

# SMART-CHARGE™

## *Programmable Charging Scale*

**Part # 98300  
and  
Part #98300-220  
OPERATIONS MANUAL**



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**Mastercool® Inc.**  
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# SMART-CHARGE™

## Table of Contents

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	Pages
SETUP.....	1
QUICK CHARGE.....	4
CHARGE MODE.....	6
RECOVERY MODE.....	10
VACUUM MODE.....	11

### VACUUM mode (con't.)

- D. Use the "DOWN/SHIFT" key to move the cursor and use the "UP/+" key to change the numbers. Once the correct time is entered and you are ready to vacuum the system, press the "ENTER" key.
- E. The SMART-CHARGE will now activate the AC power outlet and countdown the vacuum time.

<b>VACUUM TIME LEFT:           000.01</b>
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*NOTE: At any time during the countdown you can press the "HOLD/BACK" key to stop the evacuation process. To start the vacuum pump back up, press the "HOLD/BACK" key again.*

- F. Once complete, the vacuum pump will shut off and the scale will notify the user.

<b>VACUUM DONE!</b>
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- G. The "REPEAT" key is used to repeat vacuum mode. After first vacuum cycle is complete, press the "REPEAT" key two (2) times. Vacuum cycle time is displayed. Press "ENTER" key. Vacuum cycle time will repeat. The repeat function can be used as many times as required.
- H. Press any key to return to scale function.

## VACUUM mode

The Vacuum mode in the SMART-CHARGE has the capability of running a vacuum pump for a user defined amount of time. This allows the technician to let the vacuum pump draw down a system and have the SMART-CHARGE automatically turn the pump off. Most pumps have an optimal vacuum time. After too long, the efficiency of the pump will decline. The timer function allows you to perform other tasks and not have to worry about the operating time of the vacuum pump.

In the Vacuum mode, the following tasks can be performed:

### 1. Vacuum time set

To enter the Vacuum mode, press the "MODE / RESET" key until the word VACUUM appears in the upper left corner of the LCD.



VACUUM  
X.XXX KG

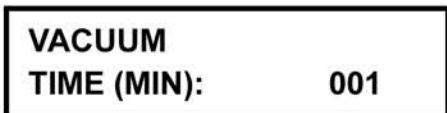
### 2. Vacuum

A. Press the "ENTER" key to begin the Vacuum process. The following screen will be displayed.



VACUUM  
POWER ON? YES

- B. Plug your vacuum pump into the Power Outlet on the face plate of the scale.  
C. Press the "ENTER" key and the following screen will appear.



VACUUM  
TIME (MIN): 001

## SETUP function

In the SETUP function, the following items can be changed:

1. Company Name
2. Language display
3. Start-up units.
4. Tank information (tare weight and capacity)

### **IMPORTANT!**

*In order to access the SETUP menu, enter the SCALE mode and press the "SETUP" key for 3 seconds.*

### 1. Company's name or owner's name

When the scale is first turned on, a company's or individual's name will be displayed for about 1 second. In the SETUP function, this name can be changed. This feature allows the user to personalize the SMART-CHARGE. The following instructions will describe how to change the company's name.

A. The first screen in the SETUP mode will display the Company's name.



COMPANY:  
MASTERCOOL INC.

- B. Up to 16 characters can be entered in the field. To change the character, use the "UP" and "DOWN" keys to scroll. Once the correct character has been identified, use the "UNITS" key to move to the next space.  
C. Press the "ENTER" key when complete.

### 2. Language selection

The scale has seven different languages (English, Spanish, French, Dutch, Portuguese, Italian and Swedish). Select the language of your choice to operate the SMART-CHARGE.

A. The second screen in the SETUP mode will display a choice of languages.



LANGUAGE?  
ENGLISH

### SETUP function (con't.)

- B. Use the "UP" key to scroll through the languages.
- C. Press the "ENTER" key when the correct language is selected.

