EC-3000/3400
Solid State Rotary Cam Limit Switch

Installation/Operation Manual

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Shaft Connection Precaution

The shaft can be coupled to the machine using a chain and sprocket, timing pulley and belt, or a direct in-line shaft-to-shaft coupling.

If a shaft-to-shaft coupling is used, Electro Cam Corp. recommends the use of a flexible coupling. Flexible couplings available through Electro Cam Corp. are listed on the Rotary Cam Switch Price List.

⚠ CAUTION

Unit damage may occur when using a solid coupling with shaft misalignment greater than 0.005". Shimming of the individual unit to its mounting surface must take place because of tolerance stackups.

Do the following prior to installing, setting up, or operating your Rotary Cam Limit Switch:

⚠ **WARNING**

Turn the power to the machine off prior to installation.

When conducting maintenance on this product, ensure that the machine is in a safe control mode.

Keep all personnel clear of the machine area while adjusting cams, rotating the shaft, or setting DIP switches. An accidental start up can damage the machine and injure personnel.

Preventive Maintenance

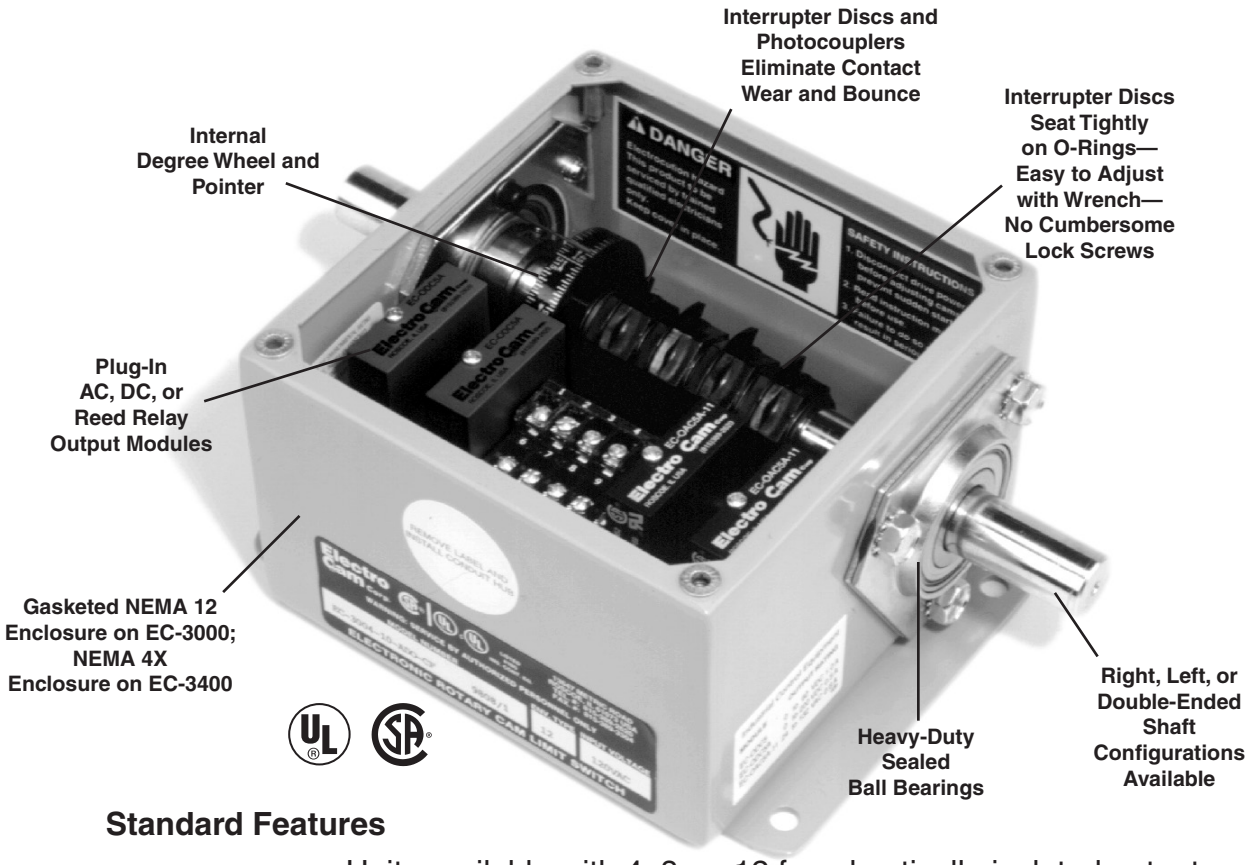
Extensive maintenance is not normally required because the limit switch is solid state and has no contacting parts. However, certain preventive maintenance items should be performed to ensure a long life.

⚠ CAUTION

1. Do not operate the unit any longer than necessary with the cover off.
2. Secure all cover screws.
3. Keep the interior of your unit clean and free of contaminants.

Product Description

EC-3004-10-ADO Unit Shown (JIC, cover not shown)



Standard Features

- Units available with 4, 8, or 12 fused optically-isolated outputs.
- Photo-interrupter discs, seated tightly on O-rings, eliminate contact bounce at high speeds and are easily adjusted with a wrench.
- Output modules are plug-in and available in AC, DC, or Reed Relay output. Each output has a plug-in fuse, easily removed and installed with a needle nose pliers.
- LED indicator lights illuminate when an output is “on”.
- EC-3000 units housed in gasketed NEMA 12 JIC enclosures; EC-3400 units housed in NEMA 4X stainless steel enclosures.
- Heavy-duty sealed ball bearings are used for shaft rotation.
- Operates at speeds from 0 to 3000 RPM in a clockwise or counter-clockwise rotation.
- Internal degree wheel and pointer is located on the shaft for easy and accurate adjustment.
- Right, left, or double-ended shaft extensions are available. All Nema 4X units feature the double-ended shaft extensions as standard equipment.
- Standard EC-3000 and EC-3400 Series are UL listed, CSA certified. 240 VAC (input power) models are not UL listed.

Product Description

The EC-3000 and EC-3400 Series Rotary Cam Limit Switches replace traditional cams and mechanical limit switches, eliminating contact wear and bounce. They are shaft-driven and use interrupter discs and photocouplers for on/off switching based on rotary position. These switches provide on/off control to devices such as glue guns, solenoids, air cylinders, or relays. They can be used as stand-alone controls or interfaced to other circuitry such as Programmable Logic Controllers (PLC).

Five standard models are available in the EC-3000 Series and four standard models in the EC-3400 Series units. The EC-3000 units are rated NEMA 12, and the EC-3400 units are NEMA 4X rating with a stainless steel enclosure. The cover plate on the EC-3400 units is secured with clamps to avoid contamination. The EC-3400 units are standard with a double-ended stainless steel shaft.

Unit Specifications

Max Speed: 3000 RPM, clockwise or counterclockwise rotation

Max Phase Shift: 1°/1000 RPM

Ambient Temp: 0° to 60°C (32° to 140°F)

Humidity: 95% maximum relative non-condensing

Input Voltage: 120 VAC (108 to 132 VAC), 50 or 60 Hz.
12 VDC, 24 VDC or 240 VAC units available

Input Power:

EC-3004/EC-3404	3 VA Max
EC-3008/EC-3408	6 VA Max
EC-3012	6 VA Max

Shaft: 3/4" diameter shaft extensions. The shaft is rated at 32,000 PSI yield and necked down to 0.500" internally. Power transmission through the shaft should be based on these figures.

Max Side Load: 100 lbs. up to 1800 RPM / 200 lbs. up to 500 RPM

Bearing Life: 10 years (87,660 hours) continuous running with 75 lbs. side load at 1000 RPM. **Note:** Consult factory if higher speeds or larger loads are required.

Enclosures: EC-3000—NEMA 12 JIC, oil-tight steel housing
EC-3400—NEMA 4X stainless steel housing

Printed Circuit Board: EC-3000—conformal coating on top only
EC-3400—conformal coating on top and bottom

Net Weight:

EC-3004/EC-3404	9.00 lbs.	4.0 kg
EC-3008/EC-3408	13.50 lbs.	6.1 kg
EC-3012	15.00 lbs.	6.8 kg

Product Description

Table 1—Information for the EC-3000 and EC-3400 Series Units.

