



TIM[®] Total Instrument Manager

Instruction Manual Software Rev. 2.0

WARNING

THIS MANUAL MUST BE CAREFULLY READ BY ALL INDIVIDUALS WHO HAVE OR WILL HAVE THE RESPONSIBILITY FOR USING OR SERVICING THE PRODUCT. Like any piece of complex equipment, this instrument will perform as designed only if it is used and serviced in accordance with the manufacturer's instructions. OTHERWISE IT COULD FAIL TO PERFORM AS DESIGNED AND PERSONS WHO RELY ON THIS PRODUCT FOR THEIR SAFETY COULD SUSTAIN SEVERE PERSONAL INJURY OR DEATH.

The warranties made by Mine Safety Appliances Company with respect to the product are voided if the product is not used and serviced in accordance with the instructions in this manual. Please protect yourself and others by following them. We encourage our customers to write or call regarding this equipment prior to use or for any additional information relative to use or repairs.

CAUTION

For safety reasons, this equipment must be operated by qualified personnel only. Read and understand the instruction manual completely before operating.

In the U.S., to contact your nearest stocking location, dial toll-free 1-800-MSA-2222. To contact MSA International, dial 1-412-967-3354 or 1-800-MSA-7777.

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Manufactured by
MSA INSTRUMENT DIVISION
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MSA
Portable Instrument Warranty

1. **Warranty-** Seller warrants that this product will be free from mechanical defect or faulty workmanship for a period of one (1) year from date of shipment provided it is maintained and used in accordance with Seller's instructions and/or recommendations. This warranty does not apply to expendable or consumable parts whose normal life expectancy is less than one (1) year such as, but not limited to, non-rechargeable batteries, filament units, filter, lamps, fuses etc. The Seller shall be released from all obligations under this warranty in the event repairs or modifications are made by persons other than its own or authorized service personnel or if the warranty claim results from physical abuse or misuse of the product. No agent, employee or representative of the Seller has any authority to bind the Seller to any affirmation, representation or warranty concerning this product. Seller makes no warranty concerning components or accessories not manufactured by the Seller, but will pass on to the Purchaser all warranties of manufacturers of such components. **THIS WARRANTY IS IN LIEU OF ALL OTHER WARRANTIES, EXPRESSED, IMPLIED OR STATUTORY, AND IS STRICTLY LIMITED TO THE TERMS HEREOF. SELLER SPECIFICALLY DISCLAIMS ANY WARRANTY OF MERCHANTABILITY OR OF FITNESS FOR A PARTICULAR PURPOSE.**
2. **Exclusive Remedy-** It is expressly agreed that Purchaser's sole and exclusive remedy for breach of the above warranty, for any tortious conduct of Seller, or for any other cause of action, shall be the repair and/or replacement at Seller's option, of any equipment or parts thereof, which after examination by Seller is proven to be defective. Replacement equipment and/or parts will be provided at no cost to Purchaser, F.O.B. Seller's Plant. Failure of Seller to successfully repair any nonconforming product shall not cause the remedy established hereby to fail of its essential purpose.
3. **Exclusion of Consequential Damages-** Purchaser specifically understands and agrees that under no circumstances will Seller be liable to purchaser for economic, special, incidental or consequential damages or losses of any kind whatsoever, including but not limited to, loss of anticipated profits and any other loss caused by reason of nonoperation of the goods. This exclusion is applicable to claims for breach of warranty, tortious conduct or any other cause of action against Seller.

Warnings and Cautions

⚠ WARNINGS

1. Do not use silicone-type lubricants in assembling the TIM flow system and do not allow silicone vapors to be drawn into the flow system while in operation. Silicone tends to desensitize the combustible gas sensor, thereby giving erroneously low readings.
2. Use the TIM System only in non-hazardous environments free of combustible concentrations of gases and vapors.
3. Use only genuine MSA replacement parts when performing any maintenance procedures on the TIM System. Substitution of components can seriously impair calibration performance.
4. **Calibration Gas Assignments**

Only one gas concentration of the same calibration gas can be assigned to the TIM System for instrument test or calibration. The TIM System cannot differentiate concentration levels of the same gas.

Example: The user cannot:

- assign a gas cylinder of 1.5% Methane on solenoid valve no. 1 and also
- assign a concentration of 1.5% Methane on solenoid valve no. 2.

Therefore, the TIM System cylinder assignments are defaulted to allow calibration of instruments to selected calibration cylinders and selected methane concentrations. All Passport® Watchman® and Passport® FiveStar instruments are limited to calibration of 1.5% Methane, or 58% LEL for Pentane simulant and 2.5% CH₄ for Methane-calibrated instruments.

NOTES:**1. Software Revisions - Gasport® Instruments**

When calibrating Gasport instruments:

- Gasport software must be firmware Rev. 2.0 or higher for operation on the TIM System with firmware Rev. 1.2 or higher.
- Gasport instruments with firmware revisions lower than 2.0 must be tested or calibrated on TIM System Software Rev. 1.0i.
- Gasport instruments can be upgraded to firmware Rev. 2.0.

2. Software Revisions - Passport and Watchman Units

When calibrating Passport and Watchman instruments:

The Passport and Watchman firmware must be Software Rev. 4.0 or higher for operation with the TIM System. Version 4.1 or higher firmware is recommended.

3. Software Revisions - Passport FiveStar Instruments

When calibrating Passport FiveStar instruments:

- The Passport FiveStar firmware must be Software Rev. 3.0 or higher for operation with the TIM System.
 - The Passport FiveStar language must be set for English.
4. The TCC includes a Serial Pass-through mode, allowing the user to "launch" or use the MSA LINK or FiveStar LINK without disconnecting the Data Docking Module, Holster Assembly or JetEye from the TCC.
- Only the TIM System or a LINK program can be used at any one time; do not open both programs simultaneously.
 - In this mode, the TCC display reads:

"Pass-through Mode Testing disabled"

5. Passport and Passport FiveStar Instruments

The TIM System has not been approved for use by MSHA in calibrating instruments for use in underground mining applications. The standard, manual calibration procedure must be used for instruments in these applications.

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Chapter 1

System Descriptions

General Description

The TIM System is a computer-controlled calibration system for the:

- Gasport[®] Gas Tester
- Passport[®] Personal Alarm
- FiveStar[®] Alarm
- Watchman[®] Multigas Monitor and
- Orion[®] Multigas Detector.

TIM System Features:

- automatically identifies an instrument
- verifies the instrument calibration settings
- Bump Tests and/or calibrates the instrument
- stores calibration data for future retrieval and safety records
- maintains instrument serial number records
- records instrument assignment and location information
- maintains records and includes print record capability
- synchronizes instrument date and time to operating pc.

TIM System Components

The TIM System includes:

- Personal Computer (PC)
- TIM Control Center (TCC)
- Data Docking Module or Holster Assembly for Passport, Gasport or Watchman Instruments
- JetEye or Holster for Passport FiveStar Instrument
- calibration gas delivery system
- operating software.

The Personal Computer (PC)

The TIM System requires the use of a PC to run the TIM Testing and Calibration Software. This PC:

- stores all test, inventory and pertinent records for instruments maintained by the TIM System
- can be remotely located from the testing area.

All instrument testing is performed directly through the TIM Control Center; TIM System users are not required to operate any PC equipment to run the system.

System Requirements

Computer Requirements

A Pentium-based IBM-compatible computer is required to operate the TIM system with Windows 95 or 98 software. Minimum computer requirements are:

- IBM-compatible computer with a Pentium processor
- 16 meg RAM
- 30 Mb hard drive
- one open COM port per TCC
- keyboard
- monitor
- mouse (recommended).

The TIM software must communicate back and forth with the TCC and instrument in test. To ensure accuracy and smooth communication flows smoothly, there are many checks of timing for messages sent and received. To facilitate this, it is important that the PC not be used for other tasks while testing is in progress. System operation is greatly enhanced (user receives fewer communication errors) with more up-to-date computers. A Pentium-style PC with any reasonable clock speed will greatly improve system performance.

Screen Savers

As noted, TIM software relies on the computer central processing unit (CPU) to perform testing. Many screen savers included with PCs use a great deal of CPU time which will interfere with the

operation of the TIM System during testing. To avoid this, set the screen saver to the simplest possible option (such as "blank screen" which will simply darken the monitor screen).

The TIM Control Center (TCC)

The TCC (FIGURE 1-1) is the user interface for testing and/or calibrating instruments. While the TCC is connected to and controlled by the PC, it may be remotely located from the PC.

TCC Features:

- two-line LCD operator information display
- large RUN and STOP keys
- full alphanumeric keypad
- status LEDs
- alert horn
- calibration gas delivery system
- push-button operation.

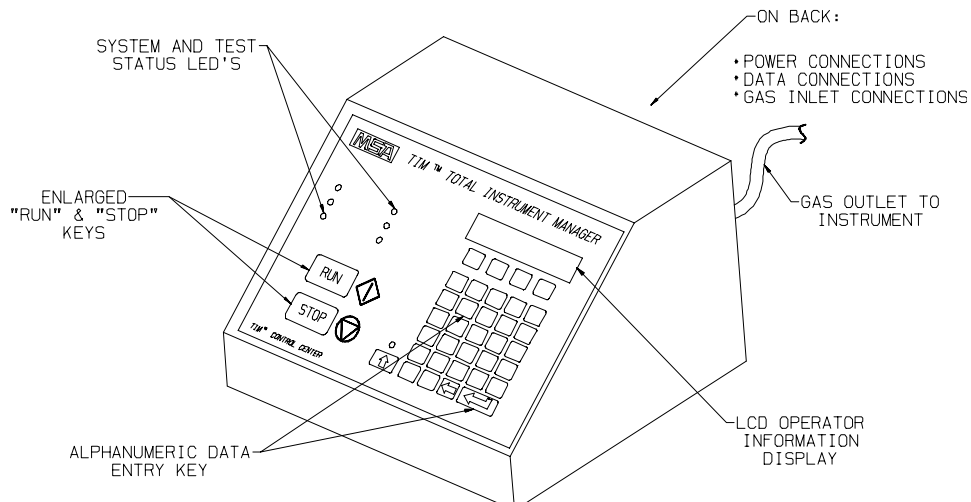


Figure 1-1.
TIM Control Center (TCC)

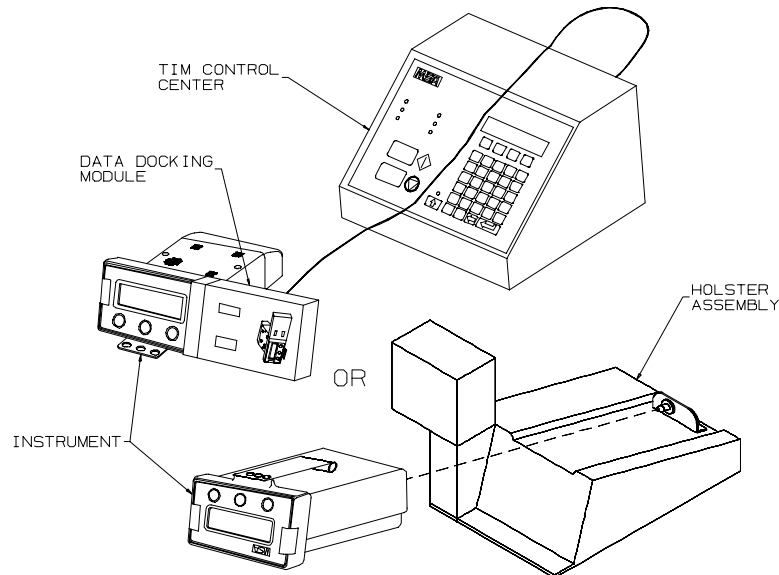


Figure 1-2.
Data Docking Module

The Data Docking Module

The Data Docking Module (P/N 804679) shown in FIGURE 1-2 is an electronic interface to send data to and from the instrument and the TCC.

The Data Docking Module:

- plugs directly into the UUT connector on the TCC
- is equipped with a bracket to orient it for correct alignment with the instrument
- is used with the Watchman instrument:
 1. Remove the two locking nuts and brackets from the Data Docking Module.
 2. Attach Bracket (P/N 10006711) with the two locking nuts.
 3. Attach the Data Docking Module with bracket to the Watchman instrument.

Holster Assembly

Integral or Add-on Holster Assembly (FIGURE 1-2) Features:

- same features as the Data Docking Module
- automatically positions the instrument for test
- automatically connects gas supply line
- integral pump for Gasport or Passport units (P/N 710658)
- add-on pump for Passport units (P/N 711391)
- FiveStar Holster (P/N 10010164)
- Orion Holster (P/N 10028009).

JetEye Infrared LINK

JetEye Infrared LINK (P/N 655505):

- plugs directly into the UUT connector on the TCC
- is free-standing and does not connect to the instrument
- must be located two to five inches from the instrument
- must be positioned on the left side of the instrument front panel.

Chapter 2 Setting Up TIM

Unpacking the TIM System

Several items are shipped with the TIM System. Check the contents of the shipping carton against the packing list. If an item is missing or damaged, notify your MSA representative or the Customer Service Department at **1-800-MSA-INST**. Properly dispose of all packing material.

Basic Setup

The following basic steps are necessary to start testing with the TIM System. Each step is described in greater detail in the body of this manual.

Installing TIM Software on the PC

The TIM software is easy to install. To install the TIM software:

1. Turn on the PC and start Windows™ software.
2. Place the TIM System Software CD in the computer CD drive.
3. Follow the instructions displayed on the screen.
4. For normal installation, press "OK" for the directory selections made by the install program.

Converting Data from TIM Software 1.2

1. Turn ON the PC and start Windows Software.
2. For most users, select **START, PROGRAMS, MSA TIM 2.0, CONVERT TIM DATA V1.2 TO V2.0**
3. After the Application window opens, select an automatic conversion or one of the two manual conversions.
4. Follow the instructions that appear on the screen.

Setting the TIM Software Icon

To set up the PC to start the TIM software when Windows starts:

1. Open folder **C:\Windows\Start Menu\Programs\Startup**.
2. Select **File**.
3. Select **New**.
4. Select **Shortcut**.
5. In the "command line" box, enter the name and directory path of the TIM program.
 - The Browse button can be used to find this.
 - In a normal installation, the directory is:

C:\Program Files\MSA TIMMSA_V20.exe

Setting up the TCC

1. Verify that TCC power switch is OFF; then, connect power.
2. Connect the TCC power cable to:
 - any 120 VAC power source (standard house receptacle) or any 220 VAC power source
 - the socket on the back of the TCC.
3. Connect the 9-pin data cable to a PC serial com port and to the TCC RS-232 connector.
4. Connect the Data Docking Module or Holster to the TCC (UUT Connector).
5. Connect JetEye to the TCC (UUT Connector).
6. Remove the plastic cap plug from the TCC rear gas port #6.
7. Attach the dust filter to TCC gas port #6, if supplied/desired (P/N 633697).
8. Install the Demand Regulator on the calibration gas cylinders; refer to Regulator instructions for proper installation.
9. Connect calibration gas tubing to gas port #1 (and other ports, as necessary); remove plastic cap.
10. Chlorine and ammonia calibration.

Chlorine and Ammonia Calibration

Chlorine and ammonia calibrations can only be performed on MSA's FiveStar Alarm with instrument software revision of G-00 or higher. FiveStar Alarms that are not revision G-00 can be upgraded to the latest software. Contact MSA customer Service

at 1-800-MSA-2222 for information on upgrading FiveStar Alarm instruments.

Other instruments compatible with the TIM System (such as Passport Personal Alarm, Watchman Multigas Monitor, Gasport Gas Tester and Orion Multigas Detector) cannot be used for chlorine calibrations on the TIM System.

The Chlorine- or Ammonia-approved TIM Control Center (TCC) is identical in appearance to a standard TCC (see FIGURE 1-1), with the addition of a front label indicating "Chlorine Approved" or "Ammonia Approved," identifying the TCC as chlorine- or ammonia-compatible. The S/N label, on the back of the TCC will be version 1.0X. The software supplied on a CD will be P/N 10035440.

Operation of a chlorine-or ammonia-approved TIM System is identical as for standard TIM System calibration. There is no difference in user operation or user inputs as given in Chapters 1 through 8.

The only difference between chlorine or ammonia calibration and standard calibration is in Chapter 3 procedures, "Calibration Gas Connections" and "Solenoid to Gas Cylinder Assignments Page". Calibrations using chlorine or ammonia gas require the use of a zero air cylinder, a special Gas Miser Demand Regulator (P/N 10034391) approved for chlorine or ammonia gas, and a Tee and Tubing Assembly (P/N 10038730) in the plumbing of the zero air cylinder to the fresh air inlet port and solenoid assignment.

