



**INSTALLATION, OPERATION,
AND MAINTENANCE MANUAL
FOR
CARES & SS-CARES
CEILING SYSTEMS**



Retain instructions with unit and maintain in a legible condition.

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YOU HAVE RESPONSIBILITIES TOO

This installation, operation and maintenance manual cannot cover every possibility, situation or eventuality. Regular service, cleaning and maintaining the equipment is necessary. If you are not capable of performing these tasks, hire a qualified technician. **Failure to perform these duties can cause property damage and/or harm to the building occupants and will void the manufacturer's warranty.**

Installing and servicing a **CARES or SS-CARES** ceiling system can be hazardous due to system pressure and integral electrical components. Only trained and qualified technicians should install or service a **CARES or SS-CARES** ceiling system.

Untrained personnel can perform basic maintenance, such as cleaning the system and replacing filters. All other operations should be performed by qualified technicians.

Follow all safety codes. Wear appropriate PPE safety glasses and work gloves for your protection.

This equipment shall be carefully installed in accordance with the standards of the National Fire Protection Association (National Electrical Code).



Before installing or servicing the system, always turn off, 'lockout', the main power to the system. There may be more than one disconnect switch. Electrical shock can cause personal injury or death. Always disconnect and lock out power before servicing.

The installer is responsible for providing qualified, trained personnel to install and operate the equipment. Consult all local building codes, occupational safety, electrical, gas and any other codes applicable to the installation of this equipment.

Authorities having jurisdiction should be consulted prior to installation of this equipment to verify local codes and installation procedures.

INTRODUCTION

AJ Manufacturing provides high quality products designed and manufactured for many years of trouble-free operation. We recommend that this manual be read thoroughly to ensure proper installation, efficient operation and proper maintenance of this equipment. The submittal record shall be considered an integral part of this Installation, Operation and Maintenance Manual.

The AJ ceiling system is a laminar flow air delivery system which may contain integral lighting, sprinklers, filtration and surgical equipment mounts all built into a modular unit at the factory. The integral equipment mounts eliminate the need for additional separate structural equipment support system above the ceiling. AJ Manufacturing's products incorporate aseptic design details within a laminar airflow system for optimized contamination control. Review this entire Installation and Maintenance Manual as well as the entire Submittal Record prior to installing your equipment.

SUBMITTAL RECORD

AJ Manufacturing ceiling system is designed and manufactured to the submittal supplied by AJM and approved by the Customer. All changes and/or variations thereof are to be resubmitted or documented by correspondence. Contained in the submittals are the systems specifications, complete system layouts, vendor acknowledgments, schematics and ship loose parts information.

Spare Parts and Replacement Parts List:

- **Spare Parts:** Spare parts are defined as an added item to the purchase order. The customer, depending on their requirements, can request a spare parts list. These parts are normally non-stocked items that require a longer lead-time upon placing an order.
- **Replacement Parts:** The replacement parts in a particular system may be covered under the AJM warranty. Many of these parts are listed in the submittal and have data sheets accompanying them. Replacement parts are part of the assembled units and can be identified by the individual unit tag number.
- **Ship Loose Parts:** The ship loose parts are items that require field installation and are shipped separately from assembled units. All installation of these parts is 'By Others'.

TOOLS AND EQUIPMENT

Below is a list of tools and equipment that can and should be used to help facilitate the installation of this equipment. There may be other tools and equipment that are not mentioned that may also be used. These are only examples and only for reference. All tools and equipment used shall be in accordance with all safety codes or governing bodies.



Genie-Lift® or Duct-Lift



Forklift with Long Forks



Ratchet Straps



Pallet Jack



Chain Hoist



Wood Dunnage Blocks



Hand Tools consisting of:

Prybars, Drift Pins, Wrenches, Socket Set, 7-in-1 Tool, Hammer, Screwdriver, and Utility Knife.



Moving Dollies/Carts



Eyebolt Lifting Lugs

The contractor is responsible for all labor and tooling required equipment installation. The list above are AJM's recommendations for items that will make the installation of the equipment faster and more efficient.

