

2019

14-11-19

# BEKAMAK

bandsawing machines

## FULL AUTOMATIC HORIZONTAL BANDSAWING MACHINES

BMSO 320



RUNNING VOLTAGE

SERIAL NUMBER



**Manufacturer / İmalatçı : Beka-Mak Makina Sanayi ve Tic. A.Ş.**

**Address / Adres: İzmir Yolu Caddesi No:698 - 16370 Başköy-Nilüfer -Bursa/Türkiye**

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## Warranty

- The firm guarantees the machine described hereby, designed in compliance with all regulations in force, in particular safety and health regulations; the machine has undergone successful testing.
- The warranty covers a period of 12 months. It doesn't cover electrical motors and tools.
- The purchaser is entitled 'replacement of faulty parts'. Shipping and packing costs are at his expense.
- The warranty doesn't cover the parts damaged by falls or careless handling of the machine, incorrect operation, non-compliance with the maintenance rules. Any tampering with the machine, especially with the safety devices automatically expires the warranty and the manufacturer will be freed from any responsibility.
- Any kind of alteration on the machine ends the warranty and the manufacturer becomes free from every kind of responsibility.
- No claim for damages shall be accepted in case the machine lays idle for a long period of time.
- Machine is designed to be run indoors. It is not recommended to run the machine outdoors.

The serial number on the machine is a 'main reference for the warranty', instructions manual, after sale service and identify the machine in case of need.

## Important

Upon the delivery of the machine, the consumer must make himself sure that all the devices indicated in the paragraph of the safety manual are present and working correctly. Furthermore, he must mount in conformity with the instructions indicated those devices which are not mounted at the time of delivery to facilitate transport.

When ordering spare parts

It is necessary to state:

- Machine model
- Serial number and year of production
- Item reference number

**Without serial number no spare parts will be delivered**

## General Information

- The machines are manufactured in compliance with the accident prevention rules in force.
- Strictly comply with the instructions contained in this manual to obtain the best performance from the machine. Strict compliance with the rules contained herewith will ensure optimum results and avoid any inconvenience caused by the non-compliance of operation and maintenance instructions.
- Closely follow the instructions given below to avoid contacting the manufacturer for the problems which can be easily solved..
- If after having strictly compliance with the given instructions, the purchaser still needs the help of our technical assistance service, he must supply all the technical indications necessary to determine the type of problem and/or the parts which are not functioning correctly. This will enable our technical assistance service to intervene quickly and efficiently on the machine.

Copies of the instruction manual may be requested upon indication of the machine serial number.

## General Safety Notes

All installation work including the electrical connection must only be carried out by qualified personnel.

The machine must only be operated by a technically trained and experienced operative who is also instructed in 'safety at work ' procedures.

Any adjustments, cleaning, repairs or changing of the saw blade must under no circumstances be performed unless the machine is fully isolated from the electrical power supply. Ensure the emergency stop button on the control binnacle is pressed and the power supplies at the mains are disconnected."

The band saw must be regularly inspected and maintained in good serviceable condition. Eye protection, ear protection, gloves and protective clothing must be worn when any of the above procedures are being carried out, as well as when cutting fluid is prepared, introduced or displaced from the band saw machine (the relevant environmental regulations must be observed in case of the use and disposal of cutting fluid etc.)

The band saw must be installed on ground. Observe the permissible floor load. Than the band saw machine has been properly bolt to ground securely.

Allow sufficient working space around the band saw of at least 1 meter. Installations of stock roller conveyors require additional space and possibly a lifting mechanism for heavy work pieces.

Always ensure that the working area around the band saw is well lit.

## Safety Instructions

- Be sure that electrical connection is made carefully. To avoid unwanted situations like electrical shock, protect the main supply cable with a holster.
- Before running the machine, be sure that all of the protections are mounted properly and all the covers are closed.
- Avoid from smoke and moisture.
- Please use the parts and equipments which are recommended. Usage of unsuitable parts and materials which are bigger than the capacity of the machine can cause unwanted situations.
- Check the machine and inform the defects everyday.
- Don't leave any material after chancing the band.
- Do not hold the material while the machine is cutting. Always tighten the material by using essential parts.
- Please pay attention to choose the area of the machine which doesn't include anything that creates difficulties to control the machine
- Please be sure that the teeth of the band are looking to correct direction.
- Don't leave the band on the ground or any place that is dangerous for other people.
- Be careful when using the machine and keep the working area clean ( clean the saw dusts and oil traces )
- Pay attention to security instructions when using the machine.
- Don't wear loose cloths when using the machine.
- Regardless use the protective gloves when using the machine.
- Don't get close too much to the machine when running.
- Before carrying out any cleaning or maintenance procedure, disconnect the machine from main supply.
- In some conditions, noise level can be about 80 db. Band choice and cutting speed is important factor for noise level.
- Illumination is an important factor for security.
- Ratio of coolant liquid is important for obtaining optimum lubrication.
- Never use the machine if you notice any fault of the machine or absence of any part of the machine.
- Control the emergency button at least once a week and be sure that it is working properly.

## Definitions

(EN ISO 12100:2010)

**User:** the person, body or company who has bought or rented the machine and intends to employ it for the uses contemplated.

**Operator:** the physical person authorized by the user to operate the machine after having been suitable trained on the use and specific risks of the machine..

**Authorized person:** the skilled person, who is authorized by the user to carry out maintenance or setting-up operation of the machine.

**Dangerous zone:** anywhere inside and/or near a machine, which the presence of an exposed person represents a risk for his safety and health.

**Exposed person:** any person who finds himself in dangerous zone, either entirely or partially

## Purpose of machine

This machine has been designed to be mainly used by light and medium structural steel industries.

This machine has been designed for the cutting of ferrous material and the other light materials with solid, hollow or cross section. Any other material use differing from the above mentioned materials is to be considered inappropriate and prohibited.

The machine operator must be trained and informed of risks and must have the instruction manual at his disposal.

The operator must not work in the vicinity of the danger zone (cutting area) with any other people.

**During the cutting process, the operator must never put hands or use tools in the cutting area**

## **RELATED DIRECTIVES AND STANDARDS**

### **DIRECTIVES**

MACHINERY DIRECTIVE- **2006/42/EC**

LOW VOLTAGE DIRECTIVE- **2006/95/EC**

ELECTROMAGNETIC COMPATIBILITY DIRECTIVE- **2004/108/EC**

### **STANDARDS**

**EN ISO 13857:2008**; SAFETY OF MACHINERY-SAFETY DISTANCES TO PREVENT DANGER ZONES BEING REACHED BY UPPER LOWER LIMBS

**EN ISO 4413:20106**: HYDRAULIC FLUID POWER – GENERAL RULES AND SAFETY REQUIREMENTS FOR SYSTEMS AND THEIR COMPONENTS

**EN ISO 13849-1:2008/AC:2009**; SAFETY OF MACHINERY - SAFETY-RELATED PARTS OF CONTROL SYSTEMS - PART 1: GENERAL PRINCIPLES FOR DESIGN






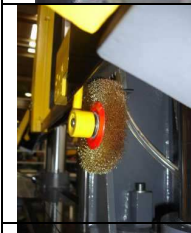
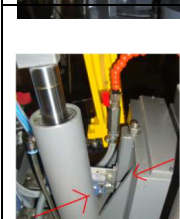

**EN 13898:2003+A1:2009/AC:2010**: MACHINE TOOLS - SAFETY - SAWING MACHINES FOR COLD METAL



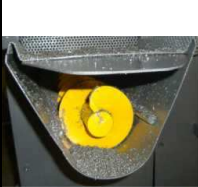



**EN ISO 12100:2010**; SAFETY OF MACHINERY - GENERAL PRINCIPLES FOR DESIGN – RISK ASSESMENT AND RISK REDUCTION.

**EN 60204-1:2006/A1:2009**; SAFETY OF MACHINERY - ELECTRICAL EQUIPMENT OF MACHINES - PART 1: GENERAL REQUIREMENTS

## Residual Risks

### Do Not Touch Below Mentioned Moving Or Movable Parts Of The Machine While It Runs.

	Mechanical Dangers	Residual Risks
	<p>There might be hand/arm jam and crushing between the wheel cover and control panel.</p>	<p>Downfeed speed is designed to be less than 10mm/s. There are the warnings in manual and on machine.</p>
	<p>There might be finger jamming between the piston shaft and block.</p>	<p>Piston closing time is designed to be less than 10mm/s. To reduce the probability of piston jams wedge is designed to be substantially close to the plunger shaft diameter. There is warning label.</p>
	<p>There is hand jam possibility between the lower switch and vice plate.</p>	<p>Downfeed stops when the switch touches the screw. When there is finger jam the switch will be pressed and the movement will stop. In this way movement stops without harm.</p>
	<p>The switch which limits the downfeed presses on the plate, there is finger jam risk.</p>	<p>Downfeed speed is adjusted to less than 10mm/s, which helps running away faster.</p>
	<p>There is hand jam possibility between the upper switch and bow head.</p>	<p>Downfeed speed is adjusted to less than 10mm/s, which helps running away faster.</p>
	<p>There is jam possibility when you put your finger to the chip brush.</p>	<p>Brushes to provide sufficient clearance in accordance with EN 294 was closed by the stationary casing. There are warning at related sections.</p>
	<p>When the bow approaches down the gap between the piston and vice closes. Finger jam warning.</p>	<p>There are warnings in user manuals. There are warning signs on the machines.</p>
	<p>When the bow goes up the gap between the movable part and vice plates closes. Finger jam warning.</p>	<p>There are warnings in user manuals. There are warning signs on the machines.</p>

	<p>Gap under the cover may let get to the blade.</p>	<p>The chip exit hole under the cover is narrowed according to EN294 for protection.(check calculation part)</p>
	<p>There is possibility to get to the out of cutting part of the blade from front and back.</p>	<p>There are warnings in user manuals. There are warning signs on the machines.</p>
 <p>(optional)</p>	<p>Warning for the end of chip conveyor which may cause jamming.</p>	<p>There are warnings in user manuals. There are warning signs on the machines.</p>
	<p>Warning for jamming from the chip conveyor grid to chip conveyor.</p>	<p>There are warnings in user manuals. There are warning signs on the machines.</p>
	<p>Warning for reaching to the chain under the chain cover.</p>	<p>Under the cover is closed to prevent reaching to the chain.</p>
	<p>Warning for finger jamming between the roller and materail.</p>	<p>Feeding mechanism cover is designed to prevent jamming. There are warning signs on the machines.</p>



## **Statement of Noise**

### **Conditions for measurement**

Tested Machine: BMSO 320– Blade size: 3660 x 27 x 0,9mm

Material in use: ø250 Solid Material

### **A Nominal sound pressure level in warehouse**

**L<sub>pfa,1m</sub>=77dB(A) Coefficient of uncertainty k:4 db (testing appropriate to en 11202)**

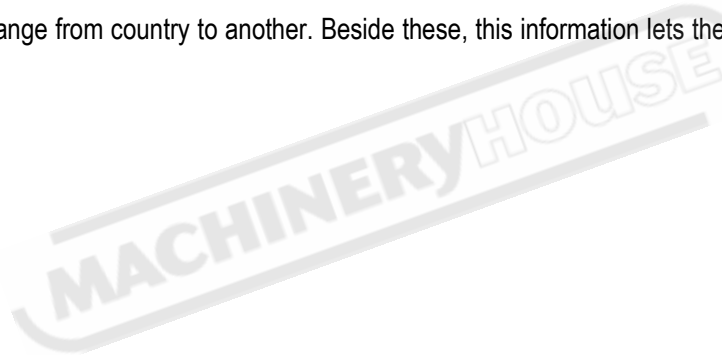
### **A nominal sound power level**

**Power level L<sub>wa</sub>=95dB(A) (mesasured value)**

Coefficient of uncertainty k:4 db (testing appropriate to en iso 3746)

Values for noise are level of issue and it doesn't state it's on safe working level. Even there is a connection between Issue and exposure levels, this can not be used safely to decide if advanced precautions are needed. Factors that effect the real level of exposure that effects work force are depending on featuress of warehouse,(other sources of noise, other works nearby, and quantity of machines) including exposure time

Allowed level of exposure may change from country to another. Beside these, this information lets the operator to consider the dangers and risks.



## Warning

This chapter outlining the safety devices and norms was drawn up bearing in mind the normal use of the machine as stated in the chapter on the operation of the machine and the adequate preparation of the operators as regards the specific risks linked to the operation of the machine.

If the machine isn't used according to instruction given in the 'purpose of the machine' chapter in this manual, the manufacturer isn't responsible for any damage caused to people and things.

Furthermore, the manufacturer isn't responsible for any damage to people and things and things resulting from the non-compliance with the following warnings.

- A) Adopt all the necessary precautions during loading, calibration, part replacement, cleaning, and repair or maintenance operations to prevent someone else from turning the machine on.
- B) Do not temper with the safety devices and guards on the machine.
- C) Do not remove any of the safety devices and guards on the machine.

Always make sure that safety devices and guards are remounted after their temporary removal for technical reasons ordered by the boss

## Connection To The Electrical System

Control panel is mounted on the electric panel. Machine is connected to the main supply in the electrical panel. **R, s and t shows the phases, n is neuter and pe is grounding.** Connection will be from the 13(l1) klemens which is at right klemens group.

Check the voltage which is mentioned at the first page of the manuel before setting the electrical connection of the machine.

If the cable phase line is correct phase control led lightens in that way it is prevented to motors move on wrong ways. Be sure that the out-put voltage at the power supply is 22 ~ 28 vdc.

The machine is protected against short circuit with interrupters and against high voltage with thermal relays. Grounding and neutralizing have to be done to protect the machine .

