

V BELT DRIVEN DRILLING MACHINES

HU 16-2 TOPLINE

HU 16-4 TOPLINE

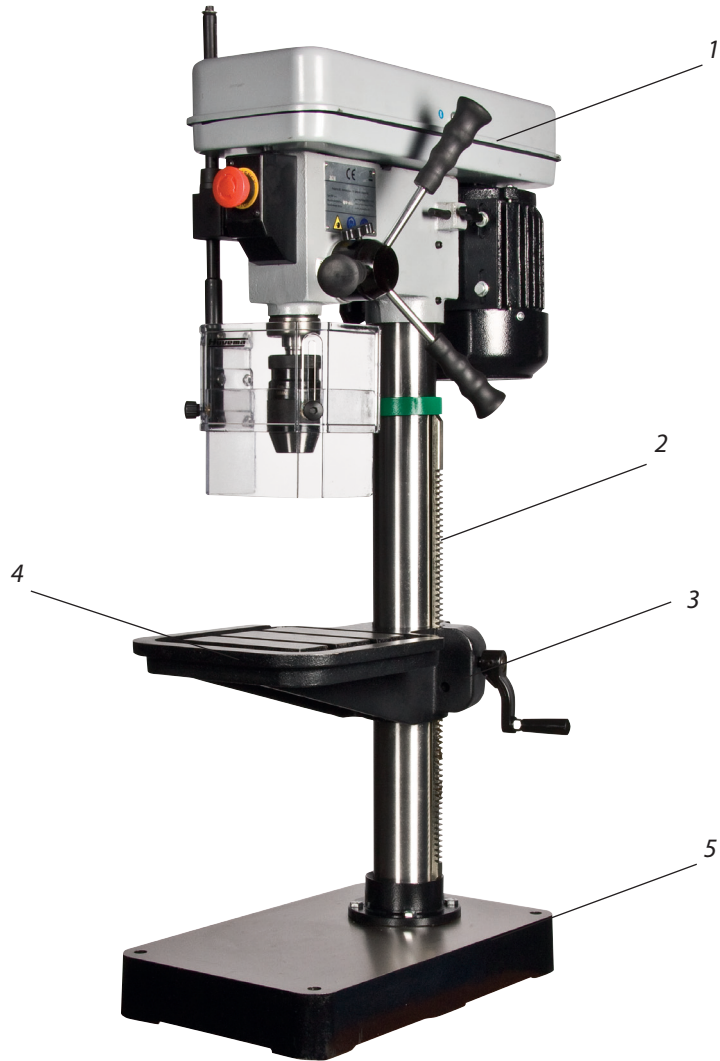


Fig. A - Main parts



Fig. 1

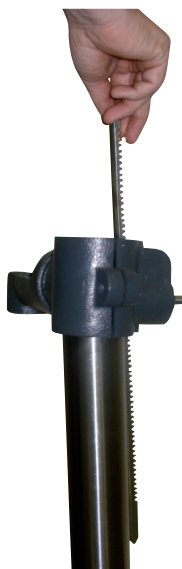


Fig. 2



Fig. 3

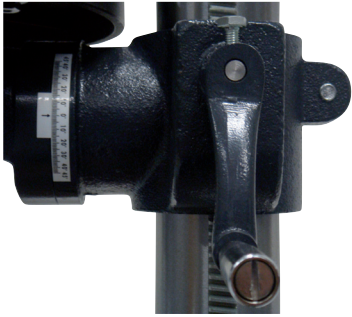


Fig. 4

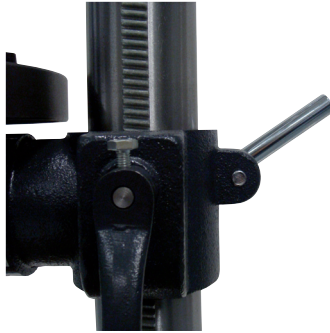


Fig. 5

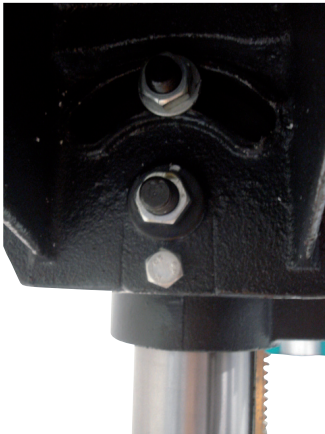


Fig. 6



Fig. 7



Fig. 8



Fig. 9

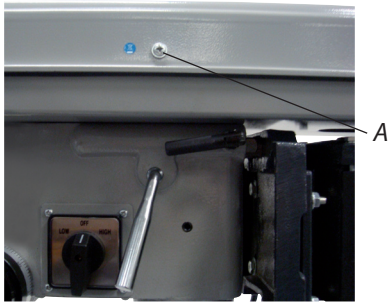


Fig. 10

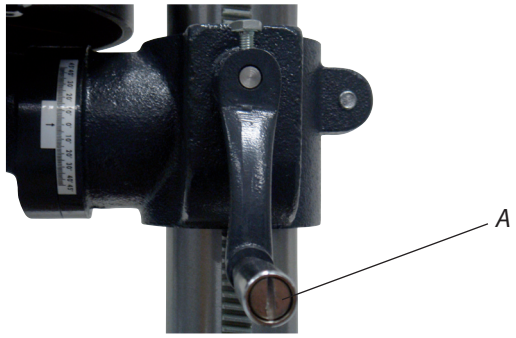


Fig. 11

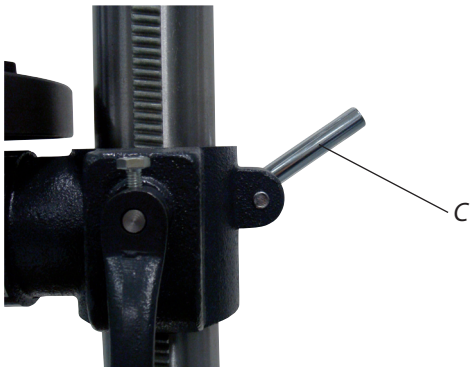


Fig. 12

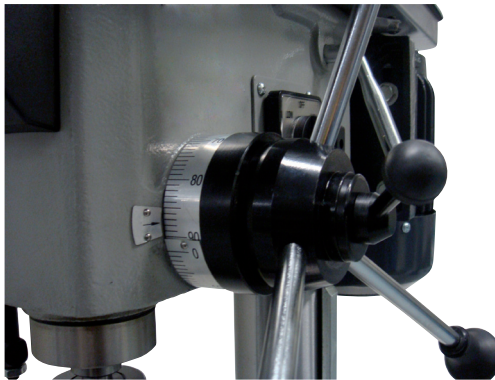


Fig. 13



Fig. 14

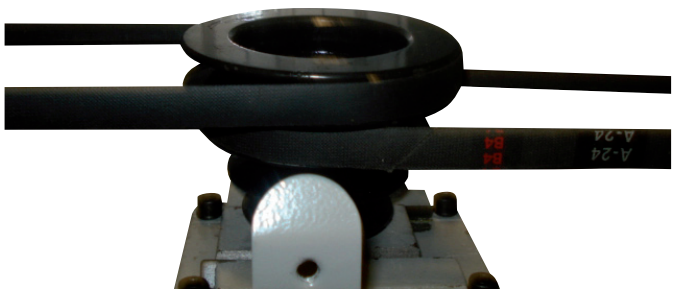


Fig. 15



Fig. 15A



Fig. 15B

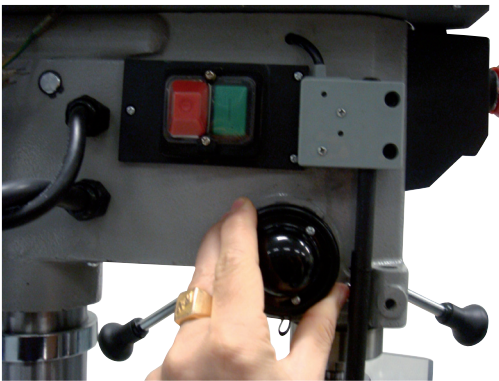


Fig. 16

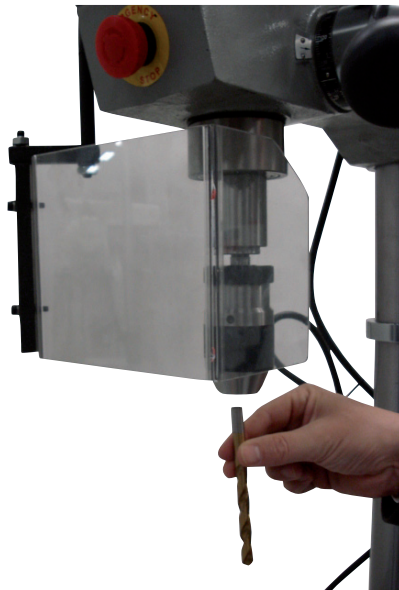


Fig. 17



Fig. 18

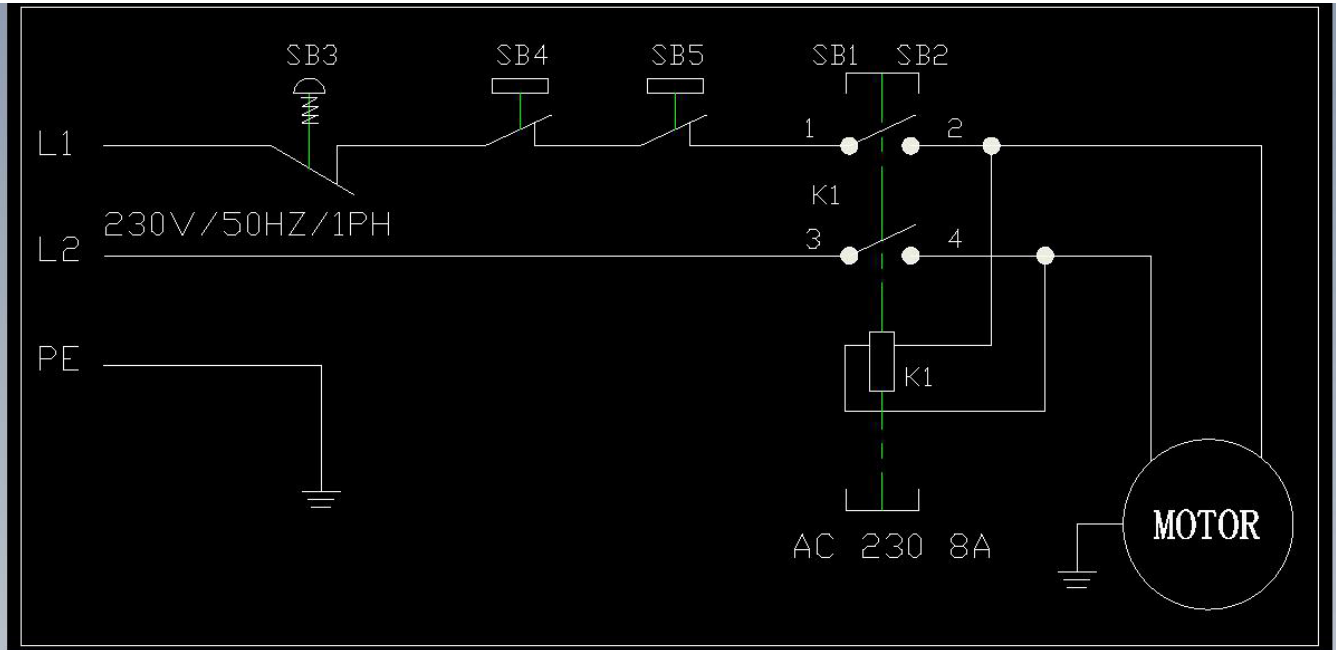


Fig. 19

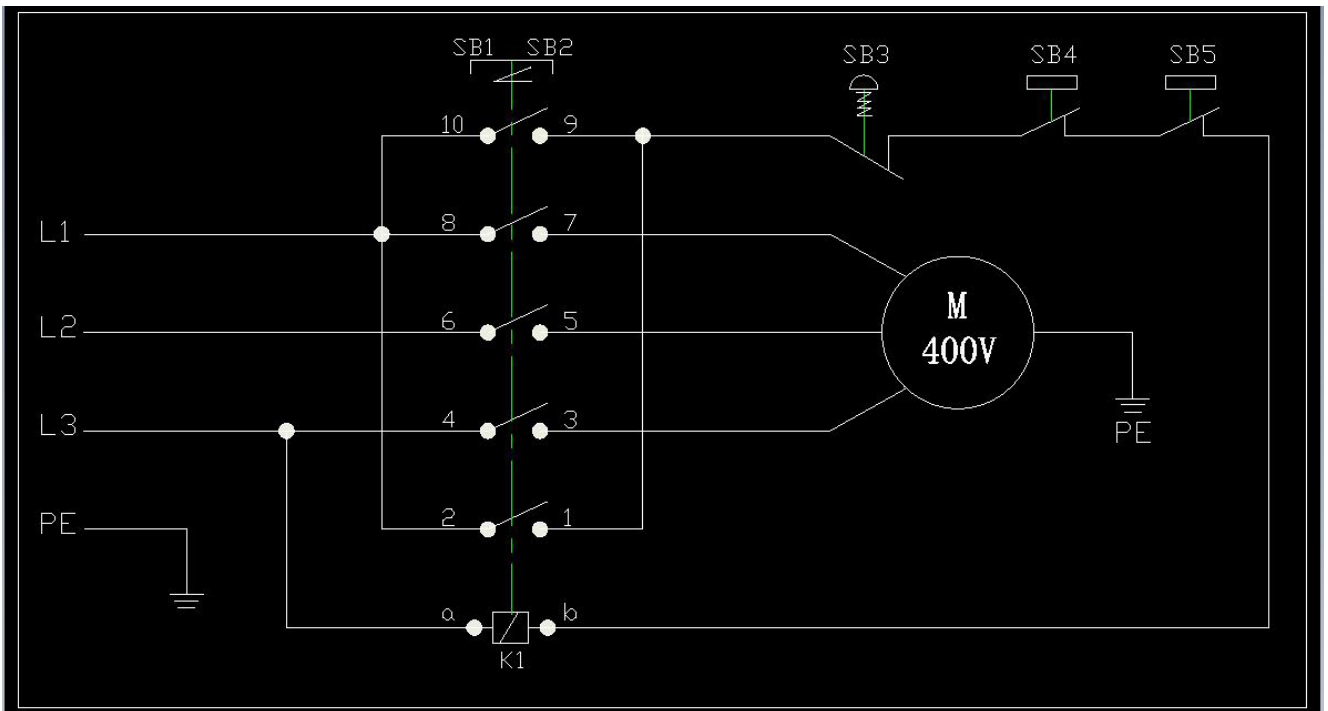


Fig. 20

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BENCH DRILLING MACHINES HU 16-2 TOPLINE /HU 16-4 TOPLINE

1. GENERAL SAFETY RULES FOR ALL MACHINES

N.B.: Read the instructions carefully in order to avoid any problems.

As with all machinery there are certain hazards involved with operation and use of this machine. 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 occur. Observe these rules insofar as they are applicable to this particular machine.

