

INSTALLATION INSTRUCTIONS

SurgiCare Surgical Troffer Series: STR24, STR22, STR14

CAUTION! – READ THIS FIRST
IMPORTANT SAFETY INSTRUCTIONS

CAUTION--READ THIS FIRST IMPORTANT SAFETY INSTRUCTIONS

* Carefully read the instructions pertaining to your fixture. IF YOU HAVE ANY QUESTIONS REGARDING THE PROPER INSTALLATION OR LOCAL CODES, CONSULT A QUALIFIED ELECTRICIAN.

* To avoid shock hazard, do not work with live electrical wires.

CAUTION: THE INSTALLATION AND SERVICING OF THIS PRODUCT SHOULD BE PERFORMED BY A QUALIFIED ELECTRICIAN OR SERVICE PERSONNEL
ATTENTION : L'INSTALLATION ET L'ENTRETIEN DE CE PRODUIT DOIVENT ÊTRE EFFECTUÉS PAR UN ÉLECTRICIEN OU UN MEMBRE DU PERSONNEL QUALIFIÉ.

* Install the fixture in only indoor applications.

* Do not install outdoors or in applications other than the intended use.

* Install and wire the fixture in locations in accordance with all national, state and local codes.

WARNING: THIS PRODUCT MUST BE INSTALLED IN ACCORDANCE WITH THE APPLICABLE INSTALLATION CODE BY A PERSON FAMILIAR WITH THE CONSTRUCTIONS AND OPERATION OF THE PRODUCT AND THE HAZARDS INVOLVED.



WARNING: RISK OF FIRE, MINIMUM OF 90°C SUPPLY CONDUCTOR. CONSULT A QUALIFIED ELECTRICIAN TO ENSURE CORRECT BRANCH CIRCUIT CONDUCTOR.



WARNING: TO AVOID SHOCK HAZARD, DISCONNECT THE POWER AT THE PANEL BOARD (CIRCUIT BREAKER BOX) BEFORE BEGINNING INSTALLATION.



A. GENERAL NOTES

1. Lens Orientation

STR sealed surgical fixtures can be ordered with either an asymmetric or symmetric lens option. If ordered with the asymmetric lens, the fixture must be oriented with the arrows on the "Light Direction" labels pointing to the side requiring more light – typically toward the surgical field in the center of the room. The "Light Direction" labels can be located on the lens' protective wrapping and/or on the inside edge of the door frame. The door-housing assembly is factory assembled as a unit. The door assembly can not be changed in the field to change light direction so care must be taken to orient the fixture properly during installation. For the symmetric lens option, the fixture can be positioned in either direction.

2. Door Frame and Hardware

Some STR models utilize screws to secure the door frame to the housing. To prevent cross-threading of the screws, start threading each screw by hand to ensure proper threading of the screw into the nut. Once started, continue tightening the screws with a screw driver – alternating between screws until they are all tight.

When opening or closing the door frame, support the door in closed position until all fasteners are completely tightened or completely unthreaded from nut inserts.

Some door frame options are supplied with a cable lanyard to support the door in an open position. The eyelets on these cables are secured to the housing and door frame with screws and lock-nuts. If it becomes necessary to completely remove the door frame from the housing, disconnect the cable from the door frame. Follow the steps below to ensure that the cable is reconnected properly to the door frame.

- Insert the screw through the hole on the door frame. The head of the screw should be near the end of the door frame.
- Slide the eyelet over the screw orientating the eyelet as shown in Figure 1. The eyelet will need to be rotated 90° to fit properly. At other end of door rotate eyelet in opposite direction.
- Tighten the locknut onto the screw making sure that it is loose enough for the eyelet to swivel freely. This is important to ensure that the cable lanyard tucks away properly when the door is closed. When closing the door, always tuck the cable lanyard inside main compartment of the fixture by flipping the eyelet and cable toward the center of the door.

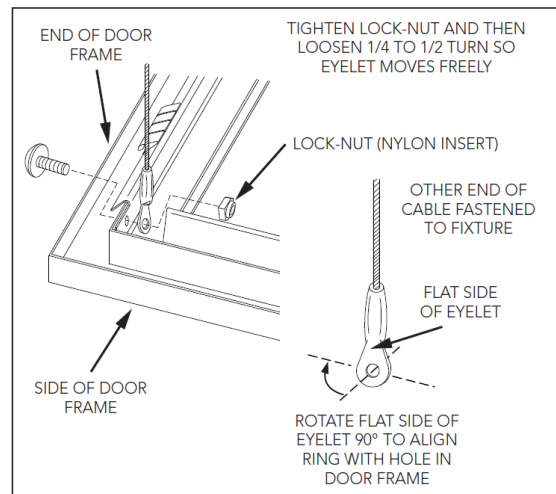


Figure 1

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B. INSTALLATION OF GRID STYLE ("G" Versions) FIXTURES