UnitOutput	Shafts	Output Fuses	Input Fuses	
EC-3004 EC-3404	4	Right, left, or double	3 Amp EC-9000-0003	1/4 Amp EC-9000-0250; Littelfuse #275-.250
EC-3008 EC-3408	8	Right, left, or double	3 Amp EC-9000-0003	1/4 Amp EC-9000-0250; Littelfuse #275-.250
EC-3012	12	Right, left, or double	3 Amp EC-9000-0003	1/4 Amp EC-9000-0250; Littelfuse #275-.250

Output Module Information

The EC-3000 Series and the EC-3400 Series units offer plug-in modules for AC, DC, and Reed Relay outputs. **One output module must be purchased for each output desired.**

AC Output (EC-OAC5A-11, black/gray)

Output Voltage: 24 to 280 VAC

Output Current: 3 Amps @ 35°C (95°F)
Derate 50 mA/°C above 35°C (95°F)
Values marked on actual unit denote derated operating parameters.

DC Output (EC-ODC5, red)

Output Voltage: 0 to 60 VDC

Output Current: 3 Amps @ 35°C (95°F)
Derate 35.7 mA/°C above 35°C (95°F)
Values marked on actual unit denote derated operating parameters.

DC Output (EC-ODC5A, red)

Output Voltage: 0 to 200 VDC

Output Current: 1 Amp
Derate .018 amp/°C above 45°C (113°F)
Values marked on actual unit denote derated operating parameters.

Reed Relay Output (EC-ORR5, white)

Output Type: Reed Relay contacts (min. life - 50 million cycles)

Max Switching Voltage: 200V DC or peak AC

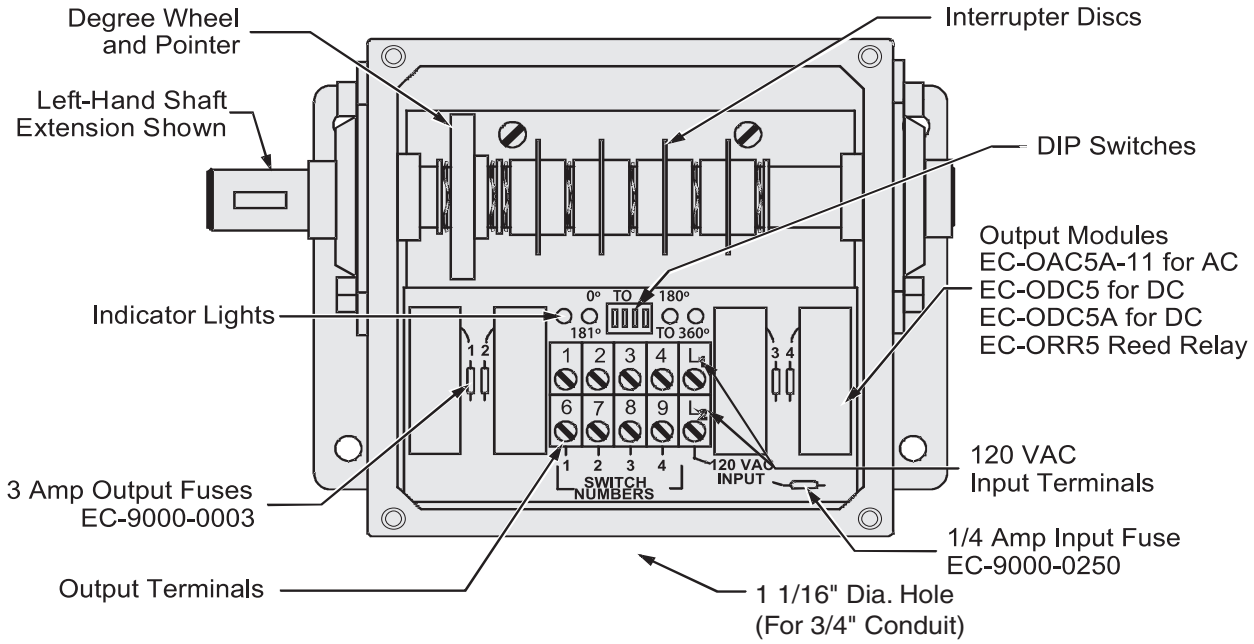
Max Switching Current: 0.5A DC or peak AC (resistive loads only)

Max Carry Current: 1.0A DC or peak AC

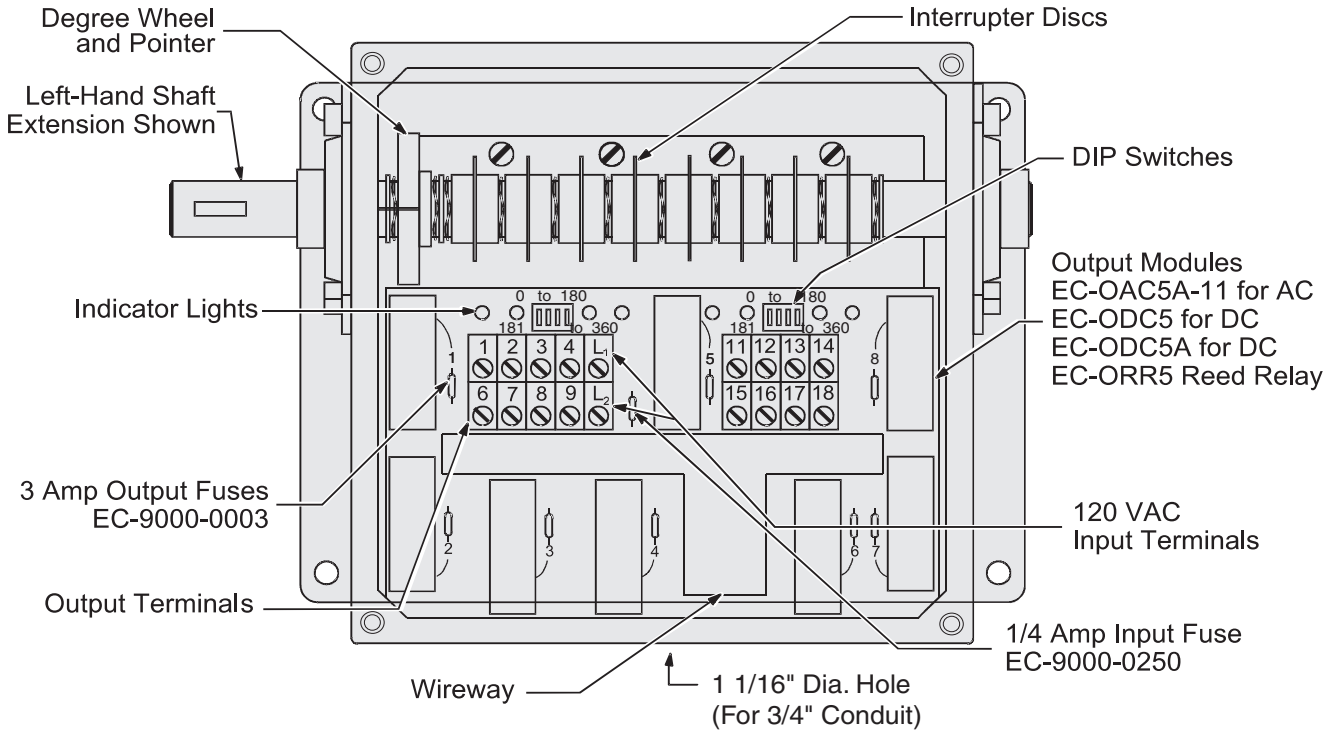
For further information, please consult Electro Cam Corp.

