Sommario

MDI_P1P20F - 022 : Installation manual

1. Informations

1.1 Release

This document is valid in its entirety except for errors or omissions.

Document:	**mdi_p1p20f-022**		
Description:	Installation manual p1p20f-022		
Editor:	Omar Sbalchiero		
Approver	Gabriele Bazzi		
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Language:	English		
Release document	**Description**	**Note**	**Date**
01	New manual		18/09/2020

1.1.1 Specifications/Copyright

2. Description

The **P1P20F - 022** software, controls the automation of **sanders/smoothing** machines.

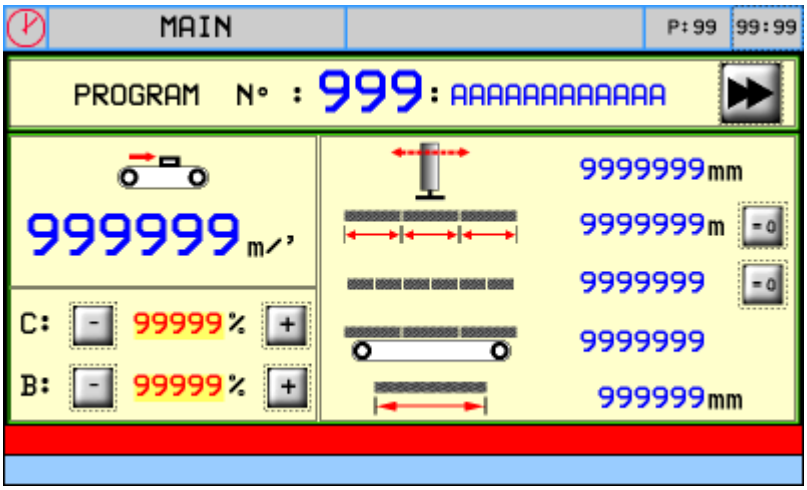
Main features

- control of **20 heads**
- control the **sequential start-up of motors** (to limit the excessive current demand)
- also control of the **bridge move**
- for each head you can set **advances/delays working** to the **start/end** of the piece
- the ascent/descent controls of the sanding heads, calculated **automatically as the speed** of the conveyor belt changes
- counts the **meters worked** and is able to work up to **30 pieces** at the same time

Other features

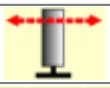
- HMI with touchscreen
- Function keys
- Work programs
- Alarm messages
- Warning messages
- Reset defective pieces
- Reset of all piece in process
- Offset correction of part presence limit
- How heads are processed
    1. Sanding
    2. Milling
    3. Grinding
    4. Brushing
    5. Water jet

3. Main Page



3.1 Command bars and information

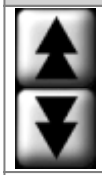
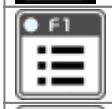
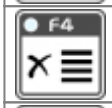
The bars at the top and bottom of each page provide the following information:

A	Machine states
B	Page name
C	Additional page description
D	Page number
E	Watch
F	Alarm on (red background)
G	Warning (blue background)
	Current speed of conveyor belt
N:	Setting conveyor belt speed
P:	Setting bridge speed
	Position of the Bridge
	Machined linear meters
	Number of total work pieces
	Number of pieces currently being processed in the machine
	Last piece length in process

3.2 Machine states

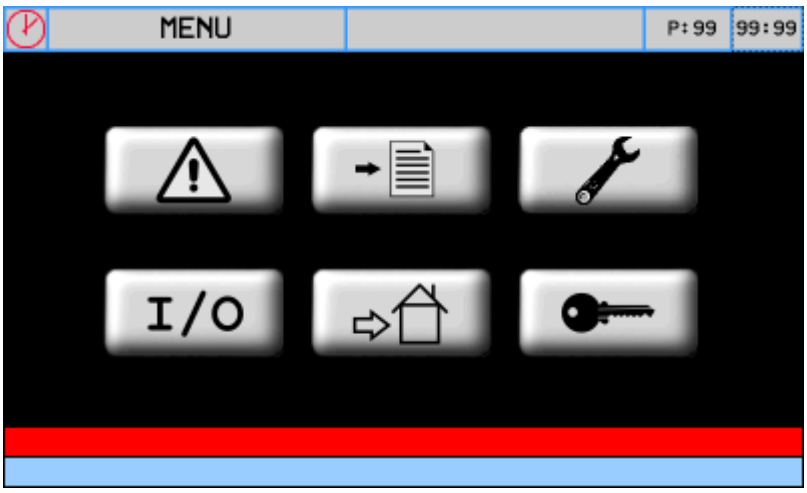
Simbol	Description
	Manual
	Emergency
	Automatic
	Works mode
	Calibration
	Not used

3.3 Common keys

Simbol	Description
	Scroll through programs
	Save and exit: setup values that you set are saved to internal memory and executed
	Open program
	Page forward
	Page backward
	Exit without saving: the setup values entered are not saved and the values in the internal memory are reloaded
	MENU page
	SETUP page (protected with password)
	WORK PROGRAMS
	RESET TOTAL PIECES
	RESET PARTIAL PIECES
	ALARMS
	Page exit

- ## 4. Main Menu

From **MAIN PAGE** press the  key



	Allarms
	Access to programs
	Functions menu
	Diagnostic
	Homing bridge
	Access to setup

- ## 4.1 Password

Installer Password	**462**

5. First start-up

For proper start-up of the machine, it's recommended to follow the order of the activities described below

J1-P20F Controller's Preliminary Calibration

1. HMI calibration (**Touch calibration** screen and setting of the **language**)

Machine Settings

1. Check the correctness of the **GP** and **MP** parameters (**Generic parameters** and **Machine Parameters**)
2. Check the **machine wiring** with **Diagnostics** pages
3. Check the **direction of the Conveyor and tilting Bridge** with the forward/backward controls from the manual page

Calibrations

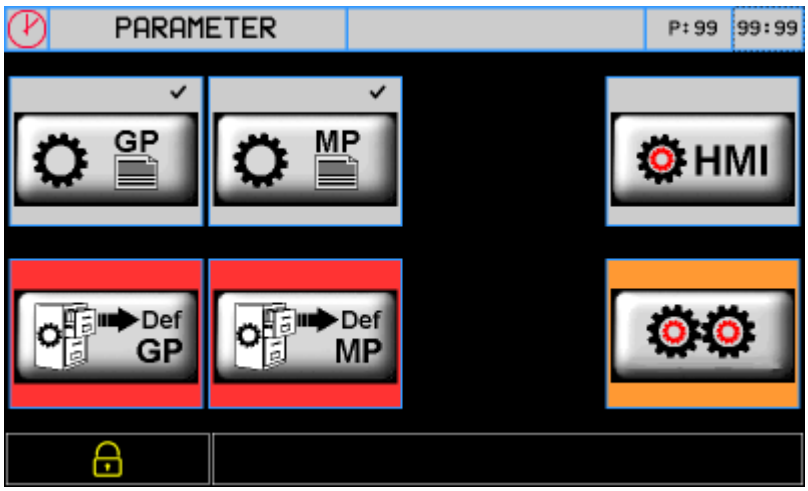
1. Check the **Counter Direction** and calibrate the **Conveyor Belt Resolution**
2. Calibrate the maximum speed of the conveyor belt
3. Calibrate the **offset of the “piece presence” limit switch**
4. **Heads calibrating**
    1. Tool diameter
    2. Introduce **distance of heads from the end of the limit switch of presence piece**
    3. **Calibration of dynamic corrections ascent/descent heads** depending on the speed of the conveyor belt

