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Form 90059 R2

HS Skylight Motorization System Installation Instructions



French and Spanish versions available at www.truth.com/technicalsupport



Made in USA





Danger: To help prevent severe personal injury or death:

- Read and understand instructions completely before beginning installation.
- Wiring must be installed by a qualified electrician according to local and National Electrical Codes (N.E.C.)
- Disconnect main power before beginning installation! Verify that power is OFF at the main breaker or fuse panel by testing with a voltage meter that you know is working correctly.
- Connect power only after motor connections and settings are verified.
- This equipment does not provide a method to shut off power, and should be connected to a dedicated breaker or fused power circuit capable of providing 1 amp at 120 VAC of power per skylight unit.
- The screen interlock MUST be correctly installed and is a required part of the power skylight system. It is intended to help prevent injury that could result from reaching into the skylight area during operation. The correct installation of the screen interlock is the responsibility of the installer. (The screen interlock is not required on skylights installed more than 8 feet above the floor.)
- Do not allow children to operate the wall switch push buttons or remote control transmitter(s).

Additional Safety Guidelines

- When connecting the Sentry II system to accessories, read the installation instructions supplied with each accessory before beginning installation.
- The Sentry II system is intended for indoor use only, with screens in place.
- This product has been designed to open and close skylights and awning windows only. Any other use of this product is not supported by Truth Hardware.
- Save ALL instructions. Additional copies can be downloaded off of our web site at: truth.com/technicalsupport
- Installer – please be sure to give ALL instructions to the homeowner once installation is complete.

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Preparation

What You Should Know Before Starting

Languages: This installation booklet is available in French and Spanish on our web site at www.truth.com/technicalsupport.

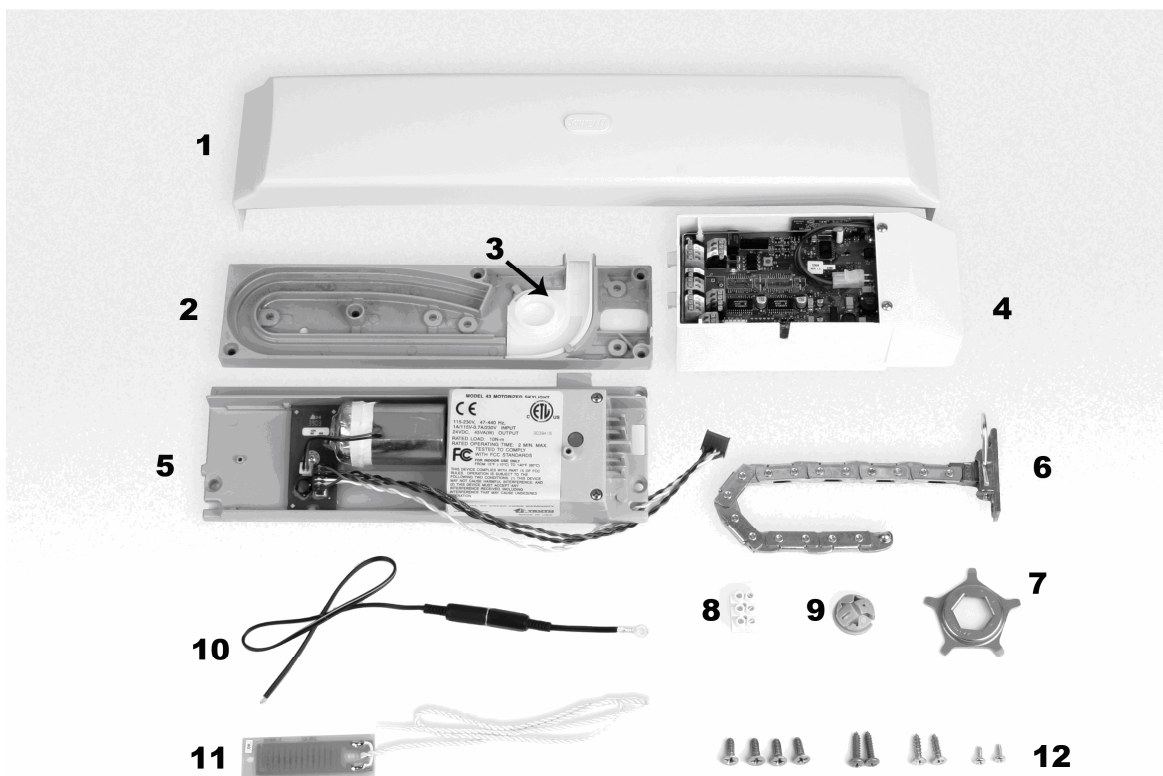
Supply Voltage Note: The supply voltage range for the Sentry II power skylight system is very flexible to accommodate supply voltages available from many different countries. The input (supply) voltage range is 90 to 264 VAC at a frequency range of 47 to 440 Hz. For practical purposes, the supply voltage referenced in this document is 120 volts at 60 Hz commonly used in the United States.

Operating Environment: The operating temperature range must be maintained between 140° F (60° C) to -5° F (-20° C).

Single motor vs. multiple (synchronous) motor application: Most applications of the Sentry II HS system will be a single motor on a single skylight. However, the Sentry II HS motor system can be used in a number of different applications depending on the size and weight of your skylight lid. The skylight lid must weigh less than 160 lbs. (80 lbs. at the chain) for a single motor installation. If your skylight lid is heavier than 160 lbs., multiple motors (up to 4) can be used to lift a single skylight lid. The maximum skylight weight for 4 motors is 400lbs. This is called a synchronous motor application. Please refer to page 29 for the details of this installation.

Multiple motors on separate skylights: There is a way of wiring several motors on different skylights together so that they all will respond to one wall switch or one HPI input. Please refer to page 28 for the details of this installation.

Getting Started



Item	Part Number
------	-------------

1. Motor Cover	12481.XX (not part of kit)
2. Base Plate	Not sold separately
3. Chain Liner	Not sold separately
4. Control Unit	13027
5. Motor Unit	12473.92
6. Chain	11533
7. Sprocket	30654
8. Terminal block	Items 8 thru 9 are part of hardware kit # 12482
9. Strain Relief	
10. Screen Interlock	
11. Rain sensor	
12. Screws	
	(4) Size A – (#12-24 X 5/8", TF, Ph FH, self threading machine screws)
	(2) Size B (#6-32 X 3/8" T23, Ph PH machine screws)
	(2) Size C (#10 X 3/4" Ph PH sheet metal screws)
	(2) Size D (#10 X 3/4" Ph PH sheet metal screws)

Note:

- No wire is included. See wiring diagram on page 28 for wire requirements.
- To replace lost or broken parts, please go to www.truth.com to locate distributor

Did you find what you're looking for? The Truth Hardware Web site is a great resource for the latest product and installation information. It's available at www.truth.com

