

Bäumr-AG®

Mill Drill BMMDL-07



User Manual

[Revision 1.0 February 2020]

READ THIS MANUAL CAREFULLY BEFORE USE – FAILURE TO DO SO MAY RESULT IN INJURY, PROPERTY DAMAGE AND MAY VOID WARRANTY. • KEEP THIS MANUAL FOR FUTURE REFERENCE. • Products covered by this manual may vary in appearance, assembly, inclusions, specifications, description and packaging.

Safety

Safety messages are designed to alert you to possible dangers or hazards that could cause death, injury or equipment or property damage if not understood or followed. Safety messages have the following symbols:



You **WILL** be KILLED or SERIOUSLY INJURED if you do not follow instructions.

It is vital that you read and understand this user manual before using the product, including safety warnings, and any assembly and operating instructions. Keep the manual for future reference.

Safety precautions and recommendations detailed here must be fully understood and followed to reduce the risk of injury, fire, explosion, electrical hazard, and/or property damage.

Safety information presented here is generic in nature – some advice may not be applicable to every product. The term "equipment" refers to the product, be it electrical mains powered, battery powered or combustion engine powered.

- **Before Use** - If you are not familiar with the safe operation/handling of the equipment or are in any way unsure of any aspect of suitability or correct use for your application, you should complete training conducted by a person or organization qualified in safe use and operation of this equipment, including fuel/electrical handling and safety.
- Do NOT operate the equipment in flammable or explosive environments, such as in the presence of flammable liquids, gases or dust. The equipment may create sparks or heat that may ignite flammable substances.
- Keep clear of moving parts.
- Equipment may be a potential source of electric shock or injury if misused.
- Do NOT operate the equipment if it is damaged, malfunctioning or is in an excessively worn state.
- Do NOT allow others to use the equipment unless they have read this manual and are adequately trained.
- Keep packaging away from children - risk of suffocation! Operators must use the equipment correctly. When using the equipment, consider conditions and pay due care to persons and property.

General Work Area Safety

- Work areas should be clean and well lit.
- Do not operate the equipment if bystanders, animals etc are within operating range of the equipment or the general work area.
- If devices are provided for connecting dust extraction / collection facilities, ensure these are connected and used properly. Dust collection can reduce dust-related hazards.



You **CAN** be KILLED or SERIOUSLY INJURED if you do not follow instructions.

General Personal Safety

- Wear appropriate protective equipment when operating, servicing, or when in the operating area of the equipment to help protect from eye and ear injury, poisoning, burns, cutting and crush injuries. Protective equipment such as safety goggles, respirators, non-slip safety footwear, hard hat, hearing protection etc should be used for appropriate equipment / conditions. Other people nearby should also wear appropriate personal protective equipment. Do not wear loose clothing or jewellery, which can be caught in moving parts. Keep hair and clothing away from the equipment.
- Stay alert and use common sense when operating the equipment. Do not over-reach. Always maintain secure footing and balance.
- Do not use the equipment if tired or under the influence of drugs, alcohol or medication.
- This equipment is not intended for use by persons with reduced physical, sensory or mental capabilities.

General Fuel Safety

- Petrol/fuel/gasoline is extremely flammable – keep clear of naked flames or other ignition sources.
- Do not spill fuel. If you spill fuel, wipe it off the equipment immediately – if fuel gets on your clothing, change clothing.
- Do NOT smoke near fuel or when refuelling.
- Always shut off the engine before refuelling.
- Do NOT refuel a hot engine.
- Open the fuel cap carefully to allow any pressure build-up in the tank to release slowly.
- Always refuel in well ventilated areas.
- Always check for fuel leakage. If fuel leakage is found, do not start or run the engine until all leaks are fixed.

General Carbon-Monoxide Safety

- Using a combustion engine indoors **CAN KILL IN MINUTES**. Engine exhaust contains carbon-monoxide – a poison you cannot smell or see.
- Use combustion engines OUTSIDE only, and far away from windows, doors and vents.



You **CAN** be INJURED if you do not follow instructions or equipment damage may occur.

General Equipment Use and Care

- The equipment is designed for domestic use only.
- Handle the equipment safely and carefully.
- Before use, inspect the equipment for misalignment or binding of moving parts, loose components, damage or any other condition that may affect its operation. If damaged, have the equipment repaired by an authorised service centre or technician before use.
- Prevent unintentional starting of the equipment - ensure equipment and power switches are in the OFF position before connecting or moving equipment. Do not carry equipment with hands or fingers touching any controls. Remove any tools or other items that are not a part of the equipment from it before starting or switching on.
- Do not force the equipment. Use the correct equipment for your application. Equipment will perform better and be safer when used within its design and usage parameters.
- Use the equipment and accessories etc. in accordance with these instructions, considering working conditions and the work to be performed. Using the equipment for operations different from those intended could result in hazardous situations.
- Always keep equipment components (engines, hoses, handles, controls, frames, housings, guards etc) and accessories (cutting tools, nozzles, bits etc) properly maintained. Keep the equipment clean and, where applicable, properly lubricated.
- Store the equipment out of reach of children or untrained persons. To avoid burns or fire hazards, let the equipment cool completely before transporting or storing. Never place or store the equipment near flammable materials, combustible gases or liquids etc.
- The equipment is not weather-proof, and should not be stored in direct sunlight, at high ambient temperatures or locations that are damp or humid.
- Do not clean equipment with solvents, flammable liquids or harsh abrasives.
- For specific equipment safety use and care, see Equipment Safety.

General Electrical Safety	General Electrical Safety	General Service Information
<ul style="list-style-type: none"> Inspect electrical equipment, extension cords, power bars, and electrical fittings for damage or wear before each use. Repair or replace damaged equipment immediately. Ensure all power sources conform to equipment voltage requirements and are disconnected before connecting or disconnecting equipment. When wiring electrically powered equipment, follow all electrical and safety codes. Wherever possible, use a residual current device (RCD). High voltage / high current power lines may be present. Use extreme caution to avoid contact or interference with power lines. Electrical shock can be fatal. 	<ul style="list-style-type: none"> Electrically grounded equipment must have an approved cord and plug and be connected to a grounded electrical outlet. Do NOT bypass the ON/OFF switch and operate equipment by connecting and disconnecting the electrical cord. Do NOT use equipment that has exposed wiring, damaged switches, covers or guards. Do NOT use electrical equipment in wet conditions or in damp locations. Do NOT use electrical cords to lift, move or carry equipment. Do NOT coil or knot electrical cords, and ensure electrical cords are not trip hazards. 	<ul style="list-style-type: none"> The equipment must be serviced or repaired at authorised service centres by qualified personnel only. Replacement parts must be original equipment manufacturer (OEM) to ensure equipment safety is maintained. Do NOT attempt any maintenance or repair work not described in this manual. After use, the equipment and components may still be hot – allow the equipment to cool and disconnect spark plugs and/or electrical power sources and/or batteries from it before adjusting, changing accessories or performing repair or maintenance. Do NOT adjust while the equipment is running. Perform service related activities in suitable conditions, such as a workshop. Replace worn, damaged or missing warning/safety labels immediately.

Mill Drill General Safety

This machine is designed for drilling, deep milling and face milling of small work pieces with size limitations of 300x200x200mm. If the operator intends to use this machine beyond its intended design/purpose, please contact the manufacturer or your dealer before operation.

Do not use the mill drill if you intend to operate it:

- Without reading the manual.
- Without any professional training of drilling and milling.
- Beyond its intended design/purpose and without getting enough advice about safety from manufacturer.
- Without making sure that every safety precaution is followed.

