SAWING PRODUCTS

INSTRUCTION MANUAL



BAND SAW MACHINES

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Version	II.generation – version 2

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2. INTRODUCTION

The Instruction Manual was written to comply with the rules and regulations established by the Federal Trade Commission (FTC) for equipment being sold to customers. The Instruction Manual contains installation, operation and safety instructions. The operator should read the manual and keep it handy for future reference. It is very important for operators of the machine to read the Instruction Manual carefully.

Warning: Producer and supplier of a machine has the right to make technical changes on its products and to make changes in manual instructions without previous warning.

2. DESCRIPTION OF THE MACHINE

Semiautomatic machine with hydraulic manipulation.
The machine is designed for cutting of material in vertical and angle cuts, angle cuts are possible to set fluently from 60° right to 45° left.
It is suitable for piece production and small series production. The machine is so durable that it can be used to cut a wide range of profiles and materials, including piece production and small series production.
The machine is designed to saw steel materials, but also non-ferrous and light metals. However, we recommend consulting the manufacturer about this option.

No other materials may be sawn without approval from the manufacturer.

2.1 OPERATING CYCLE

After manual adjustment of the jaws the operator starts the cycle with a switch on the control panel. The hydraulic cylinder of the vice grips the material and the saw starts working. The cutting speed of the arm is controlled by a throttle valve. Arm and vice movements after cut following set users parameters. The vice opens and the operator can handle the material.

2.2 CONTROL SYSTEM

- The machine features a Mitsubishi PLC control system, which features an automatic feed control BRP.
- Control panel MITSUBISHI as standard equipment. It uses touch display and PLC, which enable semi-automatic cutting (basic setting encluded) as well as communication with operator.
- The control system displays information about the cutting process:
  - Cutting cycle indication,
  - indication BRP,
  - indication – blade tightening,
  - time of the cut,
  - loading of blade in amperes,
  - speed of the blade,
  - cutting times measuring,
  - list of error messages.
- User´s setting:
  - autostop of hydraulic unit
  - mode of arm moving after end of the cut
  - mode time lag of shift speed
  - mode blade moving
  - mode jaw moving after cutting cycle finish
  - diagnostic of inputs and outputs
- STOP function – cutting : it enables to stop cutting by pressing STOP button at any time. The Frame goes up with the running blade without opening the vice.
- Regulation of shaft speed (moving to cut) is manual and uses throttle valve placed beside control panel. Automatic (safety) regulation of shift speed BRP. Principle: Machine will stop after exceeding set loading (defined in ampers).
- Extenally situated controlling panel - its position does not depend on the position of turntable position during angular cuts. There is equipped with a safety button, which stops the saw. There is also a feed regulator and buttons which controls the various available movements.

2.3 CONSTRUCTION

- The machine is designed in that way, so that it corresponds to extreme exertions in productive conditions.
- The arm on the machine is designed to make precision cuts. The arm is sloped twenty-five degrees to increase blade life.
- The arm is rotated by a shaft(joint) which is support by adjustableconical bearings
- Cast iron pulleys are used with the drive motor.
- Upper working arm position controled by automatic stopper (DPP)
- The down working position of the arm controlled by the miscroswitch. In the end position microswitch is on, arm goes to selected upper position.
- The vice is made from cast iron. Jaws ensure safe clamping of the material.
- The hydraulically operating vice with short travel is placed in an adjustable dovetail groove.
- Moving jaw of the vice is manual with a wheel and trapeze thread. Speedy jaw adjustment is achieved by means of a lever, spring and trapeze half-nut.
- Basic part of the vice moves according to the direction of the angle cut setting, fixation is made by the handle.
- Turn table is cust iron. A turntable gives a big place for supportion of material and its perfect clamping.
- Manuall turning of the table for angle cuts, angle fixation using handle. The turning table has autoarresting every 15 grades (the groove with the spring).
- General angles are adjusted by the nonius. It is possible to equip the machine by reading of angle by

2.4 STANDARD EQUIPMENT

- The blade leading in guides with hardmetal plates and leading bearings and along cast iron pulleys.
- There is a guide situated on the firm beam on the drive side. On the tightening side there is the guide situated on the moving beam.
- The guide beams of moving band guide is adjustable. Manual adjustment and fixing of the guide beams.
- Guide holder moves in adjustable dovetail groove.
- The saw-band is equipped with a guard, which protects the operator from millings and cutting fluid.
- Mechanic tightening of the blade.
- Indication the correct tension of the saw blade.
- A passive driven cleaning brush for perfect cleaning and function of blade.
- The machine is powered by a maintenance-free worm gear box. The 3-phase drive motor is equipped with a frequency converter that regulates blade speed. The electric motor has thermo-protection.
- The cooling system distributes coolant to the band guides.
- Massive base with a tank for chips. Base is designed for manipulation with machine by pallet truck and also by any fork lift truck.
- Indication of blade tightening and opening of the cover.
- Controlling 24 V.
- The hydraulic system controls all machine functions, including raising and lowering the arm, and opening and closing the vice.

2.5 BASIC EQUIPMENT OF MACHINE

- Band saw blade.
- Set of spanners for common service.
- Manual instructions in eletronic form (CD).

2.5.1 SET OF TOOLS FOR COMMON SERVICE

Item	Descritpion
1	Allen wrenches
2	Allen wrench for blade tightenns
3	Wrenchs



pic: 2-1

2.6 PURPOSE OF THE MACHINE

The DS-320SA sawing machine is designed:

- to cut bars and shaped materials (pipes). The size of bars is defined in a table, chapter 4. Saw is constructed for cutting of bars of maximal diameter (11,8x12,6in) in length of 236in. At longer bars the maximal diameter decreases proportionally.
- to saw steel materials, but also non-ferrous and light metals. However, we recommend consulting the manufacturer about this option. No other materials may be sawn without approval from the manufacturer.
- for operation in a standard environment.

The machine is designed and produced to cut bar materials in agreement with the instructions described in this manual. No other use is permitted.
Sawing is not permitted if the material is not properly gripped in the vice.
The machine is designed to saw steel materials, but also non-ferrous and light metals. However, we recommend consulting the manufacturer about this option.

**No other materials may be sawn without approval from the manufacturer.**

To achieve correct operation of the machine and the safety of operators, the structural properties and size of the saw-band may not be altered under any circumstances and all instructions printed in this manual must be observed.

The electrical installation should be connected to 3/PE AC 230V 60Hz, TN-C (or 2 AC 24V 60Hz, PELV) power network, see technical data in the electronic documentation.

The electrical installation of the machine should be used in an environment determined by the valid regulations and technical standards with the following ambient effects:
AA5 (ambient temperature 40 to 105°F), AB5 (relative humidity up to 95%), AC1, AD1 (negligible presence of water), AE1, AF1, AG2, AH2, AK1, AL1, AM
negligable effects: AN1, AP1, AQ1, AR1, AS1, BA4 (only qualified persons may operate the machine), BC3, BD1, BE1, CA1,CB1

The saw machine does not produce excessive high-frequency electromagnetic disturbances. The machine is expected to operate in an electromagnetic environment as defined in the valid regulations and technical standards.

Observing the instructions and processes for installation, operation, maintenance and cleaning stated in the following chapters of this manual, are further conditions for the use of the sawing machine.

NOTICE:

- The manufacturer (supplier) bears no responsibility for any damage incurred by using the machine for different purposes or in different circumstances. All the responsibility falls on the User.
- The operator is only allowed to perform the operations described in the manual. Any interference with the machine not covered in this manual belongs to an authorized company.
- Before putting the machine into operation or when teaching a new operator, we recommend studying the manual properly. Only in this manner will you be able to fully utilise the outstanding properties of the sawing machine.
- We recommend observing the data in the tables for choosing saw-bands. Consult all queries with our technicians.
- In order to achieve the best quality of our services, we only accept written orders (fax, e-mail, surface mail). When ordering maintenance service, always give the name and model of the sawing machine, year of production, serial number, name and code of the spare part. Describe the malfunction as clearly as possible.

band saw machine DS-320SA it is a product that answers demands of technical directives.

3. TECHNICAL DATA

To achieve the right function of the machine and the safety of the operator following data can not be changed in any case:

Protection by cover IP44

performance parameters		
drive of the blade	Hp	3,5
drive of the hydraulic agregate	Hp	0,74
pump of the cooling emulsion	Hp	0,17
cooling	Hp	0,04
distributor	Hp	0,34
total input	Hp	6,84
cutting speed	fpm	115 - 230
diameter of the blade	in	238-1/2
electric connection		3x230V, 60 Hz, TN-C

tab: 3-1

3.1 CUTTING PARAMETERS

cutting parameters							
		0°	45°	60°	45°	60°	b / a
	D [in]	11,8	11,8	7,9	10,6	X	X
	D [in]	7,08*	4,3*	3,2*	4,3*	X	X
b / a	axb [in]	12,6x11,8	11,4x11,8	7,5x7,5	10,6x7,9	X	12,6x6,3

tab: 3-2

*recommended values

the shortest cutting	in	0,11
the smallest divisible diameter	in	0,2
the shortest rest during one cut	in	1,2

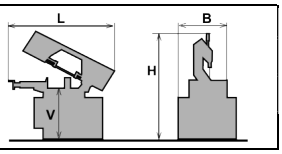
tab: 3-3

feed of the Frame to the cut	hydraulically
feed of the material	manually
clamping of material	hydraulically
bend tension	manually
cleaning of the blade	cleaning brush driven by a pulley
cooling	Cooling system for emulsion with liguid distribution to blade guides.

tab: 3-4

3.2 DIMENSIONS FOR TRANSPORT

Parameters					
length	width	Height max	height min	height of the table	weight
[L]	[B]	[Hmax]	[Hmin]	[V]	(lb)
80,7	46	80,3	56	31,5	1430



tab: 3-5

* high measurements do not count with the interlay materials that are neccesary for transport.

3.3 INFORMATION ON DRIVE

	type	rated output Pn [hp]	rated voltage Un [V]	rated current In [A]	Turns [*min-1]	performance [l/min]
M1 - blade	Indukta – 3SIEK90L4A	3,5	230	9,6	1745	-
M1 - gearbox	Varvel: SRT08528G635, i=28					
M2 – coolant pump	4COA2-14 HP1+S - UL	0,17	230	0,5	-	-
M3 - hydraulic	MAAL71-14F85-4A	0,75	230	2,6	1680	-

tab: 3-6

3.4 THE AMOUNT OF SERVICE/OPERATING FLUIDS

Hydraulic oil	**10 l (10,56qt)**
*The amount of hydraulic oil is only for your orientation – the minimum level of oil is determined by the transparent oil level indicator.	
Emulsion oil	**12 l (12,68qt)**
*The amount of emulsion oil is only for your orientation. To check the sufficient amount of the coolant – it is the task of operators of the majority of machines. The level of coolant is from 30 to 60 mm below the level of the flange of coolant pump.	
gear oil	**0,6 l (0,63qt)**
There is a longlife syntetic oil filled in the gearboxes: it is not necessary to make any service or filling the oil during average 15.000 hours of lifetime.	
Oil for MINI-LUBE	**0,5 l (0,53qt)**

tab: 3-7

3.5 EMISSIONS – MACHINE NOISE LEVEL

In regard to emissions, the machine operators are in no danger of taking in harmful gaseous products during the operation of the machine.

The machine noise level specifies a method for measuring the emission sound pressure levels of machinery and equipment at a work station and at other specified positions nearby in a semi-reverberant field. Noise is measured in units of sound pressure called decibels (dB).

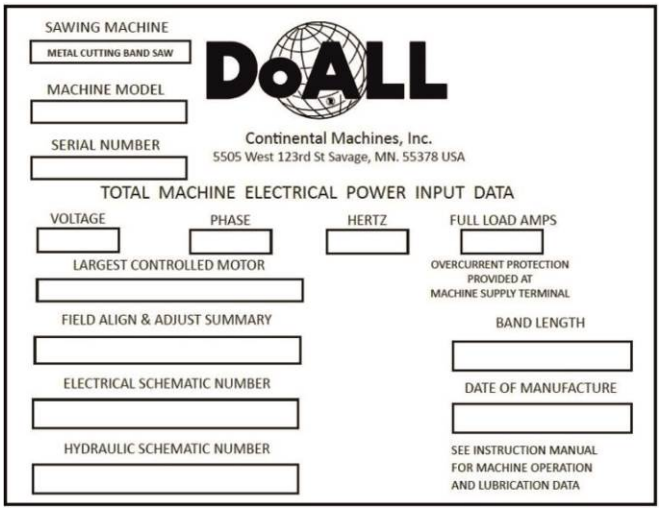
The *noise level* at a workplace of a *machine* (the emission sound pressure level) has to be mentioned and specified in the user manual if it exceeds 70 dB(A).

Table 1. Emissions – Machine Noise Level

Source	Definition	Noise Level
ISO 11202: 1995	The declared emmisions level of the working machine, anytime the machine is running/idling.	LpAeg,T = 65+4 [dB]
ISO 11202: 1995	The declared emmisions level of the working machine when it is cutting a low alloy steel.	LpAeg,T = 65+4 [dB]

3.6 PRODUCTION LABEL

Every machine is equipped with an aluminium tag that contains main technical information answering to the working and constructional specifications. This tag cannot be removed and must be clean and legible. All data on this tag must be specified in case of order of spare parts or service.



For your information and future reference, pertinent data concerning your machine should be written in the spaces provided above. This information is printed on a label attached to your machine. Be sure to provide machine model and serial numbers with any correspondence or parts orders.

Specifications contained herein were in effect at the time this manual was approved for printing. The DoALL Company, whose policy is one of continuous improvement, reserves the right, however, to change specifications or design at any time without notice and without incurring obligations.

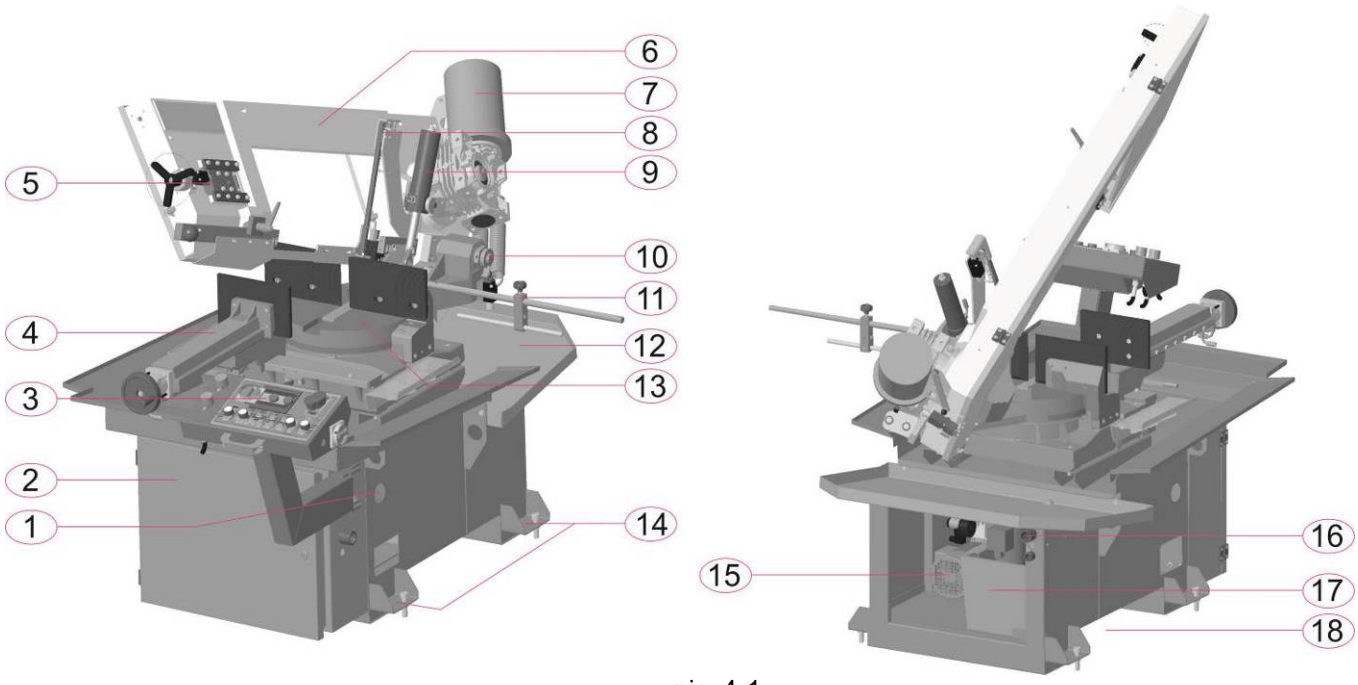
PLEASE READ THIS MANUAL CAREFULY BEFORE OPERATING THE MACHINE!

For Sales, Parts and Service, call 1-888-362-5572

For general information, visit our web site at: **www.doallsawing.com**

4. MAIN PARTS AND FUNCTIONS

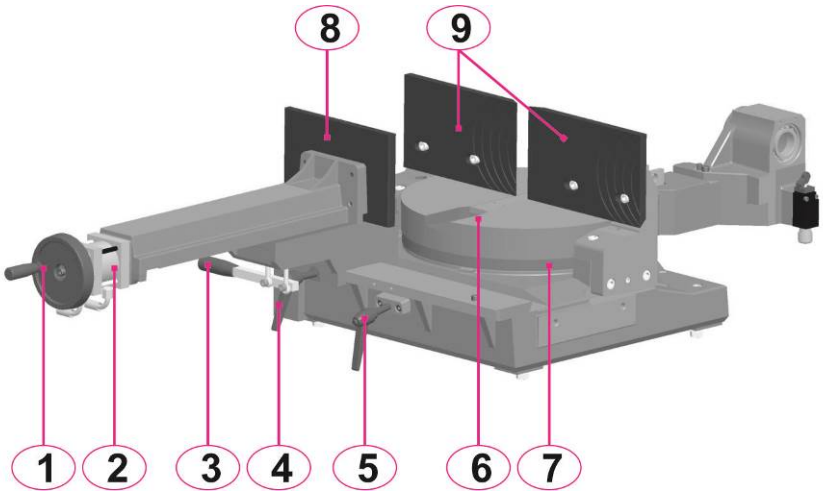
1. Base of machine
2. Wire installation
3. Control panel
4. Hydraulically operating vice for clamping of material. The adjustment is manual with a wheel and trapeze thread.
5. Screw for manually tightening of the band.
6. Arm of machine
7. Drive of - worm gear box with and three phase electric motor
8. Automatic stopper at upper working arm position (T-bar)
9. Hydraulic cylinder of arm movement
10. Cam for adjustment of bottom working arm position
11. Measuring end stop
12. Metalic gutter, vessel for chips
13. Turn table of the machine. It carries the arm and enables its turning.
14. Anchoring holes.
15. Hydraulic centrale
16. Main power supply - means of a flexible lead with one end firmly attached to the main connectors of the machine and the loose end for socket connection (i.e. three-phase, five-pin plug) or for fixed connection to the object's electrical power network. (The plug is not supplied).
17. Coolant pump - used to cool the saw blade when cutting. Coolant flows through the blade guides. Pump operation is controlled through logic machines - cooling blade only machine cycle.
18. Transportation holes for low-lift or high-lift truck.



pic: 4-1

4.1 VICE

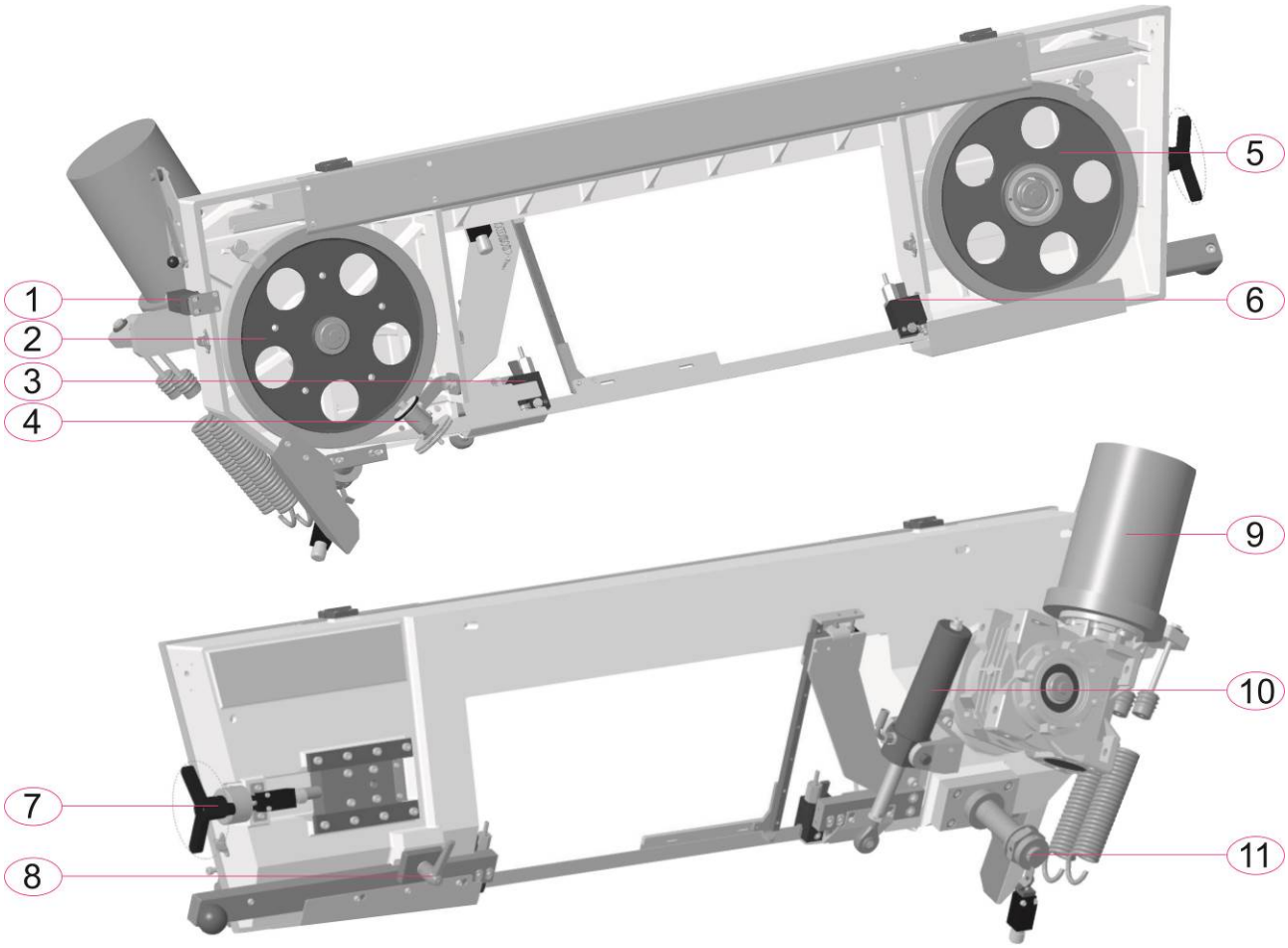
1. Crank for manual operation of the moveable jaw
2. Short step hydraulic cylinder of the vice
3. Locking lever for a quick setting of the jaw, pressed lever control the spring and release the trapese seminut, it is possible to move with the jaw according to your needs
4. Locking lever for the vice position (right/left). When changing the position of the vice it is necessary to loose it
5. Locking lever for turntable rotation, after loosing it it is possible to turn the arm.
6. Turn table
7. Angle scale
8. Movable jaw of the vice – it increases the diameter of the material to be cut
9. Firm jaws of the vice



pic: 4-2

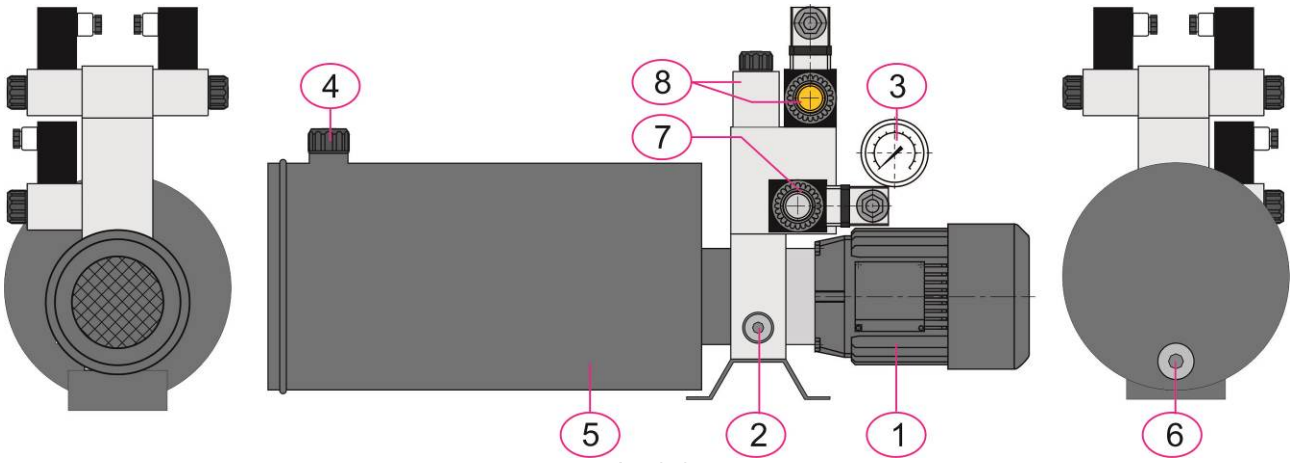
4.2 ARM

1. Microswitch of the pulley guard
2. Tensioning pulley
3. Fixed band guide
4. Band cleaning brush
5. Drive pulley
6. Adjustable guide of the saw-band. Washed by coolant.
7. Band tensioning
8. Locking lever of the adjustable guide
9. Three-phase electric motor (see the Drive Information).
10. Hydraulic cylinder of the arm.
11. Adjustable stops of the arm's operating positions (see Adjustable Stops of the Arm's Operating Positions).



pic: 4-3

4.3 HYDRAULIC UNIT



pic: 4-4

1. Motor
2. Pressure regulation screw
3. Pressure gage of the main hydraulic circuit
4. Oil plug
5. Reservoir oil
6. Drain plug
7. Hydraulic valve -main vice
8. Hydraulic valve - arm of the machine

5. SAFETY RULES

ALWAYS WORK WITH CARE AND CAUTION, AVOID ALL DANGEROUS SITUATIONS.