Component Layout

EC-3004 Unit

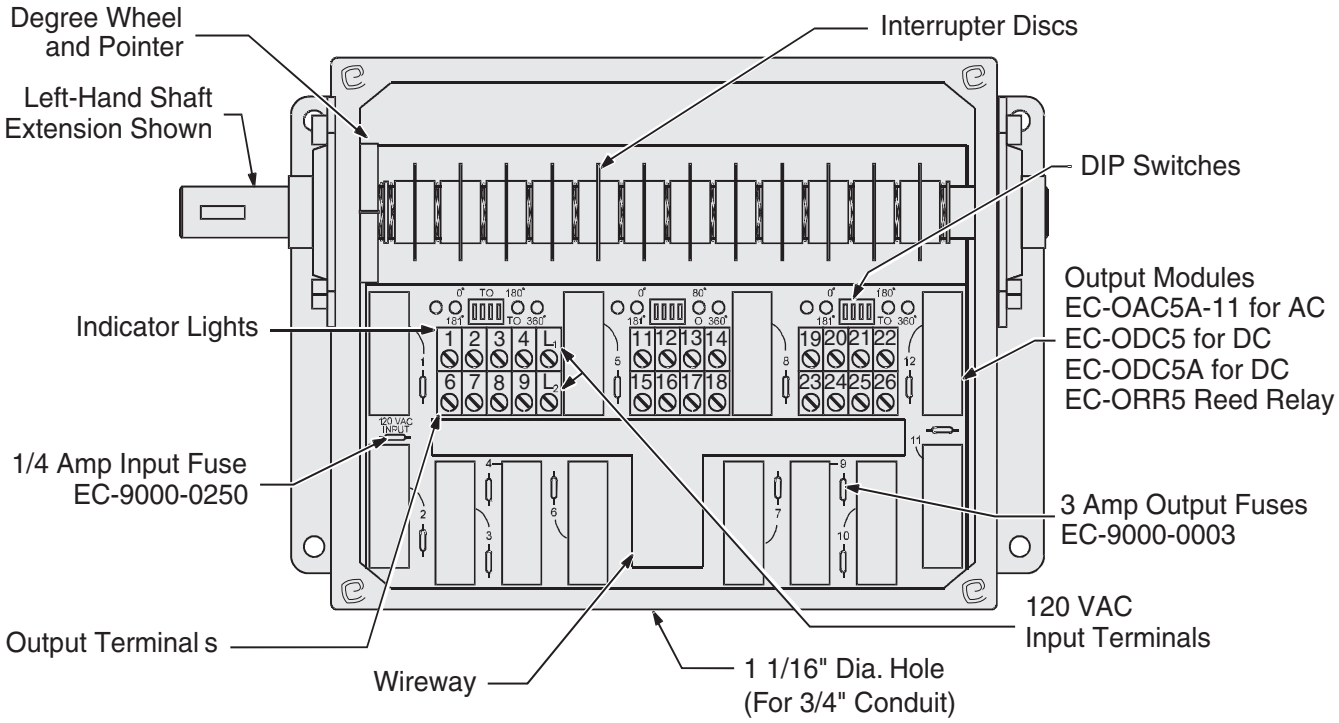


EC-3008 Unit



Component Layout

EC-3012 Unit



*In the component drawings, each upper and lower number pair on the terminal block represents an output. The table below will identify each output.

Terminal Block Numbers Upper Lower	Output Number	Terminal Block Numbers Upper Lower	Output Number	Terminal Block Numbers Upper Lower	Output Numbers
1 and 6	1	11 and 15	5	19 and 23	9
2 and 7	2	12 and 16	6	20 and 24	10
3 and 8	3	13 and 17	7	21 and 25	11
4 and 9	4	14 and 18	8	22 and 26	12

EC-3400 Series Units

All EC-3400 Series units have the same component layout as EC-3000 Series units except a stainless steel double-ended shaft extension and stainless steel enclosure with clamps to secure the cover are standard.

Installation Instructions

Shaft Connection Precaution

The shaft can be coupled to the machine using a chain and sprocket, timing pulley and belt, or a direct in-line shaft-to-shaft coupling.

If a shaft-to-shaft coupling is used, Electro Cam Corp. recommends the use of a flexible coupling. Flexible couplings available through Electro Cam Corp. are listed on the Rotary Cam Price List.

⚠ CAUTION

Unit damage may occur when using a solid coupling with shaft misalignment greater than 0.005". Shimming of the individual unit to its mounting surface must take place because of tolerance stackups.

Do not attempt to remove the shaft. Doing so will damage the unit and void the warranty.

⚠ WARNING

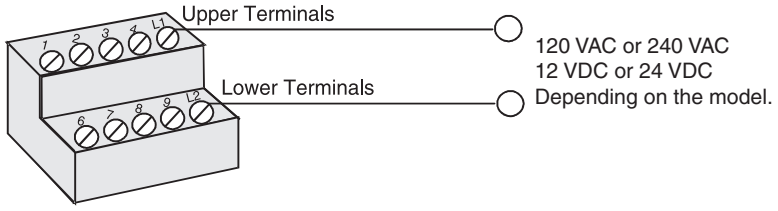
Turn power to the machine off prior to installation.

Installation Procedure

Conduct the following procedure to install the EC-3000 or EC-3400 Series Rotary Cam Limit Switch.

1. Mount the unit securely to the machine using the holes in the mounting feet and the mounting dimensions in Figure 2 through Figure 4 or the EC-3000 Series units and Figure 5 through Figure 7 for the EC-3400 Series units.
2. Remove the gasketed cover.
3. Connect the wires traveling through the sealed conduit entrance. Typically, the black wire connects to terminal L1, and the white wire connects to terminal L2. Refer to Figure 1 for the layout of a terminal block.

Figure 1—Terminal Block. The number of terminal blocks varies from model to model.



4. The interrupter discs may be adjusted at this time.
5. Replace the gasketed cover on the unit.
6. Inspect the conduit entrance to ensure it is properly sealed to prevent contamination.

Mounting Dimensions

Figure 2—Mounting Dimensions for EC-3004.