Important Safety Information:

- Noise level during operation is 70 – 75dB(A).
- Temperature range to operate and store this machine should be between -20 to 40°C.
- WARNING!** After interruption due to power failure, it's possible that the machine will accidentally start up. Please turn OFF the machine as soon as a power failure occurs.
- WARNING!** Always wear approved eye protection during operation.

Correct Handling:

- The machine is quite heavy. It would be better to carry this machine with the help of an appropriate lifting tool.
- If the operator has to handle this machine without any lifting tools, ensure that the operator can comfortably carry its weight and handle it with care while practicing common sense and self-protection.





















WARNING! When using electric tools, basic safety precautions should always be followed to reduce the risk of fire, electric shocks and personal injuries. Read all these instructions before operating this product and save these instructions.

- Keep work area clean. Cluttered areas and benches invite injuries.
- Consider work area environment. Do not expose power outlet to rain or moisture. Do not use power tools in damp or wet locations. Keep work area well lit. Do not use power tools where there is risk of causing a fire or explosion.
- Guard against electric shock. Avoid bodily contact with earthed or grounded surfaces (e.g. pipes, radiators, ranges, refrigerators, etc.)
- Keep children away. Do not let visitors touch the tool or extension cord. All visitors should be kept away from the work area.
- Store idle tools. When not in use, tools should be stored in a dry, high or locked-up place, out of reach of children.
- Do not force the tools. It will do the job better and safer at the rate for which it was intended.
- Use the right tools. Do not force small tools or attachments to do the job of a heavy-duty tool. Do not use tools for purposes not intended; for example, do not use circular saws to cut tree limbs or logs.
- Dress properly. Do not wear loose clothing or jewellery, they can get caught in moving parts. Rubber gloves and non-skid footwear are recommended when working outdoors. Wear protective hair covering to contain long hair.
- Use safety glasses. Also use face or dust mask if the cutting operation is dusty.
- Connect a dust extraction equipment. If devices are provided for the connection of extraction and collection facilities, ensure these are connected and properly used.
- Do not abuse the cord. Never carry the tool by cord or yank it to disconnect it from the socket. Keep the cord away from heat, oil and sharp edges.
- Secure work. Use a clamp or a vise to hold down the work. Once it's fixed securely, you can then use both hands to operate the machine.
- Do not overreach. Always keep proper footing and balance.

- Maintain tools with care. Keep cutting tool sharp and clean for better and safer performance. Follow instructions for lubrication and changing accessories. Inspect tool cord periodically and if damaged have it repaired by an authorised serviced facility. Inspect extension cords periodically and replace, if damaged. Keep handle dry, clean and free from oil and grease.
- Disconnect tools. When not in use, before servicing and when changing accessories such as blade, bits and cutters.
- Remove adjusting keys and wrenches. Form the habit of checking to see that keys and adjusting wrenches are removed from the tool before turning it on.
- Avoid unintentional starting. Do not carry a plugged-in tool with a finger on the switch. Ensure switch is OFF when plugging in.
- Use outdoor extension leads. When tool is used outdoors, use only extension cords intended for outdoor use.
- Stay alert. Watch what you are doing. Use common sense. Do not operate tool when you are tired. Check damaged parts. Before further use of the tool, a guard or other part that is damaged should be carefully checked to determine that it will operate properly and perform its intended function. Check for alignment of moving parts, free running of moving parts, breakage of parts, mounting and any other conditions that may affect its operation, guard or other part that is damaged should be properly repaired or replaced by an authorised service centre unless otherwise indicated in this instruction manual. Have defective switches replaced by an authorised service facility. Do not use the tool if the switch does not turn it ON and OFF.
- **Warning.** The use of any accessory or attachment, other than those recommended in this instruction manual, may present a risk of personal injury.
- Have your tool repaired by a qualified person. -This electric tool is in accordance with the relevant safety requirements. Repairs should only be carried out by qualified persons using original spare parts, otherwise this may result in considerable danger to the user.

Safety Symbols

The product may have safety warning labels attached to it, explained below. Understand the symbols on your product and their meanings. If any stickers become unreadable, unattached etc., replace them.

 <p>Flammable Material Hazard Flammable liquids, gases or substances etc may present. Avoid ignition sources and open flames. Danger of fire.</p>	 <p>Read User Manual Read and fully understand product safety warnings, operation, procedures etc before using the product.</p>	 <p>Use Hand Protection Wear appropriate hand protection and take due care as the product or use of the product may present hand hazards.</p>	 <p>Carbon-Monoxide Hazard Do not use the product in confined areas or without adequate ventilation. Carbon-monoxide poisoning can be fatal.</p>
 <p>Electrocution / Electrical Shock Hazard High voltage or high current electricity may be present or required by the product. Take due care when handling electrical products, cables, plugs and leads. Electrical shock can be fatal.</p>	 <p>Toxic Fumes / Dust Hazard Using the product or by-products from use may produce fumes, smoke or particles that could be harmful if inhaled. Wear appropriate breathing protection and have adequate ventilation.</p>	 <p>Explosive Material Hazard Combustible liquids, gases or substances etc may be present. Avoid ignition sources and open flames. Danger of explosion.</p>	 <p>Cutting / Amputation Hazard The product may have blades, edges or mechanical devices that can cause severe cut injury to fingers, limbs etc. Take due care when handling and using the product.</p>
 <p>Crush Hazard The product may have blades, edges or mechanical devices that can cause severe crush injury to fingers, limbs etc. Take due care when handling and using the product.</p>	 <p>Single Operator Only The product must be operated by a single person only. More than one person operating the product may introduce additional hazards.</p>	 <p>Use Face Protection Wear appropriate full-face protection and take due care as the product or use of the product may present face and eye hazards.</p>	 <p>Use Foot Protection Wear appropriate foot protection and take due care as the product or use of the product may present foot hazards.</p>
 <p>Use Eye / Ear / Head Protection Wear appropriate eye and / or ear and / or head protection and take due care as the product or use of the product may present eye, hearing and head hazards.</p>	 <p>Running Hazard Do not run on or near the product as doing so may present a fall hazard.</p>	 <p>Diving Hazard Do not dive into the product as doing so may present a neck / head injury hazard.</p>	 <p>Adult Supervision Required Always supervise children and other users of a product to prevent drowning or injury.</p>
 <p>Skin Penetration / Puncture Hazard The product may produce pressure, emit liquids or objects that can cause severe injury to fingers, limbs, blood etc. Take due care when handling and using the product.</p>	 <p>Hot Surface Hazard Be aware that the product may produce high temperatures and hot surfaces that can cause burn injuries.</p>	 <p>Flying Debris Hazard Be aware that the product or use of the product may present hazards produced by flying debris. Wear appropriate clothing and protective devices.</p>	 <p>Moving Parts Hazard Be aware that the product contains or uses mechanical devices that move or rotate. Always wait for moving parts to stop fully before handling the product, adjusting, maintenance etc.</p>












