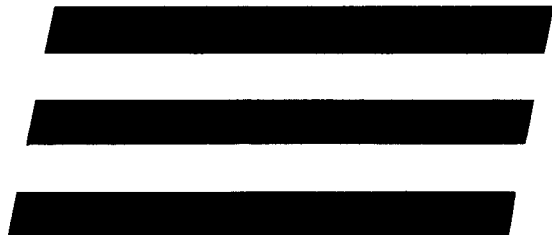




Prober RP388

Technical
Reference Manual

HUNTRON



CHANGE INFORMATION

P/N: 21-1278

ISSUE NO: 3 1/98

This change contains information necessary to ensure the accuracy of the following manual:

Title: **HUNTRON PROBER RP388
TECHNICAL REFERENCE MANUAL**
Print date: **April 1994**
P/N: **21-1118**
Revision: **0**
Revision Date: **1994**

CHANGE #1

EFFECTIVITY: ALL 230V UNITS STARTING WITH S/N 400-01325 AND
ENDING WITH S/N 400-01356.

On Page 4-23:

CHANGE: 1.A1.P1 Power Chassis Assembly

FROM: Power Entry Module	06-6057	N/A	FN393-6-05-11
TO: Power Entry Module A*, CE	06-6068	57705	06-6068

CHANGE #2

EFFECTIVITY: 1/98

On Page before the Table of Contents change the CONTACTING HUNTRON
information to:

To obtain information about service, accessories and other products, contact:

Huntron Instruments, Inc.
15720 Mill Creek Blvd.
Mill Creek, WA 98012
USA

In North America, call 800-426-9265 or 425-743-3171.

Huntron is also accessible by:

- ◆ FAX: 425-743-1360
- ◆ Internet E-mail: huntron@huntron.com
- ◆ Internet Home Page: <http://www.huntron.com>

CHANGE #3

EFFECTIVITY: 1/98

On Page 3-1 section 3-2, replace paragraph 2 with:

“For in-warranty or out-of warranty factory service in the United States, call (toll-free) 800-426-9265 to describe the malfunction and obtain an RMA number and shipping instructions prior to shipment. This number must be clearly displayed on the exterior of the shipping carton. Only parcels displaying an RMA number will be accepted. In Washington state, call 425-743-3171. Huntron is also accessible by FAX at 425-743-1360, by Internet E-mail at huntron@huntron.com, and on our Internet Home Page at <http://www.huntron.com>”

HUNTRON INSTRUMENTS, INC.

PROBER RP388

TECHNICAL REFERENCE MANUAL

**April 1994
P/N 21-1118**

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Huntron warrants that the Huntron Tracker 5100DS/Prober RP388 hardware shall be free from defects in material and workmanship for one (1) year from the date of purchase.

Huntron warrants that the diskette(s) containing the Huntron Tracker 5100DS/Prober RP388 software shall be free from defects in material and workmanship for one (1) year from the date of purchase. Huntron further warrants that the Huntron 5100DS/RP388 software will perform in substantial conformance with the system specifications of the Huntron Tracker 5100DS/Prober RP388 at the time of purchase and for the period of one (1) year thereafter.

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Outside North America, call your local distributor for assistance or service.

Table of Contents

SECTION 1 INTRODUCTION AND SPECIFICATIONS

1-1.	INTRODUCTION	1-1
1-2.	SPECIFICATIONS	1-2
1-3.	SAFETY CONSIDERATIONS	1-3

SECTION 2 THEORY OF OPERATION

2-1.	INTRODUCTION	2-1
2-2.	FUNCTIONAL OVERVIEW	2-1
2-3.	STEPPER MOTOR CONTROLLER	2-2
2-4.	STEPPER MOTOR DRIVERS	2-2
2-5.	VISION SYSTEM	2-2

SECTION 3 MAINTENANCE

3-1.	INTRODUCTION	3-1
3-2.	SERVICE INFORMATION	3-1
3-3.	DISASSEMBLY PROCEDURES	3-2
	Left Top Cover Removal Procedure	3-2
	Right Top Cover Removal Procedure	3-2
	Back Top Cover Removal Procedure	3-3
	Limit Switch Assembly Removal Procedure	3-3
	Left X Axis Pulley Block Assembly Removal Procedure	3-4
	Right X Axis Pulley Block Assembly Removal Procedure	3-5
	X Motor And Bracket Assembly Removal Procedure	3-6
	X Motor Removal Procedure	3-7
	Left Y Timing Belt Replacement Procedure	3-8
	Right Y Timing Belt Replacement Procedure	3-9
	Y Timing Belt Tension Calibration Procedure	3-10
	Left Front Pulley Assembly Removal Procedure	3-11
	Right Front Pulley Assembly Removal Procedure	3-12
	Left Rear Pulley Block Removal Procedure	3-13

	Right Rear Pulley Block Removal Procedure	3-14
	Y Motor And Bracket Assembly Removal Procedure	3-15
	Y Motor Removal Procedure	3-16
	Left Z Axis Cover Removal Procedure	3-17
	X Timing Belt Replacement Procedure	3-18
	Z Axis Assembly Removal Procedure	3-19
	Z Motor Assembly Removal Procedure	3-20
	CCD Assembly Removal Procedure	3-21
	Spring Probe Replacement Procedure	3-22
	Back Panel Removal Procedure	3-23
	Camera Body Removal Procedure	3-24
	Camera Interface Harness Replacement Procedure	3-25
	Power Chassis Assembly Removal Procedure	3-26
	Power Transformer Replacement Procedure	3-27
	Stepper Driver Replacement Procedure	3-28
3-4.	REASSEMBLY PROCEDURES	3-29
3-5.	EXTERNAL CLEANING AND LUBRICATION	3-29
3-6.	LINE FUSES AND VOLTAGE SELECTION	3-29
3-7.	STORAGE INSTRUCTIONS	3-30

SECTION 4 LIST OF REPLACEABLE PARTS

4-1.	INTRODUCTION	4-1
4-2.	HOW TO OBTAIN PARTS	4-1

SECTION 5 SCHEMATIC DIAGRAMS

5-1.	SCHEMATICS	5-1
------	----------------------	-----

List of Illustrations

Figure	Description	Page
2-1.	Components of the RP388.	2-1
3-2.	Right Top Cover Removal.	3-2
3-1.	Left Top Cover Removal.	3-2
3-3.	Back Top Cover Removal.	3-3
3-4.	Limit Switch Assembly Removal.	3-3
3-5a.	Z Axis Assembly Screw Locations.	3-4
3-5b.	Left X Axis Pulley Block Removal.	3-4
3-6a.	Z Axis Assembly Screw Locations.	3-5
3-6b.	Right X Axis Pulley Block Removal.	3-5
3-7.	X Motor and Bracket Assembly Removal.	3-6
3-8.	X Motor Assembly Removal.	3-7
3-9a.	Left Y Timing Belt Clamping	3-8
3-9b.	Left Y Timing Belt Routing	3-8
3-10a.	Right Y Timing Belt Clamping	3-9
3-10b.	Right Y Timing Belt Routing	3-9
3-11.	Y Belt Tensioning Setup.	3-10
3-12.	Left Front Pulley Block Removal.	3-11
3-13.	Right Front Pulley Block Removal.	3-12
3-14.	Left Rear Pulley Block Removal.	3-13
3-15.	Right Rear Pulley Block Removal.	3-14
3-16.	Y Motor and Bracket Assembly Removal.	3-15
3-17.	Y Motor Removal.	3-16
3-18.	Left Z Axis Cover Removal.	3-17
3-19.	X Axis Belt Replacement.	3-18
3-20.	X Axis Belt Removal.	3-19
3-21.	Z Motor Assembly Removal.	3-20
3-22.	CCD Assembly Removal.	3-21
3-23.	Spring Probe Replacement.	3-22
3-24.	Back Cover Removal.	3-23

Figure	Description	Page
3-25.	Camera Body Removal.	3-24
3-26.	Camera Interface Harness Replacment.	3-25
3-27.	Power Chassis Assembly Removal.	3-26
3-28.	Power Transformer Replacement.	3-27
3-29.	Stepper Motor Driver Replacement.	3-28
4-1a.	Final Assembly	4-2
4-1b.	Final Assembly	4-3
4-1c.	Final Assembly	4-4
4-1d.	Final Assembly	4-5
4-1e.	Final Assembly	4-6
4-1f.	Final Assembly	4-7
4-1g.	Final Assembly	4-8
4-1h.	Final Assembly	4-9
4-1i.	Final Assembly	4-10
4-1j.	Final Assembly	4-11
4-1k.	Final Assembly	4-12
4-2a.	Power Chassis Assembly	4-13
4-2b.	Power Chassis Assembly	4-14
4-2c.	Power Chassis Assembly	4-15
4-3.	X Motor & Bracket Assembly	4-16
4-4.	Y Motor & Bracket Assembly	4-17
4-5.	X Bracket Assembly - Right	4-18
4-6.	X Bracket Assembly - Left	4-19
4-7.	Z Axis Assembly	4-20
5-1.	Prober Power Supply Component Locations.	5-1
5-2a.	Prober Power Supply Schematic	5-2
5-2b.	Prober Power Supply Schematic	5-3

List of Tables

Table	Description	Page
1-1.	RP388 Specifications	1-2

Notes:

SECTION 1

INTRODUCTION AND SPECIFICATIONS

1-1. INTRODUCTION

The Robotic Prober RP388 is a universal test fixture for accessing test points on printed circuit boards without the need for test clips and cables. The RP388 is an accessory to the 5100DS, allowing fully automated testing of boards consisting of surface mount, pin-grid-array and discreet through-hole components. The RP388 has the following features:

- The XYZ table is a precision-machined cast Aluminum alloy chassis.
- Versatile board-under-test clamping system allowing either solder or component side probing without additional fixturing.
- All motor drive and 5100DS electronics mount inside the XYZ table.
- Movement is produced by precision stepper motors driving linear slides with toothed timing belts.
- A trackball connected to the PC allows pointing to a visible test point for storing xyz data.
- A miniature camera which displays an image of the board on the PC screen.
- The light source consists of two super-bright LEDs with light intensity control.
- Optical filtering for minimum ambient interference with the image acquisition hardware.
- Magnetic proximity limit switches are used to accurately define the "home" positions.
- Backlash associated with drive mechanisms is almost zero due to timing belts and toothed pulleys. All rotating shafts run on sealed bearings.
- The probe tip is removable allowing standard "bed-of-nails" type spring loaded probe tips to be used.
- An optional dust cover is available.
- Calibration routine allows timing belt tension adjustments and Camera position adjustment.

1-2. SPECIFICATIONS

The specifications for the Robotic Prober RP388 are listed in Table 1-1. External dimensions are shown in figure 1-1.

Table 1-1.
RP388 Specifications.

Power Requirements

Power requirements	200 Watts Maximum.
Line Voltage	115V AC or 230V AC.

Mechanical

Height	17" (43 cm)
Width	23" (58 cm)
Depth	26" (66 cm)
Weight	113.5 lb (51.5 kg)
Shock and Vibration	withstands shock and vibration encountered in commercial shipping and handling when supplied stop blocks are properly installed.

Mechanical specifications of X and Y axis

Speed	5 inches/sec (12.5 cm/sec)
Accuracy	+/- 4 mils (0.104 mm or 100 microns)
Minimum Resolution	2 mils (.0508 mm or 50 microns)
Repeatability	2 mils over 12 in of travel. (50 microns over 30.48 cm of travel)
Maximum Z travel	3 in (7.6 cm).
Maximum board-under-test size	14 in. by 14 in (35.6 cm by 35.6 cm)
Maximum probing area	12 wide by 14 long (30.4 cm by 35.6 cm)
Maximum allowable component height	2.375 in. (6 cm)

Interface

Serial – RS232

Environmental

Operating temp.	+15 degrees C to +30 degrees C (+59 degrees F to +86F)
Storage temp:	-50 degrees C to +60 degrees C (-58 degrees F to +140 degrees F)
Humidity:	0 to 50% R.H.

Table 1-1. (con't)
RP388 Specifications

Vision system

CCD Camera	Monochrome 192 by 165 pixels
Lens system	multi-lens system with 10.7 mm Focal length and f-stop of 2.8
Light source	660 nm LED with maximum brightness of 1000 milli-candela.
Light filtering	Optical narrow bandpass filter with 660 +/- 10 nm.
Focus adjustment	manual with 5 inches (12.7 cm) depth of field.

Safety considerations

- Front panel STOP button for emergency stop.
- Dust Cover with key lock switch.

1-3. SAFETY CONSIDERATIONS

This manual contains information, cautions, and warnings the user must follow to ensure safe operation, and to keep the instrument in safe condition.

WARNING

A warning denotes a hazard. It calls attention to a procedure or practice which, if not correctly performed or adhered to, could result in personal injury.

CAUTION

A caution also denotes a hazard. It calls attention to a procedure or practice which, if not correctly performed or adhered to, could result in damage to or destruction of part or all of the instrument.

Notes:

SECTION 2

THEORY OF OPERATION

2-1. INTRODUCTION

This section describes in detail how various components of the RP388 system work. The purpose of this section is to simply explain the functional characteristics of the main components of the RP388 system. This information will serve as an aid in running RP388 diagnostics and troubleshooting possible hardware problems.

2-2. FUNCTIONAL OVERVIEW

The following figure shows the components of the RP388 system.

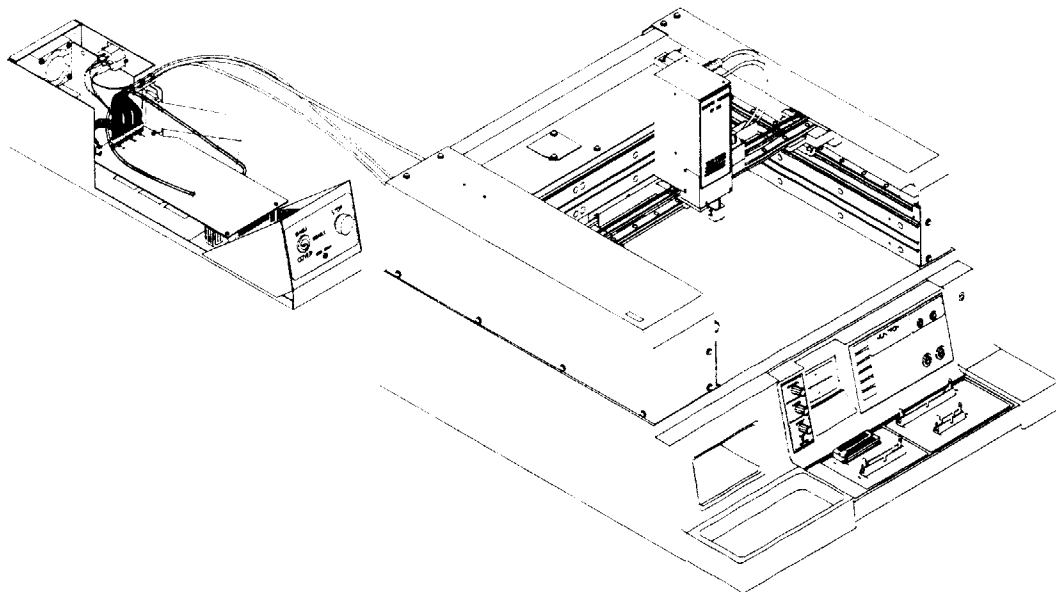


Figure 2-1. Components of the RP388.

The probe connected to the Z axis is directly connected to the TEST terminal of the 5100DS. The purpose of the XYZ stage is to accurately place the probe at a particular location for the 5100DS to perform the test. The vision system displays an image of a small area of the board-under-test on the PC monitor for setting up the xy locations of test points.

2-3. STEPPER MOTOR CONTROLLER

The Stepper Motor Controller receives commands from the PC which in turn applies step pulses to the appropriate motor drivers. The controller needs the motor speed and ramping profile information before any signals are sent to the Drivers. Once this information is obtained from the PC then the controller applies direction pulses for clockwise or counter-clockwise rotation and step pulses at different frequencies to the motor driver. The controller consists of a Microprocessor which decodes the instructions from the RS232 port and converts them to pulsed signals.

The Controller is capable of supplying pulsed signals to 4 motor drivers simultaneously. The RP388 uses only 3 axis. Each axis has limit switch inputs for stopping and reversing any motor until the limit switch is open. The limit switches are used to setup the "home" position of the X, Y and Z axis.

2-4. STEPPER MOTOR DRIVERS

The purpose of Motor Drivers is to supply sufficient and regulated current to each phase of the motor winding. The motor drivers are of the Bipolar Chopper type, supplying current in either direction through the same motor phase winding and regulating the current by high speed on-off switching of the DC supply voltage. Bipolar Chopper Drivers are the most efficient Drivers requiring less heat sinking and producing maximum output motor torque.

The motor controller is capable of half stepping. This produces half the rotational distance per step of a full step motor. The Stepper motor produces 0.9 degrees of rotational movement per full step. In half step mode the motor produces 0.045 degrees of rotational movement. The total number of incremental steps produced by the motor is 800 steps per revolution. Each motor step produces 0.002 inches (50 microns) of linear movement.

2-5. VISION SYSTEM

The vision system uses a monochrome CCD mounted in a remote housing.

The light source produces red light at a wavelength of 660nm. The optical filter is a 660nm +/- 10nm bandpass filter. This ensures that external light whose frequency is below 650 and above 670nm does not interfere with the camera image. The light intensity can be varied by a simple potentiometer adjustment.

The lens is a multi-element system producing a focal length of 10.7 mm with an f-stop of 2.8. The lenses are arranged for Chromatic Aberration correction allowing multi-colored objects to be in consistent focus. The focusing system is manual.

The CCD is remotely wired to the camera body which consists of a video amplifier. The camera body is mounted on the back panel of the RP388 and is connected to a camera interface card which plugs into an 8-bit slot in the PC. The camera interface card consists of an A to D converter which sends data to the PC bus. The interface card also consists of brightness and contrast potentiometers which are factory calibrated.

The image from the camera system is displayed on the PC monitor. A Trackball is used to point to a particular pixel on the camera image. The position of the Trackball cursor and the position of the motors provide accurate data for storing the position of each test point. Based on this data and the two user defined alignment points, it is possible to ensure accurate repeatability even when the board is not placed in the exact position as the original "golden" board.

Notes:

SECTION 3 MAINTENANCE

WARNING

These service instructions are intended for qualified personnel only. To avoid electrical shock and physical harm, do not perform any procedures in this section unless you are technically qualified to do so.

3-1. INTRODUCTION

This section presents the procedures for disassembly and assembly of the RP388. Timing belt replacement and tensioning as well as probe tip replacement are also covered in this section.

3-2. SERVICE INFORMATION

The conditions of the RP388 warranty are given at the front of this manual. Malfunctions that occur within the limits of the warranty will be corrected at no cost to the purchaser exclusive of one-way shipping costs to Huntron Instruments, Inc. Huntron service is also available for alignment and/or repair of units that are beyond the warranty period. In either case, please clearly describe the problem(s) encountered with the unit.

For in-warranty or out-of-warranty factory service in the United States, call (toll-free) 800-426-9265 to obtain an RMA number and shipping instructions prior to shipment. This number must be clearly displayed on the exterior of the shipping carton. Only parcels displaying an RMA number will be accepted. In Washington state, call 206-743-3171. Outside of the United States, call your local distributor for assistance or service. Huntron is also accessible by FAX at 206-743-1360.

When packaging the unit for shipment, use the original pallet and shipping container to provide protection during transit. If the original pallet and shipping container are not available, contact Huntron Instruments, Inc in the United States, or your distributor if not in the United States, for packaging instructions.

3-3. DISASSEMBLY PROCEDURES

Left Top Cover Removal Procedure

Refer to figure 3-1 for the following:

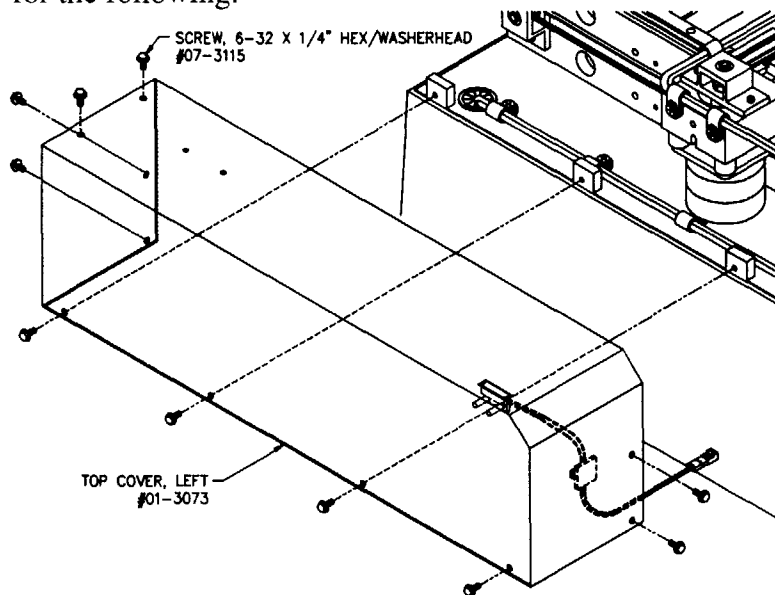


Figure 3-1. Left Top Cover Removal.

1. Remove the 6-32 x 1/4" hex head screws (10 places) from the Left Top Cover.
2. Carefully remove the cover and unplug the Limit Switch Assembly.

Right Top Cover Removal Procedure

Refer to figure 3-2 for the following:

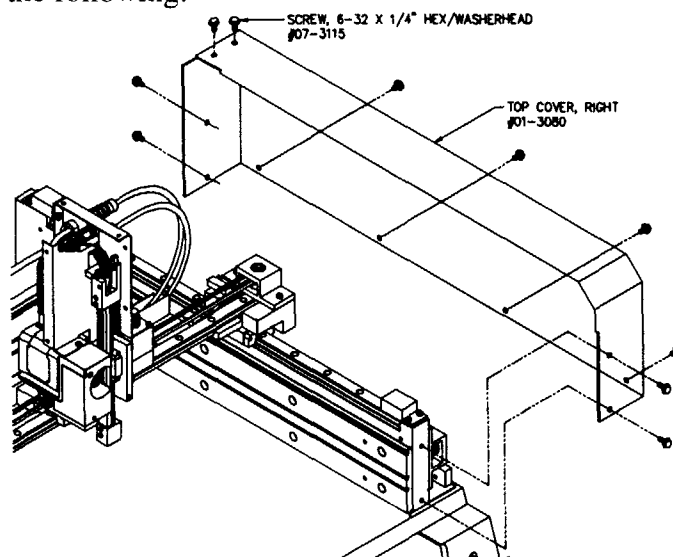


Figure 3-2. Right Top Cover Removal.

1. Remove the 6-32 x 1/4" hex head screws (10 places) from the Right Top Cover and remove the cover.

Back Top Cover Removal Procedure

Refer to figure 3-3 for the following:

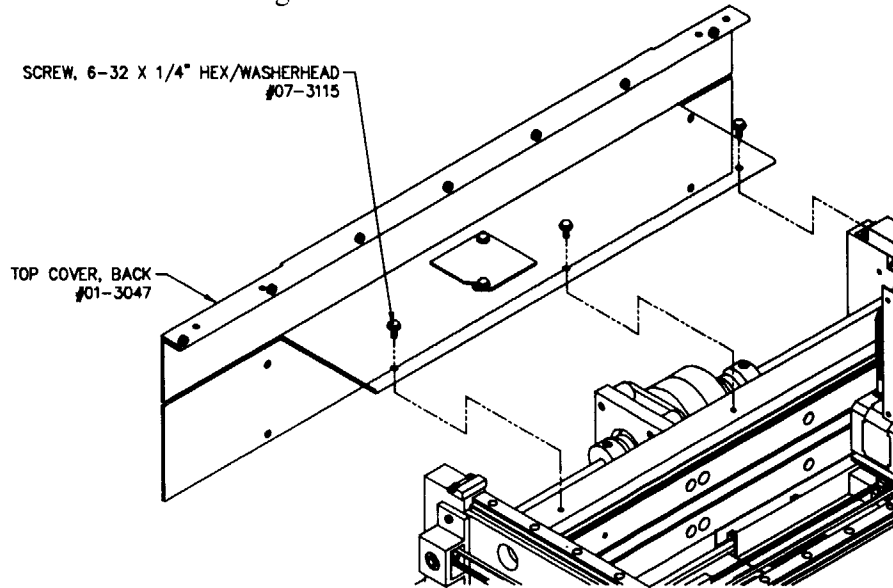


Figure 3-3. Back Top Cover Removal.

