RCBS

AmmoMaster® Chronograph
Operating Instructions

All of us at RCBS® would like to thank you for purchasing the AmmoMaster® Chronograph. We believe, dollar for dollar, it is the best chronograph on the market.

THOROUGHLY READ ALL DIRECTIONS AND SAFETY INSTRUCTIONS INCLUDED IN THIS PACKAGE.

If you have any questions or problems, do not return it to the store. Instead, call us at (800) 533-5000 or (530) 533-5191 and we will be happy to help you.

FEATURES

• 86 square inches of available shooting area.

• Detachable Display Unit with 20 foot cord.

• High, Low and Average data-string velocity readings.

• Extreme Spread and Standard Deviation data-string calculations.

• Edit data-string functions and delete data functions.

• Feet/second (f/s) or meter/second (m/s) velocity readings.

• Low battery indicator

• Full string indication

• 10 strings maximum stored in memory with 10 shot velocity measurements per string

• Warranty of 1 year from date of purchase.

SPECIFICATIONS

Velocity Range: 70 – 7000 fps (21 – 2134 m/s)

Clock speed: 10 MHz

Power Requirements: 9 Volt DC battery

Operating Temperature Range: 20 – 120º F

SAFETY AND WARNINGS

⚠ READ THOROUGHLY ALL DIRECTIONS AND SAFETY INSTRUCTIONS INCLUDED IN THIS PACKAGE. FAILURE TO COMPLY MAY RESULT IN AN UNSAFE FIREARM CONDITION THAT MAY CAUSE PROPERTY DAMAGE, PERSONAL INJURY OR DEATH.

⚠ **WARNING!**

• **TARGET MUST HAVE A SAFE BACKSTOP.**

• **BYSTANDERS MUST STAY BEHIND THE SHOOTERS AT ALL TIMES.**

• **ALWAYS WEAR EYE AND HEARING PROTECTION.** Shooter must maintain proper eye relief from optical sighting devices and wear eye protection at all times.

• **FOLLOW LOCAL, STATE AND FEDERAL LAWS REGARDING FIREARM USE.**

ALWAYS FOLLOW THE RULES OF FIREARM SAFETY.

UNLOAD FIREARM, OPEN FIREARM ACTION AND ENGAGE FIREARM SAFETY BEFORE MAKING ANY FIREARM ADJUSTMENTS. DO NOT REACH IN FRONT OF FIREARM MUZZLE TO MAKE ADJUSTMENTS.

ALWAYS KEEP FIREARM MUZZLE POINTED IN A SAFE DIRECTION WHEN MAKING ADJUSTMENTS, LOADING FIREARM AND DISCHARGING FIREARM. CARE SHOULD BE TAKEN TO ENSURE THAT THERE IS NOT INTERFERENCE WITH THE FIREARM STOCK, SLING OR ACTION.

⚠ **WARNING! Never exceed published recommended gun powder amounts in reloads to achieve higher velocities in your ammunition. Increasing the amount of powder could cause a dangerous condition that may cause property damage, personal injury or death.**

⚠ **WARNING!** Velocity measurements should not be used to calculate combustion pressures in your cartridge or chamber. Again, do not exceed published maximum powder levels in your ammunition.

⚠ **WARNING!** Do NOT try to protect your chronograph with armor plating. Bullet ricochet from hitting this plating could cause property damage, personal injury or death. Chronograph components are replaceable.

All chronograph units have inherent uncertainty when recording velocity measurements. Several uncontrollable variables can affect each measurement and contribute to this uncertainty, including sunlight intensity, sunlight orientation, cloud cover, wind, shadows, and ground reflectivity of cement, water, or snow, etc. When collecting data, be suspicious of any data points that have greater than a 4% difference of that ammo's average string velocity.

Special care should be taken when shooting certain types of ammunition. Gas checks, wads, sabots, etc. can separate and impact your chronograph causing damage to the device.

Also, as with any electronic device, water can damage certain components. Be careful when using the chronograph outdoors in rainy weather to prevent damage to the Keypad/Display Unit or Skyscreens.

