Vitals Reference Manual

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E.H. Wachs Part No. 79-MAN-04
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Table of Contents

Chapter 1
About This Manual

Purpose of This Manual

This manual explains the functions of the Vitals system for valve operation and maintenance. Vitals version 3.8.7 includes the following components:

- TC-100/110 tablet controller for valve operation and data collection with the ERV-750, TM-7, and TM-6 valve operators.
- Vitals Mobile 3.8.7 software (and later), running on the handheld controller.
- Vitals Desktop 3.8.7 software for Window-based computers, for valve database management.

Chapter 3 describes the Vitals 3.8.7 hardware and software in detail. **NOTE**: This manual describes using Vitals with the TC series (100/110) tablet controller. If you are using the older HC controller, refer to the **Rev. K** (Feb. 2022) version of the manual.

When using Vitals version 3.8.7 for the first time, be sure to follow the procedures in Chapter 4, “Starting Up with Vitals”. The setup procedure requires that you have a Windows (version 7, 8, or 10) PC on which you can install Vitals Desktop 3.8.7.

If you are currently running Vitals Desktop 3.7, upgrade it to version 3.8 before using Vitals Mobile 3.8 (either TC or HC version). If you have older HC-100 controllers, also upgrade them to version 3.8. You should always be running the same Vitals version on all your devices.

In This Chapter

How to Use The Manual

Throughout this manual, refer to this column for cautions and notices with supplementary information.

This manual is organized to help you quickly find the information you need. Each chapter describes a specific topic on using the Vitals controller and software.

This symbol indicates a user notice. **Notices** provide additional information to supplement the instructions, or tips for easier operation.

Each page is designed with two columns. This large column on the inside of the page contains instructions and illustrations. The narrower column on the outside contains additional information such as special notes and definitions. Refer to it for safety notes and other information.

Manual Updates and Revision Tracking

Current versions of E.H. Wachs Company manuals are also available in PDF format. You can request an electronic copy of this manual by emailing customer service at sales@ehwachs.com.

Occasionally, we will update manuals with improved operation or maintenance procedures, or with corrections if necessary. When a manual is revised, we will update the revision history on the title page.

You may have factory service or upgrades performed on the equipment. If this service changes any technical data or operation and maintenance procedures, we will include a revised manual when we return the equipment to you.

Revision History

Original December 2012
Rev. B, October 2014
Rev. C, June 2015
Rev. D, July 2017
Rev. E, November 2018
Rev. F, September 2019
Rev. G, September 2020
Rev. H, April 2021
Rev. I, August 2021
Rev. J, August 2022
Rev. K, February 2024

Chapter 2
Safety

E.H. Wachs takes great pride in designing and manufacturing safe, high-quality products. We make user safety a top priority in the design of all our products.

Read this chapter carefully before operating the valve equipment using the Vitals TC-100/110 controller. It contains important safety instructions and recommendations.

In This Chapter

OPERATOR SAFETY

Follow these guidelines for safe operation of the equipment.

- **READ THE OPERATING MANUAL.** Make sure you understand all setup and operating instructions before you begin.
- **INSPECT MACHINE AND ACCESSORIES.** Before starting the machine, look for loose bolts or nuts, leaking lubricant, rusted components, and any other physical conditions that may affect operation. Properly maintaining the machine can greatly decrease the chances for injury.
- **ALWAYS READ PLACARDS AND LABELS.** Make sure all placards, labels, and stickers are clearly legible and in good condition. You can purchase replacement labels from E.H. Wachs Company.
- **KEEP CLEAR OF MOVING PARTS.** Keep hands, arms, and fingers clear of all rotating or moving parts.

Look for this symbol throughout the manual. It indicates a personal injury hazard.

Always turn machine off before doing any adjustments or service.

- **SECURE LOOSE CLOTHING AND JEWELRY.** Secure or remove loose-fitting clothing and jewelry, and securely bind long hair, to prevent them from getting caught in moving parts of the machine.
- **KEEP WORK AREA CLEAR.** Keep all clutter and nonessential materials out of the work area. Only people directly involved with the work being performed should have access to the area.

Safety Symbols

This icon is displayed with any safety alert that indicates a personal injury hazard.

⚠ WARNING

This safety alert indicates a potentially hazardous situation that, if not avoided, **could** result in **death or serious injury**.

⚠ CAUTION

This safety alert, with the personal injury hazard symbol, indicates a potentially hazardous situation that, if not avoided, **could** result in **minor or moderate injury**.

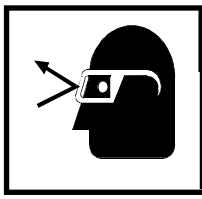
NOTICE

This alert indicates a situation that, if not avoided, **will** result in **damage to the equipment**.

IMPORTANT

This alert indicates a situation that, if not avoided, **may** result in **damage to the equipment**.

Protective Equipment Requirements



WARNING

Always wear impact resistant eye protection while operating or working near this equipment.

For additional information on eye and face protection, refer to Federal OSHA regulations, 29 Code of Federal Regulations, Section 1910.133., Eye and Face Protection and American National Standards Institute, ANSI Z87.1, Occupational and Educational Eye and Face Protection. Z87.1 is available from the American National Standards Institute, Inc., 1430 Broadway, New York, NY 10018.

CAUTION

Personal hearing protection is recommended when operating or working near this tool.

Hearing protectors are required in high noise areas, 85 dBA or greater. The operation of other tools and equipment in the area, reflective surfaces, process noises, and resonant structures can increase the noise level in the area. For additional information on hearing protection, refer to Federal OSHA regulations, 29 Code of Federal Regulations, Section 1910.95, Occupational Noise Exposure and ANSI S12.6 Hearing Protectors.

VITALS DIAGNOSTICS

The Diagnostics module of Vitals Mobile lets you test electronic and mechanical functions of the valve operator.

Vitals Diagnostics operates the valve operator; use the same safety precautions and procedures that you use when performing valve operations.

Do not use Vitals Diagnostics with the valve operator attached to a valve. Run Diagnostics only in the following circumstances:

- the valve operator is powered on and in operating position;
- the valve operator is **not** attached to a valve;
- all safe operating procedures are in place. See the User Manual for your valve operator.

Figure 2-1. The Diagnostics button on the main screen opens the Vitals Mobile Diagnostics program.

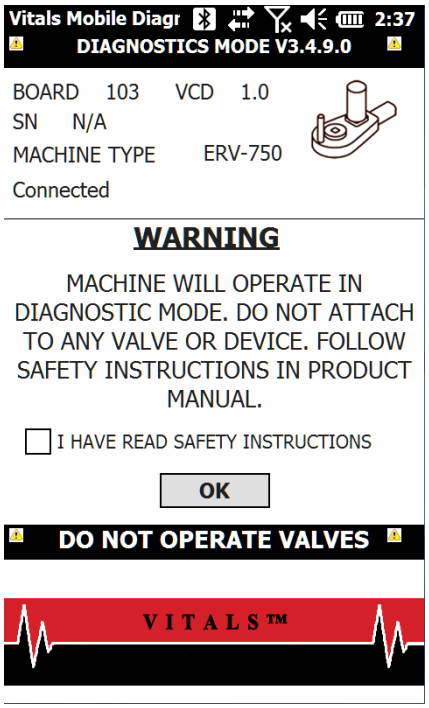


Figure 2-2. The Warning screen appears when you start Vitals Mobile Diagnostics. Read all safety instructions in the valve operator manual and verify by clicking the checkbox before you continue.

WARNING

Make sure that the valve operator is not attached to a valve when running Diagnostics. Keep clear of moving parts while running Diagnostics. Follow all safety procedures for using the valve operator.

Chapter 3
Vitals Hardware and Software

In This Chapter

VITALS SYSTEM ARCHITECTURE

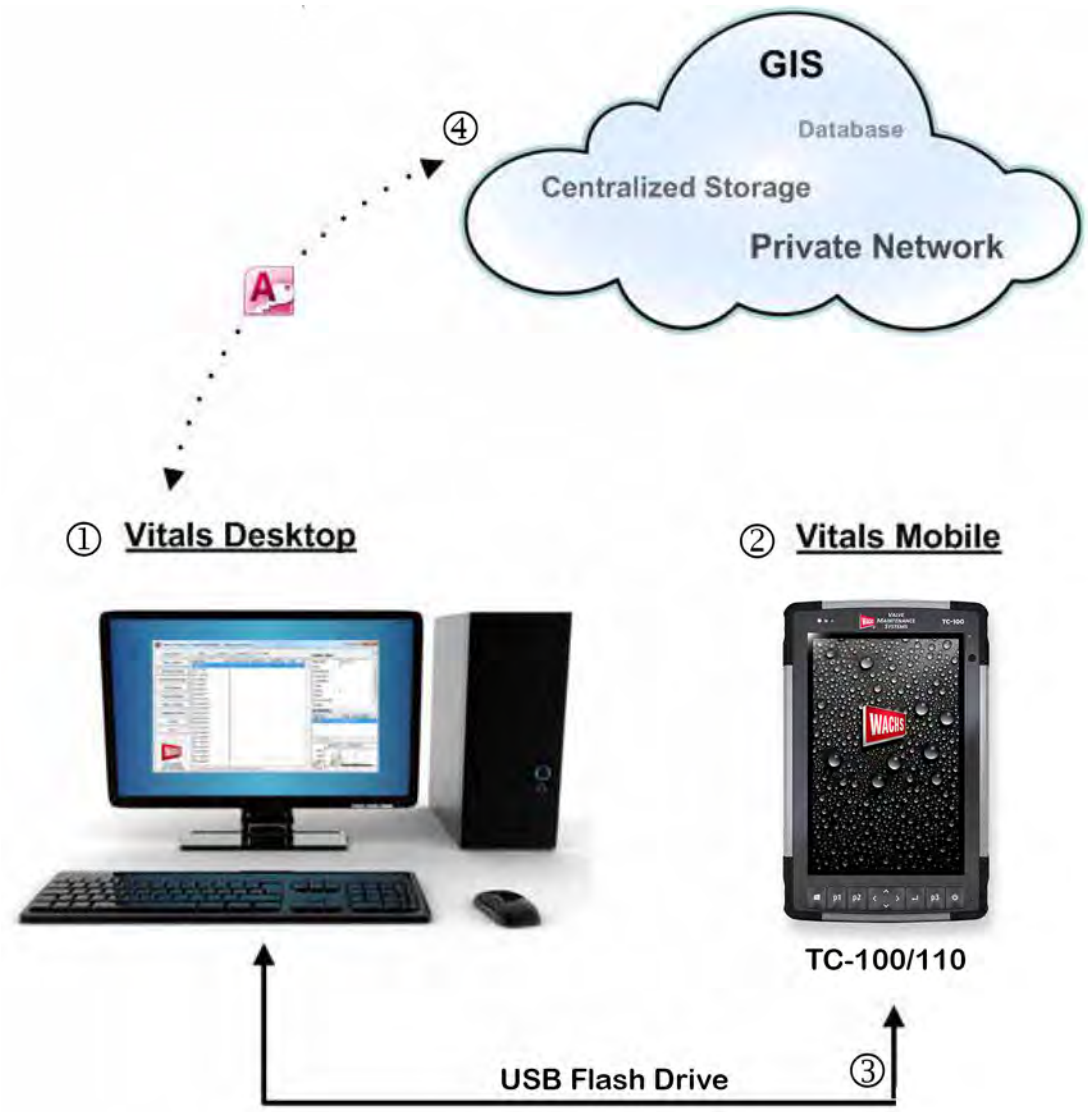
Figure 3-1 illustrates the Vitals 3.8.7 hardware and software architecture.

The **Vitals hardware** is a tablet computer that operates E.H. Wachs valve exercising equipment, and stores and transfers valve operation data. This manual describes using Vitals with 2 controller models:

- **TC-100 tablet controller (introduced in 2021), running Windows 10.**
- **TC-110 tablet controller (introduced in 2025), running Windows 11.**

The **Vitals software** has two components:

- *Vitals Desktop* runs on a Windows-based computer. Vitals Desktop lets you manage and analyze valve information and exercising data. Chapter 6 describes using Vitals Desktop.
- *Vitals Mobile* runs on the tablet controller. It operates the valve exercising equipment and logs valve exercising data.



1. The master database resides in Vitals Desktop. Data is transferred between Vitals Mobile and Vitals Desktop during a data transfer.
2. The master database is replicated in Vitals Mobile during a data transfer. Any new valve data created in Vitals Mobile is downloaded into the master database during a data transfer.
3. USB flash drive transfer can be initiated from the TC-100/110. Activity data is transferred to the Vitals Desktop database; the updated database is then transferred by flash drive back to the controller.
4. Data collected through the Vitals software suite can be exported from Vitals Desktop to your choice of GIS software, private network, or any other location, by your IT or GIS team. (This functionality is not supported by E.H. Wachs.) Vitals database is stored in Microsoft Access format. See Appendix B for Vitals database technical information.

Figure 3-1. The diagram illustrates the Vitals software and hardware architecture.

System Requirements

Vitals Desktop requires a Windows PC running Windows 7, 8, 10, or 11, with a USB port. The PC USB port is used to connect to the Vitals controller, or to connect to a flash USB drive for Flash Transfer.

Vitals Mobile-TC runs on the TC-100/110 tablet controller. The TC-100 runs Windows 10, and the TC-110 runs Windows 11. Vitals Mobile-TC operates identically on both tablets.

NOTE

Vitals Desktop 3.8.7 should be compatible with Windows Vista and XP. However, this has not been tested and is not supported, and E.H. Wachs does not guarantee compatibility. E.H. Wachs follows Window's lifecycle support guidelines.

Valve Operator Support and Compatibility

The Vitals controllers running Vitals 3.8.7 are compatible with the following Wachs valve operators. Table 3-1 describes feature support for each valve operator.

- ERV-750
- TM-7
- TM-6

Table 3-1: Vitals Mobile 3.8.7 Feature Support

Feature	ERV-750	TM-7	TM-6
Manual/emergency valve operation	Yes	Yes	Yes
Automatic "No-assumption" valve exercising	Yes	Yes	Yes
Data logging	Yes	Yes*	Yes*
Bluetooth communication (requires Bluetooth module on valve operator)	Yes	Yes*	Yes*
Vitals Mobile Diagnostics	Yes	Yes**	Yes**

* May require board upgrade on older valve operators; contact E.H. Wachs with serial number for information.
** Not applicable for older TM-7/TM-6 units with silver/yellow controller boxes.

TC-100/110 Tablet Controller with Vitals Mobile-TC

The TC-100 (running Windows 10) and TC-110 (running Windows 11) are tablet computers running the Vitals Mobile-TC app. The tablets are waterproof, dustproof, and can be used in temperatures from -4°F to +122°F (-20°C to

+50°C). They have integrated GPS and Bluetooth connectivity. See specifications below.

You can use an external GPS unit for higher-resolution mapping. Input requires NMEA-0183 data format, using Bluetooth.

Figure 3-2. The TC-110 handheld controller is a fully functional Windows 11 computer, running Vitals Mobile-TC software.

Connection Options

Connection between the TC-100/110 tablet and E.H. Wachs valve operating equipment is made using either the included 79-302-30 Machine Control Cable or the embedded wireless Bluetooth communication in the TC tablet (requires Bluetooth-equipped valve operator).

You can transfer valve and activity data between the TC tablet and your PC running Vitals Desktop using a USB flash drive. You can also set up the TC tablet on your network; see your IT person/department for assistance. The TC tablet operates as a fully functional Windows tablet PC.

Specifications

Table 3-2: TC Tablet Controller Specifications

Feature	TC-100	TC-110
Operating System	Microsoft Windows 10	Microsoft Windows 11
Processor	Quad-core Intel Pentium N4200	Quad-core Intel N200
Memory	8 GB RAM	8 GB RAM
Storage Memory	128 GB. Expansion with Micro SD/SDXC slot.	128 GB. Expansion with Micro SD/SDXC slot.
Display	800 x 1280, 7” backlit LCD	800 x 1280, 7” backlit LCD
Battery Life	Up to 12 hours (may be reduced running GPS)	7-10 hours typical (may be reduced running GPS)
Battery Charging	4-6 hours to full charge	6 hours to full charge
Ports	Data: USB 3.0 host (full A), 3.5 mm audio jack. Power: 10-15.5 V, nominal 12 VDC.	Data: USB-A (5 Gbps); USB-C (5 Gbps, power/display); USB 2.0 docking connector. Power: 10-15.5 V, nominal 12 VDC.
Cameras	8 MP rear and 2 MP front	13 MP rear and 5 MP front
Wireless connectivity	Bluetooth 5.0 long range wireless. Wi-Fi 801.11a/b/g/n/ac 2.4 GHz and 5 GHz..	Bluetooth 5.3 long range wireless. Wi-Fi 802.11ax 2.4 GHz and 5 GHz Wi-Fi 6E.
GPS	u-blox NEO-M8N GNSS with 72 tracking channels.	Quectel LC79H Dual Frequency GNSS with 135 tracking channels.
Size and weight	5.4” w x 8.48” l x 1.36” d (137 mm x 215 mm x 35 mm). 1.73 lb (770 g) with battery.	5.4” w x 8.5” l x 1.36” d (137 mm x 216 mm x 35 mm). 1.95 lb (885 g) with battery.
Temperature	Operating: -4°F to +122°F (-20°C to +50°C)	Operating: -4°F to +122°F (-20°C to +50°C)
	Storage: -22°F to +158°F (-30°C to +70°C)	Storage: -22°F to +158°F (-30°C to +70°C)
	Charging: 32°F to +122°F (0°C to +50°C)	Charging: 32°F to +122°F (0°C to +50°C)
Environmental	IP68 waterproof and dustproof	IP68 waterproof and dustproof
Drop	Shockproof: multiple drops from 4’ (1.2 m) onto concrete	Shockproof: multiple drops from 4’ (1.2 m) onto concrete

NOTE

The “BC” symbol on the cover of this manual signifies CEC compliance.

California Energy Commission Compliance

The battery charger supplied with the TC-100/110 has passed testing required by California Code of Regulations Title 20, using Test Method 10 CFR Section 430.23(aa) (Appendix Y to Subpart B), June 2016. Information on the charger’s certification is available at: https://cacertappliances.energy.ca.gov/Pages/Appliance-Search.aspx (No hyphen.)

Search for company “Juniper Systems”, model “TC-100” or “TC-110”.

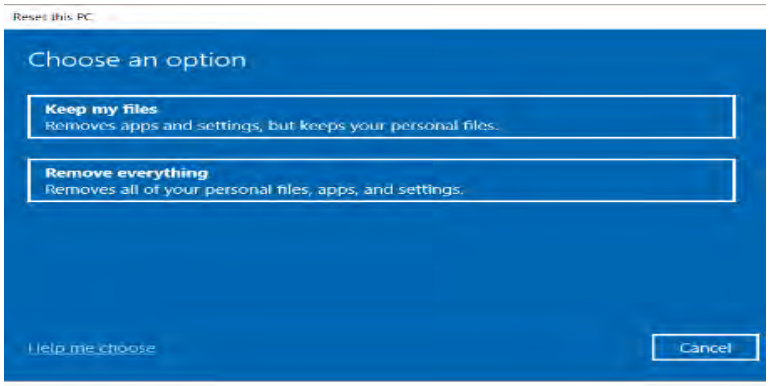
TC-110 Factory Reset

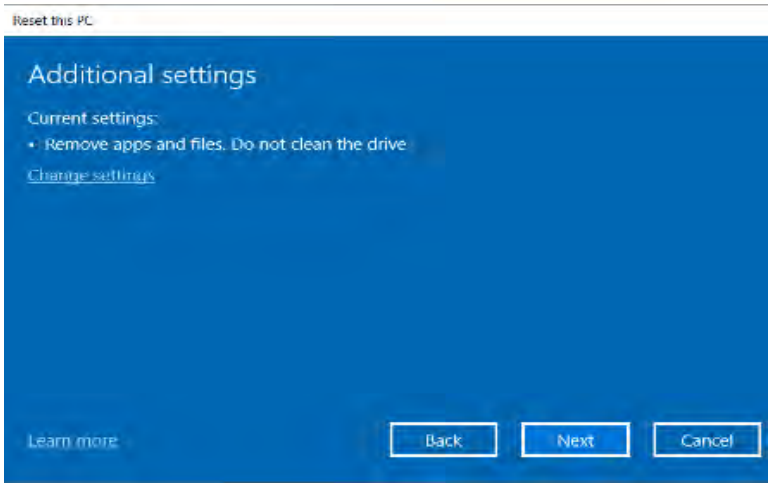
If you want to set the TC-110 controller to factory defaults, follow the instructions below. After a factory reset, perform the Windows 11 setup to create a new offline account (see next section).

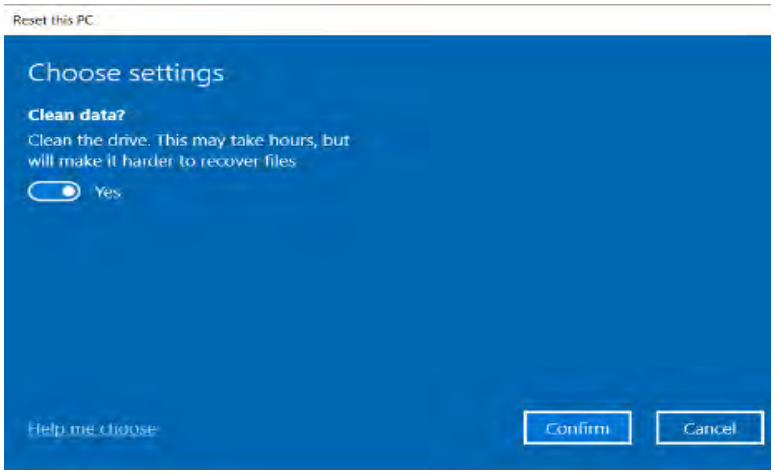
Option 1

If you can access the current operating system, navigate to **Start > Settings > System > Recovery > Reset this PC (Get started)** then follow the instructions in each step below.

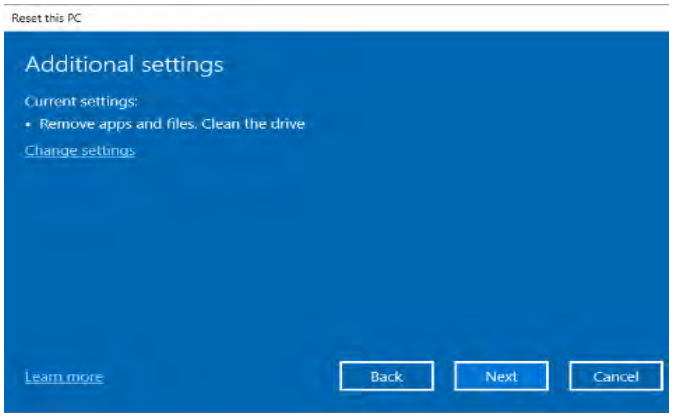
1. Select **Remove everything > Change Settings > YES (Clean data) > Confirm**.

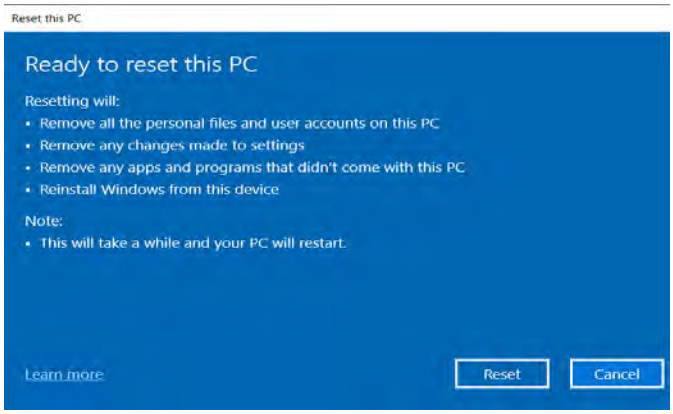






2. Select **Next > Reset**.



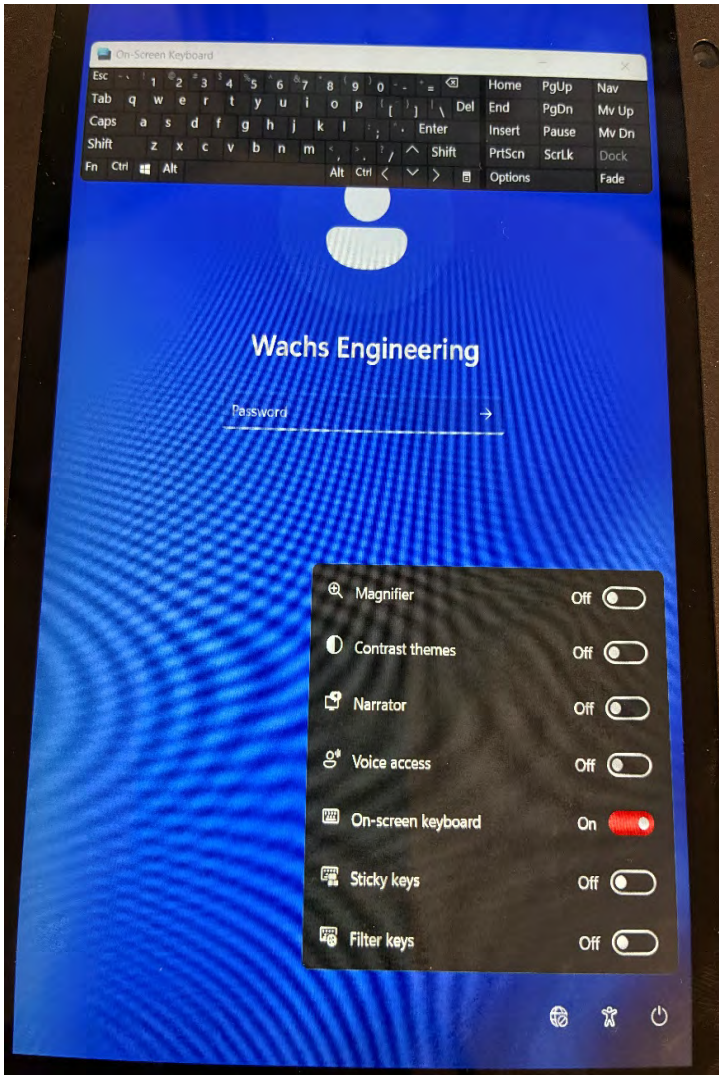


3. Set up a new account by following **TC-110 Windows Setup** instructions.

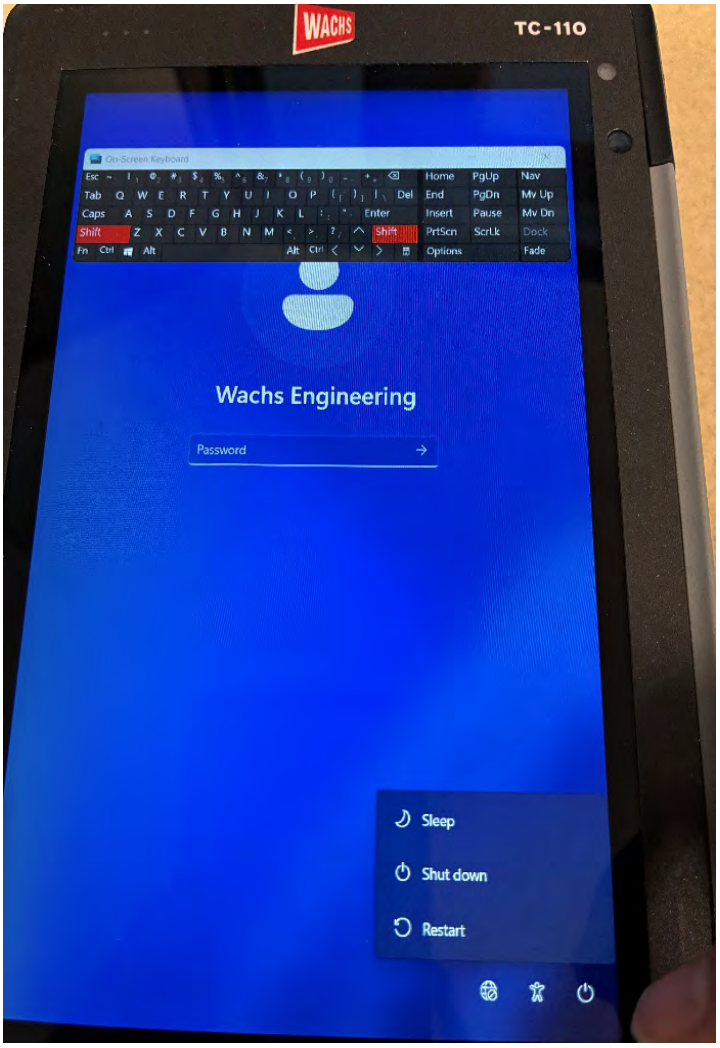
Option 2

If you are not able to access the current operating system (stuck during boot process or forgot password), tap or **press** the **Shift button** (on screen or on an **attached USB keyboard**) **while performing a Restart**. If done correctly, you should see a menu with Troubleshoot (**Reset your PC**) option.


Wachs Engineering
Password
Magnifier Off
Contrast themes Off
Narrator Off
Voice access Off
On-screen keyboard Off
Sticky keys Off
Filter keys Off


On-Screen Keyboard
Wachs Engineering
Password
Magnifier Off
Contrast themes Off
Narrator Off
Voice access Off
On-screen keyboard On
Sticky keys Off
Filter keys Off


WACHS
TC-110
Wachs Engineering
Password


WACHS
TC-110
Wachs Engineering
Password
Sleep
Shut down
Restart

.

Follow the same onscreen instructions as in Option 3 below (some windows might be in different order).

Option 3

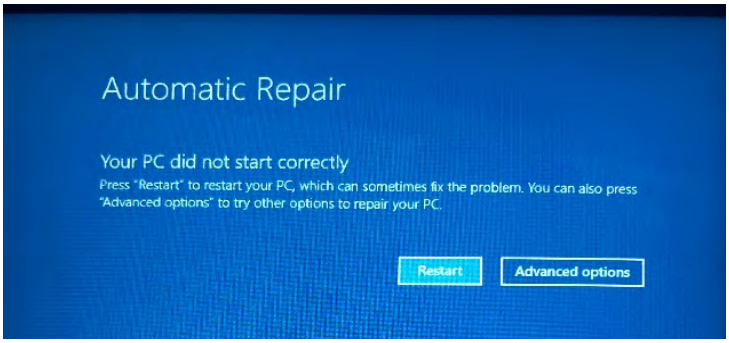
If options above did not work, try the following steps:

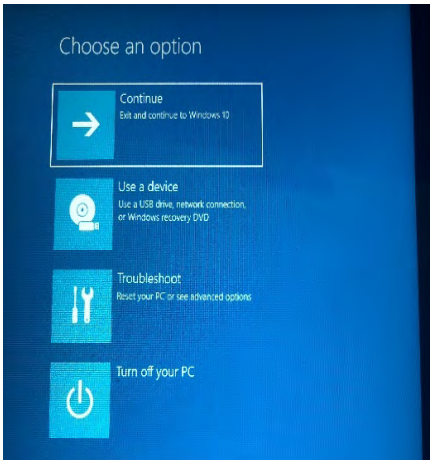
- **Press and hold** the hardware **Power button** for **10 seconds**
- **Release power button** while the **red LED is flashing rapidly**
- Briefly **press** the **Power button** again, **wait 3-4 seconds**
- Immediately **repeat this process two more times**.

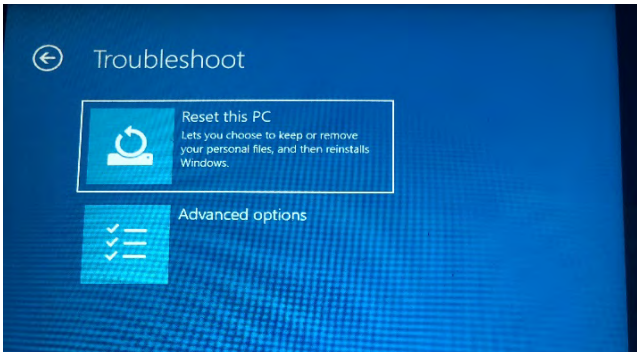
This will force the system to Restart before completing boot three times in a row will show “Diagnosing your PC” then the **Automatic Repair** menu as previously described.

Follow steps below after getting to the **Automatic Repair** window (some steps might be in different order depending on which option above you followed):

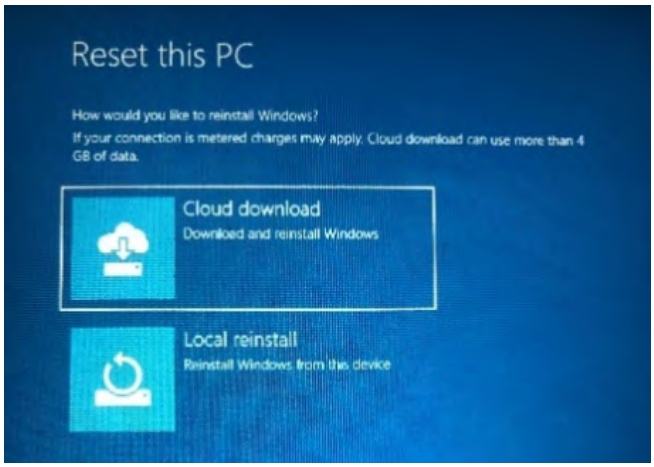
1. Click **Advanced Options > Troubleshoot > Reset this PC**.

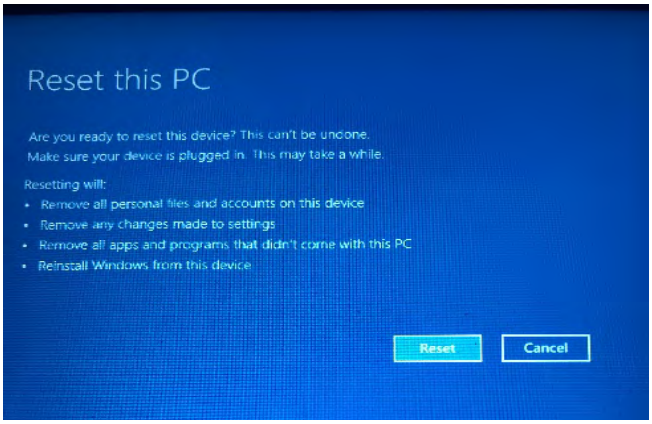






2. Click **Local Install > Fully clean the drive > Reset**.





3. Wait for the TC-110 to restore Factory Defaults.

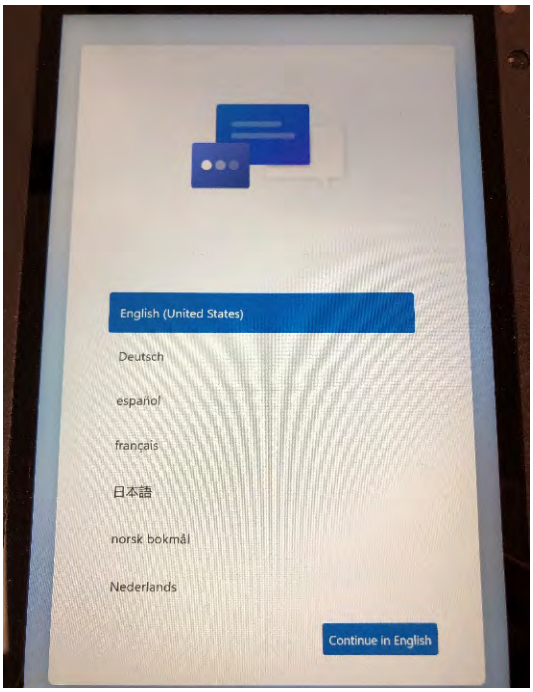
4. Set up a new account by following the **TC-110 Windows Setup** instructions below.

TC-110 Windows Setup (Windows 11)

Follow this guide to set up a local offline account on the TC-110 (Windows 11). However, depending on the release the steps may be slightly different.

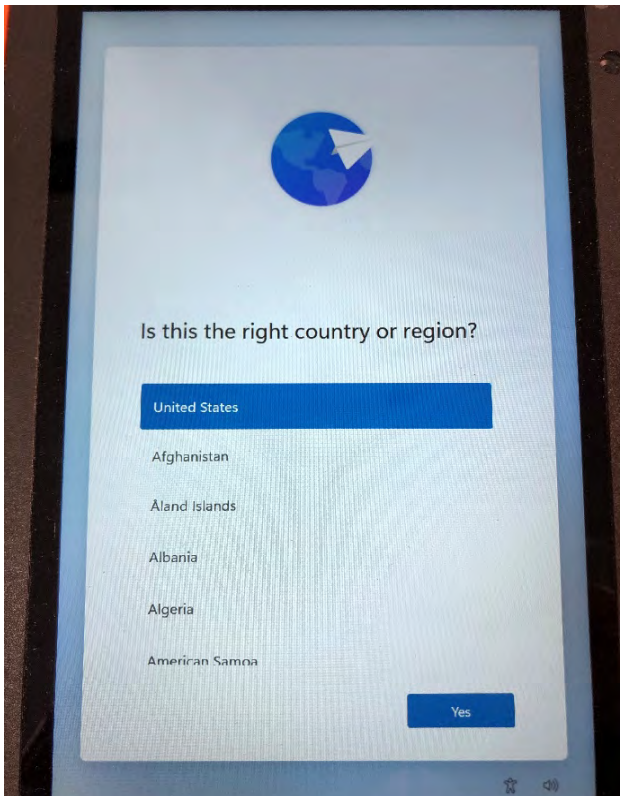
To set up Windows 11, follow these steps.

