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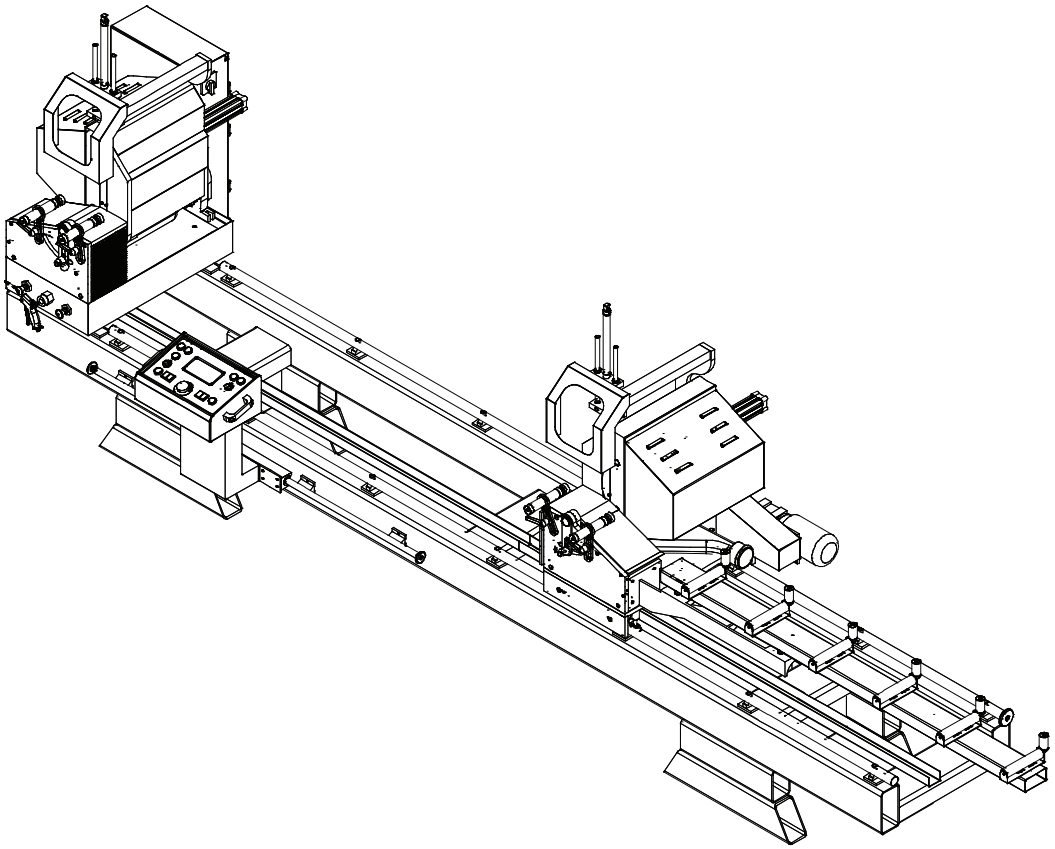
Certified System
Quality
ISO 9001

PRODUCT AND MAINTENANCE MANUAL

AUTOMATIC DOUBLE HEAD CUTTING SAW

Model No. TNF-113



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1. INTRODUCTION

We congratulate you on acquisition of the high-quality equipment. Undoubtedly, you have made a correct and well-founded choice, production of our company is the highly reliable product corresponding to the European quality standards. The equipment is simple in usage, has high consumer properties and will serve you long.

User instruction contains the manufacturer states principles of work and machine use. Each operator, beginning to work on the machine should familiarise attentively with the instruction and understand it.

At correct operation and observance requests of the present instruction the manufacturer guarantees working capacity of the machine during a warranty period.

MANUFACTURER:

BROBO GROUP

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Probably that some functional features of the machine are not reflected in the given document.

Conformity of the information containing in the given document is checked by us. Nevertheless some divergences are possible and complete conformity of the validity is not guaranteed.

The manufacturer reserves the right on production and instruction change.

2. SAFETY APPLICATIONS

1. It is forbidden to use machine to any person, except the operator.
2. Start operation only at complete reliance that you have familiarized and have understood with designations and the definitions, concerning safety.
3. It is forbidden to work and execute operations on the machine for operator who has not familiarized with the given instruction,
4. Acquaintance and understanding of the given instruction has importance for prevention of aggrieving to the operator, third persons, animal, to environment and the machine.

DO NOT MAINTAIN THE MACHINE WITHOUT OBSERVANCE OF THE ABOVE-STATED ITEMS AS SUCH OPERATION OF THE MACHINE IS UNEQUIVOCALLY DANGEROUS!

2.1 DESCRIPTION OF THE SYMBOLS USED IN THE INSTRUCTION

	Instructions on the data given for the purpose of acquaintance with the machine.
	Instructions on necessity of familiarity with a management before machine tool operation.
	Instructions on safety conditions which are obligatory for observance by the user for the purpose of the prevention of drawing of a possible damage to the machine.
	Warning of high voltage presence.
	Warning of possible harm to health of the person and of any kinds of time damage.
	Warning of possibility of occurrence of failures with a deadly or traumatic outcome.
	Instructions for work in protective clothes.
	Instructions on necessity of use of ear-phones at work on the machine.
	Instructions on necessity of use of goggles at work on the machine.
	Instructions on necessity of use of gloves at work on the machine tool.
	Warning about possible trauma receptions at hands clamping.
	Prohibiting sign. It is forbidden to touch. Dangerous.
	Warning of performance of necessary measures before the beginning of service of the equipment.
	Warning of heat presence.
	Attention! Danger of a clamp!

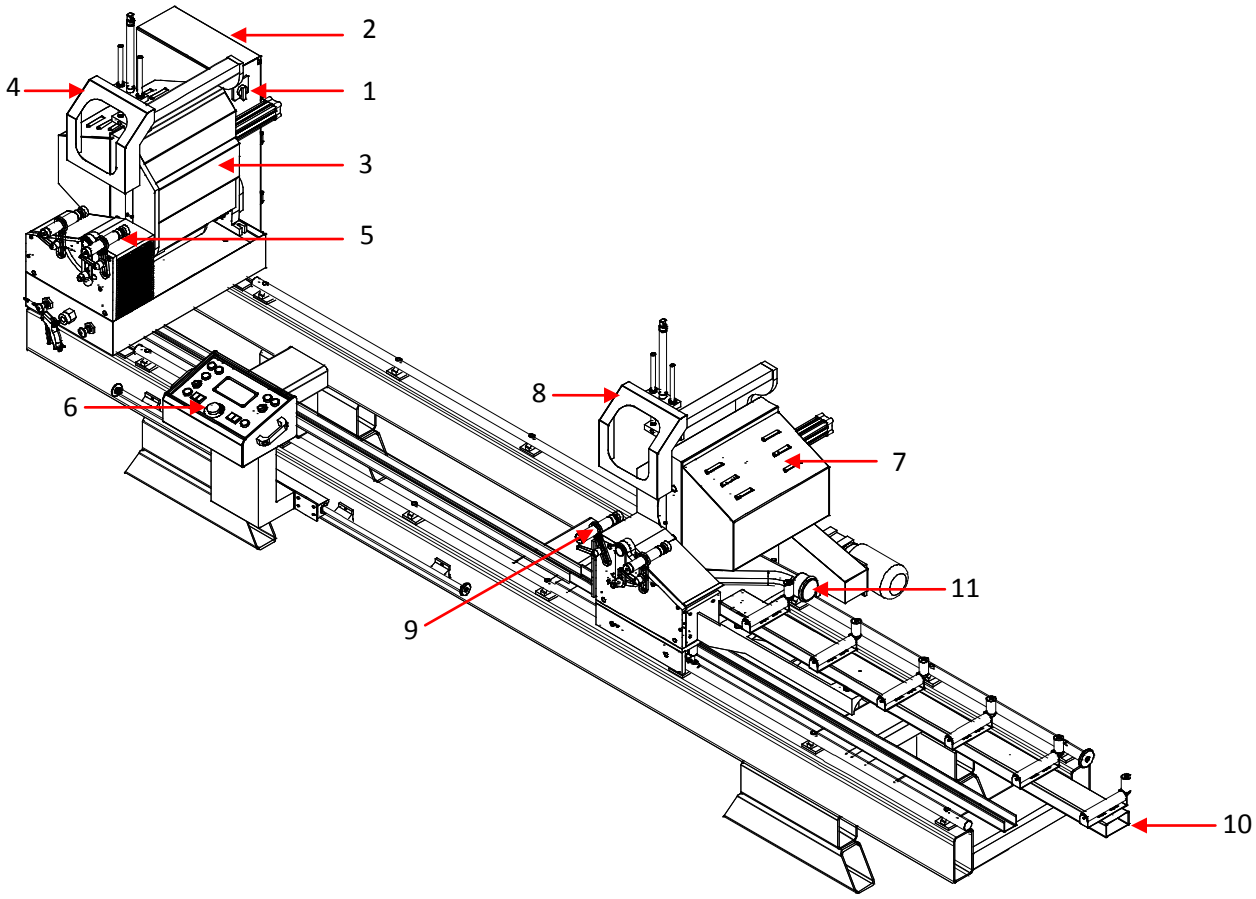
2.2 SAFETY INSTRUCTIONS

	ATTENTION! Read the instruction and familiarize with all rules and positions.
	Keep the instruction in a reliable place. The instruction should be near at hand, for consultations in an operating time on care of the equipment.
	The expert performing works on installation of the machine tool, is obliged to study the given instruction attentively.
	It is forbidden to carry out repair at occurrence of failure of the machine for operator, failure should be eliminated by the expert of service department.
	The machine and its details are necessary for protecting from every possible external influences. Carry out the regular control of filter-regulator and fill up oil level at its insufficiency.
	It is forbidden to be under the machine during loading and unloading.
	It is necessary to provide machine grounding. It is forbidden to maintain the machine tool without grounding!
	At work on the machine it is necessary to use goggles.
	Not to be treated to action of natural noise of the machine it is necessary to use ear-phones.
	At replacement of disks it is necessary to use gloves.
	It is necessary to use only original spare parts.
	Make thrifty use of the control panel, do not suppose any mechanical damages.
	Equipment start is carried out by the expert of service department. It is forbidden to suppose any other person to start.
	Equipment repair should be carried out only by experts of the service centre and only with use of the original spare details and parts.
	Use the equipment for other purposes which distinct from are the provided scope can lead to dangerous situations.
	Be always attentive and watch that you do, do not start thoughtlessly work with the machine. Machine operation is forbidden if you have got tired or be under the influence of narcotic substances, alcohol or medicines. The minute carelessness at equipment operation can lead to serious traumas or mutilations.
	Operation of the machine with the damaged network cable is forbidden. It is necessary to immediately replace the damaged cable with the new.
	Use special working clothes. Don't wear spacious subjects of clothes or an ornament. Preserve hair, clothes and gloves from mobile knots and details. Free clothes, ornaments or long hair can be tightened by moving parts of machine.
	Before the repair or service beginning it is necessary to disconnect a supply of electricity and compressed air from the machine.
	It is forbidden to remove the protective details which are on the machine. It is necessary to remember that protective details of the equipment are established for the purpose of safety at work on the machine.

	Avoid clamping hands between the cylinders intended for fixing of a cross-section and moving parts of the equipment.
	Do not open safety covers to a machine blackout.
	Only one operator should work on the machine.
	The machine should pass regular service and adjustment. Do not use the machine tool in faulty condition.
	Do not use the machine tool in wet and damp premises.
	It is forbidden to touch a heating plate of the working machine.
	Attention! Do not stay between moving cutting heads.

3. PRODUCT DESCRIPTION

3.1 GENERAL VIEW



Picture 3.1-1 General view

1. Power switch
2. Electrical panel
3. Left stable head. Head № 1.
4. Left head protective cover
5. Pneumatic clamp for left head
6. Control panel
7. Right mobile head. Head № 2.
8. Right head protective cover
9. Pneumatic clamp for right head
10. Conveyor
11. Exhaust pipe

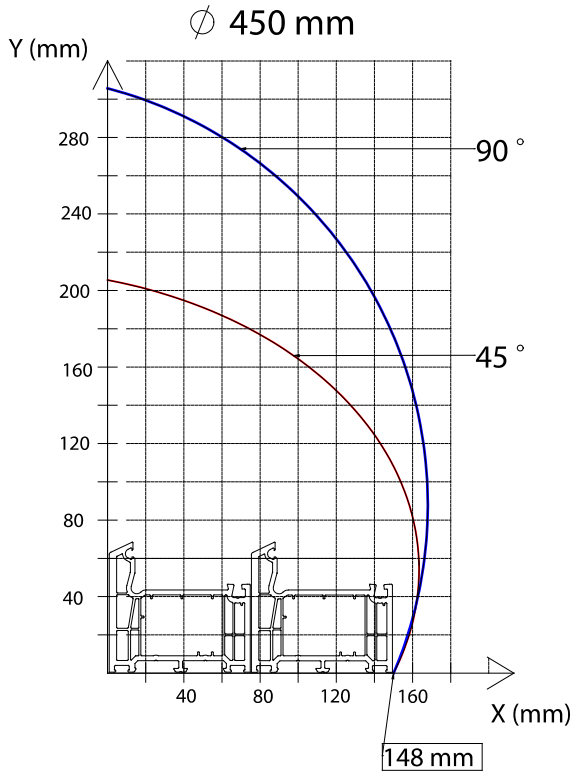
3.2 TECHNICAL DESCRIPTION

- Cutting length size and angle degree are entered from LCD-display on control panel
- Automatic head position for 45° and 90 °degrees, easy adjustment for intermediate angles
- Possibility of manual length size adjustment
- Magnetic rule length control system
- Multilanguage support
- Repetitive cut program, angle cut – variable and fixed length – fixed angle
- Extra length cut program (over 4 mt.)
- Horizontal pneumatic clamping kit
- Industrial dust exhaust
- Bearing conveyor for the movable head

3.3 TECHNICAL FEATURES

Voltage	: 380 V
Frequency	: 50/60 Hz
Total power	: 3 kW
Air pressure	: 6–8 Bar
Air consumption	: 30 lt./min.
Minimum cutting length	: 460 mm
Maximum cutting length	: 4060 mm
Minimum cutting width	: 130 mm
Maximum cutting height at 90°	: 170 mm
Maximum cutting height at 45°	: 120 mm
Width	: 1600 mm
Length	: 5200 mm
Height	: 2000 mm
Weight	: 910 kg

3.4 CUTTING DIAGRAMM



4. INSTALLATION

- The equipment has passed working tests of all mechanic, electric and pneumatic units at factory. All materials and the spare parts have passed the complete careful control before delivery in a transport company.
- At equipment acceptance make the control on availability/absence of any transport damages.