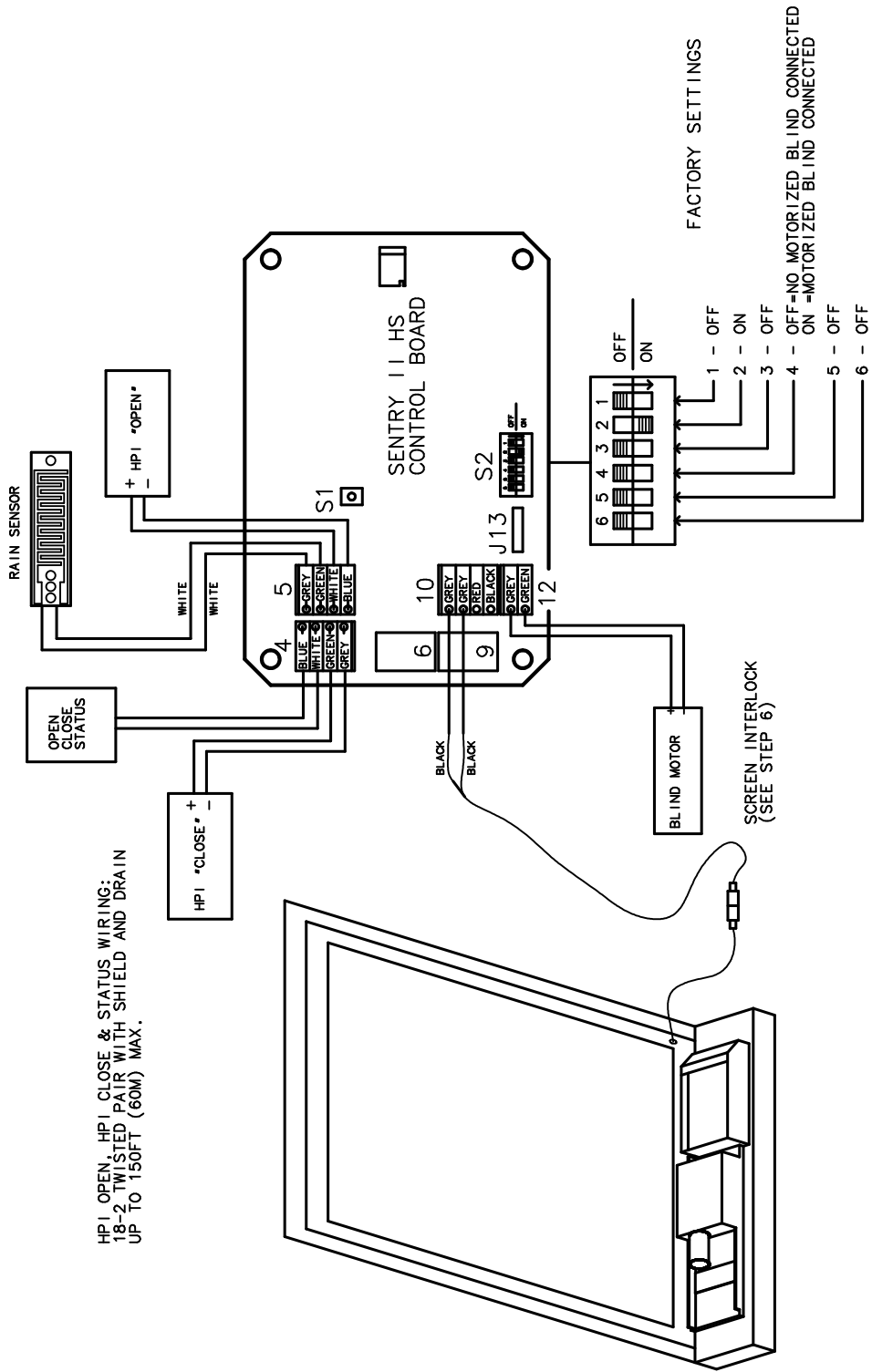
Planning

Important: If you are not the homeowner, it is important to contact the homeowner and discuss how they want to control a group of skylights. It may be very difficult to change the installation to meet the homeowner's desires once installation is complete.

Please consider:

- In case of a power outage the Sentry II power skylight system does not have manual override. If it is important to be able to close the skylights without power, consider installing a battery back-up system.
- There are a number of other control options available:
 - **Remote Control Has Built-in Thermostat** for those applications where it is desirable to open and close skylights based on temperature. Just set the temperature and place the remote in the area where you want the temperature controlled. Every Sentry II HS unit is remote control enabled.
 - **A Rain Sensor** comes standard with each unit. If you choose to install the rain sensor, each control unit needs a separate rain sensor. Consult main wiring diagram for wiring requirements.
 - **Power mini blinds** - The Sentry II control unit is capable of controlling power mini blinds (supplied by others). See page 20 for additional information. Consult main wiring diagram for wiring requirements.
 - **Skylight position feedback** - The Sentry II control unit is capable of providing skylight position feedback (open or closed). See page 20 for additional information. Consult main wiring diagram for wiring requirements.
 - **Integrated control with other control systems** - The Sentry II power skylight system can be integrated with other automated control systems. Some examples are home automation systems, thermostats and security systems. See the HPI section on page 18 for additional information. Consult main wiring diagram for wiring requirements if used.
- Plan your circuits based on 1 amp of power at 120 VAC per motor unit.
- The primary means of skylight control is the remote control. An optional wall mounted switch panel is available if required.
 - If installing a wall mounted switch panel – See main wiring diagram for wiring details. Plan your wiring routes carefully. Low voltage wires must not be run parallel to high voltage wires.

Main wiring diagram



HP1 OPEN, HP1 CLOSE & STATUS WIRING:
18-2 TWISTED PAIR WITH SHIELD AND DRAIN
UP TO 150FT (60M) MAX.

MAIN WIRING DIAGRAM

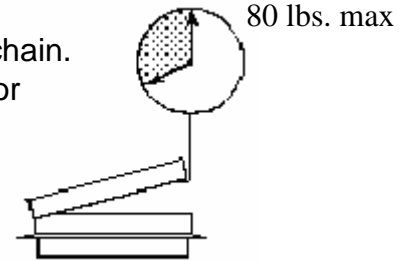
Motor Installation

Please Note: If the chain base and motor unit are pre-installed on the skylight, skip to step 7.

1. Verify Skylight Weight

Important Skylight Information:

- The skylight lid weight must not exceed 80 lbs. (36 kg) at the chain.
- If over 80 lbs. or wider than 40" refer to the Synchronous Motor section of the manual.

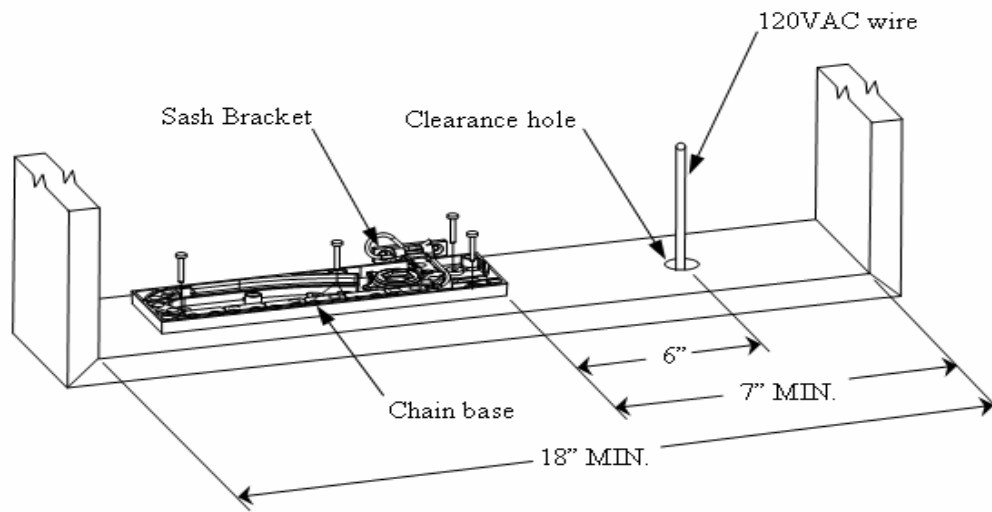


Chain carries 1/2 of total lid weight

2. Install Chain Base

- Remove existing manual operator and/or chain base if present.
- Install the chain base included with the kit (even if the current unit appears to be the same).
- Secure chain base to skylight frame with #10 screws (not supplied) in the locations shown. Where possible, reuse the fasteners used by the skylight manufacturer.
- Secure vent bracket to skylight vent.