This machine was designed for certain applications only. We strongly recommend that this machine NOT be modified in any way and/or used for any application other than for which it was designed.

If you have any questions relative to its application DO NOT use the machine until you have contacted your dealer.

1. For your own safety read the instruction manual before operating the tool.
2. Keep all guards in place and in working order.
3. Ground all tools.
4. Remove adjusting keys and wrenches. Make a habit of checking the machine before turning it on.
5. Keep the work area clean. Cluttered areas and benches invite accidents.
6. Do not use in a dangerous environment, such as damp or wet locations or expose to rain. Always keep the work area well-lit.
7. Keep children and visitors away. They must be kept at a safe distance from the machine at all times.
8. Make sure that the work area is not accessible to unauthorised persons. Use padlocks, master switches, remove starter keys etc.
9. Never overload the machine. The capacity of the machine is at its largest when properly loaded.
10. Do not force the machine or attachment to do a job for which it was not designed.
11. Wear proper apparel. No loose clothing, gloves, neckties, rings, necklaces, bracelets or jewellery: they may get caught in moving parts. No slip footwear is recommended. Wear a hairnet to contain long hair.
12. Always wear safety glasses and work according to safety regulations. Use a face or dust mask if operation is dusty.
13. Always secure workpiece tightly using a vise or clamping device. This will keep both hands free to operate the machine.
14. Do not overreach. Keep your proper footing and balance at all times.
15. Maintain tools in top condition. Keep them sharp and clean. Read the instructions carefully and follow the instructions for cleaning, lubrication and tool replacement.
16. Lubricate the machine and fill all oil reservoirs before operation.
17. Disconnect tools before servicing and when changing accessories such as blades, bits, cutters etc.
18. Use only recommended accessories. Consult the owner's manual for recommended accessories. The use of improper accessories may cause hazards.
19. Avoid accidental starting. Make sure the on/off switch is in the "OFF" position before plugging in the power cord.
20. Never stand on the machine or tools. Serious injury could occur if the machine is tipped or if the cutting tool is accidentally touched.
21. Check damaged parts. Replace or repair damaged parts immediately. Check machine for alignment of moving parts, binding of moving parts, breakage of parts, mounting and any other conditions that may affect its operation.
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. Do not turn power off until it has come to a complete stop.
24. Alcohol, medication, drugs. Never use the machine while under the influence of alcohol, medication or drugs.
25. Make sure the tool is disconnected from the power supply, before servicing, repairing etc.
26. Keep the original packing for future transport or relocation of the machine.

ADDITIONAL SAFETY RULES

Always keep in mind that:

- the machine must be switched off and disconnected from the power supply during maintenance and repairs,
- clamped workpieces may only be measured when the machine is switched off.

Never lean over the machine, mind loose clothing, ties, jewellery etc. and wear a cap.

Do not remove safety devices or guards. Never use the machine while a guard is open.

Always use safety glasses for machining rough materials.

Burrs and chips should only be removed using a sweeper or other aid, never with your bare hands!

Never leave the machine running unattended.

2. INSTRUCTIONS FOR USING THIS MACHINE

Read the safety rules carefully and always observe them. Examine the applications of this machine and beware of possible risks.



Always wear safety glasses!