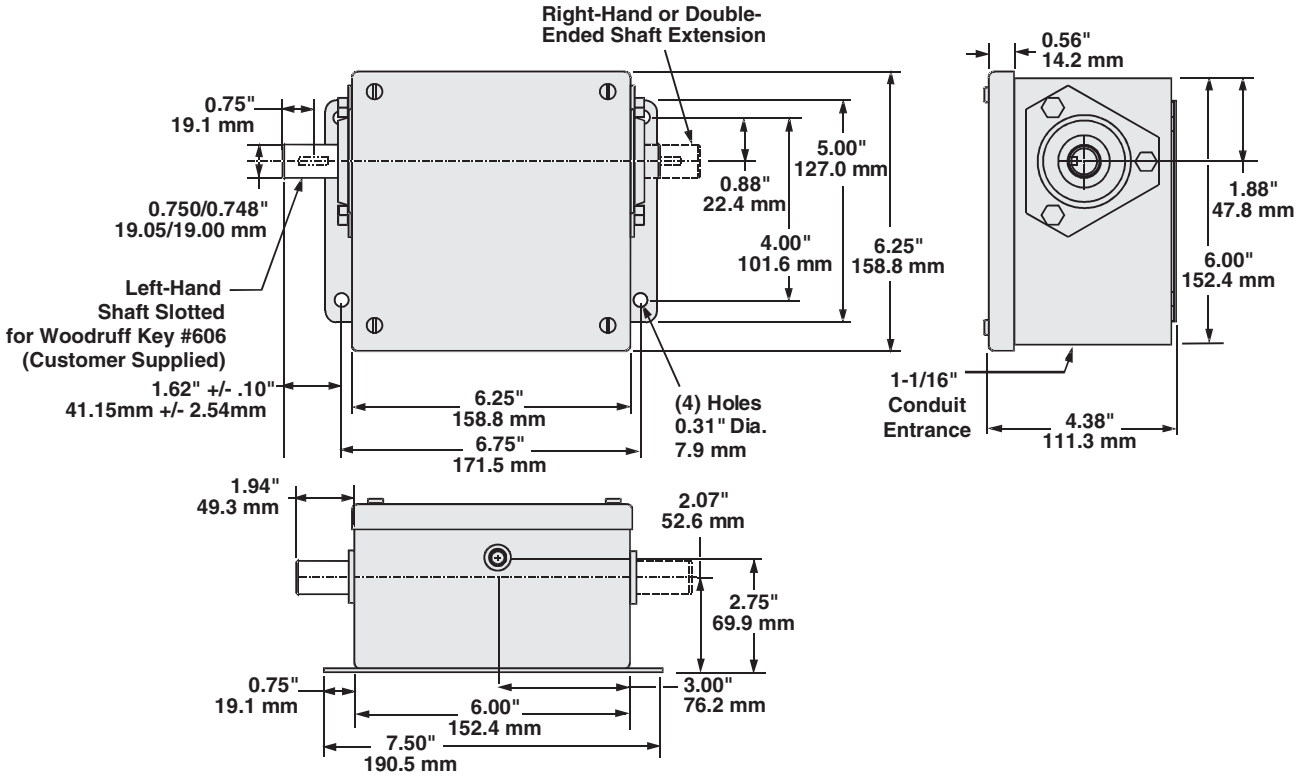
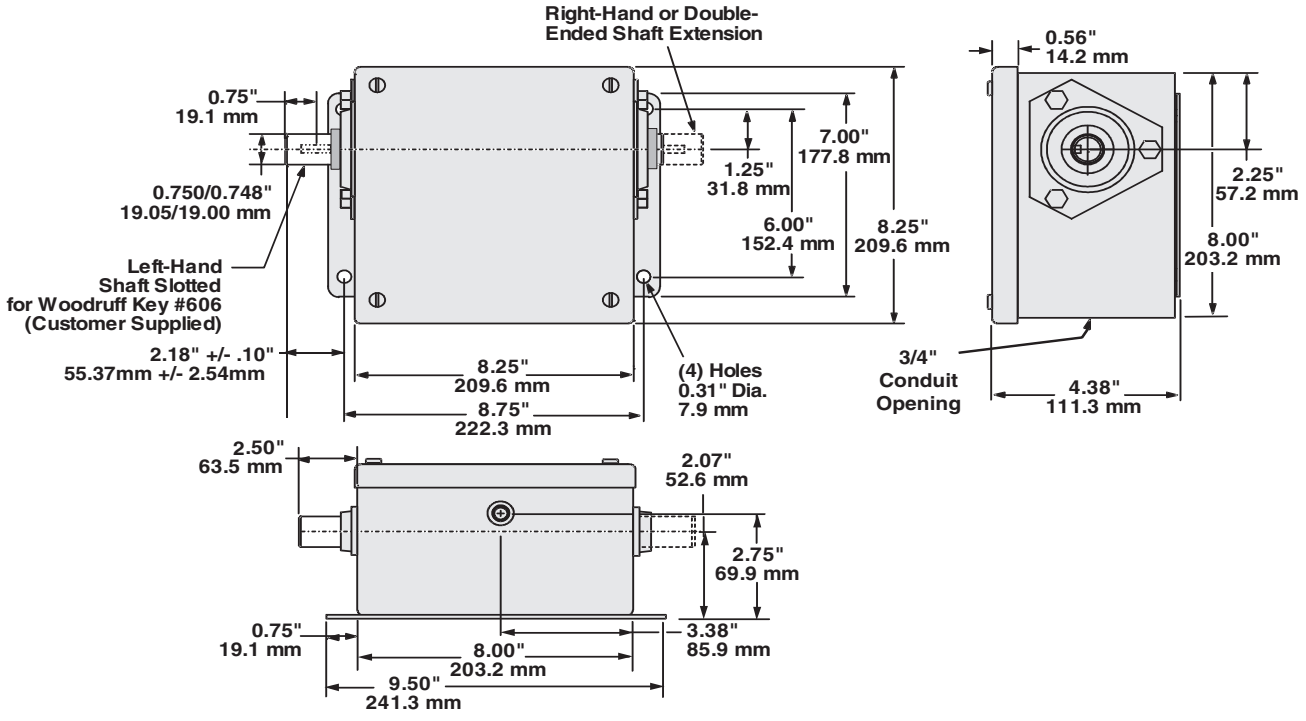
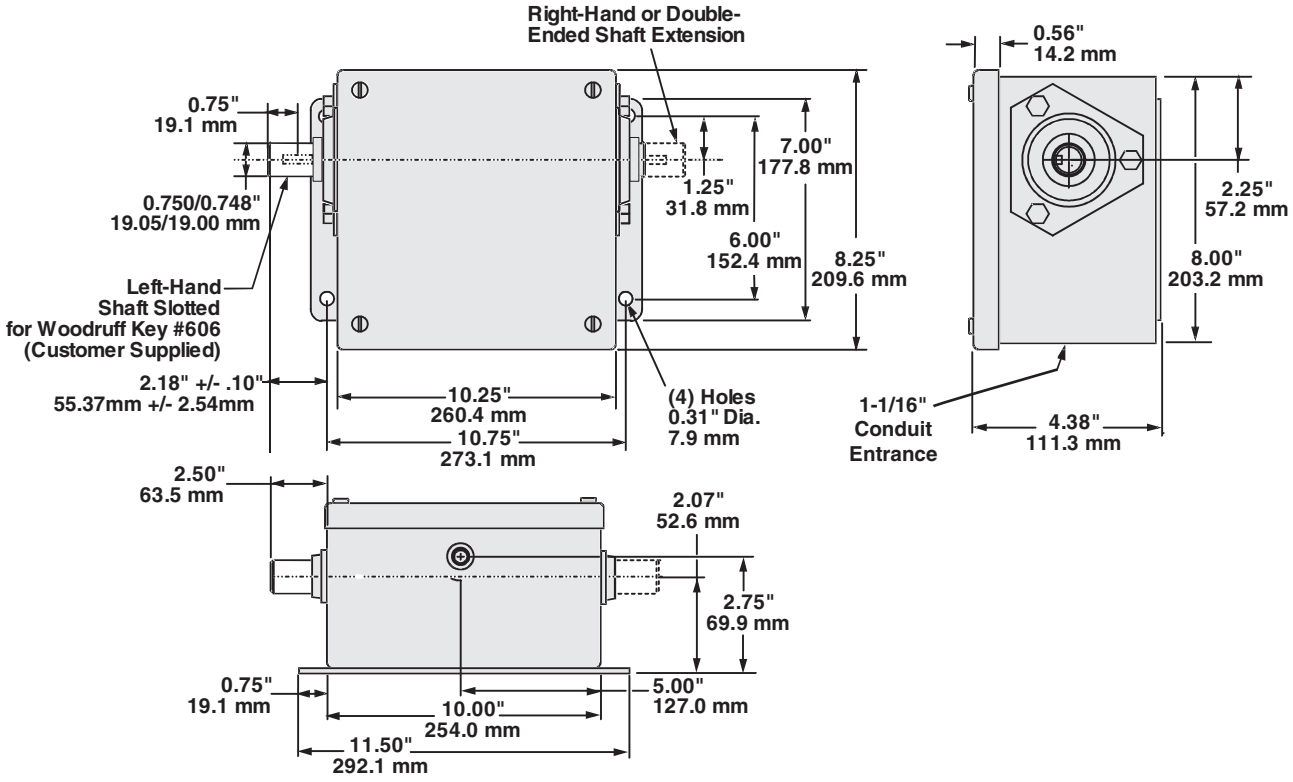


Figure 3—Mounting Dimensions for EC-3008.



