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PLEASE review operation instruction in the manual prior to use.

Operation Manual

BIG-BANG 50 Accelerated Weight Drop Seismic Source

BBH750 Preliminary Operation Manual

Version 0.01

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Forward

Congratulations on the purchase of your new Big BANG 50 (BBH50) accelerated weight drop seismic source. We would like to be the first ones to thank you for your purchase. The Big Bang 50 is a commercial grade accelerated weight drop seismic source designed to provide years of service with proper maintenance. We want to help you to operate the system safely and get the best results. This manual contains important information on how to do that.

Please read this entire manual before attempting to use the new seismic source.

All of the information in this publication is based on the latest information available at the time of printing. We reserve the right to make changes anytime without notice and without incurring any obligation.

Overview

The BBH750 is a 50 pound 12 Volt Motor actuated accelerated weight drop designed to interface seismic recording systems and produce the seismic signals necessary to produce subsurface seismic images. It has applications in seismic refraction, reflection and MASW surveying.

The system is comprised of the hammer, 1 HP 12 Volt electric right angle drive to power the lift chain and thus drive the hammer. All of the apparatus is arranged on a heavy duty custom 2” standard trailer mount which is designed to interface the hammer behind a suitable vehicle.

The standard 50 pound hammer is designed to add weight. There is a pocket welded into the front bottom of the 50 pound hammer such that steel shot can be added increasing the hammer weight by upto 10 lbs (60 lbs total). Filling the shot pocket partially (90% full) creates a dead blow hammer effect which can be used to kill hammer bounce if it occurs on stiff impact surfaces.

The BBH50 should only be used on flat ground. The hammer impacts the earth surface with high velocity and debris can fly especially when standing water can occur. Proper PPE should be used including eye protection when in the operation vicinity of the BBH50.

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START-UP DETAIL

WARNING! WARNING! WARNING!

FIGURE 1 WARNING HAMMER WILL DAMAGE YOUR APPENDEGES

This device is dangerous if used improperly. It is an impact hammer with potentially enough energy to injure or kill. NEVER place any body part under the hammer for any reason. It is simply not necessary to do. Never do it. NOTICE: The hammer will fall if it is in the air even if the Honda motor is off. Someone could unexpectedly drop the hammer by sitting on the controller in the front seat of the tow vehicle even if the motor is not running. If any part of you is close enough the hammer will crush it.

**********DO NOT PUT BODY PARTS UNDER THE HAMMER**********

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The BB50 comes equipped with a robust hitch height adjustment fixture which allows the seismic source to be connected to any vehicle with a standard 2” reciever. The hammer height should be adjusted such that the stroke and lift height are optimized for the conditions

FIGURE 2 BB50 Trailer Height Adjustment Fixture

If two people are available then each person can grab the Hammer with the lift handles on each side. It is best attached to the vehicle with the help of 2 people.

Connect trigger wire from the seismograph to the trigger switch mounted in the angle tube at the foot near the base of the hammer. A nylon zip tye can be used to hold the trigger switch in the trigger switch mounting tube. This trigger switch tells the seismic system exactly when the hammer hits the ground to initiate the data collection process.

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Although the Honda engine used on the BBH750 is capable of running on ethanol enriched gasoline it is not recommend it ever be used in small engines. Gasoline with ethanol often has water associated with it and that is bad for the reliable engine operation over time.

FIGURE 3 Press Down to Release Safety Pin and left Hammer Rise

The hammer is shipped with the safety pin holding the hammer in collapsed transport mode. Use your body weight to press down on the entire hammer against the ground while pulling out on the safety pin to release it.

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FIGURE 4 Safety Pin has cross pin to allow pin rotation and locked off

The safety pin should be locked into the slot so the pin does not interfere with the operation of the hammer. The safety pin should not be used between shots during move up only when travelling between the lines or down the road.

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FIGURE 5 Shows Hammer held to the exact height necessary to put the 2” square tube into the standard 2” reciver

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FIGURE 6 Always install Red Guard to keep everybody away from the hammer impact area.

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FIGURE 7 Shows proper source operation and operator position

The battery clips are usually connected to the vehicle battery and can be use with the vehicle motor running.

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The BigBang 50 is the latest in reliable, high speed, low-cost seismic energy production from 3Dg. The system provides for ~3 second cycle time and best in class move up time - cutting costs and improving profits. The FULL spectrum of important highs and LOW frequency signal comes standard. The system includes a NEW shock absorbing latch pin/lifting mechanism and handheld controller with 20 ft of wire for operation from within any tow vehicle. The reliable 12 Volt DC (permanent magnet motor) provide 1 Kilo Watts of relentless hammer cocking power. The energy is stored in common "garage-door" springs (2) which are low cost, readily available and reliable.

BIG BANG 50 Seismic Source Specification:

*Standard Impact Hammer Weight (Dry): 50 lbs (adjustable)
*Draw and Release Height: 18 inches
*Cycle Time: 3 seconds (adjustable: optional speed control)
* Grade 8 - Shock Absorbing Latch Pin and roller (saves gear boxes)
* Dead Blow Hammer - Steel Shot Pocket - standard 10 lb capacity
*Energy Storage Springs: 140 lbs. standard "garage door" springs
*LOW Shipping Costs Weight: 100 lbs. uncrated (+ 25 lb Hitch & Cable)
*Dimensions Min: Height: 52 inches X 12 inches X 10 inches
*25 ft Battery Cables (1 guage) - 25 ft Controller Cable
*Power Plant: Standard 12 Volt DC Car Battery (not provided)
*Standard Receiver Coupler Size: 2" square tube (N.A. Standard)
* Includes about 10" Adjustable Hitch Height
* Flat Steel Top allows for Mag Mount GPS Mount

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