

# NightSpire® Search Light



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## ***Installation and Maintenance Instructions***

25500704

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## Limited Warranty

This product is subject to and covered by a limited warranty, a copy of which can be found at [www.fedsig.com/SSG-Warranty](http://www.fedsig.com/SSG-Warranty). A copy of this limited warranty can also be obtained by written request to Federal Signal Corporation, 2645 Federal Signal Drive, University Park, IL 60484, email to [info@fedsig.com](mailto:info@fedsig.com) or call +1 708-534-3400.

This limited warranty is in lieu of all other warranties, express or implied, contractual or statutory, including, but not limited to the warranty of merchantability, warranty of fitness for a particular purpose and any warranty against failure of its essential purpose.



**FEDERAL SIGNAL®**

**Safety and Security Systems**

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### **Safety Message to Installers and Service Personnel**

#### **⚠ WARNING**

People's lives depend on your proper installation and servicing of Federal Signal products. It is important to read and follow all instructions shipped with this product. Listed below are some other important safety instructions and precautions you should follow:

- To properly install or service this equipment, you must have a good understanding of automotive mechanical and electrical procedures and systems, along with proficiency in the installation and service of safety warning equipment. Always refer to the vehicle's service manuals when performing equipment installations on a vehicle.
- To be an effective warning device, this product produces bright light that can be hazardous to your eyesight when viewed at a close range. Do not stare directly into this lighting product at a close range, or permanent damage to your eyesight may occur.
- Do not install the light system in an area that would block, impair, or blind the driver's vision. Ensure that the light system is mounted in a position that is outside the driver's field of vision so the driver can safely operate the vehicle.
- A light system is a high current system. For the system to function properly, a separate negative (-) connection and positive (+) connection must be made. All negative connections should be connected to the negative battery terminal, and a suitable fuse should be installed on the positive battery terminal connection as close to the battery as possible. Ensure that all wires and fuses are rated correctly to handle the device and system amperage requirements.
- Never attempt to install aftermarket equipment that connects to the vehicle wiring without reviewing a vehicle wiring diagram available from the vehicle manufacturer. Ensure that your installation will not affect vehicle operation or mandated safety functions or circuits. Always check the vehicle for proper operation after installation.
- The lighting system components, especially the outer housing, get hot during operation. Be sure to disconnect power to the system and allow the system to cool down before handling any components of the system.

## ***Safety Message to Installers and Service Personnel***

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- Do not mount a radio antenna within 18 inches (45.7 cm) of the lighting system. Placing the antenna too close to the lighting system could cause the lighting system to malfunction or be damaged by strong radio fields. Mounting the antenna too close to the lighting system may also cause the radio noise emitted from the lighting system to interfere with the reception of the radio transmitter and reduce radio reception.
- Do not attempt to wash any unsealed electrical device while it is connected to its power source.
- DO NOT connect this system to the vehicle battery until ALL other electrical connections are made, mounting of all components is complete, and you have verified that no shorts exist. If the wiring is shorted to the vehicle body or frame, high current conductors can cause hazardous sparks, resulting in electrical fires or flying molten metal.
- DO NOT install equipment or route wiring (or the plug-in cord) in the deployment path of an airbag.
- Before drilling into a vehicle structure, ensure that both sides of the surface are clear of anything that could be damaged. Remove all burrs from drilled holes. To prevent electrical shorts, grommet all drilled holes through which wiring passes. Ensure that the mounting screws do not cause electrical or mechanical damage to the vehicle.
- Because vehicle roof construction and driving conditions vary, do not drive a vehicle with a magnetically mounted warning light installed. The light could fly off the vehicle, causing injury or damage. Repair of damage incurred because of ignoring this warning shall be the sole responsibility of the user.
- Locate the light system controls so the VEHICLE and CONTROLS can be operated safely under all driving conditions.
- After installation, test the light system to ensure that it is operating properly.
- Test all vehicle functions, including horn operation, vehicle safety functions, and vehicle light systems, to ensure proper operation.

