



MODULAR  
SERVICES COMPANY

# INSTALLATION MANUAL

## PUMP STAR®



### IMPORTANT

Before operating this equipment near patients, all staff should complete a training course and competency exam on the use of this equipment. Check with your facility equipment coordinator for specific training requirements and certifications.

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## OVERVIEW

The Pump Star® is a UL-recognized patient equipment transportation system manufactured by Modular Services Company (MSC). The unit is specifically designed for ICU and OR environments for pump transport in settings where medical equipment organization and mobilization is routinely required for patient care.

The Pump Star® provides a fast and easy method for pump transport, eliminating manual lifting of heavy pumps and bags. Engineered for easy mounting and efficiency, the pump rack docks from the Pump Star® to the bed-mounted bracket for patient and equipment mobilization, using a motor inside the tower of the Pump Star® to raise and lower the rack into place. After transport, the pump rack is easily undocked from the bed onto the Pump Star®.

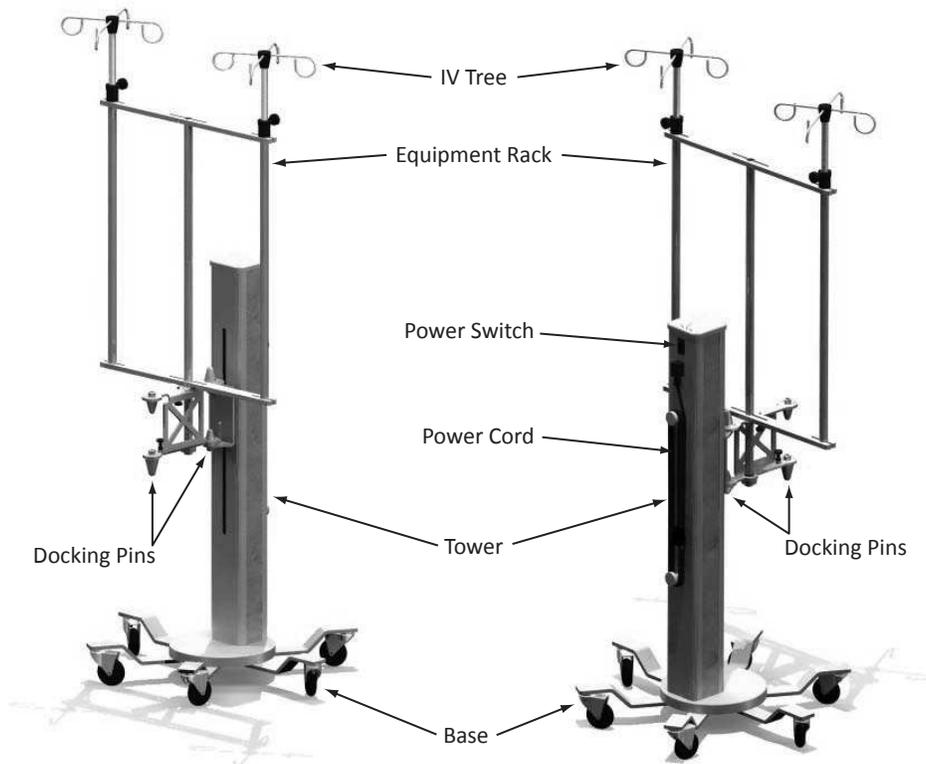
**WARNING:** This equipment is not suitable for use in the presence of a flammable anesthetic mixture with air or with oxygen or nitrous oxide.

**WARNING:** This product has not been evaluated for Electromagnetic Compatibility according to IEC 60601-1-2. This unit may not function under radiation, and it may emit radiation that may affect other equipment. If adverse performance is experienced, discontinue use of this product.

## UNPACKING AND INSPECTION

1. Upon receipt of Pump Star® units and prior to unpacking, inspect shipping containers for damage. Document any damage found and notify the carrier and Modular Services Company.
2. Carefully open each carton. Dispose of all excess packaging material, leaving cardboard under the unit to protect surfaces during assembly.
3. Inspect unit for defects in materials or workmanship prior to assembly. It is the responsibility of the customer to report any damage or deficiencies to Modular Services immediately upon discovery.

