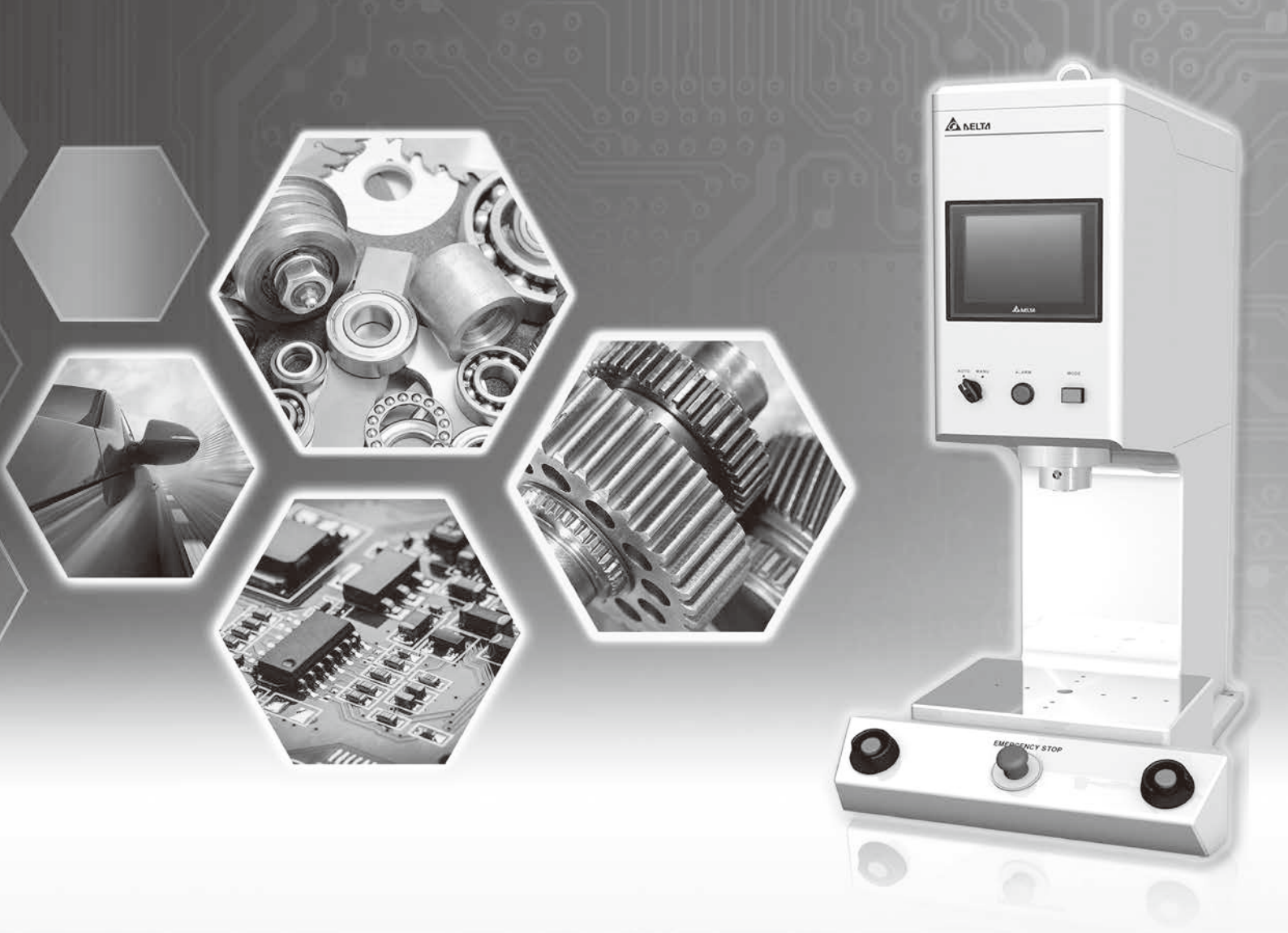

Delta Electronics Servo Press DIAServoPress Software User's Manual

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Delta Electronics Servo Press
DIAServoPress Software User's Manual

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1. Installing the DIAServoPress software

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1. Installing the DIAServoPress software

1.1 Software introduction

DIAServoPress is a PC tool for Delta's servo press. It helps users perform live monitoring, statistical analysis and plotting, and remote settings during the pressing process.

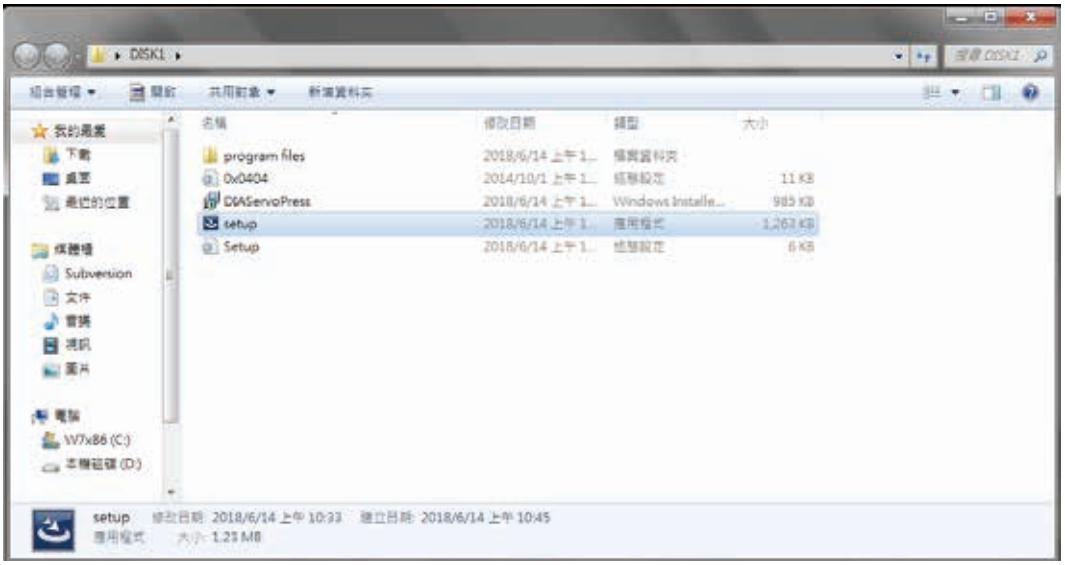
Before beginning the use of the DIAServoPress, be sure that your operating system meets the below requirements.

Item	System requirements
Operating system	Windows 7 / 8 / 10
CPU	Models with Pentium 1.5G or higher
Memory	256MB or more (at least 512MB recommended)
Disk space	At least 100MB space must be provided for the DIAServoPress
DVD	For conditions that require software installation by DVD (optional)
Display	800 × 600 or more (recommended display settings: 1024 × 768 / 96DPI)
Ethernet	For connection with the servo press
Connection software	Computer must be installed with COMMGR communication manager software (*1)
OFFICE	Microsoft Excel 2007 or higher version (for exporting statistics reports)

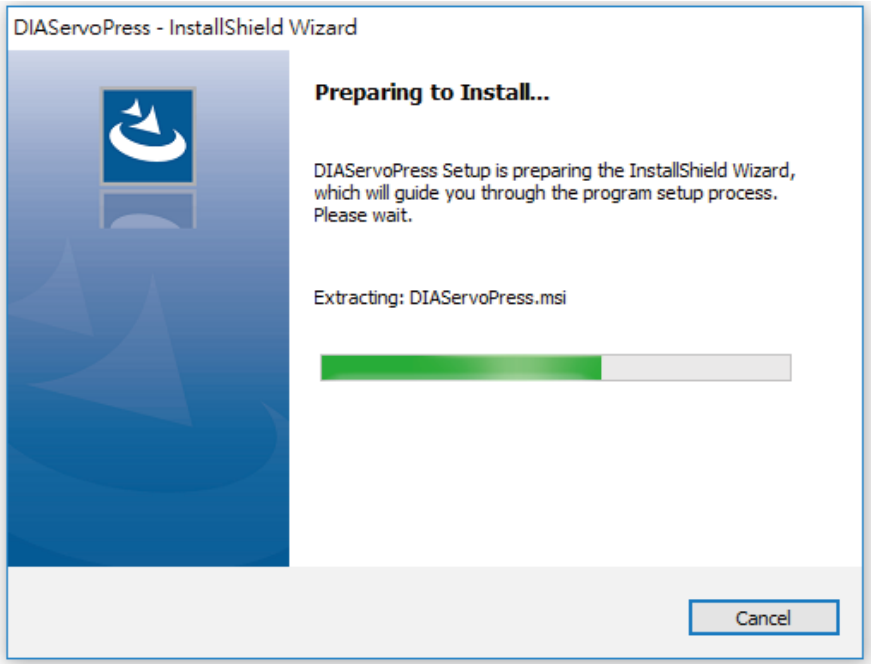
*1 Refer to Section 2.1 for introduction of COMMGR communication manager.

