MAKSIWA®

LBM.13 - LBP.13

Line Boring Pneumatic - Line Boring Manual

INSTRUCTION MANUAL

Attention: Read the instruction manual before using the appliance

GENERAL SAFETY RULES

⚠WARNING READ AND UNDERSTAND ALL WARNINGS AND OPERATING INSTRUCTIONS BEFOREUSING THIS EQUIPMENT.Failure to follow all instructions listed below, may result in electric shock, fire, and/or serious personal injury or property damage.

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. Always use common sense and exercise caution 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.

⚠WARNING This machine was designed for certain applications only. We 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 us to determine if it can or should be performed on the product.

⚠WARNING **FAILURE TO FOLLOW THESE RULES MAY RESULT IN SERIOUS PERSONAL INJURY.**

1. **FOR YOUR OWN SAFETY, READ THE INSTRUCTION MANUAL BEFORE OPERATING THE MACHINE.** Learning the machine's application, limitations, and specific hazards will greatly minimize the possibility of accidents and injury.
2. **WEAR EYE PROTECTION. ALWAYS USE SAFETY GLASSES.** Also use face or dust mask if cutting operation is dusty. Everyday eyeglasses are NOT safety glasses. **USE CERTIFIED SAFETY EQUIPMENT.** Eye protection equipment should comply with ANSI Z87.1 standards, hearing equipment should comply with ANSI S3.19 standards, and dust mask protection should comply with MSHA/NIOSH certified respirator standards. Splinters, air-borne debris, and dust can cause irritation, injury, and/or illness.
3. **WEAR PROPER APPAREL.** Do not wear loose clothing, gloves, neckties, rings, bracelets, or other jewelry which may get caught in moving parts. Nonslip footwear is recommended. Wear protective hair covering to contain long hair.
4. **DO NOT USE THE MACHINE IN A DANGEROUS ENVIRONMENT.** The use of power tools in damp or wet locations or in rain can cause shock or electrocution. Keep your work area well-lit to prevent tripping or placing arms, hands, and fingers in danger.
5. **MAINTAIN ALL TOOLS AND MACHINES IN PEAK CONDITION.** Keep tools sharp and clean for best and safest performance. Follow instructions for lubricating and changing accessories. Poorly maintained tools and machines can further damage the tool or machine and/or cause injury.
6. **CHECK FOR DAMAGED PARTS.** Before using the machine, check for any damaged parts. Check for alignment of moving parts, binding of moving parts, breakage of parts, and any other conditions that may affect its operation. A guard or any other part that is damaged **should be properly repaired or replaced.** Damaged parts can cause further damage to the machine and/or injury.
7. **KEEP THE WORK AREA CLEAN.** Cluttered areas and benches invite accidents.
8. **KEEP CHILDREN AND VISITORS AWAY.** Your shop is a potentially dangerous environment. Children and visitors can be injured.
9. **REDUCE THE RISK OF UNINTENTIONAL STARTING.** Make sure that the switch is in the "OFF" position before plugging in the power cord. In the event of a power failure, move the switch to the "OFF" position. An accidental start-up can cause injury.
10. **USE THE GUARDS.** Check to see that all guards are in place, secured, and working correctly to prevent injury.
11. **REMOVE ADJUSTING KEYS AND WRENCHES BEFORE STARTING THE MACHINE.** Tools, scrap pieces, and other debris can be thrown at high speed, causing injury.
12. **USE THE RIGHT MACHINE.** Don't force a machine or an attachment to do a job for which it was not designed. Damage to the machine and/or injury may result.

13. **USE RECOMMENDED ACCESSORIES.** The use of accessories and attachments not recommended by Delta may cause damage to the machine or injury to the user.
14. **USE THE PROPER EXTENSION CORD.** Make sure your extension cord is in good condition. When using an extension cord, be sure to use one heavy enough to carry the current your product will draw. An undersized cord will cause a drop in line voltage, resulting in loss of power and overheating. See the Extension Cord Chart for the correct size depending on the cord length and nameplate ampere rating. If in doubt, use the next heavier gauge. The smaller the gauge number, the heavier the cord.
15. **SECURE THE WORKPIECE.** Use clamps or a vise to hold the workpiece when practical. Loss of control of a workpiece can cause injury.
16. **FEED THE WORKPIECE AGAINST THE DIRECTION OF THE ROTATION OF THE BLADE, CUTTER, OR ABRASIVE SURFACE.** Feeding it from the other direction will cause the workpiece to be thrown out at high speed.
17. **DON'T FORCE THE WORKPIECE ON THE MACHINE.** Damage to the machine and/or injury may result.
18. **DON'T OVERREACH.** Loss of balance can make you fall into a working machine, causing injury.
19. **NEVER STAND ON THE MACHINE.** Injury could occur if the tool tips, or if you accidentally contact the cutting tool.
20. **NEVER LEAVE THE MACHINE RUNNING UNATTENDED. TURN THE POWER OFF.** Don't leave the machine until it comes to a complete stop. A child or visitor could be injured.
21. **TURN THE MACHINE "OFF", AND DISCONNECT THE MACHINE FROM THE POWER SOURCE** before installing or removing accessories, before adjusting or changing set-ups, or when making repairs. An accidental start-up can cause injury.
22. **MAKE YOUR WORKSHOP CHILDPROOF WITH PADLOCKS, MASTER SWITCHES, OR BY REMOVING STARTER KEYS.** The accidental start-up of a machine by a child or visitor could cause injury.
23. **STAY ALERT, WATCH WHAT YOU ARE DOING, AND USE COMMON SENSE. DO NOT USE THE MACHINE WHEN YOU ARE TIRED OR UNDER THE INFLUENCE OF DRUGS, ALCOHOL, OR MEDICA- TION.** A moment of inattention while operating power tools may result in injury.
24. **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 proper dust removal. Use wood dust collection systems whenever possible.

ADDITIONAL SAFETY RULES FOR LINE BORING MACHINES

⚠WARNING **FAILURE TO FOLLOW THESE RULES MAY RESULT IN SERIOUS PERSONAL INJURY.**

1. **DO NOT OPERATE THIS MACHINE** until it is completely assembled and installed according to the instructions. A machine incorrectly assembled can cause serious injury.
2. **OBTAIN ADVICE** from your supervisor, instructor, or another qualified person if you are not thoroughly familiar with the operation of this machine. Knowledge is safety.
3. **FOLLOW ALL WIRING CODES** and recommended electrical connections to prevent shock or electrocution.
4. **SECURE THE MACHINE TO A SUPPORTING SUR- FACE.** Vibration can cause the machine to slide, walk, or tip over.
5. **NEVER START THE MACHINE BEFORE CLEARING THE TABLE OF ALL OBJECTS** (tools, scrap pieces, etc.). Debris can be thrown at high speed.
6. **NEVER START THE MACHINE** with the drill bit, cutting tool, or sanding drum against the workpiece. Loss of control of the workpiece can cause serious injury.
7. **PROPERLY LOCK THE DRILL BIT, CUTTING TOOL, OR SANDING DRUM IN THE CHUCK** before operating this machine.
8. **REMOVE THE CHUCK KEY BEFORE STARTING THE MACHINE.** The chuck key can be thrown out at a high speed.

