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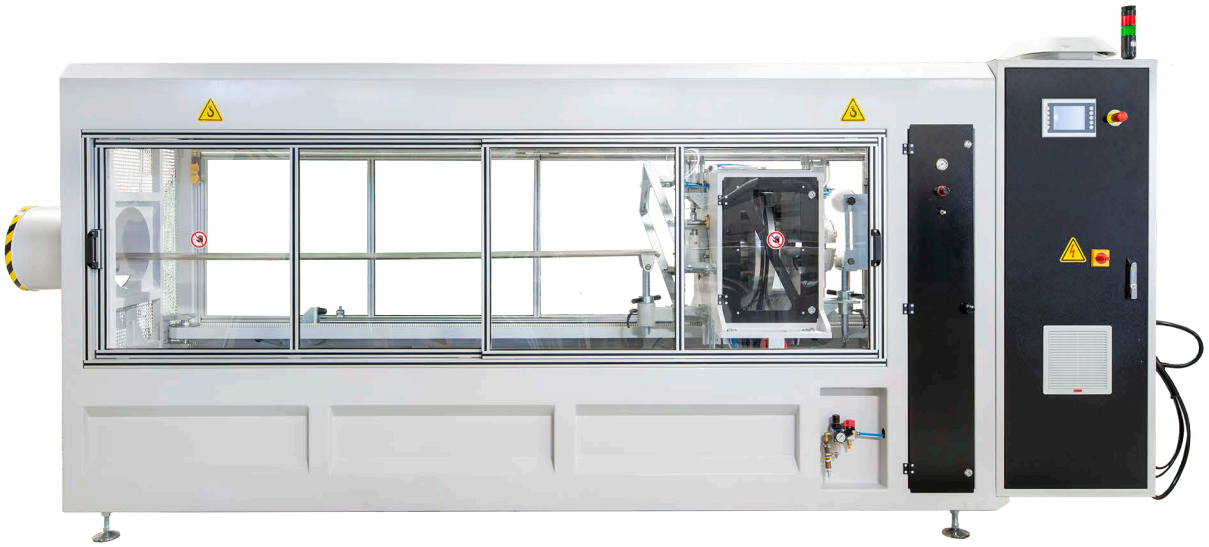
USER GUIDE

UGE123-0821

# PipeMaster™ MDT and MTT Series

## Pipe Cutting Unit



Corporate Office: 724.584.5500 | Instant Access 24/7 (Parts and Service): 800.458.1960 | Parts and Service: 814.437.6861

Please record your equipment's model and serial number(s) and the date you received it in the spaces provided.

It's a good idea to record the model and serial number(s) of your equipment and the date you received it in the User Guide. Our service department uses this information, along with the manual number, to provide help for the specific equipment you installed.

Please keep this User Guide and all manuals, engineering prints, and parts lists together for documentation of your equipment.

Date:

Manual Number: UGE123-0821

Serial Number(s):

Model Number(s):

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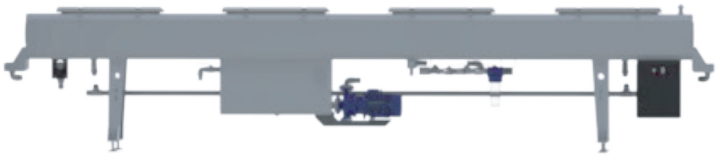
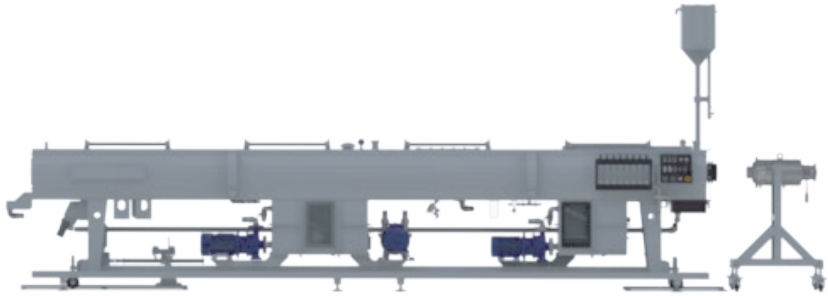


MSHB Spray Cooling Tank



Vacuum Cooling Tank

Pipe Head

## PO SINGLE LAYER PIPE HEADS

| Model | Pipe Diameter Range (in.) | HDPE Output max. (lb/h) | PP-R Output max. (lb/h) |
|---|---|---|---|
| MBK 63 | .63 - 2.5 | 550 | 440 |
| MBK 160 | 2 - 6.3 | 1100 | 880 |
| MBK 250 | 2 - 9.85 | 1760 | 1320 |
| MBK 400 | 4.34 - 15.75 | 2200 | 1540 |
| MBK 630 | 9.85 - 24.81 | | |

Suitable for HDPE, PP-R and PP-H single-layer pipe production

## VACUUM COOLING TANK

| Model | Machine Length in. {mm} | Machine Width in. {mm} | Pipe Diameter Range (in.) | Vacuum Pump | Circulation Water Pump |
|---|---|---|---|---|---|
| **Double Chamber Vacuum Tanks** | | | | | |
| MCVBH 75/9000 | 354.33 {9000} | 34.843 {885} | .63 - 2.96 | 1 | 2 |
| MCVBH 160/6000 | 259.84 {6600} | 38.38 {975} | .63 - 6.3 | | |
| MCVBH 160/9000 | 354.33 {9000} | | | | |
| MCVBH 250/6000 | 259.84 {6600} | 43.93 {1116} | 1.58 - 9.85 | | |
| MCVBH 400/6000 | | 49.8 {1265} | 4.34 - 15.75 | 2 | |
| MCVBH 630/6000 | 354.33 {9000} | 59.84 {1520} | 9.85 - 24.81 | | |
| **Single Chamber Vacuum Tanks** | | | | | |
| MTVBH 400/6000 | 259.84 {6600} | 49.8 {1265} | 4.34 - 15.75 | 1 | 1 |
| MTVBH 630/6000 | 267.52 {6795} | 59.84 {1520} | 9.85 - 24.81 | | |

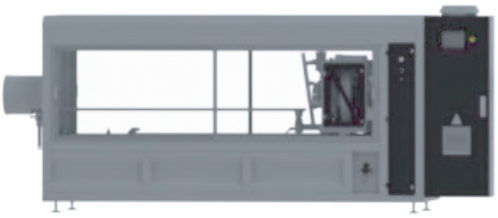
Suitable for PVC, CPVC, HDPE, PP-R and PP-H pipe production

## MSHB SPRAY COOLING TANK

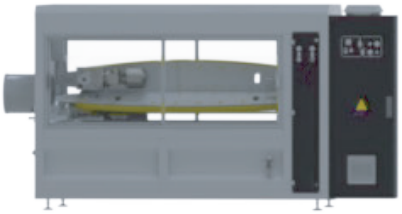
| Model | Machine Length in. {mm} | Machine Width in. {mm} | Pipe Diameter Range (in.) | Circulation Water Pump |
|---|---|---|---|---|
| MSBH 75/6000 with spray | 260.24 {6610} | 19.68 {500} | .63 - 2.96 | 1 |
| MSH 75/4000 full immersion | 157.48 {4000} | | | |
| MSBH 160/6000 with spray | 260.62 {6620} | 22.05 {560} | .63 - 6.3 | |
| MSBH 250/6000 with spray | | 28.74 {730} | 2 - 9.85 | |
| MSBH 400/6000 with spray | | 49.8 {1265} | 2 - 15.75 | |
| MSBH 630/6000 with spray | 268.5 {6820} | 47.24 {1200} | 9.85 - 24.81 | |

Suitable for PVC, CPVC, HDPE, PP-R and PP-H pipe production

Tilting Table



Cutting Unit



Pipe Haul-off Unit

## PIPE HAUL-OFF UNIT

| Model | Number of Belts | Machine Length in. {mm} | Machine Width in. {mm} | Contact Length in. {mm} | Pipe Diameter Range (in.) | Pulling Speed Range (ft/min) | Pulling Force (N) |
|---|---|---|---|---|---|---|---|
| MBC 75 2K-1500 | 2 | 127.95 {3250} | 41.33 {1050} | 59.05 {1500} | .63 - 2.96 | 0.66 - 82 | 7,000 |
| MBC 160 3K-1500 | 3 | 133.46 {3390} | 53.93 {1370} | | .79 - 6.3 | 0.66 - 65 | 12,000 |
| MBC 250 4K-1500 | 4 | 140.55 {3570} | 61.81 {1570} | | 2 - 9.85 | | 30,000 |
| MBC 400 6K-1500 | 6 | 141.33 {3590} | 77.55 {1970} | | 2 - 15.75 | 0.66 - 29 | 33,000 |
| MBC 630 8K-1600 | 8 | 161 {4090} | 93.3 {2370} | 63 {1600} | 7.09 - 24.81 | | 56,000 |

Suitable for continuous pulling of PVC, ABS, PC, PE and PP solid-wall pipes during production

## CUTTING UNIT

| Model | Machine Width in. {mm} | Cutting Table Stroke in. {mm} | Pipe Diameter Range(in.) | Line Speed (ft/min) |
|---|---|---|---|---|
| MDT 75 ( Without scrap ) | 40.55 {1030} | 53.15 {1350} | .63 - 2.96 | 82 |
| MDT 110 (With Disk, Without scrap) | | | .63 - 4.34 | |
| MTT 160 (Without scrap) | 56.1{1425} | 70.86 {1800} | 1.58 - 6.3 | 65 |
| MTT 250 (Without scrap) | 57.08 {1450} | | 2 - 9.85 | |
| MTT 400 (Without scrap) | | | 4.34 - 15.75 | 29 |
| MTT 630 (Without scrap) | | | 7.09 - 24.81 | |

Suitable for PVC and PO pipe production

## TILTING TABLE

| Model | Machine Length in. {mm} | Rollers | Pipe Length Max.(ft.) | Pipe Diameter Range (in.) |
|---|---|---|---|---|
| MDBA 75/6000 | 236.22 {6000} | Optional | 19.7 | .63 - 2.96 |
| MDBA 160/6000 | | | | .79 - 6.3 |
| MDBA 250/6000 | | Standard | | 2 - 9.85 |
| MDBA 400/6000 | | | | 2 - 15.75 |
| MDBA 630/6000 | | | | 7.09 - 24.81 |

Suitable for HDPE, PP-R and PP-H pipe production

# PIPE CUTTING UNIT

Date of Issue: 2021

**PLEASE READ THIS MANUAL CAREFULLY BEFORE STARTING THE MACHINE!**

Please pay attention to the following symbols in the operation manual.

| Symbol | Meaning | Content |
|---|---|---|
|  | Warning | Do not change any of the standard parts or parts related to the manufacturing process! |
|  | Attention | You can obtain special information by consulting our firm in order for your machine operator to work more effectively! |
|  | Danger | Prevent any substantial damages and loss which may threaten work and machine safety! |

# PIPE CUTTING UNIT

Prepared:

Date of Issue: 2021

Version: 1.0

Revision: 0.0

Copy: 1 hard copy for customer

# *PART 1*

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# 1 CONTENTS

# *PART 2*

# *TABLES OF FIGURES*

# 2 TABLES OF FIGURES

# *PART 3*

# *PREFACE*

# Purpose of this User Guide

This User Guide describes the process of installing the PipeMaster™ MBC Series. Pipe Haul-Off Unit. Before installing this product, please take a few moments to read the User Guide and review the diagrams and safety information in the instruction packet. You should also review manuals covering associated equipment in your system. This review won't take long, and it could save you valuable installation and operating time later.

# Your Responsibility as a User

You must be familiar with all safety procedures concerning installation, operation, and maintenance of this equipment. Responsible safety procedures include:

- Thorough view of this Installation Guide, paying particular attention to hazard warnings appendices, and related diagrams.
- Thorough review of the equipment itself, with careful attention to voltage sources, intende use, and warning labels.
- Thorough review of instruction manuals for associated equipment
- Step-by-step adherence to instructions outlined in this Installation Guide

# ATTENTION:
# Read This So No One Gets Hurt

We design equipment with the user's safety in mind. You can avoid the potential hazards identified on this machine by following the procedures outlined below and elsewhere in the User Guide.

# ⚠ WARNING: Improper installation, operation, or servicing may result in equipment damage or personal injury.

This equipment should be installed, adjusted, and serviced by qualified technical personnel who are familiar with the construction, operation, and potential hazards of this type of machine.

All wiring, disconnects should be installed by qualified electrical technicians in accordance with electrical codes in your region. Always maintain a safe ground. Do not operate at power levels other than what the specified voltage.

# ⚠ WARNING: Voltage hazard

This equipment is powered by three-phase alternating current, as indicated on the serial tag of the machine. Reference supplemental equipment's manuals for their power requirements.

A properly-sized conductive ground wire from the incoming power supply must be connected to the outlet where tis device will be connected to. Improper grounding can result in severe personal injury and erratic machine operation.

Always disconnect and lock out the incoming main power source before opening the device enclosure or performing non-standard operating procedures. Only qualified personnel should perform troubleshooting procedures that require access to the electrical enclosure while power is on.

# *PART 4*

# *CONTACT*

# We're Here to Help

Conair has made the largest investment in customer support in the plastics industry. Our service experts are available to help with any problem you might have installing and operating your equipment. Your Conair sales representative also can help analyze the nature of your problem, assuring that it did not result from misapplication or improper use.

# How to Contact Customer Service

To contact Customer Service personnel, call:


**NOTE:** Normal operating hours are 8:00 am - 5:00 pm EST. After hours emergency service is available at the same phone number.

**From outside the United States, call: 814-437-6861**

You can commission Conair service personnel to provide on-site service by contacting the Customer Service Department. Standard rates include an on-site hourly rate, with a one-day minimum plus expenses.

# *PART 5*

# *SECURITY INFORMATION*

# 5 GENERAL SECURITY INFORMATION

## 5.1 Basic Information

This machine is manufactured in accordance with the rules stated ISO EN Machine Security Standards which are designed specially.

Interventions by third parties may cause life threat for the operator and damage on the machine parts.

Problems that may arise in this machine are resolved with the coordination of qualified technician and the user. Because of complex structures of some functions, unconscious interventions may cause severe damages to the security of the operator and to the machine.

The operator is required to obey some rules during operation. These are: Long haired personnel should tie their hair, they should hide jewelry (ring, necklace, bracelet.. etc) the way that they will not cause danger, or don't wear them, their uniform should be tidy and orderly etc.

Personal protective equipments (Gloves, Glasses ... etc.) should be used by the operator in every needed situation.

The operator has to pay attention to all given security information and warning signs.

Be sure that security information and warning signs on the machine are clearly read and understandable.

All necessary interventions should be made by qualified technician after the machine stops.

Desired insertions and changes that may affect the security should never be done without confirmation of the firm. For example, interventions such as part and measure changes in oil and water installations, changing and inserting connective components on the machine, welding works that may damage electronic parts.

## 5.2 Maintenance and Control

Maintenance and control should only be done by qualified and experienced personnel. Proper security measures should be taken in the field of maintenance.

In order not to cause any inattention and danger, the power should be turned off before maintenance and resolving the problem.

Main control components should be turned off and factors that may cause danger should be removed.

Danger and warning signs should be hung in main switch and necessary places.

In order to prevent from personal mistakes and accidents, be sure that rope or chain used for carrying big heavy parts is tied firmly and safely. User should use equipments which are practical to be carried by one person and which has full technical properties and he/she should pay attention to their carrying capacity. The user never pass under the being carried materials.

The operator should provide that the part to be carried is on the right direction and in the open field of vision.

Parts to be carried and machines or fields on which the operation will be done should be in safe platforms. Machine parts should certainly carried on a safety height. Maintenance and repair equipments, shipping equipments should be kept in a proper place when they are not used and the intervention of an unauthorized personnel should never permitted.

Before starting the machine, clean especially carrying connective points. Do not use corrosive cleaning materials. Clean the parts with fabric and compressed air.

Before cleaning, open the protective covers of the machine.

After cleaning, check that water installation unit, oil installation unit and important mechanic connective points are damaged or not. If there seems a problem, resolve it without any delayed.

Arrange security equipments that you use, check that they are damaged or not. Preserve them for the purpose of using again.

Take measures in order to draw harmful parts which are used after maintenance and during the operation away without giving any harm to the environment.

## 5.3 Warnings for Special Dangers

### 5.3.1 Electrical Energy

User should only use original electrical and electronic materials. When there is a failure in electricity system, turn the main switch off immediately.

Only qualified and authorized personnel should intervene in resolving the problems in electricity system and using electrical equipments

Before repair and maintenance of electrical failures, main energy source should certainly be turned off.

Before starting the machine, provide the security of parts that have electrical energy, grounding cable and alive parts and equipments which may cause short circuit.

Check electrical equipments on the machine regularly. Correct loose connections and

flammable cables definitely.

While working with alive parts and resolving the electricity problems, second authorized personnel should stand ready next to the main switch and cut the energy in case of danger.

Secure the fields on which electricity problems are resolved with guard bands and warning signs. Use only dielectric materials.

Before starting the machine, certainly check that cable and other equipments that you use are sufficient and safe.

### 5.3.2 Gas, Dust, Smoke and Vapor

Operations such as welding and flame cutting should only be done with the permission of authorized personnel against explosion, fire and accident risks.

Before welding and flame cutting operations, purify the machine and around it from dust and other burnable substances, provide sufficient ventilation in the building against explosion risk.

If your operation area is narrow and limited, take necessary measures in order to pay attention and obey these rules.

### 5.3.3 Hydraulic and Pneumatic Equipments

During operating and carrying hydraulic equipments specially trained in this subject and experienced personnel should be used.

Act in a coordination with authorized personnel in repair of these systems and system (hydraulic installation pipes, compressed air installation).

Hydraulic and compressed air installations should be equipped properly for safe working. Be sure before making connections and changes. Connection components, hose and connection lengths should meet technical conditions.

### 5.3.4 Noise

You must use earplug definitely.

### 5.3.5 Oil, Lubrication and Other Chemical Substances

When you have to use oil, lubrication and other chemical substances, please obey the security rules related to those productions.

Be careful while carrying hot chemicals (in case of burning risk)

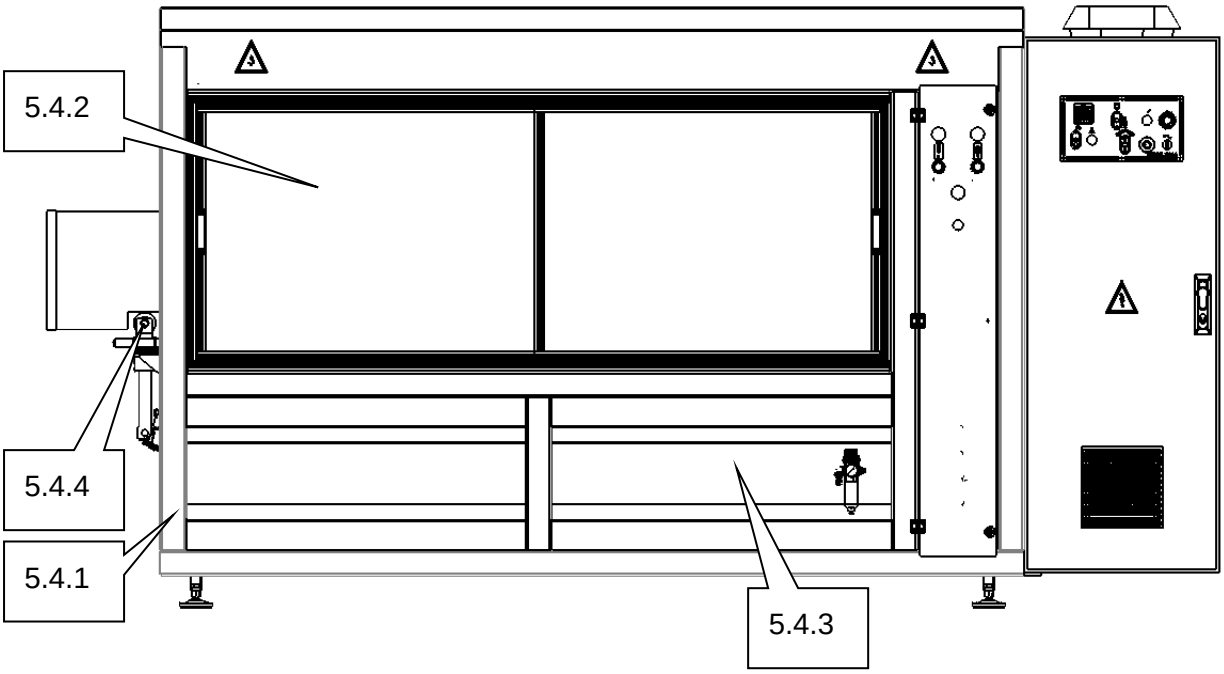
## 5.4 Special Security Information of the Machine

5.4.1.Machine Body

5.4.2.Plexiglas

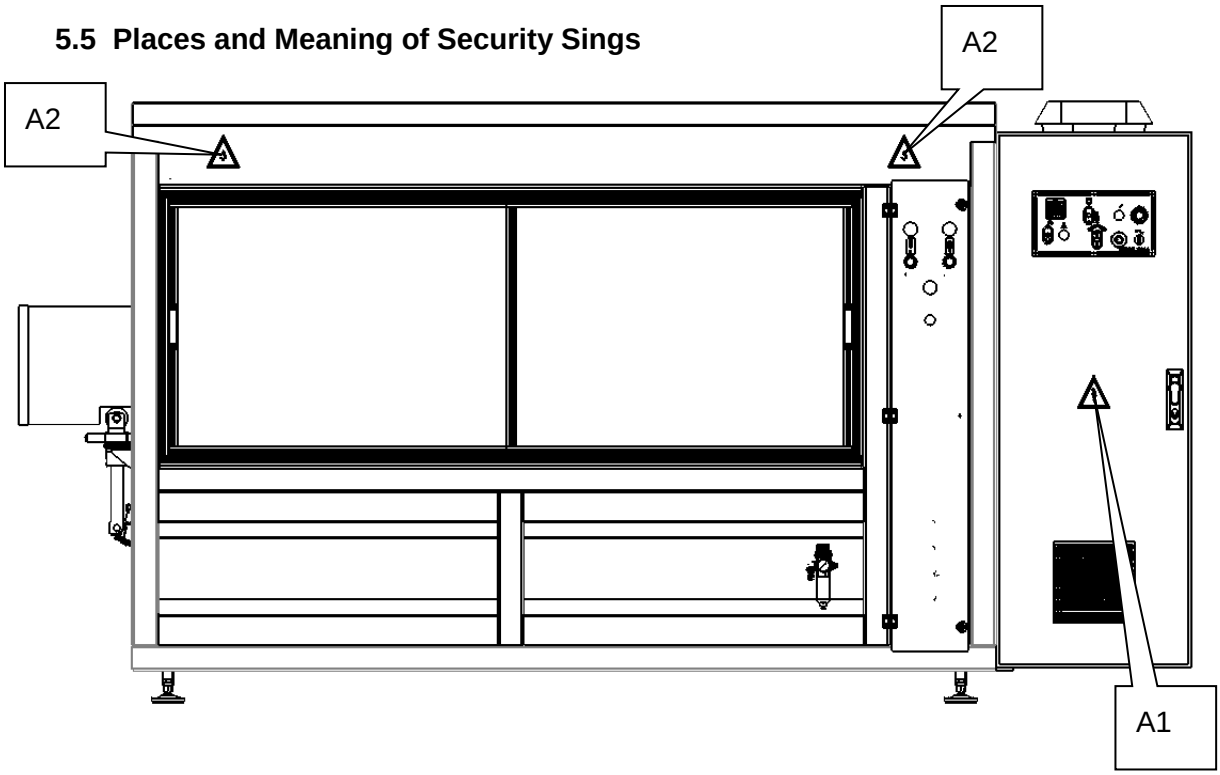
5.4.3.Side Covers of the Machine

5.4.4.Guide Unit




*1. Figure: Special Security Information of the Machine*

## 5.5 Places and Meaning of Security Sings




*2. Figure: Places and Meaning of Security Sings*

### 5.6 Meanings of Position and Warning Signs

| | | | | | |
|---|---|---|---|---|---|
|  | A1 | Dangerous Electric Voltage. |  | A10 | Wear Protective Gloves. |
|  | A2 | Carrying Units of the Machine |  | A11 | Wear Goggles. |
|  | A3 | Hand or foot may be stucked. |  | A12 | Wear Barette. |
|  | A4 | Water Intervention In Case of Fire. |  | A13 | Wear Safety Shoes. |
|  | A5 | Operating Part. |  | A14 | Wear Overalls. |
|  | A6 | Hands may be cut. |  | A15 | Warning Slippery Surface. |
|  | A7 | It is forbidden to touch apart from responsible operator. |  | A16 | Keep Clear of Suspended Loads. |
|  | A8 | Don’t remove security devices. |  | A17 | High Noise Area: Wear Earplugs. |
|  | A9 | It is forbidden to make clean and maintenance during operation. |  | A18 | Don’t Eat or Drink Anything. |

# *PART 6*

# *DEFINITION OF MACHINE*

# 6 DEFINITION OF MACHINE

## 6.1 Definition of the Machine

Some machine parts are stated in the following picture. Parts that cannot be seen clearly are closed with a cover or preservation in terms of job security.

