

# Steelmax<sup>®</sup>

The tools of innovation.

*APB-32 Automatic*

# Pipe Beveler

Operator's Manual





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## Table of Contents

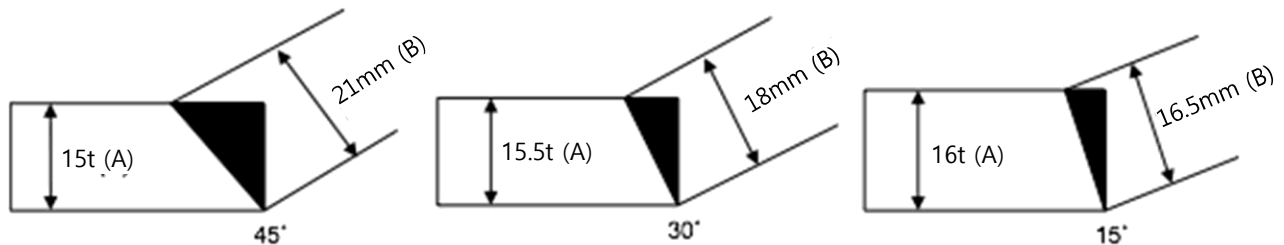
1. System Specifications.....	3
2. Included System Components .....	4
3. Tools and Parts Provided .....	4
4. Optional Components and Consumables.....	4
5. Safety Precautions .....	5
6. Procedure for Beveling Pipe .....	6
7. Procedure for Beveling Plates .....	9
8. Differences in Bevel Depth Due to Set-Up Variation .....	10
9. Bevel Depth Adjustment.....	10
10. Bevel Angle Adjustment.....	11
11. Beveling Large Diameter Pipe (Using SM-PB-AP1020-LD) .....	11
12. Manual Plate Beveling .....	13
13. Cutting Insert Replacement.....	14
14. Troubleshooting .....	16
15. Warranty.....	17
APB 32 Parts List / Drawings.....	18
APB 32/AP1020-LD Parts List / Drawings.....	19
Chamfer Mill Parts List / Drawing.....	20
Metabo W24-230 Parts List / Drawing.....	21

## APB 32 Automatic Pipe Beveling System Operator's Manual

### 1. System Specifications

Pipe Beveling Specifications		
Pipe Diameter Range	10" ~ 32"	Over 32" with optional attachment
Maximum Pipe Wall Thickness	0.80" (20 mm)	0.25" ~1.60" (5~40mm) (varies with pipe diameter)
Maximum Bevel Width (B)	13/16" (21 mm)	
Maximum Bevel Depth (45°) (max) (A)	0.60" (15 mm)	
Bevel Angle Range	0° ~ 45°	
System Weight	90 lbs. (41 Kg)	90 lbs. (41 Kg)
Required Pipe Projected Length	16" (400 mm)	
Minimum Workspace Dimension	16" (400 mm)	

Plate Beveling Specifications	
Maximum Plate Thickness	0.25" ~1.60" (5~40mm)
Maximum Bevel Width (B)	13/16" (21 mm)
Maximum Bevel Depth (45°) (A)	0.60" (15 mm)
Bevel Angle Range	0° ~ 45°
System Weight	90 lbs. (41 Kg)
Minimum Plate Width	6.30" (160mm)
Minimum Working Space	16" (400mm)
Minimum Workspace Below Plate	10" (250 mm)



Chamfer Mill Specifications	
Number of Cutting Inserts	10
Weight	23 ½ lbs. (10.6 Kg)
Motor Specifications	2500 W/120 V/50-60 Hz/Single Phase



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## 2. Included System Components

Part Number	Description
SM-PB-APB-32	Complete Pipe Beveling System Consisting of:
SM-PB-AP1020-BD	Automatic Carrier Unit
SM-PB-AP1020-SD	Pipe Attachment (10-32" OD)
SM-PB-CM2100-00	Chamfer Mill 2100



## 3. Tools and Parts Provided

Item	Quantity
2.5 mm Hexagonal T Handle Wrench	1
5 mm Ball L Allen Wrench	1
6 mm Ball T-Handle Allen Wrench	1
24 mm × ½" Long Hand Socket	1
Ratchet Handle ½"	1
M8 × 20 Allen Head Bolt	4

## 4. Optional Components and Consumables

Part Number	Description
SM-PB-AP1020-LD	Pipe Attachment for Pipe Diameters Above 32"
SM-PB-CM2100-CA	Cutter Head Assembly for APB-32 and MPB-26 (without inserts)
SM-PB-CM2100-10	Cutting inserts (Package of 10)
SM-PB-CM2100-09	Cutter Wedge for APB-32 and MPB-26 (each)
SM-PB-CM2100-08	Cutter Insert Screw (each)
SM-PB-CM2100-SC	Speed Controller for APB-32 and MPB-26 Pipe Beveling Machines

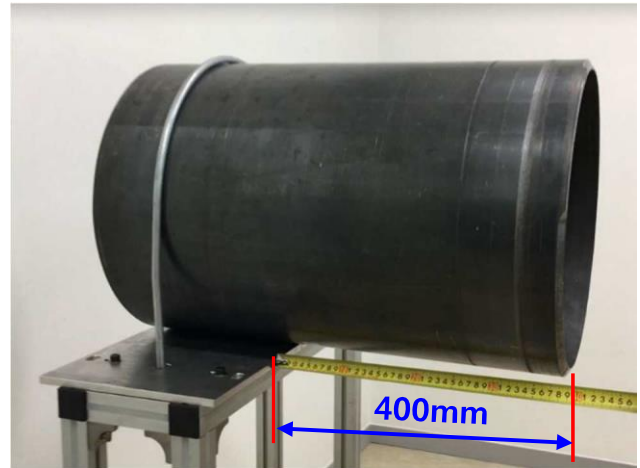
## 5. Safety Precautions

1. This machine is not waterproof. Work in damp condition may cause injuries or damage to machines. Electrical safety precautions should be followed at all times.
2. When connecting the power cord, be sure the switch is in the "OFF" position.
3. When operating the machine, do not leave it unattended.
4. When operating the machine, do not stand or walk underneath the machine.
5. Always wear safety goggles and ear protection.  

