# Wrestling Mat Carrier System

## Model: 4095

**Installation, Operation and Maintenance Instructions**

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**Please read all instructions before attempting installation or operation of these units**

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**SAVE THESE INSTRUCTIONS FOR FUTURE USE**

**PUBLICATION NO.**
**8 0 1 7 5 3 9 4 5**

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# NOTICE TO INSTALLERS

This guide is intended to assist you with the installation and operation of the Model 4040 Wrestling Mat Carrier System. Jobsite conditions will be different for each project, and conditions may change during the project. Any suggestions or tips contained herein are for general information, and may not apply to your particular installation.

Please contact Performance Sports Systems for additional information if you are unsure how to proceed with the installation at any time, or if jobsite or building conditions change before or during this installation, thus affecting the correct installation of this curtain.

It is imperative to inspect all material being used in this installation BEFORE you begin. Confirm that materials and parts received correspond to those listed on the packing list and production drawings. If any materials or parts have been damaged during shipping or are missing as a result of shipping, you must file a freight claim with the delivering freight company. (Missing or damaged material must also be noted on the Bill of Lading at the time of delivery.)

If materials or parts are determined to be missing due to factory error or oversight, contact Performance Sports Systems immediately at 800-848-8034.

Follow all local safety codes and OSHA regulations. Performance Sports Systems will not be held liable, in any way, for improper installation or faulty workmanship at the jobsite.

## IMPORTANT NOTES:

**The correct operation of a Wrestling Mat Carrier System is dependent on the quality of the installation. It is imperative that all supporting structure is installed correctly.**

**It is the responsibility of the PSS Dealer/Installer to set the limit switches after electrical connections are made and make sure they are working correctly. It is also the responsibility of the Dealer/Installer to coordinate with the Electrical contractor to make sure the rotation of the hoist is correct and the proper limit switches are working for the direction being tested.** **Refer to page 7 for limit switch and rotation test procedure.**

This guide will provide information on the proper installation methods of the Wrestling Mat Carrier System. Please note that a Bill of Materials is provided on the installation drawings supplied with the product. Please check that all of the parts called out on the Bill of Materials are present prior to beginning assembly. Please do not substitute for factory parts. If any parts are missing, do not substitute non-factory parts. Please contact the Performance Sports Systems customer service department and allow them to determine if substitute parts are acceptable.

## Important Notice:

**Performance Sports Systems assumes no responsibility for the building structure to support our products. We believe it is the responsibility of the building designers to determine the correct structure size to support our products. We will provide your structural engineers with all required weight and loading information as required for the project in order for them to calculate the appropriate structure.**

## *Cautions and Warnings*

**⚠ CAUTION**

THIS DEVICE WEIGHS APPROXIMATELY 1660 LBS. USE EXTREME CARE WHEN MOVING AND LIFTING THE DEVICE INTO ITS FINAL POSITION. MAKE SURE ALL LIFTING DEVICES USED DURING THE INSTALLATION ARE RATED FOR AT LEAST 2000 LBS CAPACITY. MAKE SURE PERSONNEL REMAIN CLEAR OF AREA BELOW DEVICE DURING INSTALLATION.

**NOTICE**

THIS EQUIPMENT HAS BEEN MANUFACTURED TO OPERATE ON THE SPECIFIC VOLTAGE AND PHASE SPECIFIED FOR THE BUILDING WHERE IT WILL BE INSTALLED. IT HAS BEEN TESTED AT THE FACTORY FOR PROPER ROTATION AND LIMIT SWITCH OPERATION WHEN CONNECTED TO THE SPECIFIED VOLTAGE AND PHASE. WHEN THIS DEVICE IS INSTALLED AND OPERATED BY A 3 PHASE POWER SUPPLY, THE ROTATION AND LIMIT SWITCH TRAVEL MUST BE CHECKED AFTER INITIAL POWER CONNECTIONS. REFER TO THE ELECTRICAL SECTION OF THIS MANUAL FOR INSTRUCTIONS ON PROPER ROTATION AND LIMIT SWITCH OPERATION.

**⚠ WARNING**

LIMIT ACTUATOR ROD MUST MOVE TOWARD THE CORRECT LIMIT SWITCH DURING OPERATION. CHECK DRUM ROTATION ARROW AND MAKE SURE THE LIMIT ACTUATOR ROD IS MOVING TOWARD THE CORRECT LIMIT SWITCH. INCORRECT MOVEMENT OF ACTUATOR ROD COULD RESULT IN SEVERE DAMAGE TO EQUIPMENT AND/OR SERIOUS PERSONAL INJURY.

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## Parts List

| Item | Quantity | Part Number | Description |
|---|---|---|---|
| 1 | 1 | 805652159 | Mat Storage Hoist Assembly |
| 2 | 1 | See Note 1 | Load Bar |
| 3 | 1 | 155652162 | Load Bar Hardware Kit (See note 2) |
| 4 | 3 | 155704616 | Kit, Shipped Loose Hardware (See Ship Loose Parts List) |
| 5 | 3 | 4603-27-00 | 5/16” x 40’ Cable Assembly |
| 6 | See Note 3 | 4606-27-00 | Custom Vinyl Sling |
| 7 | 1 | 805652781 | Motorized Trolley, 230/460V, 2 Ton |
| 8 | 1 | 805652782 | Idler Trolley, 2 Ton Capacity |
| 9 | 50 Ft | 805652876 | Flat Festoon Cable, 4 Wire, 10 AWG |
| 10 | 50 Ft | 805652877 | Flat Festoon Cable, 8 Wire, 14 AWG |
| 11 | 1 | 805704157 | Kit, Festoon Support |
| 12 | 6 | 4115-05-10 | Festoon Track mounting Angle (1.5” x1.5” x.125” x 2’ L) |

Notes:

1. Part Number varies based on length of load bar and number of slings.
2. Load bar hardware kit NOT required or supplied for 20’ load bar assemblies.
3. Quantity varies based on order. Refer to packing slip for quantity received.