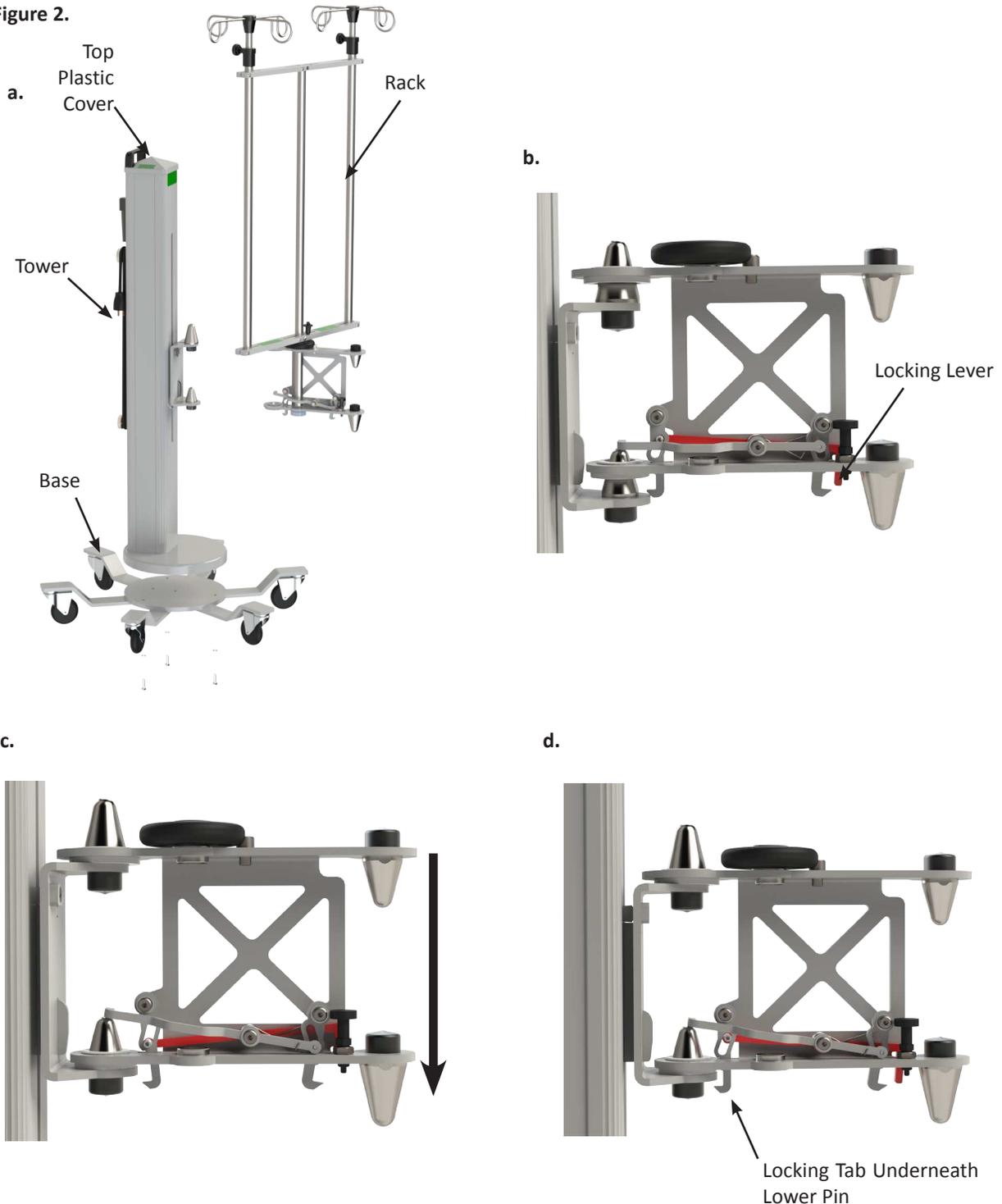
Figure 1.