RECEIVING, UNPACKING, AND INSPECTION



On skids larger than Four (4) Feet wide, we recommend the use of '**Eight (8) Foot forks**' on all forklifts whether the modules are being removed from the freight carrier's truck or being moved around the construction site. This will reduce the risk of property damage, injury, or death.

AJ's ceiling modules are double-wrapped in the factory, unless other packing is required by specification. Shipped loose hardware is not wrapped unless otherwise specified. These ceiling modules are pre-cleaned and then wrapped, DO NOT un-wrap them outdoors or in a dirty environment.

Carefully inspect all parts, after receiving them from the transporting agent, for any damage that may have occurred in transit. If shipping damage has occurred, notify freight carrier and AJ Manufacturing immediately and report the damage by providing photographs of the damage and a list of components affected. Isolate the damaged equipment in a separate holding area to prevent it from being installed, freight carrier may also choose to inspect the damage.



Compare parts with the shipping documentation to make sure your shipment is correct, free of damage and complete. Your signature verifies that you have received all equipment in satisfactory condition.

INVENTORY



AJ Manufacturing recommends inventorying all crated items. As crates are opened and parts are used during installation of the ceiling system, parts are often lost or misplaced. To prevent this from occurring, mark off items as they are removed from the crate. This will help minimize back charges caused by having to replace lost or misplaced parts.

If any parts are missing from the crate, please notify AJ Manufacturing immediately.

STORING PRODUCT

AJ Manufacturing does not recommend storing ceiling systems outside of an enclosed weather tight area. The warranty of AJ Manufacturing products may be limited due to improper storage beyond the normal effects of transportation.

STAGING CEILING MODULES

The AJ Manufacturing ceiling modules are wrapped with two (2) or more layers of protection. Each layer may be removed at different protocol levels and transported from the most particle exposed areas to the more stringent protocol levels.

INSTALLING CEILING MODULES

AJ Manufacturing recommends use of a padded platform accessible by a forklift. Most damage occurs when direct pressure is placed upon individual plenum and grid members. Avoid placing the legs of any lifting device directly underneath any light lens.

Double-Check Each Module: Verify all suspension rods, plenum-to-plenum, shared air, supply air and module-to-module holes are in the correct location and orientation. Verify electrical boxes and any sprinkler pipe connection is in the correct position. Verify pigtails for light bar connections are visible and located on the proper side. See submittal layout for exact module and room orientation.

Lift Ceiling Modules into Position: Lift modules into position using a protected surface platform or rigging attached to the suspension holes or rods. **WHEN RIGGING, DO NOT RIG HOLES AT AN ANGLE.** Verify top and sides are lined up evenly. NOTE: Throughout the installation procedure, the lift will be required to hold up the module. Use a lift that is suited for plenum module weight and max capacity. [Use caution to not damage or pinch pig tail wiring when mating adjacent plenum modules.](#)

Plenum and Grid Mating Surface: Prior to installation of adjacent modules, clean mating surface on both modules. [DO NOT APPLY CAULKING TO MATING SURFACES.](#) Applying caulking to mating surfaces will increase overall room dimensions as a completed system, create alignment complications with adjoining structural hardware and cause intersecting lens material to not fit properly.

Hanging Modules from Suspension Rods: Attach suspension rods through to the top of each plenum module using (5/8" or 3/4") threaded rods, as required by engineer.

Tighten the hex nuts against the plenum top to prevent the rod from backing out. The plenum may now be attached to any turnbuckles and to the supporting structure for suspension. Refer to job specific field connections, drawings, section details and notes on the submittal.

- Torque requirements for Fasteners: (1) Suspension Rod connections shall be: **Snug Tight**

AISC (*American Institute of Steel Construction*) and **RCSC** (*Research Council on Structural Connections*) defines **Snug Tight** as: *the condition that exists when all of the plies in a connection have been pulled into firm contact by the bolts in the joint and all the bolts in the joint have been tightened sufficiently to prevent the removal of the nuts without the use of a wrench.*

Attachment of Adjacent Ceiling Modules: After each module has been lifted into position and secured to the supporting structure assembly above, proceed to install and align proper fasteners for the module-to-module mating surfaces. *Verify top and sides of module are aligned properly.* First install fasteners in four (4) places on the long side and then two (2) places on the short side. Once proper alignment of module is completed the remaining fasteners should be installed.



