TIF 9020 REMOTE PROGRAMMABLE MODULE

Owner's Manual

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GENERAL INFORMATION

The 9020 Remote Programmable Module is an accessory to the 9010A Electronic Charging Meter. The 9020 will interface with the 9010A to permit automatic, programmable charging with the 9010A. The bi-directional communication uses the display on the 9010A to indicate the operational status and modes of the 9020, as well as the load cell output signal to control the electric valve of the 9020.

Self powered by 4 "AA" batteries, the 9020 is completely portable, and expands the applications of the 9010A to permit automatic charging anywhere, anytime. The unit includes both 1/4" Male Flare fittings and 1/2" ACME fittings to allow connection to all standard charging manifolds and all types of refrigerant cylinders. The 500psi rating of the valve is compatible with, and capable of handling, all common refrigerants.

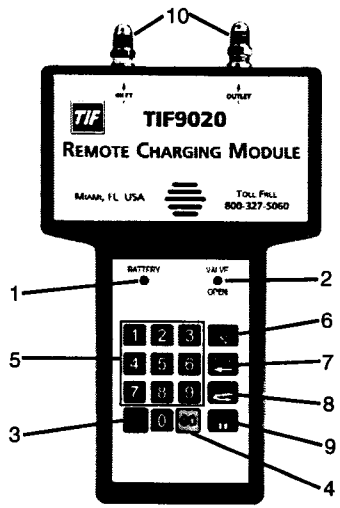
The Tactile Keypad of the 9020 is color coded and includes universal symbols, permitting simple and intuitive operation. Audible sounds work in conjunction with the keypad. Whenever an acceptable or affirmative key press is made, a positive, high frequency beep is heard. Unaccepted or incorrect key presses are accompanied by a lower frequency "raspberry" sound.

In order to gain the fullest benefits of your purchase, please carefully read and review the information in the following pages. If you have further questions, or need additional assistance, please contact the TIF Customer Service Hotline at 1-800-327-5060.

FEATURES

- Permits automatic programmable charging or recovery using the TIF9010A Electronic Scale
- Self-contained and portable, powered by 4-AA batteries
- Color-coded Tactile Keypad with universal symbols
- Compatible with all refrigerants
- LED Indicators for Low Battery and Valve Open alerts
- Audible indications for key presses, pause, and valve actuation.
- Includes protective carrying case with integrated handle/hanging strap, and interface cable for 9010A
- High Impact case
- One Year Warranty
- Made in USA

PARTS AND CONTROLS



1. **Battery/Power LED**
2. **Valve Open LED**
3. **Set Key**
4. **Go Key**
5. **Numeric Keys**
6. **Cancel Key**
7. **Back Key**
8. **Repeat Key**
9. **Pause Key**
10. **Inlet/Outlet Ports**

OPERATING INSTRUCTIONS

9010A INTERFACE

NOTE: YOU MUST HAVE A 9010A SCALE IN ORDER TO USE THIS DEVICE.
The 9010A LCD will display all status and command info from the 9020. *Within the text of this manual, all 9010A displays are printed in blue.*

There are three enunciators which appear on the 9010A display and will indicate the 9020 status when the two device are connected, see Fig. 2.

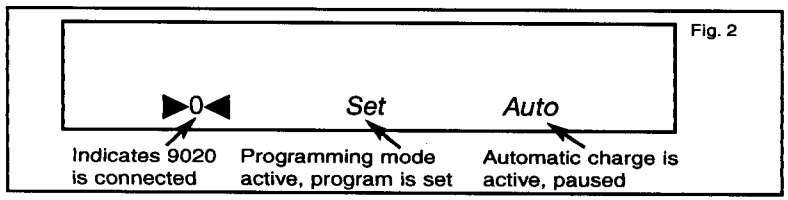


Fig. 2

OPERATING INSTRUCTIONS

SET-UP PROCEDURE

Refer to the Maintenance Section on page 7 for battery installation or replacement.

The unit comes packaged in a ballistic nylon, protective carrying case. The design is such that the unit may operated without removing it from the carrying case. The top carrying handle is designed to also serve as a hanging strap, permitting flexible location of the 9020.