## Technical Data

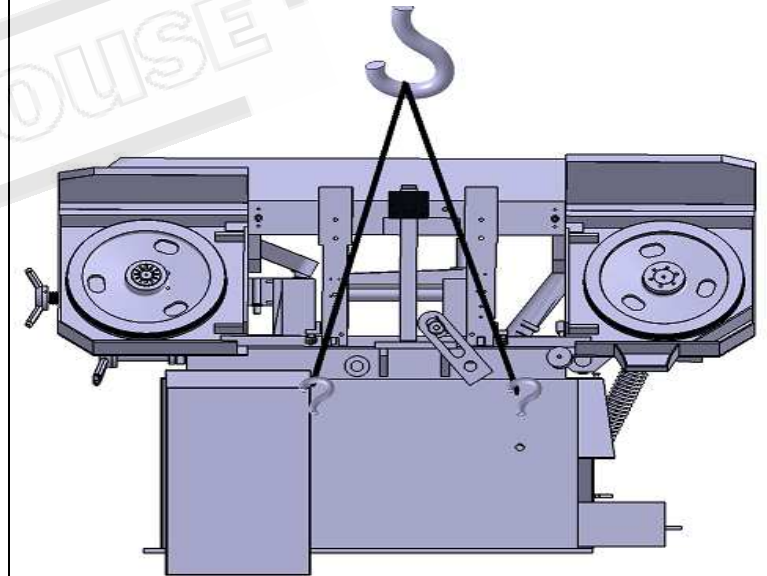
TECNICAL DATA/TECHNISCE DATEN			BMSO 320	BMSO 320	BMSO 320L
Cutting Capacity Schnittbereich 0°	Round/Rund	mm	280	320	330
	Flat/Flach	mm	280 x 250	320 x 300	500 x 320
	Square/Vierkant	mm	270	300	330
Main Drive Motor/Hauptmotor		kW	1,5	1,5	2,2
Hydraulic Motor/Hydraulikmotor		kW	0,37	0,37	0,37
Coolant Motor/Kühlmittelpumpe		kW	0,12	0,12	0,12
Feed Motor/Kühlmittelpumpe		kW	0,25	0,25	0,25
Cutting Speeds/Schnittgeschwindigkeit		m/min	20 - 100	20-100	20-100
Band Dimensions/Sagebandabmessung		mm	3400 x 27 x 0,9	3660 x 27 x 0,9	4160 x 34 x 1,1
Working Height/Arbeitshöhe		mm	640	640	640
Weight/Gewicht		Kg	736	765	860
Dimensions/Masse	Length/Länge	mm	1800	1900	2100
	Width/Breite	mm	850	850	850
	Height/Höhe	mm	1300	1300	1300

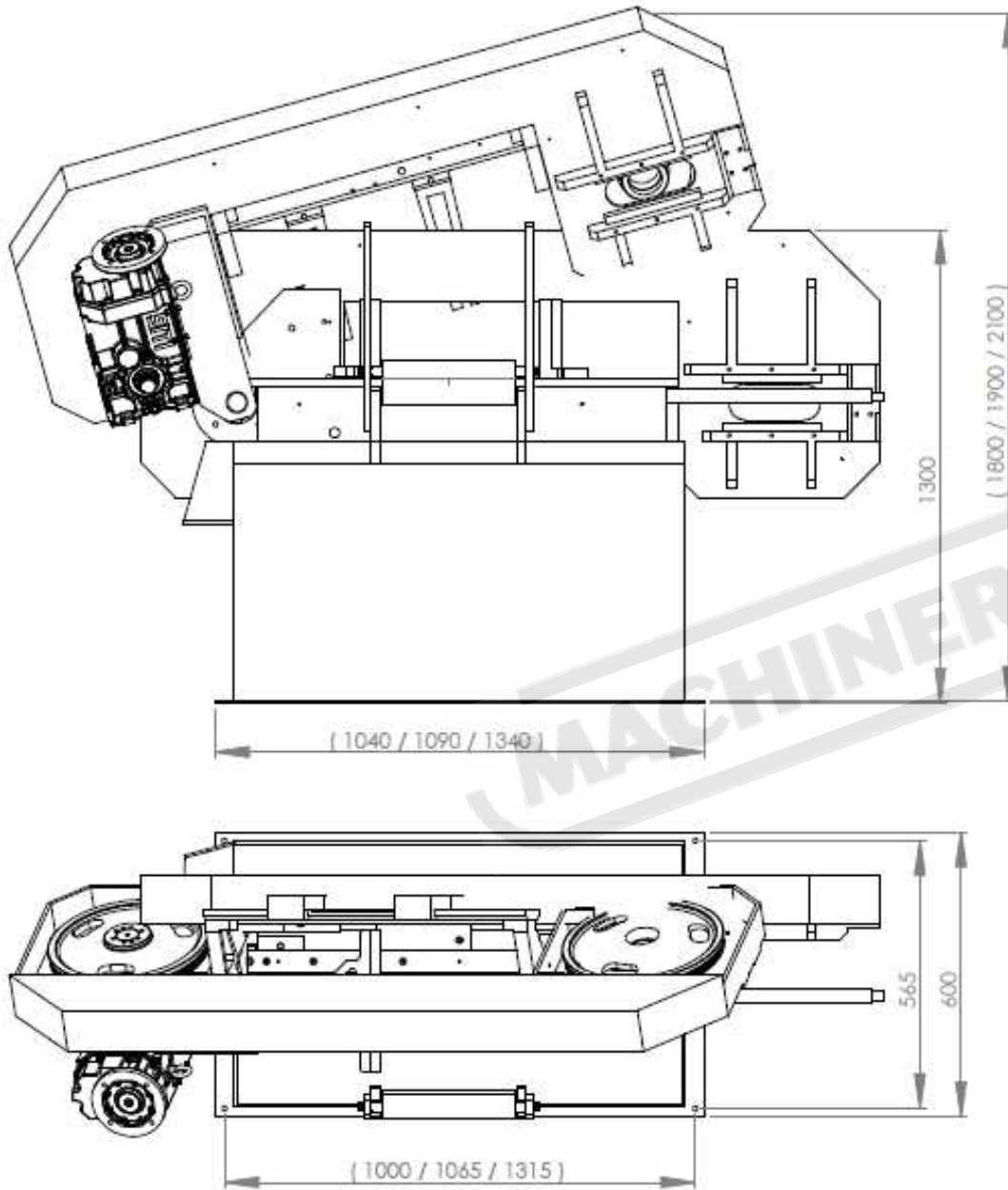
## Transportation And Carrying Of Machine

### important

Carry well-balanced with a strong rope which will be hooked to carrying rings

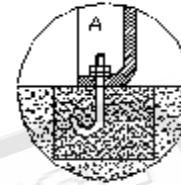
**Bekamak may change the properties of the product without notice.**





### Fixing

Area that machine will be fixed should be flat and bowless. Machine base should be placed properly, linear and diagonal way. Get the machine to balance with 4pcs M10 screws that are on the legs, you should fix it with  $\text{Ø}10,5$  steel pins.



## Operating instruction



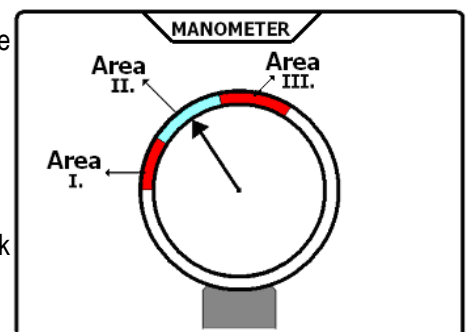
	<p><b>Counter:</b> when automatic position, shows how many pieces will be cut and how many pieces have been cut. Upper line is preset the of cuts required. Lower line shows the number of cut material. When the counter reaches the present number, the saw automatically stops. After this, the reset button must be pressed and made a new program for next cutting</p>		<p><b>Emergency stop button:</b> prevents accidents at unexpected situations.</p>
	<p><b>Start button :</b> start the cutting</p>		<p><b>Stop button :</b> stops the cutting</p>
	<p><b>Signal button :</b> show sif there is a problem at the machine.</p>		<p><b>Start (ready) button:</b> energises power circuit of the machine</p>
	<p><b>Bow up button:</b> moves the bow up manually and stops cutting.</p>		<p><b>Bow down button:</b> moves down the bow manually.</p>

	<p><b>Coolant button</b> : it is used to let the coolant liquid flow.</p>		<p><b>Vice pressure button</b>: it is used to press the material</p>
	<p><b>Blade tightening button</b>: tighten the blade.</p>		<p><b>Speed control potentiometer</b> : controls the inverter to adjust the turning speed of blade</p>
	<p>Manual-automatic select.</p>		<p><b>Feeding material</b>: it is used to feed forward (1) or backward (2) manually, when the bow is on top (e2 switch pressed). (controls the feeding motor)</p>
	<p><b>Chip conveyor</b></p>		<p><b>Down feed speed adjustment</b>: adjust speed according to hardness of material to be cut. When blade becomes blunt choose a lower speed to have a better cut.</p>

**Area I** : this shows that the tension of the blade is less than it must be. Adjust the blade tension.

**Area II** : this shows that the tension of the blade is normal

**Area III** : this shows that the tension of the blade is more than it must be. This may break the blade. Reduce the tension.



**Hydraulic vice: 22 bar**

**hydraulic blade tension: 35 bar (34 saw)**

**Hydromecanic blade tension: min. 190 / max. 210 bar (27 saw)**

**Hydromecanic blade tension: min. 280 / max. 300 bar (34 saw)**

**Main pressure: 40 bar**

## **Manuel Cutting Operation**

- 1) Switch on the main switch.
- 2) Select the manual-automatic selector to position 2.
- 3) Adjust s3 limit switch according to the material's diameter or height.
- 4) Press b3 pushbutton to go up the bow. ( s2 limit switch must be in circuit otherwise the machine does not work. )
- 5) Adjust the length of the material to required length. (by using s4 switch.)
- 6) Press start pushbutton. ( in manual position, start pushbutton must be kept pressed until the bow left s2 limit switch.)
- 7) Regulate the cutting pressure by the throttling valve.
- 8) Because of counter, the machine could be locked. In this situation the machine does not work. Upper line of counter must be preset after that the reset button must be pressed.
- 9) For the next cutting, follow the same way.

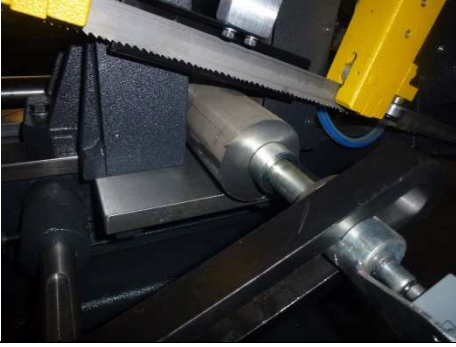
## **Automatic cutting operation**

1. Switch on the main switch.
2. Select B6 selector to position 2.
3. Adjust S2 limit switch according to the material's diameter or height.
4. Press B3 pushbutton to the bow up.
5. Select B6 selector to position 1.
6. Slide the length-stop on the spindle until reaching required length and then tighten.
7. Preset the number of cuts required and press the reset button on the counter.
8. Press start button to begin the cutting operation.
9. Regulate the cutting pressure by throttling valve.

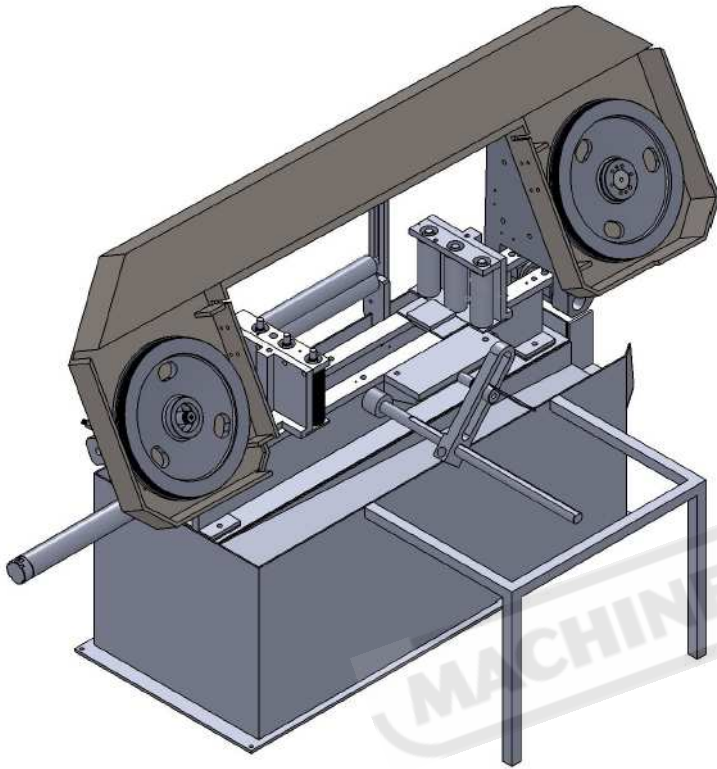
After starting the cutting operation, you do not need any other operation, but according to the grade of material you switch on the coolant pump or not.

**P.s.** If the machine stopped without reaching the preset number, the blade could be broken or the material length could be shortened.

Cutting in a wrong way



Cutting in a right way



You should make fence like on the the picture with the same length of material to be cut, to avoid sliding danger of material  
There is a warning plate on machine aganist danger of material's falling.



## Limit Switches

**Upper limit switch:** after cutting, the bow is raised by hydraulic cylinder up to the adjusted level on the spindle. It can be adjusted by sliding the limit up or down.

**Lower limit switch:** after cutting the material, this switch provides the control valve switched off and rises the bow up.

**P.s.** Its place is adjusted by manufacturer, do not change if unnecessary.

**Blade breaks out limit switch:** when the blade has broken or not tightened, it prevents the drive motor working.

**Pulley cover open limit switch (optional):** this limit switch stops the machine when the protection cover at the back of the bow is opened.

### - The Adjustment Of Cutting Pressure

According to the grade of material, it provides to regulate cutting pressure. The cutting pressure should be reduced when the blade is being dull. After that the blade must be changed.

### - Adjustment Of Upper Limit Switch Before Cutting

Bring down the bow till it approaches to the material about 5mm.

For preventing the bow go up more than necessary;

Loose the part which presses to the switch,

Turn it towards the switch and tighten it when it touches the switch.

**The indicator of manometer must be in the green area (area ii). If the indicator is in one of the red area, this means that the tension of the blade is not in the acceptable level and it may cause unwanted results.**

1-Wheel motor

2-Wheel reductor

3-Feed motor

4-Feed reductor

### Switch

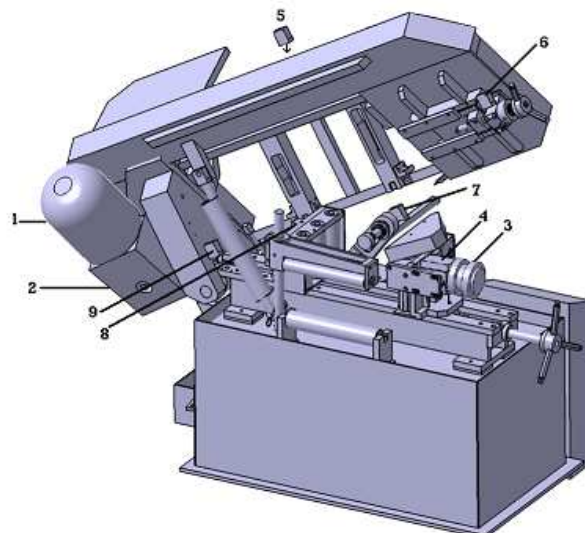
5-Upper switch(on flat)

6-Blade break switch

7-Length stop switch

8-Material finish switch(behind the vice)

9-Lower switch

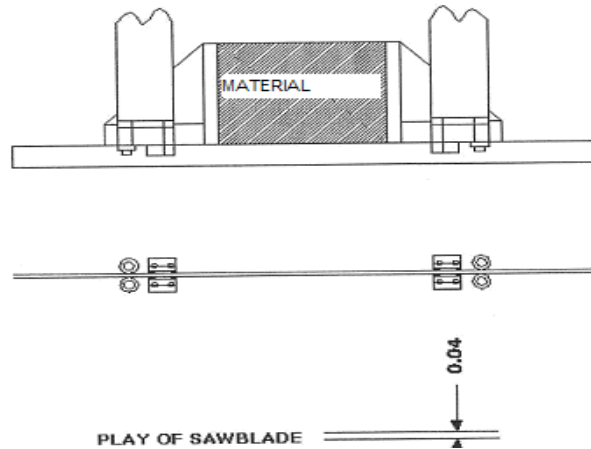


## Blade Guidance

For an accurate guidance of the bandsaw blade there are two rigid and precise vertical guide arms fitted with rollers for twisting pretwisting and carbide inserted plates for the final and exact blade guide. Put the blade guide arms always as close as possible to the material to be cut and tighten them.

The play of the blade can be re-set by altering the position of a carbide inserted guide plate.

The minimum play should be 0,04 mm.