5.1 Accessing the Setup

You can access the setup in two modes:

1. from the **MENU** page press  key
2. from the **MAIN PAGE** press  function key

Access granted only if there aren't parts in the machine



	Generic parameters

	Machine parameters
	Load default generic parameters
	Load default machine parameters
	HMI Calibration
	Conveyor, bridge and heads calibration

To disable the password until the next restart press  , the icon must become 

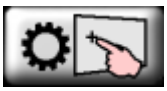
To return to the **MENU**' page, press the  key

5.2 J1P20F Preliminary Settings

5.2.1 HMI Calibration

To access from the **SETUP** page press the  key

Parameter name	*Default*	*Range*	*Description*
LOGO	ON	OFF ÷ ON	**OFF**: logo not showed **ON**: logo showed
LANGUAGE	en_GB	-	**en_GB** : english **it_IT** : italian
BUZZER	ON	OFF ÷ ON	**OFF**: disable **ON**: enable
DATA	-	-	Insert data
TIME	-	-	Insert time
DAYLING SAVING TIME	OFF	OFF ÷ ON	**OFF**: disable **ON**: enable

To calibrate the touch screen, press  key

Follow the instruction.

1. 5.3 Machine settings

5.3.1 Generic parameters

To access, from the **Generic Parameters** page, press the 

key

	Previous page
	Next page

- **GP-XX** = **G**eneric **P**arameters, **XX** = number
- **P.ter** = Parameters
- **U.M.** = **U**nit **M**easure
- **Def.** = Default

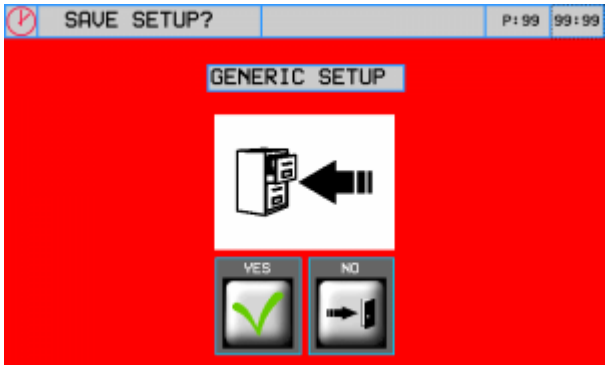
P.ter	*U.M.*	*Def.*	*Range*	*Description*
GP-01	-	4000	P (Pulse)	**Encoder pulses** x 4 corresponding to the space set in the **Measure**.
GP-02	-	400.0	M (Measure)	**Space** corresponding to the encoder pulses in the **Pulse** parameter. **Note:** - the P/M ratio must be between 0.000935 and 4.000000.
GP-03	-	1	0 ÷ 3	**Decimal point position** on the **measurement** of the conveyor belt view. **0**=xxxx, **1**=xxx.x, **2**=xx.xx, **3**=x.xxx
GP-04	-	-	-	***n.u.***
GP-05	-	1	0 ÷ 1	**Position of heads** with conveyor belt speeds below minimum (*GP-06*) **0** = **remain in a low position** **1** = **go up**
GP-06	-	0.1	0 ÷ 999999	**Minimun speed** of the conveyor.
GP-07	-	0.5	0 ÷ 999999	**Delta speed** beyond which the filter intervenes (*GP-08*).
GP-08	msec	50	0 ÷ 9999	**Filter value** of the tape speed.
GP-09	-	0	0 ÷ 5	Frequenzimeter **sampling time** (used to determine the speed of the conveyor belt) **0** = 240 ms, **1** = 480 ms, **2** = 24 ms, **3** = 120 ms, **4** = 960 ms, **5** = 1920 ms
GP-10	-	0	0 ÷ 1	**0** = **Store** parts when turned off **1** = **Does not store** parts when switched off
GP-11	-	0	0 ÷ 1	**Piece acquisition** (In9) below the **minimum speed**. **0** = Enable **1** = Disable
GP-12	mm	10.0	0 ÷ 9999	**Space** under which two nearby pieces are **continuously machined** **Note:** The counting of pieces always counts 2 pieces.
GP-13	-	-	-	***n.u.***
GP-14	msec	1000	0 ÷ 9999	**Time T1** between starting a motor and the next
GP-15	msec	1000	0 ÷ 9999	**Time T2** between the start of the last motor and the activation of the end start motor output O18
GP-16	-	0	0 ÷ 1	**Position** abrasive change. **0** = backward limit-switch **1** = forward limit-switch
GP-17	-	0	0 ÷ 1	**Carter Contact** Activation Status. **0** = NC (**N**ormally **C**losed) **1** = NO (**N**ormally **O**pen)

P.ter	*U.M.*	*Def.*	*Range*	*Description*
GP-18	-	4000	P (Pulse) Encoder Bridge	**Bridge encoder pulses** x 4 corresponding to the space set in the **Measure**.
GP-19	-	400.0	M (Measure) Encoder Bridge	**Bridge Space** corresponding to the encoder pulses in the **Pulse** parameter. **Note:** - the P/M ratio must be between 0.000935 and 4.000000.
GP-20	-	1	0 ÷ 3	**Decimal point position** on the **speed** Bridge view. **0**=xxxx, **1**=xxx.x, **2**=xx.xx, **3**=x.xxx
GP-21	-	1	0 ÷ 3	**Decimal point position** on the **measure** Bridge view. **0**=xxxx, **1**=xxx.x, **2**=xx.xx, **3**=x.xxx
GP-22	-	2000	-99999 ÷ 999999	**Maximum measure** of the Bridge.
GP-23	-	0	-99999 ÷ 999999	**Minimum measure** of the Bridge.
GP-24	-	100	-99999 ÷ 999999	**Slow-down measure** of the Bridge.
GP-25	-	0	-99999 ÷ 999999	**Homing measure** of the Bridge.
GP-26	-	1.0	-9999 ÷ 99999	**Homing Search Speed** of the Bridge.
GP-27	-	0	0 ÷ 1	**Homing Search Direction** of the Bridge. 0 = Forward; 1 = Backward.
GP-28	sec	0.5	0 ÷ 60.0	**T3**. Time passage operation heads descent / motor start. This is the waiting time from activating I2 input, for the instrument function mode from “Head activation” to “Motor Start”.
GP-29	sec	0.5	0 ÷ 60.0	**T4**. Transition time from motor start/head descent operation.This is the waiting time from activating I2 input, for the instrument function mode from “Motor Start” to “Head activation”.
GP-30	-	0	0 ÷ 3	Unit of measure “Time to activate/deactivate Mix Output”. **0** = The **tA** and **td** deactivation time are expressed in seconds. **1** = The activation time **tA** is expressed in seconds, the deactivation time **td** is expressed in minutes. **2** = The activation time **tA** is expressed in minutes, the deactivation time **td** is expressed in seconds. **3** = The **tA** activation time and **td** deactivation time are expressed in minutes.
GP-31	-	0.5	0 ÷ 999.0	**Ta**. Activation time Mix output. This is the time (in minutes or seconds) to activate the U19 output (mix out) to execute the mix cycle.
GP-32	-	0.5	0 ÷ 999.0	**Td**. Dectivation time Mix output. This is the time (in minutes or seconds) to deactivate the U19 output (mix out) to execute the mix cycle.
GP-33	-	0	-99999 ÷ 999999	**Increase/Decrease** minimum and maximum measure of the Bridge. It is the value that is added or subtracted from the maximum and /or minimum measure of the Bridge by pressing the relative keys on the main page of the bridge view.
GP-34	-	3	0 ÷ 99	Number of check for piece presence input. The instrument checks the status of the input every 3 milliseconds. this parameter indicates how many checks and how many milliseconds the input must maintain logical state so that the instrument acquires the variation.