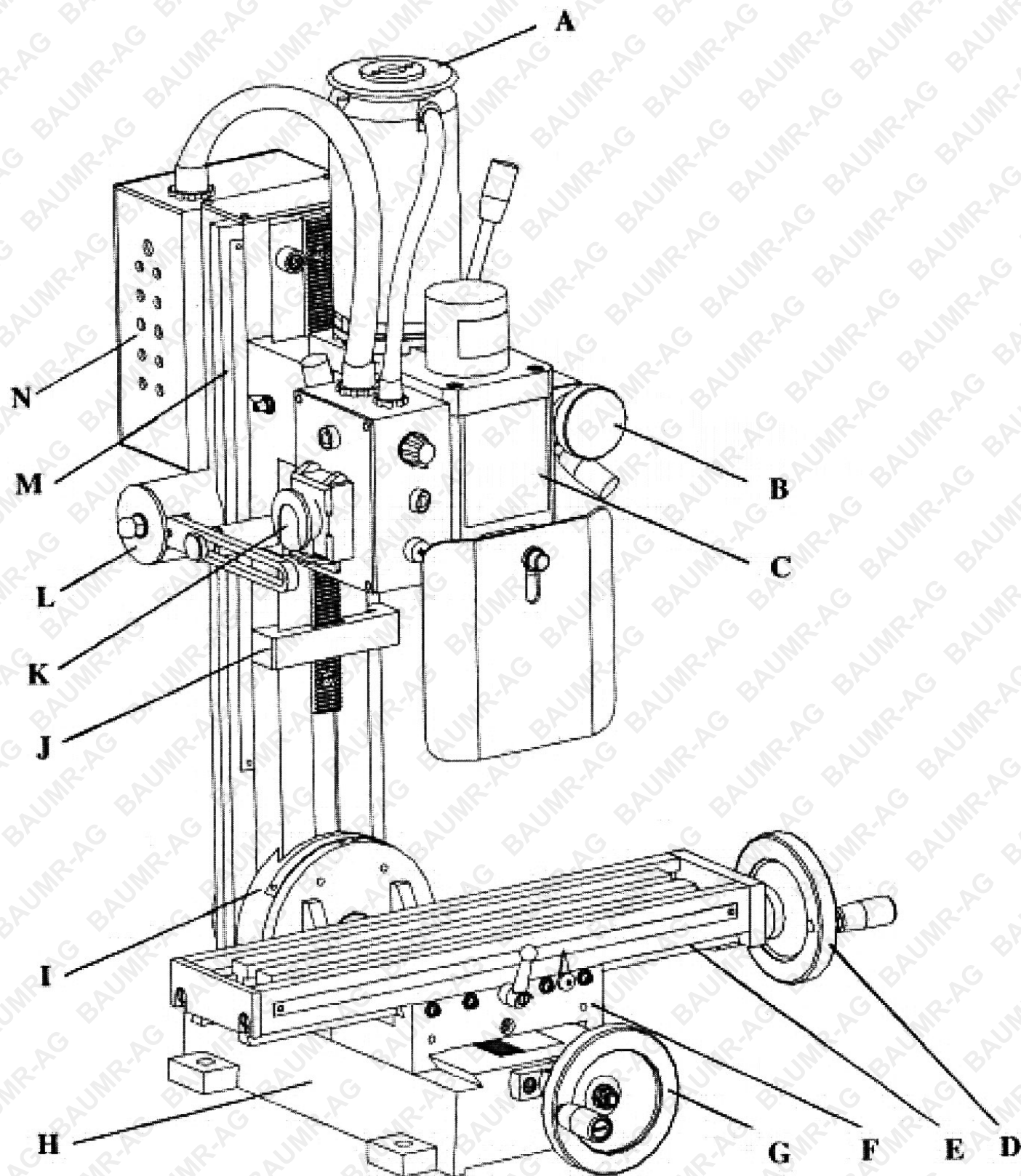
 <p>Carbon-Monoxide Hazard Do not use the product in confined areas or without adequate ventilation. Carbon-monoxide poisoning can be fatal.</p>	 <p>Pull Hazard Be aware that the product contains or uses mechanical devices that can pull in objects and can cause severe injury to fingers, limbs etc. Take due care when handling and using the product.</p>	 <p>Slope / Fall Injury Hazard Be aware that using the product on sloping surfaces or in slippery conditions may present additional dangers from falls and contact with blades, moving parts, hot surfaces etc.</p>	 <p>"Slam Dunk" Warning Do NOT attempt "slam dunk" manoeuvres as this may result in severe injury due to falling, product breakage or collapse etc.</p>
 <p>Electrocution / Electrical Shock Hazard - Outdoor High voltage or high current electricity may be present or required by the product. Do NOT use in rain, damp or wet conditions. Electrical shock can be fatal.</p>	 <p>Electrocution / Electrical Shock Hazard - Disconnect High voltage or high current electricity may be present or required by the product. Always disconnect the product from the electrical supply before handling the product, adjusting, maintenance etc.</p>	 <p>Power Line Electrocution Hazard High voltage / high current power lines may be present. Use extreme caution to avoid contact or interference with power lines. Electrical shock can be fatal.</p>	 <p>"Kick-Back" Hazard High level of "kick-back" hazard that can cause the machine to suddenly rotate towards operator. Kick-back injury can be fatal.</p>
 <p>Winch Operator Position Hazard Do NOT stand between winch and load. Do NOT use winch to move people.</p>	 <p>Winch Lift Hazard Do NOT LIFT load vertically. Use machine to PULL only.</p>	 <p>Cable Hazard Ensure that load bearing cable is not kinked or knotted.</p>	 <p>Winch Cable Hazard Ensure that there is a minimum number of cable coils on winching mechanism.</p>
 <p>Winch Hook Hazard Carry hook to load – do NOT throw or run.</p>	 <p>Flash / Blinding Hazard Wear appropriate eye protection for welding. Direct exposure to weld arcs may cause permanent eye injury.</p>	 <p>Laser Hazard Laser may be in use – do NOT look directly at laser or allow others to.</p>	