4.1 TRANSPORTATION INSTRUCTIONS

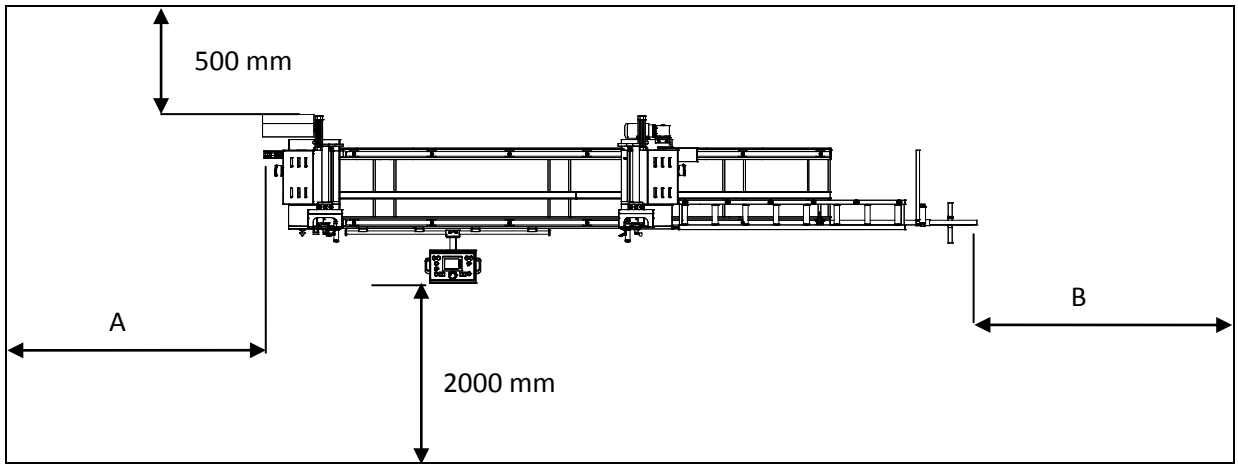
- The machine should be standing upright and positioned centrally on top of a wooden pallet. While the machine is situated on the pallet, position the forklift arms under the pallet between the runners, keeping in mind that the machine is head heavy. Move the entire unit to an accessible area as close as possible to the final location.
- Carefully remove the packing frame surrounding the saw unit. Once completed, proceed by elevating the machine away from the pallet base using a sling harness wrapped around the cutting head of the saw. Ensure that the floor is as level as possible before finally positioning the machine to the desired location.

It is forbidden to be under the machine during loading and unloading.

1. At loading to forklift it is necessary to avoid damage of cables, cylinders, hoses, filter-regulator and control panels.
2. Means for moving should have dimensions corresponding for the machine.
3. Avoid blows of the machine tool in the course of moving.
4. Machine moving should be performed by a forklift.

4.2 REQUIRED WORKING AREA

- For high-efficiency work of the machine it is recommended to place the machine in workshop with maintenance of indicators of the distances indicated by the manufacturer. A – B the placings shown on the plan, it is necessary to keep plots the free. The minimum recommended distance from the uppermost point of the machine tool to a ceiling constitutes 2 mt.



Picture 4.2-1 Required Working Area

4.3 INSTALLATION SETTINGS

	► Care should be taken for the floor to be straight and sound the machine will be positioned. Note that there will be sufficient distance around the machine in order to work safely, for easy servicing and maneuvers.
	► The machine should be scaled. The machine that is well scaled will reduce the vibration, working will be easier and the production and the quality will also increase.
	► Pressure of air should constitute 6-8 Bar. Usage of a thick hose interferes with air pressure decrease on all length of a line. Besides, it is necessary to avoid hit of moisture for the prevention of breakage of valves and pneumocylinders. ► **Warning: if there is no air dryer in the pneumatic system connection of machine, parts of the pneumatic group are not subject to warranty service!**
	► The electrical connections of the machine should be done by the service staff or qualified electrician.
	► The used electric switchboard should correspond to norms of safety and electric standards. The voltage stabilizer should be connected to a line of a supply of electricity.
	► The grounding contour prevents aggrieving to the user by wandering currents, for this reason the correct system and reliability of a contour of grounding has special importance. ► Grounding line should be connected to the machine body.
	► Voltage changes, its increase and decrease is harmful and dangerous to the equipment. To prevent these events use a voltage stabilizer. Otherwise the manufacturer does not bear any responsibility for possible malfunctions. ► **Warning: if there is no voltage stabilizer in electric system connection of the machine, parts of electric and pneumatic are not subject to warranty service!**
	► In the machine used a cable with 5 pins (3 phases + 1 neutral + 1 grounding), corresponding to IP 44 standards and the power of machine. It is necessary to ensure that similar standards for plug sockets.

4.4 FIRST CONNECTION

1. Remove the package.
2. Locate machine on an even horizotal place.
3. Connect electricity (380 V).
4. Checks the sequence of phases (3 phases + 1 neutral + 1 grounding).
5. Connect air pressure (6-8 bar).
6. Check oil level in filter-regulator.

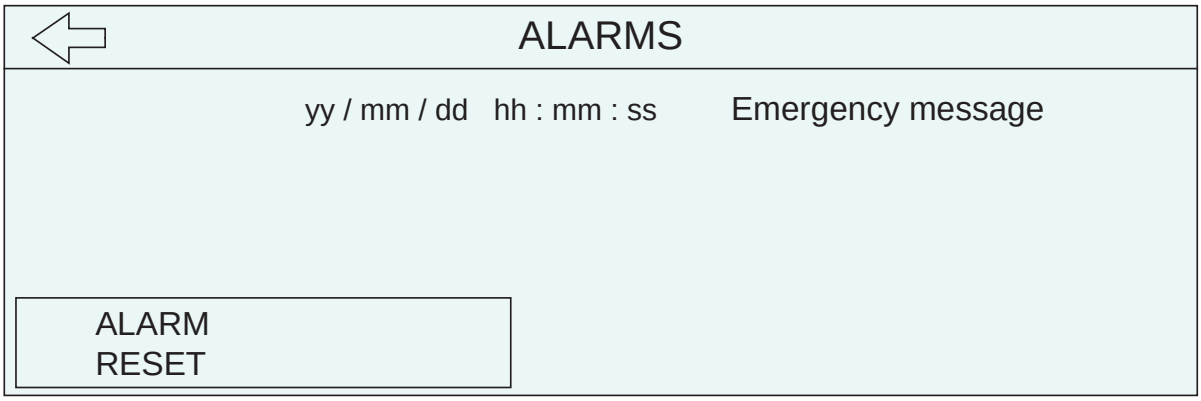
► The first connection should be made by service team. The manufacturer does not bear responsibility for damages incurred by connection the machine by not service team.

First connection by service team:

- Eliminate failures occured during transportation.
- Check the uniformity of machine installation.
- Check the electrical and air connections.
- Switch on the machine
- Instruct the operator of the machine
- Give instruction on the safety and maintenance of machine

Note: If in new connection machine does not work, then the cause could be the inconsistency of phases in the electrical network, so that motors does not rotate in the opposite direction, the machine is protected by a special control-phase relay. Changes of phases in the connection socket should be performed by service or qualified electrician.

► When phase sequence incorrect or the inclusion of an emergency stop, the emergency stop message displays on the screen. To return to the main menu, first you must disconnect the emergency stop or reverse phases and then push the "Reset".



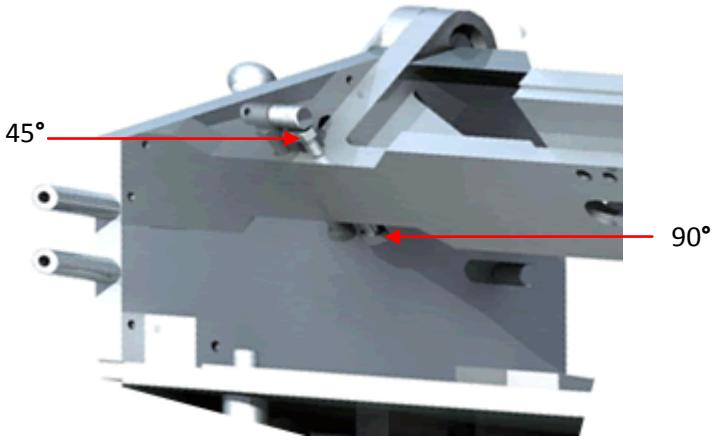
5. PRINCIPLES OF WORK

5.1 MAIN SETTINGS

- All necessary factory options are performed on the equipment. At wear of mechanical units or details, at change of profile system it is necessary to change some options. Necessary options are given below.

5.1.1 DEGREE CALIBRATION 45° - 90°

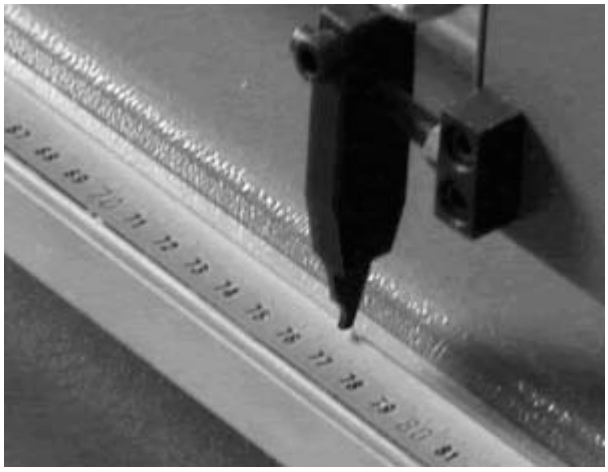
- The angle degree is automatically given by the operator via the control panel with time, depending on the operation of the equipment may stray from the original settings. To set the initial configuration needed to adjust the screws on the inside of the plate head.



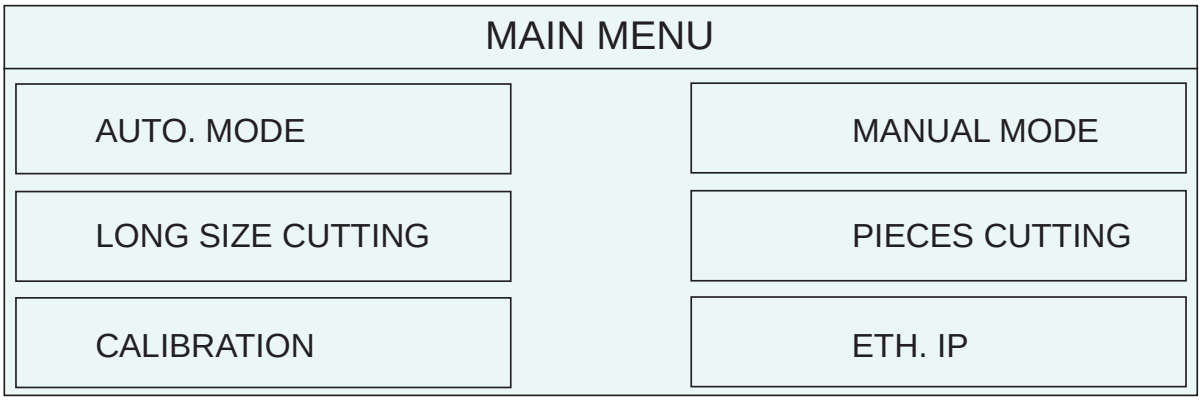
Picture 5.1-1 Degree calibration

5.1.2 MEASURE CALIBRATION

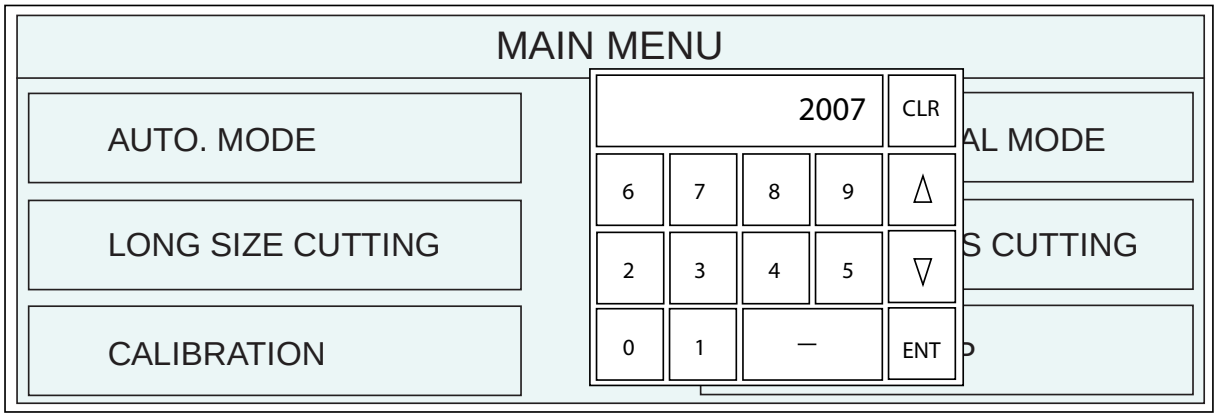
- Measure the profile after cutting. Set the dimension you get on the ruler by the pointer, weakening its attachment.



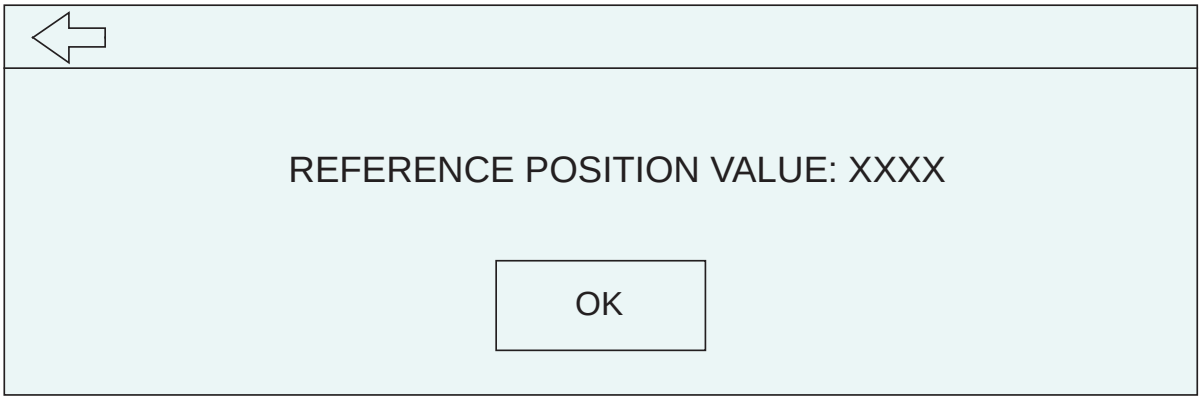
► In Main Menu push “Calibration”,



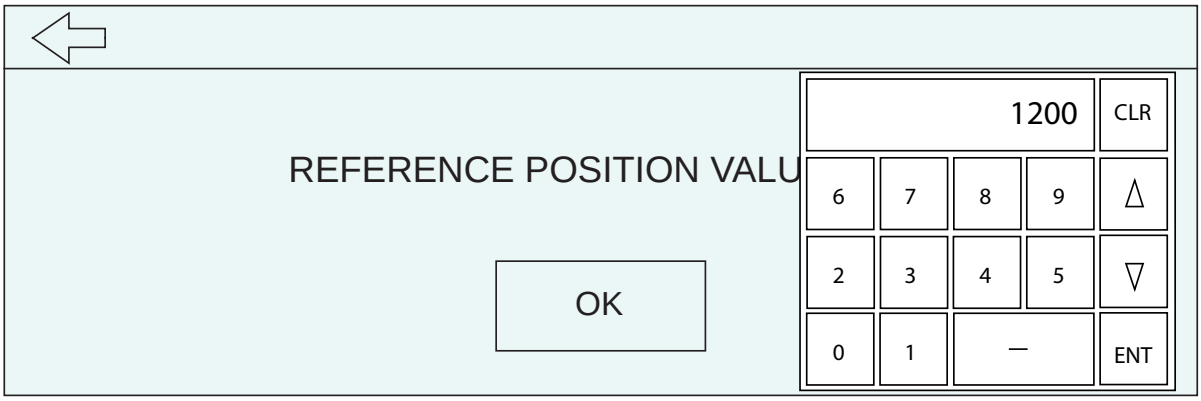
► Enter the password: 2007, pres “Enter”,



► In new window enter the reference value (the value of real dimension you set by pointer)



► Enter size and then push ENT, use CLR if you made mistake.

