

**Owners Manual.  
Compactor**

**Durham Geo-Slope Indicator**

**Phone:** 1-800-837-0864

**Fax:** 770-465-7447

**Web site:** [www.durhamgeo.com](http://www.durhamgeo.com)

**DURHAM GEO  SLOPE INDICATOR**

**S-335  
Compactor**

# Operator's Manual

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## FIRST RECORD THIS INFORMATION

MODEL # \_\_\_\_\_

SERIAL # \_\_\_\_\_

AC VOLTAGE REQUIREMENTS \_\_\_\_\_

DATE PURCHASED \_\_\_\_\_

## IMPORTANT RECEIVING INSTRUCTIONS

Visually inspect all components for shipping damage. If any damage is found, notify the carrier at once. Shipping damage is NOT covered by warranty. The carrier is responsible for all repair and or replacement cost resulting from damage in shipment.

## SAFETY FIRST

Before you operate this automatic soils compactor.

Read all DANGER, WARNINGS, CAUTIONS AND INSTRUCTIONS included with or attached to this Compactor. Follow all safety precautions to avoid personal injury when operating this machine.

Durham Geo-Enterprises, Inc. cannot be responsible for damage or injury resulting from unsafe product use, lack of maintenance, or incorrect product application. Contact Durham Geo-Enterprises, Inc. when in doubt as to safety precautions, design criteria, or product usage.

*All information, illustrations and specifications in this manual are based on the latest information available at the time of publication. We reserve the right to make changes at any time without notice and without incurring any obligation.*

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## SAFETY SIGNAL WORDS USED IN THIS MANUAL

- Danger** Means that if the safety information is not followed, someone will be seriously injured or killed.
- Warning** Means that if the safety information is not followed, someone could be seriously injured or killed.
- Caution** Means that if the safety information is not followed, someone may be injured.
- Notice** Indicates that equipment or property damage could result if instructions are not followed.
- Note** Gives helpful information

## General Safety Information

**WARNING:** High voltage and rotating parts can cause serious or fatal injury. Safe installation, operation, and maintenance must be performed by qualified personnel. Familiarization with and adherence to NEMA MG2, the National Electric Code, and OSHA and local codes is recommended. It is important to observe the following safety precautions to protect personnel from possible harm.

1. Be familiar with the COMPACTOR and read all instructions thoroughly before installing or working with it.
2. Be careful, and follow the prescribed procedures when handling and lifting the COMPACTOR, as is top heavy.
3. Do not install this COMPACTOR in an explosive atmosphere.
4. Avoid contact with energized circuits or rotating parts.
5. Follow all applicable local electrical and safety codes as well as the National Electric Code (NEC) and the Occupational Safety and Health Act (OSHA) in the United States.
6. Do not depend on motor control devices (motor starters, etc.) to prevent unexpected motor starting. Always disconnect power sources before working on or near a motor or its connected load.

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7. Avoid touching capacitors until safe discharge procedures have been completed.
8. Be careful about touching an operating motor; it may be hot enough to hurt or injure you. Modern motors are designed to run hot under full load.
9. Protect the power cable; don't let it touch sharp objects, hot surfaces, oil, grease, or chemicals.
10. Do not kink the power cable.
11. Make certain that the power source conforms to the requirements of your equipment.
12. When cleaning electrical or electronic components, always use an approved non-flammable cleaning agent such as a dry cleaning solution. Be careful about choosing and using cleaning agents. Some of them attack motor insulation, finish, or bearing lubricant; some are highly flammable. If using cleaning agents, make sure the area is well ventilated.
13. Avoid prolonged exposure to high noise levels from this COMPACTOR.
14. To prevent accidents, be sure to guard this COMPACTOR against access by children or other unauthorized personnel.
15. Wear safety glasses to protect your eyes when running this COMPACTOR.
16. Keep all body parts away from hammer while running COMPACTOR.

## General Information

The COMPACTOR operates with a motor driven, specially chain lift. The chain lift picks up a lift arm which pinches the hammer shaft. When the lift arm reaches the end of the chain, it falls off and releases the hammer at the same time. Since the hammer shaft is being pinched, it is held in place by gravity which can not be released accidentally. This mechanism is far superior to older chain and trigger mechanism used in most other automatic hammers.