1. Follow the instructions presented in this manual.
2. Keep the manual in the vicinity of the machine.

5.1 SAFETY DURING OPERATION

This machine is designed to cut steel and can easily injure you. Work with caution.

3. Adhere to the safety rules during work.
4. Alwas use eye protection and gloves when handling material and maintaining saws.
5. Wear tight clothes.
6. Wear antislip footwear.
7. Confirm saw is in good operating condition prior to using the saw.
8. Use the machine only if all protective devices are in position and operational; no protective devices may be removed or discarded.
9. Make sure the machine is properly installed and connected to the main power supply. (All electrical connections must be performed only by a licensed Electrical contractor.)
10. Inspection and repair of the wiring can only be performed by a licensed Electrical contractor.
11. Never start the machine before closing and securing all safety guards.
12. Keep a safe distance from all moving parts (i.e. the saw-band, motor, tensioning pulleys and cleaning brush).
13. Keep the saw clean.
14. Never clutter the working space with tools or unnecessary objects.
15. After finishing work, the operator turns off the main power switch.
16. When troubleshooting problems with the saw, follow the procedures in the manual or call DoALL (1-888-362-5572) to schedule an appointment for service.
17. When handling the saw-band (or blade) or performing maintenance: turn off the main switch and disconnect the power cable from the main power supply. When the band is in motion, no part of the body may be in the vicinity of the cutting zone.
18. In the case of a breakdown, press the EMERGENCY STOP button immediately and TURN OFF THE MAIN SWITCH.
19. Stay clear of machine while in operation.
20. Use only recommended bands or blades.
21. Use a conveyor system to safely support long bars in front and behind the saw.
22. It is forbidden to cut material whose size and properties do not correspond to the cutting capacity of the machine.
23. When cutting short pieces, pay attention to their proper removal.
24. Never push the sawn material into the machine when it is operating.
25. Before starting the first cutting cycle, the operator should perform one “empty” cycle, i.e. without material, to inspect the correct adjustment of the saw.
26. Before starting the cutting cycle, check the machine for proper operation. Test its performance occasionally at the maximum adjusted values (i.e. band speed, cutting pressure, maximum feeder travel, etc.).
27. Make sure the vice jaw position is adjusted correctly (clearance: 0,04-0,2in) and the material is gripped correctly.
28. The employer is obligated to provide a safe and healthy working environment.
29. Before putting the machine into operation, it is the employer's responsibility to ensure that the operator is properly trained. In addition to operator training, the employer must be held responsible for regular machine maintenance, which includes but is not limited to: service and repair, and cleaning the machine.
30. The machine may only be operated independently by persons who are 18 years or older and mentally and physically competent. All operators must be certifiably trained for this particular kind of work and familiar with
31. It is the employer's responsibility to install a first aid kit and refill it after use for any possible injuries caused by the machine.
32. It is the employer's responsibility to ensure safe operation of the machine and perform regular maintenance and cleaning.
33. It is the employer's responsibility to take measures, which prevent the access of unqualified persons or children to the operational area.

34. The machine may only be used for purposes to which it is technically applicable in accordance with the conditions stipulated by the manufacturer and must conform to the safety rules with regard to its design, construction and technical condition.
35. It is the operator's responsibility to inspect the machine for correct operation after starting the machine and then at regular intervals and after modifications.
36. It is the operator's responsibility to perform a visual inspection of the machine and basic maintenance
37. It is the operator's responsibility to report any malfunction and damage that might compromise safety to the employer.
38. If the machine is not in use for any reason, shut off the main power switch and disconnect the power cord.
39. Safety marking, symbols and signs must be kept in a legible condition. If damaged or illegible, the User is obliged to restore them to their original design.
40. It is the employer's responsibility to restore take measures, which prevent any unauthorized person from operating the machine.
41. It is the employer's responsibility to take measures that prevents unauthorized personnel from operating the machine.
42. The saw operator must ensure that other people, except for machine operators, have not access to the workplace. The manufacturer is not responsible for damages caused to persons who have moved to the designated workplace.
43. The operator must check the safety system of the machine once a week (the machine stops immediately after pressing the Emergency Off button).

5.2 LIST OF POSSIBLE DANGERS WHEN WORKING WITH MACHINE

Even though the machine was produced with respect to all of the known technical regulations, it is possible to minimize, but not eliminate all the risks that can arise, especially if the machine operator is careless. Operator's should keep in mind the following risks:

5.2.1 MECHANICAL RISK

- The danger of finger, hand bruising or leg bruising when dismantling parts of machines
- Danger of injuries caused by dismantled parts dropping when doing maintenance and service work.
- Danger of injuries caused by movable parts when the machine works after removing safe covers.
- Danger of injuries caused by movable parts of machine when you are in a prohibited distance – too close to working parts of machine
- Danger of injuries caused by a dropping of machine during wrong manipulation with the machine while transporting or moving it.
- Danger of material slipping, tripping, and falling around machine work area.

5.2.2 ELECTRICAL RISKS

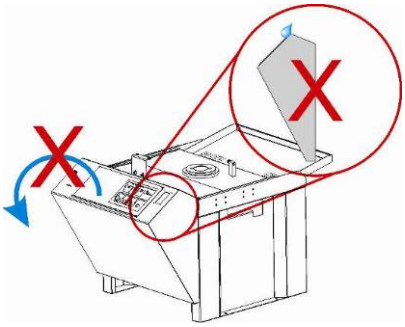
- Danger of direct or indirect contact with electric parts (live parts) after removing protective covers or after damaging isolating parts
- Danger of injury caused by electric shock when touching inanimate parts of machine when there is a part on electric system, when safety rules are not followed
- Danger of injury caused by electric shock when parts of electric system are damaged.

5.3 FIRE PROTECTION

- **NOTE:** During a fire, burning plastic parts can produce toxic emissions. It is thus necessary to follow the general fire protection regulations.
- The machine is not equipped with fire extinguishers. It is the employer's responsibility to equip the premises where the machine is used with suitable fire extinguishing tools of an approved type, in the appropriate numbers, located in a visible area and protected against damage or misuse. The operator must be acquainted with their use in accordance valid regulations.
- The electrical equipment must not be extinguished with water. Powder or halon fire extinguishers must be placed in the premises and the operators must be acquainted with their use. If a water or foam extinguisher is located near the equipment, it can be used after turning off the mains.
- The surface of electrical guards and surfaces where increased heat is expected (e.g. electromotor), should be regularly cleared of dust and other impurities so that the efficiency of the surface cooling is not impaired.

5.4 ELECTRICAL EQUIPMENT

- Work on electrical equipment and can only be performed by licensed contractors with the appropriate electrical qualification. They must be fully acquainted with the equipment.
- The electrical enclosure on the machine was designed to meet the established electrical requirements, regulations and technical standards for electrical equipment.
- The electrical equipment of the machine should be connected to the 3PE AC 230V 60Hz, TN-C (or 2 AC 24V 60Hz, TN-C) (see technical data in the electronic documentation) electrical power network by a flexible connection. Connect one end of the cable to the main power connector. Connect the other end of the cable to a three-phase socket plug or fixed connection to the power distribution network of the building.
- Connect the electrical connection from the machine to the power distribution network in accordance with the requirements of the latest National Electrical Code (NEC). Also, make sure the connection follows any Federal, State, County, or Municipal laws or statutes in the area where the installation is made.
- To prevent equipment damage, do not lay the flexible lead on the floor without protection. The initial connection of the flexible lead may only be performed by a worker with the corresponding electrical qualification. After connection, he inspects the correct operation of the machine including the guards and safety disconnection and blocking.
- It is the employer's responsibility to have a licensed contractor perform regular inspections of the electrical equipment to ensure safety in the workplace.
- **NOTE: The band saw machine must be turned off at the main switch before you open the electrical case door. Before opening the door always make sure that the upper part of the door is dry to prevent injury or damage of the switchboard.**



5.5 IT IS PROHIBITED TO

- switch on the main electric switch when some covering or protecting parts are removed (covers of electric , covers of dangerous mechanical parts) !
- pull the plug from a socket when holding only a cable !
- remove protective covers when the machine is working and to remove protective arrangements
- be close to revolving parts after starting the machine
- make any changes in the construction of the machine
- make adjustments to the machine when it is operating.
- perform maintenance with power connected to the machine.
- use a hand tools or expose your hands in the work area while the blade is running.
- leave the machine running unattended

When cutting bundles we recommend to weld end of bars . When you decide to weld it is necessary to disconnect the power cable to the machine (to disconnect plug and socket, it is not enough to switch off the main switch). If you do not do it, you run in the risk of damage of electronic parts in a manipulating terminal.

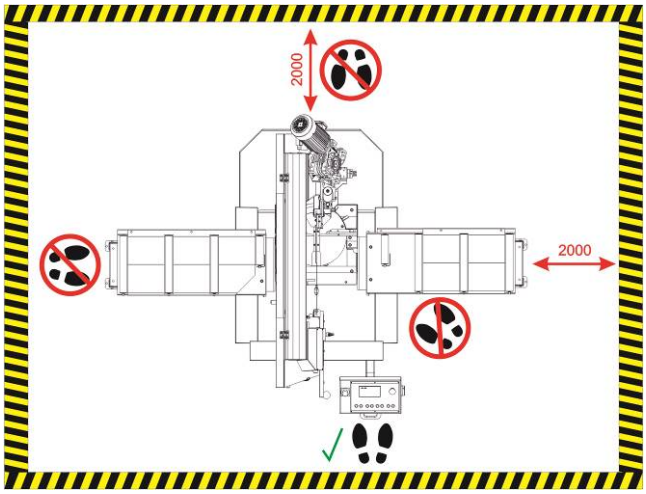
5.6 SAFETY REGULATIONS

The machine has revolving and moving parts that could hurt you. So it is necessary that there is only one operator who works in the working area of the machine. It is the operator's responsibility to keep others out of the work zone.

WARNING: It is the employer's responsibility to mark the machine safe zone using, for example, black and yellow striped tape on the floor. It is necessary to keep this marking legible.

That is why it is necessary for the operator to stay behind the protective line during cutting (cutting, it means that blade moves). The protective line is determined by the area in front of control panel

Machine surroundings – contour line copying the ground plan with 6 ft space gap



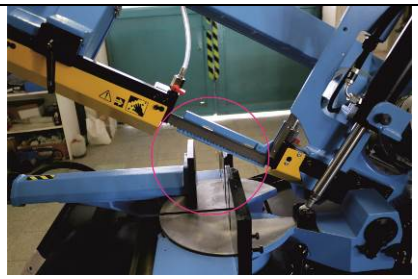
pic: 5-1

WARNING: If the jaw of vice moves, you can not leave your place in front of the controlling terminal before you press the button to stop jaws movement.



pic: 5-2

WARNING: The beam of the movable guide could collide with the material to be cut. Exercise extreme care when moving the arm near the movable guide.



pic: 5-3

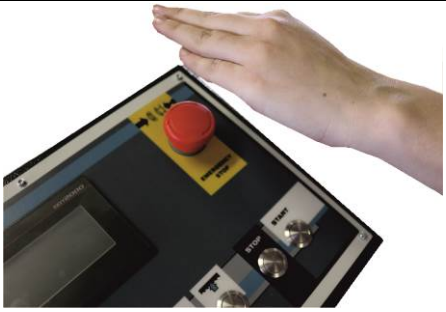
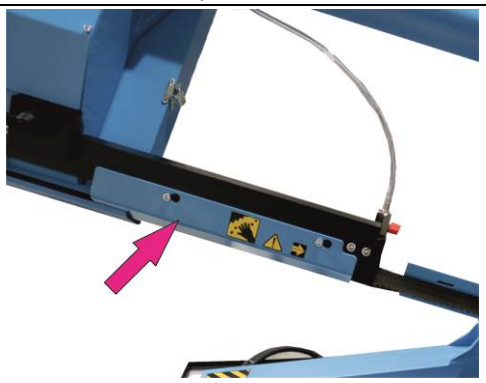
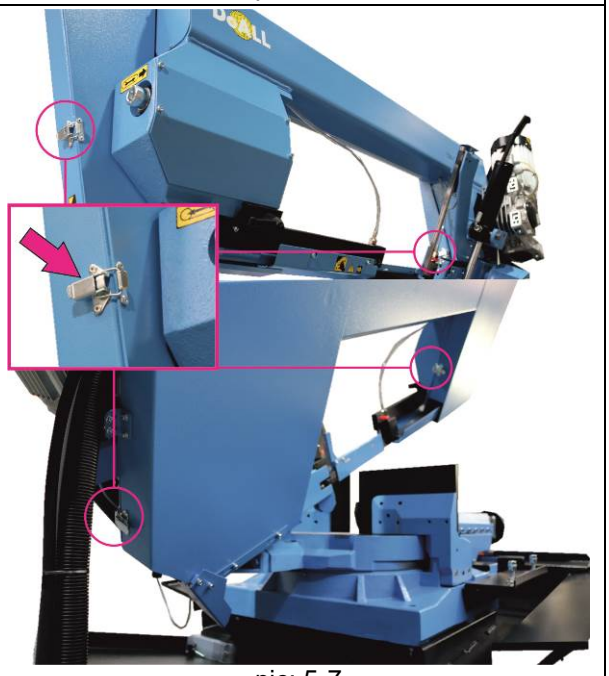
WARNING: Before adjusting the machine or its parts, turn off the main switch and lock it using a padlock. (The padlock prevents others from turning the machine on during maintenance.)

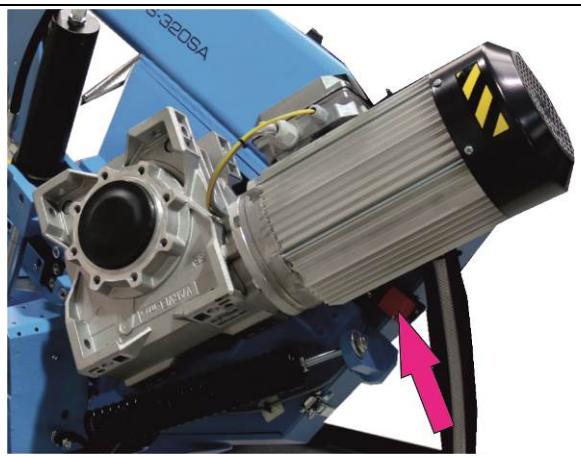
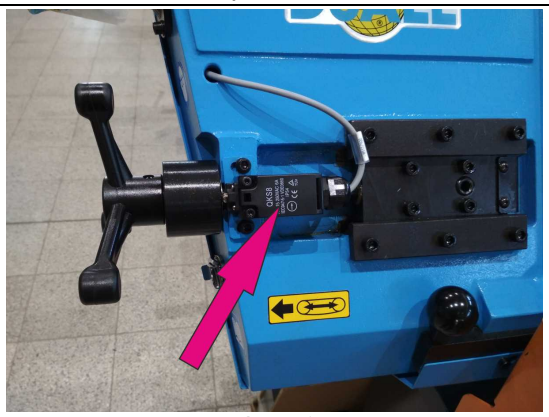


pic: 5-4

5.6.1 SAFETY COMPONENTS

WARNING: The operator is endangered by the rotating or movable parts of the machine. It is prohibited to remove safety covers during machine operation and stop safety, protective and ensuring arrangements !

EMERGENCY STOP button stops all controlling circuits of the machine and band movement. After pressing the EMERGENCY STOP button, the controlling circuits are still charged with electric current. Press the **EMERGENCY STOP** button immediately in case of any failure or possible danger. To release or reset the EMERGENCY STOP button, rotate the button head clockwise until the head pops up.	 pic: 5-5
The blade cover of movable band guide. Cutting without the cover is prohibited!	 pic: 5-6
The pulley cover. Make sure all four clips on the pulley cover are closed properly before starting to cut. **WARNING:** Due to safety regulations, it is prohibited to loosen clips and open the pulley covers when the machine is operating.	 pic: 5-7

Microswitch of the pulley cover. With the pulley cover closed, the microswitch is closed, and machine operation is enabled. With the pulley cover open, the microswitch is open, and machine operation is disabled.	 pic: 5-8
Microswitch for band tension. Controls the tension of the band and in case of bad tension or breaking, immediately stops the machine. Regularly check band tension microswitch to ensure proper operation. With good band tension, the microswitch is closed, and machine operation is enabled. With the bad band tension, the microswitch is open, and machine operation is disabled.	 pic: 5-9

It is strictly prohibited to dismantle the protective covers, to cut with removed protective covers or with nonfunctional safety sensors.

5.7 DESCRIPTION OF LABELS

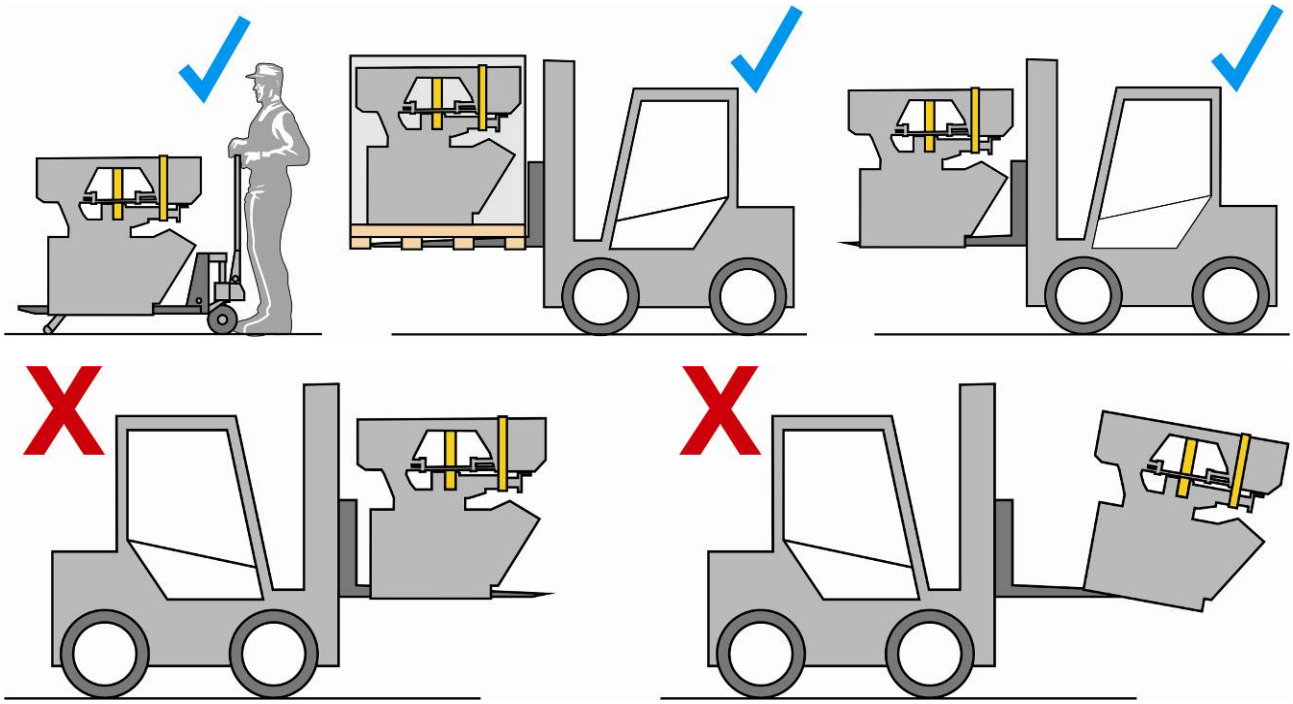
	**Clamping of material to vice** - During machine operation, keep unauthorized personnel out of the work zone. - Make sure the vice jaws have firmly clamped the material.
	**The direction of saw blade when cutting** - When initially starting the machine, check to ensure the saw blade direction is correct. If not, rewire the power leads. - When changing saw-blade pay attention to the right sence of direction of teeth.
	**Be careful when cutting** - When cutting, be very careful. - Pay attention when changing or stretching saw-blade. - Only the operator can be near the machine during machine operation.
	**Adjust saw blade tension** - arrow shows you (when the cover is closed) the screw that moves with the tightening pulley.
	**Feeder cable of electric feeding of the machine** 230V power cable for the machine
	**Electrical Hazard** - Risk of electric shock. Only authorized personnel or a licensed electrician is allowed to make electrical connections on this machine.