1. Caution: This drill press is intended for use only with drill bits. The use of other accessories may be hazardous.
2. Correct drilling speeds: Factors which determine the best speed to use in any drill press operation are the kind of material being worked on, the size of the hole, the type of drill or other cutter and the quality of the cut desired. The smaller the drill, the greater the required RPM. In soft materials, the speed should be higher than for hard materials.
3. Drilling in metal: Use clamps to hold the work when drilling in metal. The work should never be held with bare hands. The flutes of the drill may seize the work at any time, especially when breaking through the stock. If the piece is whirled out of the operator's hand, he may be injured. In any case, the drill will break when the work strikes the column.
4. The work must be clamped firmly while drilling, any tilting, twisting or shifting results not only in a rough hole, but also increases the risk of the drill breaking. For flat work, lay the piece on a wooden base and clamp it firmly down against the table to prevent it from turning. If the piece is of irregular shape and cannot be laid flat on the table, it should be securely blocked and clamped.
5. The chuck must be securely fastened to the spindle so that it can't separate from the spindle.
6. Remove the key from the chuck after adjustment.
7. The tool has to be disconnected from the power supply while the motor is being mounted or connected.
8. Secure the tool to the supporting structure if, during normal operation, there is any tendency for the tool to tip over, slide or walk on the supporting surface.
9. The set screws of the head frame should be secured tightly before using the machine.

3. UNPACKING

Unpack the carton and check for the parts below:

| Fig. A. | Main parts | Qty. |
|---------|--------------------|------|
| 1 | Head | 1 |
| 2 | Column with flange | 1 |
| 3 | Bracket | 1 |
| 4 | Table | 1 |
| 5 | Base | 1 |



If you find any parts missing or damaged, contact your dealer.

4. ASSEMBLY

- Place the column on the base and align the holes in the column support with the holes in the base (fig. 1).
- Secure the column with the bolts and washers.
- Take off the collar and the rack. (fig. 2)
- Install the bracket together with the rack.
- Install the collar and tighten firmly (fig. 3)
- Install the bracket handle and clamp bolt. Tighten the handle with the set screw and tighten the clamp bolt (fig. 4 and 5).
- Install the table and clamp it with two bolts (fig. 6).
- Carefully put the head frame over the column and slide it into position. Align the head frame with the table and base. Fix the set screws on the right side of the head to lock it into position.
- Screw the knob on each feeding handle, install them into the hub of the pinion shaft (fig. 7).
- Insert the arbour into the spindle and pull the feeding handle down to press it inward.
- Open the chuck jaws completely by turning the attached chuck key counter-clockwise. Put a piece of scrap wood on the table to protect the chuck nose.
- Pull the feeding handle down and press the chuck against the scrap wood until the chuck is forced into the spindle (fig. 9).
- Install the knob and screw of the upper pulley cover (A, fig. 10).



Clean the taper for the drill chuck with a clean cloth.

5. ADJUSTMENT

5.1 TABLE ADJUSTMENT

Height adjustment:

To adjust up or down, loosen the clamp bolt and then adjust the table to the desired position by turning the table bracket handle (A, fig. 11).

360° swing:

Loosen the clamp bolt (C) and then swing the table to the appropriate position and retighten the clamp bolt (fig. 12).

5.2 FEED DEPTH ADJUSTMENT

Loosen the clamp bolt and move to the desired depth. Then, re-tighten the clamp bolt (fig. 13).

5.3. SPEED ADJUSTMENT

Figures 14, 15, 15A and 15B

1. Pull the plug.
2. Open the pulley case and loosen the belt tension lock handle.
3. Choose the speed for the drilling operation and move the belt to the correct position.
4. Push the motor backward until a moderate belt tension is acquired. Re-tighten the handle again.