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## MOTOR:

The motor used in the COMPACTOR is a right angle, simple-reduction, ac, capacitor start, gearmotor with the following specifications:

Rated power	1/3 hp (0.25 kw)
Full Load	299 lbf in (34 Nm)
Full load current	6.2 A @ 115 v (ac)
Output speed	45 rpm

## GEAR CASE:

Maximum ambient temp.	104 degrees F (40 degrees C)
Oil capacity	3/4 qt (0.7 dm <sup>3</sup> )
Oil type	AGMA recommended worm gear lubricant #8EP

**CAUTION:** The gear case lubricant can reach a temperature of 200 degrees f (93 degree C) in normal operations.

**NOTICE:** Motor damage may result if the following instructions are not followed.

**BREAK-IN PERIOD:** Change the gear case oil after the first thirty hours of operation, using the AGMA recommended worm gear lubricant #8EP.

## Set-Up Instructions

**WARNING:** Be careful not to touch overhead power lines if you use lifting equipment to handle the COMPACTOR. The COMPACTOR plus pallet weighs approximately 230 lb (105kg).

## Before operating the COMPACTOR

**DANGER:** When the COMPACTOR is shipped, the hammer should be in the down position. If the hammer head is not down and it is in full view, do not make any adjustments until after you have reviewed ALL operating instructions and procedures contained in this manual including the section, "Dropping the Hammer". If the hammer falls unexpectedly, it could easily cut off a finger or severely damage a hand.

**WARNING:** Make certain that the power source conforms to the requirements of this COMPACTOR.

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## 1. Unpacking:

The COMPACTOR is top heavy; therefore, handle it with care to avoid dropping it. Before unpacking the COMPACTOR, inspect it to make sure it was not damaged in shipment. If it is damaged, contact the carrier immediately. remove the holding strap on the hammer. Remove the three bolts which fasten the COMPACTOR base to the pallet.

## 2. Power Requirements

The AC power requirements of your COMPACTOR are clearly marked on the label. The internal fuse is located on the motor mount. This fuse is a 8 A slow blow, 1/4" x 1-1/4", 250 volt.

There are 2 power connections for the unit, a standard 110 plug for the motor supply And a 9v transformer that supplies power to the circuit board. Both of these must be plugged in for the unit to work.

**WARNING:** Make sure the electrical power is disconnected before attempting to inspect or change the fuse.

## 3. Support Base Requirements

### Set-Up Instructions

The energy from the hammer striking the sample in the mold must be supported on a level, non-yielding surface which is equal to a 200 pound (91 kg) block of concrete. The COMPACTOR must be bolted to this surface for stability. An quick drying leveling cement such as Pour Stone or Rockite can be poured on a non-level concrete base to facilitate a level, stable surface. Either of these products can be prepared in a liquid state just before placement of the COMPACTOR.

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## Optional Raised Pedestal:

A concrete pedestal may be poured to raise the COMPACTOR height if the base for the pedestal is equal to the 200 pound (91 kg) block of concrete. To determine the height of the pedestal, take your ceiling height and subtract one of the following examples below for the molds which you intend to use. The examples below are based on the COMPACTOR height of 54.4 " (1382 mm) and the maximum drop height of 18" (457mm) taken from the top of the maximum sample height.

- A. For ASTM or AASHTO molds, use 80 inches (2032 mm)
- B. For CAL 216 molds, use 90 inches (2286 mm)
- C. For CBR molds, use 83 inches (2108 mm)

**EXAMPLE:** If your ceiling is 120 in (3048 mm) or 10 ft (3048mm) and you plan to use a CAL 216 mold, subtract 90 in (2286 mm) from 120 in(3048 mm) and your maximum pedestal height would be 30 in (762 mm).

## Operation

**DANGER:** When the COMPACTOR is shipped, the hammer should be in the down position resting on the rubber pad it was shipped on. If the hammer head is not down and it is in full view, do not make any adjustments until after you have reviewed ALL operating instructions and procedures contained in this manual including the section, "Dropping the Hammer". If the hammer falls unexpectedly, it could easily cut off a finger or severely damage a hand.