1. Select **Language**.

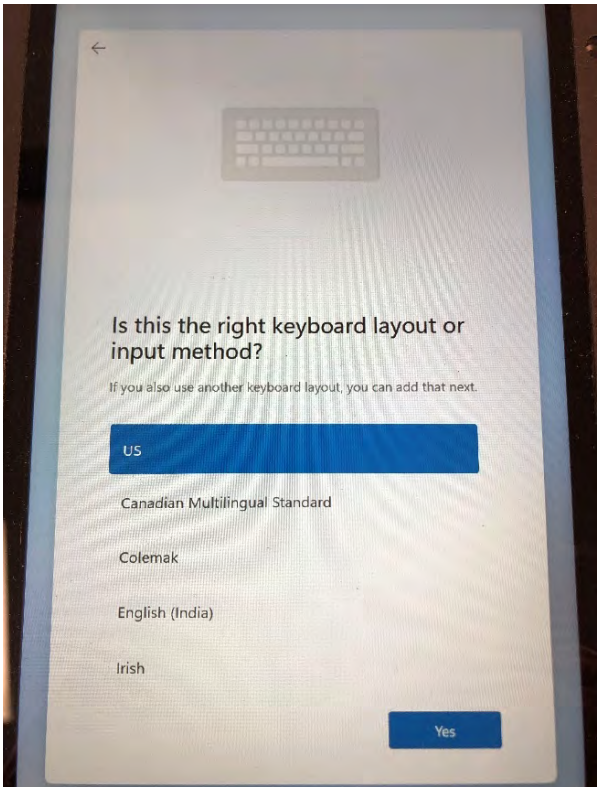


2. Select the **Continue in English** button.

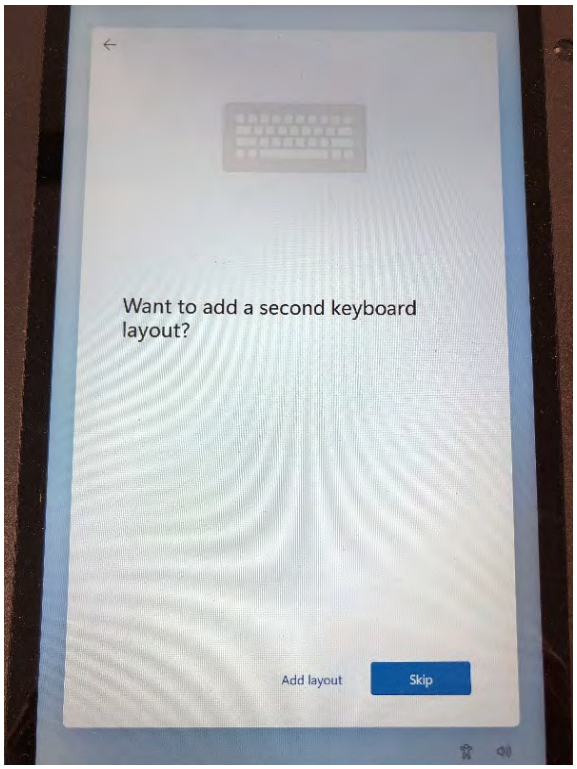
3. Select your **Region** option.



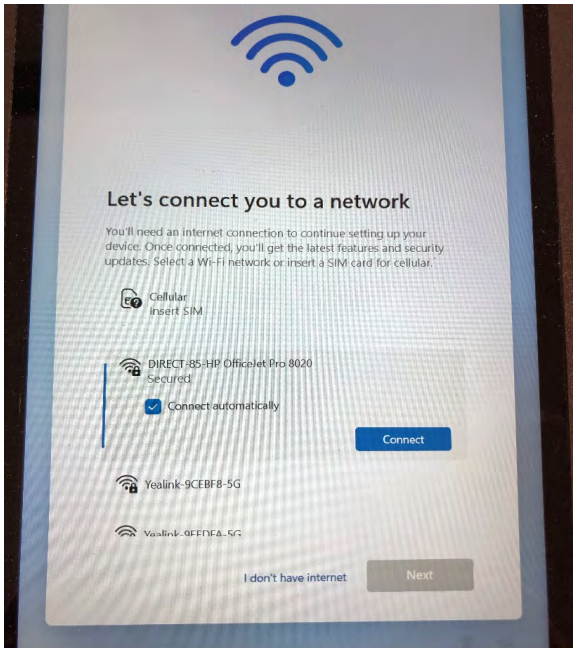
4. Click the **Yes** button. The **Select your keyboard layout** screen appears.



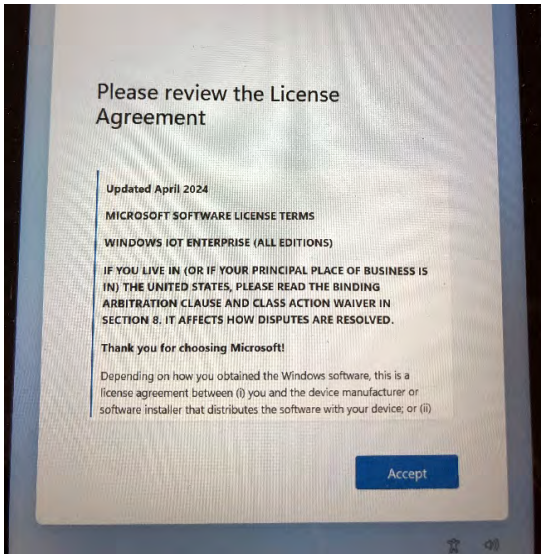
5. Click the **Yes** button. The **Add second keyboard layout** screen appears.



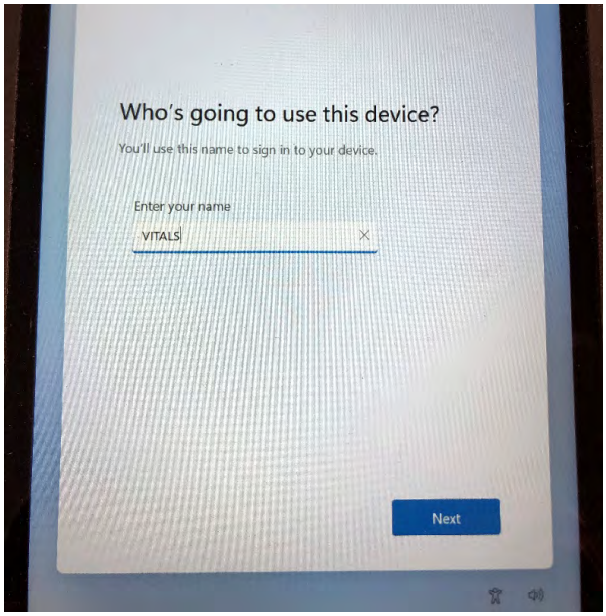
6. Click the **Skip** button (unless you need to add a second keyboard layout). The **Connect to a network** screen appears.



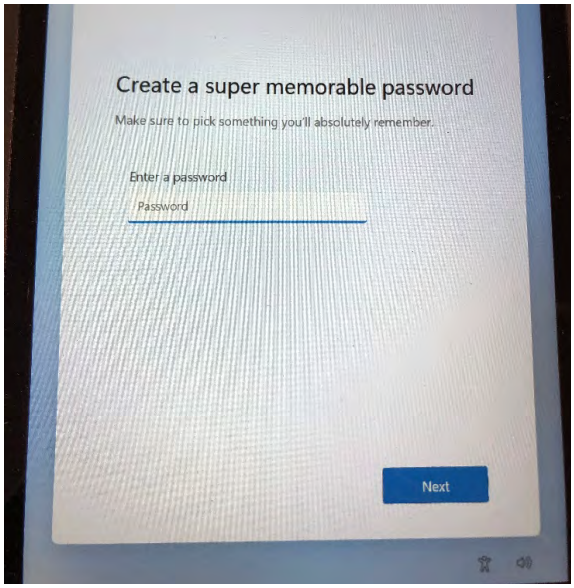
7. Click **I don't have internet** on the bottom left corner of the screen. The **Windows 11 License Agreement** appears.



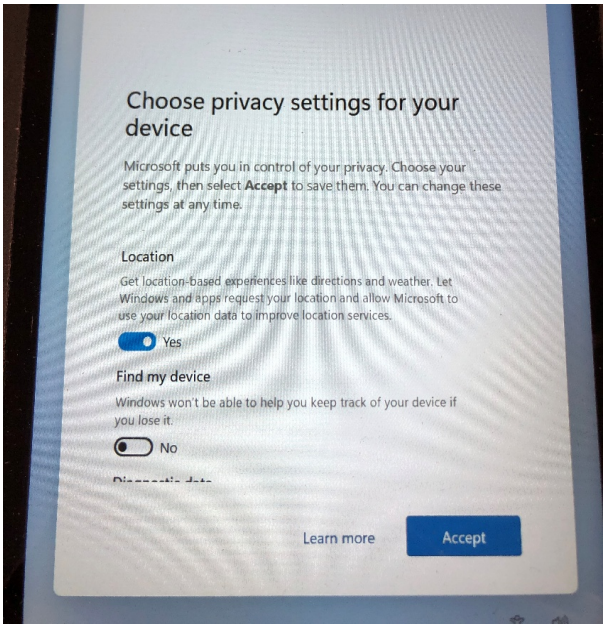
8. Click the **Accept** button. The **PC Name** screen appears.



9. Enter a name for device (**VITALS** if unsure). Click **Next**. The **Create a password** screen appears.



10. Leave blank (no password) and click **Next**. The **Privacy settings** screen appears.



11. Select **YES** for **Location** (required for internal GPS). For everything else, select **NO**. Click **Accept**.

12. Wait for the device to finish setup.

NOTE: Connect your device to the internet (Wi-Fi) to fully activate Windows. Vitals Mobile-TC software is factory installed on the TC-110.

Chapter 4

Starting Up with Vitals

You will need Internet access to download the Vitals installation file.

There are two steps to start up the Vitals 3.8.7 software. You must perform them in this order:

1. **Install Vitals Desktop**. Run the Vitals 3.8.7 installer on your Vitals Desktop Windows PC (Windows 7, 8, 10, or 11). (You can download the installer from the Wachs Utility website at **www.turnvalves.com**.
   - If you already have Vitals Desktop installed, download and run the installer to update it to Version 3.8.6.
2. **Initializing Vitals Mobile**.
   - For the TC-100/110 controller, start up and configure your Windows account on the tablet. The *Quick Setup Guide* included with your tablet controller has a link to detailed instructions on the Wachs Utility website.

In This Chapter

WHAT'S INCLUDED

The Vitals Desktop 3.8.7 installer includes the following files:

- Vitals Desktop application
- Language pack files
- Windows Mobile Device Center installation files
- Vitals Mobile-HC installation CAB file
- Vitals Mobile-TC installation MSIX file.

INSTALLING VITALS DESKTOP

NOTE

Before running the installer, transfer any activities saved on the handheld controller to the Vitals database. See TRANSFERING DATA CR.

1. Run the downloaded installer file. The Setup Wizard should begin automatically.

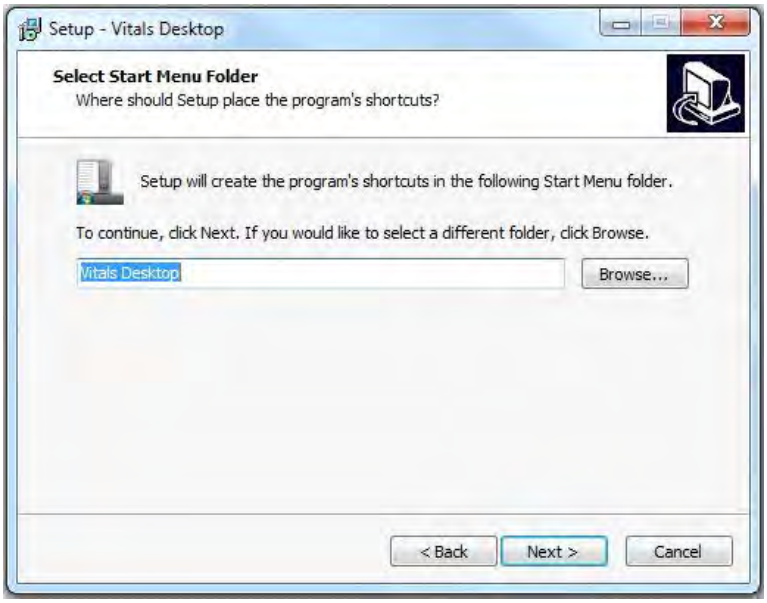
2. The **Select Setup Language** window appears. Choose a language from the dropdown list and click **OK**.

3. The **Setup - Vitals Desktop** window appears. Click **Next** to continue.

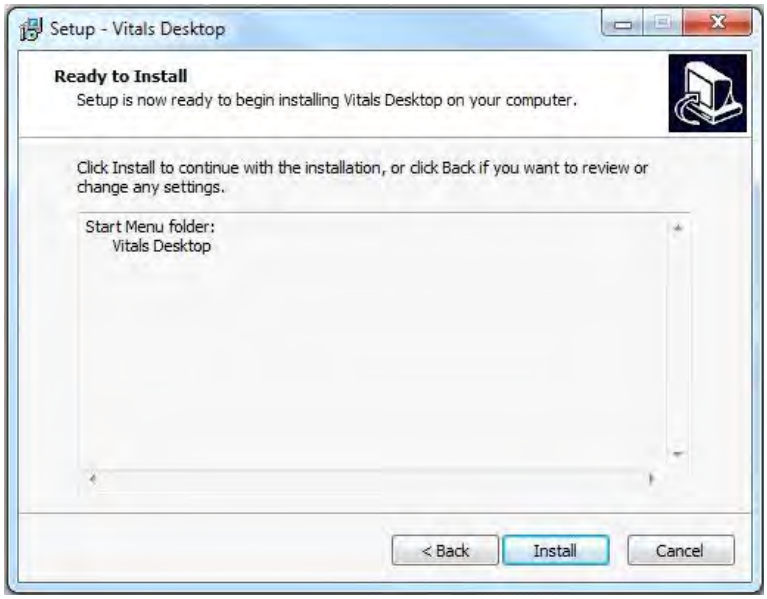
4. The **Vitals Installer Options** window appears. To proceed with the Vitals installation, select **Install Vitals 3.8.7 Software** and click **Next**. You can also choose to view the Vitals Reference Manual from this screen.

5. The **Information** window appears. Read through the Change Log and New Features to familiarize yourself with Vitals 3.8.7. Click **Next** to continue.

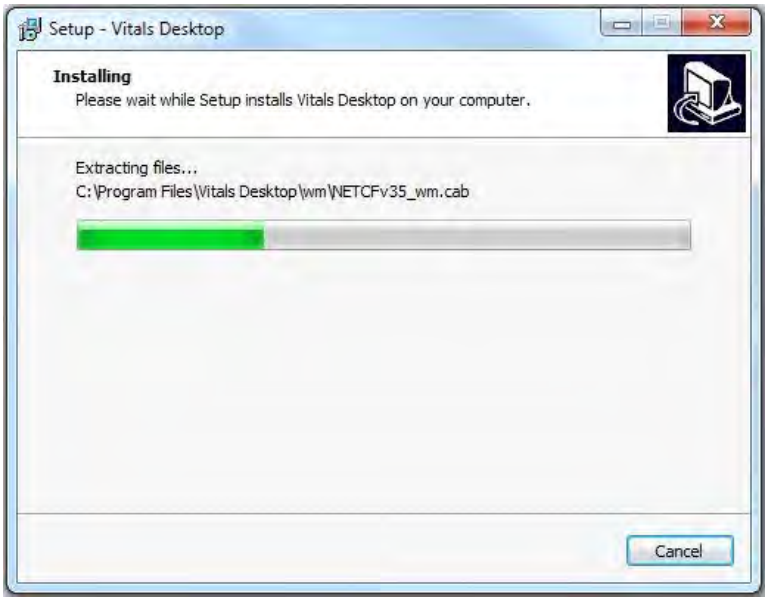
6. The **Select Start Menu Folder** window appears. Choose a location for the Vitals shortcut, or click **Next** to install the shortcut to its default location.



7. The **Ready to Install** window appears, showing the location of the Vitals Desktop Start Menu shortcut. (Another Vitals Desktop shortcut will be provided on the user's desktop.) Click **Next**.



8. The **Installing** window appears, showing the progress of the installation along with a list of files that are installed.



9. Once the installation is complete, the Setup Wizard will confirm that the installation has completed and Vitals Desktop has been installed. Click **Finish**. The Vitals Desktop software is now ready to use.

VITALS MOBILE-TC

Vitals Mobile-TC comes pre-installed on the TC-100/110 controller. As newer versions of Vitals Mobile-TC become available, they can be installed through the Settings screen in the application.

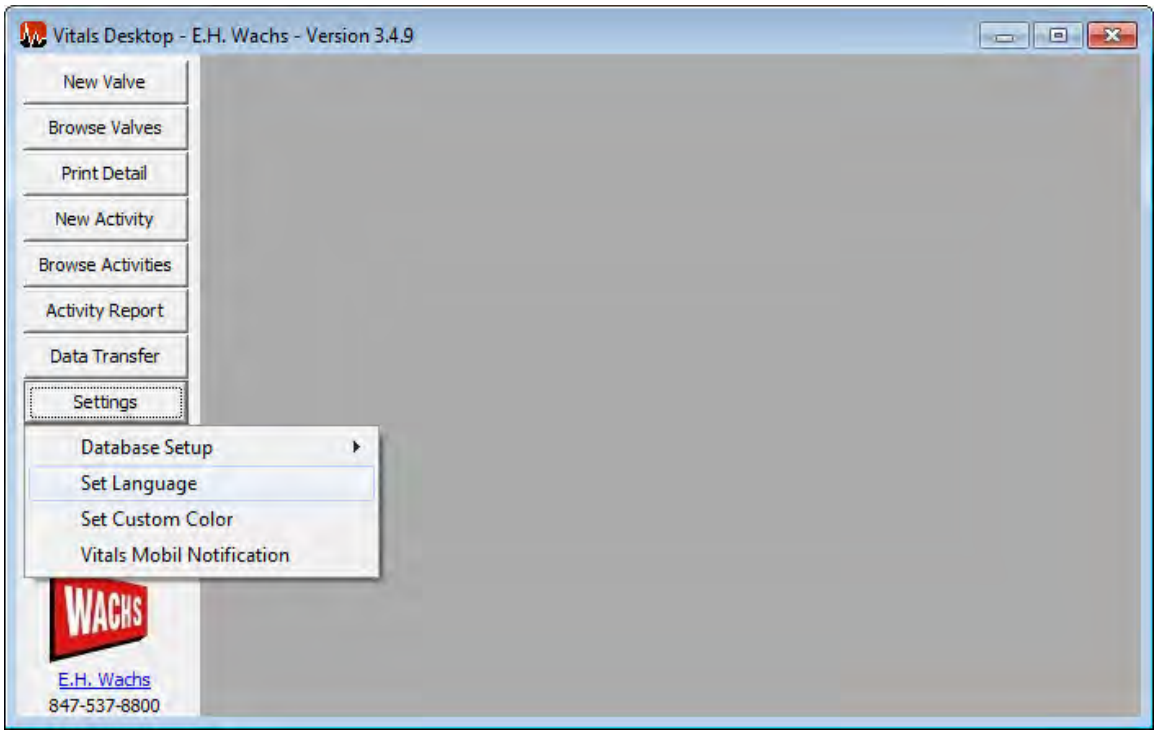
FOREIGN LANGUAGE SUPPORT

Foreign languages are supported by first installing the language file on the Vitals Desktop PC. During a Data Transfer, the available languages are pushed out to the Vitals Mobile.

1. Make sure the new language filename is in the format **strings.Language.txt**, where "**Language"** is the name of the language into which the file has been translated.
2. Copy the language file into the following directory on your computer: C:\Program Files\Vitals Desktop\strings.
3. Open Vitals Desktop and select **Settings >> Set Language.** Confirm that the new language has been added to the Vitals software.

NOTE

Vitals Mobile-TC does not currently include foreign language support.



4. A language in Vitals Desktop will be automatically uploaded to Vitals Mobile during a Data Transfer. To change the Vitals Mobile operating language, simply perform a Data Transfer while using the desired language on Vitals Desktop.

- In Vitals Desktop, some languages will require a change to the Administrative System Locale under the Region and Language settings on your Windows system in order to view special characters properly.
- Certain languages are not available in the Locale Settings on Windows Mobile devices. In order to view special characters for these languages, a language-specific firmware version is required.
- In order to easily input special characters for certain languages, third-party input software may be installed.

Chapter 5

Using Vitals Mobile-TC (TC-100/110 Controller)

In This Chapter

The TC-100/110 tablet controller runs the Vitals Mobile-TC software. Vitals Mobile-TC operates the valve exerciser and stores valve exercising data. You can transfer valve records from your PC running Vitals Desktop to the controller, or enter valve records using Vitals Mobile-TC while in the field.

This chapter assumes you are familiar with how to operate a touchscreen tablet computer—including interface features such as tapping to select icons or data fields, touching and dragging icons on the screen, "swiping" on the screen, and typing with an on-screen keyboard.

STARTING UP

The *Quick Setup Guide* is included in the box with the TC controller. Refer to this guide when unpacking and starting the controller, and for instructions on how to charge and configure it. The *Quick Setup Guide* includes a link to detailed instructions for Windows 11 setup on the Wachs Utility website.

TC-110 Controller Functions

The TC tablet has a panel of control buttons below the screen.

Figure 5-1. TC-110 connections and control buttons

Tablet Settings

Swipe from the right edge of the screen toward the middle to display the Notifications and Device Settings menu.

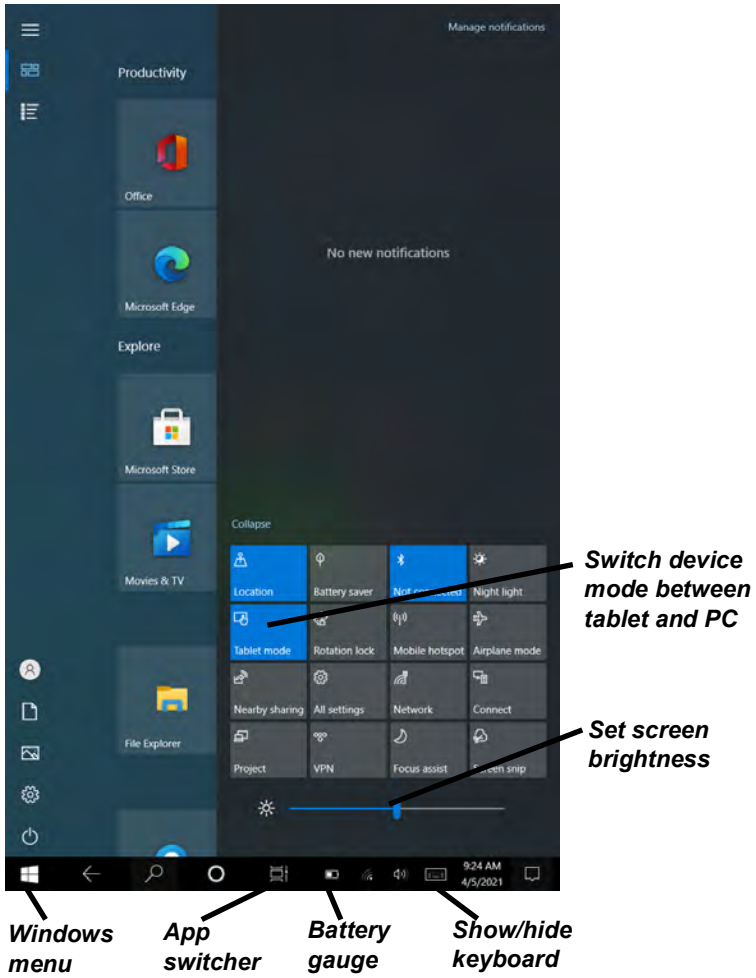


Figure 5-2. The figure shows the Windows 10 (TC-100) Notifications and Device Settings menu. Swipe from the right edge to show and hide the menu.

Tap on the left side of the screen or swipe again from the right to hide the settings.

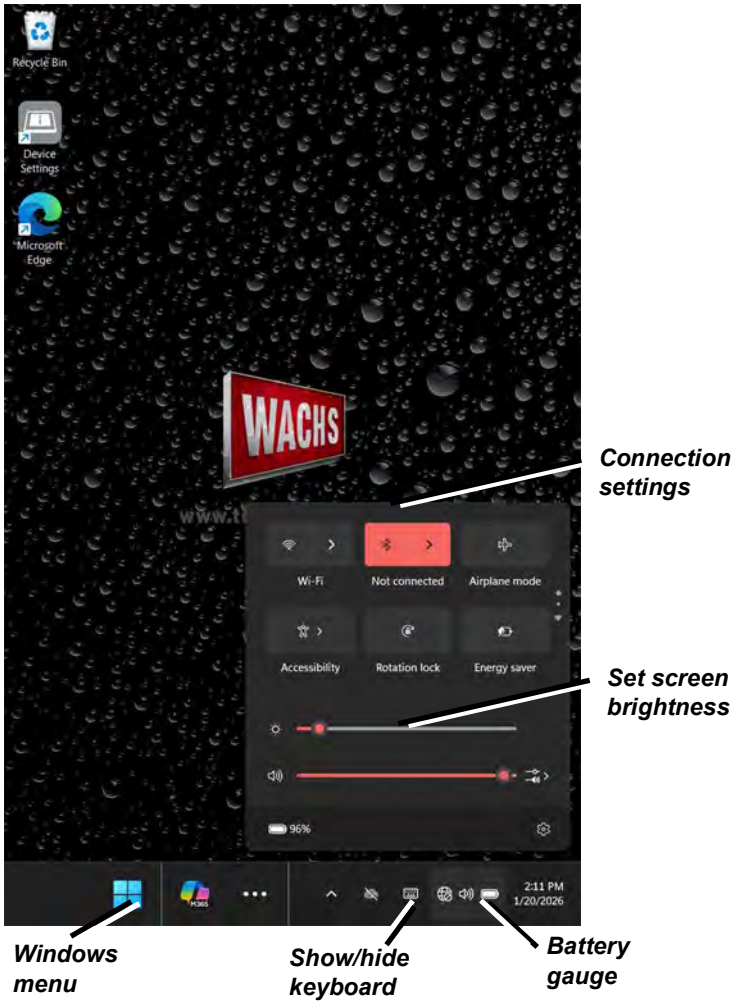


Figure 5-3. The figure shows the Windows 11 (TC-110) Notifications and Device Settings menu. Swipe from the right edge to show and hide the menu.

Initial TC Controller Setup

The TC controller functions as a standard Windows 10 (TC-100) or Windows 11 (TC-110) computer. Initial setup is the same as for a new PC. Consult with your IT person or department for assistance, if necessary.

The TC controller can be used as a non-networked, stand-alone device with a single user account for running the Vitals software. However, you will probably want to set up networking features such as wi-fi, file sharing, email, etc, to incorporate it into your office network.

1. Press the power button on the TC controller. You'll be prompted for Windows configuration information, including a user account.

2. When you login to your account, tap in the **Password** field to display the keyboard. Type in your tablet's password and tap the forward arrow to log in.

Figure 5-4. Tap the password field and type in the password to login.

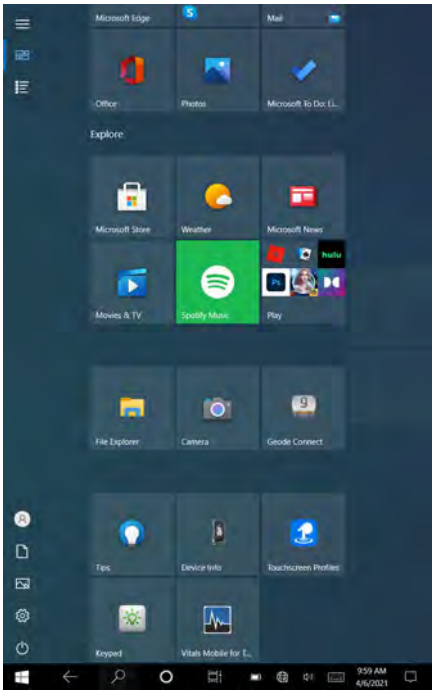


Figure 5-5. TC-100 initial screen in tablet mode. Scroll down to locate the Vitals Mobile icon.

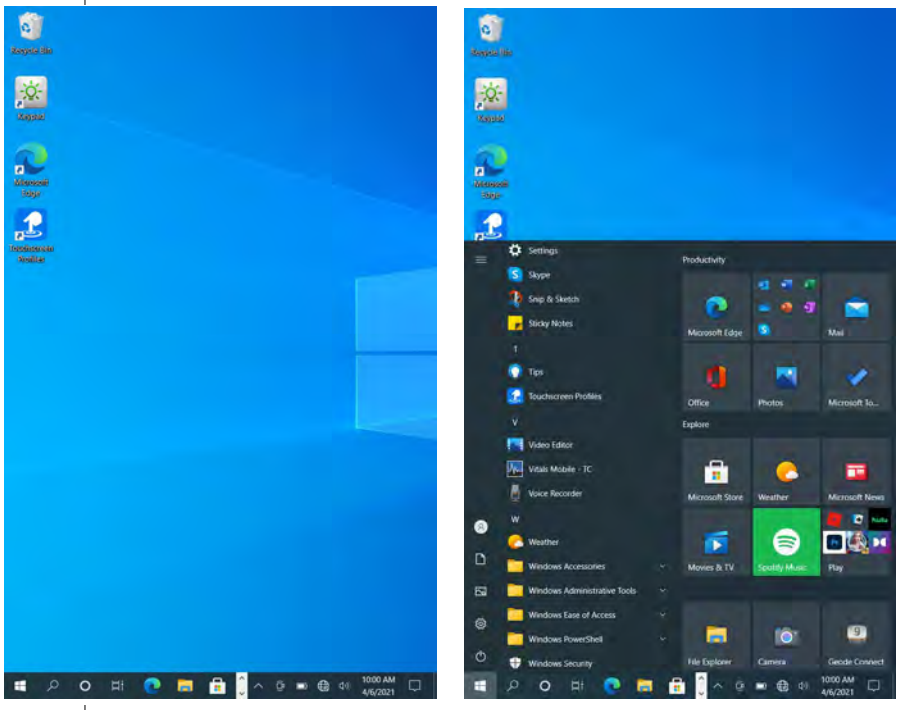


Figure 5-6. TC-100 initial screen in PC mode (left). Tap the Windows icon (right) and scroll down to locate the Vitals Mobile icon.

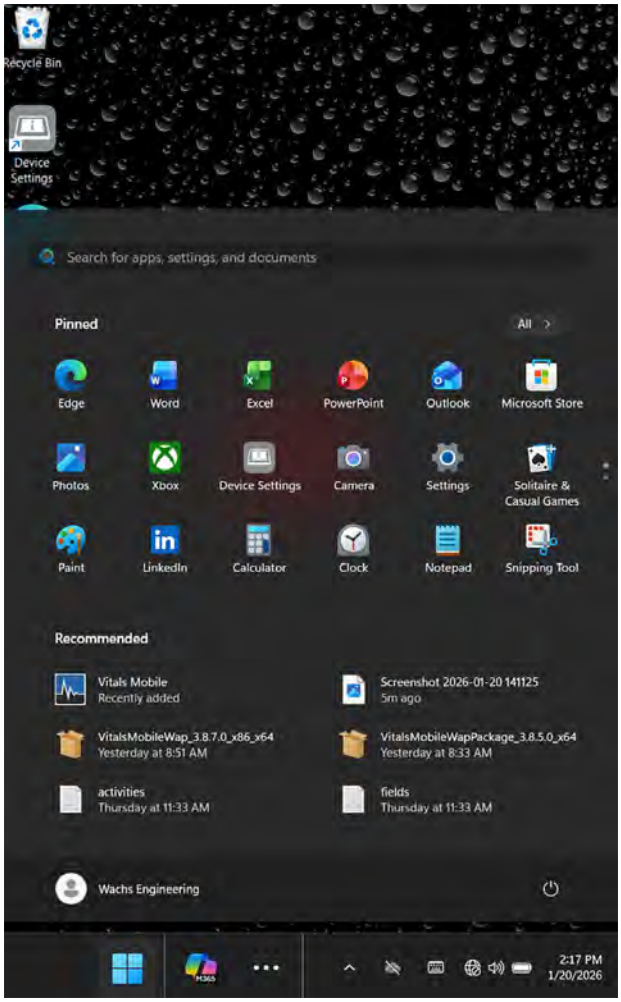


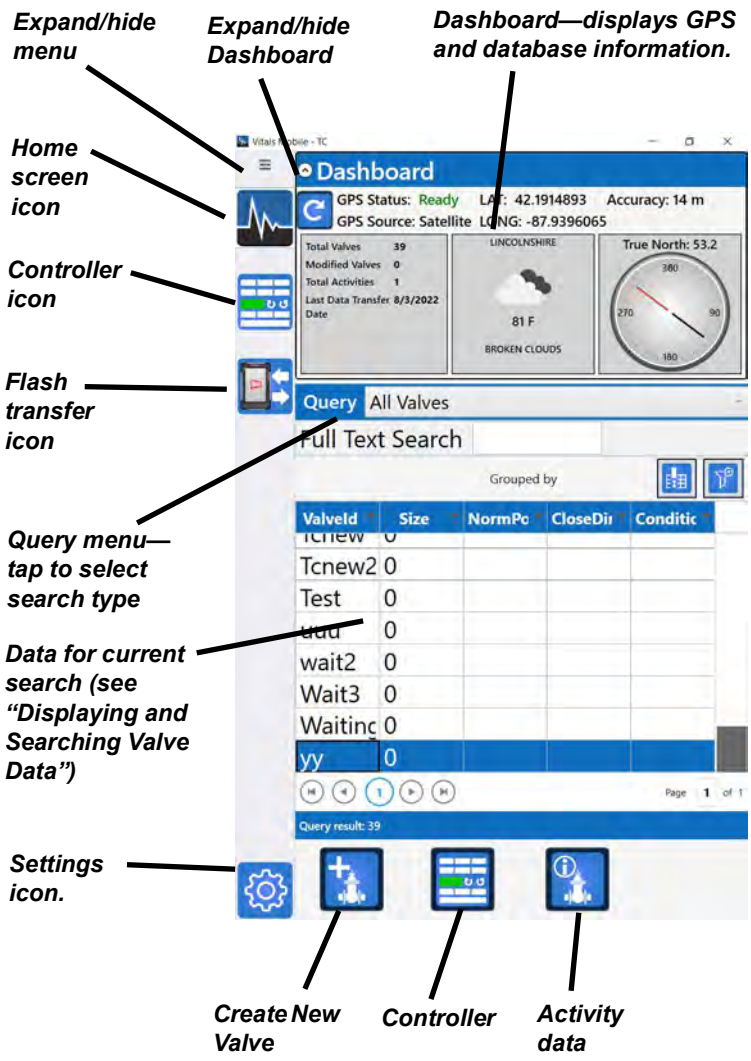
Figure 5-7. Tap the Windows icon to display the navigation screen. To view a list of all available apps, including Vitals Mobile-TC, tap the All button at the top right.

Vitals Mobile-TC Reference

1. Tap the Vitals Mobile-TC icon. The app appears with the home page and All Activities Query results displayed.

NOTE

On a new TC controller with no Vitals data, the Query results will be blank.



Icons on bottom of screen appear when they are available:
—a valve must be selected for the Activity data icon to appear

Figure 5-8. Vitals Mobile-TC Home Screen

2. Use the menu icons on the left to access the main program functions:

- Home Screen with valve and activity data
- Controller, for operating the TM or ERV-750 valve operator
- Flash transfer, for transferring activity data to Vitals Desktop.
- Settings, for changing program defaults.

Settings

Tap the Settings icon to open the Vitals Mobile-TC settings screen. The default view is the **Connection** tab.

Touch any of the tabs to view that Settings screen.

Connection Tab

1. A list of paired machines appears on the Connection tab under **MY EQUIPMENT**. If multiple machines appear in the list, tap to select the one you want to use.

Figure 5-9. Connection Settings. A list of paired valve operators appears under **MY EQUIPMENT**. *Tap the name to make it active under* **MY CONNECTION**. *(Only one is active at a time.)*

2. You can set the default torque limit under **MY CONNECTION**. (This sets the torque limit for Vitals Mobile-TC, not for the selected valve operator. The torque level you select will be saved for all valve operations until you change it again.)

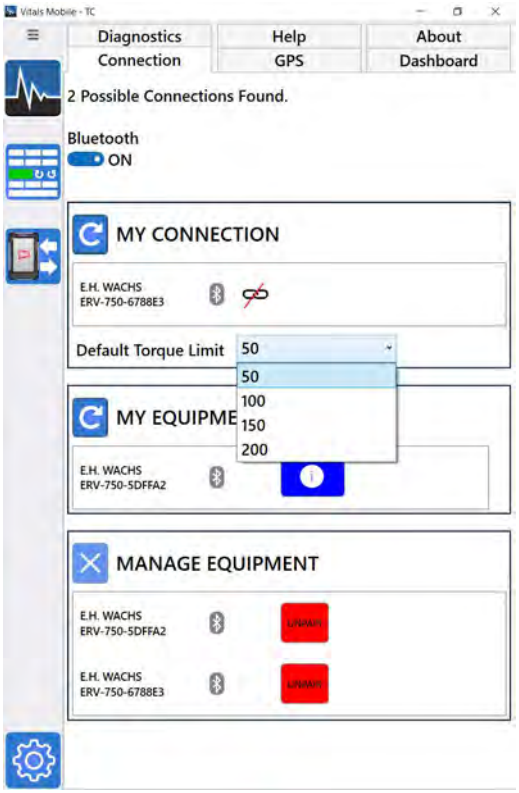


Figure 5-10. Set the Default Torque Limit for Vitals Mobile-TC using the drop-down menu.