Grid style (or "G" version) STR Series fixtures are designed to install into standard suspended grid ceilings with a standard 1" or 1½" high grid. The STR grid fixtures are sized to fit within standard 2x2 and 2x4 ceiling systems. Fixtures can be installed in any pattern necessary within the ceiling grid layout. The weight of the fixture is supported by the grid and supplemented with direct connection to the building structure. The steps for installation are as follows:

1. Inspect the ceiling grid to make sure it is supported from the building structure as recommended by the ceiling grid manufacturer's instructions. This must be approved before bearing the weight of the lighting fixture.
2. Angle the fixture up through the opening in the grid making sure that the door frame is facing the room. Once the fixture is positioned through the opening, it can be leveled out and lifted down until the flanges of the fixture rest on the corresponding flanges of the ceiling grid. For 2x2 fixtures being installed within a 2x4 ceiling system or for 1x4 fixtures, additional grid pieces may need to be installed. All four sides of the fixture must rest on the grid.

3. The fixture is to be connected directly to the building structure, independent of the ceiling grid. Locate the hanger support tab at each corner of the fixture as shown in Figure 1. Use a hanger wire at all four support tabs to tie the fixture to the building structure. Use 12 gauge minimum hanger wire rated for such application. In addition, follow local building codes regarding required additional support of fixtures.

Retainer Clips or Earthquake Clips can be ordered as accessories with the STR Series fixtures for additional support with grid ceilings. When using these accessories, the fixture should still be installed per the instructions above. Specific instructions for installing and using these accessories are supplied with the packaging for the clips.

4. Follow the instructions in section "E. Making Electrical Connections". If the fixture has an emergency ballast and/or dimming ballasts, also follow the instructions in sections "F. Emergency Ballast Connections" and G. Low Voltage Dimming Circuits".

C. INSTALLATION OF A FLANGED ("F" Version) FIXTURE

Flange style (or "F" version) STR Series fixtures are designed to install into dry wall (i.e. gypsum board, sheetrock) ceilings. It is important to carefully review and follow the instructions in this section to ensure a successful installation.

1. Determine the required ceiling opening.

Installation requires a clean and accurate opening to be cut into the ceiling surface for the fixture to be installed into. Openings need to be cut square and accurate to 1/16" of the provided dimensions. The cut openings should be into whole pieces of ceiling material to minimize seams and joints intersecting the cut opening. This limits the stress on taped joints and ensures a better fit of the fixture flange against the ceiling surface.

The ceiling surface should be free of bowing and the area around the ceiling opening should be finished to a smooth and flat surface free of imperfections. The elevation of the ceiling surface should not deviate more than 1/32" over 2' of horizontal surface.

Rigid framing (i.e. C-channel) around the cut opening should be installed with the inside edge of the frame positioned flush with the cut opening. The ceiling material should be secured to the bottom surface of the frame. The combined thickness of the ceiling material should be a minimum of 1-1/16" but no greater than 3-1/16". (See Figure 3)

The ceiling opening for individual fixtures are listed in Chart 1 below.

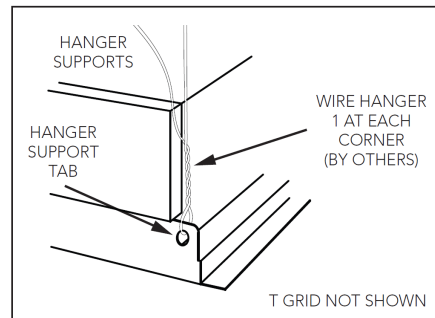


Figure 1

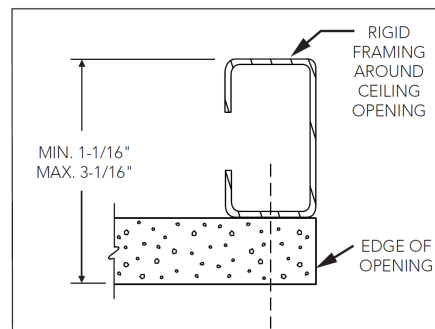


Figure 2

| Model | Nominal Fixture Size | Required Ceiling Opening | Required Ceiling Opening (when using Plaster Frame*) |
|--------|----------------------|--------------------------|--|
| STRF24 | 2' x 4' | 22-7/8" x 48-5/8" | 23" x 48-3/4" |
| STRF22 | 2' x 2' | 22-7/8" x 24-5/8" | 23" x 24-3/4" |
| STRF14 | 1' x 4' | 10-7/8" x 48-5/8" | 11" x 48-3/4" |

* The Plaster Frame kit is packaged separately from the fixture with installation instructions.
** The 24-5/8" dimension (or 24-3/4" when using a Plaster Frame) represents the length of the opening running parallel to the side flange (or lamps) of the surgical fixture.

