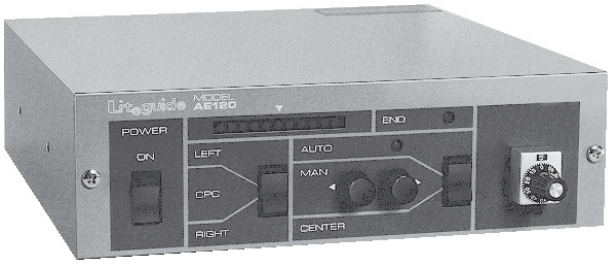
nexen

WEB CONTROL PRODUCTS

User Manual



AE120 Web Guide Amplifier

FORM NO. L-20230-E-1107

In accordance with Nexen's established policy of constant product improvement, the specifications contained in this manual are subject to change without notice. Technical data listed in this manual are based on the latest information available at the time of printing and are also subject to change without notice.

Technical Support:
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www.nexengroup.com

WARNING

Read this manual carefully before installation and operation.

Follow Nexen's instructions and integrate this unit into your system with care.

This unit should be installed, operated and maintained by qualified personnel ONLY.

Improper installation can damage your system or cause injury or death.

Comply with all applicable codes.

Nexen Group, Inc.
560 Oak Grove Parkway
Vadnais Heights, Minnesota 55127

ISO 9001 Certified

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INTRODUCTION

Read this manual carefully, making full use of its explanations and instructions. The “Know How” of safe, continuous, trouble-free operation depends on the degree of your understanding of the system and your willingness to keep all components in proper operating condition. Pay particular attention to all NOTES, CAUTIONS, and WARNINGS to avoid the risk of personal injury or property damage. It is important to understand that these NOTES, CAUTIONS, and WARNINGS are not exhaustive. Nexen cannot possibly know or evaluate all conceivable methods in which service may be performed, or the possible hazardous consequences of each method. Accordingly, anyone who uses a procedure that is not recommended by Nexen must first satisfy themselves that neither their safety or the safety of the product will be jeopardized by the service method selected.

Nexen’s AE120 electronic amplifier and controller receives web edge input signals from web guide sensors and puts out a signal to correct the Web position within the machine.

Edge position signals can be provided by an opaque edge sensor (PH16 and PH46) or ultra sonic sensors (UH21 and UH01) for transparent edges. Both types of sensors can be mounted to control one side of the web or Edge Position Control (EPC). Two sensors of either type can be placed on either side of the webs to provide Center Position Control (CPC).

With EPC, a single sensor is mounted on one side of the web, with its measuring center aligned with the desired position of the web edge. The primary purpose for EPC is to maintain the edge of the web at the measuring center of the sensor (See Figure 1).

With CPC, two sensors are mounted equally spaced from the centerline of the machine. The primary purpose of CPC is to maintain alignment of the web to the center of the machine (See Figure 2).

Nexen’s AE120 can also receive inputs from several sources:

- An Automatic Centering Sensor can be attached to guide roll assemblies or moveable roll stands. Nexen’s AE120 uses a Proximity Sensor (Product No. 912696) mounted to show the mechanical device is at its center of travel or neutral position.
- A customer supplied 10K ohm Remote Fine Adjustment Pot can be installed to allow remote fine adjustment of the web position.
- A Remote Controller, model RP10 (Product No. 912695) can be connected to allow remote control with a Fine Adjustment Pot, Mode Switch, and Manual Control Switches.
- A customer supplied switch rated at 15VDC, 250 mA, can be used as a Lock Out Switch to momentarily disable automatic correction.

The AE120 may be used with Travel Limit Switches. These are not required for proper functioning of the AE120 as it is equipped with an over current protection circuit. In installations where the guide roll design or moveable roll stand design requires limit switches, the Travel Limit Switches can be used to interrupt output to the actuator motor.