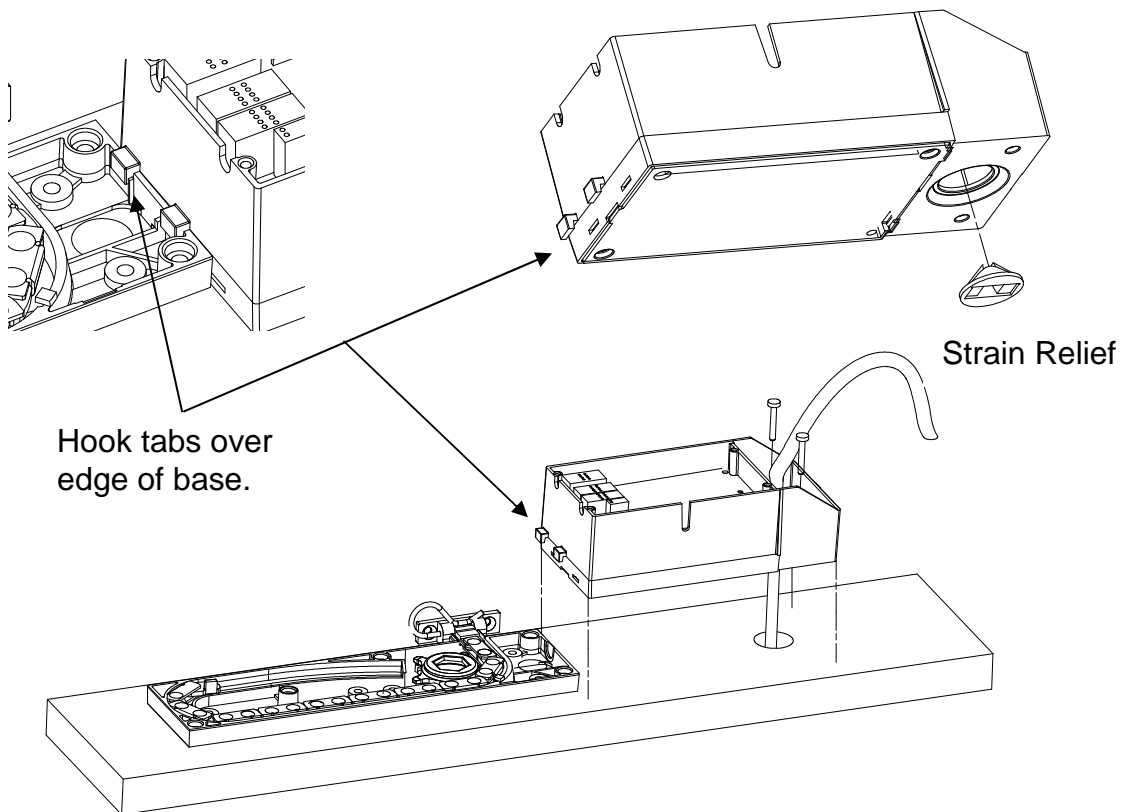
Important: Check chain, vent bracket and lid alignment to ensure smooth operation. Adjust mounting positions as needed.



3. Install the Control Box

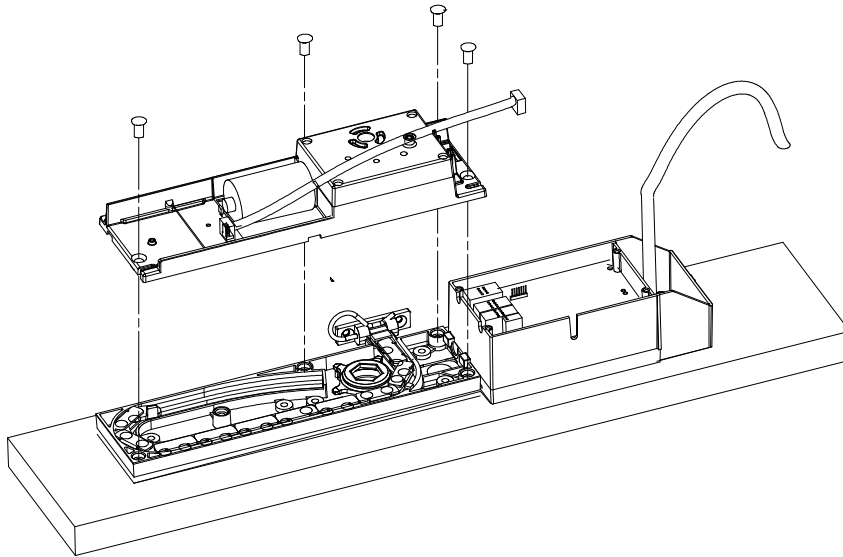
DANGER: 120 VAC supply power must be off until instructed to turn it on.

- Remove high voltage protection cover.
- Install Hit-Loc strain relief as shown.
- Route 120 VAC supply wiring through the rear inlet and strain relief on control box.
- Install the motor control box by aligning the tabs on the box with the notches on the chain base.
- Use (2) #10 X ¾ Phillips Pan Head Machine screws in the locations shown.



4. Install Motor Drive onto Chain Base

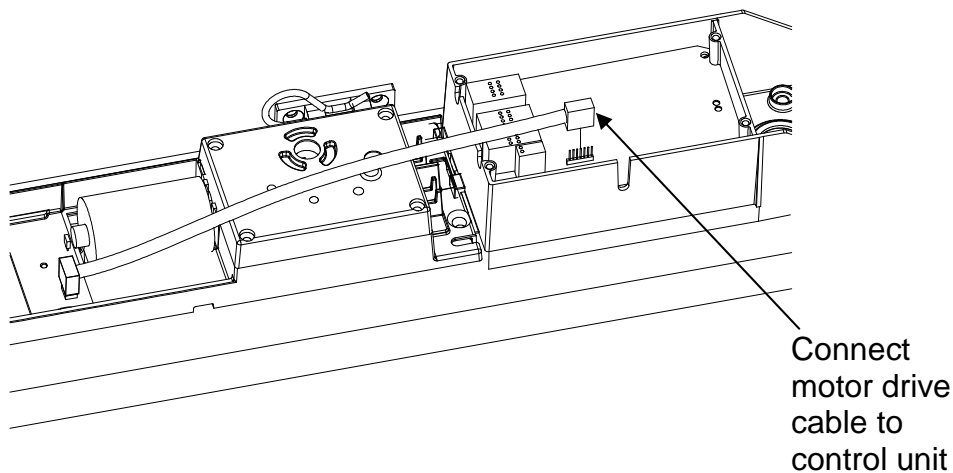
- Install the motor drive onto the chain base, being sure to align the hex drive with the hole in the 5 pointed drive sprocket. Once the motor is fully engaged with the chain base the control box is effectively locked into the chain base/motor drive assembly.
- Secure with (4) #12-24 X 5/8" Ph FH Machine Screws in the locations shown.



5. Install Motor Drive Cable

Connect motor drive cable to the control unit as shown in the diagram.

Important: The female connector on the end of the wire harness must be properly oriented with the male connector on the control unit or the motor system will not work.



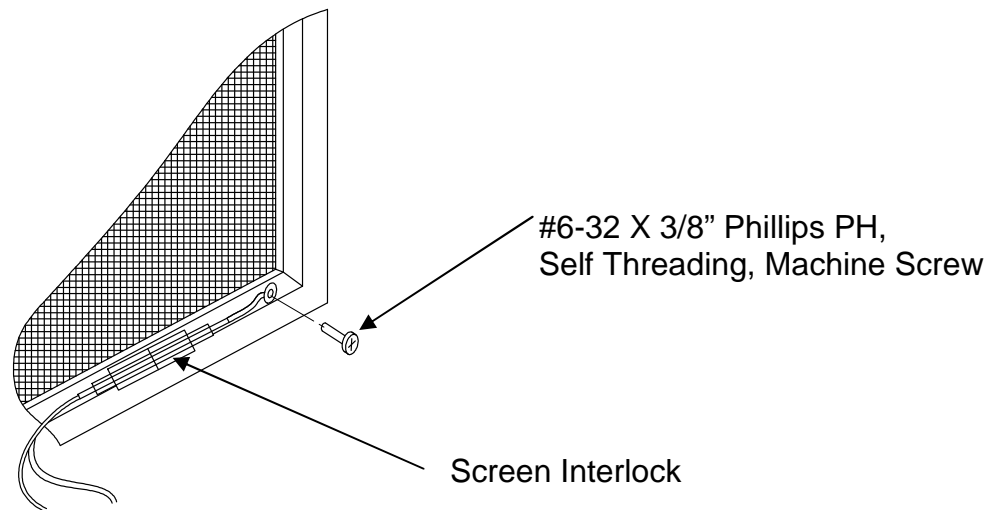
6. Install Screen Interlock!

DANGER: The screen interlock must be correctly installed on all skylights less than 8 feet (2.4 meters) above the floor. It is intended to prevent personal injury and/or skylight damage during operation. The correct installation of the screen interlock is the responsibility of the installer.