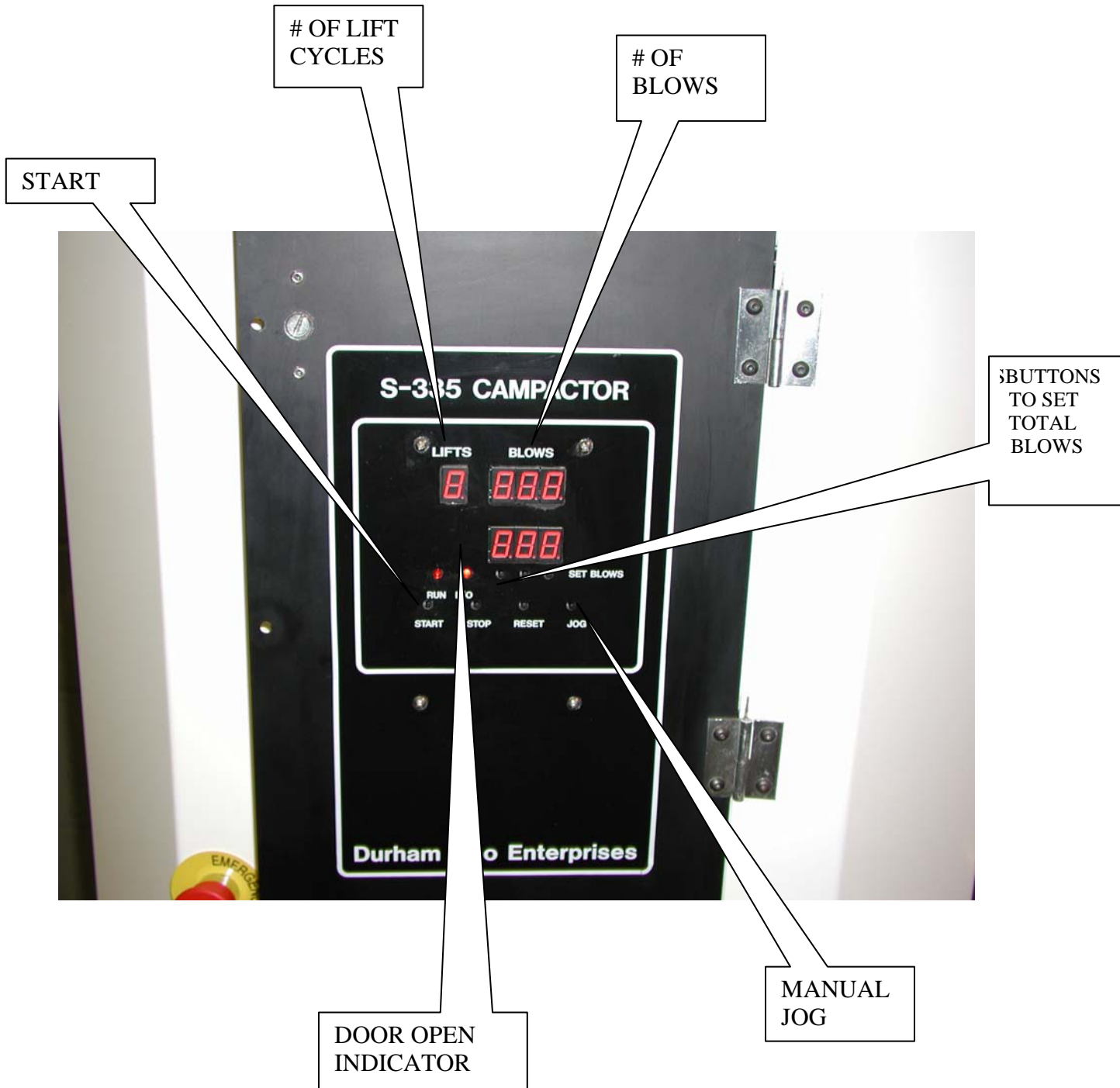
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## **Know your Controls**

1. Start/stop button (momentary). Push firmly to start sequence.
2. Reset button (momentary). Push firmly and reset display counter.
3. LCD digital display: Indicates blows (counts up) 999 blows maximum. Indicates lifts after completion of blows set up by counter. LCD will indicate on lift. Will continue to add lifts until reset.
4. Counter (tumbler). Maximum counts 999. Set blows required.
5. Emergency stop button. Push in locks the stop switch. Machine will not operate. Twist to unlock.
6. Jog button (momentary). Used to adjust drop hammer to desired position.