- Torque requirements for Fasteners: Module-to-Module connections shall be: **Snug Tight**

Leveling of Ceiling System: The overall ceiling system shall be leveled within ± 0.062 inch in 10 feet and not over ± 0.10 inch throughout the room. Check and level the plenum and grid modules using a laser transit. Adjust the level by turning the turnbuckle connections or nuts on threaded rods. Once leveled, snug the locking nut onto the turnbuckle or threaded rods. *Some ceilings may have a more strenuous leveling requirement. Please follow all project specific, suspended equipment manufacturers' leveling requirements.*

PROTECTING THE CEILING SYSTEM

Structural Stability: During construction and installation, the contractor shall be responsible for the structural stability of the system. The structure shown on the AJ Manufacturing submittal has been designed for stability under the **FINAL** installed configuration only.

Electrical: Close off all exposed wire ends by use of appropriate wire connections or wire nuts.

Wrapped Parts: Keep all items wrapped for maximum protection until it is necessary to remove the wrapping and use those components.

Close off all Openings: To minimize particle contamination during construction and installation, close off all exposed openings.

Mask off Exposed Areas: AJ Manufacturing recommends masking off exposed areas relating to the interior of the module and grid. This will minimize cleanup and wipe down prior to start-up.

CAULKING REQUIREMENTS

AJ Manufacturing provides caulk sealant for filling voids where air may penetrate. Sealing of the system is done upon complete installation of the ceiling module system and is the responsibility of the installation contractor. All modules come pre-sealed with caulking in all possible air penetration seams. *Due to circumstances beyond our control during shipping, sealant may dislodge in areas requiring a seal.* AJ Manufacturing recommends each module be inspected for any loosening of sealant and reapplication shall be required if this condition occurs.

- Completely caulk all module seams and around all penetrations. Additional sealing locations include but are not limited to electrical penetrations, sprinkler pipe penetrations, grounding screws, damper ports, etc.
- If silicone caulking is required by the client, use an approved primer on the mating surfaces prior to caulking. Follow product instructions for cure time prior to using caulking.
- **USE ONLY approved caulking!** Caulking shall meet all customer specification requirements and be factory approved for our system prior to installation. See submittal for approved caulking.
- Caulking should **ONLY** be applied to adjoining module SEAMS as shown. Refer to submittal for module split section details.



Caulk at ceiling grid seams.



Caulk at interior seams.



Caulk at exterior seams.

ELECTRICAL CONNECTIONS

Ceiling Modules come pre-wired at the factory with light bar assembly's integral to the grid system. Each system has a source grid that receives the power supply from the main facility power. Due to lighting requirements and system design, some light fixtures may need to be installed in the field by others.

- Grid-to-Grid Connections: Along the grid level there are two types of electrical lines that require connecting procedures: High Voltage and Low Voltage wiring. Refer to job specific field connections, electrical drawings, and the submittal. Where applicable, cover electrical connections, at the grid module joints, with the supplied wire separator cover. Refer to the job specific drawing in the submittal.
- High Voltage Connections on exterior of the modules, under normal conditions, shall have all J-Boxes located on the top or the sides as required. The connection for the high voltage wiring should only be performed by a licensed electrician and must follow all applicable electrical codes. Please refer to the submittal layout drawing and locate the electrical sheet for exact power supply locations. This drawing will identify the plenum and grids associated with each circuit. Amperages were calculated according to the maximum amps allowable per light bar assembly. **DO NOT** make any field changes to these circuits unless the change is approved by AJ Manufacturing. Some changes may void any warranty.



