

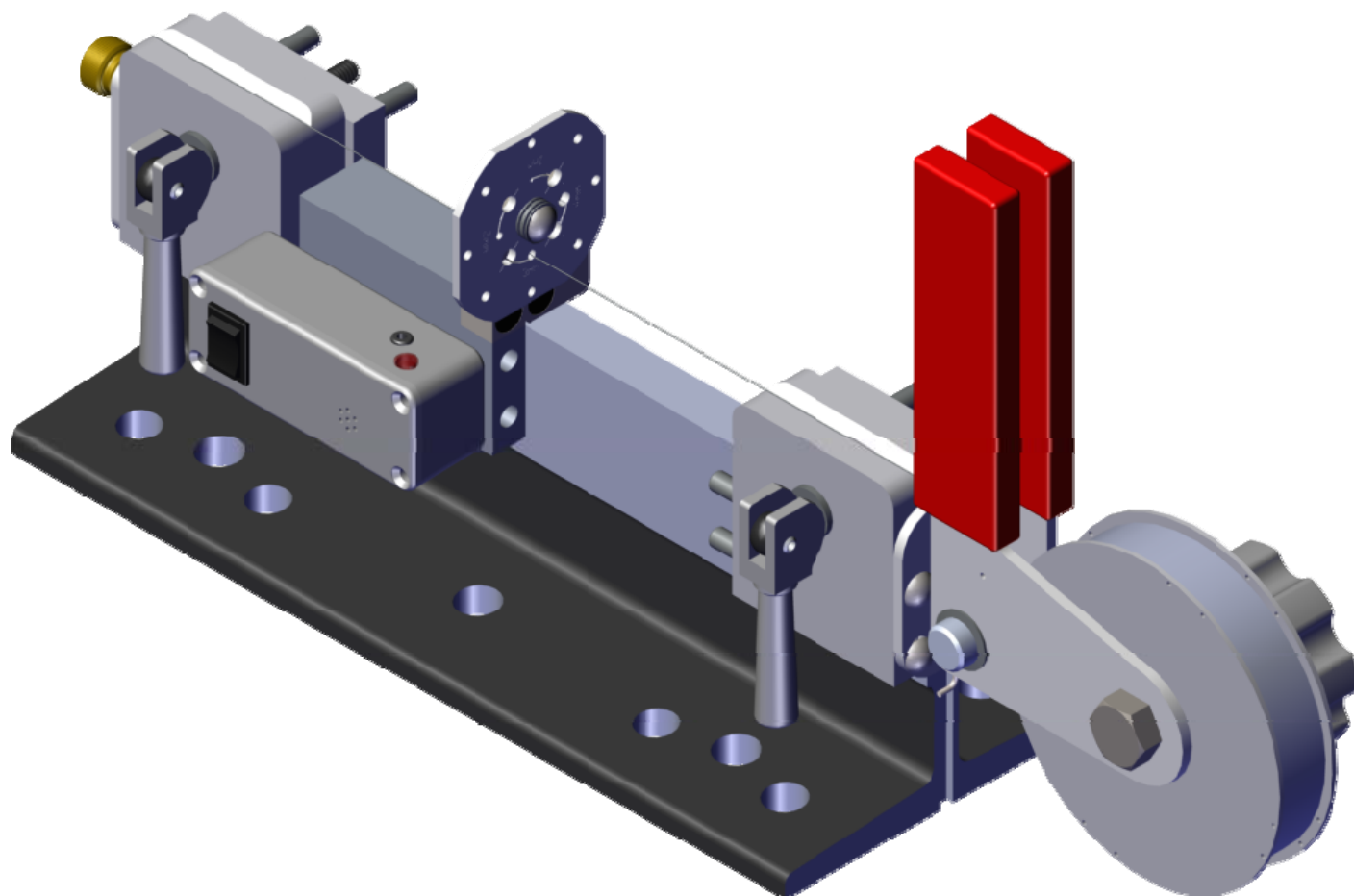


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Overview:

The purpose of this manual is to provide the user with detailed instructions on the proper use of the Rail Straightness Tester. This includes:

- Hazards** associated with use of this product;
- Explanations of the **Features** and **Functions** of this product;
- Installation** and **Proper Use** instructions;
- A **Troubleshooting** Guide.

After reading this manual, the reader will be able to set up elevator guide rails in a manner that allows for accurate straightness testing. The reader will be able to install this product onto a guide rail and use it to determine whether the rail is “straight” within a specified tolerance. Also, the reader will have a clear understanding of how to transfer this product quickly onto another rail in order to test multiple rails.



CAUTION!

The equipment covered in this manual should only be installed, used, and serviced by qualified personnel trained in proper work and safety procedures. This manual is intended to assist such trained individuals in the installation and use of this equipment and is not intended as a substitute for proper training and experience.

This document or any other information regarding this equipment is not intended to cover all of the possible situations which may be encountered while using the equipment described herein. Should specific situations arise which are not covered by the information provided, or should the user desire further details, the specifics should be directed to Wurtec, Inc.

Note: In the effort of continuous product improvement, Wurtec, Inc. reserves the right to modify the design and specifications of this product at any time without notice.



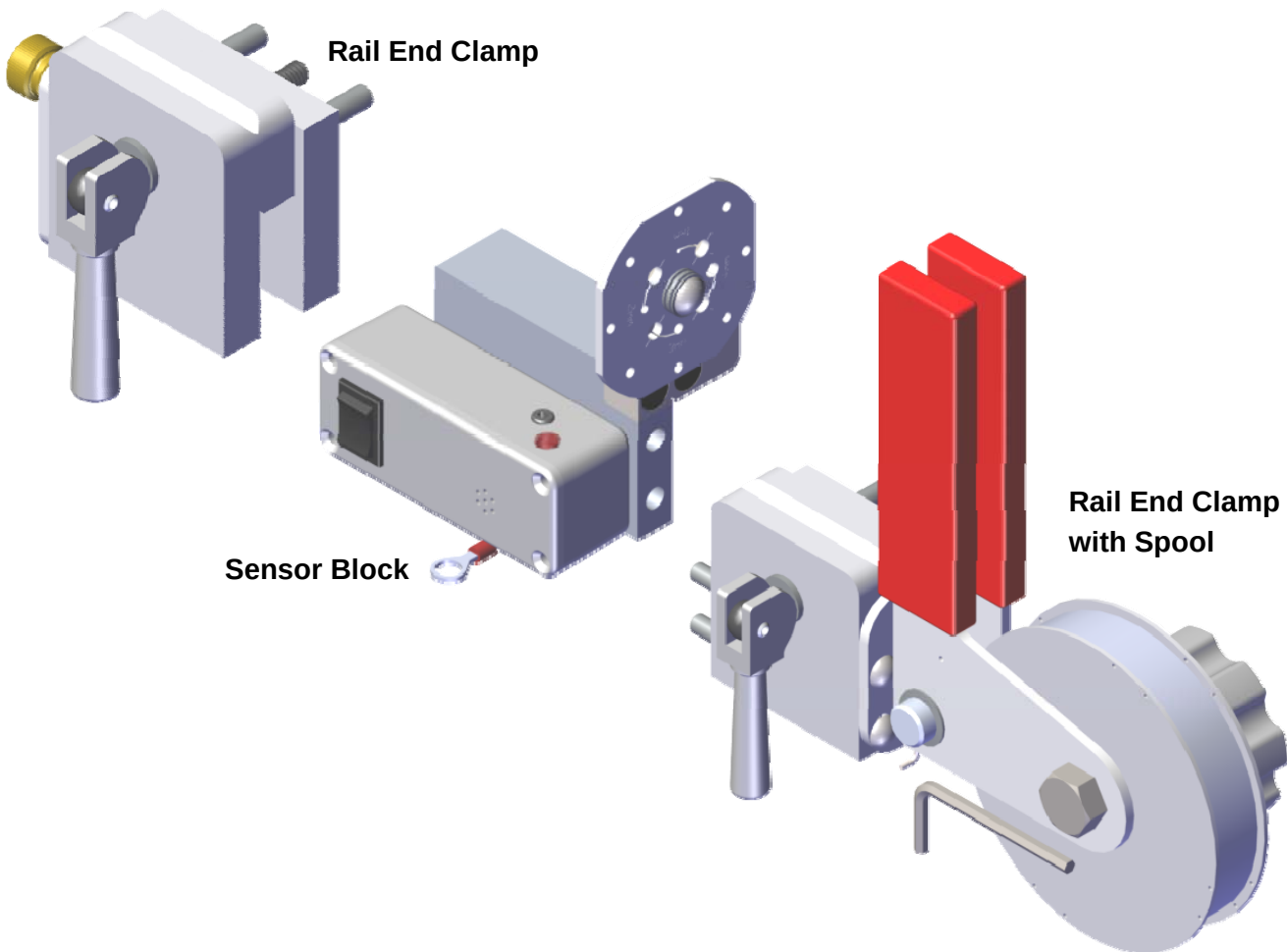
WARNING!