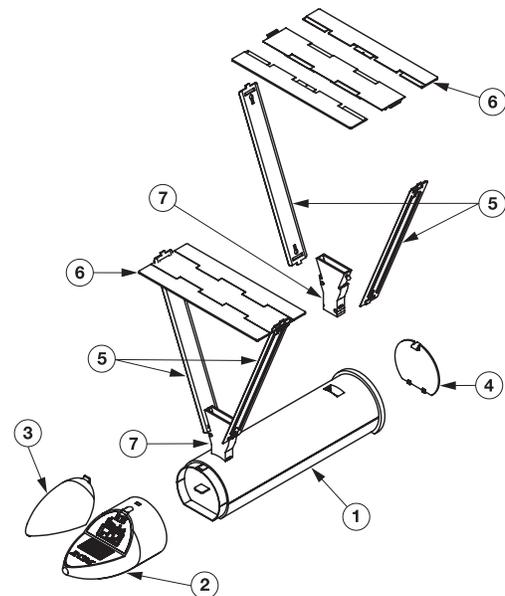| ITEM NO.	PART NUMBER	DESCRIPTION	QTY.
1		Body	1
2		Keypad/Display Unit	1
3		Keypad/Display Unit Cover	1
4		Body Lid	1
5	81191	Side Support (set of 2)	2
6	81192	Diffuser (3 part assembly)	2
7	81193	Skyscreens	2

Figure 1 - RCBS® AmmoMaster® Chronograph

UNPACKING

1. Detach the Keypad/Display Unit from the chronograph's body by depressing the locking tab on top of the unit and pulling straight off. Try not to twist or bend Display Unit while performing this action. The display will be kept near the shooter during use.

2. The AmmoMaster® Chronograph has an internal storage compartment. The base or 'headstamp' end of the chronograph has a removable door. Depress the tab to remove the door (See Figure 2).

Figure 2 - Storage Compartment

3. Remove the peripheral equipment from inside the chronograph's body. There should be 2 Skyscreens (Item 7), 2 Diffuser Assemblies (Item 6), and 4 Side Supports (Item 5) shown in Figure 1.

ASSEMBLY

1. Attach the chronograph base unit to any camera tripod (not included) that uses a standard 1/4"-20 mounting screw or place the unit on a stable and level surface like a table or workbench (See Figure 3).
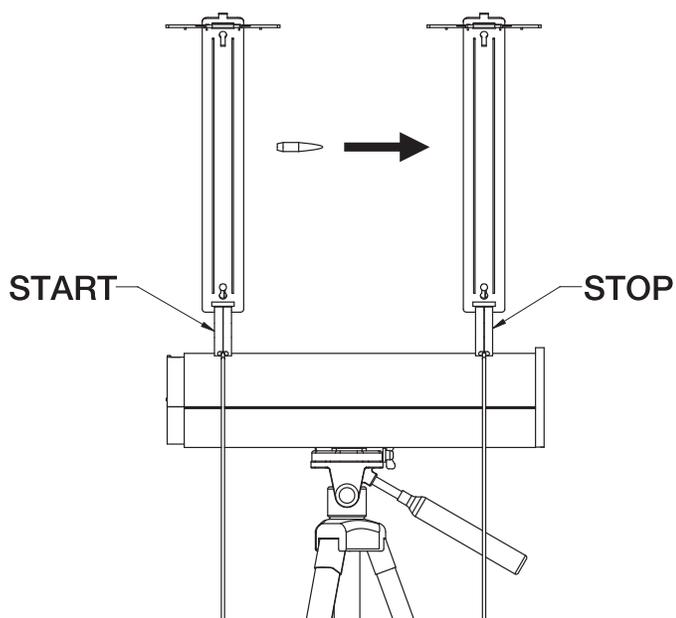

START STOP

Figure 3

Figure 4

2. Unwrap the Skyscreen cable and locate the label at the end of the cable, which will be labeled "Start" for the Start Skyscreen, or "Stop" for the Stop Skyscreen. Plug the end of the cable, from each of the two Skyscreens, into the backside of the Display Unit (See Figure 4). Make sure the Skyscreens are plugged into the correct socket, i.e., Start Skyscreen should be plugged into the RGA Jack marked "Start" and the Stop Skyscreen plugged into the RGA Jack marked "Stop". The chronograph will not record velocities accurately if the Start and Stop Skyscreens are plugged into an incorrect jack. (See Figure 4).

3. Place the Start Skyscreen in the first slot located in the front of the chronograph's body/case. Place the Stop Skyscreen in the slot located at the rear of the case (See Figure 3 and 5). The Skyscreens are secured in place by a spring clip. Once installed, give the skyscreens a slight pull to ensure they are securely locked into place. Velocity readings may be inaccurate if the Skyscreens are not fully inserted into their respective mounting slots.

