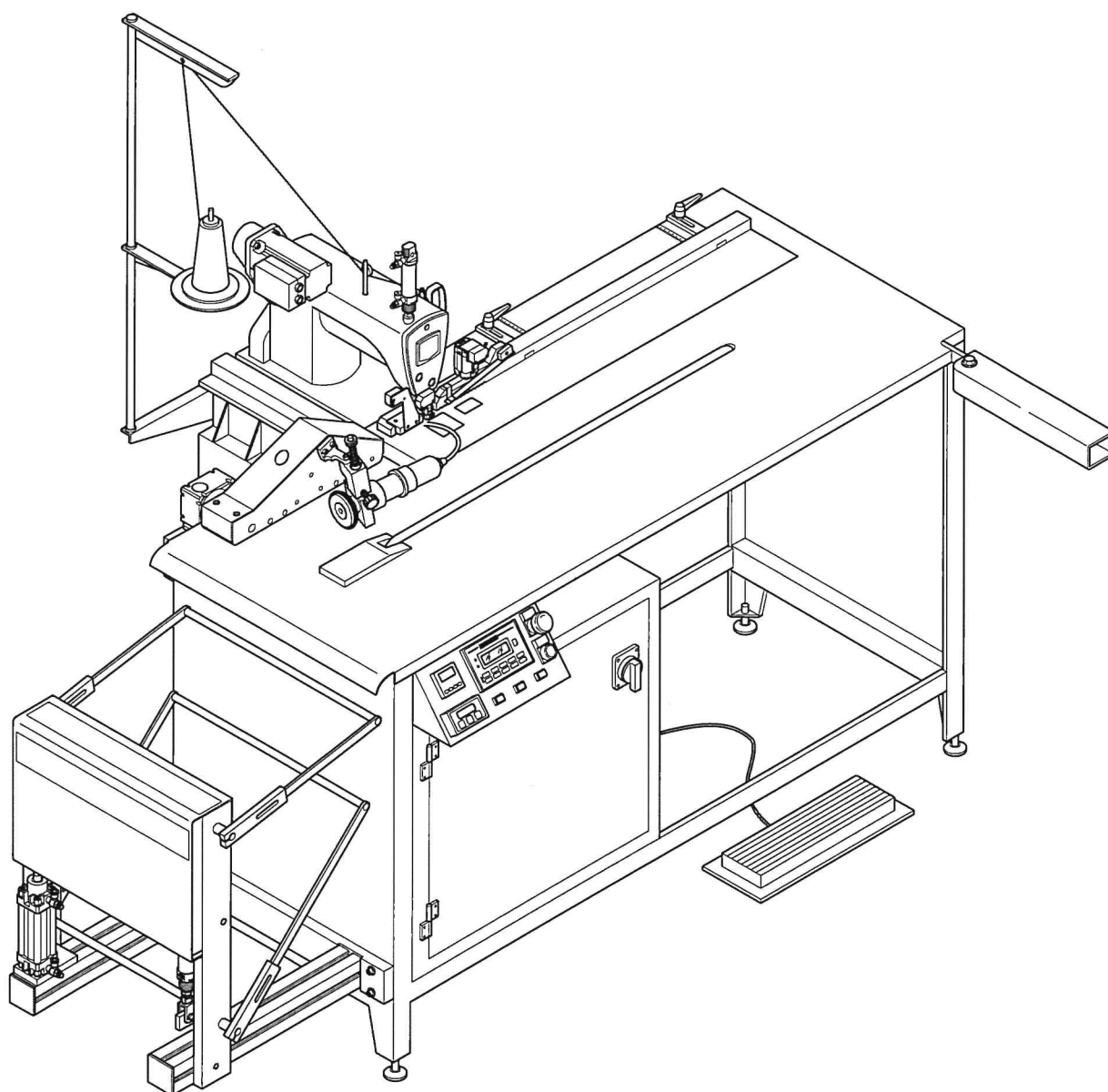


AUTOMATIC UNIT FOR SEWING THE FRONTS OF SHIRTS mod. MCD



Instructions for use and maintenance





Macchine Automatismi Industriali Camicerie Abbigliamento

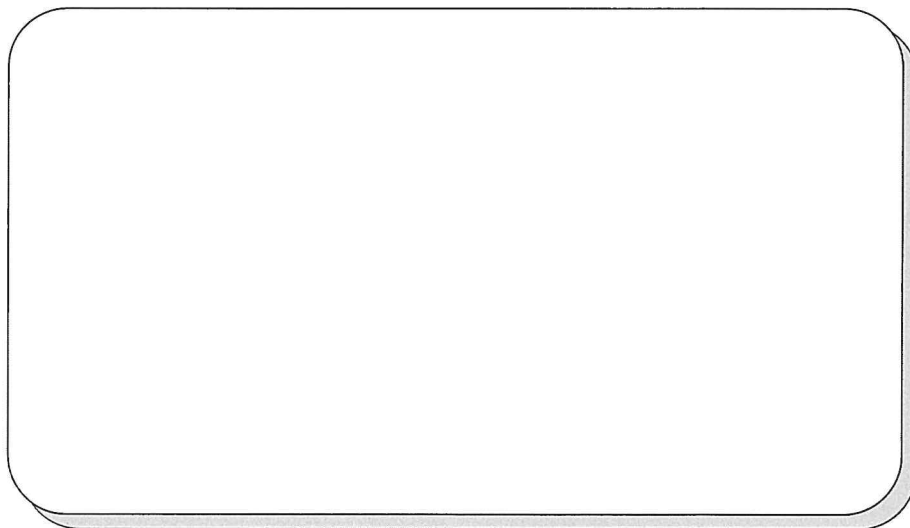
Via Casale, 23 - 24060 Torre de' Roveri (Bergamo) - ITALY

Telefono (+39) 35 580040 - Telefax (+39) 35 580920

web: www.maicaitalia.com

e-mail: info.maicaitalia@maicaitalia.com

AUTHORIZED AREA DEALER FOR ASSISTANCE



EEC CONFORMITY DECLARATION

The **mod. MCD automatic unit for sewing the fronts of shirts**, as described in this manual, complies with the standards set down by the following EEC Directives:

UNI EN 292-1	Machine safety. Essential principles.
UNI EN 292-2	Machine safety. Essential principles.
UNI EN 294	Machine safety. Safety distances for arms.
UNI EN 349	Machine safety. Minimum crushing distances.
UNI EN 418	Machine safety. Emergency stop devices.
pr EN 563	Machine safety. Contact surface temperatures. Ergonomic data.
pr EN 574	Machine safety. Two-hand control devices.
pr EN 953	Machine safety. Guard design and construction.
pr EN 1088	Machine safety. Interlocking devices with or without guard locking.
EN 60204-1	Electrical devices on industrial machines. Part 1: general standards.
EN 60529	Levels of protection guaranteed by guards (IP code)

Manufacturer:
M.A.I.C.A. S.r.l.

01 - GENERALITIES

CHARACTERISTICS AND FIELD OF APPLICATION

The mod. MCD automatic unit sews the fronts of shirts; an extraction system ensures a perfect stitch and an ironing group eliminates wrinkling in the front strip, facilitating making the buttonholes and fitting the buttons.

The front strips, sewn and ironed, are collected automatically by a stacking device.

All functions are controlled automatically by a PLC.

ADVISED USE

The mod. MCD automatic unit is to **be used solely** for sewing the fronts of shirts. The manufacturer cannot be held liable for any damage to persons or property arising from the incorrect use of this machine or any use differing from the instructions indicated in this manual.

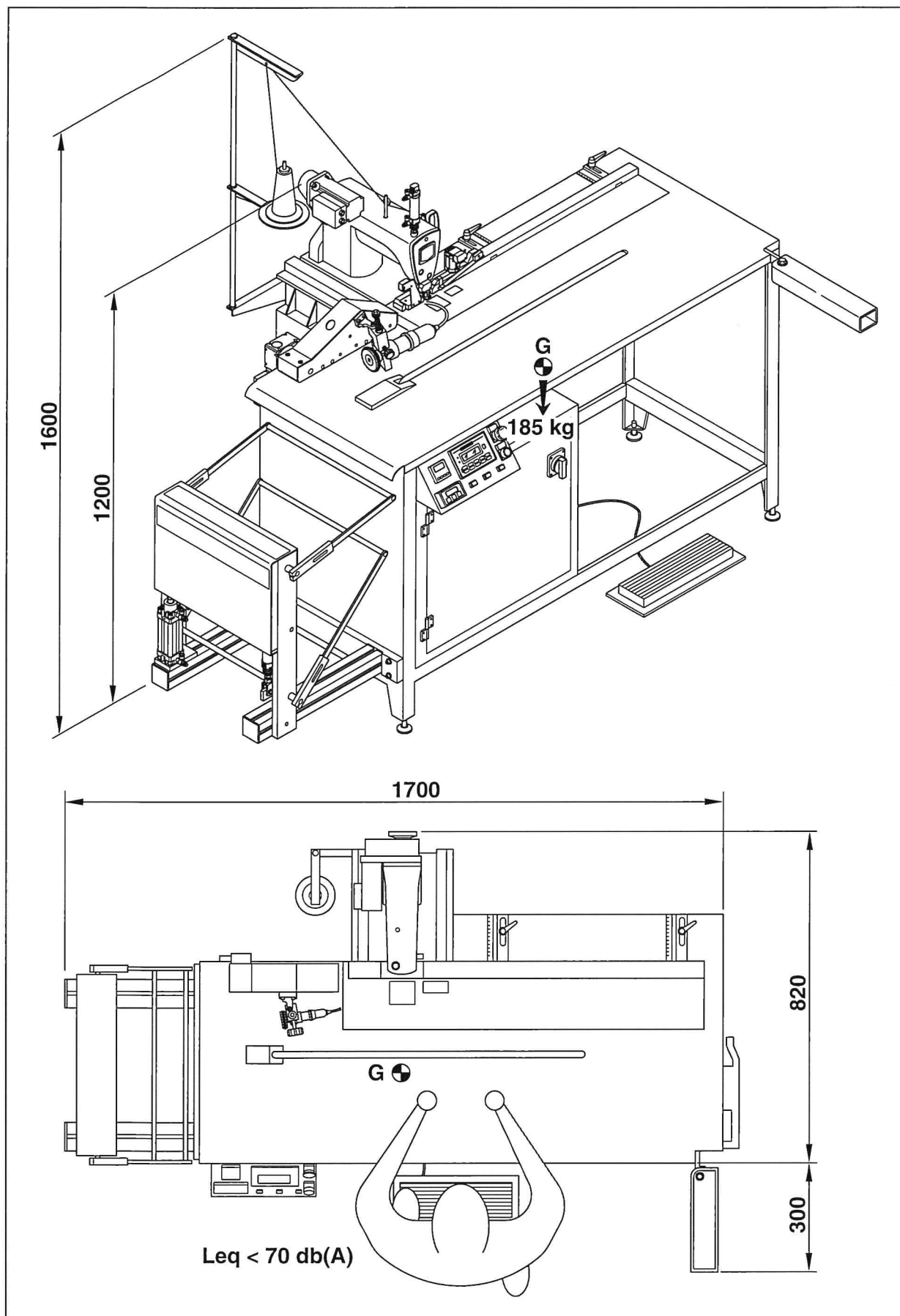
The  symbol indicates there exists a risk or danger for the health of the operator and, therefore, much care must be taken at this point.

The machine is fitted with a sewing group with needles in motion and an ironing device that reaches high temperatures. Be very careful when touching these parts.

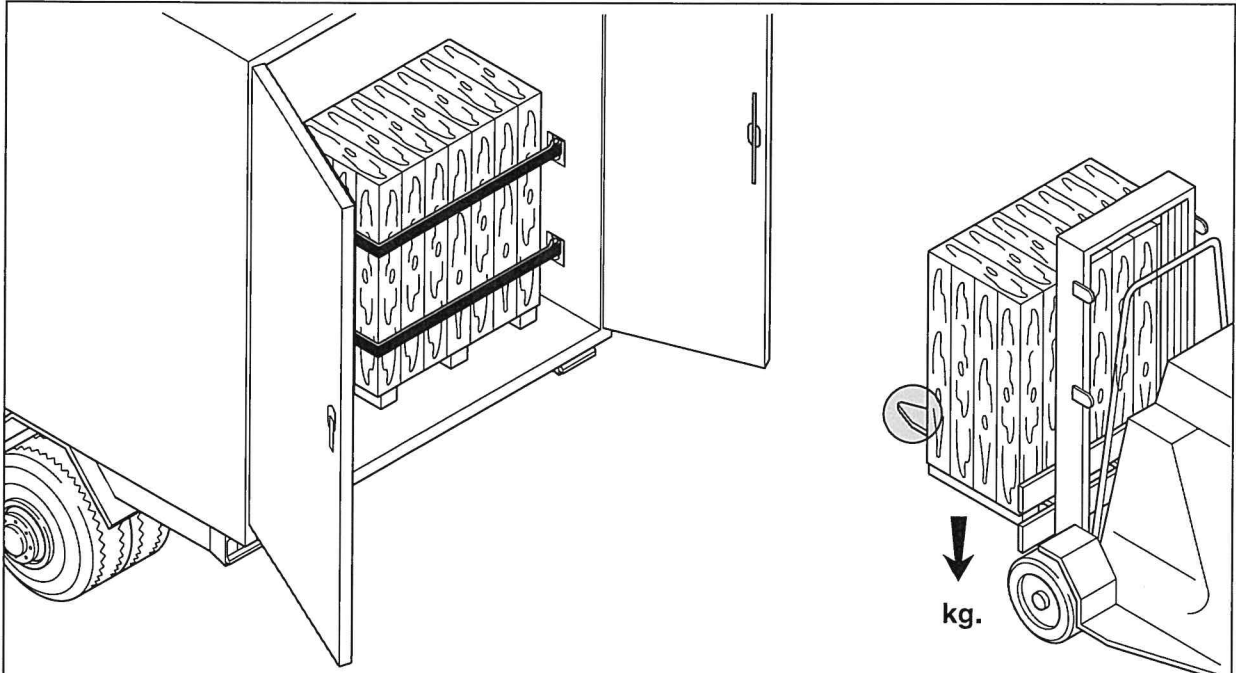
Always disconnect the machine from the mains supply, the compressed air supply and wait for the ironing parts to cool down before undertaking any adjustment, replacement or maintenance work.

The machine **must not be** exposed to the weather (rain, sun, etc).

02 - AUTOMATIC UNIT mod. MCD TECHNICAL DATA

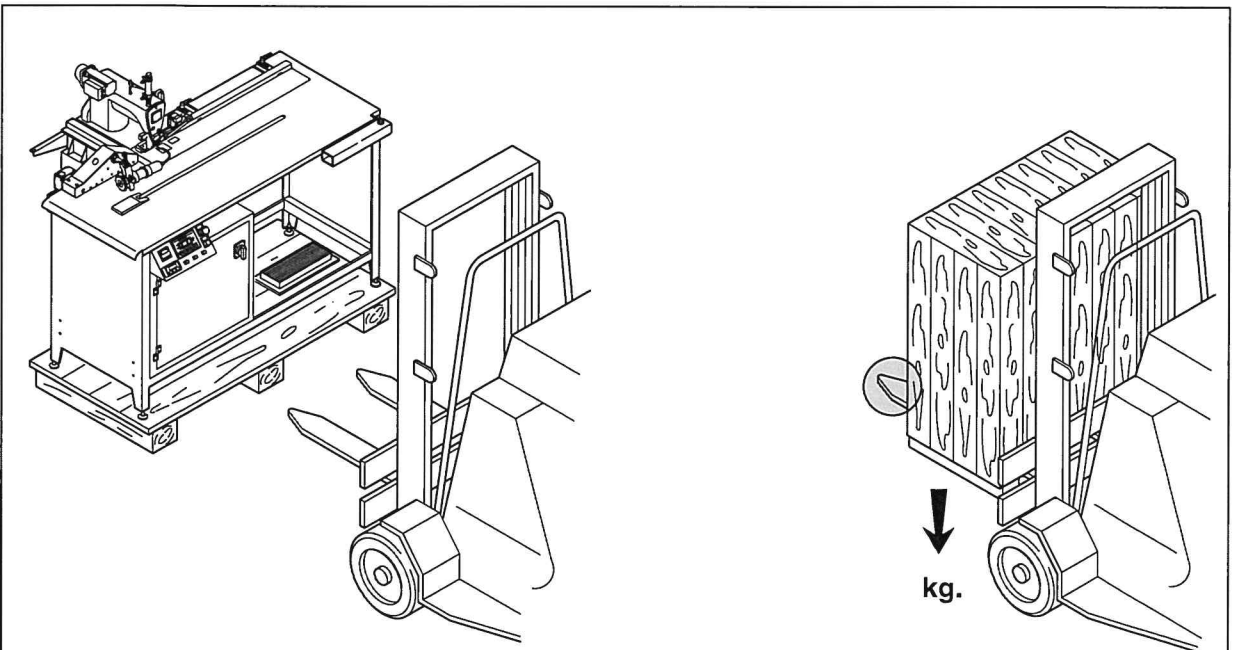


03 - LIFTING AND TRANSPORTATION



The mod. MCD Automatic Unit, can be transported with or without a packing case.
In both cases, check that the forks of the fork-lift truck bear the full weight of the machine. To move using a fork-lift truck, place the forks under the machine with the front of the MCD facing the fork-lift truck.
Place in the lorry or van and secure with ropes or belts.

04 - LOADING AND UNLOADING



Make sure that the forks of the fork-lift truck bear the full weight of the machine during movement.
Remove the packing case and lift the machine with the front facing the fork-lift truck, as in the figure above.
Place on a solid and even surface, not exposed to the weather.

05 - INSTALLATION

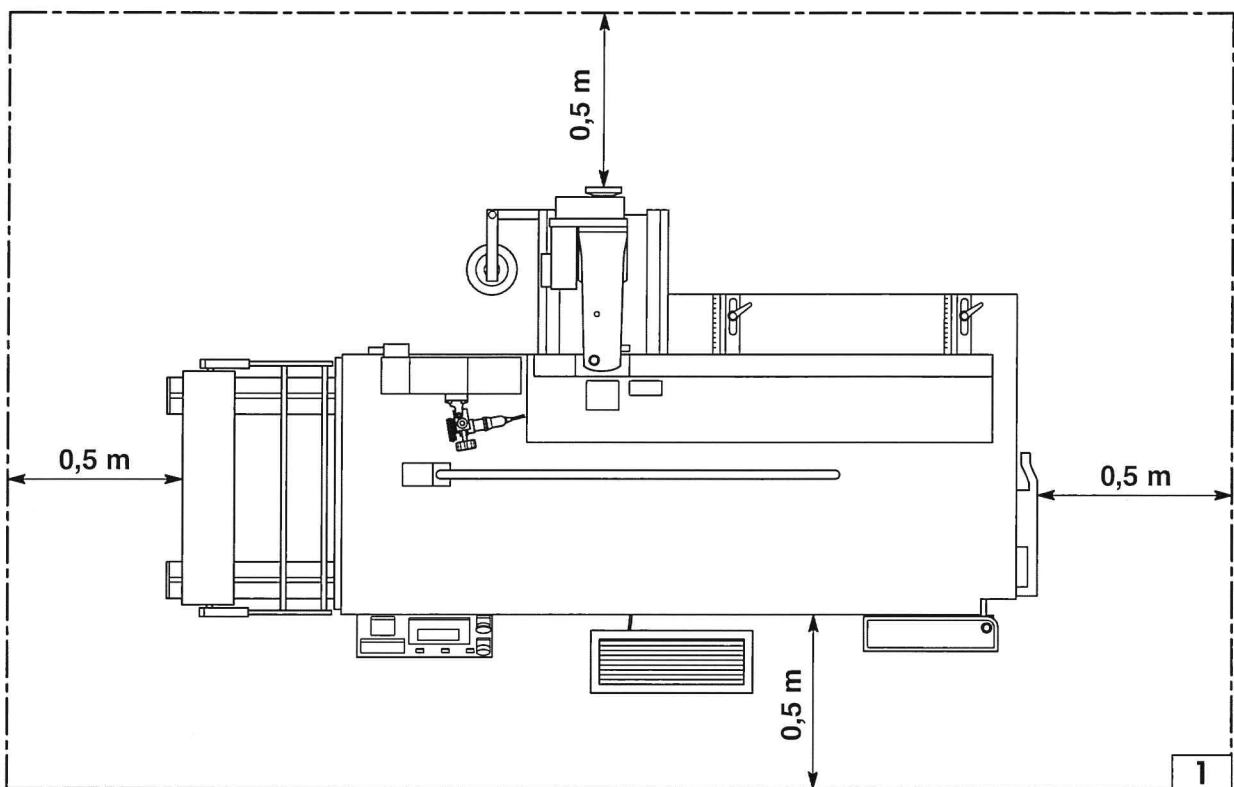
ATTENTION: This machine must only be installed by specialized personnel.

The manufacturer cannot be held liable for any damage to persons or to property arising from incorrect installation not in accordance with these instructions and connection to a mains supply that does not meet the necessary requirements.



If the machine is installed on a suspended surface, check that the surface can withstand the weight of the machine. This machine must not be installed in areas where there are explosive or inflammable materials and substances.

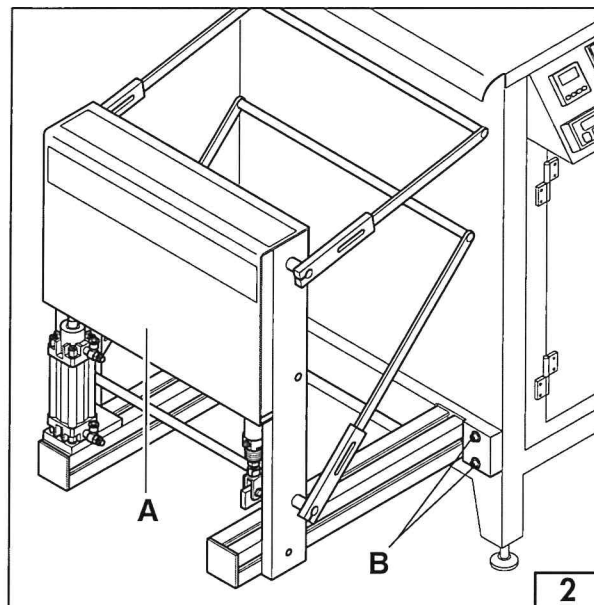
Make sure that the distances shown in figure 1 below are respected as these are necessary for the maintenance and operation of the machine.



The machine is delivered with the following parts dismantled for ease of transport:

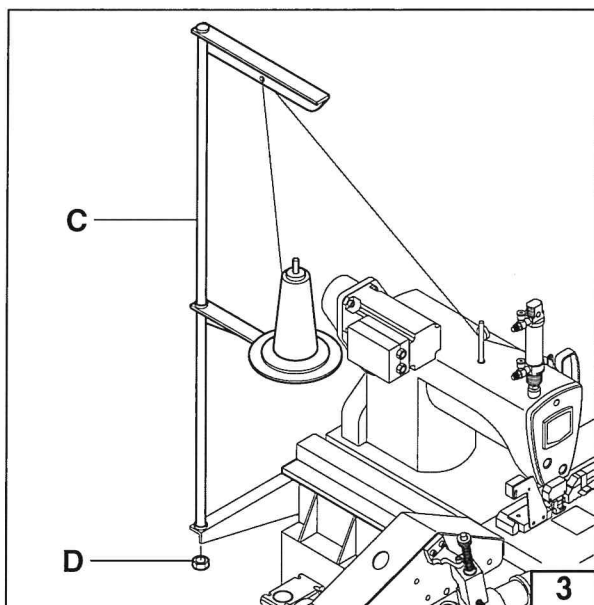
- stacker group "A" (fig. 2).