Always place guide rails on stable, secure support devices. Avoid placing any parts of your body underneath the guide rails. Falling rails can cause serious bodily harm. Always wear proper safety equipment.

DESCRIPTION:

The Rail Straightness Tester is designed to provide a quick, accurate method for measuring the straightness of an elevator guide rail. It comes in a compact portable case, and is composed of three (3) sections:

- (2) Rail End Clamps (one with the wire spool assembly, which should contain approximately 100' of Ø.015 steel wire)
- Sensor Block



- 4-1/2" Diagonal Cutters are also included in the kit, for cutting the steel wire.
- (2) Saw Horses or other support devices capable of supporting a guide rail in a stable manner.



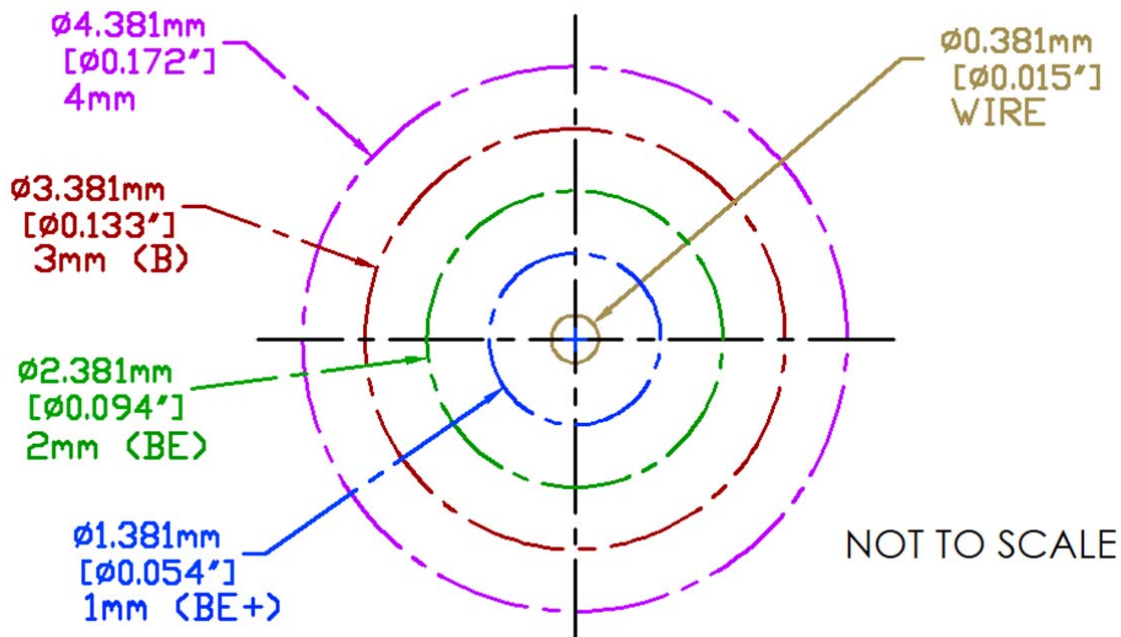
FEATURES AND FUNCTIONS:

The Rail Straightness Tester uses an electrical system to determine the straightness of a rail within (4) tolerance zones. A steel wire runs the length of the rail and connects the sections of the Rail Straightness Tester. If the wire touches the edge of any of the target holes, it completes the electrical circuit which activates a light and beeper device. This alert tells you that the rail has exceeded its straightness tolerance.

The (4) straightness tolerance zones are:

Rail Straightness Designation	Tolerance	As Shown on Target
BE+	±0.5mm	1mm
BE	±1mm	2mm
B	±1.5mm	3mm
(For Reference Only)	±2mm	4mm

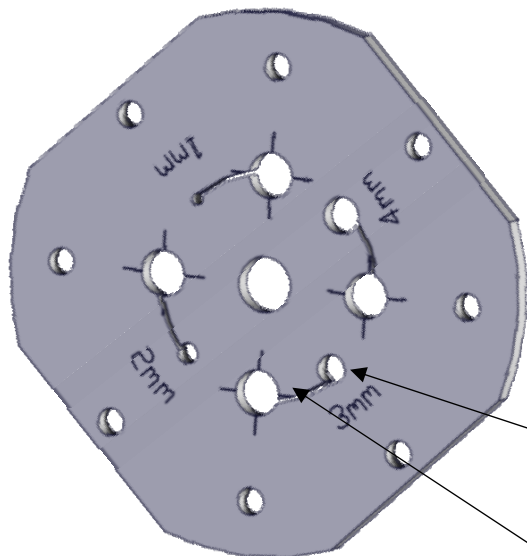
Below is a representation of the sizes of each of the tolerance zone holes and the wire that runs along the rail and through the target.



The target contains 4 pairs of holes with a path in-between. The pairs include:

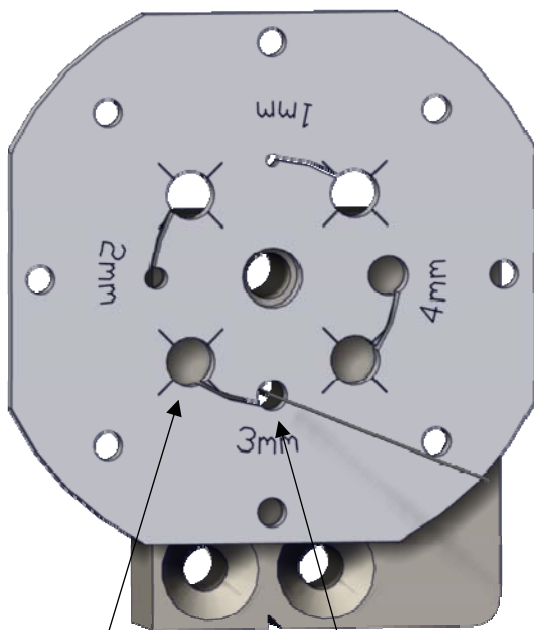
- one for the actual measurement (the smaller of the two)
- one for visual inspection of wire location relative to the target hole

If the wire touches the edge of the smaller target hole and closes the circuit to set off the alert system, switch the target to the larger hole to visually inspect which direction the rail is out-of-tolerance.