Calibration Gas Connections

As outlined in Chapter 3, "Calibration Gas Connections", "Fresh Air", a chlorine calibration must be performed with a zero air supply cylinder to the fresh air inlet port. Zero air is also required for the actual calibration.

Set-Up

- Do not use the fresh air inlet filter (supplied) as listed in "Setting up the TCC".
 1. Connect the Gas Miser Model BD to the zero air BD cylinder (P/N 710776).
 2. Connect the Tee and Tubing assembly (P/N 10038730) to the outlet barb of the BD Regulator.

3. Connect one end of the tubing assembly to Inlet Port # 6 or fresh air inlet on the gas inlet manifold (see FIGURE 3-2).
 4. Connect the second end of the tubing assembly to Inlet Port #1 of the inlet manifold.
- Additional calibration gases, depending on the sensors contained in the instrument(s) are to be connected in a similar manner using a Gas Miser regulator for each assigned cylinder.
 - The Gas Miser Model RP regulator (P/N 10034391) must be used for chlorine calibration or ammonia gas.

Solenoid Assignment

See Chapter 4, "Solenoid Assignments" for calibration gas cylinder assignments.

1. Assign Zero Air Cylinder (P/N 710776) to TCC Solenoid #1, (TCC #_).
2. Assign all required calibration gases as listed in Solenoid Assignments.

System Connections (FIGURE 2-1)

Multiple Connections - TCC Switch Box

The TCC switch box (P/N 10010168) allows the use of the:

- Data Docking Module
- Holster Assembly
- FiveStar Data Docking Stand and
- JetEye Infrared Link

without disconnecting the:

- Holster
- Data Docking Module or
- JetEye Infrared LINK.

NOTES: The user can switch between the two communication links by selecting position "A" or "B" for the respective instrument to be connected.

1. Select one of the following for connection:

- Data Docking Module
 - Holster Assembly or
 - JetEye Infrared .
2. Connect the nine pin cable from:
- the Holster Assembly or Data Docking Module to one of the nine-pin connectors (A or B) or
 - the JetEye to the other connector (A or B).

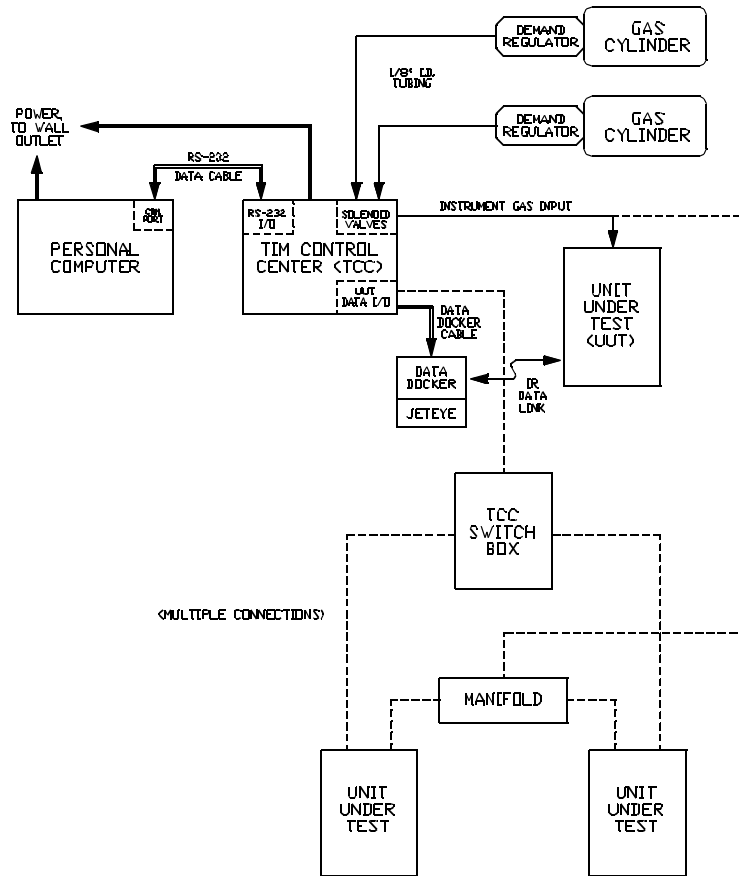


Figure 2-1.
TIM System Hook-up

3. Connect the supplied cable (P/N 10009121) from the UUT connector located at the rear of the TCC to the switch box connector labeled "C."
4. Select switch position A or B.

Gas Connections

The Switch Box is supplied with a manifold assembly, complete with check valves and required tubing.

1. Connect UUT tubing from the TCC to the "T" connector in the manifold.
2. Connect tubing from the manifold (after check valves) to the Holster Assembly or instrument.
3. It is not necessary to remove the tubing once it is connected to the Holster Assembly.

Chapter 3

TIM System Overview

Power Connections

- The TCC can operate on either 110 or 220 VAC.
- Power must be available in the TIM setup area to operate the:
 - PC (although the PC can be remotely located) and
 - TCC.
- Outlets for chargers must be available for TIM System setup.

The supplied power cord must be plugged into the rear TCC socket and into an appropriate power source (FIGURE 3-1).

Communication Connections

The TCC communicates with the PC using one of three communications protocols. The standard setup configuration calls for the PC and TCC to be located less than 25 feet apart (local). If desired, however, it is possible to remotely operate the TCC up to 1000 feet away.

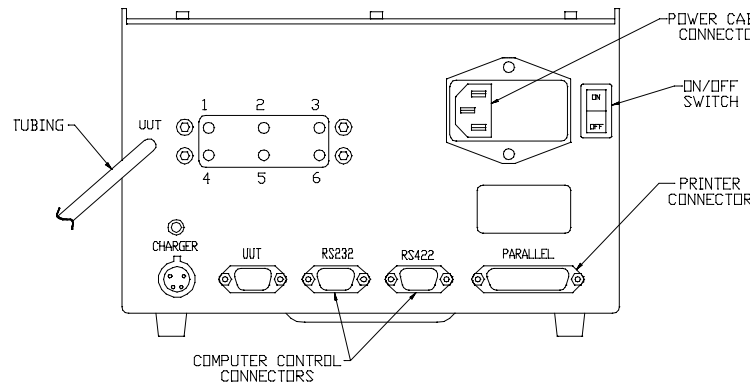


Figure 3-1.
TCC Rear View Connectors

Standard, Short Distance (RS-232) Operation

Standard TIM System operation allows the TCC and the PC to be located up to 25 feet apart. The system is supplied with a six-foot cable to allow local PC to TCC communication.

- One cable end must be inserted in the rear TCC connector marked **RS-232**.
- The other cable end must be connected to a PC serial com port.
- In some cases, a 25-to-9 pin serial adapter may be required (the PC COM port may be 25-pin).
- If a longer separation is desired, a longer serial communication cable may be used.
- Serial adapters and cables can be purchased at any computer/electronics supply store.

Special, Remote PC (RS-422/RS-485) Operation

This option is used when the PC must be located a significant distance from the TCC. This approach requires:

- a dedicated RS-422/485 communication cable and
- a special PC extender card.
 - The TCC is supplied with a separately marked connector for this communication protocol.

Calibration Gas Connections

The TIM System automatically introduces calibration gases to the instruments being tested.

- This calibration gas is delivered via a set of solenoid valves located inside the TCC.
- Six inlet ports with barbed fittings located on the rear of the TCC case allow easy connection to inlet tubing for calibration gases (see FIGURE 3-2).
- For proper system operation, calibration gas cylinders connected to the TCC must be fitted with demand regulators.

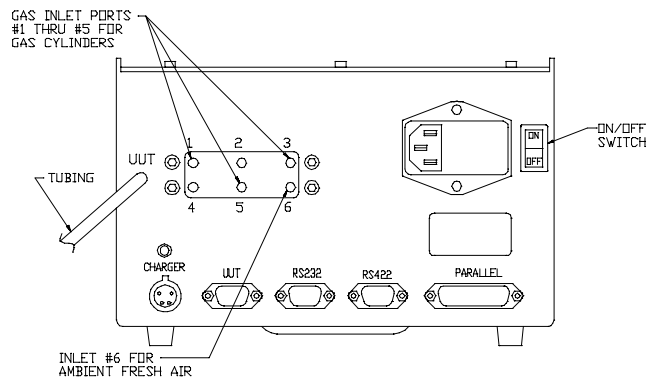


Figure 3-2.
Calibration Gas Cylinder Connection to the TCC

Fresh Air

The TIM System requires that TCC port #6 be supplied with fresh air, except for chlorine or ammonia calibrations (see Chapter 2, "Chlorine and Ammonia Calibration".) If the system is used in an area likely to contain toxic gas concentrations (e.g., a garage), a cylinder of Zero Air [Model RP - 58 liters (P/N 801050) or Model BD - 552 liters (P/N 710776)] may be used to ensure that background levels of these toxic gases are not zeroed-out during calibration. Assign zero air to one of the solenoid valve input connections; see Chapter 4, "Assigning a Cylinder to a Solenoid".

Calibration Gases

As previously noted, the calibration gases are connected to the barbed fittings on the back of the TCC.

NOTE: When connecting calibration gas cylinders, record the valve number used for each cylinder. The user must later instruct the TIM software as to what gas cylinder is connected to what valve (FIGURE 3-2).

Demand Regulators

As previously noted, calibration gases must be supplied to the TCC through demand regulators which supply the exact amount of gas required by the unit in test. Demand regulators are available from MSA for:

- MSA Model RP calibration cylinders (P/N 710288)
- MSA Model RP calibration cylinders for chlorine and ammonia (P/N 10034391)
- MSA Model BD calibration cylinders (P/N 710289) or 200-cubic foot cylinders from a third party supplier
- Low pressure, natural gas supply lines (P/N 710545).

Gas Supply Tubing

In order to ensure accurate calibration readings, the tubing used to connect the cylinder and demand regulator to the TCC must be compatible with the calibration gases.

Polyurethane tubing (MSA P/N 603806) is adequate for all gases qualified for use with the TIM System and all gases used with the Gasport, Passport, Passport FiveStar, Orion Multigas and Watchman instruments.

In general, locate the cylinders near the TCC to keep tubing lengths as short as possible.

Ventilation

WARNING

The user must provide adequate ventilation for the toxic calibration gases used for calibrating their instruments with the TIM System. In addition, line gas for calibrating the Gasport instrument must be properly vented to prevent the build-up of a potentially explosive concentration of combustible gases. Failure to comply with this warning can result in serious personal injury or death.

System Start-up

TCC Operation

Turn ON the TCC using the power switch on the back of the unit:

NOTE: If the PC is not yet running the TIM Software, the TCC should display one of two messages:

**Waiting for TIM
RS232 Connection...**

OR

**Waiting for TIM
RS422 Connection...**

Data Docking Module or Instrument Holster Operation

The Data Docking Module or Instrument Holster have an LED indicating if they are powered. Verify:

- proper connection to the TCC
- that Data Docking Module ON/OFF switch (right-hand switch when viewed from the IR I/O end) is turned ON.

The Data Docking Module may be powered with an Omega™ Charger or a 9-volt battery. When using a 9-volt battery, the LED is green. A weak battery is indicated when the LED is a pale green to amber.

JetEye Infrared Link Operation

The JetEye Infrared Link:

- has no LED power indicator
- is powered through connection to the TCC.

TIM Computer Operation

TIM Software operation is similar to most Windows programs.

- Actual System log-ON information appears in Chapter 4, "Using the TIM System."
- The main screen of the TIM Software is the Test screen. The TIM window has two main features (FIGURE 3-3):
 - menu area
 - TCC (COM Port) viewing area.

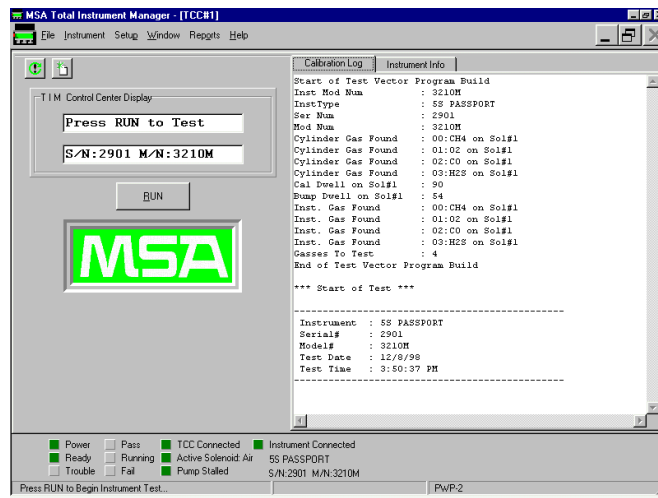


Figure 3-3.

TIM Window Menu Area and TCC (COM Port) Viewing Area

TIM Menus

To Access Pull-down Menus at Top of the Screen

Select the menu of interest and click the left mouse button to obtain a list of options; click on the desired option with the left mouse button.

NOTE: As an alternative (or if no mouse is connected to PC):

- press the "ALT" key; then, select an item by typing the underlined letter from the desired menu or menu option or:
- use the Up and Down Arrow keys; select highlighted command and press "Enter" to execute.

Description of TIM Pull-Down Menus

ITEM	SELECT THIS OPTION TO:
FILE MENU	
LOG-ON	Log onto the system. Users with different password levels will have access to different system features
LOG-OFF	Log off the system
USERS	View, enter, or modify information about the system users
EXIT	Quit the TIM program. All data recorded during the session is automatically saved for future retrieval
INSTRUMENT MENU	
INVENTORY	View and edit instrument information and calibration results
CALIBRATION RESULTS	View individual calibration results
SETUP MENU	
CYLINDERS	View, edit, add, and delete cylinder definitions and contents
SOLENOIDS	View, assign, and unassign cylinders to the six TCC solenoids
PREFERENCES	View and edit TIM software configuration including: COM port activation, printing options for the test results, type of testing being done, and user ID and password requirements for different system operations
WINDOW MENU	Arrange the TCC viewing screens (one for each active COM port)
REPORTS MENU	
TEST RESULTS	View a report summary of individual calibration results
INSTRUMENT INVENTORY	View a report summary of instruments in the inventory
INSTRUMENT CALIBRATION DUE	View a report summary of instrument calibration due dates
USERS	View a report listing of all of the users on system
USER DEFINED	View a report listing as defined by user

TCC Status Bar

The TCC Status Bar at the bottom of the TCC viewing area (FIGURE 3-4) gives the real-time status of the TCC connected to a particular COM Port. The Status Bar conveys the following information through solid red or green indications:

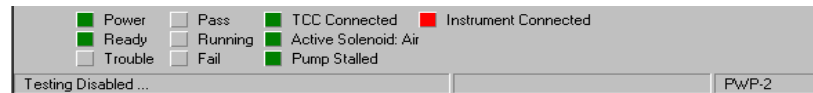


Figure 3-4.
TCC Status Bar

- Serial number and type of instrument currently connected to the TCC
- System status of the TCC (if it is powered, ready, or in a trouble mode)
- State of the last calibration test (if the test passed, failed, or is currently running)
- Which solenoid is active
- Whether or not the instrument pump is functioning properly
- A message area regarding the status of the test in progress
- Password level of current user.

TIM User Interface Screens

Several screens built into the TIM System assist the user in setting up or changing the system assignments. This section describes each of these screens in some detail. Performing basic TIM setup operations using these screens is covered in a later section.

Password Protection (PWP) and Logging onto the TIM System

The TIM System can be operated without logging on at all. For specialized setup procedures and screen access, however, it is necessary to log onto the system with a higher security password. There are three levels of operators established for the TIM System:

- User - Password Protection (PWP) Level 0
- Technician - PWP Level 1
- Supervisor - PWP Level 2.

Higher PWP levels have access to view/edit more system functions.

Level - PWP 0 (User)

- does not need to log onto the TIM System at all
- is able to run tests
- cannot view or edit system information
- can view information about the instrument under test as shown on the **INSTRUMENT** pull-down menu
- can view instrument inventory.

Level - PWP 1 (Technician)

- can make simple operational changes to TIM System setup:
 - View and edit instrument inventory information
 - view, edit, add, or delete gas cylinders or contents
 - view and edit solenoid valve assignments on the TCC

Level - PWP 2 (Supervisor)

- allowed to perform all necessary tasks to setup and run the TIM System. In addition to the PWP 1 functions, PWP 2 can:
 - View, edit, add or delete users and their passwords
 - Delete instruments from inventory
 - Delete records from the calibration history
 - Set up the TCC COM Port assignments
 - View, edit, add or delete all gas cylinder information.