**NOTE:** Under normal use, the hammer will always stop in safe park position (3/4 lift position).

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## Dropping the Hammer: Procedure A

A. If you require to adjust the hammer position to other than up (park position), use the following procedure.

**WARNING:** Place soft piece of wood over the mold platen. Or the rubber plate that was supplied during shipping. Keep hand away from compaction area.

- A1. Press emergency stop button.
- A2. Press reset button (white).
- A3. Register two counts in counter.
- A4. Press and hold jog button(do not release).
- A5. **WARNING:** Keep hands away from compaction area.
- A6. Release emergency stop button (twist to unlock).
- A7. Still holding in jog button , press start button.
- A8. Momentarily release jog button and hammer will move. Continue this action to place hammer in desired position and then press the emergency stop button.
- A9. Press in emergency stop button.
- A10. Press reset button.
- A11. To place hammer in park position: Use "Procedure C".

**NOTE:** Hammer in lowest position can be lifted by hand. latching will take place.

**NOTE:** When hammer is partially lifted, it is possible to push hammer up but not down.

**WARNING:** It is dangerous to use the jog button to place hammer at top end of lift.

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## To Start Compaction Hammer Test: Procedure B:

- B1. Place and clamp 4 in or 6 in mold onto base plate. Be careful to centralize mold on locating pin.
- B2. Using "Procedure A" but with soft wood block resting on top mold, allow hammer to drop.
- B3. With hammer in dropped position, check clearance of 2 in (51mm) dia. head or pie head with side of mold. Adjust lower plate to give clearance of 0.100 in (2.54 mm) head to inside of mold.
- B4. Use "Procedure A" to lift hammer away from mold or allow hammer to automatically park by setting one blow in counter and press start. Then press emergency stop button.
- B5. Set counter to required blows.
- B6. Press reset button.
- B7. Release emergency stop button (twist).
- B8. Press start. Machine will strike sample the amount of blows in counter. The display will count up when counts are completed. The lift section of LCD will register one.
- B9. Repeat process until required lifts are completed as required by the relevant standard.

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## **Parking Hammer: Procedure C**

To place the hammer in the park position, set the counter to 001. With a piece of soft wood over the platen, push the start/stop button. The COMPACTOR should cycle one time and park the hammer.

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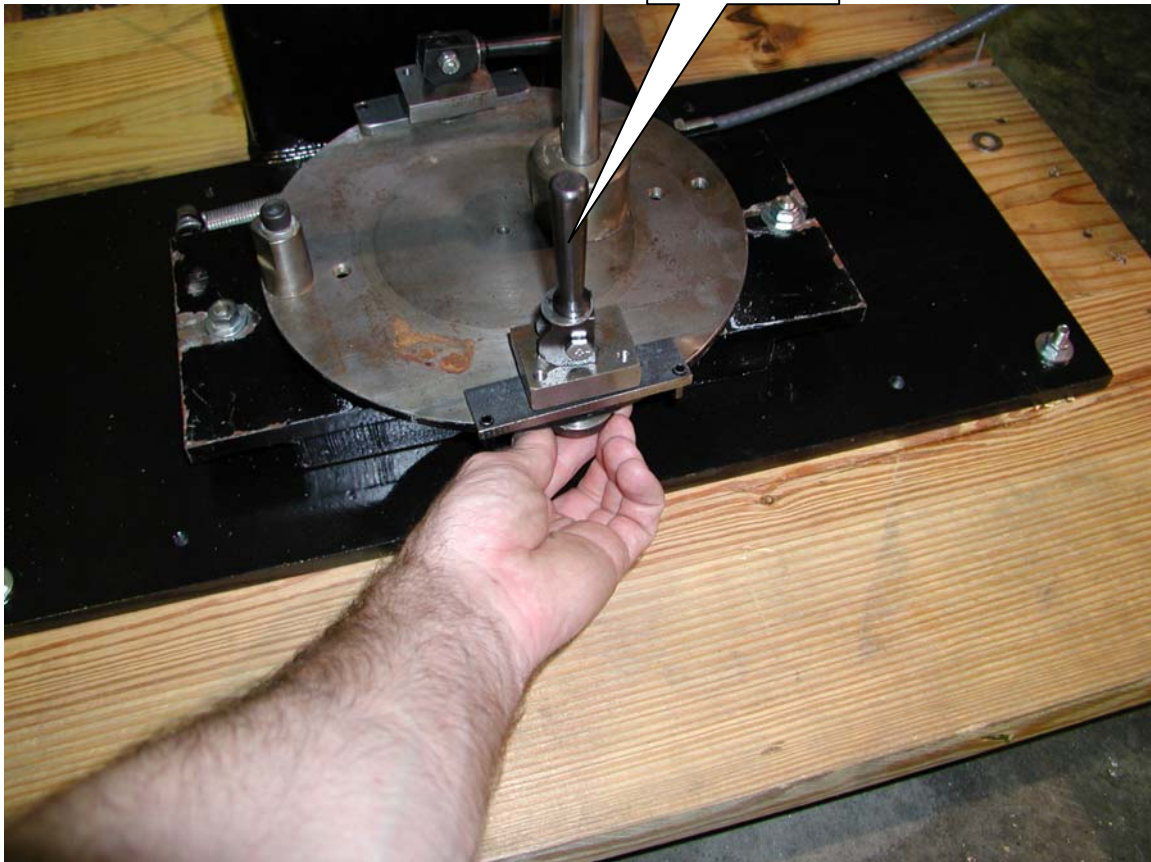
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## 1. Adjusting the Mold Platen:

**CAUTION:** Make sure the electrical power is disconnected before attempting to adjust the mold platen.

Lift the hammer up to a position just above the height of the mold. Install the 4" or 6" mold to the platen using the toggle clamps provided. The mold platen slides to the right and left., There is a cam nut that can be twisted for a stop for repeated quick centering of the molds. There are two nuts located under the mold platen which adjust the toggle clamps for a secure snug fit to the mold base.

Adjustment  
For toggle  
Clamps



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## Operations

### 2. Understanding the Digital Display:

The single digit to the left of the colon (:) is the lift counter. This counter counts one lift at the completion of the cycle counter preset. This digit may be reset with the reset button. The three digits to the right of the colon (:) are the cycle counters. These digits count the number of hammer blows and automatically resets the counter to zero at the end of the preset counts. The digits may also be reset with the reset button.

### 3. Control Panel:

- Emergency Stop Button:** This button will stop the machine immediately. After this button has been pushed, the button locks down. To release the button, turn the button clockwise.
- Reset Button (white):** Resets the digital display.
- Start/Stop Button (red):** Starts the machine when pushed. If pushed again, it will interrupt the run mode but does not reset counter.
- Jog Button(yellow):** Jogs the motor only for the period of time when it is released.
- Preset Counter Wheel:** Sets the number of hammer blows or cycles.

