



Kodak Service & Support

SERVICE MANUAL for the

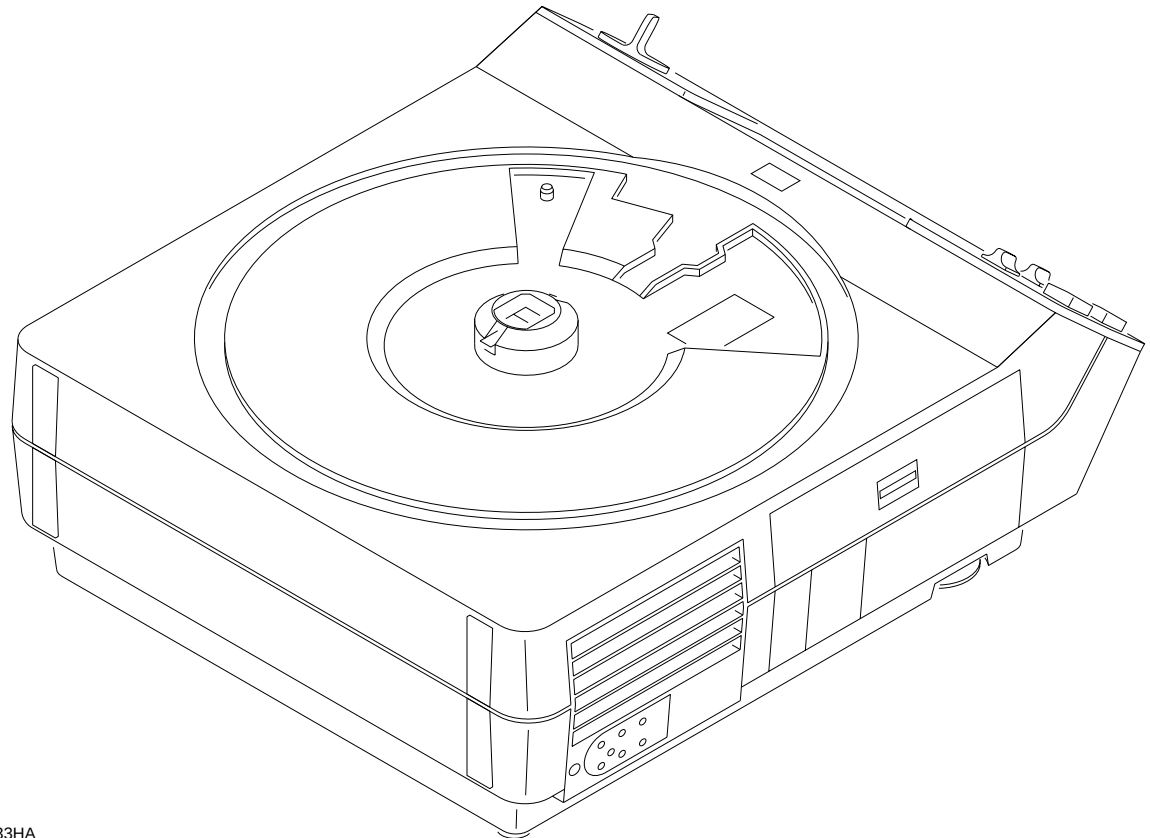
Kodak Carousel

**Models 4200, 4200-K, 4200-KK, 4200-J, 4400, 4600,
4600-K, 4600-KK, 5200, 5200-K, 5400, 5600,
5600-KK, 5600-J, MedalistAF, Medalist I and II,
Painted and Non-Painted PROJECTORS**

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 **Table of Contents**



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This equipment includes parts and assemblies sensitive to damage from electrostatic discharge. Use caution to prevent damage during all service procedures.

Table of Contents

Description	Page
<u>Replacements and Installations</u>	4
Replacing the LOWER HOUSING ASSEMBLY	4
Installing the LOWER HOUSING ASSEMBLY	4
Replacing the FAN SHAFT ASSEMBLY	4
Installing the FAN SHAFT ASSEMBLY	6
Replacing the MOTOR	7
Installing the MOTOR	7
Replacing the WORM PULLEY and MECHANISM BELT	8
Installing the WORM PULLEY and MECHANISM BELT	9
Replacing the THERMAL FUSE ASSEMBLY	10
Installing the THERMAL FUSE ASSEMBLY	10
Replacing the LAMP MODULE RECEPTACLE	10
Installing the LAMP MODULE RECEPTACLE	11
Replacing the CYCLE SOLENOID ASSEMBLY	12
Installing the CYCLE SOLENOID ASSEMBLY	12
Replacing the MECHANISM ASSEMBLY	13
Installing the MECHANISM ASSEMBLY	13
Replacing the AUTO-FOCUS BRACKET ASSEMBLY	14
Installing the AUTO-FOCUS BRACKET ASSEMBLY	14
Replacing the CAM STACK ASSEMBLY and CYCLE LEVER ASSEMBLY ..	14
Installing the CAM STACK ASSEMBLY and CYCLE LEVER ASSEMBLY ..	17
Replacing the LAMP SOCKET TERMINAL ASSEMBLY, N.P.	18
Installing the LAMP SOCKET TERMINAL ASSEMBLY	18
Replacing the LAMP SOCKET TERMINAL ASSEMBLY, Painted Models ..	18
Installing the LAMP SOCKET TERMINAL ASSEMBLY, Painted Models ..	19
Replacing the LENS MOUNT ASSEMBLY - Auto Focus Model	20
Installing the LENS MOUNT ASSEMBLY - Auto Focus Models	20
Replacing the LENS MOUNT ASSEMBLY - Non Auto Focus Model	21
Installing the LENS MOUNT ASSEMBLY - Non Auto Focus Model	21
Replacing the AUTO-FOCUS SWITCH ASSEMBLY	22
Installing the AUTO-FOCUS SWITCH ASSEMBLY	22
Replacing the FOCUS SHAFT ASSEMBLY - Auto Focus Models	22
Installing the FOCUS SHAFT ASSEMBLY	24
Replacing the FOCUS SHAFT ASSEMBLY - Non Auto-Focus Models	24
Installing the FOCUS SHAFT ASSEMBLY	25
<u>Adjustments</u>	26
Adjusting the CYCLE SOLENOID	26
Adjusting the INDEXER LEVER ASSEMBLY	27
Adjusting the SLIDE LIFT LEVER MANUAL	28

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Adjusting the SLIDE LIFT LEVER POWER	28
Adjusting the Focus Light Path - Auto Focus Models	29
Adjusting the NULL	30
Adjusting the PHOTOCELL	32
Adjusting the CLAMP PAD ASSEMBLY	35
Adjusting the DARK SHUTTER	35
Lubrication	37
Tools	40
Specifications	41
Diagnostics	43
MAIN MOTOR Voltages	43
PHOTOCELL Voltages	44
5-PIN REMOTE CORD PLUG Voltages	44
SMALL COMPONENT BOARD ASSEMBLY 256809 Voltages	45
Voltage Specifications - General Parts	46
Power, Illumination, and Cooling Malfunctions	46
Slide Transport Malfunctions	47
Focus Malfunctions	49

Section 1: Replacements and Installations

Replacing the LOWER HOUSING ASSEMBLY

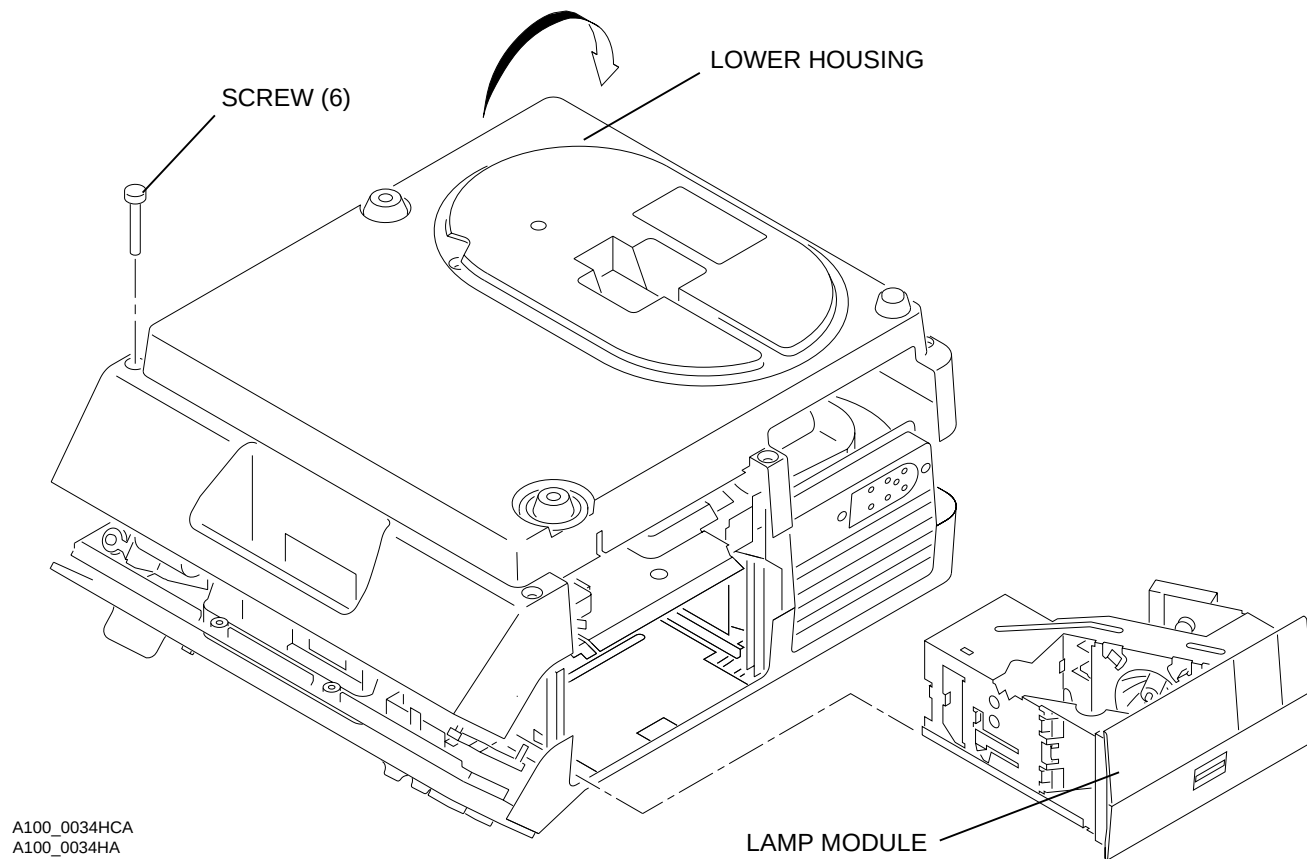
**Warning**

Dangerous Voltage

- [1] Disconnect the main power.
- [2] Remove the PROJECTION LENS.
- [3] Remove the LAMP MODULE ASSEMBLY.
- [4] Remove the 6 *Torx* SCREWS (for the N.P. Models) or (6 *Phillips* SCREWS for Painted Models) from the LOWER HOUSING ASSEMBLY.
- [5] Pull the LOWER HOUSING ASSEMBLY off the TOP HOUSING.

Installing the LOWER HOUSING ASSEMBLY

- [1] Do the replacement procedure for the LOWER HOUSING ASSEMBLY in reverse order.



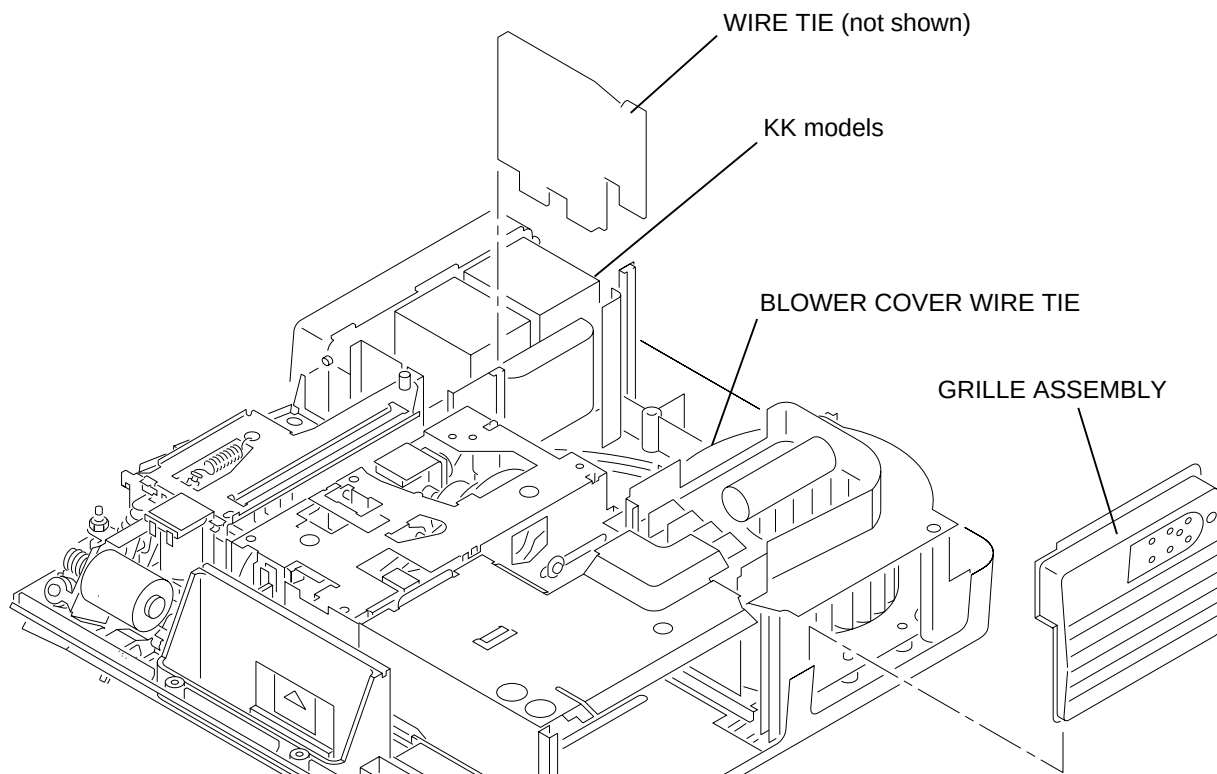
Replacing the FAN SHAFT ASSEMBLY

**Warning**

Dangerous Voltage

- [1] Disconnect the main power.
- [2] Do the replacement procedure for the LOWER HOUSING ASSEMBLY.

- [3] Cut the 3 WIRE TIES:
- 1 on BLOWER COVER wires
 - 2 on SMALL CIRCUIT BOARD between the MOTOR and MECHANISM ASSEMBLY
- [4] Disconnect the 2 wires from the CYCLE SOLENOID on the SMALL CIRCUIT BOARD.
- [5] Pull the SMALL CIRCUIT BOARD up.
- [6] Remove the *Torx* SCREW from the BLOWER COVER ASSEMBLY.
- [7] Lift the GRILLE ASSEMBLY in front of the BLOWER COVER ASSEMBLY up.
- [8] Loosen the *Torx* SCREW on the right track of the LOWER LIGHT BAFFLE ASSEMBLY approximately half way.
- [9] Lift the LOWER LIGHT BAFFLE ASSEMBLY off the TAB on the BLOWER COVER ASSEMBLY.



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A100_0035HA

- [10] Remove the 2 long *Torx* SCREWS from the BLOWER COVER ASSEMBLY.
- [11] Lift the BLOWER COVER ASSEMBLY up.
- [12] Remove the 3 *Hex* 1/4 in. SCREWS from the MOTOR.
- [13] Lift the MOTOR until you observe the FAN BELT and MECHANISM BELT.
- [14] Remove the FAN BELT and MECHANISM BELT off the MOTOR PULLEY. Use SPRING HOOK TL-1165.

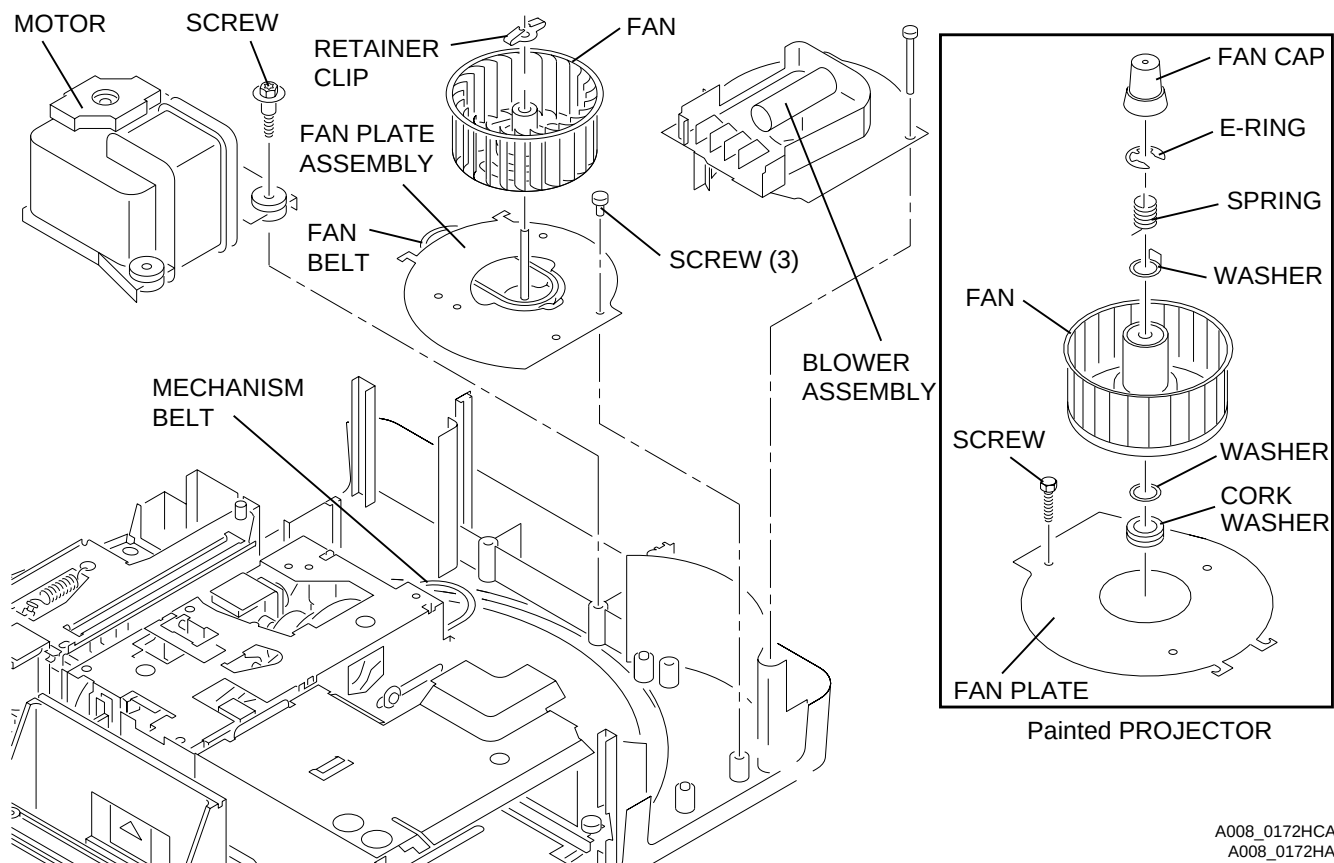


Caution

Move the MOTOR to allow access to the parts; wires are still connected to the MOTOR. Do not cause damage to the MOTOR wires.

- [15] N.P. only: Remove the RETAINER CLIP from the FAN SHAFT.
- [16] Painted Models only: Remove the FAN CAP, E-RING, SPRING, and WASHER.
- [17] Pull the FAN up and off the FAN SHAFT to allow access to the FAN BELT.
- [18] Remove the FAN BELT.
- [19] N.P. only: Remove the 3 *Torx* SCREWS from the FAN SHAFT ASSEMBLY.

[20] Lift and remove the FAN SHAFT ASSEMBLY.