Users

The TIM System has a provision for customers to track the users which are qualified to use the system. Selecting the **USERS** option from the FILE menu brings up the **USERS** screen (FIGURE 3-5). This screen allows the customer to enter the following information:

PROMPT	DESCRIPTION
USER ID	A unique number, letter or combination sequence the user will utilize to identify themselves when testing an instrument.
LAST NAME	The user's last name
FIRST NAME	The user's first name
PWP LEVEL	The user's password protection level (0, 1, 2, or 3)
PASSWORD	The user's password to be entered when logging on to TIM

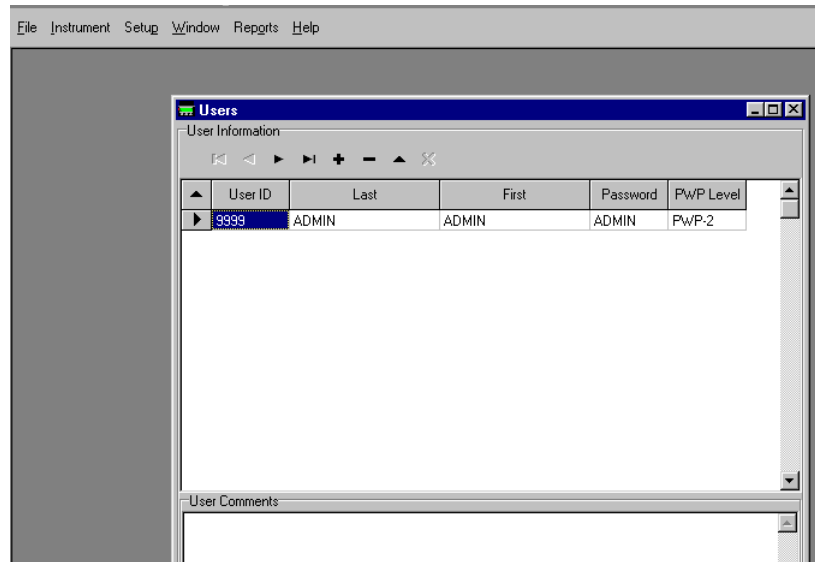


Figure 3-5.
Users Option

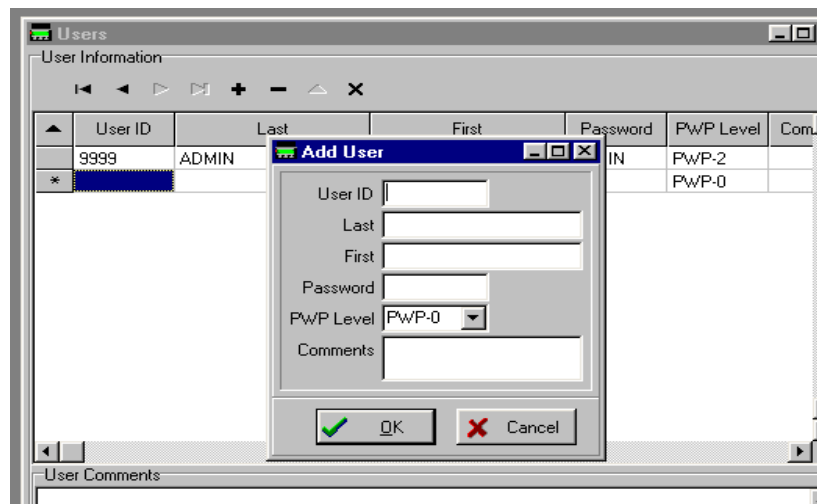


Figure 3-6.
Users Information Screen

Instrument Inventory

The TIM System tracks all of the tested instruments. Selecting the **INVENTORY** option from the **INSTRUMENT** menu brings up the **INSTRUMENT INVENTORY** screen (FIGURE 3-7).



Figure 3-7.
Instrument Menu Access to Inventory Screen

To help track instruments, further information regarding the instrument’s “owner” and location is possible. In addition, the instrument test data is accessible through this screen. The **INVENTORY** screen is broken into two sections (FIGURE 3-8):

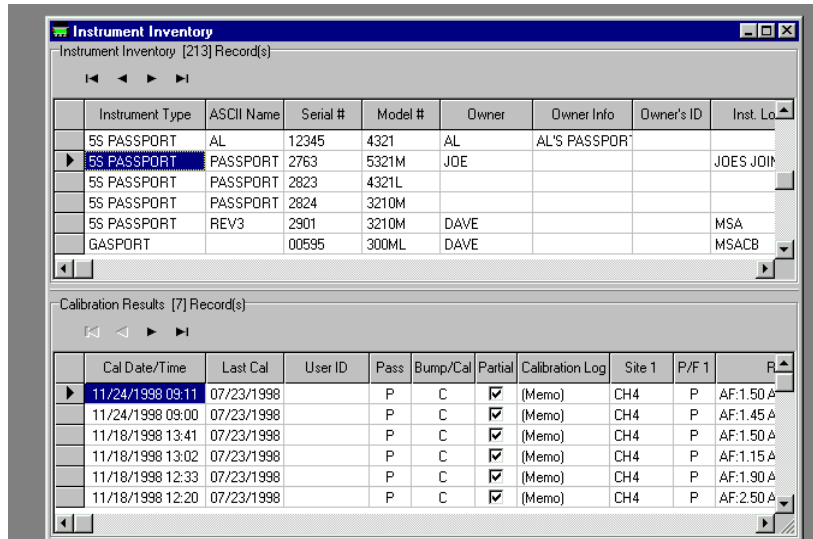


Figure 3-8.
Instrument Inventory Screen

- inventory listing (top)
- test summary listing and detailed test records (lower)

To print a detailed record of any highlighted Test Record, click on **Test Receipt**. To leave the **INVENTORY** screen and return to the main screens, select the "X" button to close the window.

Instrument Inventory/Calibration Results

The **INSTRUMENT INVENTORY** section sorts data by instrument type and serial number; it allows the user to scroll through all of the instruments tested in the local TIM System database.

Selecting the **INVENTORY** option in the **INSTRUMENT** menu brings up the **INSTRUMENT INVENTORY** screen (FIGURE 3-8).

To view the data:

- use the scroll bars attached to the Inventory viewing box or
- use the arrow keys under the box.

The system automatically adds a new FiveStar, Gasport, Passport or Watchman instrument to its database when the instrument is first connected to the system. Before the TIM System will add an Orion instrument into the system database, the four-digit numeric system must be manually entered by the operator. Once the instrument serial number is added, it will never need to be added again.

To enter further data, such as instrument owner, simply double click in the appropriate field and type in the information.

Comments

The TIM System provides an area for free-form instrument inventory comments. In this space, the user may want to provide more information regarding instrument history (e.g., sensor replacement, or additional information about the user). The Comments are entered from the Inventory data entry screen as indicated in the previous section. To enter further data, simply double click in the **COMMENTS** field to enter the **COMMENTS** screen.

Calibration Results

The Instrument Inventory **CALIBRATION RESULTS** section provides a full listing of calibration records for the instrument highlighted in the top Inventory section. The records display:

- partial or complete test
- last calibration date
- individual site information ("site" is the sensor position in this instrument)
- bump or calibration
- P/F for pass/fail
- date and time of the test
- operator identification entered at the time of the test.

The user can scroll through this data by using either the scroll bars or the arrow keys.

Calibration Results (FIGURE 3-9)

The **CALIBRATION** information section sorts data by calibration date and time; it also provides a detailed record of the test highlighted in the **INSTRUMENT CALIBRATION HISTORY** section. This section displays:

- pass or fail
- bump or calibration
- partial or complete calibration

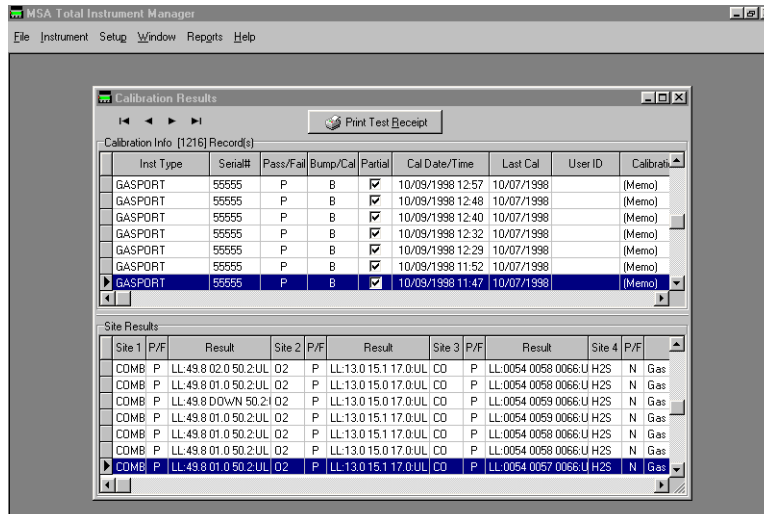


Figure 3-9. Calibration Results

- calibration date and time
- last calibration date
- user ID
- testing log.

For bump test records, the record contains three numbers:

NUMBER	DESCRIPTION
LL: ###	LL denotes "lower test limit"
###	the middle number is the actual reading
### :UL	UL denotes the upper test limit.

For sensor calibration changes which have passed, the record will display two numbers:

NUMBER	DESCRIPTION
AF: ###	AF denotes the "as found" reading of the instrument before the calibration command
AL: ###	AL denotes the "as left" or what the instrument reading was set to for the calibration

If a test fails for a specific sensor, it will show the same information as shown for the bump test.

Gas Cylinder Definition Page

The TIM system stores calibration cylinder information in the **GAS CYLINDER DEFINITIONS** page (FIGURE 3-10). This page can be reached by selecting the **CYLINDERS** option in the **SETUP** Menu; it is used to store cylinder information and enable the user to quickly select a cylinder from a list and attach it to a solenoid valve at TIM system set-up.

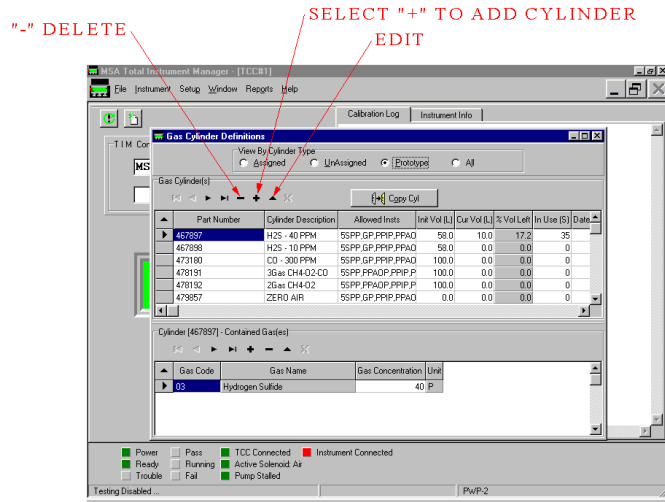


Figure 3-10.
Gas Cylinder Definition Page

In addition, this page enables the user to generate entries for custom cylinder gas mixes and to track gas cylinder inventory.

The cylinder records are divided into three lists:

CYLINDER	DESCRIPTION
PROTOTYPE	Prototypes are pre-defined cylinders with detailed gas contents already entered. To simplify getting started, the TIM software comes with a selection of installed, standard MSA part-numbered calibration gas cylinders. These Prototype cylinders are "starter sets" for assigning cylinders to a solenoid.
ASSIGNED	Once a Prototype cylinder is assigned to a solenoid valve, the TIM system generates a record in the Assigned cylinders list. The system considers the assignment to be a physical cylinder that the user can clearly identify to assist in cylinder inventory tracking.
UNASSIGNED	When a cylinder is unassigned from a solenoid valve, the record for this cylinder is placed in the Unassigned cylinder list. These cylinders may be reassigned to a solenoid valve, which may be done if a cylinder is temporarily removed from service and later returned to use.

The Gas Cylinder Definition screen is divided into two parts:

1. Gas Cylinder listing (top of screen)
2. Listing of contained gases (bottom of screen).

Gas Cylinders Listing

The Gas Cylinders Listing allows the user to scroll through and view all cylinders in all three categories (Prototype, Assigned, and Unassigned) available in the database. To select between the three categories, click on the button beside the appropriate category to be viewed. The Cylinder Listing displays the following information about each cylinder:

LISTING	DESCRIPTION
PART NUMBER	MSA part number or user-entered identification number
CYLINDER DESCRIPTION	User-entered description of cylinder
ASSIGNED TCC	This list only pertains to Assigned cylinders; it identifies which TCC is currently assigned to the cylinder
ALLOWED INSTS	A list of instrument types (Gasport, Passport, Passport FiveStar, or Watchman) that are allowed to be calibrated using that particular cylinder
INIT VOL (L)	Cylinder contained volume of gas (in liters)
CUR VOL (L)	Current estimated volume of gas in the cylinder (in liters)
% VOL LEFT	Percentage of estimated volume of gas left in the cylinder
IN USE(S)	Amount of time the cylinder has been used during calibration (in seconds)
DATE INSTALLED	User-entered date of cylinder installation on the TIM system
DATE EXPIRE	User-entered date of cylinder expiration requiring its removal from the TIM system
COMMENTS	Allows the user to enter comments pertaining to the cylinder

Cylinder Contained Gases

This section of the Gas Cylinders Definition screen supplies detailed information about the make-up of the cylinder highlighted in the listing section at the top of the screen. Several important pieces of information entered in the section ensure proper calibration testing:

INFORMATION	DESCRIPTION
GAS CODE	Code number for the gas type
GAS NAME	Name of the gas
GAS CONCENTRATION	Gas concentration
UNIT	Unit of gas concentration (ppm or %)

When creating a new cylinder, the user must completely enter the gas make-up of the cylinder in order to ensure accurate testing.

Solenoid to Gas Cylinder Assignments Page

To set up the solenoid to gas cylinder assignments for running the TIM testing, select the **SETUP** menu, **SOLENOIDS** option. The **SOLENOID TO GAS CYLINDER ASSIGNMENTS** page (FIGURE 3-11) contains two basic sections:

1. Top section: solenoid map.
2. Bottom section: gases contained in the cylinder currently attached to the highlighted solenoid in the top section.

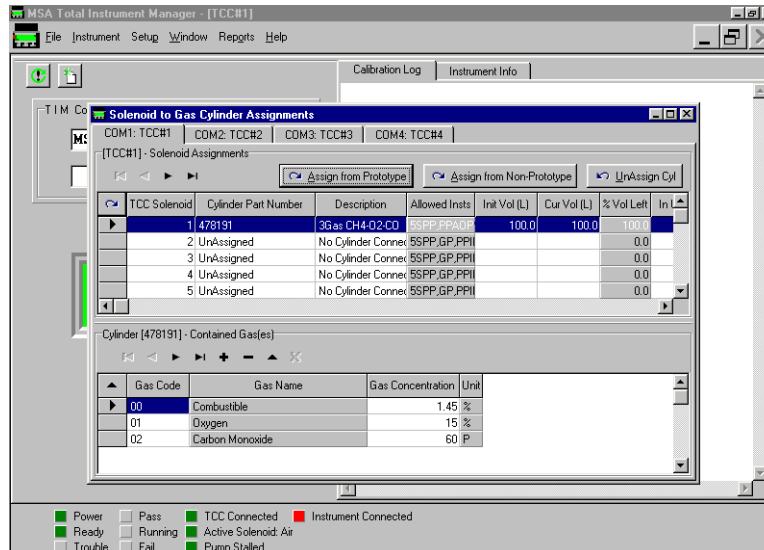


Figure 3-11.
Solenoid to Gas Cylinder Assignments Page

Solenoid Map Section

The solenoid map shows all of the cylinders currently assigned to the TCC of interest. The tabs at the bottom of the screen allow the user to view assignments for any of the four TCCs which may be connected to the PC COM Ports. The Solenoid Map section contains the following information:

ITEM	DESCRIPTION
TCC SOLENOID	The Solenoid number (marked on the back of the TCC)
CYLINDER PART NUMBER	MSA part number or user-entered identification number
DESCRIPTION	Text description of the cylinder
ALLOWED INSTS	A list of instrument types (Gasport, Passport, Passport FiveStar, or Watchman) that are allowed to be calibrated using that particular cylinder
INIT VOL (L)	Cylinder contained volume of gas (in liters)
CUR VOL (L)	Current estimated volume of gas in the cylinder (in liters)
% VOL LEFT	Percentage of estimated gas volume left in the cylinder
IN USE (S)	Amount of time the cylinder has been used during calibration (in seconds)
DATE INSTALLED	User-entered date of cylinder installation on the TIM system
DATE EXPIRE	User-entered date of expected cylinder expiration/removal from TIM system
COMMENTS	Allows user to enter comments pertaining to the cylinder

In general, the length of time a test requires depends on the number of solenoid valves that must be accessed to calibrate an instrument. This is because each time a gas is applied, a set dwell time must pass before the instrument gas readings stabilize. If the gases are supplied in a mixture, the dwell times can run concurrently, significantly reducing the total test time. It is therefore recommended that the user select calibration gas mixtures to reduce the number of solenoids required for a particular test.