For exit from the **Generic Parameters** page, press the 

key

On the display is showed:



Press **“YES”**, if you want to store the introduced parameters.
Press **“NO”**, if you want exit, without saving the instroduced parameters.

1. **5.3.2 Machine parameters**

To access, from the **Machine Parameters** page, press the 

key

	Previous page
	Next page

- **MP-XX** = **M**achine **P**arameters, **XX** = number
- **P.ter** = **P**aramet**er**s
- **U.M.** = **U**nit **M**easure
- **Def.** = Default

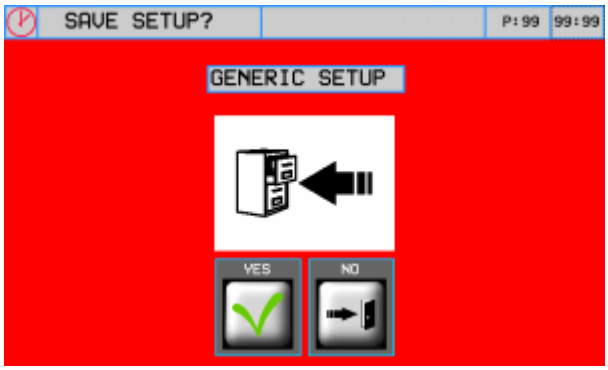
N.ter	*U.M.*	*Def.*	*Range*	*Description*
MP-01	-	1	1 ÷ 19	Heads number.
MP-02	mm	0	0 ÷ 999999	Machine length. **Note:** space between the piece presence sensor and the end of the machine.
MP-03	-	0	0 ÷ 2	**Command/Control** of the conveyor belt **0** - **External Command/Control** - Reading the speed. **1** - **Command** - reading the speed - Analog output. **2**: - **Command and Control** with feedback from encoder - Reading the speed - Analog output - Start/Stop of the instrument
MP-04	-	0	0 ÷ 1	**Bridge command** **0** = **External control**. **1** = **Bridge control** with minimum, maximum limit-switch and slow-down. **2** = **Bridge control** with encoder minimum, maximum limit-switch and slow-down.
MP-05	-	0	0 ÷ 1	**Motor Startup Sequence** **0** = disable. **1** = enable to J1-P20. **N.B.** Motor start outputs are in common with head descent outputs. **2** = enabled on RMC module. **3** = enabled on RMC module. **N.B.** It is activated automatically at the input of the piece in the machine.
MP-06	-	-	-	-
MP-07	-	-	-	-
MP-08	m/'	5.0	0 ÷ 5.0	**Maximum speed** (AO1 = 10 Volt) of the **conveyor belt** (*MP-03* > 0) (see "**Maximum speed settings**).
MP-09	m/'	3.0	0 ÷ 5.0	**Speed in automatic** of the **conveyor belt** (*MP-03* > 0)
MP-10	m/'	1.0	0 ÷ 5.0	**Jog speed** of the **conveyor belt** (*MP-03* > 0).
MP-11	-	0	0 ÷ 1	**Starting condition** of the bridge in automatic mode (*MP-04* = 1). **0** = Start with conveyor belt **1** = Start when a piece enter
MP-12	s	1.000	0 ÷ 999.0	**Delay time** between the conveyor belt start and bridge start (*MP-05* = 1).
MP-13	%	5.0	0 ÷ 100.0	**% maximum speed** of the bridge in automatic mode.
MP-14	%	5.0	0 ÷ 100.0	**Slow speed** of the bridge in automatic mode (*MP-04* = 1)
MP-15	%	50.0	0 ÷ 100.0	**Jog Speed** of the bridge (*MP-04* = 1).

N.ter	*U.M.*	*Def.*	*Range*	*Description*
MP-16	s	2.000	0 ÷ 999.0	**Bridge stop time** on the maximum and minimum limit-switches (*MP-04* = 1).
MP-17	-	0	0 ÷ 1	**Direction** of the pieces input. **0** = right **1** = left

For exit from the **Machine Parameters** press the 

key

On the display is showed:



Press **“YES”**, if you want to store the introduced parameters.
Press **“NO”**, if you want exit, without saving the introduced parameters.

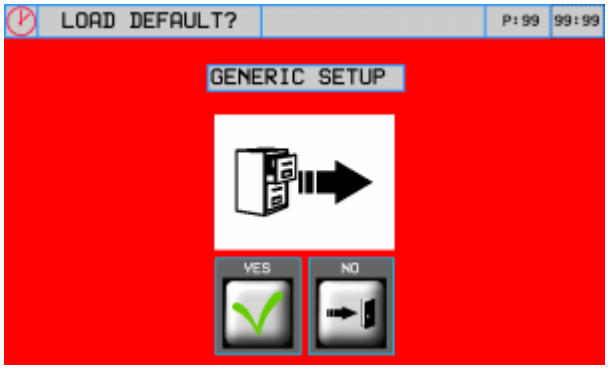
1. **5.3.3 Default parameters**

To access to the “load default parameters” page, from the **SETUP** page:

- press the 

key for load the **default generic parameters**, or
- press the 

key for load the **default machine parameters**.

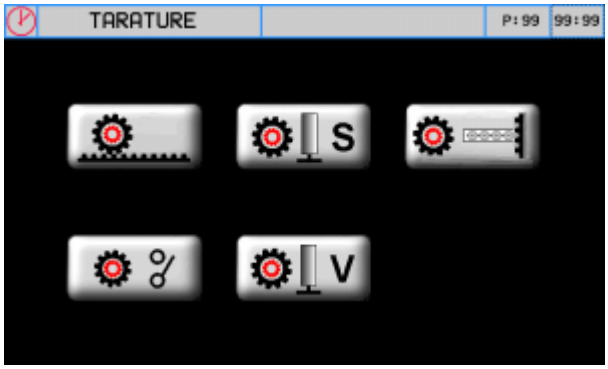


Press **“YES”**, if you want “load” the default generic parameters.
Press **“NO”**, if you want exit, without saving “load” the default generic parameters.