## ***Safety Message to Installers and Service Personnel***

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Ensure that the installation has not affected the vehicle operation or changed any vehicle safety function or circuit.

- Scratched or dull reflectors or lenses will reduce the effectiveness of the lighting system. Avoid heavy pressure and caustic or petroleum-based products when cleaning the lighting system.
- Replace any optical components that may have been scratched or crazed during system installation.
- Do not attempt to activate or deactivate the light system controls while driving in a hazardous situation.
- Frequently inspect the light system to ensure that it is operating properly and that it is securely attached to the vehicle.
- After installation and testing are complete, provide a copy of these instructions to instructional staff and all operating personnel.
- File these instructions in a safe place and refer to them when maintaining and/or reinstalling the product. Failure to follow all safety precautions and instructions may result in property damage, serious injury, or death.

## Overview

The NightSpire® is a remotely adjustable search light with an adjustable light pattern. It can be rotated horizontally, 360° continuously. It can elevate from 40° down to 90° up. The light output of the NS200 models is continuously adjustable from a 4° spot to a 50° wide flood. The NS100 has the ability to flash. The NightSpire can be controlled by either the handheld wireless controller or dash mount wireless controller. The controller that is included depends on the model purchased.

The handheld wireless controller uses 2 AAA (LR03) batteries and has a range of approximately 125 feet. The handheld controller can be programmed for selectable control of up to three different search lights, individually selectable at the remote. There are two memory buttons available to save preset locations and spot sizes.

The dash mount wireless controller is powered by the included two-conductor power harness and has a range of approximately 125 feet. The dash mount controller can be programmed for selectable control of up to three different search lights, individually selectable at the remote. There is one memory button available to save a preset location and spot size.

**Table 1 Product specifications**

Nominal Input Voltage	12 Vdc
Input Current	3.0 A
Height	Perm Mt: 7.10 inches (18.0 cm)
	Mag mt: 6.94 inches (17.6 cm)
Diameter	Perm Mt: 6.54 inches (16.6 cm)
	Mag Mt: 5.19 inches (13.2 cm)
Weight	Perm Mt: 2.4 lb (1.1 kg)
	Mag Mt: 2.5 lb (1.1 kg)
Wireless Operating Frequency	2.4 GHz

## Unpacking

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### Unpacking

After unpacking the search light, inspect it for damage that may have occurred in transit. If there is damage, file a claim immediately with the carrier, stating the extent of damage. Carefully check all envelopes, shipping labels, and tags before removing or destroying them. If installing a permanent mounted search light, ensure that the parts listed in Table 2 are included in the package.

**Table 2 Kit Contents**

<b>Qty.</b>	<b>Description</b>
3	#8 Pan Head Phillips Screw
3	#10 Pan Head Phillips Screw
3	1-3/4-inch #10 Machine Screws
3	7/8-inch #10 Machine Screws
3	#10 Machine Nuts
1	Handheld Wireless Controller*
2	AAA Batteries*
1	Dash Mount Wireless Controller**
1	2-Cond. Power Harness**
1	Flat Mount Bracket**
1	Controller Cradle*
4	3/8-inch #6 Screws*

\*Included with Handheld Wireless Controller models

\*\*Included with Dash Mount Wireless Controller models

## Installation

### Attaching the Mounting Flange

The mounting flange shipped with the unit is removable. You can either leave it attached the search light before installation or attach the flange to the vehicle first. If desired, permanently lock the flange to the base using the three #8 pan head screws provided. See Figure 1.