## Shipped Loose Hardware Parts List

| Item | Quantity | Part Number | Description |
|---|---|---|---|
| 13 | 2 | 1195-01-00 | Key Switch on Cover |
| 14 | 4 | 4831-11-00 | 2 ½” Beam Clamp |
| 15 | 6 | 502-12-10-40 | 3/4-10 x 2 ½” Hex Bolt |
| 16 | 12 | 502-5-18-16 | 5/16-18 x 1” Hex Bolt |
| 17 | 4 | 502-8-13-23 | ½-13 x 2” Hex Bolt |
| 18 | 12 | 5020-02-00 | Universal C- Clamp |
| 19 | 6 | 541-12-10 | ¾-10 Hex Nut |
| 20 | 12 | 548-5-18Z | 5/16-18 Serrated Flange Lock Nut |
| 21 | 4 | 548-8-13 | ½-13 Serrated Flange Lock Nut |
| 22 | 6 | 562-12Z | ¾” Split Lock Washer |
| 23 | 4 | 805704155 | Plate, Trolley Connection |
| 24 | 4 | 805704158 | Angle, Trolley Stop |
| 25 | 2 | 805704161 | Travel Limit Actuator Bracket |
| 26 | 4 | 805704617 | Spacer, 2” Motor Trolley Plate |
| 27 | 4 | 805704618 | Spacer, 2 ½” Idler Trolley Plate |

Notes:

1. Key switches NOT supplied when system is used with TSC2000 Controls.

## *Tools Required*

The following tools are needed to help you efficiently install the Model 4095Wrestling Mat Carrier System:

Hammer

3/8” Ratchet Wrench with 7/16” and 1/2” Sockets

1/2” Ratchet Wrench with 3/4”, 1-1/8” and 1-1/4” Sockets

Wrenches – 7/16”, 1/2”, 9/16”, 3/4”, 1-1/8” and 1-1/4”

#2 Phillips Screwdriver

Pliers

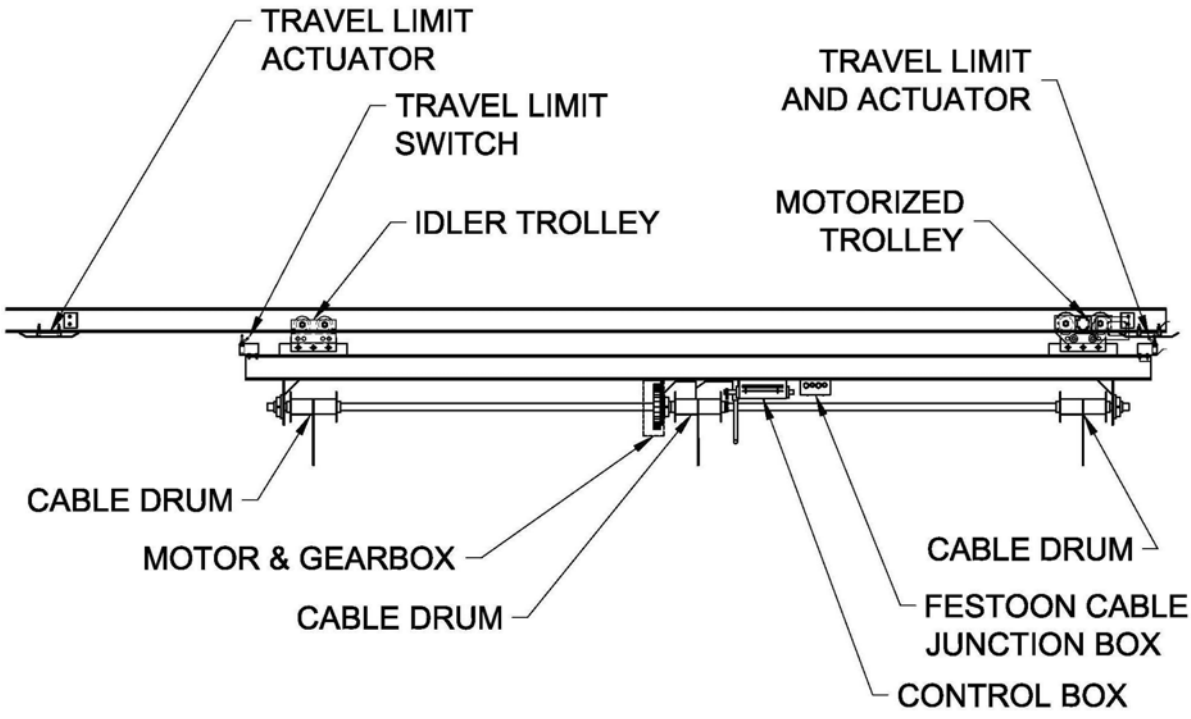
Vice Grips

Channel Locks are also suggested.

25’ Tape Measure

Cable Cutters

Lifting Rigging (Rated for minimum 2000 Lbs). Suggested methods are chain hoist or come-along. At least two are required, one near each end of the mat storage I-beam.



**IMPORTANT:**
**A minimum of three people is recommended to be available to assist with the installation.**

## *Installation Instructions for Model 4095 Wrestling Mat Carrier System*

**Important: Locate, identify and count all parts before starting the installation to ensure that all are correct and correspond to the packing list/production drawings. Also review production drawings to ensure that building conditions have not changed since the initial field check. Verify overall height and width noted on drawings.**

1. Unpack all parts. Remove packing material from the Mat Carrier Assembly and set load bar aside for later assembly.
2. Assemble the Idler Trolley (Item 8) as shown in Figure 1. Measure the I-Beam flange width to determine the trolley wheel spacing for the assembly. The 2 ½" Spacers (Item 27), two of the Trolley Connection Plates (Item 23), and the hardware supplied in the Idler Trolley box will be required for this assembly. Install four thin shims from the trolley hardware onto each of the 1" diameter shaft pins. Install a trolley connection plate on each side of the shims. Measure the gap between the two trolley connection plates. This gap should be between 0.504" and 0.510". Adjust shims if necessary to obtain the proper gap.
3. Add the 2 ½" spacers, one on each side of the shaft and then add thin shims to obtain the spacing for the trolley wheels. Spacing for the trolley wheels should be ¼" larger than the beam flange width measured. Make sure the trolley connection plates are centered between the trolley side plates and install the remaining shims and lock washers and nuts on the 1" diameter shaft pins.
4. Check to make sure the trolley rolls freely on the beam.