3. Tap **MANAGE EQUIPMENT** to pair or unpair valve operators.

- See “Adding a Valve Operator” on page 49 for connecting to new equipment.

Figure 5-11. Pair and unpair machines under the **MANAGE EQUIPMENT** *list.*

GPS Tab

See “Adding External GPS” on page 53.

1. Tap the **GPS** tab.
2. Use **Auto-discover serial port** to search for an available GPS device, or manually select a device with the **Serial port** drop-down.

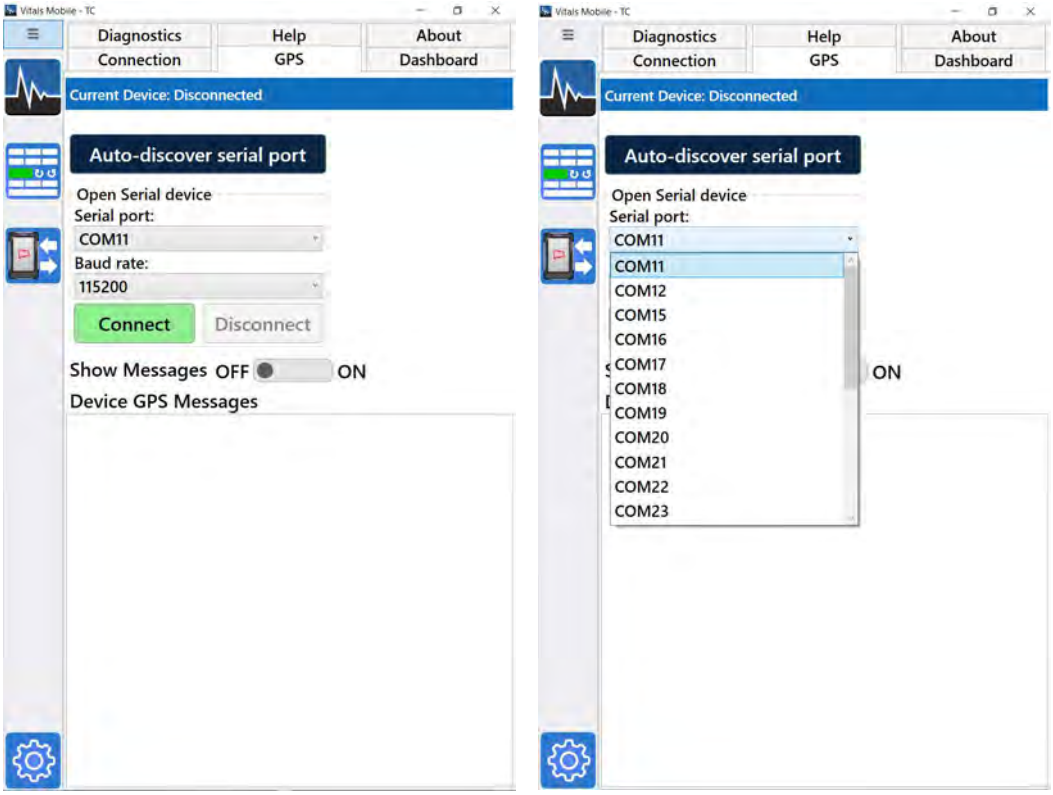


Figure 5-12. Use the GPS tab to connect to an external GPS device. Either click **Auto-discover serial port**, *or select the serial port manually.*

3. Tap the **Show Messages** toggle button to turn GPS message display on or off.

Dashboard Tab

1. Tap the **Dashboard** tab.
2. Tap the **Select Query** drop-down to select any of the Home Screen data queries. Then tap to select the fields you want to list on the Home Screen.

- You can arrange the order of the fields by dragging them on the Home Screen.
- Select a limited number of fields for display. If there are more than 3-5 fields displayed, the columns will be too narrow to read.
- You can see the rest of the valve and activity data by selecting the specific record on the Home Screen.

3. After selecting the fields for the query, tap the Save icon.

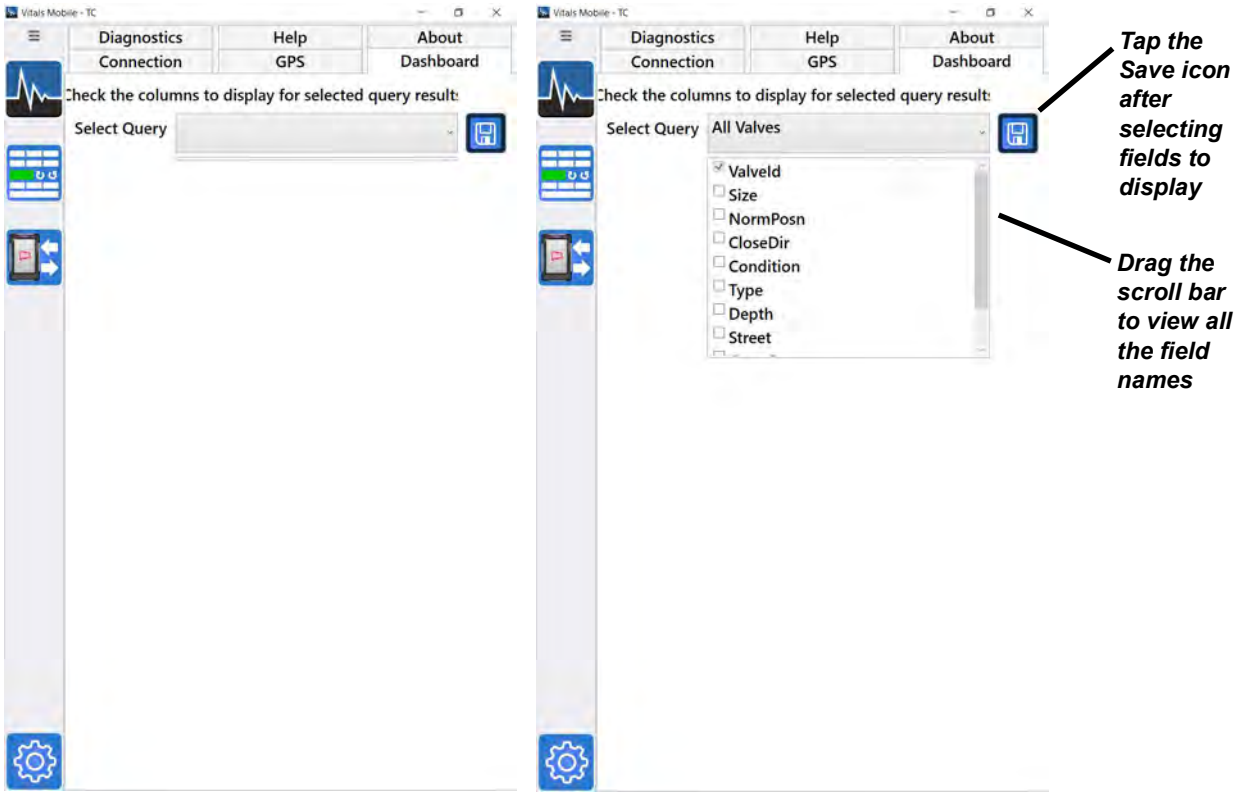


Figure 5-13. Dashboard Setting tab. Select a query to choose the fields for display.

Help Tab

1. Tap the **Help** tab.
2. The Help reference screen for Vitals Mobile-TC appears.
3. Tap **Vitals Manual** to access this manual from the **turnvalves.com** website. The manual is in PDF format. You can save it to your TC controller after downloading it.

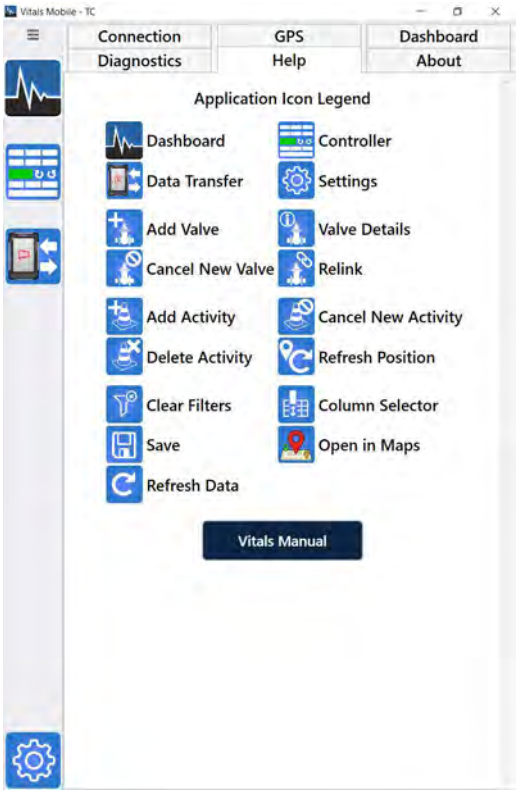


Figure 5-14. Vitals Mobile-TC Help reference screen.

About Tab

1. Tap the **About** tab.
2. The **About** tab displays device and software version information. You can tap **Check for Update** to see if a newer version of Vitals Mobile-TC is available.

- You should back up your data using the Flash Transfer function before updating the software.
- If you choose to install the update, you will be prompted to start the download. Once the download is complete, you will be prompted to run the installer for the new software version.

3. Exit and restart Vitals Mobile-TC after performing the software update.

Figure 5-15. The About tab shows version information and allows you to update Vitals Mobile-TC.

NOTE

The Clean Data feature will perform a database cleanup the next time you launch Vitals Mobile. The feature resets to No on startup, until you enable it again.

4. On the About screen, you can use the **Clean Data on Startup** feature to correct database errors. If you are seeing error messages when using Vitals, enable the Clean Data function.

5. To enable the Clean Data feature, tap the toggle switch. A message will appear asking you to confirm. Tap **Yes**.

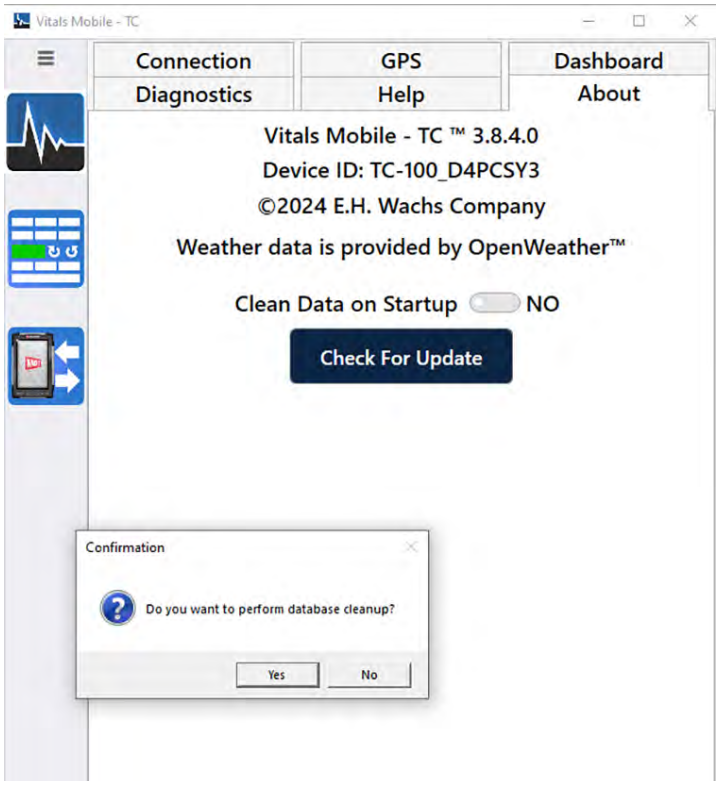


Figure 5-16. When you enable the Clean Data on Startup feature, you will be prompted to confirm.

6. The toggle switch will display **Yes**, and a message will inform you that Vitals will shut down to clean up the database.

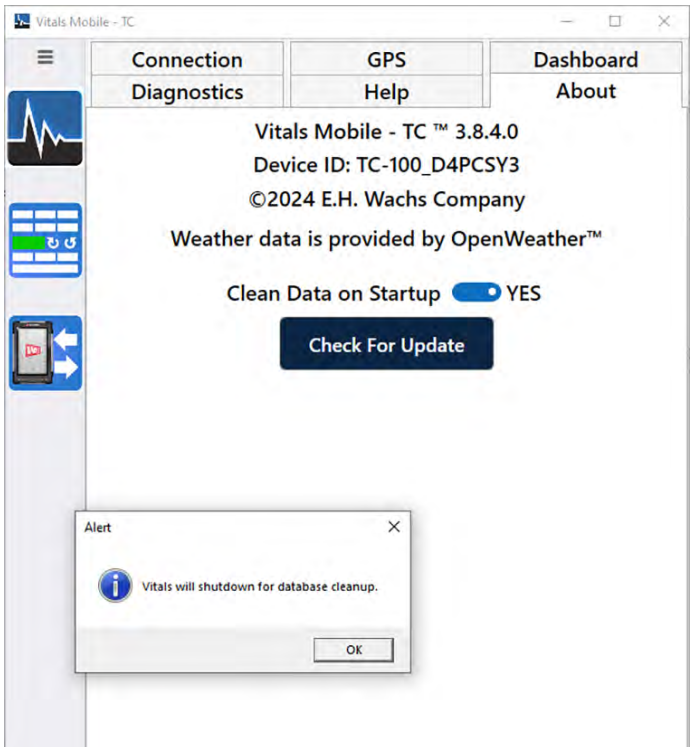


Figure 5-17. Vitals will shut down when you tap **OK**. *When you restart the program, it will perform a database cleanup.*

7. Tap **OK**. Vitals Mobile will shut down.

8. The next time you restart Vitals Mobile, it will perform a database cleanup.

Adding a Valve Operator

Add a connection to a valve operator in Settings, under the Connection tab.

Before connecting to a valve operator, turn its power on.

1. Tap the Vitals Mobile-TC Settings icon. The **Connection** tab appears by default.

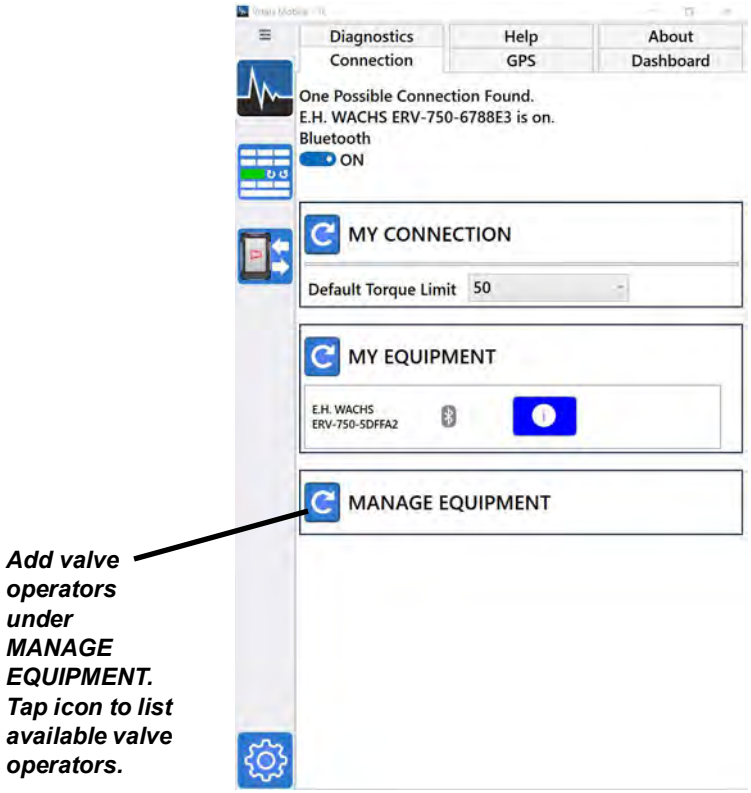


Figure 5-18. Adding valve operator connection.

2. Tap the icon for **MANAGE EQUIPMENT** to display available valve operators (both paired and unpaired). Make sure the valve operator is turned on.

The MANAGE EQUIPMENT section displays paired and unpaired valve operators within range.

Figure 5-19. Display available valve operators under **MANAGE EQUIPMENT**.

3. Tap the **PAIR** button for the valve operator you want to connect to. A **Scanning...** message appears on the **MY CONNECTION** and **MY EQUIPMENT** sections while the connections are updated.

Figure 5-20. When you pair a new valve operator, connection information is updated.

4. The updated connections are listed. To change the active connection, select the new valve operator under **MY EQUIPMENT**.

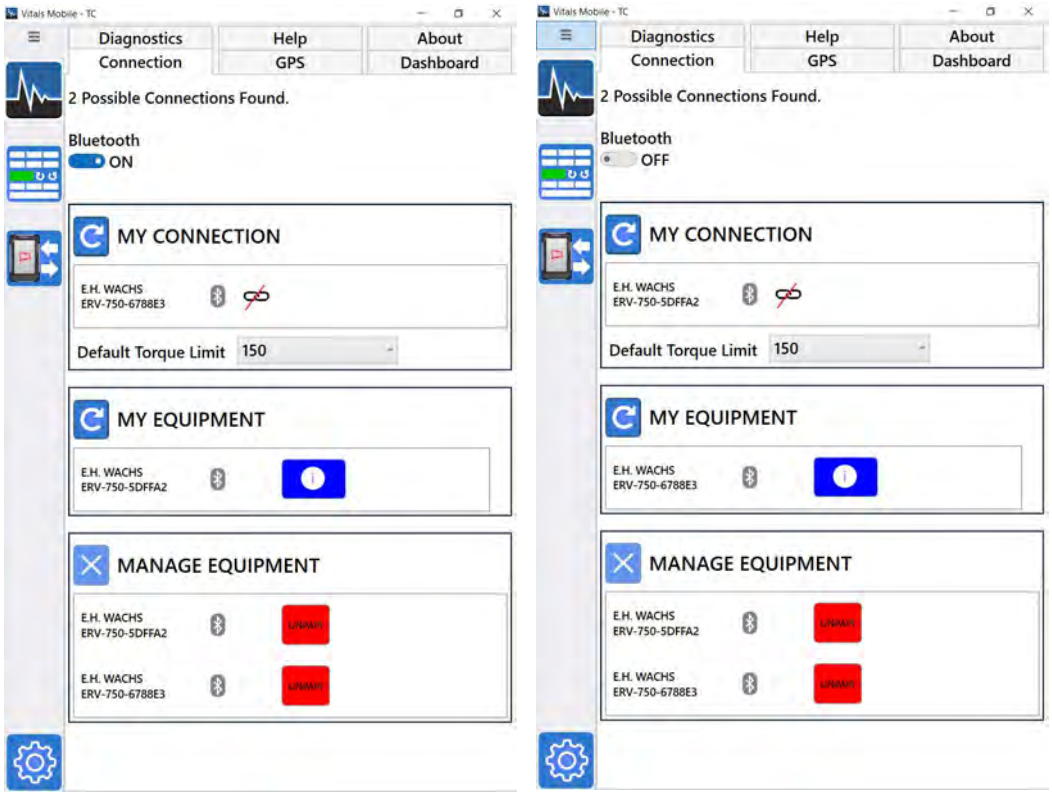


Figure 5-21. To change the connection, tap the new valve operator under **MY EQUIPMENT**.

Adding External GPS

1. Pair the GPS to the TC controller according to the manufacturer's instructions.

2. On the TC controller, go to **Settings** and then **Bluetooth & other devices** to verify that the GPS is paired. Tap **More Bluetooth options**.

Figure 5-22. GPS Bluetooth options.

3. Tap the **COM Ports** tab. Identify the **Outgoing** COM port for **R2 Trimble 'COM2'**. Write down the COM port. Click **OK**.

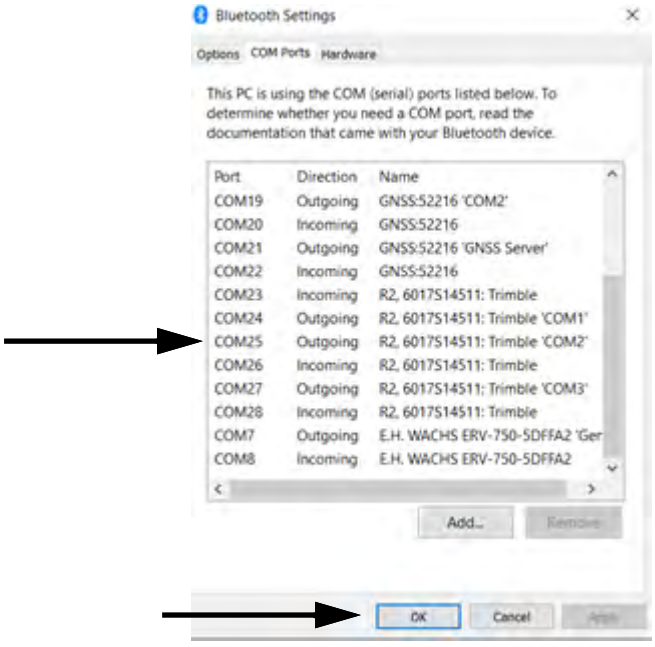


Figure 5-23. GPS COM port.

NOTE

This example shows the Trimble R2 sold by E.H. Wachs. The name will be different for other devices. This COM port is the one used by the GPS for the GGA NMEA data stream.

NOTE

External GPS devices should have GGA NMEA data enable at 1 or 2 Hz for use with Vitals. You also need to know the GPS device's baud rate.

4. Launch Vitals Mobile. Tap the **Settings** button at the lower left, then tap the **GPS** tab at the top.

Figure 5-24. Vitals Mobile GPS settings.

5. Set the **Serial port** to the COM port you wrote down (**COM25** in the example).

6. Set the **Baud rate** for the GPS device (**4800** for the Trimble R2).

7. Tap **Connect**. The **Current Device** in the status line will update.

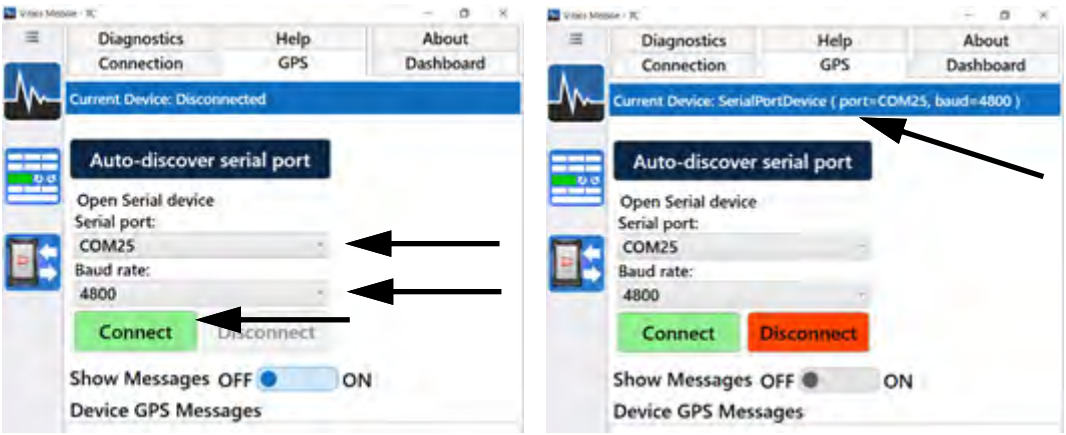


Figure 5-25. Setting GPS COM port settings.

8. Tap the **Dashboard** button to go to the home screen.

9. When the **GPS Status** updates to **Ready** and the **GPS Source** displays the correct COM port, activities will be saved with GPS data.

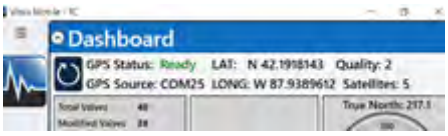


Figure 5-26. GPS Status Ready.

DISPLAYING AND SEARCHING VALVE INFORMATION

You can sort and display valve and activity data on the Home screen.

1. When you open Vitals Mobile-TC, the Home screen appears with Query results for All Activities.

NOTE

You can hide the Dashboard to create more room to display valve data.

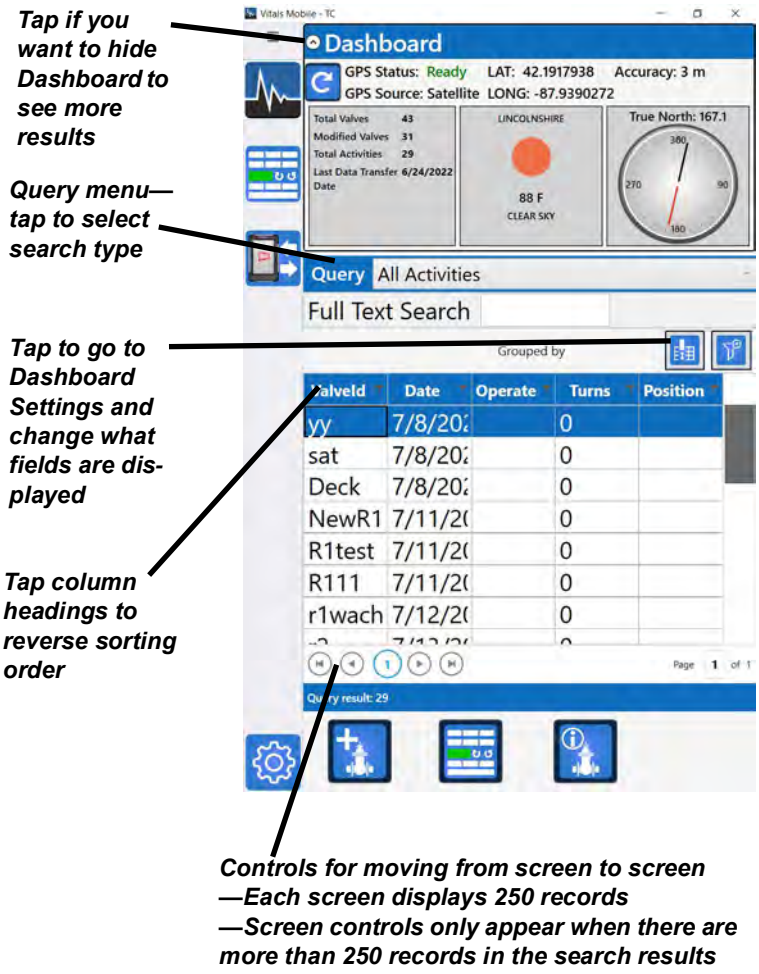


Figure 5-27. Vitals Mobile-TC Home Screen

2. To change the Query type, tap on the Query menu and select the type of search.

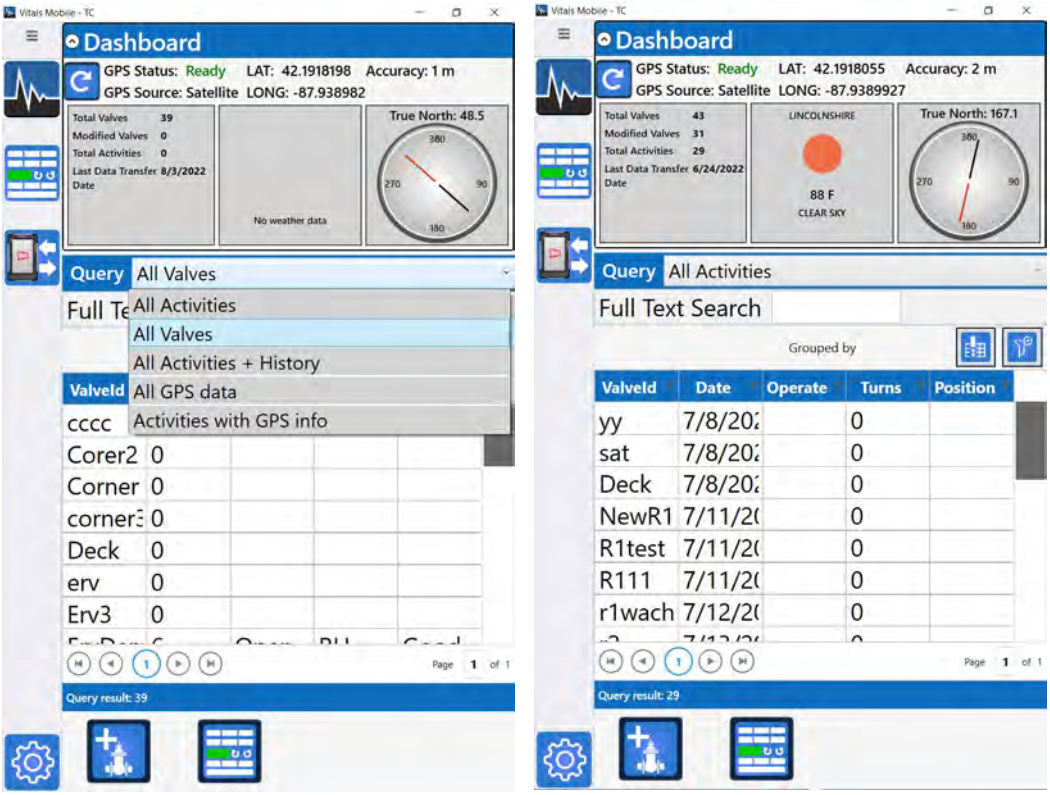


Figure 5-28. Tap the Query menu to select the data search (left). You can move the columns in the list by dragging the column headers left or right (right).

- **All Activities**—lists all activity records stored on the TC-100. You can select fields for display in the Dashboard Settings.
- **All Valves**—lists all valve records stored on the TC-100. You can select fields for display in the Dashboard Settings.
- **All Activities + History**—lists activities with **ValveID**, **Date**, **OperatedBy**, and **Turns** fields.
- **All GPS Data**—lists valve records that have GPS data, with **Latitude**, **Longitude**, **ValveID**, **Dist. from**, and **Heading**.
- **Activities with GPS info**—lists valves that have activities with GPS data, with **Latitude**, **Longitude**, **ValveID**, **Dist. from**, and **Heading**.

3. Tap on an activity to highlight it. The Valve Details icon will highlight to show valve information is available.

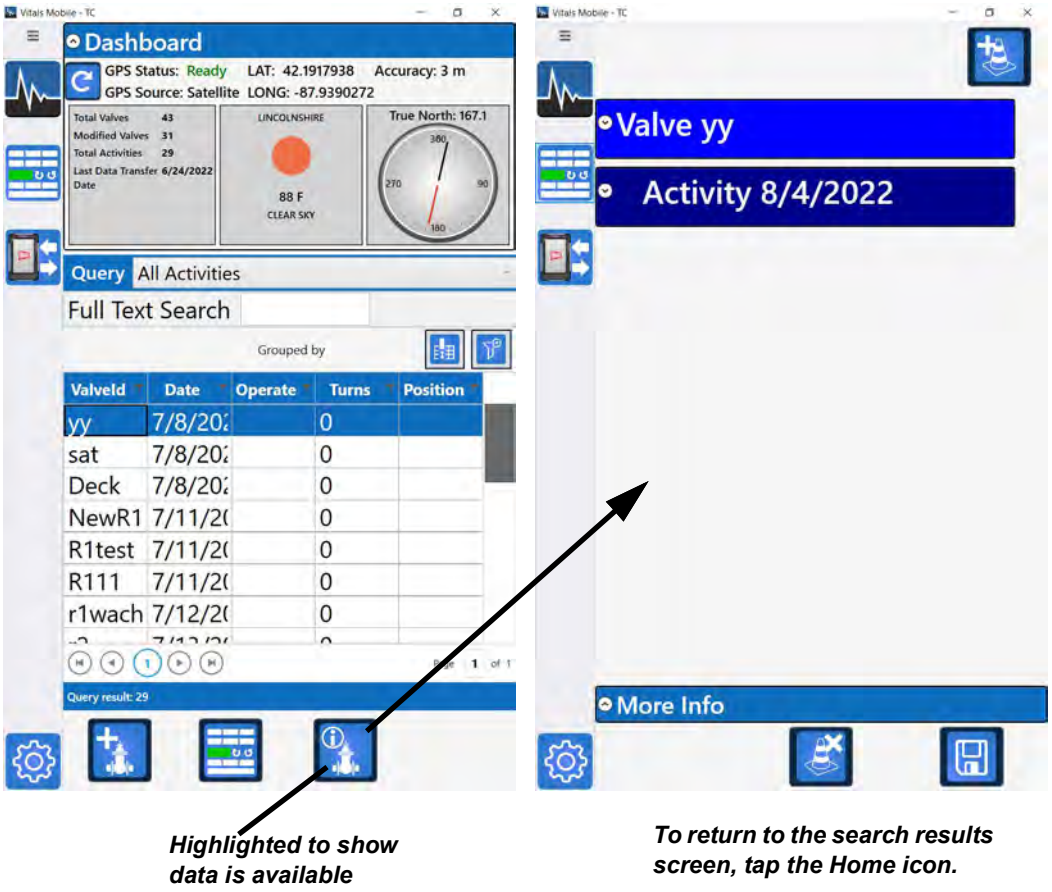


Figure 5-29. Select an activity in the list, and tap the Valve Details icon to display the valve data.

4. Tap on the headings to expand the data records.

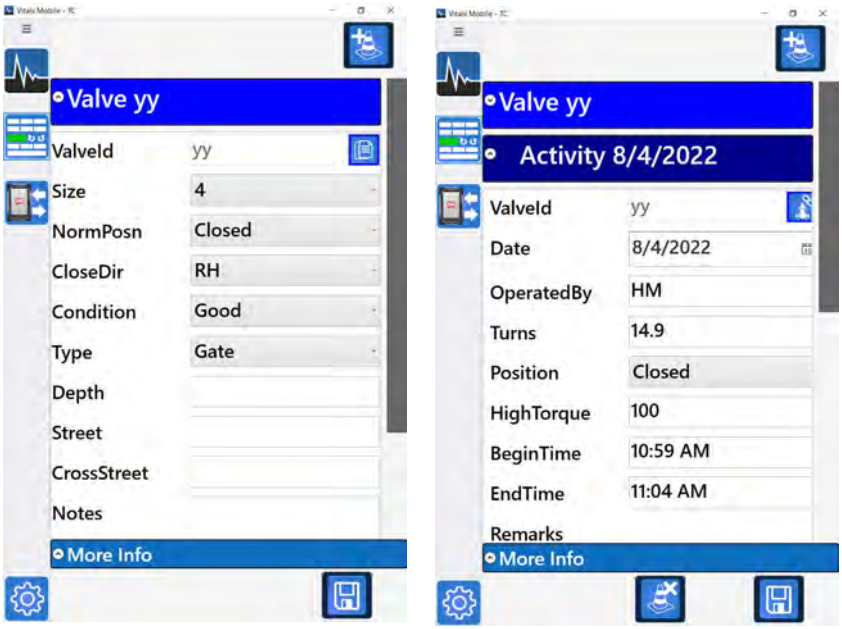


Figure 5-30. Tap the heading to display the available data.

5. Tap **More Info** to display the torque chart, if one is available.

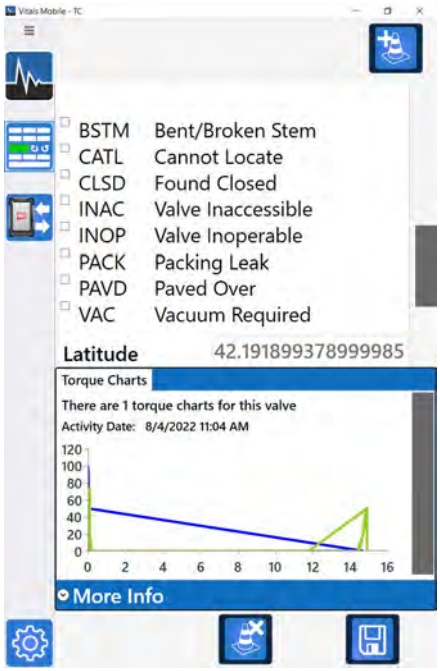


Figure 5-31. More Info displays the torque chart.

6. You can group data by any of the displayed fields. Drag the field heading up into the Sort box.

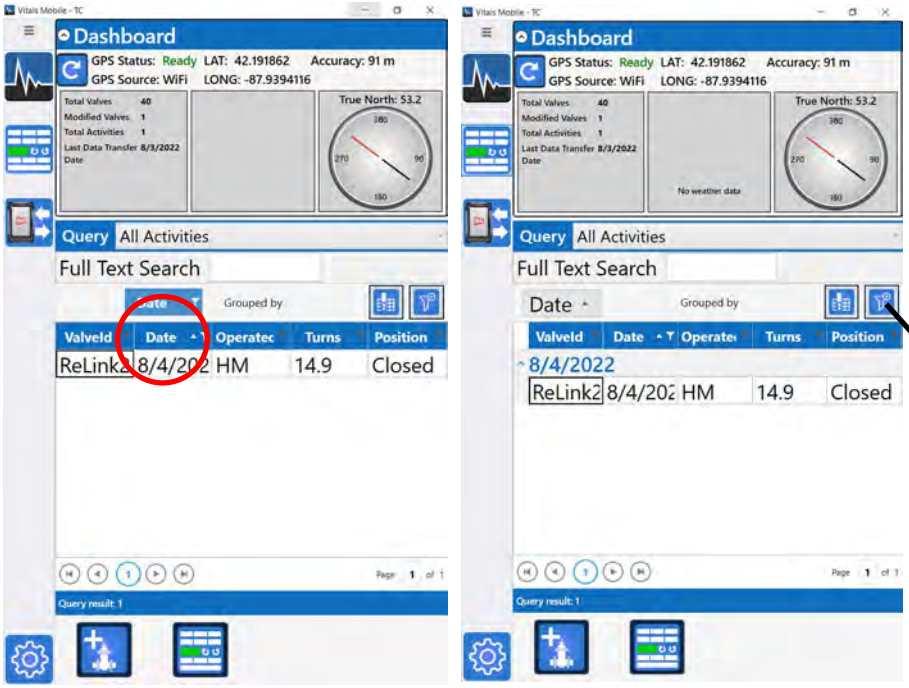


Figure 5-32. You can drag any of the field headers up into the Sort box to group the data (Date field shown).