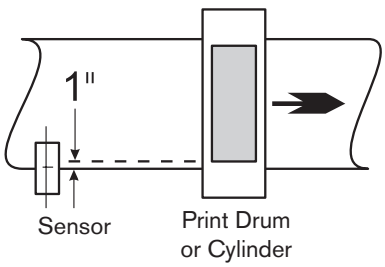

FIGURE 1
Edge Position Control (EPC)

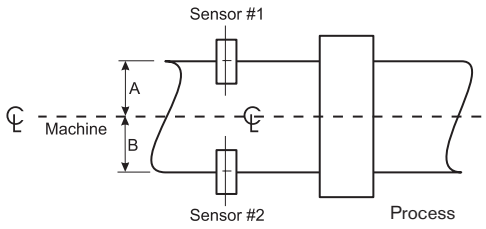

FIGURE 2
Center Position Control (CPC)

The AE120 output is a bipolar, 24VDC signal, rated at 1.2 Amp. The output of a freestanding AE120 can be applied to a linear or rotary actuator to control web position with a web guide assembly or a moveable roll stand.

Nexen’s AE120 also provides the excitation voltage for the following sensors: PH16, PH46, UH21, or UH01.

An End of Travel Alarm is also available as both a front panel warning light and a N. O. relay contact. The End of Travel Alarm is given when the guide roll assembly or moveable roll stand has moved to the end of its travel limits and could not bring the web back into correct alignment or when the optional Travel Limit Switches are actuated.

INSTALLATION

Refer to Figure 3 for mounting dimensions when the AE120 is used as a free standing Web Guide Amplifier.

NOTE: The AE120 is an electronic component and should be mounted in a shock and vibration free area which has an ambient temperature greater than 32° F [0° C] and less than 122° F [50° C].

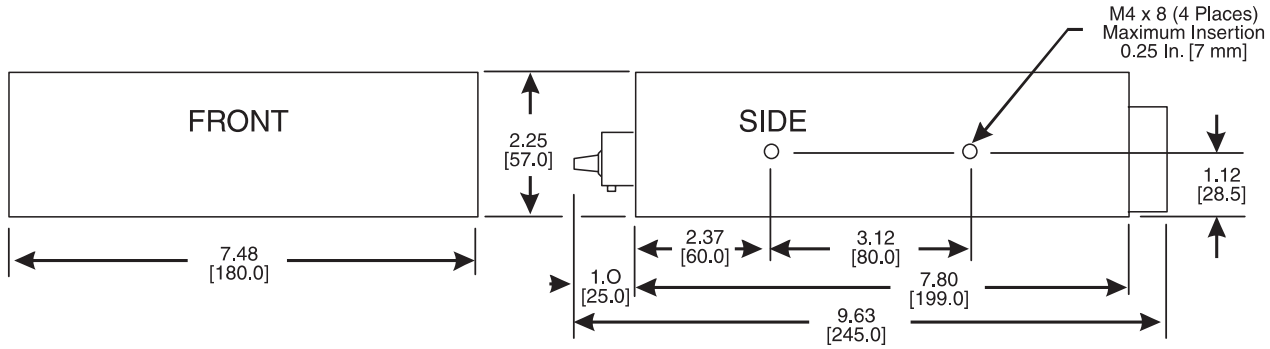

FIGURE 3

ELECTRICAL CONNECTIONS

When used as a stand alone Web Guide Amplifier, make electrical connections according to the following procedure:

1. Remove two screws on the front panel (See Figure 4).

2. Slide the chassis out of the housing to allow access to the Terminal Block (See Figure 5).

   NOTE: All cables must be routed through the Strain Relief Clamps (See Figure 5).