	**Moving part of the machine** - when the machine is working or when manipulating with parts labeled like this, be very careful
	**Adjustment label** - MAX- the highest value (speed, force, pressure) - MIN - the lowest value
	**Wear eye protection** (protective glasses or face shield) - when manipulating with saw-blade - when manipulating with cut material - when manipulating with spray gun (cutting coolant) - when cutting
	**Read and follow the instructions provided in the manual.**

tab: 5-1

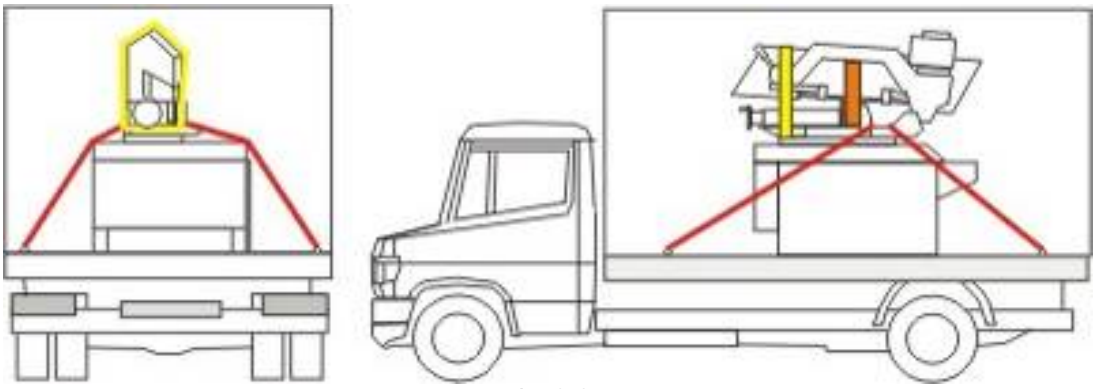
6. INSTRUCTIONS FOR TRANSPORT

Use a forklift truck (low or high) when moving the machine a short distance. Note: To avoid equipment damage, only use personnel who have a forklift certificate to transport the machine. When moving the machine, insert the forklift forks in places that are marked with a label.
Fasten all loose parts to the machine. Use nylon rope or stretch wrap to secure the arm to the vice.



pic: 6-1

When transporting the equipment on a truck, use nylon ropes to fastened the machine down in the loading area.



pic: 6-2

WARNING: The customer is totally responsible for the product shipment cost incurred from the manufacturer's location to the customer's installation location. This includes the freight carrier's expenses for safe transport of the machine.

7. DIRECTIVES FOR STORAGE

When the machine will be placed in storage, cover the control panel and drive motor with stretch wrap. Treat the machined and unpainted surfaces on the machine with rust preventative oil (Cosmoline) . The storage temperature range for the machine is: 32 to 104°F.

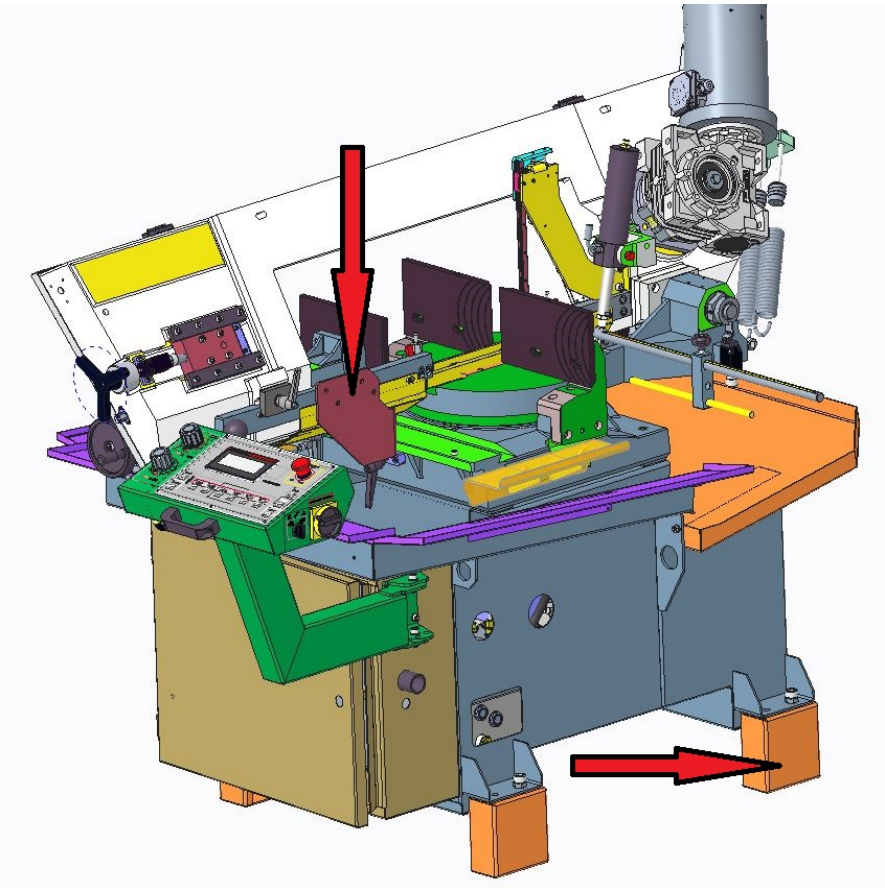
8. MACHINE INSTALLATION

8.1 INSPECT MACHINE FOR SHIPPING DAMAGES

Inspect the machine for damage. If there is visible damage as a result from transporting the machine to the customer's installation site, notify the carrier and the manufacturer immediately to report the damages.

8.2 SHIPPING BRACKETS

It is necessary to remove shipping brackets before setting up the saw. The brackets are orange and are marked in the picture.



8.3 INSTALLING THE MACHINE

8.3.1 FOUNDATION REQUIREMENTS

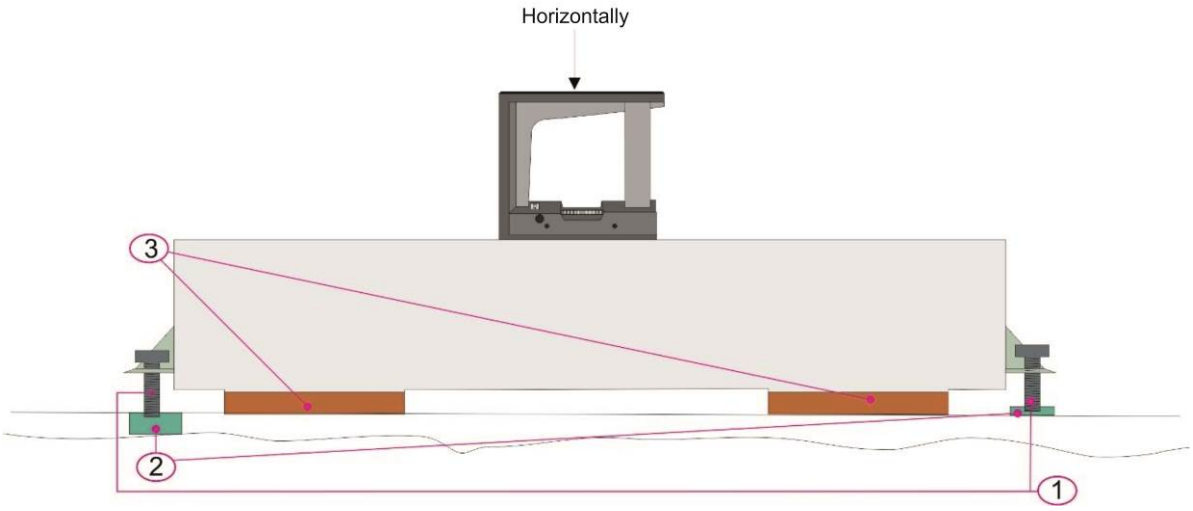
A solid foundation is essential for normal machine operation. The machine must be installed in a location that satisfies all of its foundation requirements. After the customer decides where to install the machine, the installer must examine the following considerations in order to meet the foundation requirements:

- sufficient floor weight load. The weight of the machine consist of weight of the saw with all installed accesories and maximal weight of a material. If the floor is not corresponding with requirements, proper foundation has to be done (mainly when installing machine with long conveyor is essential to measure the level of the floor or make a new floor)
- correct leveling of the floor has to be done with: +-0,04in/10 square feet tolerance.

Attention: Make sure that there is enough space for operators, repair, maintenance and material manipulation space when installing the machine.
For additional information, refer to Heading 5.6., Safety Regulations.

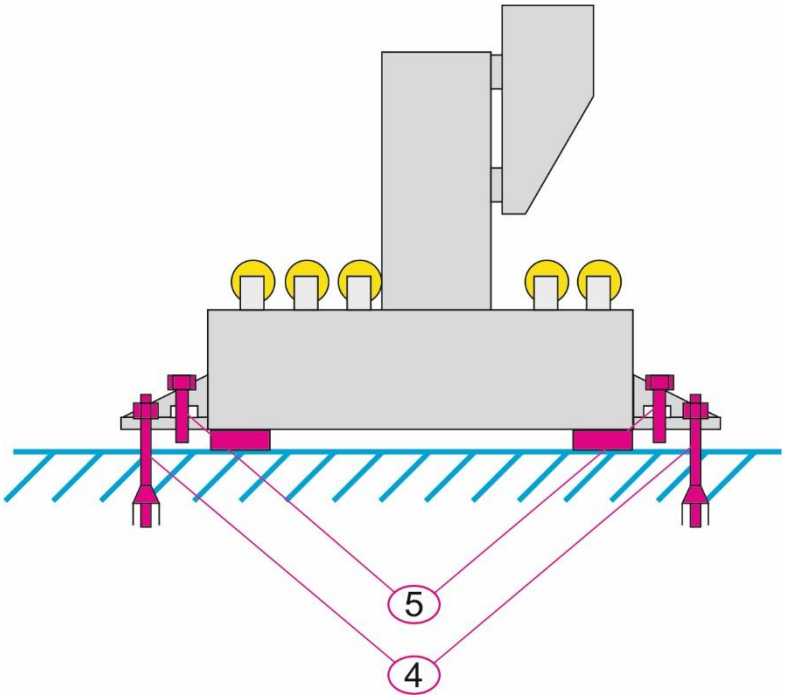
8.3.2 ACHORING INSTRUCTIONS:

- Check the foundation to ensure it meets the requirements outlined in Heading 8.2.1, Foundation Requirements.
- Using the proper lifting equipment (forklift, hoist, machine skates), set the machine in place.
- Place a digital machine level (or equivalent) on the machine (on a flat surface).
- using leveling screws (1) level the machine directly to plane. We recommend to put sheets of metal with minimum 0,4 inches thickess under the stand screws. Check the plane with the scale on the table. Machine has to be leveled in both longitudinal and diagonal directions.
- After the accurate machine setting support the base of saw with sheets of metal close the standing screws with appropriate height (3). Dimensions of the sheets should be at least 4x4 inches..



pic: 8-1

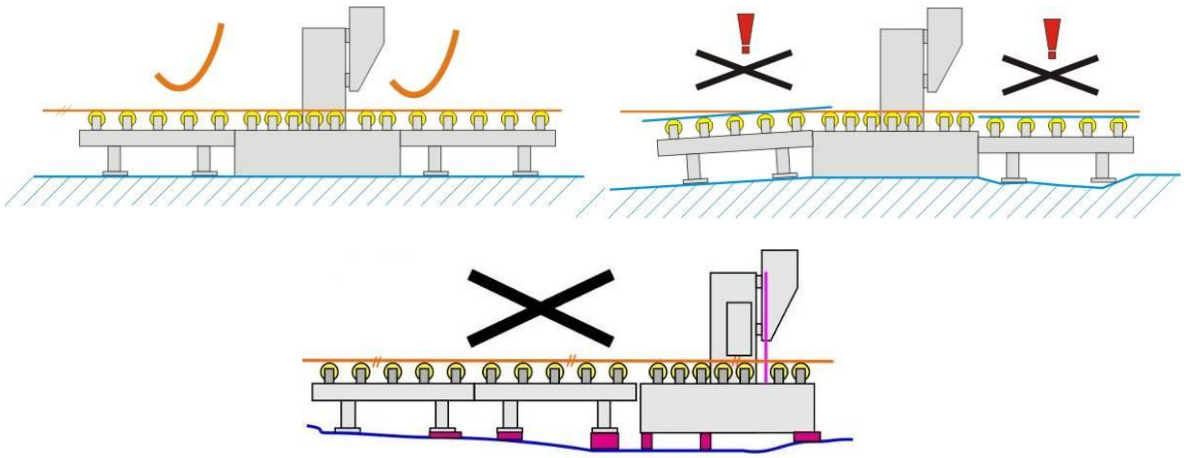
- Drill the holes for anchors and then anchor the machine (4). Stand screws must be loosened before tightening the anchors, so the machine is not standing on the screws when tightening. The machine base cannot be deformed. Use anchors with mechanical wedge M12 (1/2”), recommended anchor length is 8 inches, or anchors with chemical addition M12 (1/2”), recommended anchor length is 8 inches.
- When the machine is set in place, you can dismantle the fixation parts for machine transport.



pic: 8-2

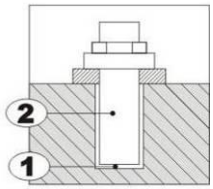
8.4 INSTALLING THE ROLLER TABLE

- It is very important to correctly level the conveyors with the plane of machine (plane defined by tangents of supporting rollers, eventually by plane of the table).
- The machine won't be cutting straight, the lifespan of the blade, vices and hydraulic cylinder will be lowered and material handling problems will occur if the conveyors are not leveled properly.



pic: 8-3

8.5 HOW TO ANCHOR MACHINE TO THE FLOOR



1. Drilled hole in floor D=0,5in, depth 9in
2. Anchor M12 (1/2”), length 8in

If the mechanical anchor cannot be used, then the threaded rod M12 (1/2“) can be used, to depth 9in, drill hole D=0,6in, use chemical glue and fix the threaded rod with the glue.

8.6 CONNECTING TO THE ELECTRICAL NET

Any work on electrical equipment of the machine may be performed only by persons with the corresponding qualifications according to the valid regulations and standards.

The electrical equipment of the machine should be connected to the three-phase 3PE AC 230V 60Hz, TN-C (or 2 AC 24V 60Hz, TN-C) (see technical data in the electronic documentation.) power network, by means of a flexible lead with one end firmly attached to the main connectors of the machine and the loose end for fixed connection to the object’s electrical power network. **Recommended types of power supply protection are listed in a manual, part electronic documentation.** The plug is not supplied.

The correct connection of phases can be checked on the pressure gauge of the hydraulic central unit – it should equal 300 PSI.

Marking of cables and connectors:
Connecters L1, L2, L3 – outer (phase) marked red, black, blue.
Connecter PE – guard wire, grounded base marked green.

The socket circuit for connection of the machine (or the circuit for the power network where the saw will be connected) must be carried out according to the valid regulations and technical standards, which relate to the particular equipment.

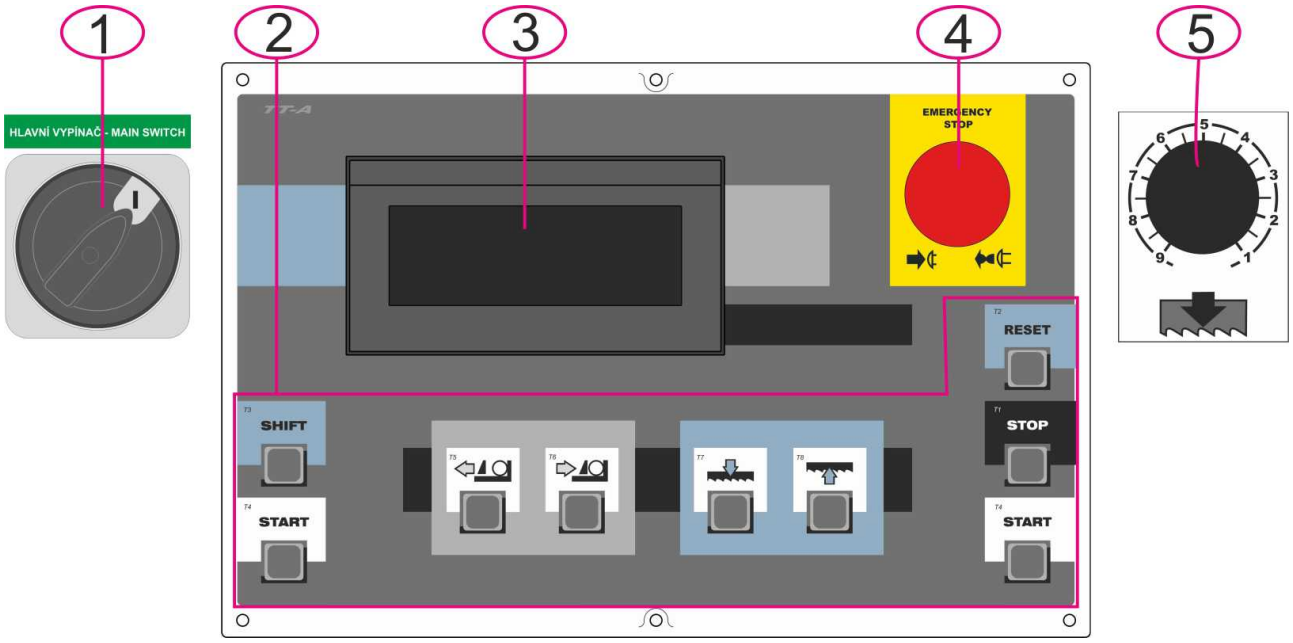
Protection against electric shock refers to the requirements of the valid regulations and technical standards for automatic disconnection from the power supply.
We recommend connecting the machine to a circuit equipped with a 30 mA residual current device, which will enhance basic protection against electric shock.
The design and use of guard wires must conform to the respective requirements.

ATTENTION: Only authorized personnel or a licensed electrician is allowed to make electrical connections on this machine. The authorized person must be fully acquainted with the equipment and after connection is obliged to inspect the correct operation of the electrical equipment including protection and safety disconnection and blockage.

It is recommended to make a routine control of all connections, adjustments and bolts in electronic case before first connection of it to electrical network.

If it is proven that the machine receives ELECTRIC SHOCK CAUSED BY HIGH INDUCTION ELECTRIC NETWORKS, the warranty conditions have not been complied with and the machine supplier is entitled to send invoices to the machine operator for all replaced and destroyed machine parts that the operator claims or has claimed.

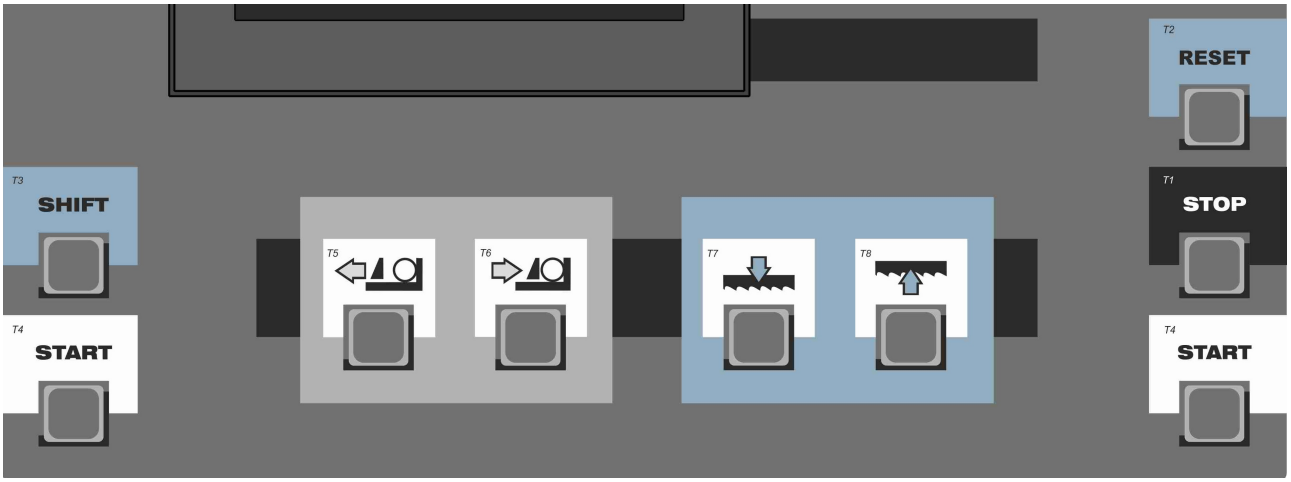
9. DESCRIPTION OF MAIN PANEL



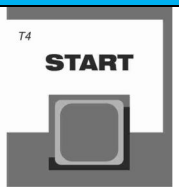
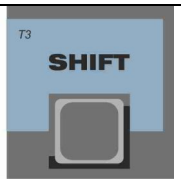
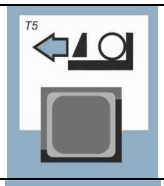
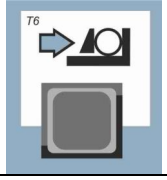
pic: 9-1

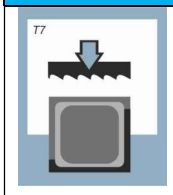
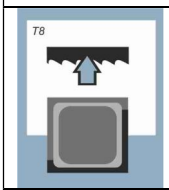
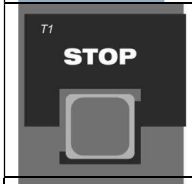
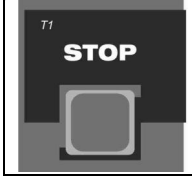
Item	Description
1	**MAIN SWITCH** of the machine that is possible to lock. It serves also as the emergency stop. In 0 position no electric circuit is under voltage. If you want to switch on the machine, turn to 1. When the operator of the machine is absent, we recommend to lock the machine using the padlock.
2	**KEYPAD**
3	**HMI PANEL**
4	**EMERGENCY STOP BUTTON** – it stops all controlling circuits of the machine, it means all movements, there is still current in the machine. If the operator turns off the machine using Emergency Stop button) while the blade is rotating, it is essential to wait (one minute) for the frequency converter memory to reset. Turn off main switch, wait for 1 min and after it you can turn on the machine again. **WARNING:** if the machine is in a cutting cycle, after pressing of emergency stop button all drives are blocked except from the drive of hydraulic unit and jaws of clamping the material. This safeguard prevents the material from being loosened after pressing the emergency button and protects the operator from a possible injury caused by material. It is possible to switch off the vice by pressing the button on the front panel of the distributor.
5	**THROTTLE VALVE** for speed control arm saws to cut

9.1 KEYPAD



pic: 9-2

Button	Description
	Start the cutting cycle: push both START buttons simultaneously
	Sub button. This serves, e.g., to activate the rapid arm travel: push SHIFT together with the arm down button.
	OPEN main vice
	CLOSE main vice

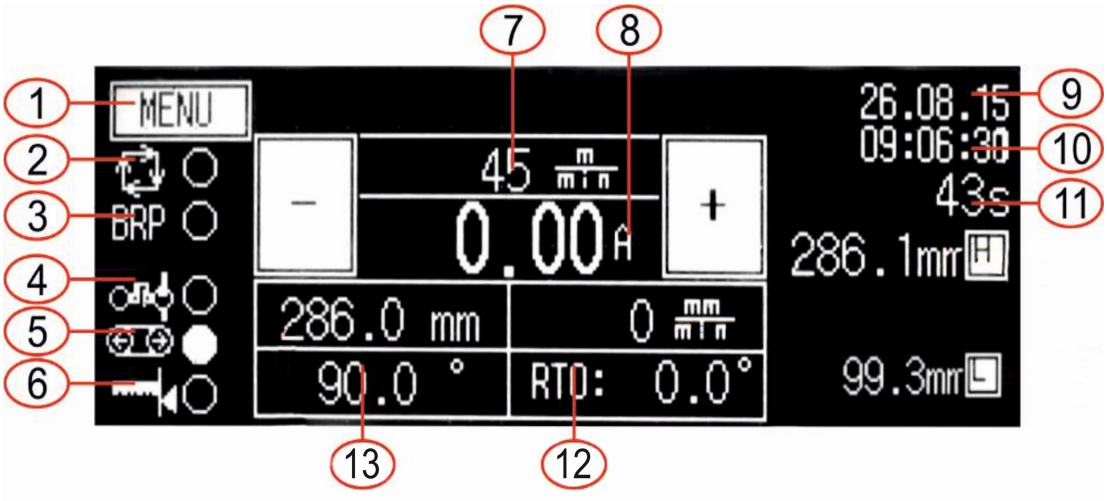
Button	Description
	Arm DOWN movement to cut by set cutting speed. In case of press the button with SHIFT together, The bow is moving by fast speed. **CAUTION:** You have to be sure nobody can to be injured by the Machine bow BEFORE the button pressing. **CAUTION:** To prevent equipment damage, the operator must stop the arm going down before the blade touches the material. If unable to stop the arm going down, the blade and blade guides could be damaged.
	Arm UP
	STOP – stops (suspends) the cycle
	STOP – activates the hydraulic system (by holding the button for 2 seconds)

9.2 HMI PANEL

The MITSUBISHI HMI panel uses the touchscreen technology. The graphical fields described below are activated by touching the center of the symbol with your finger.

