USER'S MANUAL
MODEL 4R HSS 25-320 NC
HYDRAULIC 4 ROLLS PLATE BENDING MACHINE

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Spare parts & service: support@sahinlermetal.com

Main Technical Features

➢ Rolls Table Length:	2550	mm
➢ Central Rolls Diameter:	320	mm
➢ Lateral Rolls Diameter:	240	mm
➢ Max useful opening between the central rolls:	90	mm
➢ Rotation Speed:	1.5-5	m/1’
➢ Number of motorized rolls:	3	
➢ Installed power:	20	kW
➢ Voltage/Frequency/phases:	400V-50Hz-3ph	
➢ Approximate Weight:	11750	Kg
➢ Appr. Dimensions (L x W x H):	5400x1800x1950	mm

DATA REPORTED ON THE MACHINE IDENTIFICATION PLATE:

- MACCHINE: 4 Rolls Plate Bending Machine
- MODEL: 4R HSS 25-320 NC
- SERIAL NUMBER:
- YEAR BUILT:

CONTENTS OF THE MANUAL

This manual is divided into 8 chapters including 1 Appendix:

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IMPORTANT NOTICE – WARNINGS *A-B-C-D-E-F-G-H*

OPERATING AND MAINTENANCE MANUAL

INTRODUCTION

This manual is intended to provide operating instructions for your SAHINLER Machine. These instructions do not purport to cover all the details or variations in equipment and do not provide for every possible contingency to be met in conjunction with operation or maintenance. Should further information be desired or should particular problems arise which are not covered sufficiently for the purchaser`s purposes, the matter should be referred to SAHINLER. This manual contains valuable information directly relating to the safety of the operator. It is the purchaser`s responsibility to familiarize the operator and maintenance personnel with the content of this manual.

This cannot be over-emphasized:

- Most breakdowns are due to exceeding the rated capacity of the machine or other incorrect use by the operator.

IMPORTANT NOTICE

Providing a safe and proper working environment consistent with the use and operation of the machine is the sole responsibility of the owner and user of the machine. All operating and maintenance personnel should be specifically instructed by the user in the operating principles. The owner and/or operator of the machine should be constantly aware of this responsibility for the safe operation of the equipment. They must be constantly alert to the danger of possible injury points, and should never leave the machine unattended while it is operating. When power is not required, it is recommended to TURN OFF the Power Supply Control.
To assure proper performance and SAFETY FOR THE OPERATOR, any minor problems noticed should be immediately corrected.

WARNING

Owner (or lessee in case of a leased machine) and machine operator jointly and severally assume all responsibility for damage and/or injury resulting from use and operation of this machine in any manner inconsistent with the cautions and instructions in this operating manual and with normal trade practice for the safe use of this type machine.
Owner (or lessee) and operator are responsible for knowledge of such instruction and trade practice and agree, by allowing the machine to be used or by operating it, to hold Vendor (and/or Lessor) of the machine harmless from any failure to comply with such instructions and trade practice.

TO ALL CONCERNED: MAKE SURE THAT THE OPERATOR UNDERSTAND THE FOLLOWING

WARNING

TO PREVENT SERIOUS BODILY INJURY

NEVER **PLACE ANY PART OF YOUR BODY AT THE POINT OF OPERATION.**

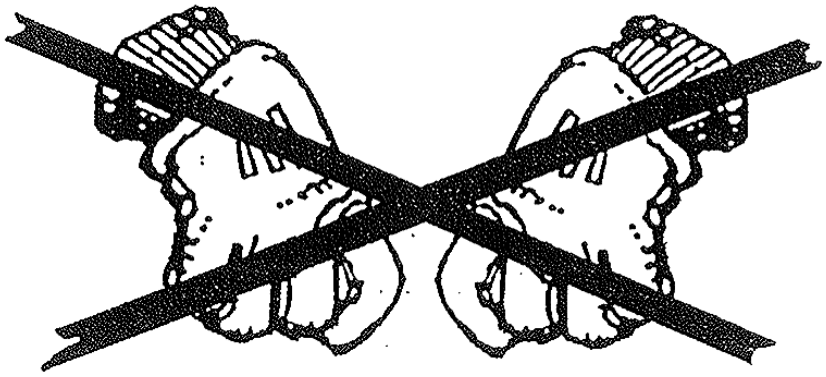
NEVER **OPERATE, SERVICE, REPAIR OR ADJUST MACHINE WITHOUT PROPER INSTRUCTION FROM YOUR SUPERVISOR AND WITHOUT READING AND UNDERSTANDING THE INSTRUCTION MANUAL.**

NEVER **SERVICE MACHINE WITH MOTOR ON.**

IT IS THE EMPLOYER'S RESPONSIBILITY TO IMPLEMENT THE ABOVE INSTRUCTIONS AND TO PROVIDE PROPER SAFETY MEASURES NECESSARY FOR EACH PARTICULAR USE, OPERATION, SETUP OR SERVICE OF THE MACHINE.

DO NOT REMOVE THIS SIGN FROM MACHINE FOR ANY REASON.

ONLY PROPERLY TRAINED AND AUTHORIZED PERSONNEL SHOULD OPERATE THIS MACHINE



- NO ! -

DO NOT WEAR GLOVES WHEN OPERATING THIS MACHINE

SAFETY INSTRUCTIONS

- THE OPERATOR OF THE MACHINE AND HIS SUPERVISOR MUST FAMILIARIZE THEMSELVES WITH THE MACHINE AND THE OPERATING INSTRUCTIONS AND SAFETY INSTRUCTIONS HERE AND THROUGHOUT THIS MANUAL.

- PRESS THE EMERGENCY STOP WIRE OR THE RED EMERGENCY STOP BUTTON ON THE OPERATING CONTROL TO STOP THE MACHINE IN ANY EMERGENCY.

- ONLY THE OPERATOR SHOULD CONTROL THE OPERATING CONTROL AND ONLY HE SHOULD OPERATE THE MACHINE.

- ONLY THE OPERATOR SHOULD BE IN THE WORKING AREA OF THE MACHINE WHEN IT IS RUNNING.

- THE OPERATOR SHOULD NOT WAR GLOVES.

- THE OPERATOR MUST KEEP HIS HANDS, FEET , HAIR AND CLOTHES AWAY FROM THE ROLLS WHEN THE MACHINE IS WORKING.

- NEVER EXCEED THE CAPACITIES OF THE MACHINE.

- ALWAYS TAKE EXTREME CARE WITH ELECTRICAL CONTROLS AND COMPONENTS.

- NEVER DISCONNECT OR REMOVE OR OTHERWISE TAKE OUT OF SERVICE THE STOP WIRE OR THE RED BUTTON IN THE PORTABLE PUSH BUTTON CONTROL.

- ALWAYS TURN THE MACHINE OFF WHEN LUBRICATING, MAINTAINING OR REPAIRING IT.

- NEVER LEAVE THE MACHINE RUNNING WHEN NOT IN USE OR WHEN NOT ATTENDED BY AUTHORIZED PERSONNEL.

- ANY MODIFICATION ON THE MACHINE WITHOUT WRITTEN CONFIRMATION FROM THE MANUFACTURER IS STRICTLY FORBIDDEN AS SUCH CHANGES IN THE MACHINE CAN CAUSE UNINTENDED DAMAGES AND INJURIES.

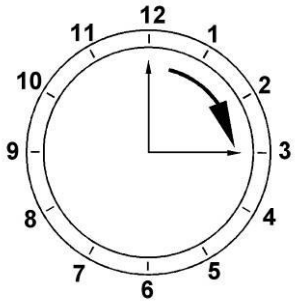
- ALL ORDERS AND NOTICES SHOULD BE STRICTLY OBEYED FOR A SAFE WORKING ENVIRONMENT.

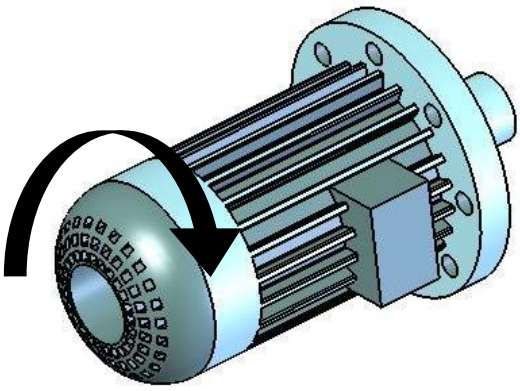
IF ANY PART OF THESE INSTRUCTIONS OF OTHER INSTRUCTIONS IN THIS MANUAL ARE NOT UNDERSTOOD, CONTRACT THE SUPPLIER OF THE MACHINE FOR CLARIFICATION.

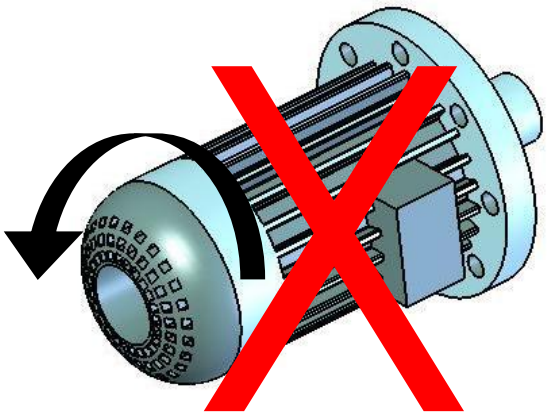
CAUTION

The machine will not operate if the motor is running in the wrong direction.

Therefore before attempting to start the machine you must follow these important steps.







RIGH

WRONG

1. ***Open the cover and check the direction of motor rotation.***
2. ***If motor rotation direction is wrong, interchange the connections of the L1& L2 cables.***

CONVERSION OF MILLIMETERS, INCHES, POUNDS:

Length, width, height, and weight are approximate.

Some dimension in this manual may be indicated in millimeters. To change to inches, divide the millimeters by 25,4

Some yield Points in this manual may be indicated in kg/mm^2. To convert to KSI, multiply the kg/mm^2 by 15,0

Some weight in this manual may be stated in kilograms. To change pounds , multiply the kilograms by 2,2

The contents of this Operations Manual/Parts List are subject to correction without penalty in case of typographical or other errors and/or omissions.

ORDERING SPARE PARTS

When ordering spare parts, please provide the following information:

Machine model number

Machine serial number

The title of the drawing on which the part to be ordered is shown

The code number of the part

The name of the part

The number of parts required

When ordering a motor or motor-reducer, please provide the complete data from the nameplate.

In all cases, please provide any additional information that might be helpful.

INDEX

1.1 INTRODUCTION

The information contained in this document are property of SAHINLER which reserves the right to change, without notice, the characteristics of the product described in this manual and the manual itself..

The SAHINLER is not responsible for inaccuracies due to printing errors or inadvertent errors. And ‘prohibited the dissemination and reproduction, even partial, of this manual without prior written permission of SAHINLER METAL MAKINE ENDUSTRI A.S.

1.2 MANUFACTURER NEWS

Şahinler has started in a small factory in a 1953. Then invested on a lathe machine and other equipment to produce textile machinery in 1958. Sewing machines followed to be the next production in 1960 and finally started production of sheet metal machinery with the well-known drilling machines.
Şahinler has made first export sales with Pneumatic Powerhammers which is still in production.
Today the factory is on 21.500m^2 closed area and 24.000m^2 field with more than 220 workers.
Thanks to it is know-how, the ŞAHİNLER can provide:
* 3 and 4 Roll Hydraulic Plate Bending Machines,
* Section Bending Rolls,
* Hydraulic Steel workers and Punching machines,
* Flanging Machines and Hydraulics Presses.

Şahinler is one of the most experienced company in its field in Turkey besides represented all over the world with it is dealers.
80% of the production is for export sales and 20% is for local market. All over machines are suitable for CE regulations and ISO 9001-2000 certificate.
Sahinler pursues the goal of continuous improvement in technical and technological, and to satisfy the various needs of both customers and growing reputation in it is various markets.
This is the target of the commitment of Şahinler : do not waste time pursuing the client's needs.
Şahinler offers it is customer sand sales reps;
•Long andcompetent collaboration;
•Fulltechnical collaboration both in pre-sales in the post-sales;
• Materials and components of the best producers in the industry;
•The best ratio: price of supply/value of the asset.

Şahinler is located in Bursa, a city in north western Turkey, and the metropolitan area of Bursa province had a population of about 2 million, making the city fourth most populous in Turkey. The city is as well as one of the most industrialized metropolitan centers in the country.Bursa is settled on the north western slopes of Mount Uludağ in the southern Marmara Region and it is the capital city of Bursa Province bordered by the Sea of Marmara. The city is frequently cited as "Yeşil Bursa" (meaning "Green Bursa") in a reference to the parks and gardens located across its urban tissue, as well as to the vast forests in rich variety that extend in its surrounding region.

1.3 *DECLARATION OF CONFORMITY "CE"*

We as

ŞAHİNLER METAL MAKİNE END. A.Ş.
İzmir Yolu 22.km Görükle Zafer Mah.
Mümin Gençoğlu Caddesi No : 14
16285 Bursa / TÜRKİYE

confirm that the machine:

4R HSS 25-320 NC

Serial Number :
Production Year :

complies with:

2006/42/EU MACHINE SAFETY DIRECTIVE
2014/35/EU LOW VOLTAGE DIRECTIVE
2014/30/EU ELECTROMAGNETIC COMPATIBILITY DIRECTIVE

and Regulations Applied acc. to HARMONIZE STANDARDS:

EN ISO 12100:2010; EN ISO 13849-1:2015; EN ISO 13855:2010; EN ISO 13857:2008; EN ISO 13850:2015; EN 60204-1:2006/A1:2009/AC:2010; EN 61000-6-2:2005; EN 61000-6-4:2007/A1:2011; EN ISO 11202:2010

Name : Ferhan ŞAHİN

Position : Product Manager

BURSA, on

Signature:……...…….

C E D E C L A R A T I O N

1.4 GENERAL WARRANTY TERMS

- *Your machine is covered by manufacturer's guarantee for a period of 12 months from the date of purchase against manufacture defects. The warranty period does not exceed 18 months from the date of delivery from the manufacturer's factory.*

- *Warranty covers only manufacture defective parts and / or components that are reported as "defective" by a Sahinler Technician or the Agent Technician and must be reported to Sahinler in writing by fax or email.*

- *The manufacturer is responsible for the supply of free of charge spares only and cannot be held responsible for loss of work.*

- *Shipping and customs fees for the spare part must be paid by the end-user.*

- *If a technician travel is necessary Sahinler will not charge for labor and workmanship costs but the customer must pay traveling and accommodation charges.*

- *A Warranty claim does not relieve the Customer from payment obligations.*

- *The Customer can not ask or demand any reimbursement of damage nor the Customer will have the right to extend or delay payment obligations nor the cancellation of order and the refunding of damages as the guarantee is given for the defective parts of the machine and not for the job.*

- *The warranty is void if:*
  •are not used original parts;
  •breakage or damage during shipping or handling;
  • modifications or changes not previously approved by the manufacturer;
  •operator error or otherwise improper use of the machine;
  •lack of maintenance.

- *The Company SAHINLER disclaims any and all liability for damages to persons and /or property as a result of incorrect use of the machine and its accessories in general and for disregarding the warnings contained here in as well as the general rules of safety force.*

- *Repairs and / or replacements during the warranty period will not extend it is duration.*
  Recognition of Warranty excludes any claim for damages for loss of production.

- *ŞAHINLER engineers are available to any ordinary or extra ordinary maintenance.*
  There quest must be sent to the address below to SAHINLER:

info@sahinlermetal.com

Note: *All warranty claims must be applied with the Model, Serial Number and the Manufacture Year of the machine.*

1.5 PURPOSE – CONTENT – RECIPIENTS - HANDBOOK CONSERVATION

ATTENTION

PURPUSE:

Before starting any operation,installation, testing,commissioning,use or maintenance of the machine is **absolutely necessary** to consult the manual, which should be read carefully before transporting, installing, using or perform any maintenance on the machine.
The operations on the machine should only be done by qualified personnel, who must advance and carefully read the instructions in this manual.

CONTENT:

This manual is **integral part** of the machine and contains information about the characteristics and intended use of the machine, it is transport, it is operation, the downtime, maintenance and security and also provides information for the parts, the presence of risk residues, and staff training, etc...
This manual must be kept until the final demolition of the machine.
If lost ask for a new copy of the manufacturer.

RECIPIENTS:

This manual aims to provide customers and it is technical and production staff **all the information necessary to ensure** that the machine can be used in the best way, to get the best productivity and for working safely. The manual is therefore aim edit both enabled operators and maintenance technicians. The operators **must not**, however, perform tasks reserved for the maintenance or skilled technicians in charge.
It should be noted that the instruction manual can never replace a proper **user experience**, for some maintenance very difficult this manual is a reminder of the main operations to be acquired for operators with specific training.

HANDBOOK CONSERVATION:

This user and maintenance manual should always be carefully **preserved** and **available** for consultation and should be in the immediate vicinity of the machine, in a place known to the machine user and to the use and maintenance responsible there of. It should keep this manual in a special container to keep it away from agents that may affect the status of **readability**.

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1.6 USED SYMBOLS AND CLASSIFICATION OF HAZARD'

In order to increasethe security status, were used in the manual the following symbols(pictograms) to draw thereader's attention and highlight aspects that are particularly important:

The term DANGER is used when failure to comply with the regulations or the manipulation of organ scan be a source of injury or serious harm to human health.

The term WARNING is used when there is a "risk" or rather the combination of the probability of serious injury or damage to health. Failure to comply may result in injury or property damage.

DANGER

WARNING: CRUSH

Projection HAZARD of metallic fragments.

DANGER of being injured during the handling of the piece.

DANGER of possible emissions of metal powders.

DANGER: ELECTRIC VOLTAGE

DANGER: EXPLOSIVE MATERIALS

DANGER: FALL

DANGER: FIRE

DANGER: SUSPENDED LOADS

DANGER: TOXIC MATERIALS

WARNING: WORKPIECES HIGH TEMPERATURE

CAUTION: MOVING PARTS OF THE MACHINE

1.6.1 OTHER SYMBOLS

PROHIBITIONS

DUTIES AND REQUIREMENTS

NOTE: Notes for the user and other useful information for use.

1.7 ADDITIONAL IMPORTANT INFORMATION

MAKE SURE that all users have understood the rules of use and meaning of symbols on the machine.

Possible accidents can be avoided by following these technical instructions compiled with reference to the relevant EU directives.

In anycase always meet national safety standards.

DO NOT remove or damage protections,labels and notices, especially those imposed by law.

This manual reflects the state of the art at the marketing machine and can not be regarded as in appropriate because then updated based on new experiences.

The manufacturer has the right to update products and manuals, without any obligation to update previous production and manual, except inexceptional cases.

To request or receive any updates or additions of the instruction manual, which will be considered part of the manual, forward the request to the following address:

CAN EXIST AS A DIFFERENT VIEW ON THE SAFETY WITH DIFFERENT SITUATIONS A RISING FROM APPLICABLE LOCAL LAWS,

PLEASE LET US KNOW ANY LOCAL AGENCIES DESIRED CHANGES TO CONFORM THE MACHINE, IT IS A MATTER OF THE CUSTOMER MAKE SURE THE MACHINE COMPLY WITH REGULATION AT THE LOCAL LEVEL.

1.8 JOBS IN THE CUSTOMER EXPENCE

Are charged to the customer all the works relating to:

•preparing the site for the installation of the machine, including the masonry and foundations and warning signs;

•the connection and power supply of the machine in accordance with applicable laws in the country.

SAFETY 2

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2.1 INTRODUCTION

The Safety Rules summarize the basic safety guidelines to observe when using the machine.

They provide also information about:

- Use in accordance with the provisions;
- The selection and training of staff;
- The scope of work and the work area;
- Protective equipments.

MANDATORY

The safety standards are only part of technical documentation of this machine and must always be considered in relation with the other instructions.

Operator safety is a major concern of a manufacturer of machines.
When making a new machine it seeks to provide for all the potential danger that the operator may be subject, and of course take the appropriate protections.
Remains very high level of accidents caused by the unwary and clumsy use of machines.
Distraction, too much lightness and confidence are often the cause of accidents, as can fatigue and sleepiness.

ATTENTION

READ THIS MANUAL VERY CAREFULLY AND IN PARTICULAR THE SECTION ON THE RULES OF SAFETY.

ATTENTION

The 'Manufacturer Company disclaims any liability for failure to follow Safety Rules and Prevention under the law beyond what is indicated in this manual.

ATTENTION

It is strictly forbidden to use the machine to operators under the age of 16 years

ATTENTION

Failure to comply with the requirements in the manual or the possible tampering with safety devices, **will raise the manufacturing company from any liability** for accidents, damage or malfunction of the machine.

2.2 IDENTIFICATION OF THE MACHINES - PLATES

Each machine SAHINLER is equipped with a non-removable nameplate, shown in

Figure 1.1, showing the following data:

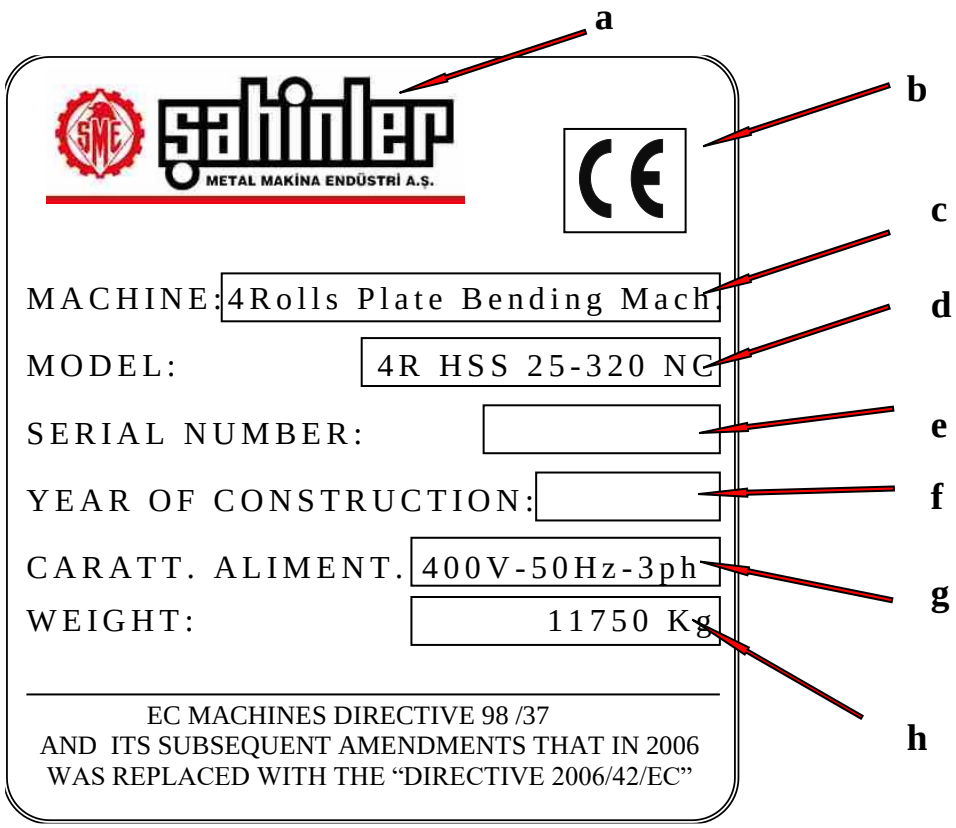

Figure 1.1 – Identification Plate

a. Manufacturer's Name
b. CE Marking
c. Machine Type
d. Machine Model
e. Serial Number
f. Year of Construction
g. Power Supply
h. Machine Weight

ATTENTION

Removing or tampering of the plaque can lead to serious risks for the user and voids the warranty provided by the manufacturer.

In case of deterioration of the plate, immediately notify the manufacturer and replace it.

2.3 TERMINOLOGY

Following are defined some recurrent terms. Is a:

USER:
The person or entity or company that has purchased or rented the machine and that intents to use it for the uses designed for the purpose. This is the machine responsibility and the responsibility of the training to all those that there must operate.

HAZARDOUS AREA:
Any area inside and/or near a machine in which the presence of a person is a risk for the safety and health of the same person.

EXPOSED PERSON:
Any person who is wholly or partially within the hazardous area.

OPERATOR:
Person responsible to install, operate, regulate, perform maintenance, cleaning, repair, transport or demolish the machine. Is not qualified to do maintenance in the presence of electric power.

QUALIFIED PERSONEL:
Persons specially trained and qualified to perform maintenance or repair in need of special knowledge of the machine, its operation, safety, and methods of intervention, that are able to recognize the dangers arising from the use of the machine and therefore may be able to avoid.

AUTHORIZED SERVICE CENTRE:
Structure legally recognized from the manufacturer that has qualified personnel and qualified to perform all operations of service, and maintenance repair, even some of complexity, which make it necessary for the maintenance of machine with perfect efficiency.

2.4 GENERAL SAFETY RULES

In order to ensure the health and safety of people exposed, the SAHINLER machines are equipped with the following safety: passive and active.

PASSIVE SAFETY:

* Plates reporting dangerous areas;
* Ban and obligation plates;
* Warning labels.

ACTIVE SAFETY:

* Emergency stop mushroom with manual reset.

MANDATORY

The Employer must accurately inform all operators on the risk of accident and the main risks deriving from noise, personal protective equipment provided and the general accident prevention regulations laid down by international and national laws of the country of destination of the machine. All operators must comply with international safety regulations and the country of destination of the machine in order to avoid possible accidents.

Please note that the European Union has issued directives concerning safety and health of workers that each employer has the obligation to respect and enforce.

Before start any bending work each operator must have full knowledge of the operation of the machine and it is controls and have read and understood all the technical information contained herein. The operator assigned to this machine must be trained and experienced person already to use.

Such training must be done within the user company.

ATTENTION

ATTENTION

It is forbidden to tamper with or replace parts of the machine if not expressly authorized by the SAHINLER Company. The use of accessories, tools, supplies or parts other than those recommended by the manufacturer and/or referenced herein may constitute a danger for operators and/or damage the machine.
Any modification of the machine not expressly authorized by SAHINLER raises the Company from any civil or criminal liability.

It is strictly forbidden to remove any device and security on the machine, periodically, every week, to verify the integrity and smooth functioning.

The machine should never be put into operation when:

- **The power cable is damaged;**
- **It is dropped and/or shows visible damage;**
- **It presents a malfunction of part of all electrical and/or mechanical.**

Any maintenance and repair must be performed by qualified personnel. Imperfect repairs or maintenance can cause serious danger to the user.

ATTENTION

Any ordinary or extraordinary maintenance must be done with the machine without power supply.

Do not put hands or introduce screw drivers, wrenches or other tools on the moving parts.

The workplace around the machine must be kept clean, tidy and free from objects that may hinder movement of the operator and therefore a great danger to stumbling or whatever.

Operators must avoid unsafe operations in uncomfortable positions that could compromise their balance.

The workplace must be adequately lighted for the operation provided.
An insufficient or excessive light can be dangerous.

The instructions, accident prevention regulations and warnings contained in this manual must be always be respected.

2.5 GENERAL WARNINGS

- This manual should be read carefully before using the machine.
- The user must leave the machine only to qualified and trained personnel for the purpose.
- The user must take all appropriate measures to prevent unauthorized person from gaining access to the machine.
- The user must perform their staff properly on observance of safety regulations, for which purpose he is campaigning for anyone, according to it is job, know the instruction for use of the machine and related requirement security.
- The user must notify Company Manufacturer in case any defect, deficiency or malfunction of the accident-prevention systems, and any alleged danger of the situation.
- User must not allow the machine to be mounted pieces of other brand, the machine being tested only with the provision of equipment provided, such an eventuality, or other changes can alter it is characteristics and thus affect it is safe operation, any changes and/or addition of accessories, must be explicitly approved and/or made by the manufacturer.
- The machine should be used only for the use for which it was built.
- During operation there are live electrical parts and mechanical parts in movement: do not remove any protection or loosen screws or fasteners, as it can cause serious damage to persons or property.

DANGER

Before opening the cabinet, unplug the power of the machine.

ATTENTION

The operator must always use the appropriate PPE (*Personal Protective Equipment*):

- Use specific tools for the manipulation of the pieces;
- Wear **safety shoes, apron, gloves, face shield, headset.**

The operator must comply with all the signs of danger and caution marked on the machine.

The operator must not perform operations on its own initiative or action that is not within its competence.

Not clean, oil, grease the machine when is running or with inserted electric tension.
These operations must be performed only by staff activating the relevant procedures.

The operator has the obligation to report to his Superior any problem or dangerous situation that would create..

2.6 PARTICULAR TYPES OF HAZARD

2.6.1 ELECTRICITY

An electrical shock can result in serious injury and can lead to death.

Work on the electrical of the machine can be made according to the rules of engineering, only by an electrician. Open the doors of the cabinet with only the main switch off.

The wiring diagrams provided are binding on all connections.
Use only original fuses with the current intensity required.
The electrical system of the machine must be periodically inspected for defects such as loose connections and cables burned, should be immediately removed.

2.6.2 PLUMBING

Regularly check all the pipes, hoses and fittings for leaks and/or externally visible damage.

Remove immediately any damage.

The oil spill can cause injuries and fires.

Work on hydraulic systems must be performed only by staff sufficently trained and qualified.

2.6.3 NOISE

ATTENTION

For machine placed in the production department, is to pay attention to the fact that the threshold exceeded 85db **requires** the information to workers and the medical examination if requested by the employee; the excess of the threshold of 90 db **requires** the information to the workers, the use of the PPE, the delimitation of areas at risk, the medical examination and communication to the competent authorities.

ATTENTION

2.7 SAFE USE

- Wear appropriate clothing and avoid wearing loose clothing and loose-fitting that could be caught in moving parts. Long hair should be collected.
  The operator must not bring sharp scissors or tools in pockets.

- It is forbidden to operate or to operate the machine who has not read and assimilated the contents of this manual, as well as by persons not competent, or not in good mental and physical health.

- Before starting the machine check the integrity of all safety devices.

- The area around the machine must always be kept clean and uncluttered.

- Before using for the first time the machine to familiarize yourself with control devices and their functions.

- The area in which the machine is used is considered the **danger zone**, especially for persons not trained on the use thereof. Before starting the machine verify that around the work area there are no people, animals or obstructions of any kind.

- When a person is exposed, that is in the **danger zone**, the operator must immediately intervene by stopping the machine and possibly removing the person in question.

ATTENTION

- Periodically check the integrity of the machine in its entirely and its protective devices.
- The operator, during operation of the machine, must be in a position to have full control of the entire machine in order to intervene at any time and for any eventuality.
- In case of dangerous situations, press the **emergency stop**.
- Before you give up control of the machine, unplug the power.
- Adjustments, with guard disarmed or without safety devices, must be performed by a single operator, and during these operations is strictly forbidden access to the machine by unauthorized persons.
- Do not use water jets to clean the machine.

2.8 CONTROINDICATIONS

The machine cannot be used for purposes other than those for which it was designed.

2.9 PLATE AND SAFETY SIGNALS LOCATION

The SAHINLER machine in figure was made adopting all possible solutions for the protection and safety of those working on it. Nevertheless, the machine may have more residual risks, ie those risks that could not be completely eliminated under certain conditions. These potential hazards are marked with pictograms on the machine (warning plates) or in the machine working area that, with proper evidence, point to their essential form in dangerous situations.

DANGER

The warning plates, which provide financial security, should not be covered or removed or damaged, and must be kept clean and replaced immediately if damaged or detached.


şahinler
Model
Üretim Yılı
Production Year
Baujahr
Seri Numarası
Serial Number
Serien Nummer
Motor Gücü
Motor Power
Motor Leistung
kW
Voltaj ve Frekans
Voltage and Frequency
Spannung und Frequenz
V
P
Hz
ŞAHİNLER METAL MAKİNA END. A.Ş.
DANGER
4R HSS 30-350

Figura 2.2

2.10 RESIDUAL RISKS

During the normal cycle of work and during maintenance operations Workers are exposed to some residual risks that, due to the nature of operation, cannot be totally eliminated.

RISK of ejection of metal fragments.
RISK of being hit during the moving of the piece.
RISK of possible emissions of metal powders.

ELECTRICAL RISK.

INDEX

3.1 MACHINE DESCRIPTION

- This machine is a 4-rolls plate bending machine, particularly suitable for bending medium and heavy plates with high daily production and high flexibility. The machine equipped with NC can work in automatic for mass production.
- Steel welded heavy frame construction, thermally stress relieved and machined.
- Rolls are of high tensile carbon steel forgings, heat treated and submitted to non-destructive structure controls. On request they are also supplied with surface hardening by Induction Hardening Process.
- Bottom pinching roll and lateral rolls with hydraulic positioning, the movement is carried out by means of pistons.
- Two lateral rolls with double pinch pyramid action and linear movement. This system allows the best prebending with the shortest flat part, the machine frame is very rigid and strong (compared with other systems) and the machine life is very long.
- Bottom and lateral rolls with balancing system to guarantee parallelism/rolls inclination and high quality production.
- Top roll is driven by a hydraulic motor coupled to the planetary gearbox (equipped with overload protection system). Lateral Side Rolls are driven by individual hydromotor and planetary gearbox. Bottom Roll is idle (free).
- Touch Screen NC panel.
- Hydraulic drop end for ease of cylinder removal.
- All control operations are conveniently located on an independent mobile control console.(Mobile Control Panel).
- Machine is equipped with double speed adjustment.
- Conical bending device.
- Central Lubrication System.
- Hydraulic equipments: Motor and pumps group, pressure valves, selenoid valves, oil level and all the necessary equipments for the correct m/c operating.
- The electrical system consists of a cabinet with main switch, magnetic switches, thermal overload protections, relay cards and everything necessary for the proper operating under the laws in force.
- First Class Hydraulic Components: Duplomatic or Rexroth/Bosch or similar brand.
- First class Electric Components: Siemens or Telemecanique or similar brand.
- First Class Reducers: Brevini or Comer Group or similar brand.
- First Class Hydraulic Motors: Sai, Samhydraulik, Intermot or similar brand.
- Emergency system : Safety string barier around the machine and emergency push button on the Mobile Control Panel.
- Built according to EC Safety Directives (CE Mark)

3.2 EQUIPMENT AND ACCESSORIES INCLUDED IN THE MACHINE.

- Top and lateral rolls driven with n°3 independent motor-reducer groups.
- Hydraulic protection from overloads.
- Hydraulic rolls movement.
- Double speed working system
- Conical bending device.
- Control System of the rolls parallelism and their inclination by Hydraulic Balancing System.
- NC panel
- Mobile Control Console.
- Central Lubrication System.
- Safety guard cable around the machine.
- Hydraulic and electric components of first class producers.

3.3 MACHINE'S PERFORMANCES

➢ Useful Length:	2550	mm
➢ Pre-bending Capacity:		
* With min. inside diameter 480 mm:	12	mm
* With min. inside diameter 1600 mm:	16	mm
➢ Rolling Capacity:		
* With min. inside diameter 480 mm:	16	mm
➢ * With min. inside diameter 1600 mm:	20	mm
➢ Plate Material: Mild Steel -Yielding Strength:	250	N/mmq

3.4 MACHINE MOVEMENTS CONTROLS

3.4.1.- Controls on the Electrical Cabinet:

MAIN SWITCH WITH DOOR INTERLOCK

3.4.2.- Controls on the Mobile Control Panel:

See Chapter 5.1 – Page 55

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4.1 HANDLING AND TRANSPORTATION OF THE MACHINE

ATTENTION

The user receiving the machine has to make sure that the same has not been damaged and has not been tampered.

Should it be necessary to transport the machine for a long journey, the same can be loaded on trucks, rail cars or other means. For lifting and handling it is necessary to have a system of lifting the appropriate features, and harness systems adequate capacity. The lifting devices should be used in compliance with specific legislation on safety.

ATTENTION

In the event that the machine is packed, use a bride-crane or a crane or adequate capacity elevator. To this end, view Techical Information for Weight and Dimentions. The use of not adequate lifting equipment can lead to damage or injury to personnel and damage to the machne.

Inspect the rope before use: there shall be no damage, broken wires or signs of wear.

Do not twist or tie the ropes and follow the directions for the use may be indicated from the manufacturer of the cables themselves.

4.1.1 SPECIFICTION AND LAY-OUT OF THE MACHINE

MAIN DIMENSION OF MACHINE

Model	*Usefull Length*	*A mm.*	*B mm.*	*C mm.*	*D mm.*	*E mm.*
4R HSS 25-320	*2500*	*5100*	*1775*	*1860*	*730*	*900*

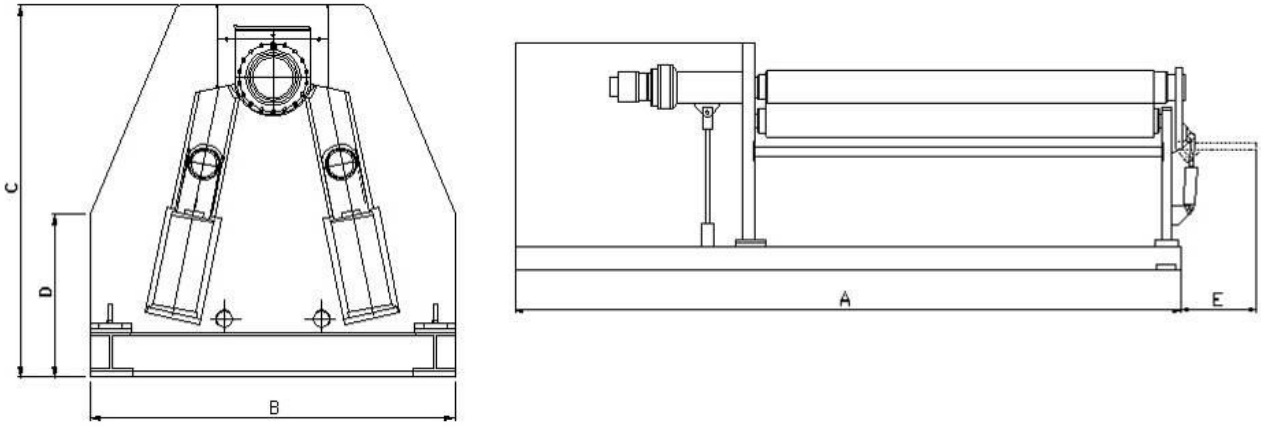


Figure 4.1

The layout in Figure 4.1 shows the main dimensions of the machine.

Note:

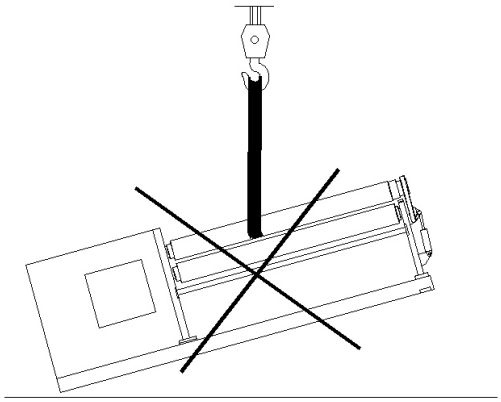
For safety issue always leave free space around the machine, that area will also depend on work being done.

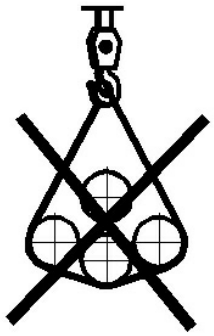
4.1.2 UNPACKING OF THE MACHINE

If any visible damage exist on the machine when you receive the machine immediately informs the dealer or manufacturer. Also **never forget to state the visible damage on transport documents.**

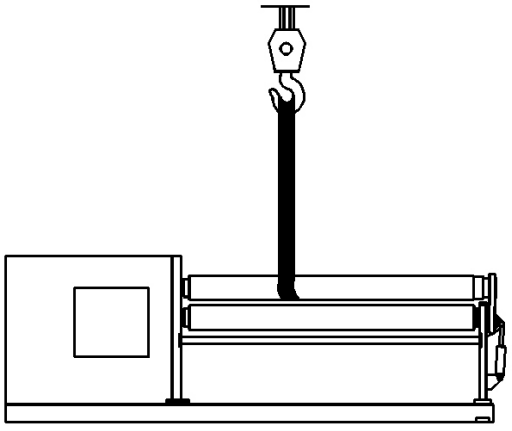
The packing material is completely safe and do not consist any environmentally dangerous articles. However they must be kept out reach of children as some nylon products in packing may cause suffocation if used as a toy etc.

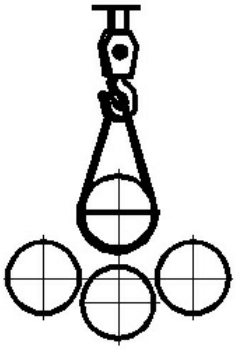
4.1.3 LIFTING THE MACHINE





Weight 11750 kg





4.1.4 TRANSPORT AND LIFTING

When transporting, the components of the machine must be well anchored with ropes or chains attached to the transport plan, in order to avoid that, during this phase, may be slipping and tipping over the same resulting projections beyond the means of transport, which could cause damage to persons and/or property, as well as cause damage to the machine.

CAUTION

After transport and before releasing the components if the machine all the constraints, check that the status and position of the same cannot be dangerous.
To unload the machine from the half transportation, you must

* free the machine from ropes or chains that held her anchored to the transportation plan;
* lift the components of the machine with suitable lifting and make the discharge from the same vehicle.

Should it be necessary to transport the machine elsewhere, carrying the same must be done by working in reverse with the same procedure described for the discharge.
The unpacking and installation operations must be performed by qualified personnel.

Before proceeding to respect the rules for the use of lifting equipment:

- ✓ Check the weight of the machine parts;
- ✓ Check that the eye bolts (if used) are of suitable size and tightened;
- ✓ Make sure that the ropes used are appropriate and in good condition;
- ✓ Always check the state of wear of the ropes and hooks used;
- ✓ Ensure that the load is properly restrained and balances;
- ✓ Warn the beginning of the maneuver;
- ✓ Ensure that the maximum capacity of the lifting device is greater that the total weight of the machine and installed equipment;
- ✓ Not to leave the operating position leaving the suspended load.

