

# Installation & User Manual

## Interface Force Verification Frame IFVF



*IFVF-1K*

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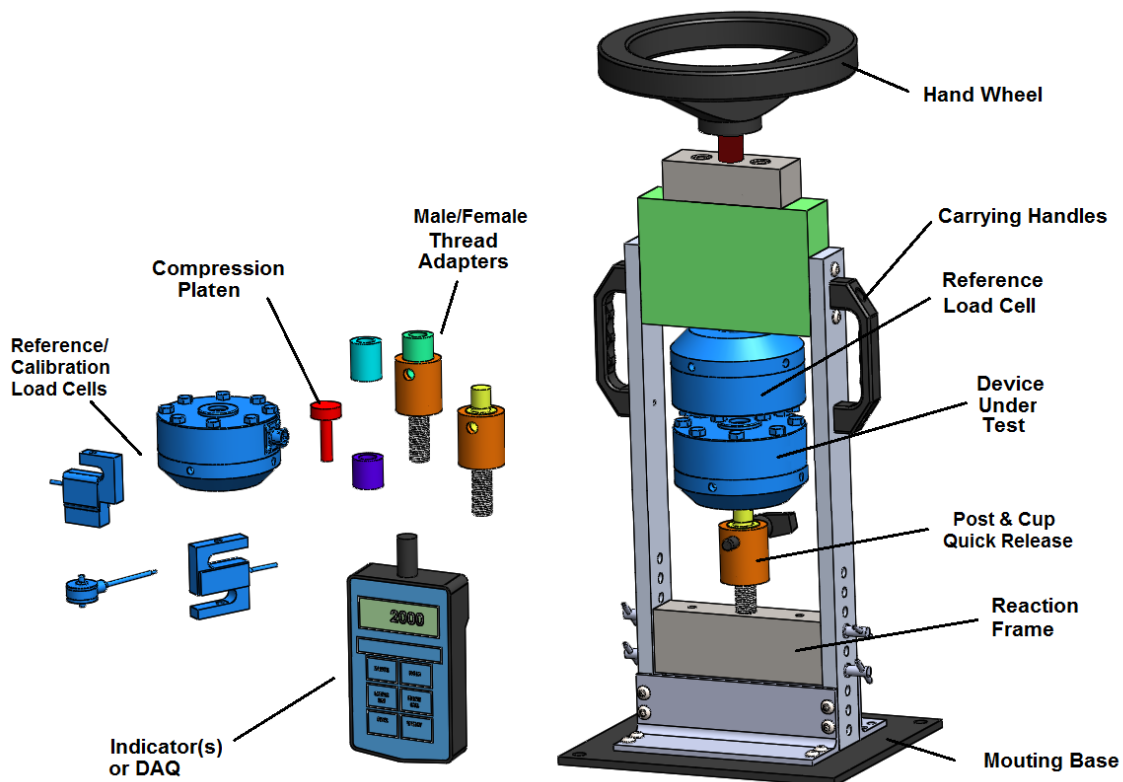
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# 1. Introduction

## Equipment Description

The Interface Force Verification Frame (IFVF) is a portable high force capacity frame and accessories designed to apply tension and compression forces to load cells with high resolution and accuracy. This system features a portable reaction frame, manual actuator, thread/adaptor accessories, and optional force sensor(s) and instrumentation. The hardware can be used to verify operation of a device under test or calibrate relative to a second reference load cell.

The base IFVF system includes the frame and tension/compression adapters. Load cells, indicators, and additional adapter hardware are sold separately. The items have been designed by Interface Inc. to work fully together for most common applications.



**Interface Inc. Supplied Components**

<b>Component</b>	<b>Description</b>
<b>IFVF-1K</b>	Components used to create and control both tension and compression forces up to 1,000lbf. Features reaction frame, manual turn force actuator, mounting base, and carrying handles. Features 5/8-18 male thread loading interface.
<b>Compression Platen</b>	Component used to react compression forces. Features smooth loading surface and 5/8-18 male height adjustment threads.
<b>Post/Cup Adapter</b>	Components used to impart tension forces. Features male 5/8-18 male threads, post/cup mating features, and quick release pin.