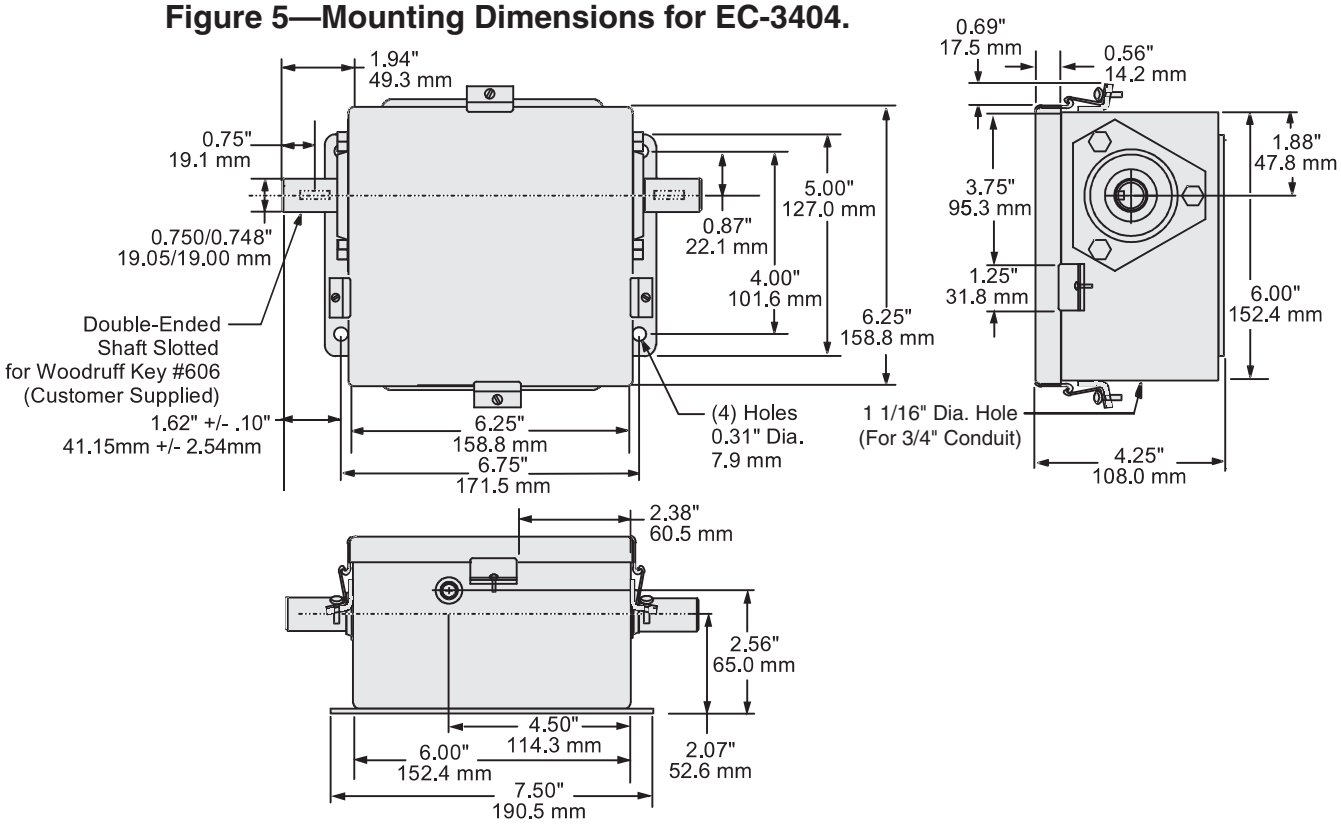
Mounting Dimensions

Figure 4—Mounting Dimensions for EC-3012.



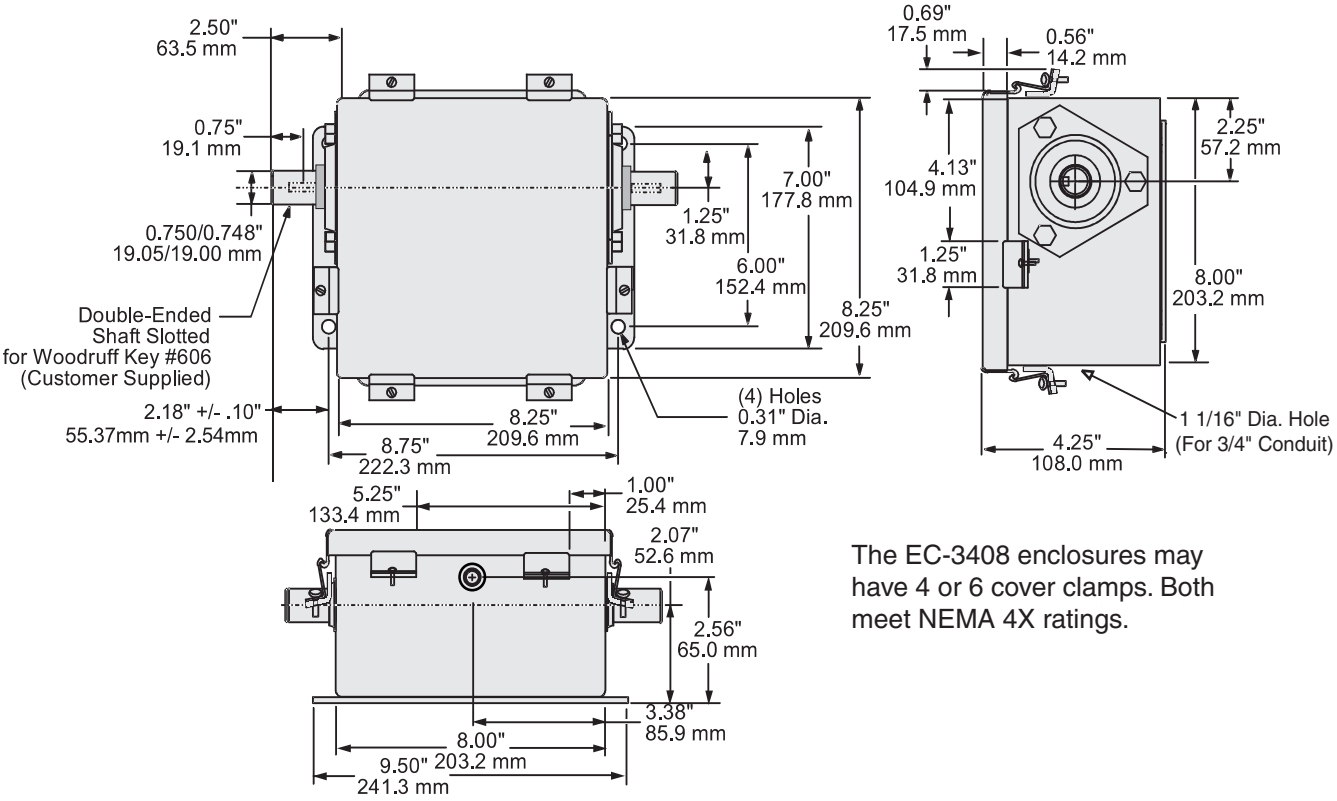
Mounting Dimensions - NEMA 4X Units

Figure 5—Mounting Dimensions for EC-3404.



Mounting Dimensions - NEMA 4X Units

Figure 6—Mounting Dimensions for EC-3408.



The EC-3408 enclosures may have 4 or 6 cover clamps. Both meet NEMA 4X ratings.

Output Wiring

Output modules act like switches; they do not supply power to loads. Output modules available for the EC-3000 and EC-3400 Series units include DC, AC, and Reed Relay. Module signals are isolated from one another, allowing AC and DC modules to be mixed on the same control. An output module is required for each output being used. Refer to Page 5 for further module information.

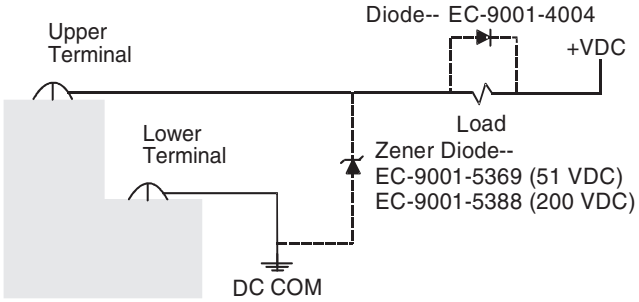
DC Output Wiring

DC output modules can be wired to sink or source the load circuit.

Sinking*

To sink, connect the positive VDC directly to one side of the load device. Connect the other side of the load to the upper terminal of the output module. Connect the lower terminal to DC common.

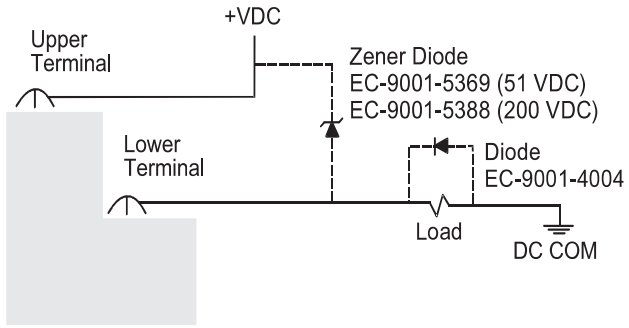
Figure 8—Sinking Output*



Sourcing*

To source, connect the positive VDC directly to the upper terminal of the output module. Connect the lower terminal to one side of the load device. Connect the other side of the load to DC common.

Figure 9—Sourcing Output*



Diodes

Most applications will function properly without the diodes shown in the above diagrams. However, highly inductive DC loads may damage modules by generating voltage spikes when switched off. This type of inductive load may need to be suppressed by a diode, using one of the following two methods.

- Connect a Zener diode across the terminals. This will not significantly increase the load turn-off time. The voltage rating of the diode must be greater than the normal circuit voltage.
- Connect a reverse-biased diode across the load. This may increase the load turn-off time.