## Trouble Shooting

- ✓ The bow comes down out of control;
  - ✓ The seals inside of the hydraulic pistons might be worn out; replace.
  - ✓ Check valve might be bugged up with dirt; clean.
  - ✓ Center of the direction valve might be bugged up with dirt; clean.
  - ✓ The o-rings of pressure adjusting valve might be worn out; replace.
- ✓ Sounds coming from the front pulley
  - ✓ The bearings might be worn out; replace.
- ✓ The blade is leaning to one side while cutting
  - ✓ Carbides must be worn out; replace,
  - ✓ Blade guiding bearings might be worn out; replace
- ✓ the warning lamp on the control panel is on,
  - ✓ Check the blade tightening switch
  - ✓ Check the drive switch

Check the upper limit switch

## REGULATIONS

### DEFECT SYMPTOMS

### CAUSE OF DEFECT

### TYP OF REPAIR

AFTER SWITCHING ON THE MAIN SWITCH, THE LAMP ON CONTROL PANEL DOES NOT WORK.

A) FUSE IS OFF.

A) RESET FUSE.

B) BUMT BULB.

B) REPLACE BULB.

AFTER GOING THE BOW DOWN COMPLETELY, DOES NOT GO UP.

A) THE BOW DOES NOT TOUCH S3 LIMIT SWITCH.

A) RE-ADJUST S3 LIMIT SWITCH.

B) REVERSE DIRECTION PUMP ROTATION.

B) TAKE THE COVER OFF AT THE BACKSIDE OF THE MACHINE AND CHECK IF DIRECTION OF ROTATION AGREE WITH THE ARROW. IN CASE OF DISCREPANCY, PHASES IN THE PUMP SUPPLY.

AFTER PRESING START BUTTON THE MOTOR DOES NOT WORK.

A) S2 LIMIT SWITCH DOES NOT GET IN TOUCH WITH THE BOW.

A) PRESS BOW-UP BUTTON.

B) COUNTER IS LOCKED.

B) PRESET THE COUNTER AND PRESS RESET BUTTON.

WORKED

C) THERMAL PROTECTION HAS

C) WAIT A FEW MINUTES UNTIL

THERMAL RELAY COOL. IF THE

MOTOR STILL DOES NOT WORK. PRESS RESET BUTTON.

PUMP DOES NOT SUPPLY COOLANT.

A) REVERSE DIRECTION OF PUMP ROTATION.

A) EXCHANGE PHASES IN THE PUMP'S SUPPLY.

B) LACK OF COOLANT.

B) POUR IN COOLANT.

C) SHUT VALVES THAT CUM OFF COOLANT.

C) OPEN VALVE'S.

D) THERMAL PROTECTION HAS WORKED.

D) WAIT A FEW MINUTES UNTIL RELAY COOL. IF THE MOTOR STILL DOES NOT WORK PRESS KEY.

IF THE ABOVE DEFECTS HAVE BEEN REMOVED AND IF THE MACHINE STILL DOES NOT WORK, CHECK APPROPRIATE ELECTRIC CIRCUITS AND THEN CALL A CREW TRAINED TO REPAIR FOR THIS PURPOSE.

## MACHINE MAINTENANCE INSTRUCTIONS

### 1) Daily Maintenance

1) Clean the chips behind the wheels.



1.2. a) How the chip conveyor removes the chips



1.2 b) Chip conveyor cover



1.2 c) Coolant oil tank



1.2 d) How to remove the chips from oil tank.



1.3) Clean the chips from the vice block



1.4) Lubricate the upper clamping blocks.



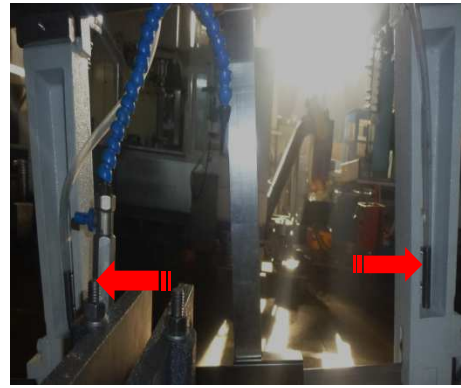
1.5) Clean the vice clamping shaft.



1.6) Lubricate the vice clamping shaft.



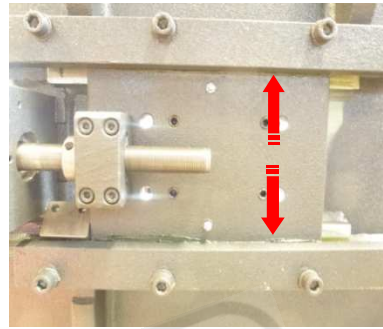
1.7 a) Coolant hoses



1.7 b) How to air the hoses mentioned above.



1.8) How to clean the tensioning rails



1.9) The manometer should be at 43 bars.



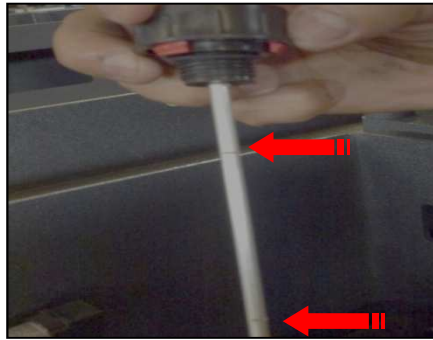
## 2) Weekly maintenance

2.1) Check the gearbox oil level (no 90)





2.2) Hydraulic oil tank oil level should be between upper and lower levels. No 46



2.3) Remove the chips from the tank with shovel.



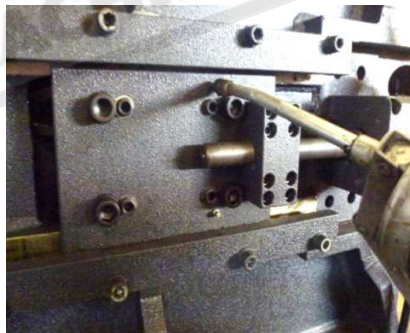
2.4) New type coolant case.



### 3) Monthly maintenance

3.1. Lubricate the front and drive wheels as shown.

3.2. Lubricate the tensioning sledge as it is shown. 3.2a Lubricate Vice chain sprocket idler shaft



3.3) Check the chip brush.



3.4) Check the wheel bolts.



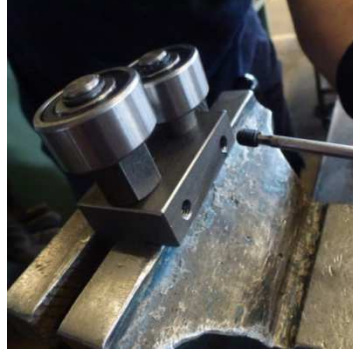
## 4) 6 Months Maintenance

### Changing the bearings

1) Remove the bolts and take the bearing block.



2) Remove the shafts after removing the bolts



3) Remove the clip



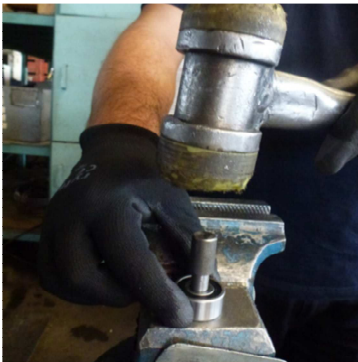
4) Remove the inner pin of bearing. Put a new one.



5) Place the straight and eccentric shaft into the bearings



6) Hammer the straight and eccentric shafts into the bearings





8) Hammer eccentric shadt into bearing bed.



9) Hammer straight shadt into bearing bed.



10) Fix the pins with stay bolt.



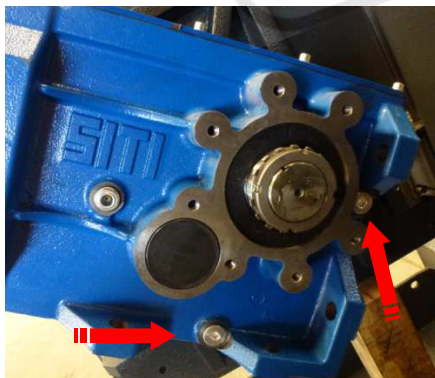
11) Fix the bearing block to the movable arm with bolt.



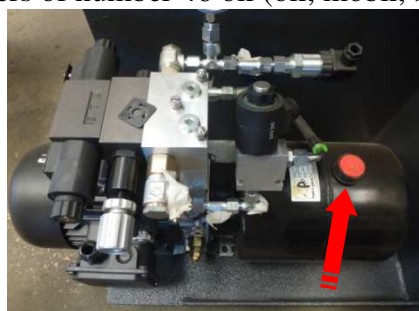
## 5) Annual maintenance

5.1 Empty the oil from marked points.

5.2 Remove the pointed pin and add 9,3 lt. Shell, Ip, Esso etc. Oil.



5.6 Remove the cap and put 30 liters of number 46 oil (oil, mobil, Shell)





# CHANGING THE SAWBLADE

1. Loosen the sawblade



4. Remove the sawblade from the carbide block.



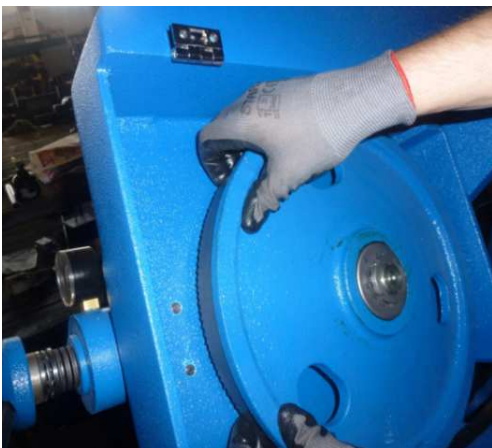
3. Remove the sawblade from the wheel



5. Change the blade with new one.



6. Place the blade to the wheel.



7. Place the sawblade.



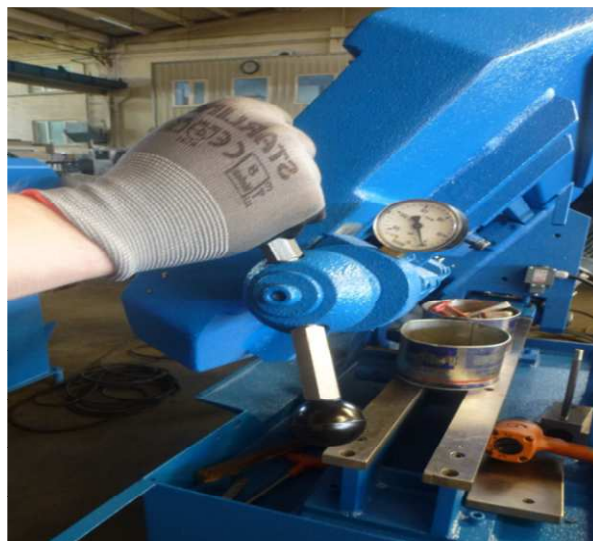
7. Place the sawblade between the bearings.



8. Place the sawblade between the carbide blocks straightly.



9. Tighten the sawblade with tensioning shaft.



## Filling up coolant

Coolant and water fixture should be used for cutting steel. Do not use coolant for cutting casting material. At periods (at least once a month) the coolant should be emptied and dreg should be cleaned. If the coolant oil is not enough, add to coolant tank. ( the tank capacity is 20 liter. Coolant mixture rate is 1/10)

With using coolant it prevent to ignition at process area.

1) Remove the coolant case onto a chock.



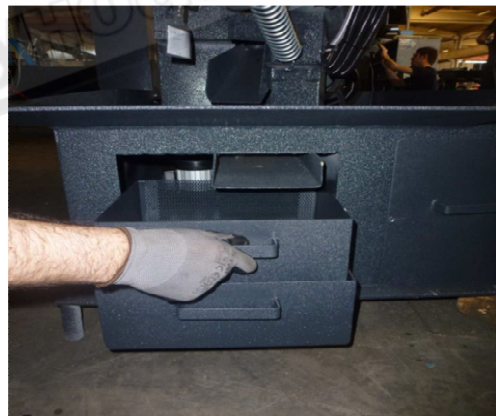
2) How to add coolant to the coolant tank.



3) Add coolant till the marked place.



4) Placing the coolant tank.



## Cutting Speeds

The machine has two pre-selected cutting speeds of 20 and 100 m/sec. Cutting speeds has to be selected according to the grade and dimensions of the material. If any vibration and/or noise raises from the blade, change the speed.

- All the details about the cutting of various materials and dimensions are given below

**CUTTING RECOMENDATIONS**

**NOTE:THE CUTTING SPEEDS GIVEN BELOW ARE GUIDELINES ONLY**

MATERIAL	MATERIAL DESIGNATION DIN	MATERIAL NO	CUTTING SPEED		COOLANT		
			SPECIAL LG-SUPER	BI-METAL	EMULSION	CUTTING OIL	
						YES	NO
STRUCTURAL STEEL	ST 35 – ST 42	1.0308-	40 - 55	60 - 80	1:10	X	
	ST 350 – ST 70	1.0052-	30 - 45	50 - 70	1:20	X	
HARDENING STEEL	C 10 - C 16	1.0301-	45 - 65	60 - 90	1:10	X	
	14 NICR 14	1.5752	30 - 40	40 - 50	1:10	X	
	21 NICR MO 2	1.6523	30 - 45	45 - 55	1:10	X	
NITRICTED STEEL	16 MRCR 5	1.7131	30 - 45	50 - 65	1:10	X	
	34 CRAL 6	1.8504	-----	20 - 35	1:20		X
FREE CUTTING STEEL	34 CR AL NI 7	1.8550	-----	20 - 35	1:20		X
	9 S 20	1.0711	45 - 65	70 - 120	1:10	X	
HEAT TREATABLE STEEL	C 35 C 45	1.0501-	35 - 55	55 - 75	1:20		X
	41 CR 4	1.7035	35 - 35	40 - 60	1:20		X
	40 MN 4	1.5038	35 - 45	50 - 65	1:20		X
	42 CRMO 4	1.7225	30 - 40	35 - 50	1:20		X
	36 NI CR 6	1.5710	30 - 40	50 - 60	1:20		X
	24 NI CR 14	1.5754	25 - 35	40 - 60	1:20		X
BALL BEARING STEEL	100 - CR 6	1.3505	25 - 35	50 - 65	1:30		X
	105 - CR 4	1.3503	25 - 35	50 - 65	1:30		X
	100 - CRMO 6	1.3520	20 - 30	40 - 50	1:30		X
SPRING STEEL	65 SI 7	1.0906	30 - 40	40 - 60	1:30		X
	50 CRV 4	1.8159	30 - 40	40 - 60	1:30		X
UNALLOYED TOOL STEEL	C 80 W 1	1.1525	25 - 35	50 - 60	1:30		X
	C 125 W 1	1.1560	20 - 30	20 - 35	1:30		X
	C 105 W 2	1.1645	25 - 35	40 - 50	1:30		X
ALLOYED TOOL STEEL	105 CR 5	1.2060	30 - 40	50 - 60	1:30		X
	X 210 CR 12	1.2080	-----	20 - 35	-----		X
	X 40 CR MO V 51	1.2344	20 - 30	30 - 40	1:30		X
	X 210 CR W 12	1.2436	-----	20 - 30	-----		X
	X 165 CR MP V 12	1.2601	-----	20 - 35	1:30		X
	56 NICRMOV 7	1.2714	25 - 30	20 - 40	1:30		X
	100 CRMO 5	1.2303	20 - 30	35 - 45	1:30		X
	X 32 CRMOV 33	1.2365	20 - 30	30 - 45	1:20	X	
	S 5-6-2	1.3343	-----	25 - 40	1:30		X
HIGH SPEED STEEL	S 5-6-2-5	1.3243	-----	25 - 40	1:30		X
	S 18-0-1	1.3355	-----	25 - 40	1:30		X
	S 18-1-2-10	1.3265	-----	25 - 40	1:30		X
VALVE STEEL	X 45 CRSI 93	1.4718	-----	30 - 40	1:20	X	
	X 45 CRNIW 189	1.4873	-----	30 - 40	1:20	X	
HIGH TEMPERATURE STEEL	CRNI 2520	1.4843	-----	25 - 40	1:10	X	
	X 20 CRMOV 211	1.4922	-----	25 - 40	1:10	X	
	X5 NICRTI 2615	1.4980	-----	25 - 40	1:10	X	
HEAT RESISTING STEEL	X 10 CRAL 7	1.4713	-----	20 - 35	1:10	X	
	X 15 CRNISI 25 / 20	1.4841	-----	20 - 35	1:10	X	
	X 10 CRSI 6	1.4712	-----	20 - 35	1:10	X	
STAINLESS AND ACID RESISTING STEEL	X 5 CRNI 189	1.4301	-----	25 - 35	1:10	X	
	X 10 CRNIMPT 1810	1.4571	-----	25 - 35	1:10	X	
	X 10 CR 13	1.4006	-----	25 - 35	1:10	X	
	X 5 CRNIMO 1810	1.4401	-----	25 - 35	1:10	X	
STEEL CASTING	GS - 38		30 - 40	50 - 60	1:50		X
	GS - 60		30 - 40	50 - 60	1:50		X
CAST IRON	GG - 16		30 - 40	40 - 50	-----		X
	GG - 30		30 - 40	40 - 50	-----		X
	GTW - 40		30 - 40	40 - 50	-----		X
	GTS - 65		30 - 40	40 - 50	-----		X
	NIMONIC	2.4631	-----	15 - 25	1:10	X	
HIGH TEMPERATURE NICKEL ALLOYS	HASTELLOY	X 2.4972	-----	15 - 25	1:10	X	
	INCONEL	2.4640	-----	15 - 25	1:10	X	
ALUMINIUM ALLOYS	AL 99.5	3.0255	80 - 300	100 - 700	1:10		X
	ALMG 3	3.3535	80 - 300	100 - 700	1:10		X
BRONZE / TIN BRONZE	CUSN 6	2.1020	50 - 70	70 - 100	1:50		X
	G - CUSN 10	2.1050	50 - 70	70 - 100	1:50		X
ALUMINIUM - BRONZE	CUAL 8	2.0920	30 - 45	50 - 70	1:30		X
	CUAL 8 FE 38	2.0920,60	30 - 40	40 - 50	1:20	X	
RED BRASS	G - CUSN 10 ZN	2.1086.01	30 - 45	70 - 100	1:50		X
	G - CUSN 5 ZN PB	2.1096.01	30 - 45	70 - 100	1:50		X
BRASS	CUZN 10	2.0230	80 - 200	100 - 300	1:50		X
	CUZN 31 S	2.0490	80 - 200	100 - 300	1:50		X