9. **TIGHTEN ALL LOCK HANDLES** before starting the machine**.** Loss of control of the workpiece can cause serious injury.
10. **USE ONLY DRILL BITS,CUTTING TOOLS,** SANDING DRUMS, OR OTHER ACCESSORIES with shank size recommended in your instruction manual. The wrong size accessory can cause damage to the machine and/or serious injury.
11. **USE ONLY DRILL BITS, CUTTING TOOLS, OR SANDING DRUMS** that are not damaged. Damaged items can cause malfunctions that lead to injuries.
12. **USE RECOMMENDED SPEEDS** for all operations. Other speeds may cause the machine to malfunction causing damage to the machine and/or serious injury
13. **AVOID AWKWARD OPERATIONS AND HAND POSITIONS.** A sudden slip could cause a hand to move into the bit.
14. **KEEP ARMS, HANDS, AND FINGERS** away from the bit. Serious injury to the hand can occur.
15. **HOLD THE WORKPIECE FIRMLY AGAINST THE TABLE.** Do not attempt to drill a workpiece that does not have a flat surface against the table, or that is not secured by a vise. Prevent the workpiece from rotating by clamping it to the table. Loss of control of the workpiece can cause serious injury.
16. **TURN THE MACHINE "OFF" AND WAIT FOR THE DRILL BIT, CUTTING TOOL, OR SANDING DRUM TO STOP TURNING** prior to cleaning the work area, removing debris, removing or securing work-piece, or changing the angle of the table. A moving drill bit, cutting tool, or sanding drum can cause serious injury.
17. **PROPERLY SUPPORT LONG OR WIDE** work- pieces. Loss of control of the workpiece can cause severe injury.
18. **NEVER PERFORM LAYOUT, ASSEMBLY OR SET-UP WORK** on the table/work area when the machine is running. Serious injury can result.
19. **TURN THE MACHINE "OFF",** disconnect the machine from the power source, and clean the table/work area before leaving the machine. **LOCK THE SWITCH IN THE "OFF" POSITION** to prevent unauthorized use. Someone else might accidentally start the machine and cause serious injury to themselves.

SAVE THESE INSTRUCTIONS

Refer to them often and use them to instruct others.

POWER CONNECTIONS

A separate electrical circuit should be used for your machines. This circuit should not be less than #12 wire and should be protected with a 20 Amp time lag fuse. If an extension cord is used, use only 3-wire extension cords which have 3- prong grounding type plugs and matching receptacle which will accept the machine's plug. Before connecting the machine to the power line, make sure the switch is in the "OFF" position and be sure that the electric current is of the same characteristics as indicated on the machine. All line connections should make good contact. Running on low voltage will damage the machine.

⚠WARNING DO NOT EXPOSE THE MACHINE TO RAIN OR OPERATE THE MACHINE IN DAMP LOCATIONS.

MOTOR SPECIFICATIONS

Your machine is wired for 120 volt, 60 HZ alternating current. Before connecting the machine to the power source, make sure the switch is in the "OFF" position.

GROUNDING INSTRUCTIONS

⚠DANGER THIS MACHINE MUST BE GROUNDED WHILE IN USE TO PROTECT THE OPERATOR FROM ELECTRIC SHOCK.

1. All grounded, cord-connected machines:

   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. This machine is equipped with an electric cord having an equipment- grounding conductor and a grounding plug. The plug 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 the proper outlet installed by a qualified electrician.

   Improper connection 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 cord or plug is 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 machine is properly grounded.

   Use only 3-wire extension cords that have 3-prong grounding type plugs and matching 3-conductor receptacles that accept the machine's plug, as shown in Fig. A. Repair or replace damaged or worn cord immediately.

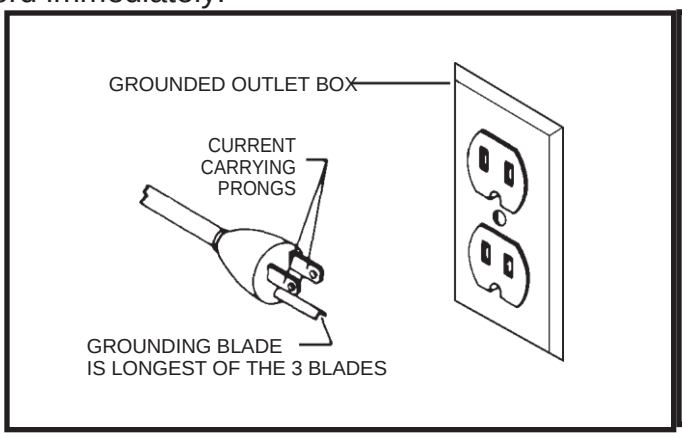


FIG.A

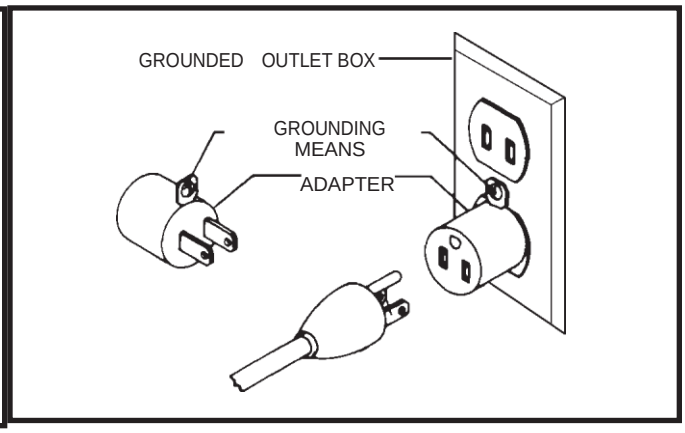


FIG.B

2.Grounded, cord-connected machines intended for use on a supply circuit having a nominal rating less than 150 volts:

If the machine is intended for use on a circuit that has an outlet that looks like the one illustrated in Fig. A**,** the machine will have a grounding plug that looks like the plug illustrated in Fig. A**.** A temporary adapter, which looks like the adapter illustrated in Fig. B, may be used to connect this plug to a matching 2-conductor receptacle as shown in Fig. B if a properly grounded outlet is not available. The temporary adapter should be used only until a properly grounded outlet can be installed by a qualified electrician. The green-colored rigid ear, lug, and the like, extending from the adapter must be connected to a permanent ground such as a properly grounded outlet box. Whenever the adapter is used, it must be held in place with a metal screw.

NOTE: In Canada, the use of a temporary adapter is not permitted by the Canadian Electric Code.

⚠DANGER IN ALL CASES, MAKE CERTAIN THE RECEPTACLE IN QUESTION IS PROPERLY GROUNDED. IF YOU ARE NOT SURE HAVE A QUALIFIED ELECTRICIAN CHECK THE RECEPTACLE.

EXTENSION CORDS

CAUTION condition and is a 3-wire extension cord which has a 3-prong grounding type plug and matching receptacle which will accept the machine's plug. When using an extension cord, be sure to use one heavy enough to carry the current of the machine. An undersized cord will cause a drop in line voltage, resulting in loss of power and overheating. Fig. D, shows the correct gauge to use depending on the cord length. If in doubt, use the next heavier gauge. The smaller the gauge number, the heavier the cord.

