



Lighting System

Operating Manual for Models:

NS6-600, -1000, -1500, -2000, -3000
NS6-140DC



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ISO 9001 Registered Quality System

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I. Warranty

The Manufacturer warrants its products to be free from defects in material and workmanship for a period of one year from the date of shipment from the factory. The Manufacturer shall not be responsible for any damage resulting to or caused by its products by reason of improper installation, improper storage, unauthorized service, alteration of products, neglect or abuse, or use of the product in a manner inconsistent with its design, accident, acts of God, or failure to properly maintain this product. This warranty does not extend to any component parts not manufactured by Manufacturer; however, Manufacturer's warranty herein shall not limit any warranties made by manufacturer of component parts that may extend to the Buyer.

THE FOREGOING WARRANTY IS IN LIEU OF ALL OTHER WARRANTIES, AND NO REPRESENTATIONS, GUARANTEES OR WARRANTIES, EXPRESSED OR IMPLIED, (INCLUDING, BUT NOT LIMITED TO, A WARRANTY OR MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE) ARE MADE BY MANUFACTURER IN CONNECTION WITH THE MANUFACTURE OR SALE OF ITS PRODUCTS. NO EMPLOYEE, DISTRIBUTOR, OR REPRESENTATIVE IS AUTHORIZED TO CHANGE THIS WARRANTY IN ANY WAY OR GRANT ANY OTHER WARRANTY ON BEHALF OF MANUFACTURER.

Claims for defects in material and workmanship shall be made in writing to Manufacturer within thirty (30) days of the discovery of the defect. Failure to provide notice as required hereby should be conclusive evidence that the product was in conformity with the warranty, and the Manufacturer shall be released from any and all liability relating to the product. Manufacturer may either send a service representative or have the product returned to its factory at the Buyer's expense for inspection. If judged by manufacturer to be defective in material or workmanship, the product will be replaced or repaired at the option of Manufacturer, free from all changes except authorized transportation.

THE REMEDIES OF BUYER SET FORTH HEREIN ARE EXCLUSIVE AND ARE IN LIEU OF ALL OTHER REMEDIES. THE LIABILITY OF MANUFACTURER WHETHER IN CONTRACT, TORT, UNDER ANY WARRANTY, OR OTHERWISE, SHALL NOT EXTEND BEYOND ITS OBLIGATION TO REPAIR OR REPLACE, AT ITS OPTION, ANY PRODUCT OR PART FOUND BY MANUFACTURER TO BE DEFECTIVE IN MATERIAL OR WORKMANSHIP. MANUFACTURER SHALL NOT BE **LIABLE FOR COST** OF INSTALLATION AND/OR REMOVAL, OR BE RESPONSIBLE FOR DIRECT, INDIRECT, SPECIAL OR CONSEQUENTIAL DAMAGES OF ANY NATURE.

II. Safety Summary

THE PURPOSE OF SAFETY SYMBOLS IS TO ATTRACT YOUR ATTENTION TO POSSIBLE DANGERS. THE SAFETY SYMBOLS AND THE EXPLANATIONS WITH THEM REQUIRE YOUR CAREFUL ATTENTION. UNDERSTAND AND FOLLOW THE WARNINGS CAREFULLY. FOLLOW APPROPRIATE ACCIDENT PREVENTION MEASURES AT ALL TIMES.



A **WARNING** is used to call your attention to instructions concerning your personal safety. Failure to follow and observe the following instructions can result in death, severe injury, burns or property damage.



A **WARNING** is used to call your attention to instructions concerning your personal safety. Failure to follow and observe the following instructions can result in death, severe injury, burns or property damage **due to high electrical voltage.**



A **NOTE** or **CAUTION** advises you of information or instructions vital to the operation or maintenance of the equipment.



Always turn power off before servicing Night Scan Chief unit.



Do not operate Night Scan Chief until you have made certain that the area of operation is free of overhead power lines and other unwanted sources of electricity.



Do not raise the mast while vehicle is in motion. Do not move vehicle while mast is extended.



Lamps are extremely hot when operating and should not come in contact with people or combustive and/or explosive materials. Do not operate if breakage occurs or unit is knocked over.



Make sure all persons stay clear of the mast and the direction of travel in which it is pointed. In the event of a pressure irregularity, it is conceivable that the mast could become separated and explosively launch.



Do not allow objects to strike unit, vehicle or object to which it is attached.



Do not look directly into lights when they are illuminated. Temporary impairment of vision could occur.



Only trained and qualified personnel should install, use and service this equipment.



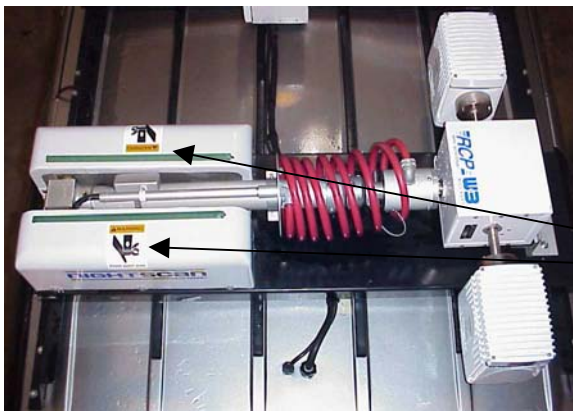
Always make sure there is adequate clearance above the Night Scan Chief unit before applying power and operating the unit. Damage and personal injury may result if the unit comes in contact with an obstruction.



A pressure strip (see Figure below) is located on each cover of the Night Scan Chief adjacent to the mast. If the Night Scan Chief mast is in motion from 90 degrees to 0 degrees and the strip is touched by an object, the mast will raise to vertical position and stop. To stop the mast from raising, disconnect 12/24V DC power.



Keep hands and other objects away from pinch points at all times (see Figure below).



Pinch points

III. Introduction

“Night Scan Chief” is a transportable lighting system consisting of a directionally adjustable fixture containing quartz-halogen or metal halide lights mounted on a folding telescoping mast. A self-contained compressor provides the pressure to raise the mast. The system is operated through one of two hand-operated units, the Panel Mount Control or the Pistol Grip Control, connected to the main unit by a 15 or 25 foot cable, respectively. The system can be mounted on a vehicle or attached to stationary objects. It is adaptable to a wide variety of uses in which bright, temporary, directionally controlled lighting is helpful; for example, emergency rescue vehicles, transportation depots and police investigation scenes.