DANGER

The lifting and transport can be very dangerous if not done carefully: keep away any outsider or unauthorized person, clear and delimit the area of transfer, verify the integrity of the available resources.
Before the lifting, make sure that all moving parts of machinery have been blocked.

Never manually keep machine parts in case of precarious stability.
When transporting loads shall not be raised for more than 20 cm from the ground, and not exceed the height required to move.

You must also ensure that the area where you operate is clear and that there is enough space to escape, that is, free and secure area in which to move quickly in the event that load falls.
Warn the beginning of the maneuver.

Do not leave the driving position, leaving the suspended load.

ATTENTION

During the handling operation and/or use of the machine take all the necessary security measures and sufficient distance to avoid injury when falling or tipping load.

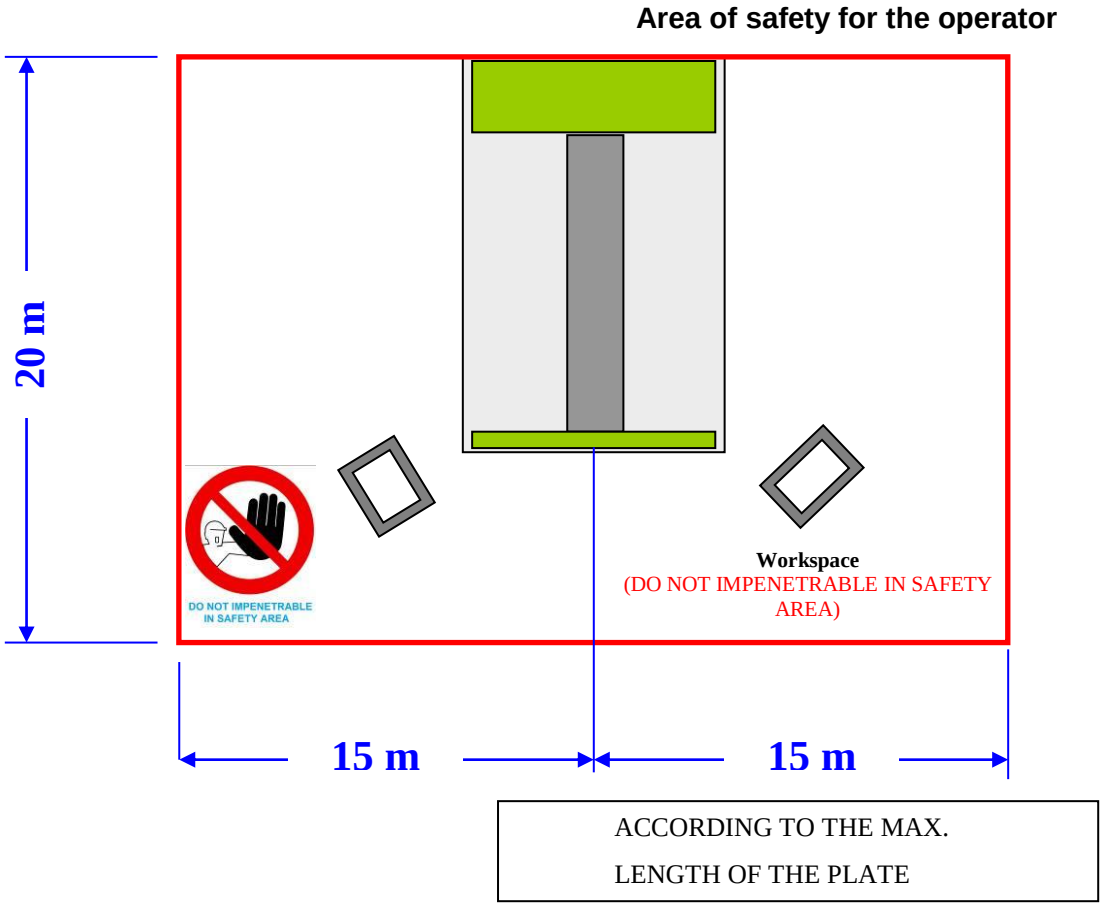
4.1.5 BARRIERS LIMITING DANGER ZONES

During processing is important:

- **Define the work space;**
- **Indicate the danger with proper signage;**
- **One person should operate the machine.**

In relation to the technical and operating characteristics of the machine, it is therefore necessary to delimit the work area with appropriate barriers and indicate the danger with proper signs.

The indicate below danger zone must be kept clear during the bending operation.



DANGEROUS AREAS

Dangerous areas listed below must be kept clear during the bending operation.

4.1.6 TEMPORARY STORAGE

In the event that the machine should remain outdoor for a short period, prior to being transported in, the user must provide to cover it with sturdy nylon sheeting.

If storage is longer than two-three days, it is necessary for this to happen in a place protected from weathering and by temperatures too high and too low.

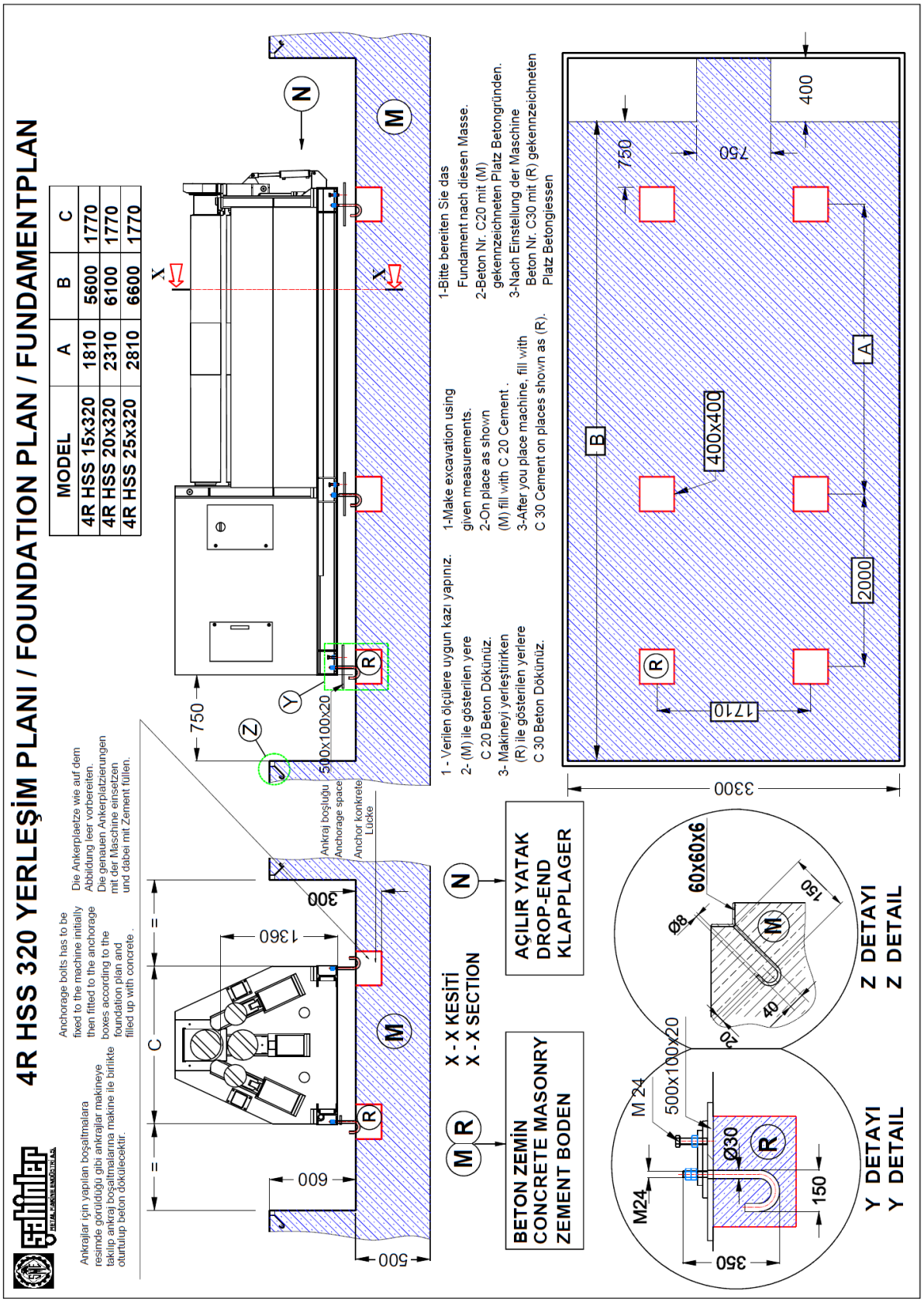
4.2 INSTALLATION

After verifying the integrity, the user can install the machine in mind that has the responsibility to ensure that:

ATTENTION

- The intended location is sheltered from the elements;
- The support area is perfectly flat and with load capacity adequate to the weight of the machine;
- Around the machine is provided for an adequate working area free from obstruction;
- The environment where the machine is positioned to be secured or closed, to prevent free access to the machine to children or strangers or who are not entitled to it is use;
- Be located in the vicinity of the main switch with thermal differential established for the purpose;
- The installation of power is equipped with ground;
- The ambient temperature is between +5°C e +40°C, with an average of no more than 35°C within 24 hours; Relative Humidity: 50% with temperatures of 40°C, 90% with temperatures of 20^0C.

4.2.1 FOUNDATION PLAN



4.2.2 ELECTRICAL CONNECTION

Before making the electrical connection, check that the power supply be equipped with an efficient equipotential bonding in accordance with applicable electrical standards.

This is a specific responsibility of the User.

The electrical equipment of the machine is prepared, unless otherwise specified by the Buyer, to operate at a voltage of 380V and a frequency of 50 Hz.

Proceed to control of voltage and frequency of operation: they must match the voltage and frequency of the distribution network.

DANGER

It is essential to correctly perform the electrical connections.
It is recommended to carefully follow the instructions below, using the functionals schemas in the Annexes to this manual.

ATTENTION

In order to ensure proper functionning of the entire electrical equipment, the values of the voltage of the machine may not differ with respect to nominal declared under contract beyond the percentages required by law.

Proceed to control the existing distribution cabinet that have to feed the machine electrical cabinet. It must be equipped with set of three fuses and properly calibrated magnetothermic switch.
The power cable must be protected with anti-crush special sheath and positioned so it cannot be crushed, bumped or damaged. To this end it is recommended to avoid laying on the floor.

We recommend, when you're done with electricity and always before the first start of the machine or after a routine maintenance, to make a perfect control of the operation of the circuit and a testing ground (protective equipotential bonding circuit) with appropriate instrumentation.

DANGER

It is forbidden to connect the machine directly to the electrical conductors of the distribution plant, a failure on the system of distribution can result in serious injury to the Operator and irreparable damage to the machine electrical equipment.

It is mandatory to always turn off the power to intervene whenever the power connections. The contact of body parts to machinery parts supply can cause very serious injury and even death.

It is mandatory to always verify the effectiveness of the grounding of the machine after connection. The connection of defective or inadequate grounding conductor can result in serious injury or even death.

Do not make changes or adjustments on the motor and electrical organs. These interventions, in addition to invalidating the warranty, can cause imbalances that could affect the operation of the machine as well as being dangerous to the operator itself.

ATTENTION
ELECTRIC
VOLTAGE

CAUTION

To make the electrical connections and other actions by qualified personnel.

The electrical cabinet has a locking wrench and a switch "**interlock**". This prevents the opening of the cabinet door with the equipment energized. It must be to bring the switch from position 1 to position 0 before opening the door.

ATTENTION

For safety of personnel, the earthing system of the plant must be efficient.

ATTENTION

Before performing any maintenance or other, electrically disconnect the machine directly from the power supply.

Connection (see diagram in Section 7 - Attachments):

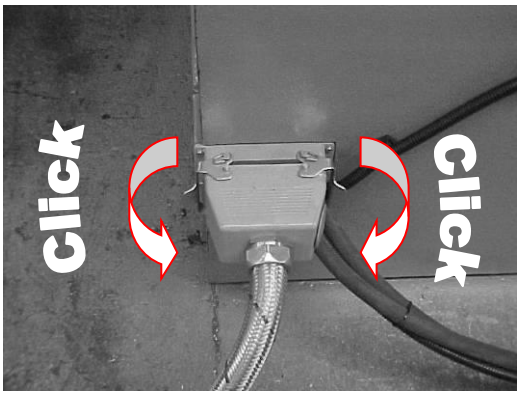
Before making the electrical connection, check that:

1.- The voltage required by the machine conforms to the mains supply.

2.- The supply line to bear the power of absorption of the motors installed on the machine.

Connecting the plug connection of the Control Consolle (consolle details in Chapiter 5 – Goodwill and Use):

Move the plug to the machine and connect the same as shown in the figure.



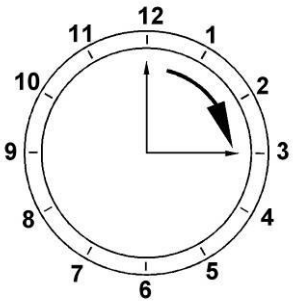
MOTOR VOLTAGE - CURRENT CABLE VALUES

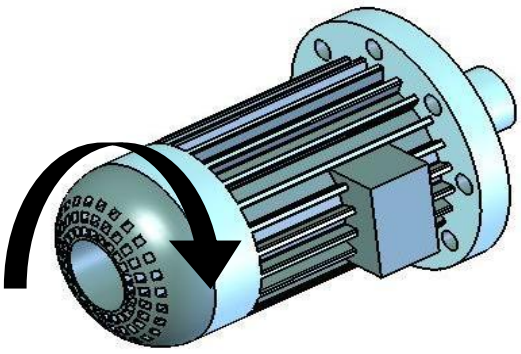
kW / HP	220-240 V (50Hz/60Hz)					380-400 V (50Hz/60Hz)					415-460 V (50Hz/60Hz)					575 V (50Hz/60Hz)			
	A	A	0-75 m	75-100 m	100-150 m	A	A	0-75 m	75-100 m	100-150 m	A	A	0-75 m	75-100 m	100-150 m	A	A	75-100 m	100-150 m
	Fuse	Motor	Wire thickness (mm²)			Fuse	Motor	Wire thickness (mm²)			Fuse	Motor	Wire thickness (mm²)			Fuse	Motor	Wire thickness (mm²)	
3 / 4	16	11,5	4 x 1,5	4 x 2,5	4 x 4	10	7	4 x 1,5	4 x 1,5	4 x 1,5	10	6,5	4 x 1,5	4 x 1,5	4 x 1,5	6	3,5	4 x 1,5	4 x 1,5
4 / 5,5	25	14,5	4 x 2,5	4 x 4	4 x 6	16	8,5	4 x 1,5	4 x 1,5	4 x 2,5	16	8	4 x 1,5	4 x 1,5	4 x 1,5	10	5	4 x 1,5	4 x 1,5
5,5 / 7,5	25	20	4 x 4	4 x 6	4 x 10	16	11,5	4 x 1,5	4 x 1,5	4 x 2,5	16	11	4 x 1,5	4 x 1,5	4 x 2,5	16	8	4 x 1,5	4 x 1,5
7,5 / 10	32	27	4 x 6	4 x 6	4 x 10	25	15,5	4 x 1,5	4 x 2,5	4 x 4	25	14	4 x 1,5	4 x 2,5	4 x 2,5	16	10	4 x 1,5	4 x 2,5
11 / 15	50	39	4 x 10	4 x 10	4 x 16	32	22	4 x 2,5	4 x 4	4 x 6	32	21	4 x 2,5	4 x 2,5	4 x 4	25	16,5	4 x 2,5	4 x 4
15 / 20	63	52	4 x 10	4 x 16	4 x 25	40	30	4 x 4	4 x 4	4 x 6	40	28	4 x 4	4 x 4	4 x 6	24	20,5	4 x 2,5	4 x 4
18,5 / 25	80	64	4 x 10	4 x 16	4 x 25	50	37	4 x 6	4 x 6	4 x 10	50	35	4 x 6	4 x 6	4 x 6	40	21	4 x 4	4 x 6
22 / 30	80	75	4 x 16	4 x 25	4 x 35	63	44	4 x 10	4 x 10	4 x 10	50	40	4 x 6	4 x 6	4 x 10	40	26	4 x 6	4 x 6
30 / 40	125	103	-	-	-	80	60	4 x 16	4 x 16	4 x 16	63	55	4 x 10	4 x 10	4 x 10	50	32	4 x 10	4 x 10
37 / 50	150	126	-	-	-	100	72	4 x 16	4 x 16	4 x 16	80	66	4 x 16	4 x 16	4 x 16	63	50	4 x 10	4 x 10
55 / 75	200	182	-	-	-	125	105	4 x 25	4 x 25	4 x 35	125	100	4 x 25	4 x 25	4 x 35	80	70	4 x 25	4 x 25

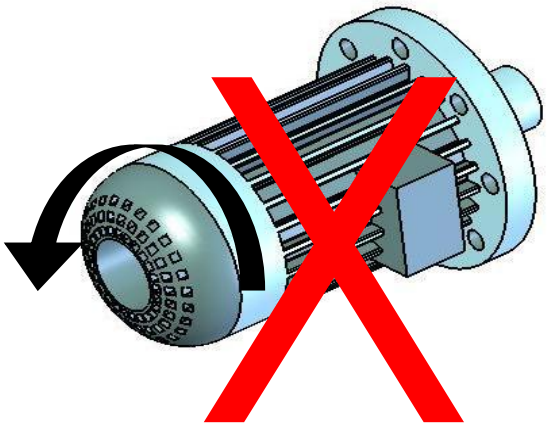
4.2.4 MOTOR STARTING

ATTENTION
ELECTRIC
VOLTAGE

Before using the machine you must perform the following:



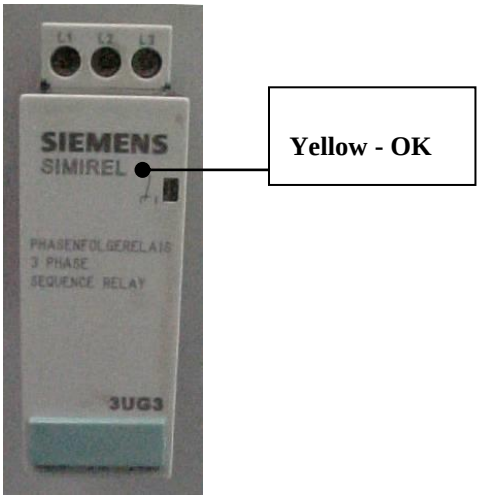




JUST **WRONG**

1. ***Open the protective cover and check the direction of motor rotation.***
2. ***If the direction of rotation is wrong to reverse the wires L1-L2 with each other.***

4.2.5 REVERSE POWER PROTECTION



Siemens o similar

If the electrical connection of the machine is wrong, the protection device is activated and blocks all phase electrical protection, in order to protect the pump from reverse rotation which could cause burning of the same. Only when the connection is correct, the relay will turn on the light and the machine will be put into operation.

4.2.6 PRELIMINARY CLEANING OF THE MACHINE

Before and after placement, the machine itself must be thoroughly cleaned. Before proceeding, you must remove the power supply by bringing to “0” the main switch.

4.2.7 GENERAL INSPECTION

Check that there is no corrupted items and that all components are installed correctly. Safety devices are unsafe or damaged parts must be repaired or replaced by qualified personnel before the commissioning of the machine.

ATTENTION

Before putting the machine in use, you should carefully review the efficiency and proper operation of safety devices.

If, for whatever reason, there were doubts about safety of the machine, check for the cause of these concerns and ask the Service of the Company Manufacturer.

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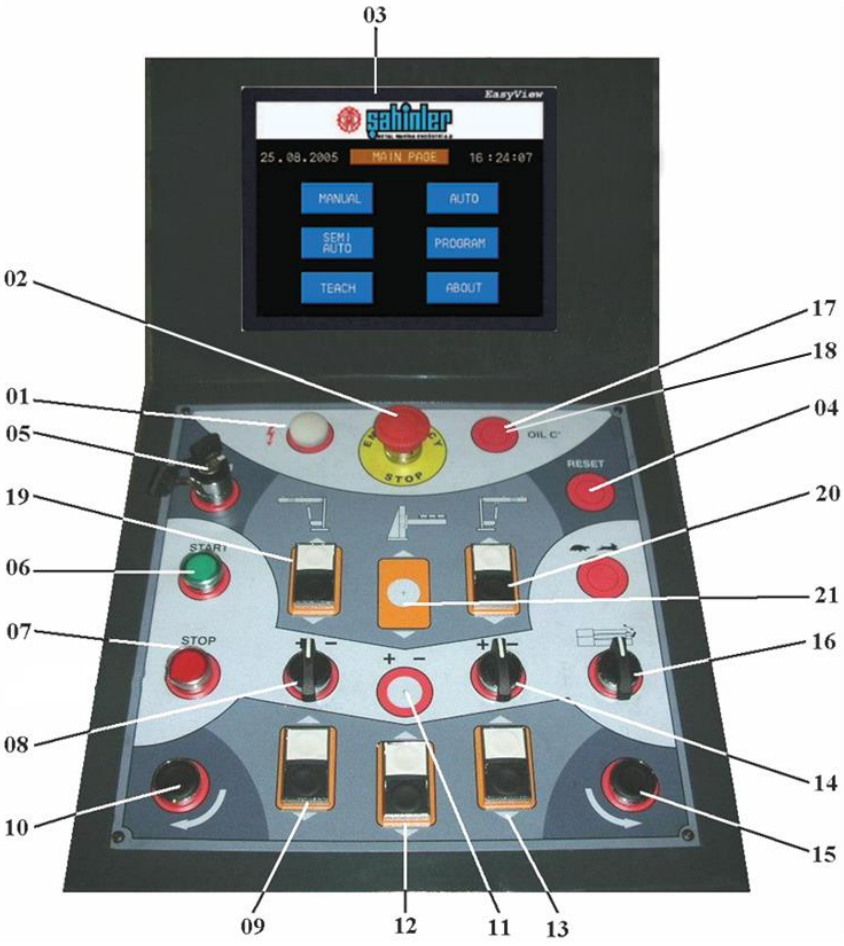
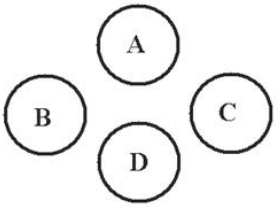
5.1 First Start and Control Console

- *The machine is equipped with a phase controller. If the electrical connection is not correct the machine will not start. Reverse the position of power cables and try again (see also Chap. 4.2).*
- *When you see the network light illuminated press the start button. The motor will start and after a few seconds you will hear the machine working.*
- *Check the movement of the machine by using the buttons of rotation or other movements*





5.2 Normal Operation

Read the instructions on the control panel before using the machine. The description of the electrical panel is inserted in the last chapter of the manual. The schema of the control panel with a description is given below.

1. *Power light on – When lit, indicates that the Main Power Switch is "On" position and the machine is ready to work.*
2. *Emergency - Stop*
3. *Touch Screen NC panel*
4. *Reset – To reset the PLC after the emergency stop (for machines equipped with the same).*
5. *Power On switch key – Security Key. When the machine is not in use you must remove the key to prevent use by unauthorized persons.*
6. *Start Button – To start the hydraulic pump and all the functions.*
7. *Stop – To stop the activities of the machine and the main motor before switching off the machine.*
8. *Roll B Tilting - This lifts only the bracket side of the roll B for the conical bending.*
9. *Roll B parallel up and down button.*
10. *Rolls rotation – counter clockwise (plate translation on the left).*
11. *Roll D Tilting - This lifts only the bracket side of the roll D for the conical bending.*
12. *Roll D parallel up and down button.*
13. *Roll C parallel up and down button.*
14. *Roll C Tilting - This lifts only the bracket side of the roll C for the conical bending*
15. *Rolls rotation – clockwise (plate translation on the right).*
16. *Bracket Opening/Closing – To open or close the bracket and remove the ferrule.*
17. *Oil Temperature Indicator – If the oil is overheated, indicator lights blinks and the motor stops to prevent burning.*
18. *Oil Level Indicator – If the level is low, indicator lights up and the motor stops to prevent burning.*
19. *Ascent – Descent of the Left Side Support (OPTIONAL).*
20. *Ascent – Descent of the Right Side Support (OPTIONAL).*
21. *Ascent – Descent of the Central Support Tower (OPTIONAL).*

5.3 EMERGENCY STOP

The machine has one Emergency Stop (2) and Emergency Stop wire around the machine. If the machine is stopped by pushing one of these the PLC must be reset before starting. To restart after an emergency stop:

- *Release the Emergency Stop Button (2) or*
- *Switch on the Emergency Wire (instructions on Safety Section)*
- *Push Reset Button (4)*
- *Push Start Button (6)*

5.4 THERMAL OVERLOAD OR OIL TEMPERATURE

If the Thermal Overload Indicator (3) is on it means the motor is disabled by the system to protect it from burning. The motor is overheated due to a problem (overloading – excess pressure due to hydraulic malfunction etc.) and must cool down before restarting. Do not restart the motor at least 10 minutes. Let it cool down and try to find the problem.

If Oil Temperature Indicator (3) is on it means the oil in the system is overheated. The problem could be with the coolant unit or hydraulic system. Do not restart the machine until the problem is solved.

5.5 WARNINGS

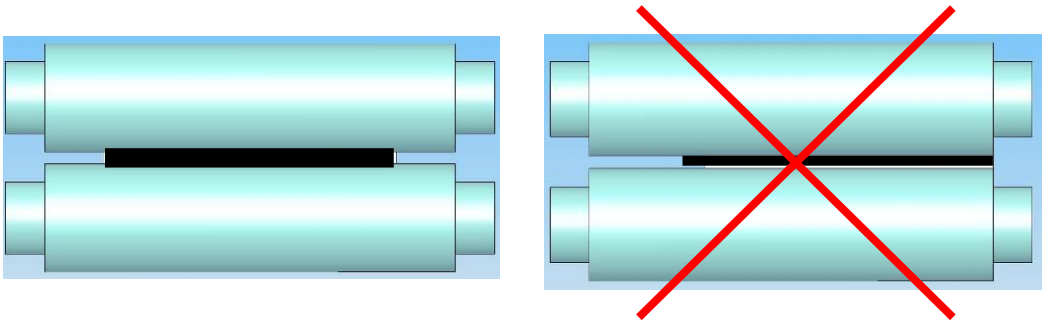
- Never try to bend on the machine very hard or fragile materials.
- Do not load the machine if it is operating.
- Any modification of the machine is strictly prohibited without written confirmation from the manufacturer, as these changes may cause unnecessary damage and injury.
- All the provisions and warnings on this machine should be closely observed for a secure job.
- DO NOT OVERLOAD the machine.
- If you notice an abnormal operation of the machine immediately notify the manager.
- Be careful when working with other people who may be close to the machine.
- Perform periodic maintenance.

5.6 CYLINDRICAL BENDING OPERATIONS

Pre – bending is the operation where the edges of the material is bent to the same radius of the end radius. This is used to get best results in full circle bending

Before Operation ;

- *Clean the material and the rolls of dust or grease.*
- *Make sure there are no chips or flame cutting left – over on the edges of the material*
- *Make sure the material is flat.*
- *It is a good idea to have template of the required radius when making a bend. To make a template cut a hard cardboard or cartoon piece with the necessary radius.*
- *Always work in the center of the rolls as shown .*



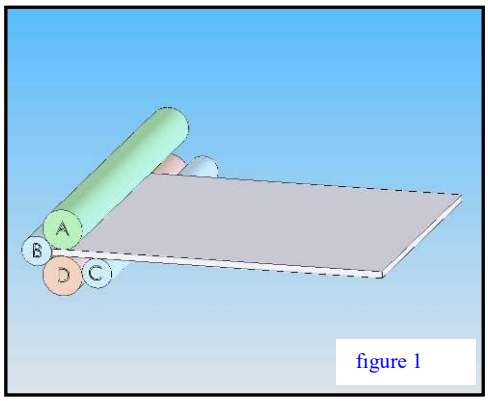


figure 1

FIRST OF ALL , AS SHOWN IN FIGURE, PLACE THE ROLL B AND INTRODUCE THE PLATE AMOUNG THE ROLLS.

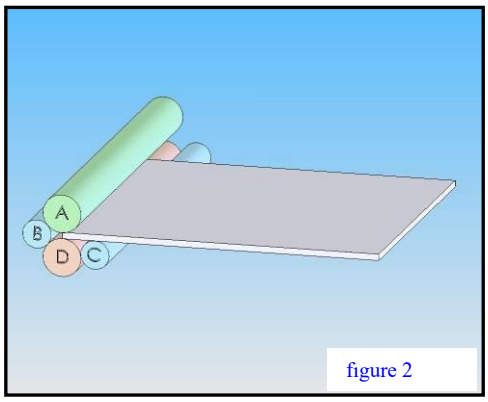


figure 2

LIFT THE ROLL D AND PINCH THE MATERIAL

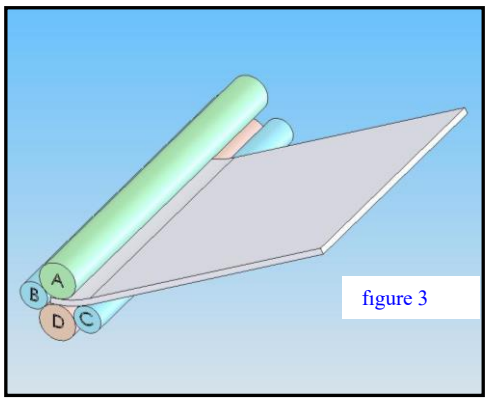
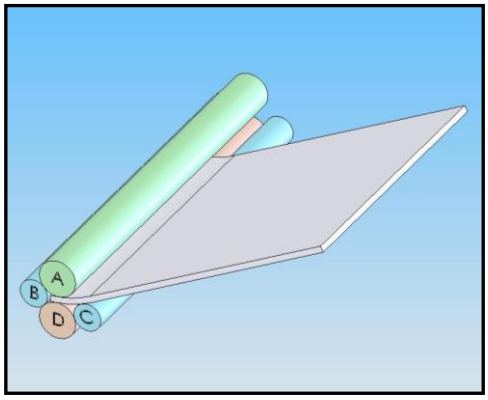


figure 3

USING THE ROLLS ROTATION BRING THE END OF THE PLATE TO THE CENTRE OF THE CENTRAL ROLLS. NOW THE PLATE IS READY TO BE BENT.



CARRY OUT THE PRE-BENDING LIFTING THE SIDE ROLL C , AFTER CHECKED WITH THE TEMPLATE IF THE RADIUS OF THE OBTAINED CURVATURE IS EQUAL TO THAT YOU WANT, MAKE A SMALL ROTATION.

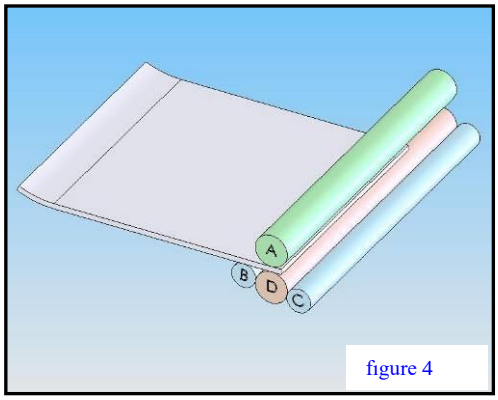


figure 4

WISHING, TRANSLATING THE PLATE SO THAT THE SECOND END IS AMOUNG THE ROLLS, THE PRE-BENDING OF THIS END MAY BE OBTAINED. THIS ACTION IS NOT NECESSARY ON A FOUR ROLL MACHINE.

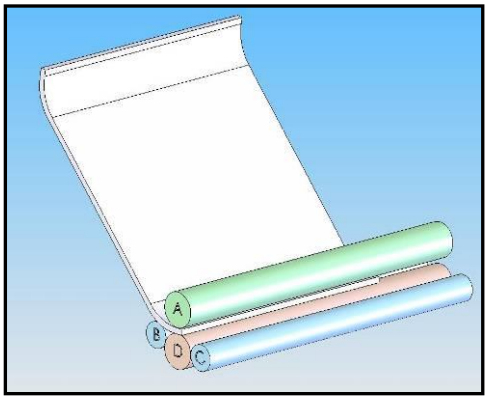


figure 5

LOWERING ROLL B AND LIFTING ROLL C WITH RIGHT AND VICEVERSA LEFT ROLLS ROTATION, LIFTING STEP-BY-STEP ROLLS B AND C, MAKING CLOCKWISE AND ANTICLOCKWISE ROTATIONS UP TO ACHIVE THE DESIRED BENDING RADIUS.

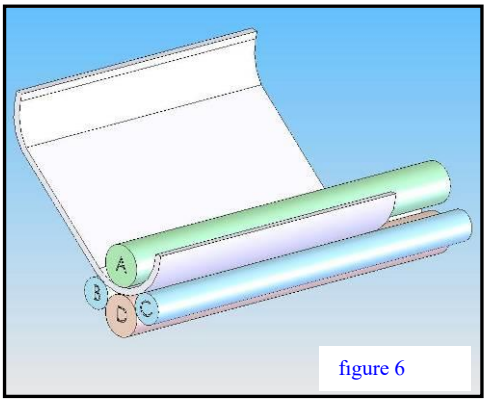


figure 6

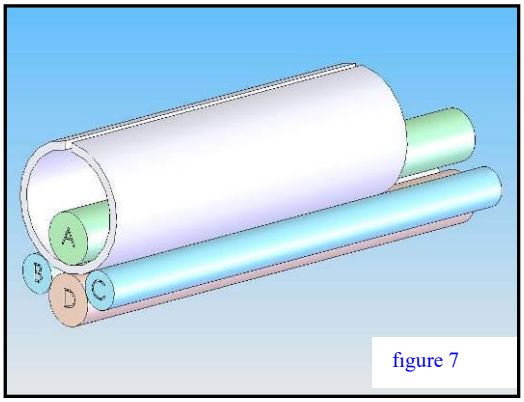


figure 7

NOTES

* *Start rolling the material until you get the required radius. It is normal to make several passes before getting the job done but remember that with less passes you get better finished material.*
* *If you are working with stainless steel it is important to finish the job in a few passes. Because the work hardens this material and it becomes progressively harder after each pass (self-hardening).*
* *Write down the values of the rolls final position, detected by digital display, you can for repetitive work minimize the number of passes.*

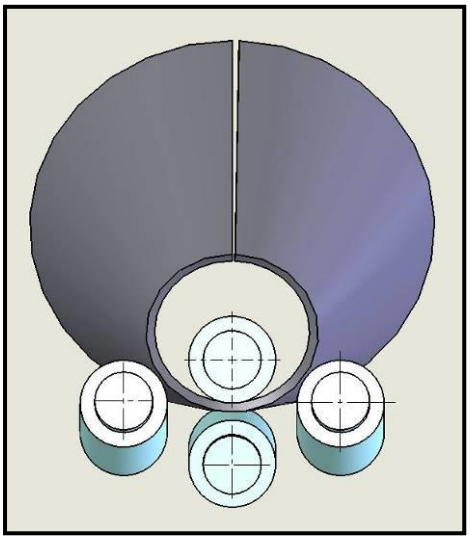
5.7 CONICAL BENDING

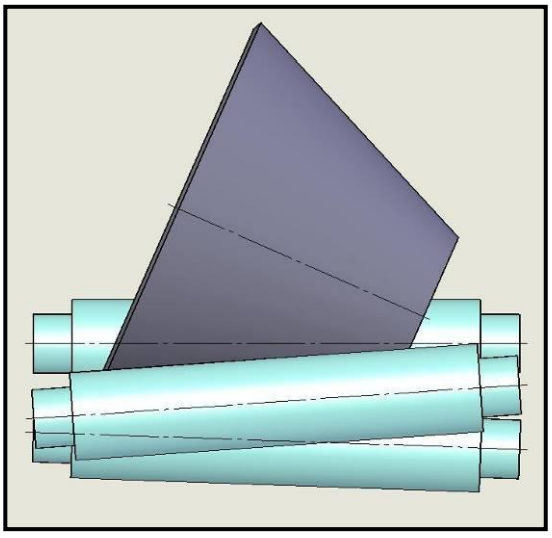
ALTHOUGH THE BENDING PROCEDURE IS THE SAME AS PER THE CYLINDRICAL BENDING, WHILE MAKING THE CONICAL BENDING YOU FIRST NEED TO TILT THE ROLLS AS SHOWN IN FIGURE AND THEN PUT THE SIDE OF THE SHEET CORRESPONDENTING TO THE SMALL DIAMETER OF THE CONE AGAINST THE CONICAL BENDING DEVICE.

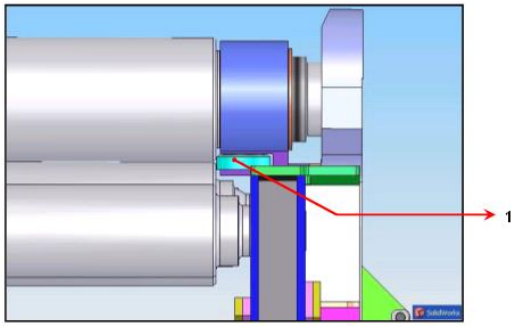
BEFORE YOU START THE CONICAL BENDING, THE SHEET MUST BE CUT ACCORDING TO THE SHAPE OF THE CONE TO BE OBTAINED.

IF IN DOUBT ABOUT THE SHAPE OF THE CONE, THE THICKNESS, THE MATERIAL AND ITS DIMENSIONS, CONTACT THE MANUFACTURER.

WHEN CONE BENDING, THE THICKNESS AND WIDTH CAPACITIES OF THE MACHINE ARE REDUCED. AN INCREASE IN THE CONE ANGLE INCLINATION CORRESPONDS A DECREASE IN MACHINE BENDING CAPACITY.



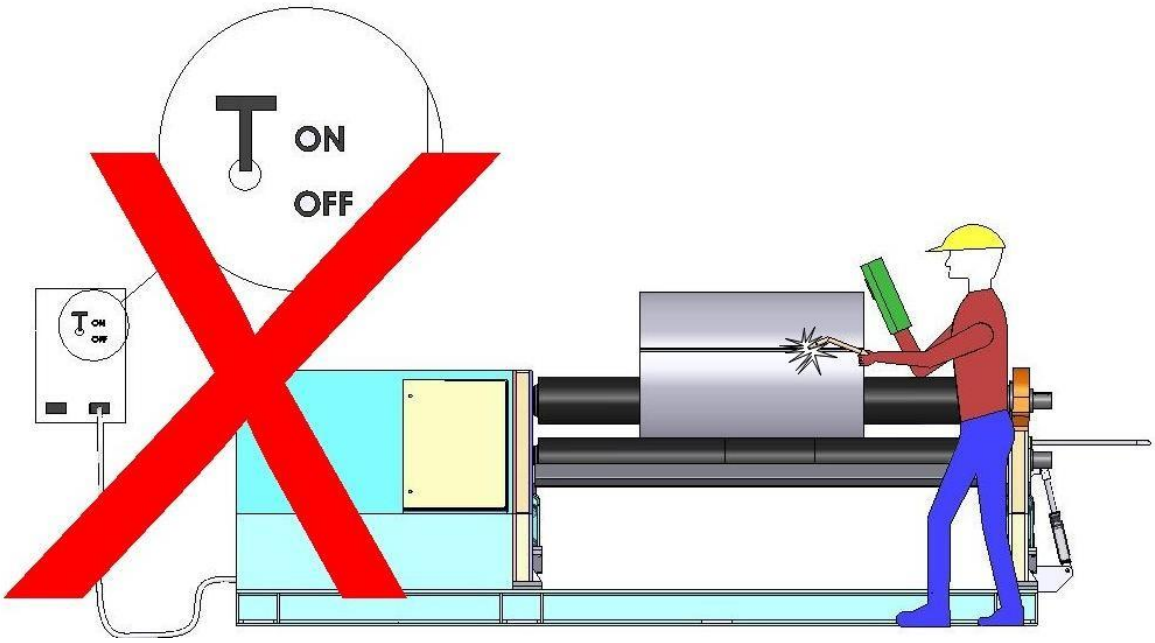




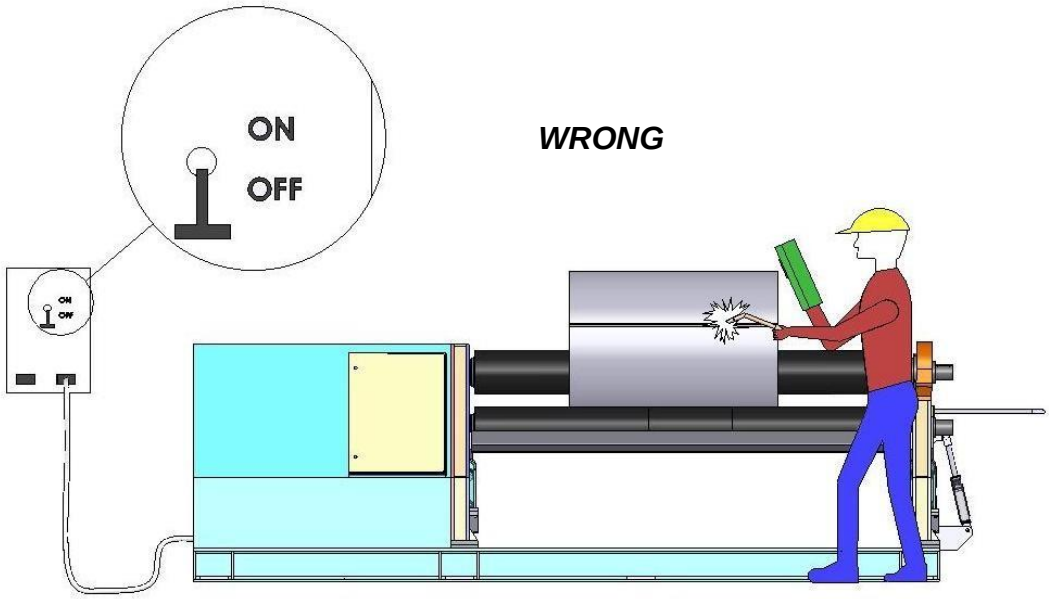
THE PART INDICATED BY N° 1 HAS BEEN DESIGNED AND MADE FOR SUPPORTING THE THRUST OF THE PLATE DURING THE CONICAL BENDING OPERATION.
AVOID TOO HIGH THRUST OF THE PLATE, CORRECTING THE TILT OF THE ROLLS, TO AVOID OR MINIMIZE THE RIM CLINCHING.