FIG.D

MINIMUM GAUGE EXTENSION CORD

RECOMMENDED SIZES FOR USE WITH STATIONARY ELECTRIC MACHINES

Ampere Rating	Volts	Total Length of Cord in Feet	Gauge of Extension Cord
0-6	120	up to 25	18 AWG
0-6	120	25-50	16 AWG
0-6	120	50-100	16 AWG
0-6	120	100-150	14 AWG
6-10	120	up to 25	18 AWG
6-10	120	25-50	16 AWG
6-10	120	50-100	14 AWG
6-10	120	100-150	12 AWG
10-12	120	up to 25	16 AWG
10-12	120	25-50	16 AWG
10-12	120	50-100	14 AWG
10-12	120	100-150	12 AWG
12-16	120	up to 25	14 AWG
12-16	120	25-50	12 AWG
12-16	120	GREATER THAN 50 FEET NOT RECOMMENDED	

FUNCTIONAL DESCRIPTION

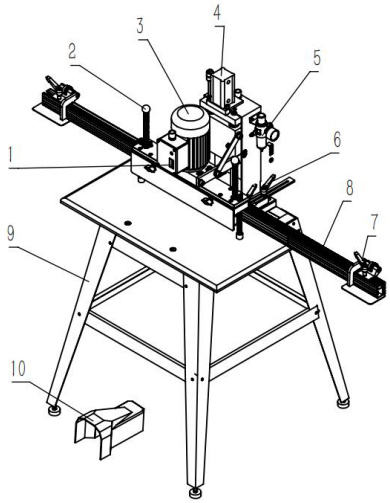
FOREWORD

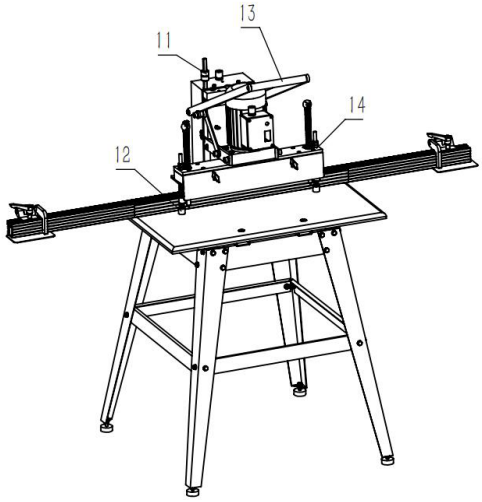
These line boring machines come with a large, 31"x15$_{1/2}$" table, which provides a large work space in front of the boring head for boring extra large boards.

NOTICE: THE MANUAL COVER PHOTO ILLUSTRATES THE CURRENT PRODUCTION MODEL. ALL OTHER ILLUSTRATIONS ARE REPRESENTATIVE ONLY AND MAY NOT DEPICT THE ACTUAL COLOR, LABELING OR ACCESSORIES AND MAY BE INTENDED TO ILLUSTRATE TECHNIQUE ONLY.

Distance between centers (mm)	32
Spindle speed (RPM)	3450
Number of spindles	13 (7 right, 6 left)
Depth of stroke (in)	2.5
Table surface (L x W) (in)	31x15$_{1/2}$
Quick Chuck internal diameter (mm)	10
Table height from floor (in)	34
Length of fence (in)	61.5-91.5
Fence stops	2
Approximate air pressure required (psi)	90(PB13)
Motor	TEFC, 1HP, 1Ph, 120V

The above specifications were current at the time this manual was published, but because of our policy of continuous improvement, We reserves the right to change specifications at any time and without prior notice, without incurring obligations.





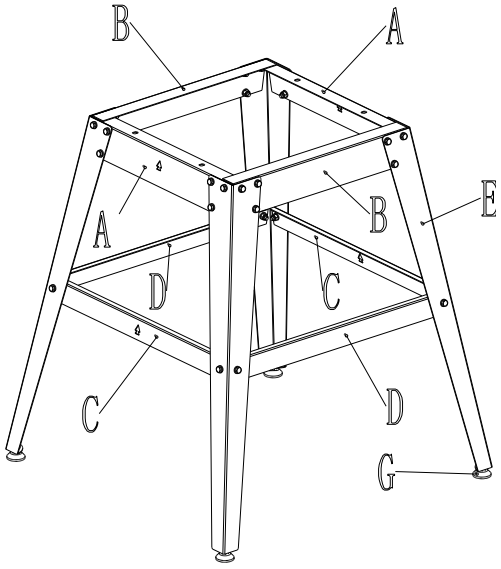
1.Switch
2.Indexing Pin
3.Motor
4. Air Cylinder
5.Air pressure Regulator
6. Locking Handle
7. Locking Handle
8.Fence
9.Stand
10. Foot Pedal
11. Height Adjustment nut
12. Clamp
13. Lowering and Raising Handle
14. Boring Head

ASSEMBLY

⚠WARNING FOR YOUR OWN SAFETY, DO NOT CONNECT THE MACHINE TO THE POWER SOURCE UNTIL THE MACHINE IS COMPLETE LY ASSEMBLED AND YOU READ AND UNDERSTAND THE ENTIRE INSTRUCTION MANUAL.

ACCESSORY STAND

If you purchased the accessory steel stand for use with your boring machine, assemble the stand as shown in Fig. E, using 32-M8X20 bolts, flat washers and hex nuts. Align the holes in the legs with the holes in the braces, and hand tighten. Repeat this process **NOTE:** All braces mount to the inside of the legs. **NOTE: Do not completely tighten the stand mounting hardware until the machine**



is assembled to the stand.

Assemble the four plastic feet

(G) to the bottom of each leg (E) as show.

MACHINE TO STAND

If you purchased the accessory steel stand for use with your boring machine, assemble the machine to the stand using four M8X20 hex head bolts, one of which is shown at (A-C) Fig. washers, and hex nuts supplied with the accessory stand. **NOTE:** Align the four holes in the machine with the four holes in the stand. Insert the hex head bolt through the top of the machine and stand, place a flat washer onto the hex head bolt and thread a nut onto the bolt and tighten securely. Repeat this process for the three remaining holes.