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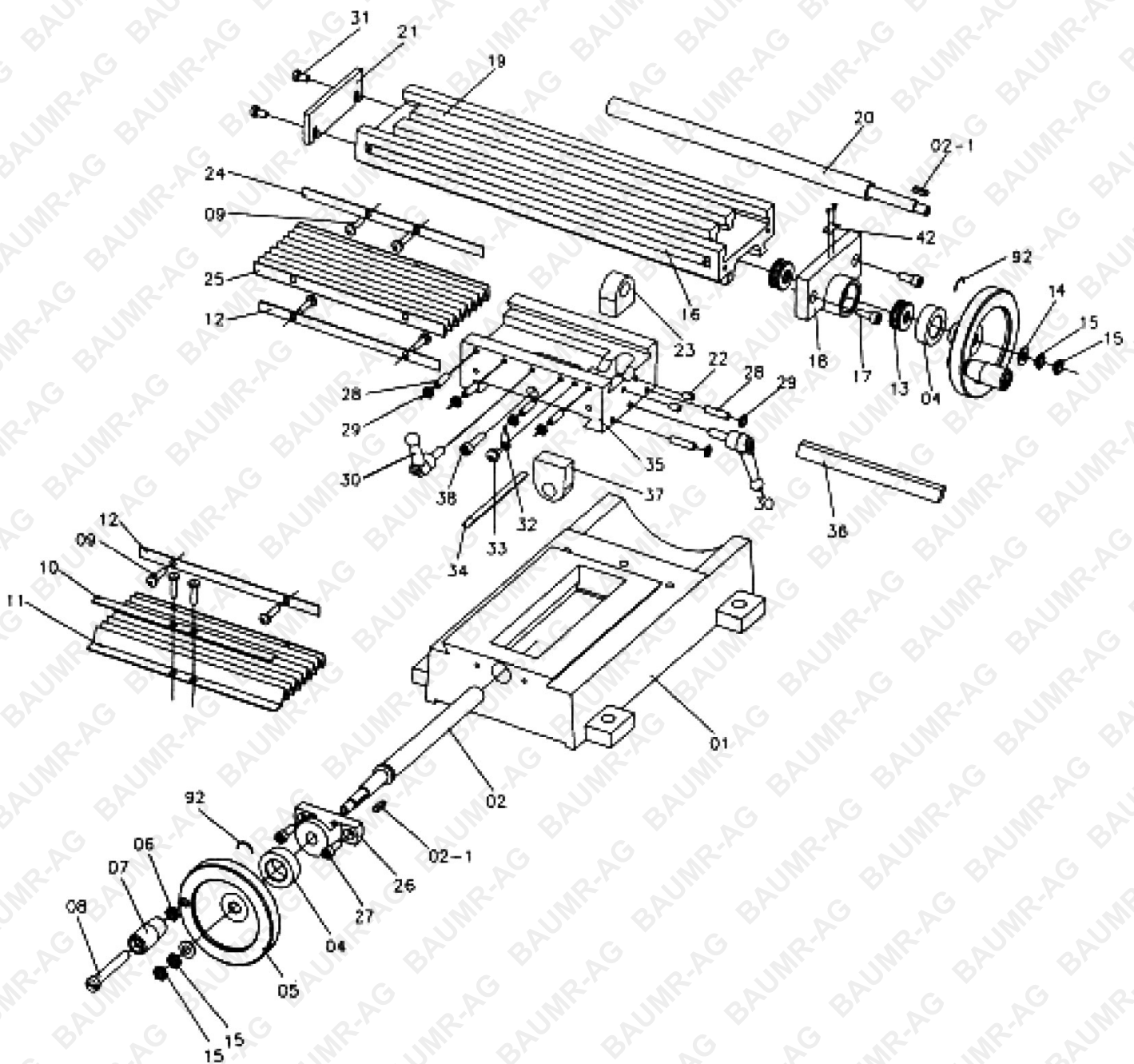
Parts Identification

External Features

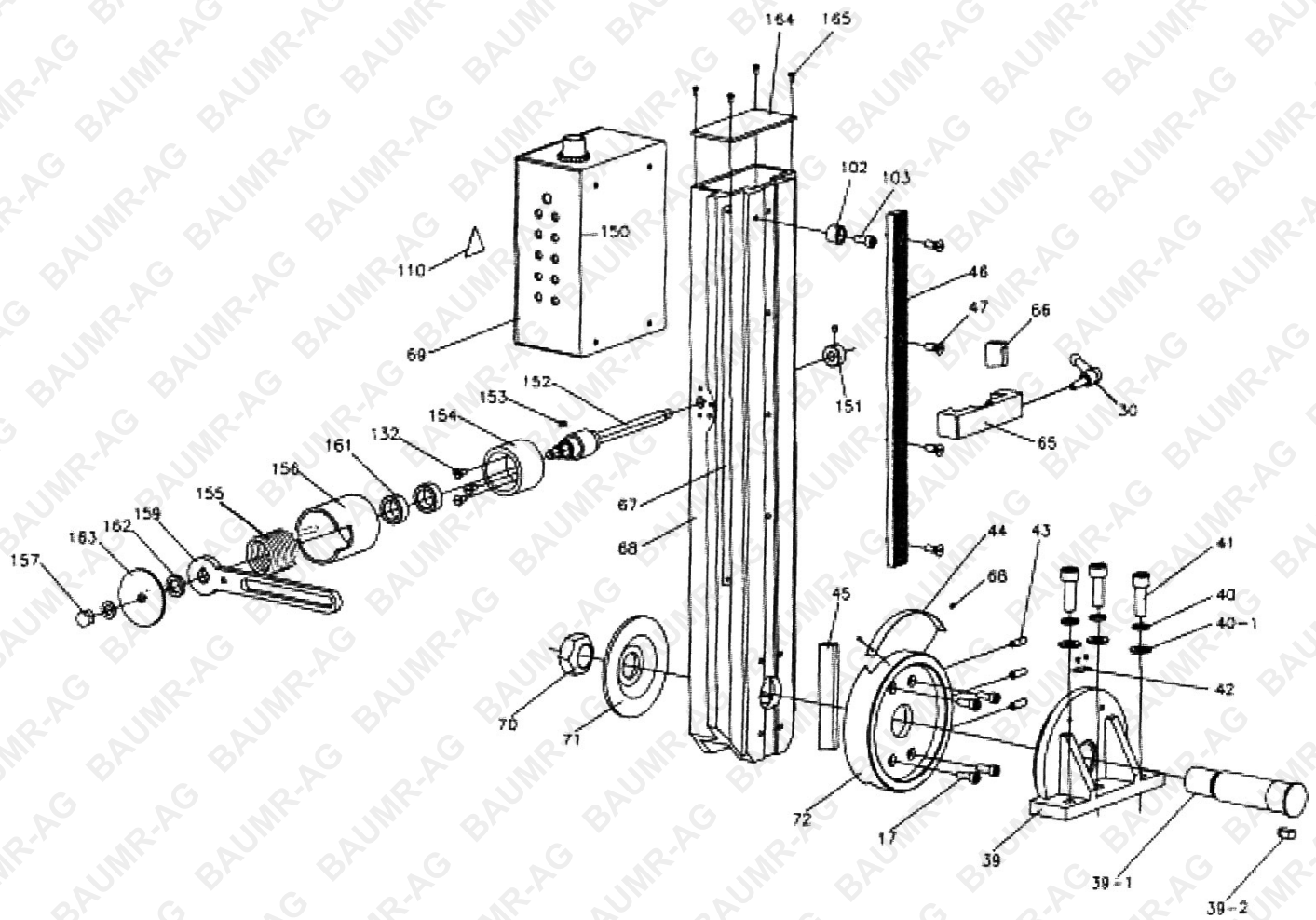


No.	Name	No.	Name
A	Motor	H	Base
B	Fine feeding wheel	I	Connecting strut
C	Headstock & spindle	J	Limit block
D	Longitudinal feed hand wheel	K	Controller
E	Working table	L	Balance mechanism
F	Saddle	M	Fuselage
G	Cross feed hand wheel	N	Electrical box