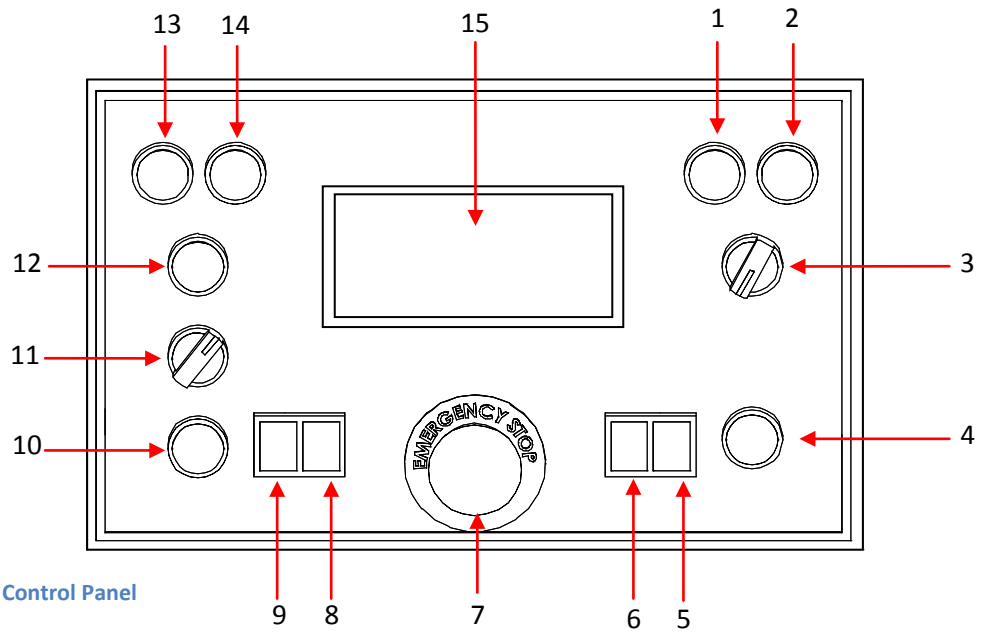


► Save value by pushing “OK”. Push back arrow to go main screen.

Attention! To prevent measure errors always use same tape-measure.

5.2 MACHINE CONTROL ELEMENTS

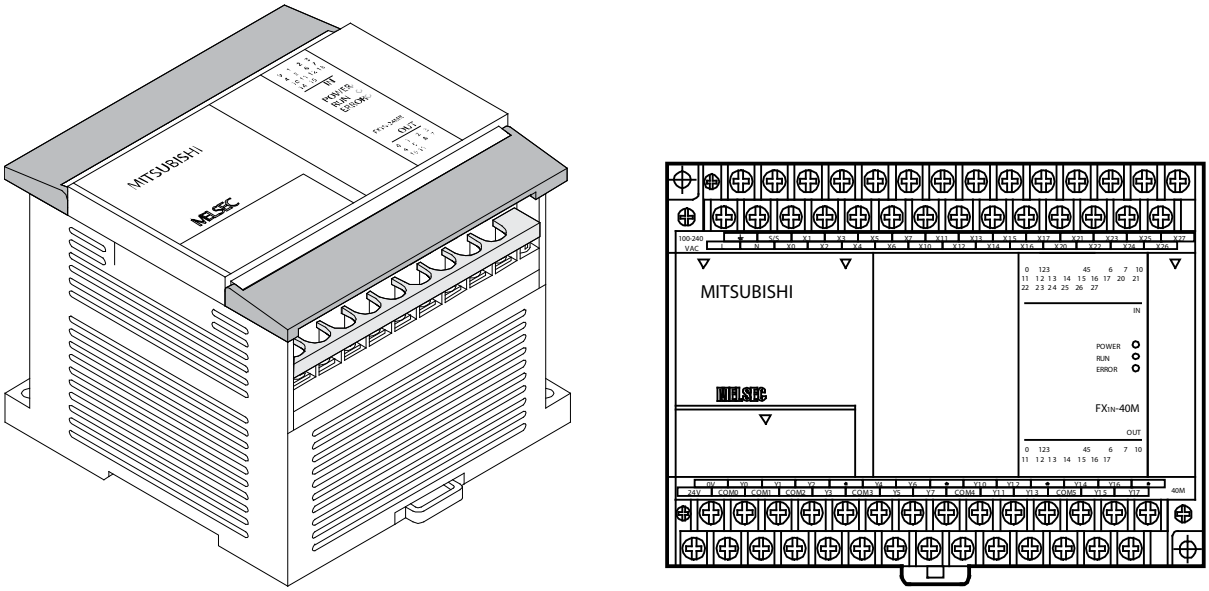
CONTROL PANEL



Picture 5.2-1 Control Panel

1. Button “Clamp”
2. Button “Pull out”
3. Switch “ Work 1 / 2 head”
4. Button “Start” cutting
5. Button “Start” Head № 2 motor
6. Button “Stop” Head № 2 motor
7. Emergency Stop
8. Button “Stop” Head № 1 motor
9. Button “Start” Head № 1 motor
10. Button “Start” cutting
11. Switch “Fixation”
12. Fast move buton. Use together with buton No. 13 or 14
13. Button “Backward”
14. Button “Forward”
15. Display

5.3 PLC



Picture 5.3-1 PLC MITSUBISHI General view

A programmable logic controller (PLC) or programmable controller is a digital computer used for automation of electromechanical processes.

At machine power ON, on PLC IN (Input)section following light-emitting diodes should be ON: 5, 7, 11, 15, 16. If any of these light-emitting diodes are not ON, the machine will not function.

PLC SIGNALS DEFINITIONS

INPUT (Input signals)

- Input X0 ON when phase A has signal
- Input X1 ON when phase B has signal
- Input X2 ON when phase C has signal
- Input X4 ON when cutting “Start” button pushed
- Input X5 OFF when Head № 1 motor’s “Stop” button pushed
- Input X6 ON when Head № 1 motor’s “Start” button pushed
- Input X7 OFF when Head № 2 motor’s “Stop” button pushed
- Input X10 ON when Head № 2 motor’s “Start” button pushed
- Input X11 OFF when “Pull out” button pushed
- Input X12 ON when “Clamp” button is pushed
- Input X13 ON when head selection 1 / 2 head occurs
- Input X14 OFF when head fixation occurs
- Input X15 OFF when “Emegency stop”button ON
- Input X16 ON when Head № 1 cylinder’s sensor has signal
- Input X17 ON when thermal relay has overload
- Input X20 ON when Head № 2 cylinder’s sensor has signal
- Input X21 ON when “Forward” button pushed
- Input X22 ON when “Backward” button pushed
- Input X23 ON when “Fast” button pushed

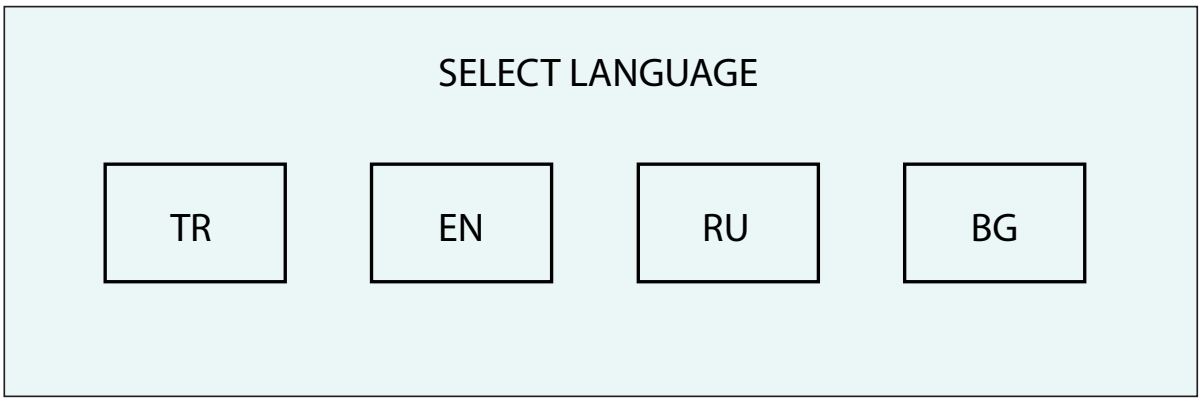
OUTPUT (Output signals)

- Output Y0 ON when Head № 2 moves forward
- Output Y1 ON when Head № 2 moves backward
- Output Y2 ON when Head № 2 moves forward fast
- Output Y3 ON when Head № 1 motor is ON
- Output Y4 ON when Head № 2 motor is ON
- Output Y5 ON when clamp valve Works
- Output Y6 ON when Head № 1 valve works
- Output Y7 ON when cuttıng operation on Head № 1 occurs
- Output Y10 ON when cuttıng operation on Head № 2 occurs
- Output Y11 ON when Head № 1 motor lamp is ON
- Output Y12 ON when Head № 2 motor lamp is ON
- Output Y13 ON when Head № 2 clamp valve is ON
- Output Y14 ON when Head № 1 adjusted at 45°
- Output Y15 ON when Head № 1 adjusted at 90°
- Output Y16 ON when Head № 2 adjusted at 45°
- Output Y17 ON when Head № 2 adjusted at 90°

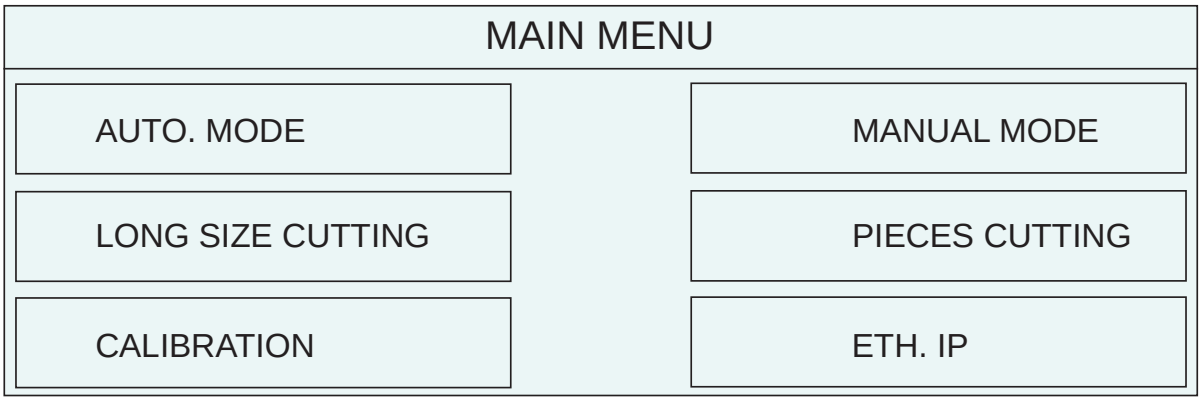
Before the operation starts it is necessary to be convinced of absence people (service staff, etc.) near to the machine which can receive damages at movement of units of the machine; the operator should be attentive for the purpose of protection of health of persons which can be near to it, also it is necessary to warn surround persons about machine operation.

5.4 OPERATION OF THE MACHINE

► At power supply feed on the machine display appears screen with a language selection. Select language. (EN - English)



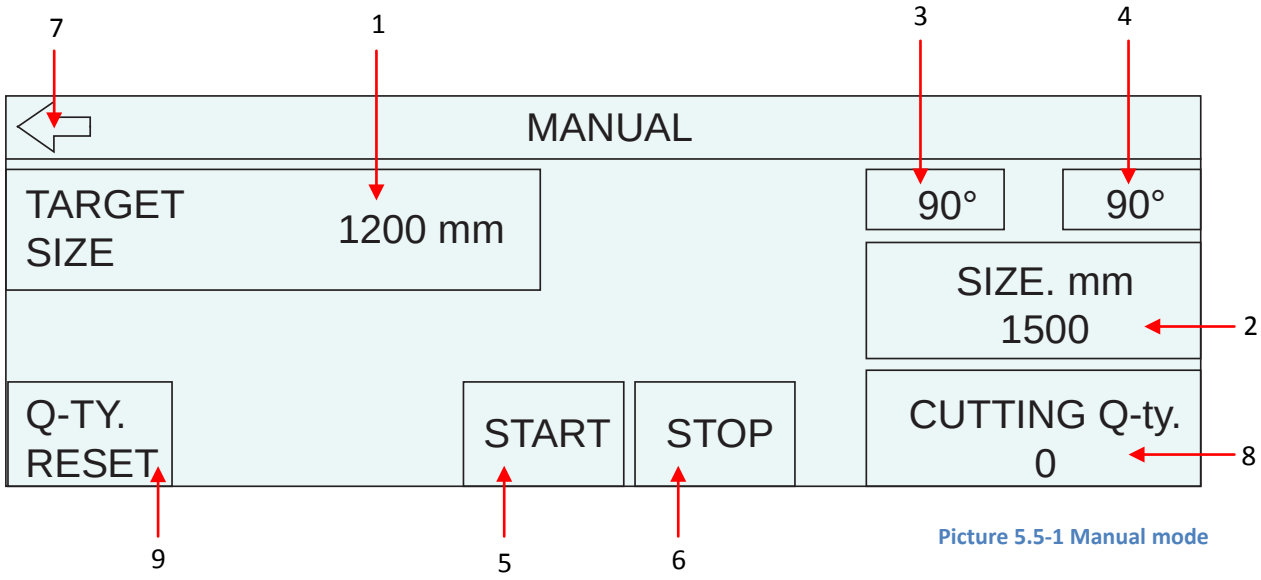
► After language has been selected main menu screen appears



► Main menu contains 6 sub-menu:

- Manual mode
- Automatic mode
- Long size cutting mode (over 4000 mm)
- Pieces cutting mode
- Calibration
- Ethernet IP

5.5 MANUAL MODE



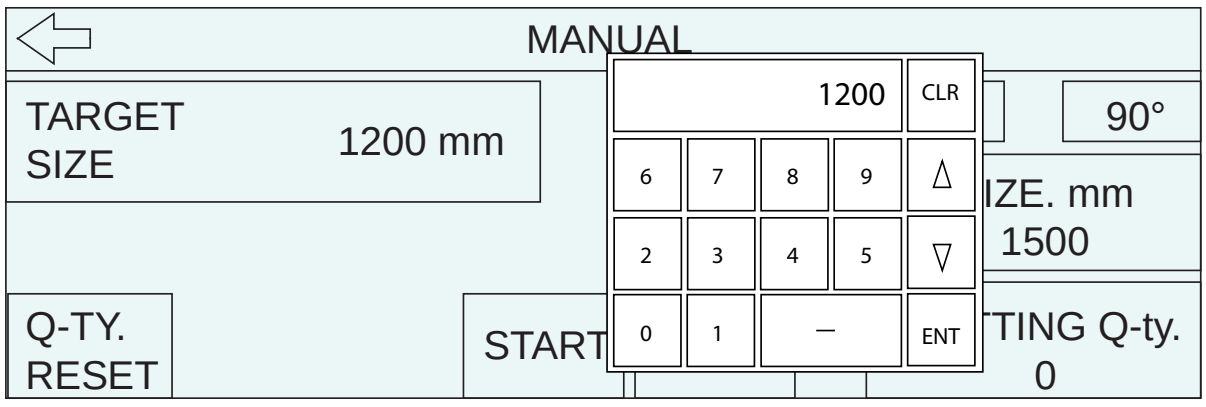
Picture 5.5-1 Manual mode

1. Target. Size needed for cutting.
2. Size. Actual size on machine.
3. Head № 1 degree position.
4. Head № 2 degree position.
5. Start. Sets Head № 2 on the target size.
6. Stop. Cancels Start command.
7. “Back” arrow. Goes to main menu.
8. Cutting quantity.
9. Cutting quantity reset.

