

COMMAND LIGHT



KNIGHT 2

KL435
KL450
KL470MH
KL475
KL490
KL495A

COMMAND LIGHT
P.O. BOX 87
LOVELAND, CO 80539

PHONE: 1-800-797-7974
FAX: 1-970-667-4296
WEB: www.commandlight.com

Serial Numbers: KL4901 and higher

This document supersedes all previous documents.
Effective Wednesday, January 04, 2006

Please take the time to read this manual before installing or operating the light.
Save this guide for future reference.

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Thank you for investing in a Command Light product.

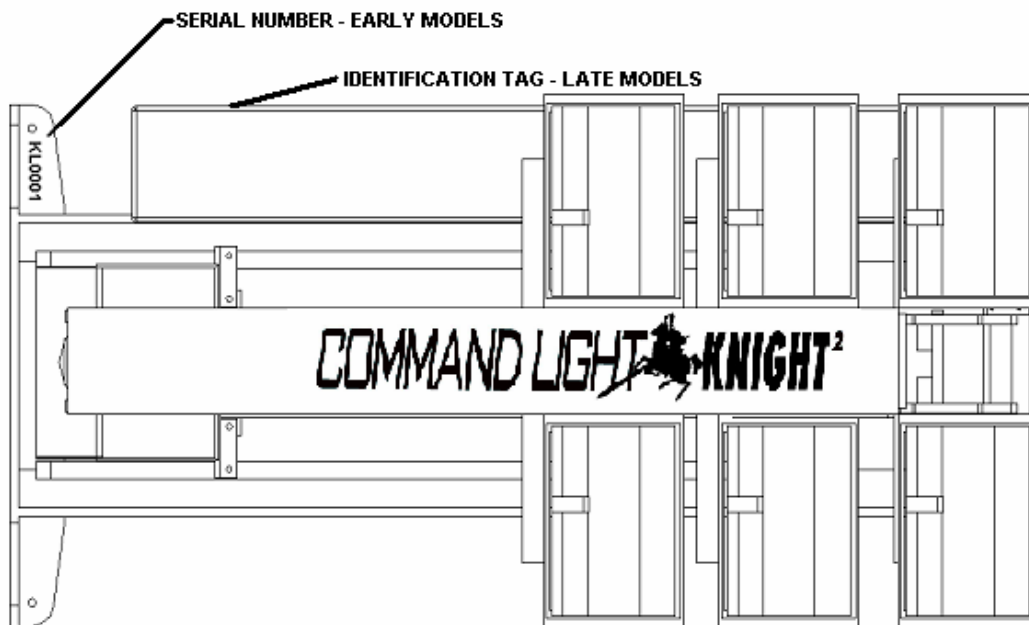
In order to serve you better, when contacting Command Light for assistance please have the serial number(s) available. The serial number can be located stamped into the frame in proximity to the power connection entrance. Please refer to the figure below. Later model Knight Lights have an identification plate affixed to the relay box.

Command Light strives to refine the product line. We welcome individual input on features and enhancements that would improve our product versatility.

Questions or comments regarding any of our products please contact us.

Phone: 1-800-797-7974
FAX: 1-970-667-4296
Email: info@commandlight.com
Web: www.commandlight.com

Specifications are subject to change without notice.



1. Breakage or Damage During Shipment

The transportation company is fully responsible for all shipping damage and will resolve problems promptly if you handle it correctly. Please read these instructions carefully.

Examine the contents of all shipping cases. If you find any damage, call your transportation agent at once and have them make a description on the freight or express bill describing the damage and the number of pieces. Then write us and we will send you the original bill of lading. Get a claim form from the express or truck company. Fill the claim form out. Attach the claim form to the original bill of lading together with a copy of our invoice. Attach a memo on which you show the value of the damaged goods. Mail or hand these papers to your local transportation agent. They will process your claim with reasonable promptness.

Please note, we cannot and will not enter claims for damages. If we filed claim here, it would be sent to your local freight agent for verification and investigation. This time can be saved by you filing the claim directly. Every consignee is on the ground floor, in contact with the local agent who inspects the damaged goods, and thus, each claim can be given individual attention.

Since our goods are packed to comply with the regulations of all railroad, truck, and express companies, we cannot allow deduction from any invoice because of any damage, however, be sure to file your claim promptly. Our goods are sold F.O.B. factory. We take receipt from the transportation company certifying that the goods were delivered to them in good order and our responsibility ceases.

It is seldom that any breakage or damage occurs in any of our shipments and in no case will the customer be out any expense if they follow the above instructions.

Be sure to keep all damaged goods subject to examination of the truck or express company inspector, who may call on you some time later. These damaged goods, of course, will belong to them, and they will inform you what to do with them. If you dispose of these damaged goods, your claim may not be paid.

2. General Description and Specifications

The COMMAND LIGHT KNIGHT V2 is designed to provide high-intensity emergency scene lighting with quick precision. As with any electromechanical device, take precautionary steps to assure safe operation.



Never operate the *KNIGHT*² near overhead power lines.

Power for the 120/240 VAC circuitry is provided by the emergency vehicle generator. All mechanical actuation power is designed to be powered by the internal 12 VDC power supply. The umbilical corded control unit is powered via 12 VDC eliminating hazardous voltage levels within the hand held control box. EURO specification models incorporate an additional step down transformer for single line 220VAC operation.

The *KNIGHT*² is manufactured to provide years of service with a minimum of maintenance.

There are several lighting options available for the *KNIGHT*²

Model #	Description	Power Requirements
KL435	6 x 350 watts	2KW, 120 or 240 VAC
KL450	6 x 500 watts	4KW, 120 or 240 VAC
KL470MH	4 x 175 watts	2KW, 120 or 240 VAC
KL475	6 x 750 watts	4.5KW, 240 VAC
KL490	6 x 900 watts	5.6KW, 240 VAC
KL495A	3 x 1500 watts	4.5KW, 240 VAC

Replacement lamps are available from lighting dealers or direct from *COMMAND LIGHT*.

Model 435 bulbs are 350 watt FCM/H1R-350T3/4

Model 450 bulbs are 500 watt, Q500T3/CL

Model 470MH bulbs are 175 watt Sylvania M175/U/MED/ED17 G4479-0 or equivalent

Model 475 bulbs are 750 watt Q750T3/CL

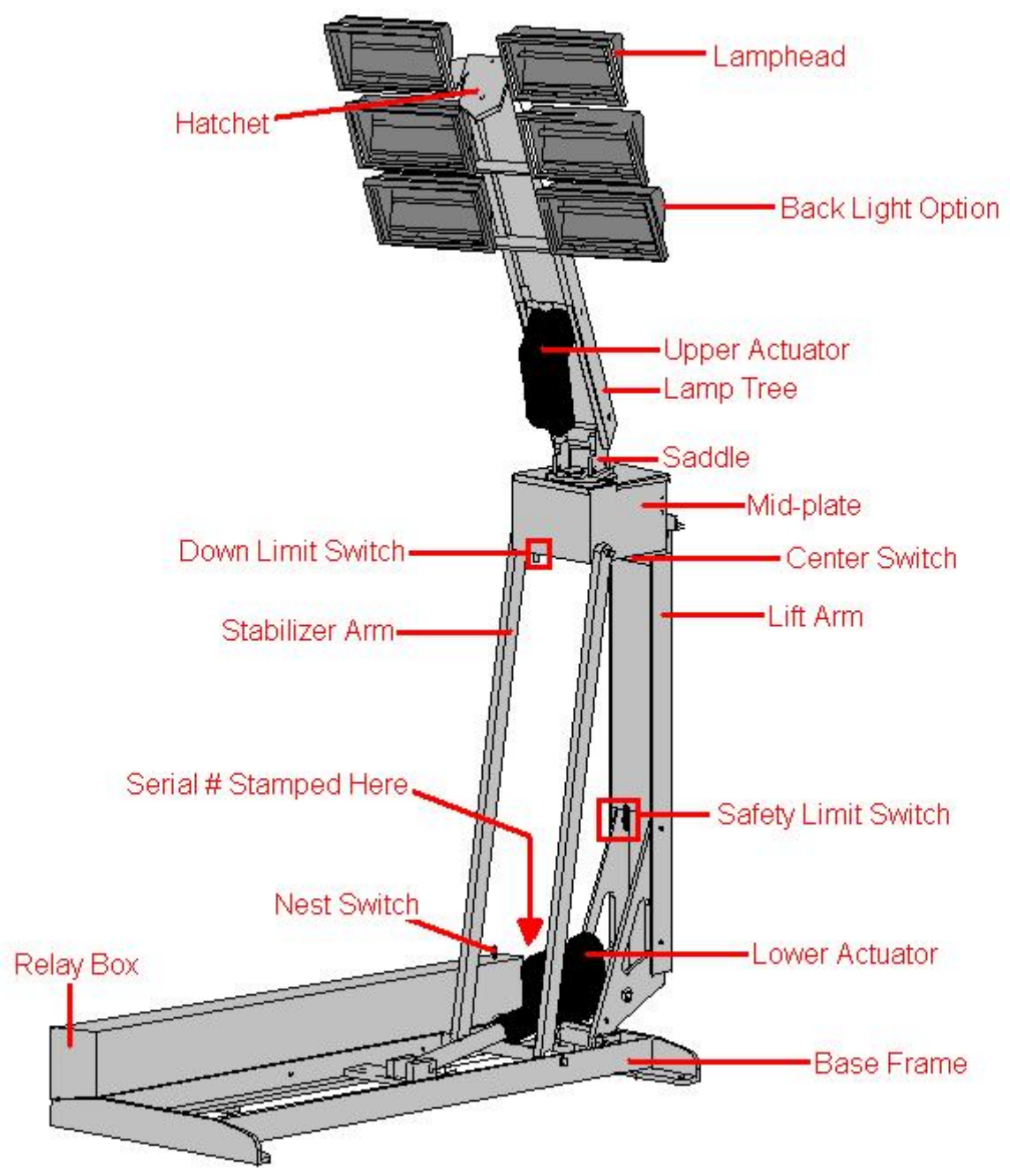
Model 490 bulbs are 900 watt Q900T3/CL

Model 495 bulbs are 1500 watt Q1500T3/CL

Metal Halide Precautions WARNING: RISK OF ULTRAVIOLET RADIATION EXPOSURE!

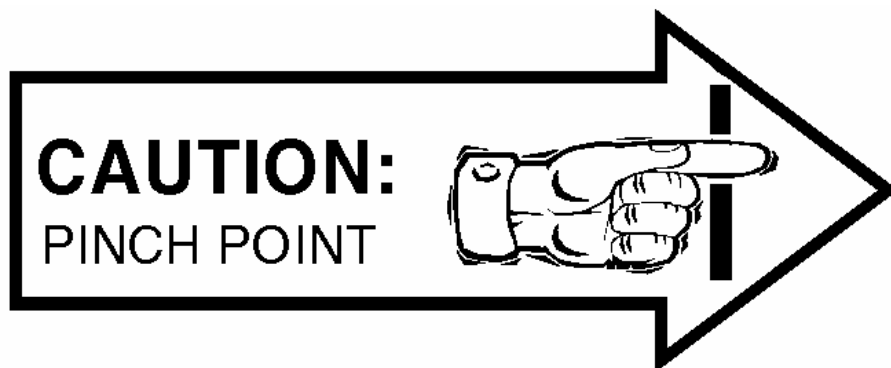
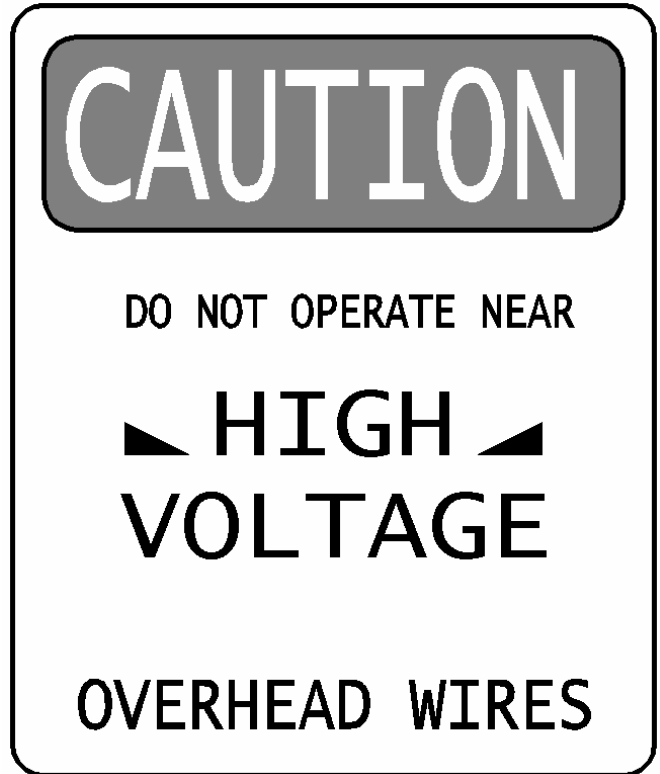
The Knight Light Model KL470MH is equipped with METAL HALIDE lamps. Metal Halide lamps are constructed of an outer glass bulb with an internal arc-tube made of quartz. Metal Halide arc-tubes operate at high pressure (up to 50 p.s.i.) and at very high temperatures and can unexpectedly rupture due to internal causes such as a ballast failure or misapplication. An arc-tube rupture can burst and shatter the outer glass bulb resulting in the discharge of glass fragments and extremely hot quartz particles (as high as 1832° F, 1000° C). These lamps can cause serious skin burn and eye inflammation from short wave ultraviolet radiation if the outer envelope of the lamp is broken or punctured. Do not use where people will remain for more than a few minutes unless adequate shielding or other safety precautions are used.

Feature Identification



3. Product Safety Precautions

- ⊗ Never operate the **KNIGHT²** near overhead high voltage power lines. The **KNIGHT²** is manufactured from electrically conductive materials.
- ⊗ Do not use the **KNIGHT²** for uses other than its' intended purpose.
- ⊗ Do not move emergency vehicle with the light extended. Visually verify that the light is completely nested before moving vehicle.
- ⊗ Do not change light position while people are located within its' operating envelope. There are numerous pinch points that can cause serious bodily injury.
- ⊗ Several components in the **KNIGHT²** contain automatic reset thermal protection. Disconnect power at the generator distribution panel before servicing the unit.
- ⊗ Do not use a high-pressure washer or subject the light to high volumes of water when cleaning.
- ⊗ Never use the **KNIGHT²** as a lifting device or mobile arm.
- ⊗ Do not use a **KNIGHT²** that has been damaged or is not fully functional, including non-working indicator lamps.
- ⊗ Never hold any part of the **KNIGHT²** with a hand or foot while it is in motion.
- ⊗ The **KNIGHT²** has numerous pinch points. Keep loose clothing, hands and feet clear of moving parts.



4. Operation

Raising the light from the nested position

Using the control box, raise the lower or upper stage. You may also activate both stages simultaneously. Control switches are of momentary action style and must be held in the “on” position to actuate the stages.

The **KNIGHT²** has an override system that precludes rotation of the upper stage until the lower stage has elevated $\approx 10''$ from the nested position. When the lower stage is below $10''$ a mercury switch controls the following:

- Upper stage is prevented from rotating
- All lights are turned off, including strobe light if equipped, regardless of light switch positions.
- Prevents the upper stage from moving down if upper stage is not centered.

If the supply from the generator is marginal, position the **KNIGHT²** before turning on lights.

Returning the light to the nested position

The **KNIGHT²** is equipped with an auto park function as a standard feature. The green button on the control box initiates the auto-park sequence. Once initiated the “STOP” red indicator button is illuminated. Pressing the “STOP” button will cancel the auto-park sequence.

Auto-park Sequence

Press green button labeled **AUTOPARK** once. It does not need to be held in position. The auto-park sequence begins:

1. Emergency STOP red light is illuminated.
2. Lamps are extinguished.
3. Upper stage begins rotation clockwise to the center position.
4. Center switch cam on spindle contacts the center switch. Green center indicator lamp is illuminated.
5. Once upper stage is centered, rotation stops, lower stage begins retracting.
6. Down limit plunger on midplate contacts plastic strike pad on frame engaging down limit switch.
7. After lower stage has fully retracted, upper stage begins retracting.
8. Nest contact bolt contacts nest switch (protective rubber cover) on relay box.
9. Upon upper stage retracting fully, red emergency stop light turns off.

5. Installation

The **KNIGHT²** must be installed by a designated installation facility by qualified personnel only. All safety precautions must be thoroughly understood before installation. Please consult the factory for additional installation information assistance. The screws for the cover are located in a parts bag inside the installation kit box.

Installation Kit

Included with the **COMMAND LIGHT** is an installation kit. Verify that the contents of the kit includes the following items:

- 50 feet of 10GA-4 Conductor power cable
- (1) Pre-wired HOLSTER BOX w/cover and 50 feet of 20 conductor cable
- (1) Control Box
- (1) Small hardware parts bag with:
 - (4) mounting spacers
 - (4) $\frac{5}{16}$ -18 X 2 $\frac{1}{2}$ " bolts
 - (4) $\frac{5}{16}$ -18 nylon lock nuts
 - (4) $\frac{5}{16}$ " flat washers
 - (4) large diameter flat washers
 - (2) $\frac{1}{4}$ -20 X $\frac{5}{8}$ " pan head Phillips machine screws
 - (12) $\frac{1}{4}$ " flat washers
 - (6) $\frac{1}{4}$ -20 nylon lock nuts
 - (4) $\frac{1}{4}$ -20 x 1 pan head Phillips machine screw
 - (1) PVC wire grommet
 - (2) $\frac{1}{4}$ -20 x 1 socket head cap screw
 - (1) 90 degree $\frac{1}{2}$ " sealing connector with nut
 - (1) 90 degree $\frac{3}{4}$ " sealing connector with nut

Tools Required

- Lifting device (crane, forklift, block and tackle, etc.)
- Sling for lifting
- Drill
- $\frac{17}{64}$ " , $\frac{21}{64}$ " drill bits
- Hole saws for metal with a $\frac{7}{8}$ ", 1- $\frac{1}{8}$ ", 1- $\frac{1}{4}$ " diameter capacity
- Phillips head screwdrivers, #1 and #2
- $\frac{7}{16}$ " and $\frac{1}{2}$ " combination wrenches and / or ratchet and $\frac{7}{16}$ " and $\frac{1}{2}$ " sockets
- 8" adjustable wrench
- Wire stripper or razor blade knife
- Solder-less wire connector crimp tool
- Silicone based gasket sealer, RTV™ recommended

The **KNIGHT²** weighs between 136 – 174 pounds depending upon the model. Use mechanical assistance to lift the light into installation position such as a forklift or crane.

Use a sling to grasp the light.

Use the provided fender washers inside the mounting surface to distribute the weight load evenly.

When routing the connecting electrical wires take care to avoid sharp bends, hot components or other hazards to the wire.

The **KNIGHT²** is not designed to be operated in a raised position while the vehicle is in motion. The **KNIGHT²** includes warning circuit wiring to enable a warning device, letting the vehicle operator know when the **KNIGHT²** is not in the nested (travel) position.

Location Requirements

The **KNIGHT²** can be mounted on any location that is

KL435/KL450	47" x 23"
KL470MH	47" x 27"
KL475/490	58" x 32"
KL495A	56" x 23"

The surface should be flat or have only a slight crown.

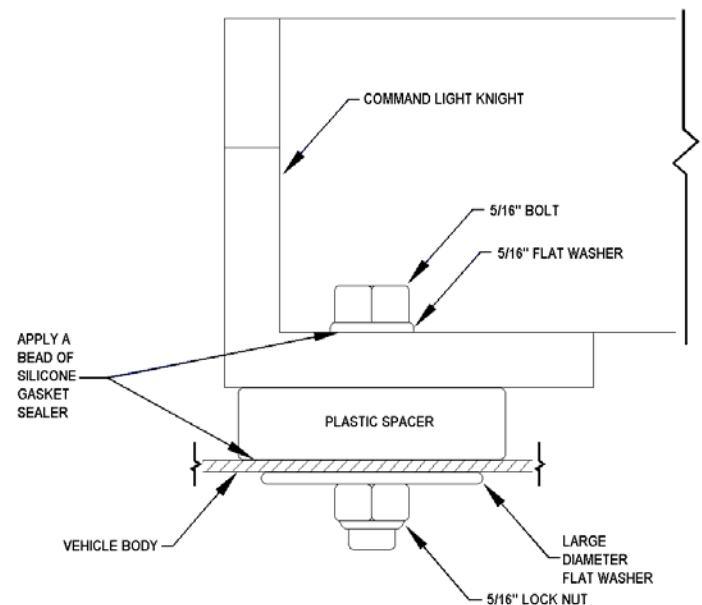
Recessed installations

KL435 – KL450	Allow for a minimum of 54" x 24" and a maximum of 10" deep to allow for proper operation.
KL470MH	Allow for a minimum of 54" x 30" and a maximum of 10" deep to allow for proper operation.
KL475/490	Allow for a minimum of 58" x 32" and a maximum of 10" deep to allow for proper operation.
KL495A	Allow for a minimum of 58" x 24" and a maximum of 10" deep to allow for proper operation.

