Visual Point

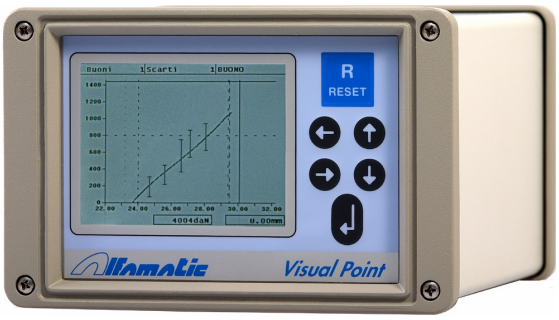
Version 1.60

User manual

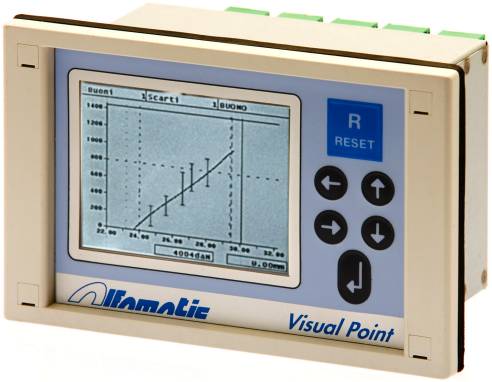
Jun. 7, 2013

1 Introduction

The VISUAL POINT is a device that allows for a 100% quality check of the production process.
It is connected with a power transformer, actuators and display (light display or acoustic signals).
Esistono due versioni di VISUAL POINT: per montaggio esterno con contenitore (Picture 1); per montaggio a pannello (Picture 2).
The interface for the user is the operating front which consists of a display and a membrane keyboard.



Picture 1



Picture 2

1.1 Control theory

While working on a sample pieces there are data on the position of the cylinder and the force exerted by it. You can draw the graph: position-force that is characteristic of work done.
If more operations are performed on similar pieces their position-forced curves will also be similar. If, on the contrary, one of the pieces will be different from the sample, the curve will deviate from the sample curve. It is as intuitive control of the curve can ensure consistent quality of workmanship

1.2 OPERATING ABILITY OF THE INSTRUMENT

The VISUAL POINT features various operation possibilities. The set process check occurs on the basis of *checkpoints* and *limits*. All operation parameters are saved in an internal, not regenerative memory. Up to 32 different settings can be saved. Every setting is called **work** (see paragraph 3.2).
A change to the checkpoints (section 5.2) allows the measurement and control of the force at a certain position of the set path. The force must lie between the minimum and maximum value.
The following maximum value (paragraph 5.3) can apply: Minimum force, maximum force, minimal set path and maximum set path; these control the maximum values achieved during the force and set path operation. Should the maximum force achieved not lie above the minimum force or exceed the maximum force, then the part is rejected. And if the maximum set path achieved does not lie above the minimum set path or exceeds the maximum set path, the part is likewise rejected.
There are two other limits: the initial position minimum and initial position maximum, if the initial position (see paragraph 1.3) is less than the minimum or is higher than the maximum the piece is discarded
The part is only regarded as good if the forces contain a positive result at the checkpoints as well as at the limits.
The VISUAL POINT carries out the control of the cylinder retraction, as soon as the operation is shut down (see section 5.1). This retraction can occur if a certain force or if a certain set path is

reached. Both force and set path shut-down values can be entered at the same time, in which case the first value achieved retracts the cylinder. By pressing of the RESET button on the keyboard, the possibility of an immediate retraction of the pressing ram (annulment of the process) exists.

1.3 Start position

The VISUAL POINT is able to detect the position in which the press touches the workpiece. This is known as **start position** and corresponds to the approaching stroke. To survey the start position, the load cell is used: when the force measured by the load cell exceeds the value of **zero force** (paragraph 4.3.4) is measured the start position.
The accuracy of the start position depends on the speed of the cylinder and especially on the type of workpiece. For example, in the operations of shrinking the two pieces have rounded corners, so the starting position varies with the bevel and strength that is used to in the first place a piece of work.

Note:

The VISUAL POINT used with manual presses is capable of measuring the start position during the descent of the stem.

1.4 Absolute or relative positions

The position of the cylinder is detected by a transducer. The positions measured by the transducer are called absolute positions. The positions measured from piece contact are called relative positions. The VISUAL POINT can use absolute or relative positions (see Figure 3).

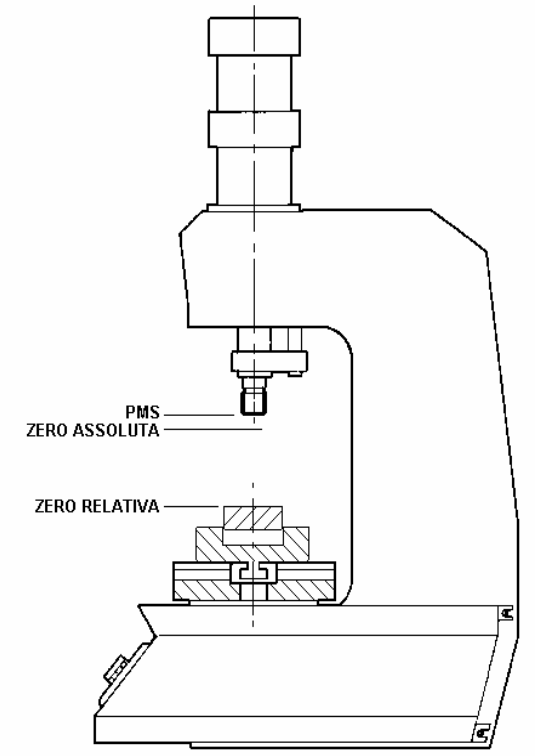


Figure 3

1.4.1 Check point on the stop position

The position of the checkpoint may be related to the final of the pressfit.