7. You can drag multiple field headings into the sort box.

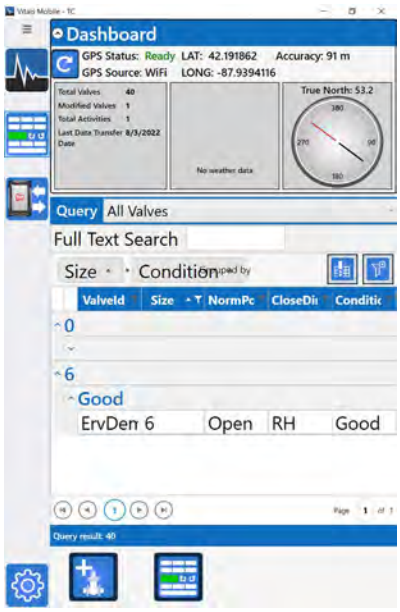


Figure 5-33. Group by multiple fields.

8. You can search within your query results by typing in the Full Text Search box. All displayed fields are searched. Results are updated as you search.

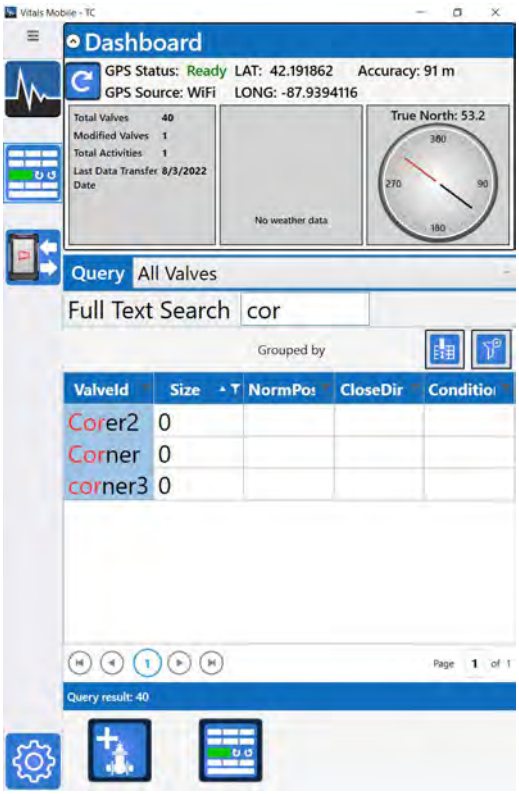


Figure 5-34. Type in the Full Text Search box to search the displayed results.

9. From your search results, you can select valves and proceed to valve operation. See “Starting a New Activity with Existing Valve” on page 69.

Re-linking an Activity to a Different Valve

If you perform a valve activity assigned to the wrong Valve ID, you can re-link the activity to the correct valve.

1. Search or display the valve activities to locate the valve activity you want to re-link.

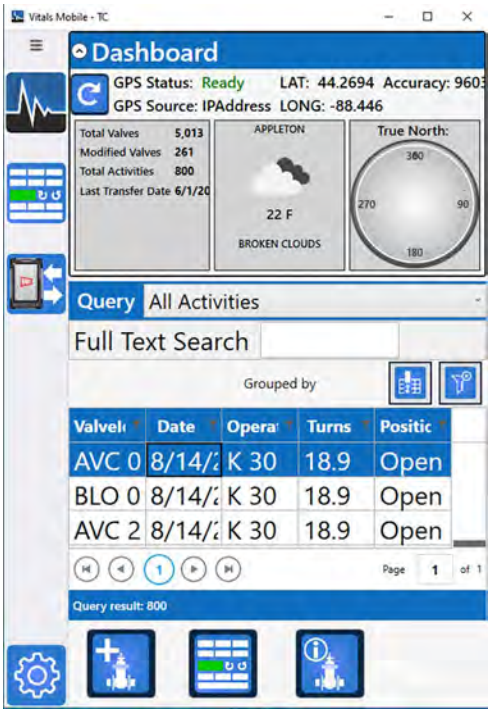


Figure 5-35. Locate the activity record you want to re-link to a different Valve ID.

2. Open the activity record.

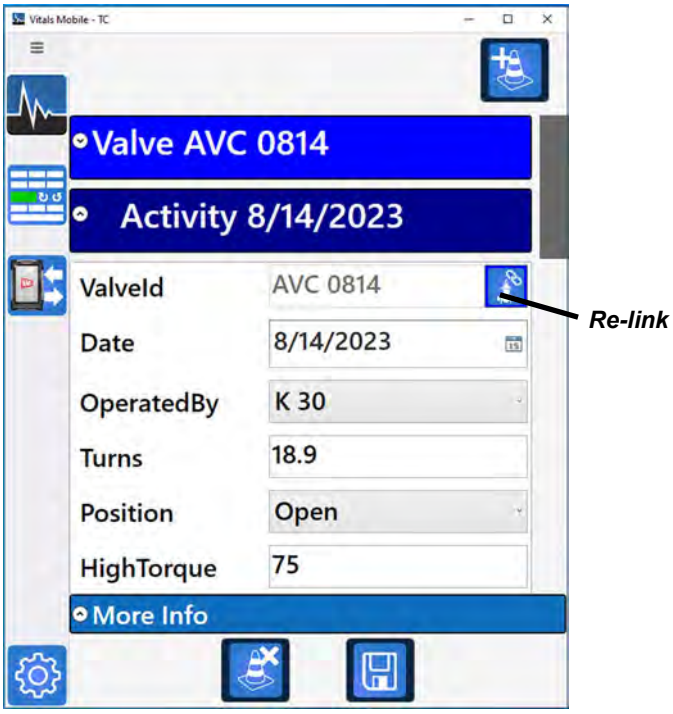


Figure 5-36. Open the activity record. The re-link button appears next to the Valve ID.

3. Tap the Re-link button next to the Valve ID. A message will appear asking you to confirm re-linking.

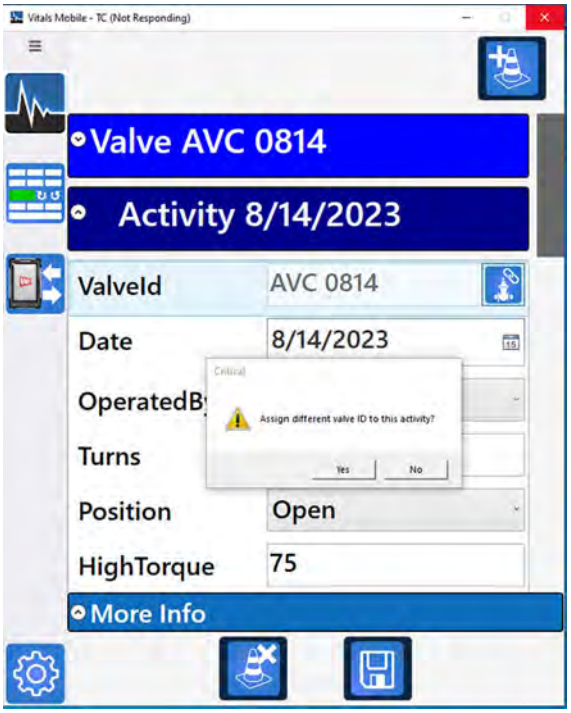


Figure 5-37. Tapping the Re-link button displays a message asking you to confirm. Tap **Yes** *to continue.*

4. The Valve (New) screen appears. Type in the Valve ID you want to assign the activity to.

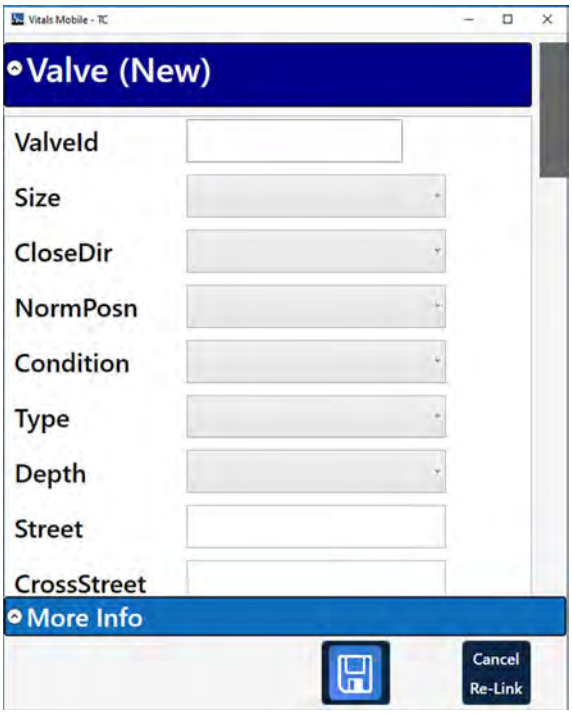


Figure 5-38. Type in the desired Valve ID and tap the Save button at the bottom. Tap **Cancel Re-Link** *to cancel.*

5. Tap the Save button to save the activity with the newly assigned Valve ID. The screen will return to the dashboard, and the activity list will show the activity linked to the new Valve ID.

- If you want to cancel, tap the **Cancel Re-Link** button. The screen will return to the dashboard, with the valve link unchanged.

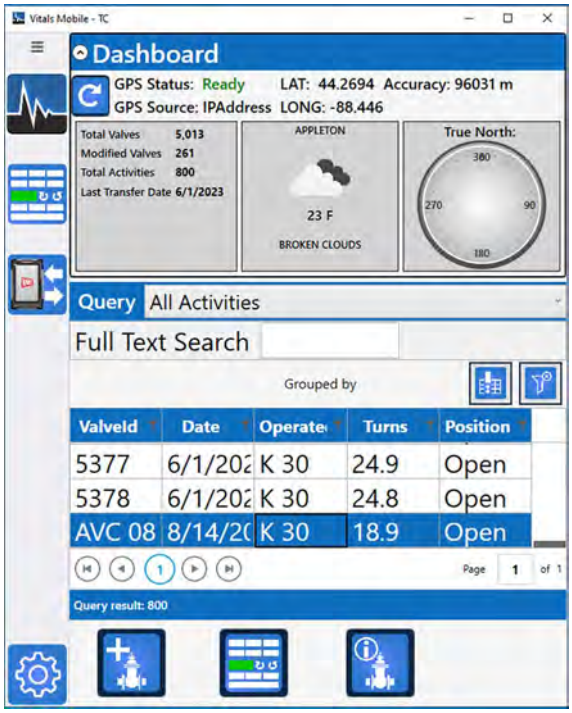


Figure 5-39. The activity list will show the activity linked to the new Valve ID.

VALVE OPERATION

Vitals Mobile Controller

E.H. Wachs "No-Assumption" Valve Exercising
When you run the valve operator in EXER mode, it uses the "no-assumption" exercising protocol to determine direction of valve rotation.

Refer to Appendix A for a detailed description of the no-assumptions protocol.

The Vitals Controller is the program for operating E.H. Wachs valve operators. If using a cable connection, make sure the control cable is connected to the USB or serial port on the controller and to the port on the valve exerciser. If using a Bluetooth connection, make sure a Bluetooth module is properly installed and that the Bluetooth settings on the controller have been properly set up.

1. On the **Vitals Mobile** screen, tap the **Controller** button. The Controller screen appears. If a valve or activity was selected on the Home screen, that valve is selected by default.

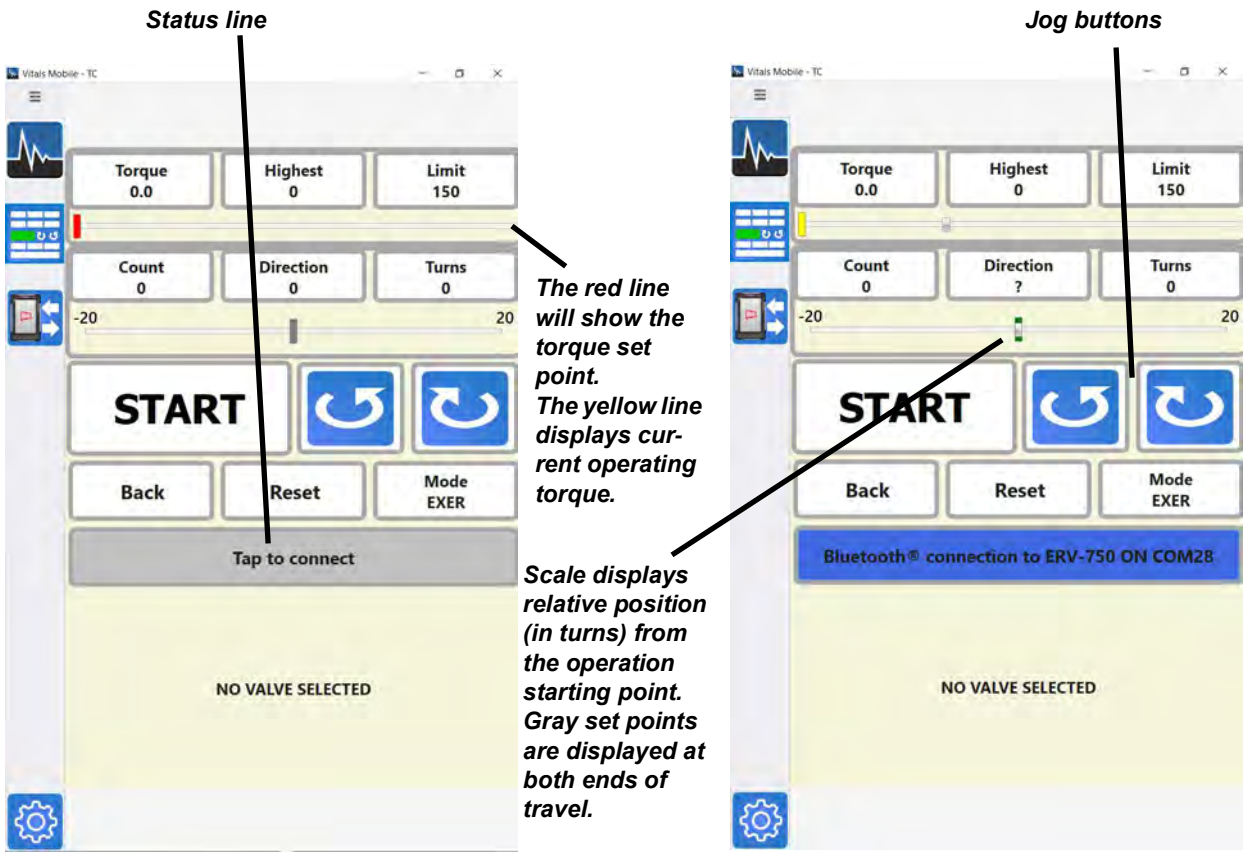


Figure 5-40. Controller screen with valve selected (left) and without valve (right).

2. The **Torque** field displays the current operating torque.

3. The **Highest** field displays the highest torque level during the current operation.

4. The **Limit** field displays the current torque limit. (To change the default torque limit setting, tap the **Settings** icon and go to the **Controller Settings** tab.)

5. The **Count** field displays the current position, in number of turns from the starting point (positive or negative).

6. To override the automated exercising program and set a starting direction, tap the **Direction** button until either **RH** or **LH** appears. Leave the question mark in the display for automatic direction control.

If connection is not detected when the Vitals controller screen opens, a message will ask if you want to autoconnect. Tap **Yes**.

You can tap the **Tap to connect** button to try to make a connection to the valve operator using the saved port.

CAUTION

If you get a **Transducer Error** message during operation, there is something wrong with the transducers or cables. Operating with faulty transducer readings could cause valve damage. See "Transducer Errors" at the end of this section.

NOTE

See Appendix A for a description of the operating modes.

7. The **Turns** field displays the total number of turns performed, in both directions, during the current operation.

8. Press **START** to begin the valve operation. The valve exerciser will run in the selected mode. The button will turn red and the text will change to **STOP**.

9. To turn the valve exerciser slightly in either direction (for positioning or installing the valve key), tap and hold on one of the **Jog** buttons. The operator will turn as long as you keep touching either of these buttons.

10. By default, the valve exerciser mode is **EXER**, which runs the valve exercising protocol. You can also operate in Emergency Mode (**EMER**) and Manual Mode (**MAN**). Tap the **Mode** button to switch modes.

11. Press **STOP** to end the valve operation. The button will blink white and green and the text will change to **START**.

12. To reset the valve operation readings and the operating defaults, tap and hold the **Reset** button.

13. Tap the **Back** button to go to the valve information screen for the current valve and enter remarks or other information. You can also create a new valve record in the database.

14. The status line shows details of the currently active connection or operation. You can tap the status line to toggle through current status messages, including operating values, connection messages, and exercising status messages.

15. If the status line is a string of numbers, it is displaying the current connection type and machine selection.

- turn count
- transducer 1 value
- transducer 2 value
- machine ID
- machine status.

Starting a New Activity with Existing Valve

Before starting new activities, perform a data transfer with Vitals Desktop to sync any changes from the Vitals database to the controller.

1. Find the valve you want to operate by searching on the Home screen, using the Query and search functions.
2. Select the valve (or a related valve activity) in the results list.
3. Tap the New Activity icon. Enter any information you want on the Valve screen, then tap the Save icon.
4. Tap the Controller icon. The selected valve appears at the bottom of the screen. You can page through the valve data using the arrow buttons on-screen.

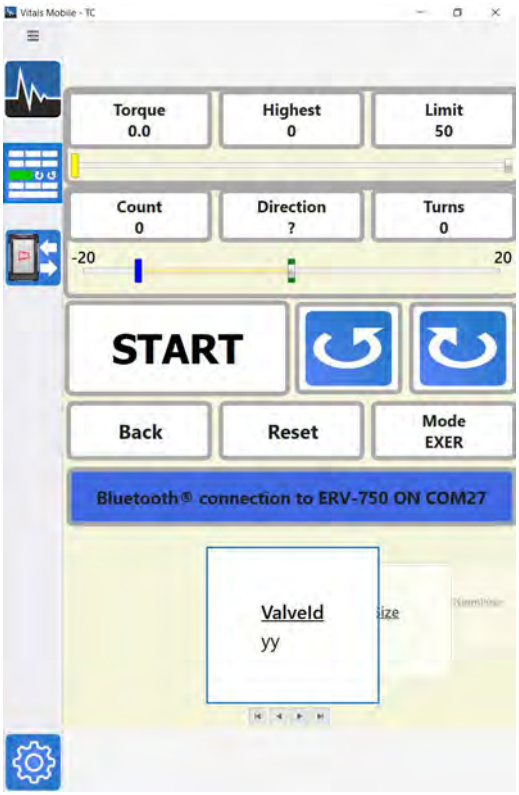


Figure 5-41. Start the valve activity for a selected valve.

5. Start the activity. See “Vitals Mobile Controller” on page 66.

Starting a New Activity with a New Valve

Before starting new activities, perform a data transfer with Vitals Desktop to sync any changes from the Vitals database to the controller.

1. Tap the New Valve icon. The **New Valve** screen appears.

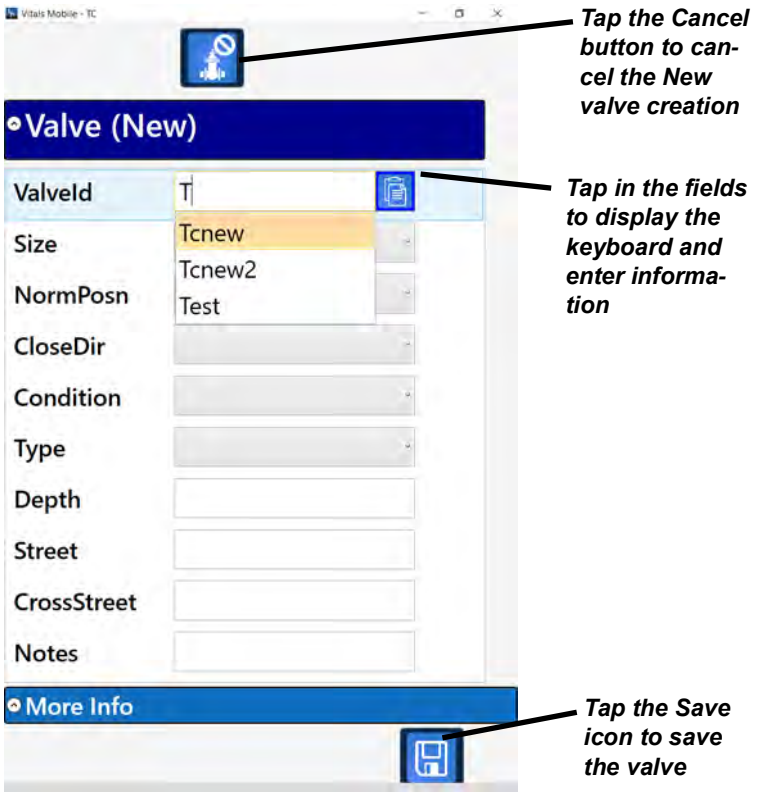


Figure 5-42. New valve screen.

2. Enter a valve ID and as much information about the valve as you want. Tap the Save button.

3. Tap the Controller icon. Perform the valve activity, then tap the **Back** button to save the activity information. See "Vitals Mobile Controller" on page 66.

4. You can also start a New Valve activity by going to the Controller first. The Controller appears with **NO VALVE SELECTED** at the bottom of the screen.

Figure 5-43. Controller screen with no valve selected.

5. After the valve operation, tap the Back button to enter valve data. Tap the Save icon to save the information.

Relinking an Activity to a Valve Record

You can relink a saved activity that is linked to the wrong valve record (ValveID). Create a new valve record if the valve is not in the Vitals database, or link the activity to an existing ValveID.

Creating a New Valve Record

Follow this procedure if the correct valve is not in the database.

1. Select the activity from the Dashboard screen, then tap the **Valve Details** button.

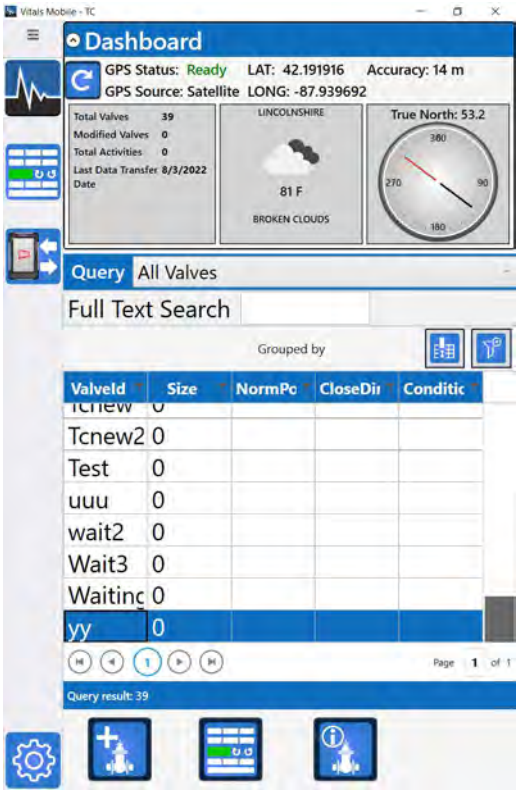


Figure 5-44. Valve listing.

2. Expand the activity to view details. Click the **Relink** button next to the **ValveID**, and then click **Yes** in the pop-up message.

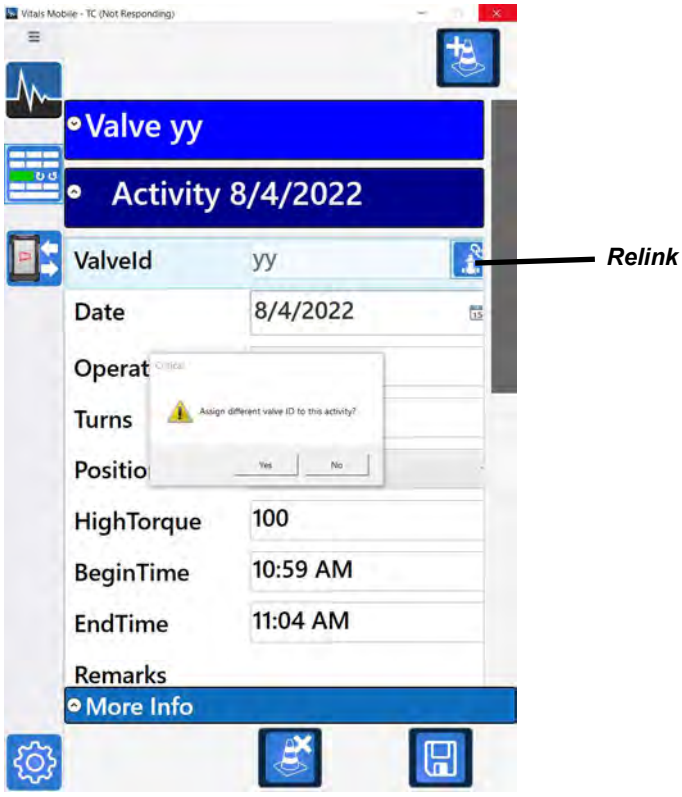


Figure 5-45.

3. Type in a **ValveID** for the new valve record. Enter additional valve information if required. Click **Save**.

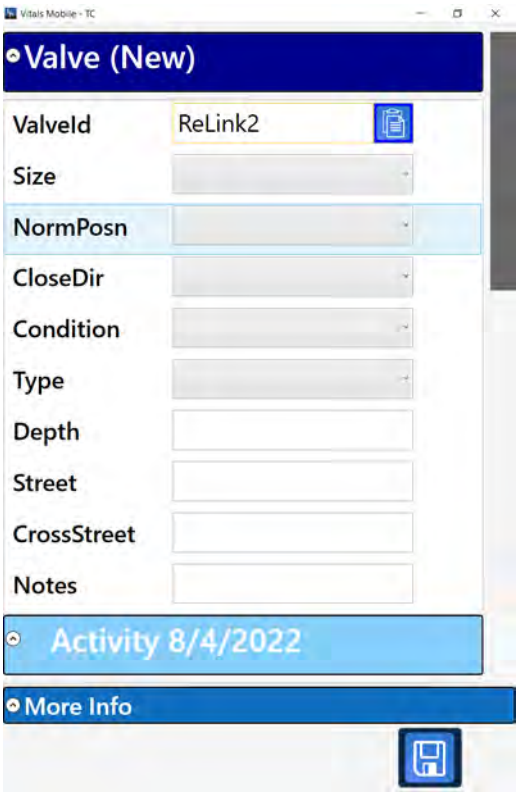


Figure 5-46. Fill in new ValveID and any other required information.

4. To verify the relink, select the updated activity or valve from the Dashboard and click the **Details** button.

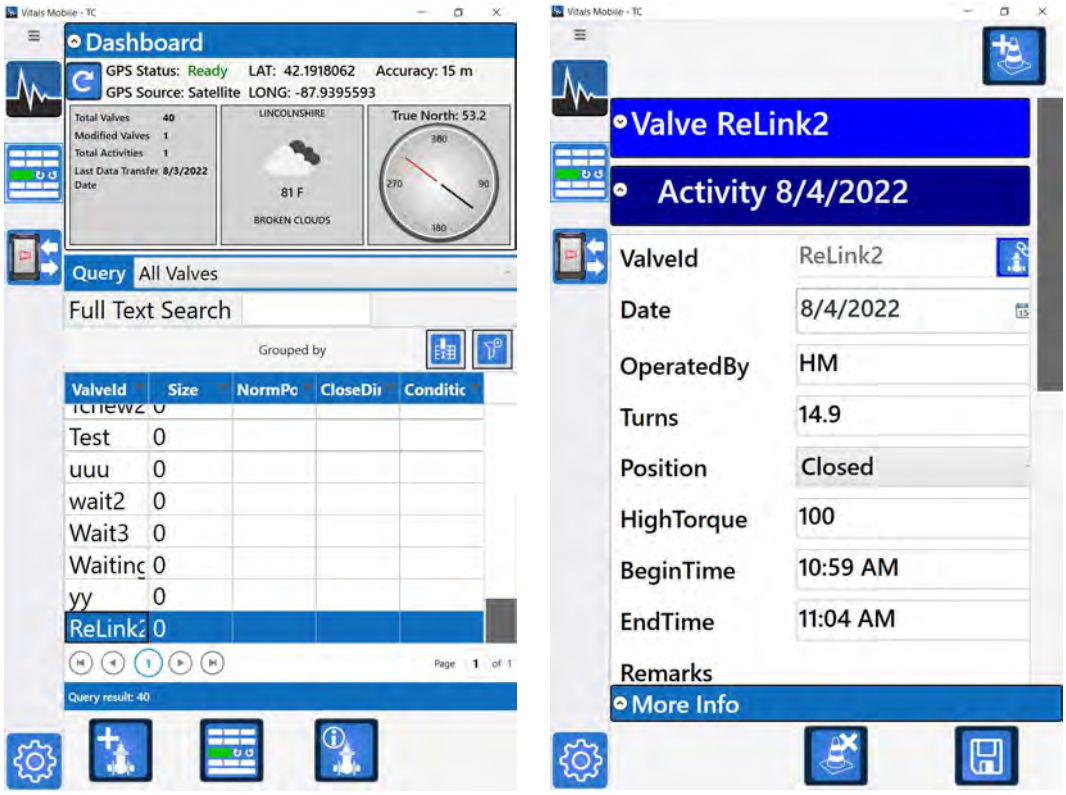


Figure 5-47. Verify activity is relinked to correct ValveID.

Relinking to an Existing Valve Record

Follow this procedure if the correct valve is already in the database, and you need to relink an activity to it.

1. From the Dashboard, open the valve record for the valve that should be linked to the activity. Tap **Valve Details**.

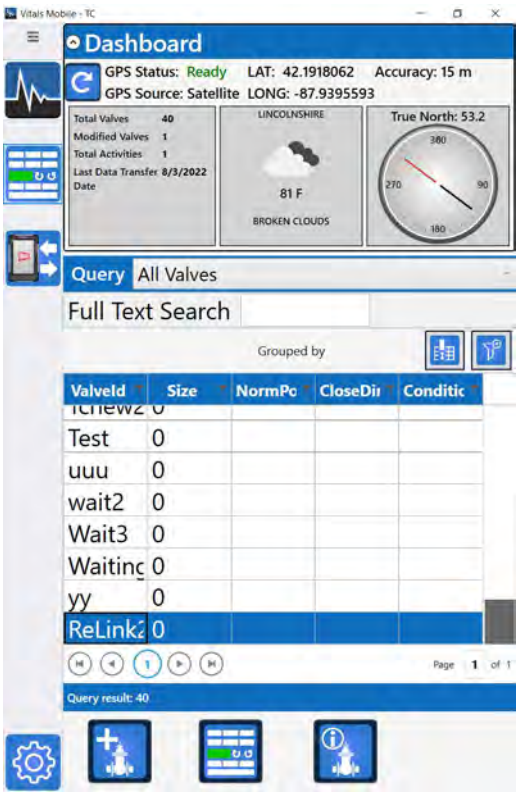


Figure 5-48. Display the valve list to select the correct valve for relinking.

2. Expand the valve record and tap the Copy button next to the **ValveID**.

Figure 5-49. Copy the ValveID.

3. Tap the **Home** button to go back to the Dashboard.

4. Select the activity from the Dashboard screen, then tap the **Valve Details** button.

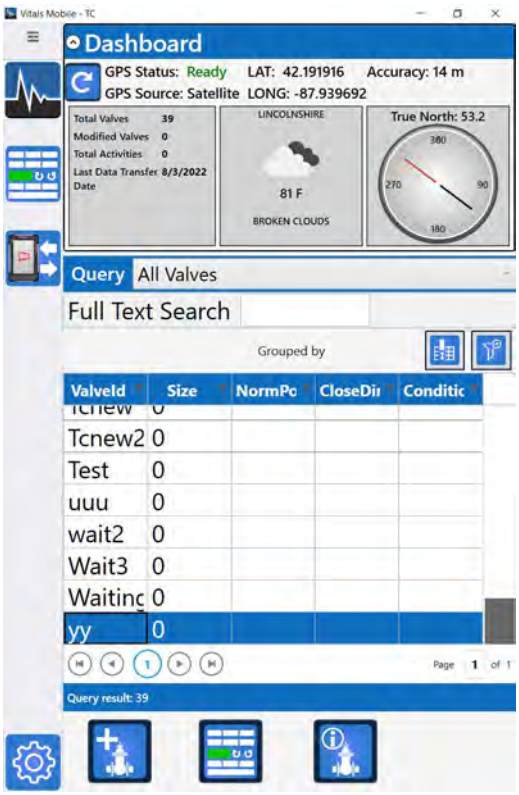


Figure 5-50. Select the valve from the valve list.

5. Expand the activity to view details. Click the **Relink** button next to the **ValveID**, and then click **Yes** in the pop-up message.

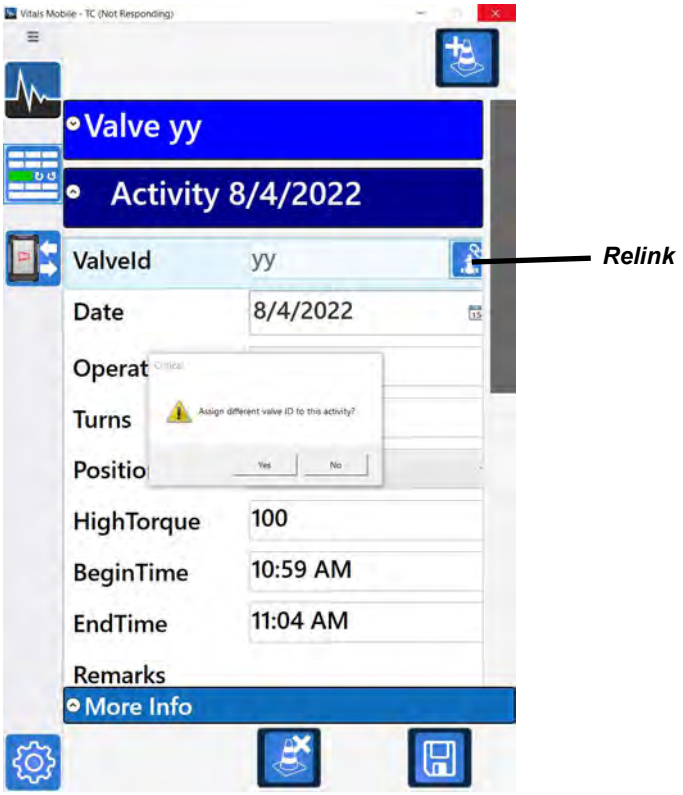


Figure 5-51. Tap the **Relink** *button.*

6. Tap the **Paste** button next to the **ValveID** field. The ValveID you copied will be entered in the field. Click **Save**.

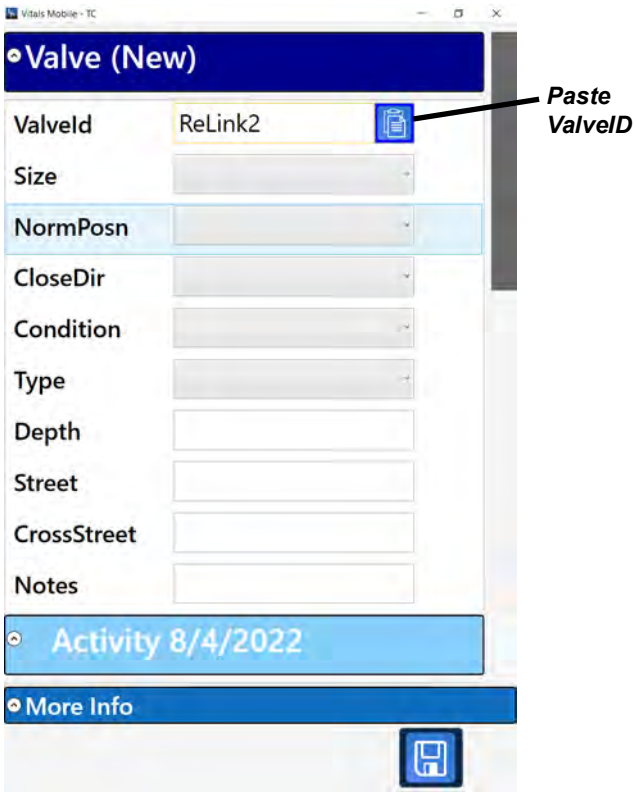


Figure 5-52. Paste in the correct ValveID and then tap **Save**.

Transducer Errors

If you get a **Transducer Error** message while operating the TM-7 or ERV-750, the transducer readings from the valve operator are out of normal range. This indicates a problem with either the transducers or cables. **Caution: Vitals uses transducer readings to calculate operating torque. Operating with incorrect readings can cause the machine to break a valve.**

Contact E.H. Wachs for service if your valve operator is generating **Transducer Error** messages.