**Optional Components (Sold Separately)**

<b>Component</b>	<b>Description</b>
<b>Reference Load Cell</b>	Component used to measure the level of force being created by the manual turn actuator as contained within the reaction frame.
<b>Force Readout</b>	Component used to display the level of force being created within the reaction frame.
<b>Device Under Test</b>	Component being force loaded within reaction frame.
<b>Power Cables</b>	Components used to provide power to the load cell and force indicator.
<b>Adapter Hardware</b>	Components used to adapt between different thread sizes and configurations. Interface Inc. can quote and supply as needed.

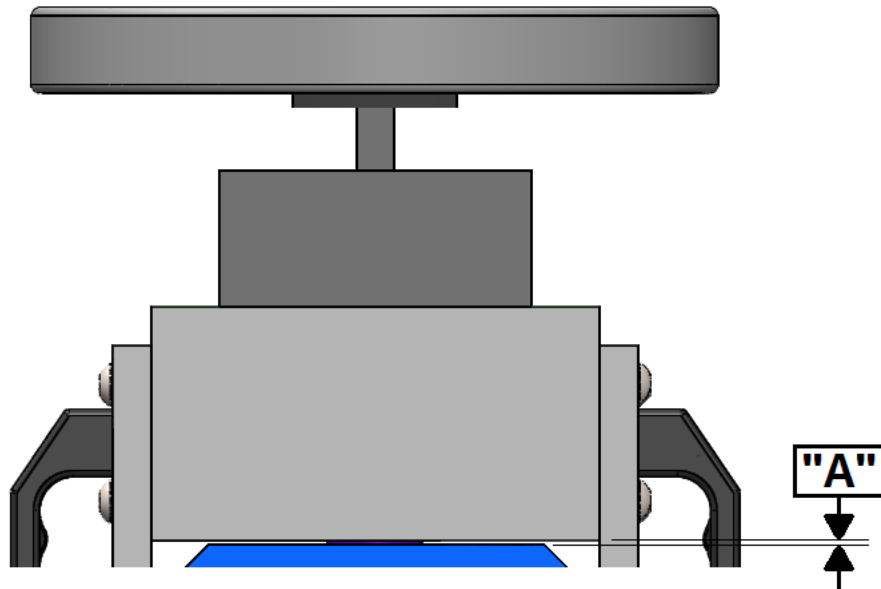
## Theory of Operation

Turning the handles clockwise imparts a linear compression movement of ~0.007” per turn. Turning the verification frame handles counter-clockwise imparts a linear tension movement of ~0.007” per turn. The exact level of deflection changes based the stiffness of the load cell and/or device under test.

The force created is contained and reacted through the structural frame. The Reference Load Cell measures the force being applied to the Device Under Test. The verification frame can be used to verify operation of a Device Under Test or calibrate relative to a second reference load cell.

## General Specifications

Parameter	Specification
<b>Force Rating</b>	+/-1,000lbf Tension and Compression
<b>Force Actuation</b>	~0.007” per turn, ~6 full turns, 8in Hand Wheel. Reference Figure 1, below.
<b>Size</b>	8.0” x 10.0” x 20.0”, Under 20lbs
<b>Mounting Base</b>	8.0” x 10.0”, 2x .41” Thru Holes for Mounting Bolts



**Figure 1:** Force Actuator Movement

## 2. Warnings

### General

It is very important that you study the following safety information as to not result in a hazardous situation or equipment damage.




1. DO NOT SHOCK LOAD HANDLES WHILE TURNING/ACTUATING. Use only smooth and gentle pressures with gradual accelerations and decelerations.
2. HARD STOPS are located at full extension and retraction of the actuator. Do not apply high force or attempt to actuate past these hard stops. Damage to the internal members of the verification frame will occur from overpressure at hard stops.
3. Do not allow personnel to operate the verification frame who are not experienced or trained in its use.
4. Keep fingers and hands free of potential pinch points of the verification frame. Be aware of operating conditions at all times.
5. Do not exceed the verification frame force capacity of 1,000lbf by more than 10%.
6. Replace, remove and install hardware adapters only when verification frame is unloaded of all levels of force.