In practice, if I enable the option to use check points on stop, the positions of measuring forces are calculated by working backward from the quota that has been driven to stop.

For example, if I point a controlling stake in a check point equal to 1 mm, the instrument will measure and monitor at the end of processing, strength 1mm before the final installment of the production.

2 Implementation of VISUAL POINT

For installation of VISUAL POINT on the machine refer to the specific manual.
The VISUAL POINT is available in two versions: with box and for panel mounting.
The version with the box can be mounted inside a power supply to operate without electrical panel.

3 HOW TO BEGIN

This chapter serves as quick instruction for the immediate use of VISUAL POINT. A short functional description of the instrument is followed by a chapter that accompanies you through the execution of a few tests. To follow this guide you need to get some pieces to assemble the evidence into practice.

Note:

The stop of the press is controlled by VISUAL POINT.

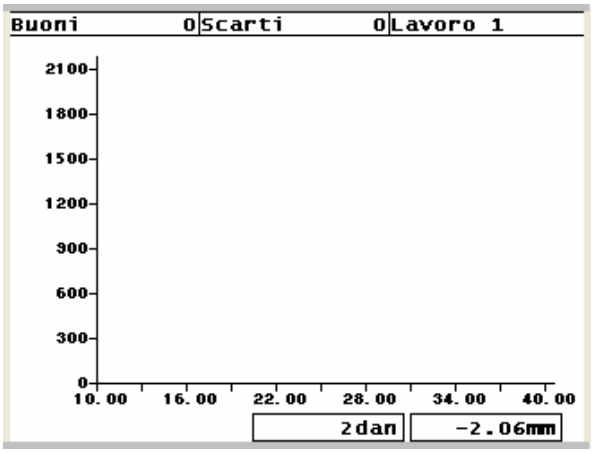
Should the value of a parameter with zero be entered, then this will not be used by the instrument.

The configuration and taring values cannot be coincidently changed without entering the configuration password (see chapter **Errore. L'origine riferimento non è stata trovata.**)

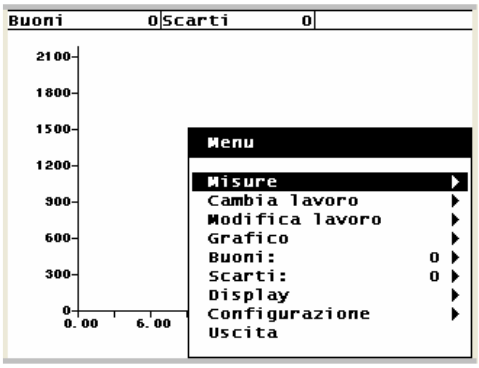
A password can be also generated in order to prevent a change in the working parameters (see chapter **Errore. L'origine riferimento non è stata trovata.**)

3.1 INTRODUCTION FOR THE USE OF VISUAL POINT

To turn the instrument on, there is a switch at the back of the instrument. When it is switched on, the axes of the force stroke graphic appear on the display. Above the graphic there are three fields which contain the part numbers and the names of the selected work. Below the graphic, there are two framed fields which contain the measured force value as well as the value measured by the travel measuring system of the force sensor in actual time.
In the graphic, the curve is only captured if it is within the full scale value of the axes. Of course these values can be altered.



When the **ENTER** button is pressed, a menu window that contains an item list will appear on the display. An item on this list is highlighted by a black bar; with the arrow buttons upwards and downwards , the bar is able to be moved and it will run through all the items on the menu. To execute a command of one of the highlighted items, the **ENTER** button must be pressed.



If you leave the menu or change a value that you would like to cancel, you can simply press the **RESET** button. The item 'exit' is also included in the sub-menus and allows you to return to the previous menu where the function is identical to pressing the **RESET** button.
In order to display the graphic and the curve momentarily without exiting the menu, the **RESET** button must be pressed for a few seconds.

3.2 ENTERING OF A VALUE

A value can be entered if the figure to be changed is displayed in a window, with the description and the number to be changed. A digit of the value to be changed is highlighted on the cursor by a small black rectangle:

Q.Offset: + 100

The value can be changed by using the keyboard, which must always be accepted by pressing the **ENTER** . The arrow keys have the following functions during value input:

increases the digit highlighted by the cursor (in the representation one becomes two).

decreases the digit highlighted by the cursor (in the representation one becomes zero).

moves the cursor to the left (in the representation the cursor moves to the **+** symbol).

moves the cursor to the right (in the representation the cursor moves to the right, to the zero).

To change the sign of the value, move the cursor to the sign and press the or .
For a momentary display of the graphic and the curve without exiting the menu, press the **RESET** for a few seconds.