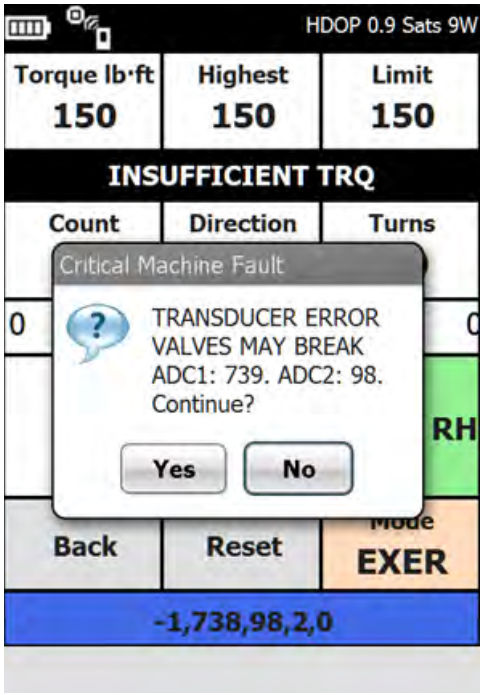


Figure 5-53. Example **Transducer Error** *screen. If you tap* **Yes**, *the valve operation will continue. If you tap* **No**, *the valve operation will stop.*

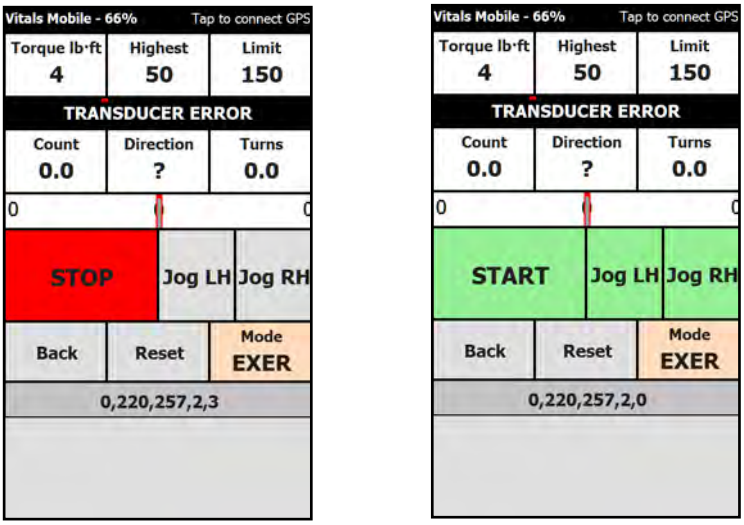


Figure 5-54. If you selected **Yes** *to continue (left), the valve operation will continue. If you selected* **No**, *the valve operation is stopped. The message* **TRANSDUCER ERROR** *is noted on the screen.*

Using the valve operator with transducer errors (by clicking **Yes**) is **not** recommended. If necessary, you can still operate it, but torque control will not be reliable. Use caution to avoid damaging the valve.

VITALS MOBILE DIAGNOSTICS

Use the Vitals Mobile Diagnostics program to identify problems with the valve operator or GPS function.

Vitals Diagnostics operates the valve operator; use the same safety precautions and procedures that you use when performing valve operations.

Do not use Vitals Diagnostics with the valve operator installed on a valve. Run Diagnostics only in the following circumstances:

- the valve operator is powered on and in operating position;
- the valve operator is **not** engaged with a valve;
- all safe operating procedures are in place. See the User Manual for your valve operator.

Before using the Diagnostics program, make sure you are familiar with the safety instructions for your valve operator. Refer to the valve operator user manual.

1. Tap the Settings icon on the Home screen to display the Settings screen.
2. Under the **Connection** tab, make sure the valve operator you are testing is active under **MY CONNECTION**.
3. Tap the **Diagnostics** tab on the Settings screen. The Diagnostics **WARNING** screen appears.

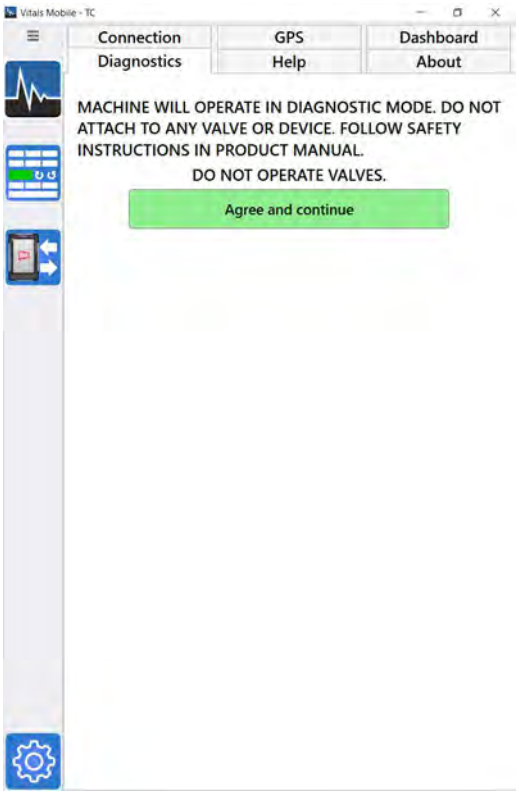


Figure 5-55. Vitals Diagnostic startup screen.

4. Do not use diagnostics with the valve operator mounted on a valve. Tap **Agree and Continue**.

5. The **SELECT TEST** screen appears.

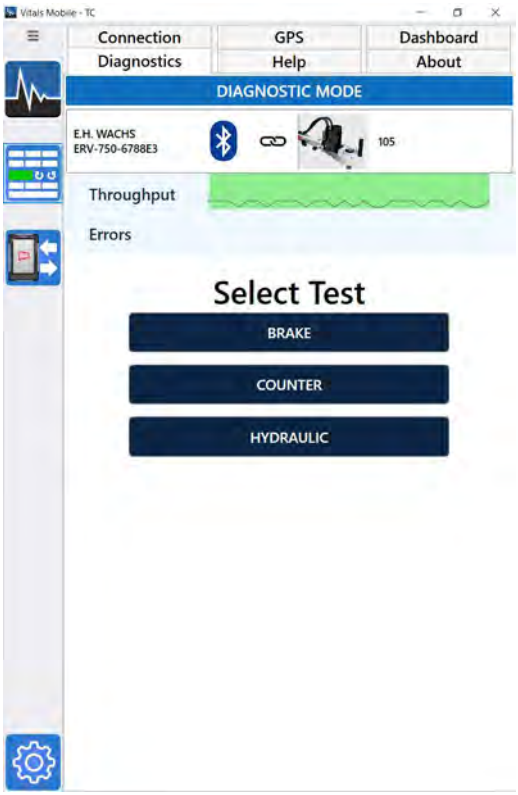


Figure 5-56. Vitals Diagnostics Select Test screen.

- The **BRAKE** test checks locking and releasing the valve operator brake.
- The **COUNTER** test checks the operation of the rotation counter.
- The **HYDRAULICS** test checks operation of the hydraulic system and the pressure transducers.

- **NOTE**: The **Errors** line below the **Throughput** graph displays the status of the data connection. Red bars in the graph indicate data connection failures.
  - An occasional red error bar is normal, but consistent or multiple error bars indicate a connection problem:

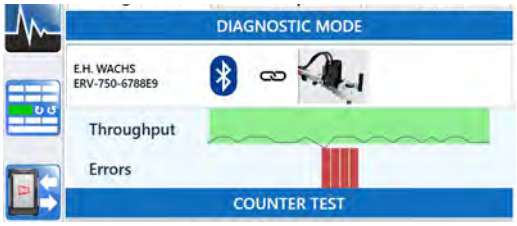


Figure 5-57. Multiple red error bars indicate a connection problem.

NOTE

Vitals Diagnostics is designed to thoroughly check the data connection between the control board and the controller. Noise, incorrect data packets, etc. will prevent a connection.

To check for wiring/connector issues, use the Diagnostic Control Cable (for the TC controller, p/n 79-302-40). See “Using the Diagnostics Cable” on page 93.

(Vitals Mobile is not particular in establishing a machine connection. If Vitals Mobile connects, but Vitals Diagnostics does not, it indicates a connection issue.)

- Make sure you are using the controller close enough to the valve operator for a good Bluetooth connection, or connect the controller using the optional diagnostics cable.

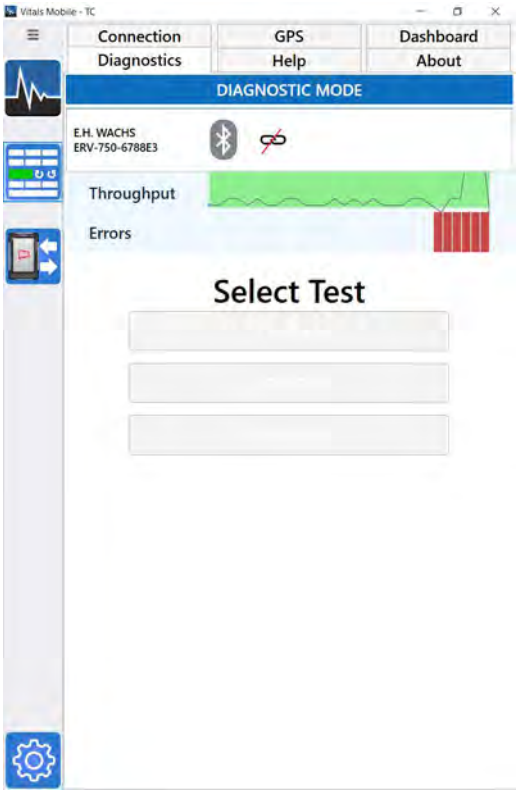


Figure 5-58. The red bars below the **Throughput** *graph indicate data connection errors. If connecting with Bluetooth, try moving closer to the valve operator. You can also use the optional Diagnostics Cable.*

6. Tap the button for the test you want to run. Refer to the following sections for instructions for each test.

7. After you have run the desired test(s), tap another Settings tab or program icon (Home, Controller, etc.) to continue.

Brake Test

1. When the brake test starts, the brake on the valve operator is locked. Tap and hold the green **PUSH** button.

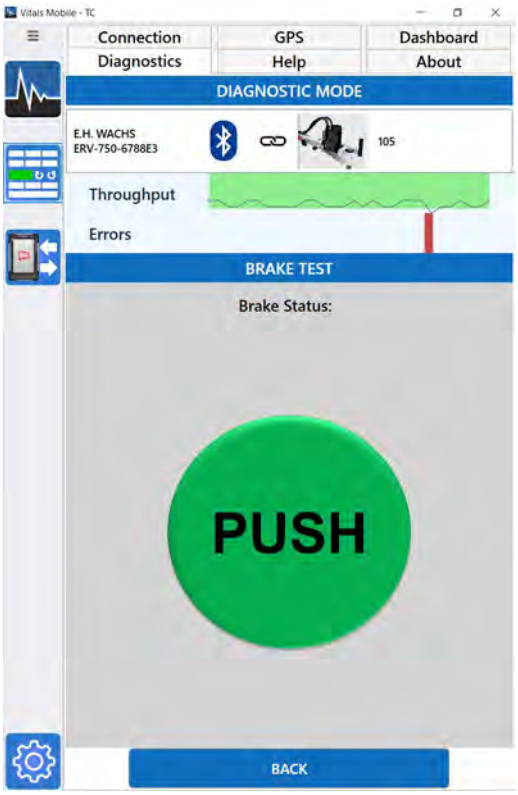


Figure 5-59. Test the brake by pressing and holding the PUSH button. The brake is released while you hold the button.

2. The button turns yellow and the status changes to **RELEASED**. Take your finger off the button to lock the brake again.

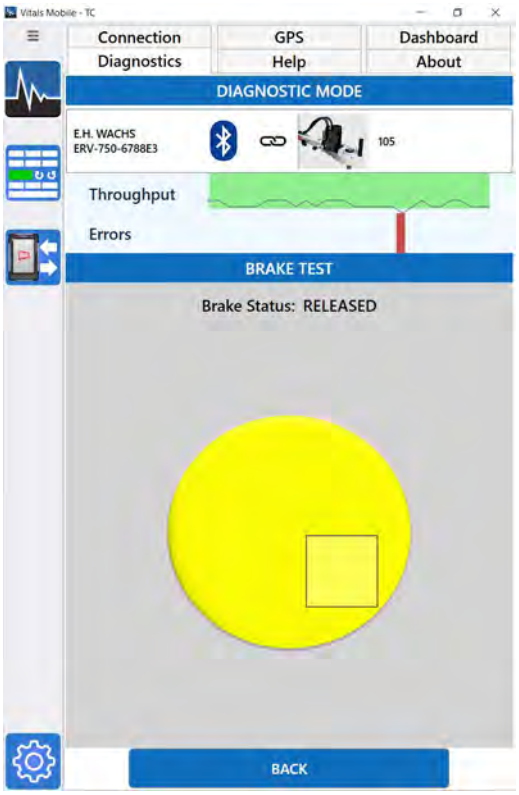


Figure 5-60. The button is yellow while the brake is released.

3. To exit the brake test, tap the **Back** button.

Counter Test

1. The direction button reads either **RH** (right-hand) or **LH** (left-hand). Tap the direction button to change the test direction.

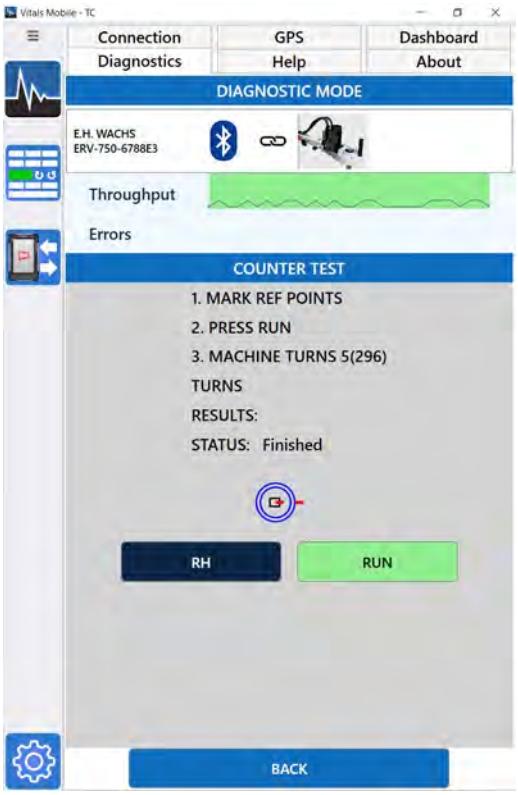


Figure 5-61. Start Counter Test screen.

2. Tap the **RUN** button to start the test. The test for the selected direction starts. The button changes to read **STOP**.

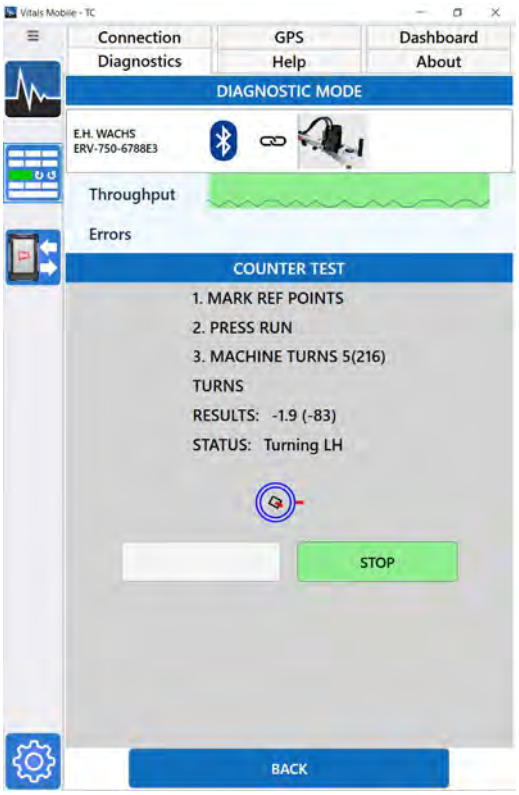


Figure 5-62. Counter Test running screen.

3. The status changes as the test is conducted. When the message at the bottom reads **Finished**, the test is complete.

4. If you want to test in the opposite direction, tap the direction button (**RH**/**LH**) to change it and tap **RUN**.

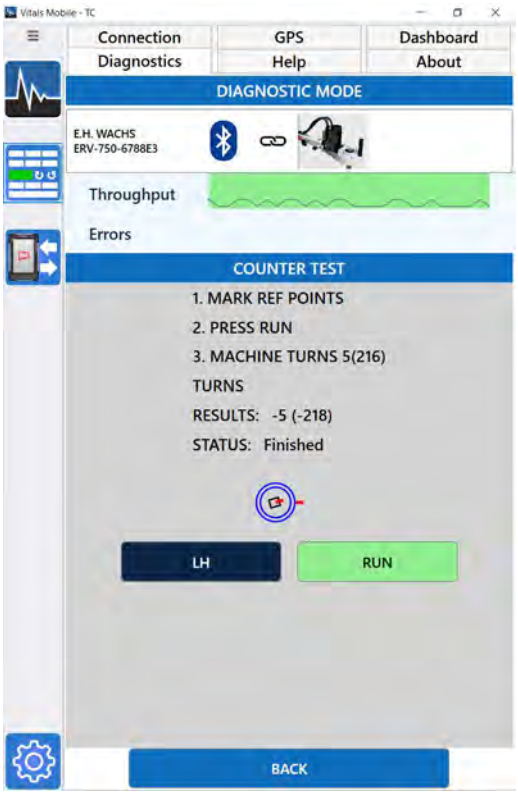


Figure 5-63. Counter Test finished screen.

5. To exit the counter test, tap the **Back** button.

Hydraulics Test

1. Tap to select the **FLOW** (**MIN** or **MAX**), **PRESSURE** (**MIN** or **MAX**), and **DIRECTION** (**LH** or **RH**).

NOTE

When you start the Hydraulics Test, an error message appears if there is a transducer error. If you see this error message, follow the instructions in “Transducer Zero Torque Error” at the end of this section before performing the Hydraulics Test.

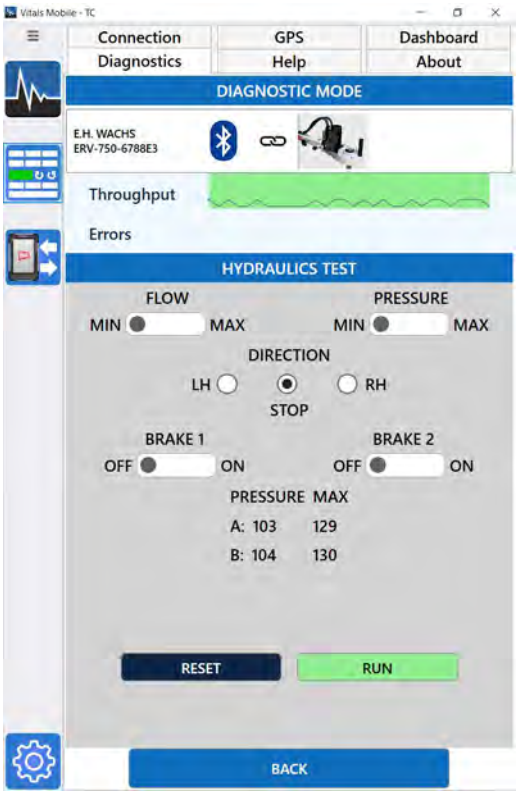


Figure 5-64. Hydraulics Test screen.

2. Tap the **RUN** button to start the test. The test for the selected parameters begins, and the button changes to read **STOP**.

Figure 5-65. Hydraulics Test running screen.

3. The status changes as the test is conducted. Press the **STOP** button to end the test.

4. If desired, you can change the test parameters and run additional tests.

5. To exit the hydraulics test, tap the **Back** button.

Transducer Zero Torque Error

A transducer error may cause a **Transducer Zero Torque** error message when you start the Hydraulics Test. To correct the error, adjust the transducer potentiometer in the valve operator control box.

1. Remove the 4 screws in the control box cover, and take off the cover to access the control board.

NOTE

Do **NOT** run the Hydraulics Test while performing this adjustment. The valve operator must be in the stopped condition.

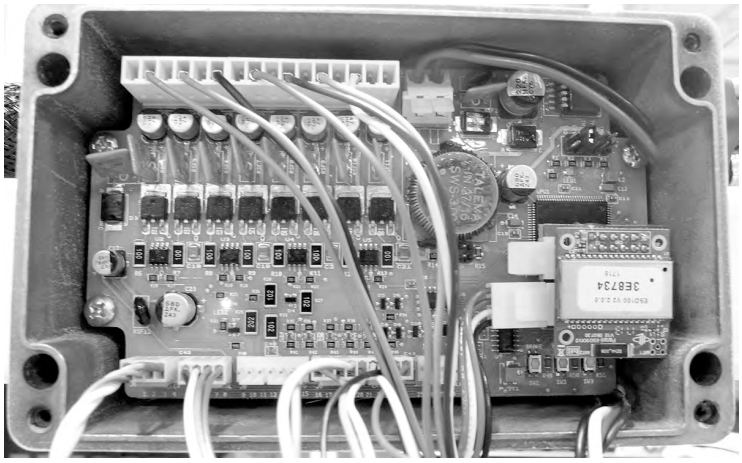


Figure 5-66. Open the control box to adjust the transducer potentiometer.

2. Locate the potentiometer on the control board. You will need a jeweler's screwdriver to adjust it.

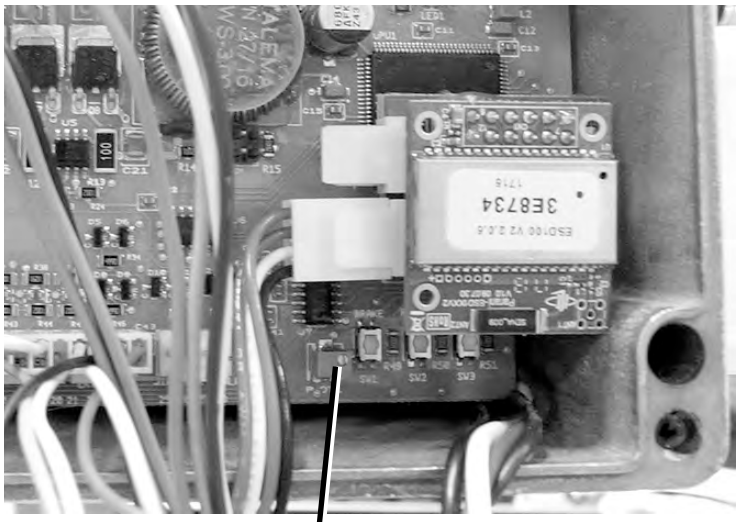


Figure 5-67. Locate the adjustment screw on the potentiometer.

3. Turn the adjustment screw on the potentiometer while watching the value for **A** on the Vitals Diagnostics Hydraulics Test screen. Adjust the **A** value until **A** and **B** are equal.

IMPORTANT: Do **NOT** run the Hydraulics Test while performing this adjustment. The valve operator must be in the stopped condition.

NOTE

The actual values for **A** and **B** may vary, depending on whether hydraulic power is on. It doesn't matter what the values are when adjusting the potentiometer—only that you set them to be equal.

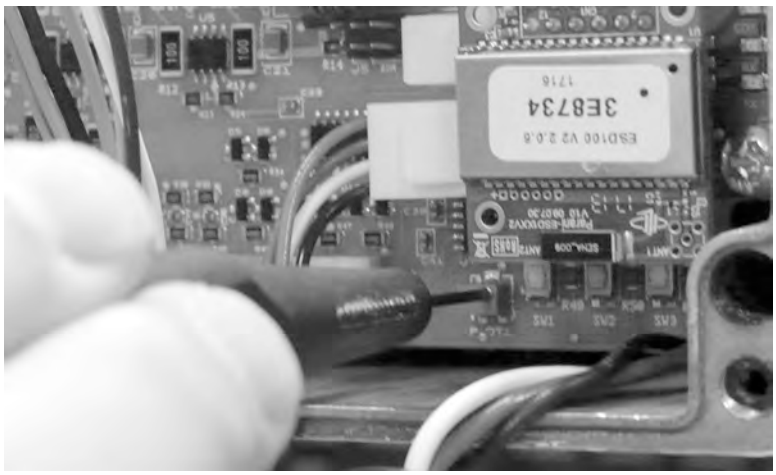


Figure 5-68. Turn the adjustment screw until the **A** *and* **B** *readings on the Hydraulics Test screen are equal.*

4. When the **A** and **B** readings are equal, replace the cover on the control box.

5. Continue with the Hydraulics Test by tapping the **RUN** button.

Using the Diagnostics Cable

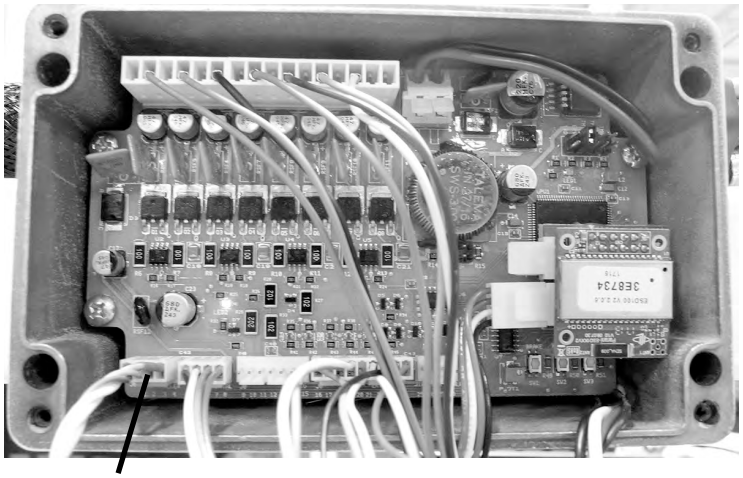
To isolate possible wiring or connection issues, you can perform diagnostics using the optional Diagnostics Cable (part no. 79-302-40 for the TC controller).

1. Connect the USB end of the diagnostics cable to the port on the TC controller.

2. Remove the cover from the control box on the valve operator.

3. Remove the internal cable connection from the bottom left of the circuit board, as shown in Figure 5-69.

4. Plug the diagnostics cable into the circuit board where you removed the internal cable.



Remove the internal cable from the circuit board, and plug in the diagnostics cable

Figure 5-69. Plug the diagnostics cable directly into the circuit board in the valve operator control box.

5. Perform the diagnostics as described earlier in this section.

6. When finished, reconnect the internal cable and replace the control box cover.

Chapter 6
Using Vitals Desktop

Vitals Desktop 3.8.7 provides a database for managing your valve records and tools for analyzing valve exercising data. You can create multiple database files, and can create valve records manually or import them from the Vitals Mobile device. Selected valve records can be exported to the controller to have it ready for valve operations in the field.

Vitals Desktop runs on a Windows-based PC. It is compatible with Windows 11, Windows 10, Windows 8, and Windows 7.

(Vitals Desktop 3.8.7 should be compatible with Windows XP. However, this has not been tested and is not supported. Compatibility is not guaranteed by E.H. Wachs.)

Instructions for installing Vitals Desktop are in Chapter 4.

In This Chapter

INITIAL START-UP

When you start Vitals Desktop for the first time, you will be prompted to **Select a Default Language**.

NOTE

You will also be prompted to **Select a Default Language** if a default language file is not present.

Figure 6-1. Select Default Language

The language you select will be automatically set on the handheld controller when you set it up with Vitals Desktop.

When you install Vitals for the first time on a computer, you will be asked to create a new database or locate an existing database the first time you start the program. (See "Database File Location" below for creating or locating a Vitals database file.)

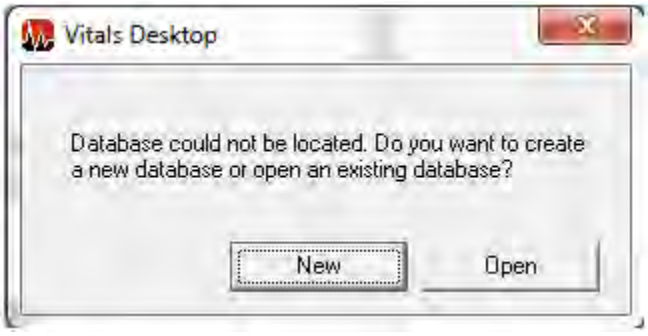


Figure 6-2. When you install Vitals for the first time and start the program, it will prompt you to create or find a database.

Database File Location

By default, Vitals Desktop creates its database file in the program's directory (**Program Files/Vitals Desktop/db/**). If the database is deleted, or moved to a different location,

Vitals Desktop will display the following dialog when launched.

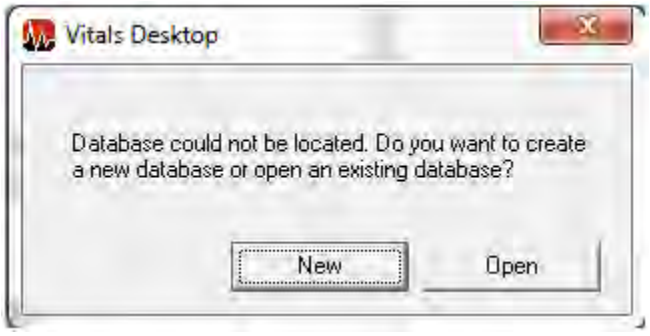


Figure 6-3. Vitals Desktop displays this notification if the database file is missing.

- To create a new database, click **New**. The Save As dialog appears. Name the database, select a location for it, and click **Save**.

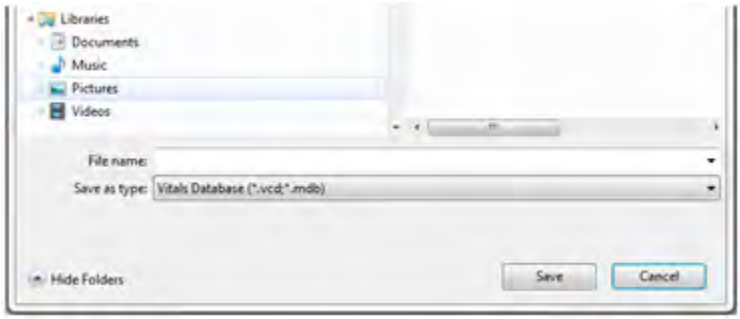


Figure 6-4. After clicking the **New** *button, name and save the new Vitals database.*

- To locate the existing database, click **Open**. The Open File dialog appears; browse to the location of the database file, click on the file to select it, and click **Open**.

NOTE

The standard location for the Vitals database in the program's folder (**Program Files/ Vitals Desktop/db/**). However, you can save the file in any directory or on a network server.

NOTE

To find a database file, you can search your computer drive for any file with a ".vcd" file extension.

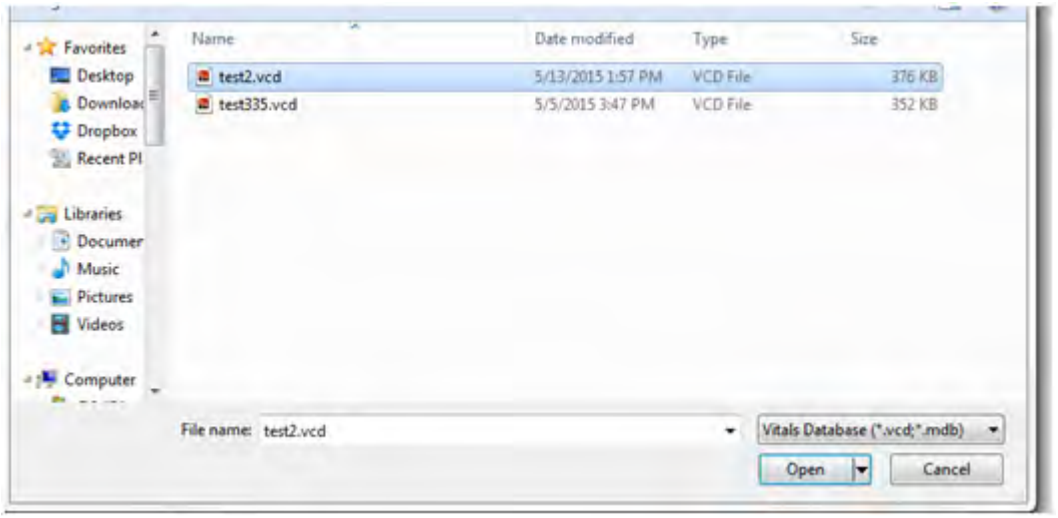


Figure 6-5. After clicking the **Open** *button, browse to find the existing database, select the file, and click* **Open**.

SCREEN REFERENCE

This section describes the functions available on the Vitals Desktop 3.8.7 screens.

Main Screen

The Main Screen is displayed when Vitals Desktop 3.8.7 is first opened.

Figure 6-6. Vitals Desktop Main Screen

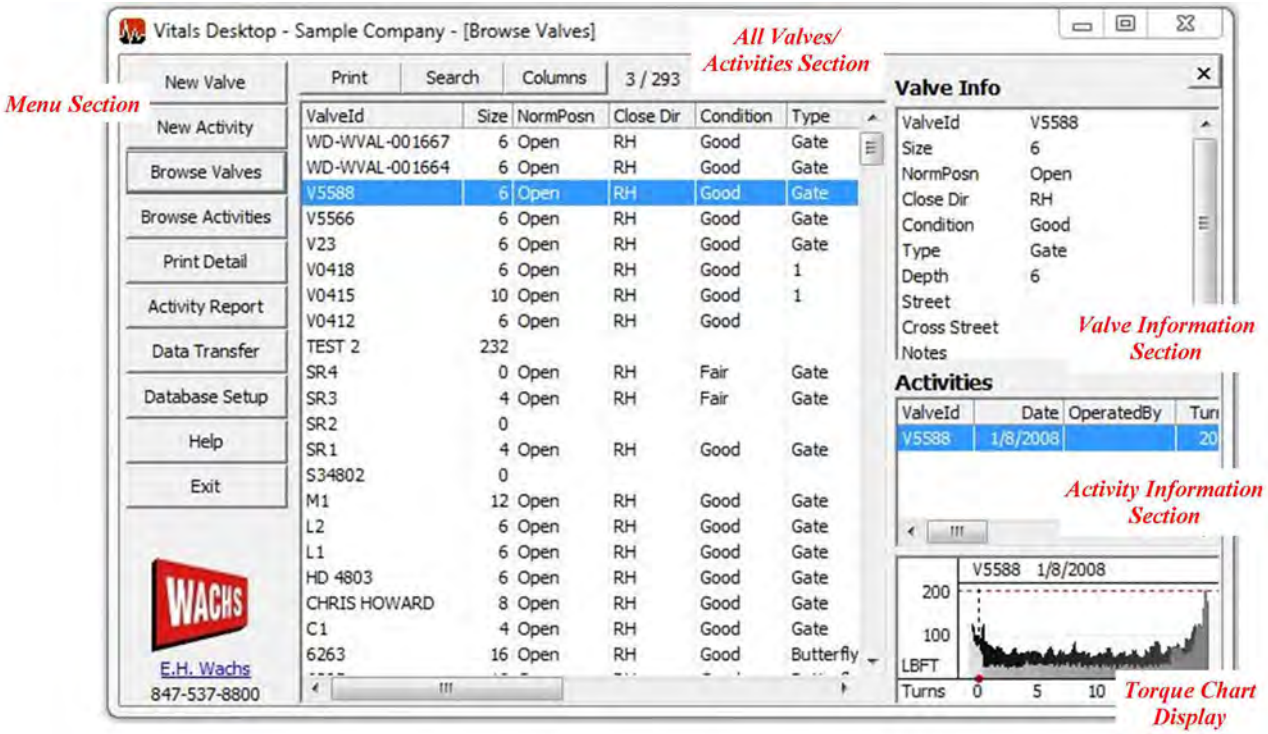


Figure 6-7. Vitals Desktop Screen Sections

- The Menu Section displays menu buttons for all application menu actions.
  - **New Valve** opens the New Valve window to create a valve record in the database.
  - **Browse Valves** lets you search for, review, and edit valve records.
  - **Print Detail** allows you to print the currently displayed data to the screen, a printer, or PDF.
  - **New Activity** opens the New Activity window, where you can manually enter data for a new activity.
  - Browse Activities lets you search for, review, and edit activity records.
  - **Activity Report** opens the Activity Report window, where you can search by date range.
  - **Data Transfer** starts a data transfer between Vitals Desktop and Vitals Mobile. You can transfer data by using a direct cable connection (to the HC-100, or older "Yellow Box" and "Silver Box" valve operator contollers); by using a USB flash drive; or by opening another database file on the Vitals Desktop computer.
  - **Settings** displays Settings menu commands. See "Settings" on page 123.
  - **Help** displays Help menu commands. See "Help Options" on page 125.
  - **Exit** quits the Vitals program.
  - **Update** checks your version of Vitals and lets you know if an updated version is available.
- The All Valves/Activities Section displays all valves or activities present in the currently open database, depending on whether you are browsing valves or activities.
- The Valve Information Section displays the valve records matching the current search/display criteria.
- The Activity Information Section displays the activity records matching the current search/display criteria. If you click on a valve record, the activities for that valve are displayed here.
- The Torque Chart Display shows the torque chart for the currently selected activity from the Activity Information section.

CREATING AND EDITING VALVES AND ACTIVITIES

If you need details about the structure of the Vitals valve database (for instance, for importing/exporting data to or from an external database), see Appendix B, "Vitals Database Reference".

How Vitals Uses GPS Location Information

Vitals 3.8.7 includes **Latitude** and **Longitude** in the valve record. You must enter these values to the valve record manually, using your best available GPS data for the valve. (You can also add them when importing valve data from an external database.)

The latitude and longitude stored in the **valve record** are considered the reference, or "correct", values. Vitals will look first to the valve record for GPS information about a valve (such as when doing a GPS search with Vitals Mobile). If there is no GPS information in the valve record, Vitals will use data from activity records for the valve.

Activity records have latitude and longitude values that are logged during the activity, using GPS measurements from the controller. These values may vary for a given valve, depending on the quality of the GPS readings during the activity, and may not be accurate. Note that Vitals Mobile only stores latitude and longitude data in **activity records**; it does not change the latitude and longitude in the **valve record**.

When Vitals needs location data for a valve that does not have latitude and longitude in the valve record, it reads from activity records for that valve and averages the available data.

Valve Record

Double click on any valve record in the Valves section to bring up the valve record window.