WARNING: Touch the screen with your clean bare fingers. Do not wear gloves or use any tool (screwdriver, pencil, toothpick, ...) to operate the touchscreen. If the operator scratches or punctures the screen, this damage will not be covered by warranty.

9.2.1 STARTING SCREEN

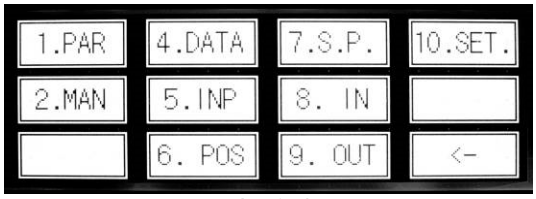


pic: 9-3

Item		Description
1	MENU	MENU button This is where all the user and service parameter settings can be accessed (see next section)
2		Cycle(cut) indication
3	BRP	BRP indication – this is activated if the band drive load limit (a user-adjustable parameter) is surpassed (Par. 2: BRP control current (A))
4		Hydraulic system status indication
5		Band tensioning indication
6		Upper arm position indication
7		Saw band speed control by means of the + and - buttons
8		Band drive load (Amperes)
9		Date
10		Time
11		Duration of the current or completed cycle
12		Actual turn table position (Not standard equipment).
13		RTO: angle is set as the first, moving with turn table after. Not standard equipment).

9.2.2 MENU

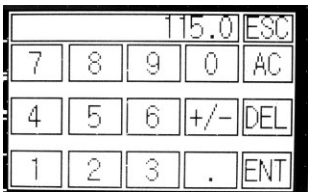
Following screen will appear after pressing the MENU button.



pic: 9-4

Item.		Description
1	1.PAR	**User parameters**
2	2.MAN	**Manual saw control:** This screen allows the basic saw motions to be controlled. It can be used, for instance, if the keypad has failed. only for authorized personnel (service technician), access under service password.
3		Free
4	4.DATA	**Information screen:** Data of of the last cutting cycle (date, time, total time of running, kind of ending of the cycles, quantity of the cutting cycles) only for authorized personnel (service technician), access under service password.
5	5.INP	**Input function control** only for authorized personnel (service technician), access under service password.
6	6. POS	**Setting the levels for measurement**
7	7.S.P.	**Service parameters** only for authorized personnel (service technician), access under service password.
8	8. IN	**Inputs setting (mapping)** only for authorized personnel (service technician), access under service password.
9	9. OUT	**Outputs setting (mapping)** only for authorized personnel (service technician), access under service password.
10	10.SET.	**Settings: date, time, language** only for authorized personnel (service technician), access under service password.
11		Free
12	<-	**Back button** one step back in browsing between the screens

9.2.3 NUMERIC KEYPAD

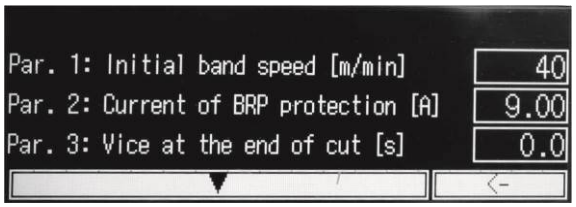


pic: 9-5

	Description
ESC	ESC – go back
AC	AC:
DEL	DEL: deletion of the set value
ENT	ENT: enter

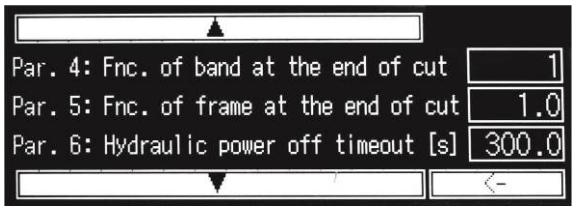
9.3 /1.PAR/ USER PARAMETERS

1.PAR	User (i.e. user-adjustable) parameters



pic: 9-6

	Name	Description / Settings
Par. 1:	Initial band speed	The user can set the band speed for starting the saw up with the ON/OFF button
		default setting: 40
Par. 2:	BRP control current	Setting the band drive current whose exceeding activates cutting travel control
		(the default level is the motor's rated value)
Par. 3:	Vice at the end of the cut (s)	Setting the motion of the main vice at the cut end
		0.0 - the vice remains closed
		0.1 and more – the vice will be opening for the time set
		default setting: 0.0



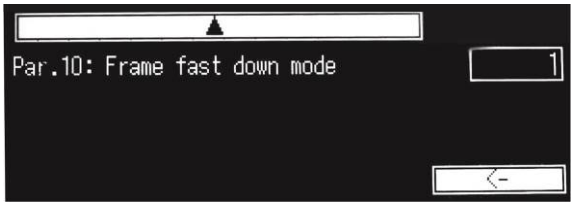
pic: 9-7

	Name	Description / Settings
Par. 4:	Function of the band at the end of the cut	Setting the band motion at the cut end
		0 – the band will stop in the bottom position
		1 – the band will stop only after reaching the top position
		Default setting: 1
Par. 5:	Function of the arm at the end of the cut	Setting of the arm motion at the cut end
		0.0 – the arm remains in the bottom position when the cut is over
		2.0 – the arm travels to the position set as Par. 8 when the cut is over
		1.0 - the arm travels to the top position when the cut is over
		3.0 - the arm finishes the cut in the position set as Par. 9 and travels up to the position set as Par. 8
		10.0 0 and more – the arm travels up for 10 seconds or longer when the cut is over.
		Default setting: 1
Par. 6:	Switching off hydraulics (s)	Time in which the hydraulics is automatically switched off if the machine is idle
		Default setting: 300



pic: 9-8

	Name	Description/Settings
Par. 7:	Cutting travel delay (s)	Setting of the delay of the arm motion to the cut. The arm waits for the time set and only then starts moving to the cut.
Par. 8:	User DPP position (in)	User setting of the top arm position. This is active only if the arm height measuring function is active. The position reached by the arm when moving up after finishing the cut is thereby set.
Par. 9:	User down limit position (in)	User setting of the bottom arm position. This is active only if the arm height measuring function is active. The position at which the arm finishes the cut is there by set.

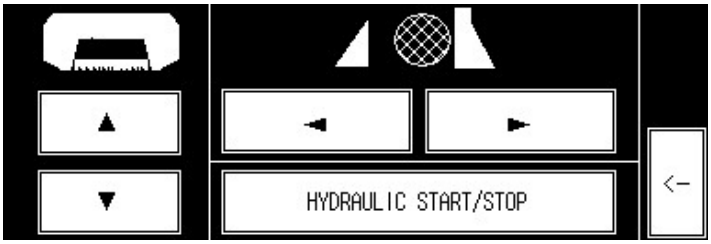


pic: 9-9

	Name	Description/Settings
Par. 10:	Arm speed movement mode	0 – speed moving OFF
		1 – speed moving is ON only above the upper possition
		2 – speed moving ON no matter where

9.4 /2.MAN/ MANUAL SAW CONTROL

2.MAN	**Manual saw control**



pic: 9-10

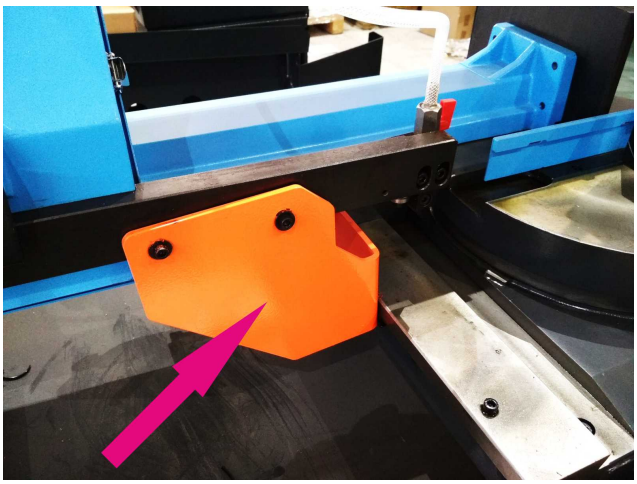
Under **user´s password (123456)** and it´s used in case of blade changing or error message W003 (bleaking or loosing the blade).

Machines with hydraulic blade tightening, which have service mode: It is possible to handle with machine by following screen buttons, even though the blade covers are open:

Pic:	Description
HYDRAULIKA START/STOP	The buttons control the hydraulic system START / STOP
▲	the UP arm travel
▼	the DOWN arm travel
◄	vice OPENING
►	vice CLOSING

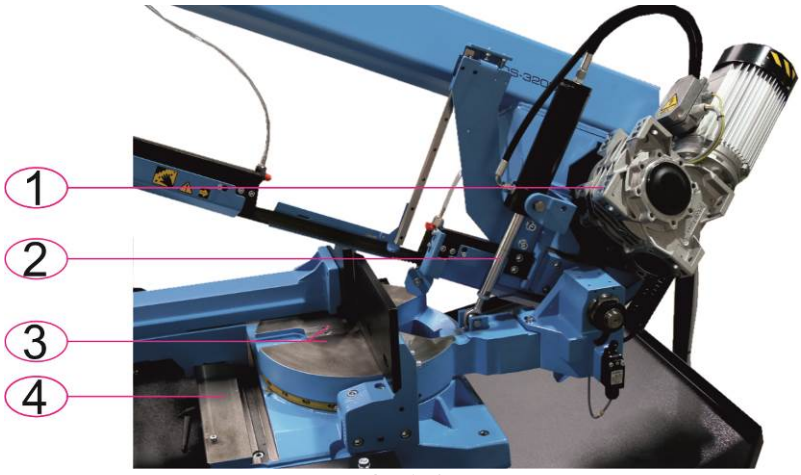
9.5 PREPARATIONS BEFORE CUTTING

After unpacking the saw and before connecting to the mains, it is necessary to remove the transport bracket. The brackets are orange and are marked in the picture.



Before being shipped to the customer's site, the machine is inspected and tested for proper operation by qualified personnel at DoALL.
All screws of the hydraulic system must be well tightened. Use two spanners for tightening the screws, one is for socket, one is for nut.

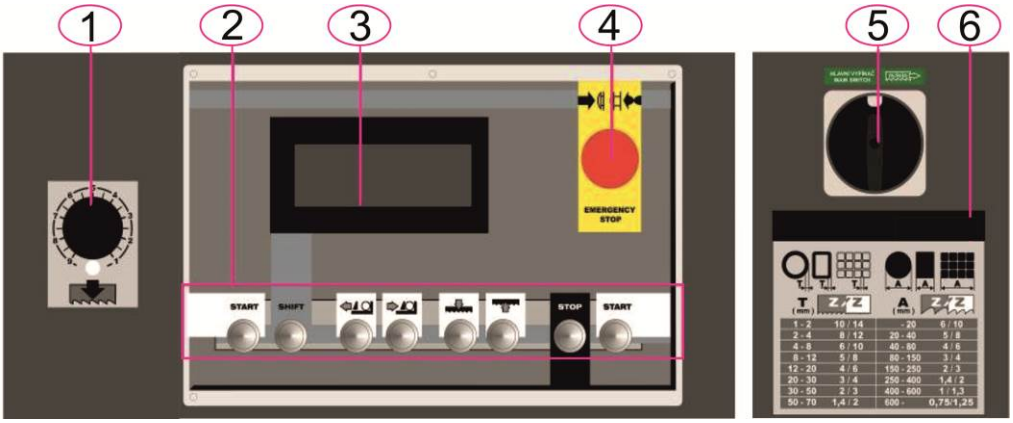
To prevent the unpainted surfaces on the machine from rusting, the milled parts and surfaces are greased. The sliding surfaces, especially on the base, vice, and linear leading are greased to ensure effortless movement and reduce mechanical wear. These spots also collect a lot of chips and dust (pos. 1, 2 and 3)



pic: 9-1

It is necessary to remove the protective grease off the machine before the initial machine start.

9.6 INITIATION OF THE MACHINE INTO THE STAND-BY MODE

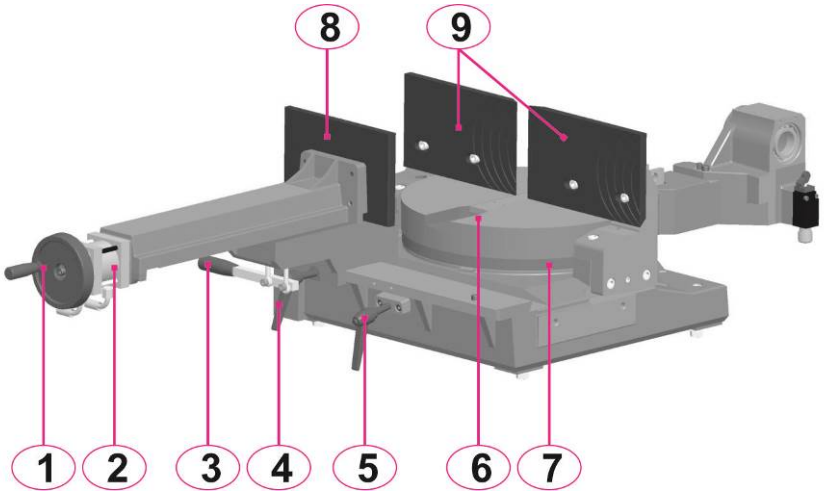


pic: 9-2

1. The saw must be connected to the mains.
2. Turn on the main switch to position 1 **(pos.5)**.
3. If the saw was turned off with EMERGENCY STOP button **(pos. 4)** unlock the EMERGENCY STOP button by turning it to the right. With this, the machine is prepared for cutting.
4. Set the feed rate **(pos. 1)** to minimum
5. In case of MINI-LUBE (not standard equipment) choose the mode of emulsion input.
6. The turntable must be well arrested before cutting.

9.7 ANGLE SETTING

The machine is designed to make linear cuts (vertical cuts) and miter cuts (angle cuts 45° left and 60° right). General angles are adjusted by the nonius. It is possible to equip the machine by digital indication of the angle for a wish.



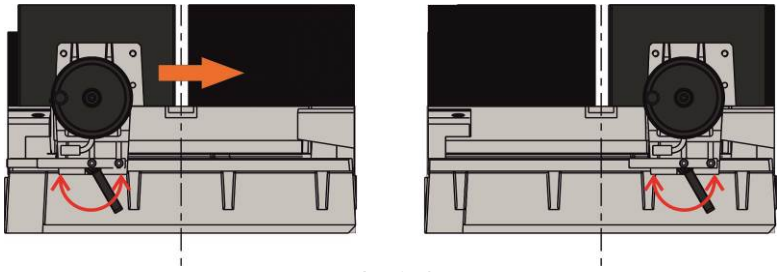
pic: 9-3

9.7.1 CUTTING OF THE RIGHT ANGLE CUTS

- lift the arm above the fixed jaw of the vice
- loose the turntable by a aretation lever **(No. 5)**
- turn the arm to desired angle – using the measuring scale.
- ensure the turntable by a aretation lever **(No. 5)**

9.7.2 CUTTING OF THE LEFT ANGLE CUTS

- lift the arm to its upper position above the firm position of the vice
- readjust the vice:
- by lever **(No. 4)** situated under the vice release the vice
- move the vice to utmost right position and fix it by the lever **(No. 4)**



pic: 9-4

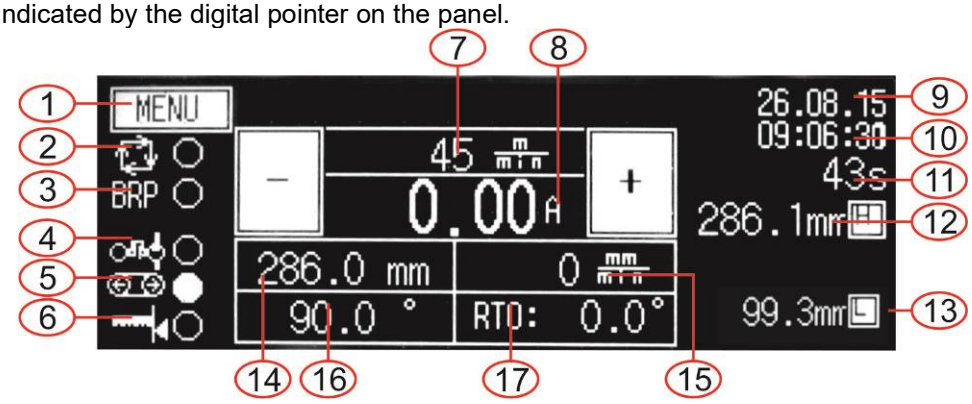
- make the arm turning to the left side to a desidered angle – the procedure is the same for setting of the right angle cuts.

Readjusting of the vice is made only for angle cutting to the left. Vertical cuts and cuts to the right are made in the establishment of the vice on the left!

WARNING: the force of the lock is set to a level, which prevents a change of the cutting angle. However, in case of a shock to the arm the angle may change.

9.7.3 DIGITAL POINTER OF THE ANGLE (ACCESSORIES)

The angle is indicated by the digital pointer on the panel.



pic: 9-11

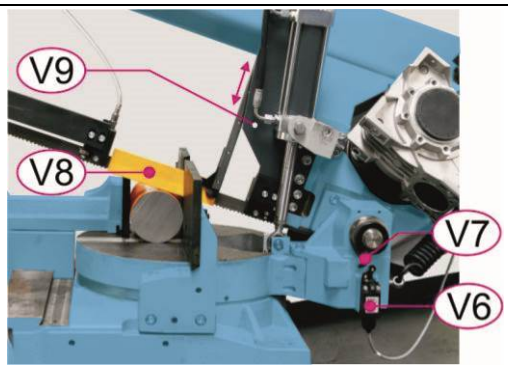
Item		Description
16		Actual turn table position (Not standard equipment).
17		RTO: angle is set as the first, moving with turn table after.(Not standard equipment).

9.8 ADJUSTMENT OF THE WORKING POSITION

9.8.1 ADJUSTMENT OF THE UPPER WORKING POSITION

The machine is equipped by the automatic end stop of the upper position (DPP). The upper working position is set automatically according to the diameter of the cut material.

The operator does not need to interfere when changing the diameter of the bar to be cut. In case you want to cut without the upper working position, move the end stop of the upper working position to its upper position and arrest the position using the screw and arresting hole **(No.V9).**



pic: 9-5


pic: 9-6

V6 - limit switch – down working position
V7 - end stop of the down working position
V8 - the automatic end stop of the upper position (290- DPP)
V9 - arresting hole

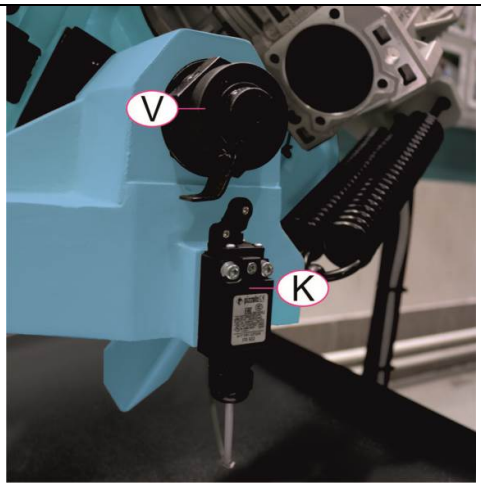
WARNING: The saw does not work unless the arm is not located above the upper operational position.

WARNING: In case the frame is above the top working position or just below it (the sensor of top position is not activated) it is highly forbidden to press the STOP button! Otherwise the band will stop and the frame will move down for several milimeters, by that the band may be damaged. There will be no warranty claims accepted for cases like these!

9.8.2 ADJUSTMENT OF THE DOWN WORKING POSITION

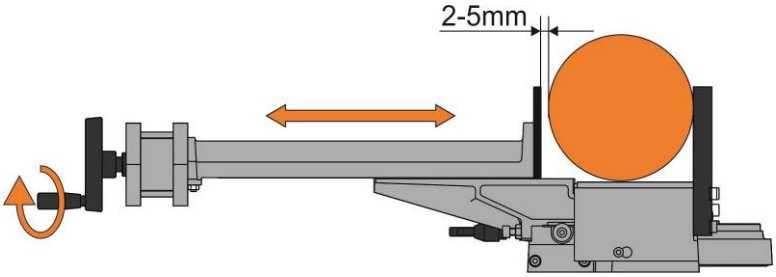
The down working position is set from the production

- When pressing START button in the handle and opening the throttle valve we can move the arm 8-10 mm above the material, which is fastened in clamping vice out of the band
- Loosen the arresting screw. Turn the V-cam slowly against clockwise direction until the terminal K-switch throws. Fixate this position. Lift the arm up to the position about 20 mm above cut material



pic: 9-7

9.9 VICE ADJUSTMENT - HOW TO CLAMP THE MATERIAL WELL



pic: 9-8

- Put the material into the vice
- Check the position of the material regarding the blade (for a precise cutting it is necessary to cut the front part of the material – to level the material).
- Use the handle and readjust the movable jaw, so that the material is slightly clamped.
- Move with the handle of one turn back. Between the jaw and material arises necessary clearance 2 to 5 mm.

Before starting the cycle, inspect correct grip of the material.

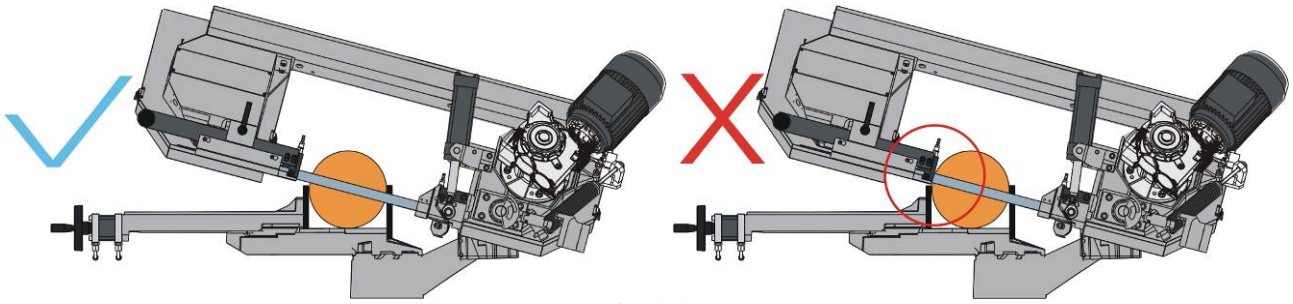
9.10 GUIDE POSITION ADJUSTMENT

The position of front guides of the blade - try to set the position of front guides as close the opened clamping part as possible.

The right setting of the movable guide influences the quality and precisity of the cut a lot. There is the rule that the blades should be supported on both sides as close the material as possible. Supporting is ensured by guides.
Position of the movable guide – is determined by the width of the clamped material. Set the guide so that is as close the movable jaw of the main vice (when jaws are opened). If it is necessary, adjust the movable covers of the blade.

