Dresser™ Model 6 Transfer Prover

Operation and Maintenance Manual

for 2/10M and 10M Versions

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1 Introduction

This manual provides information for using the Dresser Natural Gas (NGS) Model 6 Prover and its software.

Operate and maintain the Prover in accordance with Factory recommendations as outlined in this manual to ensure accurate and repeatable results. Please contact local IT personnel or Dresser Meters and Instruments technical support for questions.

1.1 Symbols Used in This Manual

DANGER

DANGER indicates an imminently hazardous situation, which, if not avoided, will result in death or serious injury.

DANGER: Indique une situation de danger imminente qui, si elle n'est pas évitée, entraînera des blessures graves ou même la mort.

WARNING

WARNING indicates a potentially hazardous situation, which, if not avoided, could result in death or serious injury.

AVERTISSEMENT: Indique une situation de danger potentielle qui, si elle n'est pas évitée, peut entraîner des blessures graves ou même la mort.

CAUTION

CAUTION indicates a potentially hazardous situation, which, if not avoided, could result in minor or moderate injury.

MISE EN GARDE: Indique une situation de danger potentielle qui, si elle n'est pas évitée, peut entraîner des blessures mineures ou modérées.

Note: Notes provide important related information, such as an explanation, tip, or comment that is not hazard-related.

1.2 Certifications

This equipment is certified to the following:

Electromagnetic Compatibility	
FCC 47CFR 15	2019 Telecommunication, Radio Frequency Devices
ICES-003: 2016	Issue 6, Information Technology Equipment (including Digital Apparatus) – Limits and Methods of Measurement
IEC 61326-1	Issued: 2012/07/10 Ed: 2 Electrical Equipment for Measurement, Control, and Laboratory Use–EMC Requirements–Part 1: General Requirement
Safety Requirements for Electrical Equipment for Measurement, Control, And Laboratory	
UL 61010-1:2012 Ed.3+R:29Apr2016	
(R2017) CSA C22.2#61010-1-12:2012 Ed.3+U1;U2	
IEC 61010-1:2010 (Third Edition)	

2 Overview

The Dresser Model 6 Prover is an integrated computer-controlled system designed for shop or field proving of rotary, turbine, and diaphragm-type positive displacement gas meters. This Prover is designed for transfer proving using only air as the test medium. Electric blowers mounted on a manifold or a skid provide the test air flow (vacuum).

This Prover system consists of the following major components:

- Master Meter(s) as the measurement reference standard
- Pressure transducers and temperature probes
- Blowers
- Prover Hose(s)
- Electronic cables and accessories with a storage case
- Junction Box
- Controller Box

This Prover also has the unique capability to test Dresser NGS meters equipped with the Integral Micro Corrector (IMCW2) and other Dresser NGS electronics, such as the ETC and ES3 Electronic Temperature Compensating Devices.

The Model 6 Prover is a portable unit that can be transported into the field for on-site testing. Because the Prover is a precision instrument, transport it with care and ensure that it is properly secured and covered for protection from moisture and dirt.

This unit is designed for indoor and outdoor usage, but it is not designed for use in rain conditions. The ambient operating temperature is from +32°F to 140°F. Maximum altitude is 6,500 feet above sea level with an environment of pollution degree 2.

2.1 Operating Principle

The Prover operates as a transfer test. Blowers are used to pull a vacuum, which draws ambient air into the meter under test (MUT or Field Meter) and through a connecting hose directly into the Master Meter. The Field Meter registers pressure, temperature, and volume that are compared to the values registered by a Master Meter on the Prover. The Master Meter is a Reference Meter with known performance characteristics that are traceable to national and international standards.

In the normal test set up, the mass of air passes through the Field Meter and then through the Master Meter. Since the Master Meter's characteristics are known, the meter under test can be characterized based on the difference in its performance parameters as compared to the Master Meter. The difference in performance is expressed in terms of accuracy. Proof and percent error are also displayed.

2.2 Software

Prover software is available for setting test configurations, performing calculations, and presenting the Prover's flow test data. The software stores predetermined Field Meter test configurations and allows custom configurations to be created. It performs all calculations at the end of each test run and displays the pressure and temperature readings, Field Meter proof, Field Meter accuracy, and percent error. Test reports can be saved in different formats and downloaded. The software can be configured for Imperial or Metric display and storage of data.

The software is accessed through a web browser and a connection to the Prover. The connection can be wireless or through a Cat5e or Cat6 shielded Ethernet cable connected to the Prover. Any device with a web browser and the ability to connect with the Prover, such as a laptop, desktop, tablet, or cell phone can be used. No software needs to be installed on the connecting device. The device connects wirelessly with a router on the Prover, so no Internet service is needed.

3 Receiving, Handling, and Storage

Follow the steps and recommendations in this section to ensure your Prover and its accessories are ready for use.

3.1 At Time of Delivery

Perform the following steps when you receive your shipment:

1. Check the packing list to verify all items have been received.
2. Inspect each item for damage and if necessary:
   a. Record any visible damage or shortages on the delivery record.
   b. File a claim with the carrier.
   c. Immediately notify your Dresser prover supplier.

CAUTION

Do not accept any shipment with evidence of mishandling without making an immediate inspection for damage prior to signing the carrier's delivery record. Do not attempt repairs or adjustments, as doing so may be a basis for voiding all claims for warranty or insurance claim with carrier.

Refuser toute expédition présentant des signes de mauvaise manipulation sans faire une inspection immédiate des dommages avant de signer le bon de livraison du transporteur. Ne tenter aucune réparation ou aucun réglage; le faire peut constituer un motif suffisant pour annuler toutes les demandes de garantie ou de réclamation d'assurance auprès du transporteur.

3.2 Storage

If the product is not tested or installed soon after it is received, store it in a dry location in the original shipping container for protection with the Prover's operating conditions:

- Temperature range of 32°F to 140°F (0°C to 60°C)
- Maximum altitude of 6,500 feet above sea level
- Environment pollution degree 2

4 Parts Identification

The following is a list and physical description of the items available for the Dresser Model 6 Prover. Your Prover order may or may not include all of the components listed below. If any items that you ordered are missing or damaged, call Meters & Instruments at 1-800-521-1114 or 832-590-2303.

CAUTION

Only use manufacturer supplied parts. Failure to follow this instruction may lead to a safety or operational hazard.

N'utiliser que des pièces d'origine. Le non-respect de cette consigne peut entraîner un risque de sécurité ou de fonctionnement.

4.1 Equipment Provided with the Model 6 Prover

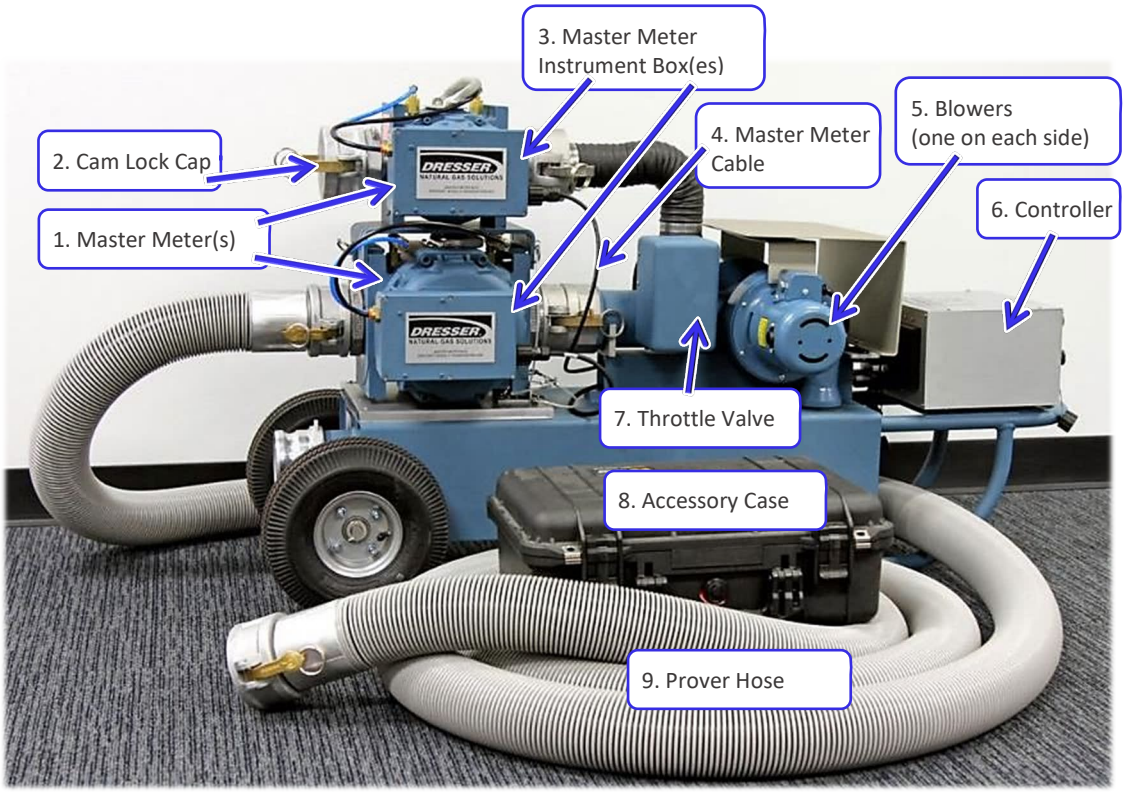


Figure 1: 10M or 2M/10M Prover parts identification

Table 1: Model 6 Prover Parts Identification

Number	Part	Description
1	Master Meter(s)	Reference Meter with known performance characteristics that are traceable to national and international standards The Prover may be purchased with one or two Master Meters.
2	Cam Lock Cap	Cam-type cap to close off the inlet of the unused Master Meter
3	Master Meter Instrument Box	Rectangular box mounted to the end cover of the Master Meters(s) It contains the pressure, temperature, and volume input sensors for the Master Meter.
4	Master Meter Cable	Cable from the Master Meter to the Controller box
5	Blowers	Devices attached to the Prover Cart that are responsible for producing a source of airflow during Prover testing
6	Controller	Aluminum or steel rectangular box with electronics and a number of sockets for electrical and Ethernet connections
7	Throttle Valve	Electrical actuator used to aid in the flow rate control for the Prover
8	Accessory Case	Briefcase-sized, black container used for storing Model 6 Prover accessory equipment
9	Prover Hose	Flexible, ribbed hose with quick-disconnect couplings at each end

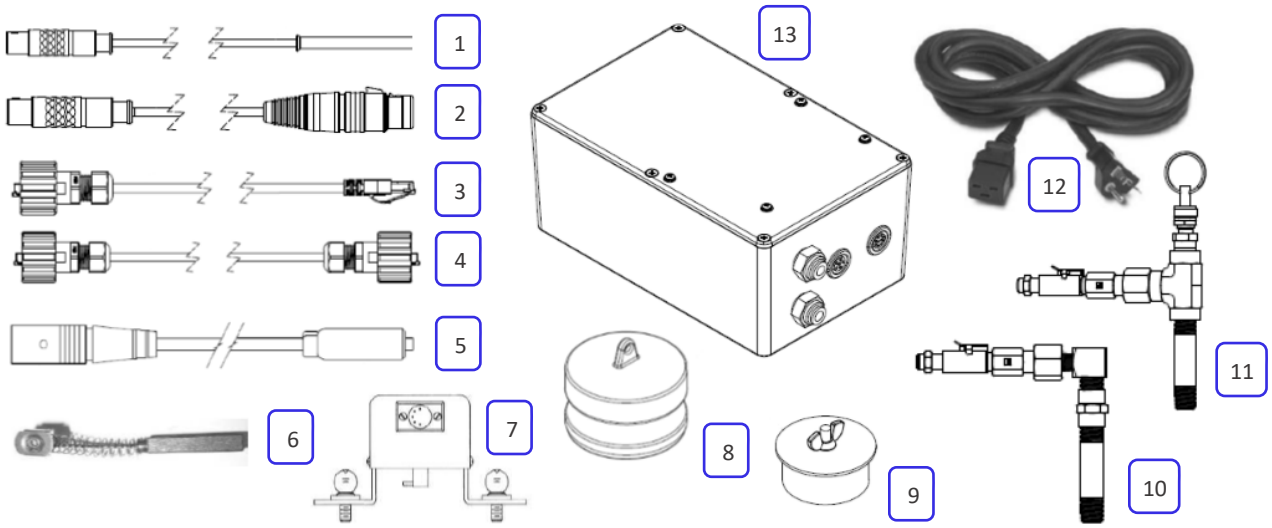


Figure 2: Accessory Case Items

Table 2: Model 6 Prover Accessory Parts Identification

Number	Part	Description
1	Field Meter Temperature Probe	6-inch-long, 1/4-inch diameter silver tube with a cable extending from it The end of the cable has a push-pull connector.
2	Field Meter Instrument Drive (ID) Pulser Cable	Cable with a 5-pin connector on one end and a push-pull connector on the other end
3	Ethernet Cable	Cat6 shielded cable used to connect a device to the Prover's Ethernet jacks
4	Ethernet Cable	Cat6 shielded cable used to connect the Field Meter Junction Box to the Controller
5	Manual Start/Stop Cable and Button	Cable with a 5-pin connector at one end and a push button at the other end
6	Blower Brush	Replacement Blower Brush
7	Instrument Drive (ID) Pulser	Small, aluminum, rectangular box with two 90-degree angled metal feet protruding from the underside and an L-shaped shaft that extends down between the two metal feet Two mounting clamps are included with the ID Pulser.
8	Cam Lock	Cam-type to close off the inlet of the unused Master Meter
9	Hose Plug	Cam-type plug to seal the flexible Prover Hose end when the hose is not in use
10	Field Meter Pressure Adapter	"L"-shaped brass pipe fitting with a 1/4-inch NPT threaded end and a quick-disconnect fitting end that serves as a pressure-dampening device
11	Field Meter Pressure and Temperature (P&T) Adapter	Brass "T"-assembly with a 1/4-inch NPT threaded end, a compression fitting for the temperature probe, and a quick-disconnect fitting for the pressure fitting
12	25-foot power cord	Electric extension cord
13	Field Meter Junction Box	Rectangular box with connectors for an Ethernet cable, pressure lines, and temperature and pressure testing.

Number	Part	Description
Not Shown	Pressure Lines	1/4-inch diameter nylon tubing with compression nuts attached to each end One (1) set of blue and black pressure lines is included. Blue is for inlet, and black is for outlet.

Figure 3: Controller Connections and Test Stop button

Table 3: Model 6 Prover Controller Identification

Number	Part	Description
1	Serial number label	Shows the Prover's assigned serial number
2	Test Stop button	In case of emergency, press to disable the Blowers and immediately stop a Meter Test. If engaged, twist to release and enable the Blowers.
3	Junction Box connection*	Ethernet connection to the Field Meter Junction Box
4	WAN port*	Ethernet connection to connect to another network, such as a company network
5	LAN port*	Ethernet connection to connect directly to the Prover from a device. This port runs a DHCP server.
6	Power connection/switch	Power cable connection and power switch.
7	Status indicator	LED light to indicate the status of the Controller.

* These connections should be covered when not in use.

4.2 Optional Accessories

The following accessories can also be purchased from Dresser and used with the Model 6 Prover:

Part	Description
Optical Scanner	Used when testing meters with dial indexes and odometers with black and white graduated marks
Acoustic filter	Used when testing ultrasonic meters to reduce or eliminate resonance induced by pulsation from the Master Meter at some flow rates
Inverter	Provides a power source when AC power is not available (120V and 60Hz)
3-inch quick disconnect (female)	NPT Cam Lock couplings used to connect the Master Meter to the Field Meter
3-inch quick disconnect (male)	

Part	Description
Smart Prove Cable	Used for Smart Prove testing to connect the field meter to the Prover's Junction Box. The cable can be serial or telemetry/serial (Y-cable).
Reference Meters	Used when validating the transfer Prover's accuracy between recertifications. **Note:** Testing the Prover with a Reference Meter is not a substitute for Prover recertification.

5 Problems with Installation or Operation

If you encounter any serious problems during installation or initial operation of the Prover, immediately notify your Dresser Prover supplier.

Note: Do not attempt repairs or adjustments. Doing so might void all claims for warranty.

When reporting a suspected problem, complete the following steps:

1. Provide the following information to your Customer Service Representative:
   - Purchase order number and/or sales order number
   - Product model, serial number, and/or bill of material number
   - Description of the problem
2. Pack all returns in the original shipping container or similar, if available, and use shipping material that protects the product from damage during transit.
3. Contact your Dresser meter supplier to obtain a Return Materials Authorization (RMA) number.

   The Dresser Product Services Department offers professional services for all Dresser Meters and Instruments products. Authorization for return is required for all products shipped to the Factory for repair, calibration, warranty, exchange, or credit. An RMA number is required to obtain authorization.

Installation

6 Precautions

Ensure that everyone using the Dresser Model 6 Prover takes the following precautions:

DANGER

The Blowers are not explosion proof. Do not operate them when testing in a hazardous area. Do not operate the Prover in the presence of explosive or flammable gases or an explosion may result. The Prover system is not designed for intrinsic safety.

Les soufflantes ne sont pas à l'épreuve des explosions. Éviter de les faire fonctionner lors d'essais dans une zone dangereuse. Ne pas faire fonctionner l'appareil d'étalonnage en présence de gaz explosifs ou inflammables au risque de provoquer une explosion. L'appareil d'étalonnage n'est pas équipé de protection à sécurité intrinsèque.

DANGER

At NO time should power be applied when the Prover is in a possibly explosive atmosphere. Observe all company safety rules, regulations, and procedures.

En AUCUN moment ne convient-il de mettre l'appareil d'étalonnage en marche en atmosphère potentiellement explosive. Respecter toutes les règles de sécurité, les règlements et les procédures de l'entreprise.

DANGER

For safety reasons, always use positive pressure to purge the Field Meter (meter to be tested) prior to initiating a test using the vacuum test method. Failure to purge a Field Meter can result in severe personal injury and/or equipment damage. For the Meter Purging Procedure, refer to Section 13.

Pour des raisons de sécurité, toujours purger le débitmètre (l'appareil sous essai) avec une pression positive avant de lancer toute mise à l'essai sous vide. Le non-respect de cette consigne de purge du débitmètre peut provoquer des blessures graves ou des dommages matériels. Voir la Section 13 pour la procédure de purge de l'appareil.

WARNING

To avoid a potential electrical shock, do not operate the Dresser Model 6 Prover in the rain or while standing in water.

WARNING

The Blowers contain rotating parts. Keep hands clear. Entanglement of hands, feet, hair, clothing, or accessories can occur causing death or serious injury. Stop and unplug Blowers and wait for all moving parts to stop before cleaning or servicing.

WARNING

The Controller box might be hot to the touch when operating the Prover outdoors. Do not touch Controller box when it might be hot. Contact with the hot surface may cause burns.

CAUTION

Do not lay cords, cables, or hoses across a walkway or other location that can create a slip or trip hazard. Move them out of the way or keep them secured by using a cable cover or other means, as needed.

CAUTION

Arrange the Prover, cords, cables, hoses, and other accessories to allow sufficient freedom of movement for users to safely and easily access and use them. Avoid creating a cramped or strained work location.

- Check upstream and downstream blocking or bypass valves to ensure that they operate properly and are leak tight in the closed position before powering any device.
- If the Dresser Model 6 Prover is equipped with both the 2M and the 10M Master Meters, make certain that the unused Master Meter has the inlet capped or plugged to prevent any possibility of overspeeding the unused Master Meter.

7 Setting Up Prover Equipment

CAUTION

Important: Before setting up your Dresser Model 6 Prover, review this manual for all operating and safety instructions. Read all instructions within a specific step before executing any of the actions associated with that step. This equipment should only be operated in the manners specified in this manual. Failure to follow this manual may cause the protection provided by the equipment to be impaired.

Important: Avant de paramétrer votre appareil d'étalonnage Dresser Modèle 6, il est important de lire attentivement toutes les consignes de sécurité et d'utilisation contenues dans ce manuel. Lire toutes les instructions relatives à chaque étape particulière avant d'exécuter l'une ou l'autre des mesures correspondant à chacune des étapes. Cet équipement doit uniquement être utilisé de la manière stipulée dans le manuel. Tout manquement aux instructions contenues dans ce manuel peut rendre inutilisables les dispositifs de protection intégrés à l'appareil.

CAUTION

This equipment should be maintained and repaired only by Factory-trained personnel. Failure to follow this direction may result in an injury to personnel or improper functioning of equipment.

Cet équipement doit être entretenu et réparé uniquement par du personnel formé en usine. Le non-respect de ces directives peut occasionner des blessures au personnel ou un mauvais fonctionnement de l'équipement.

DANGER

For safety reasons, always use positive pressure to purge the Field Meter (meter to be tested) prior to initiating a test using the vacuum test method. Failure to purge a Field Meter can result in severe personal injury and/or equipment damage. For the Meter Purging Procedure, refer to Section 13.

Pour des raisons de sécurité, toujours purger le débitmètre (l'appareil sous essai) avec une pression positive avant de lancer toute mise à l'essai sous vide. Le non-respect de cette consigne de purge du débitmètre peut provoquer des blessures graves ou des dommages matériels. Voir la Section 13 pour la procédure de purge de l'appareil.

This procedure assumes that the Model 6 Prover (and associated hardware) has been unpacked from the shipping container, all of the packing material has been removed, and the Prover is ready to be properly configured for testing. Maintain the Prover Cart in a horizontal position during operation and keep it as level as possible.

Isolate the Field Meter to be tested from any gas before testing. Follow all recommended and/or company safety procedures.

To set up the Prover for testing, perform the following steps:

1. Position the Field Meter for testing.

CAUTION

The Field Meter air intake functions as a vacuum during testing and foreign material may be drawn into the Prover. Remove all loose objects, foreign debris, and litter from in front of the Field Meter air intake and keep it clear during Prover testing.

2. Connect the 25-foot flexible Prover Hose to the outlet of the Field Meter, and connect the other end of the hose to the inlet quick-disconnect coupling of the appropriate Master Meter (Figure 4).

   Where possible, put a loop in the hose between the Master Meter and the Field Meter.

3. If the Prover has two Master Meters, ensure the Cam Lock Cap is firmly attached to the inlet quick-disconnect coupling of the unused Master Meter (Figure 5).

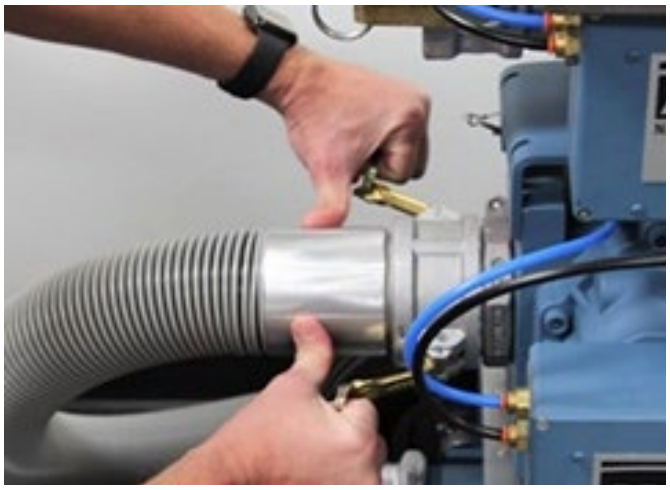


Figure 4: Connect Prover Hose to Master Meter

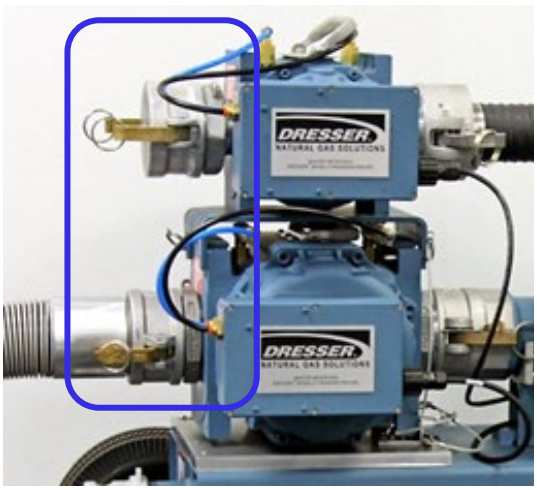


Figure 5: Hose connected to Master Meter to be used and other is capped

Note: In Figure 5, the lower Master Meter is being used for the test, so the upper Master Meter is capped.

4. Verify the Master Meter communication cables connections are locked into place into each respective Master Meter's Instrument Box (Figure 6 and Figure 7).

Figure 6: Verify Master Meter communication cables connected

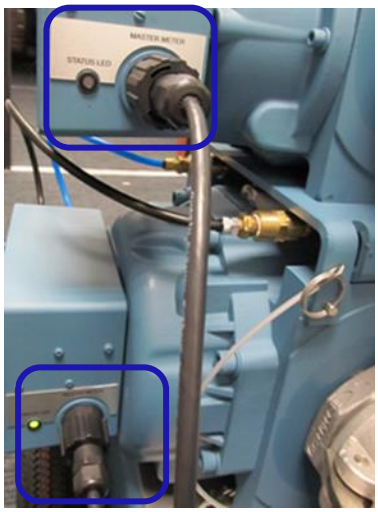


Figure 7: Master Meter communication cables connected

5. Verify the pressure lines are properly connected from the Master Meter pressure fittings to the appropriate Master Meter Instrument Box (Figure 8 and Figure 9):

   - One end of a blue inlet pressure line connects into the selected Master Meter inlet pressure fitting and the other end connects into the inlet pressure port on the Master Meter Instrument Box (labeled IN PRESSURE).
   - One end of a black outlet pressure line connects into the selected Master Meter outlet pressure fitting and the other end connects into the outlet pressure port on the Master Meter Instrument Box (labeled OUT PRESSURE).

Figure 8: Master Meter blue inlet and black outlet pressure lines connected

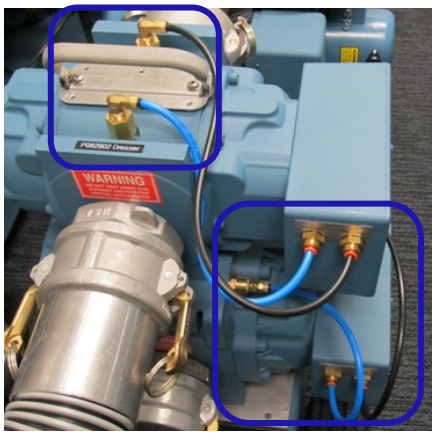


Figure 9: Master Meter pressure lines connected

6. Connect an Ethernet cable from the Field Meter Junction Box Ethernet jack (Figure 10) to the Ethernet jack labeled JUNCTION BOX on the Controller (Figure 11).

Figure 10: Connect Ethernet cable from the Field Meter Junction Box

Figure 11: Connect Junction Box Ethernet cable to the Controller

7. Install the P&T Adapter into the appropriate port on the Field Meter:
   - For rotary and diaphragm meters, install the P&T Adapter into the inlet pressure port.
   - For turbine meters, install the P&T Adapter into the outlet pressure port.
8. Install the Field Meter Pressure Adapter into the outlet pressure port of the Field Meter for rotary and diaphragm meters.
9. Insert the Field Meter temperature probe into the P&T Adapter vertical port until the temperature probe is in the center of the air stream, and then hand tighten the compression fitting.

   If installing the P&T Adapter into the top of a diaphragm meter, do not extend the probe to the point where it will engage with the tangent linkage.

   If an opening is not available, install the probe in the pipeline as close to the meter outlet as possible.

CAUTION

Make sure that the Field Meter temperature probe or the meter being tested cannot be damaged due to the positioning of the Field Meter temperature probe. Avoid leakage at or around the P&T Adapter or Field Meter temperature probe.

S'assurer que la sonde thermique du débitmètre ou l'appareil mis à l'essai ne peut pas être endommagé en raison de la position de la sonde de température. Éviter toute fuite de, ou autour de, l'adaptateur ou de la sonde de température P&T.

10. Plug the end of the Field Meter temperature probe cable into the Field Meter Junction Box connection labeled TEMP PROBE.
11. Ensure the pressure lines are properly connected from the P&T Adapter (the T-shaped brass piece) at the silver quick-disconnect fitting to the Field Meter Junction Box:
    - One end of a blue inlet pressure line connects into the P&T Adapter and the other end connects to the port labeled IN PRESSURE on the Field Meter Junction Box.
    - One end of a black outlet pressure line connects into the Pressure Adapter, and the other end connects to the port labeled OUT PRESSURE on the Field Meter Junction Box.

Figure 12: Field Meter with ID Pulser attached

Figure 13: Attach blue inlet and black outlet pressure lines

12. If using an ID Pulser as the test equipment, perform this step and then skip to step 15.

Note: Use an ID Pulser to test only non-compensated (non-TC) rotary meters.

Figure 14: Instrument Drive Pulser test setup

As the drive dog travels around the interior hole of the adapter plate during testing, it is critical that continuous contact is maintained between the drive dog and the follow pin before securing the ID Pulser to the adapter plate:

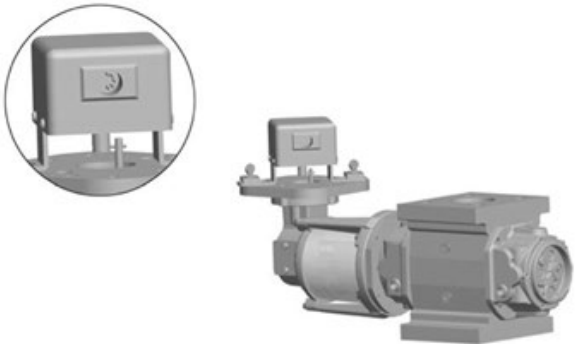


Figure 15: ID Pulser detail of the drive dog connected to the follow pin on a CD version meter

CAUTION

Improper alignment and engagement of the instrument drive dog can lead to equipment damage.

Un mauvais alignement et l'engagement du toc d'entraînement peut endommager l'instrument.

a. Place the ID Pulser over the center hole of the adapter plate. Determine which set of mounting holes in the adapter plate to use to get the ID Pulser shaft most closely centered over the adapter plate and drive dog.

b. Fasten the ID Pulser to the adapter plate. This can be done by using the two (2) mounting clamps provided.

You may need to make fine adjustments to the position of the ID Pulser when the meter test begins, so do not tighten the mounting clamps all the way down yet.

c. Plug the ID cable into the Field Meter Junction Box at the connection labeled VOLUME INPUT.