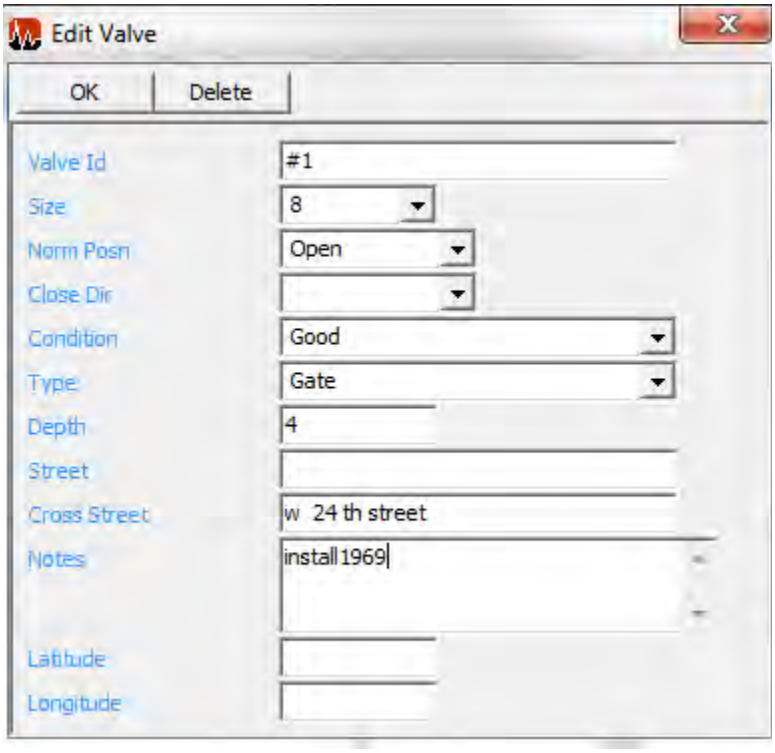


Figure 6-8. Create/Edit Valve

- You can edit the information in the valve record, and click the **OK** button to save changes.
- Enter the **Latitude** and **Longitude** for the valve. The values in the valve record must be entered manually (or imported during a database import); use your most accurate GPS data for the valve.
- Click the **Delete** button to delete the valve record. You will be prompted to confirm that you want to delete it.
- You can also access this form and create a new valve record by clicking the **New Valve** button in the Menu Section on the left-hand side of Vitals Desktop.

NOTE

Latitude and Longitude values are not required, but are recommended for GPS searches.

Activity Record

Double click on any activity in the Activities section to display the activity record window.

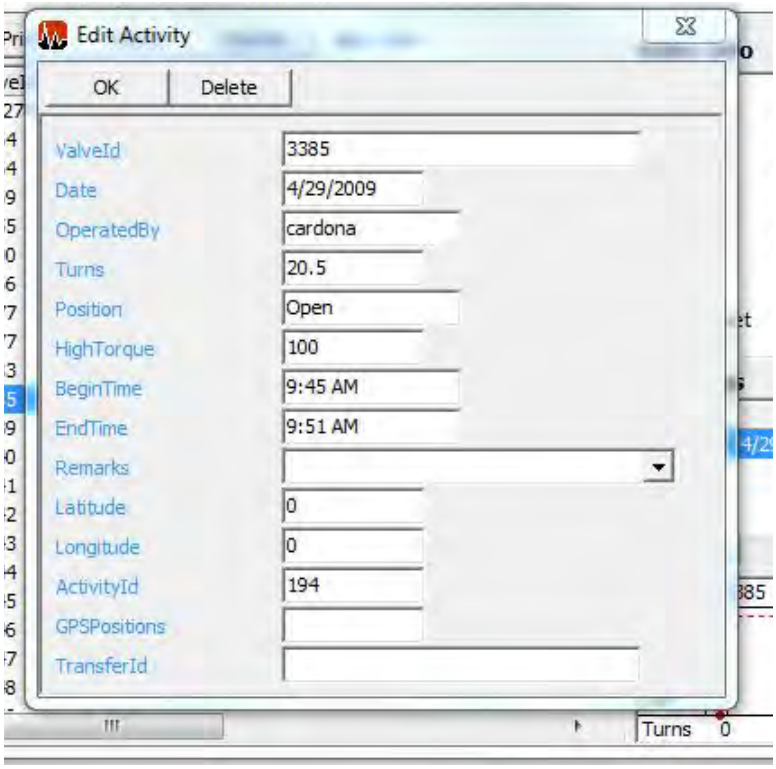


Figure 6-9. Create/Edit Activity

- You can edit the information in the activity record, and click the **OK** button to save changes.
- Click the **Delete** button to delete the activity record. You will be prompted to confirm that you want to delete it.
- You can also access this form and create a new activity record by clicking the **New Activity** button in the Menu Section on the left-hand side of Vitals Desktop. (When creating a new activity for a specified valve ID, a valve with that ID must exist in the database.)

Remarks List Window

The Select Remarks window displays the remarks you have defined and allows you to create new remarks.

NOTE

When the user selects remarks on the handheld controller during an activity, the selected remarks are copied into the activity record.

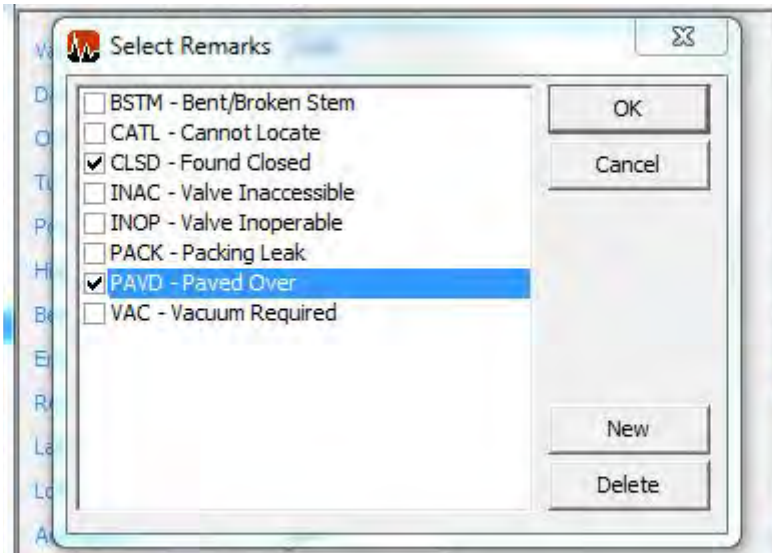


Figure 6-10. Select/Create Remarks

- The Select Remarks window is accessible by choosing the **Remarks** dropdown section in a New/Edit Activity window. (You can also access this window by clicking **Remarks List** in the Database Setup window.)
- Click **OK** or **Cancel** to close the Select Remarks window.
- Click **New** to enter a new remark.
- Click **Delete** to remove the highlighted remark from the list. You will be prompted to confirm that you want to delete the remark.
- The four-letter remark ID displays the ID of the remark. You cannot edit an existing remark ID.
- The remark description displays the description of the remark. The description can be up to 20 characters.

ANALYZING VALVE DATA

Displaying Valve/Activity Records

1. To display all the valve or activity records in the currently open database, click either the **Browse Valves** or **Browse Activities** button in the Menu Section on the left-hand side of Vitals Desktop.

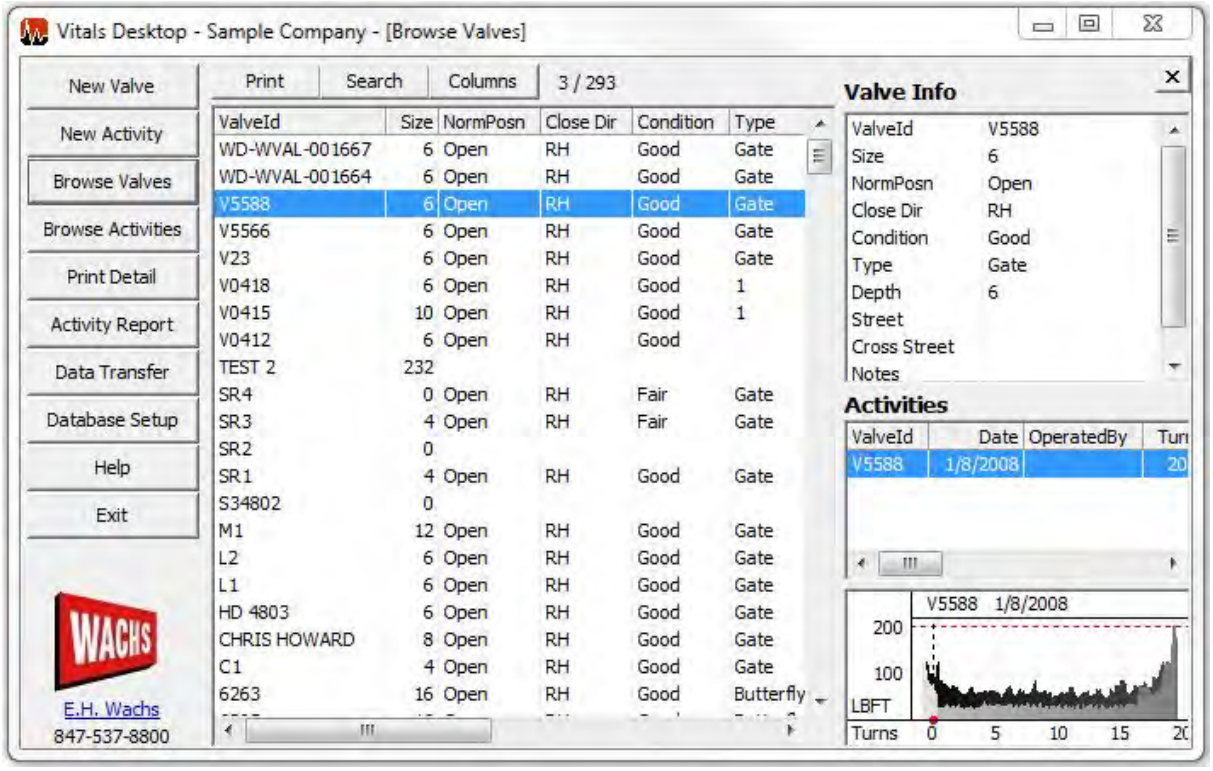


Figure 6-11. Browse Valves

- To display the torque chart for an activity, click on the activity in the Activities section of the screen. The torque chart appears below.
- To view a larger version of a torque chart animation in its own window, double-click the torque chart graphic in the Torque Chart display section. To animate the torque chart, right-click the graphic and select **Animate**.

2. To search for valves/activities matching specific criteria, click the **Search** button in the All Valves/Activities section.

Figure 6-12. Valve Record Search

3. To select which fields appear on the valve/activity record screen, click the **Columns** button to bring up the Select Report Fields screen.

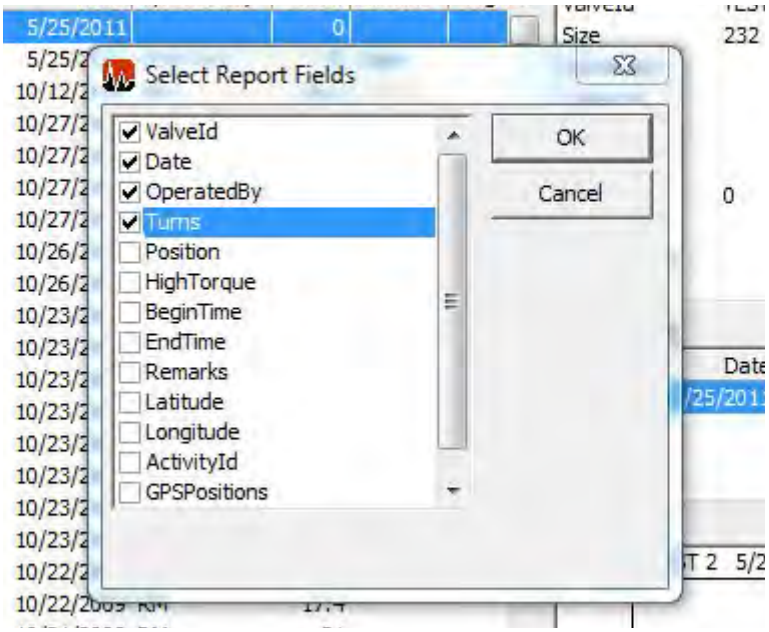


Figure 6-13. Select Report Fields

PRINTING

Print Detail

1. When you click **Print Detail**, the **Print Detail** dialog appears.

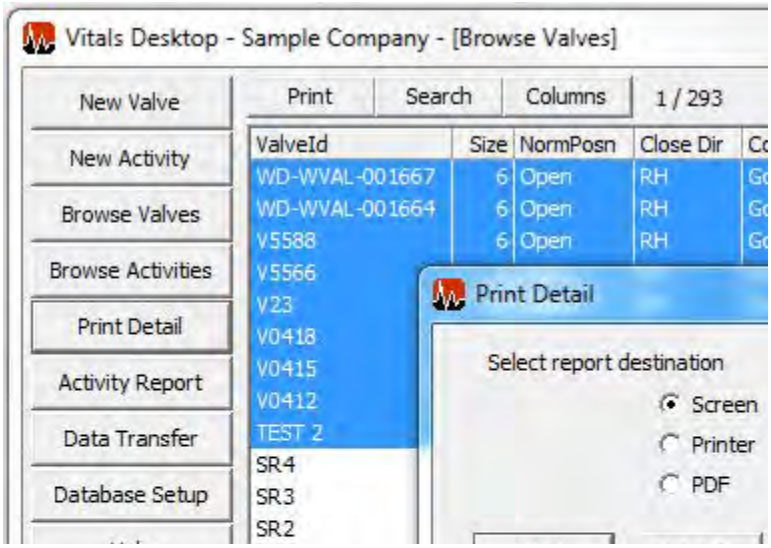


Figure 6-14. Print Detail

- Click a radio button titled **Screen**, **Printer**, or **PDF** to choose a location to print.
- Click **OK** to confirm printing.

VITALS™ **gg - Valve Detail Report** **5/21/2015**

Page 1 of 1

Valve#CAR111 Detail

ValveId	CAR111
Size	0
NormPosn	
Close Dir	
Condition	
Type	
Depth	0
Street	
CrossStreet	
Notes	
Latitude	
Longitude	

Activity #1 of 3 Activities

ValveId	Date	OperatedBy	Turns	Position	HighTorque
CAR111	4/20/2015		0		0

Begin Time	End Time	Remarks	Latitude	Longitude	ActivityId
8:48 AM	8:49 AM		42.425368	-88.632407	38

Activity #2 of 3 Activities

ValveId	Date	OperatedBy	Turns	Position	HighTorque
CAR111	4/20/2015		0		0

Begin Time	End Time	Remarks	Latitude	Longitude	ActivityId
8:45 AM	8:48 AM		42.425354	-88.632419	37

Activity #3 of 3 Activities

ValveId	Date	OperatedBy	Turns	Position	HighTorque
CAR111	4/17/2015		0		0

Begin Time	End Time	Remarks	Latitude	Longitude	ActivityId
10:27 AM	10:27 AM		42.425376	-88.63241	29

Figure 6-15. Sample Print Detail

Activity Report

1. When you click **Activity Report**, the **Activity Report** dialog appears.

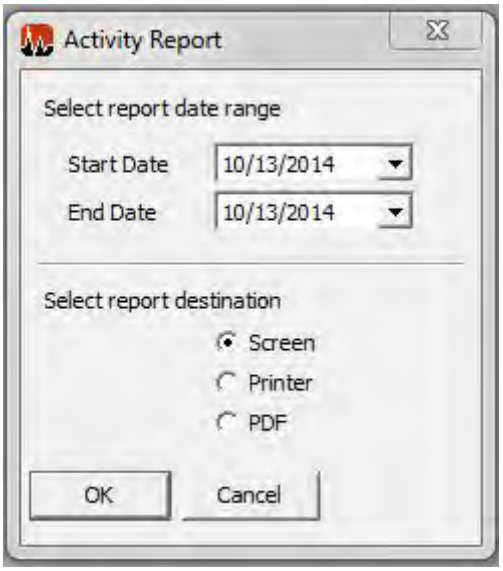


Figure 6-16. Activity Report

- Click the dropdown boxes next to Start Date and End Date to choose a date range of valves or activities for which you would like to produce a report.
- Click a radio button titled Screen, Printer, or PDF to choose a location to print.
- Click OK to confirm printing.

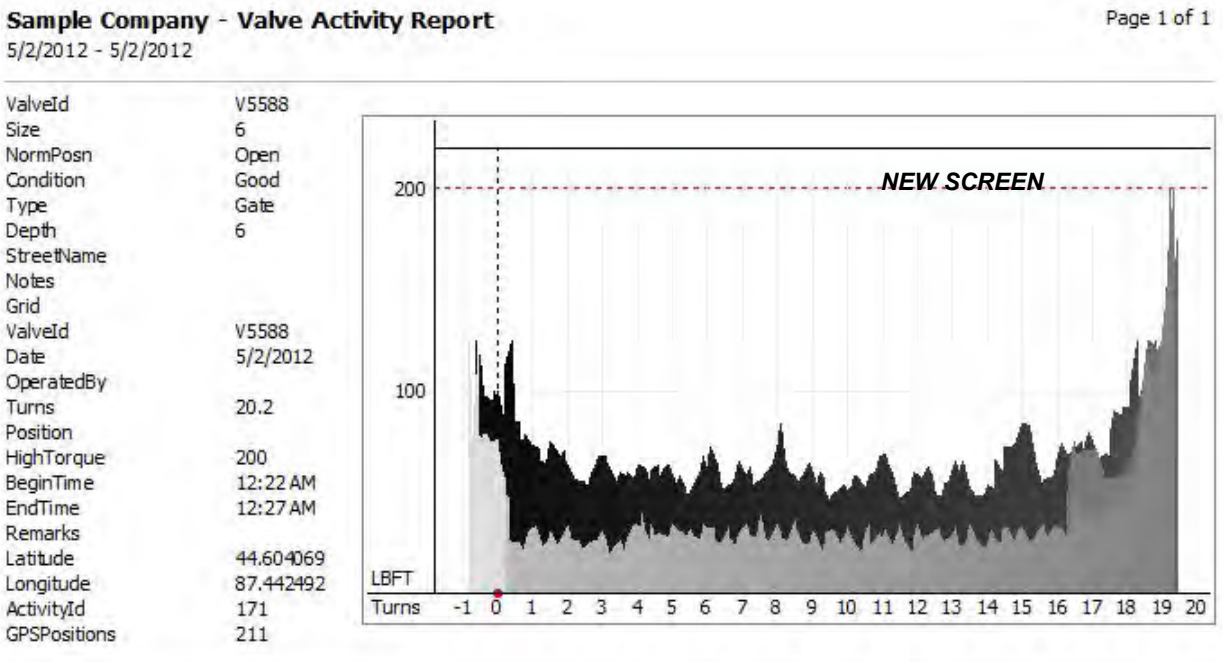


Figure 6-17. Sample Activity Report

TRANSFERRING DATA BETWEEN VITALS DESKTOP AND VITALS MOBILE

It is very important to understand where your master Vitals Desktop database is stored. It is highly recommended that the database reside on a network drive or other location accessible by all Vitals Desktop users. You should back up the Vitals Database periodically.

This section describes data transfer with Vitals Mobile-TC (TC-100/110 controllers). For data transfer with an older controller, refer to the electronic manual provided with the controller.

- TC-100 Data Transfer
- HC-100 Data Transfer
- Other Controllers Data Transfer.

For the TC-100/110 controller, there are two data transfer methods:

- Flash Transfer—Uses a USB flash drive that you share between the devices.
- Local Transfer—If you have the optional TC Office Dock and are running Vitals Desktop 3.8 on the TC controller, you can transfer data directly using Local Transfer.

You must be running Vitals Desktop version 3.8 (or later) to do data transfers with the TC controller. Update your Vitals Desktop version before transferring data.

TC-100/110 Flash Transfer

NOTE: Vitals Desktop 8.3 or higher is required for flash transfer.

Use a USB flash drive to transfer data between Vitals Desktop and Vitals Mobile-TC. The flash transfer process will automatically synchronize all valve and activity data between Desktop and Mobile.

These are the steps of the transfer process:

- Plug a USB flash drive into the TC controller, and transfer the data to the flash drive.
- Plug the flash drive into the Vitals Desktop computer and transfer the data into Vitals Desktop.
- Export the updated Vitals database back to the flash drive.
- Plug the flash drive back into the Vitals controller and transfer the data to Vitals Mobile.

NOTE: It is possible to transfer data from multiple controllers to a single flash drive before importing the records into the desktop database. However, you will have to perform the import process individually for each handheld transfer. (The transfers will appear as separate folders on the import screen, shown in Figure 6-23.)

1. Tap the Flash Transfer icon in the Vitals Mobile-TC menu. The **Flash Transfer** screen appears.

NOTE

The USB flash drive must be formatted with the FAT32 file system. The drive must be compatible with the USB 1.1 standard. 8 GB capacity or less is recommended; larger drives take more time to load in the OS.
If the handheld controller won't read your USB flash drive, try another model with the correct specifications.

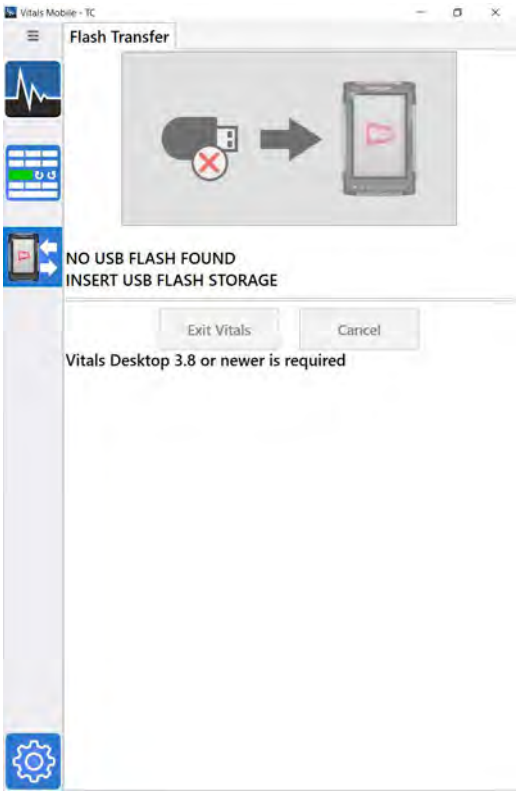


Figure 6-18. Tap the Flash Transfer icon to bring up the transfer screen.

2. Insert a USB flash drive into the port on the bottom of the TC controller. The Start button appears on the screen.

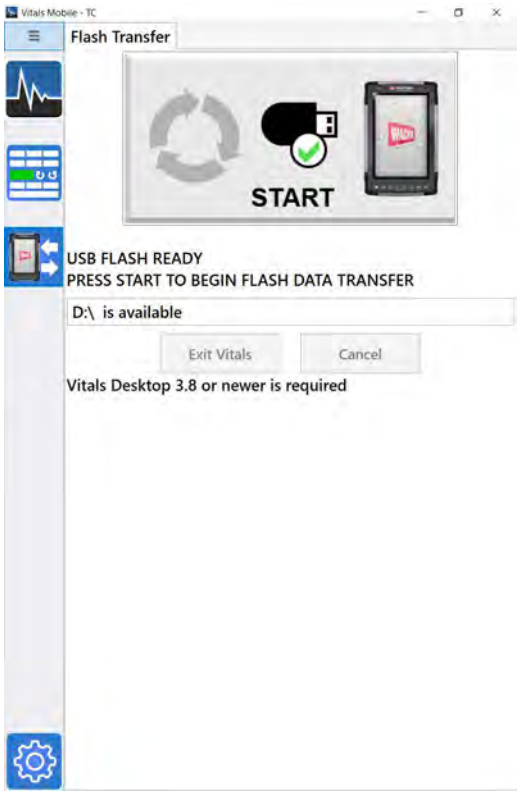


Figure 6-19. Tap Start when you see the USB Flash Ready message.

3. Tap the **Start** button. The screen will say **Copying**, then the **Files Copied** message appears.

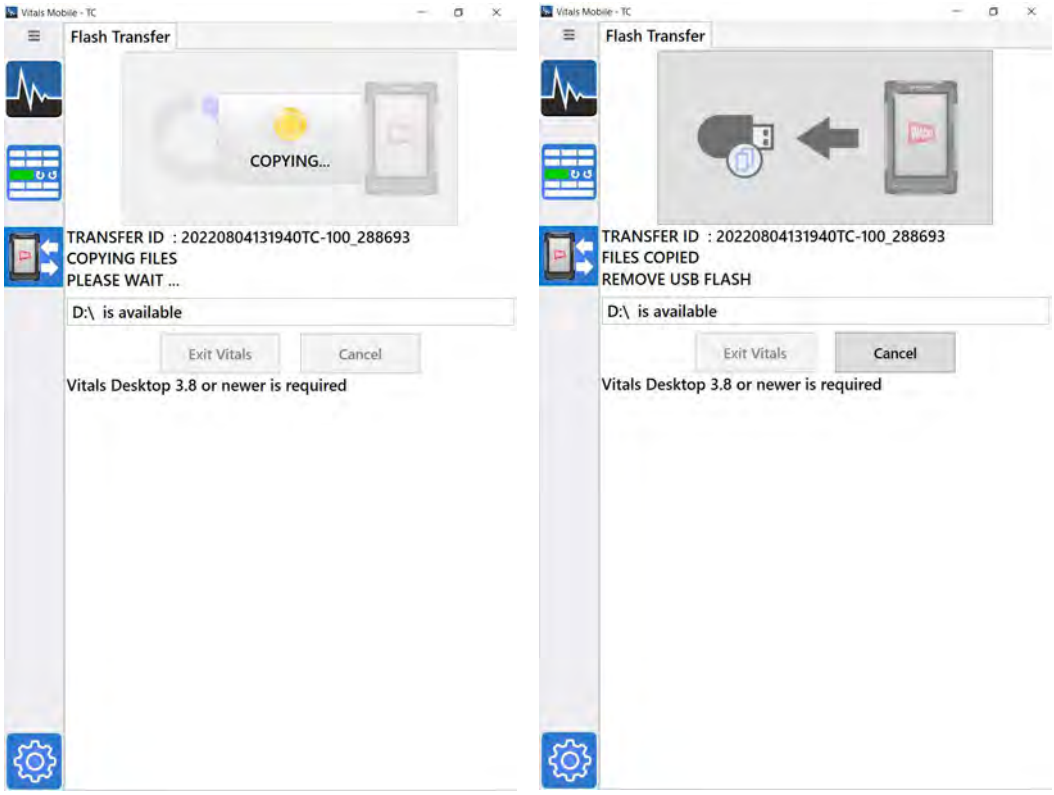


Figure 6-20. Data transfer in progress.

4. Remove the flash drive. A **Pending Desktop Data Transfer** message appears. (You will transfer the updated database back to the controller at the end of this procedure.)

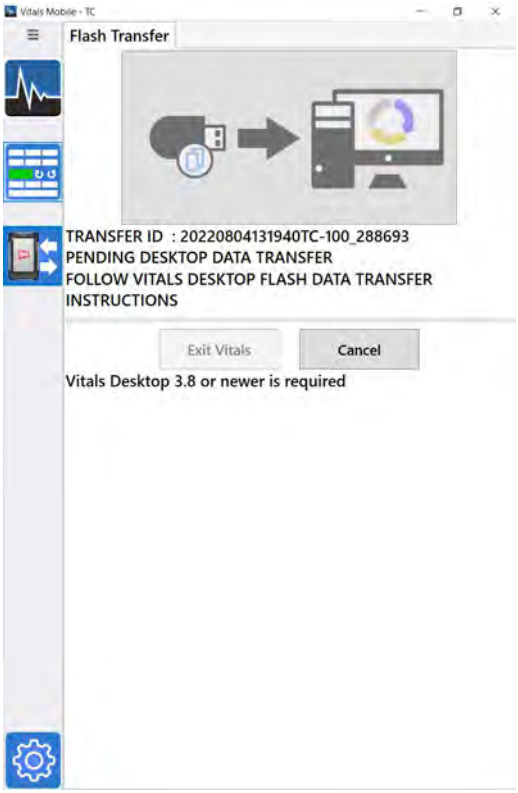


Figure 6-21. Pending Desktop transfer status.

5. Insert the flash drive into the Vitals Desktop computer.

6. Open Vitals Desktop and click the **Data Transfer** button. Select **Flash Transfer** from the **Connect To** drop-down menu. The screen will display a series of **START** messages.

Figure 6-22. Use the Flash Transfer connection.

7. Click on the folder name for the transfer. The folder name is the same as the **Transfer ID** shown on the Vitals Mobile screen.

NOTE

If there are data transfers from multiple handheld controllers on the flash drive, they will appears as separate folders. You will need to import each folder individually.

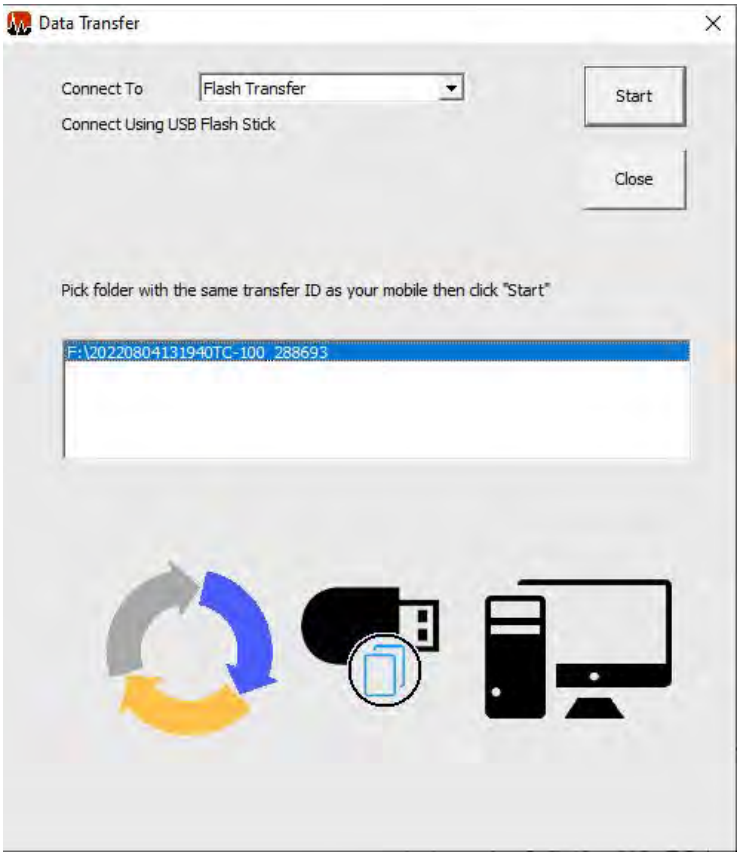


Figure 6-23. Select the name of the folder in the window. (Multiple folders will appear if there are transfers from multiple handheld controllers on the USB flash drive.)

8. Click the **Start** button. The **Updated Valves** import screen appears.

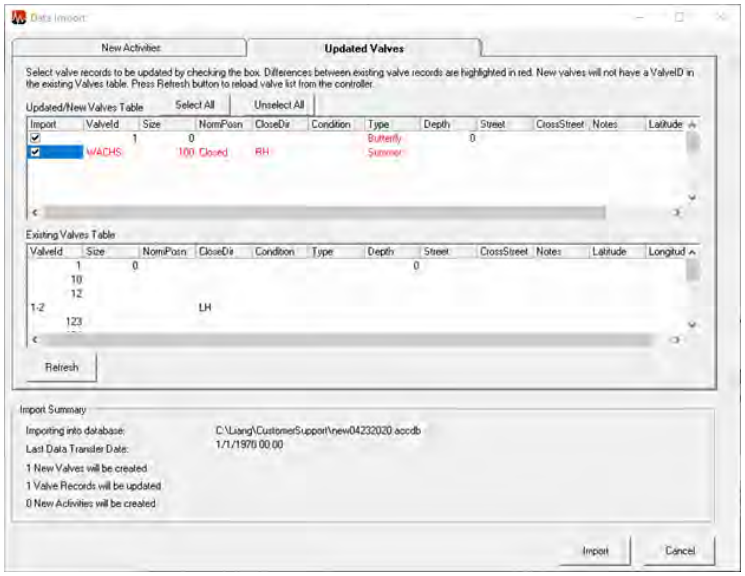


Figure 6-24. Updated Valves import screen.

9. Click the **Import** button. The new valve data is imported from the flash drive.

10. After the import is complete, export the database back to the flash drive. This ensures that all valve data on both Desktop and Mobile is synchronized.

Figure 6-25. Export Valve Records screen.

11. A **Data has been exported** message will appear. Remove the flash drive from the Vitals Desktop computer.

12. Insert the flash drive into the tablet controller. An **Updating Vitals Mobile Files** message appears.

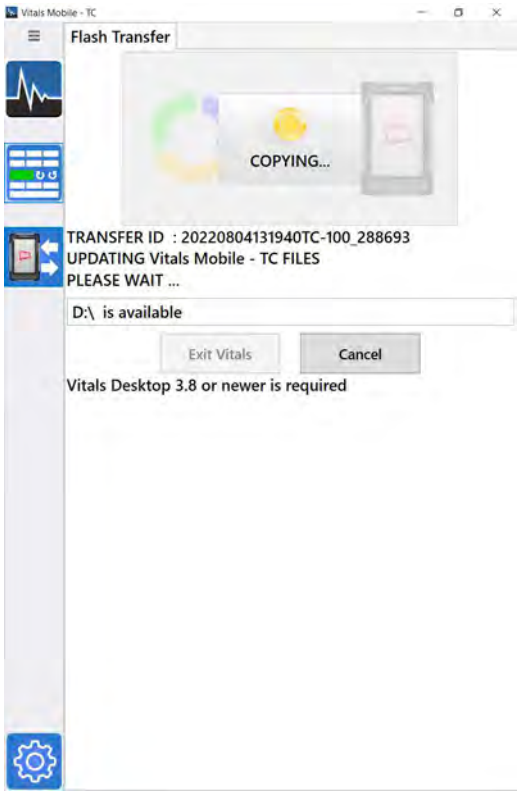


Figure 6-26. A status message appears while data is transferred back to Vitals Mobile.

13. When the update is complete, a **Data Transfer Finished** message appears. Tap the **Exit Vitals** button.

IMPORTANT

You **must** complete the final step of re-inserting the USB flash drive into the handheld controller. This synchronizes all the valve records in the desktop and handheld databases.

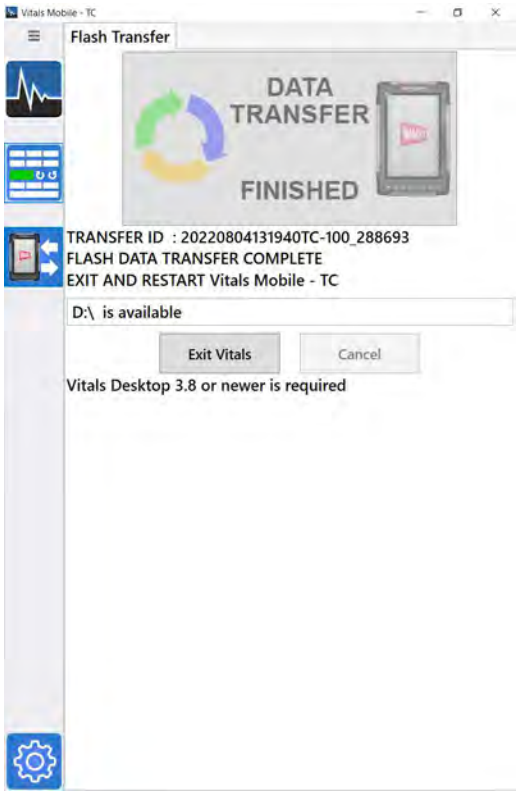


Figure 6-27. When the data transfer is finished, exit Vitals and restart.

14. Restart Vitals Mobile-TC.

TC-100/110 Local Transfer

You can perform a local transfer between Vitals Mobile-TC and Vitals Desktop if you are running Vitals Desktop on the TC controller.

(In this usage scenario, you are running Vitals Mobile-TC in the field for data logging, and running Vitals Desktop on the same TC controller when in the office.

1. Exit Vitals Mobile-TC on the TC controller.

2. Launch Vitals Desktop on the TC controller.

3. Click **Data Transfer**. The Data Transfer screen appears. Click the **Connect to** menu and select **Local**.

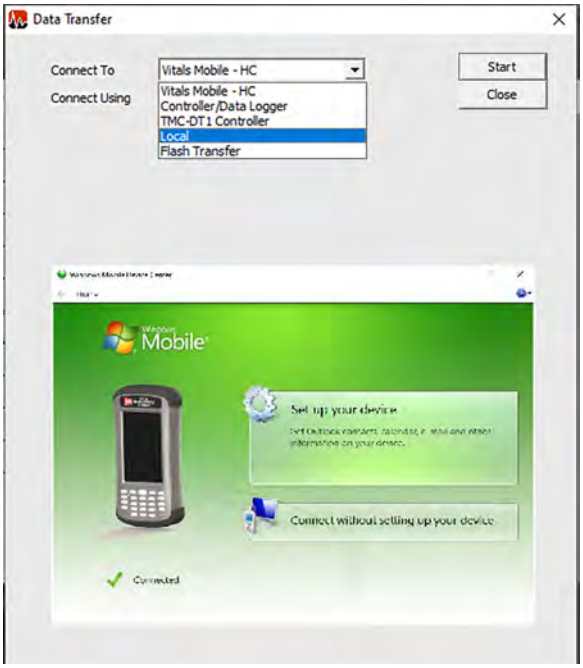


Figure 6-28.