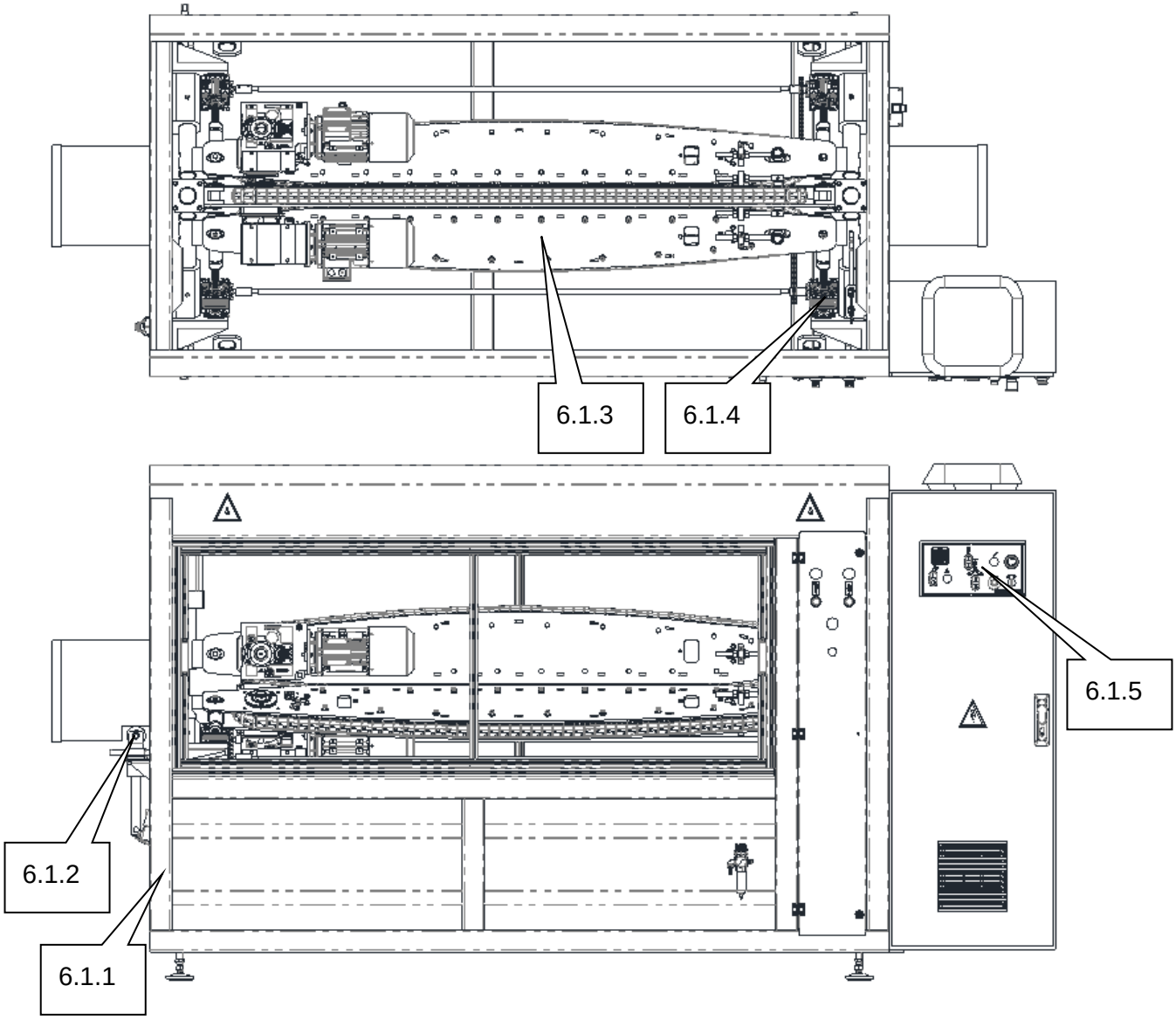
6.1.1.Machine Body

6.1.2.Guide Group

6.1.3.Cutting Unit/Cutter Group

6.1.4.Servo Motion Group

6.1.5.Electrical Cabinet and Control Panel



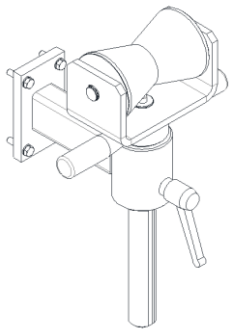

*3. Figure: Definition of the Machine*

### 6.1.1 Machine Body

It is a steel construction which carries the cutter, guide group, pneumatic installation and consists of NPU which controls and commands these equipments and various sizes of profile and flexion and which is connected with the weld.

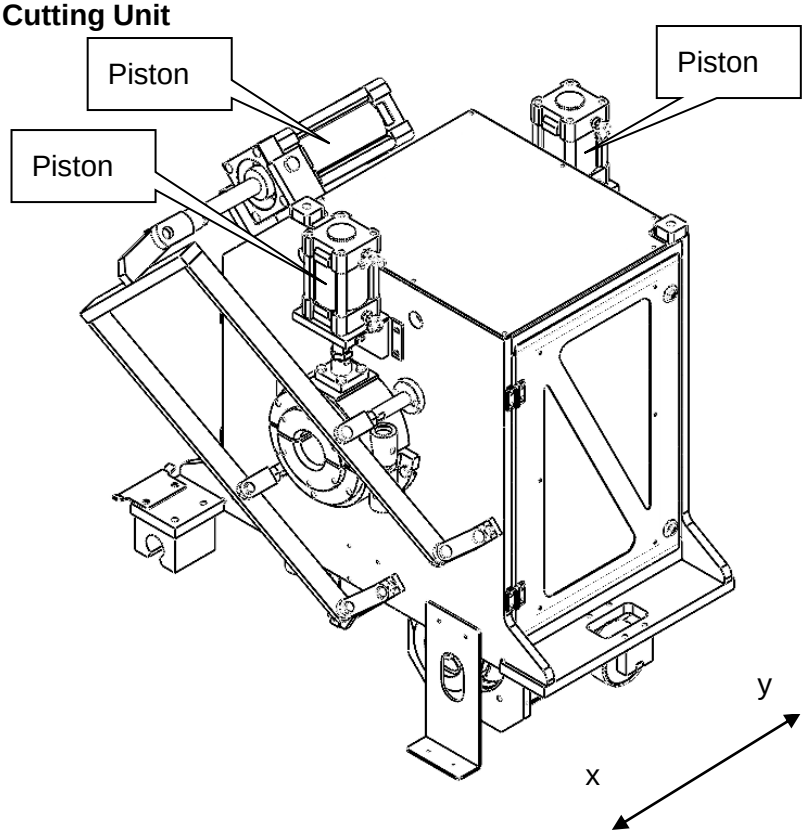
### 6.1.2 Guide Group

Profile guide group is located in the front and back part of the pipe cutter. Isometric perspective figure of profile guide group is given below. It is used for the purpose of making the profile remain in the desired axis. Guide rollers are made from PPH Pipes in order to prevent the pipe from corrosion which is caused by the friction between the pipe pulled by guide rollers during guide process. Guide roller are arranged by sliding right and left in the size of pipes in the pipe line by loosening fillister handles under the guide rollers. Then guide rollers are arranged in the sizes of the pipe by tightening the fillister handles again.



*4. Figure: Guide Group*

### 6.1.3 Cutting Unit



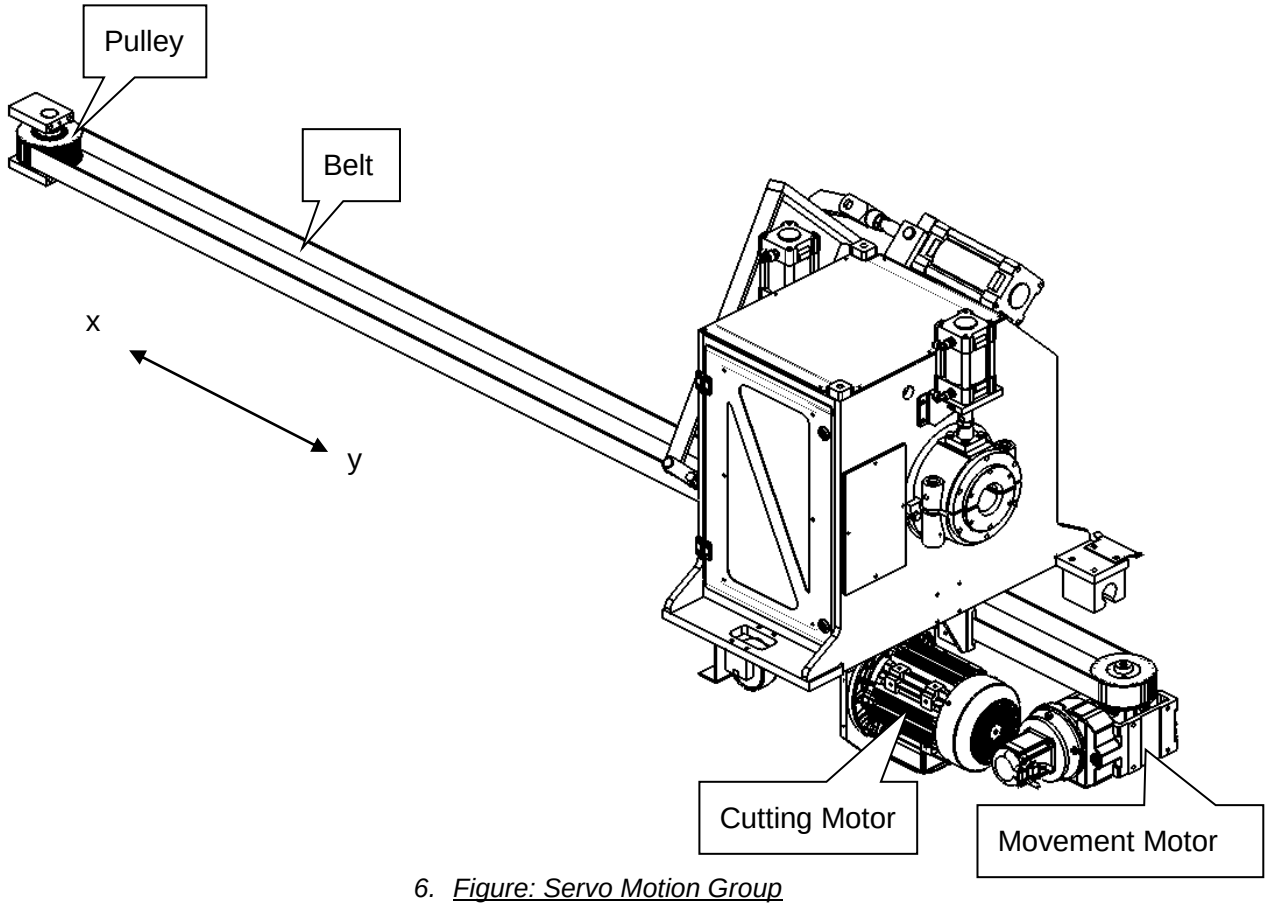

*5. Figure: Cutting Unit*

Rotational movement is transferred from the motor to the cutter with the help of timing belt and timing pulley. Cutter is mounted to the frame and rotates together with the frame. When puller pulls a pipe, frame moves in x-y direction together with the cutter with the help of motion transfer group of mechanisms. Pipe holding cylinders hold the pipe while the pipe is being cut. Cylinder, which provides the cutting procedure, moves and by this movement draws the cutter nearer to the pipe. And so cutting is being carried out in a proper way. When cutting process is over cutter is being withdrawn and cutting group of mechanisms return to the staring point. Tasks carried out by this unit are as follows;

1. Movement with the same speed as pipe puller (system speed compliance)
2. Fixation of the pipe during cutting process
3. Rotation of the cutter body (So rotation of the cutter for 360° around the pipe is provided)
4. Approacing of the cutter to the pipe
5. Return of the cutting group to the starting position

| Cutting Motor | | Conair MOTOR |
|---|---|---|
| Power | kW | 1,5 |
| Revolution | rpm | 1000 |

### 6.1.4 Servo Motion Group



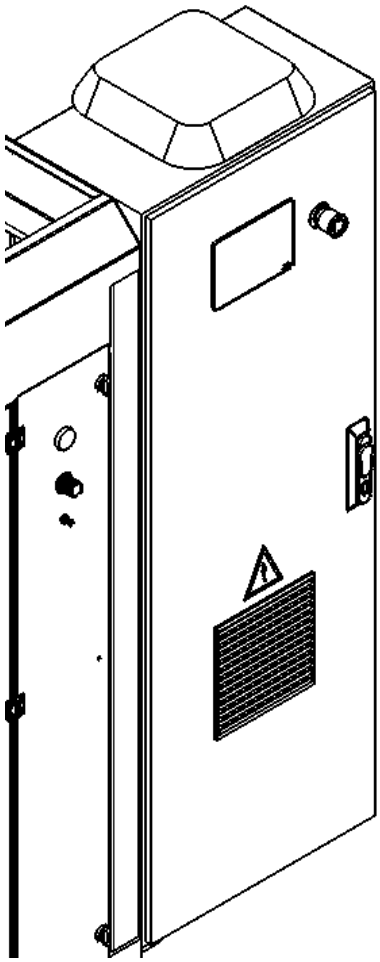

*6. Figure: Servo Motion Group*

Rotational movement is transferred from the motor to the cutter with the help of timing belt and timing pulley. So according to the data from the puller cutter moves in x-y direction at the same speed as puller and cuts the pipe. When pipe has been cut and cutting process is over motion group comes to the starting position.

| KN20301 Conair ABB B5M80R-340MT | | |
|---|---|---|
| Motor | [ kW ] | 0,75 |
| Revolution | [ rpm ] | 3000 |
| Ratio | [ i ] | 38,16 |

### 6.1.5 Electrical Cabinet and Control Panel

The electric enclosure is designed specifically and produced of sheet iron (2mm thick). It contains the electrical installation equipment and the electrical system of the pipe cutter. In the picture below you can see the various electrical equipment on the iron sheet floor surface of the pipe cutter's enclosure.



*7. Figure: Electrical Cabinet and Control Panel*

# *PART 7*

# *TECHNICAL PROPERTIES*

# 7 TECHNICAL PROPERTIES

| **GENERAL CUTTER PROPERTIAS** | |
|---|---|
| Machine Special | Pipe Cutting Unit |
| Machine Type | |
| Machine Serial Number | |
| Order Number | |
| **Measurements** | |
| Lenght (mm) | 4530 |
| Width (mm) | 1160 |
| Height (mm) | 1900 |
| Screw Center Height (mm) | 1060 |

## 7.1 Cutter Unit Motor Propertias

| Conair MOTOR | | |
|---|---|---|
| Power | [ kW ] | 1,5 |
| Revolution | [ rpm ] | 1000 |

## 7.2 Movement Group

| KN20301 Conair ABB B5M80R-340MT | | |
|---|---|---|
| Motor | [ kW ] | 0,75 |
| Power | [ rpm ] | 3000 |
| Ratio | [ i ] | 38,16 |

# *PART 8*

# *HANDLING AND MOUNTING*

# 8 CARRIAGE and INSTALLMENT

## 8.1 Opening the Package

Pipe Cutter is placed into a wooden box or on a palette according to the agreement with the customer and then it is covered with stretch wrap.

Wrapped machine is only carried by the stated points.

If the machine is in a wooden box;

First the upper cover of the box is opened and then side covers are opened carefully.

Then stretch wrap is removed.

Please check the machine against possible harms which may arise during carriage.

## 8.2 Information on Carriage

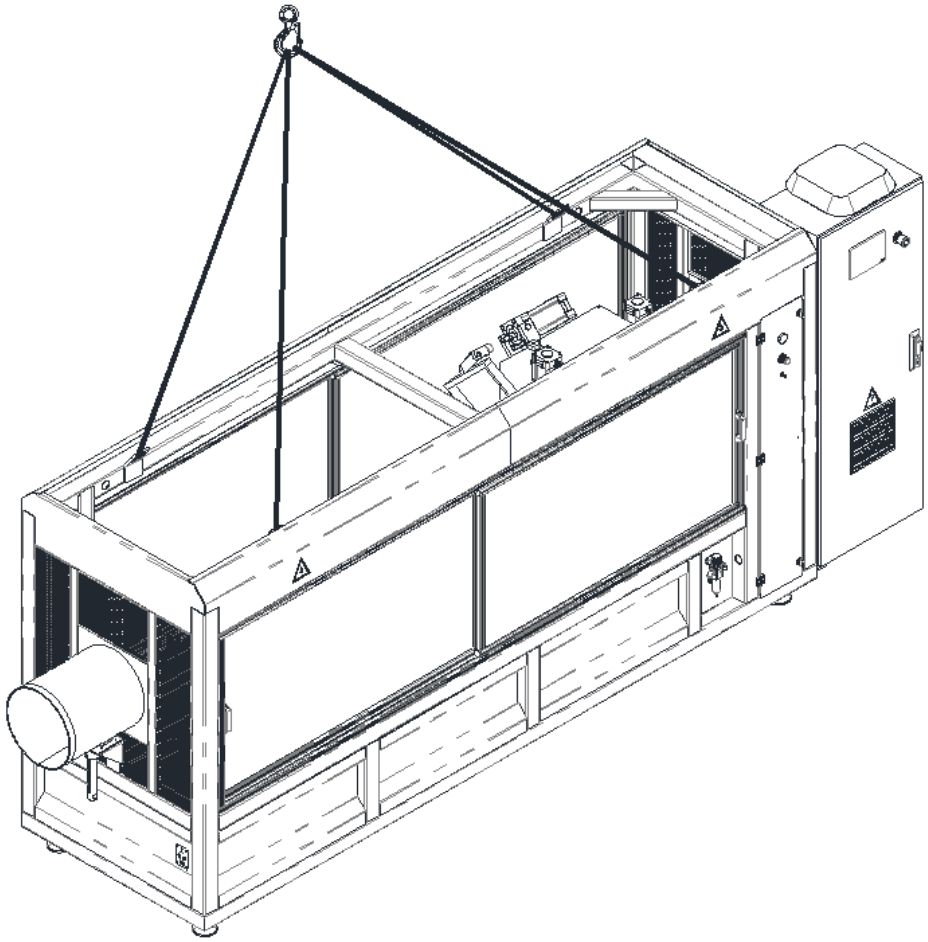
Be sure that carriage equipments and carriage place is safe against accident risks which may occur because of personal mistakes during carriage. Use only the carriage equipments which are suitable for carriage capacity and have technical competence. Never work or pass under the machine. Stay away from the around of the machine during carriage.

Crane operating responsibility for loading and carriage of the machine should be given to experienced personnel. During carriage, provide proper view and sound area for the operator via assistant personnel in order that the operator could work reliable and safely.

If you need to carry machine parts to a high place, do not step on the machine and do not use machine parts as stairs. Use a portable stair and specially designed working platform.

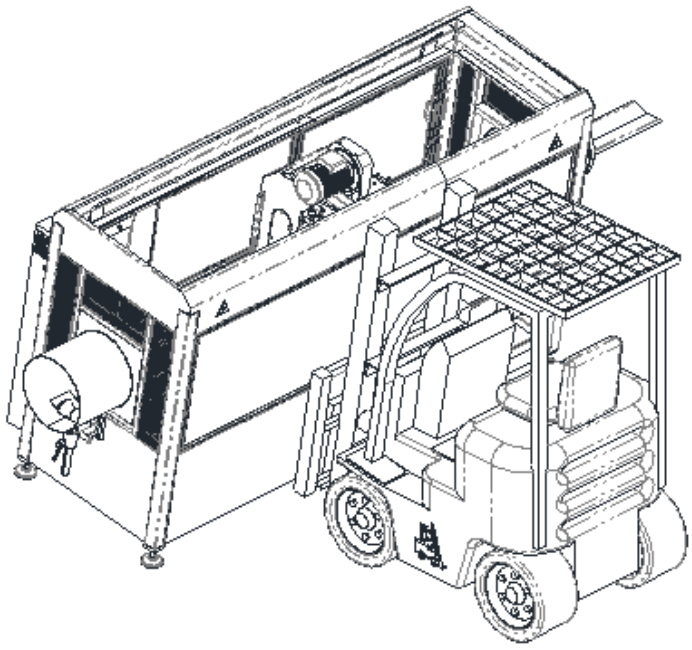
| | |
|---|---|
|  | Carry only as shown in the figure! |

### 8.2.1 Handing Points Of Machine

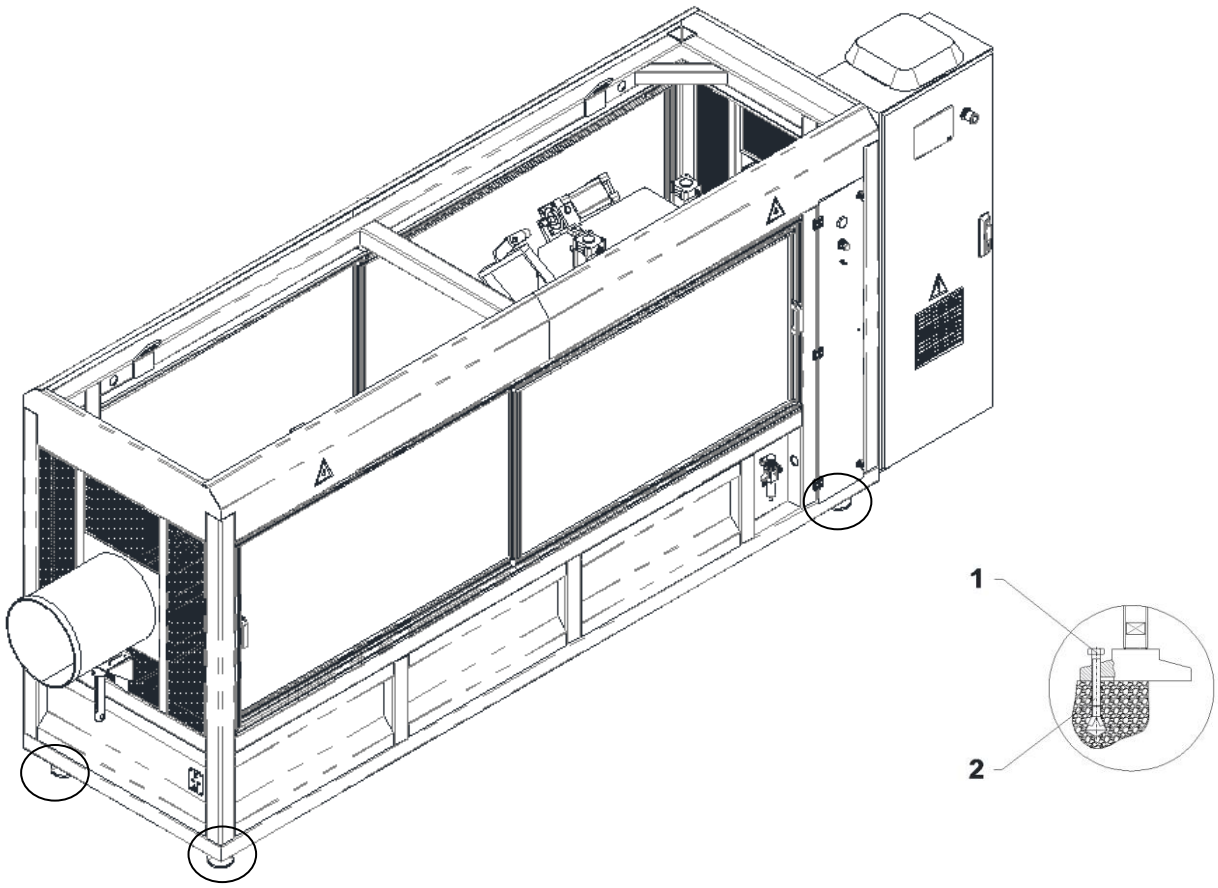


*8. Figure: Handing Points Of Machine*

Machine should be transported by means of eyebolts on the machine's body or with the help of forklift as shown on the figure.



### 8.3 Installment of the Machine




*9. Figure: Installment of the Machine*

Maximum horizontal deviation should be 0.5-1 mm/m. (0.5 to 1 mm in 1 meter). While installing the machine take chassis base as reference and provide horizontal balance of the machine with water gauge. If the machine is unbalanced, you can provide the balance by using adjusting bolts on the machine body.

Adjust the machine by controlling its width and length.

After balancing the machine with adjusting bolts, fix the machine to the floor with steel dowel by using the hole in the middle of the adjusting shoe. (A4: Machine fixing points)

Please check the balance and fixation adjustments of the machine at least twice a year.

| | |
|---|---|
| ⚠ | Do not start manufacturing without making balance and fixation adjustments of the machine! |

# *PART 9*

# *MAINTENANCE AND CONTROL*

# 9 MAINTENANCE AND CONTROL

## 9.1 General Information

This machine is under the guarantee of producing company only when the user fully obeys the maintenance and control rules stated below.

Maintenance and control should be performed only by qualified and experienced personnel.

If the machine is completely closed for maintenance and control and there is a work on it, pay attention to the safety rules before starting the machine again. (Warning signs, main switches etc.)

If some security devices have to be removed for maintenance, repair or cleaning, they should be immediately reinstalled after the process and maintenance and control should continue.

Some screws should always remain tight and they should not be loosened during maintenance and repair.

In order to abstain from accident risks, special parts should be carried in wide areas, carriage equipments should be checked carefully and connections should be safe. Only carriage equipments which are suitable for carriage capacity and have full technical competences should be used. Never stay under the loads and carried machine parts.

While carrying the loads, an assistant should be provided for the carrier, this assistant should make warnings to the carrier by signs and words.

## 9.2 Cleaning of the Machine

During the cleaning of the machine, connections and parts should especially be operated out of the maintenance and repair area.

Never use corrosive cleaning materials.

Open all the covers and protectors of the machine before cleaning.

Clean with compressed air.

After the machine is cleaned, check water connections, compressed air connections, hydrolic fluid lines and connections which may become loose, against leakage probability.

If there are problematic parts, repair them immediately.

The parts changed with the new ones, and used cleaning materials should be annihilated without giving any harm to the environment.

### 9.3 Cleaning of the Pats

After balance and fixation process is over, clean the parts that are needed to be installed on the machine by using cleaning materials such as cleaning solvent etc.

Pay attention to the properties of the cleaning materials that you will use.

### 9.4 Annual Maintenance Chart

| | | | | |
|---|---|---|---|---|
| OPERATOR PANEL | Daily | Protect indicator devices on the operator panel from dust and flammable materials.<br>Check that mechanic part between operator panel and electrical cabinet operates properly or not. | If there is dust and dirty on the devices, remove them by means of a dry fabric. | |
| MAIN MOTOR AND DRIVER | Weekly | Perform necessary cleaning and maintenance by looking to motor and driver catalogues of producing companies. | Perform necessary cleaning and maintenance by looking to motor and driver catalogues of producing companies. | |

# *PART 10*

# *ERRORS*

## 10 ERRORS

| | | | |
|---|---|---|---|
| CUTTING | PROBLEM | POSSIBLE REASON | SUGGESTION |
| | If your profile has difficulty in pulling? | Cutting take off velocity of the cutter may be high. | Adjust the cutting take off velocity by adjusting button. |
| | | Profile retainers may pres on the profile lightly or it may not pres. | Adjust the stroke length of profile retainer pistons and check the air pressure. |

# *PART 11*

# *PANEL USER MANUAL*

# *PART 12*

# *STANDARDS*

## 12 STANDARDS AND DIRECTIVES

- TS EN 614-1+A1 : Machine Security- Ergonomic Design Principles- Part 1:Terminology and General Principles
- TS EN 6124-2+A1 : Machine Security - Ergonomic Design Principles- Part 2: Interactions between the Design and Duties of the Machine
- TS EN 894-1+A1 : Machine Security -Ergonomic Rules for the Design of Indicators and Actuator Part 1: General Principles for the Interaction between Indicator, Actuator and Human
- TS EN 894-2+A1 : Machine Security - Ergonomic Rules for the Design of Indicators and Actuator Part 2 Indicators
- TS EN 894-23+A1 : Machine Security - Ergonomic Rules for the Design of Indicators and Actuator Part 3 Actuator
- TS EN 1114-2+A1 : Rubber and Plastic Machines-Extruder and Extrusion Lines-Part 2: Security Rules for Mould Face Palletizes.
- TS EN 1114-3+A1 : Rubber and Plastic Machines - Extruder and Extrusion Lines – Part 3: Security Rules for Towing Equipments.
- TS EN 12100-1: Machine Security - General Principles for Basic Concepts -Part 1:1 Basic Terminology, Methodology
- TS EN 12100-1: Machine Security - General Principles for Basic Concepts Part 1/A1: 1 Basic Terminology, Methodology
- TS EN 12100-2: - Machine Security- General Principles for Basic Concepts -Part 2: Technical Principles
- TS EN 12100-2: Machine Security - General Principles for Basic Concepts -Part 2/A1: Technical Principles
- TS EN 14121-1: Machine Security -Risk Assessment-Part 1: Principles
- TS EN 14121-2 : Machine Security - Risk Assessment -Part2 : Working Platforms and Paths for Walking
- TS EN 61000-4-4 : Electromagnetic Compatibility (EMU) Part 4-4: Testing and Measuring Techniques- Immunity Tests Against Electrical Fast Transient/ Sudden Impact.
- TS EN 61000-4-4/A1 : Electromagnetic Compatibility (EMU) Part 4-4: Testing and Measuring Techniques - Immunity Test Against Electrical Fast Transient/ Sudden

Impact.

