

Sporting Claymate



Manual covering Issue 6 PCB and Software revision 7.05

Serial numbers 1300 and higher

Installation.

Caution

Do not connect the release wiring directly to a vehicle battery. This could damage the unit, and WILL invalidate the warranty. When first connecting traps to the System, the launcher may throw a clay. Always point traps in a safe direction away from people.

Connecting the Traps. Do not connect a counter during this procedure.

There are two cables, Black and Grey exiting the Claymate. These connect to the clay launchers. Polarity of the wiring is unimportant.

This GREY cable should be connected to the release wiring of the A side trap using the black coloured cores. The green core is a throw back from older designs. It can be cut back and ignored.

The Sporting Claymate will operate any trap with more than 10 volts DC on the pull cord. Traps supplying more than 40 volts AC (60 volts DC) require a release converter box. If only one trap is connected, it MUST be connected to the GREY cable.

The BLACK cable connects to the B side trap if a second trap is required.

Claymate will power up as soon as power is detected on the A side trap wiring. During the initial connecting phase, please do not have a counter connected as the presence of the counter will power the Claymate from its internal supply and this may mislead you into thinking the Claymate is powered by the trap when it may not be.

Sporting Claymates are fitted with an internal 9 volt battery to cater for the situation where a slow battery powered A side trap may deny power to the unit at a time when a small current pulse is required to launch the B trap.

These batteries should last in excess of half a million A side launches.

Do not store the Sporting Claymate with any Counter Box connected, as this will drain the internal supply.

Claymate is ready to launch as soon as traps are connected and a valid counter is plugged in. Read on to learn more about the additional features that the Sporting Claymate offers.

Factory Default State.

The factory default is with both traps set as SINGLES and Trap cycle times set to 2.5 seconds for a single arm and 3 seconds for a double arm trap with a 2 second following pair delay. These timings are stored in memory and will be remembered even without power.

See page 4 for details on how to select different timings.

Any new settings will be stored to be used as the default unless changed.

System Configuration.

Use Configuration to tell the System...

- How many clays to count for each trap.
- The actual cycle times of each of the connected traps.
- Change the following pair delay times.
- To RESET the processor, and restore Factory settings.
- To output the total Clay Count (Audit) of clays launched.

To enter Configuration mode.

The Claymate must be connected to the 'A' trap or have a Counter plugged in (to supply the power). The configuration key is inserted into the keyhole underneath the unit. Turn the key clockwise. Claymate will respond with a chirpy warble, and the key will lock in place. A Counter is necessary to correctly set up trap cycle times and following pair delay times as Claymate needs to launch targets.

Changing trap clay counts with the A & B buttons.

Having entered configuration mode, the A or B buttons are used in order to select the trap type. The beeps from the sounder indicate the trap type as follows: -

- ONE beep indicates a single clay count for single throw traps, and a 2 second cycle time. (Factory default)
- TWO beeps indicate a double thrower trap and a count of 2 clays per release and a 3 second cycle time. (Factory default)

Changing the cycle times of a trap (and following delay from same trap).

To let the System know you want to set a trap cycle time, press the **DELAYED** button. The System will respond with three chirps to acknowledge that it will remember what you do next.

1. Press the button of the trap you wish to adjust.
The trap selected will launch.
The System will now mark time up to the point at which you...
2. Press the trap button again.
The System will use the time between the two launches and wait for the trap to cycle.
A third clay will be launched if the trap has managed to cycle in the time recorded.

Repeat the above process if you wish to change your original timing, or if you wish to adjust the cycle time of the other trap.

In sending *Following Pairs from the same trap*, Claymate will use the cycle times of the trap as the following pair delay time, so this feature can be used either to maximise the output of a trap, or to set a delay that causes a defined clay spacing in the air.

Changing the Following Pair delay for alternate traps.

To let the System know you want to set a trap cycle time, press the **DELAYED** button. The System will respond with three chirps to acknowledge that it will remember what you do next. To change the A to B timing... or the B to A timing...

1. Press the trap button of the first trap to launch... .. The selected trap will launch.
The System will now mark time up to the point at which you...
2. Press the other trap button... .. The second trap will launch.