1.2 DIAServoPress installation process

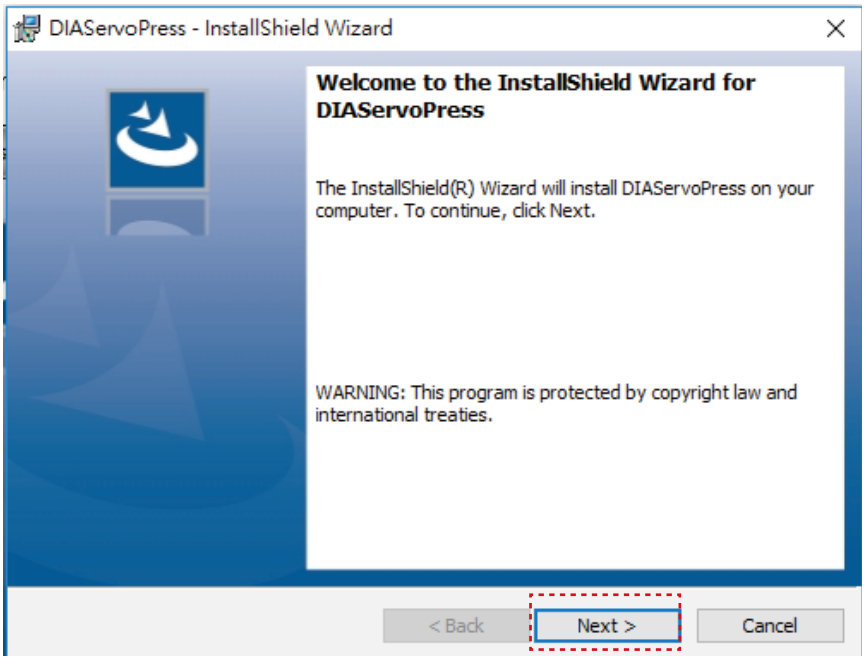
1. Click on setup.exe to install the DIAServoPress software



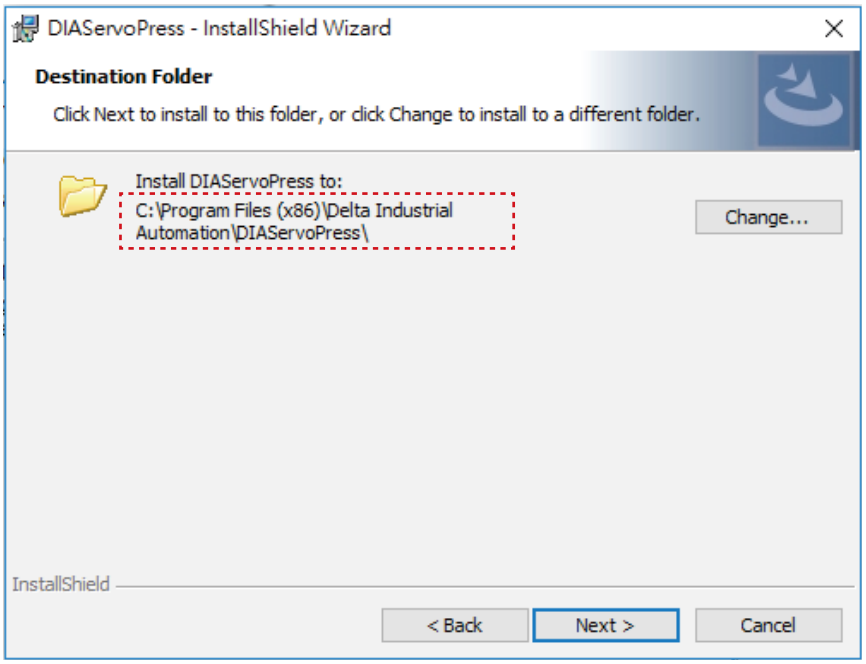
2. Installer opens, and prepares for the installation process



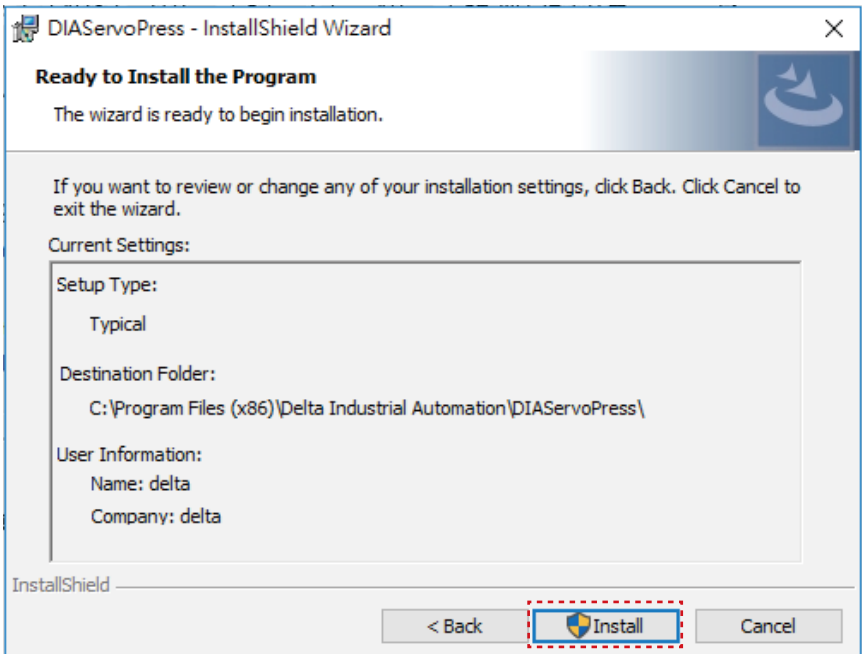
Installation process begins. Click **[Next]** to perform installation-related setting



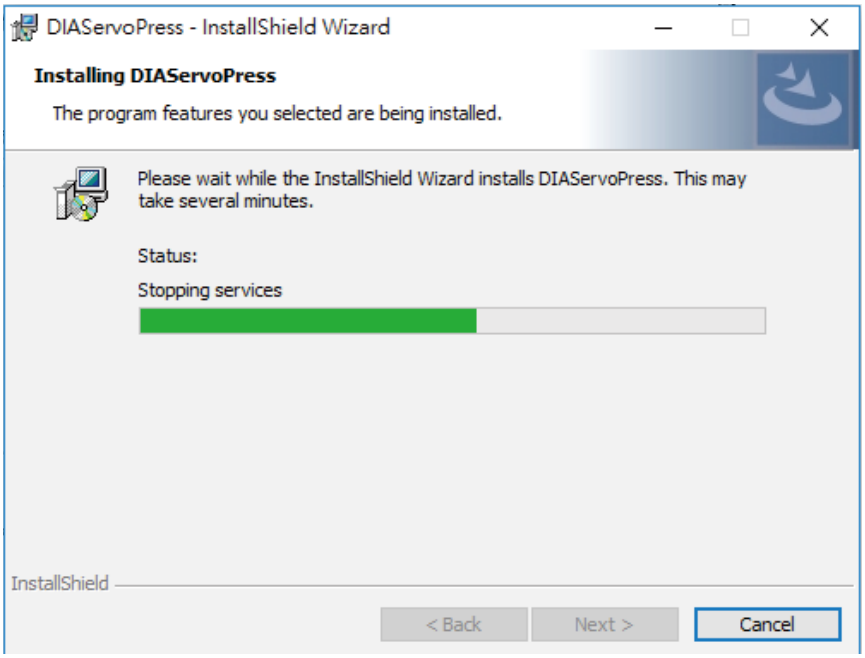
The default installation location is C:\Program Files\Delta Industrial Automation\.
If you need to change the path, click on **[Change]** to set your own installation location



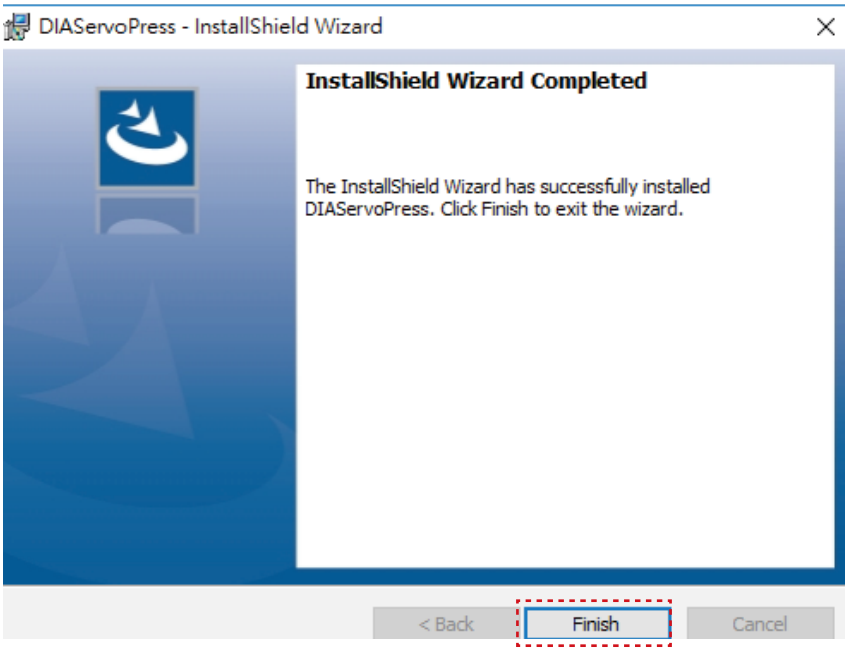
Confirm the current installation details and click **[Install]**



