Annealing Made Perfect

MARK II DB
OPERATOR MANUAL

PLEASE READ THOROUGHLY

105B Manukau Rd,
Pukekohe 2120,
Auckland, New Zealand

CAUTION

- Read and understand this manual before operation. For use with brass ammunition cartridge cases only.
- Do not attempt to anneal loaded or primed cases. Injury and/or damage could result.
- Annealed cartridges are hot! Exercise caution when removing them from the shell holder.
- Do not place liquids on or near annealer. Spillage could cause a short circuit.
- Ensure correct program before starting. An incorrect case in too high a program can melt the brass.
- Cases should never come out of the annealer glowing red. If one does, stop annealing and check the head stamp of the case. It will be either the wrong brand for the program setting, or alternatively, a different lot of number from the samples tested for our Settings Page. If it is a different lot number, samples should be sent to us for correct calibration.
- Do not obstruct air vents. These are vital for cooling.
- Use in a well ventilated room. Any residues on the neck and shoulder of the brass will be burnt off.
- No user serviceable parts inside. Do not attempt to open the annealer.
- It uses very high voltages and currents. Warranty will be voided if tampered with.

Ensure that unit is permanently and reliably connected to an earthing contact of the appliance inlet by means of power cord connected to a socket-outlet with an earthing connection.

Make sure the socket outlet the annealer is connected to remains easily accessible in case disconnection is required.

PROTECTIVE EARTH SYMBOL

GENERAL WARNING

Reloading should be performed only by trained adults.

It is always recommended that eye and ear protection be utilised when reloading and shooting. Check cases before reloading. Discard split or damaged cases.

Since reloading is beyond our control, we disclaim all liability for any damage that may result from reloading or the use of this product.

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WELCOME

Congratulations on your purchase of an ANNEALING MADE PERFECT annealing system. We are confident you will have as many hours of satisfaction using this machine as we have had creating it. ANNEALING MADE PERFECT has been designed from the ground up as a system which eliminates human error and the need for re-calibration between cartridges, giving you the confidence of accurate, repeatable results every time.

The Annealing Made Perfect annealer is ready to use right out of the box with no assembly required.

NOTE: When installing the four feet, do not over-tighten. finger-tight is sufficient.

No tools are necessary for operation except for cartridge specific shell holders (not provided) to insert the cartridges into the machine. When using the annealer ensure it is on a level surface free from dust or debris, preferably in a cool, dry and well ventilated room. Do not use in direct hot sunlight.

Use only the power cable supplied with the unit. Plug it into the power socket on the rear of the annealer and turn on using the red switch on power cable socket. Also supplied is a USB cable. When future software updates are available, this can be plugged into the port on the left hand side of the annealer to connect with a computer.

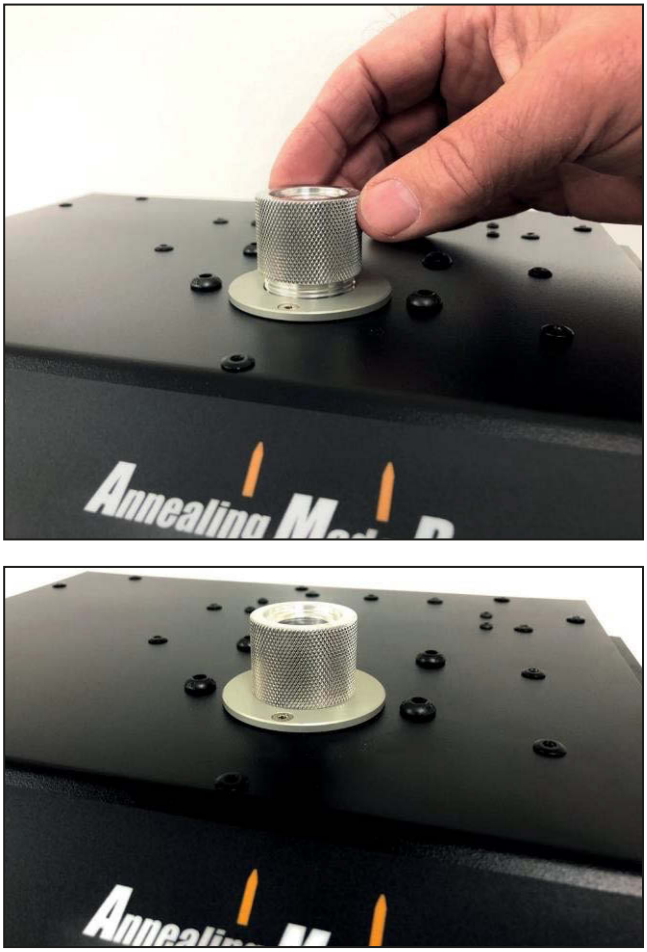
The annealer has preloaded programs for each cartridge and care must be taken to ensure the correct program is used to prevent damage to cartridges and or property. The annealer is designed for **BRASS CARTRIDGES ONLY.** Nickel plated brass cases are fine.

