

Glide Switches 200 Series

These instructions are for 200 Series Glide Switches, as used with TC/American Crane 200 Series Patented Track rail. See the Index to locate the appropriate pages for the model of switch being used.

DANGER

Lifting Operations

Installation of equipment such as TC/American Crane's Switches requires performance of overhead lifting operations. Proper lifting procedures involve training, skills and experience beyond the scope of this document. Workplace supervisors are responsible to assure that all persons under their supervision are properly trained, properly equipped, and are following safety practices appropriate for the lifting operation being employed.

DANGER

Overhead Mechanical Assembly

Persons performing installation and assembly of overhead equipment must use caution while lifting, assembling and adjusting components. These operations are frequently conducted from manlifts or platforms that require specific knowledge, training and operation skills beyond the scope of this document.

Access to the floor below the work area must be restricted to reduce the potential of personnel injury due to falling objects.

Workplace supervisors are responsible to assure that all persons under their supervision are properly trained, properly equipped, and are following appropriate safety practices.

DANGER

Electrical Equipment Installation, Service and Maintenance

Persons performing installation, service or maintenance activities on, near, or with equipment that is electrically powered are exposed to electrical hazards that could result in serious injury or death if proper precautions are not followed. Before performing such work, disconnect the electrical power source for the system at the disconnect device and lock it out, following appropriate Lockout/Tagout (LOTO) procedures, to prevent electric power from being applied while work is being performed.

All persons must use safe work practices appropriate to the electrical system, and follow all workplace procedures and policies. This requires specific knowledge, equipment and training beyond the scope of this document. Workplace supervisors are responsible to assure that all persons under their supervision are properly trained, properly equipped, and are following appropriate safety practices.

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Switches

TC/American Crane offers several models of switches, for all sizes of our rail. Selection of the appropriate model depends upon the layout of the monorail, the load to be carried, powered travel or hand pushed, service duty class, and other factors.

Switch Model Numbers:

(general information for all switches)

- The first character(s) of the Model Number identifies the rail size used with this switch:
 - 2 = 200 Series Rail
 - 3 = 325 Series Rail
 - 4 = 400 Series Rail
 - 45 = 450 Series Rail
- The second character(s):
 - S = Switch, non-electrified (without conductor bars)
 - ES = Switch, electrified (with conductor bars)
- The intermediate numbers identify a model series, i.e.:
 - 260 = 200 Series, 2-way glide switch
 - 693 = 600 Series, 2-way glide switch
 - 833 = 800 Series, 3-way glide switch
 - 2710 = 2000 Series, Wye glide switch
 - Etc.
- The next number, or number and letters, may identify the switch as follows:
 - L = Left Hand configuration (or sometimes "LH")
 - R = Right Hand configuration (or sometimes "RH")
 - Y = Wye configuration
 - H = "H" Series rail (in 800 and 2000 Series Switches, 3-way and wye configurations)
 - LH = "H" Series rail (in 800 and 2000 Series Switches, 2-way configurations, left hand)
 - RH = "H" Series rail (in 800 and 2000 Series Switches, 2-way configurations, right hand)
 - 12 = 12" (for 2000 Series only)
 - 12H = 12" deep, "H" Series rail (for 2000 Series only)
 - 14H = 14" deep, "H" Series rail (for 2000 Series only)
 - Etc.

NOTE: See the appropriate section(s) of these instructions for assembly, installation and maintenance details specific to your Switch model.

NOTE: For a specific parts breakdown of the Switch provided with an order, see the drawings provided with that shipment and the Switch Section of TC/American Crane Systems Catalog.

General Installation Instructions

Before beginning the installation:

- When shipment is received, remove all shipping materials and visually inspect all parts for damage. Repair and/or replace if necessary.
- Check packing lists against materials received and identify all parts.
- Gather all TC/American Crane drawings, plus any vendor equipment drawings, and keep in a secure location for reference during installation and start-up, and to give to end user for future reference.
- Store all equipment in a clean, secure area prior to final assembly.

Installing Switches in a Monorail System:

- Check layout drawings for any notes.
- TC/American Crane Glide Switches are shipped fully assembled and ready to install.
- Begin a monorail installation at one switch location and work out from there, adding straight rails and curves sequentially.
- Refer to *Suspension* section of this document for notes about primary and auxiliary suspension methods. See caution about setting the rail gap at outgoing rail hangers when substituting hanger rods for the flat head cap screws used during factory switch assembly. Use care when installing and leveling switches so that switches are uniformly and equally suspended, with no twisting of the top plate or slide channels of the switch.
- Switches must be installed in alignment with the planned monorail layout. Adjust switch suspension so the straight rail of the inner frame (or the centerline of a Wye switch) is aligned with the centerline of the incoming and/or outgoing straight rails.
- If there is more than one switch in a system, add the second and additional switches as the installation progresses. Do not install all switches and then try to force rails into place between them.
- Install all switches, curves and rails snug until all is in place. Then shift and adjust as necessary to assure that straight rails enter and exit the switch straight, and that curves are properly formed and flow smoothly from the switch (verify that rail hangers are properly in line). See *Treadline and Rail Alignment Adjustment Notes* section of this document.
- Make any adjustments for switch rail height, switch throw and tread alignment. See *Switch Adjustments* section of this document.
- Make any final switch leveling adjustments (adjust nuts on threaded rods, or use shims at bolted connections). Use care when installing and leveling switches so that switches are uniformly and equally suspended, with no twisting of the top plate or slide channels of the switch.
- Tighten all suspension components.
- Rod suspended switches must be rigidly sway braced for stability. Sway brace materials are by others.

Initial Start-Up:

- After lubrication, operate all switches several times through full switch throw in all directions.
- Verify proper latching at each outgoing rail or curve location.
- Run trolleys through the switches to check clearances and smooth transition.
- Verify that safety stops on the switch properly contact the trolley to prevent it from falling off when the switch rail is not aligned to an outgoing rail.
- NOTE: These switches are not designed to be thrown (moving portion of the switch repositioned) with a load on the rail of the inner frame.

Terminology Notes

The following instructions use these unique terms:

- “Outer Frame” - describes the portion of the switch that is suspended from the building, and is the “fixed” or “non-moving” portion of the switch.
- “Inner Frame” - describes the portion of the switch with straight and curved rail segments that slide from side to side.
- “Right Hand” or “Left Hand” references are based upon looking at the switch from the incoming rail side (single rail leading to the switch).

200 Series Glide Switches

Non-Electrified

2S-293L	2-way, LH	Figure 1
2S-293R	2-way, RH	Not Shown
2S-294	3-way	Not Shown
2S-295	Wye	Not Shown

Electrified

2ES-296-LT	2-way, LH	Not Shown
2ES-296-RT	2-way, RH	Not Shown
2ES-297-T	3-way	Figure 2
2ES-298-T	Wye	Figure 3

Figure 1: typical non-electrified 2-Way Glide Switch.

Switches may be provided with either Shielded Channel-Bar or Shielded Figure-8 Bar electrical conductors.

Figure 2: electrified 3-Way Glide Switch with Shielded Channel-Bar electrical conductors factory mounted and wired.

Figure 3: electrified Wye Glide Switch.