- TS EN 61000-4-5 : Electromagnetic Compatibility (EMU) Part 4-5: Testing and Measuring Techniques - Immunity Test Against Sudden Elevation.
- TS EN 61310-1 : Machine Security - Demonstration, Marking and Activation –Part 1: Rules for Visible, Audible and Touchable Mark.
- TS EN 61310-3 Machine Security – Demonstration, Marking and Activation – Part 3: Rules for Installation and Operation of Activator Mechanisms.
- TS EN 13849-1: Machine Security - Control Systems' Parts Related to Security -Part 1: General Principles for Design
- TS EN 60204-1 : Machine Security - Power Installation of the Machines-Part 1 : General Rules
- TS EN 60002-4-11 : Electromagnetic Compatibility (EMU)- Part 4-11: Testing and Measuring Techniques - Immunity Tests Related with Voltage Dips, Short Interruptions and Voltage Variations.
- TS EN 61508-1 : Machine Security –Basic Concepts General Principles for Design-Part -1 Basic Terminology, Methodology
- TS EN 602061 : Machine Security - Functional Security of Electric, Electronic and Programmable Electronic Control Systems.
- TS EN 60204-1/A1 : Machine Security –Electrical Equipments for Machines -Part 1: General Rules
- TS EN 349 +A1: Machine Security -Minimum Gaps In Order To Protect Human Body Against Crushes
- TS EN 619 : Permanent Carrying Equipments and Systems - Rules of EMU and the Rules about the Equipments Used for Carrying Unit Loads Mechanically.
- TS EN 953 + A1: Machine Security – Protectors - General Properties for Design and Production of Fixed and Movable Protectors.
- TS EN 953 + A1: Machine Security - Security Rules for Fluid Power Systems and Their Components
- TS EN 1005-3+A1 : Machine Security –Physical Performance of Human-Part 3: Recommended Power Limits While Using the Machines.
- TS EN 1037 + A1 : Machine Security –Preventing Unexpected Operation
- TS EN 1088 +A2 : Machine Security - Interlocking installations used with the

protectors- Principles for Design and Choice

- TS EN 13849-1/AC : Machine Security - Control Systems' Parts Related to the Security Part 1: General Principles for Design.
- TS EN 13857 : Machine Security - Security distances in order to prevent dangers in the areas where arms and legs can reach.
- TS 18001 : Management Systems for Job Health and Security –Conditions
- TS EN 1114-1 : Machine Security –Basic Concepts General Principles for Design Part 1 Basic Terminology, Methodology.
- TS 3181 EN ISO 3497 : Metallic Coatings- Measuring Coating Thickness- X-ray Spectrometric Methods.

# *PART 13*

## *CE*

# *PART 14*

# *ELECTRIC*

| | |
|---|---|
| Project Description | PIPE CUTTING UNIT |
| SUPPLY VOLTAGE | 460/60Hz |
| Control Voltage | 24VDC |
| Installed Power | 6kW |
| Number of pages | 38 |

# Table of contents

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# Table of contents

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| Page | Page description | supplementary page field | Date | Edited by | X |
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| =PIPE CUTTING UNIT/30.c | PART LIST | | 03.03.2021 | | |
| =PIPE CUTTING UNIT/30.d | PART LIST | | 03.03.2021 | | |
| =PIPE CUTTING UNIT/30.e | PART LIST | | 03.03.2021 | | |

# GENERAL INSTRUCTIONS

## CABLE COLOURS

| | | |
|---|---|---|
| MAIN CIRCUITS | | BLACK (sw) |
| CONTROL CIRCUIT (230V / 380V) | (L) | BLACK (sw) |
| | (N) | BLUE (bl) |
| CONTROL CIRCUIT (24V) | (24V+) | BLUE (bl) |
| | (24V-) | BLUE-WHITE |
| GROUND | (PE) | YELLOW-GREEN |

## COLOR TABLE

| NO | IEC 757 | DIN | COLOURS |
|---|---|---|---|
| 01 | Wh | ws | White |
| 02 | BN | br | Brown |
| 03 | GN | gn | Green |
| 04 | YE | ge | Yellow |
| 05 | GY | gr | Grey |
| 06 | PK | rs | Pink |
| 07 | BU | bl | Blue |
| 08 | RD | rt | Red |
| 09 | BK | sw | Black |
| 10 | VT | vi | Violet |
| 11 | OG | or | Orange |
| | | | |
| 12 | SC | sc | Screen |

## Terminal strip

# =PIPE CUTTING UNIT+-X1

Total N 0
Total number 11

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| /7.2 | 2 | ZDU 2.5 | 1608510000 | Weidmüller |
| /7.2 | 3 | ZDU 2.5 | 1608510000 | Weidmüller |
| /8.3 | 4 | ZDU 2.5 | 1608510000 | Weidmüller |
| /8.4 | 5 | ZDU 2.5 BL | 1608520000 | Weidmüller |
| /9.2 | 6 | ZDU 2.5 | 1608510000 | Weidmüller |
| /9.3 | 7 | ZDU 2.5 | 1608510000 | Weidmüller |
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| /26.2 | 15 | ZPE 2.5 | 1608640000 | Weidmüller |
| /26.6 | 18 | ZDU 2.5 | 1608510000 | Weidmüller |
| /26.7 | 19 | ZPE 2.5 | 1608640000 | Weidmüller |
| /26.6 | 20 | ZDU 2.5 | 1608510000 | Weidmüller |
| /29.4 | 21 | ZDU 2.5 | 1608510000 | Weidmüller |
| /29.4 | 22 | ZDU 2.5 BL | 1608520000 | Weidmüller |
| /29.6 | 23 | ZDU 2.5 | 1608510000 | Weidmüller |
| /29.6 | 24 | ZDU 2.5 BL | 1608520000 | Weidmüller |
| /29.8 | 25 | ZDU 2.5 | 1608510000 | Weidmüller |

## Terminal strip

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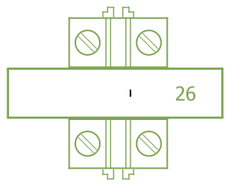


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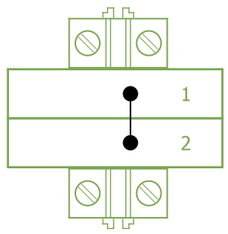


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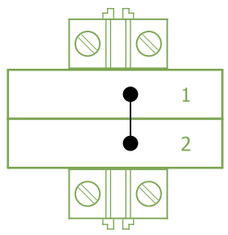


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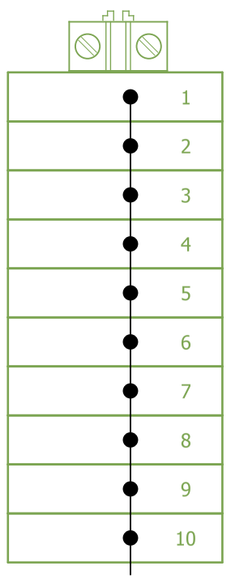

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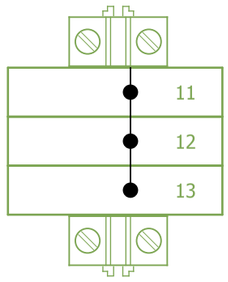


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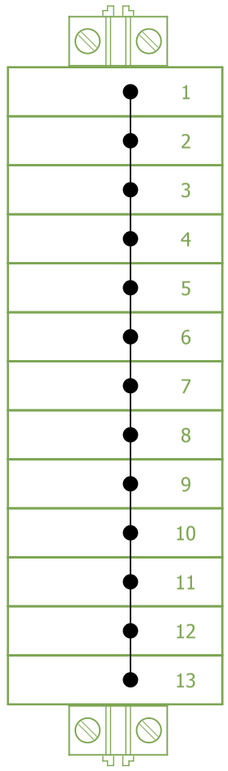


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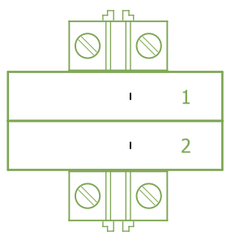

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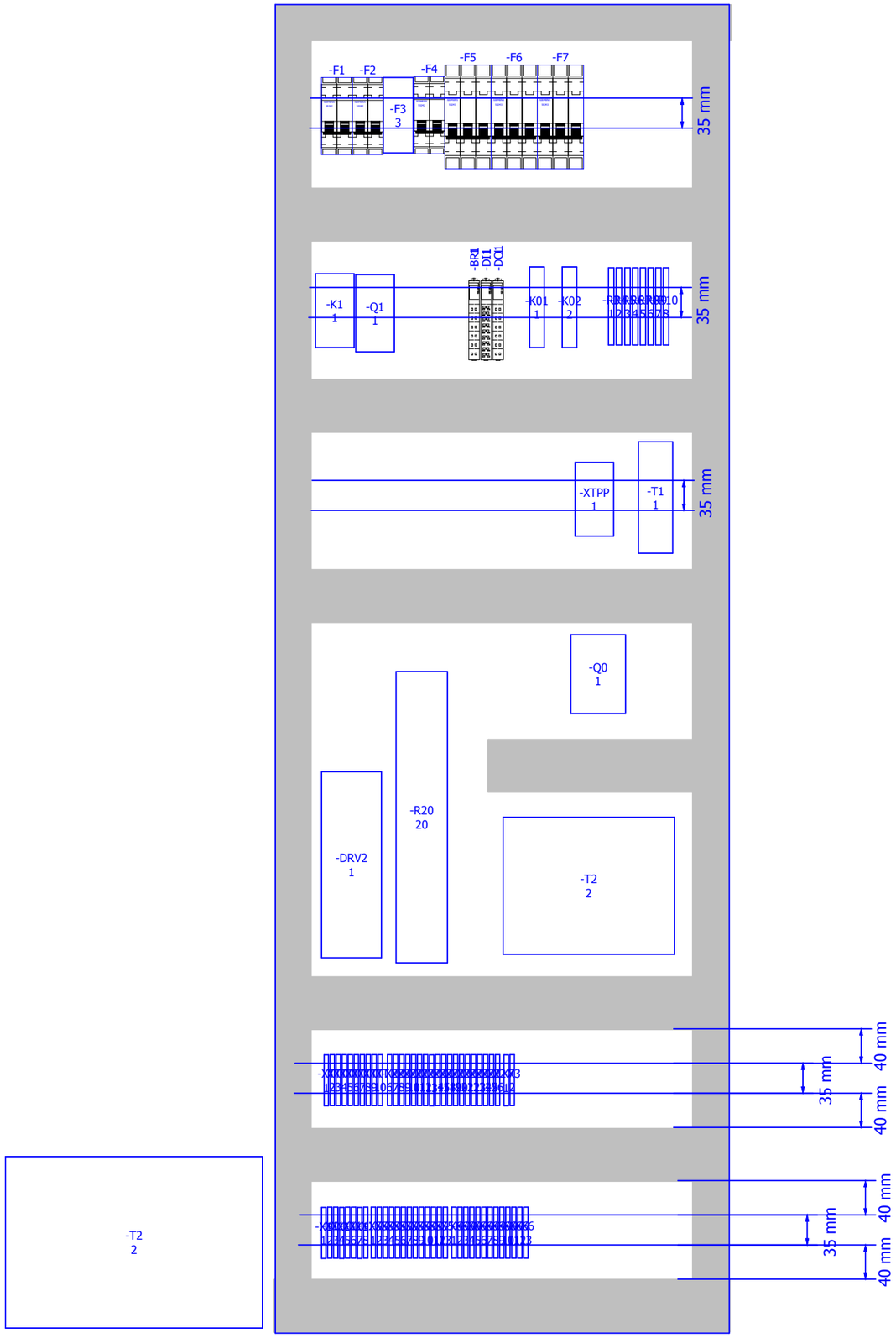




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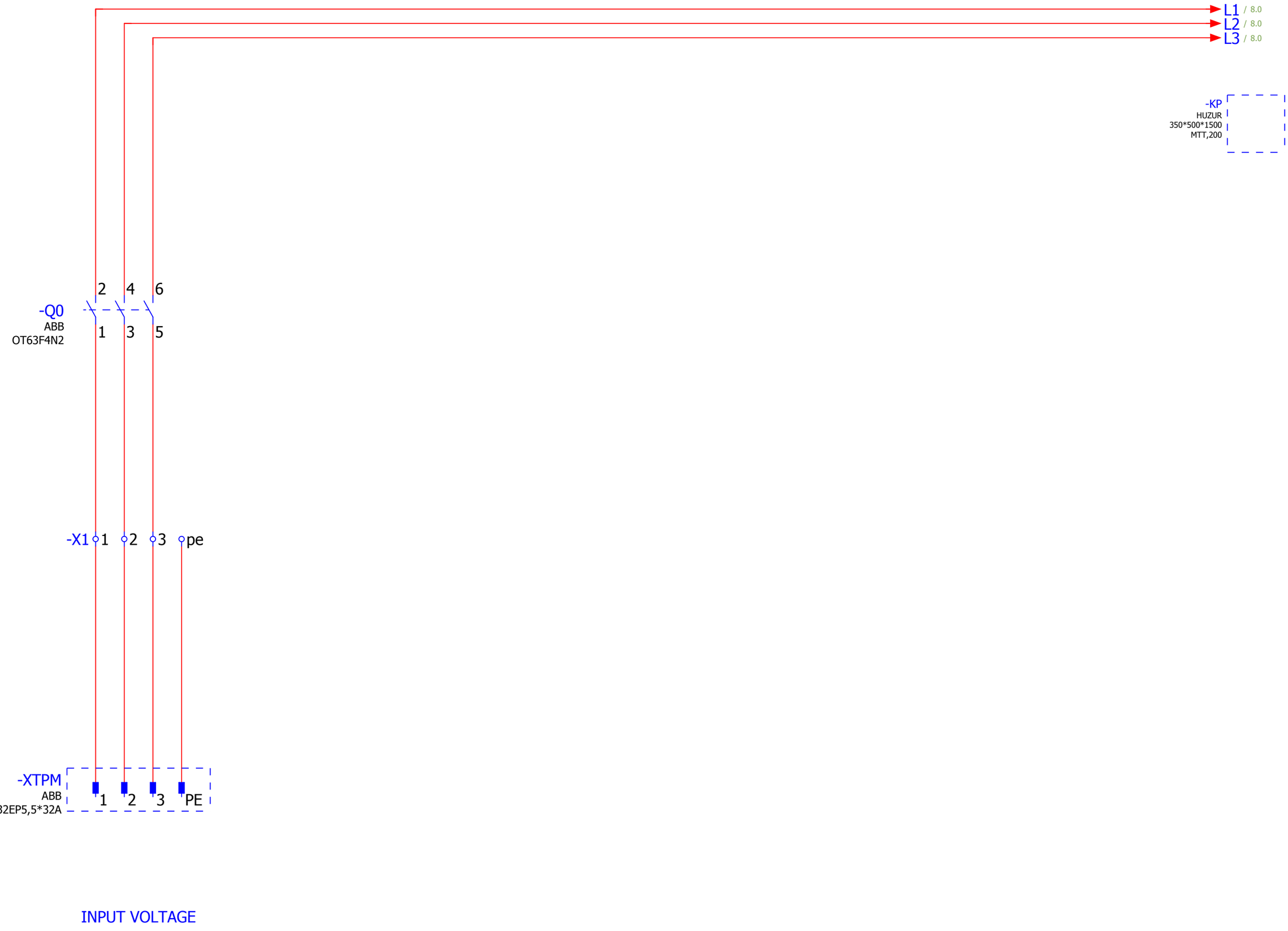


INPUT VOLTAGE

5 8

| | | | | | | | | |
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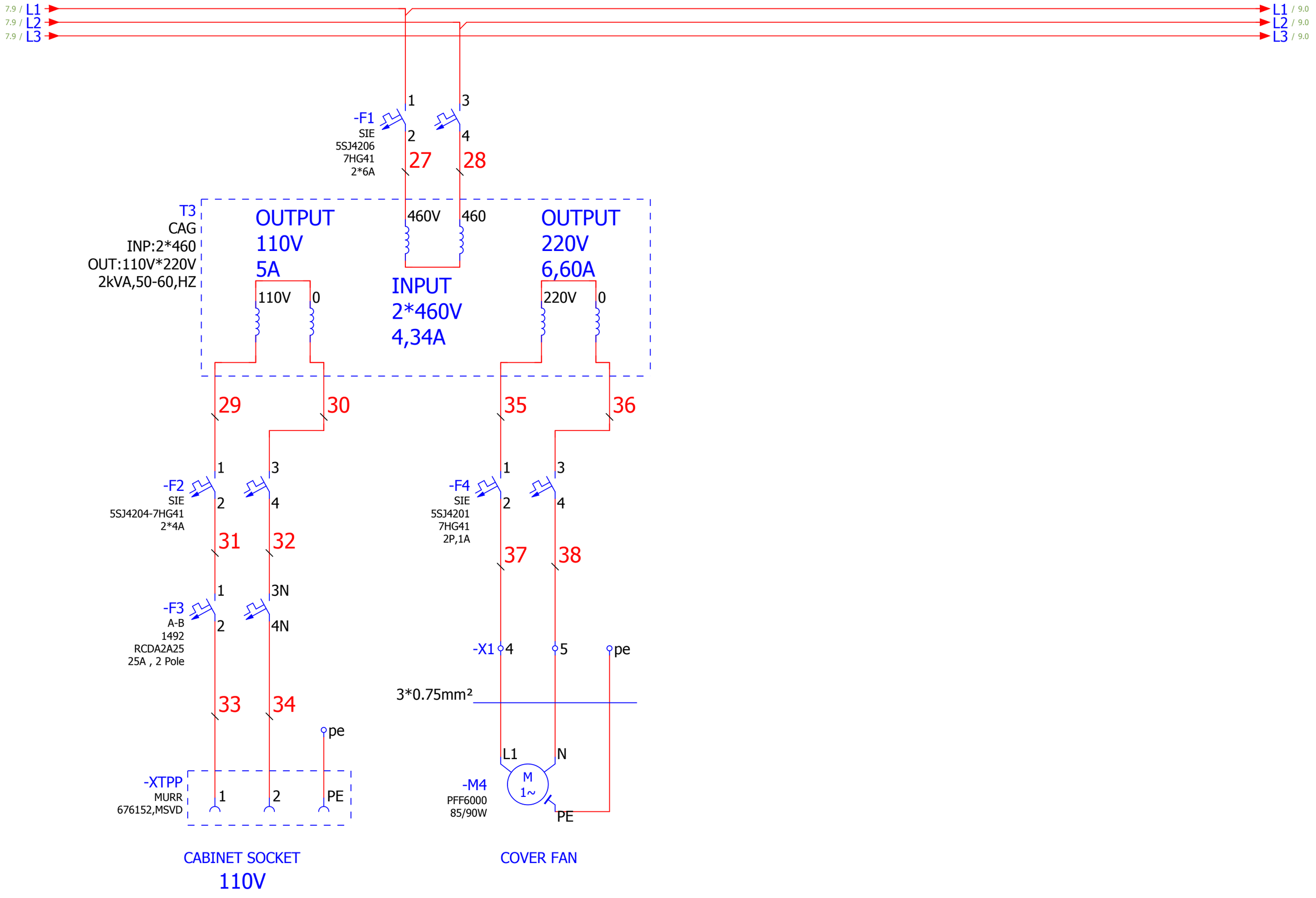


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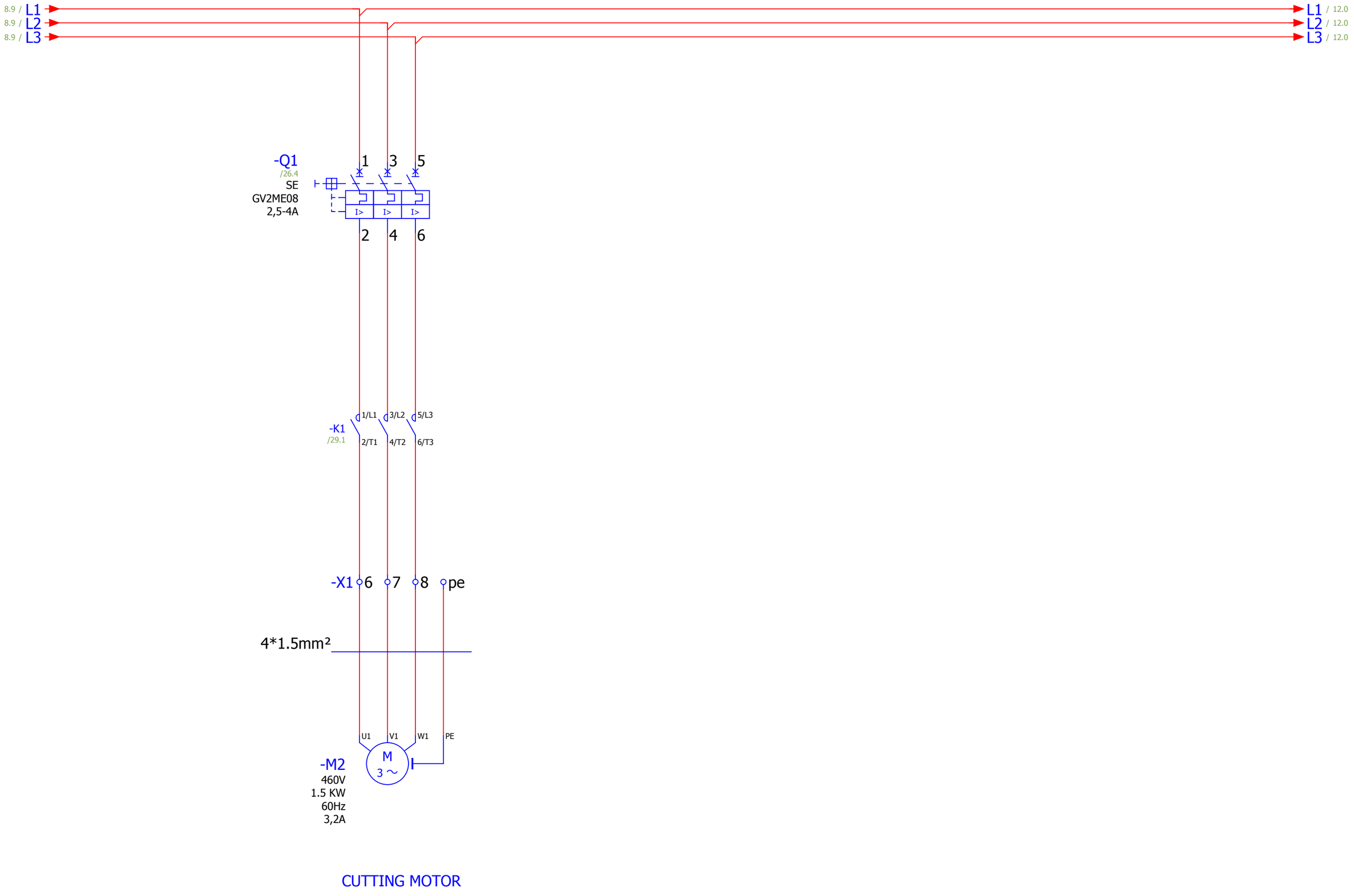


CUTTING MOTOR



| | | | | | | | | |
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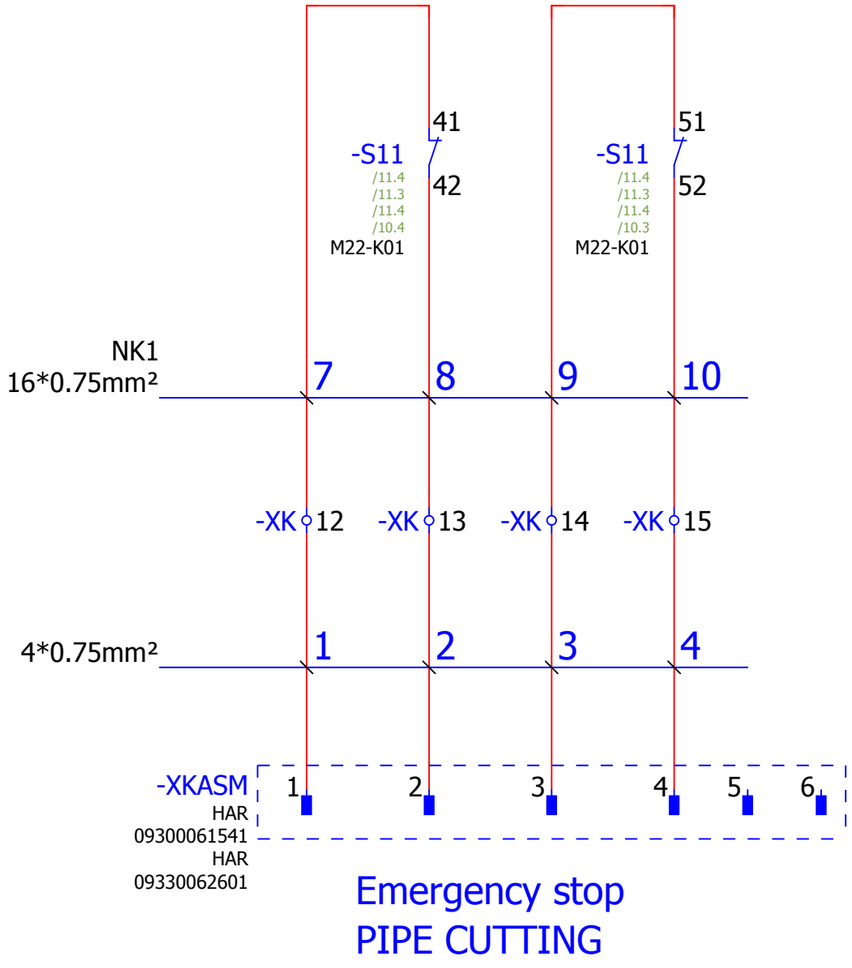