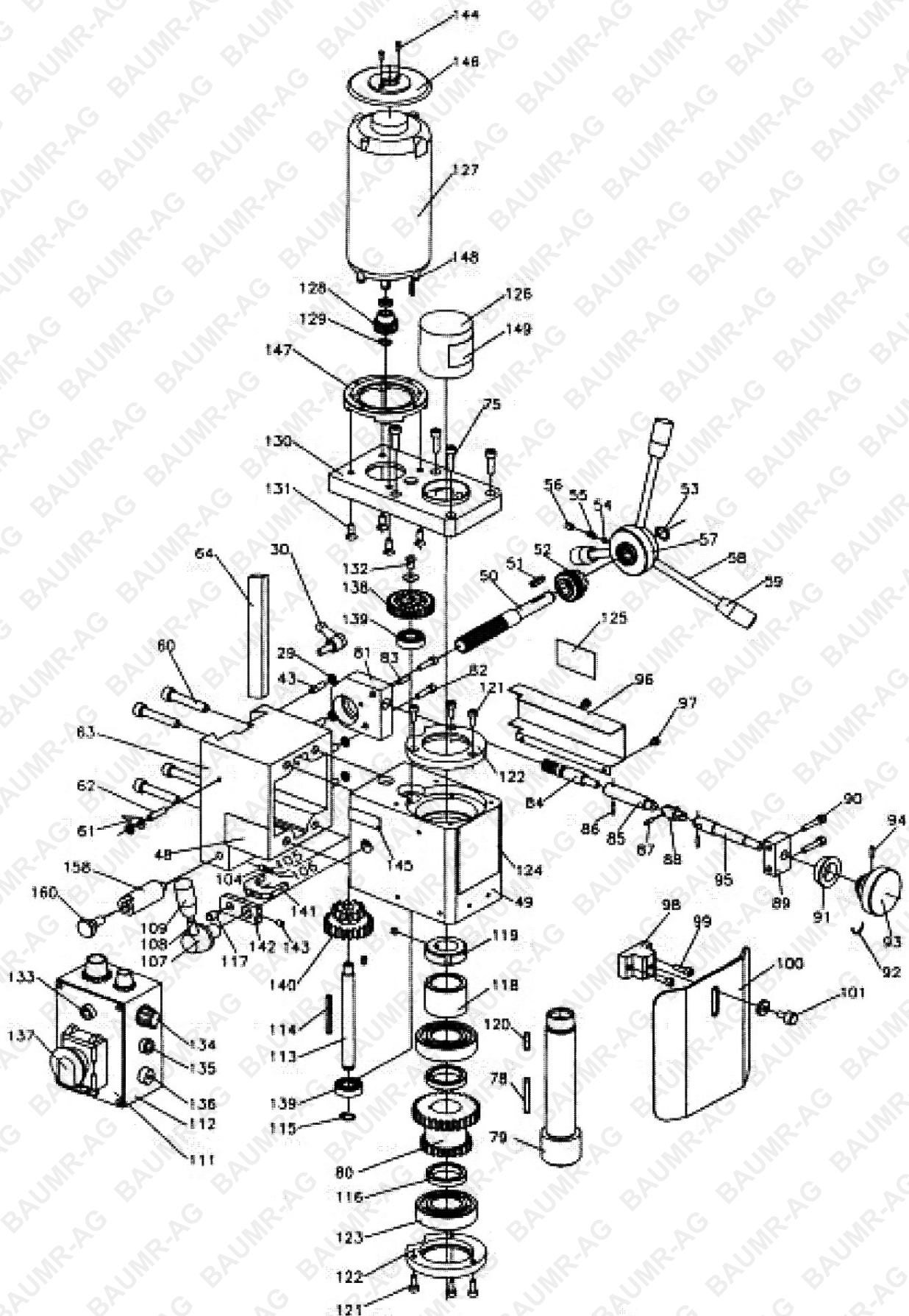
Longitudinal (Y) and Cross (X) Axis



Vertical (Z) Axis



Spindle and Gear Box



Parts List

Item No	Part Name	Q'ty	Item No	Part Name	Q'ty
1	Base	1	38	Cap screw M6 x 25	2
2	X-axis feeding screw	1	39	Fuselage seat	1
2-1	Key 4 x 16	2	39-1	Shaft	1
4	Dial	2	39-2	Key 8 x 12	1
5	Hand wheel	2	40	Spring washer 10	3
6	Nut MS	2	40-1	Washer 10	3
7	Knob	2	41	Cap screw M10 x 30	3
8	Screw MS x 55	2	42	Guide finger	2
9	Cap screw M6x 8	8	43	Set screw M6 x 22	7
10	Holding plate (1)	1	44	Ruler	1
11	Dust guard cover	1	45	Wedge	1
12	Holding plate (2)	2	46	Gear rack	1
13	Ball bearing 8200	2	47	Cap screw M6 x 12	4
14	Washer	2	48	Name plate	1
15	Nut MS	4	49	Spindle box	1
16	Y-axis ruler	1	50	Pinion	1
17	Cap screw M6x 16	4	51	Key 4 x 25	1
18	Y-axis bearing seat	1	52	Bevel gear	1
19	Working table	1	53	Retaining ring 12	1
20	Y-axis feeding screw	1	54	Ball ø 5.0	1
21	End cover	1	55	Spring 0.8x 0.8 x 10	1
22	Screw M6x 10	2	56	Screw M6x 8	1
23	Y-axis screw nut	1	57	Handle stock	1
24	Holding plate (3)	1	58	Operating lever	3
25	Dust guard cover	1	59	Lever cap	3
26	Screw seat	1	60	Cap screw MS x 25	4
27	Cap screw M6x 16	2	61	Guide finger	1
28	Set screw M6 x 22	6	62	Cap screw M6 x 25	1
29	NutM6	13	63	Spindle box seat	1
30	Handle	3	64	Wedge	1
31	Screw M6x 10	2	65	Limit block	1
32	Guide finger	1	66	Wedge	1
33	Screw M6x 8	1	67	Ruler	1
34	X-axis wedge	1	68	Fuselage	1
35	Saddle	1	69	Electric box	1
36	Y-axis wedge	1	70	Lock nut M24	1
37	X-axis screw nut	1	71	Big washer	1

Item No	Part Name	Q'ty	Item No	Part Name	Q'ty
72	Connecting strut	1	122	Bearing cover	2
78	Key 5 x 5 x 40	1	123	Ball bearing 80206	2
79	Spindle	1	124	Name plate	1
80	Transmission gear	1	125	Fine feeding label	1
81	Support block	1	126	Protecting cover	1
82	Screw MS x 20	2	127	Motor	1
83	Pin 4 x 15	1	128	Motor gear	1
84	Worm	1	129	Interring ring 9.0	1
85	Sleeve	1	130	Motor seat	1
86	Pin 3 x 12	1	131	Flat screw M6x 12	4
87	Pin 3 x 12	2	132	Round screw M5 x 8	4
88	Adjustable union	1	133	Yellow lamp	1
89	Bracket	1	134	Speed control knob	1
90	Screw MS x 25	1	135	Green lamp	1
91	Dial	1	136	Fuse box	1
92	Spring steel 1.0	3	137	Emergency stop switch	1
93	Small hand wheel	1	138	Gear	1
94	Screw MS x 16	1	139	Ball bearing 80101	2
95	Small shaft	1	140	Transmission gear	1
96	Cover	1	141	Bar	1
97	Screw M4 x 6	2	142	Linking board	1
98	Support of dust cover	1	143	Set screw M5 x 8	1
99	Screw MS x 16	2	144	Self-tapping Screw ST2.9 x 8	2
100	Dust guard	1	145	H/L label	1
101	Clamp bolt M6 x 12	1	146	Motor cover	1
102	Upper end washer	1	147	Motor connecting flange	1
103	Upper end screw M6 x 16	1	148	Screw M6 x 10	4
104	Set screw M6 x 6	1	149	Warning label	1
105	Spring 0.8 x 4.8 x 10	1	150	PC board	1
106	Ball ø 5.0	1	151	Lock sleeve	1
107	Handle seat	1	152	Rotor shaft	1
108	Double head bolt MS x 70	1	153	Key 4 x 6	1
109	Knob	1	154	Spring support	1
110	Warning label	1	155	Torsion spring	1
111	Controller	1	156	Cover	1
112	Label on controller	1	157	Nut	1
113	Shaft (1)	1	158	Prop	1

Item No	Part Name	Q'ty	Item No	Part Name	Q'ty
114	Double round head key 4x4x45	1	159	Supporting shank	1
115	Internal ring ø 12	1	160	Screw	1
116	Spacing ring	2	161	Washer	2
117	Small shaft	1	162	Internal ring 12	1
118	Spacing ring	1	163	Cover	1
119	Spindle nut	1	164	Top Cover	1
120	Double round head key 5x5x30	1	165	Screw M3 x 6	4
121	Cap screw M5 x 8	6			

Installation

Location Set-Up

The machine should be fixed on a flat and secure worktable with four hexagon bolts. Install it at an appropriate location in order to fully-utilised the precision requirements of the machine.