WORKING PRINCIPLE

► The principle of operation in the given mode consists in data entry (size, angle) through the display and subsequent cutting.

1. Push on Target value to enter the cutting size. Size menu will appear. Enter required size and push ENT, if you entered incorrect puch CLR to delete.

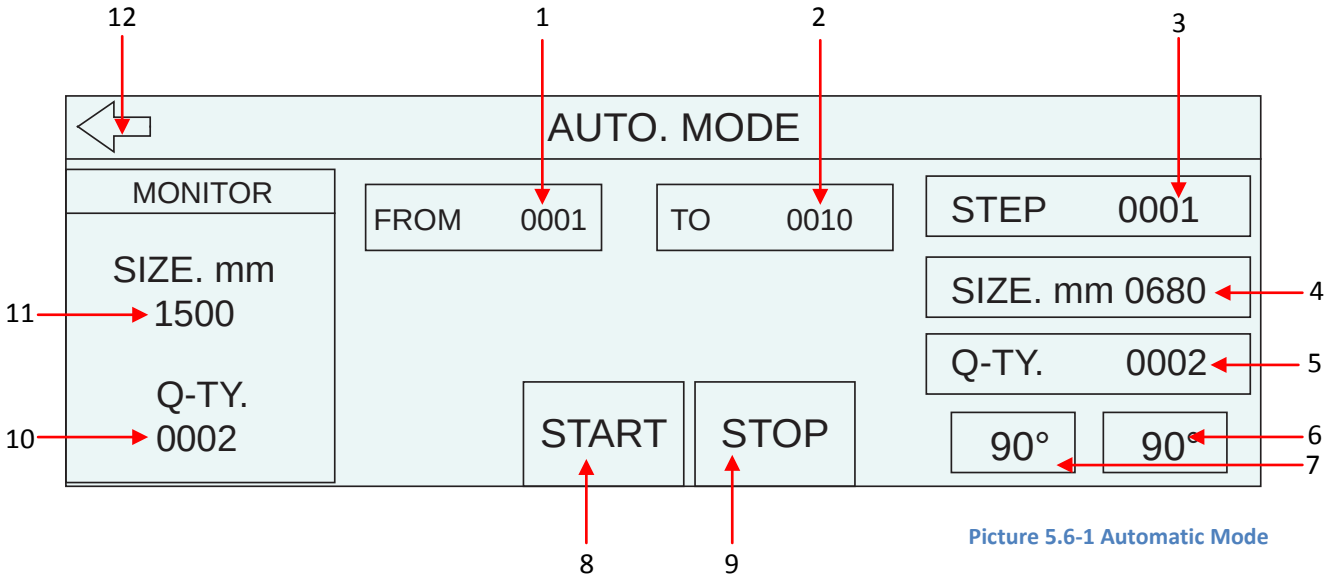


1. Set the angle for stable and Head № 2s by pushing angle value (3) and (4). Head will automatically set on 45° or 90°. To set intermediate degree see
2. Push “Start”. Head № 2 automatically goes to set size. Head automatically will be fixed and fixation button will be lighted.
3. Put the profile for cutting on the plate.
4. Push “Clamp” (1). Pneumatic cylinders will clamp the profile. If clamping is incorrect push “Pull out” (2).
5. Start the motors for right (5) and left (9) heads.
6. At the same time push and hold cutting “Start”buttons (4) and (10). Pneumatic covers go down, cutting blades go out and profile cutting happens.
7. After cutting is finished leave the “Start” buttons (4) and (10). Cutting blades go back, pneumatic covers go up, pneumatic cylinders pull out.
8. Push “Stop” buttons to swith off motors of stable and mobile heads (6) and (8)

► In single head cutting, just Head № 1 is working. To enable single cutting turn the (3) button to 1 head mode.

Attention! The “Fixation” switch should be in active position. In active position the button is lit continuously green.

5.6 AUTOMATIC MODE



Picture 5.6-1 Automatic Mode

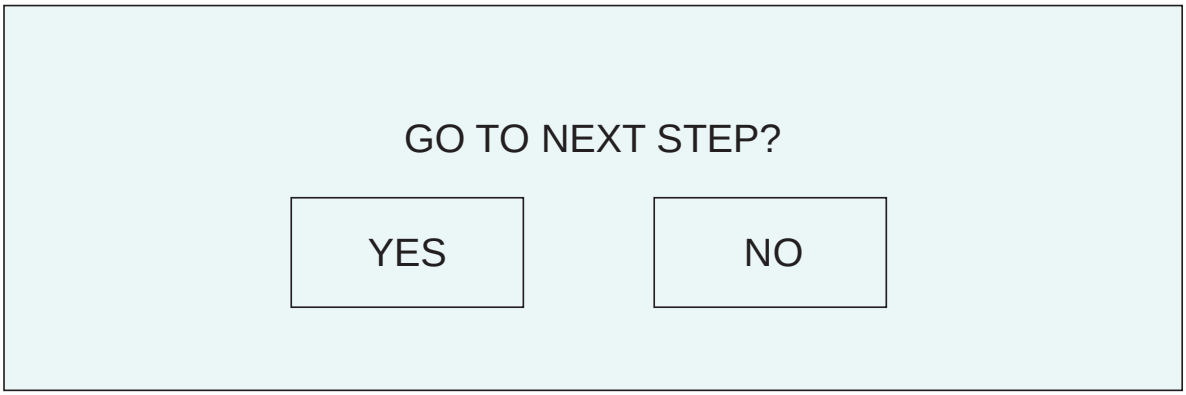
1. From. Initial cutting step.
2. End. final cutting step.
3. Step number.
4. Step size.
5. Step cutting quantity.
6. Head № 2 angle position.
7. Head № 1 angle position.
8. “Start”. Programm start button.
9. “Stop”. Programm stop button.
10. Cutting quantity.
11. Length. Actual size on machine.
12. “Back” arrow. Goes to main menu.

WORKING PRINCIPLE

► Working principle of the given mode consists in automatic cutting of set steps.

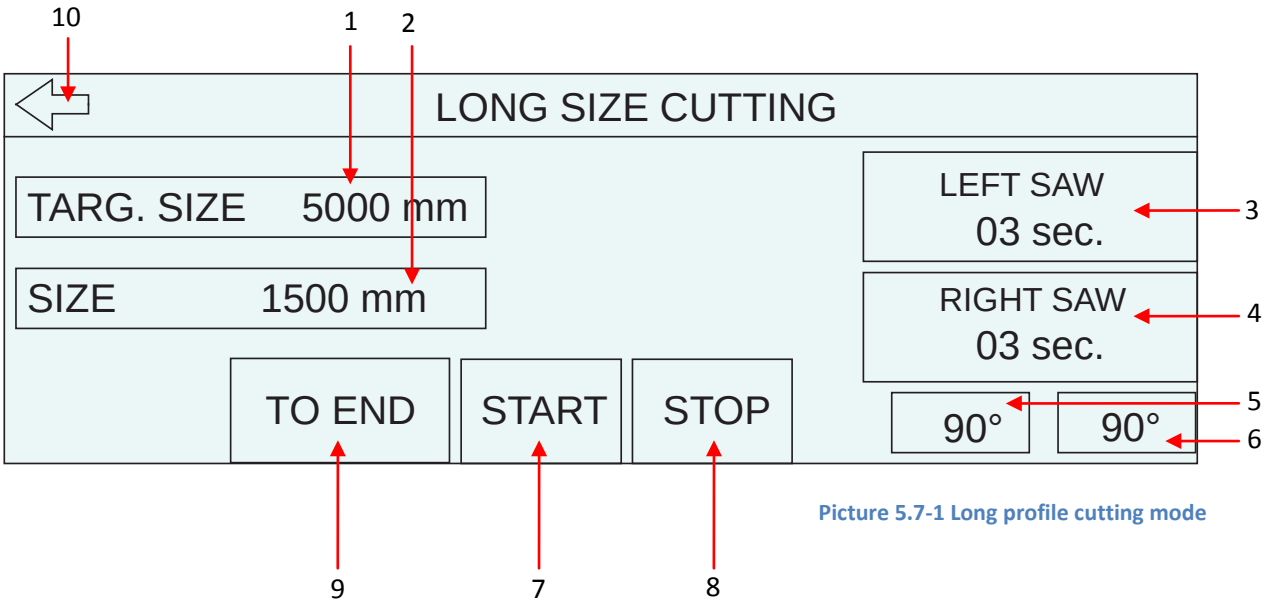
1. Select step number (3).
   a. Enter step size (4).
   b. Enter cutting quantity (5).
   c. Enter angle position for both heads (7) and (6).
2. Enter parameters for next steps.
   Max. Step number: 2299
3. Enter initial (1) and final cutting steps (2).
4. Push “Start”. Following operations will be performed automatically:
   Head № 2 on required size.
   Heads № 1 & 2 take the angle positions for hat step.
   Head № 2 fixates and fixation button lamp turns on.
5. Put the profile for cutting on the plate.
6. Push “Clamp” (1). Pneumatic cylinders will clamp the profile. If clamping is incorrect push “Pull out” (2).

7. Start the motors for right (5) and left (9) heads.
8. At the same time push and hold cutting “Start”buttons (4) and (10). Pneumatic covers go down, cutting blades go out and profile cutting happens.
9. After cutting is finished leave the “Start” buttons (4) and (10). Cutting blades go back, pneumatic covers go up, pneumatic cylinders pull out.
10. Repeat steps from 5 to 9 in accordance with a specified number of cuttings for performed step.
11. After step is finished – “Go to next step?” message appears. Push “Yes” and Head №2 will go to the next step size.



12. After final step is finished – “Steps finished” message appears. Push “OK” it will turn back to automatic mode menu.

5.7 LONG PROFILE CUTTING over 4000 mm



Picture 5.7-1 Long profile cutting mode

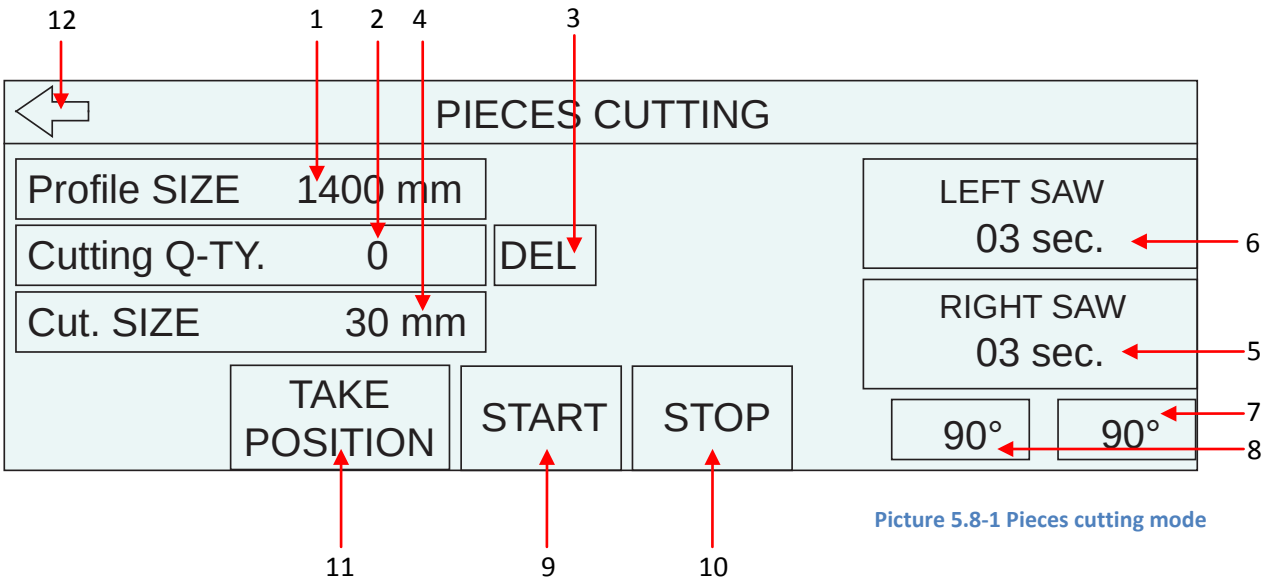
1. Target size. Cutting size value.
2. Size. Actual position size value.
3. Time interval for saw output - Head №1.
4. Time interval for saw output - Head №2.
5. Angle position for Head №1.
6. Angle position for Head №2.
7. “Start”. Cutting start command.
8. “Stop”. Cutting stop command.
9. “To End” Program Start command
10. Arrow “Back”. To enter main menu.

WORKING PRINCIPLE

► The principle of given operation mode consists in automatic cutting of profile which length over 4000 mm. Basically it is used for aluminium profiles cutting.

1. Enter the size you will finally obtain (1).
2. Enter time intervals for saw output (3) & (4).
   Time intervals could be changed depends on saw output speed, width of cutting material (profile).
3. Enter angle position for both heads (5) & (6). Heads automatically set on 45° or 90°.
4. Push “To End”. Head №2 will go the last point on machine.
5. Put profile for cutting on plate of machine.
6. Open motors on both heads (5) and (9).
7. Push “Start” (7). Automatic program starts:
   Pneumatic cylinders clamp profile. Head №1 makes cutting, after that pneumatic cylinder on Head №1 pulls out and Head №2 starts to slide profile to the left on the necessary size. Pneumatic cylinders on Head №1 clamp, on Head №2 pull out and Head №2 will move on necessary size, after that pneumatic cylinders on Head №2 will clamp and cuttion operation on Head №2 will be performed. After that all pneumatic cylinders will pull out. Operation is finished.

5.8 PIECES CUTTING



Picture 5.8-1 Pieces cutting mode

1. Size of the profile before cutting.
2. Quantity of cutting.
3. Delete quantity of cutting.
4. Required piece size.
5. Time interval for saw output - Head №1.
6. Time interval for saw output - Head №2.
7. Angle position for Head №1.
8. Angle position for Head №2.
9. “Start”. Cutting start command.
10. “Stop”. Cutting stop command.
11. “Take Position”. Program Start command.
12. Arrow “Back”. To enter main menu.