5.4 Calibrations

To access at the Calibration page, from the **SETUP** page press the  key

Access is only allowed if input I5 = OFF



	Conveyor calibration
	Offset calibration of the piece presence sensor
	Set Heads parameters
	Calibration of dynamic corrections of ascent/descent heads
	Bridge calibration

To return to the **setup** page press the 

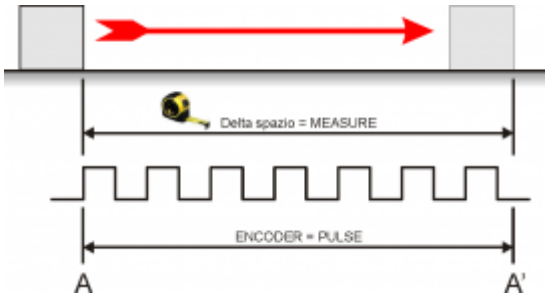
key

5.4.1 Conveyor calibration

To access on the conveyor calibration, press the  key

The following page appears

Procedure



- Set **1 Volt**, on the **ANALOG OUTPUT** parameter
- Presse the  key (Analog output +1 Volt), check that the value of the ENCODER parameter increases (if it decreases, the two phases of the encoder in the CN9 connector must be reversed).
- A - A' = Longest possible space
- Mark the starting position (A)
- Reset the **ENCODER** value: 
- Execute the movement from A to A'
- Write on the **PULSE** parameter, the value showed in the **ENCODER** parameter
- Measure the **delta space** A - A'
- Write the **delta space** value A - A' on the **MEASURE** parameter
- verify the value that appears in the **VEL** parameter, when you press the  key
- The **maximum speed** value of the conveyor will be **10 times** larger than the **VEL** showed. this value should be written to the ***MP-08*** parameter

Important:

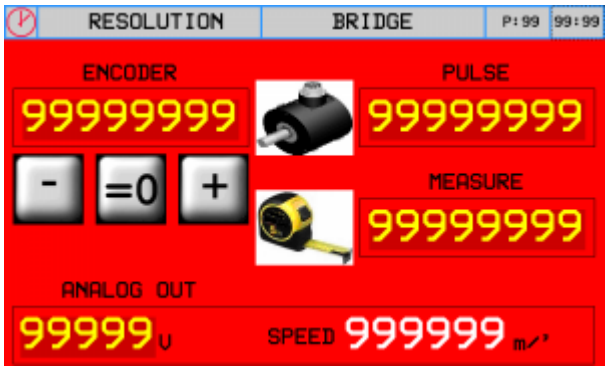
- The **PULSE** value must always be greater than the value of **MEASURE** (the optimal value is “MEASURE x 10 = PULSE”)
- Introduce the **MEASURE** value into the **unit of measure** that you choosen. Example: if you choose 1/10mm unit of measure and the **delta space** measure is 133.5mm, introduce the value 1335 into the **MEASURE** parameter
- The **Pulse** and **Measure** parameters inserted here, will be automatically transcribed into the ***GP-01*** and ***GP-02*** parameters

For exit from the **Conveyor calibration** page press the  key

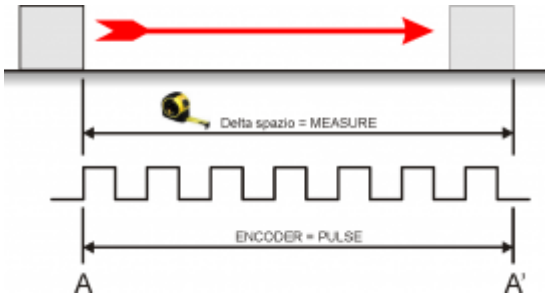
1. 5.4.2 Bridge calibration

To access on the calibration of the Bridge, press the  key

The following page appears



Procedura



- Set **1 Volt**, on the **ANALOG OUTPUT** parameter
- Presse the  key (Out analogica +1 Volt), check that the value of the ENCODER parameter increases (if it decreases, the two phases of the encoder in the **CN10** connector must be reversed).
- A - A' = Longest possible space
- Mark the starting position (A)
- Reset the **ENCODER** value: 
- Execute the movement from A to A'
- Write on the **PULSE** parameter, the value showed in the **ENCODER** parameter
- Measure the **delta space** A - A'
- Write the **delta space** value A - A' on the **MEASURE** parameter
- Verify the value that appears in the **VEL** parameter, when you press the  key
- The **maximum speed** value of the bridge will be **10 times** larger than the **VEL** showed.

Important:

- The **PULSE** value must always be greater than the value of **MEASURE** (the optimal value is “MEASURE x 10 = PULSE”)
- Introduce the **MEASURE** value into the **unit of measure** that you choosen. Example: if you choose 1/10mm unit of measure and the **delta space** is 133.5mm, measure is 133.5mm, introduce the value 1335 into the **MEASURE** parameter
- The **Pulse** and **Measure** parameters inserted here, will be automatically transcribed into the ***GP-18*** and ***GP-19*** parameters

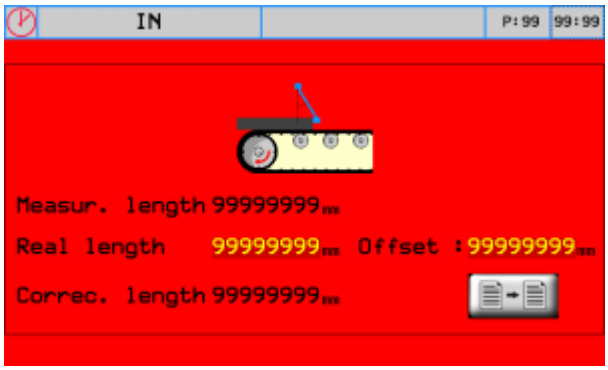
For exit from the **Bridge calibration** page press the  key

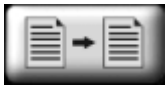
1. 5.4.3 Offset calibration of the pieces presence sensor

Offset calibration is used to calculate the difference between the **activation point** and the **deactivation point** of the limit-switch piece presence.

To access on the **offset calibration** page, press the  key

The following page appears:

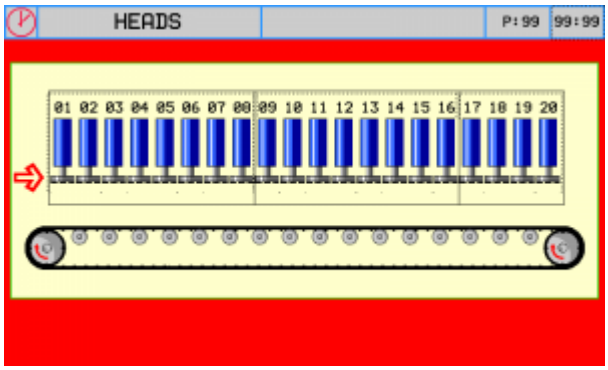


1. Measure the length of a piece;
2. Enter the length in the **Real length** parameter;
3. Start the conveyor (the instrument will read the length of the piece, using the sensor);
4. The instrument will show the length value of the piece on the **Measur. length** value;
5. Press the  key and the instrument will calculate the offset value of the limit-switch

