

# DrillBoss<sup>TM</sup>

## Owner's Manual





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**Key Features**

- Significantly reduce worker fatigue
- Significantly increase productivity
- Very low handle vibration
- Vacuums mount directly to unit
- Suitable for scissor lift operation
- Onboard 12v power with smart charger
- Limit switch elevator cutoff
- Fused charging port with status display

**2014 Safety Innovation of the Year**

**2019 Alaska Governor's Innovation in Safety Award**

**YEARS OF RESEARCH AND DEVELOPMENT DELIVERS A PROVEN SOLUTION FOR HIGH VOLUME SERIAL CONCRETE DRILLING**

- Protective
- Productive
- Durable
- Highly Mobile
- Invest in your workers

**One Drill or Two**



Designed for jobs that require several thousand holes in a serial layout. The unit can drill two holes simultaneously from 5.5 inches OC up to 36" OC.



**Drill at Any Angle**



Whether operating in single or dual drill mode, the drills can advance in ANY direction, from straight up to straight down and all angles in between.

**Quality Construction**



- All tig welded steel construction
- Durable powder coating
- Top grade locking caster wheels
- Large drive wheel provides 12:1 driving advantage, requiring very low operator input to advance drills.



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## Uncrating:

**Video:** Refer to the videos for additional information.

<https://www.ergomek.com/wp-content/uploads/Uncrating2.m4v>



## DrillBoss Data Sheet:

**Made in the USA**

**Stock values:** Job specific modifications available upon request.

**Construction:**

-All TIG welded 11 gauge tubular steel construction.

**Power:**

Fused DC 12 volt power supply and charging system.

12 volt winch for elevation control

Safety limit switch to prevent over winching

**Mobility:**

Four casters, 2 rear locking.

Telescoping front legs can be retracted to reduce footprint in overhead or floor drilling.

**Max vertical drilling height:**

8'6" from the ground. Footprint appropriate for all scissor / boom lifts.

**Maximum Horizontal drilling range:**

24" throw per bit

**Maximum hole spacing:**

36" on center

**Minimum hole spacing:**

5.5" on center

**Recommended maximum drill size for tandem drilling:**

Hilti TE-70 (18lb/drill)

**Unit Weight:**

215lbs without drills

**Shipping Crate dimensions:**

23" X 36" X 48"

**Shipping Crate weight:**

280lbs

**Drilling direction:**

Any

**Drill Capacity:**

Designed to accept all makes and models of roto-hammer. May be operated with a single drill by removing T-bar and inserting single saddle onto ram. May be operated in twin drill mode by using two saddles mounted on the T-bar. Drills are remotely activated by the operator.



## Overview

The DrillBoss was developed to reduce the drill operator's exposure to the health and safety risks associated with hand-drilling into concrete. Proper personal protective equipment (PPE) should be worn during operation. The drill is held securely in a saddle that is mounted at the end of a gear driven ram. The ram can be advanced in any direction with the use of the hand-wheel. A T-bar may be mounted at the end of the ram enabling the simultaneous operation of two drills. The ram has 360 degree rotation enabling overhead, horizontal and down drilling operations. The drills are activated and deactivated by either a single or double shifter (depending on the number of drills being used) mounted on the side of the ram.

## Intended Use

The DrillBoss is designed to advance all varieties of concrete drills into concrete at a feed rate similar to that of the hand drilling operation. The use of pneumatic rock drills requires a custom saddle for the particular drill you will be using. The T-bar and saddle described in this document are not designed for pneumatic rock drills. The use of pneumatics in these saddles will result in damage to the unit. If you intend to use pneumatics, please contact ErgoMek LLC for an appropriate saddle or saddle design guide.

All drilling should be done with the hand-wheel. At no time should the winch be employed to advance the drill(s) into concrete. The winch should be used only to raise and lower the carriage.