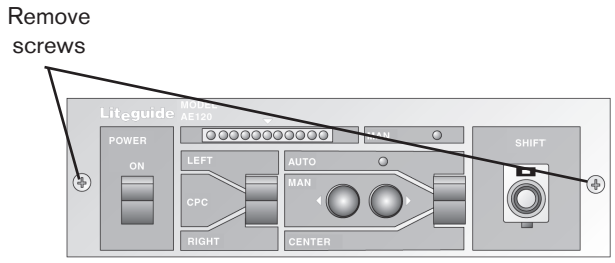

FIGURE 4

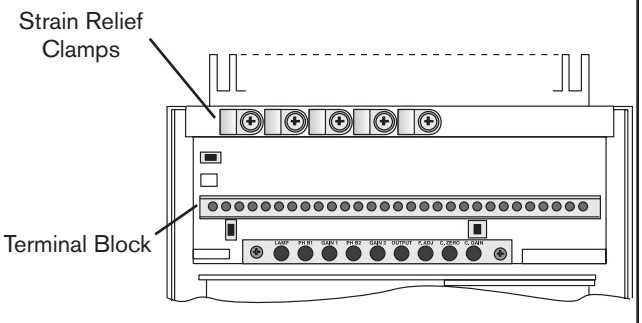

FIGURE 5

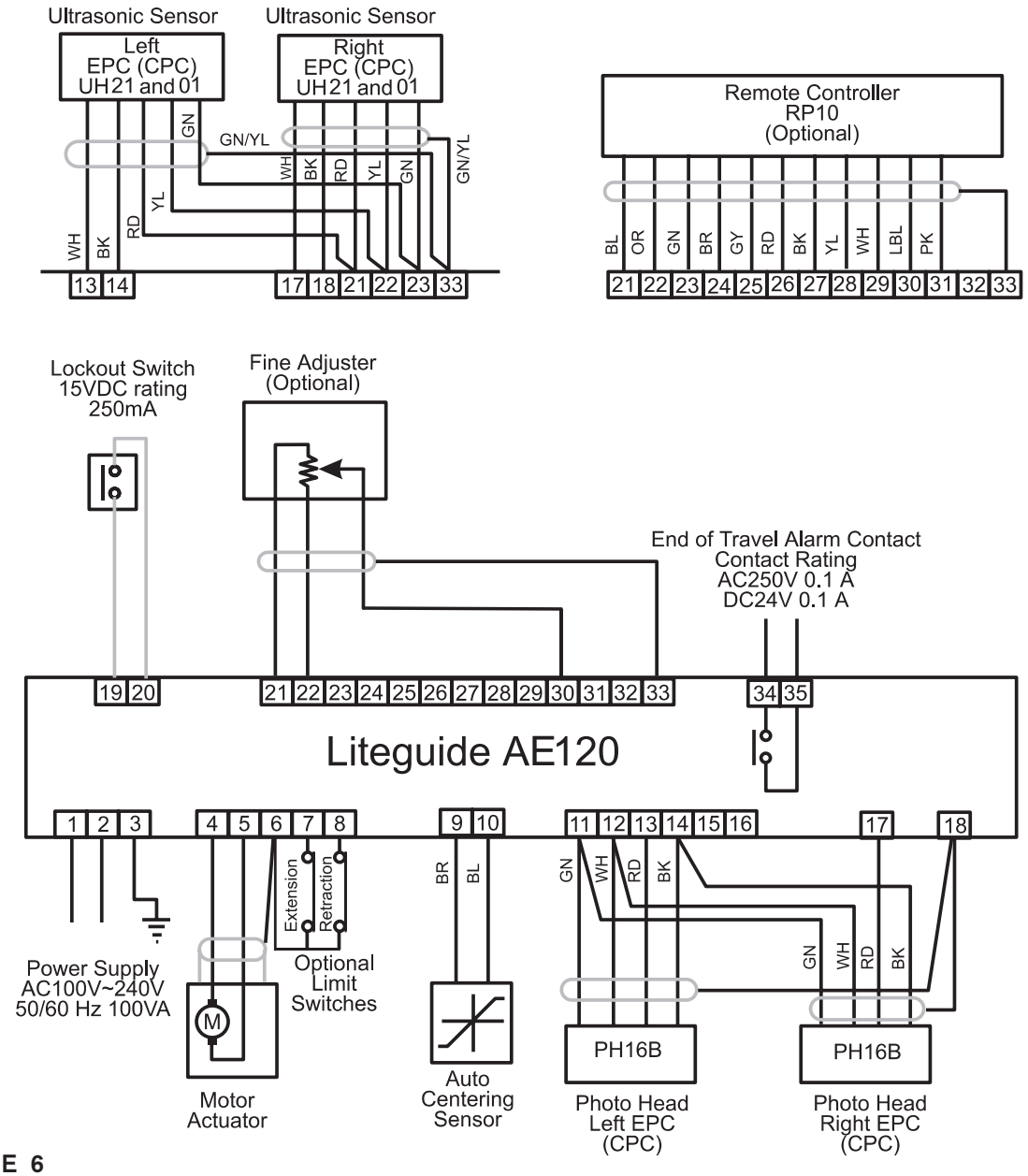

FIGURE 6

3. Using cables provided with the sensors, make the connections for either left hand or right hand EPC, or CPC (See Figure 6).

4. Connect AC Power in the range of 100 to 240VAC to Terminals **1** and **2**. Connect Terminal **3** to ground (See Figure 6).

5. Connect motor output lead to Terminals **4** and **5**. Connect cable shield to Terminal **6** (See Figure 6).

6. Connect optional Travel Limit Switches to Terminals **6**, **7**, and **8** (See Figure 6).

   NOTE: If Limit Switches are not used, short all three terminals together.

7. Connect Automatic Centering Sensor (Product No. 912696) to Terminals **9** and **10** (See Figure 6).

8. Connect the optional Lock Out Switch to Terminals **19** and **20** (See Figure 6).

   NOTE: The Lock Out Switch is a customer supplied switch rated at 15VDC, 250mA, N.O., momentary contact.

9. If used, connect optional RP10 Remote Controller (Product No. 912695) to Terminals **21**-**23** (See Figure 6).

10. If used, connect a customer supplied Remote Fine Adjustment Pot, rated 10K ohm, to Terminals **21**, **22**, **30,** and **33** (See Figure 6).