Four mounting bolt holes are required. Additional holes may be drilled in the frame ends if necessary to clear obstructions.

Access hole for the power cord cabling should be in close proximity to the entrance box on the light.

The control box should be mounted in an area shielded from the weather. Allow a minimum of 10" clearance above the control box mounting location to permit easy removal of the hand controller.



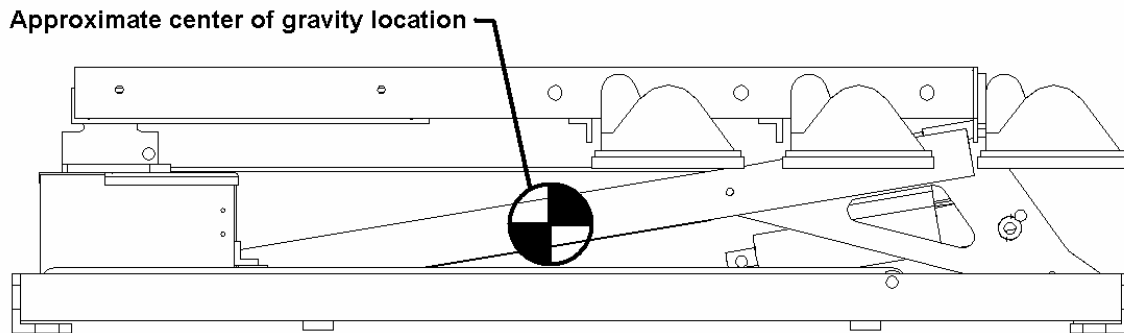
Mounting

Place the provided spacers in the location of the light mounting holes. The spacers may be modified to conform to the contour of the mounting location.

Remove any obstructions below the mounting surface such as headliners.

Attach any necessary lifting attachments to the unit.

The center of gravity (balance point) is slightly behind the lower bank of lights.



Slowly lift the **KNIGHT²** and check for balanced lifting. Lower and make any necessary adjustments to the lift points.

Lift and place the **KNIGHT²** into position above the spacers. Before placing the full weight of the unit on the spacers, align spacers with the holes in the end frame.

Drill $2\frac{1}{64}$ " holes in the mounting surface using the end frame holes as a template.

Fasten the light using the provided hardware. To assure a weather tight installation apply a thin bead of silicone based gasket sealer to the base of the spacer and under side of bolt head.

Remove any lifting straps and devices from the light.

Locate and drill the wire feed holes.

Control Box Holster Mounting

Using the holster box as a template, mark hole locations.

Drill $1\frac{7}{64}$ " mounting holes. Drill any holes required to route the control wire from the control box holster to the **KNIGHT²** unit.

Mount holster box with provided hardware.

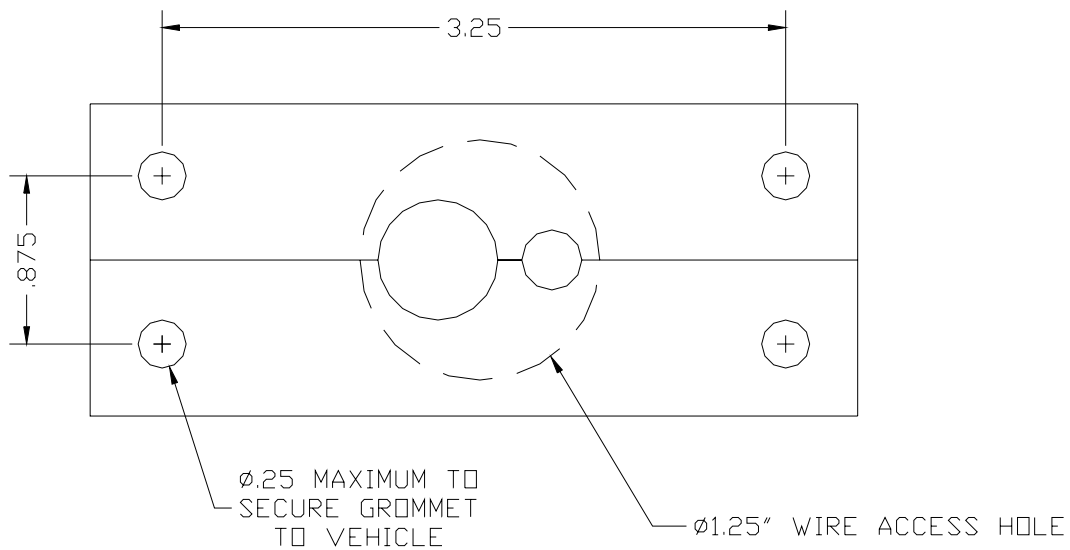
6. Electrical Wiring

Run the control wire from the control box to the *KNIGHT²*.

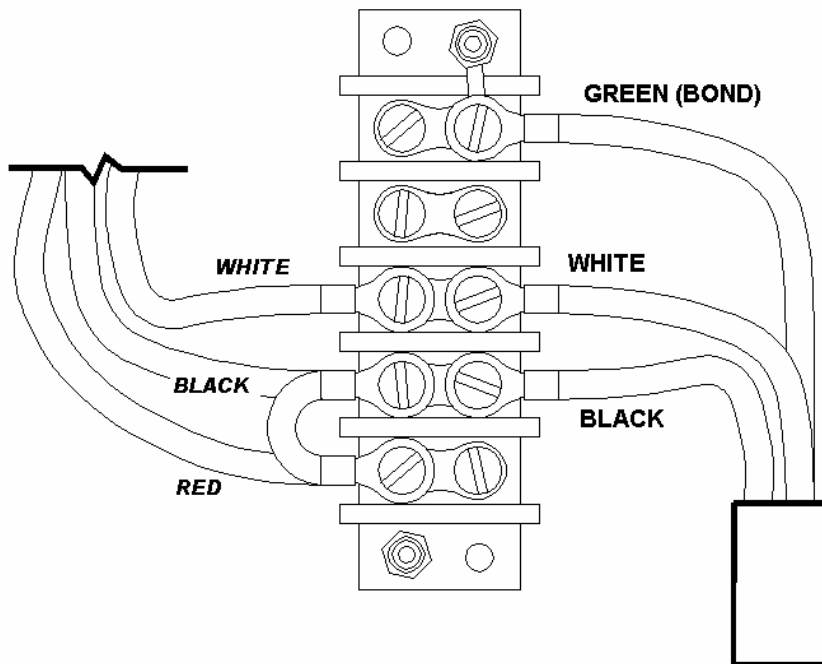
Run the power wire from the breaker box or generator to the *KNIGHT²*. A 40 Amp breaker is recommended for all models of *KNIGHT²*.

Make the control connections in the *KNIGHT²* entrance box. Light is pre-wired to connect to 120 VAC for those lights that support 120 VAC use and can be connected for 240 VAC by removal of factory jumper. Model KL495A is wired for 240 VAC only.

Drill a 1¼" diameter hole to provide access for routing of power and control wires through vehicle. A PVC grommet is provided to provide for a weatherproof installation. Use a silicone based sealant under the grommet to assure a weatherproof installation.

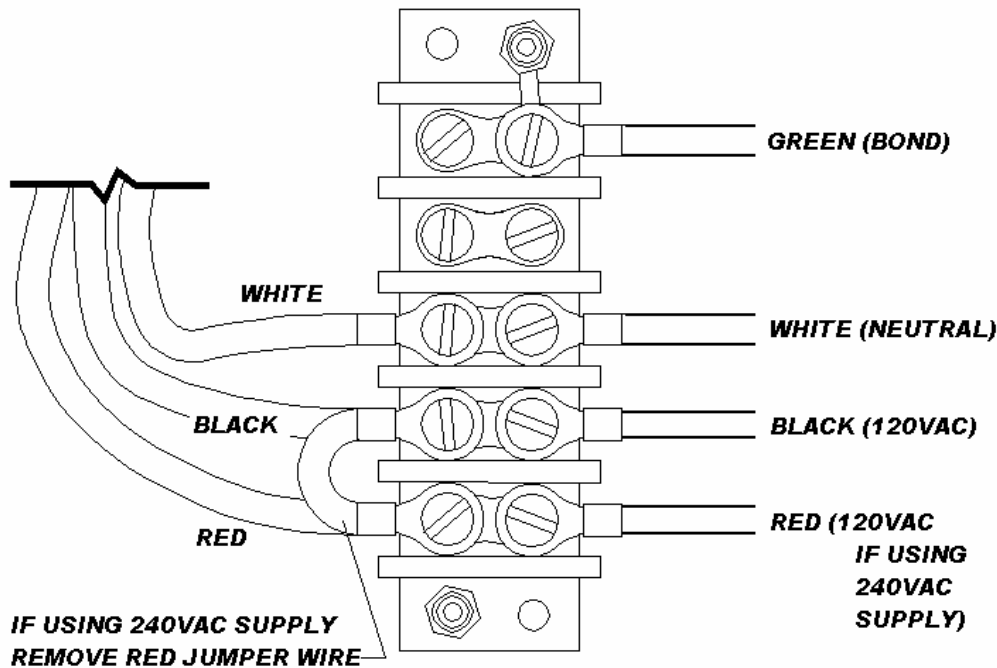


120 VAC Wiring Diagram



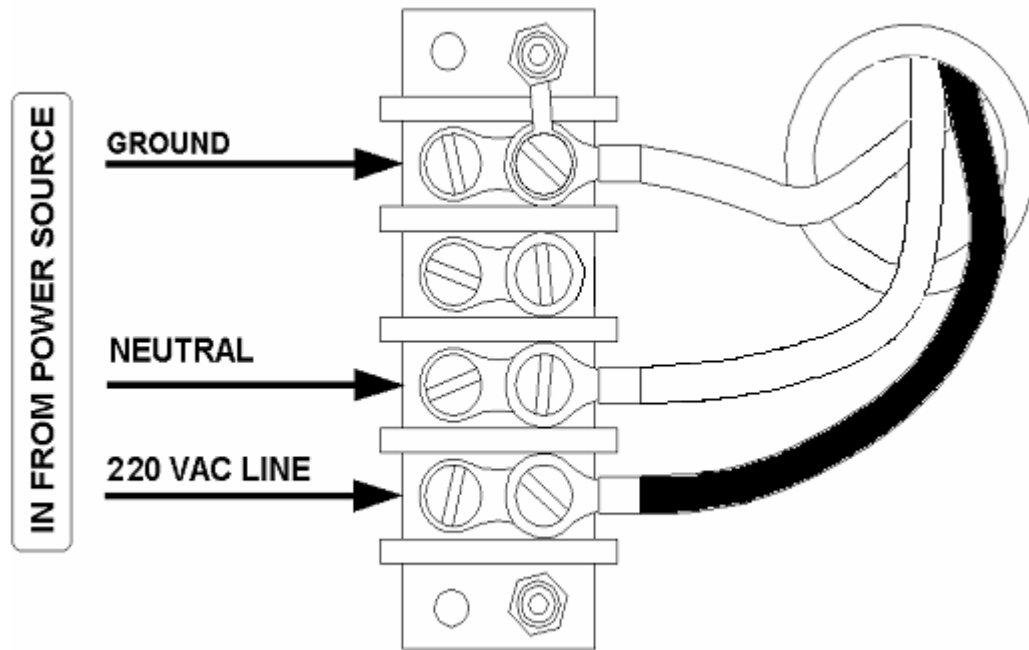
240 VAC Wiring Diagram

If 240 VAC operation is desired, remove the jumper wire between the red and black leads.



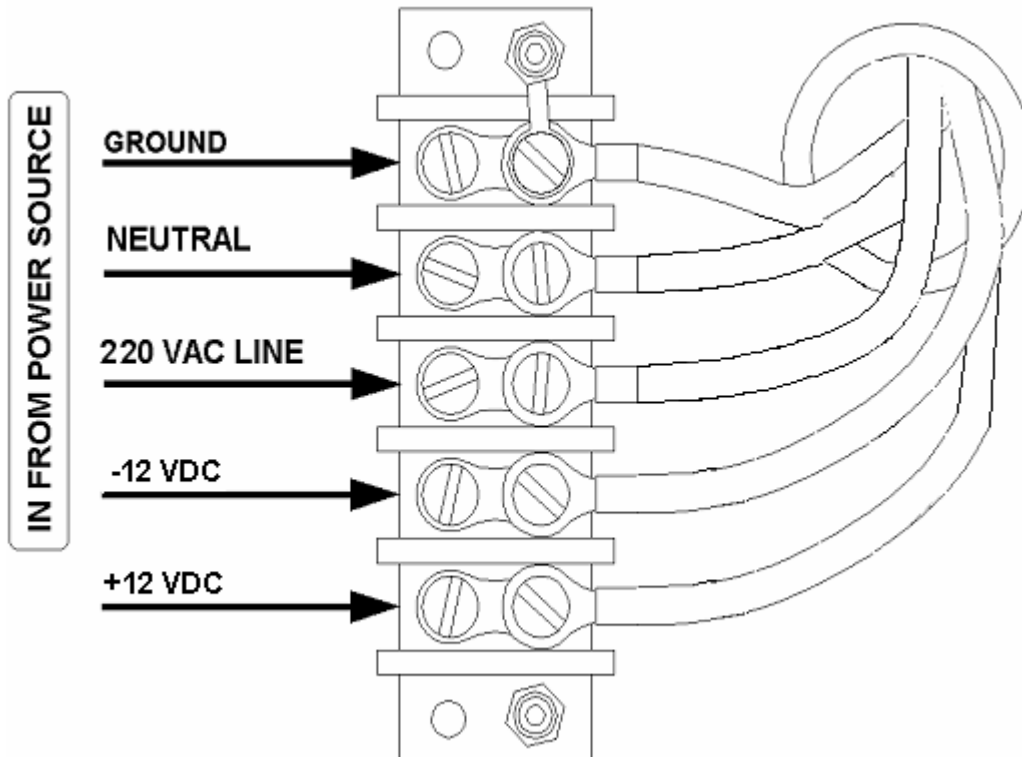
NOTE: The load on the (2) power legs will not be equally balanced. The *RED* lead powers the lamps and will carry $\approx 33\%$ more load. The *BLACK* lead supplies voltage for rotation and actuation.

220 VAC European



Verify that there is sufficient overhead room available and test operation of the light.

220 VAC / 12 VDC European



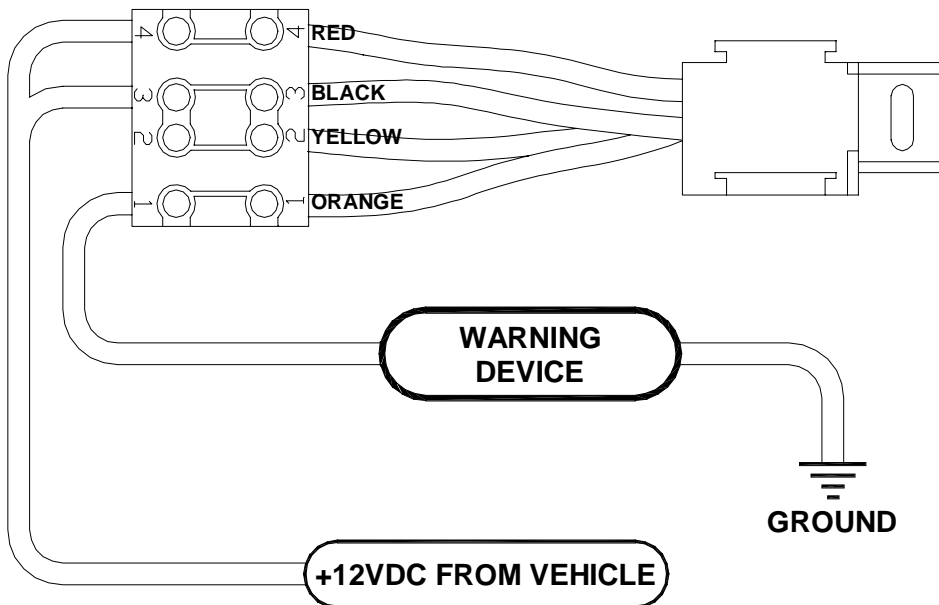
Verify that there is sufficient overhead room available and test operation of the light.

7. Warning Device Installation

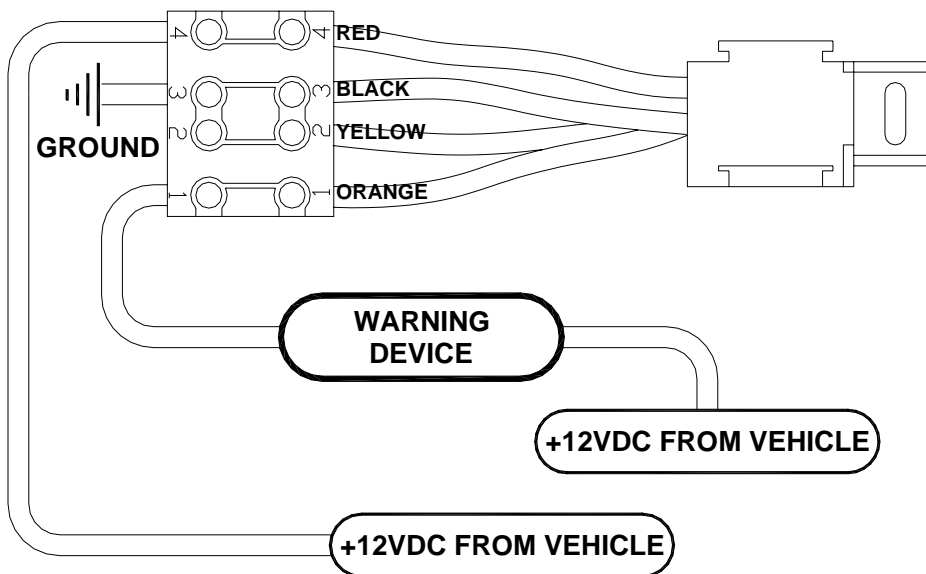
The *KNIGHT*² nest sensor can be used to activate a warning device when the light is extended. Typically, the vehicle will have a light or buzzer that actuates when the compartment doors are open. To connect such a device determine whether it is activated when it receives 12 VDC or when it receives a path to ground.

The connector for hooking up a warning device is located in the holster box that holds the control unit.

FOR A DEVICE THAT REQUIRES 12VDC SIGNAL TO ACTIVATE



FOR A DEVICE THAT REQUIRES GROUND TO ACTIVATE



8. Maintenance

Lamp Replacement

WARNING: NEVER remove any lamp from its socket while power supply is engaged!

Allow sufficient time for the lamps to cool. The surrounding metal lamp housings can cause serious burns.

Tools required:

Clean oil-free cloth

Cleaning alcohol

Protective gloves

Position lamp tree so lamps are readily accessible. This is usually with the lower stage in the retracted position and the upper stage extended to 90°.

High voltages can be present inside lamp housings. Disconnect the power supply from the *KNIGHT*². The glass capsules of lamps that have been in service tend to be brittle, handle them with caution.

KL435 / KL450

Grasp the lamp lens bezel firmly, release the latch that holds the lamp bezel in place. Use caution, The lamp bezel and lens may fall if not properly grasped. KL450 models after serial number KL4590 have a screw instead of a latch.

Caution: be certain that the lamp is cool to the touch before handling. Do not touch the lamp directly. Use a clean oil-free towel to handle the lamp. The lamps operate at high temperatures. Handling the lamps directly leaves minute traces of skin oils that cause localized hot spots that can lead to early lamp failure. Lamp surfaces may be cleaned with alcohol.

Latch the bezel making sure that the weather stripping is properly fitted.

KL470MH

Remove the (2) screws that hold the lamp bezel in place. Use caution, The lamp bezel and lens may fall if not properly grasped.

