Scotchman
Metal Fabricating Solutions

You have downloaded a manual for our Model GAA-600-90 CNC Cold Saw.

This is a Non-Ferrous up-cut saw that cuts soft metals such as aluminum, copper, or brass. It can also cut many types of plastics.

SCOTCHMAN INDS. - 180 E US HWY 14 - PO BOX 850 - PHILIP, SD 57567 Call: 1-800-843-8844

MODEL

GAA-600-90 CNC

COLD SAW

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TABLE OF CONTENTS

1.0 INTRODUCTION 2
- **1.1 Legislation applicable to the planning and construction of the machine.** 3
- **1.2 Warranty.** 3

2.0 GENERAL MACHINE DATA 4
- **2.1 Machine identification data.** 4
- **2.2 Technical data.** 4
- **2.3 Electrical data.** 6
- **2.4 Noise level.** 6

3.0 INDICATIONS REGARDING TRANSPORT AND STORAGE 6

4.0 INSTRUCTIONS FOR ANCHORING AND SERVICE START-UP 6
- **4.1 Anchoring instructions.** 6
- **4.2 Power supply connection.** 7
- **4.3 Instructions regarding blade installation.** 7
- **4.4 Cutting coolant.** 7
- **4.5 Pneumatic oil.** 7

5.0 INSTRUCTIONS FOR USE 8
- **5.1 Proper and improper use.** 8
- **5.2 Function of the operating mechanisms.** 8
- **5.3 Manual mode.** 9
- **5.4 Auto mode.** 10
- **5.5 General rules and safety checks.** 12

6.0 RECOMMENDATIONS AND MAINTENANCE 12
- **6.1 Type and frequency of inspections.** 12
- **6.2 Qualified personnel for maintenance and repair work.** 14
- **6.3 Possible breakdowns.** 14
- **6.4 Manufacturer recommendations.** 15

7.0 DRAWINGS AND SCHEMATICS 16

8.0 CYLINDER ASSEMBLY & BLADE GUIDE 22

9.0 MOTOR/BLADE ROCKER ASSEMBLY 24

10.0 SHUTTLE CLAMP ASSEMBLY 26

11.0 INFEED ASSEMBLY 28

12.0 OPTIONAL CHIP COLLECTOR - WIRE LOCATIONS 32

1. INTRODUCTION

This instruction manual has been made in compliance with the requirements of the Legislation according to the Machine directive 2006/42/CEE and its subsequent amendments.
The instruction manual represents an integral part of the machine. It must be consulted before, during and after the machine is put into service, as well as whenever it is considered necessary, thereby respecting the content in each and everyone of its parts.

This is the only way in which the fundamental objectives that have been established on the basis of this manual will be achieved, such as accident prevention and making optimal use of the machine features. Within the framework of this manual, all aspects regarding safety and accident prevention on the job while using the machine have been considered in every detail, herein highlighting the information that is of greatest interest to the user.

- **ATTENTION! Before installing the machine, read this manual carefully. The manual must be kept throughout the life of the machine, so that it is easy to find, if necessary. In the event that the used machine is sold, the machine shall be sold together with this manual. In the event that the machine is scrapped, the identification plate and any other document supplied with the same must be destroyed.**

1.1 LEGISLATION (Applicable to the planning and construction of the machine.)

EN-12100-1	**Machine Safety. Basic concepts, general design principles.**
EN-12100-2	**Machine Safety. Basic concepts, general design principles.**
EN-13857	**Safety distances to prevent dangerous zones from being reached by the upper extremities.**
EN-60204/1	**Electrical equipment of industrial machines.**
EN-13850	**Machine Safety; emergency stop equipment.**
2006/42/CE	**On "Machine Safety"**
93/68/CE	**On the CE Marking (amendment)**
2006/95/CE	**On "Safety of Electrical Material".**
2004/108/CEE	**On "Electromagnetic Compatibility".**

1.2 WARRANTY

Scotchman Industries, Inc. will, within 2 years of date of purchase, replace F.O.B. the factory or refund the purchase price for any goods which are defective in materials or workmanship and, at the seller's option, returns the defective goods, freight and delivery prepaid, to the seller, which shall be the buyer's sole and exclusive remedy for defective goods.
Hydraulic and electrical components are subject to their respective manufacturer's warranties.

This warranty does not apply to machines or components which have been altered, changed or modified in any way or subjected to abusive or abnormal use, inadequate maintenance or lubrication or subjected to use beyond the seller's recommended capacities and specifications.

In no event shall seller be liable for labor costs expended on such goods or consequential damages.

Seller shall not be liable to purchaser or any other person for loss or damage directly or indirectly arising from the use of the goods or from any other cause.
No officer, employee or agent of the seller is authorized to make any oral representations or warranty of fitness or to waive any of the foregoing terms of sale and none shall be binding on the seller.
Any electrical changes made to the standard machine to comply with local electrical codes must be paid by the purchaser.
As we constantly strive to improve our products, we reserve the right to make changes without notification.

2.0 GENERAL INFORMATION

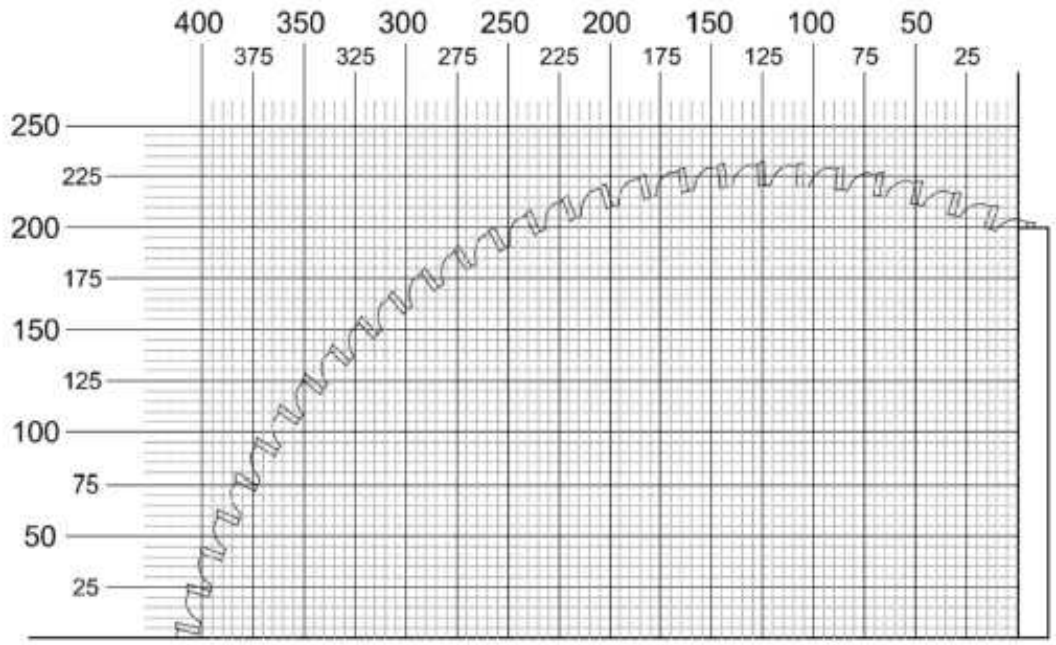
2.1 MACHINE IDENTIFICATION DATA

Model: **GAA - 600 - 90° CNC**
Serial number:
Manufacturing year:

✉ **NOTE: In order to request spare parts, whether covered by the warranty or not, always indicate the model and serial number of the machine; as well as the name of the part and the code that appears in the last chapter of the parts exploded views.**

2.2 TECHNICAL DATA

Characteristics	Dimension
Three phase motor	4 KW 230/400 V
Motor speed	3,000 RPM
Interior ∅ of blade	50mm (2")
Maximum ∅ of saw blade	500mm (20")
Maximum cutting height	170mm (6.8")
Feeder travel	700mm(28") MULTIPLE ADVANCE
Air consumption	20 litres (5.2 gallons)/minute
Pneumatic hold-down clamps	6 (3 horizontal & 3 vertical)
Lubrication system	Pneumatic, by sprayer
Dimensions	2020 x 1510 x 975 (height of working surface)
Weight	650 kgs (1,430 ibs.)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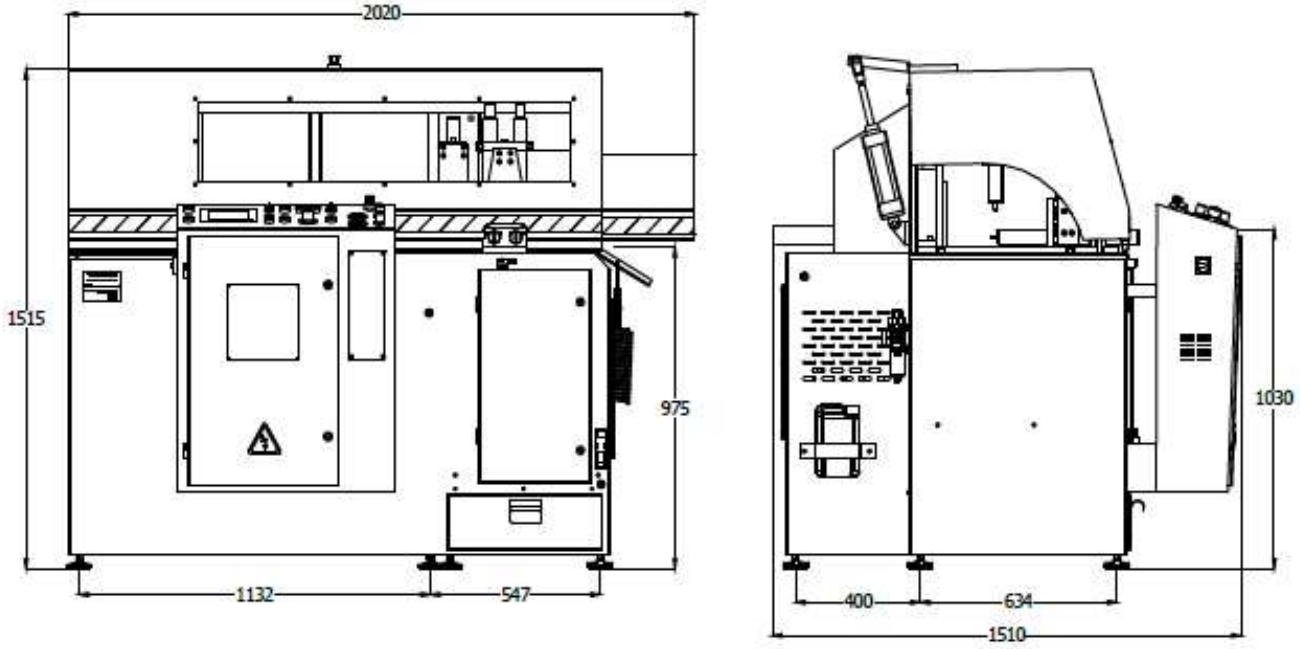
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2.3 ELECTRICAL DATA

Power supply	Motor power	Total consumption
220 V Three phase	4.5 Kw/6 HP	16 A
380 V Three phase	4.5 Kw/6 HP	11 A

2.4 NOISE LEVEL

At a distance of 60cm **RUNNING OFF-LOAD** **68 Db (A) Leq**

MACHINING A 70 X 50 PROFILE **108 Db (A) Leq**

➲ **ATTENTION: When working with the machine, use individual hearing protection equipment.**

3.0 INDICATIONS REGARDING TRANSPORT/STORAGE

The machine is delivered on a pallet in order to be transported by forklift.