## Description of Parts and Their Functions

The DrillBoss consists of a rolling base that carries two vertical masts, upon which a carriage rides up and down. The base also houses the deep-cycle 12v DC battery and components, a winch and total-lock casters.

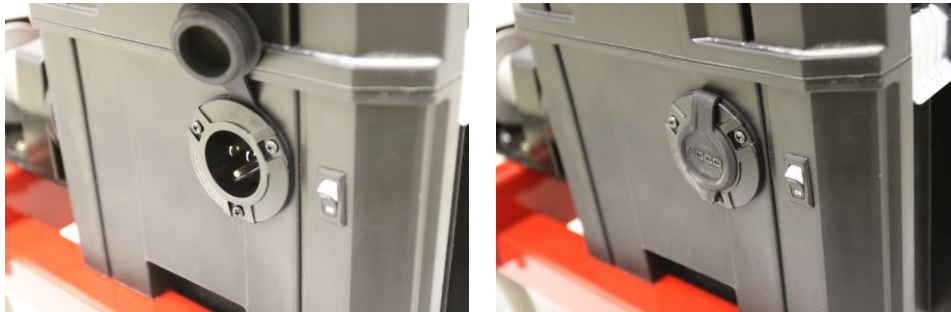
### Rolling Base



The rolling base has two locking casters. Casters have access ports for wheel replacement if needed. The base also houses the power unit, winch and mast support cups.

## Power unit

The power unit consists of a deep cycle maintenance free 12v battery, a relay, a master power switch and a charging port. A smart charger is provided and the unit should be charged overnight to ensure optimal battery performance. The master power switch should be switched off when the DrillBoss is not in use to prevent unintended activation of the winch.



## Carriage



The carriage is raised and lowered with the use of the winch via the momentary rocker switch located at the top of the mast. Care should be taken to ensure that no control cables or power cords are involved at the carriage when raising or lowering. Failure to do so may result in damage to cables or cords.

## 12 Volt System

The carriage assembly is raised and lowered by a 12V DC winch. The winch is not to be used for drilling, only for raising and lowering the carriage. Normal operation should result in two to three days of use, but it is recommended that the unit be charged overnight to maintain optimal battery condition. If it is discovered that the unit has not been charged, you can still operate the winch by plugging in the charger. This is not recommended for typical operation, as the charger introduces yet another cable to be managed. The charging port is located on the side of the battery compartment.



The winch is controlled by a rocker switch located at the head of the mast. It is a momentary rocker switch with momentary up and down positions. To avoid unintended operation of this switch during transport and when the unit is not in use generally, the master switch (located on the side of the battery box) should be switched to the off position.



For safety, there is a limit switch located at the mast head that disables the up-leg of the rocker switch when activated. The switch is activated when the carriage is raised to the top of the mast and the carriage contact lever makes contact with the switch. The down leg of the rocker switch remains available.

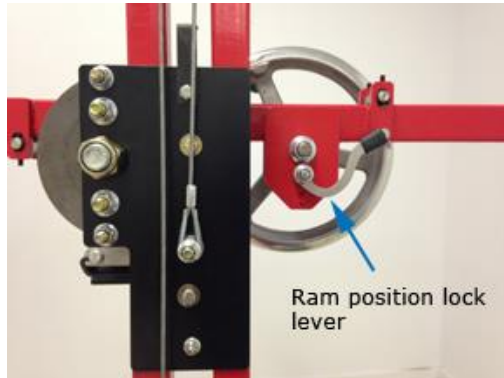
## Brake Lock Hand-Wheel



Barrel rotation is locked by the small black hand-wheel (brake lock) located adjacent to the main drive wheel. To adjust drilling angle, first support the barrel with one hand, then rotate the black hand-wheel counter-clockwise a few turns to release the brake. Acquire the desired drilling angle and rotate the brake lock clockwise until tight. If barrel rotation is not locked after tightening the brake lock, the main rotation axle (located above brake lock in the figure below) should be tightened slightly with wrenches. NOTE: The horizontal barrel assembly with drills should remain horizontal with the brake off