All program/pilot combinations can be found on our website:
www.ampannealing.com/settings

SELECTING THE PILOT

When selecting the correct pilot to use for any cartridge, refer to the ‘Settings and Pilots” page on the website, where the correct pilots for all cartridges are listed. Some pilots can be used for multiple cartridges. Insert the correct aluminium pilot into the boss on the machine until it has bottomed out. Do not over tighten. Take care to avoid cross threading the pilot when inserting as damage to the boss plate female thread may result.

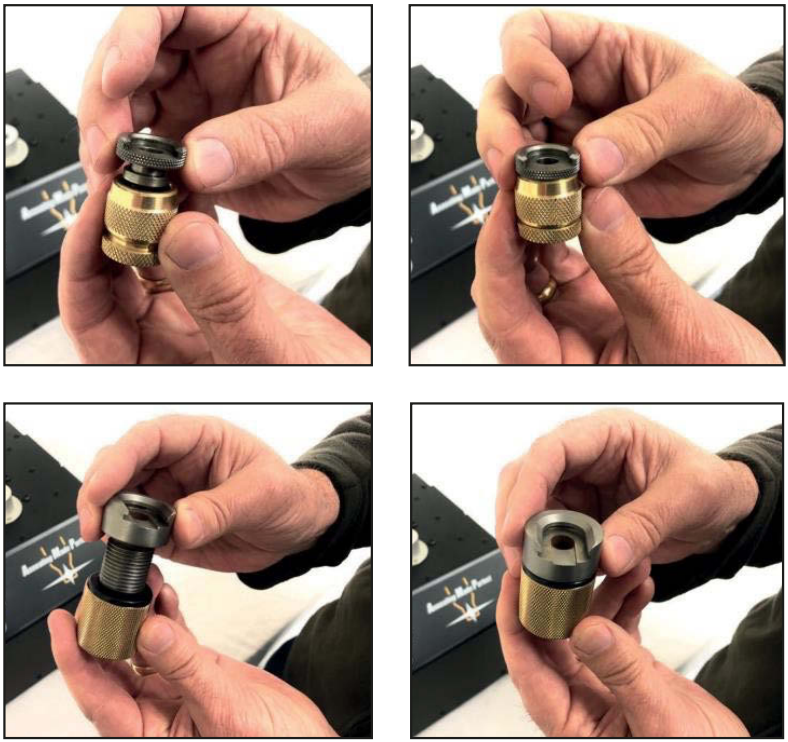
Figure 3



SHELL HOLDER GRIP

Your cartridge specific shell holder is used to insert the cartridges into the machine. A custom brass grip for standard shell holders is provided with each annealer. This attaches to the shell holder to make it more comfortable to use. Insert the shell holder lug end into the grip and tighten the collet. The 50 BMG pilot grip is threaded and insulated to prevent heating. It is sold separately.

Figure 4



Shell holders not supplied. All common brands of standard shell holders as used in reloading presses will fit into the brass grip. We get the best results with Redding EZ feed, in particular if using the AMP MATE auto feeder.

USING THE MACHINE

To analyse or anneal a case (See “Using the interface” for instructions), place a cartridge into the shell holder/ grip combination and insert the cartridge into the pilot. Make sure the face of the shell holder is mated square to the face of the pilot.