WARNING: After setting of the movable guide allways check following :

1) if there is not a collision with the movable part of the vice (opened jaws) in the whole extend of the arm lift.
2) setting of the down working position. The guide must not hit into the cutthrough desk. (Rule – the closer is the movable guide to the firm guide, the lower must be situated the the sensor of the down position)



pic: 9-9

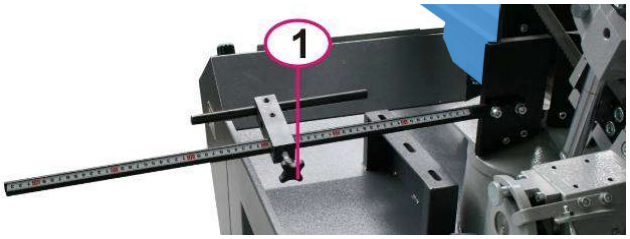
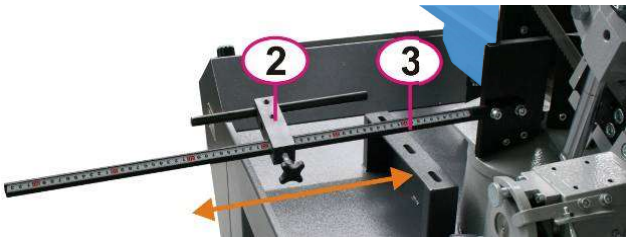
WARNING: Do not leave any objects (not even cut material) under the saw arm while the saw is switched off. The saw arm may drop due to a change in the hydraulic oil temperature and small leaks in the hydraulic system. The saw blade may be damaged.

9.11 LUBRICATION OF THE SAW - BAND

Floop cooling is standard equipment of the saw. If there is not MINI LUBE in the equipment of the machine, the emultion pump is controlled by a logic of the machine – the cooling of the blade is only in the cutting cycle of the machine. The emulsion leads to both guides and joint supply on the vice (if it is delivered with the machine). The operator can regulate the amount of the emulsion using ball joints on individual supplies.

Use only coolants supplied by the DoALL company at the recommended blending ratios. Make sure you attach the milling reservoir, emulsion tank or waste-free lubricating system (applicator) in the proper locations. When handling the coolant wear impermeable gloves and goggles. The emulsion might injure your eyes.
When blending the coolant, always pour the concentrate into water while stirring it continuously.
All necessary information is printed on the canister or in the accompanying documents.

9.12 HOW TO SET THE ADJUSTABLE END STOP

1) Loose the safety screw **(pos.1)**	 pic: 9-10
2) move the end stop **(pos.2)** to the desired length of the material. Deduct the length on the ruler **(pos.3)**	 pic: 9-11
3) Tighten the safety screw **(pos.1)**	
4) Put the material in to the vice and move it carefully to the end stop. Be careful not to damage the adjsutable end stop by material movement !	

9.13 HANDLING THE MATERIAL

The sawn and cut-off material should be handled with a crane and cloth sling to prevent damage to the frame of the machine (e.g. the roller, bearing housings, supports, etc.). Pay due attention to handling the material. If parts are damaged as the result of improper handling, the warranty claim will be rejected.

NOTE: It is not allowed to move the material with a magnet when gauging with a magnetic ruler, or to use a magnet in the immediate vicinity of the magnetic gauging device. Failure to comply with this rule will result in violation of the claim rights!!!

10. CUTTING - SEMIAUTOMATIC CYCLE

10.1 BASIC CONDITIONS FOR CUTTING

- The vice must be well arrested before cutting.
- The turntable must be well arrested before cutting.

WARNING: Before starting the cutting cycle the worker must make one cycle without material to be sure that the machine is well adjusted !

10.2 HYDRAULIC UNIT – TURNING ON

	STOP – activates the hydraulic system (by holding the button for 2 seconds)

Basic conditions of cutting: pilot light  and  must be active. In case some of them does not light, machine won´t be possible to start.

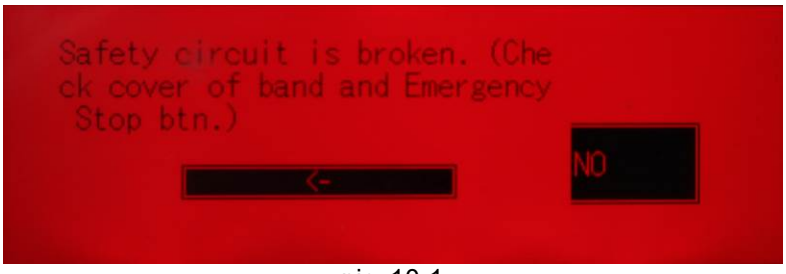
10.3 CUTTING

1. Move the material to the adjustable stop (it is not supplied in the standard equipment);
2. Set the feed rate valve () to the MIN. position.
3. Set the position of the vice.
4. Press button Start of Cycle
   - The saw starts running, the vice grips and the arm moves to a position above the material.
   - Set the cutting speed of the arm with the throttle valve.
   - The saw cuts through the material by following the set parameters.
   - The vice is under pressure after finish of cut and it holds material still (vice is possible to loosen manually only – at control panel)
5. Remove the cut-off material, push the material to the stop and press the START button (the entire semiautomatic cycle is repeated).

There is information provided about the correct tension, correctly closed band guards and amount of load on the band drive during cutting (through the diode ampere meter). The operator can thus modify the speed of arm's travel into the cut.

10.4 ERROR MESSAGES

When there is a system error, an message appears on the screen. The screen turns red and blinks while displaying a brief error message and fault correction solution. After correcting the system error, the machine returns to its operation mode.



pic: 10-1

To display a history of error messages, press the empty line beside the MENU.



pic: 10-2

a and after it press 



pic: 10-3

Using 

go back.

E.G: after breaking a communication with frequency converter an error number and description appears at the top of the screen.



pic: 10-4

At resolving the system error, it is necessary to restart the frequency converter. Click the error description line. As a result, the following screen appears:



pic: 10-5

press 

:



pic: 10-6

Press INV RST to restart the converter. If the system error is cleared, the display stops blinking in red. The machine returns to normal operation.

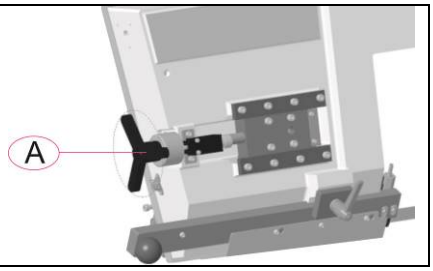
Return using <-.

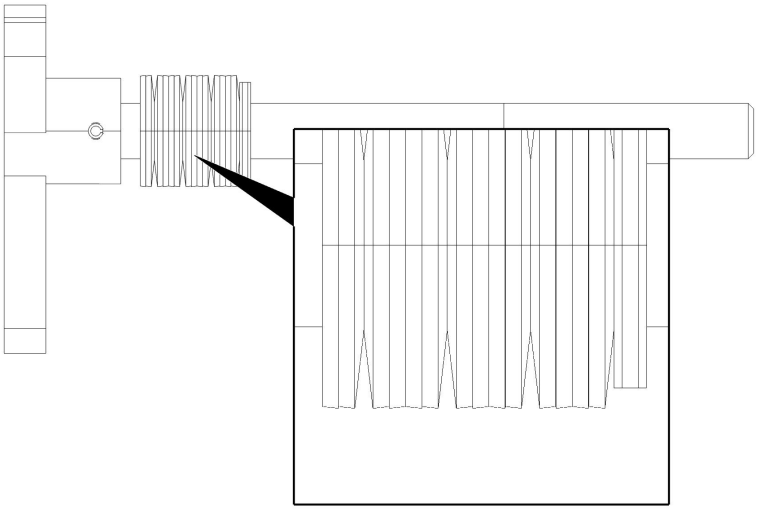
10.5 15 RULES FOR OPTIMAL CUT

1. Chose the type of machine and accessories (the way of cutting must be evident and all designs and the quality of material must be clear)
2. the quality of the blade M42, M51 is directly proportional to the hardness of the material to be cut.
3. the tooth size of the blade (or the tooth geometry) depends on the width of the material.
4. the speed of the blade (fpm) is directly proportional to material qualities.
5. cutting speed is directly proportional to the width of the chip and preference of cutting style – with respect to max. performance,optimalized blade life, ideal roughness of the cut
6. quality of coolant (sufficient amount of the oil in the water) and sufficient amount of coolant running into the cut.
7. the precision of the leading of the blade in guides – the demand for the minimal clearance of guides and blade (0,002in)
8. optimal tightening of the blade
9. the right clamping of the material – the material must not vibrate or move in the cut
10. the right mechanical adjustment of the machine (leading of the arm, device of pulleys, fluent movement of the arm
11. ideal flatness of the roller conveyor and the machine
12. The good cleaning of the chips from blade teeth – cleaning brush
13. the right constructional qualities of the machine (diameters of pulleys and the length of the blade torsion) , machine robustness (must not appear any vibration)
14. running in of the blade must be well done
15. Human factor is also very important. The operator is responsible for the quality of work.

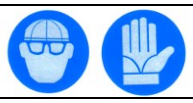
11. INFORMATION ABOUT THE BLADE

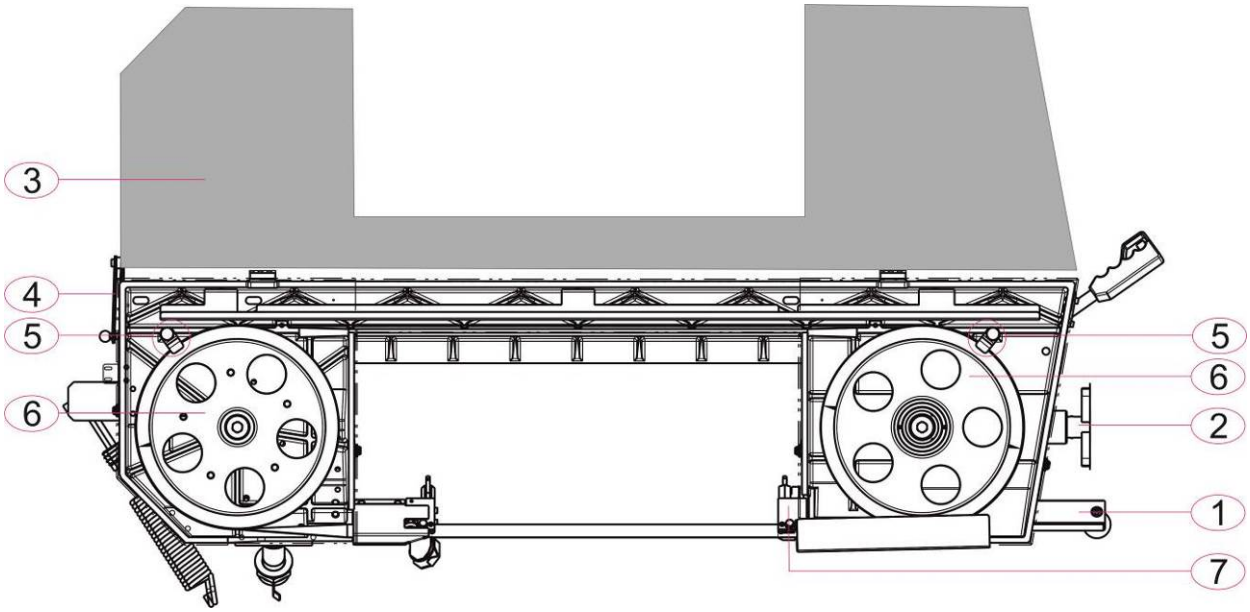
11.1 TENSIONING OF THE SAW-BAND

The band is correctly tensioned when the light on the control panel  is active. The band is tensioned by tightening tensioning screw **A** on the front part of the saw arm. **After turning on the saw, the band must move in the direction of the arrow.**	

Composition of springs in tensioning mechanism.	

11.2 BAND REPLACEMENT

	**When replacing the saw-band, it is absolutely important to disconnect the machine from the mains socket and turn it on again after the installation of a new band and closing the pulley and band guards.**

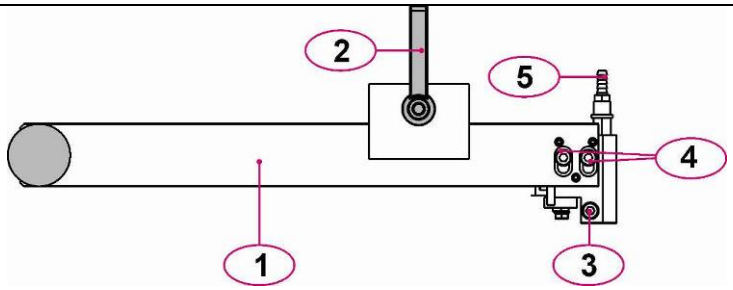


pic: 11-1

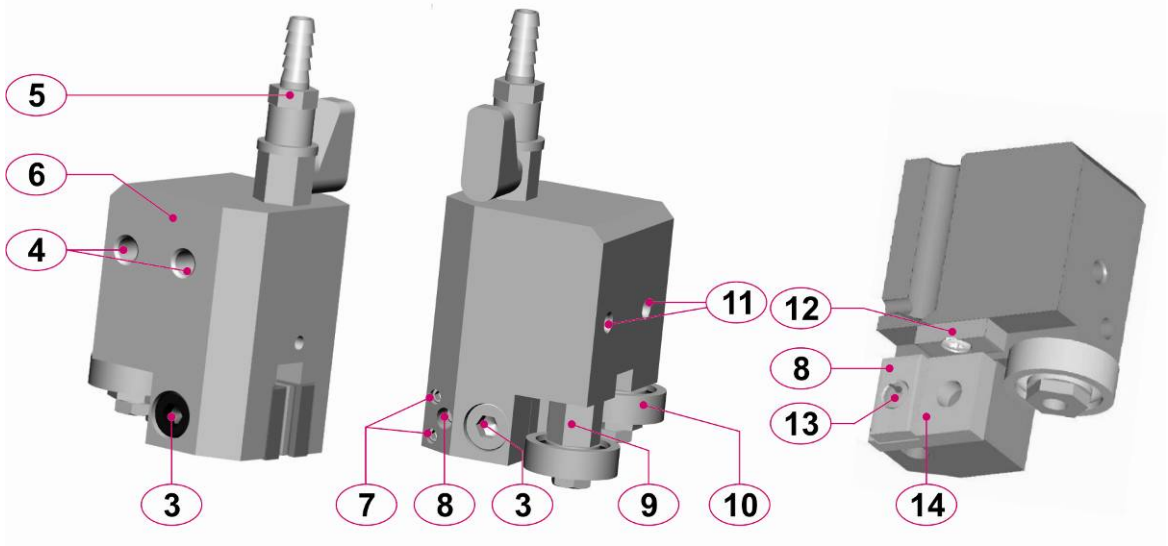
1. Set the turn table to the 0° position and move the arm so that it makes an angle of 20 – 30° to the horizontal plane. Turn the main switch to the 0 position and unplug the mains plug.
2. Make sure that the band guides are as close together as possible. Loosen the crank and move the suspension bar with guide **(No. 1)** far from the tensioning pulley. Then loosen the tensioning screw **(No. 1).**
3. After uncovering the band guard **(No. 3),** and the locking lever **(No. 4),** remove the band from the safety clips (**No. 5).** Remove the band from pulleys **(No. 6)** and from the guides **(No. 1, 7).**
4. Always check the condition of the pulleys and guides; all parts coming into contact with the band must always be cleaned carefully.
5. First slide the new band into the guides and then put on the pulleys. Push the band into the pulleys' shoulders with its flank and tighten slightly **(screw No. 2).** Check that the band is in the correct position against the pulleys' shoulders and that it is correctly placed in the guides.
6. Close the pulley guards and install the band guard. Plug in the mains socket and turn the main switch to position 1.
7. Start tightening the tensioning screw **(No. 2).** The band is correctly tensioned when the light on the control panel  is active.

11.3 GUIDES OF THE BLADE

The guides direct the band into a precision cut. Each band guide has four replaceable carbide pads that are constantly awash with coolant during the cutting process. The guides are factory pre-set. If new adjustment is necessary, we recommend ordering maintenance service of the DOALL company.
When cutting, try to adjust the front adjustable guide as close to the sawn material as possible.



pic: 11-2



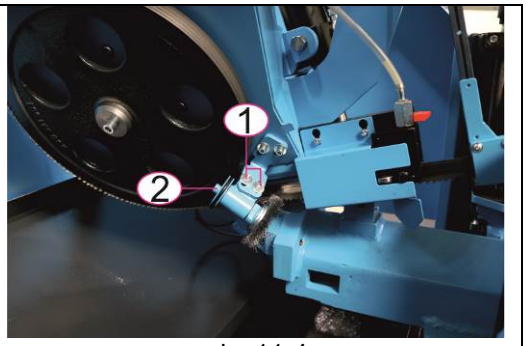
pic: 11-3

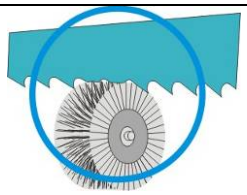
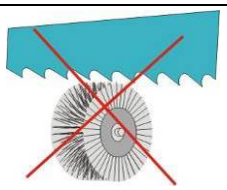
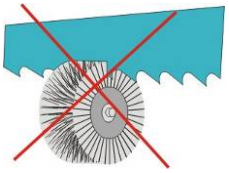
1. Adjustable guide console.
2. Fixation screw of the guide console.
3. Tightening screw of the movable distance piece with the leading carbide desks.
4. Tightening screws of the guide – do not manipulate, as this affects the life of the blade.
5. Valve regulating the amount of coolant.
6. Body of the guide.
7. The adjusting screws of the movable distance piece with the leading carbide desks. When setting the right position, tighten the tightening screws, by tightening of the adjustable screws set the clearance between the leading desks to the value 0,037 in, (the clearance between the blade and leading desks), check the tightening of the tighening screws and clearances. We recommend to check the clearance. We recommend to have the spare guide desks on stock. We recommend to have the adjusting of the clearance of guide desks done by a service technician from – company.
8. Leading carbide desks.
9. Hexagon of the cam. When replacing the band, rotate the cam so that the clearance between the slack band and the bearings is as small as possible. This will make replacement possible.
10. The leading bearings are situated on excenter. It is possible to adjust the position of bearings as close the blade as possible but with the assembling clearance. We recommend to have spare bearings on stock.
11. Holes for attaching a band guard.
12. Leading carbide desks. If a notch is carved by the band's flank (deeper than 0.012 mm), replace it.
13. Tightening screw of the leading carbide desks.
14. The movable distance piece.

11.4 HOW TO REPLACE THE CLEANING BRUSH

The right function of the cleaning brush is one of the very important factors to achieve the highest possible blade life. Edges of teeth that aproaches the material must be clean (without chips). That is why we ask you to check the cleeaning brush and its position to blade teeth.

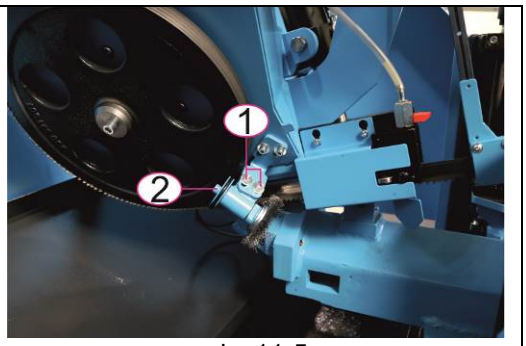
The right position of the cleaning brush towards the blade set by screws **(pos.1)**

1) 1 Loosen the safety screw **(pos. 1)** 2) Replace the worn out brush with a new brush. 3) Tighten the safety screw **(pos. 1)**	 pic: 11-4

		
RIGHT	**INCORRECTLY**	**INCORRECTLY**

11.4.1 HOW TO CHANGE THE BRUSH

If the brush is worn out and it does not carry out its function, it must be changed.

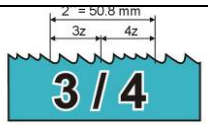
1) Loose the safety screw **(pos. 2)** 2) Change the brush for a new one 3) Tighten the safety screw **(pos. 2)**	 pic: 11-5

12. HOW TO CHOOSE THE RIGHT SAW-BLADE

There is a connection between the right choice of saw-blade and an ideal output of machine.
DoALL company also deals with a production and selling of saw-blades for metals.

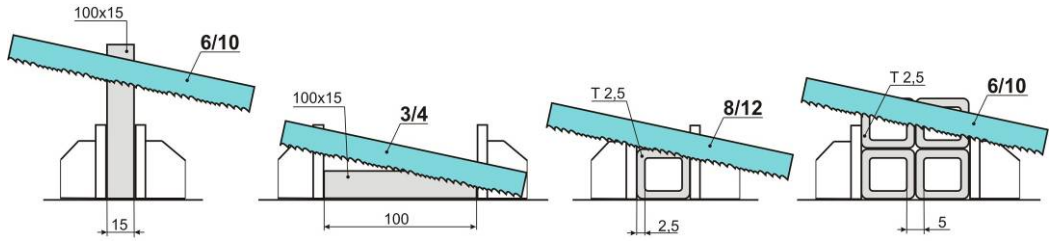
Warning : In case of wrong choice of teeth shape and size regarding the material to be cut, pulley, bearings, gear box and engine could be overloaded and enormously worn away. When using small teeth regarding the length of the cut a long chip appears, this too long chip is too big for the gap between teeth, and tries to enlarge into sides.This fact – overfilling of the teeth gap – causes gradual wedging of the chip in the cut, the loss of quality of the cut and enormous increase of the cutting resistance and input of the machine. The claim of damage of pulley, bearings, gear box and engine from above mentioned reasons would not be considered as a warranty claim.

12.1 SAW-BLADE TEETH

 **CONSTANT** - distance between teeth is constant	
 **VARIABLE -** smaller and bigger teeth are changing. This saw-blade has a bigger rate of using, it loweres vibrations during cutting, it enables better removing of chips, it causes a better surface of a cut. Life cycle of the saw-blade is bigger. - technicians are ready to help you with the right choice of saw-blade. **How to choose the right teeth for cutting solid material**	

tab: 12-1

WARNING: The position of the material in jaws influences the right choice of saw-blades teeth



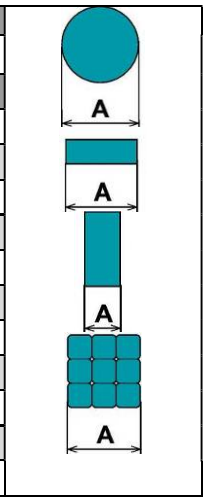
pic 12-1

12.2 HOW TO CHOOSE THE RIGHT TEETH FOR CUTTING

The table for choosing saw-blade is attached to the machine.