13. If using an Optical Scanner as the test equipment, perform this step.

Note: Mounting the Optical Scanner and positioning the lens relative to the target is critical for the reliable operation of the device.

a. Align the Optical Scanner as indicated in Table 4 and hand tighten. For illustrations of the test wheel and dials, refer to Figure 17 and Figure 18.

For Series A1, refer to Figure 19. For Series B2, refer to Figure 20. For series B3, refer to Figure 16. For correct focusing and positioning, refer to steps c and d.

Note: The distance X shown in Figure 19 and Figure 20 should be approximately 1/2 inch (or about the width of your small finger). Set angle A slightly off-center at approximately 15 degrees.

Table 4: Dresser NGS Meters Optical Scanner Alignment

Series	Temperature Compensated (TC) Combined Test	Uncorrected (UC) Test
B2 (TQM) B3 (Life-lubed)	Aim the Optical Scanner at the dial containing 10 white and 10 black squares of the temperature compensated Volume Odometer dial.	Aim the Optical Scanner at the dial containing 10 white and 10 black squares of the non-compensated Volume Odometer dial or at the high-speed half-black and half-white dial.
Series A1 (LMMA)	Aim the Optical Scanner at the dial containing 10 white and 10 black sections.	Aim the Optical Scanner at the dial that is half white and half black.

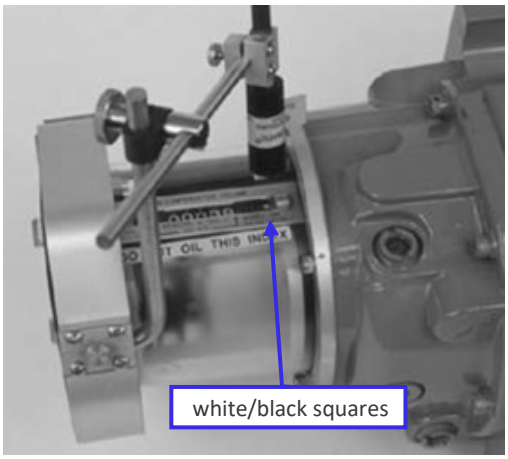


Figure 16: Optical Scanner relative positioning and alignment, Series B3 accessory unit

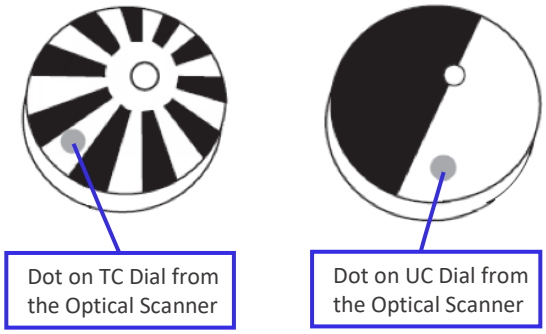


Figure 17: Optical Scanner test dials Series A1 (LMMA)

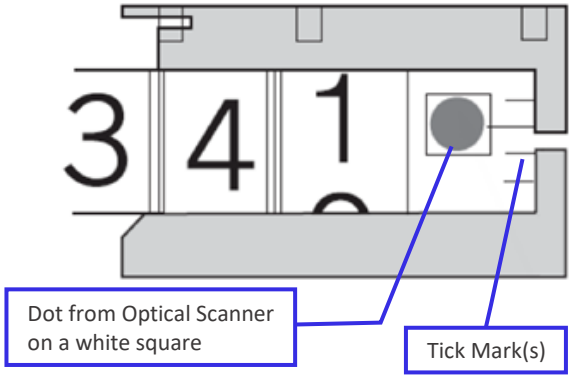


Figure 18: Volume odometer test wheel Series 2 (TQM) or Series 3 (Life Lube)

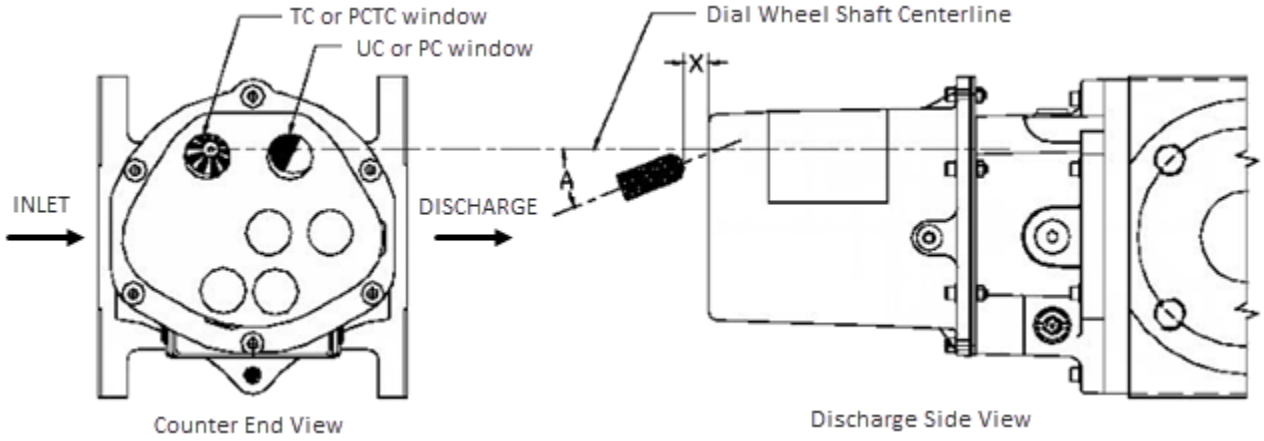


Figure 19: Optical Scanner relative positioning and alignment, Series A1 (LMMA) accessory unit

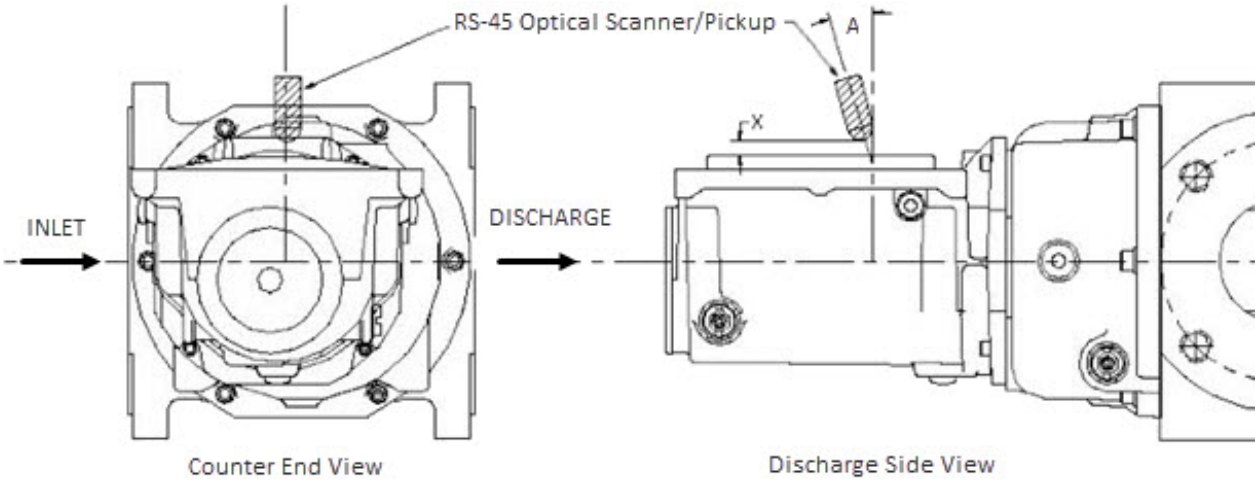


Figure 20: Optical Scanner relative positioning and alignment, Series B2 (TQM) accessory unit

b. Plug the Optical Scanner cable into the Field Meter Junction Box at the connection labeled VOLUME INPUT.

c. Focus the light emitted by the Optical Scanner so that the dot displayed on the dial is of uniform brightness and does not cross more than one black/white boundary.

d. Adjust the Optical Scanner amplifier to ensure that it blinks for each transition from white-to-black or black-to-white.

14. If using a Smart Prove Interface cable for testing, plug one end of the serial cable into the serial port of the IMCW2 instrument, and plug the other end into the Field Meter Junction Box at the connection labeled VOLUME INPUT.

15. Connect the female end of the 25-foot electrical extension cord into the recessed male receptacle located on the front side of the Controller for 110 Volt Provers, or into the 220/240 Volt receptacle of the Power Transformer for 220 Volt Provers.

16. Connect the male end of the 25-foot electrical extension cord into the proper electrical supply source.

17. Hardware setup is now complete. Push the Controller's power switch to the ON position, and verify that the green power indicator light (located next to the power switch) is illuminated.

Figure 21: Power receptacle and light

18. Connect to the Prover by using a wireless (Wi-Fi) or Ethernet connection. For more information, refer to Section 8.

Note: After connecting to the Prover and logging into the software (refer to Section 8), run the System Diagnostics feature to verify that the connections are attached and communications are working correctly. For more information, refer to Section 22.4.

8 Accessing the Model 6 Prover Software

The Model 6 Prover software is used to configure the Model 6 Prover, run Field Meter tests, run reports, generate event and audit logs, and other related tasks.

The software is accessed through a web browser and a connection to the Prover. The connection can be wireless (Wi-Fi) or through a shielded Ethernet cable connected to the Prover. You can use any device with a web browser, such as a laptop, desktop, tablet, or cell phone. No software needs to be installed on the connecting device. Because the wireless connection connects with a router on the Prover, no Internet service is needed. Factors such as physical obstructions, relative location, network range, and signal interference affect Wi-Fi signal strength.

A username and password are required to log into the Prover. The role assigned to the username determines what features you can view and change. For more information about user roles, refer to Section 21.

8.1 Connect to the Prover

The connection with the Prover can be wireless or through a shielded Ethernet cable connected to the Prover.

For connection issues, refer to Section 24.1 or contact the Factory for assistance.

8.1.1 Direct Connection

To connect directly to the Prover, plug a shielded Cat5e or Cat6 Ethernet cable from the Ethernet port on the device to the correct network port on the Prover:

- Use the LAN (local area network) port to connect directly to the Prover from a device. This port runs a DHCP server (Figure 22).

  Note: Never connect an Ethernet cable from the LAN port to a port that connects with another network.

- Use the WAN (wide area network) port to connect to another network, such as a company network.

Figure 22: Connect with an Ethernet cable

8.1.2 Wireless Connection

To connect to the Prover with a wireless connection, perform the following steps:

1. Select the Prover network name Model6WIFI-**###** from your list of available wireless networks (Figure 23).

   The **###** value is the unique number for the Prover. It should match the last three (3) numbers on the serial number label on the Prover.

   If you do not see the Prover network name on the list, you might be outside of range or an obstruction is blocking the signal. For more troubleshooting information, refer to Section 24.1.

   Ideally, you should be within sight of the Prover with no signal obstructions.
2. Click **Connect**.
3. Enter the security key/password. The default password is **Model6Prover**. It is case-sensitive.

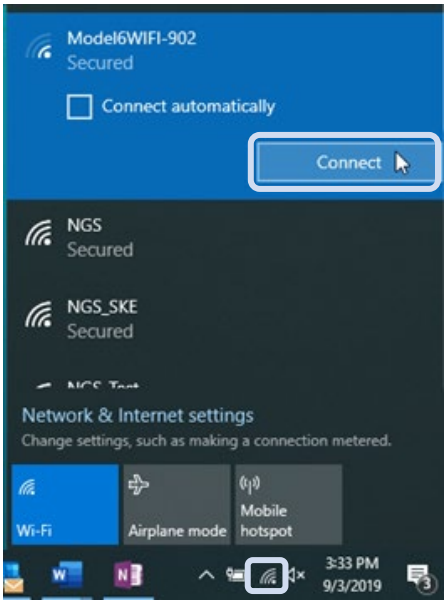


Figure 23: Select Model 6 Prover wireless network (Windows 10 shown)

8.2 Log in to the Software

To log in to the Prover software, perform the following steps:

1. Go to **model6prover.com** in a web browser.

   A login screen displays (Figure 24).
2. Enter your login username and password, and click **Log in**.

   A default username and password are set for each role at the Factory. The Operator role's username and password are both **oper**; the Superuser role's username and password are both **super**.

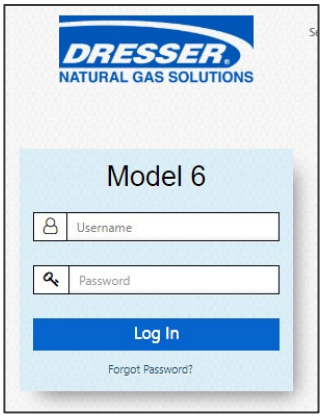


Figure 24: Model 6 Prover software login screen

3. If you are logging in with the username for the first time, the Change Password screen displays (Figure 25). If this occurs, perform the following steps:

   a. Enter your current password in the **Old Password** field.

   b. Enter the password you want to use in the **New Password** field and then in the **Confirm New Password** field.

      The new password must be at least eight (8) alphanumeric characters.

      To clear content in all of the password fields, click **Reset**.

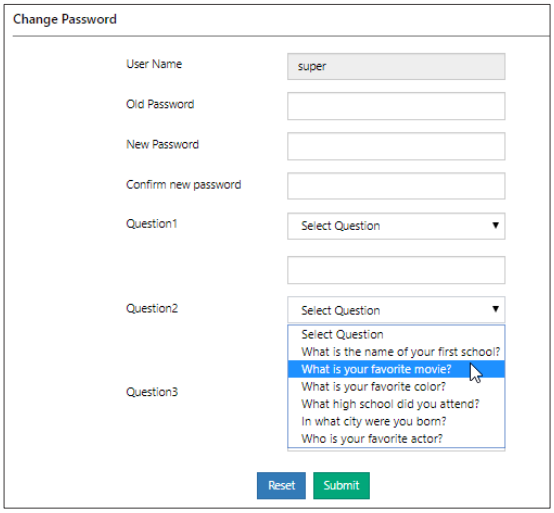


Figure 25: Change Password screen

   c. For security reasons, a question selected in one of the **Question** fields is asked when **Forgot Password**? is selected on the login screen. Select questions and enter answers that you can remember but that others will likely not know or guess.

4. Click **Submit**.

   You are logged out. A Logout screen displays (Figure 31).

5. Click **Click here** text to log back in.

   The Login screen displays (Figure 24).

6. Enter your login username and password, and click **Log in**.

   After logging in, the current username displays in the upper right corner of the screen. In Figure 26, the **oper** username is currently logged in.

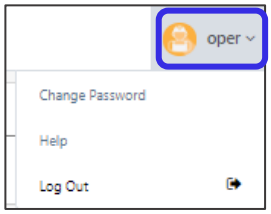


Figure 26: User drop-down menu

Note: The default password should be changed for each user, including the Factory default operator and superuser accounts. Each user can change their own password. Someone in the Superuser role can change the username and passwords for each role. For more information about passwords, refer to Section 21.1.1.

8.3 Forgot Password

If you forget your login password, perform the following steps:

1. In the login screen, enter your username, and click **Forgot Password** (Figure 27).

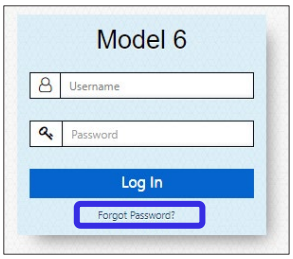


Figure 27: Model 6 Prover software login screen

2. In the Forgot Password screen (Figure 28), enter the answer to a security question, and click **Submit**.

   The security question and its answer are chosen from the ones set on the Change Password screen for the username entered.

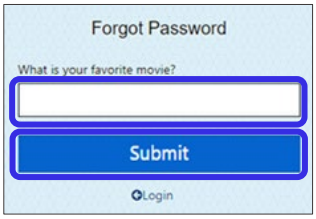


Figure 28: Security Question screen

3. In the Change Password screen (Figure 29), enter the password you want to use in the **New Password** field and then in the **Confirm New Password** field.

   The new password must be at least eight (8) alphanumeric characters.

   To clear content in all of the password fields, click **Reset**.

4. (Optional) Change questions and/or answers to the security questions.
5. Click **Submit**.

   You are logged out. A Logout screen displays (Figure 31).

6. Click **Click here** text to log back in.

   The login screen displays (Figure 24).

7. Enter your login username and password, and click **Log in**.

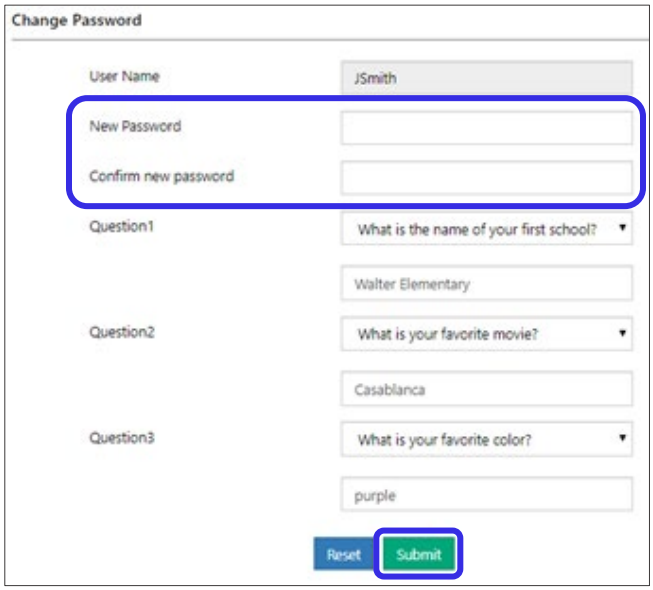


Figure 29: Enter new password

8.4 Access Online Help

To access the available online help, perform the following steps:

1. Click the down arrow icon by the username in the upper right of the program window (Figure 26).
2. Click **Help** in the drop-down menu.

8.5 Log Out

To log out of the program, perform the following steps:

1. Click the down arrow icon by the username in the upper right corner of the program window.
2. Click **Log Out** in the drop-down menu (Figure 30).

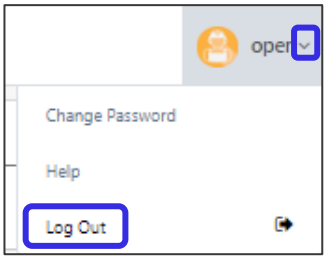


Figure 30: Log out from drop-down menu

When log out is successful, a Logout screen displays (Figure 31).

3. To log in from the Logout screen, click **Click here**.

Figure 31: Logout screen

8.6 About the Software User Interface

Note: Because of differences in devices, operating systems, screen sizes, resolution, role access, software version, and other factors, your display might appear different than the screens shown in this manual.

Figure 32 shows common features available in the Model 6 Prover software screens:

- **Toolbar:** Click an icon to perform tasks or access settings. Icons followed by a down arrow icon have additional subtasks available, as shown for the Prover icon.
- **Minimize/Maximize Toolbar Icon:** Click the icon to show/hide the toolbar icons.
- **User, User Commands, and Help:** This area displays the username that is currently logged in. Click the down arrow icon beside the username to access menu options.

Tip: You can adjust the zoom level in your browser window to enlarge or reduce the view of the software screens.

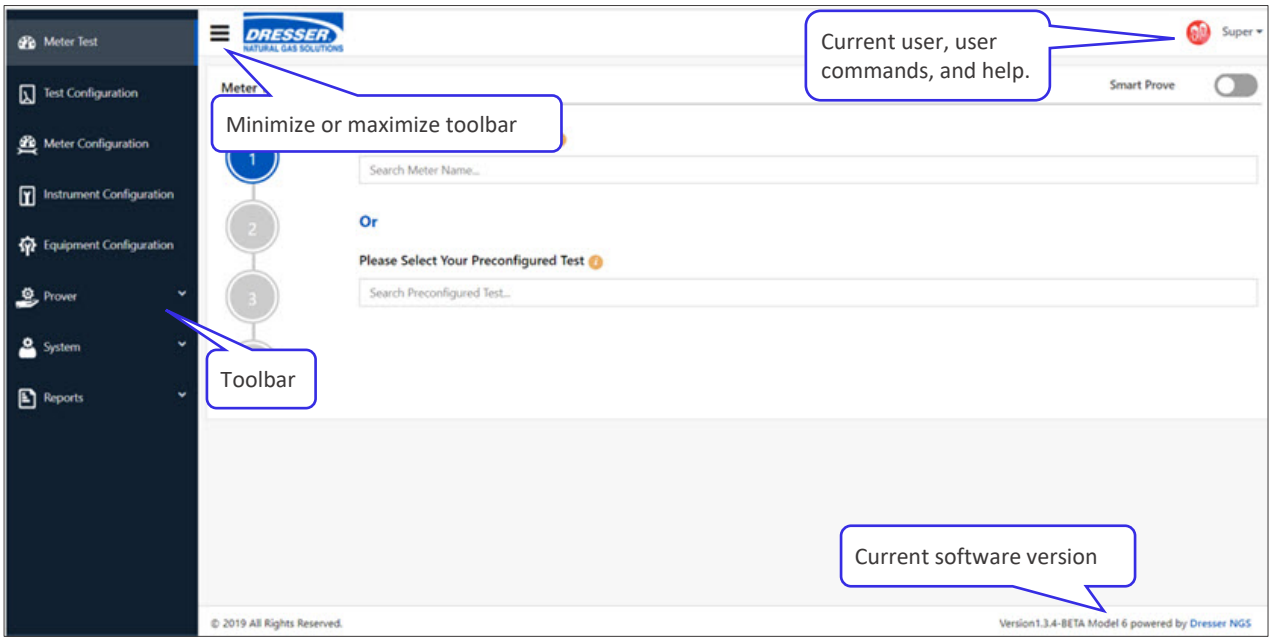


Figure 32: Model 6 Prover software screen features

Table 5 describes some common icons and buttons on the software screens.

Table 5: Common Icons and Buttons

Icon/Button	Description
+	Add a custom item, such as a meter or field.
🗑	Delete a selected custom item, such as a meter.
🔍	Search for an item in the list based on criteria entered in the search field.
ⓘ	Click to see information about the field.
Smart Prove	Double-click or slide to enable or disable Smart Prove testing
⬆	Upload a file from a source directory for use in the software.
⬇	Download file to a directory.
⬆ Browse ...	Upload an image to be used in the software, such as an image for associated test equipment.
Cancel	Exit without saving changes.
Create	Create the current item with the entered settings.
Next	Use the currently entered settings in the next step.
Reset	Clear unsaved changes made to the fields. If an item is being created, fields are cleared. If an item is being changed, fields revert to the previously saved values.
Update Submit	Save the entered settings.

Operations

9 Testing a Field Meter

The Model 6 Prover software provides a process to guide you through selecting the appropriate options or use an existing Preconfigured Test to run a test on a Field Meter.

You can select the meter, meter instrument, test equipment, and test settings. These can be set for a custom test to be run once or saved as a Preconfigured Test to be reused.

If using Smart Prove for testing, enabling the Smart Prove selector with the Smart Prove cable attached to a supported device automatically detects the meter and other equipment and skips to the Step 4-Select Test Points & Master Meter Name screen.

Note: It is recommended that the meters to be tested are stored (soaked) for a minimum of eight (8) hours in the stable environment in which the testing is being conducted to reduce measurement uncertainty. During field testing, consideration must be given for the induced errors due to unstable or averaged temperatures during a test sequence.

During the process, you must make a valid selection to proceed to the next step. The step number displayed in blue indicates the current step. You can return to previous completed steps by selecting the appropriate step number (1–4).

Selections for the meter, instrument, and test equipment are loaded at the Factory. You can also select from an existing Preconfigured Test and/or Test Points and then customize or run the test based on those parameters. The Superuser or another role that has access can customize these selections or create new ones.

Before initiating the test, make sure that the Master Meter Cable, Prover Hose, Field Meter, test equipment, and other hardware are properly connected. Also verify that the test is being conducted in the proper environmental conditions. For more information, refer to the Installation section and the specifications in Appendix A.

Note: It is important that the temperature environment in which the test will be conducted is stable. Temperature fluctuations of 1°F can result in a ±.2% error in the test results.

DANGER

The Blowers contain rotating parts. Keep hands clear. Entanglement of hands, feet, hair, clothing, or accessories can occur causing death or serious injury. Stop and unplug Blowers and wait for all moving parts to stop before cleaning or servicing.

9.1 Set the Meter Test Parameters

To start a meter test, perform the following steps:

1. Connect the Prover for testing a Field Meter. For more information, refer to Section 7.

2. Click the **Meter Test** icon in the toolbar (Figure 33).

Figure 33: Meter Test toolbar icon

3. On the Step 1 - Select Meter Name/Preconfigured Test screen (Figure 34), enter text in the appropriate field or enable Smart Prove:

   - To enable Smart Prove for testing, double-click or slide the Smart Prove selector. The selector shows gray if disabled; it shows blue if enabled.
     The Prover attempts to communicate with the Smart Prove instrument. The connection time varies depending on the connection. A message displays if the attempt is successful. If communication fails, check the Smart Prove cable is correctly attached to a supported device (such as the IMCW2). Skip to step 8.
   - In the **Meter Name** field, enter text that is in the meter name.
     A list displays the options based on the text entered.
     For example, Figure 35 shows the results of entering **2** in the **Meter Name** field.
   - If you are using an existing Preconfigured Test, enter its name in the **Preconfigured Test** field.
     A list displays the options based on the text entered.

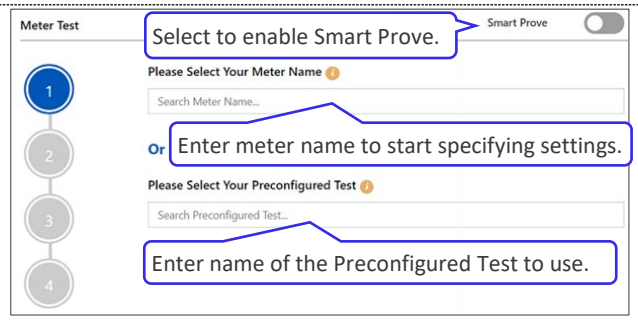


Figure 34: Select Meter Name/Preconfigured Test screen

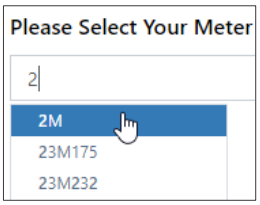


Figure 35: Selecting a 3M meter to test

4. Select the correct meter name or Preconfigured Test from the field list.

5. If you are using a Preconfigured Test, skip to step 8.

6. On the Step 2 - Select Meter Instrument screen (Figure 36), select the correct instrument for your meter from the choices displayed. Scroll down to see additional choices, if needed.

   Note: This list does not show instruments that have the **Hide Instrument** checkbox selected. For more information, refer to Section 11.2.

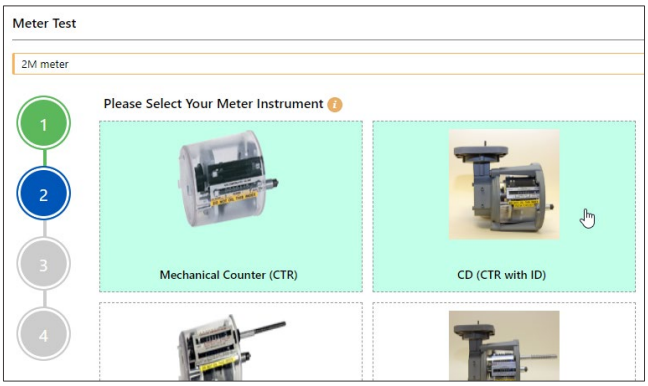


Figure 36: Select Meter Instrument screen

7. On the Step 3 - Select Test Equipment screen (Figure 37), select the test equipment to be used from the choices displayed. Scroll down to see additional choices, if needed.

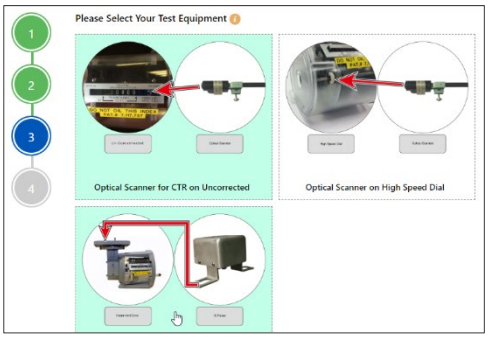


Figure 37: Select Test Equipment screen

8. The fields shown in the Step 4 - Select Test Points & Master Meter Name screen depend on whether the Smart Prove selector is enabled in the Step 1 screen.

   Select and enter the appropriate information for the test. Other fields are calculated based on the test parameters.

   The default values are specified by the Preconfigured Test you are using, if one was selected in the Step 3 screen.

   If the Smart Prove selector is enabled, the parameters for the test are specified by the Smart Prove instrument.

   Duration time is automatically determined by the specified test volume and flow rate. A test must last at least 30 seconds.

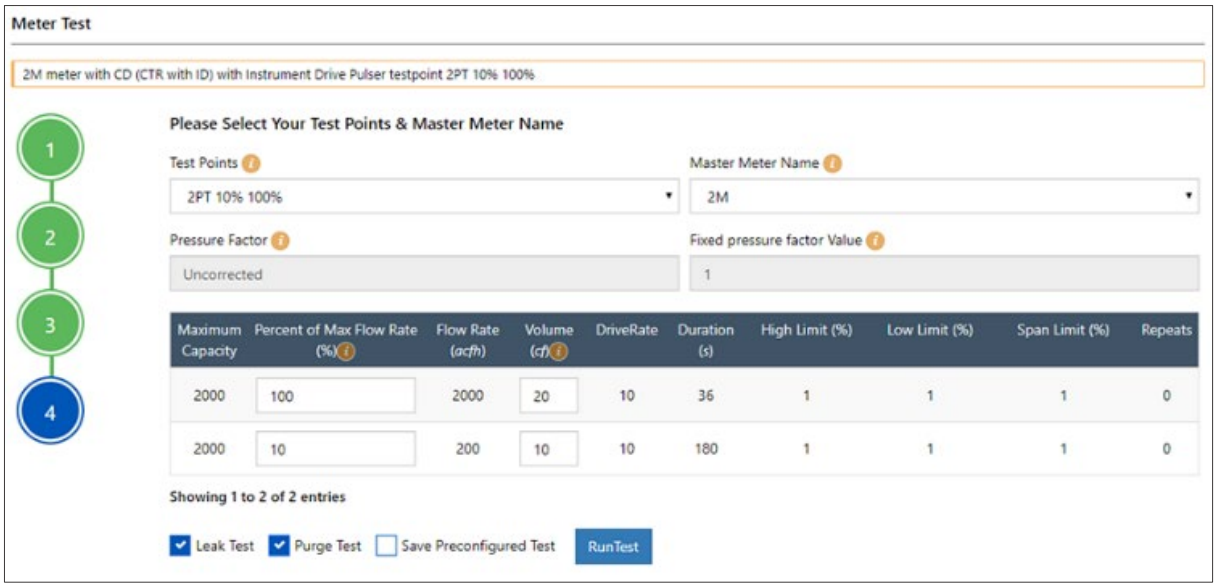


Figure 38: Select Test Points and Master Meter Name screen (Smart Prove not enabled)

If the Smart Prove selector is not enabled, the following fields are shown in the Step 4 screen (Figure 38):

- **Test Points:** Select the appropriate Test Points to use for this test. This selection determines the default values displayed in the following test setting fields.