| Diameter of drill | | Cast steel | | Tool steel | | Cast iron | | Mild steel | | Alum. and copper | |
|-------------------|------|--|--------|------------|--------|-----------|--------|------------|--------|------------------|--------|
| | | Cutting speed | | | | | | | | | |
| | | m/min | ft/min | m/min | ft/min | m/min | ft/min | m/min | ft/min | m/min | ft/min |
| | | 12 | 40 | 18 | 60 | 24 | 80 | 30 | 100 | 60 | 200 |
| mm | Inch | Speed range based on drilling diameter and cutting speed | | | | | | | | | |
| 2 | 1/16 | 1910 | 2445 | 2865 | 3665 | 3820 | 4890 | 4775 | 6110 | 9550 | 12225 |
| 3 | 1/8 | 1275 | 1220 | 1910 | 1835 | 2545 | 2445 | 3185 | 3055 | 6365 | 6110 |
| 5 | 3/16 | 765 | 815 | 1145 | 1220 | 1530 | 1630 | 1910 | 2035 | 3820 | 4075 |
| 6 | 1/4 | 610 | 610 | 955 | 915 | 1275 | 1220 | 1590 | 1530 | 3180 | 3055 |
| 8 | 5/16 | 480 | 490 | 715 | 735 | 955 | 980 | 1195 | 1220 | 2390 | 2445 |
| 10 | 3/8 | 380 | 405 | 570 | 610 | 765 | 815 | 955 | 1020 | 1910 | 2035 |
| 11 | 7/16 | 350 | 350 | 520 | 525 | 700 | 700 | 870 | 870 | 1740 | 1745 |
| 13 | 1/2 | 300 | 305 | 440 | 460 | 590 | 610 | 735 | 765 | 1470 | 1530 |
| 16 | 5/8 | 240 | 245 | 360 | 365 | 480 | 490 | 600 | 610 | 1200 | 1220 |
| 19 | 3/4 | 190 | 205 | 285 | 305 | 380 | 405 | 480 | 510 | 955 | 1020 |

5.4 BELT TENSION ADJUSTMENT

For proper belt tension: Use a light pressure on the V-belt. The distance should be 13 mm

5.5 QUILL SPRING ADJUSTMENT

Figure 16

- Pull the knob towards you and move it to the next or previous notch.
- Check the quill while feeding for smooth and unrestricted movement.

6. USAGE

6.1 INSTALLING DRILLS

Insert the drill into chuck jaws about 25.4 mm long. When using a small drill, do not insert it so far that the jaws touch the flutes of the drill. Make sure that the drill is centered in the chuck before tightening the chuck with the key (fig. 17).

6.2 POSITIONING THE WORK PIECE

Always place a piece of wood or plywood on the table. This will prevent "splintering" or making heavy burrs on the underside of the work piece as the drill breaks through. The wood should make contact with the left side of the column (fig. 18).

6.3 USING THE VICE

For small work pieces that cannot be clamped to the table, use a drill press vice. The vice must be clamped or bolted to the table.

7. TROUBLESHOOTING

| Problem | Possible cause | Possible solution |
|---------------------------|-----------------------------------|---|
| Too much noise | Wrong belt tension | Adjust tension |
| | Spindle not lubricated | Remove spindle quill and lubricate |
| | Pulley loose | Tighten pulley |
| | V-belt loose | Adjust belt tension |
| | Worn bearing | Exchange bearing |
| Play of the chuck | Drill chuck loose | Tighten by pressing chuck against table |
| | Worn spindle shaft or bearing | Replace spindle shaft or bearing |
| | Worn drill chuck | Replace drill chuck |
| Motor won't start | Power supply | Check power cord |
| | Motor connections | Check motor connections |
| | Switch connections | Check switch connections |
| | Motor windings burned | Replace motor windings |
| | Switch broken | Replace switch |
| Drill binds in work piece | Excessive pressure on feed handle | Apply less pressure |
| | V-belt loose | Check belt tension |
| | Drill chuck loose | Tighten drill with key |
| | Speed too high | Adjust speed |
| Drill burns or smokes | Wrong speed | Check speed table |
| | Chips not discharging | Clean drill |
| | Dull drill | Check sharpness and taper |
| | Needs lubrication | Lubricate during drilling |
| | Wrong feed | Apply less pressure |
| Table difficult to raise | Needs lubrication | Lubricate with a little oil |
| | Bent rack | Straighten |
| | Clamp bolt locked | Loosen clamp bolt |

8. MAINTENANCE



Warning!

Turn the machine off and disconnect it from the mains before maintenance or repairs are performed!

- Frequently blow out any dust that may accumulate inside the motor.
- Apply a light coat of car wax to the table and column to keep the surfaces clean.
- If the power cord is worn, damaged or cut, have it replaced immediately by a qualified electrician.

8.1 LUBRICATION

All ball bearings have been greased and do not require any further lubrication. Periodically lubricate the gear and rack table elevation mechanism, the splines (grooves) in the spindle and the rack (teeth).

9. ELECTRICAL SYSTEM

Figures 19 and 20

- Check the tension of the machine and the power source before connecting. They should match.
- Always shut down the machine after using it and remove the plug from the socket. Never pull the cable to remove the plug, this will lead to damage to the cable with a possible shortcut as a result.

9.1 GROUNDING

- In the event of a malfunction or breakdown, grounding provides a path of least resistance for electric current to reduce the risk of an electric shock. This machine is provided with a grounded cable and 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 if it will not fit in the outlet. Have the proper outlet installed by a qualified electrician.
- Improper connection of the equipment grounding conductor can result in a risk of electric shock. The conductor with insulation having an outer surface that is green with or without yellow stripe is the equipment grounding conductor. If a repair or a 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 if the grounding instructions are not completely understood, or in doubt as to whether the tool is properly grounded.
- Repair or replace damaged or worn cords immediately.