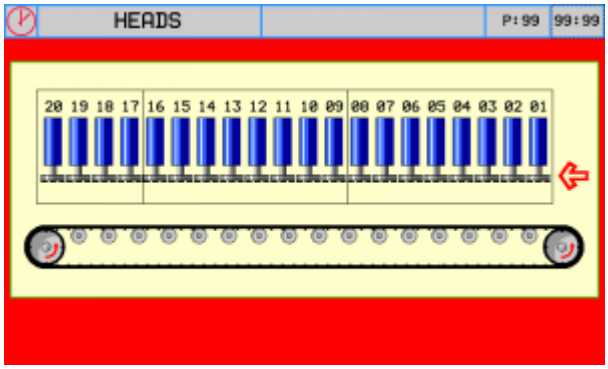
1. 5.4.4 Set Heads parameters

To access on the **Set Heads parameters** page, press the  key

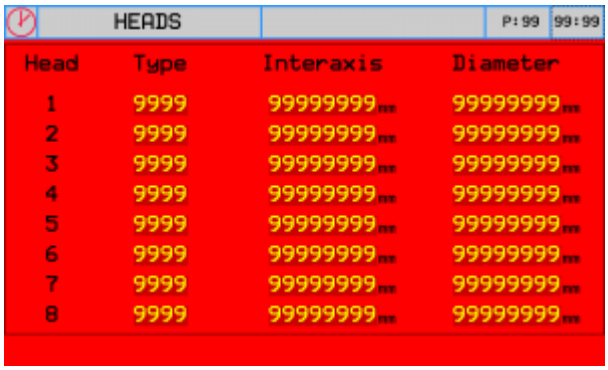
The following page appears



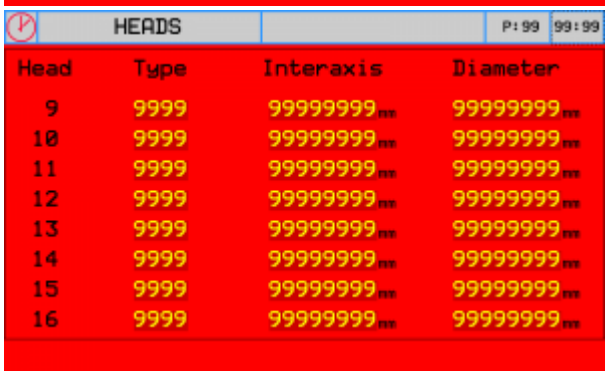
or



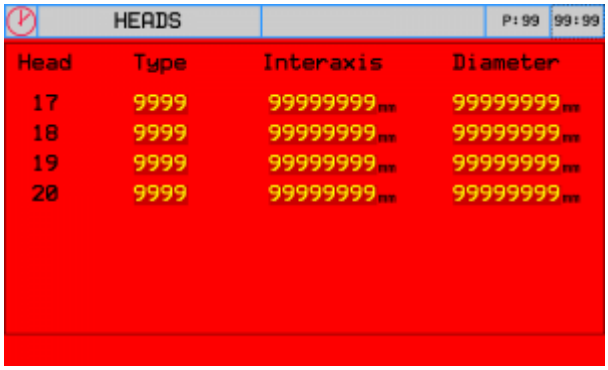
Note:
With the *MP-16* parameter = **direction** of the pieces input, you choose (graphically) the direction of entry of the workpieces.



-



-



Note:
Tap the touch to select the group of heads

Parameter name	***Unit of measure***	***Default***	***Range***	***Description***
Type	-	-	0 ÷ 5	How the head works. **0**: disable **1**: sander **2**: milling **3**: grinding **4**: brushing **5**: jet air/water
Wheelbase	mm	-	0 ÷ 99999.0	Space between the **piece presence limit-switch** and the **center of the head**.
Diameter	mm	-	0 ÷ 99999.0	Tool diameter.

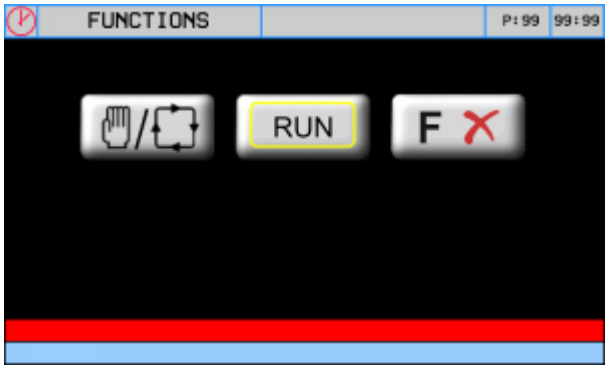
For exit from the **Set Heads parameters** press the 

key

1. **5.4.5 Calibration of dynamic corrections ascent/descent heads**

With this calibration, the heads will be **turned on/off** in the right place, even if the speed **of the conveyor belt is varied**.
Note: turn off the motor start by putting OFF the motor rotation start button.

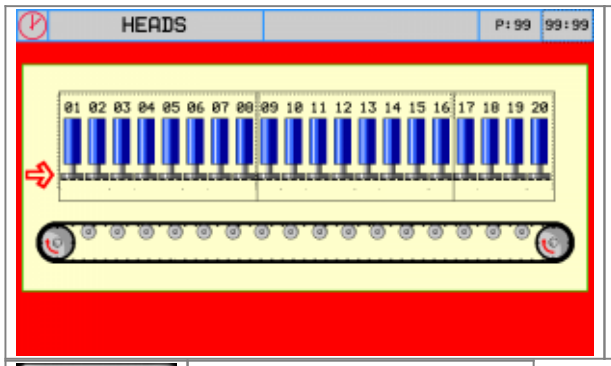
To enter from the **MAIN MENU** press the  key



Press the  key to stop the motors

For return on the **MAIN MENU**page, press the  key

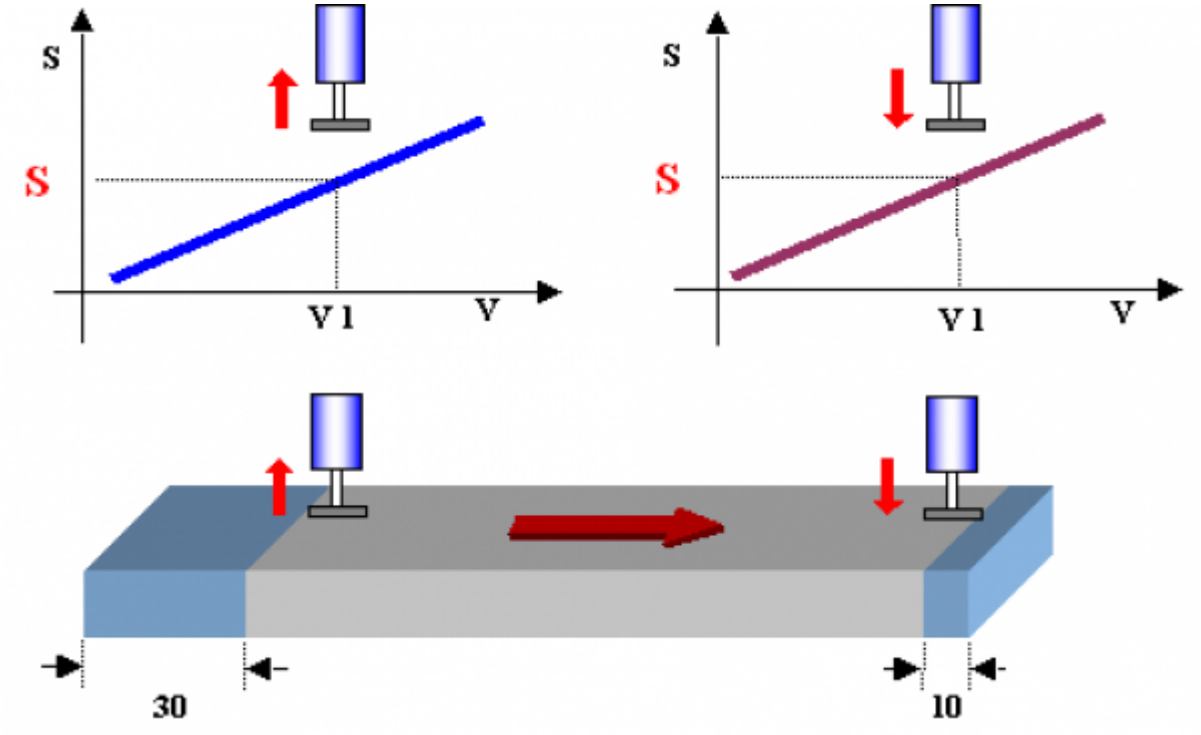
To enter, from the **CALIBRATION** page, press the  key