  Note: Test Points are created and assigned to meters in the Test Configuration screen by the Superuser role. For more information, refer to Section 12.1.

- **Master Meter Name:** Select the 2M or 10M Master Meter to use.
- **Pressure Factor:** Displays the value to be used. This value is based on the instrument configuration.
- **Fixed Pressure Factor Value:** Displays the value to be used. This value is based on the instrument configuration.
- **Percent of Max Flow Rate (%):** Defaults to the value set by the selected Test Points. You can adjust the flow ±3% to avoid harmonics points.

  Note: Ensure the calculated Flow Rate value does not exceed the maximum capacity of the Master Meter.

- **Volume (cf):** Amount of cubic feet expected to be tested. This value is calculated based on the drive rate depending on the instrument and how it is being tested. This value can be adjusted if the calculated Duration value is at least 30 seconds.
- **Leak Test:** Select this checkbox to conduct a Leak Test before the Meter Test runs. This checkbox is selected by default if the **Mandatory Leak Test** checkbox is selected in the Prover Setup tab.
- **Purge Test:** Select this checkbox to conduct a Purge Test before the Meter Test runs. This checkbox is selected by default if the **Mandatory Meter Purge** checkbox is selected in the Prover Setup tab.

  Note: For more information about the Prover Setup tab, refer to Section 18.1.

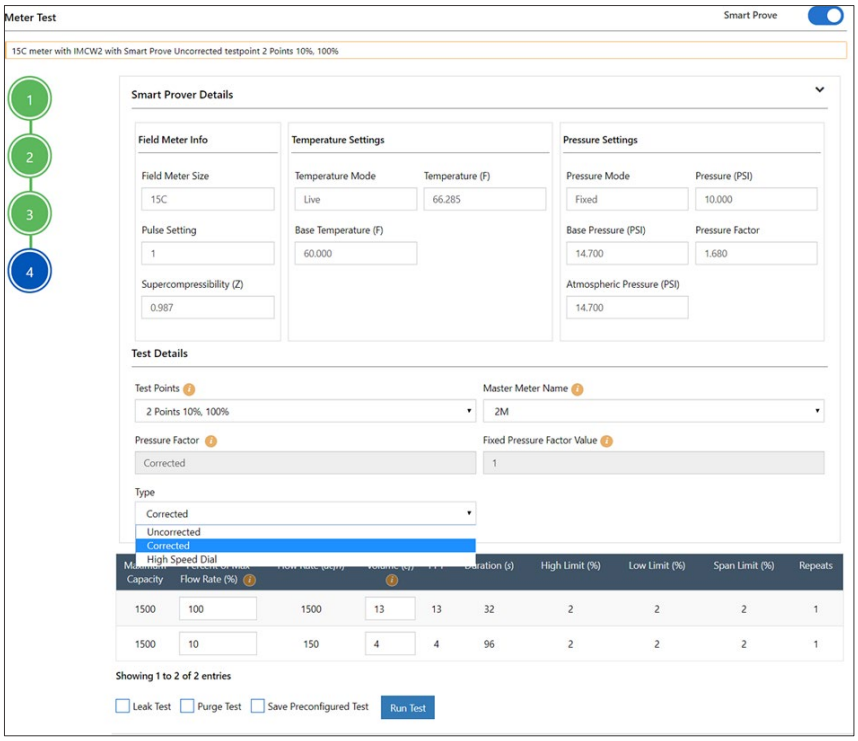


Figure 39: Select Test Points and Master Meter Name screen (Smart Prove enabled)

If the Smart Prove selector is enabled, the Step 4 screen displays the fields in Figure 38 and includes the following additional fields (Figure 39):

Note: To hide/show the Smart Prove Details section, click the down arrow icon ▼.

Smart Prover Details

Note: Fields in the Smart Prove Details section are populated from the Smart Prove instrument and cannot be changed on this screen. To change the values, change them on the instrument.

- **Field Meter Size:** Displays the size of the meter connected to the IMCW2. For example, it might display 3M or 5M.
- **Pulse Setting:** Pulse output multiplier for prove mode. It is a number ranging from 1 to 1000 that is used for Fast Prove and Standard Prove modes. In prove mode, the pulse setting is set to x1 or x10 to run a 30 second test.
- **Supercompressibility:** Displays the factor used in Gas Metrology that is calculated based on gas compositions. It ranges from 0.9 to 1.2.
- **Temperature Mode:** Specifies whether the temperature is Live or Fixed.
- **Base Temperature:** Specifies the base temperature to be used. Applies to temperature compensated meters only. It is also called the Reference Temperature to which the live/fixed temperature is measured against. It is generally set to 60°F.
- **Temperature:** Displays the live or fixed temperature.

- **Pressure Mode:** Specifies whether the pressure is Live or Fixed.
- **Base Pressure:** Specifies the base pressure to be used. It is also called the Reference Pressure to which the live/fixed pressure is measured against. It is generally set to 14.696 or 14.7 psi.
- **Atmospheric Pressure:** Displays the pressure exerted by the weight of the atmosphere. At sea level, this pressure has a mean value of 14.695 psi.
- **Pressure:** Displays the live or fixed pressure.
- **Pressure Factor:** Displays the pressure factor, which is based on the live/fixed pressure, atmospheric pressure, and base pressure.

Test Details

- **Type:** Select the type of test to perform: Uncorrected, Corrected, or High Speed Dial.

Note: The type of test selected in the **Type** field determines the volume and pulses per test for the selected test and the test setting fields displayed in the lower section of the screen.

9. To save this data as a Preconfigured Test that can be reused (Figure 40), perform the following steps:

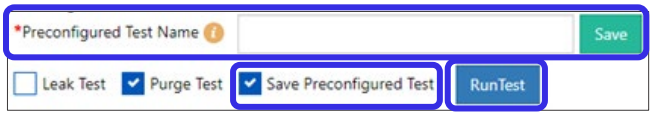


Figure 40: Saving a Preconfigured Test

   a. Select the **Save Preconfigured Test** checkbox.

   b. Enter a name for it in the **Preconfigured Test Name** field.

      The name must be between 3 and 30 characters long.

   c. Click **Save**.

10. When all data is correct, click **Run Test** to initiate the test sequence using the configured testing parameters.

Note: During Smart Prove meter testing in Fast Prove mode, the Smart Prove instrument is put into Prove mode. When the test is complete, the Smart Prove instrument exits Prove mode.

11. Proceed to the appropriate section depending on whether the Leak Test and/or the Purge Test checkboxes are selected:

- If the Purge Test checkbox is selected, proceed to Section 9.2.
- If only the Leak Test checkbox is selected, proceed to Section 9.3.
- If neither the Purge Test nor the Leak Test checkboxes are selected, proceed to Section 9.4.

9.2 Run Purge Test

If the **Purge Test** checkbox was selected in Step 4 of the Meter Test screens (refer to step 8 in Section 9.1), clicking **Run Test** displays the Purge Test screen.

Note: You can run a purge test any time and not only during a Meter Test. For more information, refer to Section 13.

DANGER

An explosion may occur if the Prover is operated in the presence of explosive or flammable gases. Always purge the Field Meter and all associated piping prior to running any test. The Prover is not intrinsically safe.

Utiliser l'appareil d'étalonnage à proximité d'une source de gaz explosif ou inflammable peut provoquer une explosion. Toujours purger le débitmètre et toutes les conduites connexes avant d'exécuter un essai. L'appareil d'étalonnage n'est pas équipé de protection à sécurité intrinsèque.

1. Observe any and all applicable company safety procedures and rules for purging the meter and piping.
2. Perform the steps in Section 13, except for steps 8–10, to set up the Prover and Field Meter and run the purge test.
3. After the purge test completes, move the flexible Prover Hose from the exhaust/outlet male quick-disconnect coupling on the Prover to the inlet quick-disconnect coupling of the appropriate Master Meter before proceeding.
4. If the **Leak Test** checkbox was selected in Step 4 of the Meter Test screens, click **Continue Leak Test** at the end of the purge test and proceed with the steps in Section 9.3. Otherwise, proceed to the steps in Section 9.4.

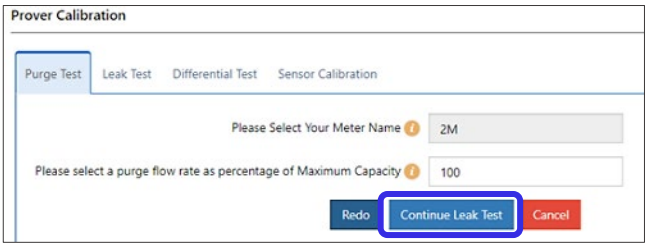


Figure 41: Purge test continue to leak test screen

9.3 Run Leak Test

If the **Leak Test** checkbox was selected in Step 4 of the Meter Test screens (refer to step 8 in Section 9.1), clicking **Run Test** displays the Leak Test screen. If the **Purge Test** checkbox was also selected, it runs first.

Note: You can run a Leak Test any time and not only during a Meter Test. For more information, refer to Section 14.

1. Perform the steps in Section 14, except for steps 3–5, to set up the Prover and Field Meter and run the leak test.
2. After the leak test completes, remove the cap from the air inlet of the Field Meter before proceeding.
3. To continue testing the Field Meter, click **Continue Meter Test** and proceed with the steps in Section 9.4.

9.4 Run Meter Test

When the Meter Test starts, the Meter Test screen (Figure 42) displays data for the test that is running based on the configured testing parameters.

9.4.1 View Meter Test Status

The Meter Test screen (Figure 42) provides status and test results information throughout the test and has the following sections. For more information about these sections and their values, refer to Table 6.

- **Test Parameters (❶):** Specified test meter, instrument, equipment, and Test Points
- **Test Steps (❷):** Detailed status of each of the Test Points
- **Test Status (❸, ❹):** Status of the overall test completion and status of each Test Point
- **Save Report (❺):** Fields in which you can enter information to be used for the report generated for the test. Custom fields may be included in this section. For more information about custom fields, refer to Section 10.3.
- **Meter Status (❻):** Current data readings for the Field Meter and the Master Meter. Use the temperature readings column to ensure the temperature of the meters used in the test are within the proper range.

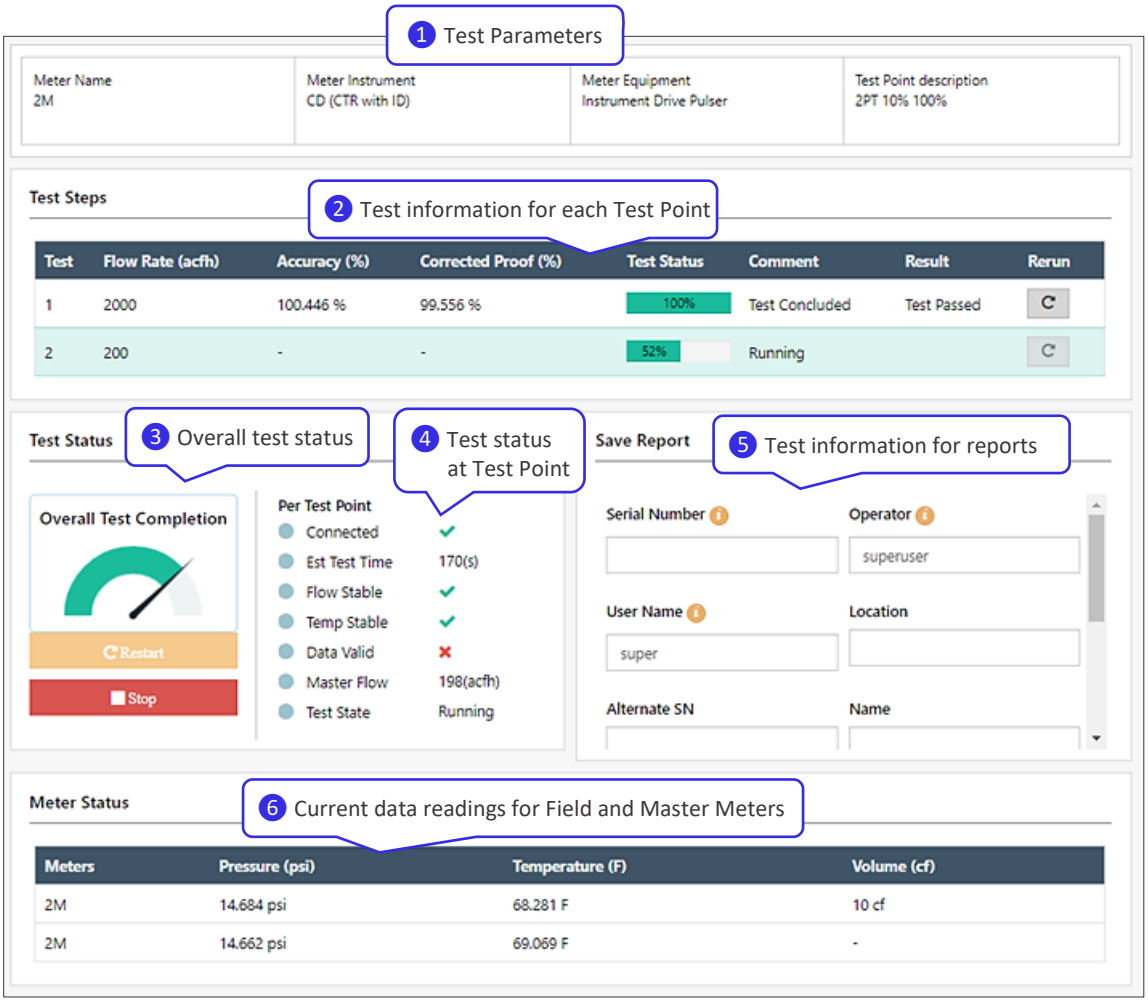


Figure 42: Meter Test (in progress) screen

Table 6: Meter Test Screen Fields

Data Field	Setting	Notes
Test Information (❶) – Test Parameters		
Meter Name	Meter under test (MUT or Field Meter)	For example, 15C.
Meter Instrument	Instrument used with the Field Meter	For example, CD.
Meter Equipment	Test Equipment on the Meter Instrument	For example, Instrument Drive Pulser
Test Point Description	Test Points to use for the test	For example, 2 Points 10%, 100%
Test Steps (❷) – For Each Test Point		
Test	Test Point	
Flow Rate	Volume per hour at the Test Point	
Accuracy (%)	Meter accuracy at the Test Point	
Corrected Proof (%)	Meter corrected proof at the Test Point	
Test Status	Current status of the Test Point (%)	
Comment	Current status of the Test Point (description)	
Result	Test results (Pass or Fail)	
Rerun	Click to run the Test Point again	
Test Status (❸) – Overall		
Overall Test Completion	Dial shows the status of the overall test completion (% of all Test Points completed)	
Restart	Click to restart with Test Point 1	Current test results are not saved.
Stop	Click to immediately stop the test	Current test results can be saved.
Test Status (❹) – Per Test Point		
Connected	Indicates whether the Master Meter is connected to the Field Meter	
Est Test Time	Estimated time for current Test Point to complete (in seconds)	
Flow Stable	Indicates whether Field Meter flow is stable	
Temp Stable	Indicates whether Field Meter temperature is stable	
Data Valid	Indicates whether the test system is receiving valid information from the Field Meter and Master Meter	
Master Flow	Current Master Meter flow	
Test State	State of the Test Point	
Save Report (❺) – Information Entered for Reporting		
Serial Number	Serial number of the Field Meter	This is a required field.
Operator	Name of operator running the test	Default is the Operator Name/ID that is logged in to run the test.
User Name	Username of operator running the test	Default is the username that is logged in to run the test.
Location	Place in which the Field Meter is located	This is a required field.

Data Field	Setting	Notes
Alternate SN	Alternative serial number for the Field Meter, if applicable	
Name	User-defined name	This is a required field.
Test Setup	Information about the test settings	
Custom Fields	Custom fields specified, if applicable	These fields are specified in **Reports > Custom Fields.**
Notes	Additional info about the test	
Meter Status (❻) – Current Data Readings		
Meter	Field Meter or Master Meter	
Pressure	Current pressure of meter	
Temperature	Current temperature of meter	
Volume	Volume of meter	

9.4.2 Rerun Test Points or Stop the Test

While the Meter Test is running, you can choose to rerun one or more Test Points or stop the test completely. For more information, refer to Table 7.

Table 7: Meter Test Actions

Action	Section	Icon/Button
Rerun the Test Point. The Test Point will run again after other Test Points complete.	Test Steps	
Immediately stop all tests. Must restart from the beginning to rerun the Meter Test. **Note:** In case of emergency, you can also press the red Test Stop button on the Controller to disable the Blowers (refer to Figure 3).	Test Status	

9.5 Evaluate Meter Test Results

1. After all Test Points in the Meter Test complete, or after **Stop** is clicked, evaluate the test data on the Meter Test results screen (Figure 43).
2. Determine whether to save the test results or restart the test.
3. Click the icon or button to perform the appropriate action (refer to Table 8).

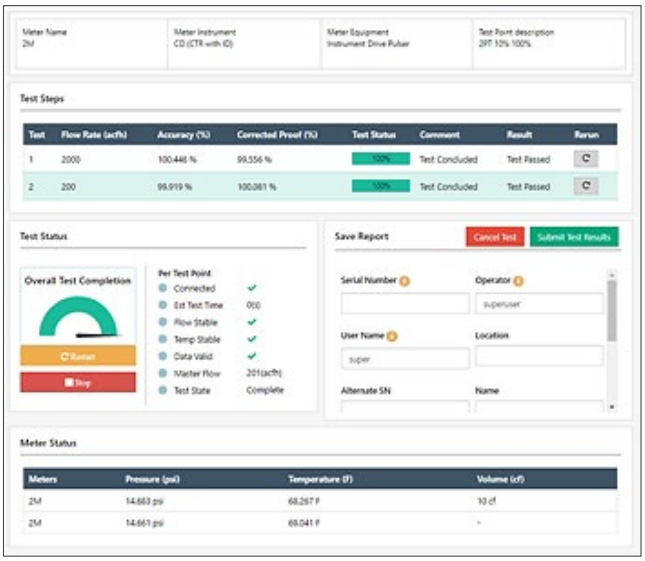


Figure 43: Meter Test results screen

Table 8: Meter Test Results Actions

Action	Section	Icon/Button
Restart the Meter Test and rerun all Test Points. **Note:** The current test results are not saved.	Test Status	Restart
Exit the Meter Test results screen without saving the test results.	Save Report	Cancel Test
Save the test results to the database and view the Test Result screen. For more information, refer to Section 9.6.	Save Report	Submit Test Results

9.6 Save and Export Meter Test Results

Note: Information included in the report can be modified in the Report Template settings. For more information, refer to Section 10.2.

To save completed Meter Test results, perform the following steps:

1. Enter information in the Save Report section (Figure 44) of the Meter Test screen (Figure 43). For more information, refer to Table 6.

   Custom fields included in this section are set in the **Reports > Custom Fields** screen. For more information about custom fields, refer to Section 10.3.

   This information is used for the test results report.

2. Click **Submit Test Results** in the Save Report section of the Meter Test screen to save the test results to the database. For more information, refer to Section 9.5.

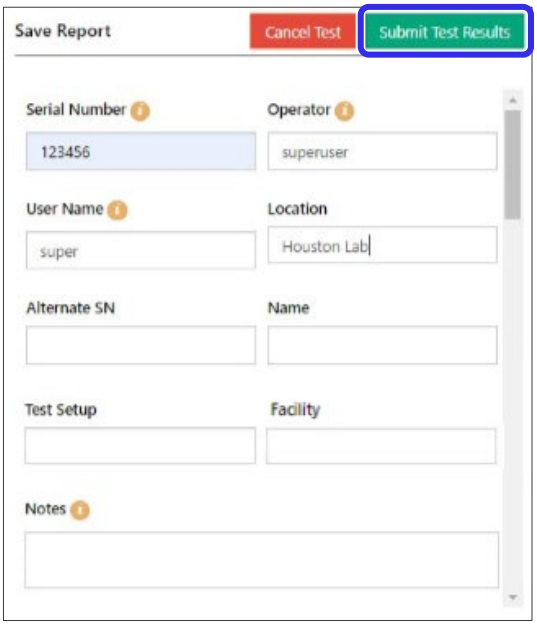


Figure 44: Save Report for test results

A Test Results screen displays a detailed summary of the test results (Figure 45).

3. In the Test Results screen, perform one of the following actions:

   - Click **Restart** to restart the Meter Test and rerun all Test Points.

     Note: The current test results are not saved.

   - Click **Export Report** to download a file of the test results.

   Note: Export a local copy of the test results to save them for reference. Storing them only on the Prover is not recommended.

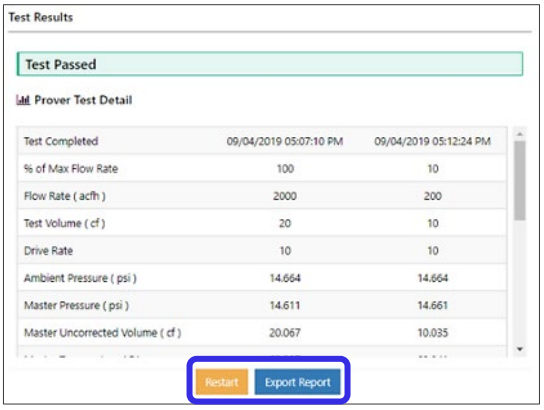


Figure 45: Test Results screen

4. If you chose to export the report, select the report export file format and file extension (Figure 46):

   - **PDF:** Exports to a PDF file format that can be read by Adobe Reader or compatible programs
   - **CSV:** Exports to a comma-separated-values (CSV) file that can be read by Microsoft Excel or compatible programs

Figure 46: Export report format options

- **DAT:** Exports to a comma-delimited format compatible with the legacy Dresser Model 5 Prover file format that can be read by a database or other compatible program

Note: PDF and CSV file formats are recommended. The DAT format only generates for a single report. It is only provided for backwards compatibility with the Dresser Model 5 Prover .dat file format.

10 Generating Reports

Any of the completed individual meter tests results are available for review after the test sequence completes and **Submit Test Results** is selected. For more information, refer to Section 9.6.

You can also search meter test results and export a report in different formats.

Settings for the content and layout of the reports are set in the Report Template screen. For more information, refer to Section 10.2.

10.1 Generate a Report from Previous Data

To create a report based on test results from previous completed meter tests, perform the following steps:

1. Click the **Reports** icon in the toolbar, and click **Report Export** (Figure 47).

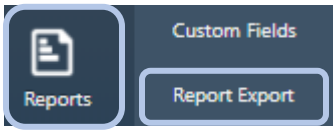


Figure 47: Report Export menu item

The Reports screen displays (Figure 48) and has the following sections:

- **History Search:** Fields that filter the list of reports in the Report List section. If these fields are blank, all reports saved in the database are displayed.
- **Report List:** Displays the list of reports. If a search has been performed, reports meeting the search criteria are displayed.

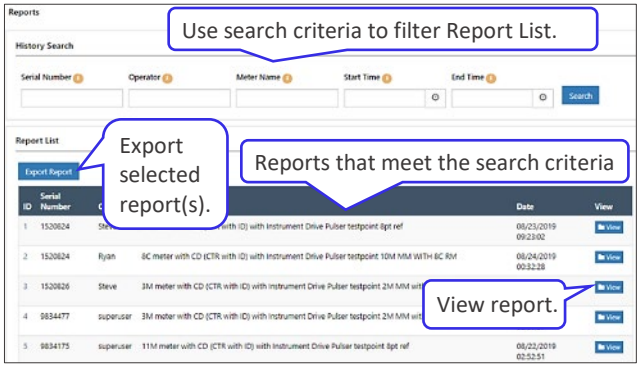


Figure 48: Reports screen

2. In the History Search section (Figure 49), enter one or more parameters to search and then click **Search**.
   - **Serial Number:** Enter the serial number of the meter tested.

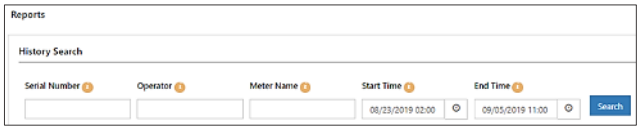


Figure 49: Search report history

- **Operator:** Enter the name of the operator that ran the test.
- **Meter Name:** Enter the name of the meter tested.
- **Start Time:** Select the earliest run date and time of reports to view.
- **End Time:** Select the latest run date and time of reports to view.

Note: The Serial Number and Operator parameters are based on what was entered in the **Save Report** fields for the meter test.

The Report List section displays a list of test results that meet the search criteria (Figure 50).

To view a report, click **View**.

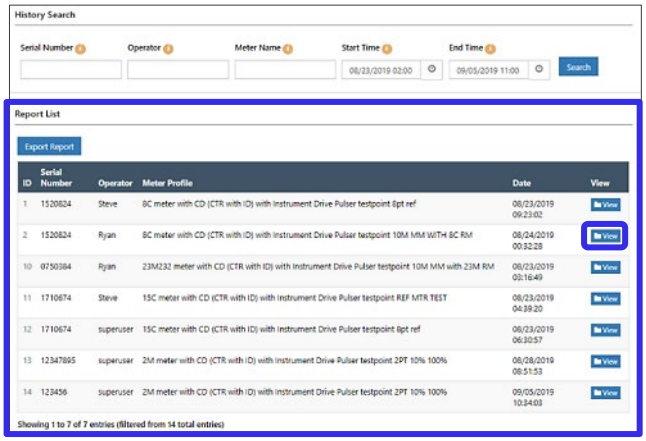


Figure 50: Report search results

3. To save one or more reports as a file, perform the following steps:

   a. Click one or more report entries to select the reports to export (Figure 51).

   Selected reports are shaded.

   Note: If more than one report is selected, they are exported into one file.

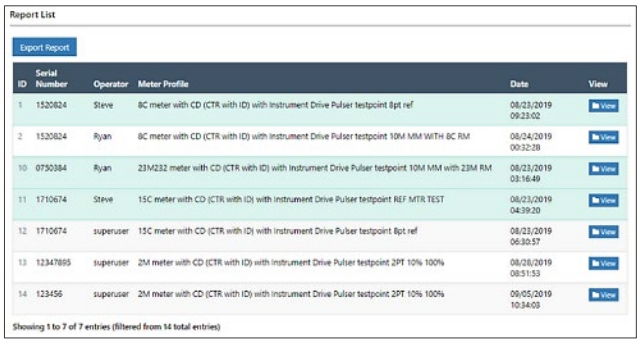


Figure 51: Select report(s) to export

   b. Click **Export Report** (Figure 52).

   c. Select the report export file format type:

      - **PDF:** Exports to a PDF file format that can be read by Adobe Reader or compatible programs

Figure 52: Export report

- **CSV:** Exports to a comma-separated-values (CSV) file that can be read by Microsoft Excel or compatible programs
- **DAT:** Exports to a comma-delimited format compatible with the Dresser Model 5 Prover file format that can be read by a database or other compatible program

Note: PDF and CSV file formats are recommended. The DAT format only generates for a single report. It is only provided for backwards compatibility with the Dresser Model 5 Prover .dat file format.

A file of the specified type is created.

10.2 Modify the Report Template

The Report Template screen specifies which information is to be included on generated test reports.

To view and edit the Report Template settings, perform the following steps:

1. Click the **Reports** icon in the toolbar and click **Report Template** (Figure 53).

Figure 53: Report Export menu item

2. In the Report Template screen (Figure 54), specify the information that is to be included on the report:
   a. In the Report Info section, click **Browse** to select a logo graphic file to display on the report, and enter a title in the **Title** field.
   b. Select or clear checkboxes to specify information to include in the sections of the report. The report will include only information that has checkboxes selected.

      The Test Summary section can be used to provide basic test information (such as an overview). The Test Details section can be used to provide more specific test information (such as a technical report).

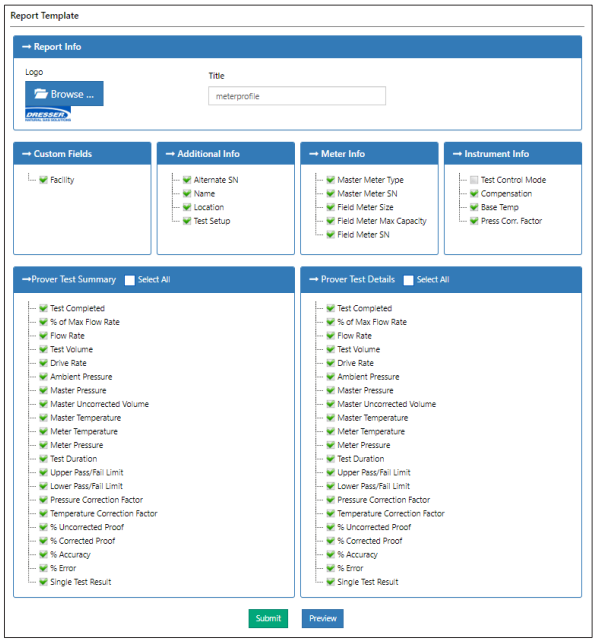


Figure 54: Report Template screen

3. Click **Preview** to see an example of how the report looks with the specified information included.
4. Make any changes to the template settings, if needed.
5. Click **Submit** to save the Report Template settings.

10.3 Add Custom Fields

You can specify custom fields to provide additional information on the test reports. These fields are displayed in the Save Report section of the Meter Test screen (Figure 42). Control which custom fields are displayed in the report by selecting them in the Report Template screen (Figure 54).

To add or change custom fields, perform the following steps:

1. Click the **Reports** icon in the toolbar and click **Custom Fields** (Figure 55).

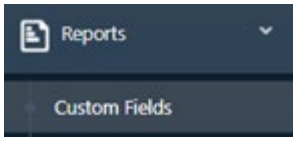


Figure 55: Custom Fields menu item

2. On the Custom Fields screen (Figure 56), enter information for custom fields to create:
   - **Field Name:** Enter a field name that is between 3 and 30 characters long.
   - **Required:** Select if this field must be filled in to proceed.