Use this hole when measuring
rail straightness

Use this hole for visual inspection

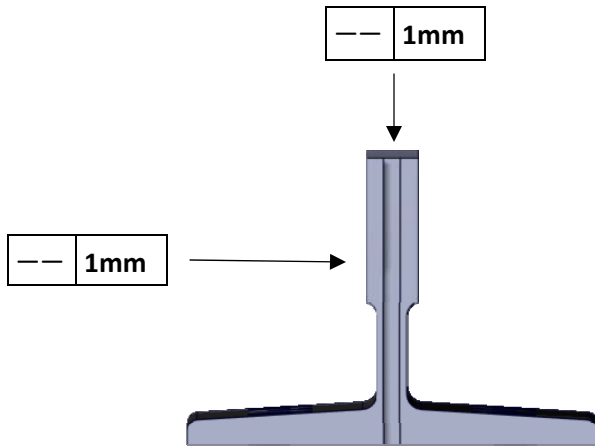


Visual
Inspection
Hole

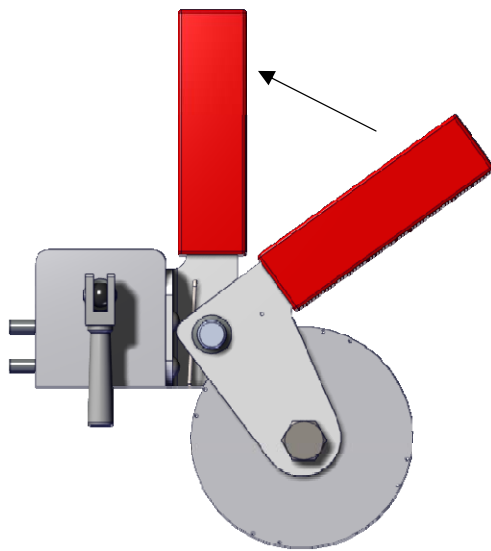
Music Wire
Use this Hole when
Measuring Rail Straight-

The geometric form of the rails measured
by the Rail Straightness Tester is
represented by the following Geometric
Dimensioning & Tolerancing control
symbols:

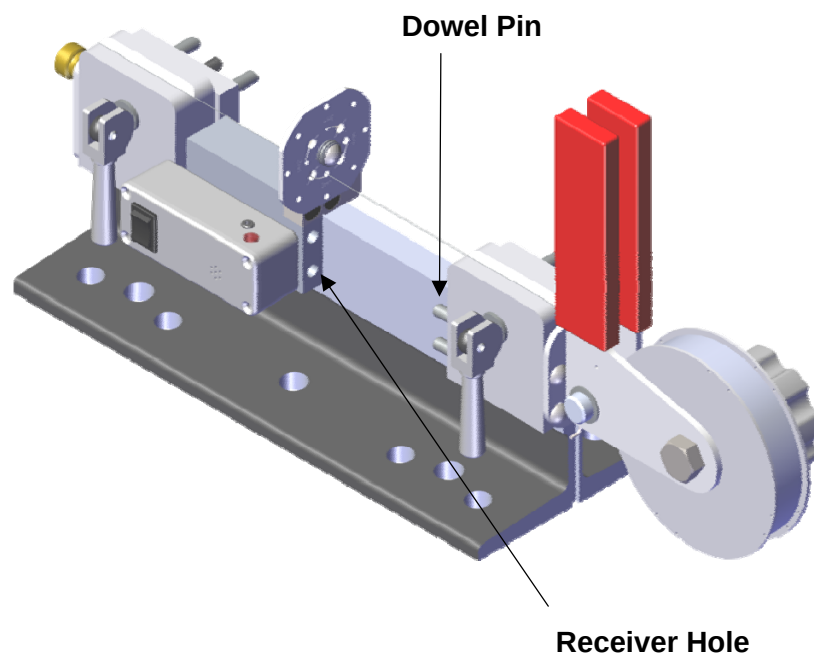
*(Note: This example shows the BE+
($\pm 0.5\text{mm}$) tolerance zone)*

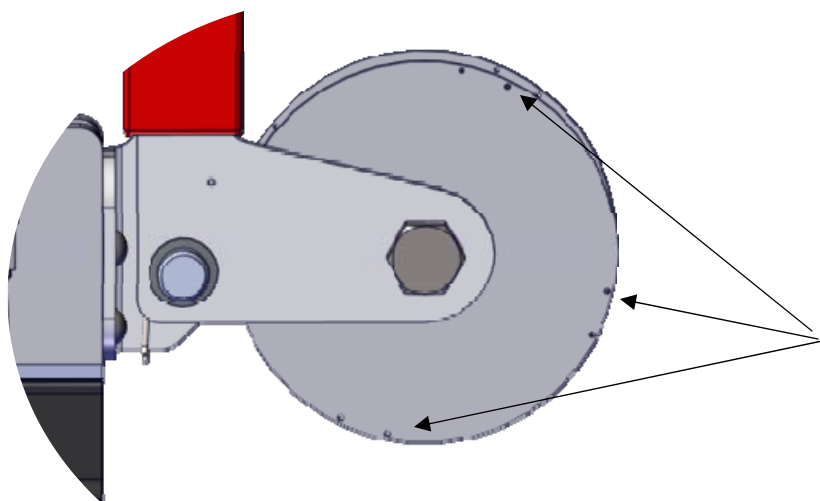
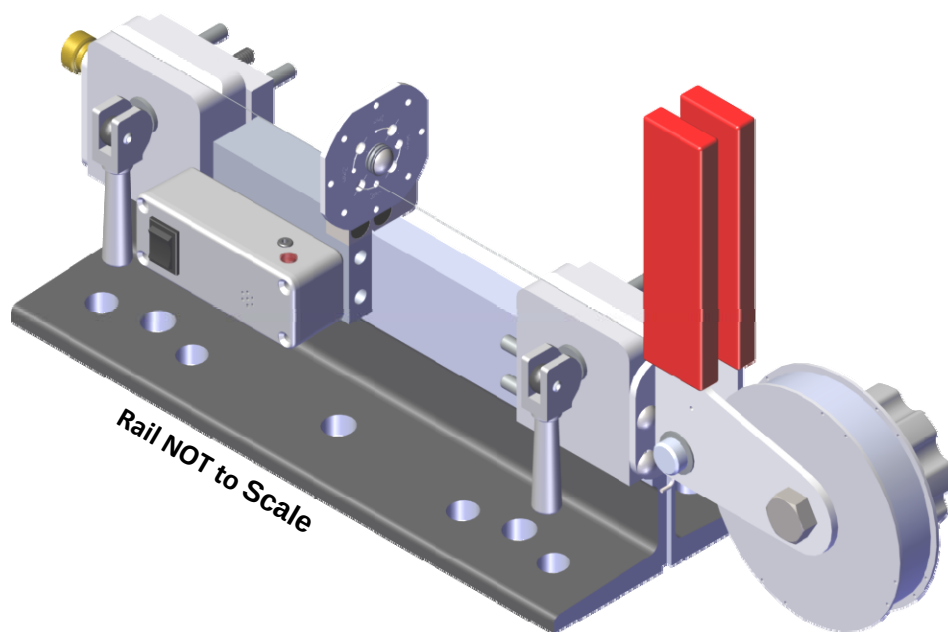
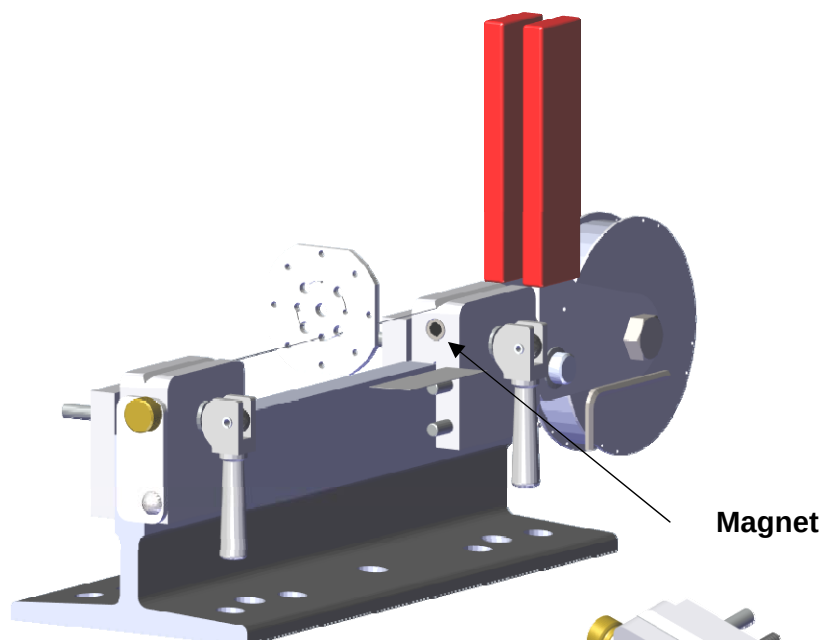