Fix the stacker to the machine using screws "B".

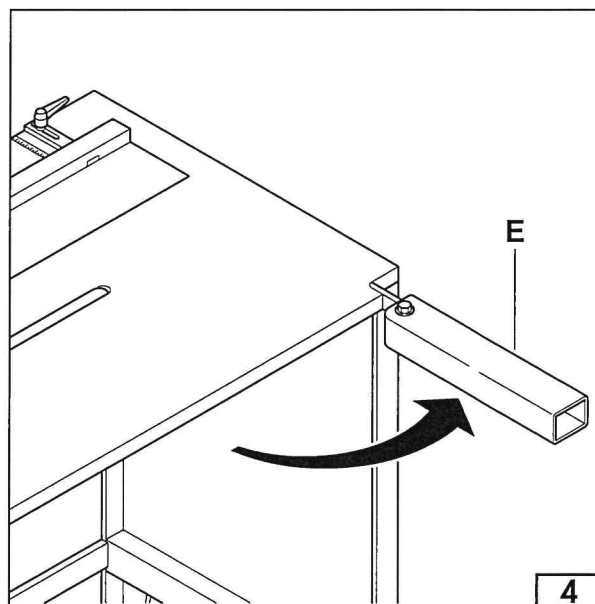


- thread holder "C" (fig. 3).

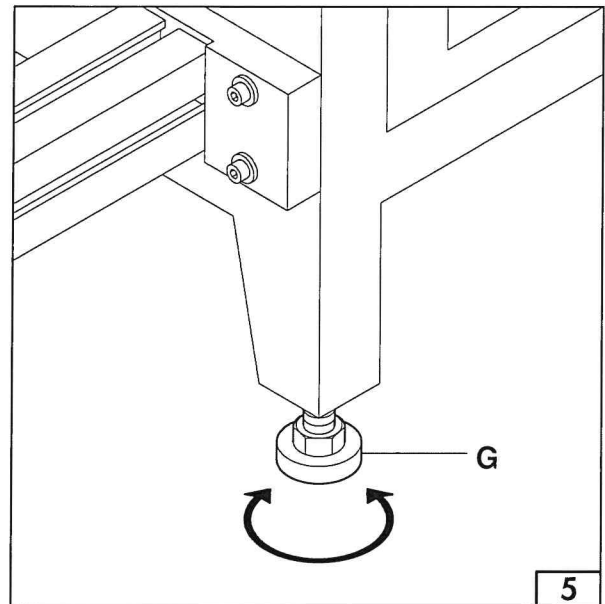
Fit using fixing nut "D".



Turn fabric holder arm "E" outwards (fig. 4).



The machine must be placed on a solid and even surface. Use levelling feet "G" to adjust the height (fig. 5).

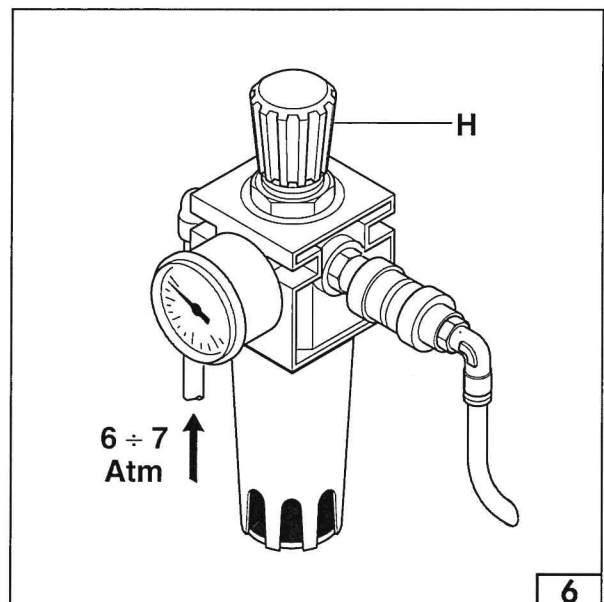


ELECTRICAL CONNECTIONS

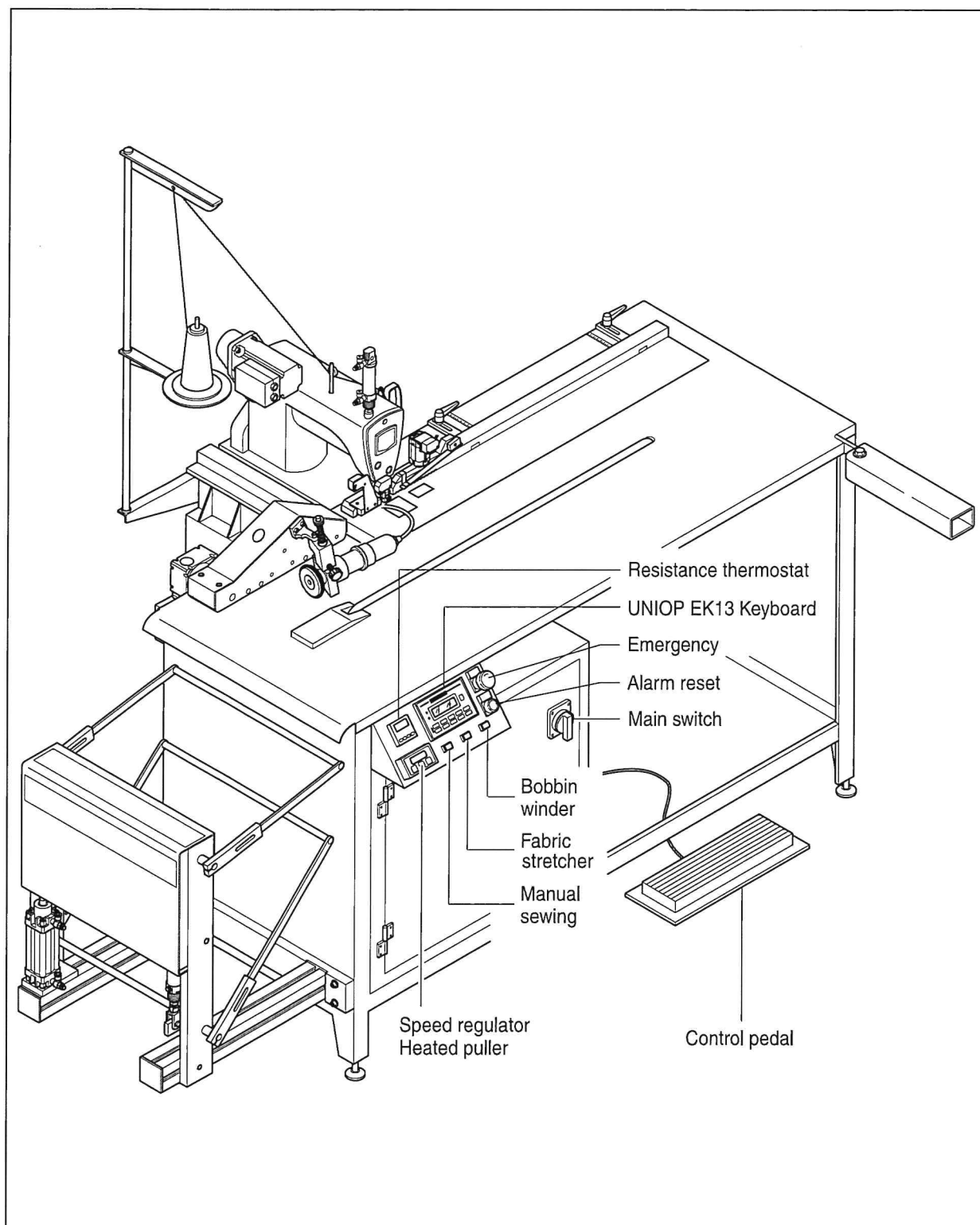
The machine is usually delivered with the power cable wired inside the electrical panel. Therefore, all that needs to be done is to connect it to a 380V-50Hz, 3P+N+ = . power outlet. The power consumption is $\sim 1,5$ kW.

PNEUMATIC CONNECTION

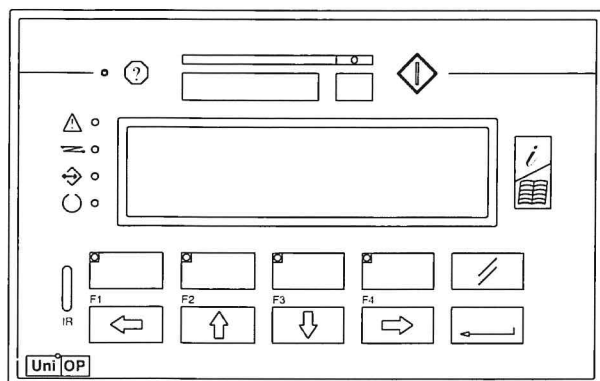
- Connect the machine to the compressed air outlet and make sure that the air flow is sufficient to allow for operation with a constant rate of pressure of 6÷7 Atm.
- Calibrate pressure regulator "H" at between 6÷7 Atm (fig. 6).



06 - MACHINE CONTROLS



UNIOP EK13 KEYBOARD FUNCTIONS AND SETTINGS

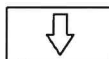


Principal functions

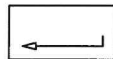
page change keys



data input keys



scroll value keys



confirm key



function keys



delete key

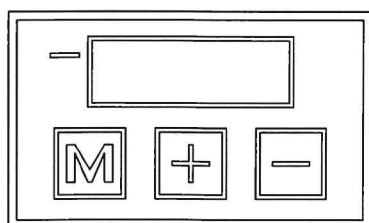
Adjustments using the keyboard

- 01) piece counter
- 02) stitch counter
- 03) thread cutting start
- 04) thread cutting duration (time)
- 05) stacker lock start
- 06) stacker start
- 07) stacker return
- 08) sewing machine speed
- 09) deceleration speed
- 10) sewing machine stop delay
- 11) start control
- 12) thread breakage control

On-board alarms

- 01 emergency cut in
- 02 thread breakage
- 03 end of count
- 04 end of bobbin for count
- 05 end of bobbin – no thread
- 06 front locked
- 07 sewing machine motor NOT OK
- 08 belt motor NOT OK
- 09 bobbin control F.C. I2.5 missing

CONVEYOR BELT SPEED CHANGE



Used to change the v.d.u. display mode



Used to scroll the parameters and to increase them



Used to scroll the parameters and to decrease them

Proceed as follows to change the speed of the conveyor belt:

- 1) Press key (+) until the parameter to be modified appears (_Pr2 in our case)
- 2) Press key (M) to enable parameter modification
- 3) Use keys (+) or (-) to increase or decrease the value
- 4) Press key (M)

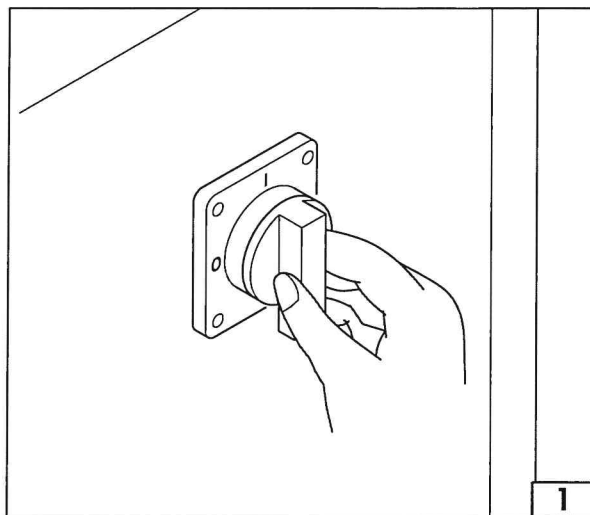
Saving the value set

- 1) Use key (+) to move to (Pb99)
- 2) Press key (M), (b99.0) will appear
- 3) Press key (+) until (b99.15) appears
- 4) Press key (M) and then key (+)
- 5) Press key (M) and then key (+) again
The value set has been saved.

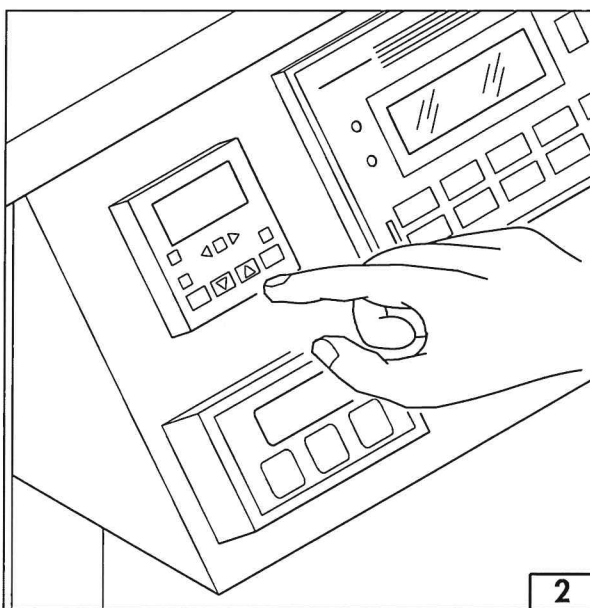
07 - OPERATION

STARTUP

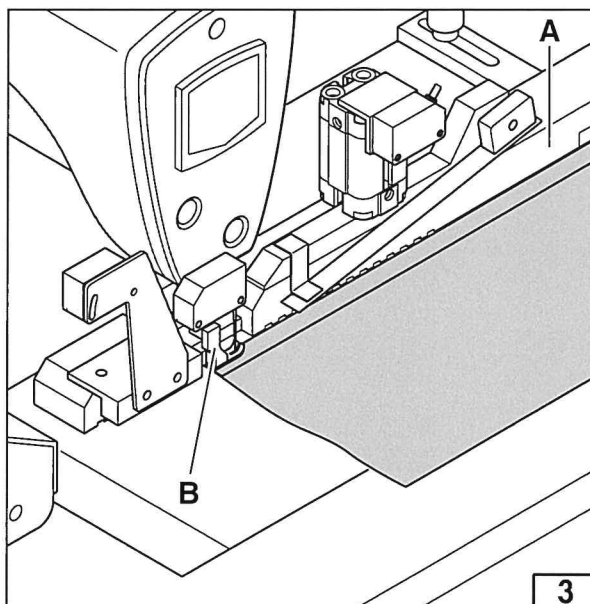
- Turn the main switch to I (fig. 1). The electrical resistances in the ironing group start to heat up and after about 15 minutes they reach working temperature. The ideal temperature, set in the factory, is approx. 120°C. Depending on the fabrics being used, this can be changed by entering a new value on the thermostat.



- Check that the preset temperature is correct for the particular use. To regulate the temperature press the keys ▼ □ ▲ (fig. 2).



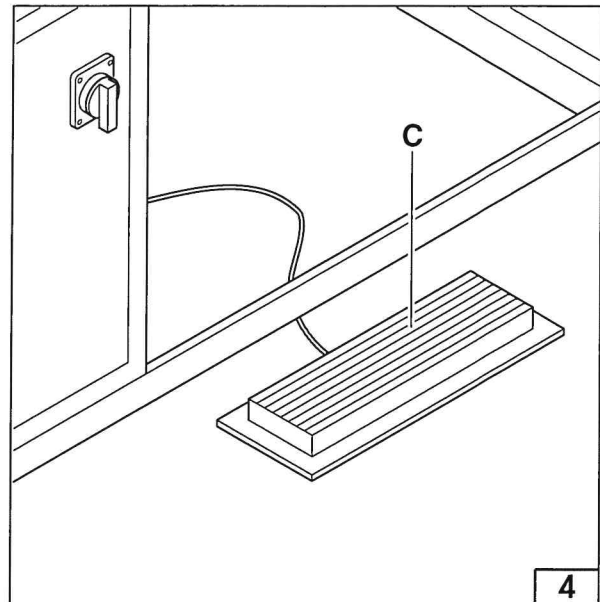
- Wait until the preset temperature is reached on the thermostat.
- Rest the front strip against reference guide "A" (fig. 3) inserting it under sewing foot "B" so that the relative photocell detects the presence of the fabric.



- Press control pedal "C" (fig. 4).

When starting with a single impulse, sewing takes place immediately after the lowering of the foot and the fabric pressing spring.

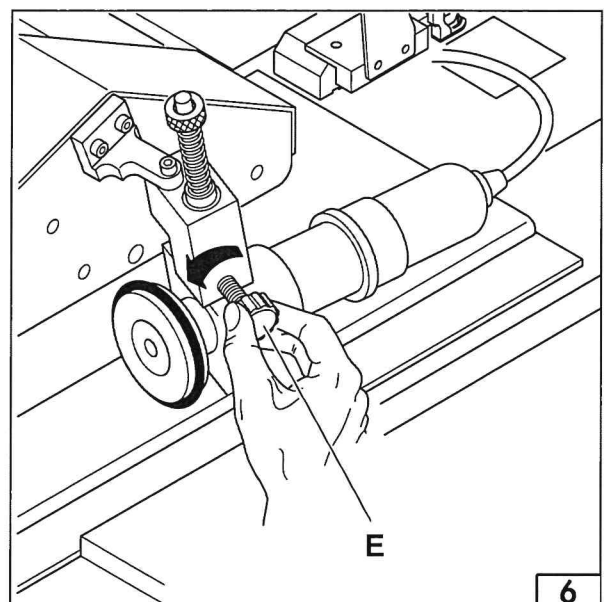
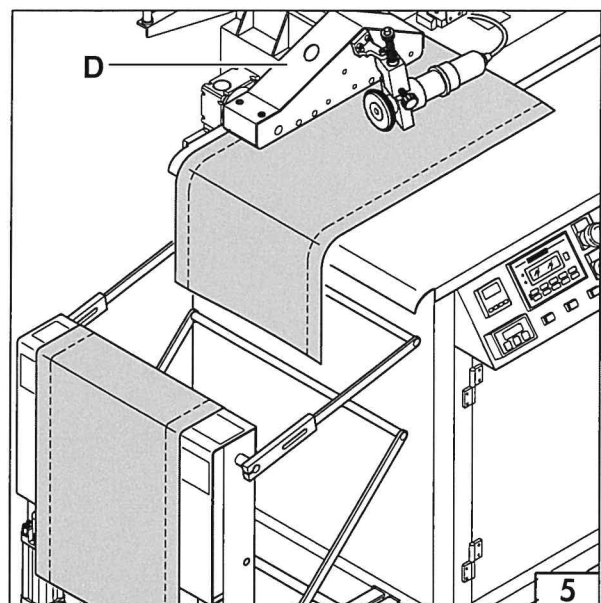
When starting with two impulses, the foot and fabric pressing spring are lowered the first time the pedal is pressed; the control pedal must be pressed again to start sewing.



- On completion of sewing the fabric passes under ironing group "D", where the thread is also cut. It is then unloaded and stacked automatically (fig. 5).
- A belt on the work surface ensures correct flow of the fabric under the ironing group.

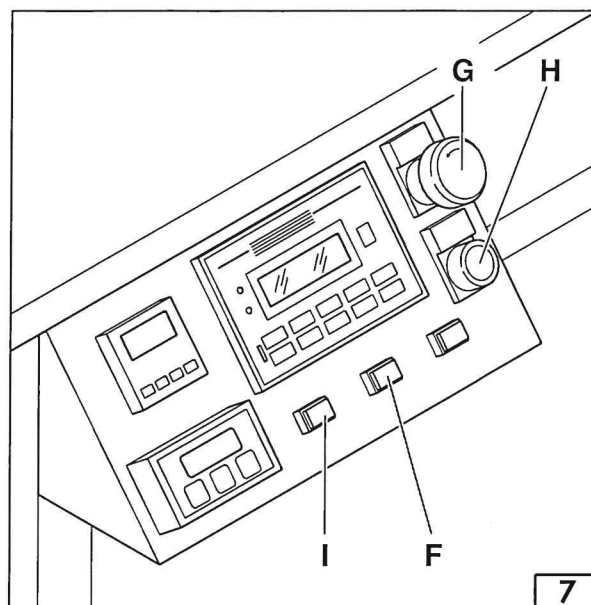
Moreover, by unscrewing knob "E" (fig. 6), it is possible to ensure that the fabric remains adequately taut during ironing., so as to obtain more open stitching.

Before starting work ensure that the fabric is sucked against the reference guide. If not, reverse the connection of the phases in the power supply plug.



- When carrying out the second sewing, fabric stretching key “F” must be pressed to prevent creases forming in the fabric and it being ironed unsatisfactorily (fig. 7).
- In the case of possible faults, the machine is fitted with an emergency pushbutton “G” that is used to block its operation. To restart operations, unlock the emergency pushbutton by turning it anticlockwise a quarter of a turn and pressing alarm reset pushbutton “H”.

To carry out initial tests use manual sewing key “I”, which allows working to be stopped when it is released (fig. 7).



THREADING THE MACHINE

Sewing is of the knotted stitch type.

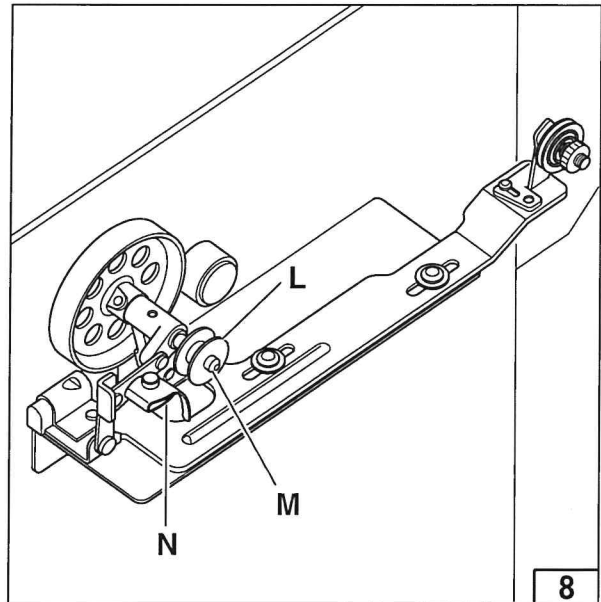
Threading is the same as for a normal sewing machine (refer to the relative manual if necessary).

When threading it is advisable to press emergency pushbutton “G” so that any movement of the sewing foot and relative needle is disabled.

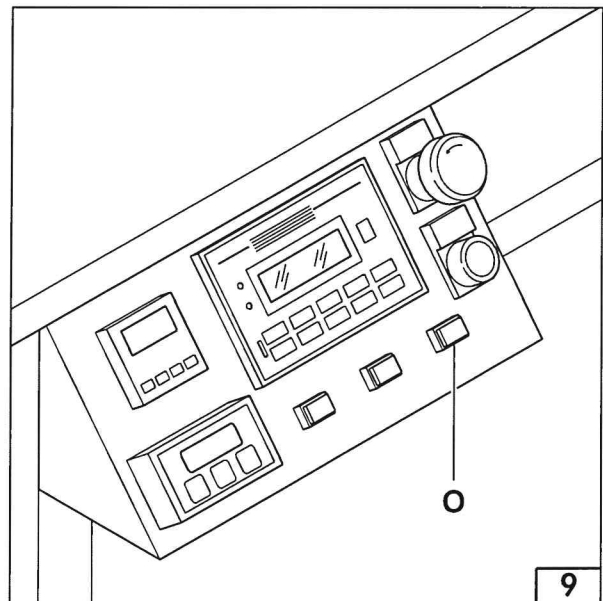
BOBBIN WINDING

There is a device for automatic bobbin winding on the right-hand side of the machine (fig. 8).