	**Copy the value** to all other heads

Tap the touch to select the group of heads

Parameter	*U.M.*	*Def.*	*Range*	*Description*
CORR. VEL	m/'	3.0	0 ÷ 5.0	**Reference speed** of the dynamic calibration
Downlag	mm	-	-999.0 ÷ 999.0	(+) **Delay space** of the **descent** of the head from the **begin piece**
Risesdv	mm	-	-999.0 ÷ 999.0	(+) **Advance space** of the **ascent** of the head from the **end piece**



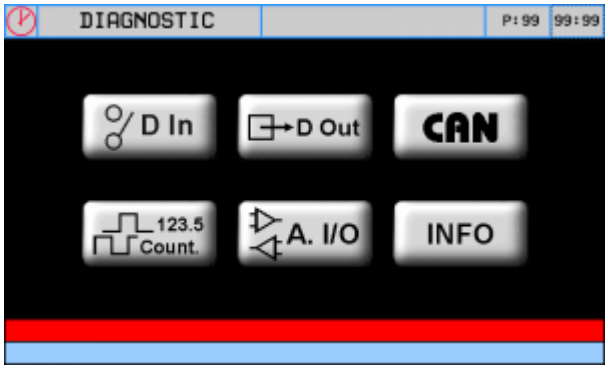
To smooth all the piece: *Downlag = 10*, *Risesdv = - 30*

For exit from the **Calibration of dynamic corrections** press the  key

1. 6. Diagnostic

To access on the diagnostic, from the **MENU** page, press the 

key



From this page you can access the various diagnostic sections:

	Digital inputs
	Digital outputs
	Counters
	Analog Inputs/Output
	Can informations
	System informations

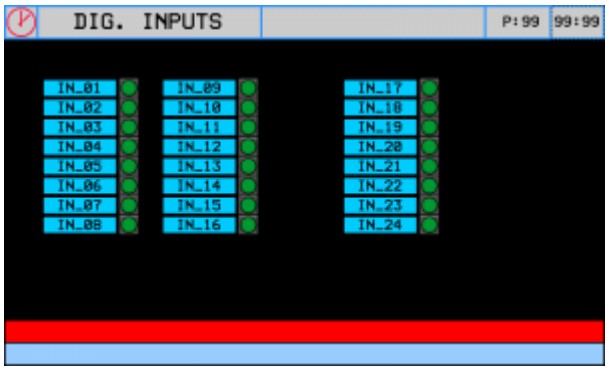
To return on the **MENU'** page, press the 

key

1. ## 6.1 Digital inputs

To access the diagnostics page of the **Digital Inputs**, press the 

key



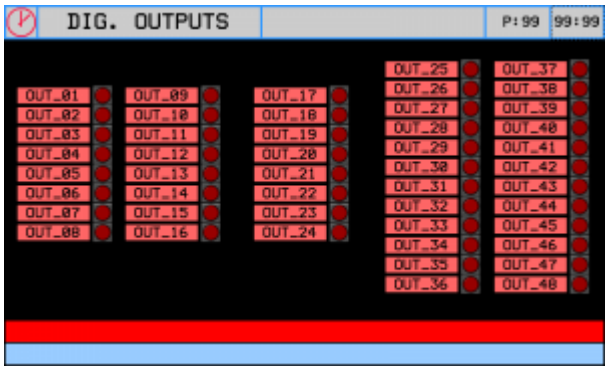
To return on the **DIAGNOSTIC** menu, press the 

key

6.2 Digital outputs

To access the diagnostics page of the **Digital Outputs** page, press the 

page



To return on the **DIAGNOSTIC** menu, press the 

key

6.3 Counters

To access the diagnostics page of the **Conters** page, press the 

key

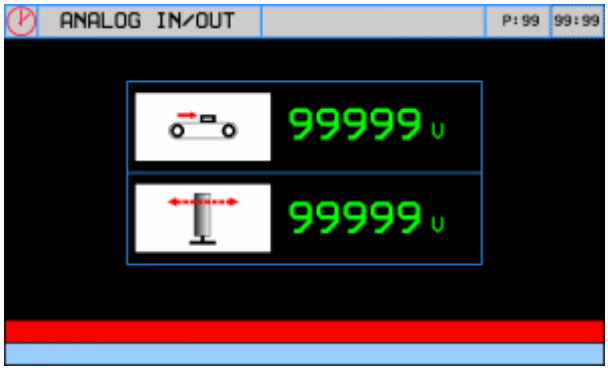
To return on the **DIAGNOSTIC** menu, press the 

key

6.4 Analog outputs

To access the diagnostics page of the **Analog outputs**, press the 

key

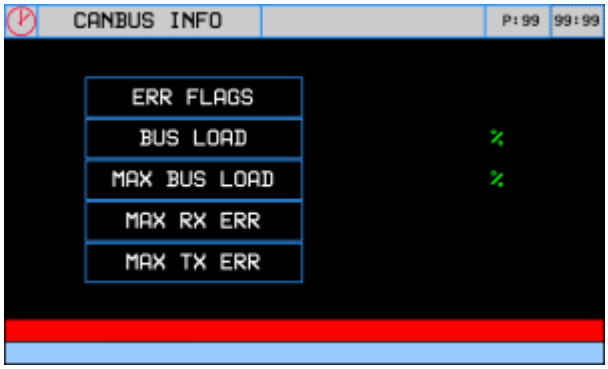


The analog output is showed in Volts.

To return on the **DIAGNOSTIC** menu, press the  key

6.5 CAN Informations

To access the diagnostics page of the **CanOpen Connection**, press the  key

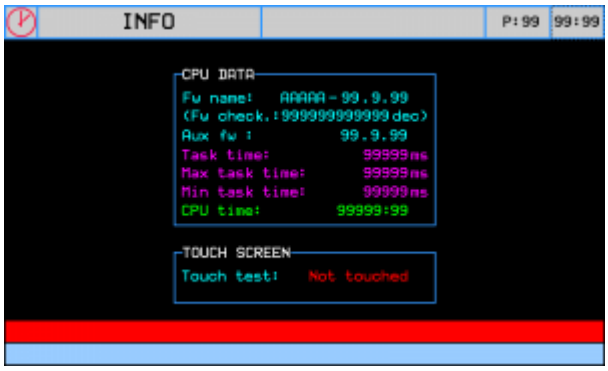


To return on the **DIAGNOSTIC** menu, press the  key

1. 6.6 System informations

To access the diagnostics page of the **“System informations”**, press the 

key



Fw name	firmware and checksum
Aux fw	firmware of the I/O module
Task time	CPU cycle time : **Minimum, Middle, Maximum**
CPU time	CPU time in the Run state (hh:mm)
Touch screen	Test touch

To return on the **DIAGNOSTIC** menu, press the 

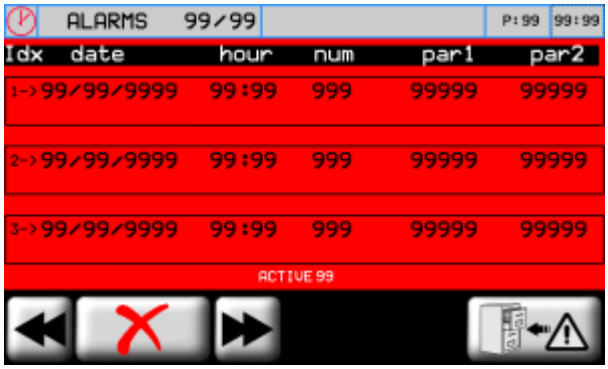
key

7. Warning messages

Message	Description
Too many pieces in the car	There are more than 30 pieces in the car
Auxiliary Activation Wait…	Waiting auxiliary enablement (with *MP-08* enable) (I4 = ON)
Abrasive change quota positioning…	The bridge is controlled in the abrasive change position
Auxiliaries disabled	Auxiliaries disabled (I4 = OFF)
Attention!!! Motors off.	Attempting to Start tape with engines off