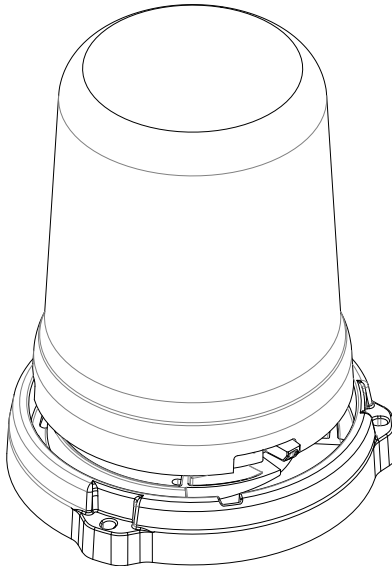
**⚠ WARNING**

***DO NOT DRIVE WITHOUT FIRST MOUNTING THE SEARCH LIGHT TO THE FLANGE: Because vehicle roof construction and driving conditions vary, do not drive a vehicle if the search light is not attached to the flange. The light could fly off the vehicle, causing injury or damage. Repair of damage incurred because of ignoring this warning shall be the sole responsibility of the user.***

To attach the mounting flange:

1. Locate the detent on the search light and one of the two detent notches on the flange.
2. Align the search light as shown in Figure 1.

**Figure 1 Mounting Flange Alignment**



3. Push the search light down completely and turn clockwise 1/8 turn until the detent locks in place.

## ***Installation***

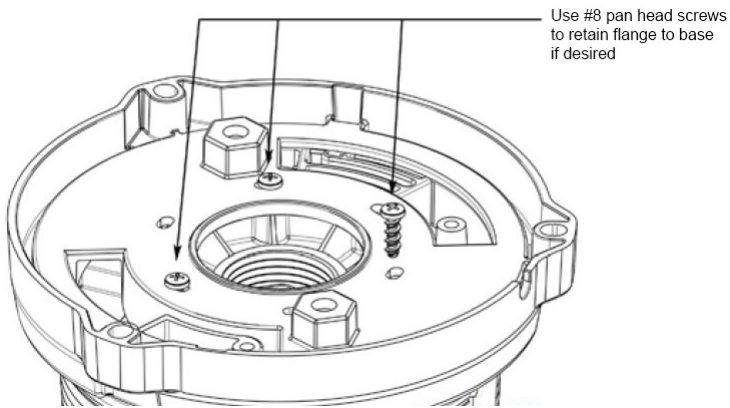
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To remove the search light from the flange:

1. Use a flat-tipped screwdriver to push the detent while turning the search light counterclockwise.
2. Pull up when the detent is free of the notch.

If desired, permanently lock the flange to the base using the three #8 pan head screws provided. See Figure 2.

**Figure 2 Permanently locking the flange**



## Wiring

### NOTICE

**REVERSE POLARITY/MISWIRING:** To avoid damage to the light, ensure that the input voltage is the same as the voltage rating of the light. Ensure that correct polarity is observed. Also ensure that the unit is properly fused with a 5 A fuse.

**Table 3 Wire Connections**

Color	Description	Connection Point
Black	Ground	Battery Negative
Red	Mode 1	Switched Positive 12 Vdc

To wire the search light:

1. Determine the required length of wires needed. The search light is supplied with 6-inch 20 AWG wires that can be connected to longer wires if needed. For lengths up to 15 feet (5 m), use a minimum 18 AWG (1 mm) wire. For lengths over 15 feet, use a minimum 16 AWG (1.5 mm) wire.
2. Install a 5 A fuse and fuse holder to the positive (+) terminal at the voltage source. Connect one side of the power switch to this fuse. Connect the light's red wire to the switched terminal of the switch.
3. Connect the black (-) wire from the search light to a known good vehicle ground as close to the unit as is practical.

For models with a dash mount wireless controller, see "Setting up the Dash Mount Wireless Controller" on page 17 for instructions on wiring the dash mount controller.