Non-electrified vs. electrified switches:

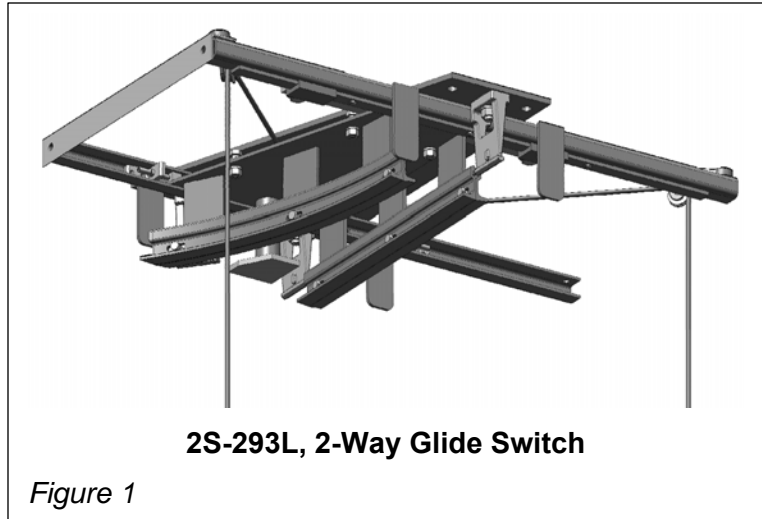
General construction, installation, operation and adjustment are the same for both types of switches.

But, some parts and dimensions of electrified switches are not the same as non-electrified switches, and electrified switches are made with a deeper rail section (to allow for installation of electrical conductor bar at 7" gage).

See the TC/American Crane Systems Catalog and drawings provided with the shipment for more detail.

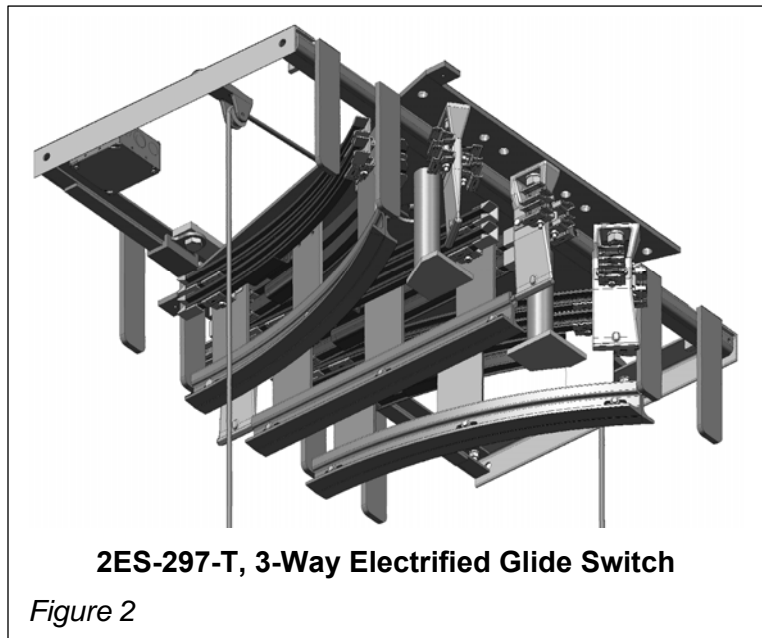
Conductor bars: are factory wired back to a junction box mounted on the frame of the switch. Building power must be provided to each switch and field connected at the junction box. Building power must be separately provided to incoming and outgoing runs of electrified straight and curved rails.

For installation of electrical conductor bar systems, see the TC/American Crane *Shielded Channel-Bar Electrical Conductor Installation Instructions* or *Shielded Figure-8 Electrical Conductor Installation Instructions*.



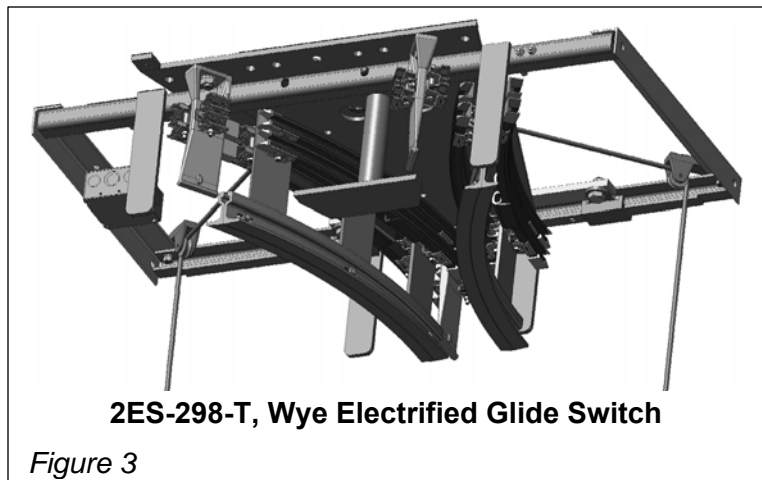
2S-293L, 2-Way Glide Switch

Figure 1



2ES-297-T, 3-Way Electrified Glide Switch

Figure 2



2ES-298-T, Wye Electrified Glide Switch

Figure 3

Suspension

Suspension Methods

- A. Primary:** use 5/8" hanger rods or bolts at each of the switch hangers (on Wye switches, also at the center countersunk hole in the top plate on the outgoing rail side).
- B. Auxiliary (Optional):** use 5/8" hanger rods or bolts at the auxiliary mounting holes.

Figure 4: shows Primary and Auxiliary switch mounting holes in the top plate of 2-Way switches.

Figure 5: shows Primary and Auxiliary switch mounting holes in the top plate of Wye and 3-Way switches.

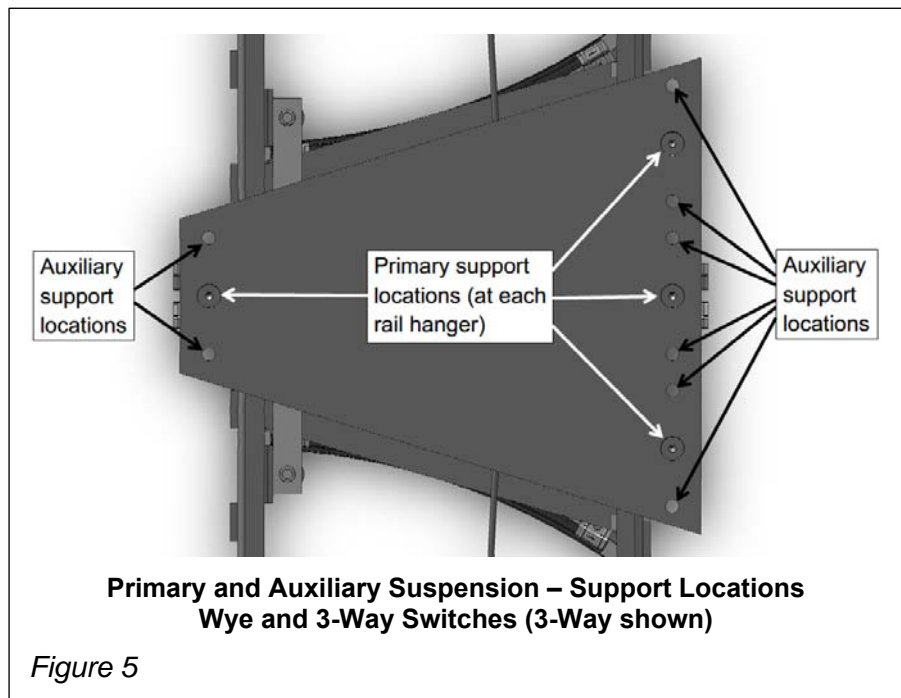
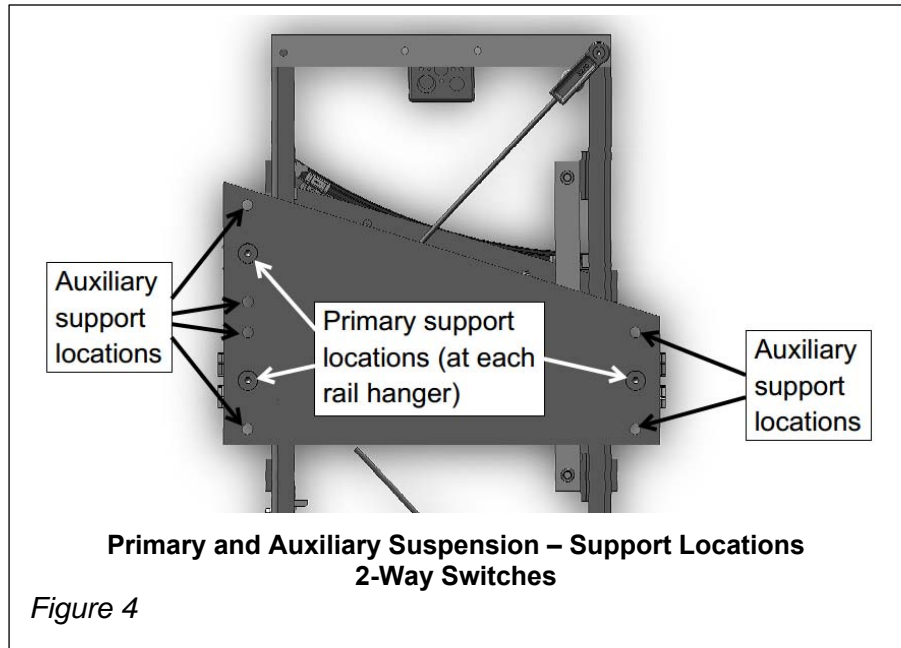
Leveling, All Switches: allow space above switch for leveling via threaded hanger rods, or by shims if bolted connection.