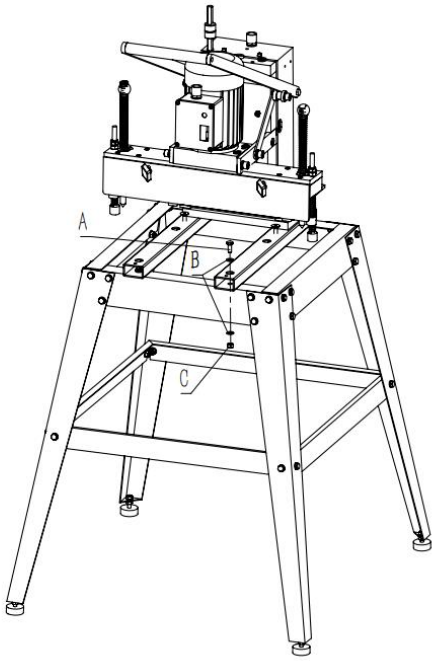


FIG.F

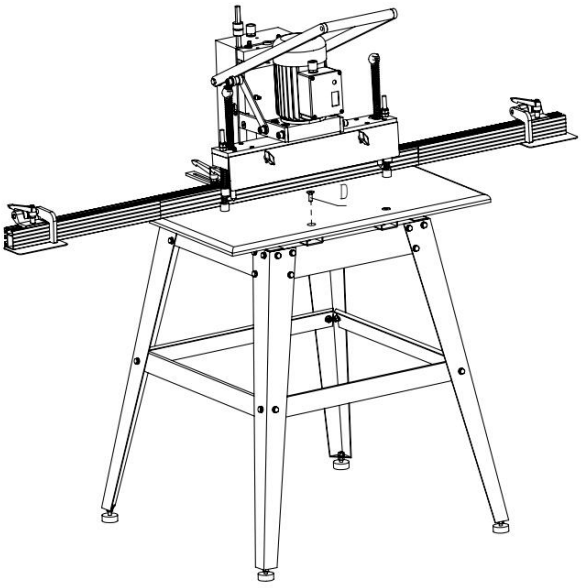


FIG.G

TABLE TO MACHINE

Assemble the table to the machine using four M8X25 screw(D)**NOTE:** Align the four holes in the table with the four holes in the machine. Insert the screw through the top of the table and tighten securely with the machine. Repeat this process for the three remaining holes.

ALIGNING FENCE PARALLEL TO LINE BORING HEAD

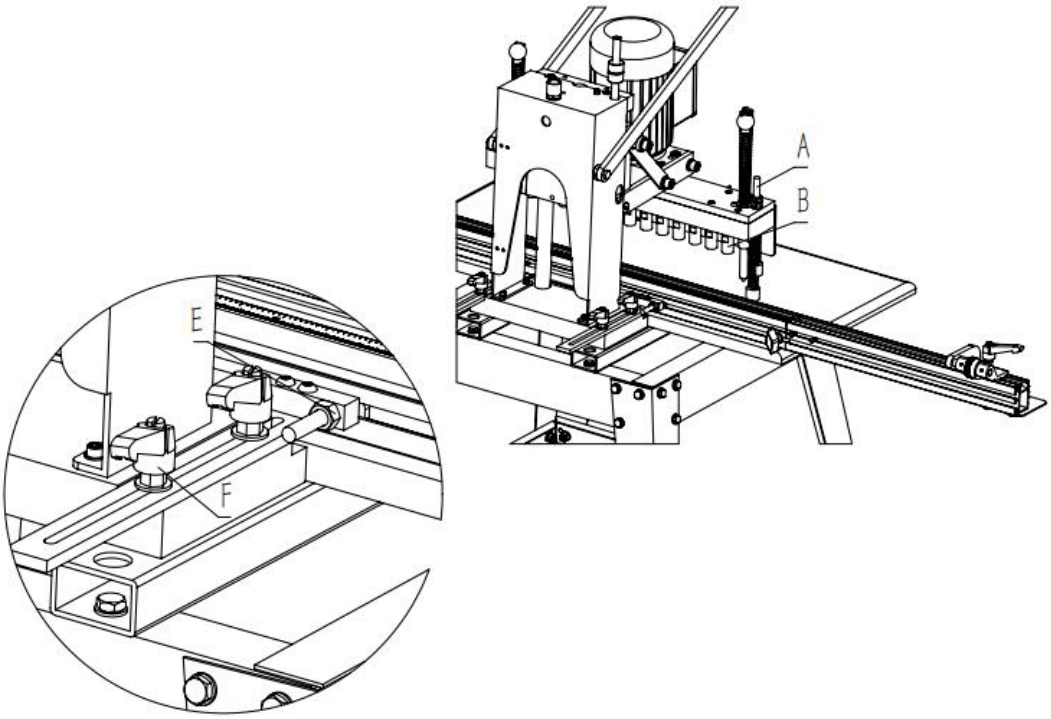


FIG.H

1.Unscrew and remove two holddown shaft(A) Fig. H, from top of boring head.

2.lowered the boring head unit till the fence can touch the bore spindle surface.

3.loose the four knobs until the fence unit can slide forward. When the fence nearly contact with the bore spindle stop sliding the fence unit.

4.Fine adjust the position of the fence unit till the left scale is same as the right scale,then lock the knobs(F).

5.Centring the fence on the bore head unit

6.loosen thin nut (D)and nut (E),adjust the fence until front surface of fence contacts bore spindle at point (B) as shown, at each end of the fence. Then tighten the fence mounting hardware.

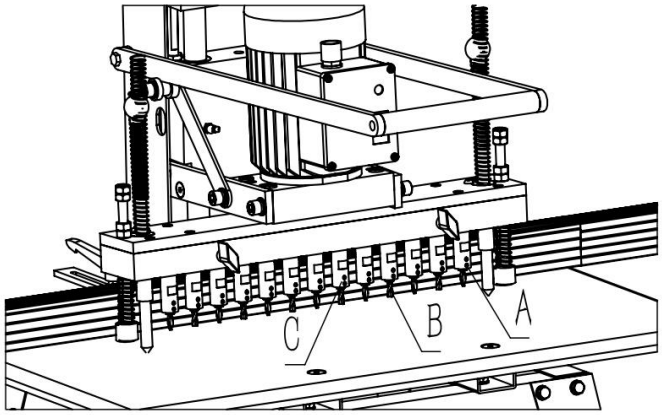
7. Lock the thin nut (D)and nut(E).

ASSEMBLING BORING BITS TO SPINDLES

NOTE: THIS MACHINE WILL ONLY ACCEPT BITS WITH 10MM SHANKS.

Thirteen set screws (A) are supplied with your machine and are to be threaded partway into each spindle, as shown in Fig. I, with T-wrench supplied.

Insert boring bits (B) Fig. I (not supplied with boring machine), into spindles (C). Push bit (B) in as far as possible and tighten set screws (A) against flat on bit.



NOTE: With the 13-Spindle Boring Machine, thirteen bits are required, seven right hand rotation and six left hand rotation. A right hand rotation bit is inserted into the center spindle and every other spindle to the right and left. Insert left hand rotation bits into the remaining spindles. Fig. I illustrates all thirteen bits assembled to the boring head.

FIG.I

ALIGNING BORING BITS

1. Place a flat piece of wood, on the table and against the fence . Pull operating handle downward until **ANY ONE** boring bit first contacts the top of the wood surface . **NOTE:** If all boring bits contact the top surface of the wood at the same time, no alignment is necessary.

2. If any of the boring bits are not contacting the wood surface , remove each bit that does not contact the board one at a time. Loosen the set screw in the shank end of the bit by the same amount that the bit does not contact the wood. Reassemble the bit into the same spindle as far as it will go, and tighten the spindle set screw. After all bits have been adjusted, go back to step 1 and recheck the alignment.

CONNECTING AIR TO MACHINE (Pneumatic Line Boring Machine Only)

A 1/4" pipe thread is provided on the air filter for connecting the air line to the machine. An air supply of 90 psi is recommended for best results and this air supply must not exceed 125 psi.