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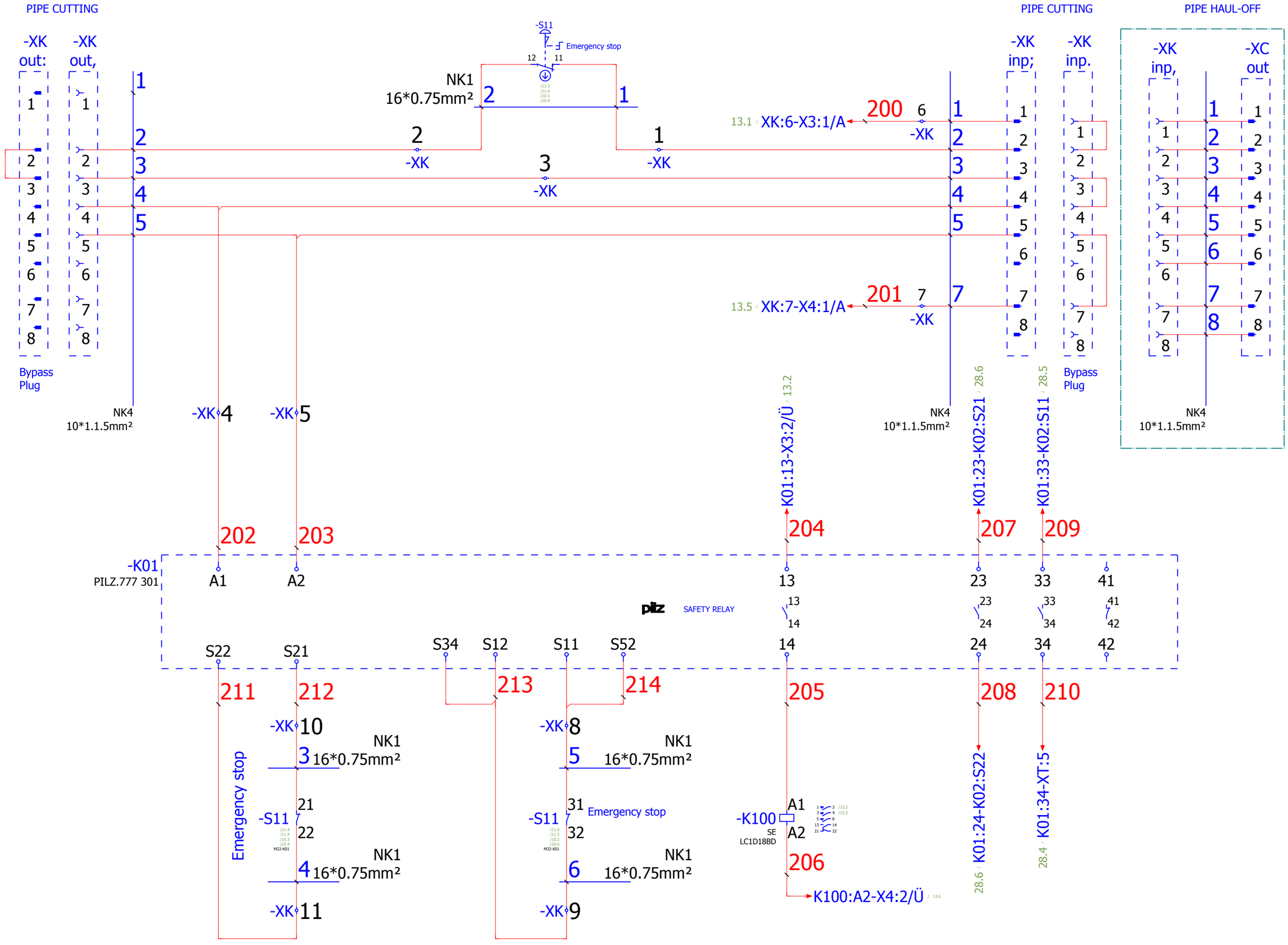


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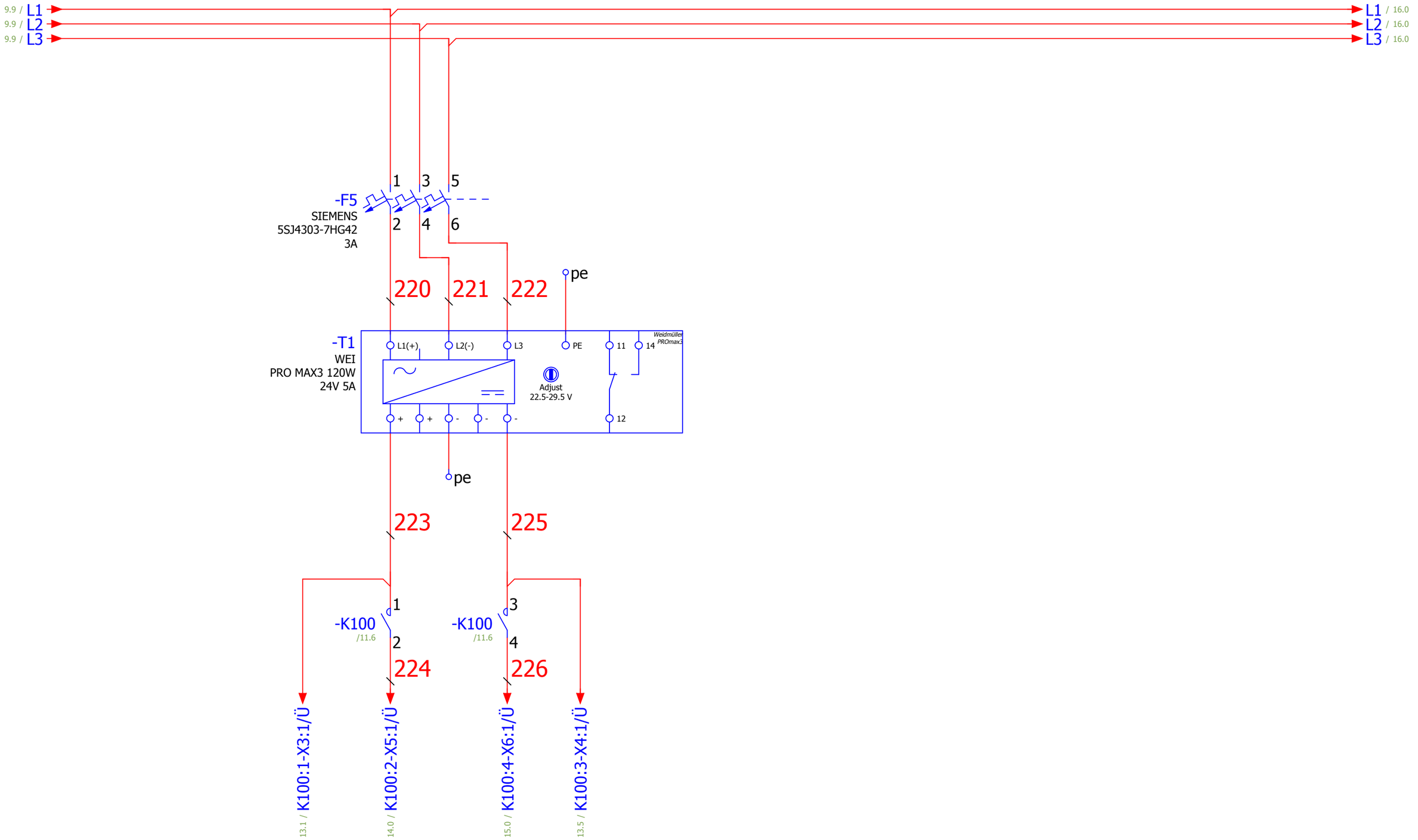




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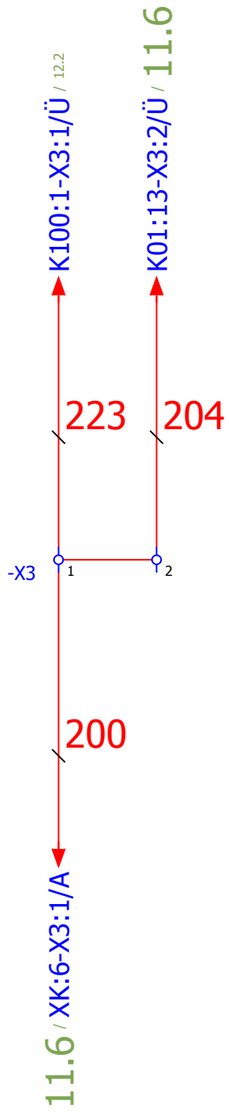


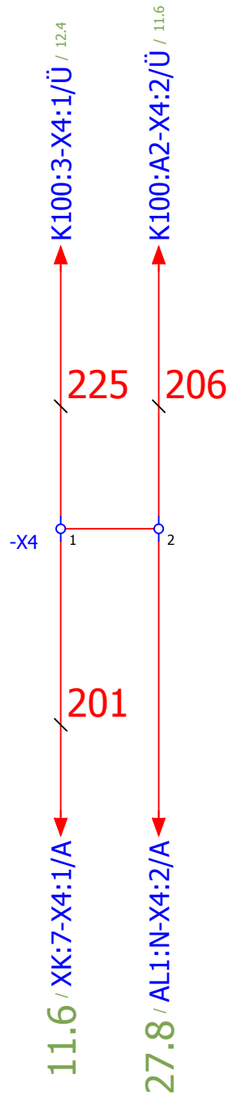




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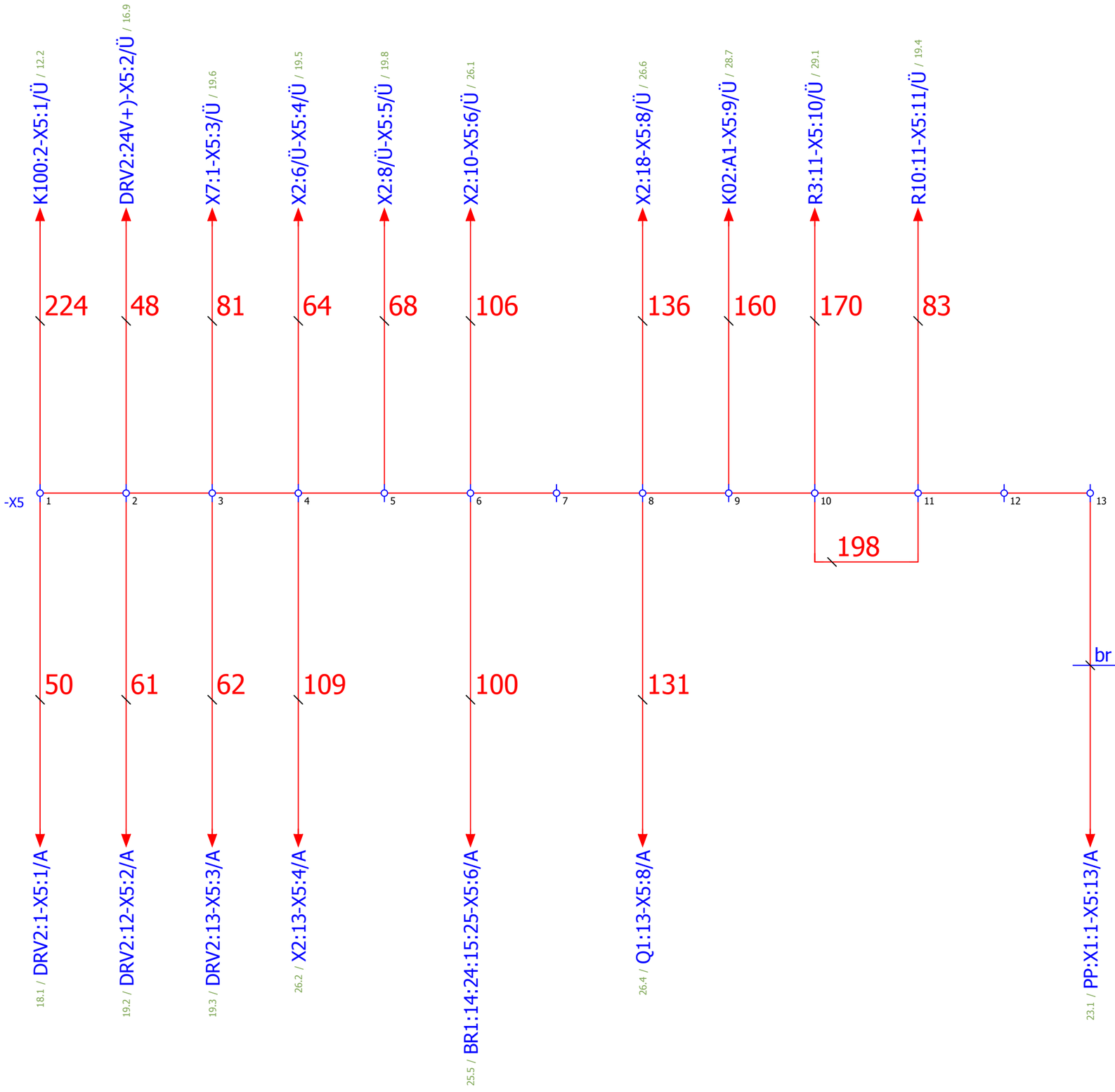
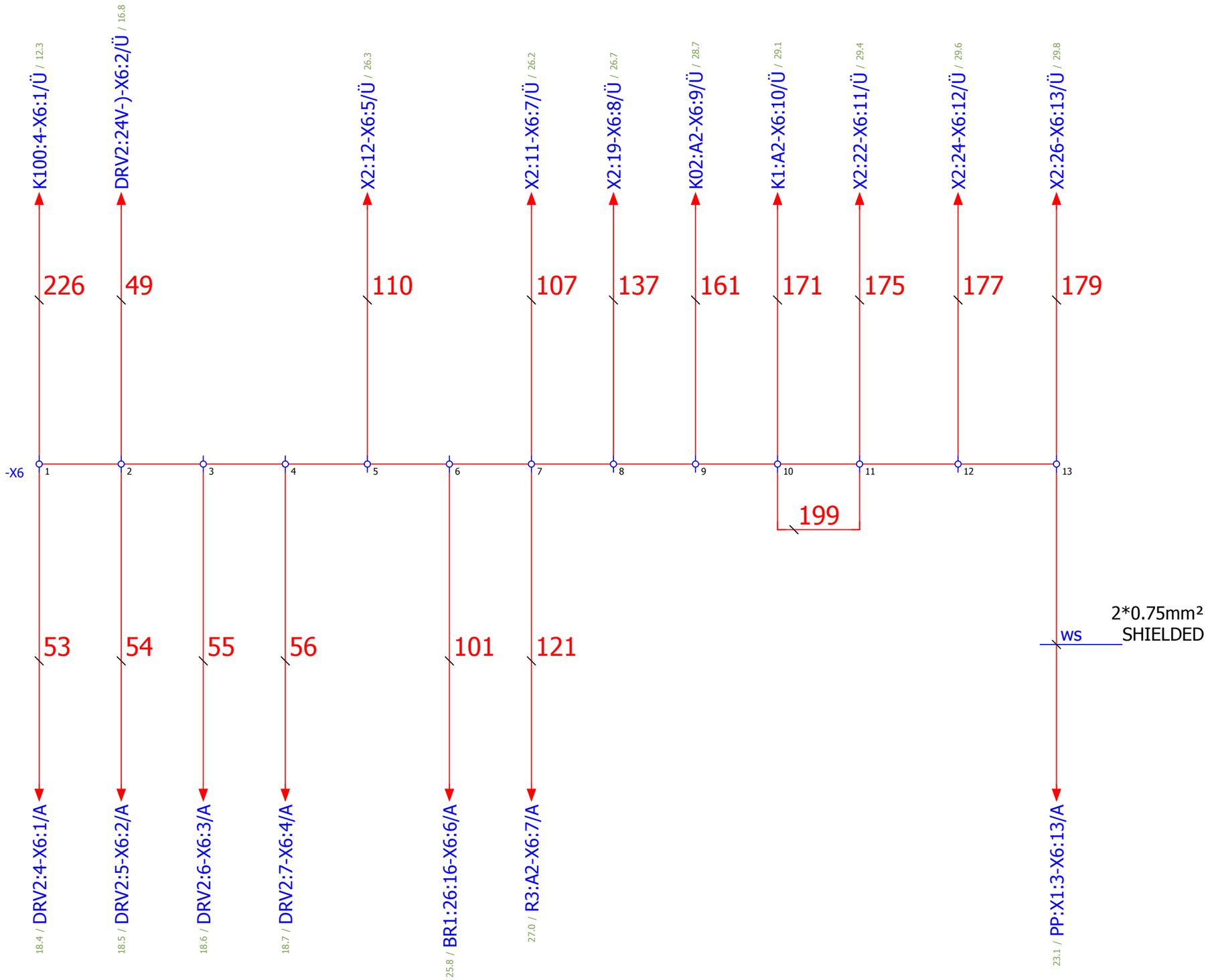
| | | Rev.3 | | | | | | Page 13 |
| | | Rev.4 | | | | | | Page total 38 |




13 15

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| | | Rev.1 | | PIPE CUTTING UNIT | | | 24VDC CONTROL DISTRIBUTION TERMINALS | = PIPE CUTTING UNIT |
| | | Rev.2 | | | | | | + |
| | | Rev.3 | | | | | | Page 14 |
| | | Rev.4 | | | | | | Page total 38 |

20 10B1 112






| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| | | Rev.1 | | PIPE CUTTING UNIT | | | 24VDC CONTROL DISTRIBUTION TERMINALS | = PIPE CUTTING UNIT |
| | | Rev.2 | | | | | | + |
| | | Rev.3 | | | | | | Page 15 |
| | | Rev.4 | | | | | | Page total 38 |

12.9 / L3
12.9 / L2
12.9 / L1

-F6
SIE
5SJ4310
7HG42
3*10A

-T2
CAG
INPUT:3*460
OUTPUT:220V
6kVA,50-60,HZ

460V 460V 40V

INPUT
3*460V
7,53A

OUTPUT
3*220V
15,76A

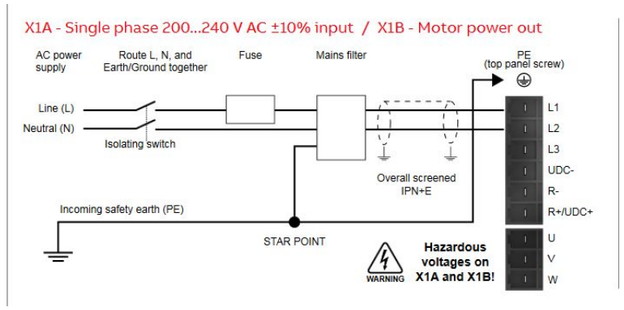
220V 220V 220V

-F7
SIEMENS
5SJ4316-7HG42
3*16A

-PE:1

PE L1 L2 L3

X1A




-DRV2
/18.0
/19.0
/20.4
/21.0
ABB
MFE190
04UN
09A0-2

MFE190-04UN-09A0-2

X1B

U1 V1 W1 PE UDC- R- R+/UDC+

X2

0V 24V+

RED WHITE BLACK

U1 V1 W1

-M1
BSM80R
340MT

M
3~

PE

-R20
1 2
1000W 50 OHM

49

15.1 / DRV2:24V-)-X6:2/Ü

48

14.1 / DRV2:24V+)-X5:2/Ü

15

17

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| | | Rev.1 | | PIPE CUTTING UNIT | | | TABLE SERVO DRIVER CONNECTIONS (1) | = PIPE CUTTING UNIT |
| | | Rev.2 | | | | | | + |
| | | Rev.3 | | | | | | Page 16 |
| | | Rev.4 | | | | | | Page total 38 |

20 10B1 112

3AXD50000048603

-MC
ABB
MFE190
MU-OCU
N8020
E190 MINT

MFE190-MU
OCU+N8020

MFE190-MU-OCU+N8020, E190 MINT

M1
MEMORY UNIT

Memory unit

Stores firmware, parameters and Mint programs, and defines drive features:

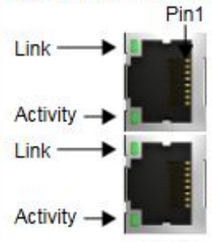
3AXD50000048603: MFE190-MU-OCU+N8020

**CAUTION!**
Do not insert or remove the memory unit while the drive is powered.

E2 IN

E1 OUT

E1 & E2 - Ethernet fieldbus

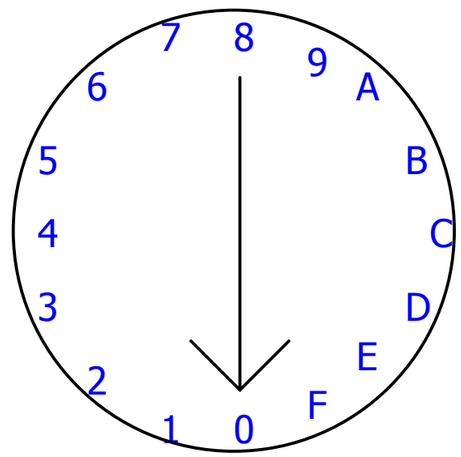



| | |
|---|---|
| 1 | TX+ |
| 2 | TX- |
| 3 | RX+ |
| 4 | (NC) |
| 5 | (NC) |
| 6 | RX- |
| 7 | (NC) |
| 8 | (NC) |

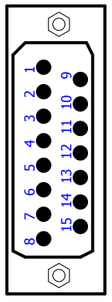
NET RUN

NET ERR

DRIVE STATUS

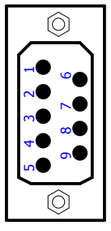



X8




| | |
|---|---|
| 1-CHA+ | 9-CHA- |
| 2-CHB+ | 10-CHB- |
| 3-CHZ+ | 11-CHZ- |
| 4-(NC) | 12 +5,5V out |
| 5-Hall U- | 13-DGND |
| 6-Hall U+ | 14-Hall W- |
| 7-Hall V- | 15-Hall W+ |
| 8-Hall V+ | |

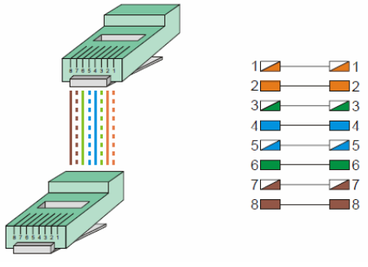
X7




| | |
|---|---|
| 1-CHA+ | 6-CHA- |
| 2-CHB+ | 7-CHB- |
| 3-CHZ+ | 8-CHZ- |
| 4-(NC) | 9 +5V out |
| 5-GND | |

5V 8V

Orange-White
Orange
Green-White
Blue
Blue-White
Green
BROWN-White
Brown

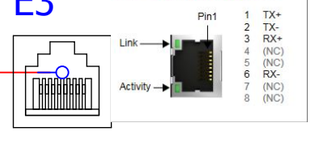




23.3 / DRV2:E3-F21:ethernet

E3

E3 - Ethernet: host PC






| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| | | Rev.1 | | PIPE CUTTING UNIT | | | TABLE SERVO DRIVER CONNECTIONS (2) | = PIPE CUTTING UNIT |
| | | Rev.2 | | | | | | + |
| | | Rev.3 | | | | | | Page 17 |
| | | Rev.4 | | | | | | Page total 38 |

20 10B1 112

-DRV2
/16.3
ABB
MFE190
04UN
09A0-2

# X3 Input/Output

| 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 |
|---|---|---|---|---|---|---|---|---|---|
| status-DO0- | DO2- | DO1- | DI2- | DI3- | DI1- | DI0- | AGND | AIO- | Shideld |
| 50 | 51 | 52 | 53 | 54 | 55 | 56 | | | |
| DRV2:1-X5:1/A | SERVO READY | SENKRON READY | DRV2:4-X6:1/A | DRV2:5-X6:2/A | DRV2:6-X6:3/A | DRV2:7-X6:4/A | | | |
| 14.0 | 26.7 | 26.8 | 15.0 | 15.1 | 15.1 | 15.2 | | | |

## X3/Input Output

1
2
3
4
5
6
7
8
9
10

## X3 - Input / output


| | | | |
|---|---|---|---|
| 1 | Status- / DO0- | 11 | Status+ / DO0+ |
| 2 | DO2- | 12 | DO2+ |
| 3 | DO1- | 13 | DO1+ |
| 4 | DI2- | 14 | DI2+ |
| 5 | DI3- | 15 | DI3+ |
| 6 | DI1- | 16 | DI1+ |
| 7 | DI0- | 17 | DI0+ |
| 8 | AGND | 18 | AO0 |
| 9 | AI0- | 19 | AI0+ |
| 10 | Shield | 20 | Shield |

17 19

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| | | Rev.1 | | PIPE CUTTING UNIT | | | TABLE SERVO DRIVER CONNECTIONS (3) |
| | | Rev.2 | | | | | + |
| | | Rev.3 | | | | | Page 18 |
| | | Rev.4 | | | | | Page total 38 |

= PIPE CUTTING UNIT

20 10B1 112

-DRV2
/16.3
ABB
MFE190
04UN
09A0-2

# X3 Input/Output

11 status-/DO0+
12 DO2+
13 DO1+
14 DI2+
15 DI3+
16 DI1+
17 DI0+
18 AO0
19 AI0+
20 Shideld

## X3/Input Output

11
12
13
14
15
16
17
18
19
20


12 → 61 → 14.1 / DRV2:12-X5:2/A

13 → 62 → 14.1 / DRV2:13-X5:3/A

14 → 84 → CUT OVER
12 14 -R10 /27.5 TRS 24VDC 1CO 11
83 → 14.5 / R10:11-X5:11/Ü

15 → 65 → -X2 7 TABLE FOREMOST
3 -SW7 XCK P2102P16 4
-X2 6
64 → 14.2 / X2:6/Ü-X5:4/Ü

16 → DI1+ → MANUAL CUTTING SAW
X7:1-X5:3/Ü / 14.1
81 → -X7 1
82 → 2
MANUAL CUTTING SAW

17 → 69 → -X2 9 TABLE PROBE
3 -SW8 XCK P2102P16 4
-X2 8
68 → 14.2 / X2:8/Ü-X5:5/Ü

20 → DI1:22-X2:9/Ü / 26.3

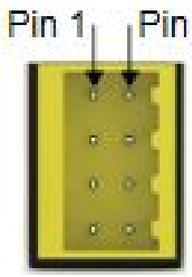


| | | | | | | | |
|---|---|---|---|---|---|---|---|
| | | Rev.1 | | PIPE CUTTING UNIT | | | CUTTING MOTOR DRIVER CONNECTIONS (2) |
| | | Rev.2 | | | | | |
| | | Rev.3 | | | | | |
| | | Rev.4 | | | | | |

= PIPE CUTTING UNIT
+
Page 19
Page total 38

20 10B1 112

# X4 - Safe Torque Off (STO)




| | | | |
|---|---|---|---|
| 1 | STO1 | 5 | STO1 |
| 2 | STO2 | 6 | STO2 |
| 3 | SGND | 7 | SGND |
| 4 | 24V out | 8 | 24V out |

The 24 V output is for
powering the STO inputs only.
See user manual for wiring.

