



## EsKaRail® Operating Instructions

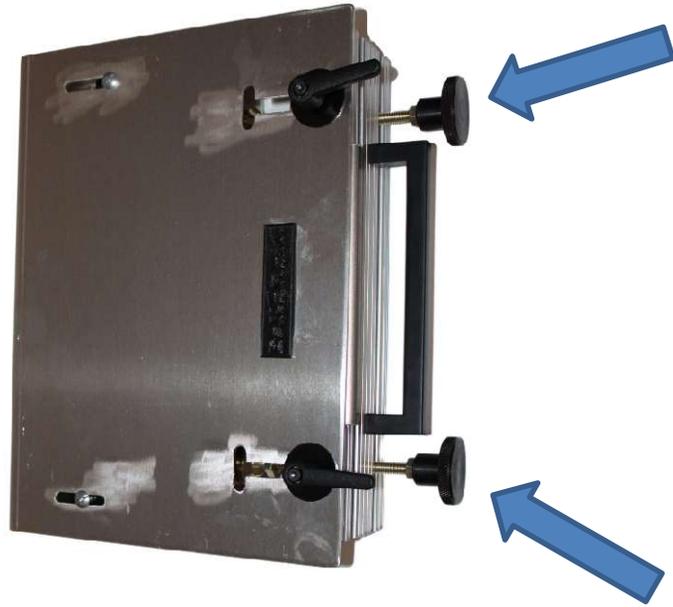
The EsKaRail® Attachment Kit, for use with the EsKalometer®, is comprised of two components, the Balustrade Clamp and the Gripper Assembly. ASME A17.1-2019/CSA B44-19 Safety Codes for Elevators and Escalators, paragraphs 6.1.6.4 Handrail Speed-Monitoring Device and 6.1.3.4 Handrails subsection 6.1.3.4.1 Type Required are the current codes for Elevators and Escalators.

### Installing the EsKaRail® Clamp onto the balustrade.

1. Loosen both of the Level Securing Levers, located on the top surface of the Balustrade Clamp, in order to open the clamp jaws.



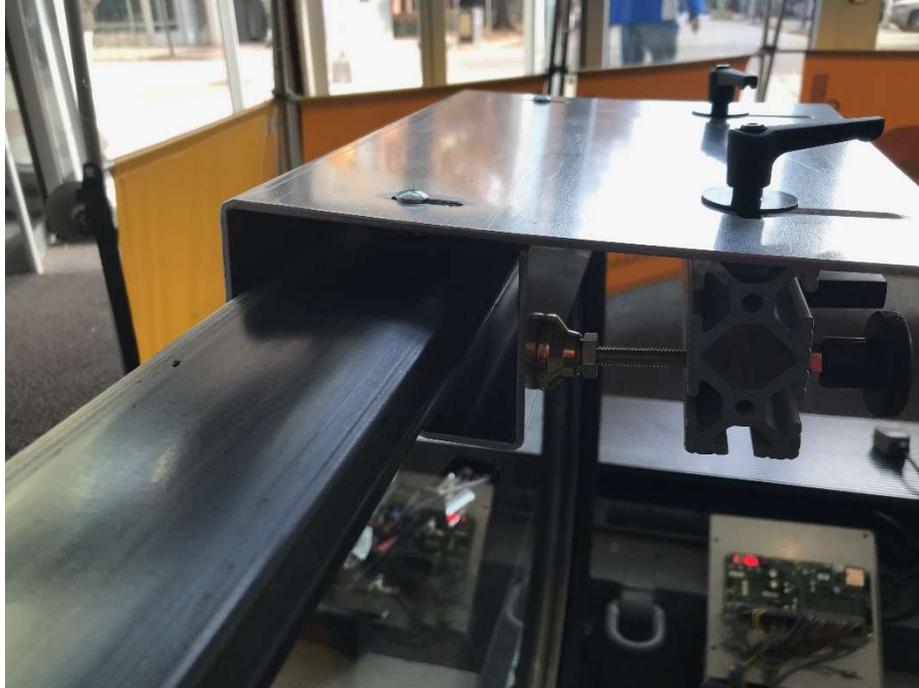
2. Loosen both Jack Screw Knobs (black knurled), located adjacent to the Black Handle, until they are fully retracted.



3. Grasping the Black Handle, located just below the top surface of the Balustrade Clamp, pull the clamp jaws to their fully open position.