Chart 1

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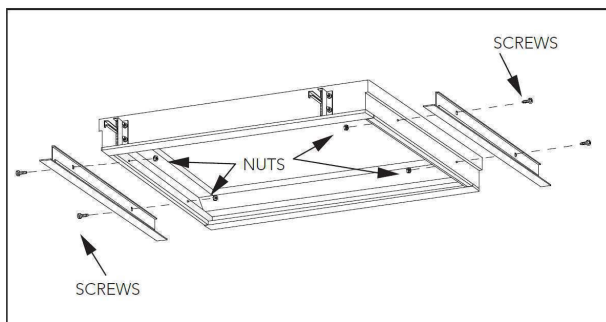


Figure 4

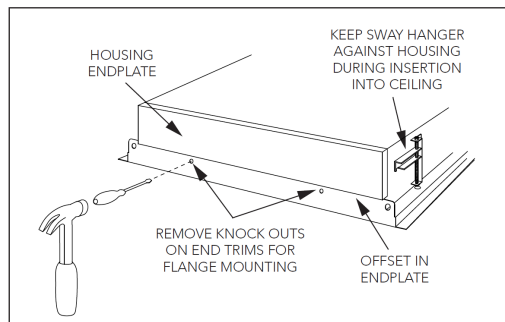


Figure 5

- The STR flanged fixture has been supplied with two end trims that need to be installed on the fixture before securing it to the ceiling. The trim pieces are secured to the end cap of the fixture as shown in Figure 4. (The end cap can be identified by its offset profile.)
Install trims by locating the two mounting hole knockouts and use a pointed tool and hammer to push in and breakout all the knockouts from each of the fixture endplates. (See Figure 5) Position the trim piece so that its center spline rests against the end cap (as illustrated in Figure 6) with the mounting holes aligned with the holes in the end cap. Insert the screws through the trim piece and through the end cap from the outside of the fixture. Thread the nut onto the screw and tighten. Repeat this step on the other end of the fixture.
- Check to make sure the sway bracket hangers, mounted on the outside walls of the fixture (See Figure 5), are resting against the side of the fixture. Carefully lift the fixture resting it on a support surface just below the ceiling.
- Follow the instructions in section "E. Making Electrical Connections" before beginning Step 5 below. If the fixture has an emergency ballast and/or dimming ballasts, also follow the instructions in sections "F. Emergency Ballast Connections" and "G. Low Voltage Dimming Circuits".
- Once the conduit is connected to the fixture, you can lift the fixture through the ceiling opening. The door of the fixture will need to be opened to gain access to the sway bracket adjustment screws. Turn these screws in a clockwise direction to swing the wing of the sway bracket out from the fixture as shown in Figure 7. When this has been done at all four of the sway brackets the fixture can support itself on the framing around the opening.
- Continue turning the sway bracket adjustment screws clockwise, alternating between locations, until the fixture fits snug against the ceiling. Make sure the end trim fits against the ceiling as shown in Figure 6.
- If the fixture has an emergency ballast and/or dimming ballasts, follow the instructions in sections "F. Emergency Ballast Connections" and "G. Low Voltage Dimming Circuits".

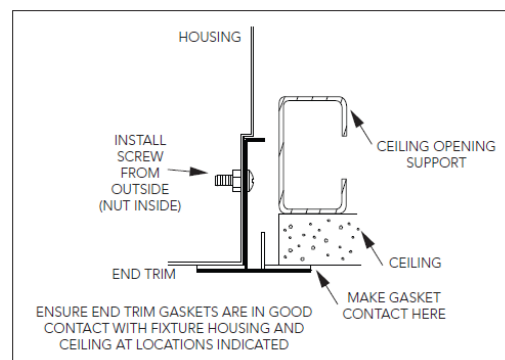


Figure 6

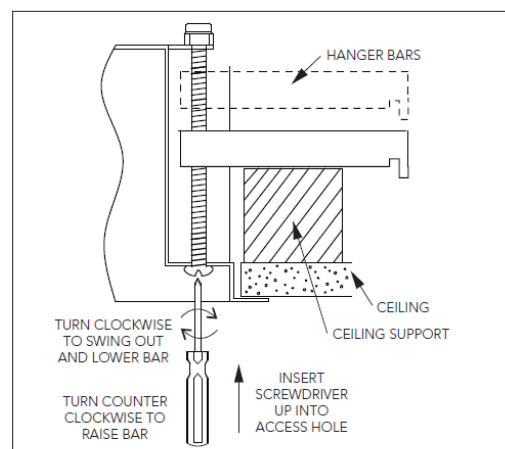


Figure 7

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D. INSTALLATION OF A CONTINUOUS ROW OF FLANGED ("F" Version) FIXTURES

Flange style (or "F" version) STR Series fixtures are designed to install into drywall (i.e. gypsum board, sheetrock) ceilings in continuous row patterns. Continuous row installations vary from installing an individual fixture. It is important to carefully review and follow the instructions in this section to ensure a successful installation.

1. Determine the required ceiling opening.

Installation requires a clean and accurate opening to be cut into the ceiling surface for the fixture to be installed into. Openings need to be cut square and accurate to 1/16" of the provided dimensions. The cut openings should be into whole pieces of ceiling material to minimize seams and joints intersecting the cut opening. This limits the stress on taped joints and ensures a better fit of the fixture flange against the ceiling surface.

