

# User's Manual



## Portable Chamfering Machine



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# Chamfer-Mill User's Manual

- Model-1000
- Model-2100

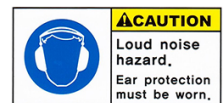
## Specifications

Specifications	Model - 1000	Model - 2100
Minimum Thickness of Steel Plate	3mm	3mm
Minimum Chamfering Width	0mm	0mm
Maximum Chamfering Width (B)	10mm	21mm
Maximum Chamfering Thickness (45°) (A)	7mm	15mm
Adjustment Angle	15~45°	15 ~ 45°
V-Block Length	224mm	224mm
Number of Inserts	5 EA	10 EA
Motor Specifications	Single phase 230V, 50/60Hz, 2400W	
Weight	10.4kg	10.6kg

<<< Patent No. : 10-0952191 >>>

## Cautions

1. Always wear safety goggles and ear protection during operation.
2. Keep your hands away from the cutter (List No.6).
3. Do not operate the mill near combustibles as the spattering hot particles may cause fire.
4. Power supply should be made in accordance with your local rules.
5. To process a new material, start with the chamfering thickness set to minimum and increase it gradually.
6. Turn on the motor first before approaching the processed material, and also turn off the motor away from the processed material.
7. Use "20 degree insert tips" only.





## Chamfering Depth Adjustment

1. Loosen or tighten the upside adjustment knob (List No. 16) watching the scale on the right side of the frame.
2. A turn of the adjustment knob changes the chamfering depth by 1.25mm. And, as a turn consists of 8 clicks, each click of the adjustment knob increases or decreases the chamfering depth by about 0.16mm.
3. The upside chamfering depth adjustment knob can be turned stiffly or smoothly by adjusting the ball plunger (List No. 20).

## Chamfering Angle Adjustment

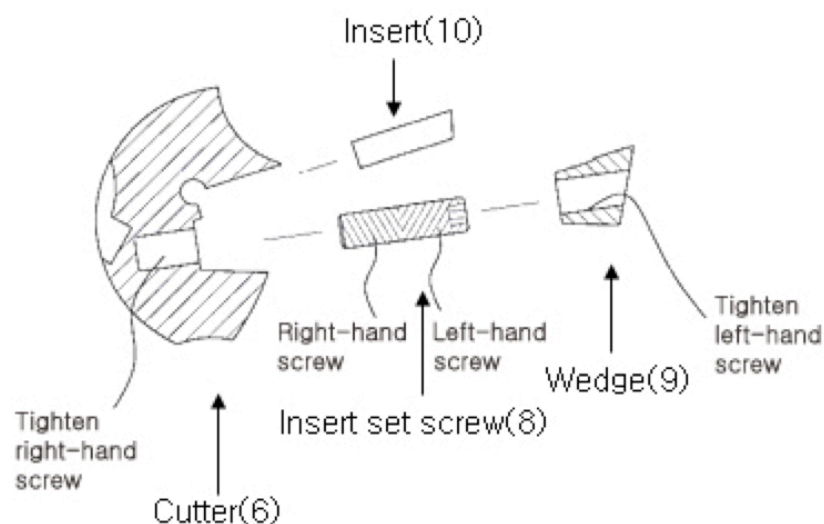
1. Turn the V-block(List No. 28 & 30) by loosening 4 hexagonal cap screws(List No. 27).
2. Adjust the chamfering angle by watching the scale on the left side.
3. Tighten 4 hexagonal cap screws again. (Check whether the chamfering angle is accurate by measuring the test chamfered surface with a goniometer.)

## Work Procedures

1. Wear safety goggles and ear protection.  

<b>CAUTION</b>
Loud noise hazard. Ear protection must be worn.
2. Hold the D-Handle (List No. 15) with the right hand and the motor switch handle with the left hand.
3. The motor switch handle is designed to turn at an angle of 90 degrees for convenience. Push the button in its groove turns right and left at 90 degrees up to 270 degrees.
4. To adjust the height of the motor switch handle held with the left hand, loosen the locking bolt (List No. 13) and, after adjustment of the height, tighten it again.
5. The motor switch is designed for adjustment in 2 steps for safety. Push and forward red button to lock the motor switch for continuous mode.  
To turn OFF the motor, push and release the switch lever (lower black switch)
6. Always start the motor first before approaching the workpiece, and chamfer the workpiece left to right.
7. Do not move the chamfer mill backwards, always move it forwards.