## Permanently Mounting

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### Permanently Mounting

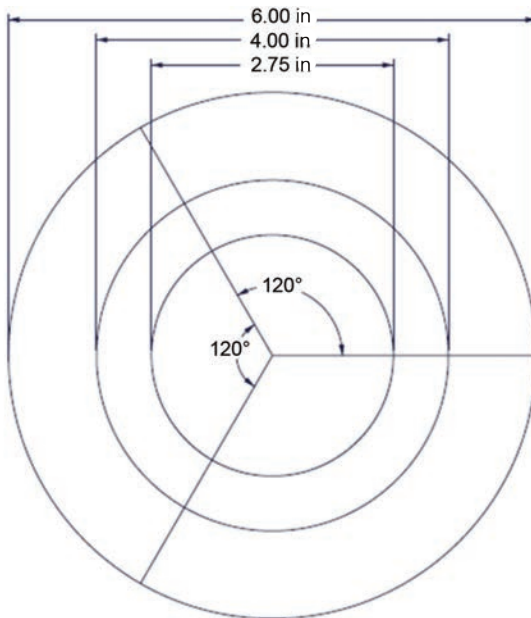
To permanently mount the search light:

1. Scribe the locations of the three mounting holes on the mounting surface using the desired mounting holes in the flange or base as a guide.

There are two sets of evenly spaced holes 120° apart on the bottom of the search light itself. Holes for the #8 self-tapping screws are on a 2.75-inch diameter (where the lines intersect the inner circle in Figure 3). The holes for the #10 self-tapping screws are on a 4-inch diameter (where the lines intersect the middle circle in Figure 3). The 4-inch pattern is the preferred pattern for permanent mounting.

If one of the optional mounting flanges is to be used, three #10 screws are on a 6.00-inch circle (where the lines intersect the outer circle in Figure 3).

**Figure 3 Drilling (Not to scale)**

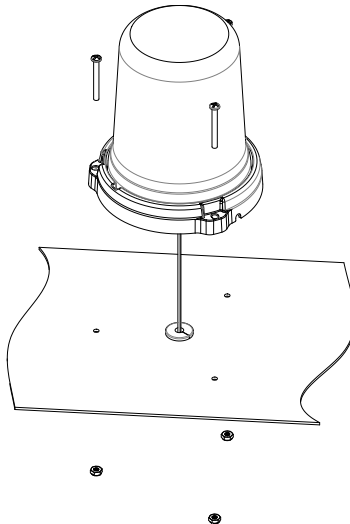


**NOTICE**

**DRILLING PRECAUTIONS:** When drilling holes, check the area you are drilling into to ensure that you do not damage vehicle components while drilling. All drilled holes should be deburred, and all sharp edges should be smoothed. All wire routings going through drilled holes should be protected by a grommet or convolute/split loom tubing.

2. Drill three 0.177-inch diameter holes for the #8 screws, or three 0.201-inch diameter holes for the #10 screws.
3. Scribe a hole for the wires or an installer-supplied bushing at the center of the screw pattern.
4. Drill a suitably sized hole at the scribed position for the bushing and wire routing hole. Otherwise, route the wires through the drain notch in the optional mounting flange. Leave open space for water to drain.
5. Align the search light over the drilled holes. Route the wires through the wire routing hole. Seal the hole with a bushing or RTV if entering a watertight compartment.

**Figure 4 Exploded view of installation**



6. Secure the base to the mounting surface with the selected pan head screws.

## Using Magnetic Mounting

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### Pipe Mounting

The base was designed for the optional installation onto the end of a threaded 1-inch NPT pipe. The supply wires are to run within the pipe for protection.

1. Route the supply wires through the pipe and connect the wires to the search light as described in “Wiring” on page 11.
2. Screw the search light onto the pipe. Ensure that the wires are not pinched or severely twisted inside the pipe. Do not overtighten; the base may split.

### Using Magnetic Mounting

#### **WARNING**

***DO NOT DRIVE WITH MAGNETICALLY-MOUNTED SEARCH LIGHT INSTALLED: Because vehicle roof construction and driving conditions vary, do not drive a vehicle with a magnetically-mounted search light installed. The search light could fly off the vehicle, causing injury or damage. Repair of damage incurred because of ignoring this warning shall be the sole responsibility of the user.***

The holding power of magnetic mounting systems depends on the surface finish, surface flatness, and thickness of the steel mounting surface. Therefore, to promote proper magnetic mounting:

- Keep the mounting surface and magnets clean, dry, and free of foreign particles that prevent good surface contact.
- Ensure that the mounting surface is flat.
- Do not use a magnetic mounting system on vehicles with vinyl tops.
- To prevent the sliding of the search light on the mounting surface, avoid quick acceleration and hard stops.