1. 8. Alarms

To access, from the **MAIN MENU**, press the  key



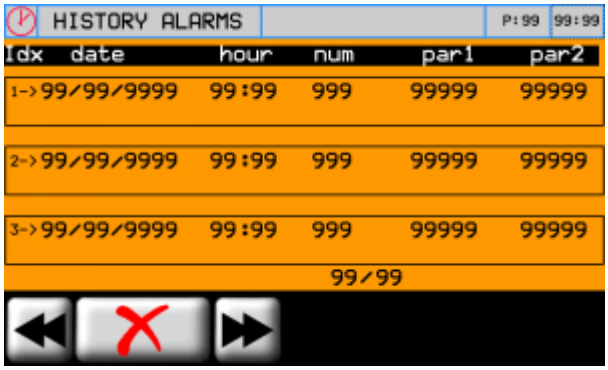
Press the  key for cancel the alarm

Message	Cause	Input
Emergency pressed	Check the emergency line	I01
Inverter Fault	Check the inverter	I12
Encoder belt Fault	Check the conveyor belt encoder (Enable only with *MP-03* > 2).	
Thermal protections	Check thermal protections	I06
Carter	Check perimeter protections	I07
No air	Check your pressure switch	I08

The "**Fault encoder belt**" message is automatically generated, if within 5 seconds there is no space greater than 2 units of measurement,
the message is generated if the instrument detects a speed of less than 60mm per minute

8.1 History alarms

To access, from the **ALARMS**page, press the  key



After **removing the causes** of the alarm, press (x 3 sec.) the  key for cancel

Maximum 60 alarms.

1. 9. Various

9.1 Motor Start sequence

The motor start sequence can be executed in 3 modes (parameter ***MP-05***)

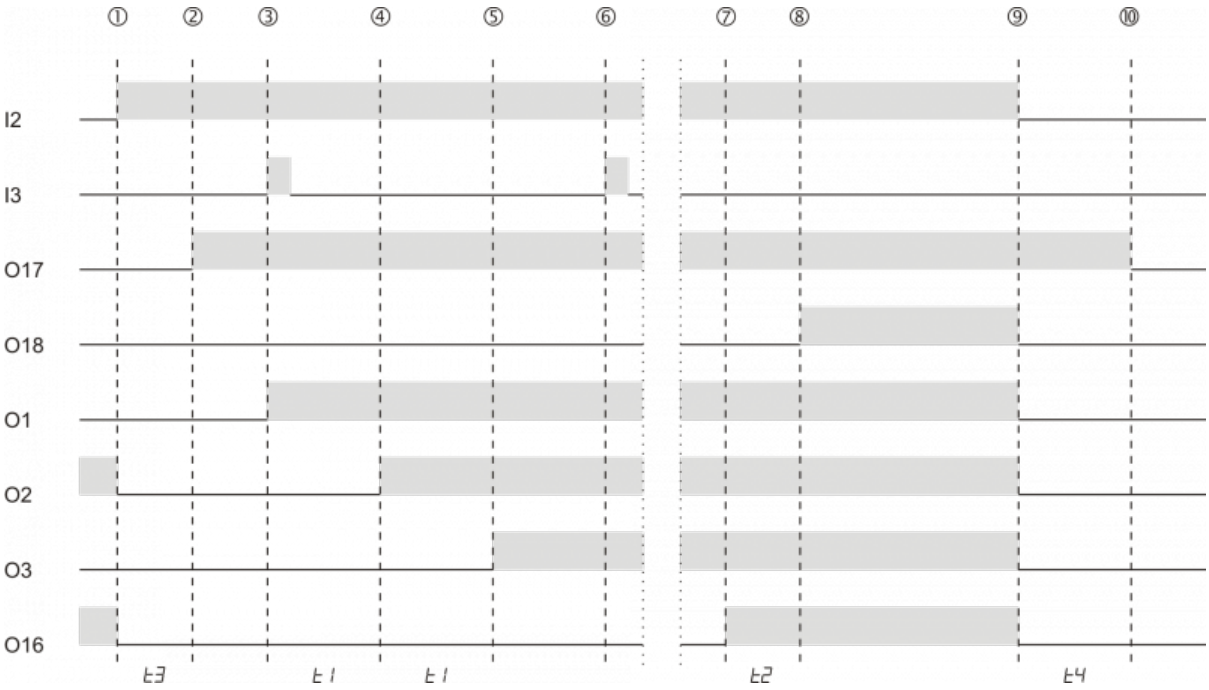
1 = enable on J1-P20. **N.B.**Motor start outputs are in common with head descent outputs.
2 = enable on the RMC module.
3 = enable on the RMC module. **N.B.** It is activated automatically at the entrance of the piece in the machine.

9.1.1 Start motors on J1-P20F (MP-05=1)

The motor start sequence uses the same outputs used for the head descent.

Input I2 determines whether the outputs are used for the descent control of the Heads or if they are used for starting motors.
Input I3 starts the motor sequence.

Below is the diagram of how the motor start sequence works with the ***MP-05 = 1*** parameter.



Legenda

- **I2** = Head activation (OFF) / Motors start (ON)
- **I3** = Motors start
- **O17** = Head activation (OFF) / Motors start (ON)
- **O1÷O16** = Heads command 1÷16
- **O18** = End of start-up