4. With **Local** selected, click **Start**.

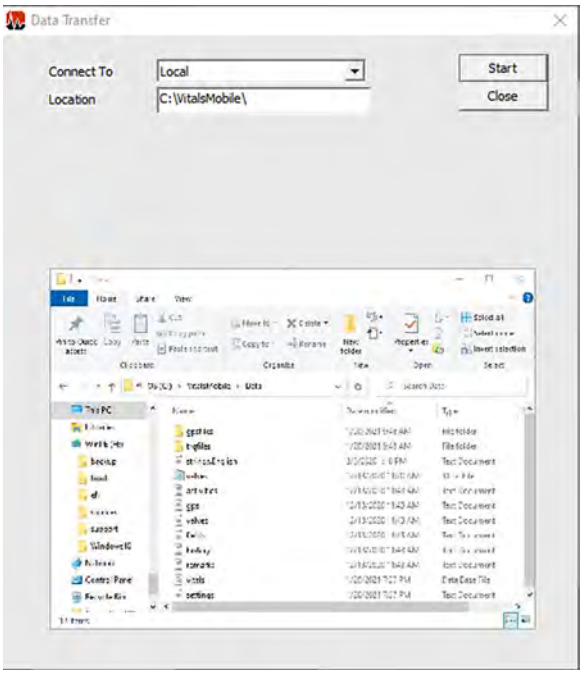


Figure 6-29.

5. If the **Database Mismatch** message appears, the database on Vitals Mobile-TC is different from the database currently open in Vitals Desktop.

- In general, click **Import Activities.** This imports activity data without changing the database structure.
- If the database in Vitals Desktop is blank or does not have any valves, you can click **Import Activities + All** valves. This will add all the valves from the controller to the local database.

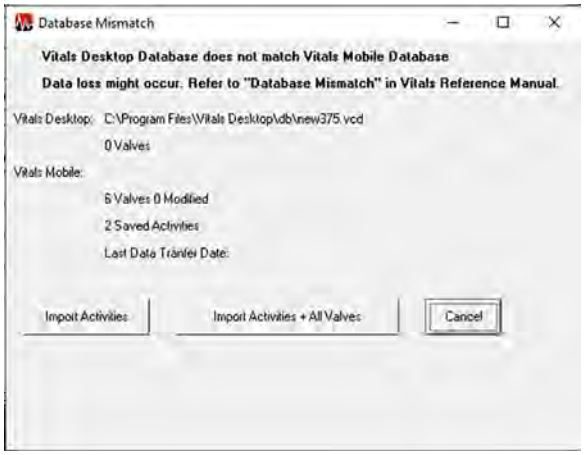


Figure 6-30. Database Mismatch will appear only if the imported data does not match the Vitals Desktop database structure.

6. The **Updated Valves** tab on the **Data Import** screen allows you to review new or changed valve data from Vitals Mobile-TC.

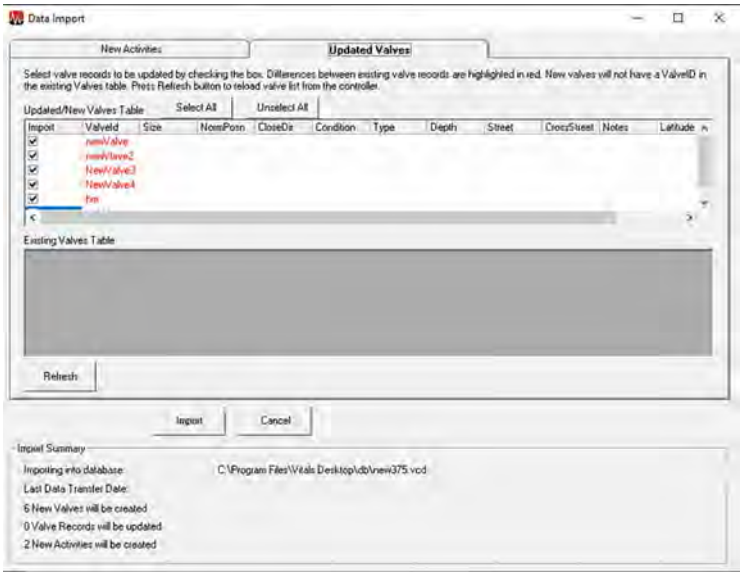


Figure 6-31.

7. The **New Activities** tab on the **Data Import** screen allows you to review new activity data from Vitals Mobile-TC.

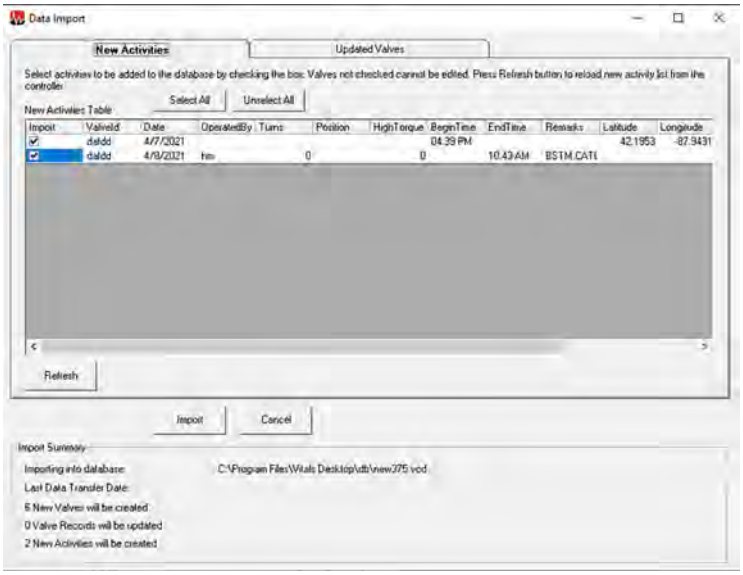


Figure 6-32.

8. When you have reviewed the data for import, click **Import** to continue.

9. After the import is complete, export the database back to Vitals Mobile-TC. This ensures that all valve data on both Desktop and Mobile is synchronized.

Figure 6-33.

10. The **Data has been exported** message will appear.

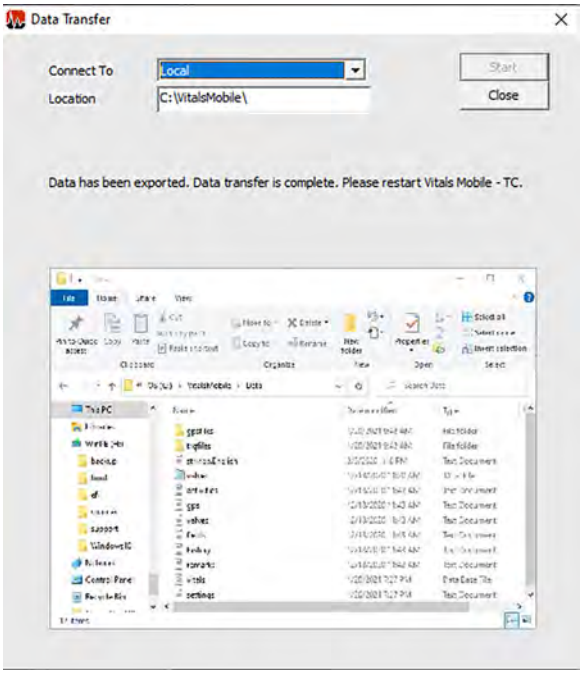


Figure 6-34.

11. Exit Vitals Mobile-TC.

Data Transfer Review

When you transfer activities into the Vitals Desktop database, the **Data Import** screen displays the activity records.

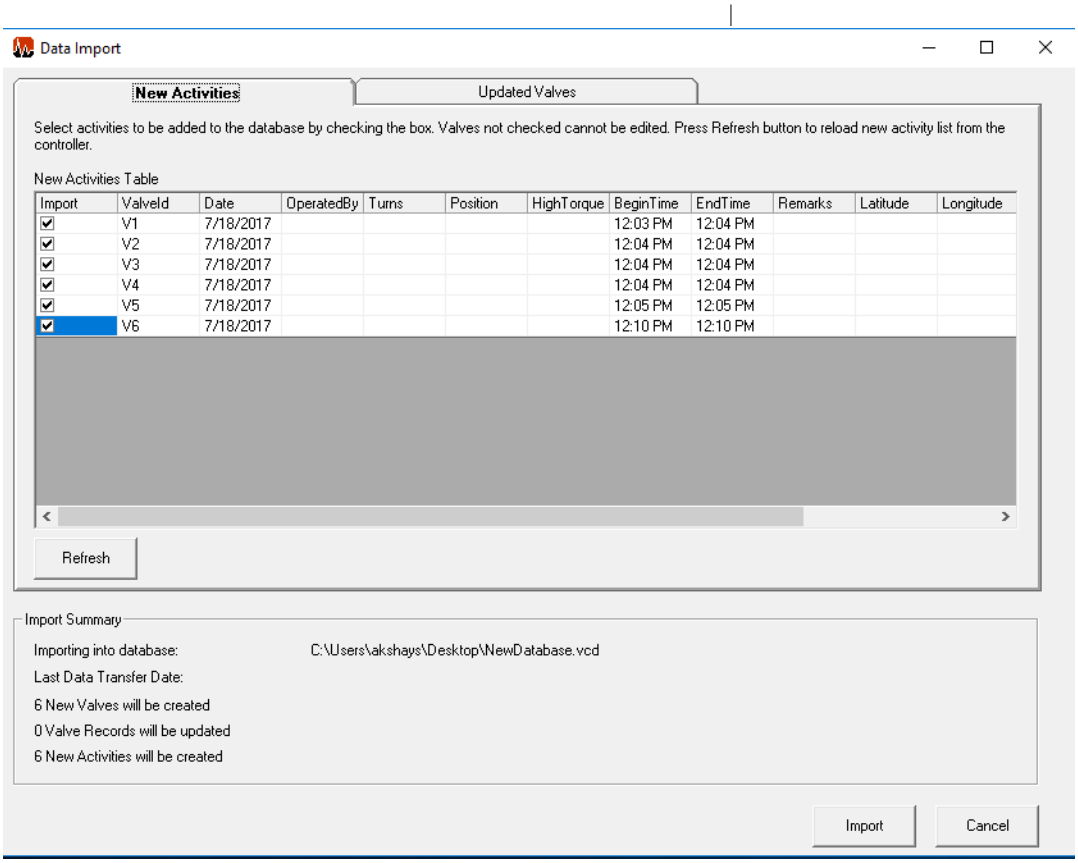


Figure 6-35. Data Import Screen

NOTE: If you get a **Database Mismatch** screen, refer to "Symptom: Database mismatch message after performing a Data Transfer." on page 147.

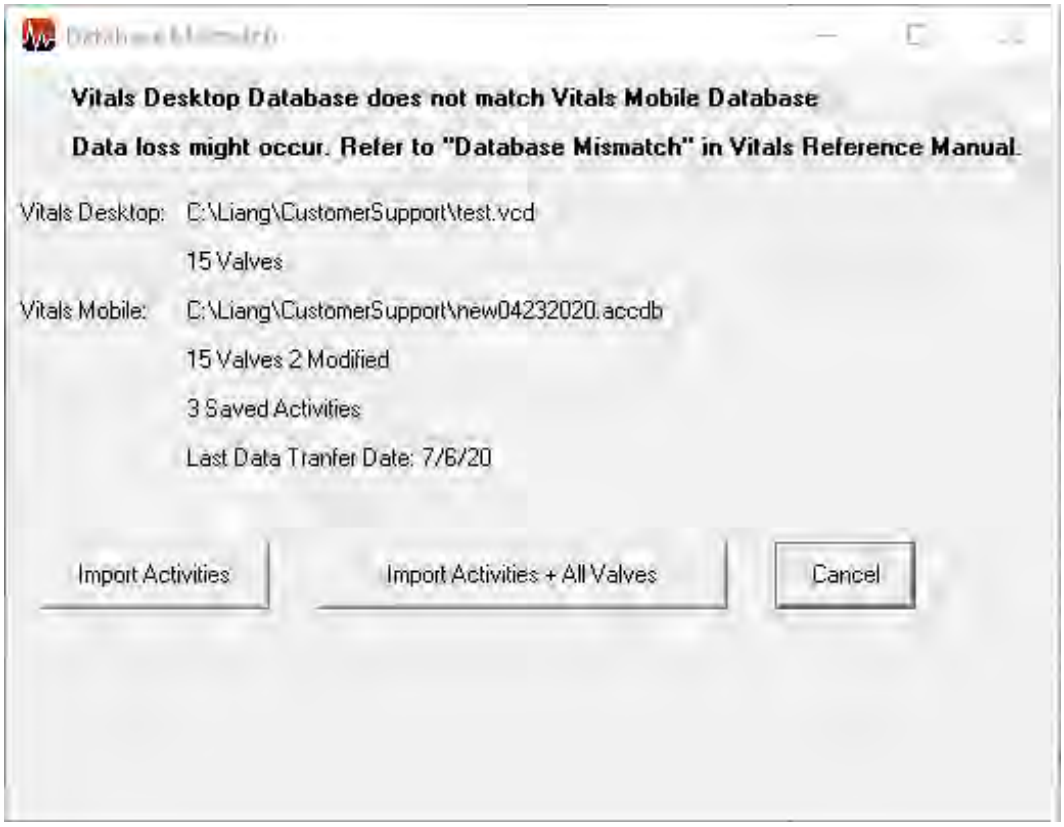


Figure 6-36. The Database Mismatch screen appears if there is a database error.

If there are activities you don't want to import, uncheck the box in the **Import** column.

You can edit details of the valve activities on the **New Activities** tab before completing the import. Click in the field you want to edit, and change the value or description. (You **cannot** change the Valve ID.)

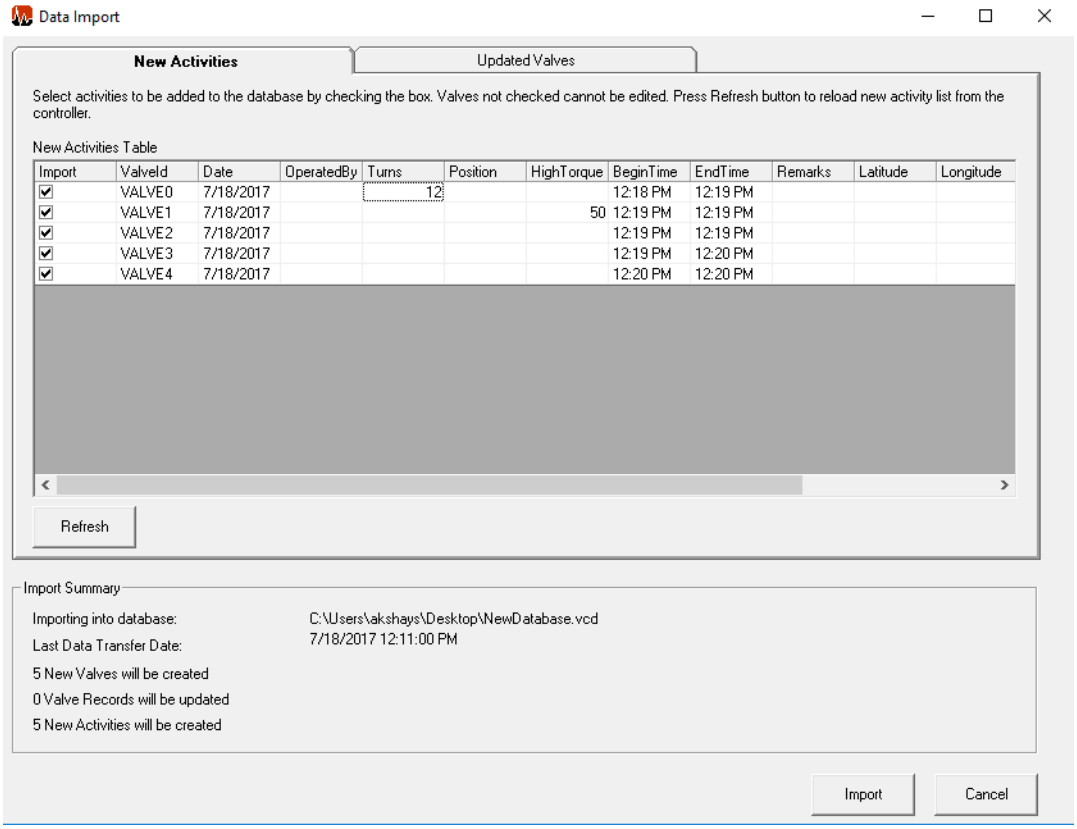


Figure 6-37. You can edit data on the Data Import screen, as shown in the **Turns** *and* **HighTorque** *columns.*

Click on the Updated Valves tab to review valve data that has been changed. Text in red indicates differences between data from Vitals Mobile and the data in the Vitals Desktop database. Valve records in red indicate new valves that are not in the database.

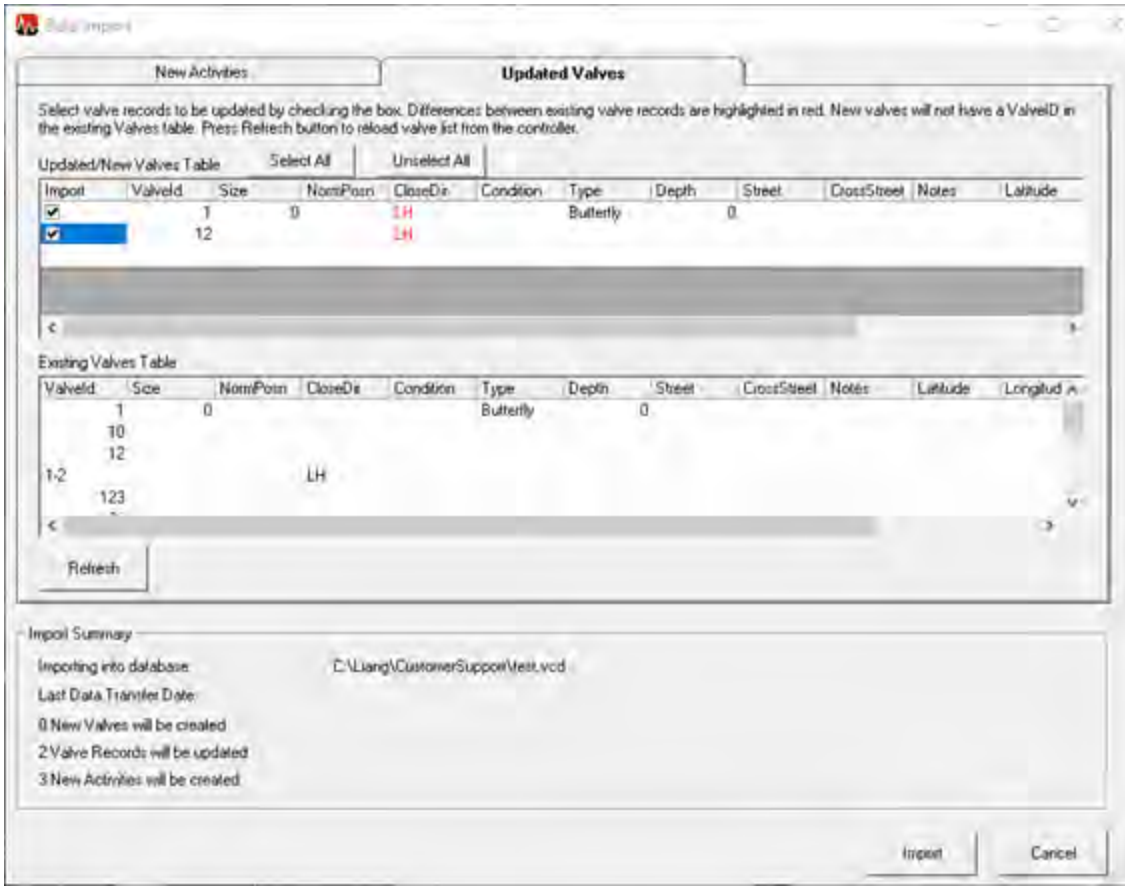


Figure 6-38. New valve data appears in red text on the **Updated Valves** *tab of the* **Data Import** *screen.*

You can edit details of the valve data on the **Updated Valves** tab before completing the import.

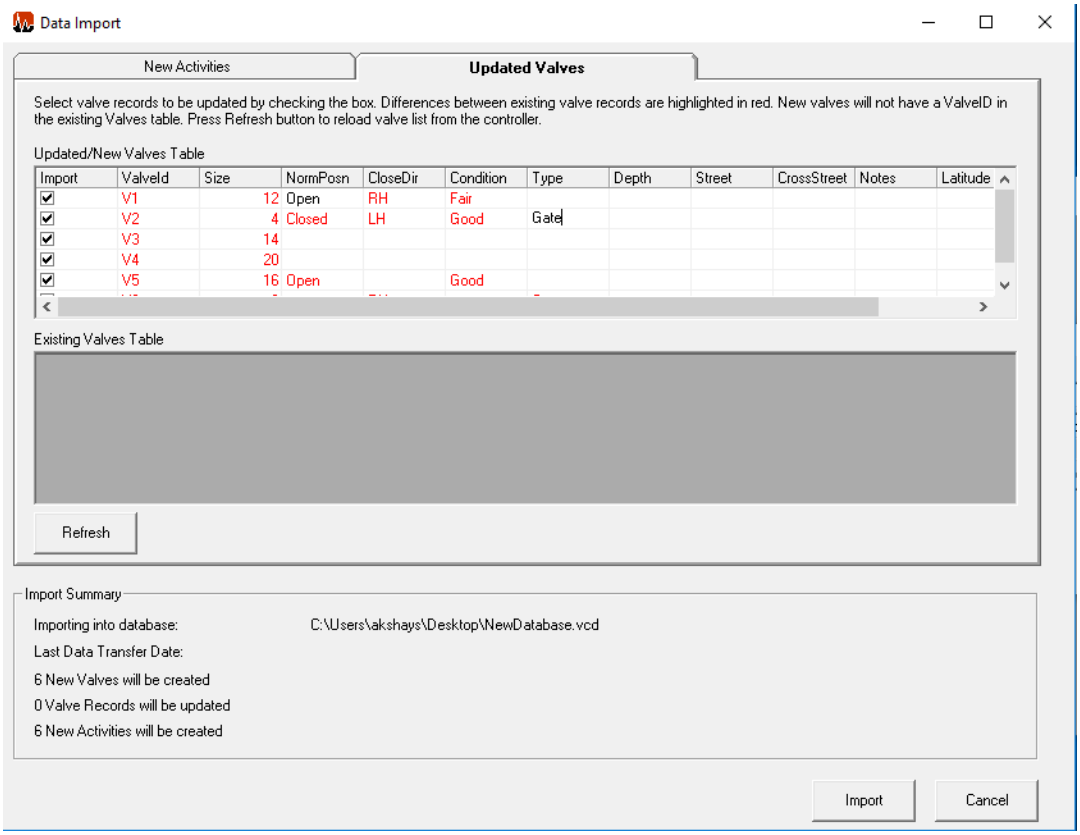


Figure 6-39. Data that you have added or edited appears in black text on the **Updated Valves** *tab.*

Any additions or changes will be saved to the Vitals database. The Import Summary highlights the changes. After you have reviewed the activity and valve data, click the Import button to import it. All valves are displayed.

Uploading Large Databases

If your database is over 50,000 valve records, a message will appear recommending you to select a range to upload. (You may still upload your entire database if you wish)

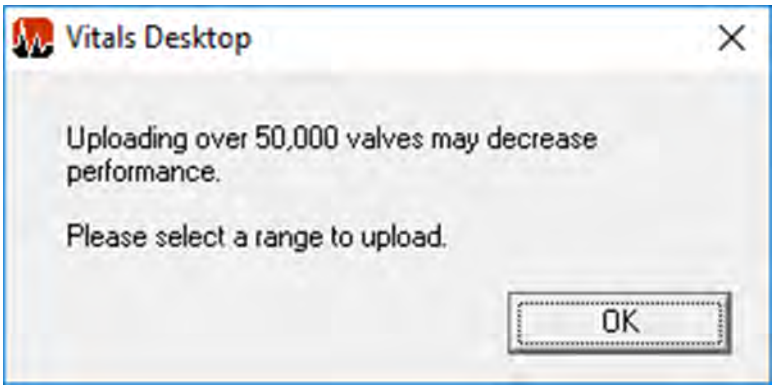


Figure 6-40. Over 50,000 Valve Record Message

To split your database into smaller sections for upload, perform the following steps.

1. Create a new field in your Valves table to identify distinct sections of your valve record structure, such as Grid. In this example, different Grid choices could be A, B, C, etc. Refer to "Customize Data Fields" in the "Database Options" section for more information on creating custom data fields.

2. Add the appropriate Grid choice for each valve record by editing the valve record information. Refer to "Valve Record" in the "Creating and Editing Valves and Activities" section for more information on editing valve records.

3. Start a Data Transfer and select **OK** when the range selection message appears. The Export Valve Records screen appears.

Figure 6-41. Select Valves to Export

4. Click the radio button **Specify valve records**. Select **Grid** in the **Field** dropdown and choose the grid(s) containing the valves you wish to upload. Notice that the number of valve records being transferred has been reduced to only those that meet the specified requirements.

Figure 6-42. Specify Valve Records - Custom Field Specification

5. Complete the remainder of the Data Transfer.

DATABASE OPTIONS

Database Setup

This section describes the actions you can perform with the currently open database. Click the **Settings** button and select the **Database Setup** command to see the database options.

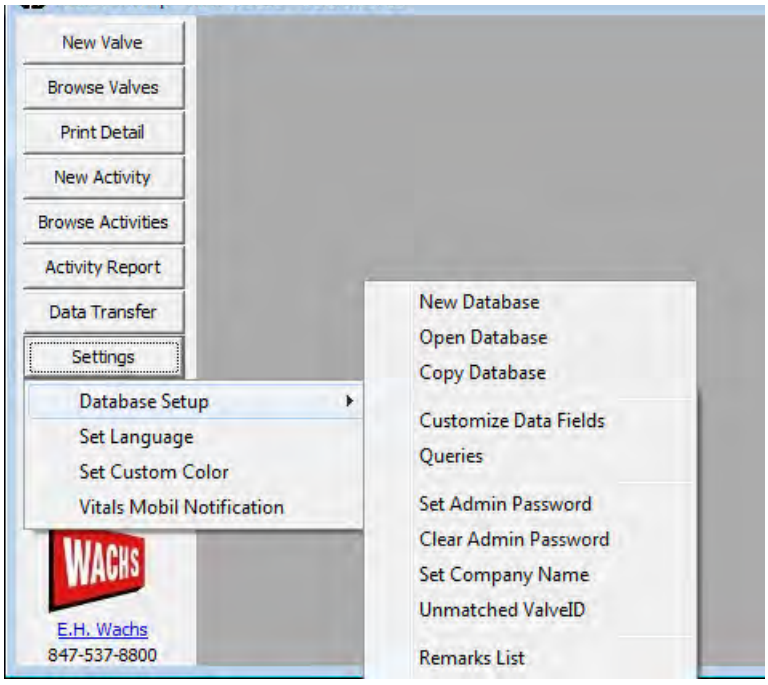


Figure 6-43. Database Setup Options

- **New Database** allows you to create a new blank database.
- **Open Database** allows you to open an existing database.
- **Copy Database** allows you to create a copy of an existing database.
- **Customize Data Fields** displays the Customize Data Fields screen, which allows you to create custom fields to your database for valves and activities. See section "Customize Data Fields" for more information.
- **Queries** displays the Query List screen, which allows you to create and run SQL queries against the currently open database. See section "Queries" for more information.
- **Set Admin Password** allows you to create a password to limit access to the Database Setup options.

- **Clear Admin Password** lets you remove password protection from the database. It will prompt you for the password when changing this setting.
- **Set Company Name** allows you to create or edit a company name associated with the currently open database.
- **Unmatched ValveId** allows you to find activities from the Activities table that do not have an associated valve with the same ValveId in the Valves table. This option will allow you to create valves with ValveIds in the Valves table to ensure that all activities in the Activities table are associated with a valve in the Valves table.
- **Remarks List** displays the remarks you have defined and allows you to create new remarks. See section "Remarks List Window" for more information.

Customize Data Fields

This section describes the Customize Data Fields screen and how to create custom data fields.

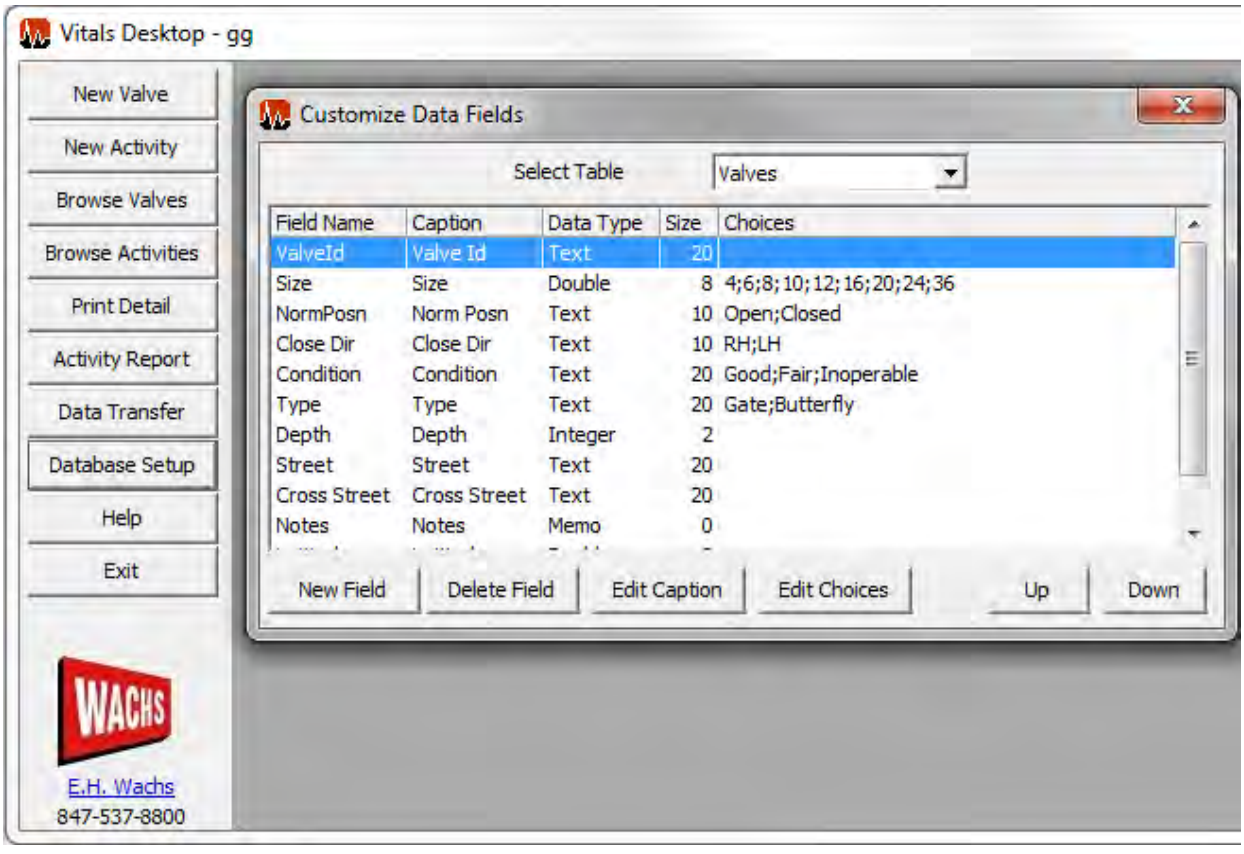


Figure 6-44. Customize Data Fields

- In the **Select Table** dropdown box, you can select whether you would like to add a data field to the Valves or Activities table.
- **Field Name** displays the name given to each data field, which is seen by the database.
- **Caption** displays the familiar name of each data field, which is seen by the user in Vitals Desktop and Vitals Mobile.
- **Data Type** displays the type of data that can be entered into each field.
- **Size** displays the maximum length each choice of a field.
- **Choices** displays the default options available for each field.
- Click **Delete Field** to delete a preexisting field.You will not be able to the delete a field if there is information associated with a valve pertaining to that field.
- Click the **New Field** button to create a new custom data field. This will bring up the New Field screen. Here, you will be able to specify a Field Name and Data Type.
- Click the **Edit Caption** button to edit the caption associated with the highlighted data field.
- Click the **Edit Choices** button to edit the choices associated with the highlighted data field.
- Click the **Up** or **Down** arrows to choose the order in which the data fields are displayed when analyzing valve information.

Queries

This section describes the Queries screen and how to create, edit, run, and delete queries. All queries are written in SQL (Structured Query Language).

The Query List screen shows a list of created queries.

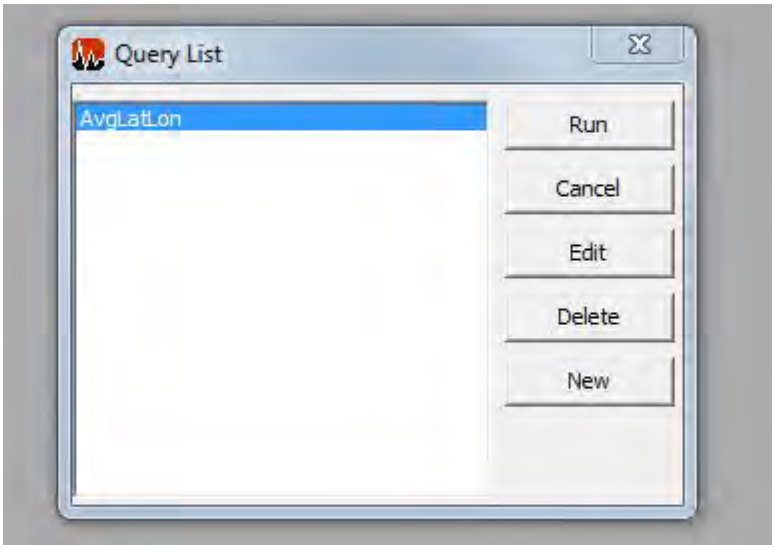
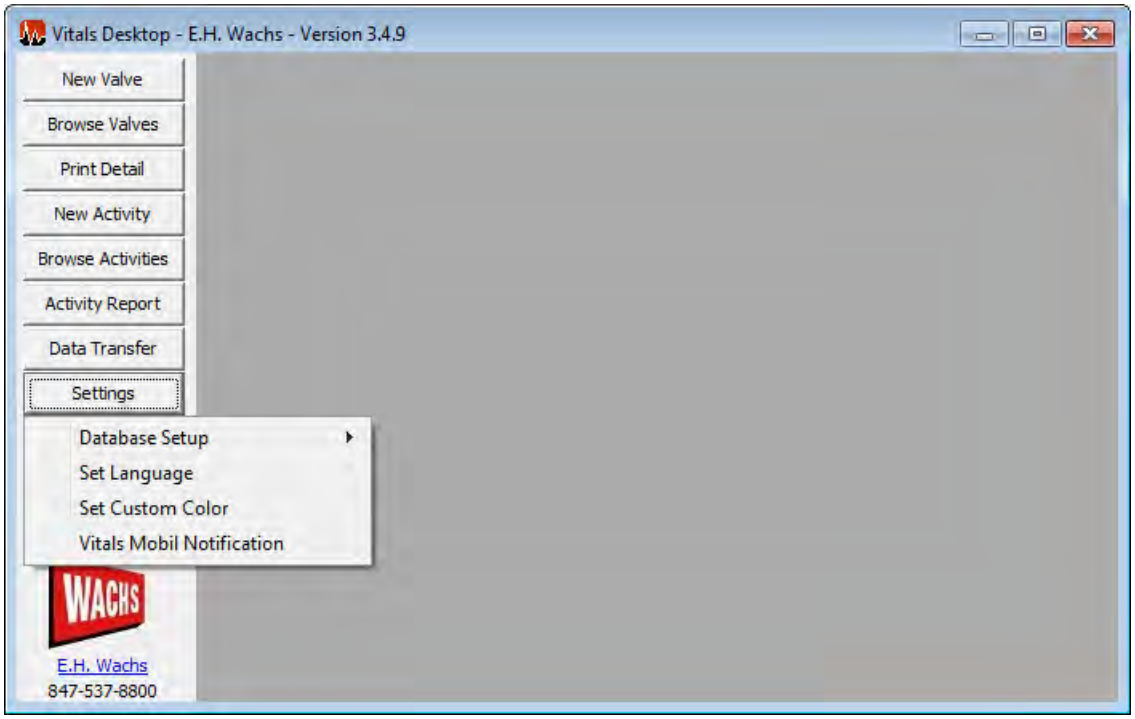


Figure 6-45. Query List

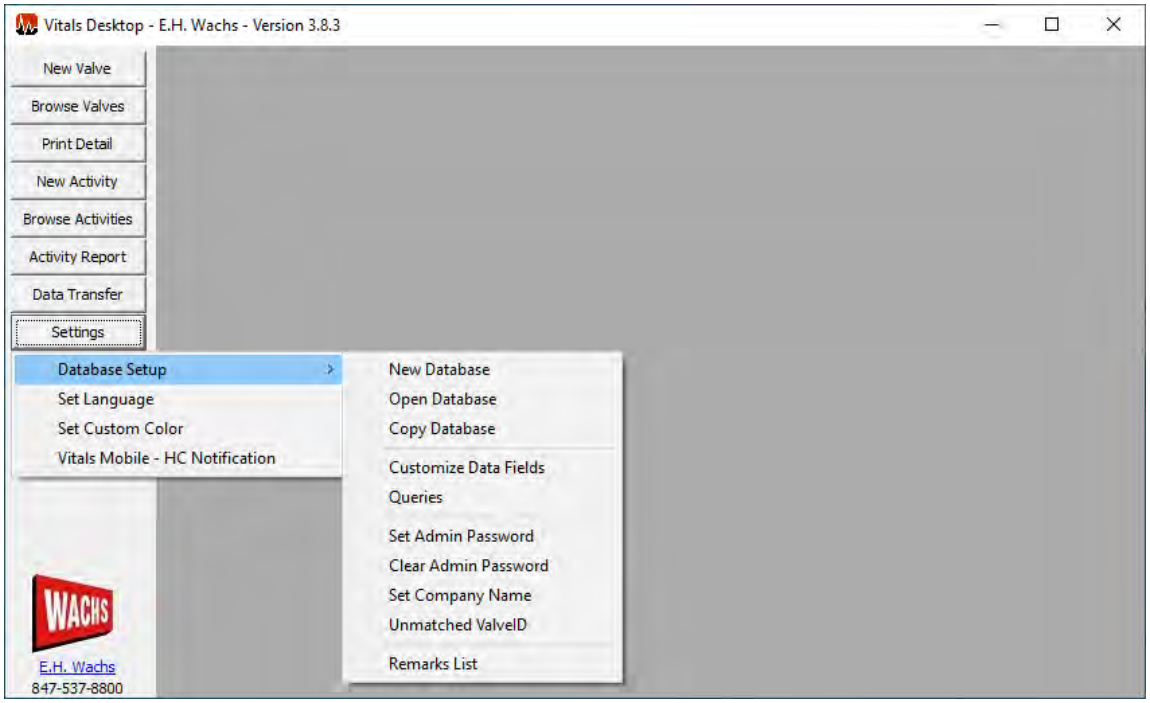
- Click the **Run** button to perform the highlighted query statement. This will return the valve or activity information specified in the query.
- Click the **Edit** button to edit the highlighted query.
- Click the **Delete** button to delete the highlighted query.
- Click the **New** button to create a new query using SQL.