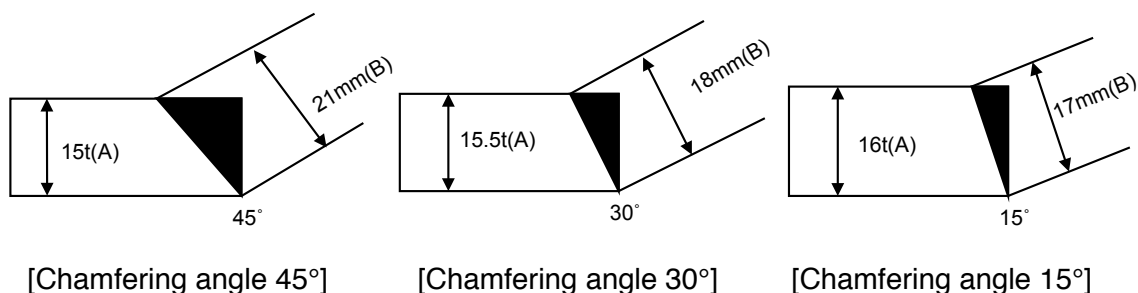
8. Always start chamfering at the end of the workpiece. If the middle of the workpiece is to be chamfered first, contact the chamfer mill slowly to the workpiece to prevent damage of the inserts.
9. Chamfering speed depends on chamfering depth and angle. Chamfering speed can be adjusted depending on volume of the workpiece, but pay attention not to use the chamfer mill excessively.
10. Replace the worn and dull inserts with new one as soon as possible, or it may damage the cutter head.
11. Only 20 degree insert tips should be used.
12. For loosening or tightening the insert for replacement, the 3mm hexagonal T-handle wrench is used.
13. If the screw (List No. 8) is not easily loosened in replacing the insert tip, do not turn it by constraint, but loosen the bolt (List No. 13) to remove the whole frame (List No.21) and then strike the insert tip with an impact driver to remove it. This makes it easy to loosen the screw and replace the insert tip.
14. Assemble the parts of List No. 8, 9 and 10 with the M3 hexagonal T-handle wrench as illustrated below. Turn the insert set screw on the right of the cutter body a round or two first and align the wedge. Turn the assembly clockwise to tighten the insert. To ensure correct assembly of the insert, adjust the insertion depth of the right-hand screw so that the head of the insert set screw is placed below the upper surface of the wedge.  
 In the Model-1000, set the insert to the center of the cutter wedge.  
 In the Model-2100, set the insert to the center of the two facing cutters.



15. Each insert tip has 4 cutting edges, the insert can be used by rotate each edge.
16. The insert set screw (List No. 8) is the KORLOY's DHA-0617.
17. The insert tip (List No. 10) also uses the KORLOY's products. We have two types of inserts: Part No. PC3500 SECN120308-AHA for general steel (gold color) and Part No. PC9530 SECN120308-AHA for stainless steel (grey color). Both inserts are titanium-coated. The insert PC3500 SECN120308-AHA is pre-installed in our delivered chamfer mill.
- The wearing rate of the insert depends on the material to be chamfered. For economy, try to select the insert which shows less wearing rate.
- \* Note: In case the chamfering width is not large, the following insert tips also can be used only for Model-1000:
- KORLOY : PC9530 SEKR1203AFSN-MX
  - TaeguTec : TT8020 SEKN1203AFTN-EM
  - Kyocera : PR730 SEKN1203AFTN
18. If the thickness of the workpiece is less than 5mm, it is recommended to place 8 metal shims or washers between the V-block plate (List No. 28 and 30) and the V-block end cap (List No. 26) so that the distance between V-block end caps may get short. (16 Washers Included)
19. Use of cutting oil (tapping oil, vegetable oil, etc.) ensures improvement of chamfering speed and longer life of the insert tip. And, if the gas cut plate is to be chamfered, it ensures lower wear of the insert tip to grind the cut surface (hardened area) before.