1. Choose the fittings which you will be using. The standard fittings on the 9020 are 1/4" SAE Flare fittings compatible with all refrigerants except R134a being used in an automotive application.
   - If your application calls for 1/2" ACME fittings, use the supplied adapters. These have a female Flare thread which will screw onto the standard fittings, and seal without tape dope or thread sealant.

Charging Connections (see Fig. 3)
a) Connect the refrigerant cylinder to the INLET (left) fitting of the 9020 with the shortest possible hose. Note that ideally this hose should have shut-off valves on both ends.
b) Connect the OUTLET (right) fitting of the 9020 to an evacuated supply hose connected to a manifold gauge set.

Recovery Connections (see Fig. 3)
a) Connect a manifold gauge set to the INLET (left) fitting of the 9020.
b) Connect the OUTLET (right) fitting of the 9020 to an approved recovery cylinder.

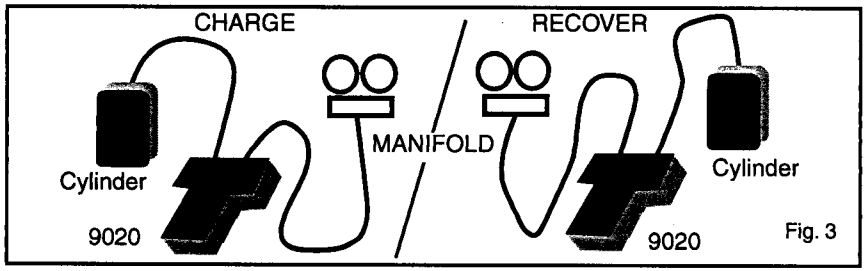


Fig. 3

2. Connect the manifold service hoses to the a/c or refrigeration system.
3. Place the refrigerant cylinder on the 9010A scale's platform.
4. Switch on the 9010A by pressing the ON/OFF button.
5. Connect the 9020 to the 9010A with the supplied connector cable. This will switch the 9020 on, indicated by three quick beeps, and the illumination of the "Battery" LED.
   When connected, a valve enunciator (▶0◀) appears on the bottom of the 9010A display.
   Note: there is no power switch to the 9020, it is switched on by connection to an energized 9010A and switched off upon disconnection, or by switching off the 9010A.

PROGRAMMING

1. Choose the unit of measure to be used by pressing the UNITS button on the 9010A. You may select pounds/ounces, decimal pounds, or kilograms/grams.
2. Press SET key to enter the value to be dispensed. The "*Set*" enunciator will appear and flash on the 9010A display.
3. Use the numeric keypad to enter value. Entering always starts from the leftmost character. Blanks are not accepted, zeroes must be entered if a numeric value is not desired. For example:
   to enter 2 Pounds 13.5 oz. - press 0, 2, 1, 3, 5
   to enter 5 ounces - press 0, 0, 0, 5, 0
   The following limitations exist:
   Pounds/Ounces mode - only a 0 or 1 may be entered in the 1st character position of the ounces display. If a 1 is entered, then 6, 7, 8, or 9 may not be entered in the 2nd character position (as 16oz.=1 Lb, 17oz.=1Lb 1oz., etc..).
   Kilograms mode - 5 through 9 may not be entered in the 1st character position, as this is in excess of the scale capacity.
4. If an error is made during entry, use the BACK key to edit. Use the CANCEL key to abort programming while in the SET mode.
5. When programming is complete, press SET key again to lock in programmed value. The "*Set*" enunciator on the 9010A display will stop flashing, and the programmed value will be displayed, permitting confirmation prior to beginning the charge.

CHARGE/RECOVERY

1. CHARGING ONLY: Open the refrigerant cylinder valve to fill the hose between the cylinder and the 9020. Purge air from hose.
   RECOVERY ONLY: Open the manifold valves or switch on recovery unit, to fill the hose between the manifold and the 9020. Then open the refrigerant cylinder valve.
2. CHARGING ONLY: Make sure manifold valves are closed.
   Initiate flow through the valve by pressing the GO key. The valve will open, the 'Valve' LED will light and refrigerant will begin to flow. The "*Auto*" enunciator will appear on the 9010A display.
   As soon as the GO key is pressed, the 9010A display will show zero, and then very quickly, a small quantity of charged refrigerant will be displayed (along with the minus sign, indicating weight is being removed). This is the volume of refrigerant which has moved into the hose between the 9020 and the manifold.