The ceiling surface should be free of bowing and the area around the ceiling opening should be finished to a smooth and flat surface free of imperfections. The elevation of the ceiling surface should not deviate more than 1/32" over 2' of horizontal surface.

Rigid framing (i.e. C-channel) around the cut opening should be installed with the inside edge of the frame positioned flush with the cut opening. The ceiling material should be secured to the bottom surface of the frame. The combined thickness of the ceiling material should be a minimum of 1-1/16" but no greater than 3-1/16". (See Figure 3)

The ceiling opening for individual fixtures are as listed on Chart 1 on page 2.

To determine the required opening for a continuous row of fixtures, the following guidelines below and review Figures 8a-8d.

- a.) For 2' x 4' and 1' x 4' fixtures, use the 48-5/8" (or 48-3/4" when using a Plaster Frame) ceiling opening length for an individual fixture and add 48" for each additional fixture being included in the row. (Example: If the application required 3 fixtures in the row, the ceiling opening would be 22-7/8" wide by 144-5/8" long (or 144-3/4" when using a Plaster Frame). The length is determined by adding 48-5/8" + 48" + 48".) (See Figure 8a)

- b.) For 2' x 2' fixtures, use the 24-5/8" (or 24-3/4" when using a Plaster Frame) ceiling opening length for an individual fixture and add 24" for each additional fixture being included in the row. (Example: If the application required 4 fixtures in the row, the ceiling opening would be 22-7/8" wide by 96-5/8" long (or 96-3/4" with plaster frame). The length is determined by adding 24-5/8" + 24" + 24" + 24".) (See Figure 8b)

- c.) A rectangular pattern is a common layout pattern. Four continuous rows are used to create this pattern. It is critical to leave a minimum of a 2-1/2" space where the end of one row meets the side of another row. This holds true even when the fixtures meet at the corners. Review Figures 8c and 8d to see this condition illustrated.

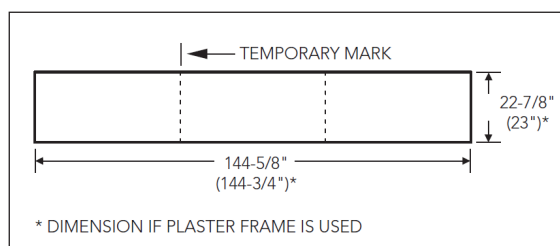


Figure 8a

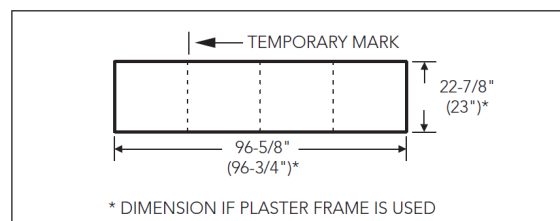


Figure 8b

2. Each STR flanged fixture has been supplied with two end trims that need to be installed on the first and last fixture of the row before securing it to the ceiling. Identify the first and last fixture that will make up the row. A trim piece will need to be secured to the outside facing ends of the row as shown in Figure 9. Do this before mounting any of the fixtures since access to the end of the rows will be limited once the fixtures are installed. The trim pieces are secured to the end cap of the fixture as shown in Figure 6. (The end cap can be identified by its offset profile.) Install trims by locating the two mounting hole knockouts and use a pointed tool and hammer to push in and breakout all the knockouts from each of the fixture endplates. (See Figure 5) Position the trim piece so that its center spline rests against the end cap (as illustrated in Figure 6) with the mounting holes aligned with the holes in the end cap. Insert the screws through the trim piece and through the end cap from the outside of the fixture. Thread the nut onto the screw and tighten. Repeat this step on the fixture at the other end of the row.
3. Mark a temporary point of (24-5/16" for 2x2 fixtures) or (48-5/16" for 1x4 or 2x4 fixtures) from the end of the row opening. This will be the location for the end plate of the first housing installed. Refer to Figures 8a and 9 to see the relationship of this marked point and the fixtures to be installed.
4. Start row installations with the first fixture prepared with the end trim located at the end of the row. Check to make sure the sway bracket hangers are located so they are touching the side of the fixture (Figure 5). If there is not space to work on the electrical fittings on top of the fixture when installed, then the fixture will need to be supported just below the ceiling during installation of the wiring, conduit and fittings.
5. Follow the instructions in section "E. Making Electrical Connections" before beginning Step 6 on Page 5.