The Rail Straightness Tester is designed for quick and easy transition between rails so that multiple rails can be measured efficiently. The handles by the wire spool allow you to relieve tension on the wire when transitioning between rails.



There are also dowel rods and a magnet which holds the assembly together in (2) pieces so that it can be transferred to another rail with two hands.





When the Rail Straightness Tester is not in use, there are pairs of holes on the spool where you can tie the wire until the next use.

Tie your wire around any of these hole pairs when not in use.

SET UP:

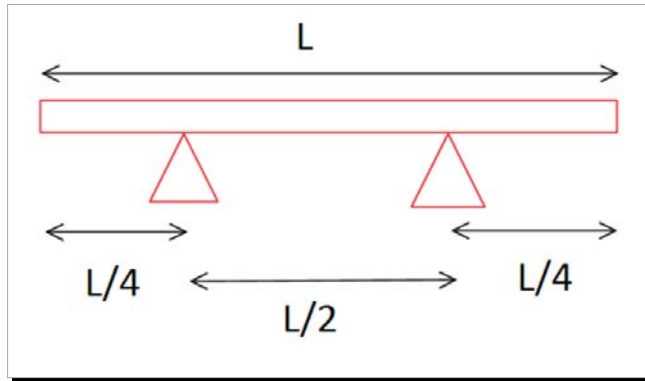


Figure 1

Rail Set Up

Place the rail you wish to test on (2) saw horses. The saw horses should be placed in the following manner, see Figure 1.

For example, if you have a 5m rail, the saw horse spacing would be, see Figure 2

This set up minimizes the deflection of the rails due to gravity, which in turn allows for a more accurate measurement of straightness.

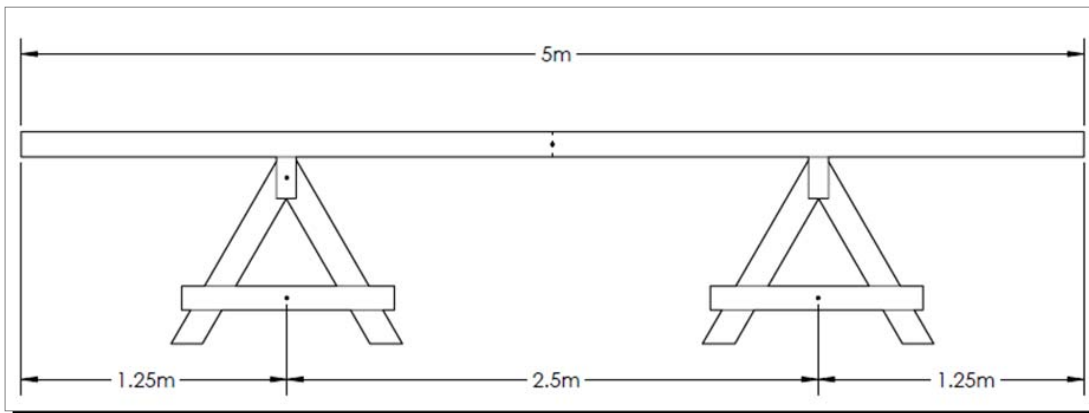
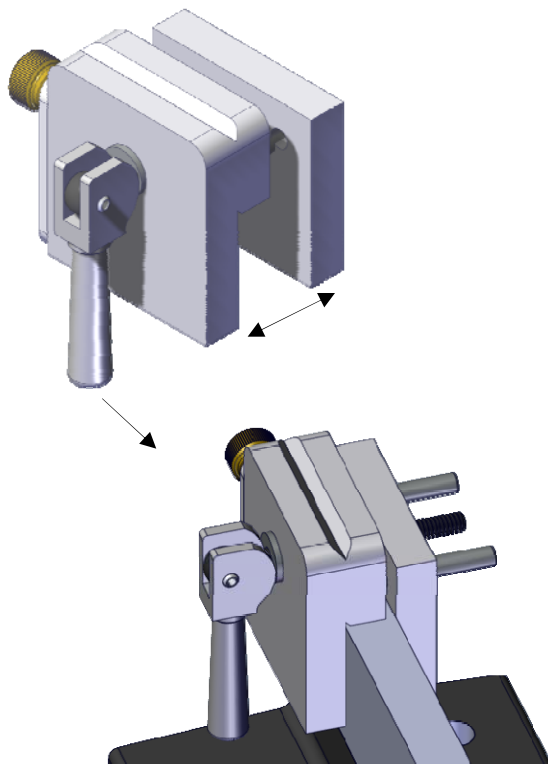


Figure 2

! IMPORTANT !

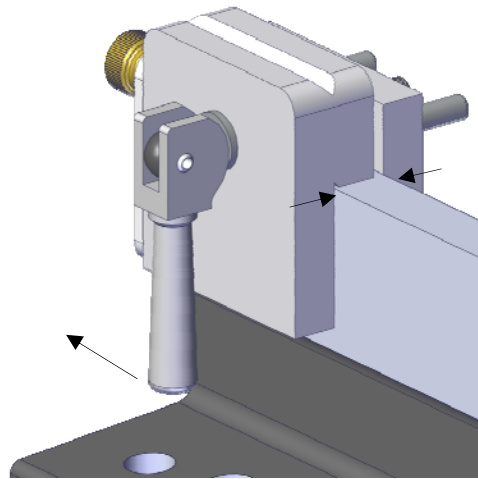
Ensure that the rail is free from any physical deformities, dirt, or other foreign objects.