Store in the vertical position.

Do not stack.

If the machine remains stored for a long period of time, periodically lubricate it.

Do not expose to the elements.

The packaging is made of properly designed and sized wood and it is also supplied wrapped in plastic.

⌦ **CAUTION: Do not improperly dispose of the packaging. Send this material to be recycled or disposed of in accordance with all legislation in force.**

4.0 INSTRUCTIONS FOR ANCHORING & SERVICE START-UP

4.1 ANCHORING INSTRUCTIONS

Ensure that the machine has not suffered any damage during transport by making an initial visual inspection. If damage is observed, advise the manufacturer immediately.

The machine must be installed on a firm and level surface in order to thus reduce vibrations during operation and so that the machine operates within the parameters established by the manufacturer.

4.2 POWER SUPPLY CONNECTION

Verify that the power supply voltage corresponds to the voltage indicated on the specifications plate of the machine. Connect the cable to the power supply, using a plug that is appropriate for the characteristics of the same, thereby respecting the color codes.

Once the machine is connected, verify that the motor rotation agrees with the direction of the saw blade teeth (rotation to the right). If the motor rotation was not correct, change the two phases of the motor. Then, check the rotation again.

The pneumatic connection must be made to the supply system, using a tube that is appropriate for the spigot of the machine. Adjust the pressure at the filtering group.

➲ **ATTENTION! The pneumatic working pressure must be between 6 and 7 atm.**

4.3 BLADE INSTALLATION

In order to install the blade, disconnect the power to the machine (deactivate the main switch) and press the EMERGENCY STOP BUTTON. Access the machine shaft through the sheet metal front, where the cutting oil sprayer is located. Lock the shaft, using the 12 ∅ rod that is provided with the tools, and loosen the blade nut.

⌦ **ATTENTION! Assure that the blade is adapted for this machine. (Diameter of the axis 50mm.)**

⌦ **DANGER! After changing the blade, put the sheet metal front back on.**

4.4 CUTTING COOLANT

In order to fill the machine with cutting coolant, open the reservoir and fill with PURE, NON-EMULSIFIABLE CUTTING OIL. (VISCOSITY ISO VG 16-32 cST 40° C)

4.5 PNEUMATIC OIL

Both the oil-pneumatic converters and the filter group lubricator must be filled with ISO VG 16 VISCOSITY PNEUMATIC OIL. If none is available, use hydraulic oil HLP 16.

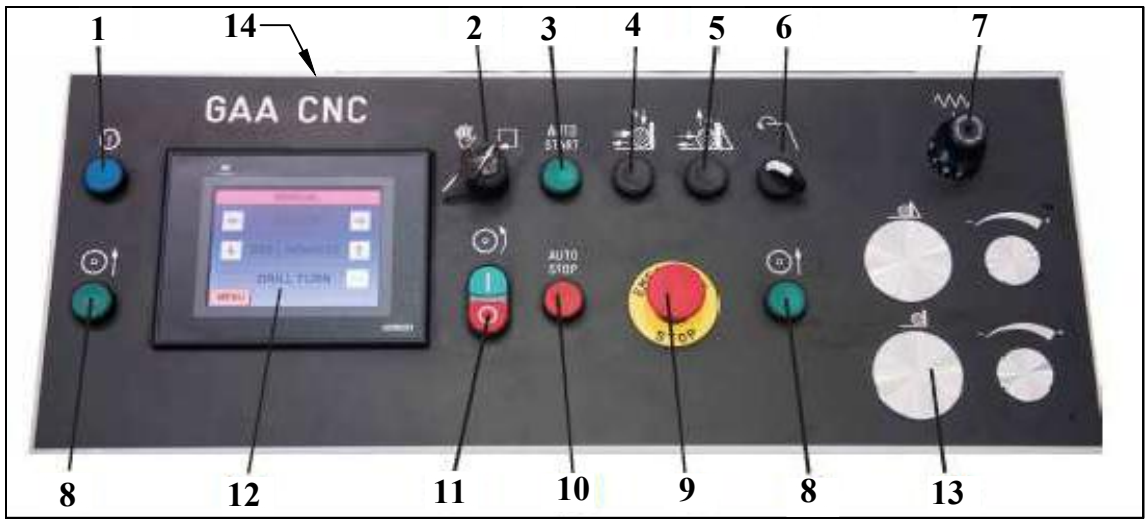
5.0 INSTRUCTIONS FOR USE

5.1 PROPER AND IMPROPER USE

This is an automatic cut-off machine, especially designed for cutting aluminum profiles. The use of the machine for cutting other materials is hereby prohibited. Such use may cause damage to the machine and put the health and safety of the worker at risk.

⌦ **DANGER! We are not responsible for any possible accident caused by the failure to comply with the aforementioned.**

5.2 FUNCTION OF THE OPERATING MECHANISMS



1. **Blue push button: To re-arm machine.**
2. **Operating mode selector: MANUAL - AUTOMATIC.**
3. **Green push button: Automatic cycle start.**
4. **Black push button: Hold down feeder clamp operation.**
5. **Black push button: Hold down machine clamp operation.**
6. **Lift protective shield.**
7. **Blade raise advance regulator.**
8. **Green push button: Blade raise.**
9. **Emergency button with interlock. It stops the machine completely.**
10. **Red push button: Automatic cycle stop.**
11. **Saw blade on-off: ON, green colored symbol I; OFF, red O.**
12. **Touch screen 5, 6".**
13. **Clamps pressure regulators.**
14. **P/N 3058 - Legend Plate.**

Signal lamps: **Red: emergency.**

Orange: Machine working in automatic cycle.

Green: Power supplied to the machine.

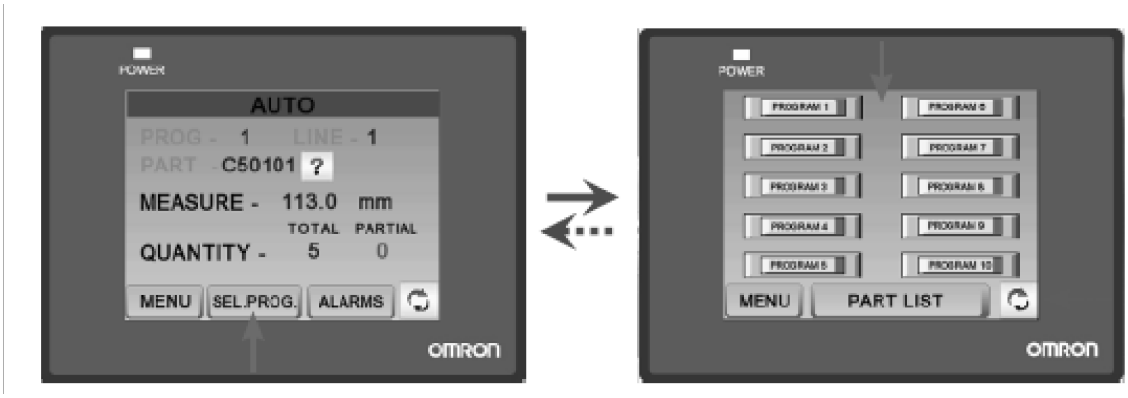
5.3 MANUAL MODE

With the operating mode switch in the MANUAL MODE, the operator can activate the hold down clamps, the feeder gripper and the saw blade. We recommend that very high feed rate for the saw blade or high feed rate on the shuttle feed not be used as this would greatly reduce the duration of the blade and the quality of the cut. The feeder can also be operated for maintenance purposes in this mode.

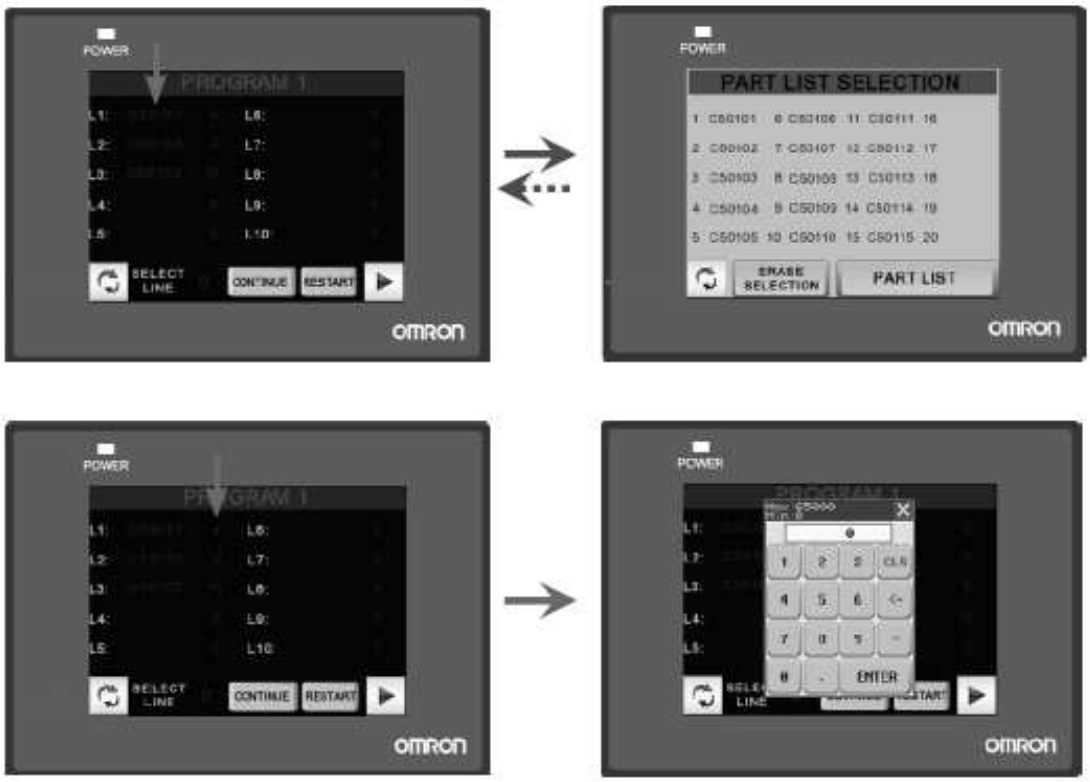
5.4 AUTO MODE

In the auto mode, select the program of work. The last program used will be marked in green. The machine has ten programs with thirty lines of cut, distributed in three pages. Every line of program is formed by the length of cut and number of pieces. To edit any of the information of a line, press on the description or quantity and a keypad will pop up so that you can make your changes.
TO CREATE, TO MODIFY AND TO EXECUTE A PROGRAM OF WORK:

1. **Select the program of work.**

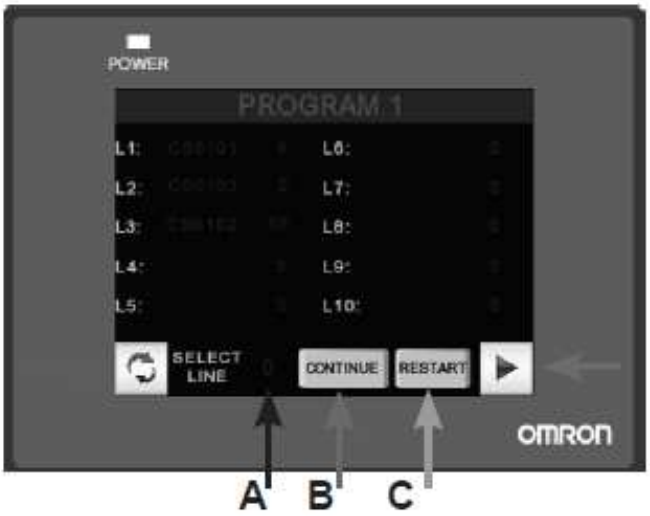


2. **Select the part list and the number of pieces.**



The program is finished when no length of piece or number of pieces are displayed.

3. **To execute the program:**



A - To select line of beginning.

B - To continue the program in the last line in execution.

C - To execute the program from the first line.

When the machine is prepared for the execution of the program, follow the steps below:

1. **Adjust the desired height of the cut, using the travel end stop at the right of the machine.**
2. **Position the machine hold-down clamps and the feeder gripper close enough to the material so that they do not travel more than 5 millimeters (2/10 of an inch).**

⌦ **It is important that the horizontal hold-down clamp of the feeder gripper is a maximum of 5mm from the material. If not, it will not allow the machine to be turned.**

3. **Position the bar over the feeder so that it passes by about 10mm (4/10 of an inch) from the saw blade groove.**
4. **Fasten the material by operating the hold-down clamps of the feeder gripper.**
5. **Start the working cycle by pressing the START button.**
   The machine will stop automatically when the material is finished, the stop button is pressed, the alarm is produced or when the program is finished. During the work of the machine, you can see the measures of the part in execution.

5.5 GENERAL RULES AND SAFETY CHECKS

- **Before using the machine, check the efficiency and operation of all safety devices and check that the moving parts of the machine are not blocked, that there are no damaged parts and that all machine components are positioned and work correctly.**
- **All safety devices must be kept in working order.**
- **DO NOT without the protective shield in position.**
- **ALWAYS wear gloves and protective eyewear.**
- **ALWAYS wear regulation work clothes that are loose fitting and fastened.**
- **Before operating the machine, the operator must ensure that all tools used for maintenance or adjustment have been removed.**
- **In the event of a fire, use powder extinguishers and disconnect the machine from the electric system.**

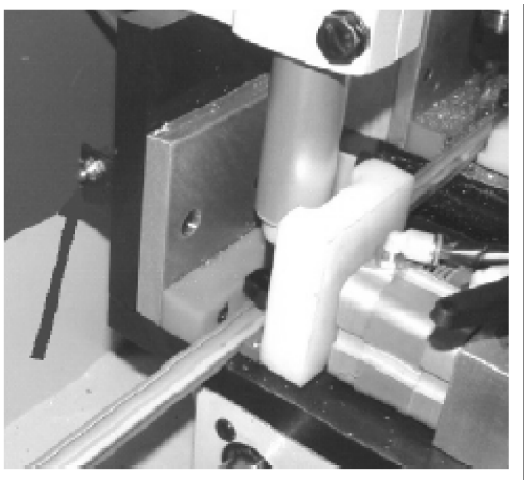
6.0 RECOMMENDATIONS AND MAINTENANCE

6.1 TYPE AND FREQUENCY OF INSPECTIONS

The operator's knowledge of the machine is one of the best ways of daily control of any possible problem. If any failure is detected, work must be stopped and qualified personnel must be informed immediately.

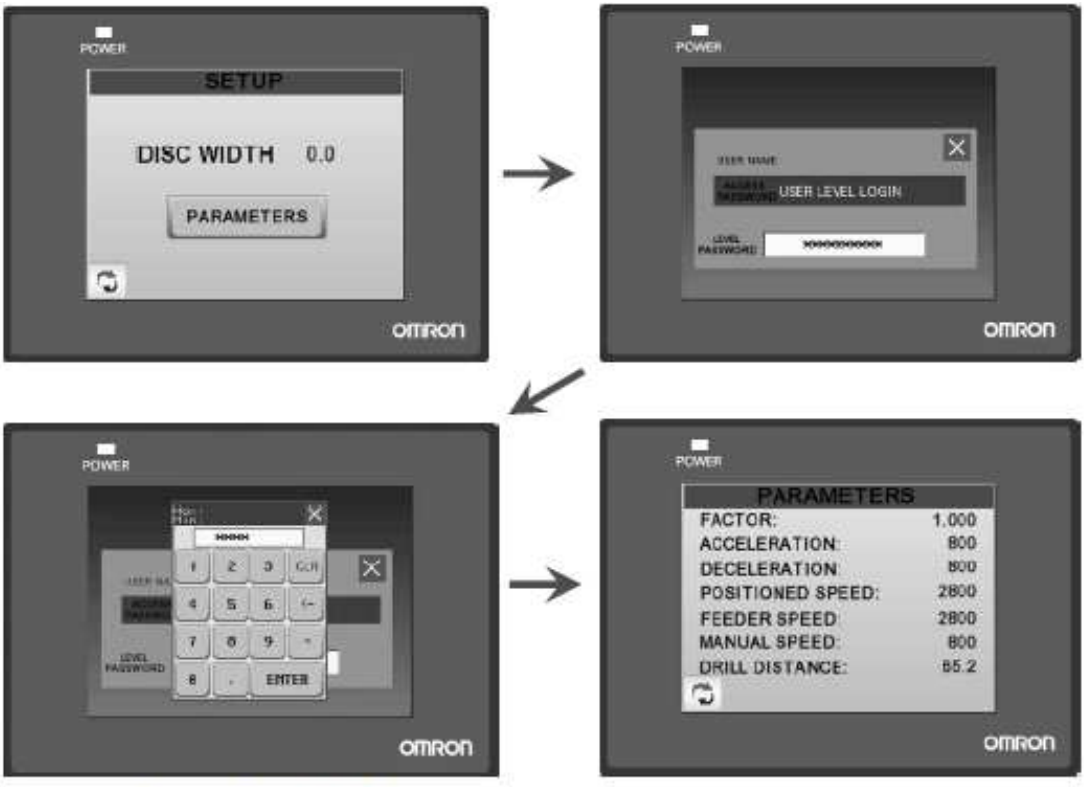
- **NOTE: ALWAYS CLEAN THE MACHINE AND THE WORK AREA AT THE END OF THE WORKDAY.**

➲ **ATTENTION: Every eighty hours, lubricate the ball screw nut with ➲KLUBER ISOFLEX NBU 15.**



In the SETUP menu, you can modify the parameters of the machine.

➲ **The password for the SETUP menu is7890.**



PASSWORD – 7890

6.2 QUALIFIED PERSONNEL FOR MAINTENANCE/REPAIR

- **All repairs shall be made exclusively by qualified personnel; thereby, always using original replacement parts. If not, the machine may be damaged or the user may be injured.**
- **The maintenance and cleaning of the machine must not be neglected. The life of the machine and its optimal operation depend on it considerably.**

6.3 POSSIBLE BREAKDOWNS

NONE OF THE MACHINE COMPONENTS WORK.

Check that there is voltage at the input and output of the main switch.
Check the control circuit fuse.
Check the condition of the transformer.

THE FEEDER DOES NOT WORK CORRECTLY.

Check the status of all end-of-travel stops and the positioning of same.
Check the condition of SERVO DRIVE.
Check the condition of the PLC and the voltage on the line itself (24 VDC).

THE SHIELD RAISED INDICATOR DOES NOT TURN OFF.

Ensure that the PLC is not receiving a signal at input ch103. If it is, check the detector located on the shield cylinder.

THE BLADE DOES NOT RAISE CORRECTLY.

Check the cylinder and regulator.
Check the pressure at the filter regulator.
Check that the advance may be too high.
Check the "raise blade" push buttons.

THE FEEDER DOES NOT MOVE CORRECTLY.

Check the feeder guides.
Check the ball-screw.
Check that the advance may be too high.