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6. Once the electrical conduit is connected to the fixture, it can be lifted into the ceiling opening. The door of the fixture will need to be opened to gain access to the sway bracket adjustment screws. Turn these screws in a clock-wise direction to swing the wing of the sway bracket out from the fixture as shown in Figure 7. When this has been done at all four of the sway brackets the fixture can support itself on the framing around the opening. Do not completely tighten the hangers yet. Adjust location of fixture in opening so end of fixture lines up with marked point. This is the location where the next fixture end plate butts against the first fixture. The end trim should completely cover the ceiling opening at the row end.
7. Continue turning the sway bracket adjustment screws clockwise, alternating between locations, until the fixture fits snug against the ceiling. Make sure the end trim fits against the ceiling as shown in Figure 6.
8. Continue installing the remaining fixtures by following Steps 4-7. Line up fixture ends evenly with each other. The remaining mounting hole knockouts in the endcaps must be removed before lifting the fixtures into place. Make sure fixtures butt end-to-end. Use an equal amount of space between each end of the row and the ceiling opening. For the last fixture in the row, install in the same manner with the end trim positioned at the end of the row. With the last fixture butted against the other fixture, the end trim should fit easily into the ceiling and cover the opening at that end of the row.
9. After all fixtures in the row have been installed, insert an end trim between the fixture joints so they are snug against the fixtures as shown in Figure 10. Fasten the trim piece to the fixtures by inserting the supplied bolt through the endcaps and end trim as shown and tightening the nut.
10. If the fixture has an emergency ballast and/or dimming ballasts, follow the instructions in sections "F. Emergency Ballast Connections" and "H. Low Voltage Dimming Circuits".

E. MAKING ELECTRICAL CONNECTIONS

Note: The circuit should be shut-off at the breaker before beginning this step. Fasten each flexible wire conduit to one of four 7/8" dia. knockouts located in the center back of the fixture. Do not make extra holes for wire entry. Use standard 1/2" electrical fittings and conduit. The fixture door needs to be open to gain access to the knockout from the inside of the housing. Remove the center ballast cover. [1x4 fixtures have (4) sheet metal screws holding the ballast cover in place. 2x4 and 2x2 fixtures have (2) nuts.]

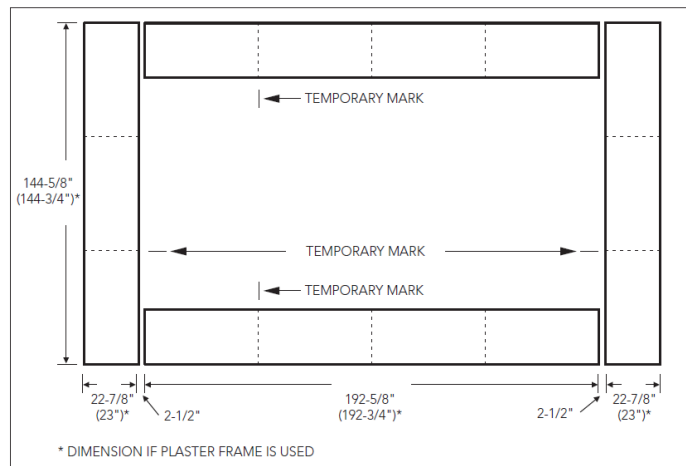


Figure 8c

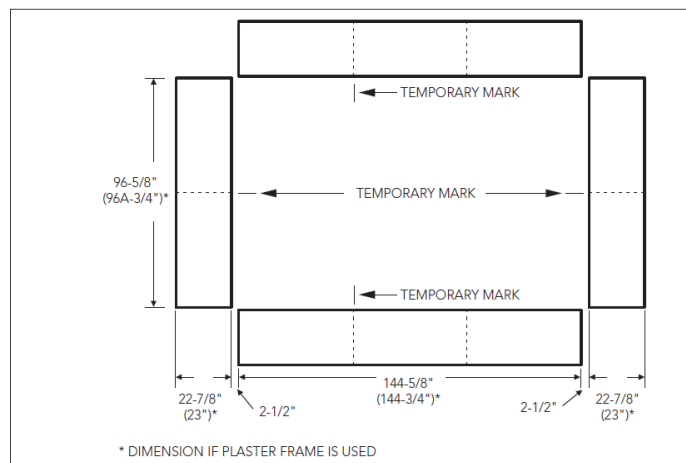


Figure 8d

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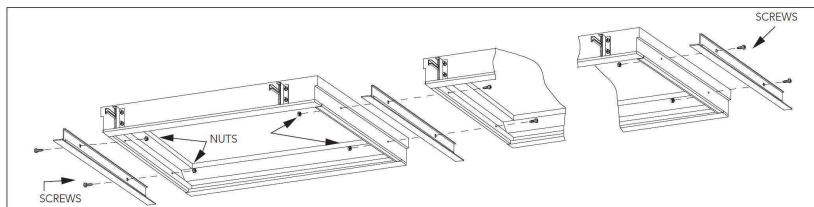


Figure 9

E. MAKING ELECTRICAL CONNECTIONS (CONTINUED)

1. Connect fixture HOT, NEUTRAL, and GROUND conductors to the matching building conductors. See Figure 15 on Page 8.

WARNING: GRAY AND VIOLET FIXTURE WIRES ARE RESERVED FOR LOW VOLTAGE DIMMING CONTROLS ONLY – DO NOT CONNECT LINE VOLTAGES TO THESE CLASS-2 LEADS. DO NOT RUN LINE VOLTAGE WIRES AND 3 CLASS-2 CONTROL LEADS TOGETHER IN THE SAME CONDUIT.