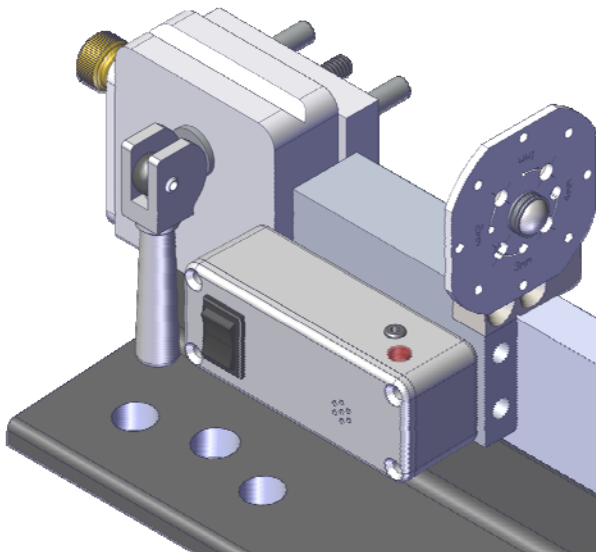
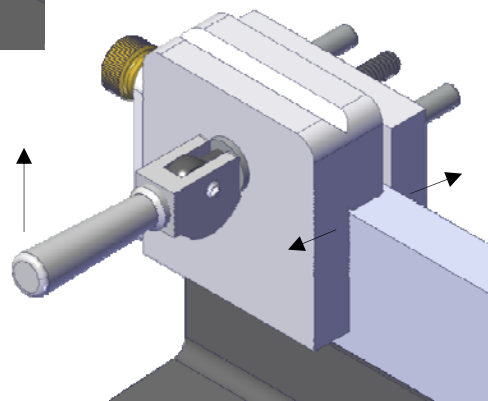
Rail Straightness Tester Set Up

a. Rail End Clamp

- i. Rotate the Cam Handle counterclockwise to spread open the plates of the Rail End Clamp so that the opening is wide enough to fit over the rail.
- ii. Place the Rail End Clamp on the nose of the rail, at one end of the rail.

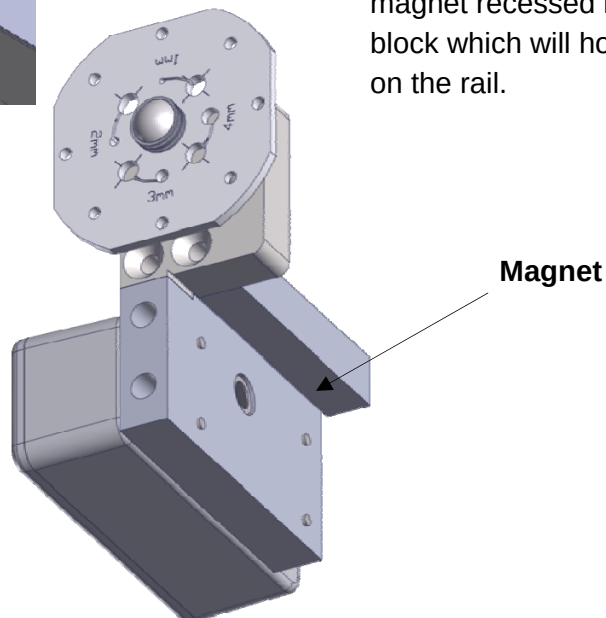


- iii. While the Cam Handle is in the perpendicular position relative to the Eye Bolt, rotate the handle clockwise so that it tightens the plates snugly onto the nose of the rail. When you extend the Cam Handle, it should loosen the blocks from the rail. Return the handle to the perpendicular, tightened position.

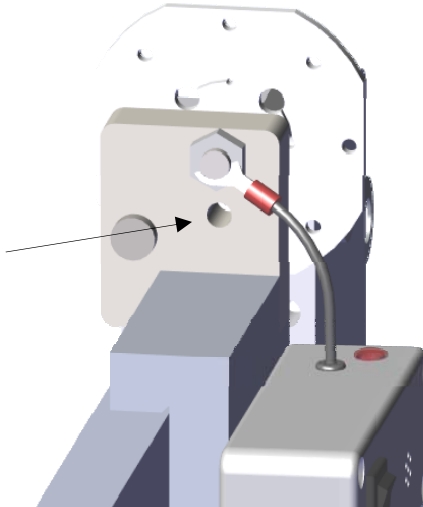


b. Sensor Block

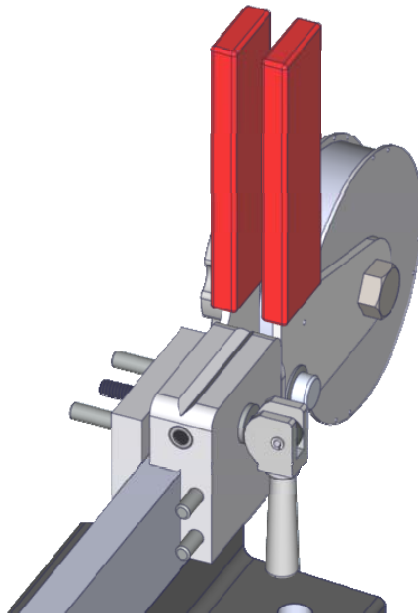
- i. Place the sensor block onto the nose of the rail. The electrical enclosure should be on the same side as the Cam Handle on the Rail End Clamp. There is a magnet recessed into the aluminum block which will hold the Sensor Block on the rail.



Align Target with Hole

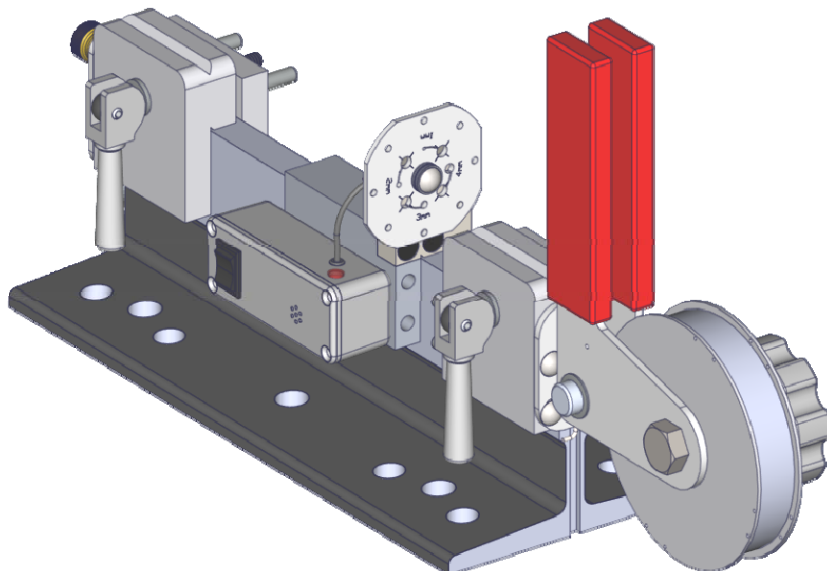


- ii. Rotate the Target to your desired straightness tolerance. Your chosen target hole should align with the hole through the Sensor Backing.