Claymate will wait a few seconds before commencing an audible countdown, as for a Solo Shooter, launching the following pair in the order you launched them, using the delay you entered. When the second test target is launched, Claymate will chirp to indicate Configuration mode. To change the setting again or to adjust the alternate delay, start by pressing the **DELAYED** button. The System will respond with three chirps to acknowledge that it will remember what you do next...

The setting of individual trap timers can be done repeatedly.

Setting the following pair timers requires that you press the **DELAYED** button before setting an A to B or a B to A following delay.

Reading the Internal Audit Counter.

Pressing **PAIRS** whilst in Configuration mode will reading the clay audit.

The System's capacity is a **MAXIMUM** of, 9,999,999 clays. In other words, 1 short of 10 Million.

The method used to show you the clay count is quite unique and very easy to use.

You will need a pen and paper to write down the numbers down as they appear...

You need a valid counter. The **ONLY** condition is that the very **LAST** digit **MUST READ '0', ZERO**.

For the purposes of this explanation, a small clay count of 678 will be described.

- **Plug in the Counter, noting the LAST digit is ZERO.**
- **Press PAIRS on the handset.**
- **The counter will increment, beeping as it goes, and STOP with a '6' in the LAST DIGIT.**
- **The display will remain static for 2 seconds... Write the number 6 down.**
- **The counter will then increment and beep to display '7' in this case,.**
- **The display will remain static for 2 seconds... Write the number 7 down.**
- **The counter will then increment and beep to display '8' in this case, in the LAST DIGIT.**
- **The display will remain static for 2 seconds... Write the number 8 down.**
- **The counter will then increment silently to zero the LAST DIGIT**

In the above example you would have written down 6,7,8 which is 678 targets launched.

As long as the count is accompanied by a beeping sounder, you should be ready to write down the number displayed in the **LAST DIGIT** when the count stops.

The process is designed to reset the **LAST DIGIT** to zero so you can either read the clay count again, or move to another Claymate to repeat the process.

Once you have done the process a few times, it will become second nature.

It is now possible to do an audit of the entire ground in slightly more than the time taken to visit each stand.

The Counter will appear to clock up large clay counts as it is always incremented in order to allow the **LAST DIGIT** to display the number you need to write down.

The actual number the Counter achieves is **MEANINGLESS**.

The Audit process can only use the last digit of the counter box as the Counter Display is only 4 digits long and could never read directly millions of clays.

The internal Audit Counter **CANNOT BE RESET** other than to launch more than 9,999,999 clays.

When you have finished reading the Audit, remove the Configuration Key.

If you remove the key during an audit, the process will continue to a satisfactory conclusion.

If you remove the counter during an audit, the last digit might not be reset to zero.

Restoring Factory settings.

Pressing **INSTANT** whilst in Configuration mode will **RESET** the processor.

This is useful if the System suffers a stroke and thinks it is a toaster.

To restore factory preset cycle times, simply hold down **PAIR** and **FOLLOWING** during the start up tune. The system will recognise the buttons being held and will sound a long tone to acknowledge that a factory reset has occurred. Claymate will restart again with factory presets.

NOTE that programming a cycle time overrides the Factory setting that changes the cycle time slightly changing from a single to a double clay count.

Once you fix a cycle time as described, that time will be used whatever the set clay count.

If you remove a fast sporting trap in favour of a slow rabbit, check the cycle timers as shooters will not thank you for charging them for clays that cannot be launched because the trap is still cycling.

Leaving Configuration Mode.

When adjustments are complete, remove the key. The System will respond with a chirp.

Cycle timers and the audit count will be retained in memory allegedly for 100 years!

The Internal Audit Counter cannot be reset other than to return the Claymate to the factory.

Operation.

The following pages cover operation in some detail.

This information will be of interest to ground staff who may have to configure the System.

In order to launch clays, plug a 'legal' counter box into the right hand side of the unit.

When a shooter is finished with the stand and removes the Counter Box, the System detects the removal of the Counter and resets itself to **INSTANT** and A followed by B, Following pairs.

The Sporting Claymate is always in 'INSTANT' mode when a new shooter connects a Counter Box.

INSTANT Mode.

This mode is commonly used by groups of shooters and Competitions.

The selected targets are launched immediately the button is pressed.

The Sporting Claymate will not normally place more than two birds in the air at any one time. The exception is **INSTANT** mode where pressing A and B in any order **WILL** launch A and B traps even if they are both double throw traps.