Switch Rail Gap: see information and Figure 6 for checking switch rail gap when replacing switch hanger hardware with hanger rods or bolts.

Switch Bracing: rod suspended switches must be sway braced, laterally and longitudinally. Sway brace materials are by others.

Attach bracing to switch at auxiliary support holes.

See Suspension section of TC/American Crane systems catalog for pipe brace fittings and clamps, or fabricate brackets locally.



Replacing Switch Hanger Hardware with 5/8" Hanger Rods or Bolts

Figure 6: typical rail hanger with hardware. Remove hardware when substituting hanger rods or bolts at these locations. Place large flat washer (by others) over countersunk hole in switch top plate.

Note: suspension hanger rods and hardware or bolts are by others.

See rail gap adjustment note below.

Rail Gap Note: factory hardware at a rail hanger is 5/8" diameter, flat head socket cap screw. The machined mounting hole in the head of the rail hanger is 13/16" diameter.

The oversized hole in the rail hanger allows it to be positioned as required to adjust the rail gap. The rail hanger is factory located to hold an approximate maximum 3/16" rail gap.

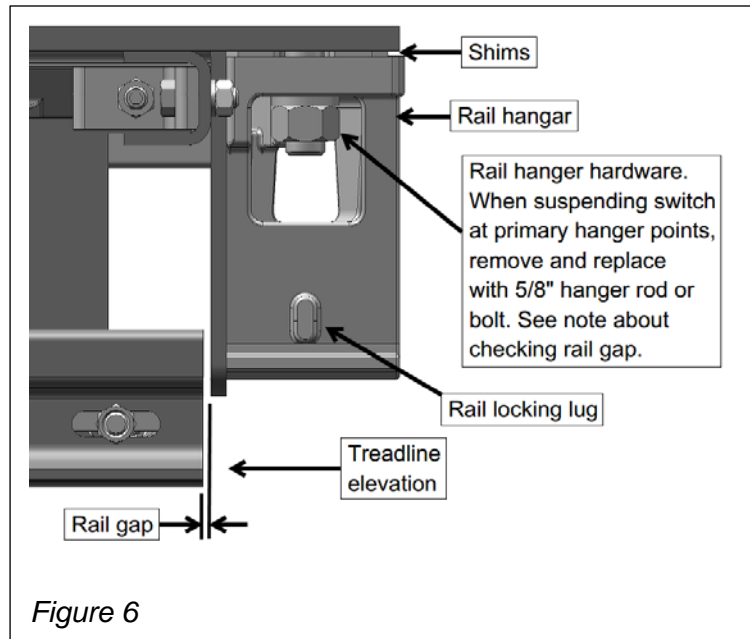


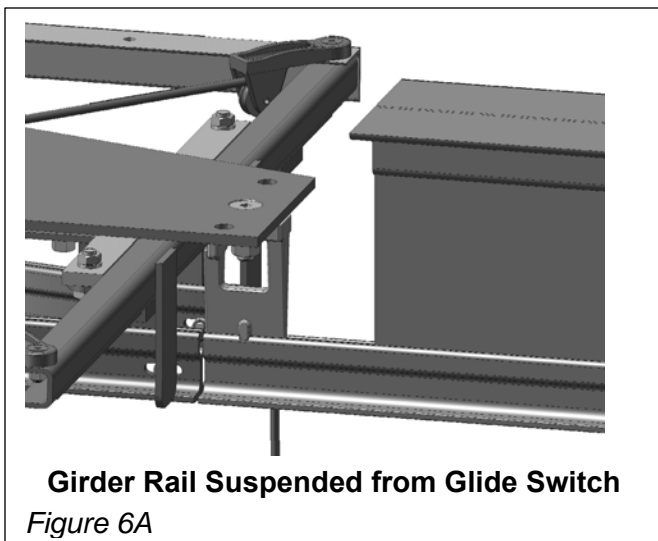
Figure 6

When replacing the rail hanger cap screw with a hanger rod or bolt, take care to position the hanger so as to not have an excessive rail gap (minor adjustment is made via the oversized hole in rail hanger as compared to cap screw or hanger rod diameter).

Switch Guide Adjustment: see Figures 16, 17 and 18. The rail gap may also be adjusted with the eccentric adjusting bolt as described in the text for these figures.

Rail Locking Lug: see Figures 6 and 11, and text on page 15; locates and holds the end of the incoming and outgoing rails relative to the hanger. Therefore, repositioning the rail hanger causes the rail gap to increase or decrease.

Girder Rail Suspended from Glide Switch: see Figure 6A, Girder Rail with "switch connection" end prep. Locking Notch in the rail engaged to Locking Lug on the switch rail hanger. Web and Top Flange of Girder Rail begins 6 1/4" back from end of rail. Support girder rail within 18" from end of rail...see Figure 6B.