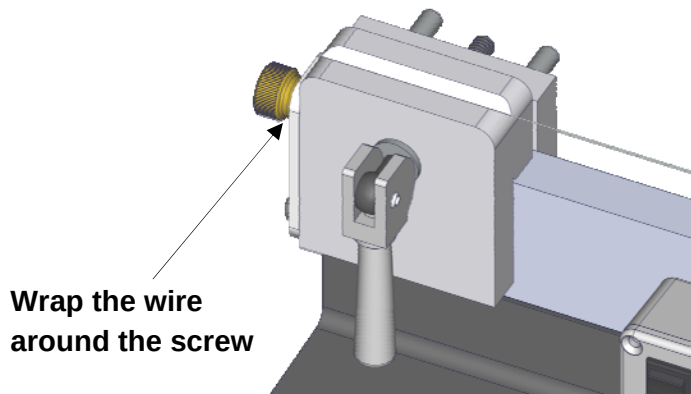
C. Rail End Clamp with Spool Assembly

- i. Follow the installation steps from the first Rail End Clamp, except on the opposite end of the rail.

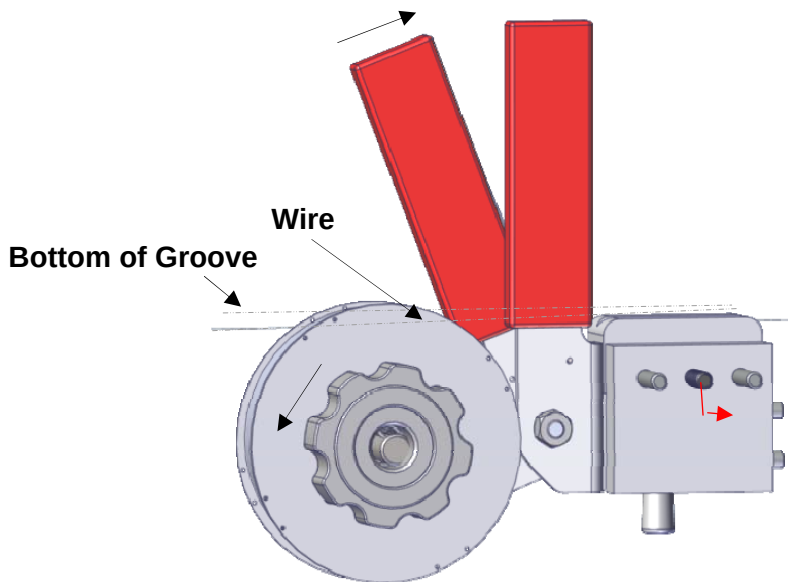


D. Steel Wire Installation

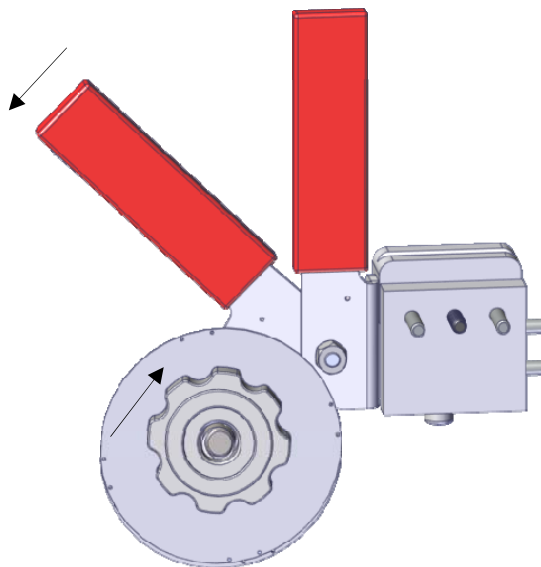
- i. Locate the end of the wire on the spool and thread it between the handles and along the groove on the Rail End Clamp.
- ii. Continue threading the wire through the Target and Sensor Backing, and along the groove of the other Rail End Clamp.



- iii. Turn the Thumb Screw on the back of the Rail End Clamp counterclockwise to loosen, and wrap the wire a few times around the neck of the screw.
- iv. Turn the Thumb Screw clockwise to tighten it and hold the wire in place.

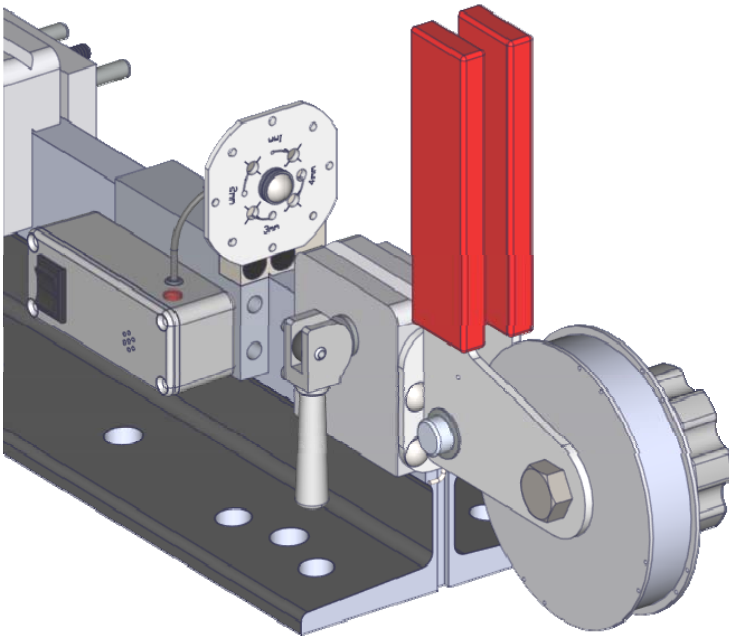


- v. Squeeze the handle to a mid-rotation position, at a point where the wire is below the horizontal level of the groove on the Rail End Clamp.
- vi. While in this position, rotate the knob on the side of the spool counterclockwise to loosen the wire spool. Rotate the spool to reel in any excess wire.



- vii. Tighten the knob to lock the spool in place.
- viii. Release the handle to tighten the wire.

TESTING AND OPERATION:

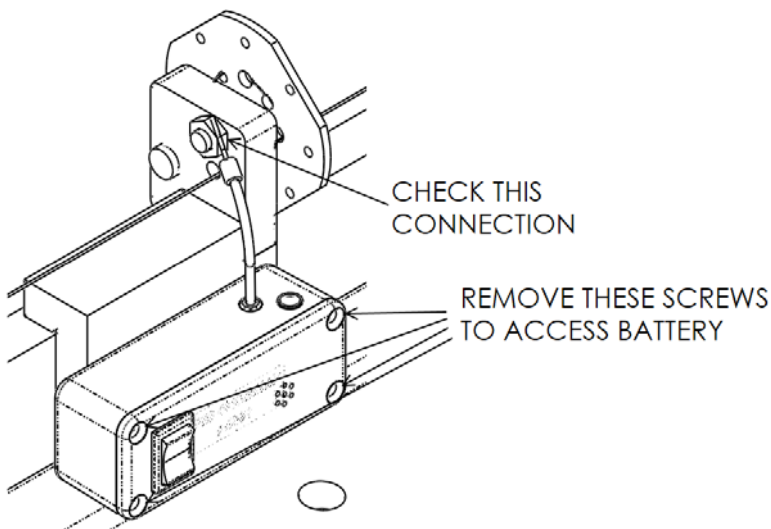


1. Slide the Sensor Block up next to the Rail End Clamp with the wire spool. Make sure the wire is in the proper target hole.
2. Set the switch on the electrical enclosure to "ON".
3. Test the system by intentionally moving the wire so that it touches the edge of the target and activates the alert system. *Refer to the Troubleshooting section if the alert system does not activate.*
4. Slide the Sensor Block along the rail.