Caution: be certain that the lamp is cool to the touch before handling. Do not touch the lamp directly. Use a clean oil-free towel to handle the lamp. The lamps operate at high temperatures and high pressure. Handling the lamps directly leaves minute traces of skin oils that cause localized hot spots that can lead to early lamp failure. Lamp surfaces may be cleaned with alcohol.

Prior to installing the lamp in the fixture, check to be sure the lamp is of proper type and wattage. Screw the lamp securely into the socket, back the lamp out one to two turns, then screw the lamp back in, making sure it is secure. This properly seats the lamp in the socket.

Refasten the bezel screws making sure that the weather stripping is properly fitted.

KL475/490

Remove the (4) screws that hold the lamp bezel in place. Use caution, The lamp bezel and lens may fall if not properly grasped.

Caution: be certain that the lamp is cool to the touch before handling. Do not touch the lamp directly. Use a clean oil-free towel to handle the lamp. The lamps operate at high temperatures and high pressure. Handling the lamps directly leaves minute traces of skin oils that cause localized hot spots that can lead to early lamp failure. Lamp surfaces may be cleaned with alcohol.

Prior to installing the lamp in the fixture, check to be sure the lamp is of proper type and wattage. Seat the lamp securely into the sockets.

Refasten the bezel screws making sure that the weather stripping is properly fitted.

KL495A

Remove the (4) screws that hold the lamp bezel in place. Use caution, The lamp bezel and lens may need to be separated from the housing using a knife edged scraper or similar tool.

Caution: be certain that the lamp is cool to the touch before handling. Do not touch the lamp directly. Use a clean oil-free towel to handle the lamp. The lamps operate at high temperatures. Handling the lamps directly leaves minute traces of skin oils that cause localized hot spots that can lead to early lamp failure. Lamp surfaces may be cleaned with alcohol. Remove lamp by grasping the left side and pushing the bulb towards the right hand socket. Once bulb end is clear of the left side socket rotate towards you to remove. When inserting bulb, insert bulb into the right side socket first.

Refasten the bezel screws making sure that the weather stripping is properly fitted.

The **KNIGHT²** is constructed with corrosion resistant aluminum and stainless steel fasteners. To further enhance corrosion resistance all exposed surfaces receive a powder coated paint finish. To assure years of trouble free service periodically clean all external surfaces with a mild detergent solution and a gentle spray of water. Do not use a high-pressure washer, which will force water into sensitive electric circuitry.

Lamp lenses may be cleaned with any commercially available glass cleaner.

Upper and lower stage actuators are sealed units and do not require adjustment or lubrication.

Periodic cleaning of all pivot points on the **KNIGHT²** with a moisture displacing cleaner and soft bristle brush, without disassembly, to remove accumulated dirt and debris will minimize wear.

Center Switch Cam Adjustment

Symptom: **KNIGHT²** lamp tree is not returning to center during *AutoPark*.

Solution: Adjust center switch activating cam. Listed below are the steps to follow to adjust cam correctly.

- Raise lamp tree to a 45 degree angle, raise lower section high enough to comfortably work on, and make sure you are above the set safety limit (i.e. Lights will turn on).
- Visually check to see that the centering cam on the rotation spindle is contacting the center switch.
- Rotate off center, then press the auto park button and let light tower proceed through sequence until the lamp tree is a couple inches above the nested position, hit emergency stop.
- Visually determine which side the lamp tree will be hitting the lift arm on.
- Raise lower section above safety limit and to comfortable working height.
- Loosen screw on center switch cam slightly.
- Tap center switch cam away from the side that the lamp tree is hitting on.
- Fully tighten the screw holding the center switch cam.
- Raise lamp tree to a 45 degree angle, rotate off center.
- Press the auto park button and let light tower proceed through sequence until the lamp tree is a couple inches above the nested position, hit emergency stop.
- If it looks like center is now adjusted properly, raise lamp tree to a 45 degree angle, and lower stage all the way up, press auto park and let it go through the entire sequence.
- If it is still hitting off center, repeat previous steps.
- If problems adjusting center still persist you may need to adjust the center switch bracket, or call Command Light at 1-800-797-7974 to order a new switch, part number 069-14222.

Note:

By making a mark next to the cam on the bottom of the spindle, this makes judging the distance much easier.

Having the lamp tree at either extreme of fully up or down, will affect the degree of centering. The optimum is achieved by adjusting it at a 45 degree angle.

If problems persist please call Command Light at 1-800-797-7974.



Rotation Drive Belt Adjustment

Raise lamp tree to permit easy access.

Remove the (6) screws that retain the 2-piece midplate cover in place.



Remove the (4) screws that retain the midplate surround cover. Rotate the cover up and away from the main lift arm, around the pivot point



Loosen, but do not remove, screws that retain rotation motor.

Make sure both pulleys are parallel and in alignment with each other. To adjust any misalignment loosen the (2) set screws securing the small drive pulley to motor shaft. Adjust as required and tighten set screws.



Belt should fit snugly, neither too loose nor too tight. Avoid any preload, which can cause premature failure.

Using a suitable pry bar, apply gentle pressure between rotation motor case and sheet metal motor mount. Use caution to not over tighten drive belt. Drive belt should have a minimum of 2mm deflection and a maximum of 4mm midway between pulleys when adjusted with the lamp tree positioned as shown in the bottom right photo. Rotate lamp tree 180 degrees to verify that belt is not too tight. If belt is too tight, rotation motor noise level will rise noticeably.

Replace all covers before returning light tower to active service.



Rotation Drive Belt Replacement

Remove midplate covers as outlined previously.

Raise lamp tree enough to provide easy access to the twist-lock connectors located above the actuator.



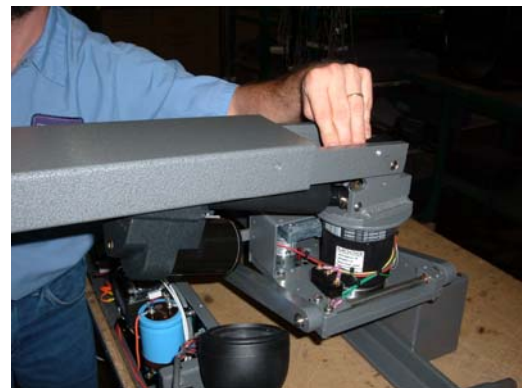
Disconnect all connectors found. The number of connectors will vary depending on what options your model of light tower has.



Loosen and remove (4) hex head bolts securing lamp tree.



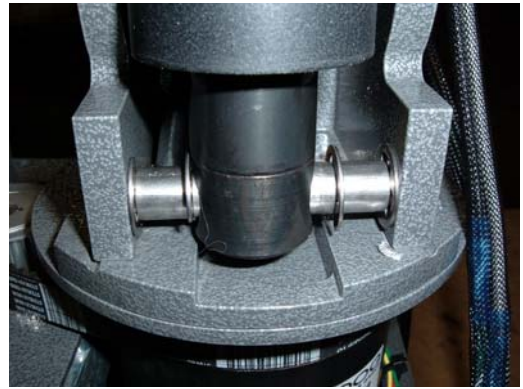
Slide lamp tree away from rotation platform. Lamp tree is a tight sliding fit. Do not use excessive force. If lamp tree does not slide with relative ease verify that you have disconnected all cable connections.



While supporting the actuator remove lamp tree mount arms. Use caution the actuator weighs approximately 13 pounds [6kg] and can cause injury if not supporting adequately. Mount arms are universal and can go on either side. Note position of lamp tree mount holes in photo at right for proper reassembly position



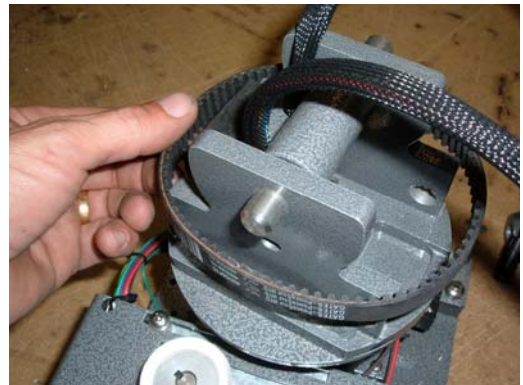
Remove (4) E-ring retaining clips securing actuator lower pivot pin in place. It is recommended that new E-rings be used for reassembly.



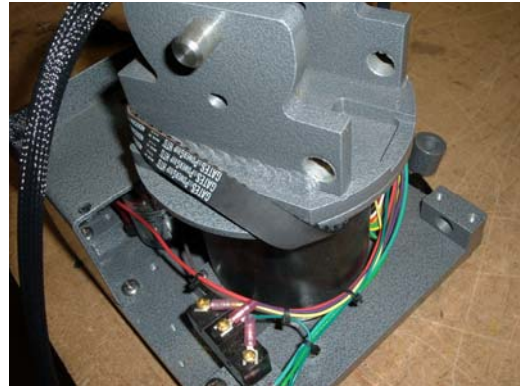
Support actuator and remove lower pivot pin.



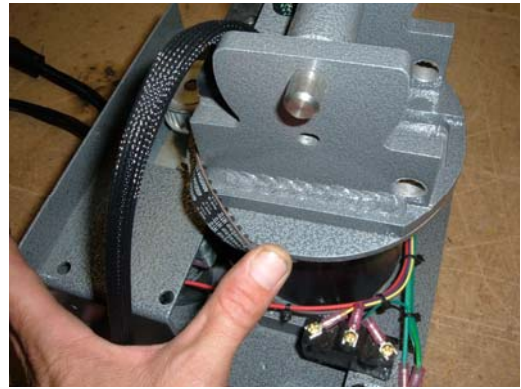
New belt can be installed without further disassembly. Place belt over rotation platform. Starting from one edge, begin sliding the belt past the circular dust shields.



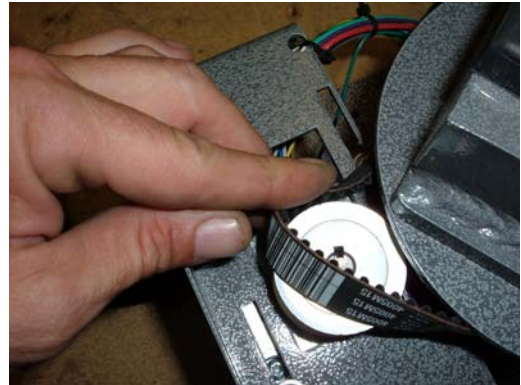
Belt will take some effort to slide past the dust shield.



Work it over the shield a little at a time.



Once belt is past the shield, slide rotation motor towards the center of the motor mount. Begin guiding the belt over the drive pulley.



To assist in getting belt over pulley you can activate the rotation switch on the hand controller to turn the motor. Follow previous procedure to adjust the belt tension.



9. Power Failure

The *KNIGHT*² can be retracted manually if power to the unit is lost. If power loss is temporary, reestablishing power may be easier than manually retracting the light.

Disconnect all power sources from the *KNIGHT*².

Retract the lower stage first.

Slowly apply pressure to the rotation platform to manually rotate to the centered position. Trying to rotate the platform too quickly or with too much pressure can break the rotation motor shaft or cause the toothed drive belt to shear a tooth. The upper stage can be rotated in either direction.

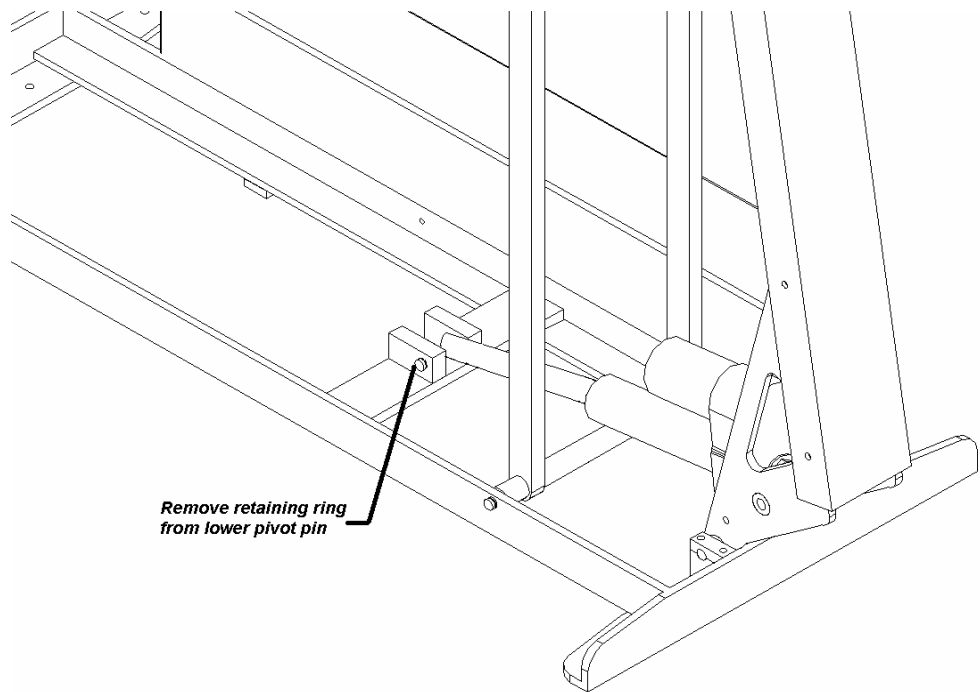
Generally, you need to rotate the platform in the direction that requires the least amount of travel in order to center the platform.

Support the mid-plate assembly with temporary blocking to relieve the tension on the lower actuator pivot pins.

Using a small flat blade screw driver, remove the retaining rings that secure the lower pivot pin in place. New retaining rings must be installed before returning light to service.

Use a brass drift punch to remove the pivot pin from the extension end of the actuator. Avoid using a hardened steel punch which couldpeen the end of the shaft thus damaging the bore within the aluminum pivot blocks.

Note the upper stage of the light weighs in excess of 100 pounds, use caution. Apply upward pressure on the main lift arm to remove support blocking then slowly lower the lift arm allowing the actuator shaft to extend past the lower pivot blocks.

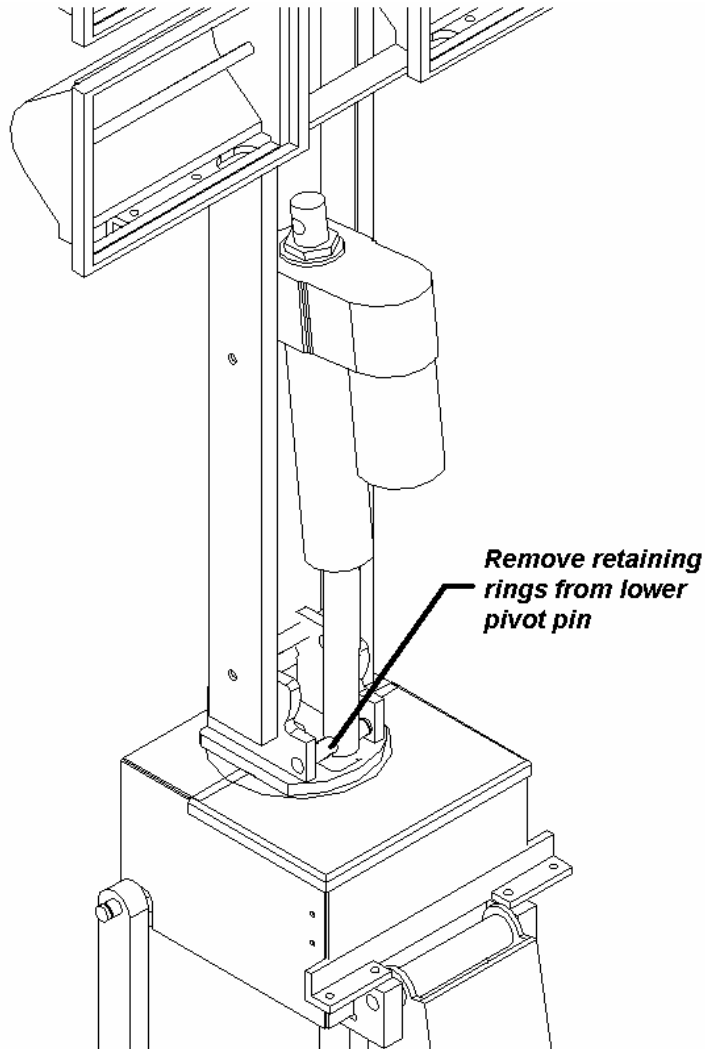


Retract the upper stage.

Support the lamp tree with temporary blocking to relieve the tension on the upper actuator pivot pins.

Unfasten the twist lock connector for the upper actuator. The connector is located above and in front of the actuator. The actuator connector is the medium sized of the 3 connectors found there.

Using a small flat blade screw driver remove the 4 e-clips securing the lower pin of the upper actuator. While supporting the lamp tree, lamp tree weighs between 27 – 46 pounds depending on configuration, use a brass drift to remove the pin.



Lift up on lamp tree to remove support blocking. Rotate the actuator towards the front of the light. The upper stage will not be completely lowered but should provide ample clearance to transport the light.

Cushion and secure the actuators and other components as necessary before transporting.

10. Troubleshooting

General

Problem	Possible Cause	Solution
Unit will not extend	No power to the unit	Check power input connections.
	Incorrect installation	Refer to installation instructions.
Upper stage will not rotate	Lower stage not raised above 40mm	Raise lower stage higher.
	Rotation motor in thermal overload.	Allow rotation motor to cool.
	Rotation motor failure.	Consult with factory.
Lights will not illuminate.	Lower stage not raised above 40mm	Raise lower stage higher.
	Circuit breaker tripped.	Check circuit breaker at power supply.
	No power to the unit.	Check power supply operation/output.
	Lamp filament broken.	Replace lamp.
Lights will not turn off	Unit overheated	Turn off power allow unit to cool
Rotation coasts after switch is released	Loose drive belt.	Consult with factory
Unit will not nest	Upper stage not centered	Raise lower stage > 10°. Center upper stage (green light illuminated)
	Unit being operated on a slope >15 degrees	Lower upper stage to horizontal. Using a pole, hold unit level while lowering to nest position.

Autopark Malfunction

Problem	Possible Cause	Solution
Autopark button must be held in to park unit	Improper or faulty ground	Check nest switch ground and operation.
	Water in electronics	Remove moisture from ground points and electronics. Do not use a pressure washer to clean unit.
	Stuck or broken nest switch	Clean switch plunger surface of accumulated debris. Lubricate plunger with dry graphite. If problem persists replace switch.
	Nest engagement bolt not contacting switch fully.	Lower bolt and / or raise switch adjustment. Realign bolt to switch.
	12VDC power not present on red/green control wire located in holster box.	Trace connections to red/green wire and verify continuity to +12VDC using wiring schematic. For a replacement wiring schematic please call Command Light 1-800-797-7974
Upper actuator and rotation start simultaneously	Down limit switch stuck Midplate plunger stuck. Down limit switch defective..	Clean and dry lubricate switch. Clean plunger and apply an anti-seize compound. Replace switch.
Autopark stops after lamp tree has centered and lower actuator has retracted. Upper stage does not retract.	Nest switch stuck. Rubber cover holding nest switch down. Defective nest switch.	Clean and dry lubricate switch. Replace rubber cover. Replace switch.
Lamp tree comes down off center.	Centering cam out of adjustment.	Adjust center switch cam.
Lamp tree continues to rotate.	Light being operated on too severe an angle.	
	Centering cam out of adjustment.	Adjust center switch cam.
	Center switch defective	Replace switch.

Sensor Switch Troubleshooting

Description	Function	Problem	Solution
Rotation Limit Switch (item 106 on parts list)	Mercury switch. Provides ground for safety limit relays. Prevents operation of lamps and rotation when lower stage is below \approx 12 inches.	Lamps will not illuminate, upper stage will not rotate.	Adjust angle of switch, replace if necessary.
Nest Switch (Located inside relay box)	Normally closed. Provides ground for autopark sequence, red indicator lamp on controller and vehicle warning device.	Upper stage will not retract during autopark. Warning device on vehicle does not deactivate.	Inspect protective switch cover for damage. Adjust nest switch plunger (item 93 on parts list).
Down Limit Switch (item 49 on parts list)	Normally closed. Provides ground for autopark sequence.	Light will rotate to center, lower stage retracts, upper stage remains extended.	Check down limit plunger (item 47 on parts list) for freedom of movement. Adjust switch as necessary.
Centering switch (item 25 on parts list)	Normally open. Indicates to autopark upper stage is centered for nest. Provides ground for center indicator lamp on controller.	Upper stage will not retract during autopark. Upper stage not centered.	Adjust switch mount and/or cam. Adjust drive belt tension.