ABB
MFE190
04UN
09A0-2
/16.3
-DRV2

## X4 Safe Torque off

1 STO1 — STO1 5
70 SYSTEM START OK → DRV2:X4:5-K102:24 / 28.9

2 STO2 — STO2 6
70 SYSTEM START OK → DRV2:X4:6-K102:24 / 28.9

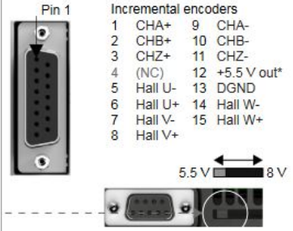
3 SGND — SGND 7

4 24 V out — 24 V out 8
80 → DRV2:X4:8-K02:23 / 28.9



| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| | | Rev.1 | | PIPE CUTTING UNIT | | | CUTTING MOTOR DRIVER CONNECTIONS (3) | = PIPE CUTTING UNIT |
| | | Rev.2 | | | | | | + |
| | | Rev.3 | | | | | | Page 20 |
| | | Rev.4 | | | | | | Page total 38 |

## X8 - Feedback in (Enc 0)




**Incremental encoders**

| | | | |
|---|---|---|---|
| 1 | CHA+ | 9 | CHA- |
| 2 | CHB+ | 10 | CHB- |
| 3 | CHZ+ | 11 | CHZ- |
| 4 | (NC) | 12 | +5.5 V out* |
| 5 | Hall U- | 13 | DGND |
| 6 | Hall U+ | 14 | Hall W- |
| 7 | Hall V- | 15 | Hall W+ |
| 8 | Hall V+ | | |

**EnDat 2.1**

| | | | |
|---|---|---|---|
| 1 | Data+ | 9 | Data- |
| 2 | Clock+ | 10 | Clock- |
| 3 | (NC) | 11 | (NC) |
| 4 | (NC) | 12 | +5.5 V out* |
| 5 | Sin- | 13 | DGND |
| 6 | Sin+ | 14 | (NC) |
| 7 | Cos- | 15 | (NC) |
| 8 | Cos+ | | |

**SinCos**

| | | | |
|---|---|---|---|
| 1 | (NC) | 9 | (NC) |
| 2 | (NC) | 10 | (NC) |
| 3 | (NC) | 11 | (NC) |
| 4 | (NC) | 12 | +5.5 V out* |
| 5 | Sin- | 13 | DGND |
| 6 | Sin+ | 14 | (NC) |
| 7 | Cos- | 15 | (NC) |
| 8 | Cos+ | | |

* Max. combined current from X8 pin 12 and X7 pin 9 is 500 mA

**BiSS, SSI or EnDat 2.2**

| | | | |
|---|---|---|---|
| 1 | Data+ | 9 | Data- |
| 2 | Clock+ | 10 | Clock- |
| 3 | (NC) | 11 | (NC) |
| 4 | (NC) | 12 | +5.5 V out* |
| 5 | (NC) | 13 | DGND |
| 6 | (NC) | 14 | (NC) |
| 7 | (NC) | 15 | (NC) |
| 8 | (NC) | | |

**Smart Abs**

| | | | |
|---|---|---|---|
| 1 | Data+ | 9 | Data- |
| 2 | (NC) | 10 | (NC) |
| 3 | (NC) | 11 | (NC) |
| 4 | (NC) | 12 | +5.5 V out* |
| 5 | (NC) | 13 | DGND |
| 6 | (NC) | 14 | (NC) |
| 7 | (NC) | 15 | (NC) |
| 8 | (NC) | | |

**(Enc 2)†**

**Extra incremental encoder**

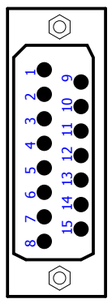
| | | | |
|---|---|---|---|
| 1 | (NC) | 9 | (NC) |
| 2 | (NC) | 10 | (NC) |
| 3 | (NC) | 11 | (NC) |
| 4 | (NC) | 12 | +5.5 V out* |
| 5 | CHA- | 13 | DGND |
| 6 | CHA+ | 14 | CHZ- |
| 7 | CHB- | 15 | CHZ+ |
| 8 | CHB+ | | |

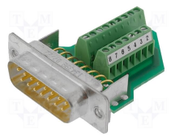
**Hiperface**

| | | | |
|---|---|---|---|
| 1 | Data+ | 9 | Data- |
| 2 | (NC) | 10 | (NC) |
| 3 | (NC) | 11 | (NC) |
| 4 | (NC) | 12 | +8 V out* |
| 5 | Sin- | 13 | DGND |
| 6 | Sin+ | 14 | (NC) |
| 7 | Cos- | 15 | (NC) |
| 8 | Cos+ | | |

* X8 pin 12 provides a 5.5 V or 8-12 V supply for feedback devices that require power. The maximum combined current from all encoder supplies (X8 pin 12 and X7 pin 9) is 500 mA.
**WARNING!** The 8-12 V supply is provided for devices on X8 that require this voltage. Move the switch towards the rear of the drive to select 8-12 V output. Selecting the wrong voltage could damage your feedback device.

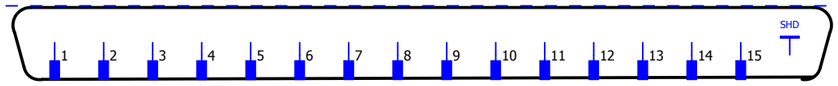
An extra incremental encoder can be connected simultaneously with BiSS, SSI, EnDat 2.2, or Smart Abs. Use OPT-MF-200 Encoder Breakout for easy connection of both inputs.
Use OPT-MF-200 in conjunction with OPT-MF-201 Resolver Adapter to allow simultaneous connection of a resolver (Enc 0) and an incremental encoder (Enc 2). † See note for X7.



-ENC1
5V+
0V
A/
A
BROWN
BLACK
GREEN
Blue

-DSUP
PXC
1688078
1688078




PHOENIX CONTACT

-DRV2
/16.3
ABB
MFE190
04UN
09A0-2

| | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 6 | 5 | 7 | 8 | 12 | 13 | 3 | 4 | 14 | 15 | 11 | 10 | 9 | 2 | 1 |
| Hall U+ | Hall U- | Hall V- | Hall V+ | +5.5V out* | DGND | CHZ+ | (NC) | Hall W- | Hall W+ | CHZ- | CHB- | CHA- | CHB+ | CHA+ |

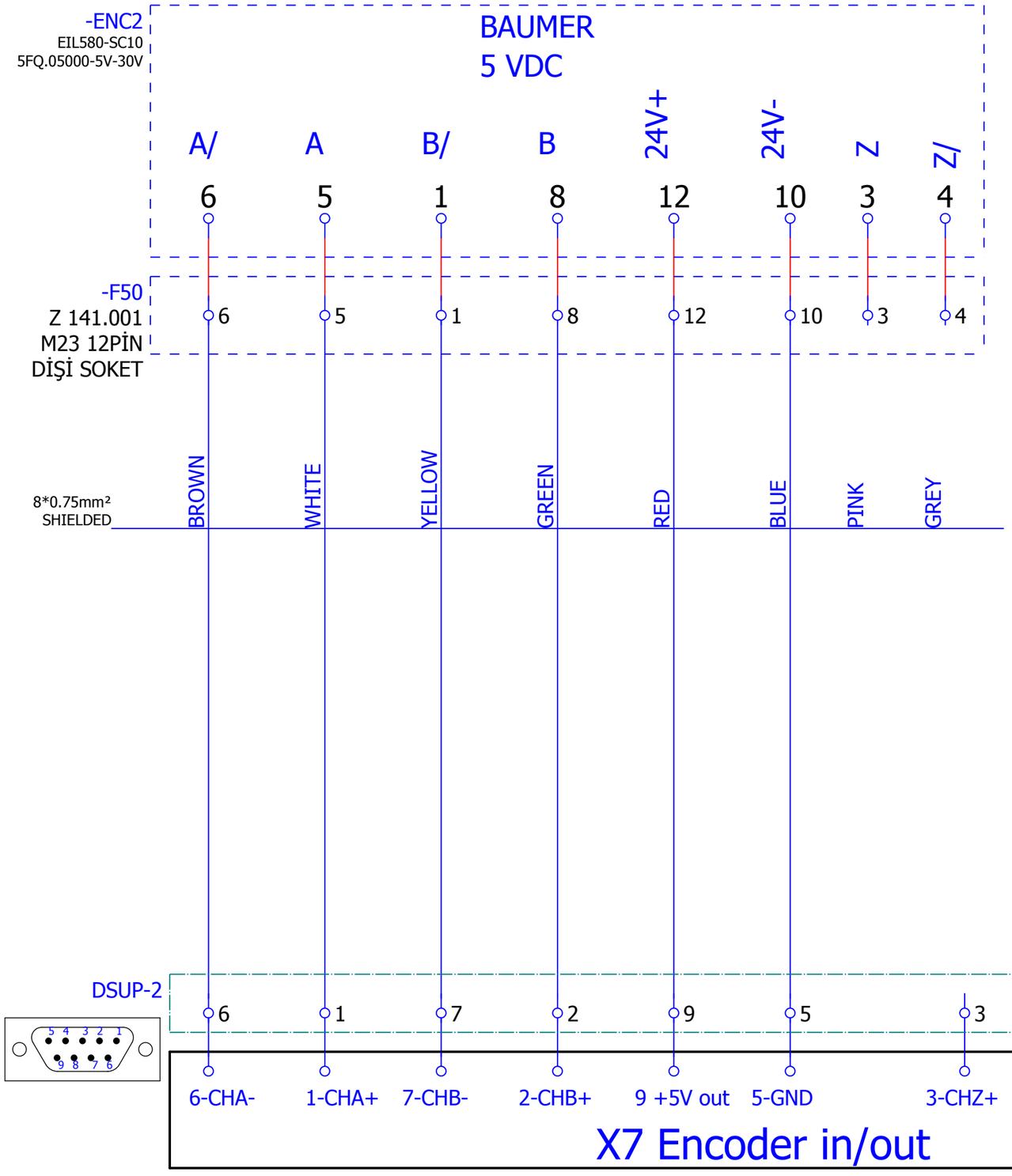
# X8 Feedback in (ENC O )



| | | | | | | | |
|---|---|---|---|---|---|---|---|
| | | Rev.1 | | PIPE CUTTING UNIT | | | ENCODER CONNECTION 1 |
| | | Rev.2 | | | | | |
| | | Rev.3 | | | | | |
| | | Rev.4 | | | | | |

= PIPE CUTTING UNIT
+
Page 21
Page total 38

20 10B1 112



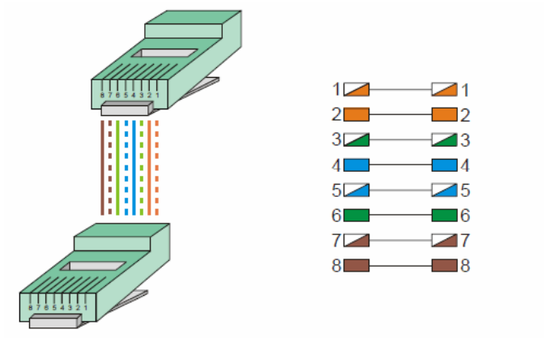

## X7 Encoder in / out†

Pin 1

| | | | |
|---|---|---|---|
| 1 | CHA+ | 6 | CHA- |
| 2 | CHB+ | 7 | CHB- |
| 3 | CHZ+ | 8 | CHZ- |
| 4 | (NC) | 9 | +5 V out* |
| 5 | GND | | |

† X7 can be configured as an input (Enc 2) or output (Enc 0). If X7 is configured as an input, the extra incremental encoder input on X8 cannot be used.

DRV2:E3-F21:ethernet / 17.6



Orange-White
Orange
Green-White
Blue
Blue-White
Green
BROWN-White
Brown

PP:X1:1-X5:13/A / 14.6
PP:X1:3-X6:13/A / 15.6
PP:2X2-BR1:11X2X_HI / 25.1
PP:X2XT-BR1:22:X2X_GND / 25.2
PP:X2/-BR1:21:X2X_LO / 25.2
BR1:SH-PP:SHLD / 25.3

PE
PE

3*0.75mm²
SHIELDED
br gn ws

BROWN
GREEN
WHITE

4*0.75mm² CAN
SHIELDED
br gn ws

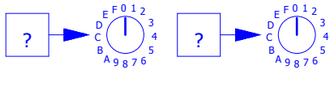
BROWN
GREEN
WHITE

PP-1
IF3 1 CAN_H CAN_H
IF3 2 CANGND CANGND
IF3 3 CAN_L CAN_L
IF3 4 SH SH
CAN

4PP065.IF23-1

-PP
BuR
4PP065.0571
P74F

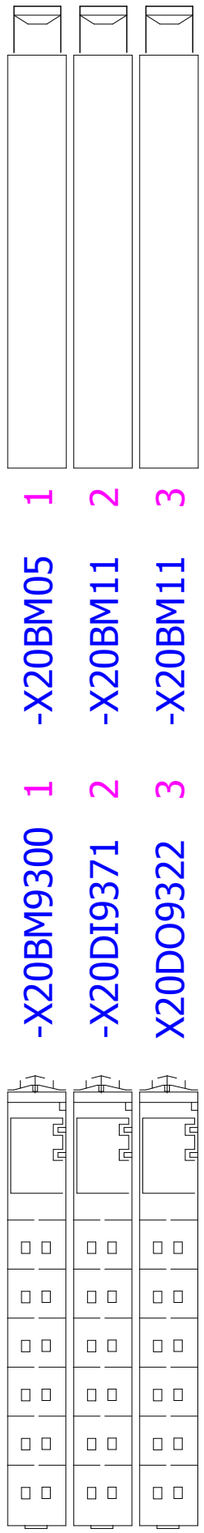
X1 1 VDC VDC
X1 2 PE PE
X1 3 GND GND
PE:
IF5 1 ETH ETH
1 2X2 2X2
2 2X2T 2X2T
3 2X2/ 2X2/
4 SHLD SHLD
IF6 1 USB1 USB1
IF7 1 USB2 USB2
IF4 1 EPL EPL
USB

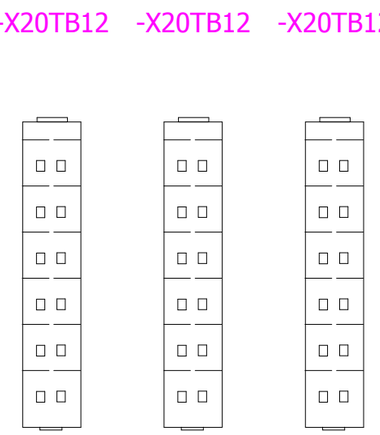


4PP065.0571-P74F



| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| | | Rev.1 | | PIPE CUTTING UNIT | | | CONTROL PANEL | = PIPE CUTTING UNIT |
| | | Rev.2 | | | | | | + |
| | | Rev.3 | | | | | | Page 23 |
| | | Rev.4 | | | | | | Page total 38 |






| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| | | Rev.1 | | PIPE CUTTING UNIT | | | MODULE OVERVIEW | = PIPE CUTTING UNIT |
| | | Rev.2 | | | | | | + |
| | | Rev.3 | | | | | | Page 24 |
| | | Rev.4 | | | | | | Page total 38 |

-BR1
BuR
X20BR9300

X20BR9300 — X20 bus receiver X2X Link,with feed for internal I/O supply,X2X Link bus supply,X20AC0SL1/X20AC0SR1 X20 end plates left and right included

| X2X | X2X/ | X2XGND | n.c. | n.c. | n.c. | n.c. | n.c. | n.c. | VDCIO | n.c. | GND |
|---|---|---|---|---|---|---|---|---|---|---|---|
| X2X | X2X/ | X2XGND | n.c. | n.c. | n.c. | n.c. | n.c. | n.c. | VDCIO | n.c. | GND |
| 11 X1 | 21 X1 | 22 X1 | 12 X1 | 13 X1 | 23 X1 | 14 X1 | 24 X1 | 15 X1 | 25 X1 | 16 X1 | 26 X1 |

BROWN
WHITE
GREEN

4*1*0.22mm²
CAN CABLE
br ws gn

100
101


23.4 / PP:2X2-BR1:11X2X_HI
23.4 / PP:X2/-BR1:21:X2X_LO
23.4 / PP:X2XT-BR1:22:X2X_GND
23.4 / BR1:SH-PP:SHLD
14.3 / BR1:14:24:15:25-X5:6/A
15.3 / BR1:26:16-X6:6/A



| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| | | Rev.1 | | PIPE CUTTING UNIT | | | X20BR9300 MODULE | = PIPE CUTTING UNIT |
| | | Rev.2 | | | | | | + |
| | | Rev.3 | | | | | | Page 25 |
| | | Rev.4 | | | | | | Page total 38 |

# -DI1

BuR
X20DI9371

## X20DI9371 — X20 digital input module, 12 inputs, 24VDC, sink, configurable input filter, 1-wire connection

| -K02:34 DigitalInput01 | -SW9 DigitalInput02 | -SW10 DigitalInput03 | -SW8:3 DigitalInput04 | -Q1:14 DigitalInput05 | DigitalInput06 | DigitalInput07 | -SW12 DigitalInput08 | -DRV2:2 DigitalInput09 | -DRV2:3 DigitalInput10 | DigitalInput11 | DigitalInput12 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| DI-01 | DI-02 | DI-03 | DI-04 | DI-05 | DI-06 | DI-07 | DI-08 | DI-09 | DI-10 | DI-11 | DI-12 |
| 11 X1 | 21 X1 | 12 X1 | 22 X1 | 13 X1 | 23 X1 | 14 X1 | 24 X1 | 15 X1 | 25 X1 | 16 X1 | 26 X1 |

### SYSTEM START OK
105
28.8 / DI1:11-K02:34

### SAW TOP PROBE
108
-X2 12
BLACK
-SW9 WIN KT-50 RP-QD
BROWN
-X2 10
106
14.3 / X2:10-X5:6/Ü
BLUE
-X2 11
107
15.3 / X2:11-X6:7/Ü

### SAW FOREMOST
111
-X2 15
BLACK
-SW10 WIN KT-50 RP-QD
BROWN
-X2 13
109
14.2 / X2:13-X5:4/A
BLUE
-X2 14
110
15.2 / X2:12-X6:5/Ü

### TABLE PROBE
69
19.9 / DI1:22-X2:9/Ü

### SAW FAULT
132
14
-Q1 /9.2 SE GVAE11
13
131
14.4 / Q1:13-X5:8/A

### CLAMPING SENSOR
138
-X2 20
BLACK
-SW12 WIN KT-50 RP-QD
BROWN
-X2 18
136
14.4 / X2:18-X5:8/Ü
BLUE
-X2 19
137
15.4 / X2:19-X6:8/Ü

### SERVO READY
51
18.2 / DRV2:2-DI1:15

### SENKRON READY
52
18.3 / DRV2:3-DI1:25

25 27

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| | | Rev.1 | | PIPE CUTTING UNIT | | | X20DI9371 MODULE 1 | = PIPE CUTTING UNIT |
| | | Rev.2 | | | | | | + |
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-DO1
BuR
X20DO9322

X20DO9322 X20 digital output module, 12 outputs, 24VDC, 0.5A, source, 1-wire connection

| -R3:A1 DigitalOutput01 | DigitalOutput02 | -R5:A1 DigitalOutput03 | -R6:A1 DigitalOutput04 | -R7:A1 DigitalOutput05 | -R9:A1 DigitalOutput06 | -R10:A1 DigitalOutput07 | -AL1 DigitalOutput08 | -AL1 DigitalOutput09 | -AL1 DigitalOutput10 | DigitalOutput11 | DigitalOutput12 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| DO-01 | DO-02 | DO-03 | DO-04 | DO-05 | DO-06 | DO-07 | DO-08 | DO-09 | DO-10 | DO-11 | DO-12 |
| 11 X1 | 21 X1 | 12 X1 | 22 X1 | 13 X1 | 23 X1 | 14 X1 | 24 X1 | 15 X1 | 25 X1 | 16 X1 | 26 X1 |

122 SAW CONTACTOR
124 CUTTING VALVE
127 CLAMPING VALVE
151 OVERTURNING VALVE
152 SYSTEM START
153 CUT OVER
RED WARNING LAMP
GREEN LAMP
Horn

A1 -R3 TRS 24VDC 1CO A2
A1 -R5 TRS 24VDC 1CO A2
A1 -R6 TRS 24VDC 1CO A2
A1 -R7 TRS 24VDC 1CO A2
A1 -R9 TRS 24VDC 1CO A2
A1 -R10 TRS 24VDC 1CO A2

121
15.3 / R3:A2-X6:7/A

14 12 11 /29.1
14 12 11 /29.4
14 12 11 /29.6
14 12 11 /29.8
14 12 11 /28.6
14 12 11 /19.4

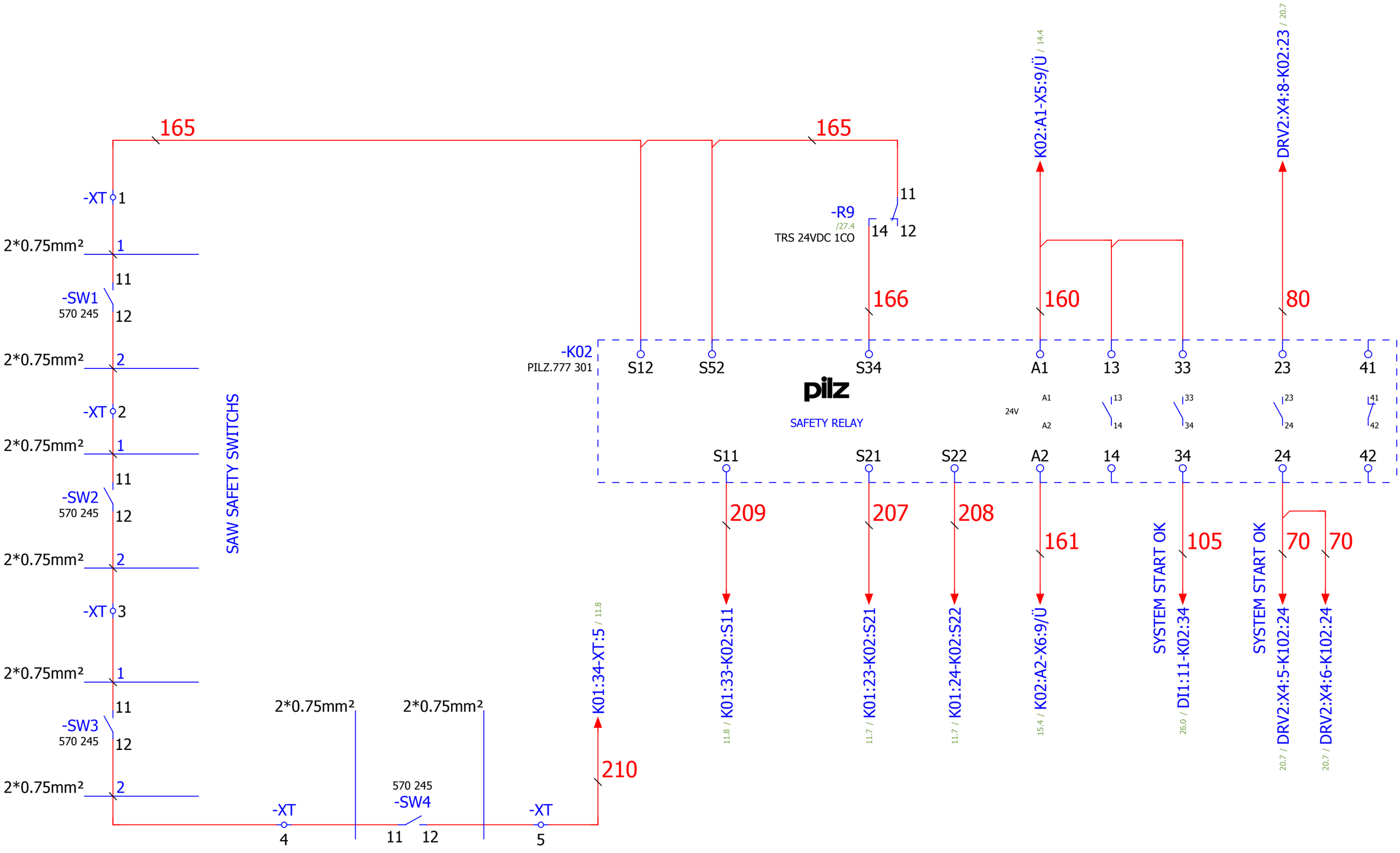
Red Violet Gray

-AL1
MENICS
PTE-AGB-302
RYG-B
RED GREEN HORN

BLACK
13.6 / AL1:N-X4:2/A



| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| | | Rev.1 | | PIPE CUTTING UNIT | | | X20DO9322 MODULE | = PIPE CUTTING UNIT |
| | | Rev.2 | | | | | | + |
| | | Rev.3 | | | | | | Page 27 |
| | | Rev.4 | | | | | | Page total 38 |

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| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| | | Rev.1 | | PIPE CUTTING UNIT | | | SAW CONTROL | = PIPE CUTTING UNIT |
| | | Rev.2 | | | | | | + |
| | | Rev.3 | | | | | | Page 28 |
| | | Rev.4 | | | | | | Page total 38 |