### 3. Start-up units

The SMART-CHARGE can weigh in ENGLISH (LB) and METRIC (KG) units. When the scale is turned on, a default unit will be displayed (either LB or KG). One can change the default unit by changing it in the SETUP mode.

- A. The third screen displayed in this mode will display a choice of units.



- B. Use the "UP" key to scroll between KG and LB.
- C. Press the "ENTER" key once your selection has been made.

### 4. Tank information (tare weight "empty weight", capacity)

The SMART-CHARGE uses the tare weight and capacity to keep track of the amount of refrigerant remaining in the tank. If the tank gets to full or empty, the SMART-CHARGE will let you know. Entering the correct information here will assure you that you will never over fill or run out of refrigerant during the recovery or charging process. If you have a new tank, or are just starting out, use this step to enter the correct tare weight and tank capacity. If you have entered the information already, the scale will retain this in it's memory.

*NOTE: Most DOT tanks will have the tare weight of the tank stamped into the body of the tank. If you do not have this information, you can make a conservative estimate and enter this information. The scale will still work if no information is entered.*

### RECOVER mode (con't)

- C. The SMART-CHARGE will monitor the amount of refrigerant that is being recovered.

### 2. Timer

Once the refrigerant stops transferring to the scale, the SMART-CHARGE will start a 10-minute timer. If 10 minutes elapses and no change in weight is detected, the LCD will display DONE! See display below.



### 3. Electronic Signaling

*This feature is for Machine Manufacturers only!*

### 4. Tank Full Feature

The SMART-CHARGE will inform the user if the tank has reached 80% of it's total capacity by displaying the word FULL! (See SETUP function concerning the input of tank tare weight and capacity). This is a safety feature included in the SMART-CHARGE to prevent over filling of the refrigerant tank.

***WARNING! This feature will only give you a visual display. It will not prevent refrigerant from entering your tank. If a float switch or pressure switch is not incorporated in the tank, be very careful NOT to overfill the tank. It could cause a very DANGEROUS situation!***

## RECOVER mode

The SMART-CHARGE is a system that has been designed to be used as a stand-alone scale and as an integral component of a recovery / recycle machine. If you are using the scale as a stand-alone system, it is not necessary to use the RECOVER mode to recover refrigerant. You can simply place the scale in the SCALE mode and weigh the amount of refrigerant that is recovered. One can also recover and weigh the amount of refrigerant in the RECOVER mode. It is up to you!

**In the RECOVER mode, the following tasks can be performed:**

1. Weigh recovered refrigerant
2. If there is no transfer of refrigerant after 10 minutes, the SMART-CHARGE will inform the user that the recovery process is complete. DONE!
3. Electronic signaling
4. If the tank has reached 80% of it's capacity, the scale will notify the user. FULL!

*To enter the RECOVER mode, press the "MODE / RESET" key until the word RECOVER appears in the upper left corner of the LCD.*

<b>RECOVER</b>  <b>X.XXX KG</b>
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### **1. Recovery**

- A. Press the "ENTER" key to begin the RECOVERY process. The following screen will be displayed.

<b>RECOVER</b>	<b>0.000 KG</b>
<b>START.....GO!</b>	

- B. Once you are ready to recover (ie....The recovery machine hooked up and all valves in the correct position), press the "ENTER" key. The following screen will appear:

<b>RECOVER</b>	<b>0.000 KG</b>
<b>600</b>	<b>0.000 KG</b>

## Tank information (con't...)

- A. The fourth screen displayed will ask if you have a new tank.

<b>NEW TANK?</b>	<b>NO</b>
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- B. If you do not have a new tank or the information is the same, press the "ENTER" key and the scale will reset.
- C. If you need to enter new information, press the "UP" key to scroll to a yes answer. Press the "ENTER" key to enter new information.
- D. The scale will require you to enter the empty weight of the tank. This is the weight of the tank with no refrigerant.