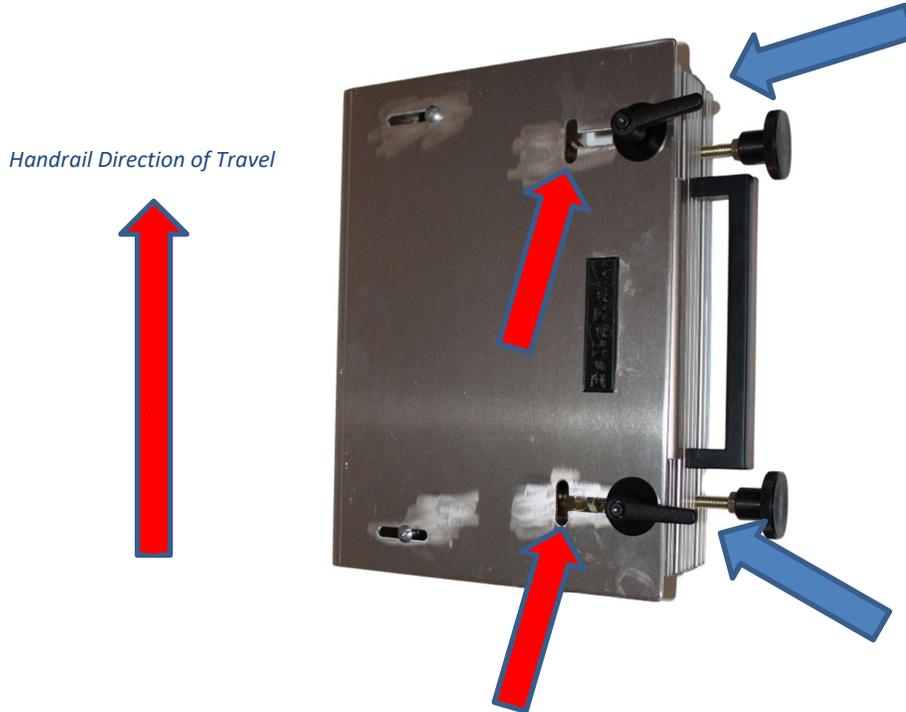


4. With the escalator STOPPED, place the EsKaRail® Balustrade Clamp over the handrail and allow it to rest onto the top surface of the handrail.

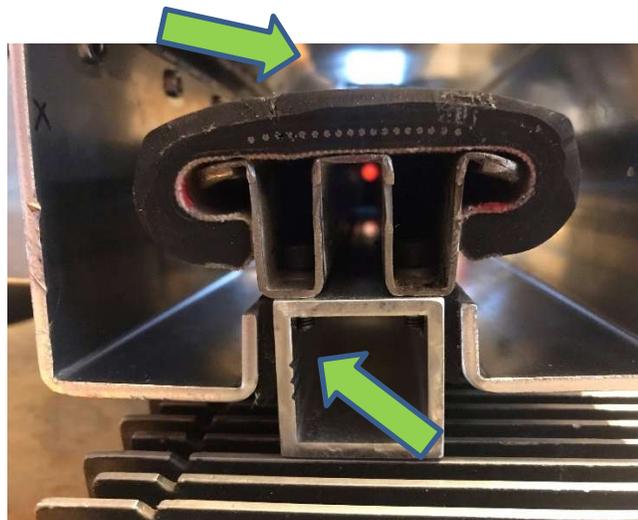


5. Push the double clamp jaws closed around the balustrade via the Black Handle until the levers slip into the top edge of the “T” slots, then tighten the Black Securing Levers.

**NOTE:** Use the opposite end of the “T slot” from the direction of travel of the handrail.



6. Lift the EsKaRail® Balustrade Clamp up and away from the top of the handrail until the rubber coated clamp pads rest just under the handrail guide.



## NOTE:



**WRONG**: These Securing Levers were not inserted into the top of the “T” Slot closest to the blue end plate of the EsKalometer®. This will prevent the clamp jaws from fitting onto the balustrade in a parallel fashion and thus will not provide sufficient clamping force.

# WARNING

The adhesive that secures the neoprene rubber clamp faces can separate if the traction drive tension is set above 115 pounds!