3.3 THE WORK

The VISUAL POINT has the capacity to save 32 different **work** settings. Each setting is called **work** and a name can be assigned to every **work** as a description. The choice of **work** to be performed takes place via the appropriate sub menu. In order to add a **work**, change a name or selection see the menu **Select work**. In order to change or eliminate a **work** in progress, see the menu **select work**. Every work has various parameters, as described in Chapter 5.

3.4 GETTING ACCUSTOMED TO THE INSTRUMENT

In order to perform tests with the VISUAL POINT, one can proceed as follows: after turning the instrument on, press the **ENTER** button to go to the menu. Run through the menu items by pressing the buttons until the **edit work** item, which contains all the settings of the work in process is reached. Now in the **edit work** menu, with the help of the arrow keys , move up to the

item **stops**; and press the **ENTER** button to reach in the sub menu which contains the setting of the **Fstop** and the **Sstop**.
Point the item force Stop and press the **ENTER** button to change its value. Enter a value of force below the maximum force of the press.
Once you modify the parameters, to exit the menu, select Exit or press the **RESET** button.
Now the press can be started; the press remains in operation until the **Fstop** entered is reached. In order to stop the press before the reaching the **Fstop**, the **RESET** button can be pressed.

Should the pressing ram of the press have returned to the starting point, then the menu **Measurements** can be selected in order to indicate the measured values.
In order to view the curve in the Stroke force graph, the beginning and ending chart must be entered into the sub menu **Graph setup** which is in the main menu.
To choose which values we use to enter your measured values shown in the menu Measures: The start position **S.Zero** shows the position of value measured when the piece has been touched, we will use a position slightly less than this as the origin of the graph.
The peak position **S.max** indicates the maximum achieved position value, we will use a scale larger of this value. The peak force **F.max** indicates the maximum force value reached, we will use a scale of force larger of this value.
If we repeat the test on another similar piece we see the position-force curve. We can now improve the display touching the values of the chart menu and then navigate to the definition of the work parameters that determine whether the workpieces are good or rejected as explained in Chapter 5.

3.5 REJECTED PIECES MANAGMENT

Should, for various reasons, the part be rejected, then one can proceed to the **Measurements** menu and view the individual reasons using the arrow keys  .
When a piece is rejected the machine locks. To re-enable it, there are several options: if the machine is equipped with a rejects basket should pass the piece through the sensor of the basket, if there is also protection must first press **RESET** button to open it, then the piece must pass through the sensor of the basket rejects, if the machine does not have these variants simply press **RESET** or, if present, to re-enable the external switch.

4 MENU DESCRIPTION

Note:
It is possible hiding items menu used infrequently by turning on the instrument while holding pressed the **RESET** 

button. To restore the full menus do the same.

When pressing **ENTER**  button, a menu window which contains a concept list appears on the display.

An item on this list is highlighted by a black bar; with the arrow buttons upwards and downwards  , the bar is able to be moved and it will run through all the items on the menu. In order to activate the command of the item highlighted by the bar, the **ENTER** button must be pressed.

The items which have a small triangle on the right are selected, access sub-menus when the **ENTER** button is pressed.

Other items include a value measured by the instrument (for e.g. number of good/rejected parts).

Others indicate the value of an operation parameter, that the operator can change.

Items which include a rectangle on the left side are options which can be activated or deactivated with the use of the **ENTER** button.

If you leave the menu or change a value that you would like to cancel, you can simply press the **RESET** 

button. There is also the **exit** item in the menu which allows you to return to the previous menu.

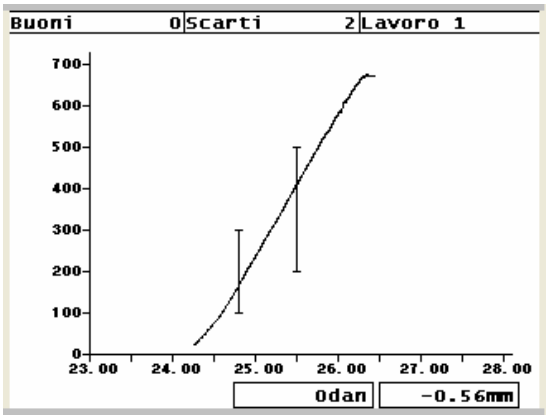
Note:

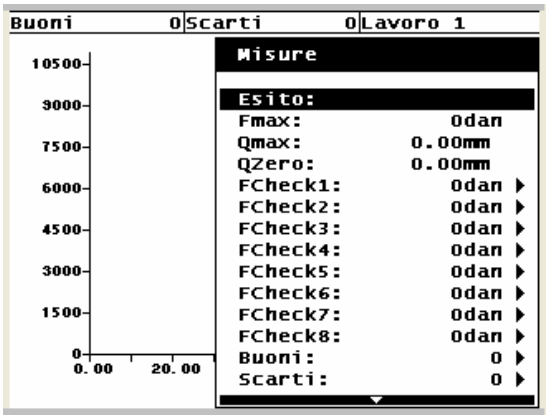
If the **RESET** button is pressed for two seconds, the graphic with the curve and the parameters entered can be viewed and the menu is momentarily covered without leaving the actual menu.

In the following sections, the menu items and their function descriptions are performed.