6.4 MANUFACTURER'S RECOMMENDATIONS

☑ **In the event that the machine is broken down or the saw blades must be replaced, place a padlock on the protection switch and place the keys under the care of qualified personnel.**

☑ **Before working on any electrical devices, disconnect the plug from the power supply.**

☑ **If extension cords are used, ensure that the cable has the appropriate cross-section for the power of the machine.**

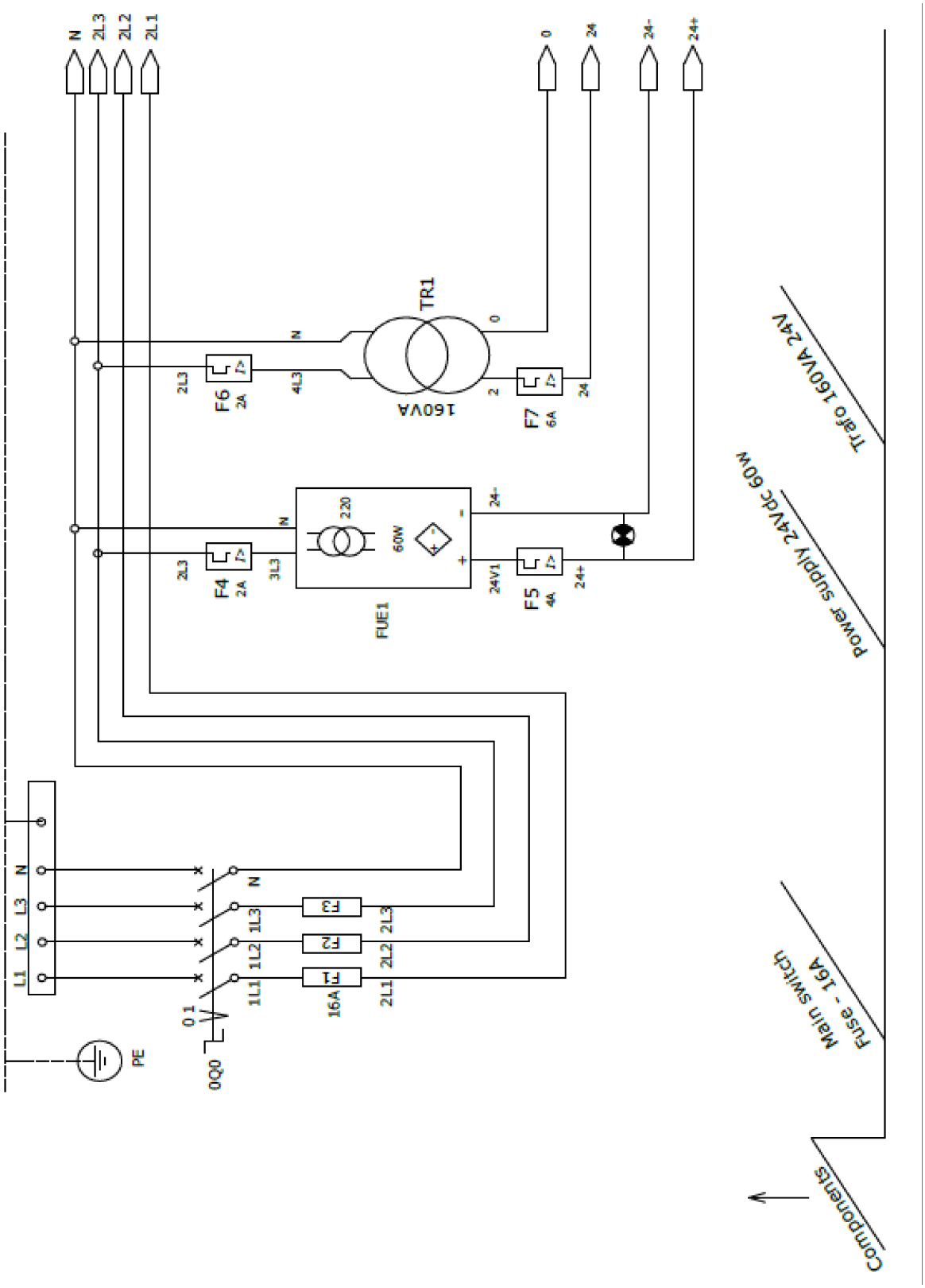
☑ **Whenever any part has to be replaced, use an original replacement part and endeavor to use the oil recommended by the manufacturer.**

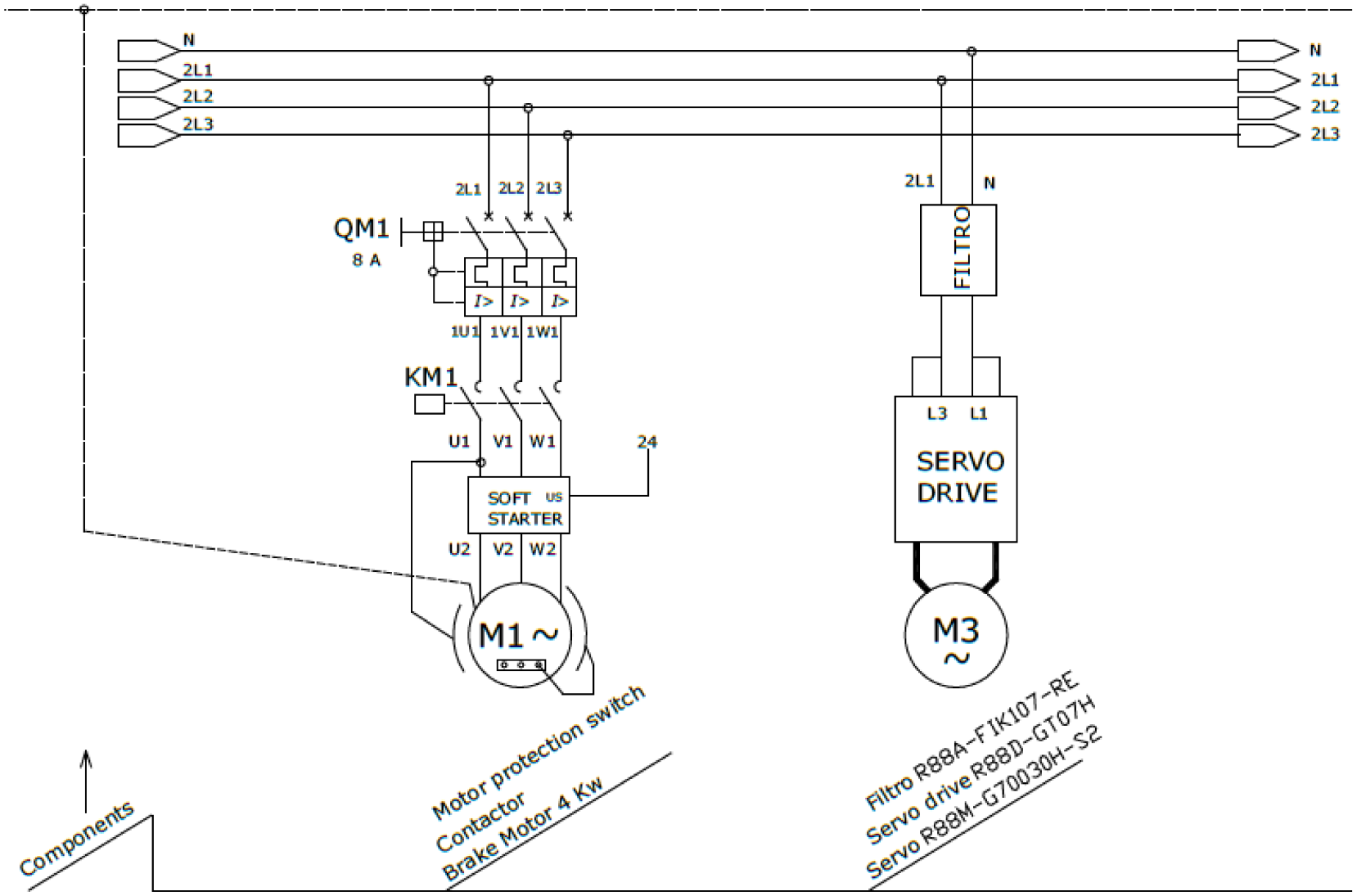
✉ **NOTE: IN CASE OF ANY DOUBT OR PROBLEM, DO NOT HESITATE TO CONSULT THE MANUFACTURER.**

➲ **ATTENTION: THE MANUFACTURER GUARANTEES THE SUPPLY OF EACH ONE OF THE PARTS OR COMPONENTS FOR AT LEAST THREE YEARS FROM THE MANUFACTURING DATE OF THE MACHINE.**