Purpose of this Manual:

The purpose is to explain the operation and installation of the Night Scan Chief lighting systems models NS6-600, -1000, -1500, -2000, -3000, and -140DC.

English Conversion Chart (in/lbs)

Dimensions	140 DC 12V	140 DC 24V	600	1000	1500*	2000*	3000*
Stowed Height	9	9	8.75	8.75	8.75	9	9
Extended Height	72	72	72	72	72	79	72
Width	31.5	31.5	28.5	28.5	28.5	46	46
Length	42.5	42.5	42.5	42.5	42.5	53.75	42.5
Remote Control Positioner (RCP) Weight	30	30	20	20	20	22	22
Total Unit Weight (Base + RCP)	95	95	70	70	82	85	85
Number of Mast Sections	3	3	3	3	3	3	3
Tube Diameter Range (outside)	1.5-2.5	1.5-2.5	1.5-2.5	1.5-2.5	1.5-2.5	1.5-2.5	1.5-2.5
Lights	2 –70 watt Halide	2 – 70 watt Halide	2 – 300 watt Halogen	2 – 500 watt Halogen	2 – 750 watt Halogen	2 –1000 watt Halogen	2 – 1500 watt Halogen
Electrical Power Supply	DC – 12V, 15 Amp	DC – 12V, 15 Amp	DC – 12V, 15 Amp AC – 110 Vac, 6 Amp	DC – 12V, 15 Amp AC – 110 Vac, 6 Amp	DC – 12V, 15 Amp AC – 110 Vac, 6 Amp	DC – 12V, 15 Amp AC – 110 Vac, 6 Amp	DC – 12V, 15 Amp AC – 110 Vac, 6 Amp

*Maximum dimension is the largest dimension on all specified models.

Metric Conversion Chart (mm/kg)

Dimensions	140 DC 12V	140 DC 24V	600	1000	1500*	2000*	3000*
Stowed Height	229	229	222	222	222	229	229
Extended Height	1829	1829	1829	1829	1829	1829	1829
Width	800	800	724	724	724	1168	1168
Length	1080	1080	1080	1080	1080	1365	1080
Remote Control Positioner (RCP) Weight	13.6	13.6	9.1	9.1	9.1	10	10
Total Unit Weight (Base + RCP)	43.2	43.2	31.8	31.8	37.3	38.6	38.6
Number of Mast Sections	3	3	3	3	3	3	3
Tube Diameter Range (outside)	38.1-63.5	38.1-63.5	38.1-63.5	38.1-63.5	38.1-63.5	38.1-63.5	38.1-63.5
Lights	2 –70 watt Halide	2 – 70 watt Halide	2 – 300 watt Halogen	2 – 500 watt Halogen	2 – 750 watt Halogen	2 –1000 watt Halogen	2 – 1500 watt Halogen
Electrical Power Supply	DC – 12V, 15 Amp	DC – 12V, 15 Amp	DC – 12V, 15 Amp AC – 110 Vac, 6 Amp	DC – 12V, 15 Amp AC – 110 Vac, 6 Amp	DC – 12V, 15 Amp AC – 110 Vac, 6 Amp	DC – 12V, 15 Amp AC – 110 Vac, 6 Amp	DC – 12V, 15 Amp AC – 110 Vac, 6 Amp

*Maximum dimension is the largest dimension on all specified models.

IV. Installation



Note: The Night Scan Chief system was carefully inspected and packaged at Will-Burt and left the factory complete and in good condition. Shipping damage claims should be made to the carrier.

Night Scan Chief Removal from Container:

1. Carefully open and remove all blocking and parts from container. Inspect for any shipping damage. If damage has occurred, notify carrier.



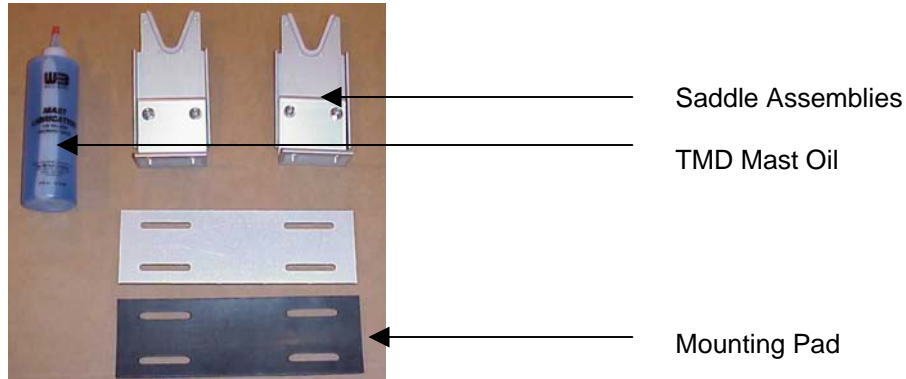
Night Scan Chief Unit and Components Supplied for Installation:

1. Night Scan Chief base unit with mast, RCP, Panel-Mount Controller or Hand-Held Pistol Grip Remote.



Hand-held Pistol Grip Remote

- Saddle Assemblies, TMD Mast Oil (See Material Safety Data Sheet in Appendix A) and Mounting Pad.



Night Scan Chief Hardware Needed for Installation and NOT SUPPLIED:

- Four (4) 5/16-inch bolts, stainless steel. Length determined at installation – see Installation Instructions starting on Page 9.
- Four (4) 5/16-inch nuts, stainless steel – see Installation Instructions starting on Page 9.
- Eight (8) 5/16-inch washers, stainless steel - see Installation Instructions starting on Page 9.
- Four (4) ¼-20-inch bolt, stainless steel. Length determined at installation – see Installation Instructions starting on Page 9.
- Four (4) ¼" flat washers – see Saddle Installation Instructions starting on Page 13.
- Four (4) ¼-20-inch Nylock nuts – see Saddle Installation Instructions starting on Page 13.
- Silicon Sealant – see installation instructions starting on Page 9.

