

CIVL-SD Rev4 User Manual

Comb Impact / Vertical Lift and Skirt Deflection



CIVL Test Set

Scope

The sole purpose of this test set (which includes the Comb Impact, Vertical Lift, and Skirt Deflection units) is to determine the compliance or non-compliance of the adjustments of the escalator comb plates relative to the satisfaction of ASME A17.1, starting with 2000 and Skirt Deflection limits set in the same ASME code.

Safety

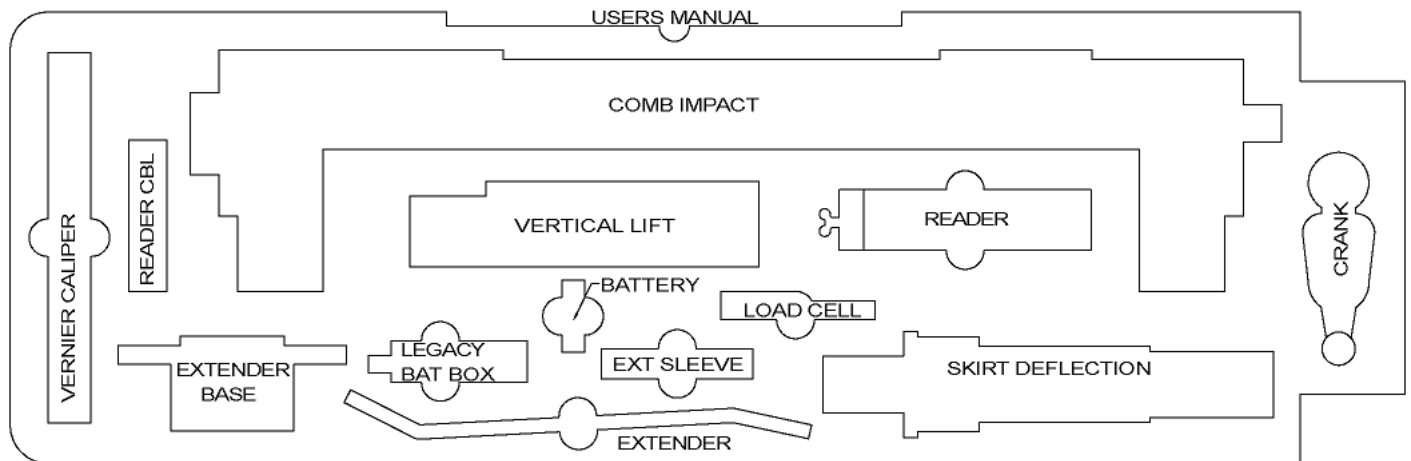
All safety measures required by the user's employer MUST be strictly followed to avoid injury. Full control of the escalator MUST be acquired before attempting any of these measurements.

***StopLoss is not responsible for results of accidents or negligence.**

Table of Contents

Scope	1
Safety	1
Limited Warranty	2
Limits of Liability	2
Disclaimers.....	2
Purpose.....	2
Test Limits.....	3
Tests Required by Code, which this it covers.....	3
Method of Test.....	3
Comb Impact Test Unit	3
Vertical Lift Test Unit, includes Comb Plate Extender	5
Vertical Lift procedure	6
SD unit	8
Contents of Test Set	9
Quality Certificate.....	9

What's In the Box



Limited Warranty

The CIVL-SD test set covered in this manual is warranted by StopLoss Resources to the original purchaser against defects in workmanship and materials under normal use for a period of six months after the date of purchase. During that time StopLoss Resources will repair or replace, at its option, any part that is determined to be defective and is returned, with shipping costs prepaid by the customer, to StopLoss Resources.

Limits of Liability

StopLoss Resources for consequential and incidental damages is expressly disclaimed. StopLoss Resources' liability in all events is limited to and shall not exceed the purchase price.

NOTE: If this test set is used for any purpose other than that stated in the purpose section of this document, **all warranties and liabilities are null and void.**

Disclaimers

The illustrations in this manual are for identification only. Actual product may vary slightly from one issue to the next. The application instructions for the test devices are suggestions only. The mechanics using these test units for demonstration of compliance must use their own knowledge, experience, and judgment to apply the tool to the escalator.

Purpose

To demonstrate compliance of ASME A17.1

Test Limits

Test limits are set by the ASME code, or by the local authority, whichever is more stringent.

