

# BENCH DRILL MACHINE MANUAL



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# SPARE PART & INSTRUCTION MANUAL

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## 1. Safety Instructions

- All contact points on the drilling machine power supply connectors should be reliable without such inferiority phenomena as being loosened or no contact.
- Please carefully read this user instruction to get detailed knowledge on the drilling machine structure and performance and thereby avoid the potential risks.
- Children are not allowed to have access to the drilling machine at any time, and all visitors shall be kept outside the safety distance.
- The drilling machine is not allowed to operate at overload and failure status, in order to avoid the occurrence of accident.
- Before the connection of power supply, it's required to check the power supply switch and ensure it's in OFF position.
- Drilling machine power supply shall be equipped with reliable grounding.
- Read and understand all instructions. Failure to follow all instructions may result in serious injury.
- The warnings, cautions, and instructions in this manual cannot cover all possible conditions or situations that could occur. Exercise common sense and caution when using the drill press. Always be aware of the environment and ensure that the drill press is

used in a safe and responsible manner.

- DO NOT modify the drill press in any way. Unauthorized modification may impair the function and/or safety and could affect the life of the drill press. There are specific applications for which the product was designed.
- DO NOT allow persons to operate or assemble the drill press until they have read this manual and have developed a thorough understanding of how it works.
- Do Not operate the Drill Press until it is assembled and you have read the instructions.
- Do not operate the Drill Press unless you are familiar with its safe operation. If you are not familiar with the operation of a Drill Press, seek advice from a qualified individual.
- If you are using a bench top Drill Press, it must be securely fastened to a stand or bench.
- If you are operating a floor Drill Press it must be securely fastened to the floor.
- Always clear the table and work area before turning on the Drill Press.
- Never place hands near the drill bit, cutting

tool or accessory.

- Never attempt to do set-up work, assembly or layout work on the Drill Press while it is in operation.
- Never start the Drill Press with the drill bit, cutting tool or accessory in contact with the work piece.
- Always adjust the depth stop to avoid drilling into the table surface.
- Always clamp the work piece to the table.
- Always support large work-pieces at the same height as the table.
- Always wear a face shield and safety glasses while operating the Drill Press.
- Always clean the work surface and work area when finished operating the Drill Press.
- Always disconnect the power when adjusting or performing maintenance on the Drill Press.
- Always disconnect the power when finished using the Drill Press to prevent accidental operation.

## **Bench Type Drilling Machine**

**SI-BD-20**

**TECHNICAL PARAMETERS.**

1.	Drilling capacity in steel	<b>20mm (<math>\frac{3}{4}</math>" )</b>
2.	Overall size of rectangular table	<b>330mm x 455mm</b>
3.	Working surface of rectangular table	<b>280mm x 380mm</b>
4.	Vertical adjustment of table	<b>240mm</b>
5.	Working surface of base approx	<b>285mm x 290mm</b>
6.	Clamping surface of base	<b>285mm x 290mm</b>
7.	Maximum spindle travel	<b>125mm</b>
8.	Maximum distance from spindle to base ( spindle nose to base)	<b>240mm</b>
9.	Maximum distance from spindle to base (spindle nose to base)	<b>415mm</b>
10.	Distance from spindle centres to column centre	<b>230mm</b>
11.	Distance from spindle centre to column edge throat	<b>195mm</b>
12.	Overall height x width x depth	<b>930mm x 370mm x 705mm</b>
13.	No. of feeds and range of feeds	<b>8</b>
14.	Range of speed	<b>78-140-250-440-540-960-1710-3040-</b>
15.	No. of feeds and range of feeds	<b>Hand operated</b>
16.	Hardness of wearing surface	<b>200 +/- 10% BHN</b>
17.	Net weight of the machine	<b>105 KGS approx.</b>
18.	Horse power of the motor	<b>0.75HP</b>