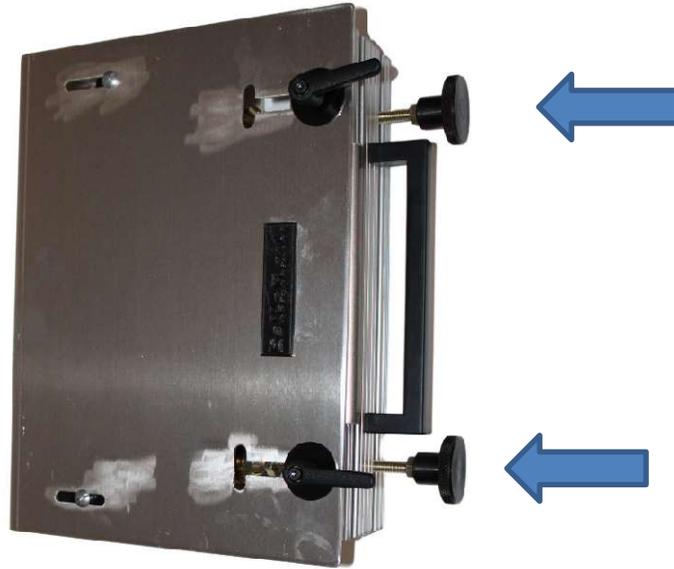
Ideal setting is 105 pounds +/- 2.5 pounds.

Setting the traction drive tension low generally results in bearing chatter/failure and excessive traction drive tension typically results in the handrail dusting as well as bearing failure.

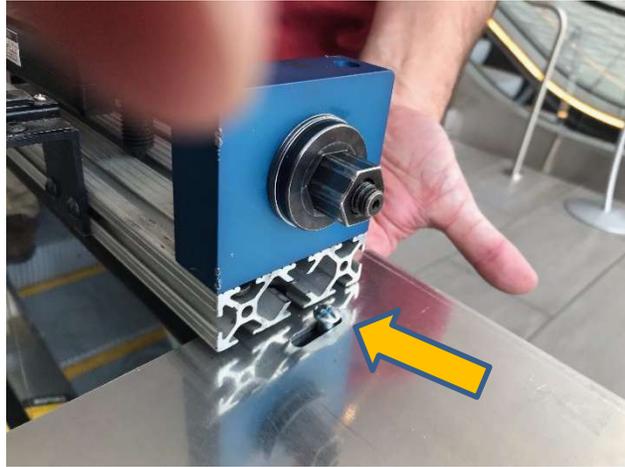
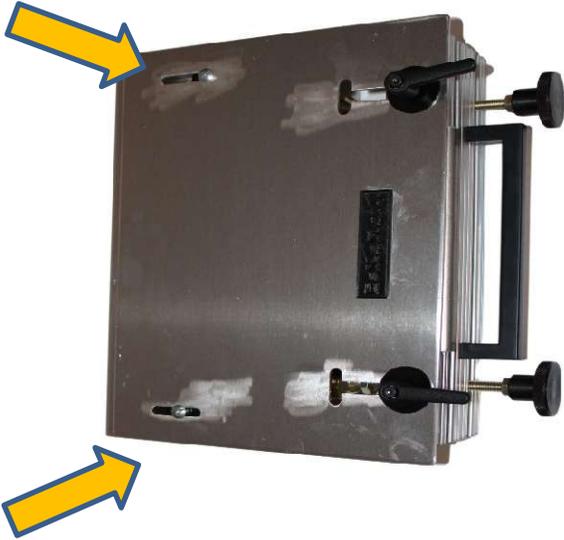
Repair/replacement of the rubber clamp faces can be accomplished with some double-sided tape, example below.



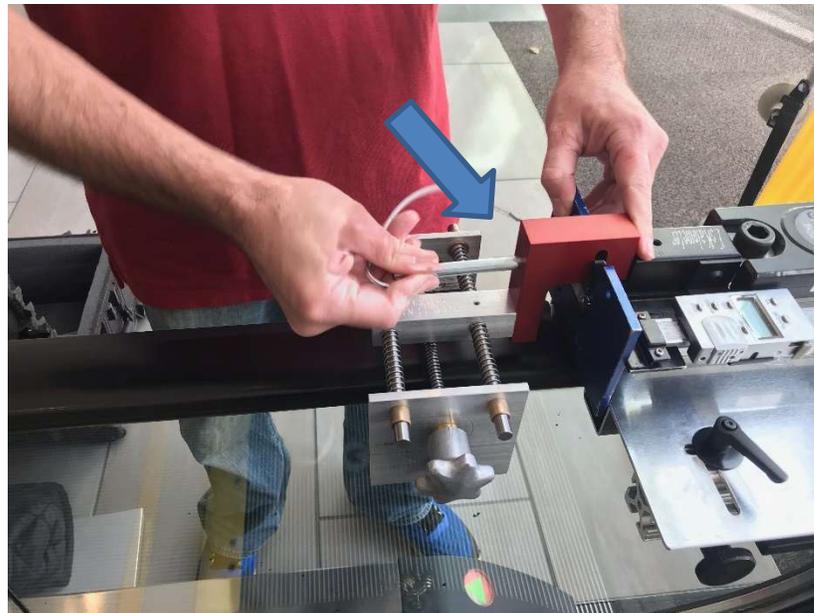
7. Tighten the Jack Screw Knobs (black knurled), finger tight, independently, repeating until the clamp is tight onto the balustrade.