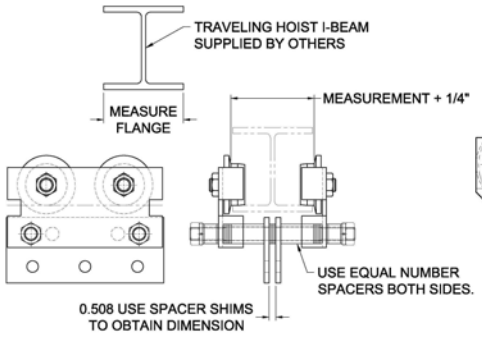



Figure 1

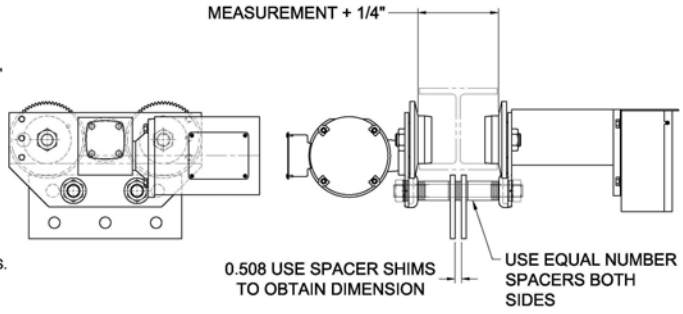



Figure 2

5. Assemble the Motorized Trolley (Item 7) as shown in Figure 2. Measure the I-Beam flange width to determine the trolley wheel spacing for the assembly. The 2" Spacers (Item 26), two of the Trolley Connection Plates (Item 23), and the hardware supplied in the Motorized Trolley box will be required for this assembly. Install four thin shims from the trolley hardware onto each of the 1" diameter shaft pins. Install a trolley connection plate on each side of the shims. Measure the gap between the two trolley connection plates. This gap should be between 0.504" and 0.510". Adjust shims if necessary to obtain the proper gap.

6. Add the 2” spacers, one on each side of the shaft and then add thin shims to obtain the spacing for the trolley wheels. Spacing for the trolley wheels should be ¼” larger than the beam flange width measured. Make sure the trolley connection plates are centered between the trolley side plates and install the remaining shims and lock washers and nuts on the 1” diameter shaft pins.
7. Check to make sure the trolley rolls freely on the beam.
8. Position the mat carrier assembly in the room centered under the beam and trolleys it will be connected to when installed.
9. Rig the Mat Storage Assembly for lifting into position.

IMPORTANT:

Make sure all rigging is secure and supported properly for the weight to be lifted. Make sure all personnel not involved with the lift are clear of the area around and under the Mat Carrier Assembly.

10. Raise the Mat Carrier Assembly into position just below the I-Beam and trolleys.
11. Continue raising the assembly until the connection plate on the mat carrier assembly is between the two trolley connection plates and the three mounting holes on the trolley connection plate and carrier mounting plate are aligned. Install three ¾” x 2 ½” hex bolts, lock washers, and nuts on each trolley and tighten securely.
12. Rigging used to lift the mat carrier system into place can now be safely removed.

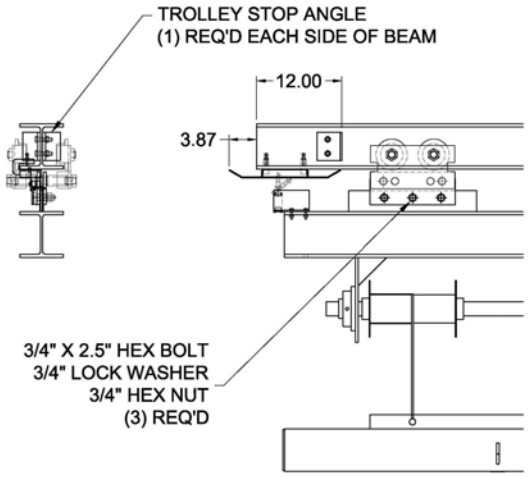



Figure 3

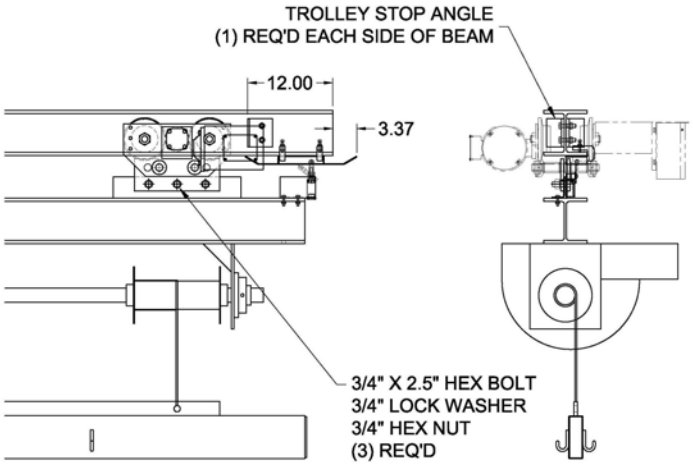



Figure 4

13. Install the trolley stop angles (Item 24) on each end of the travel beam as shown in Figures 3 and 4. Install one angle on each side of the I-beam web using the ½” x 2’ hex bolts and serrated flange lock nuts.
14. Install the travel limit switch actuator brackets (Item 25) on each end of the travel beam as shown in Figures 3 and 4. Use two of the 2 ½” beam clamps (Item 14) on each limit actuator bracket. Note: the limit brackets will be on opposite sides of the travel I-Beam when installed.
15. Install the travel limit switches on each end of the mat carrier beam assembly. Refer to figure 5. These switches are pre-wired and mounted on the attaching angle. Remove the 5/16” bolts from the carrier beam and attaché the limit switch mounting angle using the same holes and bolts. Tighten the bolts securely.