9.2 PRODUCT SPECIFICATIONS

| Model | HU16-2 Topline | HU16-4 Topline |
|--------------------------------|---------------------|---------------------|
| Motor power | 0,38 kW | 0,38 kW |
| Drilling capacity | 16 mm | 16 mm |
| Drilling depth | 80 mm | 80 mm |
| Spindle taper | MT2 | MT2 |
| Number of speeds | 12 | 12 |
| Spindle speed range | 280 - 3000 rpm | 280 - 3000 rpm |
| Column diameter | 70 mm | 70 mm |
| Distance spindle-column | 185 mm | 185 mm |
| Base dimensions l x w | 400 x 230 mm | 400 x 230 mm |
| Packaging dimensions l x w x h | 1390 x 600 x 260 mm | 1390 x 600 x 260 mm |
| Net weight | 60 kg | 60 kg |
| Voltage | 230 V | 400 V |

10. PARTS LIST

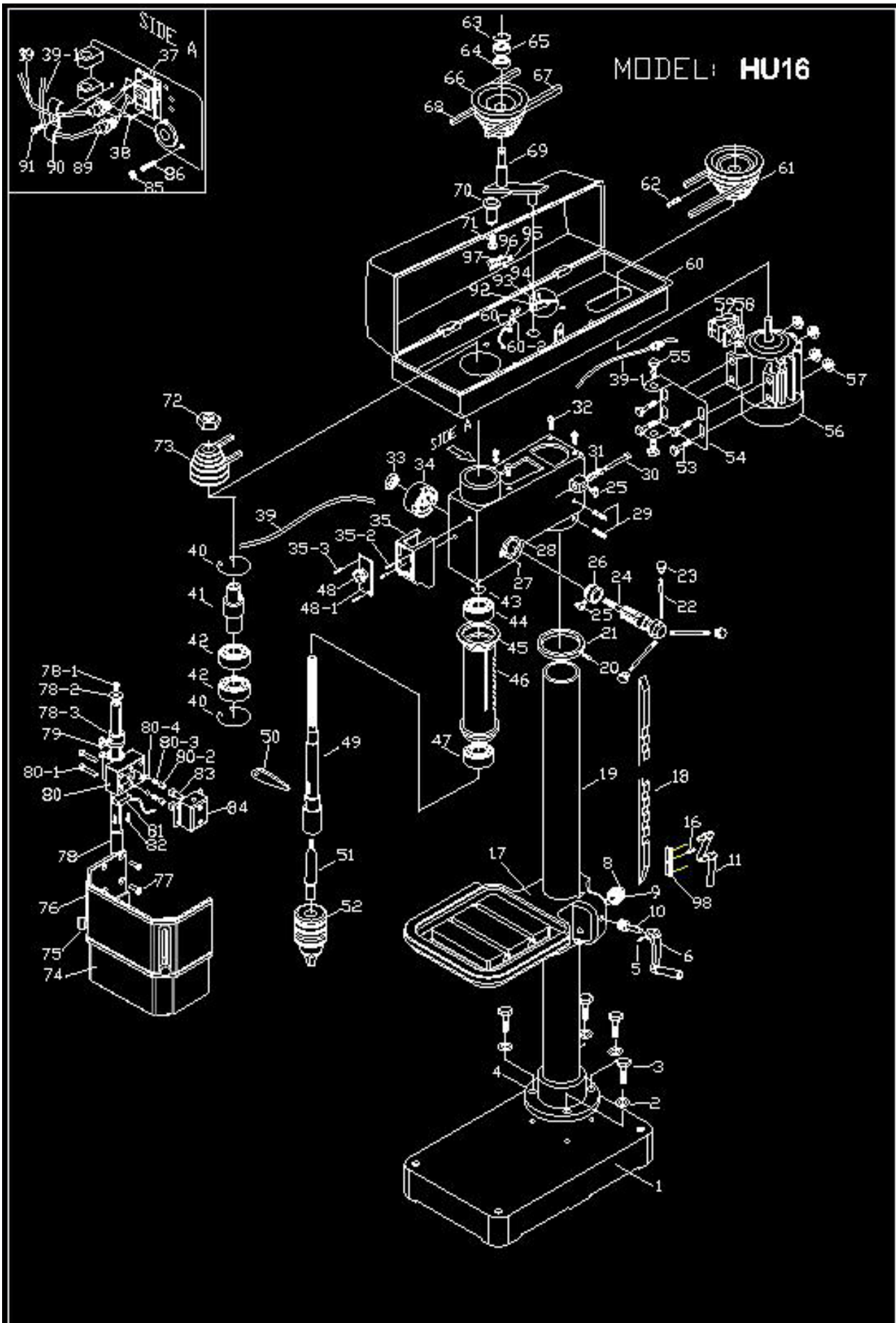


Fig. B - Explosion drawing

| No. | Description | Qty. | No. | Description | Qty. |
|------|------------------------|------|------|----------------------|------|
| 1 | Base | 1 | 47 | Bearing | 1 |
| 2 | Washer | 4 | 48 | Exigence switch | 1 |
| 3 | Bolt m8x25 bench | 4 | 49 | Spindle | 1 |
| 4 | Base flange | 1 | 50 | Drift key | 1 |
| 5 | Screw m6x10 | 1 | 51 | Arbor | 1 |
| 6 | Crank sleeve handle | 1 | 52 | Chuck | 1 |
| 7 | Table bracket | 1 | 53 | Bolt | 4 |
| 7-1 | Tilt scale | 1 | 54 | Motor plate | 1 |
| 8 | Gear shaft | 1 | 55 | Bolt | 1 |
| 9 | Helical gear | 1 | 56 | Motor | 2 |
| 10 | Elevating worm 1/2 | 1 | 57 | Nut | 1 |
| 11 | Bolt clamp m12x40 | 1 | 58 | Rubber | 2 |
| 12 | Table arm bracket | 1 | 59 | Outlet box | 1 |
| 12-1 | Pointer | 1 | 60 | Pulley cover | 1 |
| 13 | Screw m6x10 | 1 | 61 | Motor pulley | 1 |
| 14 | Bolt clamp m10x25 | 1 | 62 | Set screw | 1 |
| 15 | Washer | 1 | 63 | Retaining ring | 1 |
| 16 | Bolt m16x32 | 1 | 64 | Bearing | 1 |
| 17 | Table | 1 | 65 | Bearing | 1 |