## **Bench Type Drilling Machine**

### **SI-BD-20**

#### **LIST OF ACCESSORIES & TOOLS**

<b>1.</b>	<b>M.T. Socket 2</b>	<b>1 off</b>
<b>2.</b>	<b>Drift Knock Out</b>	<b>1 off</b>
<b>3.</b>	<b>Co-ordinate Table</b>	<b>1 on</b>
<b>4.</b>	<b>Reversing switch Equipment</b>	<b>1 on</b>
<b>5.</b>	<b>Boring Head</b>	<b>1 on</b>
<b>6.</b>	<b>Drilling Collets with quick changing Chuck</b>	<b>1 on</b>
<b>7.</b>	<b>Quick Change Chuck</b>	<b>1 on</b>
<b>8.</b>	<b>Parallel Jaw vice capacity 80 mm</b>	<b>1 off</b>

### **3. INSTALLATION**

Please use the bolts to directly install and fix the drilling machine on the machine frame. When the drilling machine is put on the ground base, please adjust the adjustable steel pad on the base to make the drilling machine working table at level position.

#### **Installing the Chuck & Arbor**

- Open the chuck jaws as wide as possible to prevent any damage.
- Make sure that the arbor end and receiving tapered hole in the chuck body rear are clean of grease, oil, rust protection and any burrs or scratches that disrupt the taper surface.
- Carefully insert the chuck and arbor assembly into the spindle, making sure to align the flat part of the arbor with the spindle.
- Using a mallet or wood and hammer, drive the chuck and arbor assembly into the spindle. This will properly seat the chuck assembly on the spindle.