6. Program installing

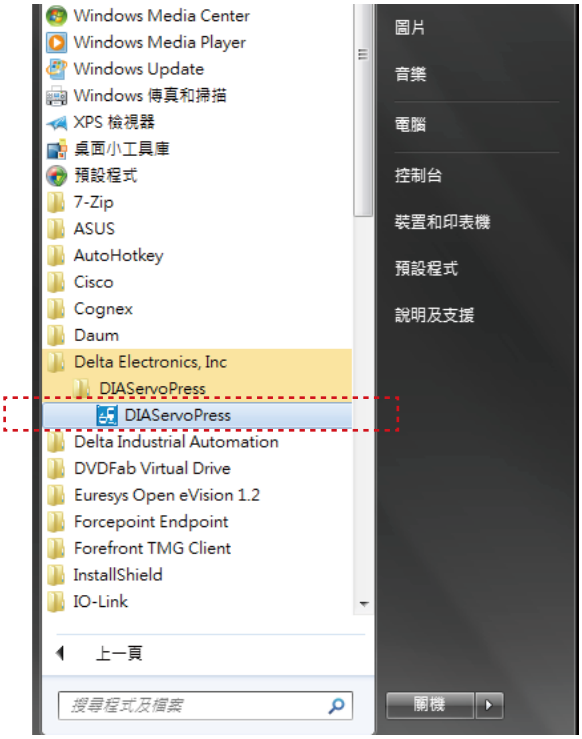


DIAServoPress software installed. Click **[Finish]** to close InstallShield Wizard



1.3 How to open DIAServoPress

Select **[Start]** → **[All Programs]** → **[Delta]** → **[Delta Industrial Automation]** folder, and select DIAServoPress to open software



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2. Using the DIAServoPress software

Once the DIAServoPress software is open, the below processes must be followed before pressing may begin. This chapter gives an introduction and explains the operation of each process.

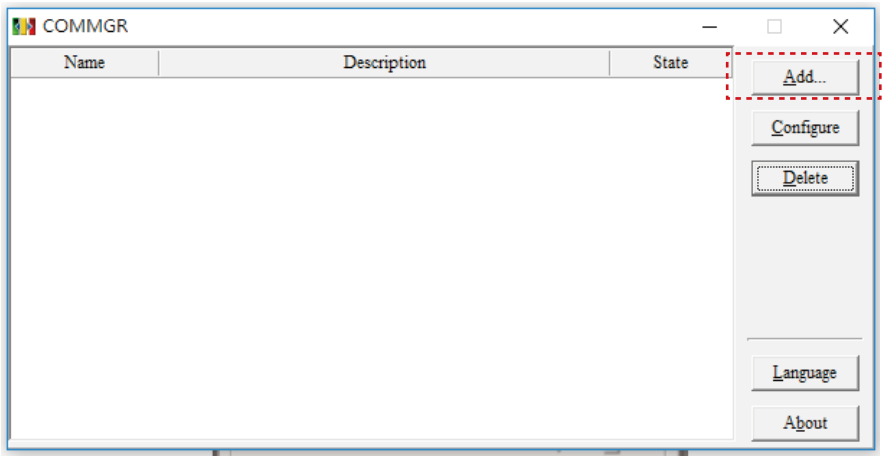
Connection: Once the software is open, it must connect to the servo press via Ethernet. Check the IP and connection port settings before connecting. Successfully connected, the software may operate and retrieve data from the machine through communications. See Section 2.1 for details.

Initialization: When the servo press is turned on, it must undergo main axis resetting and parameter initialization. These actions may be performed by DIAServoPress or operated through the servo press human machine interface. If the servo press has already completed initialization when DIAServoPress opens, the software will automatically proceed to standby. See Section 2.2 for details.

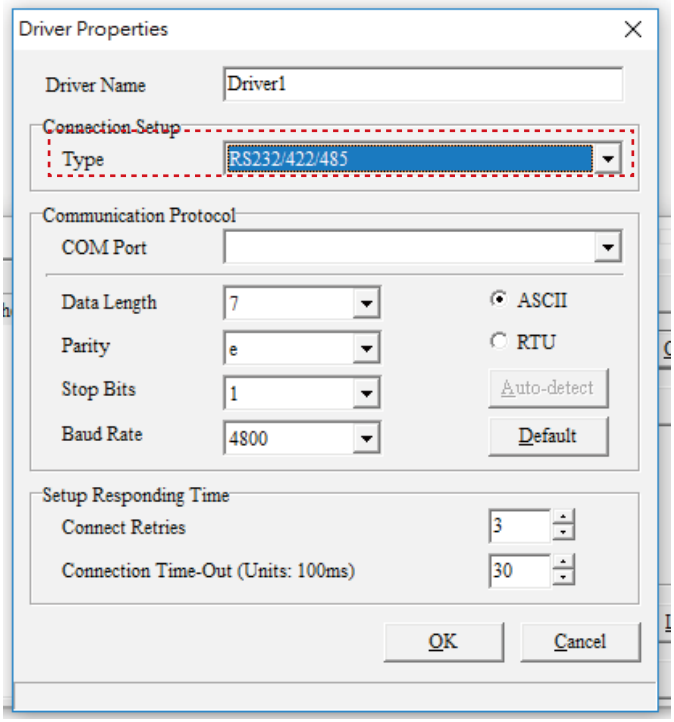
Start: When the servo press is not running, recipe and related setting may be performed. Once started, the main axis will move from the mechanical origin to the working origin, and no recipe parameter modification is allowed under this condition. On and off actions may be performed by DIAServoPress or operated through the servo press human machine interface. If the servo press is already on when DIAServoPress opens, the software will automatically proceed to pressing standby. See Section 2.3 for details.

2.1 Connection

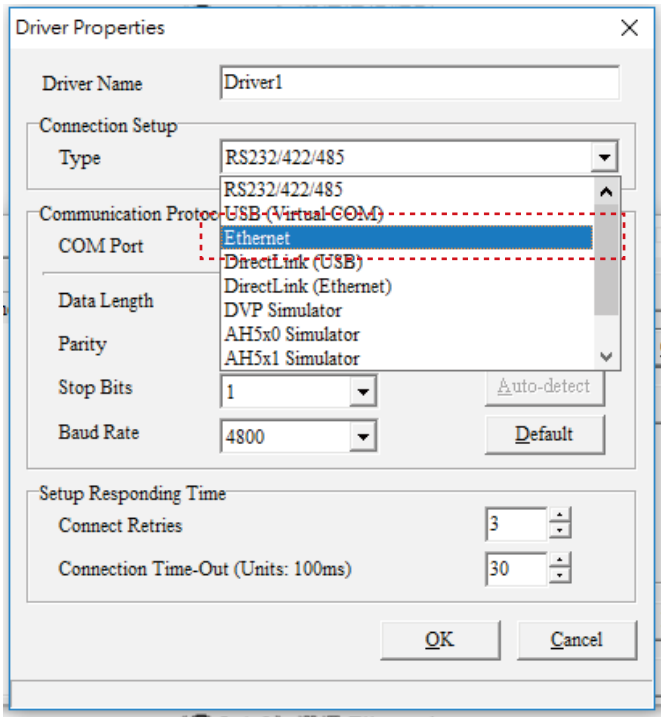
COMMGR is Delta' s communication management tool. Its main function is to bridge communications between Delta software and hardware. COMMGR management also makes connection more convenient and efficient. After installation, open COMMGR and select **[Add]** to create a new drive program, as shown in Figure 2-1-1. When the new window is opened, click on **[Connection Setup]** → **[Type]**, as in Figure 2-1-2. Select **[Ethernet]** as the type, as Figure 2-1-3, verify the network card and click **[Search]**, as in Figure 2-1-4. Check the IP address and click **[OK]**, as shown in Figure 2-1-6. This IP will be used for DIAServoPress connection. When finished, check that COMMGR has a new driver program added, as shown in Figure 2-1-7.