5.8 WELDING OPERATION

ATTENTION: *Before welding operation switch off the electricity from the general switch*



WRONG



TRUE

INDEX

6.1 PRE LIMINARY REMARKS

The robustness of the machine and the precautions taken at the design stage, means that the machine requires very little maintenance that in any case must be performed regularly.

6.2 GENERAL RECOMMENDATIONS

(SEE ELECTRICAL AND HYDRAULIC DIAGRAMS IN CHAPTER 8)

Before carrying out any work to read the instruction in this manual.

Maintenance operations must be carried out by maintenance workers and that by skilled and competent personnel. SAHINLER is available for any periodic maintenance and/or extraordinary.

Behavior does not conform to the safety instructions listed here can cause a serious danger to persons and/or serious damage danger to property and/or the environment.

ATTENTION

Any maintenance operation must be carried out after disconnecting the machine from power supply.

The manufacturer disclaims any liability for any damage if these were attributable to non-routine maintenance, even if such damage occurs during the warranty period.

DANGER

WARNING: DANGEROUS VOLTAGE

Pay attention to the maintenance of the electrical cabinet.

Observe the frequency indicated for maintenance.

ATTENTION

The regularly scheduled maintenance cannot be done when the machine is running. Then unplug the power supply through the main switch and the socket.

A warning signal that says "DO NOT START – MACHINE MAINTENANCE" must be clearly visible on the machine.

Note :

Performed maintenance work, before putting the machine into service, make sure that all work has been completed, check that the pieces may be replaced and/or equipment used for repair/maintenance has been removed from the machine itself.

Check that all safety signs and graphic signs are present, in good condition and legible

6.3 LUBRICATION

The machine needs to be lubricated regularly for it to work efficiently and for a long time.

In Figure 6.3 highlights the points where to lubricate according to the attached sheet:

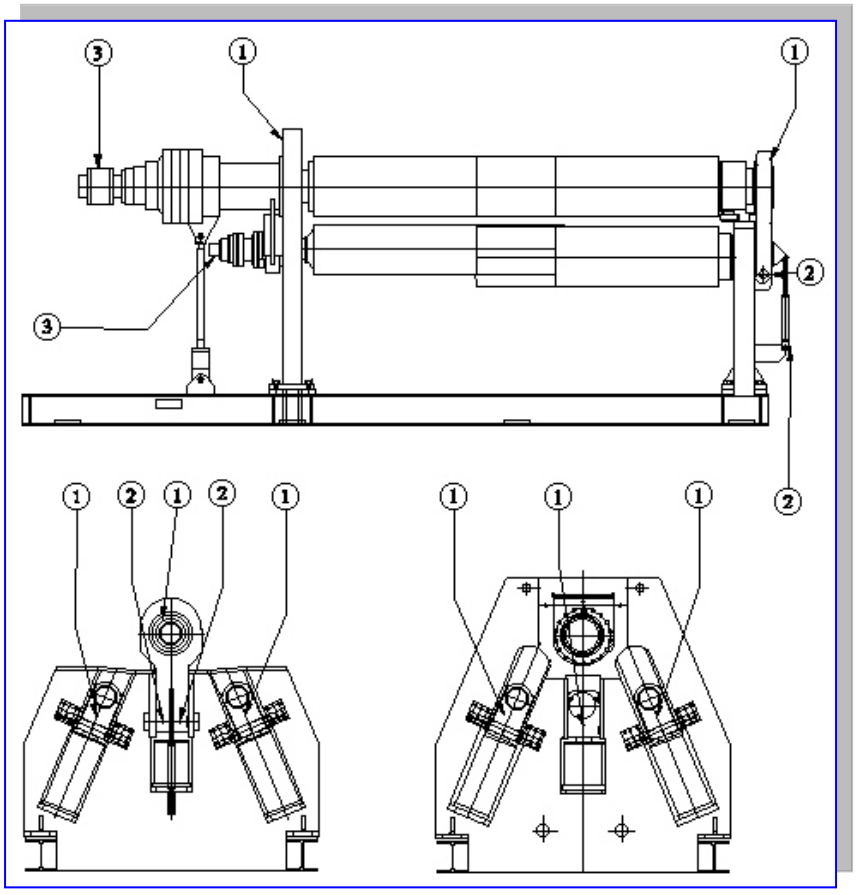


FIGURE 6.3

Lubrication of Bushings:

Perform periodic maintenance as follows:

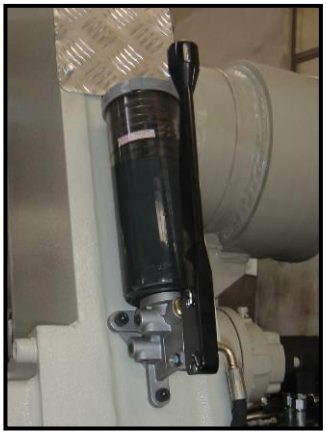
- *The bushings shown as (1) on the drawing are lubricated by the Centralized Lubrication System. However they must be greased manually once every two weeks by hand also.*
- *The bushings shown as (2) on the drawing must be greased manually once a month*
- *The motors-reducers shown as (3) must be controlled periodically. Refer to Chap.8-Annex 6-7 Instruction Manual - for maintenance of the motors and reducers.*

LUBRICATION

Also this machine needs to be lubricated as periodic like all mechanical machines. Please check the points on the lubrication plan.

Lubrication Center System

Your machine is equipped with a centralized greasing system. It works manually but very simple to use. All you have to do is to pull the lever on the greasing unit (fig –1) 4-5 times everyday before you start working the machine the system lubricates all mechanical moving parts and slides.



Note : It is necessary to use just recommended oils in your machines in order to work them longterm.

Note : *The environmental sensitive important for us. Please dispose of used oil properly with oil companies. Don't throw away used mineral oil*

6.4 MACHINE CLEANING

During processing the machine (in particular the area of the rolls and the guides) is covered with slags and residues of bending operations, it is therefore advisable to clean the machine regularly.

To make this clean absolutely to avoid blowing with compressed air, since slags tend to get inside the machine.

Then use a brush to remove larger waste, trying to download them out of the machine and away from moving mechanical parts.

Where possible use a vacuum cleaner.

* **Cleaning the inside of the electrical cabinet.**

Clean the cabinet as following:

- *Turn the machine off using the main switch;*
- *Disconnect electrical power to the cabinet;*
- *Open the electrical cabinet;*
- *Do not use liquid cleaners for cleaning the inside of the cabinet;*
- *Check the connection to the terminals of different devices;*
- *Tighten any loose contact;*
- *Close the cabinet door by controlling its effective closure.*

6.5 CONTROL OF SAFETY

Check periodically (every month max) and after every maintenance operation the perfect state of operation of safety devices on the machine.

Check that all devices are present and firmly fixed in their position.

Make sure the machine after an emergency can not be started until you restore.

Verify the integrity of symbols and terms posted on the machine.

ATTENTION

At the end of the maintenance before restarting the machine, the technical manager must ensure that the works are concluded, the securities reactivated and that have been re-mounted guards.

6.6 MAINTENANCE

Control all the bolts of the machine and the reducers periodically once a month, in particular:

* After the first 2 weeks of work or 100 hours after start-up:
  - Filters of the hydraulic system,
  - Oil leaks,
  - Gearbox bolts.
* Check every week or every 50 working hours:
  - Reducer oil,
  - Decrease in amount of oil.
* Check every month or every 500 working hours:
  - Filter return cartridge and its cleaning.

It is recommended to periodically (about every 1000 hours of operation), a review of all the parts subject to wear and, where appropriate, to replace them.

The following table shows the maintenance activities necessary to ensure that the machine can work properly, preventing malfunctions and defects.

INTERESTED PARTY	OPERATION	WORKING HOURS
ROLLS BLOCKS GUIDES	CLEANING - LUBRICATION	40
PINS OF BRACKET - HEAD	GREASING	1000
REDUCER	ADDING OIL	1000
HYDRAULIC UNIT	OIL CHANGE	2000
ELECTRIC PLANT MASS	CONTACT CONTROL	200
ELECTRIC MOTORS	CONTACTS CONTROL	1000
RELAYS	INSPECTION	200
POWER CABLES LINE	TIGHTENING CONTROL	1000

Comparative Table of hydraulic oils:

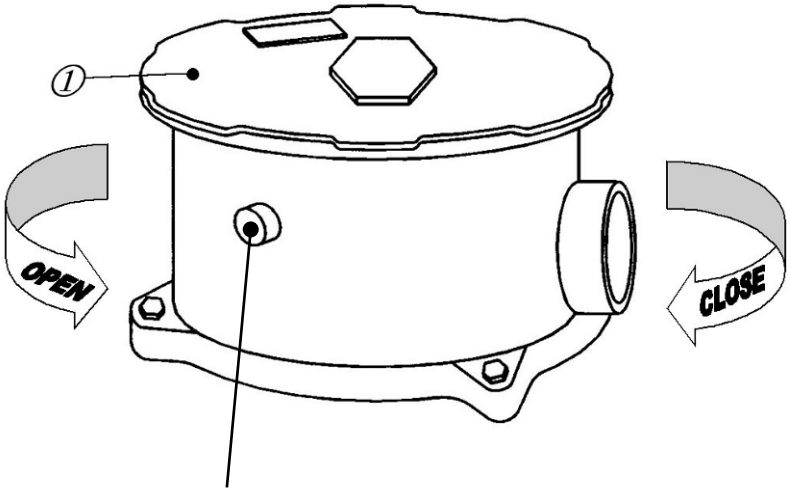
Brand	Working Temperature > 20 °C	Working Temperature < 20 °C
Agip	OSO 46	OSO 32
BP	Energol HLP 46	Energol HLP 32
Castrol	Hyspin AWS 46	Hyspin AWS 32
Elf	Elfona 46	Olna 32
Esso	Nuto H 46	Nuto H 32
Fina	Hydran 46	Hydran 32
Ip	Hydrus 46	Hydrus 32
Mobil	DTE 25	
Q8	Haydn 46	Haydn 32
Shell	Tellus 46	Tellus 32
Texeco	Rando HD 46	Rando HD 32
Total	Azolla ZS 46	Azolla ZS 32

RECOMMENDED GREASE/OIL

DESCRIPTION	BRAND	INTERESTED PARTIES
Lubrication Grease	AGIP GR MU EP/2	BEARINGS – GUIDES-SLIDES
Lubrication Grease	AGIP GR MU EP/2	BUSHINGS
Oil for Reducers	SHELL OMALA 220	REDUCERS

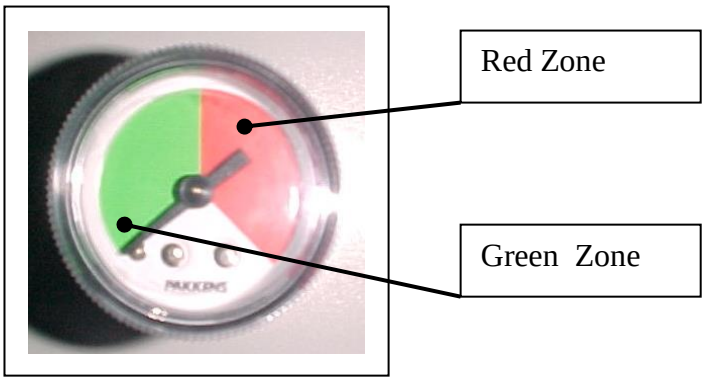
PERIODIC CHECKS OF THE RETURN FILTER

Check to return Filter



Clean or change the filter as follows:

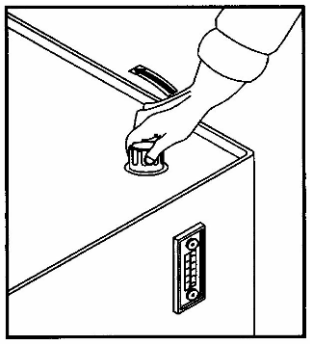
1. Open the cover (Nr.1) by turning it to counter-clockwise
2. Clean or change the filter element
3. Close the cover by turning it to clockwise



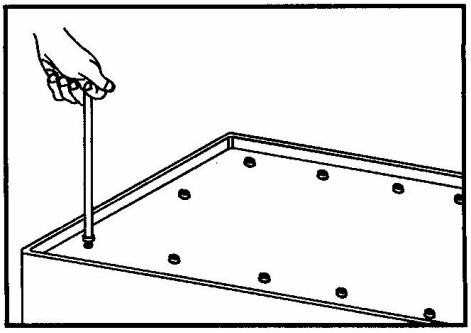
Attention: When filter's pointer got red zone, filter must be changed. Also, you had better check filter frequently.

Check to Suction Filter (Inside)

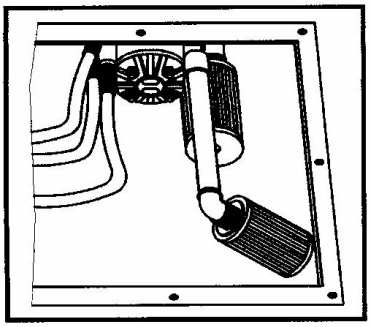
Below we explain step by step to change the suction filter



Step 1



Step 2



Step 3

6.7 EXTRAORDINARY MAINTENANCE

The extraordinary maintenance operations are not covered in this manual, as they must have been made by manufacturer or by authorized personnel from the same.

6.8 AFTER SALES SERVICE

ATTENTION

IT IS ABSOLUTELY NOT RECOMMENDED THE USE OF NOT ORIGINAL SPARE PARTS.

The original spare part, by it is construction and/or heat treatment which is submitted, warrant the quality of operation of the machine, the best life and it is conditions of safety.

6.9 SET ASIDE

In case of temporary storage (less than two months) is not necessary to take special precautions. For a longer period of inactivity to maintain the efficiency of the machine should be:

- Ensure that the environment in which the machine is being treated is dry and without excessive thermal shock;
- Interrupt the power supply of the machine by intervening on the magnetothermic switch of the machine;
- Ensure that during the period of inactivity of the machine the line switch cannot be reinserted by unauthorized persons;
- Carry out thorough cleaning of the whole machine of any traces of dirt;
- Tighten all hardware;
- Check and replace worn or damaged parts;
- Pass a coat of antirust on the areas damaged or abrased;
- Lubricate/grease all the parts subject to wear;
- To operate the plant for a few minutes at regular intervals of about two months, without pressure, to ensure proper lubrication of internal components.

MACHINE DEMOLITION 7

WASTE DISPOSAL

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WASTE DISPOSAL

7.1 MACHINE DEMOLITION

ATTENTION

THE DISASSEMBLY AND DEMOLITION AND/OR SCRAPPING OF THE MACHINE MUST BE PERFORMED BY QUALIFIED PERSONNEL

The machine is an asset for it is demolition follow the regulations imposed by the country's laws regarding the alienation of goods.
Prior to demolition (if necessary) request an inspection by relevant authorities and verbalization..
To carry out the demolition:

- Unplug the machine from the electrical power supply and possible other machines interfacing.
- Dismantle the machine and group the components depending on the type of materials to enable a differentiated waste disposal.
- Used oil must be stored in airtight metal containers which are deposited in a suitable environment and delivered to a licensed contractor for disposal in accordance with current standards.
- Any oil-soaked rags should be stored in special containers, stored and disposed of with the same procedures of the oil.

7.2 WASTE DISPOSAL

ATTENTION

For disposal of various components, contact only facilities legally authorized and able to issue a receipt to disposal.

The disposal of materials constituting the packaging, replaced parts of components or machine must be done in an environmentally, avoiding pollution of soil, water, air. Will be the responsibility of the recipient to do this in accordance with current standards in the country in which the machine is used.

Exhausted lubricants and cleaning products should be disposed of according to their differentiated structure.

APPENDIX WITH ATTACHMENTS 8

8.1 MACHINE PARTS LIST

SEE ANNEX 1

8.2 ELECTRIC DIAGRAMS

SEE ANNEX 2

8.3 ELECTRIC MOTORS SHEET

SEE ANNEX 3

8.4 NC MANUAL

SEE ANNEX 4

8.5 HYDRAULIC DIAGRAMS AND PART LIST

SEE ANNEX 5

8.6 COOLING SYSTEM

SEE ANNEX 6

8.7 HYDRAULIC MOTORS MANUAL

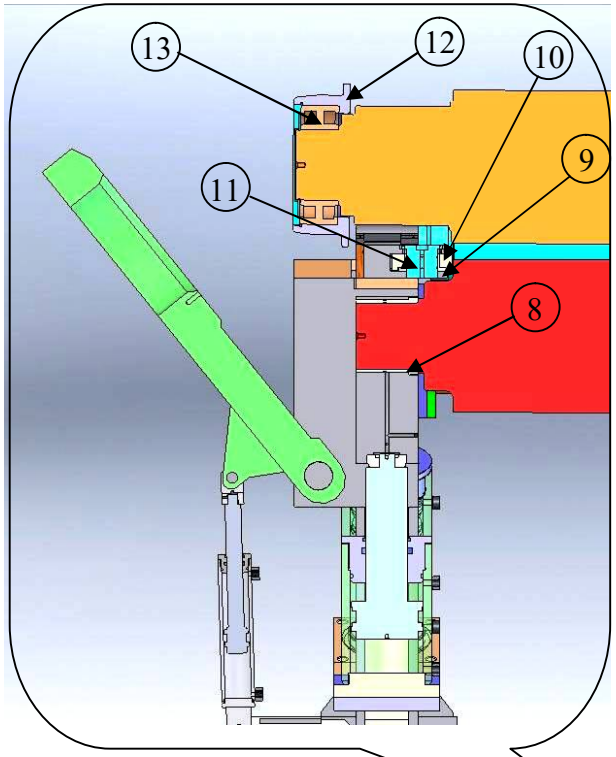
SEE ANNEX 7

8.8 REDUCERS MANUAL

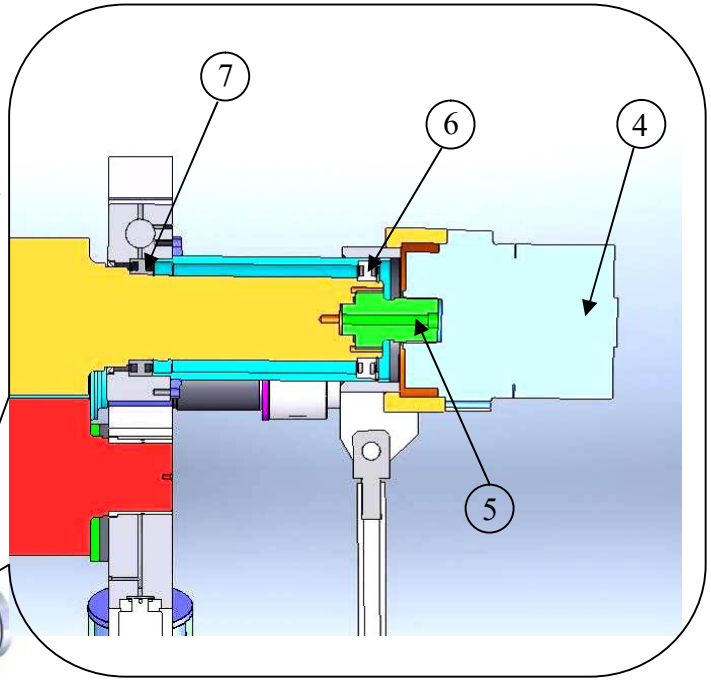
SEE ANNEX 8

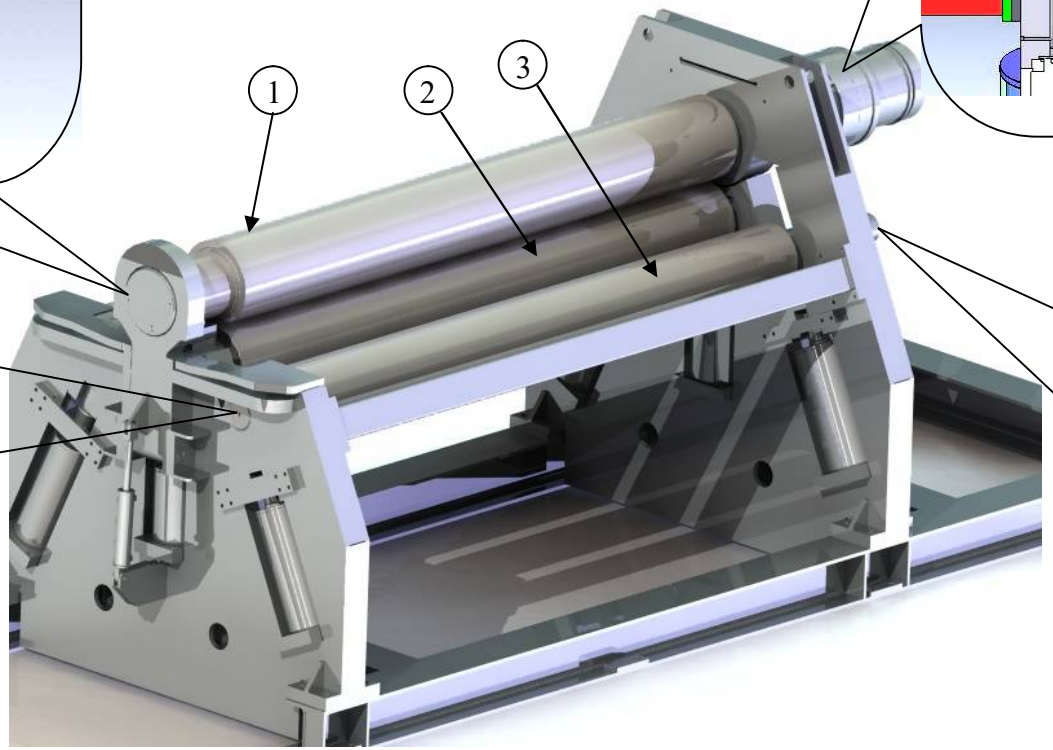
4R HSS Part List

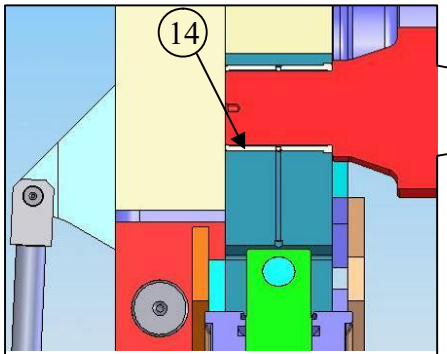
ANNEX 1



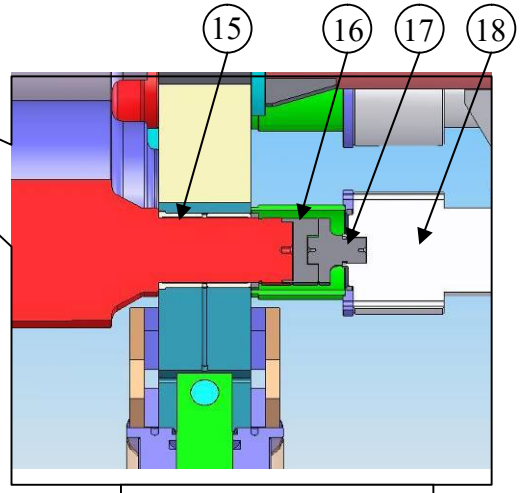
1. TOP ROLL
2. BOTTOM ROLL
3. LATERAL ROLL
4. TOP REDUCER
5. SHAFT
6. BEARING
7. BEARING
8. BRONZ BUSHING
9. BRONZ BUSHING
10. CONICAL BENDING ROLLER
11. CONICAL BENDING PIN
12. DROP-END BLOCK
13. BEARING
14. BRONZ BUSHING
15. BRONZ BUSHING
16. SHAFT JOINT
17. SHAFT JOINT
18. LATERAL REDUCER







LATERAL ROLL

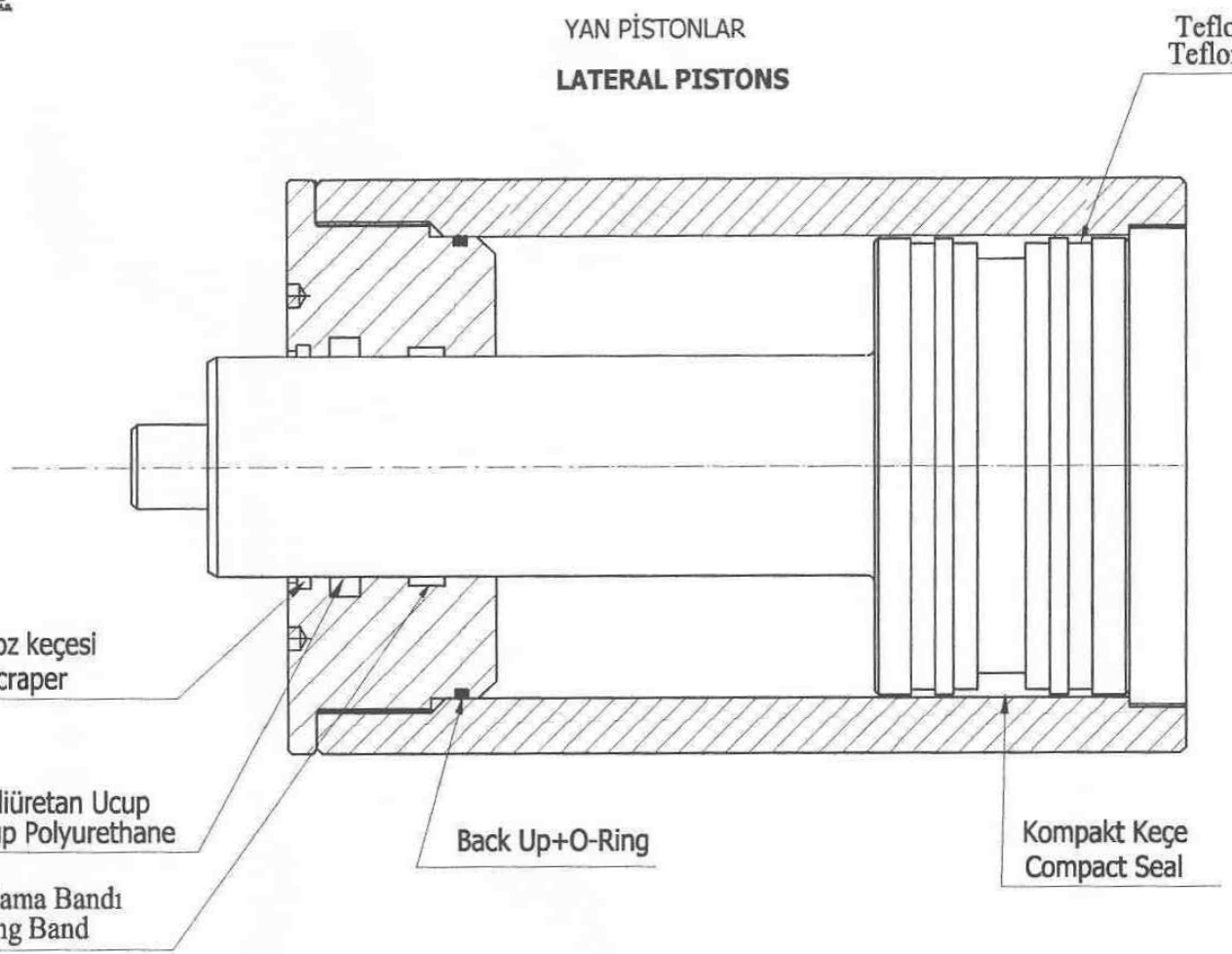


LATERAL ROLL

şahinler

YAN PİSTONLAR

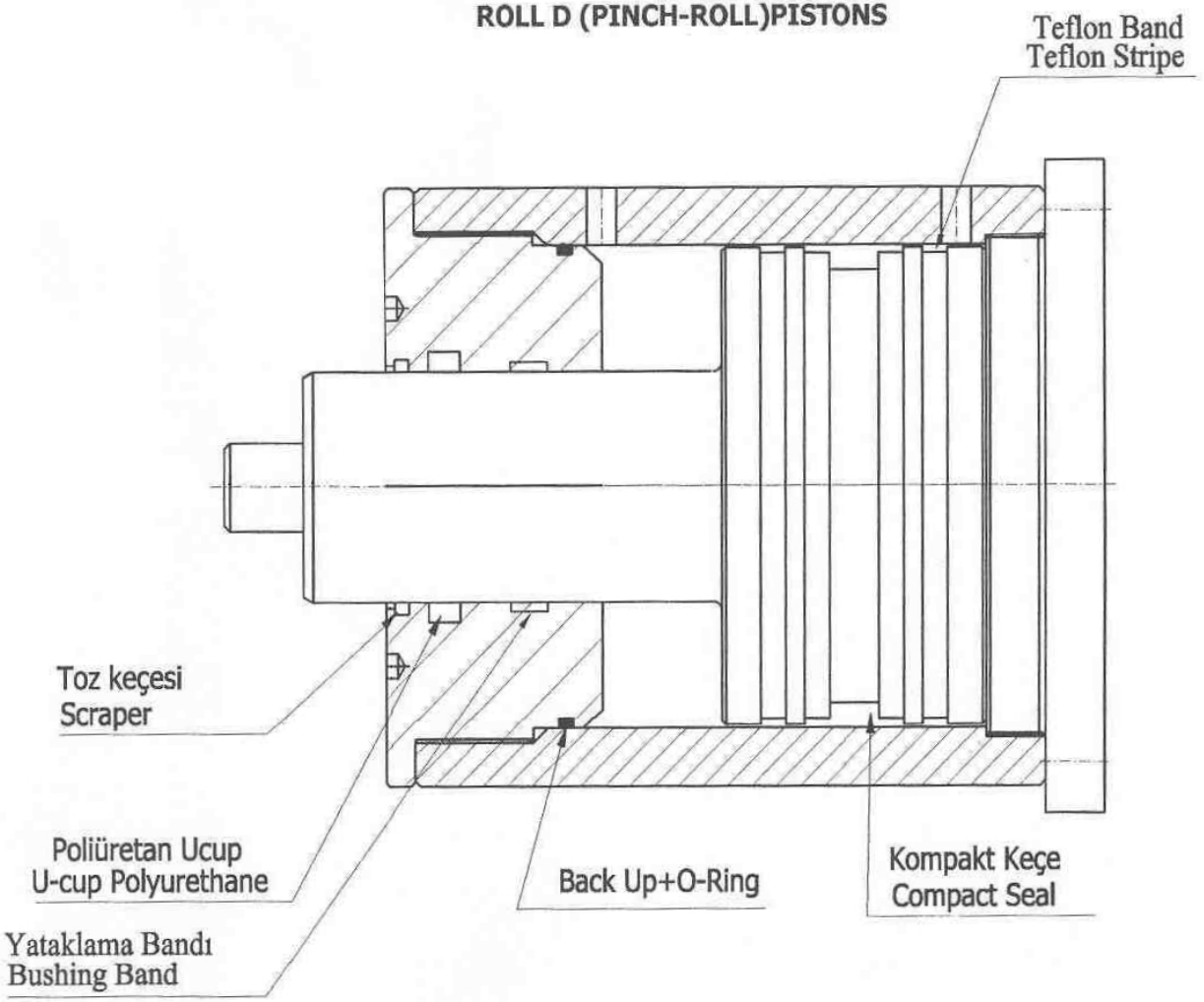
LATERAL PISTONS



şahinler

AVARE PİSTONLARI

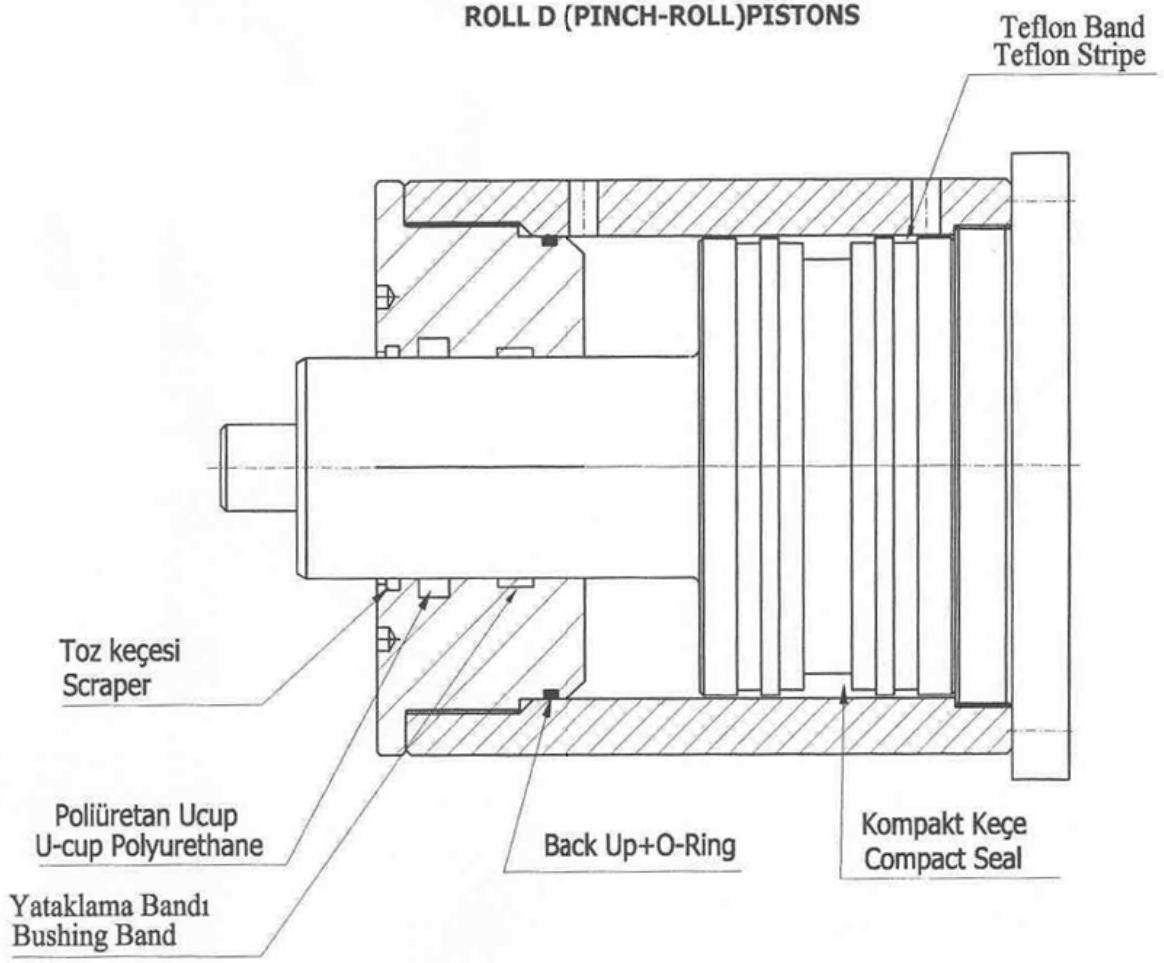
ROLL D (PINCH-ROLL)PISTONS



şahinler

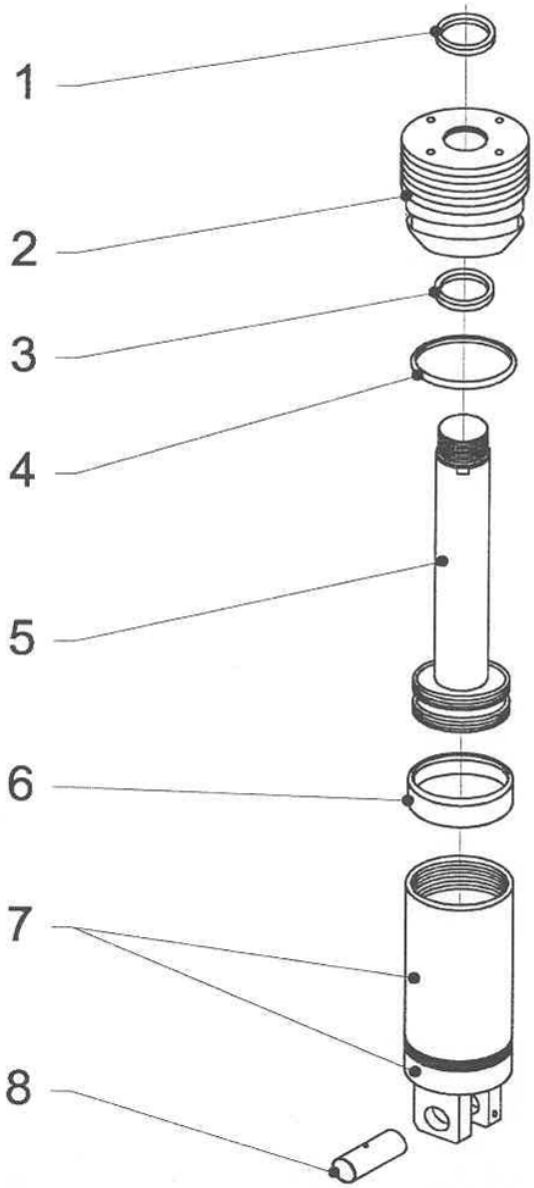
AVARE PİSTONLARI

ROLL D (PINCH-ROLL)PISTONS



MAIN PARTS VIEWS

BRACKET ARM PISTON



1. Scraper
2. Cast Neck
3. Neck Seal
4. O – Ring
5. Piston
6. Compact Seal
7. Cylinder
8. Pin

SAHINLER METAL MAKINA ENDUSTRI A.S.

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Customer :
Project name : 4R-HSS 320 NC SECTION BENDING MACHINE
Drawing number : 26122008
Customer's address:

Manufacturer SAHINLER METAL MAKINA ENDUSTRI A.S.