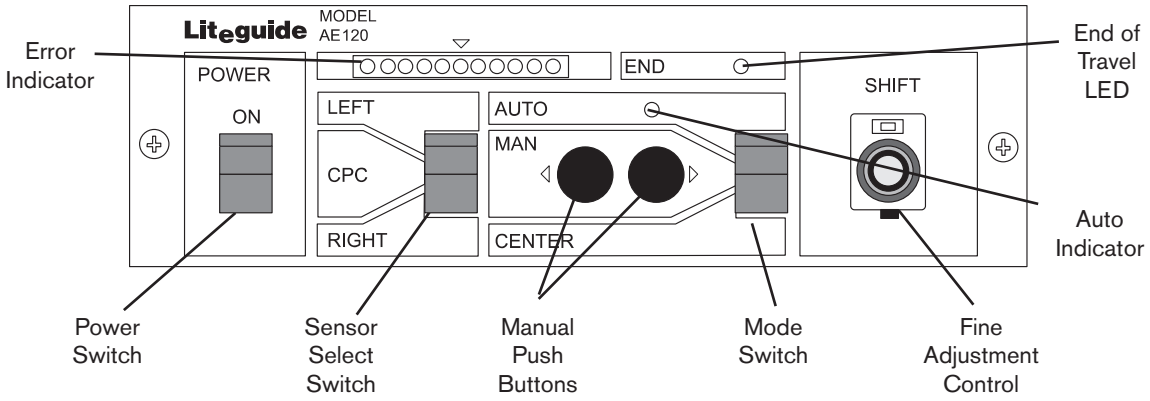

FIGURE 7

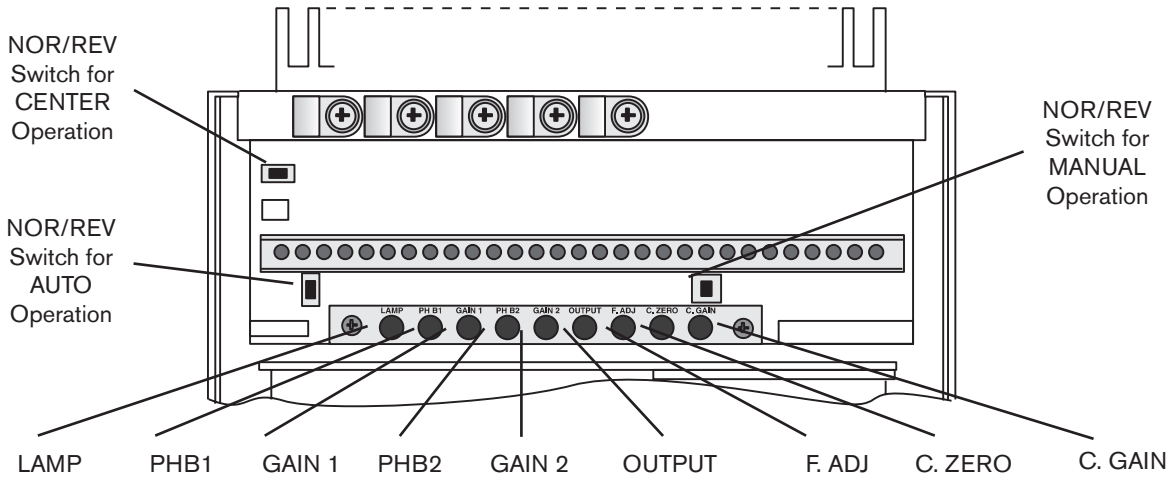

FIGURE 8

SENSOR CALIBRATION

EPC Calibration

1. Set Fine Adj. Pot on the front panel to 5.0 (mid-travel) (See Figure 7).

2. Using the Sensor Select Switch located on the front panel, select either the **RIGHT** or **LEFT** Sensor (See Figure 7).

3. Insert a piece of material until it completely covers the sensing area of the sensor; then, remove the material. The Error Indicator array will light up to show maximum and minimum insertion with up to five red lights on either side of the center green light (See Figure 7).

   NOTE: Use opaque material with PH16 and PH46 and soundproof material with the UH21 and UH01.

4. Rotate the Photo Head Balance Pot (**PH1B** for the left sensor and **PH2B** for the right sensor) until the insertion and removal of material lights up an equal number of red lights on either side of the green light on the Error Indicator array (See Figures 7 and 8).

5. Rotate **GAIN 1** for the left sensor and **GAIN 2** for the right sensor until the insertion of material illuminates five red lights in either direction (See Figures 7 and 8).

CPC Calibration

1. Perform **EPC** Calibration separately for each sensor.

2. Set the Sensor Selector Switch to the **CPC** position (See Figure 7).

AUTOMATIC CENTERING SENSOR ADJUSTMENT

1. In Manual Mode, align the guide roll mechanism or moveable roll stand so it is in the middle of its mechanical travel or neutral position.

2. Align the Automatic Centering Sensor with its magnetic trigger to give as near zero output as possible, measured at Terminals **9** and **10**.

3. Switch to Centering Mode; then, adjust the **C. ZERO** Centering pot to maintain the guide roll mechanism or moveable roll stand at its neutral position (See Figures 7 and 8).

4. If the guide roll mechanism or roll stand hunts or oscillates back and forth in Centering Mode, adjust the Centering Gain pot (**C. GAIN**) until the motion stops (See Figure 8).

OUTPUT GAIN ADJUSTMENT

1. If the guide roll mechanism or roll stand hunts or oscillates while the AE120 is operating in Automatic Mode, rotate the Output Gain Pot (**OUTPUT**) counterclockwise until hunting stops (See Figure 8).

2. If the guide roll mechanism or roll stand is sluggish, adjust the Output Gain Pot (**OUTPUT**) clockwise until control speed matches web speed (See Figure 8).