Note: For multiple circuit installations, EMI suppressors have been provided for each circuit. The number of circuits must be specified at the time of order because it may not be changeable during installation. The entire fixture should be on the same phase circuit when connecting multiple circuits in a fixture. This includes emergency ballasts. The emergency ballast must have its HOT lead connected to unswitched power for proper operation. The emergency ballast NEUTRAL is shared with the other ballast on the same power tray. See instructions from emergency ballast manufacturer for further details.

2. The fixture is now ready to have the remainder of the installation steps completed. Return to the appropriate section.

F. EMERGENCY BALLAST CONNECTION

WARNING: TO PREVENT HIGH VOLTAGE FROM BEING PRESENT ON OUTPUT LEADS PRIOR TO INSTALLATION, INVERTER BATTERY CONNECTOR MUST BE OPEN. DO NOT JOIN INVERTER BATTERY CONNECTOR UNTIL INSTALLATION IS COMPLETE AND AC POWER IS SUPPLIED TO THE EMERGENCY BALLAST. DISCONNECT FOR MAINTENANCE.



Note: Make sure that the necessary branch circuit wiring is available. An unswitched source of power is required. The emergency ballast must be fed from the same branch circuit as the AC ballast.

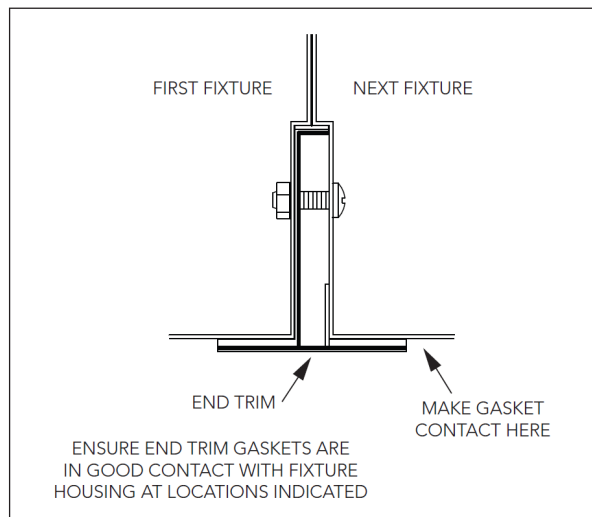


Figure 10

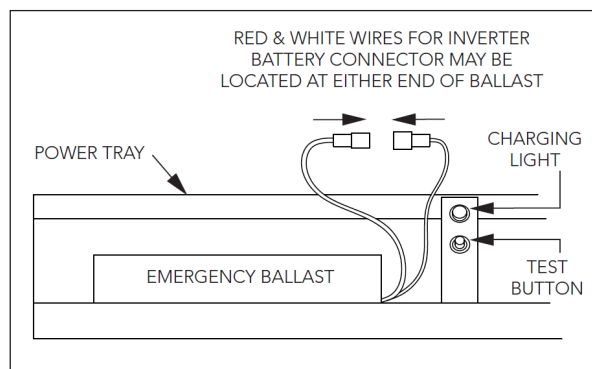


Figure 11

1. The emergency ballast has an inverter battery connector which is disconnected for shipment. It must be reconnected only after installation of fixture and AC power is supplied. To access the battery connector, remove the ballast cover with the charging indicator and test switch mounted behind it. The 1x4 fixture center cover can be removed as indicated above. The 2x2 and 2x4 fixtures must have the center cover removed as described above and a side ballast cover removed also. Remove (4) screws on the side ballast cover and find the battery connector leads on the emergency ballast (the red and white wires with mating connectors) and snap them together. Reassemble the covers. (See Figure 11).

CAUTION: Electrical luminaires are designed for permanent installation in ordinary (Non-Hazardous) locations in accordance with the National Electrical Code and all applicable local codes. Do not use in areas of limited ventilation or in high ambient enclosures. The lamp and luminaire operate at high temperatures, contact with combustible materials can cause fire and personal contact can cause severe burns.

ATTENTION: Ce luminaire a été conçu pour une installation permanente dans un emplacement régulier (non dangereux) et en conformité avec le Code électrique canadien et codes locaux applicables. Ne jamais installer dans un endroit où la ventilation est limitée ou dans des boîtiers où la température ambiante est très élevée. La lampe et le luminaire fonctionnent à des températures élevées, un contact avec des matériaux combustibles peut engendrer un incendie et un contact corporel peut causer de sévères brûlures.