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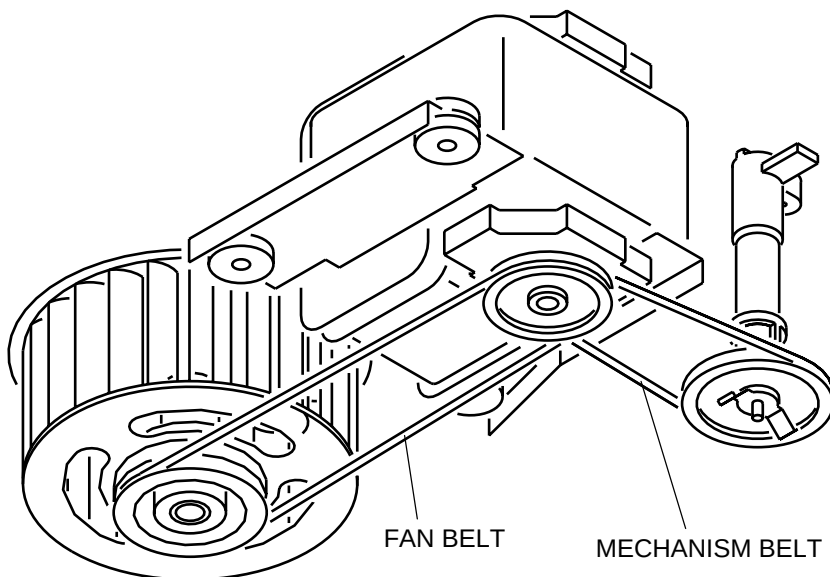
Installing the FAN SHAFT ASSEMBLY



Important

When installing the FAN and MECHANISM BELTS, install the MECHANISM BELT on the small MOTOR PULLEY, and the FAN BELT on the large MOTOR PULLEY.

[1] Do the removal procedure for the FAN BELT and SHAFT in reverse order.



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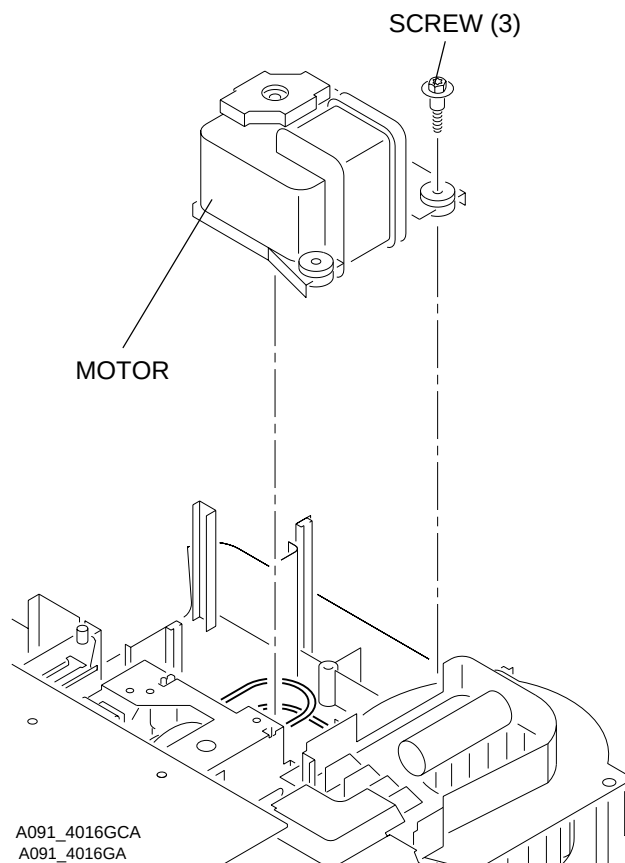
Replacing the MOTOR



Warning

Dangerous Voltage

- [1] Disconnect the main power.
- [2] Do the replacement procedure for the LOWER HOUSING ASSEMBLY.
- [3] Disconnect all wires from the MOTOR.
- [4] Cut the 2 WIRE TIES on the SMALL CIRCUIT BOARD between the MOTOR and MECHANISM ASSEMBLY.
- [5] Disconnect the 2 wires from the CYCLE SOLENOID on the SMALL CIRCUIT BOARD.
- [6] Pull the SMALL CIRCUIT BOARD up.
- [7] Disconnect all wires on the MOTOR.
- [8] Remove 3 Hex 1/4 in. SCREWS from the MOTOR.
- [9] Lift the MOTOR up to allow access to the FAN and MECHANISM BELTS.
- [10] Remove the FAN and MECHANISM BELTS from the MOTOR PULLEY.
- [11] Remove the MOTOR.



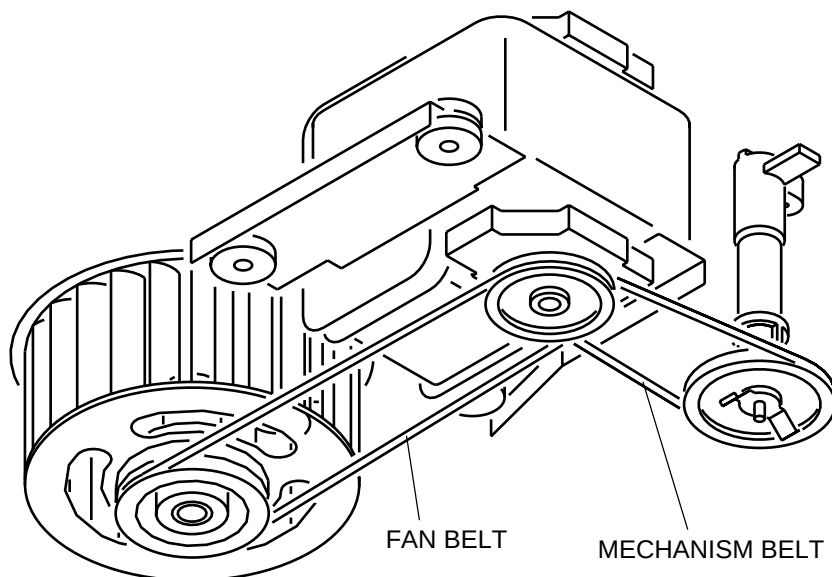
Installing the MOTOR



Important

When installing the FAN and MECHANISM BELTS, install the MECHANISM BELT on the small MOTOR PULLEY, and the FAN BELT on the large MOTOR PULLEY.

- [1] Do the replacement procedure for the MOTOR in reverse order.

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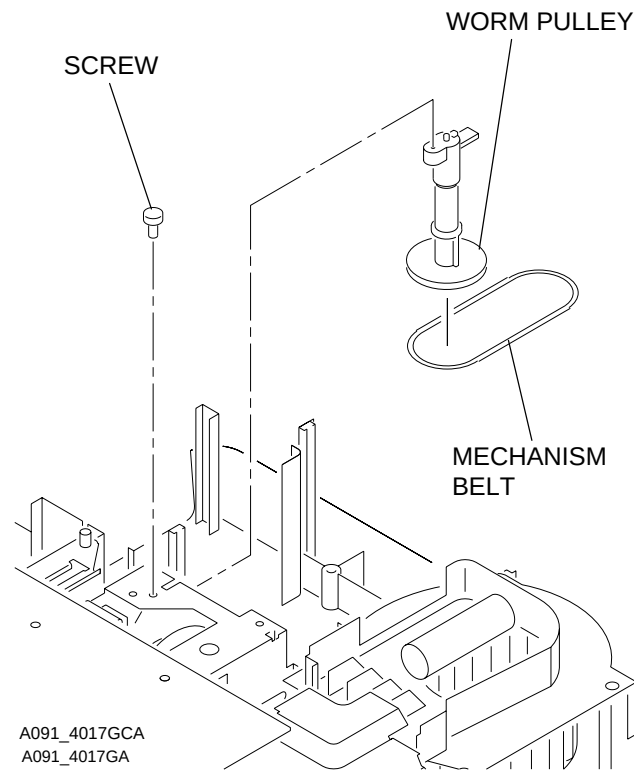
Replacing the WORM PULLEY and MECHANISM BELT



Warning

Dangerous Voltage

- [1] Disconnect the main power.
- [2] Do the replacement procedure for the LOWER HOUSING ASSEMBLY.
- [3] Do the replacement procedure for the MOTOR except do not disconnect the wires from the MOTOR.
- [4] Remove the *Torx* SCREW (on N.P. models) (or Hex SCREW on Painted Models) from the WORM PULLEY ASSEMBLY.
- [5] Move the TAB on the WORM PULLEY ASSEMBLY out.
- [6] Remove the WORM PULLEY ASSEMBLY and MECHANISM BELT.



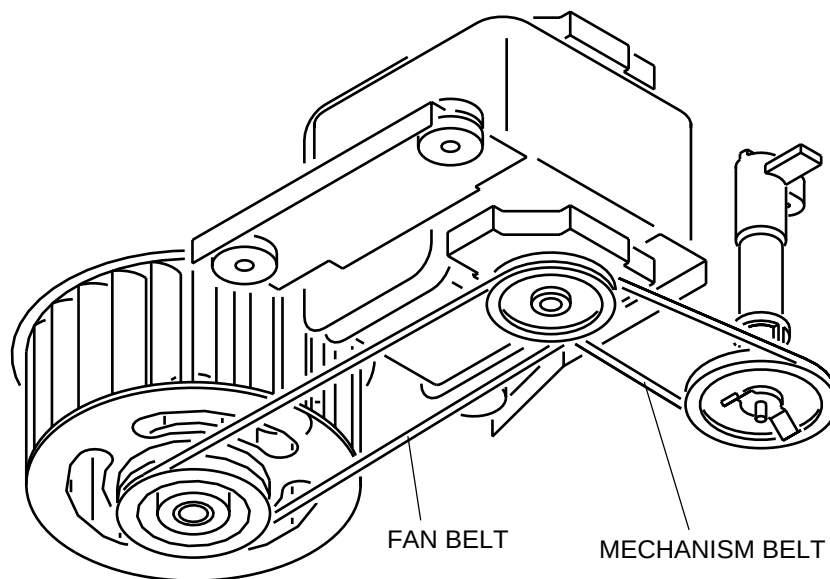
Installing the WORM PULLEY and MECHANISM BELT



Important

When installing the FAN and MECHANISM BELTS, install the MECHANISM BELT on the small MOTOR PULLEY, and the FAN BELT on the large MOTOR PULLEY.

[1] Do the replacement procedure for the WORM PULLEY and MECHANISM BELT in reverse order.



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Replacing the THERMAL FUSE ASSEMBLY



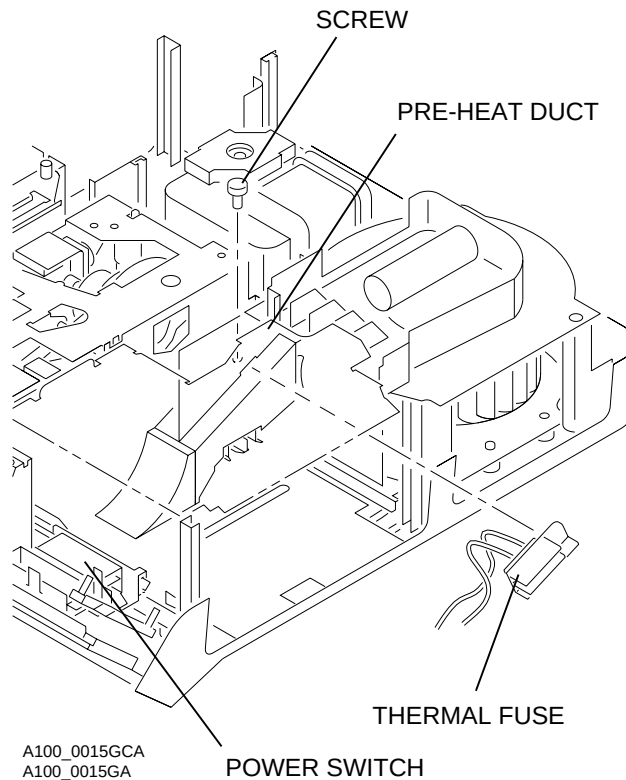
Warning

Dangerous Voltage

- [1] Disconnect the main power.
- [2] Do the replacement procedure for the LOWER HOUSING ASSEMBLY.
- [3] Cut and remove the necessary WIRE TIES.
- [4] Remove the black wire from the THERMAL FUSE ASSEMBLY on the POWER SWITCH.
- [5] Remove the gray wire from the THERMAL FUSE ASSEMBLY from the POWER CORD.
- [6] Loosen the *Torx* SCREW on the PREHEAT DUCT approximately half way.
- [7] Pull the THERMAL FUSE ASSEMBLY out of hole of the LOWER LIGHT BAFFLE ASSEMBLY.

Installing the THERMAL FUSE ASSEMBLY

- [1] Do the replacement procedure for the THERMAL FUSE ASSEMBLY in reverse order.



Replacing the LAMP MODULE RECEPTACLE

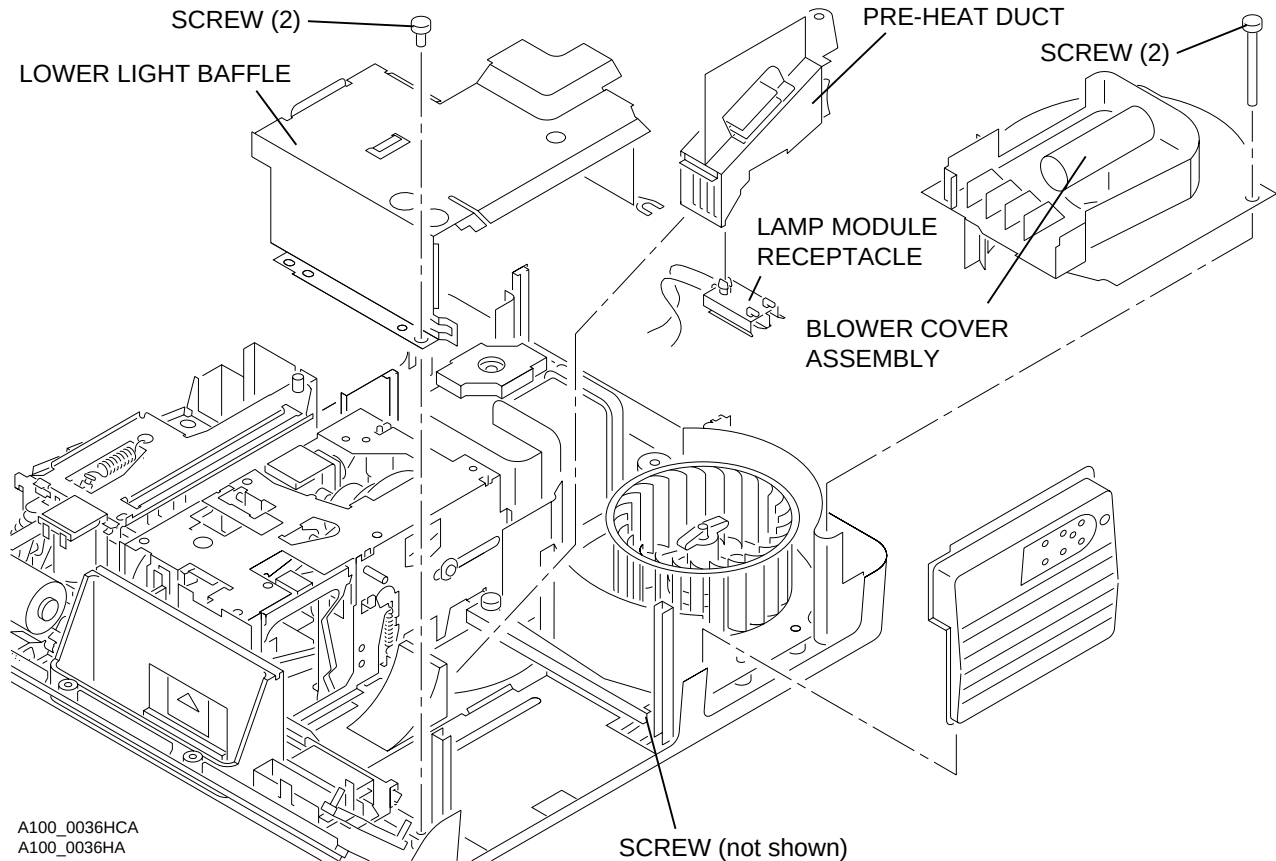


Warning

Dangerous Voltage

- [1] Disconnect the main power.
- [2] Do the replacement procedure for the LOWER HOUSING ASSEMBLY.
- [3] Cut and remove the necessary WIRE TIES.
- [4] Remove the 2 *Torx* SCREWS on the left side of the LOWER LIGHT BAFFLE ASSEMBLY.

- [5] Loosen the *Torx* SCREW on the right side of the LOWER LIGHT BAFFLE ASSEMBLY approximately 1/2 way.
- [6] Lift and remove the LOWER LIGHT BAFFLE ASSEMBLY.
- [7] Lift the GRILLE ASSEMBLY up.
- [8] Remove the 2 long *Torx* from the BLOWER COVER ASSEMBLY.
- [9] Lift the BLOWER COVER ASSEMBLY up.
- [10] Lift and move the PREHEAT DUCT up.
- [11] To remove the LAMP MODULE RECEPTACLE from the PREHEAT DUCT, compress the 2 TABS on the LAMP MODULE RECEPTACLE.



Installing the LAMP MODULE RECEPTACLE

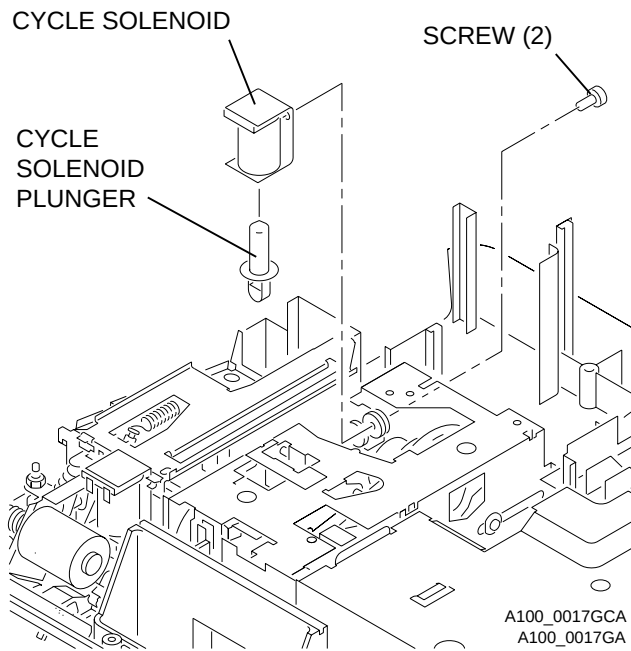


Warning

Dangerous Voltage

- [1] Disconnect the main power.
- [2] Do the replacement procedure for the LAMP MODULE RECEPTACLE in reverse order.

Replacing the CYCLE SOLENOID ASSEMBLY



Warning

Dangerous Voltage

- [1] Disconnect the main power.
- [2] Do the replacement procedures for the LOWER HOUSING ASSEMBLY and the MOTOR.
- [3] Cut and remove the necessary WIRE TIES.
- [4] Disconnect the 2 wires from the CYCLE SOLENOID on the SMALL CIRCUIT BOARD.
- [5] Pull the SMALL CIRCUIT BOARD up.
- [6] Remove the *Torx* SCREW (for N.P. models) (or Hex SCREW for Painted Models) from the WORM PULLEY SHAFT.
- [7] Move the TAB on the WORM PULLEY ASSEMBLY out of the MECHANISM ASSEMBLY.
- [8] Lift and remove the WORM PULLEY ASSEMBLY.
- [9] Remove the 2 *Torx* 1/4 in. SCREWS from the 2 CYCLE SOLENOID GROMMETS.
- [10] Pull the CYCLE SOLENOID ASSEMBLY up and out.
- [11] If necessary, remove the CYCLE SOLENOID PLUNGER ASSEMBLY.