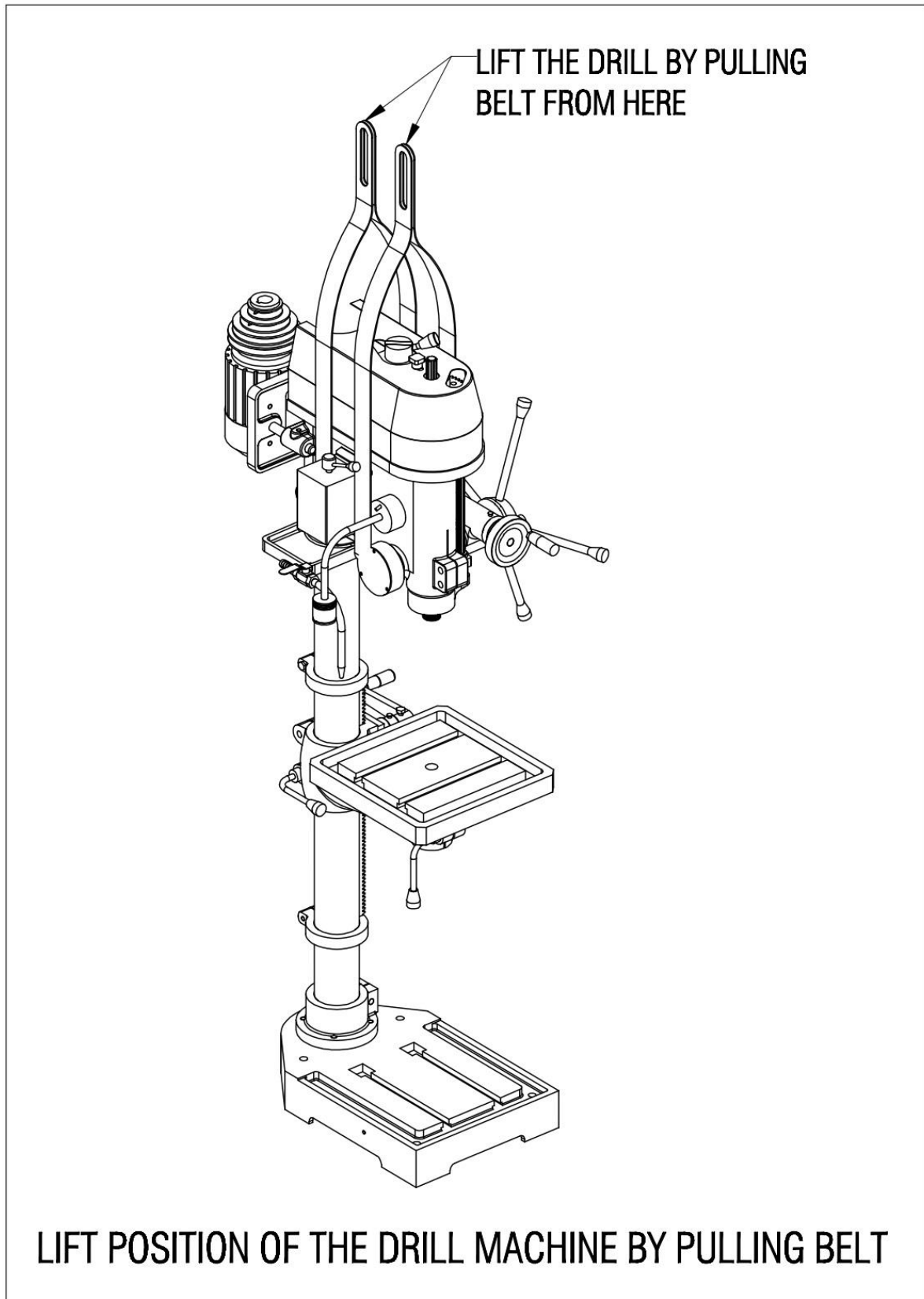


- Close the chuck jaws with the chuck key provi

## **Removing the chuck**

- Open the chuck jaws as wide as possible to prevent damage.
- Lower the spindle until the slot in the spindle is exposed.
- Position the table approximately 1/2" below the extended chuck.
- Turn the chuck until a through hole is exposed spindle.
- Insert the Key-drift into the slot.

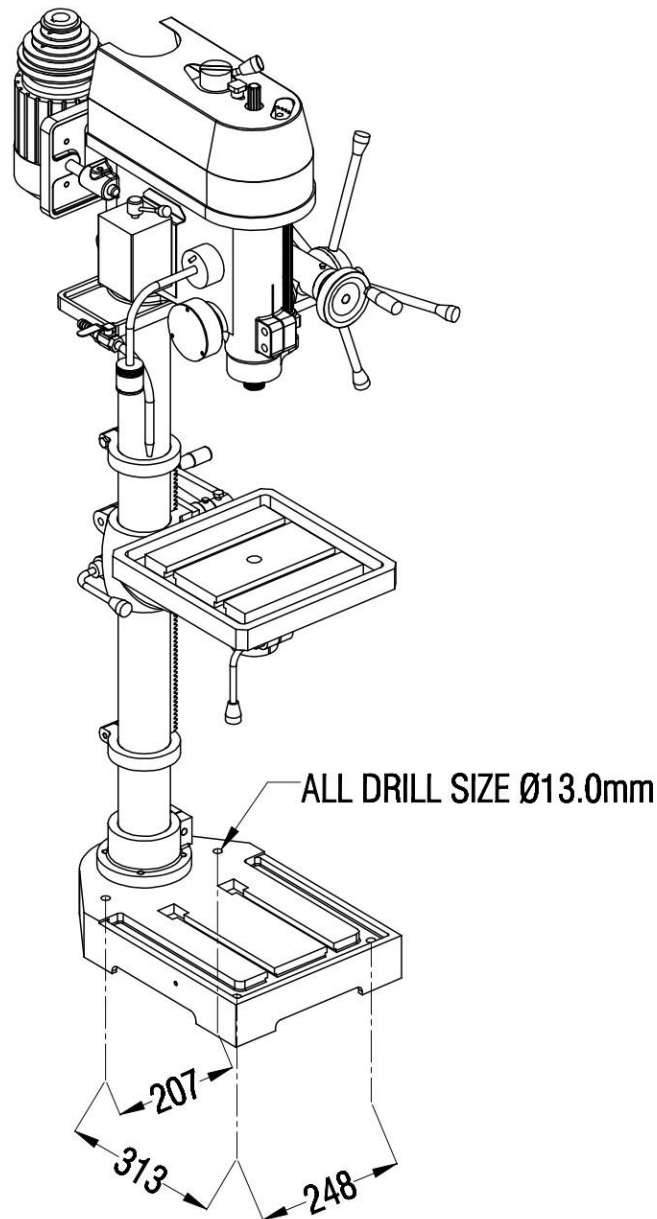
## **LIFTING ARRANGEMENT**



### ➤ **ERECTION**

The machine should be installed at a place, which provides sufficient room for its operation and maintenance (see foundation plan Fig.4).