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INSTALLATION INSTRUCTIONS

SurgiCare Surgical Troffer Series: STR24, STR22, STR14

G. STR 1x4 RELAMPING

1. Lamp Removal: Start with one of the outside lamps and remove one lamp at a time. Twist lamps $\frac{1}{4}$ -turn and slide out of sockets. Insert the 2 contact pins, at one end of lamp, into the matching holes at end of housing near the corner. (See Figure 12) Angle the opposite end (free end) of the lamp so it is diagonal across the fixture. Slide contact pins, of the free end, out of fixture through slot at fixture opening in corner as shown in Figure 13. Lamp is now freely removed. (See Figure 14)

2. Lamp Installation: Start with one of the outside lamps and install one lamp at a time. The last lamp to install should be the other outside lamp (install middle lamp as the second lamp). (See Figure 14) Insert the 2 contact pins, at one end of lamp, into matching holes at ends of housing near the corner. Angle the opposite end (free end) of the lamp so it is diagonal across the fixture as shown in Figure 13. Slide contact pins, of free end, into fixture through slot at fixture opening in corner. (See Figure 12) Slide lamp pins into sockets and twist lamps $\frac{1}{4}$ -turn to lock in place.

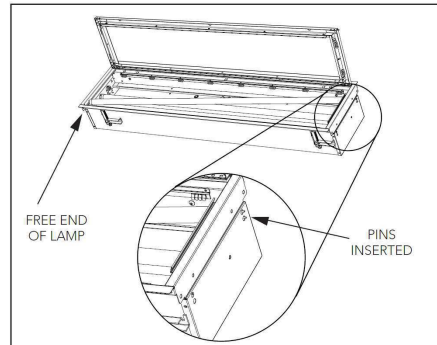


Figure 12

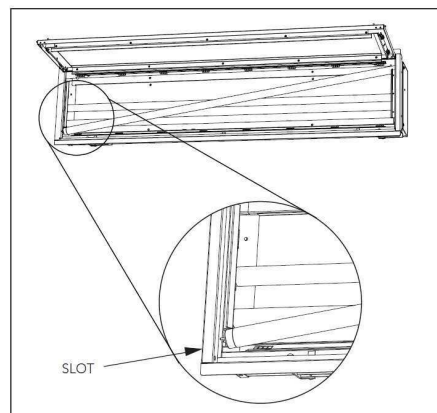


Figure 13

H. LOW VOLTAGE DIMMING CIRCUITS

The STR fixtures can be ordered with dimming ballasts for variable control of light levels. The control wires from the dimming ballast should only be connected to low voltage control devices (0-10v DC).

1. To wire fixtures to dimming controls, use the access points located at the center of the fixture as described in Section C, step 4 or Section D, step 4.
2. Connect the VIOLET and GRAY fixture wires to incoming low voltage control leads of the same color. Do not cross wire the VIOLET and GRAY wires. It is recommended that these Class-2 wires be run in grounded conduit to reduce problems with electrical noise. See instructions from dimming ballast and control manufacturer for further details.

WARNING: GRAY AND VIOLET FIXTURE WIRES ARE RESERVED FOR LOW VOLTAGE DIMMING CONTROLS ONLY – DO NOT CONNECT LINE VOLTAGES TO THESE CLASS-2 LEADS. DO NOT RUN LINE VOLTAGE WIRES AND CLASS-2 CONTROL LEADS TOGETHER IN THE SAME CONDUIT.



I. CLEANING

Fixtures can be wiped down with a soft cloth lightly dampened with warm and mild soapy water. Do not use ammonia based or abrasive cleaners. Do not use steel wool or steel brushes on stainless steel housings. Wipe stainless steel in direction of grain.

Installation Instructions continued on page 8 - Section J. Maintenance

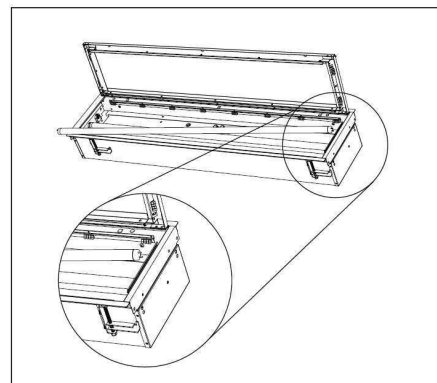


Figure 14

CAUTION: Electrical luminaires are designed for permanent installation in ordinary (Non-Hazardous) locations in accordance with the National Electrical Code and all applicable local codes. Do not use in areas of limited ventilation or in high ambient enclosures. The lamp and luminaire operate at high temperatures, contact with combustible materials can cause fire and personal contact can cause severe burns.

ATTENTION: Ce luminaire a été conçu pour une installation permanente dans un emplacement régulier (non dangereux) et en conformité avec le Code électrique canadien et codes locaux applicables. Ne jamais installer dans un endroit où la ventilation est limitée ou dans des boîtiers où la température ambiante est très élevée. La lampe et le luminaire fonctionnent à des températures élevées, un contact avec des matériaux combustibles peut engendrer un incendie et un contact corporel peut causer de sévères brûlures.

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INSTALLATION INSTRUCTIONS

SurgiCare Surgical Troffer Series: STR24, STR22, STR14

CAUTION: THE INSTALLATION AND SERVICING OF THIS PRODUCT SHOULD BE PERFORMED BY A QUALIFIED ELECTRICIAN OR SERVICE PERSONNEL
ATTENTION : L'INSTALLATION ET L'ENTRETIEN DE CE PRODUIT DOIVENT ÊTRE EFFECTUÉS PAR UN ÉLECTRICIEN OU UN MEMBRE DU PERSONNEL QUALIFIÉ.

