Horizontal Boring Machine (Model 32-350) DATED 7-15-96 PART NO. 1346961 © Delta International Machinery Corp. 1996



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SAFETY RULES

Woodworking can be dangerous if safe and proper operating procedures are not followed. As with all machinery, there are certain hazards involved with the operation of the product. Using the machine with respect and caution will considerably lessen the possibility of personal injury. However, if normal safety precautions are overlooked or ignored, personal injury to the operator may result. Safety equipment such as guards, push sticks, hold-downs, featherboards, goggles, dust masks and hearing protection can reduce your potential for injury. But even the best guard won't make up for poor judgment, carelessness or inattention. <u>Always use common sense</u> and exercise <u>caution</u> in the workshop. If a procedure feels dangerous, don't try it. Figure out an alternative procedure that feels safer. REMEMBER: Your personal safety is your responsibility.

This machine was designed for certain applications only. Delta Machinery strongly recommends that this machine not be modified and/or used for any application other than that for which it was designed. If you have any questions relative to a particular application, DO NOT use the machine until you have first contacted Delta to determine if it can or should be performed on the product.

DELTA INTERNATIONAL MACHINERY CORP. MANAGER OF TECHNICAL SERVICES 246 ALPHA DRIVE PITTSBURGH, PENNSYLVANIA 15238 (IN CANADA: 644 IMPERIAL ROAD, GUELPH, ONTARIO N1H 6M7)

WARNING: FAILURE TO FOLLOW THESE RULES MAY RESULT IN SERIOUS PERSONAL INJURY

1. FOR YOUR OWN SAFETY, READ INSTRUCTION MANUAL BEFORE OPERATING THE TOOL. Learn the tool's application and limitations as well as the specific hazards peculiar to it.

- 2. KEEP GUARDS IN PLACE and in working order.
- 3. ALWAYS WEAR EYE PROTECTION.

4. **GROUND ALL TOOLS**. If tool is equipped with threeprong plug, it should be plugged into a three-hole electrical receptacle. If an adapter is used to accommodate a twoprong receptacle, the adapter lug must be attached to a known ground. Never remove the third prong.

5. **REMOVE ADJUSTING KEYS AND WRENCHES**. Form habit of checking to see that keys and adjusting wrenches are removed from tool before turning it "on."

6. **KEEP WORK AREA CLEAN**. Cluttered areas and benches invite accidents.

7. **DON'T USE IN DANGEROUS ENVIRONMENT**. Don't use power tools in damp or wet locations, or expose them to rain. Keep work area well-lighted.

8. **KEEP CHILDREN AND VISITORS AWAY**. All children and visitors should be kept a safe distance from work area.

9. **MAKE WORKSHOP CHILDPROOF** - with padlocks, master switches, or by removing starter keys.

10. **DON'T FORCE TOOL**. It will do the job better and be safer at the rate for which it was designed.

11. **USE RIGHT TOOL**. Don't force tool or attachment to do a job for which it was not designed.

12. **WEAR PROPER APPAREL**. No loose clothing, gloves, neckties, rings, bracelets, or other jewelry to get caught in moving parts. Nonslip footwear is recommended. Wear protective hair covering to contain long hair.

13. **ALWAYS USE SAFETY GLASSES**. Wear safety glasses (must comply with ANSI Z87.1). Everyday eyeglasses only have impact resistant lenses; they are not safety glasses. Also use face or dust mask if cutting operation is dusty.

14. **SECURE WORK**. Use clamps or a vise to hold work when practical. It's safer than using your hand and frees both hands to operate tool.

15. **DON'T OVERREACH**. Keep proper footing and balance at all times.

16. **MAINTAIN TOOLS IN TOP CONDITION**. Keep tools sharp and clean for best and safest performance. Follow instructions for lubricating and changing accessories.

17. **DISCONNECT TOOLS** before servicing and when changing accessories such as blades, bits, cutters, etc.

18. **USE RECOMMENDED ACCESSORIES**. The use of accessories and attachments not recommended by Delta may cause hazards or risk of injury to persons.

19. **REDUCE THE RISK OF UNINTENTIONAL START-ING.** Make sure switch is in "OFF" position before plugging in power cord.

20. **NEVER STAND ON TOOL**. Serious injury could occur if the tool is tipped or if the cutting tool is accidentally contacted.

21. **CHECK DAMAGED PARTS**. Before further use of the tool, a guard or other part that is damaged should be carefully checked to ensure that it will operate properly and perform its intended function - check for alignment of moving parts, binding of moving parts, breakage of parts, mounting, and any other conditions that may affect its operation. A guard or other part that is damaged should be properly repaired or replaced.