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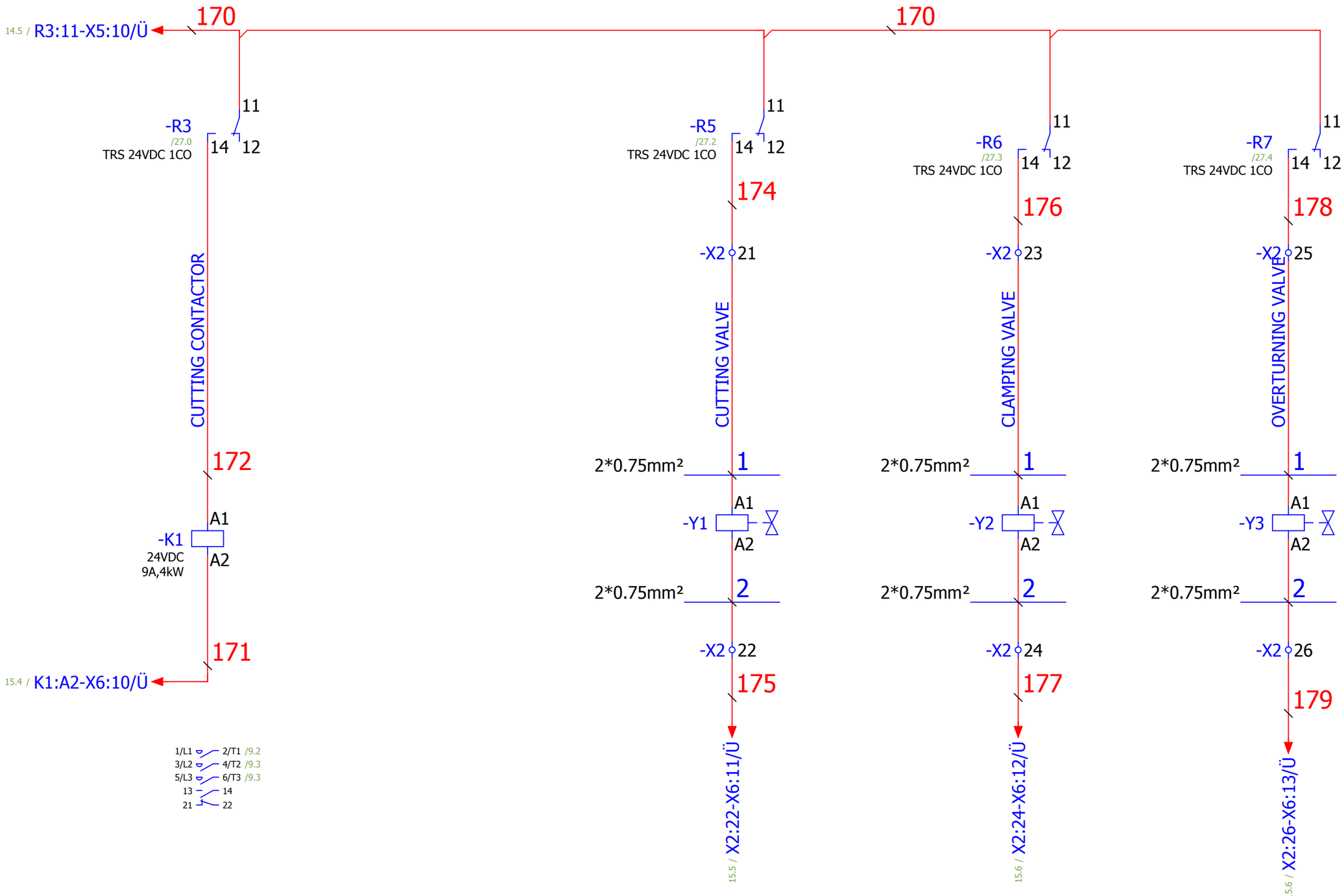


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30

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|---|---|---|---|---|---|---|---|---|
| | | Rev.1 | | PIPE CUTTING UNIT | | | SAW CONTROL | = PIPE CUTTING UNIT |
| | | Rev.2 | | | | | | + |
| | | Rev.3 | | | | | | Page 29 |
| | | Rev.4 | | | | | | Page total 38 |

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# Parts list

| Device Designation<br>Schematic / position | Quantity | Designation | Type number<br>Order number | Manufacturer<br>Supplier | Part number<br>Function text | ERP number |
|---|---|---|---|---|---|---|
| -AL1<br>/27.6 | 1 | Warning Lamp, 24V ac/DC | PTE-AGB-302-RYG-B<br>PTE-AGB-302-RYG-B | MENICS<br>MENICS | MENICS.PTE-AGB-302-RYG-B | 844 04 302 001 089 |
| -AL1<br>/27.6 | 1 | Warning Lamp Base | MAP-DS30-BLK<br>MAP-DS30-BLK | MENICS<br>MENICS | MENICS.MAP-DS30-BLK | 844 04 030 001 089 |
| -BR1<br>/25.1 | 1 | Module, Bus Receiver | X20BR9300<br>X20BR9300 | BuR<br>BuR | BuR.X20BR9300 | 804 50 093 000 017 |
| -BR1<br>/25.1 | 1 | Module, Power Bus Seperation | X20BM01<br>X20BM01 | BuR<br>BuR | BuR.X20BM01 | 804 50 001 001 017 |
| -BR1<br>/25.1 | 1 | Module, Standart Terminal Block 12x | X20TB12<br>X20TB12 | BuR<br>BuR | BuR.X20TB12 | 804 50 012 000 017 |
| -DI1<br>/26.0 | 1 | Module, Digital Input 12xI | X20DI9371<br>X20DI9371 | BuR<br>BuR | BuR.X20DI9371 | 804 50 093 710 017 |
| -DI1<br>/26.0 | 1 | Module, Power Bus Connection | X20BM11<br>X20BM11 | BuR<br>BuR | BuR.X20BM11 | 804 50 011 000 017 |
| -DI1<br>/26.0 | 1 | Module, Standart Terminal Block 12x | X20TB12<br>X20TB12 | BuR<br>BuR | BuR.X20TB12 | 804 50 012 000 017 |
| -DO1<br>/27.0 | 1 | Module, Digital Output 12xO | X20DO9322<br>X20DO9322 | BuR<br>BuR | BuR.X20DO9322 | 804 50 093 220 017 |
| -DO1<br>/27.0 | 1 | Module, Power Bus Connection | X20BM11<br>X20BM11 | BuR<br>BuR | BuR.X20BM11 | 804 50 011 000 017 |
| -DO1<br>/27.0 | 1 | Module, Standart Terminal Block 12x | X20TB12<br>X20TB12 | BuR<br>BuR | BuR.X20TB12 | 804 50 012 000 017 |
| -DRV2<br>/16.3 | 1 | Driver, 2kW | MFE190-04UN-09A0-2<br>3AXD50000038569 | ABB<br>ABB | ABB MFE190-04UN-09A0-2 Servo Driver | 802 02 190 001 001 |
| -DSUP<br>/21.0 | 1 | D-SUB contact insert | 1688078<br>1688078 | PXC<br>PXC | PXC.1688078 | 856 01 015 001 107 |
| -ENC2<br>/22.1 | 1 | ENCODER 5000PULS 5-30 VDC | EIL580-SC10.5FQ.05000.A<br>EIL580-SC10.5FQ.05000.A | BAUMER<br>BAUMER | BAUMER.EIL580-SC10.5FQ.05000.A | 858 05 500 001 014- |
| -ENC2<br>/22.1 | 1 | 10*10,METAL KAPLİN | 10*10,METAL KAPLİN<br>10*10,METAL KAPLİN | BAUMER<br>BAUMER | BAUMER.10*10,METAL KAPLİN | 858 51 010 001 014 |
| -F1<br>/8.3 | 1 | CIRCUIT BREAKER,2*6A | 5SJ4206-7HG41,2*6A<br>5SJ4206-7HG41 | SIE<br>SIE | SIE.5SJ4206-7HG41,2*6A | 838 02 006 002 003 |
| -F2<br>/8.1 | 1 | CIRCUIT BREAKER,2*4A | 5SJ4204-7HG41<br>5SJ4204-7HG41 | SIE<br>SIE | SIE.5SJ4204-7HG41 | 838 02 004 002 003 |
| -F3<br>/8.1 | 1 | | 1492<br>1492-RCDA2A25 | | A-B.1492-RCDA2A25 | 834 08 025 001 118 |
| -F4<br>/8.3 | 1 | | 5SJ4201-7HG41,2P,1A<br>5SJ4201-7HG41 | SIE<br>SIE | SIE.5SJ4201-7HG41,2P,1A | 838 02 001 002 003 |



| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| | | Rev.1 | | PIPE CUTTING UNIT | | | PART LIST | = PIPE CUTTING UNIT |
| | | Rev.2 | | | | | | + |
| | | Rev.3 | | | | | | Page 30 |
| | | Rev.4 | | | | | | Page total 38 |

# Parts list

| Device Designation<br>Schematic / position | Quantity | Designation | Type number<br>Order number | Manufacturer<br>Supplier | Part number<br>Function text | ERP number |
|---|---|---|---|---|---|---|
| -F5<br>/12.2 | 1 | Miniature Circuit Breaker | 5SJ4303-7HG42-3A<br>5SJ4303-7HG42 | SIE<br>SIE | SIE.5SJ4303-7HG42 | 838 02 003 003 003 |
| -F6<br>/16.1 | 1 | CIRCUIT BREAKER,3*10A | 5SJ4310-7HG42,3*10A<br>5SJ4310-7HG42 | SIE<br>SIE | SIE.5SJ4310-7HG42,3*10A | 838 02 010 003 003 |
| -F6<br>/5.4 | 1 | CIRCUIT BREAKER,3*25A | 5SJ4325-7HG42,3*25A<br>5SJ4325-7HG42 | SIE<br>SIE | SIE.5SJ4325-7HG42,3*25A | 838 02 025 003 003 |
| -F7<br>/16.1 | 1 | Miniature Circuit Breaker,3*16A | 5SJ4316-7HG42-3*16A<br>5SJ4316-7HG42 | SIE<br>SIE | SIE.5SJ4316-7HG42,3*16A | 838 02 016 003 003 |
| -F7<br>/5.4 | 1 | Miniature Circuit Breaker | 5SJ4303-7HG42-3A<br>5SJ4303-7HG42 | SIE<br>SIE | SIE.5SJ4303-7HG42 | 838 02 003 003 003 |
| -F50<br>/22.1 | 1 | Z 141.001,M23 12PİN DİŞİ SOKET | Z 141.001,M23 12PİN DİŞİ SOKET<br>Z 141.001,M23 12PİN DİŞİ SOKET | BAUMER<br>BAUMER | BAUMER.Z 141.001,M23 12PİN DİŞİ SOKET | 856 01 023 001 014 |
| -K1<br>/29.1 | 1 | Kontaktör TeSys LC1-D - 3P - AC-3 440V 9 A, Bobin 24 V DC 1NO 1NC | LC1-D 3P 9A<br>LC1D09BD | SE<br>SE | SE.LC1D09BD | 832 01 009 002 012 |
| -K01<br>/11.2 | 1 | Safety Relay | PNOZ X2.8P 24Vac/dc 3NO, 1NC<br>777 301 | PILZ<br>PILZ | PILZ.777 301 | 834 04 777 001 057 |
| -K02<br>/28.4 | 1 | Safety Relay | PNOZ X2.8P 24Vac/dc 3NO, 1NC<br>777 301 | PILZ<br>PILZ | PILZ.777 301 | 834 04 777 001 057 |
| -K100<br>/11.6 | 1 | Contactor | LC1-D 3P 18A<br>LC1D18BD | SCHNEIDER<br>Schneider | SE.LC1D18BD | 832 01 018 001 012- |
| -KP<br>/7.9 | 1 | 350*500*1500 | 350*500*1500<br>350*500*1500 | HUZUR<br>HUZUR | HUZUR.350*500*1500,MTT,200 | 814 05 150 002 025 |
| -KP<br>/7.9 | 2 | TAPE FLEXIBLE CONNECTION BAR | 10*02mm (30cm)<br>10*02mm (30cm) | TSE<br>TSE | TSE.10*02mm (30cm) | 866 04 300 001 128 |
| -KP<br>/7.9 | 2 | Relay | TRS 24VDC 1CO<br>1122770000 | WEI<br>WEI | WEI.TRS 24VDC 1CO | 834 03 112 001 019 |
| -M1<br>/16.4 | 1 | 2,9 NM 2900 rpm (ENCODER) | BSM80R-340MT<br>BSM80R-340MT | ABB<br>ABB | ABB.BSM80R-340MT | 800 03 080 001 001 |
| -M2<br>/9.2 | 1 | M2AA 100L6C,1.5KW,1000 RPM,Three-Phase Motor | M2AA 100L6C,1.5KW,1000 RPM<br>M2AA 100L6C,1.5KW,1000 RPM | ABB<br>ABB | ABB.M2AA 100L6C,1.5KW,1000 RPM | 800 02 001 501 001 |
| -M4<br>/8.3 | 1 | Hill Fan | PFF6000<br>PFF6000 | PLASTİM<br>PLASTİM | PLAS.PFF6000 | 824 01 600 001 037 |
| -M4<br>/8.3 | 1 | Cover Filter | PFI2500<br>PFI2500 | PLASTIM<br>PLASTIM | PLAS.PFI2500 | 824 50 250 001 037 |
| -MC<br>/17.0 | 1 | MEMORY CARD | MFE190-MU-OCU+N8020,  E190 MINT<br>3AXD50000048603 | ABB<br>ABB | ABB MFE190-MU-OCU+N8020,  E190 MINT | 802 80 190 001 001 |
| -PP<br>/23.0 | 1 | 4PP065.0571-P74F | 4PP065.0571-P74F<br>4PP065.0571-P74F | BuR<br>BuR | BuR.4PP065.0571-P74F | 804 01 065 001 017 |

# Parts list

| Device Designation<br>Schematic / position | Quantity | Designation | Type number<br>Order number | Manufacturer<br>Supplier | Part number<br>Function text | ERP number |
|---|---|---|---|---|---|---|
| -PP<br>/23.0 | 1 | COMPACT FLASH | 5CFCRD.0512-03<br>5CFCRD.0512-03 | BuR<br>BuR | BuR.5CFCRD.0512-03 | 804 52 512 000 017 |
| -PP<br>/23.0 | 1 | TERMINAL BLOCK | 0TB103.91<br>0TB103.91 | BuR<br>BuR | BuR.0TB103.91 | 804 50 103 910 017 |
| -PP<br>/23.0 | 2 | TERMINAL BLOCK | 0TB104.91<br>0TB103.91 | BuR<br>BuR | BuR.0TB104.91 | 804 50 104 910 017 |
| -PP-1<br>/23.7 | 1 | 4PP065.IF23-1 | 4PP065.IF23-1<br>4PP065.IF23-1 | BuR<br>BuR | BuR.4PP065.IF23-1 | 804 52 023 100 017 |
| -Q0<br>/7.1 | 1 | Paco Circuit Breaker,63A | OT63F4N2<br>1SCA105365R1001 | ABB<br>ABB | ABB.OT63F4N2- | 830 02 063 001 001-1 |
| -Q0<br>/7.1 | 1 | Paco Circuit Breaker Lever | OHYS2AJ<br>1SCA105296R1001 | ABB<br>ABB | ABB.OHYS2AJ | 830 52 002 001 001 |
| -Q0<br>/7.1 | 1 | Paco Circuit Breaker Metal Extension | OXS6X330<br>1SCA101661R1001 | ABB<br>ABB | ABB.OXS6X330 | 830 52 330 001 001 |
| -Q1<br>/9.2 | 1 | Motor Overload Switch,2,5-4A | GV2ME08<br>GV2ME08 | SE<br>SE | SE.GV2ME08 | 830 03 004 001 012 |
| -Q1<br>/26.4 | 1 | Motor Overload Switch Auxiliary Contact | GVAE11<br>GVAE11 | SE<br>SE | SE.GVAE11 | 830 53 001 002 012 |
| -R3<br>/27.0 | 1 | Relay | TRS 24VDC 1CO<br>1122770000 | WEI<br>WEI | WEI.TRS 24VDC 1CO | 834 03 112 001 019 |
| -R5<br>/27.2 | 1 | Relay | TRS 24VDC 1CO<br>1122770000 | WEI<br>WEI | WEI.TRS 24VDC 1CO | 834 03 112 001 019 |
| -R6<br>/27.3 | 1 | Relay | TRS 24VDC 1CO<br>1122770000 | WEI<br>WEI | WEI.TRS 24VDC 1CO | 834 03 112 001 019 |
| -R7<br>/27.4 | 1 | Relay | TRS 24VDC 1CO<br>1122770000 | WEI<br>WEI | WEI.TRS 24VDC 1CO | 834 03 112 001 019 |
| -R9<br>/27.4 | 1 | Relay | TRS 24VDC 1CO<br>1122770000 | WEI<br>WEI | WEI.TRS 24VDC 1CO | 834 03 112 001 019 |
| -R10<br>/27.5 | 1 | Relay | TRS 24VDC 1CO<br>1122770000 | WEI<br>WEI | WEI.TRS 24VDC 1CO | 834 03 112 001 019 |
| -R20<br>/16.7 | 1 | ELEKTRONİK FRENLEME DİRENCİ | 1000W 50 OHM<br>1000W 50 OHM | DİNAMİK<br>DİNAMİK | DİNAMİK.1000W 50 OHM | 800 80 050 001 146 |
| -S11<br>/10.3;/10.4;/11.3;/11.4 | 4 | 1N/C Auxiliary Contact | M22-K01<br>216378 | MOE<br>MOE | MOE.M22-K01 | 842 51 022 002 043 |
| -S11<br>/11.4 | 1 | Acil durdurma butonu, ışıksız, çevir-bırak 1NO kontak | M22-PVT/K01<br>263467 | ETN<br>ETN | ETN.M22-PVT/K01 | 842 07 022 002 043 |
| -SW1<br>/28.1 | 1 | SAFETY SWITCH | PSENME 4.01/4AS<br>570 245 | PILZ<br>PILZ | PILZ.570 245 | 854 04 570 001 057 |

# Parts list

| Device Designation<br>Schematic / position | Quantity | Designation | Type number<br>Order number | Manufacturer<br>Supplier | Part number<br>Function text | ERP number |
|---|---|---|---|---|---|---|
| -SW2<br>/28.1 | 1 | SAFETY SWITCH | PSENME 4.01/4AS<br>570 245 | PILZ<br>PILZ | PILZ.570 245 | 854 04 570 001 057 |
| -SW3<br>/28.1 | 1 | SAFETY SWITCH | PSENME 4.01/4AS<br>570 245 | PILZ<br>PILZ | PILZ.570 245 | 854 04 570 001 057 |
| -SW4<br>/28.3 | 1 | SAFETY SWITCH | PSENME 4.01/4AS<br>570 245 | PILZ<br>PILZ | PILZ.570 245 | 854 04 570 001 057 |
| -SW7<br>/19.5 | 1 | Wheeled Switch,Blue | XCK P2102P16<br>XCK P2102P16 | Schneider<br>Schneider | SCH.XCK P2102P16 | 854 01 021 001 012 |
| -SW8<br>/19.8 | 1 | Wheeled Switch,Blue | XCK P2102P16<br>XCK P2102P16 | Schneider<br>Schneider | SCH.XCK P2102P16 | 854 01 021 001 012 |
| -SW9<br>/26.1 | 1 | Sensor | KT-50 RP-QD<br>KT-50 RP-QD | WINMAN<br>WINMAN | WIN.KT-50 RP-QD | 848 10 050 001 085 |
| -SW9<br>/26.1 | 1 | Sensor Cable | M83R-PUR-10M<br>M83R-PUR-10M | WINMAN<br>WINMAN | WIN.M83R-PUR-10M | 820 11 083 002 085 |
| -SW10<br>/26.2 | 1 | Sensor | KT-50 RP-QD<br>KT-50 RP-QD | WINMAN<br>WINMAN | WIN.KT-50 RP-QD | 848 10 050 001 085 |
| -SW10<br>/26.2 | 1 | Sensor Cable | M83R-PUR-10M<br>M83R-PUR-10M | WINMAN<br>WINMAN | WIN.M83R-PUR-10M | 820 11 083 002 085 |
| -SW12<br>/26.6 | 1 | Sensor | KT-50 RP-QD<br>KT-50 RP-QD | WINMAN<br>WINMAN | WIN.KT-50 RP-QD | 848 10 050 001 085 |
| -SW12<br>/26.6 | 1 | Sensor Cable | M83R-PUR-10M<br>M83R-PUR-10M | WINMAN<br>WINMAN | WIN.M83R-PUR-10M | 820 11 083 002 085 |
| -T1<br>/12.2 | 1 | Power supply,120W,5A | PRO MAX3 120W 24V 5A<br>1478170000 | WEI<br>WEI | WEI.PRO MAX3 120W 24V 5A | 828 01 005 003 019 |
| -T2<br>/16.1 | 1 | Transformer,INPUT:3*460,OUTPUT:220V,6kVA,50-60,HZ | INPUT:3*460,OUTPUT:220V,6kVA,50-60,HZ<br>INPUT:3*460,OUTPUT:220V,6kVA,50-60,HZ | CAG<br>CAG | CAG.INP:INPUT:3*460,OUTPUT:220V,6kVA,50-60,HZ | 826 02 460 001 042 |
| -T3<br>/8.1 | 1 | Transformer, INP:2*460,OUT:110V*220V,2kVA,50-60Hz | INP:2*460,OUT:110V*220V,2kVA,50-60Hz<br>INP:2*460,OUT:110V*220V,2kVA,50-60Hz | CAG<br>CAG | CAG.INP:2*460,OUT:110V*220V,2kVA,50-60Hz | 826 02 460 002 042 |
| -XCout<br>/11.9 | 1 | Gelenkrahmen 10B für 3 Module (A..C) | Gelenkrahmen 10B für 3 Module (A..C)<br>09140100303 | HAR<br>HAR | HAR.09140100303 | 868 01 091 004 071 |
| -XCout<br>/11.9 | 1 | Han-Quintax module, male | Han-Quintax module, male<br>09140023001 | HAR<br>HAR | HAR.09140023001 | 868 01 091 005 071 |
| -XCout<br>/11.9 | 1 | 09 14 008 3001 | 09 14 008 3001<br>09 14 008 3001 | HAR<br>HAR | HAR.09 14 008 3001 | 868 01 091 006 071 |
| -XCout<br>/11.9 | 2 | Han-Easy Lock ® 10/16/24B, QB | Han-Easy Lock ® 10/16/24B, QB<br>09000005221 | HAR<br>HAR | HAR.09000005221 | 868 01 090 001 071 |
| -XCout<br>/11.9 | 1 | Han 10B-kg-QB-M32 | Han 10B-kg-QB-M32<br>19300100737 | HAR<br>HAR | HAR.19300100737 | 868 01 193 002 071 |

# Parts list

| Device Designation<br>Schematic / position | Quantity | Designation | Type number<br>Order number | Manufacturer<br>Supplier | Part number<br>Function text | ERP number |
|---|---|---|---|---|---|---|
| -XCout<br>/11.9 | 8 | Han E-Kontaktstift-c 1,5mm² / AWG 16 | Han E-Kontaktstift-c 1,5mm² / AWG 16<br>09330006104 | HAR<br>HAR | HAR.09330006104 | 868 01 093 004 071 |
| -XKASM<br>/10.2 | 1 | Han 6B-gs-16 | Han 6B-gs-16<br>09300061541 | HAR<br>HAR | HAR.09300061541 | 868 01 006 003 071 |
| -XKASM<br>/10.2 | 1 | Han 6E-sti-s | Han 6E-sti-s<br>09330062601 | HAR<br>HAR | HAR.09330062601 | 868 01 006 001 071 |
| -XKinp.<br>/11.8 | 1 | Gelenkrahmen 10B für 3 Module (a..c) | Gelenkrahmen 10B für 3 Module (a..c)<br>09140100313 | HAR<br>HAR | HAR.09140100313 | 868 01 091 001 071 |
| -XKinp.<br>/11.8 | 1 | Han-Quintax module, female | Han-Quintax module, female<br>09140023101 | HAR<br>HAR | HAR.09140023101 | 868 01 091 002 071 |
| -XKinp.<br>/11.8 | 1 | 09 14 008 3101 | 09 14 008 3101<br>09 14 008 3101 | HAR<br>HAR | HAR.09 14 008 3101 | 868 01 091 003 071 |
| -XKinp.<br>/11.8 | 1 | Han 10B-gg-M32 | Han 10B-gg-M32<br>19300100427 | HAR<br>HAR | HAR.19300100427 | 868 01 193 001 071 |
| -XKinp.<br>/11.8 | 8 | Han E-Kontaktbuchse-c 1,5mm² / AWG 16 | Han E-Kontaktbuchse-c 1,5mm² / AWG 16<br>09330006204 | HAR<br>HAR | HAR.09330006204 | 868 01 093 006 071 |
| -XKinp,<br>/11.8 | 1 | Gelenkrahmen 10B für 3 Module (a..c) | Gelenkrahmen 10B für 3 Module (a..c)<br>09140100313 | HAR<br>HAR | HAR.09140100313 | 868 01 091 001 071 |
| -XKinp,<br>/11.8 | 1 | Han-Quintax module, female | Han-Quintax module, female<br>09140023101 | HAR<br>HAR | HAR.09140023101 | 868 01 091 002 071 |
| -XKinp,<br>/11.8 | 1 | 09 14 008 3101 | 09 14 008 3101<br>09 14 008 3101 | HAR<br>HAR | HAR.09 14 008 3101 | 868 01 091 003 071 |
| -XKinp,<br>/11.8 | 1 | Han 10B-gg-M32 | Han 10B-gg-M32<br>19300100427 | HAR<br>HAR | HAR.19300100427 | 868 01 193 001 071 |
| -XKinp,<br>/11.8 | 8 | Han E-Kontaktbuchse-c 1,5mm² / AWG 16 | Han E-Kontaktbuchse-c 1,5mm² / AWG 16<br>09330006204 | HAR<br>HAR | HAR.09330006204 | 868 01 093 006 071 |
| -XKinp;<br>/11.7 | 1 | Han 10B-asg2-K-21 | Han 10B-asg2-K-21<br>09300100262 | HAR<br>HAR | HAR.09300100262 | 868 01 093 002 071 |
| -XKinp;<br>/11.7 | 1 | Gelenkrahmen 10B für 3 Module (A..C) | Gelenkrahmen 10B für 3 Module (A..C)<br>09140100303 | HAR<br>HAR | HAR.09140100303 | 868 01 091 004 071 |
| -XKinp;<br>/11.7 | 1 | Han-Quintax module, male | Han-Quintax module, male<br>09140023001 | HAR<br>HAR | HAR.09140023001 | 868 01 091 005 071 |
| -XKinp;<br>/11.7 | 1 | 09 14 008 3001 | 09 14 008 3001<br>09 14 008 3001 | HAR<br>HAR | HAR.09 14 008 3001 | 868 01 091 006 071 |
| -XKinp;<br>/11.7 | 2 | Han-Easy Lock ® 10/16/24B, QB | Han-Easy Lock ® 10/16/24B, QB<br>09000005221 | HAR<br>HAR | HAR.09000005221 | 868 01 090 001 071 |
| -XKinp;<br>/11.7 | 8 | Han E-Kontaktstift-c 1,5mm² / AWG 16 | Han E-Kontaktstift-c 1,5mm² / AWG 16<br>09330006104 | HAR<br>HAR | HAR.09330006104 | 868 01 093 004 071 |

# Parts list

| Device Designation<br>Schematic / position | Quantity | Designation | Type number<br>Order number | Manufacturer<br>Supplier | Part number<br>Function text | ERP number |
|---|---|---|---|---|---|---|
| -XKout,<br>/11.1 | 1 | Gelenkrahmen 10B für 3 Module (a..c) | Gelenkrahmen 10B für 3 Module (a..c)<br>09140100313 | HAR<br>HAR | HAR.09140100313 | 868 01 091 001 071 |
| -XKout,<br>/11.1 | 1 | Han-Quintax module, female | Han-Quintax module, female<br>09140023101 | HAR<br>HAR | HAR.09140023101 | 868 01 091 002 071 |
| -XKout,<br>/11.1 | 1 | 09 14 008 3101 | 09 14 008 3101<br>09 14 008 3101 | HAR<br>HAR | HAR.09 14 008 3101 | 868 01 091 003 071 |
| -XKout,<br>/11.1 | 1 | Han 10B-gs-29 | Han 10B-gs-29<br>09300100310 | HAR<br>HAR | HAR.09300100310 | 868 01 093 001 071 |
| -XKout,<br>/11.1 | 8 | Han E-Kontaktbuchse-c 1,5mm² / AWG 16 | Han E-Kontaktbuchse-c 1,5mm² / AWG 16<br>09330006204 | HAR<br>HAR | HAR.09330006204 | 868 01 093 006 071 |
| -XKout:<br>/11.1 | 1 | Gelenkrahmen 10B für 3 Module (A..C) | Gelenkrahmen 10B für 3 Module (A..C)<br>09140100303 | HAR<br>HAR | HAR.09140100303 | 868 01 091 004 071 |
| -XKout:<br>/11.1 | 1 | Han-Quintax module, male | Han-Quintax module, male<br>09140023001 | HAR<br>HAR | HAR.09140023001 | 868 01 091 005 071 |
| -XKout:<br>/11.1 | 1 | 09 14 008 3001 | 09 14 008 3001<br>09 14 008 3001 | HAR<br>HAR | HAR.09 14 008 3001 | 868 01 091 006 071 |
| -XKout:<br>/11.1 | 2 | Han-Easy Lock ® 10/16/24B, QB | Han-Easy Lock ® 10/16/24B, QB<br>09000005221 | HAR<br>HAR | HAR.09000005221 | 868 01 090 001 071 |
| -XKout:<br>/11.1 | 1 | Han 10B-gg-M32 | Han 10B-gg-M32<br>19300100427 | HAR<br>HAR | HAR.19300100427 | 868 01 193 001 071 |
| -XKout:<br>/11.1 | 8 | Han E-Kontaktstift-c 1,5mm² / AWG 16 | Han E-Kontaktstift-c 1,5mm² / AWG 16<br>09330006104 | HAR<br>HAR | HAR.09330006104 | 868 01 093 004 071 |
| -XTPM<br>/7.1 | 1 | 5*32A, Flat Male Contact | 432EP5,5*32A<br>2CMA101994R1000 | ABB<br>ABB | ABB.432EP5,5*32A | 840 01 432 002 001 |
| -XTPP<br>/8.1 | 1 | 676152,MSVD POWER SOCKEK | PP1/35<br>676152,MSVD POWER SOCKEK | MURR ELEKTRONİK<br>MURR ELEKTRONİK | MURR ELEKTRONİK.676152,MSVD POWER SOCKEK | 840 55 001 001 174 |

# *PART 15*

# *SPARE PARTS LIST*

# *PART 16*

# *FOREIGN DOCUMENT*

# THREE PHASE ASYNCHRONOUS ELECTRIC MOTORS

## OPERATING MANUAL

## (Original Instructions)

Corporate Office: 724.584.5500 I Instant Access 24/7 (Parts and Service): 800.458.1960 I Parts and Service: 814.437.6861

# 1. INTRODUCTION /GENERAL DESCRIPTION

These instructions describe the electric motor and explain best practices in motor handling, from initial delivery to final disposal of the equipment.