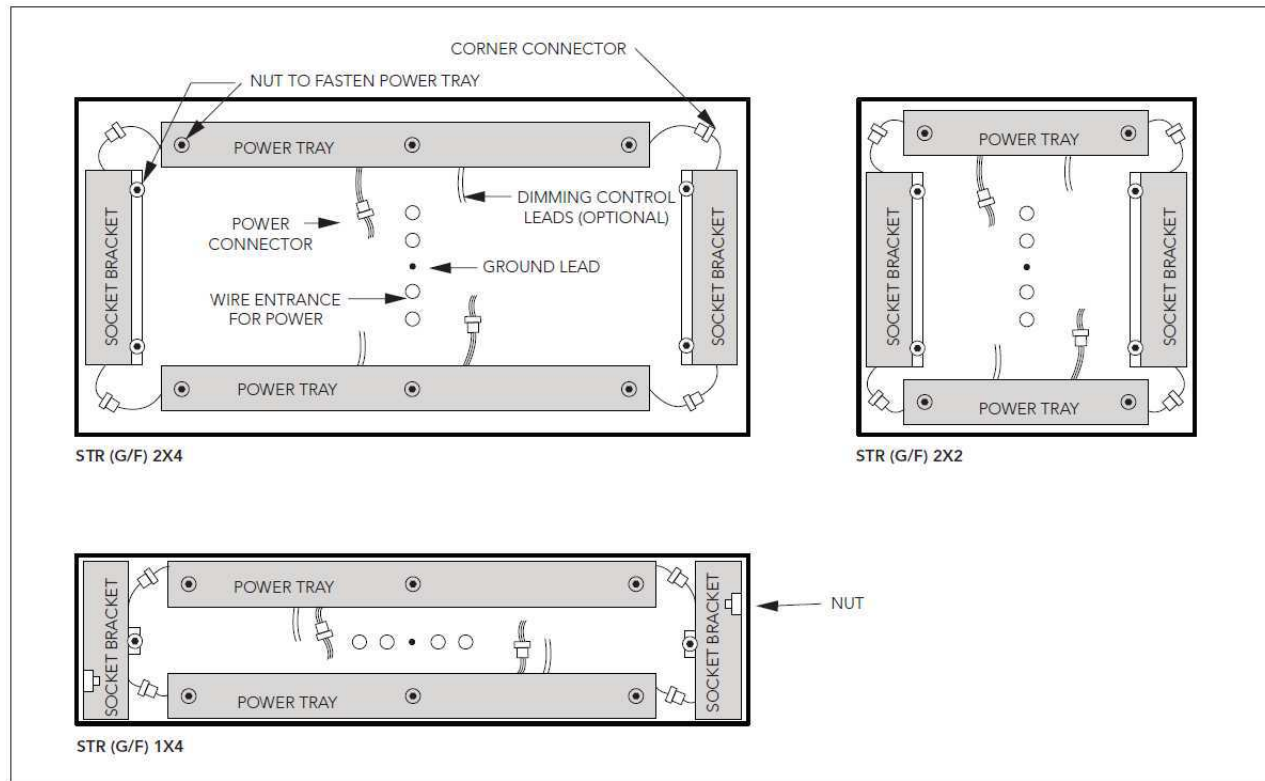


Figure 15

J. MAINTENANCE

WARNING: The STR series has been designed to reduce conducted and radiated EMI. Changes to the housing or electrical system may lead to unknown EMI problems. **DO NOT SUBSTITUTE COMPONENTS OR REWIRE WITHOUT CONSULTING FACTORY. DO NOT ALTER HOUSING OR CREATE EXTRA HOLES FOR WIRE ENTRY.**



The STR series has been designed to reduce maintenance time in a time critical room. If a power tray needs attention, it may be removed from the fixture and worked on in a different location. A replacement power tray may be reinstalled in its place and the fixture reclosed to quickly return the room to operating condition. A replacement must match the wiring exactly. Refer to labels on power trays to identify. There is a number which begin with 093-... that must be matched. To remove a power tray, first disconnect all power connectors and any dimming control connections at center of fixture. Then disconnect the corner connectors. Next, remove the nuts fastening the power tray to the housing. (See Figure 15) If necessary, remove nuts fastening socket brackets to the housing. To reinstall, fasten tray or brackets back into fixture over mounting studs with original nuts, then reconnect the corner connectors and lastly remake the connections at the center of the fixture.

CAUTION: Electrical luminaires are designed for permanent installation in ordinary (Non-Hazardous) locations in accordance with the National Electrical Code and all applicable local codes. Do not use in areas of limited ventilation or in high ambient enclosures. The lamp and luminaire operate at high temperatures, contact with combustible materials can cause fire and personal contact can cause severe burns.

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