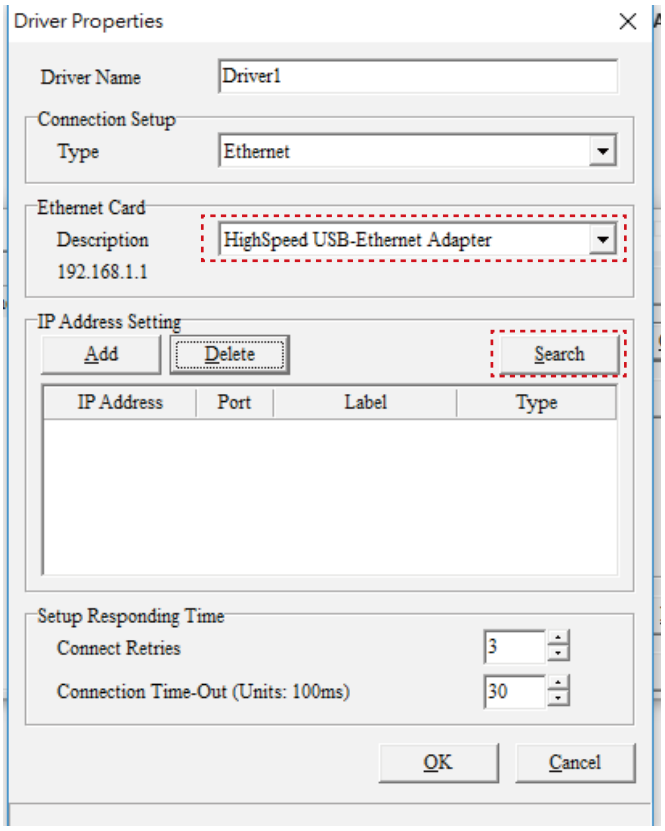
《Fig. 2-1-1》Add driver program



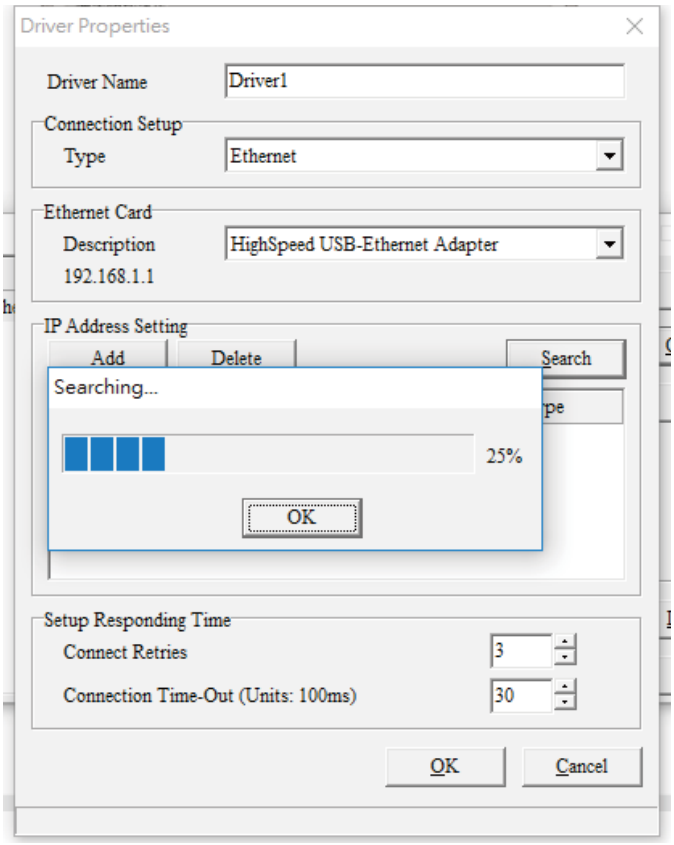
《Fig. 2-1-2》Select communication type



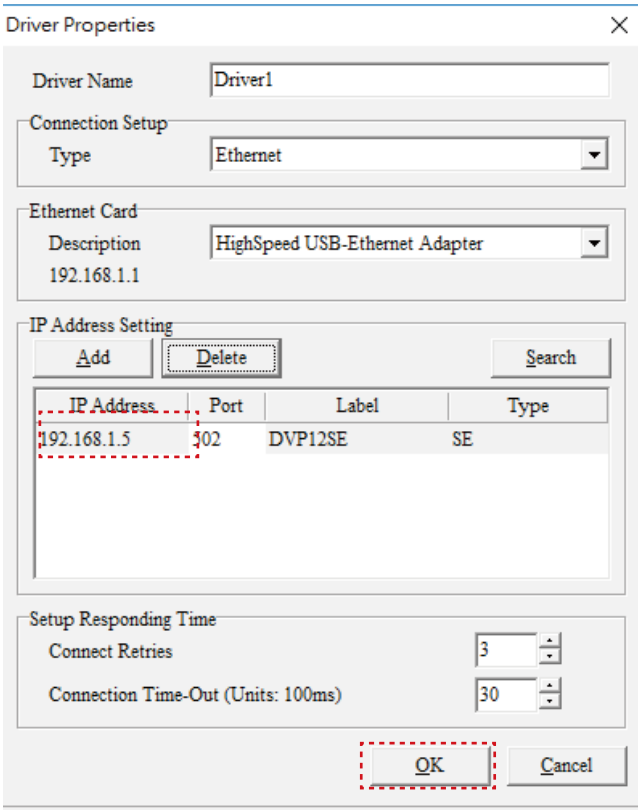
《Fig. 2-1-3》Select Ethernet



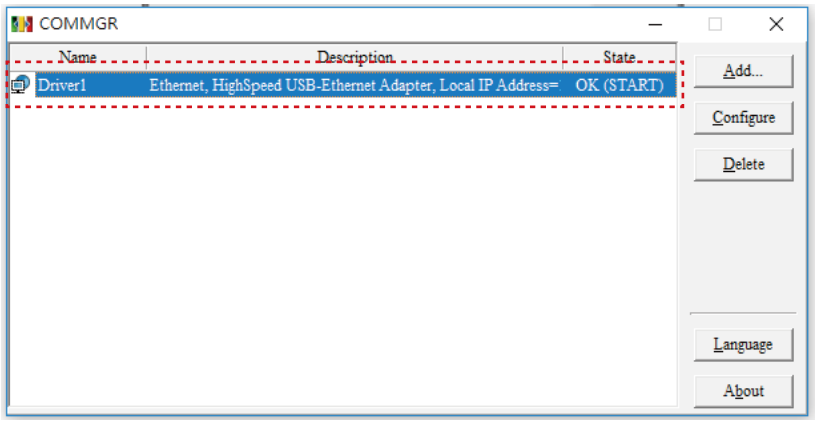
《Fig. 2-1-4》Search



《Fig. 2-1-5》Searching

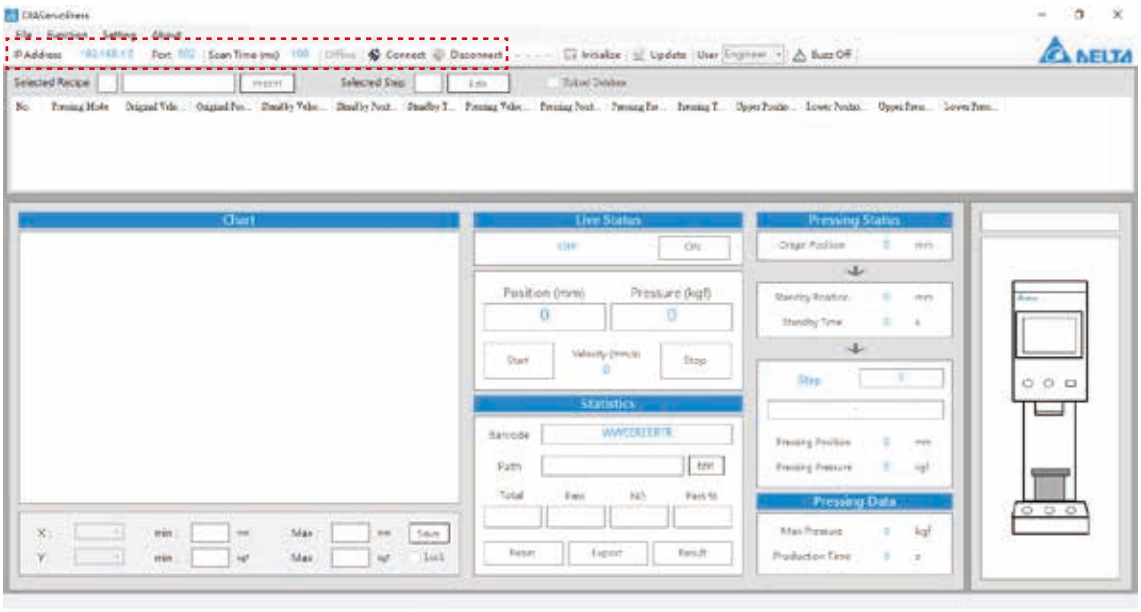


《Fig. 2-1-6》Confirm setup

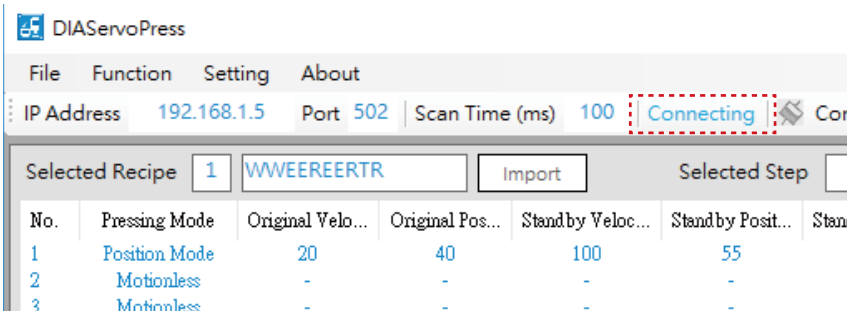


《Fig. 2-1-7》Confirm driver program creation

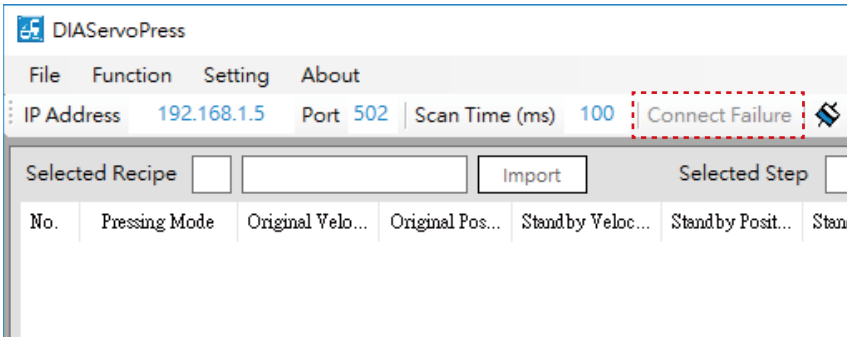
Make sure that the PC is connected to the servo press through Ethernet, and enter connection parameters such as IP address and port on the software's functions menu. When done, click **[Connect]**, as in Figure 2-1-8. If connection is successful, the window will display **[Connecting]**, as shown in Figure 2-1-9. If connection failed, it will display **[Connect Failure]**, as in Figure 2-1-10. Reconfirm the IP address and port parameters then. To disconnect the PC and servo press, click **[Disconnect]**, as shown in Figure 2-1-11. The window will display **[Offline]**, as in Figure 2-1-12.



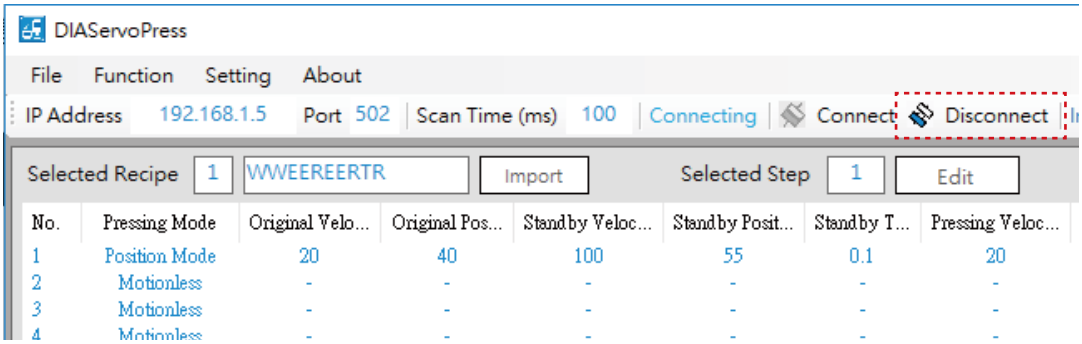
《Fig. 2-1-8》DIAServoPress connection setting