File name (\EPLAN4\P): 4RH3221
Drawn by : HUSEYIN KARADUMAN
Checked by : FIRAT CILINGIR
Responsible for project : FIRAT CILINGIR

Start Date : 10.Nov.2008
Complete Date : 12.Mar.2007

The Last Page : 23
Total page : 23

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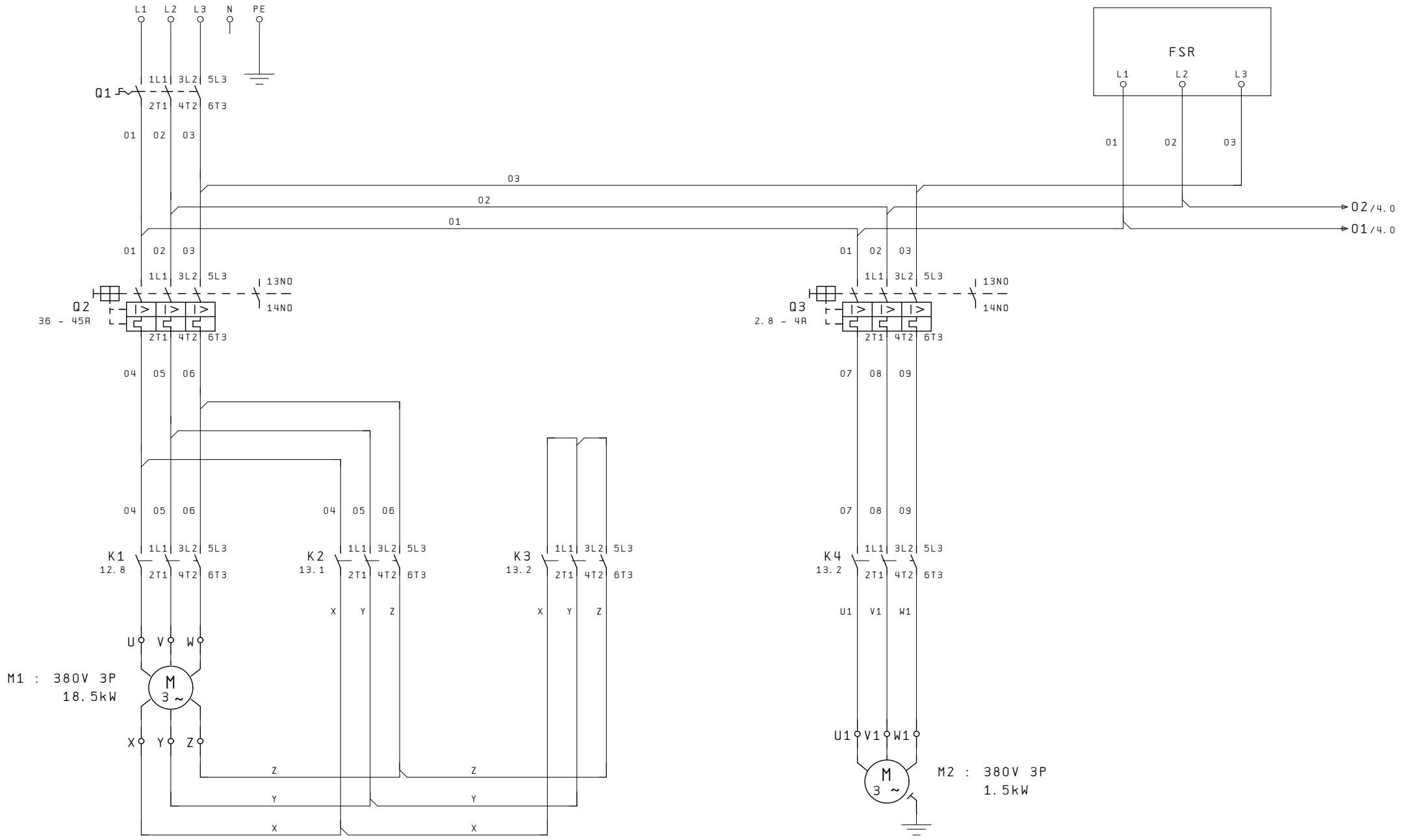

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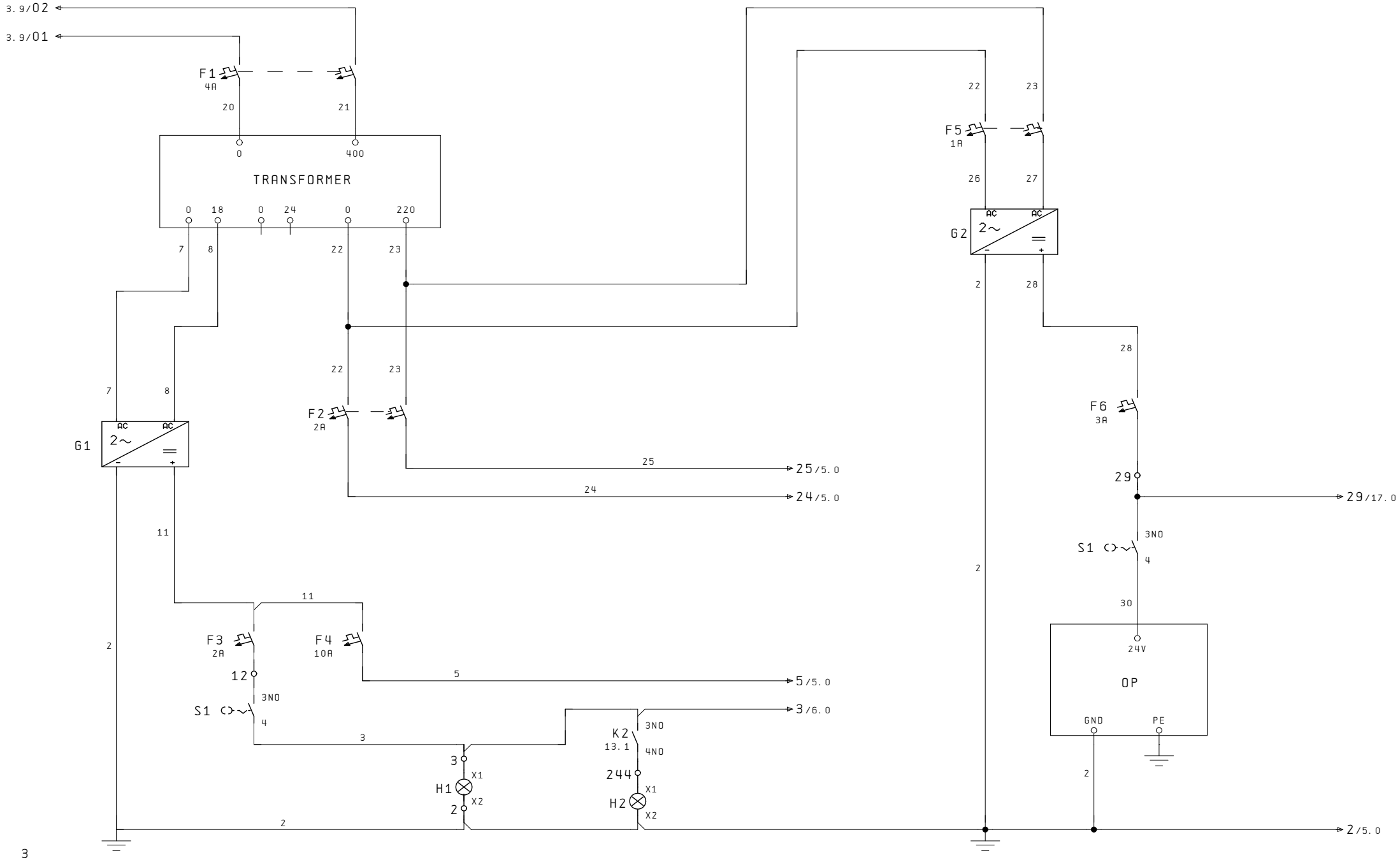

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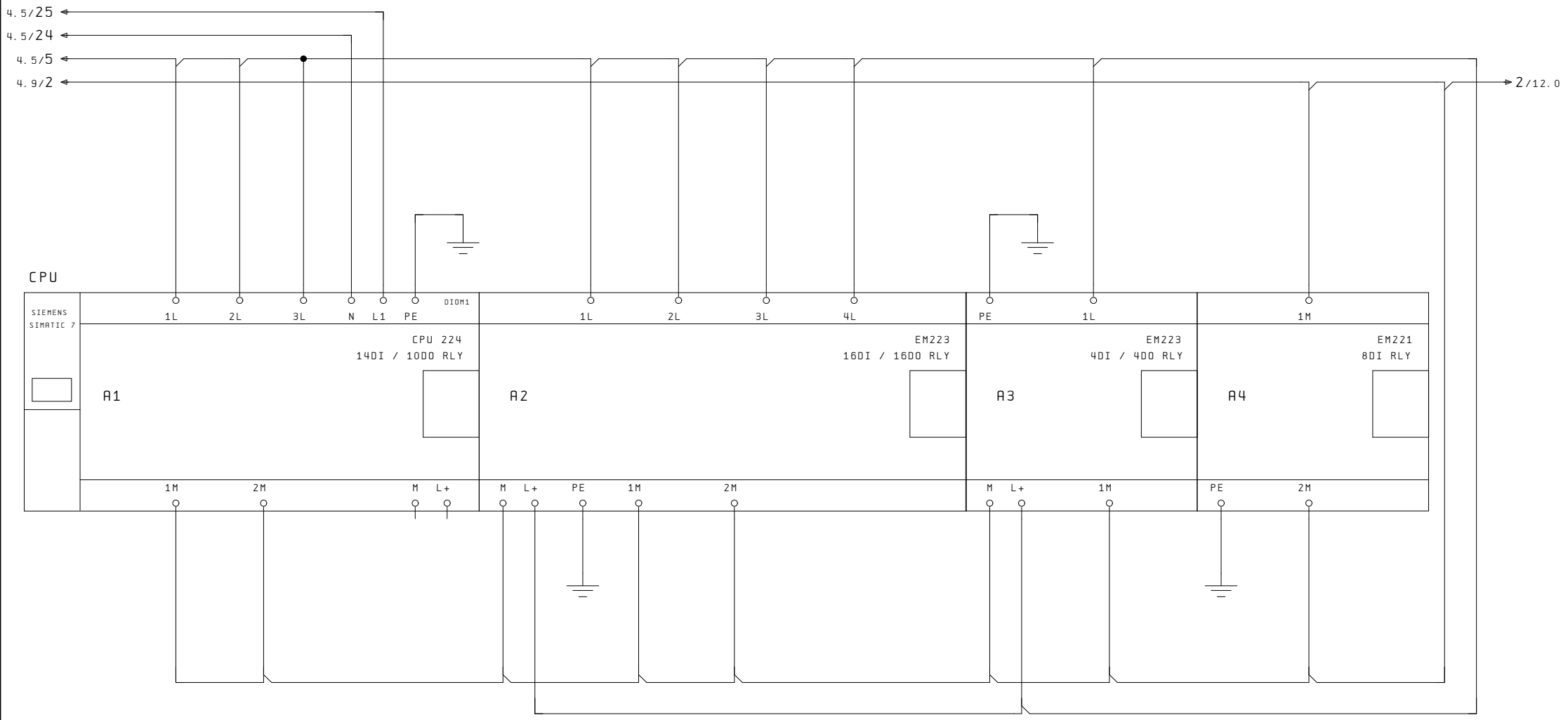
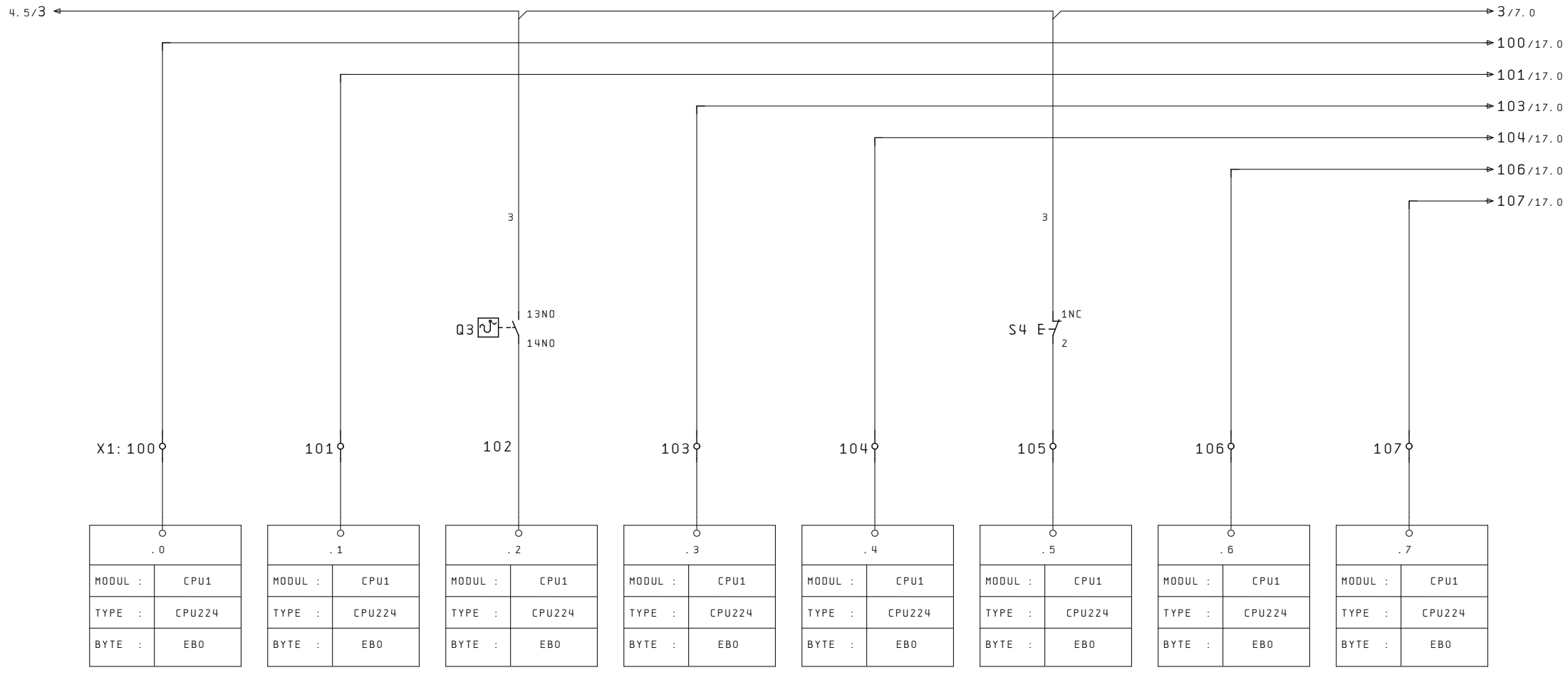
METAL MAKINA ENDUSTRI A.S.

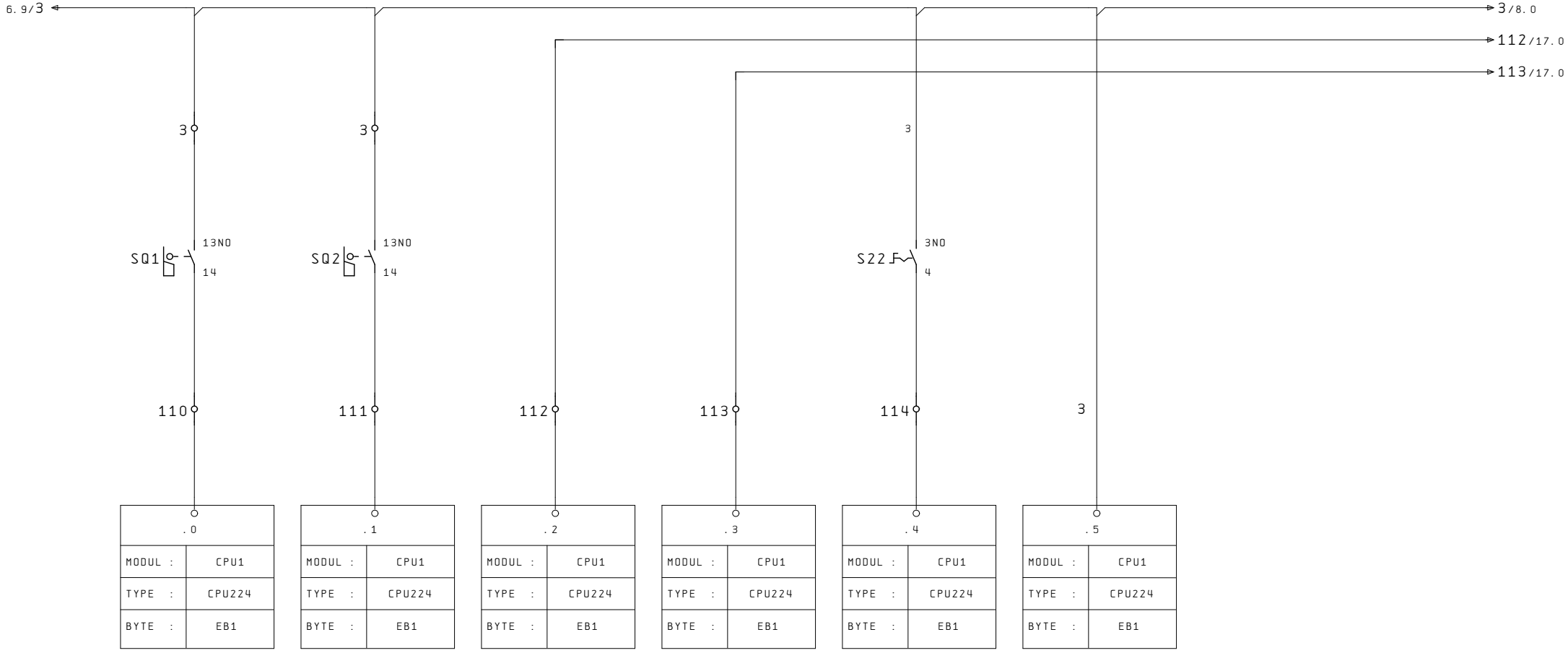


	Date	10. Aug. 2020	4R-HSS 320 NC (380V)	sahinler METAL MAKINA ENDUSTRI A. S.	PLC GROUP	Drawing number: 26122008	=
	Drawn by	HUSEYIN KARADUMAN					+
	Checked by	FIRAT CILINGIR				File number: 4RH3221 / Project name: 4RH3221	P. 5
	Norm		Original				23 P.

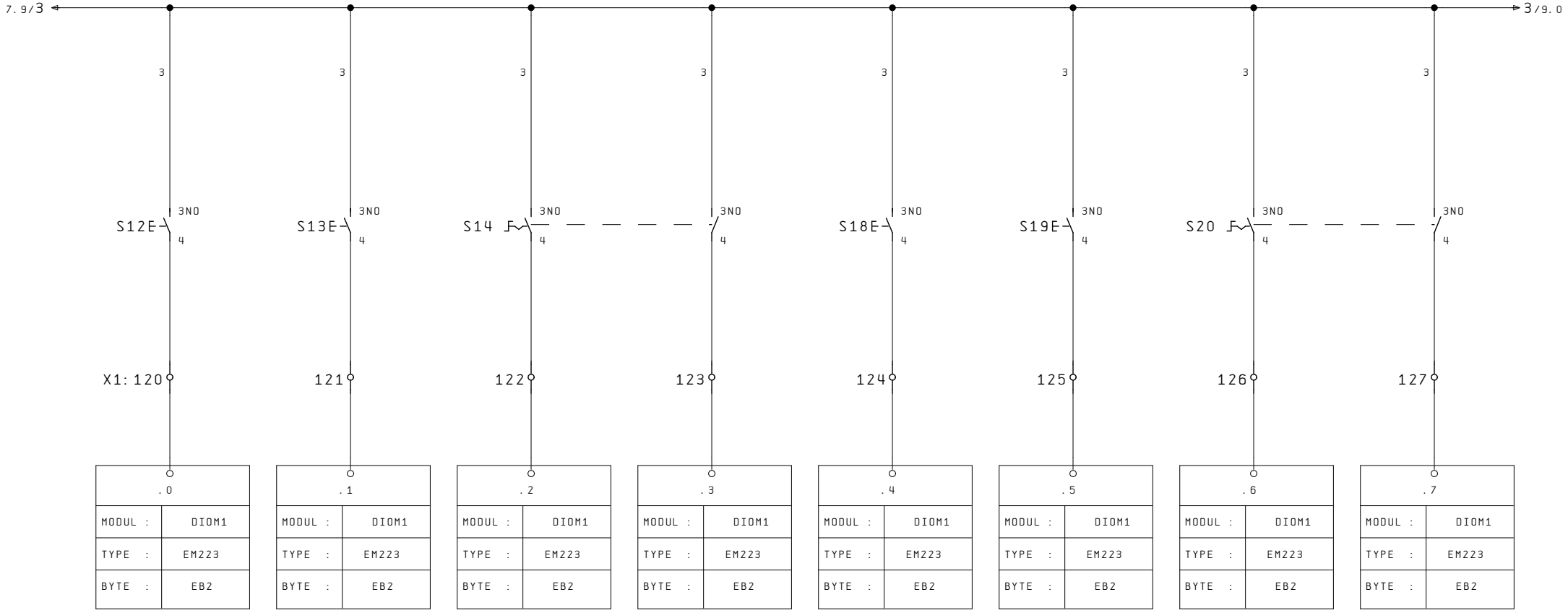


5 7

	Date	10. Aug. 2020	4R-HSS 320 NC (380V)	sahinler METAL MAKINA ENDUSTRI A.S.	PLC INPUTS GROUP - 1	Drawing number: 26122008	=
	Drawn by	HUSEYIN KARADUMAN					+
	Checked by	FIRAT CILINGIR				File number: 4RH3221 / Project name: 4RH3221	P. 6 / 23 P.
	Norm		Original				

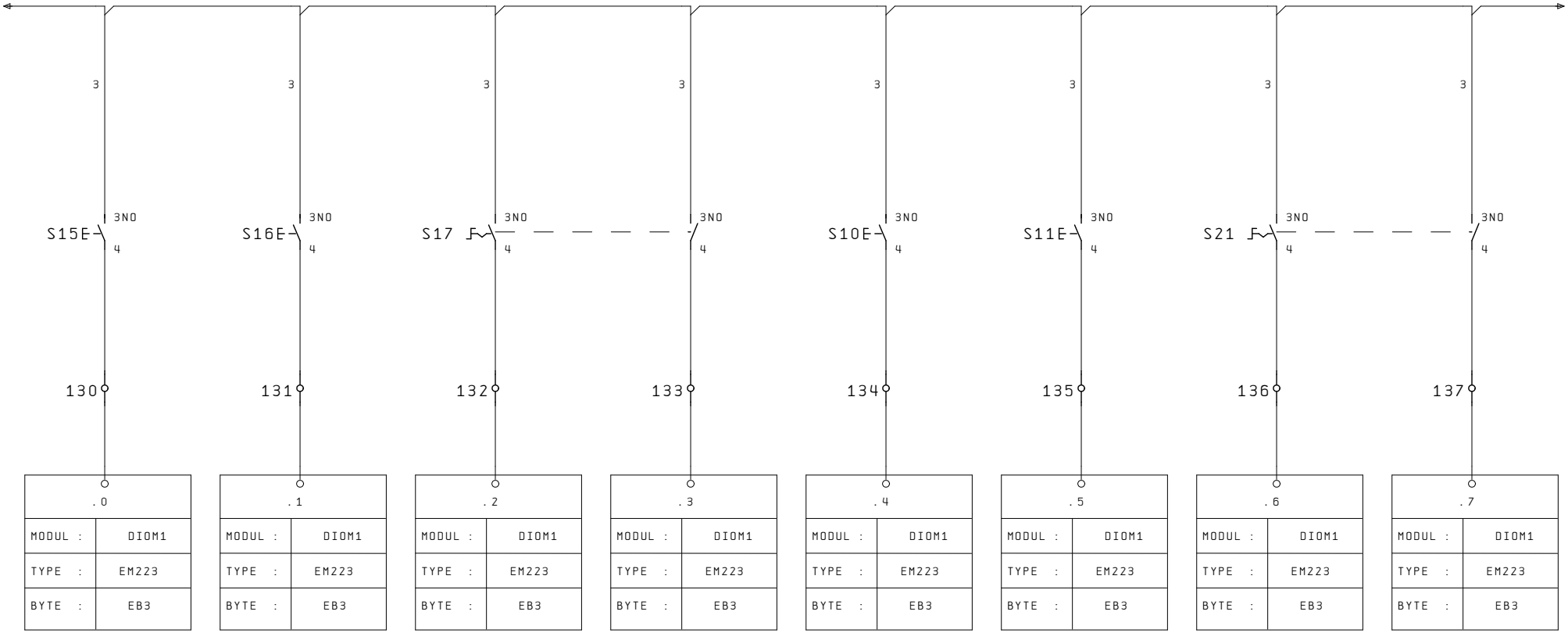


	Date	10. Aug. 2020	4R-HSS 320 NC (380V)	sahinler METAL MAKINA ENDUSTRI A.S.	PLC INPUTS GROUP - 2	Drawing number: 26122008	= +
	Drawn by	HUSEYIN KARADUMAN				File number: 4RH3221 / Project name: 4RH3221	P. 7 / 23 P.
	Checked by	FIRAT CILINGIR					
	Norm		Original				



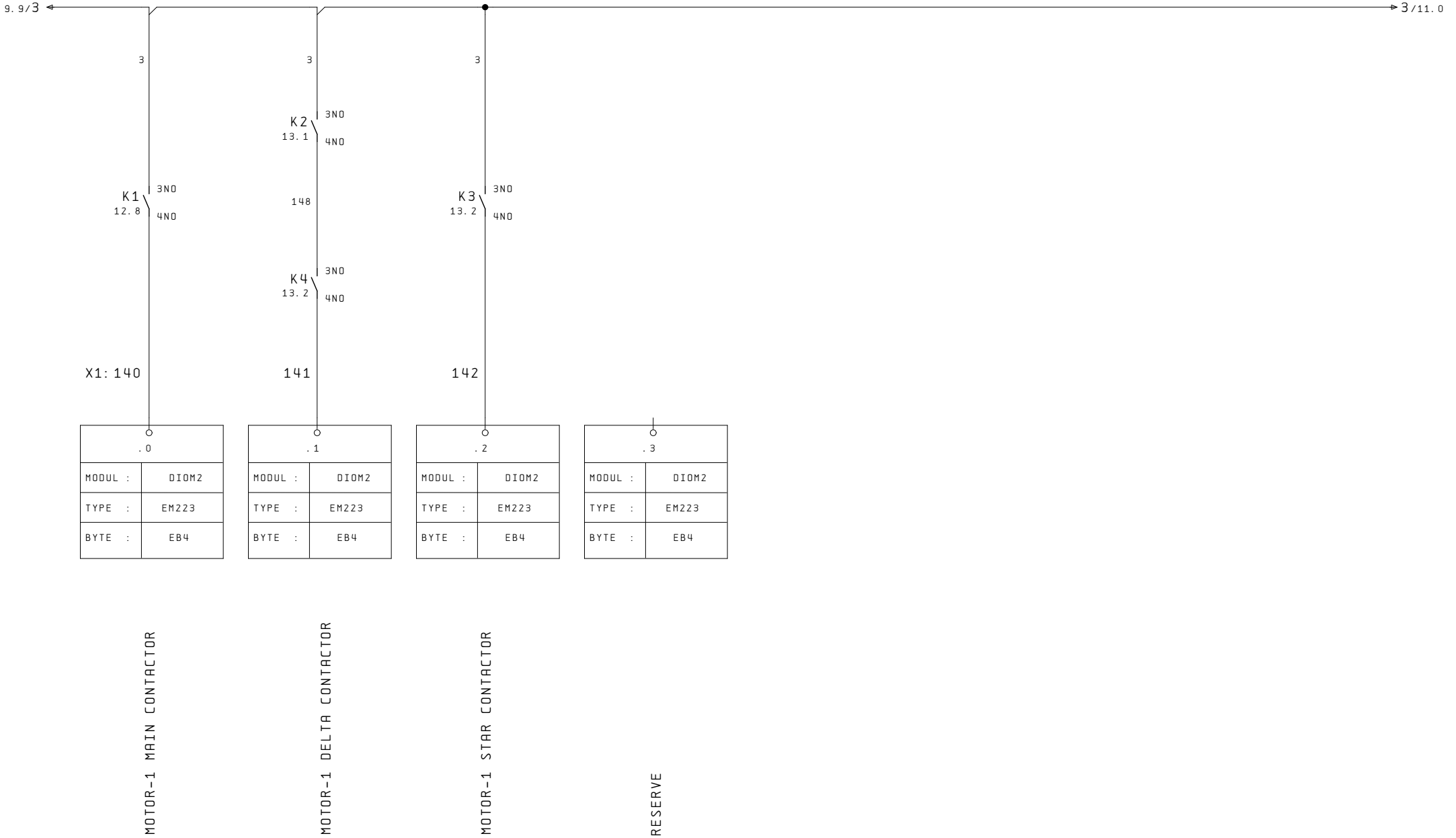
	Date	10. Aug. 2020	4R-HSS 320 NC (380V)	sahinler METAL MAKINA ENDUSTRI A.S.	PLC INPUTS GROUP - 3	Drawing number: 26122008	=
	Drawn by	HUSEYIN KARADUMAN					+
	Checked by	FIRAT CILINGIR				File number: 4RH3221 / Project name: 4RH3221	P. 8 / 23 P.
	Norm		Original				

8.9/3



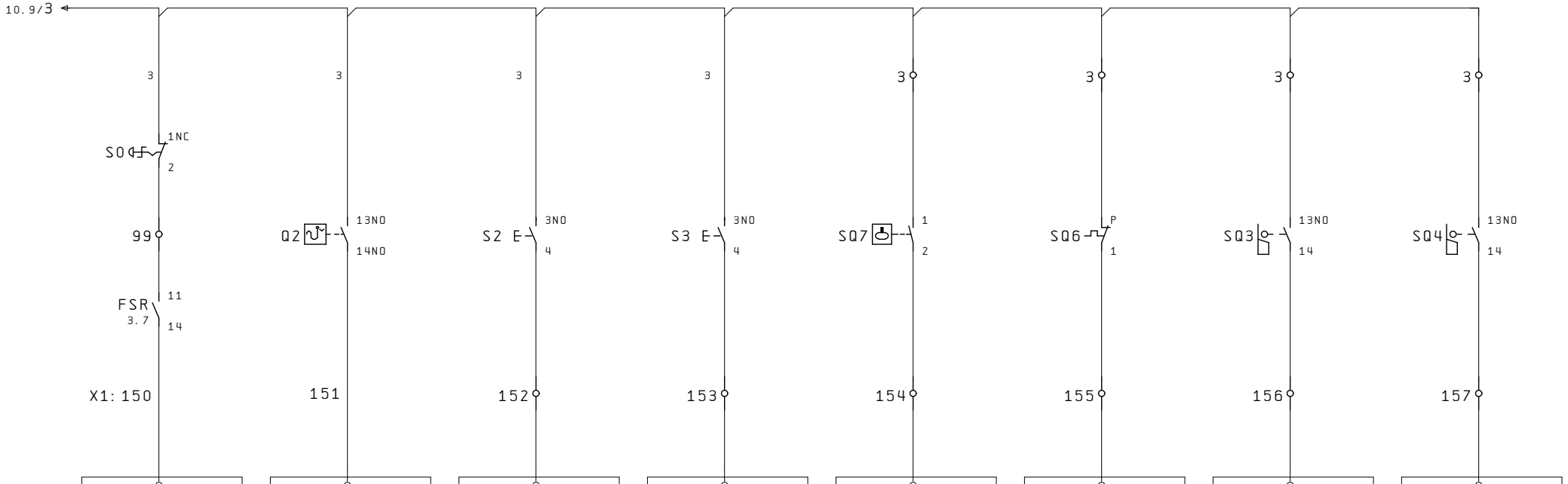
3/10.0

	Date	10. Aug. 2020	4R-HSS 320 NC (380V)	sahinler METAL MAKINA ENDUSTRI A.S.	PLC INPUTS GROUP - 4	Drawing number: 26122008	=
	Drawn by	HUSEYIN KARADUMAN					+
	Checked by	FIRAT CILINGIR				File number: 4RH3221 / Project name: 4RH3221	P. 9 / 23 P.
	Norm		Original				



	Date	10. Aug. 2020	4R-HSS 320 NC (380V)		PLC INPUTS GROUP - 5	Drawing number: 26122008	=
	Drawn by	HUSEYIN KARADUMAN					+
	Checked by	FIRAT CILINGIR				File number: 4RH3221 / Project name: 4RH3221	P. 10 / 23 P.
	Norm		Original				

METAL MAKINA ENDUSTRI A.S.



.0	
MODUL :	DIM3
TYPE :	EM221
BYTE :	EB5

.1	
MODUL :	DIM3
TYPE :	EM221
BYTE :	EB5

.2	
MODUL :	DIM3
TYPE :	EM221
BYTE :	EB5

.3	
MODUL :	DIM3
TYPE :	EM221
BYTE :	EB5

.4	
MODUL :	DIM3
TYPE :	EM221
BYTE :	EB5

.5	
MODUL :	DIM3
TYPE :	EM221
BYTE :	EB5

.6	
MODUL :	DIM3
TYPE :	EM221
BYTE :	EB5

.7	
MODUL :	DIM3
TYPE :	EM221
BYTE :	EB5

EMERGENCY STOP AND PHASE SEQUENCE RELAY

PUMP MOTOR - 1 OVERLOAD RELAY

PUMP MOTOR START

RESET BUTTON

OIL LEVEL

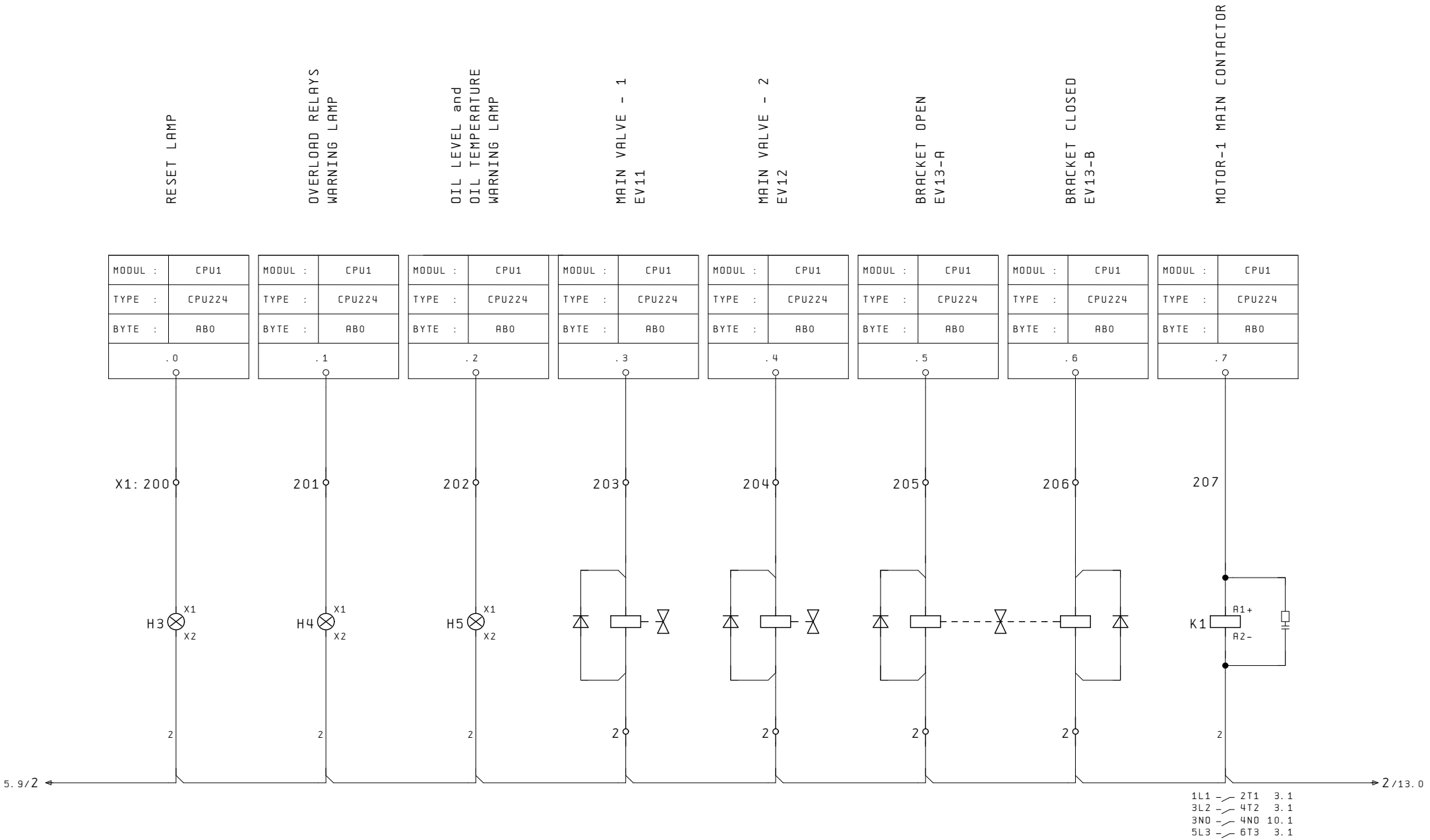
OIL TEMPERATURE

TOP ROLL DOWN MOVEMENT END SWITCH

SAFETY WIRE

	Date	10. Aug. 2020	4R-HSS 320 NC (380V)		PLC INPUTS GROUP - 6	Drawing number: 26122008	=
	Drawn by	HUSEYIN KARADUMAN					+
	Checked by	FIRAT CILINGIR				File number: 4RH3221 / Project name: 4RH3221	P. 11 / 23 P.
	Norm		Original				

sahinler METAL MAKINA ENDUSTRI A.S.



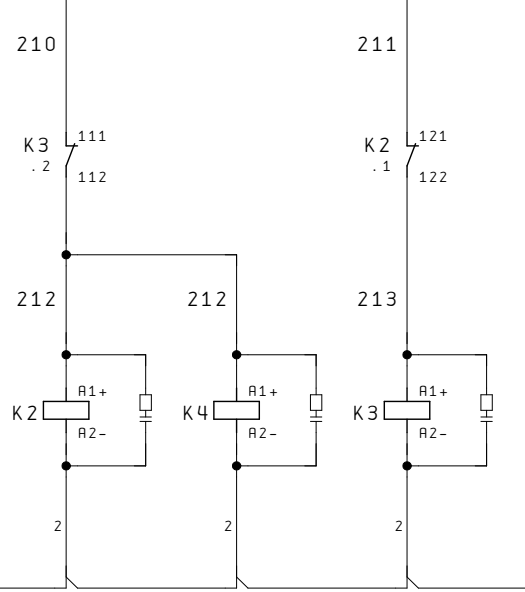
	Date	10. Aug. 2020	4R-HSS 320 NC (380V)	sahinler METAL MAKINA ENDUSTRI A.S.	PLC OUTPUTS GROUP - 1	Drawing number: 26122008	=
	Drawn by	HUSEYIN KARADUMAN					+
	Checked by	FIRAT CILINGIR				File number: 4RH3221 / Project name: 4RH3221	P. 12 / 23 P.
	Norm		Original				

MOTOR-1 DELTA CONTACTOR

MOTOR-1 STAR CONTACTOR

MODUL :	CPU1
TYPE :	CPU224
BYTE :	AB1
.0	

MODUL :	CPU1
TYPE :	CPU224
BYTE :	AB1
.1	



12.9/2

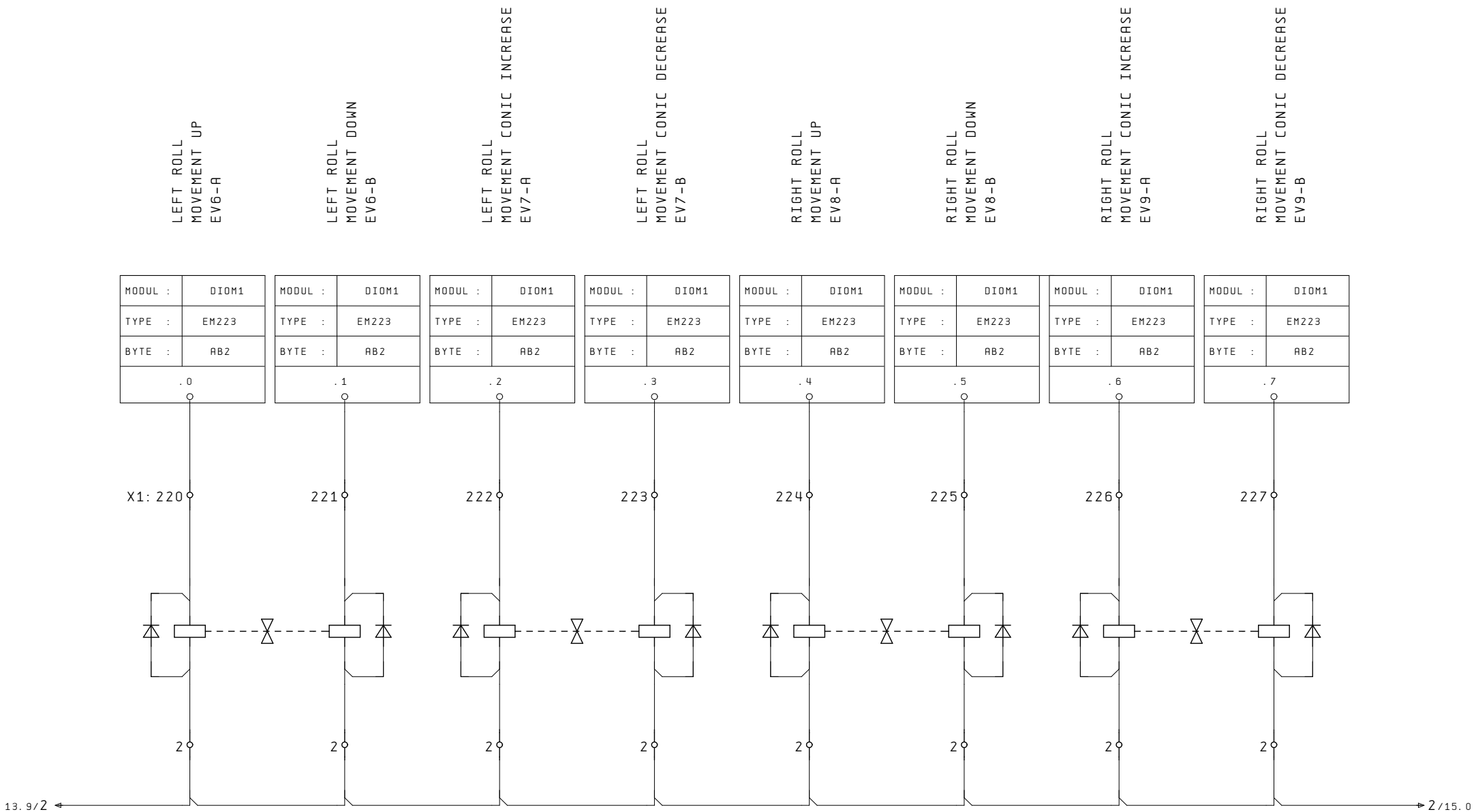
2/14.0

121 — 122	.2	
1L1 — 2T1	3.2	
3L2 — 4T2	3.2	
3NO — 4NO	4.4	
3NO — 4NO	10.2	
5L3 — 6T3	3.2	

1L1 — 2T1	3.6	
3L2 — 4T2	3.6	
3NO — 4NO	10.2	
5L3 — 6T3	3.6	

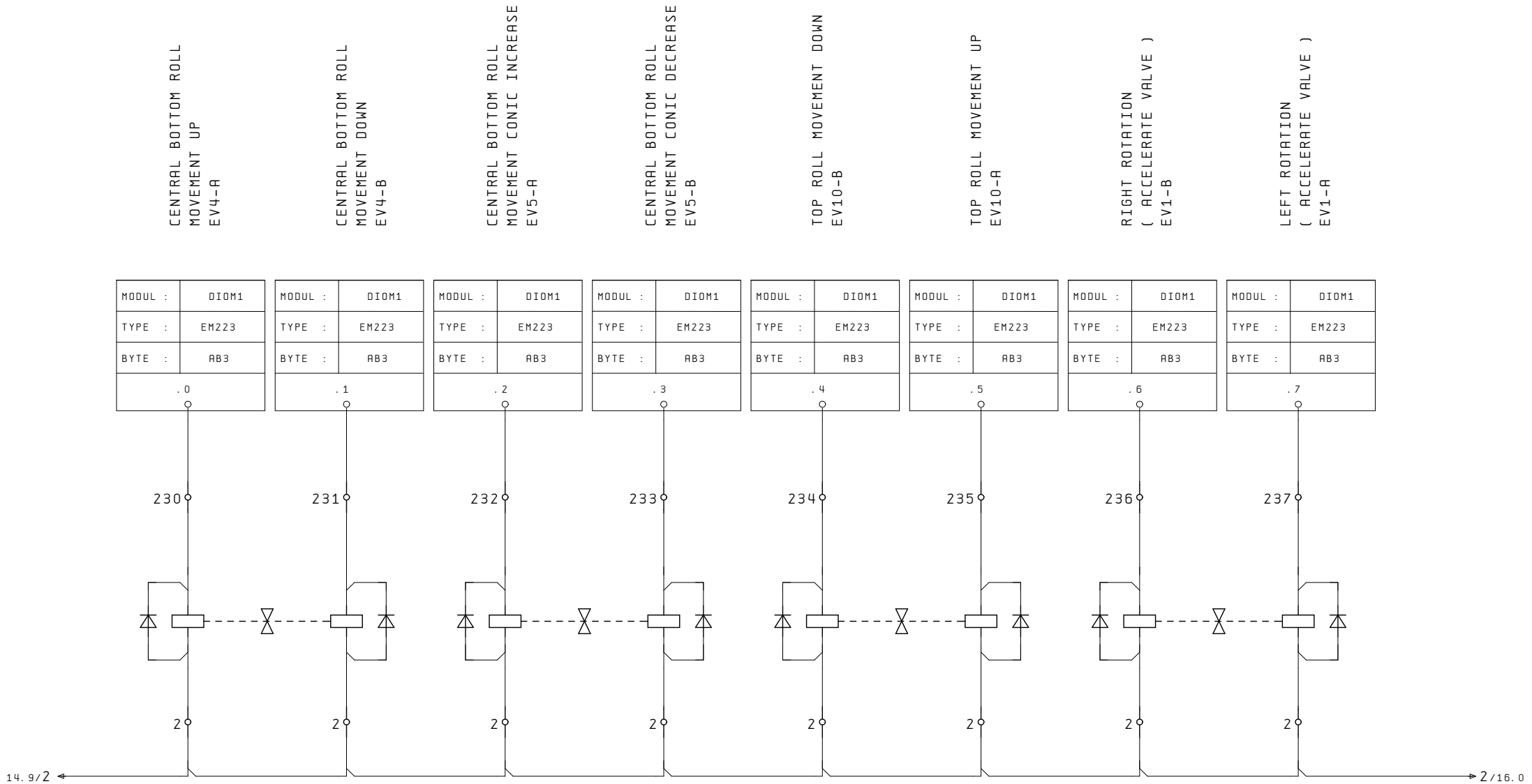
111 — 112	.1	
1L1 — 2T1	3.3	
3L2 — 4T2	3.4	
3NO — 4NO	10.3	
5L3 — 6T3	3.4	

	Date	10.Aug.2020	4R-HSS 320 NC (380V)	sahinler METAL MAKINA ENDUSTRI A.S.	PLC OUTPUTS GROUP - 2	Drawing number: 26122008	=
	Drawn by	HUSEYIN KARADUMAN					+
	Checked by	FIRAT CILINGIR				File number: 4RH3221 / Project name: 4RH3221	P. 13 / 23 P.
	Norm		Original				

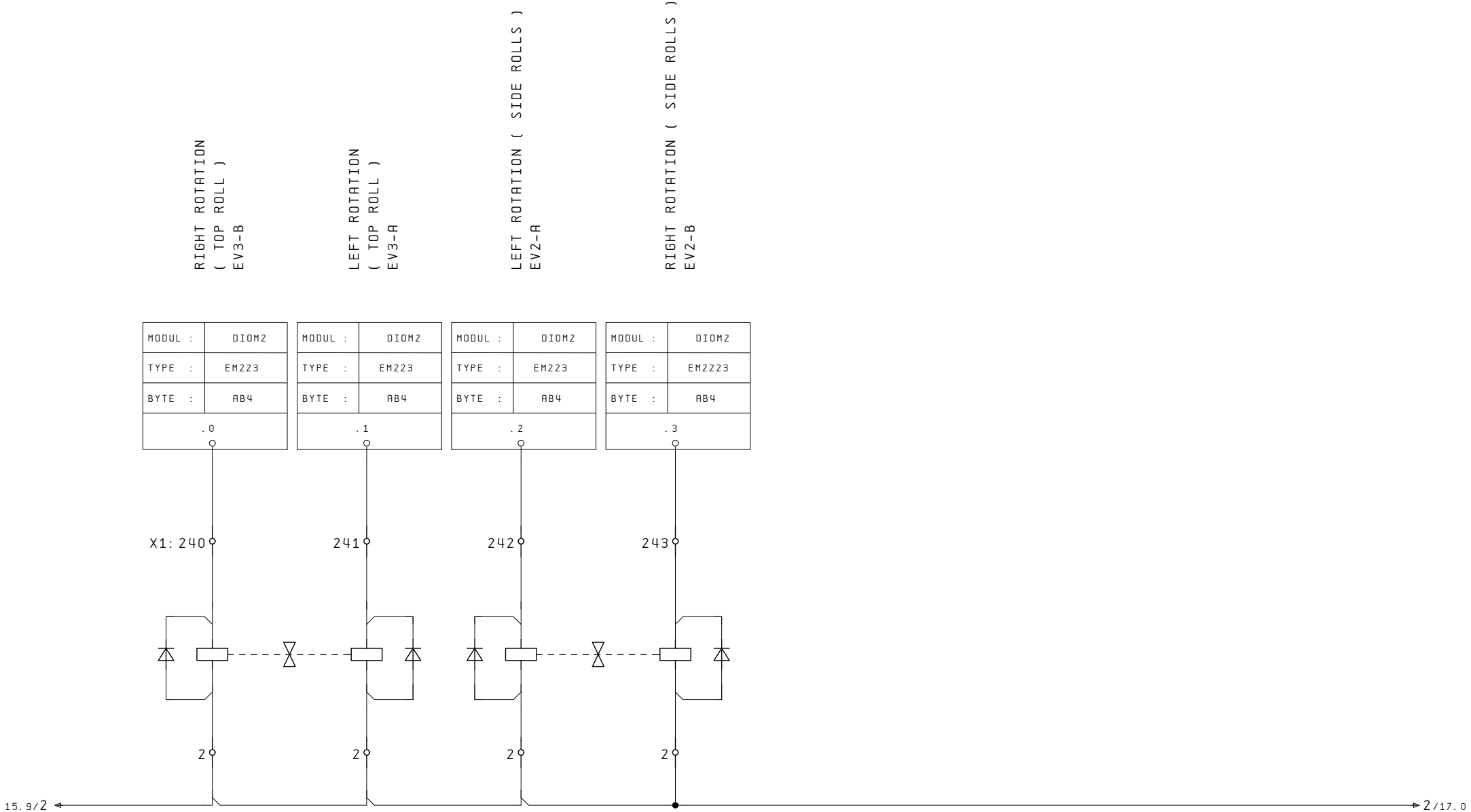


	Date	10. Aug. 2020	4R-HSS 320 NC (380V)		PLC OUTPUTS GROUP - 3	Drawing number: 26122008	=
	Drawn by	HUSEYIN KARADUMAN					+
	Checked by	FIRAT CILINGIR				File number: 4RH3221 / Project name: 4RH3221	P. 14
	Norm		Original				23 P.