4.1 MEASUREMENTS

By selecting the item **Measurements**, you will arrive at a sub-menu which contains all the values measured in the last press cycle.
In the following illustrations we have the process curve on the left and the VISUAL POINT measurement values for the curve on the right:





The following items are included in the **Measurements** menu:

4.1.1 Result

Result indicates whether a part is good or the possible reasons why it is rejected. If there is more than one reason for the part to be rejected, then the arrow keys can be used to indicate the reasons one after the other.
The following items could appear depending on the circumstances:

- ***Good:*** il pezzo è risultato buono.
- ***No F.min****:* The part is scrap because the maximum force did not reach the minimum force value entered.
- ***Exc.F.max****:* The part is scrap because the maximum force has exceeded the maximum force value entered.
- ***No S.min****:* The part is scrap because of the maximum stroke has not reached the minimum stroke entered. Should the minimum stroke limits have not been entered, then the part is scrap because the maximum stroke has not reached the checkpoint, provided one was defined.
- ***Exc.S.max****:* The part is scrap because of the maximum stroke has exceeded the highest stroke limit.
- ***No S.zero****:* the piece is rejected because the start position is less than the minimum limit.
- ***Exc.S.zero****:* the piece is rejected because the start position is great than the maximum limit.
- ***F. low n****:* The part is scrap because the force at the checkpoint lies below the fixed minimum force value.
- ***F. high n****:* The part is scrap because the force at the checkpoint lies above the fixed maximum force value.
- ***Stop***: It appears that the test has been manually interrupted, i.e. the idleness of the press is not controlled by VISUAL POINT.

4.1.2 F.reached

The value of the maximum force achieved during the last test. This value is checked with the aid of the minimum and maximum force limits.

4.1.3 P. reached

The value of the maximum stroke achieved during the last test. This value is checked with the aid of the Minimum and Maximum stroke.

4.1.4 P.Zero

The value of the position determined by the force sensor, when setting tool comes into contact with the part (vedi capitolo 1.3).

4.1.5 F.check n

The force value captured from the stroke at the *checkpoint*. This item allows the access to a sub-menu which transmits the statistical values of the corresponding checkpoint. In the sub-menu of the statistical values, the average force at the checkpoint (**F.min. CP**), the number of scraps due to a too great force (**n. NIO.F.max**) and due to a too low force (**n. NIO.F.min**) are contained. These values are reset, when the tally of good parts and scrap parts are reset.

4.1.6 Good

Number of completed good parts. The counter remains saved in memory when the instrument is switched off. To reset the counter back to zero, press the **ENTER** button. By zeroing the counter, the calculated average values also become zero.

4.1.7 Rejected

Number of completed parts that are scrap. The counter remains saved in memory when the instrument is switched off. To reset the counter back to zero, press the **ENTER** button. By zeroing the counter, the scrap counters at each checkpoints also become zero.

4.2 SELECT WORK

In the ' select work ' menu, the directory of all the available work that is saved on the instrument is displayed.
When viewing this menu, the most current work is highlighted. By selecting the most current work, the name of the description can be changed.
To eliminate a work, one must select the menu ' select work' (see section 4.3.6).

4.2.1 Creating a new work

Using this item, a work can be added to the list. The new work will be empty. If a new work is created, an identification will be required.

4.2.2 Create a copy

Using this item, a work can be added to the list. The new work will be identical to the work in use. If a new work is created, an identification will be required.

4.3 EDIT WORK

In the sub-menu you can enter all the work parameters and options that the instrument is to use during the operation. The changes will refer to the task in operation at that moment.

4.3.1 Stops

When this item is selected, you can determine idle force and stroke (see chapter 5.1). To use no idle value, simply do not enter a value (zero).

- ***F.Stop*:** is the force value with which the press becomes disengaged into the idle position.
- ***P.Stop*:** is the stroke with which the press becomes disengaged into the idle position.
- ***Stop delay*:** is the time in which the shut-down can be delayed.

4.3.2 Check point n

The checkpoint allows for the inspection of the curve progression and requires the input of three parameters:

- ***P.check*:** is a value that lies between the start of the stroke and before the final stroke value, where the measurement of the controlling force takes place. If the option relative checkpoint on end is activated (see Section 4.3.5) this value will indicate the position of measurement refers to the end of the pressfit.
- ***F.min*:** is the minimum value of the force which is measured at the measurement point **S.check**. The measured force must lie above this value in order to achieve a good part.
- ***F.max*:** is the maximum value of the force which is measured in the measurement point **S.check**. The measured force may not lie above this value to achieve a good part.

If a value of zero is entered for the stroke, the *checkpoint* is excluded from the inspection.
The force measured at the checkpoint can be viewed in the menu **Measurements**. The checkpoints will only appear in the graphics if the stroke endpoint becomes known, i.e. at the end of the task.
If you activate the option **Quote for the check point** check point will be displayed on the graph will be known only when the final position of pressfit, so after work.

4.3.3 Limits

The *limit* values control the force and the maximum stroke (see chapter 5.3).

- ***F.min:*** is the minimum force which must be achieved to receive a good part.
- ***F.max:*** is the maximum force which may not be exceeded in order to receive a good part.
- ***P.min:*** is the minimum stroke which must be achieved in order to receive a good part.
- ***P.max:*** is the maximum stroke which may not be exceeded in order to receive a good part.
- ***SetPoint*:** is the value attack signal SETPOINT. The SetPoint item is visible only if the device is configured to control its output power.