8. Slide the EsKalometer®'s frame onto the top of the Balustrade Clamp aligning the center tee slot with the floating restraining screws so that the centerline of the EsKalometer® and the handrail are generally in-line with one another. NOTE: No adjustment of these screws is necessary.

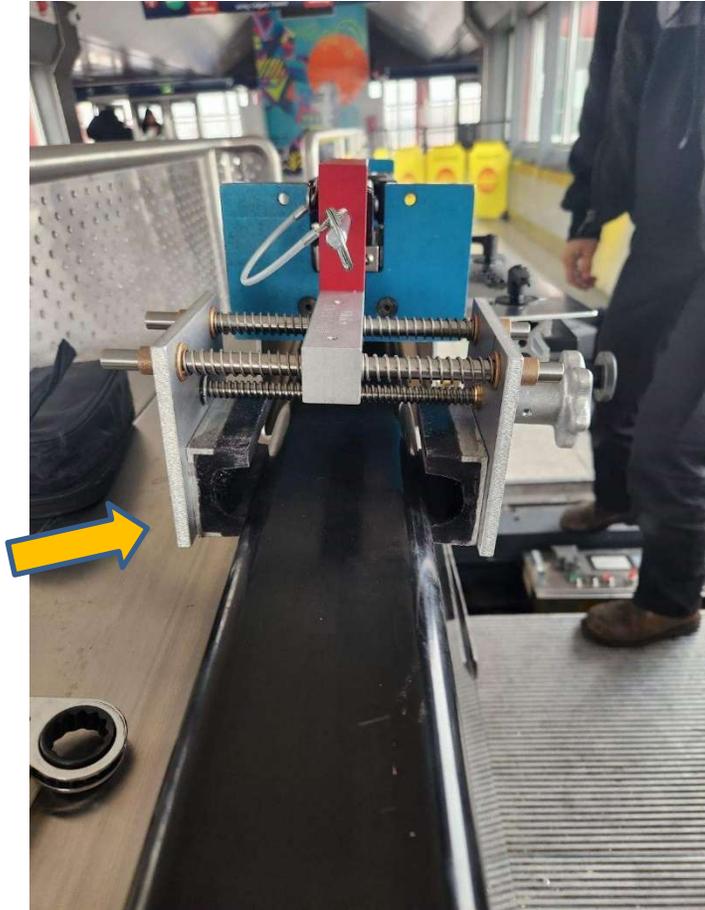


9. Fit the Gripper Assembly over the handrail, then place the red block of the Gripper Assembly onto the EsKalometer®'s main foot's toe and then install the tethered securing pin.





## NOTE:



The side plates have two locating holes for the Gripper Pads. Should the Gripper Pads not align with the handrail, relocate them into the lower/upper set of holes in the side plates. Select the Black or White Gripper Pads based upon the cross section of the handrail.

## Actuating the EsKaRail®

10. Depress the “On/Off-Tare” Button of the EsKalometer®’s Force Scale TWICE, thereby “zeroing the force scale”. Confirm that the symbol “N” is displayed in the lower left corner of the force scale (depress the ”Hold” Button to toggle setting [repeatedly] until the symbol “N” is displayed).
11. Turn on the escalator, ensuring that the handrail’s direction of travel is thru the Gripper Assembly thus “pushing” into the EsKalometer® and applying compression onto the force scale. If desired, use the included handheld tachometer with the surface speed measuring wheel for confirmation of handrail speed.
12. Slowly twist/turn the Gripper Knob to tighten the gripper pads onto the handrail. Continue tightening until the force scale of the EsKalometer® reads 100 LBS FORCE [450 N]. Observe that the handrail’s speed does not slow/deviate more than 15 percent. If the handrail does slow down more than 15 percent, the handrail has failed the code requirement.



13. Should the handrail speed slow/deviate more than 15 percent, then within 2 seconds to 6 seconds range (see 6.1.6.4 Handrail Speed-Monitoring Device) the activation of the alarm as required by 6.1.6.3.1 (b) shall occur. After this time interval, an initiation of dynamic braking (6.1.5.3.4) or the removal electric power to the driving-machine motor with brake application shall occur.