1. Remove the Left Top Cover (refer to the **Left Top Cover Removal Procedure**).
2. Remove the Right Top Cover (refer to the **Right Top Cover Removal Procedure**).
3. Remove the 6-32 x 1/4" hex head screws (3 places) from the Back Top Cover and remove the cover.

Limit Switch Assembly Removal Procedure

Refer to figure 3-4 for the following:

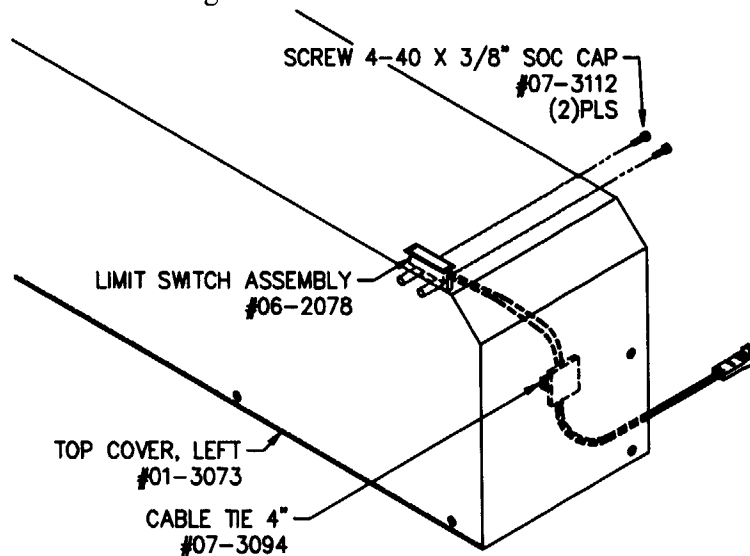


Figure 3-4. Limit Switch Assembly Removal.

1. Remove the Left Top Cover (refer to the **Left Top Cover Removal Procedure**).
2. Remove the 4-40 x 3/8" socket screws (2 places) from the Limit Switch Assembly.

- Cut the Cable Tie and remove the Limit Switch Assembly.

Left X Axis Pulley Block Assembly Removal Procedure

Refer to figures 3-5a and 3-5b for the following:

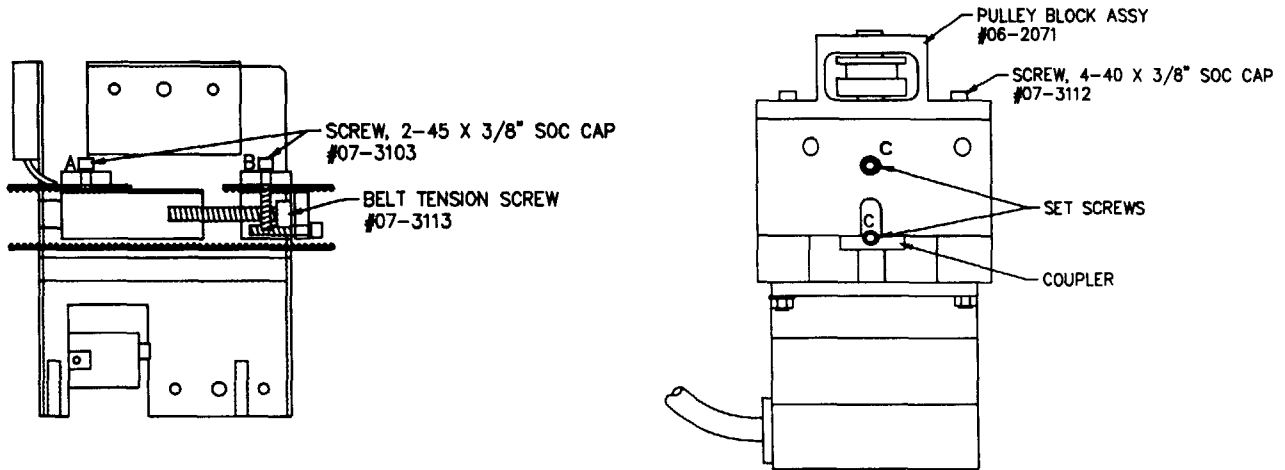


Figure 3-5a. Z Axis Assembly Screw Locations.

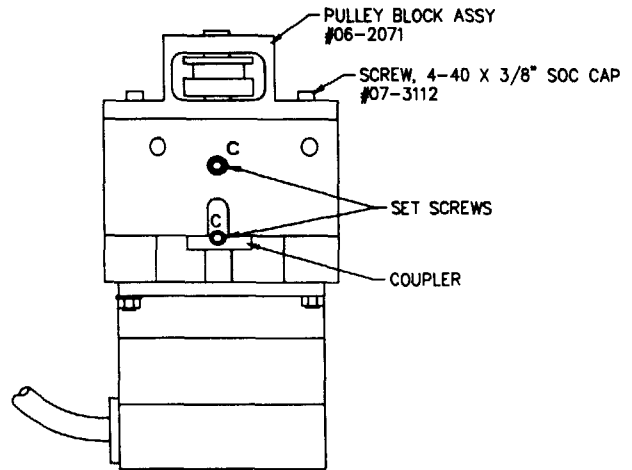


Figure 3-5b. Left X Axis Pulley Block Removal.

- Remove the Left Top Cover (refer to the **Left Top Cover Removal Procedure**).
- Loosen the 2-56 x 3/8" socket screws (4 places) located under the Z Axis Assembly, shown in figure 3-5a, and remove the X Axis Timing Belt. If the screws on retainer 'A' cannot be accessed, loosen the 2-56 x 3/8" socket screws (2 places) securing the Belt Tension Adjustment Screw Retainer and turn the 6-32 x 1" Belt Tension Adjustment Screw counter-clockwise until the retainer screws are accessible.
- Rotate the pulley so that the coupler set screws on the X Motor can be loosened through access holes 'C'. Loosen the upper set screw. (figure 3-5b)
- Remove the 4-40 x 3/8" socket screws (2 places) securing the Pulley Block Assembly and remove the assembly.

Right X Axis Pulley Block Assembly Removal Procedure

Refer to figures 3-6a and 3-6b for the following:

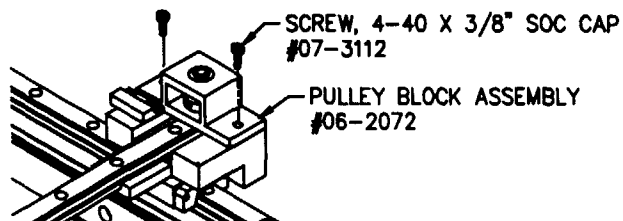
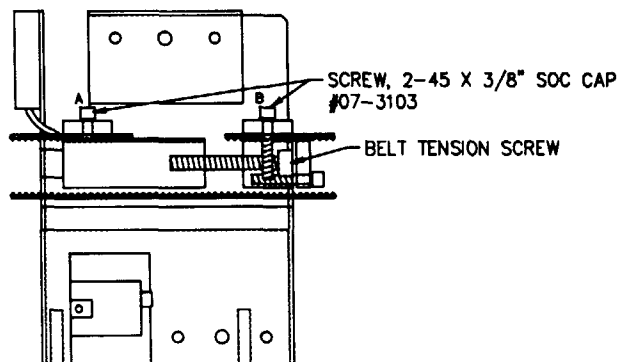


Figure 3-6a. Z Axis Assembly Screw Locations.

Figure 3-6b. Right X Axis Pulley Block Removal.

1. Remove the Right Top Cover (refer to the **Right Top Cover Removal Procedure**).
2. Loosen the 2-56 x 3/8" socket screws (4 places) located under the Z Axis Assembly, shown in figure 3-6a, and remove the X Axis Timing Belt. If the screws on retainer 'A' cannot be accessed, loosen the 2-56 x 3/8" socket screws (2 places) securing the Belt Tension Adjustment Screw Retainer and turn the 6-32 x 1" Belt Tension Adjustment Screw counter-clockwise until the retainer screws are accessible.
3. Remove the 4-40 x 3/8" socket screws (2 places) securing the Pulley Block Assembly and remove the assembly. (figure 3-6b)

X Motor And Bracket Assembly Removal Procedure

Refer to figure 3-7 for the following:

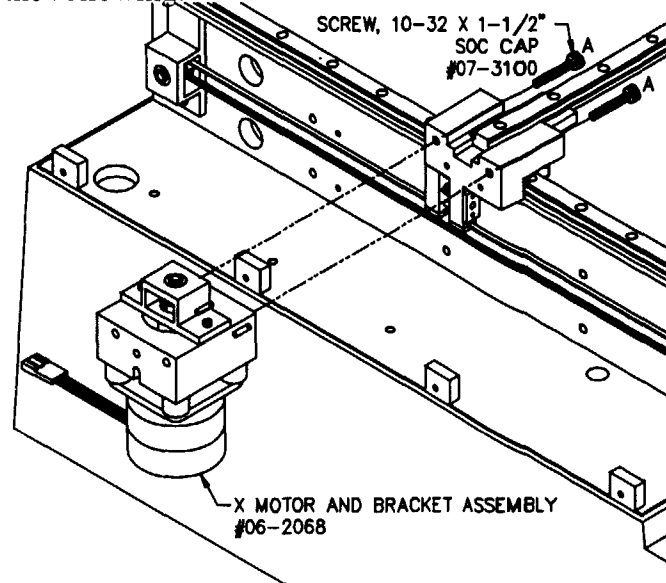


Figure 3-7. X Motor and Bracket Assembly Removal.

1. Remove the Left Top Cover (refer to the **Left Top Cover Removal Procedure**).
2. Loosen the 2-56 x 3/8" socket screws (4 places) located under the Z Axis Assembly, shown in figure 3-6a, and remove the X Axis Timing Belt. If the screws on retainer 'A' cannot be accessed, loosen the 2-56 x 3/8" socket screws (2 places) securing the Belt Tension Adjustment Screw Retainer and turn the 6-32 x 1" Belt Tension Adjustment Screw counter-clockwise until the retainer screws are accessible.
3. Cut the Cable Tie(s) securing the Cables to the back of the X Motor and Bracket Assembly. Unplug the Motor and Limit Switch Assembly.
4. Remove the 6-32x3/8" phillips screw securing the Ground Wires to the back of the X Motor and Bracket Assembly.
5. Remove the 10-32x3/8" phillips screws (3 places) securing the Cable Clamps and set the Cables aside.
6. Remove the 10-32 x 1-1/2" socket screws (2 places) at 'A' securing the X Motor and Bracket Assembly to the Prober and remove the assembly.

X Motor Removal Procedure

Refer to figure 3-8 for the following:

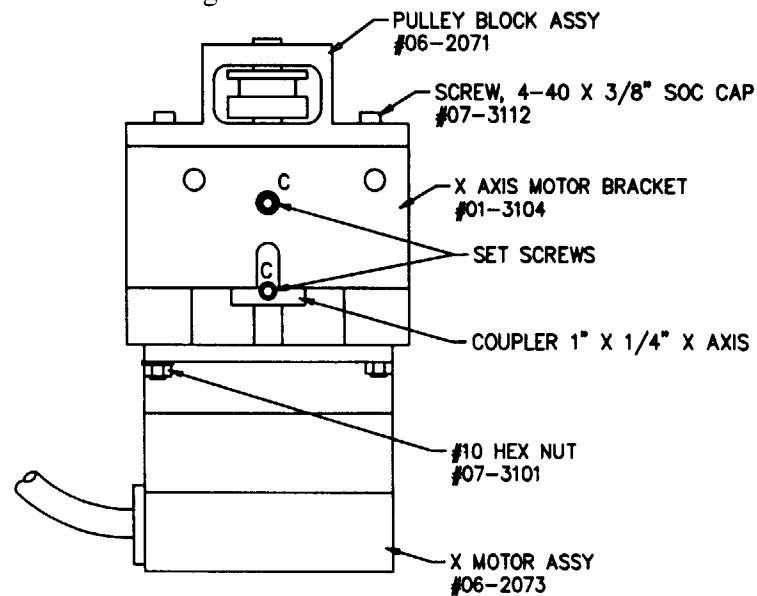


Figure 3-8. X Motor Assembly Removal.

1. Remove the Left Top Cover (refer to the **Left Top Cover Removal Procedure**).
2. Remove the X Motor and Bracket Assembly (refer to the **X Motor And Bracket Assembly Removal Procedure**).
3. Rotate the pulley so that the coupler set screws on the motor can be loosened through access holes 'C'. Loosen the lower set screw.
4. Remove the #10 hex nuts (4 places).
5. Slide the motor down and out of the coupler.

Left Y Timing Belt Replacement Procedure

Refer to figures 3-9a and 3-9b for the following:

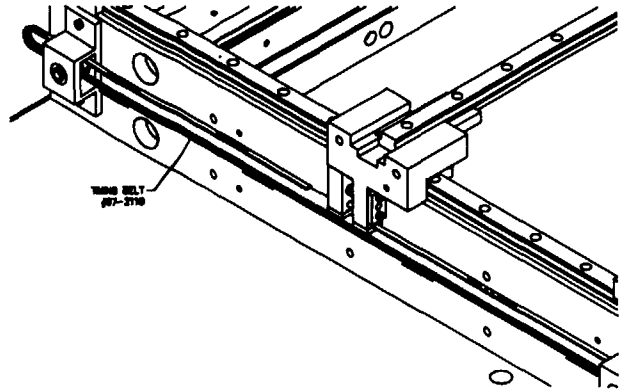
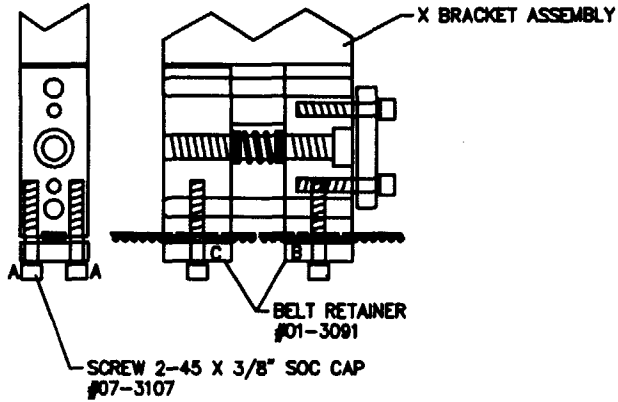


Figure 3-9a. Left Y Timing Belt Clamping

Figure 3-9b. Left Y Timing Belt Routing

1. Remove the Left Top Cover (refer to the **Left Top Cover Removal Procedure**).
2. Remove the X Motor and Bracket Assembly (refer to the **X Motor And Bracket Assembly Removal Procedure**).
3. Loosen the 2-56 x 3/8" socket screws (2 places) on the Belt Tension Adjustment Screw Retainer and turn the Belt Tension Adjustment Screw counter-clockwise until the Belt Adjustment Block is flush with the rear of the X Bracket Assembly.
4. Loosen the 2-56 x 3/8" socket screws (4 places) marked 'A', located under the X Bracket Assembly with the ratchet and hex bit. (See figure 3-9a.)
5. Remove the timing belt.
6. Secure one end of the new timing belt by tightening the Belt Retainer screws (2 places) at the bottom of the Bracket Assembly. The end of the belt must protrude through the opposite end of the slot. Evenly tighten the screws 'A' on the Belt Retainer 'B' until proper contact is made with the mating surface.
7. Thread the belt through the Pulley Block Assemblies as shown in figure 3-9b, with the teeth inward.
8. Secure the other end of the belt to the Belt Retainer. Belt ends must protrude through the opposite end of the slot. Evenly tighten the screws 'A' on Belt Retainer 'C' until contact is made with the mating surface.
9. Refer to the **Y Timing Belt Calibration Procedure**.

Right Y Timing Belt Replacement Procedure

Refer to figures 3-10a and 3-10b for the following:

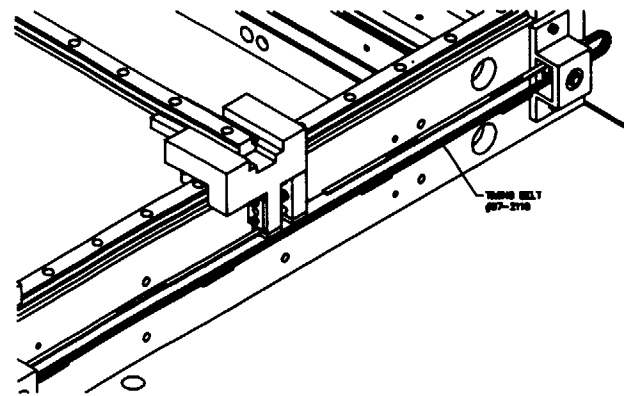
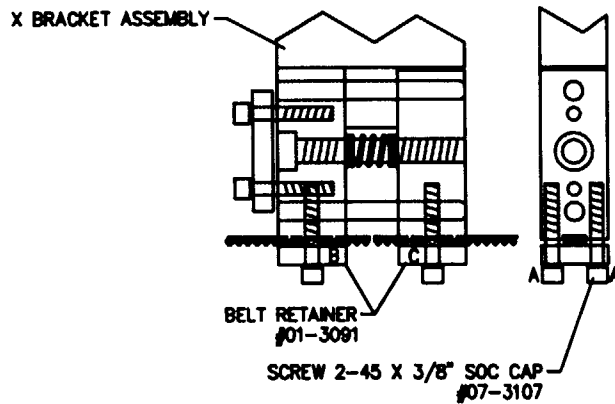


Figure 3-10a. Right Timing Belt Clamping

Figure 3-10b. Right Timing Belt Routing

1. Remove the Right Top Cover (refer to the **Right Top Cover Removal Procedure**).
2. Loosen the 2-56 x 3/8" socket screws (2 places) on the Belt Tension Adjustment Screw Retainer and turn the Belt Tension Adjustment Screw counter-clockwise until the Belt Adjustment Block is flush with the rear of the X Bracket Assembly.
3. Loosen the 2-56 x 3/8" socket screws (4 places) marked 'A', located under the X Bracket Assembly with the ratchet and hex bit. (See figure 3-10a.)
4. Remove the timing belt.
5. Secure one end of the new timing belt by tightening the Belt Retainer screws (2 places) at the bottom of the Bracket Assembly. The end of the belt must protrude through the opposite end of the slot. Evenly tighten the screws 'A' on the Belt Retainer 'B' until proper contact is made with the mating surface.
6. Thread the belt through the Pulley Block Assemblies as shown in figure 3-10b, with the teeth inward.
7. Secure the other end of the belt to the Belt Retainer. Belt ends must protrude through the opposite end of the slot. Evenly tighten the screws 'A' on the Belt Retainer 'C' until contact is made with the mating surface.
8. Refer to the **Y Timing Belt Calibration Procedure**.

Y Timing Belt Tension Calibration Procedure

Refer to figure 3-11 for the following:

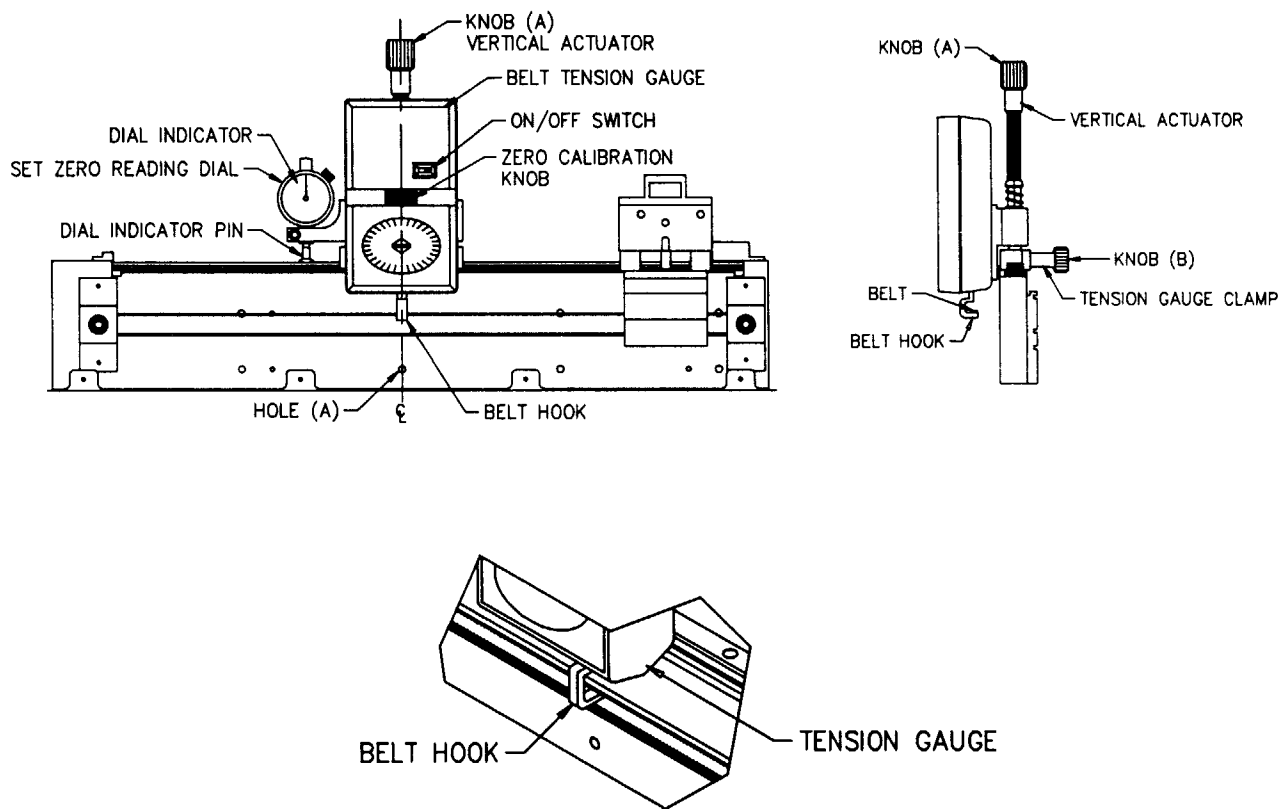


Figure 3-11. Y Belt Tensioning Setup.

1. Replace the Y Timing Belt(s) (refer to the **Left or Right Y Timing Belt Replacement Procedure**), or if you are just tuning up the Prober, remove the Left Top Cover (refer to the **Left Top Cover Removal Procedure**) or remove the Right Top Cover (refer to the **Right Top Cover Removal Procedure**).
2. Clamp the X Axis Assembly to the front of the Prober. (The red Stop Blocks work well for this).
3. Mount the tension gauge in the middle of the rail, aligning the Belt Hook with hole 'A'.
4. Tighten the 6-32 x 1" Belt Tension Adjustment Screw to apply some tension to the belt.
5. Adjust tension knob 'A' so the Belt Hook is just touching the belt.
6. Zero out both gauges to begin adjustments.
7. Turn knob 'A' clockwise so that the needle gauge goes around two times and back to zero.
8. Tighten the Belt Tension Adjustment Screw until the LCD gauge reads 80 grams.
9. Lower the tension gauge so that it is not in contact with the belt.

10. Even the tension along the belt by placing your finger between the belt sections and pulling gently up and down on the belt several times.
11. Bring the Belt Hook up to just touching the belt and zero out again.
12. Turn knob 'A' two complete turns clockwise.
13. The LCD gauge should read 80 grams again. If not, repeat steps 8 through 12.

Left Front Pulley Assembly Removal Procedure

Refer to figure 3-12 for the following:

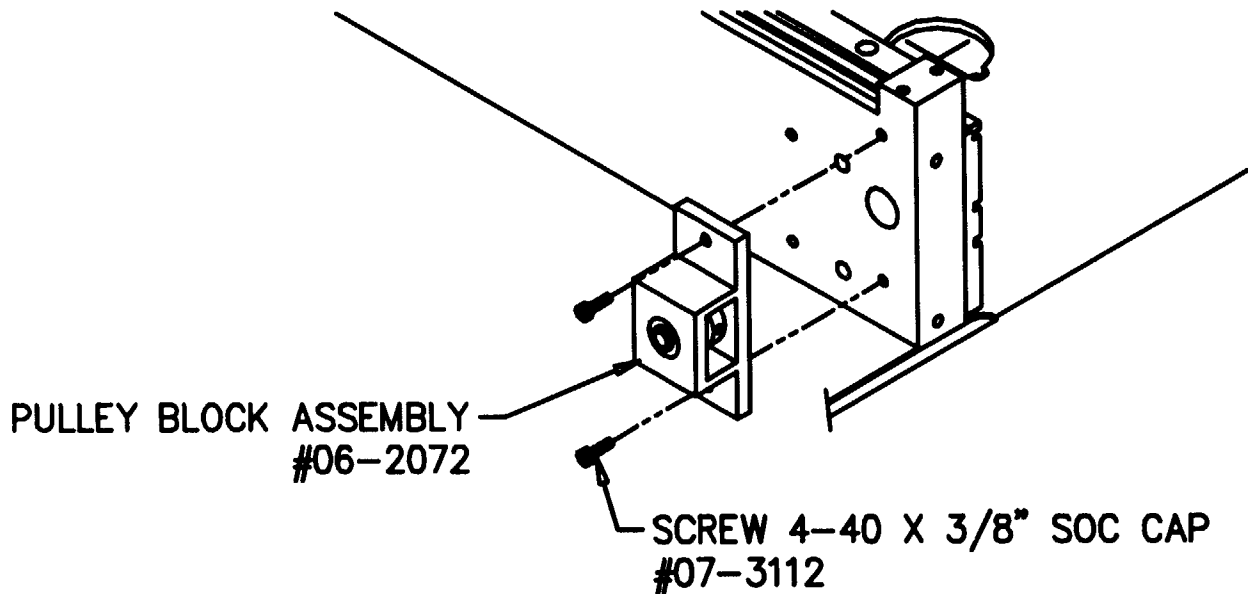


Figure 3-12. Left Front Pully Block Removal.