These instructions must be followed to ensure safe and proper installation, operation, and maintenance of the motor.

## Area of application and Intended use of the motors

Conair motor is an electric motor that converts electric energy into mechanical energy. Our product family defined in this manual is a three phase squirrel cage induction motor

Motors of this series are self-ventilated low voltage three phase asynchronous motors with a cylindrical shaft end and feather key way

The three-phase electric motors of this series are used as industrial drives. They are designed for a wide range of drive applications both for line operation as well as in conjunction with frequency converters.

These motors are intended for use in industrial plants. They comply with the harmonized standards of the series IEC/EN 60034

Low-voltage motors are components designed for installation in machines in accordance with the current Machinery Directive. They must not be commissioned until it has been verified that the end product complies with this directive (refer to EN 60204-1).

The instructions are valid for 2EL, 3EL type electric motors.

## Environmental requirements

All of the Conair motors have a sound pressure level not exceeding 70 dB (A) at 50 Hz when operated at the rated output rated voltage

The motors are designed for the following conditions unless otherwise stated on the rating plate.

- Normal ambient temperature limits are -20°C to +40°C.
- Maximum altitude 1000 m above sea level.
- Tolerance for supply voltage is ±5% in Zone A and ±10% in Zone B. Tolerance for frequency is±2% for Zone A and +%3, -%5 for Zone B according to EN / IEC 60034-1.

These motors have not been designed for hazardous area applications.

## General safety rules:

Please read operating manual of motor for correct storage, installation, and operation.
Mechanical and electrical installation and maintenance shall be done by qualified technicians!

For your personal safety and to prevent material damage when working on the motor, always observe the safety instructions and the following safety rules, according to EN 50110-1 ("Working in a voltage-free state).

- Disconnect the system. Disconnect the auxiliary circuits, for example anti-condensation heating
- Prevent reconnection.
- Make sure that the equipment is at zero voltage
- Ground and short-circuit the terminals
- Cover or isolate nearby components that are still live.

To energize the system, apply the measures in reverse order.

WARNING

Electric motors contain live parts.F atal or severe injuries and substantial material damage can occur if the required covers are removed or if the motors are not handled, operated, or maintained properly.

Electric motors contain dangerous rotating parts.Fatal or severe injuries and substantial material damage can occur if the required covers are removed or if the motors are not handled, operated, or maintained properly.

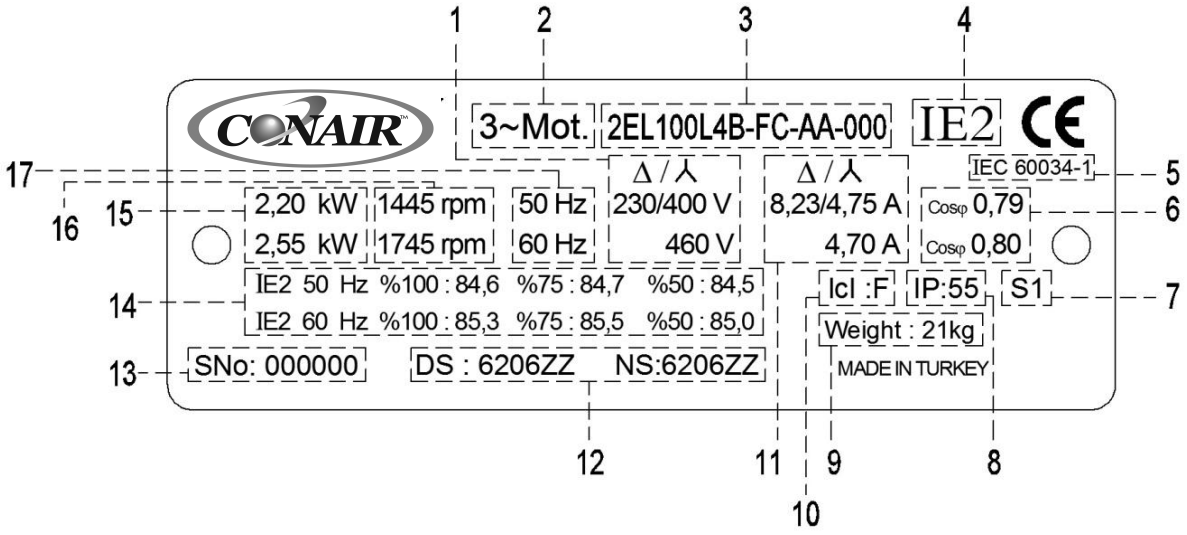
Electric motors have hot surfaces.Fatal or severe injuries and substantial material damage can occur if the required covers are removed or if the motors are not handled, operated, or maintained properly.

**General Definition and technical Properties of the motors:**

All of our standard products are designed, manufactured, and tested according to the IEC and EN standards given below:

| | |
|---|---|
| IEC 60034-1 | Rating and performance |
| IEC 60034-2-1 | 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 system |
| IEC 60034-30 | Efficiency classes (IE-code) |
| IEC 60038 | Standard voltages |
| EN 50347 | Dimensions and output for electrical machines |
| EN 60204-1: 1993 | (Safety of machinery - Electrical equipment of machines Part 1: General requirements) |

Nameplate description;

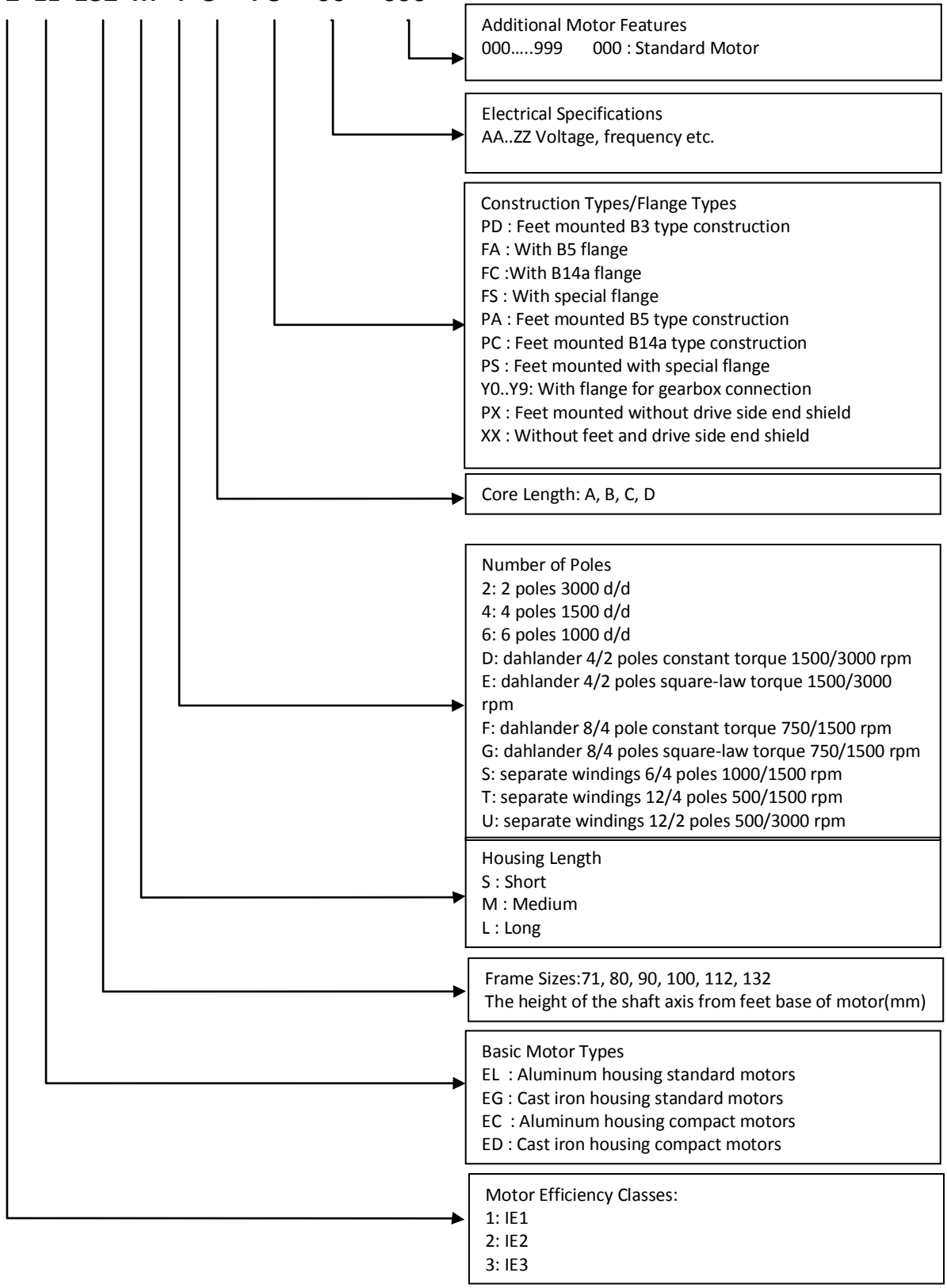



1. Rated Voltage
2. Motor Type: 3 Phase Asynchronous motor
3. Motor Code
4. Efficiency Class
5. Manufacture Standard
6. Power Factor
7. Duty Cycle
8. Ingress Protection Class
9. Motor Weight
10. Insulation Class
11. Rated Current
12. Bearing Type
13. Production Year/ Serial Number
14. Efficiency
15. Output Power
16. Speed
17. Frequency

The nameplate shows the identification, and the most important technical data. The name plate also defines the limits of proper usage, and manufacturing year of the motors. The first two digits in the serial number, shows the manufacturing year. For example 15XXXXXXX shows that the product is manufactured in 2015

**Product type codes**

**2 EL 132 M 4 C - FC - 00 - 000**

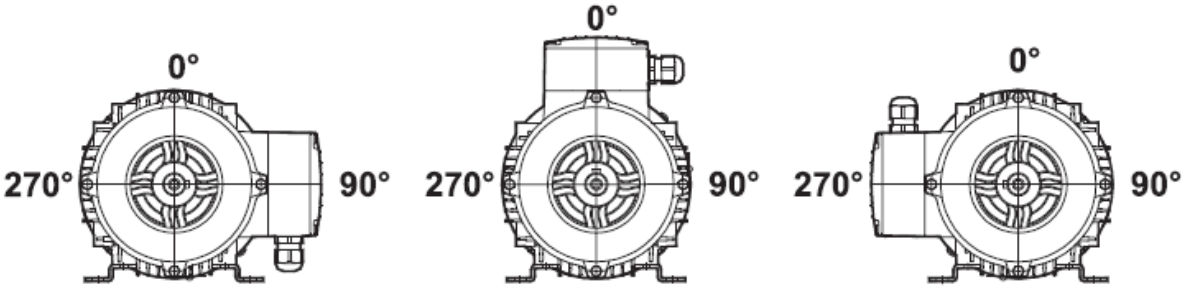


**0 0**

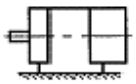
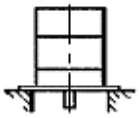
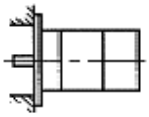
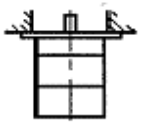
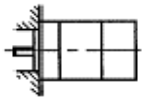
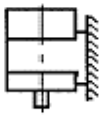
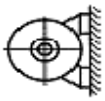
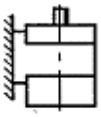
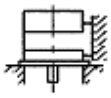
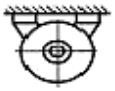
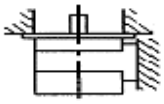
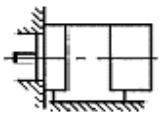
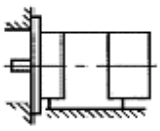
2nd digit: Additional Electrical Features
0: Standard motor, basic version
A: Motors with thermistor
B: Motors with heater
K: Motors with thermistor and heater

1st digit : Voltage and Frequency
A: 230/400V 50Hz
B: 400/690V 50Hz
C: 240/415V 50Hz
D: 415/720V 50Hz
E: 220/380V 60Hz Standard power
F: 380/660V 60Hz Standard power
I: 220/380V 60Hz 16% increased rated output power
J: 380/660V 60Hz 16% increased rated output power

Conair Motors provides flexibility for different mounting types through their detachable feet which can be mounted on three sides. This feature allows terminal box assembly on the desired side. Standard motor terminal box position is on Top



Conair electric motors are manufactured according to International Mounting Standard IEC 60034-7.

| International Mounting Code via IEC 60034-7 | | | | | |
|---|---|---|---|---|---|
| | Horizontal Mounting Alpha Numeric Marking | | | Vertical Mounting Alpha Numeric Marking | |
| | I | II | | I | II |
|  | IM B3 | IM 1001 |  | IM V1 | IM 3011 |
|  | IM B5 | IM 3001 |  | IMV3 | IM3031 |
|  | IM B14 | IM 3601 |  | IM V5 | IM 1011 |
|  | IM B7 | IM 1061 |  | IMV6 | IM1031 |
|  | IM B6 | IM 1051 |  | IM V15 | IM 2011 |
|  | IM B8 | IM 1071 |  | IM V35 | IM 2031 |
|  | IM B34 | IM 2101 | | | |
|  | IM B35 | IM2001 | | | |

## 2. LIFTING AND STORAGE

Please check delivered product if any damages can exist in transportation process.

Motors above 25 kg weight have lifting lugs or eye bolts. The actual weight of motors is shown on the nameplate.

- Only the main lifting lugs or eyebolts of the motor should be used for lifting the motor.
- Use all the lifting eyes on the motors.
- Don't use damaged lifting lug.

Shocks, falls, and humidity should be avoided during transportation

During storage,following conditionsmust be satisfied;

- The storage rooms must provide protection against extreme weather conditions. They must be dry, free from dust, frost, and vibration, and well ventilated.
- Temperature shall be between -20℃ and 40℃.
- Motor shaft shall be rotated by hand at least once per year.
- Protect motors from direct effect of sun and from gases that have corrosion impact on motors.
- Unprotected machined surfaces (shaft-ends and flanges) should be treated against corrosion.
- Open any condensation drain holes to drain the condensation (<6 months).
- If an anti-condensation heater is provided, switch it on during the machine stoppages.

## 3. COMMISSIONING

Immediately upon receipt, check the motor for external damage (e.g. shaft-ends and flanges and painted surfaces) and if found, inform the forwarding agent without delay.

Check all nameplate data, especially voltage and winding connection (star or delta) to ensure that the motor protection and connection will be properly done.

### Checking the insulation resistance

Motor winding insulation resistance shall be measured prior to starting the motor, if the winding is too damp.

WARNING

- Only appropriately trained personnel may carry out this work.
- Before starting commissioning, install all covers that are designed to prevent active orrotating parts from being touched
- If any power cables are connected, check to make sure line supply voltage cannot beconnected.
- Once you have measured the insulation resistance, discharge the winding byconnecting to the ground potential.
- Measurement of insulation resistance should be performed while the motor is not in operation.

If the measurements are performed at winding temperatures not equal to25 °C, convert the measured value to the reference temperature of 25 °C in order to be able to compare the values with the table below.

– The insulation resistance halves every time the temperature rises by 10 K.
– The resistance doubles every time the temperature falls by 10 K.

Insulation resistance, corrected to 25°C, must be higher than the reference value given below.

If the reference resistance value is not attained, the winding is too damp and must be oven dried. The oven temperature should be 90-100 °C for 12 hours.

| **Insulation resistance of the stator winding at 25 °C** | |
|---|---|
| Measuring circuit voltage | 500 V |
| Minimum insulation resistance for new, cleaned orrepaired windings | 100 MΩ |

## 4. MECHANIC INSTALLATION

### Safety considerations

- The machine is intended for installation and use by qualified personnel, familiar with health and safety requirements and national legislation.
- Safety equipment necessary for the prevention of accidents at the installation and operating site must be provided in accordance with local regulations.
- The temperature of the outer casing of the motor may be too hot to touch during normal operation and especially after shut-down.
- Be aware of rotating parts of the motor.
- Do not open terminal boxes while energized.

Before start-up, please check that

- Condensation drain holes are always located at the lowest point of the motor!
- Connect the motor corresponding to the specified direction of rotation.
- Ensure that all seals and sealing surfaces are undamaged and clean.

When aligning and fastening the motor, please bear the following in mind:

- The motor shall be mounted on a base, which is rigid enough to prevent distortion and vibration.
- Feet and flanges must be fastened securely.
- Avoid using rigid coupling measures.
- The motors must be carefully aligned. Incorrect alignment can lead to beating failure, vibration, even shaft fracture.
- Coupling halves and pulleys must be fitted on the shaft by using suitable equipment and tools which do not damage the bearings and seals. Never fit a coupling half or pulley by hammering or by removing it using a lever pressed against the body of the motor
- Excessive belt tension will damage bearings and can cause shaft damage.
- If a belt drive is used, make sure that the driving and the driven pulleys are correctly aligned.
- The motor should be mounted in such a way that the cooling air should flow to and away from the motor without obstruction.
- For Technical details about the motor dimensions see the catalogue.
- Do not exceed permissible loading values for bearings as stated in the product catalogues.

As standard, balancing of the motor has been carried out using half key

Coupling halves or pulleys must be balanced after machining the keyways. Balancing must be done in accordance with the balancing method specified for the motor.

## 5. ELECTRICAL INSTALLATION AND OPERATION CONDITIONS

Before installation, check motor specifications from nameplate if they fitthe requirements of the load and specification of voltage and frequency.

Measure the insulation resistance between windings and housing. Please check detailed information in the Checking the insulation resistance section.

WARNING

Note the following safety information before connecting-up the motor:

- Only qualified and trained personnel should carry out work on the motor while it is stationary.
- Disconnect the motor from the power supply and take measures to prevent it being reconnected. This also applies to auxiliary circuits.
- Check that the motor really is in a no-voltage condition.
- Establish a safe protective conductor connection before starting any work.
- It must be ensured that there are no foreign bodies, dirt, or moisture in the terminal box.
- Keep the inside of the terminal box clean and free from trimmed-off ends of wire.
- Close any additional open cable entries with O-rings or suitable flat gaskets, the terminal box itself must be sealed so that it is dust and water tight using the original seal.
- When performing a test run, secure the feather keys without output elements.
- Earthing must be carried out according to local regulations before the machine is connected to the supply voltage.

## Terminals and direction of rotation

The standard motors are suitable for clockwise and counter-clockwise rotation.

When the power cables L1, L2, L3 are connected to U1, V1, W1 respectively, the motor shaft turns in clockwise direction (looking at the shaft from drive side). If two of the power cables are interchanged then the resulting direction of rotation is counter-clockwise.

Select the connecting cables in accordance with the rated current, ambient temperature, cable gland and routing method etc. according to IEC/EN 60204-1.

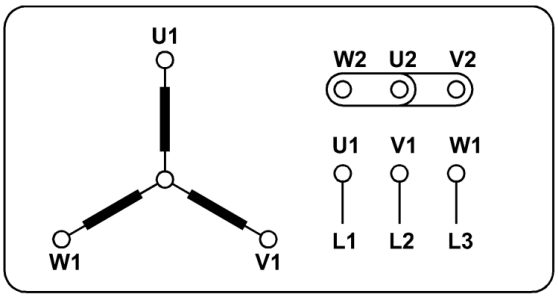
Please observe the tightening torques for cable glands, terminal screws, and other screws.

In addition to the main winding and earthing terminals, the terminal box can also contain connections for thermistors, heating elements or other auxiliary devices.

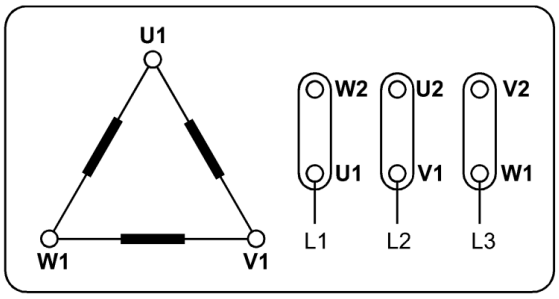
The terminal box on standard single speed motors normally contains six winding terminals and at least one earth terminal. This enables the use of DOL or Y/D starting.

The motors shall be connected in star or delta according to rated voltage given in their nameplate and the network voltage that they will be connected. For phase to phase 400 V supply, the motors with 230/400V nameplate values shall be connected in star (Y) and the motors with 400/690V nameplate values shall be connected in delta (Δ).

Terminal connection for single speed motor;

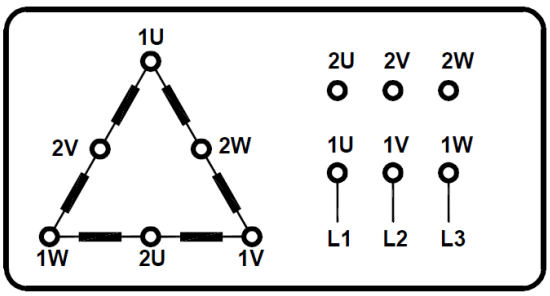



Star Connection

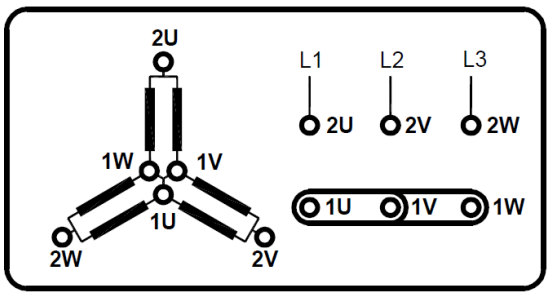



Delta Connection

Terminal connection of double speed motor;

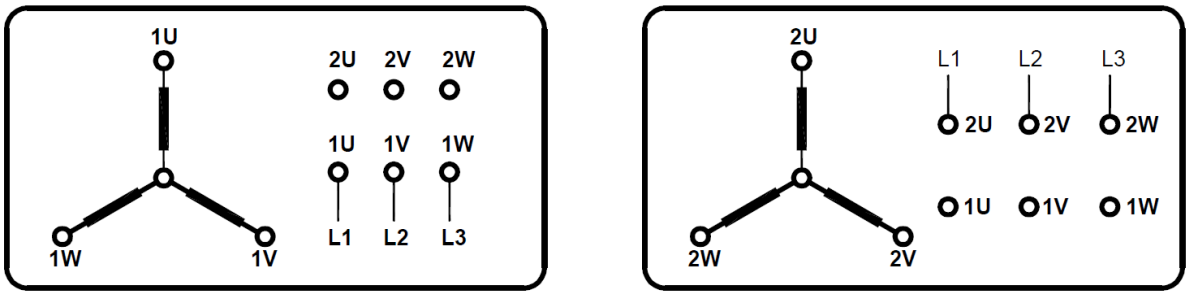



Low Speed




High Speed

Terminal connection of Dahlander motor;




Low Speed

High Speed

| Tightening torques for electrical connections on the terminal board | | | | | | | |
|---|---|---|---|---|---|---|---|
| **ThreadØ** | | **M4** | **M5** | **M6** | **M8** | **M10** | **M12** |
| **Nm** | min | 0,8 | 1,8 | 2,7 | 5,5 | 9 | 14 |
| | Max. | 1,2 | 2,5 | 4 | 8 | 13 | 20 |

| **The cable glands according to the frame size.** | | |
|---|---|---|
| Frame Size | 71 - 80 - 90 | 100 - 112-132 |
| Cable Glands | M20 +M16 | M25 + M25 |

| **Cable Gland Tightening Torque ±10% Nm** | |
|---|---|
| **M 16** | **2** |
| **M20** | **4** |
| **M25** | **4** |

Our standard motors have insulation Class F while the temperature rise is Class B. This means the motors will have a longer service life and work under hard conditions.

Motors are designed to operate at altitudes up to 1000 m and ambient temperature up to 40°C according to IEC 60034-1. Rated output will change at the % ratings given below for different altitudes and ambient temperatures.