WORKING PRINCIPLE

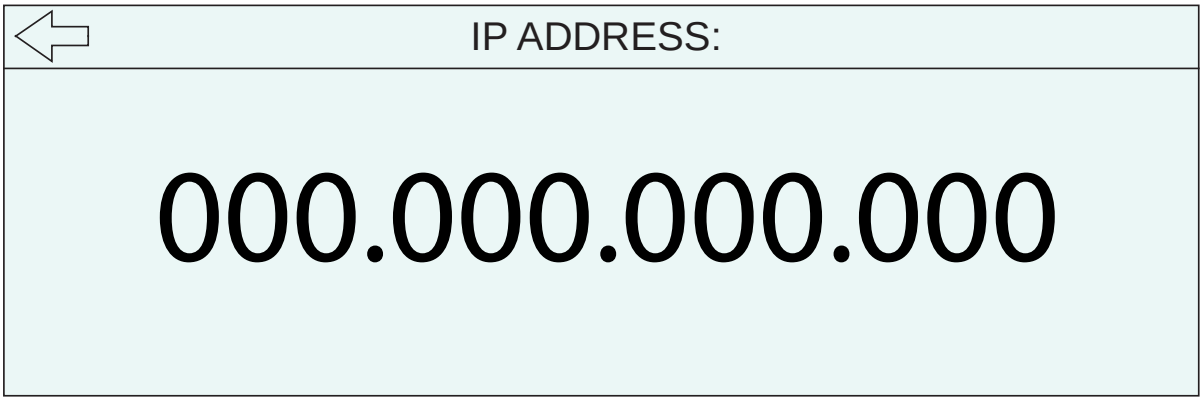
► The principle of given operation mode consists in automatic cutting of profile on equal parts. Basically it is used for aluminium profile corner buffer joinery.

1. Enter size of profile before cutting (1).
2. Enter reqired pieces size (4).
3. Enter time intervals for saw output (5) & (6).
   Time intervals could be changed depends on saw output speed, width of cutting material (profile).
4. Enter angle position for both heads (8) & (7). Heads automatically set on 45° or 90°.
5. Push “Take Position”. Head №2 automatically will set on given size (1).
6. Put the profile for cutting on plate of machine.
7. Switch ON motors for Head №2 (5) and Head №1 (9).
8. Push on “Start” (9). Automatic program starts:
   Pneumatic cylinders clamlps the profile.
   Head № 1 &2 cut the edges of profile from both sides.
   Pneumatic cylinder of Head №1 pulls out, Head №2 slides profile to the left side for required size (4).
   Pneumatic cylinder of Head №1 clamps and left side cutting happens at the same time

pneumatic cylinder of Head №2 pulls out and Head №2 moves left side for required size.
While Head №2 is cutting, pneumatic cylinder of Head №1 pulls out and Head №2 moves left and slides profile for required size.
Operation is repeating till profile obtains minimum cutting size.

5.9 ETH. IP (ETHERNET IP)

► This function is used to give to machine the IP address to establish connection with PC.

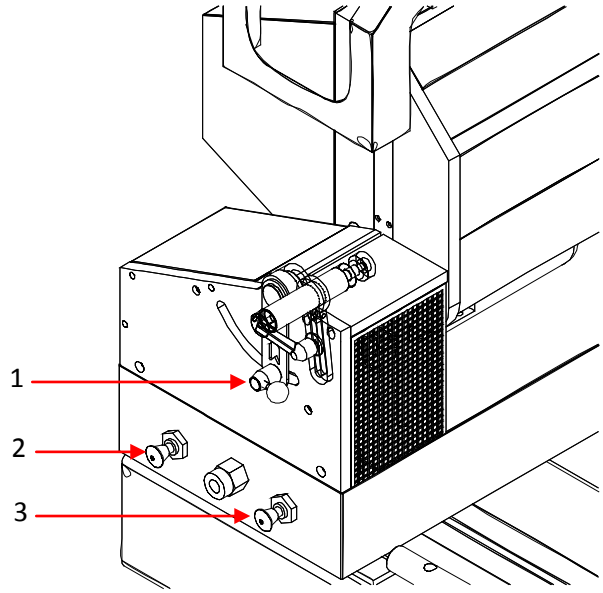


Picture 5.9-1 Ethernet IP mode

► After IP address is entered, turn OFF and then turn ON the machine – IP address will be established.

5.10 INTERMEDIATE DEGREE SETTING

1. Left head fixation handle.
2. Mechanic valve for left head.
3. Mechanic valve for right head.



Picture 5.10-1 Intermediate degree setting

► Intermediate angle degree setting between 45° & 90° performs in following way

1. Release the air pressure by switching OFF valves on left head front part.
2. Slack fastening of the head - turn the fixation handle counter-clockwise.
3. Arrange heads on required degree.
4. Fix the fastening.

Automatic angle degree setting.
To start automatic angle degree setting you should slack fastening of the head and switch ON valves (2) and (3).

6. MAINTENANCE AND THE LUBRICATION OF THE MACHINE

1. All air and electrical energy should be disconnected before maintenance.
2. In order to disconnect the electric energy, set the power switch ''OFF'' position.
3. In order to disconnect the air completely, separate the air input hose from the machine.
4. Perform the cleaning of the machine every day. Clean the daily sawdust. The cleaning can be performed with an air gun.
5. Use only the lubrication products recommended by our factory.
6. Add oil by checking the filter-regulator for its oil level.
7. Electrical and pneumatic panels should be cleaned once a month with air against the dust and sawdust.
8. The dismantling and assembling process of the motor cutter ends should be performed by an expert.
9. If the clamping cylinders do not press the profile, the pressure should be checked from the air lubricator.
10. The machine needs at least 6 bar air pressure. Pressure should be followed.

Daily maintenance

► Clean machine and surround area with compressed area.
► Clean with duster oil, shaves, dust etc.
► Check bladesaw. Must be changed if blunt or saw damage occurs. See page 28 CHANGING THE BLADE.
► Check condensate level in filter-regulator. See page 33 FILTER-REGULATOR.

Weekly maintenance

► Check oil level in filter-regulator. See page 33 FILTER-REGULATOR.
► Check oil feeding. See page 33 FILTER-REGULATOR.

Monthly maintenance

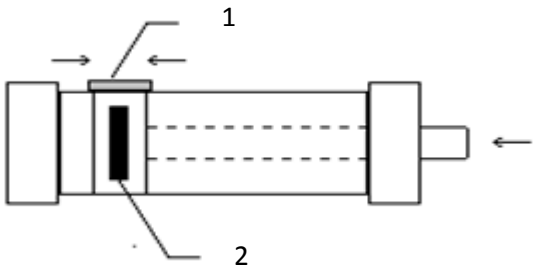
► Check weekly maintenance

6.1 MAINTENANCE TABLE

	Daily	Weekly	Monthly
Clean machine and area from dust, oil etc.	X		
Check the sawblade	X		
Check the oil level in filter-regulator		X	
Check the oil feeding in filter-regulator		X	
Check the condensate level in filter-regulator	X		

6.2 MAGNETIC SENSOR

- There is a magnet inside the pneumatic cylinder and this magnet moves with the piston.
- The magnetic sensor connected to the surface of the piston open its contacts when it is effects by this magnet. If the position of the magnetic sensor changes that is to say it will not contact with the magnet so the signal will not go the PLC and therefore there will not be any action performed.
  In this case the sensor is placed by moving forward or backward slightly in the arrow direction. (the light on the sensor turns on when the magnet contacts with the sensor and the sensor is fixed in that position so the problem will be solved).



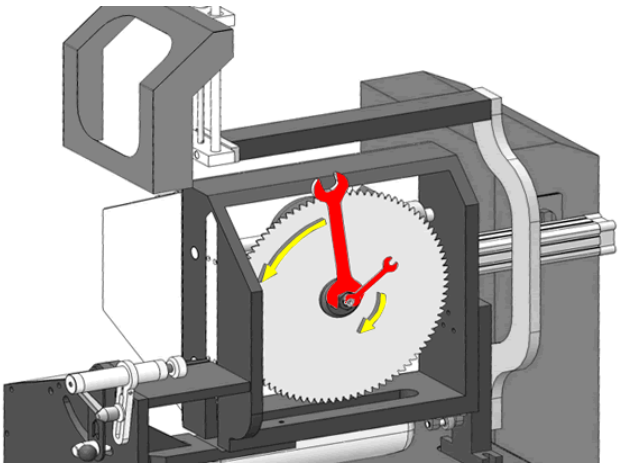
Picture 6.1-1 Sensor adjustment

1. Sensor
2. Piston and magnet

6.3 CHANGING THE BLADE

1. All air and electrical connections should be disconnected.
2. Protective covers must be removed.
3. The nuts on the motor spindle where the saw is installed are must be removed from the saw place by opening in the opposite direction to each others.
4. After the saw is replaced with the new one, the same procedure is reversed.
5. After the saw is replaced the covers are replaced too.

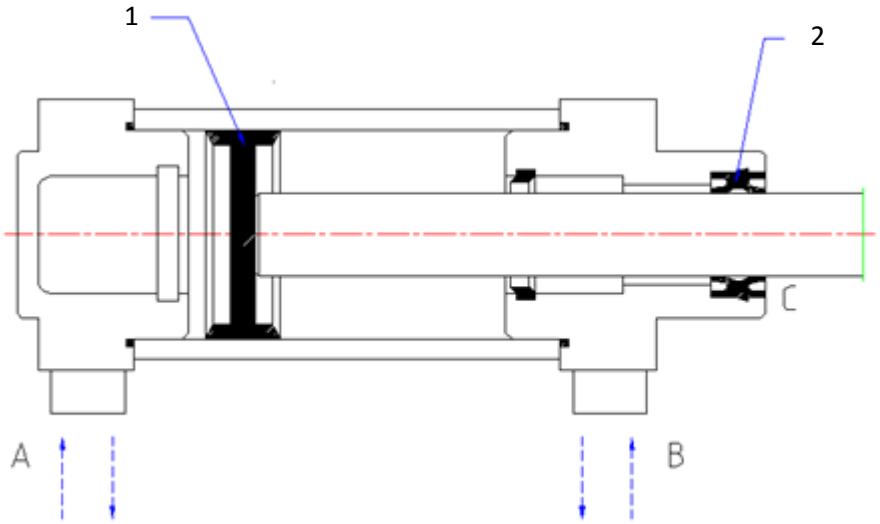
Wear gloves during the saw replacement.



Picture 6.2-1 Blade changing

7. PNEUMATIC ELEMENTS

7.1 VALVE AND CYLINDER CONTROL



Picture 7.1-1 Valve and cylinder control

1. Piston cuff
2. Ring gasket

► If some operations on machine does not start to process or an air leakage occurs continuously in the valves, you should perform following:

1. Look the pneumatic drawing to understand which cylinder works with which valve. If you don't have the pneumatic drawing, follow the input- output pipes of the cylinder to understand.

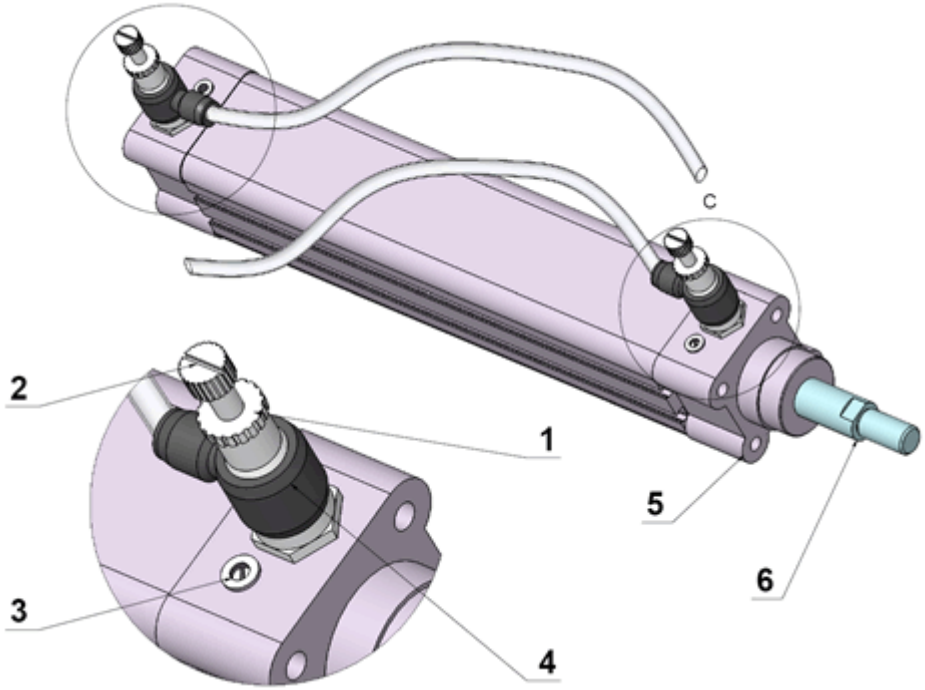
2. Take off the air pipes connected to the A and B cable glands. Give air from A and check from B. If air comes from B, the cylinder seal must be malfunctioning.

3. When air is given from B, the cylinder rod must still be giving out air, the neck seal C must be malfunctioning. If after checking them, A, B and C give out no air but there still is a leakage through the valves exhaust, check the valve.

4. After you have checked them, if A, B and C give out no air but there still is a leakage through the valves exhaust, then check the valve.

5. If the coil does not move by pressing the manual button, the coil may have broken down and it must be replaced. (A very low voice coming from coils when electric applied to them must be heard.) If the voice cannot be heard, check the electricity feed for coils.

7.2 CYLINDER SPEED ADJUSTMENT



Picture 7.2-1 Cylinder speed adjustment

- ► The part adjustment nut numbered (1) is loosened. The adjustment bolt numbered (2) is fastened or loosened.
- ► Therefore the piston motor movement enabling speed is detected by adjusting the pressure affecting the piston (6) inside the cylinder (5). Also by loosening and opening the screw numbered (3) we cal make the adjustment of padding.

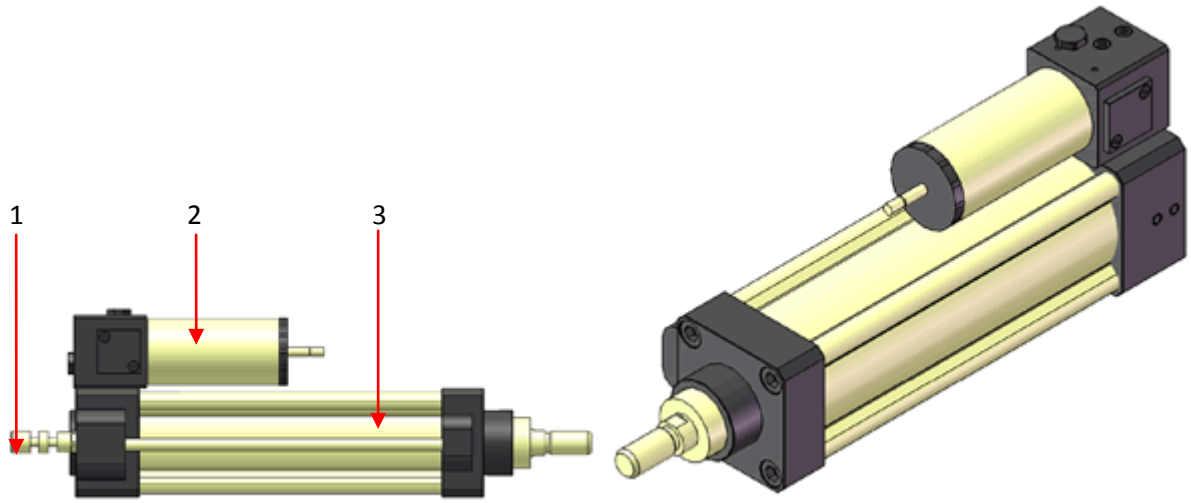
NOTE: This process is applied in the same way for every cylinder with air reducer.

NOTE: It is used to prevent the shaking or the bumping in the last point of the direction in the opening or closing of the piston spindle.