11. Technical Specifications

KL435 / KL450

Dimensions:

	Height(Depth)	Length	Width
Retracted	11.375"	47"	23"
Extended	7'4"	52"	23"
Recessed installation	10" Maximum	54" Minimum	24" Minimum

Weight:

136 pounds

Wiring:

110 VAC	10/4 SO cord	50' provided
Control wiring	22/20 PVC Jacketed	50' provided

Relay protection:

Lights	Cole-Hersey	3055	40
Other electrical	Cole-Hersey	3055	40

Current Draw / Power Requirements:

	Max @ 110 VAC	Max @ 240 VAC	Generator Requirement
500 Watt bulbs	24 amps	12 amps	4 kW minimum
350 Watt bulbs	17 amps	9 amps	2 kW minimum

Motor Duty Cycle:

(All motors thermally protected, specifications are to thermal relay trip):

Lower stage	1:3 (90 seconds maximum per 5 minute)
Upper stage	1:3 (90 seconds maximum per 5 minute)
Rotation	5-6 Revolutions

Motor Speed:

Lower stage	0.5 inches per minute	10 seconds to full extension
Upper stage	0.5 inches per minute	12 seconds to full extension
Rotation	3.25 RPM at lamp tree	
Full Deployment	Lower and upper stages	15 seconds to full actuator extension
Auto Park	Rotate 180 degees and retract	40 seconds from full extension

Operation

Angle of vehicle 15° maximum incline

Wind load

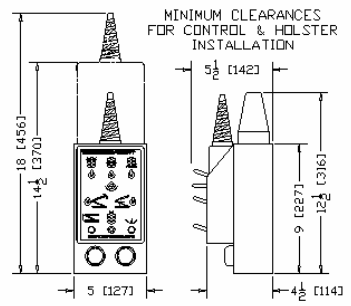
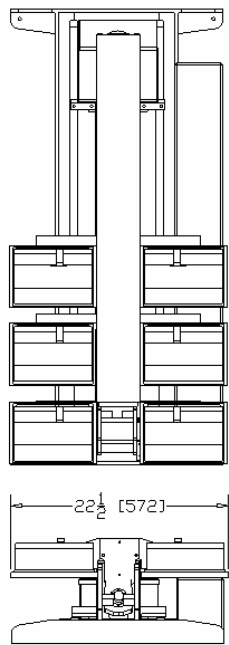
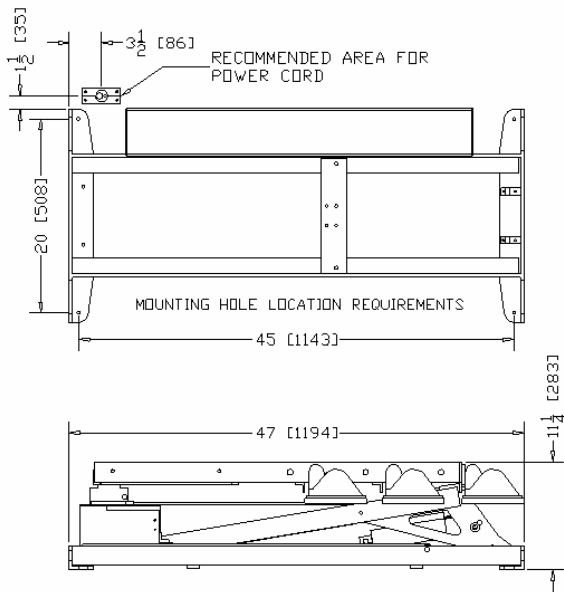
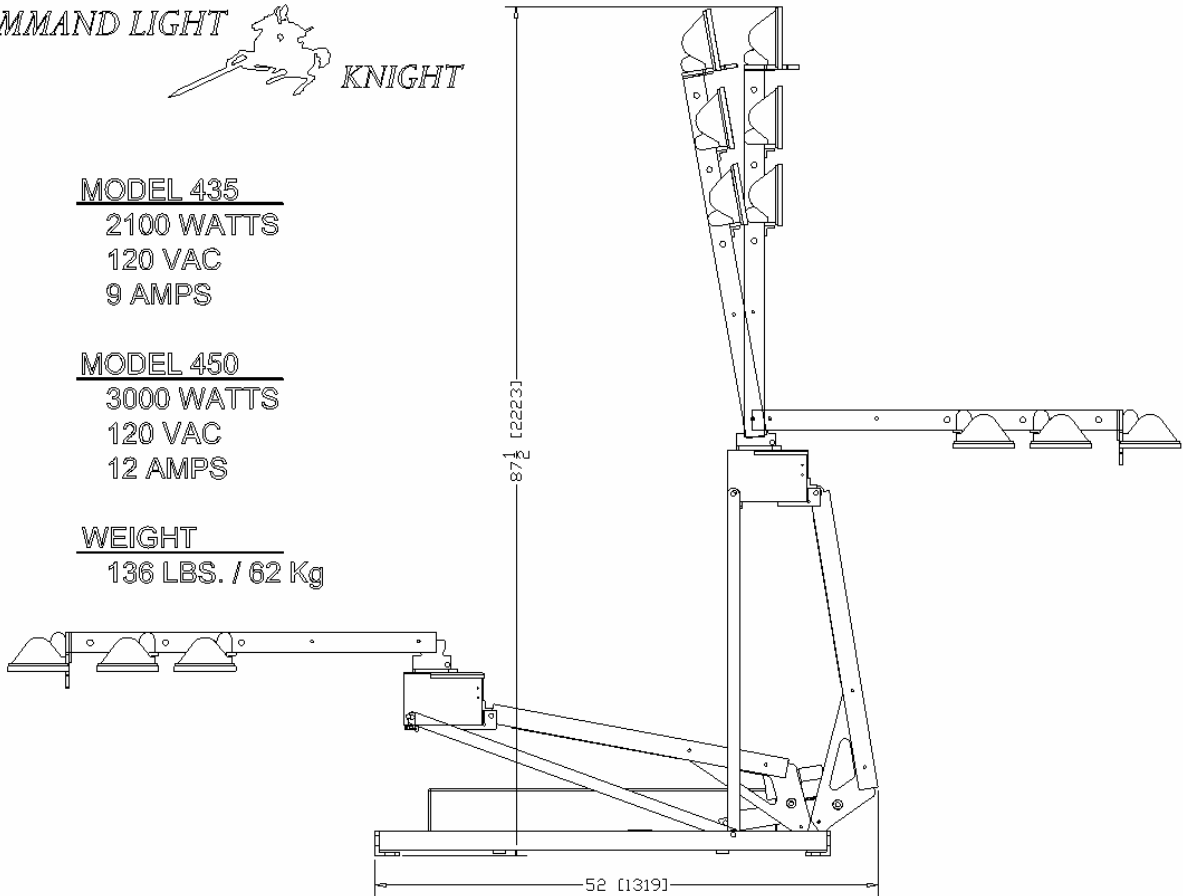
Design maximum	65 mph
Maximum tested	55 mph

COMMAND LIGHT  **KNIGHT**

MODEL 435
 2100 WATTS
 120 VAC
 9 AMPS

MODEL 450
 3000 WATTS
 120 VAC
 12 AMPS

WEIGHT
 136 LBS. / 62 Kg



KL470MH

Dimensions:

	Height(Depth)	Length	Width	
Retracted	14.75"	47"	27"	
Extended	7'4"	52"	27"	
Recessed installation	10" Maximum	54" Minimum	30"	Minimum

Weight:

160 pounds

Wiring:

110 VAC	10/4 SO cord	50' provided
Control wiring	22/20 PVC Jacketed	50' provided

Relay protection:

Lights	Cole-Hersey	3055	40
Other electrical	Cole-Hersey	3055	40

Current Draw / Power Requirements:

	Max @ 110 VAC	Max @ 240 VAC	Generator Requirement
175 Watt bulbs	10 amps	7 amps	2 kW minimum

Motor Duty Cycle:

(All motors thermally protected, specifications are to thermal relay trip):

Lower stage	1:3 (90 seconds maximum per 5 minute)
Upper stage	1:3 (90 seconds maximum per 5 minute)
Rotation	5-6 Revolutions

Motor Speed:

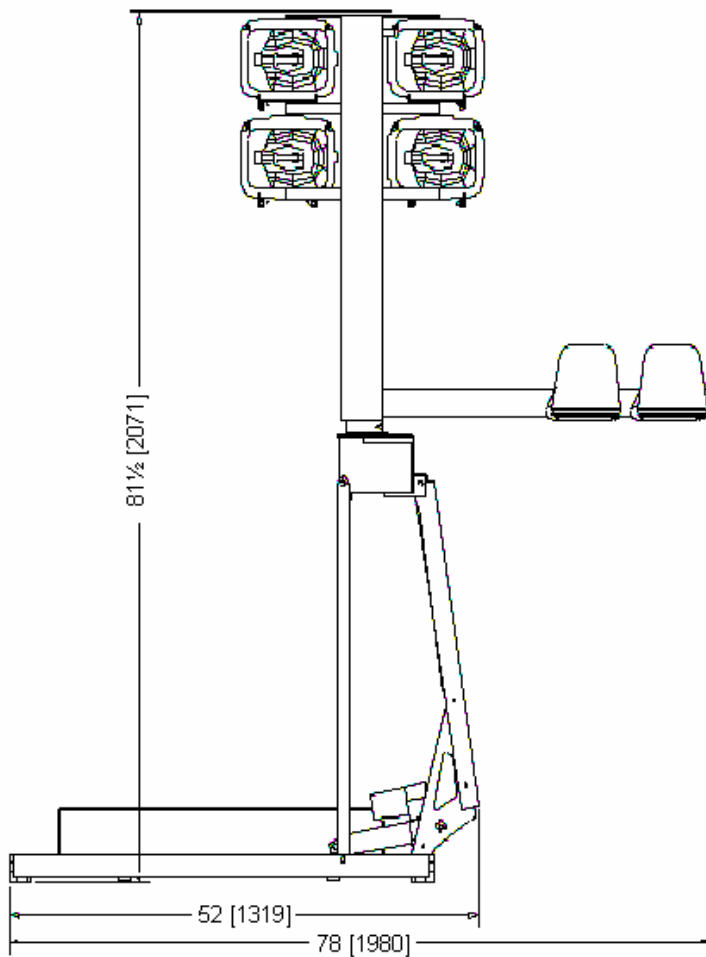
Lower stage	0.5 inches per minute	10 seconds to full extension
Upper stage	0.5 inches per minute	12 seconds to full extension
Rotation	3.25 RPM at lamp tree	
Full Deployment	Lower and upper stages	15 seconds to full actuator extension
Auto Park	Rotate 180 degrees and retract	40 seconds from full extension

Operation

Angle of vehicle 15° maximum incline

Wind load

Design maximum	65 mph
Maximum tested	55 mph



MODEL 470MH

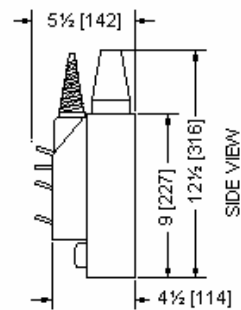
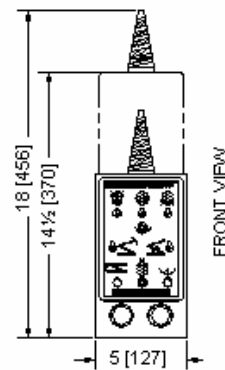
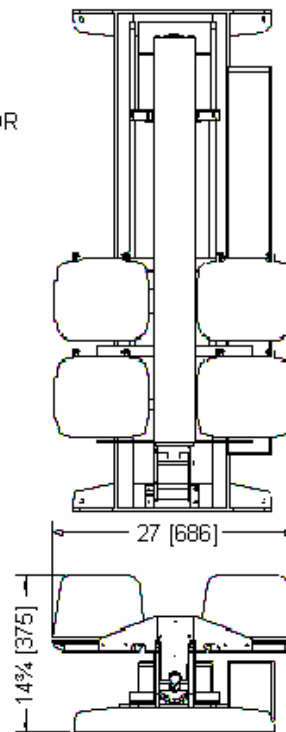
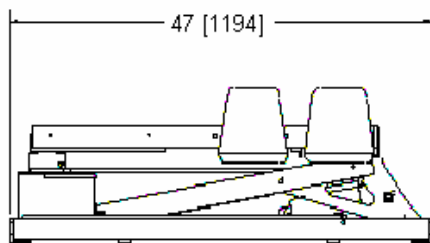
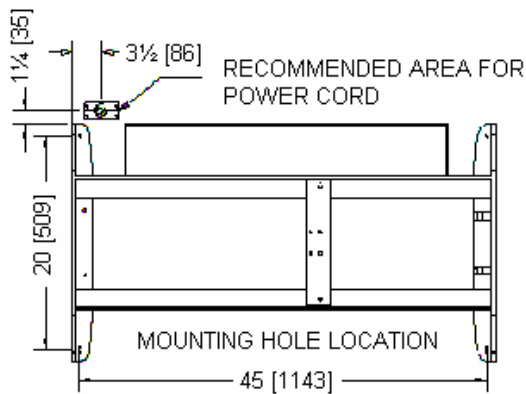
**700 WATTS
(4 @ 175w)**

6 AMPS

WEIGHT

160 LBS. / 73 Kg

MINIMUM CLEARANCES
FOR CONTROL & HOLSTER
INSTALLATION



KL475/490

Dimensions:

	Height(Depth)	Length	Width	
Retracted	13.375"	54.75"	30"	
Extended	7'4"	95.25"	30"	
Recessed installation	13" Maximum	58" Minimum	32"	Minimum

Weight:

174 pounds

Wiring:

240 VAC	10/4 SO cord	50' provided
Control wiring	22/20 PVC Jacketed	50' provided

Relay protection:

Lights	Cole-Hersey	3055	40
Other electrical	Cole-Hersey	3055	40

Current Draw / Power Requirements:

	Max @ 240 VAC	Generator Requirement
750 Watt bulbs	19 amps	4.5 kW minimum
900 Watt bulbs	24 amps	6.5 kW minimum

Motor Duty Cycle:

(All motors thermally protected, specifications are to thermal relay trip):

Lower stage	1:3 (90 seconds maximum per 5 minute)
Upper stage	1:3 (90 seconds maximum per 5 minute)
Rotation	5-6 Revolutions

Motor Speed:

Lower stage	0.5 inches per minute	10 seconds to full extension
Upper stage	0.5 inches per minute	12 seconds to full extension
Rotation	3.25 RPM at lamp tree	
Full Deployment	Lower and upper stages	15 seconds to full actuator extension
Auto Park	Rotate 180 degees and retract	40 seconds from full extension

Operation

Angle of vehicle	15° maximum incline
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Wind load

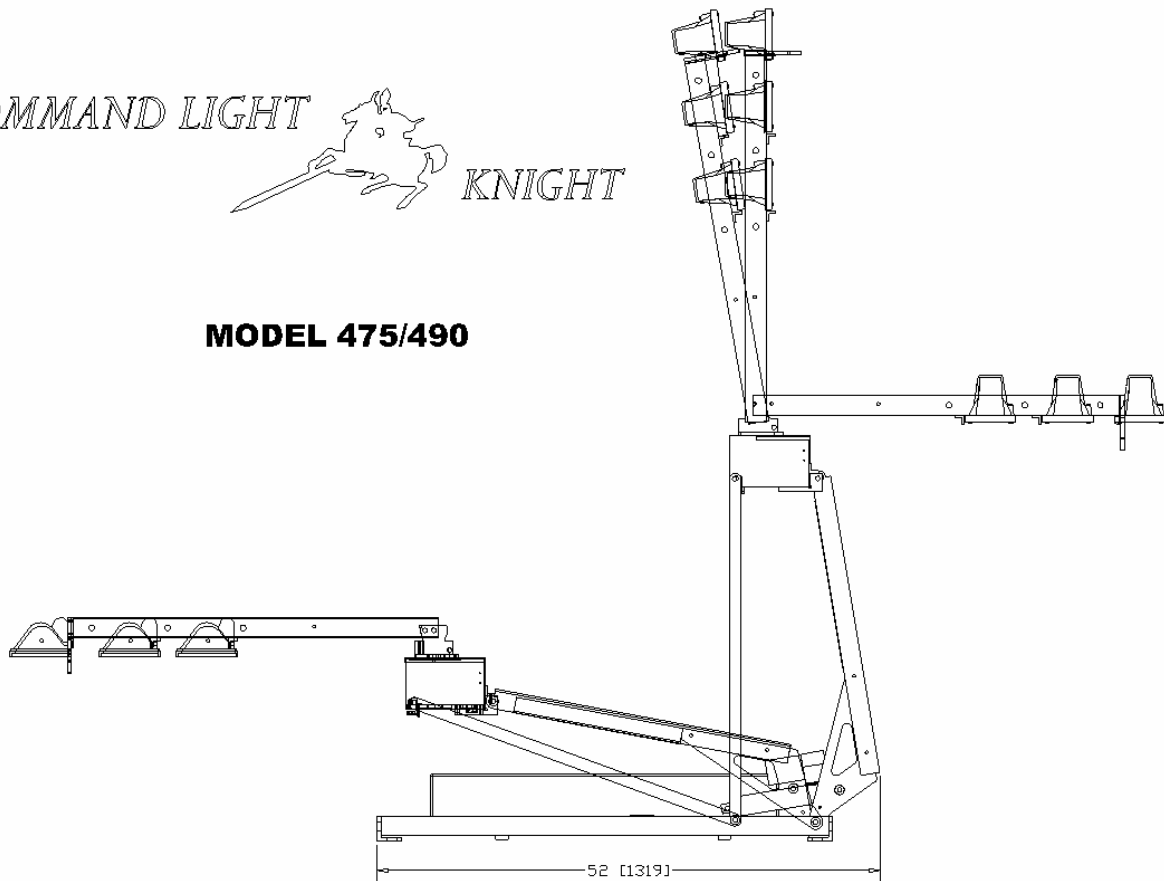
Design maximum	65 mph
Maximum tested	55 mph

COMMAND LIGHT

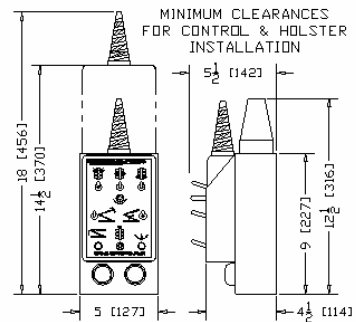
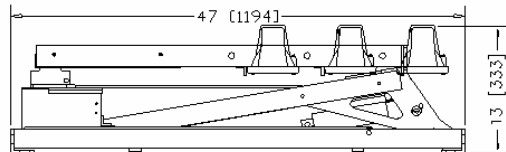
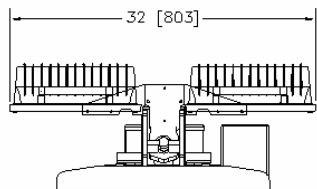
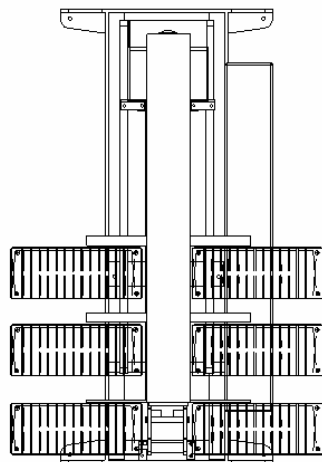
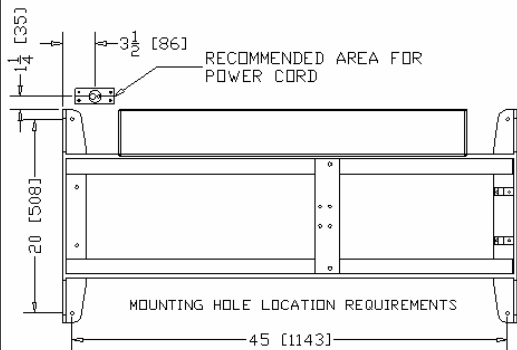


KNIGHT

MODEL 475/490



52 [1319]



KL495A

Dimensions:

	Height(Depth)	Length	Width	
Retracted	11.375"	54.75"	23"	
Extended	7'4"	95.25"	23"	
Recessed installation	10" Maximum	58" Minimum	24"	Minimum

Weight:

174 pounds

Wiring:

240 VAC	10/4 SO cord	50' provided
Control wiring	22/20 PVC Jacketed	50' provided

Relay protection:

Lights	Cole-Hersey	3055	40
Other electrical	Cole-Hersey	3055	40

Current Draw / Power Requirements:

	Max @ 240 VAC	Generator Requirement
1500 Watt bulbs	8 amps	4.5 kW minimum

Motor Duty Cycle:

(All motors thermally protected, specifications are to thermal relay trip):

Lower stage	1:3 (90 seconds maximum per 5 minute)
Upper stage	1:3 (90 seconds maximum per 5 minute)
Rotation	5-6 Revolutions

Motor Speed:

Lower stage	0.5 inches per minute	10 seconds to full extension
Upper stage	0.5 inches per minute	12 seconds to full extension
Rotation	3.25 RPM at lamp tree	
Full Deployment	Lower and upper stages	15 seconds to full actuator extension
Auto Park	Rotate 180 degees and retract	40 seconds from full extension

Operation

Angle of vehicle 15° maximum incline

Wind load

Design maximum	65 mph
Maximum tested	55 mph

MODEL 495A

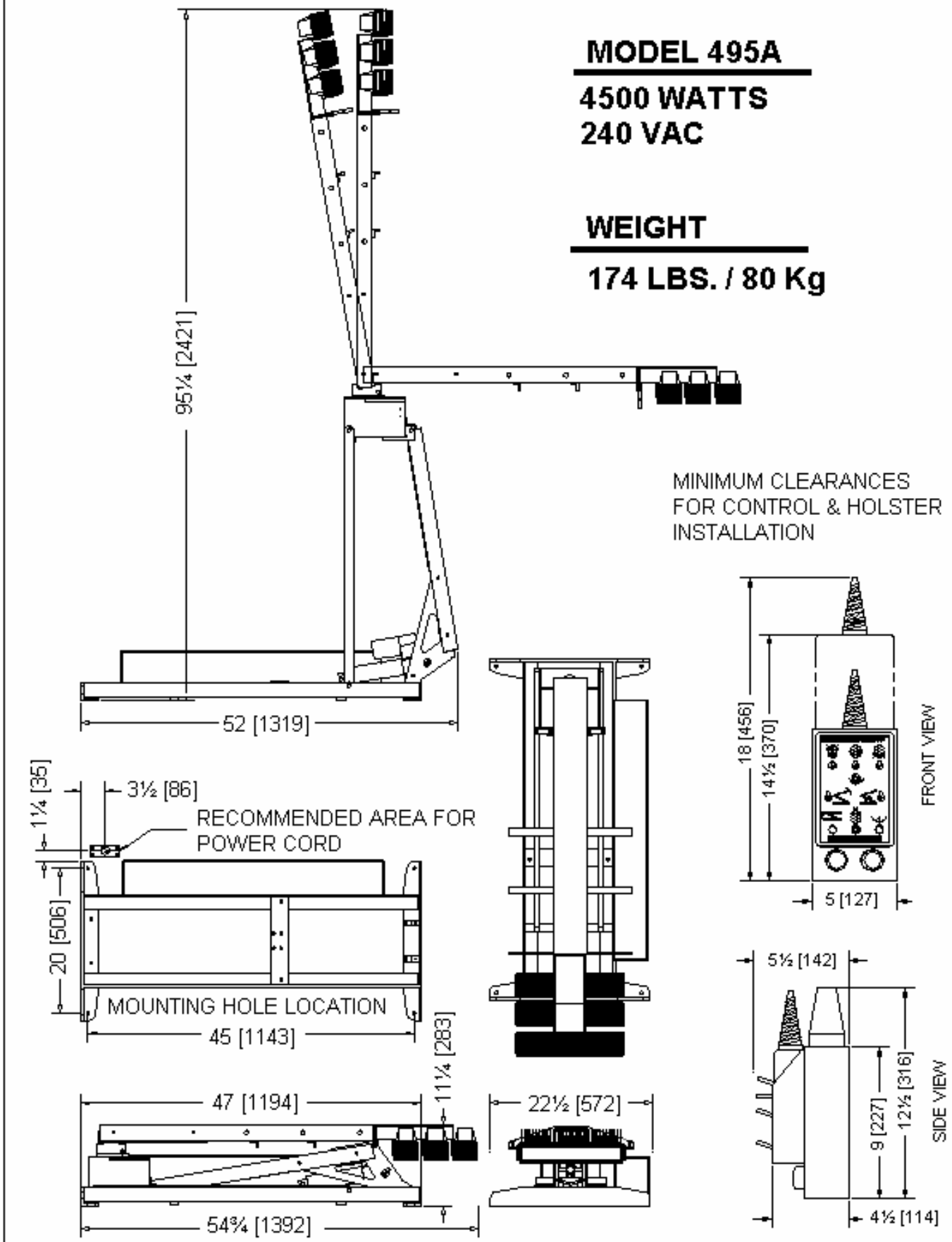
4500 WATTS

240 VAC

WEIGHT

174 LBS. / 80 Kg

MINIMUM CLEARANCES
FOR CONTROL & HOLSTER
INSTALLATION



12. Parts Lists

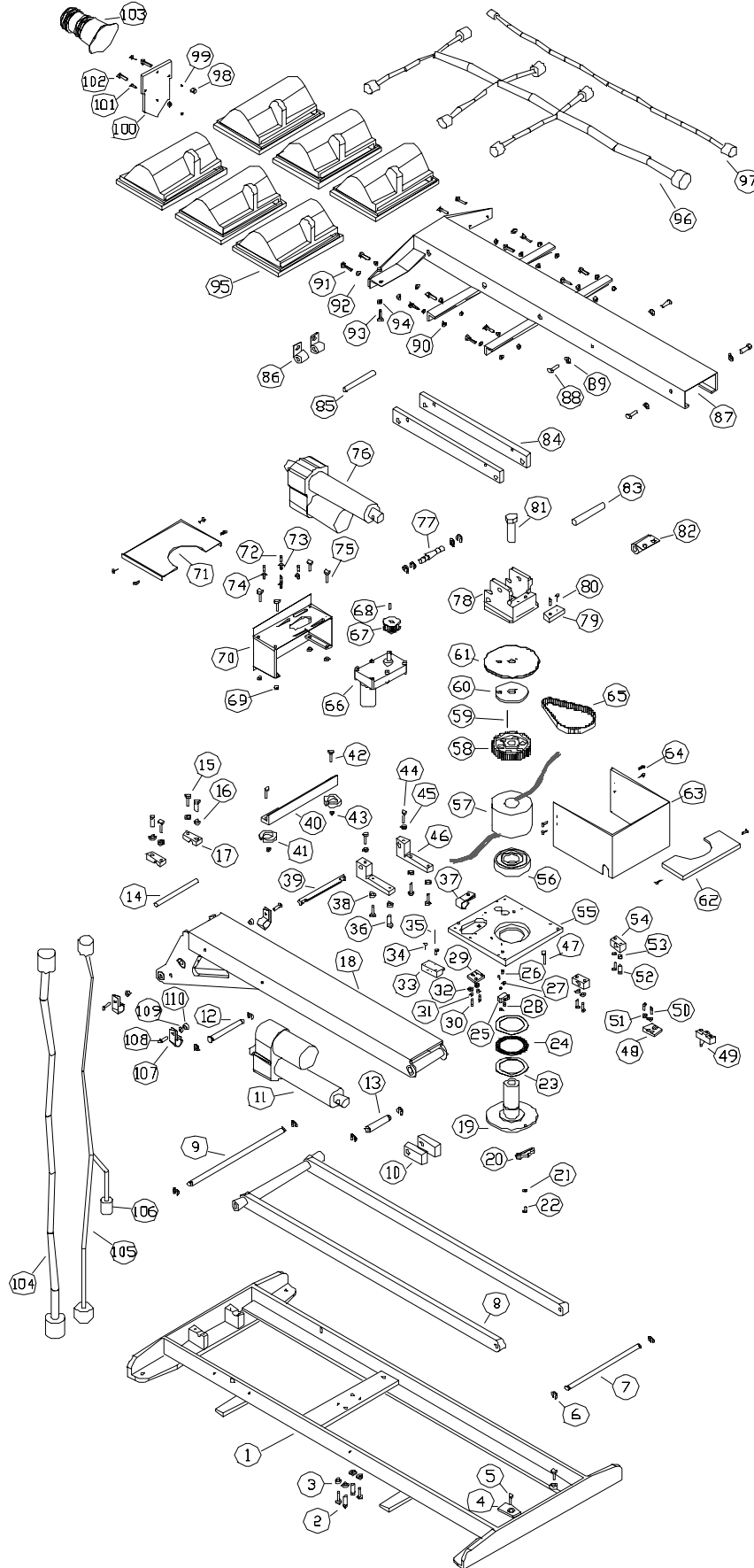
Parts List (KL450 Standard Assembly) - See Figure 1

ITEM	QTY	PART NO.	DESCRIPTION
1	1	075-01000A	FRAME, MAIN
2	4	034-11042	BOLT, HEX HEAD, 5/16-18 X 1, SS
3	4	034-11053	WASHER, SPLIT RING LOCK, 5/16, SS
4	1	075-06500	PLATE, DOWN LIMIT STRIKE
5	2	034-13033	SCREW, HEX HEAD, ¼-20 X 7/8, SS
6	12	069-15336	E-CLIP
7	1	075-06020	SHAFT, UPPER STABILIZER PIVOT
8	1	075-01700A	ARM, STABILIZER
9	1	075-06010	SHAFT, LOWER STABILIZER PIVOT
10	2	075-01600	BLOCK, LOWER ACTUATOR PIVOT
11	1	069-15355	ACTUATOR, LOWER
12	1	075-06050	SHAFT, UPPER, LOWER ACTUATOR
13	1	075-06080	SHAFT, LOWER, LOWER ACTUATOR
14	1	075-06060	SHAFT, LOWER, LIFT ARM PIVOT
15	4	034-11042	SCREW, HEX HEAD, 5/16-18 X 1, SS
16	4	034-11053	WASHER, SPLIT RING LOCK, 5/16
17	2	075-01300	CAP, MAIN FRAME
18	1	075-02001A	ARM, MAIN LIFT
19	1	075-03400	SPINDLE
20	1	075-03410	CAM, SWITCH
21	1	034-11030	WASHER, INTERNAL LOCK, ¼, SS
22	1	034-11001	SCREW, PANHEAD MS, ¼-20 X ½, SS
23	2	069-15335	RACE, NEEDLE BEARING
24	1	069-15334	BEARING, NEEDLE ROLLER
25	1	069-14222	SWITCH, CENTER
26	2	034-13288	SCREW, PANHEAD PHILLIPS, 4-40 X ¾, SS
27	2	034-14283	WASHERS, INTERNAL LOCK, #4, SS
28	2	034-10899	NUT, 4-40, SS
29	1	075-03500	PLATE, CENTER SWITCH
30	2	034-10939	SCREW, PANHEAD, 8-32 X ½, SS
31	2	034-10949	WASHER, INTERNAL LOCK, #8, SS
32	2	034-10947	WASHER FLAT, #8, SS
33	1	075-03300	BLOCK, SLIP RING
34	2	034-10942	SCREW, PH, 8-32 X 1, SS
35	1	065-12966	PIN, SLIP RING
36	4	034-11017	SCREW, HEX HEAD, ¼-20 X 1, SS
37	1	065-12860	CLAMP, WIRE LOOM, #10
38	4	034-11028	WASHER, SPLIT RING LOCK, ¼, SS
39	1	075-06030	SHAFT, UPPER, LIFT ARM PIVOT
40	1	075-03530	STOP, MIDPLATE
41	2	024-10524	BUMPER, RUBBER, 0638-MW
42	2	034-10941	SCREW, PH, 8-32 X ¾, SS

43	2	034-10951	NUT, LOCKING, #8, SS
44	2	034-11017	SCREW, HEX HEAD, ¼-20 X 1, SS
45	2	034-11028	WASHER, SPLIT RING LOCK, ¼, SS
46	2	075-03000	BLOCK, PIVOT, MAIN LIFT UPPER
47	1	075-03520	PLUNGER, DOWN LIMIT
48	1	075-03510	PLATE, DOWN LIMIT SWITCH
49	1	069-15360	SWITCH, DOWN LIMIT
50	2	034-11001	SCREW, PH MS, ¼-20 X ½, SS
51	2	034-11028	WASHER, SPLIT RING LOCK, ¼, SS
52	4	034-11017	SCREW, HEX HEAD, ¼-20 X 1, SS
53	4	034-11028	WASHER, SPLIT RING LOCK, ¼, SS
54	2	075-03100	BLOCK, MIDPLATE PIVOT
55	1	075-03200	PLATE, MIDPLATE
56	1	069-15333	BEARING, SPINDLE, 6308-2NSE
57	1	065-12817	SLIP RING
58	1	069-14152	PULLEY, ROTATION
59	1	069-15361	PIN, ROTATION DRIVE
60	1	075-04310	DISK, LOWER, ROTATION
61	1	075-04300	DISK, UPPER, ROTATION
62	1	075-03605	COVER, REAR, MIDPLATE
63	1	075-03610	COVER, SURROUND, MIDPLATE
64	10	034-10961	SCREW, PH MS, 10-24 X 3/8, SS
65	1	069-14153	BELT, DRIVE
66	1	065-13833	MOTOR, ROTATION
67	1	069-14151	PULLEY, DRIVE
68	1	075-06400	KEY, DRIVE PULLEY
69	4	034-11033	NUT, NYLOCK, ¼-20, SS
70	1	075-03620	MOUNT, ROTATION MOTOR
71	1	075-03600	COVER, FRONT, MIDPLATE
72	4	034-13039	SCREW, PH MS, 10-32 X ¾, SS
73	4	034-10977	WASHER, FLAT, #10, SS
74	4	034-10977	WASHER, INTERNAL LOCK, #10, SS
75	4	034-11004	SCREW, PH MS, ¼-20 X 1, SS
76	1	069-15356	ACTUATOR, UPPER
77	1	075-06070	SHAFT, LOWER, UPPER ACTUATOR
78	1	075-04100A	PLATFORM, ROTATION
79	1	024-10527	PAD, RUBBER
80	2	034-13059	SCREW, FH MS, 8-32 X 5/8 SS
81	1	034-10850	BOLT, HEX HEAD, ¾-10 X 3, KL4268 – KL4629
			Starting with Serial Number: KL4630
	1	032-10857	BOLT, HEX HEAD, ¾-10 X 7
	1	032-10861	NUT, HEX, ¾-10
82	1	075-06120	GUIDE, LOWER, LAMP TREE WIRE
83	1	075-06060	SHAFT, LAMP TREE PIVOT
84	1	075-05000	ARM, LAMP TREE
85	1	075-06060	SHAFT, UPPER, UPPER ACTUATOR
86	2	075-06110	GUIDE, UPPER, LAMP TREE WIRE
87	1	075-05300A	TREE, LAMP

88	4	034-11041	SCREW, HEX HEAD, 5/16-18 X 3/4 , SS
89	4	034-11053	WASHER, SPLIT RING LOCK, 5/16, SS
90	12	034-11033	NUT, NYLOCK, 1/4-20, SS
91	12	034-11017	SCREW, PH MS, 1/4-20 X 7/8 , SS
92	12	034-11112	NUT, 1/4-20, JAM, SS
93	1	034-11020	BOLT, HEX HEAD, 1/4-20 X 1 3/4 , SS
94	2	034-11033	NUT, NYLOCK, 1/4-20, SS
95	6	069-15332	LAMP
NI	6	065-12850	BULB, 500 WATT
NI	6	065-14024	BULB, 350 WATT
96	1	075-90000	HARNESS, LAMP
97	1	075-90001	HARNESS, STROBE
98	2	034-11032	NUT, HEX, 1/4-20, SS
99	2	034-11028	WASHER, SPLIT RING LOCK, 1/4, SS
100	1	075-05400	BRACKET, NEST
101	2	034-10961	SCREW, PH MS, 10-24 X 3/8 , SS
102	2	034-10997	SCREW, FLAT HEAD, 1/4-20 X 1, SS
103	1	065-12867X	STROBE, SPECIFY COLOR, PRE-WIRED
NI	1	065-13824	BULB, STROBE
104	1	075-90002	HARNESS, AC FEED
105	1	075-90003	HARNESS, DC FEED
106	1	049-12293	SWITCH, SAFE LIMIT
107	3	065-12861	CLAMP, WIRE LOOM, #8
108	3	034-10997	SCREW, PHP MS, 1/4-20 X 1, SS
109	1	034-11030	WASHERS, INTERNAL LOCK, 1/4 , SS
110	3	034-11033	NUT, NYLOCK, 1/4-20, SS
NI	1	075-06300	GROMMET, POWER CABLES
NI	1	069-14106	DECAL, KNIGHT LIGHT

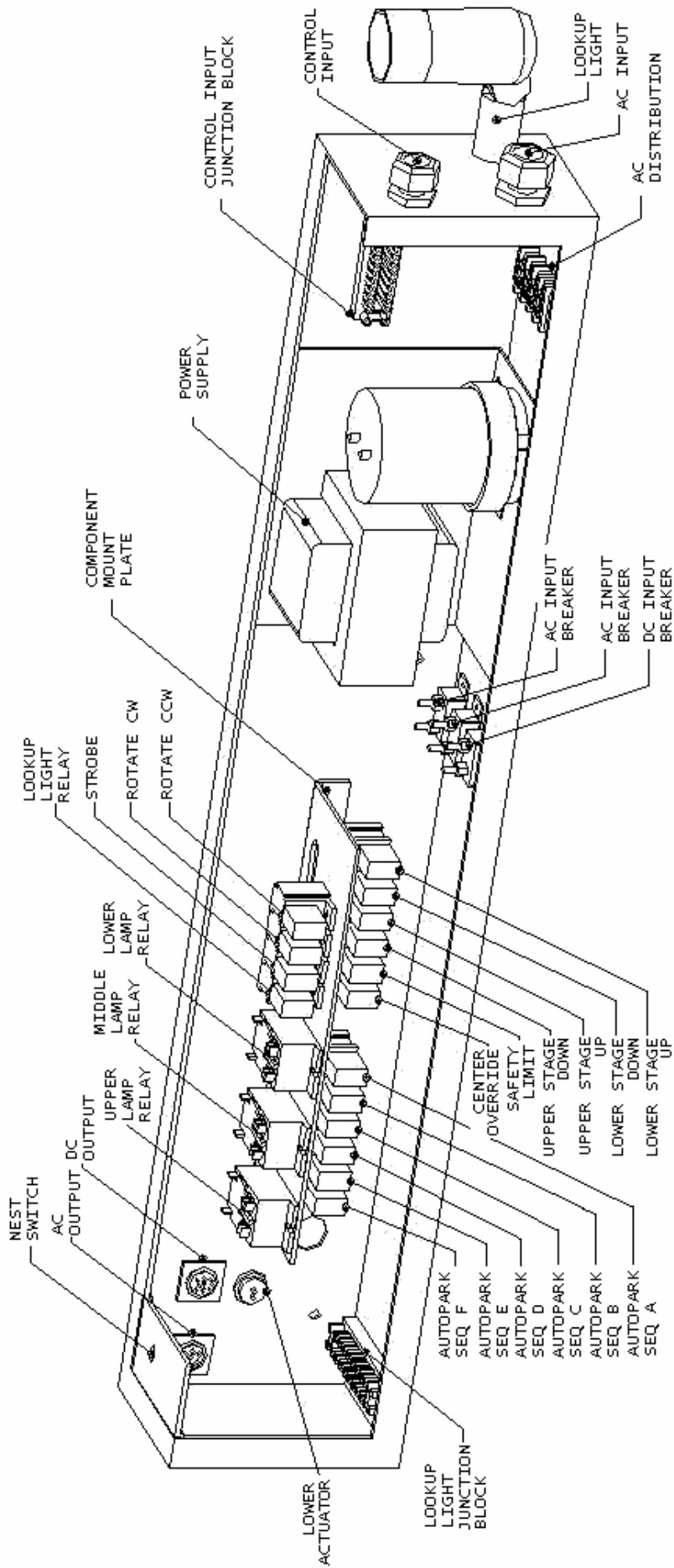
Figure 1



Relay Box Parts – See Figure 2

QTY	PART NO.	DESCRIPTION
1	069-15360	SWITCH, NEST
1	069-15351	SOCKET, 2 POSITION
1	069-15347	SOCKET, 7 POSITION
1	069-15350	SOCKET, 10 POSITION
2	065-13530	BREAKER, 12V 40A
1	065-13529	BREAKER, 24V 20A
3	065-14020	RELAY, AC LAMPS
16	065-13730	SOCKET, BOSCH
16	065-13729	RELAY, BOSCH
1	065-14780	LIGHT,LOOKUP,BLACK
1	065-12852	SEALCON, ½, STRAIGHT
1	065-12854	SEALCON, ¾”, STRAIGHT
1	065-14576	TRANSFORMER, 12V 15A, POWER SUPPLY
2	034-10919	SCREW, 6-32 X ¾,PH PHIL, SS
2	034-10924	NUT, 6-32, NYLOCK, SS
10	034-10939	SCREW, 8-32 X ½,PH PHIL, SS
2	034-13060	SCREW,8-32 X ¾,PH PHIL,SS
12	034-10951	NUT,8-32,NYLOCK,SS
6	034-10962	SCREW,10-24 X ½,PH PHIL,SS
2	034-10966	SCREW,10-24 X ¾,PH PHIL,SS
2	034-10968	SCREW, 10-24 X 1,PH PHIL, SS
4	034-10978	WASHER, #10, INTERNAL LOCK,SS
15	034-10981	NUT,10-24,NYLOCK,SS
20	034-11002	SCREW, ¼-20 X 5/8,PH PHIL, SS
20	034-11028	WASHER, ¼, LOCK, SS
20	034-11032	NUT, ¼-20, SS
1	054-12315	BLOCK, TERMINAL,5 POSITION
1	065-12828	BLOCK, TERMINAL, 16 POSITION
1	065-12827	BLOCK, TERMINAL, 12 POSITION
1	065-12826	BLOCK, TERMINAL, 4 POSITION
1	075-07002	PLATE, COMPONENT MOUNT
1	065-15339	TRANSFORMER, 230VAC IN, 115VAC OUT, EURO ONLY