   RECOVERY ONLY: Initiate flow through the valve by pressing the GO key. The valve will open, the 'Valve' LED will light and refrigerant will begin to flow into the cylinder. The "Auto" enunciator will appear on the 9010A display and the display on the 9010A will count up as refrigerant is added.
3. CHARGING ONLY: Open the manifold valves slowly to allow refrigerant flow into the system. The numbers on the 9010A display will continue to increase as refrigerant flows out of the cylinder; indicating the amount that has been charged.
4. If necessary, press the PAUSE key to interrupt operation, see below.
5. When displayed value reaches programmed amount, four beeps will be heard, valve closes and "Valve" LED goes out, refrigerant flow is stopped. The "*Auto*" enunciator will disappear from the 9010A display, and the amount of refrigerant charged/recovered will remain displayed on the 9010A.
6. CHARGING ONLY: Leave the manifold valve(s) open for a few seconds in order to draw the refrigerant from the supply hose into the system. Close manifolds valves.
   RECOVERY ONLY: Close manifold valves and cylinder valve.
7. When completed, disconnect hoses from 9020 and cylinder.
8. To cancel the operation at any time after the GO key has been pressed, interrupt the flow and close the valve by pressing the PAUSE key. Press the CANCEL key to cease the operation. The "*Auto*" enunciator will disappear from the 9010A display, and the amount of refrigerant charged/recovered will remain displayed on the 9010A.
   CAUTION: Once this is done, the remaining programmed cycle cannot be completed!!

PAUSE FEATURE

The 9020 features a PAUSE Key that may be used during automatic dispensing to interrupt flow through the valve; or when manually charging with the 9010A to hold the displayed value.
This is useful if it becomes necessary to switch refrigerant cylinders or allow system pressures to equalize. In critical charge (less than 8 ounces) situations it is desirable to lock the scale display to prevent drift or bounce, when opening and closing, heating, or shifting the cylinder.

Automatic Mode

1. Press the PAUSE Key. The valve will close, the "Valve" LED will go out, refrigerant flow will stop and the 9020 will beep every second. The "*Auto*" enunciator on the 9010A display will flash.
2. To resume automatic dispensing, press the PAUSE Key again. The Valve will open, the "Valve" LED will come on, refrigerant will flow, and the 9020 will silence. The "*Auto*" enunciator on the 9010A display will stop flashing.

Manual Mode

3. With the 9020 connected to the 9010A, but without automatic charging active, press the PAUSE Key. This will freeze the 9010A display; the 9020 will beep every second. The "*Auto*" enunciator on the 9010A display will flash.
   Caution: Only do this if you are not, or have stopped, charging. With the Manual Pause activated any weight added or removed from the 9010A platform will be ignored.

REPEAT PROGRAM FEATURE

For multiple charges of the same amount, the REPEAT key may be used to re-enter and lock a duplicate program, allowing for one step charging.
1. After entering the desired program value as described earlier, and completing one charge cycle, the program value remains in memory.
   The amount of refrigerant charged/recovered will remain displayed on the 9010A.
2. After making the necessary hose disconnection, and re-connection, press the REPEAT Key. The "*Set*" enunciator on the 9010A display will appear, and the programmed value will be displayed.
3. Press the GO Key, and the cycle may be repeated as many times as desired.
   CAUTION: The CANCEL Key may be used as described above. If the CANCEL Key is pressed before the GO Key, the memory is erased and the Repeat Feature will not function. If pressed during a pause in charging, it stops the present operation, but does not erase the memory. Pressing the CANCEL Key a second time will erase the memory, and the Repeat Feature will not function.

FAIL SAFE FEATURE

The 9020 is designed with a fail safe feature that will close the valve in the event of lost power or signal.

The following conditions will cause the 9020 to fail safe:
a) The 9020 batteries fail
b) The connection to the 9010A is lost
c) The 9010A is switched off
d) The 9010A battery fails

In anyone of these instances, the 9020 will close the valve and shut down. All memory will be lost and it will not be possible to resume programmed dispensing, or activate the repeat feature.
Refer to the maintenance section below for Low Battery indication warnings of the 9020. If the *"Battery"* enunciator on the 9010A appears, it indicates approximately 2 hours of remaining operation. Refer to the instructions included with the 9010A, and do not operate the 9020 again until the 9010A battery is replaced.