Selecting an Appropriate Location

- The worktable should have a flat, stable surface.
- Avoid placing it under direct sunlight or areas with heavy dust and moisture.

Securing the Mill Drill

1. Drill four holes on the worktable. Dimensions should be the same as the holes on the machine's base.
NOTE: Consider the Y-axis handwheel when choosing a suitable location for the machine.
2. Adjust the machine accordingly and secure it to the worktable with 4 M10 bolts and nuts.

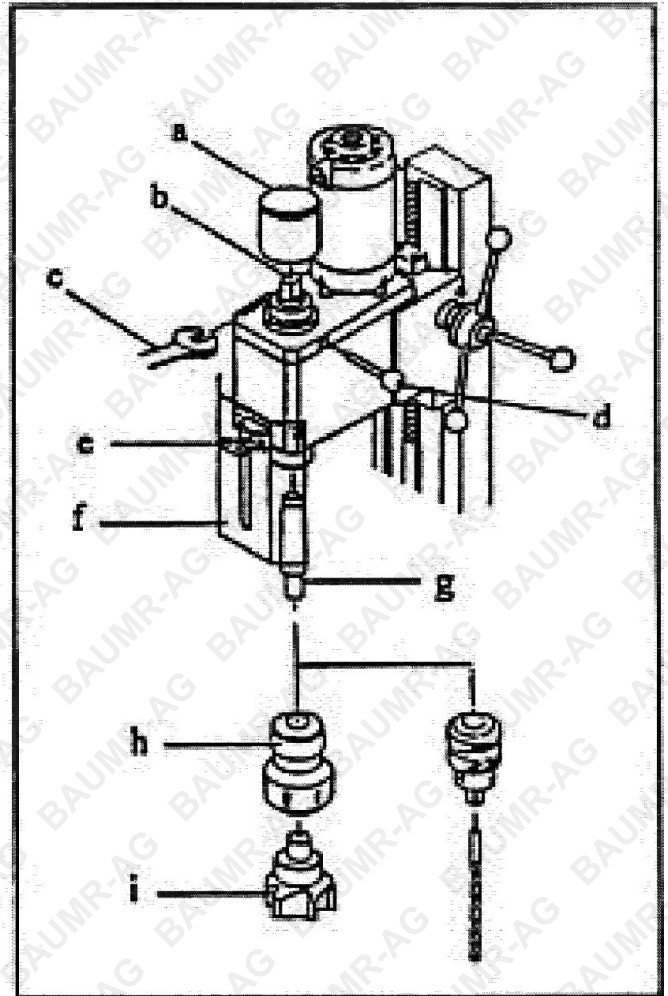
Checklist Before Switching ON the Machine

- Remove all fixtures which that might impede the normal operation of the machine.
- Check whether the power voltage is suited to the machine (see label in front of the machine).
- Remove all obstacles and debris around the machine.
- Remove the anti-rust protection before affixing the machine.
- Check the angle of the pillar and adjust the bolts to see if they are tight enough.
- Check the chuck, chuck holder and fixing pin on the spindle to ensure they are unloaded.
- Check the High-Low speed on spindle to see if it's set on the right speed setting.
- Turn on the machine and check the direction of the spindle rotation (should be clockwise).
- Run the Longitudinal Axis (Working table), Cross Axis (Saddle seat) and Vertical Axis (Fuselage) to ensure they're in normal condition.
- Be aware always while operating the machine. If you notice anything unusual, immediately stop using the machine and have it repaired immediately.

Installation and Removal of the Taper Shank

Installation

1. Turn off the main power before you replace the cutter.
2. Pull out the protective cover (a).
3. Wipe the spindle sleeve and taper shank.
4. Put the taper shank (g) into the spindle sleeve. Cutter should be matted with oil cloth to ensure the safety of the machine and your fingers.
5. Insert the Fixing Pin (d) right on the spindle sleeve.
6. Use a #14 open end wrench (c) to tighten the spindle draw bar (b) in a clockwise direction to secure the taper shank.
7. Pull out the fixing pin.
8. Install the protective cover (a).



Removal

1. Turn off the main power before you replace the cutter.
2. Pull out the protective cover (a).
3. Insert the fixing pin (d) right on the spindle sleeve.
4. Use a #14 open end wrench (c) to loosen the spindle draw bar (b) in an anti-clockwise direction.
5. Knock the taper shank (g) gently with a plastic hammer to loosen it in the spindle sleeve. Then, take off the taper shank (g).
6. Cutter should be matted with an oil cloth to ensure the safety of the machine and your fingers.
7. Re-install the protective cover (a).

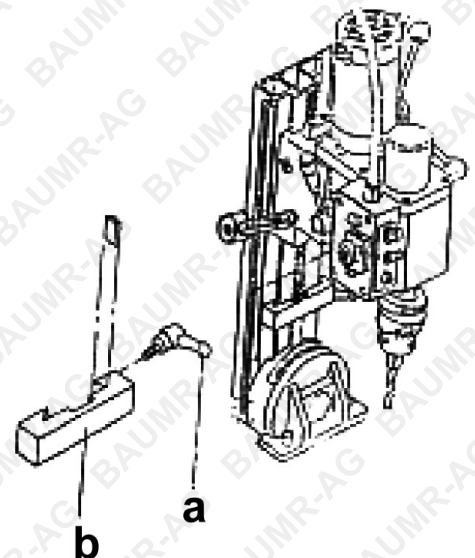


IMPORTANT! For your safety, any adjustments on the machine should be done only when it is already unplugged from the mains power supply.

Adjusting the Spindle Box

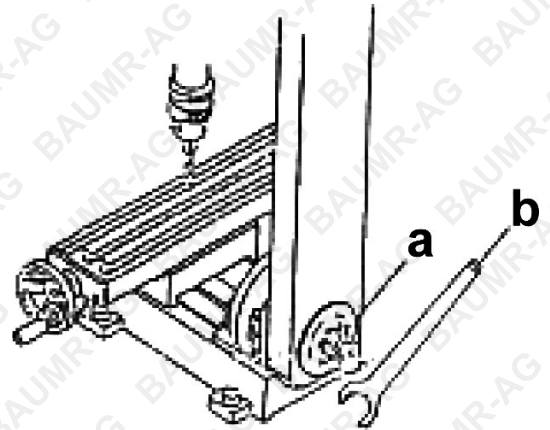
Using the limit block, you can control the traveling rate of the spindle box.

1. Loosen the handle (a) beside the limit block (b).
2. Adjust the limit block (b) into the desired position.
3. Tighten the handle.
4. Travel position can refer to the ruler on the fuselage rotary.



Adjusting the Tip Angle of the Fuselage

1. Turn OFF the mains power before doing any adjustments.
2. Hold the fuselage by hands to prevent the fuselage from falling.
3. Loosen the locked nut (a) with a large wrench (b).
4. Adjust the fuselage tip angle, as needed (max. angle is 45° for both left and right).
5. Tighten it.



Adjusting the Mitre Wedge

After long-term contact motion to the machine, function error will occur due to relative surface motion. Mitre wedge will act as an interface on each slide surface. In order to eliminate this error, this machine will make use of adjusting the screw pressure between the two machine parts (ex. Spindle Box and Fuselage). Adjust and keep-up the contact pressure to maintain its mechanical precision.