Magnetic mounting provides a secure, temporary mounting method for most installations. However, it is not intended for use on the exterior of a moving vehicle.

## ***Setting up the Handheld Wireless Controller***

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To temporarily mount the search light to a vehicle with magnetic mounting:

1. Place the light assembly on a level, steel surface. Ensure that the light is placed to promote maximum coverage and range of the search light.
2. Insert the plug at the end of the cable assembly into the 12-volt power outlet socket.
3. Turn the power on and off using the power switch on the plug. To show that the power is on, a pilot light turns on.
4. Use the remote to operate the light.

**NOTE:** The accessory plug has an integral fuse and power switch. The switch may be used to remove power from the light. If direct connection to the power source (not using the accessory plug) is desired, a user-supplied inline fuse holder and 5 A fuse must be installed in the power cord's ribbed (positive) lead.

## **Setting up the Handheld Wireless Controller**

To set up the handheld wireless controller:

1. Open the battery compartment by removing the #1 Phillips® head screw and removing the cover.
2. Install two AAA batteries in the orientation indicated in the battery compartment.
3. Replace the cover and secure with the screw.

## ***Mounting the Controller Bracket***

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### **Mounting the Controller Bracket**

The bracket is supplied with four screws suitable for thread cutting into plastic. The mounting hardware used will depend on the chosen mounting location, available room, and user preference. Different hardware may be required and is to be supplied by the installer.

Choose a location that allows the vehicle and controls to be operated safely at all times.

#### **⚠ WARNING**

***MOUNTING PRECAUTION: Unreliable switch activation and loss of “tactile feedback” will result if the method of mounting the Controller allows movement. DO NOT mount the Controller on padded surfaces. Failure to heed this warning could result in driver distraction or driver error while operating the vehicle.***

#### **⚠ WARNING**

***AIRBAG DEPLOYMENT: Do not install equipment or route wiring in the deployment path of an airbag. Failure to observe this warning will reduce the effectiveness of the airbag or potentially dislodge the equipment, causing serious injury or death.***

To install the bracket:

1. Select a suitable mounting location. This must be out of the way of the driver and have room for drilling and placing the mounting screws without damaging wires, airbags, and other hazards.
2. Using the dash mount as a guide, scribe the four drill-position marks at the selected mounting location. For reference, the pattern is 2.375 inches tall by 1 inch wide.

#### **NOTICE**

***DRILLING PRECAUTIONS: Before drilling holes, check the area into which you are drilling to ensure that you do not damage vehicle components while drilling. All wire routings going through drilled holes should be protected by a grommet or convoluted/ split loom tubing.***

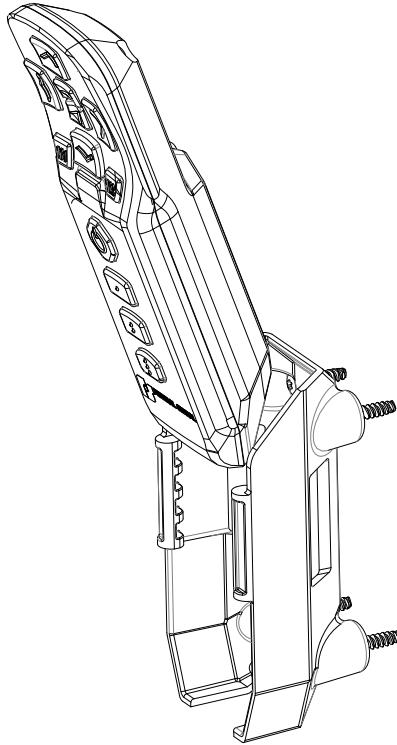
3. Drill four 1/8-inch screw holes at the marked positions.
4. Secure the mount bracket to the mounting surface with the provided screws. Do not overtighten the screws.