METAL MAKINA ENDUSTRI A.S.

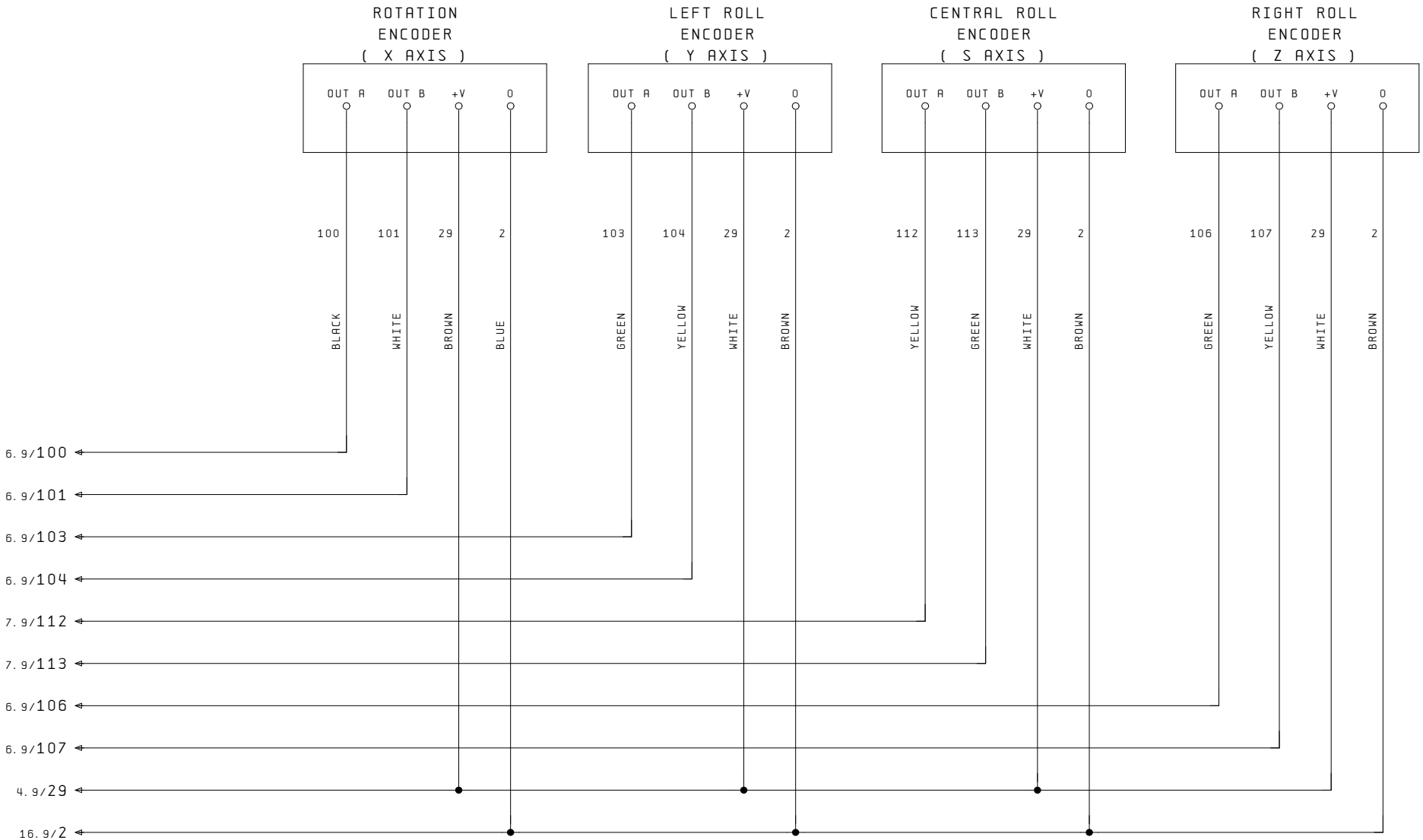


	Date	10. Aug. 2020	4R-HSS 320 NC (380V)	sahinler METAL MAKINA ENDUSTRI A.S.	PLC OUTPUTS GROUP - 4	Drawing number: 26122008	=
	Drawn by	HUSEYIN KARADUMAN					+
	Checked by	FIRAT CILINGIR				File number: 4RH3221 / Project name: 4RH3221	P. 15
	Norm		Original				23 P.



	Date	10. Aug. 2020	4R-HSS 320 NC (380V)		PLC OUTPUTS GROUP - 5	Drawing number: 26122008	= / +
	Drawn by	HUSEYIN KARADUMAN					
	Checked by	FIRAT CILINGIR				File number: 4RH3221 / Project name: 4RH3221	P. 16 / 23 P.
	Norm		Original				

sahinler METAL MAKINA ENDUSTRI A.S.

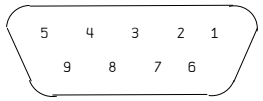


	Date	10. Aug. 2020	4R-HSS 320 NC (380V)		PLC ENCODER CONNECTIONS	Drawing number: 26122008	= +
	Drawn by	HUSEYIN KARADUMAN					
	Checked by	FIRAT CILINGIR				File number: 4RH3221 / Project name: 4RH3221	P. 17 / 23 P.
	Norm		Original				

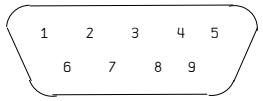
sahinler METAL MAKINA ENDUSTRI A. S.

OPERATOR PANEL - PLC

OPERATOR PANEL
RS232&RS485 Port



FEMALE

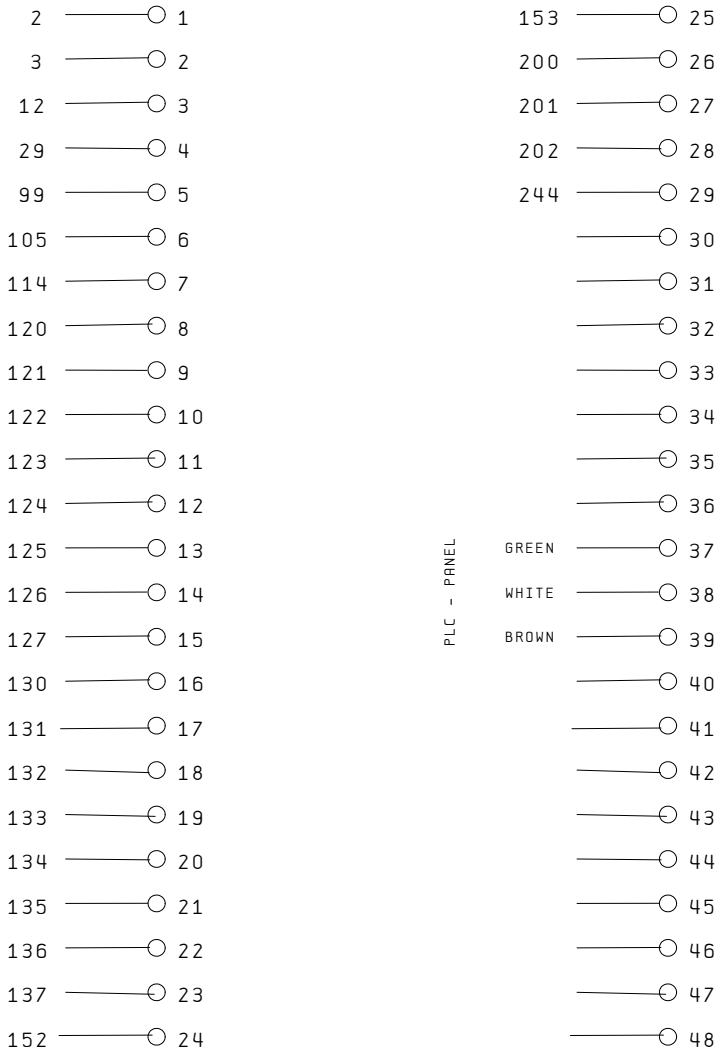


MALE

PLC (CPU 224)
A1 - Port 1

	Date	10. Aug. 2020	4R-HSS 320 NC (380V)		COMMUNICATION CONNECTIONS	Drawing number: 26122008	=
	Drawn by	HUSEYIN KARADUMAN					+
	Checked by	FIRAT CILINGIR				File number: 4RH3221 / Project name: 4RH3221	P. 18
	Norm		Original				23 P.

sahinler METAL MAKINA ENDUSTRI A.S.



	Date	10. Aug. 2020	4R-HSS 320 NC (380V)		CONNECTOR PLAN	Drawing number: 26122008	= / +
	Drawn by	HUSEYIN KARADUMAN		sahinler METAL MAKINA ENDUSTRI A.S.			
	Checked by	FIRAT CILINGIR				File number: 4RH3221	Project name: 4RH3221
	Norm		Original				P. 19 / 23 P.

ELECTRICAL PARTS LIST - 1

CODE	EXPLANATION	ORDER NUMBER	MANUFACTURER
Q1	MAIN SWITCH	KG80 T203/09VE	KRAUS - NAIMER
Q2	MOTOR - 1 PROTECTION OVERLOAD RELAY (36 - 45A)	(3RV1031-4GA10) + (3RV1901-1E)	SIEMENS
Q3	MOTOR - 2 PROTECTION OVERLOAD RELAY (2.8 - 4A)	(3RV1011-1EA10) + (3RV1901-1E)	SIEMENS
TR	TRANSFORMER (+15/0/-15/230/400/440 // 0/220 0/24 0/18V 630VA)		ETA
FSR	PHASE SEQUENCE RELAY	(3UG4511 - 1AP20)	SIEMENS
K1	MOTOR - 1 MAIN CONTACTOR	(3RT1034-1BB40) + (3RH1921-1CA10)	SIEMENS
K2	MOTOR - 1 DELTA CONTACTOR	(3RT1034-1BB40) + 2X(3RH1921-1CA10)	SIEMENS
K3	MOTOR - 1 STAR CONTACTOR	(3RT1034-1BB40) + (3RH1921-1CA10)	SIEMENS
	MECHANICAL LOCK	(3RA1924-2B)	SIEMENS
	COMBINATION	(3RA1923-2A)	SIEMENS
	CAPASITOR (K1 - K2 - K3)	(3RT1926 - 1BD00)	SIEMENS
K4	MOTOR - 2 MAIN CONTACTOR	(3RT1015-1BB41)	SIEMENS
	CAPASITOR (K4)	(3RT1916 - 1BB00)	SIEMENS
G1	DC VOLTAGE FILTER CIRCUIT		SAHINLER
G2	POWER SUPPLY - INPUT AC 230V 1.1A // OUTPUT DC 24V 4A	6EP1-232-1AA10	SIEMENS
F1	TRANSFORMER INPUT FUSE	5SQ22 - C4	SIEMENS
F2	PLC 220V AC FEED FUSE	5SQ22 - C2	SIEMENS
F3	PLC INPUTS 24V DC FEED FUSE	5SQ21 - C2	SIEMENS
F4	PLC OUTPUTS 24V DC FEED FUSE	5SQ21 - C10	SIEMENS
F5	POWER SUPPLY INPUT FUSE	5SQ22 - C1	SIEMENS
F6	POWER SUPPLY OUTPUT FUSE	5SQ21 - C2	SIEMENS
A1	PLC CPU UNIT	6ES7 214 - 1BD23 - 0XB0	SIEMENS
A2	PLC DIGITAL INPUT / OUTPUT EXPANSION MODULE - 1	6ES7 223 - 1PL22 - 0XA0	SIEMENS
A3	PLC DIGITAL INPUT / OUTPUT EXPANSION MODULE - 2	6ES7 223 - 1HF22 - 0XA0	SIEMENS
A4	PLC DIGITAL INPUT EXPANSION MODULE - 4	6ES7 221 - 1BF22 - 0XA0	SIEMENS

	Date	10. Aug. 2020	4R-HSS 320 NC (380V)	sahinler METAL MAKINA ENDUSTRI A.S.	ELECTRICAL PARTS LIST - 1	Drawing number: 26122008	=
	Drawn by	HUSEYIN KARADUMAN					+
	Checked by	FIRAT CILINGIR				File number: 4RH3221	Project name: 4RH3221
	Norm		Original				P. 20 / 23 P.

ELECTRICAL PARTS LIST - 2

CODE	EXPLANATION	ORDER NUMBER	MANUFACTURER
S0	EMERGENCY STOP	XB4 - BS542	TELEMECANIQUE
S1	0-1 POWER SWITCH	(XB4 - BG21) + (ZBE - 101)	TELEMECANIQUE
H1	POWER ON LAMP	XB4 - BV61	TELEMECANIQUE
S2 - H2	START BUTTON AND LAMP	XB4 - BW3365	TELEMECANIQUE
S3 - H3	RESET BUTTON AND LAMP	XB4 - BW3165	TELEMECANIQUE
S4 - H4	PUMP MOTORS STOP BUTTON AND THERMAL OVERLOAD RELAYS WARNING LAMP	XB4 - BW3465	TELEMECANIQUE
H5	OIL LEVEL AND OIL TEMPERATURE WARNING LAMP	XB4 - BV65	TELEMECANIQUE
S10	CONTROL BUTTON FOR RIGHT ROTATION	XB4 - BA21	TELEMECANIQUE
S11	CONTROL BUTTON FOR LEFT ROTATION	XB4 - BA21	TELEMECANIQUE
S12 - S13	CONTROL BUTTON FOR LEFT ROLL MOVEMENT UP & DOWN	(ZB4 - BA8112) + (ZB4 - BZ101)	TELEMECANIQUE
S14	CONTROL BUTTON FOR LEFT ROLL MOVEMENT CONIC INCREASE & DECREASE	XB4 - BJ53	TELEMECANIQUE
S15 - S16	CONTROL BUTTON FOR CENTRAL BOTTOM ROLL MOVEMENT UP & DOWN	(ZB4 - BA8112) + (ZB4 - BZ101)	TELEMECANIQUE
S17	CONTROL BUTTON FOR CENTRAL BOTTOM ROLL MOVEMENT CONIC INCREASE & DECREASE	XB4 - BJ53	TELEMECANIQUE
S18 - S19	CONTROL BUTTON FOR RIGHT ROLL MOVEMENT UP & DOWN	(ZB4 - BA8112) + (ZB4 - BZ101)	TELEMECANIQUE
S20	CONTROL BUTTON FOR RIGHT ROLL MOVEMENT CONIC INCREASE & DECREASE	XB4 - BJ53	TELEMECANIQUE
S21	CONTROL BUTTON FOR BRACKET OPEN & CLOSE	XB4 - BJ53	TELEMECANIQUE
S22	CONTROL BUTTON FOR SLOW / FAST ROTATION	XB4 - BD21	TELEMECANIQUE
SQ1	BRACKET IS OPEN LIMIT SWITCH	XCK - P2121 - P16	TELEMECANIQUE
SQ2	BRACKET IS CLOSED LIMIT SWITCH	XCK - P2110 - P16	TELEMECANIQUE
SQ3	TOP ROLL MOVEMENT DOWN END SWITCH	XCK - P2121 - P16	TELEMECANIQUE
SQ4	SAFETY WIRE	FD 1878	TELEMECANIQUE

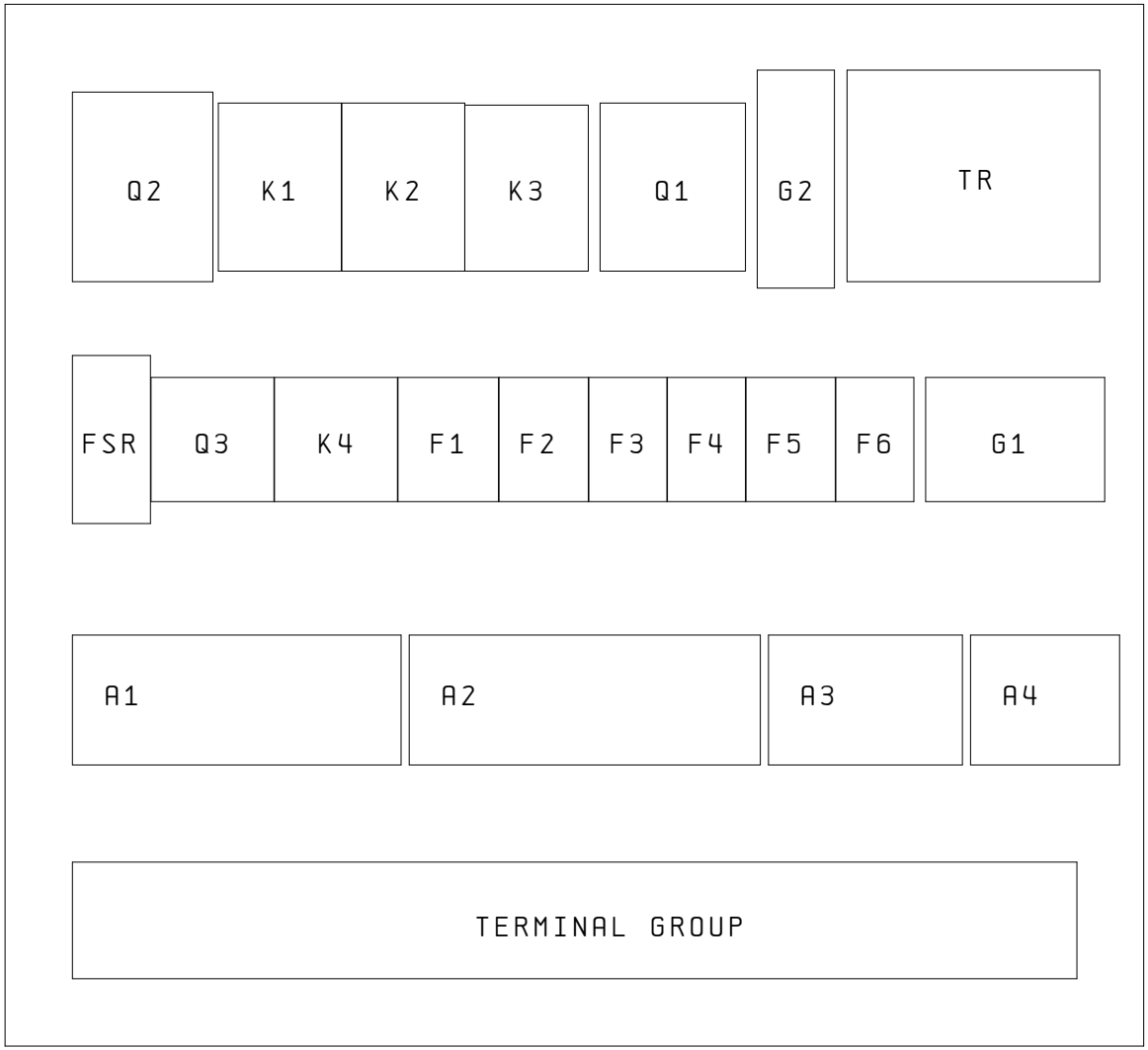
	Date	10. Aug. 2020	4R-HSS 320 NC (380V)	sahinler METAL MAKINA ENDUSTRI A.S.	ELECTRICAL PARTS LIST - 2	Drawing number: 26122008	=
	Drawn by	HUSEYIN KARADUMAN					+
	Checked by	FIRAT CILINGIR				File number: 4RH3221	Project name: 4RH3221
	Norm		Original				P. 21 / 23 P.

ELECTRICAL PARTS LIST - 3

CODE	EXPLANATION	ORDER NUMBER	MANUFACTURER
OP	OPERATOR PANEL (5.7'')	MT506T	EASYVIEW
	EEPROM (ON THE CPU)	1P6ES7291 - 8GH23 - 0XA0	SIEMENS
	X AXIS ENCODER (256 PULSE)	MRI-50-TP-256-Z-24V-2m5	OPKON
	Y, Z AXIS ENCODERS (300 mm) (2 pcs.)	MLC-300-T80-TP-B-24V	OPKON
	S AXIS ENCODERS (150 mm)	MLC-150-T80-TP-B-24V	OPKON
	48 POLES MACHINE PLUG-IN	403085	METE ENERJI
	48 POLES MACHINE PLUG	403064	METE ENERJI

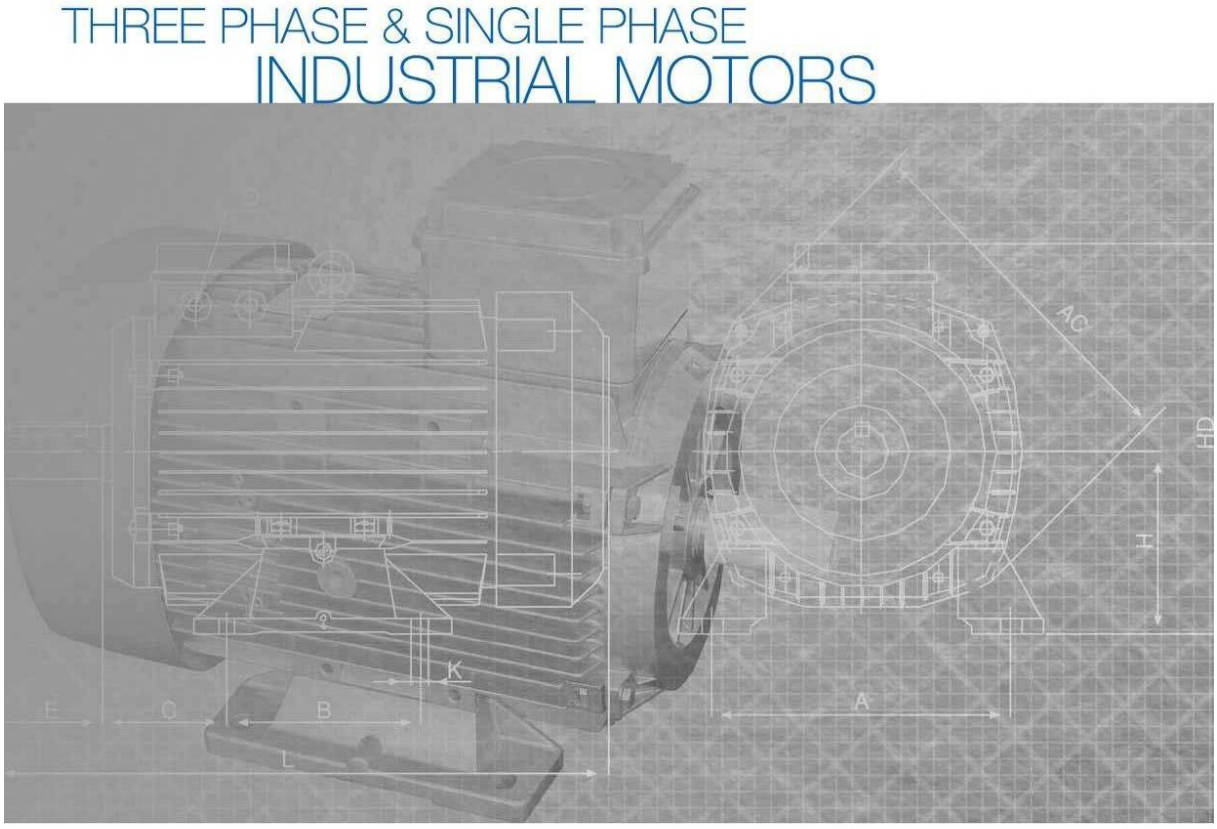
	Date	10. Aug. 2020	4R-HSS 320 NC (380V)	sahinler METAL MAKINA ENDUSTRI A.S.	ELECTRICAL PARTS LIST - 3	Drawing number: 26122008	=
	Drawn by	HUSEYIN KARADUMAN					+
	Checked by	FIRAT CILINGIR				File number: 4RH3221 / Project name: 4RH3221	P. 22 / 23 P.
	Norm		Original				

ELECTRICAL CABINET SCHEME

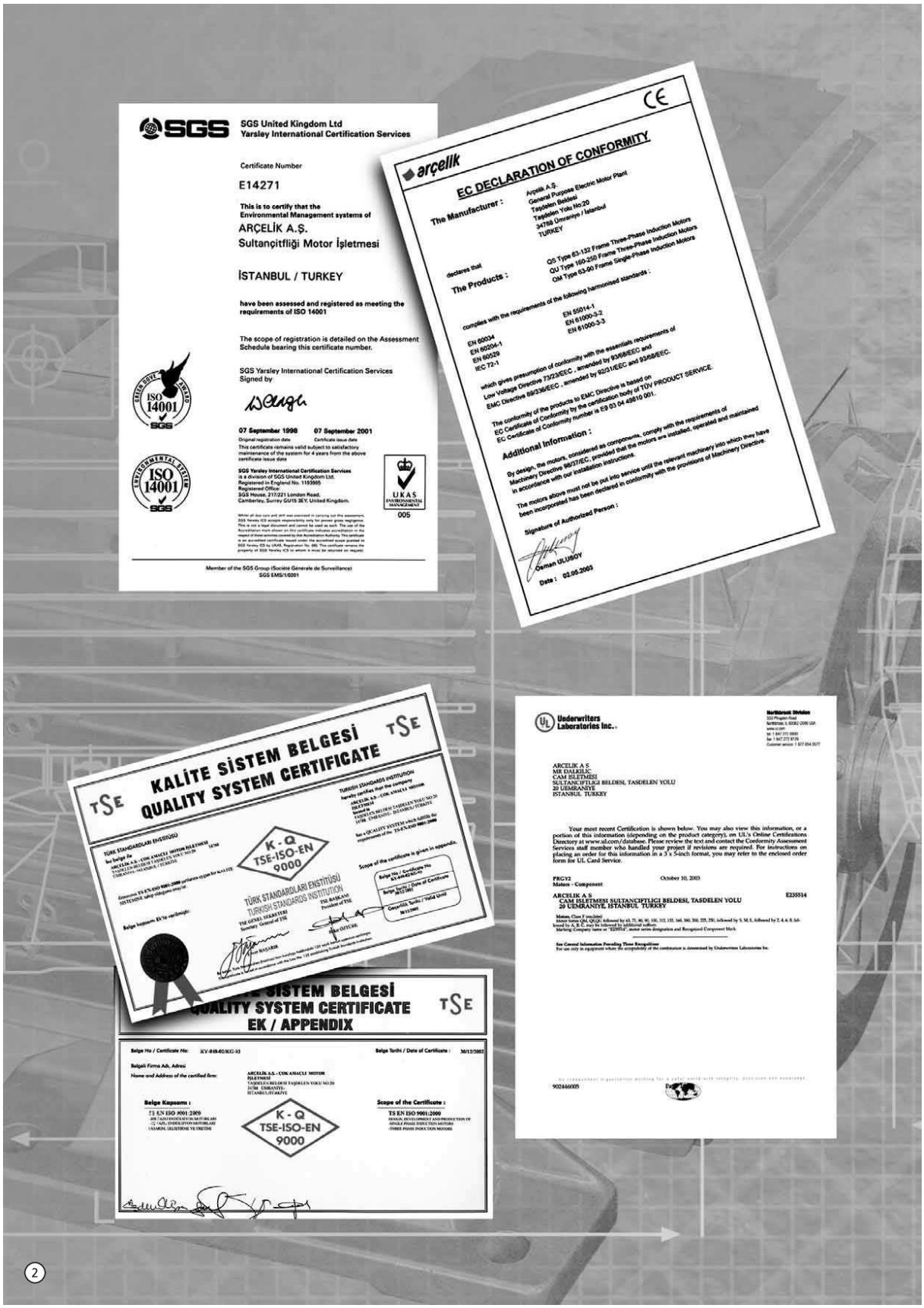


	Date	10. Aug. 2020	4R-HSS 320 NC (380V)	sahinler METAL MAKINA ENDUSTRI A.S.	ELECTRICAL CABINET SCHEME	Drawing number: 26122008	=
	Drawn by	HUSEYIN KARADUMAN					+
	Checked by	FIRAT CILINGIR				File number: 4RH3221 / Project name: 4RH3221	P. 23
	Norm		Original				23 P.

8.3 ELECTRIC MOTOR



TEE


SGS
SGS United Kingdom Ltd
Yarsley International Certification Services
Certificate Number
E14271
This is to certify that the
Environmental Management systems of
ARÇELİK A.Ş.
Sultançiftliği Motor İşletmesi
İSTANBUL / TURKEY
have been assessed and registered as meeting the
requirements of ISO 14001
The scope of registration is detailed on the Assessment
Schedule bearing this certificate number.
SGS Yarsley International Certification Services
Signed by
07 September 1998
07 September 2001
Original registration date
Certificate issue date
This certificate remains valid subject to satisfactory
maintenance of the system for 4 years from the above
certificate issue date
SGS Yarsley International Certification Services
is a division of SGS United Kingdom Ltd.
Registered in England No. 1193985
Registered Office:
SGS House, 217/221 London Road,
Camberley, Surrey GU15 3EY, United Kingdom.
ISO 14001
ENVIRONMENTAL SYSTEM
UKAS
ENVIRONMENTAL MANAGEMENT
005
Member of the SGS Group (Société Générale de Surveillance)
SGS EMS/1/0291
CE
arçelik
EC DECLARATION OF CONFORMITY
The Manufacturer :
Arçelik A.Ş
General Purpose Electric Motor Plant
Taşdelen Beldesi
Taşdelen Yolu No:20
34788 Ümraniye / İstanbul
TURKEY
declares that
The Products :
QS Type 63-132 Frame Three-Phase Induction Motors
QU Type 160-250 Frame Three-Phase Induction Motors
QM Type 63-90 Frame Single-Phase Induction Motors
complies with the requirements of the following harmonised standards :
EN 60034
EN 60204-1
EN 60529
IEC 72-1
EN 55014-1
EN 61000-3-2
EN 61000-3-3
which gives presumption of conformity with the essentials requirements of
Low Voltage Directive 73/23/EEC , amended by 93/68/EEC and
EMC Directive 89/336/EEC , amended by 92/31/EEC and 93/68/EEC.
The conformity of the products to EMC Directive is based on
EC Certificate of Conformity by the certification body of TÜV PRODUCT SERVICE.
The conformity of the products to Low Voltage Directive is based on
EC Certificate of Conformity number is E9 03 04 49810 001.
Additional Information :
By design, the motors, considered as components, comply with the requirements of
Machinery Directive 98/37/EC, provided that the motors are installed, operated and maintained
in accordance with our installation instructions.
The motors above must not be put into service until the relevant machinery into which they have
been incorporated has been declared in conformity with the provisions of Machinery Directive.
Signature of Authorized Person :
Osman ULUBOY
Date : 02.05.2005
TSE
KALİTE SİSTEM BELGESİ
QUALITY SYSTEM CERTIFICATE
TÜRK STANDARDLARI ENSTİTÜSÜ
TURKISH STANDARDS INSTITUTION
K-Q
TSE-ISO-EN
9000
TÜRK STANDARDLARI ENSTİTÜSÜ
TURKISH STANDARDS INSTITUTION
TSE BAŞKANI
President of TSE
TSE GENEL SEKRETERİ
Secretary General of TSE
Scope of the certificate is given in appendix.
Belge No / Certificate No
Belge Tarihi / Date of Certificate
Geçerlilik Tarihi / Valid Until
30/12/2003
SİSTEM BELGESİ
QUALITY SYSTEM CERTIFICATE
EK / APPENDIX
TSE
Belge No / Certificate No:
KV-048-02/KG-03
Belge Tarihi / Date of Certificate :
30/12/2003
Belgeli Firma Adı, Adresi
Name and Address of the certified firm:
ARÇELİK A.Ş. - ÇOK AMAÇLI MOTOR
İŞLETMESİ
TAŞDELEN BELDESİ TAŞDELEN YOLU NO:20
34788 ÜMRANİYE -
İSTANBUL/TÜRKİYE
Belge Kapsamı :
TS EN ISO 9001:2000
Scope of the Certificate :
TS EN ISO 9001:2000
K-Q
TSE-ISO-EN
9000
Underwriters Laboratories Inc.
Northbrook Division
ARCELIK A S
MR DALKILIC
CAM ISLETMESI
SULTANCIFTLIGI BELDESI, TASDELEN YOLU
20 UMRANIYE
ISTANBUL TURKEY
Your most recent Certification is shown below. You may also view this information, or a portion of this information (depending on the product category), on UL's Online Certifications Directory at www.ul.com/database. Please review the text and contact the Conformity Assessment Services staff member who handled your project if revisions are required. For instructions on placing an order for this information in a 3 x 5-inch format, you may refer to the enclosed order form for UL Card Service.
PRGY2
Motors - Component
October 10, 2003
ARCELIK A S
CAM ISLETMESI SULTANCIFTLIGI BELDESI, TASDELEN YOLU
20 UMRANIYE, ISTANBUL TURKEY
E235514
902446005

TECHNICAL DOCUMENTATION

INTERNATIONAL STANDARDS

Electric motors are manufactured according to the international standards listed below:

IEC 60034-1	Rating and performance
IEC 60034-2	Methods for determining losses and efficiency
IEC 60034-5	Classification of degrees of protection
IEC 60034-6	Methods of cooling
IEC 60034-7	Symbols of construction and mounting arrangements
IEC 60034-8	Terminal markings and direction of rotation
IEC 60034-9	Noise limits
IEC 60034-11	Built-in thermal protection
IEC 60034-14	Vibration limits
IEC 60034-18-1	Functional evaluation of insulation systems
IEC 60038	Standart voltages
EN 50347	Dimensions and output for electrical machines
EN 55014-1 EN 61000-3-2 EN 61000-3-3	Electromagnetic compatibility

Germany	Great Britain	Turkey
DIN VDE 0530 DIN EN 60034	BS EN 60034	TSE 3067 TSE 4239

Threephase and singlephase motor series complying with UL 1004 and CSA C 22.2 Nr. 100.95 for UL and c- UL respectively, are also available for our standart product range.

The materials supplied contain none of the substances that is prohibited from July 1st, 2006 by the EU directive 2002/95/EG (RoHS) and the substances prohibited from August 15th, 2004 by the EU directive 2003/11/EG (ban of Octa-und PentaBDE).

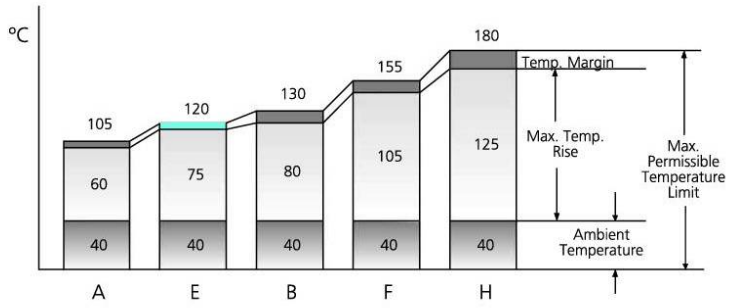
TECHNICAL DOCUMENTATION

INSULATION CLASSIFICATION

Our standard motors have insulation class F while the temperature rise is for class B. It means longer life of motors.

Under specified measuring conditions in accordance with IEC 60034-1 standard, insulation class F for an electric motor means that at ambient temperature of 40°C the temperature rise of its windings may be max. 105°C with the additional temperaturte margin of 10°C.

On customer's demand, we are able to make motors insulation class F with temperature rise for class F.



Insulation Class

DEGREE OF PROTECTION

According to IEC 60034-5 standard, electric motors are provided with IP code which determines the degree of protection ensured by the housing against access to dangerous parts, introducing foreign matter and/or water.

Our motors comply with IP55 protection class as standard.