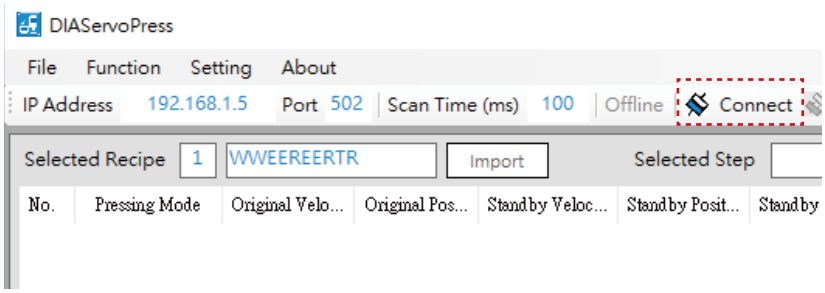
《Fig. 2-1-9》Connection successful



《Fig. 2-1-10》Connection Failure



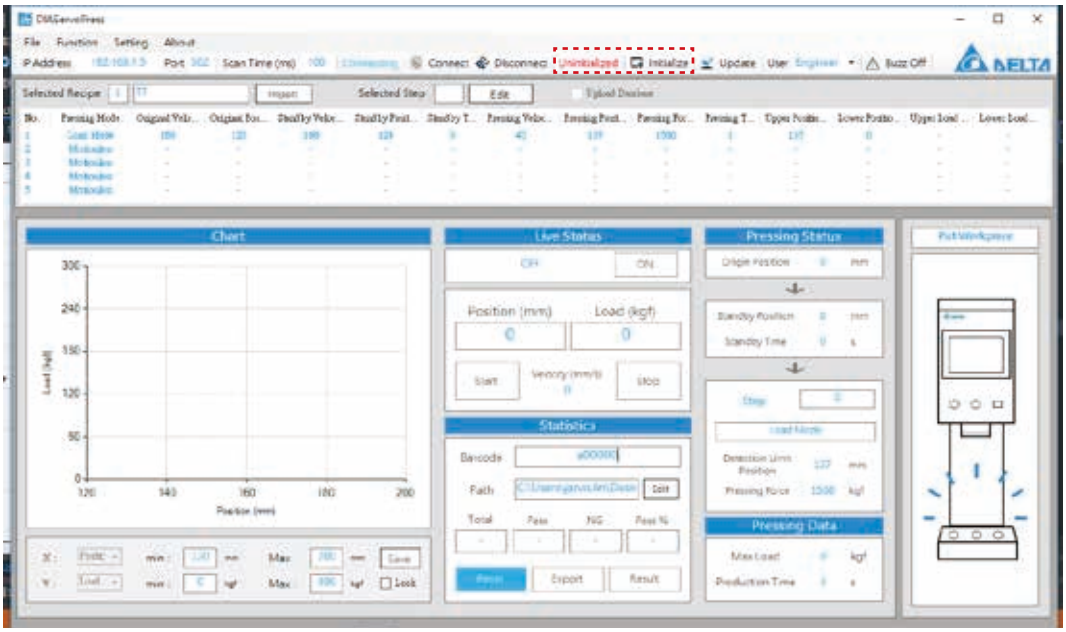
《Fig. 2-1-11》Disconnect



《Fig. 2-1-12》Offline

2.2 Initialization

After powering up the servo press, main axis position resetting and parameter initialization must be performed. Pressing cannot be done until servo press initialization is completed. After successful connection, DIAServoPress will automatically check if the servo press has completed initialization, as in Figure 2-2-1. If it has not, click on **[Initialize]** to perform servo press main axis resetting and parameter initialization.

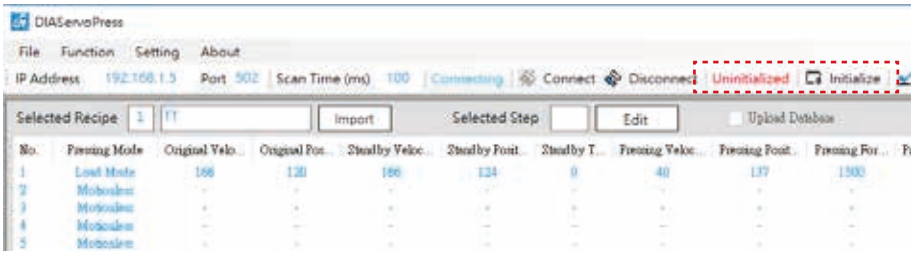


《Fig. 2-2-1》Check initialization status

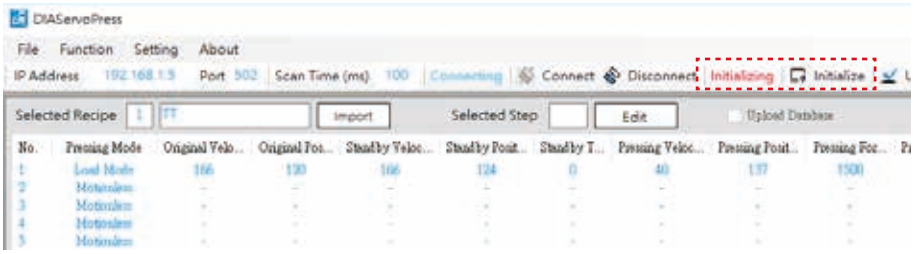
Uninitialized: If the servo press is uninitialized, click on **[Initialize]** and complete initialization before proceeding with pressing. As in Fig. 2-2-2.

Initializing: Resetting to origin, main axis is moving towards the mechanical origin. As in Fig. 2-2-3.

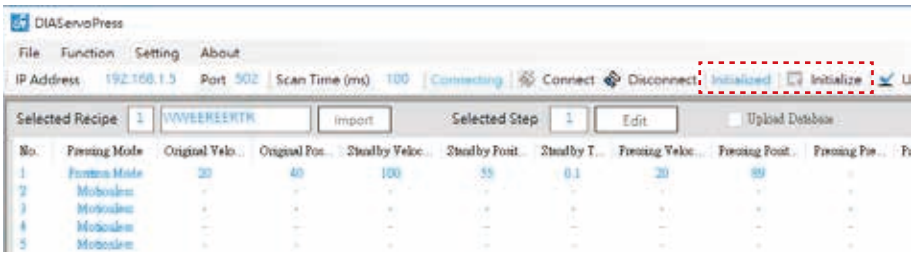
Initialized: Initialization completed, may proceed to subsequent pressing work. As in Fig. 2-2-4.



