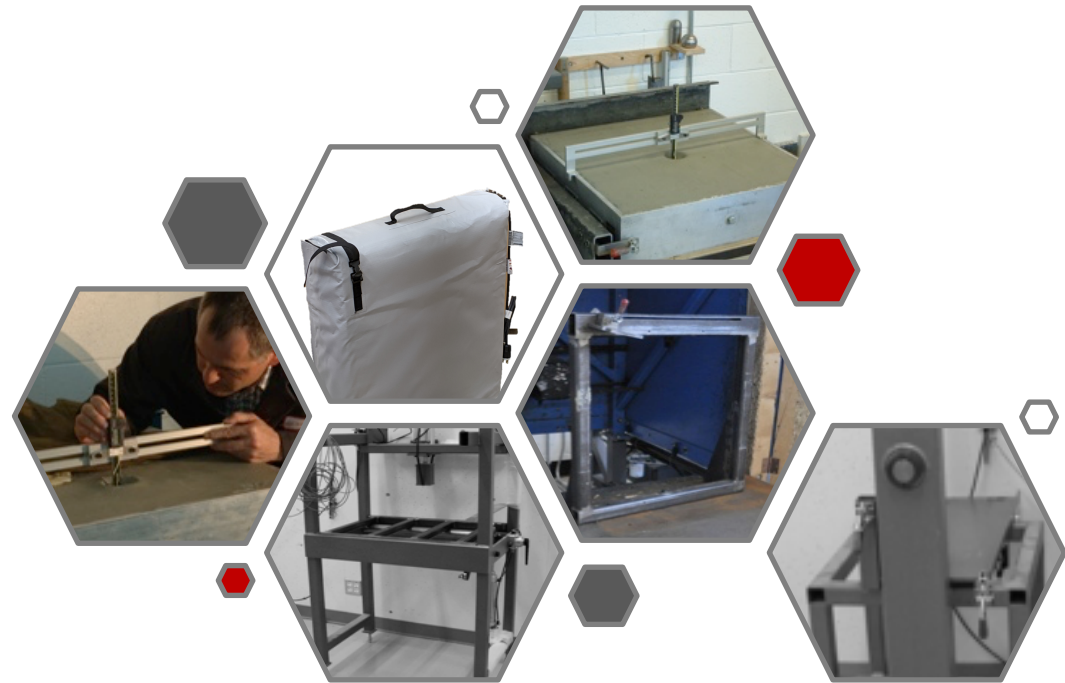


Ballistic Clay Equipment

Catalogue



May 2023

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NOTE: All specifications are subject to change.

Ballistic Clay Handling Overview

Biokinetics provides a suite of custom fixtures to facilitate testing with the clay backing used in military and law enforcement armour performance standards. The clay backing requires careful preparation, verification and handling during ballistics testing as detailed below.

Clay Preparation & Repair

Consistency of the clay backing is essential for repeatable and accurate assessment of the armour's performance. Initial preparation of the clay block involves the backing fixture being packed with ROMA Plastilina® clay layer by layer until the depth exceeds the strike face edges. A flat planar test surface is then achieved with a clay knife that is drawn across the strike face to remove excess clay. With clay blocks weighing approximately 81 kg (179 lbs), we have developed a clay trolley to ease transportation and for placement of the clay in the press for preparation and repairs.

Clay Verification

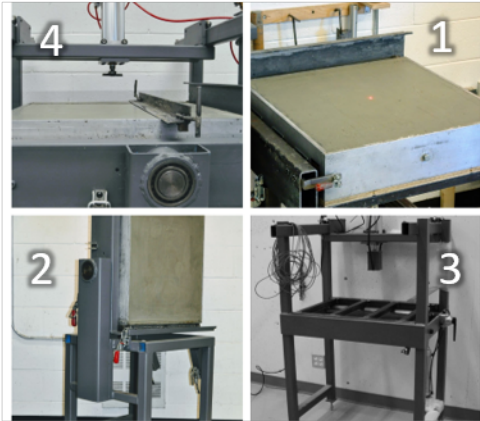
The firmness of the clay backing is adjusted by temperature conditioning to meet specifications and is verified with a steel ball impactor that is dropped from a specified height onto discrete locations on the clay surface. The depth of the indentation left by the drop test is measured and must conform to standards. Verification testing is simplified with the clay trolley allowing rotation and placement of the clay box beneath the clay calibration station.

Ballistics Testing

A mounting fixture helps align and clamp the clay block to the target table while the clay trolley allows for their transportation to the conditioning area or clay press for repair.

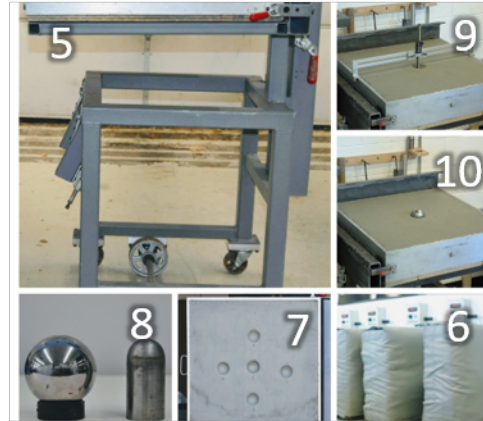
The clay handling equipment is further depicted in the figure below.