1. Remove the Left Top Cover (refer to the **Left Top Cover Removal Procedure**).
2. Remove the X Motor and Bracket Assembly (refer to the **X Motor and Bracket Assembly Removal Procedure**).
3. Remove the Left Y Timing Belt (refer to the **Left Y Timing Belt Removal Procedure**).
4. Remove the 4-40 x 3/8" socket screws (2 places) and remove the assembly.

Right Front Pulley Assembly Removal Procedure

Refer to figure 3-13 for the following:

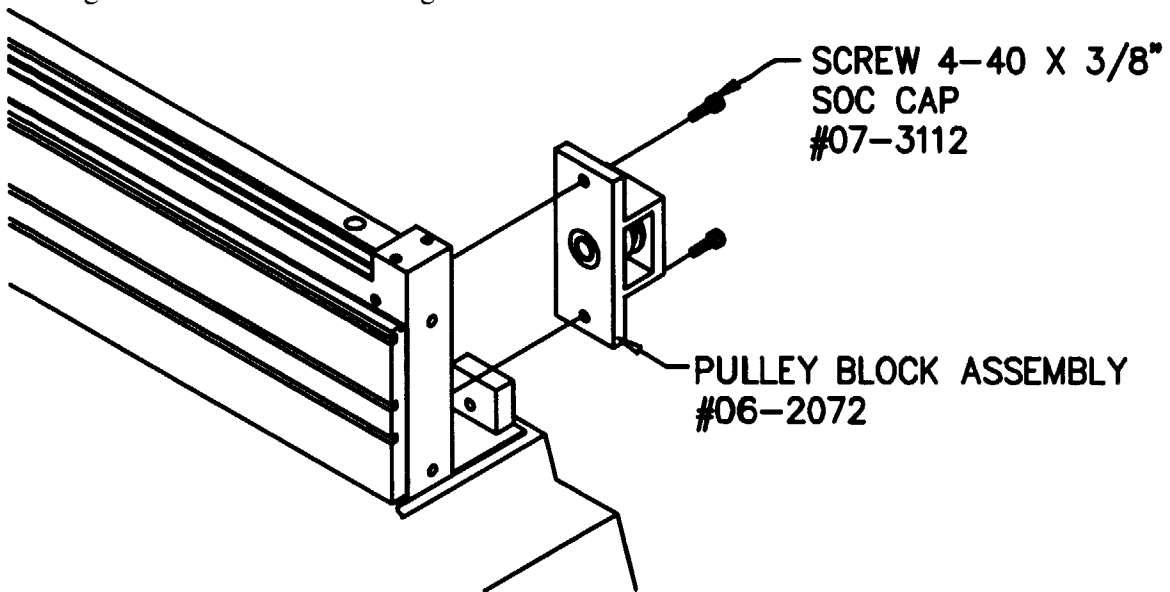


Figure 3-13. Right Front Pully Block Removal.

1. Remove the Right Top Cover (refer to the **Right Top Cover Removal Procedure**).
2. Remove the Right Y Timing Belt (refer to the **Right Y Timing Belt Removal Procedure**).
3. Remove the 4-40 x 3/8" socket screws (2 places) and remove the assembly.

Left Rear Pulley Block Removal Procedure

Refer to figure 3-14 for the following:

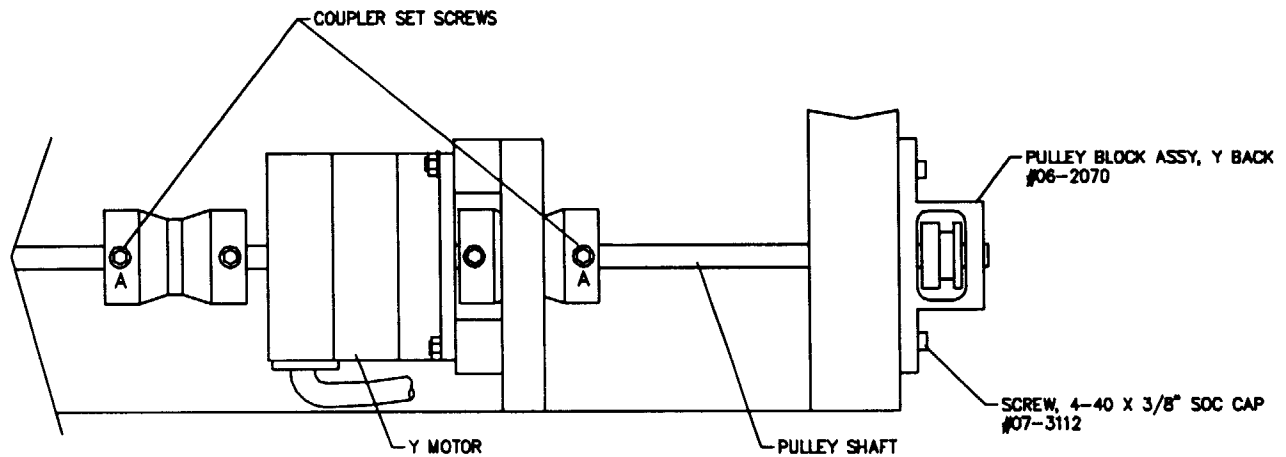


Figure 3-14. Left Rear Pulley Block Removal.

1. Remove the Right Top Cover (refer to the **Right Top Cover Removal Procedure**).
2. Remove the Left Top Cover (refer to the **Left Top Cover Removal Procedure**).
3. Remove the Back Top Cover (refer to the **Back Top Cover Removal Procedure**).
4. Remove the X Motor and Bracket Assembly (refer to the **X Motor and Bracket Assembly Removal Procedure**).
5. Remove the Left Y Timing Belt (refer to the **Left Y Timing Belt Replacement Procedure**, steps 1 through 3).
6. Rotate the Y Motor so that the set screws in the left coupler can be easily accessed. Loosen set screw 'A'.
7. Remove the 4-40 x 3/8" socket screws (2 places) securing the pulley assembly and slide the assembly out of the coupler.

Right Rear Pulley Block Removal Procedure

Refer to figure 3-15 for the following:

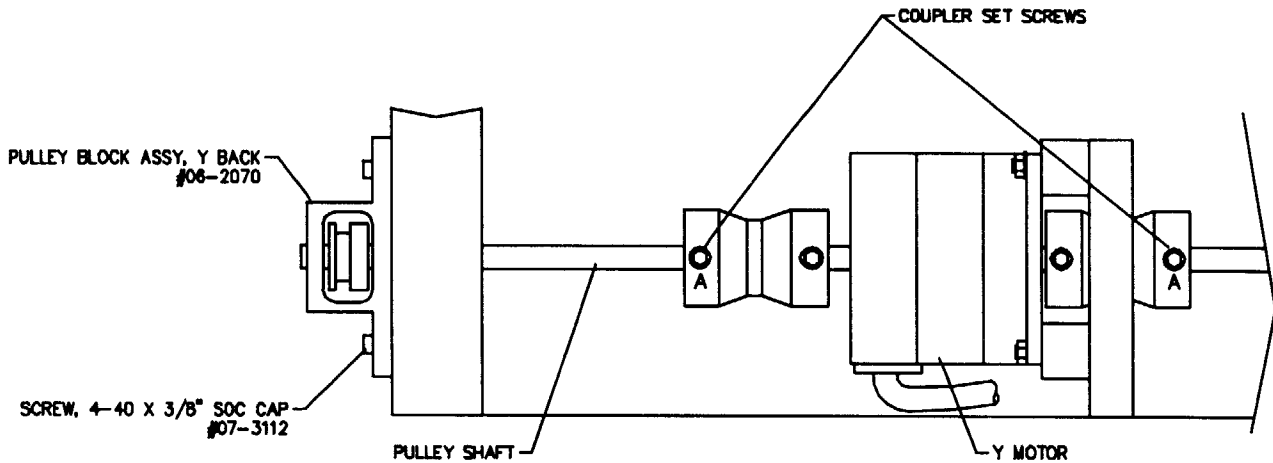


Figure 3-15. Right Rear Pully Block Removal.

1. Remove the Right Top Cover (refer to the **Right Top Cover Removal Procedure**).
2. Remove the Left Top Cover (refer to the **Left Top Cover Removal Procedure**).
3. Remove the Back Top Cover (refer to the **Back Top Cover Removal Procedure**).
4. Remove the Right Y Timing Belt (refer to the **Right Y Timing Belt Replacement Procedure**, steps 1 through 3).
5. Rotate the Y Motor so that the set screws in the right coupler can be easily accessed. Loosen set screw 'A'.
6. Remove the 4-40 x 3/8" socket screws (2 places) securing the pulley assembly and slide the assembly out of the coupler.

Y Motor And Bracket Assembly Removal Procedure

Refer to figure 3-16 for the following:

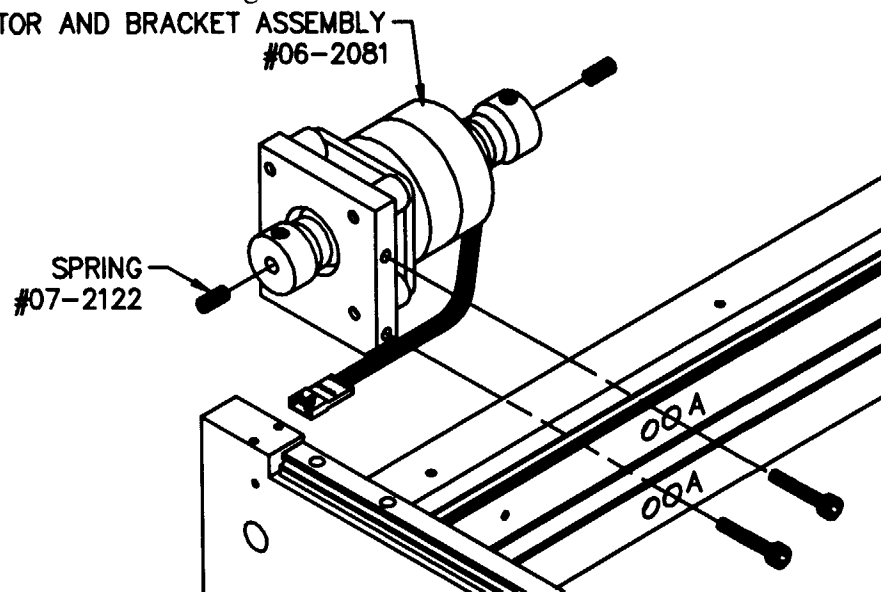


Figure 3-16. Y Motor and Bracket Assembly Removal.

1. Remove the Right Top Cover (refer to the **Right Top Cover Removal Procedure**).
2. Remove the Left Top Cover (refer to the **Left Top Cover Removal Procedure**).
3. Remove the Back Top Cover (refer to the **Back Top Cover Removal Procedure**).
4. Remove both of the Rear Pulley Block Assemblies (refer to the **Left and Right Rear Pulley Block Assembly Removal Procedures**).

Note: The Y Timing Belts do not need to be removed at this time

5. Unplug the Y Motor Cable.
6. Remove the 6-32 x 3/8" phillips screw securing the green Motor Ground Wire (not shown) to the back wall.
7. Remove the 10-32 x 1-1/2" socket screws (2 places) at 'A'.
8. Remove the Y Motor and Bracket Assembly.

Y Motor Removal Procedure

Refer to figure 3-17 for the following:

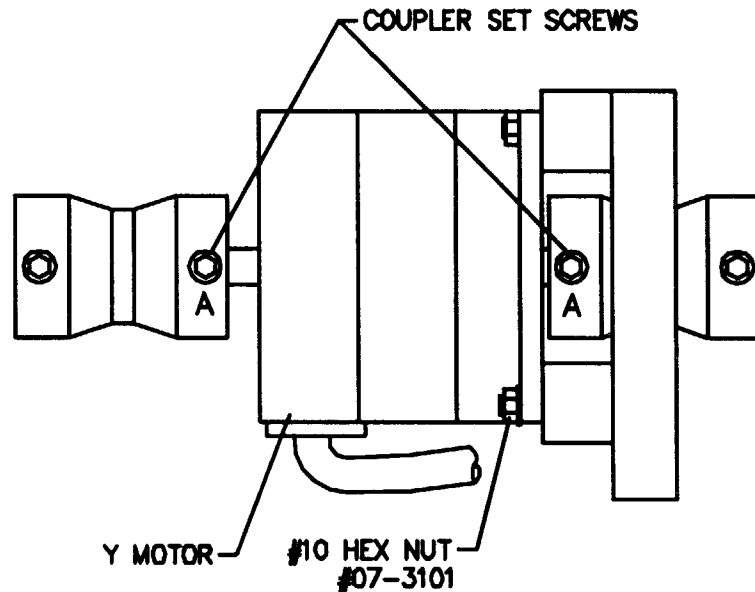


Figure 3-17. Y Motor Removal.

1. Remove the Y Motor and Bracket Assembly (refer to the **Y Motor And Bracket Assembly Removal Procedure**).
2. Rotate the couplers to access the set screws.
3. Loosen the inside set screws identified by 'A'.
4. Slide the couplers off of the motor shaft.
5. Remove the #10 hex nuts (4 places).
6. Remove the Motor from the Y Motor Bracket.

Left Z Axis Cover Removal Procedure

Refer to figure 3-18 for the following:

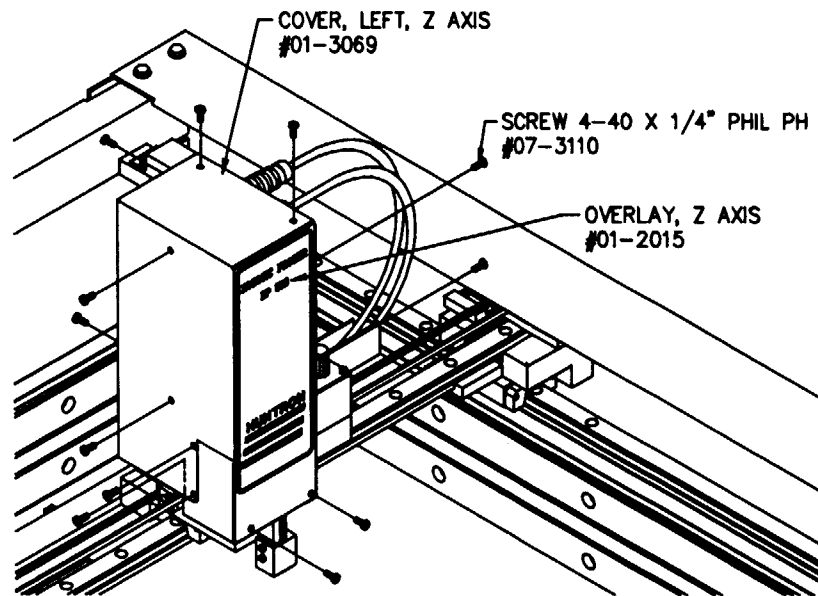


Figure 3-18. Left Z Axis Cover Removal.

1. Remove the 4-40 x 1/4" phillips screws (12 places) securing the Cover to the Z Axis Assembly.
2. Remove the Cover.

X Timing Belt Replacement Procedure

Refer to figure 3-19 for the following:

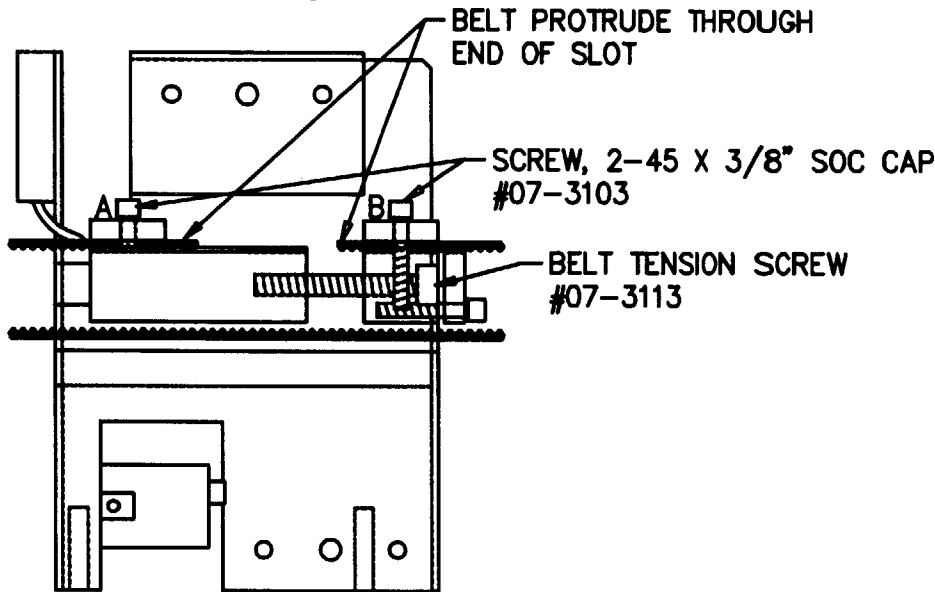


Figure 3-19. X Axis Belt Replacement.

1. Remove the Left Top Cover (refer to the **Left Top Cover Removal Procedure**).
2. Remove the Right Top Cover (refer to the **Right Top Cover Removal Procedure**).
3. Loosen the 2-56 x 3/8" socket screws (4 places) located under the Z Axis Assembly. If the screws on retainer 'A' cannot be accessed, loosen the 2-56 x 3/8" socket screws (2 places) on the Belt Tension Adjustment Screw Retainer and turn the Belt Tension Adjustment Screw counter-clockwise until the retainer screws are accessible.
4. Remove the timing belt.
5. Place the end of the belt in retainer 'A', and tighten down. Be sure that the teeth are facing inward as shown. The end of the belt must protrude through the opposite end of the groove. Tighten the belt retainer screws evenly until contact is made with the mating surface.
6. Thread the belt through the first pulley assembly and then through the slot in the Z Axis Assembly (refer to figure 3-19). Then thread it through the second pulley. Be sure that the teeth are facing inward.
7. Push the Z Axis Assembly to the left Y rail to allow easy access to the second belt retainer.
8. Tighten the loose end of the belt to the retainer marked 'B'. The end of the belt must protrude through the opposite end of the slot. Tighten the belt retainer screws evenly until contact is made with the mating surface.
9. To calibrate the tension, run "Verify/Adjust XY Calibration" under the Maintenance menu in the Prober software. To adjust the tension, turn the Belt Tension Adjustment Screw clockwise.
10. When complete, tighten the screws on the Belt Tension Adjustment Screw Retainer.

Z Axis Assembly Removal Procedure

Refer to figure 3-20 for the following:

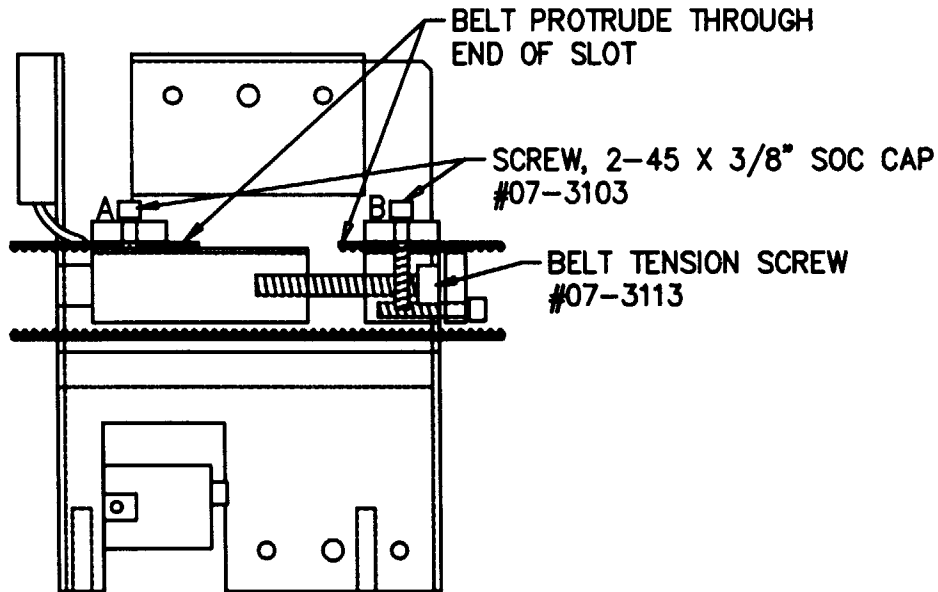


Figure 3-20. X Axis Belt Removal.

1. Loosen the 2-56 x 3/8" socket screws (4 places) located under the Z Axis Assembly. If the screws on retainer 'A' cannot be accessed, loosen the 2-56 x 3/8" socket screws (2 places) on the Belt Tension Adjustment Screw Retainer and turn the Belt Tension Adjustment Screw counter-clockwise until the retainer screws are accessible.
2. Remove the Timing Belt.
3. Cut the Cable Ties from the Wire Tray (3 places).
4. Loosen the M3.5 x 12mm socket screws (3 places) securing the Wire Tray to the X Axis Rail.
5. Remove the wire tray.
6. Hold the Z Axis Assembly, with the ratchet and hex bit, loosen the 4-40 x 3/8" socket screws (4 places) located under the front and rear of the Z Axis Assembly.
7. Lift the Z Axis Assembly off of the Platform.

NOTE: This procedure does not completely disconnect the Z Axis Assembly from the Prober. It will still be attached by the two input cables.

Z Motor Assembly Removal Procedure

Refer to figure 3-21 for the following:

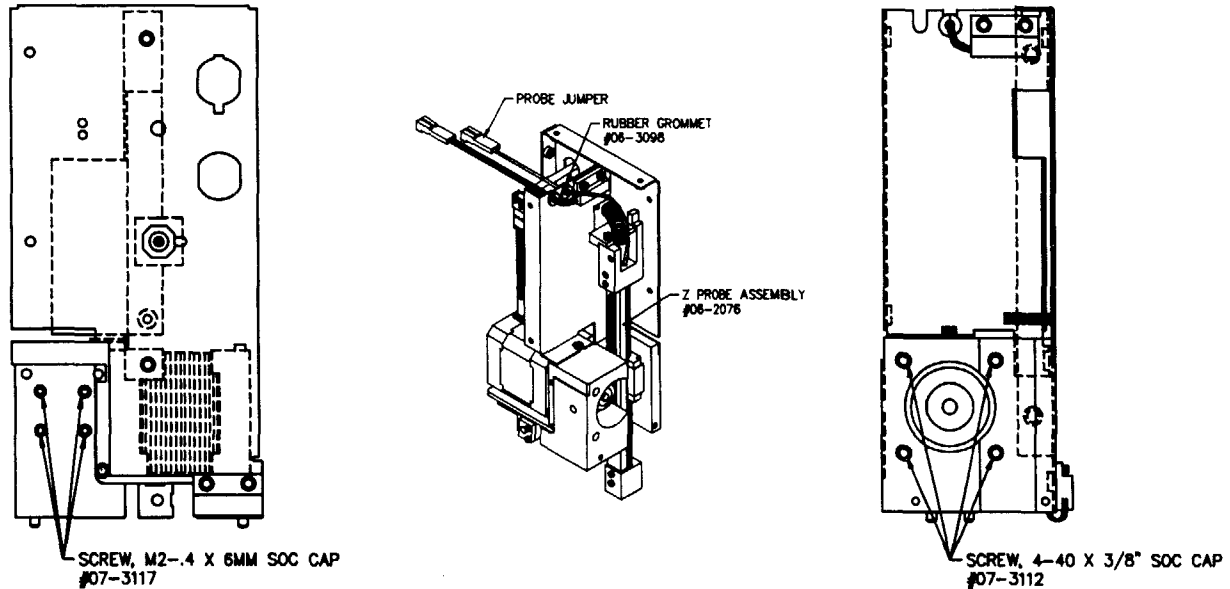


Figure 3-21. Z Motor Assembly Removal.