## PUMP STAR® ASSEMBLY

1. Attach the tower to the base. Use a narrow rod to align the bolt holes while assembling, if necessary. Use the 1/4"-20x1" hex head bolts and lock washers supplied with the unit.
2. Dock the rack on the tower by setting it on the pins (Figure 2a). Racks equipped with a rack lock mechanism may require manually triggering the locking lever to fully seat the rack (Figures 2b and 2c, lever shown in red). A properly engaged rack will have the locking tab underneath the lower pin and won't be removable without manually triggering locking lever again (Figure 2d).

Figure 2.

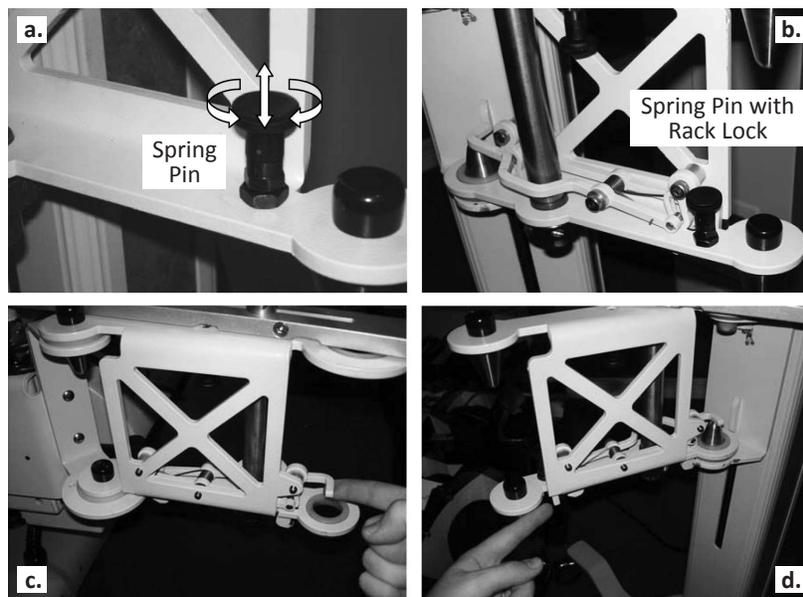


3. Make sure the top plastic cover on the tower is secure by pressing down firmly.
4. Depending on the application, brackets may be included for mounting on hospital beds or headwalls. Follow the instructions included in the bracket package.

### SETUP AND FEATURES

1. Read these instructions and all safety labels attached to the unit before proceeding.
2. Two black spring pins are located at the bottom of the rack (Figure 3a). These spring pins are used to restrict rotation of the rack while docked on a piece of equipment other than the tower. To lock rotation, turn the knob until it falls and stops rotating. When it reaches a locking location, it will fall completely down as shown. To temporarily unlock, simply pull up on the knob and rotate away from the locking location. It will lock again once it reaches another locking location. To unlock completely, pull up on the knob and turn one quarter turn. The spring pin shown locks rotation around the docking pins, the top spring pin locks rotation around the center rack pole.
3. Spring pins on the bracket should be retracted at all times while on the tower.
4. Some racks will come equipped with a rack lock mechanism (Figure 3b). This automatic lock will help to prevent damage or injury caused by inadvertent lifting of the rack by the bed or other motorized equipment causing it to fall from its mount. This lock can be disengaged by lifting the corresponding lever to retract the latch (Figures 3c and 3d). This is a manual release only, and should only be used when lifting an empty rack. If the rack cannot be removed from the bed, it should be swung away and left on the bed. If the rack cannot be removed from the tower for transport, the tower should be rolled with the patient until it can be released. In an emergency, the up and down motion of the bed can also be used to transfer the rack.

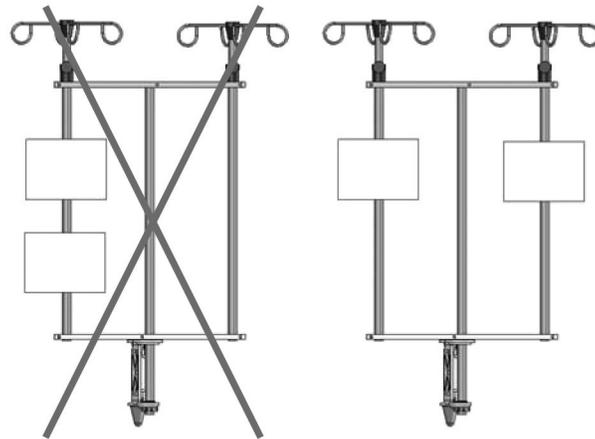
Figure 3.