Delayed Mode.

This is a **SOLO SHOOTER** mode giving a Lone Shooter an audible countdown delay before the selected targets are launched.

A & B launches will perform as expected.

However, if launching a **PAIR** would result in more than two clays in the air, i.e. one or both traps are double throwers, the System will launch and count the 'pull' trap only, suppressing the 'report'.

Clays are only counted if they are launched. Suppression of a launch by the System, for any reason does **NOT** increment either the Shooters counter, or the internal Audit Counter.

'No Birds' are deemed **LAUNCHED**. The System cannot detect broken targets.

Following Mode.

Following Pairs can be launched in either INSTANT or DELAYED modes.

This mode performs slightly differently dependant upon whether one or more traps are configured as double throwers.

Launches are preceded with an audible countdown to release giving sufficient time to prepare. There is never a need to rush the shot or fumble with a loaded gun!

...With Single throw traps.

A Following A or B gives two clays from the same trap, i.e. pressing A will give A followed by another A. Pressing B gives B followed by B.

PAIR launches 'A' followed by 'B' OR 'B' followed by 'A', with a delay of 2 seconds (default) or as programmed.

The option to change the launch order for PAIRS is provided by pressing the Following Pair Button.

- One beep from the sounder indicates A followed by B.
- Two beeps indicate B followed by A

...With one or more double throw traps.

In the case where one or both traps are double throwers the situation changes slightly.

If the launch of the second trap would result in more than two clays in the air, then the second launch will be defeated.

No more than two clays can be launched from a Solo Shooter (timed delay) mode.

Programmed cycle times, Instant and Delayed Modes.

To clarify the programmable nature of cycle times.

UNLESS you program a different delay time, the defaults are...

- Single throw traps, 2.5 seconds pre-set cycle time.
- Double throw traps, 3 seconds pre-set cycle time.
- A followed by B and B followed by A, 2 seconds.
- A followed by A and B followed by B, The appropriate trap cycle time of 2 or 3 seconds.

Calling for a PAIR whilst a trap is cycling will hold up the launch until both traps are ready.

INSTANT and DELAYED launches are treated slightly differently.

If you call for a bird from a trap that is not ready...

- INSTANT Mode... The launch will take place as soon as the trap is ready as long as the relevant button is still pressed.
If you let the button go and the trap is still not ready, the launch is abandoned.
- DELAYED Mode... The countdown will commence as soon as the relevant button is pressed.
The launch will be held at ZERO Time until the relevant trap(s) is ready.

Experiment with the trap delay times. It is possible to arrange targets to be in specific points in the sky by judicious timing of the following delays.

This will be especially useful for competition shoots where the trapper / scorer can launch consistent targets presenting the identical situation to all shooters.

Single Trap Operation.

The Sporting Claymate is probably the most versatile Trap Controller on the market. Whilst it comes to life with two traps, it is possible to operate with only one trap connected. The single trap should be connected to the 'A' side, grey release cable.

Single trap operation with one SINGLE THROW trap.

The Claymate will always try to deliver the number of targets requested, so if just one single throw trap is connected, it is obvious that all clays must come from that one trap. Therefore: -

INSTANT A or B will give a single launch from A.

INSTANT PAIR will give a **FOLLOWING PAIR** from A.

DELAYED is exactly as above but with the audible countdown delay.

FOLLOWING A, B or PAIR will give **A FOLLOWED** by A with either the default 2 seconds delay or a programmed delay if one is programmed.

As there is only one trap connected, the above is quite logical.

For correct Clay Counting operation, ensure that the Configuration is also set correctly.

Single trap operation with one DOUBLE THROW trap.

The Claymate will always try to deliver the number of targets requested, and because two targets is all a Solo Shooter can feasibly hit with one gun, the Claymate will suppress any permutation that would launch more than two clays.

In other words if A, B or a PAIR is requested and a sole DOUBLE thrower is connected, the Claymate will deliver just one launch, i.e. 2 clays, from the sole trap.

Operation With Two Traps.

The Sporting Claymate comes to life with two traps allowing a real shooting challenge to experienced shooters, or a more humbled presentation for the novice.

With two SINGLE THROW traps.

INSTANT A, B or PAIRS will present a single A, a single B or a simultaneous PAIR.