Girder Rail Suspended from Glide Switch

Figure 6A

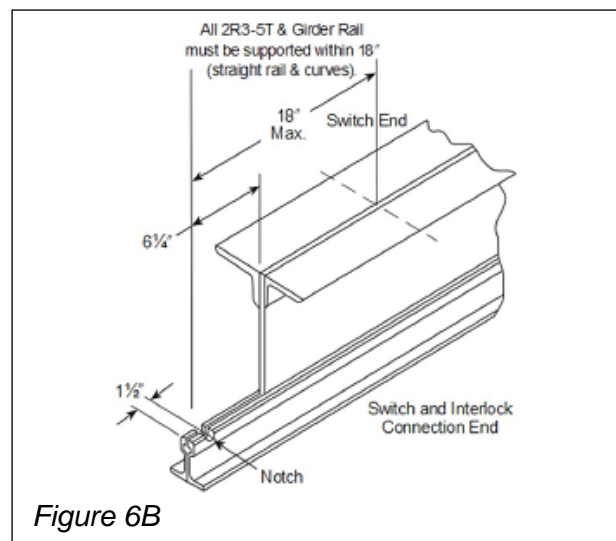


Figure 6B

Switch Latching and Operating Mechanisms

2-Way and Wye Glide Switch and Latch Operation

(ref: Figures 7 and 8)

Operation: 2-Way and Wye Glide Switches are operated by pulling on one of the two 5/16" diameter yellow poly ropes connected to the switch latch mechanism. Each rope is approximately 12' long and is routed from the latch through a sheave mounted on arms extended to each side of the switch (see Figures 1 and 3). Pulling a rope disengages the latch mechanism and sequentially pulls the inner frame right or left to reposition the alignment of the inner frame rail to the outgoing rail.

Rope length may be adjusted as needed to meet the height and layout of the monorail system (by others, unless special ordered). Additional sheaves may be furnished locally to route the ropes as required.

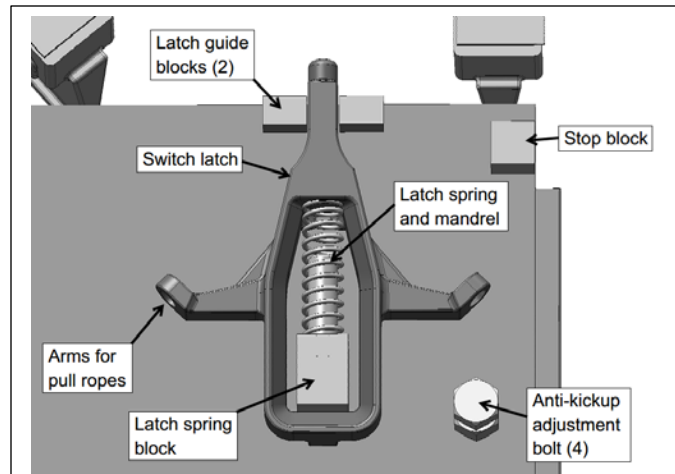
Since the inner frame (moving portion) of these switches slides on a mating surface in the slide channels, be sure all surfaces are smooth and clean. Lubricate as needed. A firm pull pressure on the rope is required to reposition the inner frame of the switch.

- A. Operation from Straight to LH Curve: pull the rope on the right hand side of the switch (direction to which you want the inner frame to move so the curved rail will move into position with the incoming rail). Pulling the rope slides the latch backwards, toward the incoming rail side of the switch, disengaging the latch nose from the alignment hole in the slide channel.

Continued pull on the rope slides the inner frame in the direction of pull until the stop block contacts a set screw at the end of the channel slide (see Figure 14). Releasing pressure on the rope allows the latch spring to push the nose of the latch into the alignment hole at that point of the switch. This locks the switch into alignment with the outgoing curved rail. Switch movement to the Left Hand position is complete and normal monorail use may proceed.

- B. Operation from Straight to RH Curve: similar as described in "A" above.
C. Operation from RH Curve or LH Curve to Straight: opposite of "A" and "B" above.

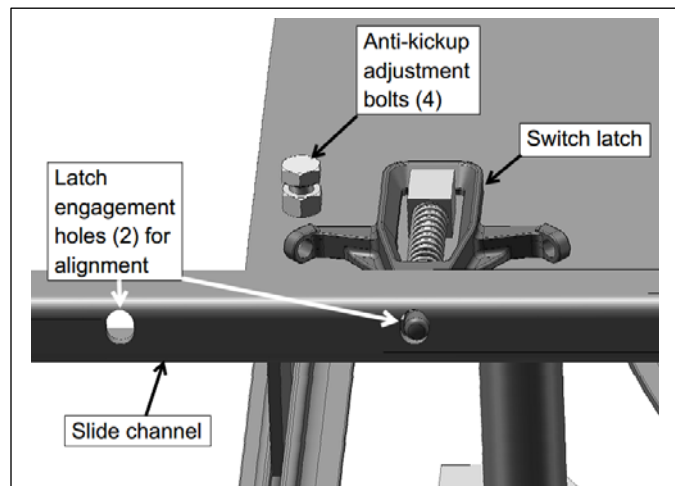
Moving Switch with a Load on the Inner Frame: These switches are not designed to be thrown (moving portion of the switch repositioned) with a load on the rail of the inner frame.



Left Hand Switch

(top plate of outer frame and pull ropes removed for clarity)

Figure 7



LH Switch, end view of channel slide
(rail hangers removed for clarity)

Figure 8

3-Way Switch and Latch Operation

(ref: Figure 9, switch aligned in center position)

Operation: 3-way switches are operated by pulling on one of the two 5/16" diameter yellow poly ropes connected to the latch mechanism. Each rope is approximately 12' long and is routed from the latch through sheaves mounted on the top plate of the inner frame, and on arms extended to each side of the switch. See Figures 2 and 9. Pulling a rope disengages the latch mechanism and sequentially pulls the inner frame right or left to reposition the alignment of the inner frame rail to the outgoing rail.

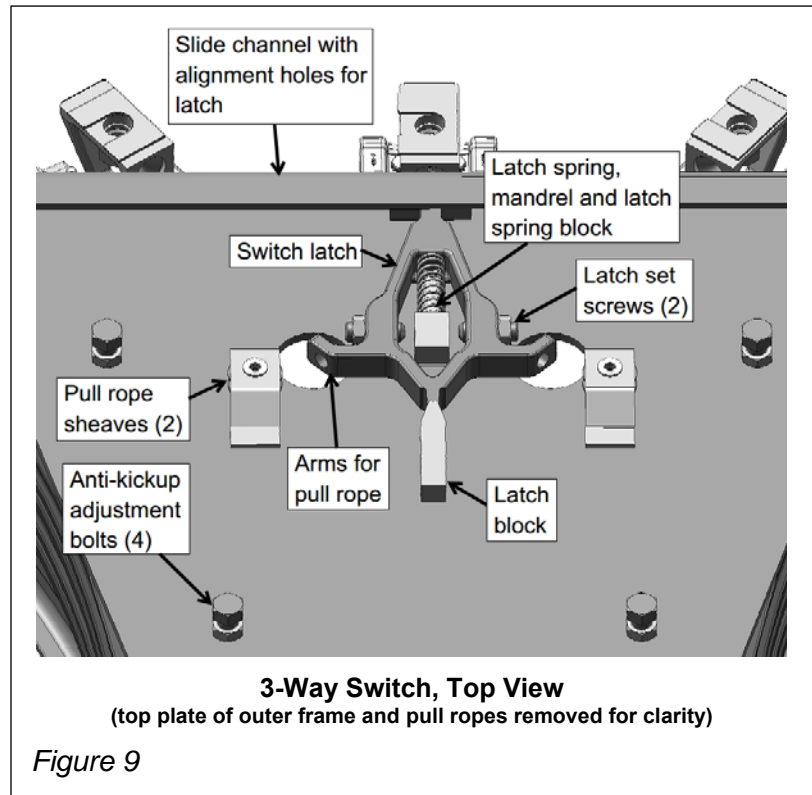
Rope length may be adjusted as needed to meet the height and layout of the monorail system. Additional sheaves may be furnished locally to route the ropes as required.