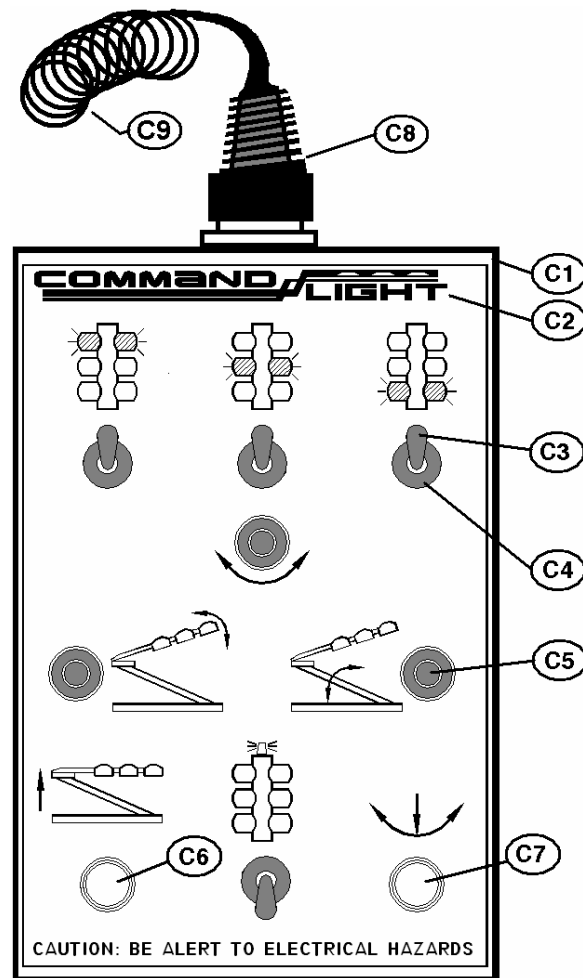
Figure 2



Controller Parts – See Figure 3

ITEM	PART NO.	QTY	DESCRIPTION
C1	065-12833	1	PLASTIBOX P5-11333-E
	075-00722	1	SWITCH MOUNT PLATE
C2	065-13959	1	LABEL, CONTROL PANEL
C3	065-12844	3	SWITCH SPST, LIGHT BANK
	065-12844	1	SWITCH SPST, STROBE
C4	065-12846	7	BOOT, SWITCH COVER
C5	065-12845	1	SWITCH DPMT, ROTATION
	065-12845	1	SWITCH DPMT, UP STAGE
	065-12845	1	SWITCH DPMT, LOW STAGE
C6	065-12842	1	INDICATOR LAMP, RED
C7	065-12843	1	INDICATOR LAMP, GREEN
C8	065-12855	1	STRAIN RELIEF
	065-12856	1	½" SEALCON NUT
C9		10'	COILED UMBILICAL CORD

Figure 3

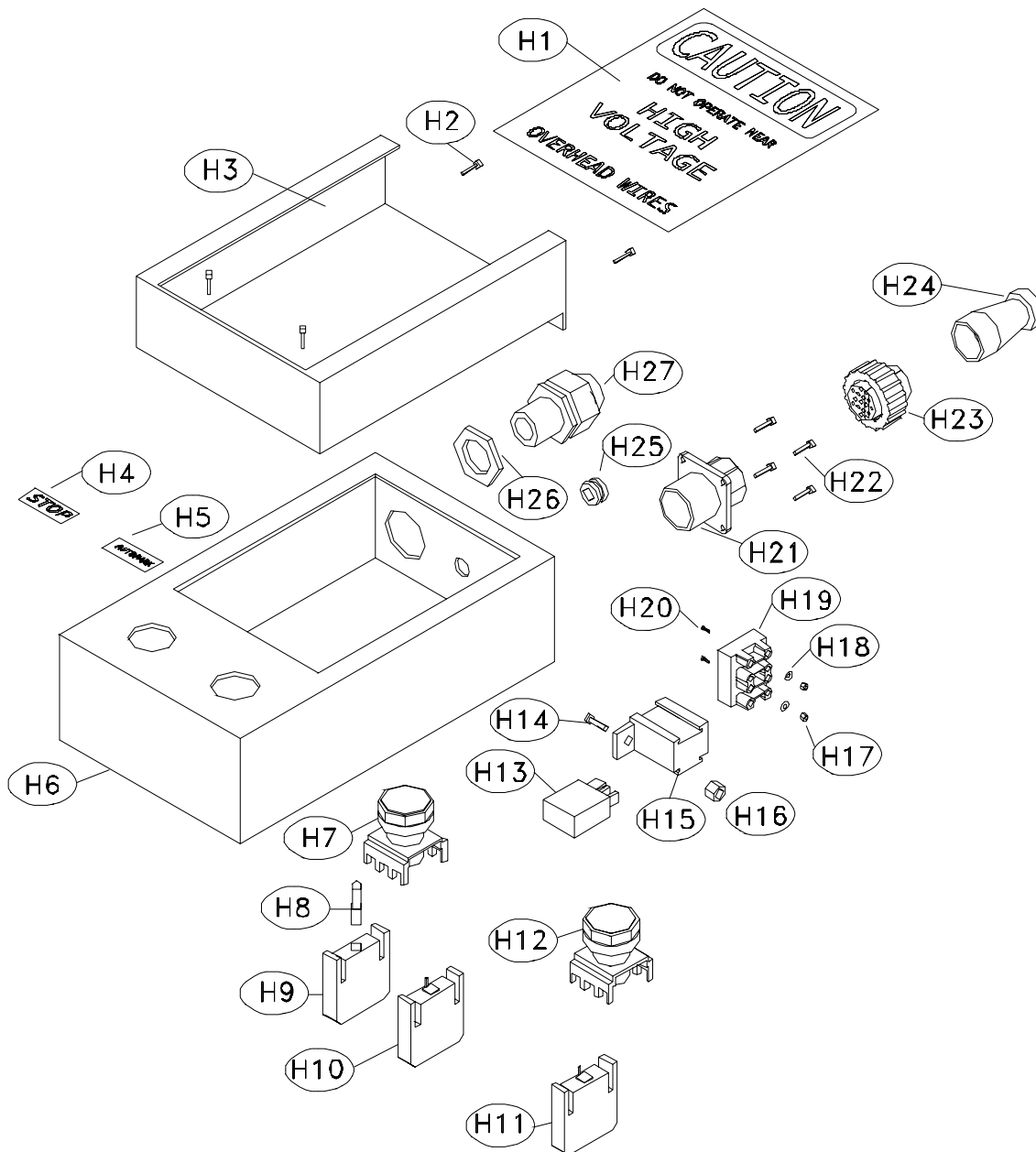


Holster Parts – See Figure 4

H1	065-12921	1	LABEL, CAUTION
H2	034-10909	4	#6 X 3/8" SM SCREW
H3	075-00712	1	HOLSTER, COVER
H4	065-14139	1	LABEL, STOP
H5	065-14138	1	LABEL, AUTOPARK
H6	075-00711	1	HOLSTER BOX
H7	065-14089	1	OPERATOR, RED
H8	065-14093	1	BULB #756 12VDC
H9	065-14088	1	#E22D120 FULL VOLT UNIT
H10	065-14091	1	#E22B1 CONTACT BLK NC
H11	065-14092	1	#E22B2 CONTACT BLK NO
H12	065-14090	1	#E22PB3 GREEN OPERATOR
H13	065-13729	1	RELAY #0-332-207-107
H14	034-10939	1	8-32 X 1/2" PH PHILIPS CS SS

H15	065-13730	1	RELAY MODULE
H16	034-10951	1	8-32 LOCKNUT SS
H17	034-10902	2	4-40 HEX NUT
H18	034-14283	2	#4 INTERNAL LOCK WASH
H19	065-12826	1	TERM STRIP 4 POLE
H20	034-13288	2	4-40 X 3/4" PH PHILIPS SS
H21	065-12835	1	AMP CONNECTOR MALE
H22	034-10909	4	#6 X 3/8" SM SCREW
H23	065-12834	1	AMP CONNECTOR FEMALE
H24	065-12838	1	AMP STRAIN RELIEF
H25	065-12868	1	GROMMET #763
H26	065-12856	1	1/2" NUT, SEALCON
H27	065-12852	1	1/2" SEALCON, STRAIGHT

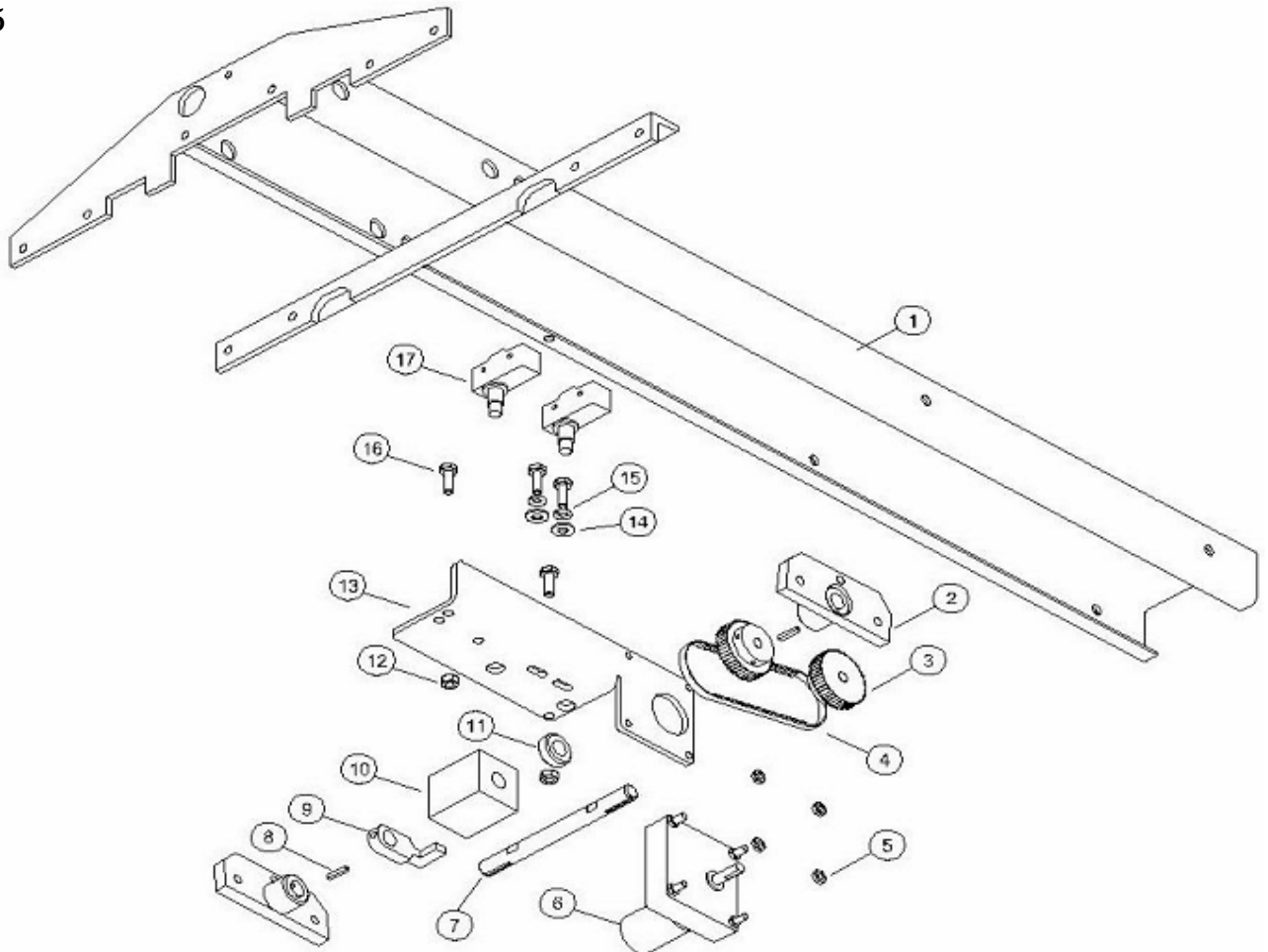
Figure 4



Backlight Option Parts List – See Figure 5

ITEM	PART NO	QTY	DESCRIPTION
1	075-12090W	1	TREE, BACKLIGHT, KV2, WELDMENT
2	075-12060W	2	MOUNT, LAMP, BACKLIGHT, KV2
3	069-14154	2	PULLEY, 48 GR, 3MM P, .3125 ID
4	069-14155	1	BELT, 11 GR, 3MM P, 333MM
5	034-10990	4	NUT, 10-32, HEX, SS
6	065-13834	1	GEAR MOTOR, BACKLIGHT, 2L005
7	075-12080	1	SHAFT, BACKLIGHT, KNIGHT V2
8	075-12050	2	KEY, SHAFT, BACKLIGHT
9	075-12030	1	TRIGGER, SWITCH, BACKLIGHT
10	075-12020	1	BLOCK, SHAFT, BACKLIGHT
11	075-12040	1	SPACER, SHAFT, BACKLIGHT
12	034-11033	2	NUT, ¼-20, HEX, NYLOCK, SS
13	075-12010	1	MOUNT, MOTOR, BACKLIGHT, KV2
14	034-11029	2	WASHER, FLAT, ¼, SS
15	034-11028	2	WASHER, SPLIT LOCK, ¼, SS
16	034-11016	4	BOLT, ¼-20 X ¾, HEX, SS
17	069-15360	2	SWITCH, LIMIT, BACKLIGHT
NI	069-15359	2	BOOT, SWITCH, GRAY
NI	065-14183	1	RELAY, LATCHING, AUTOPARK