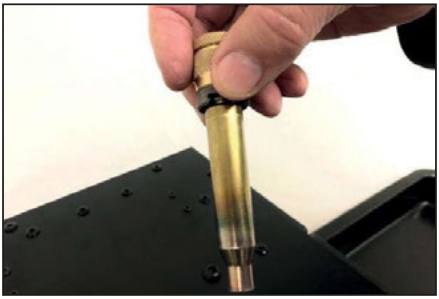
Figure 5

Press the start button to anneal. The button will illuminate red during heating and will turn off when finished.

Figure 6

Placing the thumb over the gap in the shell holder during insertion and removal prevents the case falling out during use.

Figure 7



Once the annealing cycle has ended, remove the case promptly from the machine and into your chosen heat proof tray.

Figure 8

Take care to remove the cases from the annealer vertically.

We have found that most cases will simply fall out of the shell holder and into the cooling tray with gravity, however some cases tend to stick more. We therefore recommend removing the cases from the shell holder by using the edge of your cooling tray to push the cartridge out of the shell holder as shown. Redding E-Z Feed shell holders give the smoothest results.

Always remove each annealed case from the shell holder promptly. The longer a hot case is left in the shell holder the more heat can migrate to the brass grip.

With normal cycling the shell holder grip should remain comfortable to use for hundreds of cases. Note: the 50-Cal. brass shell holder grip is insulated to prevent undue heat migration from the annealed cases.

Take care not to touch the steel shell holder itself. That will get reasonably hot after 30 or 40 cases.

For best results let annealed cases cool down without assistance. Quenching in water is not necessary.

CASES WILL BE HOT. Take care when handling annealed cases.

Using the Interface

When turning on the machine the mode select screen will show. To navigate between different modes, simply tap the arrow button on the left and right of the screen to change between modes and then tap the middle of the screen to enter the desired mode.

Once you have entered a mode at any time you can press the “Back” button in the top left corner of the screen to go back one page.

OPERATING MODES

AZTEC MODE

When entering AZTEC mode two options will appear, ANALYSE and RUN.

The ANALYSIS function is used to generate an annealing setting by analysing one piece of brass from the batch you wish to anneal. The case is sacrificed during this process and should be discarded after.

The RUN setting is used to either enter a previously saved setting from the database or to enter a setting manually.

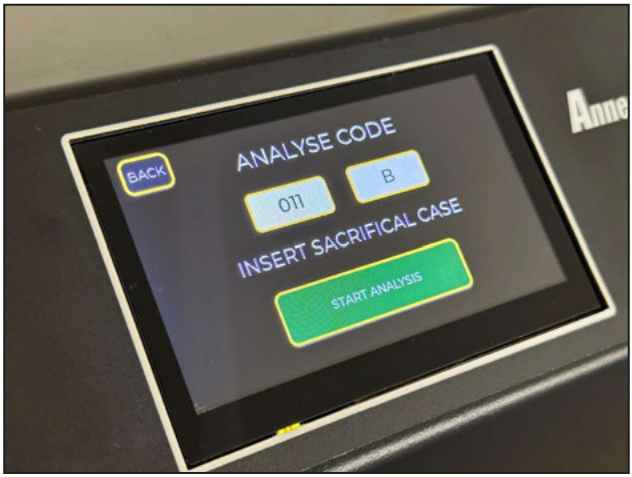
ANALYSE MODE

When entering ANALYSIS mode you will be prompted to enter the pilot for the case you wish to anneal. Refer to our website under Setting/Pilot > AZTEC for the pilot and Suffix combination for your cartridge case.

For example here we are going to enter Pilot #11.

Press the green arrow button to enter that pilot and advance to the Suffix screen.

Once the Pilot number is entered the Suffix screen is displayed. Enter the correct suffix for your cartridge case after consulting the AZTEC settings page of our website. Note that different cases that use the same Pilot in many instances will need a different suffix to analyse correctly.



Once you have entered the Pilot and Suffix the ANALYSIS CODE page will display showing what you have entered. You can now insert the case to be analysed and then press START ANALYSIS to begin the analysis process.

When the case is being analysed, the display will show the above graphic.

Ensure that you do not remove the case during this process.