5. When there is no equipment on the rack, the lock mechanism can potentially fail to release during transfer, potentially lifting the Pump Star unit or the bed. If this occurs, push down on the rack to release the latches. This can also be caused by excessive tilt on the bed frame. Both of these situations should be resolved when equipment is mounted to the rack.
6. Equipment may only be added to the rack while it is on the tower. Load the rack evenly on both sides or in the center (Figure 4).
7. Small pumps with pole mounting clamps may be attached according to standard hospital procedures.

8. Small collars are available as options, making pump placement easier for heavy pumps or pumps that are repeatedly removed and reattached.
9. Fluid bags and small hook-mounted equipment may be attached to IV trees. The weight of items placed on IV trees should not exceed 15 pounds.

**Figure 4.**



10. Equipment not mounted using a clamp or a hook must be attached using a special adapter, if available. Follow the instructions included with any adapters.
11. For best results, set up one rack and modify the layout until the best placements are found and record the location of each piece of equipment. If desired, use collars to make placement on this rack and others easier. Record all positions and set up each rack the same. If equipment loads vary within the unit, find the optimum location for common setups. This standardization will make setups easier and will help minimize problems caused by interference with the bed.

## **UNIT OPERATION**

### **Tower**

1. To operate the tower, plug the power cord into a standard or emergency 115 volt hospital-grade wall power outlet. The unit will now function using the power switch. To discontinue use, unplug the power cord.
2. To raise the tower pins, press the top of the switch on the back of the tower. To lower the tower pins, press the bottom of the switch. To stop, release the switch. Verify this motion works correctly before proceeding with any further procedures.
3. The Pump Star tower is not intended for use as a transportation device, only as a holding device. If transportation is required with a rack and equipment, lower the rack to the bottom of travel and make sure the rack is loaded evenly and the cord is wrapped up on the back of the tower. Always maintain contact with the unit to avoid losing control of the unit's motion.
4. For best results, transport equipment on the patient bed properly locked from rotation. Install brackets on every bed according to the installation instructions included with the bed.
5. Before using the bed to transport the rack, visually inspect the bracket for loose or broken connections. Do not use a bed bracket that is damaged or loosely attached. Call maintenance for assistance.

### **Docking**

1. To dock the rack on a bracket, raise or lower the rack using the tower motor until the pins line up and clear the bracket holes (Figure 5a). If both pins do not line up, level the bed or equipment or check the installation of the bed bracket.
2. Lower the pins into the bracket, carefully ensuring that both pins engage the holes (Figure 5b).

**WARNING:** Always ensure both pins engage when docking or undocking (Figure 6). Failure to engage both pins may cause the rack to fall.

3. Continue lowering the tower until the tower pins have cleared the holes in the rack. Remove the tower by rolling it away (Figure 5c).

Figure 5.

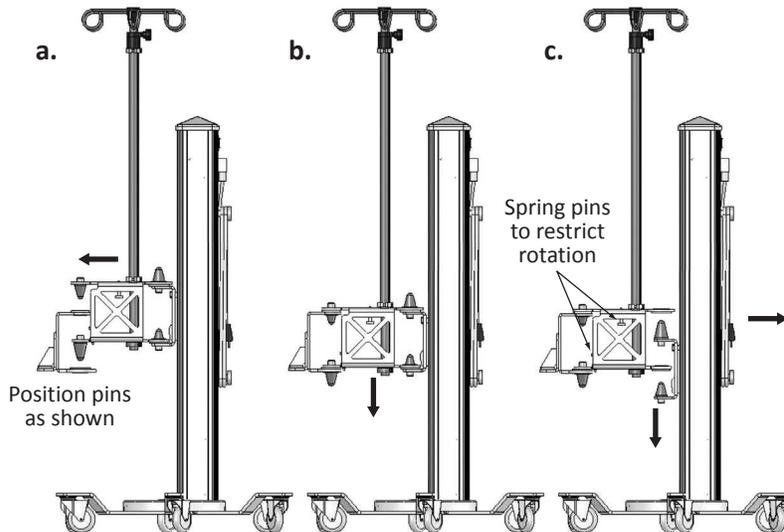
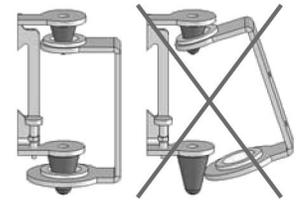


Figure 6.