## 3. System Operation

### Setup

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1. Clamp or bolt the verification frame base to a sturdy surface. Ensure that turning handles can freely rotate and are not obstructed.
2. Install desired hardware adapters needed for use.
  - a. Compression: Compression Platen
  - b. Tension: Tension Post/Cup
3. Position the bottom horizontal reaction frame member as needed by removing and re-installing T-pins on the two vertical side rails. Do NOT remove T-pins while any force is being generated within the reaction frame. 
4. Install load cell(s) within reaction frame per manufacturer guidelines.
5. Connect load cell wiring to indicators to display force values per manufacturer guidelines.

### Operation

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#### 1. Compression

- a. Turn actuator counterclockwise gently until hard stop is reached, then turn actuator 1 turn clockwise. Reference Figure 1.
- b. Manually rotate compression platen until contact is made between loading surfaces. Observe force increase/changes on electronic display.  
*(Between 0 and 30lbs actuation may be somewhat non-linear as threaded connections engage unevenly.)*
- c. Rotate handles clockwise to increase compression magnitude.
- d. Rotate handles counter-clockwise to decrease compression magnitude.

#### 2. Tension

- a. Turn actuator clockwise gently until hard stop is reached, then turn actuator 1 turn counterclockwise. Reference Figure 1.
- b. Thread the Post of the Post/Cup Adapter into the load cell or Device Under Test. Next, vertically position the Cup of the Post/Cup Adapter to best align it to the Post. Using the Force Actuator turn handles, fine position the

concentricity of the Post and Cup and then cross pin the two features together.

- c. Rotate handles counter-clockwise to increase tension magnitude.
- d. Rotate handles clockwise to decrease tension magnitude.

## **Maintenance**

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The verification frame is designed to operate with minimal maintenance requirements. However, periodic maintenance should be performed to ensure trouble free operation.

### **1. Daily**

- Ensure handles turn smoothly throughout its range and do not bind during movements.

### **2. Weekly**

- Wipe down any surfaces that appear dirty.
- Apply light machine oil to cup/post hardware and thread adapters.

### **3. Monthly**

- Inspect all moving joints for signs of wear/damage.
- Verify all fastener hardware is torqued and not loose.



## 4. Technical Support

If you cannot find answers to your technical questions from the above sections, you can use the Internet, e-mail, or telephone to contact Interface Inc. for assistance.

[www.interfaceforce.com](http://www.interfaceforce.com): The website provides contact information.

E-Mail: [customerservice@interfaceforce.com](mailto:customerservice@interfaceforce.com)

Telephone: 480-948-5555

### **Before you contact Interface Inc.**

Interface Inc. can help you more efficiently if you have the following information available when you contact us for support.

- Description of problem
- How long and how often has the problem occurred
- Troubleshooting attempts taken thus far

### **Be prepared to Troubleshoot**

- Call from a telephone close to the verification frame so that you can implement suggestions made over the phone.
- Write down any specific instructions and relevant information provided during the support.

### **After you Contact Us**

- Interface Inc. logs and tracks all technical support inquiries to ensure that you receive assistance for your problem or request. If you have questions about the status of your problem or have additional information to report, please contact Interface Inc. again.

## Warranty

All force verification frame products from Interface Inc., ('Interface') are warranted against defective material and workmanship for a period of (1) one year from the date of dispatch. If the 'Interface' product you purchase appears to have a defect in material or workmanship or fails during normal use within the period, please contact Interface customer service, who will assist you in resolving the problem. If it is necessary to return the product to 'Interface' please include a note stating name, company, address, phone number and a detailed description of the problem. Also, please indicate if it is a warranty repair. The sender is responsible for shipping charges, freight insurance and proper packaging to prevent breakage in transit. 'Interface' warranty does not apply to defects resulting from action of the buyer such as mishandling, improper interfacing, operation outside of design limits, improper repair or unauthorized modification. No other warranties are expressed or implied. 'Interface' specifically disclaims any implied warranties of merchantability or fitness for a specific purpose. The remedies outlined above are the buyer's only remedies. 'Interface' will not be liable for direct, indirect, special, incidental or consequential damages whether based on the contract, tort or other legal theory.

Any corrective maintenance required after the warranty period should be performed by 'Interface' approved personnel only.