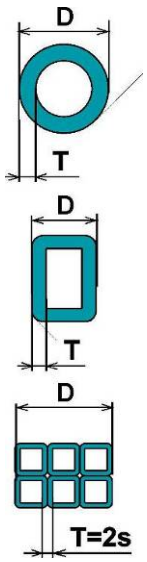
CONSTANT		VARIABLE	
A	teeth	A	teeth
-0,25	22	-0,8	6/10
0,25-0,4	18	0,8-1,6	5/8
0,4-0,8	14	1,6-3,2	4/6
0,8-1,2	10	3,2-6,5	3/4
1,2-2	8	6,5-8	2/3
2-3,2	6	8-16	1,4/2
3,2-4,8	4	16-25	1/1,3
4,8-8	3	> 25	0,75/1,25
8-16	2		
16-32	1,25		
> 32	0,75		

CONSTANT		VARIABLE	
A	teeth	A	teeth
-0,6	14	- 0,6	10/14
0,6-1,6	10	0,6 – 1,6	8/12
1-2	8	1 – 2	6/10
1,4-2,8	6**	1,4 – 2,8	5/8
1,6-3,2	4**	1,6 – 3,2	5/6
2-4,7	3**	2 – 4,7	4/6 * **
3,2-7	2	3,2 – 7	3/4 * **
5-14	1,25	5 – 14	2/3
6-18	0,75	6 – 18	1,5/2
8-24		8 – 24	1,1/1,6
>20		> 20	0,75/1,25



tab. 12-1

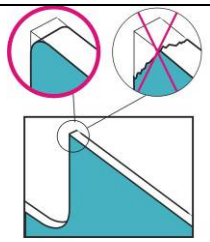
T/D	0,8	1,6	2,4	3,2	4	4,8	6	8	12	20
0,08	14	10/14	10/14	10/14	10/14	8/12	8/12	8/12	8/12	5/8
0,12	14	10/14	10/14	8/12	8/12	8/12	8/12	6/10	6/10	5/8
0,16	10/14	10/14	8/12	8/12	8/12	6/10	6/10	5/8	5/8	4/6 S
0,2	10/14	10/14	8/12	8/12	6/10	6/10	5/8	4/6 S	4/6 S	4/6 S
0,24	10/14	8/12	8/12	6/10	6/10	5/8	5/8	4/6 S	4/6 S	4/6 S
0,32	10/14	8/12	8/12	6/10	5/8	5/8	4/6	4/6	4/6	4/6
0,4		8/12	6/10	5/8	4/6	4/6	4/6	4/6	4/6	4/5
0,5		8/12	6/10	4/6	4/6	4/6	4/6	4/6	4/6	4/5
0,6		8/12	6/10	4/6	4/6	4/6	4/6	4/5	4/5	4/5
0,8			4/6	4/6	4/6	4/6	4/6	4/5	4/5	3/4
1,2				4/6	4/6	4/5	4/5	4/5	4/5	2/3
2							4/5	3/4	2/3	2/3
3								3/4	2/3	2/3
> 4									2/3	1,5/2



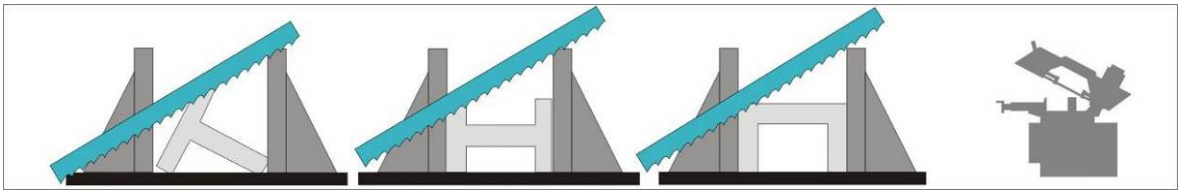
tab. 12-2

12.3 RUN IN OF SAW-BLADE - WHEN HAVING A NEW SAW-BLADE

Run in is necessary for achieving max. saw-blade life cycle. By running in you prevent breaking microfragments of teeth, that damage other teeth and increase stress to the saw-blade.
Let saw-blade run on no-load for about 30 seconds with the coolant pump working (due to right lubrication of saw-blade). Run in do if possible with easy machined materials by min. speed of arm when cutting. After about 30 minutes increase the speed of feed continuously.

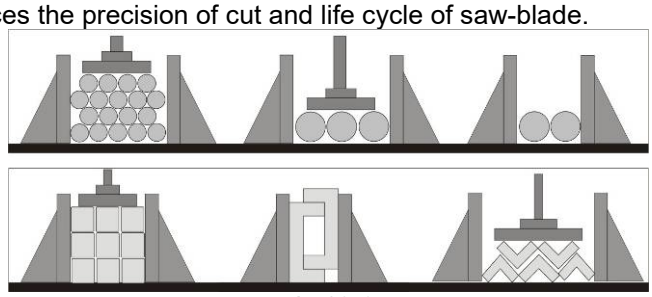


12.4 HOW TO CLAMP MATERIAL



pic 12-2

Material clamping influences the precision of cut and life cycle of saw-blade.



pic 12-3

12.5 SPEED OF ARM MOVEMENT WHEN CUTTING

The shape and color of the metal chips removed from the bandsaw helps you with the setting of the right speed of arm movement when cutting :



A



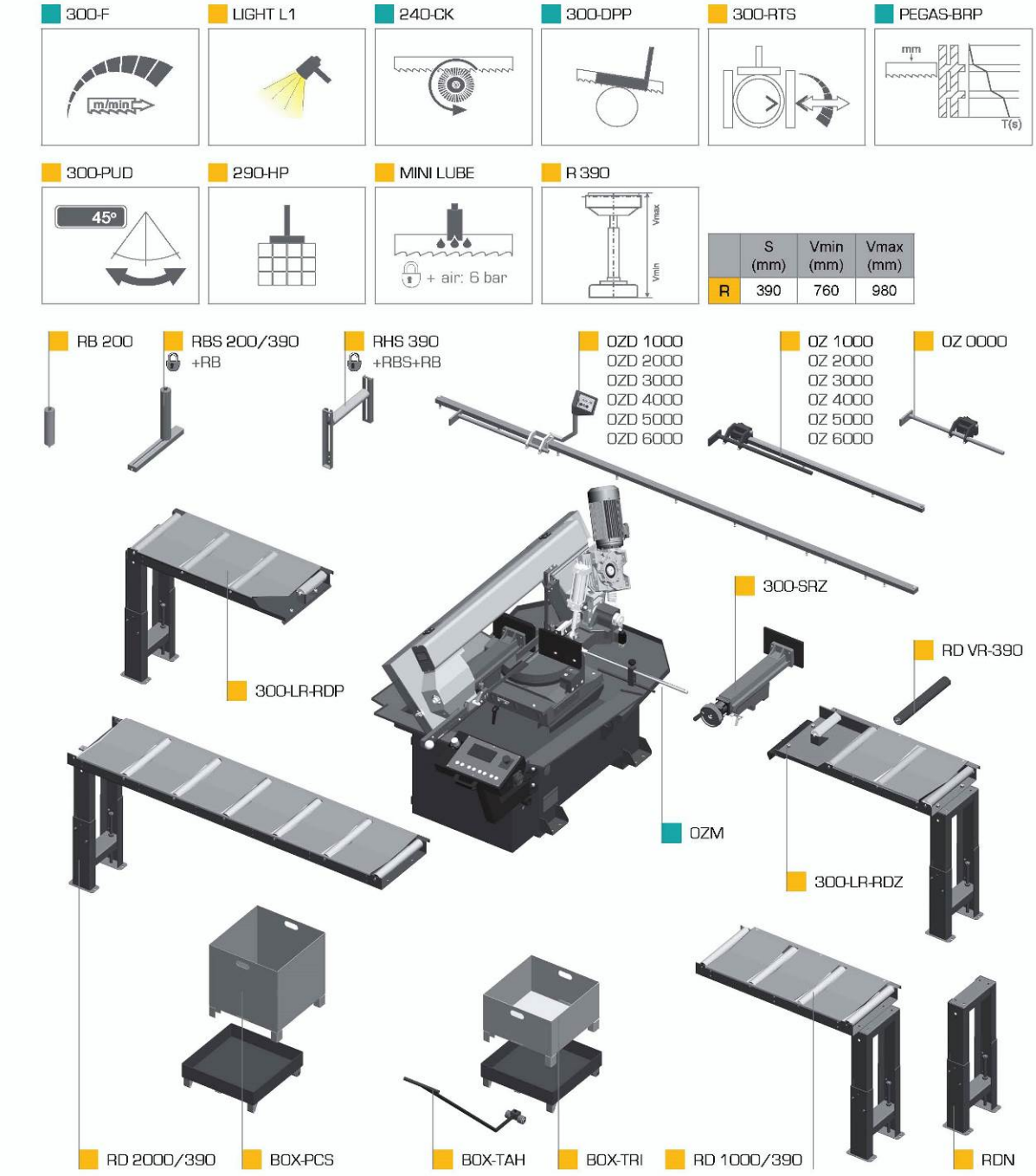
B



C

a) thin or broken chips - increase the speed of feed or reduce the speed of a blade
b) - thick or blue chips - reduce the feed ,check coolant
- too spinny chips - full gaps between teeth, use saw-blade with bigger teeth, reduce feed or increase saw-blade speed
c) spiral chips - well set parameters
Notice : Too high speed of arm when cutting causes trembling of machine and its bigger noise.

12.5.1 EXTRA ACCESSORIES



pic: 12-1

CODE	OPTION	
300-M2V	Engine with the gear box- 2 speed	
300-F	Motor and frequency converter for a fluent change of the circumferential speed of the blade.	ST
OZM	Measuring end stop which is mounted directly to the machine, length 1m.	ST
240-CK	Cleaning brush of blade, driven passively (driven by sawing blade).	ST
-BRP	Electronical regulation of the down-shift.	ST
300-DPP	Automatic end stop of the upper position.	ST
300-SKZ	Slide of cut pieces.	
300-PUD	Digital indicator of adjusted angle	OP
300-SRZ-R	Vice behind the cut	
300-SRZ	Vice behind the cut. Hydraulic clamping of the material behind the cut.	OP
290-RP	Manual upper vice.	

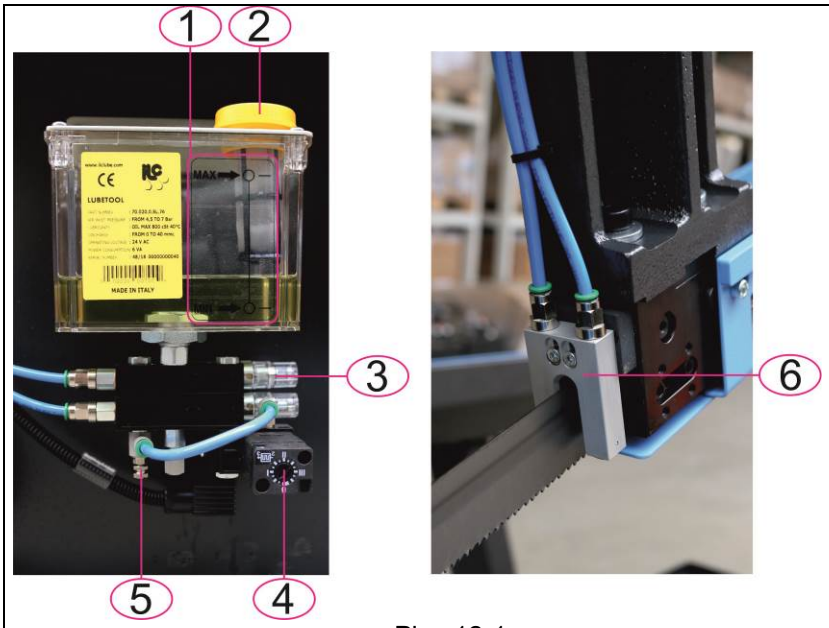
300x320 HP	Hydraulical upper vice. Hydraulic upper clamping tighten the material in vertical sense by the hydraulic cylinder.	O
300x320 HP-A	Hydraulical upper vice for mounted on the main vice and on the feeding vice. Hydraulic upper clamping tighten the material in vertical sense by the hydraulic cylinder. Set of 2 pcs.	
300-RTS	Regulation press of vice.	O
300-RTS-A	Regulation press of vice – set of 2 pcs for bothvices.	
300-VTT	Worm chip extractor for long chips (stainless-chips), includedd 1 pc of BOX-TRI.	
BOX-PCS	Box for cutted pieces with emulsion draining to the waterproof tank.	O
BOX-TRI	Box for the chips with emulsion draining to the waterproof tank.	O
BOX-TAH	Tool for manipulation with BOX-PCS and BOX-TRI.	O
LIGHT L1	Lighting of working space.	OP
MINI LUBE	Wasteless lubricating system, instead of emulsion cooling, specially for cutting profiles and non-ferrous metals, necessary supply of pressed air 6 Atm.	OP
300-LR-RDP	Input connecting part of the roller conveyor RD - ensures angle cuts of the machine, length 1000 mm, width 390 mm, bearing capacity 200 kg/m, adjustable leg includedd in price.	O
300-LR-RDZ	Output connecting part of the roller conveyor RD-ensures angle cuts of the machine, length 1000 mm, width 390 mm, bearing capacity 200 kg/m, adjustable leg includedd in price.	O
RD 1000/390	Roller conveyor. Length 1000 mm, width of cylinders 390 mm, capacity 200 kg/m, adjustable leg includedd in price.	O
RD 2000/390	Roller conveyor. Length 2000 mm, width of cylinders 390 mm, capacity 200 kg/m, adjustable leg includedd in price.	O
RD VR-390	Robust cylinder length 390 mm with the bearing for RD roller coneyor. The capacity of roller table increased from 200 kg/m to 400 kg/m	O
RB 200	Side vertical fix cylinder, height 200 mm, monted on the RD tables.	O
RBS 200/390	Side vertical moovable cylinder, height 200 mm, working only with RB.	O
RHS 390	Horizontal cylinder , working only together with RB + RBS for bundle fixing, length of cylinder 390 mm.	O
OZ 1000	Mechanic measuring system with the meter L = 1200 mm.	O
OZ 2000	Mechanic measuring system with the meter L = 2200 mm.	O
OZ 3000	Mechanic measuring system with the meter L = 3200 mm.	O
OZ 4000	Mechanic measuring system with the meter L = 4200 mm.	O
OZ 5000	Mechanic measuring system with the meter L = 5200 mm.	O
OZ 6000	Mechanic measuring system with the meter L = 6200 mm.	O
OZD 1000	Mechanic measuring system with digital display 1 meter long.	O
OZD 2000	Mechanic measuring system with digital display 2 meter long.	O
OZD 3000	Mechanic measuring system with digital display 3 meter long.	O
OZD 4000	Mechanic measuring system with digital display 4 meter long.	O
OZD 5000	Mechanic measuring system with digital display 5 meter long.	O
OZD 6000	Mechanic measuring system with digital display 6 meter long.	O
OZ 0000	Second movable stop for OZ.	O
RDN	Support for RD.	O
R390	Movable cylinder, adjustable height, width 390 mm, capacity 200 kg	O
300x320-QPARTS	Set of easy worn away spare parts: * 4 pcss: hard-metal plate 235 * 4 pcss: bearing 608 2Z * 10 pcs: cleaning brush 240-CK	O
300 - NAV	Manual instruction – printed version.	O
PAL1	Packing on the palette 1,2 m x 2,0 m.	O
PAL2	Packing on the palette 2,4 m x 2,4 m.	
OBAL1	Package - wooden box 1,2 m x 2,0 m.	O
OBAL2	Package - wooden box 2,4 m x 2,4 m.	
OBAL-300	Packing in the wooden cage.	O

tab: 12-2

O – accessories, OP – accessories mounted directly in the production, ST – standard equipment

12.6 MINI-LUBE

The mini-lube system lubricates cutting tools in a dissipating manner. Using a spraying process of oil x air achieves a minimum consumption of lubricant while cooling the tool. Use LB 10000 lubrication oil. For correct operation of the mini-lube system, six-bar pressurised air supply is necessary.



Pic.: 12-1

1. Container for cutting coolant with Max. and Min. marking.
2. Filling hole with strainer.
3. Piston pump – the amount of oil is regulated by travel restriction with a cap nut.
4. Number of travels regulator.
5. Amount of air regulator
6. Block with nozzles – applies coolant to the band.

5.5.1 SETTING AND ADJUSTMENT

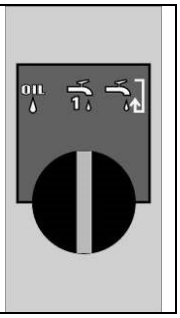
a) Install block (7) into the immediate vicinity of the band so that the side nozzles point at the blades of the tool.
b) Install the mini-lube on the stationary part of the machine.
c) Connect pressurised air (1) with the inlet screw-coupling. The min. operational pressure is 6 Atm.
d) Connect the connector of pressure valve 24 V DC.
e) After connecting pressurised air and 24 V to the valve coil, the pump starts pulsating. The amount of oil is adjusted by a combination of the number of cycles on the pump (3), length of travel (2) and amount of air for oil spray – valve (6).
f) You can determine the correct amount of oil with a testing paper, which you put between the nozzles for five seconds. After removing, the paper can be:

Greased without dripping oil	O.K.
Running oil drop	Too much oil = reduce the richness to 2, 3
Separate oil drops or dry paper	Low amount of oil = enrich to 2, 3
Dry paper, oil dripping from nozzle	Low amount of oil or low air pressure

tab: 12-3

12.6.1 CONTROL

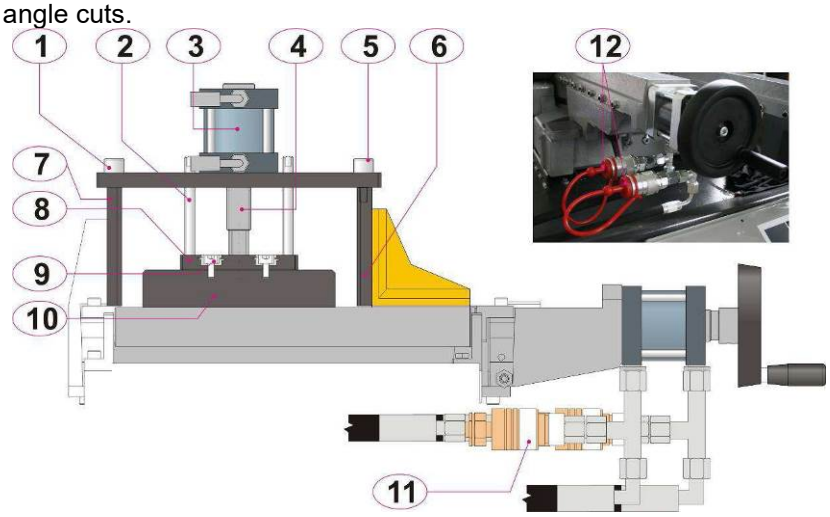
The switch selects between:
A) Closed-cycle lubrication system – left.
B) Permanent cooling – middle.
C) Coolant in cycle – right.



12.7 HYDRAULICAL UPPER VICE

Hydraulic upper vice mounted on the main vice. Hydraulic upper clamping tightens the material in vertical sense by the hydraulic cylinder connected with the cylinder of the main vice.

WARNING: upper clamping can be used only when doing vertical cuts, there could be a collision when doing angle cuts.



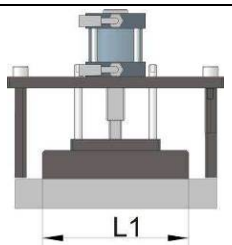
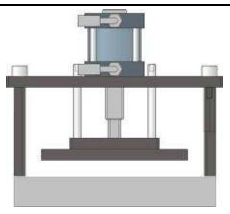
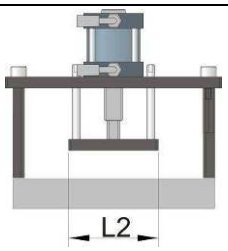
pic: 15-2

1.	Adjustable screw of firm jaw
2.	Mounting screws of basic thrust jaw
3.	Short stroke hydraulic cylinder of the upper vice
4.	Lead screw of the upper clamping
5.	Adjustable screw of movable jaw
6.	Movable jaw of the vice
7.	Firm jaw of the vice
8.	Basic thrust jaw A or B type type (A=130mm, type B=250mm)
9.	Mounting screws of replaceable thrust jaw
10.	Replaceable thrust jaw A or B type type (A=130mm, type B=250mm)
11.	Quickclamps
12.	Plugs

12.7.1 UPPER THRUST SETTING

Upper thrust is delivered with the basic jaw (**pos.8)** length L2=4,7in, two replaceable jaws **(pos.10),** length L1=9,8in.

It is necessary to set the upper thrust according to the diameter of the material. Set the upper thrust according to the following table:

Version of composition	**A**	**B**	**C**
			
hight of the bundle (mm)	**0-2,4in**	**2,4-4,8 in**	**3,15-5,12in**
use of thrust jaws	**Basic jaw + replaceable jaw A type**	**Basic jaw + replaceable jaw B type**	**Basic jaw**
Min. width of the bundle is 4,7in (when using the 4,7in long jaw) Max. width of the bundle is 11in (it is possible to use the jaw of 9,8in or 4,7in length)			

When assembly / dismantle thrust jaw of the upper clamping we recommend to dismantle the whole upper thrust from the vice: open the movable jaw **(pos. 6)** to maximum and loose screws **(pos.1 and 5)** , then dismantle upper thrust.
Assemble the replaceable A jaw or B jaw to the basic jaw using the screws **(pos.9)**. After this assembly the upper clamping to the vice.

Set the thrust jaw about 5 mm above the material using the central screw **(pos.4)**

WARNING: the lead adjusting screw of the upper clamping **(pos. 5)** it is possible to adjust only if the piston rod of hydraulic cylinder is in open position. Otherwise the hydraulic cylinder will be damaged, this damage will not be considered as a warranty one.

WARNING: It is necessary to be extremely careful when cutting with upper clamping not to damage hydraulic pipes. It is necessary to fix hydraulic pipes to the firm or movable part of machine. Pipes must be protected against mechanical damage, against high temperatures, pipes and terminals must be easily controllable and accessible for possible dismantling. Fixation of pipes can not be firm (count with changes of pipes and different pressure). Pipes can not be exposed to turning after fixation.

12.7.2 CONTROLLING OF UPPER THRUST

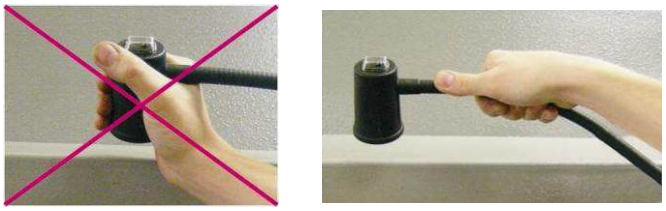
Controlling of the upper thrust is the same as constrolling of the vice.

12.7.3 ASSEMBLY / DISMANTLE OF UPPER THRUST

Loose arresting screws **(pos.1)** loose quickclamps **(pos.11)**. All quickclamps ensure by plugs **(pos. 12).** Dismantle upper thrust from the jaws of the vice.

12.8 LIGHT

The machine can be equipped by a light with an independent switch. As the light after a longer time of lightening is very hot, it is forbidden to touch the light. To change the position of the light you can only by manipulating with the neck of the light.

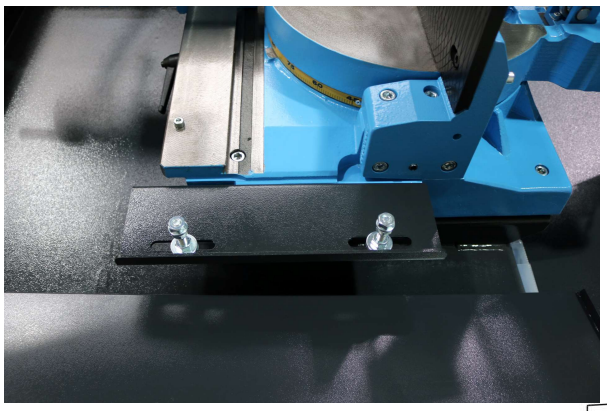


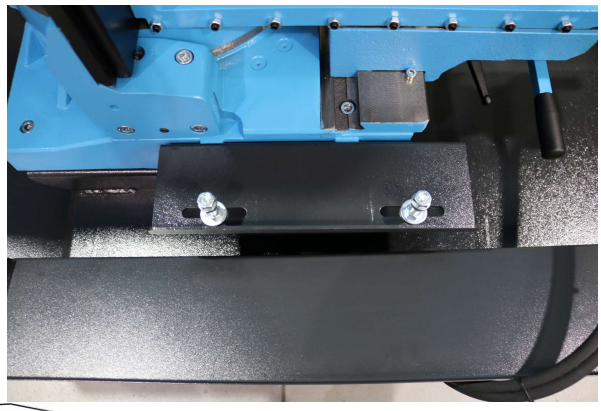
pic: 15-3

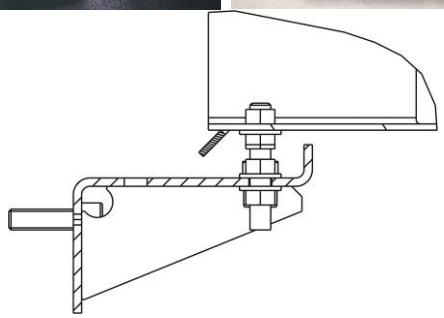
12.9 ROLLER TABLE

To properly connect roller tables to machine DS-320SA is necessary:

1) Before the cutting zone, on input you have to equip machine with **LR-RDP.** On output you have to use roller table **LR-RDZ.** To connect directly the table to machine, there is connecting part used – **290 LR-PR** – which is included as the part of this type of roller table. In case you would connect roller table RD directly to the machine, the angle cutting would be disabled, connecting part **290 LR-PR** is not a part of this type of roller table.