*See back page for discussion of Sinking and Sourcing.

Output Wiring

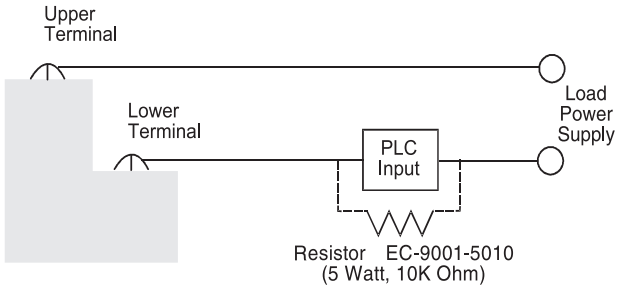
AC Output Wiring

AC output modules are wired with the load connected to the lower terminal of the output module, while the external power supply is connected to the upper terminal.

Resistor

If the load is affected by the module's off-state leakage of 2 mA maximum, a resistor may be added (refer to Figure 10). However, most applications will function properly without the resistor.

Figure 10—For Loads Affected by Off-State Leakage.

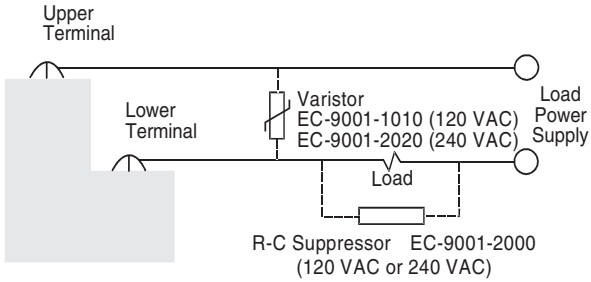


A resistor across a PLC input card may speed up the response time of that PLC input.

Varistor/R-C Suppressor

When other switching devices are in series or parallel with the AC output module, voltage spikes may damage the module. A varistor or an R-C suppressor can be used as shown in Figure 11. The varistor will absorb the potential voltage spike, thereby protecting the components from damage. An R-C suppressor suppresses interference. Most applications will function properly without the varistor or R-C suppressor. However, use one of the following two methods to suppress voltage spikes if needed:

Figure 11—For Loads Connected to Other Switching Devices.



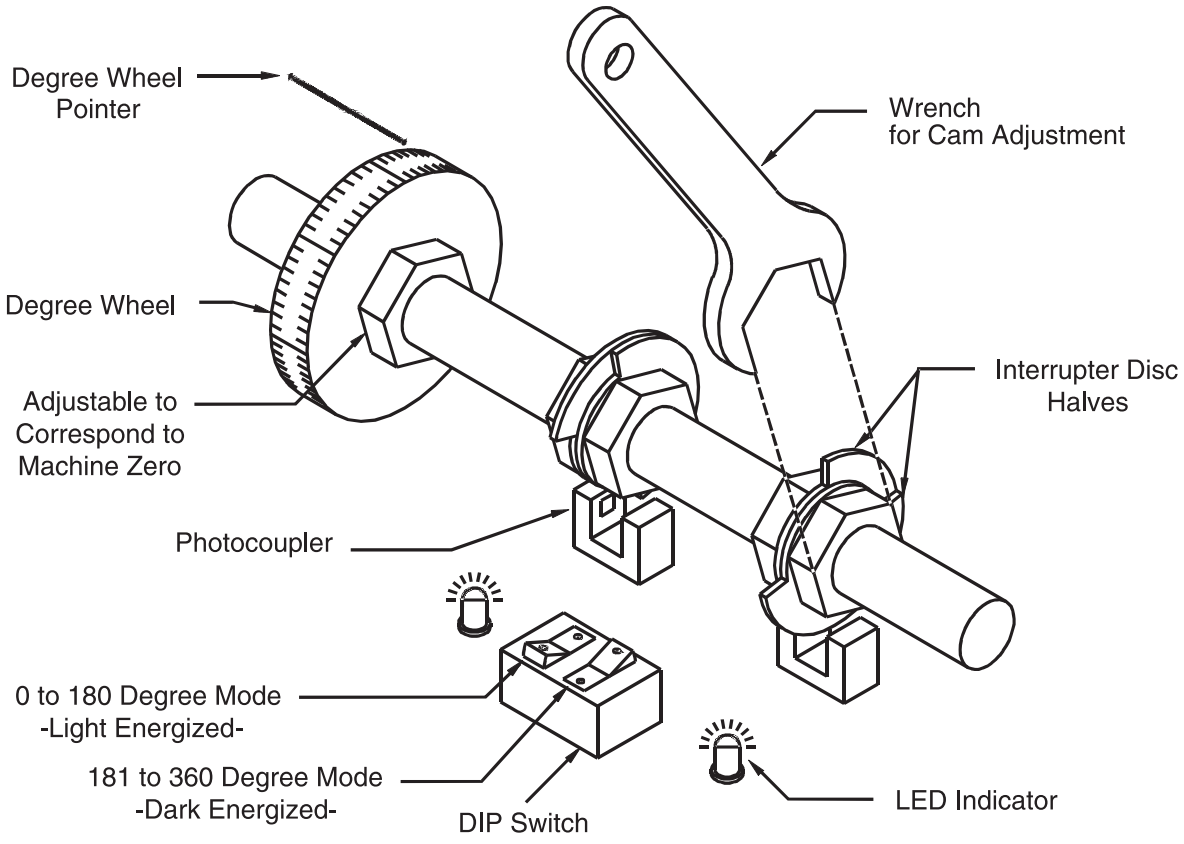
- For infrequent switching, connect a varistor (MOV) across the terminals.
- For continuous switching, connect an R-C suppressor in parallel with the load.

Description of Operation

As shown in Figure 12, each output switch is controlled by interrupter discs with two halves. These discs break the beam of light in the corresponding photocoupler. If the DIP switch associated with the photocoupler is in the 0° to 180° or Light Energized mode, the output and the corresponding LED will be switched on when the beam is unbroken. If the DIP switch is in the 181° to 360° or Dark Energized mode, the output and the corresponding LED will be switched on when the interrupter breaks the beam.

The disc halves seat tightly to the shaft with O-rings. The gap, or open window, in the interrupter is adjusted by applying a 1" wrench to the hex shoulder of the disc interrupter. There are no lock screws or other devices used.

Figure 12—Layout and Adjustment of the Cams.



Setup Procedure

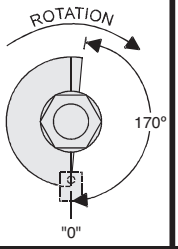
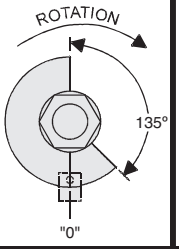
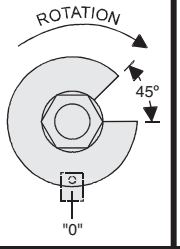
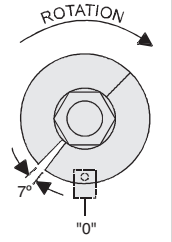
Zero the Degree Wheel

To zero the degree wheel and pointer after the Rotary Cam Switch has been properly mounted to the machine, follow this procedure.

1. Jog the machine to the designated zero position, or home position.
2. Notice the direction that the shaft rotates, clockwise or counterclockwise, when the machine moves in its forward direction.
3. Remove the gasketed cover from your unit, using a screw driver.
4. With the machine stopped at its zero position, turn the internal degree wheel so that the pointer reads 0°, using the 1" wrench provided. The degree wheel is numbered every 90° in both directions with arrows indicating the direction. Use the set of numbers that correspond to the direction your machine rotates.

   Note: If the control has the optional external degree wheel and pointer, set it to read 0° also.
5. Determine for each of the cams within your unit, where in the revolution each will need to turn “on” and “off”. Use Table 2 for examples of setting “on” times for interrupter discs.

Table 2—Examples of Setting “on” Times.