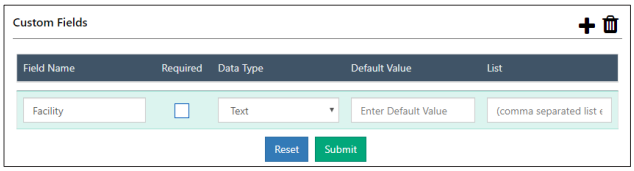


Figure 56: Custom Fields screen

   - **Data Type:** Click the down arrow icon ▼, and select whether the field is for text entry (**Text**) or provides a menu of entries from which the user can choose (**Choice**).
   - **Default Value:** Enter the initial entry for the field. This field entry can then be changed by the user.
   - **List:** Enter a comma-separated list of values to show for a Choice-type field. These values will be included in the drop-down menu for the field.

   To reset the field entries to their values before the last Submit, click **Reset**.

   To add additional rows, click the plus sign icon ✚ in the upper right corner of the Custom Fields screen. Three (3) custom fields are initially available for entry.

   To delete rows, click the delete icon 🗑 in the upper right corner of the Custom Fields screen.

3. Click **Submit** to create or update the custom fields.

4. The custom fields are displayed in the Save Report section of the Meter Test screen and in the Report Template screen. For an example, see Figure 44.

   You can use the Custom Fields screen to change existing or add additional custom fields, as needed.

11 Configuring Custom Equipment Settings

The Model 6 Prover software lets you add, delete, and customize meters, instruments, and test equipment specifications. The selections made in the Configuration screens determine what is available to select when running a meter test. For more information about meter tests, refer to Section 9.

You can use an existing or custom meter that uses an existing or custom instrument/equipment, and then test that combination by using an existing or custom test configuration. Figure 57 shows a flowchart of

the different choices available and the order in which to define or associate the configurations. For more information about custom test configurations, refer to Section 12.

All meters must have at least one associated instrument, and all instruments must have associated test equipment. The test configuration for the associated meter/instrument/equipment combination is tested according to Test Points and can be saved as a Preconfigured Test.

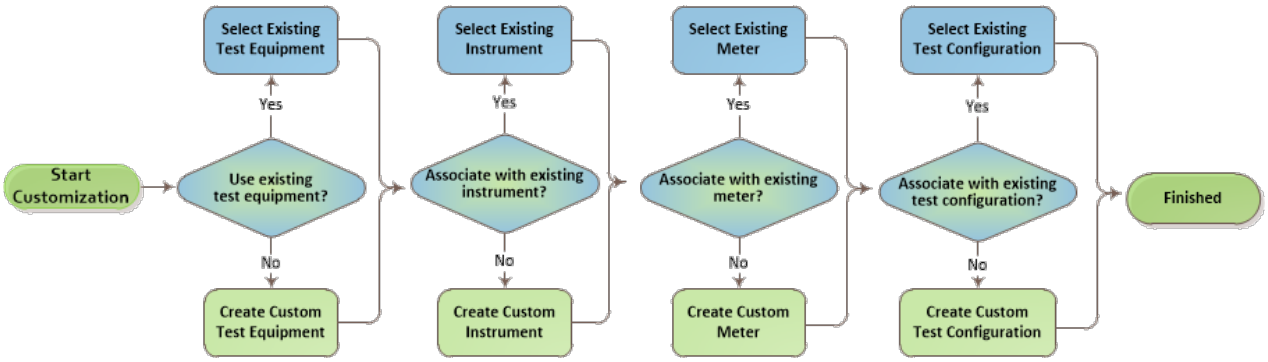


Figure 57: Customize equipment choice flow

Note: For information about saving these custom settings to a file to use for backup or for use on another Prover 6 system, refer to Section 18.5.

11.1 Set Up Custom Test Equipment

All instruments must have test equipment associated to specify how the instrument will be tested.

Entries in the Custom Equipment List and the Equipment List sections populate the **Equipment Type** drop-down menu in the Test Equipment List section in the Instrument Configuration screen. For more information about the Instrument Configuration screen, refer to Section 11.2.1.

To create or customize entries for test equipment, click the **Equipment Configuration** icon in the toolbar (Figure 58).

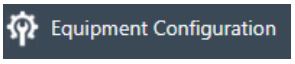


Figure 58: Equipment Configuration toolbar icon

The Equipment Configuration screen displays (Figure 59) and has the following sections:

- **Custom Equipment List:** Displays custom equipment currently defined.
- **Equipment List:** Displays equipment that is available from Dresser.
- **Equipment Info:** Displays the information for the equipment selected in the Equipment List sections or new equipment being added.

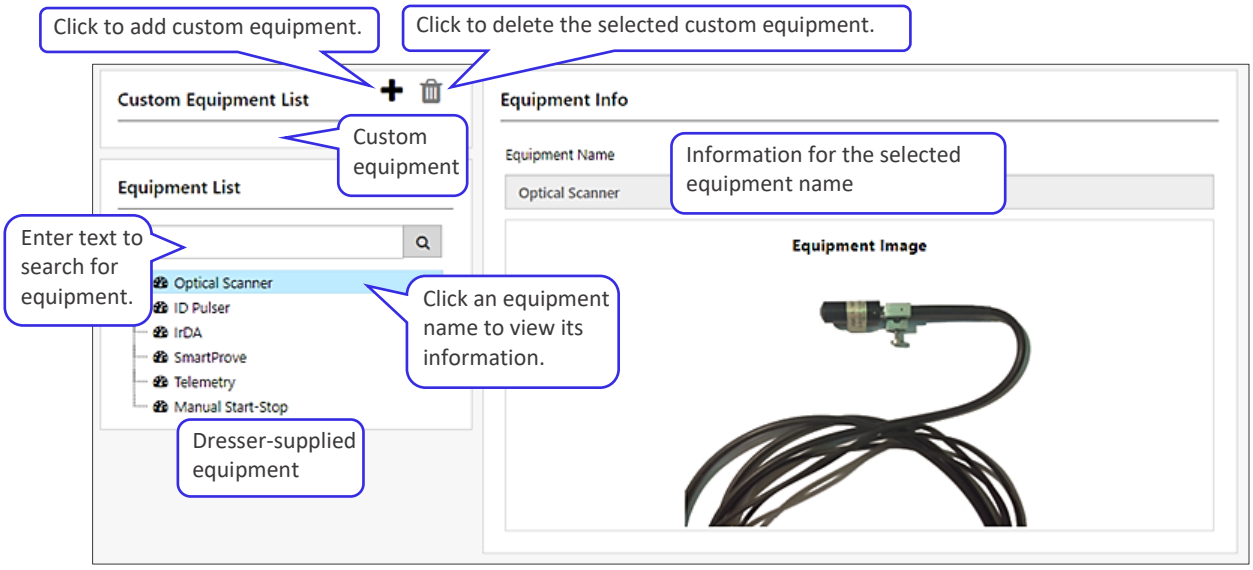


Figure 59: Equipment Configuration screen

11.1.1 Create Custom Test Equipment

Test equipment is attached to an instrument to control when the test starts and stops.

To create custom test equipment, perform the following steps in the Equipment Configuration screen (Figure 59):

1. Click the plus sign icon ✚ in the upper right corner of the Custom Equipment List section (Figure 60).

Figure 60: Create equipment

2. In the Equipment Info section (Figure 61) enter the information for the equipment.
   - **Equipment Name:** Enter an equipment name that is unique and between 3 and 30 characters long. This name must be different than currently defined equipment.
   - **Equipment Image:** Click **Browse** to select a graphic to be displayed for the equipment on the software screens.

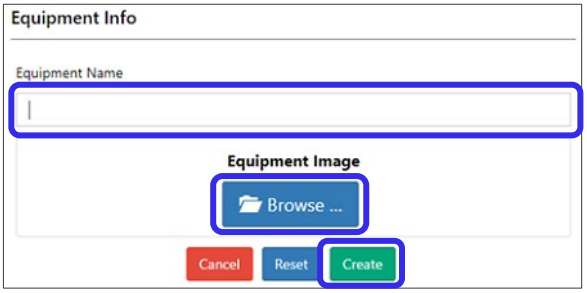


Figure 61: Create new equipment

This graphic is optional but recommended. Graphics can be jpg, jpeg, or png file types that are 256MB or smaller.

To clear all field content, click **Reset.**

To exit without saving changes, click **Cancel**.

3. Click **Create** to create the equipment.

   The new equipment displays in the Custom Equipment List.

Note: If you click outside the Equipment Info section without clicking **Create** or **Update**, information entered is not saved.

4. In the displayed message, choose whether to associate the equipment with an instrument (Figure 62)

   - Click **Yes** to go to the Instrument Configuration screen. For more information, refer to Section 11.2.
   - Click **No** to proceed without associating the equipment.

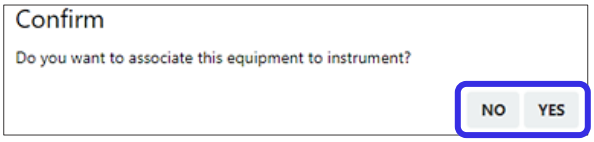


Figure 62: Choose whether to associate equipment to instrument

11.1.2 Modify Existing Test Equipment

To modify existing test equipment, perform the following steps:

1. Click the equipment to modify in one of the equipment lists in the Equipment Configuration screen (Figure 59), and make the needed changes.
2. Click **Update** to save the changes.

11.2 Set Up Custom Instrument

All meters must have instruments associated to specify how the meter will be measured. All instruments must have associated test equipment to specify how the instrument will be tested.

Entries in the Custom Instrument List and the Instrument List sections populate the **Instrument-Equipment Type** drop-down menu in the Instrument Type section in the Meter Configuration screen. For more information about the Meter Configuration screen, refer to Section 11.3.

To create or customize entries for an instrument, click the **Instrument Configuration** icon in the toolbar (Figure 63).

Figure 63: Instrument Configuration toolbar icon

The Instrument Configuration screen displays (Figure 64) and has the following sections:

- **Custom Instrument List:** Displays the custom instruments currently defined.
- **Instrument List:** Displays Dresser-supplied instruments that are available from Dresser.
- **Instrument Info:** Displays the information for the instrument selected in the Instrument List sections or a new instrument being added, including associated test equipment.

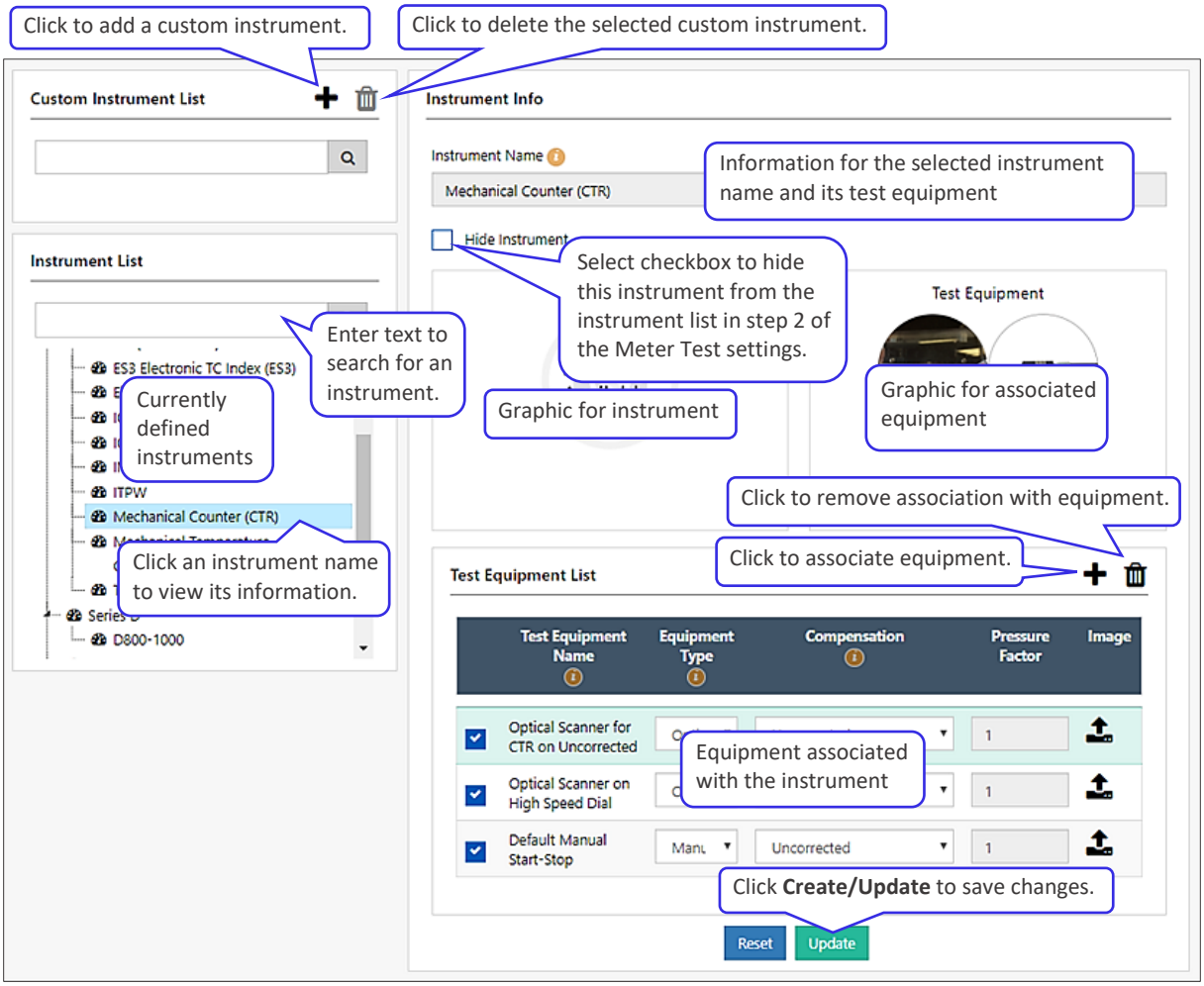


Figure 64: Instrument Configuration screen

11.2.1 Create Custom Instrument

To create an instrument, perform the following steps in the Instrument Configuration screen (Figure 64):

1. To create an instrument, click the plus sign icon ✚ in the upper right corner of the Custom Instrument List section (Figure 65).

Figure 65: Create instrument

2. In the Instrument Info section (Figure 66), enter the information for the instrument.

   - **Instrument Name:** Enter an instrument name that is unique and between 3 and 30 characters long. This name must be different than currently defined instruments.
   - **Instrument:** Click **Browse** to select a graphic to be displayed for the instrument on the software screens. This graphic is optional but recommended.

     Graphics can be jpg, jpeg, or png file types that are 256MB or smaller.

     The selected graphic for the instrument displays in the Instrument area of the screen.

   To clear all field content, click **Reset.**

   To exit without saving changes, click **Cancel**.

   Example: Figure 67 displays entries to create a Digital Index (DIT) instrument and its picture.

3. Click **Create** to create the instrument.

   Note: If you click outside the Instrument Info section without clicking **Create** or **Update**, information entered is not saved.

   The new instrument displays in the Custom Instrument List.

   Example: The new Digital Index (DIT) instrument entered in Figure 67 displays in the Custom Instrument List section (Figure 68).

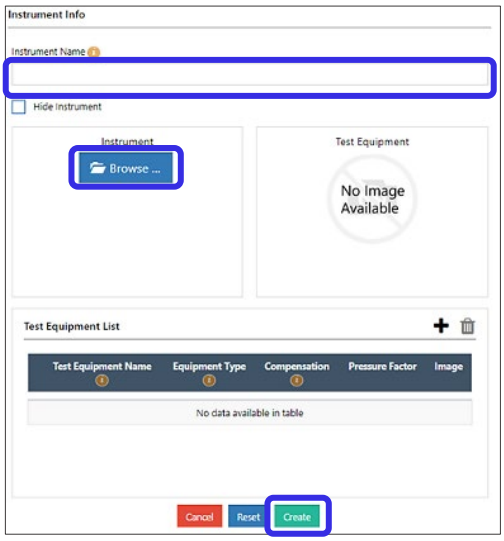


Figure 66: Create new instrument

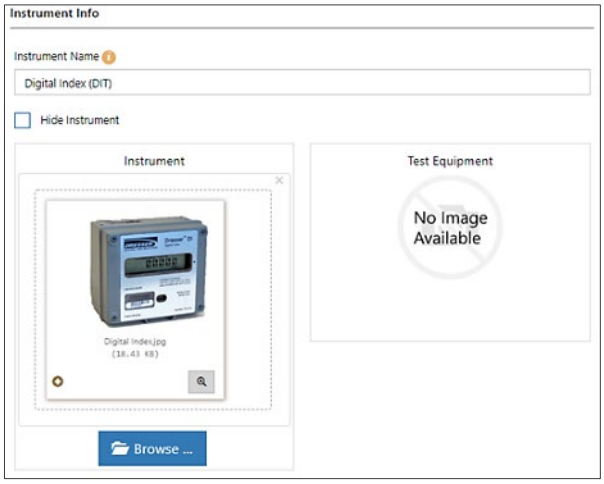


Figure 67: Create new instrument example

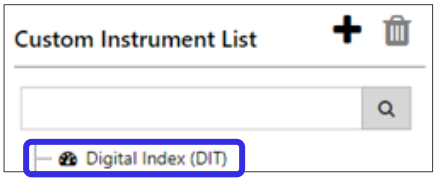


Figure 68: New instrument created

Note: If you need to associate the instrument with test equipment that has not been created, refer to Section 11.1.1, and then complete the following steps.

4. In the Test Equipment List section, associate one or more pieces of test equipment with the instrument by clicking the plus sign icon ✚ in the upper right corner of the Test Equipment List section (Figure 69).

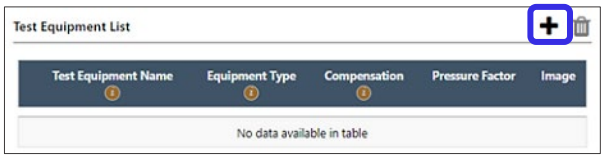


Figure 69: Associate test equipment to instrument

5. Enter the information for the test equipment (Figure 70).

   Example: Figure 71 shows information entered to associate an IrDA with the Digital Index (DIT) created in step 2.

   For examples of some possible field entries, including graphics, see the predefined instrument entries provided with the Prover software.

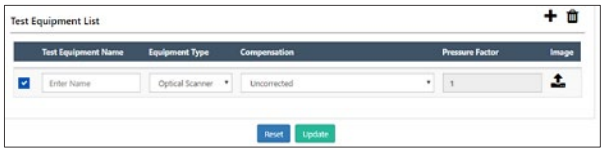


Figure 70: Define test equipment for instrument

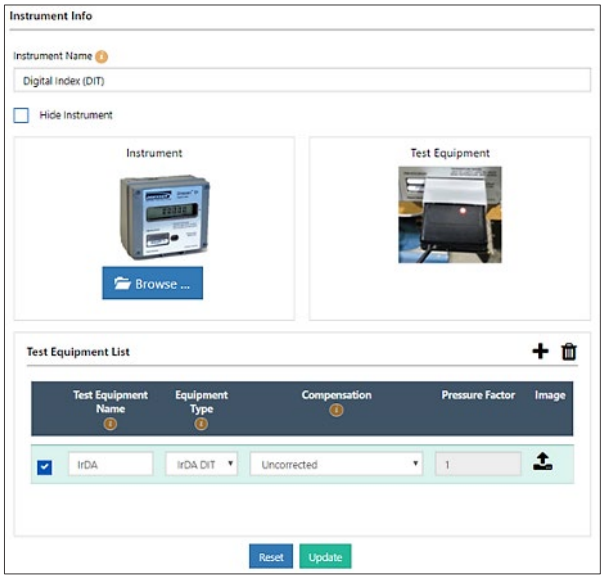


Figure 71: Associate test equipment example

   - Select the checkbox to designate that the equipment should display as a choice in Step 3 of the Meter Test.
   - **Test Equipment Name:** Enter an equipment name that is unique and between 3 and 30 characters long. This name must be different than currently defined equipment.
   - **Equipment Type:** Click the down arrow icon ▼, and select the appropriate equipment type from the drop-down menu.

     If the correct equipment type is not displayed, you can create it by using the Equipment Configuration screen. For more information, refer to Section 11.1.1.

   - **Compensation:** Click the down arrow icon ▼, and select the appropriate compensation type from the drop-down menu:
     - **Uncorrected:** Select when the instrument reading does not have any corrections for temperature or pressure (such as a counter).
     - **Intermittent Temperature Corrected:** Select when the instrument volumetric reading uses a temperature compensation that is irregular (such as a clutch- or gear-operated compensation).
     - **Continuous Temperature Corrected:** Select when the instrument volumetric reading uses a temperature correction that is constant (such as a diaphragm TC meter).

  - **Continuous Pressure Corrected:** Select when the instrument volumetric reading uses a pressure compensation that is constant.
  - **Continuous Temperature and Pressure Corrected:** Select when the instrument volumetric reading uses temperature and pressure compensation that is constant (such as a corrector).

- **Pressure Factor:** Enter the pressure factor to use. The default value is 1, which means the instrument does not correct for pressure.
- **Image:** Click to browse and select a graphic to be displayed for the equipment on the software screens. For example, select one that shows how the test equipment is used on the instrument. This graphic is optional but recommended.

  Graphics can be jpg, jpeg, or png file types that are 256MB or smaller.

  The selected graphic for the test equipment displays in the Test Equipment area of the screen.

To clear all field content, click **Reset.**

6. Click **Update** to update the test equipment information associated with the instrument.
7. Repeat step 4 through step 6 to associate another equipment type with the instrument.

11.2.2 Modify Existing Instrument

To modify an existing instrument, perform the following steps:

1. In the Instrument Configuration screen, click the instrument to modify in one of the instrument lists (Figure 64), and make the needed changes. For more information, refer to step 4 through step 7 in Section 11.2.1.
2. Click **Update** to save the changes.

11.3 Set Up Custom Meter

To create or customize entries for a meter, click the **Meter Configuration** icon in the toolbar (Figure 72).

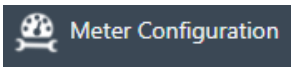


Figure 72: Meter Configuration toolbar icon

The Meter Configuration screen displays (Figure 73) and has the following sections:

- **Meter List:** Displays the custom meters currently defined.
- **Dresser Meter List:** Displays the Dresser meters currently defined.
- **Meter Info:** Displays the information for the meter selected in the Meter List sections or a new meter being added, including associated instruments.

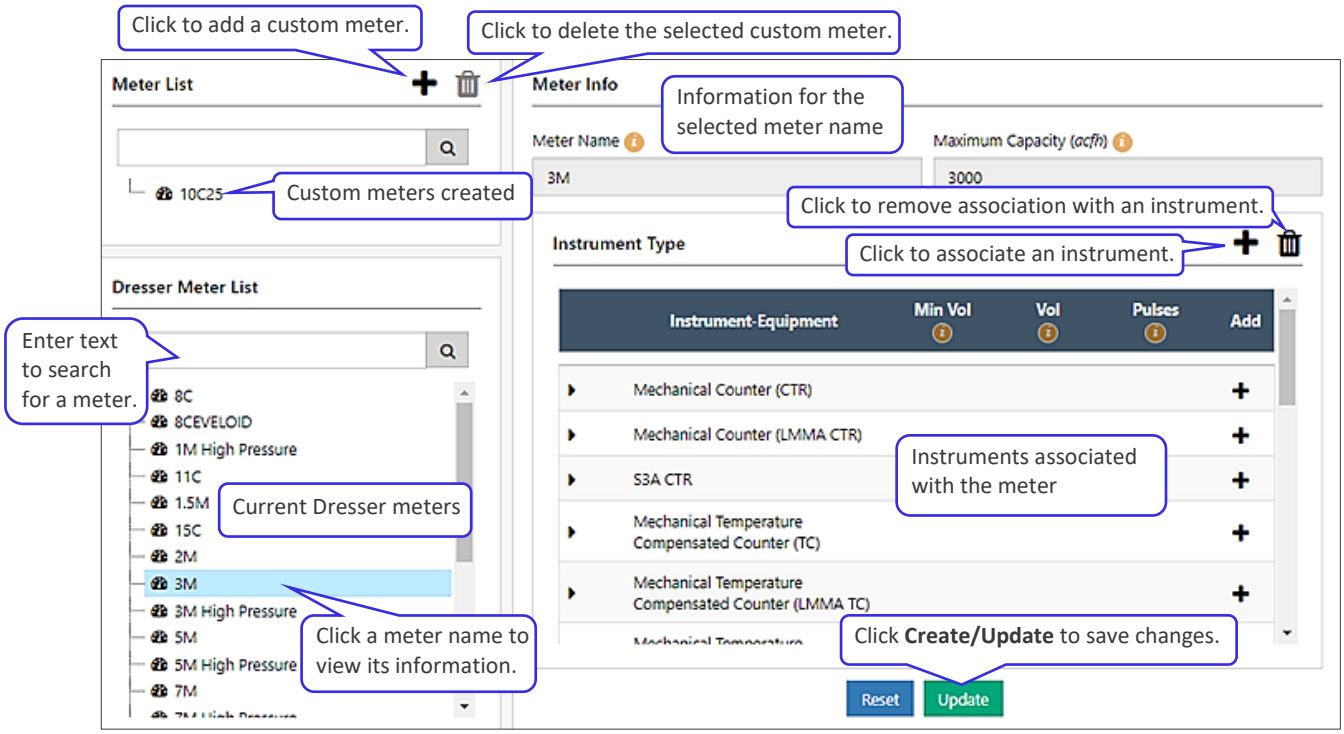


Figure 73: Meter Configuration screen

11.3.1 Create a Custom Meter

To create a meter, perform the following steps in the Meter Configuration screen (Figure 73):

1. Click the plus sign icon ✚ in the upper right corner of the Meter List section (Figure 74).

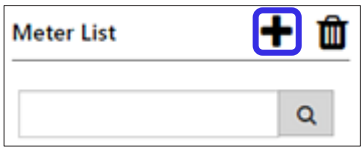


Figure 74: Create meter

2. In the Meter Info section (Figure 75), enter the information for the meter.

   - **Meter Name:** Enter a meter name that is unique and between 3 and 30 characters long. This name must be different than currently defined meters.
   - **Maximum Capacity:** Enter the meter's maximum flow capacity.

   To clear all field content, click **Reset**.

   To exit without saving changes, click **Cancel**.

3. Click **Create** to create the meter.

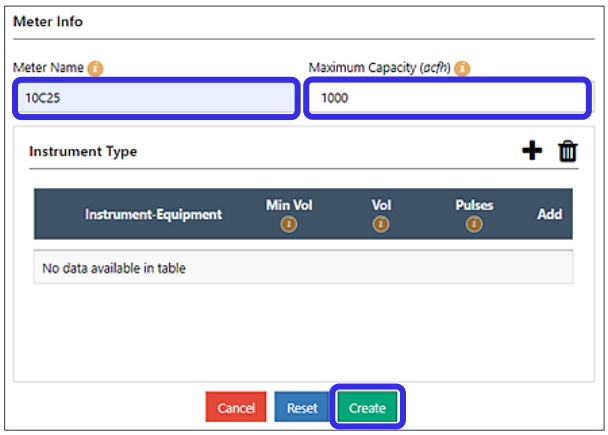


Figure 75: Create new meter example

Note: If you click outside the Meter Info section before clicking **Create** or **Update**, information entered is not saved.

The new meter displays in the Meter List.

Example: The 10C25 meter entered in Figure 75 displays in the Meter List section (Figure 76).

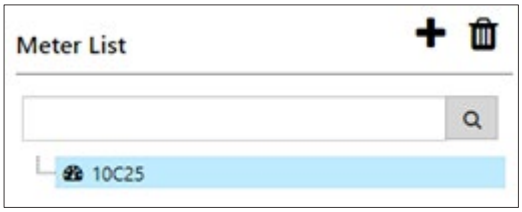


Figure 76: New meter created

Note: If you need to associate the meter with an instrument that has not been created, refer to Section 11.2.1, and then complete the following steps.

4. In the Instrument Type section, associate one or more instruments with the meter by clicking the plus sign icon ✚ in the upper right corner of the Instrument Type section (Figure 77).

   You can associate multiple instrument/equipment types to a meter.

Figure 77: Associate instrument to meter

Test equipment associated with the selected instrument is displayed. To associate other test equipment with this instrument, refer to Section 11.2.1 and perform steps 4 and 5.

5. In the Instrument Type section (Figure 78), click the down arrow icon ▼, and select the appropriate instrument from the drop-down menu.
6. Click the plus sign icon ✚ in the **Add** column to associate test equipment with the selected instrument.

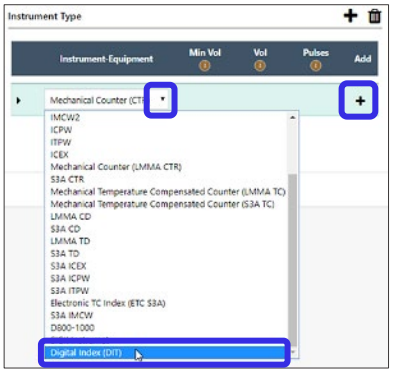


Figure 78: Select instrument to associate with the meter

7. Enter the information for the instrument with the associated test equipment.

   An instrument might have multiple types of test equipment associated with it. Repeat step 6 to add associations to more types of equipment.

   - Select the checkbox to designate that the instrument should display as a choice in Step 2 of the Meter Test.
   - **Min Vol:** Enter the minimum volume to use. This value is typically applicable to the volume seen at the check rate to meet the minimum test time.

     Note: For manual start/stop tests, select a test volume large enough to compensate for error introduced by an operator. Typically, a configuration of ±1.0 cf per 100 cf of test volume equates to an error of ±0.1%.

   - **Vol:** Enter the volume of air that passes through the meter for the system to receive the designated number of pulses.
   - **Pulses:** Enter the number of pulses.

     Note: When using a Dresser ID Pulser, pulses must be set to 9.