1. Remove the Left Z Axis Cover (refer to the **Left Z Axis Cover Removal Procedure**).
2. Unplug the Z Probe Assembly.
3. Unplug the Z Motor Assembly.
4. Lift the Rubber Grommet holding the Probe Wire, out of the sheet metal.
5. Remove the M2 x 8mm socket screws (4 places) securing the Z Probe Assembly.
6. Slide the Z Probe Assembly straight out and set aside.
7. Loosen the set screws (2 places) in the Nylon Gear .
8. Slide the Gear off of the motor shaft.
9. Remove the 4-40 x 3/8" socket screws (4 places) that secure the Motor.
10. Slide the Motor out of the Motor Bracket.

CCD Assembly Removal Procedure

Refer to figure 3-22 for the following:

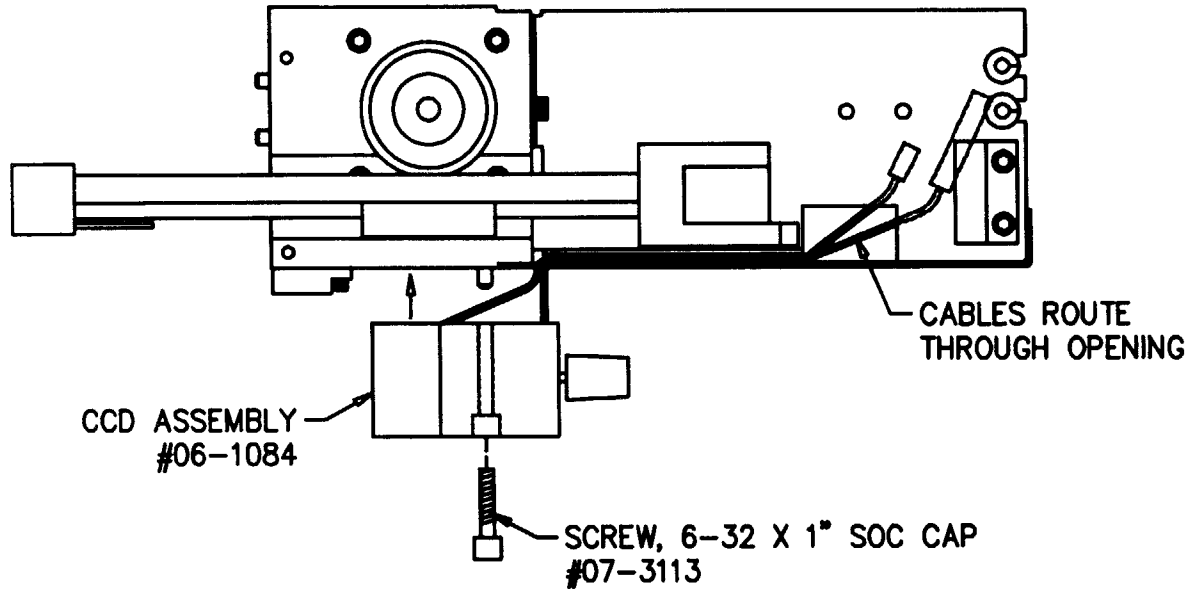


Figure 3-22. CCD Assembly Removal.

1. Remove the Left Z Axis Cover (refer to the **Left Z Axis Cover Removal Procedure**).
2. Unplug the CCD Assembly.
3. Lower the Z Probe Assembly, as shown in figure 3-22, so that the cables may be slid out of the Z Cover Bracket.
4. Remove the 6-32 x 1" socket screws (2 places) securing the CCD Assembly.
5. Slide the CCD Assembly away from the Z Axis Assembly. Be careful when pulling the wires through the wire slot.

Spring Probe Replacement Procedure

Refer to figure 3-23 for the following:

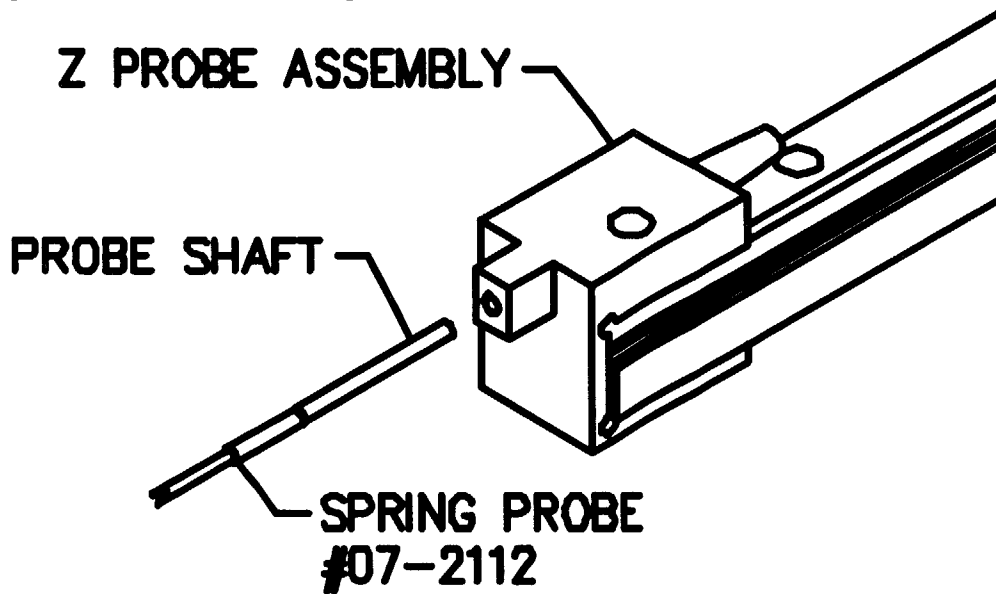


Figure 3-23. Spring Probe Replacement.

1. Pull the Spring Probe carefully out of the Z Probe Assembly with a pair of needle nose pliers.
2. Push the new Spring Probe into the assembly. Insert it until the Probe shaft is flush with the Probe holder.
3. To calibrate the system, perform the "Camera Offset" procedure in the Prober software.

Back Panel Removal Procedure

Refer to figure 3-24 for the following:

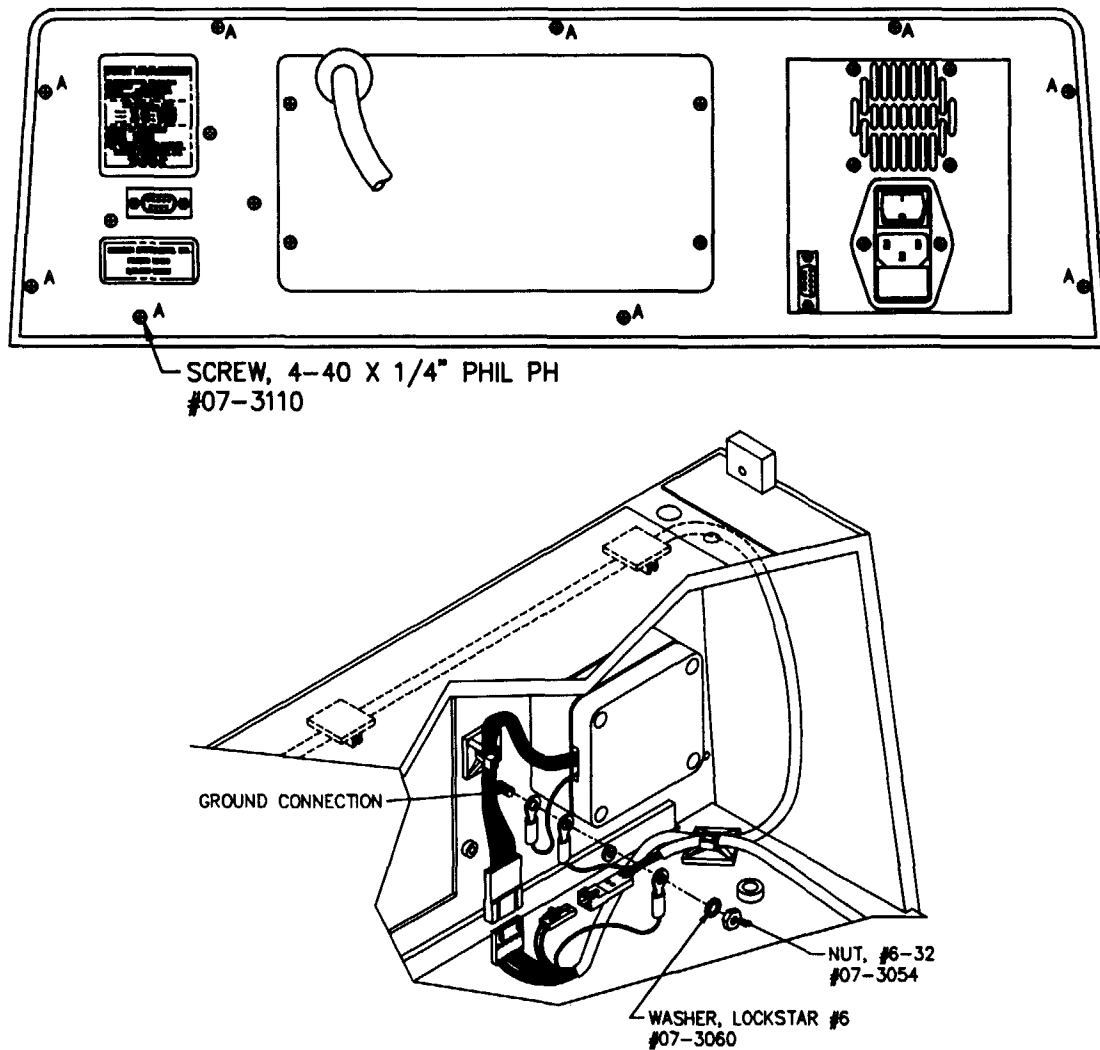


Figure 3-24. Back Cover Removal.

1. Remove the 4-40 x 1/4" phillips screws (9 places).
2. Pull the panel away from the Prober slowly in such a way that you can unplug the Camera Interface Harness.
4. Remove the #6 nut and remove the ground wires.

Camera Body Removal Procedure

Refer to figure 3-25 for the following:

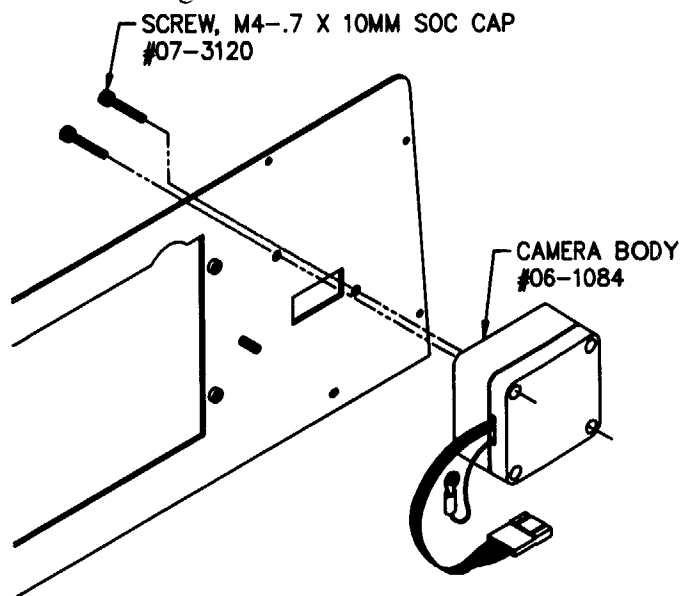


Figure 3-25. Camera Body Removal.

1. Remove the Back Panel (refer to the **Back Panel Removal Procedure**).
2. Remove the M4.7 x 10mm socket screws securing the Camera Body to the Back Panel and remove the Camera Body.

Camera Interface Harness Replacement Procedure

Refer to figure 3-26 for the following:

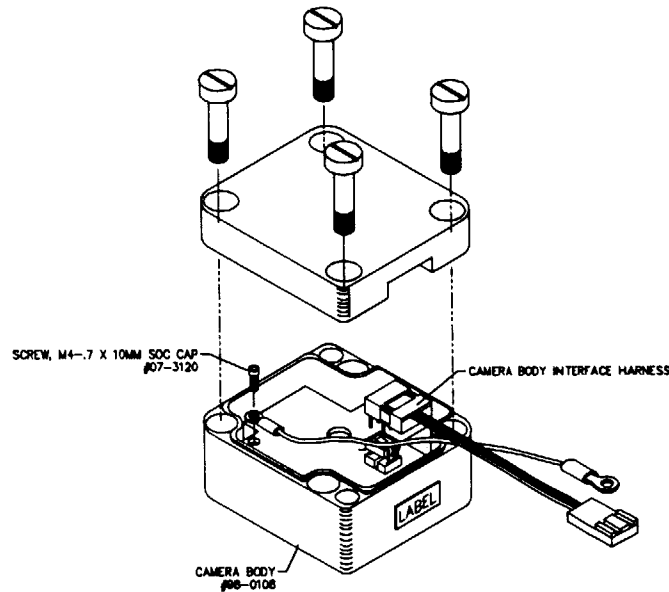


Figure 3-26. Camera Interface Harness Replacement.

1. Remove the Back Panel (refer to the **Back Panel Removal Procedure**).
2. Remove the Camera Body (refer to the **Camera Body Removal Procedure**).
3. Loosen the four cover screws (Phillips or flat) and remove the cover.
4. Remove the M4.7 x 10mm socket screw to remove the ground wire (MCA units only).
5. Unplug the Camera Interface Harness from the socket and replace it with a new one.
6. Reinstall the ground wire and the cover.

Power Chassis Assembly Removal Procedure

CAUTION:

The Prober is very heavy and this procedure requires more than one person or a work stand allowing easy access to the underside of the Prober for the removal of the securing screws.

Refer to figure 3-27 for the following:

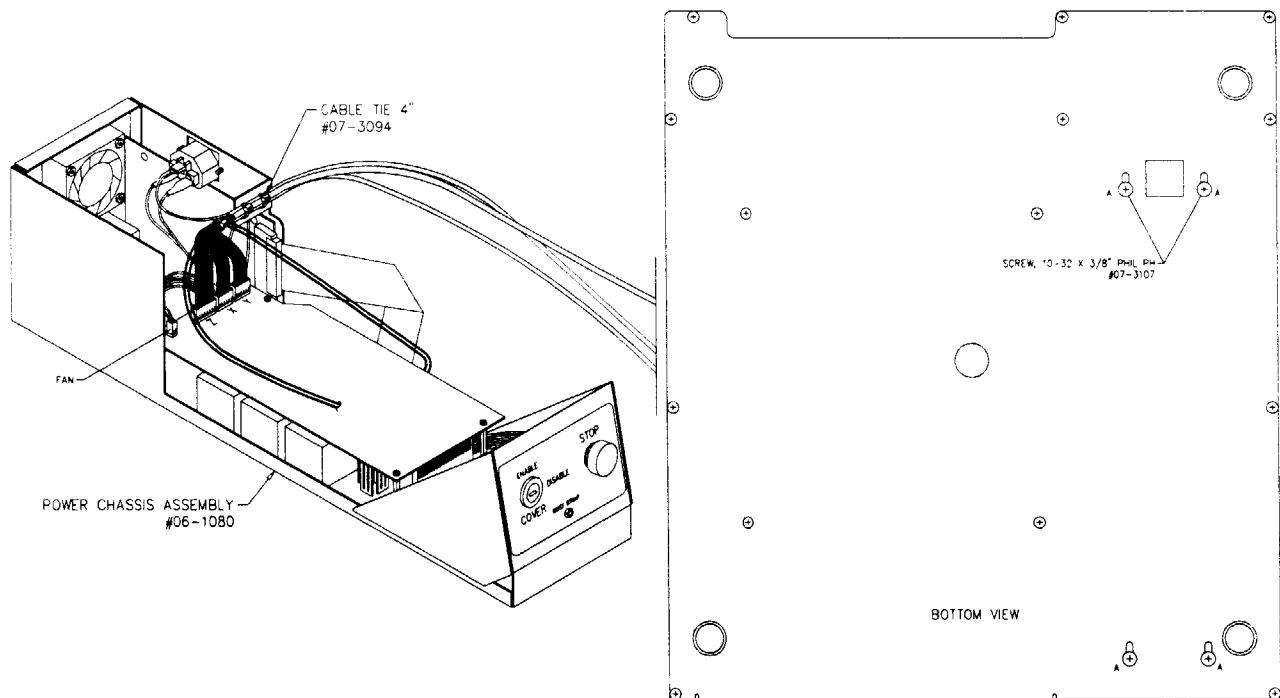


Figure 3-27. Power Chassis Assembly Removal.

1. Remove the Back Panel (refer to the **Back Panel Removal Procedure**).
2. Remove the 10-32 x 3/8" phillips screws (4 places) under the Prober to remove the Power Chassis Assembly.
3. Slide the Power Chassis Assembly out of the Prober. It will not come completely out due to the wire connections.
4. Cut the Cable Ties (3 places).
5. Unplug the X, Y, Z, FAN and CS connections. CS is located on the component side of the PCB at P14.
6. Slide the Power Chassis Assembly out of the Prober.

Power Transformer Replacement Procedure

Refer to figure 3-28 for the following:

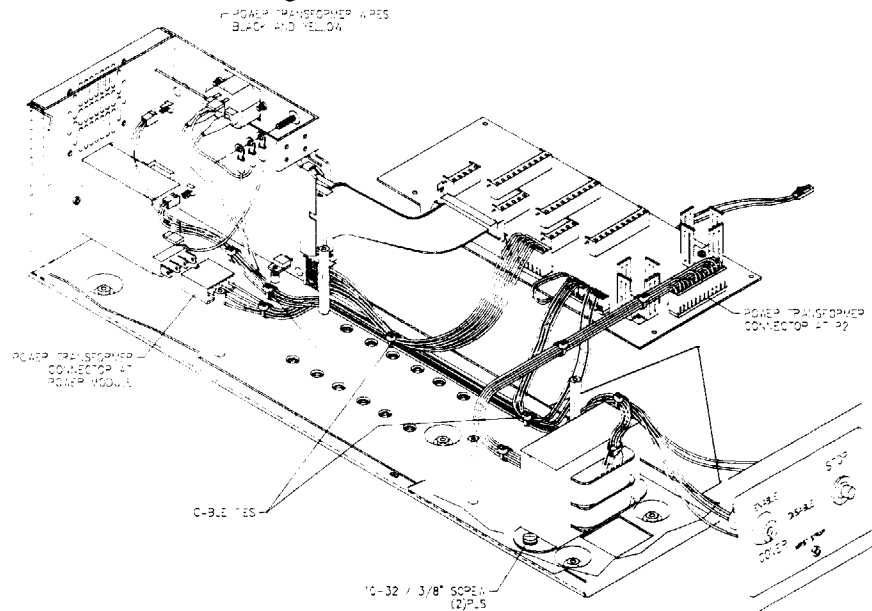


Figure 3-28. Power Transformer Replacement.

1. Remove the Power Chassis Assembly (refer to the **Power Chassis Assembly Removal Procedure**).
2. Remove the 4-40 X 3/8" phillips screws (4 places) securing the Power Supply PCA.
3. Unplug the PCA from the Stepper Motor Drivers and set it next to the Power Chassis as in figure 3-28.
4. Cut the Cable Ties inside the Power Chassis securing the Power Transformer wires.

NOTE: Number of cable ties may vary.

5. Disconnect all transformer cables:
 - a. P2 on Power Supply PCA
 - b. power module
 - c. marked yellow and black wires on power receptacle
6. Remove the 10-32 x 3/8" phillips screws (2 places) securing the Power Transformer to the Chassis.
7. Remove and replace the transformer.
8. Replace all removed cable ties.
9. Reconnect the transformer connections.
10. Reinstall the Power Supply PCA.

Stepper Driver Replacement Procedure

Refer to figure 3-29 for the following:

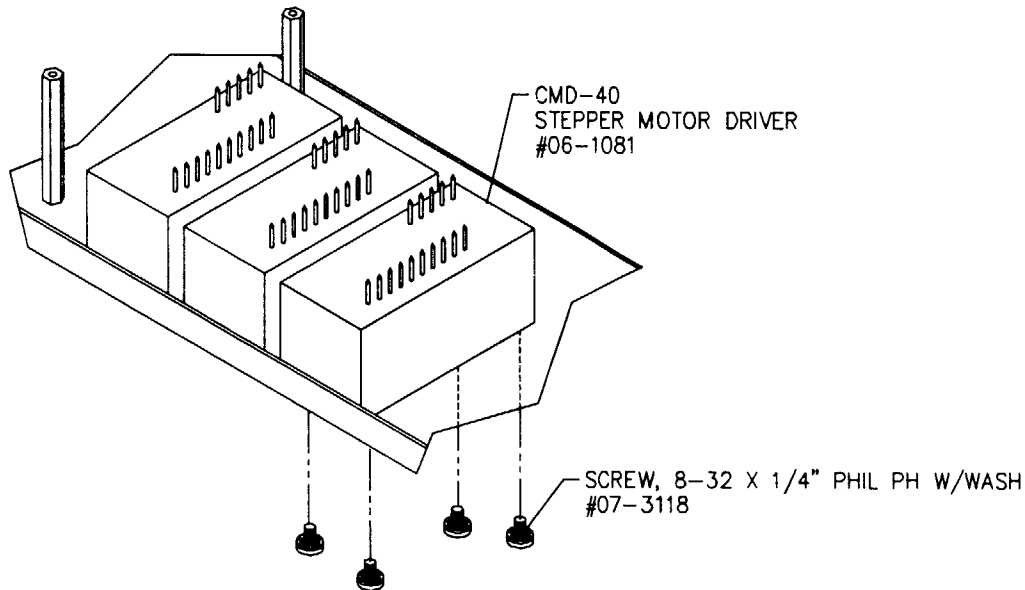


Figure 3-29. Stepper Motor Driver Replacement.

1. Remove the Power Chassis Assembly (refer to the **Power Chassis Assembly Removal Procedure**).
2. Remove the 4-40 x 3/8" phillips screws (4 places) securing the Power Supply PCA.
3. Unplug the PCA and set it next to the Power Chassis as in figure 3-28.
4. Remove the 8-32 x 1/4" phillips screws (4 places for each driver) located on the underside of the assembly.
5. Replace the driver. In the older models, the holes for the driver screws are not raised. Therefore, there must be two washers per screw to keep them from penetrating into the drivers internal components.
6. Reinstall the Power Supply PCA.

3-4. REASSEMBLY PROCEDURES

To reassemble the RP388, reverse the disassembly procedures you performed.

3-5. EXTERNAL CLEANING AND LUBRICATION

WARNING

To avoid electric shock or instrument damage, never get water inside the chassis. To avoid instrument damage, never apply solvents to the instrument.

Should the RP388 require cleaning, wipe the unit with a cloth that is lightly dampened with water or a mild detergent solution.

The rails of the RP388 require cleaning with a lint free cloth and lubrication once per month.

3-6. LINE FUSES AND VOLTAGE SELECTION

The power line fuse is in a removable tray in the power entry module on the back panel of the RP388. The power entry module has the main power switch on top, the recessed male power cord connector in the middle and the fuse tray on the bottom. The fuse tray also functions as the line voltage select switch on 100V/115V/230V units. The following describes how to use the fuse tray correctly.

1. Turn off the power.
2. Disconnect the line cord from the outlet.
3. Remove the line cord from the power entry module receptacle.
4. Using a small flat blade tool, gently pry outwards at the indentation on top of the fuse tray, directly below the center pin of the line receptacle.
5. Grasp the tray and remove.

To verify fuse, remove fuse and check; when replacing a fuse, make sure the correct type and rating is used as specified.

To change the operating line voltage from the factory setting, do the following:

1. Remove the fuse from the fuse tray and replace it with the correct type as specified below:

100V - 2 Amp, 250V, type AGC or GMA, Huntron P/N: 02-0015

115V - 2 Amp, 250V, type AGC or GMA, Huntron P/N: 02-0015

230V - 1 Amp, 250V, type AGC or GMA, Huntron P/N: 02-0016

2. Grasp the tray so that the selected voltage matches the pointer at the lower right corner of the power entry module.
3. Insert the fuse tray into the power entry module and push firmly to seat.