To ensure constant precision, the pressure between the two elements needs to be adjusted appropriately because of abrasion, which the machine produces from contact motion for the same timeframe (about one year).

The following items will need to make pressure adjustments to the mitre wedge:

- Basement and saddle seat slide surface
- Saddle seat and working table slide surface.
- Fuselage seat and connecting strut slide surface.
- Fuselage and spindle box slide surface.

NOTE: Position the spindle box at its highest position when not in use.

To Adjust:

1. Loosen the locked nuts.
2. Adjust the foremost pressure of the mitre wedge with the locked nut. If necessary, adjust all screws.
3. Tighten and loosen the adjusting screws and keep in mind that the pressure of each adjusting screw must be the same.
4. Tighten the locked nut uniformly.
5. When locking the nut, please use a #3 interior hexagonal wrench to secure the adjusting screw from rotating, which can cause unbalance in the pressure.
6. Adjust the middle portion first and then go towards the interior from two sides uniformly while you are adjusting the screw to ensure a uniformed pressure setting.



Operation

Power Connection/Disconnection

- Connecting, disconnecting and grounding are carried out through the plug equipped on the machine. For safety reasons, DO NOT change this plug into any other type in any situation.
- For the control device's protection, it's recommended for the operator to supply a fuse with the current rating and the total length between the fuse and the connecting terminal. Please refer to table below:

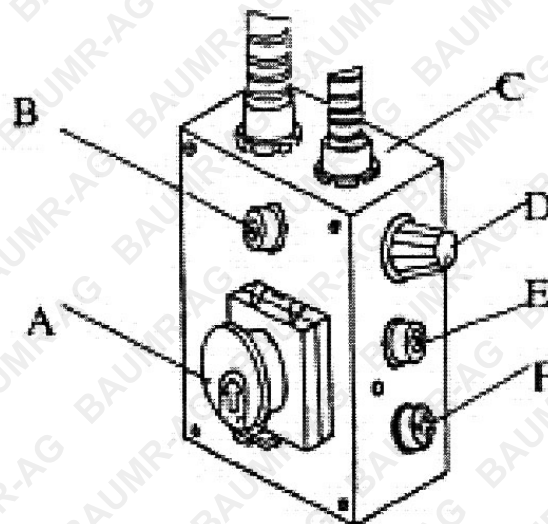
Extension Lead Table

Ampere rating	3A	6A	10A	13A
Extension Cable Length	Wire Size (mm ²)			
7.5m	0.75	0.75	1.0	1.25
15m	0.75	0.75	1.0	1.5
22.5m	0.75	0.75	1.0	1.5
30m	0.75	0.75	1.25	1.5
45.5m	0.75	1.25	1.5	2.5

- Ensure that the Emergency Stop Switch (A, on the left side beside the electrical box) is in the OFF position before plugging in the cord.
- Disconnect all tools from power sources before servicing them and when changing their accessories.

Initial Starting

- Taking all precautions stated, set the HIGH-LOW range lever to LOW.
- Insert the electric plug into the socket.
- Release the Emergency Stop Switch (A) by pushing down on the red knob slightly and pushing it up, as indicated by the arrow on the top of the red knob.
- Switch on the machine by GENTLY turning the Variable Speed Control Knob (D) clockwise. A click will be heard as the motor power is turned ON, but the spindle will not rotate until the knob is turning clockwise a little further. Speed will increase progressively the further the knob is turned.
- Run for a total of 5 minutes, during which you can gradually increase the spindle speed to its maximum value.
- Run for at least 2 minutes at this speed before stopping the machine and disconnecting it from the mains supply.
- Ensure that all components are still secure and are working freely and correctly.
- Ensure that all mountings are secure.



- A. Emergency stop switch B. Yellow LED
 C. Electric control box D. Variable speed control knob
 E. Green LED F. Fuse box

9. Repeat these procedures at HIGH range setting.

CAUTION! NEVER attempt to change from HIGH to LOW range setting when the machine is running.

Starting Under Normal Conditions

1. Take all the necessary precautions previously stated and ensure the workpiece is firmly secured.
2. Set the Speed range control lever to HIGH or LOW, as needed.
3. Proceed to start the machine as described above.

ATTENTION: The power supply system of this machine has an auto over-load protective function. If the feeding is too fast or drilling is too deep, the system will stop working and the yellow LED (B) will light-up. Just turn off the Variable Speed Control Knob (D) and then turn it ON again. The system will work again and the yellow LED will turn OFF automatically.

Drilling or Deep Milling

1. As per [Installation and Removal of the Taper Shank](#), install an appropriate adjustment and tighten it securely.
2. Select an appropriate speed level.

WARNING! When the spindle is running, DON'T change the speed setting.

3. Using the fixture, secure the workpiece on the working table.
4. Adjust working table (longitudinal Axis Y) and the saddle seat (Cross Axis X) into position.
5. Loosen the limit block handle and adjust the blocks into position.

NOTE: Ensure that the workpiece doesn't come in contact the tool.

6. Put the adjusting tools in order and remove all obstacles and debris around the machine.
7. Turn the main power ON. Adjust the appropriate spindle speed for drilling or deep milling.
8. Refer to the ruler on the fuselage to measure the drilling or milling depth.
9. When finished with your work, turn OFF the power and take the spindle to the upper position.
10. Clean the machine.

Face Milling

1. As per [Installation and Removal of the Taper Shank](#), install an appropriate adjustment and tighten it securely.
2. Select an appropriate speed level.

WARNING! When the spindle is running, DON'T change the speed setting.

3. Using the fixture, secure the workpiece on the working table.
4. Adjust working table (longitudinal Axis Y) and the saddle seat (Cross Axis X) into position.
5. Release the limit block on the fuselage, adjust the cutting depth then fix it into position.
6. Arrange all tools into their proper positions.
7. Turn the hand wheel of the working table (Y-axis) and the saddle seat (X-axis) to perform face milling.
8. Finishing all the steps, turn the power OFF and take the spindle back to the upper position, then you can take out the workpiece.

9. Clean the machine.

Drilling/Milling Speed

Before performing any work, set the spindle to a correct running speed.

The normal operating speed range for working is from 0 to 2500rpm. Most of the time, choosing the correct speed will depend on the size of the workpiece and the material. Generally, you can use higher speed for softer material or workpieces with small holes. Use a lower speed setting for harder material or workpieces with bigger holes.

A good rule of thumb is:

Small holes and soft material will need higher speed settings. Avoid drilling above 2300rpm if your workpiece is made of wood, as you may run the risk of burning it. For metal workpieces, the speed range can be 0 to 2500rpm.

Operational Checklist

IMPORTANT! Please ensure to follow these instructions as you operate the machine to ensure operational safety and to maintain its working capacity.

Before Turning ON

- Before turning ON the power, inspect the tool chuck and cutter. If they are loose, re-tighten them securely.
- Inspect each machine part to see if they are loose and re-tighten them securely.
- Check if the speed adjustment rod is at a correct position and re-position securely if needed.
- The workpiece is securely fixed onto the fixture.
- Clean or remove obstacles and debris around the machine.