Installing the CYCLE SOLENOID ASSEMBLY

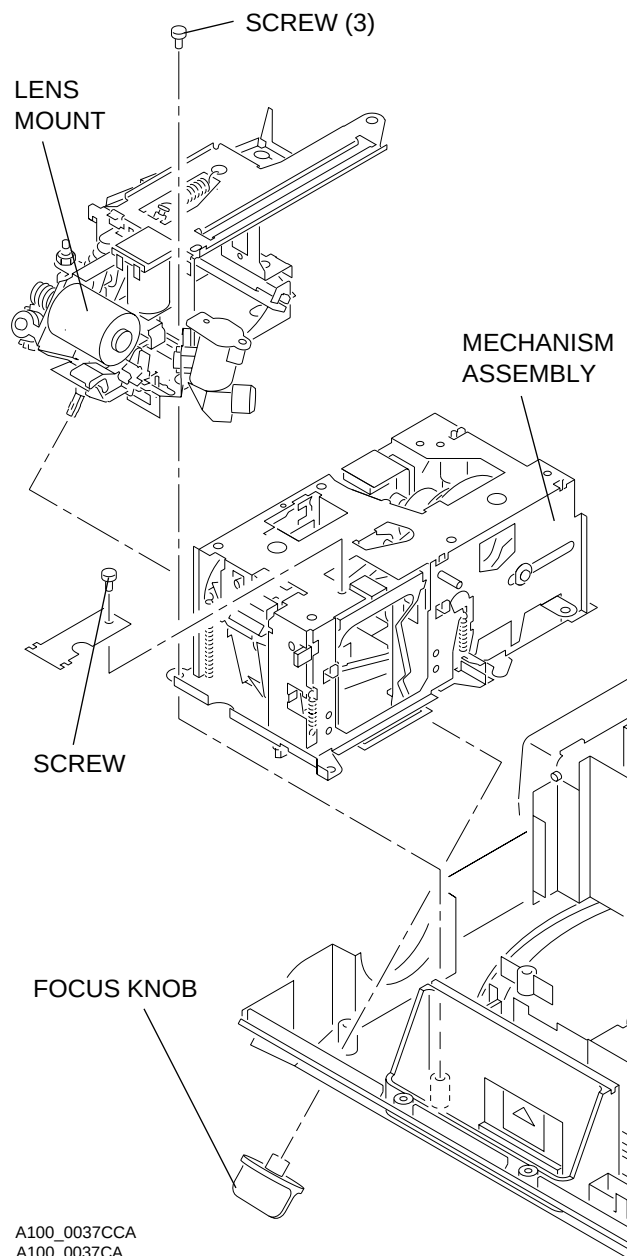


Important

Do the adjustment for the CYCLE SOLENOID ASSEMBLY. See the Adjustments section.

- [1] Do the replacement procedure for the CYCLE SOLENOID ASSEMBLY in reverse order.

Replacing the MECHANISM ASSEMBLY



Warning

Dangerous Voltage

- [1] Disconnect the main power.
- [2] Do the replacement procedure for the LOWER HOUSING ASSEMBLY.
- [3] Cut and remove the necessary WIRE TIES.
- [4] Disconnect the 2 wires from the CYCLE SOLENOID on the SMALL CIRCUIT BOARD.
- [5] Pull the SMALL CIRCUIT BOARD up.
- [6] Disconnect all wires connected to the MECHANISM ASSEMBLY:
 - 1 yellow wire from CYCLE SWITCH
 - 1 orange wire from WIRE NUT
 - 1 green wire from POWER CORD
 - 2 green ground wires from the lower MECHANISM ASSEMBLY
- [7] Remove the FOCUS KNOB from the FRONT PANEL.
- [8] Remove the 3 *Torx* SCREWS from the LENS MOUNT ASSEMBLY.
- [9] Lift and move the LENS MOUNT ASSEMBLY up.
- [10] Do the replacement procedure for the MOTOR.
- [11] Remove the 3 *Torx* SCREWS from the MECHANISM ASSEMBLY.
- [12] Loosen the SCREW on the STABILIZER WALL approximately half way.



Caution

There might be a bind between the SELECT LEVER and the SELECT BUTTON when removing the MECHANISM ASSEMBLY. Do not use force; this might cause damage to the SELECT BUTTON.

- [13] Remove the MECHANISM ASSEMBLY.

Installing the MECHANISM ASSEMBLY



Important

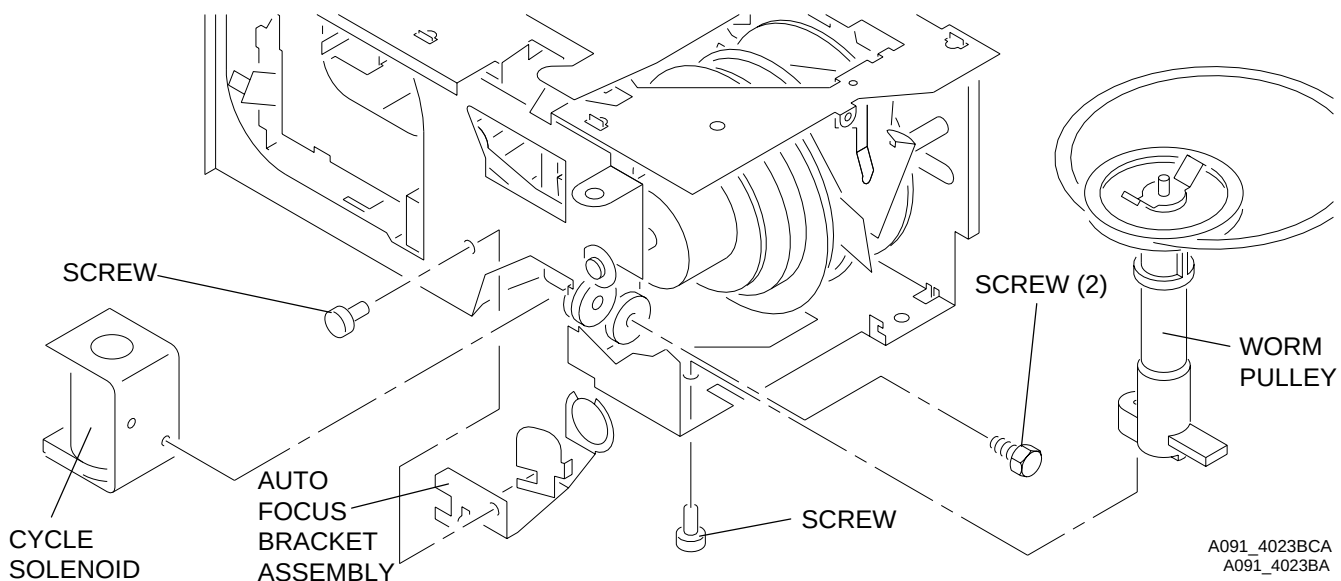
To insert the SELECT BUTTON into the hole in the SELECT LEVER when installing the MECHANISM ASSEMBLY, hold the SELECT BUTTON completely down.

- [1] Do the removal procedure for the MECHANISM ASSEMBLY in reverse order.

Replacing the AUTO-FOCUS BRACKET ASSEMBLY**Warning**

Dangerous Voltage

- [1] Disconnect the main power.
- [2] Do the replacement procedure for the LOWER HOUSING ASSEMBLY.
- [3] Cut and remove the necessary WIRE TIES.
- [4] Disconnect the 2 wires from the CYCLE SOLENOID on the SMALL CIRCUIT BOARD.
- [5] Pull the SMALL CIRCUIT BOARD up.
- [6] Do the replacement procedure for the MECHANISM ASSEMBLY.
- [7] Remove the *Torx* SCREW (on N.P. models) (or Hex SCREW on Painted Models) from the WORM PULLEY.
- [8] Remove the WORM PULLEY.
- [9] Remove the 2 *Hex* SCREWS from the CYCLE SOLENOID.
- [10] Remove the CYCLE SOLENOID.
- [11] Remove the *Phillips* SCREW from the AUTO-FOCUS BRACKET ASSEMBLY.
- [12] Pull and remove the AUTO-FOCUS BRACKET ASSEMBLY through the hole where the CYCLE SOLENOID was.

**Installing the AUTO-FOCUS BRACKET ASSEMBLY**

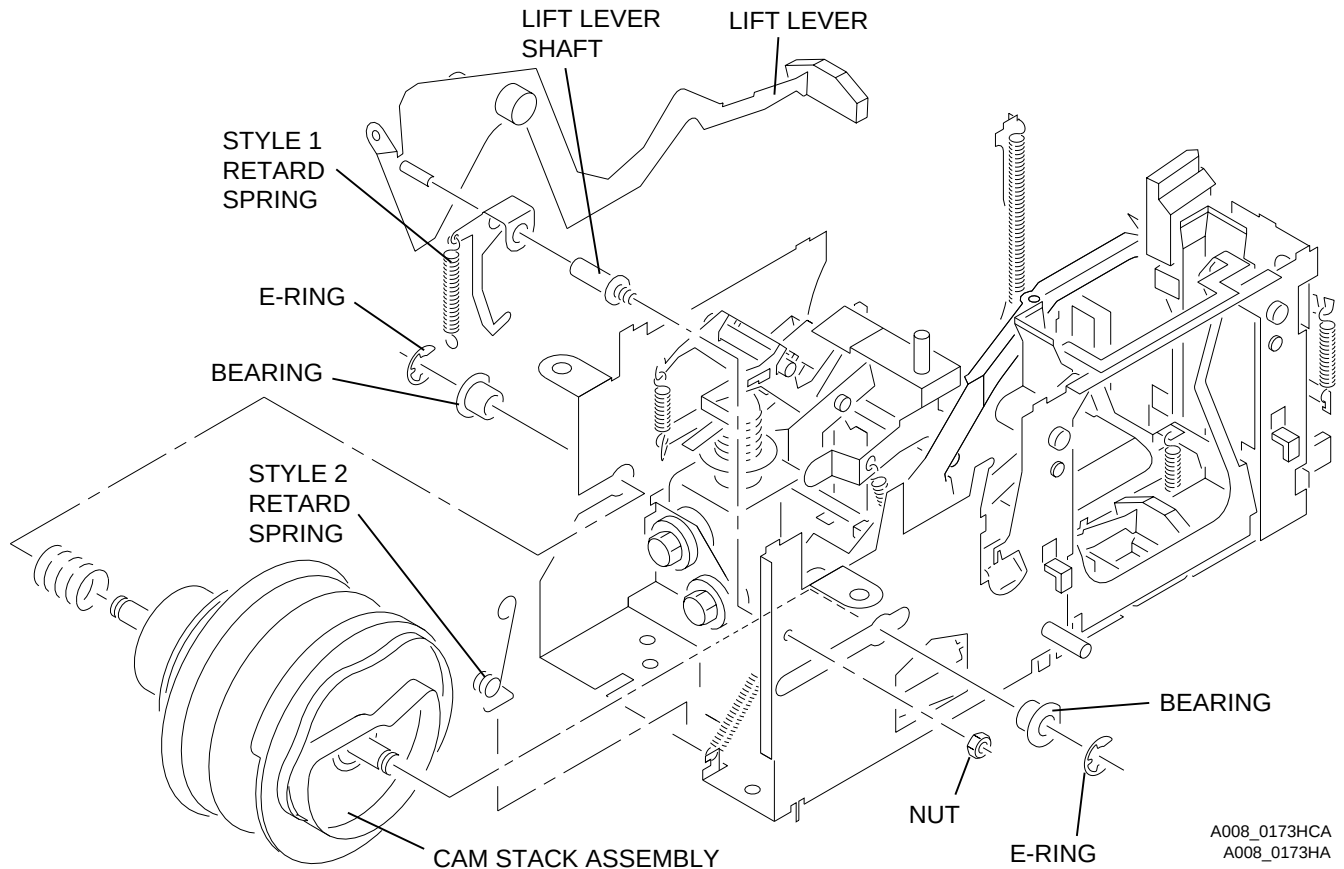
- [1] Do the replacement procedure for the AUTO-FOCUS BRACKET ASSEMBLY in reverse order.

Replacing the CAM STACK ASSEMBLY and CYCLE LEVER ASSEMBLY**Warning**

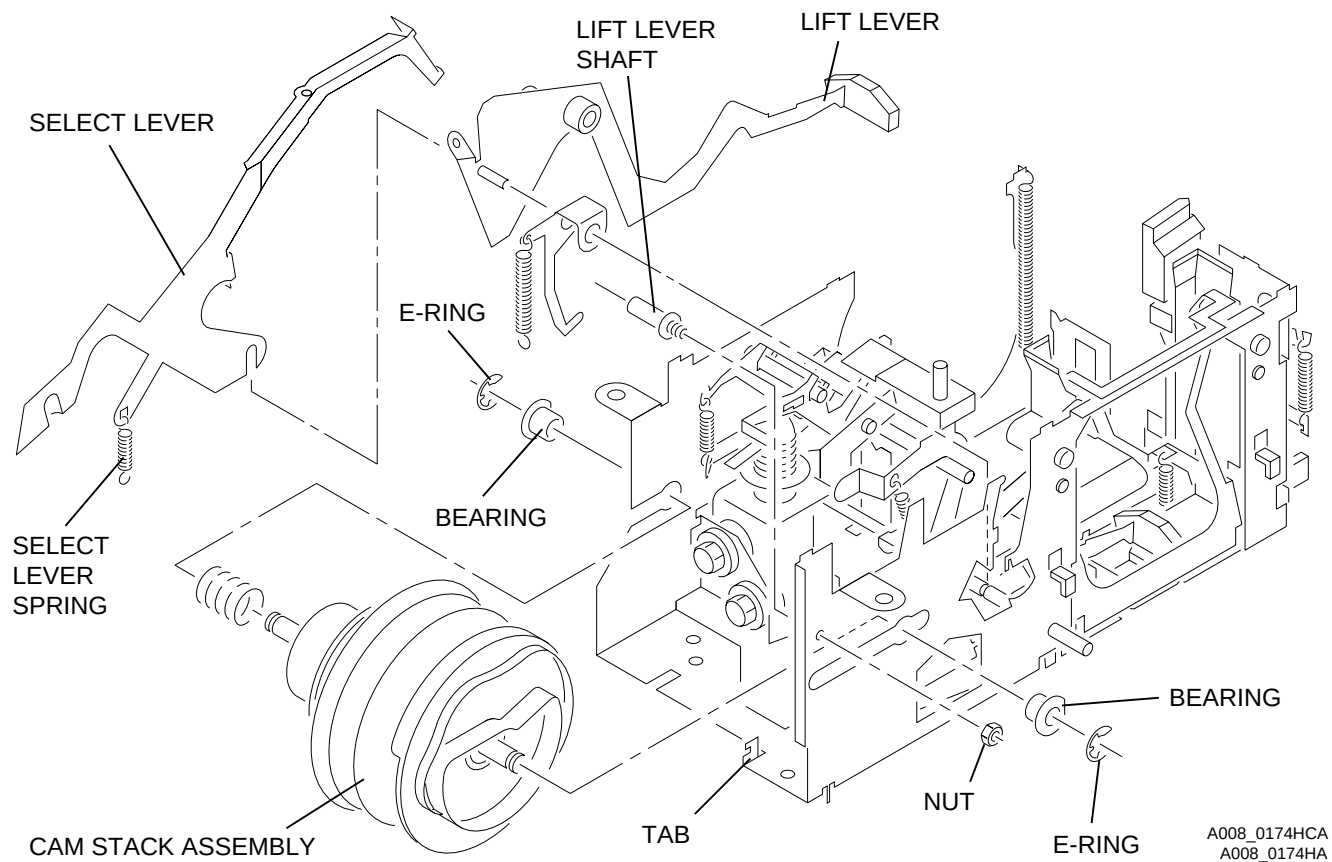
Dangerous Voltage

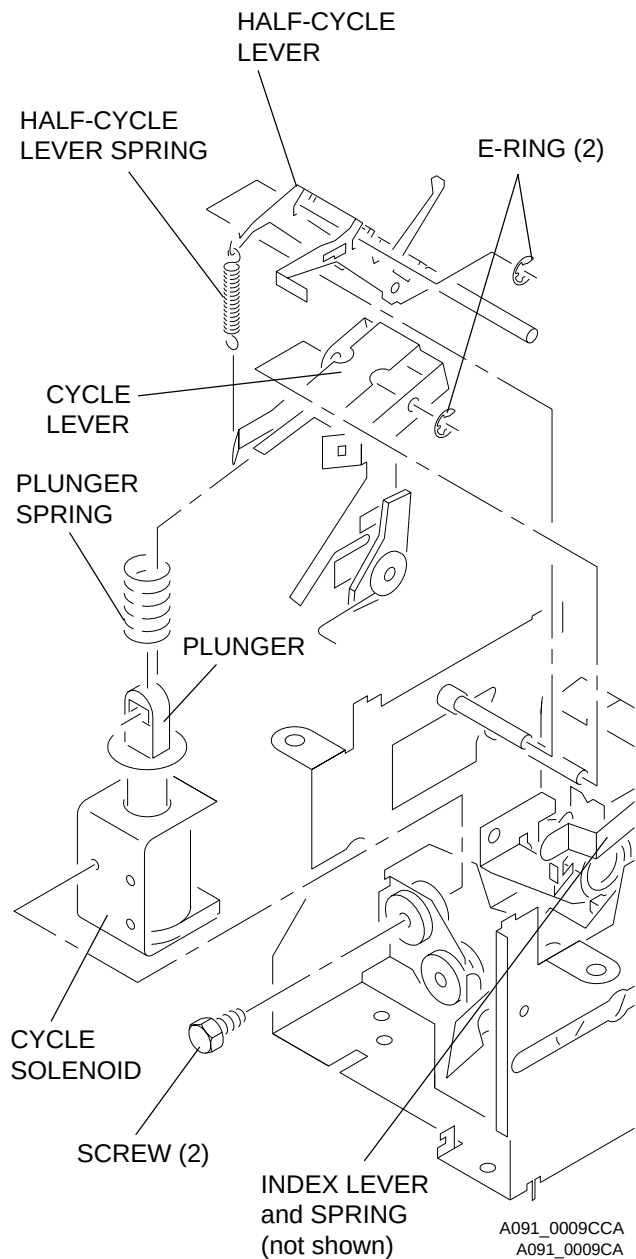
- [1] Disconnect the main power.
- [2] Do the replacement procedure for the MECHANISM ASSEMBLY.
- [3] Remove the INDEXER LEVER ASSEMBLY from the TOP PLATE of the MECHANISM ASSEMBLY.
- [4] Remove the *Torx* SCREW (on N.P. models) (or Hex SCREW on Painted Models) from the WORM PULLEY ASSEMBLY.
- [5] Remove the WORM PULLEY ASSEMBLY.

- [6] Remove the DIRECTION LEVER LINK from the DIRECTION LEVER.
- [7] Remove the DIRECTION LEVER SPRING from the DIRECTION LEVER.
- [8] Disconnect the LIFT LEVER SPRING from LIFT LEVER on the TOP PLATE of the MECHANISM ASSEMBLY.
- [9] Remove the RETARD SPRING.
- [10] Remove the 7 *Torx* SCREWS (on N.P. models) (or *Hex* SCREWS on Painted Models) from the TOP PLATE of the MECHANISM ASSEMBLY.
- [11] Remove the TOP PLATE.
- [12] Remove the LIGHT BAFFLE.



- [13] Remove the NUT from the LIFT LEVER SHAFT.
- [14] Remove the LIFT LEVER and SHAFT.
- [15] Remove the 2 E-RINGS from the 2 CAM SHAFT BEARINGS.
- [16] Remove the 2 CAM SHAFT BEARINGS.
- [17] Press and hold the SELECT LEVER down.
- [18] Remove the CAM STACK ASSEMBLY.
- [19] Disconnect the SELECT LEVER SPRING from the TAB and remove the SELECT LEVER.





- [20] Remove the 2 SCREWS from the CYCLE SOLENOID.
- [21] Remove the CYCLE SOLENOID.
- [22] Slide the PLUNGER and PLUNGER SPRING off the CYCLE LEVER.
- [23] Remove the HALF CYCLE SPRING between the CYCLE LEVER ASSEMBLY and the HALF CYCLE LEVER.
- [24] Disconnect the INDEX LEVER SPRING from the MECHANISM ASSEMBLY.
- [25] Push the INDEX LEVER back.
- [26] Remove the 2 E-RINGS:
 - 1 on the CYCLE LEVER ASSEMBLY
 - 1 on the HALF CYCLE LEVER



Caution

Keep both the CYCLE LEVER ASSEMBLY and the HALF CYCLE LEVER together and observe the orientation of both LEVERS.

- [27] Slide both the CYCLE LEVER and HALF CYCLE LEVER off the SHAFT.