### Example : Characteristics of Chamfering Depth by Angle

Chamfering depth is characterized as below by chamfering angle (Model-2100):



- A: Maximum chamfering depth at the adjusted angle  
 B: Maximum chamfering width at the adjusted angle

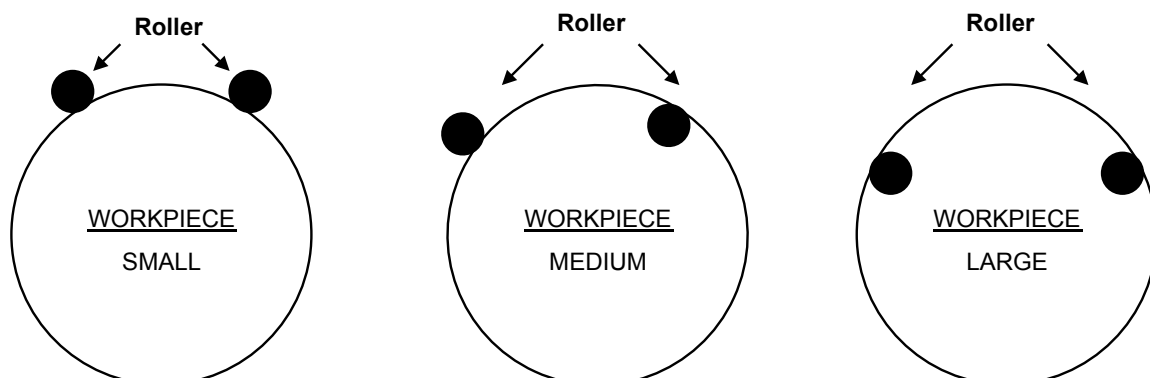
## Troubleshooting

Troubles	Causes	Solutions
Particles spattering	<ul style="list-style-type: none"> <li>- High moving speed</li> <li>- High workpiece hardness</li> </ul>	<ul style="list-style-type: none"> <li>- Lower moving speed.</li> </ul>
Chamfered surface is not smooth	<ul style="list-style-type: none"> <li>- Dull insert</li> <li>- Too high moving speed</li> </ul>	<ul style="list-style-type: none"> <li>- Replace insert.</li> <li>- Lower moving speed.</li> </ul>
Longer sparks at motor carbon brushes	<ul style="list-style-type: none"> <li>- Deteriorated motor</li> </ul>	<ul style="list-style-type: none"> <li>- Replace or repair motor parts.</li> </ul>

## Use of Roller Guide

1. The roller guide (List No. 32) is provided for chamfering round plate or pipe whose diameter is larger than 6 inch (150mm).
  
2. For use for the work-piece such as round plate or erected pipe, the roller guide (List No. 32) is mounted on the large plate (List No. 30) in the state of V-block (List No. 28 & 30) as delivered. For use for the laid pipe, the large plate (List No. 30) and small plate (List No. 28) are crossed at the end cap (List No. 26) and the roller guide (List No. 32) is mounted on the large plate (List No. 30).
  
3. Adjust the chamfering depth to the minimum.
  
4. Place two rollers at proper positions. <Adjust position of each roller guide (List No.32) inserted in the groove of the large plate (List No. 30) depending on diameter.>
  
5. Adjust position of the roller guide (List No. 32) so that the chamfer mill can be easily put to and away the workpiece.
  