   To clear all field content, click **Reset.**

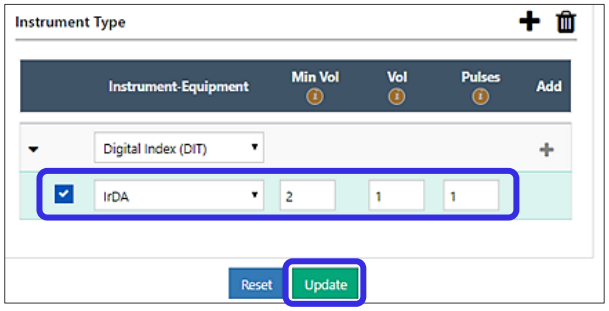


Figure 79: Define instrument equipment for meter

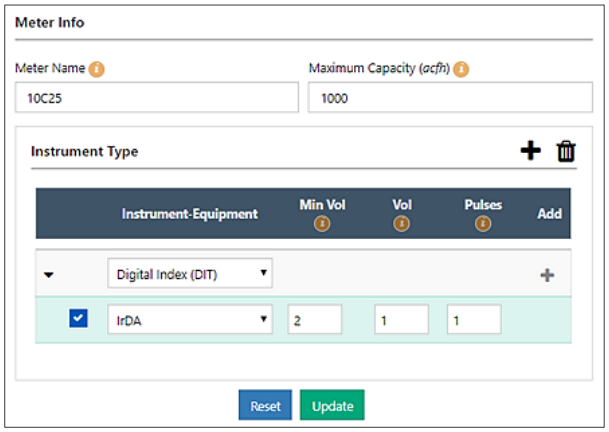


Figure 80: Define instrument equipment for meter example

8. Click **Update** to update the instrument and meter associations.

   Example: The Digital Index (DIT) instrument entered in Figure 79 displays in the Instrument Type List section (Figure 80).

9. Repeat step 4 through step 8 to associate another instrument with the meter.

11.3.2 Modify Existing Meter

To modify an existing meter, perform the following steps:

1. Click the meter to modify in one of the meter lists in the Meter Configuration screen (Figure 73), and make the needed changes. For more information, refer to step 4 through step 9 in Section 11.3.1.
2. Click **Update** to save the changes.

12 Configuring Custom Tests

The Model 6 Prover software comes with pre-established test settings. The settings are a suggested starting point that may be used or modified to meet company needs. Additional tests can be created and saved, as needed.

Preconfigured Tests specify the meter, instrument, and test equipment. Preconfigured Tests use Test Points to specify the flow rate, limits, and the number of times the test is to repeat after its initial run.

Note: For information about saving these custom settings to a file to use for backup or for use on another Prover 6 system, refer to Section 18.5.

12.1 Set Up Custom Test Points

Test Points specify what flow rates should be tested. They are presented as a percentage of the maximum flow rate. Test Points also specify the accuracy, span, and repeats required of a given flow rate. The Test Points created in the Test Configuration screen populate the Test Points drop-down menu on the last step in the Meter Test screens.

To create or customize Test Points available for a meter test, perform the following steps:

1. Click the **Test Configuration** icon in the toolbar (Figure 81).

Figure 81: Test Configuration toolbar icon

The Test Configuration screen displays (Figure 82) and has the following sections:

- **Test Point List:** Displays Test Points currently defined. These Test Points populate the Test Points drop-down menu on the last step in the Meter Test screens.
- **Preconfigured Test List:** Displays the Preconfigured Tests that are currently defined. Preconfigured Tests are created on the Meter Test screens. For more information, refer to Section 9.
- **Test Info:** Displays the information for the Test Point selected in the Test List section or a new Test Point being added, including associated meters.
- **Test Points:** Specifies the settings for the meter test.
- **Meter Association:** Displays the meters to which these Test Points apply. A selected checkbox indicates these Test Points are available during Step 4 of the Meter Test for that meter name.

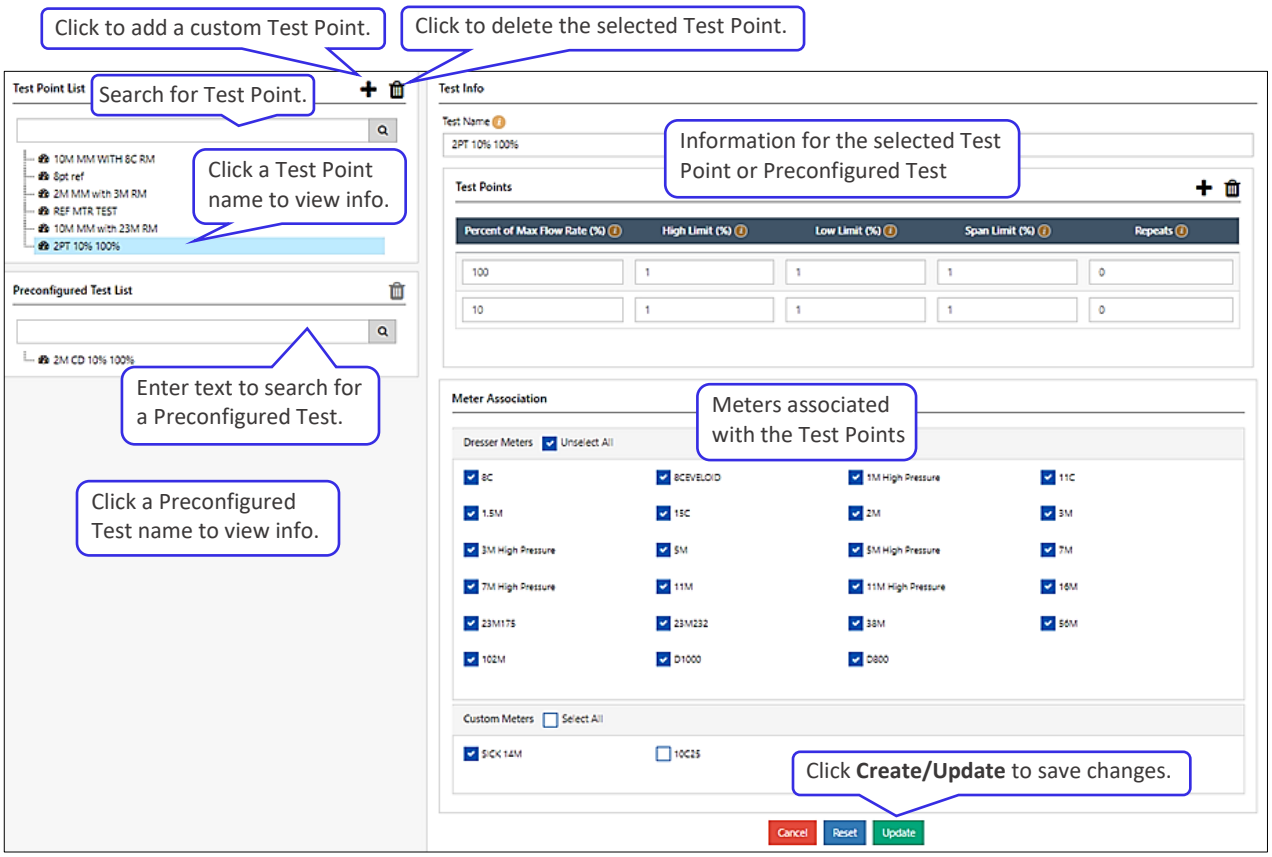


Figure 82: Test Configuration screen

2. To create a Test Point, click the plus sign icon ✚ in the upper right corner of the Test Point List section (Figure 83).

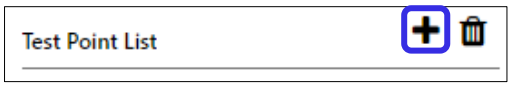


Figure 83: Create Test Point

3. To customize an existing Test Point, select the Test Point to modify from the Test Point List.
4. In the Test Info section, enter the information for the Test Points and select the meters to which these Test Points apply:
   - **Percent of Max Flow Rate (%):** This value specifies the relative percentage of the meter's maximum flow capacity.
   - **High Limit (%):** This configurable Pass/Fail limit is the maximum allowable deviation above 100%.
   - **Low Limit (%):** This configurable Pass/Fail limit is the maximum allowable deviation below 100%.
   - **Span Limit (%):** This test limit defines the maximum allowable difference between the highest accuracy and the lowest accuracy reported.
   - **Repeats:** This value specifies the number of times the test will run again after its initial run. For example, a value of 0 runs one test run, and a value of 1 runs two test runs.
   - **Meter Association:** Select the meters to which these Test Points apply. Selecting a checkbox makes these Test Points available during Step 4 of the Meter Test for that meter name.

   To clear all field content, click **Reset.**

To exit without saving changes, click **Cancel**.

5. Click **Create** to create the Test Points or **Update** to save changes.

   The created Test Points display in the Test Point List.

12.2 Set Up Custom Preconfigured Test

To create a Preconfigured Test, perform step 2 through step 9 in Section 9.1 to select the test parameters and save them as a Preconfigured Test. For more information, refer to Section 9.

The Test Points available for a meter test and the meters associated with them are set in the Test Configuration screen (refer to Section 12.1).

12.2.1 View Current Preconfigured Tests

To view the Preconfigured Tests that are currently defined, perform the following steps:

1. Click the **Test Configuration** icon in the toolbar (Figure 84).

Figure 84: Test Configuration toolbar icon

   Preconfigured Test List displays the Preconfigured Tests that are currently defined (Figure 85).

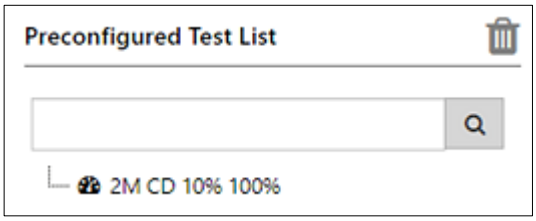


Figure 85: Preconfigured Test List

2. Click a Preconfigured Test to see its current test parameters (Figure 86).

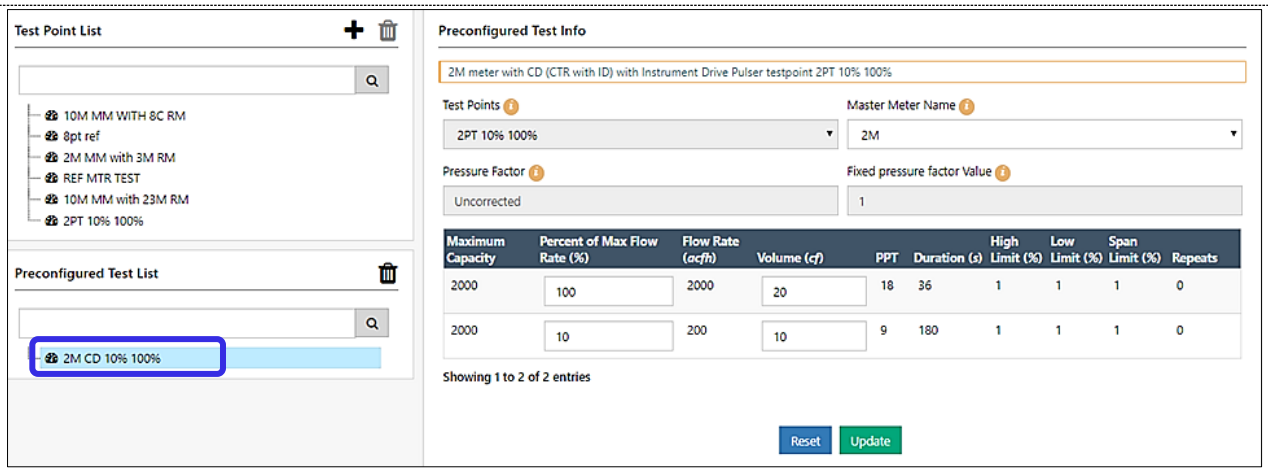


Figure 86: Preconfigured Test settings

12.2.2 Modify Existing Preconfigured Test

Because Preconfigured Test parameters are set in the Meter Test screens, to modify an existing Preconfigured Test you must delete the Preconfigured Test and then re-create it by using the Meter Test screens.

To modify an existing Preconfigured Test, perform the following steps:

1. Click the **Test Configuration** icon in the toolbar (Figure 87).

Figure 87: Test Configuration toolbar icon

2. In the Preconfigured Test List (Figure 88), select the Preconfigured Test to delete.

   To search the list of available Preconfigured Tests, enter the name of the Preconfigured Test in the search field.

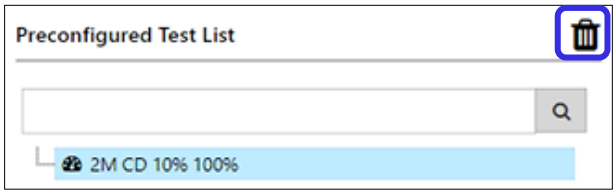


Figure 88: Delete Preconfigured Test

3. Click the delete icon (Figure 88).

   The Preconfigured Test is removed from the Preconfigured Test List.

4. Create a Preconfigured Test with the correct test parameters by performing step 2 through step 9 in Section 9.1 to select the test parameters and saving them as a Preconfigured Test. For more information, refer to Section 9.

Maintenance

DANGER

There are no serviceable parts in this unit. All repairs must be done at the Factory. Failure to follow this instruction may result in injury or other losses.

L'unité ne comporte aucune pièce réparable. Toutes les réparations doivent être effectuées à l'usine. Le non-respect de ces directives peut entraîner des lésions corporelles ou même la mort.

13 Purging the Field Meter Under Test

DANGER

An explosion may occur if the Prover is operated in the presence of explosive or flammable gases. Always purge the Field Meter and all associated piping prior to running any test. The Prover is not intrinsically safe.

Utiliser l'appareil d'étalonnage à proximité d'une source de gaz explosif ou inflammable peut provoquer une explosion. Toujours purger le débitmètre et toutes les conduites connexes avant d'exécuter un essai. L'appareil d'étalonnage n'est pas équipé de protection à sécurité intrinsèque.

The Field Meter and associated piping may be purged of all flammable gas with a hand-held blower or by using the Blowers on the Model 6 Prover. Observe any and all applicable company safety procedures and rules for purging the meter and piping.

CAUTION

Do not overspeed the Field Meter.

If the Blowers on the Prover are being used to purge the Field Meter and associated piping, perform the following steps to connect them:

1. Isolate or remove the Field Meter from the gas line and allow any released gas to dissipate. The Field Meter must be open to atmosphere at both the inlet and the outlet.
2. Install a quick-disconnect coupling in the appropriate place:
   - If the Field Meter is installed on the piping, install the coupling to the piping on the inlet side of the Field Meter.
   - If the Field Meter has been removed from all piping, install the coupling directly to the inlet of the Field Meter.

3. Connect one end of the flexible Prover Hose to the single exhaust/outlet male quick-disconnect coupling (Figure 89).

Figure 89: Prover exhaust purge outlet

4. Connect the other end of the Prover Hose to the quick-disconnect coupling installed at the inlet side of the Field Meter.
5. Ensure the outlet of the Field Meter is open to the atmosphere to allow air to flush any gas from the meter and any associated piping.

CAUTION

Observe all company safety rules, regulations, and procedures.

Respecter toutes les règles de sécurité, les règlements, et les procédures de l'entreprise.

6. Position the Model 6 Prover as far as possible from the Field Meter.
7. Place the exhaust from the Field Meter as far as possible from the Prover's Blowers.
8. Click the **Prover** icon in the toolbar, and click **Prover Calibration** (Figure 90).

Figure 90: Prover Calibration menu item

9. In the Prover Calibration screen, click the **Purge Test** tab (Figure 91).
10. In the **Meter Name** field, enter the name of the meter to use for the purge.
11. In the flow rate field, enter the flow rate at which to perform the purge.
12. Click **Next** to proceed to the next step.

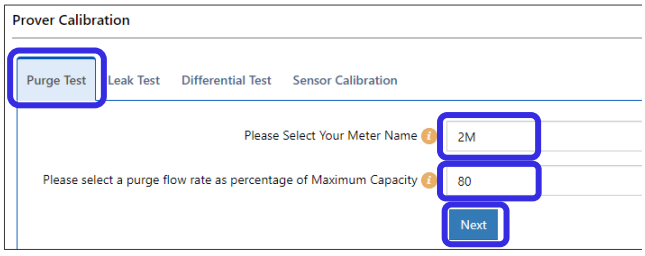


Figure 91: Purge test settings tab

13. Verify the connections for the Prover and the Field Meter are set up correctly. For more information, refer to steps 1–7.
14. Click **Next** to start the blowers to start the meter purge (Figure 92).

    The purge test starts.

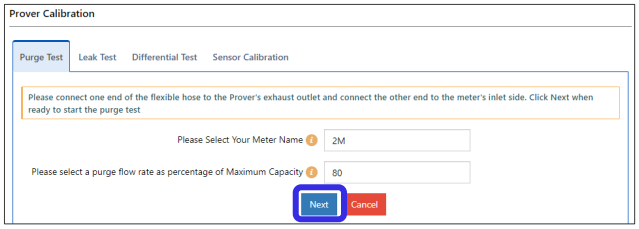


Figure 92: Check connections, and start purge test

Allow the meter and the associated piping to purge all flammable gas from the piping and the vicinity of the Model 6 Prover.

Allow the test to stop automatically or click **Next** to stop the test (Figure 93).

Note: Maximum purge time is set on the **Prover Setup** tab in the **Purge Max Time** field. For more information, refer to Section 18.1.

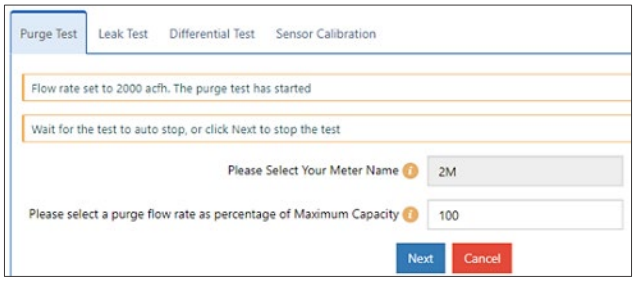


Figure 93: Purge test running

The screen changes when the test is complete (Figure 94).

To restart the test, click **Redo**.

Note: If the purge is run as part of a Meter Test and the **Leak Test** checkbox was selected in Step 4 of the Meter Test screens, **Continue Leak Test** displays.

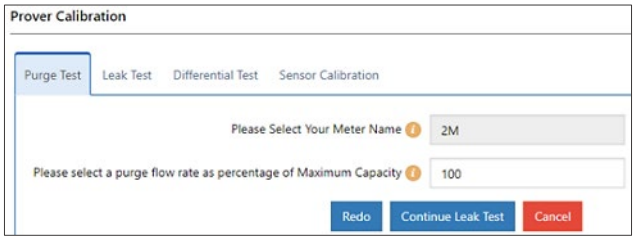


Figure 94: Purge test complete

15. To continue meter testing with the Prover, move the Prover Hose from the exhaust/outlet male quick-disconnect coupling on the Prover to the inlet quick-disconnect coupling of the appropriate Master Meter (Figure 95).

    For more information about setting up the Prover to run a Meter Test, refer to Section 7.

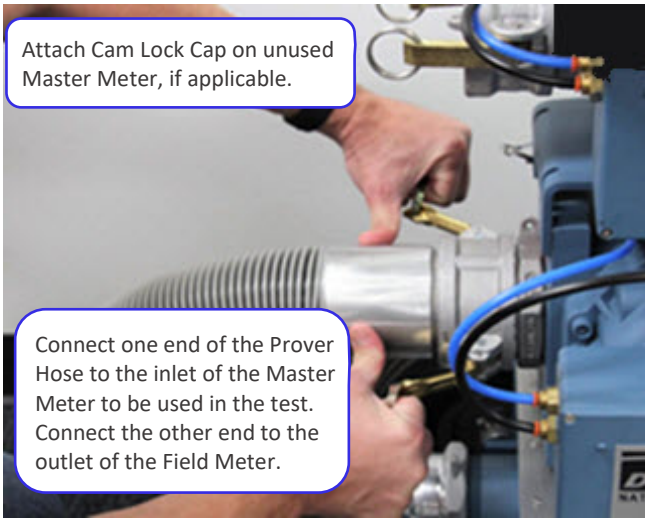


Figure 95: Connect Prover Hose to Prover inlet

14 Leak Testing the Prover System

The system leak test helps determine if a leak is present in the Prover system and where it is located. During the leak test, the volume registered by the tested Field Meter is compared to the volume registered by the Master Meter. Leakage during a Field Meter test results in a lower accuracy (higher Corrected Proof) reading than what is typically expected.

To run a system leak test, perform the following steps:

1. Connect the Prover as you would for testing a Field Meter. For more information, refer to Section 7.

2. Cap the air inlet of the flexible Prover Hose, Field, Meter, or Field Meter set (Figure 96).

Figure 96: Cap the air inlet of the Field Meter

3. Click the **Prover** icon in the toolbar and click **Prover Calibration** (Figure 97).

Figure 97: Prover Calibration menu item

4. In the Prover Calibration screen, click the **Leak Test** tab (Figure 98).

Figure 98: Leak Test tab

5. Click the down arrow icon ▾ in the **Master Meter** field and select the Master Meter to be leak tested (Figure 99).

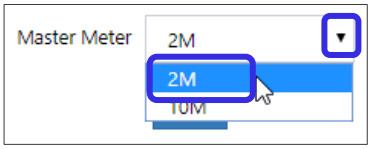


Figure 99: Select Master Meter for leak test

6. When you are ready to proceed, click **Next** (Figure 100).

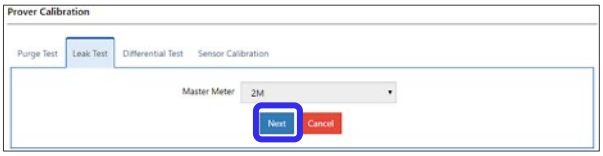


Figure 100: Click Next to proceed

7. Verify the inlet of the Field Meter has been capped. For more information, refer to step 2.
8. When you are ready to start the leak test, click **Next** (Figure 101).

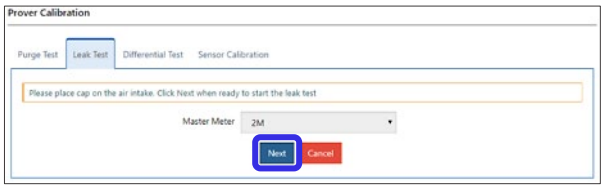


Figure 101: Cap the air intake and start leak test

During the leak test, the screen displays the current flow rate and pressure (Figure 102).

The test runs for 60 seconds unless it is stopped sooner.

To stop the test early and view the results, click **Next**.

To stop the test and exit from the screen, click **Cancel**.

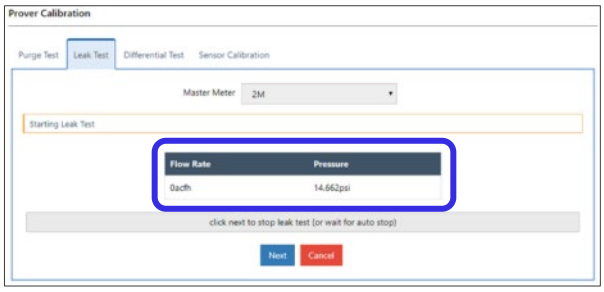


Figure 102: Leak test running

When the test is complete, the test results display, including whether the test passed (Figure 103).

If the test fails, check for areas where leaks can occur by trying the following:

- Check gaskets and connections fit tight and are secure.
- Use Snoop® or a similar liquid leak detector to determine where the leak is occurring.
- For more information, refer to Section 24.3.6.

To restart the test, click **Redo**.

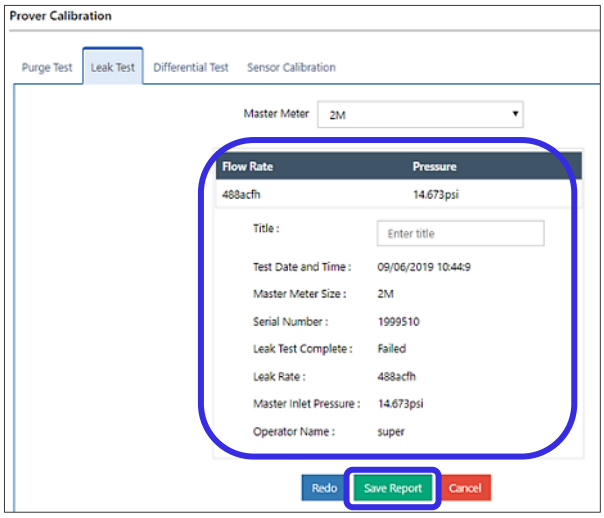


Figure 103: Leak test complete

To save the test results, enter a title in the **Title** field, and click **Save Report**. The displayed results are saved as a .txt file.

To exit the screen without saving the results, click **Cancel**.

9. When leak testing is complete, remove the cap installed in step 2.

Note: If the leak test is run as part of the Meter Test, reconnect equipment, as needed, and continue with the Meter Test.

15 Differential Pressure Testing the Master Meters

The Master Meter differential pressure test measures the differential pressure between the Master Meter inlet pressure transducer (blue 1/4-inch pressure line) and the Master Meter outlet pressure transducer (black 1/4-inch pressure line) at preset flow rate test points.

This test is run with no flexible Prover Hose or Field Meter connected to the Master Meter that is being tested.

The test results can be saved in a report in different file formats.

15.1 Run Differential Pressure Test

To run a Master Meter differential pressure test, perform the following steps:

1. Disconnect the flexible Prover Hose from the inlet quick-disconnect coupling of the appropriate Master Meter.

2. Click the **Prover** icon in the toolbar and click **Prover Calibration** (Figure 104).

Figure 104: Prover Calibration menu item

3. In the Prover Calibration screen, click the **Differential Test** tab (Figure 105).

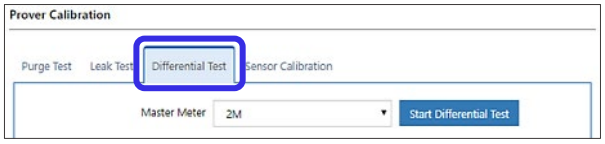


Figure 105: Differential Test tab

4. Click the down arrow icon ▾ in the **Master Meter** field, and select the Master Meter on which you want to conduct the differential pressure test (Figure 106).

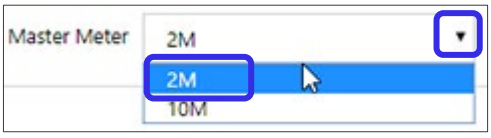


Figure 106: Select Master Meter for differential pressure test

5. When you are ready to begin the test, click **Start Differential Test** (Figure 107).

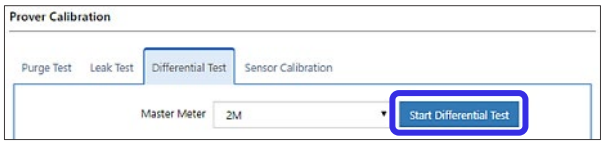


Figure 107: Click Start Differential Test to begin test

The Differential Test screen displays (Figure 108) and has the following sections:

- **Test Steps (1):** Displays information about test points at different flow rates across the meter's flow rate coverage
- **Test Status (2):** Displays additional status information about the test point that is running
- **Save Report (3):** Provides fields in which you can enter information to be used for the test report

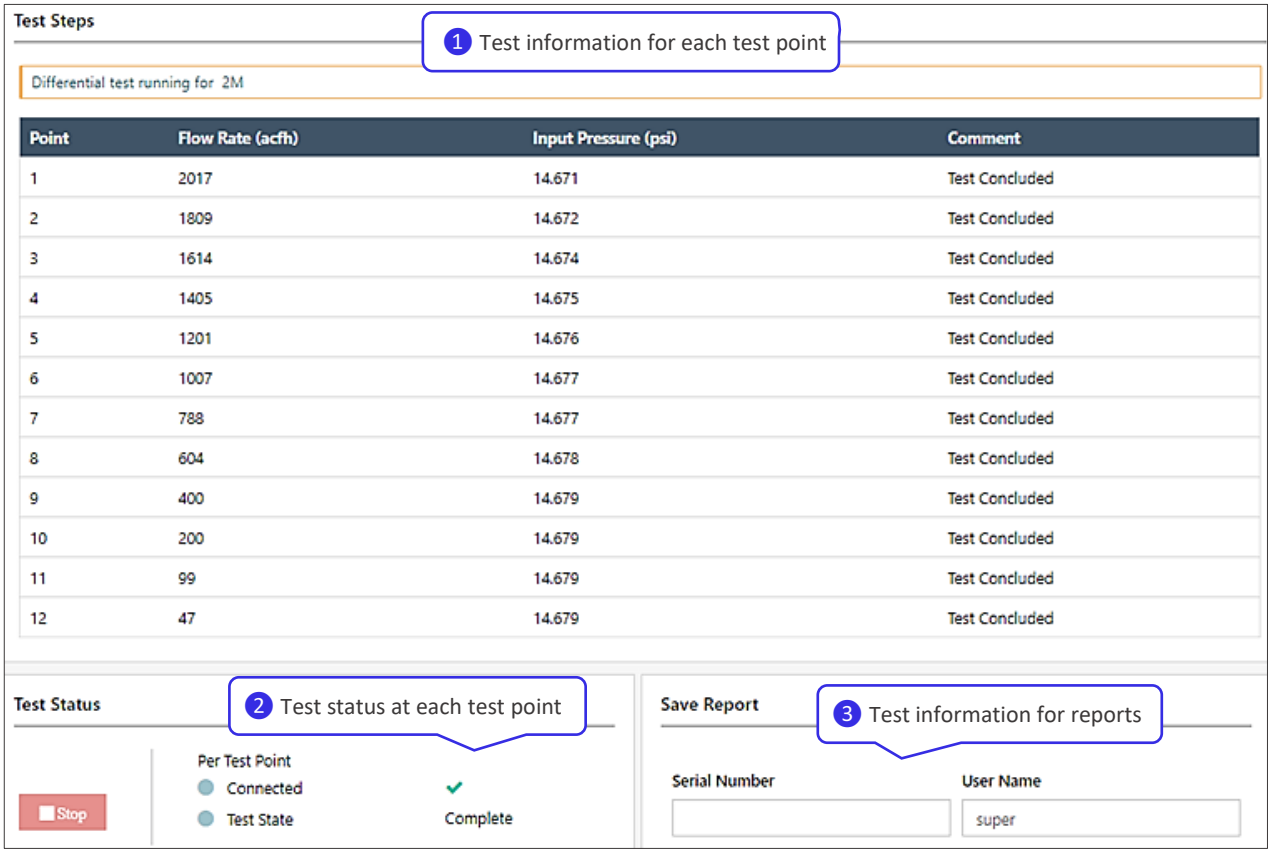


Figure 108: Differential Pressure Test screen

Note: To immediately stop the test, click **Stop** at any point during the test. In case of emergency, you can also press the red Test Stop button on the Controller to disable the Blowers (refer to Figure 3).