Screen interlock installation:

- Install screen interlock to the screen frame as shown below using #6-32 X 3/8" Phillips PH, Self Threading, Machine Screw.
- Refer to wiring diagram on page 28 for wire connections.
- Remove the jumper installed in the **Grey terminals on terminal block "10"**. Connect screen interlock leads to the same terminals. If this is a Follower motor leave jumper in place and only connect interlock to the Leader.

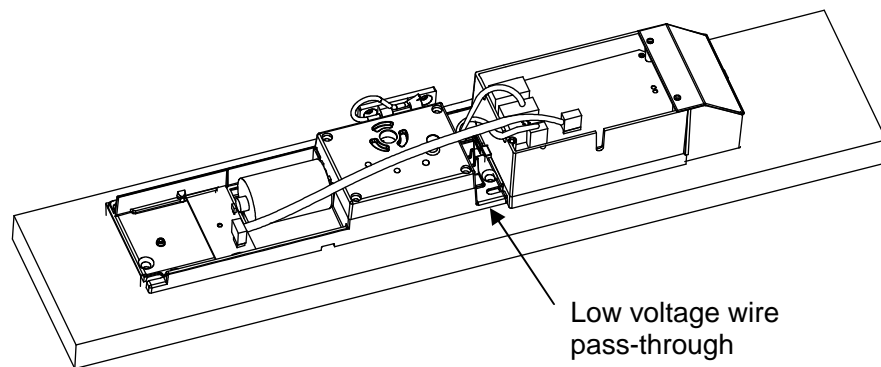
Note: *Wire orientation or polarity does not matter for this connection.*



7. Connect Control Wires

Note: See “Optional Accessories” section for information on additional control methods.

- Complete wiring diagram can be found on page 26.
- Available Accessories include:
 - Rain Sensor, See page 17
 - HPI Inputs, See page 19
 - Status Feedback, See page 20
 - Wall Switch Panel, See page 17
 - Power Shades/Blinds, See page 20
- Route low voltage wires through wire pass-through location and into control board opening.
- Connect low voltage wires to the control panel as outlined for each accessory.
- Accessories and other control options are wired to the motor designated as the “Leader” only for Synchronous Motor Operation.

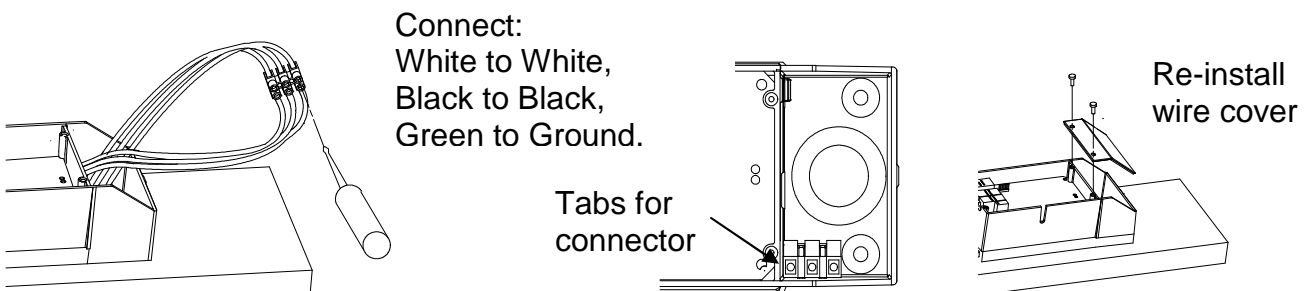


8. Connect Power Wires

- Connect high voltage wires (120 VAC) to the wire harness and terminal block as shown.

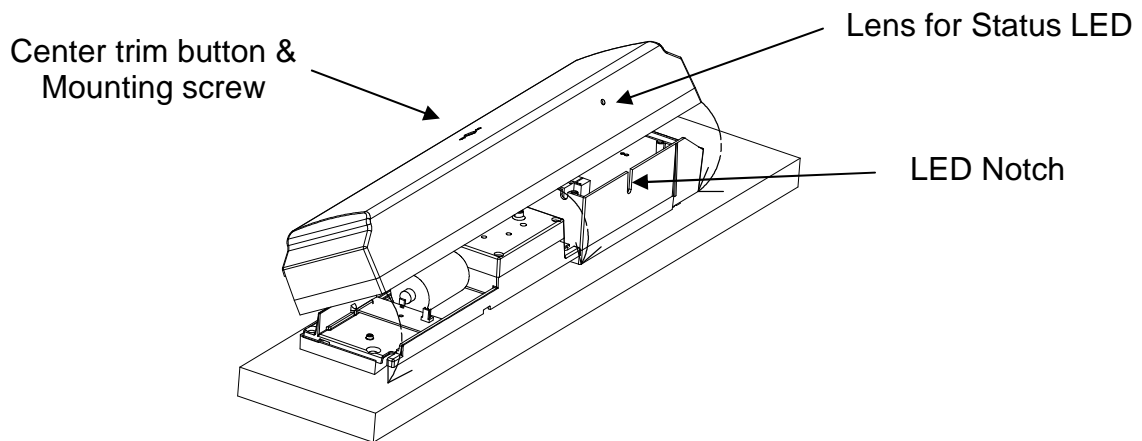
DANGER: no power should be present at this time. Power to this equipment should be shut off at the main breaker or fuse panel until installation is complete.

- Connector locks onto tabs in box once the wires are connected.
- Verify wire connections then re-install high voltage protection cover.



9. Install Cover

- Remove the center trim button from the cover (Sentry II) and locate the mounting screw beneath.
- Slip the motor cover over the drive motor and control box. Start with the notched edge of cover hooked behind the motor/control box closest to the glass. Be sure that the lens in the side of the cover aligns with the notch in the control box before pushing the motor cover down. Then swing the front edge of the cover down into the flat position.
- Fasten the motor cover using the pan head screw found under trim button (#6-32 X 3/8" Phillips PH, Self Threading, Machine Screw).
- **WARNING:** Use of a longer screw will damage motor. (If needed, a spare screw is supplied in the hardware pack.)



10. Power Up and Initialization

Important notice: To help insure a successful power up be sure that the following steps have been completed:

- Check that the end of the operator chain is connected to the skylight. (See Step 2)
- Verify the screen interlock is installed and connected **OR**, that there is a jumper installed across the two gray terminals on terminal block 10. (See Step 6)
- Units that have Followers need to be powered up at the same time.

Power up

- Apply 120 VAC power to the control unit

Note: Upon power-up the skylight will automatically **close**. (If skylight is already closed, the motor will momentarily start and stop verifying the skylight is closed.)

Initialization

The power skylight system is now ready to be initialized. Initialization occurs automatically when the motor unit receives its first “Open” command.

- Upon receiving an “Open” command for the very first time after original power up, the unit will automatically run through an initialization cycle. Initialization consists of one full open and closed cycle.
- The “Open” command can be given from any of three control devices:
 - Remote Control (**Note:** The remote must first be programmed – see step 11)
 - Wall switch
 - HPI Input
- During initialization the LED on the motor cover (and on the switch face plate if installed) will display a “Red” LED.

Note: This cycle is necessary for the unit to establish its operating parameters which will be stored in permanent memory. Once permanent memory is established it is unaffected by loss of power of any duration.

11. Program Remote Control

If a remote control is part of the installation it should now be programmed to the control unit. Refer to set-up instructions included with the remote control for proper set-up.

Skip this step if the installation does not include a remote control.

Normal Operation

From the remote control:

To open the skylight:

- Select “Unit” number (or “all”) for the skylight you want to control.
- Press “Open” button.

Note: The full open position varies with operating hardware and curb height of the skylight. The typical stop position is approx. 90% of full open.

To close the skylight:

- Select “Unit” number (or “all”) for the skylight you want to control.
- Press “Close” button.

For an intermediate open position,

- Press the “opposite” function while the motor is running - the motor will stop in that position.

Further information on using the remote control can be found in the instructions packaged with the remote.

Status Light Indicator

During operation the status light located on the skylight motor cover will be steady green to indicate normal operation. (See “**Status Codes**” on page 25 for more information.)

From the optional wall switch control:

To open the skylight:

- Press skylight “Open” button.

Note: The full open position varies with operating hardware and curb height of the skylight. The typical stop position is approx. 90% of full open.