FINE ADJUSTMENT TRIM

1. One rotation (360 degrees) on the Fine Adjustment Control located on the control panel should move the web position 0.04 In. [1 mm] (See Figure 7).

2. If one rotation of the Fine Adjustment Control moves the web position more or less than 0.04 In. [1 mm], increase the amount of correction by rotating the Fine Adjustment Trim Pot (**F. ADJ**) clockwise and decrease correction by rotating the pot counterclockwise (See Figures 7 and 8).

GUIDE ROLL MECHANISM or ROLL STAND ADJUSTMENT

1. If the guide roll mechanism or roll stand moves full-travel to its stop in either direction when the Mode Switch is set to CENTER, reverse the setting of the **CENTER Operation** (**NOR/REV**) **Switch** (See Figures 7 and 8).

2. If the guide roll mechanism or roll stand moves in the wrong direction when the Mode Switch is set to **MAN** and one of the Manual Operation Switches is depressed, reverse the setting of the **MANUAL Operation** (**NOR/REV**) **Switch** (See Figures 7 and 8).

3. If the guide roll mechanism or roll stand moves in the wrong direction when the Mode Switch is set to AUTO, reverse the setting of the **AUTO Operation (NOR/REV) Switch** (See Figure 7 and 8).

4. If all of the above (Steps 1-3) are operating in reverse, reverse the motor leads at Terminals **4** and **5** instead of reversing each switch (See Figure 6).

OPERATION

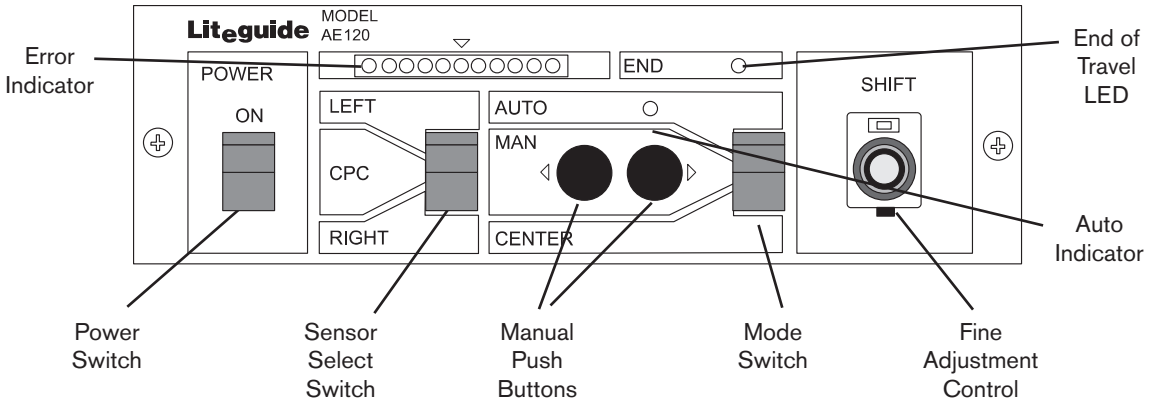

FIGURE 9

EPC

1. Set Mode Switch to **CENTER** (See Figure 9).
2. Set Fine Adjustment Control to 5.0 (mid-travel) (See Figure 9).
3. Thread the web into the machine.
4. Align the web edge with the process.
5. Set the Sensor Selector Switch to **LEFT** or **RIGHT** as appropriate (See Figure 9).
6. Move the sensor to the edge of the web until the center green light in the Error Indicator array glows (See Figure 9).
7. Set the Mode Switch to **AUTO** (See Figure 9).
8. Start the machine. The web should stay in the center of the sensor and the green light should remain on.
9. If the web is slightly misaligned with the process, it can be moved with the Fine Adjustment Control (plus or minus 0.20 In. [5 mm]) (See Figure 9).
10. Larger adjustments can be made with the sensor mounting bracket (refer to the maintenance and installation instructions provided with the sensor).