ADJUSTING AIR PRESSURE

(Pneumatic Line Boring Machine Only)

An air pressure gage (A) Fig. J, and regulator (B) are supplied to regulate the air pressure used to operate the machine. To adjust the air pressure, pull out and turn regulator (B) until the correct air pressure is indicated on the gage (A), push regulator (B) back into the locked position. For best results set pressure at 90 psi.

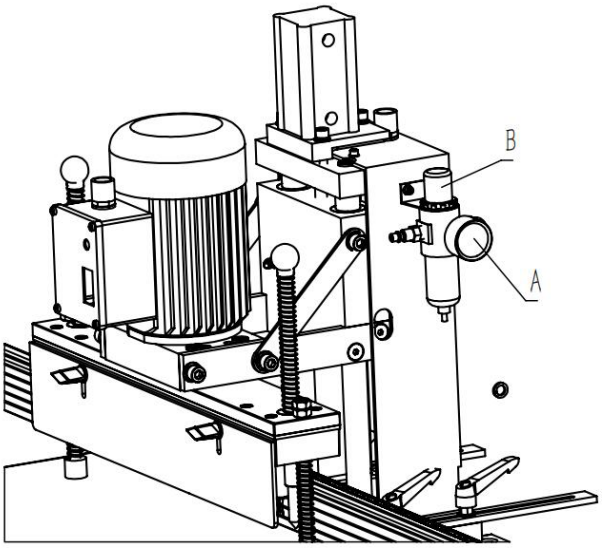


FIG.J

OPERATING CONTROLS AND ADJUSTMENT

STARTING AND STOPPING MACHINE

The switch is located on the front of the motor. To turn the machine **"ON"**, move the switch to the ON position and to turn the machine **"OFF"**, move the switch to the OFF position.

LOWERING BORING HEAD

To lower the boring head (A) Fig. K, pull down on handle (B). After holes have been bored, return handle to the up position.

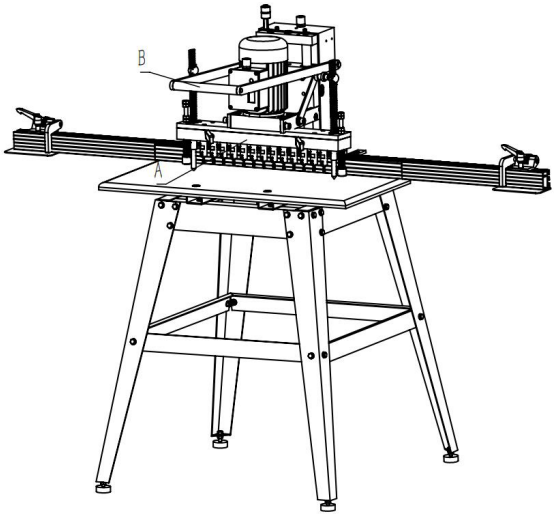


FIG.K

COTROLLING DOWNWARD TRAVEL OF BORING HEAD

A stop unit is provided to set the depth of the boring bits above the table surface. To control the downward travel of the boring head, loosen lock nut (B) Fig. L, and move them up or down until the desired mark on scale (A) you wish the boring bits to be above the table surface at the completion of the boring operation. Then tighten lock nuts (B).

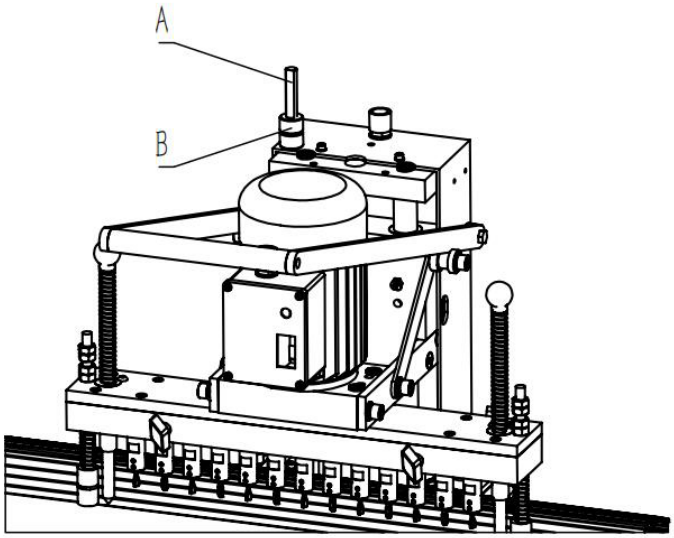


FIG.L.

MOVING FENCE

The fence can be moved in or out so that holes can be bored up to four inches from the edge of the workpiece.

FENCE STOPS

Two fence stops, one right (A) Fig. M, and one left (B), are supplied with your boring machine. The stops（A）and (B) can be moved anywhere along the fence by loosening lock handles (C), moving the stops (A) and (B), and tightening lock handles (C).

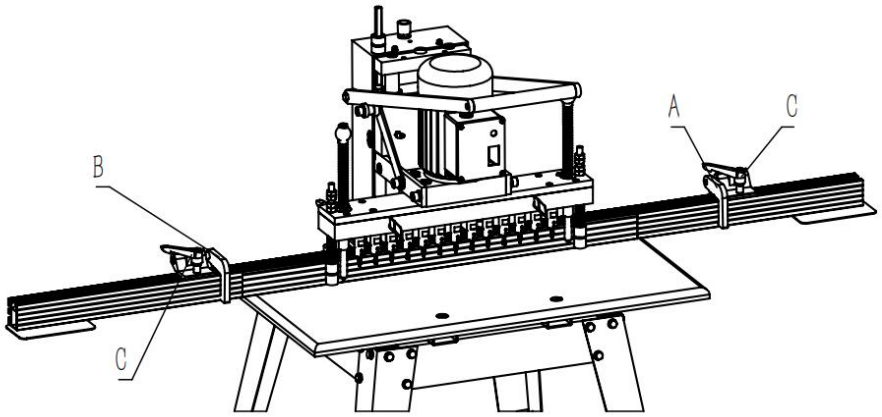


FIG.M

PRE-OPERATION

LINE BORING

1. Figure I illustrates a typical line boring operation being performed on a workpiece. Note that the right end of the workpiece is positioned against the fence stop (A) and 13 holes are being bored with a 32mm center distance between each hole.