22. **DIRECTION OF FEED**. Feed work into a blade or cutter against the direction of rotation of the blade or cutter only.

23. **NEVER LEAVE TOOL RUNNING UNATTENDED**. **TURN POWER OFF**. Don't leave tool until it comes to a complete stop.

24. **DRUGS, ALCOHOL, MEDICATION**. Do not operate tool while under the influence of drugs, alcohol or any medication.

25. MAKE SURE TOOL IS DISCONNECTED FROM **POWER SUPPLY** while motor is being mounted, connected or reconnected.

26. **WARNING:** The dust generated by certain woods and wood products can be injurious to your health. Always operate machinery in well ventilated areas and provide for

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ADDITIONAL SAFETY RULES FOR BORING MACHINES

1. **WARNING:** Do not operate your boring machine until it is completely assembled and installed according to the instructions.

2. **IF YOU ARE NOT** thoroughly familiar with the operation of boring machines, obtain advice from your supervisor, instructor, or other qualified person.

3. **MAKE CERTAIN** the machine is fastened to a supporting surface.

4. **NEVER** turn the boring machine "ON" before clearing the table of all objects (tools, scrap pieces, etc.).

5. **ALWAYS** keep hands, fingers, and hair away from rotating bits.

6. **DO NOT** attempt to bore material that does not have a flat surface, unless suitable supports are used.

7. ALWAYS support work material firmly against fence.

8. **ALWAYS** use clamps or fixtures for small or narrow work stock.

9. **MAKE SURE** that drill bits are not damaged and are properly secured before operating.

10. **DISCONNECT** and lock out machine from power source before making repairs or adjustments.

11. **NEVER** start the boring machine with the drill bits pressed against the workpiece.

12. **NEVER** perform layout, assembly, or set-up work on the table while the machine is operating.

13. **ADJUST** the depth stop before operating.

14. **ALWAYS** stop the machine before removing scrap pieces from the table.

15. **WARNING:** For your own safety, don't wear gloves when operating the machine.

16. **SHOULD** any part of your boring machine be missing, damaged, or fail in any way, or any electrical component fail to perform properly, shut off switch and remove plug from power supply outlet. Replace missing, damaged, or failed parts before resuming operation.

17. **ADDITIONAL** information regarding the safe and proper operation of this product is available from the National Safety Council, 1121 Spring Lake Drive, Itasca, IL 60143-3201, in the Accident Prevention Manual for Industrial Operations and also refer to the American National Standards Institute ANSI 01.1 Safety Requirements for Woodworking Machinery and the U.S. Department of Labor OSHA 1910.213 Regulations.

UNPACKING AND CLEANING

Carefully unpack the machine and all loose items from the shipping container. Remove any protective coating from the machined surfaces of the boring machine. This coating may be removed with a soft cloth moistened with kerosene (Do not use acetone, gasoline or lacquer thinner for this purpose). After cleaning, cover all unpainted surfaces with a good quality paste

ASSEMBLY

ASSEMBLING STAND AND MOUNTING FEET

1. Assemble front panel (A) Fig. 2, and rear panel (B) to side panels (C) with eight 5/8 inch-long screws, lock-washers and hex nuts (D). **NOTE:** Holes (E) Fig. 2, in side panels (C) should be at the bottom of the stand during assembly.

2. Fig. 3, illustrates the stand completely assembled.

3. Assemble mounting leg (F) Fig. 4, to each corner of the stand as shown, with 4 one inch-long screws, flat

washers, lockwashers and hex nuts (G).







Fig. 3





ASSEMBLING MACHINE TO STAND

1. Carefully place machine (A) Fig. 5, on stand (B).

2. Align four holes in the base of the machine (A) Fig. 5, with four threaded holes in top of stand (B) and fasten with 4 one inch-long screws, lockwashers and flat washers, three of which are shown at (C).



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ASSEMBLING TABLE TO MACHINE

1. Thread two lock knobs (A) Fig. 6, into holes (B) at the underside of table (C).

2. Place table (C) Fig. 7, onto ledge (D) Fig. 8, of machine. Align two holes in machine ledge (D) Fig. 8, with two threaded holes in the underside of table (C) and fasten as shown, with 2 one inch-long screws, lockwashers and flat washers (E) Fig. 8.