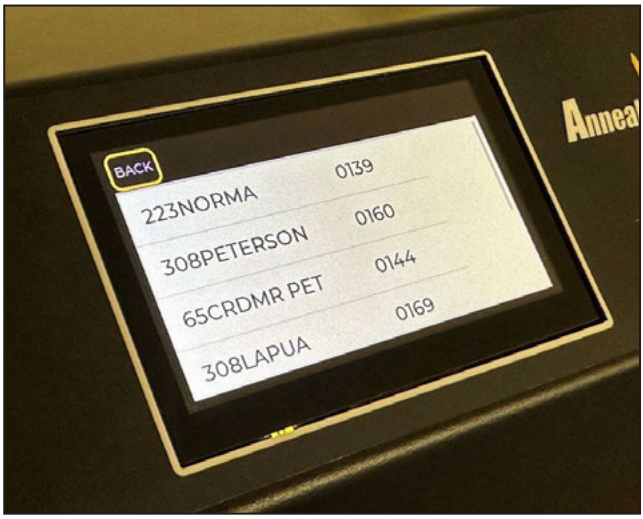
Once the Analysis is completed the generated code will display. You will have the option to either SAVE or USE NOW. You can now safely remove the case and discard it. **CAUTION: The case will be EXTREMELY HOT, take care when removing it and discarding it!**

Entering USE NOW will load that setting and take you to the RUN screen discussed in the following pages.

When entering SAVE a keypad will appear where you can name your setting and then press the arrow (Enter) button above the SPACE bar to save it into the DATABASE to be recalled later.

RUN MODE

When entering RUN MODE two options will appear: DATABASE or ENTER MANUALLY.



When entering the DATABASE you can scroll through your previously loaded settings.

Tapping a setting will show a pop up window asking if you want to load, cancel or delete a setting.

If ENTER MANUALLY is selected you can enter the desired setting using the keypad. Note that STANDARD mode settings are NOT compatible with AZTEC settings.

- Setting: The currently loaded annealing setting
- Case count: The number of cases annealed in the current session
- Status: The status of the annealer being either Empty (no case) Ready (Case inserted) Annealing (case being annealed) or Done (Case annealed).
- Auto Run: Toggle on or off. Will automatically detect and anneal the case when inserted
- START: Will start the annealing cycle when tapped if a case is inserted. Is disabled if Auto Run is enabled

When a case is inserted into the pilot to be annealed, the annealer will detect the case and then update the status as well as display a graphic in the graphic window.

If auto run is enabled (ON) then at this point the annealing process will start If it is turned off then pressing START will start the annealing process.

When the annealing cycle starts the Graphic will change to red as well as the start button being illuminated red. The Status will also change to ANNEALING. Ensure that you do not remove the case during the annealing process.

Once the annealing cycle has completed the CASE COUNT will go up by one and the Status will change to Done. The graphic and Start button will also change to Green. You can now safely remove the case and place it into your cooling tray. Please note that cases will be VERY HOT after being annealed.

AMP MATE SETUP MODE

SHELL HOLDER: Pressing the left or right arrow buttons will move the shell holder in the direction indicated in order to allow you to insert or remove a shell holder in the amp mate.

CAL EJECT: Allows you to adjust and set the desired stop point the shell holder stops at when ejecting a case. The number is the raw value from the positions sensor. Adjust to the desired value then press the number in the box to set.

SERVO ADJUSTMENT: This sets the polarity of each servo. Tap Change to allow the setting of the servo directions and then SET to enable those directions.

Selecting the Sacrificial Case

It is important that the sacrificial case is representative of the cases you are going to anneal. The two most significant factors are neck wall thickness and case weight. If cases have been accurately neck turned that makes the task simple. If not, use a ball micrometer to check neck wall thicknesses. We suggest checking say ten cases and selecting an average representative.

There is some debate about the merits of sorting cases by weight for competition shooting. We can't comment on the benefits or otherwise on downrange accuracy, but we have found that case weight affects the correct annealing setting more often than not. We always sort customer samples for case weight as part of our laboratory procedure when calibrating standard program settings. You don't need the most sophisticated scales for this task. We use a simple digital scale accurate to 0.1 gr. We are not looking for tiny variations. We treat anything over 0.5 gr. as potentially significant. Two grains or more will frequently affect the annealing outcome. For hunting cases the difference is inconsequential.

For competition, every bit matters.

Provided the brass is generally of good quality, there will be minimal variation in annealing across a whole batch if the best median case is selected as the sacrifice. With match quality turned and sorted brass there should be virtually no annealed variation.