X	Protection from introduction of solid foreign matter	Y	Protection against penetration of water and its harmful effects	IP XY
5	Protection against with live or moving parts inside the enclosure. Ingress of dust is not totally prevented, but dust does not enter in sufficient quantity to interfere with satisfactory operation of the motor	4	Water splashed against the motor from any direction will have no harmful effect.	IP 54
		5	Water projected by a nozzle against the motor from any direction will have no harmful effect.	IP 55

THREE PHASE-QS/QU TYPES

ELECTRICAL CHARACTERISTICS, AT 50 Hz

EFF2

	MOTOR TYPE	RATED VALUES					STARTING VALUES				Mk/Mn	EFF2 %η		Cosφ	J		Sound Pressure Level dBA*
		OUTPUT		SPEED	CURRENT	MOMENT	CURRENT I_A / I_N		TORQUE M_A / M_N								
		HP	kW	rpm	A	Nm	⅄	Δ	⅄	Δ		3/4	4/4	4/4	kgm²	kg	
	2 pole 3000 rpm																
230/400 V	QS 63M2A	1/4	0,18	2800	0,51	0,62	4,2	-	2,3	-	2,4	63	64	0,8	0,00017	4,5	52
	QS 63M2B	1/3	0,25	2800	0,66	0,86	4,2	-	2,2	-	2,3	66	67	0,82	0,00022	5	52
	QS 71M2A	1/2	0,37	2800	0,93	1,27	4,3	-	2	-	2,4	67	68	0,84	0,00028	6	54
	QS 71M2B	3/4	0,55	2820	1,32	1,87	5	-	2,2	-	2,5	69	71	0,85	0,00036	7	54
	QS 80M2A	1	0,75	2840	1,7	2,53	5,2	-	2,2	-	2,6	72	74	0,86	0,00088	9	58
	QS 80M2B	1,5	1,1	2850	2,4	3,69	6	-	2,6	-	2,9	75	77,3	0,86	0,00109	10	58
	QS 90S2A	2	1,5	2860	3,2	5,01	6,5	-	2,4	-	2,9	78	79	0,86	0,00127	14	62
	QS 90L2A	3	2,2	2860	4,5	7,35	7	-	2,7	-	3,3	80	81	0,87	0,00162	16	62
	QS 100L2A	4	3	2890	6,1	9,91	7,6	-	3	-	3,6	82	83	0,88	0,00241	20	65
400/690 V	QS 112M2A	5,5	4	2890	7,5	13,22	2,4	7,7	0,78	2,9	3,8	86	86	0,9	0,00394	26	67
	QS 132S2A	7,5	5,5	2900	10,4	18,11	2,6	7,9	0,8	3	3,7	85,5	86,5	0,88	0,01109	39	70
	QS 132S2C	10	7,5	2900	13,8	24,7	2,7	7,9	1,01	3,4	4,1	87	88	0,89	0,01410	46	70
	QS 132M2A	15	11	2900	20	36,22	2,6	7,9	0,83	2,9	3,6	88	88,5	0,9	0,01596	52	70
	QU 160M2A	15	11	2900	19,6	36,23	2,25	6,9	0,79	2,5	3,5	89	90	0,9	0,02644	69	71
	QU 160M2B	20	15	2910	26,5	49,23	2,25	7	0,87	2,7	3,5	89,5	90,5	0,9	0,03317	80	71
	QU 160L2A	25	18,5	2920	32,2	60,51	2,25	7	0,8	2,6	3,5	90,5	91	0,91	0,04075	92	71
	QU 180M2A	30	22	2940	38,1	71,47	2,25	7	0,74	2,6	3,5	91	91,5	0,91	0,06193	110	77
	QU 200L2A	40	30	2945	53	97,12	2,26	7	0,71	2,4	3,5	92	92,5	0,88	0,11917	145	80
	QU 200L2B	50	37	2950	64,5	119,6	2,26	7	0,68	2,4	3,5	92	93	0,89	0,13885	162	80
	QU 225M2A	60	45	2955	79	145,4	2,26	7	0,69	2,3	3,5	92	93,5	0,88	0,19833	247	81
	QU 250M2A	75	55	2955	94	177,4	2,26	7	0,69	2,3	3,6	93	94	0,9	0,23505	248	81

	4 pole 1500 rpm																
230/400 V	QS 63M4A	1/6	0,12	1365	0,5	0,84	2,8	-	2	-	2,3	53	56	0,62	0,00020	4,5	41
	QS 63M4B	1/4	0,18	1380	0,7	1,25	3,2	-	2,2	-	2,4	57	60	0,62	0,00025	5	41
	QS 71M4A	1/3	0,25	1390	0,8	1,72	3,5	-	2,2	-	2,4	63	65	0,69	0,00071	6	45
	QS 71M4B	1/2	0,37	1390	1,12	2,55	4	-	2,3	-	2,6	68	69	0,69	0,00095	7	45
	QS 80M4A	3/4	0,55	1400	1,53	3,76	4,5	-	2,3	-	2,5	71	72	0,72	0,00168	9	49
	QS 80M4B	1	0,75	1400	2	5,12	4,6	-	2,3	-	2,5	73	74	0,73	0,00205	10,5	49
	QS 90S4A	1,5	1,1	1410	2,7	7,45	5,4	-	2,5	-	3	77	77,5	0,76	0,00242	14	54
	QS 90L4A	2	1,5	1420	3,5	10,09	5,5	-	2,5	-	3,1	80	80	0,77	0,00322	16	54
	QS 100L4A	3	2,2	1420	5	14,69	5,8	-	2,7	-	3,1	82	82	0,78	0,00398	20	56
	QS 100L4B	4	3	1425	6,6	20,1	5,9	-	2,8	-	3,1	82	83	0,79	0,00471	23	56
400/690 V	QS 112M4B	5,5	4	1445	8,6	26,43	2,3	6,9	0,69	2,7	3,3	84	85	0,79	0,00933	30	58
	QS 132S4C	7,5	5,5	1450	11,1	36,22	2,1	6,7	0,81	2,8	3,1	87	87	0,82	0,02097	43	61
	QS 132M4B	10	7,5	1450	15,5	49,39	1,5	5,5	0,83	2,9	3,1	87	87	0,8	002763	54	61
	QU 160M4B	15	11	1450	21,5	72,45	2,1	6,5	0,71	2,5	3	88,5	89,5	0,83	0,05547	76	63
	QU 160L4A	20	15	1455	29	98,45	2,1	6,5	0,74	2,6	3,1	89,5	90	0,83	0,06922	91	63
	QU 180M4B	25	18,5	1455	34,9	121,4	2,1	6,5	0,71	2,6	3	90	91	0,84	0,11220	113	69
	QU 180L4B	30	22	1455	40,8	144,4	2,1	6,5	0,74	2,5	3	90,5	91,5	0,85	0,12773	127	69
	QU 200L4C	40	30	1460	54,6	196,2	2,1	7	0,68	2,3	3	91,5	92	0,86	0,25035	159	70
	QU 225S4A	50	37	1470	67,1	240,4	2,1	7	0,74	2,5	3	92	92,5	0,86	0,36429	225	71
	QU 225M4C	60	45	1470	82	292,3	2,1	7	0,74	2,5	3	92	93	0,85	0,43513	257	71
	QU 250M4C	75	55	1470	100	356,1	2,1	7	0,73	2,6	3	93	93,5	0,85	0,46270	286	71

* The Sound Pressure Level measurements are taken 1 meter away from the motor.
* Tolerance + 3 dB(A)
* The 2 and 4 pole motors in the 1,1 kw to 55 kw output range correspond with the EU "EFF2" efficiency classification.

THREE PHASE - QS TYPES

ELECTRICAL CHARACTERISTICS, AT 50 Hz

	MOTOR TYPE	RATED VALUES					STARTING VALUES				Mk/Mn	%η		Cosφ	J		Sound Pressure Level dBA*
		OUTPUT		SPEED	CURRENT	MOMENT	CURRENT I_A / I_N		TORQUE M_A / M_N								
		HP	kW	rpm	A	Nm	⅄	Δ	⅄	Δ		3/4	4/4	4/4	kgm²	kg	
	6 pole 1000 rpm																
230/400 V	QS 71M6A	1/4	0,18	900	0,78	1,91	3	-	2	-	2,4	55	58	0,57	0,00068	6	42
	QS 71M6B	1/3	0,25	910	0,9	2,63	3,1	-	2	-	2,4	61	63	0,64	0,00090	7	42
	QS 80M6A	1/2	0,37	920	1,25	3,84	3,3	-	2,1	-	2,4	65	67	0,64	0,00160	9	49
	QS 80M6B	3/4	0,55	920	1,8	5,71	3,2	-	2,1	-	2,5	68	70	0,63	0,00196	10	49
	QS 90S6A	1	0,75	925	2,1	7,74	3,8	-	2	-	2,2	70	71	0,73	0,00254	14	51
	QS 90L6B	1,5	1,1	930	3	11,29	4,2	-	2,2	-	2,4	72	73	0,72	0,00328	16	51
	QS 100L6A	2	1,5	935	4,1	15,32	4	-	2	-	2,2	73	74	0,71	0,00463	21	53
	QS 112M6A	3	2,2	950	5,4	22,11	4,7	-	2	-	2,5	80	80	0,74	0,00916	29	58
	QS 132S6B	4	3	955	7	30	1,81	5,7	0,63	2	2,5	80	81	0,76	0,02057	45	62
400/690 V	QS 132M6A	5,5	4	960	9	39,79	1,84	5,8	0,7	2,2	2,6	81	82	0,78	0,02070	45	62
	QS 132M6B	7,5	5,5	960	12,3	54,71	1,76	5,5	0,67	2,1	2,6	83	84	0,77	0,02709	54	62
	QU 160M6B	10	7,5	960	17	74,61	1,9	6	0,69	2,1	3,2	85,5	86	0,74	0,05641	77	63
	QU 160L6B	15	11	960	24,3	109,5	1,89	6	0,72	2,2	3	86	87	0,75	0,07040	89	63
	QU 180L6A	20	15	965	32	148,5	1,91	6	0,62	2	2,8	87	88,3	0,77	0,18369	125	63
	QU 200L6B	25	18,5	970	37	182,2	1,9	6	0,6	1,85	2,7	88	90	0,8	0,27088	159	64
	QU 200L6C	30	22	970	43,5	216,6	1,85	6	0,6	1,85	2,7	89	90,5	0,81	0,31281	171	64
	QU 225M6B	40	30	975	57,6	294	1,85	6	0,57	1,8	2,5	90	91	0,83	0,49334	234	65

	8 pole 750 rpm																
230/400 V	QS 80M8A	1/4	0,18	650	0,9	2,64	2,2	-	1,5	-	1,7	52	54	0,53	0,00168	9	44
	QS 80M8B	1/3	0,25	675	1,15	3,54	2,2	-	1,5	-	1,7	55	57	0,55	0,00205	10,5	44
	QS 90S8A	1/2	0,37	695	1,5	5,1	2,9	-	1,9	-	2,3	60	62	0,57	0,00242	14	49
	QS 90L8A	3/4	0,55	690	2	7,61	3	-	1,9	-	2,2	64	65	0,61	0,00322	16	49
	QS 100L8A	1	0,75	695	2,6	10,3	3,5	-	1,8	-	2,3	70	70	0,6	0,00398	20	49
	QS 100L8B	1,5	1,1	690	3,6	15,22	3,5	-	1,8	-	2,2	72	72	0,61	0,00471	22	49
	QS 112M8A	2	1,5	700	4,5	20,46	3,7	-	1,9	-	2,3	74	74	0,65	0,00933	30	54
	QS 132S8B	3	2,2	710	6	29,59	1,27	4	0,6	1,7	2,2	75	77	0,69	0,02111	43	58
	QS 132M8A	4	3	710	7,9	40,35	1,4	4,5	0,6	1,7	2,2	77	79	0,69	0,02763	52	58
400/690 V	QU 160M8A	5,5	4	720	10,5	53,1	1,75	5	0,61	1,8	2,2	82	83	0,66	0,.05612	76	60
	QU 160M8B	7,5	5,5	720	14,5	73	1,74	5	0,61	1,8	2,2	82,5	83,5	0,66	0,05612	76	60
	QU 160L8A	10	7,5	720	19	99,5	1,74	5	0,62	1,9	2,2	83	84	0,68	0,07004	89	60
	QU 180L8B	15	11	720	25,5	146	1,75	5,5	0,65	2,1	2,6	85	88	0,.71	0,12773	126	60
	QU 200L8C	20	15	725	33	197,6	1,74	5,5	0,68	2,2	2,8	87	88	0,76	0,25035	165	61
	QU 225S8A	25	18,5	725	38	244	1,75	5,5	0,62	2	2,5	88	89	0,79	0,36429	224	61
	QU 225M8C	30	22	725	45	290	1,74	5.,5	0,66	2,1	2,6	89	89	0,8	0,43513	256	61

* The Sound Pressure Level measurements are taken 1 meter away from the motor.
* Tolerance + 3 dB(A)

şahinler
METAL MAKİNE ENDÜSTRİ A.Ş.

THREE PHASE TYPES

EFF 1

ELECTRICAL CHARACTERISTICS, AT 50 Hz

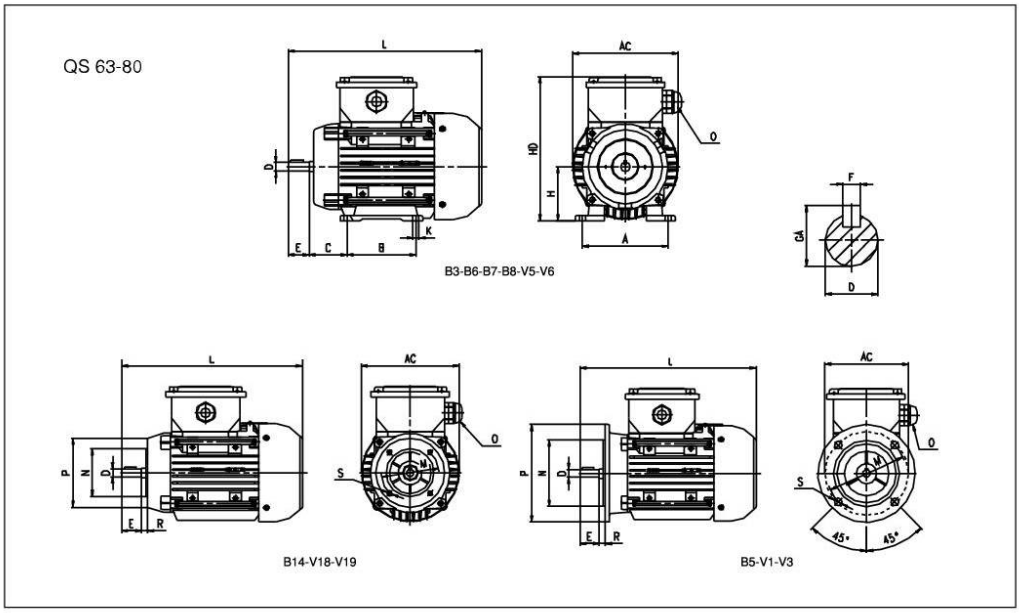
	MOTOR TYPE	RATED VALUES OUTPUT HP	RATED VALUES OUTPUT kW	SPEED rpm	CURRENT A	MOMENT Nm	STARTING VALUES CURRENT I_A / I_N ⅄ Δ	STARTING VALUES TORQUE M_A / M_N ⅄ Δ	Mk/Mn	EFF 1 %η 3/4	EFF 1 %η 4/4	Cosφ 4/4	J kgm^2	kg	Sound Pressure Level dBA *
	2 pole 3000 rpm														
230/400 V	QH 80M2D	1,5	1,1	2880	2,4	3,65	8,1	4	4,3	82,5	82,9	0.81	0.00150	13	58
230/400 V	QH 90L2C	2	1,5	2900	3,1	4,94	8,2	3,8	4,3	84,8	85,2	0,83	0,00182	17,5	62
230/400 V	QH 90L2D	3	2,2	2900	4,4	7,24	8,3	3,9	4,4	85,2	85,7	0,84	0,00182	18	62
230/400 V	QH 100L2D	4	3	2920	5,8	9,81	9,6	4,3	5,1	86,3	86,8	0,86	0,00335	26	64
400/690 V	QH 112M2C	5,5	4	2890	7,7	13,22	9,5	4,2	5	87	87,6	0,86	0,00489	31	67
400/690 V	QH 132S2C	7,5	5,5	2920	10,1	17,99	9	3,5	3,9	88,3	88,6	0,89	0,01410	47	7q
400/690 V	QH 132M2A	10	7,5	2920	13,5	24,53	9	3,6	4	89	89,5	0,9	0,01596	53	70
400/690 V	QH 160M2A	15	11	2930	19,8	35,85	8	2,8	3,5	90,3	90,8	0,88	0,02644	70	71
400/690 V	QH 160M2B	20	15	2940	26,2	48,7	8,8	3,5	4	91,4	91,8	0,9	0,03317	82	71
400/690 V	QH 160L2A	25	18,5	2930	31,8	60,3	8,2	3,3	3,9	92,5	92,2	0,91	0,04075	92	71
400/690 V	QH 180M2A	30	22	2945	37,5	71,3	7,5	2,6	3,6	92,5	92,8	0,91	0,06193	112	77
400/690 V	QH 200L2A	40	30	2950	52,5	97,1	7,6	2,1	3,6	93,2	93,5	0,88	0,11917	147	80
400/690 V	QH 200L2B	50	37	2955	64,9	119,6	8	2,5	4,2	93,6	94	0,88	0,13885	162	80
400/690 V	QH 225M2A	60	45	2960	77,5	145,2	7	2,4	3,2	93,7	94,3	0,88	0,19833	249	81
400/690 V	QH 250M2A	75	55	2960	93,4	177,4	7,4	2,3	3,4	94,4	94,5	0,9	0,23505	251	81

	MOTOR TYPE	HP	kW	rpm	A	Nm	I_A / I_N	M_A / M_N	Mk/Mn	%η 3/4	%η 4/4	Cosφ 4/4	J kgm^2	kg	Sound Pressure Level dBA *
	4 pole 1500 rpm														
230/400 V	QH 90L4C	1,5	1,1	1430	2,6	7,35	7	3,2	3,7	83,5	83,9	0,73	0,00365	17,5	54
230/400 V	QH 90L4D	2	1,5	1430	3,4	10,02	7,3	3,5	4	84,5	85	0,76	0,00365	18	55
230/400 V	QH 100L4C	3	2,2	1440	5	14,59	8	4,1	4,4	86	86,6	0,74	0,00545	25	56
230/400 V	QH 100L4D	4	3	1440	6,5	19,9	7,5	3,8	4,2	87	87,4	0,77	0,00581	26	56
400/690 V	QH 112M4D	5,5	4	1450	8,3	26,34	8,6	3,2	4,3	87,8	88,3	0,79	0,01123	34	58
400/690 V	QH 132M4B	7,5	5,5	1450	11	36,22	8,7	3,2	4,3	88,6	89,3	0,81	0,02763	55	61
400/690 V	QH 132M4C	10	7,5	1450	14,7	49,40	9,5	3,2	4,5	89,7	90,2	0,82	0,02980	57	61
400/690 V	QH 160M4B	15	11	1460	21,5	71,95	8	2,9	3,9	91,2	91,5	0,81	0,05547	77	63
400/690 V	QH 160L4A	20	15	1455	28,5	98,45	8	2,7	3,5	91,8	92	0,83	0,06922	92	63
400/690 V	QH 180M4B	25	18,5	1465	35	120,6	9	3,2	3,4	92	92,5	0,82	0,11220	114	69
400/690 V	QH 180L4B 30	30	22	1465	42	143,4	8,5	2,8	3,9	92,5	93,	0,81	0,12773	127	69
400/690 V	QH 200L4C	40	30	1465	53,5	195,6	7	2,3	3,2	93,6	93,8	0,86	0,25035	160	70
400/690 V	QH 225S4A	50	37	1470	67,8	240,4	7,9	3,2	3,3	94,4	94,5	0,83	0,36429	227	71
400/690 V	QH 225M4C	60	45	1470	81	292,3	7,3	3	3,5	95,1	95	0,84	0,43513	260	71
400/690 V	QH 250M4C	75	55	1475	96,2	356,1	7,5	3	3,5	95,2	95,3	0,87	0,46270	289	71

* The Sound Pressure Level measurements are taken 1 meter away from the motor.
* Tolerance + 3 dB(A)

DIMENSIONS

QS 63-80



		Main Dimensions			Foot Mounted Motors						Shaft				Bearing		Seal		Flange						
Frame[4] Size	No. Of Poles	AC	L	O	B	A	H	HD	K	C	D[1]	E	GA	F[3]	Drive Side	Non-Drive Side	Drive Side	Non-Drive Side[4]	Mounting Type	Flange Type	P	N[2]	M	R	S
63 M	2...8	123	219,5	1*M20	80	100	63	162 (174)[5]	7	40	11	23	12,5	4	6201-2Z	6201-2Z	12*22*7	12*22*7	B5	FA	140	95	115	0	10
																			B14	FB	120	80	100	0	M6
																			B14	FC	90	60	75	0	M5
71 M	2...8	138	252,5	1*M20	90	112	71	178 (190)[5]	7	45	14	30	16,0	5	6202-2Z	6202-2Z	15*24*5	15*24*5	B5	FA	160	110	130	0	10
																			B14	FB	140	95	115	0	M8
																			B14	FC	105	70	85	0	M6
80 M	2...8	158	283,5	1*M20	100	125	80	195 (207)[5]	10	50	19	40	21,5	6	6204-2Z	6204-2Z	20*30*7	20*30*7	B5	FA	200	130	165	0	12
																			B14	FB	160	110	130	0	M8
																			B14	FC	120	80	100	0	M6

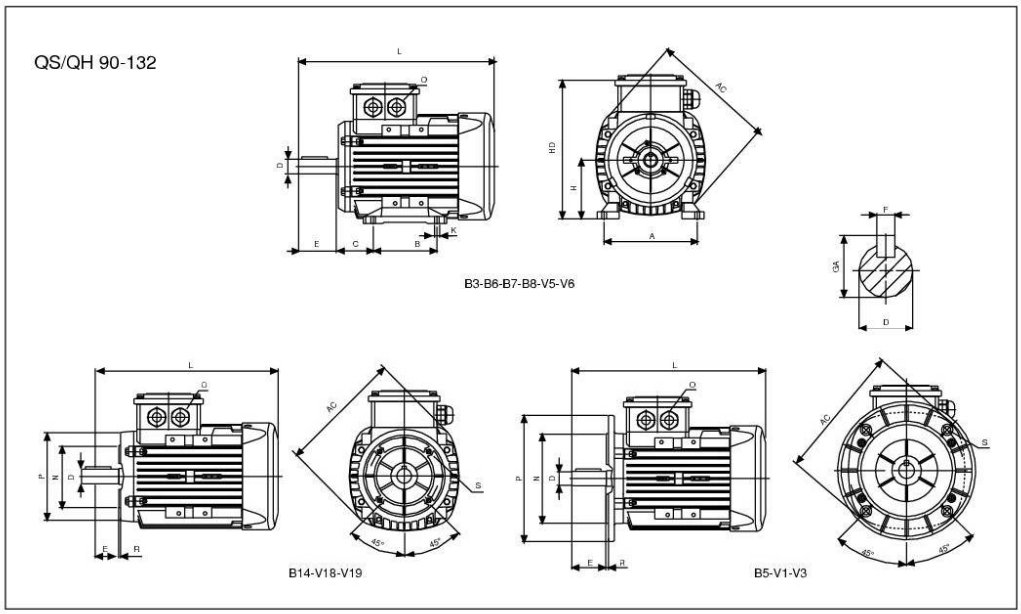
Dimensions are in mm

[1] Tolerance DIN EN 50347 "j6"
[2] Tolerance DIN EN 50347 "j6"
[3] According to DIN 6885
[4] IP55
[5] Optional terminal box application

THREE PHASE TYPES

DIMENSIONS

QS/QH 90-132



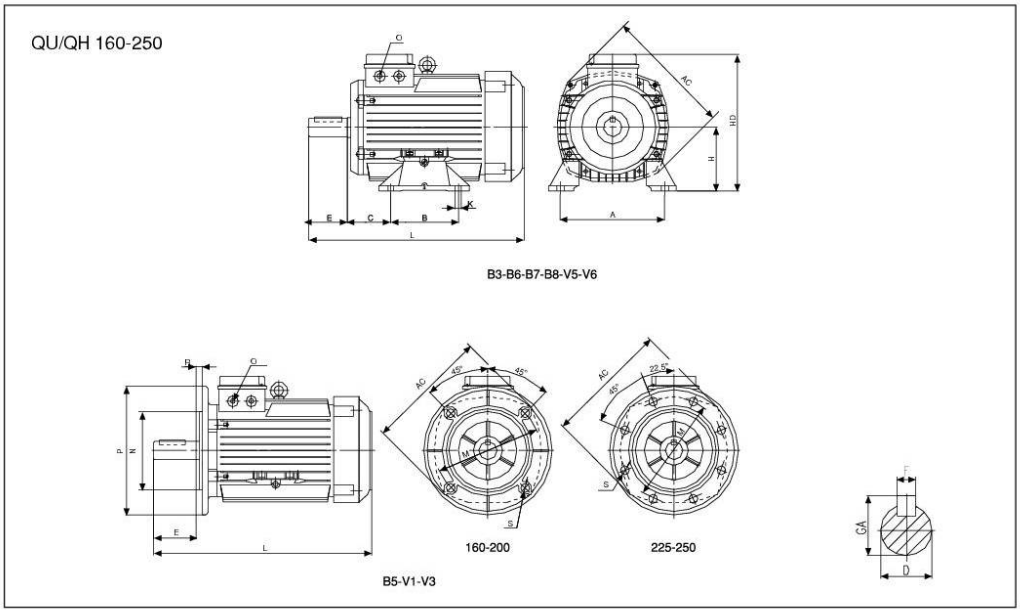
		Main Dimensions			Foot Mounted Motors						Shaft				Bearing		Seal		Flange						
Frame[4] Size	No. Of Poles	AC	L	O	B	A	H	HD	K	C	D[1]	E	GA	F[3]	Drive Side	Non-Drive Side	Drive Side	Non-Drive Side[5]	Mounting Type	Flange Type	P	N[2]	M	R	S
90 S	2...8	193	296,5	1*M25	100	140	90	222	10	56	24	50	27	8	6305-2Z	6205-2Z	25*40*7	25*40*7	B5	FA	200	130	165	0	12
																			B14	FB	160	110	130	0	M8
90 L			316,5		125			(241)[6]											B14	FC	140	95	115	0	M8
100 L	2...8	217	352	1*M25	140	160	100	241	12	63	28	60	31	8	6306-2Z	6205-2Z	30*47*7	25*40*7	B5	FA	250	180	215	0	15
								(260)[6]											B14	FB	200	130	165	0	M10
																			B14	FC	160	110	130	0	M8
112 M	2...8	232	395,5	2*M25	140	190	112	261	12	70	28	60	31	8	6306-2Z	6206-2Z	30*47*7	30*47*7	B5	FA	250	180	215	0	15
								(280)[6]											B14	FB	200	130	165	0	M10
																			B14	FC	160	110	130	0	M8
132 S	2...8	279	440,5	2*M32	140	216	132	314	12	89	38	80	41	10	6208-2Z	6208-2Z	40*62*10	40*62*10	B5	FA	300	230	265	0	15
132 M			475,5		178														B14	FC	200	130	165	0	M10

Dimensions are in mm

[1] Tolerance DIN EN 50347 "j6" up to ϕ28mm, "k6" above ϕ28mm
[2] Tolerance DIN EN 50347 "j6"
[3] According to DIN 6885
[4] Lifting bolt is mounted from frame size 112 on
[5] IP55
[6] Optional terminal box application

DIMENSIONS

QU/QH 160-250



		Main Dimensions			Foot Mounted Motors						Shaft				Bearing		Seal		Flange						
Frame[4] Size	No. Of Poles	AC	L	O	B	A	H	HD	K	C	D[1]	E	GA	F[3]	Drive Side	Non-Drive Side	Drive Side	Non-Drive Side[5]	Mounting Type	Flange Type	P	N[2]	M	R	S
160 M	2...8	323	586	2*M32	210	254	160	360	15	108	42	110	45	12	6309-2Z	6309-2Z	45*72*10	45*72*10	B5	FA	350	250	300	0	19
160 L	2...8	323	586	2*M32	254	254	160	360	15	108	42	110	45	12	6309-2Z	6309-2Z	45*72*10	45*72*10	B5	FA	350	250	300	0	19
180 M	2...8	370	629	2*M40	241	279	180	428	15	121	48	110	51,5	14	6310-2Z	6310-2Z	50*80*10	50*80*10	B5	FA	350	250	300	0	19
180 L	2...8	370	629	2*M40	279	279	180	428	15	121	48	110	51,5	14	6310-2Z	6310-2Z	50*80*10	50*80*10	B5	FA	350	250	300	0	19
200 L	2...8	415	665	2*M50	305	318	200	461	19	133	55	110	59	16	6312-2Z	6312-2Z	60*90*10	60*90*10	B5	FA	400	300	350	0	19
225 S	2	456	735	2*M40	286	356	225	485	19	149	55	110	59	16	6313-2Z	6313-2Z	65*100*13	65*100*13	B5	FA	450	350	400	0	19
	4...8		765								60	140	64	18											
225 M	2	456	735	2*M40	311	356	225	485	19	149	55	110	59	16	6313-2Z	6313-2Z	65*100*13	65*100*13	B5	FA	450	350	400	0	19
	4...8		765								60	140	64	18											
250	2	456	784	2*M40	349	406	250	510	24	168	60	140	64	18	6314[6]	6313-2Z	70*112*12	65*100*13	B5	FA	550	450	500	0	19
250	4	456	784	2*M40	349	406	250	510	24	168	65	140	69	18	6315[6]	6313-2Z	75*112*12	65*100*13	B5	FA	550	450	500	0	19

Dimensions are in mm

[1] Tolerance DIN EN 50347 "k6" up to ϕ48mm, "m6" above ϕ48mm
[2] Tolerance DIN EN 50347 "j6" up to ϕ250mm, "h6" above ϕ250mm
[3] According to DIN 6885
[4] Lifting bolt is mounted from frame size 112 on
[5] IP55
[6] External Lubrication

4R HSS 320 NC

NC – 4X-E 508T v1.5.0

General Characteristics

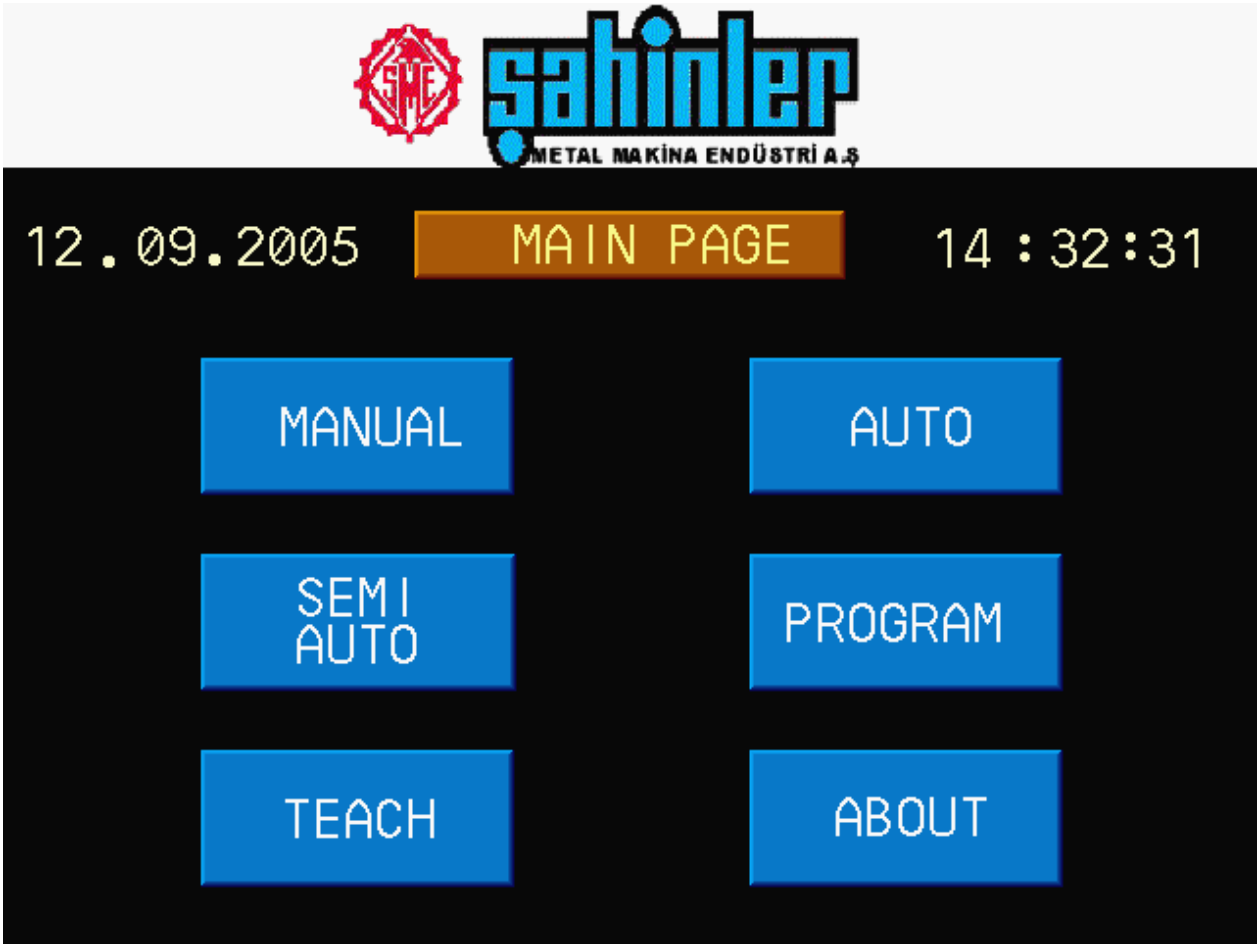
Input	21-30 VDC @ 700mA
CE	Suitable for EN50081-2 and EN50082-2 standards
EMI	FCC Class « A »
Isolation	At 500VDC 50 Mohm
Vibration Stamina	10 between 25 Hz (X,Y,Z ways 2G 30 minutes)
Protection	NEMA 4 / IP65 front panel(O ring stamp)
Temperature	32 between 113 F (0 between 45 C)
Factory Moisture	10 between 90% RH keeps clean

Hardware Specifications

	MT-510S / 510T	MT-508S	MT-509L	MT-506S / 506L
Display	10.4" STN, 256 color LCD /10.4" TFT, 256 color LCD	7.7" STN, 256 color LCD	9.4" blue mod LCD	5.7" blue mod LCD / 5.7" STN color LCD
Resolution	640(G) x 480(Y) nokta	640(G) x 480(Y) nokta	640(G) x 480(Y) nokta	320(G) x 240(Y)
Display	215(G) x 162(Y) mm		196(G) x 150(Y) mm	120(G) x 90(Y) mm
Pixel	0.33(G) x 0.33 (Y) mm			
Back Light	CCFT (MTBF 15 000hour, automatic shut down, changeable)			
Touch Screen	8 wire resistance type, voice alert on touch	8 wire resistance type, voice alert on touch		
Touch Sensitivity	2mm parallel			
Surface Hardness	4H			
Serial Ports	1 RS-232 (controller port) and 1 RS-232 / RS-485 (PC & controller port)			
Memory	4MB DRAM ve 1 M byte flash ROM, upgradable to 2MB			

Parallel port	Standard parallel printer port		No printer port	
Real Time clock	EPSON 72421B option, Y2K compatible			None
System Adjustment	Watch dog timer, power error recognize			
Dimensions H x W x D	**Bezel:** 9.37 x 12.40 x 2.44 inches (238 x 315 x 62 mm) **Cutout:** 8.86 x 11.89 inches (225 x 302 mm)	**Bezel:** 6.93 x 9.09 x 2.16 inches (176 x 231 x 55 mm) **Cutout:** 6.57 x 8.75 inches (167 x 222 mm)	**Bezel:** 9.06 x 11.69 x 1.57 inches (230 x 297 x 40 mm) **Cutout:** 8.39 x 11.10 inches (213 x 282 mm)	**Bezel:** 5.90 x 8.00 x 2.95 inches (150 x 204 x 75 mm) **Cutout:** 5.43 x 7.56 inches (138 x 192 mm)
Weight	Approx.. 2.0 kg	Approx.. 1.3 kg	Approx.. 1.8 kg	Approx.1.0 kg

RUNNING:



NC screen, helps control one axis manual, automatic and semi - automatic modes. You can move the axis with control buttons. Programme memory of the NC unit is 256Kb. 1000 programme memory.

AXIS:

X AXIS: Top roll left and right rotation

Y AXIS: Left Roll Up & Down Movement. (looking from the bracket side).

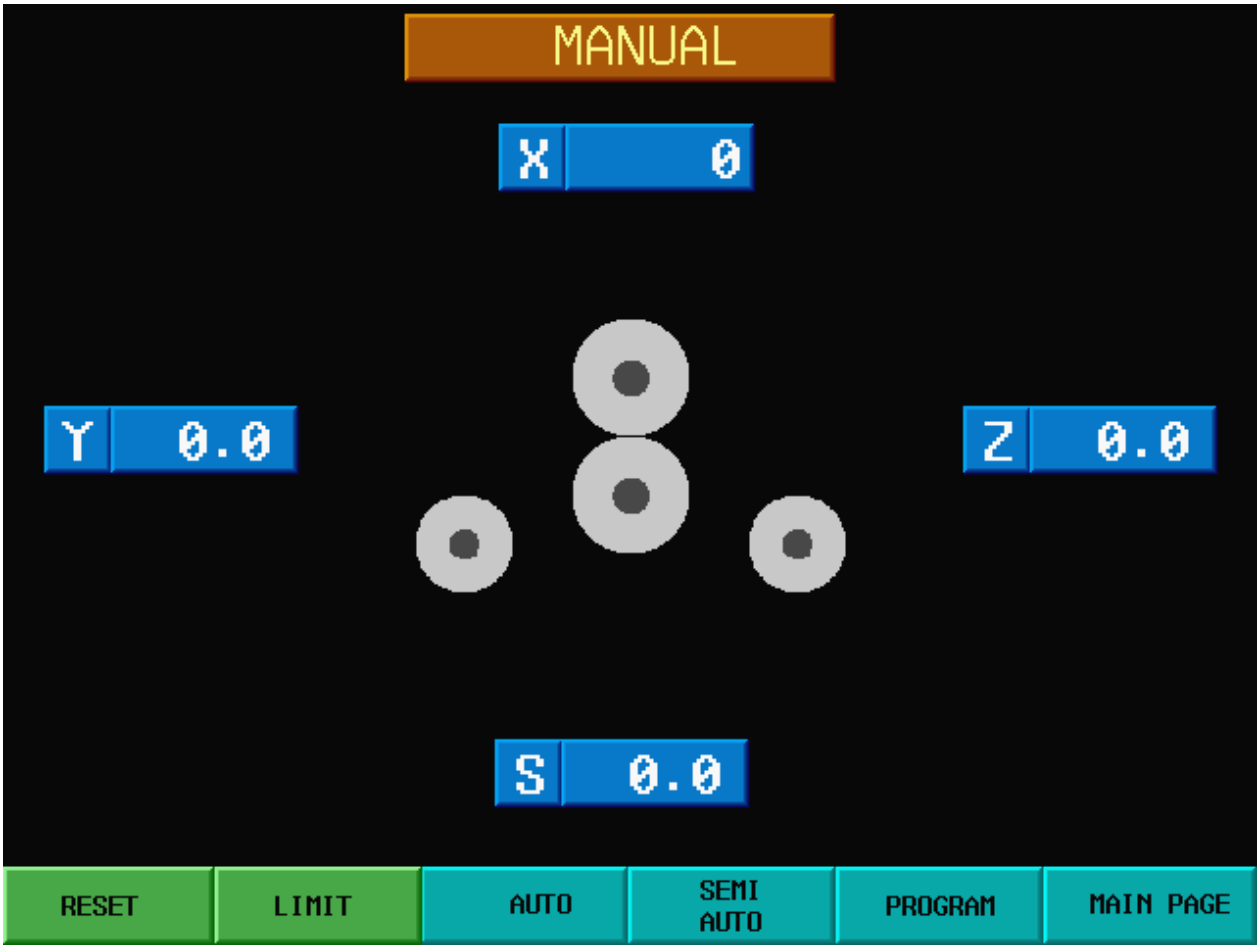
Z AXIS: Right Roll Up & Down movement (looking from the bracket side).

S AXIS: Bottom Roll up & down movement.

NC unit has 5 different modes. These modes are; manual, automatic, semi automatic, teaching and programme modes.

MANUAL MODE:

You can go to manual mode from th Main Page pressing manual button. You can watch the movement of all axis animated in manual mode and move the axis.



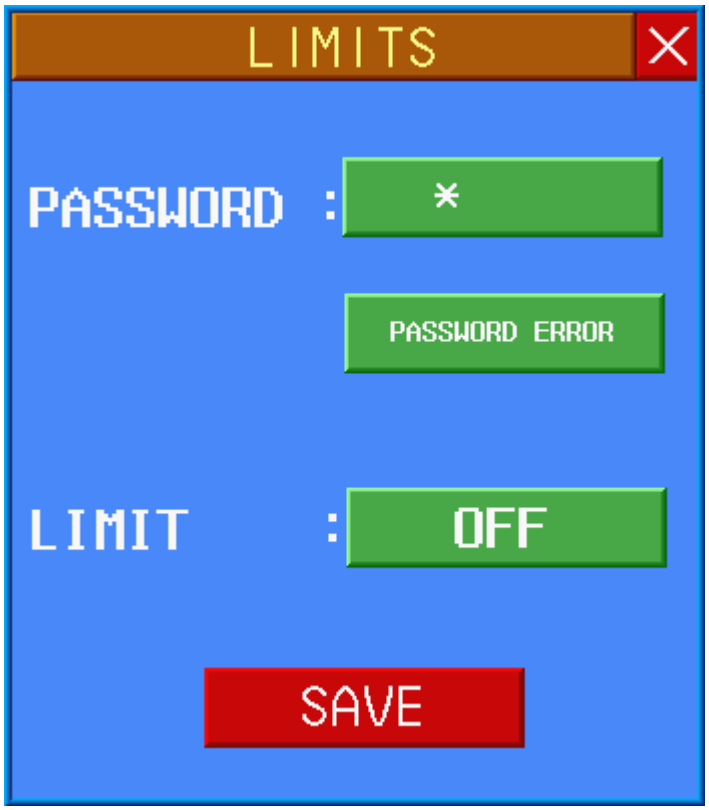
- ***RESET BUTTON***:

  Y and Z axis, is decreased until the piston is at the most bottom and S axis is brought to the top. If you want to reset all axis, press the green reset button during 3 seconds on the left bottom corner on the manual screen. When the button is pressed all axis are reset. Axis can be reset up on request at any position of the piston.