4. While docked on the bracket, the spring pins may be extended to lock the rack from rotation. To extend the spring pins, turn the handle 90° until it pulls down. To lock the rack, extend the spring pins and rotate the rack and rack holder until the pins click into place. Ensure that the lock is secure before proceeding. To temporarily unlock, pull the spring pin and rotate the rack away from the locked position. To allow free motion, pull the spring pin and turn 90° until it stays retracted.

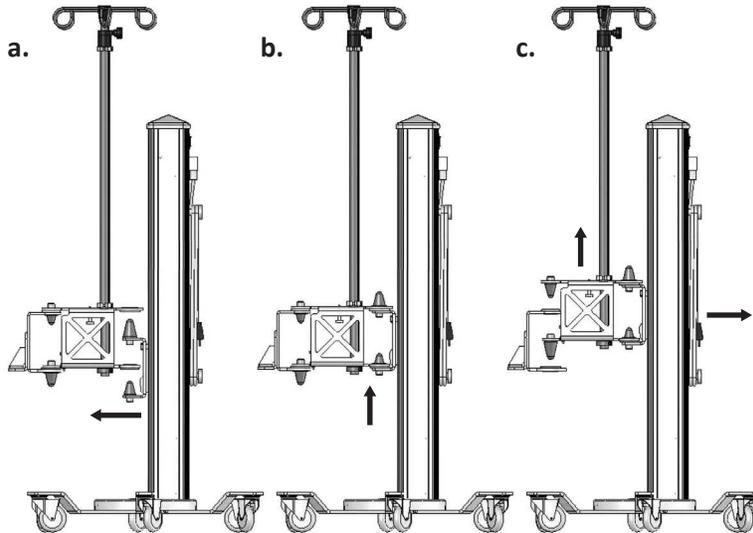
**WARNING:** Lower IV poles when transporting unit to ensure clearance in doorways and elevators.

**WARNING:** Fully constrain rack motion when transporting unit.

## Undocking

1. To undock the rack from a bracket, retract both spring pins to allow free rotation and position the rack as shown in Figure 7a. Raise or lower the tower pins until the pins line up and clear the holes.
2. Raise the tower pins into the rack, carefully ensuring that both pins engage (Figure 7b).
3. Continue raising the tower until the rack pins have cleared the holes in the bracket. Remove the tower and rack by rolling the tower away (Figure 7c).
4. Whenever pumps are attached to the rack, they will need to be plugged in. Always unplug the pumps from the wall before transferring the rack to a bed for transport.
5. Optional power strips may be available for the rack to allow the pumps to plug into a common device, allowing all devices to be powered from a single outlet. Make sure any power strips used follow all applicable codes and are plugged into hospital grade outlets to ensure proper grounding.

Figure 7.



### FACILITY SETUP AND TRAINING

1. Before using this product with patients, it is recommended that all staff on all shifts take the training course provided with the unit. For additional training materials, contact the sales representative or Modular Services Company.
2. Before using in a new location, it is recommended that the maximum amount of equipment likely to be used at once should be loaded on a rack and maneuvered as it would be with a patient to check for interference and clearance. Check for clearance in the room while mounted to the rack, and check doorways, hallways and elevators for clearance while mounted on the bed.
3. Pump Star stands should be distributed throughout the unit and hospital according to these recommendations:
  - One Pump Star stand should be placed in each patient room. The unit should remain plugged in and placed to one side of the bed.
  - One Pump Star unit may be located at each location likely to be visited by patients. Examples include diagnostic sites, labs, PACU, or Pre-Op. When the patient arrives, the rack can be removed from the bed for better patient access during the procedure.
  - A minimum of two Pump Star units should be located in the Operating Room. These units will be used to cycle the racks as they enter and leave the OR. If a stand is already located in an adjacent room that will be used with the OR, such as a pre-op area, that can count as the second stand.
4. Each stand has a laminate strip in the sides that can be used to quickly identify the unit. Each area may choose to have unique laminate colors or designs to keep the units positioned as intended.
5. The racks are initially distributed in the ICU. Each room has one rack along with any corresponding equipment.
6. Every bed should have a bracket installed. Follow bed bracket mounting instructions included with the bracket.