Required Tests

This kit covers the following tests required by code: Comb Impact, Vertical Lift, and Skirt Deflection (ASME A17.1-2000)

Test Method

While the escalator is stopped, but monitored by its control circuitry (inspection mode), apply the test units, one at a time, to the comb plate and perform the specified tests. Watch for the change in the appropriate safety switch indicators.

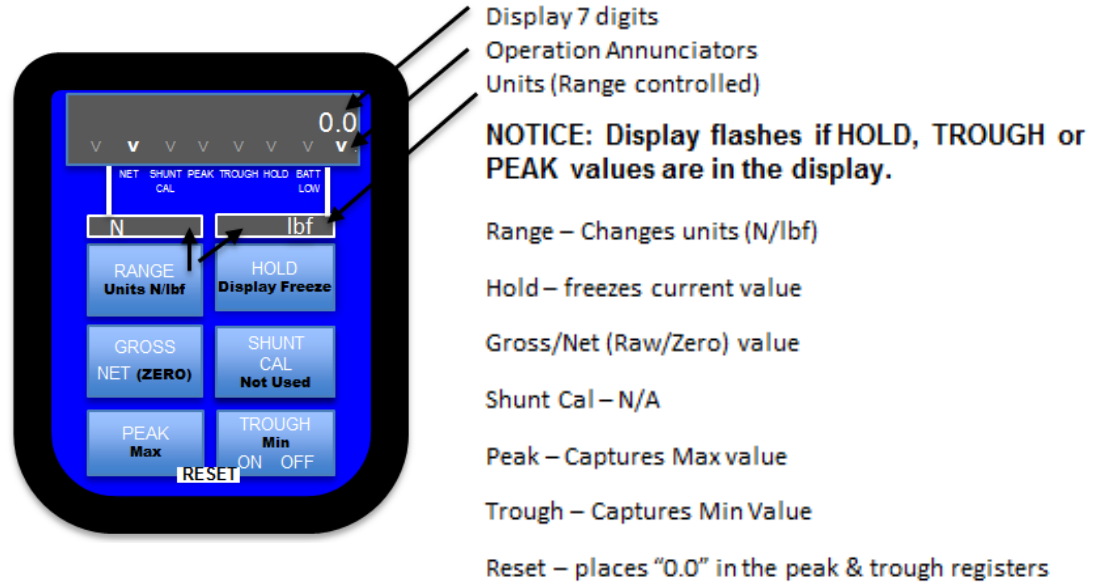
Comb Impact Test Unit

The Comb Impact test unit is designed to compress the comb plate (front to back) to demonstrate the force required to trip the impact safety switch(es) of the plate. It may be applied to the comb plate on either side and at the center to determine the force needed to exercise the impact safety switches. Refer to the current revision of the ASME A17.1



Test Procedure

1. Remove/substitute enough of the comb from the plate to apply the inside face of the test unit against the front edge of the plate. (The inspector may want to test the limits at either side or the middle). Use the end of the test unit that says "Comb End" where the comb was removed/ substituted.
2. Pull the ends of the test unit open enough to allow the pit end feet (marked "Pit End") to overlap the edge of the plate at the pit end. Manually compress the test unit against the edges of the plate.
3. Place the load cell where indicated at the comb end of the comb impact test unit.
4. Inside the test unit, near the end of the threaded rod, take up slack by adjusting the nut on that end to the nut plate where it can settle into a recess and keep from turning.
5. Insert the load cell and attach the PSD reader with the flat cable supplied.
6. Power on the PSD reader by pressing and holding the ON/OFF button.
7. Press the RANGE button to select the desired units, Newton or Pound-Force (N / lbf).
8. Ensure there is no force against the load cell, and then press the GROSS NET button to remove the "V" from above NET on the reader. The reader will now display the natural offset voltage of the particular load cell connected.
9. Zero the PSD reader to obtain the force applied to the load cell. The "V" should reappear above NET on the reader. This should settle to be 0.0. If not, repeat steps 8 and 9.
10. Monitoring the switch indicators on the controller, use the crank on the "Pit End" of the test set to apply pressure until the appropriate switch trips.
11. When the switch trips, the value seen on the meter will be the number of pounds required to trip the switch.
12. Adjust the escalator so the switch trips at a value less than the maximum allowed and retest if necessary.



