

**TECHNICAL  
BRIEF**

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**RTS BARRIER DEPLOYMENT****GENERAL:**

RTS<sup>®</sup> Moveable Barriers can be deployed in approximately the same length of time as temporary concrete barriers. There are two principal differences, however, in the handling of the RTS<sup>®</sup> Moveable Barrier. The load must be evenly distributed if it is picked up under the "T" head to avoid chipping of the lifting surface and the length of the variable length barriers must be set during the installation process. Both of these points are very important to the transfer operation and care must be taken that each is accomplished. These will be detailed further below:

**HANDLING.**

There are two ways of handling the barrier. One is using a forklift with "side shift" and a lifting device. Another is using a double barrier tong. It is most important that non-approved methods are not used because damage can result to the bottom of the "T" head. Any damage to the bottom of the "T" head will cause excessive damage to the conveyor wheels and possible damage to other parts of the machine.

**HANDLING TECHNIQUE.**

Typically the barriers are shipped to the project site with two barriers pinned together. There are two preferred methods of installation. One method is to use a forklift and the forklift-handling device. The other method is to use a crane type lifting device and a set of tongs. Using a forklift will require one person less than using a tong. A crew should be able to set between 300' and 400' (90m and 120m) of barrier an hour. As much as 600' (180m) per hour has been achieved. A crane using tongs will require four people and they should be able to set between 150' (45m) and 250' (76m) of barrier an hour.

Lindsay Transportation Solutions (LTS) does not recommend handling more than 2 barriers at a time since it is difficult to control the hinge spacing on more than 2 barriers.

**FORKLIFT HANDLING DEVICE**

Two forklift handling devices are typically furnished with each job. This handling device is shown in Figure 1 below. This device is a fork extension that is held in the proper width and the length will handle two barriers at a time. The lifting portion of this device is padded with a urethane material to protect the bottom of the barrier "T" head. Two barriers weigh approximately 2900 pounds (1315 kg) and can easily be handled by suitable forklifts. The length from end to end of the two barriers is approximately seven feet (2.2m) so that they fit across an eight-foot (2.4m) truck bed.



Figure 1 Double handling device

The forklift operator picks up the barrier and drives towards the end of the barrier wall. He lowers the barrier and aligns it with the end of the wall using the “side shift” capability of the forklift. The barrier is moved into position and another person inserts the pin into the hinge using the provided pin pushing device.

### **BARRIER TONGS LIFTING DEVICE**

Barrier tongs will work on one barrier or two barriers pinned together. (See Figure 2 below) Tongs allow for movement of barrier using standard equipment such as a small crane or backhoe, etc. If these are used, padding is not required as the steel tubing is smooth and the design of the tongs assures that no load will be applied to the outer corners of the "T" head. Be sure that the tongs are fastened to the lifting machine so that they do not pull off during this procedure.

Using tongs is typically slower than a forklift and should only be used on jobs with lane width constraints where using a forklift would not be possible.



Figure 2 Barrier Tongs

**LABOR REQUIREMENTS**

	<b>Lift Device</b>	<b>Tongs</b>
<b>Lift device</b>		
Forklift / crane operator	<b>1</b>	<b>1</b>
Ground crew	<b>2</b>	<b>2</b>
Truck deck man	<b>0</b>	<b>1</b>
E clip (If required)	<b>1</b>	<b>1</b>
<b>TOTAL</b>	<b>4</b>	<b>5</b>

## BARRIER DEPLOYMENT

### INITIAL PLACEMENT

The hinges are designed in a manner that allows for only 1/16<sup>th</sup> of an inch (1-2 mm) movement of the hinge pin. In order to allow for the necessary extension or compression of the wall to move the wall on a curve, Variable Length Barriers (VLBs) are provided. This is required because when the barrier is moved outward in a curve the arc length increases and when the barrier is transferred inward in a curve the arc length decreases.

These VLBs automatically adjust in length during the transfer, but must be preset to the right starting length when initially deployed or placed on the road. When the barrier is being initially placed it must be set with a specific amount of VLB extension if it is on the outside of the curve, or set with a specific amount of VLB compression if it is on the inside of the curve. There are 5 preset lengths for the VLBs. Using the correct preset length in the original setup is critical for the system to work properly. The deployment instructions from LTS will provide specific preset dimensions for the VLBs in each curve to insure the proper setting. This will ensure that expansion and contraction room is then available so that the barrier can be transferred through a curve.

### PIN INSTALLATION

Reactive Tension barrier has a tight tolerance between the barrier hinge and the barrier pin. For installation of a new system or a large number of barriers, the BSI Hydraulic Pin Pusher (PART# B040638 - see figure 3 below) should be used to increase production rates. For limited numbers or in an emergency manual tools can be used.



Hydraulic pin pusher used to drive pins through the hinges.

Figure 3 Pin Pusher Assembly



Hydraulic pin pusher mounted on the Barrier wall. It can be rolled to the next barrier connection after a new barrier set is put in place.

The unit is powered by a rolling gas powered hydraulic unit that rolls on the ground next to the setting operation.

A video is available outlining this entire process.

Figure 4 Pin Pusher Assembly

### E-CLIP INSTALLATION

For all installations only, after the barrier hinge pins are installed one “E” clip (part 2000085) that prevents the pin from moving upward out of the hinge and must be inserted in the groove located towards the bottom of the pin with a washer above it. See figure 3 below.



Figure 3 E-Clip installation detail

**MISCELLANEOUS.**

- Prior to installation, the LTS Engineering Department (001-707-374-6800) should be contacted to discuss any potentially critical areas in the installation that may require special treatment. Curves, slopes and super elevations are examples of areas that might require special treatment
- The barrier wall must be installed parallel to its deployed position. If it is not, you can end up with more barriers in the line than are needed, which will cause problems in the transfer operation.
- Care should be taken to install the barrier wall accurately to within +/- one inch (25mm) of a pre-established reference line.
- During the installation procedure, the end barrier should always be moved with a pry bar on the lower hinge plates to accurately line up with the pre-established line. This is easily accomplished by the man on the ground and requires less accuracy from the heavy equipment operator, which results in a faster assembly.
- Two each 6' heavy-duty pry bars are required with all of the above techniques, in addition to the tools supplied by LTS.
- Before starting the deployment of barrier, the road surface must be clear of gravel sand and other debris.