Installation of Night Scan Chief Base Unit:



WARNING: Before beginning installation and throughout installation, make certain the area in which installation will be done is free of overhead power lines and other unwanted sources of electricity. OSHA regulations require a minimum clearance of ten (10) feet from energized overhead lines of 50K volts or less – greater clearance is required for higher voltages. Remember to allow sufficient clearance for side-to-side deflection of the mast. **YOU OR OTHERS COULD BE KILLED OR SERIOUSLY INJURED BY ELECTRICITY IF THE NIGHT SCAN CHIEF UNIT COMES NEAR OR IN CONTACT WITH SUCH SOURCES OF ELECTRICITY.**



WARNING: Installation, adjustments and servicing should be performed only by trained and qualified personnel. Your attention is directed to the OSHA electrical safety requirements in 29 CFR part 1910. Electric installations and service should be performed only by a properly trained and qualified, certified electrician.

1. Locate the Night Scan Chief unit on a flat, level area of the roof or other object to which the unit will be attached. This area must be able to support 100 lbs. of dynamic load. If this area is not structurally sound, it will require reinforcement.



2. Using template of the base unit drill four (4) 3/8-inch mounting holes in mounting surface.



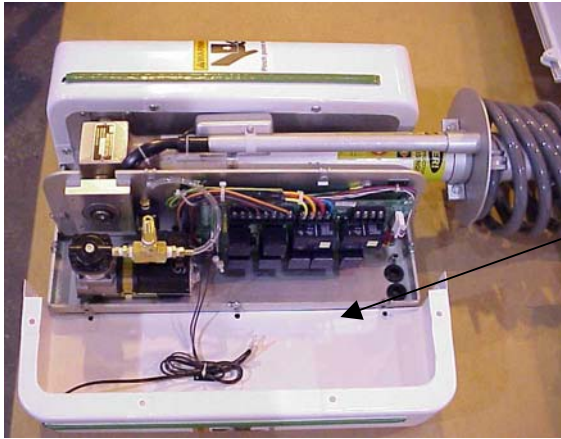
Mounting hole

Template (blueprint)

3. Install the Night Scan Chief base unit by using four (4) 5/16-inch 303 stainless steel bolts, washers and nuts (not supplied). The length of the 5/16-inch bolts will be determined by the thickness of the roof plus one inch for the material thickness of the Night Scan Chief unit. **Apply a quality silicon sealant around the bolts during installation.**

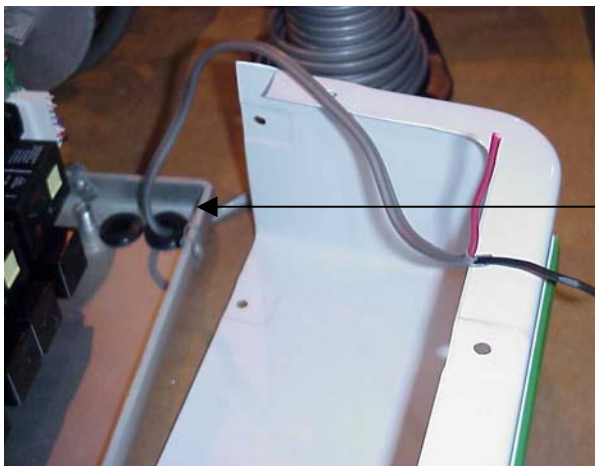
Connecting the 12/24V DC Power – Mechanical System:

1. Remove the B access cover from the base unit of the Night Scan Chief to gain access to the circuit board.



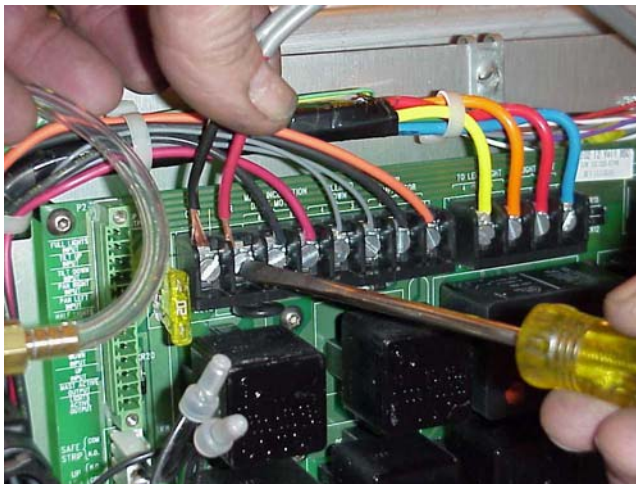
B Access Cover removed

2. Feed two (2) 12/24V DC wires through one of the grommet holes in the bottom of the base unit.



Grommet holes

3. Connect the positive feed to the circuit board Terminal Block, Terminal 7. Connect the negative feed to the circuit board Terminal Block, Terminal 8.



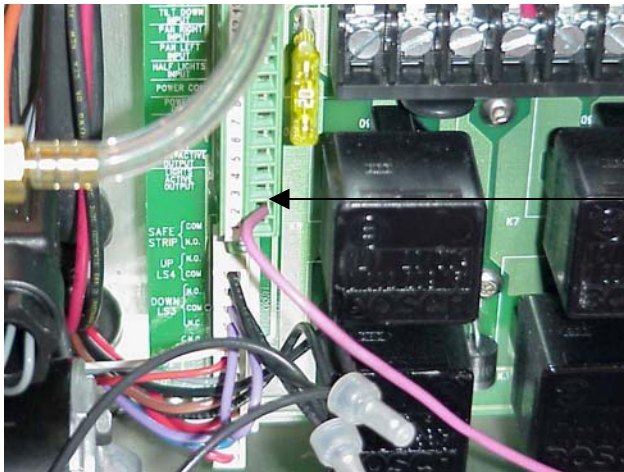
Installation of the Mast Active Light:

1. Select appropriate highly visible site for mounting of light (for example; control panel inside vehicle and on dash in plain view of driver.)