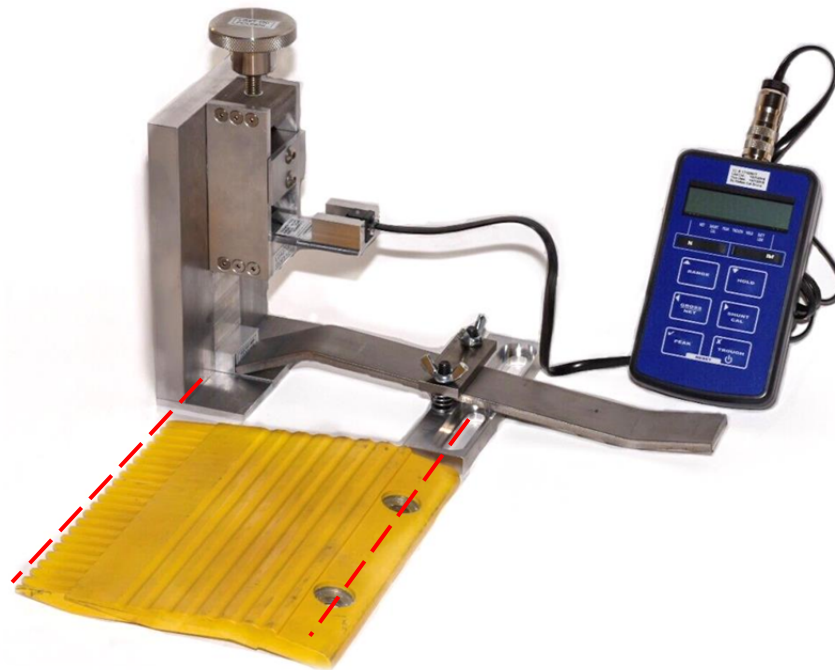
*Steps 5-9 for Legacy Reader

5. Insert the load cell and attach the reader/power supply to the load cell. Attach the DVM to the banana jacks of the Reader observing polarity.
6. Turn the meter to DC Volts with the reader still off. The meter should settle to 000.0 millivolts.
7. Press the range button and the “Auto” will disappear from the display.
8. Ensure there is no force against the load cell and turn on the load cell reader. The meter will now display the normal offset of that particular load cell. Press the “Rel” button (sometimes having a triangle marking) and the meter will again return to 000.0 with only slight activity.
9. From here on, the reader and meter combination will display the force against the load cell in pounds. Ignore the decimal point and read 10 pounds / millivolt. For example:

000.1 mv = 1 lb	010.0 mv = 100 lbs
001.0 mv = 10 lbs	100.0 mv = 1000 lbs

Vertical Lift Test Unit

The Vertical Lift Test Unit is designed to elevate the comb plate at the comb edge to demonstrate the force required to trip the vertical lift safety switch(es) of the plate. The test is usually performed in the center of the comb plate. Refer to the current revision of the ASME A17.1 to determine compliance limits. Rev3a adds the Comb Plate Extender to the CIVL-SD Test Set. This extender more accurately brings the Vertical Lift measurement out to the tip of the comb segment.



Current

The CIVL-SD Rev3a incorporates the comb plate extender that provides the ability to measure the force required to trip the switch at the tip of the comb teeth (the actual point of interest) as a Direct Measurement.