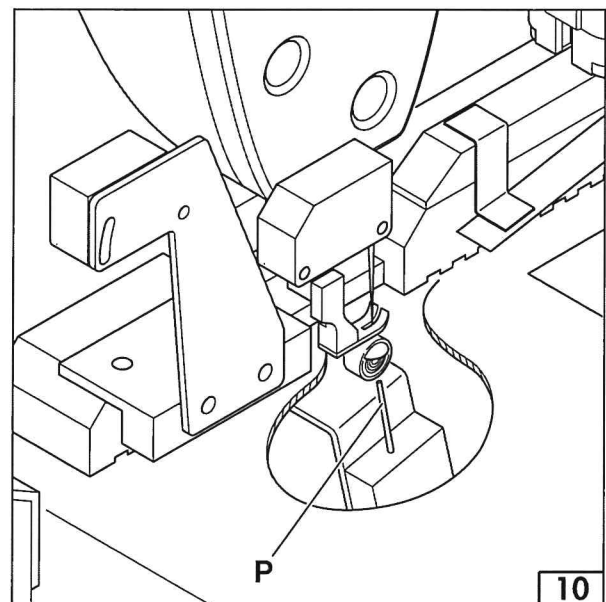
- Insert the empty bobbin "L" on spindle "M". Wind two or three turns of thread manually.
- Press lever "N" against the winding roller.



- Start winding using bobbin winding key "O" (fig. 9).



- There is a special cylinder "P" beneath the sewing machine (fig. 10) that controls the amount of thread on the bobbin.



08 - ADJUSTMENTS



Always disconnect the machine from the mains supply, the compressed air supply and wait for the ironing parts to cool down before undertaking any adjustment, replacement or maintenance work. The operations described below must only be carried out by specialized personnel.

CUTTER ADJUSTMENT

The cutter can be adjusted by means of the photocell that reads this distance and then setting the "Cutter start" value following the instructions in the *"Keyboard functions and settings"* paragraph (pag.10).

STACKER REGULATION

The stacker is controlled by the same photocell as used for cutting; to adjust, set the "Start Stacker" values as described in the *"Keyboard Functions and Settings"* paragraph (page 10).

HEATED PULLER REGULATION

For sewing the button part, knobs “A” must be slackened off and the puller group moved to the “fully back” position (fig. 1).

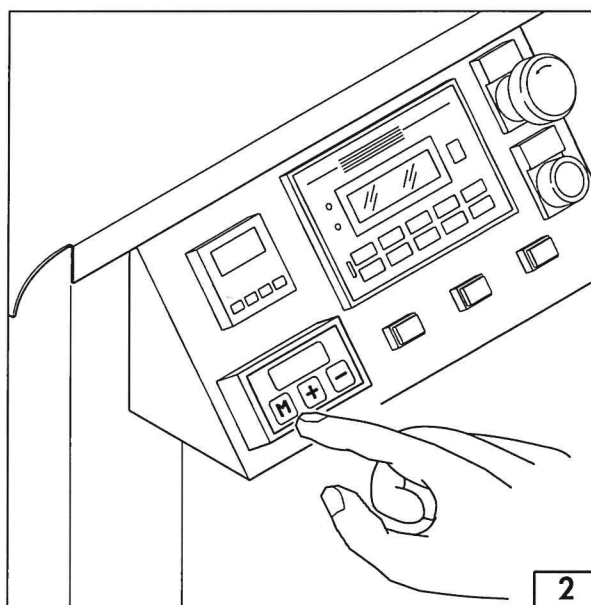
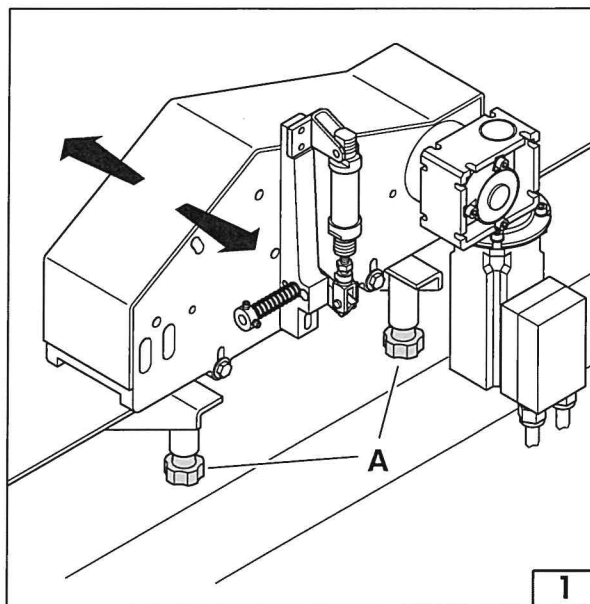
On the other hand the group must be moved to the “fully forward” position for sewing the buttonhole part.

The puller speed must be matched to the stitch length set on the sewing machine to ensure that the sewn stitch is not too stretched or too compressed.

If the sewn stitches are too stretched it means that the puller speed is too high; if, however, they are compressed, the puller speed is less than that of the sewing head.

Adjust using keys $\boxed{+}$ and $\boxed{-}$ (fig. 2).

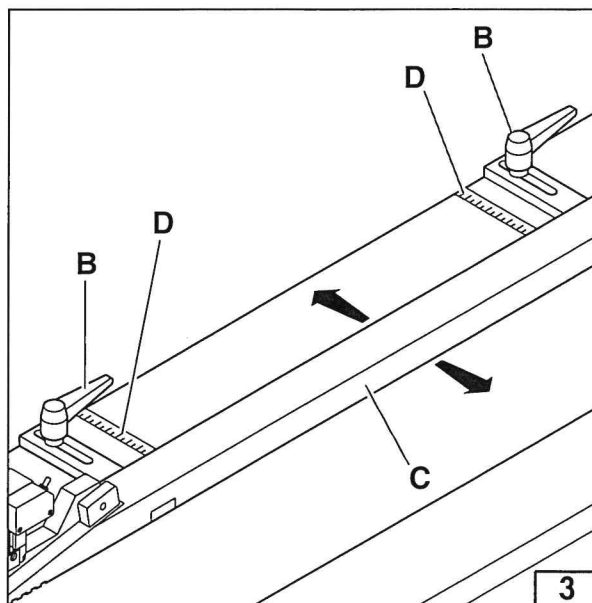
Having found the best value, it must be stored because otherwise, on switching off the machine, a return is made to the value set previously (see *Keyboard Functions and Settings on page 10*).



REFERENCE GUIDE REGULATION

The sewing foot must be replaced and the reference guide adjusted on the basis of the height of the front strip depending on the type of stitch to be used.

Slacken off levers “B” and move guide “C” to the correct position, checking using graduated scale “D” (fig. 3).



09 - MANUTENZIONE



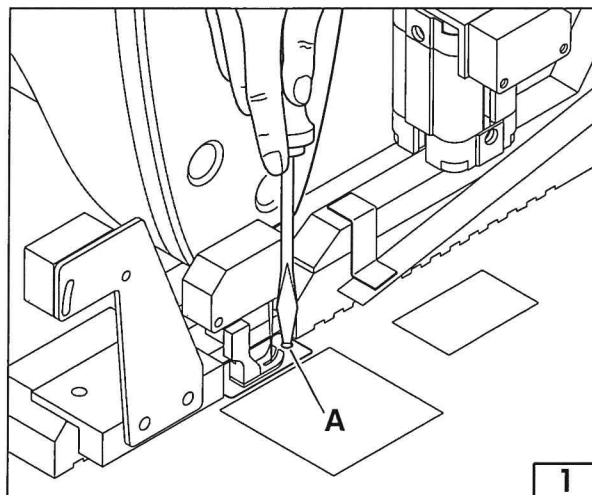
Always disconnect the machine from the mains supply, the compressed air supply and wait for the ironing parts to cool down before undertaking any adjustment, replacement or maintenance work. The operations described below must only be carried out by specialized personnel.

The mod. MCD Automatic Unit does not require any special maintenance during use thanks to its rational design.

We recommend lubricating the joints regularly and following all instructions in this manual very carefully to keep this machine in good and reliable working condition.

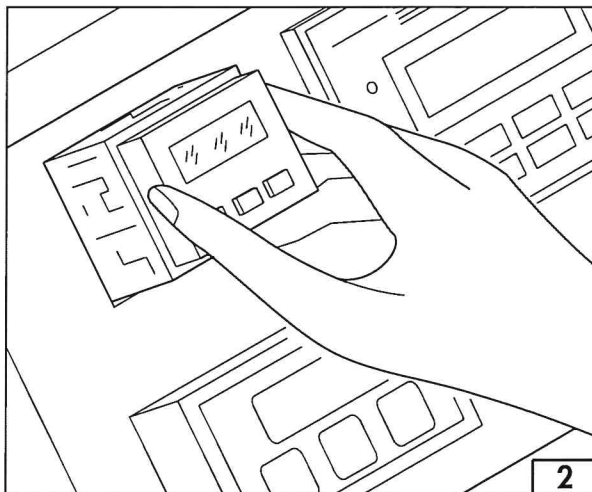
CLEANING THE CLAW

- To clean the claw, remove screw "A" (fig. 1), clean and replace.



THERMOSTAT REPLACEMENT

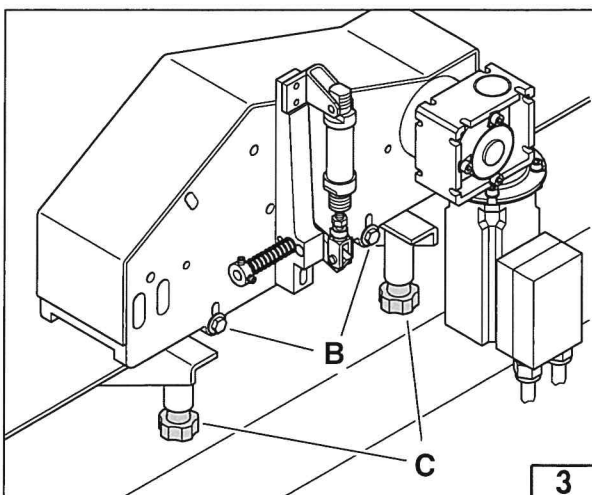
- Remove the faulty thermostat as shown in fig. 2 and insert a new thermostat.



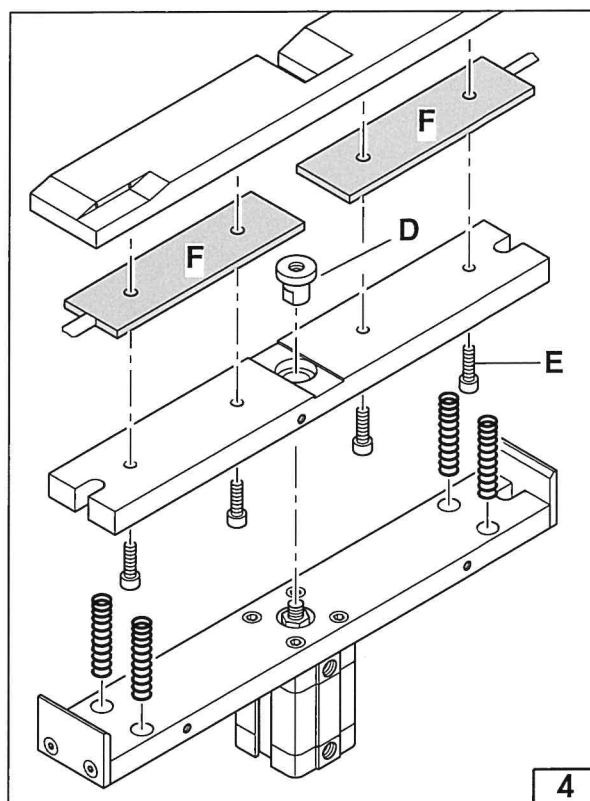
RESISTANCE REPLACEMENT

Proceed as follows if a resistance is to be replaced:

- slacken off screws "B" so that the ironing group is separated from the resistance holder group.
- slacken off knobs "C" and remove the resistance holder group (fig. 3).
- slacken off cylinder nut "D" and remove the springs and resistance holder plates.



- unscrew screws "E" relative to the burnt resistance.
- insert the new resistance "F" and repeat the operations in reverse order (fig. 4).

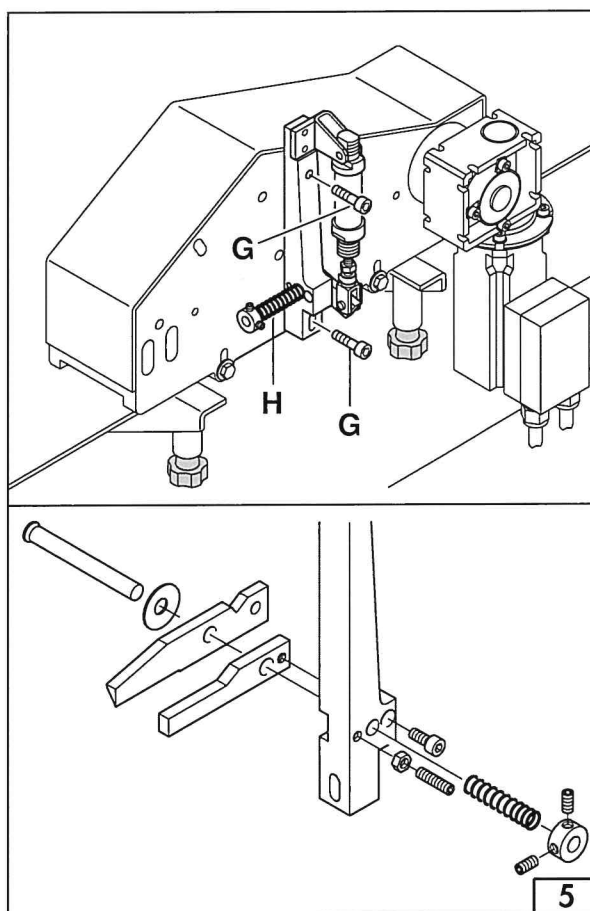


KNIFE REPLACEMENT

If the knife is to be sharpened or replaced, the group must be removed from the machine using fixing screws "G" (fig. 5).

Dismantle the knife and knife cap.

Adjust the position of spring "H" to increase or reduce the pressure between blade and blade cap.



DEMOLITION

In case of machine demolition, separate the different materials making up the machine so that they can be shipped to designated collection sites for re-cycling.

10 - MALFUNCTIONS, CAUSES AND REMEDIES

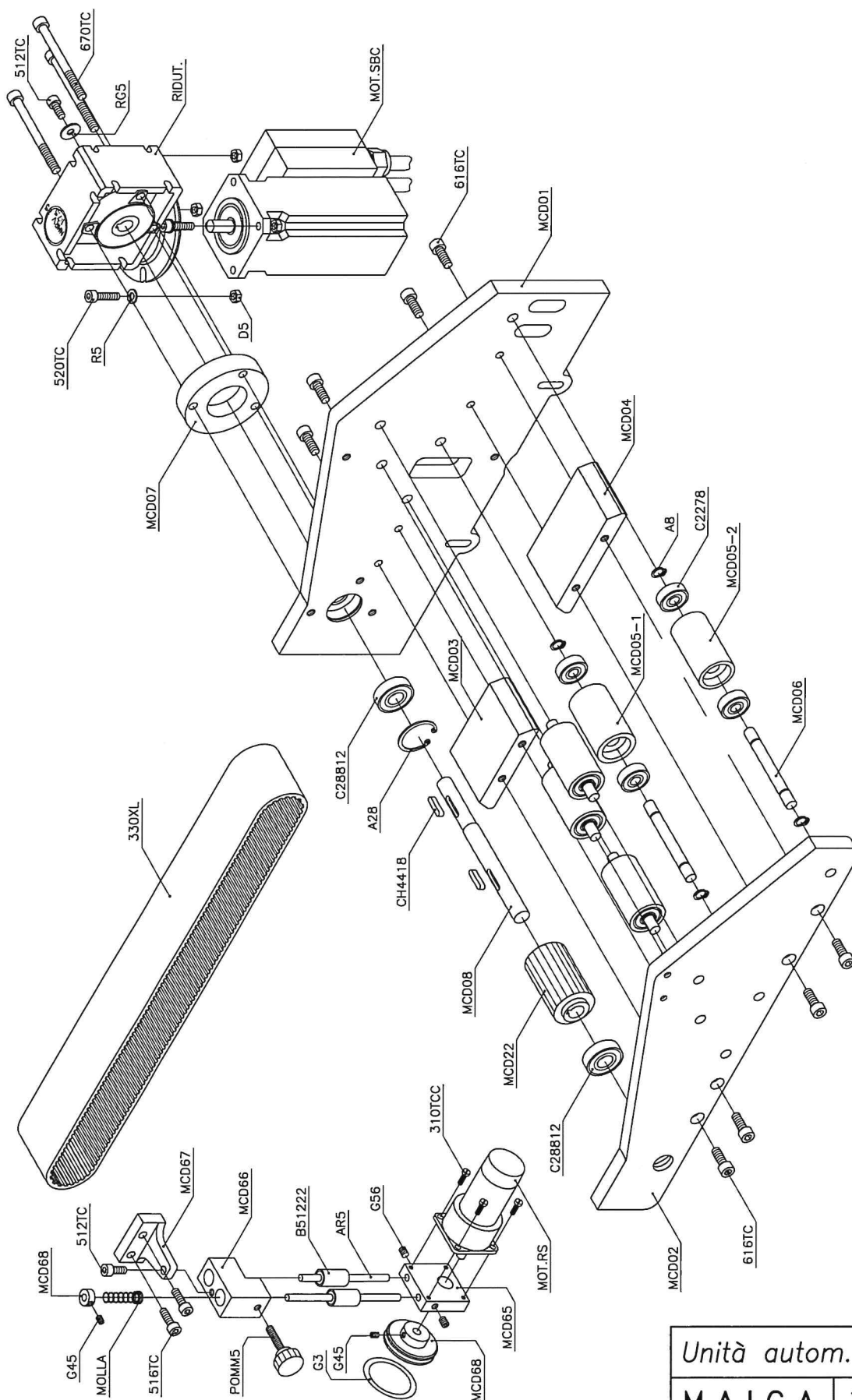
MALFUNCTION	CAUSE	REMEDY
Machine does not heat up	Burnt-out resistor	Replace (see page 17)
	Thermostat failure	Replace (see page 17)
	Broken thermocouple	Check and/or replace
	Remote switch failure	Check with voltmeter and/or replace
Irregular temperature	Thermostat failure	Replace (see page 17)
	Broken thermocouple	Check and/or replace
The machine will not start	Emergency pushbutton cut in	Release the emergency pushbutton by turning it a 1/4 of a turn anticlockwise
	Starting photocell faulty	Check and/or replace
Thread breakage	High puller speed	Adjust the puller speed (see page 16)
Cutting does not take place	Blade blunt	Sharpen or replace (see page 18)
	Inadequate pressure between blade and blade cap	Increase pressure (see page 18)
	Cutting time too short	Increase cutting time (see page 10)
Unsatisfactory ironing	Temperature too low	Increase temperature (see page 11)
	Ironing time too short	Increase the ironing time (see page 10)
Unsatisfactory sewing	Reference guide in the wrong position	Adjust the guide position (see page 16)
	Stitch stretched or compressed	Adjust the puller speed (see page 16)

11 - SPARE PART SHEETS

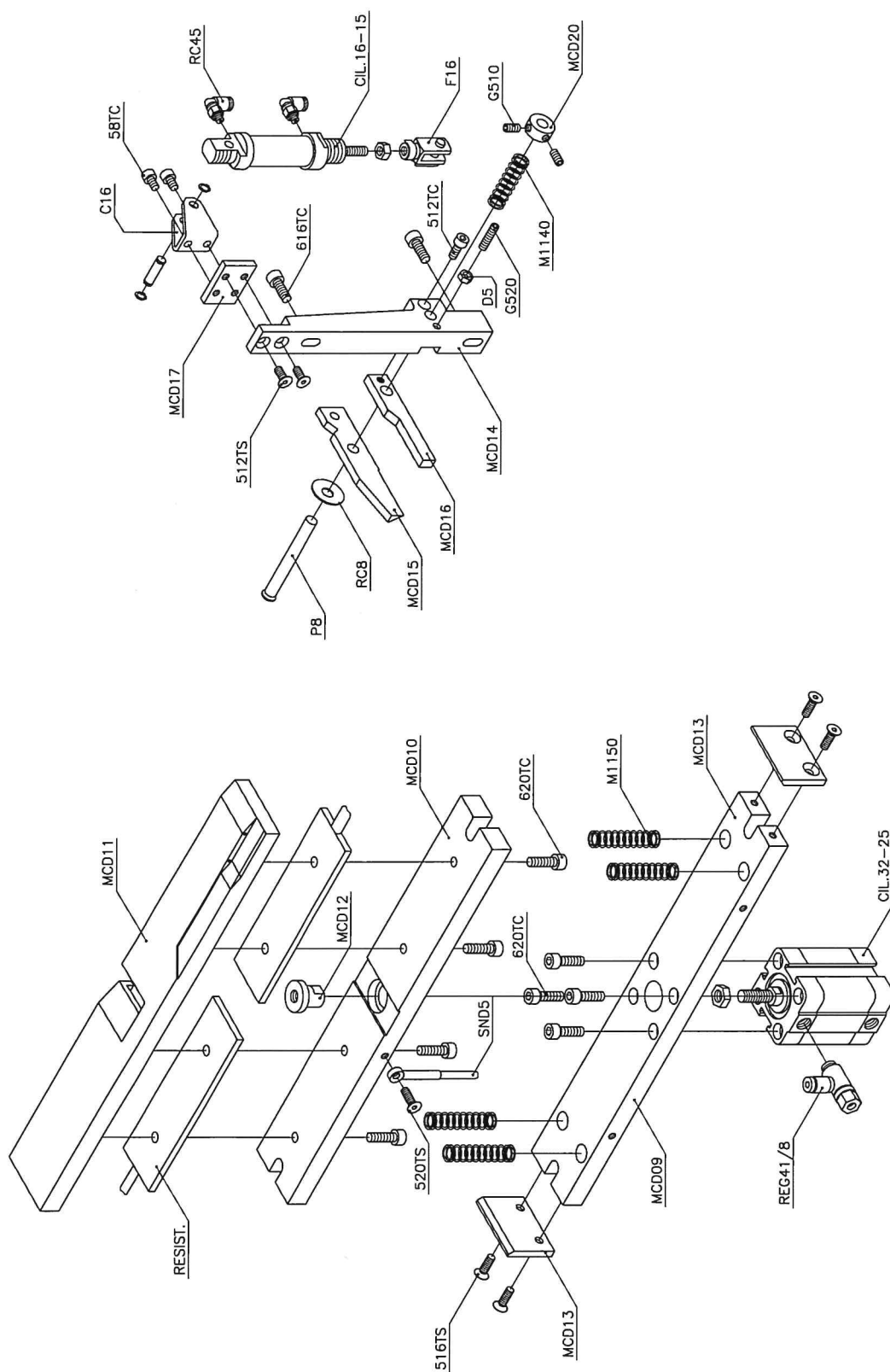
For prompt part identification, the following data must be provided:

1. Machine model and serial number
2. Spare part code
3. Sheet in which the spare part is shown

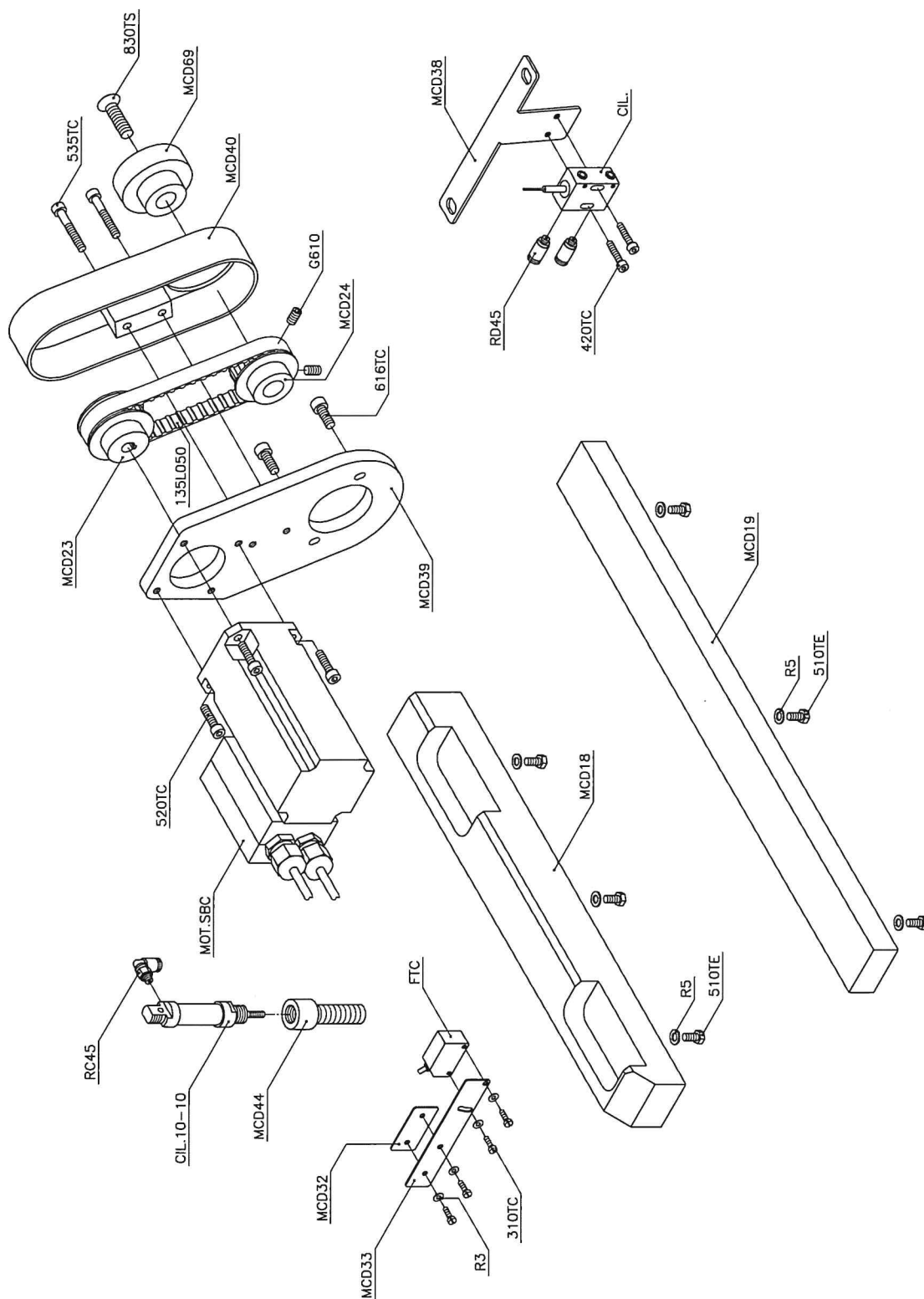
Example: AUTOMATIC UNIT mod. MCD Serial No. Code 330XL Table 1



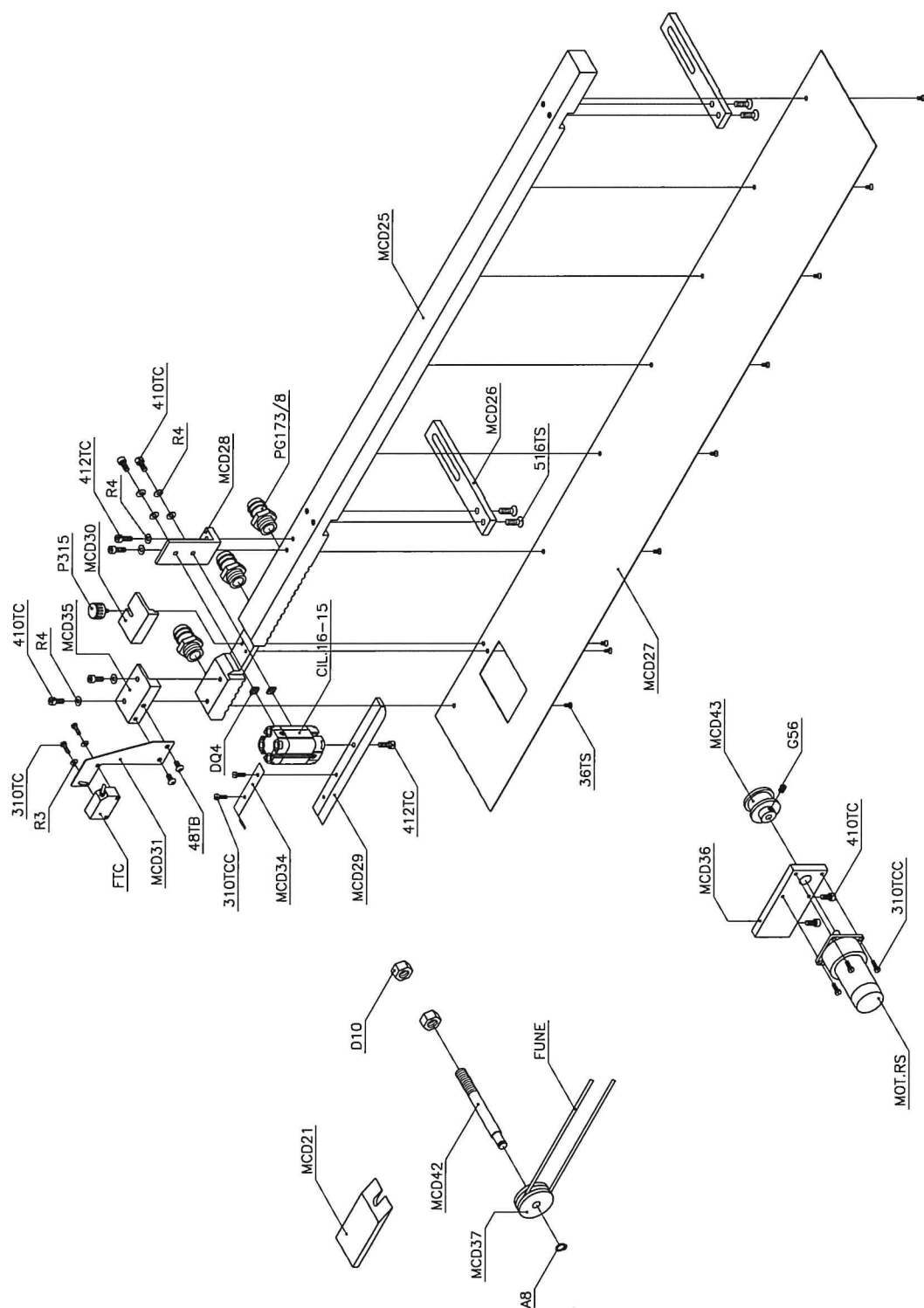
Unità autom. MCD	
M.A.I.C.A.	TAV.1



Unità autom. MCD	
M.A.I.C.A.	TAV.2

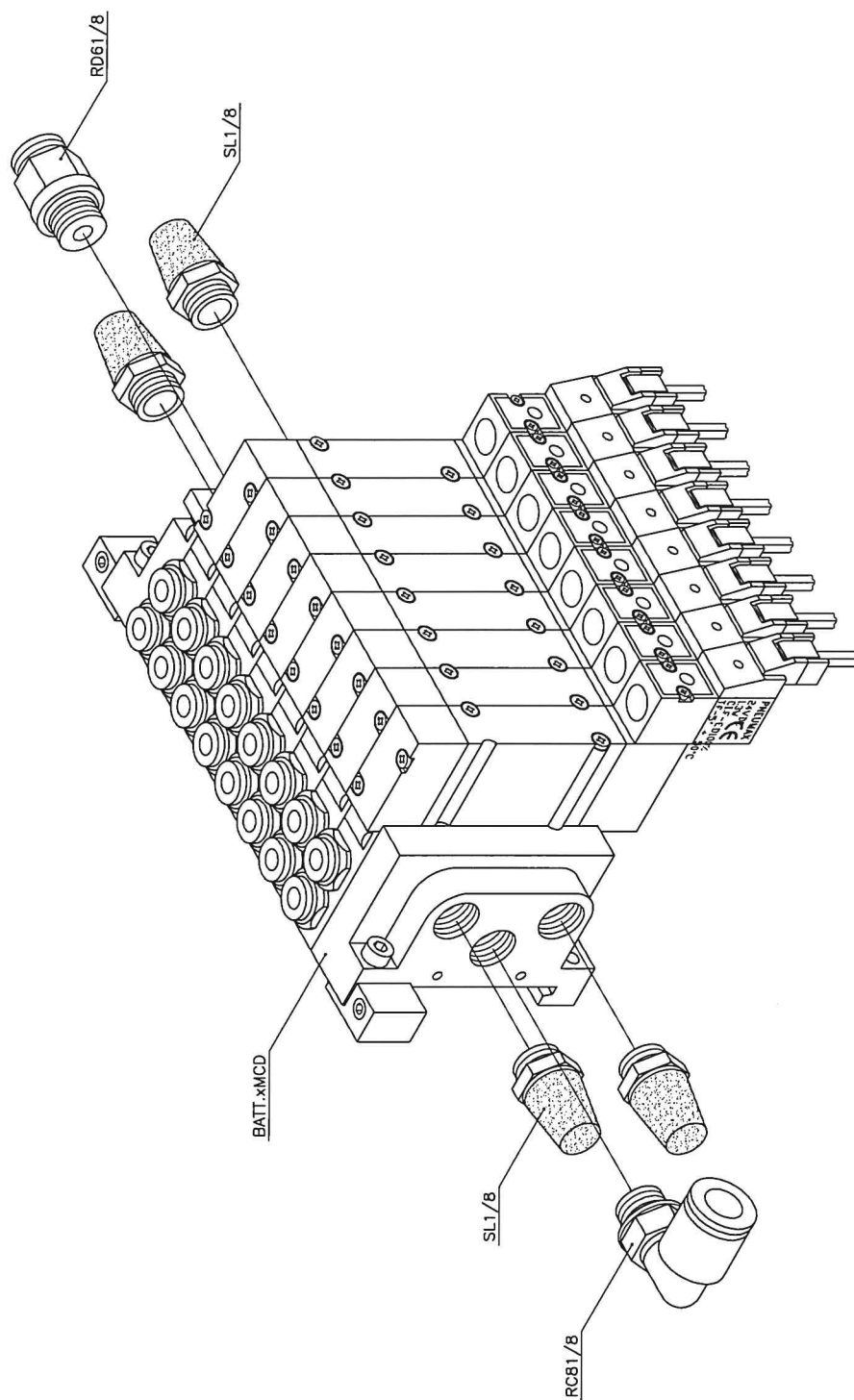


Unità autom. MCD	
M.A.I.C.A.	TAV.3

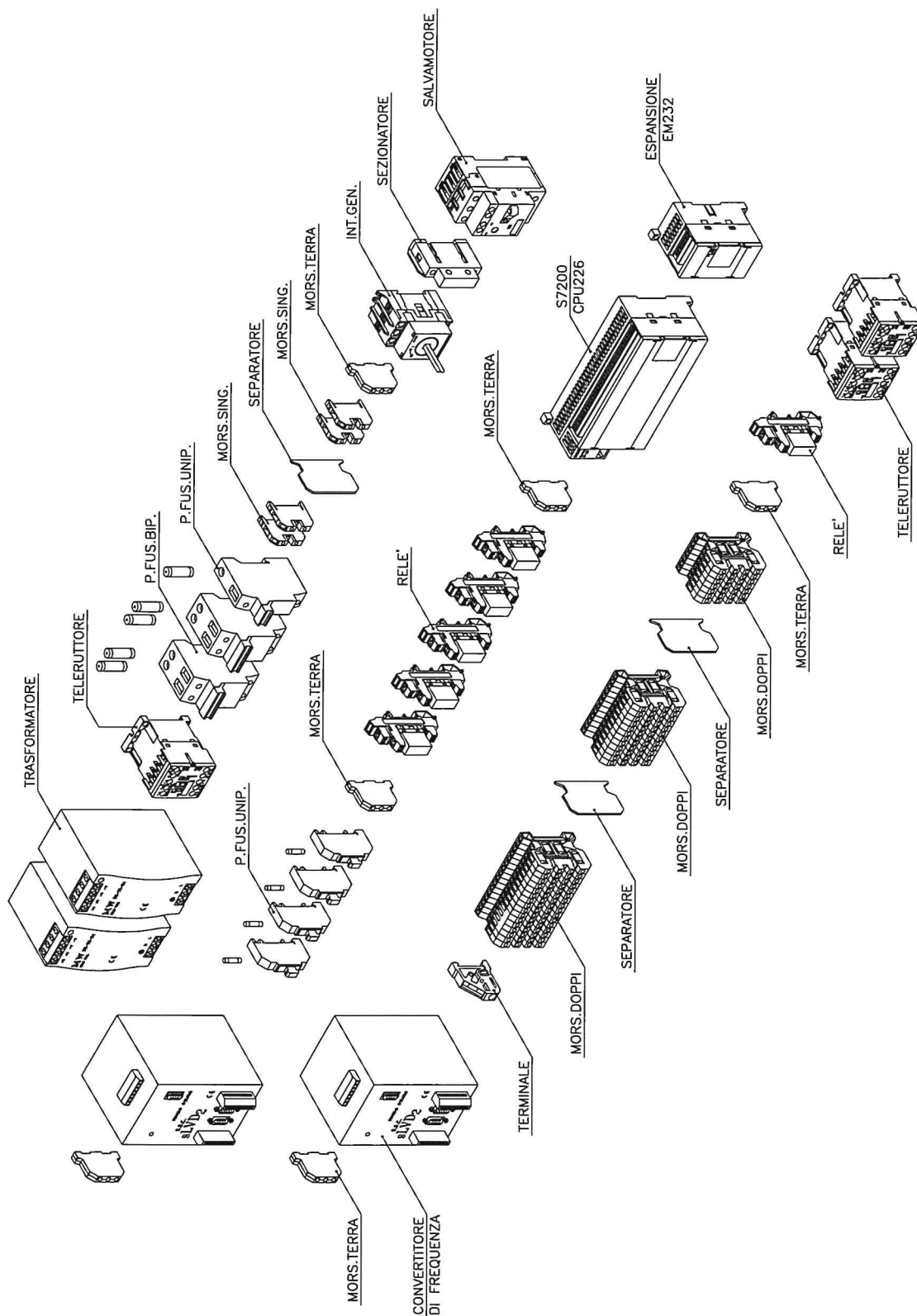


Unità autom. MCD

M.A.I.C.A. TAV.4



Unità autom. MCD	
M.A.I.C.A.	TAV.6



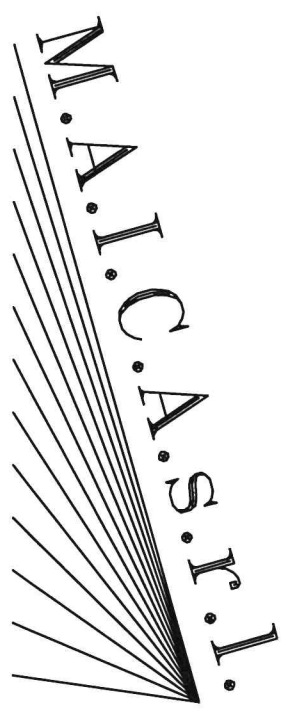
Unità autom. MCD	
M.A.I.C.A.	TAV.7

A/1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	
B																											
C																											
D																											
E																											
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G																											
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REV.	DATA	NOME	DATA																								
0			NOME	2016																							
			COUNT																								
			APPR																								
M.A.I.C.A. s.r.l.				MACCHINE AUTOMATISMI INDUSTRIALI				CLIENTE				DESCRIZIONE				FOGLIO N. 1				N. FOGLI							
				CAMICERIE ABBIGLIAMENTO								MCD															
				Via Casale, 23 - 24060 Torre de Rovere (BG)																							

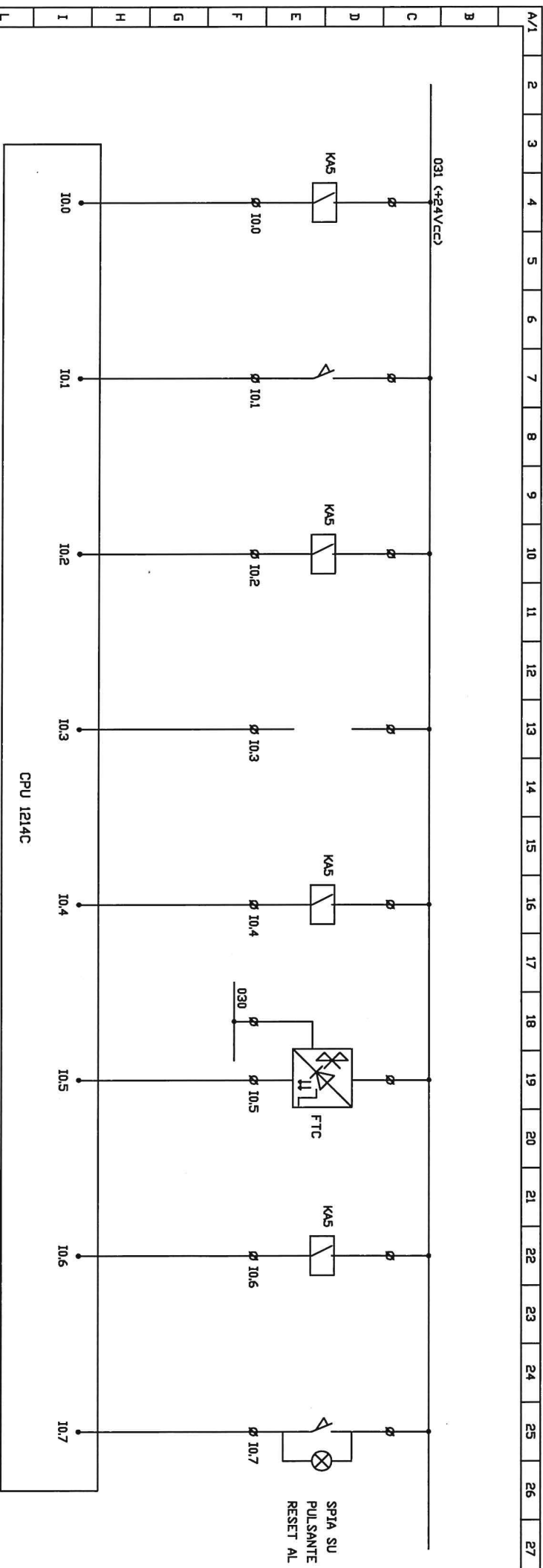
CUCITRICE E STIRATRICE

X DAVANTI (MCD)

S7_1200

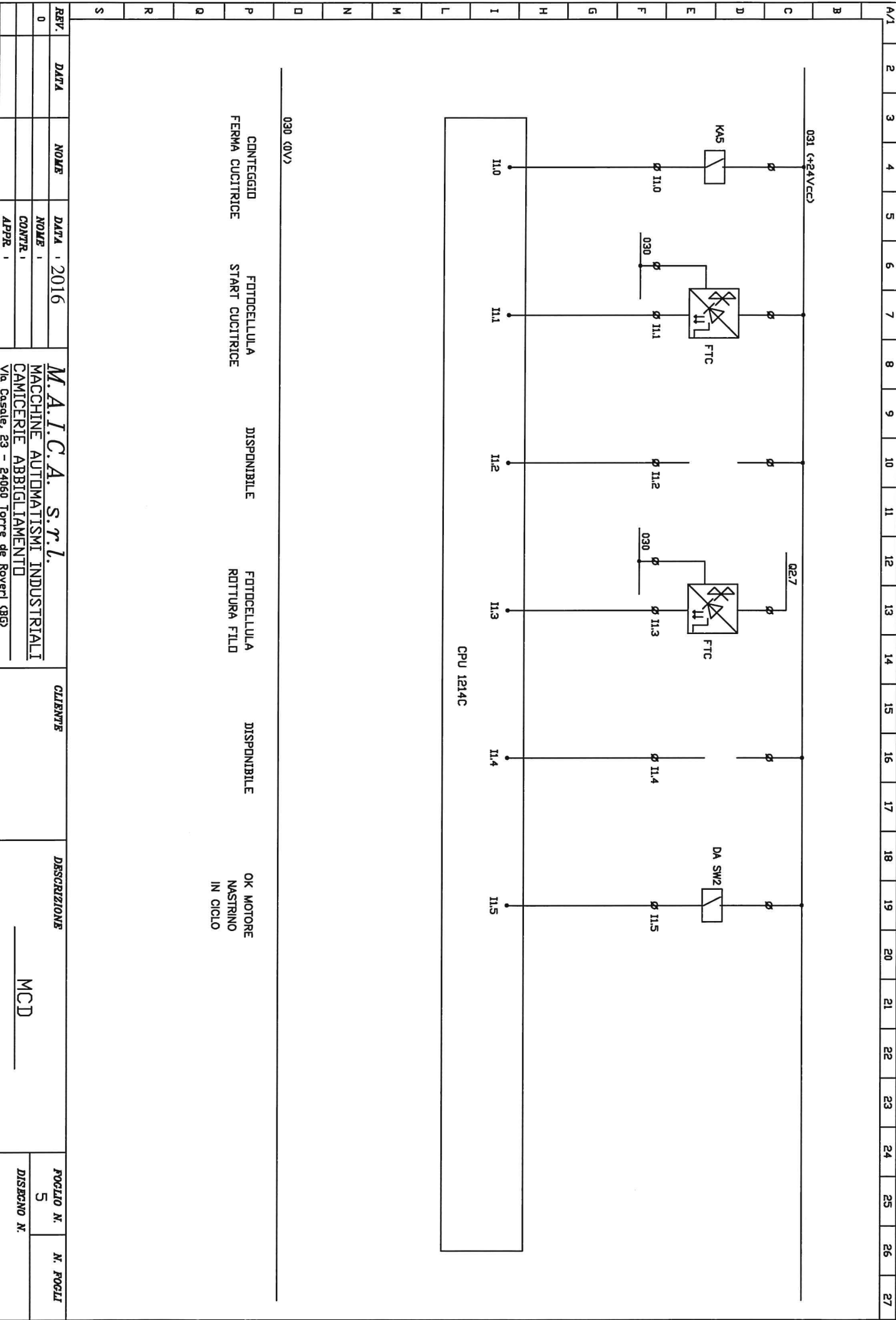


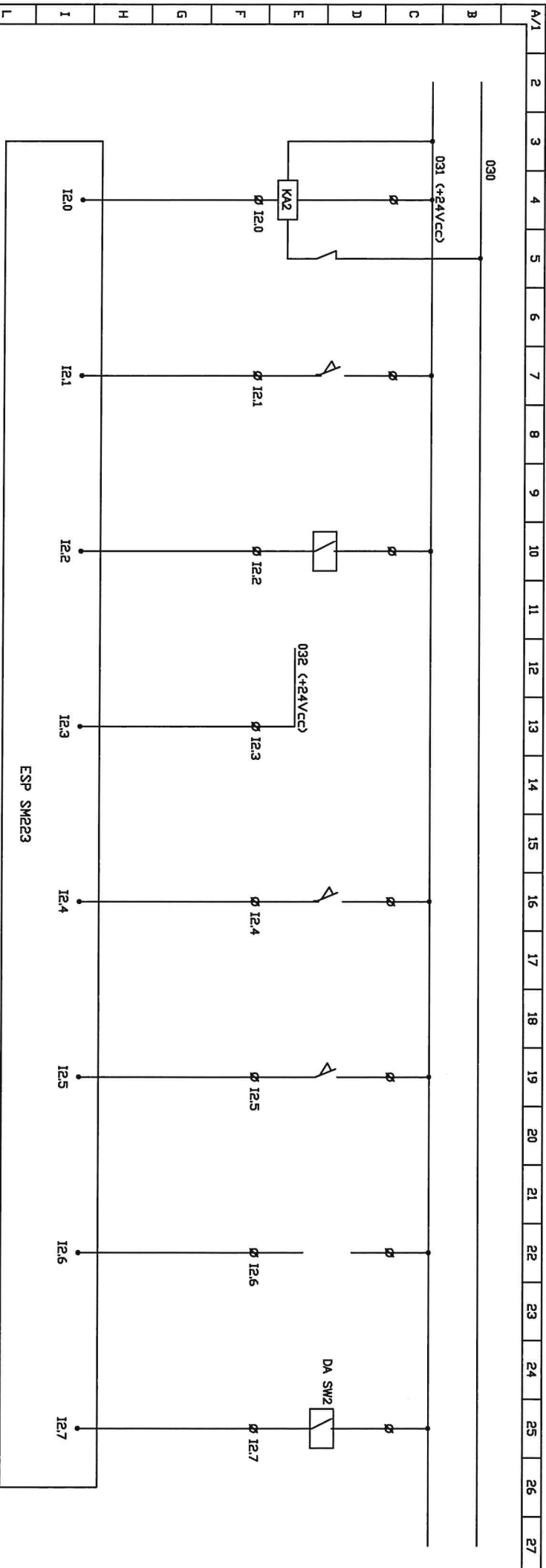
[illegible]