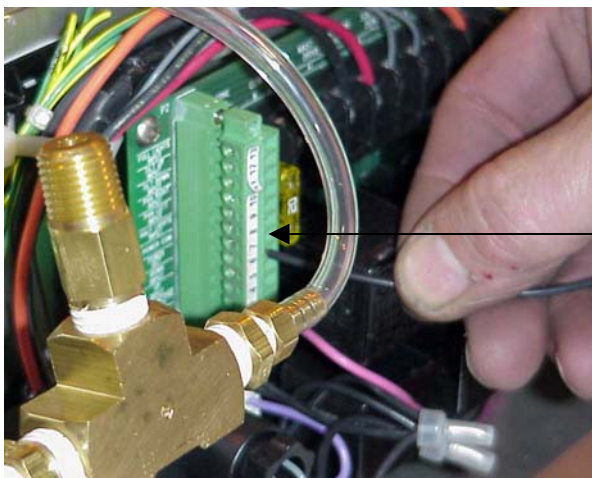
Mast Active Light

2. Route one end of wire to the flasher and them to the mast active pin (P2-2) on control board. (Refer to Page 14, Appendix A)



P2-2

3. Route other end of wire to power common pin (P2-6) on the control board.

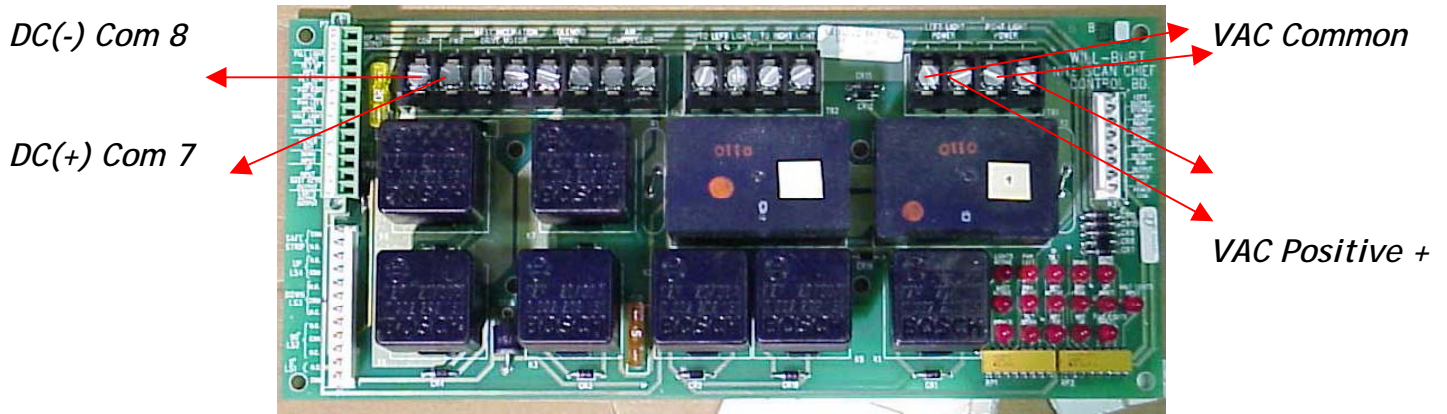


P2-6

4. Ensure that lamp used is same voltage as battery.

Connecting AC/DC Power to the Lights – Lighting System:

1. Route AC/DC power cables through the grommet hole in the Night Scan Chief base. NS6-2000 and –3000 require 220 VAC. NS6-600, -1000 and –1500 require 110 VAC. NS6-140/12V DC requires 12V DC. NS6-140/24V DC requires 24V DC. Wire connections are shown below.



WARNING: Do not touch live wires. Death or serious injury could result.

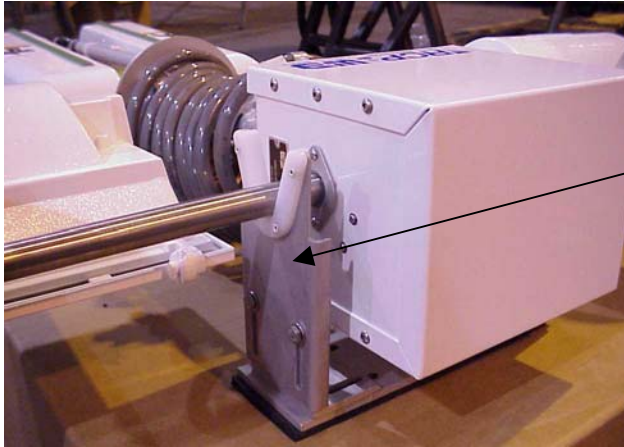
2. Replace cover on Night Scan Chief base unit.



Note: The Night Scan Chief base unit contains mixed voltages (110/220 VAC and 12/24V DC) and multiple sources.

Saddle Installation:

1. With the Night Scan Chief base unit and RCP assembly mounted and in stowed position (mast horizontal), place on saddle assembly on each side of the RCP head. The base angles of each saddle should be facing toward each other.



Saddle

2. Rest the RCP shafts into the top of the saddles, placing each saddle between the RCP head and the light fixtures.



Saddle placement – top view



Note: Do not change 0° and 90° limit switches to make adjustment to saddles.

3. Loosen the adjustment screws holding the upper saddle to the saddle base angle. Lower the saddle base angle until it rests on the mounting surface.



Adjustment screws

4. Keeping the saddle equal distance from the RCP head, move them until the distance between the center of the slot in each base angle is 7.5". Mark (with a scribe or pencil) both slot centers onto the mounting surface. Remove saddles from the RCP shafts and raise the Night Scan Chief to the vertical position.



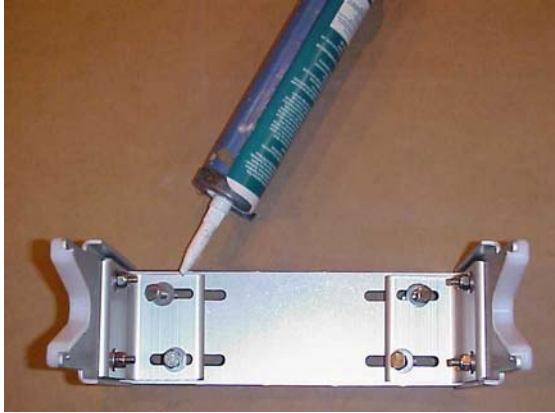
7.5" between centers of slots



WARNING: DO NOT EXTEND THE MAST!