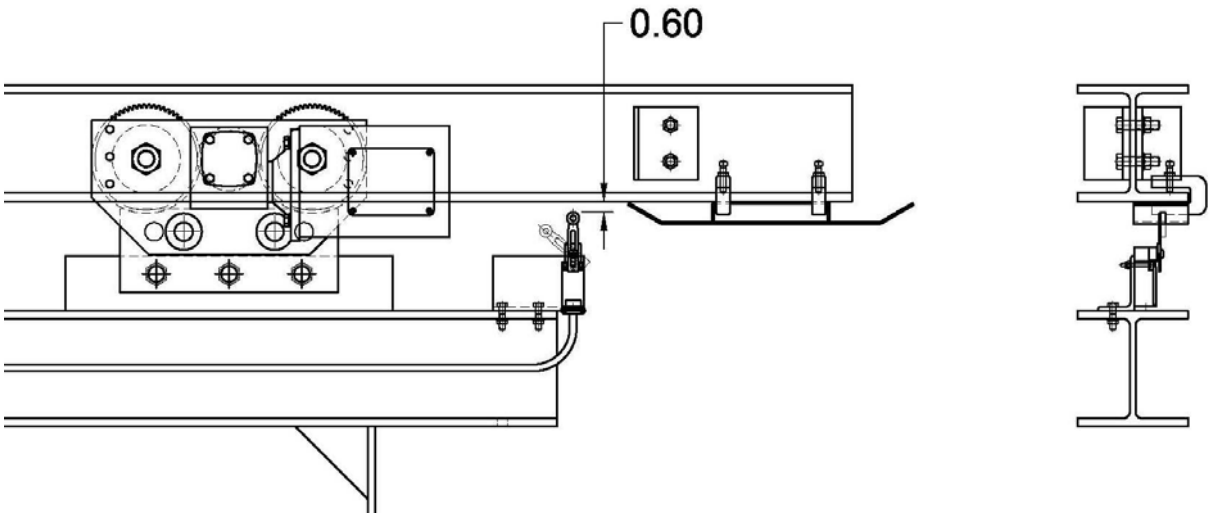


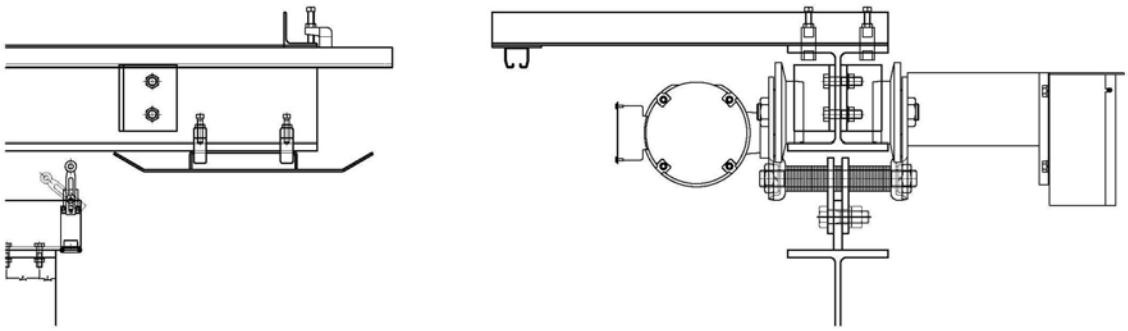

Figure 5

16. Adjust the roller arm on the limit switches to allow for 9/16” to 5/8” clearance between the roller and the travel I-Beam. Further adjustment may be required later; however, this dimension should work for most applications.

17. Connect the electrical plugs at the end of the mat carrier system to the plugs on the motorized Trolley control box.

    **Note: there is one 4 prong connector and one 3 prong connector. Refer to the electrical system wiring instructions for connecting the Motorized Trolley Control box wires to the Trolley Motor.**

18. Install the festoon track along the side of the travel I-Beam as shown in the following illustration.



19. Attach the 1 ½” x 1 ½” x 2’ long angles to the top of the I-Beam with the Universal C-Clamps (Item 18). Attach the festoon track mount to the angle with 5/16” x 1” hex bolts (Item 16) and 5/16” serrated flange lock nuts (Item 20).

    **Note: Due to variations in festoon track suppliers, the 2’ long angles are not pre-drilled for the festoon track mounting bracket. The installer will need to drill the angle to match the festoon track bracket.**

20. Follow the instructions supplied with the festoon support kit for mounting the festoon trolleys and cable.

The mat carrier is now ready for installation of the lift cables and load bar.

21. Position the load bar on the floor underneath the Mat Storage Assembly. When a 40' load bar is used, position the two load bar halves end to end with the connecting plates in the center. Bolt the two halves together using the ½" bolts nuts and lock washers supplied in the Load Bar Hardware Kit (Item 3). Tighten the bolts securely.
22. Attach the cable assemblies to the load bar as shown in the installation drawing supplied with the shipment.
23. Wrap the loose end of each cable over the cable drum. Make sure there is at least two full wraps on the drum before making the connection to the cable drum. Make sure the cables are wrapped in the up direction as shown on the cable drum label.