**NOTE:** In-order-to test the alarm/shutdown if the handrail did not slow more than 15 percent, continue tightening the Gripper Knob until the force scale of the EsKalometer® reads greater than 100 LBS FORCE [450 N] and the handrail slows down more than 15 percent.

14. Stop the escalator then, A) remove the Gripper Assembly from the EsKalometer® and the handrail, B) remove the EsKalometer® from the EsKaRail® Clamp, C) remove the EsKaRail® Clamp from the balustrade, and D) repeat steps 1 thru 13 on the opposite handrail.

## Excerpt of the Code

### *ASME A17.1-2019/CSA B44-19 Safety Codes for Elevators and Escalators*

**6.1.6.4 Handrail Speed-Monitoring Device.** A handrail speed-monitoring device shall be provided that will cause the activation of the alarm required by 6.1.6.3.1(b) without any intentional delay, whenever the speed of either handrail deviates from the step speed by 15% or more. The device shall also cause initiation of dynamic braking (6.1.5.3.4) or electric power to be removed from the driving-machine motor and brake when the speed deviation of 15% or more is continuous within a 2 s to 6 s range. The device shall be the manual reset type, or it shall be permitted to automatically reset not more than one time within 24 h of operation and thereafter require a manual reset before the next restart. Interruption of power during operation should not cause the device to lose the status of the timer nor the count of events.

#### **6.1.3.4 Handrails**

**6.1.3.4.1 Type Required.** Each balustrade shall be provided with a handrail moving in the same direction and at substantially the same speed as the steps. In the case of curved escalators, this shall be substantially the same angular velocity. The speed of the handrail shall not change when a retarding force of 450 N (100 lbf) is applied to the handrail opposite to the direction of travel.

### **ASME A17.1-2019/CSA B44-19 Handbook**

**6.1.6.4 Handrail Speed-Monitoring Device.** There is a need to stop an escalator if the speed of the handrail deviates by 15% or more. While a speed deviation of less than 15% would also not comply with 6.1.3.4.1, it would not be enough to necessitate stopping the escalator right away. A delay is necessary so that the escalator is not stopped every time someone pulls on the handrail. A handrail not moving in the same direction or speed has a tendency to pull passengers backward or forward, causing them to lose their balance. It is not necessary for the handrail to move at exactly the same speed as the step since passengers can easily adjust the position of their hands to compensate for minor differences in speeds. The handrail speed-monitoring device is permitted to be automatically reset if it operates no more than one time in a 24-h period. This is to minimize unnecessary service calls and unnecessary downtime due to nuisance trips of the device. If the handrail speed-monitoring device operates more than once in a 24-h period, it must be manually reset by elevator personnel after the cause of the operation is determined. Requirement 6.1.6.4 was revised in ASME A17.1-2019/ CSA B44:19 to require the handrail speed-monitoring device to initiate motor controlled dynamic braking where provided. It was also revised to permit dynamic braking to bypass the normal methods to remove power from the motor and driving-machine brake for those electrical protective devices that are

permitted to use dynamic braking. This is only permitted based on the stopping performance monitoring of dynamic braking, which will remove the bypass when dynamic braking fails.

#### **6.1.3.4 Handrails**

**6.1.3.4.1 Type Required.** A handrail not moving in the same direction or speed would have a tendency to pull passengers backward or forward, causing them to lose their balance. It is not necessary for the handrail to move at exactly the same speed as the step since passengers can easily adjust the position of their hands to compensate for minor differences in speeds. The minimum handrail driving force is necessary to ensure that the handrail continues to operate under a passenger.

# Handheld Tachometer

1. The Handheld Tachometer comes with a number of attachments, for measuring the handrail's speed, install the large wheel onto the tachometer's stem.



- Depress the green button to turn the tachometer on. The primary display will read as below (RPM).



- Depress the "MODE" Button three (3) times, the display should now read "Ft/Min" on the lowest line of the display and the PERIMETER: Box should display [6"].



4. Place the Large Wheel in contact with the handrail and then momentarily depress the “Measure” Key. The display should indicate a handrail speed of approximately 75 feet per minute.



5. Actuate the EsKaRail®'s Gripper's Knob until 100.0 pounds of force is displayed on the force scale of the EsKalometer. Depress the “Measure” Key once again to display the handrail's speed when the handrail is traveling when the 100.0 pounds resistive force is being applied.
6. NOTE: If the tachometer's display does NOT show the PERIMETER: Box as [6"], refer to the Tachometer's Instruction Booklet about how to change this setting.