<b>EMPTY WEIGHT</b>  <b>000.00 KG</b>
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- E. Use the "DOWNSHIFT" key to move the cursor and use the "UP / +" key to change the numbers. Once the correct weight is entered, press the "ENTER" key.
- F. The scale will then prompt you to enter the capacity of refrigerant. This is how much refrigerant the scale will hold.

<b>CAPACITY</b>  <b>000.00 KG</b>
---

- G. Use the "DOWNSHIFT" key to move the cursor and use the "UP / +" key to change the numbers. Once the correct weight is entered, press the "ENTER" key.

The SMART-CHARGE now has all the necessary information to properly perform all of it's functions. If at any time you need to change the information, simply enter the SCALE mode and press the "SETUP" key for 3 seconds.

## QUICK CHARGE Function

In the QUICK CHARGE function the following can be performed.

1. Refrigerant can be charged

### 1. QUICK CHARGE

This function allows the user to quickly and conveniently charge a system in a minimal amount of time. Simply turn on the scale and enter the weight to be charged.

- A. Turn the scale on
- B. Place refrigerant tank on scale . Wait for the reading to settle out!
- C. Press the "ZERO/TARE" key
- D. The following screen will appear

<b>SCALE</b>	<b>X.XXX LB</b>
	<b>000.00 LB</b>

- E. Use the "DOWN/SHIFT" key to move the cursor and use the "UP/+" key to change the numbers. Once the correct weight is entered and you are ready to charge the system, press the "ENTER" key.
- F. The solenoid valve will open and the refrigerant will start to transfer. When the correct amount of refrigerant has transferred, the solenoid valve will shut and the scale will read DONE. Press the "ENTER" key to exit this screen.
- G. The "REPEAT" key is used to repeat the previously entered charge weight. After the first charge cycle is complete, press the "REPEAT" key two (2) times. Charge weight is displayed. Press "ENTER" key. The displayed amount of refrigerant will be charged into the system. The "REPEAT" function can be used as many times as required.
- H. Press any key to return to scale mode.

#### **IMPORTANT!**

*You can only perform this function in the SCALE mode.  
This is the mode the SMART-CHARGE is in when the unit  
is first turned on.*

## CHARGE mode (con't.)

- D. Finally, you need to select the desired Model's year. Use the "UP/+" key and the "DOWN/SHIFT" key to scroll through all of the different Model years. Once you find the year, press the "ENTER" key. Example below: (1992)

<b>PONTIAC</b>	<b>GRAND AM</b>
<b>1992</b>	<b>42.0 OZ.</b>

- E. The correct capacity will now be displayed in the lower left hand corner of the LCD. EXAMPLE: (42.0 OZ for Pontiac Grand Am).
- F. When you are ready to charge the car, press the "ENTER" key.
- G. The SMART-CHARGE will now charge the correct amount of refrigerant. The amount remaining to be charged will be displayed until it reaches zero.
- H. Once complete, the scale will automatically stop charging and notify the user with the message: DONE!
- I. If there is NOT enough refrigerants in the tank to finish the charge, the scale will notify the user with the message: EMPTY!
- J. The "REPEAT" key is used to repeat the previously entered charge weight. After the first charge cycle is complete, press the "REPEAT" key two (2) times. Charge weight is displayed. Press "ENTER" key. The displayed amount of refrigerant will be charged into the system. The "REPEAT" function can be used as many times as required.
- K. Press any key to return to scale mode.

*NOTE - If you make a mistake and would like to go to the previous screen, press the "HOLD/BACK" key and the previous screen will appear.*

## CHARGE mode (con't.)

### 3. "FIND IT" charge

A unique feature of the SMART-CHARGE allows the user to search for the refrigerant capacity of most cars from 1988-present. Simply search for the correct Make, Model and Year and the SMART-CHARGE will FIND the correct weight to charge.

A. If you do NOT know the refrigerant capacity of the car you are charging, move the cursor to the phrase "FIND IT" and press the "ENTER" key.