  Note : Before the resetting proccess disable the software limits. After resetting proccess software limits should be enable again. (Limit settings)

- ***LIMIT BUTTON***:

  When the LIMIT button pressed the new window appears. In this window software limits can be activated or deactivated. To make changes it is necessary to enter the password (1953) to the PASSWORD box and to make OFF enter “0” or to make ON enter “1” to the LIMIT box



- ***Automatic Button***:

  This button runs “automatic” mode.

- ***Semi Automatic button*:**

  This button runs “semi automatic” mode.

- ***Programme Button:***

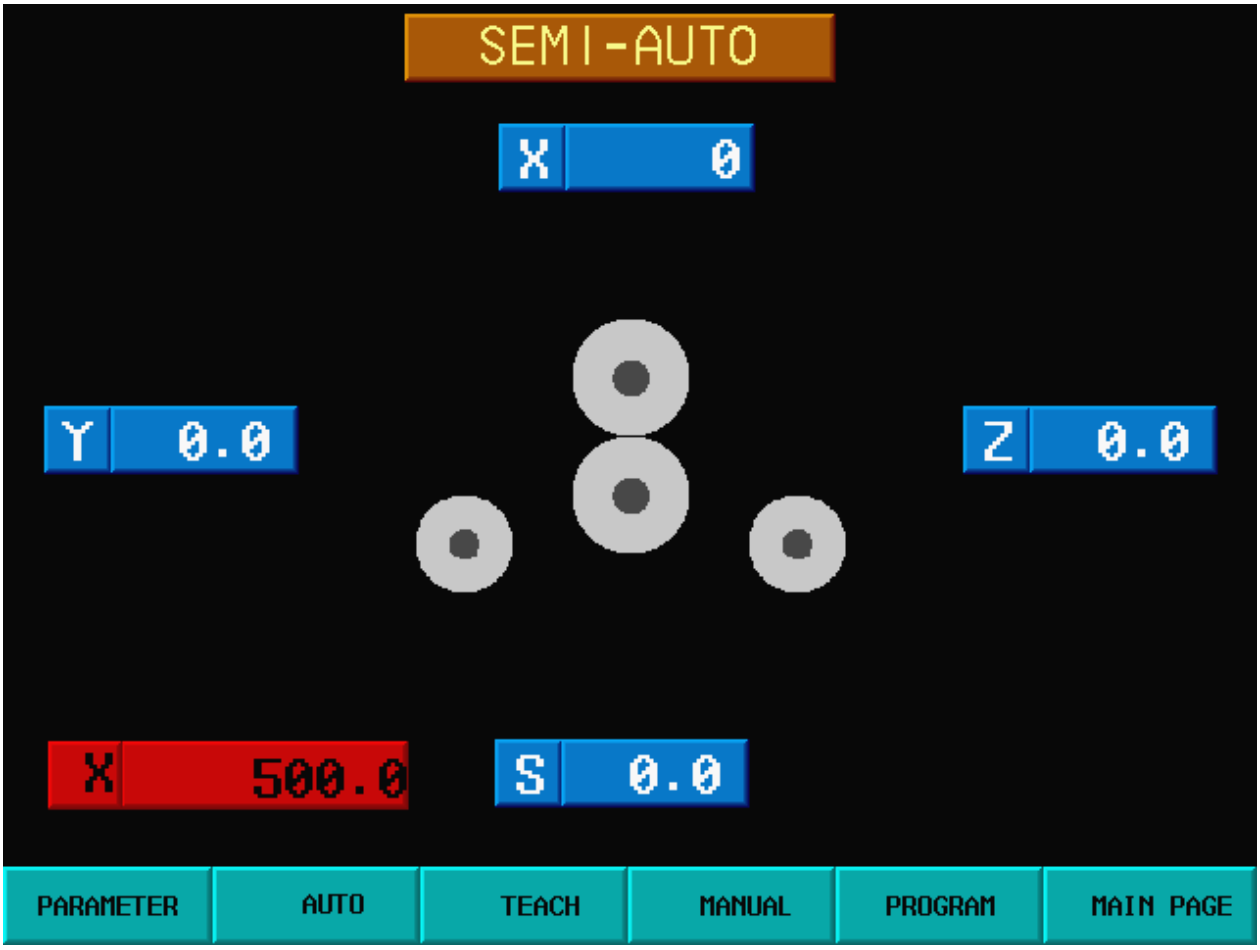
  This button runs “programme” mode and we can modify the programme.

- **Main Page Button:**

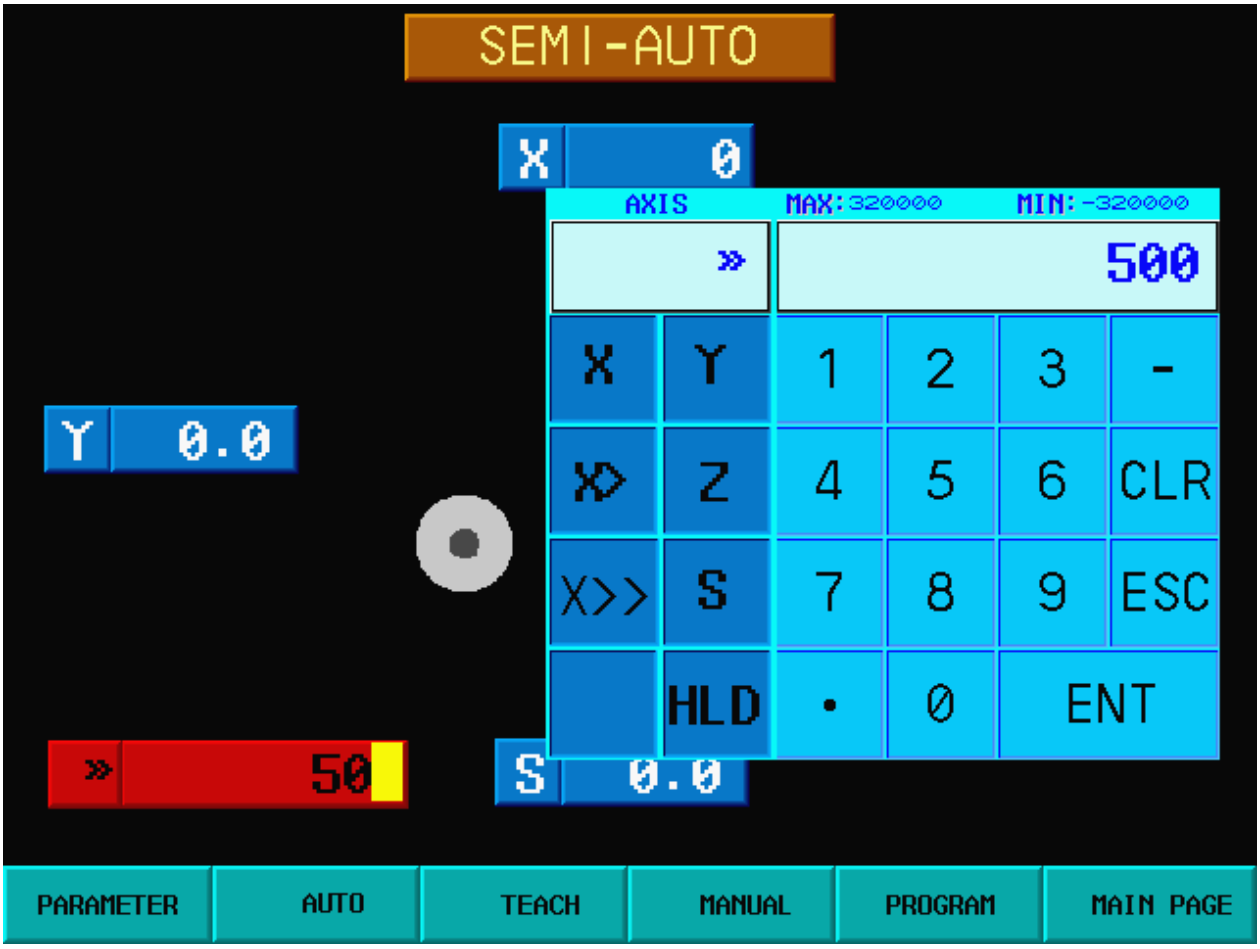
  This button goes to the Main Page.

SEMI AUTOMATIC MODE:

You can go to this mode by pressing semi – automatic buton in the main menu.
This mode tests the movement of the axis and adjusts the parameters

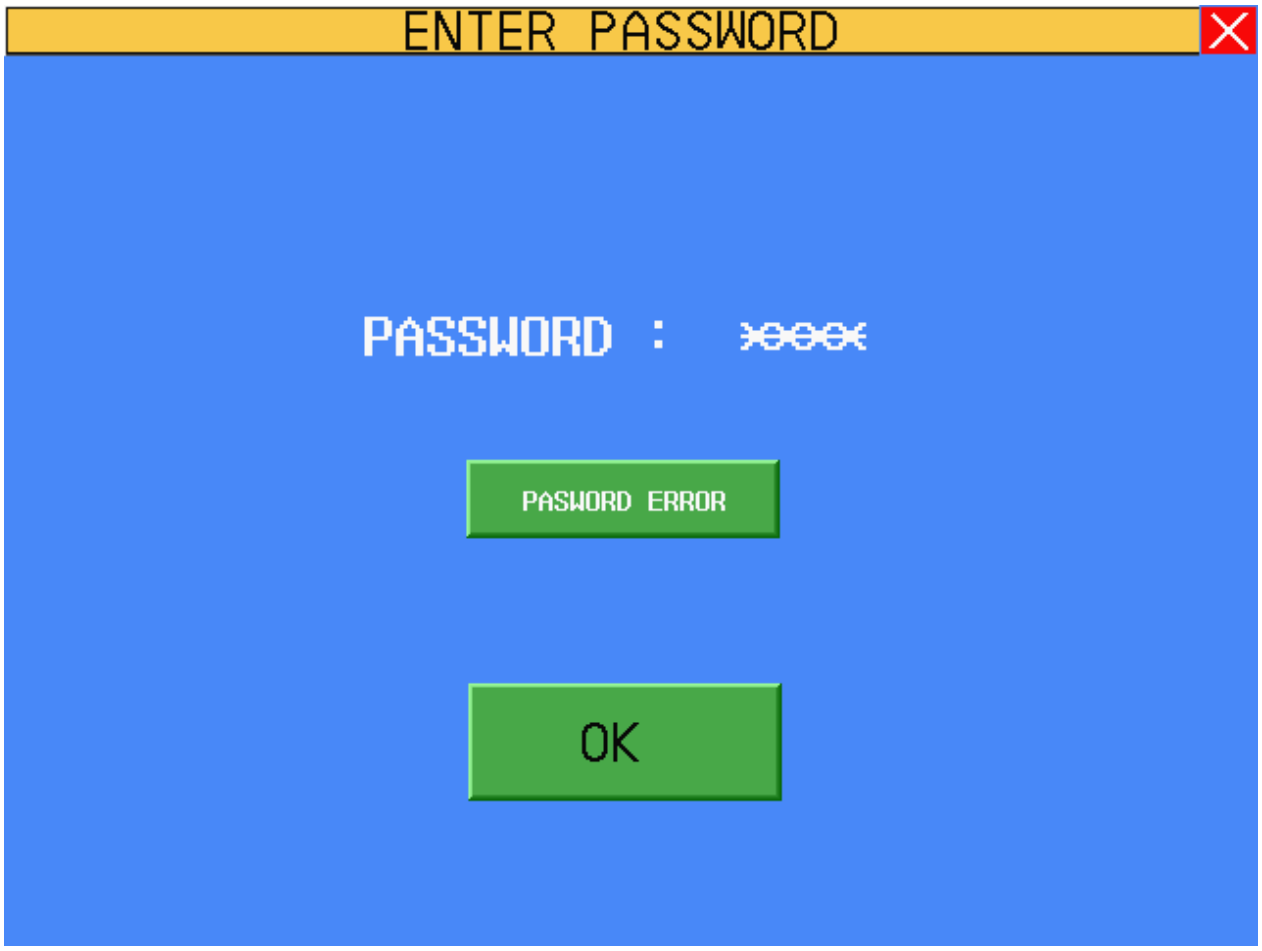


- ***Axis test:***
  Pres the red buton on the bottom left. Axis and numbers are shown on the screen now..Choose the axis and its position values and pres "*ENTER*". Entered value is shown on the red button. Then pres "start" buton to move the axis.



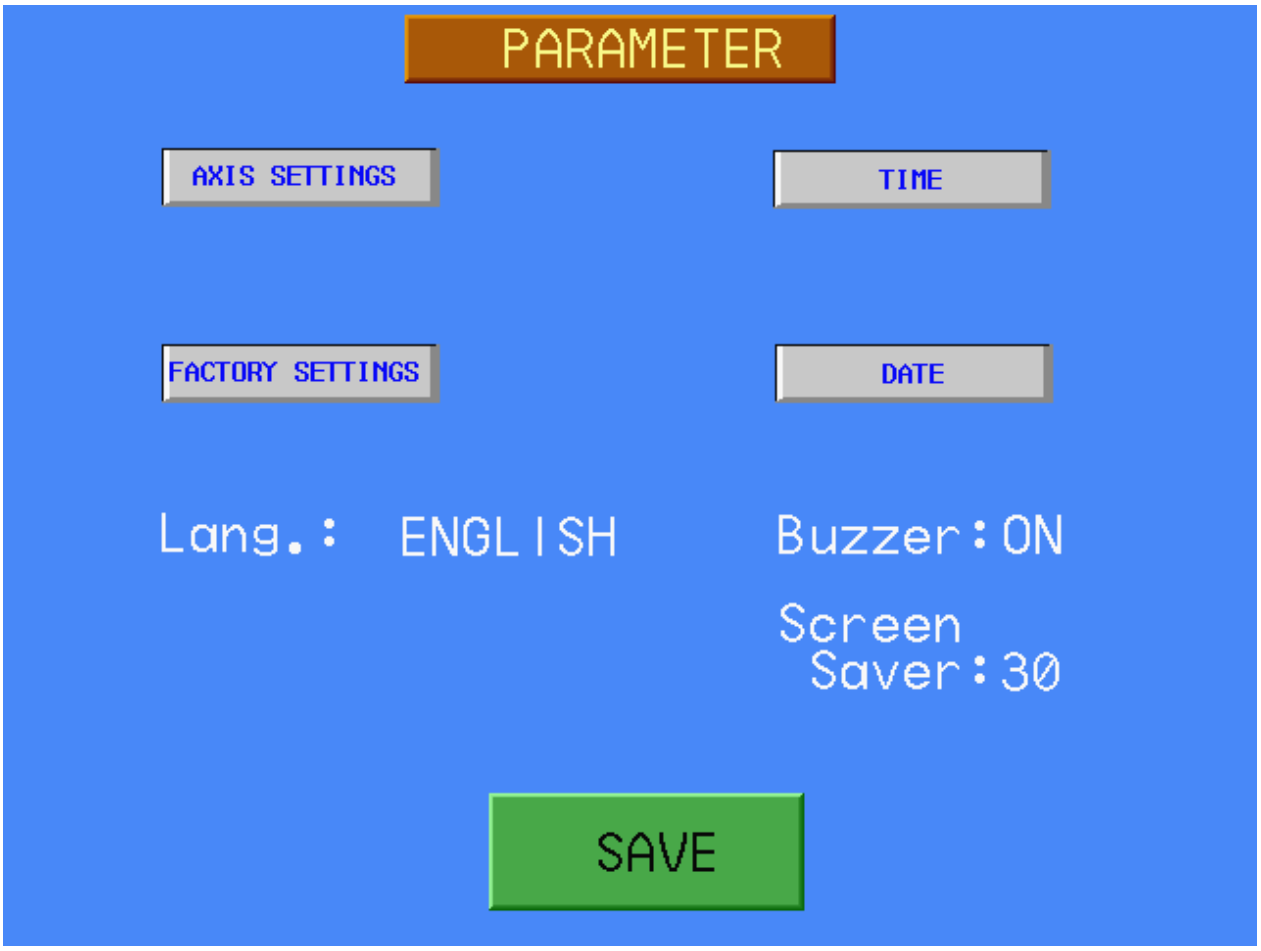
- ***Adjusting Parameters:***

When the “parameter” buton on the bottom left of the screen is pressed you see the password. Touch the number on the screen to enter the password.If the password is correct it is shown “PASSWORD IS OK”. Press ”*OK”* to go to the parameter screen. If you want to quit pres X on the top right.



Password =1953

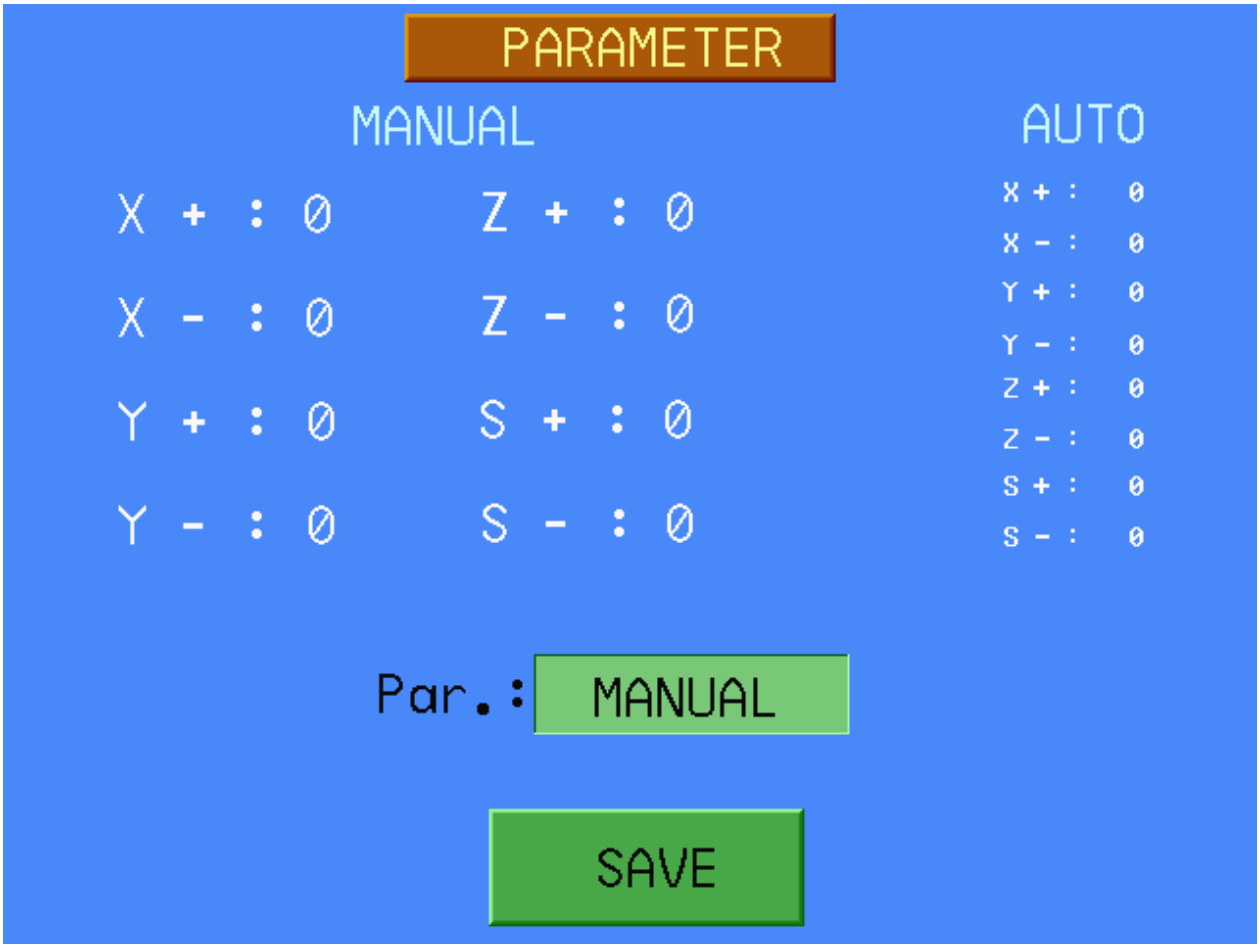
➢ **Parameter page:**



Parameter screen is used to make, adjustment of the sensitivity of the axis, language options, time, date adjustments.

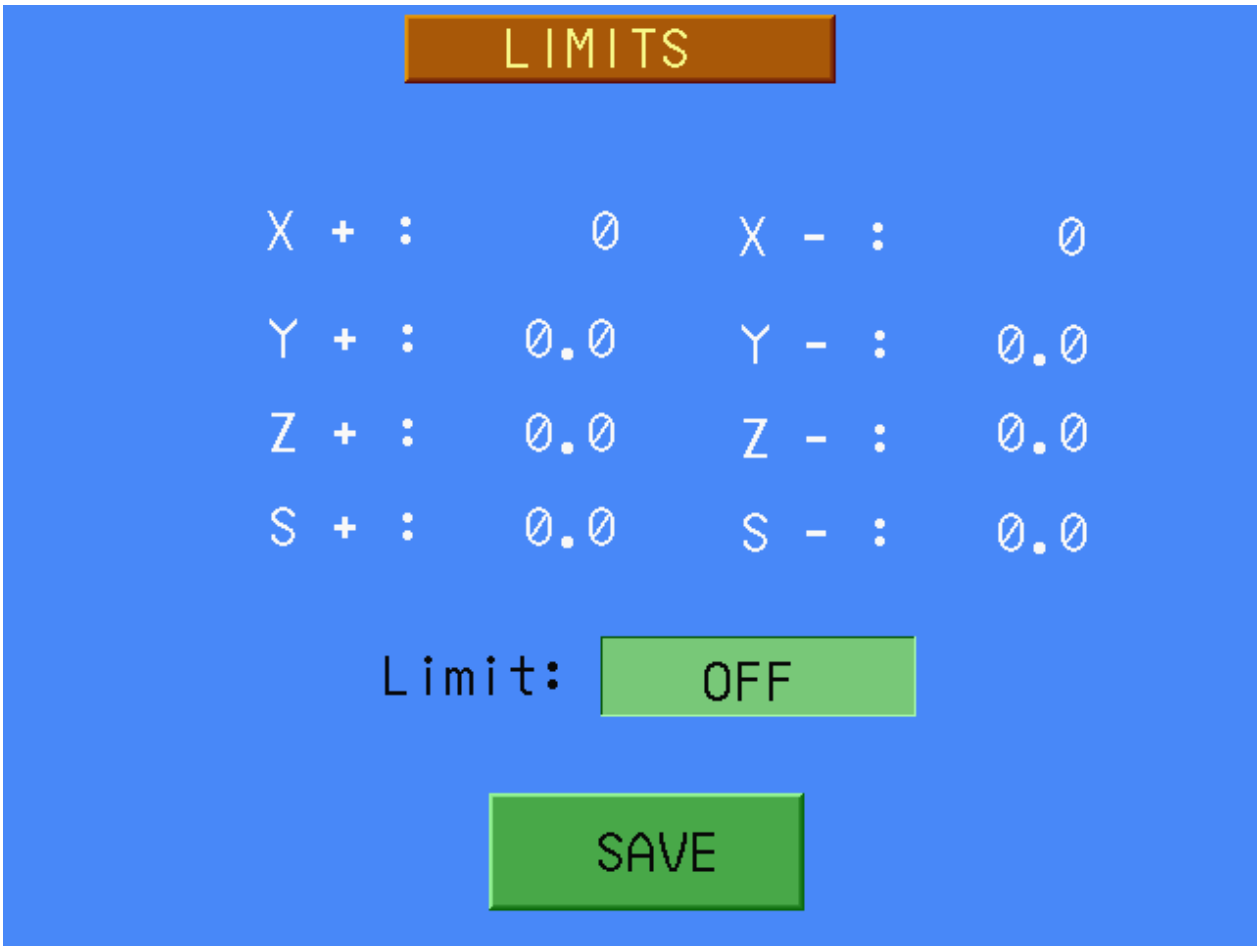
AXIS SETTINGS :

Axis settings screen is used to make adjustment of the sensitivity of the axis. If the MANUAL/AUTO button on the screen is MANUAL mode manual parameters woulb be active. If the switch is AUTO mode NC Unit calculates and updates the parameters.



X (+) : provides movement of X Axis right.
X (-) : provides movement of X Axis left
Y (+) : provides movement of Y Axis upwards.
Y (-) : provides movement of Y Axis down
Z (+) : provides movement of Z Axis upwards.
Z (-) : provides movement of Z Axis down.
S (+) : provides movement of S Axis down..
S (-) : provides movement of S Axis upwards.

LIMIT SETTINGS :



X + : X axis maximum software limit.
X - : X axis minimum software limit.
Y + : Y axis maximum software limit.
Y - : Y axis minimum software limit.
Z + : Z axis maximum software limit.
Z - : Z axis minimum software limit.
S + : S axis maximum software limit.
S - : S axis minimum software limit.

Limit : Software limit function enable parameter. (0 : disable 1: enable)

ZERO SETTINGS :

This page is for the zero ofsett parameters for the Y, Z, S axises. When the machine is resetted this values loaded to axises.

Y : Zero offset parameter for the Y axis
Z : Zero offset parameter for the Z axis
S : Zero offset parameter for the S axis

Lang. : NC Unit language slection parameter

0 : Turkish
1 : English
2 : German
3 : Russian

TIME : Adjustment of clock

DATE : Adjustment of date

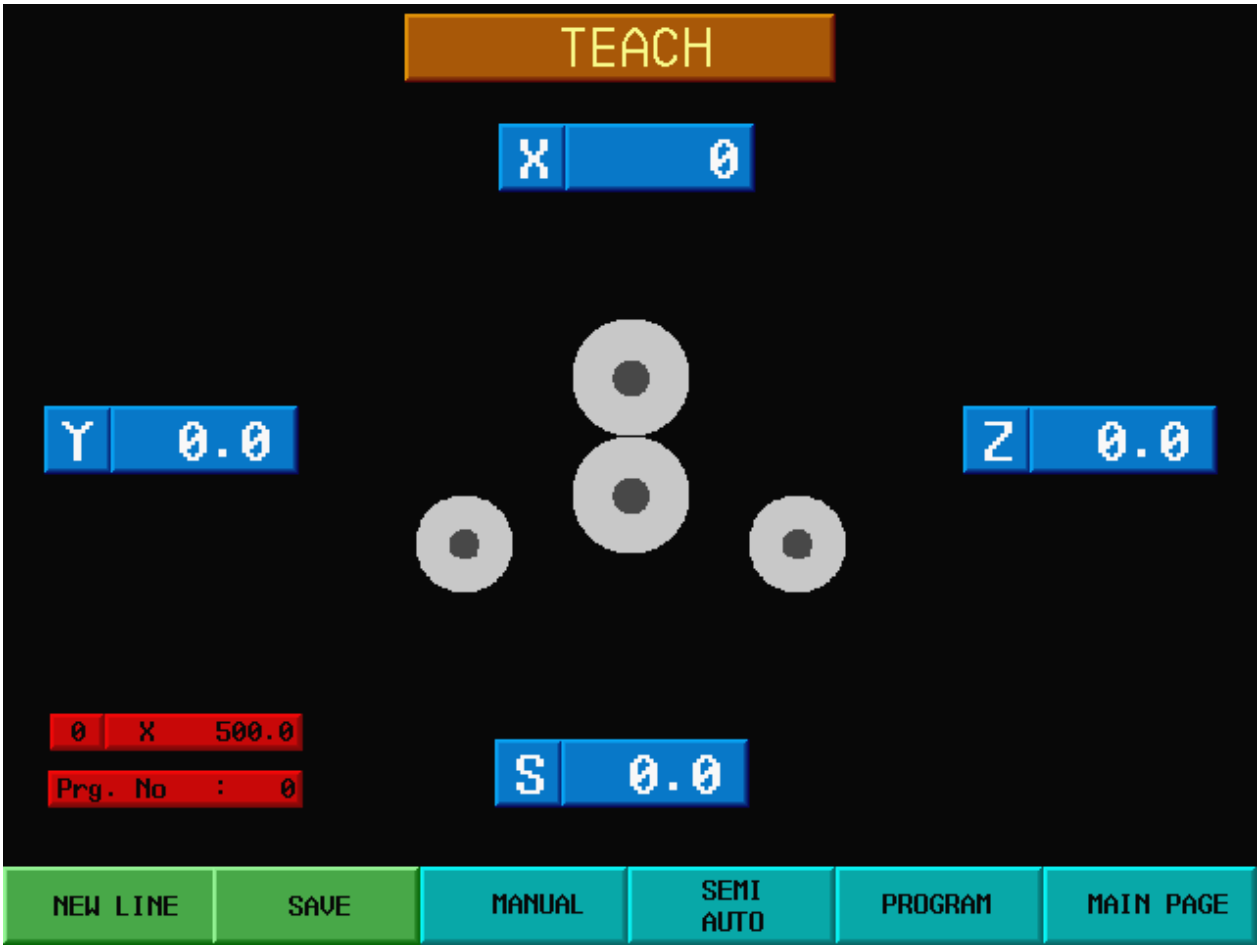
FACTORY SETTINGS: If the password is correct all the parameters change to factory settings. (Password : 2005)

Buzzer : NC Unit souds if the any buton on the screen pressed.
To activate: ‘ 1 ‘ , To Deactivate: ‘ 0 ‘

Screensaver : NC unite stand by the screen to save lifetime of the screen. Screensaver activation time is entered as minute (0 – 255 min.) by this parameter. To deactivate the screensaver : ‘ 0 ‘

After making necessary changes pres “SAVE” buton to go to the main menu

TEACHING MODE:



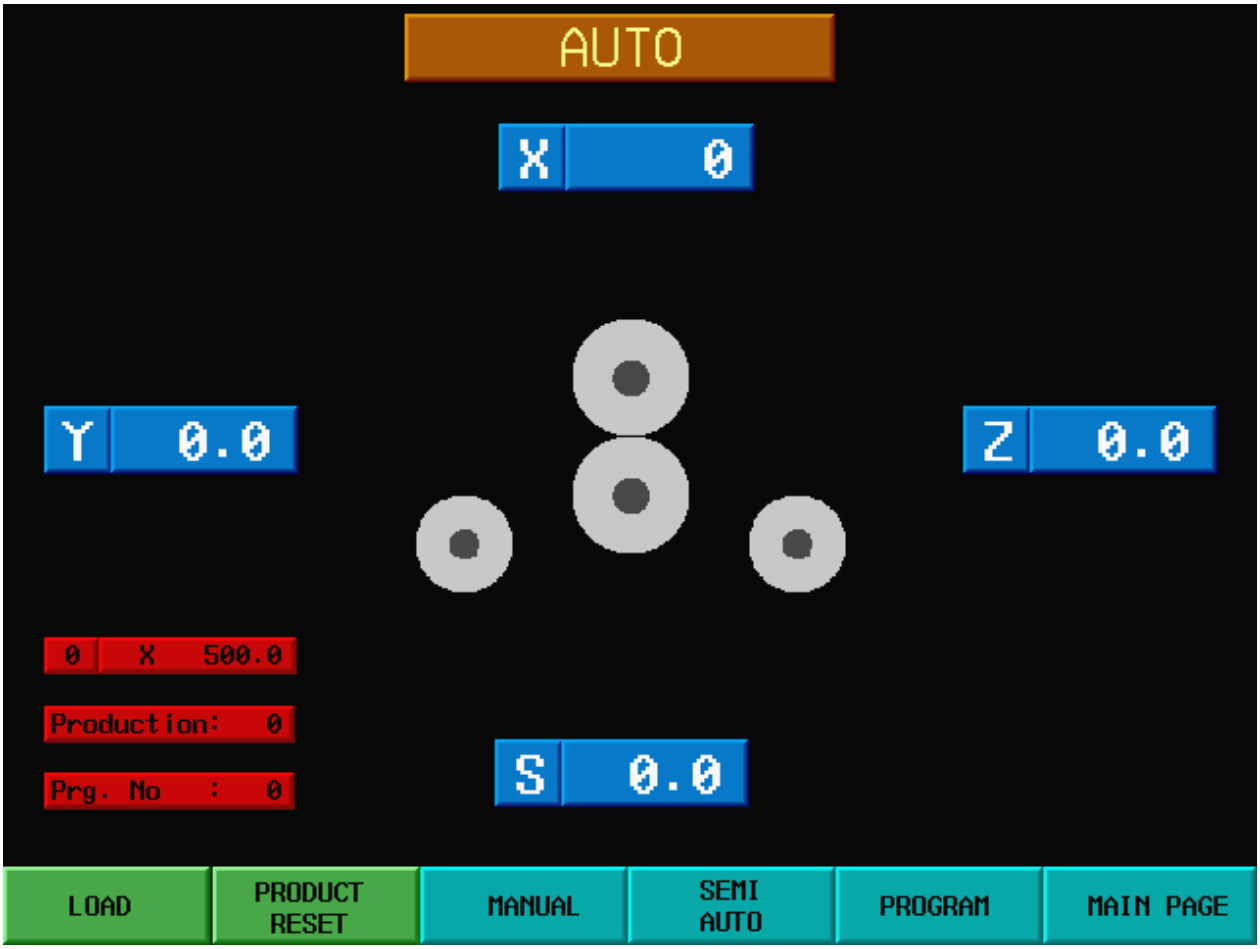
Converts all manual movements to a programme on the NC Unit

First pres *"Program No*" button to give a number to our programme.

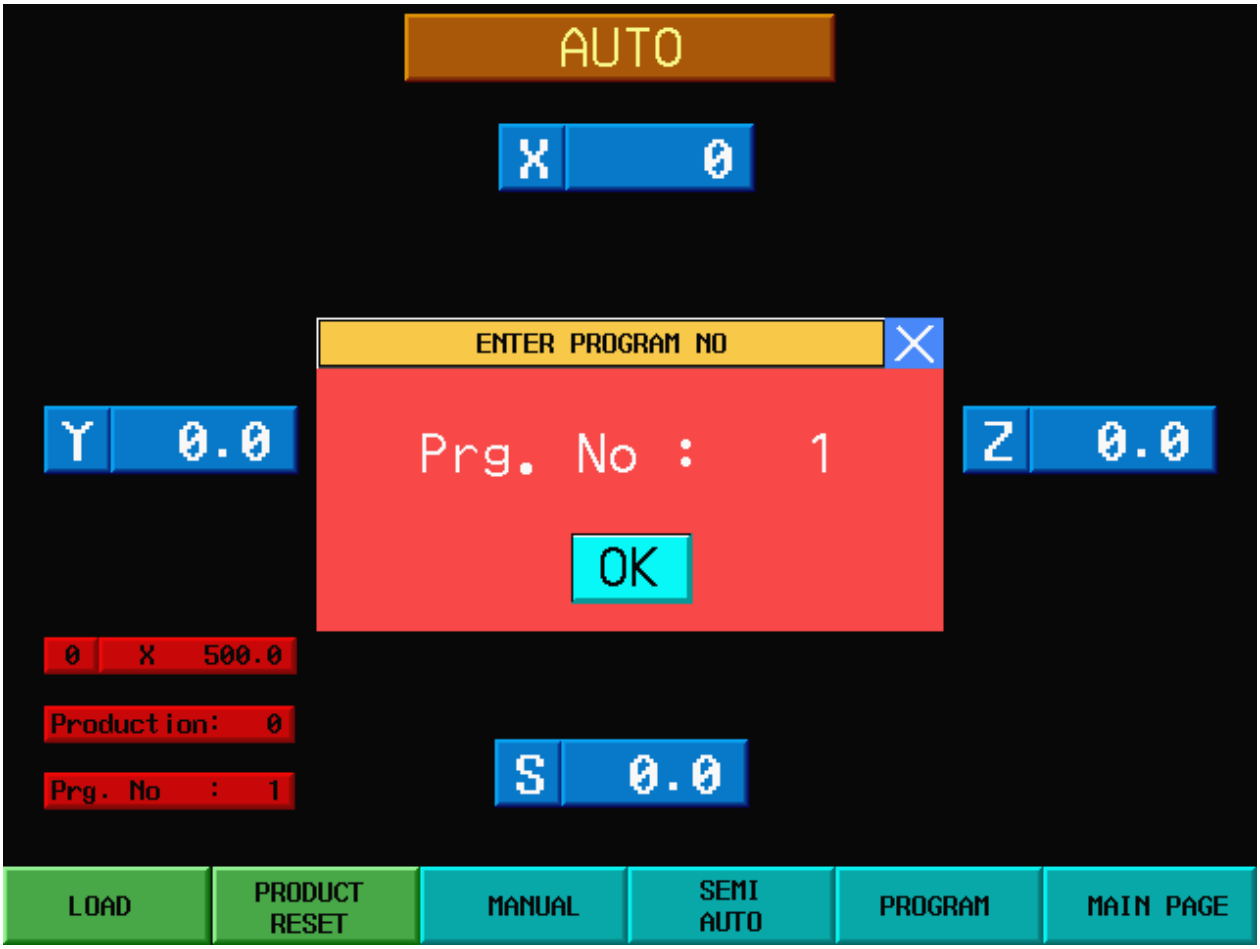
After each axis movement pres "*New Line*" button to add the current linet o the programme.After each movement pres "New line" button. After all movements are done pres "*SAVE*" button and our programme is saved.

AUTOMATIC MODE:

We can run the stored programmes from automatic mode.



Pres “*LOAD*” buton and enter programme number and call the desired programme from memory.



Press the “*Start*” button on the panel to start the programme. You can follow the running line, produced material quantity and programme number from the red indicators on the left bottom corner.

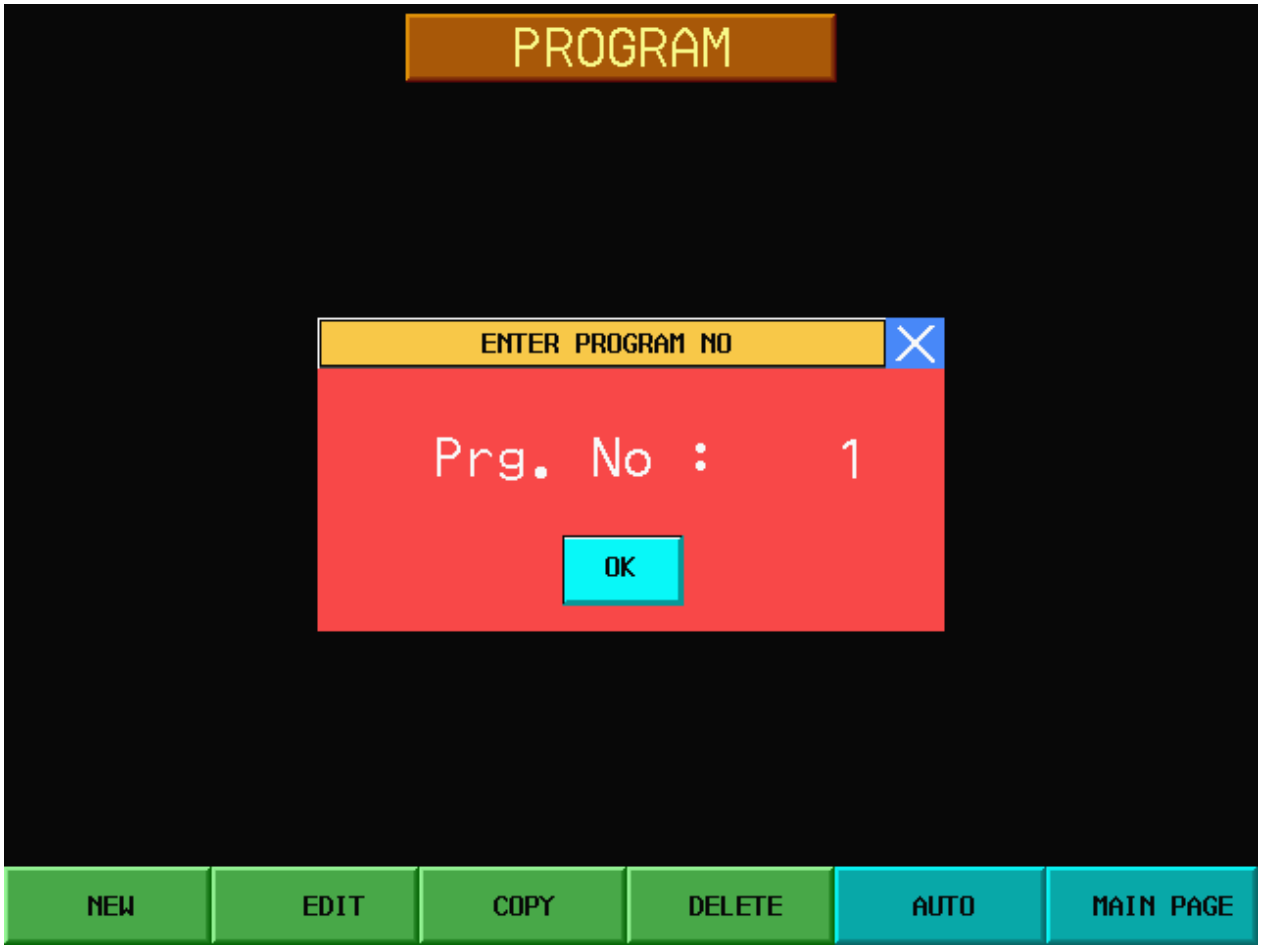
In order to reset the quantity of produced materials press the “*product reset*” button.

Press the “RESET “button on the control panel to pause automatic running anytime. Press “START “button on the control panel to resume automatic running.

PROGRAMME MODE :

1. ADDING NEW PROGRAMME:

Pres “*New*” button. On the screen enter “*program number*” and press “*OK*”.



- Programme writing screen: This screen is 48 lines long and 1000 programmes writable.

- Programme writing : press "*WRITE*." Button, enter the axis and position values on the upcoming screen and press "*Enter*" button. To go to the next line press "*New Line*" button. X axis has 3 mode in automatic mode.

  X Mode : Rotation speed of the roll can be changed manually using "Slow/Fast" switch on the control panel.
  X > Mode : Rotation speed of the roll is SLOW . The speed can not be changed manually.
  X >> Mode : Rotation speed of the roll is SLOW . The speed can not be changed manually.