<b>CAUTION</b>
Loud noise hazard. Ear protection must be worn.
6. Do not operate the machine near flammable materials. Hot chips are a fire hazard.
7. Connect electric power in accordance with all applicable regulations.
8. Before installing Chamfer-Mill 2100-00 to Pipe or Plate Attachment (SM-PB-AP1020-SD or SM-PB-AP1020-LD), always set the initial bevel depth at or below zero (0) level.
9. After installation, start the Chamfer Mill 2100-00 and set the bevel depth. Then, turn on the Automatic Carrier.
10. Stop the machine in reverse order - Automatic Carrier first and then Chamfer-Mill 2100-00.
11. Read and understand this Operator's Manual thoroughly before using this machine.
12. Before beveling with this machine, confirm sufficient workspace is available and that the workpiece is adequately secured.
13. This machine should only be used in conformance with the specifications set forth herein.
14. This machine should be used only by workers who have read this Operator's Manual and understand these safety precautions.

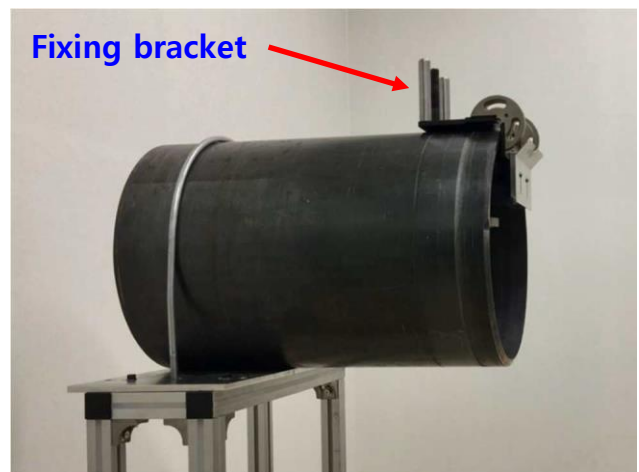
## 6. Procedure for Beveling Pipe

1. Confirm that there is at least 10" (400 mm) of pipe projection and clear workspace available all the way around the end of the pipe to be machined.

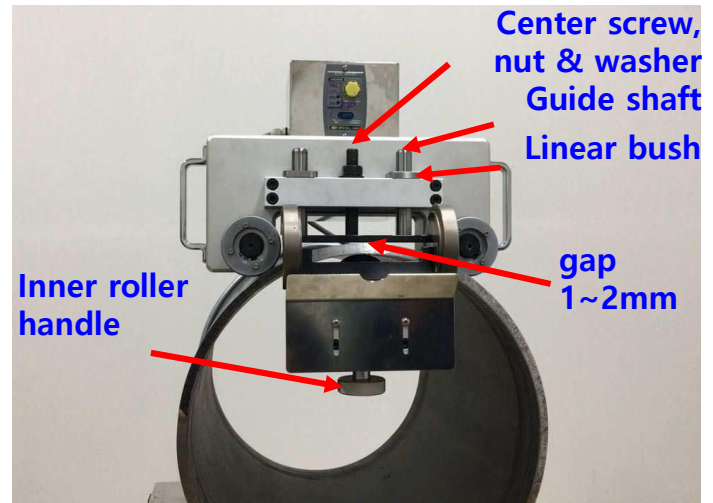


2. Place the fixing bracket to the upper side of the pipe and turn the handle of the inner roller clockwise to tighten. At this time, tighten lightly by hand only.

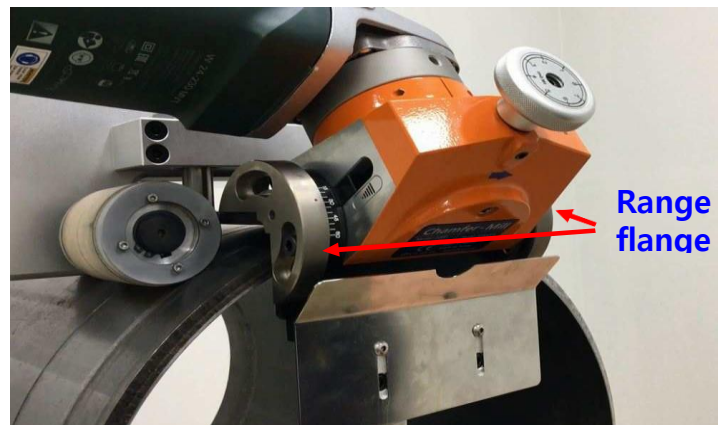
\*Before inserting the fixing bracket onto the pipe, verify that the Inner Roller Adjustment Handle is sufficiently loose to provide enough gap so that Inner Roller can be inserted into the pipe.