Clay Preparation & Repair



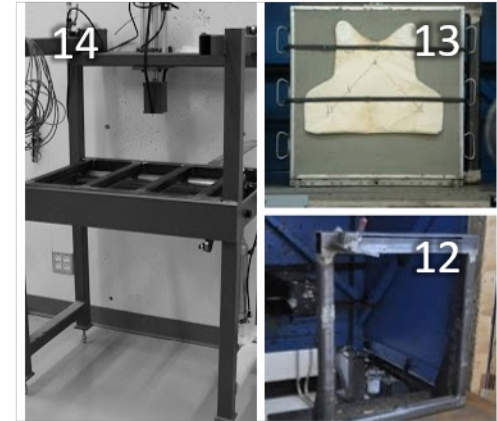
1. Clay backing fixture (BCB)
2. Clay trolley (BCT)
3. Clay press (BCP)
4. Clay striking tool (BCBK)

Clay Verification




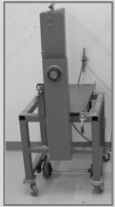




5. Clay trolley (BCT)
6. Clay conditioning (BCHB)
7. Location templates
8. Clay impactors
9. Bridge gauge (BCBFSV)
10. Guide tubes and speedometers (BCCS)
11. Post verification clay repair

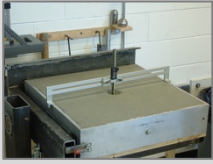


Ballistics Testing



12. Anchoring to target table (BCBS)
13. Testing of armour
14. Clay repair press (BCP)

Ballistic Clay Handling Equipment

Item	Description	Overview	Specifications	Standards	
FIXTURES FOR CLAY	BCB	Ballistic Clay Box 	Both soft armor and hard armor plate systems are commonly tested on ROMA Plastilina® clay for assessing their ballistic limits (V50), perforation performance and back-face signature (P-BFS). Biokinetics provides a sturdy metal box to meet military and law enforcement ballistics performance test standards that is integrated with the Clay Trolley and conditioning system for seamless operation in the range.	<ul style="list-style-type: none"> • Robust aluminum frame with roller wheels for use with the clay trolley • Clay filled – ready to use 	NIJ 0101.06, HOSDB 39-07 B, STANAG 2920, MIL-STD-662F, Military Armor Specs
	BCT	Ballistic Clay Trolley 	The trolley facilitates transportation of the clay box from one area of the range to another. The tilting support platform also facilitates the repair when using the Clay Press and assists with clay calibration using the Clay Calibration Station.	<ul style="list-style-type: none"> • Pivot mechanism for clay block packing and calibration • Solid floor casters for movement over smooth surfaces • Sturdy steel construction 	
	BCP	Ballistic Clay Press 	As the clay block is used in testing, repairs and replacement of the clay must be conducted. For larger repairs, this can be a long and arduous task. The clay packing station improves the time and effort for repairs. When the clay box is mounted on the Clay Trolley, it can be directly moved into the Clay Press to repair holes or to fill the clay box with ROMA Plastilina®. This station is also used with various molds to shape the clay for back-filling curved hard armor plates.	<ul style="list-style-type: none"> • Standalone, mobile frame • Pneumatic press • Manual pneumatic controls • Suitable for soft or hard armor clay back-fills 	
	BCBK	Ballistic Clay Knife 	After filling the clay box with ROMA Plastilina® or repairing the surface, the Clay Knife will index onto the edges of the Clay Box and provide a flat smooth surface level with the edges of the box.	<ul style="list-style-type: none"> • Steel blade • 2 handles for easy use 	
	BCHB	Ballistic Clay Heating Blanket 	These heating blankets provide maximum flexibility with ease of installation and placement anywhere within the facility. These also allow the temperature for each clay box to be optimized to ensure the correct stiffness for calibration, especially useful when different clay batches are used.	<ul style="list-style-type: none"> • Digital PID temperature controller • 1000 Watt consumption • up to 80 ±1° C 	
	BCBFSV	Ballistic Clay Back-face Signature Vernier 	Many body armor test standards require the measurement of back-face signature to determine the level of potential trauma to the wearer. This is obtained by measuring the indentation into the clay that supports the armor. The depth tool indexes with the Clay Box to provide a stable platform from which to measure the back-face signature without disturbing the clay surface.	<ul style="list-style-type: none"> • Point measurement of BFS • Clay Box reference measurement 	

	Item	Description	Overview	Specifications	Standards
FIXTURES FOR CLAY	BCCS	Ballistic Clay Calibration Station 	When used in conjunction with our Clay Trolley and Clay Box, the drop height is fixed at the required distance facilitating quick and repeatable calibrations. A targeting laser and magnetic ball release further ease the calibration process.	<ul style="list-style-type: none"> • Frame for holding steel ball • Laser alignment • Remote magnetic ball release 	NIJ 0101.06, HOSDB 39-07 B, STANAG 2920, MIL-STD-662F, Military Armor Specs
	BCBS	Ballistic Clay Box Support 	This support frame integrates with the clay box to provide lateral and angular adjustments when mounted on the test platform (providing height adjustment) thereby allowing for any point to be targeted.	<ul style="list-style-type: none"> • Integrates with Target Table • Locking mechanism to secure clay boxes 	
	BCBT	Ballistic Clay Box Table 	Configured to integrate with our Clay Trolley and secure the clay boxes in place when used with the Clay Heating Blankets. The steel table is robust for repeated use.	<ul style="list-style-type: none"> • 75 x 75 cm (min) 	