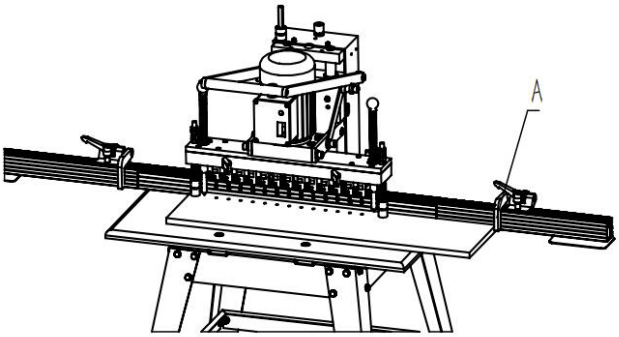


FIG.N

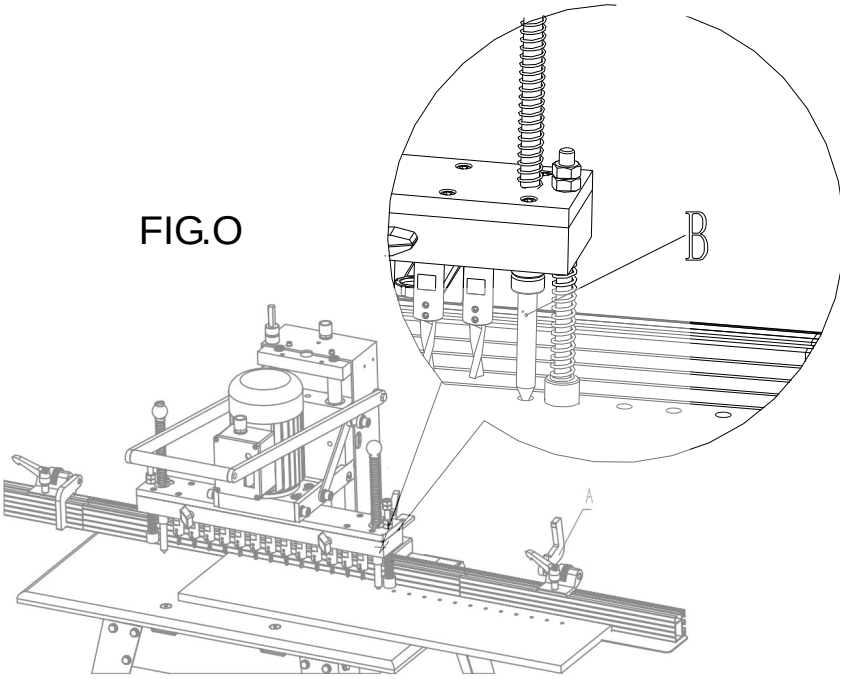


FIG.O

2. If more than 13 holes are required, simply slide work-piece along the fence and push down on the indexing pin (B) Fig. O, until the pointed end of the pin is in the last hole that was previously bored. This lines up the workpiece for the next series of holes. Note that the fence stop (A) has been pushed back allowing the workpiece to fit flush against the fence.

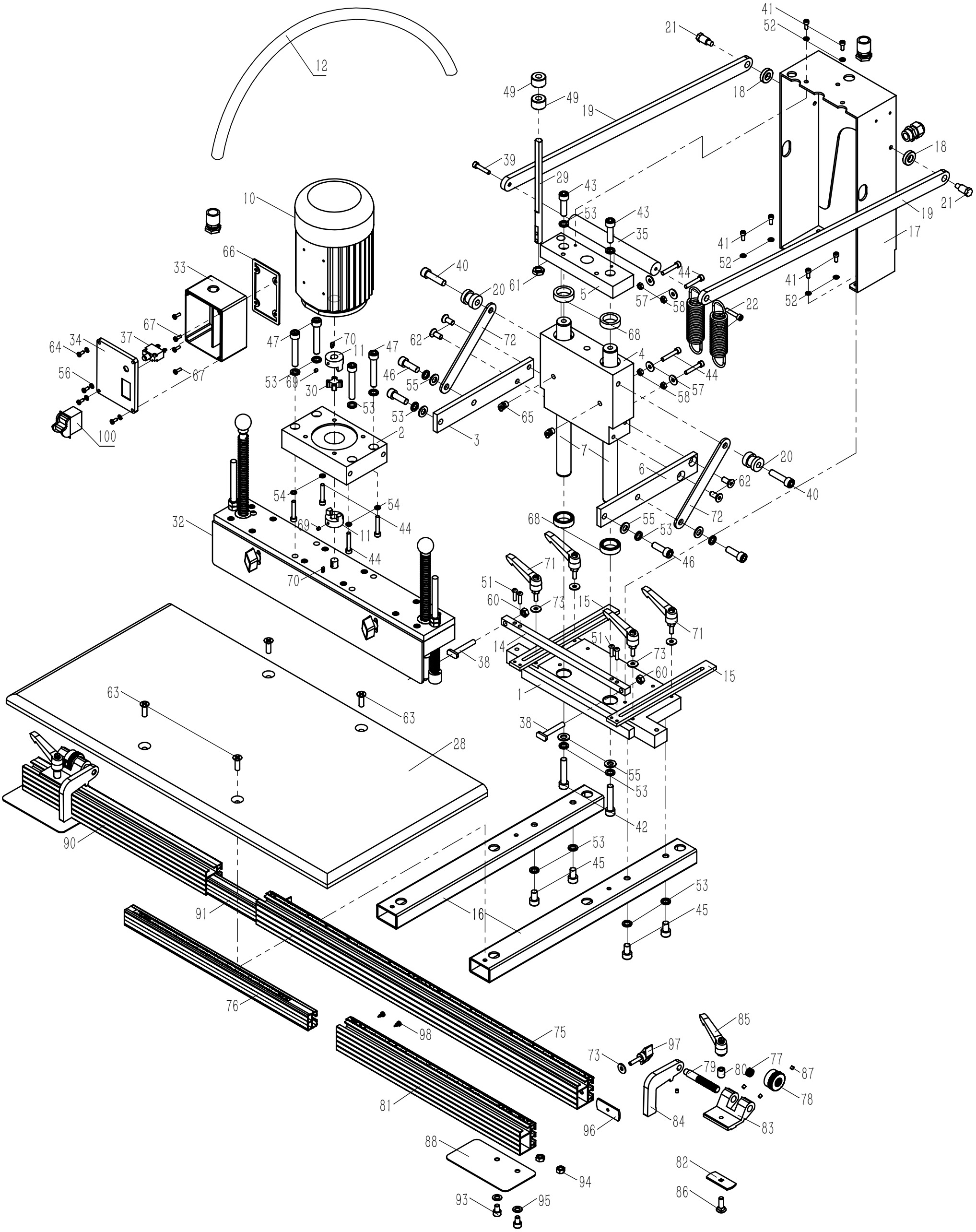
3. Then bore the additional thirteen holes in the workpiece, All holes are 32mm apart from each other.

Setting Boring Bit Feed Rate(Pneumatic Line Boring Machine Only)

The rate at which the boring head lowers and the boring bits feed into the workpiece is controlled by the valve (Fig.P) located at the air cyliner. Turn the knob counterclockwise to increase feed rate of the boring bits, or clockwise to decrease.

The feed rate will be determined by the type of wood being used, but a general rule of thumb is that hard woods require slower feed rates, while soft woods require faster feed rates.