3. Insert Linear Bushing of Main Automatic Carrier into Fixing Bracket Guide Shaft.
4. Assemble center washer and Nut with Center Screw.
5. Tighten the Nut using 24mm socket wrench provided. At this time, tighten nut very tightly – turning the nut 180 degrees 4-6 times. (The number of turns may vary with the tightness of the Adjustment Handle explained in the item 2 above.)

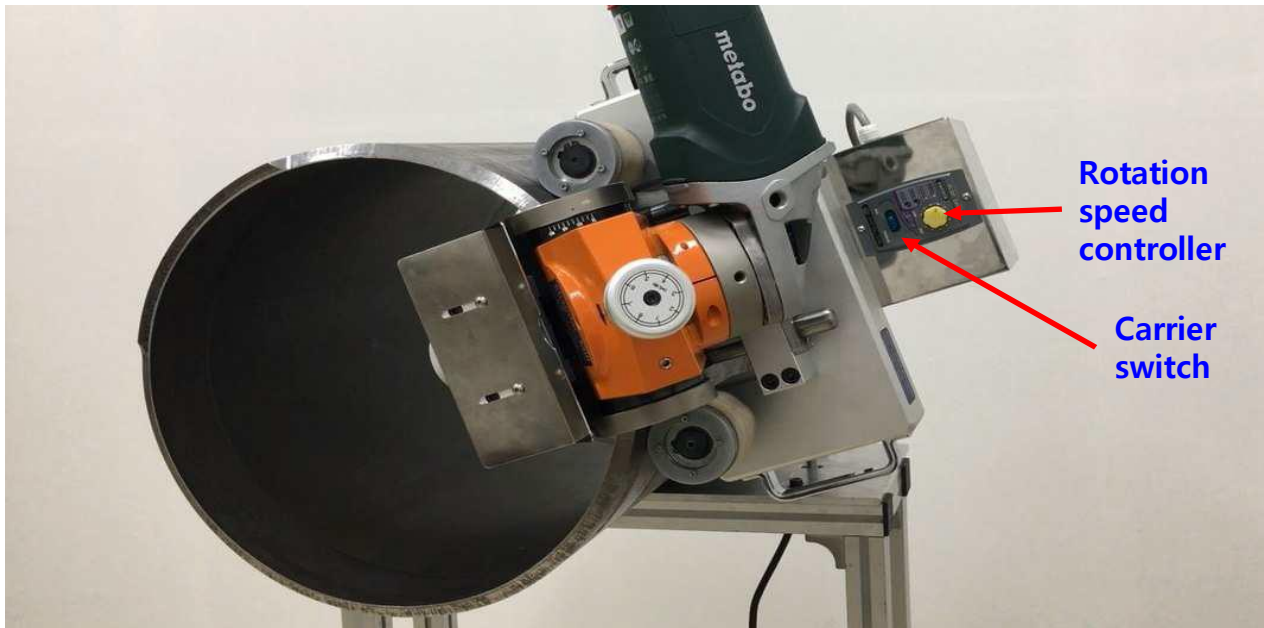
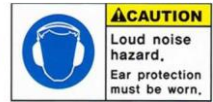


6. After tightening completely, check whether the gap between the surface of the workpiece and lower portion of X-Plate is approximately 1-2 mm. If the gap is not wide enough, adjust the gap by tightening the Nut slightly.
7. Turn the Bevel Depth Adjustment Handle and set the beveling value to be below zero (0) level. Then, install the machine between the Range Flange on both sides and match the angle. Tighten the four M8 x 20 Allen Screws (provided parts).



(If the bevel depth value is not set at or below zero (0) level at installation, it may cause damage to the machine and possible injury to the operator.)

8. Before starting the machine, make sure that the electrical cables will not be twisted or caught in the path of the machine. Wear hearing and eye protection. Turn on the switch of the motor of the chamfering machine first and adjust the intended beveling value by turning the Beveling Value Adjustment Handle. (Actual beveling work is started from this point at a standstill state.)
9. After the beveling value is set, turn on the switch of Automatic Carrier in the Control Box. From this point on, the machine starts rotating clockwise and chamfering work begins.
10. Adjust the rotation speed of the Automatic Carrier. (You need to adjust the speed according to the beveling quantity, materials and the state of the insert tips.)
11. After the beveling work is finished, turn off the switch of the Automatic Carrier first and then turn off the switch of the motor. (Be sure not to reverse the order of turning off the switches.)
12. Set the beveling value at or below zero (0) level for safe beveling work next time. Separation is the inverse order of the installation.





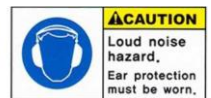
## 7. Procedure for Beveling Plate

1. The minimum width of plates workable with the APB 32 is 6.30" (160 mm). Confirm there is at least 16" (400 mm) of plate overhang and that there is at least 10" (250 mm) clear space below the plate edge to be beveled.
2. Place the fixing bracket to the upper side of the plate and turn the Inner Roller Adjustment Handle on both sides clockwise. Equivalently hand-tighten both sides at this time.



\*Before inserting the fixing bracket onto the plate, confirm that the Inner Roller Adjustment Handle is sufficiently loose to provide enough gap so that two (2) units of Inner Rollers can be inserted onto the plate.

3. The order of installation from this point is the same as explained in items 3-7 of the "Procedure for Beveling Pipe."
4. Wear hearing and eye protection. Turn on the switch of the motor of the chamfering machine and adjust the beveling value by turning the Beveling Value Adjustment Handle. (Actual beveling work is started from this point in a standstill state.)
5. After the beveling depth value is set, turn on the Automatic Carrier in the Control Box. From this point on, the machine starts moving forward and chamfering work begins.
6. Adjust the speed of the Automatic Carrier moving forward appropriately. (Adjust the speed according to the beveling depth, material and condition of the insert tips.)