Figure 5

4. Once the Skyscreens are installed, place one Side Support Arm onto the side of each Skyscreen by aligning the ball into the keyhole-shaped slot and then press the support arm down to lock the arm into position (See Figure 6).
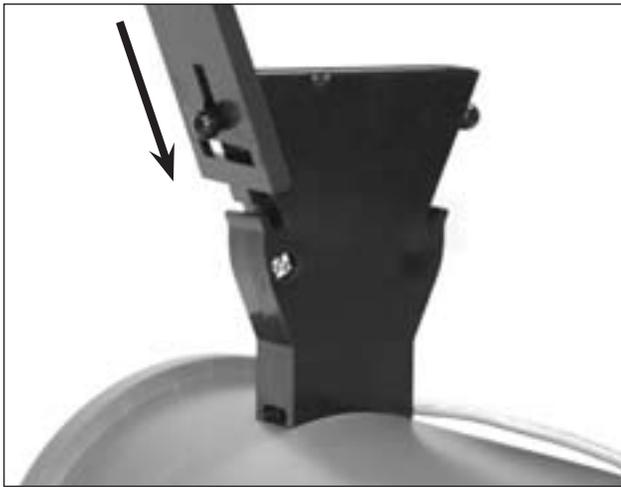
Figure 6

5. The next step is to assemble the Diffusers. Each Diffuser consists of one middle piece and two end pieces. The notches on the diffuser are numbered with either a number "1" or "2" to help aid in assembly. Take the middle piece and one of the end pieces, line up the matching numbers and simply slip into position (See Figure 7).
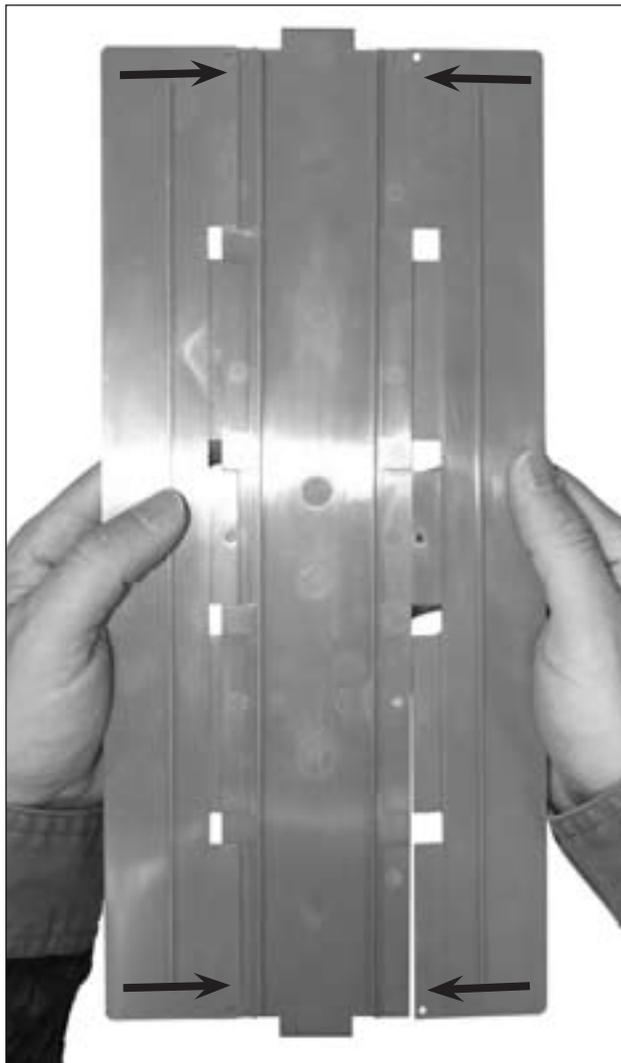

Figure 7

6. Insert the Diffuser's tab into the Support Arm's slot so the ribs on the Diffuser are facing down toward the Skyscreen as shown in Figure 8. While holding the Diffuser horizontal, install the other Support Arm onto the opposite side of this Diffuser and then connect this Support Arm to the Skyscreen the same way you did in Step #4.

Figure 8

7. Repeat steps 4 – 6 for the other Skyscreen location.

SET-UP

⚠️ **ALWAYS WEAR EYE AND HEARING PROTECTION.**

1. Place the assembled chronograph unit on a stable surface or tripod (not included). Ensure the Chronograph is level and oriented in the same direction as the bullet/projectile's path, otherwise it could give you erroneous velocity readings.

2. The Front Skyscreen, for typical rifle calibers (.308 or smaller), should be at least 10 feet away from the muzzle of the weapon (See Figure 9). Larger calibers, magnums, etc., produce more muzzle blast that can falsely trigger the Skyscreen and produce erroneous velocity readings. Increase the distance to 16' - 18' to eliminate this issue.
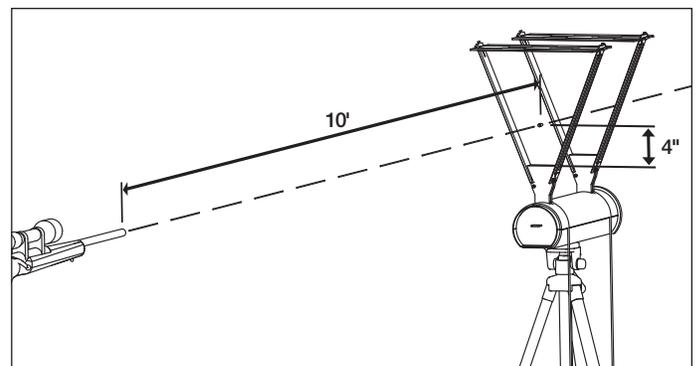

Figure 9

3. Bring the Display Unit back to your firing position. Turn the Display Unit on by pressing the On/Off button. You will see the following display for a moment while the unit initializes (See Figure 10).