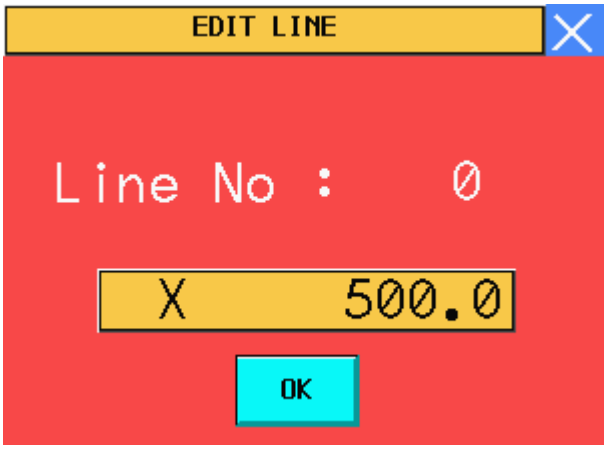
- Saving a Programme: After writing the last line press "*New Line*" button and then press "*SAVE*".button

- Editing Line: Pres the "edit Line buton to change a stored programme line, Enter the line number, Choose the Axis and position on the screen and press "*OK*" button.

2. EDITING PROGRAMME:

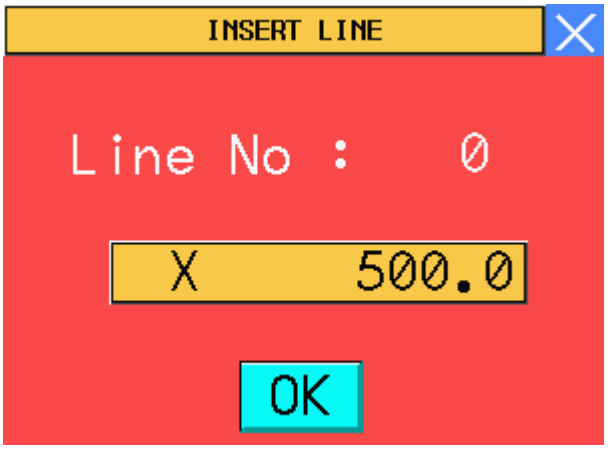
Press “EDIT” in the Program menu. Enter the programme number to be edited press “*OK* “ button. Programme Edit screen is shown on the screen.

- ***Editing a line***: Touch and choose the linet o be edited from the touch screen. Pres “*OK*” button after editing.



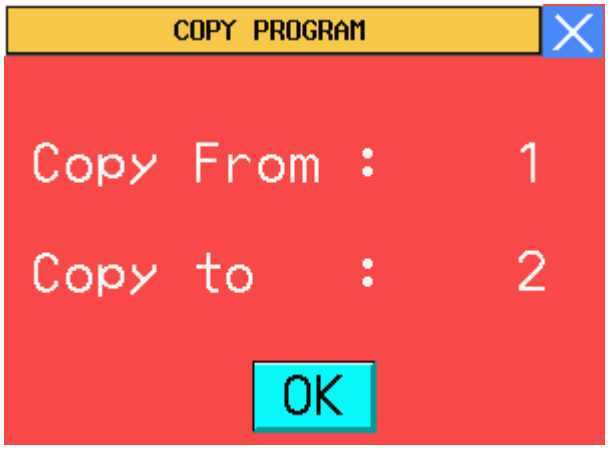
- ***Deleting a line***: Press “DELETE LINE” and enter the line number to be deleted and press “*OK*” button.

- ***Inserting a Line***: Press “INSERT LINE” button enter line number and press “*OK*” button.



- ***SAVING***: Press “*SAVE*” button after making changes to store them on the NC Unit.

3. COPYING:



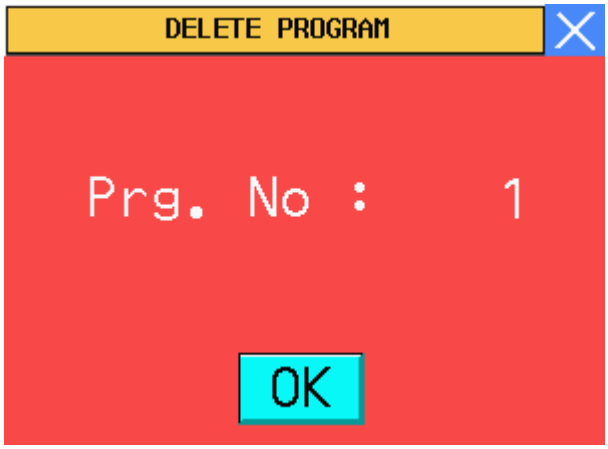
Pres “COPY” button on the screen

SOURCE: Choose the file to be copied.
TARGET: Choose the place to be copied.

Press “OK” button.

4.DELETING A PROGRAMME

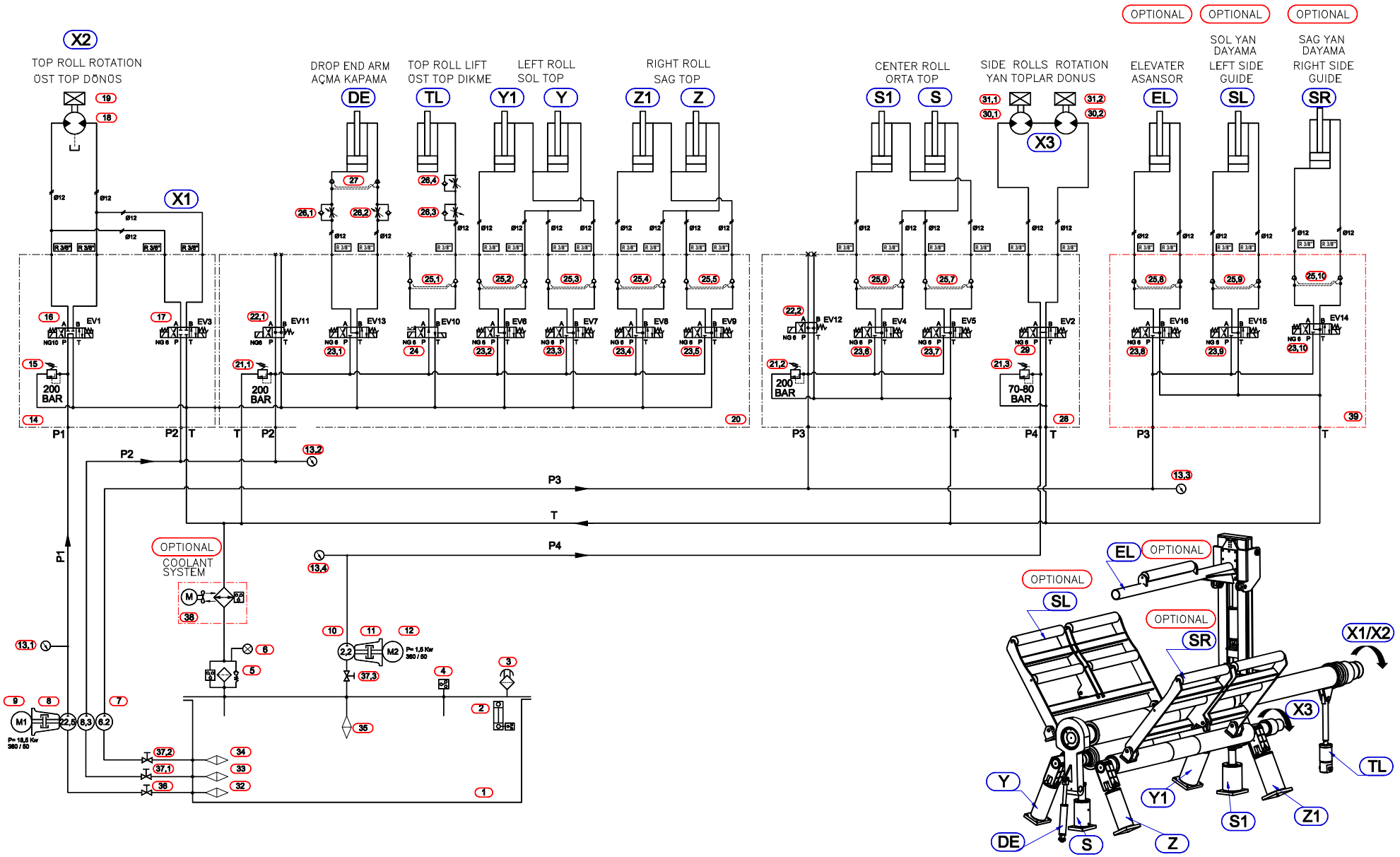
Pres the “DELETE” buton on the screen and enter the programme number and pres “OK”



ABOUT

ERROR MESSAGES

All error messages appear on the center of the screen .When the error is solved the error message disappears.



MACHINE NAME	HYDRAULIC PLAN	DATE	PLAN NO	FOLDER NAME	T.PAGE	PAGE
4R HSS 320		04-03-2013	standart	0001	1	1-1

şahinler METAL MAKINE ENDUSTRI A.S.

4R HSS 320 HYDRAULIC PART LIST / HİDROLİK PARÇA LİSTESİ

NO	AÇIKLAMA	DESCRIPTION	KOD NO / CODE NO	ADET PIECE	MARKA MODEL
1	YAĞ TANKI	HYDRAULIC TANK	…… LT	1	ŞAHİNLER
2	YAĞ SEVİYE GÖSTERGESİ	OIL LIMIT INDICATOR	LVSE3	1	FOX
3	YAĞ DOLDURMA KAPAĞI	OIL FILLING COVER	HKM 045	1	GEMFA
4	YAĞ SICAKLIK TERMOSTATI	OIL HEAT TERMOSTATE	NT 172 D0 T85 (30°-90°)	1	TEKOSA
5	DÖNÜŞ FİLTRESİ	RETURN FILTER	TEF 320	1	INTERNORMEN
6	YAĞ KİRLİLİK GÖSTERGESİ	OIL POLLUTION INDICATOR	Ø 40	1	SIMCA
7	DİŞLİ POMPA	GEAR PUMP	22,5 + 8,3 + 6,2 cm^3	1	SALAMİ MARZOCCHI
8	ELASTİK KAPLİN	ELASTICAL CAPLING	DK-DÇ 55	1	HASSEL
9	ELEKTRİK MOTORU	ELECTRICITY MOTOR	18,5 KW-400V 50Hz Amp.1485	1	GAMAK
10	DİŞLİ POMPA	GEAR PUMP	2,2 cm^3	1	SALAMİ MARZOCCHI
11	ELASTİK KAPLİN	ELASTICAL CAPLING	DK-DÇ 28	1	HASSEL
12	ELEKTRİK MOTORU	ELECTRICITY MOTOR	1,5 KW-400V 50Hz Amp.1485	1	GAMAK
13	MANOMETRE	MANOMETER	0-400BAR-Ø63 G 1/4"	4	PAKKENS
14	HİDROLİK ÜNİTE	HYDRAULIC UNIT	GGG 60	1	ŞAHİNLER
15	NG 10 BASINÇ KONTROL VALFİ	NG 10PRESSURE CONTROL VALVE	RQM6-SP/51	1	DUPLOMATIC
16	NG 10 AÇIK MERKEZ VALF	NG10 DIRECTION VALVE	DS5-S4/12N-D24K1	1	DUPLOMATIC
17	NG 6 KAPALI MERKEZ VALF	NG6 DIRECTION VALVE	DS3-S1/11N-D24K1	1	DUPLOMATIC
18	HİDRO MOTOR	HYDRA MOTOR	SAI	1	ŞAHİNLER
19	REDÜKTÖR	REDUCER	BREVINI	2	ŞAHİNLER
20	HİDROLİK ÜNİTE	HYDRAULIC UNIT	GGG 60	1	ŞAHİNLER
21	NG 6 BASINÇ KONTROL VALFİ	NG 6 PRESSURE CONTROL VALVE	MCD5-SP/51N	3	DUPLOMATIC
22	NG 6 TEK BOBİN H MERKEZ	NG 6 SINGLE COIL DIRECTION VALVE	DS3/SA2/11N-D24K1	2	DUPLOMATIC
23	NG 6 J MERKEZ VALF	NG6 DIRECTION VALVE	DS3-S3/11N-D24K1	7	DUPLOMATIC
24	NG 6 MEKANİK ROTASYON VALFİ	MECHANICAL RETENTION VALVE	DS3-RK/11N-D24K1	1	DUPLOMATIC
25	İKİZ KİLİTLEME VALFİ	TWIN LOCK VALVE	MVPP D/50	7	DUPLOMATIC
26	HAT TİPİ KISMA VALFİ	LINE TYPE THROTTLING VALVE	STU380-12S	4	WINMAN
27	HAT İKİZ KİLİTLEME VALFİ	LINE TYPE TWIN LOCK VALVE	A0503510200/21/10-12	2	HBS
28	HİDROLİK ÜNİTE	HYDRAULIC UNIT	GGG 60	1	ŞAHİNLER
29	NG 6 ÇİFT BOBİN H MERKEZ	NG 6 DOUBLE COIL DIRECTION VALVE	DS3/S2/11N-D24K1	1	DUPLOMATIC
30	HİDRO MOTOR	HYDRA MOTOR	SAI	2	ŞAHİNLER
31	REDÜKTÖR	REDUCER	BREVINI	1	ŞAHİNLER
32	EMİŞ FİLTRESİ	ABSORBING FILTER	EMS 300	1	GEMFA
33	EMİŞ FİLTRESİ	ABSORBING FILTER	EMS 125	1	GEMFA
34	EMİŞ FİLTRESİ	ABSORBING FILTER	EMS 65	1	GEMFA
35	EMİŞ FİLTRESİ	ABSORBING FILTER	EDM 38	1	GEMFA
36	KÜRESEL VANA	BALL VALVE	3/4 " DN 20	1	PAKKENS
37	KÜRESEL VANA	BALL VALVE	1/2 " DN 15	3	PAKKENS

				EV1-A	EV1-B	EV2-A	EV2-B	EV3-A	EV3-B	EV4-A	EV4-B	EV5-A	EV5-B	EV6-A	EV6-B	EV7-A	EV7-B	EV8-A	EV8-B	EV9-A	EV9-B	EV10-A	EV10-B	EV11	EV12	EV13-A	EV13-B	EV14-A	EV14-B	EV15-A	EV15-B	EV16-A	EV16-B
	X2	HIZLI DÖNÜŞ (SOL)	FAST ROTATION (LEFT)	SCHNELLE DREHUNG (LINKS)	+		+		+																+									
	X2	HIZLI DÖNÜŞ (SAĞ)	FAST ROTATION (RIGHT)	SCHNELLE DREHUNG (RECHTS)		+		+		+															+									
	X1	YAVAŞ DÖNÜŞ (SOL)	SLOW ROTATION (LEFT)	LANGSAME DREHUNG (LINKS)			+		+																+									
	X1	YAVAŞ DÖNÜŞ (SAĞ)	SLOW ROTATION (RIGHT)	LANGSAME DREHUNG (RECHTS)				+		+															+									
	DE	KAPAK AÇIK	DROP END OPEN	KLAPPLAGER OFFEN																					+		+							
	DE	KAPAK KAPALI	DROP END CLOSED	KLAPPLAGER ZU																					+			+						
	TL	DİKME YUKARI	TOP ROLL UP	OBERWALZE HOCH																			+		+									
	TL	DİKME AŞAĞI	TOP ROLL DOWN	OBERWALZE RUNTER																				+	+									
	Y1	SOL TOP YUKARI	LEFT ROLL UP	LINKE WALZE NACH OBEN										+											+									
	Y1	SOL TOP AŞAĞI	LEFT ROLL DOWN	LINKE WALZE NACH UNTEN											+										+									
	Y	SOL TOP KONİK ARTI	LEFT ROLL CONICAL UP	LINKE WALZE KONUS PLUS												+									+									
	Y	SOL TOP KONİK EKSİ	LEFT ROLL CONICAL DOWN	LINKE WALZE KONUS MINUS													+								+									
	Z1	SAĞ TOP YUKARI	RIGHT ROLL UP	RECHTE WALZE NACH OBEN														+							+									
	Z1	SAĞ TOP AŞAĞI	RIGHT ROLL DOWN	RECHTE WALZE NACH UNTEN															+						+									
	Z	SAĞ TOP KONİK ARTI	RIGHT ROLL CONICAL UP	RECHTE WALZE KONUS PLUS																+					+									
	Z	SAĞ TOP KONİK EKSİ	RIGHT ROLL CONICAL DOWN	RECHTE WALZE KONUS MINUS																	+				+									
	S1	ORTA TOP YUKARI	CENTER ROLL UP	UNTERWALZE NACH OBEN							+															+									
	S1	ORTA TOP AŞAĞI	CENTER ROLL DOWN	UNTERWALZE NACH UNTEN								+														+									
	S	ORTA TOP KONİK ARTI	CENTER ROLL CONICAL UP	UNTERWALZE KONUS PLUS									+													+									
	S	ORTA TOP KONİK EKSİ	CENTER ROLL CONICAL DOWN	UNTERWALZE KONUS MINUS										+												+									
OPTIONAL	SR	SAĞ DAYAMA YUKARI	RIGHT SIDE SUPPORT UP	RECHTES SUPPORT NACH OBEN																						+				+					
	SR	SAĞ DAYAMA AŞAĞI	RIGHT SIDE SUPPORT DOWN	RECHTES SUPPORT NACH UNTEN																						+					+				
	SL	SOL DAYAMA YUKARI	LEFT SIDE SUPPORT UP	LINKES SUPPORT NACH OBEN																						+						+			
	SL	SOL DAYAMA AŞAĞI	LEFT SIDE SUPPORT DOWN	LINKES SUPPORT NACH UNTEN																						+							+		
	EL	ASANSÖR YUKARI	OVERHEAD CRANE UP	OBERSUPPORT NACH OBEN																						+								+	
	EL	ASANSÖR AŞAĞI	OVERHEAD CRANE DOWN	OBERSUPPORT NACH UNTEN																						+									+

THE COOLING SYSTEM FOR 4R HSS

8.6

The 4R HSS series machine is equipped with a cooling unit for the hydraulic oil. Make sure that these fans are clean and working at all times. There must be enough empty space around the fans to operate properly

HİDROSAM HİDROPAR

Maxtor Air Heat Exchangers

40 Series Heat Exchangers

TECHNICAL DATA

MAXTOR AIR HEAT EXCHANGER	at Δt=20 °C cooling kcal/h	at Δt=30 °C kcal/h	max. oil flow lt/min	max. Pressure bar	oil connection size
ACR-20 2700d/d 220V AC 0.09A Monofaze	700	1.100	35	10	1/2" BSP
4010 M 24VDC	937	1.387	40	24	1/2" BSP
4010 M 220VAC	937	1.387	40	24	1/2" BSP
4015 M 24VDC	2.325	4.050	80	24	1" BSP
4015 M 220VAC	2.325	4.050	80	24	1" BSP
4020 M 24VDC	3.000	4.500	100	24	1" BSP
4020 M 220VAC	3.000	4.500	100	24	1" BSP
4024 M 24VDC	5.650	8.450	120	24	1" BSP
4024 M 220VAC	5.650	8.450	120	24	1" BSP
4030 M 24VDC	7.875	12.000	140	24	1" BSP
4030 M 220VAC	7.875	12.000	140	24	1" BSP
4040 M 24VDC	10.000	15.000	160	24	11/4" BSP
4040 M 220VAC	10.000	15.000	160	24	11/4" BSP
4050 M 220VAC	13.500	20.000	180	24	11/4" BSP
4030 2MS DOUBLE FAN 24VDC / 220VAC	15.500	23.460	260	24	11/4" BSP
4040 2MS DOUBLE FAN 24VDC / 220VAC	19.375	29.375	320	24	11/2" BSP

- Working pressure max 26 bar
- Tested pressure 36 bar
- Max. working heat 120C
- Italian IMIT TC2 adjustable thermostat is standard

şahinler
METAL MAKİNE ENDÜSTRİ A.Ş.

HİDROSAM
HİDROPAR
Hydraulic oil

COOLING DIAGRAM

Maxtor
Air Heat Exchangers

Heat Diference AT=20 °C (Oil Heat-Environmental Heat)

Oil flow lt/min	4010 cooling capacity Kcal/h	4015 cooling capacity Kcal/h	4020 cooling capacity Kcal/h	4024 cooling capacity Kcal/h	4030 cooling capacity Kcal/h	4040 cooling capacity Kcal/h	4050 cooling capacity Kcal/h	40302M cooling capacity Kcal/h	40402M cooling capacity Kcal/h
5	500								
10	575								
15	650								
20	700	1575							
25	750	1668							
30	812	1761	1575		5000				
35	875	1854	1837		5250				
40	937	1950	2100	3600	5500	5937			
50		2100	2361	3900	6000	6562			
60		2193	2625	4200	6500	7187		9250	
70		2287	2750	4500	6830	8712	8500	9875	
80		2325	2875	4650	7160	8828	9000	10500	11250
90			3000	4800	7500	8940	9500	11125	11875
100				4950	7625	9062	10000	11750	12500
120				5650	7875	9531	11000	13000	13750
140						10000	12000	13750	15000
160							12750	14125	16041
180							13500	14500	17082
260								15500	19062
280									19375

Heat Diference AT=30 °C (Oil Heat-Environmental Heat)

Oil flow lt/min	4010 cooling capacity Kcal/h	4015 cooling capacity Kcal/h	4020 cooling capacity Kcal/h	4024 cooling capacity Kcal/h	4030 cooling capacity Kcal/h	4040 cooling capacity Kcal/h	4050 cooling capacity Kcal/h	40302M cooling capacity Kcal/h	40402M cooling capacity Kcal/h
5	725								
10	862								
15	1000								
20	1062	2325							
25	1125	2493							
30	1212	2661	3000		6750				
35	1300	2829	3225		7290				
40	1387	3000	3450	5250	7830	8750			
50		3187	3675	5650	8910	9687			
60		3375	3900	6050	10000	10624		14000	
70		3712	4100	6450	10415	11562	13000	14896	
80		4050	4300	6750	10830	12187	13625	15792	17500
90			4500	7050	11250	12812	14250	16688	18437
100				7350	11500	13437	14875	17584	19374
120				8450	12000	14218	16330	19380	21248
140						15000	18000	20655	23125
160							19125	21292	24582
180							20000	21930	26041
260								23460	28906
280									29375

HİDROSAM HİDROPAR

COOLING DIAGRAM

Maxtor Air Heat Exchangers

Heat Diference AT=40 °C (Oil Heat-Environmental Heat)

Oil flow lt/min	4010 cooling capacity Kcal/h	4015 cooling capacity Kcal/h	4020 cooling capacity Kcal/h	4024 cooling capacity Kcal/h	4030 cooling capacity Kcal/h	4040 cooling capacity Kcal/h	4050 cooling capacity Kcal/h	40302M cooling capacity Kcal/h	40402M cooling capacity Kcal/h
5	1000								
10	1137								
15	1275								
20	1387	3015							
25	1500	3236							
30	1625	3457	3900		9500				
35	1750	3678	4237		10082				
40	1875	3900	4574	7050	10665	11562			
50		4237	4911	7700	11830	12912			
60		4575	5250	8350	13000	14272		18870	
70		4987	5500	9000	13665	15625	17000	20060	
80		5400	5750	9250	14330	16458	17750	21250	22500
90			6000	9500	15000	17291	18500	22440	23750
100				9750	15312	18125	19250	23630	25000
120				11250	15936	19062	21500	26010	27500
140						20000	24500	27794	30000
160							25750	28686	32291
180							27000	29580	34582
260								31620	38281
280									38750

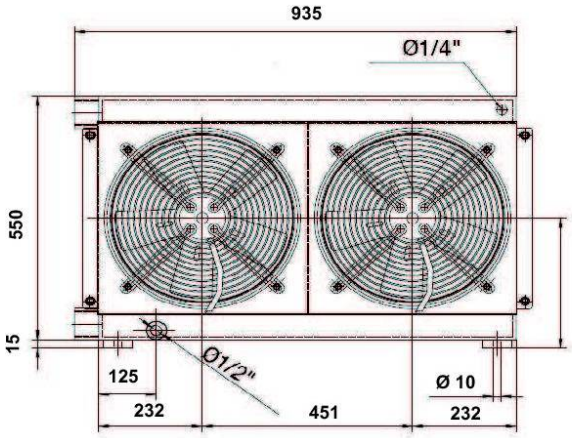
Heat Diference AT=50 °C (Oil Heat-Environmental Heat)

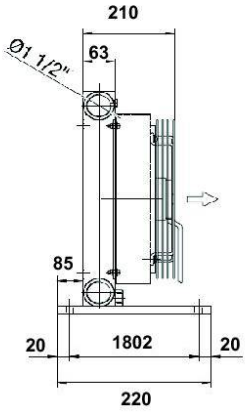
Oil flow lt/min	4010 cooling capacity Kcal/h	4015 cooling capacity Kcal/h	4020 cooling capacity Kcal/h	4024 cooling capacity Kcal/h	4030 cooling capacity Kcal/h	4040 cooling capacity Kcal/h	4050 cooling capacity Kcal/h	40302M cooling capacity Kcal/h	40402M cooling capacity Kcal/h
5	1225								
10	1412								
15	1600								
20	1737	3900							
25	1875	4143							
30	2037	4386	4950		11750				
35	2200	4629	5343		12500				
40	2363	4875	5736	9000	13250	13125			
50		5287	6129	9650	14750	15208			
60		5700	6525	10300	16250	17291		20910	
70		6225	6850	10950	17080	19375	21500	22865	
80		6750	7175	11350	17910	20520	22500	24820	28125
90			7500	11750	18750	21665	23500	26775	29791
100				12150	19187	22812	24000	28730	31457
120				14050	20061	23906	27165	32640	34789
140						25000	30500	34680	38125
160							32500	35700	40625
180							34500	36720	43125
260								39270	47968
280									48750

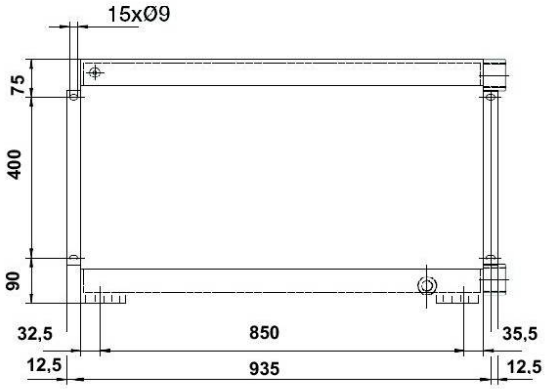
HİDROSAM
HİDROPAR

Maxtor
Air Heat Exchangers

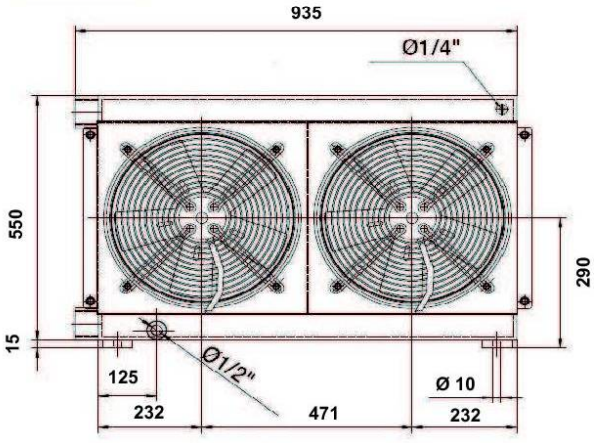
4040 2M 24 V

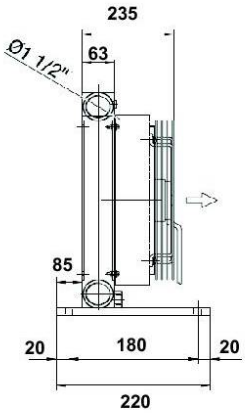


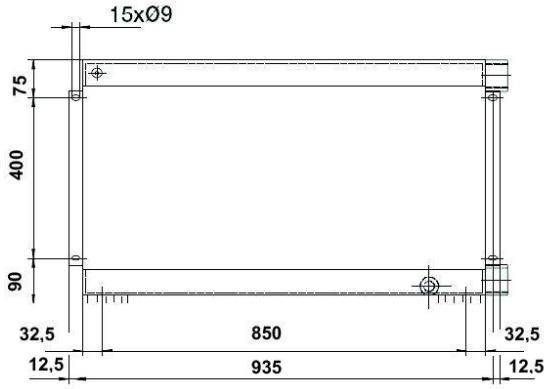




4040 2M 220 V







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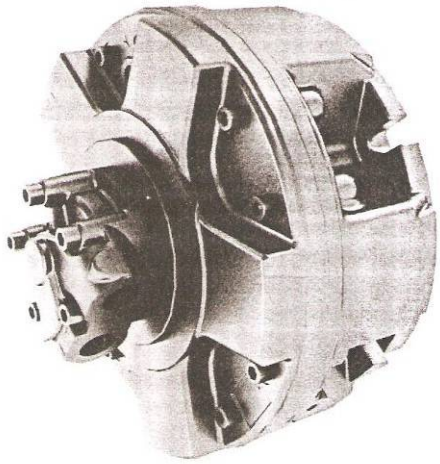
8.7 HYDRAULIC MOTORS MANUAL

GM3 SERIES — SAI — GM3 SERİSİ

GM3



PERFORMANCES TABLE
PERFORMANS TABLOSU

GM3		350☆	425	500	600☆	700☆	800	900	1000
Displacement / Deplasman	cm^3/rev	352	426	486	595	690	792	873	987
Bore / Çap	mm	40	44	47	52	56	60	63	67
Stroke / Strok	mm	56	56	56	56	56	56	56	56
Specific torque / Özgül Tork	Nm/bar	5,49	6,64	7,58	9,28	10,80	12,40	13,60	15,40
Cont. Pressure / Devamlı Basınç	bar	250	250	250	250	250	250	250	250
Peak pressure / Pik Basınç	bar	450	425	425	400	350	350	350	280
Cont. speed / Devamlı Hız	rpm	525	500	450	450	400	400	350	300
Max. speed / Maksimum Hız	rpm	700	650	600	575	500	500	400	350
Peak power / Pik Güç	kW	80	80	80	80	80	80	80	80

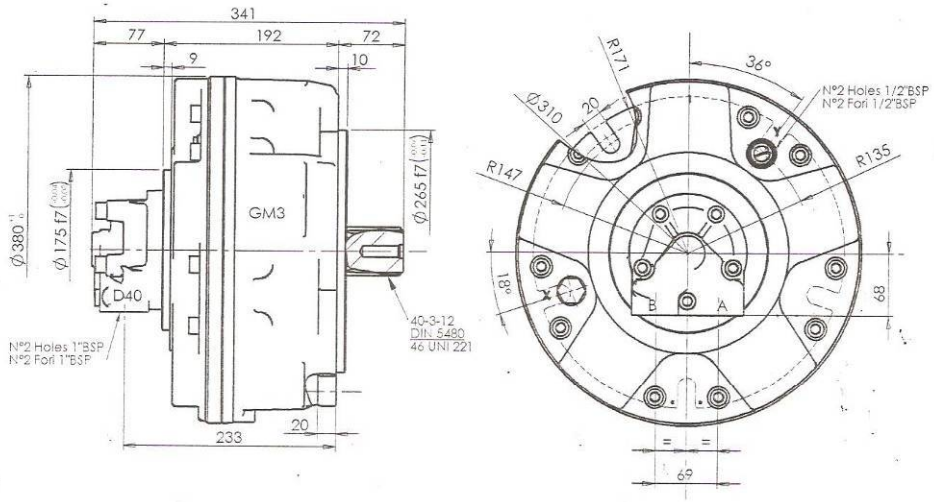
Approximative mass / Yaklaşık Ağırlık	kg	86		
Motor casing oil capacity / Motor Kasa Yağ Kapasitesi	l	4,5		
Max casing pressure / Maksimum Kasa Basıncı	bar	5 (peak / Pik)	Devamlı veya Ortalama çalışma basıncı,uygulanacak fonskiyonun gerektirdigi servis ömrü seçilmiş olmalıdır(rulman ömrüne göre)	
		1 (continuous / Devamlı)	Continuous or avarage working pressure should be chosen in function of the required service lifetime (bearing lifetime).	

☆= Preferred motor type / Seçilmiş Motor Tipi

GM3 SERIES — GM3 SERİSİ

SAI

DIMENSIONS — ÖLÇÜLER



Available also GM3A complitely interch. to M3 till cc. 800 - not available with splined shaft 36 UNI 221

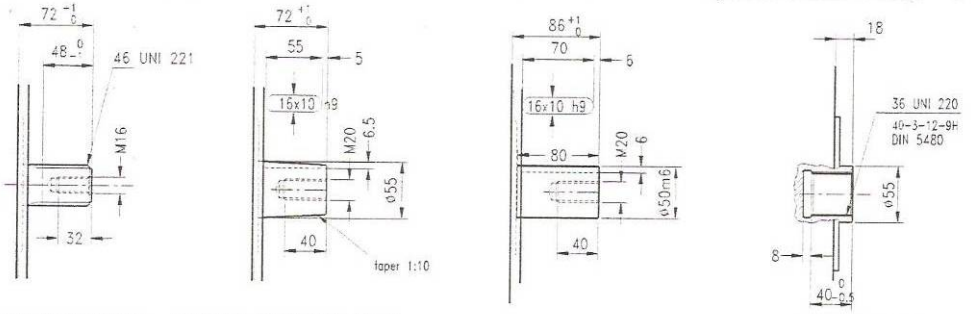
SHAFTS — ŞAFTLAR

Splined	DIN 5480	7
Kamalı	UNI 221	1

Tapered **Konik** 2

Cylindrical **Silindirik** 8

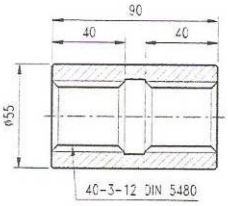
Internal spline DIN 5480 9
İçerden kamalı UNI 220 3



SPLINE DATA - KAMA DETAYLARI

40-3-12 DIN 5480			46 UNI 221 (8-46-54 DIN 5463)		
	d0	Ø36.0		d1	Ø46.0 $^{+0.030}_{+0}$ H7
	d1	Ø40.0 $^{+0.620}_{+0}$ H14		d2	Ø54.0 $^{+0.190}_{+0}$ H11
	d2	Ø34.0 $^{+0.160}_{+0}$ H11		A	9.0 $^{+0.028}_{+0.013}$ F7
	A	Ø5.25		d3	Ø46.0 $^{-0.009}_{-0.025}$ g6
	da	Ø28.964 H11		d4	Ø54.0 $^{-0.100}_{-0.290}$ d11
	d3	Ø39.4 $^{-0}_{-0.160}$ h11		B	9.0 $^{-0.013}_{-0.028}$ f7
	d4	Ø33.4 $^{-0}_{-0.620}$ h14			
	B	Ø6.0			
	db	Ø45.989 f8			

ADAPTORS — ADAPTÖRLER



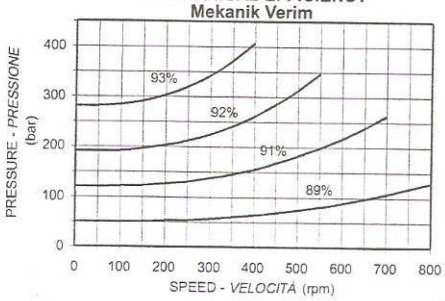
PERFORMANCE

The graphs indicate the typical performance characteristics of the 600 cc motor operating with mineral oil with viscosity 40 cSt at 50 °C.

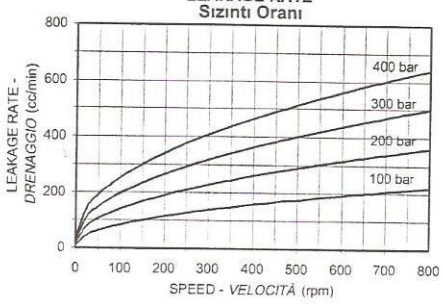
PERFORMANS

Aşağıdaki grafik 600 cc deplasmandaki motorun 40cSt kıvamında 50°C sıcaklığında mineral yağ ile tipik performansını gösteriyor.

MECHANICAL EFFICIENCY
Mekanik Verim

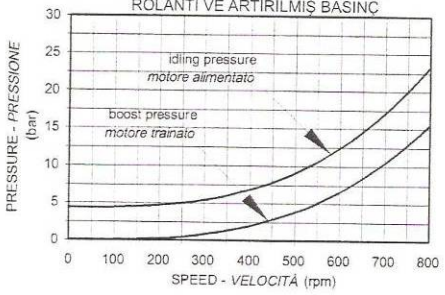


LEAKAGE RATE
Sızıntı Oranı



STARTING AND LOW SPEED TORQUE
BAŞLANGIÇ VE DÜŞÜK HIZ TORKU

IDLING AND BOOST PRESSURE
RÖLANTİ VE ARTIRILMIŞ BASINÇ

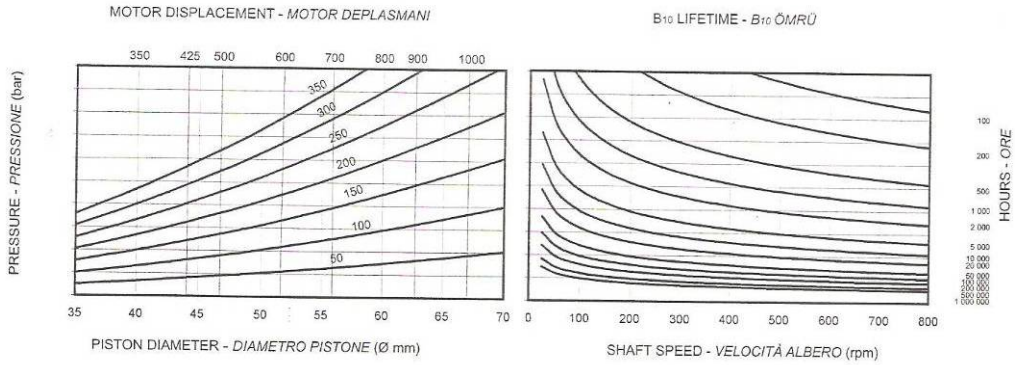


BEARING LIFETIME

The graph refers to the motor with the standard bearings. Note that the average lifetime of a bearing (B_{50} lifetime) is approximately 5 times the B_{10} lifetime.

RULMAN ÖMRÜ

Aşağıdaki grafik standart rulmanlı motoru ifade eder. Unutmayın B50 rulman ömrü B10 rulmanından 5 kat daha fazladır.



BEARING OPTIONS

Roller bearings (Standard) - The lifetme of the standard bearings is given in the lifetime graph.

Spherical roller bearing (option GP) - in the motor cover - the lifetime is approximately 5.4 times the equivalent lifetime of the standard bearing.

For longer lifetimes contact our technical department.

RULMAN OPSİYONLARI

Makaralı Rulman (Standart) - Ömrü, standart rulman ömür grafiğinde verilmiştir.

Küresel Makaralı Rulman (GP opsiyonu) - Motor Kapağı içindedir - Ömrü yaklaşık olarak standart rulman ömrünün 5.4 katı eşdeğerindedir.

Daha uzun ömürler için lütfen teknik departmanla temasa geçiniz.

ORDER CODES

SİPARİŞ KODLARI

GM3 - ❶ ❷ ❸ ❹ + ❺ ❻ ; ❼ ❽

MOTOR CODE

1. **Nominal displacement** - see motor spec. table.
2. **Shaft option:**
   - 7 = male 40-3-12 DIN 5480 (std)
   - 1 = male 46 UNI 221
   - 9 = female 40-3-12 DIN 5480
   - 3 = female 36 UNI 220
   - 2 = tapered keyed
   - 8 = cilindrical keyed
3. **Bearings:**
   - no code = roller bearings
   - GP = spherical roller bearing in the motor cover
4. **Other options:**
   - U = without shaft seal
   - SV = stainless steel shaft sleeve corr. protect. for shaft seal
   - A = high pressure shaft seal (5 bar cont., 15 bar peak)
   - V = Vyton seals
   - I = case press. relief valve 3 bar

DISTRIBUTOR CODE

see page *

5. **Distributor:** D40 standard
6. **Tachometer:** K = predisposed for tachometer
   J = with tachometer coupling

ASSEMBLY CODES

7. **Direction of shaft rotation:** standard motors are supplied with clockwise rotation (viewed from shaft end) with flow in port A, out port B.
   - R = clockwise rotation
   - L = anti-clockwise rotation
8. **Distributor cover position:** see page 10
   - no code = position DM1
   - DM . , = other position

MOTOR KODU

1. **Nominal Deplasman** Motor özellikleri tablolarına bakınız.
2. **Şaft Opsiyonu :**
   - 7 = erkek 40-3-12 DIN 5480 (standart)
   - 1 = erkek 46 UNI 221
   - 9 = dişi 40-3-12 DIN 5480
   - 3 = dişi 36 UNI 220
   - 2 = konik kamalı
   - 8 = silindirik kamalı
3. **Rulmanlar :**
   - Kodsuz = Makaralı rulman
   - GP = Motor kapağı içinde yer alan küresel makaralı rulman
4. **Diğer Opsiyonlar :**
   - U = Şaft contasız
   - SV = Paslanmaz çelik şaft contası, korozyona karşı korumalı
   - A = Yüksek basınç şaft contası (Devamlı 5 bar, pik 15 bar)
   - V = Viton conta
   - I = Kasa basınç emniyet valfi 3 bar

DİSTRİBÜTÖR KODU

5. **Distribütör :** D40 Standart
6. **Takometre:** K = Takometre uygulanabilir
   J = Takometre bağlantılı

MONTAJ KODLARI

7. **Şaft Dönüş Yönü :** standart motorlar saat yönünde ve giriş portu A, çıkış portu B olarak ayarlanarak verilir.
   - R = dönüş saat yönünde
   - L = dönüş saat yönünün tersine
8. **Distribütör kapağı pozisyonu :** sayfa 10'a bkz.
   Kodsuz ise = DM1 pozisyonunda standart
   DM ...., = diğer pozisyonlarda