7. The next steps are the same as explained in items 11-12 of "Procedure for Beveling Pipe."

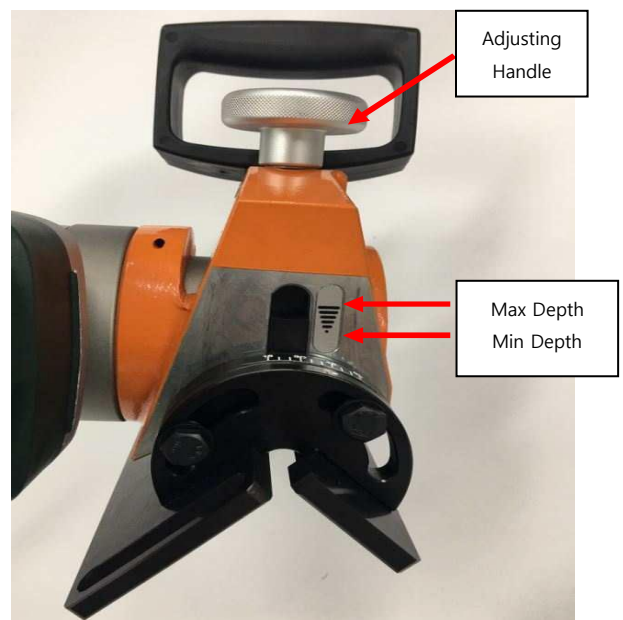
## **8. Differences in Bevel Depth Due to Set-Up Variation**

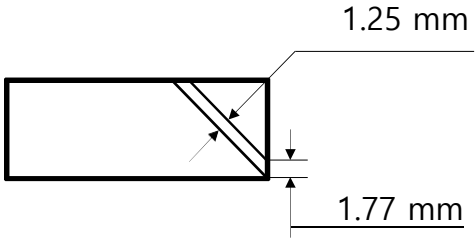
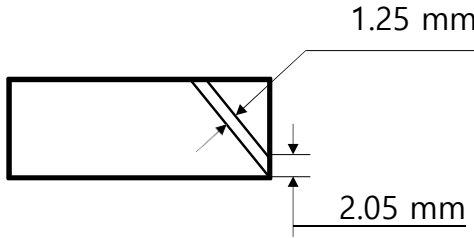
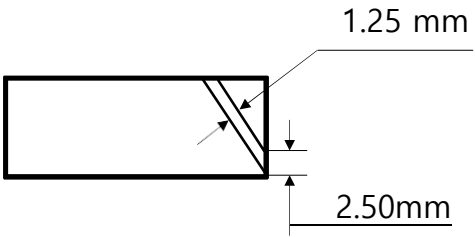
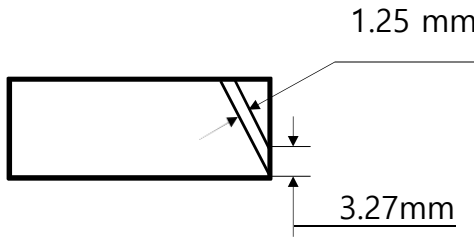
The actual bevel depth achieved may vary depending on the actual gap (1-2 mm) between the surface of the workpiece and the lower portion of X-Plate explained in item 6 of "Procedure for Beveling Pipe." For instance, even if bevel depth value is set the same while beveling two different plates, the resulting bevel depths will vary by the difference in the gap achieved during set-up. If the gap is different by 1 mm between the set-ups, the achieved bevel depth will also be different by 1 mm. Moreover, even in cases where the set-up gaps are the same, the bevel depth will vary if the bevel angle settings are not the same.

It is desirable to insure the gap under the lower portion of the X-Plate is consistent from installation to installation.

## **9. Bevel Depth Adjustment**

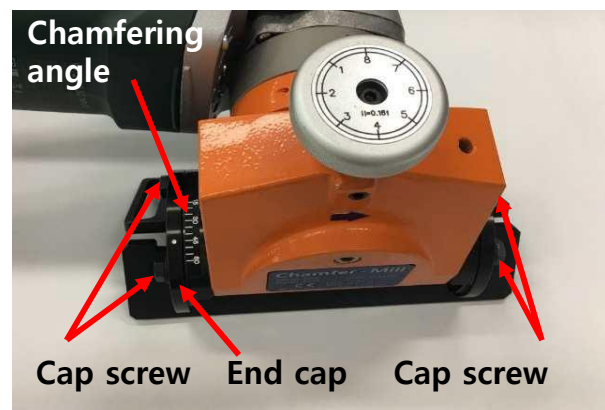
1. Adjust the bevel depth by loosening or tightening the adjustment handle on the top of the unit, using the scale on the right side of the frame.
2. One rotation of the adjustment handle changes the bevel face depth by 1.25 mm. One rotation is divided by eight clicks, each click changes the bevel face depth by approximately 0.16 mm. As shown in the table below, the vertical bevel depth varies with the angle of the bevel.



45° Bevel Angle	37.5° Bevel Angle
	
30° Bevel Angle	22.5° Bevel Angle
	

## 10. Bevel Angle Adjustment

To adjust the bevel angle, loosen the 4 hexagonal cap screws securing the v-block. Adjust the bevel angle using the scale on the left side and re-tighten the 4 hexagonal cap screws completely. Always confirm the bevel angle on a test piece of material before beginning production work.