If the alert system is activated at any time, the rail is out-of-tolerance. Visually inspect the rail for physical deformities or foreign objects. Also, rotate the target to the visual inspection hole and check which direction the rail is out-of-tolerance. Mark the location of the non-conformity on the rail.

5. You can determine that a rail is within tolerance once you have reached the other end of the rail with the Sensor Block without activating the alert system.

TROUBLESHOOTING:

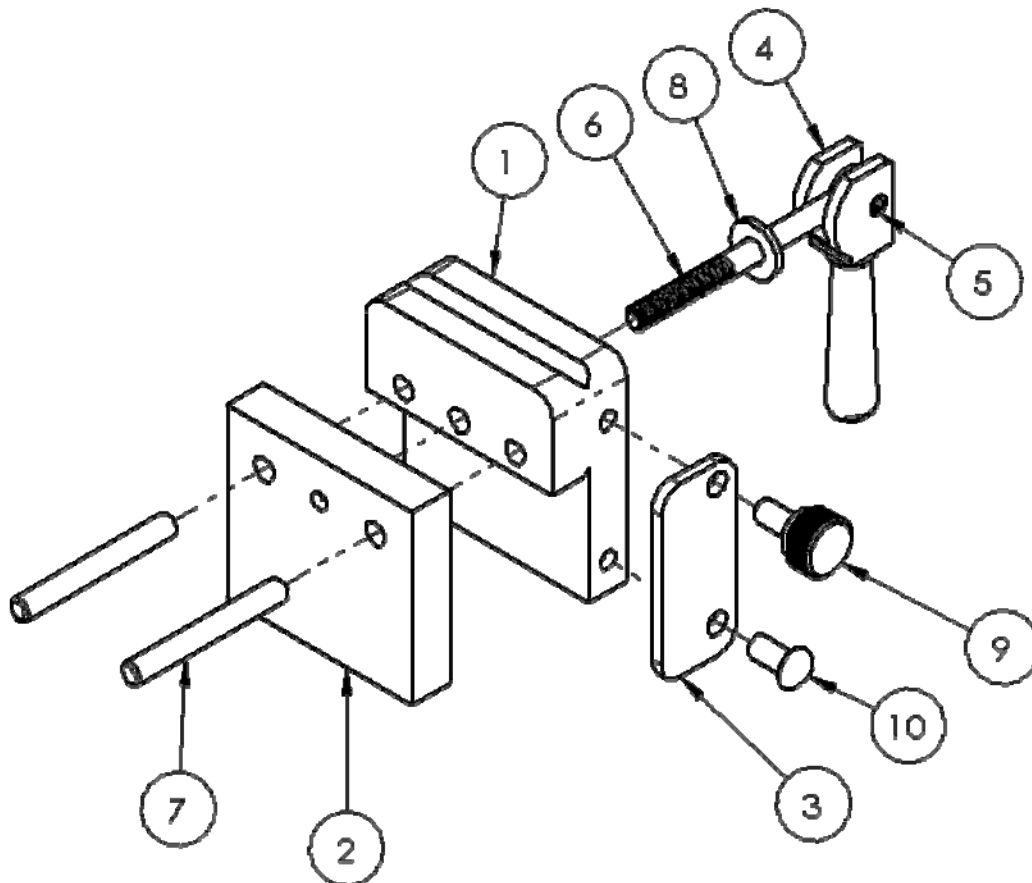
Symptom(s)	Recommended Action
The visual/audio alert system is not functioning properly.	Check the connection on the back side of the Sensor Backing. The ring terminal should be tightly fastened between the hex nut and Sensor Backing. Remove the screws on the cover of the electrical enclosure. Check or replace the battery.
	
The wire is kinked, frayed, or otherwise unsuitable for accurate measurement.	Cut off the section of wire with undesirable characteristics with the 4-1/2" Diagonal Cutters provided in the kit. Thread a new section of wire from the spool.

REPLACEMENT PARTS

	Part No.	Description
Battery	CR2032	3V Lithium Coin Cell Battery
Steel Wire	PC30-100	Malin-7 Ø.015" 30 Lb. Test X 100'

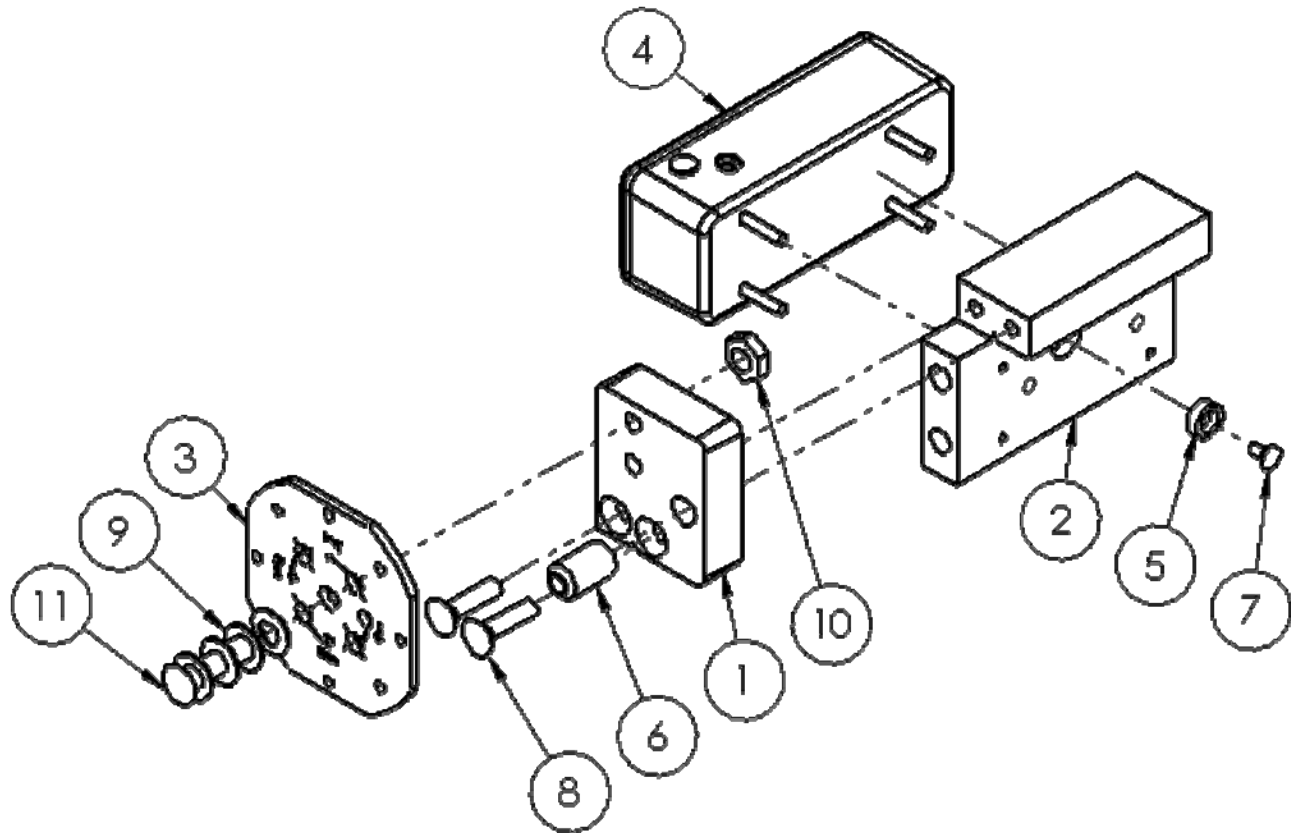
BILL OF MATERIALS:

Rail End Clamp 30-10001686



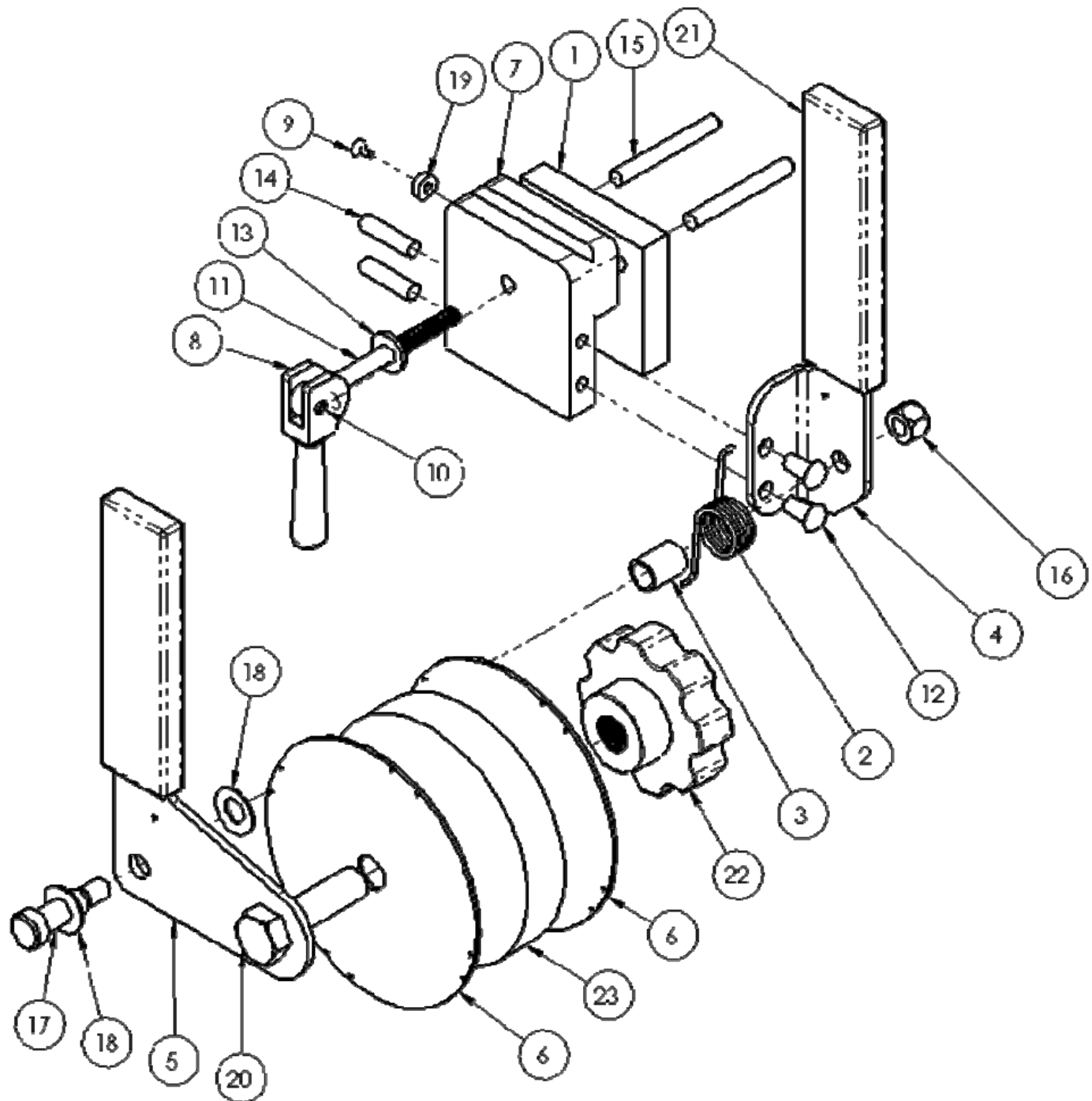
ITEM	QTY.	PartNo	Description	Size	Length
1	1	30-10001692	SIDE PLATE	-	-
2	1	30-10001694	END MOUNT BLOCK	-	-
3	1	30-10001696	END CAP	-	-
4	1	61525K110	DOUBLE CAM HANDLE		
5	1	64127	SPRING PIN	3/16"	5/8"
6	1	CL-26-EB	EYE BOLT	1/4-20	3"
7	2	26758	DOWEL PIN	1/4" DIA	2"
8	1	33078	FLATWASHER	1/4"	-
9	1	98816A256	KNURLED HEAD THUMB SCREW	1/4-20	1/2"
10	1	94049	BUTTON HEAD SCREW	1/4-20	1/2"

Sensor Block 30-10001673



ITEM	QTY.	PartNo	Description	Size	Length
1	1	30-10001675	SENSOR BACKING	-	-
2	1	30-10001677	SLIDE BLOCK	-	-
3	1	30-10001679	APERTURE PLATE	-	-
4	1	30-10001682	ELECTRONICS	-	-
5	1	R622CS-N	MAGNET	3/8" OD X 1/8" THICK	-
6	1	3408A117	BALL-NOSE SPRING PLUNGER	3/8-16	5/8"
7	1	24161	FLAT HEAD SCREW	#4-40	1/4"
8	2	24212	FLAT HEAD SCREW	#10-32	3/4"
9	4	33362	BELLEVILLE WASHER	1/4" ID X 1/2" OD	
10	1	36036	HEX NUT	1/4-20	
11	1	94053	BUTTON HEAD SCREW	1/4-20	1"

Rail End Clamp 30-10001698



Parts List →

ITEM	QTY	PartNo	Description	Size	Length
1	1	30-10001692	SIDE PLATE	-	-
2	1	30-10001700	180° RIGHT HAND TORSION SPRING	-	-
3	1	30-10001702	ROUND TUBING	-	-
4	1	30-10001704	TENSION MOUNT		
5	1	30-10001708	SPOOL MOUNT	-	-
6	2	30-10001710	SPOOL COVER		
7	1	30-10001712	END MOUNT BLOCK	-	-
8	1	61525K110	DOUBLE CAM HANDLE		
9	1	24161	FLAT HEAD SCREW	#4-40	1/4"
10	1	64127	SPRING PIN	3/16"	5/8"
11	1	CL-26-EB	EYE BOLT	1/4-20	3"
12	2	94049	BUTTON HEAD SCREW	1/4-20	1/2"
13	1	33078	FLATWASHER	1/4"	-
14	2	24634	DOWEL PIN	1/4" DIA	1"
15	2	24640	DOWEL PIN	1/4" DIA	2"
16	1	37021	HEX NUT NYLON INSERT Z	5/16-18	
17	1	26330	SOCKET HEAD SHOULDER SCREW	3/8"	7/8"
18	2	33352	BELLEVILLE WASHER	3/8" ID X 3/4" OD	
19	1	R622CS-N	MAGNET	3/8" OD X 1/8" THICK	-
20	1	10210	HEX HEAD CAP SCREW	1/2-13	1 3/4"
21	2	9692K35	VINYL HAND GRIP		
22	1	5532T37	THREADED KNOB	-	-
23	1	PC30-100	MALIN-7 SPOOL	.015 30#	100 FT.