Installing the CAM STACK ASSEMBLY and CYCLE LEVER ASSEMBLY

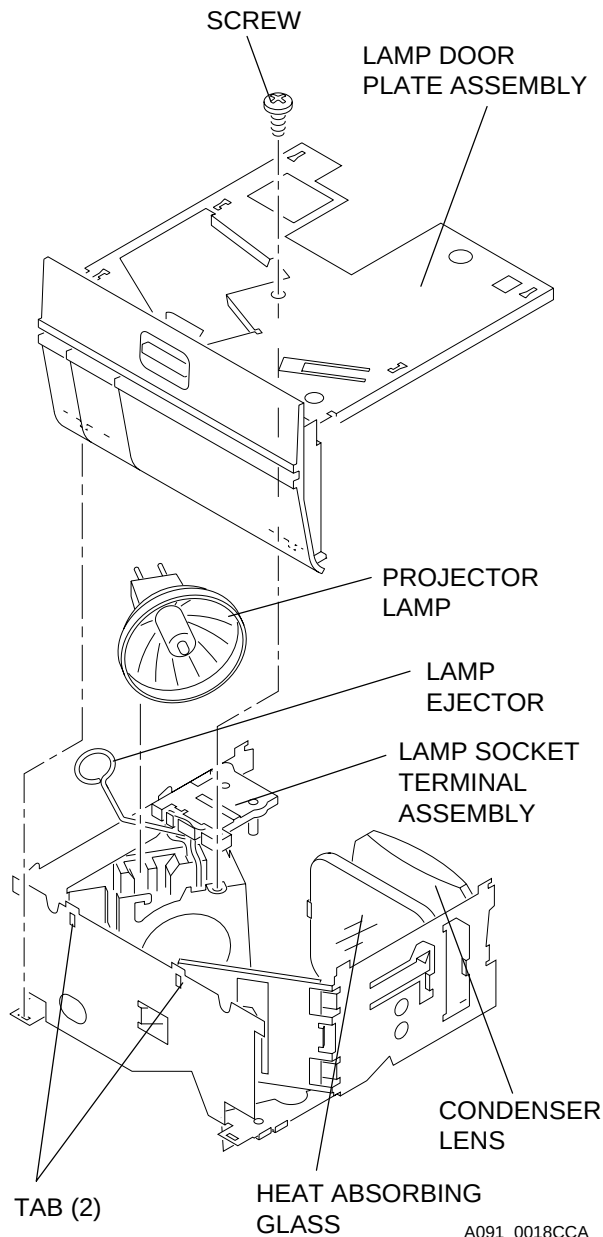


Caution

Keep both the CYCLE LEVER ASSEMBLY and the HALF CYCLE LEVER together and observe the orientation of both LEVERS.

- [1] Do the replacement procedure for the CAM STACK ASSEMBLY and CYCLE LEVER ASSEMBLY in reverse order.

Replacing the LAMP SOCKET TERMINAL ASSEMBLY, N.P.



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Warning

Dangerous Voltage

- [1] Disconnect the main power.
- [2] Remove the LAMP MODULE.
- [3] Remove the PROJECTION LAMP from the LAMP MODULE.
- [4] Remove the SCREW from the LAMP DOOR PLATE ASSEMBLY.
- [5] Release the 2 TABS on the bottom side of the LAMP MODULE next to the LAMP MODULE DOOR.
- [6] Remove the LAMP DOOR PLATE ASSEMBLY.



Caution

Remove the CONDENSER LENS and HEAT ABSORBING GLASS and set the parts on a clean cloth. **Do not** set on a cold surface; this will cause damage to the parts.

- [7] Remove the LAMP EJECTOR.
- [8] Remove the LAMP SOCKET TERMINAL ASSEMBLY.

Installing the LAMP SOCKET TERMINAL ASSEMBLY

- [1] Do the replacement procedure for the LAMP SOCKET TERMINAL ASSEMBLY in reverse order.

Replacing the LAMP SOCKET TERMINAL ASSEMBLY, Painted Models

- [1] Disconnect the main power.
- [2] Remove the LAMP MODULE.
- [3] Remove the PROJECTION LAMP for the LAMP MODULE from the LAMP MODULE.
- [4] Remove the SCREW and lift the CONDENSER LENS HOLDER up.
- [5] Remove the CONDENSER LENS and HEAT GLASS.
- [6] Remove the RETAINING RING.
- [7] Remove the SPRING WASHER.

[8] Remove the SOCKET PIN.



Caution

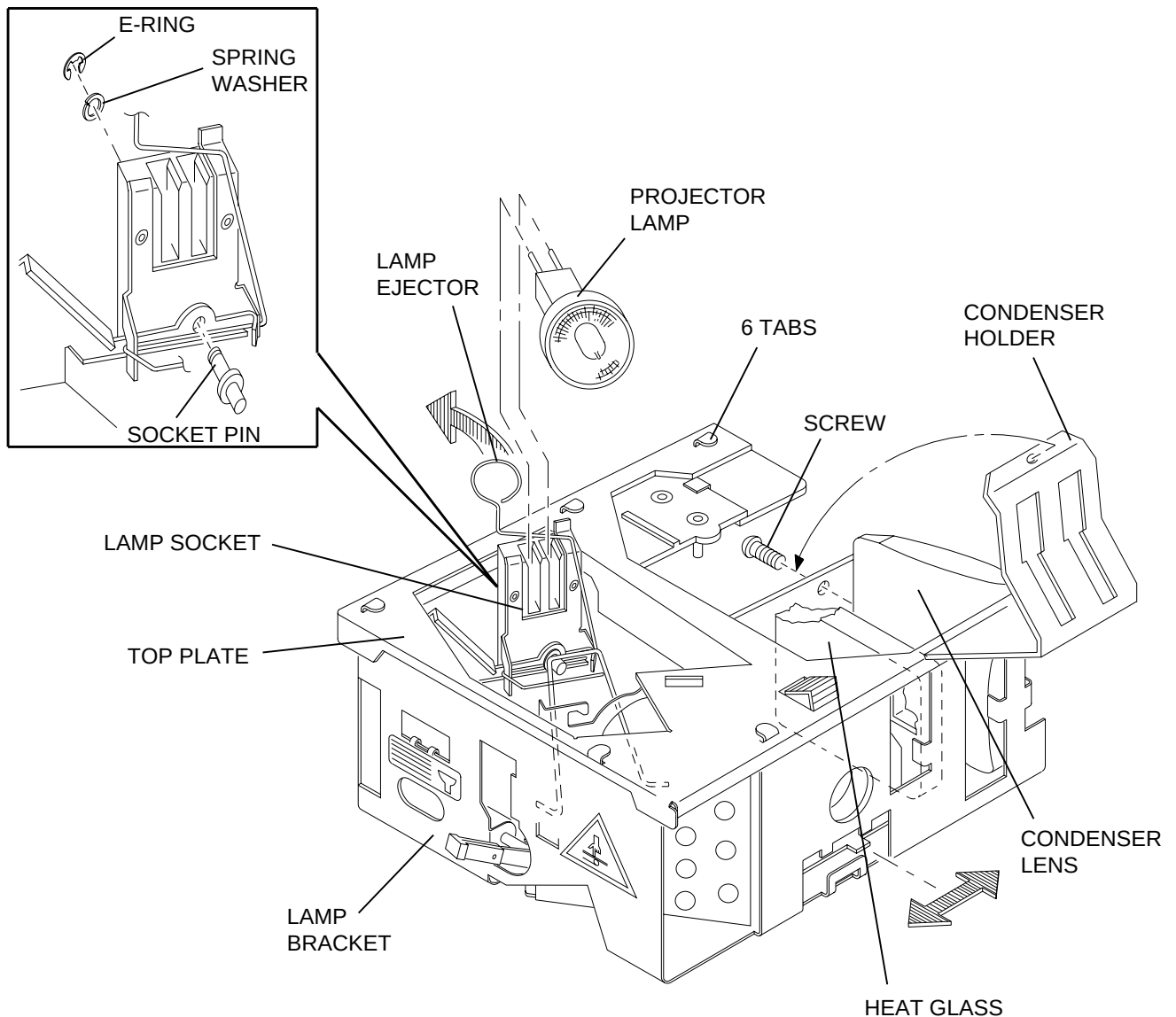
The TABS could break.

[9] Bend the 3 TABS of the LAMP BRACKET ASSEMBLY.

[10] Lift the top of the LAMP BRACKET ASSEMBLY up.

[11] Rotate and push the LAMP TERMINAL ASSEMBLY until it releases.

[12] Remove the LAMP TERMINAL ASSEMBLY.



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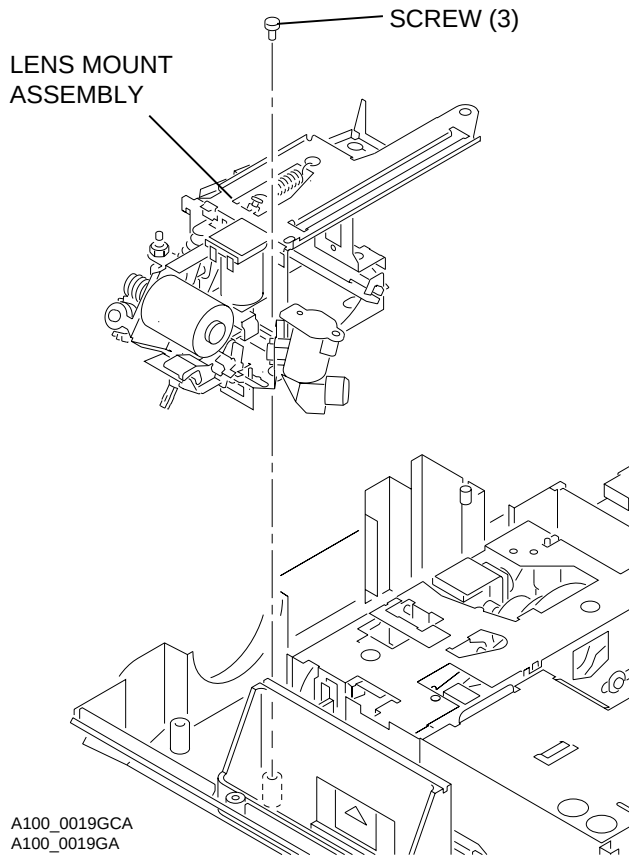
Installing the LAMP SOCKET TERMINAL ASSEMBLY, Painted Models

[1] Do the replacement procedure for the LAMP SOCKET TERMINAL ASSEMBLY in reverse order and check the following during installation:

- Check that the LAMP EJECTOR is aligned correctly before you install the LAMP TERMINAL ASSEMBLY.
- Check that the LAMP TERMINAL ASSEMBLY wires are aligned correctly.

- Bend the 3 TABS down until they are flush with the top of the LAMP BRACKET ASSEMBLY. If the TABS break, use TOP PLATE SCREW 785130 to install a new TAB.

Replacing the LENS MOUNT ASSEMBLY - Auto Focus Model



Warning

Dangerous Voltage

- [1] Disconnect the main power.
- [2] Do the replacement procedure for the LOWER HOUSING ASSEMBLY.
- [3] Remove the FOCUS KNOB.



Important

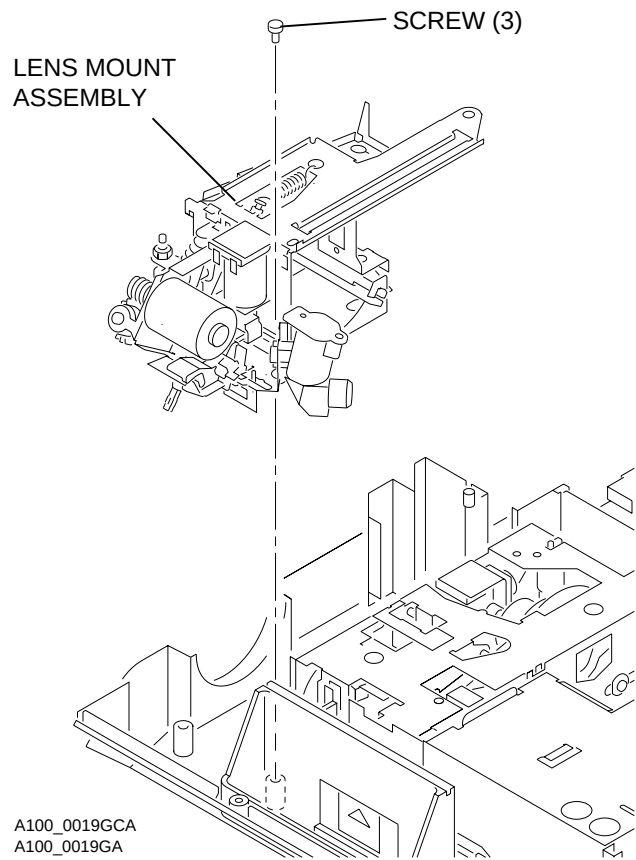
It is necessary to push the AUTO-FOCUS BRACKET backward and forward to allow access to the SCREWS on the LENS MOUNT ASSEMBLY.

- [4] Remove the 3 SCREWS from the LENS MOUNT ASSEMBLY.
- [5] Lift and remove the LENS MOUNT ASSEMBLY.

Installing the LENS MOUNT ASSEMBLY - Auto Focus Models

- [1] Do the replacement procedure for the LENS MOUNT ASSEMBLY in reverse order.

Replacing the LENS MOUNT ASSEMBLY - Non Auto Focus Model



Warning

Dangerous Voltage

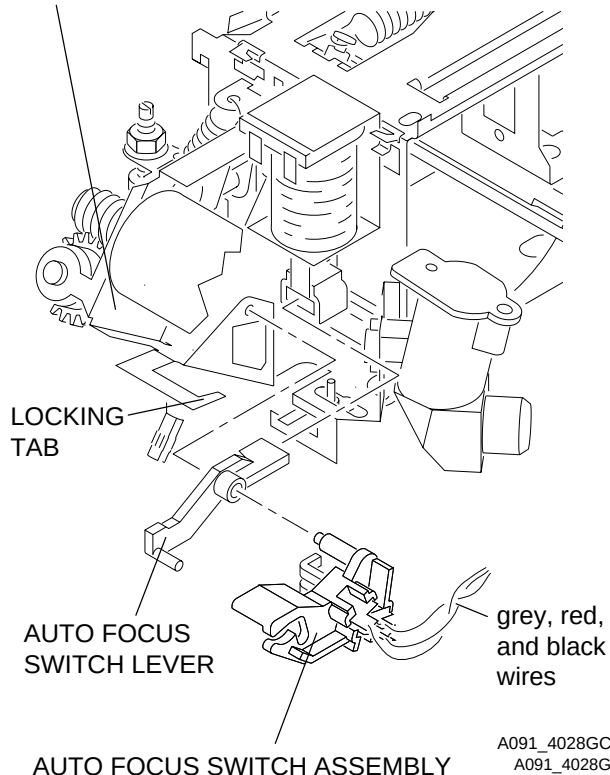
- [1] Disconnect the main power.
- [2] Do the replacement procedure for the LOWER HOUSING ASSEMBLY.
- [3] Remove the FOCUS KNOB.
- [4] Remove the 3 SCREWS from the LENS MOUNT ASSEMBLY.
- [5] Lift and remove the LENS MOUNT ASSEMBLY.

Installing the LENS MOUNT ASSEMBLY - Non Auto Focus Model

- [1] Do the replacement procedure for the LENS MOUNT ASSEMBLY in reverse order.

Replacing the AUTO-FOCUS SWITCH ASSEMBLY

AUTO FOCUS
MOTOR BRACKET



Warning

Dangerous Voltage

- [1] Disconnect the main power.
- [2] Do the replacement procedure for the LOWER HOUSING ASSEMBLY.
- [3] Remove the FOCUS KNOB.
- [4] Remove the short, gray wire from the AUTO-FOCUS DEFEAT SWITCH.



Important

It is necessary to push the AUTO-FOCUS BRACKET backward and forward to allow access to the SCREWS on the LENS MOUNT ASSEMBLY.

- [5] Remove the 3 SCREWS from the LENS MOUNT ASSEMBLY.
- [6] Lift and remove the LENS MOUNT ASSEMBLY.
- [7] Remove the gray, red, and black wires from the AUTO FOCUS SWITCH ASSEMBLY.



Important

Keep the AUTO-FOCUS SWITCH LEVER that is connected to the AUTO FOCUS SWITCH so you can install it on the new AUTO FOCUS SWITCH.

- [8] To disconnect and remove the AUTO FOCUS SWITCH, bend the LOCKING TAB on the FOCUS MOTOR BRACKET until it is aligned with the hole in the AUTO FOCUS SWITCH.

Installing the AUTO-FOCUS SWITCH ASSEMBLY



Important

Align the 2 TABS on the AUTO-FOCUS SWITCH with the FOCUS MOTOR BRACKET, checking that the end of the AUTO-FOCUS LEVER engages with the CYCLE SOLENOID PLUNGER. After the AUTO-FOCUS SWITCH is in the correct position, bend the LOCKING TAB to hold the AUTO FOCUS SWITCH in place.

- [1] Do the replacement procedure for the AUTO-FOCUS SWITCH in reverse order.

Replacing the FOCUS SHAFT ASSEMBLY - Auto Focus Models



Warning

Dangerous Voltage

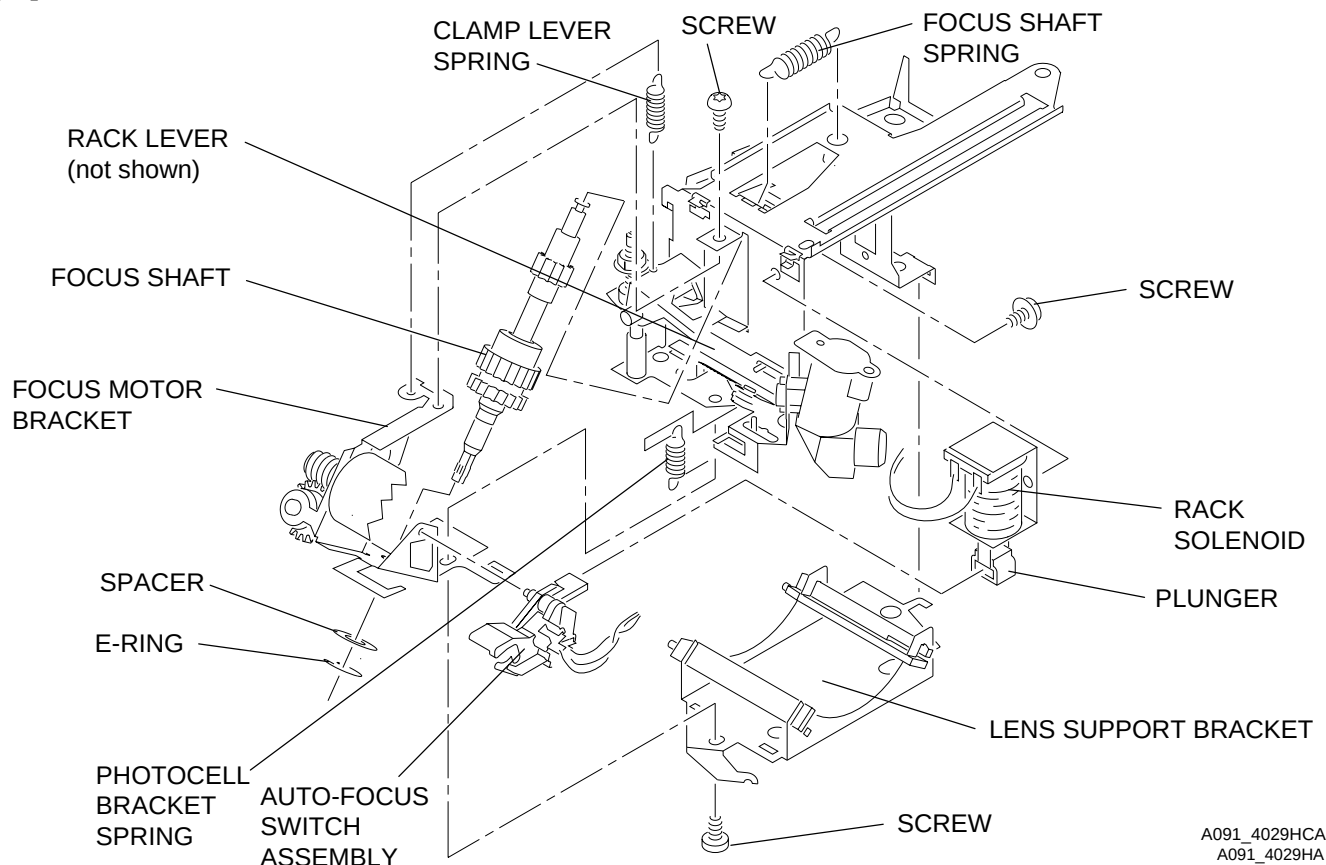
- [1] Disconnect the main power.