Figure 10 - Initialization Screen

4. Once the Display shows a shot number and an indicator next to "Ready", the AmmoMaster® unit is ready to record velocities (See Figure 11).

Figure 11 - "Ready" on Shot #1

5. Measure the distance between the bore of the weapon system and the sighting system. Typically this distance is 1.5" on a rifle with an optical scope. Remember that your line of sight will be higher than the path of the projectile. The ideal projectile path is centered over the chronograph at a height of 4.0 inches above the top of the Skyscreen (See Figure 9). The projectile/ bullet height should be kept within ± 1.5 inches of this location for accurate velocity measurements.

⚠ **WARNING! BE CAREFUL NOT TO AIM ANY LOWER THAN THIS, AS IT MAY CAUSE SERIOUS DAMAGE TO THE SKYSCREEN AND POTENTIALLY CAUSE SERIOUS INJURY TO THE SHOOTER.**

a. We recommend using a bench, sand bags, bi-pods, or other means to stabilize your weapon.

b. If you are concerned about hitting your chronograph, start by removing your Diffusers and Side Supports. Place a paper target immediately behind your chronograph and aim several inches above the top surface of the Skyscreens. Work your shots lower in small increments until your shot placement is in the correct location. Make note of that aiming spot. If desired, place a piece of tape on the Side Support as a visual reference for your aim point of that particular firearm. Repeat this procedure for each weapon used in conjunction with your chronograph.

6. Shoot a round at the correct aiming point as mentioned above, to start recording your velocity measurements.

⚠ **ALWAYS WEAR EYE AND HEARING PROTECTION.**

7. Please refer to the detailed instructions listed on pages 5-8 to become more familiar with the full functionality of the AmmoMaster® Chronograph.

8. ENJOY.

STORAGE

Follow steps 1 – 7 of the "Assembly" section in reverse sequence. Your Chronograph should be stored in a dry, cool place away from direct sunlight if possible. Although the plastic components of your unit are manufactured with a UV inhibitor additive, limiting unnecessary UV exposure of any plastic device is recommended. Do not leave your unit outside for long periods of time.

KEYPAD LAYOUT
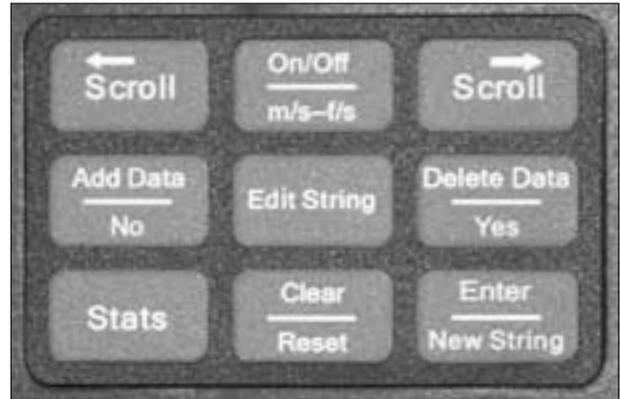
BUTTON	FUNCTION	DESCRIPTION
On/Off m/s–f/s	Power Button	Turn unit On. Turn unit Off, depress button and hold for 3-5 sec.
	Change Units	Depress to switch from f/s to m/s.
← Scroll	Scroll Left	Scroll to the left (decreasing shot #) while in Stats Mode and Edit String Mode
→ Scroll	Scroll Right	Scroll to the right (increasing shot #) while in Stats Mode and Edit String Mode
Add Data No	Adds Data to string	Add data to an existing shot string while in Edit String Mode
	No command	Depress No if choose not to delete velocity or string or clear all.
Edit String	Enter Edit String Mode	Edit String Mode allows editing of recorded velocities in selected shot strings.
Delete Data Yes	Delete Data in string	Delete current velocity recorded; delete any recorded velocity in any shot string.
	Yes command	Depress Yes if choose to delete velocity or string or clear all.
Stats	Enter Stats Mode	Displays statistical data for a selected shot string.
Clear Reset	Clear a selected string	Clear function will clear all data within a selected shot string.
	Delete all recorded data	Reset will clear all recorded data in all shot strings.
Enter New String	Accept results	Depress enter to select desired shot string, accepts the results in the stats mode.
	Starts new shot string	Starts new shot string

FUNCTIONS

On/Off

To turn unit on - depress "On/Off" button and the Chronograph is ready to record data.