A/1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27
B																										
C																										
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S																										

REV.	DATA	NOME	DATA	2016	M.A.I.C.A. S.r.l.	CLIENTE	DESCRIZIONE	FOLIO N.	N. FOGLI
0					MACCHINE AUTOMATISMI INDUSTRIALI		MCD	4	
					CAMICERIE ABBIGLIAMENTO				
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CAMICERIE ABBIGLIAMENTO

Via Casale, 23 - 24060 Torre de Roveri (BG)

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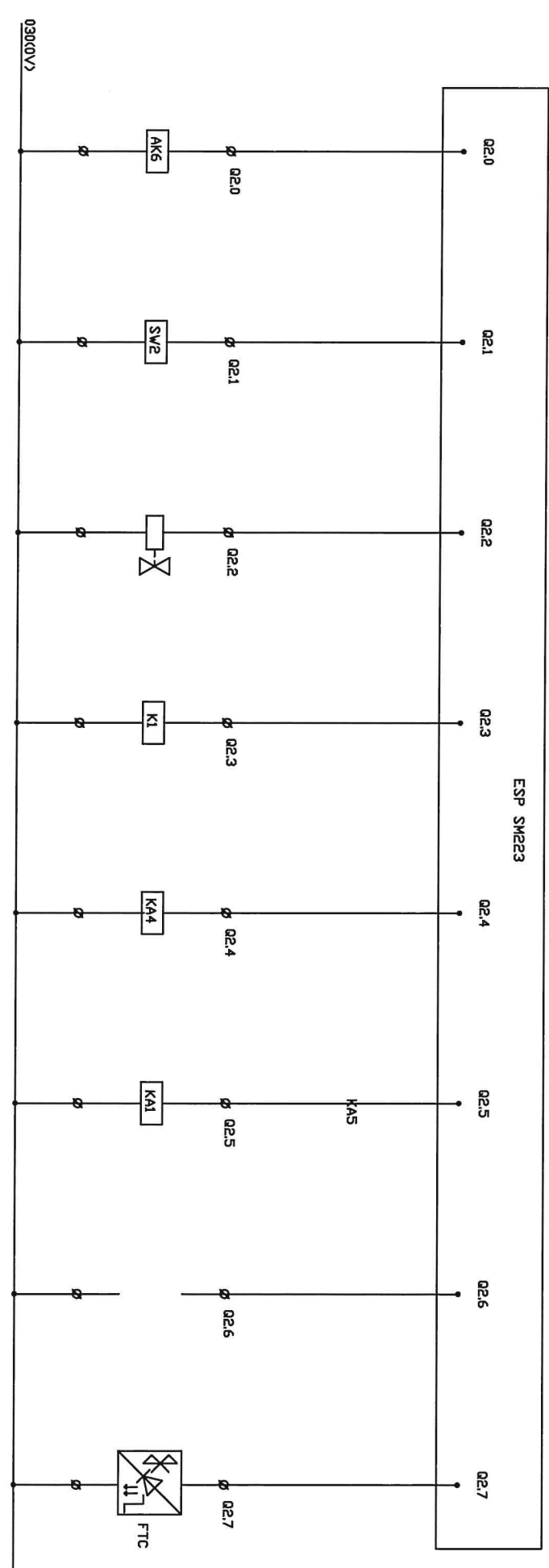
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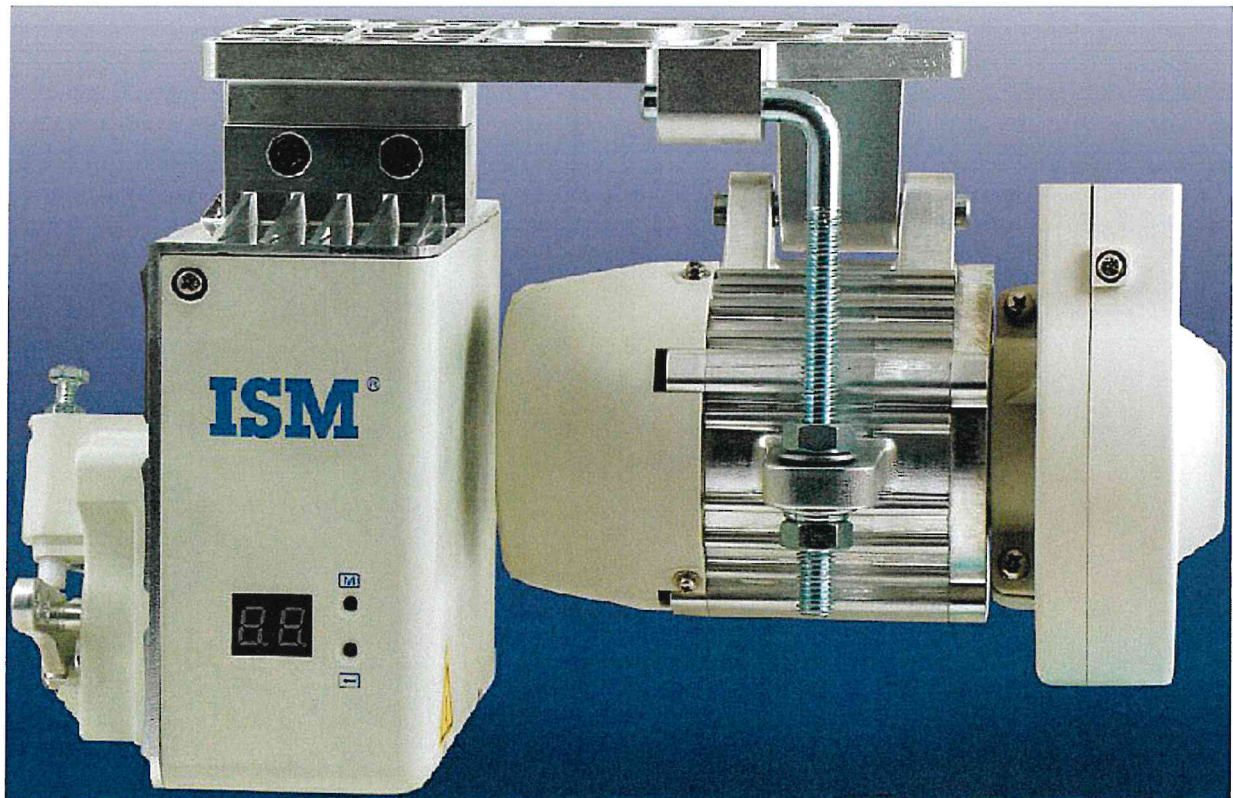
SV-71

SERVO MOTOR & CONTROLLER

ENGINEER'S MANUAL +

ADVANCED TRAINING COURSE

Ver. 02



YONG HUEI HSING ELECTRIC INDUSTRIES CORP.

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Appendix

Appendix 1. Datasheets of some important electronic components

(1) IPM(Intelligent Power Module)

(2) TNY276

(3) TLP2355

Appendix 2. Components' location diagrams

Appendix 2.1 SV-71 Control PCB (CMB00750)

Appendix 2.2 SV-71 Display PCB (CMC00070)

1. System Concepts

1.1 Product specification

Specification	
Function	SV-71
Input Voltage Ranges	1φ: 220V ± 10%
Frequency of Electric Power Source	50/60Hz
Motor Output Power	450~650 W
Motor Output Torque	38~58 kg-cm
Motor Rated Speed	3500~5000 RPM
Pulley Size Range	50-100 mm
Needle Up/Down Positioning	Y(Option synchronizer)
Max. Speed Adjustment	Y
Soft Star	Y(0~19 stitches)
Trimmer/Wiper	N
Pressure Foot Lifting	N
Inching	N
Target Stitching	N
Automatic Back-tacking	N
Motor Reverse	Y
Module/ Transistor Protection	Y
Material Counter	N
Edge Sensor Input Ports No.	0
Input Ports No.	0
Output Ports No.	0
With Standing Operation 3 Pedals	N
With Standing Operation 1 Pedal	Y (with PK-80)
With External Control Panel	N
Diagnostic Mode (Inspect I/O Conditions)	N
Display ERROR History Mode (Record Previous 6 Times)	Y
Gross Weights	4.5Kg
Packing Dimensions	395L*255W*295H

1.2 Coding system of product serial number

The rules of coding the product serial number are shown as below :

4	H	0001
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Year + Month + Serial number (of the month)

Year	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019
Code	0	1	2	3	4	5	6	7	8	9

Month	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Code	A	B	C	D	E	F	G	H	J	K	L	M

2. Set up

2.1 For motor set up

Dimensions of motor control box shown in Fig.1

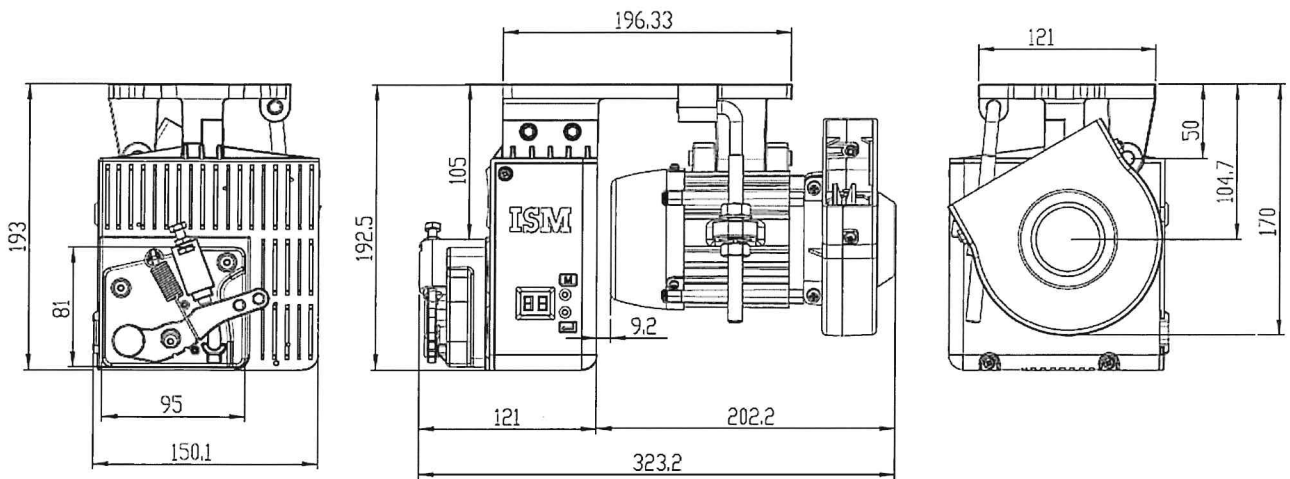


Fig.1

Drill three holes of 9 mm on the machine table, fixed the motor under the table; be sure that both pulleys of machine and motor should be parallel.

Up-down shift tension adjust nuts. Adjust belt tension force.

Adjust belt tension force ranging from 16-18mm/1kgf located in the center position as shown in Fig.2.

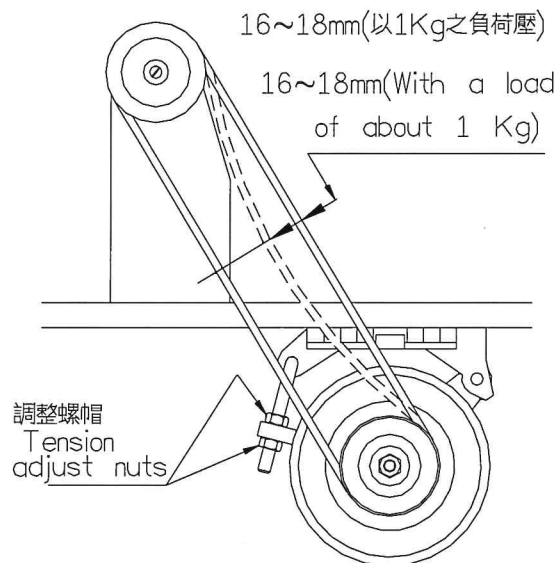


Fig.2

2.2 How to connect the cord

Open the front cover of the control box, the following connectors of the P.C.B are shown in Fig.3.

According to the sewing machine model, connect the connecting lines to the appropriate position.

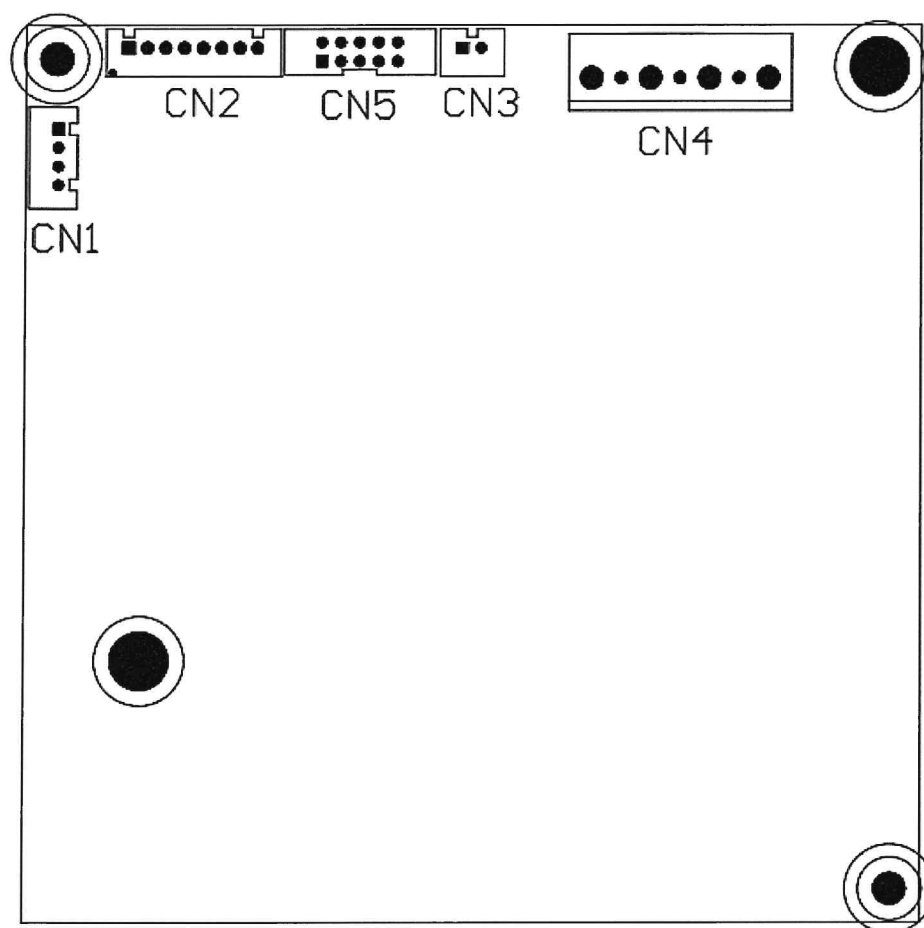
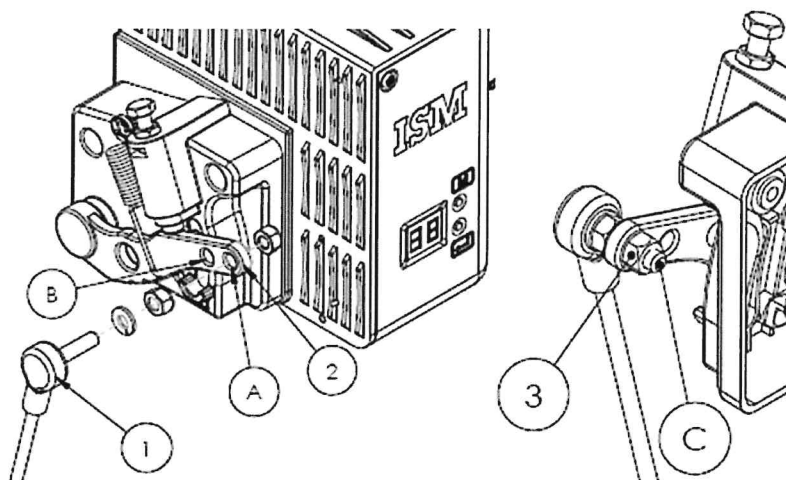


Fig. 3

Connector	Connectors' description
CN1	Synchronizer connector
CN2 :	Motor encoder connector
CN3	Speed unit connector
CN4	Motor power line connector
CN5	Operation panel connector

2.3 Attaching the connecting rod



Fix connecting rod① to installing hole A or B of pedal lever② with nut③.

If connecting rod① are installed in hole A, lengthen the pedal depressing stroke, and the pedal operation at medium speed will be easier to control

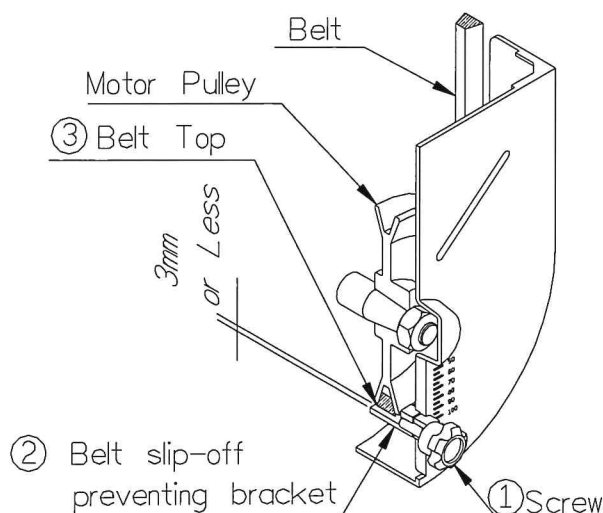
If connecting rod① are installed in hole B, shorten the pedal depressing stroke, and the pedal operation will have quicker response.

2.4 Adjusting the belt slip-off preventing bracket

Loosen screw① and adjust so that belt slip-off preventing bracket② is positioned at the location indicated in the figure. (The distance between belt top③ and slip-off preventing bracket② should be less than 3mm).

After the adjustment, tighten the screws① and be sure that before operating the sewing machine, the belt slip-off preventing bracket does not come in contact with the belt.

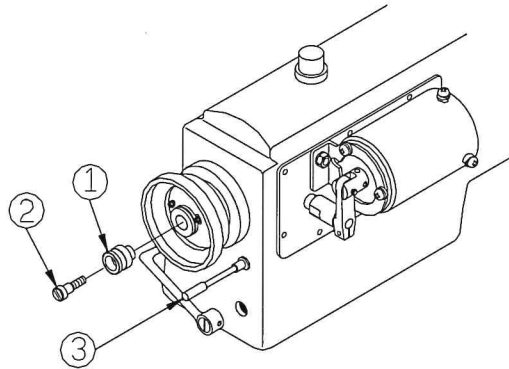
Note: If belt slip-off preventing bracket is not properly adjusted, it is possible to let the belt to slip-off causing safety hazard



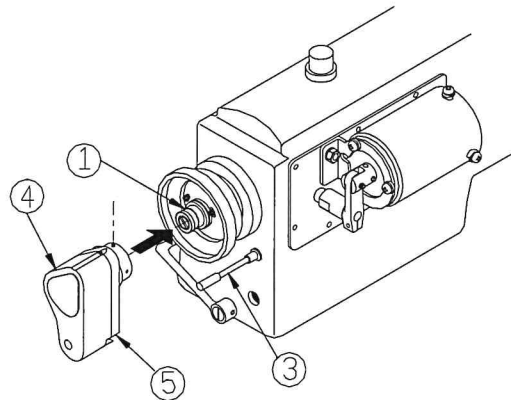
2.5 Fixing the synchronizer

- 1) Securely fix adapter**①** in the tapped hole in the main shaft of sewing machine using screw**②**.

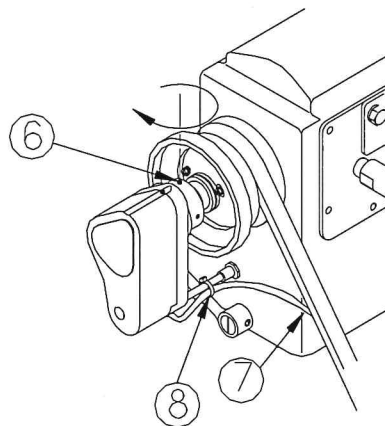
Fix supporting rod**③** on the machine head as figure.



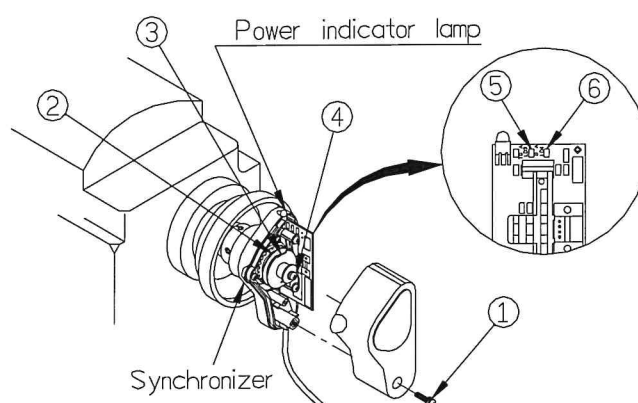
- 2) Then insert supporting rod**③** into slit**⑤** on the synchronizer stopper. Fit synchronizer**④** to adapter**①** in the direction of the arrow.