To close the skylight:

- Press skylight “Close” button.

For an intermediate open position,

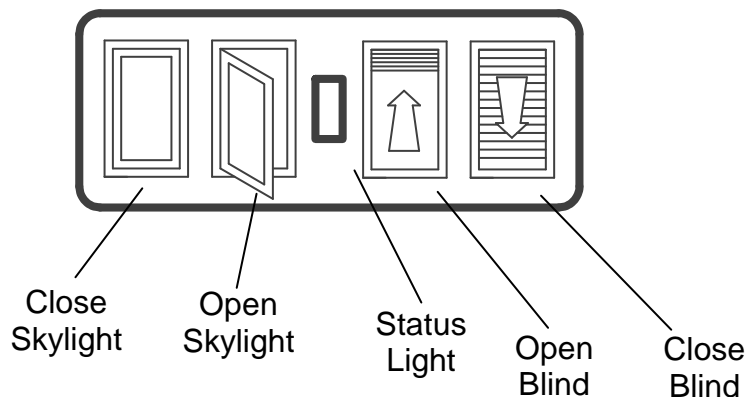
- Press the “opposite” function while the motor is running - the motor will stop in that position.

Status Light Indicator

During operation the status light located in the skylight motor and on the switch face plate will be steady green to indicate normal operation. (See “**Status Codes**” on page 25 for more information.)

Note: Any time there is a power outage, the skylights will automatically close when power is restored. The system is programmed this way because the system will not recognize any attempts to open or close the skylight while the power is off including attempts by the rain sensor (if installed) to close. Therefore, the safest position for the skylight to be in when power is restored is closed. All controls will return to normal function once power is restored.

Buttons located on wall switch:



Battery Backup

Battery backup should be used to supply emergency power when operation of the power skylight system must be maintained in the event of a power outage. (**Please note:** A battery back-up is **not** required to provide memory back-up for the Sentry II system.)

Truth recommends the use of a UPS (uninterruptible power supply) as a battery backup. They are widely available through a variety of retail and commercial outlets and are primarily used to supply emergency backup for computer equipment. (Truth Hardware is not a supplier of battery back-up systems.)

To determine the proper VA rating for a UPS, take 50 watts and multiply by the number of skylights to be backed up by a given UPS. Below is a list of the manufacturers who produce uninterruptible power supplies which Truth Hardware has approved as compatible with our power skylight systems.

Powerware
Forum III
8609 Six Forks Road
Raleigh, NC 27615
(800) 554-3448
(919) 872-3020
www.powerware.com

American Power Conversion
132 Fairgrounds Road
West Kingston, RI 02892
(800) 788-2208
(401) 789-5735
www.apcc.com

Tripp Lite
1111 West 35th Street
Chicago, IL 60609
(773) 869-1111
www.tripplite.com

Minuteman (brand)
1455 LeMay Drive
Carrollton, TX 75007
(800) 238-7272
(972) 446-7363
www.minuteman-ups.com

Wall Mounted Switch Panel (Optional)

An optional wall mounted switch panel can be ordered to control a skylight (or skylights) from a wall mounted switch panel. The switch panel can be used in conjunction with a remote control or by itself.

Installation – See installation instructions supplied with Switch Panel. For multiple units the switch is connected to the Leader.

Important: *It is not recommended to connect other input devices in place of the membrane switches on the wall switch panel.*

Helpful Hint: *The cover plate is only available in one configuration and color. The cover plate can however, be painted or wall paper can be applied to change its appearance.*

Rain Sensor (included)

The sensor will close the skylight when “beading” moisture is present on the surface of the rain sensor grid. It will also cause the green LED on the motor unit to blink (indicating moisture is present) while the skylight is closing. Once the rain sensor grid is dry, normal operation will resume.

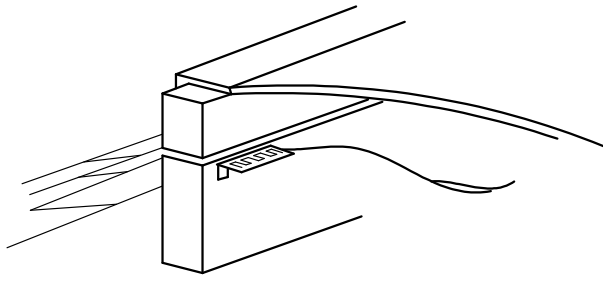
Warning: Do not install the rain sensor if the skylight is being controlled as a smoke vent to vent smoke in case of a fire. The rain sensor overrides all other inputs. (see HPI, page 19).

Note: *Rain sensor installation is optional.*

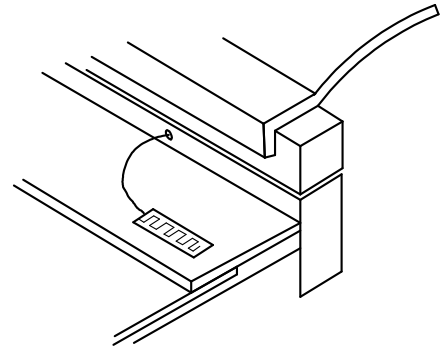
Installation of Rain Sensor

- Locate the desired mounting location for the rain sensor. It should be as horizontal as possible to accumulate rain.
- Route rain sensor wires into control unit housing.

Note: *Do not route rain sensor wire through the operator chain port, damage to rain sensor wire will be a likely result.*



Interior Mounting



Exterior Mounting

Install Rain Sensor Grid

- Connect the rain sensor wires to the **Grey & Green terminals on Port "5"**.

Rain Sensor Guidelines:

- Install the sensor with "grid" exposed to outside elements where the rain has a clear, unobstructed path to the rain sensor. Consider prevailing winds.
- If the desired location of the rain sensor exceeds the wire length supplied, use 22 AWG - 2 conductor shielded, twisted pair 50 ft (15m) maximum length.

Important: Connect shield to earth ground to reduce interference from lightning and other electrical devices.

- The sensor can be installed outside (maximum sensitivity) or inside vent edge (minimum maintenance)
- Recommended maintenance: Regular cleaning of sensor panel with a mild cleaning agent is recommended. Dirt or debris can cause the vent to stay closed even when rain is not present.

Note:

- *There is a 10 second delay from the time the rain sensor senses moisture to the time the skylight actually starts to close.*
- *When the skylight is closed because of rain, it can be forced to open by holding down the "Open" button even when the sensor is "wet", however, the skylight will immediately re-close once the open button is released.*

High Priority Inputs (HPI)

The control unit located at the skylight includes inputs to allow skylight control from other devices such as thermostats, home automation systems, security systems, smoke evacuation systems, etc. These inputs are called High Priority Inputs (HPI). There is an input for “Open” and an input for “Close”. The inputs are designed to be controlled with low voltage dry contacts (relay).

Note: See main wiring diagram on page 7 for proper hook-up.

Input Function - HPI Close

1. When connected by a continuous contact closure, the skylight will fully close. All other input devices (except for HPI Open) will be “locked-out” until the contact closure is re-opened
2. When connected by momentary contact closure, the skylight will close. There will be a minimum delay of 3 seconds before system will react.
 - A contact closure of 3 seconds is needed to activate a “close” command.

Input Function - HPI Open

1. When connected by a continuous contact closure, the skylight will fully open. All other input devices will be “locked-out” until the contact closure is re-opened. There will be a minimum delay of 3 seconds before system will react.
2. When connected by momentary contact closure, the skylight will open. There will be a minimum delay of 3 seconds before system will react.
 - A contact closure of 3 seconds is needed to activate an “open” command.

Intermediate Open position

The skylight can be stopped in an intermediate position with a ½ second momentary contact closure across the contacts for the direction opposite the skylight travel. For instance, if the skylight is opening, a momentary contact closure of ½ second across the HPI “Close” contacts will stop the skylight.

Wiring

18-2 twisted pair is recommended up to 150 feet maximum.

Control Switch Options

- Some home automation companies offer control switches that can be used to control the Sentry II HS control unit through the HPI inputs. Consult the Truth Hardware web site for more information. (www.truth.com/technicalsupport)

Helpful Information

- Voltage supplied by HPI input is: 12 VDC @ 5mA.
- When multiple input sources are used to control a given set of skylights consult the Input Command Priority Table on the Truth Hardware Web site (truth.com) to insure you receive the proper skylight response to multiple input command sources.