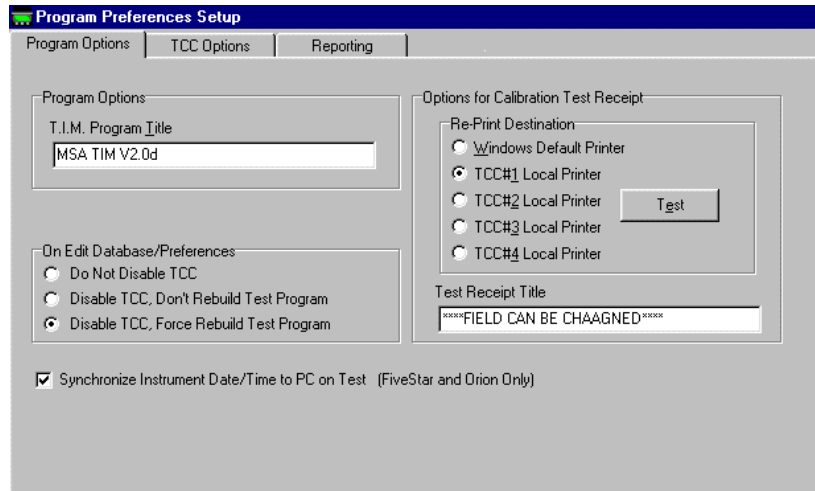


Figure 3-12.
Preferences Page

Preferences Page

The **PREFERENCES** Page is used to set up the TIM software testing environment. To reach this page (FIGURE 3-12), select the **PREFERENCES** option from the **SETUP** menu. The **PREFERENCES** Page is composed of three major sections:

- Testing options for each TCC
- Data integrity options
- Reporting options
- Synchronize date and time.

Testing Options for Each TCC

The testing options include a variety of options including:

- COM Port enabled/disabled
- Security requirements for adding new instruments to the inventory
- Security requirements for testing an instrument
- The type of test and action the system will perform
- Printing options for test results.

Data Integrity Options

The Data Integrity Option (listed as "**ON EDIT DATABASE/PREFERENCES**" in the **PREFERENCES** Page), indicates how the system should manage the testing environment when the user makes changes. For example, one option forces a rebuild of the test program when an edit page is accessed. Regardless of whether a change is actually made, the test program is rebuilt to ensure that the test environment is always up to date.

A detailed discussion of the options in the **PREFERENCES** page is given in Chapter 4.

Synchronize Date and Time

Checking this box by using the mouse to point and click, automatically sets the date and time of the instrument to the date and time of the operating pc.

Chapter 4 Using the TIM System

Passwords and TIM Log-on

Initializing the TIM Program

1. Start the TIM Software from the icon on the **Desktop** or **Explorer** menu.
 - The initial screen will be blank (FIGURE 4-1).
2. Log on the system as the System Manager.
3. From the **HEADER** menu, select **FILE**.

NOTE: TIM System software is supplied with one default user. To initially log on the System at PWP Level 2:

- a. From the **FILE** menu, select **LOG-ON** (FIGURE 4-2).

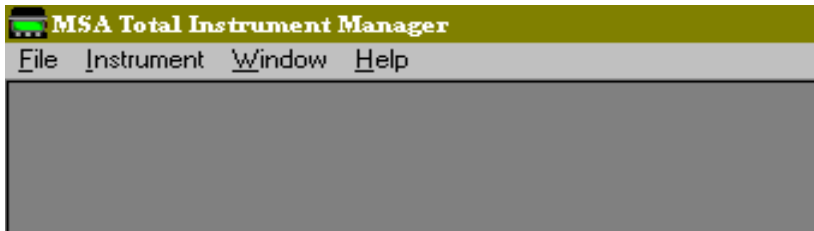


Figure 4-1. Initial Screen



Figure 4-2. Select FILE Menu, LOG-ON Option

- b. From the list of users in the Log On box, select ADMIN (FIGURE 4-3).
- c. Select the **OK** button.
- d. Enter the password "ADMIN" (FIGURE 4-4).
- e. Select the **OK** button.
 - User is now logged on the System as a PWP Level 2 user.
 - It is recommended that the System PWP 2 operator erase these default names after setting up individual profiles for TIM System users.

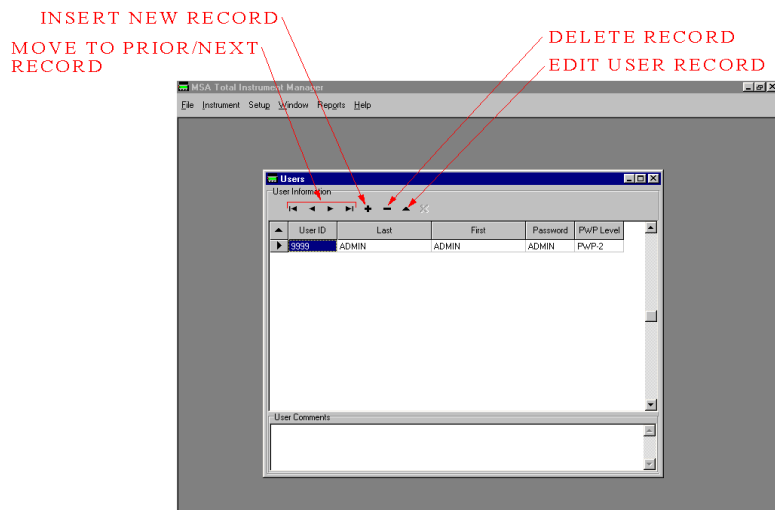


Figure 4-3. Select ADMIN from the Logon Box

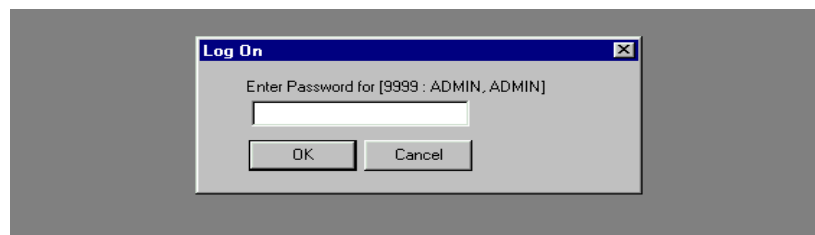


Figure 4-4.
Enter the Password "ADMIN"

Creating a New User and Password

1. Log on the TIM System at PWP Level 2.
2. From the **FILE** menu, select the **USERS** option (FIGURE 4-5).
3. From the Header Bar on the **USER INFORMATION** screen, select the "+" button (FIGURE 4-6).

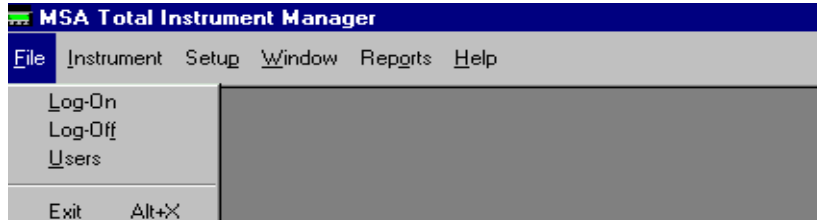


Figure 4-5.
Select USERS Option from the FILE Menu

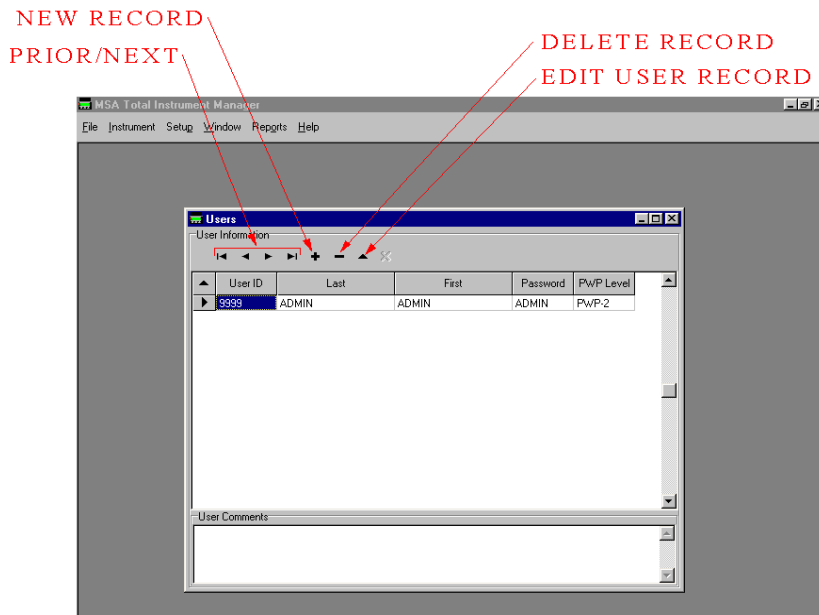


Figure 4-6.
User Information Screen

4. Enter user information in the **ADD USER** screen (FIGURE 4-6).
5. Select the **OK** button to save the data.
6. Select the **"X"** button to close and return to the main screen.

Editing a User's Information

1. Log on the TIM System at PWP Level 2.
2. From the **FILE** menu, select the **USERS** option.
3. Highlight the user whose data must be edited.
4. Select the **▲** button (FIGURE 4-7).
5. Edit the information as required in the **EDIT USER INFORMATION** screen.
6. Select the **"X"** button to close and return to the main screen.

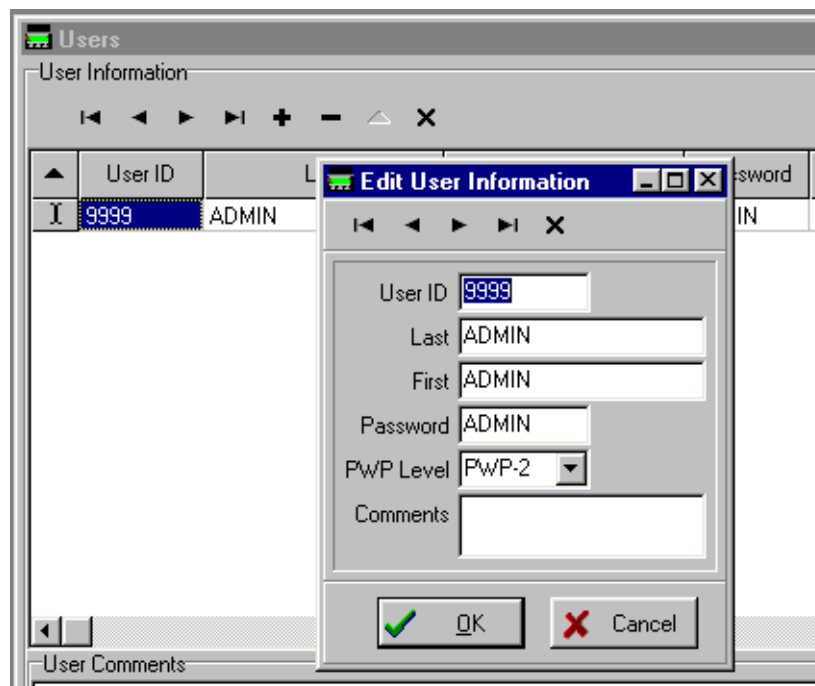


Figure 4-7.
Edit User Information Screen

Deleting a User

1. Log on the TIM System at PWP Level 2.
2. From the **FILE** menu, select the **USERS** option.
3. Highlight the user whose data must be edited.
4. From the Header Bar , select the "-" button (FIGURE 4-8).
5. Select the "X" button to close and return to the main screen.

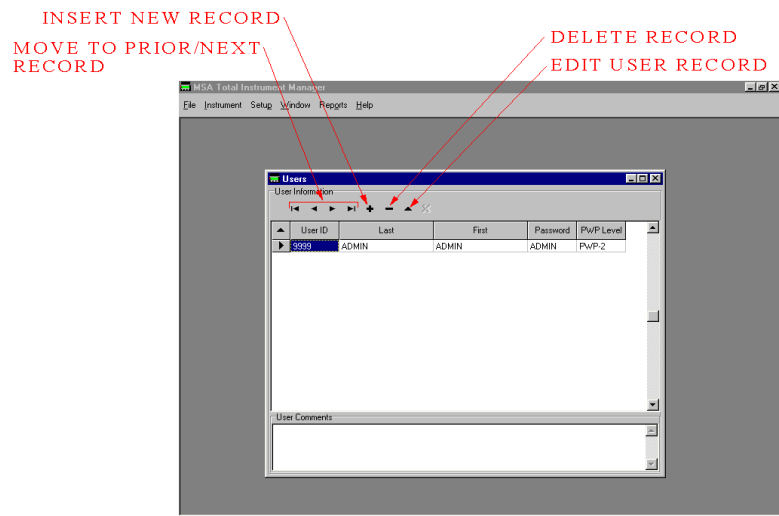


Figure 4-8.
Select the "-" Button from the Header Bar

Program Preferences Setup

Before instrument testing can be performed on the TIM System, certain information must be assigned by the System Manager:

- TCC [enable] to the PC COM PORT
- Operator(s) Identification ID (optional)
- User Identification (optional)
- Type of Testing
- Password (optional)
- Test Receipt Print (optional)
- Calibration Gas Assignment(s)
- Instrument Assignment, Model and Pump
- Test Receipt (optional).

To Access the Assignment Screen

1. Log on to the system.
2. From the **SETUP** menu, select **PREFERENCES** (FIGURE 4-9).

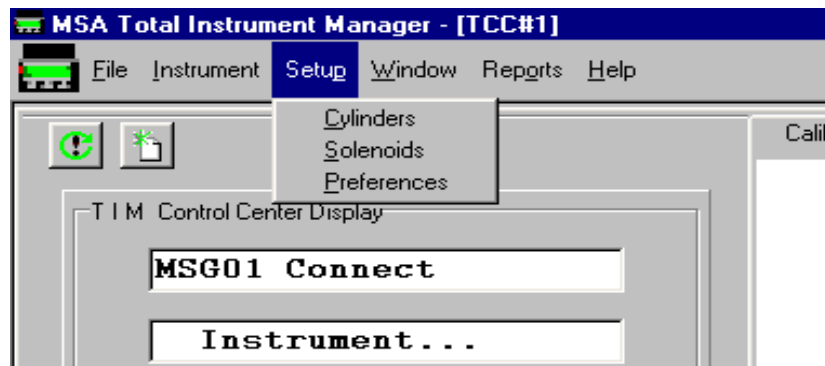


Figure 4-9.
Select PREFERENCES from SET UP Menu

TCC Options Tab

- Program Preference Setup screen appears (FIGURE 4-10).

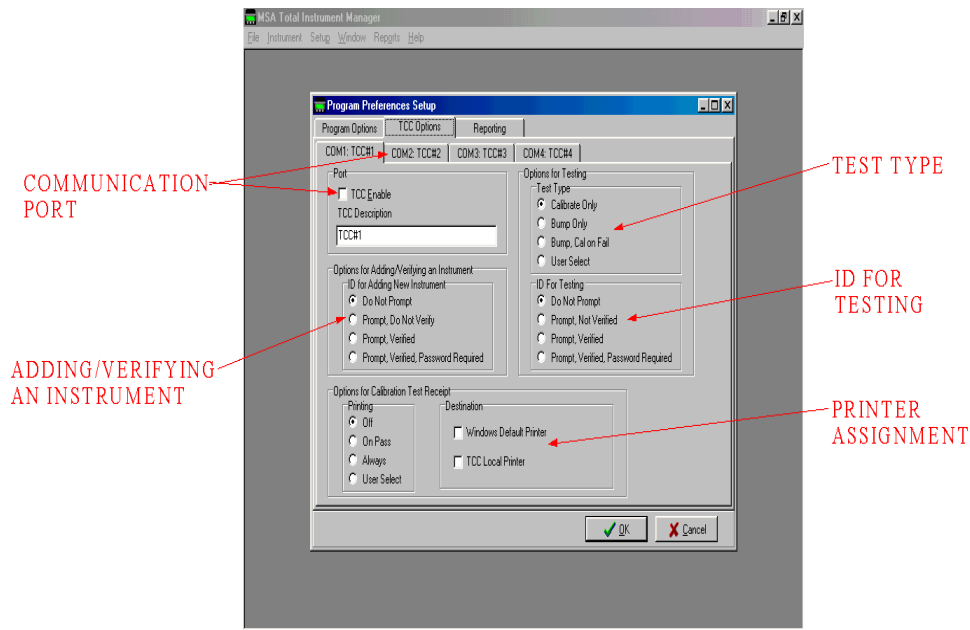


Figure 4-10.
Program Preference Setup Screen - TCC Options Tab

Communication Port

1. Select and assign the correct communications port of PC.
2. Place mouse cursor at the TCC Enable and click the left mouse button.
3. If more than one TCC will be used, again select TCC Enable to the corresponding PC COM port.