➲ **ATTENTION: THE MANUFACTURER IS NOT RESPONSIBLE FOR BREAKDOWNS CAUSED DUE TO THE IMPROPER USE OF THE MACHINE.**

7.0 DRAWINGS AND SCHEMATICS

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U2 V2 W2
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SERVO
DRIVE
M3
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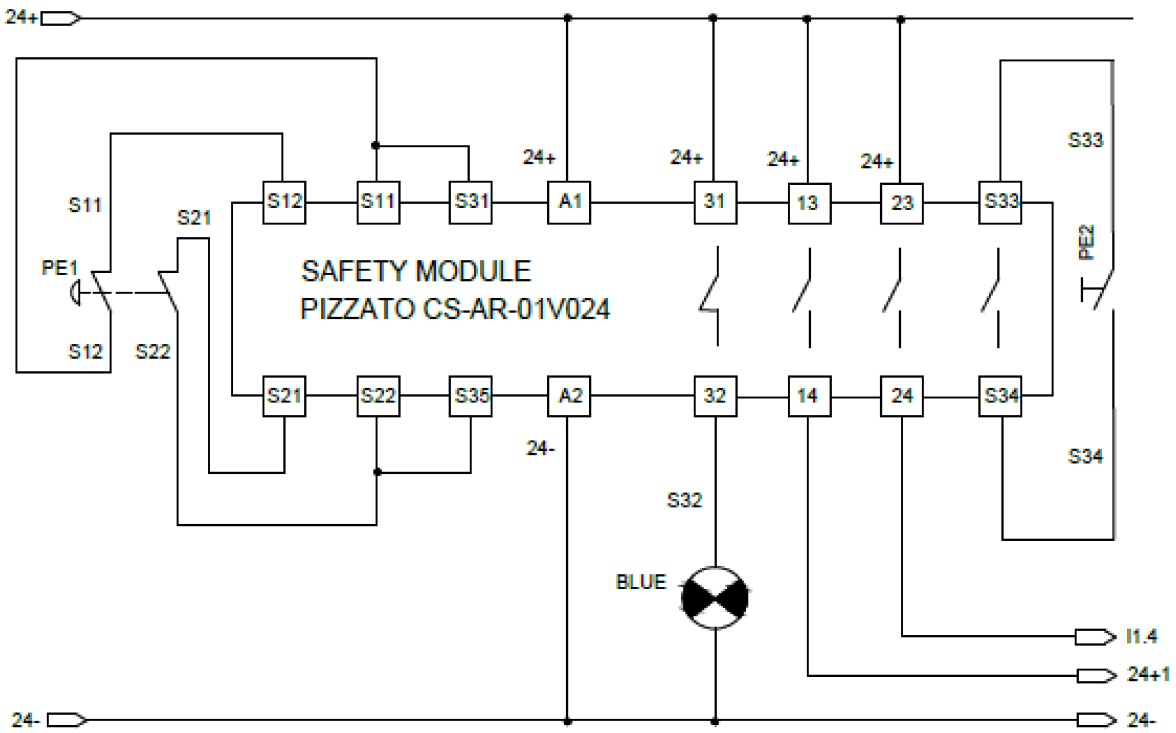
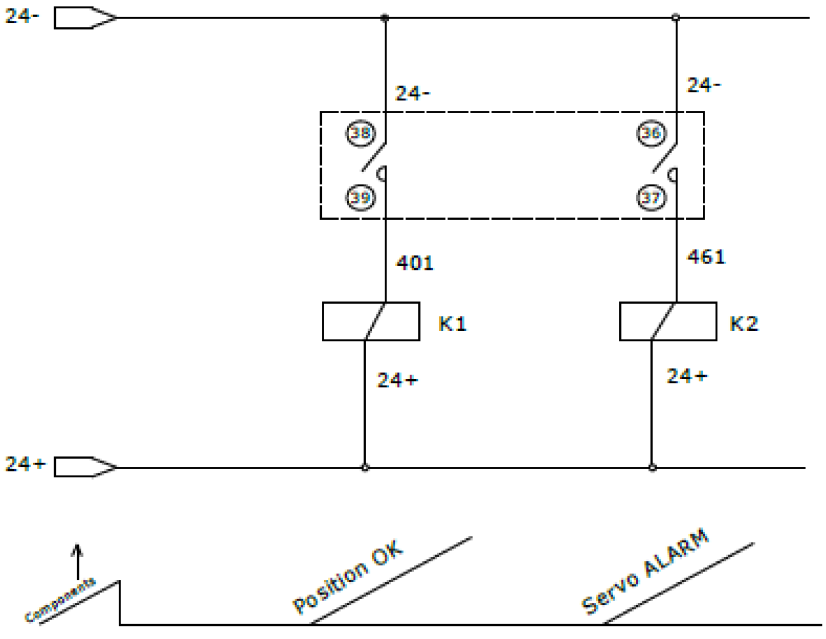
Components
Motor protection switch
Contactor
Brake Motor 4 Kw
Filtro R88A-FIK107-RE
Servo drive R88D-GT07H
Servo R88M-G70030H-S2