- 3) Tighten set screw**⑥** in synchronizer by turning it in the direction of the arrow. Fixed cord**⑦** of the synchronizer on supporting rod**③** using cord clamp**⑧**.



2.6 Adjusting the synchronizer

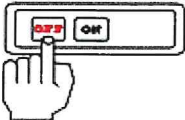
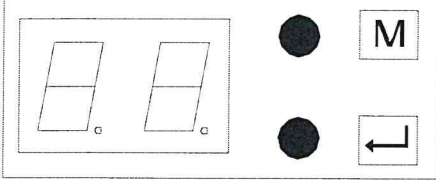
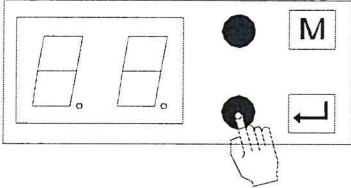
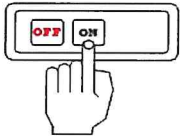
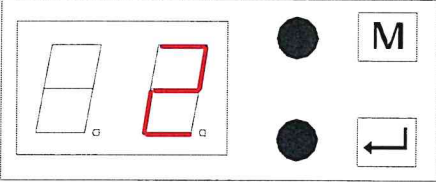
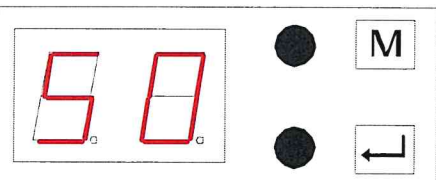
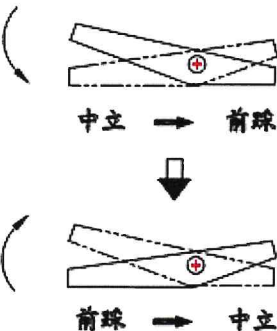
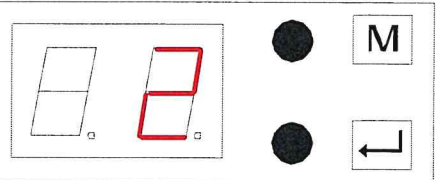
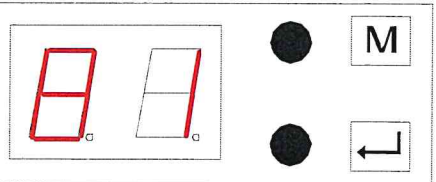


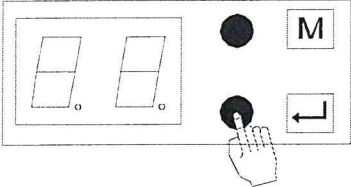
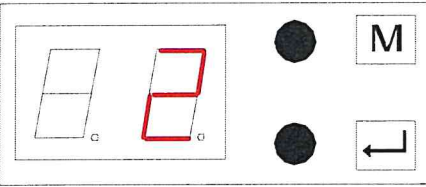
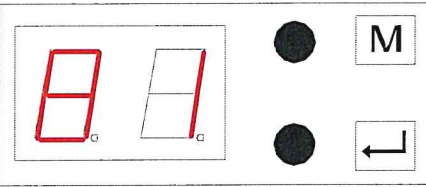
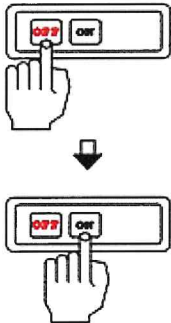
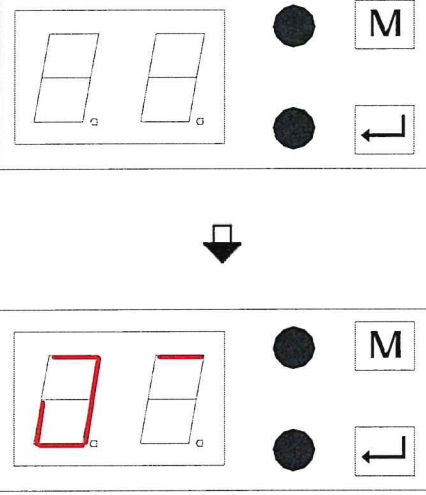
- 1) Loosen screw❶ and remove the cover. Then loosen screw❷ located at the top of the shaft.
- 2) Adjust the machine's pulley manually to needle down position.(the same direction as the machine rotates.)
- 3) Adjust the photo disc❸ till LED❹ is on. (the same direction as the machine rotates.)
- 4) Repeat step 2. Then adjust the sewing machine's pulley manually till needle remains in needle up position.
- 5) Adjust the photo disc❸ till LED❹ is on. Note: Prior the execution of this procedure, never rotate pulley and photo disc❸.
- 6) Tighten the screw❷.
- 7) Confirm the needle up / down positions of the needle by operating the pedal. In case of error, please repeat steps (2) through (5).
- 8) Set the cover and tighten it with screw❶.

2.7 Motor pulley ratio measurement and setting

★Motor pulley ratio measurement:

(Compulsory procedure when installing the motor for the first time to establish optimal motor performance)

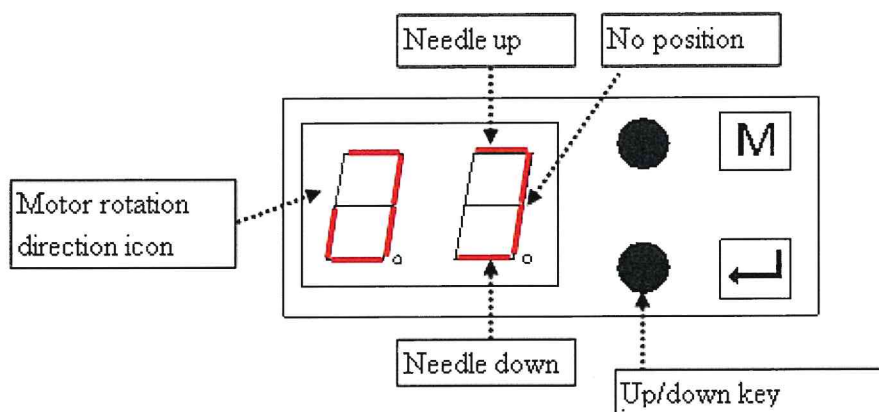
1. Turn OFF the power.		
2. Press  key and turn ON the power until the panel display the pulley ratio flickeringly. Release  key. (1digital display is hundreds, 2digital display are tens and units respectively).	 + 	Hundreds   flickering Tens and units 
3. If the display is not as shown above, please repeat steps 1-2.		
4. If the pedal is forwardly pressed, the motor will rotate 7 turns in positioning speed. After the motor stop, the motor pulley ratio will be displayed.(Sewing machine $360^\circ = \text{motor ? degrees}$). The step 4 can be repeated to confirm.		Hundreds  Tens and units 

5. Press  key to save. If this procedure is not performed, it will remain as the old values.		Hundreds  Tens and units 
6. Turn OFF the power then re-turn ON the power, It will operate according to new pulley ratio values.		

3. Operations of the control Box

3.1 For regular operations

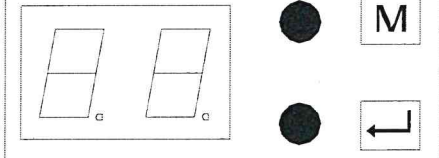
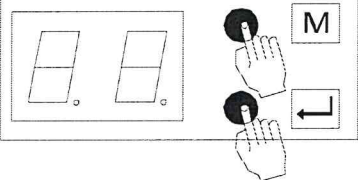
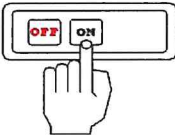
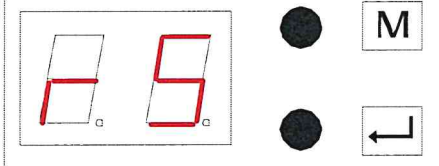
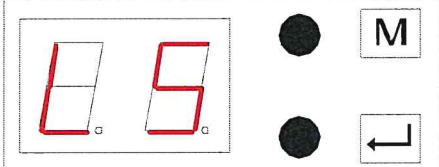
(Turning the power switch on without pressing any button)

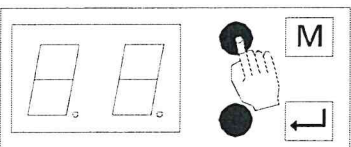
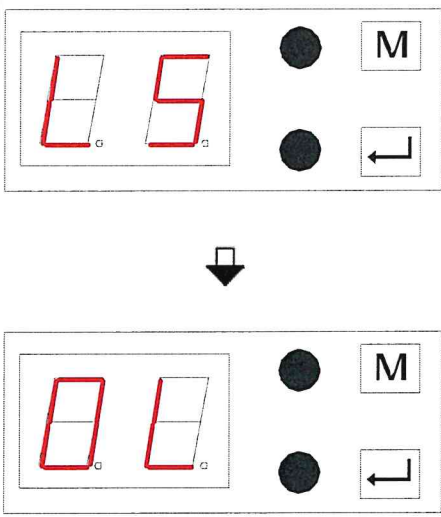
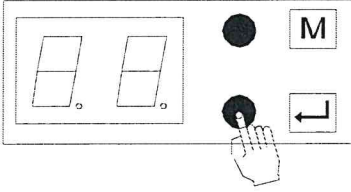
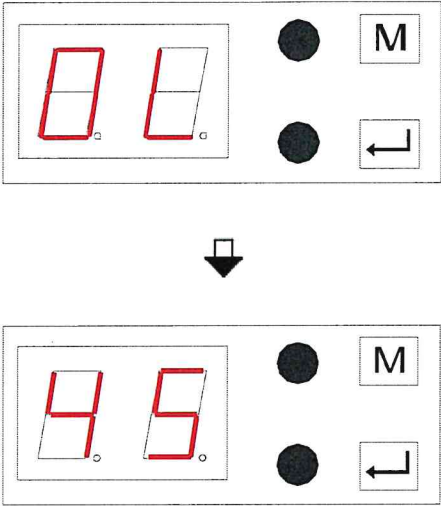
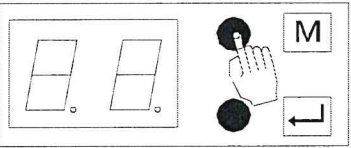
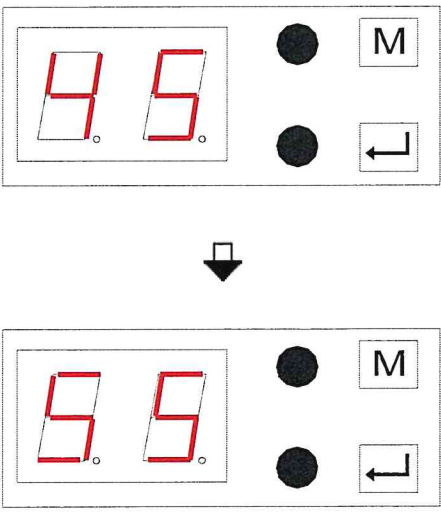
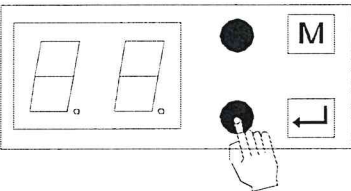
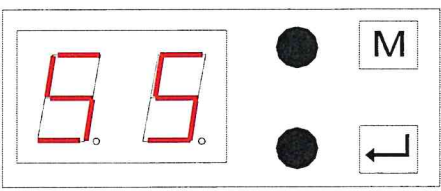


4. Control box setting

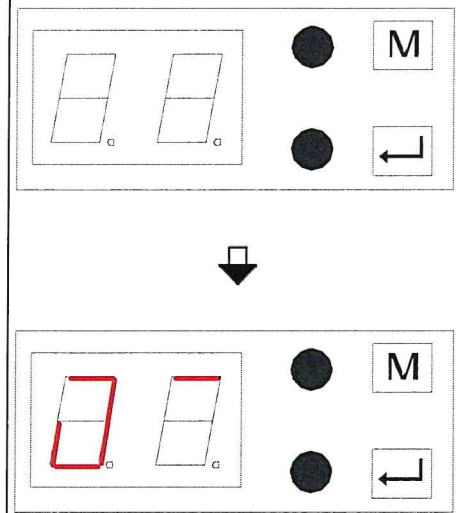
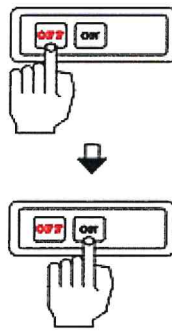
★4.1 Select the machine and motor type :

Machine Type	Motor Type
LS Lock Stitch	45 450W motor
OL Overlock.	55 550W motor
PB Postbed	65 650W motor
TN Twin Needle	U6 SM80-6535 motor
CS ChainStitch	
SP Special	

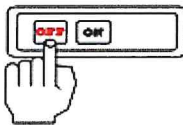
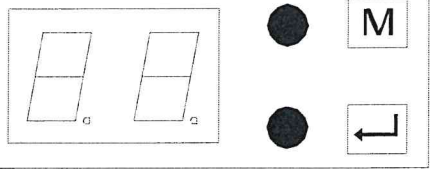
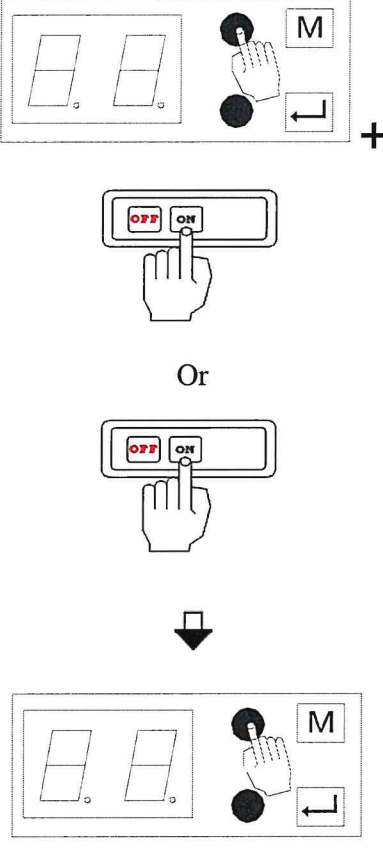
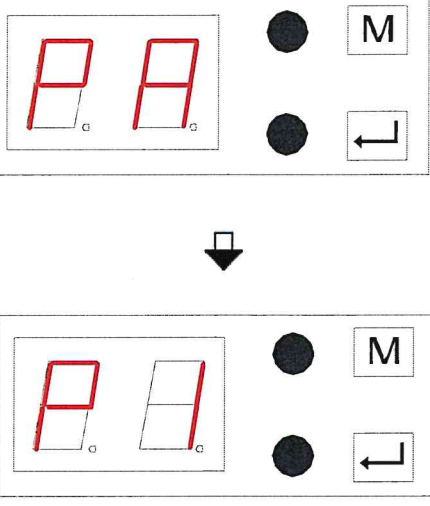
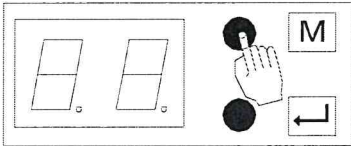
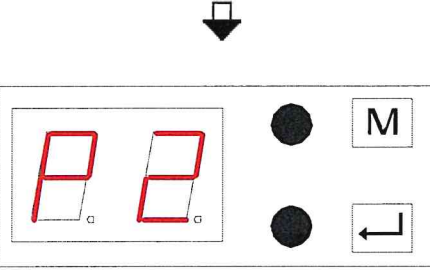
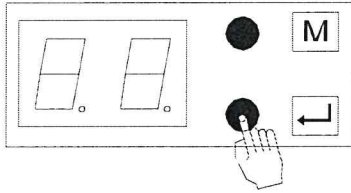
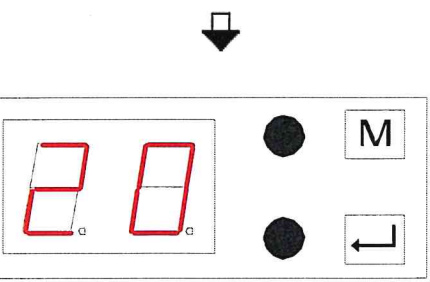
1. Turn OFF the power.		
2. Press M and  simultaneously, and turn ON the power until panel display rS then release the key.	 	  
3. If not displayed as shown above, please repeat steps 1-2.		

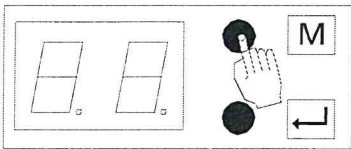
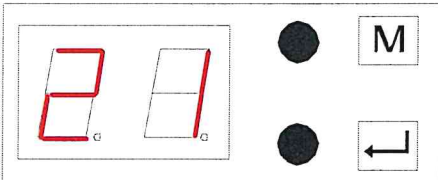
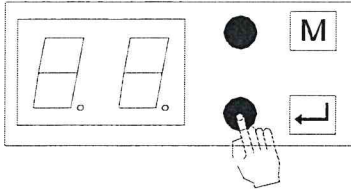
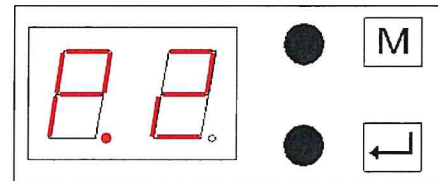
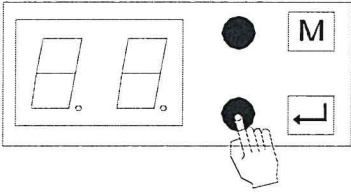
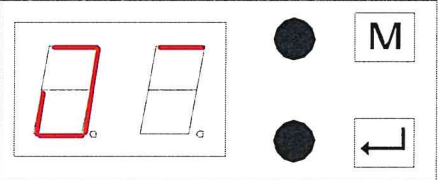
4. Press M key, thus machine type will be cycled increased. °		
5. Press Enter key to save then enter motor specification selection		
6. Press M key, thus motor specification will be cycled increased.		
7. Press Enter key to save		

8. Turn OFF the power, then turn ON the power again. It will operate according to the manual's instruction initial value.



4.2 Parameter setting

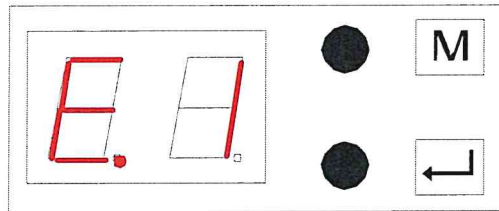
1. Turn OFF the power.		
There are two ways can enter parameter setting. 2-1. Press M key and turn on the power until the panel display PS. Release M key, the panel display parameters no. Or 2-2. Turn on the power enter normal mode then press M key until the panel display PA. Release M key, the panel display parameters no.		
3. The parameter no. will be increased a number circularly when press M key one time. Press M key and hold it to decrease the parameter no. continuously and circularly.		
4. Once the modifying parameter has been found, press Enter key, and the relative parameter setting will display accordingly.		

5. The parameter value. will be increased a number circularly when press M key one time. Press M key and hold it to decrease the parameter value continuously and circularly.		
6. Pressing ← key can return parameter no. selection. Repeat steps 4-6 to modify parameter value.		
7. Once all specified value has been changed, press ← key 2 second until return to normal operation mode. It will operate new parameter value.		

5. Troubleshooting

5.1 Error message display

When abnormal condition occurs, the error message will displayed as below fig.3 and table.2.



Error message display:

Error Code	Problem of Error	Check Items
E.1 or E.A	Synchronizer failure	-Synchronizer connector is loosen or line is broken.
E.2	Motor is not rotating	-Machine head is locked. -Motor is locked. -Motor power line or encoder line. is broken, or connector is loosen.
E.5	Speed unit output failure	-Speed unit connector is loosen -Connecting rod installation is incorrect -Speed unit is broken
E.6	CPU error	-Noise interference (Ex. High frequency machine, welding machine)
E.8	Setting speed over the motor maximum speed.	-Parameter P1 setting value is too large -Motor pulley diameter is too small -Motor pulley ratio setting error
E.9	Power transistor module is failed.	-Power module overheated -Short circuit or low voltage -Current is too high -Increase value of parameter F6
E.0 or E.C	Braking timing error	-Increase value of parameter F5

Detail information of the ERROR messages :

E.1 of EA: The input signals from the synchronizer fail

CPU doesn't detect the UP/Down signal after the motor having run over than 3 turns.

1. Check whether the UP/Down signal of the synchronizer is normal.
2. Does CPU correctly receive the signals from the synchronizer? (check the synchronizer cable, connector, the circuit between CN1 and the 34th & 35th pin of CPU in the ctl board)
3. The pulley ratio of the sewing machine and the motor is wrong ?

E.2 : The input signals from the motor encoder fail

CPU sends out the motor running command, but the feedback signal keeps being less than 20 rpm.

1. Check whether the motor power cable and encoder cable loosen or break.
2. Check whether the motor and the sewing machine are locked.
3. Check whether the HU,HV,HW,MA,MB signals of CN2 in the ctl board are correctly connected to CPU.
4. Check whether the UP,VP,WP,UN,VN,WN,HIC,LOC signals in the ctl board are normal.
5. The DC power source which supply to IPM is normal?
6. The output of IPM is normal?

E.5 : The speed command of the speed controller is abnormal.

The speed controller isn't in the neutral position when power ON.

1. The cable between the speed controller and CN3 of the ctl board is abnormal.
2. The signal between CN3 of the ctl board and the pin of CPU is abnormal.
3. The connecting rod between speed controller and the pedal isn't properly set up.
4. The speed controller isn't properly adjusted or the arm is loose..
5. The coil of the speed controller is damaged.

E.8 : The setting value of parameter is higher than the rated speed of the motor.

1. The setting value of parameter P1 is too high.
2. The motor pulley is too small.
3. The pulley ratio is wrong.

E.9 : IPM abnormal

FO (a self protection signal from IPM) signal keeps being LOW.

1. IPM is damaged.
2. The resistance of the resistor R63 in the power board is abnormal.
3. The VD voltage supplies to IPM is lower than 12V.

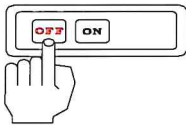
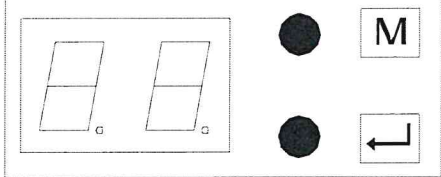
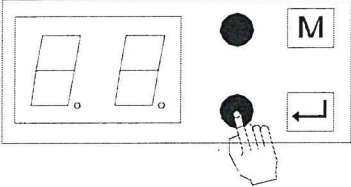
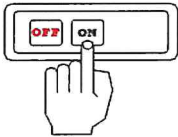
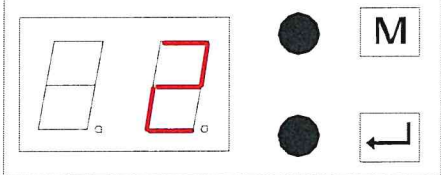
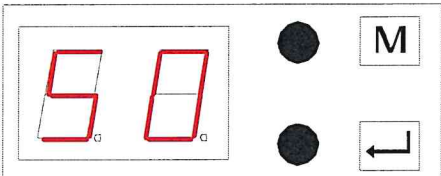
E.C Braking timing error

1. When running: The setting value of parameter F5 is too short.
2. When power on: No synchronizer but setting parameter F1 in synchronizer mode and the setting value of parameter F8 more than 2

5.2 Speed unit adjustment

After replacement of speed unit, Adjust speed unit following the below procedures.