Exploded Drawing of Manual

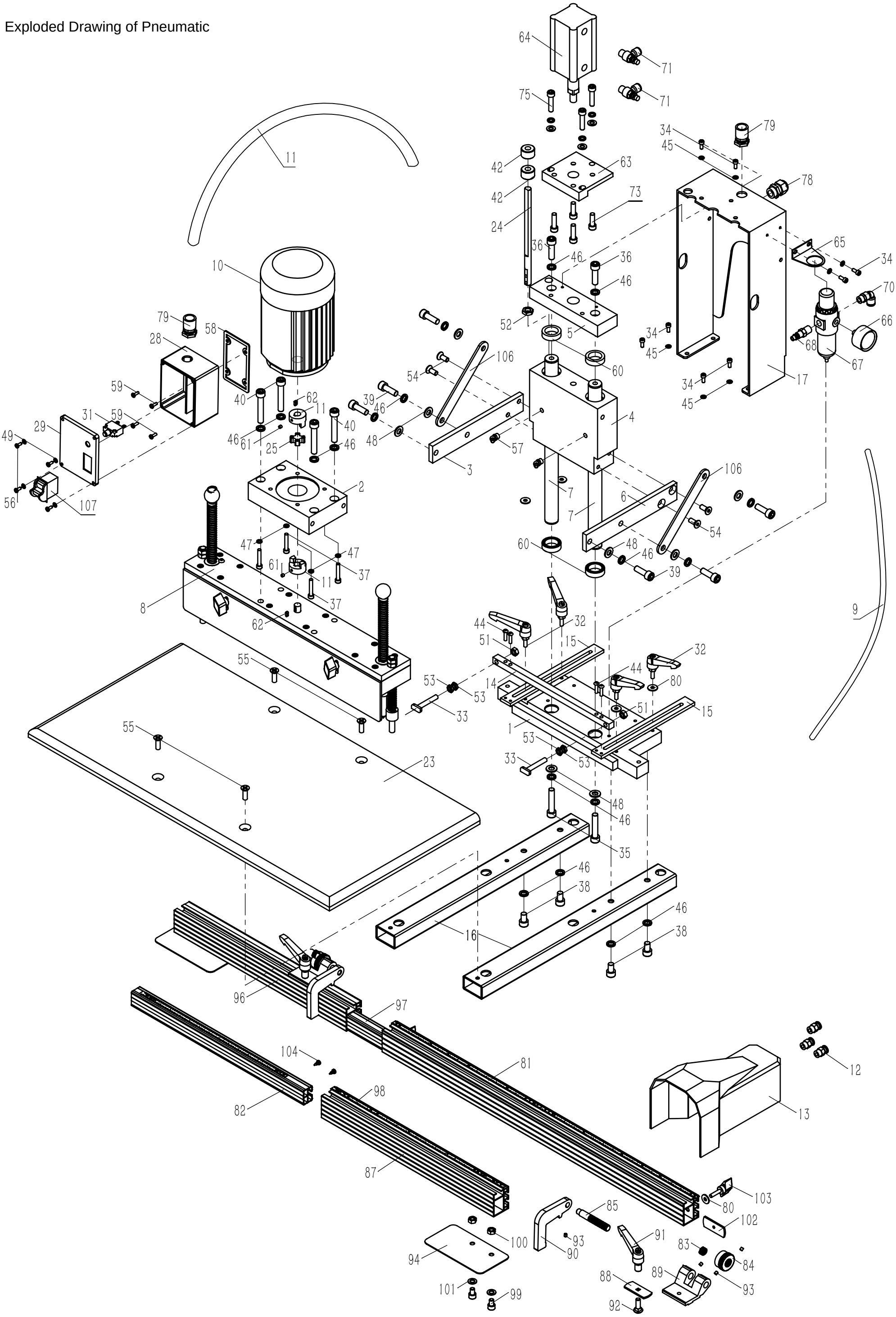


Parts List of Manual

Part No.	Description	Qty
1	Base Plate	1
2	Head Support Block	1
3	Left Side Support Plate	1
4	Vertical Carrier	1
5	Top Plate	1
6	Right Side Support Plate	1
7	Vertical Shaft	2
10	Motor	1
11	Spider	2
14	Rear Spacer Bar	1
15	Slide Bar	2
16	Table Support Tube	2
17	Rear Cover	1
18	Handle Spacer	2
19	Rocking Arm	2
20	Handle Guide	2
21	Screw	2
22	Pull Off Spring	2
28	Table	1
32	Boring Head Assy	1
33	Switch Box	1
34	Cover	1
35	Handle	1
37	Thermal Overload Protection	1
38	T_Slot Bolt	2
39	Socket Cap Screw M6X30	2
40	Socket Cap Screw M10X40	2
41	Socket Cap Screw M5X12	6
42	Socket Cap Screw M10X50	2
43	Socket Cap Screw M10X35	2
44	Socket Cap Screw M6X35	8
45	Socket Cap Screw M10X16	4
46	Socket Cap Screw M10X30	4
47	Socket Cap Screw M10X60	4
48	Socket Cap Screw M6X16	12
49	Hand Nut Depth Control	2
51	Hex. Socket Cup Head Screw M5X20	4
52	Washer 5	6
53	Spring Washer 10	16
54	Spring Washer 6	4
55	Washer 10	6
56	Washer 4	4
57	Big Washer 6	4
58	Hex.Nut M6	4
59	Hex.Nut M10	4
60	Hex.Nut M8	2
61	Hex.Nut M12	1
62	Hex.Socket Countersunk Screw M8X20	4
63	Cross Recessed Countersunk Screw M8X25	4
64	Cross Recessed Pan Head Tapping Screw St4.2X13	4
65	Grease Nipples	3
66	Gasket	1
67	Cross Recessed Countersunk Screw M4X12	4

68	Lip Type Seal	4
69	Set Screw With Flat End M5X5	2
70	Key 4X10	2
71	Ratchet Lever	4
72	Connection Plate	2
73	Big Washer 6	6
75	Rip Fence	1
76	Right Extension Fence	1
77	Spring	2
78	Knurled Knob	2
79	Stud,Flip Stop	2
80	Spacer	2
81	Right End,Extension Fence	1
82	T-Block	2
83	Flip Stop Base	2
84	Flip Stop	2
85	Ratchet Lever	2
86	Semi Round Square Nect Bolt M6X25	2
87	Set Screw With Flat End M5X5	8
88	Lock Plate	2
90	Left End,Extension Fence	1
91	Left Extension Fence	1
93	Socket Cap Screw M8X12	4
94	Hex.Nut M8	4
95	Washer 8	4
96	T-Block	2
97	Knob M6X25	2
98	Cross Recessed Pan Head Tapping Screw St4.2X10	4
100	Switch	1
101	Conduit Connector	2
102	Strain Relief	1