Fig. 7



Fig. 8







ASSEMBLING MITER GAGE

1. Remove knob and flat washer (A) Fig. 9, from threaded rod of miter gage bar (B).

2. Place miter gage body (C) Fig. 10, over threaded rod of miter gage bar (B) and reassemble flat washer and knob, which were removed from miter gage bar (B) in STEP 1. **NOTE:** Make certain pin (D) Fig. 9, located on $u \quad n \quad d \quad e \quad r \quad s \quad i \quad d \quad e$ of miter gage body (B) engages hole (E) in miter gage bar (B) when assembling miter gage.

Fig. 10

ASSEMBLING STOCK STOP TO TABLE

1. Loosen two lock knobs (A) Fig. 11, located on the underside of table (B).

2. With the flat side of stock stop rod (C) Fig. 11, facing down, slide stop rod (C) through holes at both ends of table (B) as shown, and fasten by rotating two lock knobs (A) clockwise.

3. Assemble stock stop (D) Fig. 11, to <u>either</u> end of the stop rod (C) and hold in place by rotating lock knob (E) clockwise. **NOTE:** Lock knob (E) Fig. 11, must clamp against flat surface of stop rod (C). Adjustments to stock stop (D) can be made later.



Fig. 11

CONNECTING MACHINE TO AIR SUPPLY

A 1/4 inch N.P.T. inlet (A) Fig. 12, is supplied with the boring machine for connecting the machine to your air supply. **NOTE:** A 1/4" to 3/4" air hose will supply adequate air to operate the machine; air pressure of 60 to 120 PSI is suitable. If your shop pressure is over 120 PSI, reduce pressure into the machine with a regulator to approximately 90 - 100 PSI.

WARNING: When air pressure is first applied to the machine, it may cause the carriage to move to the rear position. KEEP HANDS AWAY FROM THE MACHINE!



Fig. 12

CONNECTING BORING MACHINE TO POWER SOURCE

A separate electrical circuit should be used for your boring machine. This circuit should not be less than #12 wire and should be protected with a 15 Amp time lag fuse or circuit breaker. If an extension cord is used, use only 3-wire extension cords which have 3-prong grounding type plugs and 3-pole receptacles which accept the tool's plug. For distances up to 150 feet use #10 wire. Have a certified electrician replace or repair damaged or worn cords immediately. Before connecting the power cord to the electrical outlet, make sure the machine switch is in the "OFF" position and be sure that the electric current is of the same characteristics as the motor. Running on voltage other than specified will injure the motor.

GROUNDING INSTRUCTIONS

CAUTION: THIS TOOL MUST BE GROUNDED WHILE IN USE TO PROTECT THE OPERATOR FROM ELECTRIC SHOCK.

In the event of a malfunction or breakdown, grounding provides a path of least resistance for electric current to reduce the risk of electric shock. The motor and machine are equipped with electric cords having equipment grounding conductors and grounding plugs. The plugs must be plugged into a matching outlet that is properly installed and grounded in accordance with all local codes and ordinances.

Do not modify the plug provided - if it will not fit the outlet, have a proper outlet installed by a qualified electrician.

Improper connections of the equipment-grounding conductor can result in risk of electric shock. The conductor with insulation having an outer surface that is green with or without yellow stripes is the equipment-grounding conductor. If repair or replacement of the electric cords or plugs are necessary, do not connect the equipment grounding conductor to a live terminal.

Check with a qualified electrician or service personnel if the grounding instructions are not completely understood, or if in doubt as to whether the tool is properly grounded. Use only 3-wire extension cords that have 3-pronged grounding type plugs and 3-hole receptacles that accept the tool's plug, as shown in Fig. 13.

Repair or replace damaged or worn cord immediately.

230 VOLT OPERATION

The motor on your machine is wired for 230 volts; the power cord is equipped with a plug that has two flat, current-carrying prongs in tandem, and one round or "U" shaped longer ground prong. This is used only with the proper mating 3-conductor grounding type receptacle, as shown in Fig. 13.

When the 230 Volt three prong plug on your machine is plugged into a grounded 3-conductor receptacle, the long ground prong on the plug contacts first so the machine is properly grounded before electricity reaches it.

WARNING: IN ALL CASES, MAKE CERTAIN THE RECEPTACLE IN QUESTION IS PROPERLY GROUNDED. IF YOU ARE NOT SURE, HAVE A CERTI-FIED ELECTRICIAN CHECK THE RECEPTACLE.