To turn unit off - depress "On/Off" button and hold for approximately 3-5 seconds.

m/s – f/s

Switches units from feet per second or meters per second. To switch between units simply depress the m/s – f/s button.

Enter

Depressing the "Enter" button accepts the current string and starts a new string, accepts string while in edit string mode and accepts the results in the stats mode and readies unit for recording of the next velocity.

Scroll (← →)

Allows user to scroll to the right or the left while in Stats Mode to view statistical information, and for scrolling through recorded strings or recorded shot velocities (1, 2, 3,… , 10).

Delete Data

Delete current velocity recorded; delete any recorded velocity in any of the recorded strings, while in edit string mode.

Add Data

Depressing "Add Data" button while in Edit String Mode will prepare unit to record shot velocity within existing shot string, if string is not currently full. Data will be appended to the end of the string.

Yes or No

Depressing the "Yes" or "No" button will confirm/deny the deletion of a recorded velocity, entire shot string, or all recorded shot velocities.

Edit String

Allows user to enter the "Edit String" mode and edit the recorded velocities in a desired shot string.

Clear/Reset

This allows the user to delete a shot string or all recorded data stored in the unit.

Start New String

A new string may be started at any time. Depressing the "Enter" button will accept current string and start a new string.

Delete Velocity

To delete current recorded velocity, simply depress "Delete Data" button, "del" will display with an indicator above "Shot". Depress "Yes" button to confirm deletion of the last velocity recorded or the "No" button to deny deletion and ready unit to record next shot velocity.

For recorded velocity in different string, simply depress "Edit String" button. Use "Scroll" buttons to scroll through desired shot strings; press "Enter" to select desired string, use "Scroll" buttons to scroll through recorded shot velocities. If choose to delete recorded velocity depress "Delete" button, "del" will be displayed with an indicator above "Shot". Press "Yes" button to confirm deletion, if choose not to delete velocity press "No" button. To exit edit string mode and ready unit for next shot within existing shot string that is not full, depress the "Add Data" button or "Enter" button. For a full string, depress the "Enter" button twice to begin a new shot string.

Delete String

Depress "Edit/String" button and scroll to the desired shot string. Depress "Enter" Button, to select string. Depress "Clear/Reset" button "del" will display with an indicator above "String". Depressing "Yes" button will delete current string. If you choose not to delete string depress the "No" button which will default back into the edit string mode and allow scrolling through the recorded shot data.

Statistical Data

Depress "Stats" button and the highest velocity reading within string will be displayed. Use "Scroll" button to scroll right to view the lowest velocity reading, average velocity, extreme spread and the standard deviation of all shots recorded within the current shot string. Depress "Enter" button to exit Stats Mode, or if the statistical data reveals an erroneous velocity the velocity reading may be discarded by simply depressing the "Edit String" button and scrolling to select desired velocity and repeat the Delete Velocity instructions from above.

Delete All Data

Depressing the "Clear/Reset" button once will display "del", depressing the "Clear/Reset" button a second time will display "res" with an indicator above "String" (see Figure 12). Depressing the "Yes" button will delete all shot velocity data stored in memory, and the unit will automatically shut down. If you choose not to delete all memory depress the "No" button to exit out of "Clear/Reset" mode.

Figure 12 - Reset Display to Delete ALL Data

ADDITIONAL INFORMATION

DISPLAY UNIT

The Display Unit is what sets the AmmoMaster® Chronograph apart from the competition. The functionality of the AmmoMaster® display was designed with the shooter in mind. It allows the user to easily review statistical data and to review or edit recorded data in memory at any time during operation. The keypad was also designed with the appropriate commands necessary to allow the user to step through any operation with ease. Though data operations are simple to do, we strongly encourage the user to read through the appropriate sections in this manual.

1. Depress On/Off button, "rcbs" will display. The unit will, if there is no previous recorded data, be ready to record shot #1 in string #1. The unit will display "1" with an indicator shown directly beneath the "String" header, then disappear and flash with an indicator displayed directly beneath "Ready" and "Shot" headers (see Figure 13). This menu informs the user that the unit is ready to record shot velocity #1 in string #1.

   • If unit has recorded velocities from a previous session, please read **Previous Recorded Data** section below. If you would like to remove all previously recorded shot velocities, refer to the **Delete All Data** function on the previous page.