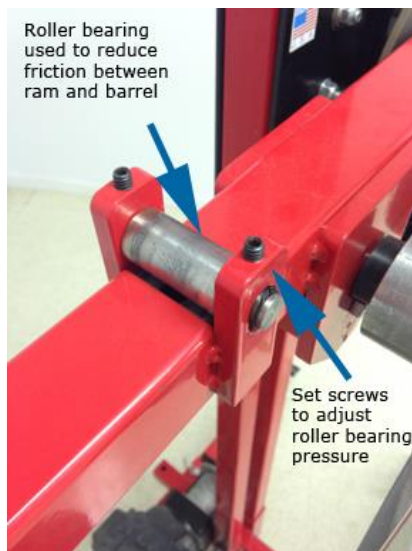
and the ram fully retracted. If it does not, tighten the main rotation axle until it does. The brake lock hand-wheel is designed to stop any rotation beyond the point of a sufficiently tightened main rotation axle. It is not intended to hold the entire rotational load presented by a loaded barrel.

## Ram Position-Lock Lever



The ram position lock is located on the opposite side of the drive wheel. The lock has forward, neutral and reverse positions. Drilling should be performed with the position lock in neutral when drilling horizontally or downward and in the forward position when drilling overhead. The reverse and forward positions can be used to resist gravity when the barrel is statically positioned up or down. If the ram position lock lever is difficult to move, relieve the gear pressure by turning the main drive wheel slightly.

## Roller Bearings

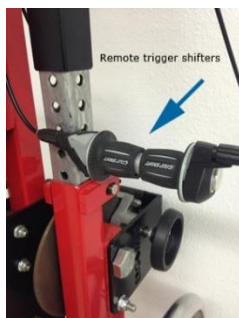


The ram is supported by two roller bearings; one located forward of the hand-wheel beneath the barrel and one located behind the hand-wheel on top of the barrel. The bearings are designed to reduce friction between the ram and the barrel. The bearing pressure can be adjusted with the set screws on the bearing mounts. The ram/barrel friction varies depending on drilling direction and the size and number of drills being driven. Heavy drills may require an increase in bearing pressure. This will need to be relieved when lighter drills are used.

Proper bearing pressure is achieved when the ram moves freely with little force applied to the hand-wheel. A good average setting is dialed in at the factory prior to shipping. Very little adjustment is required.

## Remote Trigger Actuators

The drills are activated using the remote triggers mounted on the side of the ram. The triggers behave like normal throttles; grip and rotate top-backwards to activate the drills, rotate top-forward to deactivate. There is no need to hold the trigger after activation, as they will not move. The end of the shifter cable is captured in a rod. The rod can be positioned to optimize the line of action at the trigger depending on what drill is installed. The cable housing capture screw located on the opposite side of the saddle is used to adjust and set appropriate trigger tension. Feed the cable housing toward the drill to decrease trigger tension and retract the cable housing to increase trigger tension. It is important to set the housing tension so that the drill turns on completely at full throttle and turns off completely at zero throttle. Failure to do so may result in incomplete trigger activation or deactivation. Incomplete drill deactivation can lead to drill overheating and incomplete drill activation can result in sub optimal drill power.



*Remote triggers; Remote trigger cable termination; Trigger tensioner.*

## T-bar



The T-bar mounts directly to the ram. There is a compression spring between the T-bar and the ram. This is a critical component. The operator should ensure the presence of the spring prior to drilling. The spring functions as a shock absorber between the drills and the DrillBoss/operator.



## T-bar Slide Post



The saddles move along the T-bar riding on sliding posts. Desired drill spacing is achieved by loosening the black handle on the slide while supporting the saddle. It is important that the drills are evenly spaced about the center of the T-bar. This allows for even loading of the compression spring. The handles have a spring mechanism that allows for disengaging of the drive bolt for repositioning the handles after they have been tensioned. Simply tighten to lock



then pull the handle out away from the bolt and freely rotate it into a position parallel to the T-bar to minimize interference. Handles should be tightened sufficiently to ensure the slides do not move during drilling operations.