OPERATING CONTROLS AND ADJUSTMENTS

INSTALLING AND REMOVING DRILL BITS

1. Make certain the machine is disconnected from the power source.

2. Remove four screws, two of which are shown at (A) Fig. 14, and remove safety shield (B).

3. Carefully thread drill bit adapters (C) Fig. 15, supplied, into spindles (D) and tighten drill bit adapters (C) in position using wrenches on flats of adapters and spindles as shown.

4. Insert drill bit (E) Fig. 16, not supplied, into adapter (C) and tighten set screw (F) with allen wrench.

5. Install drill bit to the other drill bit adapter in the same manner. **NOTE:** Drill bits are available in 1/4", 5/16", 3/8" and 1/2" diameters.

SETTING CENTER DISTANCE BETWEEN DRILL BITS

1. Make certain the machine is disconnected from the power source.

2. With allen wrench (A) Fig. 17, supplied, loosen two set screws (B).

3. Rotate two cylinders (C) Fig. 17, to the desired center distance between drill bits (D). **NOTE:** There are witness lines on the face of the boring head (E) to indicate the desired distance between drill bits. **NOTE:** Center drilling capacity of supplied boring head is 3/4" to 3".

4. Tighten set screws (B) Fig. 17, after setting center distance.



Fig. 14



Fig. 15







Fig. 17

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DUST CHUTE

The machine features a handy built-in dust chute (P) Fig. 18, which allows wood chips to fall out of the way and keeps the depth stop clear for accurate repetitive boring operations.

SETTING DRILLING DEPTH

1. Make certain the machine is disconnected from the power source, and air supply.

2. Loosen locknut (A) Fig. 18.

3. Manually push the boring head carriage (B) Fig. 19, forward as far as it will go.

4. Rotate threaded rod (C) Fig. 20, as necessary to obtain desired drill depth setting. **NOTE:** Drilling depth setting is obtained by measuring from rear fence (D) Fig. 20, of table to tip of drill bit (F) as shown. Manually push the boring head carriage (B) forward or backward until the desired depth setting is obtained.

5. Rotate threaded rod (C) Fig. 20, until the depth stop (G) is firmly against the back wall (H).

6. Tighten locknut (A) Fig. 20, after setting drilling depth.

7. Assemble safety shield (J) Fig. 21, over boring head (K) with four screws, two of which are shown at (L).



Fig. 18



Fig. 19









ALIGNING TABLE 90 DEGREES TO THE DRILL BITS

1. Make certain the machine is disconnected from the power source and air supply.

2. With the drill bits in position, manually push the carriage forward as far as it will go.

3. Place a square (A) Fig. 22, against rear fence (B) and drill bits (C) as shown and check to see if the table is aligned 90 degrees to the drill bits.

4. If an adjustment is necessary, loosen two screws (D) Fig. 23, and align table (E) Fig. 22, so it is 90 degrees to drill bits (C). Tighten two screws (D) Fig. 23, after adjustment is made.

5. Recheck the drilling depth setting.



ig. 22



Fig. 23

STARTING AND STOPPING DRILL ROTATION

1. To start drill rotation, push green start button (A) Fig. 24.

To stop drill rotation, push red stop button (B) Fig. 24.

3. **IMPORTANT:** The air supply must be on and the foot pedal depressed to lower work holddown and activate carriage movement.



Fig. 24

FOOT PEDAL

The foot pedal activates the movement of the work holddown and the boring head carriage.

1. Pushing halfway down on foot pedal (A) Fig. 25, will lower the work holddown (B) Fig. 26, when set properly against the work surface as shown.

2. Once the workpiece is secure on the table, continue to push down on the foot pedal to activate forward movement of the boring head carriage (C) Fig. 26.

3. After the drilling operation is completed, slowly release foot pressure from the foot pedal (A) Fig. 25, to retract the work holddown (B) Fig. 26 and boring head carriage (C).

FASTENING FOOT PEDAL ASSEMBLY TO A SUPPORTING SURFACE

During operation if there is any tendency for the foot pedal assembly (D) Fig. 25, to tip over, slide or "walk" across the floor surface, the foot pedal assembly (D) must be secured to a stationary support, such as a heavy wooden block or the floor through two mounting lugs (E), one of which is shown.

ADJUSTING WORK HOLDDOWN

1. Make certain the machine is disconnected from the power source.

2. Place workpiece (A) Fig. 27, on the table close to, but not under, the work holddown (B).

3. Depress foot pedal halfway until work holddown (A) Fig. 27, is lowered as far as it will go. **IMPORTANT:** When set correctly, the work holddown (B) Fig. 28, should rest slightly below the surface of the workpiece (A) but not contacting the drill bits (C).