System Status Feedback

The Sentry II control unit is capable of providing feedback regarding whether the skylight is closed or not closed. (System feedback is not capable of providing true skylight position.)

Note: See main wiring diagram on page 7 for proper hook-up.

Status output function:

The status output functions as a relay. When the output is closed (relay contacts closed), the skylight is fully closed. When the output is open (relay contacts open), the skylight is not fully closed.

Feedback output (contact closure) maximum ratings:

Rated Load:	0.50 A at 125VAC, 1 A at 24VDC
Minimum Load:	1mA, 5VDC
Max. operating voltage:	125 VAC, 60 VDC
Max. operating current:	1A
Max. switching capacity:	62.50 VA, 30W

Power Blind Control

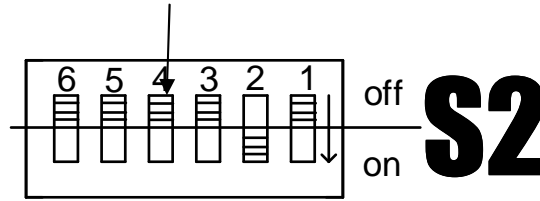
The Sentry II control unit is capable of controlling 24 VDC blinds or shades. Truth Hardware does not supply power blinds or shades. We only supply a convenient control method with the same Sentry II control system. Therefore, it is very important that a blind system be chosen that is compatible with the Sentry II control system. Please use the following electrical specifications when selecting a power blind or shade:

- Operating Voltage: 24 VDC
- Maximum current draw: 1 amp (at 24 VDC)
- Power blind system must be range protected with internal limit switches.

Note: Truth Hardware does not supply the installation instructions for the installation of the motorized blinds themselves. Please consult instructions supplied with the blinds for installation. If it is installed on a Synchronous system the blind would be connected to the Leader only.

Control unit setup for Power Blind installation

- Locate DIP switch block on the control unit labeled “S2”. (See main wiring diagram on page 7.) Set DIP switch #4 to the “on” position. (**Important:** Do not change any other switch positions!)



- Consult blind installation instructions for proper blind motor polarity. Locate the positive wire to open the motorized blind. Connect it to the “Grey” terminal on terminal block #12. (See main wiring diagram.)

Note:

- *If unable to determine the positive wire to open the motorized blind, the blind motor can be connected in either orientation. However, if the blinds open in the opposite direction from the button pressed, the two wires will need to be reversed.*
- *When the blinds are used in combination with the HPI “Open” function, the blinds will open automatically before the skylight is opened. This is because this feature is often used for smoke evacuation when connected to a smoke alarm.*

The following companies can provide information on blinds or shades that are compatible with the Sentry II Motor System. **Be sure to ask for the “Motivator” series made by Verosol.** Try these Verosol distributors:

OEM Shades Inc.
700 First Ave.
Ford City PA 16226
724-763-3600
www.oemshades.com

Shades Unlimited
545 Brooklyn Road
Mount Tabor VT 05739
802-293-2478
www.skylightshades.com

Trouble Shooting

Note: Additional Technical assistance can be found by logging onto:
www.truth.com/technicalsupport

Motor does not run

- Check to make sure power is on
- Check to make sure the screen interlock is installed and connected properly (See page 11.) **or**, check to make sure the jumper is installed across the two gray terminals on block 10. (See main wiring diagram on page 7.)

Skylight closes for unknown reason

- Check to make sure the rain sensor is clean – debris or bird droppings can activate the rain sensor. Clean with a mild soap.
- The motor system may have closed the skylights due to a power outage. Normal operation is to close the skylights when the power comes back on.

The motor will not respond from the wall switch

- Verify the connector on the back of the switch is connected properly to the control unit. See installation instructions supplied with the wall switch unit.

Skylight does not open fully

- The motor system is programmed to only open a skylight to 90% of full opening. This is done to protect the hardware from repeated high stresses. Full opening can be achieved by pressing the open button repeatedly once the skylight has stopped.

The skylight will not open more than a couple of inches

- The control system needs to be re-initialized. Follow “System Reset” procedure below.
- If the problem reoccurs, the lifting chain may need to be lubricated. Use a dry lubricant only.

When bench testing the motor system, the motor will not stop

- This is normal operation. The control unit is looking for a current rise caused by a motor stall to turn the motor off.

Skylight does not fully close

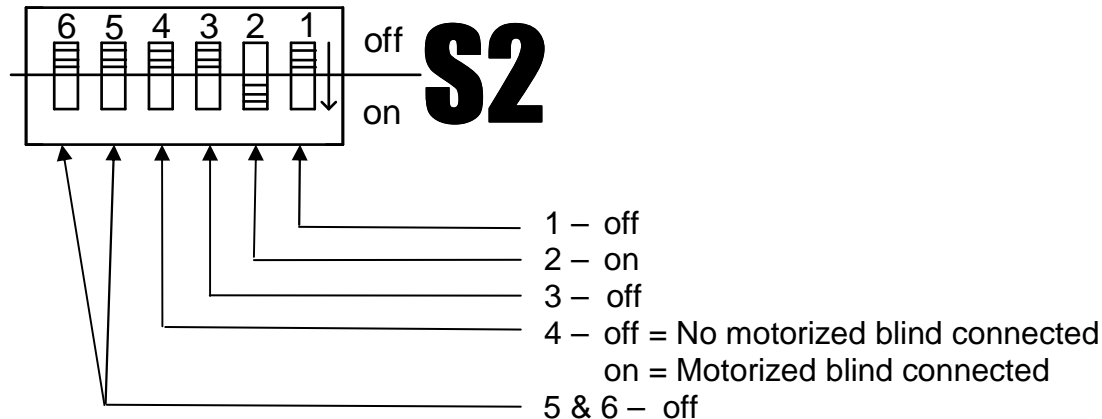
- The control system needs to be re-initialized. Follow “System Reset” procedure below.

Motor system is not functioning as expected

- Interrupting the power to the control unit for a short period of time (approximately 30 seconds) will clear some operating errors. When power is re-applied the unit should close automatically. Normal function should be restored.
- If normal function does not return, a partial or full system reset may be needed. See System Reset on page 22.

DIP Switch Settings

The DIP switches located on the control board are used to set certain system configurations. In most cases the DIP switches will not need to be changed. However, if you suspect they may have been changed for some reason, the following is the correct set up configuration when a **single motor is installed on a single skylight**. If your set-up is different, follow the DIP switch set-up instructions supplied with the installation instructions for your particular application.



DIP Switch setting for a single motor is installed on a single skylight

Important: Any DIP switch changes must be done with the 120 VAC power disconnected. If the power is not disconnected the DIP switch change may not be recognized.

System Reset

There are times when the motor system operating characteristics can change. This can occur for a number of reasons. A couple of examples are if the motor has hit an obstruction or the manual hardware requires cleaning or service. The motor system is designed to recognize unusually high torque situations during operation and then stop short of that area on subsequent operations to protect the motor system and skylight hardware from damage. If this occurs, the cause of the high torque situation must first be identified and removed. A qualified skylight service technician may be required. Once the cause has been identified and removed, the skylight system needs to be re-initialized to restore full range of motion. Follow the “system reset” options below.

A system reset will cause the motor system to re-learn most of its operating parameters. Once initiated, the skylight will close (if not already closed) then fully open and fully close. Once complete, the control system should function normally.

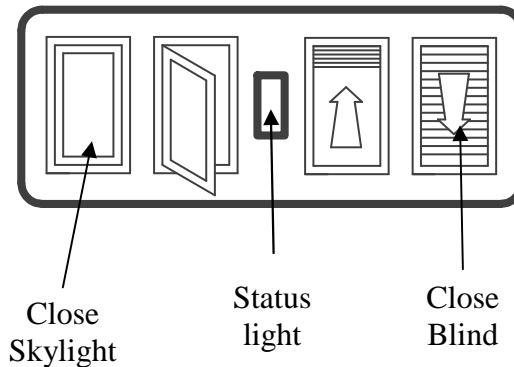
There are two different types of resets: **Partial** and **Total**.