5. Using a 5/16-inch drill bit, drill through each of the marks made in Step 4. Deburr holes.

6. Lower the Night Scan Chief back down to the stowed position. Reinstall saddles onto the RCP shafts. Place silicon sealant in the holes just drilled to maintain a water-tight seal. With the ¼-20 screws still loosened, place rubber mounting pads between saddle assemblies and the mounting surface.



7. Secure the saddles with 1/4-20inch stainless steel bolts (long enough to go through the saddle base angle, rubber mounting pad and mounting surface), nuts and washers (not supplied). Tighten and seal with more silicon sealant as necessary.
8. Raise saddle until RCP shaft sit in the plastic cradle. Retighten the ¼-20 screws that hold the saddle to the base angles.



NS6-1500, NS6-2000 and NS6-3000 Saddle Adjustments – Critical to Avoid RCP Damage:



Note: Saddles need to be adjusted so they hold the weight of the RCP head.

1. Raise the Night Scan Chief out of the saddles.



WARNING: DO NOT EXTEND THE MAST!

2. Without letting the saddles drop, loosen the ¼-20 screws holding the saddles to the base angles. Raise the saddles ½ inch from their starting positions. Retighten the screws. Lower the Night Scan Chief into the saddle. The RCP shafts should firmly rest in the plastic pads and the MAST ACTIVE light should be off.



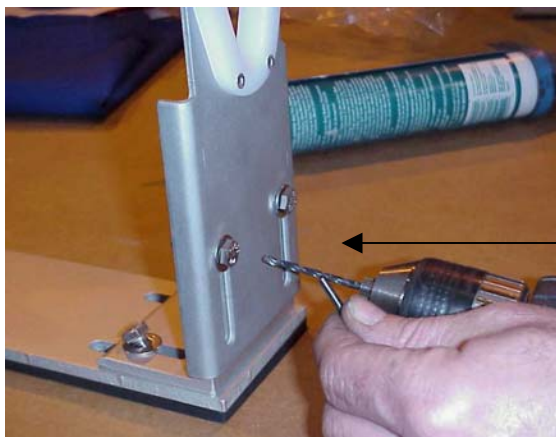
WARNING: DO NOT EXTEND THE MAST!

3. If the light is ON, raise the Night Scan Chief out of the saddle. Loosen the screws and lower the saddles a little bit, retighten screws. Lower Night Scan Chief into saddle. Repeat as necessary so that the MAST ACTIVE light is off when the Night Scan Chief is stowed.
4. Once the adjustments have been made, raise Night Scan Chief out of the saddles.



WARNING: DO NOT EXTEND THE MAST!

5. Drill a 1/8-inch hole between the slots in the saddle, going through the saddle and the base angle. Insert a 1/8-inch pin into this hole. Repeat on other saddle. This will keep saddle aligned.



Inserting pin

Installation of Controller:

Panel Mount Control

1. Route panel control cable through base unit grommet under B access cover.

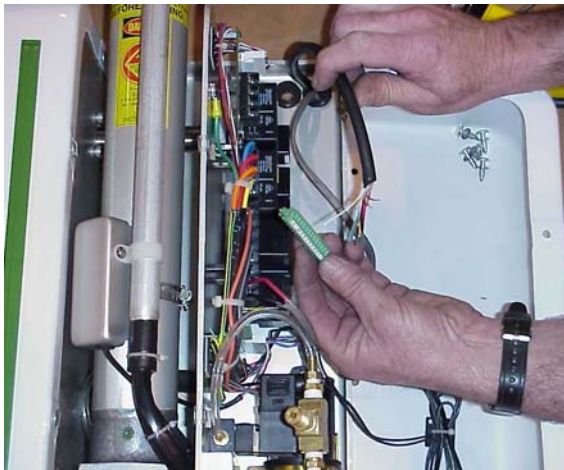


Panel Mount Control

2. Strip wire ends and connect per wiring diagram in Appendix B.

Pistol Grip Control

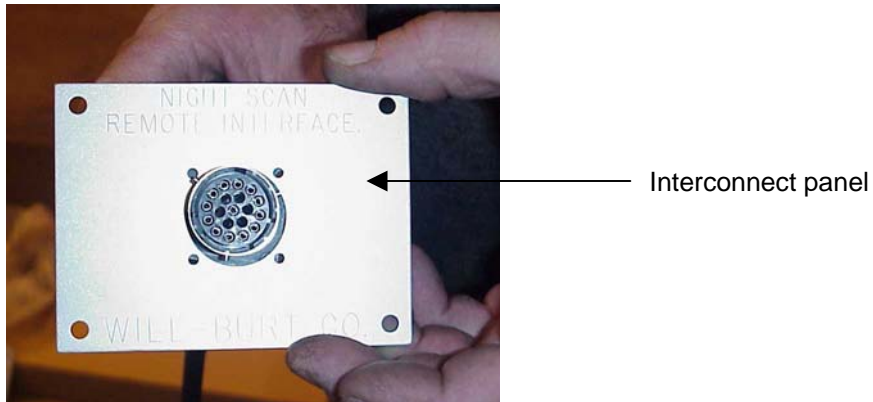
1. Route pistol grip cable through base unit grommet under B access cover.



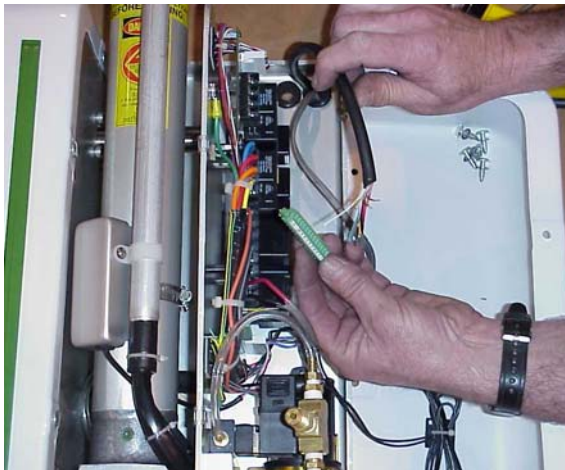
2. Strip wire ends and connect per wiring diagram in Appendix B.