4. If an adjustment is necessary loosen two carriage bolts (D) Fig. 29, and move holddown assembly (E) up or down as necessary. Tighten two bolts (D) Fig. 29, after adjustment is made. **NOTE:** Minor adjustments allowing for the workpiece, can be made by adjusting the table



Fig. 28



Fig. 25



Fig. 26



Fig. 27



Fig. 29

ADJUSTING MITER GAGE

The miter gage (A) Fig. 30, can be installed at three positions on the table, left, right or center, depending on the drilling operation.

- 1. To adjust the position and angle of the miter gage (A) Fig. 30, loosen lock knob (B).
- 2. Tighten lock knob after adjustment is made.



Fig. 30

ADJUSTING TABLE HEIGHT

The table (A) Fig. 31, moves on dovetailed ways (B) at the front of the machine.

1. To raise or lower table (A) Fig. 31, rotate knob (C).



Fig. 31

ADJUSTING SPEED/FEED RATE OF CARRIAGE ASSEMBLY

The forward speed/feed rate of carriage assembly (A) Fig. 32, is governed by the air pressure. To adjust the speed/feed rate of carriage assembly (A) Fig. 32, proceed as follows:

1. Make certain the machine is disconnected from the power source.

2. Loosen locknut (B) Fig. 32, and rotate air pressure valve (C) as necessary. **NOTE:** Rotating pressure valve (C) clockwise will decrease air pressure and slow up carriage (A) movement. Rotating air pressure valve (C) Fig. 32, counterclockwise will increase air pressure and speed up carriage (A) movement.

3. Tighten locknut (B) Fig. 32, after speed/feed rate of carriage assembly (A) is made.



Fig. 32

OPERATION



Fig. 33



Fig. 34



Fig. 35



Figs. 33 and 34, illustrate a typical end boring operation. Note that work holddown (A) Fig. 33, has been adjusted to hold workpiece (B) down on the table and that the end o f

workpiece (B) is firmly held against table fence (C) and miter gage (D).

Figs. 35 and 36, illustrate a typical two hole side boring operation. Note that work holddown (A) Fig. 35, has been adjusted to hold workpiece (E) down on the table and that workpiece (E) is firmly held against the table fence and stock stop (F).

Fig. 37, illustrates the end piece (B) with dowel rods (G) inserted, about to be assembled to workpiece (E).



Fig. 36

Fig. 37

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MAINTENANCE

LUBRICATION

The boring head assembly (A) Fig. 38, should be lubricated periodically with spindle grease Delta Part No. 999-02-023-1441 through the grease fitting (B).





REPLACING BORING HEAD

If it is ever necessary to remove the boring head for repair or replacement, proceed as follows:

Make certain the machine is disconnected from 1. the power source and air supply.

Remove four screws, two of which are shown at (A) 2. Fig. 39, and remove safety shield (B).

3. Loosen screw (C) Fig. 39, and slide boring head (D) from carriage assembly.

4. Reassemble boring head in the same manner.

REPLACING SPINDLE COUPLING

If it is ever necessary to remove the spindle coupling (A) Fig. 40, for repair or replacement due to wear, proceed as follows:

1 Make certain the machine is disconnected from the power source.

Remove safety shield and boring head. 2.

3. Thread spindle coupling removal tool (B) Fig. 40, (supplied) onto spindle coupling (A).

4. Insert allen wrench into socket head screw (C) Fig. 40, located on the head of tool (B) as shown, and turn allen wrench clockwise until spindle coupling (A) releases from spindle shaft.

5. To replace spindle coupling (A) Fig. 41, align spindle coupling with flats on tapered spindle shaft (D).

Using a block of wood and mallet, lightly tap on head 6. of spindle coupling (A) Fig. 41, until it seats firmly on tapered spindle shaft (D).

7. Replace boring head and safety shield.



Fig. 39



Fig. 40



Fig. 41

ADELTA PARTS, SERVICE OR WARRANTY ASSISTANCE

All Delta Machines and accessories are manufactured to high quality standards and are serviced by a network of factory service centers and authorized service stations listed in your owner's manual. To obtain additional information regarding your Delta quality product or to obtain parts, service or warranty assistance, please call or fax Delta's tollfree 'hotline' number.

Delta maintains a modern, efficient Parts Distribution Center, maintaining an inventory of over 15,000 parts located in Memphis, Tennessee.

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