3-7. STORAGE INSTRUCTIONS

For optimum protection, store the unit indoors in a dry place with the stop blocks in place.

SECTION 4

LIST OF REPLACEABLE PARTS

4-1. INTRODUCTION

This section contains the parts list for the RP388. The components of each assembly are listed alphanumerically by reference designation. Both electrical and mechanical components are listed by reference designation, and can be referenced to illustrations and schematics.

Part lists include the following information:

1. Reference Designation (Ref. Des.)
2. Description of each part (Description)
3. Huntron Part Number (Huntron P/N)

Numbers in parenthesis following the description refer to the total quantity of the part for that assembly.

4-2. HOW TO OBTAIN PARTS

Components may be ordered directly from a manufacturer by using the part description, or from Huntron Instruments, Inc. or its authorized distributors by using the HUNTRON PART NUMBER. In the event the part you order has been replaced by a new part, the replacement will be accompanied by an explanatory note and installation instructions if necessary.

To ensure prompt and efficient handling of your order, please include the following information:

1. Quantity
2. Huntron Part Number
3. Part Description
4. Reference Designation
5. Printed Circuit Board Part Number and Revision Level
6. Instrument Model and Serial Number

CAUTION

Devices indicated by an asterisk (*) in the list of replaceable parts are subject to damage by static discharge.