- Low Voltage is located within the lower section of the grid and/or at J-Boxes located on the top or the sides as required. The connection for the low voltage wiring should only be performed by a licensed electrician and must follow all applicable electrical codes. Use listed/certified connections.
- All J-boxes, located on the modules, will be clearly labeled as to which circuit the connection is for as well as the voltage for those connections. These connections should only be performed by a licensed electrician and must follow all applicable electrical codes.
- All interior module splits, with electrical connections, will have quick connect electrical connectors as well as luminaire disconnects. These connections shall be labeled to eliminate confusion and facilitate easy connectivity.
- Because light bar modules are INTERTEK (ETL) labeled prior to leaving the factory, any field modifications are the responsibility of the field contractor. Field modifications to the electrical fixtures may be separately listed with INTERTEK (ETL), at the contractor's expense.



PERIMETER GRID AND WALL CLOSURE

When the ceiling system includes any wall closure provisions, AJ Manufacturing will provide wall closure angles for the perimeter of the system. The components will be shipped loose and required to be installed by others in the field. Refer to any job specific sizes, drawings, and the submittal.

FIRE PROTECTION SYSTEM (SPRINKLER) CONNECTIONS

It is the sprinkler contractor's responsibility to hard pipe all sprinkler mains and branch lines to the connections in the ceiling modules and attach all sprinkler heads. After installation, they should be pressure tested to confirm that they meet all applicable fire sprinkler codes.

- **Ceiling Modules:** The sprinkler connection size is determined by the number of sprinkler heads and, under normal conditions, shall be located on the top side. **Sprinkler heads may be shipped loose.** Refer to job specific sizes, drawings, and notes on the submittal.
- All sprinkler heads must be installed by a licensed fire protection contractor.
- Follow the sprinkler head manufacturer's installation instructions. **Over-tightening may cause the system to leak and can cause damage to the threads of the sprinkler head.**

FILTERS, BLANK PANELS, AND DIFFUSION SCREEN INSTALLATION

Prior to installation, verify that the GEL is at the proper level and has been completely set-up per the manufacturer's instructions. Review layout drawings for location and quantity of parts. Verify all sizes for each part.

FILTER INSTALLATION: Filters are the most delicate part of the system and proper handling is an absolute requirement. **Filters should NOT be stacked flat. Filters must be stored indoors and in a conditioned space prior to being installed.** Filters are packaged for single or double staging. This is

determined by the customer specification. Single stage filters are bagged once and then boxed individually. Double stage filters are bagged twice and then boxed individually or separated by cardboard sleeves. Double staging adds one more step to the particle free process both in the packaging and staging procedures. This enables the installer to have the assurance of a cleaner product when properly staged. When installing a filter, do NOT handle or place any objects on the media of the filter. Doing so may damage the filter which could cause it to fail certification.

Inspect each filter prior to installation for any damage. Always follow the original filter manufacturer's handling instructions. DO NOT rack or twist the filter frame or put pressure on the filter media at any time. AJ Manufacturing recommends that two people install each filter and only handle the frame of the filter.

- **Bottom Load Filters:** Shall be loaded from the room side, centered on the knife edge and between the filter clips, and lifted into place. Once in place, rotate the filter clips $\frac{1}{4}$ turn to lock the filters into position.
- **Filter Removal:** Reverse the appropriate installation instructions. Removing filters may take some finesse. This process must be done slowly to keep the GEL from being pulled out of the filter frame through.
- **Blank Panels:** All blank pans are installed using the same procedures as the filters on the same system. See Filter Installation.



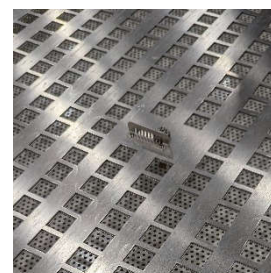
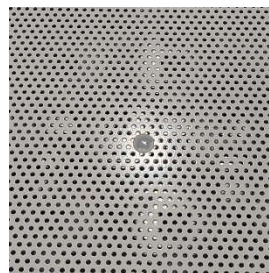
WARNING: The following diffusion screen installation procedure must be followed for secure installation of the diffusion screens.