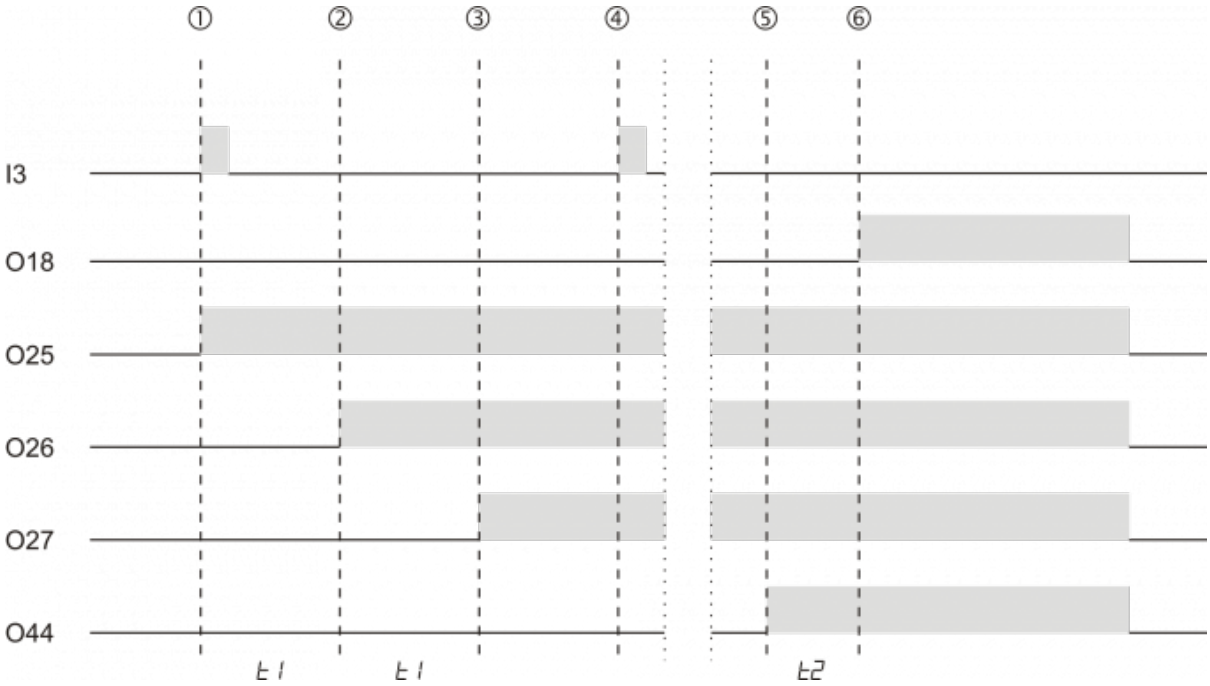
1. The input **I2** is activated and then the instrument changes the mode of operation from activating motor start heads. All head-related outputs (**O1÷O16**) are disabled.
2. After the *t3* time (time passage operation heads descent / motors start) the instrument activate the **O17** output and enable the start motors operation.
3. When activating the **I3** input you have the beginning of the procedure of cascading motors and you activate the output relative to the first set-up-enabled head in ascending order.
4. After the *t1* time (time interval motors start) you have the output activation for the next head enabled in set-up.
5. In the event that a start motor command is activated again (**I3**) is not processed. A new start command will only be processed in case the instrument first goes into operation activation heads (**O17** = OFF) and then come back in start motors operation mode (**O17** = ON).
6. The output of the last enabled head is activated and the start motors procedure is completed.
7. The **O18** output is activated after the *t2* time (The time between the start-up of the last motor and the activation of the end-of-motor output **O18**).
8. Turn off the **I2** input and the instrument changes the way of operation from starting motors to head starting. All head-related outputs (**O1÷O16**) and the **O18** outputs are deactivated.
9. After the *t4* time (start-activation step time) the instrument turns off the **O17** output and enables the heads activation operation mode.

9.1.2 Motors Start on RMC Module (MP-05=2)

The motor start sequence uses the outputs in the RMC module.

I2 input has no operation.
Input I3 starts the motor start sequence.

Below is the diagram of how the motor start sequence works with the ***MP-05=2***.



Legenda

- **I3** = Motors start
- **O25÷O44** = Heads command 1÷20
- **O18** = End of start-up

1. When activating the **I3** input you have the beginning of the procedure of cascading motors 3. and you activate the output relative to the first set-up-enabled head in ascending order.
2. After the *t1* time (time interval motors start) you have the output activation for the next head enabled in set-up.
3. In the event that a start motor command is activated again (**I3**) 5. is not processed.
4. The output of the last enabled head is activated and the start motors procedure is completed.
5. The **O18** output is activated after the *t2* time (The time between the start-up of the last motor and the activation of the end-of-motor output **O18**).

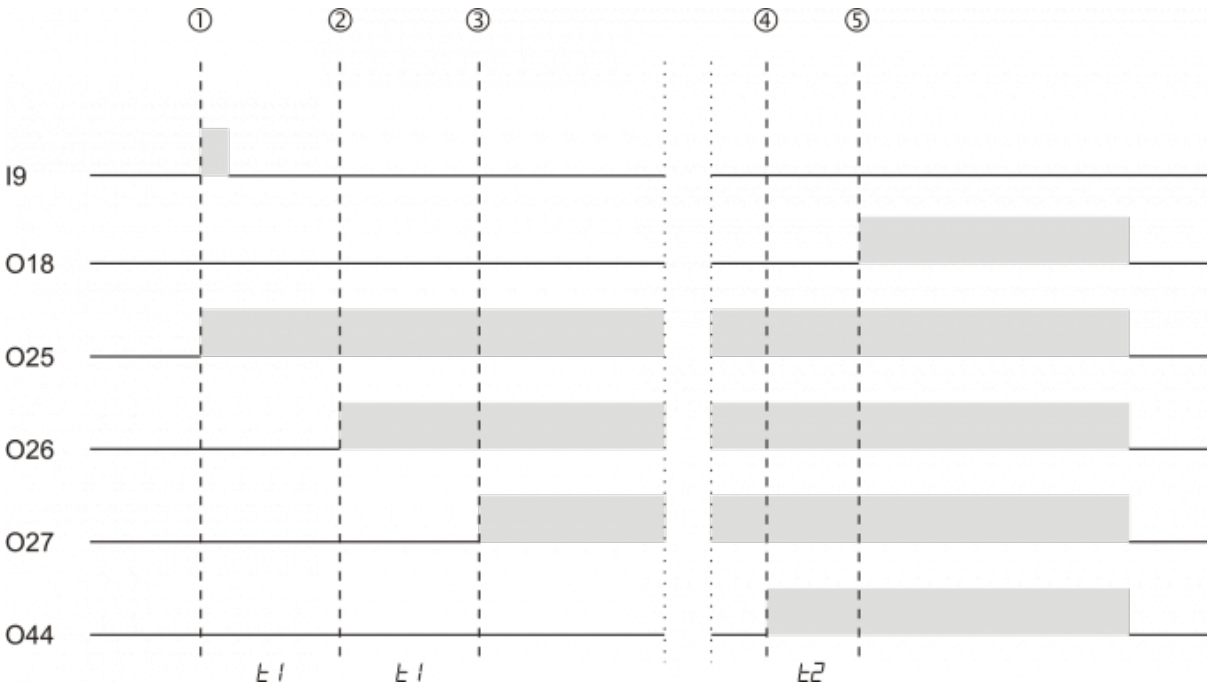
9.1.3 motors Start on RMC Module (MP-05=3)

The motor start sequence uses the outputs in the RMC module.

I2 input has no operation.
Input I3 starts the motor start sequence.

The “motor start” sequence is started automatically as soon as the first piece “enters” the machine. N.B. When the last worked piece “comes out” of the machine, the motor start outputs are deactivated.

Below is the diagram of how the motor start sequence works with the ***MP-05=3***.



Legenda

- **I9** = Piece acquisition
- **O25÷O44** = Heads commad 1÷20
- **O18** = End of start-up

1. When activating the **I9** 3. input you have the beginning of the procedure of cascading motors and you activate the output relative to the first set-up-enabled head in ascending order.
2. After the *t1* time (4. time interval motors start) you have the output activation for the next head enabled in set-up.
3. The output of the last enabled head is activated and the start motors procedure is completed.
4. The **O18** output is activated after the *t2* time (The time between the start-up of the last motor and the activation of the end-of-motor output **O18**).

1. 10. Assistance

For supplying you fast service, at the lowest cost, we need your support.

	
Follow all instructions provided in the MIMAT manual	If the problem remains, fill out the “Request Form for assistance” on the page Contacts at www.qem.it site. Our technicians will get elements essential for the understanding of your problem.

Repair

To provide you with an efficient service, please read and adhere to the instructions given here

Shipping

It is recommended to pack the instrument with materials that are able to cushion any falls.

		
Use the original package: it must protect the instrument during transport.	Attach: 1. A description of the anomaly; 2. A part of the electric scheme where the equipment is inserted 3. The planning of the equipment (set up, quotas of job, parameters...). 4. Request a quote for repair; if not required, the cost will be calculated in the final balance.	A full description of the problem, will help identify and resolve your problems fast. A careful packaging will avoid further inconveniences.