## Saddles



The saddle is highly adjustable. The objective is to seat the saddle securely in the saddle with good bit alignment and trigger activation. **Important: make sure the collar is positioned so as not to interfere with the rotation of the drill head.**

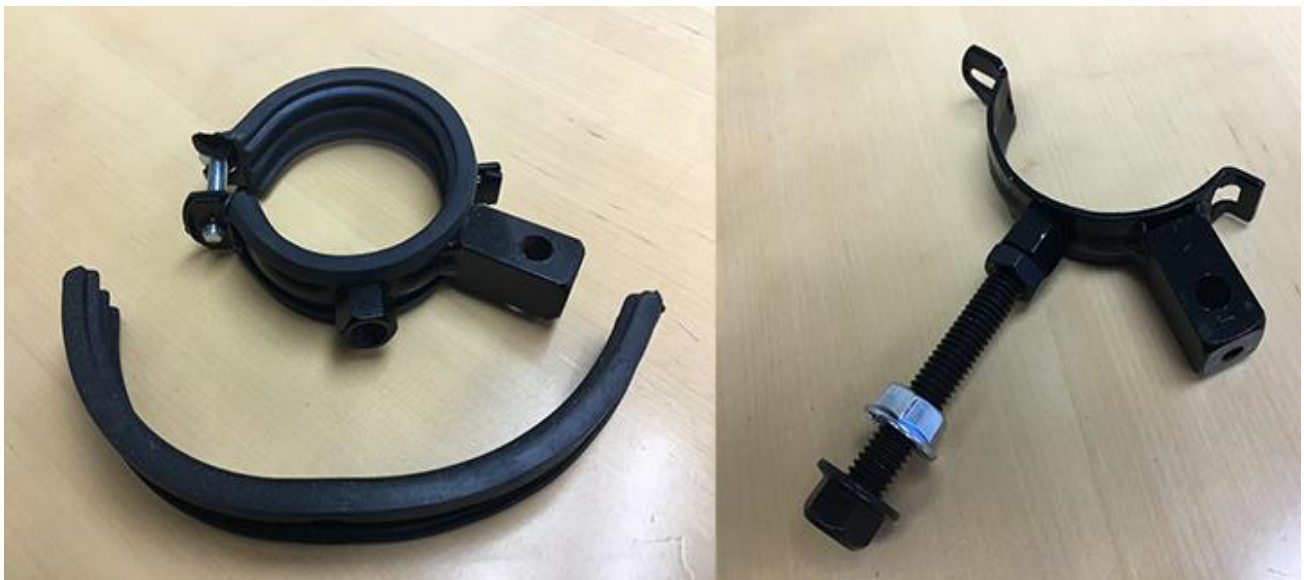
Move the locking ring on the lower rail up next to the rear clamp and tighten.

Some drills have a large spine preventing the drill from sitting close to the back of the saddle. In these cases, the nuts on the collar stud can be moved to allow the collar stud to protrude further out away from the saddle back. Use the provided locking nuts to lock the collar stud at the desired distance from the saddle back. Now move your polymer grippers out along the rails to their optimal drill support positions.



The saddle is designed to accept a variety of drills. The length of the saddle can be adjusted by sliding the upper portion of the saddle up or down to achieve the appropriate length for a given drill. Do not over tighten rear gripper as it may interfere with proper drill trigger operation. The remote trigger cable tension can be easily adjusted to provide full on and off function for any drill trigger.

### Drill Collars:



The collars form the upper grip of the saddle. All drills designed for drilling into concrete come with an auxiliary hand grip. These collars are designed to be positioned exactly in place of those grips. The shipped collars accommodate a large percentage of available drills. Some drills may require the rubber collar insert, but ideally, the collars should be used without the rubber insert where possible. The above right image shows part of a collar with a longer collar stud that allows collar extension away from the saddle back in the case of a drill with a large spine.