《Fig. 2-2-2》Uninitialized



《Fig. 2-2-3》Initializing

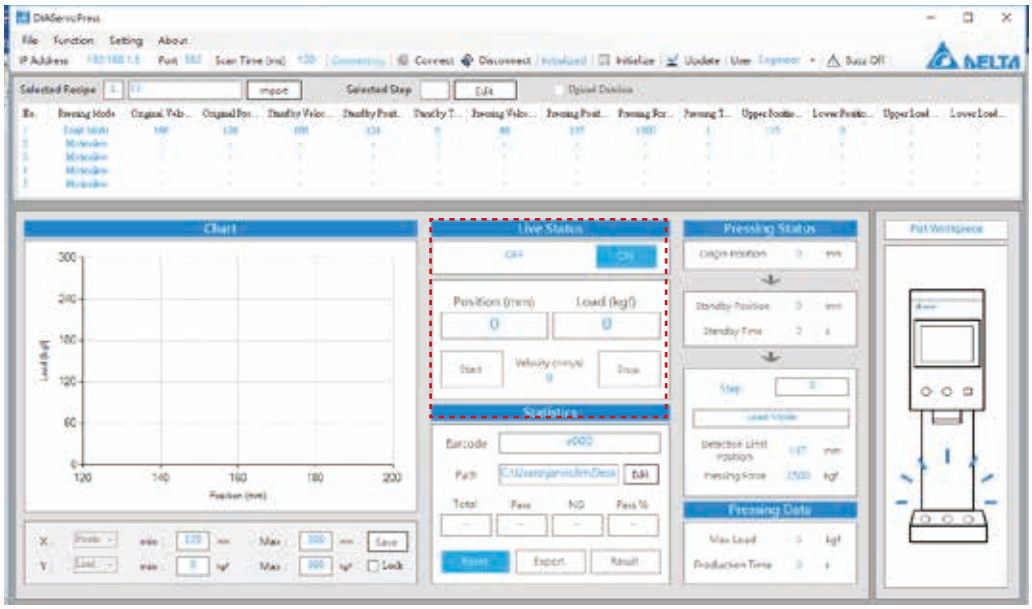


《Fig. 2-2-4》Initialized

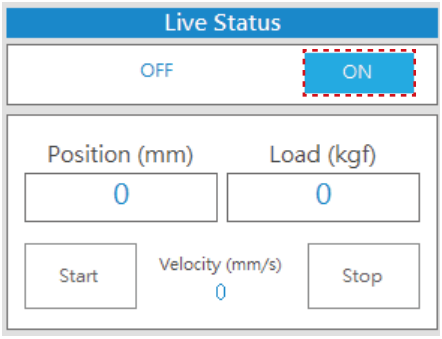
2.3 Start

Servo press must be **[On]** before auto control pressing can be performed. Once the servo press is on, the main axis will move from the **[Mechanical Origin]** to the **[Working Origin]**. However, recipe parameters can only be modified when **[On]** is canceled.

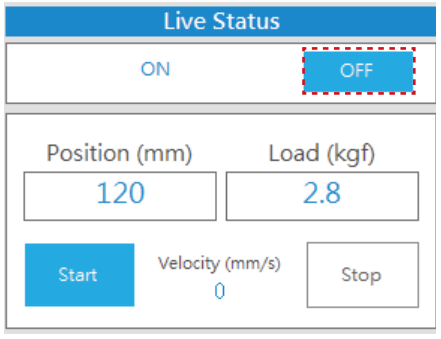
Once DIAServoPress is connected, it will automatically check if the servo press is on, as in Figure 2-3-1. If not, click **[On]** before performing auto controlled pressing. The servo press main axis will move to the working origin, waiting in standby status, as in Figure 2-3-2. If recipe parameter modification is required, click on **[Off]** to stop running and modify recipes, as shown in Figure 2-3-3.



《Fig. 2-3-1》Confirm start status



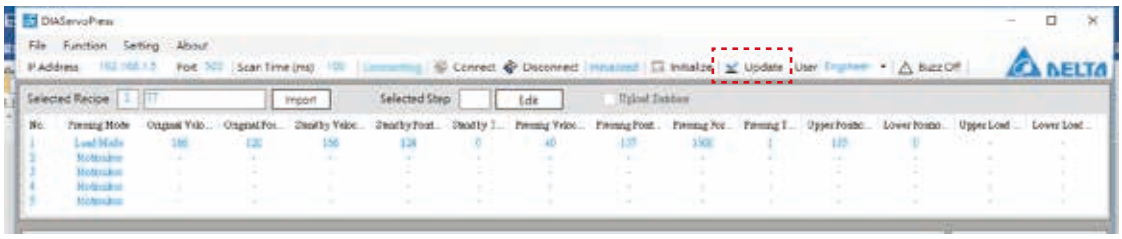
《Fig. 2-3-2》ON



《Fig. 2-3-3》OFF

2.4 Update

After DIAServoPress connects with the servo press, it will automatically capture live statuses and recipe information from the machine. However if the servo press settings and status are changed through means other than DIAServoPress after connection (such as using the servo press HMI or other remote controllers), then click on **[Update]** as in Figure 2-4-1 to ensure that DIAServoPress and the servo press are in sync.



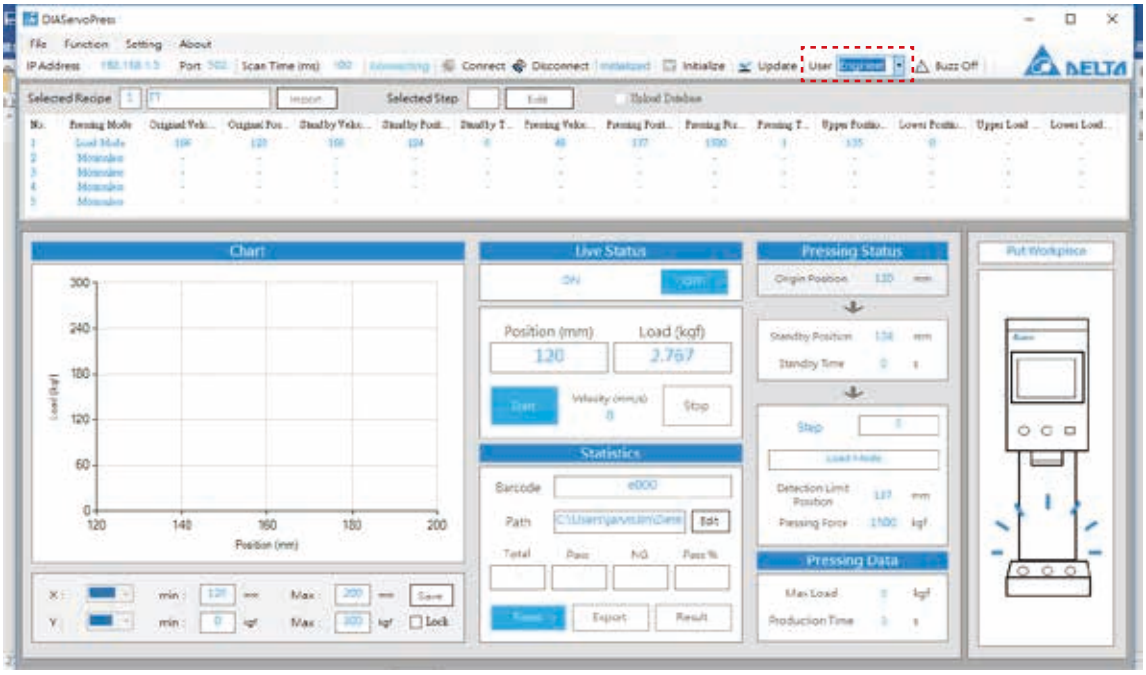
《Fig. 2-4-1》Update

2.5 User access

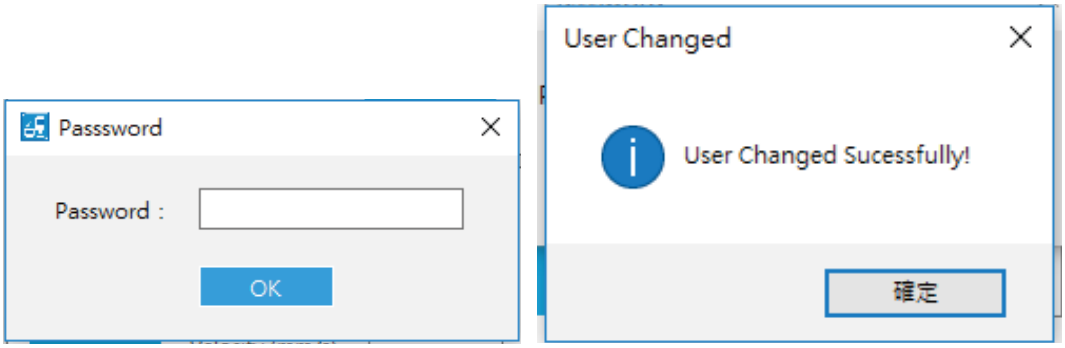
The servo press has two types of user accesses according to operational needs, as shown in Figure 2-5-1. A password must be entered to change user access, as in Figure 2-5-2. To change this password, refer to Section 6.1 Change Password.