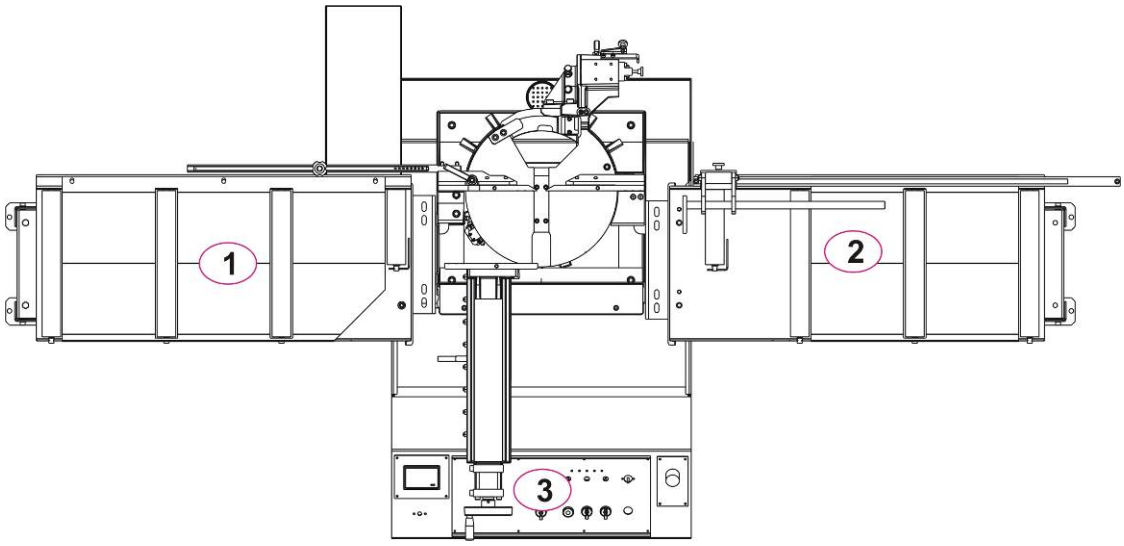




pic: 12-2

Screws for machine: Hexagon socket screw M10x35 by DIN 912 01 M10X35 (2x), pad size 12 (2x)

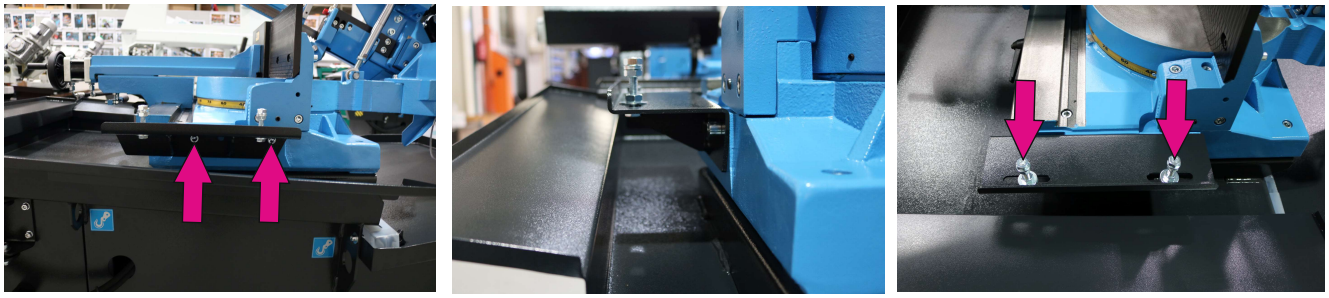
Installation screws for roller table connection: hex head screw M10x60 (2x), pad size 11 by DIN 126 01 10 (4x), nut M10 (6x).



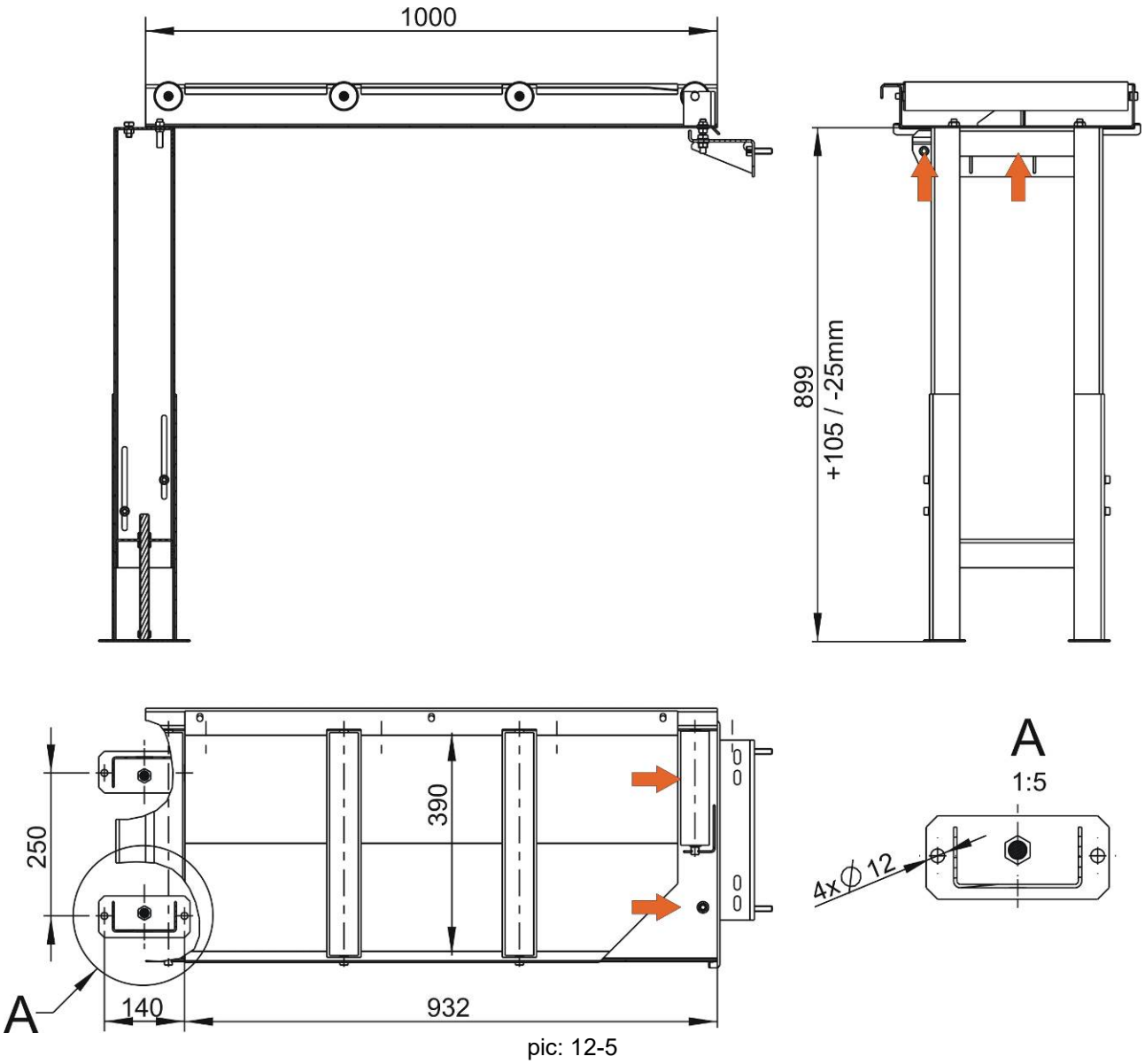
pic: 12-3

1. Input roller table 290 LR-RDP
2. Output roller table 290 LR-RDZ
3. Operating panel

Connection of the roller table on input (before the cutting zone):

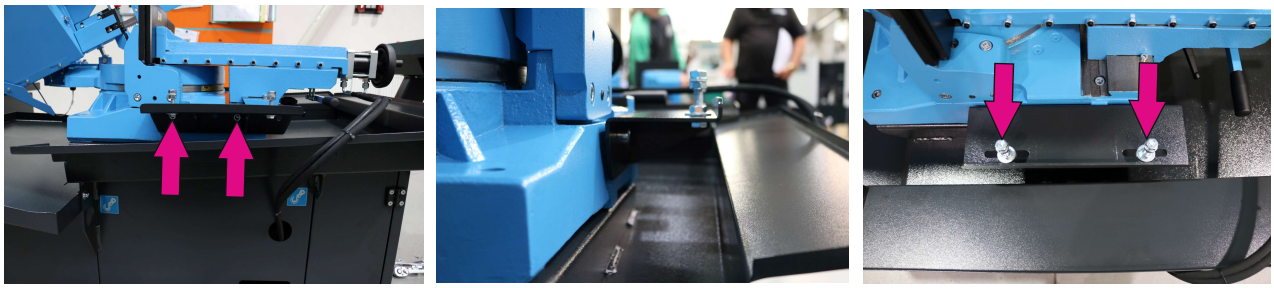


pic: 12-4

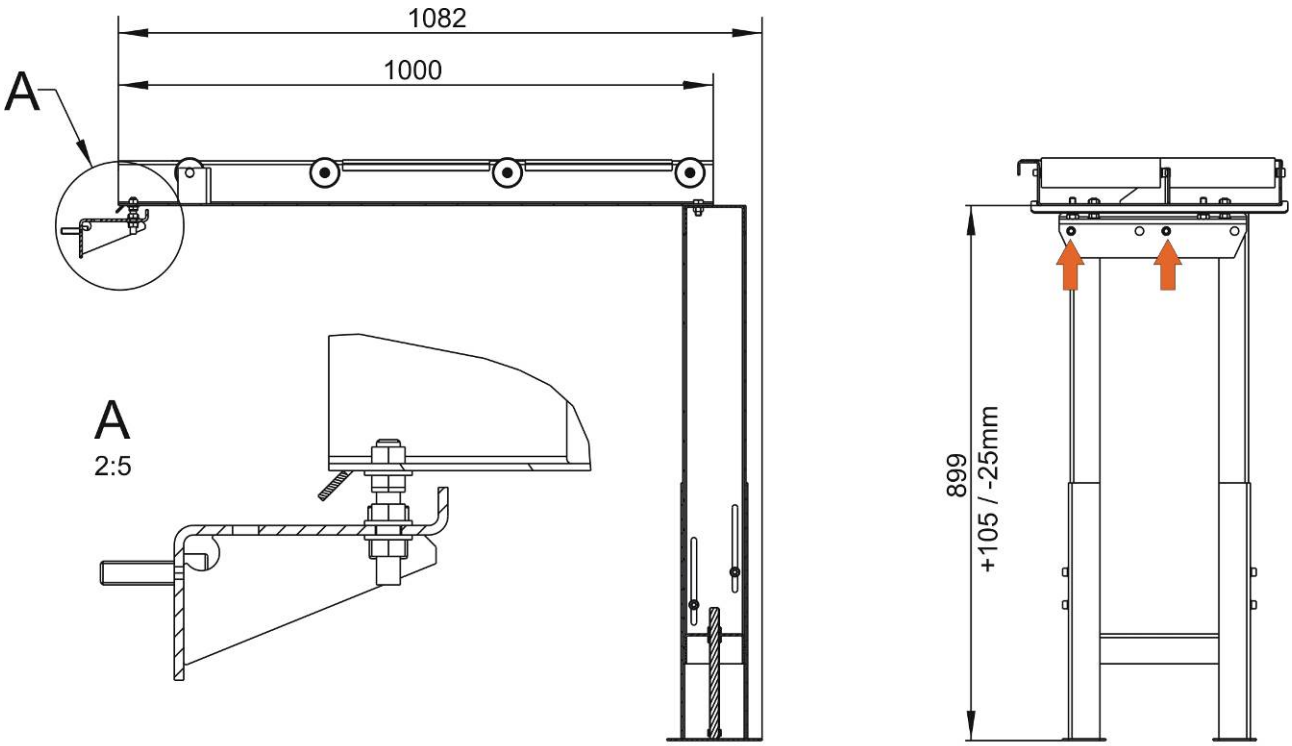


pic: 12-5

Connection of the roller table on output (after the cutting zone):

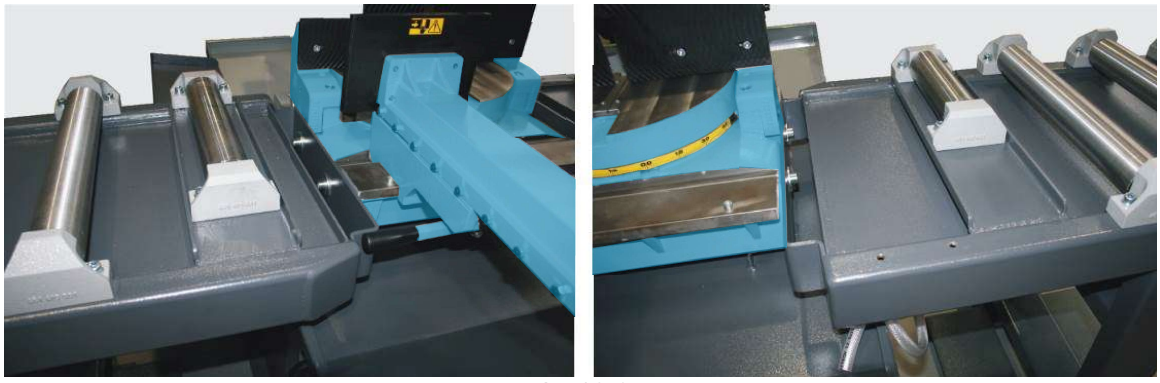


pic: 12-6



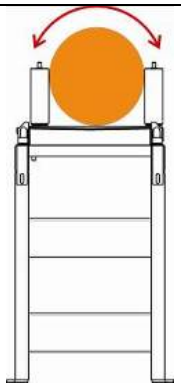
pic: 12-7

2) On input is necessary to use roller table **LR-RDTP.** For output is necessary to use roller table **LR-RDTZ**. Both those roller tables are being connected directly to machine, no need to use separate connecting parts.



pic: 12-8

WARNING: When installing roller tables, it is important to align them correctly with the horizontal level of the saw (i.e. level determined by the tangent of the support rollers). If the routes are not in alignment, the material will be undercut, the saw-band will not reach its maximum life and the power necessary for handling the material will become several times higher (i.e. the life of the vice jaws and hydraulic cylinders will decrease) and the accuracy of the material supply will fall. dramatically

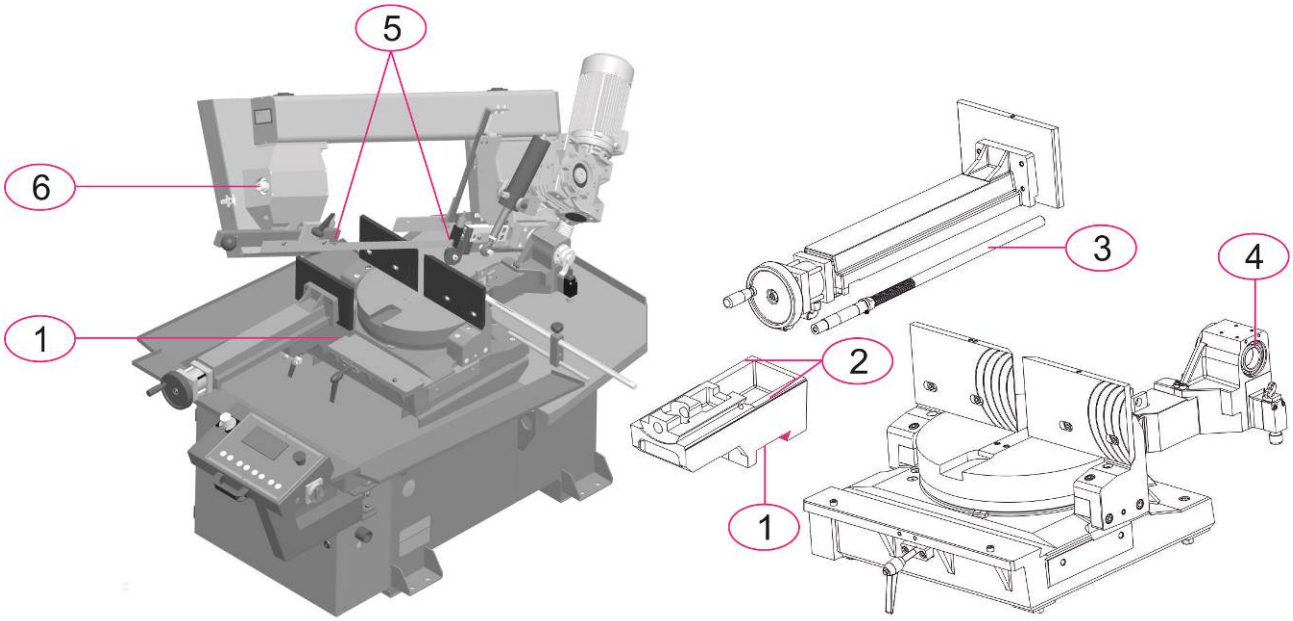
NOTE: during careless handling, the bars can roll down from the roll-way. The only safe solution is to use the RBR+RBRS side rollers.	 pic: 12-9

13. MAINTENANCE

frequency	operation
DAILY:	Remove the chips from the storage tank.
	Add coolant or cut liquid, check right proportion of diluting.
	Inspect the band for wear; replace the band, if necessary.
WEEKLY:	If the hydraulic or gear oil does not extrudes, see the regulations for changing the fillings. In other case order DoALL service.
	To clean and oil all movable parts and leading surfaces.
	Check the control panel functions.
	Pay attention for cleanness of terminal switches.
	Microswitches - check
	It is essential to replace the hydraulic hoses every eight years.

tab: 13-1

13.1 LUBRICATION CHECKING



pic: 13-1

Item	position description	necessary activities	interval	lubrication (tab. 16-2)
1	dovetail leading for moving of the vice	- lubricate surfaces that are in contact	weekly	**E**
2	Basements of movable jaw of the vice	- clean the device - Apply plastic lubricant onto the device	weekly	**E**
3	Trapezial screw of the movable jaw of the vice	- To clean the screw threads - Put oil into the thread	weekly	**F**
4	Position of the joint shaft	- Apply plastic lubricant onto the device - Check of the clearance in tapered roller bearings	weekly	**E**
5	Guide	- To clean the leading surfaces	weekly, when changing the blade	**E**
6	The movable desk of the tightening mechanism of the	- To clean the seating - Apply plastic lubricant onto the	weekly	**E**

tab.: 13-1

13.2 RECOMMENDED FILLINGS- INTERVALS FOR CHANGING FILLINGS

It is very important to change the oil in components at the prescribed intervals to ensure efficient machine operation. If the oil changes are not completed in accordance to the recommended intervals, the manufacture reserves the right to reject all warranty claims submitted for any part of the hydraulic system.

Every change of oil must be written down in the Service book by the authorized service of DoALL. In case of missing notice about regular change of oil the warranty will not be considered. Your Service book must be always kept near the machine. It is an obligation of the byuer to present the Service book to the service technician of DoALL company and check the completeness and correctness of the notice.

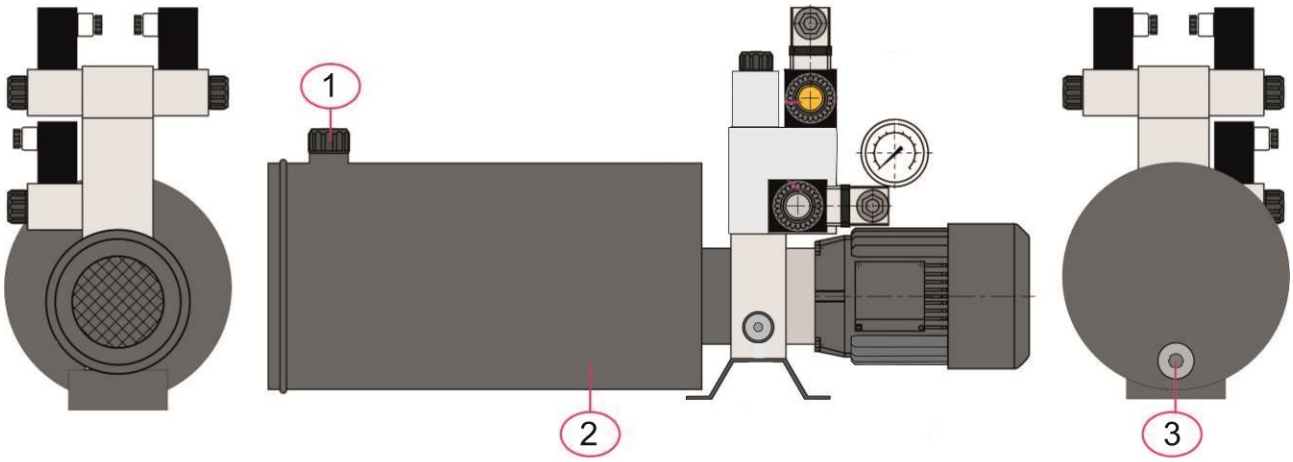
The change of oil must be provable.

		Specification	Recommended fillings	Alternatives	Oil Change Intervals
A	Hydraulic oil	**ISO-L-HM 32**	**ESSO: E-NUTOH32**	**OMV: HYDRAL 32**	one year/2000 working hours
B	gear oil	ISO-S150			
C	Emulsion oil	ISO-L-HFAE	ESSO: BS TOP CUT 97-52	OMV: UNIMET ASF 192	Every 6 months
D	Oil for MINI-LUBE::	multifunctional oil based on synthetic ester	Oemetea: HYCUT SE 12	-	when needed –see you tab 15-1
E	Plastic lubricant	DIN 51502 KP 2 P 20	Q8 RUYSDAEL	OMV: SIGNUM M 283	
F	Universal lubricating oil		WD 40	MOTIP: MPL20 MULTI SPRAY	when needed

tab: 13-2

13.3 CHANGE OF HYDRAULIC OIL

The oil level is measured using the gauge located under the lid (pos.1). Unscrew the lid and check the oil level on the dipstick. The level must be between the two marks.



pic: 13-2

1. Fill plug - under the lid is an oil gauge
2. Tank for hydraulic oil ISO VG 32
3. Drain plug

13.4 FILLING THE TANK WITH OIL

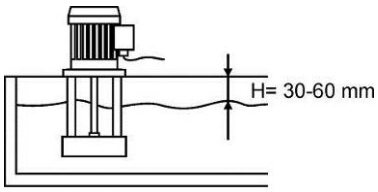
Check the inner part of the tank very properly first. Check the condition of oil resistant paint. If you find any flaking or marks of bad quality, the best thing is to remove the damaged paint by a suitable solvent, wash it, dry it and clean by pressured air. It is a prevention of damages caused by bad painting that could pollute all hydraulic system. For filling use only oil recommended by the producer. Never pour the oil directly from the barrels, always use filter aggregate with filters finer than 25 µm. The best is to use two filters with different filter ability. The first one with the rough metal filling, the second one fine with paper filling. Use filters that signal pollution, you will improve and lighten your work. There is the red cover of the oil filter that serves as the plug for pouring the oil.

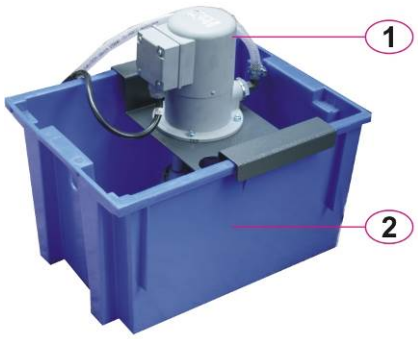
If you change the hydraulic oil, you usually dismantle also the cover of the tank. We recommend to check the state of the clutch between the pump and electroengine. It is necessary to grease surface of the clutch by the plastic lubricant- transfer of twisting moment (see service instructions).