| 18 | Rack | 1 | 66 | Middle pulley | 1 |
| 19 | Column | 1 | 67 | Belt | 1 |
| 20 | Screw m6x10 | 1 | 68 | Belt | 1 |
| 21 | Rack collar | 1 | 69 | Shaft assembly | 1 |
| 22 | Feeding handle m10x155 | 3 | 70 | Knob m6 | 1 |
| 23 | Knob | 3 | 71 | Screw m6x10 | 1 |
| 24 | Pinion arbor | 1 | 72 | Nut 1/2 | 1 |
| 25 | Screw | 1 | 73 | Spindle pulley | 1 |
| 26 | Spacer | 1 | 74 | Chuck guard 2 | 1 |
| 27 | Pointer | 1 | 75 | Nut | 1 |
| 28 | Head | 1 | 75-1 | Screw nut | 1 |
| 29 | Screw m8x12 | 2 | 76 | Chuck guard 1 | 1 |
| 30 | Lever shaft | 1 | 77 | Set screw | 1 |
| 31 | Spring | 1 | 77-1 | Nut | 2 |
| 32 | Screw | 4 | 78 | Micro switch frame | 1 |
| 33 | Nut m12 | 1 | 78-1 | Screw | 1 |
| 34 | Tension spring ass'y | 1 | 79 | Clamp bolt | 1 |
| 35 | Switch box | 1 | 80 | Micro switch holder | 1 |
| 35-1 | Rubber | 1 | 80-1 | Screw | 2 |
| 35-2 | Screw | 3 | 80-2 | Screw | 1 |
| 35-3 | Screw | 1 | 80-3 | Spring | 1 |
| 36 | Screw | 3 | 80-4 | Steel ball | 1 |
| 37 | Switch | 1 | 81 | Micro switch | 1 |
| 38 | Screw | 1 | 82 | Screw | 2 |
| 39 | Electrical cord | 2 | 83 | Screw | 2 |
| 39-1 | Motor electrical cord | 1 | 84 | Holder | 1 |
| 40 | Retaining ring | 2 | 85 | Nut | 1 |
| 41 | Pulley insert | 1 | 86 | Screw | 1 |
| 42 | Bearing 6203zz | 2 | 87 | Nut | 1 |
| 43 | Retaining ring s-12 | 1 | 88 | Screw | 1 |
| 44 | Bearing | 1 | 89 | Electrical cord/lamp | 1 |
| 45 | Quill basket | 1 | 90 | Cord clamp | 1 |
| 46 | Quill | 1 | 91 | Screw | 1 |

Our products are frequently updated and improved. Minor changes may not yet be incorporated in this manual. Always state the year of build, type and serial number of the machine in correspondence.

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