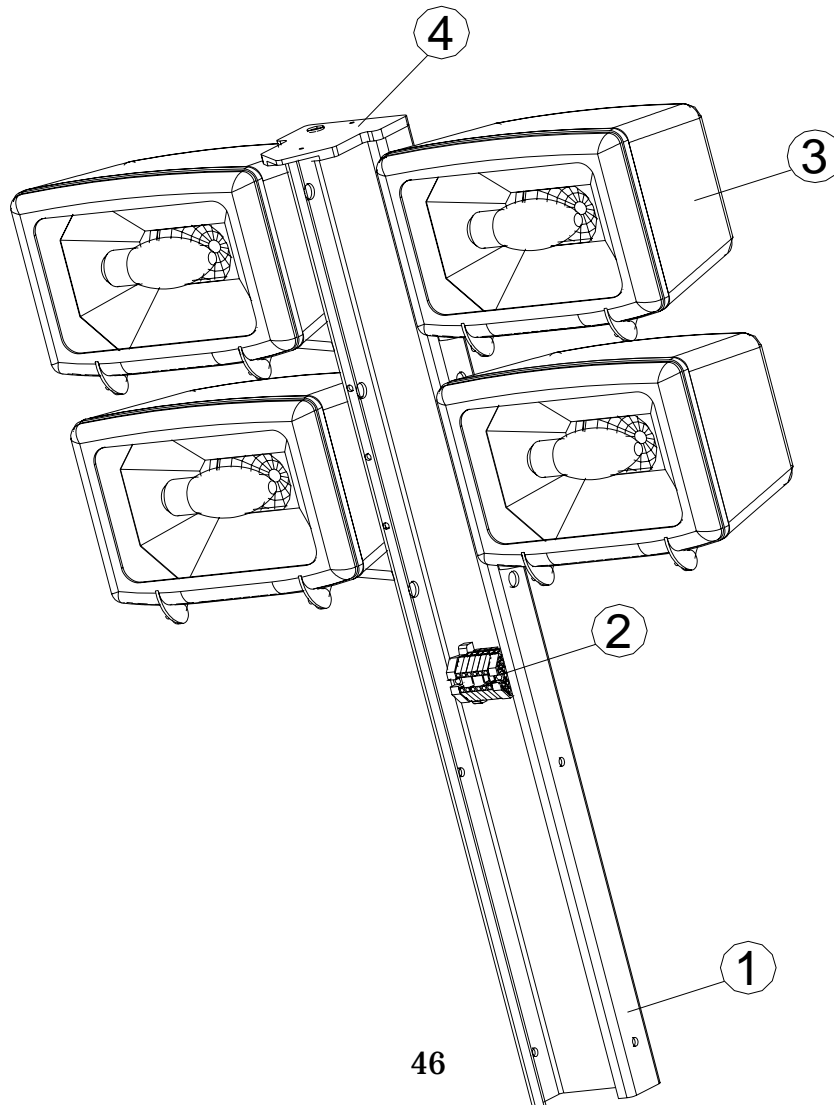
Figure 5



Metal Halide, Option, Lamp Tree Parts List – See Figure 6

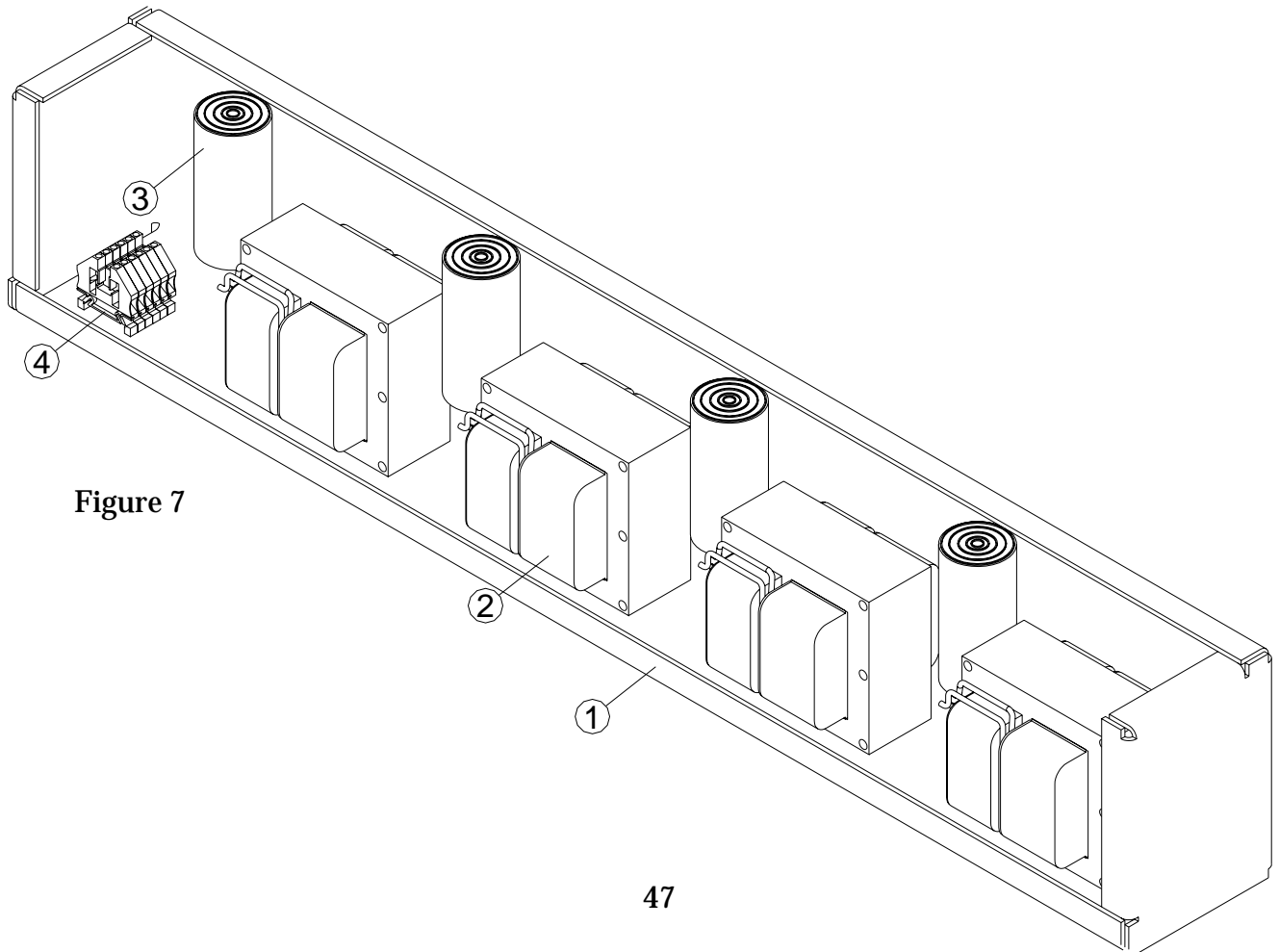
ITEM	PART NO	QTY	DESCRIPTION
1	075-08000W	1	TREE, METAL HALIDE, KV2, WELDMENT
	075-08001	1	TREE, COVER, METAL HALIDE
	034-10973	8	SCREW, 10-24 X 1/2, PHP, SS
2	075-08100A	1	DIN, BLOCK, ASSEMBLY
	DN-T10EB	2	DIN, END BLOCK
	DN-T10RED	1	DIN, CONNECTOR, SINGLE, RED
	DN-T10BLK	1	DIN, CONNECTOR, SINGLE, BLACK
	DN-T10YEL	1	DIN, CONNECTOR, SINGLE, YELLOW
	DN-T10BLU	1	DIN, CONNECTOR, SINGLE, BLUE
	DN-T10GRY	1	DIN, CONNECTOR, SINGLE, GREY
	DN-T10WHT	1	DIN, CONNECTOR, SINGLE, WHITE
	DN-T10RL	1	DIN, RAIL, 4 INCH
3	065-14033	4	FIXTURE, LAMP, METAL HALIDE, 175W
		8	SEALCON, STRAIGHT, 3/8
	051-15408	8	SEALCON, NUT, 3/8
		4	CABLE, 18/2, SJEOOW, 24 INCH
	034-11017	8	BOLT, 1/4-20 X 1, HEX, SS
	034-11029	16	WASHER, FLAT, 1/4, SS
	034-11033	8	NUT, NYLOCK, 1/4-20, SS
4	075-08002	1	BRACKET, NEST, METAL HALIDE

Figure 6



Metal Halide, Option, Transformer Compartment Parts List – See Figure 7

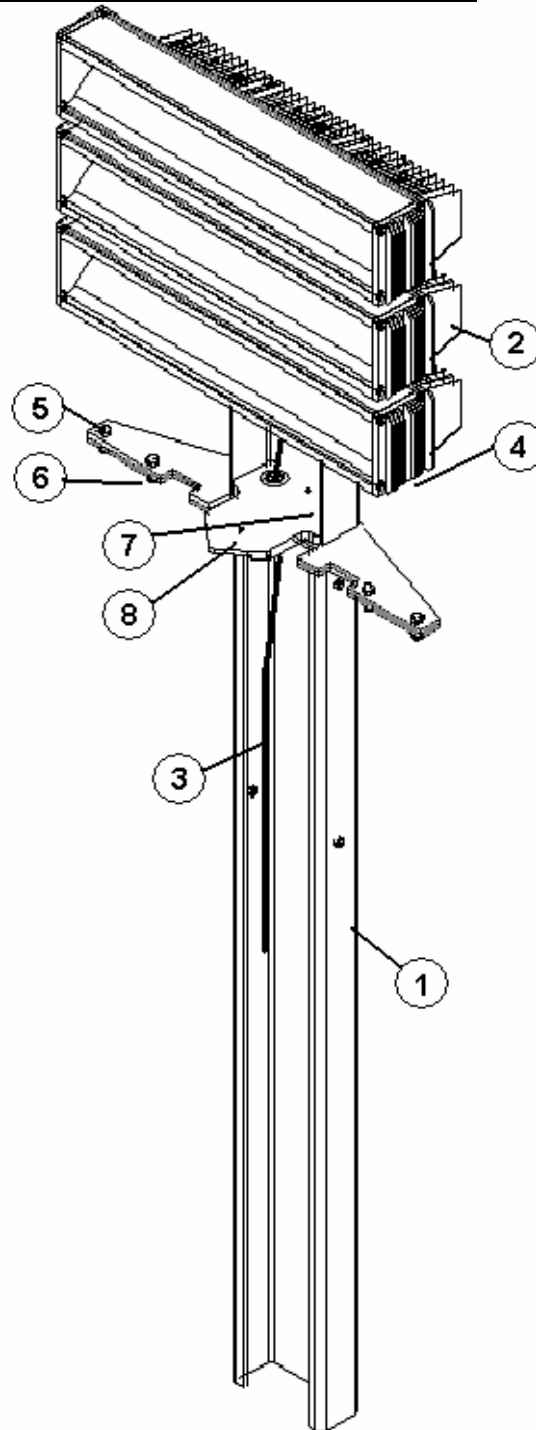
ITEM	PART NO	QTY	DESCRIPTION	
1	075-08200	1	BOX, TRANSFORMER, METAL HALIDE	
	075-08300	1	LID, TRANSFORMER BOX, METAL HALIDE	
	034-10938	12	SCREW, 8-32 X 3/8, PHP, SS	
2		4	TRANSFORMER, 175 W, METAL HALIDE	
		16	SCREW, 10-24 X 3-1/2, PHP, SS	
	034-10978	36	WASHER, INTERNAL LOCK, #10, SS	
	034-10989	32	NUT, 10-24, SS	
	072-15273	16	SPACER, BRASS, 3/4	
		4	CAPACITOR, 175 W, METAL HALIDE	
3	056-12436	4	CLAMP, #26,	
	034-10973	4	SCREW, 10-24 X 1/2, PHP, SS	
	034-10981	4	NUT, NYLOCK, 10-24, SS	
	4	075-08100A	1	DIN, BLOCK, ASSEMBLY
		DN-T10EB	2	DIN, END BLOCK
	DN-T10RED	1	DIN, CONNECTOR, SINGLE, RED	
	DN-T10BLK	1	DIN, CONNECTOR, SINGLE, BLACK	
	DN-T10YEL	1	DIN, CONNECTOR, SINGLE, YELLOW	
	DN-T10BLU	1	DIN, CONNECTOR, SINGLE, BLUE	
	DN-T10GRY	1	DIN, CONNECTOR, SINGLE, GREY	
	DN-T10WHT	1	DIN, CONNECTOR, SINGLE, WHITE	
	DN-T10RL	1	DIN, RAIL, 4 INCH	
	034-10938	2	SCREW, 8-32 X 3/8, PHP, SS	
	034-10951	2	NUT, NYLOCK, 8-32, SS	



Aerial, Option, Lamp Tree Parts List – See Figure 8

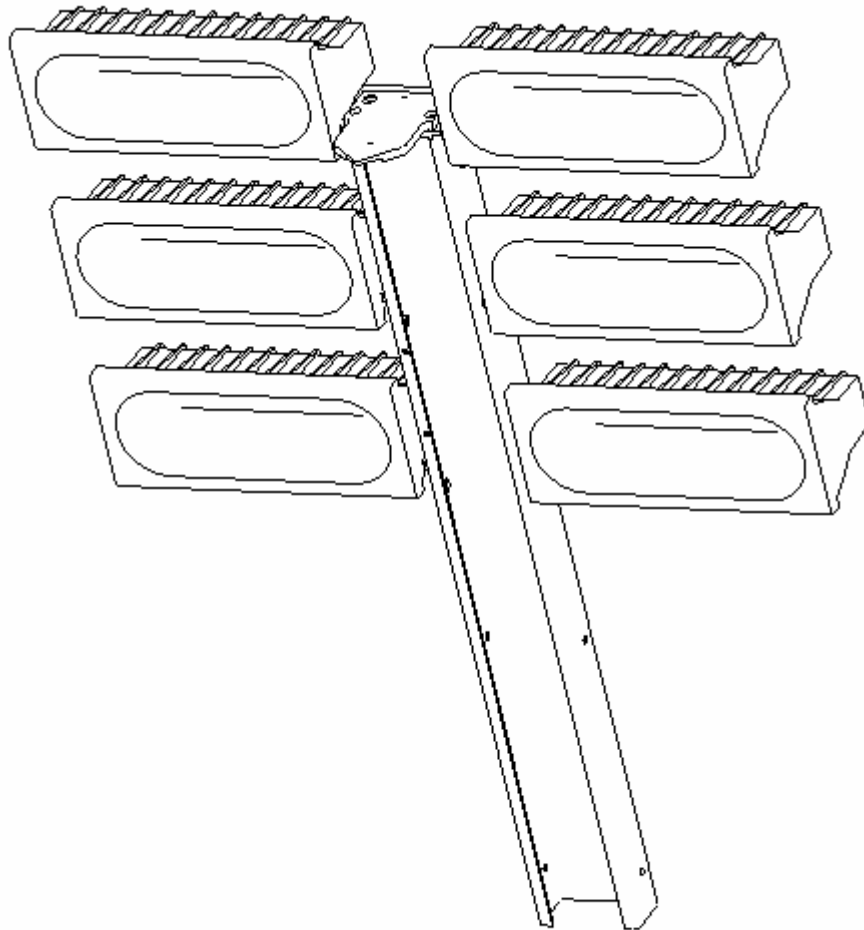
ITEM	PART NO	QTY	DESCRIPTION
1	075-08000W	1	TREE, AERIAL, KV2, WELDMENT
2	065-14031	3	FIXTURE, LAMP, FRC, 1000W
3	075-90004	1	HARNESS, LAMP, AERIAL, KV2
4	034-11017	6	BOLT, 1/4-20 X 1, HEX, SS
5	034-11016	2	BOLT, 1/4-20 X 3/4, HEX, SS
	034-11029	14	WASHER, FLAT, 1/4, SS
6	034-11033	4	NUT, NYLOCK, 1/4-20, SS
7	034-11016	2	BOLT, 1/4-20 X 3/4, HEX, SS
8	075-08002	1	BRACKET, NEST, AERIAL

Figure 8



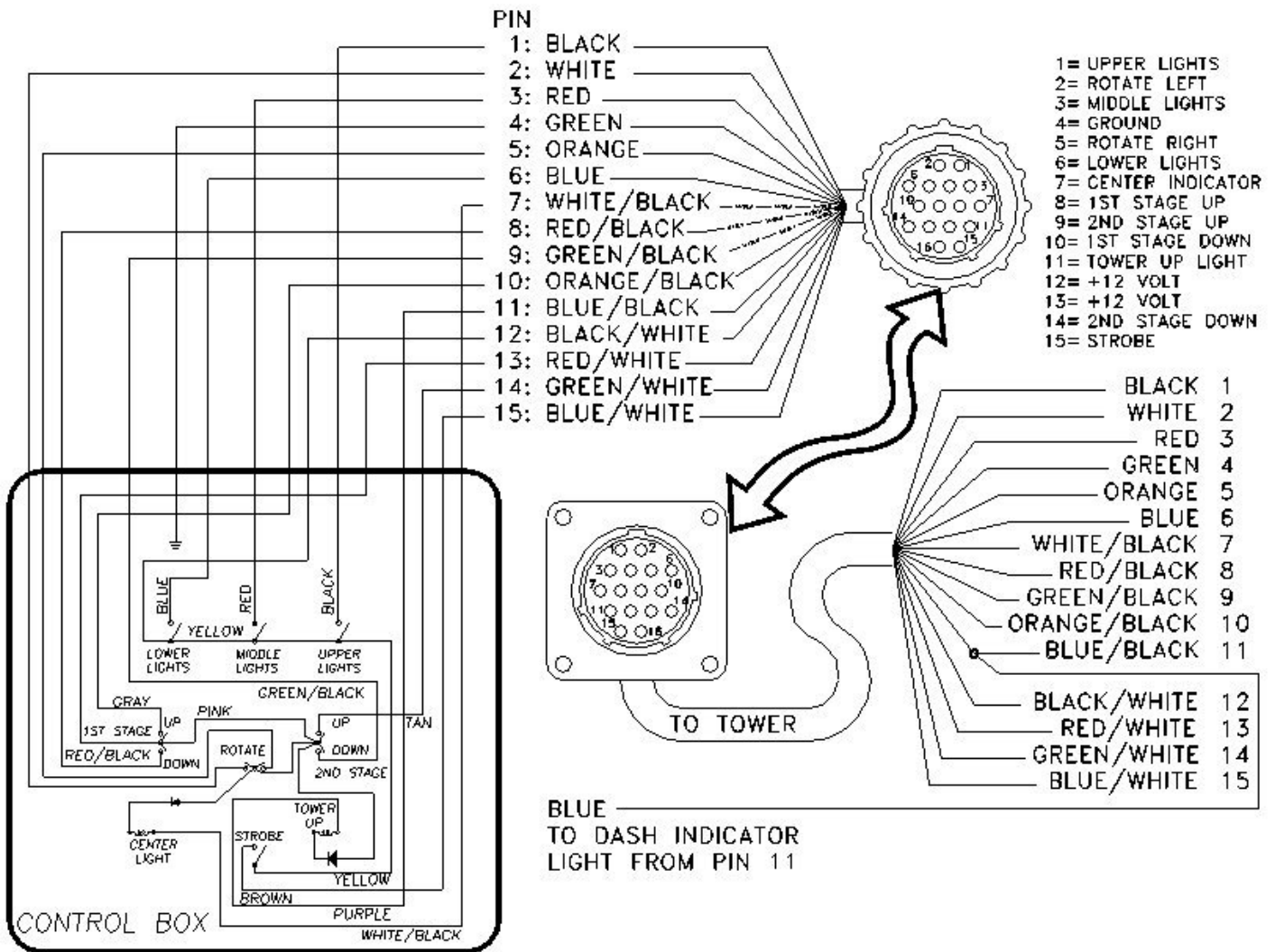
KL475/490, Option, Lamp Tree Parts List – See Figure 8

PART NO	QTY	DESCRIPTION
075-08000HS	1	TREE, HSL, KV2, WELDMENT
065-14036	3	FIXTURE, LAMP, HS, Specify Wattage
075-90000	1	HARNESS, LAMP, KV2
065-12852	6	SEALING CONNECTOR
075-08002	1	BRACKET, NEST