MAINTENANCE

BATTERY INSTALLATION/REPLACEMENT

The Battery LED on the left side of the unit indicates battery condition. When the battery voltage weakens the LED will begin to flash. The valve enunciator (▶0◀) on the 9010A will also begin flashing. Approximately 2 hours of operation remain when this occurs. Complete the current operation and replace the batteries.
CAUTION: If the batteries are not replaced and voltage falls below that required for operation, the 9020 will go into the fail safe (see above) mode and close the valve. Flow will be interrupted and all memory will be erased. The unit will not operate at all until the batteries are replaced.

To install or replace batteries:
1. Remove the 9020 from its protective carrying case.
2. Remove the battery cover on the back of the unit by squeezing the small tab at the base towards the cover, and lifting the cover away.
3. If applicable, remove the old batteries.
4. Install 4 new or tested "AA" size Alkaline batteries, carefully noting the polarity indications in the compartment.
5. Replace the battery cover, pressing down until the tab snaps in place.
6. Replace the unit into its protective carrying case.

CLEANING PORT FILTERS

The 9020 inlet and outlet ports contain fine mesh screen filters to prevent dirt or particulate from entering the valve and causing the seat to leak. In the event that you notice reduced flow through the valve, or if you have recovered very dirty/contaminated refrigerant, it is recommended that these filters be cleaned.
To clean filters:
1. Connect 9020 to 9010A, enter in a program value and press the GO key to open the valve.
2. Connect a source of clean and dry shop or compressed air (at least 80-100psi recommended) to the OUTLET (right) port.

3. With the INLET (left) port pointed away from yourself and others, open or turn on source and allow the compressed air to run backwards through the valve for several seconds.
4. Close or turn off source and disconnect from 9020.
5. Disconnect the 9020 from the 9010A. Valve will close automatically once disconnected.

REPLACEMENT PARTS

1/4" FFL to 1/2" ACME Male adapters	TIF9021

SPECIFICATIONS

• Charging Ports:	1/4"MFL fittings; 1/2" ACME adapters
• Power Supply:	4-'AA' batteries
• Battery Life:	100 hours continuous operation
• Operating Temp.:	32° to 120°F (0°- 49°C)
• Max. Valve Operating Pressure:	500psi
• Dimensions:	9" x 5 1/2" x 3" (22.8x14x7.6cm)
• Weight:	1 lb. 12 oz. (793 grams)

WARRANTY

This instrument has been designed and manufactured to provide unlimited service. Should the unit be inoperative, after performing the recommended maintenance, a no-charge repair or replacement will be made to the original purchaser if the claim is made within one year from the date of purchase. This warranty applies to all repairable instruments that have not been tampered with or damaged through improper use. This warranty does not cover batteries, or any other materials that wear out during normal operation of the instrument.

Before returning your instrument for repair please make sure that you have carefully reviewed the Unit Maintenance and Troubleshooting sections of this manual to determine if the problem can be easily fixed. Ensure that the batteries are working properly BEFORE returning the unit. If the instrument still fails to work properly send the unit to the repair facility address on the back cover of this manual. Repaired or replaced tools will carry an additional 90 day warranty. For more information please call (800) 327-5060.

TROUBLESHOOTING

Symptom	Possible Cause	Cure
Battery LED does not light (unit does work)	Unit not connected properly to 9010A	Check connection see page 4
	9010A not switched on	Switch on 9010A see page 4
	9020 batteries dead	Replace batteries see page 7
	9010A battery dead	Check Battery see 9010A instructions
Cannot enter some numbers when programming	invalid entries in ounces or kg fields	Review valid entries see page 5
GO Key does not function	no program set	Look for *Set* enunciator on 9010A See p. 5
CANCEL key does work	Unit is in Auto mode	Verify *Auto* enunciator is present, press PAUSE Key, see p.6
	No program set	Look for *Set* enunciator on 9010A
Cannot program unit	Not in Set Mode	Look for *Set* enunciator on 9010A, see page 5
REPEAT Key does work	no program set	Look for *Set* enunciator on 9010A See p. 5
9010A display does not change when weight is removed / added	Unit in Set or Pause Mode	Verify mode by looking at enunciators and exiting Set or Pause Mode.