4.3.4 Start position

The Start position is detected by the instrument when the force measured by the load cell exceeds a threshold value (see Section 1.3). This menu allows the insertion of the minimum and maximum limits for the Start position insertion of the force threshold for detecting the same.

- ***P.min:*** the input of the stroke for the minimum value to be reached for a good part.
- ***P.max:*** the input of the stroke for the maximum value to be reached for a good part.
- ***F.d'inizio:*** to start the Press action with the minimum necessary force for the stroke on the expander sphere.

If the instrument is not configured for the control of SETPOINT, the output SETPOINT is activated when the force measured by the load cell exceeds a threshold value.

4.3.5 Options

Each work in its options that govern the operation to be performed.

- ***Use relative positions:*** see chapter 1.4.
- ***Stop if low start position:*** Press stops and return when start position value measured is too low.
- ***Stop if wrong checkpoint:*** Press stops and return when start position value measured is too high.
- ***Stop if wrong checkpoint:*** Press stop and return to start position when checkpoint is non-compliant.
- ***Relative positions checkpoint:*** This option changes the method for calculating the positions of the check point. Activating this option will check the force at position from the final position value. Of course, force control will be executed only after the arrest of the press.
- ***Manual work:*** This option is only available with the presses that have to manually approach through the lever. In presses with manual approach may be that the piece is partially pressed

simply exerting a force on the lever. Enabling this option, the control curve is also during lavvicinamento with the lever, before the press is actually started.

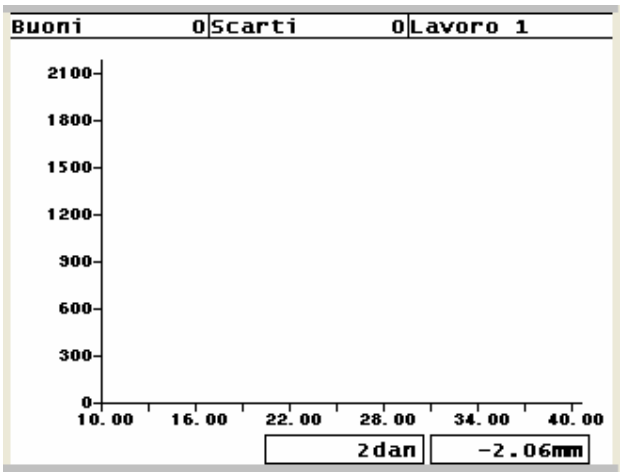
- ***Ask password with rejected pieces:*** activating this option you are prompted to enter your password to unlock do rehabilitating the instrument in case of rejected piece.

4.3.6 Delete work

When selecting this command, the work in process is deleted after quitting. When deleting the last available work, the name of the new work which is to be created, is required.

4.4 GRAPH SETUP

In the configuration menu, the scale of the axes 'Force end scale' and ‘Position end scale' can be changed in the graphic.



4.4.1 Position origin

The 'Position origin' is the initial value displayed in the graphic. In the illustration this value is 10.00mm.

4.4.2 Position end scale

The 'Position end scale' is the maximum stroke displayed in the graphic. In the illustration, this scale end value is 40.00mm.

4.4.3 Force end scale

The 'Force end scale' is the maximum set force displayed in the graphic. In the illustration, the scale end value is 2100 daN.

4.5 PRINT

The menu for printing is only visible if the instrument was configured for the use of a printer.

4.5.1 Printing statistics

Starts the print of the part counter and the statistical values.

4.5.2 Printing measured values

Starts the print of measured values for the last part worked on.

4.5.3 Print if part is good

If this option is activated, then the measured values of every good part are printed.

4.5.4 Print if part is rejected

If this option is activated, then the measured values of every scrap part are printed.

4.6 GOOD

Identical to the item Measurement results in the menu, which is described in section 4.1.6.

4.7 REJECTED

Identical to the item Measurement results in the menu, which is described in section 4.1.7.

4.8 COONTRAST

The contrast setting on the display allows for an optimum display. Upon selecting the item, one can raise the contrast making the screen darker with the help of the  button , and one can decrease the contrast making the screen brighter with the help of the  button. To exit, press the **ENTER**  button.

4.9 CONFIGURATION

VISUAL POINT can be set-up according to your requirements, using the configuration menu.

4.9.1 Password parameter

A password can be entered to change all operating parameters or changed. At the request and the correct password input, the following icon appears on the display. To reset the password, one must exit all menus and press the **RESET** button.

4.9.2 Password unlock

Allows insertion and changing the password used to unlock the device in the event of a rejected piece of work when the option is turned on.

4.9.3 Password calibration

Allows changing the password prevents access to the configuration menu of the instrument. When prompted for this password, and fits properly on the display the icon . To reset the password you need to exit any menu and press the **RESET** button. The factory set password is 9724.

4.9.4 Info

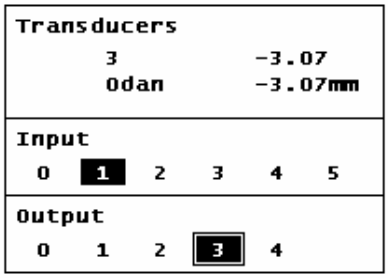
Indicates the number total of pieces worked and the firmware version in both of the instrument CPUs.