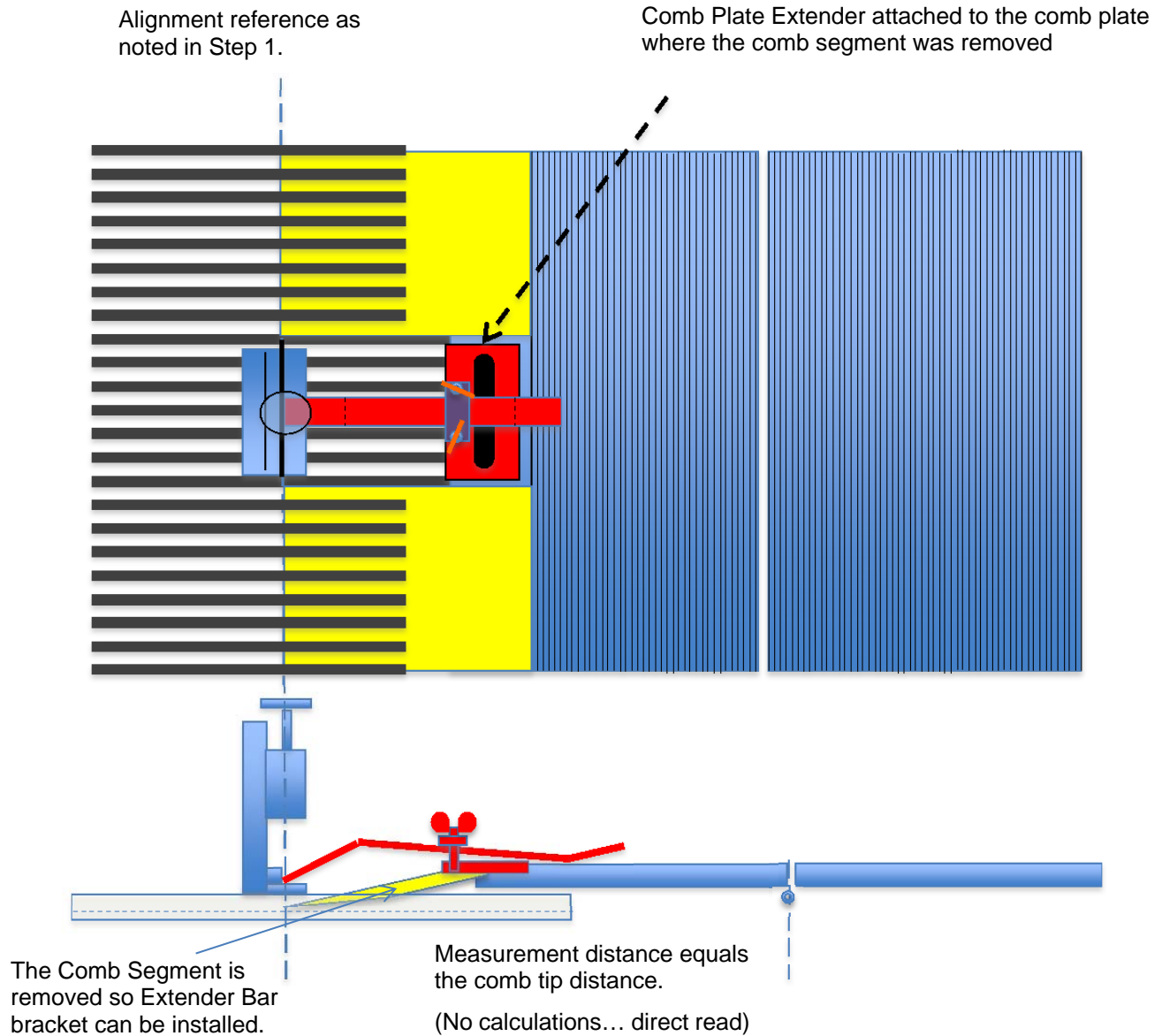
History

Most tools testing the vertical lift force for this test place the measuring device directly under the edge of the comb plate. The force at the edge of the comb teeth had to be calculated.

Vertical Lift Procedure

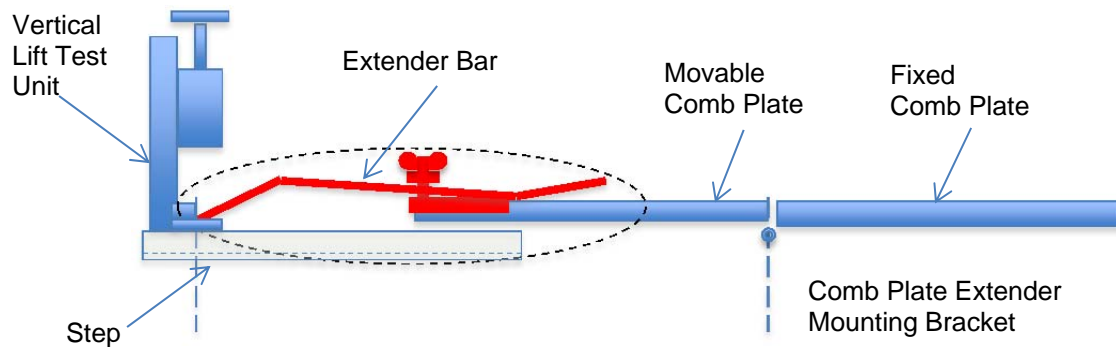
After taking appropriate steps to ensure the escalator is out of service and after removal of the comb segment at the appropriate location, vertical edge of the comb plate, install the Vertical Lift test unit. All safety precautions must be followed.