Exploded Drawing of Pneumatic

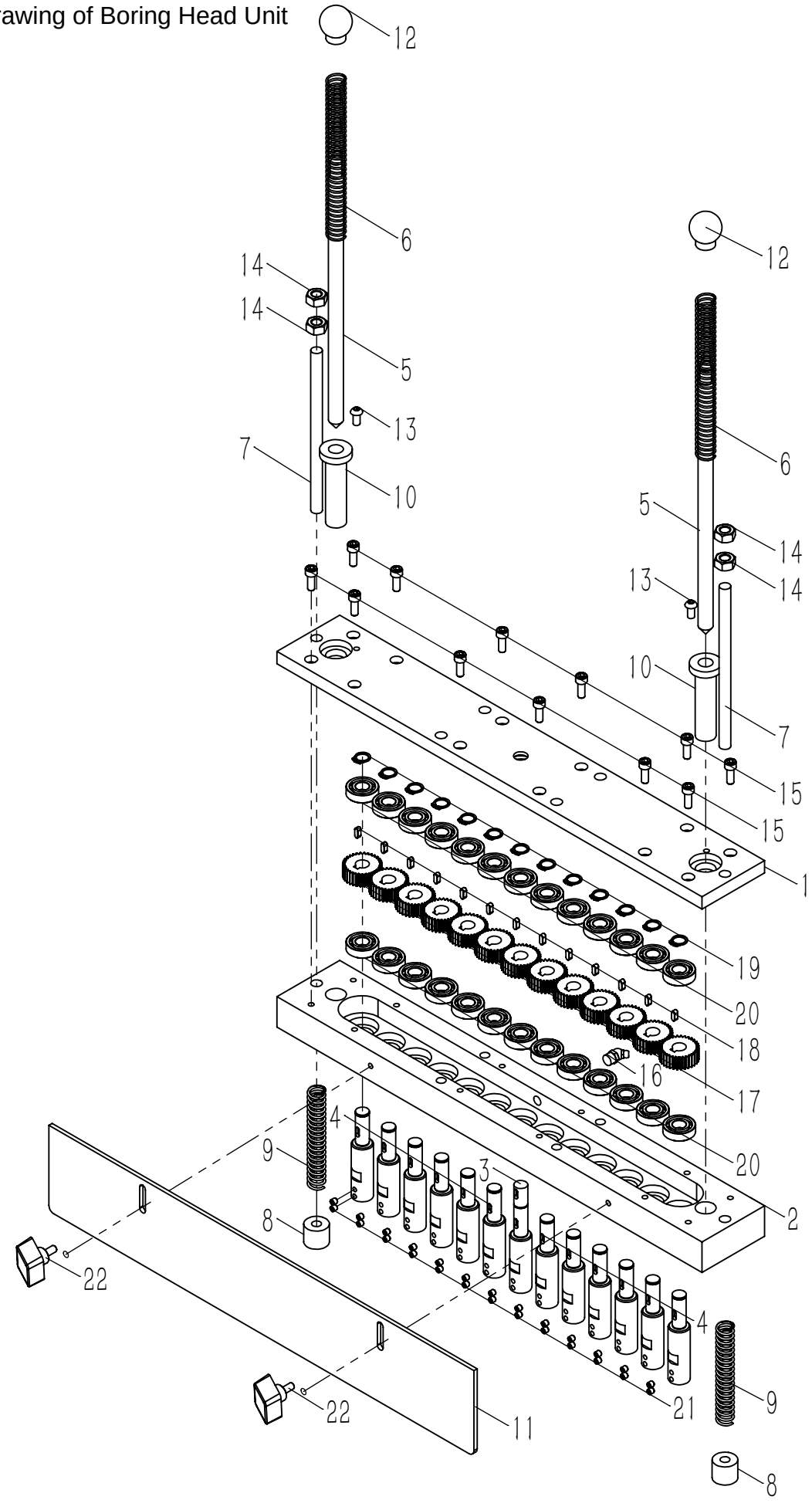


Parts List of Pneumatic

Part No.	Description	Qty
1	Base Plate	1
2	Head Support Block	1
3	Left Side Support Plate	1
4	Vertical Carrier	1
5	Top Plate	1
6	Right Side Support Plate	1
7	Vertical Shaft	2
8	Boring Head Assy	1
9	Pu Tube	1
10	Motor	1
11	Pe Passing Pipe	2
12	Pipe Union Male Pc08-02	1
13	Foot Switch Assy 4F210G-1/4	12
14	Rear Spacer Bar	1
15	Slide Bar	2
16	Table Support Tube	2
17	Rear Cover	1
23	Table	1
24	Depth Adjustment Rod	1
25	Spider Joint Ring	1
28	Switch Box	1
29	Cover	1
31	Thermal Overload Protection	1
32	Ratchet Lever	4
33	T_Slot Bolt	2
34	Socket Cap Screw M5X12	8
35	Socket Cap Screw M10X50	2
36	Socket Cap Screw M10X35	2
37	Socket Cap Screw M6X35	4
38	Socket Cap Screw M10X16	4
39	Socket Cap Screw M10X30	6
40	Socket Cap Screw M10X60	4
41	Socket Cap Screw M6X16	12
42	Hand Nut Depth Control	2
44	Hex. Socket Cup Head Screw M5X20	4
45	Washer 5	7
46	Spring Washer 10	18
47	Spring Washer 6	4
48	Washer 10	8
49	Washer 4	4
50	Hex.Nut M10	4
51	Hex.Nut M8	2
52	Hex.Nut M12	1
53	Hex.Nut M8	4
54	Hex.Socket Countersunk Screw M8X20	4
55	Cross Recessed Countersunk Screw M8X25	4
56	Cross Recessed Pan Head Tapping Screw St4.2X13	4
57	Grease Nipples	3

58	Gasket	1
59	Cross Recessed Countersunk Screw M4X12	4
60	Lip Type Seal	4
61	Set Screw With Flat End M5X5	2
62	Key 4X10	2
63	Cylinder Support Block	1
64	Air Cylinder	1
65	Bracket	1
66	Pressure Gauge	1
67	Air Regulator/Lubricator Assy	1
68	Air Inlet Connector	1
70	Pipe Elbow Male	1
71	Regulating Valve	2
73	Socket Cap Screw M8X25	2
74	Socket Cap Screw M8X30	2
75	Socket Cap Screw M8X35	3
76	Washer 8	3
77	Spring Washer 8	3
78	Strain Relief	1
79	Conduit Connector	2
80	Big Washer 6	6
81	Rip Fence	1
82	Right Extension Fence	1
83	Spring	2
84	Knurled Knob	2
85	Stud,Flip Stop	2
86	Spacer	2
87	Right End,Extension Fence	1
88	T-Block	2
89	Flip Stop Base	2
90	Flip Stop	2
91	Ratchet Lever	2
92	Semi Round Square Nect Bolt M6X25	2
93	Set Screw With Flat End M5X5	8
94	Lock Plate	2
95	Scale	1
96	Left End,Extension Fence	1
97	Left Extension Fence	1
99	Socket Cap Screw M8X12	4
100	Hex.Nut M8	4
101	Washer 8	4
102	T-Block	2
103	Knob M6X25	2
104	Cross Recessed Pan Head Tapping Screw St4.2X10	4
106	Connection Plate	2
107	Switch	1

Exploded Drawing of Boring Head Unit



Parts List of Boring Head Unit

Part No.	Description	Qty
1	Top Cover	1
2	Tool Apron	1
3	Drive Spindle	1
4	Slave Spindle	12
5	Indexing Pin	2
6	Indexing Compression Spring	2
7	Holddown Shaft	2
8	Holddown Pad	2
9	Holddown Compression Spring	2
10	Shaft Housing	2
11	Guard Plate	1
12	Knob	2
13	Allen Button Head Screw M6X12	2
14	Nut M10	4
15	Socket Cap Screw M6X16	12
16	Grease Nipple	1
17	Spur Gear	13
18	Flat Key 4X10	13
19	Ring Shield D=12	13
20	Bearing 6001	26
21	Set Screw With Flat End M5X5	26
22	Knob M6X14	2