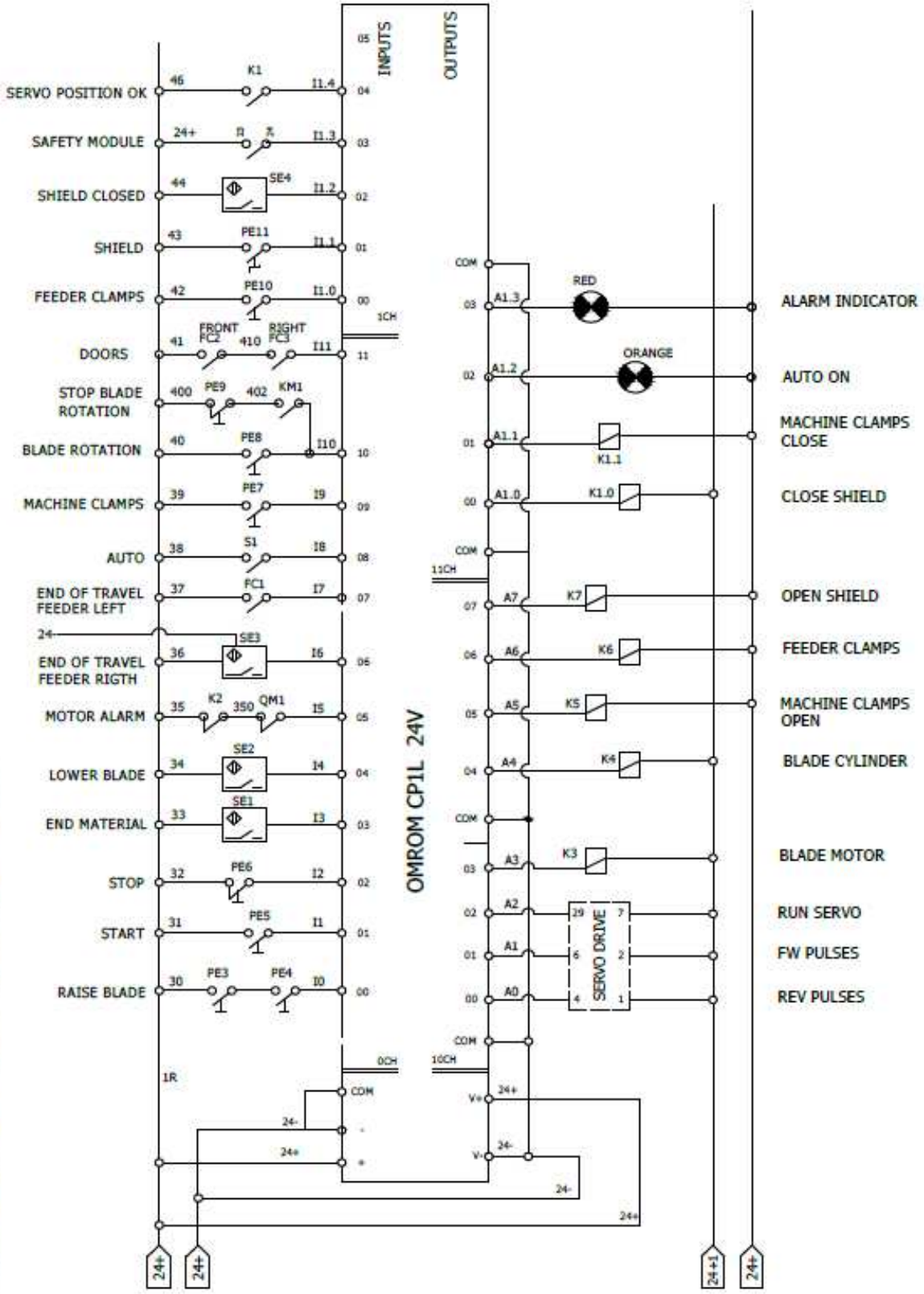
SAFETY CIRCUIT

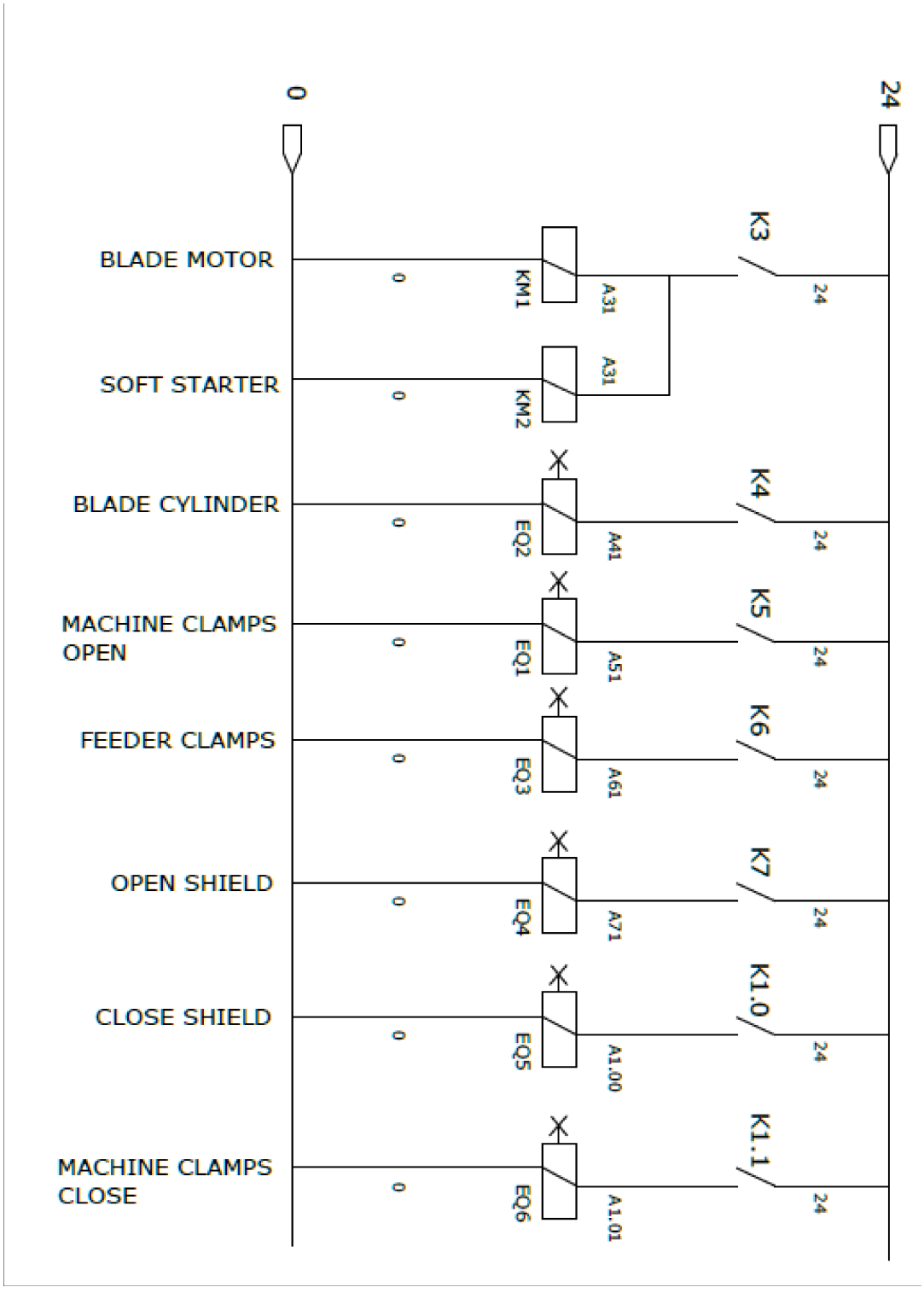


SERVO DRIVE OUTPUTS



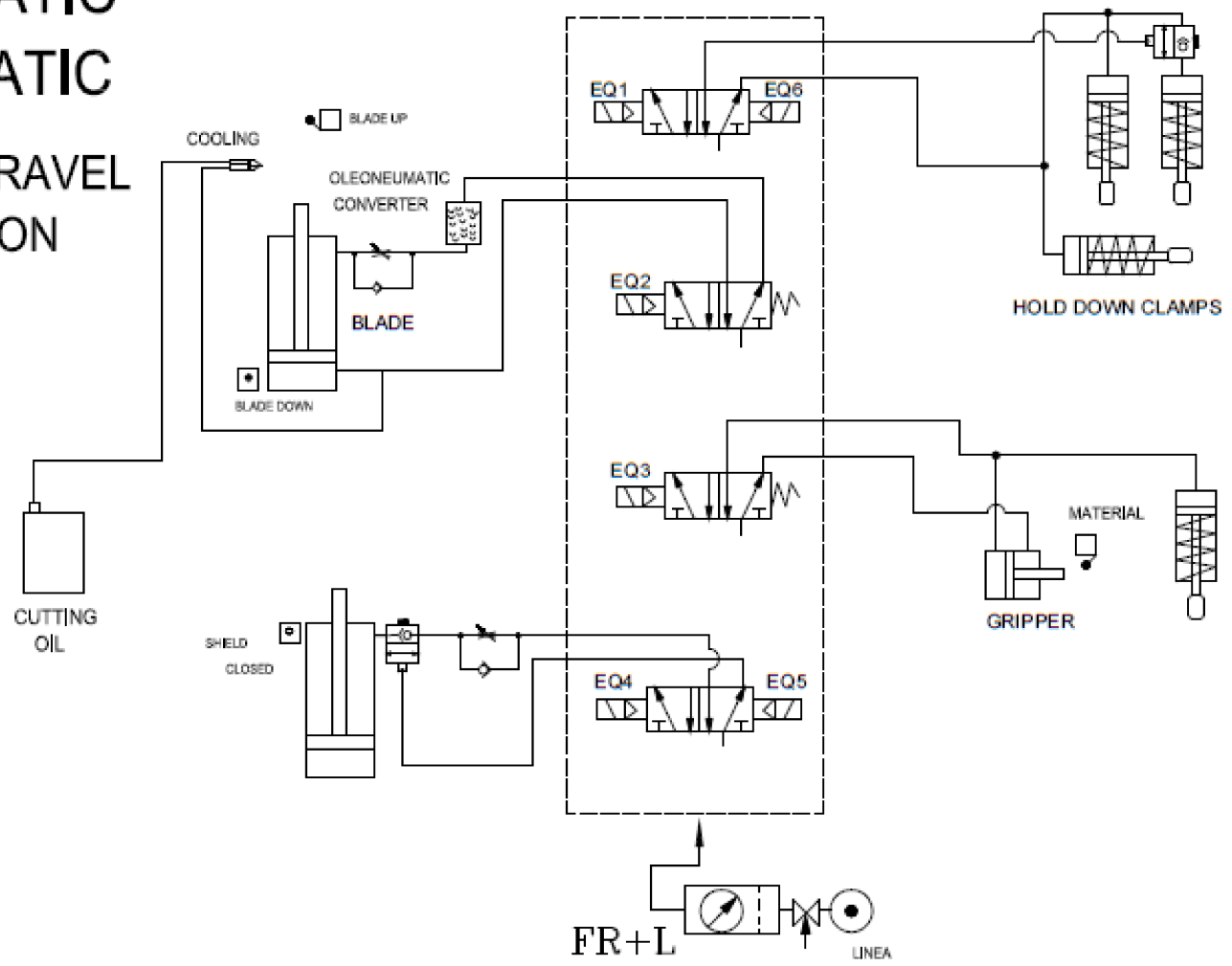
INPUTS - OUTPUTS PLC




0
24
BLADE MOTOR
SOFT STARTER
BLADE CYLINDER
MACHINE CLAMPS OPEN
FEEDER CLAMPS
OPEN SHIELD
CLOSE SHIELD
MACHINE CLAMPS CLOSE
KM1
KM2
EQ2
EQ1
EQ3
EQ4
EQ5
EQ6
A31
A31
A41
A51
A61
A71
A1.00
A1.01
K3
K4
K5
K6
K7
K1.0
K1.1