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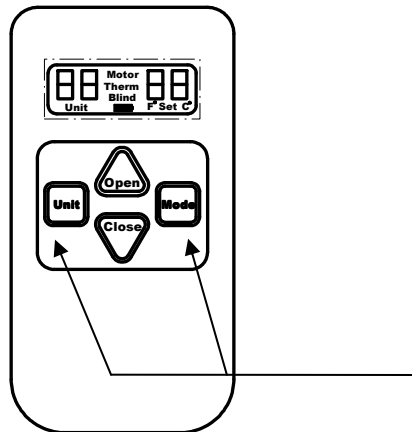
Partial System Reset:

A partial systems reset will restore normal operation under almost all circumstances and is the easiest to initiate. There are three ways a partial systems reset can be initiated.

- Through the wall switch: First turn power off for 30 seconds then reapply. With the skylight closed, simultaneously press both the skylight and blind “close” buttons. When the status light turns red release the buttons. The skylight will cycle open and then close.



- Through the remote control: First turn power off for 30 seconds then reapply. Then set the remote to the appropriate “Unit Code” and simultaneously press and hold the “Unit” & “Mode” keys down for 15 seconds.



To initiate a partial system reset: press and hold the **Unit** and **Mode** buttons simultaneously until the “Motor” indicator flashes

Total System Reset:

If the operational issue is not resolved with a partial reset as described above a total system reset may be needed. To initiate a total system reset:

1. Turn power off.
2. Change all DIP switches to “off”.
3. Turn power back on for 30 seconds.
4. Turn power off.
5. Change DIP switches back to original position.
6. Turn power back on and the skylight will close automatically.
7. Push button on remote (or wall switch or HPI open command) to open skylight.

The motor system will begin a reset cycle to re-learn all of its operating parameters. Once initiated, the skylight will fully open and then fully close. Once complete, the control system should function normally.

Status Light Codes

During setup and operation the status light on the skylight motor (and switch panel if installed) will provide information regarding system function. The following list will help explain the different conditions indicated:

Flashing Red:

1. Upon power-up - This indicates that the dip switches have not been set correctly. See DIP Switch Settings on page 23.
2. During motor operation – Indicates that the motor has run into an obstruction or that the skylight hardware requires service. This occurs when the load on the motor exceeds normal operating parameters.

Solid Red:

1. Motor not running
 - Check to make sure the screen interlock is installed and connected properly (If required - see step 6 and main wiring diagram on page 26.)
 - If screen interlock is not installed, check to be sure the jumper is installed. (See step 6.)
2. During motor operation
 - The motor is running through its initialization cycle to learn the range of skylight travel. This is normal operation. The red light will go out once the initialization cycle is completed successfully.

Solid Green:

1. During motor operation

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- Indicates normal motor operation. The light will stay lit only while the motor is running.
2. Motor not running (LED stays lit for 2 – 3 minutes)
 - The cable between the control unit and the motor may have become disconnected. See step 5.
 - The connector at the end of the black and red wires coming from the back of the motor may have become disconnected from J2 located on the small circuit board at the back of the motor assembly.
 - The jumper or screen interlock has been disconnected or has been removed. Verify connection. See step 6.

Flashing Green:

1. Under normal operation it indicates the rain sensor has been activated. The light will flash green only while the skylight is closing.
2. Indicates set up mode for the hand held remote. See set up instructions for the remote control.

Required Maintenance

The required maintenance for your new power skylight system is minimal. To insure years of trouble-free operation the following maintenance should be performed:

- Clean and lubricate the skylight chain. Be sure to use a dry lubricant. This should be done once a year in non-coastal environments.
- In coastal environments the chain should be thoroughly cleaned with fresh water to remove any salt residue. This should be done every 3 – 6 months depending on the severity of the coastal environment. A dry lubricant should be applied after each cleaning.
- If the rain sensor is used, it should be cleaned every 3 – 6 months with a mild detergent.

Service

Obtaining Service

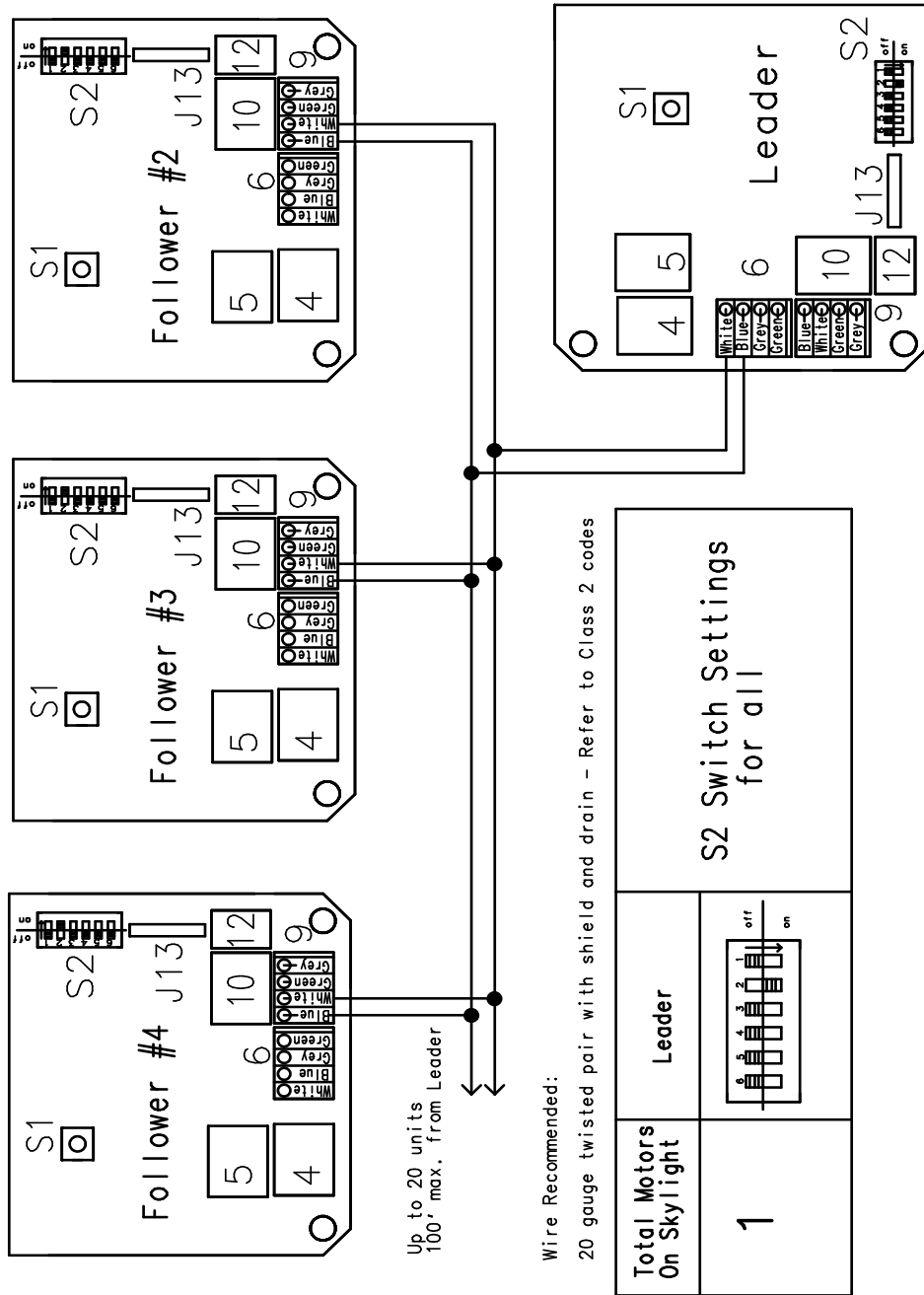
Truth Hardware has made every effort to make all pertinent information available to you through the instruction manuals supplied with the product and our web site. However, if you encounter a problem or question you can not resolve please call 1-800-324-4487 to speak to one of our hardware technicians or send an email to: techserv@truth.com.