DELAYED A, B or PAIR is as expected, but with the Solo Shooter countdown to launch.

FOLLOWING A or B gives two clays from the same trap, i.e. pressing A will give A followed by another A. Pressing B gives B followed by B.

PAIR launches 'A' followed by 'B' OR 'B' followed by 'A', with a delay of 2 seconds (default) or as programmed.

To change the launch order for PAIRS, press the Following Pair Button.

- One beep from the sounder indicates A followed by B.
- Two beeps indicate B followed by A

With two DOUBLE THROW traps or one SINGLE and one DOUBLE thrower.

The Solo Shooter will not appreciate being presented with three or four clays to shoot, so, when a DELAYED launch is selected and the launch of the second trap would result in more than two clays in the air, then the second launch is defeated.

No more than two clays will be launched for a Solo Shooter.

The ONLY exception is an INSTANT launch where the A and B buttons are pressed individually. It is then possible to launch a maximum of four clays from two double throw traps.

Audit & Security Features.

The Internal Audit Counter.

When a trap is released, the Audit Counter is incremented with the appropriate number of clays. The Audit Counter remains intact even when no power is supplied.

See page 4 for details on how to read the Audit Counter.

In conjunction with the totalled clay count from the sales office and the clays sold to customers logged by the counter boxes, it becomes possible to detect clay 'shrinkage' and locate the point at which the loss occurs.

Assuming that the traps are filled to the same degree at audit time, should the sales office log of clays sold not tally reasonably closely with the total audit counter figures then it is possible that clays are being launched but neither logged or paid for. Further, the total of audit figures and actual stock of clays should agree with initial clay stock. Any discrepancy would be the result of clays not reaching the traps!

Claymate Trap Release Systems will not release clays unless a valid Counter Box is connected to the unit.

The validity of a counter box can be determined by trying to select the different following pair order.

- A VALID box will allow the Claymate to toggle the following pair order, reporting with single and double beeps alternately.
- An INVALID box will not allow the Claymate to beep alternately 1 and 2 beeps..

A further method is to attempt to release a clay.

- A VALID box will report the launch with clay counting beeps.
- An INVALID box will complain at the lack of a correct code by a 'chirp.

The Counter Box that accompanies the shooter or group around the ground is coded to match the code in all the release controllers on the ground.

The initial coding of these units is done at the factory, with a code that will be different to any other ground code.

The code is set using two switch banks. One is an eight way switch the other is a four way.

An identical set of switches will be found in the hand counter boxes, and the RESET BOX.

Any additional Counter Boxes you purchase will be supplied with your original ground code unless you request otherwise.

Because of the losses that could be realised if a craftily retained box goes undetected, it is recommend that a check be made of which individual is issued with which box in order that lost boxes are avoided.

It is also recommend that counter boxes are reset to zero before they are issued rather than upon their return.

How you manage these security features is of course your own affair.

You have been given the option of being as security minded as you like, or not as you please.

Counter Reset Box.

Purchased additionally with your Claymate Trap Release System will be a Counter Reset Box.

The **BLACK** button will **INCREMENT** the counter whatever the security code... useful to check the box actually counts.

The **RED** button will reset the Counter Box **ONLY** if the internal security code of the Reset Box matches the code in the Counter to be reset.

It is important to take care of this unit.

Reset boxes are **ONLY** supplied with complete Trap Release Systems.

They will **NOT** be sold to individuals unless we are certain that the prospective purchaser has a legitimate need to own one.

Hints and Tips.

Here are some tips to help you determine the status of Claymate at any time.

Unable to Launch Targets.

Claymate requires a valid counter in order to release targets.

An easy and quick method to get Claymate to tell you if the counter is valid or not is to press the **FOLLOWING PAIRS** button several times.

A valid counter allows you to toggle the trap order, indicated by alternating **1** and **2** beeps.

If you don't get alternating beeps, Claymate is not happy with the counter.

Another indication that Claymate is not happy with the counter is to try to launch a target.

If the Claymate chirps, then the counter is to be suspected.

If Claymate seems happy, suspect an empty trap or a poor electrical connection to the trap.

Suspect Buttons on the Handset.

The easiest way to test the handset is to enter **CONFIGURATION** mode and press the **A** and **B** buttons to change the trap count value. The button should invoke a quick response after each press. If 'rocking' the button also invokes a response, the button is 'scratchy' and should be replaced.