Pistol Grip Control with Interconnect Cable

1. Mount interconnect panel where desired.
2. Mount interconnect cable connector to interconnect panel using supplied hardware.



3. Route interconnect cable through base unit grommet.



4. Strip wire ends and connect per wiring diagram in Appendix B.

V. Operating Instructions



WARNING: All Night Scan Chief operators must be properly trained and familiar with electric related safety work practices. Your attention is directed to the OSHA electrical safety and training requirements in 29 CFR part 1910.

Energizing the Night Scan Chief:

1. Supply power to the lights by using the switch labeled LIGHTS on the controller.



Lights



Note: Do not change 0° and 90° limit switches to make adjustment to saddles.

Raising the Night Scan Chief Mast:



WARNING: All operators must be cautioned about the risk of death or injury from electrical shock if safety rules are not followed.



WARNING: All Night Scan Chief operators must be properly trained and familiar with electric related safety work practices. Your attention is directed to the OSHA electrical safety and training requirements in 29 CFR part 1910.



WARNING: A pneumatic telescoping mast is a pressure vessel. Caution must be exercised to stay clear when the mast is being extended. Do not lean directly over the mast. Proper eye protection should be worn when working on the mast.

1. With the Night Scan Chief unit in its stowed position, use the switch on the controller (hand-held remote or mounted control box) labeled MAST UP/DOWN. Push and hold the switch/button labeled UP to raise the mast to the upright position. The mast UP indicator light on the electrical controller will come on. Continuing to hold the switch in the UP position will then raise the mast to its fully extended height. Releasing the switch will stop the motion of the mast.



Mast Up/Down



Note: During the erecting operation, the lights and RCP PAN and TILT switches are overridden by the magnetic switch located at the bottom of the base tube. If light switch is "ON" the magnetic switch will control illumination. When the mast is in a vertical position but tubes are still retracted, the magnetic switch prevents illumination or PAN and TILT. Once the mast rises approximately two (2) inches the lights and PAN and TILT switches become functional.

2. Use the PAN and TILT switches located on the controller to aim the lights as desired.



Pan & Tilt

Lowering Night Scan Chief Mast:



WARNING: While the mast is being lowered, keep hands clear of the descending collars to avoid pinching.

1. Hold the MAST UP/DOWN switch in the DOWN position. The pneumatic tubes will retract. The RCP will perform Auto Stow operations to position the lights into the appropriate arrangement for storage. The mast will then lower itself from 90° to 0° to its stowed position.



Note: If there is a loss of power, the mast must be lowered and stowed manually. The procedure for manually lower and stowing is described in the following section, “Lowering Night Scan Chief Mast Manually” on page 20.



WARNING: If the MAST UP light is lit, do not move the vehicle. Make sure the mast is stowed before moving the vehicle.



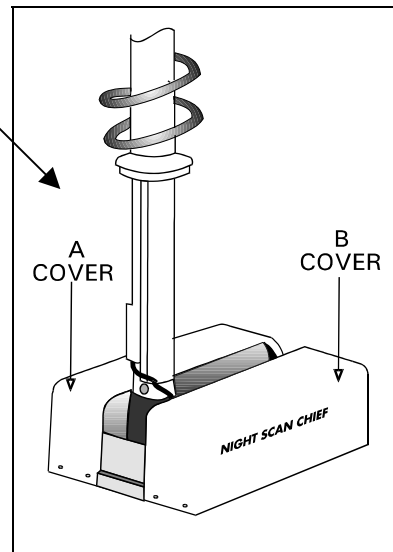
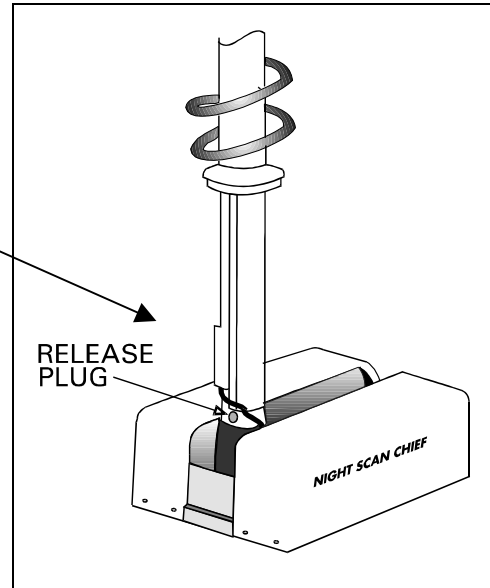
Caution: This mast contains a magnet. Do not use magnetized materials or equipment that is magnet-sensitive within a 5 ½ inch radius of the bottom six (6) inches of the base tube.

Lowering Night Scan Chief Mast System Manually:

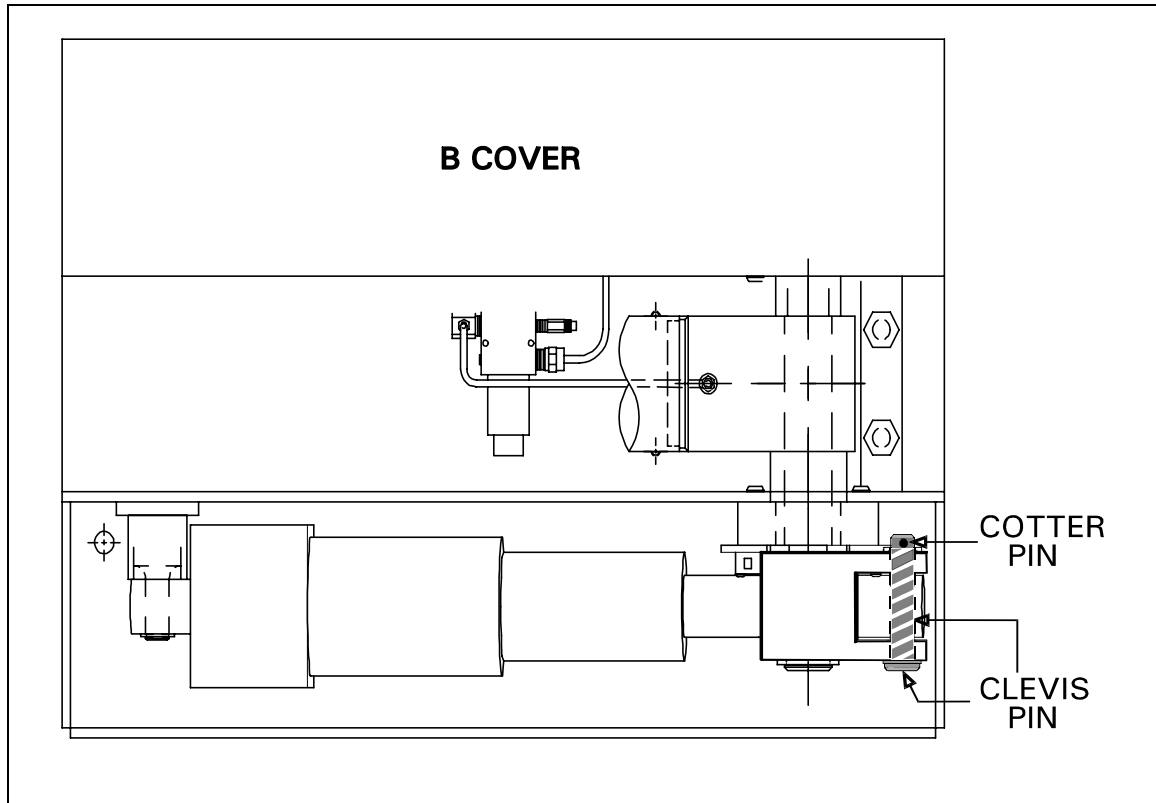


WARNING: Make sure all power has been disconnected to the Night Scan Chief unit before manually lowering the mast.

1. In the event of a power failure when the mast is extended, the mast may be lowered manually by removing the release plug located in the back of the mast, using caution. When the plug is removed, compressed air will be released from the mast and the mast tubes will lower.
2. Once the tubes have retracted, with the mast still in vertical position, remove the screws holding the **A** access cover from the Night Scan Chief base.



3. Remove access cover and place it to the side being careful not to damage the green pressure switch. The actuator connects to the clevis block with a clevis pin and cotter pin.



Caution: SUPPORT THE MAST BEFORE REMOVING PIN! Once the clevis pin has been removed, the mast and light assembly is free to move.

4. Support mast, then remove cotter pin and clevis pin. Place pins in secure location.
5. If RCP is not in a stowed position and does not rest properly in the saddle, the RCP should be removed and stored in a secure location.
6. Gently lower mast and fasten to saddle for transport.
7. Replace cover.



Caution: Ensure that RCP is in stowed position in saddle or stored in a secure location.

VI. Operator Maintenance



WARNING: Only trained and qualified personnel should install, adjust, service and operate the Night Scan Chief.



WARNING: Before performing maintenance, read the operating instructions on the preceding pages. Always obey the warnings in the operating instructions.

Quartz Floodlight Replacement:



WARNING: FOR OUTDOOR USE ONLY. Do not use in areas that have been classified as hazardous as defined in Article 500 of the National Electric Code.



WARNING: Do not use in outdoor, non-hazardous areas in the presence of flammable gases or liquids such as paint, gasoline or solvents. Do not use outdoors in areas of limited ventilation or where high ambient temperatures are present. This fixture can be permanently installed only in ordinary locations as defined in Article 410 of the National Electric Code. Contact with combustible, explosive or other hazardous materials can cause ignition leading to fire, explosion, severe burns and death.



WARNING: Do not attempt to install or service without disconnecting all power. Failure to disconnect power can result in electrocution, shock or burns. The lamp and fixture operate at extremely high temperatures (in excess of 1000° F). Failure to follow these warnings can result in severe personal injury.



WARNING: When relamping an installed fixture, make sure all power to the fixture is off and lamp is cool. Electrical shock and burns can result if these instructions are not followed.



WARNING: Disconnect all power to the fixture supply wires.



WARNING: Do not raise the mast in the vicinity of overhead power lines or other sources of electricity. OSHA regulations require a clearance of at least ten (10) feet from energized overhead lines of 50K volts or less – greater clearance is required for higher voltages. Remember to allow for side-to-side deflection of the mast. Death or serious injury could result if the mast comes near or in contact with power lines.

1. Raise mast to vertical position to allow access to the light fixture. *Only the 12/24V DC power should be on*, it is all that is needed to raise the mast. Once the mast is vertical, DISCONNECT ALL POWER.



Note: Handle bulb with gloves to avoid getting fingerprints on bulb and as protection in case of breakage. Fingerprints on the bulb will discolor bulb causing lower light output, high temperatures and possible breakage.

2. Bulb installation: Open fixture and hold bulb at one end and insert into sliding socket. Instructions permanently marked on the reflector indicate which end of the bulb to insert first. Apply pressure to the sliding socket to allow insertion of the other end of the bulb into the opposite socket. Verify that both bulb contacts are seated in the sockets.

Cleaning and Lubrication:

See Sheet #403 in Appendix C.

Overhaul of Telescoping Mast:

See Sheet #420 in Appendix C.

Replacing External Bumpers:

See Sheet #422 in Appendix C.

Replacing Delrin Inserts:

See Sheet #423 in Appendix C.

Replacing Wear Rings:

See Sheet #423 in Appendix C.

VII. Troubleshooting



WARNING: Only trained and qualified personnel should install, adjust, service and use Night Scan Chief.

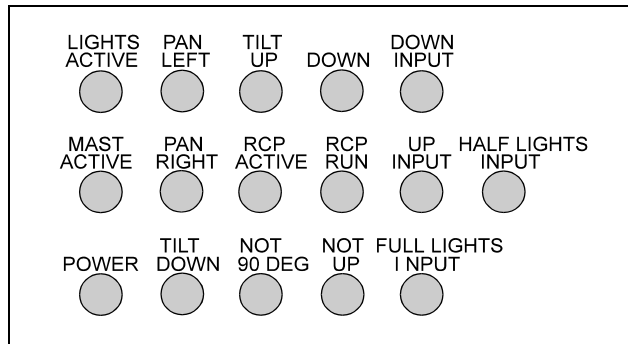


WARNING: Before troubleshooting, read the operating instructions and the safety summary. Always obey the warnings in the operating instructions.