PNEUMATIC SCHEMATIC

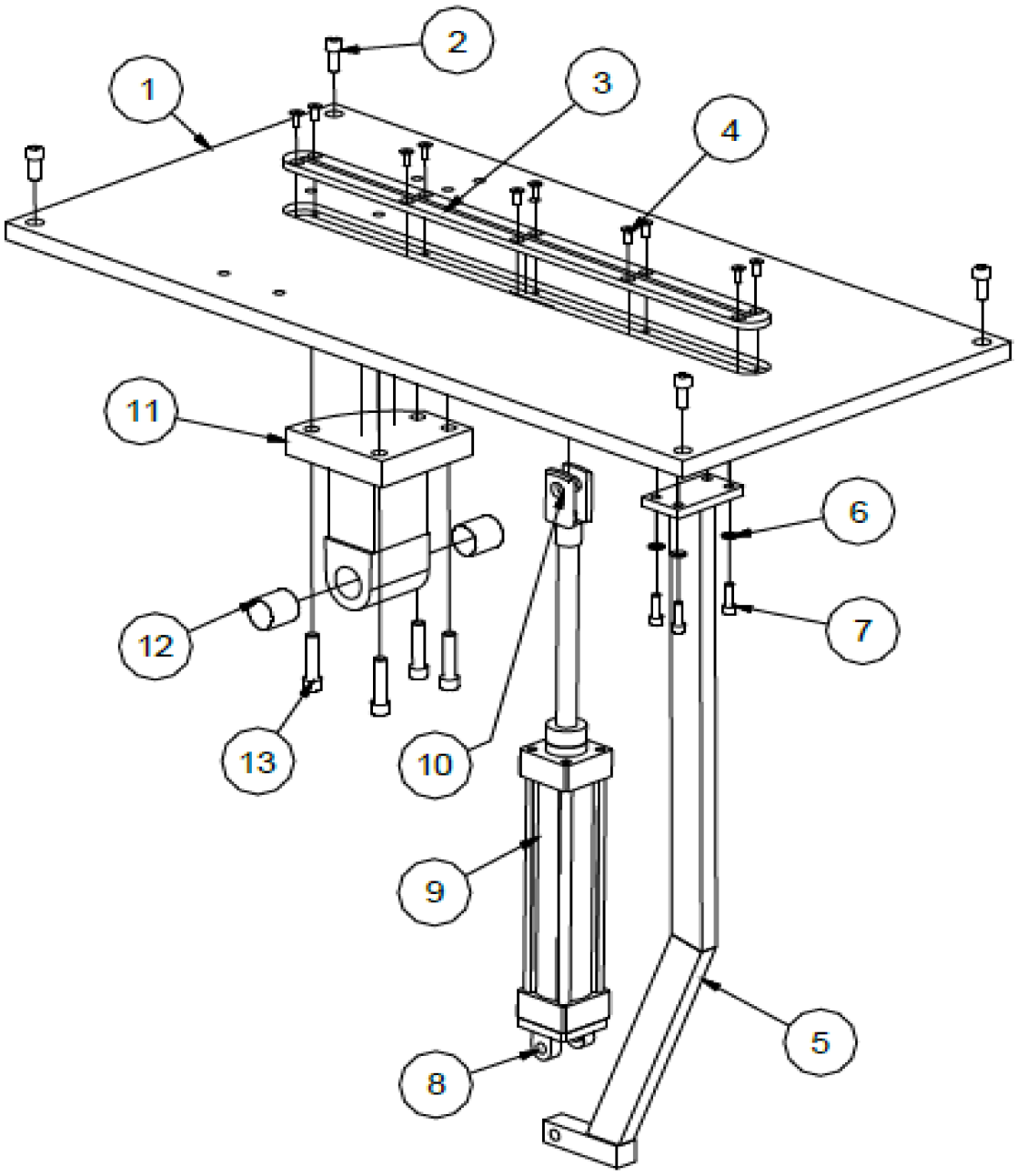
END-OF-TRAVEL POSITION



TRONZADORAS <<MG>>	MAQUINA GAA -600 CNC
	FECHA 15 - 04 - 2014

8.0 CYLINDER ASSEMBLY & BLADE GUIDE

ITEM	PART #	DESCRIPTION
1		Plate
2	TD91212025	DIN 912 M-10 x 25 Screw
3	2160000522	Blade Groove TL-600
4	TD79910616	DIN 7991 M-6 x 15 Screw
5	2169000112	Cylinder Column GAA - 600
6		DIN 127 M-8 Socket
7		DIN 912 M-8 x 25 Screw
8	N000000059	ISO 50 Cyl. Yoke
9	N000050161	ISO 50 x 200 Cylinder Reg. Panel
10	N000000057	ISO 50 Cyl. Female Pin Joint
11	2050000322	Rocker Support
12	2040000C30	Autolubricated Tip 30-35-35
13	TD91212050	DIN 912 M-12 x 50 Screw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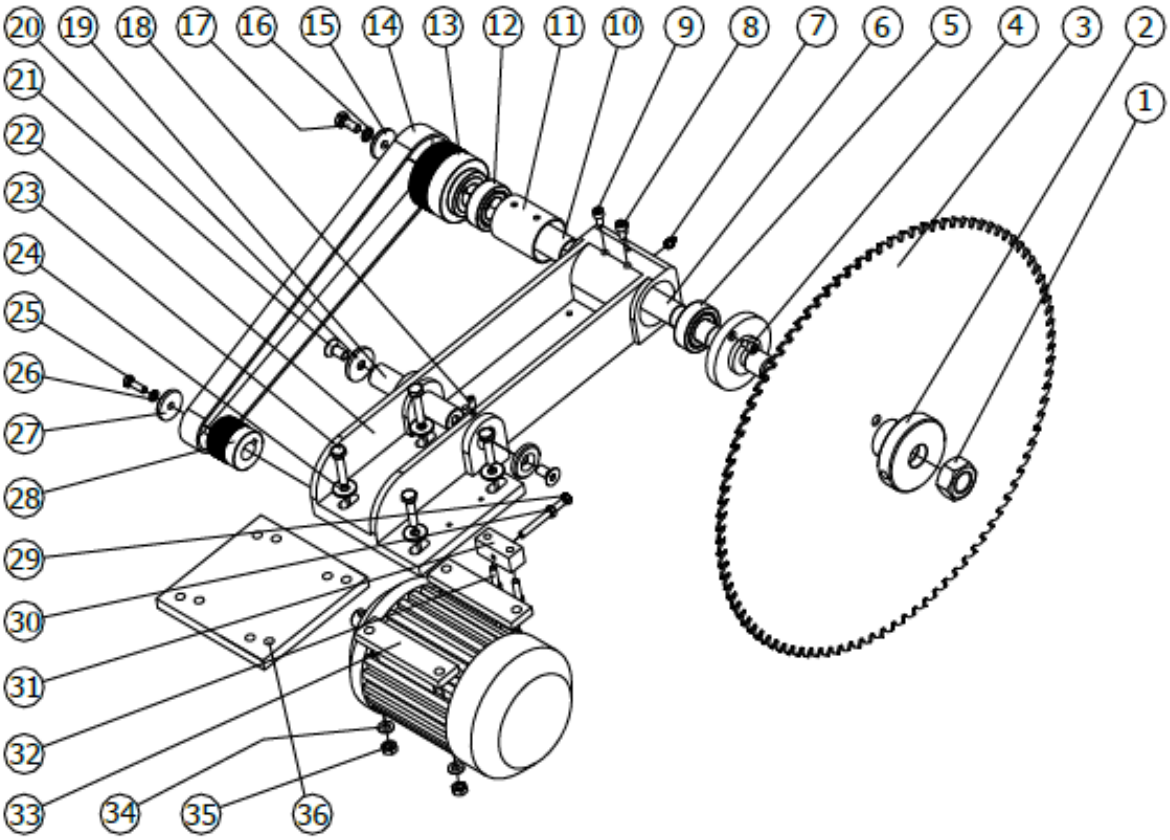
9.0 MOTOR/BLADE ROCKER ASSEMBLY

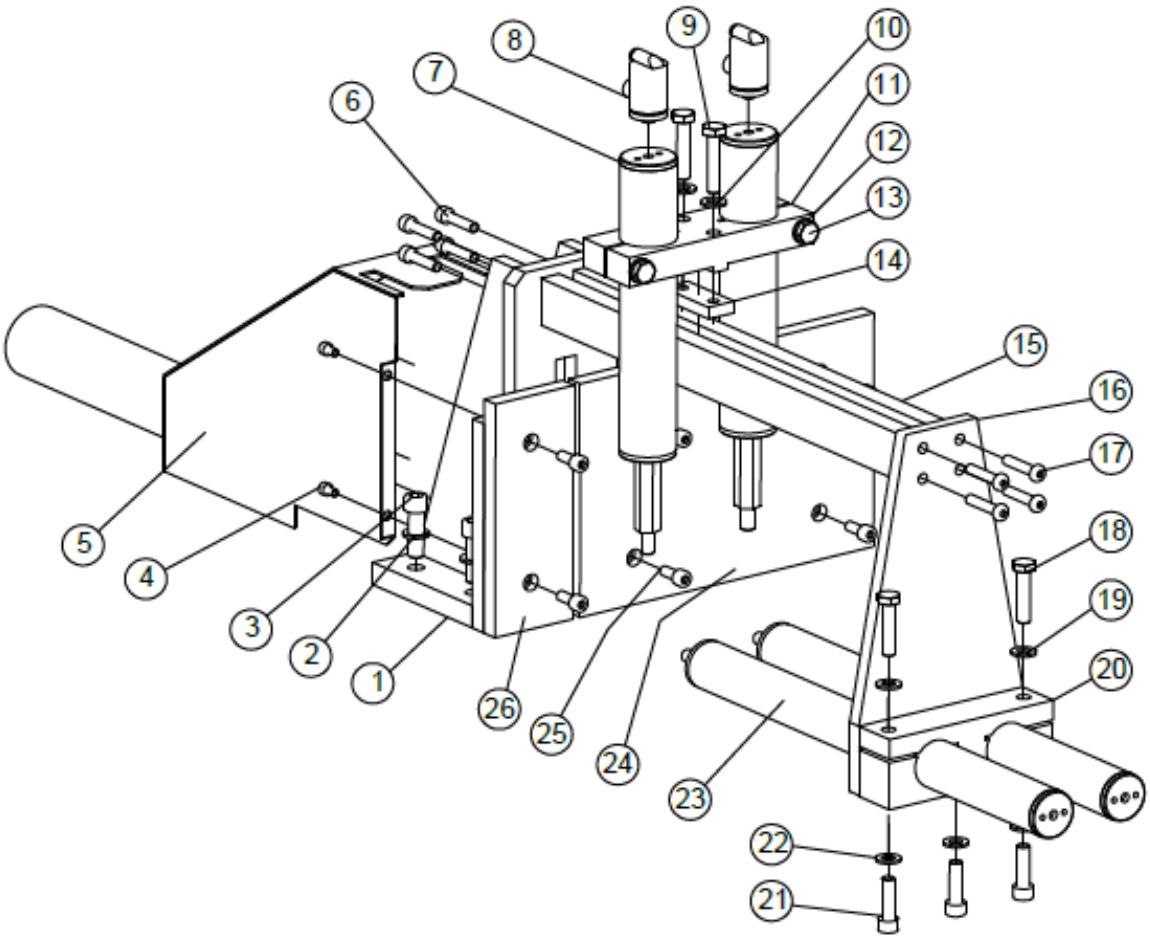
ITEM	PART #	DESCRIPTION
1	TD93400030	DIN 934 M-30 Nut
2	2040000042	Blade Washer
3	205DW65032	Widia Blade ∅ 650 x ∅ 50 x 4.5
4	TD91208012	DIN 912 M-8 x 12 Screw
5	2040000172	4206 Bearing
6	2040000102	∅ 30 Shaft
7	2070000012	Lubricator 1/8"
8	TD91206010	DIN 912 M-6 x 10 Screw
9	TD91208016	DIN 912 M-8 x 16 Screw
10	2040025582	∅ 36 Separator
11	2040060582	∅ 60 Separator
12	2040000172	4206 Bearing
13	216000132	Rocker Shaft Pulley GAA-600
14	2169000012	1168 J16 Poly-V Belt
15	204000A401	∅ 40 x ∅ 10 x 6mm Washer
16	TD128000010	DIN 128 ∅ 10 Washer
17	TD933110025	DIN 933 M-10 x 25 Screw
18	TD91308016	DIN 913 M-8 x 16 Screw
19	2040000072	Connecting Rod Pin
20	216000A452	∅ 45 x 7 Avell M-12 Washer
21	TD79911225	DIN 7991 M-12 x 25 Screw
22	2160000032	Cast Iron Rocker TL-600
23	TD93310030	DIN 933 M-10 x 50 Screw
24	204000A401	10 INT. Pisad Washer
25	TD93308025	DIN 933 M-8 x 25 Screw
26	TD12800008	DIN 128 ∅ 8 Washer
27	204000A402	∅ 40 x ∅ 8 x 6mm Washer
28	2169000142	Motor Pulley GAA-600
29	TD93308080	DIN 933 M-8 x 80 Screw
30	TD93400008	DIN 934 M-8 Nut
31		Belt Tension Adjuster
32	TD91208030	DIN 912 M-8 x 30 Screw
33	21590000M3	4KW 3-Phase Motor
34	TD125000010	DIN 125 ∅ 10 Washer

35	**TD93400010**	**DIN 934 M-10 Nut**
36		**Motor Plate T100**



10.0 SHUTTLE CLAMP ASSEMBLY

ITEM	PART #	DESCRIPTION
1		Turret Cotter
2	204000A401	Ø 10 Washer
3	TD91212040	DIN 912
4	TD91206010	DIN 912 M-6 x 10 Screw
5		Turret Protector
6	TD91208035	DIN 912 M-8 x 35 Screw
7	2165000212	Ø 45 x 115 L250 Pneumatic Clamp
8	N000000015	Safety Valve
9	TD93110050	DIN 931 M-10 x 50 Screw
10	204000A401	Ø 10 Washer
11	2906	Vertical Clamps Support
12	204000A401	Ø 10 Washer
13	TD93110060	DIN 931 M-10 x 60 Screw
14		M-10 x 12 Plane Nut
15		Vertical Clamps Guide
16	2169000494	Guide Support
17	T173800840	ISO 7389 M-8 x 40 Screw
18	TD93110045	DIN 931 M-10 x 45 Screw
19	TD12500010	D125 Ø 10 Washer
20		Aluminum Rod Horizontal Clamp
21	TD91210035	DIN 912 M-10 x 35 Screw
22	TD12500010	D125 Ø 10 Washer
23		Horizontal Clamp
24		Right Aluminum Plate
25	TD91208020	DIN 912 M-8 x 20 Screw
26		Left Aluminum Plate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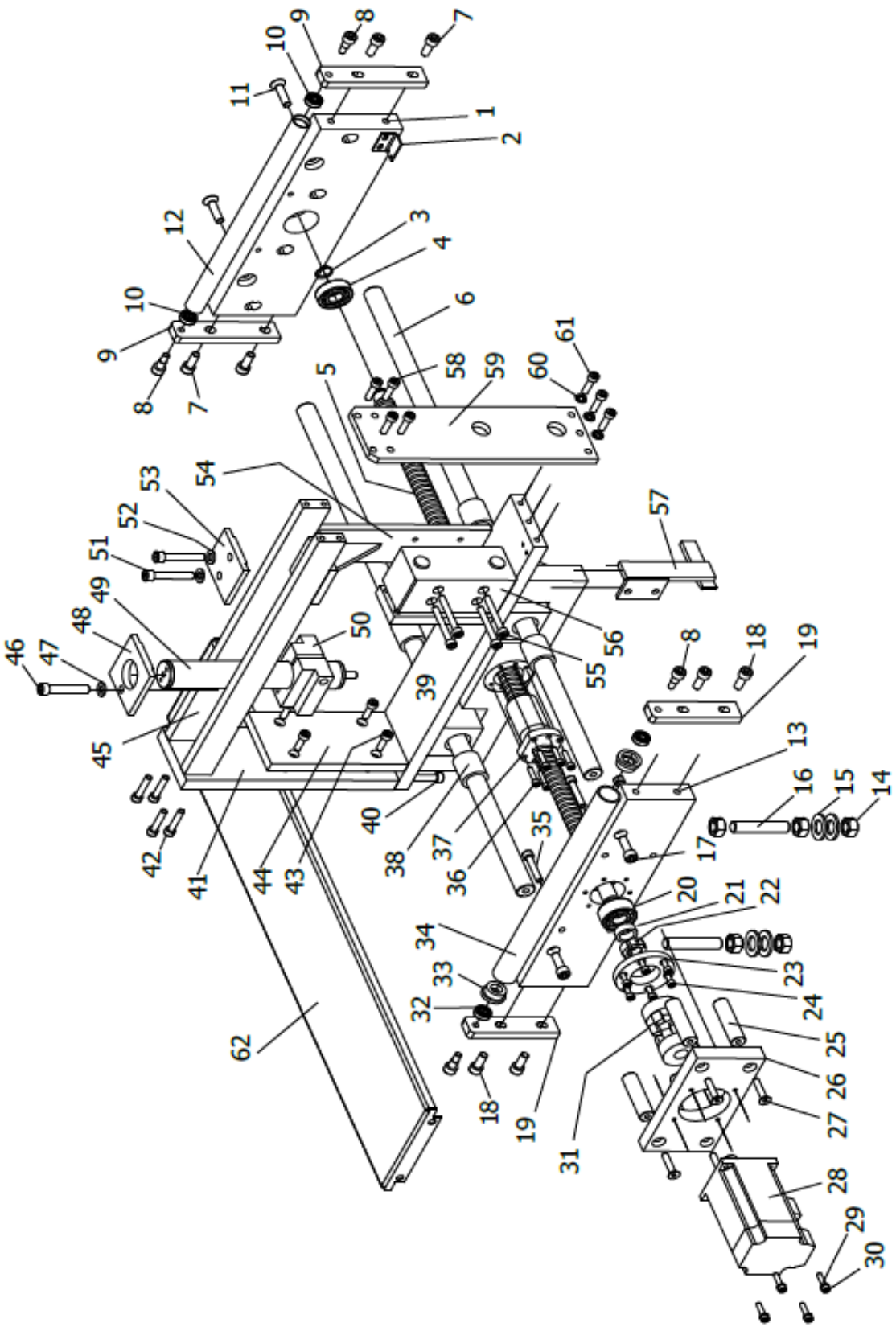
11.0 INFEED ASSEMBLY