## 11. Beveling Large Diameter Pipe (Using SM-PB-AP1020-LD)

1. SM-PB-AP1020-LD is applicable to pipes with diameters more than 32 inches and to plate beveling as well.

- To use SM-PB-AP1020-LD, select the appropriate Inner Roller Screws according to the diameter of the pipe and thickness of the plate in accordance with the table below.

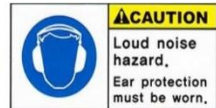
Application	Length of Inner Roller Screw	
	Short	Long
Pipe	32" ~ 59" (800 mm ~ 1500 mm)	Over 47" (Over 1200 mm)
Plate	Thicknesses of 06.0 ~ 1.60" (15 ~ 40 mm)	Thicknesses of 0.25 ~ 1.18" (5 ~ 30 mm)

- For large diameter pipe or where the height of the upper portion of the pipe is very high, it may be difficult to install the fixing bracket on the top edge of the pipe. In this case, it is possible to install the fixing bracket on the side of the pipe at a workable height, but the machine should be installed on the left-hand side, not on the right-hand side, of the pipe. When installing the fixing bracket and Main Automatic Carrier in this position, the gap between the lower portion of the X-Plate and the pipe should be 1-2mm.
- When changing from one size of Inner Roller Screws to another, when the Block Guide is separated from the Support Block and reassembled, it should be positioned so that the white point marked on the Block Guide can be seen from outside.

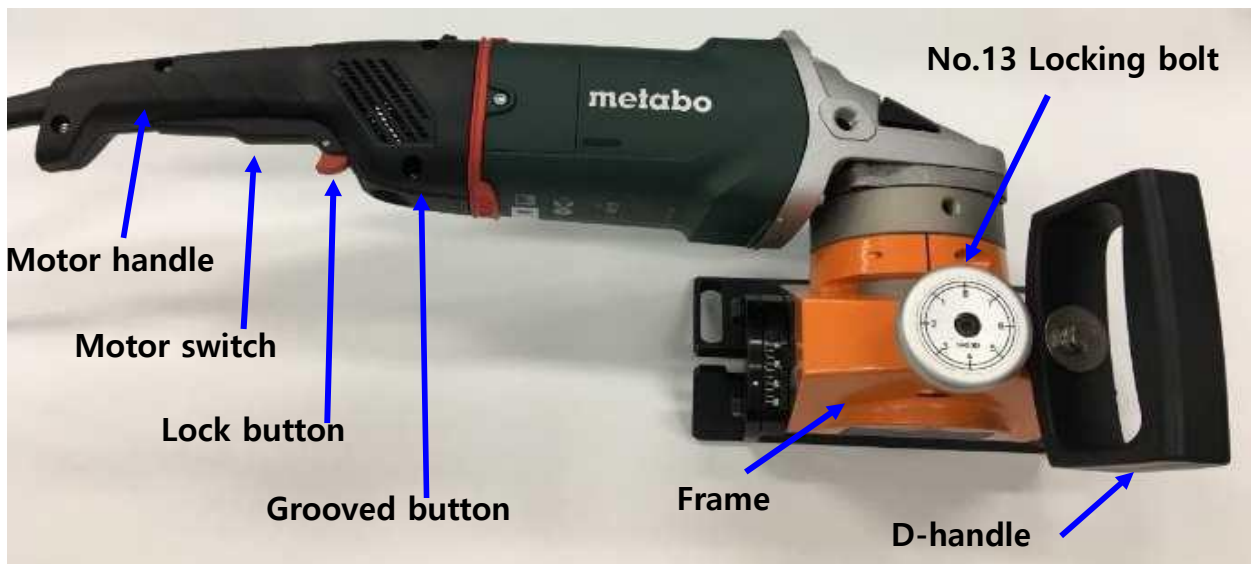
## 12. Manual Plate Beveling

With the purchase of the APB 32, items 26-30 on the Chamfer-Mill 2100 parts list are included as standard items and enable manual plate beveling with the APB 32 system. Assemble the Chamfer Mill as shown in the photo below and follow these instructions for manual plate beveling.

1. Always wear hearing and eye protection when using the Chamfer Mill.



2. Hold the D-Handle with the right hand and hold the motor switch handle portion of the Chamfer Mill with the left hand while working.
3. The motor switch handle can be rotated to a comfortable working position. By pressing the grooved button on the handle, the handle may be turned by 90 degrees either left or right, up to a total of 270 degrees.
4. The handle height may also be adjusted to a comfortable level by loosening the locking bolt. Once set, re-tighten the locking bolt.

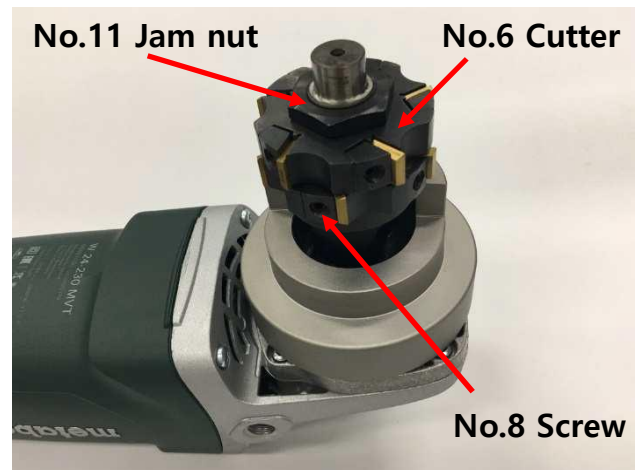


5. The motor switch uses a dual trigger function to ensure that the motor is not inadvertently turned on. The motor is started by pushing the red lever forward and simultaneously depressing the motor switch. Once both actions are taken, the switch is locked and set at a continuous "run" mode. To stop the motor, simply depress and release the black motor switch.