The **PAIRS** button, in this mode, will force an audit read but it is still useful to ascertain that the button actually works.

Stuck Buttons

If any of the 6 operation buttons is held or becomes 'stuck', Claymate will take all of 8 seconds to detect this and respond with a series of equally spaced beeps from the sounder.

Optional Accessories.

The Universal Trap Interface.

This interface provides virtually uninterrupted power to the Claymate using the trap release wires. The interface is ideal for USA manufactured traps with 100 volts present at the release button!

The interface is inserted into the original trap release cable at the trap end and requires additional connections to a local low voltage supply which can be derived from the trap, or batteries or a mains supply using a suitable step down transformer.

Although designed specifically for 12 volt DC traps, it will not impede the satisfactory performance of an AC trap in any way. It is truly a fit & forget item.

Floor Stand.

The floor stand is supplied with all Sporting Claymate Systems. (UK only)

It supports the Claymate and provides a resting place for the handset.

The tripod style allows for a stable stance on uneven surfaces and can be held down with strategically placed sandbags or can be cemented into the ground or simply partially buried.

Wall Bracket.

The wall bracket is standard for Skeet Claymates and can be supplied as an either / or option with the floor stand.

Providing a resting place for the Handset, the bracket is designed to be wall mounted with up to four securing points.

The wall bracket is also designed to be a good fit on a 4 by 4 inch wooden fence post.

ABT Sleep Timer.

The Sleep timer allows you to operate battery powered ABT traps possibly for the first time.

The unit requires some knowledge of the trap wiring to fit, but essentially it comprises a Trap Release Amplifier, and a timer running for nominally 15 seconds, so that the oscillating function operates as soon as the trap is fired and continues for 15 seconds.

If the trap is fired again in this time, another 15 seconds will elapse before the trap stops oscillating.

Waterproof Connectors.

Manufactured by Elkay and submersible to 60 feet of water, these connectors are exceptional.

Available from BLN in either cable ended or bulkhead mounting, these connectors offer excellent mechanical properties being impossible to pull apart by tugging on the cables.

Cheap connectors are the weak link in the electrical chain to the trap and some of these cheap fittings require an annual replacement costing, in labour, more than the cost of the Elkay offering. BLN is an appointed distributor for the connector. Call for prices.

Faultfinding & Trouble Shooting.

Initial Connection to Traps.

Q The trap launches continually. The Claymate System plays the start up tune ONCE.

A Adjust the end stop microswitch on the trap to reduce the sensitivity of the mechanics. This effect is caused by the small current pulse taken by the unit after the trap has cycled causing the trap release circuit to 'glitch' for enough time to nudge the trap into firing. This is not, and should not be seen as a 'fault' of either the trap or the Claymate System.

Problems in Operation.

Q Unable to release any clays at all.

A Is a Counter Box plugged in, to enable the security circuitry?

If not, plug one in or verify the problem with another Counter Box

Does the unit 'beep' when any buttons are pressed?

The System is usually powered from the A side trap, but the internal backup battery is made available when a Counter Box is plugged in.

If connecting a Counter Box causes the System to wake up, then the trap is not supplying power to the System.

There may be a corroded cable joint up to the trap denying power to the controller.

Because of the low current consumption of the System, a corroded joint will pass sufficient current for the electronics to operate but the resistance of the bad joint may be too high to pass anything like the current required to fire the trap.

If the unit does not response to button presses, it may be that the microprocessor has crashed. To reset the System, enter Configuration and press INSTANT. Claymate will restart.

Q No B clays.

A If A clays release, even when B clays are demanded, Claymate has not detected the B trap.

Verify B trap volts exist at release wires and that they exceed 11 volts.

Verify B releases when wires shorted manually. If not, attend to trap or wiring.

You have checked that the trap is not empty?

As a last resort, reset the System as described earlier.

Q Unit sends A or B but not as pairs.

A Claymate may think at least one of the traps is a double throw trap.

Verify that each trap only counts one target.

Of course, if one of the traps IS a double throw trap then this condition is normal.

REMEMBER that the Sporting Claymate will not launch more than two clays in Solo Shooter (delayed) modes. The **EXCEPTION** being INSTANT mode where buttons A & B are pressed in quick succession.