6. Test work – Increase the chamfering depth little by little.
  
7. Begin with low speed to prevent damage of the insert.
  
8. If the workpiece is a long pipe, put the chamfer mill on the pipe and turn the pipe.

9. Depending on pipe diameter, the roller guide(ListNo.32) is placed as below:



### **Standard Accessory**

1. 3mm Hexagonal T-handle Wrench - 1ea
2. 4mm Ball L-Wrench - Longitudinal - 1ea
3. 13mm Spanner Combination Wrench - 1ea



## Converting from Model-2100 to Model-1000

### 1. Purpose

When chamfering thin steel below 7mm, converting is recommended for saving inserts and operation time since Model-2100 requires 10 inserts and Model-1000 requires 5 inserts.

### 2. The Difference of Model-1000 and Model-2100

The difference between Model-1000 and Model-2100 is the numbers of cutter head 1 to 2. Other specifications are the same for both model.

### 3. How to Convert

*\* Please refer to drawings of Model-2100*

- 1) Loosen the bolt(List No.13) and remove frame(List No. 21)
- 2) disassemble List No.12, 11, 6, 7, 6 in sequence

*\* Please refer to drawing of Model-1000*

- 3) Assemble Shim(slim)(List No.7-1)
  - 4) Assemble List No.6 and No. 7-2(thick)
  - 5) Assemble List No. 11, 12, 21, 13 in sequence
- \* List No. 7-1 and 7-2 should NOT be changed*

## Insert Tips for Model-1000

1. KORLOY : PC9530 SECN120308-AHA (for maximum chamfering width)
2. KORLOY : PC9530 SEKR1203AFSN-MX
3. TaeguTec : TT8020 SEKN1203AFTN-EM
4. Kyocera : PR730 SEKN1203AFTN

## Speed Controller

### 1. Purpose

The motor (W24-230) has 6600RPM(without work load), 4600RPM with work load. This RPM can be used for steel material, but high RPM to stainless steel can lead to higher rate of inserts wear.

The speed controller is for protecting the inserts from higher wearing rate by reducing its RPM for stainless steel purpose.



### 2. How to Use

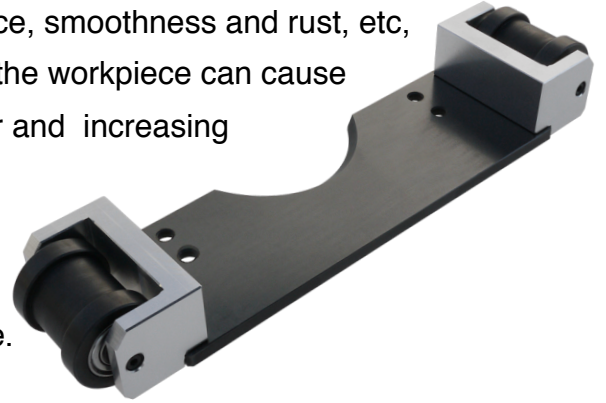
- 1) Plug speed controller to power outlet and then plug Chamfer-Mill power cable to the speed controller.
- 2) When chamfering stainless steel, adjust the controller to 40% ~60% according to chamfering amount workload.
- 3) Higher % is fast chamfering speed and high insert wearing rate.  
Lower % is slow chamfering speed and low insert wearing rate.  
Too low RPM % speed may cause vibration.
- 4) Higher tensile strength (SUS 304, SUS 310, SUS 316, etc) of the materials, it shows higher insert wearing rate.

## Roller Plate

### 1. Purpose

Depends on the surface conditions of the workpiece, smoothness and rust, etc, the friction between the V-Block (List No. 30) and the workpiece can cause problems, reducing the workability for the operator and increasing processing time.