SWITCH MODE	ENERGIZED BY	ON TIME	EXAMPLE CAM SETTINGS			
0º - 180º Light Energized	Photocoupler Light Beam -PASSING-	Fully Adjustable 1º to 180º	From 0º to 170º ON for 170º	From 45º to 180º ON for 135º	From 90º to 135º ON for 45º	From 315º to 322º ON for 7º
						
181º - 360º Dark Energized	Photocoupler Light Beam -BLOCKED-	Fully Adjustable 181º to 359º	From 170º to 0º ON for 190º	From 180º to 45º ON for 225º	From 135º to 90º ON for 315º	From 322º to 315º ON for 353º

-CFX units:

Jumper IN (Dark Energized Mode) 181° - 360°

Jumper OUT (Light Energized Mode) 0° - 180°

Setup Procedure

Cam Setup

Each cam, consisting of two interrupter disc halves, is set up individually and operates independently of the other cams.

To avoid confusion, always use the same disc half to start each cam setup. For example, if you use the left half of the interrupter disc on the first cam to turn the output “on”, use the left half of the other cams to turn those outputs “on” as well.

A DIP switch is associated with each cam, and determines whether that output “on” time duration will be more than or less than 180°.

1. Select the cam to be set up, and jog the machine to the output “on” degree position. Determine if the output should be “on” less than or more than 180°.

   If the “on” time is less than 180°, set the DIP switch to the 0° to 180° position, or Light Energized mode. The output will turn “on” when the gap passes through the photocoupler light beam.

   If the “on” time is more than 180°, set the DIP switch to the 180° to 360° position, or Dark Energized mode. The output will turn “on” when the interrupter disc breaks the photocoupler light beam.

2. In the Light Energized mode (0° to 180°), turn both interrupter disc halves so the corresponding output LED is illuminated. Rotate one interrupter disc half in the reverse direction, opposite the machine rotational direction, until the LED turns off. Then, slowly rotate the same disc half forward to the exact position where the LED turns back “on”. This is the leading edge of the gap position.

   Or, in the Dark Energized mode (180° to 360°), turn both interrupter disc halves so the corresponding output LED is “off”. Then, slowly rotate one interrupter disc half in the forward direction to the exact position where the LED turns “on”. This is the leading edge of the disc position.

3. Jog the machine to the output “off” degree position.
4. For both the Light Energized and Dark Energized modes, turn the other interrupter disc half in the direction of machine rotation, to the exact position where the LED goes off.
5. Check the “on/off” settings for this cam, and make any fine adjustments necessary.
6. Repeat Steps 1 through 5 for each cam that needs to be set up.
7. When all cams have been properly set up, replace the gasketed cover on the unit, and tighten the cover screws securely to prevent contamination.

Setup Examples

The following procedures are examples of setting up the EC-3000 or EC-3400 unit when various methods of wiring are used. The examples include multiple pulse, multiple pulses within a window, and product changeover using an external switch.

⚠ WARNING **Injury hazard due to accidental starting of machine. Put machine control in a safe mode and keep all personnel away from machine during setup, when adjusting cams, rotating the shaft, or setting DIP switches.**

Multiple Pulse Example

The following procedure is an example of an adjustment to a typical EC-3000 or EC-3400 Series unit. In this procedure, the objective is to obtain two pulses, one from 45° to 90° and the second one from 225° to 270°. The two outputs will be wired in parallel to accomplish the multiple pulse setup.

Figure 13—Wiring for Multiple Pulse.

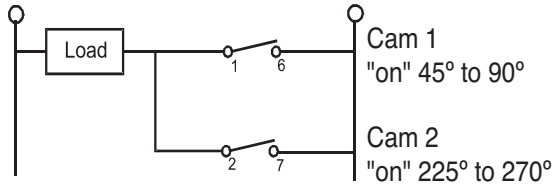


Figure 14—Unit with Parallel Wiring.

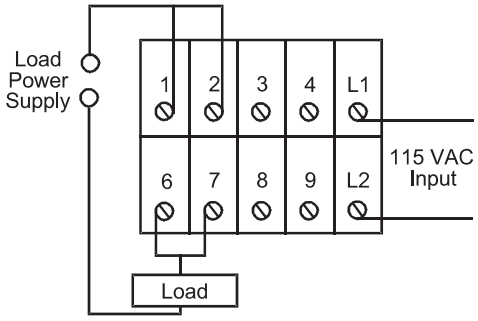
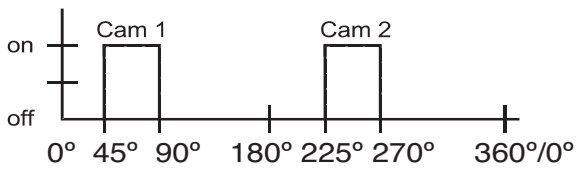


Figure 15—Output Timing Results of Mulitple Pulse.



1. Install appropriate AC or DC output modules in Positions 1 and 2 of your unit.

   Note: Positions 1 and 2 are used in the example, but the procedure may apply to any two positions.

2. Set the first two DIP switches in the 0° to 180° position or Light Energizing mode, because both pulses are less than 180°. When the photocoupler light passes through the opening, the switch and the LED will turn “on”.

3. Wire the voltage supply and load as indicated in Figure 13 and Figure 14.

4. With the provided wrench, set Cam 1 to be “on” from 45° to 90°. This will illuminate the corresponding LED from 45° to 90°.

5. Set Cam 2 to be “on” from 225° to 270°. This will illuminate the corresponding LED from 225° to 270°.

6. Since the outputs are wired in parallel (ORed), the current will flow through the load when Cam 1 or Cam 2 is “on”. Figure 15 shows the output timing results for Cam 1 and Cam 2.

Setup Examples

Multiple Pulses within a Window Example

The following procedure is an example of setting up a unit for multiple actions per machine cycle on an EC-3000 and EC-3400 Series unit. In this procedure, the objective is to obtain eight, equally-spaced pulses between 45° to 135°, using an interrupter disc in Position 3 and a 32-slot pulse generating disc in Position 4.

Figure 16—Wiring for Multiple Pulses within a Window.

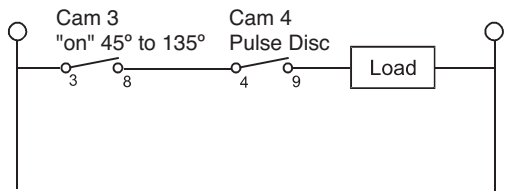


Figure 17—Unit with Series Wiring.

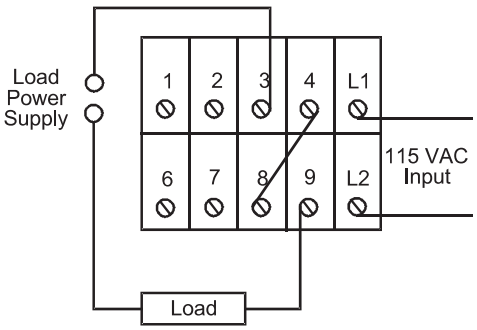
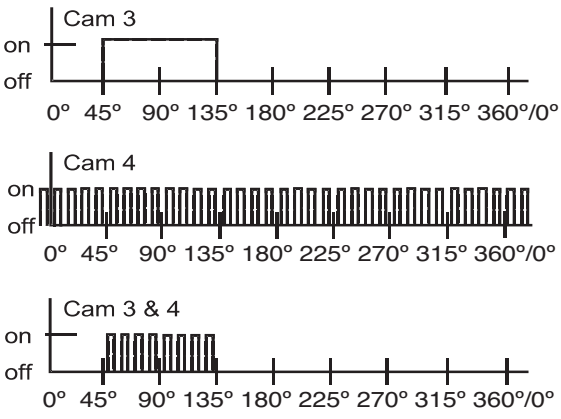


Figure 18—Output Timing Results of Multiple Pulses in a Window.



1. Install output modules in Positions 3 and 4, based on current and voltage requirements.

   Note: Positions 3 and 4 are used, but the procedure may apply to any two positions.

2. Set the corresponding DIP switches in the 0° to 180° position or Light Energizing mode. This mode is used when the timing window is less than 180°. In this example, the timing window is 90° in duration.

3. Wire the voltage supply and load as indicated in Figure 16 and Figure 17.

4. With the provided wrench, set Cam 3 to turn “on” at 45° and turn “off” at 135°.

5. The 32-slot pulse generating disc in Position 4 may be adjusted to center the pulses within the “on” period of Cam 3.

6. Since Cam 3 and Cam 4 are wired in series (ANDed), the pulsed output of Cam 4 will be “on” during the period Cam 3 is “on”. Figure 18 shows the output timing results of Cam 3 and Cam 4 individually, and the output timing results of both cams when wired in series (ANDed).