Since the inner frame (moving portion) of these switches slides on a mating surface in the slide channels, be sure all surfaces are smooth and clean.

Lubricate as needed. A firm pull pressure on the rope is required to reposition the inner frame of the switch.

- A. Operation from Center position to Right Hand (RH) Curve: pull the rope on the left side of the switch which is attached to a latch arm. This makes the latch "cock" slightly to the left and it simultaneously moves back (see *Latch Set Screw Adjustment* in the Adjustments section). This pulls the tailpiece of the switch latch to the left side of the latch block (latch block is welded to the top plate of the outer frame) and disengages the latch nose from the center alignment hole in the slide channel. Continued pull on the rope slides the inner frame to the left until it contacts a stop screw (see Figure 15). When operator pull on the rope is released, the latch spring pushes the latch forward to engage the nose into an alignment hole and lock the switch in place. Switch movement to the Right Hand position is complete and normal monorail use may proceed.
- B. Operation from RH Curve to Center: pull the rope on the right hand side of the switch. This "cocks" the latch slightly to the right and simultaneously moves it back, disengaging the nose from the alignment hole. Continued pull on the rope slides the inner frame to the right. When the center rail of the inner frame reaches the center position of the switch, the latch tailpiece contacts the left hand side of the latch block and stops the inner frame in alignment with the center rail hanger. When pull pressure on the rope is released, the latch spring pushes the latch nose forward to engage the center alignment hole and the latch tailpiece slides forward on the latch block to rest on the latch block nose. Switch movement to the Center position is complete, and normal monorail use may proceed.
- C. Operation from Center to Left Hand: similar as the procedure in "A" above. Switch movement from LH to Center is the opposite of the description in "B" above.
- D. **NOTE:** direct switch throw from full RH to full LH, or full LH to full RH, cannot be made; the inner frame movement must stop at the Center position, and pressure released on the pull rope, before continuing to move to the far LH or RH position (this allows the tailpiece of the latch to "jog" around the latch block).

Moving Switch with a Load on the Inner Frame: These switches are not designed to be thrown (moving portion of the switch repositioned) with a load on the rail of the inner frame.

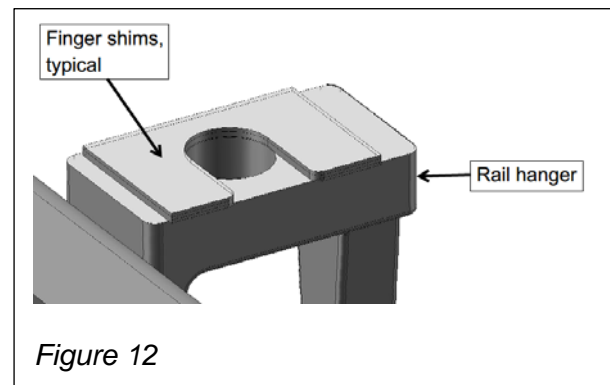
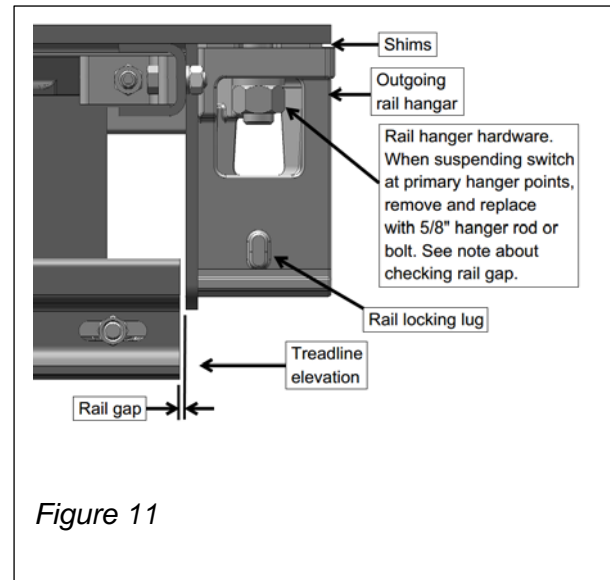
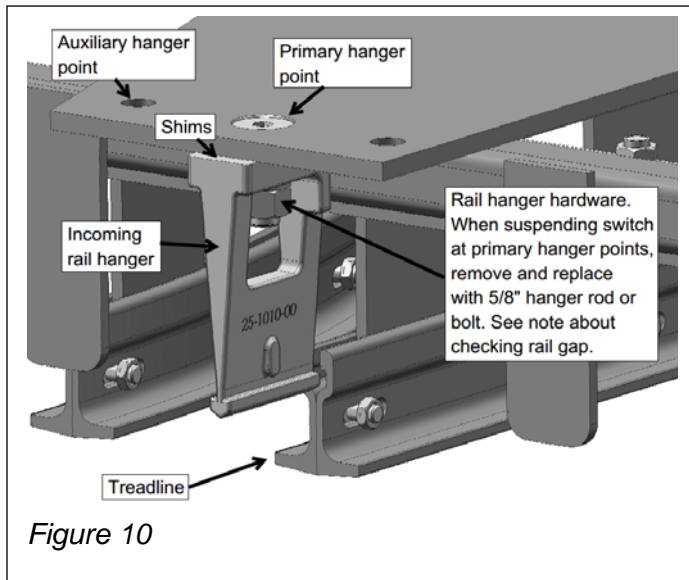


Glide Switch Adjustments

A. Incoming and Outgoing Rail Height Adjustment

Rail hangers are factory set at correct elevation so the treadline of the incoming and outgoing rails will be aligned to the treadline of the rails on the inner frame.

If any vertical adjustment is needed to adjust treadline elevations, add or remove shims between the rail hanger and the top plate as necessary. See Figures 10, 11 and 12.



B. Glide Switch Throw

2-Way and Wye Switches:

Figure 13, (2-Way, right hand switch shown): full throw to left and right is adjusted via an adjustment set screws on the slide channels. The set screw contacts a stop block on each side of the switch inner frame. When the switch is fully thrown, rail on the inner frame must be in line with the corresponding outgoing straight or curved rail, and nose of the latch must be aligned with a hole in the slide channel.

To adjust throw, loosen set screw (see Figure 14) and position the inner frame fully left or right to align the nose of the latch with a corresponding alignment hole in the slide channel (see Figure 8, typical). With the latch nose fully engaged into the slide channel hole, adjust set screw to contact the stop block on the inner frame (see Figure 14).