The sacrificial case should be fire formed and unsized. That is when cases should be annealed in the reloading cycle. There can be minor but significant differences in the code which AZTEC will allocate between sized and unsized cases.

We have found no difference in the code allocation using clean or dirty cases. We have also found that trim to length dimensions (within reason) have no effect on the code allocation.

My Cartridge is not Listed?

With AZTEC mode, the only time you would need to send samples to us is if the cartridge or Wildcat is completely new to our system. Then we need samples to set the correct AZTEC pilot code for that cartridge. Once that has been done, AZTEC will handle all variations of that cartridge, such as different brands or neck wall thickness. Contact us by email for instructions.

WHEN TO ANNEAL?

What is the correct sequence - anneal/resize or resize/anneal?

Always anneal fire formed cases before sizing.

Our settings target an annealed neck hardness consistent with virgin brass, (some cartridges are a little higher or lower). Because the process anneals both the neck and shoulder, die conformity will be correct when resizing.

Note: we have found that the target annealed hardness is reached reliably regardless of the starting hardness i.e. it doesn't matter if it starts at 20% harder or even 70% harder, it will still come back to the same hardness.

We find that the best results are obtained with this sequence:

- De-prime - optional depending on your cleaning sequence
- Clean - tumble or ultrasonic etc. – again optional. Cleaning won't affect annealing
- Anneal
- Lube - this is vital even with nitrided dies. (Imperial wax or spray such as Hornady One Shot) – note: Dry media graphite tends not to adhere well to annealed cases. We do not recommend its use.
- Resize - after annealing. THE SIZING DIE MAY NEED TO BE ADJUSTED for both shoulder bump and neck OD to account for zero spring back. See FAQ 3, 5 and 6.
- De-priming can be done as part of the resizing process.

For more detail, see our Annealing Under the Microscope articles.

There is a wealth of information available on our website. Go to the "Research" tab, then "Our Research".

NOTE: When annealing .50 BMG based cases only anneal a maximum of 50 at a time before taking a 10 min break to allow the annealer to cool down before continuing.

TROUBLESHOOTING

For full support in any areas regarding how to use and maintain this machine and for any problems, questions and feedback please do not hesitate in contacting support.

Contact us: There are NO user serviceable parts within the machine. Do NOT attempt to remove ANY screws.

Dropped Cases: If a cartridge falls out of the shell holder and into the machine, simply turn off the power at the back of the machine, remove the pilot and retrieve the cartridge. If already annealed, it will be HOT. For extremely short cartridges, a pair of long nosed pliers can be used to retrieve them. Dropping a hot case will not damage the annealer. Note: our Mark ll annealers feature a ceramic insert at the bottom of the inductor. No damage at all will result from dropping a hot case.

Machine won't turn on: Check that the power cable is firmly pushed into the power socket and check the fuse located in the power socket for serviceability. Take care to replace the fuse with the correct type (10A, 240V AC, 5mm x 20mm, F (speed), Ceramic) if needed. If the fuse is serviceable and the machine still won't turn on contact support.

Faster than normal cut out: If the machine begins to reach thermal cut out faster than normal, check the air intake filter is clean and not obstructed as this can prevent air from cooling the inductor. The filter is located on the right side of the machine and can be removed/replaced by using a flat head screwdriver to lift the plastic cover off the outer housing by inserting it into the slots and levering outward. When not in use, we suggest placing the provided dust cover over the machine.

Cartridge over heated: Except for sacrificial cases in AZTEC mode, cases should never come out of the annealer glowing red. If one does, stop annealing and check the head stamp of the case. It will be either the wrong brand for the program setting, or alternatively, a different lot number from the samples tested for our Standard Settings Page. If it is a different lot number, samples should be analysed in AZTEC mode.

Pay particular attention to the neck wall thickness of the cartridge as this greatly effects the end result. If you are unsure of which program to use for a given cartridge contact support.

Machine operates but no heat: Ensure you have the correct program and pilot installed for the cartridge being annealed. If the above is correct and there is still no heat clean the inside of the inductor well. See in Care and Maintenance.

If the display screen shows FREQ DET ERROR then the inductor well should definitely be cleaned. Never use steel wool to clean cases. If any ferrous material such as steel wool fragments accumulate, it will adversely affect the magnetics of the inductor.