7. With simple wiring, the signals can be ANDed or ORed with other cam outputs to give various stitching patterns for multi-pulse signal applications. For instance, these signals can be switched externally by a rotary switch to change patterns for different sizes or shapes of containers in a gluing application. This allows quick changeover without physically changing any of the cams.

Setup Examples

Changeover Example

The following section describes the setup of the unit for rapid changeover. This procedure eliminates the need to make internal cam adjustments by presetting several cams, one for each product.

Once preset, an external switch selects the proper cam for each specific product. This procedure can apply to carton and case sealing equipment, form, fill and seal machines, or assembly equipment. In this example, an AC solenoid valve controls a glue gun.

Figure 19—Cam with External Switching.

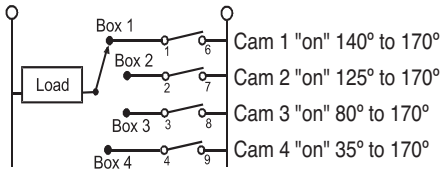


Figure 20—Preset each Cam.

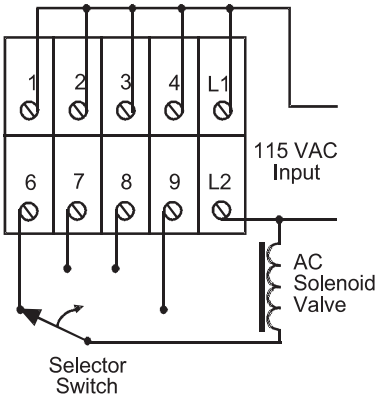
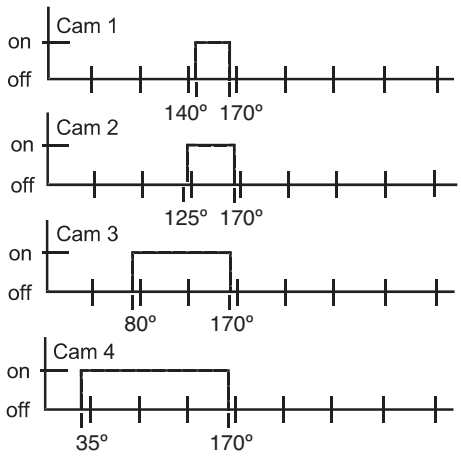


Figure 21—Output Timing Results.



1. Install output modules in Positions 1 through 4.

2. Set all DIP switches in the 0° to 180° position or Light Energizing mode, because all of the timing gaps of the cams in this example are less than 180°.

3. Wire the AC voltage supply, solenoid valve, and switch as indicated in Figure 19 and Figure 20. In this configuration, the four-position rotary switch produces four different output signals, generating four different glue patterns.

4. With the wrench provided, set the four interrupter discs as follows. The corresponding LED will illuminate when the cam is “on”.

Cam 1	on at 140°	off at 170°
Cam 2	on at 125°	off at 170°
Cam 3	on at 80°	off at 170°
Cam 4	on at 35°	off at 170°

5. Refer to Figure 21 for the output timing results for all four cams. Once all cams are set, the external selector switch is the only change that needs to be made.

Troubleshooting

The following section describes problems that may occur with your EC-3000 or EC-3400 Series unit, and the procedures to resolve those problems.

⚠ WARNING **Injury hazard due to accidental starting of machine. Put machine control in a safe mode and keep all personnel away from machine during setup, when adjusting cams, rotating the shaft, or setting DIP switches.**

1. **Outputs and LED's are not actuating on your unit.**
   a. Check the input power.
      - Ensure that terminal L1 and L2 are the correct input voltage.
   b. If the power at terminals L1 and L2 is correct, but no outputs and LED's actuate, conduct the following procedure.
      - Remove all power, unplug the input fuse, and check it with an ohmmeter.
2. **An output and its corresponding LED are not cycling on or off.**
   a. Check the corresponding photocoupler. Ensure that the photocoupler is not damaged and remove any debris, metal chips, or dirt from its surface.
   b. Operate the corresponding DIP switch, ensuring it is properly seated into position.
3. **An output is not turning on, but its corresponding LED is turning on and off properly.**
   a. Check the output fuse.
      - If the fuse is blown, replace the fuse and check all circuitry before reapplying power.
   b. The output module may not be working. Replace the output module with a new one.
   c. If the fuses and modules are okay, but the unit still does not operate properly, consult Electro Cam Corp. Customer Service for analysis and repair.
4. **An output is not turning off, but its corresponding LED is turning on and off properly.**
   a. If it is an AC output module, a load resistor may be needed. Refer to Page 14 for output wiring assistance.
   b. If it is a DC output module, ensure that the polarity is not wired backwards. Or, refer to Page 13 for output wiring sourcing or sinking assistance.
   c. The output module may be shorted or defective. Replace the output module with a new one.
   d. If the modules and wiring are okay, but the unit still does not operate properly, consult Electro Cam Corp. Customer Service for analysis and repair.

Options

Pulse Generating Discs

Multi-output pulse generating discs can be used with the EC-3000 or EC-3400 units. The EC-8003 Series pulse generating discs are often needed for applications requiring multiple outputs per revolution. These discs can generate timing pulses for tachometers, motion detection, glue stitching, or wherever multi-pulse signals are required. Glue stitching patterns on carton and case sealing equipment is an example of an application that benefits from pulse generating discs. Standard pulse discs 1, 2, 3, 4, 6, 8, 10, 16, 32, 60, and 64 slots per revolution are available, allowing for quick changeover. Pulse generating discs are factory mounted on the cam shaft, replacing one set of adjustable cams.

Sprocket Disengagement Clutch

The sprocket disengagement clutch may be used wherever a shaft needs to be easily disconnected from a sprocket without removing the chain. The clutch not only allows for disengagement of one station of the machine to check operation without jogging the entire machine, but it simplifies the adjustment of the rotary cam limit switch. In other instances, it can disengage a portion of a machine to back a section up to clear a jam. It automatically locks back in the home position after one revolution. Tight tolerance bore lengths secure the device to the shaft with snap rings. The clutch has a 3/4" bore with the provision for a #606 Woodruff key. Models available with A.S.A. No. 35, 40, and 41 sprockets.

External Degree Wheel and Pointer

In addition to the internal degree wheel and pointer included with each EC-3000 and EC-3400 unit, an optional external degree wheel and pointer is available to visually determine shaft position without removing the cover of the switch. It must be ordered with the unit, and requires a double-ended shaft for mounting. It may be mounted to the left- or right-hand shaft, and may have a clockwise or counterclockwise rotation.

CFX for High Shock or Vibration

For extremely high shock or vibration, such as punch press applications, a CFX may be needed on the EC-3000 or EC-3400 unit. The CFX adds clear conformal coating on both sides of the printed circuit board, and removable jumpers replace the DIP switch. The jumpers eliminate the possibility of intermittent connection to the DIP switch or the accidental changing of the DIP switch setting through shock or vibration.

CF for Highly Contaminating Environments

For highly contaminating environments, the CF option may be ordered with the EC-3000 units. The CF adds clear conformal coating to both sides of the printed circuit board. This option is standard on EC-3400 units.

SINKING or SOURCING ***(as pertaining to Electro Cam Corp. products)***

Sinking means that when the logic is true and the output (or input device) is ON, the output (or input device) is providing a DC common or ground to the connected device.

Sourcing means that when the logic is true and the output (or input device) is ON, the output (or input device) is providing a +DC voltage to the connected device.

This information is important when interfacing an Electro Cam Corp. product with another electronic device. The terms ***SINKING / SOURCING*** are not used in the same context by all manufacturers. If you are using an Electro Cam Corp. product input to an Allen-Bradley 1746-IN16 “sinking” input card* or similar A-B device, you have to supply a +DC voltage to this card, NOT a DC common or ground. In these cases, ***Sinking*** is what the card does with the input voltage; sinks it to common or ground.

* Other manufacturers include, but not limited to: Koyo (formerly GE Series 1, Texas Instruments, or Siemens SIMATIC PLS’s) that use descriptions similar to Allen-Bradley.

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