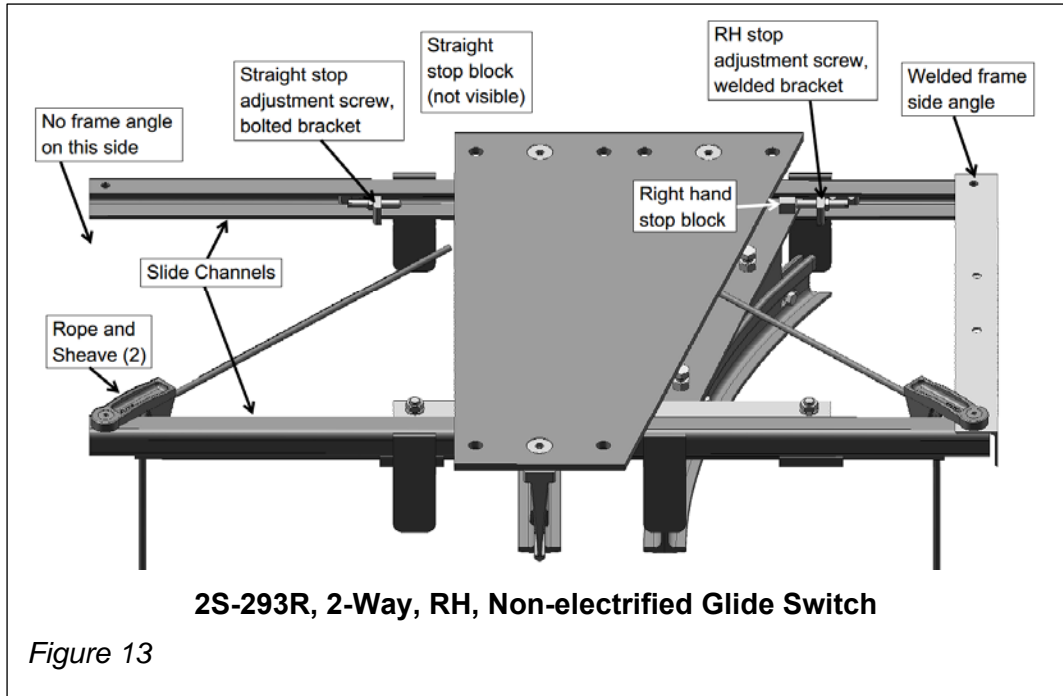


Figure 13

Tighten locking nut. Repeat process for other side. Use 3/16" hex wrench for set screw. Allow for slight oversize of the alignment hole as compared to the nose of the latch.

3-Way Switches:

Figure 15: Same process for full left and right as described for 2-Way and Wye Switches. The center alignment is factory set by the alignment of the latch hole in the slide channel and the location of the center rail hanger. Minor adjustment of the center rail alignment may be made by loosening the center rail hanger hardware and reposition the hanger and rail relative to the inner frame rail. Also see Rail Gap note with Figure 6.

All Switches: Operate switch through several cycles of movement to be sure the throw is properly adjusted. The nose of the switch latch should easily and positively engage the hole in the slide channel.

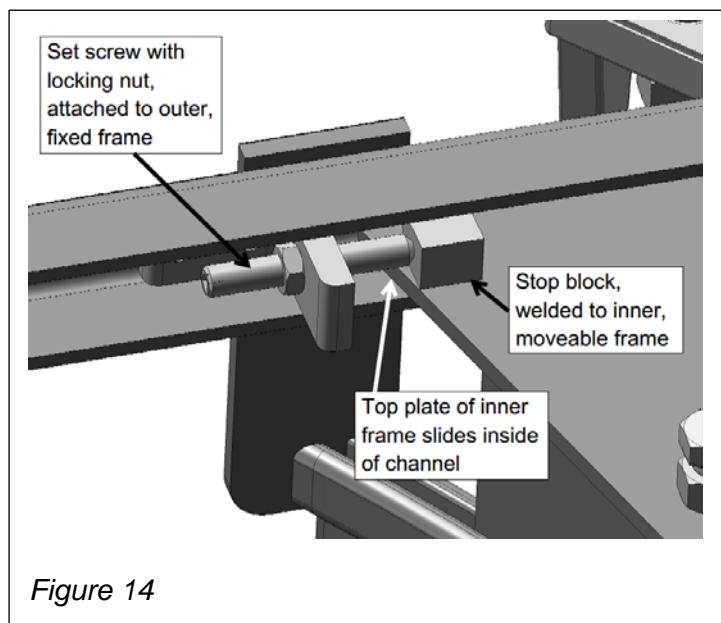
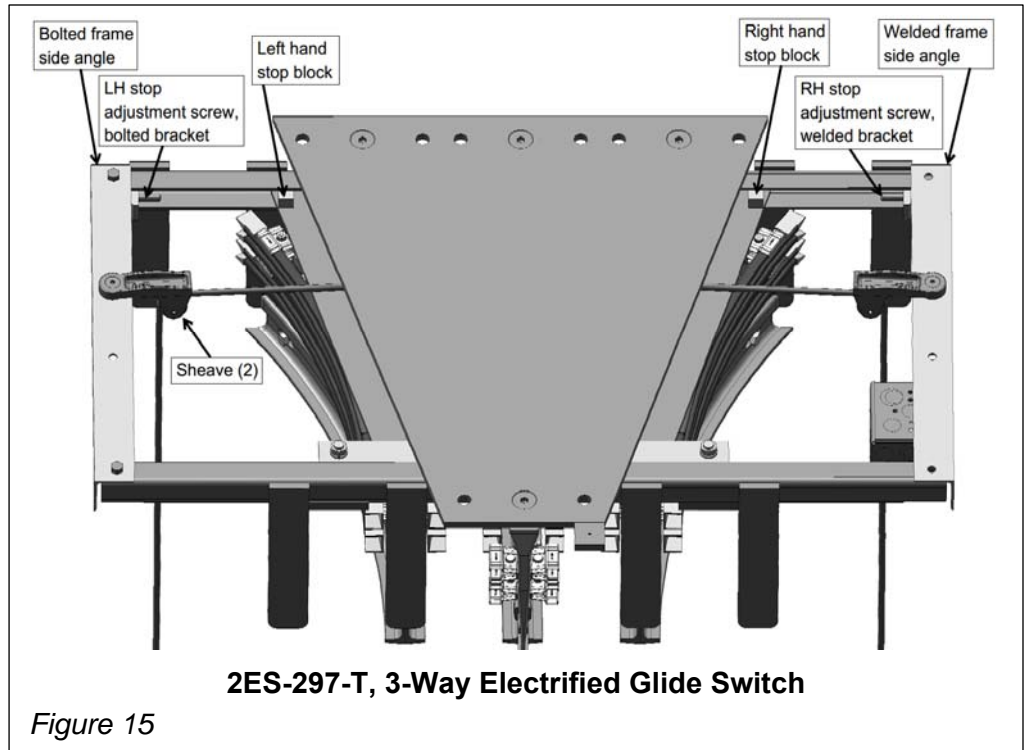


Figure 14



All Glide Switches – Slide Channel and Switch Guides

On all glide switches, the slide channel on the incoming rail side of the switch has a guide bar welded to the bottom of the channel. See Figures 16, 17 and 18. The top plate of the inner frame rides on the inner face of this slide channel (see Figure 17). Switch guides are attached to each end of a guide arm with an eccentric adjusting bolt (see Figures 16 and 18). The switch guides engage and follow the guide bar.

Guide arm and switch guides:

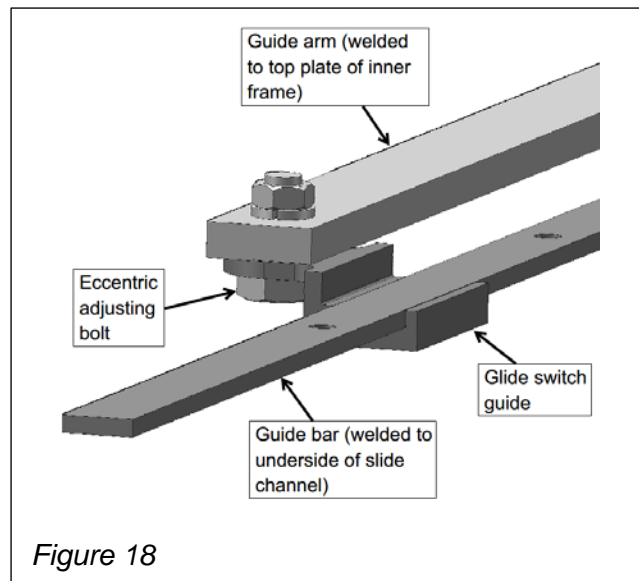
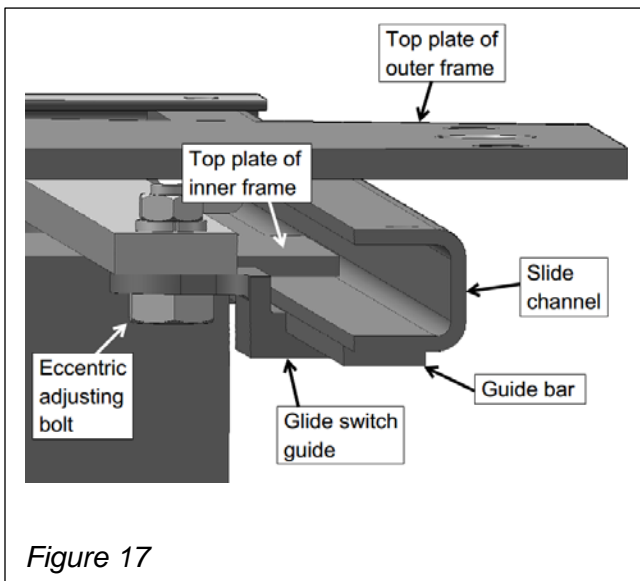
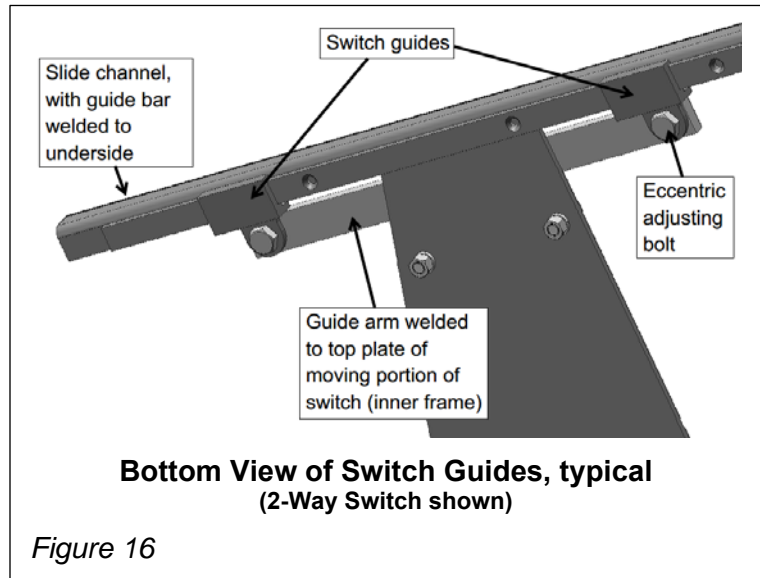
- prevent the inner frame from “cocking” when the ropes are pulled to move the inner frame
- adjust the switch gap (see Rail Gap Note and Figure 6)
- hold the inner frame in position when a trolley with a load passes through
- adjust alignment of inner frame rails to incoming and outgoing rails (see Notes for Treadline and Rail Alignment Adjustment and Figure 19).

Switch guides are factory adjusted as required for each switch.

Field adjustment procedure:

- move inner frame to either end of travel.
- measure rail gap at incoming and outgoing rails (see Figures 6 and 11).
- check alignment of incoming and outgoing rails relative to inner frame rails.
- loosen eccentric bolts on both switch guides just enough so they can be turned.
- adjust eccentric bolts as needed to equalize the rail gap at each end of inner frame, and to “cock” the ends of the inner frame rails into alignment with the incoming and outgoing rails. Note that the best result of this procedure may be a compromise at each position.
- tighten both eccentric bolt nuts very securely.
- move switch through several full cycles of motion, verify rail alignment and gap at each position. Readjust if required.

Verify that slide areas are clean and clear. Lubricate as needed for smooth operation.



C. Removing Inner Frame from Switch Assembly

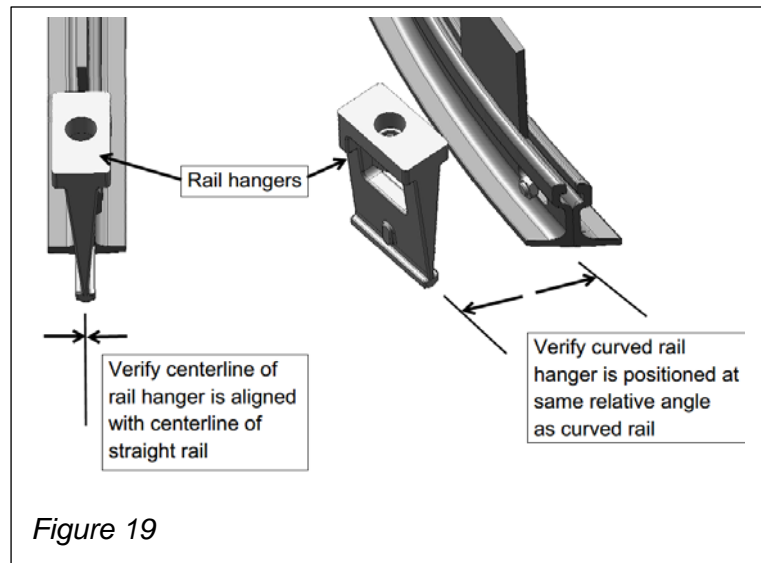
The inner frame of Glide Switches may be easily removed for maintenance. One of the stop set screw brackets on each model is bolted in place. Remove that bracket, disengage the latch mechanism and slide the inner frame out. Note that 3-Way switches and all electrified switches have one bolted side angle on the outer frame which also must be removed. See Figures 2, 3, 13 and 15 for typical examples.

D. Notes for Treadline and Rail Alignment Adjustment

Minor misalignment of the treadline and edges of the switch inner frame rail to the treadline and edges of the outgoing rail or curves may be caused by various manufacturing tolerances in fabrication or assembly, various switch adjustments, proper location of the incoming and outgoing rails relative to the switch and general monorail layout, plus clearance of the latch nose to the slide channel holes. See Figure 19. Satisfactory final adjustments and alignment must be considered to be the result of the fine art of installation.

For alignment, check the following:

- straight rail of the monorail system must leave the switch in a straight line along the monorail path. If switch is not suspended in line with the planned monorail path, or if the straight rail of the monorail enters or leaves the switch at an angle, the edges of the straight rail will not be aligned with the edges of the switch rail and may cause an excessive gap between rail ends. Note that switch rail hangers, being held by a single bolt, could become loose and pivot so they are not “straight” with the switch.
- relocate or adjust suspension of the outgoing straight rail to hold it in proper alignment.
- verify that curved rails make a smooth transition from the switch to the monorail path. Curves that may be “underbent” or “overbent” will deviate from the monorail path and may cause the switch rail hanger to pivot on the switch frame, thus causing the edges of the curved rail to be out of alignment with the edges of the switch rail. Relocate or adjust suspension of the outgoing curved rail to hold it in proper alignment.
- switch guides may need adjusting via the eccentric adjusting bolt to bring the rail ends of the inner frame into alignment with the incoming and outgoing rails, as well as to adjust the rail gap. See Figures 16, 17 and 18.
- verify that the switch is supported securely, rigidly, aligned and level, whether by hanger rods, bolts or other support structure. Rod suspended systems (switches, curves and rail) must be braced to prevent movement. The monorail system must be fully aligned and leveled before installing bracing. The frame of the switch must not be twisted by unequal tightening of hanger rods, unequal shimming or a support structure that can flex. The switch must not be forced into position or alignment.