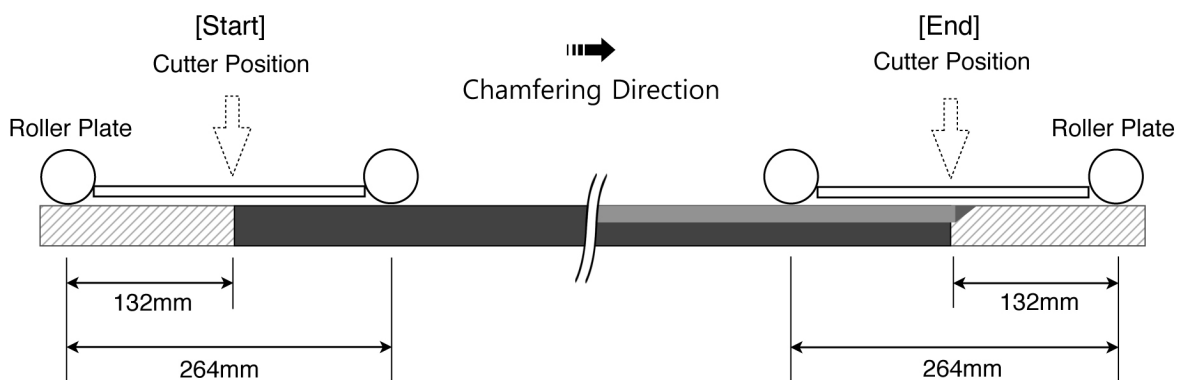
By replacing the pre-installed V-Block(List No.30) with the optional part, Roller Plate, the decreased friction will increase workability and processing time.



### 2. The Difference of the standard V-Block and Roller Plate

The length of the standard V-Block is 224mm, this means the minimum length of the workpiece should be longer than 112mm to chamfer.

However, the workpiece should be longer than 264mm due the the same length of the Roller Plate or its contact points. Otherwise, the chamfering values will be unstable. To get constant chamfering value with Roller Plate, place two extension plates (at least 140mm) at the both starting point and end point of the workpiece. (see below)



## EC Declaration of Conformity

### EC Declaration of Conformity According to EC Machinery Directive 2006/42/EC, Annex II A

We herewith declare,


**AHA Ind. Co.**

**535-ho, Migun TechnoWorld 2, 187 Techno2ro, Yuseong-gu, Daejeon, Korea**

*that the following machine complies with the appropriate basic safety and health requirements of the EC Directive based on its design and type, as brought into circulation by us. In case of alteration of the machine, not agree upon by us this declaration will lose its validity.*

**Machine Description : Chamfer-Mill**  
**Machine Type : Model-1000, Model-2100**

**Applicable EC Directives : Machinery Directive (2006/42/EC)**  
**Low Voltage Directive (2006/95/EC)**  
**EMC Directive (2004/108/EC)**

This is to  that the following machine comply to the essential requirements (Annex 1) of the above mentioned European Directives and the following standards :

EN ISO 12100 : Safety of machinery - General principles for design –

Risk assessment and risk reduction (ISO 12100:2010): 2010

EN 60204-1: Safety of machinery - Electrical equipment of machines: 2006/A1: 2009

EN 55014-1: 2006 + A1: 2009 + A2: 2011 (Class B)

EN 61000-3-2: 2006 + A1: 2009 + A2: 2009

EN 61000-3-3: 2008

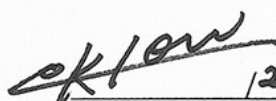
EN 55014-2: 1997 + A1: 2001 + A2: 2008, Category ¶

Authorized Signature/Date :

Authorized Complier in the Community :

Company:.

Address :