## ***Setting up the Dash Mount Wireless Controller***

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5. Slide the Controller into the bracket. See Figure 5.

**Figure 5 Slide controller into bracket**



### **Setting up the Dash Mount Wireless Controller** **Mounting the Dash Mount Wireless Controller**

Two methods to mount the Dash Mount Wireless Controller are available. The controller is supplied with a Flat Mount. A Swivel Mount is also available, but it is not included. The mounting method used will depend on chosen mounting location, available room, and user preference.

Choose a mount location that allows the vehicle and controls to be operated safely at all times.

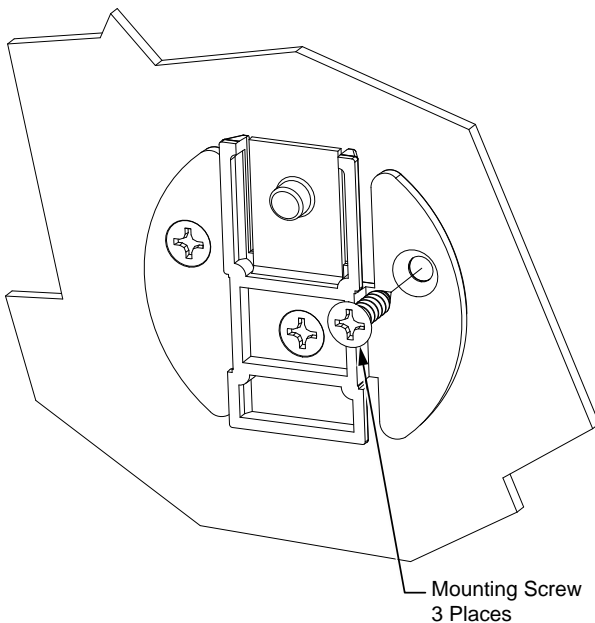
## Setting up the Dash Mount Wireless Controller

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To flat mount the Dash Mount Controller:

1. Using the flat mount bracket as a guide, scribe the three drill-position marks at the selected mounting location.
2. Drill three 1/8-inch mounting holes at the marked positions.
3. Secure the flat mount bracket to the mounting surface with the provided #8 flat head screws. Do not overtighten the screws. See Figure 6.

**Figure 6 Secure Flat Mount Bracket to Mounting Surface**



4. Slide the Dash Mount Controller onto the flat mount bracket.

## Wiring the Dash Mount Wireless Controller

**Table 4 Dash Mount Controller Wire Connections**

Color	Description	Connection Point
Black	Ground	Battery Negative
Red	Power	Switched Positive 12 Vdc

## ***Setting up the Dash Mount Wireless Controller***

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To wire the Dash Mount Wireless Controller:

1. Determine the required length of wires needed. The Dash Mount Controller is supplied with 5-foot 20 AWG wires that can be connected to longer wires if needed.
2. Install a 1 A fuse and fuse holder to the positive (+) terminal at the voltage source. Connect one side of the power switch to this fuse. Connect the controller's red wire to the switched terminal of the switch.
3. Connect the black (-) wire from the search light to a known good vehicle ground as close to the unit as is practical.

### **Adjusting the Backlight of the Dash Mount Wireless Controller**

The Dash Mount Wireless Controller has optional backlighting for the buttons. The backlight intensity can be set per the user's preference.

To set the backlight intensity:

1. Connect the Dash Mount Controller to the power. (The controller does not have to be connected to a light to adjust backlight intensity.)
2. Press and hold the Power button for 5 seconds, until the Power button turns white, the Memory button turns green, and the Preset button turns red.
3. Adjust the backlight intensity to your preference. Press the Memory button to increase the intensity. Press the Preset button to decrease the intensity. To turn off the backlight, repeatedly decrease the intensity until the backlight is off.
4. Press the Power button to lock the backlight intensity and return to normal operation.