Satisfactory final alignment of the straight and curved monorail sections to the switch will likely be the result of a combination, and perhaps a best compromise, of all of the installation and switch adjustment procedures.

All of the above are a part of normal installation. Installers must take care to properly suspend, align, shim and adjust all points within the switch and monorail components, recognizing that they have the final responsibility and ability to provide the customer with a properly operating system.

E. Anti-Kickup Adjustment Bolts

The top plate of the inner frame of each switch has four 1/2" diameter bolts installed (see Figures 7, 8 and 9) to serve as anti-kickup control.

Adjust as shown in Figure 20.

Excessive clearance may allow kickup of the inner frame as a loaded trolley transitions the switch. This kickup may cause excessive treadline misalignment and difficulty for a trolley to pass through smoothly.

Too little clearance may cause the head of the adjustment bolts to drag on the underside of the outer frame top plate and make switch operation difficult.

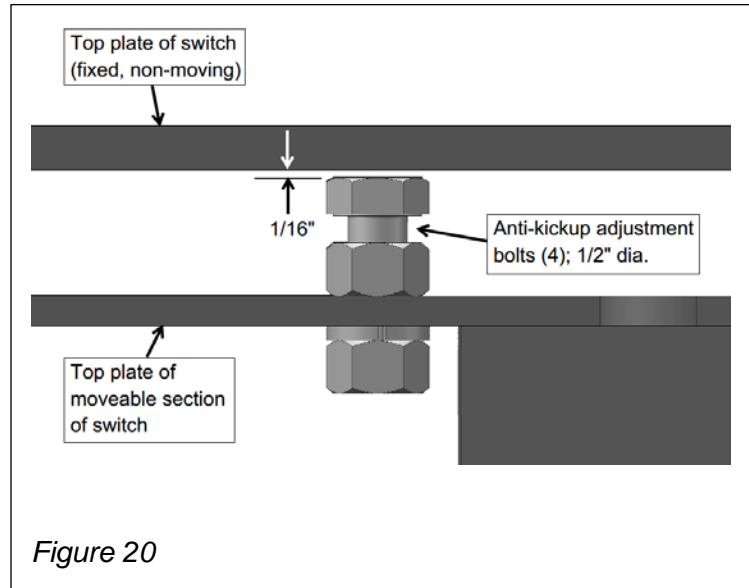


Figure 20

F. 3-Way Switch, Latch Set Screw Adjustment

Set screws on the 3-Way Switch Latch Assembly control the amount of "cocking" of the latch assembly to the left or right as the ropes are pulled. See Figure 21.

Factory set clearance of the set screw to the latch spring block is approximately 1/8" on each side.

Excessive clearance will allow too much "cocking" and will make the latch difficult to pull back. Too little clearance will not provide enough "cock" to allow the tailpiece to move across the nose of the latch block.

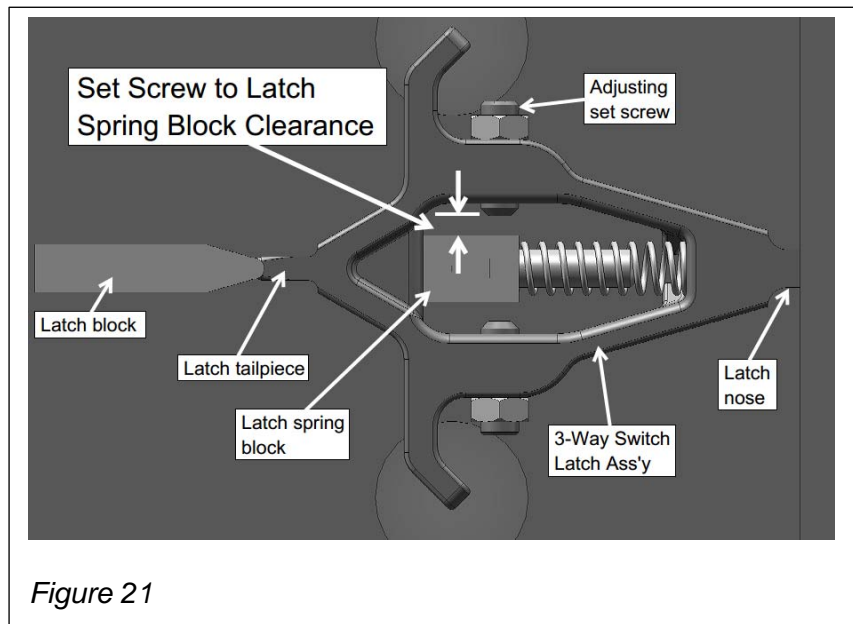
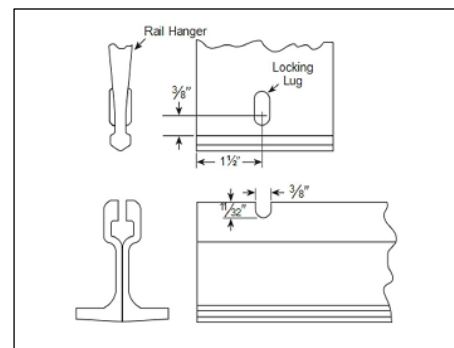


Figure 21

G. Rail Locking Lug and Notch

Rails provided by TC/American Crane with "switch connection" end preps have a notch cut into the head of the 2R3-5T rail. This notch aligns with a lug on the incoming and outgoing rail hangers of switches. This locking lug and notch accurately and securely holds the end of the rail at the correct spacing to the switch, and prevents the rail from creeping closer to the switch or from pulling away. See Figures 6, 10 and 11. The rail hangers are factory installed to provide the proper rail gap. However, if the rail hanger hardware is removed to replace with hanger rods or bolts, see the note on Page 7 and Figure 6 to re-establish the correct rail gap.



Lubrication

General Lubrication Information

1. Latch Mechanism

Lubricate the latch mechanism upon installation. Work grease into and under the latch where it slides on the top plate of the inner frame.

2. Slide Channels

- a) Lubricate the inside lower surface of both slide channels of the switch where the top plate of the inner frame slides on them. See Figures 14 and 17.
- b) Lubricate the area between the Switch Guides and the bar under the slide channel on the incoming rail side of the switch. See Figures 16, 17 and 18.

Lubrication Frequency

Recommended approximately each 6 months for normal operation, more frequently for heavy useage. Each application must be evaluated on its own merits, including: service duty, number of operations per shift, and operating environment.

Maintenance personnel should develop and maintain a record of all monthly inspections. Frequency of lubrication may be adjusted to match operational demands, based upon inspection reports.

Recommended Switch Lubricants

(for standard industrial operating environments)

Latch Mechanism

Good grade multi-purpose lithium grease

Slide Channels

Good grade multi-purpose lithium grease

Note: TC/American Crane does not normally make a "brand name" recommendation for lubricants. Each customer may have a preference based upon many legitimate reasons. TC/A recommends to use a "good quality" lubricant and, when one is chosen, to not mix them.

Adjust lubrication type and frequency based upon the operating environment and customer requirements.

NOTE: before lubricating equipment that will be taken onto a customer's site, check with the customer for any preferences on brands or types (to maintain customer stock uniformity of products used and records maintenance).

NOTE: have Material Safety Data Sheet (MSDS) info available for any lubricants brought onto a work site.

NOTE: verify with customer that lubricants being used will not have an effect upon any production processes.