**⚠ WARNING**

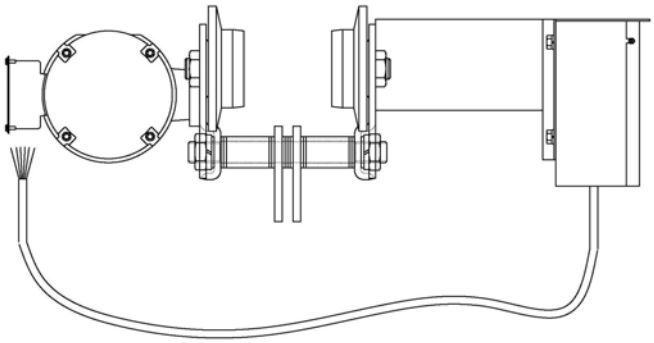
CABLES MUST BE WRAPPED ON THE DRUM FOR PROPER ROTATION. WRAPPING THE CABLES BACKWARDS ON THE DRUM WILL CAUSE THE SYSTEM TO OPERATE BACKWARDS AND THE LIMIT SWITCHES WILL NOT BE ACTIVE. THIS CONDITION CAN CAUSE SEVERE DAMAGE TO THE EQUIPMENT AND/OR SERIOUS INJURY TO PERSONNEL.

24. Run the loose end of the cable through the cable clamp on the side of the cable drum and secure the cable clamp. Trim any excess cable with cable cutter.

The Mat Storage System is now ready for electrical connections.

## ***Electrical System and Wiring Instructions***

1. Connect wiring between the Motorized Trolley Control Box and the Motorized Trolley Motor. Connect the wires as shown in Figure 6.



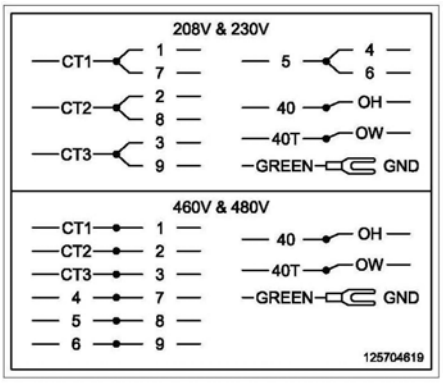



Figure 6

2. Power Supply

   The Mat Storage System is capable of operating on the following power supply voltages:

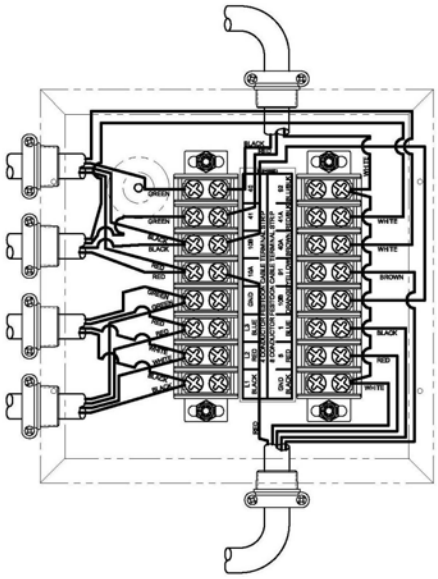
   208 VAC 3 Phase
   220 VAC 3 Phase
   480 VAC 3 Phase
   The system is configured at the factory for the specific building power supply circuit provided at time of order.

   The power supply configuration is located on the cover plate of the control box.

   **Important:**

   **Check the label on the control box and verify the voltage and phase is correct for the building power supply. If voltage and phase does not match building power supply, contact the Factory before proceeding with the electrical connections.**

3. Refer to the general electrical schematic on page 12 or 13 for system electrical configuration. The Mat Storage System is supplied with 50' of 4 wire flat festoon cable and 50' of 8 wire flat festoon cable. The 4 wire festoon is used for the power supply.
4. When local electric codes require a fused disconnect (Supplied by others), make connections of one end of the 4 wire festoon directly in the fused disconnect box. Make connections of the other end in the festoon junction box located on the mat carrier assembly. Refer to figure 7 for festoon junction box connections.
5. Use the 8 wire festoon cable for switch wire connections. Make connections in the festoon junction box as shown in figure 7. Refer to figure 8 for key switch festoon connection.



| 4 Wire Festoon Cable | |
|---|---|
| Festoon Wire | Terminal Connection |
| Black | L1 Black |
| Red | L2 Red |
| Blue | L3 Blue |
| Orange | GND |

| 8 Wire Festoon Cable | |
|---|---|
| Festoon Wire | Terminal Connection |
| Black | GND BLACK |
| Red | 6 RED |
| Blue | 1 BLUE |
| Orange | 10B ORANGE |
| Yellow | 91 YELLOW |
| Brown | 40A BROWN |
| Red W/Black Stripe | 41A RED/BLK |
| Blue W/Black Stripe | NOT USED |

Figure 7

| 8 Wire Festoon Cable | |
|---|---|
| Festoon Wire | Connection |
| Black | Ground |
| Red | Lift/Lower Switch Up |
| Blue | Lift Lower Switch Down |
| Orange | Lift Lower Switch Common |
| Yellow | Travel Switch Common |
| Brown | Travel Switch Right |
| Red W/Black Stripe | Travel Switch Left |
| Blue W/Black Stripe | NOT USED |

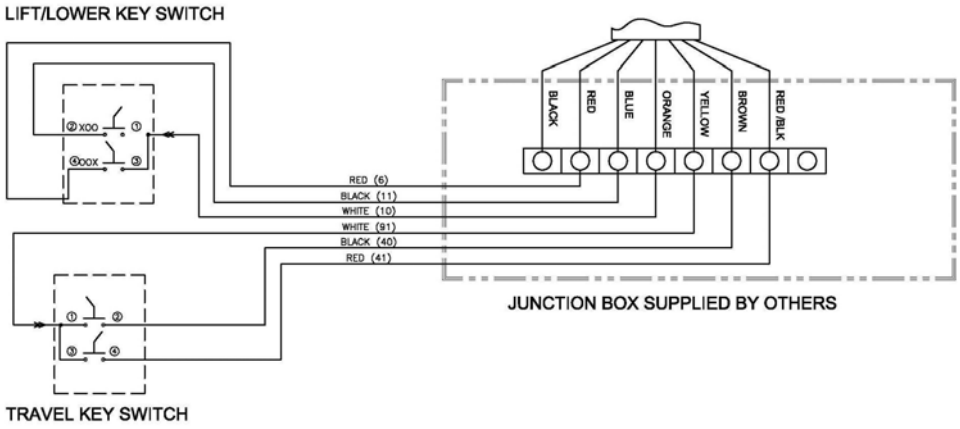



Figure 8

Once all electrical connections are completed and power is turned on to the unit, certain operational checks should be made. These checks include motor rotation, travel operation, travel limit switch operation, and lift/lower limit switch setting and operation.