**Recommendation for Tooth Style and Tooth Pitch Selections for HSS BI-Metal Bandsaws**

Standard Tooth		Combi Tooth	
Material Diameter	Tooth Pitch Tooth Shape	Material Diameter	Tooth Pitch Tooth Shape
< 12mm	14 tpi N	< 25 mm	10/14 tpi 0°
12-30 mm	10 tpi N	2-40 mm	8/12 tpi 0°
30-50 mm	8 tpi N	25-70 mm	6/10 tpi 0°
50-80 mm	6 tpi N	35-90 mm	5/8 tpi 0°
80-100	4 tpi KL	50-100 mm	4/6 tpi pos
110-200	3 tpi KL	80-200 mm	¾ tpi pos
200-400	2 tpi KL	> 200 mm	2/3 tpi pos
>400 mm	1,25 tpi KL		

For cutting pipes and shapes							
S (mm)	O (mm)	Tooth Pitch					
		<40	80	100	150	200	300
3	5	8/12	8/12	8/12	8/12	6/10	6/10
8	5	8/12	6/10	6/10	5/8	4/6	4/6
12	5	6/10	5/8	5/8	4/6	4/6	4/6
15	5	5/8	4/6	4/6	4/6	3/4	3/4
20	5		4/6	4/6	3/4	3/4	3/4
30	5		3/4	3/4	3/4	2/3	2/3
50	5				3/4	2/3	2/3

**Tooth Style Selection**

Economies of cutting can be achieved by choosing the tooth style or shape correctly suited to the being cut. Saving can be made by selecting the best tooth style because of: Faster sawing, more accurate sawing, longer blade life and less breakage of teeth. The following four (4) tooth styles are available.



**Standard Tooth (N)**

0° rake angle, fully rounded gulet, general purpose



**Skip Tooth (L)**

0° rake angle, low tooth height, flat gulet-to be used for brittle materials of larger diameters, i.e. bronze, brass, zinc, aluminum gales & risers, plastics.



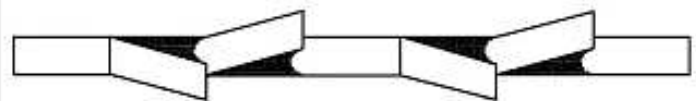
**Hook Tooth (KL)**

10° positive rake angle with wide spacing between tips, deep gullet- suitable for NF-metals, low carbon steel, large diameters



**Tooth Set Selection**

The purpose of 'set' in a bandsaw blade is to provide clearance and to allow the body of the blade to pass freely through the material being cut. The set depends on stock diameter, shape and material to be cut.



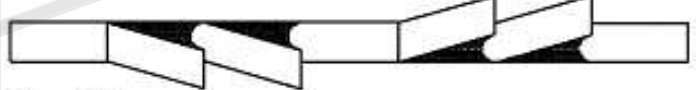
**Regular or Raker Set**

Is the most widely used setting. It consists of a repeating pattern with one tooth set the right, the next to the left and the third (the raker) without set. This type of set is best where the material being cut is uniform size; also used in contour sawing.

**Right-Left Set**



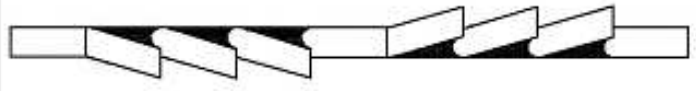
For softer materials, i.e. NF-metals, plastic & wood.



**Group Set**

For vibration free sawing of smaller diameters such as pipe tubing and shapes- faster cutting speeds and smoother surfaces

**Wavy Set**



MATERIAL	CUTTING SPEED m/min.		BI-METAL	25mm	BANDSAW / TPI			COOLANT	
	SPECIAL	BI-METAL			25-50	50-100	100-250	YES	NO
Structural Steel	30-50	50-85	14 R	8 R	4-6 R	3-4 R/H	X		
Carbon Steel	30-50	50-70	10 R	8 R	4-6 R	3-4 H	X		
Cementation Steel	30-70	50-85	10 R	8 R	4-6 R	3-4 H	X		
Heat Treatable Steel	30-50	50-70	14 R	8 R	4-6 R	3-4 H	X		
Cast Steel	30-50	50-70	14 R	8 R	4-6 R/H	3-4 H	X		
Cast Iron	30-50	50-70	14 R	8 R	4-6 R/H	3-4 H		X	
Cr-Ni Alloys	20-30	30-50	10 R	8 R	4-6 R/H	3-4 H	X		
Stainless Steel	20	20-30	10 R	8 R	4-6 R/H	3-4 H	X		
Cr-Vanadium	20-30	30-50	10 R	8 R	4-6 R/H	3-4 H	X		
Speed Steel	20-30	30-50	10 R	8 R	4-6 R/H	3-4 H	X		
Bronze (Hard)	20-50	50-70	14 R	10 R	6-8 R	4-3 S		X	
Bronze (Mild)	70-85	85	10 R	8 R	6 R	3-6 H	X		
Cooper	70-85	85	10 R	8 R	6 R	3-6 H	X		
Brass	85	85	10 R	8 R	6 R	3-6 H		X	
Aluminium	85	85	8 S	6-8 S	4-6 S	3 S	X		
Bronze Alloys	50-70	85	10 R	6 H	3-4 H/S	2 H/S	X		
Al-Bronze Alloys	20-50	20-85	10 R	8 R	4-6 H	2-3 H/S	X		
Plastic	85	85	8 S	6-8 S	4-6 H	3 S		X	

**REGULAR**

**HOOK**

**SKIP**

**Basic information with technical inquiries**

**1. Customer**

- Company: \_\_\_\_\_ - Customer No.: \_\_\_\_\_  
- Street: \_\_\_\_\_  
- City / Postal Code: \_\_\_\_\_

**2. Currently used band saw blade (even competition)**

- Quality: \_\_\_\_\_  
- Dimension: \_\_\_\_\_ [mm]  
- Tooth pitch: \_\_\_\_\_ [tpi]  
- Machine type: \_\_\_\_\_

**4. Using information**

- Material: \_\_\_\_\_, if annealed, strength \_\_\_\_\_ [N/mm<sup>2</sup>]  
- Cross-section: \_\_\_\_\_ [mm] (dimension and wall thickness in case of profiles)  
- Clamping:     Single       
                  Layer      (Layer width \_\_\_\_\_ [mm])  
                  Bundle    (Width \_\_\_\_\_, height \_\_\_\_\_ [mm])  
- Cutting speed \_\_\_\_\_ [m/min]  
- Time per cut \_\_\_\_\_ [min] (pure cutting time)  
- Current blade life \_\_\_\_\_ [cm<sup>2</sup> or m<sup>2</sup>]  
- Vertical machines: kind of feed      manual feed  
    hydraulic feed  
- used cooling lubricant:      emulsion  
    spray mist system

**5. Customer's requirement**

- high cutting rate    max. tool life    good cutting surface    none

**5. Others / remarks**

\_\_\_\_\_  
\_\_\_\_\_



## PRESSOSTATO REGOLABILE ADJUSTABLE PRESSURE SWITCH

# F4

I pressostati della serie "F4" permettono la commutazione di un microinterruttore al raggiungimento di un valore di pressione, preimpostabile dall'utilizzatore, agendo sulla vite centrale (protetta da tappo di protezione) nell'esecuzione P3 o intercettando il grano di regolazione posto all'interno dello strumento con una chiave esagonale da 2mm. Ruotando in senso orario il punto d'intervento viene incrementato viceversa viene diminuito.

### Caratteristiche Tecniche:

**Corpo:** esagonale da 24 mm in acciaio con zincatura trivalente

**Montaggio:** in ogni posizione

**Temperatura d'impiego:** da - 25°C a + 85°C

**Frequenza di commutazione:** 90 cicli/min

**Punto d'intervento:** regolabile con vite interna

**Precisione d'intervento:** ± 4% del F.S. a 20°C

### Valore fisso d'isteresi:

- esecuzioni a membrana - 10% del F.S.
- esecuzioni a pistone - 15% del F.S.
- esecuzioni a pistone Y - 25% del F.S.

**Peso:** 0,05 Kg

**Vita Meccanica:** 10<sup>6</sup> cicli a 70bar(1000 psi) a 20°C

### Caratteristiche Elettriche:

- Carico Max: 0.5 Ampère a 250 Volt AC (vedi anche pagina dedicata)
- Contatti in scambio (Comune, NA e NC)
- Attacco elettrico secondo norme DIN 43650 per M2 e M3
- Protezione elettrica secondo norme DIN40050: IP65 per esecuzione M2/M3 IP54 per esecuzione P3/P1

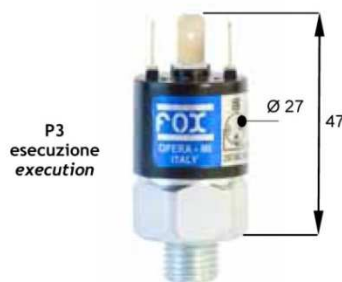
**Garanzia:** vedi pagina dedicata

**Parti di ricambio:** vedi pagina dedicata

### Disponibile:

- F4\_X con parti a contatto fluido Acciaio Inox
- F4\_L corpo in ottone
- WF4: vuotostato con campo di regolazione da -0.15 a -0.8 bar

**Nota:** Certificazione ATEX solo per esecuzioni M2 ed M3



P3  
esecuzione  
execution



M2  
esecuzione  
execution



M3  
esecuzione  
execution

"F4" adjustable pressure switches allow a micro-switch commutation once a preset pressure value is reached. The set point is adjusted working on the central screw (P3 execution) or intercepting the regulation dowel situated inside the instrument, using a 2mm hexagonal key (M2 and M3). Rotating clockwise the set point is increased and vice-versa is decreased. Mechanical stops protect both the spring and the micro-switch from over pressurization.

### Technical features:

**Body:** 24 mm hexagonal in zinc-plated carbon steel

**Assembly:** in every position

**Working temperature:** from -25°C to +85°C

**Switching frequency:** 90 cycles/min

**Operating point:** adjustable using internal screw

**Switching accuracy:** ± 4% of the end of scale at 20°C

### Fixed hysteresis value:

- membrane execution - 10% of end of scale
- piston execution - 15% of end of scale
- Y execution - 25% of end of scale

**Weight:** 0,05 Kg

**Mechanical life:** 10<sup>6</sup> cycles at 70 bar (1000 psi) at 20°C

### Electric Features:

- Maximum load: 0.5 Ampère at 250 Volt AC (see dedicated page)
- Exchange contacts NO and NC (SPDT)
- Electric connection according to DIN 43650 for M2 and M3
- Electric protection according to DIN 40050: IP65 for M2/M3 execution IP54 for P3/P1 execution

**Warranty:** see dedicated page

**Spare parts:** see dedicated page

### Also available:

- F4\_X with fluid connection in AISI316L
- F4\_L body in brass
- WF4 vacuum switch with adjustable pressure range from -0.15 to -0.8 [bar]

**Note:** Certificate ATEX only for M2 and M3 execution



### ESEMPIO D'ORDINE - HOW TO ORDER

F4									P1	
Campo di regolazione	Esecuzione	P Max	Materiale del Corpo	Connessione Idraulica	Tipo di Guarnizione	Tipologia Micro Interruttori	Taratura	Condizione	Tipologia Connessione Elettrica	Cappuccio di Protezione
Switching pressure range	Execution	P Max	Body Material	Hydraulic Connection	Type of Seal	Type of Electric Contact	Preset value	Condition	Type of Electric Connection	Protection Cap
Bar		Bar					Bar			
R	0,2>2,5	25	X AISI316L	0	V		Indicare il valore se desiderato impostato in fabbrica	D	P3	Accessorio a richiesta indispensabile per proteggere lo strumento dallo sporco e dall'umidità (solo tipo P3)
S		25	L	1/8" BSP	VITON	G		D indica taratura in discesa di pressione	6.3x0.8 Fast-on	
SM	1>12	150	L OTTONE BRASS	1	T	Contatti dorati	Indicate the value if you want the pressure switch already preset in factory	means falling pressure setting	M2 Connettore Connector 16x16	Accessory on request essential to protect the instrument from dirt, moisture and to have the IP54 Protection (only P3 type)
SP		300	B	1/4" BSP	PTFE	Gold plated contacts				
T		300	OTTONE NICHELATO NICKEL PLATED BRASS	2	E	se omissso indica contatti argentati	U indica taratura in salita	means rising pressure setting	M3 Connettore Connector 30x30	
TM	5>50	150		3	EPDM					
V		300	se omissso indica Acciaio Zincato	4	H	se omissso indica NBR				
VM	10>100	150		5	HNBR	if omitted means silver plated contacts				
Z	20>200	300	if omitted means zinc plated steel	6						
Y	50>400	600		1/4" BSPT						