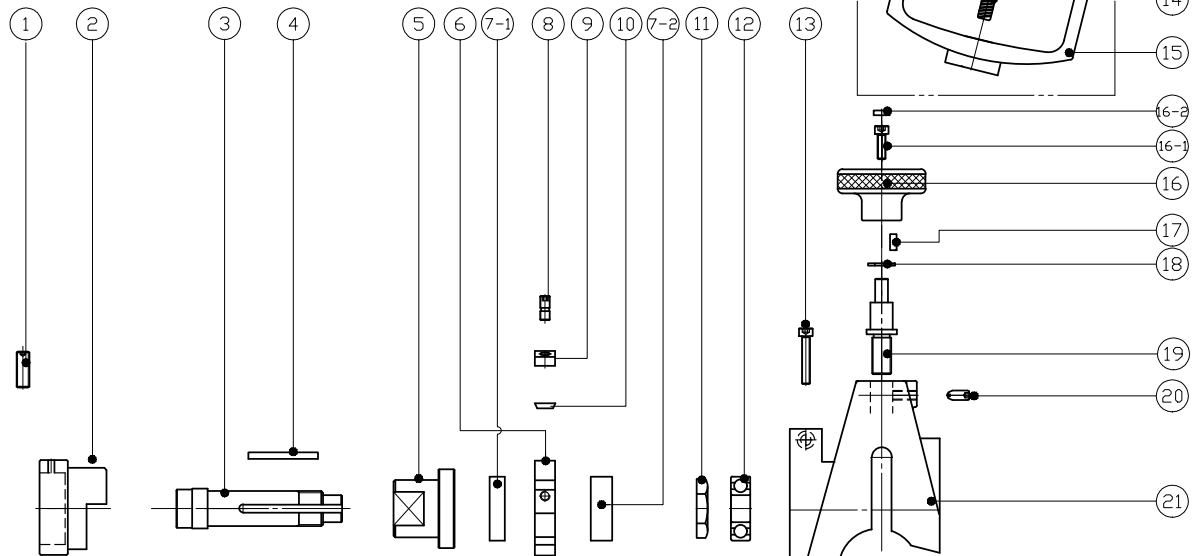
 / 26.8, 2013

J. I. Lee / CEO

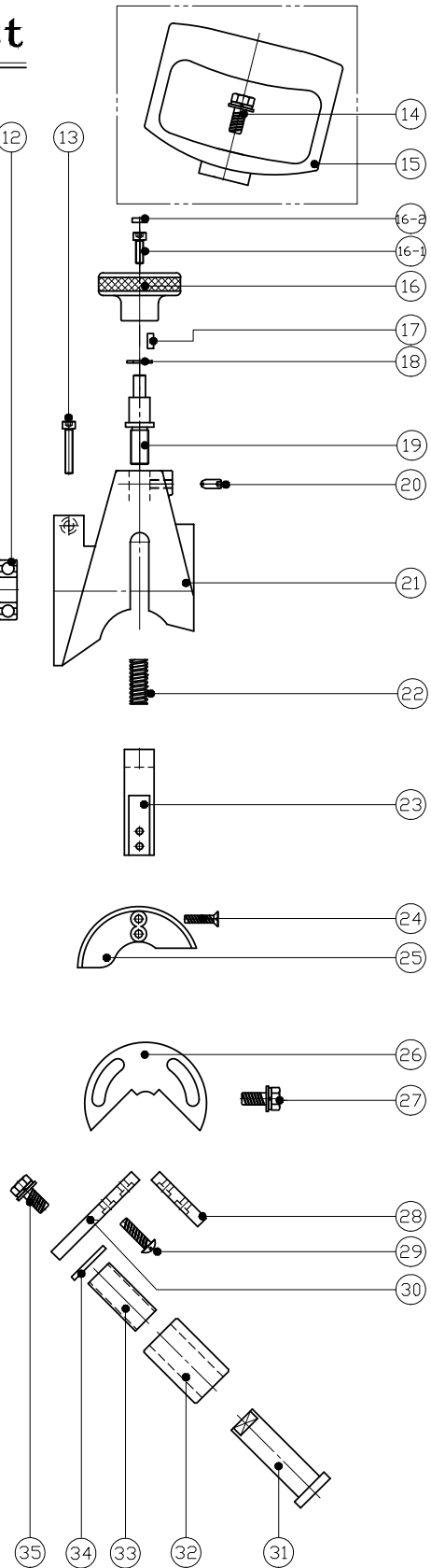
## Warranty

1. The manufacturer grants a warranty of 1 year from the date of purchase.  
(proven by invoice or delivery note).
2. Excluded from any warranty claims are wear parts, overloading, an improper use, damage by use of force, as well as any unauthorized modification by user.
3. This warranty is only valid with the carrying out of the instructions of the User's Manual and correct purpose of use.
4. If the product is or becomes defective as a result of the workmanship in the production or as a result of a defect in the material, then the manufacturer will replace the part or repair.