SETTINGS

The **Settings** menu lets you configure Vitals Desktop options.



- **Database Setup** has commands for configuring the Vitals Desktop database.



- **Set Language** displays the Language screen, which allows you to select the default language. The selected language will be automatically configured on Vitals Mobile during the next data transfer.
- **Set Custom Color** displays a color dialog, allowing you to choose a custom color in which to display the currently open database.
- **Vitals Mobile - HC Notifications** lets you configure how Vitals Mobile notifies you of valve activities that have not been transferred to Vitals Desktop.
  NOTE: Vitals Mobile HC only. Vitals 3.8 does not include the Notifications feature for Vitals Mobile TC.

HELP OPTIONS

This section describes the options available through the help dropdown menu in Vitals Desktop 3.8.7.

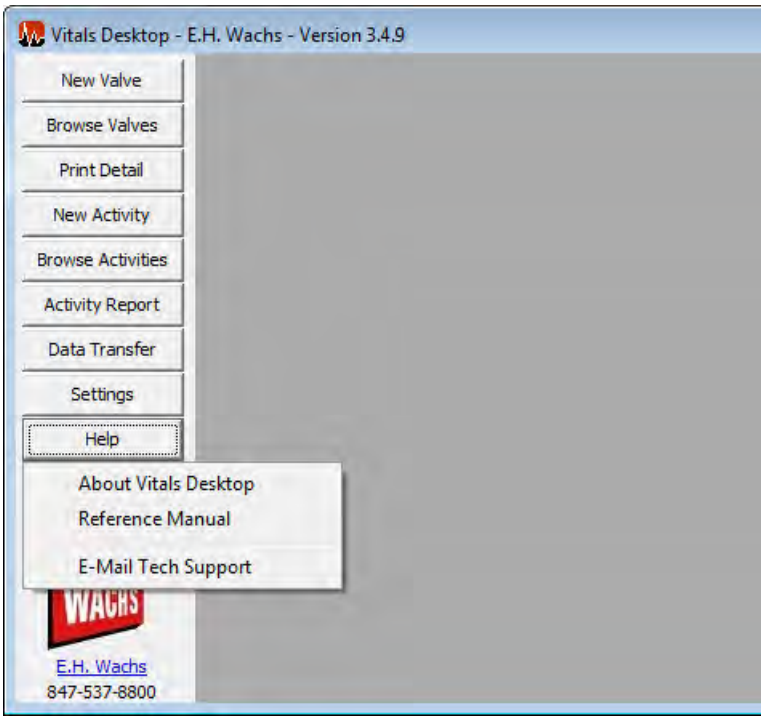


Figure 6-46. Help Options

- **About Vitals Desktop** displays an about screen with the software version number and the location where the currently open database is stored.

- **Reference Manual** opens a PDF of this reference manual for helpful information regarding the TC controller, Vitals Desktop 3.8.7, and Vitals Mobile 3.8.7.
- **E-Mail Tech Support** opens a blank email message that the user can fill out with questions or concerns. Tech Support emails are sent to the technical/engineering staff at E.H. Wachs.

Chapter 7
Troubleshooting Guide

Symptom: Running slow or locking up

Occasionally, software programs or the operating system on a device may cease to respond, leaving the device in a state where it cannot be used until some or all software programs are closed or the operating system is reset.

Stop Running Programs

1. Open Task Manager on the HC-100 to stop applications or end tasks. (Task Manager is on the HC-100 Home screen - Tap on Home button)

2. Tap on Menu > End All Tasks

Soft Reset

1. Try soft resetting the device by pressing and holding the Power (On/Off) key for 5-10 seconds until the Power Button menu appears. Tap Reset.

Restoring to Factory State (Clean Boot)

CAUTION: Restoring the HC-100 to its original factory state permanently erases data saved on the handheld, any software you installed, and any changes you made to the handheld, including changes to settings.

1. Back up files and programs you want to keep onto another computer.

2. Save open files and close running programs on the handheld. Press and hold the power button until the Power Button menu appears. Tap

3. *Reset*.

4. When the screen turns black, press and hold the power button again. The BIOS screen is shown.

5. Move the top slider on the screen to the right to set or clear factory defaults. This clean boots the handheld.

6. Tap *Exit*. The boot process continues.

Symptom: Touchscreen not accurate or responding to touch input

Touchscreen performance can be optimized for individual situation or whether using a finger vs. stylus input.

Adjust Touchscreen Settings

1. Settings>System>Touch

2. Select Touch Profile (Stylus 10 is the recommended default profile).

3. Finger and Stylus profiles available.

Use HC-100 stylus.

1. Wider tip stylus will actually work better than a fine tip stylus because the wider tip will activate more contact points at a time.

Use Hold To Zoom Feature

1. Press and hold down P1 button

2. Tap on the screen. Area around the tap location will zoom in allowing finer user touch input.

3. Release P1 button to zoom out

Soft Reset

1. Try soft resetting the device by pressing and holding the Power (On/Off) key for 5-10 seconds until the Power Button menu appears. Tap Reset.

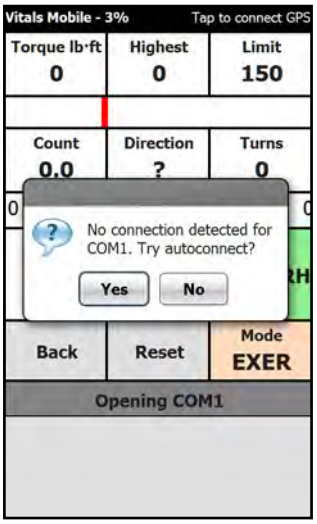
Symptom: Vitals Mobile Controller Stops responding

Faulty machine connection

1. Soft reset HC-100

2. Check connection with Vitals Diagnostics
   - Vitals Diagnostics will not connect to machine with faulty connection. Vitals Mobile accepts an intermittent connection problem.
     i. Diagnose source of faulty connection: control cable, wiring, connector corrosion, faulty equipment ground, faulty control board.

Symptom: The "No connection" message appears on the HC-100 while operating the ERV-750.



Connection to valve operator interrupted

1. Make sure the ERV-750 is powered on.

2. Make sure the cable is connected, or that a Bluetooth link has been established.

3. Pressing the brake button on an ERV-750 **with a version 1.01 control board** will interrupt the controller connection.
   i. Tap Yes to autoconnect and re-establish the connection.

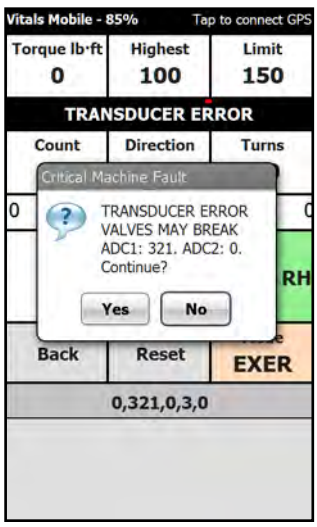
ii. If the controller is connected using Bluetooth, it may take 15-30 seconds to re-establish the link.

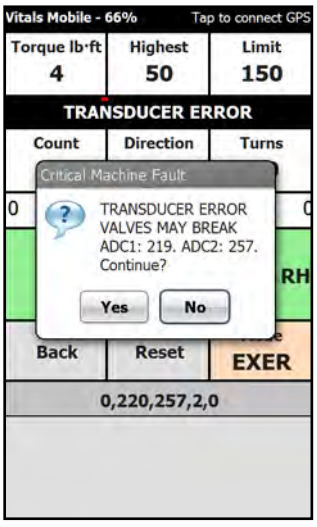
- Version 1.01 control boards can be updated. Contact E.H. Wachs service for information.

Symptom: A "Transducer Error" message appears while operating the TM-7 or ERV-750.

The transducer readings from the valve operator are out of normal range. This indicates a problem with either the transducers or cables.

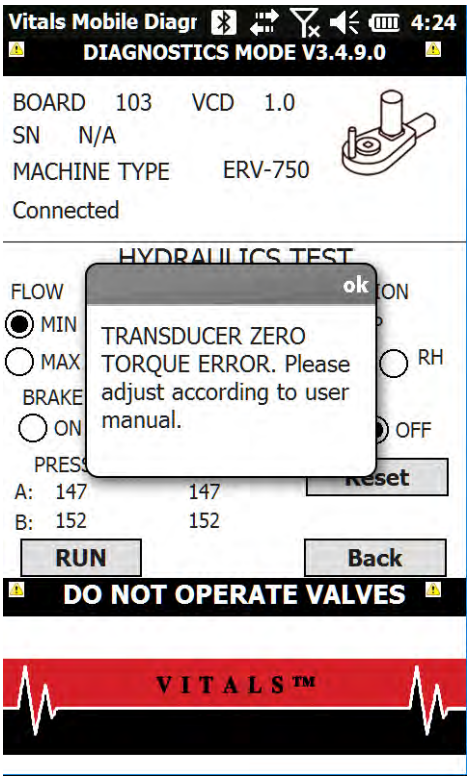
Caution: Vitals uses transducer readings to calculate operating torque. Operating with incorrect readings can cause the machine to break a valve.





1. Contact E.H. Wachs for service if your valve operator is generating **Transducer Error** messages.

Symptom: A "Transducer Zero Torque Error" message appears starting the Vitals Diagnostics Hydraulics Test.



1. Adjust the transducer potentiometer. See "Transducer Zero Torque Error" on page 144.

Symptom: Runtime errors while using or installing Vitals Desktop.

1. User account related
   - Lacking user account privileges
   - Log in to computer as Administrator

2. Vitals desktop related
   - Did not install correctly. Reinstall Vitals Desktop

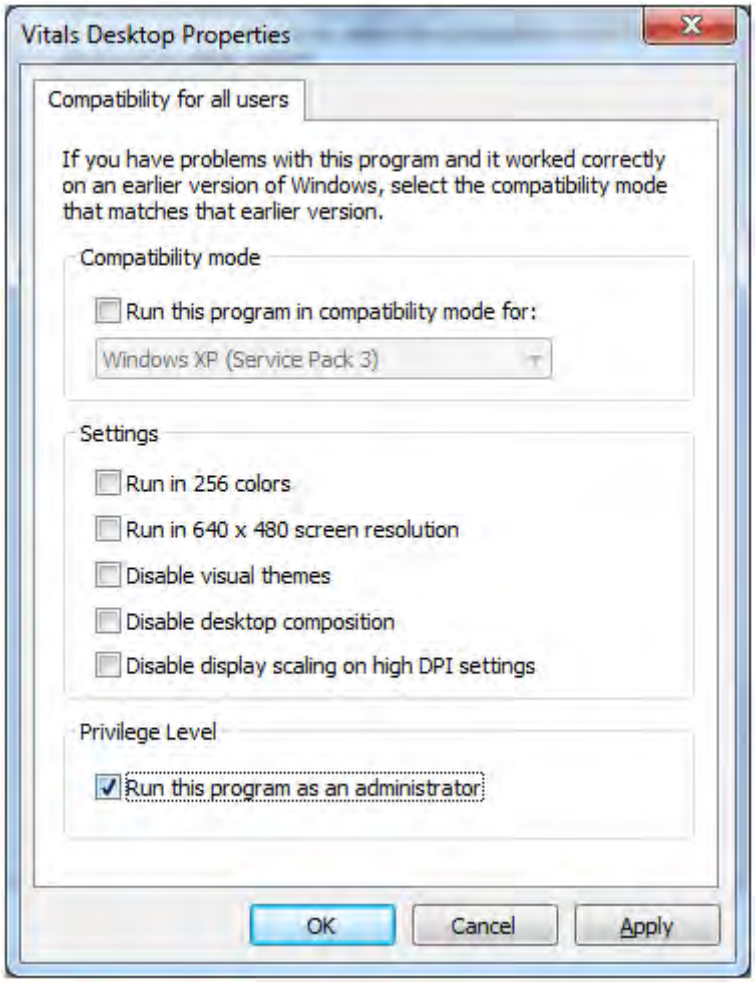
Symptom: Runtime error shows up after doing a data transfer: Runtime error 53: File not found: rapi.dll.

1. Windows Mobile Device Center

- WMDC is not installed or is corrupted on PC. Install WMDC 6.1 by downloading it from the Microsoft Website.

Symptom: Runtime error shows up after trying to launch Vitals Desktop: Runtime error 75: Path\File access error

1. User account related
   - Lacking user account privileges
   - Log in to computer as Administrator
   - Run Vitals Desktop as Administrator

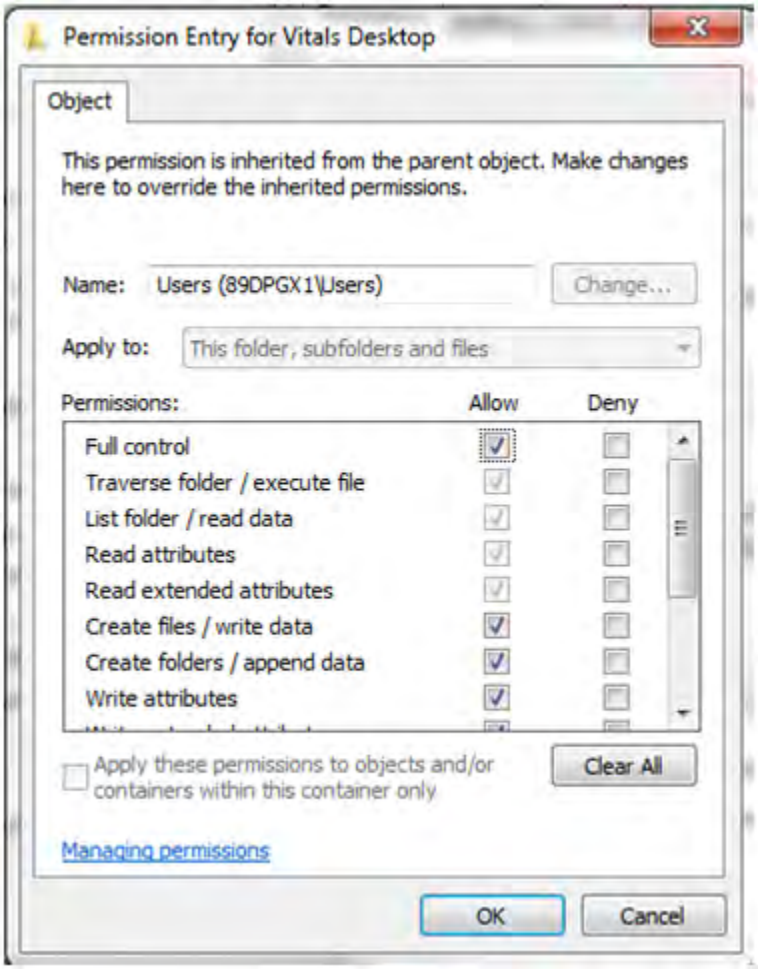


   - Allow Full Control to user running Vitals Desktop
     i. Right click in the Vitals Desktop folder (C:\Program Files\Vitals Desktop) and click **Properties.**

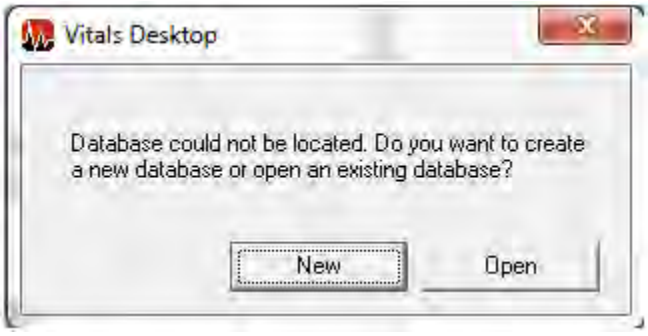
ii. Select the **Security** tab and then click **Advanced.**

iii. Click **Change Permissions** and then select the users that will be using Vitals Desktop. Click **Edit.**

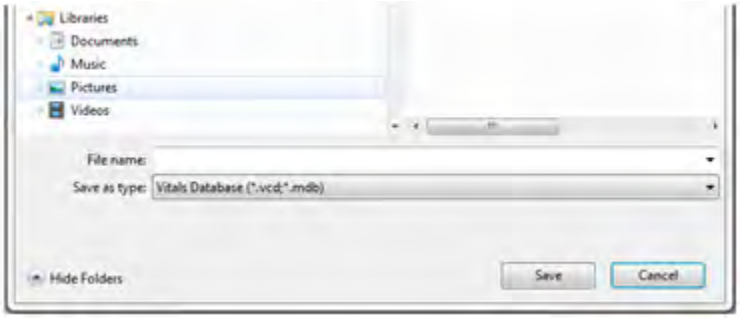
iv. Check the **Full control** check box and click **OK.**



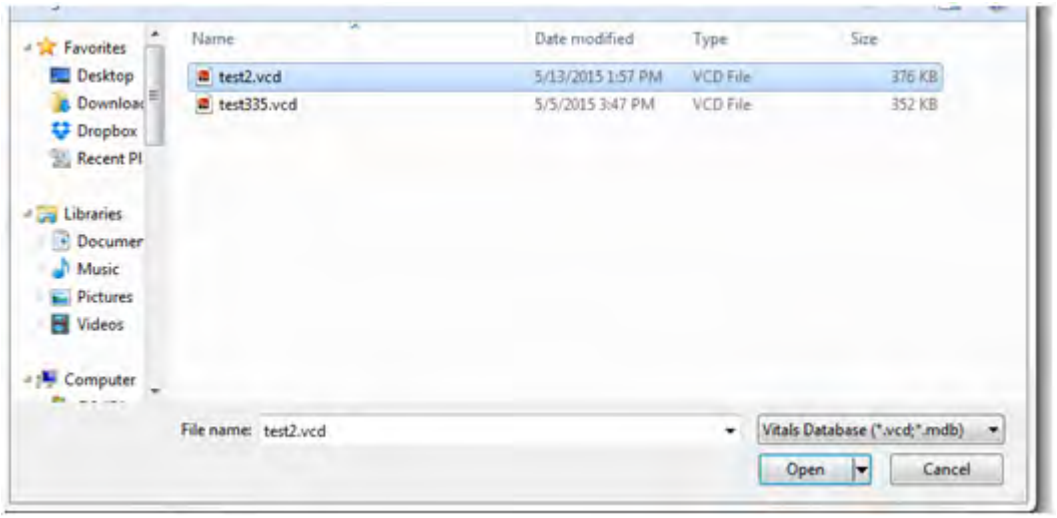
Symptom: "Database could not be located" message appears when Vitals Desktop is launched.



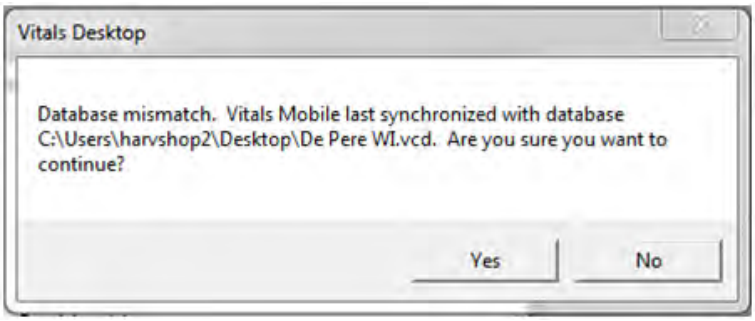
1. Directory related
   - This message will appear if the database is deleted or moved to another location.
     i. To create a new database, click **New**. The Save As dialog appears; name the database and click **Save**.



     ii. To locate the existing database, click **Open**. The Open File dialog appears; browse to the location of the database file, click on the file to select it, and click **Open**.



Symptom: Database mismatch message after performing a Data Transfer.

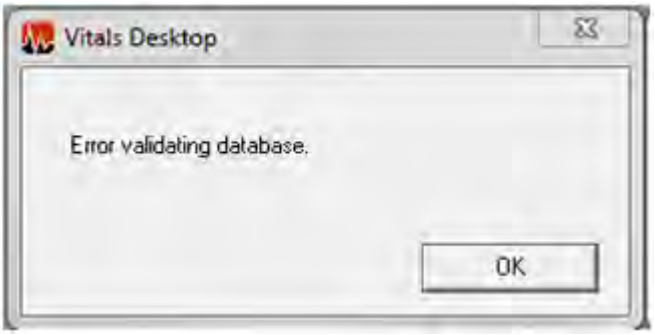


1. Directory related
   - This message can appear when the default location of the Database is changed within Vitals Desktop. The file location in the message is the location for the very first database you created.
   - Clicking yes will simply ignore the message and perform the Data Transfer to the database currently opened within Vitals Desktop.
   - To avoid this message, do not change the file location of Vitals Database. Be careful with mapped drives or user level folders. It is recommended to use Windows UNC with an absolute path
   - To eliminate this message, reinstall Vitals Mobile.
     i. Uninstall Vitals Mobile on the handheld.

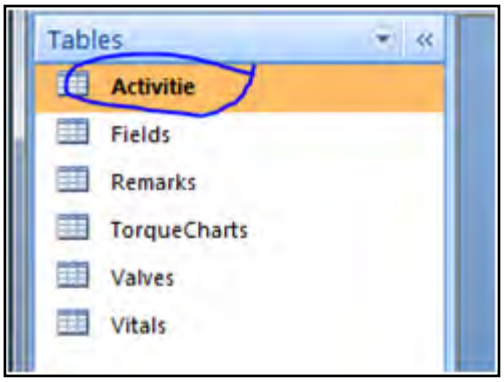
ii. Remove the Vitals Mobile folder from the File Explorer menu on the handheld.

iii. Reinstall Vitals Mobile from the PC running Vitals desktop. (If the location of the database is changed again in Vitals Desktop, the message will re-appear.)

.Symptom: "Error validating database" appears after trying to open a database in Vitals Desktop.

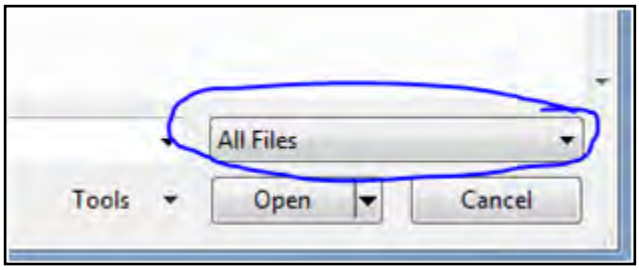


1. Database table was changed with MS Access.



- One of the tables in the database was renamed using MS Access. In this example, the **Activities** table was renamed to **Activitie** (note the missing "s" at the end). These tables should not be renamed.

  i. To fix this, open **Microsoft Office Access**, **Open**, and change the type to **All Files**.



ii. Select the database with **.vcd** extension and open it

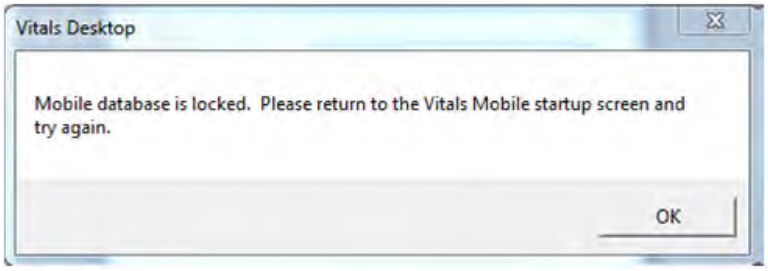
iii. **Right click** on the table and click **Rename.**

iv. Rename to **Activities.**

v. Close Microsoft Office Access and open the database with Vitals Desktop.

- Tables required by Vitals are as follows: **Activities**, **Fields**, **Remarks**, **TorqueCharts**, **Valves** and **Vitals**. If these are missing or named differently, there will be problems when trying to open the database.

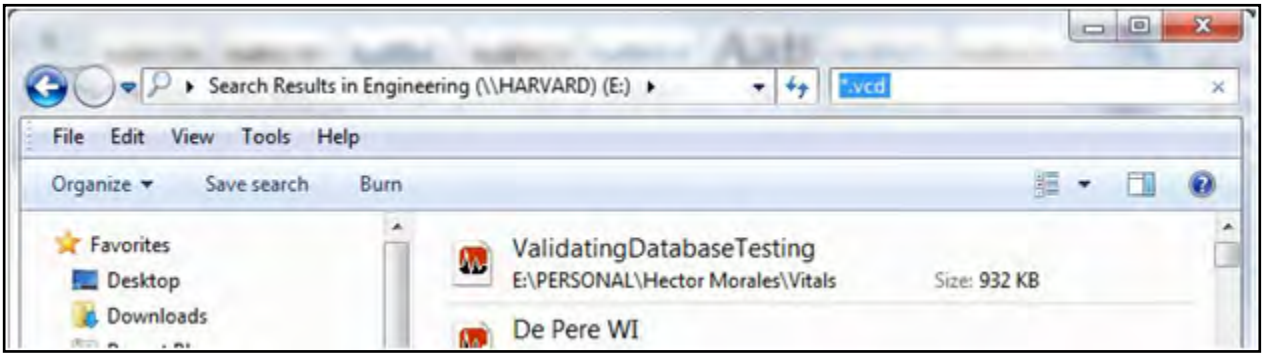
Symptom: "Mobile database is locked" message appears when performing a Data Transfer.



1. User Error
   - This error message pops up when Vitals Mobile is not on the main screen.
     i. Make sure Vitals Mobile is at the following screen, and then click on **Data Transfer** in Vitals Desktop.

Symptom: Can't find database (.vcd file) that was transferred from handheld controller to Vitals Desktop.

1. Directory related
   - Created a new database and saved it at another location and thus changing the default directory.
     i. Perform a computer search by typing "***.vcd**" in the search bar. (This is the extension for the database file when it is transferred to Vitals Desktop.)

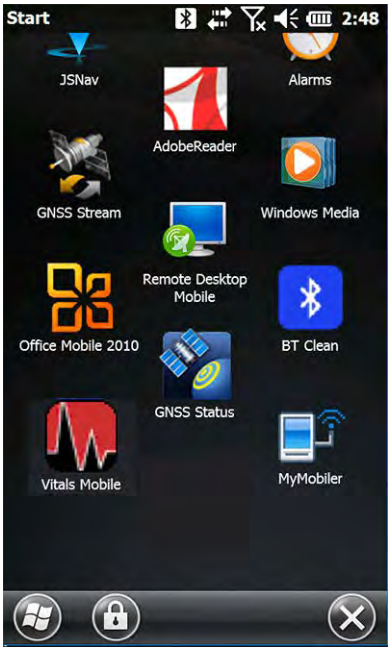


     ii. Click on Open Database under Database Setup and point to the directory containing vitalsdb.vcd.

1. Database file deleted or overwritten.

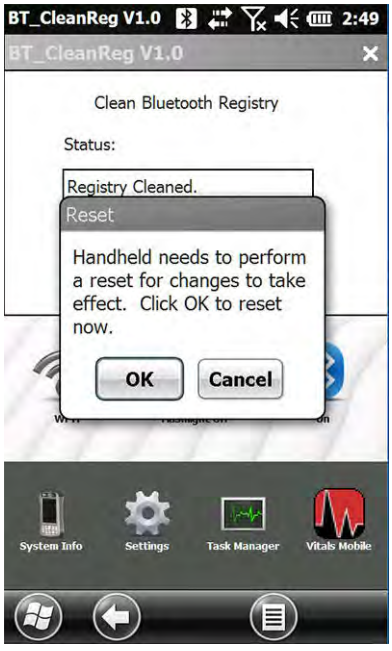
Symptom: No COM ports are available for Bluetooth pairing.

1. COM ports were not released when previous Bluetooth pairings were deleted.
   - Run the **BT Clean** app on the HC-100 to remove all COM port assignments and Bluetooth pairings. (If BT Clean is not on your HC-100, download it from the website at turnvalves.com. Click "Support", then click "Software Downloads".)
     i. Tap the **BT Clean** icon to start the app.

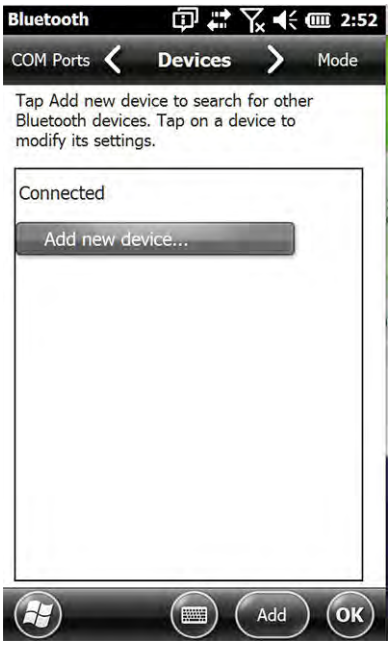


     ii. When the app opens, tap the **Clean Reg** button.

iii. Tap the **OK** button to reset the ports and restart the handheld controller.



iv. When the ports have been cleared, you can re-establish the Bluetooth link to the valve operator. Tap **Add new device**.



Symptom: Error message saying "Cannot find E. H. Wachs equipment.

1. Valve operator may not be powered on.
    i. Turn on the valve operator.

2. Bluetooth not connected.
    i. Make sure the equipment is paired. See "Adding a Valve Operator" on page 35.

Symptom: Maps view not available in the field.

1. TC-100/110 is offline and local map is not downloaded.
    i. Download local map when connected to wi-fi. Tap the Windows icon, go to Settings, then Apps>Offline Maps. Find your location and download the map.

Symptom: Query for All GPS Data comes back blank.

1. The GPS query requires valve geolocation data to return results.
    i. Best practice is to have the valve latitude and longitude coordinates stored in the Valve table, using the most precise geolocation data available.

ii. Geolocation data in the Valve table is not required, if the valve has at least one activity in the Activities table with location data.

Chapter 8
Ordering Information

To place an order, request service, or get more detailed information on any E.H. Wachs Company products, call us at one of the following numbers:

U.S. 800-323-8185

International: 847-537-8800

Or you can visit our website at:

www.turnvalves.com

In This Chapter

ORDERING REPLACEMENT PARTS

When ordering parts, please provide the part description and part number for all parts you are ordering.

REPAIR INFORMATION

Please call us for an authorization number before returning any equipment for repair or factory service. We will advise you of shipping and handling. When you send the equipment, please include the following information:

- Your name/company name
- Your address
- Your phone number

- A brief description of the problem or the work to be done
- The RMA number printed on the outside of the box or container.

Before we perform any repair, we will estimate the work and inform you of the cost and the time required to complete it.

WARRANTY INFORMATION

Enclosed with the manual is a warranty card. Please fill out the registration card and return to E.H. Wachs Company. Retain the owner's registration record and warranty card for your information.

RETURN GOODS ADDRESS

Return equipment for repair to the following address.

E.H. Wachs—Water Utility Products
600 Knightsbridge Parkway
Lincolnshire, Illinois 60069 USA

Appendix A
Vitals Valve Exercising Program

Vitals provides two modes of valve operation.

- The 'EXERCISE' mode is designed to close and open (exercise) a valve as part of a maintenance routine, with minimal risk of damage to the valve.
- The 'EMERGENCY' mode is used when the valve must be closed quickly; a higher risk of valve damage is acceptable for the sake of speed.

The main difference between the modes is that the rate at which torque is increased is greater in the EMERGENCY mode.

The valve turning program relies on several control modes as the machine works through the valve turning process. The control mode of the machine varies based on the state of the valve turning operation (direction to turn the valve, valve stuck or turning) and the mode of operation.

Function Overview

At the start of the valve turning operation, the machine (and likely the user) has no way to know what state the valve is in when the machine is first connected. The torque required to turn the valve is unknown and the valve could be fully open, fully closed, or anywhere in between.

The machine starts with a torque LIMIT of 100 ft-lbs, but the machine attempts to move the valve back and forth with a lower torque call the SETPOINT. The machine attempts

to turn the valve up to the torque set by the SETPOINT. If it is not successful, the machine changes directions and tries again. The SETPOINT is then increased by a value dependent on the operating mode (EXERCISE or EMERGENCY), then the machine tries again.

The SETPOINT continues to increase, if the valve does not move, until it reaches the LIMIT. At this point the operator must decide to increase the LIMIT or try again at the same LIMIT. The LIMIT cannot be increased until the machine has tried to turn the valve at each of the SETPOINT torques and the required number of tries at the current LIMIT.

At the beginning of the valve turning operation, the direction to turn the valve is unknown. The user may optionally choose a direction for the machine to turn. Otherwise, the machine attempts to turn the valve in either the right hand (RH) or left hand (LH) direction until a specified number of turns (depending on EXERCISE or EMERGENCY mode) is reached.

Once an operating direction is established, it is referred to as the FORWARD direction regardless of whether it is RH or LH. Likewise REVERSE is the opposite of that direction. During the operation, if the valve reaches a point where it cannot be turned at the current torque, the machine attempts to work past the tight spot by reversing and incrementing SETPOINTS.

Jogging

In order to align the machine with the valve, it is often necessary to move the machine a small amount. This is accomplished with the JOG function. The direction of operation is set by the user. This is done by pressing a ‘JOG RIGHT’ or JOG LEFT” button on the controller. The torque limit is set to the current *LIMIT*. Operation continues in that direction until the button is released or the *LIMIT* is reached.

Manual Mode

This mode implements full control by the user. The user has complete control of the machine direction. Torque is limited only by the LIMIT value and LIMIT may be incremented at any time.

Appendix B
Vitals Database Reference

The Vitals database is stored in MS Access format. Vitals has its own file type, with a **.vcd** file extension.

There are 6 tables in the database. Four of them store the valve and activity data:

- **Valves**, which contains information about the valves and has a unique ValveID for each valve.
- **Activities**, which contains activity data and is linked to the Valve table by ValveID. Each activity has its own ActivityID.
- **TorqueCharts**, which contains torque information for each activity and is linked to the Activity table by ActivityID.
- **Remarks**, which contains pre-defined remarks that the user can select while doing an activity.

The other 2 tables store customer and database information:

- **Vitals** contains version and administrator information.
- **Fields** contains settings and field lookup information.

TABLE STRUCTURE

The following charts illustrate the field structure of each Vitals database table.

NOTE

Field size is in characters unless specified otherwise.

CAUTION

Field names marked with an asterisk (*) must not be deleted from the Vitals database structure. If you are editing the database structure, do not remove these fields. **Removing these fields will cause database errors.**

Valves Table		
Field Name	**Data Type**	**Size**
ValveId*	Text	20
Size*	Double	8 bytes
NormPosn*	Text	10
Close Dir*	Text	10
Condition*	Text	20
Type*	Text	20
Depth*	Integer	2 bytes
Street*	Text	20
Cross Street*	Text	20
Notes*	Memo	64000
Latitude	Double	8 bytes
Longitude	Double	8 bytes

Activities Table		
Field Name	**Data Type**	**Size**
ValveId*	Text	20
Date*	Date	8
OperatedBy*	Text	10
Turns*	Double	8 bytes
Position*	Text	10
HighTorque*	Integer	2 bytes
Begin Time*	Text	10
End Time*	Text	10
Remarks*	Text	100
Latitude*	Double	8 bytes
Longitude*	Double	8 bytes
GPS Positions*	Integer	2 bytes
ACtivityId*	Long Integer	4 bytes
TransferId*	Text	20

NOTE: The Remarks field contains remarks that the user has selected on the handheld controller while performing an activity.

TorqueCharts Table		
Field Name	**Data Type**	**Size**
ActivityID*	Number	2147483647 Max Value
ChartData*	Memo	64000

Remarks Table		
Field Name	**Data Type**	**Size**
RemarkID*	Text	4
Description*	Text	20

NOTE: Fields in the Remarks table appear as checkboxes in Vitals Mobile. The user can select these checkboxes to add the remarks to the activity record.

Fields Table		
Field Name	**Data Type**	**Size**
FieldName*	Text	50
Caption*	Text	50
Choices*	Memo	64000

NOTE: The Fields table stores pre-defined contents that the user can select from on the handheld controller.

For example, if you add a record to the table with the following values:

- FieldName: **Size**
- Caption: **Valve Sizes**
- Choices: **4;6;8;10;12;16;24**

the user will see the choices in a pull-down list under **Valve Sizes**. Selecting one of the choices will enter it into the valve record.

You can edit the choices for an existing field, or create new fields in other tables and specify their content in the Fields table.

Vitals Table		
Field Name	**Data Type**	**Size**
Version*	Text	50
CompanyName*	Text	50
AdminPassword*	Text	50
LockValves*	Yes/No	64000