PROBLEM	CAUSE	EVIDENCE
Actuator is not functioning at all.	Blown fuse FU1 or FU2 on circuit board.	No status LEDs are lighted on the co board or in the remote Operator Station.
	MAST UP/DOWN switch in remote Operator Station is defective.	Neither the "UP INPUT" nor the "DOWN INPUT" status LEDs light when the corresponding switch is activated.
	Actuator is defective.	Contact Customer Service.
Actuator is not functioning properly in the UP direction.	MAST ERECT limit switch is misadjusted or defective.	The "NOT 90°" status LED is not lighted.
	MAST UP switch in Remote Operator Station is defective.	The "UP INPUT" status LED does not light when the switch is activated.
Actuator is not functioning properly in the DOWN direction	Magnetic (MAST RETRACTED) limit switch is misadjusted or is defective.	The "NOT 90 DEG." Status LED is not lighted.
	MAST DOWN switch in remote Operator Station is defective.	The "DOWN INPUT" status LED does not light when the switch is activated.
	The safety pressure strip sensor is defective or activated.	Make sure nothing is against it.
	The RCP is not stowed or is not signaling that it has stowed.	Mast Active & RCP active on.
Mast will not extend	MAST ERECT limit switch is misadjusted or is defective	The "LIGHTS ACTIVE" status LED is lighted
	Solenoid valve is sticking or is defective.	Compressor is running and producing pressure.
	Compressor is defective.	Compressor is not running or is not producing air pressure.

PROBLEM	CAUSE	EVIDENCE
Mast will not retract	Solenoid valve is sticking or is defective.	Hit "DOWN" button and listen for "click". If valve is not functioning take cover off and check for continuity across two leads from switch.
RCP head will not pan or tilt	Mast not in full upright position and at least partially extended.	Activating "MAST UP" switch in remote Operator Station causes mast to go to fully erect position and begin extending.
	MAST ERECT limit switch is misadjusted or is defective.	The "LIGHTS ACTIVE" status LED is not lighted.
	Magnetic (MAST RETRACTED) limit switch is misadjusted or is defective.	The "RCP RUN" status LED is not lighted.
	PAN and TILT switches in remote Operator Station are defective.	None of the PAN and TILT status LEDs light when the corresponding switch is activated.
RCP head will not automatically reposition prior to stowing unit.	Magnetic (MAST RETRACTED) limit switch is misadjusted or is defective.	The "RCP RUN" status LED is lit.
	Mast is not fully retracted.	The "RCP RUN" status LED is lit.
Lights will not illuminate at all.	MAST ERECT limit switch is misadjusted or is defective.	The "LIGHTS ACTIVE" status LED is not lit.
	ON/OFF switch in remote Operator Station is defective.	Neither the "HALF LIGHTS" or "FULL LIGHTS" status LEDs are lit.
	No light power is provided.	Meter reads zero volts between Terminal 1 and 2 of TB2 or between Terminal 3 and 4 of TB2.
	Relay K5 and/or K6 is defective.	Meter reads zero volts between Terminals 1 and 2 of TB1 or between Terminals 3 and 4 of TB2.
	Light bulbs in RCP are defective.	Meter reads proper volts between Terminals 1 and 2 of TB2 or between Terminals 3 and 4 of TB2.

PROBLEM	CAUSE	EVIDENCE
Safety pressure strip sensor does not cause mast to reverse its slowing motion and go back to full upright position.	Safety pressure strip sensor is defective.	Temporarily shorting pins 11 and 12 of P1 causes proper action.
	MAST ERECT limit switch is misadjusted or is defective.	The LIGHTS ACTIVE status LED is not lit.



VIII. Replacement Parts List

DESCRIPTION	WB PART NO.	DESCRIPTION	WB PART NO.
Mast section seal 1 ½"	902844	Limit Switch	900985
Mast section seal 2"	902603	Clevis Pin	904454
Mast section 1 ½"	904323	Clevis Shaft – mast assy	904488
Mast section 2"	904322	Interconnect Cable	901317
Mast section 2 ½"	904551	A & B Access Covers	904370
Mast Oil	900600	Access Cover Screws	901394
Actuator, 12V	904933	Solenoid Valve, 12V	901384
Air Compressor, 12V	901070	Motor Tilt, 12V	900945
Control Board, 12V	901102	Motor Pan, 12V	900944
Pistol Grip Remote Control without Connector	901348	Panel Mount Remote Control	901307
Saddle Assembly	908136	RCP22-1000 only for 904739	904733
½" Nycoil Assy. DC Vistar and 110 VAC	904450	RCP22-1500 only for 904818	904765
Lamp 300 Watt	901311	RCP22-2000 only for 904435	904734
Bulb 500 Watt (220/240V)	901663	RCP22-3000 only for 904817	904735
Bulb 1000 Watt (220V)	900629	Lens 1000 and 1500 Appleton	900854
Bulb 1000 Watt (110V)	907077	Lens 300 and 500	901356
Bulb 1500 Watt (220V)	900524	Lens 750	901142
Lamp 70 Watt, DC Vistar		Lamp 750 Watt	900955
Pistol Grip Remote Control with Connector	901320	Lens, DC Vistar	904917
RCP22-140DC, 12V	904935	RCP22-70DC, 24V	905490
Actuator, 24V	904934	Solenoid Valve, 24V	901385
Air Compressor, 24V	901069	Control Board, 24V	901147
Motor Tilt, 24V	901097	Motor Pan, 24V	901094
500 Watt Appleton Lamp Assy. without bulb	903891	1000/1500 Watt Appleton Lamp Assy. Without bulb	903367
1000 Watt Focus Lamphead (220/240V) Right	906936	1000 Watt Focus Lamphead (220/240V) Left	906937
1500 Watt Focus Lamphead (220/240V) Right	906881	1500 Watt Focus Lamphead (220/240V) Left	906882

Appendix A: Material Safety Data

Appendix B: Drawings

Appendix C: Service Sheets

Appendix D: Glossary of Terms

OSHA – Occupational Safety and Health Administration.

Panel Mount Control – Control mounted to your vehicle.

Pistol Grip Control – Hand-held control.

RCP – Remote Controlled Positioner.