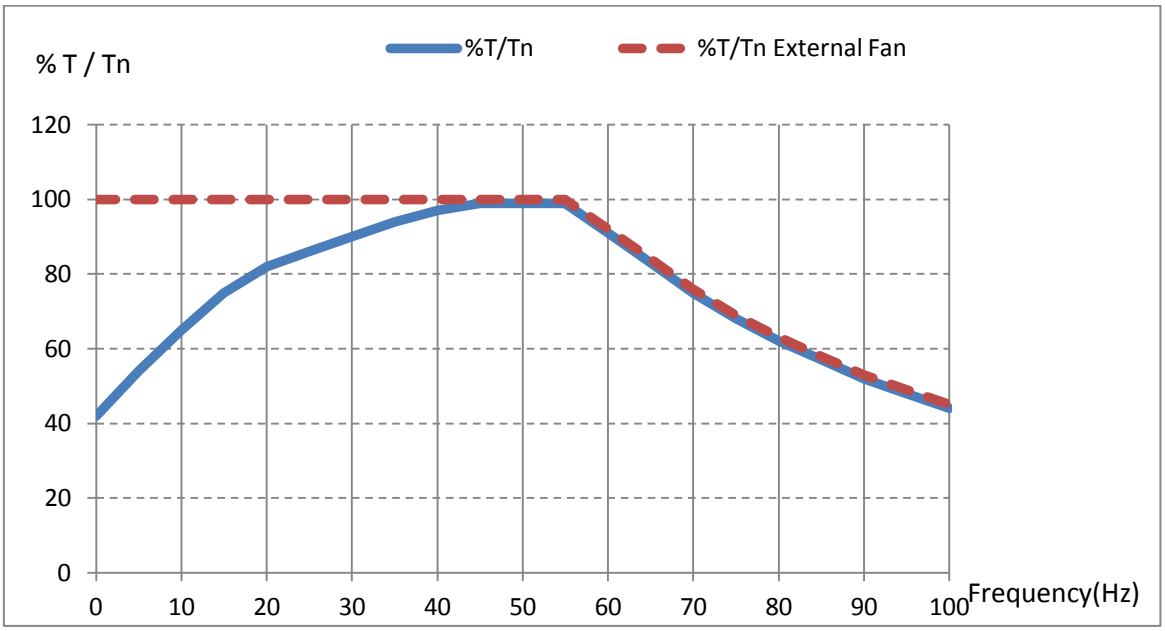
| **Rated power changes according to the altitude;** | | | | | | | |
|---|---|---|---|---|---|---|---|
| ALTITUDE | **Up to 1000m** | **Up to 1500 m** | **Up to 2000m** | **Up to 2500m** | **Up to 3000m** | **Up to 3500m** | **Up to 4000m** |
| % Power Ratio | **100** | **98** | **95** | **91** | **87** | **83** | **78** |

| **Rated power changes according to ambient temperature;** | | | | | | | |
|---|---|---|---|---|---|---|---|
| AMBIENT TEMPERATURE | <30 °C | 35 °C | 40 °C | 45 °C | 50 °C | 55 °C | 60 °C |
| % Power Ratio | **105** | **102** | **100** | **97** | **93** | **87** | **82** |

Our standard motors that have been manufactured for 50 Hz power supply, can also be used at 60 Hz network. The ratios given below indicate changes in the given rated values.

| 50Hz Rated Voltage | 60Hz Supply Voltage | Rated speed | Rated Power | Rated Torque | Rated Current | Starting Torque | Break Down Torque | Starting Current |
|---|---|---|---|---|---|---|---|---|
| 230V | 220V | 1.193 | 1 | 0.84 | 0.97 | 0.77 | 0.8 | 0.8 |
| 400V | 380V | 1.193 | 1 | 0.84 | 0.97 | 0.77 | 0.8 | 0.8 |
| 400V | 440V | 1.20 | 1.16 | 0.97 | 0.98 | 0.87 | 0.9 | 0.9 |

When operating at speeds above rated speed, for example when used with frequency converters, for adjustable speed control, noise and vibration levels will be increased and bearing lifetime will be decreased. The user may require fine balance for better operation above the rated speed. Attention should be paid to the re-greasing intervals and the grease service life.




Standard Conair motors are suitable for electronic speed control operations. The frequency range that the motor can be driven with their fan is shown with blue (continuous) line in the above graph. If the motor will be driven in a wider range, then an external fan is necessary. By using an external fan the motors can be driven in the range defined by red (dashed) line.

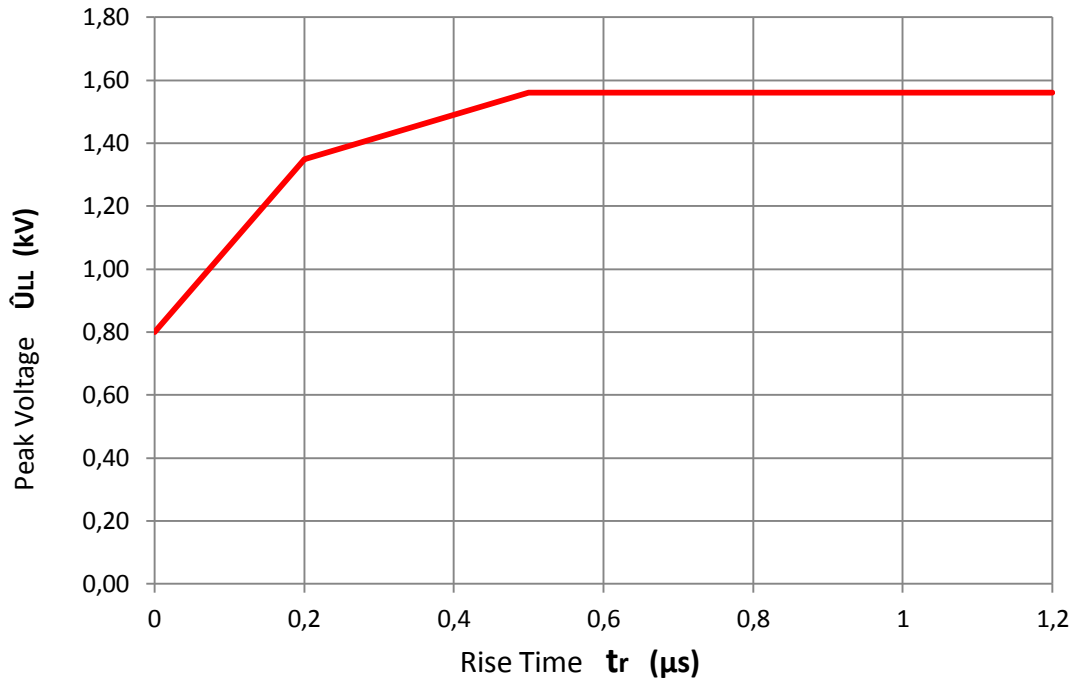
Do not exceed the speeds given in the table because high speeds increases the level of vibration and noise, and the bearing lifetime may be reduced.

| **Maximum safe operating speed (rpm) of three-phase single-speed cage induction motors** | | | |
|---|---|---|---|
| Frame Size | 2 Pole | 4 Pole | 6 Pole |
| <100 | 5400 | 3600 | 2400 |
| 112 | 5200 | 3600 | 2400 |
| 132 | 4500 | 3000 | 2400 |

Both IE2 and IE3 efficiency class motors are suitable for operation on frequency converters. Whenever the peak voltage and the rise time of the pulses at motor terminals are within the limit of the curve given below, there will be no significant decrease in motor lifetime.

The maximum allowed phase to phase voltage peaks ($\hat{U}_{LL}$ ) at the motor terminals, as a function of the rise time ($t_r$) of the pulse, is shown in the figure below.

Suitable filters must be incorporated at the converter output to not decrease insulation lifetime, whenever the peak voltages are not within the limit of the curve.




Limit curves of admissible motor terminal peak voltage for motors up to and including 500 V a.c. rated voltage

## 6. TROUBLESHOUTING

Motor service and any troubleshooting must be handled by qualified persons who have proper tools and equipment. Before rectifying any faults, please read the information in the section titled Safety information

| Defect | Cause | Solution |
|---|---|---|
| Motor does not start | Blown fuses | Replace the fuses with correct one with rated value |
| | Incorrect line connections | Check the connections |
| | Motor overloaded | Decrease the load |
| | Mechanical damage | Check whether the motor and drive rotate freely |
| | One of the phases may be open | Check the phases on the line |
| Motor stalls | One of the phases may be open. | Check if there is a broken phase on the lines |
| | Improper motor selection. | Change the type or size. Contact the device's supplier or designer. |
| | Overload. | Decrease the load |
| | Low voltage. | Check whether the voltage stated on the rating plate is maintained. Check the connection. |
| | Open power supply or control circuit. | Blown fuses, check the load relay, stator and control buttons. |
| Motor takes a long time to gain speed | Low voltage | Check the circuit capacity and power source |
| | Over loading | Decrease the load |
| | Rotor damaged | Replace the rotor |
| | Incorrect converter settings | Correct the settings |
| Motor runs and die down | Power failure | Check for a loose connection in the power supply line, fuses and control. |
| Wrong rotation direction | Wrong sequence of phases | Reverse connections at terminals |
| Motor heats up excessively | Motor overloaded | Decrease the load |
| | Low voltage | Adjust motor to supply voltage |
| | Ambient temperature is too high | Observe the permitted temperature range, decrease the load if necessary or |
| | | check the insulation class and use appropriate special motor |
| | Insufficient cooling | Provide air cooling supply, clean cooling air passages |
| | Bearing failure | Replace the bearings |
| | Unbalanced voltage | Check the circuit |
| | Short circuit in motor's winding | Rewind the motor |
| | One of the phases may be open | Check the phases on the line |
| | Broken ventilator or lack of ventilator | Check the ventilator |
| Noisy Operation | One of the phases may be open | Check the phases on the line |
| | Air gap not uniform | Check the bearing fits |
| | Fan rubbing end shield or fan cover | Check the fan mounting |
| | Broken ventilator | Replace the ventilator |
| | Incorrect coupling of the motor with the driven machine | Adjust the motor orientation and belt tension |
| | Broken rotor bar | Replace the rotor |

### Faults during operation

Deviations from conditions during normal operation, such as an increase in power consumption, temperatures or vibrations, unusual noises or odors, tripping of monitoring devices, etc., indicate that the motor is not functioning properly. This can cause faults which can result in eventual or immediate death, severe injury, or material damage.

• Immediately inform the maintenance personnel.

• If you are in doubt, immediately switch off the motor, being sure to observe the system-specific safety conditions.

## 7. INSPECTION

### Safety instructions

- Before starting work on the motors, make sure that the plant or system has been disconnected in a manner that is compliant with the appropriate specifications and regulations.
- In addition to the main currents, make sure that supplementary and auxiliary circuits, particularly in heating devices, are also disconnected.
- A motor with frequency converter supply may energize even if the motor is at standstill.
- Certain parts of the motor may reach temperatures above 50 °C. Physical contact with the motor could result in burn injuries! Check the temperature of parts before touching them.

### General inspection

Inspect the motor at regular intervals, at least once a year. The frequency of checks depends on, for example, the humidity level of the ambient air and on the local weather conditions. This can initially be determined experimentally and must then be strictly adhered to.

Keep the motor clean and ensure free ventilation airflow. If the motor is used in a dusty environment, the ventilation system must be regularly checked and cleaned.

- ✓ Check the condition of shaft seals and replace if necessary.
- ✓ Check the condition of connections and mounting and assembly bolts.
- ✓ Check the bearing condition by listening for any unusual noise, vibration measurement, bearing temperature, inspection of spent grease.
- ✓ Check if the electrical parameters are maintained.
- ✓ Check if the winding insulation resistances are sufficiently high.
- ✓ Check if the cables and insulating parts and components are in a good condition and are not discolored.

Immediately correct any impermissible deviations that are determined in the inspection.

If the paint is damaged, it must be repaired in order to protect the unit against corrosion.

Pay special attention to bearings when their calculated rated life time is coming to an end.

When signs of wear are noticed, dismantle the motor, check the parts, and replace if necessary. When bearings are changed, replacement bearings must be of the same type as those originally fitted. The shaft seals have to be replaced with seals of the same quality and characteristics as the originals when changing bearings.

In the case of the IP 55 motor and when the motor has been delivered with a plug closed, it is advisable to periodically open the drain plugs in order to ensure that the way out for condensation is not blocked and allows condensation to escape from the motor. This operation must be done when the motor is at a standstill and has been made safe to work on.

The calculated life of the bearings of 2Z, 2RS according to ISO 281 is at least 20,000 hours with utilization of the permissible radial/axial forces. However, the achievable useful life of the bearings can be significantly longer in the case of lower forces.

| Coolant temperature | Principle of operation | Bearing replacement intervals |
|---|---|---|
| 40° C | Horizontal coupling operation | 40 000 h |
| 40° C | With axial and radial forces | 20 000 h |

## 8- MAINTENANCE and REPAIR

### Cleaning

Regularly clean the cooling air passages through which the ambient air flows, e.g. using dry compressed air.

Particularly when carrying out cleaning using compressed air, make sure you use suitable safety wear

If there are condensate drain holes present, these must be opened at regular intervals, depending on climatic conditions. To maintain the degree of protection, any condensation drain holes need to be closed.

### Instructions for repair

Only appropriately qualified persons should be deployed to commission and operate equipment. Qualified persons, as far as the safety instructions specified in this manual are concerned, are those who have the necessary authorization to commission, ground and identify equipment, systems and circuits in accordance with the relevant safety standards.

Before you begin working on the three-phase motor, in particular before you open the covers of active parts, make sure that the three-phase motor or system is properly isolated from the supply.

### Replacing bearings

Special care should be taken with the bearings. These must be removed using pullers and fitted by heating or using special tools for the purpose.

Do not reuse bearings that have been removed.

### Rewinding

Rewinding should always be carried out by qualified repair shops

### Assembly

If possible, assemble the motor on an alignment plate.

Avoid damaging the windings protruding out of the stator enclosure when fitting the end Shield

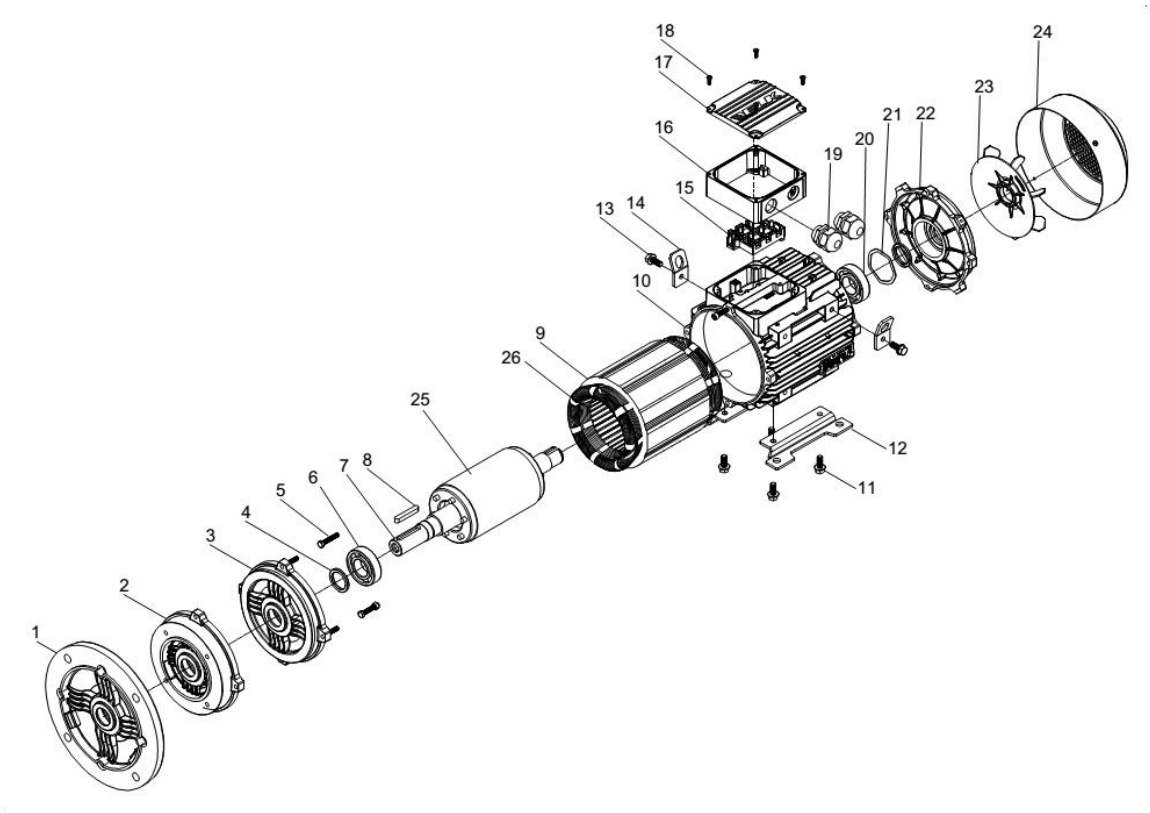
Take care not to damage the cable jacket. Tightening torques must be adapted to suit the type of cable jacket material in use.

Shaft sealing should be assembled to the right position without any damage

- Check the terminal box seals and if required, replace.
- Do not forget the foam cover in the cable entry (seal all holes completely and prevent cables from touching any sharp edges).
- Repair any damage to the paint (also on screws/bolts).
- Check the tightening torques of all screws, as well as those of screws which have not been unscrewed.

## 9- SPARE PARTS

2EL and 3EL series motors consist of the following main parts;




1. Flange B14
2. Flange B5
3. Drive side end shield
4. Shaft Sealing ring
5. Screw
6. Bearing
7. Shaft
8. Key
9. Stator Core
10. Housing
11. Screw
12. Mounting foot
13. Screw
14. Lifting lug
15. Terminal
16. Terminal box
17. Terminal box cover
18. Bolt
19. Cable gland
20. Bearing
21. Spring washer
22. Non drive side end shield
23. Fan
24. Fan cover
25. Squirrel cage rotor

When ordering spare parts, the motor serial number, full type designation, and product code, as stated on the nameplate, must be specified.

For field service, spare parts, and additional information please contact local sales office, if local sales office is not available please contact our factory, that name and address is given below

| | |
|---|---|
| | Conair<br>200 West Kensinger Dr.<br>Cranberry Township, PA 16066 USA<br>724-584-5000<br>www.conairgroup.com |

## 10- DISPOSAL

Environmentally friendly design, technical safety, and health protection are always main target for us even at the product development stage.

Recommendations for the environmentally friendly disposal of the motor and its components are given in the following section. Be sure to comply with local disposal regulations.

Dismantle the motor using the general procedures commonly used in mechanical engineering.

### Disposal of components

The motors mainly consist of steel, copper, and aluminum. Metals are generally considered to be unlimitedly recyclable.

Sort the components and process materials for recycling according to what they are:

- Iron and steel
- Aluminum
- Winding (enameled copper wire); the winding insulation is incinerated during copper recycling.
- Insulating materials
- cables and wires
- Oil
- Grease
- Cleaning substances and solvents
- Paint residues
- Anti-corrosion agent

Dispose of the separated components according to local regulations or via a specialistdisposal company

**Packaging material**

● if necessary, contact a suitable specialist disposal company.

● Wooden packaging for sea transport consists of impregnated wood. Observe the localregulations.

# *PART 17*

# *PNEUMATIC SCHEMA*

**SPARE PARTS**

| | |
|---|---|
| Company: | Machine Group: |
| Responsible: | M.Serial Number: |
| Phone Fax: | Image Number:□□□□□□□□□□ |

| No. | Number | Unit | Description |
|---|---|---|---|
| 1 | 1 | piece | AFR2000 1/4" Filter Regulator |
| 2 | 6 | piece | PY0800 Y |
| 3 | 4 | piece | 4V 210-08 1/4" 5/2 Single Coil Valve |
| 4 | 10 | piece | PL0802 1/4" - 8mm Elbow |
| 5 | 5 | piece | 40x10 Manometer Pabbel Type |
| 6 | 2 | piece | ISD02 1/4" Adjusted Absorber |
| 7 | 2 | piece | SLP0802 1/4" 8mm Stop Elbow |
| 8 | 4 | piece | BSL02 1/4" Sinter Absorber |
| 9 | 4 | piece | NSE0802 1/4" 8mm Velocity Adjustment Valve |
| 10 | 2 | piece | WAC-MYY-063-0015 Magnetic Padded Cylinder |
| 11 | 1 | piece | WAC-MYY-063-0035 Tandem Cylinder |
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Please include the Machine Serial Number.

FAX - Copy and Fax

| Order Amount | Description |
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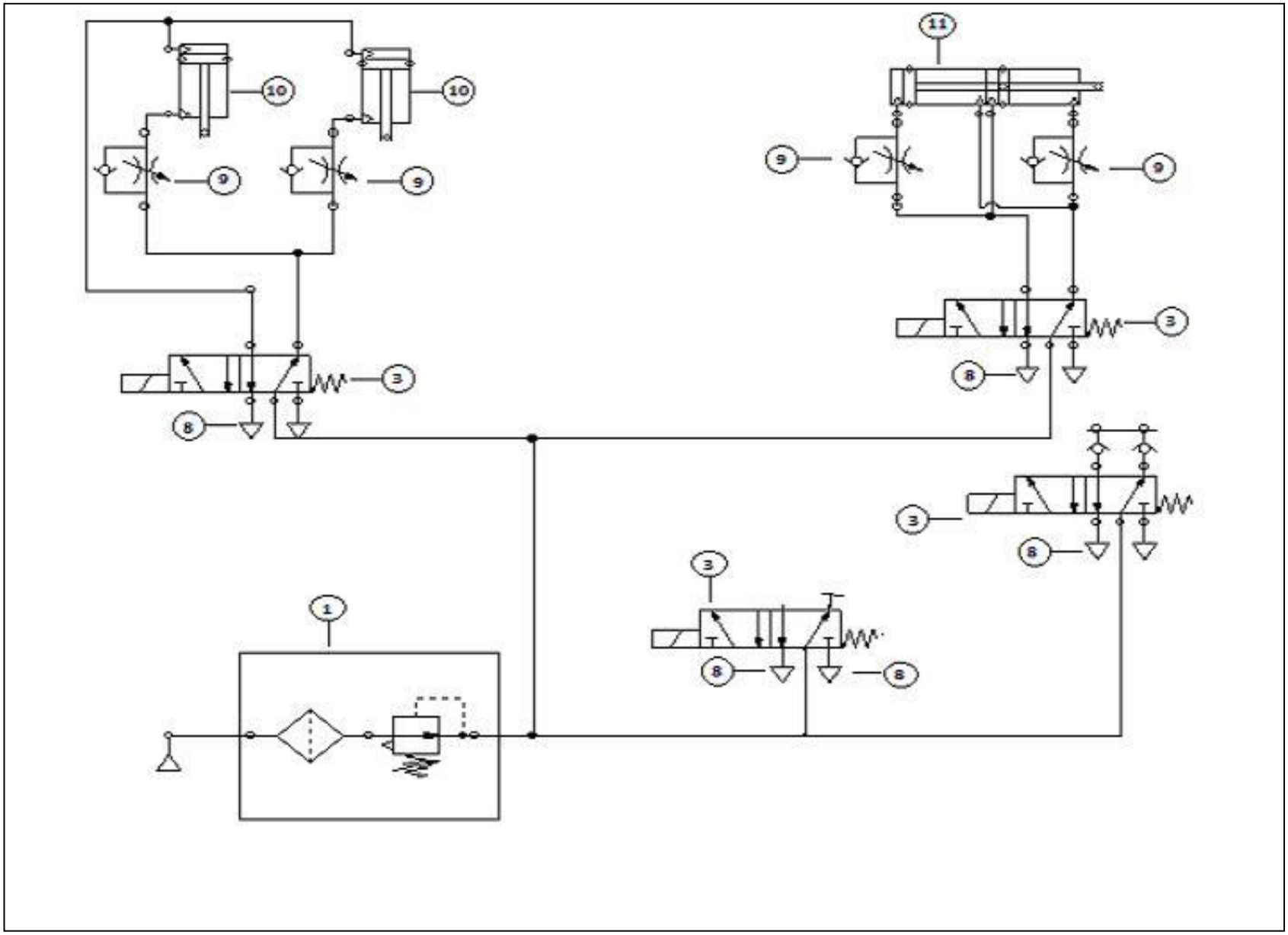
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# We're Here to Help

Conair has made the largest investment in customer support in the plastics industry. Our service experts are available to help with any problem you might have installing and operating your equipment. Your Conair sales representative also can help analyze the nature of your problem, assuring that it did not result from misapplication or improper use.

**Additional manuals and prints for your Conair equipment may be ordered through the Customer Service or Parts Department for a nominal fee.**
**Most manuals can be downloaded free of charge from the product section of the Conair website.**
**www.conairgroup.com**

## How to Contact Customer Service

To contact Customer Service personnel, call:


**NOTE:** Normal operating hours are 8:00 am - 5:00 pm EST. After hours emergency service is available at the same phone number.

**From outside the United States, call: 814-437-6861**

You can commission Conair service personnel to provide on-site service by contacting the Customer Service Department. Standard rates include an on-site hourly rate, with a one-day minimum plus expenses.

## Before You Call...

**If you do have a problem, please complete the following checklist before calling Conair:**

- ❒ Make sure you have all model, control type from the serial tag, and parts list numbers for your particular equipment. Service personnel will need this information to assist you.
- ❒ Make sure power is supplied to the equipment.
- ❒ Make sure that all connectors and wires within and between control systems and related components have been installed correctly.
- ❒ Check the troubleshooting guide of this manual for a solution.
- ❒ Thoroughly examine the instruction manual(s) for associated equipment, especially controls. Each manual may have its own troubleshooting guide to help you.

# Equipment Guarantee

Conair guarantees the machinery and equipment on this order, for a period as defined in the quotation from date of shipment, against defects in material and workmanship under the normal use and service for which it was recommended (except for parts that are typically replaced after normal usage, such as filters, liner plates, etc.). Conair's guarantee is limited to replacing, at our option, the part or parts determined by us to be defective after examination. The customer assumes the cost of transportation of the part or parts to and from the factory.

# Performance Warranty

Conair warrants that this equipment will perform at or above the ratings stated in specific quotations covering the equipment or as detailed in engineering specifications, provided the equipment is applied, installed, operated, and maintained in the recommended manner as outlined in our quotation or specifications.

Should performance not meet warranted levels, Conair at its discretion will exercise one of the following options:

- Inspect the equipment and perform alterations or adjustments to satisfy performance claims. (Charges for such inspections and corrections will be waived unless failure to meet warranty is due to misapplication, improper installation, poor maintenance practices, or improper operation.)
- Replace the original equipment with other Conair equipment that will meet original performance claims at no extra cost to the customer.
- Refund the invoiced cost to the customer. Credit is subject to prior notice by the customer at which time a Return Goods Authorization Number (RGA) will be issued by Conair's Service Department. Returned equipment must be well crated and in proper operating condition, including all parts. Returns must be prepaid.

Purchaser must notify Conair in writing of any claim and provide a customer receipt and other evidence that a claim is being made.

# Warranty Limitations

**Except for the Equipment Guarantee and Performance Warranty stated above, Conair disclaims all other warranties with respect to the equipment, express or implied, arising by operation of law, course of dealing, usage of trade or otherwise, including but not limited to the implied warranties of merchantability and fitness for a particular purpose.**