Options for Adding/Verifying an Instrument

Four options allow an instrument to be added to the software. Before any instrument can be tested or calibrated, the software must be queued to the properties of the instrument including:

- serial number
- type of instrument
- model number of instrument

- pump type for Passport instruments.

(See Chapter 5, "Running a Test.")

The system allows the system manager to select who assigns instruments and how those instruments are assigned.

Do Not Prompt Option

Initial installation of an instrument into the TIM System will assign the instrument to the Instrument Inventory Data Table.

The assigner must confirm the:

- instrument serial number
- instrument model number
- pump type for Passport and Watchman instruments
- instrument owner
- instrument location.

Prompt, Do Not Verify Option

This option prompts the user to enter their authorized user ID; this user ID will not be confirmed by the system.

Prompt, Verified Option

After the user is prompted, this option requires that the authorized ID be confirmed by the system before the instrument assignment can be completed.

Prompt, Verified, Password Required Option

This option requires that both the user ID and Password be confirmed by the system before an instrument can be assigned to the system.

Options for Testing

Test Type

Four options are provided for test type.

Calibrate Only Option

- Instrument dwell time is the recommended system test time to calibrate the instrument.
- All calibration data is displayed at end of calibration.

Bump Only Option

- Reduces test time by up to 60%
- All bump test records are displayed at the end of calibration.

Bump, Cal on Fail Option

- Combines the bump test and calibration, if needed
- Prompts user to perform a full calibration if instrument fails the bump test.
- Displays all bump test records and full calibration records at the end of the test.

User Select Option

- Allows selection of the previous options at the TCC or the PC before each instrument test
- Requires prompting as to which test is desired.

ID For Testing

Four options are provided for checking ID before testing:

Do Not Prompt Option

- TIM System allows user to test or calibrate an instrument without any security code or password requirements.
- The TCC prompt instructs the user to "Press Run to Test."

Prompt, Do Not Verify Option

- TIM System prompts user to enter information on the TCC keyboard (i.e., name, code or generic term followed by the Enter key on the TCC) or to simply press Enter key.

Prompt Verified Option

- TIM System prompts user to enter their assigned ID and press the Enter key on the TCC.
- Password is not required.

Prompt Verified Password Required Option

- TIM System prompts user to enter their assigned ID and password at the TCC.
- The "Enter" key must be pressed after each prompt.

Options for Calibration Test Receipt

Printing

At the end of a bump test or calibration, a printer must be selected to print a detailed test report of instrument test results, including the:

- test program
- instrument identification and serial number
- test date and time
- test results.

OFF Option

- No Test Receipt is printed.

ON Pass Option

- Test receipt prints only when instrument passes bump test or calibration.

Always Option

- Test receipt prints after each bump test or calibration.

User Select Option

- At end of bump test or calibration, system prompts user if a test receipt is desired.

Destination

The user has the option to select where the test receipt is printed.

Windows Default

Selection of this option prints the test receipt to the assigned printer as defaulted by the Windows setup.

TCC Local Printer

Selection of this option prints the test receipt to the printer connected to the TCC Parallel Port; this printer is an optional accessory, not one supplied with this system (see TABLE 8-1, Replacement Parts).

Program Options Tab

Program Options

A TIM Program Title

The title default is "MSA Total Instrument Manager." This title is user-changeable.

Synchronize Instrument Time/Date to PC on Test

When this feature is selected, the connected instrument's time and date is set to the operating pc prior to the instrument's pump test.

On Edit Database/Preferences

This section refers to the action taken when the user edits either the database or the preference section. The TIM Software is designed to build a test program based on the following:

- program options
- instrument type
- model number
- gas cylinders assigned to the system.

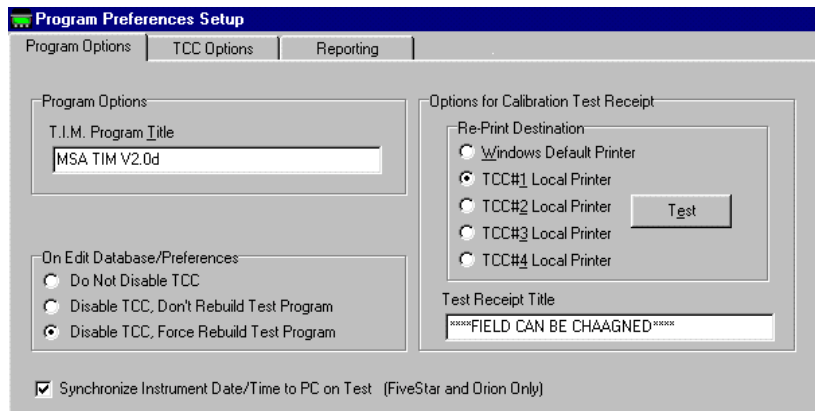


Figure 4-11.

Program Preference Setup Screen - Program Options Tab

If any of these options are changed, the TIM Software must stop the current test, disable the TCC, and rebuild a new program in order to properly calibrate or test the instrument.

The user has three selectable options to handle this testing procedure:

Do Not Disable TCC Option

This option restricts the TCC and software program for users that use only one model instrument (e.g., the Passport Model 3210L and one constant calibration gas assignment).

Use caution when using this default since the TIM System software, when in the Test of Function mode, will NOT recognize any changes to the:

- **test or calibration program**
- **calibration gas or instruments.**

All changes are recognized only after the system is powered down.

Disable TCC, Don't Rebuild Test Program Option

This option allows the user to retest at the TCC without rebuilding the test program. Once the test program is built, it remains in memory for the instrument being tested. The TCC prompts the user to retest the instrument.

Disable TCC, Force Rebuild Test Program Option (recommended option)

Any interruption in the test program causes the software to rebuild a complete test program. The TIM System performs a complete diagnostic evaluation of every instrument installed for test on the system and builds the test program accordingly.

Options for Calibration Test Receipt

This option allows the user to select where the test receipt is printed when the **PRINT TEST RECEIPT** button is selected on the **INSTRUMENT INVENTORY** or **CALIBRATION RESULTS** page.

Reprint Destination

Windows Default Printer

Selection of this option prints the test receipt to the assigned printer as defaulted by your windows setup.

TCC#1 Local Printer

Selection of this option prints the test receipt to a printer connected to the TCC#1 Parallel Port. This TCC must be enabled before a test receipt can be printed. This printer is an optional accessory, one not supplied with this system (see TABLE 8-1, Replacement Parts).

TCC#2 Local Printer

Selection of this option prints the test receipt to a printer connected to the TCC#2 Parallel Port. This TCC must be enabled before a test receipt can be printed. This printer is an optional accessory, one not supplied with this system (see TABLE 8-1, Replacement Parts).

TCC#3 Local Printer

Selection of this option prints the test receipt to a printer connected to the TCC#3 Parallel Port. This TCC must be enabled before a test receipt can be printed. This printer is an optional accessory, one not supplied with this system (see TABLE 8-1, Replacement Parts).

TCC#4 Local Printer

Selection of this option prints the test receipt to a printer connected to the TCC#4 Parallel Port. This TCC must be enabled before a test receipt can be printed. This printer is an optional accessory, one not supplied with this system (see TABLE 8-1, Replacement Parts).

Test Receipt Title

The title default is "***TIM System Calibration Test Receipt**."
This title is user-changeable.

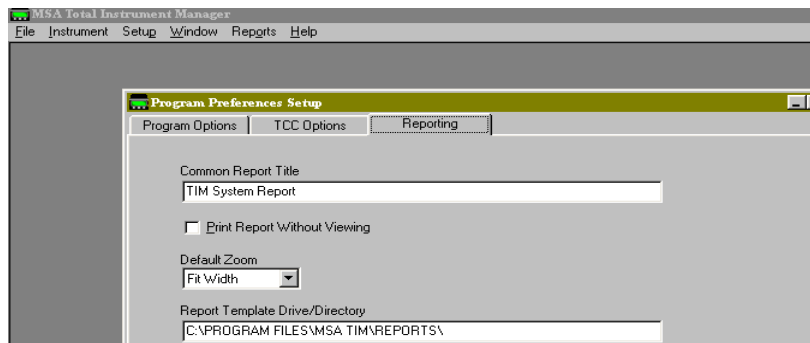


Figure 4-12.
Program Preference Setup Screen Reporting

Reporting Tab

Common Report Title

The default common report title is "TIM System Report." This title, as shown, is user-changeable.

Default Zoom

This selects the viewing size of pending reports.

Report Template Drive/Directory

This selects the location of the reports and should not be changed.

Solenoid Assignments

- Calibration gas must be assigned to the system software.
- The correct solenoid valve and communications port must be assigned before testing can be done.
- The TCC solenoid input manifold, located on the back of the TCC, provides six gas input ports; do not assign calibration gas to Solenoid Input #6; this must be reserved for Fresh Air (except for chlorine or ammonia calibrations; zero air will be connected).
- A different calibration gas can be assigned to each port.
- Users can assign calibration gases not listed in the cylinder inventory for MSA calibration cylinders. If use of a non-MSA calibration gas cylinder is used, concentrations and response factors must be edited.

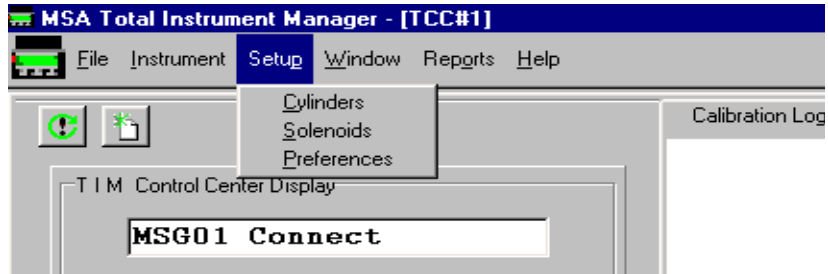


Figure 4-13.
Select the SETUP Menu, SOLENOIDS Option

Assigning a Cylinder to a Solenoid

1. Log on the system at the PWP 1 or PWP 2 level.
2. Select the **SETUP** menu, **SOLENOIDS** option (FIGURE 4-13).
3. Select the COM Port of interest with the sub-tabs at the top of the screen (FIGURE 4-14).

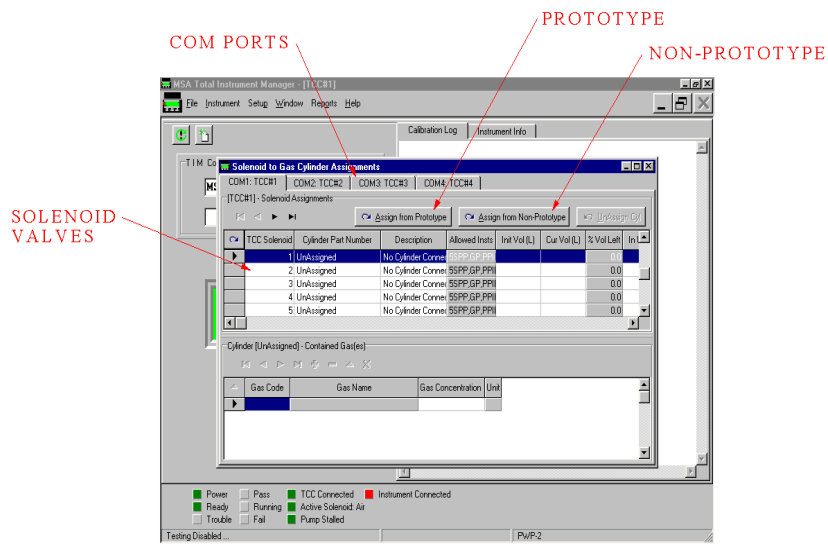


Figure 4-14.
Select COM Port and Solenoid

4. Select the **TCC SOLENOID** to assign it to the gas cylinder (FIGURE 4-14).
 - Five of the six solenoid valve inputs on the back of the TCC are numbered
 - The sixth solenoid input valve is for Fresh Air. Do not assign or connect a calibration gas or zero air to the fresh air valve. The supplied fresh air inlet filter (P/N 633697) should be connected to this valve, except for chlorine or ammonia calibrations.
5. Assign a cylinder from the Prototype or Non-prototype by selecting **ASSIGN CYLINDER PROTOTYPE** or **ASSIGN CYLINDER NON-PROTOTYPE**. Cylinder assignment; can be selected from either option (FIGURE 4-14).

Prototype Cylinder

A prototype cylinder is a calibration cylinder listing the following data for that particular MSA part-numbered cylinder:

- data
- gas fill
- concentration
- response factor
- calibration parameters.

When selecting or copying a prototype cylinder, the cylinder is considered to be full pressure and volume. The system will maintain usage of the gas used and record the estimated volume of calibration gas remaining in the cylinder.

This selection is for the initial setup of the TIM System or for assigning a new cylinder to the solenoid valves.

Non-prototype Cylinder

A non-prototype cylinder is one that was used on and removed from the TIM System. The TIM System maintains this cylinder in the non-prototype inventory and allows the user to select this cylinder for calibration. This feature allows users to:

- add and/or remove cylinders
- maintain a cylinder inventory
- estimate the remaining gas in the cylinder.

6. Using the mouse, select the Sol. Valve to which the cylinder will be assigned.
7. Select prototype or non-prototype assign button (FIGURE 4-14).

Prototype Cylinder

- a. Click on **ASSIGN CYL FROM PROTOTYPE**.
- b. Select the cylinder or choose from the prototype library (FIGURE 4-15).
- c. Choose **YES** to create a copy of the selected cylinder (FIGURE 4-16).
- d. Check cylinder information (FIGURE 4-17).
- e. Choose **OK** and verify that the cylinder and COM are correct (FIGURE 4-18).