- [2] Do the replacement procedure for the LOWER HOUSING ASSEMBLY.
- [3] Remove the FOCUS KNOB.
- [4] Remove the short, gray wire from the AUTO-FOCUS DEFEAT SWITCH.

**Important**

It is necessary to push the AUTO-FOCUS BRACKET backward and forward to allow access to the SCREWS on the LENS MOUNT ASSEMBLY.

- [5] Remove the 3 SCREWS from the LENS MOUNT ASSEMBLY.
- [6] Lift and remove the LENS MOUNT ASSEMBLY.
- [7] Remove the FOCUS SHAFT SPRING from the LENS MOUNT BRACKET.
- [8] Remote models only: Remove the SPRING from the CLAMP LEVER on the LENS MOUNT BRACKET.
- [9] Remove the SPRING from the PHOTOCELL BRACKET.
- [10] Remove the E-RING and SPACER from the FOCUS SHAFT ASSEMBLY.
- [11] Remove the SCREW from the LENS SUPPORT BRACKET.
- [12] Lift and remove the LENS SUPPORT BRACKET.
- [13] Remote models: Remove the AUTO-FOCUS SWITCH ASSEMBLY.
- [14] Remote models: Remove the SCREW from the RACK SOLENOID ASSEMBLY.
- [15] Remote models: Remove the RACK SOLENOID ASSEMBLY and PLUNGER.
- [16] Remote models: Remove the SCREW from the FOCUS MOTOR BRACKET ASSEMBLY.
- [17] Remove the FOCUS MOTOR BRACKET ASSEMBLY.
- [18] Push the RACK LEVER away from the FOCUS SHAFT ASSEMBLY.
- [19] Remove the FOCUS SHAFT ASSEMBLY.



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A091_4029HA

Installing the FOCUS SHAFT ASSEMBLY



Important

Do the adjustments for the PHOTOCELL NULL and AUTO-FOCUS CLAMP after installation. See the Adjustments section.

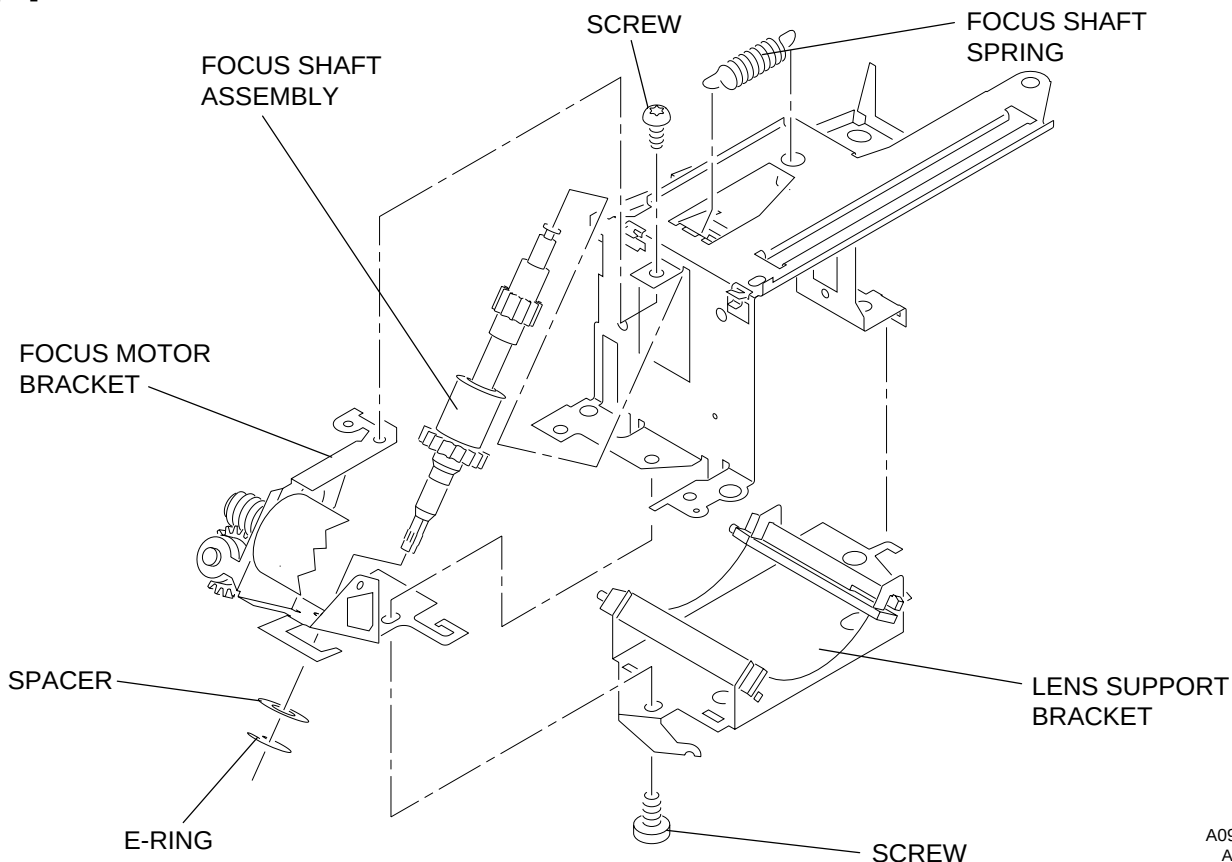
Replacing the FOCUS SHAFT ASSEMBLY - Non Auto-Focus Models



Warning

Dangerous Voltage

- [1] Disconnect the main power.
- [2] Do the replacement procedure for the LOWER HOUSING ASSEMBLY.
- [3] Remove the FOCUS KNOB.
- [4] Remove the 3 SCREWS from the LENS MOUNT ASSEMBLY.
- [5] Lift and remove the LENS MOUNT ASSEMBLY.
- [6] Remove the FOCUS SHAFT SPRING from the LENS MOUNT BRACKET.
- [7] Remove the E-RING and SPACER from the FOCUS SHAFT ASSEMBLY.
- [8] Remove the SCREW from the LENS SUPPORT BRACKET.
- [9] Lift and remove the LENS SUPPORT BRACKET.
- [10] Remove the E-RING and SPACER from the FOCUS SHAFT ASSEMBLY.
- [11] Remove the SCREW from the FOCUS MOTOR BRACKET ASSEMBLY.
- [12] Remove the FOCUS MOTOR BRACKET ASSEMBLY.
- [13] Remove the FOCUS SHAFT ASSEMBLY.



A091_0020HCA
A091_0020HA

Installing the FOCUS SHAFT ASSEMBLY

- [1] Do the replacement procedure for the FOCUS SHAFT ASSEMBLY in reverse order.

Section 2: Adjustments

Adjustment Specification

Use T-BAR TL-3003 to bend the CYCLE LEVER to adjust the CYCLE SOLENOID.

Adjusting the CYCLE SOLENOID



Warning

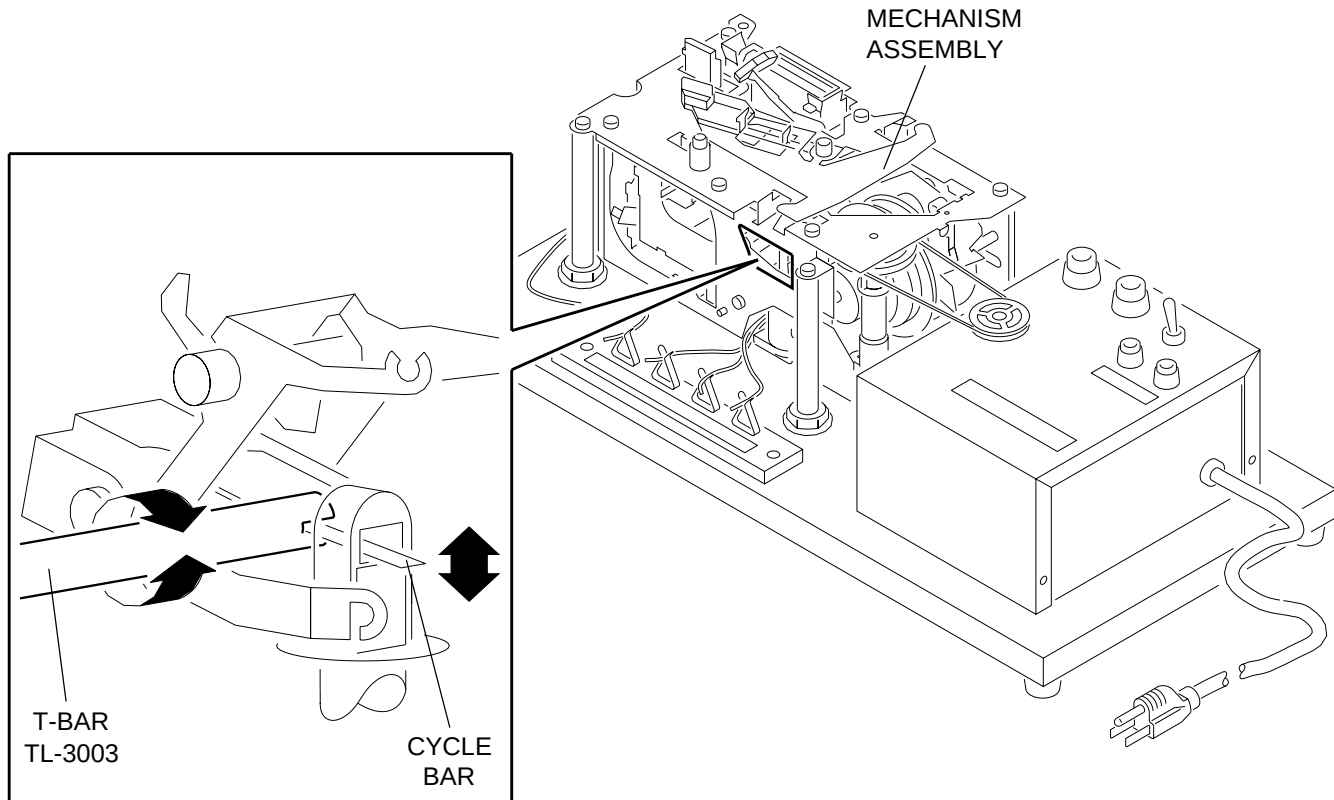
Dangerous Voltage

- [1] Connect the main power.



Important

1. The CYCLE SOLENOID must operate correctly to do this adjustment.
2. The MECHANISM ASSEMBLY does not have to be removed to do this adjustment.
- [2] Do the removal for the LOWER HOUSING ASSEMBLY.
- [3] Bend the CYCLE LEVER up or down. Use T-BAR TL-3003.
- [4] Energize the projector.
- [5] Press the "FORWARD" BUTTON to check for correct operation.
- [6] Press the "REVERSE" BUTTON to check for correct operation.
- [7] Do the steps above until the FORWARD and REVERSE functions operates correctly.



A091_0007HCA
A091_0007HA

Adjustment Specification

This adjustment adjusts the strobe and timing of the INDEXER LEVER. Use TL-3000. The gate edge of the black plastic of the INDEXER LEVER should be between the 2 holes at position 2.

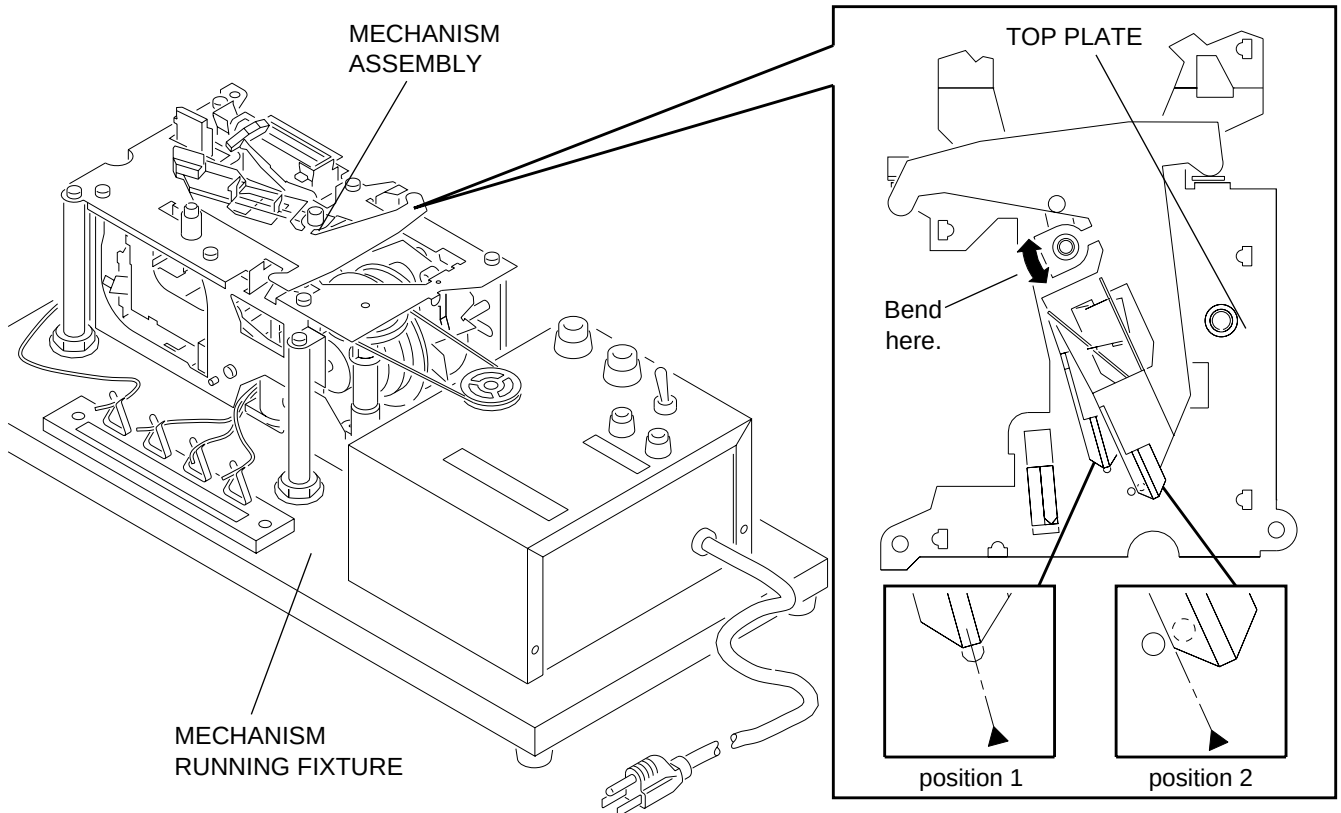
Adjusting the INDEXER LEVER ASSEMBLY



Warning

Dangerous Voltage

- [1] Disconnect the main power.
- [2] Do the removal for the MECHANISM ASSEMBLY.
- [3] Place the MECHANISM ASSEMBLY on the MECHANISM RUNNING FIXTURE TL-3000.
- [4] Check the alignment of the INDEXER LEVER with the hole in the TOP PLATE ASSEMBLY at Position 1.
- [5] Bend the INDEXER LEVER to the correct position.
- [6] Check the travel of the INDEXER LEVER in the FORWARD position. When the INDEXER LEVER moves in the FORWARD position, the gate edge of the black plastic should be between the 2 holes at Position 2.
- [7] Bend the INDEXER LEVER until you reach the correct position.



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A091_0008HA

Adjustment Specification

Use TL-3000 MECHANISM RUNNING FIXTURE. Use TL-3001 to measure the height of the SLIDE LIFT LEVER. The LEVER should make contact with the low surface of TL-3001. The LEVER should not make contact with the high surface of TL-3001.

Adjusting the SLIDE LIFT LEVER MANUAL



Warning

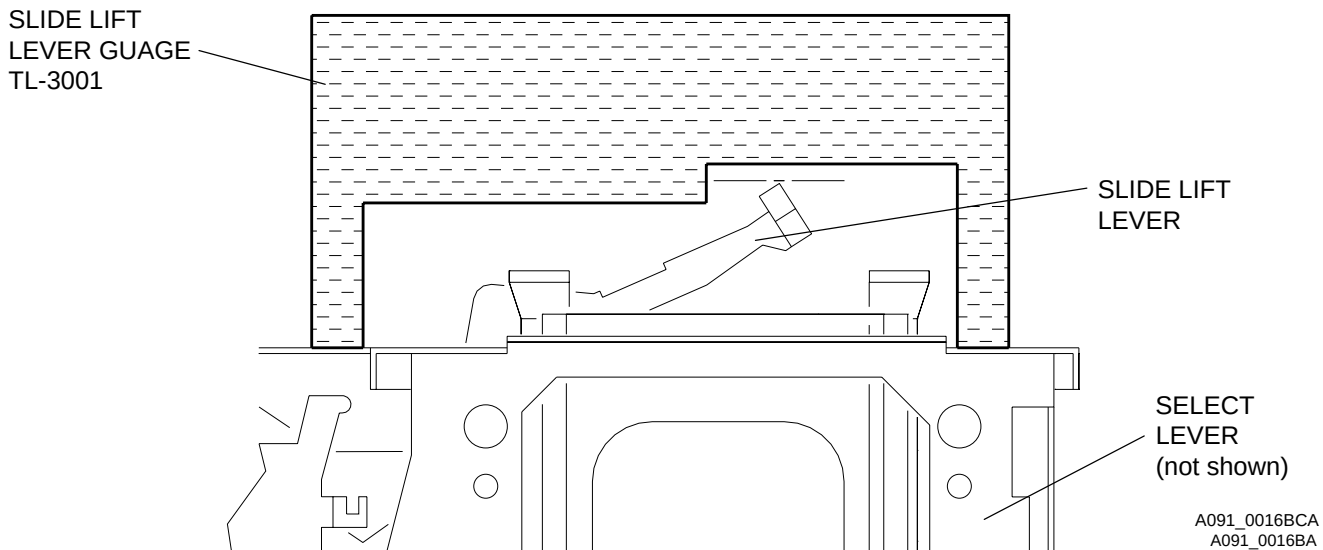
Dangerous Voltage



Important

The older style MECHANISM SLIDE LIFT LEVER has an ECCENTRIC on it to do this adjustment.

- [1] Disconnect the main power.
- [2] Do the removal for the MECHANISM ASSEMBLY.
- [3] Place the MECHANISM ASSEMBLY on the MECHANISM RUNNING FIXTURE TL-3000.
- [4] Press and hold the SELECT LEVER down to move the SLIDE LIFT LEVER to the highest position.
- [5] Measure the height of the SLIDE LIFT LEVER. Use SLIDE LIFT LEVER GAUGE TL-3001. The SLIDE LIFT LEVER should make contact with the low surface of the SLIDE LIFT LEVER GAUGE TL-3001; the SLIDE LIFT LEVER should not make contact with the high surface of the SLIDE LIFT LEVER GAUGE TL-3001.
- [6] Bend the SLIDE LIFT LEVER until the adjustment is correct.



Adjustment Specification

Use TL-3000 MECHANISM RUNNING FIXTURE. Use TL-3001 to measure the height of the SLIDE LIFT LEVER. The LEVER should make contact with the low surface of TL-3001. The LEVER should not make contact with the high surface of TL-3001.

Adjusting the SLIDE LIFT LEVER POWER



Warning

Dangerous Voltage

- [1] Disconnect the main power.