7.3 HYDRAULIC SPEED CONTROL CYLINDER

(option for aluminium profiles cutting)

- The hydraulic speed control check normally couples with a pneumatic cylinder to provide uniform speed control.



Picture 7.3-1 Hydraulic speed control cylinder

1. Speed control regulator
2. Reserve tank
3. Cylider

- Speed control is adjustable by (1) regulator.

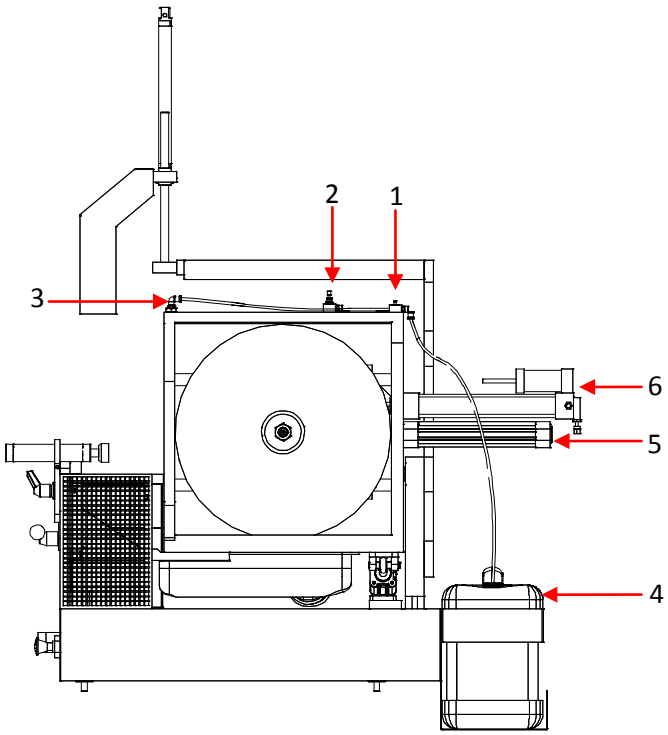
MAINTENANCE

- The speed control check is a closed system and there are no external factors that can adversely affect its function. Care however, has to be exercised not to allow the hydraulic fluid level to drop below the minimum indicated on the auxiliary tank. Should this occur, cavitation, or worse, an air pocket would result causing erratic control. Additional fluid should be put in exclusively through a unidirectional valve by means of an apporpriate syringe (such as code number1400.99.01). Excess fluid will be expelled through a vent into an appropriate containet. It is necessary to completely disassemble the regulator and be sure to bleed the system to eliminate air pockets. We suggest that you create a vacuum before beginnig to refill. This can be done with a small unidirectional valve turned up and repeatedly loaded with a syringe. The rod must be manually actuated successively releasing air through the valve using a small and pointed instrument.

- Oil for hydraulic and pneumatic circuits: Brobolube (Part Number: 9601480)

7.4 COOLING SYSTEM

(option for aluminium profiles cutting)



Picture 7.4-1 Cooling system

1. Switch ON / OFF for cooling system
2. Coolant Spray speed regulator
3. Spray head
4. Coolant tank
5. Pneumatic cylinder
6. Hydraulic speed control cylinder

- Cutting fluids are various fluids that are used in machining to cool and lubricate the cutting tool.

Before PVC profiles cutting operation started switch OFF the cooling system. Open the protective covers of cutting heads and clean the inside area from coolant.

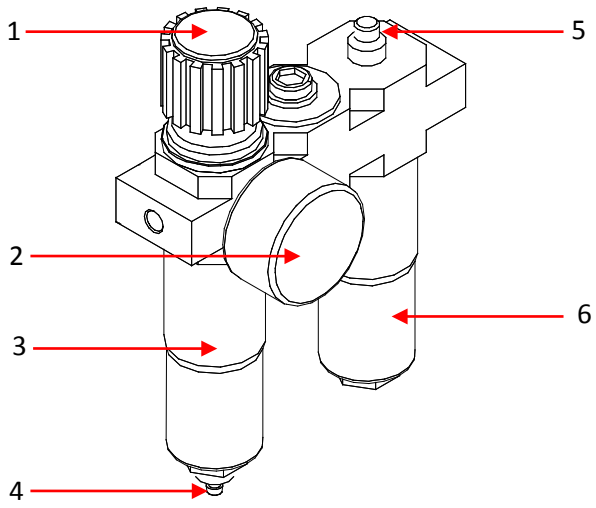
- **Cutting fluid recommended to use:**

«Brobolube

-

7.5 FILTER-REGULATOR

The first condition for a pneumatic system to function properly is to supply enough and quality pressured air.



Picture 7.5-1 Filter-regulator

1. Pressure regulator
2. Air pressure manometer
3. Condensate unit
4. Nipple for condensate discharging
5. Regulating screw for oil feeding
6. Oil unit

► Filter cleans the compressed air of impurities, rust, pipe deposits and condensation.

SETTING INSTRUCTIONS

Pressure Adjustment: Regulator head shown with 1 is pulled up. If it is turned on in the clockwise direction lubricators' outlet air pressure will increase. If turned in counter clockwise direction, the pressure will decrease.

Condensate discharging: The emptying screw shown with number 4 is opened and the condensate liquid will discharge.

Oil filling: Oil unit shown with number 6 is pulled off by turning it on clockwise direction. Then pneumatic oil is added to the container.

Oil speed adjustment: If the adjustment screw shown by number 5 is turned in the clockwise direction, the oil speed will decrease if screw is turned in the opposite direction, it starts giving oil faster to the system. Oil output should be as **one drop / minute** at air feeding.

7.5.1 RECOMMENDED FILTER-REGULATOR OILS

1. ESSO NUTO H32
2. MOBIL DTE24SHELL TELLUS C10
3. SHELL TELLUS C10
4. FESTO SPECIAL OIL
5. PETROL OFISI SPINDURA 10
6. ARAL VITAM GF32
7. MOBIL DHE LIGHT

8. TROUBLESHOOTING

8.1 ACTIONS TO BE TAKEN DURING FAILURE

1. Check the machine feeding voltage working with 3 phase of get it checked.
2. There should be 6 atmospheric pressured air. You can read this value over the regulator-filter manometer of the machine.
3. Open the valve board cover of the machine. Check whether there is air leakage or not in air hoses, air connection elements or valves. Try to correct it if there is an air leakage.
4. Close the main power switch on the machine and open the cover of the electrical board. Check whether the two fuses in the board have blown or not. Correct if there is a break in the cables on the contactors and if there is looseness in the connector screws.

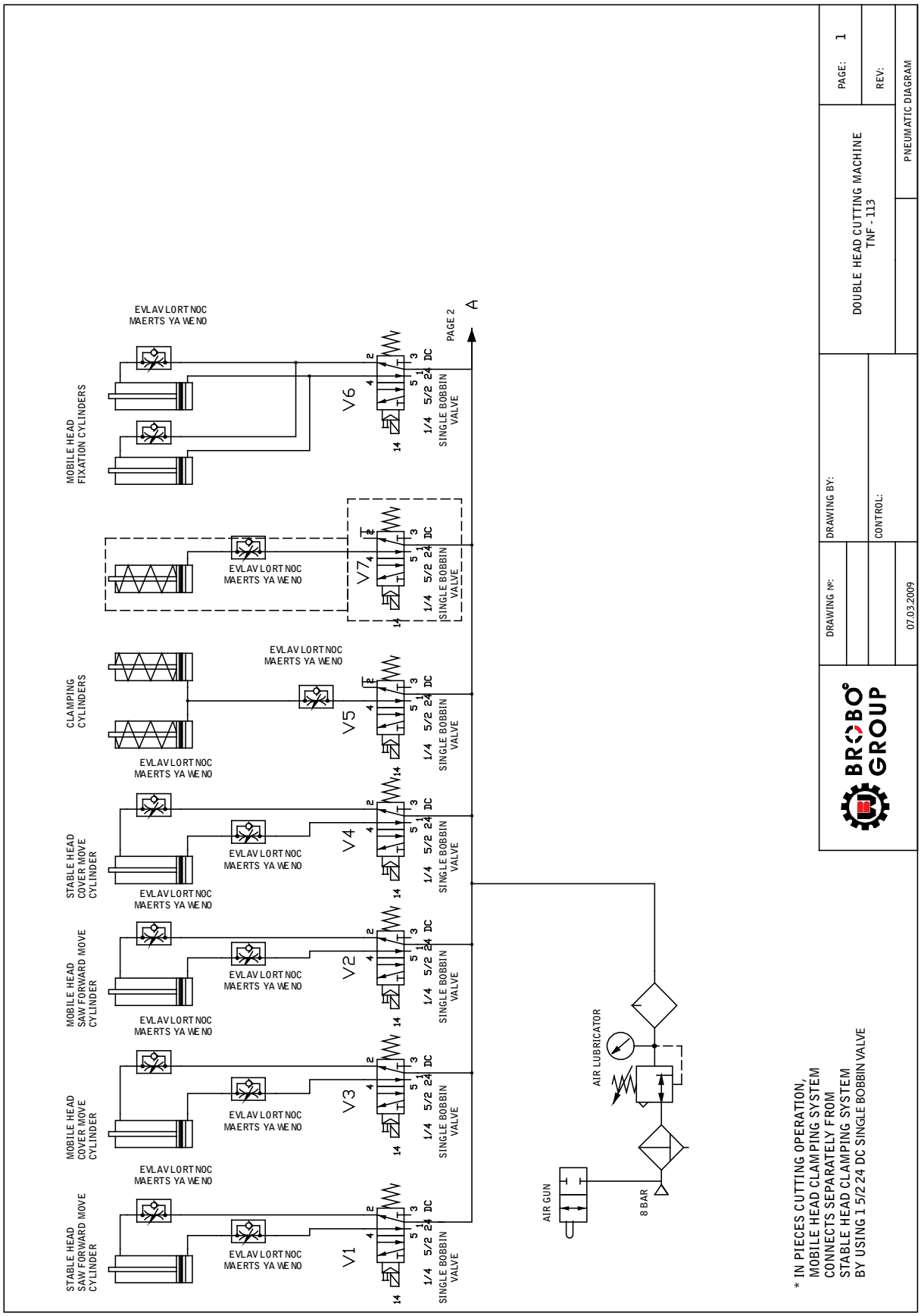
8.2 FAILURE – REASON – SOLUTION TABLE

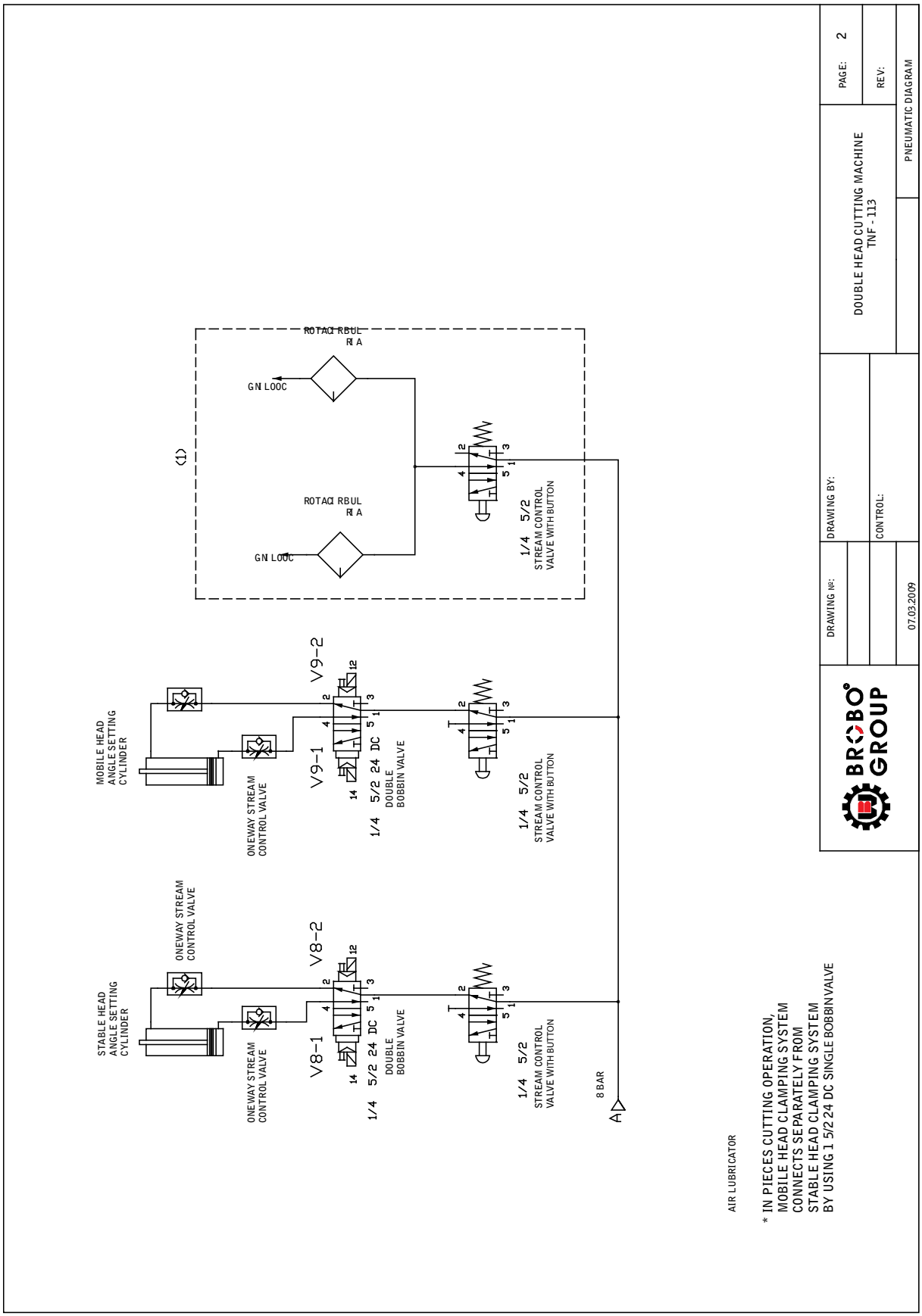
FAILURE	REASON	SOLUTION TABLE
There is no movement	Electrical failure Air connection failure	Check the safety power switch. Check the fuses. Check the input phases. Check the air connections. Check the air pressure on the conditioner.
Motors are not turning	Electrical failure	Check the safety power switch. Check the fuses.
Right head motor is turning and the left head motor is not turning	Thermic blown Motor failure	Check the thermic of the left head. Replace the motor with the new one.
Left head is motor turning, right head motor is not turning	Thermic blown Motor failure	Check the thermic of the right head. Replace the motor with the new one.
Clamping cylinders do not clamp	Valve or cylinder failure Button contact failure Right head platform is not fixed	See page 29 VALVE AND CYLINDER CONTROL Check the button contact Turn ON the fixation. See page 15 Switch “Fixation”
Right and the left head don’t tilt to 45▫ degree	Valve and piston failure Mechanical pressure valve is closed	See page 29 VALVE AND CYLINDER CONTROL See page 26 INTERMEDIATE DEGREE SETTING
The system is leaking air	Air connection, joint places and union failure	Check the connection and joint places