6. After all test points are complete or the test is stopped, determine whether to save the test information in a report.

7. To exit the results screen without saving the test results, click **Discard Test Results** in the Save Report section (Figure 109).

8. To save the test results to the database, perform the following steps:

   a. Enter information in the fields in the Save Report section (Figure 109) for the meter's serial number and the username.

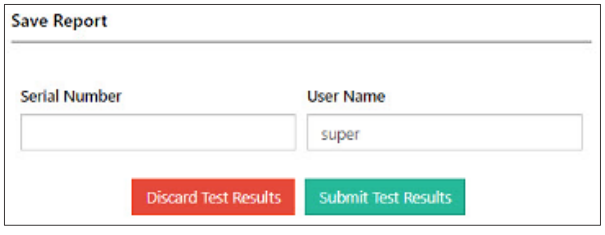


Figure 109: Save differential test results report

The **User Name** field entry defaults to the user logged in to run the test.

b. Click **Submit Test Results** to save the test results report.

A message displays to confirm.

The saved report displays in the Report List section of the **Differential Test** tab (Figure 110).

To view or export a report, refer to Section 15.2.

9. When differential pressure testing is complete, reconnect the Prover Hose to the inlet quick-disconnect coupling of the appropriate Master Meter.

15.2 View and Export Differential Pressure Test Results

Saved differential pressure test result reports are displayed in the Report List section of the **Differential Test** tab (Figure 110).

To view a report, click **View** beside the report.

To save one or more reports as a file, perform the following steps:

1. Click one or more report entries to select the reports to export (Figure 110).

Selected reports are shaded.

Note: If more than one report is selected, they are exported into one file.

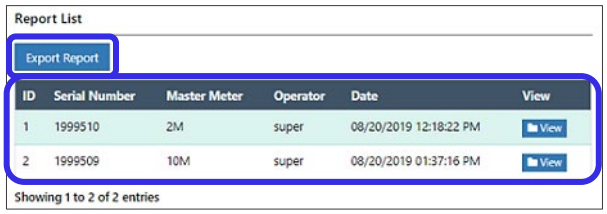


Figure 110: Differential test reports

2. Click **Export Report** (Figure 111).

3. Select the report export file format type:

Figure 111: Export differential test report

- **PDF:** Exports to a PDF file format that can be read by Adobe Reader or compatible programs
- **CSV:** Exports to a comma-separated-values (CSV) file that can be read by Microsoft Excel or compatible programs
- **DAT:** Exports to a comma-delimited format compatible with the Dresser Model 5 Prover file format that can be read by a database or other compatible program

Note: PDF and CSV file formats are recommended. The DAT format only generates for a single report. It is only provided for backwards compatibility with the Dresser Model 5 Prover .dat file format.

A file of the specified type is created for download.

16 Calibrating Sensors

The Model 6 Prover comes from the Factory with all components calibrated and the Model 6 Prover tested as a complete system. All sensors have their own distinct calibration. Individual pressure and temperature sensors do not need to be calibrated; however, you can use the following steps to create an offset.

Each Master Meter has a pressure sensor (transducer) on its inlet and on its outlet and a temperature sensor. The Junction Box is used to test the temperature probe and the inlet/outlet pressure sensor for the Field Meter.

To run a sensor calibration test, perform the following steps:

1. Click the **Prover** icon in the toolbar and click **Prover Calibration** (Figure 112).

Figure 112: Prover Calibration menu item

2. In the Prover Calibration screen, click the **Sensor Calibration** tab (Figure 113).

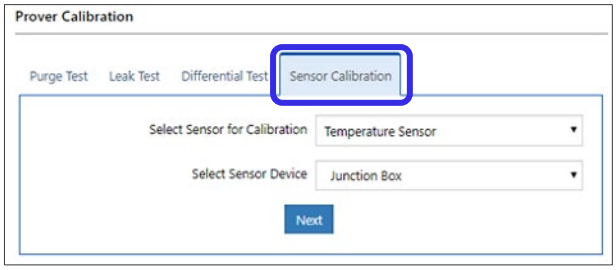


Figure 113: Sensor Calibration tab

3. Perform the steps in the correct section for the sensor you are calibrating:
   - To calibrate temperature sensors, refer to Section 16.1.
   - To calibrate pressure sensors, refer to Section 16.2.

16.1 Calibrate Temperature Sensor

To add an offset to the calibration in the temperature probe in a Master Meter or Field Meter, perform the following steps:

Note: The calibration event is recorded in the audit log. For more information about logs, refer to Section 22.2.

To view the calibration offset value for reference, perform steps 2 through 4.

1. If testing a temperature probe from a Master Meter, access the temperature probe by performing the following steps:

   a. Remove the six (6) screws holding the cover plate on the Master Meter (Figure 114).

Figure 114: Remove cover plate on Master Meter

   b. Remove the Master Meter temperature probe from its well (Figure 115).

Note: Do not disconnect any wiring.

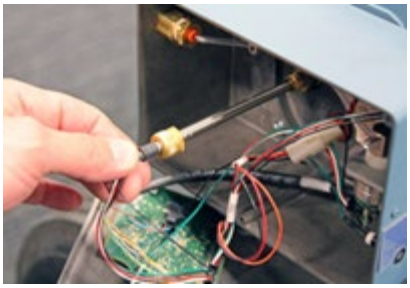


Figure 115: Remove Master Meter temperature probe

2. In the Sensor Calibration screen (Figure 113), click the down arrow icon ▾ in the **Select Sensor for Calibration** field, and select **Temperature Sensors** (Figure 116).

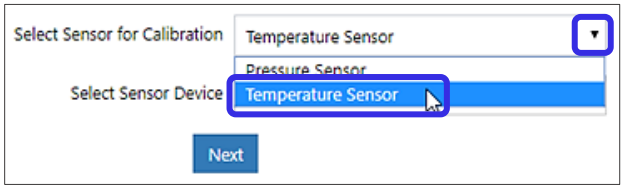


Figure 116: Select Temperature Sensors

3. Click the down arrow icon ▾ in the **Select Sensor Device** field, and select the appropriate device to calibrate (Figure 117).

   - If testing a Master Meter, select the one whose temperature probe is being calibrated.
   - If testing a temperature probe for a Field Meter, select **Junction Box**.

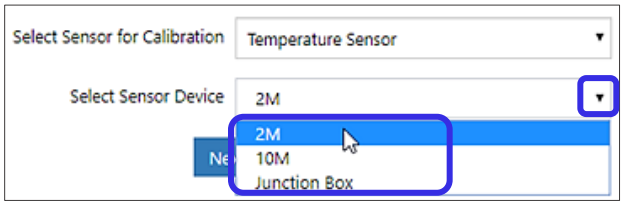


Figure 117: Select device for calibration

4. When you are ready to begin the calibration, click **Next.**
5. Immerse temperature probe into a medium that will be used as a reference temperature.

Note: It is important that there is no greater than ±1°F difference between the temperature reference and the temperature probe.

In the Sensor Calibration screen (Figure 118), the **Current sensor value** field displays the current temperature calculated by using the value from the most recent pressure calibration.

6. In the **reference value** field, enter the reference value for the calibration.

   To return to the previous screen, click **Back**.

   To exit from the screen, click **Cancel**.

7. Click **Calibrate** to complete and save the recalibration.

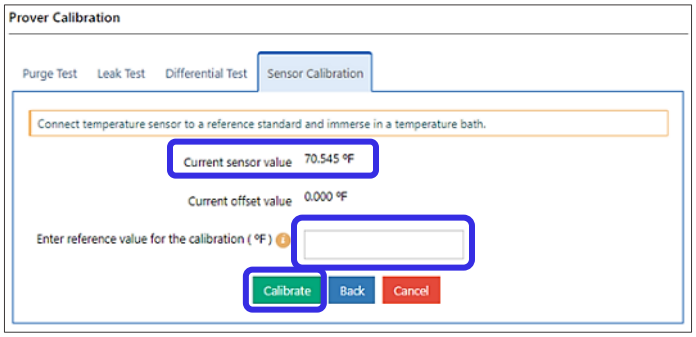


Figure 118: Sensor Calibration Connect sensor screen

The calibration of the temperature sensor is complete.

The calibration offset is saved, and the display updates with the new value. The temperature value updates within about 30 seconds as the sensor readings are averaged.

8. Remove the temperature probe and the temperature standard from the temperature bath, and carefully dry both probes.
9. If testing a temperature probe from a Field Meter, disconnect the cables from the temperature probe.
10. If testing a temperature probe from a Master Meter, replace the temperature probe by performing the following steps:
    a. Re-insert the Master Meter temperature probe in its well and secure it in place.
    b. Reattach the Master Meter cover plate, and tighten all six (6) screws.

16.2 Calibrate Pressure Sensor

To calibrate the inlet/outlet pressure sensor (transducer) in a Master Meter or Field Meter, perform the followings steps:

Note: The calibration event is recorded in the audit log. For more information about logs, refer to Section 22.2.

To view the calibration offset value for reference, perform steps 1 through 3.

1. In the Sensor Calibration tab (Figure 113), click the down arrow icon ▼ in the **Select Sensor for Calibration** field, and select **Pressure Sensors** (Figure 119).

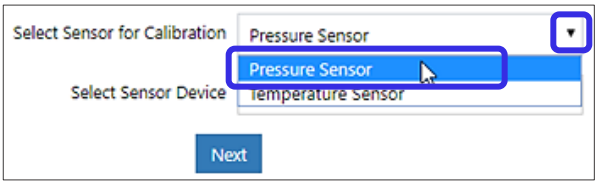


Figure 119: Select Pressure Sensors

2. Click the down arrow icon ▼ in the **Select Sensor Device** field, and select the appropriate device to calibrate (Figure 120).
   - If testing a Master Meter, select the one whose pressure sensor is being calibrated.
   - If testing a pressure sensor for a Field Meter, select **Junction Box**.

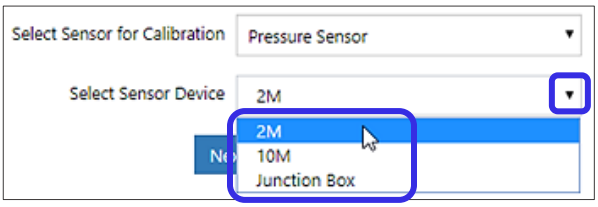


Figure 120: Select device for calibration

3. Click **Next**.

4. Depending on the meter and sensor to test, disconnect the flexible Prover Hose or correct inlet/outlet pressure line to expose the pressure sensor to atmospheric pressure:

Meter	Pressure Sensor	Disconnect
Master Meter	Inlet	Prover Hose
Field Meter	Inlet	Pressure Line from Junction Box IN PRESSURE port

5. Use a calibrated reference pressure standard device to determine the atmospheric pressure reference value. A calibrated barometer can be used.

   In the Sensor Calibration tab (Figure 121), the **Current sensor value** field displays current ambient pressure calculated using the value from the most recent pressure calibration.

6. In the **reference value** field, enter the pressure of the calibrated reference pressure standard device used in step 5.

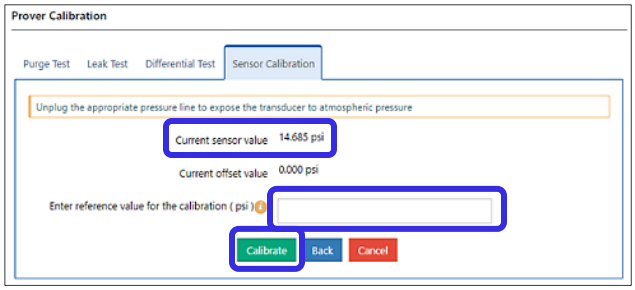


Figure 121: Pressure Sensor Calibration tab

   To return to the previous screen, click **Back**.

   To exit from the screen, click **Cancel**.

7. Click **Calibrate** to complete and save the recalibration.

The calibration of the pressure sensor is complete.

The calibration offset is saved, and the display updates with the new value. The pressure value updates within about 30 seconds as the sensor readings are averaged.

8. Reconnect the Prover Hose or inlet/outlet pressure line that was removed in step 4.

17 Prover Preset Screen

In the Model 6 Prover, unlike previous prover models, the preset files stay with prover and are loaded on the Prover Master Meters at the Factory. There is no need for the user to upload. Contact the Factory for more information.

18 Setting and Saving Prover Defaults

The Prover Management screen is used to set up the defaults for the Prover. This section describes the available default settings.

The Prover Management screen also has a download icon and an upload icon in the upper right of the screen that can be used to save and reload Prover 6 custom and configuration settings as described in Section 18.5.

Changes made on the default screens only affect tests configured after changes are saved. Any previously saved tests are unaffected.

Note: By default, the Operator role only has read access to this screen.

To set the Prover defaults in the Prover Management screen, perform the following steps:

1. Click the **Prover** icon in the toolbar, and click **Prover Management** (Figure 122).
2. Set the appropriate default settings on each tab, as needed, as described in the following sections.

Figure 122: Prover Management menu item

The Prover Management screen has tabs to access the following screens.

- **Prover Setup:** Specifies the Prover test default settings
- **Default Units:** Specifies the units of measure to be used in the Prover screens.
- **Differential Pressure (DP) Readings:** Specifies whether to display the differential pressure readings by default

Note: Click **Submit** before exiting each screen to save changes.

18.1 Set Prover Test Defaults

Click the **Prover Setup** tab (Figure 123) to view and set the Prover test default settings.

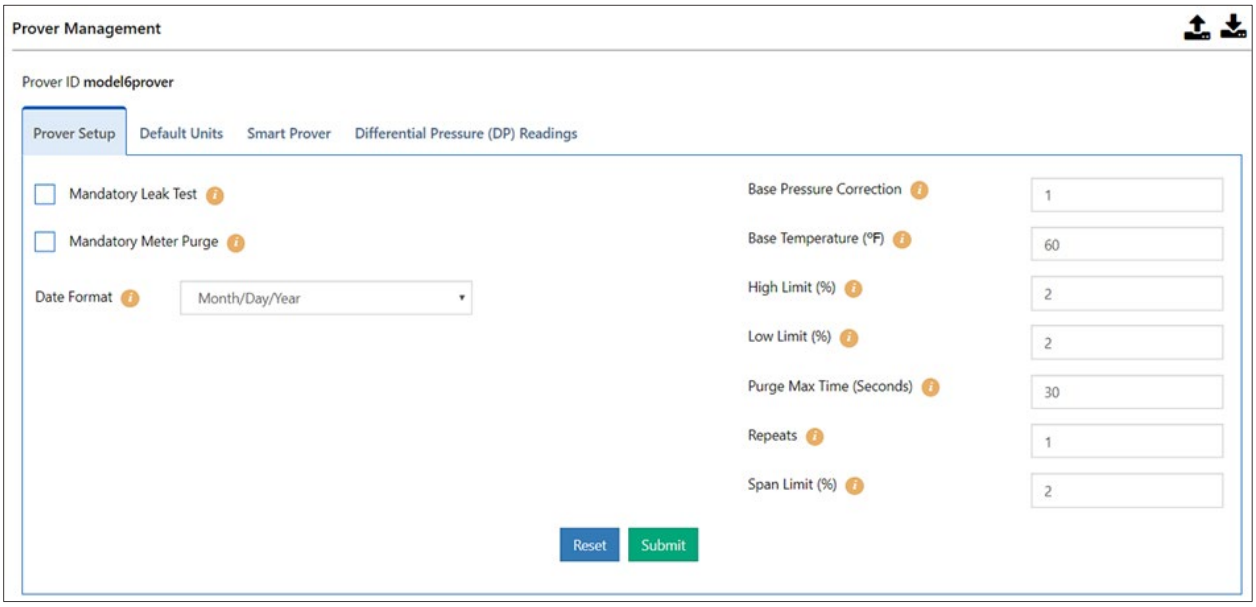


Figure 123: Prover Management Prover Setup tab

- **Mandatory Leak Test:** Check this option to require a system leak text to pass before initiating a Meter Test.
- **Mandatory Meter Purge**: Check this option to require a meter purge before initiating a Meter Test.
- **Date Format:** Choose the date format to be displayed on screens and on test reports.
- **Base Pressure Correction:** Specify the base pressure to be used for Meter Tests.
- **Base Temperature:** Specify the base temperature to be used for Meter Tests. Applies to temperature compensated meters only.
- **High Limit (%):** This configurable Pass/Fail limit is the maximum allowable deviation above 100%.

  For example, if the Low Limit% field is set to 2 and the High Limit% field is set to 2, any test result accuracy falling between 98% and 102% yields a Test Pass indication. Any test result accuracy outside of these limits yields a Test Fail indication.
- **Low Limit (%):** This configurable Pass/Fail limit is the maximum allowable deviation below 100%.
- **Purge Max Time (seconds):** Specify the maximum number of seconds before the meter purge ends.
- **Repeats:** Specify the default number of times the test is to repeat after its initial run. For example, a value of 0 runs one (1) test, and a value of 1 runs two (2) tests.
- **Span Limit (%):** This test limit defines the maximum allowable difference between the highest accuracy and the lowest accuracy reported.

To reset the field entries to their values before the last Submit, click **Reset**.

To save the field values before exiting the screen, click **Submit**.

18.2 Set Default Units of Measure

Click the **Default Units** tab (Figure 124) to view and set the units of measure used in the screens.

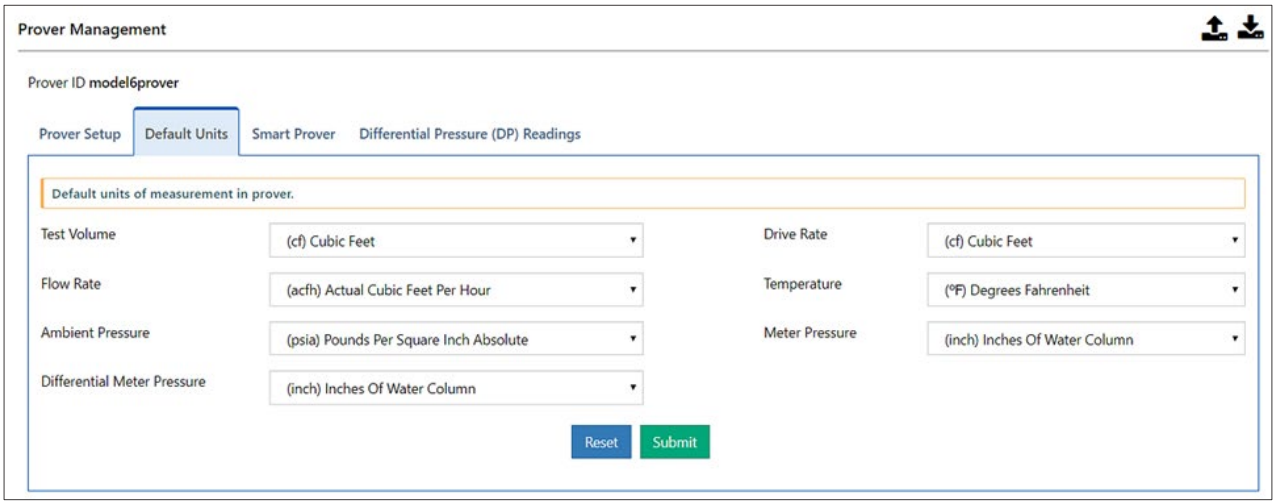


Figure 124: Prover Management Default Units tab

For each field, select the down arrow icon ▾ beside each field to select from the available values.

- The **Test Volume** and **Drive Rate** field values should always have the same units of measure. Test Volume should be a multiple of the Drive Rate for an instrument drive-style meter.
- The **Meter Pressure** field value determines the units of measure used for the **Base Pressure Correction** field in the Prover Setup tab for test configuration.
- The **Temperature** field value determines the units of measure used for the **Base Temp Correction** field in the Prover Setup tab for test configuration.

To reset the field entries to their values before the last Submit, click **Reset**.

To save the field values before exiting the screen, click **Submit**.

18.3 Smart Prover Configuration

Click the **Smart Prover** tab (Figure 125) to view and set the Prover test default settings.

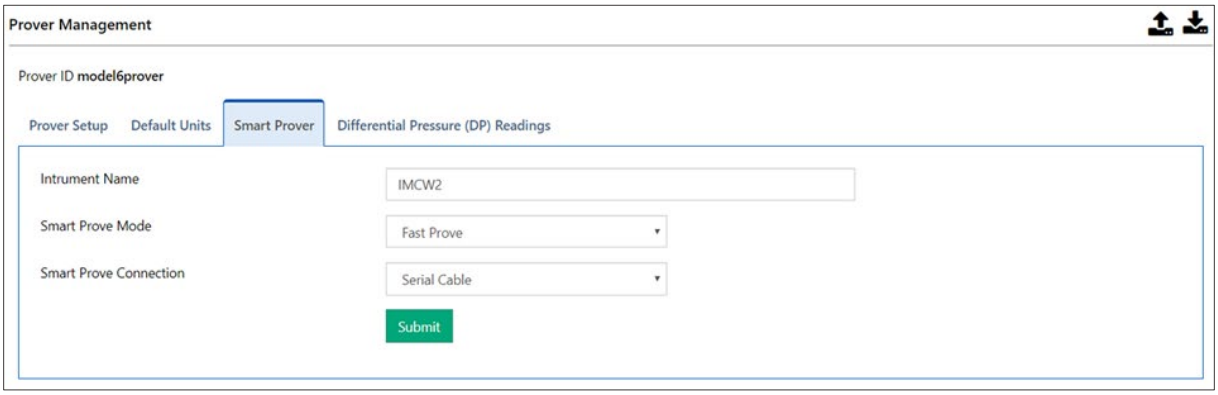


Figure 125: Prover Management Smart Prover tab

On the Smart Prover tab (Figure 125), the fields show the settings for the Smart Prove testing.

For the **Smart Prove Mode** and **Smart Prove Connection** fields, select the down arrow icon ▾ beside each field to select from the available values.

- **Instrument Name:** Specifies the name of the instrument attached to use for the Smart Prove testing.
- **Smart Prove Mode:** Specifies the type of testing mode for the Smart Prove test. Select either **Fast Prove** or **Standard Prove**.
  - **Fast Prove:** Runs a faster test. The test duration is usually about 30 seconds. The connected device is put into Prove mode during the meter test.
  - **Standard Prove:** Uses settings in the connected device. The test duration is generally longer than the Fast Prove test mode. The connected device is not put into Prove mode during the meter test.
- **Smart Prove Connection:** Specifies the type of cable connecting to the Prover. Select either **Serial Cable** or **Telemetry Cable**.

To save the field values before exiting the screen, click **Submit**.

18.4 Set Differential Pressure (DP) Readings Display

On the Differential Pressure (DP) Readings tab (Figure 126), the checkbox determines whether to display the differential pressure readings for the meter and differential pressure tests.

Note: DP data is hidden by default.

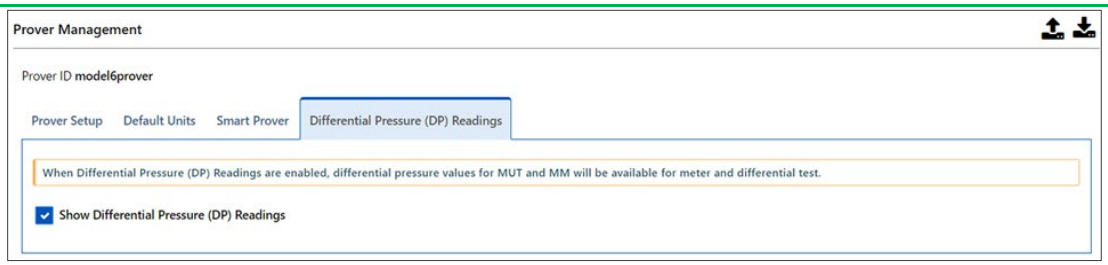


Figure 126: Prover Management > Differential Pressure (DP) Readings tab

The differential pressure reading measures the resistance across the differential ports to indicate whether there is any friction within the meter. The differential pressure can be affected by line pressure, specific gravity of the gas, flow rate, and internal friction.

Note: Differential pressure readings are provided for information purposes only. It is not an accuracy test. They are not used as part of the accuracy calculations and should not be used as meter acceptance criteria.

18.5 Backing Up and Reusing Prover Configuration Settings

You can save Prover custom and configuration settings (meters, instruments, equipment, and tests) to a file. Saving Prover configuration settings is useful for creating a backup file that might be needed to reload Prover settings. It can also be used to set these configurations on another Prover 6 system if you want to use the same configuration settings on multiple Prover 6 systems.

Note: Do not modify or unzip the configuration file.

1. To create a configuration file, click the download icon in the upper right on the Prover Management screen and save the file to a location. To see the location of these icons on the screen, refer to Figure 123.

   The configuration file downloads to the location your device has designated for downloads. For example, for Windows devices, the default setting is usually the Downloads directory as shown in Figure 127.

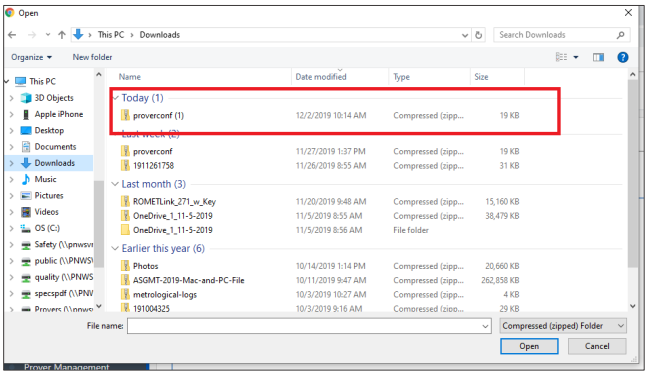


Figure 127: File download screen (Windows 10 shown)

2. To reload the settings or set these configurations on another Prover 6 system, perform the following steps:

   a. Log onto the Prover to be updated.

   b. Click the **Prover** icon in the toolbar, and click **Prover Management** (Figure 122).

   c. On the Prover Management screen, click the upload icon .

   d. Select to upload the file that was downloaded from another prover and contains the configuration settings to be used.

   The settings will load into the current Prover 6.

19 Recertification Recommendations

To maintain a high standard of accuracy for the Prover, it is strongly recommended that the complete proving system be returned to the Factory for recertification by using one or more of the following criteria:

- As dictated by a State regulatory agency or by Company procedure
- Every three (3) to five (5) years, depending on the Prover system's condition and frequency of use

Check the Master Meter accuracy against the original Factory differential curve supplied with the new or recertified Master Meter. Return the Master Meter to the Factory for recertification if any of the following conditions occur:

- The differential does not meet the criteria at any time or after completing the recommended maintenance procedures.
- Master Meter tests results consistently exceed ±0.5% as compared to the original curve.

20 Maintenance Checklist

This section provides information about some maintenance tasks that should be performed to keep the Prover 6 working as designed.

20.1 Master Meter Inlet Screen Cleaning

Prior to each test, perform the following tasks:

- Inspect the Master Meter inlet screen.
- Remove debris from the inlet screen by using a vacuum or wiping it off.

Note: Do not use solvents to clean the inlet screen.

20.2 Adapter Testing

If you suspect a problem, check the pressure and temperature (P&T) Adapters and the Pressure Adapters for the Field Meter and the Master Meters by performing the following steps for each Adapter. This test confirms the adapter assembly tubing is not clogged by checking whether an applied gage pressure reduces to ambient pressure within two (2) minutes of removing a seal.

1. With the Adapter disconnected, seal the non-quick-disconnect end of each Adapter, 052579-000 and 052580-000. Also plug the knurled collet fitting into which the temperature probe connects.

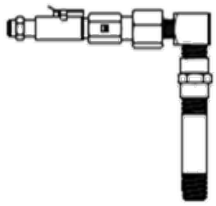


Figure 128: Pressure Adapter 052579-000

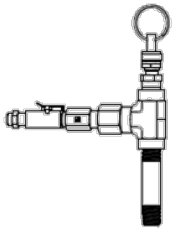


Figure 129: Pressure and Temperature Adapter 052580-000

2. Apply a pressure of 10 inches w.c. (0.36 psi) to the quick-disconnect end of the Adapter.
3. Quickly open the sealed end of the Adapter, and record the time.
4. Use calibrated test equipment to determine when the pressure in the previously sealed end is equal to ambient pressure. Record the time that it occurs.
5. Check the time difference between step 4 and step 3 to determine whether the Adapter needs to be replaced:
   - If the time between these steps is less than two (2) minutes, the Adapter is in good condition.
   - If the time is greater than two (2) minutes, replace the Adapter.

20.3 Reference Meter Testing

Use a Reference Meter as a standard to monitor the Prover system for changes that could affect test results. The documented history of performance is the baseline for continuous comparisons.

When inspecting and characterizing the performance of the Master Meters, compare and plot the results against the historical baseline of the Reference Meter with an acceptable tolerance (such as, ±0.55%).

Run the Reference Meter test on an occasional basis (weekly, monthly, etc.) to ensure proper Prover system condition and repeatability. Run tests any time Field Meter tests are consecutively out of tolerance or there is a suspicion of problems.

To avoid overspeeding, the Reference Meter should ideally have a larger volume capacity than the Master Meter it is testing.

20.4 Blower Maintenance

The Model Prover 6 has two AC Blowers with brushes.

Maintain the Blowers by regularly performing the following checks for each Blower:

CAUTION

Turn the Controller power OFF and remove the Master Meter(s).

Mettre le contrôleur hors tension (OFF) et déposer le ou les appareils de mesure étalon.

DANGER

The Blowers contain rotating parts. Keep hands clear. Entanglement of hands, feet, hair, clothing, or accessories can occur causing death or serious injury. Turn off and unplug Blowers and wait for all moving parts to stop before cleaning or servicing.

20.4.1 Check Brush Cap Tightness

Periodically inspect the tightness of the Blower armature brush caps (refer to Figure 130). Carefully re-tighten the brush caps if they are loose.

20.4.2 Check Brush Wear

At least once every 400 hours of operation, or as required by apparent changes in sound and arcing, inspect the armature brushes for wear. A significant increase in heat can be generated by brushes that are less than 1/2-inch long. This heat can increase current and result in a premature failure of the blowers.

1. Push the Controller's power switch to the OFF position, and verify that the green power indicator light (located next to the power switch) is not illuminated.
2. Disconnect the male end of the 25-foot electrical extension cord from the proper electrical supply source.
3. Disconnect the female end of the 25-foot electrical extension cord from the recessed male receptacle located on the front side of the Controller.
4. Remove the armature brush caps (Figure 130 and Figure 131).