DIFFUSION SCREEN INSTALLATION: Verify the correct size and location of the screen being installed. On each diffusion screen you will find $\frac{1}{4}$ turn screws on the long sides of the screen. Place the $\frac{1}{4}$ turn screws over the screen clips that are factory installed within the ceiling flush grid. Securely fasten the diffusion screen by turning each screw a $\frac{1}{4}$ turn. Each diffusion screen has a safety cable attached to two sides to eliminate diffusion screens being dropped. Make sure these safety cables have been properly connected to screen clips prior to final installation. Inspect the diffusion screen to make sure that all the $\frac{1}{4}$ turn screws are properly seated. Some variation in the height of the diffusion screen is normal.



DIFFUSION SCREEN REMOVAL: To remove, gently put a hand on the diffusions screen and reverse the $\frac{1}{4}$ turn screw opposite of the installation instructions. If the diffusions screen needs to be removed completely, make sure that all safety cables have been disconnected before lowering the screen from the ceiling system.

All AJ Manufacturing ceiling systems come with **Slide Plate Dampers** pre-installed up stream of the diffusion screen and below the filter. These dampers are supplied to facilitate a balanced laminar flow across the entirety of the ceiling system. Each damper has an adjustment gear to help with this balance. These dampers can be adjusted, *without removing the diffusion screen*,



through a center port at the face of the screen. A 3/16" Allen Key can be used to make this adjustment.

LENS INSTALLATION

Install the ceiling grid lens covers after all the electrical connections and light bar fixtures have been installed. White lens will be used when there are no light bars above. Clear light lens will be used at all light bar locations. Inspect all lens for any signs of cracking. If there are any cracks, then do not use the lens and use a new lens. NOTE: Whitening on the legs of the lens may be caused by repeated installation and removal of the lens. This is normal and the lens can still be used as long as the lens is not cracked.

- Install the lens by inserting one leg of the lens into the grid channel, the leg that is away from you.
- Rotate the other leg of the lens towards you and into the grid channel. This leg may need to be pushed in with your fingers to get the leg inside of the grid channel.
- Continue this process down the lens towards the opposite end continuously.
- With the palm of your hand push up along the length of the lens to make sure it is seated in the grid channel properly.
- DO NOT use excessive force to install the lens as this may cause the lens to crack.
- To remove the lens, pry between the lens wings and the edge of the grid channel, you may use a 7-in-1 tool to do this. Do not pry on the prism of the lens; this may cause the lens to crack.
- **DO NOT use alcohol to clean the acrylic light lens in the grid.** Lens material may be cleaned with 100% de-ionized water only.



BEFORE START-UP

- Clean all powder coated and/or stainless-steel surfaces with a 10% Alcohol and 90% deionized water solution.
- Check application of all sealants at locations in traffic areas.
- Check all fan compartments for loose debris and remove any foreign objects.
- Verify all filters and blanks have been installed.
- Check all connections: Sprinkler, electrical, ducting, etc. for proper fit.
- Fan Filter Units (FFU's): See Manufacturers O&M Manual prior to start-up of system. DO NOT START THE SYSTEM UNTIL O&M MANUAL HAS BEEN REVIEWED.