Figure 13 - "Ready" on "Shot" 1

2. While recording shot velocities, the **most recent** velocity measurement can easily be deleted by pressing the "Delete Data" button. The word "del" will show on the display (see Figure 14). Depressing the "Yes" button will confirm the deletion of the last recorded velocity. Depressing the "No" button will prevent deletion of velocity and resume recording shot velocities within the existing string.

Figure 14 - Delete Current Velocity Data Point

3. Once you have fired your tenth and final shot in a string, the display will flash between "FULL" and "1", (see Figure 15). This means that string 1 is full with ten recorded shot velocities.

  • To start a new shot string, depress "Enter". If all shot strings are full, refer to the **Delete String** and/or the **Delete All Data** section above to allow for recording more shot velocities

  • To view the High, Low, Average, Extreme Spread, and Standard Deviation of the current shot string velocities - depress the "Stats" button and refer to the **Statistical Data** section below.

  • If you choose to scroll through and verify shot velocities recorded - depress the "Edit String" button and use the "Scroll" buttons to scroll through the recorded shot velocities.

Note: When 100 shots have been recorded, all memory allocations are full. Some or all of the data must be deleted in order to continue collecting velocity data. The chronograph will not overwrite subsequent data if you continue to shoot.

Figure 15 - Full String of Data

EDIT STRING FUNCTION

1. The Edit String function is one of the most useful functions on the AmmoMaster® Chronograph. By depressing the "Edit String" button, the unit will default to the highest string number with recorded shot velocities. For example, if there are nine full shot strings and the "Edit String" button is depressed, the display will show an indicator displayed directly under "String" and the display will show a "9".

2. At this point the user is allowed to scroll through shot strings and select the desired string to review. After determining which string to review, depressing the "Enter" button will select the desired string. The unit will flash between the last shot velocity recorded in the string and its corresponding velocity.

3. The user can scroll through and review shot velocities. An erroneous velocity reading is easily deleted by depressing the "Delete Data" button, followed by the "Yes" button. This will shift all numbers down. For example, if there were 8 shot velocities recorded within a particular string and shot 4 velocity was deleted, shots 1-3 will remain unchanged. However, the old shot 5 will become the new shot 4, and the old shot 6 will become the new shot 5, etc. up to shot 7. The string can be filled by appending new shot velocities by simply depressing the "Add Data" button or the "Enter" button. The display will flash between string and shot, which means the unit is ready to record the next velocity reading and you can begin shooting. Or, by pressing "Enter" again, the unit will begin on shot 1 of the next blank string.

PREVIOUSLY RECORDED DATA

If there is stored shot velocity data, the unit will display "rcbs" and then automatically default to the highest level string that has no data. For example, if strings 1-9 have stored velocity data and string 10 has none, the unit display will flash "10" with an indicator on "String" and flash "1" with an indicator on "Shot". This means the unit is ready to record shot 1 in string 10.

Note: If there are strings that are not completely filled, i.e., having less than 10 shots per string, the unit will default to the highest level string containing data. If this string happens to be full the display will flash between "FULL" and the string number you are currently in. For example, if in string 10; the unit display will flash between "FULL" and "10"; meaning string 10 is full.

It is possible to access and record shot velocities to strings with no previously recorded data by using the "Edit String" function. For example, if string 4 has no data and all of the remaining strings are full, the unit will default to string 10 and show that string 10 is full. (The only way for this to happen is if the user physically deleted all the recorded shot velocities within string 4.) You can depress "Edit String" and use "Scroll" to locate string 4. Depressing "Enter" will select string 4 and the unit display will flash between shot "1" and velocity "- - - -", meaning you are in string 4 but there are no

recorded velocities (see Figure 16). Depressing "Enter" again, or the "Add Data" button, the display will flash between "String" 4 and "Ready" on "Shot" 1. Now the unit is ready to record shot 1 in string 4.
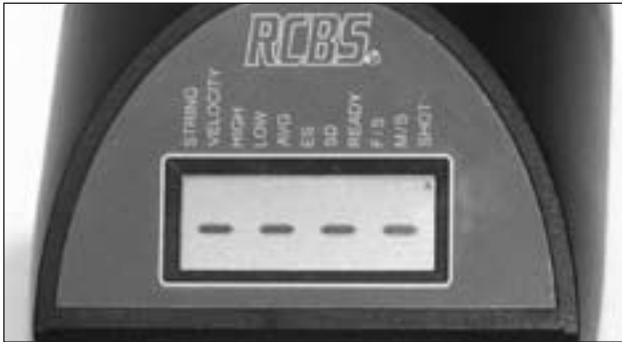

Figure 16 - Display for No Data in String

SKYSCREEENS

Your AmmoMaster® Skyscreens operate using standard photocell technology. The photocell is constantly gathering incoming light. When an instantaneous change in light is detected, the photocell saves the time at which this occurs. For example, when a projectile is fired over the Start Skyscreen of the Chronograph, the shadow cast by the projectile triggers the photocell at a moment in time. The instant the projectile passes over the Stop Skyscreen, the shadow cast by the projectile triggers the photocell at another moment in time, thus generating a start and stop time. Since the Skyscreens are manufactured with a known distance between them, the projectile velocity can be calculated using the equation Velocity = Distance ÷ Time.