The Drill can be free standing on hard. And stable shop floor, for alignment test and light jobs but should have fixed installation for Maximum performance by bolting it down by means of m/10 bolts.



Depth of foundation depends  
On quantity of labour but should be  
100mm (~14") min

### ➤ Levelling

The Drill can give satisfactory performance only if it is placed on a well-laid foundation.

Made according to the foundation drawing and accurate levelling .The machine must be levelled accurately to values specified in the test chart (supplied along with the machine).

Use precision level graduated to 0.02/0.05mm/meter of level bottle. Follow the procedure.

**A. TRANSVERSE LEVEL:**

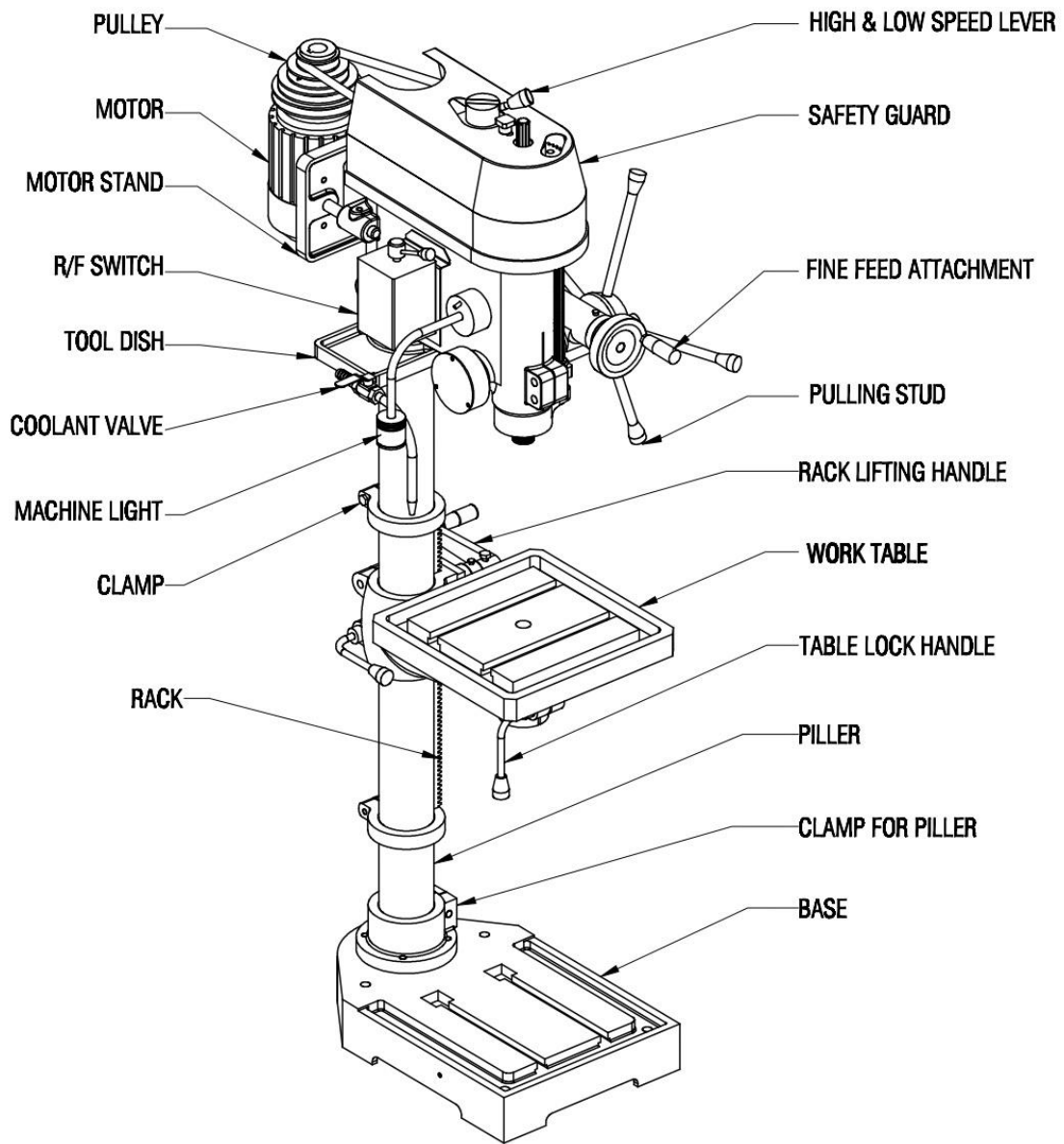
- a) Keep the precision level on base at centre in transverse Position (a)