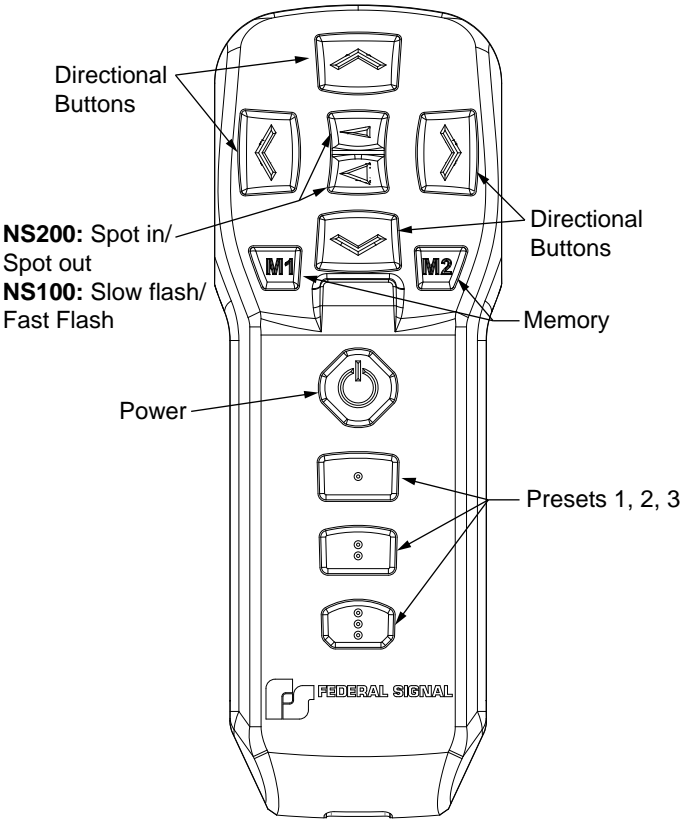
**Operation**

**Operation**

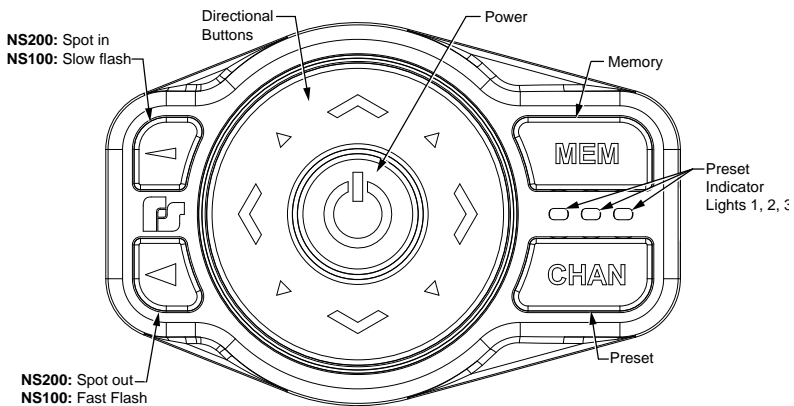
**⚠ WARNING**

**LIGHT HAZARD:** This product contains a high-intensity LED device. To prevent permanent eye damage, **DO NOT** stare into the light beam at close range.

**Figure 7 Handheld Wireless Controller**



**Figure 8 Dash Mount Wireless Controller**



When the search light is powered on, it performs a calibration procedure. It rotates to zero and returns to the last position it was at when powered off.

Select a unit to be controlled from one of the three presets. With the Handheld Controller, this is done by pressing the appropriate preset button. With the Dash Mount Controller, this is done by setting the preset channel. (Press the preset button to cycle channels.) If the light for the selected preset is paired and connected, it is made the active connection, and the button turns solid green. If it is only paired, the controller scans for up to 30 seconds (the button flashes blue while scanning) or until it connects. (The button turns solid green.) If no search light has been paired for the selected preset, the button flashes red briefly, and if the last active search light is still connected, it will be selected. See “Pairing Procedure” below to pair a new light.