Engineer: May modify **[Recipe]** and **[Step]** settings, **[Parameter Setting]**, and **[Load cell calibration]**. As in Fig. 2-5-3.

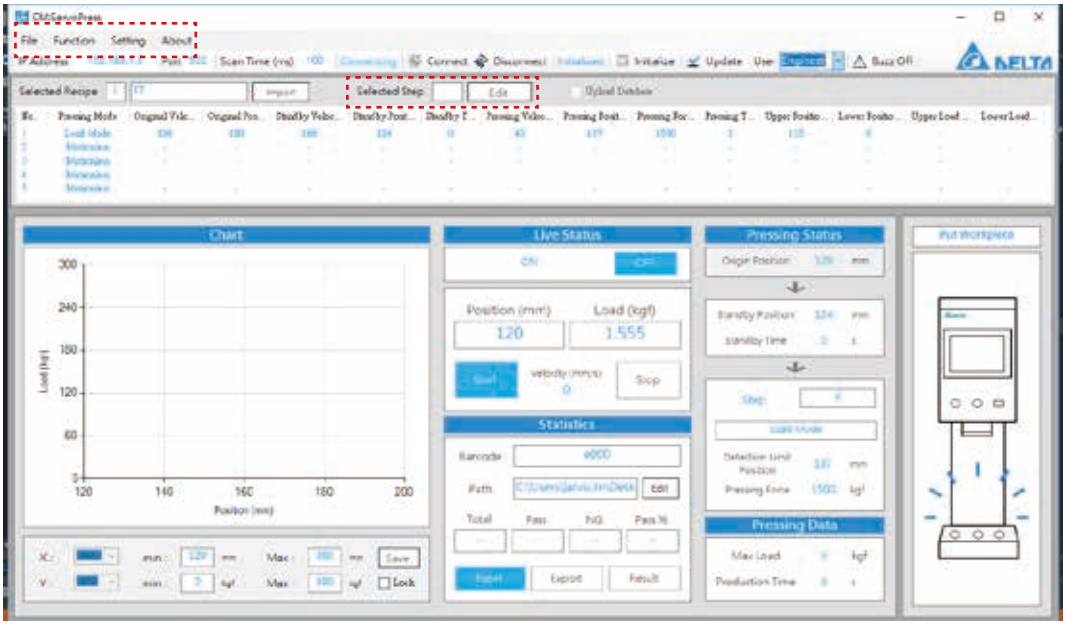
OP: May only select recipes and auto/manual controlled pressing. As in Fig. 2-5-4.



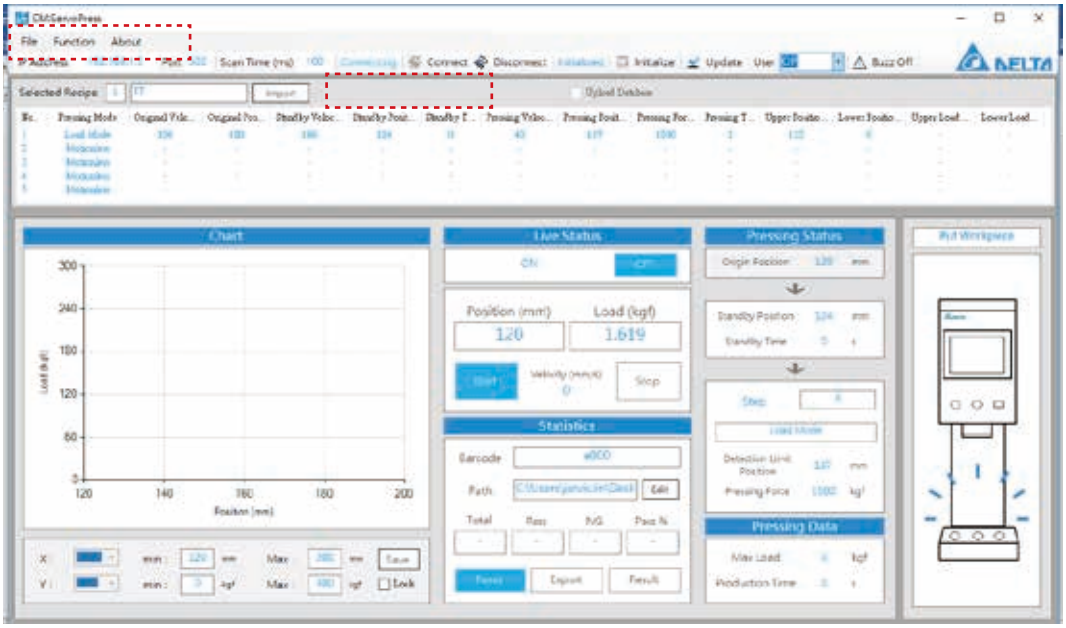
《Fig. 2-5-1》User access setting



《Fig. 2-5-2》Enter password to change user access



《Fig. 2-5-3》User access - Engineer



《Fig. 2-5-4》User access - OP

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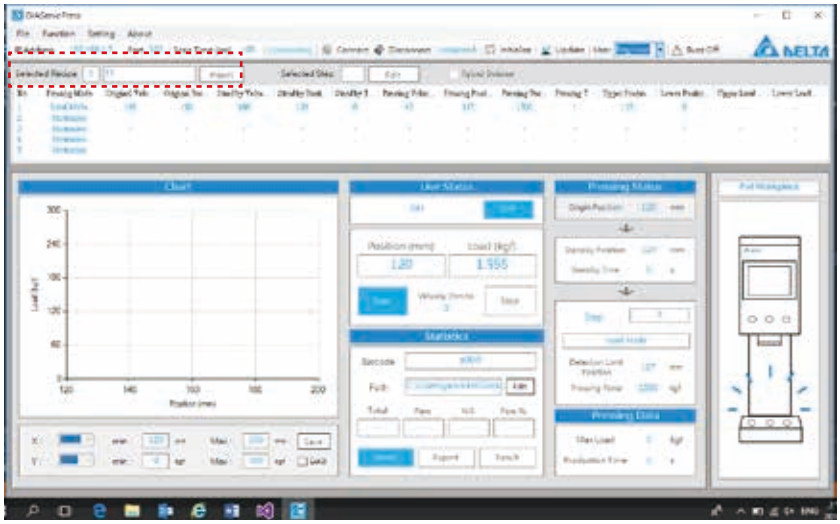
3. Parameter setting for recipe steps

3.1 Import

3.1.1 Default recipe

Once connected to the servo press, DIAServoPress will automatically import the current servo press recipe parameters and display the recipe number and name in the window, as shown in Figure 3-1-1-1.