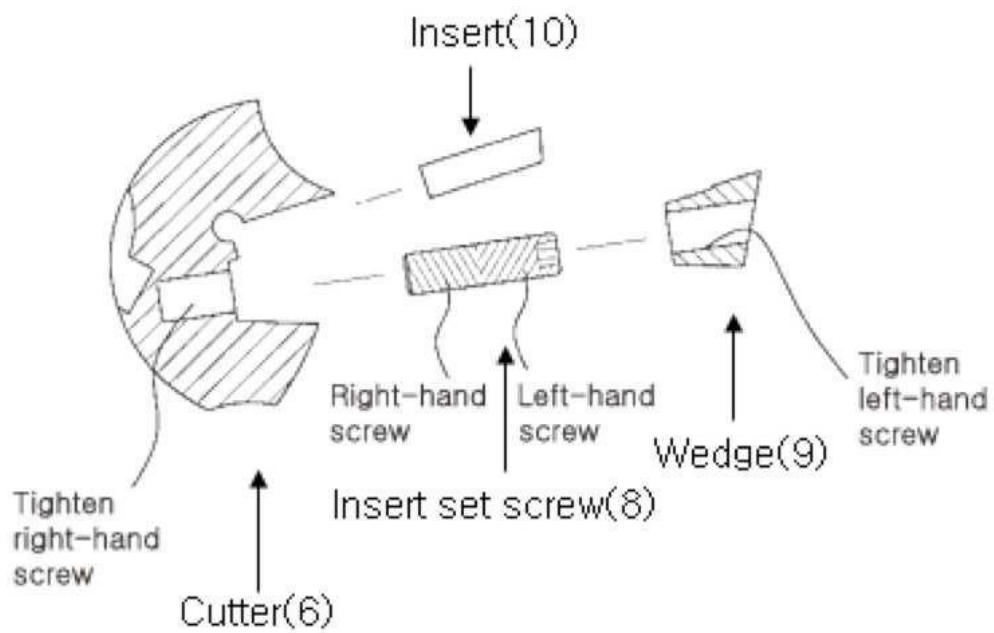
6. Start the motor and let it come up to full speed before advancing the machine into the material. Move the machine at a constant speed and bevel the workpiece from left to right. Never move the machine right to left, always left to right.
7. Always start chamfering from the edge of the workpiece. In the unusual circumstance where beveling must be started in the middle of a plate, move the machine into the workpiece very slowly to prevent damage to the cutting inserts.
8. The travel speed must be appropriate for the bevel angle and the amount of material being removed. Do not operate the machine with excessive speed.
9. Replace the insert tips when they are worn, dull or damaged. Excessive use may cause damages on cutter heads and the machine itself, limiting the useful life of the machine.
10. Only Steelmax 20 degree cutting inserts should be used.

## 13. Cutting Insert Replacement

1. Make certain the unit is disconnected from the power source and the motor switch is in the "OFF" position before attempting to change cutting inserts. Use the provided 3 mm hexagonal T-handle wrench for loosening and tightening.
2. If the insert screws cannot be easily loosened, do not use excessive force to remove them. Rather, loosen the bolt holding the milling unit to the frame and separate the two. Next, loosen the jam nut and remove the cutter head assembly. Once separated, use an impact driver to remove the inserts.



- When installing cutting inserts (inserts, screws and wedges) use the provided 3mm hexagonal T-handle wrench as illustrated below. Turn the insert set screws clockwise so that the right-hand screws of the cutter body and the left-hand screws of the wedge can be assembled at the same time. When the inserts are completely assembled, adjust the length of the left-hand screw or right-hand screw so that the heads of the insert set screws are below the upper surface of the wedge. The inserts should be placed at the center of the two cutters facing each other.



- Each cutting insert has 4 cutting edges and can be used 4 times by rotating the inserts 90° at a time.
- Use of cutting oils (tapping oil, vegetable oil, etc.) may improve beveling speed and increase the life of the cutting inserts. Using compressed air to cool the cutter head and inserts during operation may extend the life of the inserts as well. An air valve is included that can be attached to the center of the frame for this purpose.
- When beveling the surface of a workpiece which has been cut with a thermal process (i.e. oxy fuel or plasma), insert life will be diminished due to the hardened surface in the Heat Affected Zone.

## 14. Troubleshooting

Trouble	Possible Cause	Corrective Actions
Faster than Normal Insert Wear.	The speed of Automatic Carrier is too slow relative to the beveling quantity.	Increase the speed of Automatic Carrier.
	The machine RPM is too high relative to the beveling quantity.	Decrease the RPM using Speed Controller.
Actual result of beveling quantity is less than intended beveling depth set on the machine.	Less beveling quantity caused by the wearing of insert tips.	Replace the worn insert tips.
	The travel speed of Automatic Carrier is too fast for the amount of material being removed.	Decrease the travel speed of Automatic Carrier.
Beveled Surface not smooth.	Worn or dull cutting inserts. Travel speed too high.	Replace/rotate cutting inserts. Slow travel speed.
Motor sparks.	Worn carbon brushes. Deterioration of the motor.	Replace carbon brushes Repair/Replace motor.