4.9.5 Type of machine

Allows editing of the configuration options of the instrument. These depend on the connected machine and the type of operation required. For a description see chapter 6.

4.9.6 Diagnosis

The serviceability of the force and travel encoders can be inspected via the diagnostics window. The serviceability of the inputs and outputs can also be inspected.



The diagnostics window is divided into three sections:

Section **Transducers**

In this section the digital value of the force transducer appears on the left. By changing the force offset, this value can be brought to zero.

The force measurement value is displayed at the bottom in a size that is easier to manage. The digital value is multiplied with the force factor in order to achieve this value. The taring can be changed together with the offset and factor of the measuring units as well as the number of the decimal digits.

In the transducers section the digital value of the position transducer appears on the right. By changing the stroke offset, this value can be brought down to zero.

The position measuring value is displayed at the bottom in a size that is easier to manage. The digital value is multiplied with the stroke in order to achieve this value The taring can be changed together with the offset and factor of the measuring units as well as the number of the decimal digits.

One can reach the taring menu by moving the cursor in this section.

Section **Input**

The state of the input signals are indicated in the middle section. If an input is active, the number is highlighted by a black rectangle. In the illustration above, the input 1 is active.

Section **Output**

The state of the output signals are indicated in the middle section. If an output is active, the number is highlighted by a black rectangle. In the illustration above, the output 3 is active.

An output can be changed by moving the cursor (black rectangle) onto the desired source number and pressing the **ENTER** button.

Changing the outputs can be dangerous.

4.9.7 Calibration

With the help of the taring menu, the transducers can be calibrated and changed to indicate both of the instrument sizes used (Force and stroke).

- ***S.Offset:*** is the value which is deducted from the position transducer value on the display.
- ***S.Gain:*** is a factor by which the position transducer value is multiplied on the display.
- ***S.Decimals:*** allows the determining of the number of the digits after the comma which are to be used for all stroke values. Up to three digits can be displayed.
- ***S.dim.unit:*** allows the choice of desired measurement units for the stroke values: millimetre (mm) or inch (in).
- ***F.Offset:*** is the value on the display which is deducted from the force transducer value.
- ***F.Gain:*** is the factor on the display by which the force transducer value is multiplied.

- ***F.Decimals:*** allows the determining of the number of digits after the comma which are to be used for all force values. Up to three digits can be displayed.
- ***F.dim.unit:*** allows the selection of the desired measurement units for the force values: decaNewton (daN = approx. 1 kg), kiloNewton (KN = approx. 100 kg)

4.9.8 Enable printer

A printer that prints on striped paper or labels can be connected. When connecting a printer to the instrument, this option must be activated.

Note:

Only special printers can be connected: for more information contact the Alfamatic.

The connection of a printer excludes the possibility of using the ExPress together with a computer and screen, because only one serial interface RS232 exists.

4.9.9 Date

This item is visible only if the clock is equipped with VISUAL PONT.
With this item you can set the date and time that will be used in printing.

4.9.10 Reset memory

In the VISUAL POINT is a nonvolatile memory that retains the settings of the instrument and counter parts: with this command you can erase this memory.

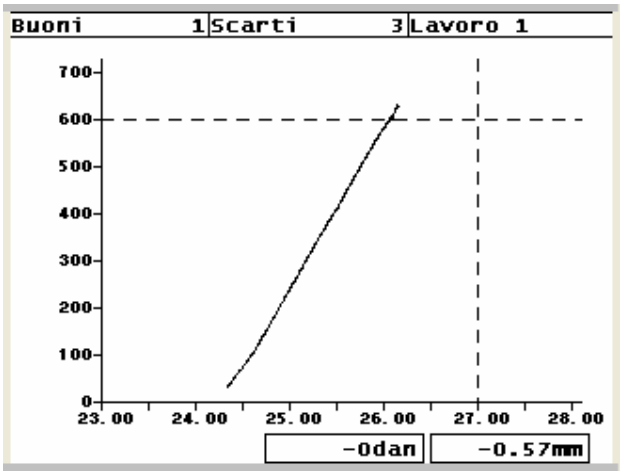
If you erase the memory of the instrument, you will have to repeat all the calibration and configuration of the instrument.

5 WORK PARAMETER

The parameters available for work are: Shut-down values, checkpoints and maximum values. To display changes or remove parameters, one must view the menu. The stroke force curve is captured by VISUAL POINT and depends on the characteristics of the work piece. One must enter the working parameters in order to separate the curves of good parts from those of scrap parts.

5.1 STOP VALUES

The shut-down values determine whether the process of the pressing ram is stopped and returned. The return can be actuated if a certain force or a certain stroke is achieved. If the force or the stroke exceeds these shut-down values, the instrument triggers the return of the pressing ram.



Picture 4

When both values are entered, if at least one value is exceeded (first-achieved), then the press will be shut-down.