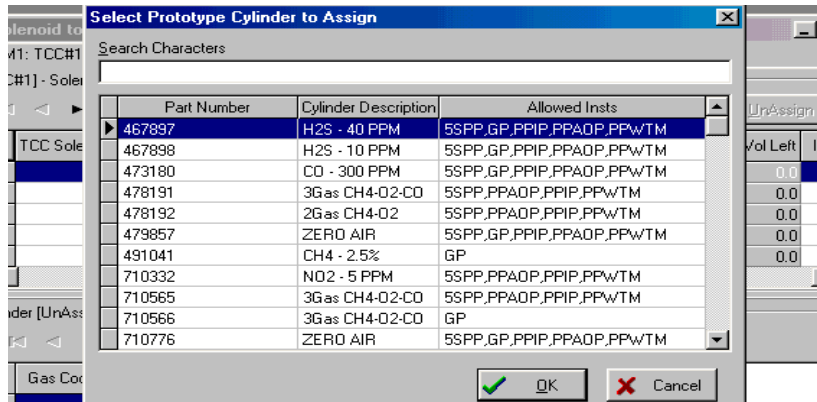


Figure 4-15. Selecting a Cylinder

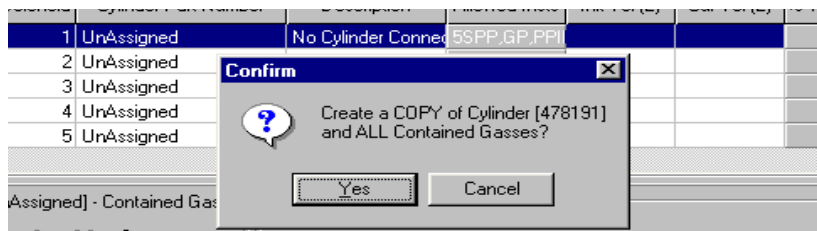


Figure 4-16. Create a Copy of the Cylinder

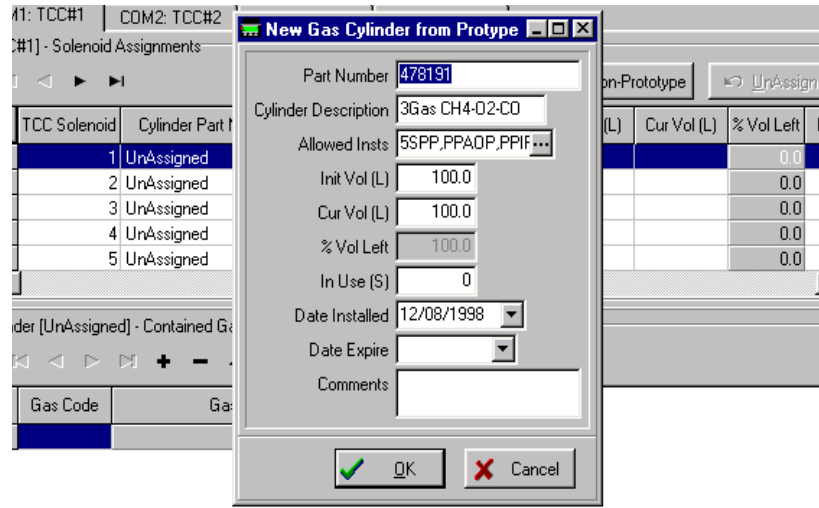


Figure 4-17.
Enter Cylinder Information

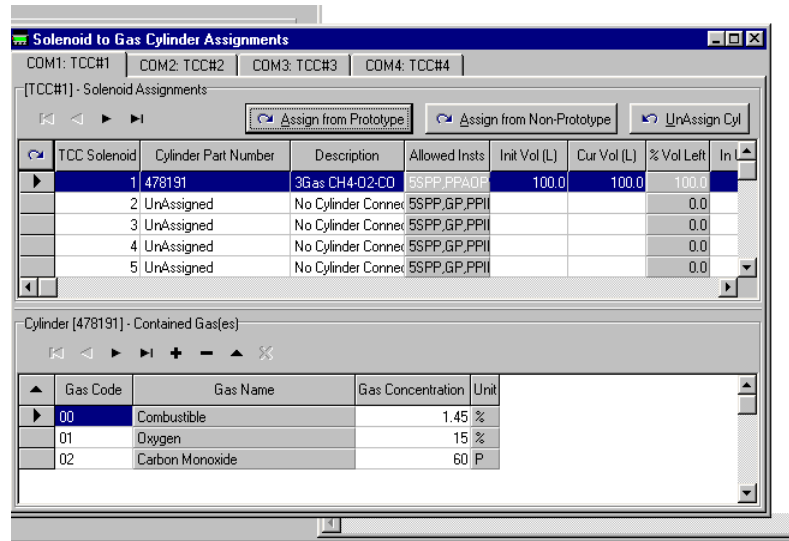


Figure 4-18.
Verify Cylinder and COM

Non-prototype Cylinder

- a. Click on **ASSIGN FROM NON-PROTOTYPE**.
- b. Select the cylinder of choice from the Non-prototype selection screen (FIGURE 4-19).
- c. Choose **OK** and verify that the cylinder and COM are correct (FIGURE 4-20).

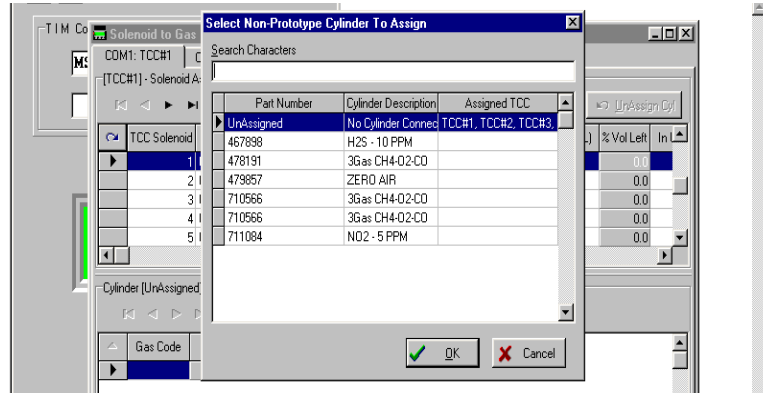


Figure 4-19.
Select Non-prototype Cylinder to Assign

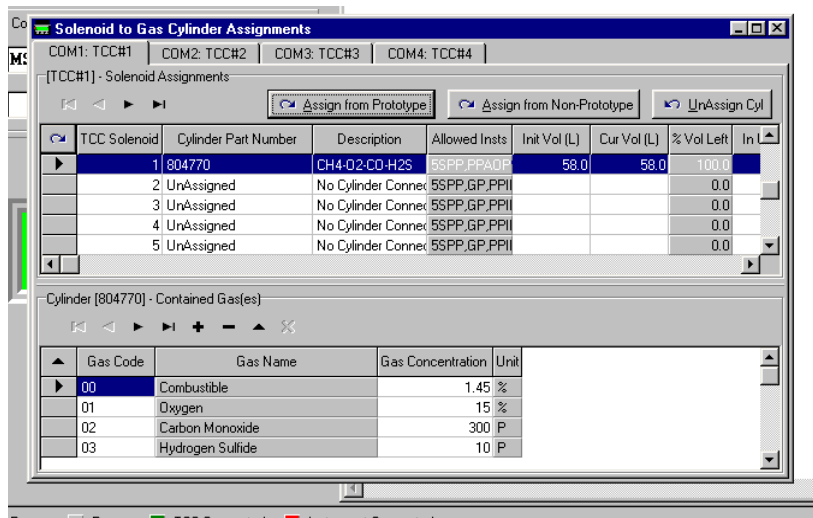


Figure 4-20.
Solenoid to Gas Cylinder Assignments

Unassign a Cylinder from a Solenoid

1. Identify the correct COM port.
2. Use the mouse to highlight the cylinder to be unassigned.
3. Choose **UNASSIGN CYLINDER**.
 - The cylinder will be recorded in the Non-prototype inventory.

Adding a Cylinder not in Cylinder Inventory

1. Log on the system as a PWP 2 User.
2. From the **SETUP** menu, select **CYLINDERS** (FIGURE 4-21).
3. Select **PROTOTYPE** List.
4. Select "+" to add cylinder as Unassigned (FIGURE 4-22).

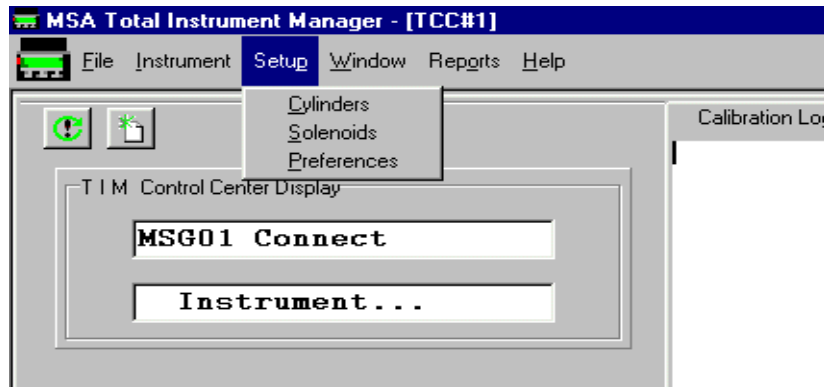


Figure 4-21.
Choose **CYLINDERS** from the Setup Menu

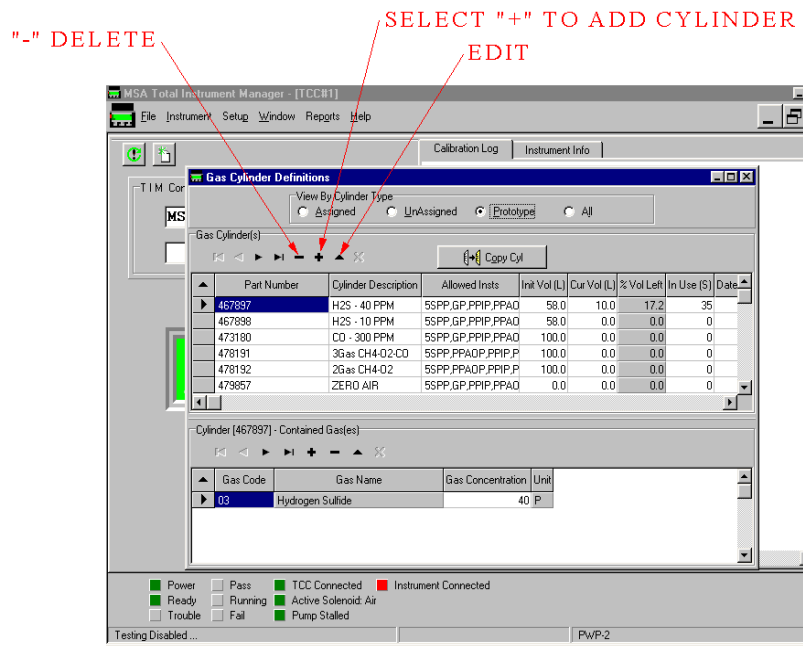
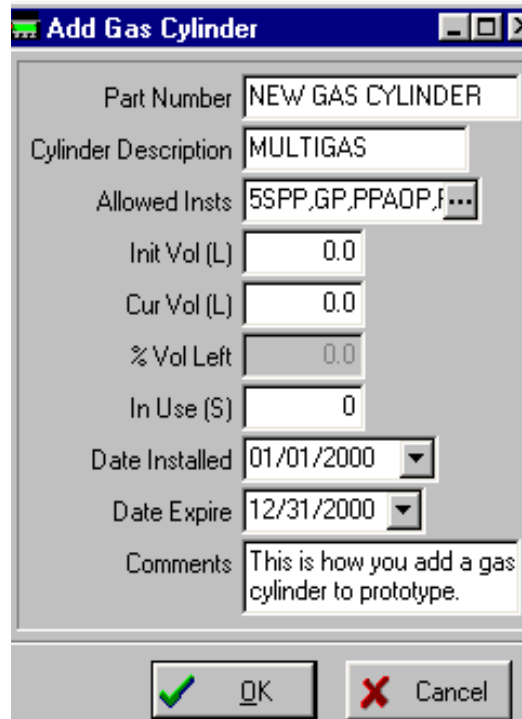


Figure 4-22.
 Select "+" to Add Cylinder as Prototype

5. Complete the cylinder information (FIGURE 4-23); use the scroll bar for allowed instruments.



The screenshot shows a dialog box titled "Add Gas Cylinder". It contains the following fields and values:

Field	Value
Part Number	NEW GAS CYLINDER
Cylinder Description	MULTIGAS
Allowed Insts	5SPP,GP,PPAOP,f...
Init Vol (L)	0.0
Cur Vol (L)	0.0
% Vol Left	0.0
In Use (S)	0
Date Installed	01/01/2000
Date Expire	12/31/2000
Comments	This is how you add a gas cylinder to prototype.

At the bottom of the dialog box are two buttons: "OK" (with a green checkmark icon) and "Cancel" (with a red X icon).

Figure 4-23. Complete Cylinder Information

6. Locate the added cylinder from the Cylinder list (FIGURE 4-24).
7. Press **INSERT RECORD "+"** (FIGURE 4-24) for contained gases.
8. Assign appropriate gas code and concentrations (FIGURE 4-25); use scroll bar for library of gas codes and description. List the concentrations for all gases contained.

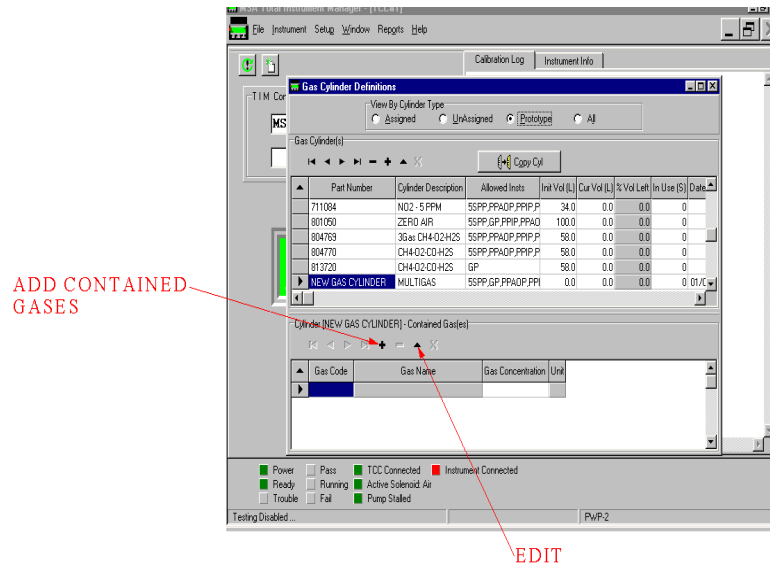


Figure 4-24.
Locate the Added Cylinder from the Prototype Cylinder List

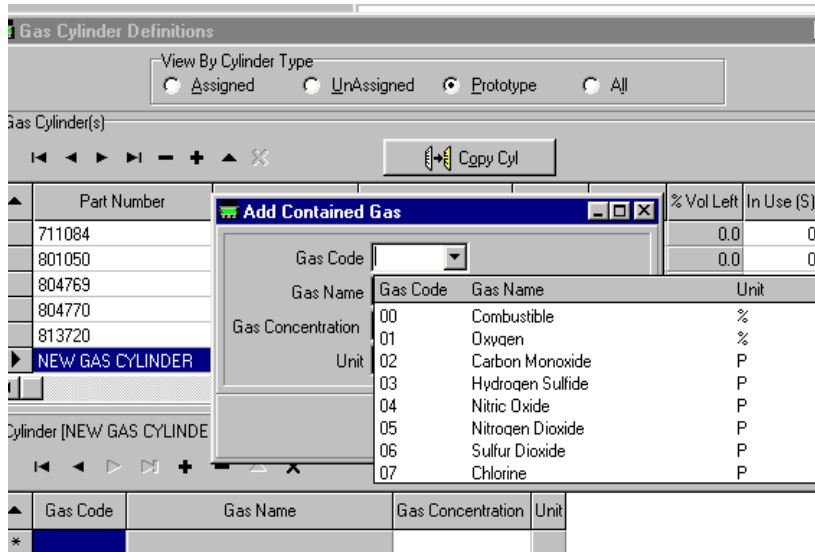


Figure 4-25.
Assign Appropriate Gas Code and Concentrations

Instruments

Viewing Calibration Log and Instrument Information

when instrument is connected and identified by the TIM System, The Calibration Log and Instrument Information can be viewed.

Calibration Log (FIGURE 4-26)

The following information is available in the Calibration Log Tab:

- instrument type, serial number and model number
- instrument test date and time
- gas assignments to TCC solenoids
- simultaneous testing results
- final test results.