Emergency stop buttons not working	Button contact failure	Check the contact
Right saw is not moving forward	Valve and piston failure Control device has not reached the position	See page 29 VALVE AND CYLINDER CONTROL Check the positioning device indicators
Left saw is not moving forward	Valve and piston failure Control device has not reached the position	See page 29 VALVE AND CYLINDER CONTROL Check the positioning device indicators
Positioning measures do not match	Calibration inaccurate	See page 12 MEASURE CALIBRATION
Position control device is not working	Position control device or position control fuse failure	Check the fuse first then the device
Going forward in vibration or going backward in vibration	Speed union settings unadjusted Insufficient lubrication in pneumatic cylinder	See page 30 CYLINDER SPEED ADJUSTMENT See page 33 FILTER-REGULATOR
Saws do not come out or go back simultaneously	Valve or cylinder Speed union settings unadjusted	See page 29 VALVE AND CYLINDER CONTROL See page 30 CYLINDER SPEED ADJUSTMENT
The sawdust going out the saw is yellow and there is an odor like the pvc burnt.	Saws are blunt or the teeth are broken Saw proceeding is fast	Sharpen the saw or replace with the new one. See page 28 CHANGING THE BLADE See page 30 CYLINDER SPEED ADJUSTMENT

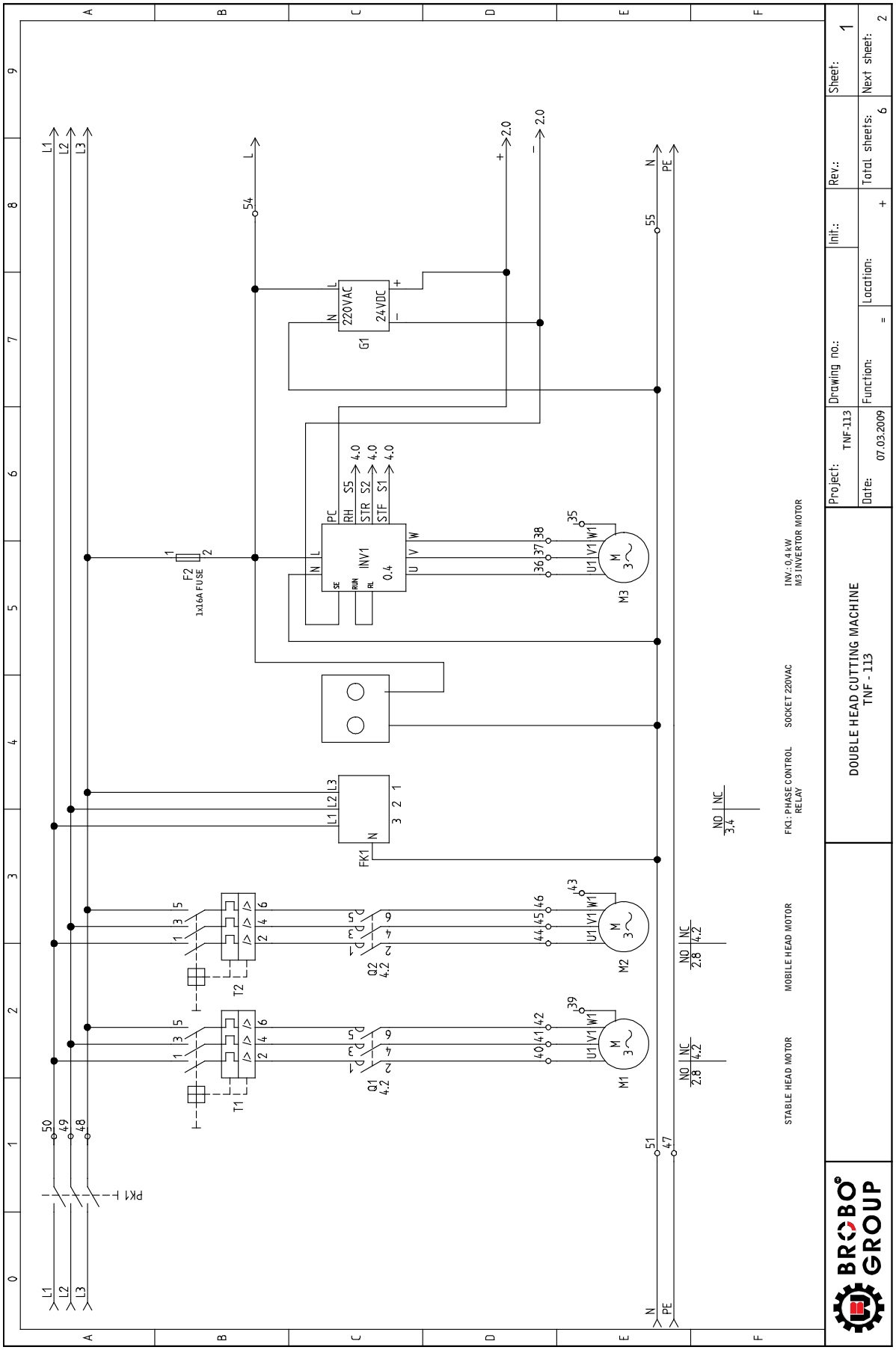
9. CIRCUIT DIAGRAMS

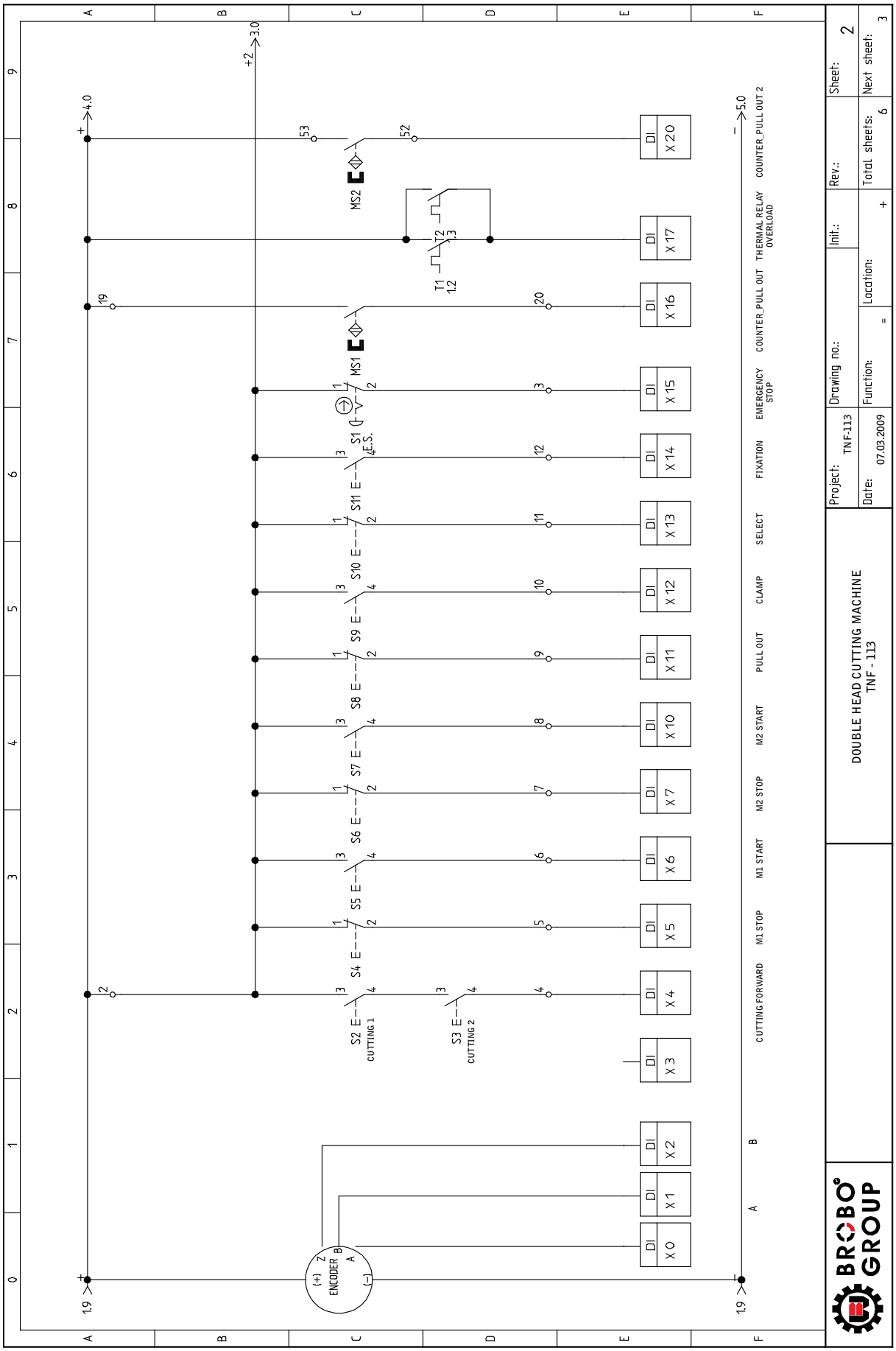
9.1 PNEUMATIC CIRCUIT DIAGRAM




DOUBLE HEAD CUTTING MACHINE
TNF - 113
PNEUMATIC DIAGRAM
PAGE: 2
REV:
DRAWING BY:
CONTROL:
DRAWING №:
07.03.2009
BROBO GROUP
MOBILE HEAD ANGLE SETTING CYLINDER
STABLE HEAD ANGLE SETTING CYLINDER
ONEWAY STREAM CONTROL VALVE
V9-1
V9-2
V8-1
V8-2
1/4 5/2 24 DC DOUBLE BOBBIN VALVE
1/4 5/2 STREAM CONTROL VALVE WITH BUTTON
8 BAR
AIR LUBRICATOR
* IN PIECES CUTTING OPERATION, MOBILE HEAD CLAMPING SYSTEM CONNECTS SEPARATELY FROM STABLE HEAD CLAMPING SYSTEM BY USING 1 5/2 24 DC SINGLE BOBBIN VALVE