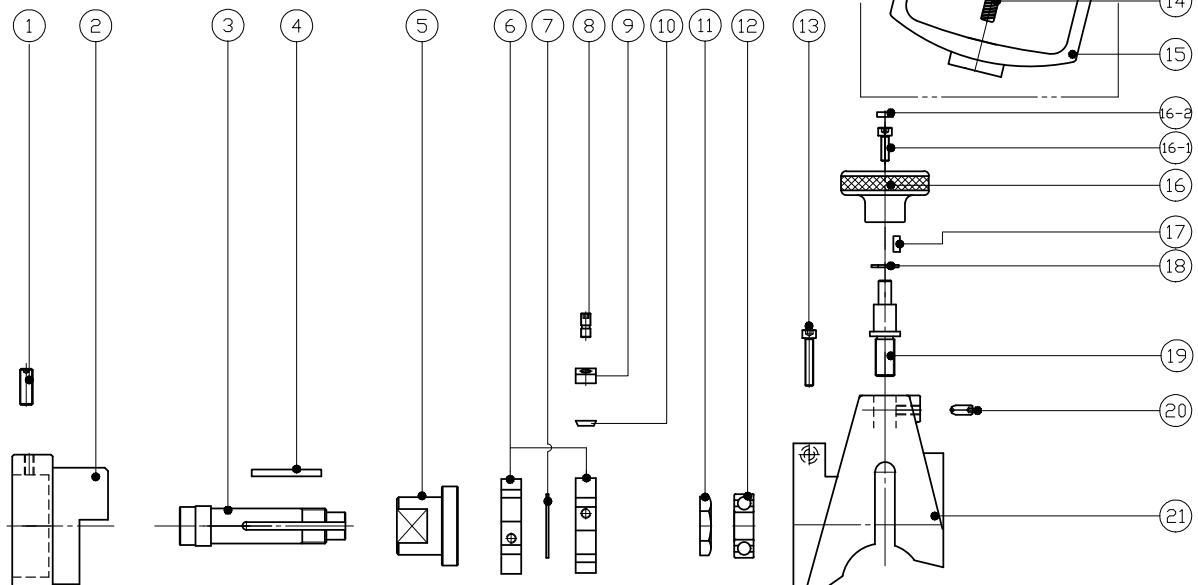
# Chamfer – Mill 1000 Parts List



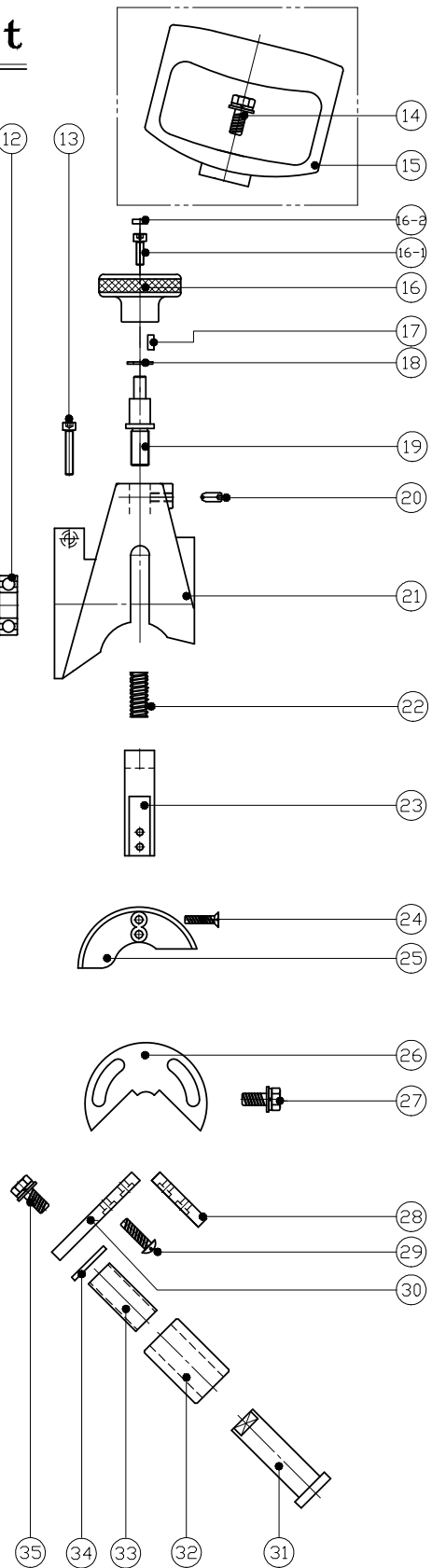
1000-35	Roller Guides Screw	2	H-M8 x 15
1000-34	Washer	2	
1000-33	Roller Pipe	2	
1000-32	Roller Guide	2	
1000-31	Roller Guides Shaft	2	
1000-30	V-Block Plate (Large)	1	
1000-29	V-Block Screw	8	DL-M6 x 10
1000-28	V-Block Plate (Small)	1	
1000-27	Cap Screw	4	H-M8 x 20
1000-26	End cap	2	
1000-25	End Cap Cup	2	
1000-24	Screw	4	SL-M5 x 12
1000-23	U-Bracket	1	
1000-22	Spring	2	
1000-21	Frame	1	
1000-20	Ball Plunger	1	
1000-19	Adjusting Screw	1	
1000-18	Washer	1	
1000-17	Key	1	4 x 4 x 12L
1000-16-2	Cap	1	C5
1000-16-1	Screw	1	SL-M5 x 15
1000-16	Adjusting Knob	1	
1000-15	D-Handle	1	
1000-14	D-Handle Screw	1	H-M8 x 30
1000-13	Locking Bolt	1	L-M5 x 25
1000-12	Bearing	1	#6203zz
1000-11	Jam Nut	1	
1000-10	Insert	5	
1000-9	Wedge	5	
1000-8	Insert Set Screw	5	DHA 0617
1000-7-2	Shim	1	
1000-7-1	Shim	1	
1000-6	Cutter	1	
1000-5	Cutter Spacer	1	
1000-4	Key	1	5 x 5 x 45
1000-3	Spindle	1	
1000-2	Motor Adapter	1	
1000-1	Adapter Screw	2	M6 x 15