NOTES

ONE YEAR LIMITED EXCLUSIVE WARRANTY

EXCLUSIVE WARRANTY; DISCLAIMER: If any product manufactured by A.J. Manufacturing Co., Inc. ("AJ") fails to work in accordance with the applicable product specifications due to defects in material or workmanship within one (1) year from the date AJ shipped the product to buyer, such product will be replaced or repaired at AJ's sole option. Repair or replacement of the product determined by AJ to be defective will be provided F.O.B. point of manufacture (with buyer responsible for risk of loss during delivery). All replacements or repairs necessitated by inadequate maintenance, normal wear and usage, unsuitable power sources or environmental conditions, accident, buyer or third-party negligence or misuse, including, without limitation, misapplication or use beyond capacity, improper installation, modification, repair, storage or handling on buyer or its agents' behalf, or any other cause not the fault of AJ are not covered by this limited warranty, and shall be at buyer's expense. Further, this warranty does not apply to products which have been altered or repaired by anyone except AJ. This warranty does not include reimbursement for the expenses of installation, removal, handling, transportation or shipping costs, or any other expenses which may be incurred. For products or component parts or parts thereof sold to buyer by AJ, but manufactured by other third parties, the above warranty shall not apply; rather, AJ will extend to buyer the same warranty it receives from the third-party manufacturer, to the extent assignable to buyer, and/or as applicable, buyer will have the benefit of any warranties provided by the third-party manufacturer directly to buyer as the end user of the product or component part(s). The exclusive warranty remedies provided to buyer in this paragraph shall be contingent upon buyer's payment in full to AJ all amounts due for said product. AJ reserves the right to make changes to the specifications and features of any products from time to time without notice to buyer and may discontinue any products at any time without notice or obligation. CHARGES ACCRUED AGAINST AJ'S ACCOUNT BY BUYER WITHOUT PRIOR APPROVAL OF AJ WILL NOT BE PAID BY AJ. If after notifying AJ of defect, buyer returns products to AJ for repair and AJ determines such repairs are not covered by the foregoing warranty, the buyer will be assessed AJ's regular repair and reconditioning charges.

THIS WARRANTY IS MADE EXPRESSLY IN LIEU OF ANY OTHER WARRANTY AND AJ MAKES NO OTHER REPRESENTATION OR WARRANTY OF ANY OTHER KIND, EXPRESS OR IMPLIED, WITH RESPECT TO THE PRODUCT, WHETHER AS TO MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE, NON-INFRINGEMENT OF THIRD-PARTY RIGHTS OR ANY OTHER MATTER. THE WARRANTIES CONTAINED HEREIN SET FORTH BUYER'S SOLE AND EXCLUSIVE REMEDY IN THE EVENT OF A DEFECT IN WORKMANSHIP OR MATERIALS AND SHALL NOT BE DEEMED TO HAVE FAILED ITS ESSENTIAL PURPOSE SO LONG AS AJ IS WILLING AND ABLE TO CARRY OUT THE TERMS OF THIS EXCLUSIVE WARRANTY. ANY SERVICES PROVIDED BY AJ RELATED TO THE PRODUCT IS PROVIDED ON AN "AS-IS" BASIS WITHOUT ANY WARRANTY.

LIMITATION OF LIABILITY: All claims, causes of action or legal proceedings against AJ arising from AJ's sale of the product to buyer hereunder or use of the product must be commenced by buyer within the express warranty period specified under the WARRANTY paragraph above, which period is one (1) year from the date of shipment of the product to buyer. Failure to commence any such claim, cause of action or legal proceeding within such period shall constitute a voluntary and knowing waiver thereof by buyer. IN NO EVENT SHALL AJ'S LIABILITY FOR ANY DAMAGES EXCEED THE PAYMENTS RECEIVED BY AJ FROM BUYER FOR THE SPECIFIC PRODUCT GIVING RISE TO THE CLAIM OR CAUSE OF ACTION, NOR SHALL AJ BE LIABLE FOR ANY LOST PROFITS OR SPECIAL, INCIDENTAL, CONSEQUENTIAL OR PUNITIVE DAMAGES. THE LIMITATIONS ON DAMAGES IN THIS PARAGRAPH SHALL APPLY UNDER ALL THEORIES OF LIABILITY OR CAUSES OF ACTION, INCLUDING BUT NOT LIMITED TO CONTRACT, WARRANTY (INCLUDING WARRANTY REMEDIES UNDER THE WARRANTY PARAGRAPH ABOVE), TORT OR STRICT LIABILITY. THE ABOVE LIMITATIONS SHALL INURE TO THE BENEFIT OF AJ'S SUPPLIERS, AGENTS AND SUBCONTRACTORS. WARRANTY (INCLUDING WARRANTY REMEDIES UNDER THE WARRANTY PARAGRAPH ABOVE), TORT OR STRICT LIABILITY. THE ABOVE LIMITATIONS SHALL INURE TO THE BENEFIT OF AJ'S SUPPLIERS, AGENTS AND SUBCONTRACTORS.

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