2019

# **BEKA-MAK**

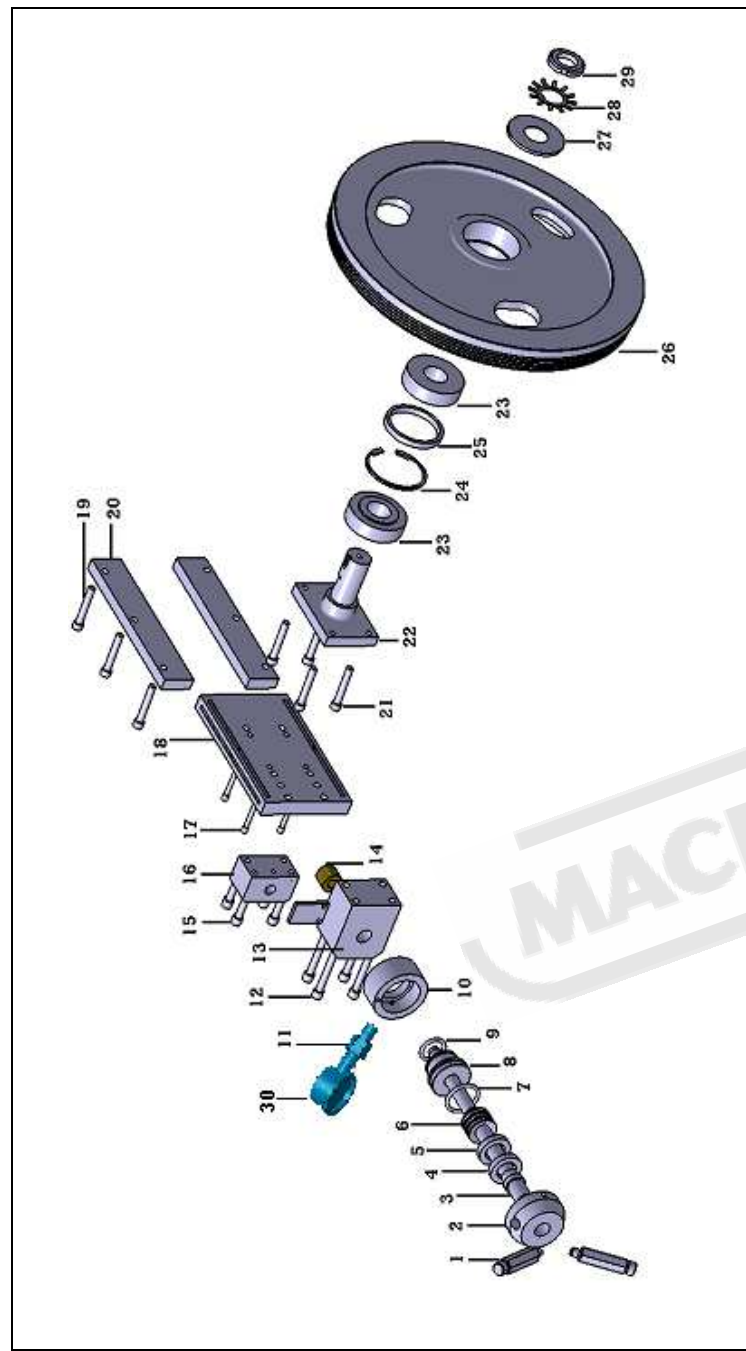
## **FULL AUTOMATIC HORIZONTAL BANDSAWING MACHINES**

BMSO 320



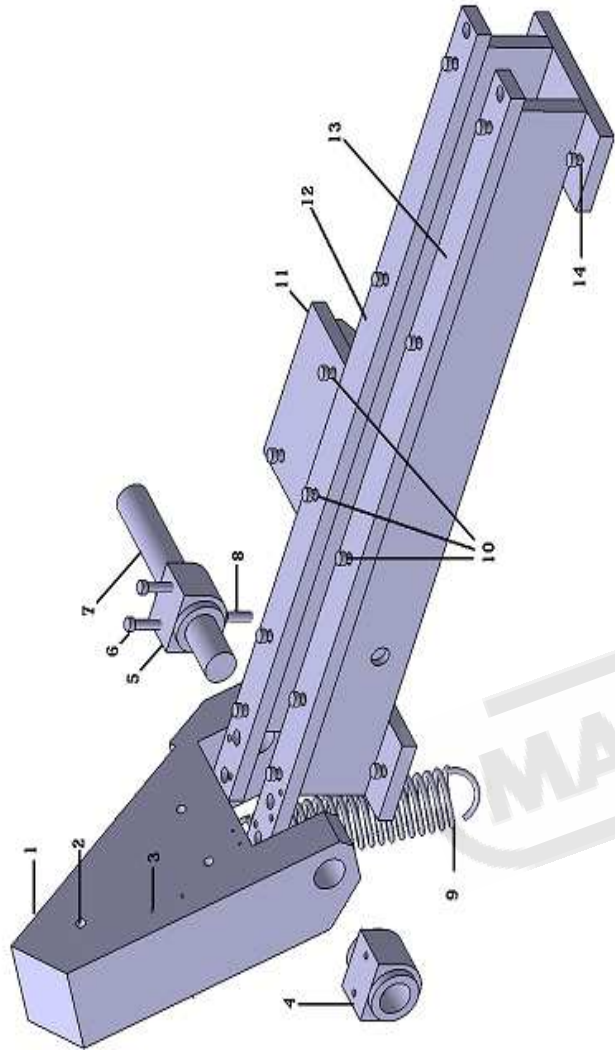
### **SPARE PART TABLES**





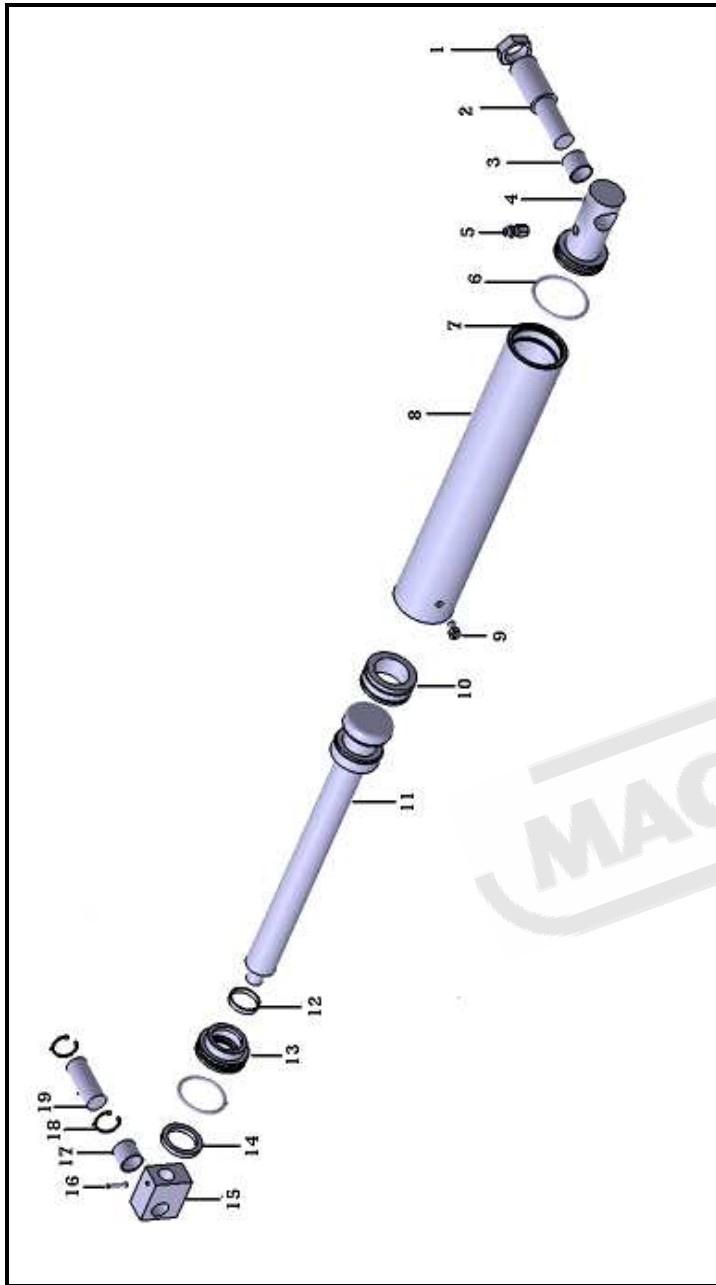
**TENSIONING GROUP**

PART NMR	PART CODE	PART NAME
001	BMSO 280/320/320L.01.01	KNOP BLOCKS
002	BMSO 280/320/320L.01.02	TENSIONING KNOP
003	BMSO 280/320/320L.01.03	TENSIONING SHAFT
004	BMSO 280/320/320L.01.04	BEARING 51204
005	BMSO 280/320/320L.01.05	METAL RING
006	BMSO 280/320/320L.01.06	WASHER 6 PC
007	BMSO 280/320/320L.01.07	42*86*3,53 ORÍNG
008	BMSO 280/320/320L.01.08	LEAN BLOCK ( INNER)
009	BMSO 280/320/320L.01.09	34*59*2,62 ORÍNG
010	BMSO 280/320/320L.01.10	LEAN BLOCK ( OUTER)
011	BMSO 280/320/320L.01.11	1/8 REKOR
012	BMSO 280/320/320L.01.12	M8*80 INBUS
013	BMSO 280/320/320L.01.13	TENSIONING BLOCK
014	BMSO 280/320/320L.01.14	BRASS
015	BMSO 280/320/320L.01.15	M8*30 INBUS
016	BMSO 280/320/320L.01.16	TENSIONING NUT
017	BMSO 280/320/320L.01.17	M8*20 SETSKUR
018	BMSO 280/320/320L.01.18	TENSIONING SLEDGE
019	BMSO 280/320/320L.01.19	M8*30 INBUS
020	BMSO 280/320/320L.01.20	SLEDGE FLAT
021	BMSO 280/320/320L.01.21	M8*35 INBUS
022	BMSO 280/320/320L.01.22	TENSIONING ARRANGEMENTS
023	BMSO 280/320/320L.01.23	CR 30306 BEARING
024	BMSO 280/320/320L.01.24	472/72 SEGMAN
025	BMSO 280/320/320L.01.25	METAL RING
026	BMSO 280/320/320L.01.26	FRONT WHEEL
027	BMSO 280/320/320L.01.27	DRIVE WHEEL COVER
028	BMSO 280/320/320L.01.28	MB6 SECURITY WASHER
029	BMSO 280/320/320L.01.29	KM6 NUT
030	BMSO 280/320/320L.01.30	MANOMETRE

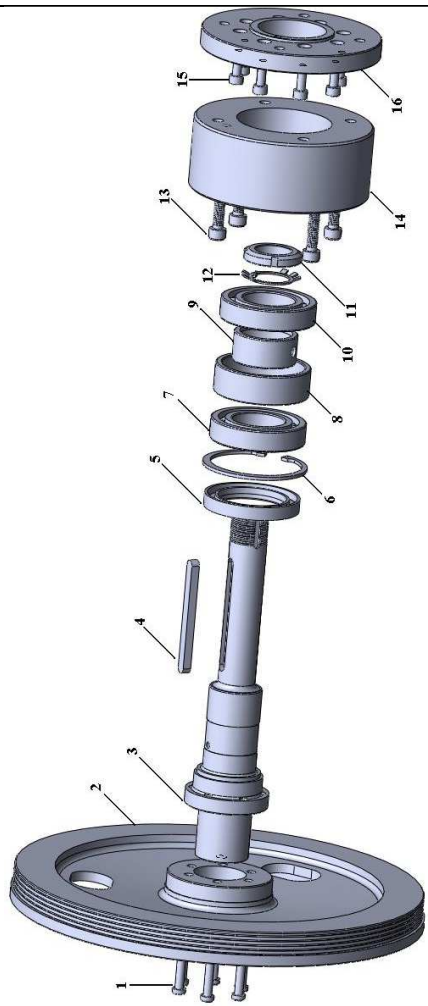


**LOWER BODY GROUP**

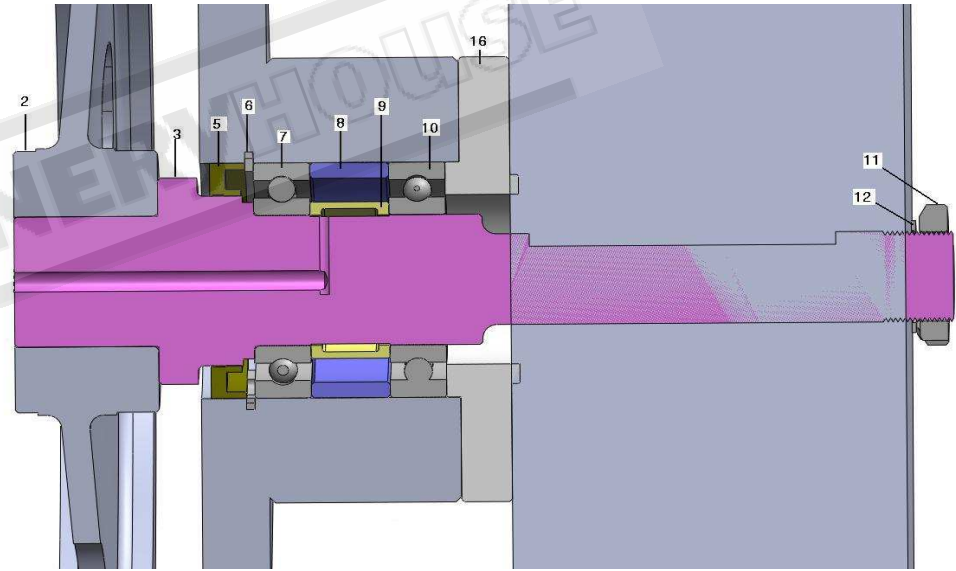
<b>PART NMR</b>	<b>PART CODE</b>	<b>PART NAME</b>
001	BMSO 280/320/320L.02.01	BOW CONNECTION
002	BMSO 280/320/320L.02.02	M12*50 INBUS
003	BMSO 280/320/320L.02.03	PIN 5*30
004	BMSO 280/320/320L.02.04	BOW CONNECTION CASTING FIXING BLOCK LEFT
005	BMSO 280/320/320L.02.05	BOW CONNECTION CASTING BLOCK RIGHT
006	BMSO 280/320/320L.02.06	M10*30 INBUS
007	BMSO 280/320/320L.02.07	BOW CONNECTION CASTING SHAFT
008	BMSO 280/320/320L.02.08	M8*20 SETSKUR
009	BMSO 280/320/320L.02.09	SPRING
010	BMSO 280/320/320L.02.10	M8*30 INBUS
011	BMSO 280/320/320L.02.11	CUTTING TABLE
012	BMSO 280/320/320L.02.12	VICE LOWER FLAT (RIGHT)
013	BMSO 280/320/320L.02.13	VICE LOWER FLAT ( LEFT)
014	BMSO 280/320/320L.02.14	M12*40 INBUS