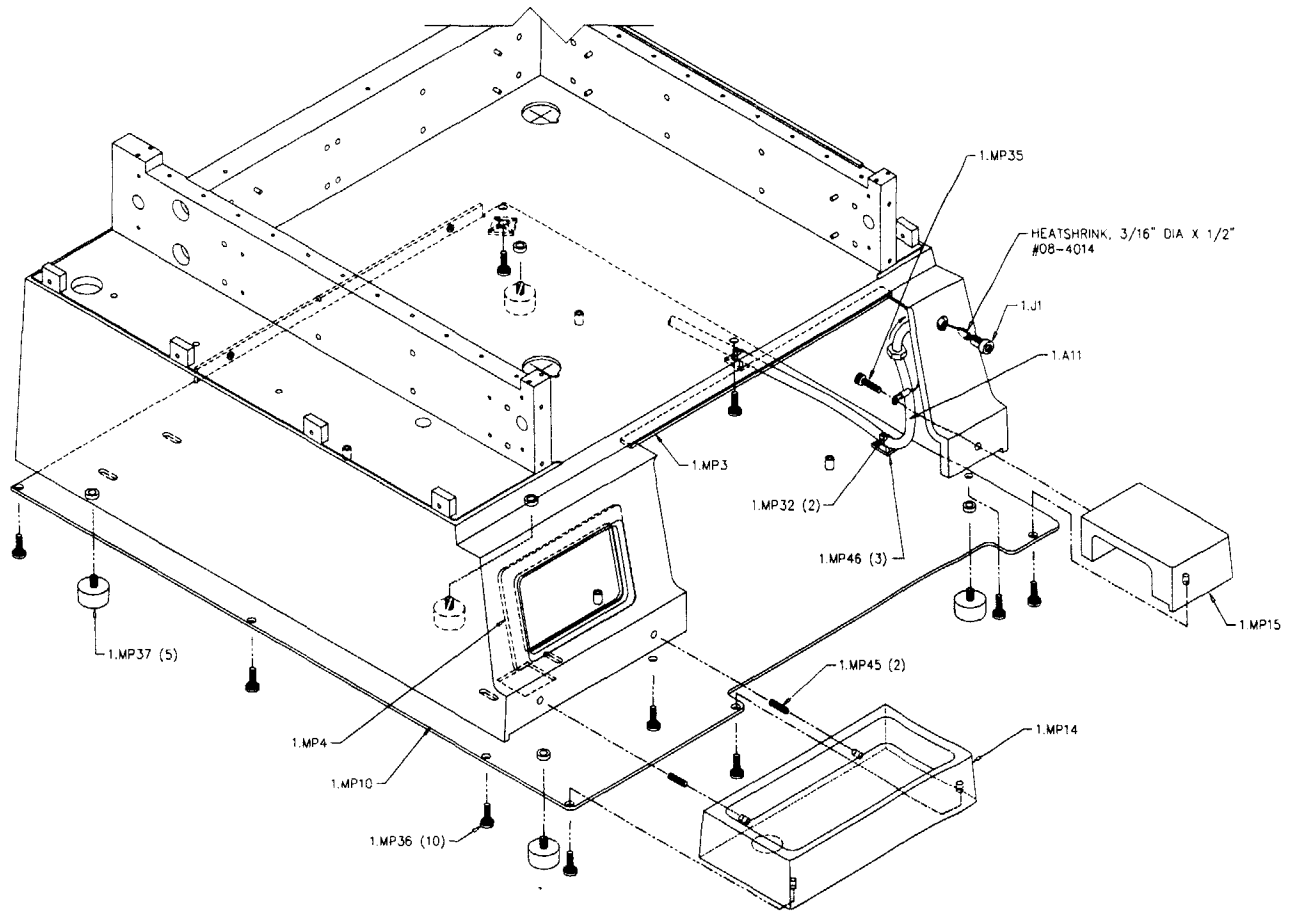


Figure 4-1a. Final Assembly

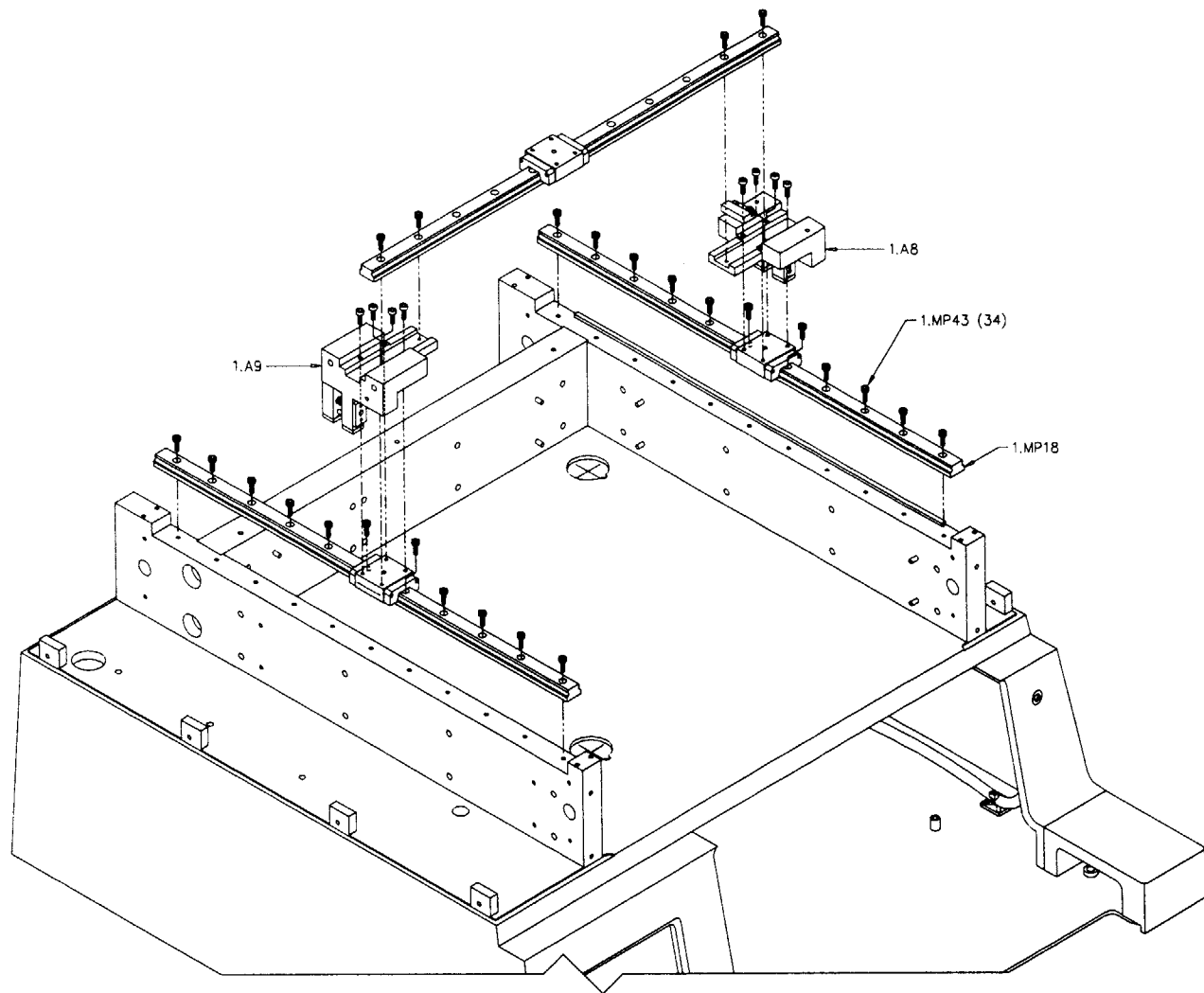


Figure 4-1b. Final Assembly

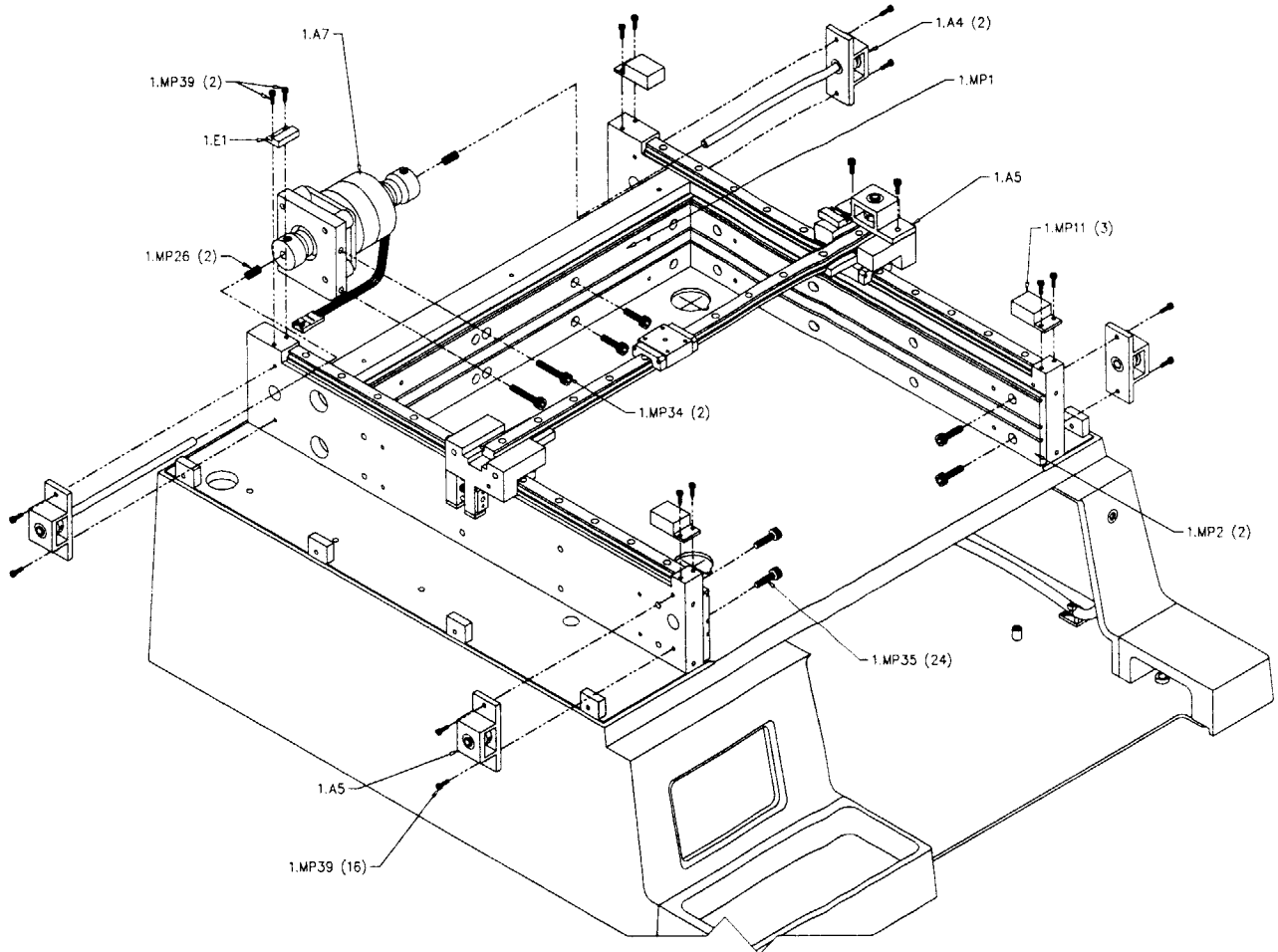


Figure 4-1c. Final Assembly

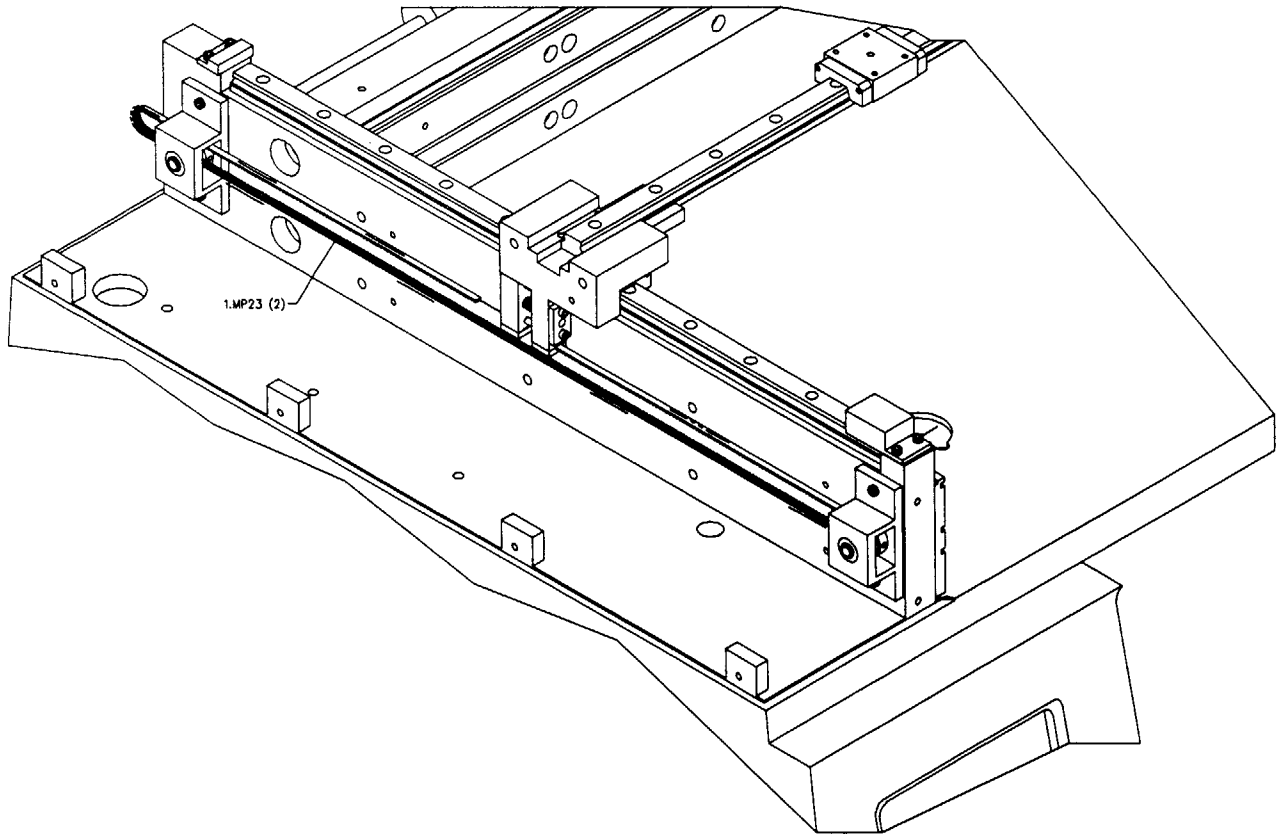


Figure 4-1d. Final Assembly

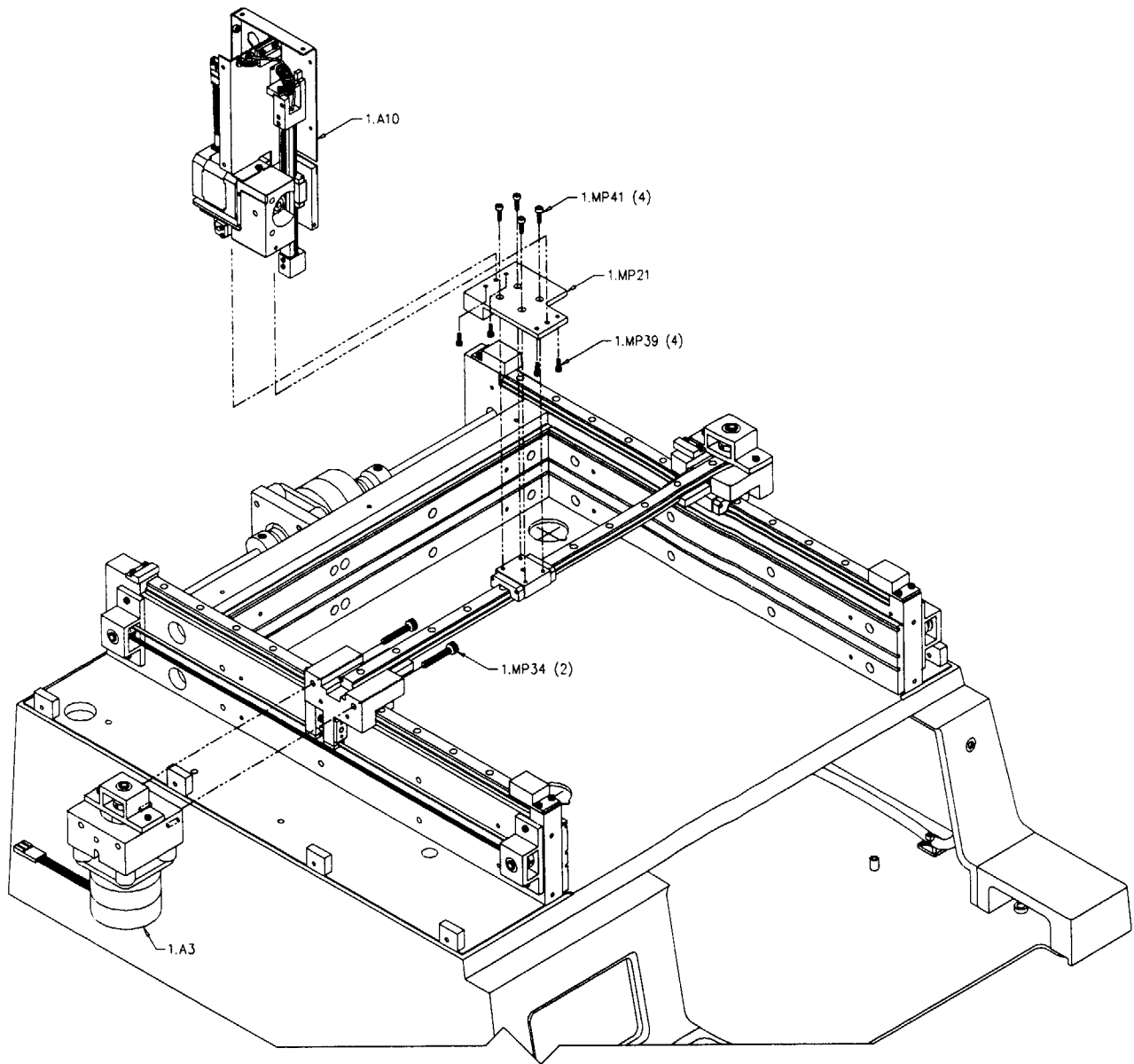


Figure 4-1e. Final Assembly

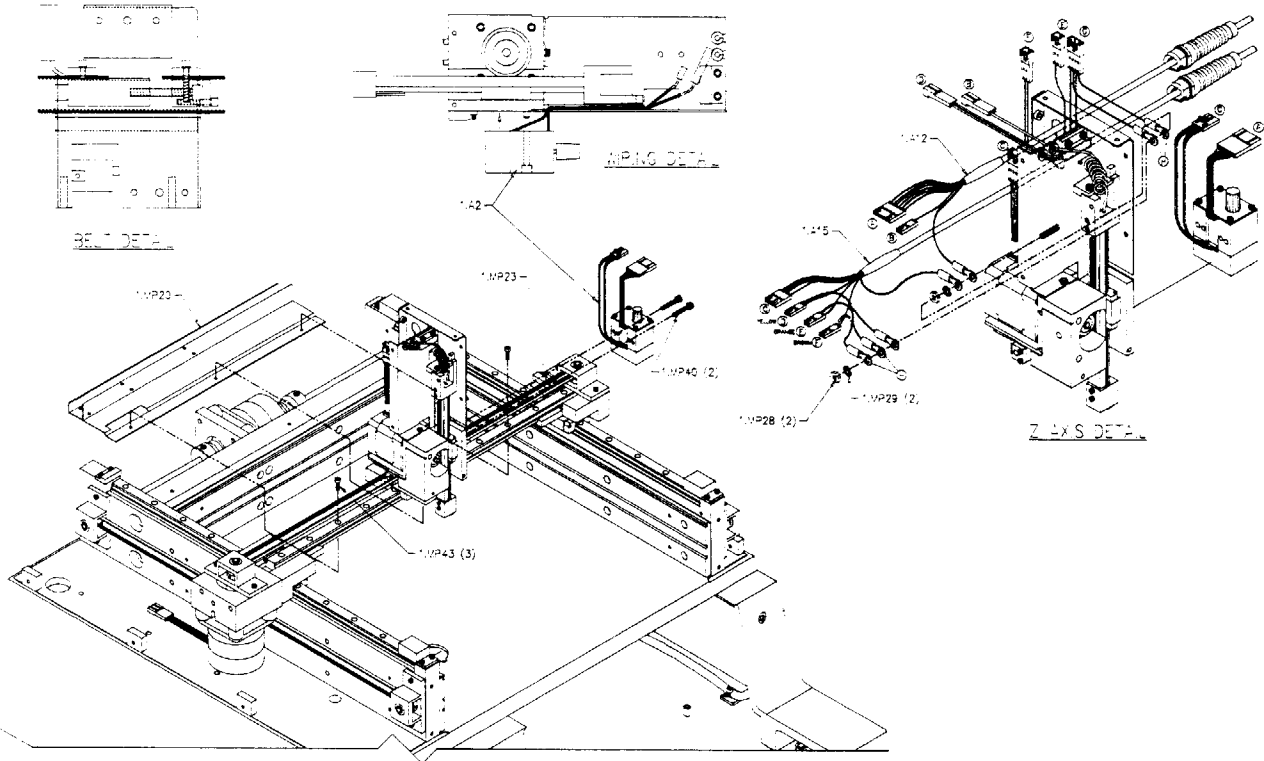


Figure 4-1f. Final Assembly

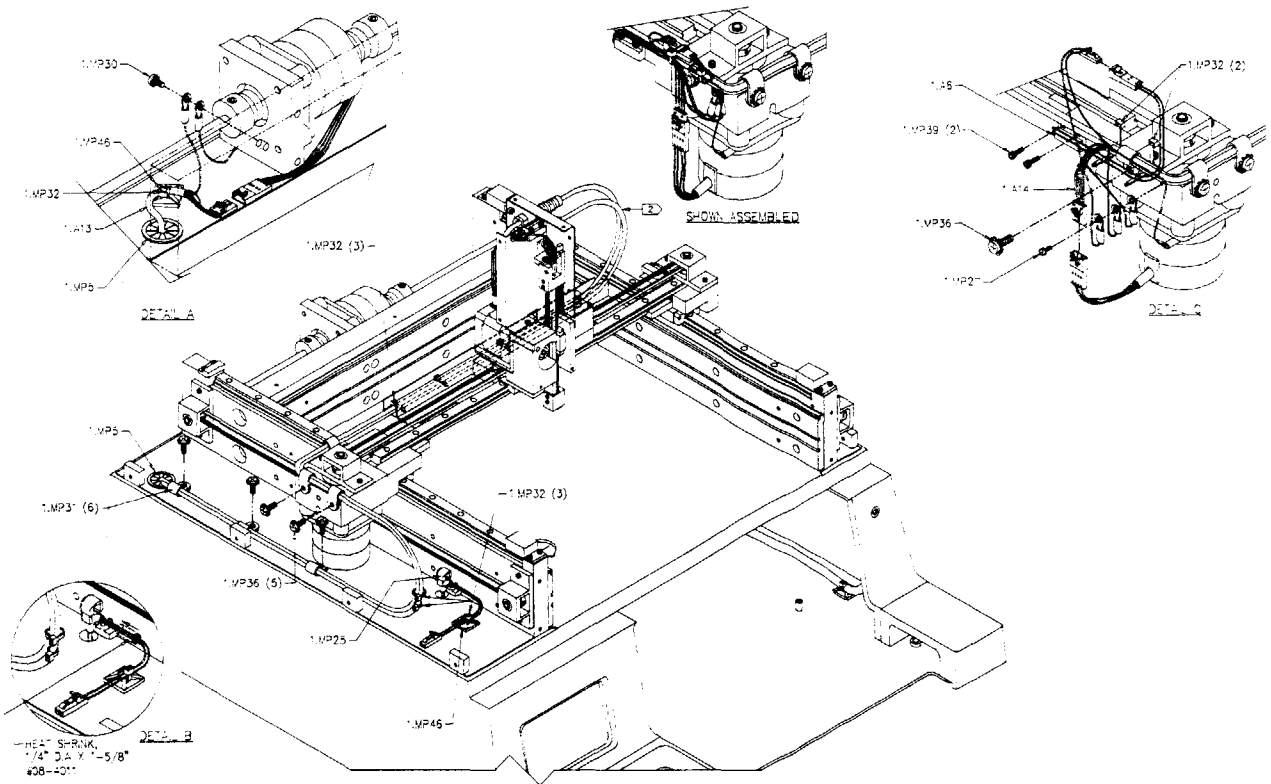


Figure 4-1g. Final Assembly

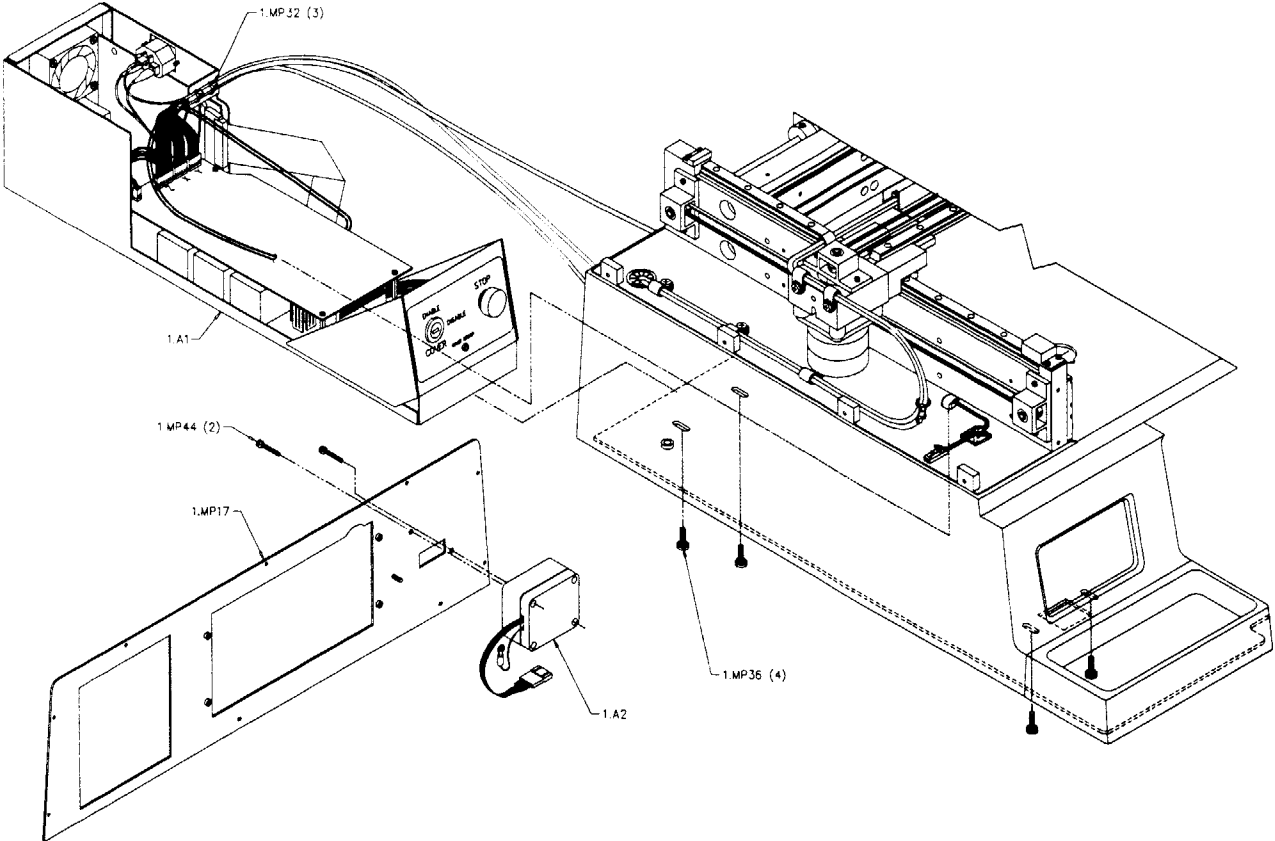


Figure 4-1h. Final Assembly

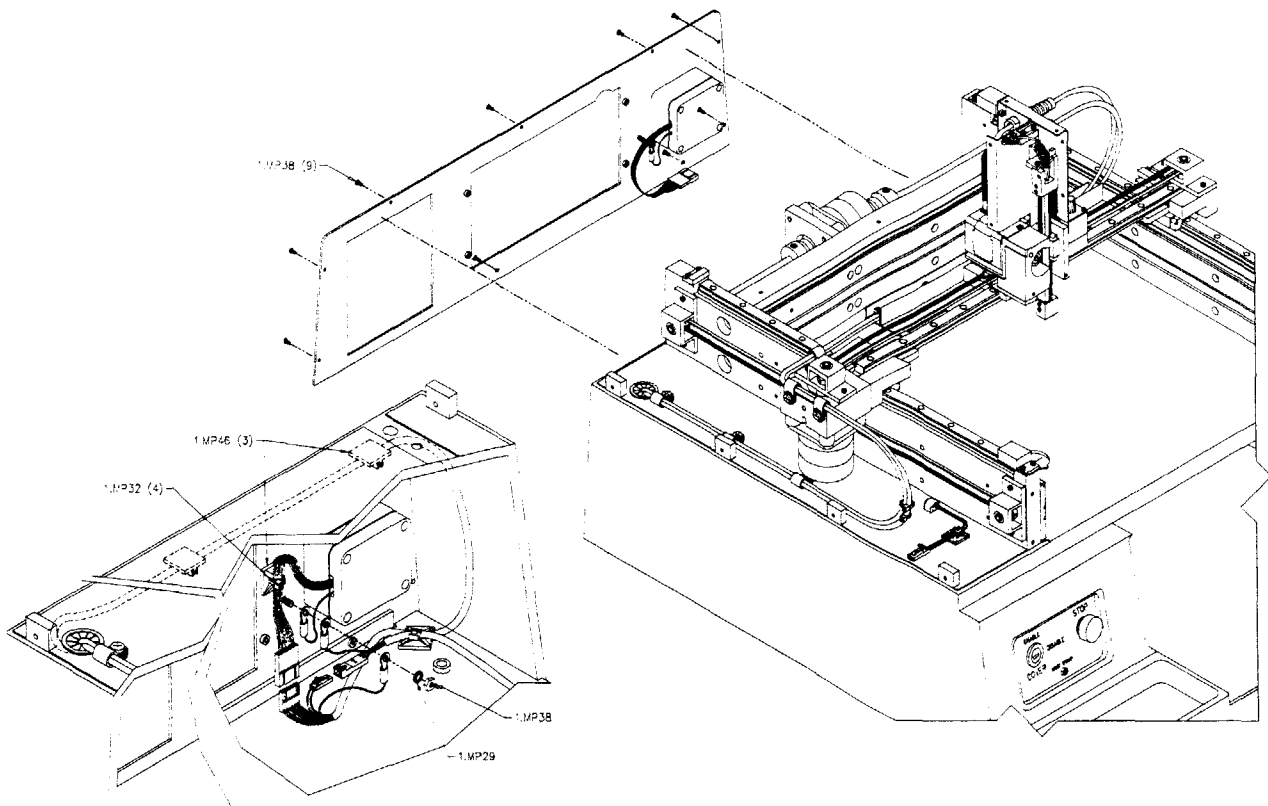


Figure 4-1i. Final Assembly

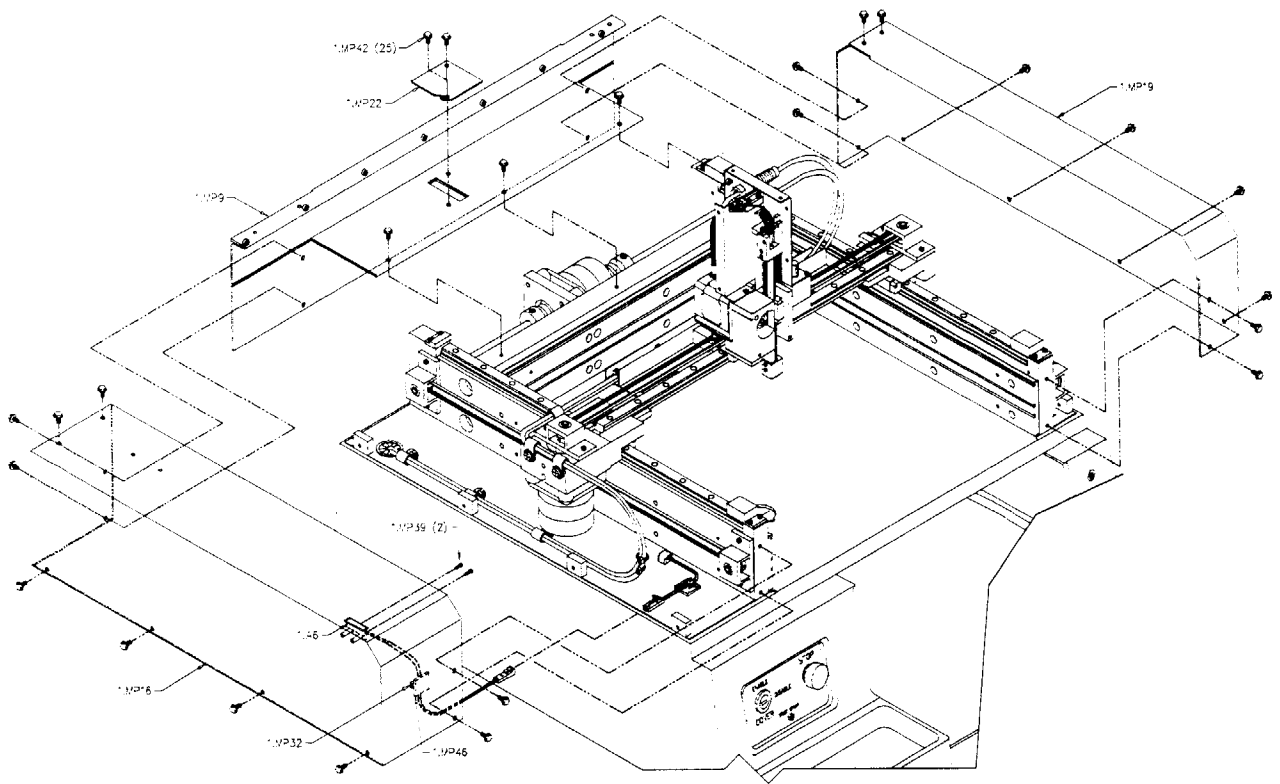


Figure 4-1j. Final Assembly

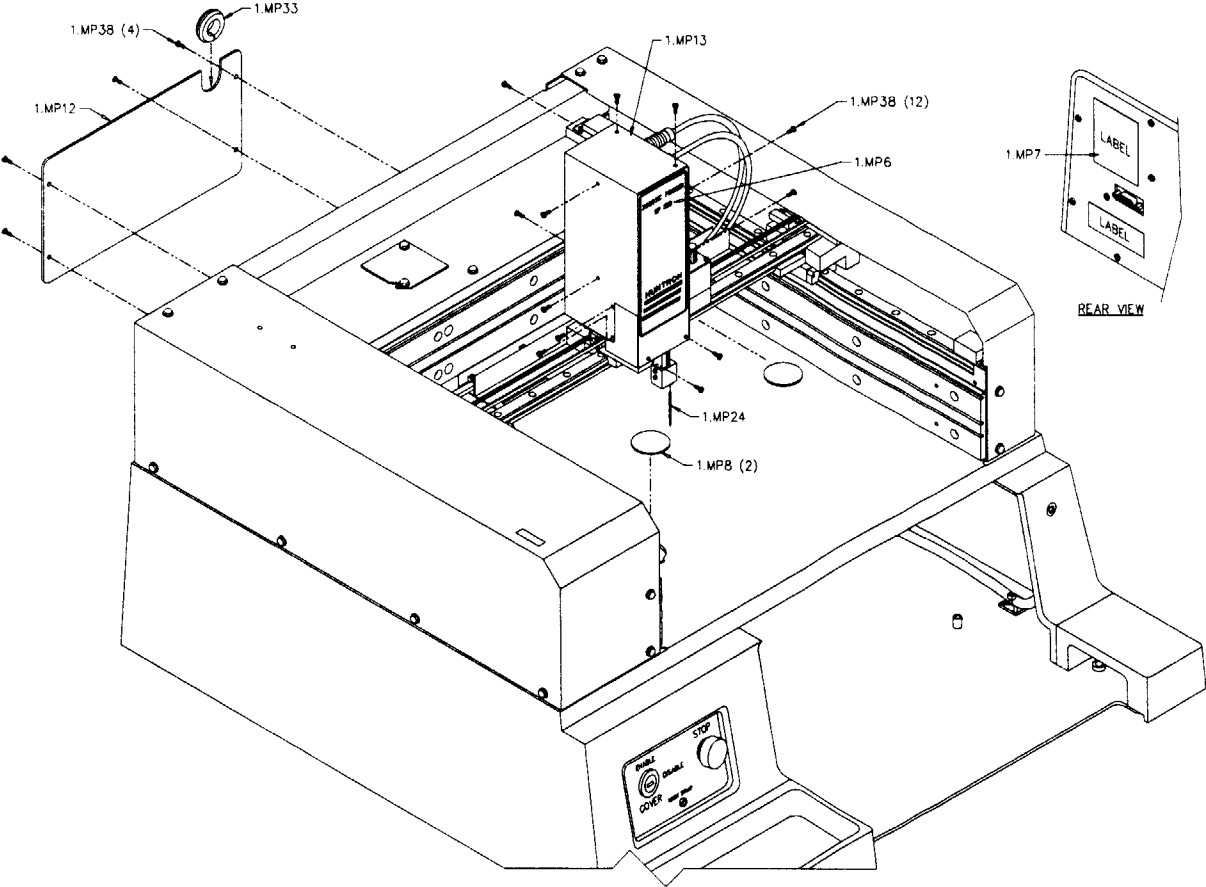


Figure 4-1k. Final Assembly

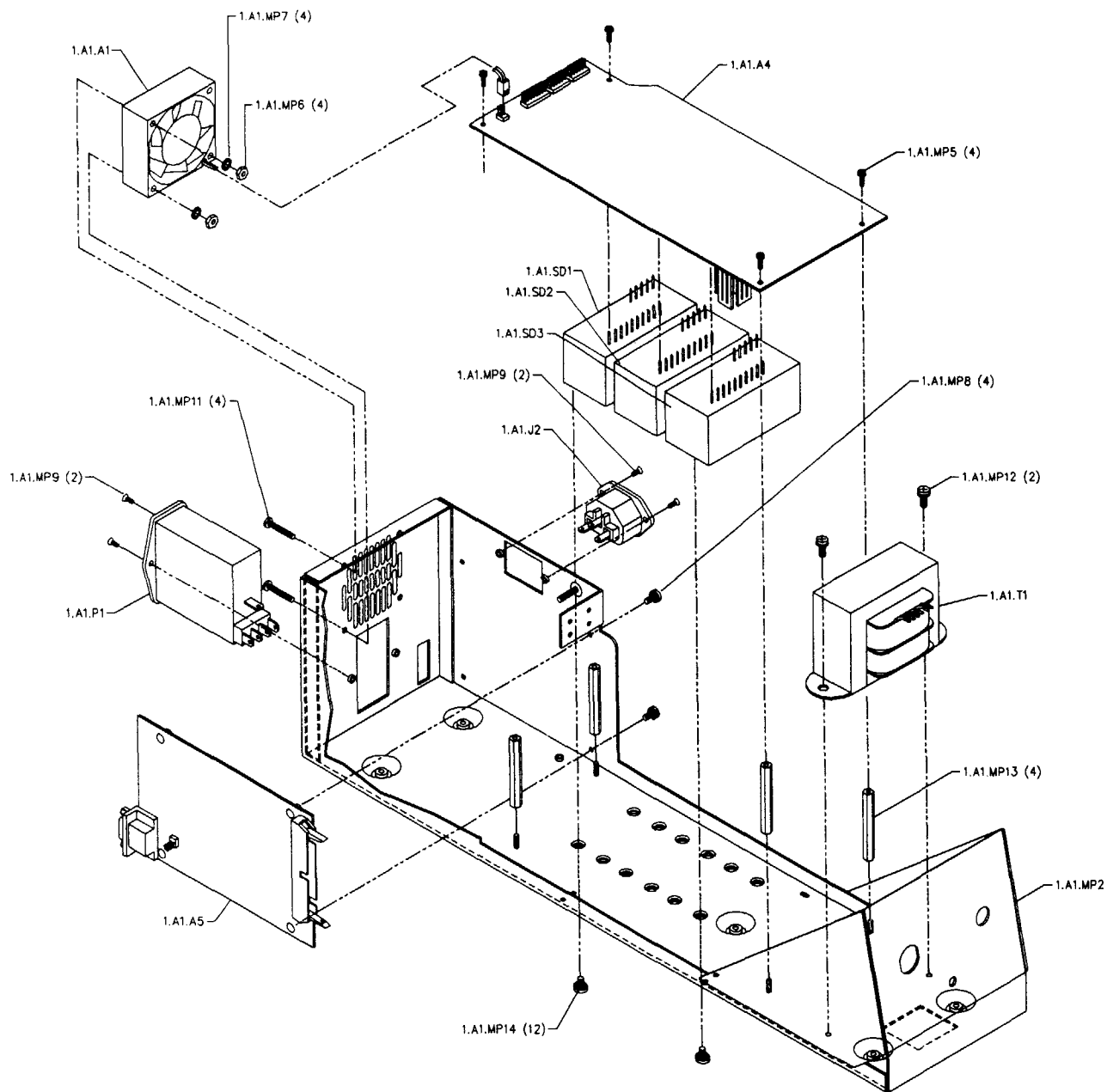


Figure 4-2a. Power Chassis Assembly

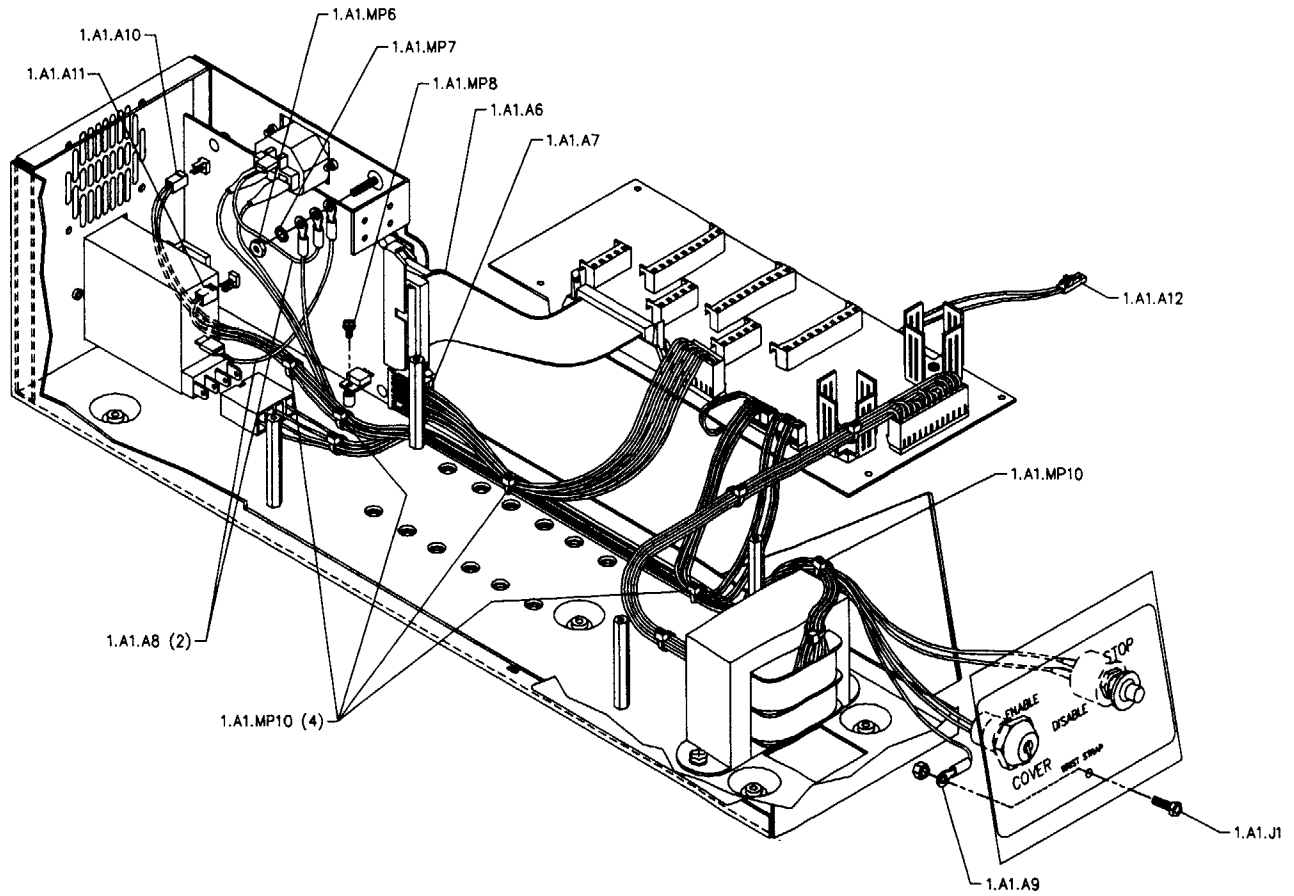


Figure 4-2b. Power Chassis Assembly

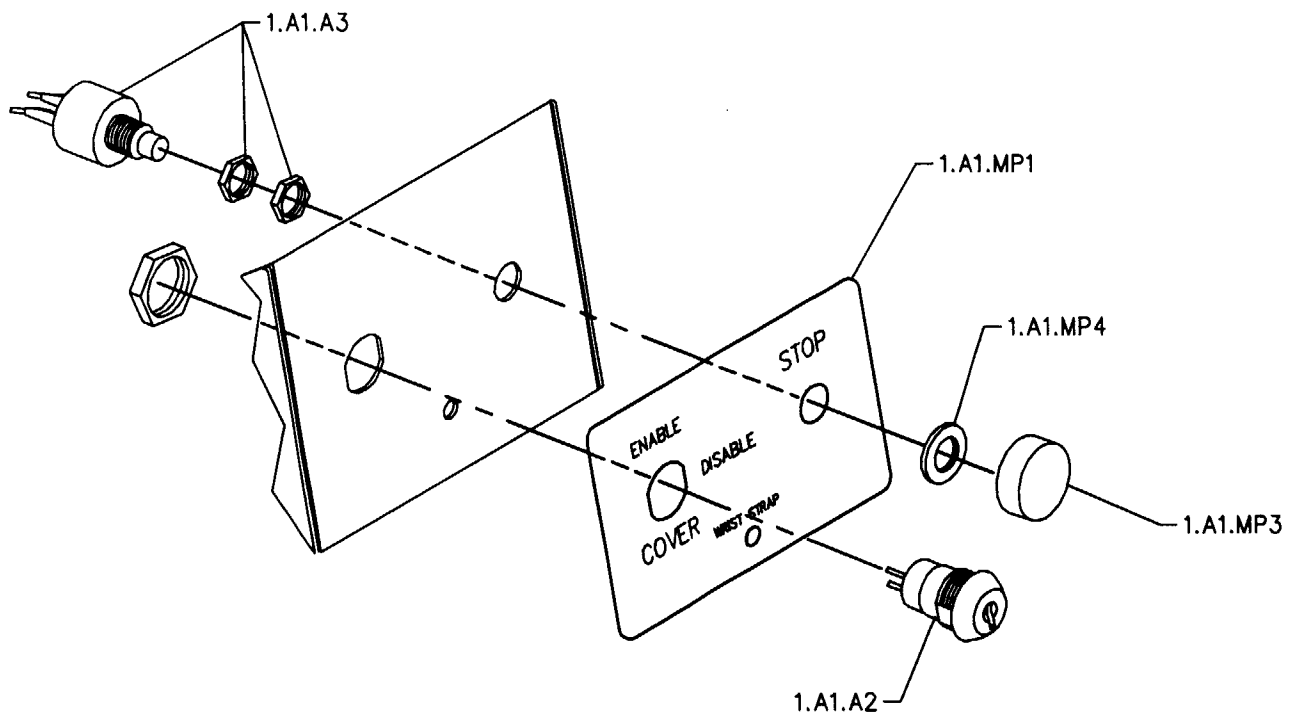


Figure 4-2c. Power Chassis Assembly

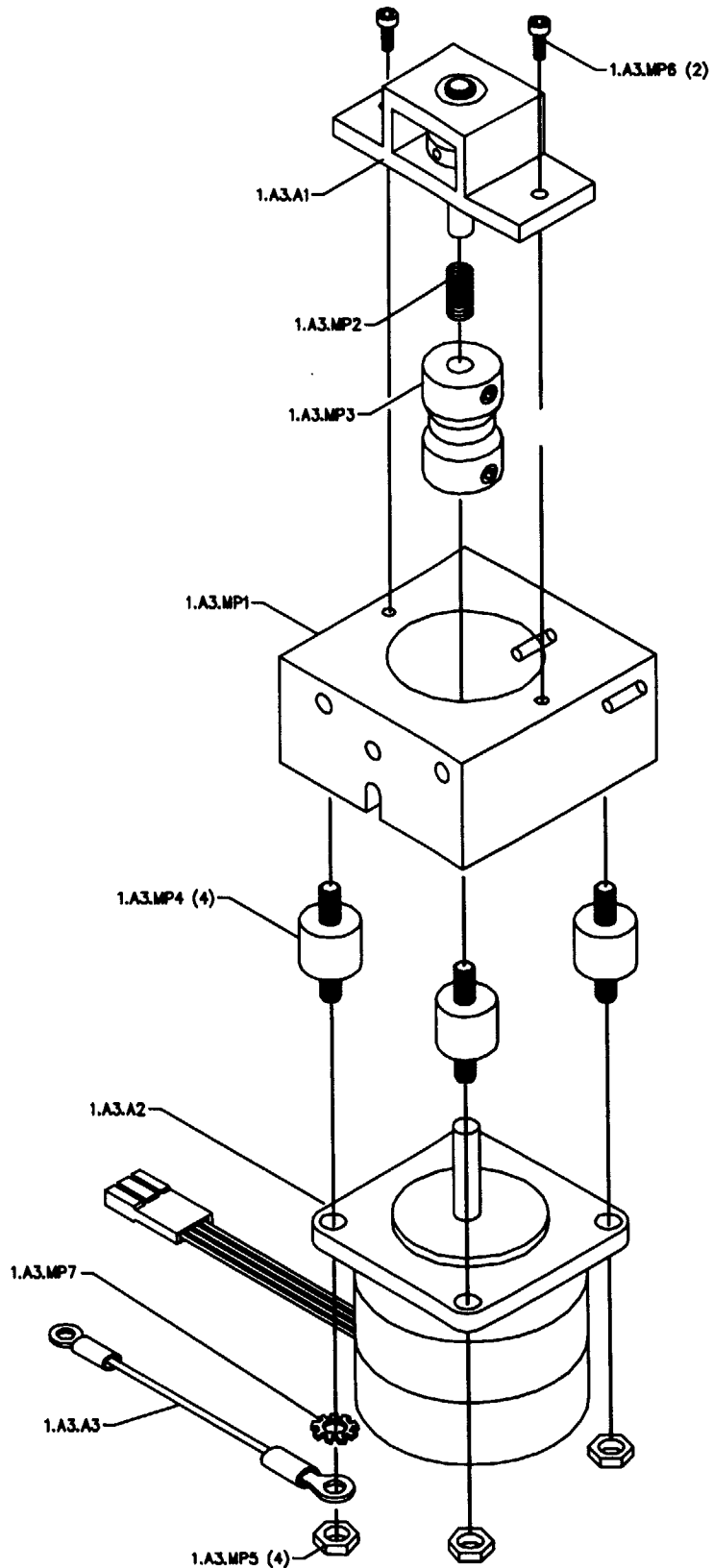


Figure 4-3. X Motor & Bracket Assembly

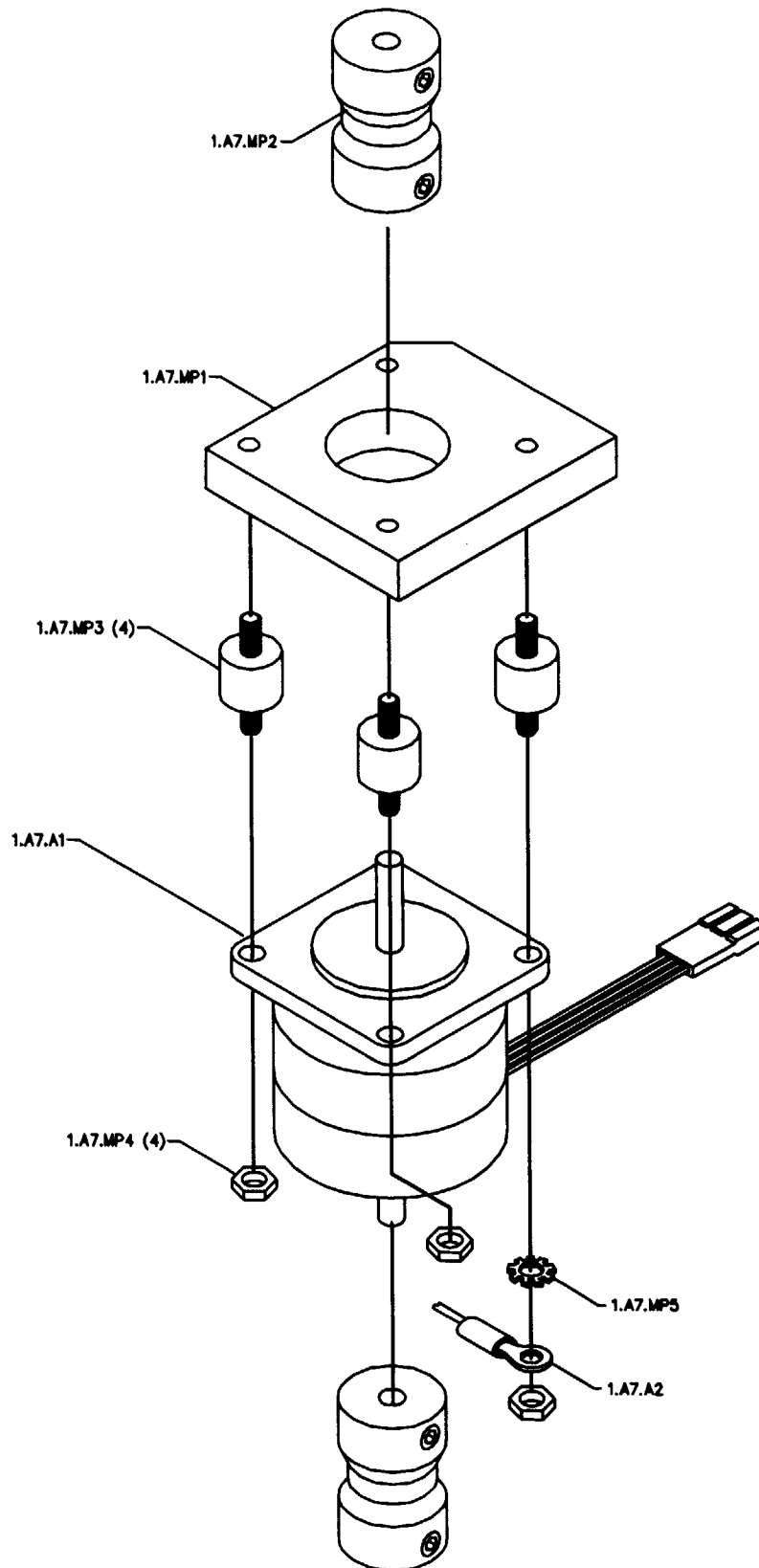


Figure 4-4. Y Motor & Bracket Assembly

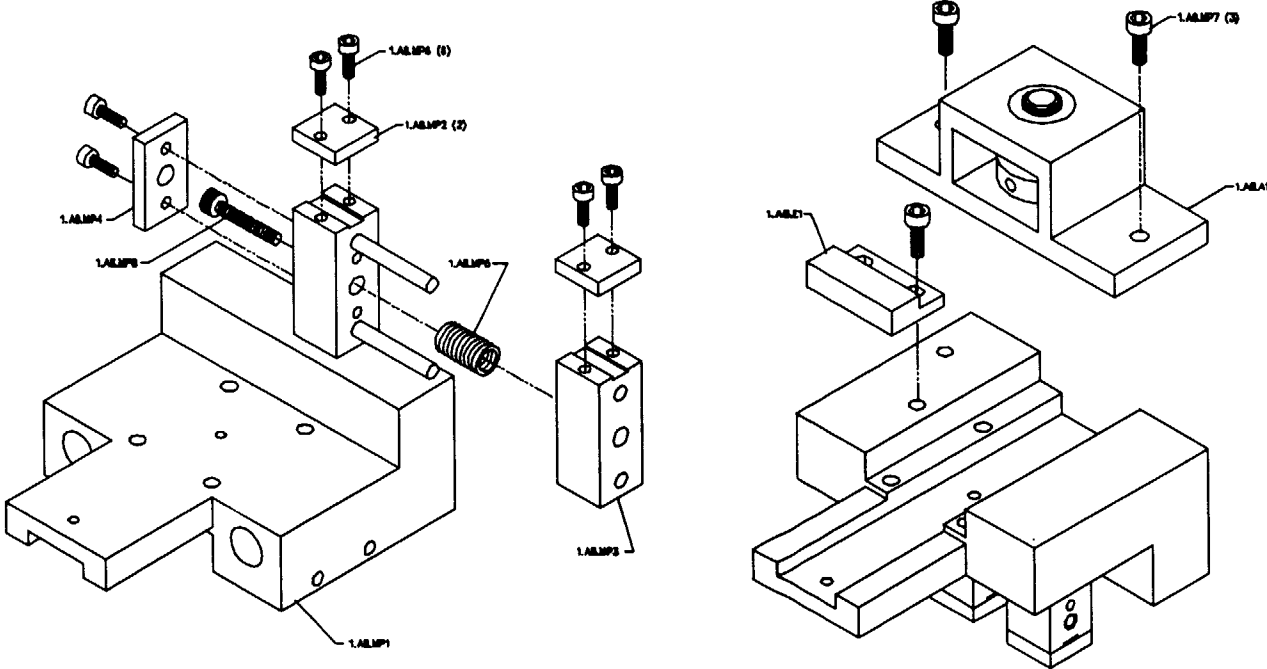


Figure 4-5. X Bracket Assembly - Right

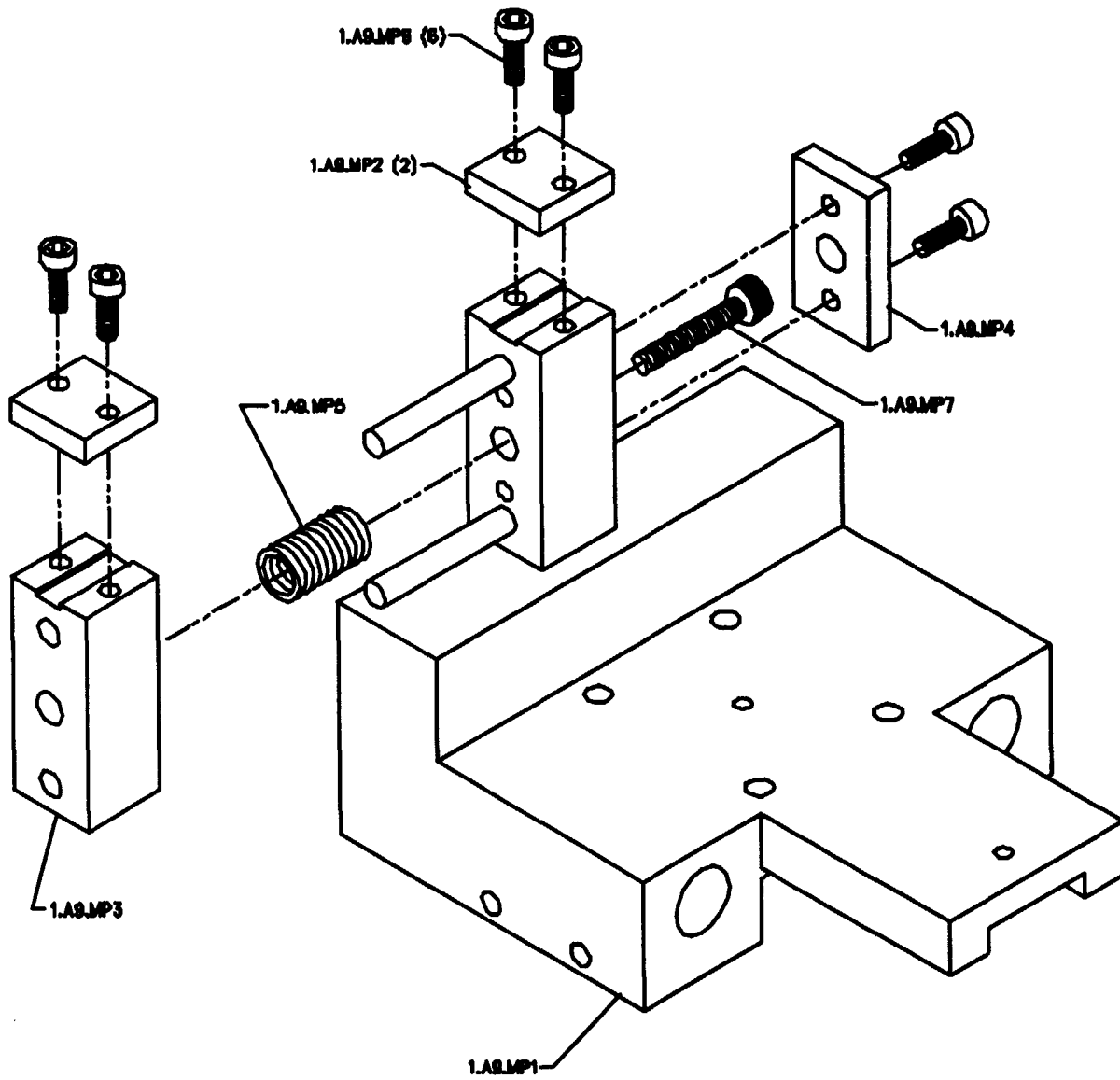


Figure 4-6. X Bracket Assembly - Left

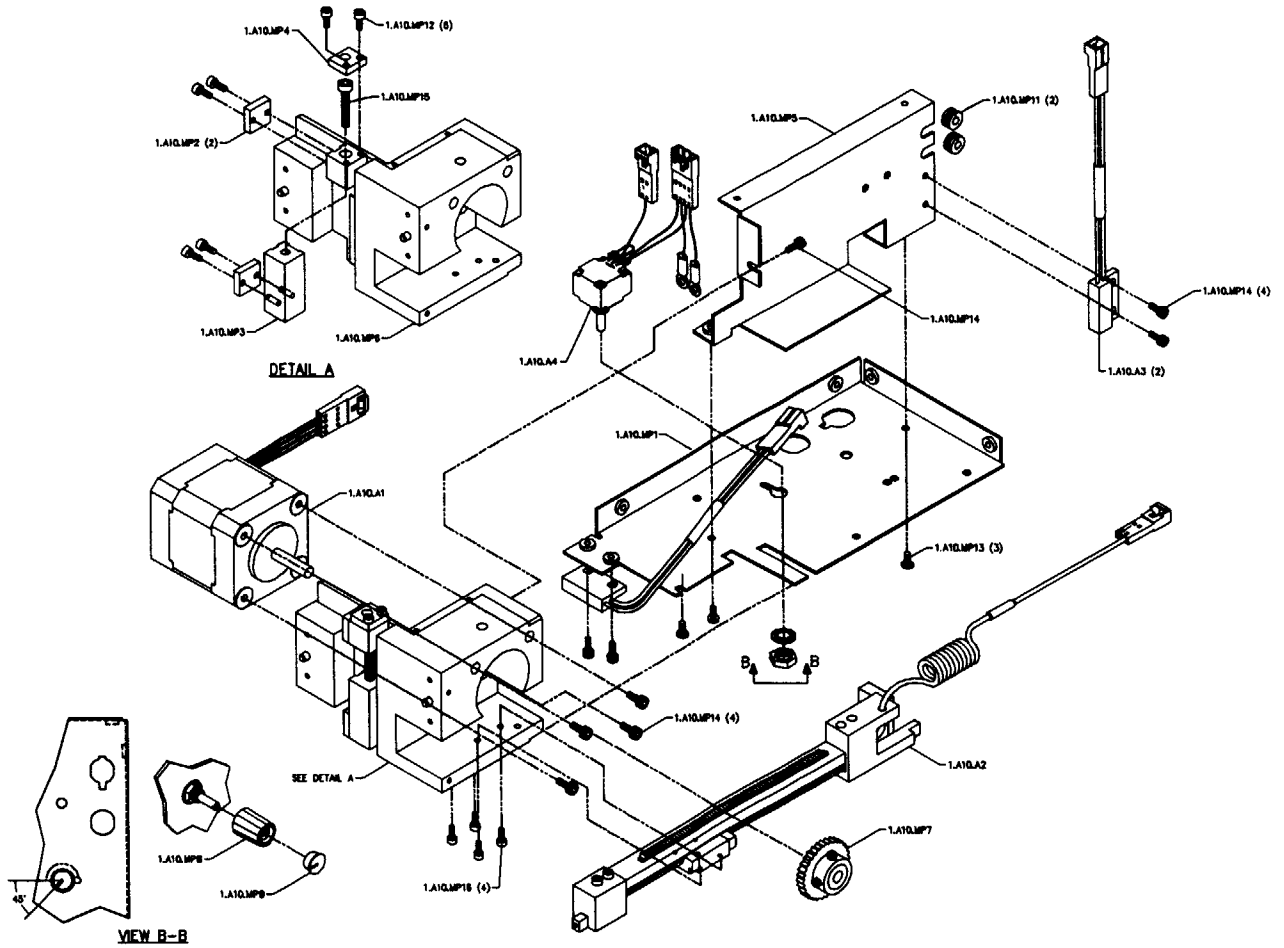


Figure 4-7. Z Axis Assembly

Final Assembly

Ref. Des.	Description	Huntron P/N
1	* Final Assembly	
1.A1	* PWR Chassis Assembly, 115/230V	06-1080
	* PWR Chassis Assembly, 100V	06-1087
1.A2	* CCD Assembly, ISA	06-1084
1.A3	X Motor & Bracket Assembly	06-2068
1.A4	Pulley Block Assembly Y-Back (2)	06-2070
1.A5	Pulley Block Assembly, Y-FRT, X-RT (2)	06-2072
1.A6	Limit Switch Assembly	06-2078
1.A7	Y Motor & Bracket Assembly	06-2081
1.A8	X Bracket Assembly - Right	06-2082
1.A9	X Bracket Assembly - Left	06-2083
1.A10	Z Axis Assembly	06-2086
1.A11	Signal Cable Assembly	06-4053
1.A12	CCD/Camera Cable Assembly	06-4054
1.A13	Y Motor Cable Assembly	06-4055
1.A14	X Motor Cable Assembly	06-4056
1.A15	Z Motor Cable Assembly	06-4057
1.E1	Magnet	07-4044
1.J1	Jack Banana, Red W/Hex Nut	07-1147
1.MP1	PCB Locator Panel, Back	01-1132
1.MP2	PCB Locator Panel (2)	01-1133