ITEM	PART #	DESCRIPTION
1		Feeder Machine Support
2		Sensor Square
3	CTD47100120	DIN 471 Æ 20 Ring
4	C2070000142	6204 2RS Bearing
5	M200HBA2510	Ball Screw Æ 25 x 10
6	C2169311074	Ø 30H6 x 925 Bar
7	CTD91210025	DIN 912 M-10 x 25 Screw
8		Roller Shaft
9		Front Roller Support
10	C2350000461	608 Bearing
11		DIN 7991 M-10 x 50 Screw
12	COF6025400	Ø 25 x 350 PVC Roller
13		Back Feeder Support
14		M-16 Nut
15		Ø 16 Washer
16		M-16 Screw
17	CTD91210030	DIN 912 M-10 x 30 Screw
18	CTD91210025	DIN 912 M-10 x 25 Screw
19		Back Roller Support
20	CR0003204RS	3204 2RS Bearing
21		Screw Separating Tip
22		Back Roller Support
23	CTP00FR2010	M-20 x 1 Precision Nut
24		Cover Bearing
25	CTD91206020	DIN 912 M-6 x 20 Screw
26		Ø 20 Support
27		Servo Plate 740w
28	CE000R88750	750W Servomotor G
29		DIN 127 6 Washer
30	CTD91206025	DIN 912 M-6 x 25 Screw
31	C2000401917	Elastic Coupling
32		608 Bearing
33		Roller Head Ø 32
34	P2060000324	Ø 32 x 300 PVC Roller

35	**CTD91208045**	**DIN 912 M-8 x 45 Screw**
36	**CTD91206025**	**DIN 912 M-6 x 25 Screw**
37	**C20000A2510**	**25 x 10 Ball Screw Nut**
38	**C2163000171**	**∅ 30 Lineal Bearing**
39		**Feeder Carriage**
40	**CTD91208035**	**DIN 912 M-8 x 35 Screw**
41		**Vertical Support**
42	**CTD91208040**	**DIN 912 M-8 x 35 Screw**
43	**CTD91208025**	**DIN 912 M-8 x 25 Screw**
44		**Feeder Aluminum Plate**
45		**Feeder Clamps Guided**
46	**CTD91210060**	**DIN 912 M-10 x 60 Screw**
47		**∅ 10 Washer**
48		**Vertical Clamp Sheet**
49		**∅ 40 L250 Pneumatic Clamp**
50		**∅ 40 Aluminum Rod**
51	**CTD91210060**	**DIN 912 M-10 x 60 Screw**
52		**∅ 10 Washer**
53		**Horizontal Clamp Sheet**
54		**Cylinder Carriage**
55		**DIN 912 M-8 x 65 Screw**
56		**50 x 20 Tri-Rod Cylinder**
57		**End of Travel Stop**
58	**CT173808030**	**ISO 7380 M-8 x 30 Screw**
59		**Vertical Support**
60		**∅ 8 Washer**
61	**CTD91208030**	**DIN 912 M-8 x 30 Screw**
62		**Ball Screw Protector**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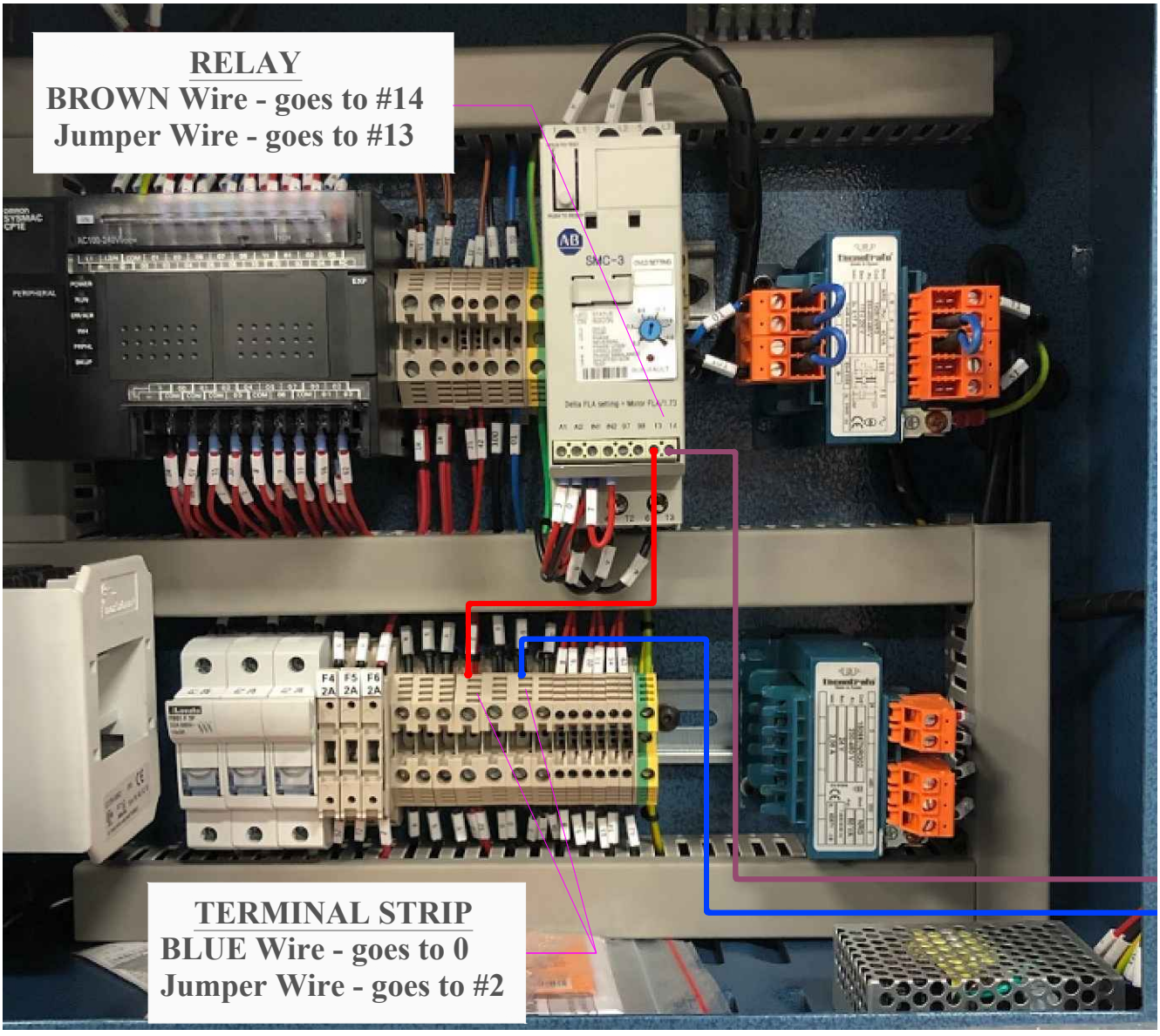
12 . OPTIONAL CHIP COLLECTOR - WIRE LOCATIONS

CHIP COLLECTOR WIRING INSTRUCTIONS for ALL of the GAA-500 & GAA-600 SAWS

CHIP COLLECTORS - P/N 829230 - 230V 3PH or P/N 829460 - 460V 3PH

Chip Collector has a BROWN wire and a BLUE wire. A jumper wire also needed. Below shows where the wires go.

BROWN - 14 RELAY
BLUE - 0 TERMINAL STRIP
JUMPER - 13 RELAY to 2 TERMINAL STRIP



	TOLERANCE (UNLESS SPECIFIED) .0 = +/-.02 (.5mm) .00 = +/-.01 (.25mm) .000 = +/-.005 (.125mm) Fractions = +/- 1/32 (.7mm) Angles = +/- 1'	DATE: 12/10/19 DWN. BY: Jason S.	SCALE: None CHK. BY:	PART NAME: Chip Collector GAA-500 & GAA-600 Saws	Scotchman Inds. PART NO.