**SELECT ONE:**  
**MANUAL                  FIND IT**

B. You are now in the FIND IT mode. Use the "UP/+" key and the "DOWN/SHIFT" key to scroll through all of the different Makes of cars. There are 46 different Makes in the memory. Find the correct Make and press the "ENTER" key. Example below: (Pontiac)

**FIND IT**  
**PONTIAC**

C. Now you need to select the desired Model of car. Use the "UP/+" key and the "DOWN/SHIFT" key to scroll through all of the different Models of cars. Once you find the Model, press the "ENTER" key. Example below: (Grand Am)

**PONTIAC**  
**GRAND AM**

## SCALE mode

In the Scale mode, the following tasks can be done:

1. Items can be weighed
2. Quick Charge
3. Setup
4. Calibration

### 2. Weighing

The SMART-CHARGE can be used to weigh items other than refrigerant. Do not place items that are over the maximum capacity of the scale (80 kg / 176 lbs.) This could damage the scale.

A. Turn scale on

B. Items can be weighed in any mode (Scale, Charge, Recover or Vacuum)

C. Press the "ZERO/TARE" key to zero out the display. This will only work in the SCALE mode.

D. If you want to change the units of measurement, press the "UNITS" key.

1. Quick Charge, see Quick Charge section, (pg.4)
2. Setup, see Setup section (pg. 1)

## CHARGE mode

In the Charge mode the following tasks can be performed:

1. Power outlet activated
2. "MANUAL" charge
3. "FIND IT" charge

To enter the CHARGE mode press the "MODE/RESET" key until the word CHARGE appears in the upper left corner of the LCD.

<b>CHARGE</b>  <b>X.XXX LB</b>
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### 1. Power outlet

The power outlet on the faceplate of the scale can only be activated by the user. It can be activated in the CHARGE and VACUUM modes.

In the CHARGE mode, the user is asked if he wants to power on. The main purpose of this function is to allow one to plug in a heater blanket to heat the refrigerant before charging. Heating the refrigerant will increase the pressure in the tank and usually reduce charging time. Make sure to use a heater blanket designed specifically for heating a refrigerant tank. The blanket should have a built in thermostat to maintain a proper temperature. Overheating could cause a build up of excess pressure which could become very dangerous.

A. Once in the CHARGE mode, press the "ENTER" key.

<b>CHARGE</b> <b>POWER ON?</b>	<b>0.000 LB</b> <b>YES</b>
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- B. Use the "UP/+" key to change the answer to YES or NO
- C. Press the "ENTER" key when complete. If YES was your answer, the power outlet will become active.
- D. Allow enough time for the heater to properly heat the refrigerant

## CHARGE mode (con't.)

### 2. "MANUAL" charge

A. The next screen in the CHARGE mode will ask if you want to manually enter the charge weight or "FIND IT" in SMART-CHARGE's memory.

<b>SELECT ONE:</b> <b>MANUAL</b> <b>FIND IT</b>
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- B. If you know the correct amount of refrigerant to charge, manually key in the weight. Move the cursor to MANUAL by pressing the "DOWN/SHIFT" key.
- C. Press the "ENTER" key when the cursor is on MANUAL
- D. In this screen, you can enter the charge.

<b>MANUAL</b> <b>000.00 KG</b>
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- E. Use the "DOWN/SHIFT" key to move the cursor and use the "UP/+" key to change the numbers. Once the correct weight is entered and you are ready to charge the system, press the "ENTER" key.
- F. The SMART-CHARGE will now charge the entered amount of refrigerant. The amount remaining to be charged will be displayed until it reaches zero.
- G. Once complete, the scale will automatically stop charging and notify the user with the message: DONE!
- H. If there is NOT enough refrigerant in the tank to finish the charge, the scale will notify the user with the message: EMPTY!

*NOTE - If you make a mistake and would like to go to the previous screen, press the "HOLD/BACK" key and the previous screen will appear.*