9.2 ELECTRIC CIRCUIT DIAGRAM

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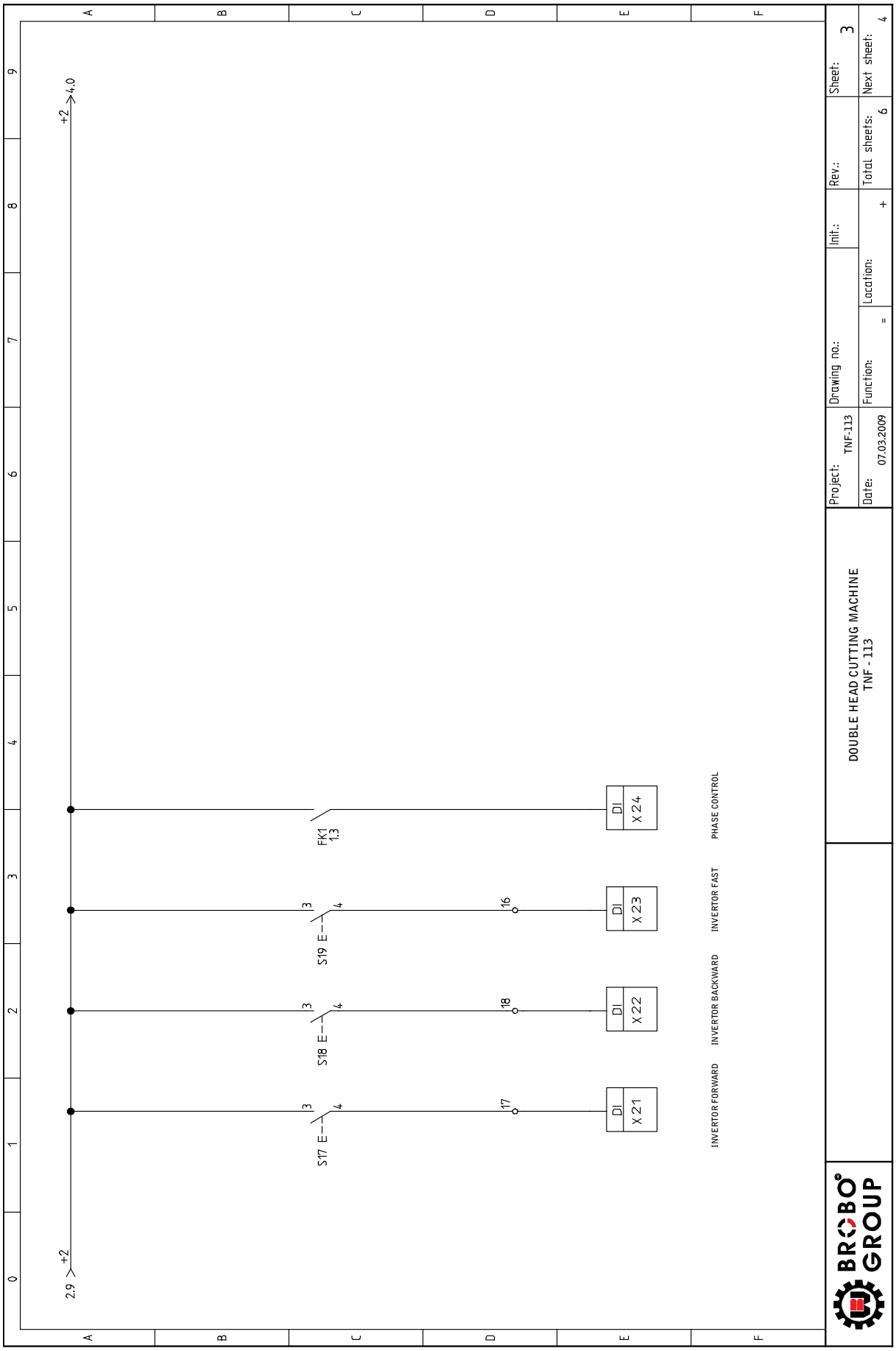
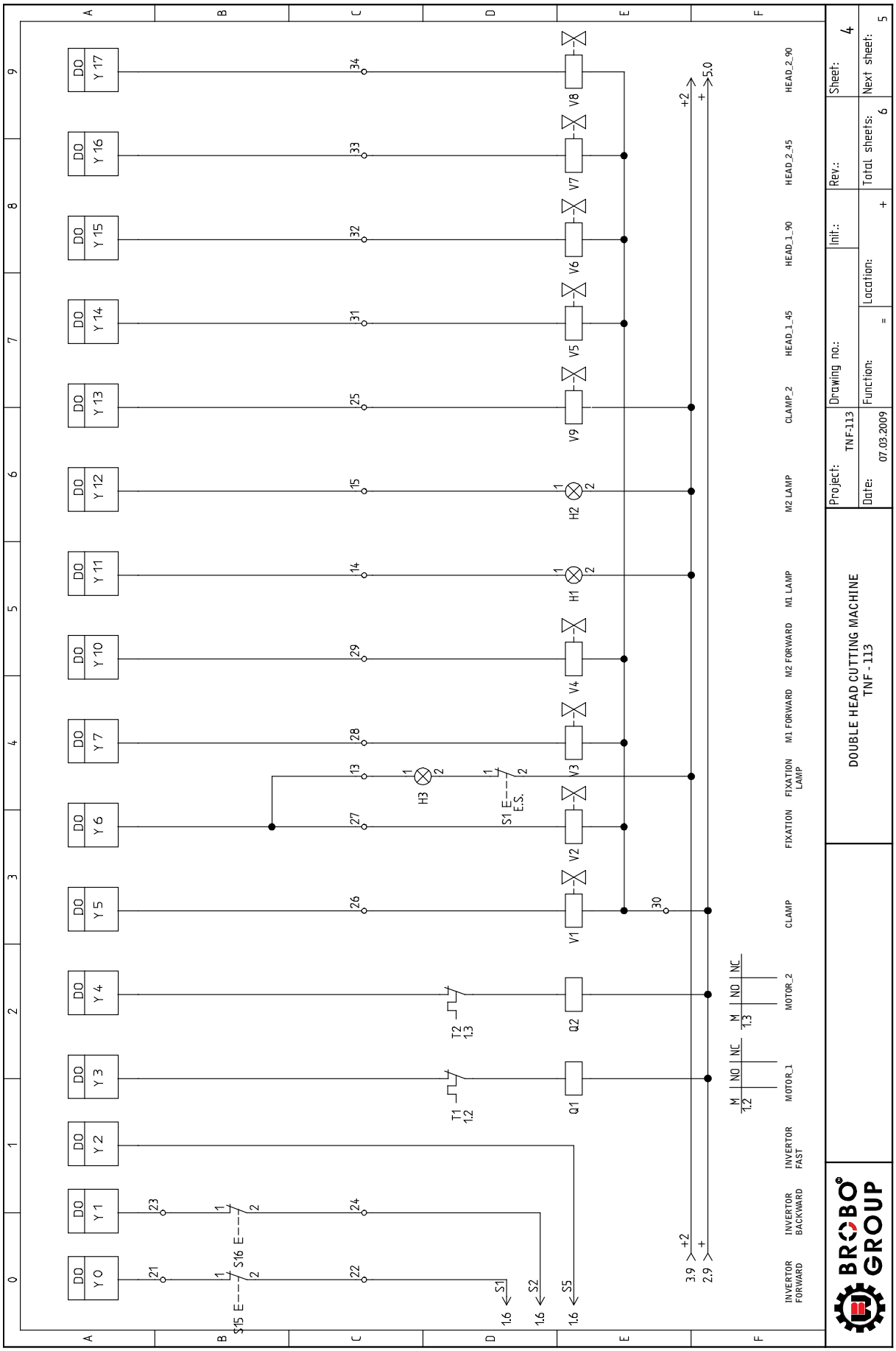
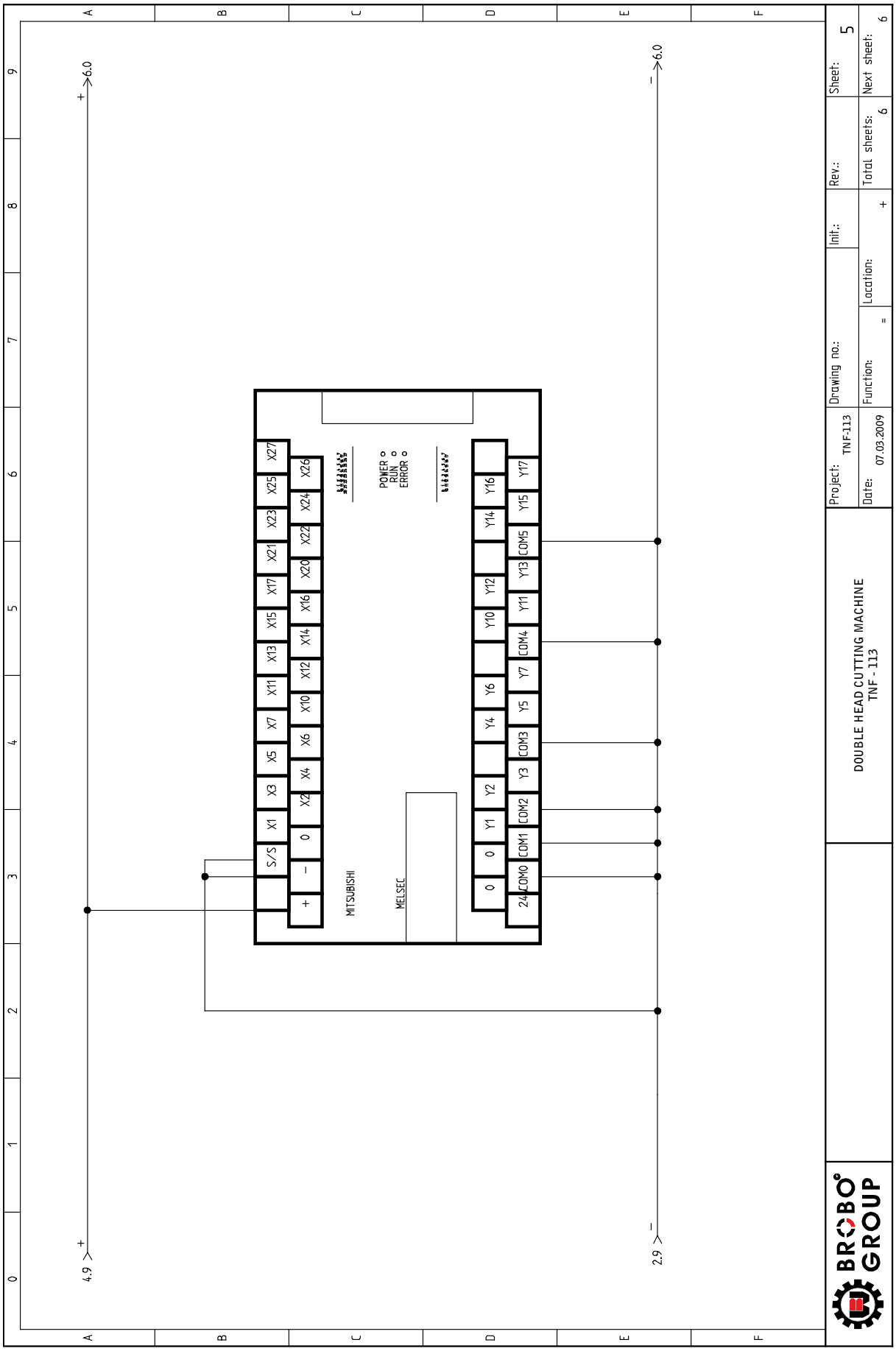
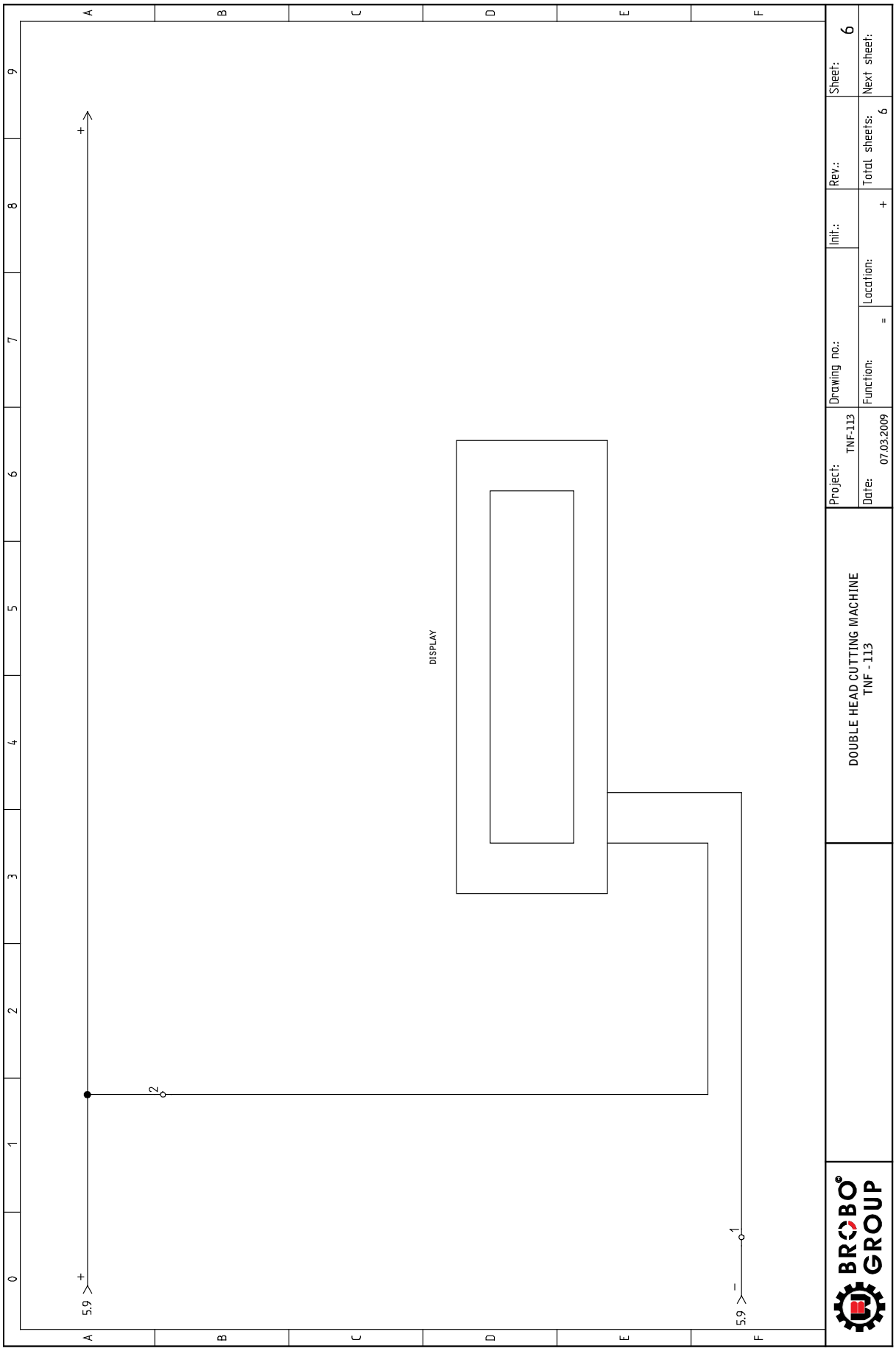
TNF - 113
Project: TNF-113
Date: 07.03.2009
Drawing no.:
Function:
Location:
Init.:
Rev.:
Total sheets: 6
Sheet: 2
Next sheet: 3
BROBO GROUP
EMERGENCY STOP
COUNTER_PULL OUT
FIXATION
SELECT
CLAMP
PULL OUT
M2 START
M2 STOP
M1 START
M1 STOP
CUTTING FORWARD
THERMAL RELAY OVERLOAD
COUNTER_PULL OUT 2
MS1
MS2
S1 E.S.
S2 E CUTTING 1
S3 E CUTTING 2
ENCODER


+2 >4.0
2.9 >+2
FK1 1.3
S19 E
S18 E
S17 E
DI X 24
DI X 23
DI X 22
DI X 21
16
18
17
PHASE CONTROL
INVERTOR FAST
INVERTOR BACKWARD
INVERTOR FORWARD
DOUBLE HEAD CUTTING MACHINE
TNF - 113
Project: TNF-113
Date: 07.03.2009
Drawing no.:
Function:
Location:
Init.:
Rev.:
Total sheets: 6
Sheet: 3
Next sheet: 4


DOUBLE HEAD CUTTING MACHINE
TNF - 113
Project: TNF-113
Drawing no.:
Date: 07.03.2009
Function:
Location:
Init.:
Rev.:
Total sheets: 6
Sheet: 4
Next sheet: 5
INVERTOR FORWARD
INVERTOR BACKWARD
INVERTOR FAST
MOTOR_1
MOTOR_2
CLAMP
FIXATION
FIXATION LAMP
M1 FORWARD
M2 FORWARD
M1 LAMP
M2 LAMP
CLAMP_2
HEAD_1_45
HEAD_1_90
HEAD_2_45
HEAD_2_90
S15
S16
S1
S2
S5
S1 E.S.
H1
H2
H3
V1
V2
V3
V4
V5
V6
V7
V8
V9
Q1
Q2
T1
T2
+2
+5.0


+ >6.0
- >6.0
+ 4.9 >
- 2.9 >
MITSUBISHI
MELSEC
POWER
RUN
ERROR
S/S
X1
X3
X5
X7
X11
X13
X15
X17
X21
X23
X25
X27
X2
X4
X6
X10
X12
X14
X16
X20
X22
X24
X26
Y0
Y1
Y2
Y4
Y5
Y7
Y10
Y12
Y14
Y16
Y17
Y15
Y13
Y11
COM0
COM1
COM2
COM3
COM4
COM5
24
DOUBLE HEAD CUTTING MACHINE
TNF - 113
Project: TNF-113
Date: 07.03.2009
Drawing no.:
Function:
Location:
Init.:
Rev.:
Total sheets: 6
Sheet: 5
Next sheet: 6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10.WARRANTY

1.1 The supplier warrants that all goods supplied by it, shall be free from defects in materials and workmanship for a period of twenty four (24) months from the date of delivery to the Customer. ("the Warranty Period"), on the following terms and conditions.

1.2 The Customer shall promptly provide written particulars to the supplier on becoming aware of any defect in the goods during the Warranty Period, and shall provide the Supplier with all necessary access, facilities and information to enable the Supplier to ascertain or verify the nature and the cause of the defect and to carry out its obligations under this warranty.

1.3 The Supplier's obligation under this warranty is limited to repairs of the defect goods and the Supplier is under no obligation to replace the goods or refund the value of the goods to the Customer.

1.4 If the goods are, in the opinion of the Supplier, not defective or if any defect is attributable to any one or more of the following circumstances then the Supplier is under no obligation whatsoever to the Customer:

1.4.1 The use of the goods for a purpose other than that for which they were intended to be used;

1.4.2 The repair, modification or alteration of the goods by any person other than the Supplier;

1.4.3 Where the defect has arisen due to misuse, neglect or accident, howsoever arising;

1.4.4 Where the defect has arisen due to installation of the goods which were, in the reasonable opinion of the Supplier, incorrectly carried out

1.4.5 Where the goods have not been correctly stored or maintained

1.4.6 Where the defect has arisen due to normal wear and tear on the goods

1.5 The Supplier is under no obligation under this warranty where the Customer has failed to observe the terms of payment for the goods or any other obligation imposed by the terms and conditions of this warranty.

1.6 In the event that the Supplier is supplying goods, which have been manufactured by third parties, the Customer shall be entitled to the benefit of any Manufacturer's Warranty in respect of such goods. The Customer acknowledges that the Supplier accepts no responsibility whatsoever for any Manufacturer's Warranty or any claim howsoever arising from the use of the goods, whether singularly or in combination with other products.

1.7 The Supplier shall not be liable for any indirect or consequential losses or expenses suffered by the Customer, howsoever caused.

1.8 Except as specifically set out herein, or in writing by way of catalogue or pamphlet or otherwise provided by the Supplier to the Customer any term, representation, condition or warranty in respect of the quality, condition or description of the goods, whether implied by statute, common law, trade usage, custom or otherwise, is hereby expressly excluded.

This warranty is given by Brobo Group Pty Ltd, ABN: 42 098 264 316
Address: 65-67 Williams Rd, Dandenong, VIC 3175
Ph: 03 9794 8751 Fax: 03 9794 8792
Email: info@brobo.com.au

This warranty is provided in addition to other rights and remedies you have under law: Our goods come with guarantees which cannot be excluded under the Australian Consumer Law. You are entitled to replacement or refund for a major failure and to compensation for other reasonably foreseeable loss or damage. You are also entitled to have the goods repaired or replaced if the goods fail to be of acceptable quality and the failure does not amount to a major failure.

The manufacturer reserves the right on production and instruction change.

BROBO GROUP ©

A.C.N. **098 264 316**
A.B.N. **42 098 264 316**

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