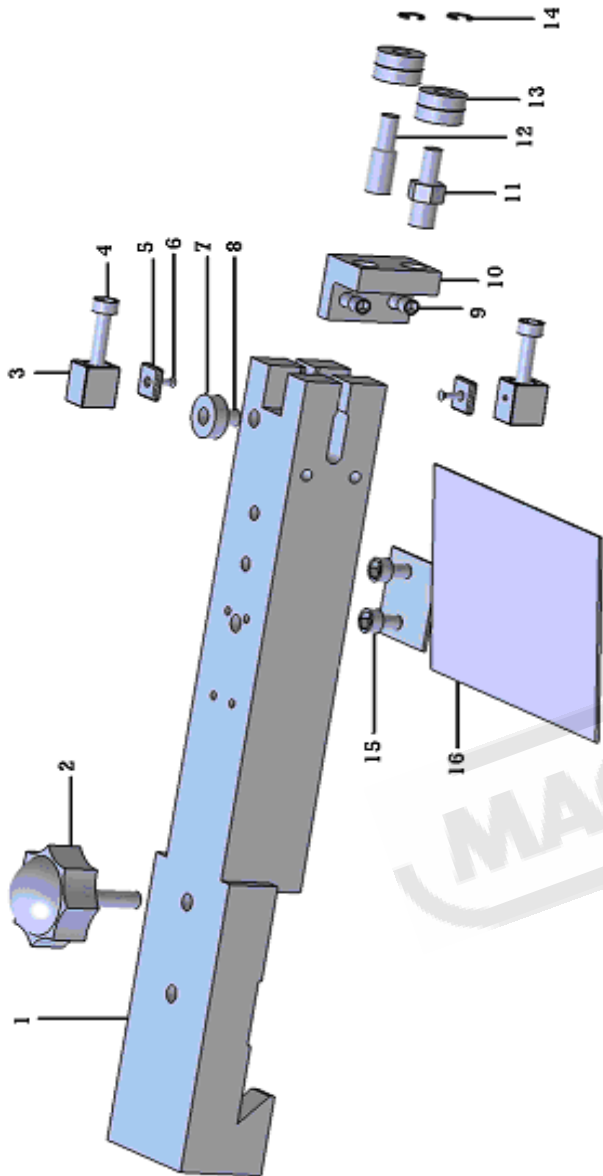
PISTON GROUP		
PART NMR	PART CODE	PART NAME
001	BMSO 280/320/320L.03.01	24*1,5 NUT
002	BMSO 280/320/320L.03.02	CONNECTION PIN
003	BMSO 280/320/320L.03.03	Ø23*Ø20* 25 METAL RING
004	BMSO 280/320/320L.03.04	LOWER BLOCK
005	BMSO 280/320/320L.03.05	1/8 Ø6 REKOR
006	BMSO 280/320/320L.03.06	42,86*3,53 ORING
007	BMSO 280/320/320L.03.07	472/50 SEGMAN
008	BMSO 280/320/320L.03.08	PISTON PIPE
009	BMSO 280/320/320L.03.09	1/8 Ø6 ELBOW
010	BMSO 280/320/320L.03.10	50*34*20,5 SEAL SET
011	BMSO 280/320/320L.03.11	PISTON SHAFT
012	BMSO 280/320/320L.03.12	BAND
013	BMSO 280/320/320L.03.13	UPPER COVER
014	BMSO 280/320/320L.03.14	DUST SEAL 30*38
015	BMSO 280/320/320L.03.15	UPPER CONNECTION BLOCK
016	BMSO 280/320/320L.03.16	M6*8 SETSKUR
017	BMSO 280/320/320L.03.17	Ø20*Ø18*16 METAL RING
018	BMSO 280/320/320L.03.18	471/16 SEGMAN
019	BMSO 280/320/320L.03.19	Ø16 PIN



REDUCTOR GROUP			
PART NMR	PART CODE		PART NAME
001	BMSO 280/320/320L.04.01	M8*60 INBUS	
002	BMSO 280/320/320L.04.02	REAR WHEEL	
003	BMSO 280/320/320L.04.03	REDUCTOR SHAFT	
004	BMSO 280/320/320L.04.04	8*7*35 WEDGE	
005	BMSO 280/320/320L.04.05	65*90*13 SEAL	
006	BMSO 280/320/320L.04.06	472/90 SEGMAN	
007	BMSO 280/320/320L.04.07	6210 BEARING	
008	BMSO 280/320/320L.04.08	METAL RING	
009	BMSO 280/320/320L.04.09	METAL RING	
010	BMSO 280/320/320L.04.10	6210 BEARING	
011	BMSO 280/320/320L.04.11	KM7 SOMUN	
012	BMSO 280/320/320L.04.12	MB7 WASHER	
013	BMSO 280/320/320L.04.13	M10*110 INBUS	
014	BMSO 280/320/320L.04.14	REDUCTOR BEARING	
015	BMSO 280/320/320L.04.15	M8*25 (8 ADET)	
016	BMSO 280/320/320L.04.16	FLANGE	

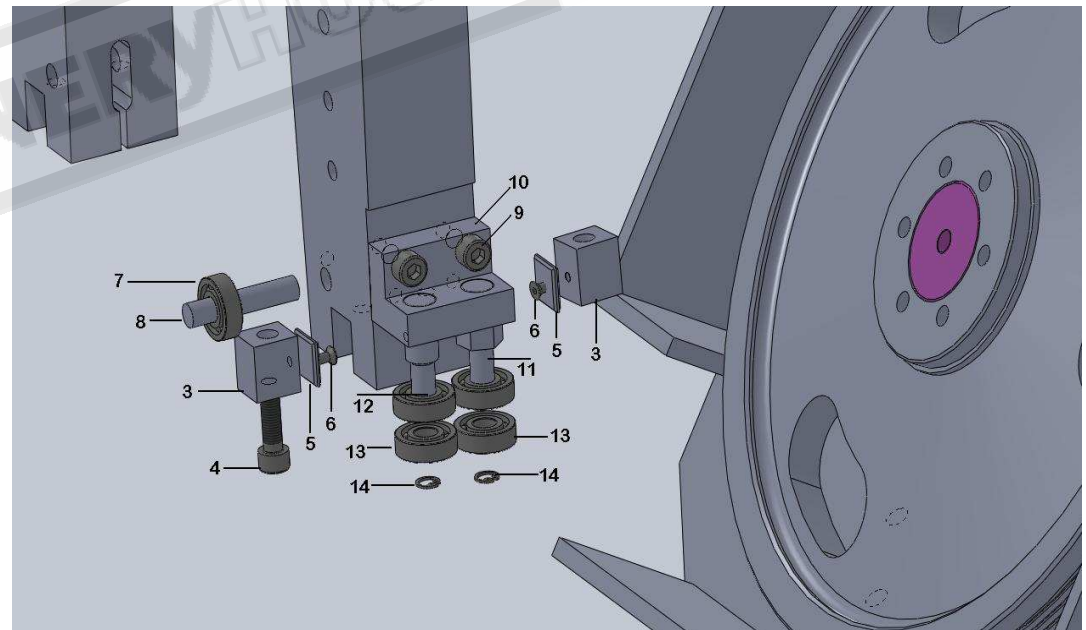






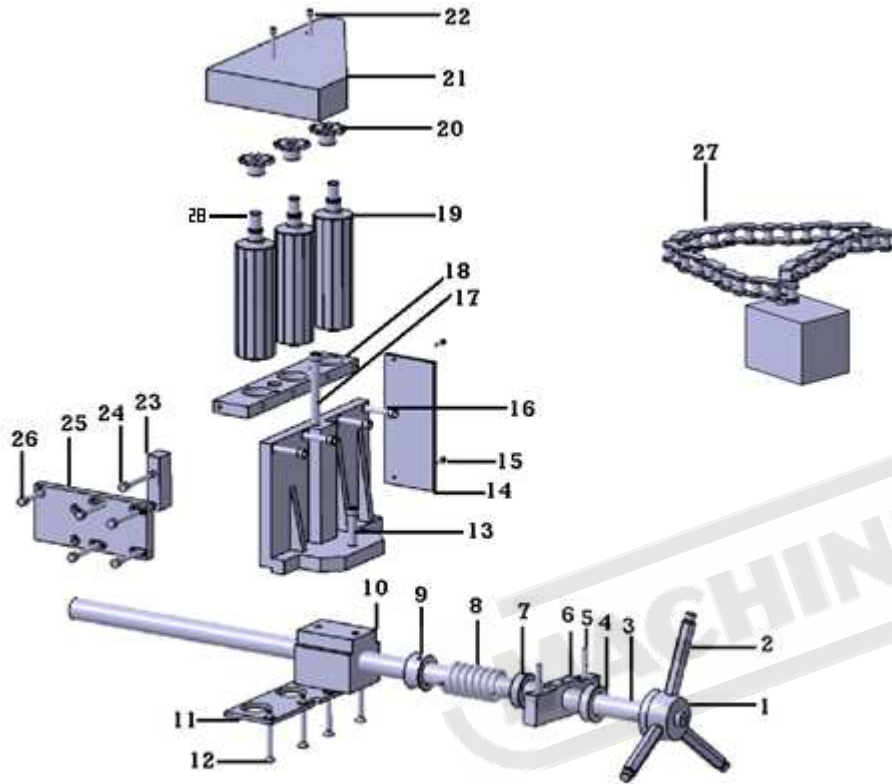
**CARBIDE GUIDE GROUP**

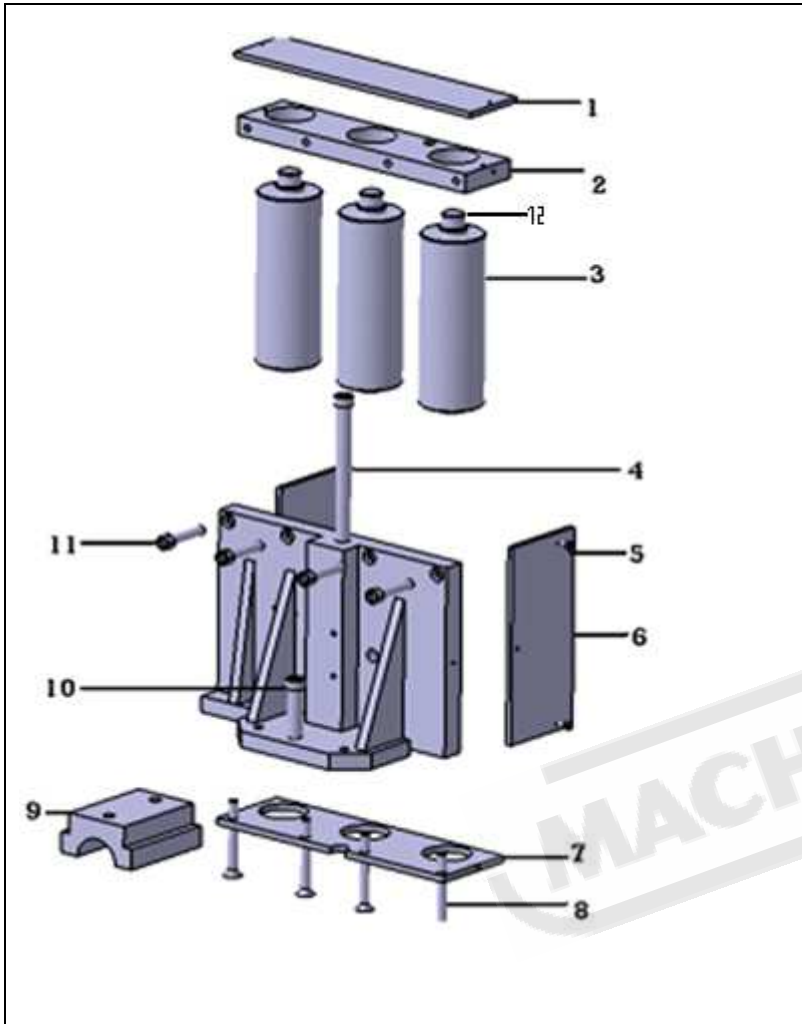
PART NMR	PART CODE	PART NAME
001	BMSO 280/320/320L.05.01	MOVING ARM
002	BMSO 280/320/320L.05.02	10*50 HANDLE
003	BMSO 280/320/320L.05.03	CARBIDE BLOCK
004	BMSO 280/320/320L.05.04	M8*30 INBUS
005	BMSO 280/320/320L.05.05	CARBIDE
006	BMSO 280/320/320L.05.06	M4*8 INBUS
007	BMSO 280/320/320L.05.07	6000 BEARING
008	BMSO 280/320/320L.05.08	10*50 SHAFT
009	BMSO 280/320/320L.05.09	M8*25 INBUS
010	BMSO 280/320/320L.05.10	BLADE DIRECTION BLOCK
011	BMSO 280/320/320L.05.11	ECCENTRIC PIN
012	BMSO 280/320/320L.05.12	STRAIGHT PIN
013	BMSO 280/320/320L.05.13	62200 BEARING
014	BMSO 280/320/320L.05.14	Ø10 RING
015	BMSO 280/320/320L.05.15	M8*15 INBUS
016	BMSO 280/320/320L.05.16	BLADE GUIDE



**MOVING VICE GROUP**

	<b>PART CODE</b>	<b>PART NAME</b>
1	BMSO 280/320/320L.06.01	KNOP
2	BMSO 280/320/320L.06.02	HANDLE
3	BMSO 280/320/320L.06.03	MOVING SHAFT
4	BMSO 280/320/320L.06.04	METAL RING
5	BMSO 280/320/320L.06.05	M10*25 INBUS
6	BMSO 280/320/320L.06.06	VICE CONNECTION BLOCK
7	BMSO 280/320/320L.06.07	RT119 BEARING
8	BMSO 280/320/320L.06.08	SPRING
9	BMSO 280/320/320L.06.09	METAL RING
10	BMSO 280/320/320L.06.10	VICE NUT
11	BMSO 280/320/320L.06.11	VICE LOWER FLAFT
12	BMSO 280/320/320L.06.12	M8*20 INBUS
13	BMSO 280/320/320L.06.13	M12*45 INBUS
14	BMSO 280/320/320L.06.14	FLAT
15	BMSO 280/320/320L.06.15	M4*10 INBUS
16	BMSO 280/320/320L.06.16	M8*20 INBUS
17	BMSO 280/320/320L.06.17	12*210 SHAFT
18	BMSO 280/320/320L.06.18	UPPER FLAT
19	BMSO 280/320/320L.06.19	MOVING VICE ROLLER (ROUGH)
20	BMSO 280/320/320L.06.20	CHAIN GEAR WHEEL
21	BMSO 280/320/320L.06.21	UPPOR COVER
22	BMSO 280/320/320L.06.22	6 CORNER SHAFT
23	BMSO 280/320/320L.06.23	SHAFT
24	BMSO 280/320/320L.06.24	M10*50 INBUS
25	BMSO 280/320/320L.06.25	FLAT
26	BMSO 280/320/320L.06.26	M8*25 INBUS
27	BMSO 280/320/320L.06.27	CHAIN(65cm)