Recycle used oil. Contact a recycling facility to have the oil recycled properly to protect the environment. Do not dump the oil on land or dispose of it in waterways.

13.5 FILLING AND CHANGING PUMP COOLANT

- use only liquids delivered by DoALL – and mix them in recommended proportions. Pay attention to right placement of the tank for chips and liquid tank.
- When operating with coolant, wear impermeable protecting gloves and protective glasses. If the liquid got into the eyes, the eyes could be injured.
- When stirring the coolant, pour the concentrate into the water and stir continuously. All information needed are mentioned directly on the vessel or in covering documents.

It is the operator's responsibility to check the amount of coolant in the reservoir. The coolant level is from 1,2 to 2,4in below the level of the flange of coolant pump.	 pic: 13-3



pic: 13-4

Procedure for replacing coolant:

1. Pump out the coolant from tank by pump and hose (or coolant pistol).
2. Remove the pump with holder from tank (pos. 1)
3. Clean the tank (pos. 2) and the pump
4. Fill up the tank with new coolant
5. Put back on it the holder with pump
6. Connect the coolant drain hose to coolant tank

Warning: the exchange tank coolant is necessary to use a tank with an overflow hole, otherwise it may lead to flooding of the pump coolant. For this damaged pumps will not be recognized claims.

13.5.1 STIRRING THE COOLANT

optimum state : stir the coolant oil permanently and pour it slowly into the lukewarm water when stirring the coolant oil. The mixing will be ideal and you make the right coolant.

13.5.2 PROPORTION OF OIL AND WATER MIXTURE

Proportion of oil and water mixture comes from the recommendation of the producer of machines and producer of blades.
General rule : the basic coolant for frequently used constructional steel is blended as follows : min. 1 qt of oil for 10 qt of water (1 : 10). When cutting hard, legated steel we recommend to increase the concentration of the coolant up to 2,5 qt of oil for 10 qt of water.

If you need to add the coolant, always pour allready mixed coolant. To pour water and then estimated amount of the oil it is a very bad procedure.

13.5.3 LIFETIME OF THE COOLANT

The lifetime of the coolant is influenced by many factors.
- coolant rinses oil / liquids which protect surface of bars to be cut. These liquids can destroy the coolant.
- Hydraulic or gear oil can leak into the coolant. These oils will make a layer on the coolant level which helps to destroy the cutting coolant. In this case in necessary to change the coolant and repair the leaking of hydraulic of gear oils immediately.

 **Contact a recycling facility to have the coolant recycled properly to protect the environment. Do not dump the coolant on land or dispose of it in waterways.**

13.6 CHANGE OF GEAR OIL

Change and filling the gearbox by lubricating oil is made at buyers responsibility.

There is a longlife synthetic oil filled in the gearboxes : it is not necessary to make any service or filling the oil during average 15.000 hours of lifetime. If it is necessary to change or fill the oil use only synthetic oil. Do not use mineral oil in any case.
For the safe operation of the gearboxes with the oil ISO VG 320, there is recommended surrounding temperature from 50 to 130 °F.
Check the gaskets regularly for possible oil leaks.

 **Recycle used oil. Contact a recycling facility to have the coolant recycled properly to protect the environment. Do not dump the coolant on land or dispose of it in waterways.**

13.6.1 TECHNICAL MAINTENANCE OF GEARBOXES

To ensure suitable working conditions we recommend to follow these maintenance intervals :

- according to the working conditions: to eliminate the dust by vacuuming it.
- Every 500 working hours or every month: visual check of the oil sealing and possible oil leaking
- Every 3000 working hours of every 6 months: check of the oil sealing and its exchange if it is worn out.
- Every 5 years : exchange of syntetic oil

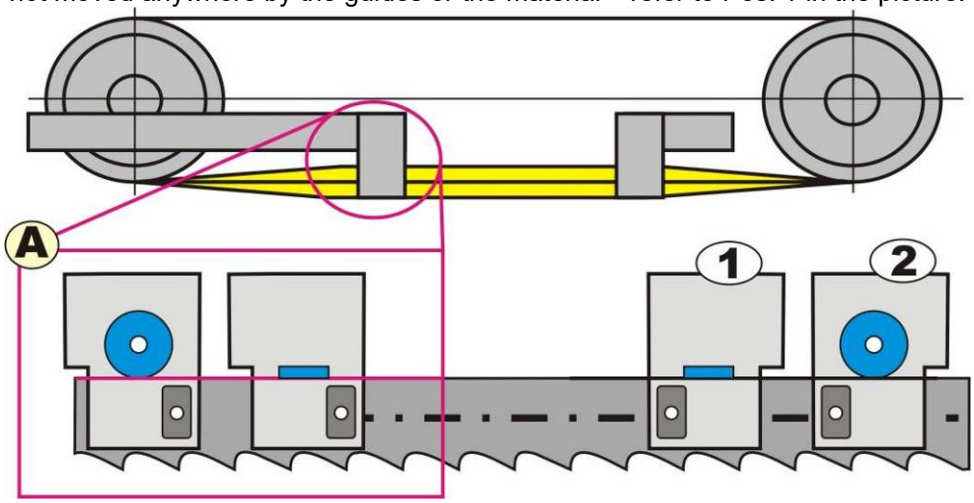
14. SERVICE INSTRUCTIONS

For service assistance, we recommend using only DoALL factory-authorized service technicians.
If the machine is under warranty, the customer is not allowed to perform the procedures in this section.
Before you embark on the below-mentioned procedures on your own, you must be sure that you can manage the task. The DoALL company does not vouch for the accuracy of the text or your potential failure.

14.1 ADJUSTMENT OF BAND GUIDES

The band guides are factory-adjusted. The operator must not tamper with or modify the current setting of the band guides.
We suggest inspecting it once a year, together with inspection of the band tension.
It is not necessary to adjust the guides if the operator does not hit them etc.

For optimum band life and cutting accuracy it is necessary to ensure that the band moves naturally in the guides and is not moved anywhere by the guides or the material – refer to Pos. 1 in the picture.



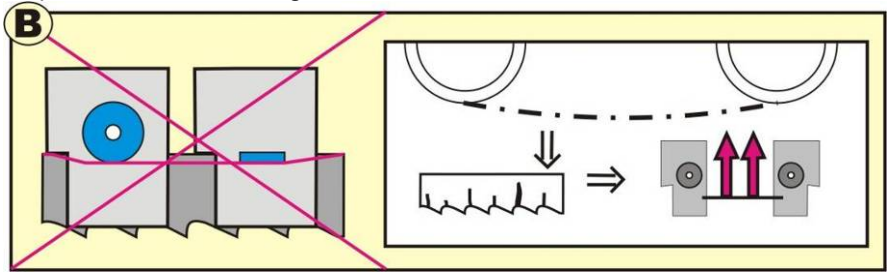
pic 14-1

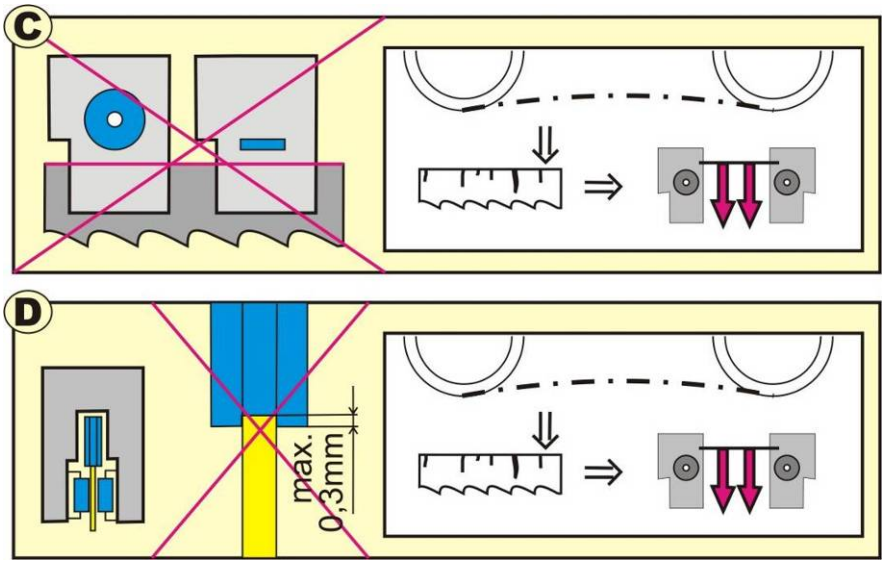
If the band is dragged downwards by the guides (Pos.B) or upwards by the sawn material (Pos. C), it means that it is not correctly guided and the guides should be adjusted.

The position of the guides can be adjusted by moving both guides up (approximately 2 mm). This will create a clearance between the guide pad (roller) and the band.
Replace all guards and start the saw band. Stop the machine after approximately 10 seconds. Now the band has reached its ideal position.
Important: turn off the main switch and disconnect from the mains.
Use a wooden block to push the saw teeth from the bottom in the location of the guide. Use a slide gauge to measure the distance by which the band moves up. The guide should be lowered by this value.
Use this method for the second guide.

If you decide to adjust the guide on your own, clean it from the inside (assist yourself by removing a spacer, which is not adjustable) and always check the condition of the carbide guiding areas.

It often happens that the customer requires a guide adjustment without noticing that the saw band has made a groove in the upper part of the pad (or roller) – see Fig. D. In this case it is enough to replace the pad (or roller) and keep the position without change.



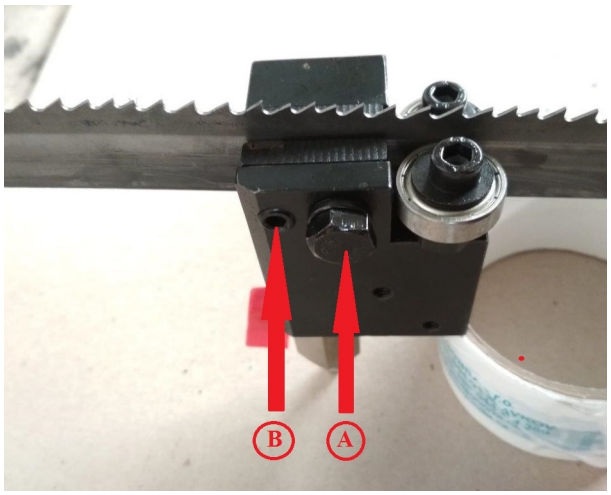


pic 14-2

14.2 ADJUSTMENT OF CLEARANCE BETWEEN THE SAW-BAND AND CARBIDE PADS

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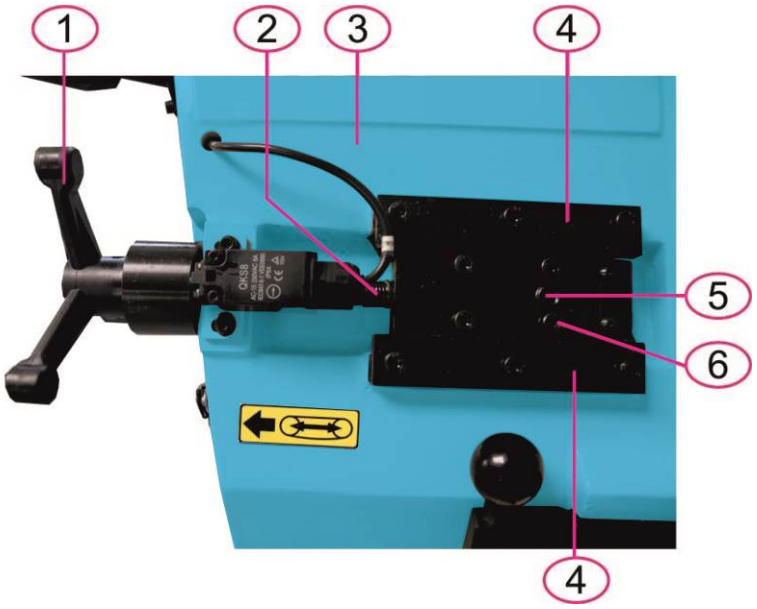
Adjustments of clearance between the belt and the guide plates are made:
Loosen the screw A, insert a 0.037in thick plate between the guide plates, and then tighten the screw B. This will set the exact clearance between the plates. Then tighten screw A.



pic 14-3

14.3 ADJUSTMENT OF THE TENSIONING PULLEY

We suggest leaving the adjustment to authorized assistance.



Pic: 14-1

The position of the tensioning pulley is pre-set from the factory. The position can be adjusted by means of adjusting screws and nuts.

1. belt tensioning handle
2. tensioning screw of the band – tensioning is carried out with the supplied key
3. arm
4. band tensioning plate
5. adjusters for setting the correct position of the tensioning pulley
6. fixating screws

Slack in the tensioning pulley assembly (i.e. in bearings, between the base and the adjustable plate) will allow deflection of the tensioning pulley – the pulley is not parallel to the driving pulley.
This is why the entire tensioning assembly is mounted on the saw arm with four adjusters.

It is necessary to perform the adjustment with the main microswitch in the OFF position and a slack saw-band.
Before you start adjusting the position of the tensioning pulley, check that all screws, which might affect the axial position of the driving and tensioning pulleys, have been tightened. Also inspect the condition of the tensioning pulley bearings. Loose bearings may affect the position of the saw-band more than potential looseness of the tensioning plate (Pos. 4), which is housed on the arm (Pos. 3) by means of adjusters (Pos. 5).
Loosen the adjuster fixation screws by one turn, move the adjusting screw of adjuster in by several tens of degrees. Turn the adjusting screw of adjuster. If you turn clockwise, the flank of the saw-band will move (after switching the semiautomatic cycle) towards the arm. If you turn anti-clockwise, the flank will move away from the arm. Tighten all fixation screws. Turn on the main switch, tighten the band, set the band speed to 1fps. and start the semiautomatic cycle. Be careful. If you overdo the adjustment, the band may fall off the pulleys and break. Turn the cycle off after ten seconds and check the position of the band after opening the door.
Repeat the entire procedure if necessary.

14.4 ADJUSTING THE HYDRAULIC PUMP PRESSURES:

1. main pressure – preset from the factory, not necessary to change
2. saw-band tensioning pressure – with tensiometer
3. main vice jaw pressure – adjust according to the size and weight of the material; the lower the pressure, the longer the life of mechanical parts of the vice.

14.5 SETTING PRESSURES

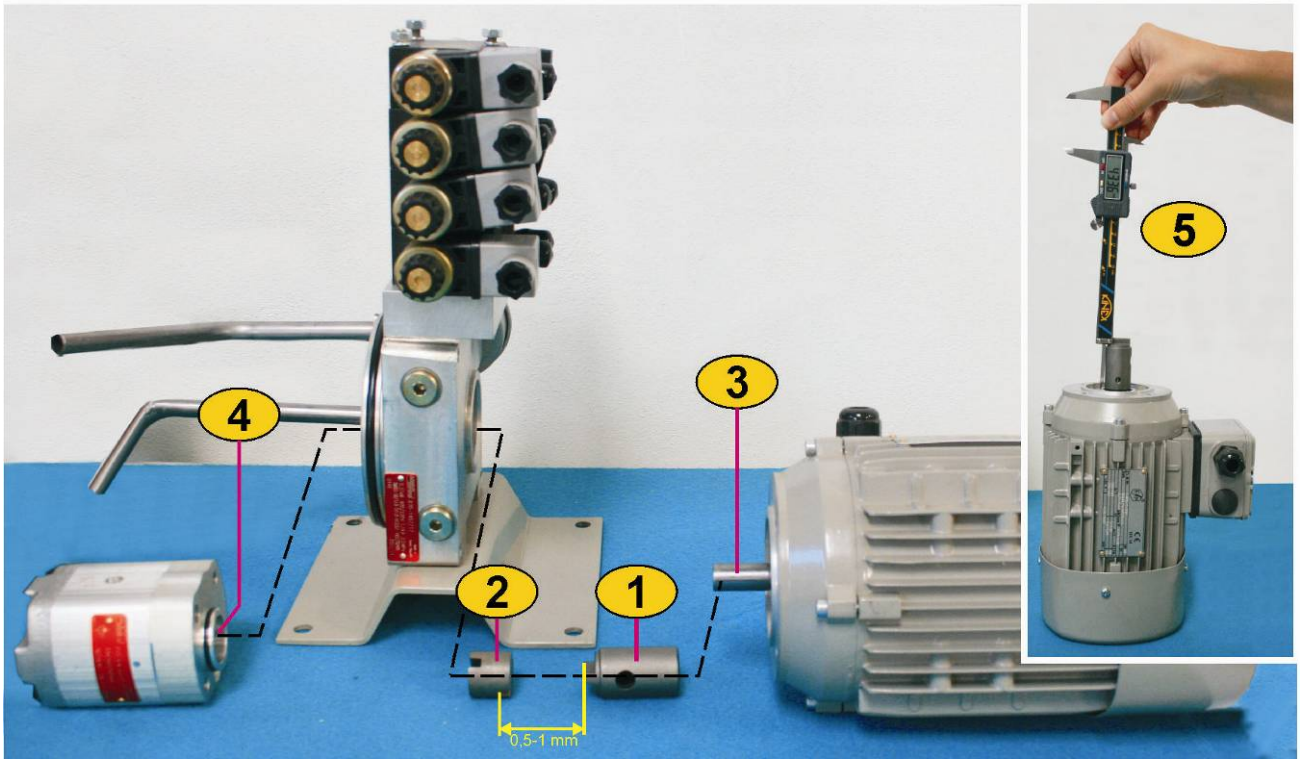
The pressures are pre-set in the factory – we strictly recommend no change. Leave potential adjustment to the maintenance service.

machine	Band saw	**BLADE TIGHTENING** (pressure) **CUTTING FOR LIFE OF MACHINE and BAND****	Main pressure
Strain gauge			
		STARRETT VOLUME ON SCALE PSI	**PSI**
DS-320SA	**238-1/2**	24000-25000	275 - 290

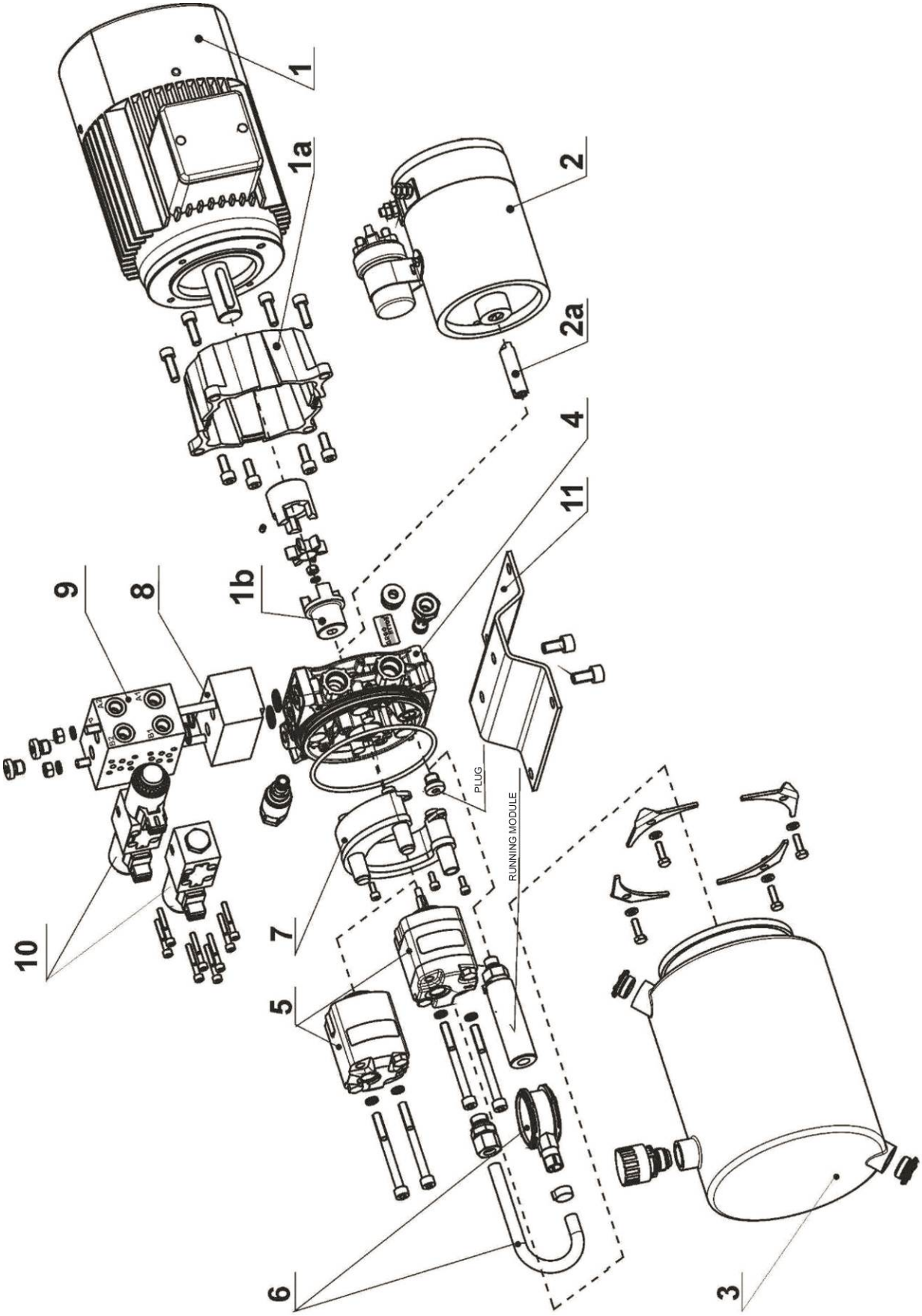
tab: 14-1

14.6 REPLACING THE COUPLING BETWEEN THE ELECTRIC MOTOR AND HYDRAULIC PUMP

After replacing (or lubricating) the coupling, make sure to reassemble the parts back into their correct position.
There should be a clearance of 0.5 – 1 mm between the heading of the coupling (Pos. 1) and the spacer (Pos. 2). Use a slide gauge (Pos. 5) to measure the coupling's position against the motor flange. Install a new coupling or motor into the same position.
If there were no clearance between the coupling's heading and the spacer, the motor shaft (Pos. 3) would push into the pump's rotor (Pos. 4). A spot would be scraped out in the pump's body immediately and the pump would lose its performance (it would be unable to pump pressure oil). The only remedy is then to purchase a new pump.



pic: 14-2



pic: 14-3

14.7 HOW TO SOLVE PROBLEMS-MACHINE

problem	solution
blade motor does not work	3,4,5,9
motor of hydraulic circuit does not work	1,2,3,4,5,9,17
el.panel does not shine	6,7,8,9,
cooling is insufficient	18,19,20,21,24
cut piece is moving or is deformed	22,23

1	plug is not in the socket
2	main switch is out
3	the engine is burned or damaged
4	el.source is not correct
5	gearbox is blocked – nylon clutch, wheels of the gear box, shaft seating
6	fuses in a primary circuit
7	fuses in a control panel
8	transformer is damaged or burned
9	.connection of the suplying cable
18	damaged hydraulic valves
19	filters for coolant must be cleaned or changed
20	coolant pump does not work
21	the tank is empty or dirty
22	excessive movement of the arm towards the cut
23	the vice is not clamped properly, the material is not clamped well
24	by pressing button Lubricant off the coolant pump is off

tab: 14-2

15. CLOSING

Contact our service department to set up an appointment for service and maintenance on your machine. For Sales, Parts, and Service, call 1-888-362-5572.
For a complete machine inspection, schedule a service appointment with a DoALL service technician.
For additional information when the customer elects to review the CE Mark Declaration of Conformity for the machine and other certificates, visit the official DoALL website at: www.dosawing.com.

DoALL