①enter speed unit adjustment mode

1. Turn OFF the power.		
2. Press  key and turn ON the power until the panel display the pulley ratio flickeringly. Release  key. (1digital display is hundreds, 2digital display are tens and units respectively).	 	Hundreds  ↓ ↑ flickering Tens and units 
3. If the display is not as shown above, please repeat steps 1-2		

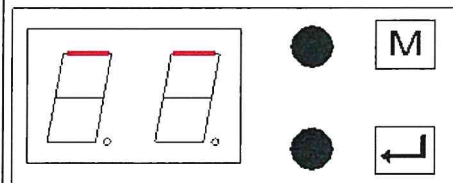
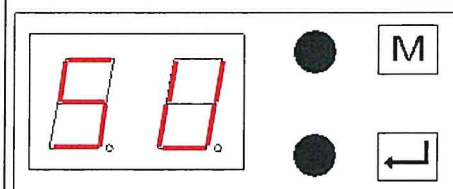
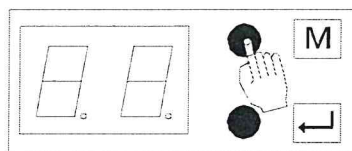
4. Press **M** key until display

“SU”. Release **M** key enter the

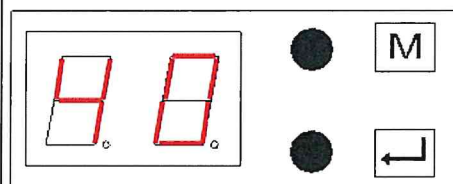
speed unit adjustment mode.

The display has three statuses:

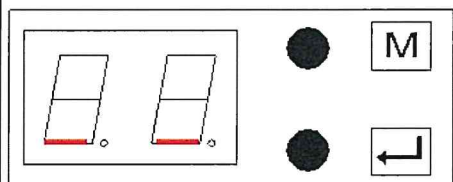
overflow, normal, underflow.



Overflow
or



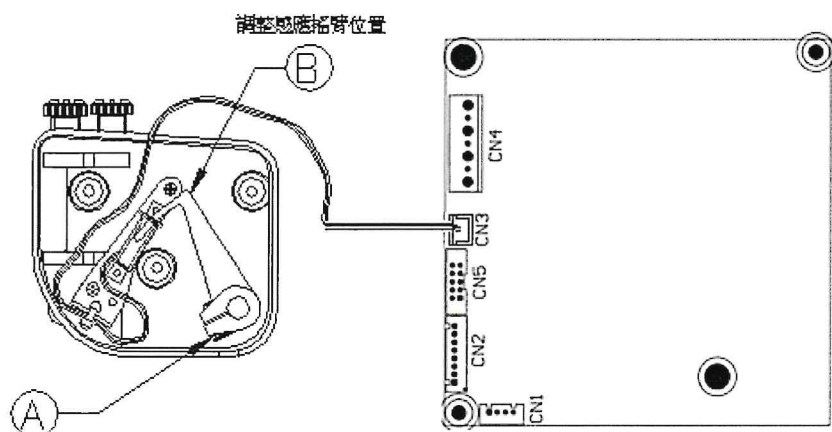
Normal
or



Underflow

②Place the pedal sensor inner lever arm to the neutral position .

Loosen the hexagon screw (A) from the speed unit. Adjust the induction arm (B) so that the number on display is between 37~47.



③ Tighten the hexagon screw (A).

④ If the number is within the range of 39~43, thus adjustment is completed, otherwise repeat steps 2~3.

5.3 Other problems

(1) No electricity input in the control box after power ON (completely nothing displayed on the simple control panel).

A. The red indicator LED2 in the ctl board isn't lighted.

a. Make sure that the power switch cable connects to the correct electric power source.

b. The fuse F1 (10A/250V) in the ctl board is broken.

c. The choke CHOKE1 in the ctl board is damaged or the pins are not well soldered.

d. The NTC resistor NTC1(10Ω) in the ctl board is damaged and becomes open-circuited.

e. The bridge BR1 BR1(MP1508M) in the ctl board is broken.

B. The red indicator LED2 in the ctl board is lighted, and the relay RY1 in the ctl board is active.

a. The voltage regulator IC U9(7805) in the ctl board is damaged.

b. Power is not full released.

C. The red indicator LED2 in the ctl board is lighted, but the relay isn't active, and is with slow discharging action.

a. The diode D7(SJPX-F2) in the ctl board is broken.

b. Some components in the switching power supply circuit of the ctl board are damaged, such as: diode D3(FR305), PS IC U8(MR4020), transformer TR1...etc.

(2) The motor can not run at high speed.

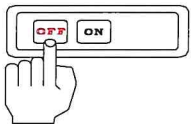
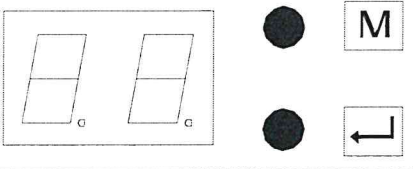
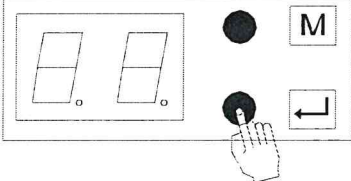
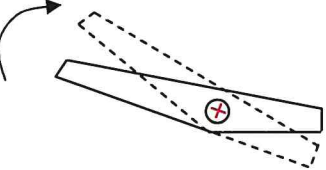
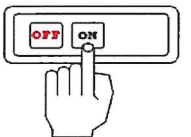
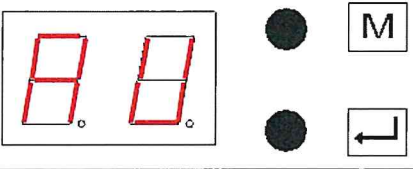
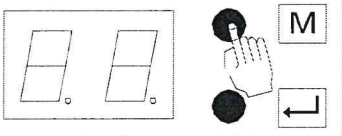
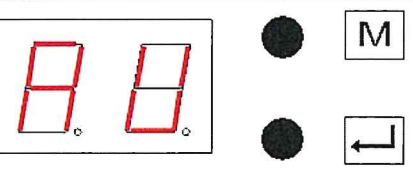
A. IPM U11(PS21565) and relative driver circuits are damaged.

B. The speed controller is not well adjusted.

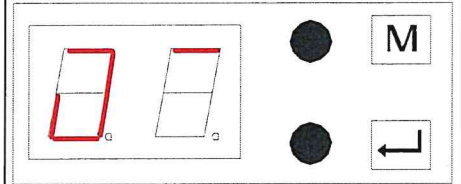
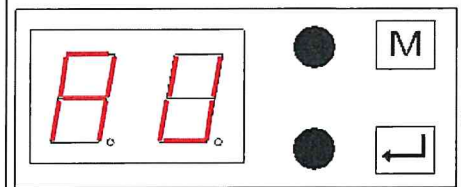
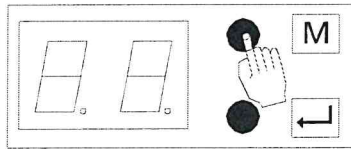
C. The selection of motor type is wrong.

D. The pulley ratio is wrong.

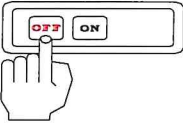
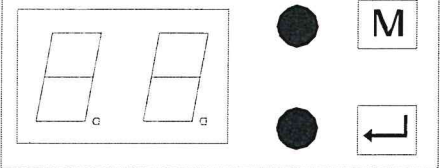
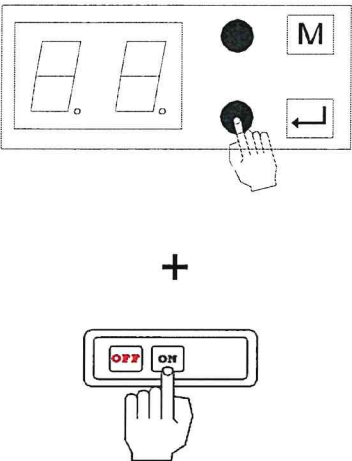
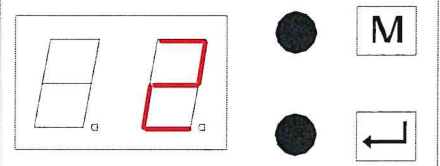
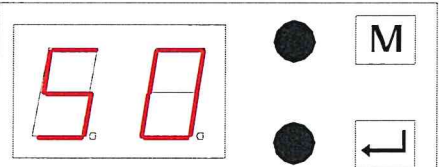
5.4 Auto-run (Aging) mode

1. Turn OFF the power.		
2. Press  and full heel back the pedal, and then turn ON the power until panel display AG then release the key and pedal.	 +  neutral position ➔ Full heel back + 	
3. If not displayed as shown above, please repeat steps 1-2.		
4. Press  key one time		

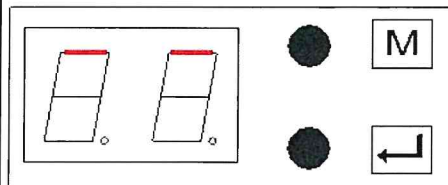
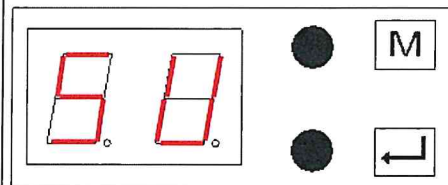
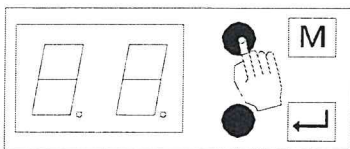
5. Press  key to enter auto-run mode



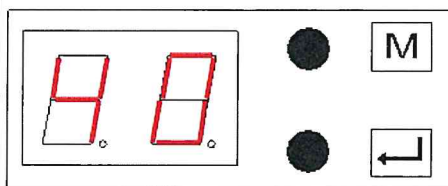
5.5 Diagnostic(Self-check mode) (FW version V10) Check HU,HV,HW,MA,MB,FO,UP

1. Turn OFF the power.		
2. Press  key and turn ON the power until the panel display the pulley ratio flickeringly. Release  key. (1digital display is hundreds, 2digital display are tens and units respectively).		Hundreds  Tens and units 
3. If the display is not as shown above, please repeat steps 1-2		

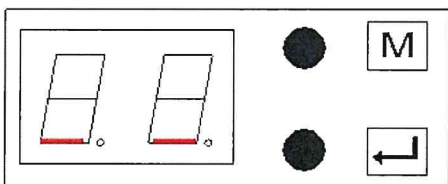
4. Press **M** key until display
 “SU”. Release **M** key enter the
 speed unit adjustment mode.
 The display has three statuses:
 overflow, normal, underflow.



Overflow
 or

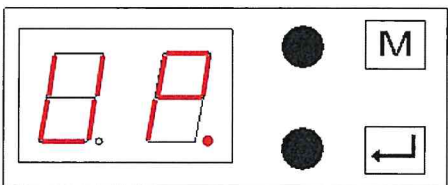


Normal
 or

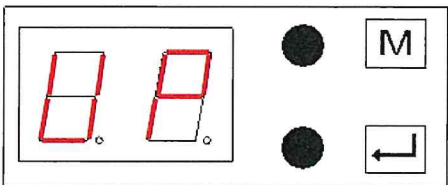


Underflow

5. Push **M** key enter self-check
 mode. The signal can be check as
 below HU,HV,HW,MA,MB,FO,
 UP. Push **M** key switch check-
 signal.
 Signal level is "HIGH" when
 point burning, otherwise signal
 level is "LOW"



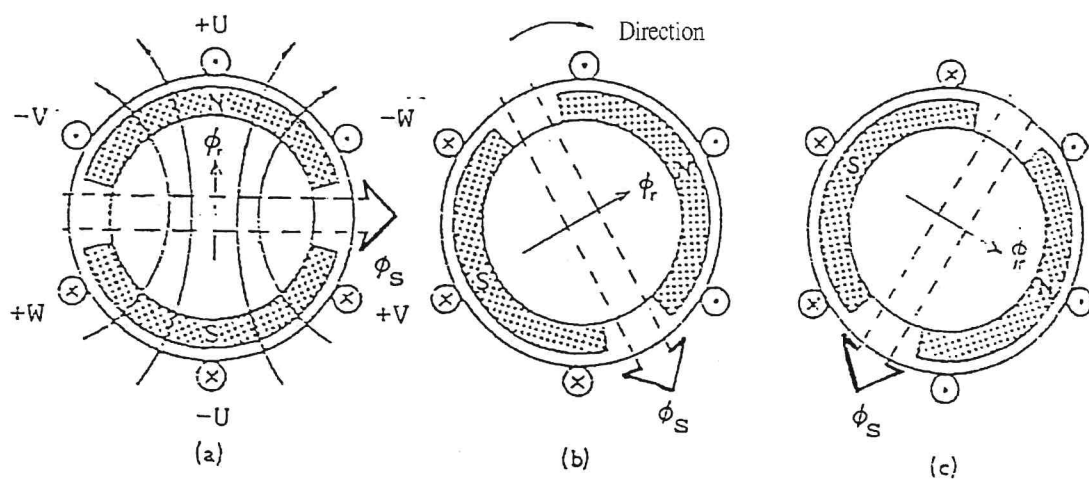
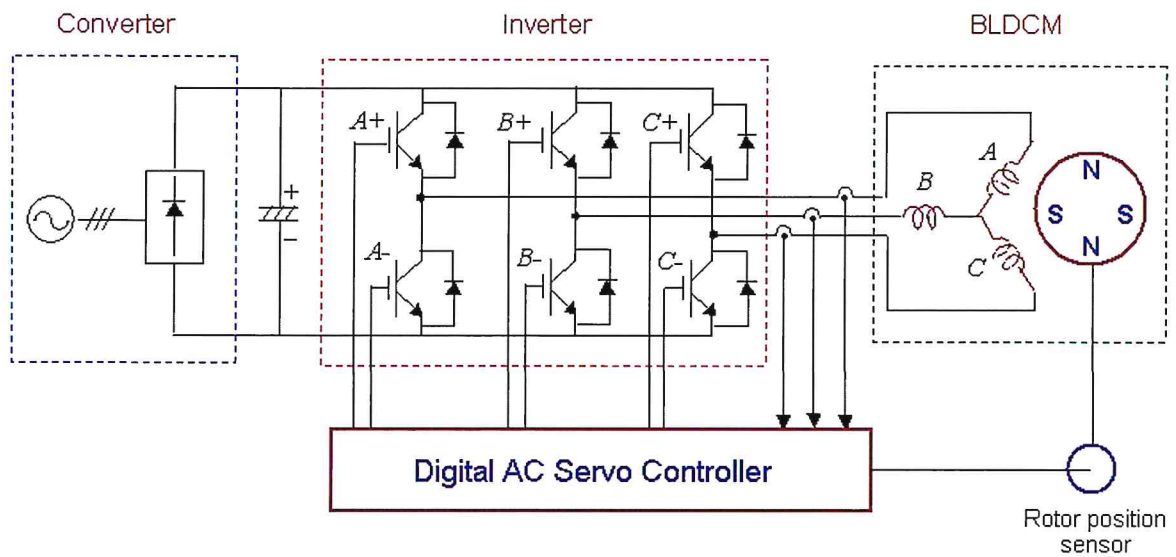
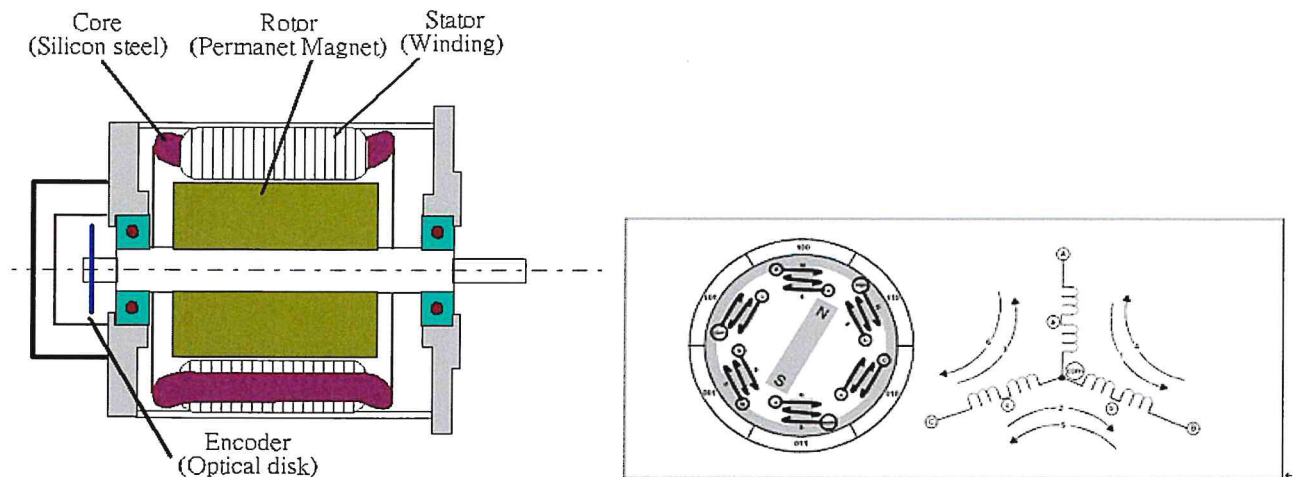
Signal level is "HIGH"



Signal level is "LOW"

6. Analysis of servo control system

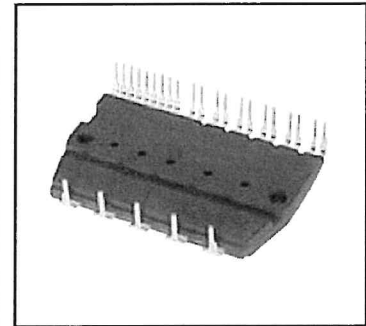
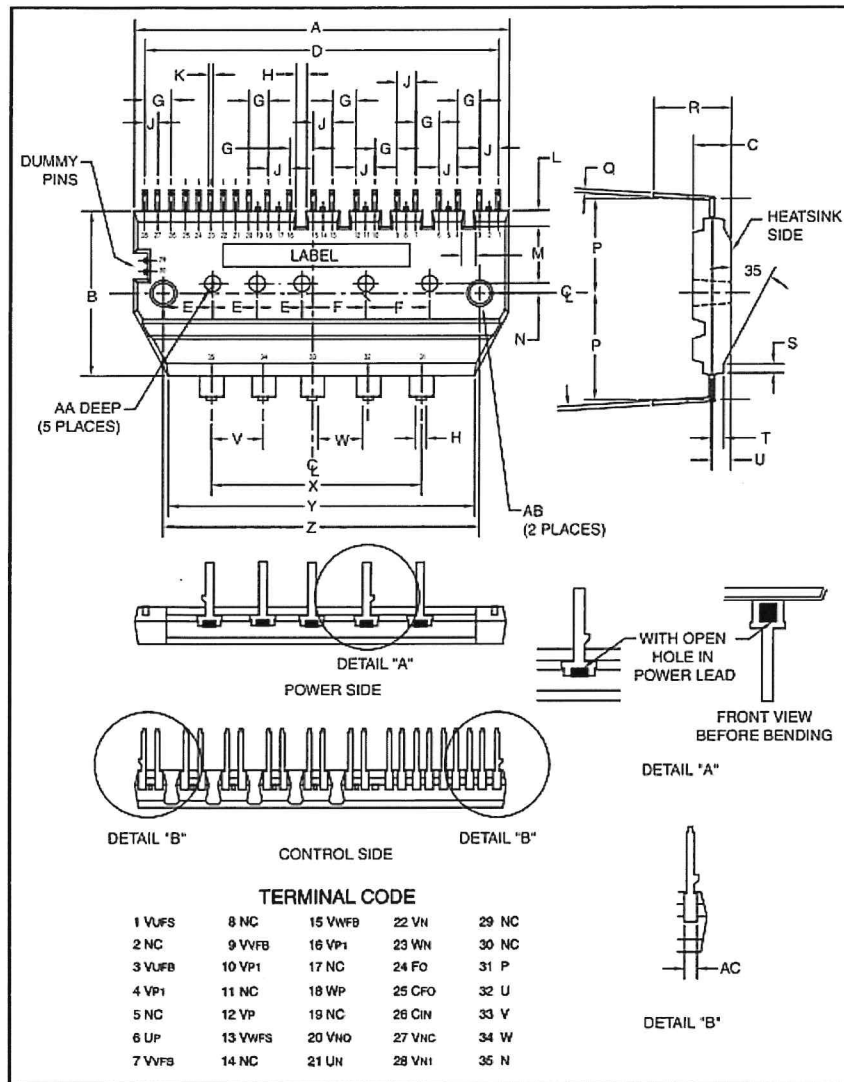
6.1 Basic principles of servo motor control



Appendix

Appendix 1. Datasheets of some important electronic components

(1) IPM(Intelligent Power Module)



Description:

DIP and Mini DIP-IPMs are intelligent power modules that integrate power devices, drivers, and protection circuitry in an ultra compact dual-in-line transfer-mold package for use in driving small three phase motors. Use of 5th generation IGBTs, DIP packaging, and application specific HVICs allow the designer to reduce inverter size and overall design time.