Q Following pairs from the same trap does not release second bird, the sounder beeps to say a second launch should have been made, but no clay.

A Try setting a more suitable trap cycle time as described in the Configuration section.

Q The units beeps continually.

A This is the 'Stuck Button' warning. If removing the handset cures, attend to the handset. If the beeping continues, then one of the front panel buttons is damaged and should be replaced

GUARANTEE & POLICY STATEMENT

Claymate Trap Control Systems is wholly owned and operated by BLN Technical Services.

BLN Technical Services guarantees the Claymate product described to be free of manufacturing defects for the purpose of clay trap launcher control for a period of one year from date of purchase.

This guarantee specifically does not cover wear and tear or faults caused by wear and tear, misuse, abuse or application of excessive or inappropriate voltages, including lightning strikes.

The owner shall at all times be responsible for the care of the product and shall take steps to ensure that the product is protected from the damaging effects of wind, rain or snow.

BLN Technical Services reserve the right to change or amend the specification or software without notice. Software changes as requested by customers become the copyright of BLN technical Services and such changes may be included in future software releases, or may be offered to existing customers as an option or an upgrade.

The software supplied at any time has been thoroughly tested and is believed to be free of errors.

Software upgrades may or not be chargeable at the discretion of BLN.

Neither Claymate Trap Control Systems, BLN Technical Services or agents of BLN will be responsible for accidents or injury or loss caused by operation of traps or associated equipment under the control of any Claymate System whether the operation of such equipment is desirable or not; is caused by operation of any equipment when it is unsafe to do so, or under any fault condition of any equipment howsoever caused.

Repair policy, and care of the Equipment

Do not return units to BLN or agents without a covering letter explaining any fault condition in detail. In most cases, it is possible to replace whichever element has failed without returning the entire System.

If any part of the System is returned for warranty work, a copy of the invoice will be required. It is up to YOU to validate warranty claims, NOT BLN.

The Release Handsets are fitted with a connector. If a handset is suspected, verify by substitution.

Counter Boxes can be checked on the Reset Box and other Claymate Systems.

The batteries inside the Counter should last several years.

The Reset Box contains a 9 volt battery which will last at least one year.

The most current is consumed during a 'reset'.

If the Reset Box is suspect, verify on more than one counter.

Check the battery reads more than 8 volts or has not become dislodged in the holder.

The Electronics.

All connections to the PCB are by multi pin connectors.

Should it be necessary to remove the Circuit Board proceed with care.

Do not turn a warranty replacement into a chargeable repair!

Use a small hook to ease the board away from the mounting locks. DO NOT PULL ON THE COMPONENTS.

In all cases, BLN reserves the right to repair or replace boards at the discretion of BLN.

Replacement parts may be new or 'reworked' at the discretion of BLN.

The design of mechanical or electronic components may change without notice.

Sporting Claymate Technical Specification.

Trap release voltage range.

**DC - 12 to 60 volts.
AC - 10 to 40 volts.**

External Supply voltage range

**DC - 12 to 60 volts.
AC - 10 to 40 volts.**

Current requirements.

**800uA quiescent
1.3 mA peaks during trap release and sounder operation.**

Trap Release Specification.

**Optical isolation of traps to 2500 volts
FET and full wave bridge release circuit.
Maximum allowable trap release voltage, 40 volts AC.
Low impedance switch with burden voltage equivalent to 2 silicon diodes.
Replaceable release module in the event of a failure**

Built in Trap Cycle Timers.

**2.5 seconds standard for single throw traps.
3.0 seconds standard for double throw traps.
Above timings are factory set in software but are programmable by the owner.
See configuration for programmable timing.**

Controlling elements.

**Arizona Microchip PIC.
12 bit CODEC chip for security.**

Build options

Call with requirements.

Security.

Owner selectable code offering 4096 combinations.

Auditing.

Internal non volatile memory with a maximum count of 9,999,999 clays.

Printed Circuit Boards.

**Conformal coating to high specifications.
High quality board connections for easy board removal and replacement.
Release circuitry mounted on plug in 'piggy back' boards for easy replacement.**

All Claymate products have been tested and certified to exceed European EMC regulations and specifications including conducted and radiated emissions and susceptibility.

BLN Technical Services reserve the right to change specifications in the pursuance of product improvement without notice.

Such changes are, however, usually announced on the web site.

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