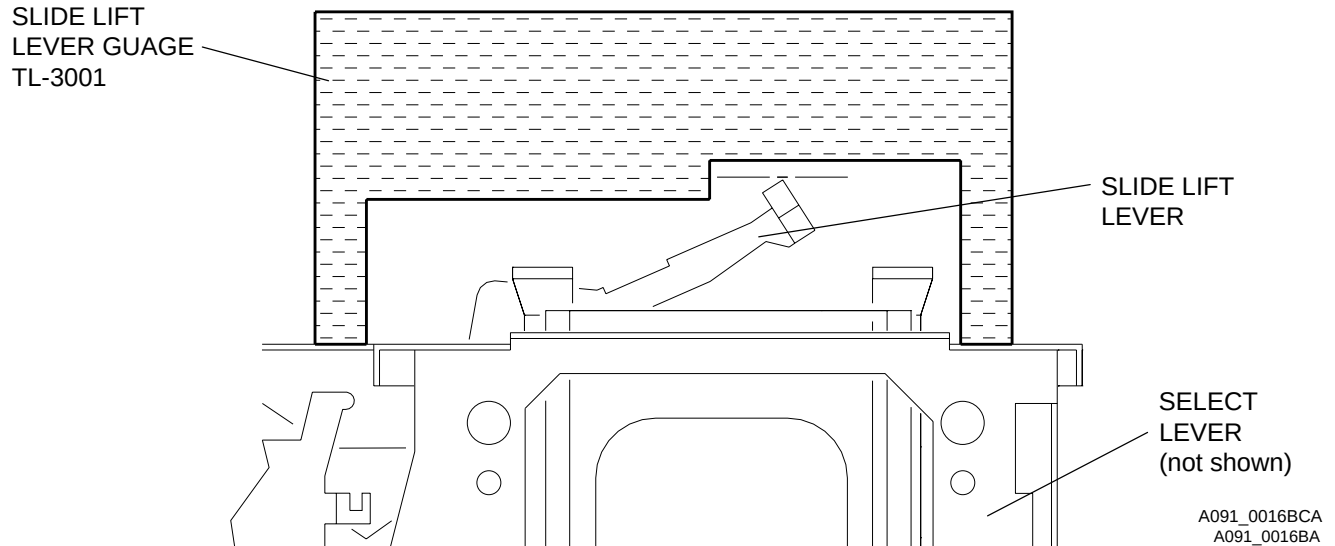


Important

The older style MECHANISM SLIDE LIFT LEVER has an ECCENTRIC on it to do this adjustment.

- [2] Do the removal for the MECHANISM ASSEMBLY.
- [3] Place the MECHANISM ASSEMBLY on the MECHANISM RUNNING FIXTURE TL-3000.

- [4] Energize the MECHANISM FIXTURE.
- [5] Press and hold the SELECT LEVER down to move the SLIDE LIFT LEVER to the highest position.
- [6] Measure the height of the SLIDE LIFT LEVER. Use SLIDE LIFT LEVER GAUGE TL-3001. The SLIDE LIFT LEVER should make contact with the low surface of the SLIDE LIFT LEVER GAUGE TL-3001; the SLIDE LIFT LEVER should not make contact with the high surface of the SLIDE LIFT LEVER GAUGE TL-3001.
- [7] Bend the SLIDE LIFT LEVER until the adjustment is correct.



Adjustment Specification

Seat AUTO-FOCUS TARGET SLIDE TL-3002 on the GATE MECHANISM. Use TL-3005 or TL-1165 to bend the AUTO-FOCUS BRACKET ASSEMBLY MIRROR until the image is within the target of the TARGET SLIDE.

Adjusting the Focus Light Path - Auto Focus Models



Warning

Dangerous Voltage

- [1] Disconnect the main power.
- [2] Remove the PROJECTION LENS.
- [3] Do the removal for the LOWER HOUSING ASSEMBLY.



Important

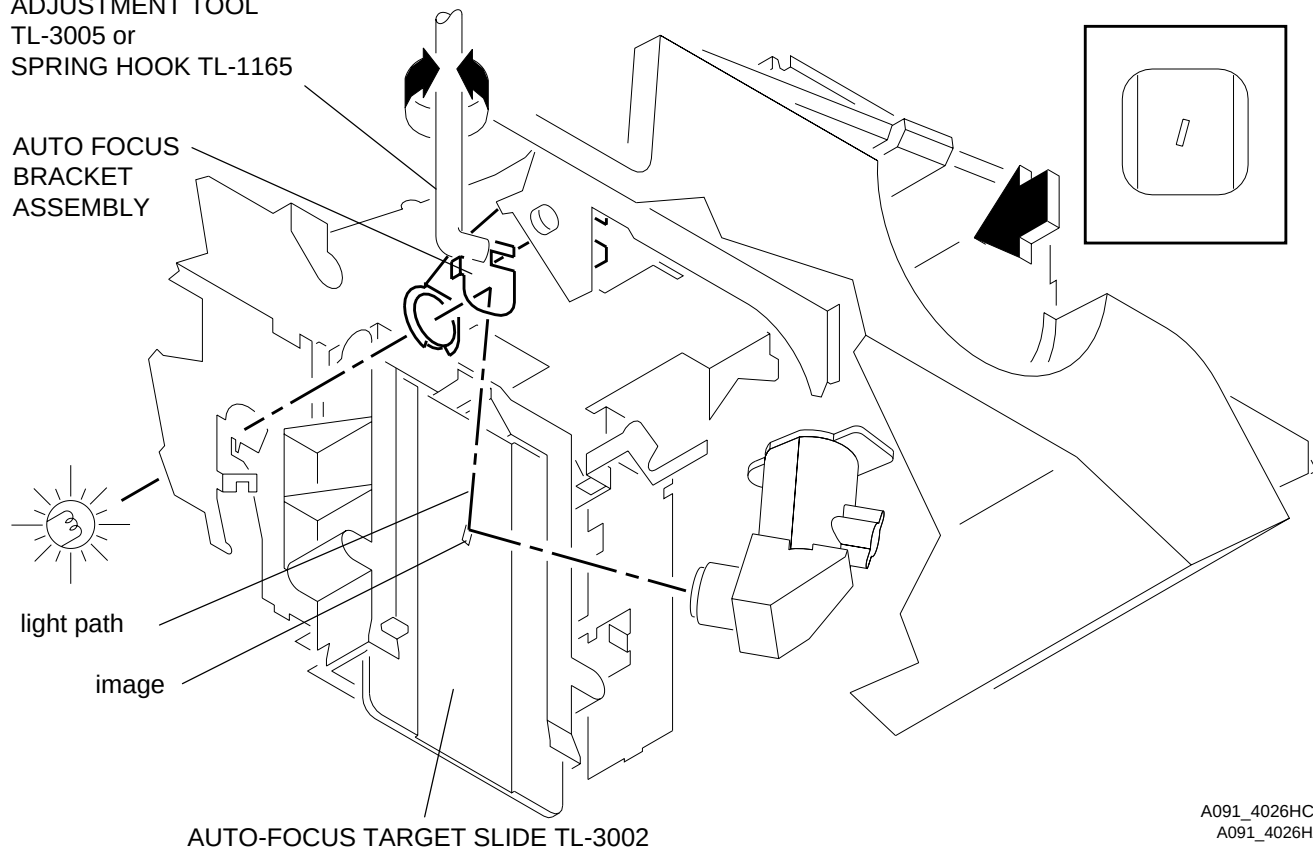
It is necessary to make a FAN COVER TOOL. See the Tools section.

- [4] Install the FAN COVER TOOL over the FAN area and the LAMP MODULE.
- [5] Energize the projector.
- [6] Set the projector to the LOW LAMP position.
- [7] Install the AUTO-FOCUS TARGET SLIDE TL-3002 until it is fully seated in the GATE MECHANISM.

- [8] Look through the PROJECTION LENS hole and observe the focus light path on the AUTO-FOCUS TARGET SLIDE TL-3002.
- [9] Check the position of the image on the AUTO-FOCUS TARGET SLIDE TL-3002.
- [10] Bend the AUTO-FOCUS BRACKET ASSEMBLY MIRROR until the image is within the target on the TARGET SLIDE. Use ADJUSTMENT TOOL TL-3005 or the SPRING HOOK TL-1165.

ADJUSTMENT TOOL
TL-3005 or
SPRING HOOK TL-1165

AUTO FOCUS
BRACKET
ASSEMBLY



A091_4026HCA
A091_4026HA

Adjustment Specification

Use TL-3002 to observe the focus light path and check the light image. Use T-BAR TL-3003 to bend the PHOTOCELL BRACKET to move the NULL in the center if necessary.

Adjusting the NULL



Warning

Dangerous Voltage

- [1] Disconnect the main power.
- [2] Do the removal for the LOWER HOUSING ASSEMBLY.



Important

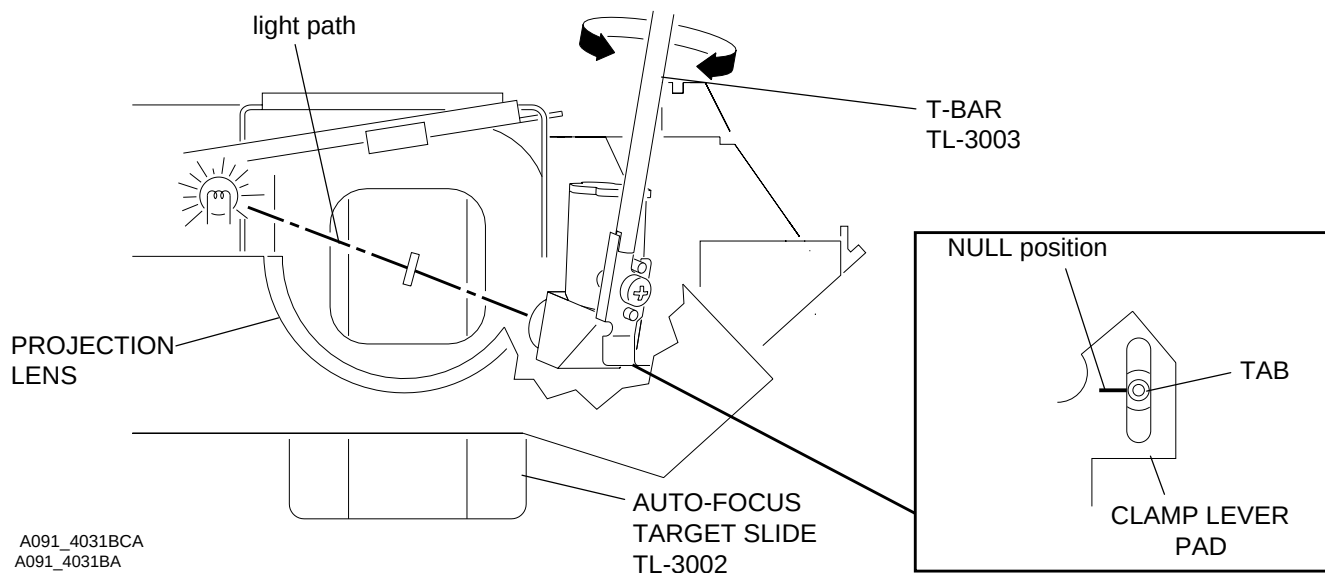
It is necessary to make a FAN COVER TOOL. See the Tools section.

- [3] Install the FAN COVER TOOL over the FAN area and the LAMP MODULE. See the Tools section.
- [4] Energize the projector.
- [5] Set the projector to the LO-LAMP position.
- [6] Install and hold the AUTO FOCUS TARGET SLIDE TL-3002 until it is fully seated in the GATE MECHANISM.
- [7] Look through the PROJECTION LENS hole and observe the focus light path on the AUTO-FOCUS TARGET SLIDE TL-3002. Check that the light image is correct. If not, do the Adjusting the FOCUS LIGHT PATH.

- [8] Check that the TAB on the CLAMP PAD ASSEMBLY is in the NULL position. If the TAB is not in the correct position, do the adjustment procedure for the NULL.
- [9] Bend the PHOTOCELL BRACKET to move the NULL in the center; use T-BAR TL-3003.

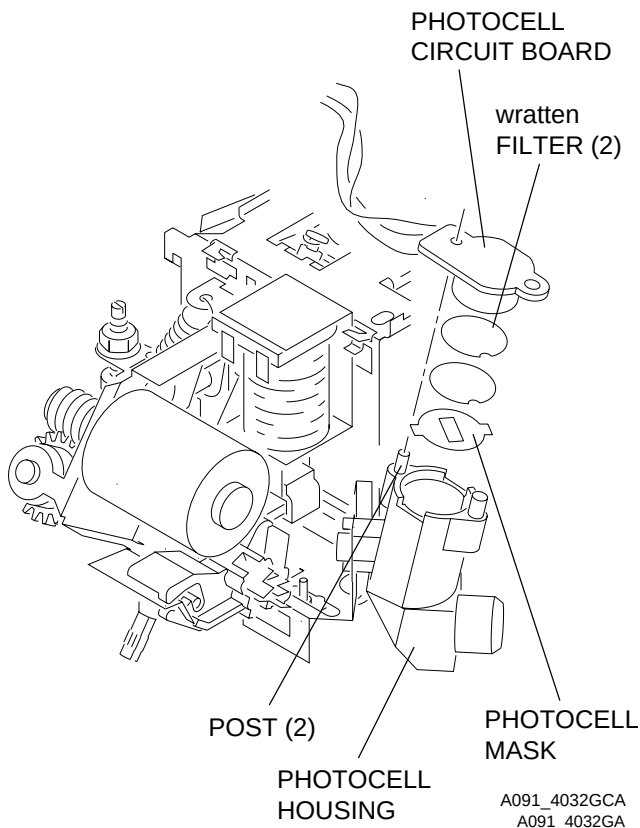
**Important**

If you cannot obtain the NULL position after doing the adjustment approximately 3 times, go to the adjustment procedure for the PHOTOCELL.

**Adjustment Specification**

Use TL-3002 and FAN CAP 232729 to check the adjustment of the PHOTOCELL.

Adjusting the PHOTOCELL



Warning

Dangerous Voltage

- [1] Disconnect the main power.
- [2] Do the removal for the LOWER HOUSING ASSEMBLY.



Important

It is necessary to make a FAN COVER TOOL. See the Tools section.

- [3] Install the FAN COVER TOOL over the FAN area and the LAMP MODULE. See the Tools section.



Warning

Dangerous Voltage

- [4] Energize the projector.
- [5] Set the projector to the LO-LAMP position.
- [6] Install and hold the AUTO FOCUS TARGET SLIDE TL-3002 until it is fully seated in the GATE MECHANISM.
- [7] Look through the PROJECTION LENS hole and observe the focus light path on the AUTO-FOCUS TARGET SLIDE TL-3002. Check that the light path is correct. If not, do the adjustment procedure for the FOCUS LIGHT PATH.

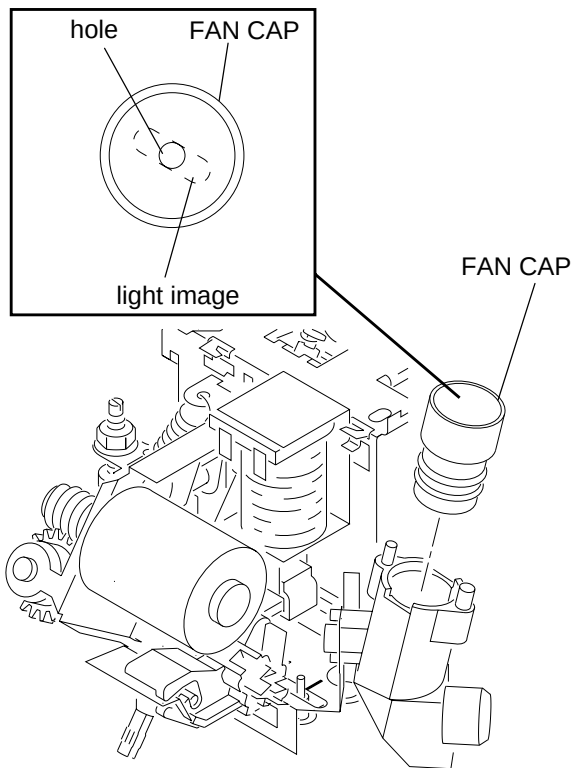


Warning

Dangerous Voltage

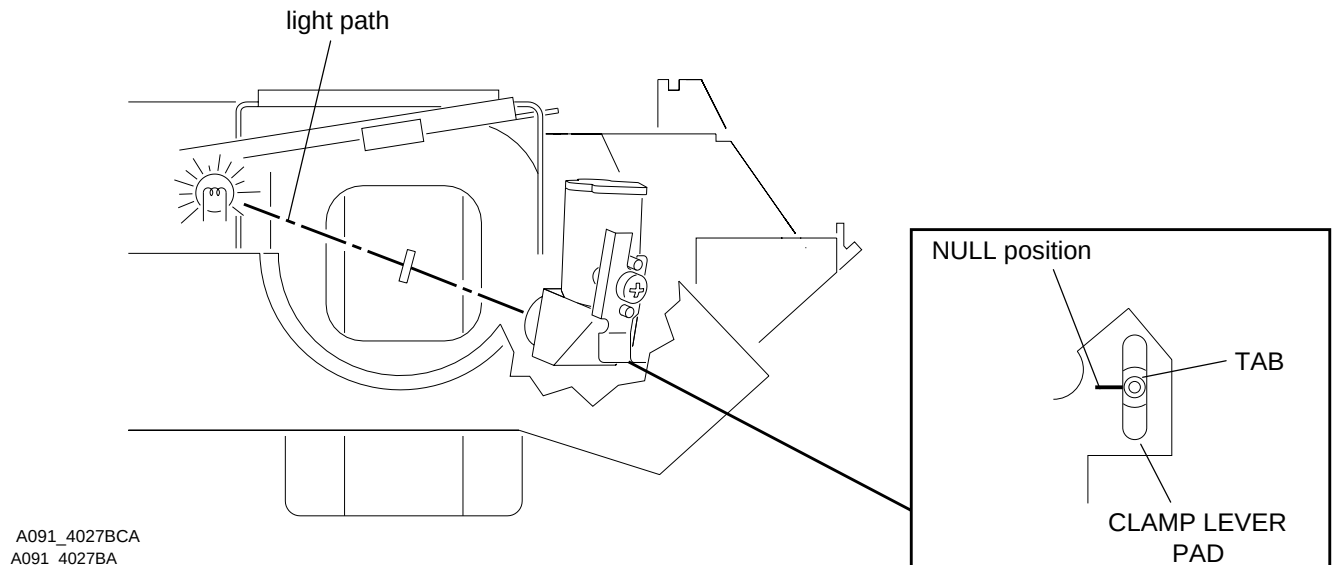
- [8] Disconnect the main power.
- [9] Heat the 2 POSTS on the PHOTOCELL HOUSING to allow the POSTS to bend enough to pull the PHOTOCELL CIRCUIT BOARD up and off the PHOTOCELL HOUSING. Use a SOLDERING IRON.
- [10] Remove the 2 *Wartten* FILTERS and the PHOTOCELL MASK.

- [11] Install the FAN CAP 232729 in the PHOTOCELL HOUSING.



A091_4033GCA
A091_4033GA

- [12] Manually move the CLAMP PAD ASSEMBLY until the TAB is in the NULL position.



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Warning

Dangerous Voltage

- [13] Connect the main power.



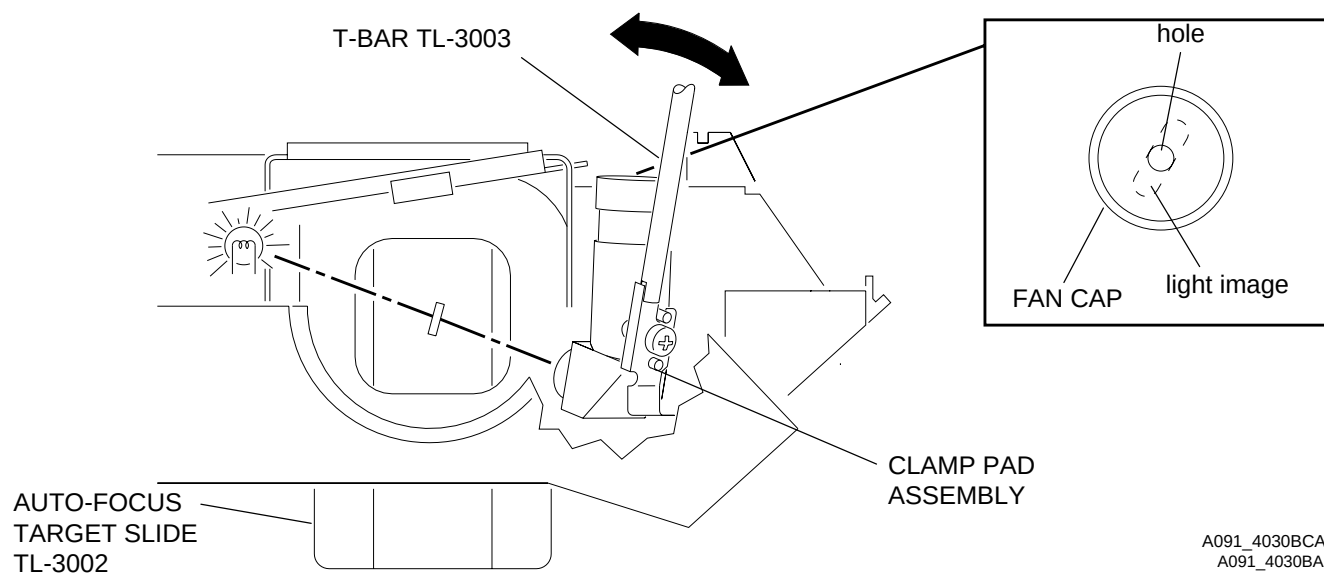
Important

It is necessary to make a FAN COVER TOOL. See the Tools section.