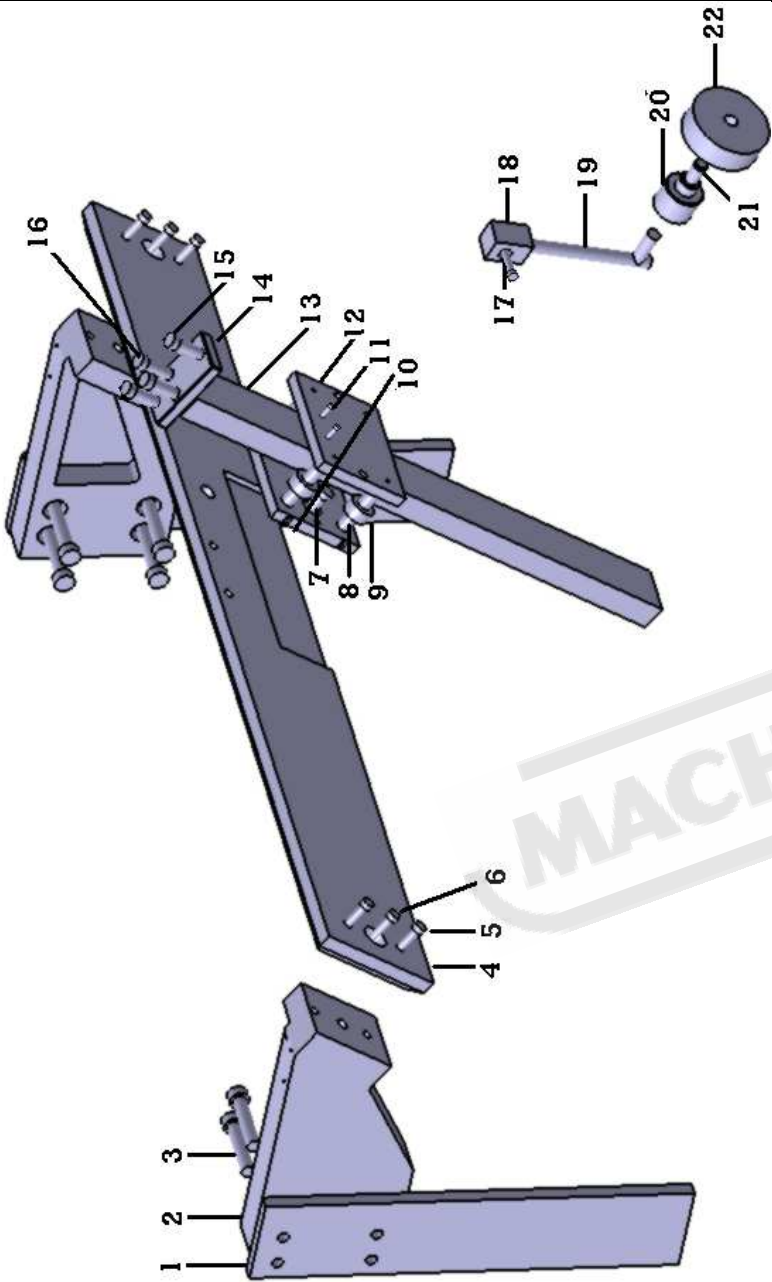




**FIXED VICE GROUP**

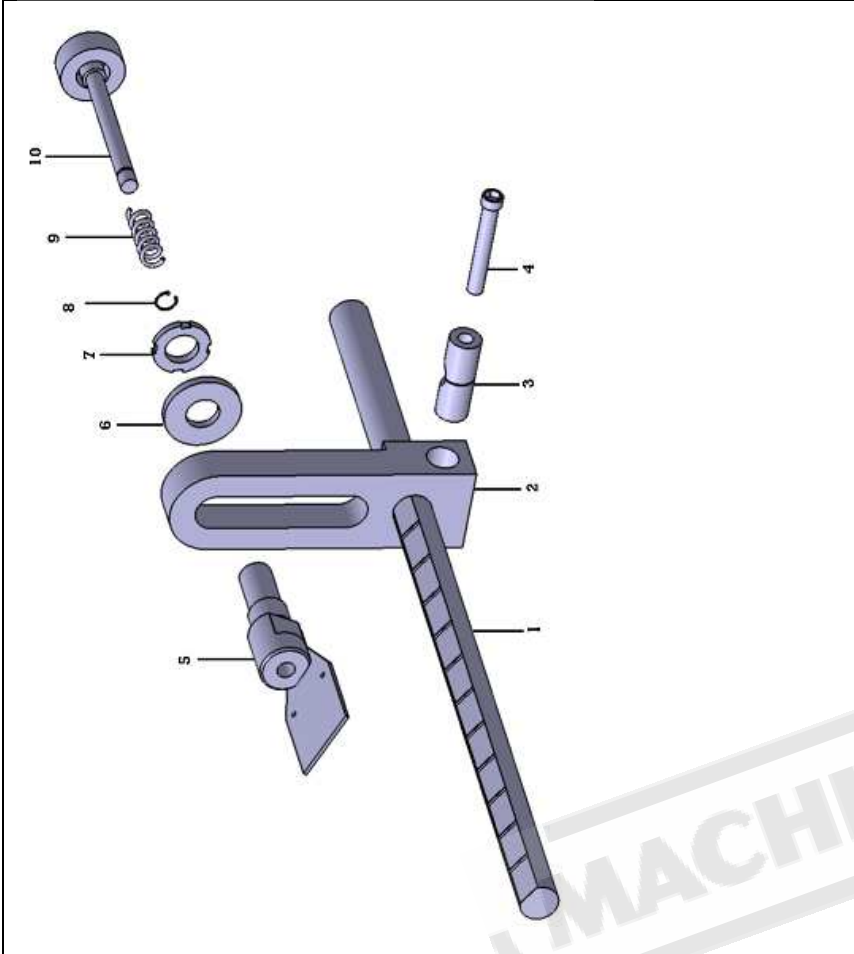
	<b>PART CODE</b>	<b>PART NAME</b>
1	BMSO 280/320/320L.07.01	UPPER CONNECTION FLAT
2	BMSO 280/320/320L.07.02	UPPER FLAT
3	BMSO 280/320/320L.07.03	FIXED VICE WHEEL (STRAIGHT)
4	BMSO 280/320/320L.07.04	12*220 SHAFT
5	BMSO 280/320/320L.07.05	M4*10 INBUS
6	BMSO 280/320/320L.07.06	FLAT
7	BMSO 280/320/320L.07.07	LOWER FLAT
8	BMSO 280/320/320L.07.08	M8*20 INBUS
9	BMSO 280/320/320L.07.09	FIXED VICE NUT
10	BMSO 280/320/320L.07.10	M12*40 6 CORNER BOLT
11	BMSO 280/320/320L.07.11	M8*20 INBUS
12	BMSO 280/320/320L.07.12	6004 BEARING





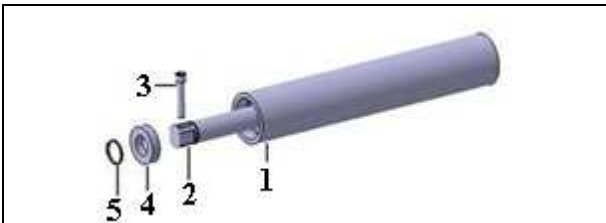
**SWITCH AND BRUSH GROUP**

PART NMR	PART CODE	PART NAME
001	BMSO 280/320/320L.08.01	CONNECTION FLAT
002	BMSO 280/320/320L.08.02	LEFT BLOCK
003	BMSO 280/320/320L.08.03	M10*30 INBUS
004	BMSO 280/320/320L.08.04	SLEDGE FLAT
005	BMSO 280/320/320L.08.05	M8*20 INBUS
006	BMSO 280/320/320L.08.06	M10*30 INBUS
007	BMSO 280/320/320L.08.07	M6*30 INBUS
008	BMSO 280/320/320L.08.08	STRAIGHT SHAFT
009	BMSO 280/320/320L.08.09	BEARING 6000
010	BMSO 280/320/320L.08.10	SWITCH LOWER FLAT
011	BMSO 280/320/320L.08.11	M4*30 INBUS
012	BMSO 280/320/320L.08.12	SWITCH UPPER FLAT
013	BMSO 280/320/320L.08.13	SWITCH FLAT
014	BMSO 280/320/320L.08.14	SWITCH FIXED FLAT
015	BMSO 280/320/320L.08.15	M6*15 INBUS
016	BMSO 280/320/320L.08.16	M6*20 INBUS
017	BMSO 280/320/320L.08.17	M8*30 INBUS
018	BMSO 280/320/320L.08.18	BRUSH CONNECTION BLOCK
019	BMSO 280/320/320L.08.19	BRUSH CONNECTION SHAFT
020	BMSO 280/320/320L.08.20	BRUSH CONNECTION ARM
021	BMSO 280/320/320L.08.21	SEGMAN 471/10
022	BMSO 280/320/320L.08.22	BRUSH



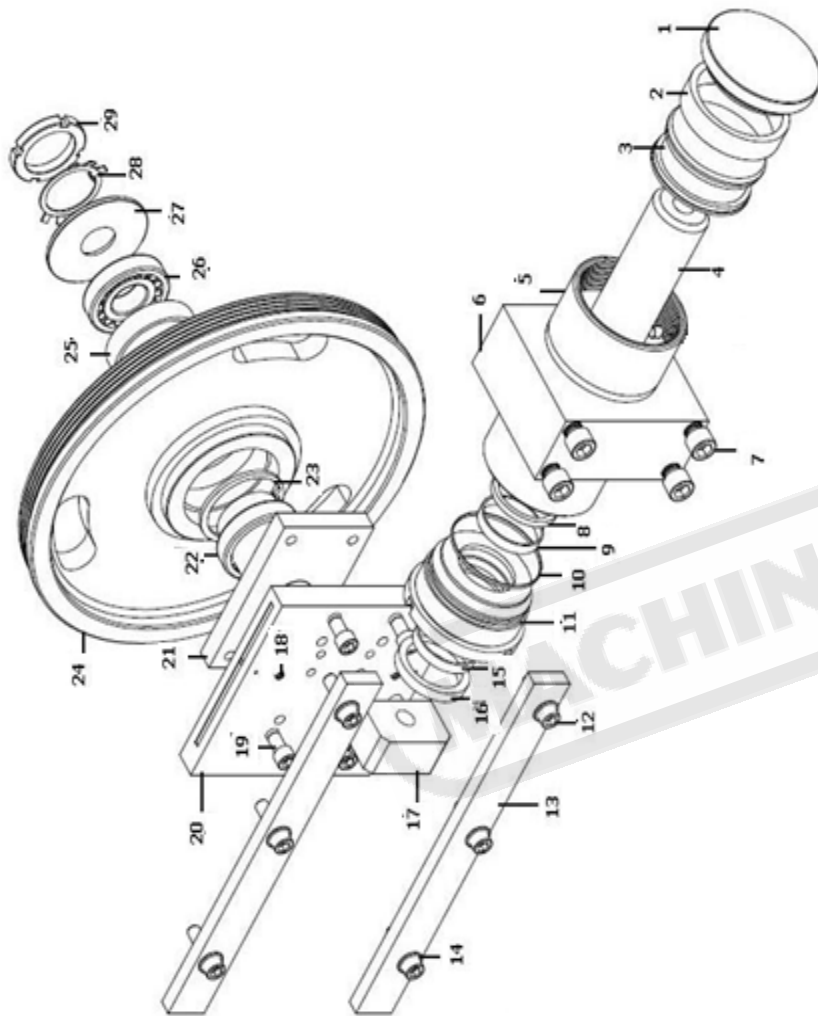
Exploded view diagram of a lean shaft assembly. The parts are numbered 1 through 10. Part 1 is the main shaft with a threaded section. Part 2 is a U-shaped bracket. Part 3 is a sleeve. Part 4 is a pin. Part 5 is a nut. Part 6 is a washer. Part 7 is a ring. Part 8 is a ring. Part 9 is a spring. Part 10 is a shaft with a nut.

LEAN GROUP		
PART NMR	PART CODE	PART NAME
001	BMSO 280/320/320L.09.01	LEAN SHAFT
002	BMSO 280/320/320L.09.02	LEAN BLOCK
003	BMSO 280/320/320L.09.03	LEAN INNER SHAFT
004	BMSO 280/320/320L.09.04	M8*50 INBUS
005	BMSO 280/320/320L.09.05	SWITCH TABLE
006	BMSO 280/320/320L.09.06	WASHER
007	BMSO 280/320/320L.09.07	KM6 NUT
008	BMSO 280/320/320L.09.08	Ø 14 SEGMAN
009	BMSO 280/320/320L.09.09	SPRING
010	BMSO 280/320/320L.09.10	SWITCH TABLE SHAFT



Exploded view diagram of a cylinder pipe assembly. The parts are numbered 1 through 5. Part 1 is the cylinder pipe. Part 2 is a sleeve. Part 3 is a nut. Part 4 is a washer. Part 5 is a ring.

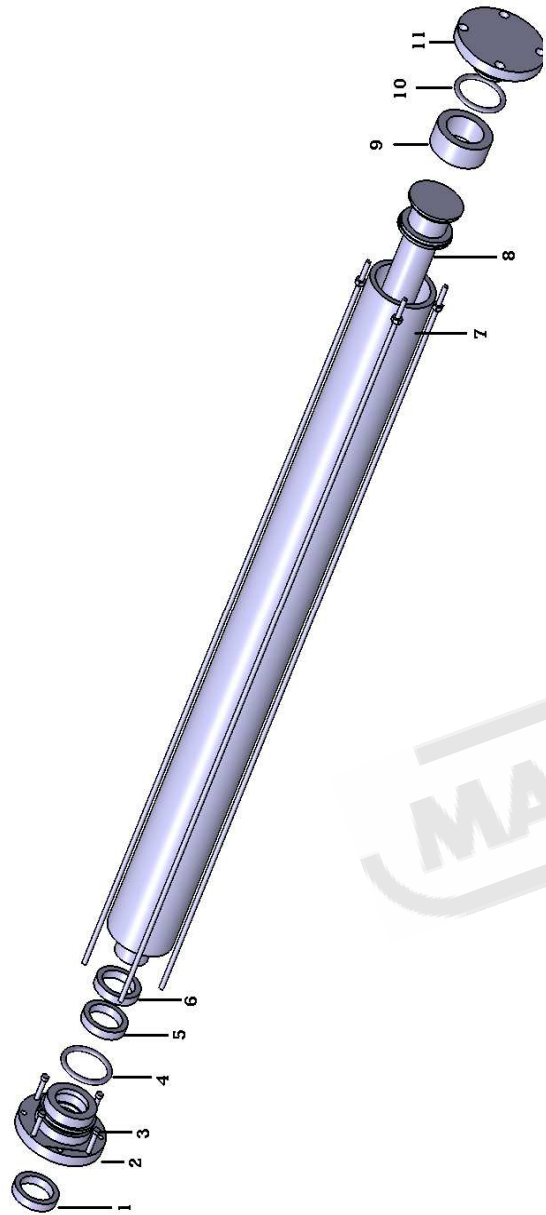
PART NMR	PART CODE	PART NAME
001	BMSO 280/320/320L.10.01	CYLINDER PIPE
002	BMSO 280/320/320L.10.02	CYLINDER MILE
003	BMSO 280/320/320L.10.03	M10*40 INBUS
004	BMSO 280/320/320L.10.04	6005 BEARING
005	BMSO 280/320/320L.10.05	Ø25 SEGMAN



### HYDRAULIC TENSIOING GROUP

PART NMR	PART CODE	PART NAME
001	BMSO 280/320/320L.11.01	PISTON COVER
002	BMSO 280/320/320L.11.02	SEAL SET 100X86X22,4
003	BMSO 280/320/320L.11.03	PISTON HEAD
004	BMSO 280/320/320L.11.04	PISTON SHAFT
005	BMSO 280/320/320L.11.05	SHAFT PIPE
006	BMSO 280/320/320L.11.06	LEAN PART (INNER)
007	BMSO 280/320/320L.11.07	M8X100 INBUS
008	BMSO 280/320/320L.11.08	DUST SEAL 25X33X7,5
009	BMSO 280/320/320L.11.09	BANT 2X10
010	BMSO 280/320/320L.11.10	O-RING 90X4
011	BMSO 280/320/320L.11.11	PISTON HOLDER ( BACK)
012	BMSO 280/320/320L.11.12	M8*20 INBUS
013	BMSO 280/320/320L.11.13	SLEDGE PLATES
014	BMSO 280/320/320L.11.14	WASHER
015	BMSO 280/320/320L.11.15	OIL SEAL 25X35X7
016	BMSO 280/320/320L.11.16	BANT 2X10
017	BMSO 280/320/320L.11.17	TENSIONING SLEDGE BLOCK
018	BMSO 280/320/320L.11.18	GREASE UNION
019	BMSO 280/320/320L.11.19	M8*20 SESTKUR
020	BMSO 280/320/320L.11.20	TENSIONING SLEDGE
021	BMSO 280/320/320L.11.21	WHEEL SHAFT
022	BMSO 280/320/320L.11.22	BEARING 30307
023	BMSO 280/320/320L.11.23	RING 472/90
024	BMSO 280/320/320L.11.24	IDDLE WHEEL
025	BMSO 280/320/320L.11.25	METAL RING 20*80
026	BMSO 280/320/320L.11.26	BEARING 30306
027	BMSO 280/320/320L.11.27	TENSIONING SHAFT COVER
028	BMSO 280/320/320L.11.28	MB6 SAFETY WASHER
029	BMSO 280/320/320L.11.29	KM6 NUT