6. Test the system for rotation and limit switch rod movement.

**Important:**

**When making connections to a 3 Ø circuit, it is critical to check motor rotation. Refer to the rotation and limit switch test procedure on page 6 for proper method to check rotation and limit switch operation.**

## ***Limit Switch Information and Operation***

a. Limit Switch Information

The Mat Carrier System is equipped with three limit switches in the lift/lower mode of operation. Two of the limit switches are used to control the normal up and down stop positions of the load bar. The third limit is a safety override for up travel. The safety override switch is activated by a T-bar in the event the normal up switch fails.

**⚠ WARNING**

THE SAFETY OVERRIDE LIMIT SWITCH SHOULD NEVER BE USED AS THE PRIMARY UP LIMIT SWITCH. ALWAYS MAKE SURE THE NORMAL UP LIMIT SWITCH IS SET TO ACTIVATE BETWEEN 4 AND 6 INCHES BEFORE THE LOAD BAR CONTACTS THE T-BAR. USING THE SAFETY OVERRIDE LIMIT AS THE PRIMARY UP STOP LIMIT COULD RESULT IN DAMAGE TO EQUIPMENT AND\OR SERIOUS INJURY TO PERSONNEL.

b. Limit Switch Operation

**Note:**

**It is the responsibility Dealer/Installer to coordinate with the Electrical Contractor to insure the drum rotation is correct and the Limit Switch Actuator Rod is moving toward the correct limit switch after initial power connections are made. It is the responsibility of the Dealer/Installer to set the limit switches for proper up and down settings and to verify the limit switch rod is moving toward the correct limit.**

**Refer to the rotation label on the cable drum and the limit switch rod label on the control box for proper rod movement during operation.**

### Rotation and Limit Switch Test Procedure

After electrical connections have been made, the rotation and limit switches should be tested as follows:

a. Turn the key switch to the “up” position (key rotated clockwise) and check the rotation of the drum. The drum should be rotating in the direction of the up arrows on each drum. If the drum is not rotating in the up direction, turn the key switch to the down position. The drum should now be rotating up.

b. With the drum rotating in the up direction, push up on the T-bar safety limit actuator. The safety limit should turn off the motor.

c. When the key switch is in the “up” position and the drum rotates toward the up arrow and the T-bar limit switch shuts off the motor when activated, proceed to the section on setting limit switches. If the drum does not rotate toward the up arrow or the T-bar limit actuator does not shut off the motor, go to the troubleshooting procedures on page 9 to determine the proper corrective action.

**DO NOT Proceed to setting limit switches if the motor rotation is not correct or if the T-bar limit actuator does not turn of the motor when the drum is rotating toward the up arrow.**

After the rotation and limit switch test has been completed and proper rotation and limit switch operation has been confirmed, the limit switches should be adjusted as follows:

a. Using the key switch, raise the load bar to 36" – 48" off the floor. At the control box, use a Phillips Screwdriver to loosen the Down Limit Switch screws and slide the limit switch in the slots until the switch bar contacts the activation rod and you hear the limit switch click. Tighten the limit switch screws

b. Again using the key switch, raise the load bar about 2 feet then lower the load bar until the limit switch activates to verify the down setting is correct.

c. Raise the load bar until it is 4"- 6" below the T-Bar safety switch actuator. At the control box, use a Phillips Screwdriver to loosen the Up Limit Switch screws and slide the limit switch in the slots until the switch bar contacts the activation rod and you hear the limit switch click. Tighten the limit switch screws

d. Again using the key switch, lower the load bar about 2 feet then raise the load bar until the up limit switch activates to verify the "Up" setting is correct. If the load bar contacts the T-bar before the Up limit switch activates, adjust the Up limit switch setting to contact before the load bar hits the T-bar. Tighten the limit switch screws.

The limits are now set and the unit is now ready for normal operation.

## ***Mat Carrier System Operation***

1. Before operating the mat carrier system, make sure all personnel are clear from the area underneath the hoist and travel beam. Only qualified and authorized personnel should operate the mat carrier system
2. When loading mats onto the sling and load bar of the mat carrier system, make sure each of the sling straps are securely connected to the "J" hooks on the load bar. Refer to the sling loading information decal on the load bar and make sure the sling straps are positioned correctly as indicated on the decal.

   **Important**

   **The system is designed to only raise or lower the mats when the carrier hoist is at the full end of travel (either in or out). The hoist will not raise or lower when the mat carrier hoist is in the middle of the travel (or when not contacting either end travel limit switch). The mat carrier system will not travel unless the mat carrier hoist is in the full up position and contacting the up limit switch of the hoist.**
3. To operate the travel portion of the mat carrier system, make sure the hoist is raised to the full end (either in or out) position on the travel I-Beam by using the travel key switch (or TSC travel control). Use the raise/lower key switch (or TSC raise/lower control) to lift or lower the mat hoist load bar and mats.
4. To operate the hoist portion of the mat carrier system, make sure the carrier is moved to the full up position by using the raise/lower key switch (or TSC raise/lower control). Use the travel key switch (or TSC travel control) to move the mat carrier system in or out on the travel I-Beam.
5. When done, make sure to remove both keys from the key switches (or log off the TSC control) to prevent unauthorized use of the system.