Figure 130: Brush cap

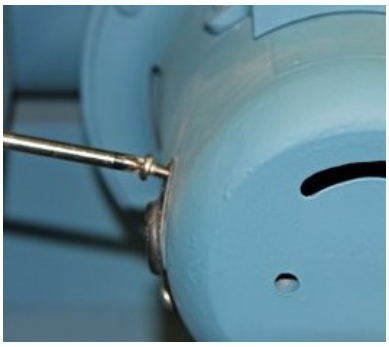


Figure 131: Remove brush cap

5. Remove the brush and measure the length of the square carbon (Figure 132).
6. Replace the brush if it has less than 1/2-inch of carbon remaining.

Note: For example, the brush shown in Figure 133 should be replaced when the '94' marking is worn off and you can only see the 'K2' marking.

Figure 132: Remove brush

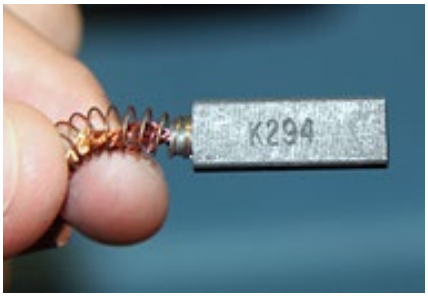


Figure 133: Good brush

7. Install the brush.
8. Re-attach the armature brush caps.
9. Connect the female end of the electrical extension cord into the recessed male receptacle located on the front side of the Controller for 110 Volt Provers, or into the 220/240 Volt receptacle of the Power Transformer for 220 Volt Provers.
10. Connect the male end of the electrical extension cord into the proper electrical supply source.
11. Push the Controller's power switch to the ON position, and verify that the green power indicator light (located next to the power switch) is illuminated.

Figure 134: Reconnect power

20.4.3 Check for Worn Bearings

1. Perform steps 1–3 in Section 20.4.2 to remove power from the Blowers.
2. Perform steps 9–11 in Section 20.4.2 to provide power from the Blowers.
3. Listen to the Blower motor sounds.

   If the Blower motor sounds smooth, the Blower motor bearings are good.

20.5 Prover Cart Maintenance

Maintain the Prover Cart by regularly performing the following checks:

- At least once a year, check the air pressure in the Prover Cart's tires is at 30 psig.
- As needed, clean the frame, wheels, toolbox/accessory case, and exterior surfaces of the Master Meters with a damp cloth and compressed air.
- Regularly inspect all cables for fraying and replace them as needed.

20.6 Accessories

Maintain the Prover accessories by regularly performing the following checks:

- Inspect all flexible hoses, caps, and plugs for damage. Replace them, as needed.
- Once every three (3) months, clean the quick-disconnect couplings by using a degreaser. If the quick-disconnect coupling is removed from the Master Meter, apply a thin anti-seize compound on the male threads before reinstalling it.
- Once a month, inspect all electrical cables and their connectors for damage, ensure that the connectors are clean, and ensure all pins/contacts are straight.
- Inspect the ID Pulser for damage before and after each use.
- Inspect the Optical Scanner for damage before and after each use.

21 Managing User Roles and Information

The Prover software provides different levels of user roles. Each role can have users assigned and different levels of access.

Only some roles, such as the Superuser, have read/write access to the User Management and Role Management screens.

To help ensure that at least one user can log in with Superuser access, at least two users with a Superuser role assigned must always be defined and active.

21.1 Managing User Information

The software provides different levels of user roles. Each role can have one or more users assigned to them.

Note: Because some user role options can allow users to provide and revoke access, set and change passwords, and make other Prover setting changes, carefully plan and maintain the access of different users and roles.

To manage users and the roles they are assigned to, click the **System** icon in the toolbar, and click **User Management** (Figure 135).

The User Management screen displays (Figure 136) and has the following sections:

- **User Lists:** Displays the roles and the users currently assigned to those roles
- **User Info:** Displays the information for the user selected in the User Lists section or a new user being added

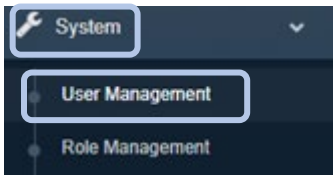


Figure 135: User Management menu item

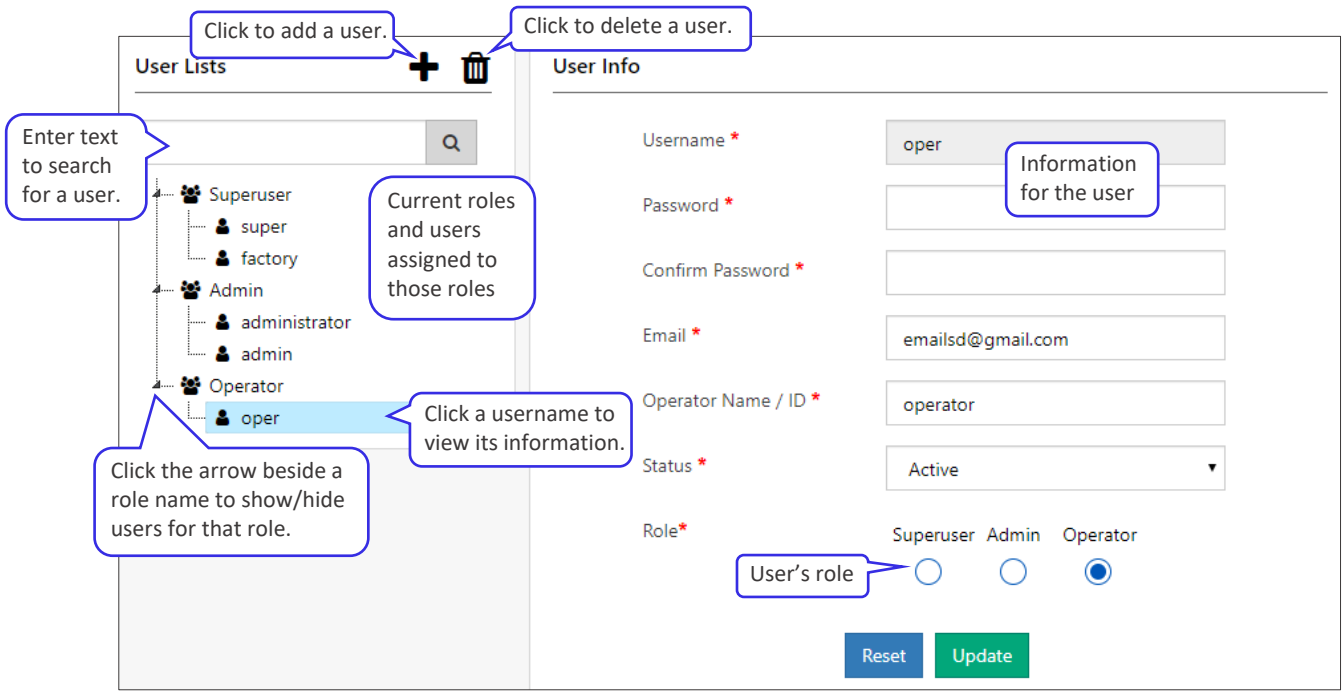


Figure 136: User Management screen

21.1.1 Add a User to a Role

To add a user to a role, perform the following steps in the User Management screen (Figure 136):

1. Click the plus sign icon ✚ in the upper right corner of the User Lists section (Figure 137).

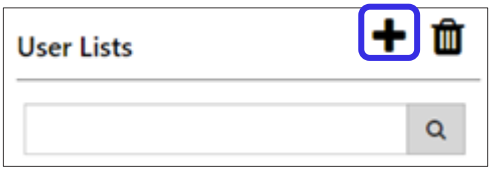


Figure 137: Add user to role

2. In the User Info section (Figure 138), enter the information for the user:

Note: Required fields are marked with an *.

- **Username:** Enter a username that is unique and between 3 and 30 characters long.
- **Password:** Enter a user password that is at least 8 characters long. It is case-sensitive.
- **Confirm Password:** Enter the same entry as the Password field. It is case-sensitive.
- **Email:** Enter the user's email address.
- **Operator Name/ID:** Enter the user's name or ID number.

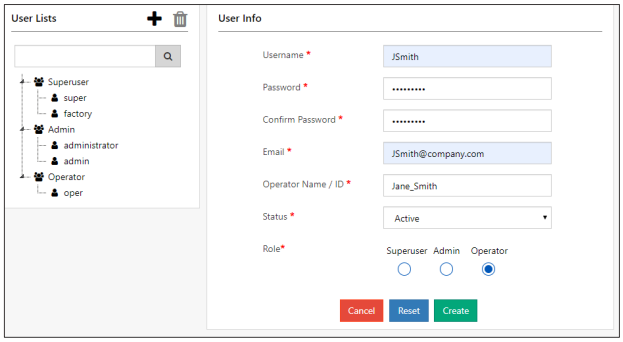


Figure 138: Create new user

This name can be different than the Username field. Only alphanumeric and '.', '_', '-' characters are allowed.

- **Status:** Select **Active** or **Inactive**.

  For example, Inactive status can be assigned to users, such as contractors or new employees, that do not currently need access but might in the future.

- **Role:** Select the appropriate user role. The role assigned specifies the areas of the software the user can access and whether they can change or only view data. For more information about roles, refer to Section 21.2.

To clear all field content, click **Reset**.

To exit without saving changes, click **Cancel**.

3. Click **Create**.

   The new username displays in the User Lists under the assigned role.

   Example: The new Operator user, JSmith, displays under the Operator role (Figure 139).

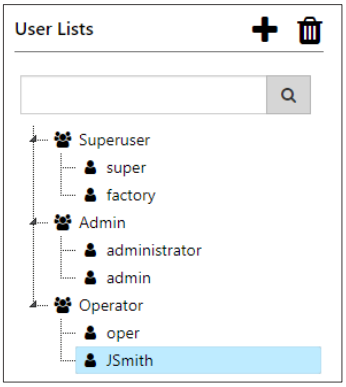


Figure 139: New Operator user created

21.1.2 View and Edit an Existing User

To view or edit information for an existing user, perform the following steps in the User Management screen (Figure 136):

1. Select the user you want to view or edit from the ones displayed in the User Lists section.

   To search for a user or filter the users shown, enter one or more letters in the **Search** field . A list displays the usernames that contain those letters. Clear text in the **Search** field to see all entries in the User Lists.

2. Edit the user information, as needed.

   Refer to Section 21.1.1 step 2 for field descriptions.

   Note: The entries for the password fields do not display.

3. Click **Reset** to clear the changes, or click **Update** to save the changes.

21.1.3 Delete a User

To delete a user, perform the following steps in the User Management screen (Figure 136):

1. Select the user you want to delete from the ones displayed in the User Lists section.
2. Click the delete icon in the upper right corner of the Users Lists section.

3. Click **Confirm** to delete the user.

   The username no longer displays in the User List.

Note: At least two users with a superuser role must always be defined. If you only have two users with the superuser role assigned, you must create a third user before you can delete one of them.

21.2 Managing Role Access

The software provides different roles to which users can be assigned. Each role can have different levels of read or write access to different features of the software.

The roles provided in the software are designed to manage user access based on each user's role in the organization. Although these roles are designed for users that need certain access, you can customize the access for the Superuser, Admin, and Operator roles on the Role Management screen to conform to company needs and requirements.

The following roles are available:

- **Superuser:** Role designed to have access to all features, except for writing Prover Presets. Superusers often work with Prover settings such as customizations and testing parameters
- **Admin:** Role designed for administrative tasks, such as user and role management, diagnostics, and version control
- **Configurer:** Role reserved for Dresser Factory personnel for use during service, recertification, and troubleshooting. The access settings for this role cannot be changed.
- **Operator:** Role designed for everyday use, with restricted levels of customization

Note: Because some user role options can allow users to provide and revoke access, set and change passwords, and make other Prover setting changes, carefully plan and maintain the access of different users and roles.

To manage roles and the access that each has assigned, click the **System** icon in the toolbar, and click **Role Management** (Figure 140).

The Role Management screen displays (Figure 141).

Figure 140: Role Management menu item

Select the appropriate checkbox for each role:

- **Read:** Allows the user to view the information.
- **Write:** Allows the user to change the information. Selecting this checkbox also selects the Read checkbox.

To clear the changes, click **Reset.**

To save the changes, click **Update**.

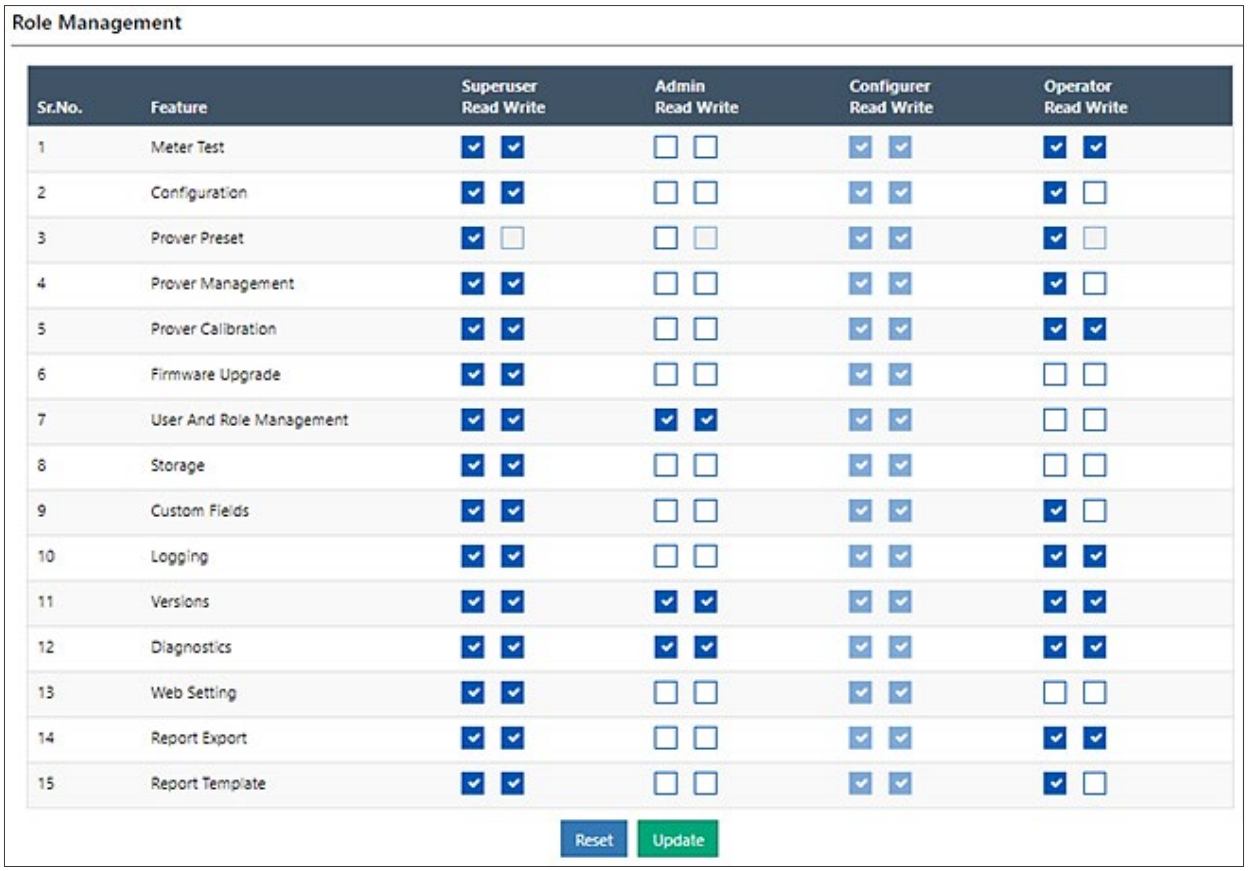


Figure 141: Role Management screen

21.3 Change User Passwords

Each user can change their current password. Users in the Superuser and Admin roles can also set and change passwords for all roles and users (refer to Section 21.1).

To change your user password, perform the following steps:

1. Select **Change Password** on one of the following menus:
   - Click the **System** icon in the toolbar (Figure 142) and click **Change Password**.

Figure 142: System Change Password menu item

- Click the down arrow icon by the username in the upper right of the program window. Click **Change Password** in the drop-down menu (Figure 143).

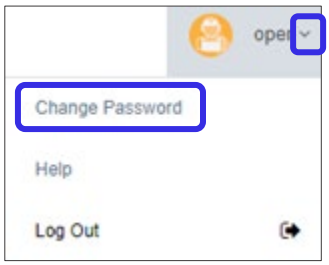


Figure 143: User Change Password menu item

The Change Password screen displays (Figure 144).

2. Enter your current password in the **Old Password** field.
3. Enter the password you want to use in the **New Password** field and then in the **Confirm New Password** field.

   The new password must be at least 8 characters.

   To clear content in all password fields, click **Reset**.

   For security reasons, a question selected in the **Question** fields is asked when **Forgot Password**? is selected on the Login screen. Select questions and enter answers that you can remember but that others will likely not know or guess.
4. Click **Submit**.

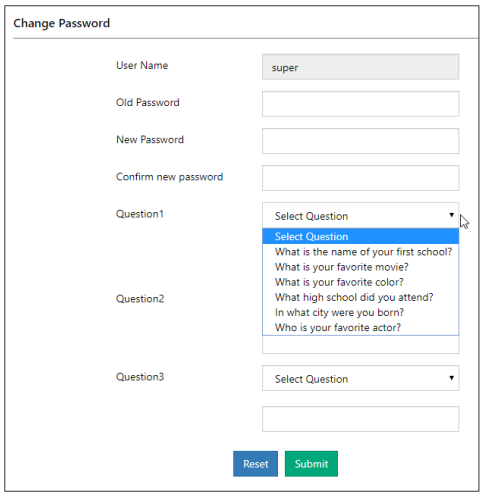


Figure 144: Change Password screen

22 Accessing System Information

The Prover 6 system stores information in reports and logs that can be downloaded and deleted. You can also view Prover information, such as component versions and status, and network settings.

22.1 View Storage Information

The Prover system contains storage to store information such as reports and logs.

To view system storage information, perform the following steps:

1. Click the **System** icon in the toolbar and click **Storage** (Figure 145).

Figure 145: System Storage menu item

2. The History screen (Figure 146) displays how much memory storage is available on the Prover and how much of that storage is currently being used.

   When storage space runs out for reports and logs, the oldest ones are overwritten.

   Some memory can be freed by deleting some of the reports and logs.

   Note: Download a local copy of reports and logs you want to save for reference.

   To delete reports or logs, click the **Start Date** and **End Date** fields to select the range of entries to delete, and then click **Delete**.

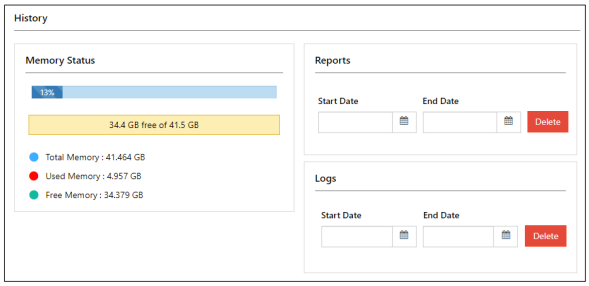


Figure 146: System Storage screen

22.2 Download System Logs

The Prover system keeps a record of each change that is made (such as adding a new meter or changing a test configuration setting) and events that occur (such as meter test results). You can download a .zip file of those logs to make a local copy and view the information. These files contain .csv or .log files that can be read by Microsoft Excel or compatible programs.

When storage runs low on the Prover, the oldest records are overwritten. For information about storage status and deleting unwanted logs, refer to Section 22.1.

To view system log information, perform the following steps:

1. Click the **System** icon in the toolbar and click **Logging** (Figure 147).

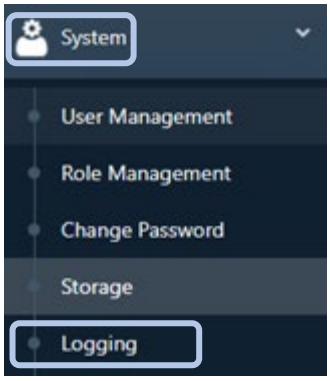


Figure 147: System Logging menu item

2. On the Logging screen (Figure 148), select the appropriate log to download a .zip file of the logs on the Prover.
   - **Download:** Includes all logs
   - **Metrological Events Logs:** Includes events that affect the meters ability to measure volume accurately (such as calibrations performed)
   - **Non Metrological Events Logs:** Includes events (such as user logins and creating or changing meters, instruments, and equipment)

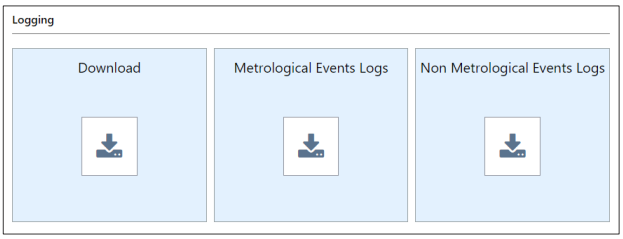


Figure 148: Logging screen

22.3 View Version Information

To view the version of components on the Prover, click the **System** icon in the toolbar, and click **Versions** (Figure 149).

The Versions screen displays (Figure 150).

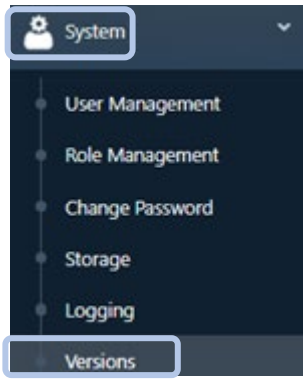


Figure 149: System Versions menu item

Versions

Component	Version
10M	1.1.2.190822
2M	1.1.0.190619
API Server	1.1.7-BETA
Controller Box	1.0.1.190619
Database	1.1.0
Junction Box	1.1.0.190619
Web Server	1.1.0

Figure 150: Versions screen

22.4 Run System Diagnostics

To view the status of the hardware on the Prover and run a system diagnostic, click the **System** icon in the toolbar, and click **Diagnostics** (Figure 151).

The Diagnostics screen displays (Figure 152). Wait a minute or so while the Prover checks the status of the system components and updates the results.

System diagnostics checks all communications to the subsystems and sensors.

The Pulse sensor results might initially show as Fail (as shown for the 10M Master Meter in Figure 152). To update the status results of the pulse sensors, click **Start** to perform a pulse count test. This test activates the Blowers and looks for pulses on the Master Meter and the Field Meter.

The diagnostic information is useful for viewing the current status and readings of components on the Prover and troubleshooting issues.

The **Zero cross** field displays the line frequency, which should be 60Hz (or 50Hz).

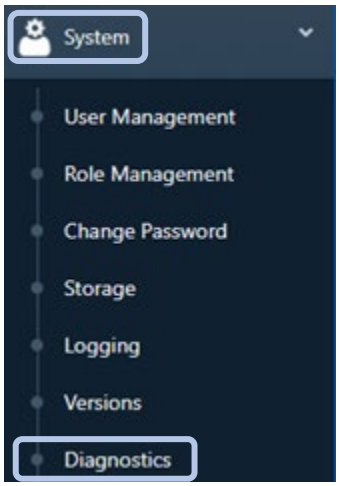
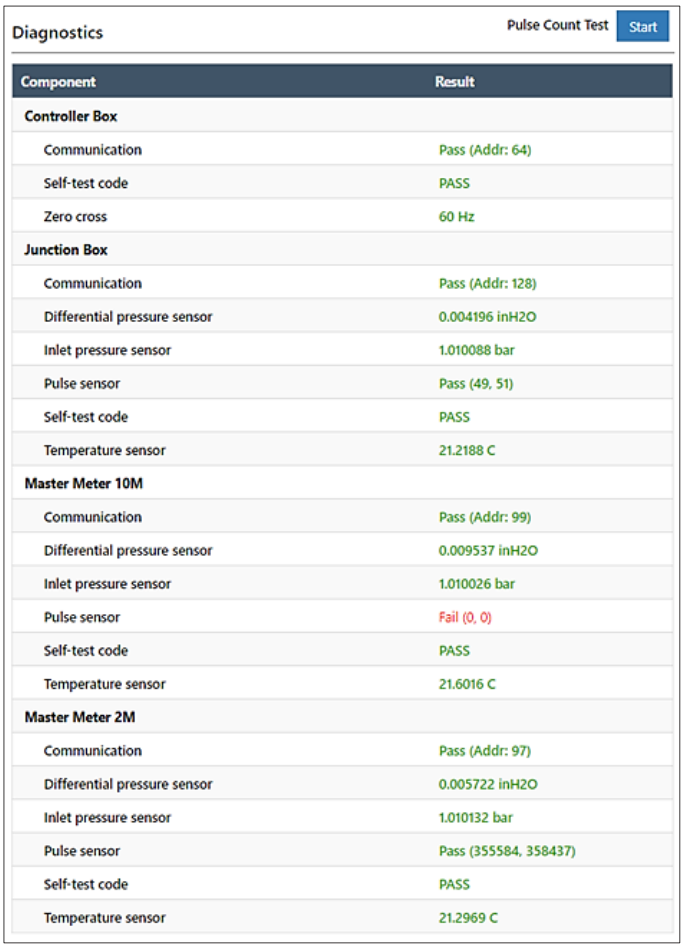


Figure 151: System Diagnostics menu item



Diagnostics

Pulse Count Test Start

Component	Result
Controller Box	
Communication	Pass (Addr: 64)
Self-test code	PASS
Zero cross	60 Hz
Junction Box	
Communication	Pass (Addr: 128)
Differential pressure sensor	0.004196 inH2O
Inlet pressure sensor	1.010088 bar
Pulse sensor	Pass (49, 51)
Self-test code	PASS
Temperature sensor	21.2188 C
Master Meter 10M	
Communication	Pass (Addr: 99)
Differential pressure sensor	0.009537 inH2O
Inlet pressure sensor	1.010026 bar
Pulse sensor	Fail (0, 0)
Self-test code	PASS
Temperature sensor	21.6016 C
Master Meter 2M	
Communication	Pass (Addr: 97)
Differential pressure sensor	0.005722 inH2O
Inlet pressure sensor	1.010132 bar
Pulse sensor	Pass (355584, 358437)
Self-test code	PASS
Temperature sensor	21.2969 C

Figure 152: Diagnostics screen

Note: If the Prover only includes a 10M Master Meter, all 2M Master Meter component results will fail because the 2M is not installed. If the Prover is not connected to a Field Meter, the Junction Box pulse sensor will not pass the pulse count test.

22.5 View Web Settings

To view the web settings on the Prover, click the **System** icon in the toolbar, and click **Web Setting** (Figure 153).

The Network Information screen displays (Figure 154).

This screen provides information about the device's network connection with the Prover, such as the IP addresses.

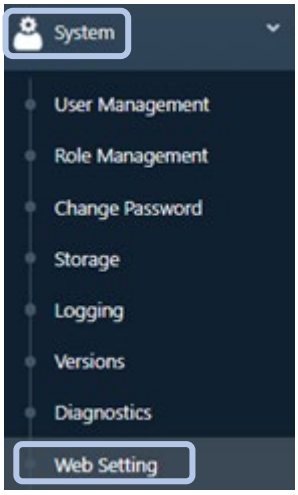


Figure 153: System Web Setting menu item

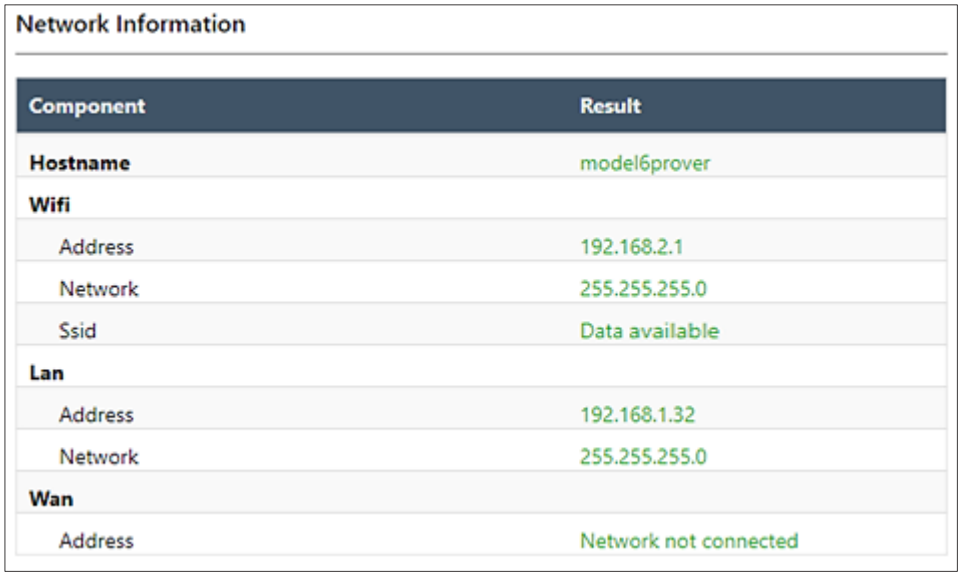


Figure 154: Web Settings screen

23 Upgrading Firmware

Firmware is special software stored in the memory of the Prover. Factory upgrades might be available to correct software issues or provide feature enhancements. Upgrade the Prover's current firmware revision by uploading a new file. Contact the Factory to obtain the appropriate Factory-provided firmware upgrade file.

The current version of the Prover components displays on the Versions screen. For more information, refer to Section 22.3.

Note: By default, the Operator role cannot update firmware.

To upgrade the Prover firmware, perform the following steps:

1. Directly connect the device with the appropriate Factory-provided firmware upgrade file to the Prover. For more information, refer to Section 8.1.1.

   Ensure the connection can remain in place for the duration of the firmware upgrade process.

   Note: Do not use a wireless connection to update the firmware.

2. Click the **Prover** icon in the toolbar, and click **Firmware Upgrade** (Figure 155).

Figure 155: Firmware Upgrade menu item

3. On the Firmware Upgrade screen (Figure 156), click the upload icon .

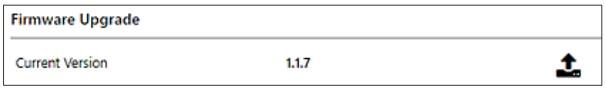


Figure 156: Firmware Upgrade screen

4. On the file screen, browse to the Factory provided firmware upgrade file, and select to open it.

The firmware upgrade begins. A status screen displays to show the progress of the upgrade (Figure 157).