DIFFUSERS

The Diffusers for your AmmoMaster® Chronograph play a very important role in recording velocity readings. The Diffusers are used to help filter out any unnecessary incoming light. This aids in the photocell's ability to detect a slight change in light as a projectile passes over the Skyscreen. If the Diffusers are not used on a clear, sunny day, the photocell may be saturated by all the incoming light and may not detect the shadow cast by the projectile. Imagine trying to spot an object flying through the air as it passes directly in front of the sun; this is similar to using the chronograph without any diffusers on a clear sunny day. Again, imagine trying to spot the same object flying through the air as it passes directly in front of the sun but this time, there is an overcast condition. The object is much easier to see. This analogy is similar to using Diffusers on your Chronograph.

LIGHTING CONDITIONS

Now that you have a basic understanding of what makes your chronograph function, you know that the lighting conditions are very important. A Skyscreen's accuracy and sensitivity to changes in illumination is based on the ambient lighting conditions. While they work most of the time, chronographs do have limitations which will cause errors. Too much light, as well as not enough light, will inhibit the chronograph operation.

In low light situations, i.e., early morning, late evening, overcast or cloudy conditions, the chronograph may produce inconsistent velocity measurements or may not record velocity readings at all. Try removing the Diffusers to allow more light to reach the photocell.

Problems can also arise on clear, sunny days when shooting over snow, water, or light colored sand/gravel, etc. Reflected light off the ground can illuminate the bottom of the bullet and cancel the shadow cast onto the skyscreen causing erroneous velocity readings. When this happens, try covering the ground around the chronograph with a blanket or non-reflective tarp. This should minimize the reflected ground light and

alleviate the problem. Another technique is to color the bullet with a black marker, especially if the bullets have a shiny appearance.

In locations with direct overhead sunlight, the Skyscreen may become saturated by the incoming light, even when the Diffusers are installed. Excessive light can cause a blind condition and the photocell may not "see" the bullet pass over. This is because the small bullet's shadow is not providing sufficient contrast. To reduce the amount of input light, try covering the diffuser's top surface with any material that will absorb or reflect the light (aluminum foil, cloth material, cardboard, etc.) Don't use anything heavy enough to disrupt the units balance or damage the Diffuser or Side Supports. If all else fails, it might be best to come back and shoot another day or wait until later in the day when the light has subsided.

INDOOR SHOOTING

To use indoors, you must provide the chronograph with an artificial light source. Install a standard incandescent light bulb centered 24 inches above each diffuser to provide a uniform illumination. We recommend using a 60 – 100 W bulb and an aluminum reflector dish for each light fixture, if possible. These products are readily available at most hardware stores.

Other lighting configurations may provide acceptable results (different installation height, no reflector dish, etc.), but be slightly less accurate. Fluorescent light sources will not work reliably because they do not provide a continuous light source.

SHOTSHELL VELOCITY

⚠ It is highly recommended that you determine your shot's pattern size before starting. Only use your Diffusers and Side Supports if your gun's shot pattern is small enough to pass through the chronograph's shooting area without causing damage. FAILURE TO DO SO MAY CAUSE SERIOUS DAMAGE TO THE SKYSCREEN OR OTHER COMPONENTS AND POTENTIALLY CAUSE SERIOUS INJURY TO THE SHOOTER.

To prevent damage to your Chronograph, we recommend removing the Diffusers and Side Supports when measuring shotshell velocity. Position weapon 10 feet away from chronograph (see Figure 9) and continue using as you would for centerfire rifle ammo. Certain ambient and environmental conditions can result in erratic measurements when the Diffusers are not used. See "Lighting Conditions" section for more information.

To measure your shot pattern, place a paper target approximately 15 feet from the muzzle of your firing position. Shoot into the target to measure the diameter of the shot pattern. Then, determine a desired aiming point to ensure you are shooting approximately 4-6 inches above the chronograph Skyscreens. Once this has been done place your chronograph so the back of the unit is against the target. Verify the shot pattern is the correct height above the skyscreens. Move the target a few feet further away (ie., down range) from the chronograph and begin recording velocities.