# ***Troubleshooting Guide***

### 3 Phase Power Troubleshooting Chart

| Problem | Corrective Action |
|---|---|
| Key switch in the up position. Motor rotates down. Limit bar travelling toward down limit. T-bar safety switch stops motor when activated. | Change two legs of power either at the breaker panel or by reversing the black (L1) and red (L2) wire locations in the festoon junction box. |
| Key switch in the up position. Motor rotates down. Limit bar travelling toward down limit. T-bar safety switch DOES NOT stop motor when activated. | In the festoon junction box, reverse the red and black wires connected to the "6 RED" and "1 BLUE" terminals on the 8 wire festoon terminal strip. |
| Key switch in the up position. Motor rotates up. Limit bar travelling toward up limit. T-bar safety switch DOES NOT stop motor when activated. | Reverse the "X" and "Y" wire positions in the switch cord receptacle. Then reverse wires 1T1 and 1T3 in the lift motor junction box. |

### Single Phase Power Troubleshooting Chart

| Problem | Corrective Action |
|---|---|
| Key switch in the up position. Motor rotates down. Limit bar travelling toward down limit. T-bar safety switch DOES NOT stop motor when activated. | In the festoon junction box, reverse the red and black wires connected to the "6 RED" and "1 BLUE" terminals on the 8 wire festoon terminal strip. |

### Troubleshooting Chart All Voltages and All Phases

| Problem | Corrective Action |
|---|---|
| Brake chatters when mat hoist is operated. | Caused by low voltage to the mat hoist control box.<br>208 V System – Minimum Voltage is 197 V<br>220 V System – Minimum Voltage is 207 V<br>480 V System – Minimum Voltage is 456 V<br>Voltage is measured at the hoist motor. |

If any conditions other than those shown in the above tables occur, contact the factory for assistance. 800-848-8034

# ***Troubleshooting Guide***

**Travel Troubleshooting Chart**

| Problem | Corrective Action |
|---|---|
| Hoist will raise and lower, but carrier system will not travel when hoist is in the full up position. (See Note 1 below) | In the lift/lower control box, reverse the circuits on the up limit switch. Refer to figure 9 below. Move wire A to terminal 2 and wire C to terminal 1. Move wire B to terminal 6 and wire C to terminal 3. See note 2. |
| Hoist will not raise or lower when the carrier is at the full end of the travel. | Check the travel limit switch roller arm and adjust the arm to make sure the switch is activated when the roller arm in on the travel limit actuator plate. |

Notes:

1. The DPST limit switch in the lift/lower control box makes contact on one circuit slightly faster than the second circuit. Because of this phenomenon, it is important to make sure the travel circuit is connected to the side of the switch that makes contact before the lift/lower circuit makes contact.
2. When changing the circuit positions on the DPST limit switch, make sure the lift/lower circuit is connected as normally closed (NC) and the travel circuit is connected as normally open (NO).