Part Number	Description	Q'ty	Spec



# Chamfer – Mill 2100 Parts List



2100-35	Roller Guides Screw	2	H-M8 x 15
2100-34	Washer	2	
2100-33	Roller Pipe	2	
2100-32	Roller Guide	2	
2100-31	Roller Guides Shaft	2	
2100-30	V-Block Plate (Large)	1	
2100-29	V-Block Screw	8	DL-M6 x 10
2100-28	V-Block Plate (Small)	1	
2100-27	Cap Screw	4	H-M8 x 20
2100-26	End cap	2	
2100-25	End Cap Cup	2	
2100-24	Screw	4	SL-M5 x 12
2100-23	U-Bracket	1	
2100-22	Spring	2	
2100-21	Frame	1	
2100-20	Ball Plunger	1	
2100-19	Adjusting Screw	1	
2100-18	Washer	1	
2100-17	Key	1	4 x 4 x 12L
2100-16-2	Cap	1	C5
2100-16-1	Screw	1	SL-M5 x 15
2100-16	Adjusting Knob	1	
2100-15	D-Handle	1	
2100-14	D-Handle Screw	1	H-M8 x 30
2100-13	Locking Bolt	1	L-M5 x 25
2100-12	Bearing	1	#6203zz
2100-11	Jam Nut	1	
2100-10	Insert	10	
2100-9	Wedge	10	
2100-8	Insert Set Screw	10	DHA 0617
2100-7	Shim	1	
2100-6	Cutter	2	
2100-5	Cutter Spacer	1	
2100-4	Key	1	5 x 5 x 45
2100-3	Spindle	1	
2100-2	Motor Adapter	1	
2100-1	Adapter Screw	2	M6 x 15
Part Number	Description	Q'ty	Spec



# METABO W24-230