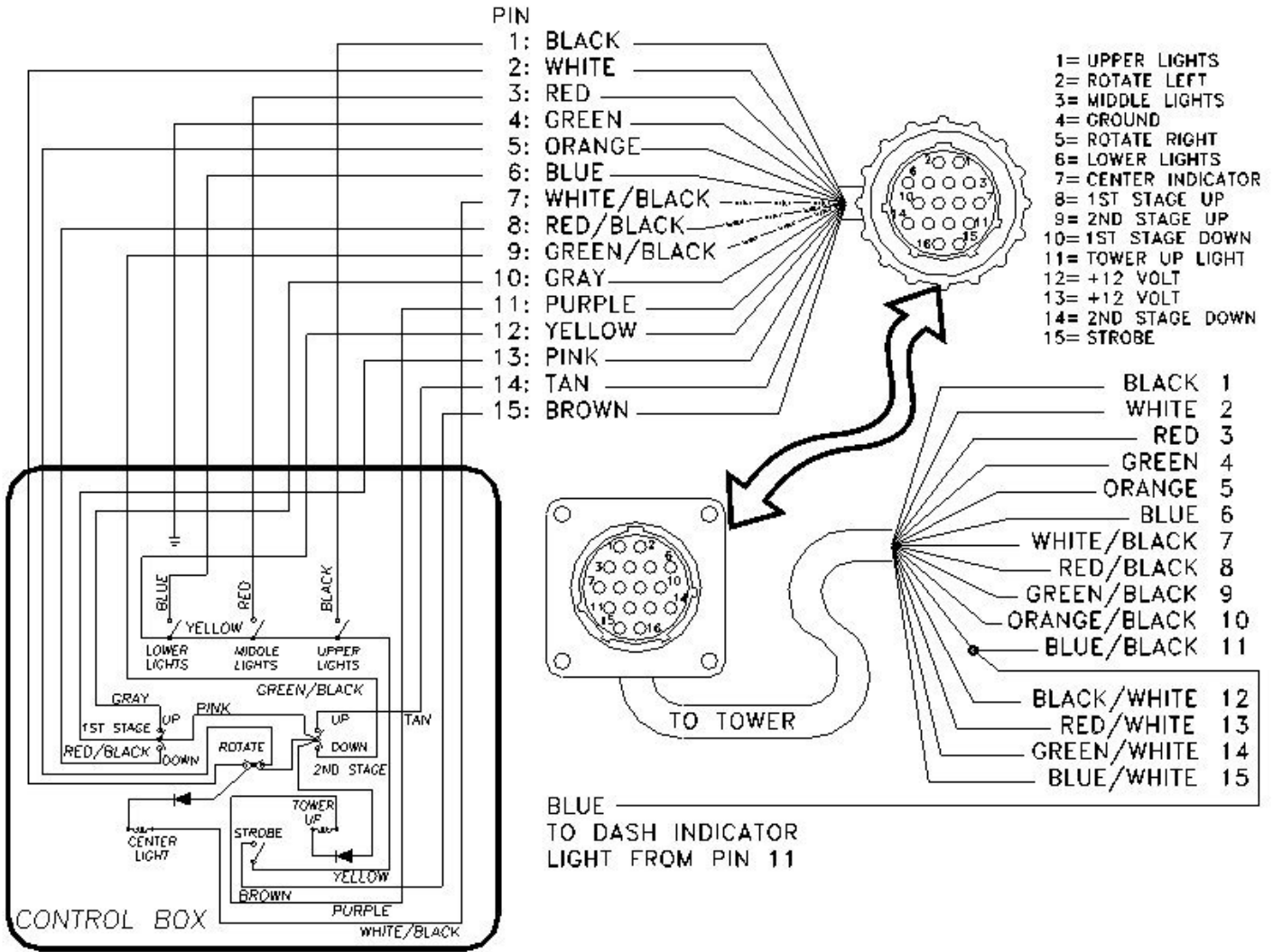


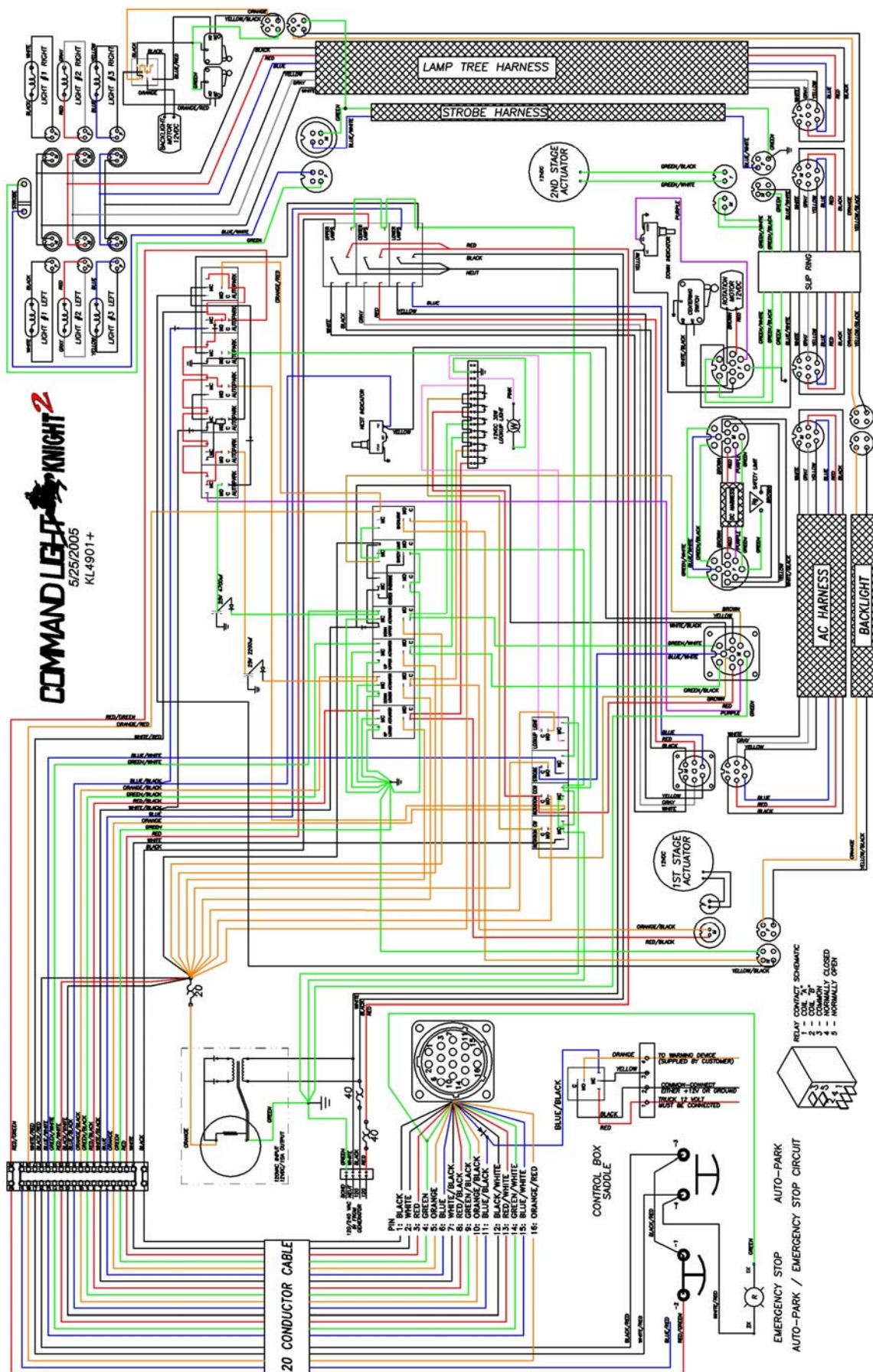
13. Control Wiring Schematics

Control Box – Straight Cord



Control Box – Coiled Cord



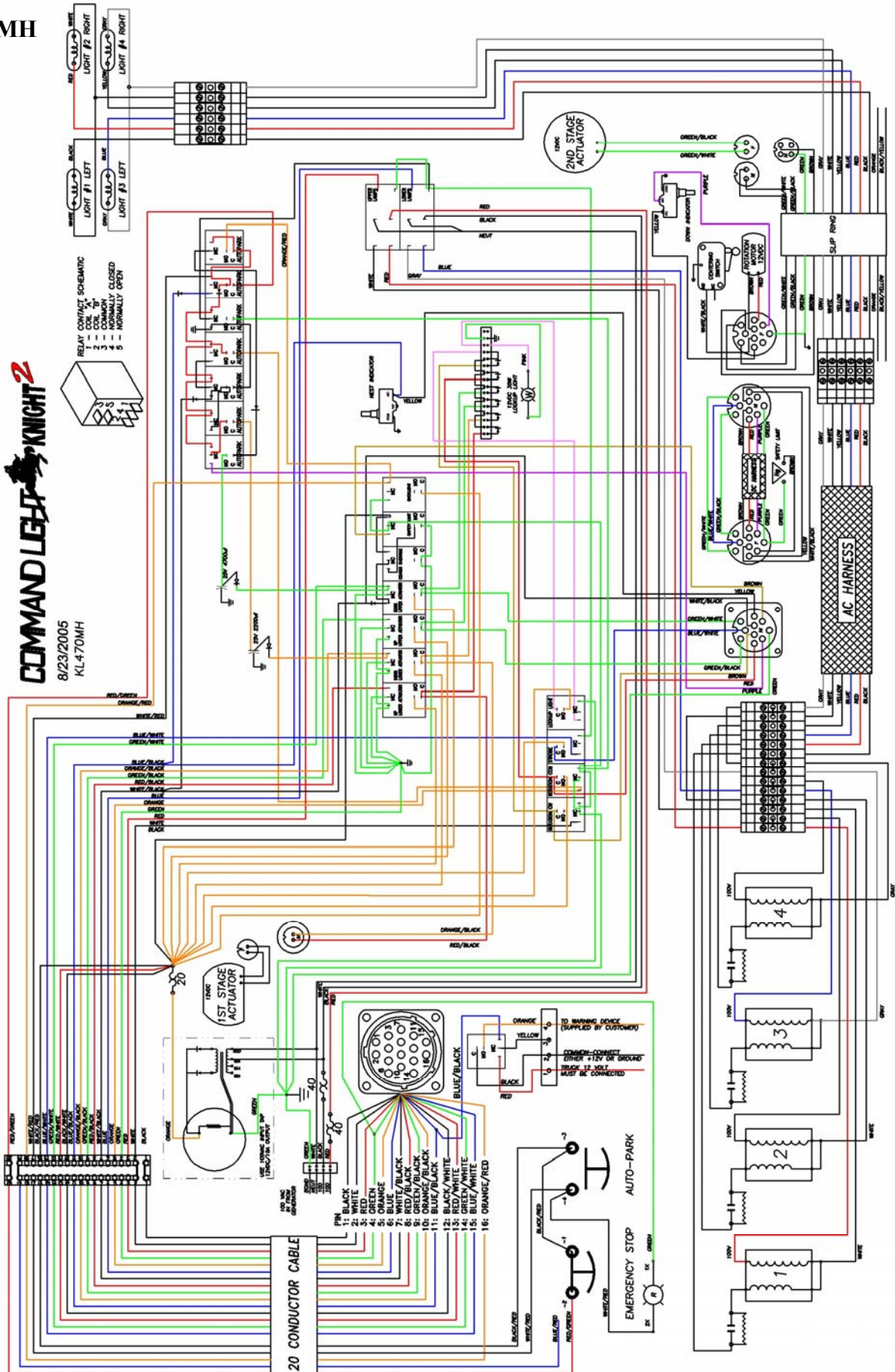
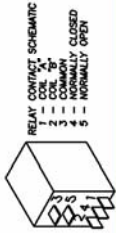


COMMAND LEFT KNIGHT 2
5/25/2005
KL4901+

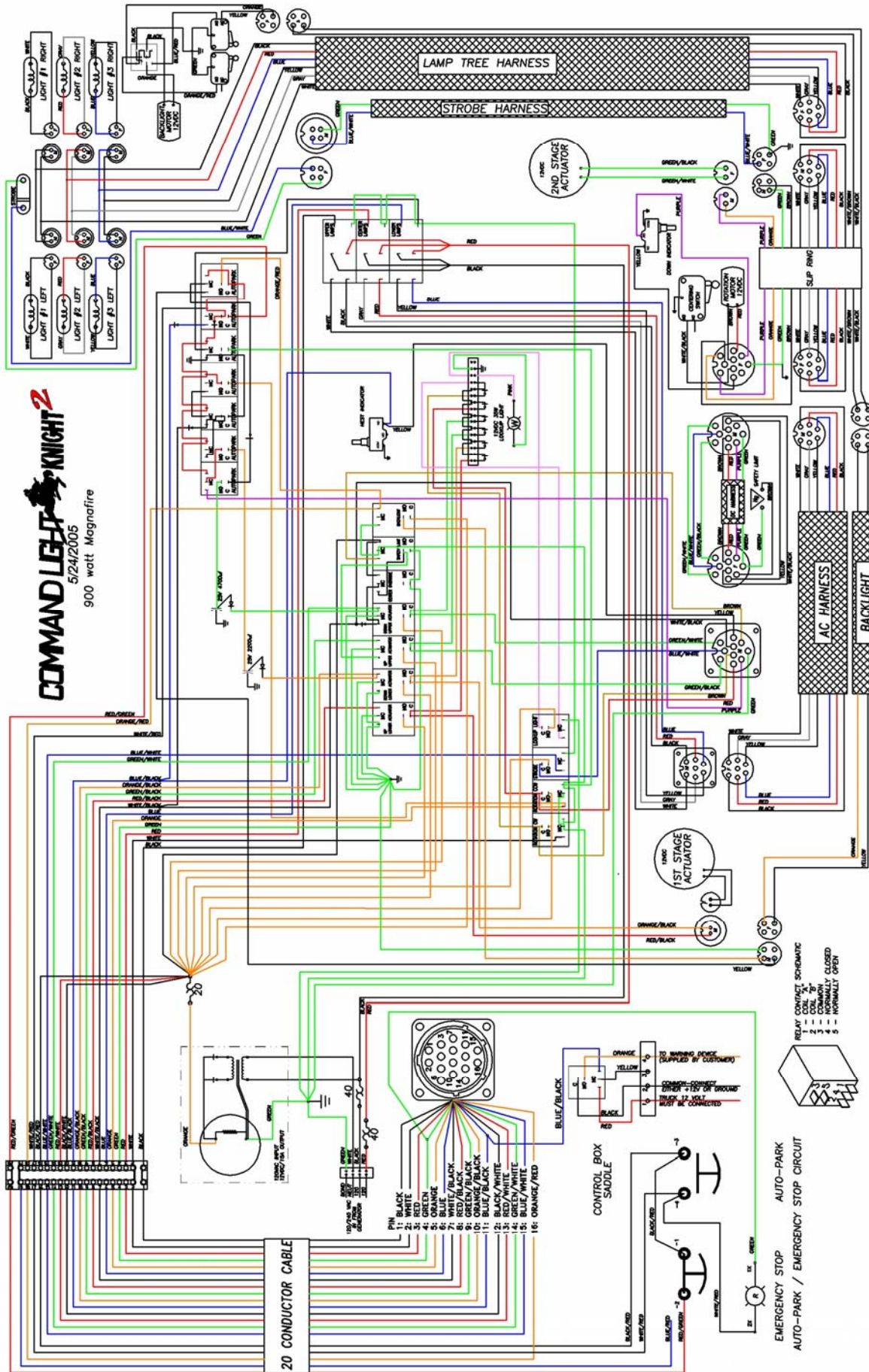
KL470MH

COMMAND LIGHT KNIGHT 2

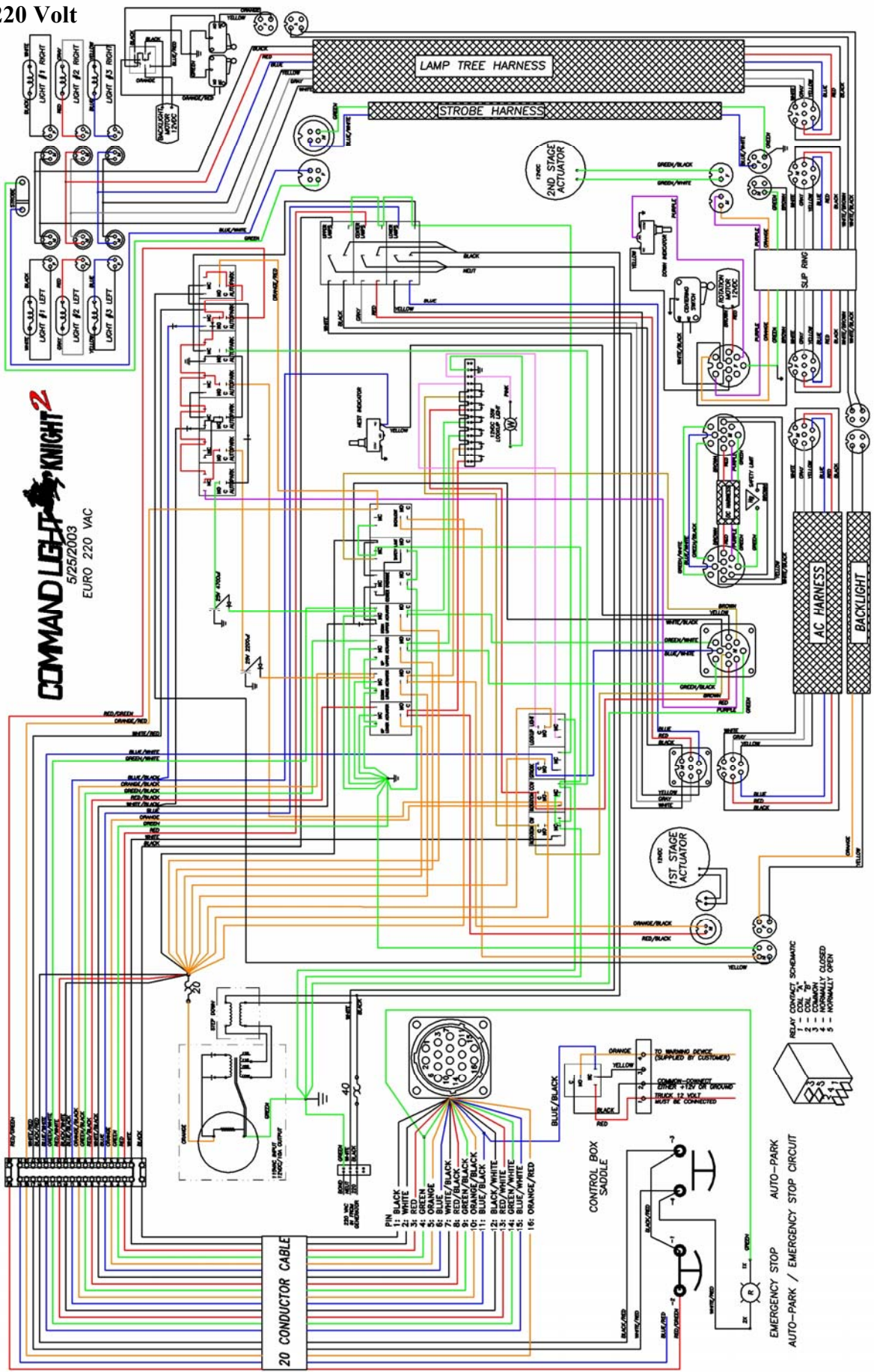
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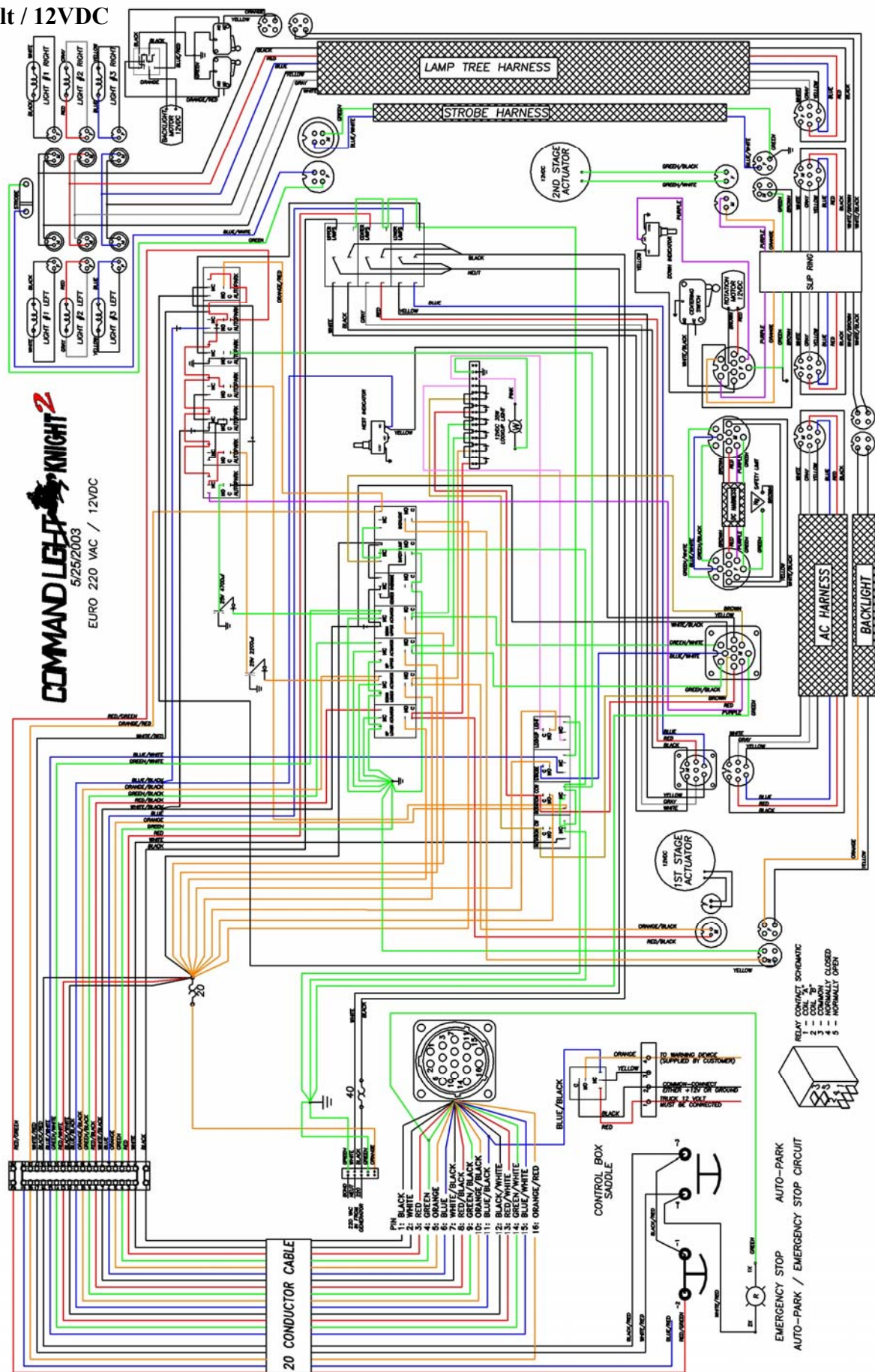


COMMAND LIGHT KNIGHT 2
5/24/2005
900 watt Magnafire



EURO 220 Volt





14. Limited Warranty

Five Year

COMMAND LIGHT warrants that the equipment is free from defects in materials and workmanship when used and operated for a period of five years. The responsibility of COMMAND LIGHT under this limited warranty is limited to the repair and replacement of any parts found defective. Parts are returned to COMMAND LIGHT at 1303 East 11th Street, Loveland, Colorado 80537 with transportation charges prepaid (C.O.D. shipments will not be accepted).

Prior to returning defective parts to COMMAND LIGHT, the original purchaser shall make a claim in writing to COMMAND LIGHT at the above address indicating the model number, serial number and type of defect. No parts or equipment will be received by COMMAND LIGHT for repair or replacement under this warranty without specific written authority from COMMAND LIGHT in advance.

Any parts damaged by improper installation, overloading, abuse or accident of any type or cause are not covered by this warranty.

All equipment manufactured by us is tested before leaving our plant, and is shipped in good working order and condition. We therefore extend to the original purchasers the following Limited Warranty for the period of five years from the original date of purchase:

1. This warranty does not apply to defects caused by accident, misuse, neglect, or wear and tear, nor can we be held responsible for incidental and consequential expense and loss, nor does this warranty apply to equipment where alterations have been executed without our knowledge or consent. These conditions are readily discernable when the equipment is returned to us for inspection.
2. On all component parts not manufactured by COMMAND LIGHT, their warranty is to the extent that the manufacturer of such component warrants them to COMMAND LIGHT, if at all. Look in your local business telephone directory for the nearest repair station for the brand of parts you have or write to us for the address.
3. If equipment received has been damaged in transit, a claim should be made against the carrier within three days, as we assume no responsibility for such damage.
4. Any service other than our Authorized Service voids this warranty.
5. This warranty is in lieu of and is intended to exclude all other warranties, express or implied, oral or written, including any warranties of MERCHANTIBILITY or FITNESS for a particular purpose.