**B. LONGITUDINAL LEVEL:**

After properly levelling the machine, run the machine for about 2 hours at various speeds and check levels. Reset if required.

Then foundation bolts are grouted in the cement to cure (3-4 days). The foundation bolts are then tightened without undue force. Periodically check-up bed level to ensure continued drill accuracy.

**4. MACHINE PARTS LIST**



## NOMENCLATURE OF THE DRILL MACHINE PARTS

### 5. MAINTENANCE

- Check the power cord and plug for any wear or damage.
- Check for any loose screws, hardware or parts.
- Check the area to make sure it is clear of any misplaced tools, lumber, cleaning supplies, etc. that could hamper the safe operation of the machine.
- To avoid a build-up of wood dust, regularly clean all parts of the machine using a soft cloth, brush or compressed air. A general cleaning should be done after every use to avoid future problems and ensure the machine is in ready condition for its next use.
- Lubricate the table bracket and locking lever bolts to keep them operating smoothly.
- Clean the column on a regular basis to prevent the build-up of dust, drilling residue and rust. Treat the posts with a dry lubricant spray or a light coating of wax. Do not use ordinary oil which will collect dust and hamper the movement of parts along the column
- Keep the drive belt and pulley surfaces free of oil and grease. Periodically, check the drive belt for wear and replace if necessary.

## **6. BENCH DRILL USE AND CARE**

- Do not force the tool. Tools do a better and safer job when used in the manner for which they are designed. Plan your work, and use the correct tool for the job.
- Check for damaged parts before each use. Carefully check that the tool will operate properly and perform its intended function. Replace damaged or worn parts immediately. Never operate the tool with a damaged part.
- Do not use a tool with a malfunctioning switch. Any power tool that cannot be controlled with the power switch is dangerous and must be repaired by an authorized service representative before using.
- Disconnect the power/air supply from the product and place the switch in the locked or off position before making any adjustments, changing accessories, or storing the tool. Such preventive safety measures reduce the risk of starting the tool accidentally.
- Use only accessories that are recommended by the manufacturer for use with your tool. Accessories that may be suitable for one tool may create a risk of injury when used with another tool.
- Never use an accessory that has a lower operating speed or operating pressure than the tool itself.

## PROBLEM (TROUBLE SHOOTING & REMEDIES)

SI.No.	PROBLEMS	CAUSES	REMEDIES
1	MACHINE VIBRATES WHILE RUNNING	JOB RUN OUT & IMPROPER WORK HOLDING	CHECK & THROUGH TH JOB
		IMPROPER LEVELLING	LEVEL M/c properly as per chart by micro level
2	Machine vibrates while machining : Chatter marks on work piece	Improper levelling	Level machine properly
		V-belt tension not proper	Adjust the belt tension
		Excusive tool over hongs	Reduce over hang and clamp more rigidly
		Main spindle bearing may be fatuity	Adjust preload
		Wrong tool – in proper tool height	Check for proper tool material and tool Set
3	Spindle stops under load	V-belt slack	Adjust belt tension
4	Noise in the head stock	No proper lubrication	Check and rectify
		Gears damaged & not proper engage	Replace damaged gears check and replace
		Bearing seized	Replace bearing