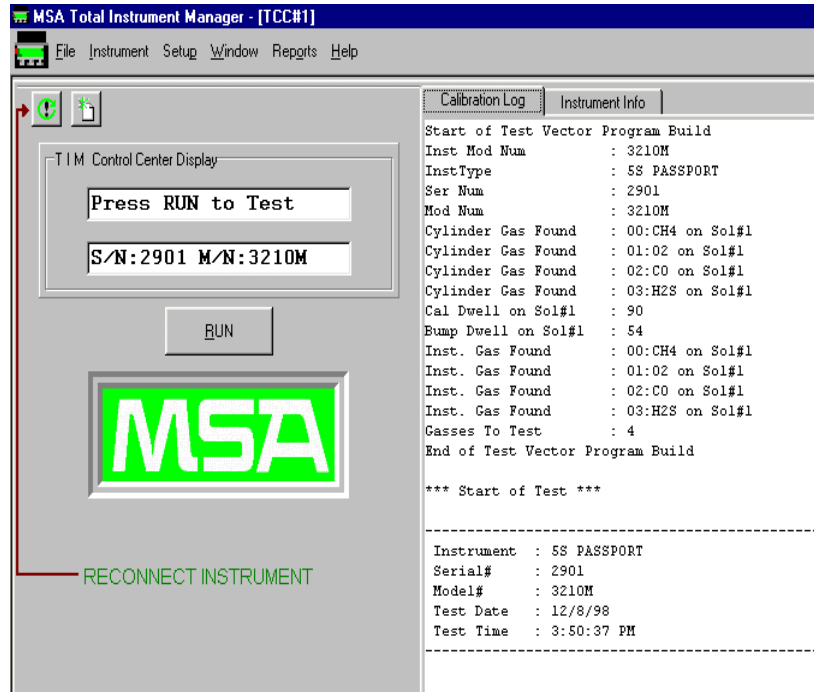


Figure 4-26.
Calibration Log

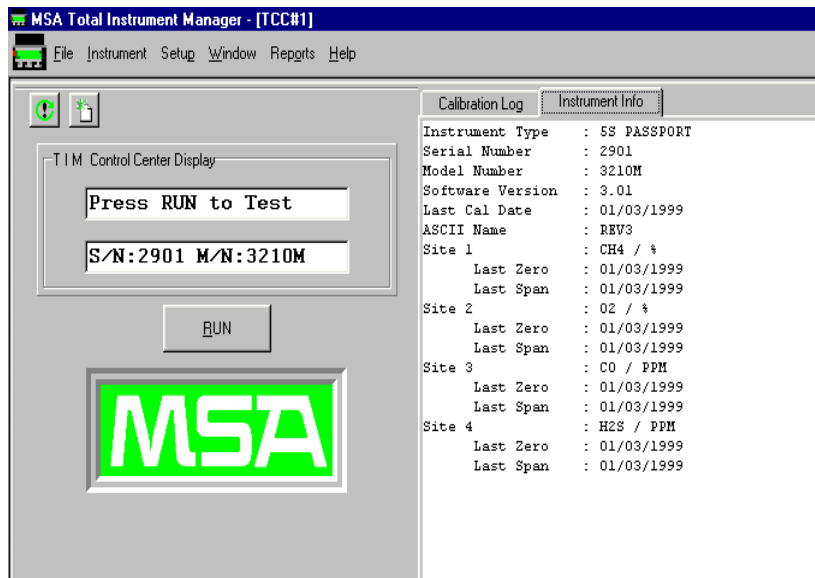


Figure 4-27.
Instrument Information

Instrument Info Tab (FIGURE 4-27)

The following information is available in the Instrument Info Tab:

- Instrument type, serial number and model number
- instrument software version
- last instrument calibration date
- individual sensor location in instrument.

Viewing Instrument Calibration Data

- To view any instrument's test records:
 1. From the **INSTRUMENT** menu, select the **INVENTORY** option (FIGURE 4-28).
 2. Select the instrument to review from the **INSTRUMENT INVENTORY** display at the top of the screen.
 - The instrument's calibration history appears in the **CALIBRATION RESULTS** display at the bottom of the screen.

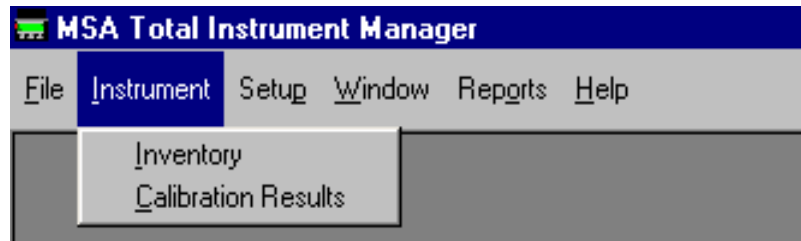


Figure 4-28.
Viewing Instrument Calibration Data

3. Using the arrow keys or the scroll bar to the right of the summary display, scroll up and down to view the records of interest .
4. To print records of selected calibration, click on **PRINT TEST RECEIPT**.
5. Select the "X" button in the upper right-hand corner to close this screen and return to the main screen.
6. From the **INSTRUMENT** menu, select the **CALIBRATION RESULTS** option.
7. Select the instrument to review from the **CALIBRATION INFO** display at the top of the screen.
 - The instrument calibration history appears in the **SITE RESULTS** display at the bottom of the screen.
8. Using the arrow keys or the scroll bar to the right of the summary display, scroll up and down to view the records of interest.
9. To print records of selected calibration, click on **PRINT TEST RECEIPT**.
10. Select the "X" button in the upper right-hand corner to close this screen and return to the main screen.

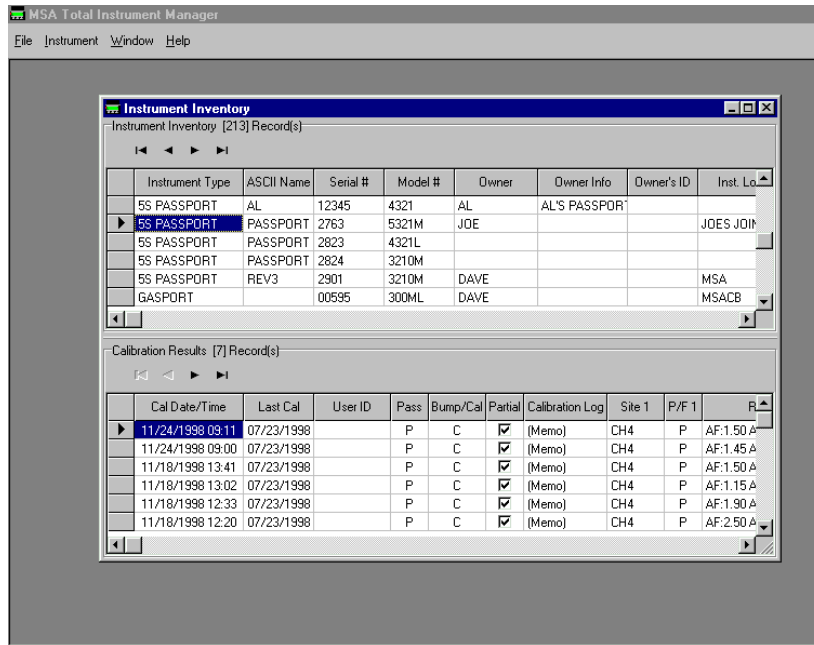


Figure 4-29. Instrument Inventory Screen

Chapter 5

Testing an Instrument

User Steps

Testing an instrument on the TIM System can be done with the push of a single button. The user must take the following steps to perform a test once the System is set up.

Turning on the System

1. Turn ON the PC and run the TIM software.
2. Turn ON the TCC and verify that Data Docking Module, Holster or JetEye is connected.
3. Check that gas cylinders/demand regulators are attached.
4. Verify that the following message appears on the TCC display:

MSG01 Connect Instrument...

Running a Test

1. Turn ON the instrument and allow it to fully warm up.

WARNING

Instrument must fully warm up; failing to allow unit to warm up can cause erroneous test results, which can cause inaccurate calibrations.

2. Attach Passport, Gasport or Watchman instrument to the Data Docking Module (FIGURE 5-1) or Holster Assembly (FIGURE 5-2).
3. Attach the Passport FiveStar Alarm or Orion instrument to the JetEye Infrared LINK (FIGURE 5-3) or to the Holster assembly (FIGURE 5-4).
4. If not using a Holster, attach the gas input line from the TCC (UUT) to the instrument gas inlet. If using a Holster assembly, attach the gas input line to the Holster assembly.
5. Verify that the appropriate COM port for the TCC is enabled (see Chapter 4, FIGURE 4-10).

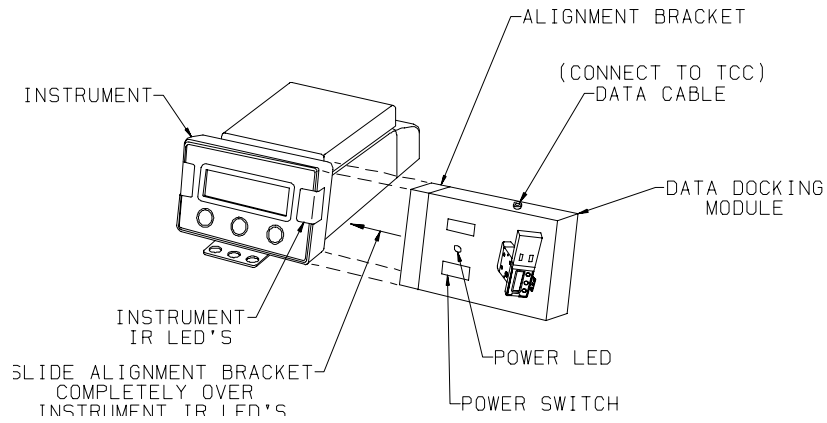


Figure 5-1.
Attaching the FiveStar Instrument to the Data Docking Module

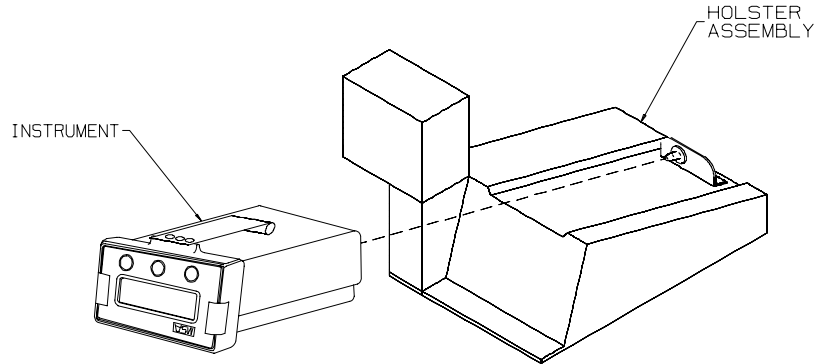


Figure 5-2.
Attaching the FiveStar Instrument to the Holster Assembly

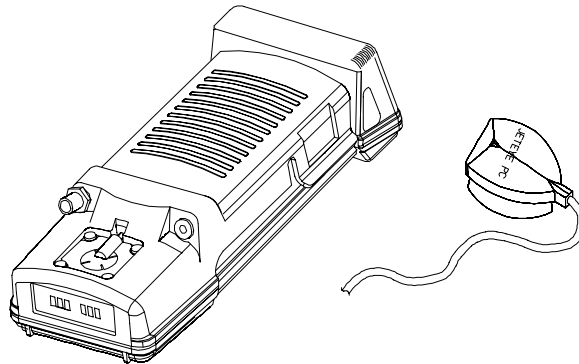


Figure 5-3.
Attaching the FiveStar Instrument to the JetEye Infrared LINK

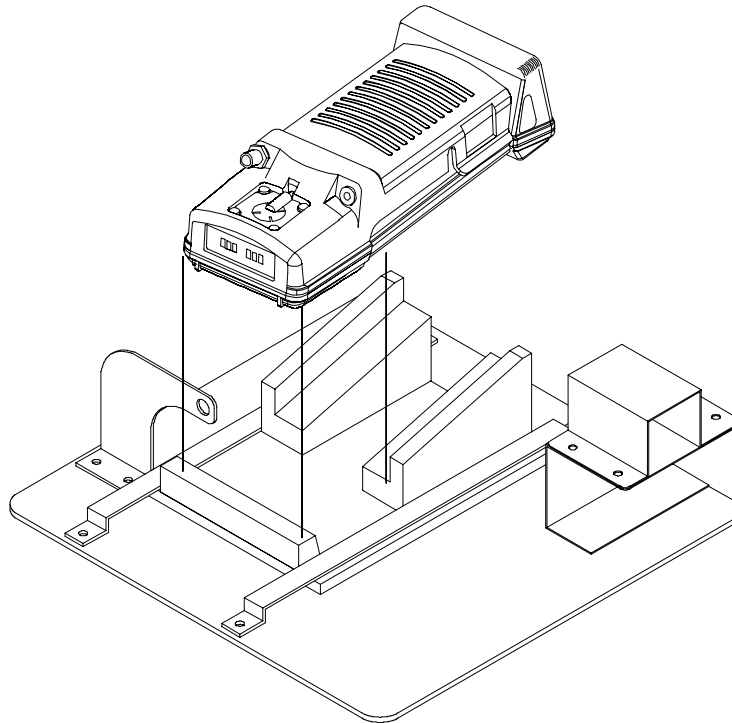


Figure 5-4.
Attaching the FiveStar Instrument to the FiveStar Holster Assembly

6. Verify that the TIM software has connected to the instrument and is ready to test.
6. Adding a new instrument:


The first time an instrument is added to the TIM System, the user must confirm instrument information. Once this information is entered, it is maintained in the TIM System database. The following information is required:

 - instrument serial number
 - instrument model number
 - type of pump for Passport instrument
 - Passport Add-on (A)
 - Passport Integral pump (I)
 - Passport Watchman (W)
 - Passport FiveStar (5S)
 - instrument owner (optional)
 - instrument location (optional).

When assigning a Passport or Watchman instrument to the system, the user is required to differentiate between Passport Integral Pump, Passport Add-on Pump, or Passport Watchman Pump.

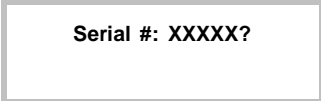
Once a new instrument is connected to the TIM System, perform the following to add the instrument to the system:

- When prompted - **Press Run to Add New** (FIGURE 5-5): press RUN either on the TCC or on the PC TIM window.
- When prompted - **Serial #** (FIGURE 5-6): verify the Instrument Serial Number and press Enter.
- When prompted - **Model #:** (FIGURE 5-7): verify the Instrument Model Number and press Enter.




Press Run to Add New
S/N xxxxx M/N xxxxxx

Figure 5-5.



Serial #: XXXXX?

Figure 5-6.



Model #: XXXXX?

Figure 5-7.

- When prompted - **Passport Type? I/A/W** (FIGURE 5-8): enter the correct Passport Type.

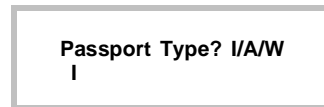


Figure 5-8.

- When prompted - **Enter Inst Owner:** (FIGURE 5-9): enter correct information and press Enter.



Figure 5-9.

- When prompted - **Enter Inst Location:** (FIGURE 5-10): enter correct information; press Enter.



Figure 5-10.

- When prompted, press the **RUN** key on the TCC.
- (Optional) Type in your user ID and press the TCC **ENTER** key; this option can be removed from the test program, if desired (FIGURE 4-10).
- Wait until the test is completed.
 - The TCC indicates when the test is done.
 - Test duration is two to six minutes, depending on the number of solenoids used in test.
- Press the TCC **F1** key to review results if test passes (as prompted) or:
- Remove gas input line from instrument.
- Remove Data Docking Module from instrument or remove instrument from Holster.

Summary of Test Operations


The TIM Software performs a number of operations during the calibration sequence. The TCC displays which test step is in process; following is a summary and sequence of these operations.

- **MSG01 Connect Instrument...** (FIGURE 5-11) Prior to instrument attachment, the TCC periodically looks for an instrument through the Data Docking Module. It sends a command requesting the instrument serial number and starts the test sequence when it receives a valid response.

Figure 5-11.

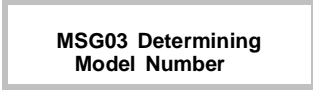
- **MSG02 Identifying Instrument...** (FIGURE 5-12)

Once the TCC recognizes an instrument is attached, it reads all instrument data into a temporary record. If the instrument is accidentally disconnected and reattached, the TIM System recognizes the instrument type and serial number and quickly reloads this data.



MSG02 Identifying

Figure 5-12.




MSG03 Determining Model Number

Figure 5-13.

- **MSG03 Determining Model Number** (FIGURE 5-13)


When the TCC is done reading the instrument:

- the check box in the TCC information area at the bottom of the screen is checked
- the instrument serial number displays next to the box.



Build Test Program Please Wait

Figure 5-14.



Press Run to Test
S/N xxxxx M/N xxxxxx

Figure 5-15.

- **Build Test Program** (FIGURE 5-14)

The TIM software automatically builds the Test Program based on the type of instrument, the type of installed gas sensor, and the gas cylinders assigned to solenoids.



Testing Pump Please Wait

Figure 5-16.

- **Press Run to Test S/N xxxxx M/N xxxxxx** (FIGURE 5-15)

The TIM System is ready; operator is prompted to press the RUN key.

- **Testing Pump Please Wait** (FIGURE 5-16)

The TCC performs a pump check to verify that the sample system is sealed and there are no leaks TCC to instrument (and that the gas line is attached, or the valves are operational). The TCC closes all the valves momentarily and reads the pressure sensor to check for an adequate vacuum.

- **Applying Fresh Air (FIGURE 5-17)-
Adjusting Zeroes (FIGURE 5-18)**

The TCC sends the appropriate command to have the instrument adjust the zero-points (fresh air) for all the sensors. During this time, the TCC is drawing air through Valve #6. If the ambient air where the instruments are to be calibrated is possible to have some low level of background toxic gases, it is recommended that the user supply Zero Air to an unassigned solenoid valve (see Chapter 3).