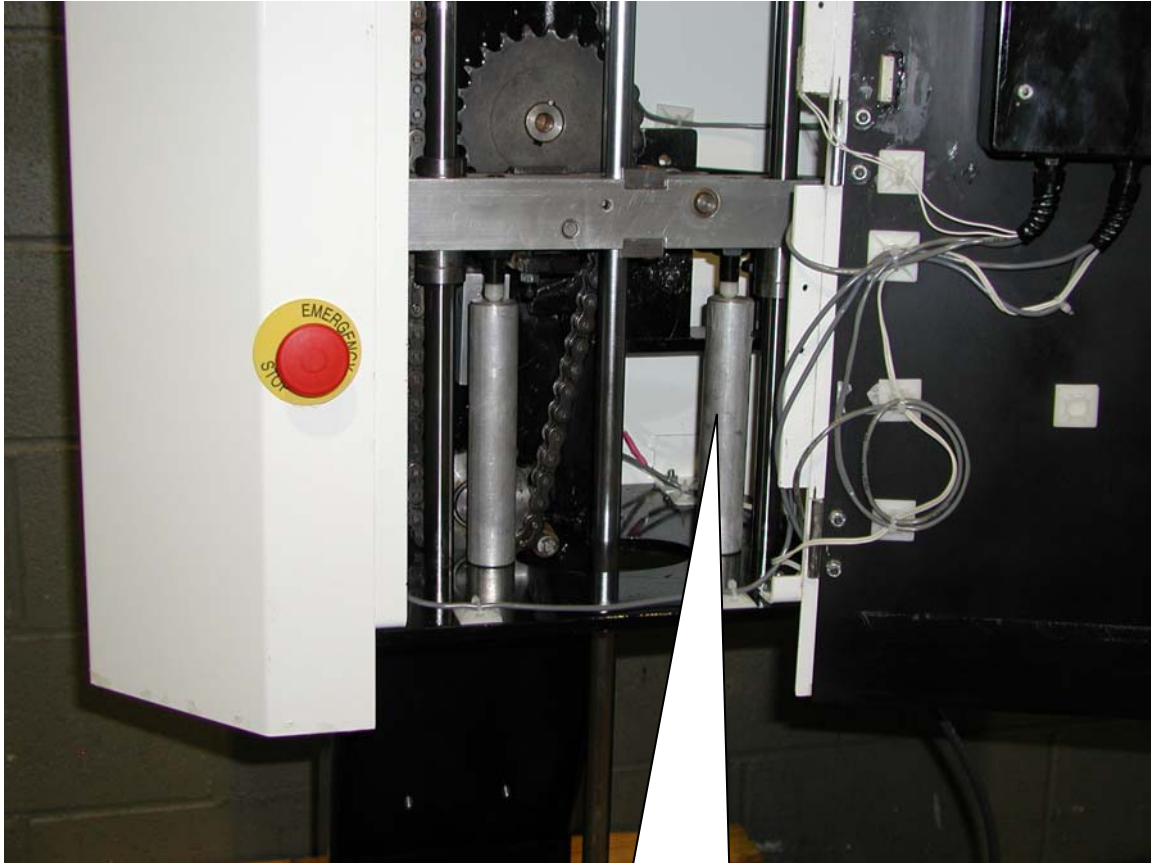
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Remove these spacers  
for 18" Drop  
Add for 12" Drop

## Hammer Drop Height:

12 inches (304.8 mm) or 18 inches (457.2 mm). To adjust the hammer drop height to 12 inches (304.8 mm), open the lower front panel door and place the two 1-1/4 inch (32 mm) round aluminum bars on the two pins (item 10) under the hammer pickup bar. To adjust the hammer drop height to 18 inches (457.2 mm), open the lower front panel door and remove the two 1-1/4 inch (32 mm) round aluminum bars on the two pins under the hammer pickup bar.

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## Changing of Hammer Weights:

Using a wrench locate the hex nut on top of the lift bar.

Turn counter-clockwise to loosen.

Continue turning by hand until rod can be pulled out of lift bar, but do not remove out of lift bar.