On account of the delay times of hydro pneumatic components, the shut-down occurs a little delayed compared to the control via the instrument. It is normal that the captured effective values achieved exceed the programmed shut-down values. If a value is set to zero, it is ignored, if both values are set to zero, the shut-down occurs via VISUAL POINT; in this case, one must press the **RESET** 

for the unit to return. If the workpiece has not a mechanical stop, it is best to use a stop mounted on the press. If you can not work with a mechanical stop is possible to equip the press with a deceleration to slow the speed of the stem in the last section of the press. The VISUAL POINT can activate the decelerator settable position. The value of this share will to be slightly smaller than the percentage arrest.

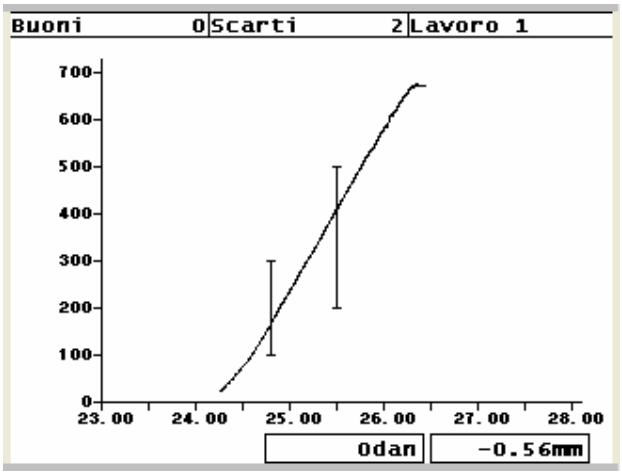
5.2 Check point

The checkpoint serves for the measurement and the inspection of the force in a certain position on the press. The forces measured on a specific stroke must lie between the minimum and maximum force.

Every checkpoint requires the input of three parameters:

- The measuring position 1, i.e. the position at which the force is to be measured: **S.check**.
- The minimum value of the force measured on the measuring position is: **F.min**.
- The highest value of the force measured on the measuring position is: **F.max**.

If the stroke value is set to zero, the checkpoint is excluded from the inspection.
If you activate the option **Quote for the check point** check point will be displayed on the graph will be known only when the final position of pressfit, so after work.The work piece is only then classed as a good part if the force lies within the corresponding maximum ratings at the checkpoint.



Picture 5

The force measured at the checkpoint is indicated in the **Measurement** menu (see section **Errore. L'origine riferimento non è stata trovata.**).

5.3 Limits

The following *limits* can exist: minimum and maximum force, minimum and maximum stroke; these control the maximum forces and strokes achieved during the operation.
There are two other limits: minimum and amximum start position that controls the start position value (see paragraph 1.3).

5.3.1 Minimum and maximum limits

When the force reached Maximum (peak) does not exceed the minimum or exceed the maximum force the piece is rejected. Similarly, if the maximum position (peak) achieved no more than the minimum or exceed the maximum level the piece is rejected.

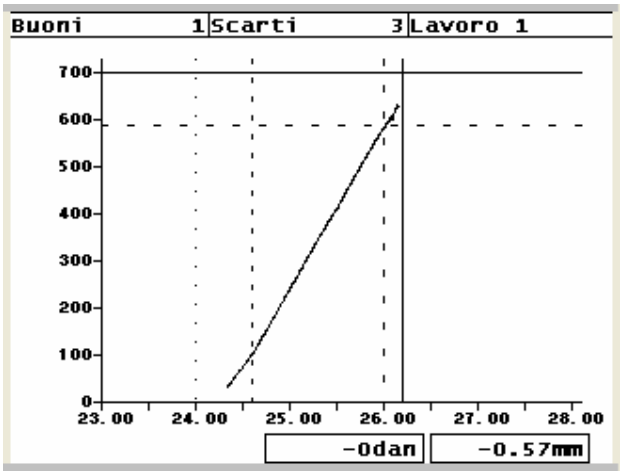


Figure 6

If a limit is set to zero is not used in the control.

Note:
If you set minimum position limit to zero, the VISUAL POINT will use as a limit the position of checkpoint to the right.

5.3.2 Start position limits

If the start position (see Section 1.3) is below the minimum start position minimum or the maximum start position, the piece is rejected.

6 Configuration

Depending on the type of machine is connected to activate various options in VISUAL POINT.

- **Number of selectable works**

Indicates the number of works that you can choose via the digital inputs. You can select using inputs from 2 to 16 jobs. Although some works are selected by inputs, the VISUAL POINT always allows the creation of all sixteen works. Those not selected by the inputs can be selected from the menu **Select work**.

- **Press with manual approach**

When the VISUAL POINT is connected to a press Tromboline Alfamatic or similar, where the race approaching the piece is made by a lever, you must enable this option. Note that there is another option for full manual presses such as rack or brace.

- **Disable reset button**

Each time the VISUAL POINT finds a rejected piece, locks and prevents the execution of a new cycle until you reset. The reset can give it through a digital input or via the **RESET** 

button. If you want to disable the reset button so that only through the appropriate digital input is possible to reset the tool you must enable this option.

- **Use basket for rejected**

Each time the VISUAL POINT finds a rejected piece, locks and prevents the execution of a new cycle until you reset. You can connect a switch to the objectification of rejects at the reset. This will discard all the pieces necessary to rejected. If this is the rejects basket to enable this option.
The behavior of the Reset state depends on or off this option:
When it detects a rejected piece protection remains closed, the basket with the **RESET** button allows you to open it. With the rejects basket, the reset input works only on the rising edge.