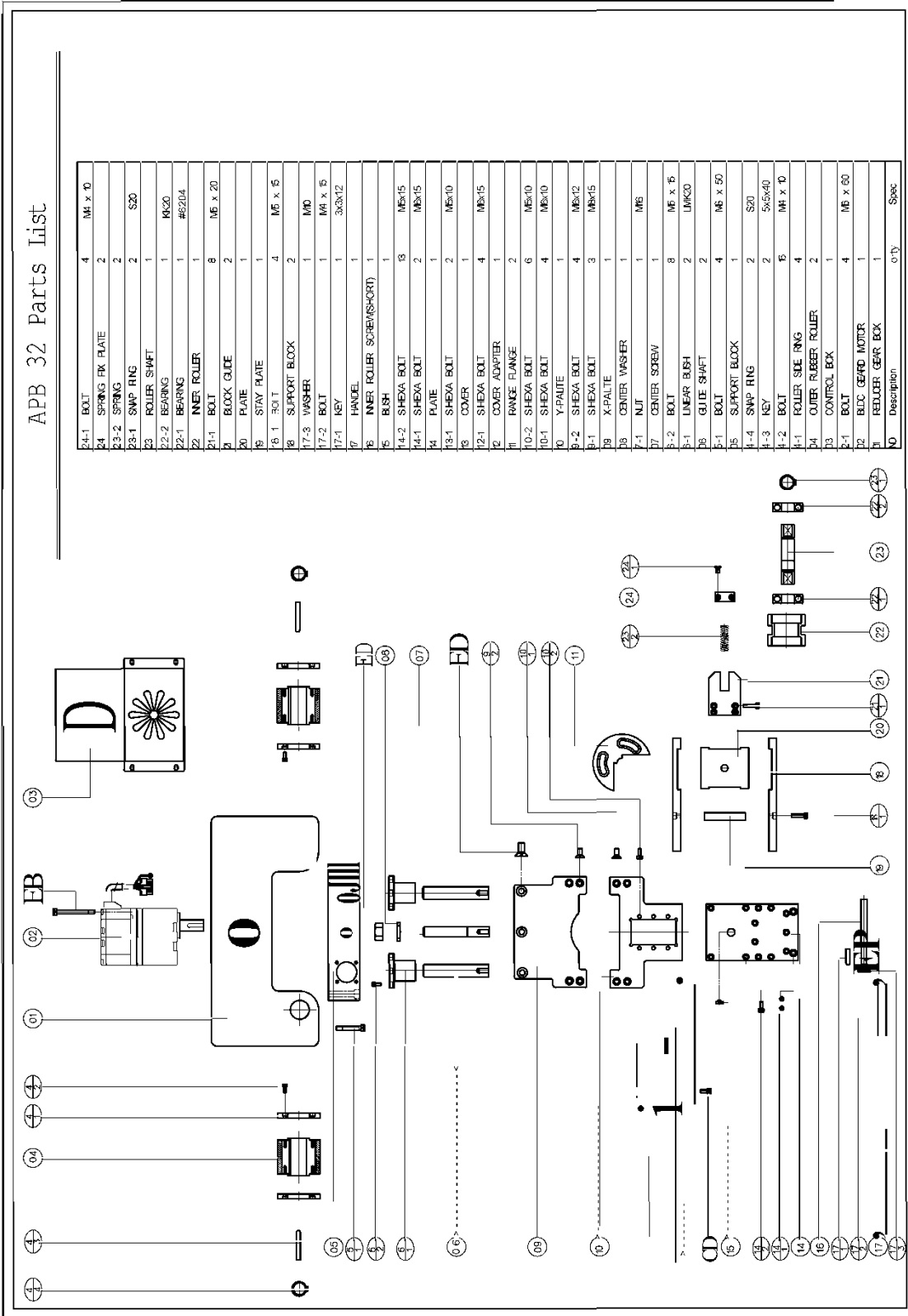


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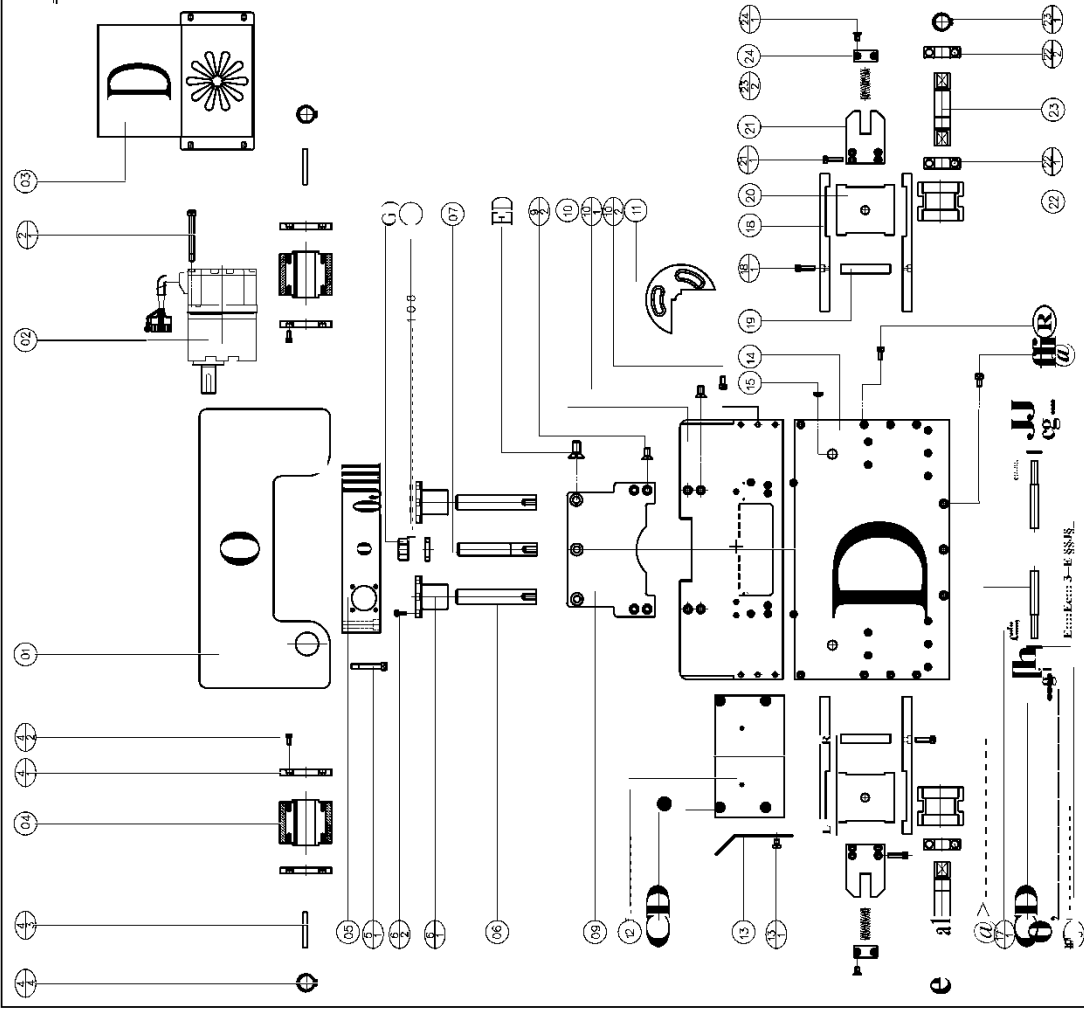
## **15. Steelmax Product Warranty**

Within twelve (12) months from the original date of purchase Steelmax will repair or replace any machine tool found to be defective in materials or workmanship, provided the product registration card has been returned to Steelmax within thirty (30) days of the purchase date. This warranty is void if the tool being returned has been used beyond the recommendations in this Operator's Manual or if the machine has been damaged by accident, neglect, improper service, or other causes not arising out of defects in materials or workmanship. This warranty does not apply to machines and/or components which have been altered, changed, or modified in any way, or subjected to use beyond recommended capacities and specifications. Electrical components are subject to respective manufacturers warranties. All goods returned defective shall be returned prepaid freight to Steelmax, which shall be the buyer's sole and exclusive remedy for defective goods. Steelmax reserves the right to optionally repair or replace the machine with the same or equivalent item. There is no warranty for any consumable items, including, without limitation, saw blades, annular cutters, abrasive belts and cutting inserts. All machines must have the consumables used when the machine failed installed to determine if the machine has been overused or if it falls under Steelmax's warranty replacement program for defects in material and