Before contacting Truth Hardware please be aware that:

- Complete product and troubleshooting information is available on our web site at: www.truth.com/technicalsupport
- A qualified electrician is required to resolve most electrical issues
- It may be necessary to contact a qualified skylight service technician through your skylight dealer to resolve skylight or hardware related issues.
- Truth Hardware is a window, skylight and patio door hardware manufacturer. Truth Hardware does not manufacturer windows or skylights.
- Truth Hardware does not have field service technicians. If you encounter a problem or question you can not resolve to please call 1-800-324-4487 to speak to one of our hardware technicians or send an email describing the problem to: techserv@truth.com.

Non-Synchronous Operation

To connect multiple motors on **different skylights** together (none can be on synchronous systems) follow the diagram below and connect the wall switch or HPI input on the Leader only.



Non-Synchronous Multi-Motor Wire Diagram

Synchronous Operation

Please Note: To use multiple motors on a **single skylight** you will need to follow the previous installation instruction for each motor. The wall switch connection, HPI connections or remote 'Learn' procedure only happens to the Leader of the group.

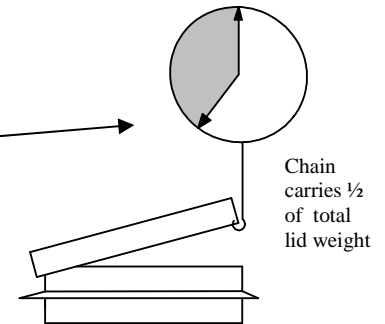
1. Verify Skylight Weight

Important Skylight Information:

- The skylight lid weight must not exceed 200 lbs. (91 kg) at the chain.

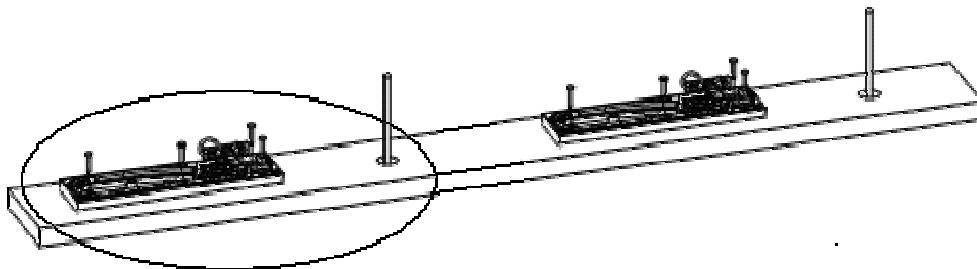
- Verify number of motors required based on skylight lid weight:

Number of Motors req'd on Skylight	Maximum Weight (at the chain)
2	125 (57 kg)
3	165 (75 kg)
4	200 (91 kg)

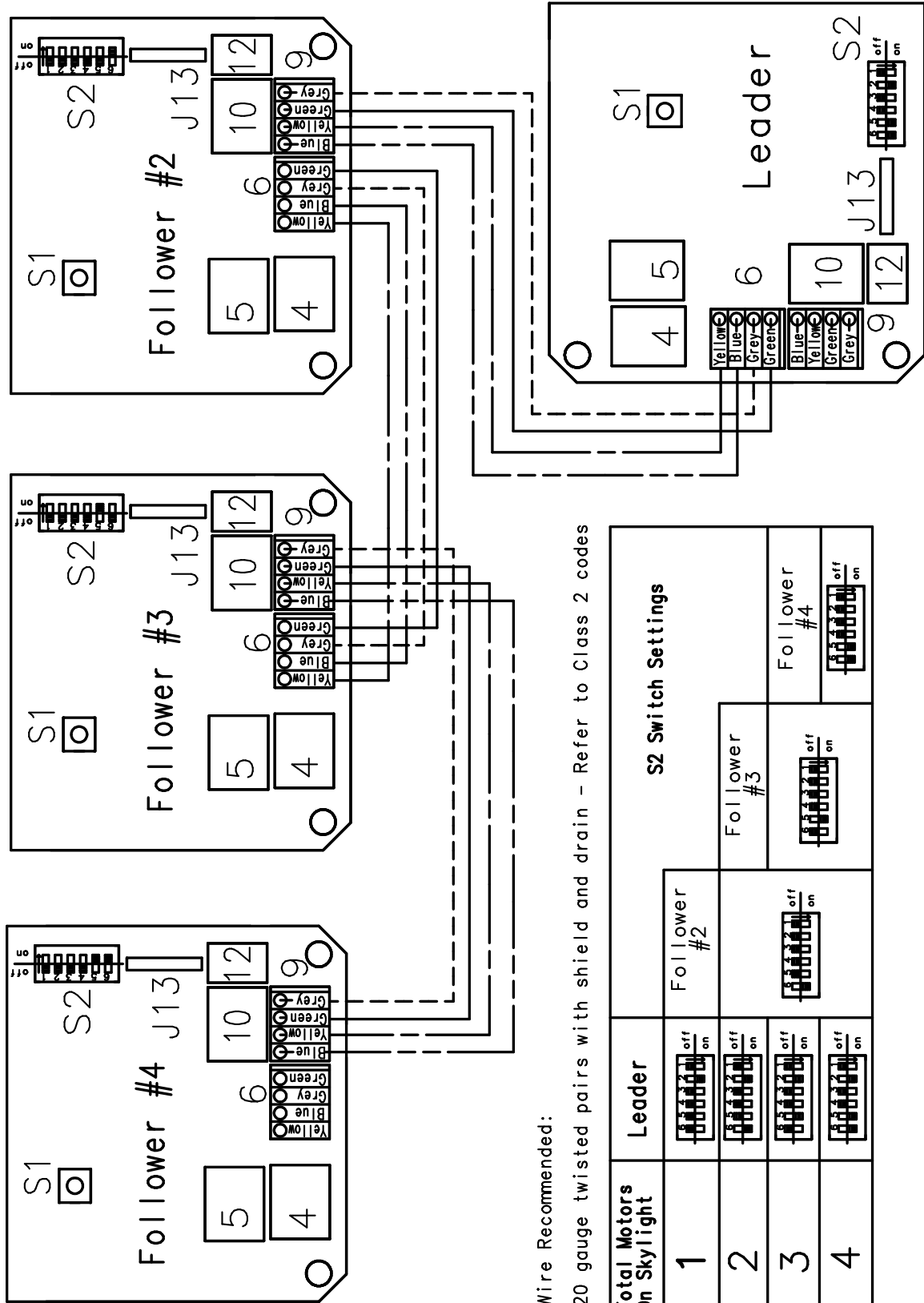


2. Install Chain Base

- Evenly space motors on skylight.
- Please refer to single motor instructions for mounting details.



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Synchronous Multi-Motor Wire Diagram

Regulatory Compliance

United States of America

Federal Communications Commission (FCC)

Unintentional emitter per FCC Part 15

Note: This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instructions may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and receiver.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio/TV technician for help.

Warning: Changes or modifications not expressly approved by Truth Hardware could void the FCC compliance and negate your authority to operate the product.

FCC Declaration of Conformity

According to 47 CFR, Parts 15.107 and 15.109 Class B

Responsible party: Truth Hardware, 700 West Bridge St., Owatonna, MN 55060
www.truth.com or 1-800-324-4487

Product: Sentry II Hand Held Remote (43.53)

This device complies with part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) This device may not cause harmful interference, and (2) this device must accept any interference received including interferences that may cause undesired operation.

Canada

Industry Canada (IC)

Unintentional emitter per ICES-003

This class B digital apparatus complies with Canadian ICES-003.

Cet appareil numérique de la classe B est conforme à la norme NMB-003 du Canada.

Operation is subject to the following two conditions: (1) this device may not cause interference, and (2) this device must accept any interference, including interference that may cause undesired operation of the device.

Europe

European Community EMC Directive (CE)

Compliance with these directives implies conformity to the following European Norms or Regulations:

Emissions

ETSI EN 300-220-1 v1.3.1 (2000-09)

ETSI EN 300-220-3 v1.1.1 (2000-09)

ETSI EN 301 489-3 v1.2.1 (2000-08)

EN 55014-1: 1997

Immunity

ETSI EN 301 489-3 v1.2.1 (2000-08)

EN 55014-2: 1997

CONFORMS TO ANSI/UL STD 325; CERTIFIED TO CAN/CSA STD C22.2 NO. 68

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