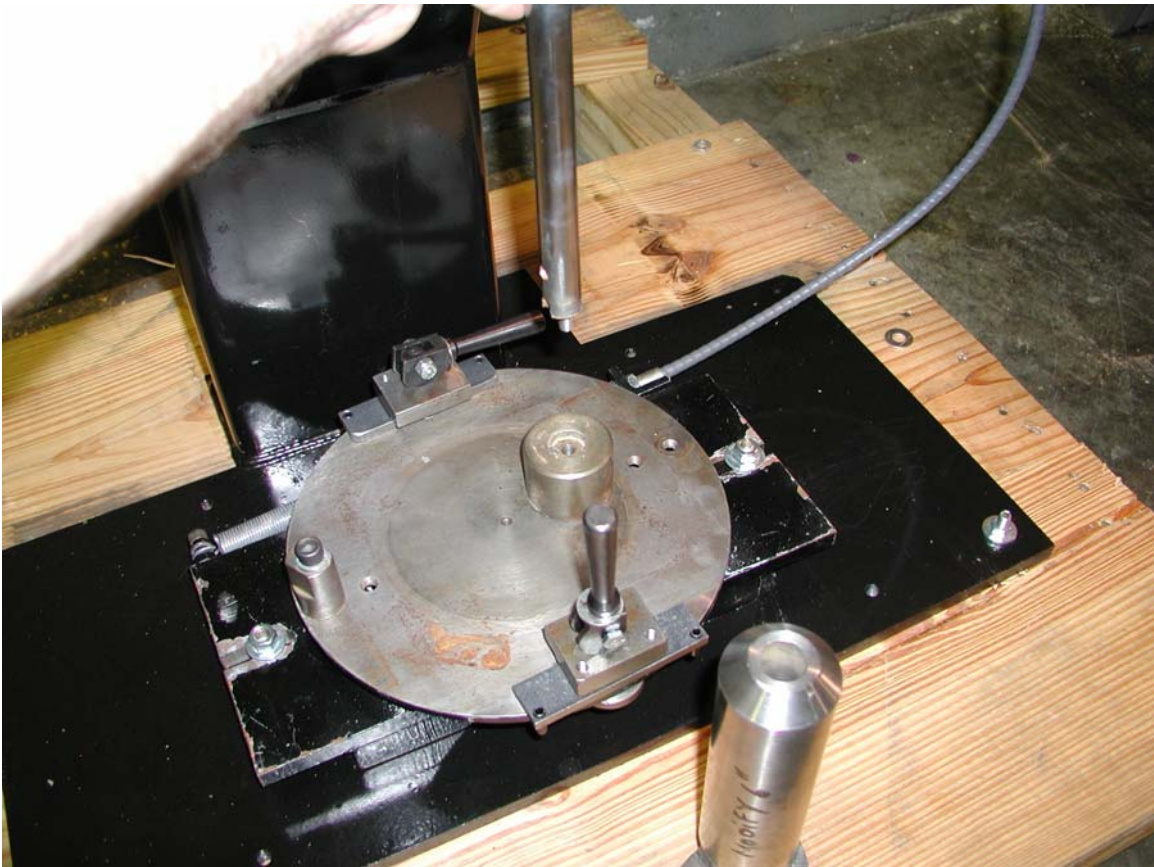
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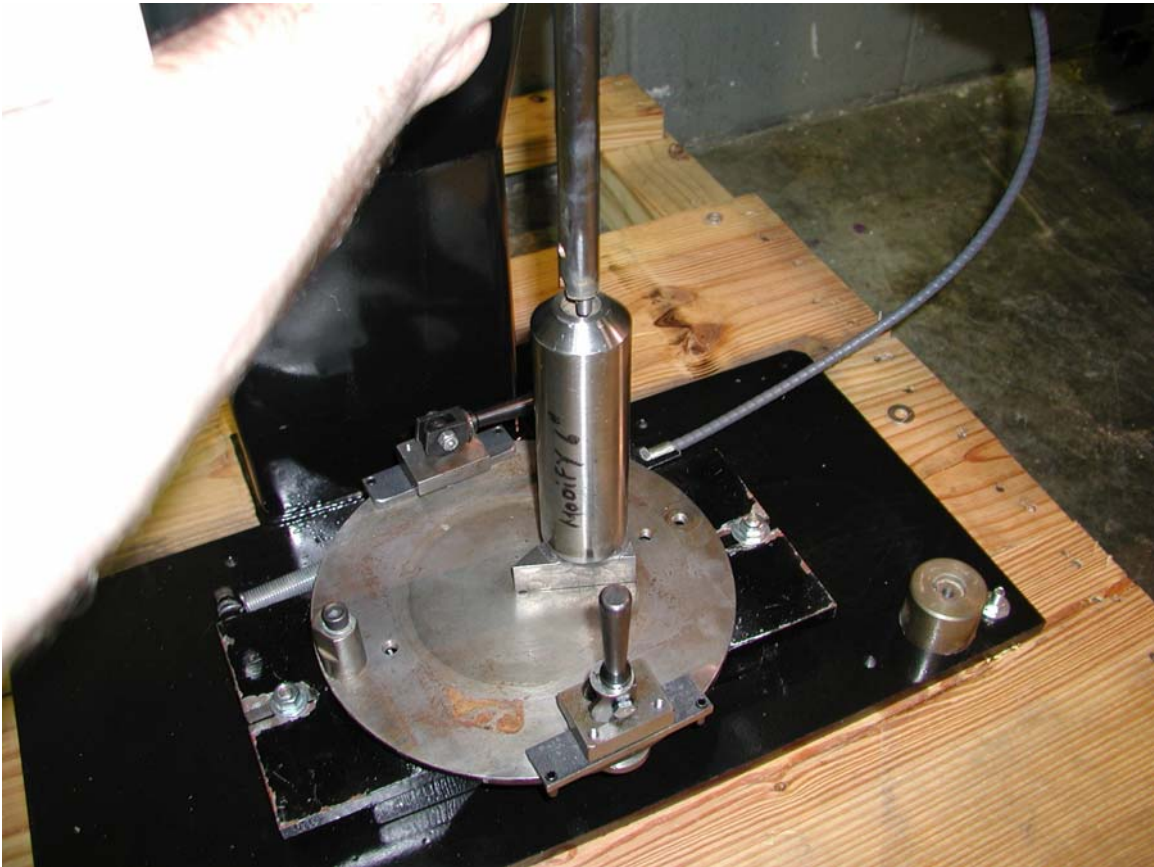