Features:

- ☐ Compact Packages
- ☐ Single Power Supply
- ☐ Integrated HVICs
- ☐ Direct Connection to CPU

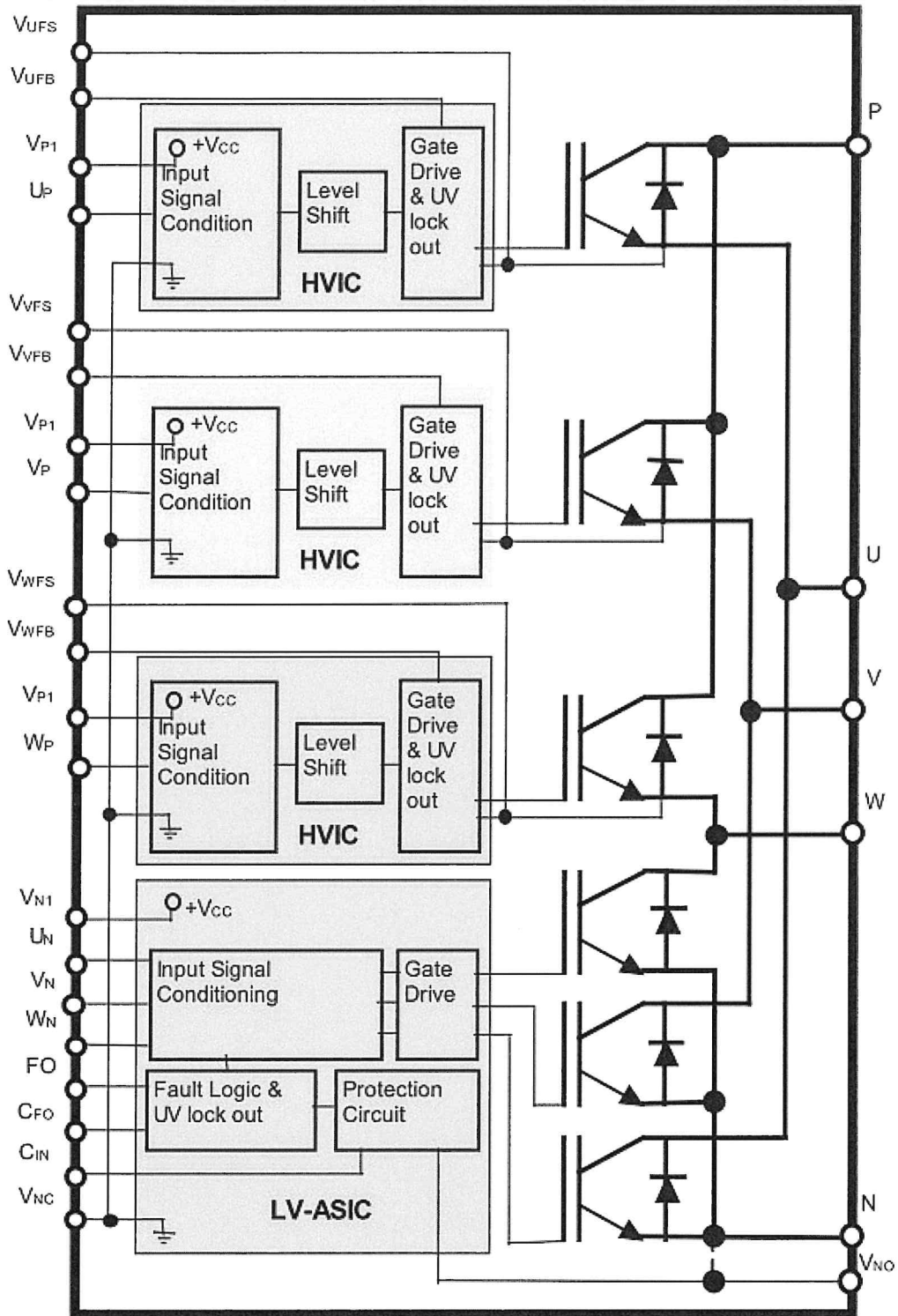
Applications:

- ☐ Washing Machines
- ☐ Refrigerators
- ☐ Air Conditioners
- ☐ Small Servo Motors
- ☐ Small Motor Control

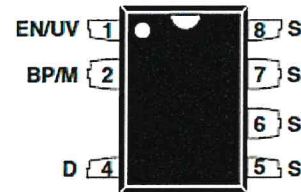
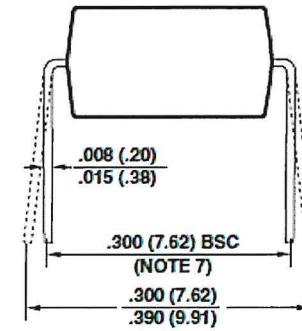
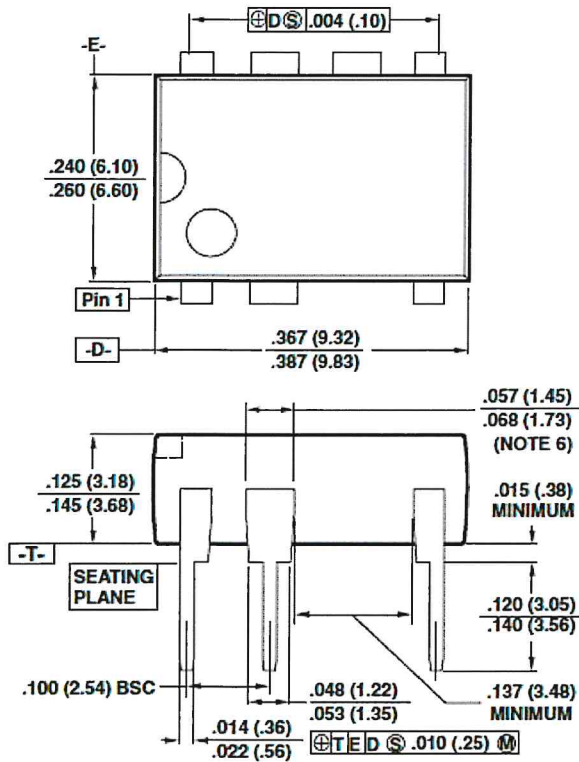
Outline Drawing and Circuit Diagram

Dimensions	Inches	Millimeters
A	1.93	49.0
B	1.20	30.5
C	0.20	5.0
D	1.82	46.23
E	0.25	6.25
F	0.32	8.0
G	0.14	3.556
H	0.04	1.0
J	0.07	1.778
K	0.02	0.5
L	0.06	1.5
M	0.07 Min.	1.8 Min.
N	0.30	0.75
P	0.69	17.4

Dimensions	Inches	Millimeters
Q	0.02	0.5
R	0.41	10.5
S	0.05	1.2
T	0.05	1.25
U	0.10	2.5
V	0.30	7.62
W	0.16 Min.	4.0 Min.
X	1.20	30.48
Y	1.61	41.0
Z	1.65	42.0
AA	0.08 Dia.	2.0 Dia.
AB	0.13 Dia.	3.3 Dia.
AC	0.05	1.25



(2) TNY276



Absolute Maximum Ratings^(1,4)

DRAIN Voltage	-0.3 V to 700 V
DRAIN Peak Current: TNY276	720 (1350) mA ⁽²⁾
EN/UV Voltage	-0.3 V to 9 V
EN/UV Current	100 mA
BP/M Voltage	-0.3 V to 9 V
Storage Temperature	-65 °C to 150 °C
Operating Junction Temperature ⁽³⁾	-40 °C to 150 °C
Lead Temperature ⁽⁴⁾	260 °C

Notes:

1. All voltages referenced to SOURCE, $T_A = 25\text{ °C}$.
2. The higher peak DRAIN current is allowed while the DRAIN voltage is simultaneously less than 400 V.
3. Normally limited by internal circuitry.
4. 1/16 in. from case for 5 seconds.
5. Maximum ratings specified may be applied one at a time, without causing permanent damage to the product. Exposure to Absolute Rating conditions for extended periods of time may affect product reliability.

Thermal Impedance

Thermal Impedance: P or G Package:

(θ_{JA})	70 °C/W ⁽²⁾ ; 60 °C/W ⁽³⁾
(θ_{JC}) ⁽¹⁾	11 °C/W

Notes:

1. Measured on the SOURCE pin close to plastic interface.
2. Soldered to 0.36 sq. in. (232 mm²), 2 oz. (610 g/m²) copper clad.
3. Soldered to 1 sq. in. (645 mm²), 2 oz. (610 g/m²) copper clad.

TLP2355

1. Applications

- Intelligent Power Module Signal Isolation
- Programmable Logic Controllers (PLCs)
- High-Speed Digital Interfacing for Instrumentation and Control Devices

2. General

The Toshiba TLP2355 consists of a GaAsInfrared light-emitting diode coupled with a high-gain, high-speed photo detector. It is housed in the SO6 package.

The detector has a totem-pole output stage with current sourcing and sinking capabilities.

The TLP2355 has an internal Faraday shield that provides a guaranteed common-mode transient immunity of ± 20 kV/ μ s.

The TLP2355 has a logic buffer output. An inverter output version, the TLP2358, is also available.

3. Features

- (1) Buffer logic type (totem pole output)
- (2) Package: SO6
- (3) Supply voltage: 3 to 20 V
- (4) Threshold input current, low to high: $I_{FTH} = 1.6$ mA (max)
- (5) Propagation delay time: $t_{pHL}/t_{pLH} = 250$ ns (max)
- (6) Pulse width distortion: $|t_{pHL} - t_{pLH}| = 70$ ns (max)
- (7) Common-mode transient immunity: ± 20 kV/ μ s (min)
- (8) Operating temperature: -40 to 125°C
- (9) Isolation voltage: 3750 Vrms (min)
- (10) Safety standards

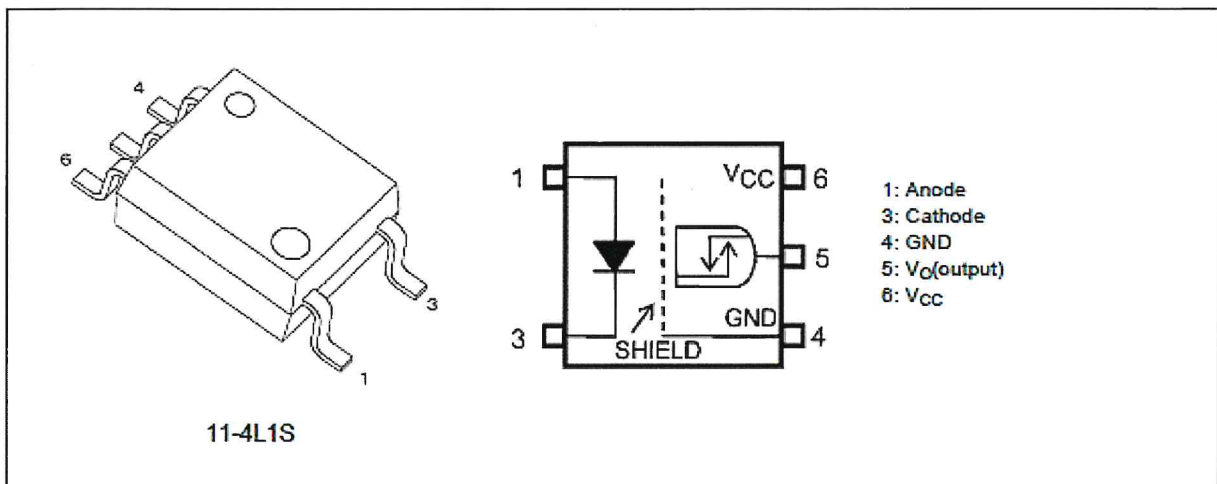
UL-under application: UL1577 File No.E67349

cUL-under application: CSA Component Acceptance Service No.5A, File No.E67349

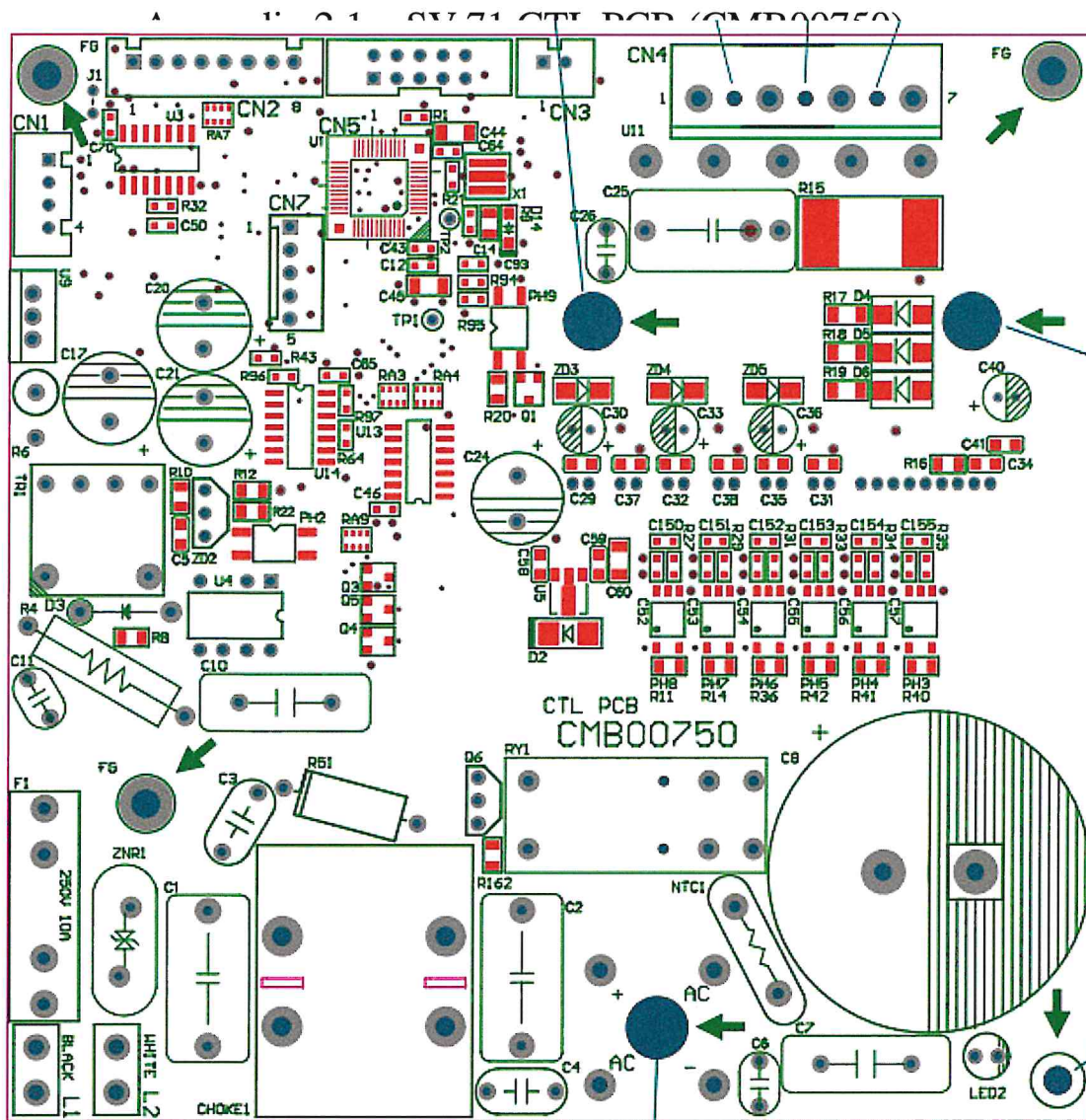
VDE-under application: Option (V4) EN60747-5-2 (Note)

Note: When an EN60747-5-2 approved type is needed, please designate the **Option (V4)**.

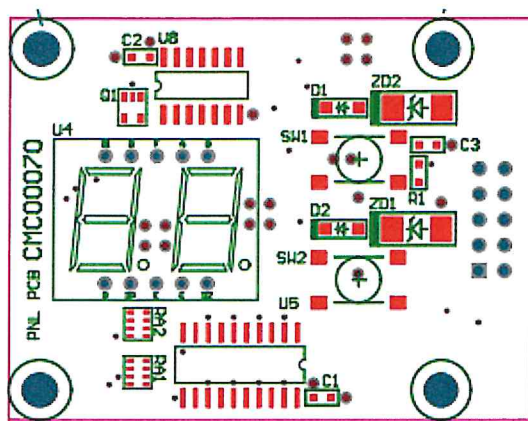
4. Packaging and Pin Configuration



Appendix 2. Components' location diagrams



Appendix 2.2 SV-71 Display PCB (CMC00070)



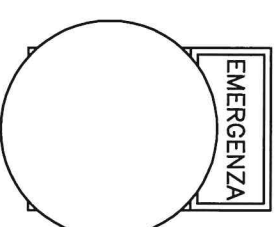
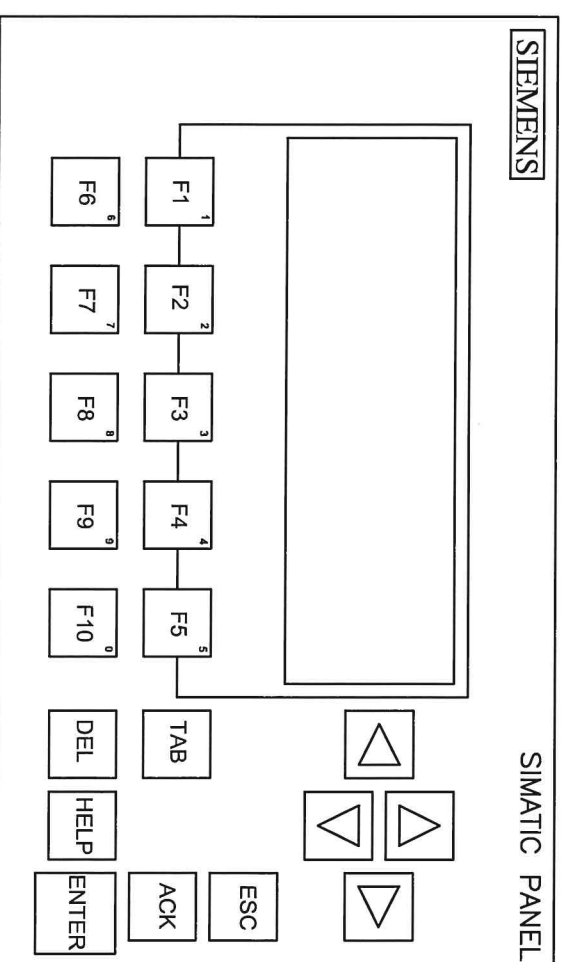
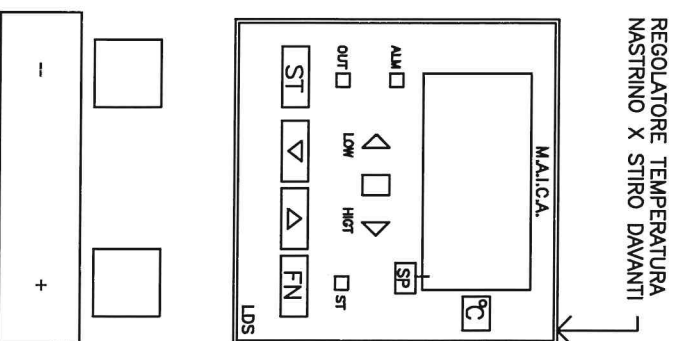
YONG HUEI HSING ELECTRIC INDUSTRIES CORP.

NO.55, YONG HUEI ROAD, TAHO LI, SHI TUN D.,
TAICHUNG, TAIWAN, R.O.C.
(ZIP code : 407)

TEL: 886-4-23111551

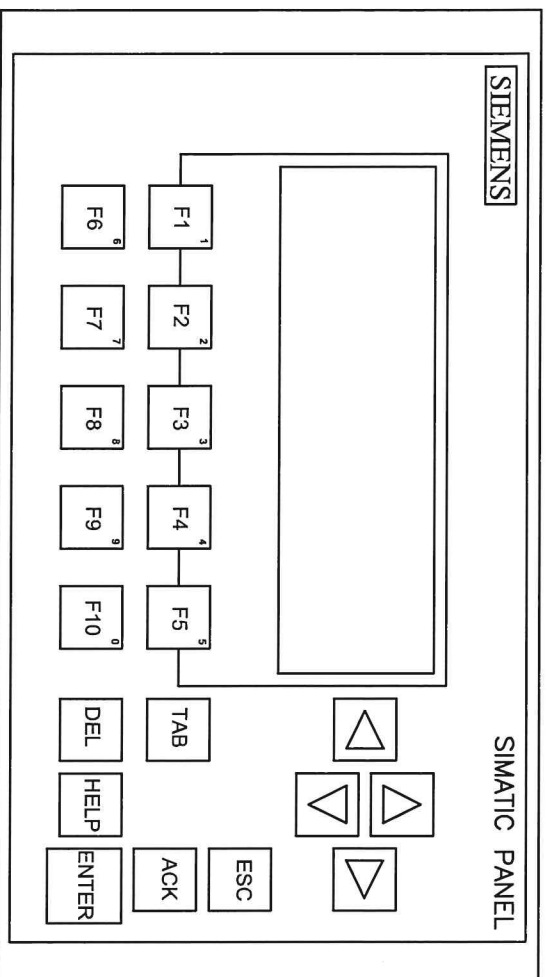
FAX: 886-4-23110006, 886-4-23119383

PANNELLO CONTROLLO MCD



REV.	DATA	NOME	DATA	2016	<u>M.A.I.C.A. s.r.l.</u> <u>MACCHINE AUTOMATISMI INDUSTRIALI</u> <u>CAMICERIE ABBIGLIAMENTO</u> <u>Via Casale, 23 - 24060 Torre de Roveri (BG)</u>	CLIENTE	DESCRIZIONE	FOGLIO N. 11	N. FOGLI
0		NOME							
		CONTR.							
		APPR.							
							MCD		DISCEND N.

TASTIERA SIEMENS KP300 X(MCD)



ALLARMI A BORDO

- | | |
|---------------------------|-------------------------|
| 01 EMERGENZA INSERITA | 02 FINE CONTEGGIO PEZZI |
| 03 FINE CONTEGGIO PUNTI | 04 CUCITRICE MANUALE |
| 05 MOTORE NASTRINO NON OK | 07 NASTRINO BLOCCATO |
| 07 ROTTURA FILO | |

INSERIMENTO FASI DA TASTIERA

IL CONTROLLO FASI TRAMITE TASTI FUNZIONA SOLO NELLE PAGINE SPECIFICHE

- | | | | |
|-----------------------------------|-----------------------------------|---------------------------------------|-----------------------------------|
| F1 ¹ RESET CONTA PEZZI | F2 ² RESET CONTA PUNTI | F1 ¹ INSERIMENTO ETICHETTE | F2 ² APERTURA CUCITURA |
|-----------------------------------|-----------------------------------|---------------------------------------|-----------------------------------|

REGOLAZIONI

- CONTA PEZZI =CONTROLLO PEZZI CUCITI
 CONTA PUNTI =CONTROLLO PUNTI
 (CONTROLLO TAGLIO)
 PARTENZA =PUNTI PARTENZA TAGLIO
 DURATA =TEMPO TAGLIO
 SICUREZZA =PUNTI PRIMA DI POTER TAGLIARE
 CONTROLLO NASTRO =PUNTI X DISCESA CONTROLLO RECUPERO NASTRINO
 ETICHETTE =PUNTI X INSERIMENTO ETICHETTA

F-10⁹ IL TASTO CAMBIO LINGUA
 FUNZIONA SOLO NELLA
 PAGINA INIZIALE

FUNZIONE TASTI

- CAMBIO PAGINA:
 PER IL CAMBIO PAGINA AVANTI PREMERE IL TASTO
 PER IL CAMBIO PAGINE INDIETRO PREMERE IL TASTO

F5⁵
 F10⁰

- CAMBIO VALORI:
 PER IL CAMBIO VALORI PORTARSI CON I TASTI
 SULLA PAGINA DEL VALORE DA MODIFICARE

F5⁵
 F10⁰

- PORTARSI CON I TASTI FRECCIE SUL VALORE
 DA MODIFICARE (IL VALORE VERRA EVIDENZIATO)

Left Arrow
 Up Arrow
 Down Arrow
 Right Arrow

- PREMERE IL TASTO ENTER PER CONFERMARE

ENTER

- CON I TASTI DA 1 A 10 MODIFICARE
 IL VALORE

F1¹
 F10⁰

- PREMERE IL TASTO ENTER X CONFERMARE

ENTER

TASTI FUNZIONANTI IN TUTTE LE PAGINE

- | | | | |
|----------------------------------|-----------------------------|----------------------------------|------------------------------|
| F6 ⁶ CUCITURA MANUALE | F7 ⁷ BOBINA FILO | F8 ⁸ ABBASSA NASTRINO | F9 ⁹ ROTTURA FILO |
|----------------------------------|-----------------------------|----------------------------------|------------------------------|

(CONTROLLO IMPIILATORE)

- PARTENZA =PUNTI X PARTENZA BLOCCO IMPIILATORE
 PARTENZA IMPIILATORE = PARTENZA GIRA IMPIILATORE
 FERMATA =PUNTI X FERMATA CUCITRICE
 VELOCITA NASTRO =VELOCITA IN CUCITURA
 RALLENTAMENTO =VELOCITA DI FERMATA NASTRO
 RECUPERO =VOLECITA IN % DI RECUPERO NASTRINO
 AVANTI FINALE =TEMPO SPOSTAMENTO NASTRINO

- REGOLAZIONE VELOCITA NASTRINO TRAMITE PULSANTI - +

- +

- A MACCHINA FERMA
 PREMERE IL PULSANTE RESET ALLARMI E DOPO IL PULSANTE -X ATTIVARE LA FUNZIONE
 LA TASTIERA VISUALIZZA REGOLAZIONE NASTRINO
 COI TASTI - E + REGOLARE LA VELOCITA
 X DISATTIVARE LA FUNZIONE PREMERE IL TASTO RESET ALLARMI E DOPO IL PULSANTE +

A/1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27
B	032 (+24Vcc) 10 8 7 9 3 2 1 2 3 </																									