1.MP3	Foam Strip, 12"	01-1139
1.MP4	Gasket, Key/Stop Overlay	01-1146
1.MP5	Flex Bushing, 1" (2)	01-1148
1.MP6	Overlay, Z-Axis	01-2015
1.MP7	Label, PWR Requirements	01-2016
1.MP8	Lens, Calibration	01-2017
1.MP9	Top Cover, Back	01-3047
1.MP10	Base Plate	01-3048
1.MP11	Stop Block (3)	01-3066
1.MP12	Door, Back Panel	01-3068
1.MP13	Cover, Left Z Axis	01-3069
1.MP14	Front Panel Block, Left	01-3070
1.MP15	Front Panel Block, Right	01-3071
1.MP16	Top Cover, Left	01-3073
1.MP17	Back Panel	01-3076
1.MP18	Rail & Slide 430MM (3)	01-3077
1.MP19	Top Cover, Right	01-3080
1.MP20	Wire Tray	01-3082
1.MP21	Z Motor Bracket Platform	01-3090

Final Assembly (con't)

Ref. Des.	Description	Huntron P/N
1.MP22	Access Panel, CAL.	01-3095
1.MP23	Timing Belt, 39" (3)	07-2110
1.MP24	Spring Probe	07-2112
1.MP25	Strain Relief	07-2116
1.MP26	Spring (2)	07-2122
1.MP27	Screw 4-40X3/8" Ph Phil W/Washer (2)	07-3051
1.MP28	Nut, #6-32 (3)	07-3054
1.MP29	Washer, Lock Star #6 (3)	07-3060
1.MP30	Screw 6-32X3/8" Ph Phil W/Washer (2)	07-3061
1.MP31	Cable Clamp, Nylon (6)	07-3093
1.MP32	Cable Tie Black 4" (19)	07-3094
1.MP33	Grommet, 5/8" I.D.	07-3099
1.MP34	Screw 10-32X1&1/2" SOC CAP SS (4)	07-3100
1.MP35	Screw 10-32X3/4" SOC CAP SS (25)	07-2105
1.MP36	Screw 10-32X3/8" Ph Phil W/Washer (20)	07-3107
1.MP37	Stud Mount, (foot) (5)	07-3109
1.MP38	Screw 4-40X1/4" Phil Ph SS Blk (25)	07-3110
1.MP39	Screw 4-40X3/8" SOC CAP SS (26)	07-3112
1.MP40	Screw 6-32X1" SOC CAP SS (2)	07-3113
1.MP41	Screw M3-.5X12MM SOC CAP SS (4)	07-3114
1.MP42	Screw, 6-32X1/4" HEX/Washerhead (25)	07-3115
1.MP43	Screw M3-.5X12MM SOC CAP SS (37)	07-3116
1.MP44	Screw M4-.7X10MM SOC CAP SS (2)	07-3120
1.MP45	Screw 10-32X3/4" SOC SET CUP SS (2)	07-3124
1.MP46	Cable Tie Mount, .75sq, Adhesive (9)	07-3128

Power Chassis Assembly

Ref. Des.	Description	Huntron P/N
1.A1	* PWR Chassis Assembly, 115/230V	06-1080
	* PWR Chassis Assembly, 100V	06-1087
1.A1.A1	Fan Assembly	06-2077
1.A1.A2	Keyed Switch Assembly	06-2079
1.A1.A3	Reset Switch Assembly	06-2080
1.A1.A4	* Power Supply PCA	06-3067
1.A1.A5	* Stepper Controller, HS-1	06-3068
1.A1.A6	Control Cable Assembly	06-4041
1.A1.A7	Controller PWR Harness	06-4042
1.A1.A8	Ground Wire Assembly (2)	06-4044
1.A1.A9	Ground Wire Assembly	06-4045

Power Chassis Assembly (con't)