## Pulley Guard



The pulley guard is intended to keep objects out of the pulley mechanism. The DrillBoss should not be operated without the guard present. Also shown is the upper control handle. This may be used when drilling or when moving the unit as needed.

# Proper Drilling Technique

## **Horizontal Drilling**

Drilling technique is largely up to user preference, but there are a few tips that can make it easier on the operator. Assuming that the operator has a hole layout to follow, good target acquisition will be important. Set the depth stop to the required hole depth (depth stop provided with your drill). With wheels unlocked, the ram fully retracted, and the drilling angle set, position the unit in line with the hole layout. Raise or lower the carriage to acquire the target. Once acquired, lock the two wheels. Check that the target is still acquired and activate the vacuum (if used) then activate the drill(s). The hand-wheel may be gripped and driven at any location that is comfortable; it is not necessary to use the protruding handle. Place the ram position lock in neutral. Brace the unit with one foot and the non-driving hand and begin drilling by advancing the ram.

The drills require some drill-bit back pressure to engage the hammer mechanism. Until the hammer has started, the bits may want to walk on the wall. It is important to control the DrillBoss firmly while starting the holes. Relax control of the unit for the remainder of the hole. When the depth is achieved, fully retract the ram and repeat for subsequent holes.

Telescoping legs should be extended during horizontal drilling to maintain a stable base of support.

## Overhead Drilling

The pawl lever should be in the forward/up position to act as a safety. It should be shifted to neutral to lower the drill(s) only when the operator has good control of the hand-wheel. Failure to maintain control during retraction could result in injury. The drills should not be allowed to free-fall.

## Down Drilling

When down drilling, the pawl lever may be left in neutral during the drilling operation and shifted to reverse when retracting. The reverse position will maintain the ram position with respect to the barrel. If retracted, the operator should not shift to neutral until he/she has full control of the hand-wheel. Failure to control the hand-wheel during this operation could result in injury. Do not let the drills free-fall from a raised position above the ground. Often, when down-drilling, the weight of the drills will be sufficient to provide appropriate drilling force. Do not over drive the drills. Over driving the drills in any orientation may result in reduced cutting efficiency and increased bit wear.

When performing downward drilling, depending on the size of the drill and bit combination being used, the bits may not have sufficient clearance when the carriage is fully raised and the drills fully retracted. In this case, the T-bar spring may be removed and the locking T-bar pin put through the hole shown in the picture below rather than through the T-bar slot. This will normally provide enough clearance for most drill and bit combinations. Be sure to replace the spring and pin into their normal working positions for any other drilling mode.



## Cautions

- Always wear proper PPE while drilling into concrete. Inhalation of silica dust is a health hazard. The DrillBoss is designed to work with a variety of dust control systems and it is advisable to employ one.
- The winch used to raise and lower the carriage is very powerful.
- Pinch hazards are a concern with all moving mechanical systems. When operating or adjusting the DrillBoss, be aware of the location of your hands and feet to prevent pinching in moving parts. Be aware of all cabling and wiring. All cables/wires should be able to move freely over the range of the ram. Be especially aware of cables/wires during barrel rotation (adjusting drilling angle).
- When moving the DrillBoss, maintain good control of the unit, especially when moving over obstacles or rough surfaces. Moving too quickly may pose a tipping hazard. Always move at a speed slow enough to maintain good control of the unit.
- When drilling at any angle other than horizontal, it is important to either have the ram position lock engaged or have firm control of the driving hand-wheel. Gravity will move the ram (and hand-wheel) when the ram position lock is not engaged and the barrel is at an angle. Maintain a good grip on the hand-wheel when moving the ram position lock lever into the neutral position.

## Parts List

In development

## Contact Information

For service or questions, please contact:

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Visit us at: [www.ergomek.com](http://www.ergomek.com)