Power the unit off and on using the power button.

Aim the light toward the work area by using the Up-Down and Left-Right buttons.

Adjust the spot size by using the spot in and spot out buttons.

Once a desired position is reached, this may be programmed as a memory location by pressing the M1/M2/MEM button for five seconds until the Power button blinks. If the light is moved from this position, it may be returned to by pressing the selected memory button.

## ***Operation***

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### **Pairing Procedure**

The search light and the controller shipped with it will be paired as #1. If this is lost, if adding additional search lights into a controller's memory, or if a replacement is needed, follow this pairing procedure.

To pair the unit:

- 1.** Select the Preset you want to pair.
  - On the Handheld Controller, select the Preset 1, Preset 2, or Preset 3 button.
  - On the Dash Mount Controller, set the Preset Indicator light to the desired Preset. Change the Indicator light by briefly pressing and releasing the Preset button.
- 2.** With the NightSpire® powered down, hold the Preset button for five seconds to begin the pairing procedure.
- 3.** When the button begins to flash blue, apply power to the search light.
- 4.** Wait until the Power button begins to flash green and the Preset button begins to flash red.
- 5.** To confirm the pairing, short press the Power button. The Preset button will turn solid green.
- 6.** To cancel the pairing and continue to scan for a new search light, short press the Preset button. The Preset button will begin to flash blue again.
- 7.** If desired, repeat this procedure for the remaining two Preset buttons/channels with additional search lights.

### Cleaning

#### **⚠ WARNING**

***CRAZING/CRACKING*** *Crazing (fine cracks) of lenses causes reduced effectiveness of the light. Do not use cleaning agents (which cause crazing) such as strong detergents, solvents, or petroleum products. If crazing of the lenses does occur, the reliability of light for emergency signaling purposes may be reduced until the lenses are replaced.*

#### **NOTICE**

***CLEANING THE POLYCARBONATE LENSES:*** *To extend the life of this device, periodic cleaning is necessary. Clean the lens with a mild, non-abrasive, neutral-pH cleaning agent and a soft, clean cloth. Rinse the device thoroughly to ensure that no cleaning agent residue remains. To avoid water spots, dry the device with a soft clean cloth. Failure to follow this precaution can cause crazing or cracking of the lens/dome and voids the warranty claims for the light.*

### Getting Technical Support

For technical support, please contact:

Federal Signal Corporation  
Service Department  
Phone: 1-800-433-9132  
Email: empsserviceinfo@fedsig.com

### Getting Repair Service

The Federal Signal factory provides technical assistance with any problems that cannot be handled locally. Any product returned to Federal Signal for service, inspection, or repair must be accompanied by a Return Material Authorization (RMA). Obtain an RMA from a local Distributor or Manufacturer's Representative. Provide a brief explanation of the service requested or the nature of the malfunction.

Address all communications and shipments to the following:

Federal Signal Corporation  
Service Department  
2645 Federal Signal Dr.  
University Park, IL 60484-3167

## Returning a Product to Federal Signal

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### Ordering Replacement Parts

To order replacement parts, call Customer Support at 1-800-264-3578, 7 a.m. to 5 p.m., Monday through Friday (CT) or contact your nearest distributor.

**Table 5 Replacement Parts**

Description	Part No
Dome	843303374
O-ring	70601114
Flange	862702693
Handheld Wireless Controller	843303392
Mag Cord	17501973
Dash Mount Wireless Controller	843304174
Dash Mount Power Harness	17503019-60
Dash Mount Controller Swivel Mount	8623129

### Returning a Product to Federal Signal

All products returned must be accompanied with a Returned Merchandise Authorization (RMA) number. To obtain an RMA number, call 1-800-433-9132.



2645 Federal Signal Drive  
University Park, Illinois 60484

[www.fedsig.com](http://www.fedsig.com)

Customer Support

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Work Truck: 800-824-0254 • +1 708 534-3400

Technical Support 800-433-9132 • +1 708 534-3400