No annealing marks on cartridge: Please refer to the TAKE NOTE section in the previous section in the manual regarding cosmetics of annealed cartridges.

Cartridges difficult to remove from shell holder: Refer to the previous section of the manual titled TAKE NOTE it is recommended to wipe the cartridge against the lip of the cooling tray to remove cartridges instead of using fingers as cartridges will be hot.

CARE AND MAINTENANCE

From time to time, debris can accumulate in the inductor air gap well. This can be removed by using a moistened Q tip or similar. A short spray of isopropyl alcohol down the inductor well before cleaning is helpful. Ensure the annealer is cool and unplugged before cleaning.

Stainless Steel Media Tumbling

If you are using stainless steel media for case tumbling, you must be certain to remove all media from cases before annealing. If any media dislodges inside the annealer inductor well, it will be heated to a very high temperature during the annealing cycle. The MARK II annealer incorporates a ceramic insert which protects the inductor from SS media contamination as well as dropped cases which are hot.

The dome head machine screws used on the top and back of the annealer are blued mild steel. In damp environments, these can rust. We suggest wiping with a little gun oil periodically. The rivet heads are fine.

After use, we suggest leaving the annealer to run for five minutes before turning off. This will allow the fans to cool the annealer down and expel any condensation.

We also recommend to clean the fan filters regularly to prevent build up of dust which can reduce the fans effectiveness. The covers are held on by clips and can be removed with a flat screw driver.

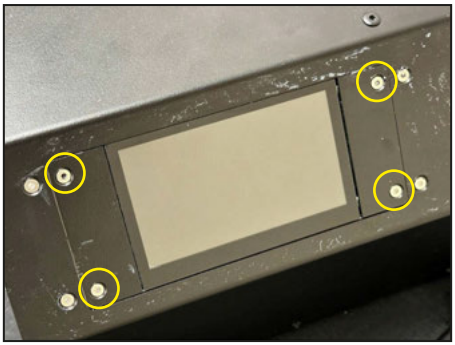
After cool down, place the supplied dust cover over the annealer.

Touch Screen Replacement

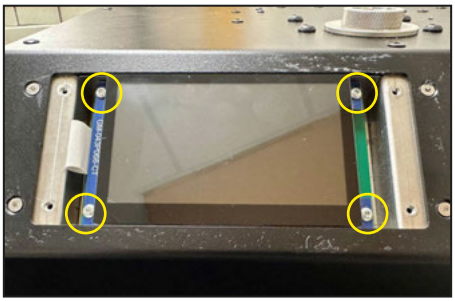
The touch screen interface has been designed to be replaced by the user in the event it becomes inoperable or damaged. Please contact customer support if this happens in order to arrange screen replacement.

To replace the screen follow these steps:

1. Remove the front sticker that covers the touch screen, this will expose the eight bolts that surround the screen.
2. Remove the two bolts closest to the screen on either side which will allow the removal of the two cover plates.



3. Once removed, the four bolts that hold the screen in place will be exposed. Remove them gradually to prevent tilting of the screen during removal. The screen and its attached circuit board will come out as one.



4. Once the screen is out you can insert the new screen and board in its place and re assemble in the reverse order. The bolts on the screen should be tightened gradually to prevent tilting of the screen when being installed. Once the screen is secure and the side panels re installed, apply the replacement front panel sticker to cover the screws.

FCC Regulations

- This equipment has been tested and found to comply with the limits for a Class B digital device pursuant to part 15 of the FCC Rules and as a consumer ISM device pursuant to part 18 of the FCC Rules.
- These limits are designed to provide reasonable protection against harmful interference in a residential installation.
- This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications.
- However, there is no guarantee that interference will not occur in a particular installation.
- If this equipment does harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct interference by one or more of the following measures:
- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and receiver.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio/TV technician for help.
- Using this equipment in accordance with the user's guide will ensure safe, reliable and long lasting performance.
- Changes or modifications to the equipment not expressly approved by equipment manufacturer will void the user's authority to operate the equipment.

AZTEC LOG BOOK

CARTRIDGE	BRAND	Lot #	CASE PREP NOTES	AZTEC Run Code

AZTEC LOG BOOK

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