- **Use potentimeter**

Enable this option if you connect to the VISUAL POINT potentiometer or a transducer with analog output 0-10V instead of the incremental encoder.

- **Use pressure sensor**

Enable this option if you connect to a switch or VISUAL POINT transducer output with 0-10V instead of the load cell.

- **Mechanical press**

Enable this option if the device is connected to a fully manual press type or rack brace.

- **Enable buzzer**

At the exit of protection, you can connect a buzzer to signal the rejects. The buzzer will be silenced forever by the **RESET** button.

- **SETPOINT active at position**

The VISUAL POINT can activate the SETPOINT output when a position is reached. You can use this output as desired, taking into account that is enabled to reach the predetermined amount and is

deactivated when you reach the value Stop or, with the option described below, when you enable the TDC input

- **SETPOINT active with force**

The VISUAL POINT can activate the SETPOINT output when a force is reached. You can use this output as desired, taking into account that is enabled to reach the predetermined amount and is deactivated when you reach the value Stop or, with the option described below, when you enable the TDC input.

- **SETPOINT until back stroke ends**

Normally the SETPOINT output is switch-off when is reached the stop value. When activated, the SETPOINT output is deactivated only when the press is back to TDC and has been reset any piece of rejected.

- **Work only with computer comm**

Turning this feature on VISUAL POINT not allow the execution of work unless connected to a computer with the program WinScope ready for the acquisition of the curve.

- **Check piece presence**

Enabling this option, you can connect a presence sensor that enables the start of VISUAL POINT only if the input is active. Note that this input is shared with the input of selection work.

- **Disable TDC**

Enabling this option, you can not connect the TDC switch. This option, however, prevent the use of incremental encoder with multi zero signal on the course.

6.1 Ethernet connection

To use the Ethernet port (optional) it is necessary to assign the instrument a univocal IP address. To do this, you need the *VisualPoint Setup* software on the CD supplied with the instruments.

7 Calibration

From the **Calibration** menu it is possible to calibrate the transducers connected to the VISUAL POINT. You can access the Calibration menu directly from the diagnosis, making the operation much faster. Diagnosis In the the menu it is possible to force the outputs and control the press without having to exit the menu every time you want to check the calibration values entered.
This operation has to be carried out by specially appointed and qualified personnel.
The calibration password is required for calibration.

7.1 Force transducer calibration

The offset is the value subtracted from the output value of the analogue-digital converter.
The gain is the multiplication factor that regulates the force value displayed. If the gain is higher than three, it is best to change the unit of measure and the number of decimals.
The best method for calculating the gain of the force transducer is by way of a calibrated reference load cell. Alternatively, it is possible to enter a theoretic gain.

7.1.1 Calibration using a calibrated load cell

To calculate the gain and offset, this procedure can be used:
- Temporarily enter 1.0 as the gain and 0 as the offset.
- Do not exercise any force on the load cell.
- Enter the force value displayed as offset.
- Remove the stop values (see chepter 5.1).
- Position the calibrated load cell under the cylinder.
- Start the press and manually regulate the force until the display shows 1000daN.
- At exactly 1000daN, read the real force value measured by the calibrated instrument.
- Divide the value read by 1000 and enter it as the gain.
- Check this calibration.

7.1.2 Calibration using theoretic values

If you do not have a calibrated load cell, this procedure can be followed:
- Temporarily insert 0 as the offset.
- Do not exercise any force on the load cell.
- Enter the transducer value displayed as offset.
- Now enter the gain calculated theoretically using the formula:

For 2mV/V load cells:
Gain = 0.260 * (nominal value of the load cell in tons)
Examples:
for a 2.5t load cell the gain is 0.650 in daN without decimals
for a 5t load cell the gain is 1.300 in daN without decimals
for a 10t load cell the gain is 0.260 in KN with one decimal
for a 20t load cell the gain is 0.520 in KN with one decimal

7.2 Position transducer calibration

It is possible to use an incremental encoder, a potentiometer or a 0.10V analogue transducer as a position transducer.
The incremental encoder is best as the precision does not depend on the useful stroke and is not influenced by electrical disturbance.

7.3 Encoder calibration

The encoder is connected to a counter which multiplies the physical resolution of the transducer by four.
The offset is a number of steps subtracted from the value by the counter.
The gain is the multiplication factor that regulates the position value displayed.
It is important to understand that the position is aligned at a position which does not correspond with the upper dead point. The alignment position is determined by the concurrence of the T.D.C. signal (cylinder withdrawn) and the presence of the encoder signal at the zero notch.
Only if the encoder is replaced can the alignment position vary.
When the VISUAL POINT is switched on, the position displayed is zero whatever the position of the lever: only at the first passage for the zeroing position are the positions reset. This means that a negative position must be indicated for the return of the cylinder.

7.4 Potenziometer calibration

The VISUAL POINT has a 0-10V analogue input with a 12-bit analogue-digital converter.
The offset is the digital value subtracted from the output value of the analogue-digital converter.
The gain is the multiplication factor that regulates the position value displayed.
The theoretic value of the gain to obtain the hundredths of a millimetre is obtained from the following formula:
Gain = (Nominal stroke in millimetres) / 40.96