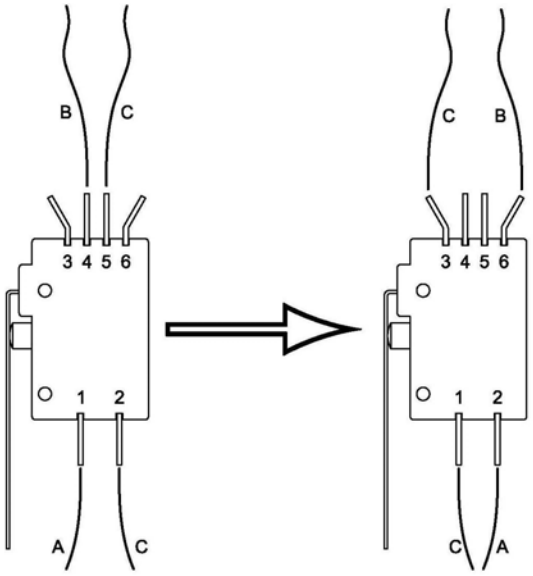
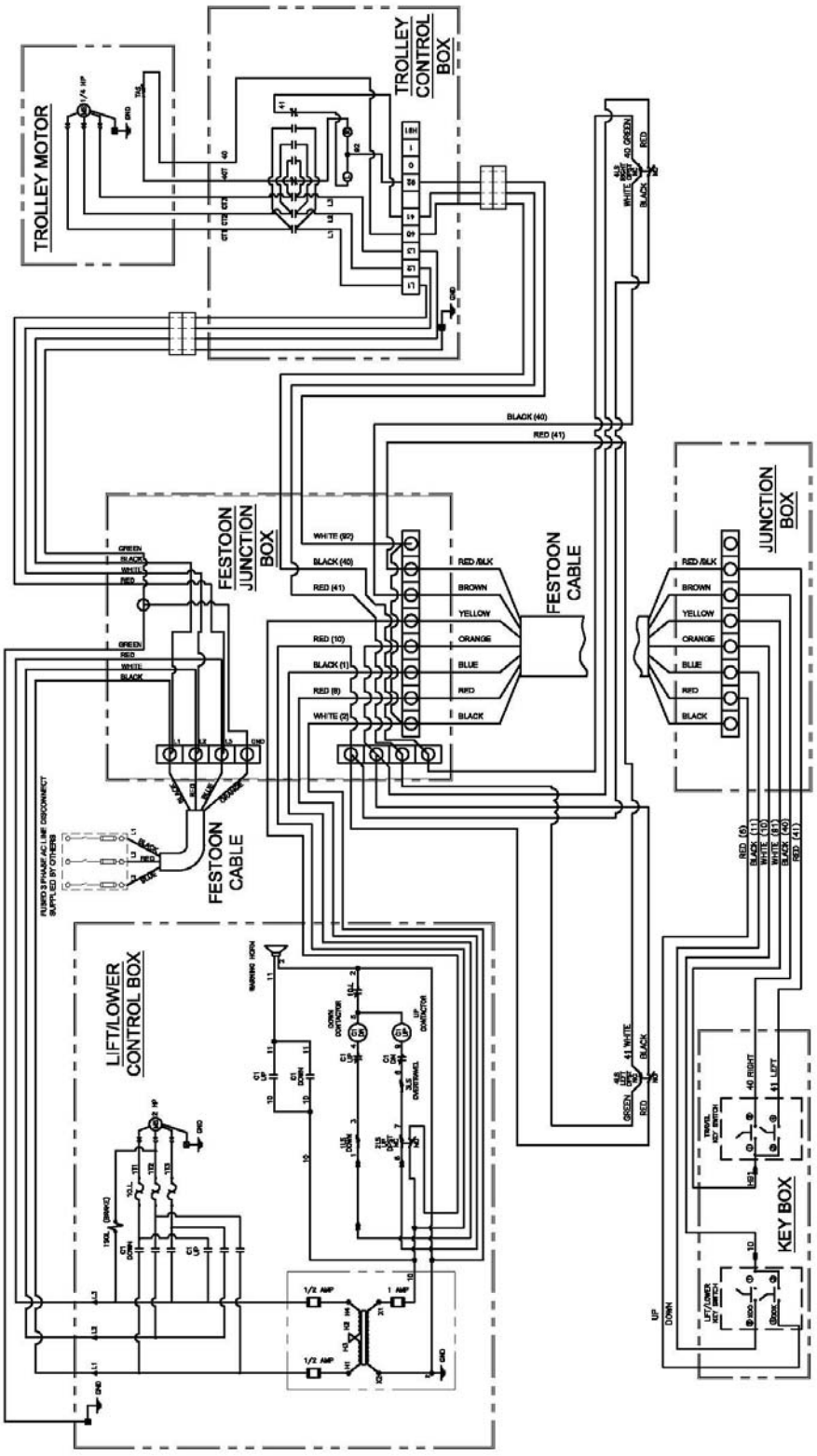
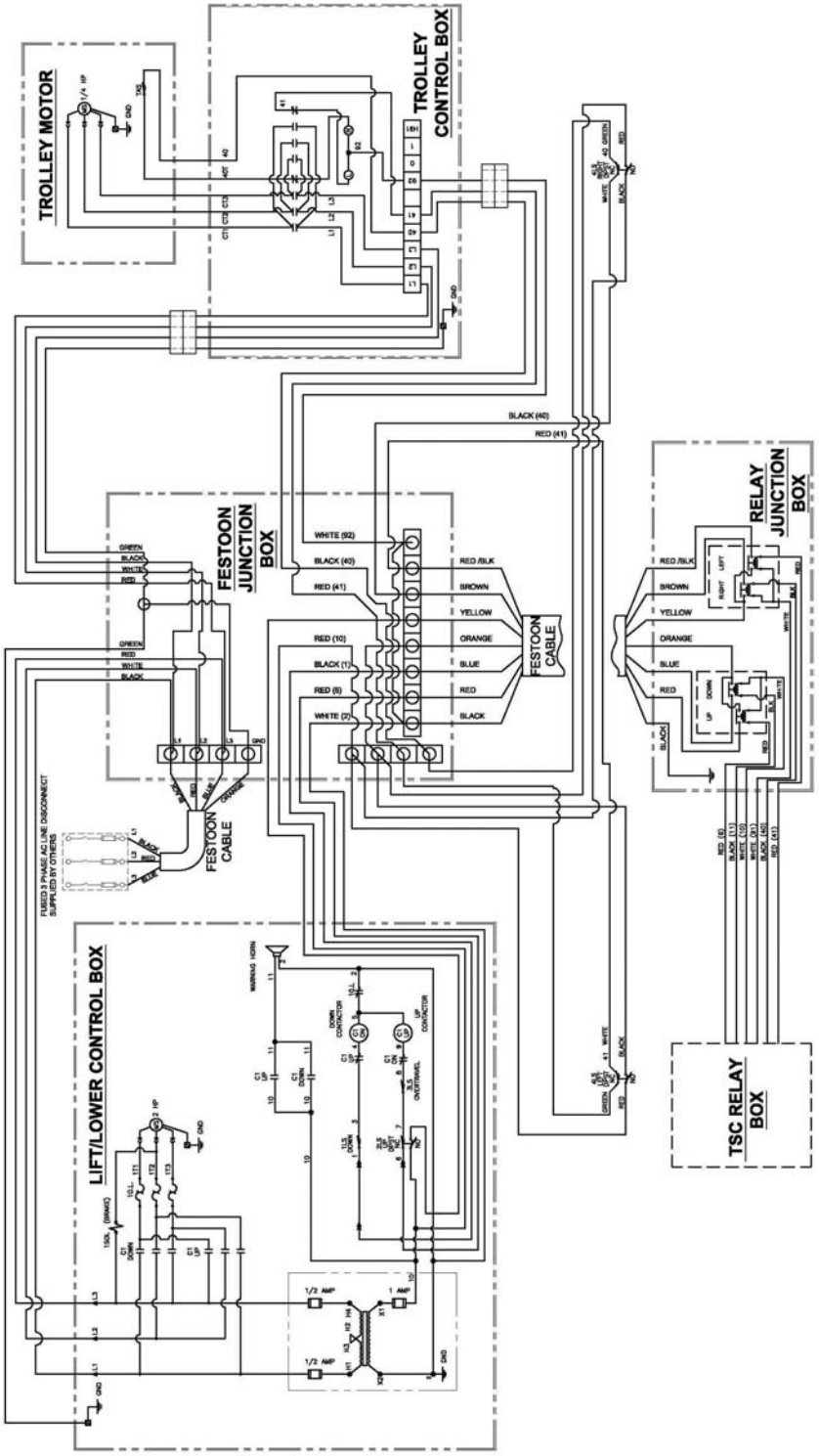



Figure 9




Electrical Diagram for Key Switch Operation




Electrical Diagram for TSC1000 Operation



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