- [14] Install the FAN COVER TOOL over the FAN area and the LAMP MODULE. See the Tools section.

- [15] Install and hold the AUTO FOCUS TARGET SLIDE TL-3002 until it is fully seated in the GATE MECHANISM.

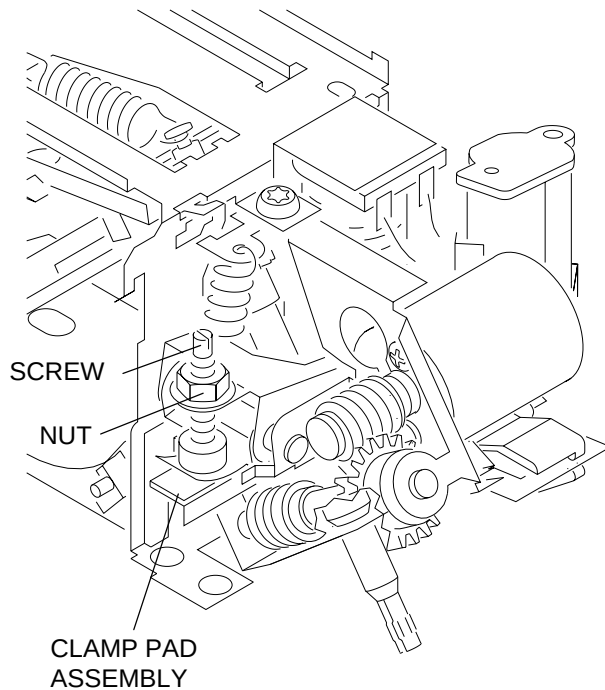
- [16] Set the projector to the LO-LAMP position.
- [17] Observe the image of the focus light path on the bottom of the FAN CAP; the light path should be in the center of the hole in the FAN CAP.
- [18] Bend the CLAMP PAD ASSEMBLY until the image is in the center of the hole in the FAN CAP.
- [19] Assemble the PHOTOCELL MASK, FILTERS and PHOTOCELL BOARD.



Adjustment Specification

Use TL-1744 to check that the CLAMP PAD ASSEMBLY moves forward and backward.

Adjusting the CLAMP PAD ASSEMBLY



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Warning

Dangerous Voltage



Important

If the CLAMP ASSEMBLY has a COIL SPRING on the ADJUSTMENT SCREW, remove it. This will make the adjustment easier.

- [1] Disconnect the main power.
- [2] Do the removal for the LOWER HOUSING ASSEMBLY.



Important

It is necessary to make a FAN COVER TOOL. See the Tools section.

- [3] Install the FAN COVER TOOL over the FAN area and the LAMP MODULE. See the Tools section.
- [4] Connect the REMOTE CONTROL ASSEMBLY EC-3 to the REMOTE RECEPTACLE.



Warning

Dangerous Voltage

- [5] Connect the main power.
- [6] Loosen the NUT on the CLAMP PAD ASSEMBLY.
- [7] Energize the REMOTE FOCUS in either direction.
- [8] Rotate the SCREW on the CLAMP PAD ASSEMBLY to adjust the pressure of the REMOTE FOCUS CLAMP on the CLAMP PAD ASSEMBLY until the CLAMP PAD ASSEMBLY does not move.
- [9] Release the REMOTE FOCUS.
- [10] Tighten the NUT on the CLAMP PAD ASSEMBLY.
- [11] Install the AUTO-FOCUS GAUGE TL-1744 in the MECHANISM GATE. The CLAMP PAD ASSEMBLY should move forward and backward using TL-1744. If not, adjust the SCREW on the CLAMP PAD ASSEMBLY again; the CLAMP PAD ASSEMBLY adjustment is too tight and not correct.

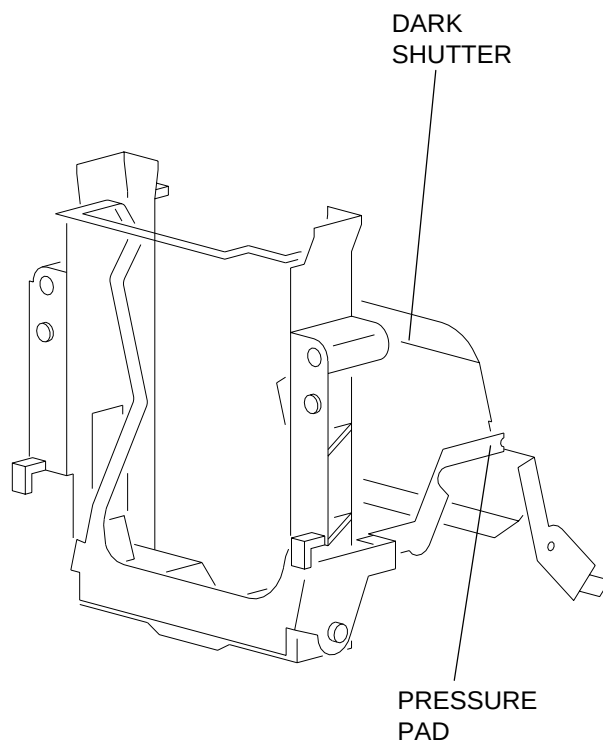
Adjustment Specification

The PRESSURE PAD should be aligned with the DARK SHUTTER.

Adjusting the DARK SHUTTER

- [1] Do the removal for the LOWER HOUSING.
- [2] Insert a thin SLIDE into the GATE MECHANISM; the DARK SHUTTER should open.
- [3] Check the the PRESSURE PAD is correctly aligned with the the DARK SHUTTER.

[4] Bend the PRESSURE PAD to adjust the alignment.

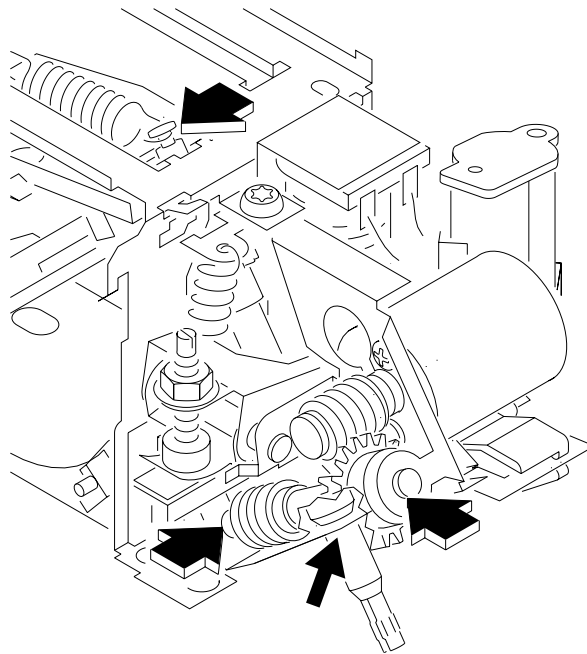


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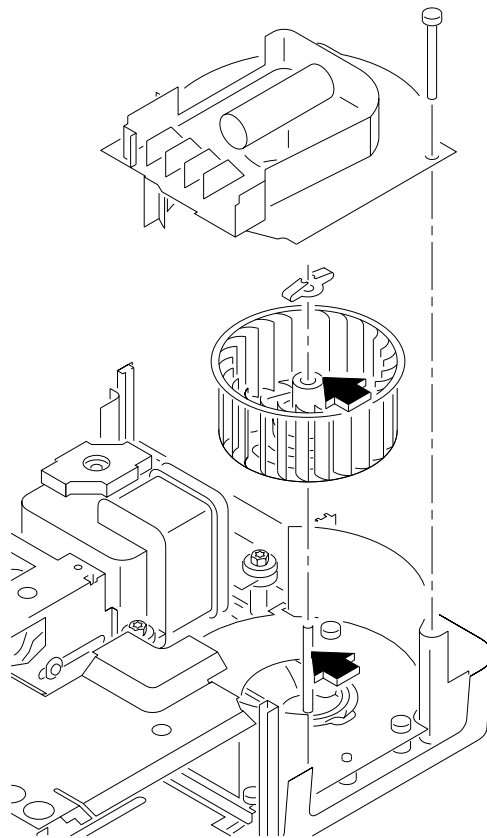
Section 3: Lubrication

Apply lubricant SUPER LUBE TL-4276 to the following parts and areas of the projector; see the illustrations.

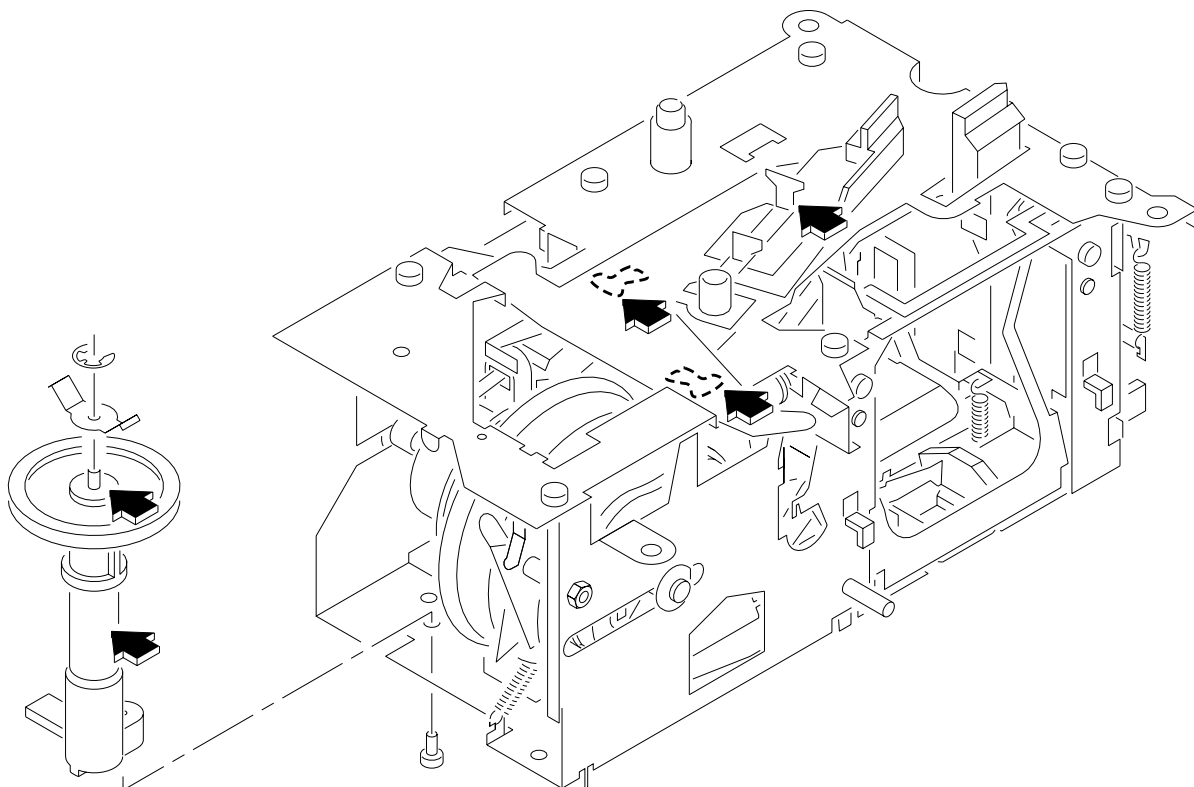
- FAN
- INDEXER LEVER and TOP PLATE
- WORM PULLEY ASSEMBLY
- CAM STACK ASSEMBLY
- CYCLE LEVERS
- PIVOT SHAFT and LEVERS
- LENS MOUNT ASSEMBLY



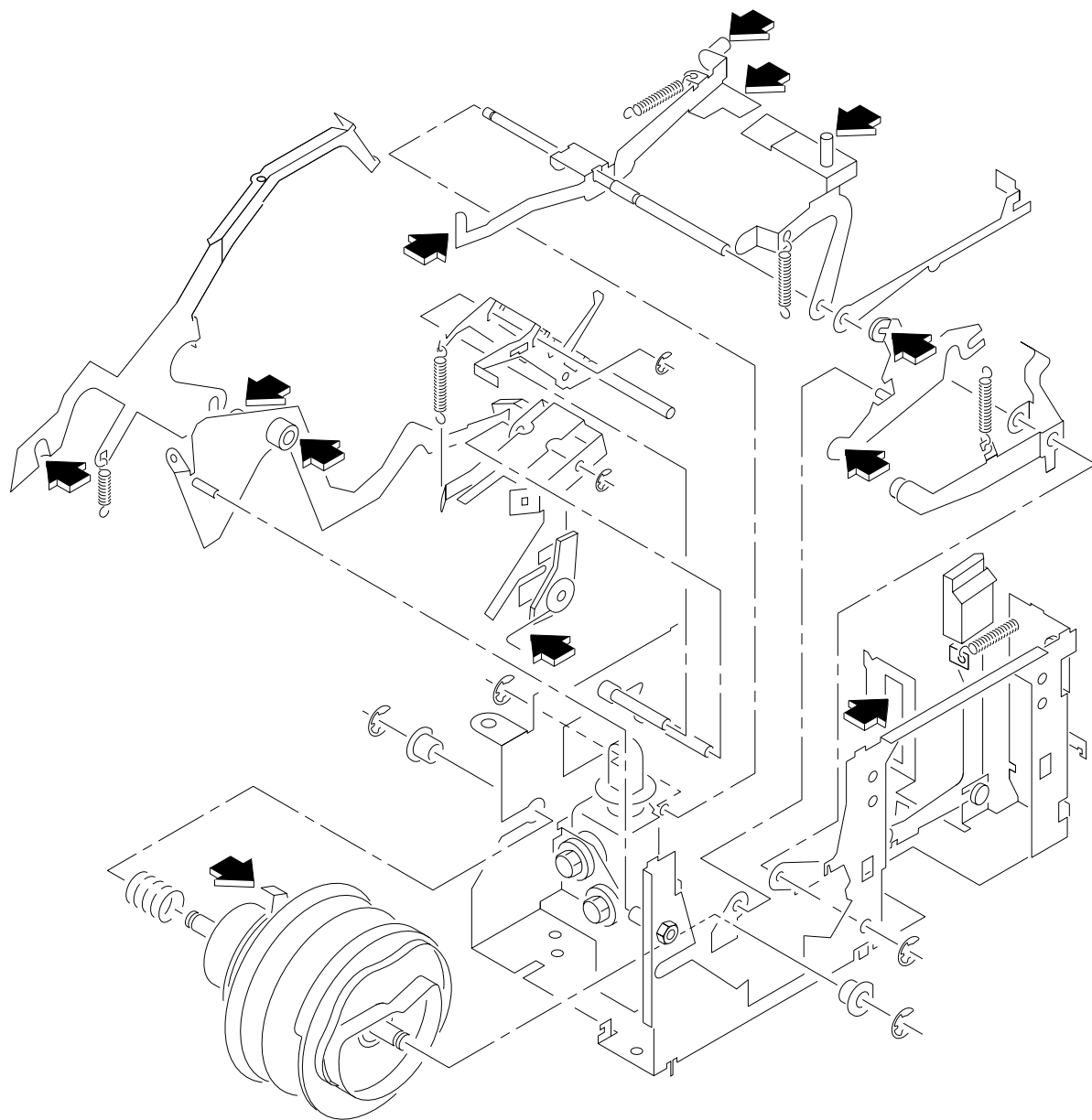
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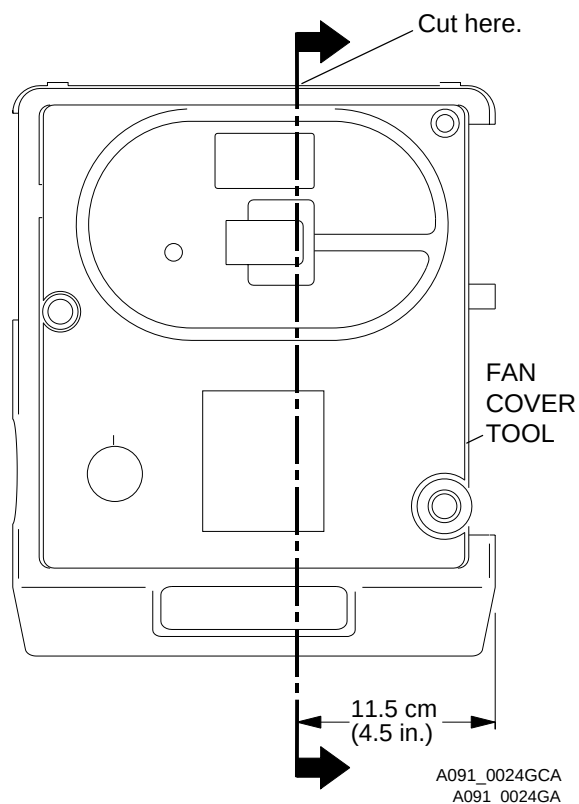
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Section 4: Tools

Tools

Tool No.	Description
TL-1744	AUTO-FOCUS GAUGE
TL-2264	FOCUS TEST (flat field)
TL-3000	MECHANISM RUNNING FIXTURE (optional)
TL-3002	AUTO-FOCUS TARGET SLIDE
TL-3003	ADJUSTMENT T-BAR
TL-3005	ADJUSTMENT TOOL
TL-3255	<i>Torx</i> DRIVER SET
TL-4276	SUPER LUBE
	DIGITAL MULTIMETER

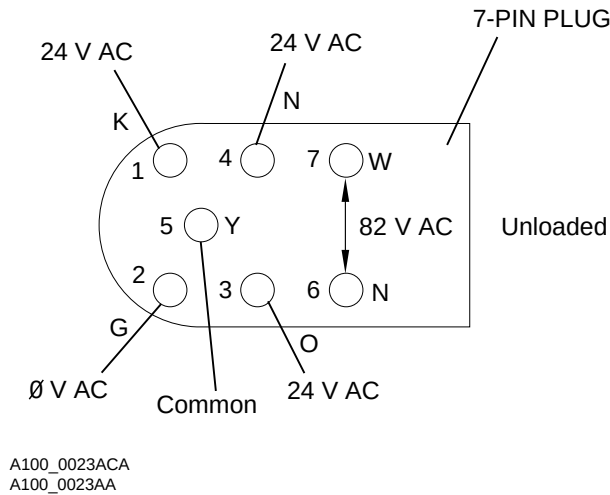
The LOWER HOUSING ASSEMBLY is a part of the cooling function. To operate the projector with the LOWER HOUSING removed, make a FAN COVER TOOL.