workmanship. In no event shall Steelmax be liable for loss or damage resulting directly or indirectly from the use of the merchandise or from any other cause. Steelmax is not liable for any costs incurred on such goods or consequential damages. No officer, employee or agent of Steelmax is authorized to make oral representations of fitness or to waive any of the foregoing terms of sale and none shall be binding on Steelmax.

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APB 32/SM-PB-AP1020-ID Parts List



24-1	BOLT	8	M4 x 10
24	SPRING FIX PLATE	4	
23-2	SPRING	4	
23-1	SNAP RING	4	S30
23	ROLLER SHAFT	2	
22-2	BEARING	2	RC20
22-1	BEARING	2	#5204
22	INNER ROLLER	2	
21-1	BOLT	16	M6 x 20
21	BLOCK GUIDE	4	
20	PLATE	2	
19	STAY PLATE	2	
18-1	BOLT	8	M6 x 16
18	SUPPORT BLOCK	4	
17-3	WASHER	2	M10
17-2	BOLT	2	M4 x 6
17-1	KEY	2	3CX12
17	HANDLE	2	
16	INNER ROLLER SCREW(LONG)	2	
15	INNER ROLLER SCREW(SHORT)	2	
15	BUSH	2	
14-2	SHEXA BOLT	26	M6x15
14-1	SHEXA BOLT	3	M6x15
14	PLATE	1	
13-1	SHEXA BOLT	2	M6x10
13	CORNER	1	
12-1	SHEXA BOLT	4	M6x15
12	CORNER ADAPTER	1	
11	RANGE FLANGE	2	
10-2	SHEXA BOLT	2	M6x10
10-1	SHEXA BOLT	4	M6x10
9	Y-PALTE	1	
9-2	SHEXA BOLT	4	M6x10
9-1	SHEXA BOLT	3	M6x15
8	X-PALTE	1	
8	CENTER WASHER	1	
7-1	NUT	1	M6
7	CENTER SCREW	1	
6-2	BOLT	8	M6 x 15
6-1	LINEAR BUSH	2	UMC20
6	GUIDE SHAFT	2	
5-1	BOLT	4	M6 x 50
5	SUPPORT BLOCK	1	
4-4	SNAP RING	2	S30
4-3	KEY	2	5x5x40
4-2	BOLT	16	M4 x 10
4-1	ROLLER SIDE RING	4	
3	OUTER RUBBER ROLLER	2	
3	CONTROL BOX	1	
2-1	BOLT	4	M6 x 60
2	BLDC GEAR MOTOR	1	
1	REDUCER GEAR BOX	1	
NO	Description	Qty	Spec

## Chamfer – Mill 2100 Parts List