looking at the weight grap hold, and rocking back and forth and pull the weight down if should remove straight down or with a gentle blow with a soft hammer strike downward on weight till removed

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With new weight, grab hold of lifting bar and slide weight over lift bar until it stops. Twist weight when the bar is fully seated to make sure the alignment pin is located correctly to prevent weight from twisting during operation.

With wrench at the top hex turn clockwise until tight. **DO NOT OVERTIGHTEN.**

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## Maintenance & Calibration

Your COMPACTOR is a precision machine designed to give you years of trouble-free service. A minimum of care is necessary; however, taking the precautions listed will extend the life of your machine.

**NOTE:** There is a grease fitting located on the bottom side of the rotary platen. Please grease weekly. With Weight lifted on the platen, pump grease while rotating platen by hand. Platen will only rotate clockwise.

**NOTE:** All bearings are grease packed and sealed. However, check all bearings occasionally for wear.

**NOTE:** We recommend the following parts be kept to ensure operational duty.  
2-P/N 4148-01 Vee Bushing  
1-P/N 4147-01 Pinch Plate

**NOTE:** At all times keep dust and water away from moving parts. A clean machine will give you years of trouble-free duty.

### Gear case Lubrication:

Break-in Period:

Change the gearcase oil after the first thirty hours of operation, using the AGMA recommended worm gear lubricant #8EP.

Regular Maintenance:

Careful attention to maintaining the correct amount of oil in the gear case will help lengthen gear/motor operating life.

After the first week of gearmotor operation and twice yearly after that, completely drain the gearcase oil and then refill the gearcase with new oil. Fill the gear case up to the horizontal centerline plug. Some bronze flakes will be present in the drain oil, especially at the first oil change because of the normal worm gear wear-in process.

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## Calibration

We recommend calibrating the unit annually. Use Durham Geo-Enterprises, Inc. calibration kit #S-33020 for calibration in accordance with the ASTM D-2 168 or other accepted calibration procedures.

To adjust the 18" (457.2 mm) drop height, open the front panel door and locate the two black dampers in the lift bar. These dampers have locking nuts on top of the lift bar. Loosen the nuts and turn the damper body counter-clockwise to increase the lift height. As you turn the two dampers equally, the lift bar will lower, and this will increase the drop height. NOTE: If you need to decrease the drop height, reverse the procedure.

**NOTICE:** Motor damage may result if the following instructions are not followed.

## WARRANTY STATEMENT

Durham Geo-Enterprises, Inc. warrants that equipment shall be free from defects in material and workmanship for a period of **90 days** from the time the equipment is put into service. In any event, the warranty period will not exceed **6 months** from the date of shipment.

Durham Geo-Enterprises, Inc.'s liability shall be limited to replacement of components or equipment (at the manufacturer's discretion) that has been determined by the manufacturer to be faulty. No claims in excess of component replacement value will be recognized. Durham Geo-Enterprises, Inc. will not be held liable for damages or lost business relating to a warranty claim.

**Specifically excluded from this warranty are claims deemed by the manufacturer to have resulted from normal wear and tear, improper use, or abuse of the equipment.**

For complete warranty disclosure, please call 1-800-837-0864 (outside GA) or 770-465-7557 (inside GA) or refer to the printed statement on the back of any Durham Geo-Enterprises, Inc. original invoice.

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