1. Place the Vertical Lift Unit out, in line with the comb teeth tips.
2. Mount the Comb Plate Extender onto the comb plate using the screws of the comb segment which was removed.



NOTE: The extender bar has bent ends with two different angles, so one of the bent ends should allow the next step to be possible.

3. Slide the extender bar into the mounted extender unit as shown below.
4. With the wing nuts, lightly clamp the bar so the end in the Vertical Lift Unit just begins to receive pressure from the bar, but not enough to lift the plate.



5. Place the load cell into the Vertical Lift Test Unit.
6. Power up the load cell system with no pressure on it.
7. Zero the meter as in the comb impact test.
8. Measure the force required to trip the escalator vertical limit switch.

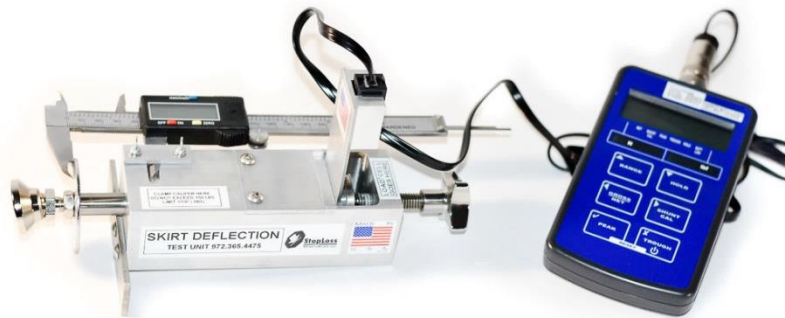
NOTE: This force is a direct read. No distance calculation is necessary. The meter decimal point is still to be ignored. 15.0 mV = 150 pounds.

9. Using the top knob, elevate the comb plate.
10. When the safety switch indicator reports a tripped switch, read the meter and record the results. If the force of the test is within limits, the test is complete. Otherwise, adjust the escalator and repeat the test.

SD Test Unit

The SD unit is for making skirt deflection measurements (Not to be confused with the Step Indexing Tool). At this time, it is required that when applying of 150 lbs. of force, the skirt must not deflect more than 1/16th of an inch.

When the device is placed onto a step and properly set up, it will measure the distance the skirt moves under the force of 150 lbs. while measuring the movement with the Vernier caliper (included).



1. Without a meter or a caliper mounted on the SD unit, push the mandrel of the unit back to the frame of the SD unit until the disk at the end of the mandrel stops the movement at the housing.
2. Place the unit on the step in the first available step groove, pointing the pushing foot towards the skirt needing the test.
3. Loosen the large knob to allow the load cell to be placed in between the floating block and pressure knob.
4. When the load cell is in place, zero the meter as in the comb impact test.
5. Tighten the space further, allowing the skirt foot to settle in on a position, and remove any further meter or mechanism movement. A safe force to apply for this is about 50 lbs.
6. Pull the Vernier caliper out far enough to exceed the distance between the “V” notch mounting the caliper and the outside of the disk mounted at the end of the mandrel.
7. Mount the Vernier caliper on the main frame of the SD unit and tighten the thumb screws while holding the caliper firmly into the “V” notch.
8. Push the moving end of the caliper in to touch the disk on the mandrel.
9. Loosen the force on the load cell until the meter reads zero.
10. The foot of the mandrel should be flat against the skirt.
11. If anything has moved, readjust to remove any linkage play. Begin the measurement.
12. Again bring the moving caliper blade to the disk and “Zero” the caliper.
13. Begin tightening the tension wheel until the meter reads 150 lbs.
14. Read the movement of the skirt on the Vernier caliper.
15. If the escalator fails, make repairs and test again from Step 10 above.

Remove the tool by removing the 150 lbs. through the load cell. Move the unit to the opposite skirt or the next step to be tested.

Contents of Test Set

- Case with foam
- Calibrated Load Cell System
- Comb Impact test unit
- Vertical Lift Test Unit with Extender Bracket and Extender Bar
- One red or blue actuating handle (fits the Comb Impact unit)
- Skirt Deflection Test Unit including Vernier caliper
- User's Manual

Quality Certificate

I certify that the CIVL Test Set has been made from new materials by quality workmanship.

By Joseph O. Jolly Date _____