Section 5: Specifications

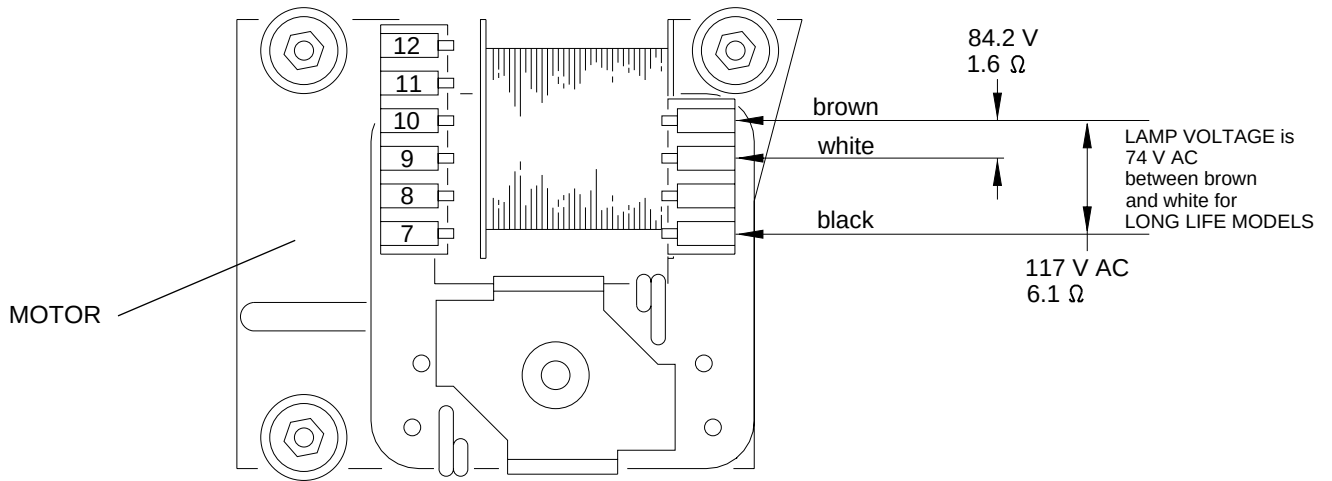
Item	Description
Electrical Supply	Standard U.S. Models: 110 - 125 V ac Japan J Models: 100 V AC, 60 Hz only Korea KK Models: 220 V AC, 60 Hz only
Power Consumption	400 W
Dimensions	<ul style="list-style-type: none"> Height: 119 mm (4.69 in.) without TRAY Width: 238 mm (12.93 in.) Length: 295 mm (11.6 in.)
Slide size	35 mm, 50 x 50 mm (2 x 2 in.)
Slide change time	1 second
Lamp (in LO position)	<ul style="list-style-type: none"> FHS 82 V, 300 W, 70 hours average life EXR 82 V, 300 W, 35 hours average life EXW 82 V, 300 W, 15 hours average lamp life EXY 82 V, 300 W, 200 hours average life
Lumen Output	<ul style="list-style-type: none"> 900 minimum with EXR lamp Lowest corner to center ratio is 55% minimum Test method: <i>Ektagrophic</i> 102 mm, F/2.8 LENS aperture (24 x 36 mm), compatible with European specification DIN 19027
Operating temperature	<ul style="list-style-type: none"> 4.5 °C (40 °F), 15% humidity in low 49 °C (120 °F), 15% humidity in high 21 - 27 °C (70 - 80 °F), 20 - 60% humidity optimum
Cooling	Fan speed is 2780 or 3000 RPMs, 1360 BTUs per hour to cool projector
Approvals	UL
Environmental storage	Complies with storage test specifications (TS 172)
Environmental operation	Complies with climactic test specifications (TS 218)
Safety	<ul style="list-style-type: none"> 3 GROUNDED POWER CORDS, detachable Heat sensitive interrupt fuses 109 C power to motor (lamp fuse) 171 C MOTOR
Dielectric strength	Apply 1200 V AC, 60 Hz for 1 second; maximum leakage current is 2.5 mA.
Automatic Timer	Operates between the following times: <ul style="list-style-type: none"> Fast = 3 - 1 second Slow = 22 - 6 seconds
Elevation	14° maximum front elevation assembly.
Auto Focus System	<ul style="list-style-type: none"> After the initial focus adjustment, the auto-focus system will adjust for the difference in the slide position from slide to slide. This focus adjustment will occur within 1 second after the slide is inserted into the GATE. The focus adjustment variation should not change from the focus and reverse specifications by more than 3 times the focus and reverse specifications.

Item	Description
Reliability	The projector can operate for 2000 hours or 2,000,000 cycles. The projector has a MTBF (mean time between failures) of 7500 operation hours.
Maintenance	Preventive maintenance by a qualified service person is recommended every 1500 hours of operation, or after 1 year.
Warranty	See the owner's manual.
7-PIN REMOTE CONTROL (See illustration on next page.)	<ul style="list-style-type: none">• PIN 1 - Black, REMOTE FOCUS• PIN 2 - Green, FORWARD TRAY CYCLE• PIN 3 - Orange, REVERSE TRAY CYCLE• PIN 4 - Brown, RACK SOLENOID• PIN 5 - Yellow, COMMON• PIN 6 - Brown, LAMP CONTROL• PIN 6 - White, LAMP CONTROL



Section 6: Diagnostics

MAIN MOTOR Voltages



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A091_0006BA

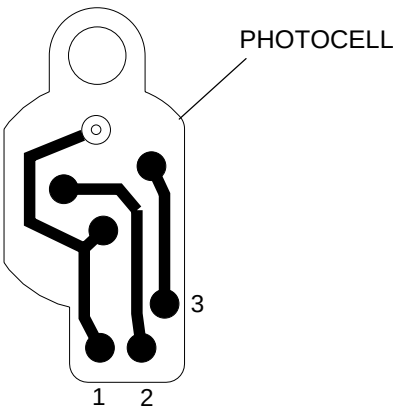
MAIN MOTOR PIN Colors

PIN	Color
12	brown
11	red
10	violet
9	yellow
8	blue
7	not used

MAIN MOTOR PIN Voltages

PIN	Voltage
8-9	25.5 V ac
10-11	14.5 V ac
11-12	14.5 V ac
10-12	29 V ac

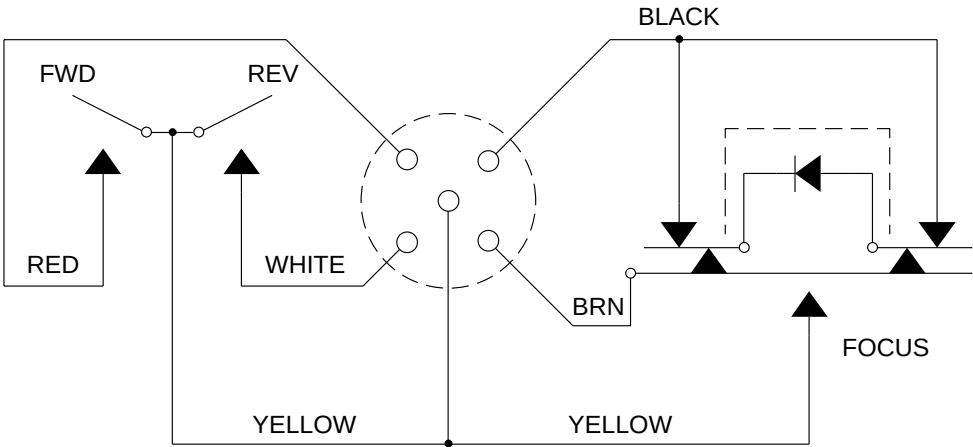
PHOTOCELL Voltages



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A091_4036AA

PINS	Voltage
1-2	14.5 V ac
2-3	14.5 V ac
1-3	29 V ac

5-PIN REMOTE CORD PLUG Voltages

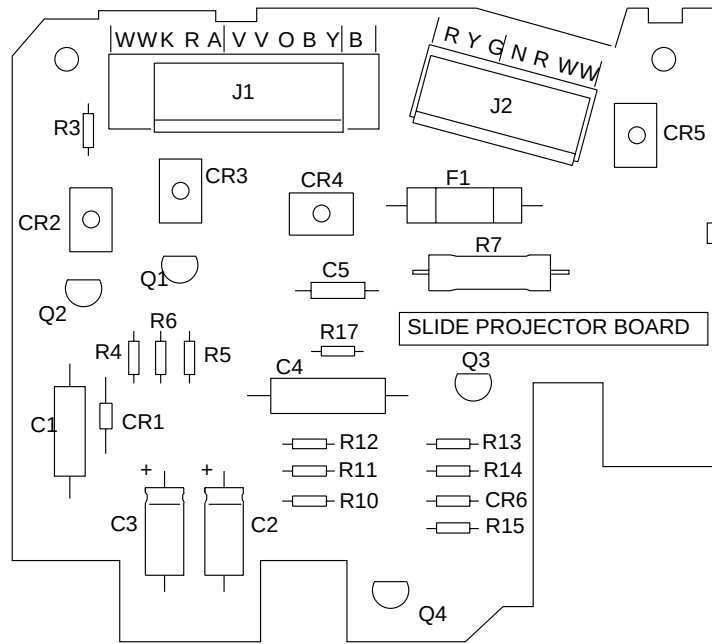


A100_0001BC_

KODAK EC-3 REMOTE CONTROL

PINS	Description
white	Reverse
red	Forward
yellow	Common
brown	RACK SOLENOID
black	Focus - REMOTE

SMALL COMPONENT BOARD ASSEMBLY 256809 Voltages



A091_4034DC

Description	Component	Red +, Black -	Voltage
TIMER Circuit	CR3	+ to -	32 V DC
TIMER Circuit	Q3	- G to + A	32 V DC
TIMER Circuit	Q4	- G to + K	18.1 V DC
CYCLE HOLD DOWN REVERSE	CR4	+ to -	18.0 V DC
FOCUS	CR2	+ to -	28.0 V DC
FOCUS RACK USE REMOTE	CR5	+ to -	18.0 V DC
FOCUS	Q1	- B to + C	23.3 V DC
FOCUS	Q2	- G to + A	28.0 V DC

Voltage Specifications - General Parts

Part	Procedure	Voltage
FOCUS MOTOR	None	8.5 V AC
CYCLE SOLENOID	Press the REVERSE BUTTON.	39 W, 18.7 V DC
RACK SOLENOID	None	39 W, 10 V AC
LAMP RECEPTACLE	None	82 V AC, approximately 85-86 V AC without a LAMP MODULE installed
DROPPING RESISTOR	Move to the LO LAMPLP position.	3.0 W, 10.6 V AC drop across

Power, Illumination, and Cooling Malfunctions

Malfunction	Check
The MOTOR does not operate.	<ol style="list-style-type: none"> 1. Check the continuity across the THERMAL FUSE ASSEMBLY, and MOTOR FUSE. 2. Check that the primary voltage on the MAIN MOTOR is correct. 3. Check that the voltage on POWER SWITCH is correct.
The FAN does not operate, MOTOR operates.	<ol style="list-style-type: none"> 1. Check that the FAN BELT is not broken. 2. Check and remove obstructions in the FAN area.
There is excessive noise in the FAN.	<ol style="list-style-type: none"> 1. Check and remove obstructions in the FAN area. 2. Check that the tension is correct on the FAN BELT. 3. Check that the FAN BELT is clean. 4. Check the condition of the BEARING in the FAN ASSEMBLY.
The LAMP does not operate.	<ol style="list-style-type: none"> 1. Check the LAMP for damage. 2. Check the LAMP RECEPTACLE ASSEMBLY for damage and correct voltage. 3. Check the LAMP TERMINAL ASSEMBLY in the LAMP MODULE ASSEMBLY for damage.
The LO LAMP does not operate.	<ol style="list-style-type: none"> 1. Check that the W of the DROPPING RESISTOR is 3 W. 2. Check that the wire connections on the POWER SWITCH are correct. 3. Check the POWER SWITCH for correct operation.
There is an obstruction in the light path.	<ol style="list-style-type: none"> 1. Check the DARK SHUTTER for correct operation. See the adjustment for the DARK SHUTTER. 2. Check the LIGHT BAFFLE in the MECHANISM for damage; it should not cause a jam in the SHUTTER.

Slide Transport Malfunctions

Malfunction	Check
Forward and reverse do not operate using the FRONT PANEL BUTTONS or REMOTE CONTROL.	<ol style="list-style-type: none"> 1. Check that the secondary voltage on the MAIN MOTOR is correct. 2. Check that the W across the CYCLE SOLENOID COIL are correct. 3. Check that the voltage across the CYCLE SOLENOID is correct.
Forward does not operate, reverse operates, voltages are correct.	<ol style="list-style-type: none"> 1. Check that the CYCLE LEVER and RATCHET PLATE are clean. Clean and lubricate the parts as necessary. Use SUPER LUBE TL-4276. 2. Install a new CAM STACK ASSEMBLY; the malfunction is within the CAM.
Reverse does not operate, forward operates, voltages are correct.	<ol style="list-style-type: none"> 1. Do the adjustment for the CYCLE SOLENOID. 2. Check that the DIRECTION LEVER SPRING is on the DIRECTION LEVER. 3. Check the DIRECTION LEVER for binds. Excessive lubrication and dirt can cause binds.
Projector does not complete a cycle; FAN operates.	<ol style="list-style-type: none"> 1. Check for a broken MECHANISM DRIVE BELT. 2. Check the CYCLE LEVER and RATCHET LEVER on the CAM SHAFT ASSEMBLY for the following: <ul style="list-style-type: none"> • correct alignment of the CYCLE LEVER • damage to parts • lubrication of the CYCLE LEVER (use SUPER LUBE TL-4276) 3. Check the CYCLE SOLENOID for correct operation. See the Voltage chart.
Projector has continual cycle.	<ol style="list-style-type: none"> 1. Check the CYCLE LEVER for correct alignment. See the adjustment for the CYCLE LEVER. 2. Check for damage to parts. 3. Check for a short•circuit in the wires: <ul style="list-style-type: none"> • Use a tool to hold the CYCLE LEVER down on the RATCHET LEVER. If there is a short•circuit causing the malfunction, the SOLENOID will be energized. If there is a bind, the CAM will not rotate. 4. Check that the CAM SHAFT ASSEMBLY RATCHET SPRING is installed correctly. 5. If there is a bind in the CAM STACK, install a new CAM.
The projector does not change cycles when using a DISSOLVE CONTROL; the REMOTE CONTROL and CONTROL PANEL BUTTONS operate correctly.	<ol style="list-style-type: none"> 1. The CYCLE LEVER and the RATCHET PLATE are dirty. 2. Clean and apply lubricant SUPER LUBE TL-4276 to the CYCLE LEVER and RATCHET PLATE. 3. If this does not correct the malfunction, install a new CAM SHAFT ASSEMBLY.

Malfunction	Check
SLIDE TRAY does not advance smoothly.	<ol style="list-style-type: none"> 1. Check the SLIDE TRAY LATCH for correct alignment. 2. Operate the projector in the forward direction. <ul style="list-style-type: none"> • Check that the INDEXER LEVER ASSEMBLY is in the correct alignment with the holes at positions A and B. • Do the adjustment for the INDEXER LEVER ASSEMBLY. • Check the condition of the LOCATOR LEVER, it should not be bent. • Check the height of the SLIDE LIFT LEVER; the lower corner of the LIFT LEVER RAMP is parallel with the TOP HOUSING. If the height is not correct, do the adjustment for the MANUAL and POWER SLIDE LIFT LEVER ECCENTRICS.
SLIDE TRAY advances when "REVERSE" is pressed.	<ol style="list-style-type: none"> 1. Do the adjustment for the CYCLE SOLENOID. 2. Check that the SPRING is on the DIRECTION LEVER. 3. Check for a bind in the DIRECTION LEVER ASSEMBLY. 4. Check that the DIRECTION LEVER LINK is in the correct position.
SLIDE TRAY does not rotate freely when the SELECT BUTTON is pressed down. The projector has power.	<ol style="list-style-type: none"> 1. Press and release the SELECT BUTTON. <ul style="list-style-type: none"> • Check that the LOCATOR LEVER moves correctly and is not bent. 2. Press and hold the SELECT BUTTON down. <ul style="list-style-type: none"> • Check the SLIDE LIFT LEVER RAMP for damage. 3. Check the height of the SLIDE LIFT LEVER; the lower corner of the LIFT LEVER RAMP is parallel with the TOP HOUSING. If the height is not correct, do the adjustment for the MANUAL and POWER SLIDE LIFT LEVER ECCENTRICS.
TIMER does not operate	<ol style="list-style-type: none"> 1. Check the VARIABLE RESISTOR for correct operation and install a new part if necessary. 2. Move the TIMER BUTTON forward and backward; use a DVM to check for changes in W. 3. Energize the projector and move the TIMER to "S". <ul style="list-style-type: none"> • Check the voltages on CR3, Q3, and Q4, see the voltage table.

Malfunction	Check
DARK SHUTTER SWITCH does not operate	<ol style="list-style-type: none"> 1. Energize the projector and release the DARK SHUTTER to allow projection. 2. Check for continuity between PINS 4 and 5 on the SPECIAL APPLICATIONS PLUG. 3. Press the "FORWARD" or "REVERSE" BUTTONS to close the DARK SHUTTER. 4. In the closed position, the DVM should measure 0 W. 5. If this procedure does not correct the malfunction, install a new DARK SHUTTER SWITCH.
After the FOCUS MOTOR energizes and moves, the FOCUS MOTOR oscillates.	<ol style="list-style-type: none"> 1. Remove R3 and install a new 68K W 1/4 W RESISTOR (part 220040). 2. If there is still a malfunction, install a new PHOTOCELL.

Focus Malfunctions

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Malfunction	Check
No manual focus	<ol style="list-style-type: none"> 1. Check the FOCUS SHAFT SPRING for the correct tension. 2. Check the LENS SUPPORT SPRING for correct tension. 3. Check the LENS DRIVE GEAR on the FOCUS SHAFT ASSEMBLY for damage and install a new part if necessary.
No remote focus (Non Auto Focus models)	<ol style="list-style-type: none"> 1. Check the REMOTE CORD for damage; use a REMOTE CORD that has no damage. 2. Actuate and hold the REMOTE CONTROL. 3. Check that the voltage across the FOCUS MOTOR is 8.5 V AC. If the voltage is correct, install a new FOCUS MOTOR. 4. Check that the secondary voltage on the MAIN MOTOR is correct.
No remote focus, RACK SOLENOID ASSEMBLY operates (Auto Focus Models)	<ol style="list-style-type: none"> 1. Check that the REMOTE CORD operates correctly; use a REMOTE CORD you know is good (EC 3). 2. Actuate and hold the REMOTE CONTROL. 3. Check that the voltage across the FOCUS MOTOR is 8.5 V AC. If the voltage is correct, install a new FOCUS MOTOR. 4. Check the AUTO FOCUS SWITCH ASSEMBLY for correct operation. 5. Check the secondary voltages on the MAIN MOTOR.

Malfunction	Check
No auto-focus	<ol style="list-style-type: none"> 1. Check that the MAIN PROJECTION LAMP operates correctly. 2. Insert the TARGET SLIDE TL-3002 in the GATE MECHANISM. <ul style="list-style-type: none"> • Check that the TARGET is correctly aligned. If not, see the Adjustment section. 3. Check that the voltages across the PHOTOCELL are correct. The voltage from 1 to 2 is 14.5 V ac. The voltage from 2 to 3 is 14.5 V ac. The voltage from 1 to 3 is 29 V ac. 4. Make a short• between 1 and 2; the FOCUS MOTOR should rotate. 5. Make a short•circuit between 2 and 3; the FOCUS MOTOR should rotate in the reverse direction. 6. If the FOCUS MOTOR operates correctly, install a new PHOTOCELL. If the FOCUS MOTOR does not operate correctly, measure the voltages on the CIRCUIT BOARD.
Slow auto-focus movement	<ol style="list-style-type: none"> 1. Check that the alignment of the FOCUS LIGHT PATH and NULL is correct. 2. Check the resolution of the FOCUS LIGHT PATH. Clean the AUTO FOCUS MIRROR and BRACKET ASSEMBLY. 3. Install a new PROJECTION LAMP if necessary. 4. Install a new PHOTOCELL. 5. Check the components on the CIRCUIT BOARD for damage.
AUTO FOCUS MOTOR operates continually	<ol style="list-style-type: none"> 1. Install the TARGET SLIDE TL-3002 in the GATE MECHANISM. 2. Check that the alignment of the TARGET and NULL is correct. If not, see the Adjustments section. 3. Check for a light leak: <ul style="list-style-type: none"> • Install a different LAMP MODULE ASSEMBLY. If the FOCUS MOTOR stops operating continually, install a new LAMP MODULE ASSEMBLY. 4. Check that the voltages across the PHOTOCELL are correct. The voltage from 1 to 2 is 14.5 V ac. The voltage from 2 to 3 is 14.5 V ac. The voltage from 1 to 3 is 29 V ac. 5. Check that the PHOTOCELL HOUSING has 2 FILTERS. 6. Install a new PHOTOCELL. 7. Check the components on the CIRCUIT BOARD for damage.
AUTO FOCUS MOTOR operates continually in forward only or reverse only and does not operate (stops) in the null position.	<ol style="list-style-type: none"> 1. Check that the wires of the AUTO FOCUS MOTOR are in the correct position; the blue wire goes to the mark on the AUTO FOCUS MOTOR.
AUTO FOCUS adjusts after REMOTE use	<ol style="list-style-type: none"> 1. Do the adjustment for the CLAMP LEVER ASSEMBLY.

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