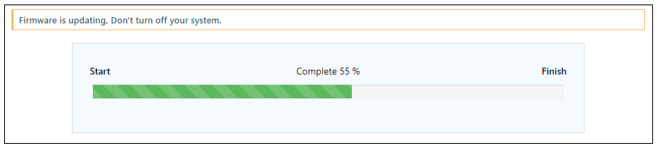


Figure 157: Firmware upgrade progress

Note: Do not disconnect or power off the prover or the device during the firmware upgrade process.

After the upgrade completes, the user is logged out and the login screen displays (Figure 24).

24 Troubleshooting

This section provides some information about common problems that might occur during operations or when testing Field Meter(s) using the Model 6 Prover.

If you experience problems not listed or the provided solutions do not resolve the problem, contact the Factory for assistance.

24.1 Common Connection Problems

24.1.1 Prover Network Name Not Showing in the Available Wireless Networks or Cannot Connect Wirelessly

Problem Description

When attempting to connect to the Prover 6 by using a wireless (Wi-Fi) connection, the Prover's wireless network name Model6WIFI-### is not showing in the list of available networks or you cannot connect to the Prover on a wireless connection.

Possible Causes

- The device you are using to wirelessly connect to the Prover is not within range of the router on the Prover 6.
- Interference or an obstruction is causing a problem with the device receiving the Wi-Fi signal from the Prover.
- Wi-Fi access is disabled on your device.
- Your device is connected to an Ethernet cable.
- Your device is already connected to another wireless network.
- Antennas on the Prover's Controller are loose or disconnected.

Possible Solutions

- Position your device closer to the Prover and away from possible obstructions.
- Move your device and/or the Prover's Controller to another location to see if the signal reception improves.
- Turn off other wireless, cordless, or electronic devices that might be interfering with the signal, such as cordless phones, Bluetooth devices, and other wireless devices.
- Verify Wi-Fi service is enabled on your device.
- For most devices you cannot connect to a wireless network if an Ethernet cable is plugged into the device. To connect to a wireless network, you must unplug the Ethernet cable from the device.
- If you are already connected to another wireless network, disconnect from that network, and then select to connect to the Prover's wireless connection.
- If you cannot get Wi-Fi service to work, you can also directly connect the device to the Prover by using an Ethernet cable plugged into the Prover's LAN port.
- Tighten the antennas on the Prover's Controller.

24.1.2 Selecting the Prover's Wireless Network Name Model6WIFI-### Will Not Connect

Problem Description

You have selected the Prover's wireless network name Model6WIFI-### but you cannot connect to the Prover.

Possible Causes

- Refer to Section 24.1.1.
- The password provided to connect to the wireless network is incorrect.

Possible Solutions

- Refer to Section 24.1.1.
- Check and re-enter the wireless network password.

24.1.3 Cannot Connect to the model6prover.com Web Address

Problem Description

You have entered the Prover's **model6prover.com** web address in the device's web browser, but you cannot connect to the page.

Possible Causes

- Connection with the Prover has not been established or has been dropped.
- The browser has an old copy of the site in its memory cache.
- For a LAN connection, the page will not load if the device's network settings are not compatible with the Prover, such as when the device's IP address does not start with 192.168.1.*xxx*.

Possible Solutions

- Verify you are connected with the Prover. Check the wireless connection or direct connection is still active.
- Refresh the web page in the browser cache. For a web browser in Windows, press **Ctrl F5**.
- Verify the device is connected to the LAN, which should assign the device an IP address in the form of 192.168.1.*xxx*.

24.2 Common Software Problems

24.2.1 Screens Display but Data Not Displaying in Sections

Problem Description

A screen, such as a Meter Configuration screen, displays but no data displays in the sections of the screen.

Possible Cause

The web browser cache needs to be refreshed.

Possible Solutions

Refresh your web browser cache. For a web browser in Windows, press **Ctrl F5**.

24.3 Common Operations Problems

24.3.1 Prover Does Not Stabilize at the Proper Flow Rate

Problem Description

Flow rate surging is typically due to insufficient back pressure in the system, which causes the valves to open too far. Blowers at maximum power usually means that there is a restriction somewhere in the system or that the solenoid-operated butterfly valve is not opening properly.

Possible Causes

- The most likely cause is a problem with the valve mechanism. Some examples include the following:
  - Sticking solenoid, valve, or valve linkage
  - Worn, damaged, or improperly adjusted valve linkage
  - Obstruction in the valve, valve piping, meter(s), silencer, or hose(s)
- A malfunction by the Blower or the Blower's Controller
- The power cable is loose.

Possible Solutions

Evaluate the possible causes to resolve.

For suspected Blower problems, try the following steps, perform the steps in Section 20.4.2 and Section 20.4.3.

24.3.2 One or More of the Blowers Comes on Without Initiating a Test

Problem Description

The Blower(s) start unexpectedly or run faster than they are supposed to.

Possible Causes

The Blower(s) are controlled by the electronics in the Controller. This problem can occur if a malfunction occurs in the Controller.

Possible Solution

Turn the Controller off, wait a few seconds, and then turn the Controller back on. Contact the Factory if the problem reoccurs.

24.3.3 Test Stops Shortly After the Blowers Start

Problem Description

The test stops shortly after the Blowers start (Blowers start and then stop almost immediately). If the Controller receives no indication that the Master Meter's impellers have started rotating, the Controller stops the test after the Blowers start.

Possible Causes

- If it occurs upon initial startup, the shipping seals have not been removed from the Master Meter(s) and the air exhaust port(s).
- If it occurs after a leak test, the seal at the inlet of the Field Meter was not removed.
- Debris or trash restricts air flow or locks up the Master Meter.
- Power provided is not sufficient.
- The Test Stop button has been engaged (refer to Figure 3).
- The motor control circuit has malfunctioned.

Possible Solutions

- Verify shipping seals for the Master Meter and air exhaust ports were removed.
- Verify the Field Meter inlet is not sealed.
- Verify air flow is not restricted.
- Verify provided power is 118–12V with 20A.
- If the Test Stop button has been engaged, twist the button to release it.
- Power the Blowers off, wait thirty seconds, and then power them back on.

24.3.4 Accuracy is Out of Specification

Problem Description

The accuracy of the Field Meter test is not within the specified values.

Pressure pulsations commonly occur when transfer testing Field Meters. These pulsations or resonant points can be pronounced at certain flow rates under otherwise normal operating conditions.

Possible Causes

- The Field Meter needs servicing.
- Length and volume of the hose, elbows, and transitions
- Size and interaction between the Field and Master Meters
- Where the pressures and temperatures are measured
- Stability of the testing environment
- Temperature variance between the Master Meter and the Field Meter is too great

Possible Solutions

- The effects of resonant points can be minimized by increasing or decreasing the flow rate slightly.
- Acoustical filters are available to reduce or eliminate the effects of pulsations and resonance. Contact the Factory for details.
- Test the Field Meter in an environment in which the temperature difference between the Master Meter and Field Meter is stable. Temperature fluctuations of 1°F can result in a ±0.2% error in the test results. Also refer to Section 24.3.5.

24.3.5 Accuracy Varies when Conducting Outdoor Meter Testing

Problem Description

The accuracy of the Field Meter test is different when performing the test in an operating environment affected by outdoor conditions.

Possible Causes

An unstable operating environment can have a noticeable effect on meter test results.

The most common effect can be seen when testing meters outside in direct sunlight. The sun's warmth can heat the air traveling through the flexible Prover Hose so that by the time the air reaches the Master Meter, an increase of 20°F is possible.

The Master Meter may remain close to the ambient air temperature and change slowly, while the temperature of the air traveling through the flexible Prover Hose fluctuates rapidly as clouds, wind, and/or shade affect it. The measured Master Meter temperature, even though situated in the center of the air stream, may not match the actual temperature of the measured volume inside the Master Meter's measuring chamber.

Possible Solutions

Effects of an unstable or outdoor operating environment can be reduced significantly by shading the flexible Prover Hose and insulating it as much as possible from dramatic temperature changes above or below ambient conditions.

Test the Field Meter in an environment in which the temperature difference between the Master Meter and Field Meter is stable. Temperature fluctuations of 1°F can result in a ±0.2% error in the test results.

24.3.6 Leak Test Fails

Problem Description

A leak test performed on a Field Meter fails.

Possible Causes

- A gasket or other connection is not connected properly.
- Prover Hose or tubing has a hole in it.

Possible Solutions

- Check gaskets and connections fit tight and are secure.
- Use Snoop® or a similar liquid leak detector to determine where the leak is occurring.
- Patch any holes or replace the damaged Prover Hose or tubing.

24.4 Common Error Messages

This section provides some information about common error messages that might display during operations or when testing Field Meter(s) using the Model 6 Prover.

If you experience other problems or the provided causes/solutions do not resolve the problem, contact the Factory for assistance.

24.4.1 "No Instruments Available for Meter *Meter Name.*"

Error Message Description

This message appears when a meter was selected on the Meter Test screen.

Possible Cause

The meter selected for testing does not have an instrument associated with it.

Possible Solution

Associate an appropriate instrument with test equipment to the meter. For more information, refer to Section 11.1.

24.4.2 "Failure to Reach Flow Rate"

Error Message Description

This error appears if the Controller has not reached the configured flow rate within a specified amount of time after the Master Meter temperature has stabilized.

Notice what flow rate is displayed to determine whether or not a problem exists. The appearance of this message does not prevent the start of a test, nor does it necessarily mean there is a problem with the Prover. It merely indicates that it took longer than the typical amount of time to reach the desired flow rate.

Possible Causes

- Blower(s) are not turned on or plugged into the Controller.
- There is a restriction in the piping, meters, or the flexible Prover Hose(s).
- There is a problem with the valves, the valve solenoid, or valve linkages.

Possible Solutions

- Check and clean the screens at the inlet of the Master Meter(s) regularly.
- Make sure the connector plug from the valve solenoid is attached into the Controller at the connector labeled THROTTLE VALVE.

25 Warranty

Contact the Factory for the latest revision of Terms and Conditions for Sale of Products and Services.

Appendix A Specifications

Table 9: Model 6 Prover Specifications

Criteria	2M/10M Specification	
Overall Prover Dimensions (l x w x h)	51” x 19.5” x 29.5”	
Prover Shipping Dimensions (l x w x h)	54” x 24” x 32”	
Net Weight/Shipping Weight	10M only: 155 lb, 2M/10M: 180 lb, Hose: 25 lb	
Shipping Weight	10M only: 270 lb, 2M/10M: 300 lb (including Prover Hose)	
System Accuracy (excluding meter under test)	±0.55% or better	
System Repeatability (excluding meter under test)	±0.15% or better	
Ambient Operating Temp.	+36°F to +104°F (2°C to +40°C)	
Ambient Storage Temp.	-40°F to +140°F (-40°C to +60°C)	
Humidity	Up to 95% non-condensing	
Power		
System	2M, 20A (120VAC), 10A (240VAC)[1]	
Inverter Requirements	3,000 Watts	
Blower Capacity		
Single	0–7,200 acfh at 10-inch differential	0–200 m^3/h at 25 millibar differential
Dual	0–14,400 acfh at 10-inch differential	0–400 m^3/h at 25 millibar differential
Compliance	Meets FCC Part-15 requirements VSL and NIST traceable. UL508 and CSA 22.2 #14	
Testing		
Test Medium	Air	
Test Flow Rate: 2M Master Meter	35–2,300 acfh 1–65.1 m^3/h	
Test Flow Rate: 10M Master Meter	100–10,000 acfh 2.83–283 m^3/h	
Regulatory Standards		
Electrical Safety	• UL 61010-1 Issued: 2012/05/11 Ed:3 Safety Requirements for Electrical Equipment for Measurement, Control, and Laboratory Use–Part 1: General Requirements • CSA 61010-1 Electrical Equipment for Measurement, Control, and Laboratory Use; Part 1: General Requirements, CAN/CSA-C22.2 No. 61010-1, 2012/05/11, 3rd Edition • IEC 61010-1 Safety Requirements for Electrical Equipment for Measurement, Control, and Laboratory Use–Part 1: General Requirements	

Criteria	2M/10M Specification
Electromagnetic Compatibility	• FCC 47CFR 15: 2016 Telecommunication, Radio Frequency Device Class B • ICES-003: 2016 Issue 6, Information Technology Equipment (Including Digital Apparatus)–Limits and Methods of Measurement Class B • IEC 61326-1: Electrical Equipment for Measurement and Control Use–EMC Requirements–Part 1
Metrology	• Measurement Canada for the reference meters and possible electronics • OIML R 137-1 and 2:2012: Gas meters–Part 1: Metrological and Technical Requirements; Part 2: Metrological Controls and Performance Tests
(additional installation components may be required)	
[1] With Factory-supplied step-down transformer	

Table 10: Model 6 Prover Controller Box Specifications

Criteria	2M/10M
Throttle Valve	120VAC/2AMPS
Master Meters	12V/0.25A
Blower 1 and Blower 2	120VAC/10A
Field Cable	12V/0.25A

Appendix B Glossary

Term	Meaning
acfh	Actual cubic feet per hour
accessory unit	Another term for instrument
Blower	Device attached to the Prover Cart that is responsible for producing a source of airflow during Prover testing
Cam lock or cam-type	Cam and groove coupling used to connect the Prover Hose. Also called quick-disconnect coupling.
Cat5e/Cat6 cable	Network cable that plugs in to an RJ-45 (Ethernet jack) used to connect two devices together to communicate data Compared with other categories of Ethernet cables, Cat5e and Cat6 shielded cables provide faster speeds and reduce crosstalk (unwanted transfer of signals)
CD version Meter	Meter that uses a Counter with Instrument Drive
cf	Cubic feet
Controller	Aluminum or steel rectangular box with electronics and a number of sockets for electrical and Ethernet connections
CSV	Comma-separated-values format in which the data fields are separated by commas This file format can be read by Microsoft Excel or compatible programs.
DAT	Comma-delimited format that is compatible with the Dresser Model 5 Prover file format This file format can be read by a database or other compatible program.
DP	Differential pressure
drive dog	Part of the ID Pulser that travels around the interior of the adapter plate and contacts the follow pin One revolution of the instrument drive dog represents a specific displaced volume measured by the meter.
Field Meter	Meter being tested by the Prover
High Limit %	Configurable Pass/Fail limit parameter specifies the maximum allowable deviation above 100%
ID	Instrument Drive
ID Pulser	Silver box for testing meters with an instrument drive
Instrument	Component attached to the meter body to record meter volume
Junction Box	Rectangular box with attached 30-foot cable with an Ethernet connector on the end.
LAN	Local area network A LAN connection allows devices to communicate with each other directly (such as connecting the Prover 6 to communicate with a device). An Ethernet cable in the LAN port can connect devices directly to each other. A LAN generally has faster data transmission speed than a WAN.
Low Limit %	Configurable Pass/Fail limit parameter specifies the maximum allowable deviation below 100%

Term	Meaning
Master Meter	Meter with known performance characteristics that is traceable to national and international standards These meters are on the Prover skid and are used to test Field Meters and Reference Meters.
Master Meter Instrument Box	Rectangular box mounted to the end cover of the Master Meters(s) It contains pressure, temperature, and volume input sensors for the Master Meter.
MUT	Meter under test; the meter being tested by the Prover Referred to as Field Meter in this manual
NGS	Natural Gas Solutions
P&T	Pressure and temperature
pressure transducer	Transducer that converts pressure into an analog electrical signal
psia	Pounds per square inch absolute
psig	Pounds per square inch gauge
Reference Meter	Meter with a documented history of performance to provide the baseline for continuous comparisons These meters are used as a standard to monitor the Prover system for changes that could affect test results.
Repeats	Test parameter value that specifies the number of times the test is to repeat after its initial run A value of 0 runs one test, and a value of 1 runs two tests
Smart Prove™	User-friendly interface that includes a specially designed cable and software and allows for a combined accuracy test of Dresser Micro Corrector models and the meter
Span Limit %	Test parameter value that defines the maximum allowable difference between the highest accuracy and the lowest accuracy reported
Temperature Compensated (TC)	Meter's performance is adjusted to compensate for the effects caused by changes in temperature
Test Equipment	Components attached to an instrument to control when the meter test starts and stops
Test Points	Flow rate and limits for a meter test and the number of times the test is to repeat after its initial run
Preconfigured Test	Meter, instrument, test equipment, and test points parameters for a meter test
Uncorrected	No correction is made for temperature. If using an Optical Scanner for test control, it reads the Temperature Compensated volume odometer dial.
w.c.	water column
WAN	Wide area network A WAN connection allows LANs to communicate with each other through a device, such as a router. It connects to an internet source, such as a modem or router that connects to an internet service provider. The Internet is an example of a WAN.

Appendix C Spare Parts Listing

The following spare parts are available for the Dresser Model 6 Prover.

Description	Quantity	Part Number
Tool Box/Large Black Accessory Case	1	012849-000
Field Meter Pressure Adapter	1	052579-000
Field Meter Pressure & Temperature Adapter	1	052580-000
Field Meter Temperature Probe	1	062340-000
Field Meter Instrument Drive Pulser	1	052191-000
Field Meter Instrument Drive Pulser Cable	1	062343-000
Manual Start/Stop Cable	1	052485-000
Blue Pressure Tubing	2–48”	011290-001
Black Pressure Tubing	2–48”	011290-002
25-foot Electrical Extension Cord	1	012850-000
Field Meter Junction Box	1	062142-000
Model 6 Prover Field Meter Junction Box Cable	1	062377-002
3-inch Aluminum Hose Plug	1	011323-008
Master Meter to Controller Cable	1–45”	062377-001
3-inch Cam Lock Cap	1	012444-000
Thumb Screw (included with Pulser)	2	011501-002
Clamp for holding ID Pulser (included with Pulser)	2	042991-000
Blower	2	052188-000
Blower Brushes	4	046894-000
25-foot flexible Prover Hose	1	043441-000
Hose Gasket	2	013287-000
10M Master Meter	1	062420-000
10M Master Meter Temperature Probe	1	062147-100
2M Master Meter Assembly	1	062422-000
2M Master Meter Temperature Probe	1	062147-000
Quick-Disconnect Shut-Off Valve	4	012844-002
Knurls (Flareless Fitting)	4	012796-003
Controller	1	062150-000
Solenoid	1	012840-003
Pulsation Dampener (Snubber)	4	012505-003
Seal Fitting for Temperature Probes	3	012918-001
Cart Tire and Wheel	2	011900-000
Acoustic Filter	1	052899-000
RS-PB Scanner Kit	1	052519-200
RS-PB Scanner Assembly	1	051997-200

Description	Quantity	Part Number
Inverter Vanner–Trusine	1	012966-000
Male Quick-Disconnect coupling for Hose Adapter	1	011321-001
Female Quick-Disconnect coupling for Hose Adapter	1	011322-001
Controller Box to RJ-45 Cable	1	062513-000
Junction Box to Smart Prove Serial Cable	1	062342-000
Junction Box to Smart Prove and Telemetry Pulse Output/Serial Cable	1	062341-000
Controller Box Right-Angle Antenna	2 required	013842-000

Appendix D Temperature Compensated Unit Operational Check

This procedure may be used to verify the overall accuracy of the TC (Temperature Compensated) Unit, independent of the basic meter body measurement accuracy. The designed accuracy for the TC Unit is within ±0.5% of the theoretical correction for gas temperatures between -20°F to 120°F (-29°C and 49°C).

Note: All Series B3 TC meters are compensated to a 60°F (15°C) base temperature.

The TC Unit Operational Check is based upon Calculated Measurement Counts (actual measurement) versus Theoretical Counts using a 25-cycle count of the compensation cycle. This is the best method for determining the accuracy of the TC Unit with the meter in service. By using the 25-cycle method, all of the gears in the TC Unit make a complete revolution and thus provide a greater amount of confidence in the resulting accuracy calculation. The method for determining the theoretical counts for 25 cycles is outlined in the “Calculating Theoretical Counts” section.

A Dresser NGS Transfer Prover is a commonly used device for conducting a TC Unit Operation Check in the shop or when the meter is not in service. The prover is used for flow rate control and indication of temperature during the test procedure. The prover may also be used during this time to test the accuracy of the basic meter body by using the non-compensated odometer or the revolutions per minute (RPM) test wheel. The information derived from the TC Unit Operation Check is then combined with the meter’s non-compensated accuracy to determine the meter’s overall accuracy, including temperature compensation (*basic meter body non-compensated accuracy* × *accuracy of TC Unit = overall or combined accuracy*).

TC Unit Operational Check

1. Measure and record stabilized gas (or air) temperature directly at the meter inlet by using a certified temperature standard.

   Note: Inaccurate results may occur if the gas temperature is not stabilized before starting the test.

2. Record the temperature displayed by the accessory unit’s temperature probe.

   The indicated temperature is visible through the accessory housing window located above the odometers.

   Compare to the readings taken in step 1. Both values should agree within ±4°F.

   Note: The temperature indicated by the unit’s temperature probe will not be used since this is an estimated reading. Use the temperature recorded in step 1 as the reference temperature for the TC Unit operational check.

3. Observe the Temperature Compensated volume odometer. When the odometer stops turning after an intermittent compensating cycle, record the last three-digit reading (Ci) indicated on the odometer and the value indicated by the graduated marks on the test wheel. Read this value as a whole number (refer to Figure 158 to see a reading example).

Note: Some of these digits may be partially or completely obscured by masking. The masking must be removed if the readings are not visible.

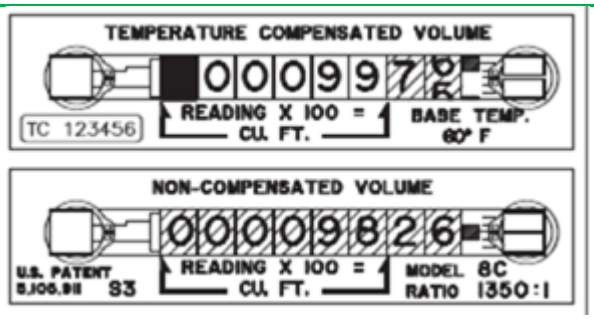


Figure 158: Reading of 9756 for the TC Unit Operational Check

4. After the Compensated Volume odometer has cycled 25 times and stopped, record the last three (3) digits of the Temperature Compensated odometer (Cf) and the graduated wheel estimation as described in step 3.
5. Use the calculation described in the "Calculating Theoretical Counts" section to determine the Theoretical Number of Counts (TNC) for the indicated temperature recorded in step 1.
6. Calculate the percent accuracy of the TC Unit with the following equation:

$$Percent\ Accuracy = Cf - Ci \times \frac{100}{TNC}$$

For example: Assume the gas temperature is 53.0°F, and the initial odometer reading (Ci) is 9756 (refer to Figure 158). Allow the odometer to cycle 25 times, and then record a final odometer reading (Cf) of 2295.

Note: When Cf is less than Ci, place a 1 in front of the reading for Cf. In this example, the adjusted reading for Cf would read as 12295.

From Table 11, the TNC is 2534.1. Using these numbers in the Percent Accuracy formula, the accuracy is calculated as follows:

$$\frac{12295 - 9756}{2534.1} \times 100 = 100.19\%$$

Calculating Theoretical Counts

The TNC value can be calculated as follows:

TB = Base Temperature (typically 60°F) and *TA*=Actual Gas Temperature.

Therefore:

$$TNC\ for\ Fahrenheit = \frac{[(460+TB) \times (Number\ of\ Cycles \times 100)]}{460+TA}$$

For example: For a 25-cycle test, the TNC for a gas temperature of 70.0°F and a 60°F base temperature is calculated as follows:

$$= \frac{(460 + 60)\ \times (25\ x\ 100)}{460 + 70.0} = \frac{1{,}300{,}00}{530.0} = 2452.8$$

Table 11 is provided for reference to show the TNC values for a specified temperature in °F. It is based on 25 Temperature Compensation Cycles at a base temperature of 60°F.

Table 11: TNC Values for °F Based on 25 Temperature Compensation Cycles

°F	TNC	°F	TNC	°F	TNC	°F	TNC	°F	TNC	°F	TNC
50.0	2549.0	55.0	2524.3	60.0	2500.0	65.0	2476.2	70.0	2452.8	75.0	2429.9
50.1	2548.5	55.1	2523.8	60.1	2499.5	65.1	2475.7	70.1	2452.4	75.1	2429.5
50.2	2548.0	55.2	2523.3	60.2	2499.0	65.2	2475.2	70.2	2451.9	75.2	2429.0
50.3	2747.5	55.3	2722.8	60.3	2498.6	65.3	2474.8	70.3	2451.4	75.3	2428.5
50.4	2547.0	55.4	2522.3	60.4	2498.1	65.4	2474.3	70.4	2451.0	75.4	2428.1
50.5	2546.5	55.5	2521.8	60.5	2497.6	65.5	2473.8	70.5	2450.5	75.5	2427.6
50.6	2546.0	55.6	2521.3	60.6	2497.1	65.6	2473.4	70.6	2450.1	75.6	2427.2
50.7	2545.5	55.7	2520.8	60.7	2496.6	65.7	2472.9	70.7	2449.6	75.7	2426.7
50.8	2545.0	55.8	2520.4	60.8	2496.2	65.8	2472.4	70.8	2449.1	75.8	2426.3
50.9	2544.5	55.9	2519.9	60.9	2495.7	65.9	2472.0	70.9	2448.7	75.9	2425.8
51.0	2544.0	56.0	2519.4	61.0	2495.2	66.0	2471.5	71.0	2448.2	76.0	2425.4
51.1	2543.5	56.1	2518.9	61.1	2494.7	66.1	2471.0	71.1	2447.7	76.1	2424.9
51.2	2543.0	56.2	2518.4	61.2	2494.2	66.2	2470.5	71.2	2447.3	76.2	2424.5
51.3	2542.5	56.3	2517.9	61.3	2493.8	66.3	2470.1	71.3	2446.8	76.3	2424.0
51.4	2542.0	56.4	2517.4	61.4	2493.3	66.4	2469.6	71.4	2446.4	76.4	2423.6
51.5	2541.5	56.5	2516.9	61.5	2492.8	66.5	2469.1	71.5	2445.9	76.5	2423.1
51.6	2541.0	56.6	2516.5	61.6	2492.3	66.6	2468.7	71.6	2445.4	76.6	2422.7
51.7	2540.6	56.7	2516.0	61.7	2491.9	66.7	2468.2	71.7	2445.0	76.7	2422.2
51.8	2540.1	56.8	2515.5	61.8	2491.4	66.8	2467.7	71.8	2444.5	76.8	2421.8
51.9	2539.6	56.9	2515.0	61.9	2490.9	66.9	2467.3	71.9	2444.1	76.9	2421.3
52.0	2539.1	57.0	2514.5	62.0	2490.4	67.0	2466.8	72.0	2443.6	77.0	2420.9
52.1	2538.6	57.1	2514.0	62.1	2489.9	67.1	2466.3	72.1	2443.1	77.1	2420.4
52.2	2538.1	57.2	2513.5	62.2	2489.5	67.2	2465.9	72.2	2442.7	77.2	2420.0
52.3	2537.6	57.3	2513.0	62.3	2489.0	67.3	2465.4	72.3	2442.2	77.3	2419.5
52.4	2537.1	57.4	2512.6	62.4	2488.5	67.4	2464.9	72.4	2441.8	77.4	2419.1
52.5	2536.6	57.5	2512.1	62.5	2488.0	67.5	2464.5	72.5	2441.3	77.5	2418.6
52.6	2536.1	57.6	2511.6	62.6	2487.6	67.6	2464.0	72.6	2440.9	77.6	2418.2
52.7	2535.6	57.7	2511.1	62.7	2487.1	67.7	2463.5	72.7	2440.4	77.7	2417.7
52.8	2535.1	57.8	2510.6	62.8	2486.6	67.8	2463.1	72.8	2439.9	77.8	2417.3
52.9	2534.6	57.9	2510.1	62.9	2486.1	67.9	2462.6	72.9	2439.5	77.9	2416.8
53.0	2534.1	58.0	2509.7	63.0	2485.7	68.0	2462.1	73.0	2439.0	78.0	2416.4
53.1	2533.6	58.1	2509.2	63.1	2485.2	68.1	2461.7	73.1	2438.6	78.1	2415.9
53.2	2533.1	58.2	2508.7	63.2	2484.7	68.2	2461.2	73.2	2438.1	78.2	2415.5
53.3	2532.6	58.3	2508.2	63.3	2484.2	68.3	2460.7	73.3	2437.7	78.3	2415.0
53.4	2532.1	58.4	2507.7	63.4	2483.8	68.4	2460.3	73.4	2437.2	78.4	2414.6
53.5	2531.6	58.5	2507.2	63.5	2483.3	68.5	2459.8	73.5	2436.7	78.5	2414.1
53.6	2531.2	58.6	2506.7	63.6	2482.8	68.6	2459.3	73.6	2436.3	78.6	2413.7
53.7	2530.7	58.7	2506.3	63.7	2482.3	68.7	2458.9	73.7	2435.8	78.7	2413.2
53.8	2530.2	58.8	2505.8	63.8	2481.9	68.8	2458.4	73.8	2435.4	78.8	2412.8
53.9	2529.7	58.9	2505.3	63.9	2481.4	68.9	2457.9	73.9	2434.9	78.9	2412.3
54.0	2529.2	59.0	2504.8	64.0	2480.9	69.0	2457.5	74.0	2434.5	79.0	2411.9
54.1	2528.7	59.1	2504.3	64.1	2480.4	69.1	2457.0	74.1	2434.0	79.1	2411.4
54.2	2528.2	59.2	2503.9	64.2	2480.0	69.2	2456.5	74.2	2433.5	79.2	2411.0
54.3	2527.7	59.3	2503.4	64.3	2479.5	69.3	2456.1	74.3	2433.1	79.3	2410.5
54.4	2527.2	59.4	2502.9	64.4	2479.0	69.4	2455.6	74.4	2432.6	79.4	2410.1
54.5	2526.7	59.5	2502.4	64.5	2478.6	69.5	2455.1	74.5	2432.2	79.5	2409.6
54.6	2526.2	59.6	2501.9	64.6	2478.1	69.6	2454.7	74.6	2431.7	79.6	2409.2
54.7	2525.7	59.7	2501.4	64.7	2477.6	69.7	2454.2	74.7	2431.3	79.7	2408.7
54.8	2525.3	59.8	2501.0	64.8	2477.1	69.8	2453.8	74.8	2430.8	79.8	2408.3
54.9	2524.8	59.9	2500.5	64.9	2476.7	69.9	2453.3	74.9	2430.4	79.9	2407.9

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