Figure 5-17



Figure 5-18.

- **Apply Sol #x Gas...Dwell Time xx Sec (FIGURE 5-19).**

After setting the zero points, the TCC will automatically move to the first calibration gas. While the gas is being applied and the readings are stabilizing, the TCC displays real-time concentrations of the gases being applied.



Figure 5-19.

- **Reading Initial Concentration (FIGURE 5-20)**
- After the proper dwell time (taken from the Cylinder setup values), the TIM System compares the actual instrument “as found” readings to the test limits set for the cylinder gases.



Figure 5-20.

- **Calibrating Sensors Please Wait (FIGURE 5-21)**
- After comparing instrument readings to test limits, the TIM System calibrates any sensors which fell outside the test limits.



Figure 5-21.

- **Compare Cal Limits (FIGURE 5-22)**
- After sending the appropriate command to calibrate the required gas channels, TIM will compare new “as left” readings directly from the instrument to the calibration limits. If any sensor cannot be calibrated to within the calibration limits, the test will fail and the TCC will light the FAIL LED and display a Test Failed message.

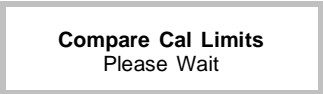


Figure 5-22.

- **Storing Calibration Results in Inst** (FIGURE 5-23) Stores calibration results, date and time in instrument memory.



Figure 5-23.

- **(Instrument Type) Passed!** (FIGURE 5-24) The TCC indicates the test has passed when the calibration is complete. All data from the test is automatically saved to the System database.



Figure 5-24.

- **Press F1 for Results or Remove Instrument** (FIGURE 5-25). The user may view the results of a successful test on the TCC by pressing the F1 key. With each key press, the TCC will scroll through all the gas channels calibrated for the instrument.

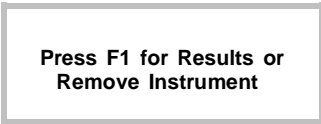


Figure 5-25.

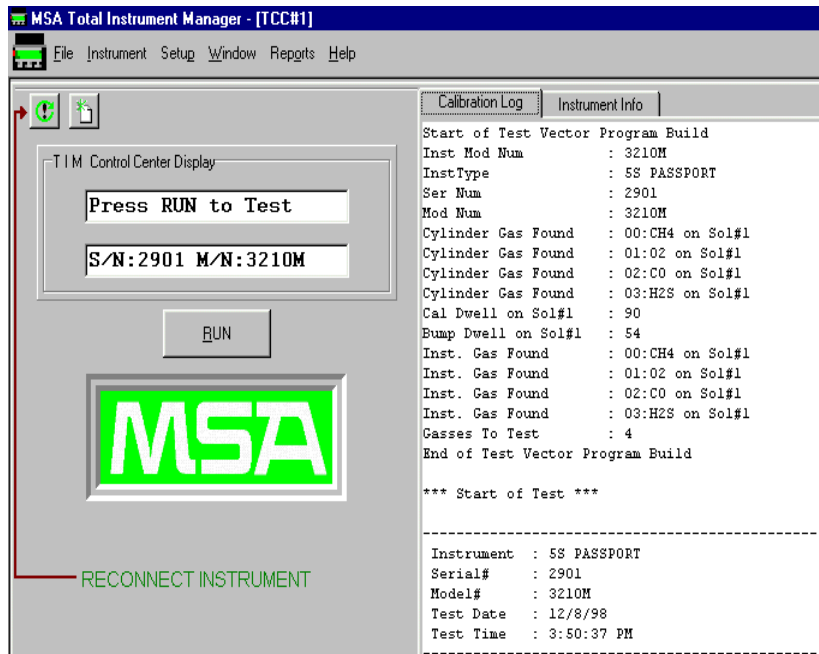


Figure 5-26. Data Connection

- In addition, the user may press F2 to verify the time and date of the instrument calibrated.
- The TIM System is ready for the next instrument.

If the data connection is disturbed or disconnected, the test program may remain in an idle state.

- Pointing and clicking on the "Reconnect Instrument" causes the system to consider the attached instrument as newly connected and rebuilds the test program.
- Clicking on the "Rebuild Test Program" rebuilds the test program without reconnecting the instrument.

Chapter 6

Report Printing

Report and test receipt printing capability is included in this software. Before any reports or test receipts can be printed, a printer must be assigned to the PC (standard Windows setup). A total of ten program reports can be categorized and printed.

NOTE: If print commands and print capability cannot be printed on network-assigned printers, a generic printer driver is recommended.

From the **REPORT** menu, select the desired report (FIGURE 6-1).

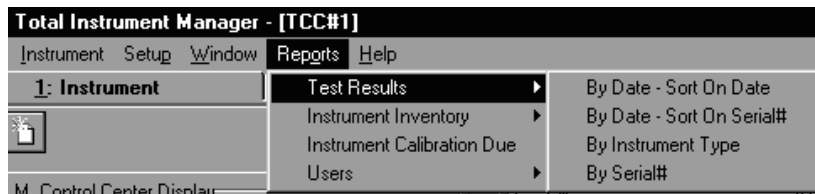


Figure 6-1. Select Desired Report from the Report Menu

Test Results

By Date-Sort on Date Option

- Allows selection of test results for a selected time period.

By Date-Sort on Serial Number Option

- Allows selection of test results for selected serial-numbered instruments for a selected time period.

By Instrument Type Option

- Allows selection of test results for a particular instrument type.

By Serial Number Option

- Allows selection of test results for all serial-numbered instruments.

Instrument Inventory

By Instrument Type Option

- Allows an inventory report of instruments sorted by instrument type.

All-Sort by Type Option

- Allows an inventory report of all instruments in the system data base, sorted by instrument type.

All-Sort by Serial Number Option

- Allows an inventory report of all instruments in the system data base, sorted by instrument serial numbers.

Instrument Calibration Due Option

- Allows a report of all instruments that are due for or are already calibrated, selected by instrument type and required time period.

Users

All-Sort by ID Option

- Reports a listing of all system users, listed by ID assignments in numerical order.

All-Sort by Last Name Option

- Reports a listing of all system users, listed by last name in alphabetical order.

Chapter 7

TIM / TCC Messages

TIM / TCC Messages

MESSAGE	OCCURS WHEN:
Waiting For TIM RS232 Connection...	TCC and TIM are not communicating
Waiting For TIM RS422 Connection...	TCC and TIM are not communicating
MSG01 Connect Instrument...	TIM is waiting for an instrument connection
MSG02 Identifying Instrument...	TIM is identifying a connected instrument
MSG03 Determining Model Number...	TIM is identifying an instruments model number
MSG04 Test Disabled TIM System Busy...	User has accessed the TIM system's database with the option selected to "Disable TCC" in preferences section
MSG05 Identifying Sensors...	TIM is identifying the sensors in a connected instrument
MSG06 Duplicate Sensors Found	TIM has found duplicate sensors in a connected instrument
MSG07 Cannot Validate Sensors	TIM has found in error in the sensor configuration
MSG08 Update Inst. Firmware Version	TIM has found an instrument which requires an upgrade to the firmware version before that instrument will operate with the TIM system
MSG09 Cannot Calc Model Number	TIM has encountered an error in calculating a connected instruments model number
MSG11 Test Disabled Bad Test Program	TIM has encountered an error in building the test program
MSG12 TIM Program Closing...	User has selected to exit the TIM system
Build Test Program Please Wait...	TIM is building a test program for a connected instrument
Waiting To Build Test Program ...	TIM is waiting to build a test program
New "Instrument" S/N xxxxx M/N xxxx	TIM has found a new, connected instrument
Press RUN to Add New S/N xxxxx M/N xxxx	TIM is prompting user to add new instrument to system

MESSAGE	OCCURS WHEN:
Enter Auth. ID:	TIM is prompting user to enter authorization code to add an instrument; this is selectable
Enter Auth. Password:	TIM is prompting user to enter authorization password to add an instrument; this is selectable
Serial #: xxxxx?	TIM is prompting user to verify connected instrument's serial number
Model #: xxxx?	TIM is prompting user to verify connected instrument's model number
Passport Type? I/A/W	TIM is prompting user to select a connected Passport type, Integral Pump, Add On Pump, Watchman
Enter Inst. Owner:	TIM is prompting user to enter his / her name
Enter Inst. Location:	TIM is prompting user to enter his/ her location
"Instrument" Connect S/N xxxxx M/N xxxx	TIM has identified a connected instrument
Press Run to Test S/N xxxxx M/N xxxx	TIM is ready and waiting for a connected instrument to be tested
Enter User ID:	TIM is prompting user to enter his / her user ID; this is selectable
Enter User Password:	TIM is prompting user to enter his / her user password; this is selectable
Start of Inst. Test Calibration...	TIM is beginning the testing sequence for a calibration test
Start of Inst. Test Bump Only...	TIM is beginning the testing sequence for a bump test
Start of Inst. Test Bump, Cal on Fail...	TIM is beginning the testing sequence for a bump, calibrate on fail test
(B)ump/(C)al/B-C(D)?	TIM is prompting the user to enter test type
Testing Pump... Please Wait...	TIM is testing the pump on a connected instrument
Enter USER ID	TIM is prompting the user to enter his / her user ID
Enter Password	TIM is prompting the user to enter his / her password
Enter Location	TIM is prompting the user to enter his / her location
Applying Fresh Air	TIM is applying fresh air to the instrument, this is solenoid #6

MESSAGE	OCCURS WHEN:
Applying Zero Air	TIM is applying zero air from a zero air cylinder
Adjusting Zeroes...	TIM is adjusting a connected instrument's zero values
Adjusting DAC...	TIM is adjusting a connected Gasport's DAC
Applying SOL #x Gas...Dwell Time xxSec	TIM is applying calibration gas to a connected instrument during testing
"Sensor": xx.x %,PPM	TIM is applying calibration gas and reading the values from the connected instrument
Reading Initial Conc. Please Wait...	TIM has completed the duration to apply gas and is reading the initial values of the sensors
Fail Bump, Calibrate?	TIM has failed the bump test and is prompting the user to decide to calibrate the connected instrument; this is selectable
Calibrating Sensors... Please Wait...	TIM is calibrating the sensors in a connected instrument
Compare Cal Limits... Please Wait...	TIM is comparing the calibration limits
Storing Calibration Results in Inst.	TIM is saving the calibration results to the connected instrument
Print Fail Receipt?	TIM is prompting the user to print a test receipt of the failed test; this is selectable
Print Pass Receipt?	TIM is prompting the user to print a test receipt of the passed test; this is selectable
"Instrument" Failed! Press RUN to ReTest	After an instrument has failed a test and the TIM is waiting for the user to ReTest
"Instrument" Passed!	After an instrument has passed a test
Press F1 for Results or Remove Instrument	After a test and the TIM is waiting for the user
Press Run To Proceed	TIM is waiting for the user to press RUN
Testing Disabled	Testing has been interrupted or instrument has been removed from the Holster

TIM / TCC Errors

MESSAGE	OCCURS WHEN:
E00:User Aborted	User aborted test
E01:UUT No Error	Arrived at error portion of test; then, no specific error defined
E03:UUT Disconnected	No response from instrument
E04:UUT Bad Response	"Error" reported from instrument or got invalid response
E05:UUT Bad Data	Data is in error from instrument
E06:UUT Bad Cmd	Invalid command requested to send to the connected instrument
E07:UUT Changed	Instrument changed
E08:UUT Pump Blocked	Pump blocked during test
E09:UUT Pump Flow	<p>TCC pressure sensor indicates a high vacuum condition and a valve is supposed to be open. This may be due to:</p> <ul style="list-style-type: none"> • Empty Cylinders • Incorrectly assigned solenoids to a capped valve • Kink in supply tubing • Possible valve failure; try reassigning the gas cylinder to another open valve
E12:UUT Cannot Cal	TIM couldn't calibrate sensor
E13:UUT Cannot Zero	<p>Sensors couldn't be zeroed. Occurs most likely when sensor must be replaced or when a previously unknown background level of toxic gas causes the failure.</p> <p>To check for this:</p> <ul style="list-style-type: none"> • Zero instrument with zero air • Check ambient air in the TCC testing area for contamination
E14:UUT Save Cal	TIM cannot save the calibration data to the connected instrument
E15:UUT Type Unknown	TIM doesn't know the instrument type to save data
E16:Adding to Inv DB	Error saving instrument inventory data
E17:Updating Inv DB	Error updating instrument inventory data
E18:Invalid Gas	Test program requests an instrument be tested with an improper gas or gas combination

MESSAGE	OCCURS WHEN:
E19:Invalid Cylinder	Test program calls for a gas combination not assigned to the TCC. <ul style="list-style-type: none"> • Check the solenoid assignment to ensure that the appropriate cylinders are assigned for the test being run
E20:Invalid Solenoid	Bad valve for solenoid command given
E21:Invalid Dwell	Bad time value for test dwell given
E22:Invalid Setup	No gasses specified with cylinder command to test
E23:Test Aborted by TIM System	TIM program aborted testing
E24:Test Aborted TIM System Closing	TIM application closing down
E25:UUT Adj DAC	Cannot adjust Gasport DAC
E26:UUT PC Cal	Couldn't enter PC cal mode
E27:UUT Set Date	Error setting the instrument's time and date
E40:Build Segment	Exception reading segment file
E41:Build Z-Air	Exception determining air
E42:Build Prev M/N	Exception determining previous model number
E43:Build Cyl Glist	Exception occurred getting test gas information based on cylinder
E44:Build Inst Glist	Exception occurred getting test gas information based on instrument
E45:Build CyDB NoGas	No gasses found to test (looking at instrument setup vs. solenoid/cylinder map)
E46:Build InDb NoGas	No gasses found to test (looking at instrument setup vs. instrument gas database)
E47:Build No Comb	Gasport connected if Line Gas is to be tested and no combustible gas selected
E48:Build Minimize	Obtained an exceptions minimizing list
E49:Build Mismatch	Number of gasses to test does not match minimized list
E50:Build Dup S/Ns	Duplicate serial numbers - probably PASSPORT IP & AOP
E51:Build Unkn Inst	Duplicate serial numbers - probably PASSPORT IP & AOP
E52:Build Add/Vfy	Exception while building "ADD/VFY" portion
E53:Build Test StubA	Exception while building "TEST" Stub A portion
E54:Build Test StubB	Exception while building "TEST" Stub B portion
E55:Build Test StubC	Exception while building "TEST" Stub C portion
E56:Build Test StubD	Exception while building "TEST" Stub D portion
E57:Build Partial	Exception while building PARTIAL test portion

MESSAGE	OCCURS WHEN:
E58:Build Exception	Unknown / un-handled exception
E59:Build Prog Lbls	Verify of vector labels failed
E60:Build Setup	Start of build error
E61:Build Data Fetch	Error fetching data
E62:Bld Dup Sensors	Duplicate sensors found
E63:Bld Val Sensors	Cannot validate Sensors
E64 Bld UUT Version	Need to update Inst. firmware version
E65:Bld Calc Mod Num	Cannot calculate model number

Chapter 8 Care, Maintenance and Repair

WARNING

Repair or alteration of the TIM System beyond the scope of these instructions by anyone other than personnel authorized by MSA may void all warranties and approvals. Such repairs can also endanger persons who rely on this equipment for their safety or health. When needed, use only genuine MSA replacement parts.

Corrective Maintenance

See TABLE 8-1 for common replacement parts associated with the TIM System. If you have any questions regarding the unit, any procedure in this manual, or the location of the nearest MSA Repair Center and source of replacement parts, please call our toll-free number: **1-800-MSA-2222**.

ITEM	PART NO.
TIM Control Center	710338
TIM Software CD	710460
MSA Instrument Stand Assembly, Add-on Pump	711391
MSA Data Docking Module	804679
MSA Instrument Stand Assembly, Internal Pump	710658
Demand Regulator - RP Type	710288
Demand Regulator - Line Gas	710545
Demand Regulator - BD Type, (CGA)	710289
Fresh Air Inlet Filter	633697
Polyurethane Tubing - specify # feet required	603806
Six Foot Data Cable	655184
TCC - Main Printed Circuit Board	655179
TCC - Display Printed Circuit Board	655180
TCC - Power Module	655181
Cable Set, TCC Internal	655182
TCC - Display Module	655183
TCC - Manifold/Wiring	655177
TCC - Keypad	655178
TCC - Printer	10010167
TCC - Switch Box	10010168
FiveStar Holster Assembly	10010164
TCC - Flow System	10011217