## DAILY OPERATIONS AND PROCEDURES

**NOTE:** This procedure is only a recommendation. This procedure has been tested and found to be the best solution for the development facility. Please study this recommendation and modify as necessary for facility procedures or requirements. Please remember that many old procedures are in place because equipment transport is a difficult thing to accomplish. Review all procedures to discover if any unnecessary steps can be removed.

1. For the first patient, a rack should be sent to the OR with equipment for that patient. Before and during the operation, pumps are filled and attached to the patient. Whenever the rack is attached to the stand, the pumps should be plugged in.
2. When it is time to send a bed to pick up the patient from the OR to return to the ICU, attach a new rack with equipment on it to the bed. The new rack will be left in the OR for the following patient.
3. When the bed and new rack arrive in the OR, the second OR stand is used to remove the rack and hold it for the next patient. The empty bed is sent into the OR and the patient and rack are transferred to the ICU bed.
4. When the patient arrives in the ICU, the rack is removed from the bed and stored on the stand in the room.
5. For transport situations, the rack is docked to the bed to be carried with the patient. If the location being visited does not have a Pump Star stand, the empty stand can be rolled to the location. Ideally, the location will have a stand nearby and the stand in the room would never leave.
6. As medications are no longer necessary, the pumps are disconnected from the patient. These pumps can either stay on the rack or be removed for use elsewhere or storage. Often, leaving the pumps in place makes turn-around faster and keeps the pump ready if medications are once again necessary.
7. When the patient leaves the ICU and transfers to another area, the pumps are disconnected from the patient or sent along according to facility policies. The rack is then cleaned and prepared for reuse.

## CARE AND MAINTENANCE

### Maintenance

- If the spring pin fails to lock the rack from rotation, the jam nut can be loosened allowing the spring pin to be extended for better engagement into the hole.
- Fuses are located below the top cover of the unit. Remove the handle or cover to expose the fuse holders and replace with 2.5 amp 3AG slow-blow fuses or equivalent, if necessary.
- For parts or repairs, contact your sales representative or Modular Services Company.

### Cleaning

- Clean the Pump Star with mild detergent and warm water or as directed in your facility cleaning policy. Cleaning after each patient is recommended.
- Avoid buildup of excessive moisture, especially behind the brushes inside the tower unit.
- Disinfect as required, according to location requirements.
- To remove difficult spots or stains, use standard household cleansers and a soft-bristled brush.

## WARRANTY

Modular Services Company warrants that all equipment assemblies shall be free from defects in material and workmanship for a period of 12 months from date of the owner's acceptance to the installing contractor or the date the equipment is put into service, whichever comes first. Warranty excludes electric lamps and/or any material not furnished by Modular Services. Warranty does not cover damage due to improper installation and/or abuse.

It is the responsibility of the customer to report any noted product deficiencies to Modular Services immediately upon discovery. It is the responsibility of Modular Services to expediently resolve the discrepancy. Any modification made to the product without the written authorization from Modular Services will void this warranty.

Also, in the event product modifications or repairs are made without the written consent of Modular Services, Modular Services shall not be held liable for any cost associated with the modification or repair.

**There are no warranties of fitness which extend beyond the description on the face hereof.**



**MODULAR**  
SERVICES COMPANY

500 E. Britton Rd. • Oklahoma City, OK 73114

Tel: 800.687.0938 • Fax: 405.528.0368

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

[info@modularservices.com](mailto:info@modularservices.com)