Ref. Des.	Description	Huntron P/N
1.A1.A10	I/O Cond. Harness	06-4048
1.A1.A11	Reset 2 Cond. Harness	06-4049
1.A1.A12	Cover Switch Harness	06-4050
1.A1.J1	Banana Jack, Metal Contact	07-1086
1.A1.J2	Female Power Socket	07-1094
1.A1.MP1	Overlay, Key/Stop	01-2021
1.A1.MP2	Chassis, Power Supply	01-3067
1.A1.MP3	Button, Cap Red	07-2114
1.A1.MP4	Nut, Dress Deco	07-2115
1.A1.MP5	Screw 4-40X3/8" Ph Phil W/Washer (5)	07-3051
1.A1.MP6	Nut, #6-32 (5)	07-3054
1.A1.MP7	Washer, Lock Star #6 (5)	07-3060
1.A1.MP8	Screw 6-32X3/8" PH Phil W/Washer (5)	07-3061
1.A1.MP9	Screw, 4-40X3/8" 82^ Flat Phil (3)	07-3073
1.A1.MP10	Cable Tie Blk 4" (5)	07-3094
1.A1.MP11	Screw 6-32X1&1/4" Phil Ph (4)	07-3104
1.A1.MP12	Screw 10-32X3/8" Phil Ph W/Washer (2)	07-3107
1.A1.MP13	Spacer, 4-40X2" FF (4)	07-3111
1.A1.MP14	Screw 8-32X1/4" Phil Ph W/Washer (12)	07-3118
1.A1.P1	PWR Module Schaffner	06-6057
1.A1.SD1	Stepper Driver, CMD-40	06-1081
1.A1.SD2	Stepper Driver, CMD-40	06-1081
1.A1.SD3	Stepper Driver, CMD-40	06-1081
1.A1.T1	Xfmr, PWR 115/230V Assembly	06-6048
	Xfmr, PWR 100V Assembly	06-6050

X Motor & Bracket Assembly

Ref. Des.	Description	Huntron P/N
1.A3	X Motor & Bracket Assembly	06-2068
1.A3.A1	Pulley Block Assembly, X Left	06-2071
1.A3.A2	X Motor Assembly	06-2073
1.A3.A3	Ground Wire Assembly ,X/Y Motor	06-4068
1.A3.MP1	X Axis Motor Bracket	01-3104
1.A3.MP2	Spring	07-2027

X Motor & Bracket Assembly (con't)

Ref. Des.	Description	Huntron P/N
1.A3.MP3	Coupler 1"X1/4", X Axis	07-3096
1.A3.MP4	Double Stud Mount (4)	07-3097
1.A3.MP5	Nut, #10 Extra Thin Wall (4)	07-3101
1.A3.MP6	Screw 4-40X3/8" SOC CAP SS (2)	07-3112
1.A3.MP7	Washer, #10 Lock Star Ext.	07-3135

Y Motor & Bracket Assembly

Ref. Des.	Description	Huntron P/N
1.A7	Y Motor & Bracket Assembly	06-2081
1.A7.A1	Y Motor Assembly	06-2074
1.A7.A2	Ground Wire Assembly, X/Y Motor	06-4068
1.A7.MP1	Y Axis Motor Bracket	01-3085
1.A7.MP2	Coupler, 1 5/8"X1/4", Y-Axis (2)	07-3095
1.A7.MP3	Double Stud Mount (4)	07-3097
1.A7.MP4	Nut, #10 Extra Thin Wall (4)	07-3101
1.A7.MP5	Washer, #10 Lock Star Ext.	07-3135

X Bracket Assembly - Right

Ref. Des.	Description	Huntron P/N
1.A8	X Bracket Assembly - Right	06-2082
1.A8.A1	Pulley Block Assembly, Y-FRT,X-RT	06-2072
1.A8.E1	Magnet	07-4044
1.A8.MP1	X Axis Bracket - Right	01-3083
1.A8.MP2	Belt Retainer (2)	01-3091
1.A8.MP3	Belt Adj Block, Y Axis	01-3093
1.A8.MP4	Belt Adj Screw Retainer Y Axis	01-3094
1.A8.MP5	SPRING	07-2027
1.A8.MP6	Screw 2-56X3/8" SOC CAP SS (6)	07-3103
1.A8.MP7	Screw 4-40X3/8" SOC CAP SS (3)	07-3112
1.A8.MP8	Screw 6-32X1" SOC CAP SS	07-3113

X Bracket Assembly - Left

Ref. Des.	Description	Huntron P/N
1.A9	X Bracket Assembly - Left	06-2083
1.A9.MP1	X Axis Bracket - Left	01-3084
1.A9.MP2	Belt Retainer (2)	01-3091
1.A9.MP3	Belt Adj Block, Y Axis	01-3093
1.A9.MP4	Belt Adj Screw Retainer Y Axis	01-3094
1.A9.MP5	Spring	07-2027
1.A9.MP6	Screw 2-56X3/8" SOC CAP SS (6)	07-3103
1.A9.MP7	Screw 6-32X1" SOC CAP SS	07-3113

Z Axis Assembly

Ref. Des.	Description	Huntron P/N
1.A10	Z Axis Assembly	06-2086
1.A10.A1	Z Motor Assembly	06-2075
1.A10.A2	Z Probe Assembly	06-2076
1.A10.A3	Limit Switch Assembly (2)	06-2078
1.A10.A4	Intensity Control Assembly	06-4065
1.A10.MP1	Z Axis Right Cover	01-3079
1.A10.MP2	Belt Retainer (2)	01-3091
1.A10.MP3	Belt Adj Block, Z Axis	01-3092
1.A10.MP4	Belt Adj. Screw Retainer Z Axis	01-3105
1.A10.MP5	Bracket, Z Cover	01-3106
1.A10.MP6	Bracket, Z Motor	01-3157
1.A10.MP7	Nylon Gear	07-2032
1.A10.MP8	Knob,Blk	07-2064
1.A10.MP9	Knob Cap, Blk W/Line	07-2067
1.A10.MP10	Cable Tie Blk 4"	07-3094
1.A10.MP11	Grommet, 1/8" I.D. (2)	07-3098
1.A10.MP12	Screw 2-56X3/8" SOC CAP SS (6)	07-3103
1.A10.MP13	Screw 4-40X1/4" Phil Ph SS Blk (3)	07-3110
1.A10.MP14	Screw 4-40X3/8" SOC CAP SS (9)	07-3112
1.A10.MP15	Screw 6-32X1" SOC CAP SS	07-3113
1.A10.MP16	Screw M2-.4X6MM SOC CAP SS (4)	07-3117

Z Probe Assembly

Ref. Des.	Description	Huntron P/N
1.A10.A2	Z Probe Assembly	06-2076
1.A10.A2.E1	Magnet	07-4044
1.A10.A2.MP1	Z Limit Switch Holder	01-1135
1.A10.A2.MP2	Probe Holder	01-1141
1.A10.A2.MP3	Rail & Slide 155MM	01-3078
1.A10.A2.MP4	Z Axis Rack Holder	01-3086
1.A10.A2.MP5	Recepticle, Spring Probe	07-2109
1.A10.A2.MP6	Rack 4"	07-2121
1.A10.A2.MP7	Screw 2-56X3/16" SOC CAP SS (9)	07-3102
1.A10.A2.MP8	Screw 4-40X3/8" SOC CAP SS (2)	07-3112
1.A10.A2.P1	Connector, 2 Conductor Male	07-1088

Note: 1.A10.A2.MP2 and 1.A10.A2.MP5 must be ordered together. 1.A10.A2.MP4 and 1.A10.A2.MP6 must be ordered together. They will be assembled prior to shipment.

Power Supply Printed Circuit Assembly

Ref. Des.	Description	Huntron P/N
1.A1.A4	* Power Supply PCA	06-3067
1.A1.A4.C1	Cap, 3300uF 50V A.E. Rad	03-3101
1.A1.A4.C2	Cap, 2200uF, 25V, A.E. Rad	03-3100
1.A1.A4.C3	Cap, 330uF, 25V, A.E. Rad	03-3102
1.A1.A4.C4	Cap, 330uF, 25V, A.E. Rad	03-3102
1.A1.A4.C5	Cap, 1000uF, 35V, A.E. Rad	03-3098
1.A1.A4.C6	Cap, 1000uF, 35V, A.E. Rad	03-3098
1.A1.A4.C7	Cap, 100uF, 35V, A.E. Rad	03-3099
1.A1.A4.C8	Cap, 100uF, 35V, A.E. Rad	03-3099
1.A1.A4.C9	Cap, 10uF, 25V, Tant	03-3011
1.A1.A4.C10	Cap, 10uF, 25V, Tant	03-3011
1.A1.A4.C11	Cap, .1uF, 50V, Mono Ceramic	03-3028
1.A1.A4.C12	Cap, .1uF, 50V, Mono Ceramic	03-3028
1.A1.A4.C13	Cap, .1uF, 50V, Mono Ceramic	03-3028
1.A1.A4.C14	Cap, .1uF, 50V, Mono Ceramic	03-3028
1.A1.A4.C15	Cap, .1uF, 50V, Mono Ceramic	03-3028
1.A1.A4.C16	Cap, .33uF, Mono Ceramic	03-3094
1.A1.A4.C17	Not Used	
1.A1.A4.C18	Not Used	
1.A1.A4.C19	Not Used	

Power Supply Printed Circuit Assembly (con't)

Ref. Des.	Description	Huntron P/N
1.A1.A4.C20	Not Used	
1.A1.A4.C21	Not Used	
1.A1.A4.C22	Not Used	
1.A1.A4.C23	Not Used	
1.A1.A4.C24	Not Used	
1.A1.A4.C25	Not Used	
1.A1.A4.C26	Not Used	
1.A1.A4.C27	Not Used	
1.A1.A4.C28	Not Used	
1.A1.A4.C29	Not Used	
1.A1.A4.C30	Not Used	
1.A1.A4.C31	Not Used	
1.A1.A4.C32	Cap, .1uF, 50V, Mono Ceramic	03-3028
1.A1.A4.C33	Cap, .1uF, 50V, Mono Ceramic	03-3028
1.A1.A4.C34	Cap, .1uF, 50V, Mono Ceramic	03-3028
1.A1.A4.C35	Cap, .1uF, 50V, Mono Ceramic	03-3028
1.A1.A4.C36	Cap, 47uF, 25V, Tant	03-3096
1.A1.A4.C37	Cap, .1uF, 50V, Mono Ceramic	03-3028
1.A1.A4.C38	Cap, .1uF, 50V, Mono Ceramic	03-3028
1.A1.A4.C39	Cap, .1uF, 50V, Mono Ceramic	03-3028
1.A1.A4.C40	Cap, .1uF, 50V, Mono Ceramic	03-3028
1.A1.A4.C41	Cap, .1uF, 50V, Mono Ceramic	03-3028
1.A1.A4.CN1	Cap, Network, .01uF, 50V, 10 pin	03-3103
1.A1.A4.CN2	Cap, Network, .01uF, 50V, 10 pin	03-3103
1.A1.A4.D1	Diode, Rectifier, 600V	04-4012
1.A1.A4.D2	Diode, Rectifier, 600V	04-4012
1.A1.A4.D3	Diode, Rectifier, 600V	04-4012
1.A1.A4.D4	Diode, Rectifier, 600V	04-4012
1.A1.A4.D5	Diode, Rectifier, 600V	04-4012
1.A1.A4.D6	Diode, Rectifier, 600V	04-4012
1.A1.A4.D7	Diode, Rectifier, 600V	04-4012
1.A1.A4.D8	Diode, Rectifier, 600V	04-4012
1.A1.A4.D9	Diode, Switch, 100V, 75mA	04-4007
1.A1.A4.DB1	Bridge Rectifier, 400V, 8A	04-4031
1.A1.A4.DB2	Bridge Rectifier, 400V, 8A	04-4031
1.A1.A4.J1	Socket, 10 pin	07-1097
1.A1.A4.J2	Socket, 5 pin	07-1098
1.A1.A4.J3	Socket, 10 pin	07-1097
1.A1.A4.J4	Socket, 5 pin	07-1098
1.A1.A4.J5	Socket, 10 pin	07-1097
1.A1.A4.J6	Socket, 5 pin	07-1098

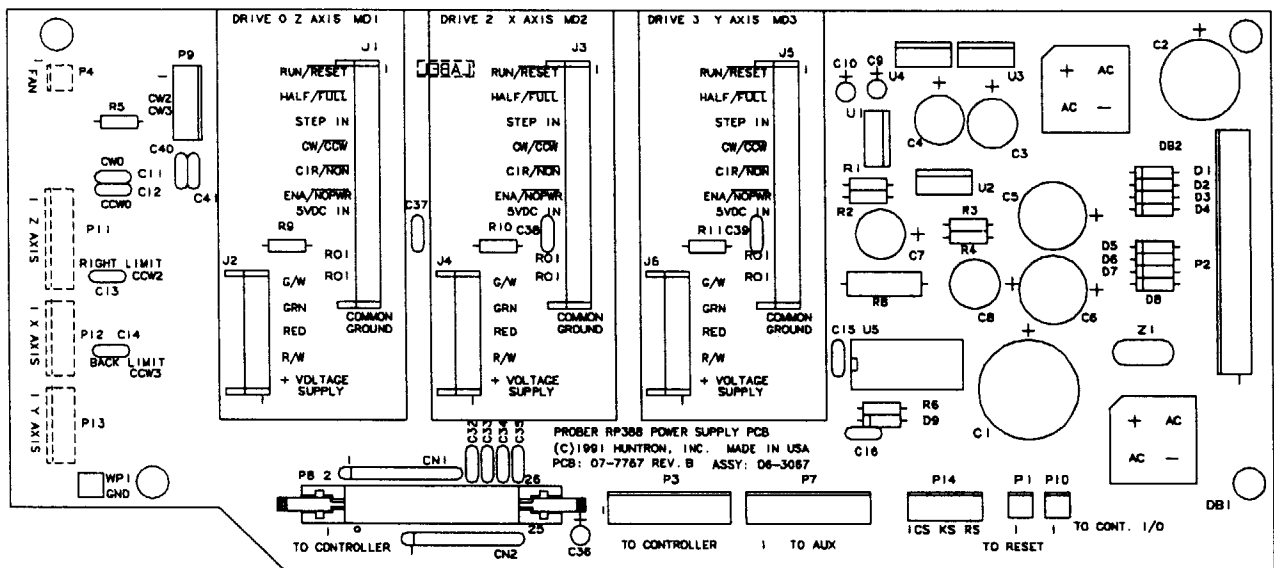
Power Supply Printed Circuit Assembly (con't)

Ref. Des.	Description	Huntron P/N
1.A1.A4.MP1	Heat Sink (2)	07-2028
1.A1.A4.MP2	Standoff, 1/8" 4-40 Aluminum (2)	07-3077
1.A1.A4.MP3	Screw 4-40X5/8" Ph Phil W/Washer (2)	07-3119
1.A1.A4.MP4	Latch (2)	07-1197
1.A1.A4.P1	Header, 2 pin	07-1095
1.A1.A4.P2	Header, 12 pin	07-1158
1.A1.A4.P3	Header, 6 pin, Polarized	07-1166
1.A1.A4.P4	Header, 2 pin	07-1095
1.A1.A4.P5	Not Used	
1.A1.A4.P6	Not Used	
1.A1.A4.P7	Not Used	
1.A1.A4.P8	Header, 26 pin	07-1096
1.A1.A4.P9	Not Used	
1.A1.A4.P10	Header, 2 pin	07-1095
1.A1.A4.P11	Header, 8 pin, Polarized	07-1211
1.A1.A4.P12	Header, 6 pin, Polarized	07-1210
1.A1.A4.P13	Header, 6 pin, Polarized	01-1210
1.A1.A4.P14	Header, 6 pin, Polarized	01-1210
1.A1.A4.R1	Res, 220, 5%, 1/4W	02-2158
1.A1.A4.R2	Res, 3.3K, 5%, 1/4W	02-2080
1.A1.A4.R3	Res, 220, 5%, 1/4W	02-2158
1.A1.A4.R4	Res, 3.3K, 5%, 1/4W	02-2080
1.A1.A4.R5	Res, 430, 5%, 1/4W	02-2348
1.A1.A4.R6	Res, 200K, 5%, 1/4W	02-2346
1.A1.A4.R7	Not Used	
1.A1.A4.R8	Res, 2K, 5%, 2W	02-2347
1.A1.A4.R9	Res, 100K, 5%, 1/4W	02-2139
1.A1.A4.R10	Res, 100K, 5%, 1/4W	02-2139
1.A1.A4.R11	Res, 100K, 5%, 1/4W	02-2139
1.A1.A4.U1	IC, Variable Regulator, Positive	05-5074
1.A1.A4.U2	IC, Variable Regulator, Negative	05-5073
1.A1.A4.U3	IC, Regulator +12	05-5002
1.A1.A4.U4	IC, Regulator -12	05-5129
1.A1.A4.U5	* IC, Dual Monostable	05-5052
1.A1.A4.Z1	Varistor, 47V	02-0016

SECTION 5 SCHEMATIC DIAGRAMS

5-1. SCHEMATICS

The following component location diagram and schematics are for the Prober Power Supply.



Note: All Reference Designations are preceded by 1.A1.A4. in the Parts List.

Figure 5-1. Prober Power Supply Component Locations.

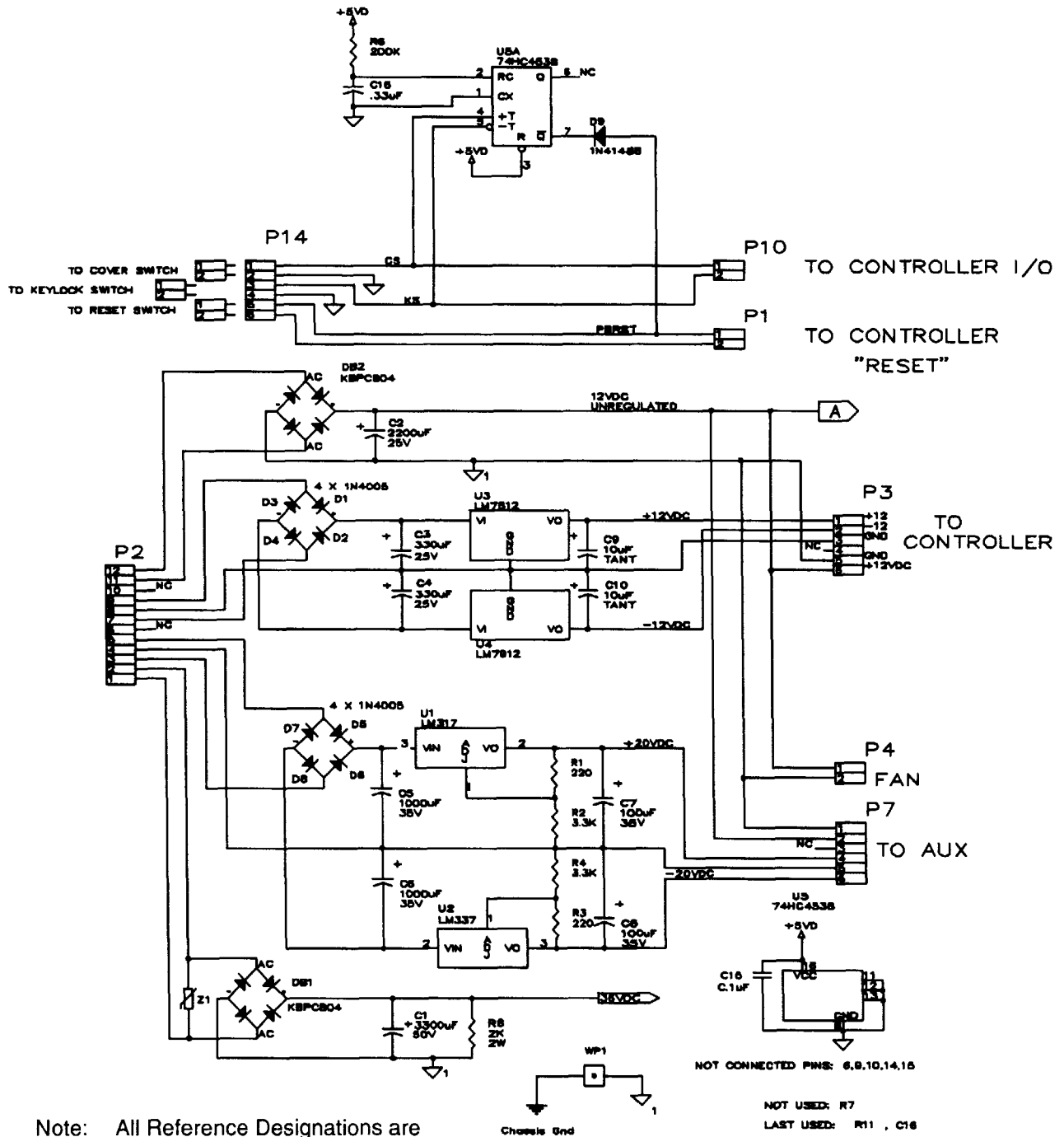


Figure 5-2a. Prober Power Supply Schematic

Note: All Reference Designations are preceded by 1.A1.A4. in the Parts List.

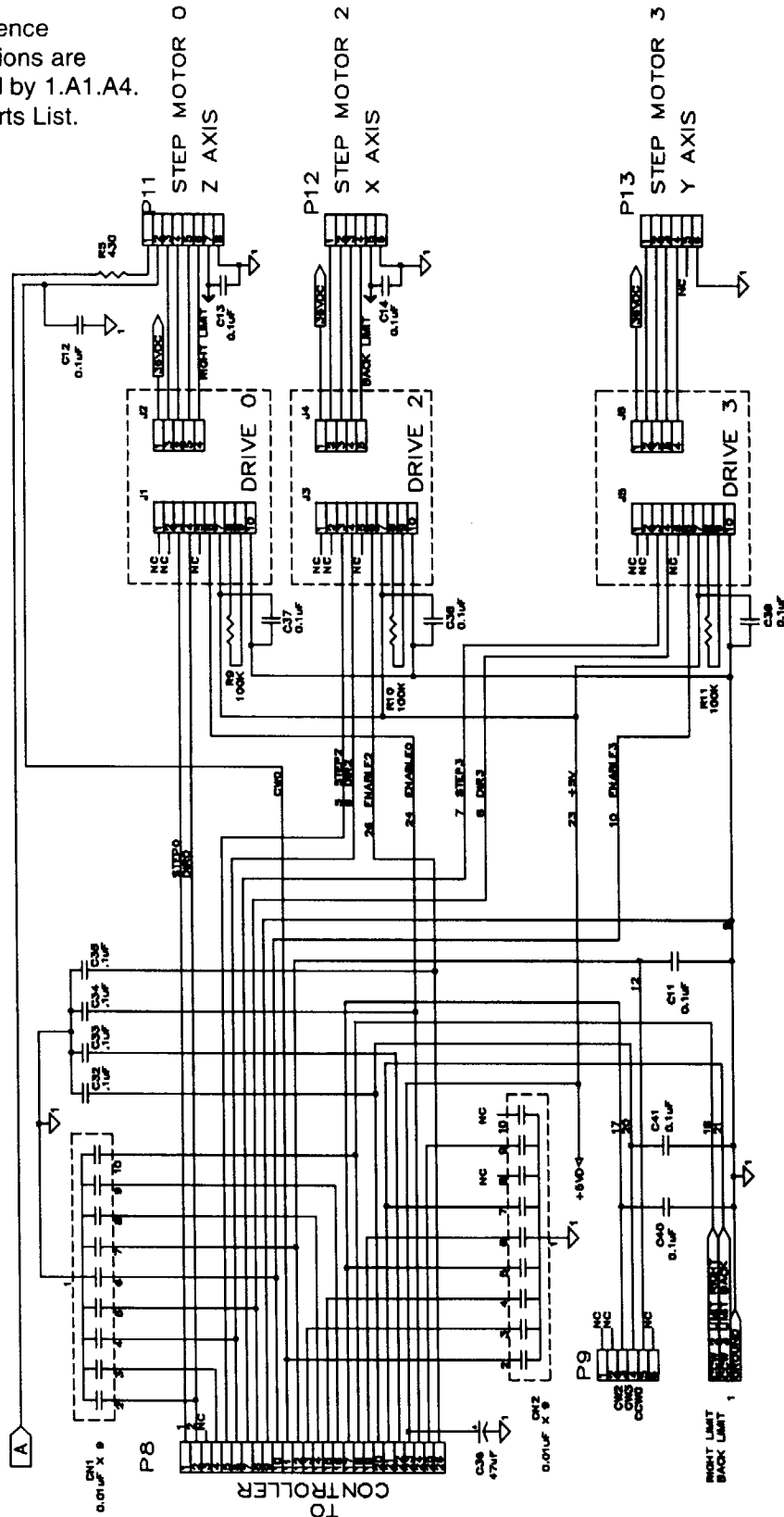


Figure 5-2b. Prober Power Supply Schematic