ARROW VELOCITY

For better measurement accuracy, make sure you are far enough away from the chronograph so that the arrow separates completely from the bow string before the tip reaches the "Start" skyscreen. Blunt arrow tips work best.

STATISTICAL DATA

Statistical data only applies to the recorded data within a selected shot string, not multiple strings. Therefore, the largest sample size for any statistical data measurement will be a sample size of ten.

High Velocity
Displays highest recorded velocity within selected shot string.

Low Velocity
Displays lowest recorded velocity within selected shot string.

Average Velocity

Displays the statistical average of the recorded velocities within an existing shot string.

Extreme Spread

Displays the difference between the highest and lowest velocity readings.

Standard Deviation

Standard deviation (S.D.) of a string is a measure of uniformity of the data. It essentially tells you how much scatter is present in the data set relative to the average velocity. The smaller the number is, the better your data's uniformity. A standard deviation of zero would mean that every velocity was identical. An S.D. value approximates that 68% of data will fall within ± 1(S.D.) of the Avg. velocity, 95% of all recorded velocities will fall within ± 2(S.D.) of the Avg. velocity, and 99% of all recorded velocities will fall within ± 3(S.D.) of the Avg. velocity.

Example: Let's say we have a full shot string of 10 shots. From pushing the Stats button we find the following information:

High Velocity:	3100 f/s
Low Velocity:	3000 f/s
Avg. Velocity:	3050 f/s
Extreme Spread:	100 f/s
Standard Deviation:	10 f/s

With a standard deviation of 10 f/s, the worst anyone can expect is that 99% of the shot velocities are within ± 3(S.D.) of the Avg. Velocity or 3050 ± 30 f/s. , which equates to 3080 f/s to 3020 f/s, respectively.

BATTERY INFO

The AmmoMaster® Chronograph operates using a 9V battery. We recommend using high quality batteries for optimal performance. A good alkaline battery life under nominal lighting conditions should last approximately 5 – 6 hours.

REPLACEMENT PARTS

Should you accidentally shoot your chronograph (and most people who use them long enough eventually will), just call us to order replacement parts. The following replacement parts are available for purchase from RCBS:

Skyscreens	# 81193
Diffusers	# 81192
Side Supports (2 pack)	# 81191

LIMITED WARRANTY

Your **AmmoMaster® Chronograph** is warranted to be free from defects in material or workmanship for one year from the date of purchase. This warranty is extended only to the original consumer purchaser. All RCBS products are intended for non-commercial use by hobbyists. Any other use of these products will void the warranty. Should you believe that your **AmmoMaster Chronograph** is defective in material or workmanship, you must return the **AmmoMaster Chronograph** to Ammunition Accessories Inc. through its Oroville operation (hereinafter "Oroville Operations") postage paid, for evaluation. If defective, the product will be repaired or replaced at Oroville Operations' option, at no charge.

Send a dated proof of purchase to Oroville Operations for return shipping and handling, along with the defective product or parts to:

Ammunition Accessories Inc., Oroville Operations
605 Oro Dam Blvd East
Oroville, California 95965

Warranty services cannot be provided without meeting the above requirements.

TO ENSURE ACCURACY OF YOUR WARRANTY INFORMATION, SEND YOUR WARRANTY CARD TO:

Ammunition Accessories Inc., Oroville Operations
605 Oro Dam Blvd East
Oroville, California 95965

THIS ONE YEAR LIMITED WARRANTY DOES NOT COVER DEFECTS OR DAMAGE RESULTING FROM: CARELESSNESS, MISUSE, COMMERCIAL USE, ABUSE, IMPROPER INSTALLATION, MODIFICATION, OR NORMAL WEAR AND TEAR. THE IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE ARE LIMITED TO THE DURATION OF THIS ONE YEAR LIMITED WARRANTY. OROVILLE OPERATIONS IS NOT LIABLE FOR DAMAGES IN EXCESS OF THE PURCHASE PRICE OF THE PRODUCT AND UNDER NO CIRCUMSTANCES SHALL OROVILLE OPERATIONS BE LIABLE FOR CONSEQUENTIAL OR INCIDENTAL DAMAGES. HOWEVER, SOME STATES DO NOT ALLOW LIMITATIONS ON INCIDENTAL, OR CONSEQUENTIAL DAMAGES, SO THE ABOVE LIMITATION OR EXCLUSION MAY NOT APPLY TO YOU.

DAMAGE TO THE UNIT CAUSED BY BULLET IMPACT IS NOT COVERED UNDER WARRANTY.

The above warranty provides the sole and exclusive warranty available to the customer in the event of a defect in material or workmanship in the **AmmoMaster® Chronograph**. This warranty gives you specific legal rights, and you may also have other rights which vary from State to State.

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