OPTIONAL

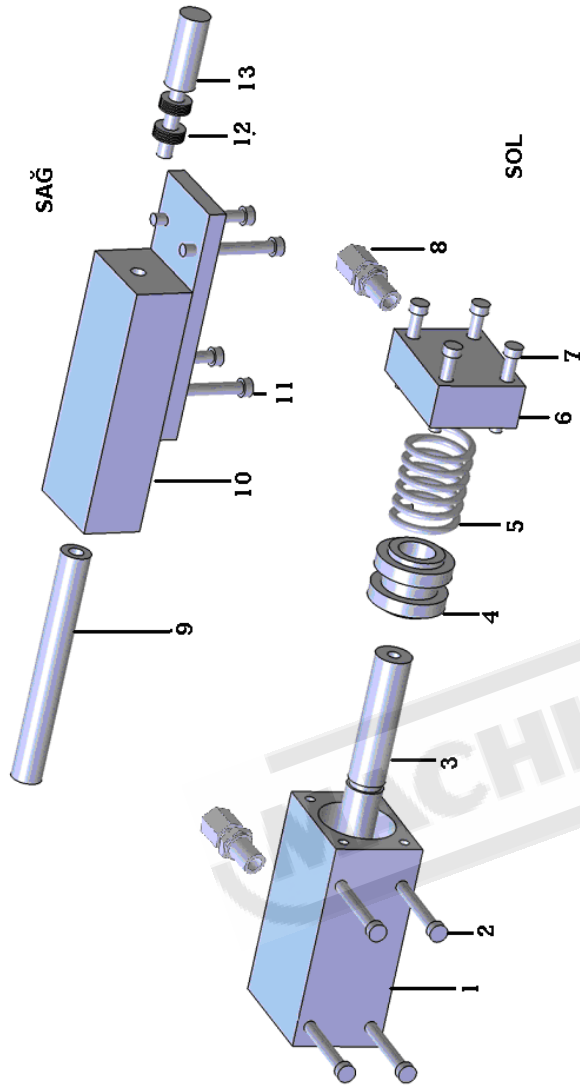


### HYDRAULIC VICE GROUP

PART NMR	PART CODE	PART NAME
001	BMSO 280/320/320L.12.01	DUST SEALI 30*38
002	BMSO 280/320/320L.12.02	PISTON FRONT COVER
003	BMSO 280/320/320L.12.03	M6*25 INBUS
004	BMSO 280/320/320L.12.04	ORING 42,86*3,53
005	BMSO 280/320/320L.12.05	OIL SEAL 30*40*8
006	BMSO 280/320/320L.12.06	BAND 2*10
007	BMSO 280/320/320L.12.07	VICE PISTON PIPE
008	BMSO 280/320/320L.12.08	VICE PISTON SHAFT
009	BMSO 280/320/320L.12.09	SEAL SET K18 050-034 (50*34*20,5)
010	BMSO 280/320/320L.12.10	ORING 42,86*3,53
011	BMSO 280/320/320L.12.11	PISTON REAR COVER

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OPTIONAL



**SENSITIVE PRESSURE GROUP -LEFT**

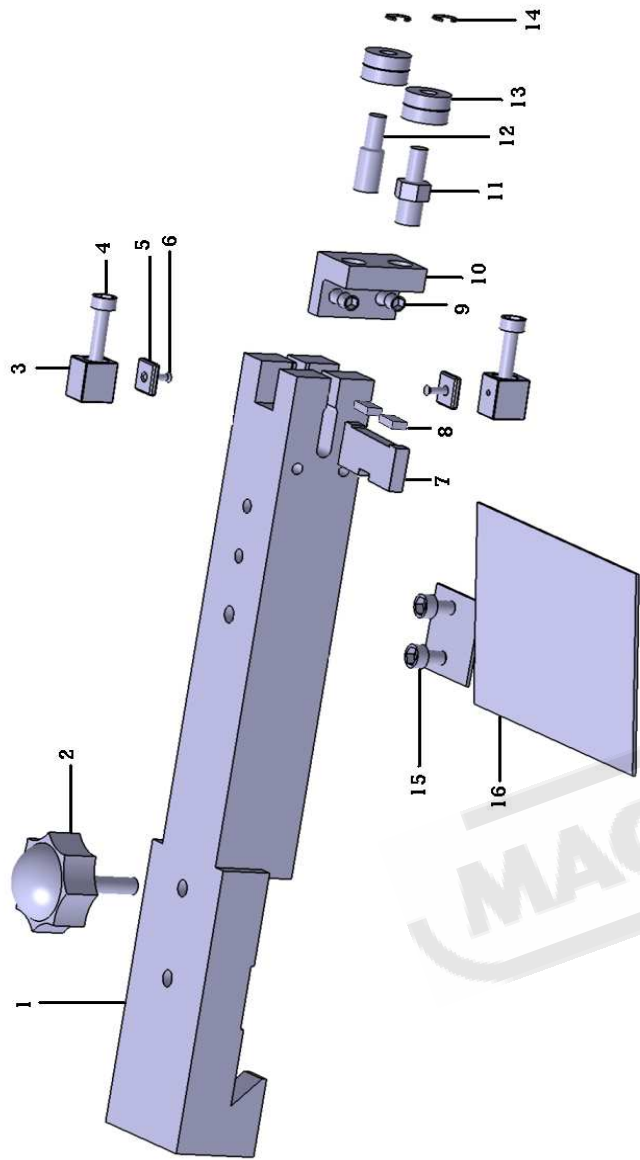
PART NMR	PART CODE	PART NAME
001	BMSO 280/320/320L.13.01	BODY
002	BMSO 280/320/320L.13.02	M4*20 INBUS
003	BMSO 280/320/320L.13.03	SHAFT
004	BMSO 280/320/320L.13.04	SHAFT TOWER
005	BMSO 280/320/320L.13.05	SPRING
006	BMSO 280/320/320L.13.06	UPPER COVER
007	BMSO 280/320/320L.13.07	M4*20 INBUS
008	BMSO 280/320/320L.13.08	REKOR 1/8 Ø6

**SENSITIVE PRESSURE GROUP-RIGHT**

PART NMR	PART CODE	PART NAME
009	BMSO 280/320/320L.13.09	CHROME SHAFT
010	BMSO 280/320/320L.13.10	BODY
011	BMSO 280/320/320L.13.11	M4*20 INBUS
012	BMSO 280/320/320L.13.12	WASHER
013	BMSO 280/320/320L.13.13	CHROME SHAFT( UPPER)

OPTIONAL



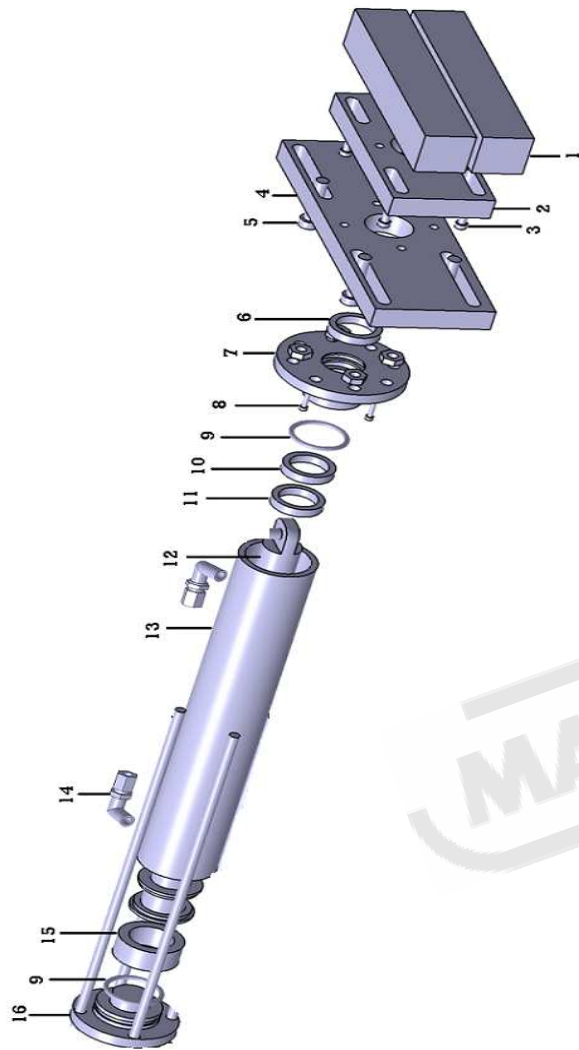


**CARBIDE GUIDE GROUP**

PART NMR	PART CODE	PART NAME
001	BMSO 280/320/320L.14.01	MOVING ARM
002	BMSO 280/320/320L.14.02	10*50 HANDLE
003	BMSO 280/320/320L.14.03	CARBIDE BLOCK
004	BMSO 280/320/320L.14.04	M8*30 INBUS
005	BMSO 280/320/320L.14.05	CARBIDE
006	BMSO 280/320/320L.14.06	M4*8 INBUS
007	BMSO 280/320/320L.14.07	CARBIDE BACK BLOCK
008	BMSO 280/320/320L.14.08	CARBIDE
009	BMSO 280/320/320L.14.09	M8*25 INBUS
010	BMSO 280/320/320L.14.10	BLADE DIRECTION BLOCK
011	BMSO 280/320/320L.14.11	ECCENTRIC PIN
012	BMSO 280/320/320L.14.12	STRAIGHT PIN
013	BMSO 280/320/320L.14.13	62202 BEARING
014	BMSO 280/320/320L.14.14	Ø10 RING
015	BMSO 280/320/320L.14.15	M8*15 INBUS
016	BMSO 280/320/320L.14.16	BLADE GUIDE

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OPTIONAL



**TOP CLAMPING PISTON GROUP**

PART NMR	PART CODE	PART NAME
001	BMSO 280/320/320L.15.01	PALET
002	BMSO 280/320/320L.15.02	PALET FLAT
003	BMSO 280/320/320L.15.03	M10*30 INBUS
004	BMSO 280/320/320L.15.04	FIXING PART
005	BMSO 280/320/320L.15.05	M10*35 INBUS
006	BMSO 280/320/320L.15.06	DUST SEAL 30*38
007	BMSO 280/320/320L.15.07	PISTON LOWER COVER
008	BMSO 280/320/320L.15.08	M6*25 INBUS
009	BMSO 280/320/320L.15.09	ORING 42,86*3,53
010	BMSO 280/320/320L.15.10	OIL SEAL 30*40*8
011	BMSO 280/320/320L.15.11	BAND 2*10
012	BMSO 280/320/320L.15.12	CHROME SHAFT 30
013	BMSO 280/320/320L.15.13	SHAFT PIPE (50*60 )
014	BMSO 280/320/320L.15.14	REKOR
015	BMSO 280/320/320L.15.15	SEAL SET K18* 050-034 (50*34*20,5)
016	BMSO 280/320/320L.15.16	PISTON UPPER COVER

OPTIONAL

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## EC DECLARATION OF CONFORMITY

### AT UYGUNLUK BEYANI

**Manufacturer / İmalatçı** : BEKA-MAK MAKİNA SANAYİ VE TİC. A.Ş.  
**Address / Adres** : İzmir Yolu Caddesi No:698 - 16370 Başköy-Nilüfer -Bursa /TÜRKİYE  
**Name and address of the person authorised to compile the technical file** ENGİN ÇETİNER  
İzmir Yolu Caddesi No:698 - 16370  
**Teknik Dosyayı derleyen yetkili kişi ve adresi** Başköy-Nilüfer -Bursa

The undersigned Company certifies under its sole responsibility that the item of equipment specified below satisfies the requirements of the Machinery Directive 2006/42/EC which is apply to it.

The item of equipment identified below has been subject to internal manufacturing checks with monitoring of the final assessment by BEKA-MAK MAKİNA

Aşağıda tanımlanmış olan ürünler için Makine Emniyeti yönetmeliği 2006 / 42 / AT'nin uygulanabilen gerekliliklerinin yerine getirildiğini ve sorumluluğun alınmış olduğunu beyan ederiz.

Aşağıda tanımlanan ürünler iç üretim kontrollerine bağlı olarak BEKA-MAK MAKİNA tarafından kontrol edilmiştir.

**Product / Ürün** :HORIZANTAL BANDSAWING MACHINE / MAFSALLI YATAY ŞERİT TESTERE  
MAKİNASI  
**Model – Type / Model-Tip** : BMSO 320  
**Serial Number / Seri Numarası** :

### Directives / Yönetmelikler

**2006/42/EC** Machinery Directive / Makine Emniyeti Yönetmeliği

**2006/95/EC** Low Voltage Directive / Belirli Gerilim Sınırları Dâhilinde Çalışmak Üzere Tasarlanmış Elektrikli Teçhizat Yönetmeliği

**2004/108/EC** Electromagnetic Compatibility Directive / Elektromanyetik Uyumluluk Yönetmeliği

### Regulations applied acc. to harmonize standards / Uygulanan Uyumlaştırılmış Standartlar

EN ISO 13857;EN ISO 4413:2010; EN ISO 13849-1; EN 13898+A1/AC;EN ISO 12100:2010;EN 60204-1:2011

**Place and date of issue** : Bursa,  
Yer ve Tarih :  
**Name and position of authorized person** : ENGİN ÇETİNER  
Yetkili kişinin adı ve görevi Genel Müdür – General Manager  
**Signature of authorized person** :  
Yetkili kişinin imzası

MACHINERYHOUSE





## EC DECLARATION OF CONFORMITY

### AT UYGUNLUK BEYANI

**Manufacturer / İmalatçı** : BEKA-MAK MAKİNA SANAYİ VE TİC. A.Ş.  
**Address / Adres** : İzmir Yolu Caddesi No:698 - 16370 Başköy-Nilüfer -Bursa /TÜRKİYE  
**Name and address of the person authorised to compile the technical file** ENGİN ÇETİNER  
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**Product / Ürün** :HORIZANTAL BANDSAWING MACHINE / MAFSALLI YATAY ŞERİT TESTERE  
MAKİNASI  
**Model – Type / Model-Tip** : BMSO 320  
**Serial Number / Seri Numarası** :

### Directives / Yönetmelikler

**2006/42/EC** Machinery Directive / Makine Emniyeti Yönetmeliği

**2006/95/EC** Low Voltage Directive / Belirli Gerilim Sınırları Dâhilinde Çalışmak Üzere Tasarlanmış Elektrikli Teçhizat Yönetmeliği

**2004/108/EC** Electromagnetic Compatibility Directive / Elektromanyetik Uyumluluk Yönetmeliği

### Regulations applied acc. to harmonize standards / Uygulanan Uyumlaştırılmış Standartlar

EN ISO 13857;EN ISO 4413:2010; EN ISO 13849-1; EN 13898+A1/AC;EN ISO 12100:2010;EN 60204-1:2011

**Place and date of issue** : Bursa,  
Yer ve Tarih :  
**Name and position of authorized person** : ENGİN ÇETİNER  
Yetkili kişinin adı ve görevi Genel Müdür – General Manager  
**Signature of authorized person** :  
Yetkili kişinin imzası