CPC

1. Set the Mode Switch to **CENTER** (See Figure 9).
2. Set the Fine Adjustment Control to 5.0 (mid-travel) (See Figure 9).
3. Thread the web into the machine.
4. Align the centerline of the web with the centerline of the machine.
5. Set the Sensor Selector Switch to **LEFT** (See Figure 9).
6. Move the left sensor to the web edge until the center green light in the indicator array glows (See Figure 9).
7. Set the Sensor Selector Switch to **RIGHT** (See Figure 9).
8. Move the right sensor to the edge of the web until the center green light of the Error Indicator array glows (See Figure 9).
9. Set the Sensor Selector Switch to **CPC** (See Figure 9).
10. Set the Mode Switch to **AUTO** (See Figure 9).
11. Start the machine. The web should stay centered between the sensors and the green light should remain on.
12. If the web is slightly misaligned with the center of the machine, it can be moved with the Fine Adjustment Control on the control panel (plus or minus 0.20 In. [5 mm]) (See Figure 9).
13. For greater misalignment errors, repeat Steps 4-12.

TROUBLESHOOTING

SYSTEM WILL NOT OPERATE CORRECTLY IN AUTOMATIC MODE

1. Make sure Remote Switch is **ON** when attempting to control with Remote Operators Control and **OFF** when trying to control with the front panel controls.

2. Select Manual Mode on the AE120 front panel. Attempt to move linear actuator with the Manual Push Buttons. If linear actuator does not move:

   a. Make sure there is no physical obstruction or restriction to guide roll movement.

   b. Check linear actuator limit switches. Both limit switches should be closed, unless linear actuator is at its travel limit.

3. Move web back and forth through sensor sensing zone and determine if the Error Indicator lights up symmetrically left and right as the web moves. If is does not, recalibrate the system for the specific sensor involved.

SPECIFICATIONS

SENSOR

Type	Infrared Sensor PH16B & PH21	Ultrasonic Sensor UH21	Ultrasonic Sensor UH01
Sensor Gap	1.18 in. [30.0 mm]	1.34 in. [34.0 mm]	1.89 in. [48 mm]
Effective Detecting Length	±0.20 in. [5.0 mm]	±0.06 in. [1.5 mm]	±.31 in. [8 mm]
Light Source Wave Length	950 nm (Near Infrared Ray)	Ultrasonic 220 kHz	Ultrasonic 220 kHz
Ambient Temperature	32° to 120° F [0° to 50° C]	32° to 120° F [0° to 50° C]	32° to 120° F [0° to 50° C]

PRODUCT NUMBERS:

AE120 912674
PH16B 912085
PH21 912626
UH21 912621
UH01 912153

AE120

Power Supply Voltage	100 to 240VAC (continuous input), 50/60 Hz
Power Consumption	100 VA
Input	Photohead: PH16B & PH46 Ultrasonic Sensor: UH21 & UH01
	Centering Sensor (Proximity Sensor)
	Fine Adjuster (Optional)
	Remote Controller: RP10 (Optional)
	Lock Out Switch: N.O., 15VDC, 250mA (Customer Supplied)
	Limit Switches: N.C. (Customer Supplied)
Output	DC Motor: 24VDC, 1.2 A
	Lamp Power Supply: 12VDC, 1.8 W
	End of Travel: Dry Contact, Rated 0.1 A, 250VAC, 0.1 A, 24VDC
Ambient Temperature	32° to 120° F [0° to 50° C]

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Warranties

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The exclusive remedy of the Buyer for any breach of the warranties set out above will be, at the sole discretion of Nexen, a repair or replacement with new, serviceably used or reconditioned Product, or issuance of credit in the amount of the purchase price paid to Nexen by the Buyer for the Products.

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To make a claim under this warranty, the claimant must give written notice of the alleged defect to whom the Product was purchased from and deliver the Product to same within one year of the date on which the alleged defect first became apparent.

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