During Operation

- Never drink any form of alcoholic drinks or strong spirits while operating the machine.
- Do not wear any thick gloves or articles of clothing (i.e. neckties, jewellerys, etc.) that could get stuck in any part of the machine.
- Select and install an appropriate cutter, and ensure they are securely fastened.
- If vigorous shaking occurs, the following conditions will likely cause it:
 - The depth of the cut is too deep.
 - The feeding speed is too fast.
 - The rotating speed is too fast.
 - The machine and stock plane are not secured firmly.
 - The vise and workpiece are not secured firmly.

Protection and Maintenance

- Perform frequent maintenance checks and record any unusual findings.
- Ensure that the power is turned OFF before performing any maintenance work on the machine.

- If there is an abnormal situation/condition and it's beyond regular user maintenance, please contact an authorised service centre to avoid further damaging the machine and to ensure safety.

Maintenance

Daily Maintenance

- Inspect each operating part to ensure they are properly lubricated.
- Examine each component for any worn or broken parts and other issues.
- Clean and remove all obstacles and debris around the machine to prevent damaging the machine and endangering the operator.
- Clean the machine daily after every use and lubricate all moving parts to prevent rust from developing.
- Be aware always while operating the machine. If you notice anything unusual, immediately stop using the machine and have it repaired immediately.

Seasonal Maintenance

- Use a clean cotton or soft gauze to clean each part of the machine.
- Confirm whether the motion of the machine's head and fixture are smooth or loose.
- Check if the spindle is over-swinging.
- Check whether each bolt and nut is loose.
- Examine the overall circuitry parts (contact points, conductor, plugs and switches) to ensure they are in normal condition.
- Perform maintenance on each part and record any findings.
- Turn OFF the machine and wait for it to completely stop before replacing any part or performing any maintenance works on it to avoid any hazards.
- Maintenance and repair should be done regularly. If there are any abnormal situations or conditions, stop the machine and have it repaired immediately.
- If abnormal situation/condition is beyond regular maintenance, please contact an authorised service centre to avoid further damaging the machine and to ensure safety.

Cutter Maintenance

- Use a clean rag while installing or unloading the cutter to prevent it from falling and splitting the blade and to protect yourself from cuts.
- Keep the cutter in a wooden or plastic box when you don't need it. In order to maintain the sharpness of the blade, the cutter should also be kept respectfully.
- Pay extra attention to the cutter's rotating direction. A wrong rotating direction might decrease the sharpness, split the blade and accelerate the cutter wearing out. If you cannot determine the cutter's rotating direction when it's revolving at high speeds, turn off the machine and observe it again while it's decelerating. It will then be easier to identify the blade's direction.
- Put the cutter and work piece (or chuck piece) in the right places before turning ON the machine. After turning on the machine, the cutter will get closer to the working piece and will start milling it.

- Sharpen the cutter as soon as it gets blunt. A blunt cutter will make your milling work not only more difficult, but it can also damage the blade.

Accessories Maintenance

- Please always keep the taper shank clean.
- Keep the taper shank and cutter together so the next time you will use them, it will be more convenient for you.
- The draw bar and chuck will have their own wrenches. For your convenience, please keep the wrenches near the machine and ever operate it with inappropriate tools.
- Please use a wrench to tighten the nuts and never use any other tools, such as a steel hammer, to do so.

Lubrication Mechanics

- In order to ensure precision, apply lubrication only on the contact surface.
- Use the oil can to lubricate accessories. Apply some lubricant to all surfaces before operating the machine.

The following the parts that needs lubrication:

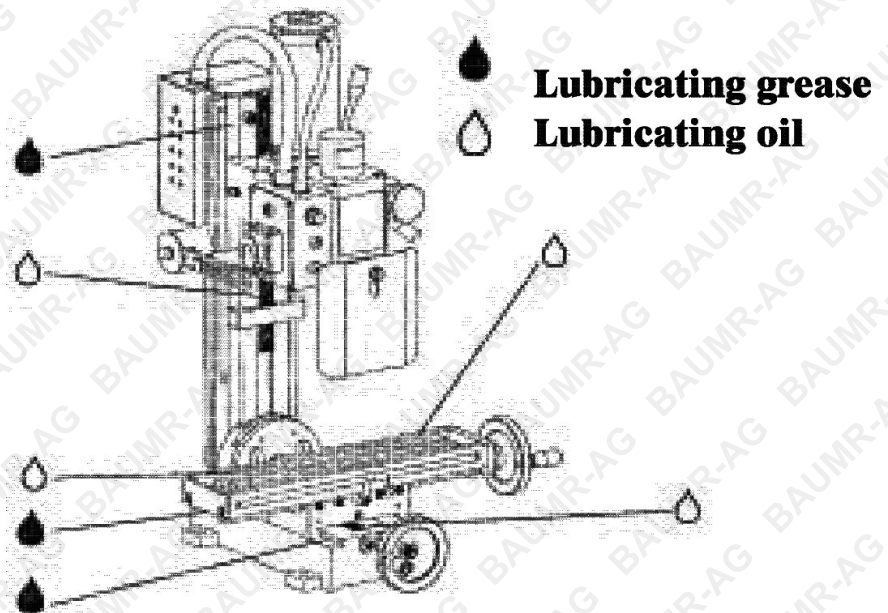
Lubricating Oil

- Basement and saddle seat surface
- Saddle seat and worktable surface
- Fuselage sear and connecting strut surface

Lubricating Grease

- X-axis feeding screw (saddle seat)
- Y-axis feeding screw (worktable)
- Z-axis feeding gear rack (fuselage)

After each work, clean the worktable and lubricate it with a little lubricant for protection.



Specifications

Output Power	350W
Voltage	240V AC
Drilling Capacity	13mm
End Mill Capacity	16mm
Face Mill Capacity	30mm
Tilt angle	-45 to +45
Max X Axis Table Travel	220mm
Max Y Axis Table Travel	100mm
Max Z Axis without collet	180mm
Spindle Taper	MT #3
Throat	167mm
Table Size	390x92mm
Spindle Speed	Low :0~1000 RPM; High: 0~2500 RPM
Swing	324mm
Spindle to Table	292mm



Some experts believe that the incorrect or prolonged use of almost any product may cause serious injury or death. To help reduce your risk of serious injury or death, refer to the information below. For more information, see www.datastreamserver.com/safety

- Consult all documentation, packaging and product labelling before use. Note that some products feature documentation available online. It is recommended to print and retain the documentation.
- Before each use, check the product for loose/broken/damaged/missing parts, wear or leaks (if applicable). Never use a product with loose/broken/damaged/missing parts, wear or leaks.
- Products must be inspected and serviced (if applicable) by a qualified technician every 6 months. This is based on average residential use by persons of average size and strength, and on a property of average metropolitan size. Use beyond these recommendations may require more frequent inspections/servicing.
- Ensure that all users of the product have completed a suitable industry recognised training course before being allowed access to the product.
- The product has been supplied by a general merchandise retailer that may not be familiar with your specific application or description of application. Be sure to attain third-party approval from a qualified specialist for your application before use, regardless of any assurances from the retailer or its representatives.
- This product is not intended for use where fail-safe operation is required. As with any product (for example, automobile, computer, toaster), there is the possibility of technical issues that may require the repair or replacement of parts, or the product itself. If the possibility of such failure and the associated time it may take to rectify could in any way inconvenience the user, business or employee, or financially affect the user, business or employee, then the product is not suitable for your requirements. This product is not intended for use where incorrect operation or a failure of any kind, including but not limited to, a condition requiring product return, replacement, parts replacement or service by a technician may cause financial loss, loss of employee time or an inconvenience requiring compensation.
- If this product has been purchased in error when considering the information presented here, contact the retailer directly for details of their returns policy, if required.

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