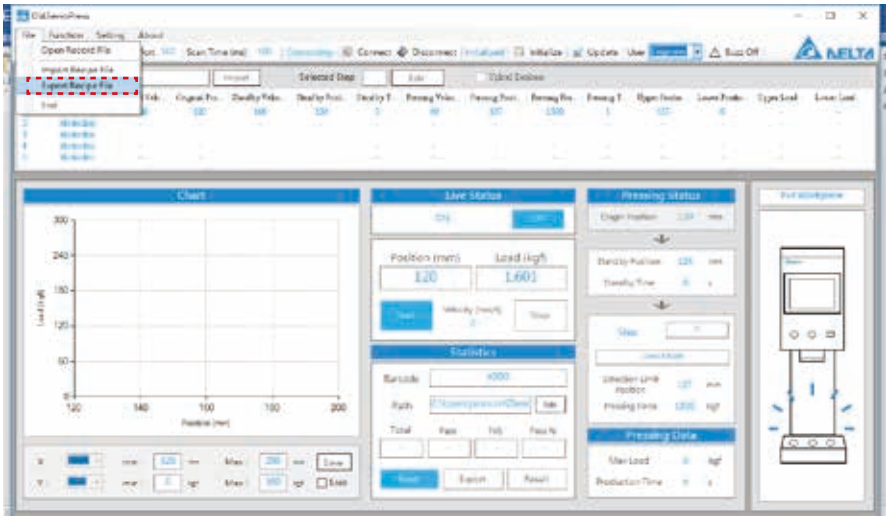


《Fig. 3-1-1-1》Recipe step window

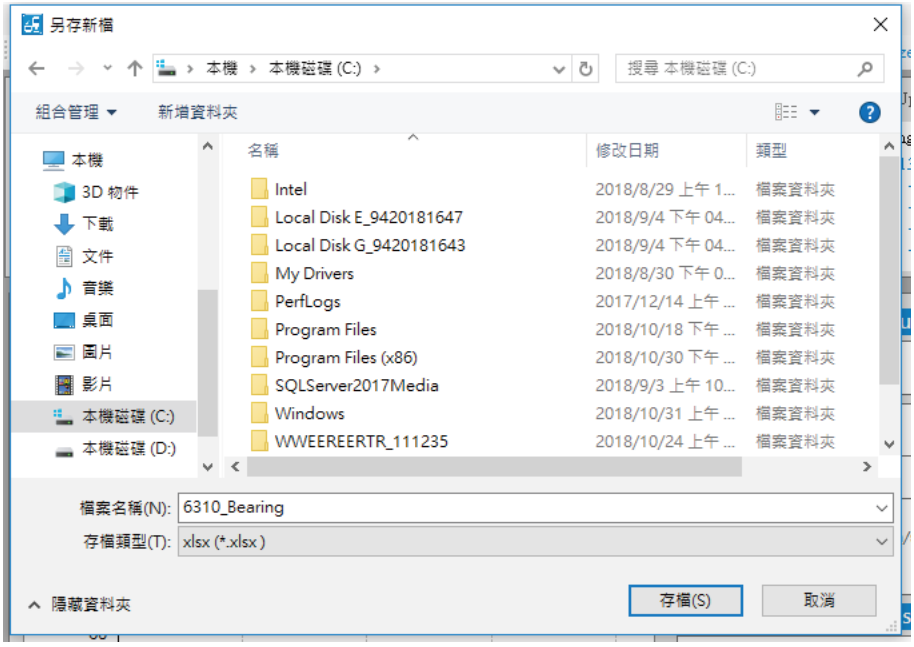
3.1.2 External file recipe

3.1.2.1 Export external recipe files

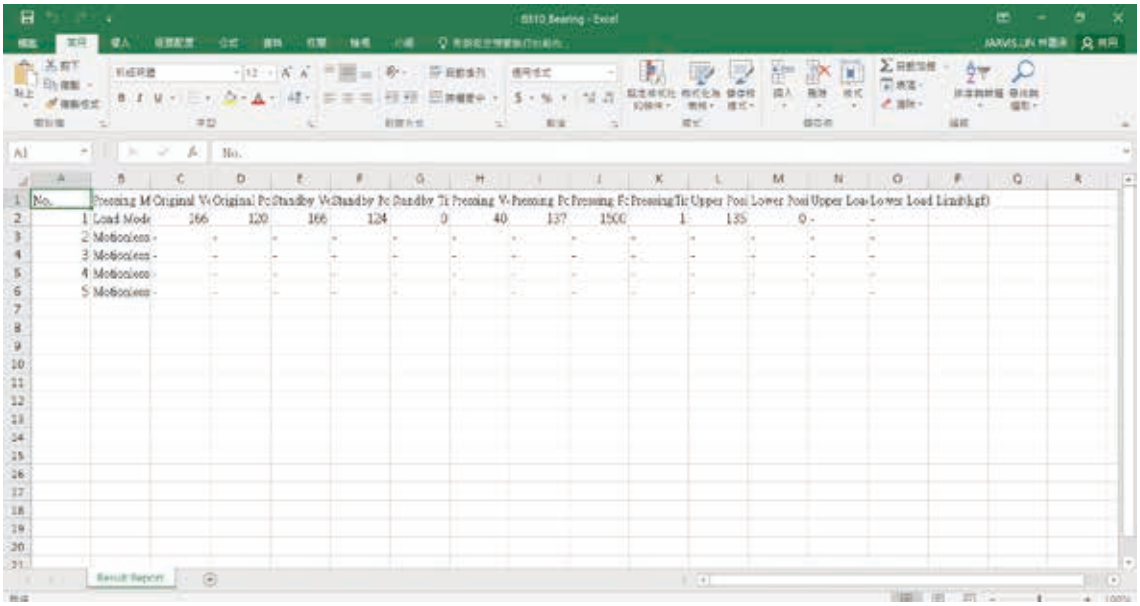
DIAServoPress may export the parameters saved temporarily in the servo press, as external Excel files for external use or for later reimportation to the servo press. Click **[File]** → **[Export Recipe File]**, as in Figure 3-1-2-1-1, and select the location and name of the file, as in Figure 3-1-2-1-2. Saved Excel files will be displayed when save completed, as in Figure 3-1-2-1-3.



《Fig. 3-1-2-1-1》Export external recipe files



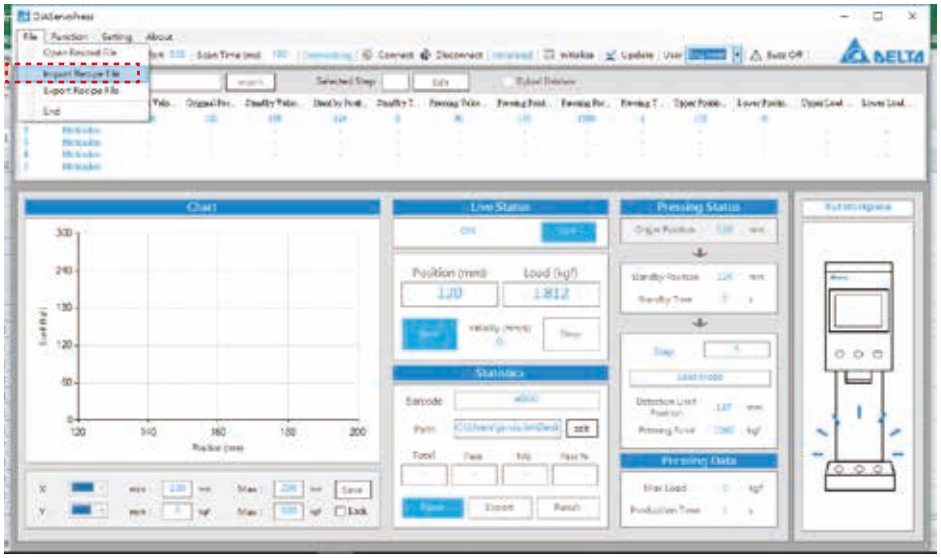
《Fig. 3-1-2-1-2》Export external recipe files - name file



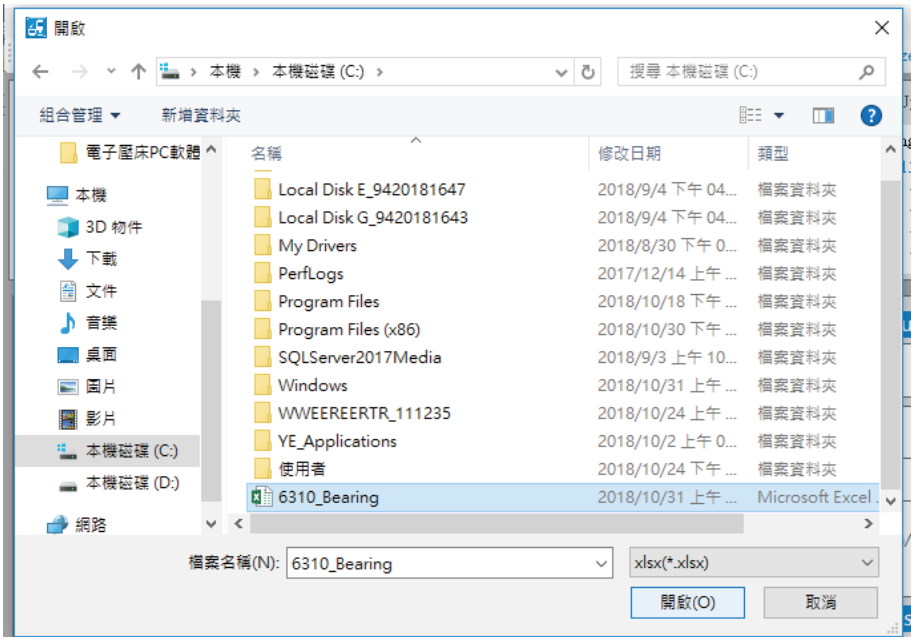
《Fig. 3-1-2-1-3》Export external recipe files - display files

3.1.2.2 Import external recipe files

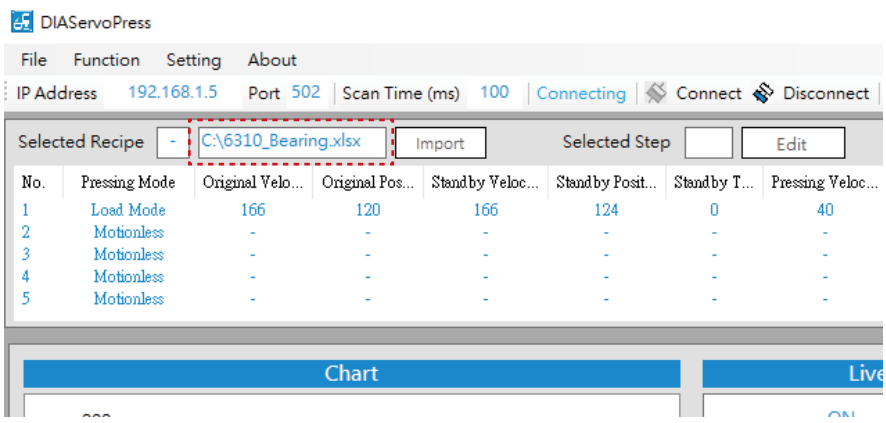
DIAServoPress imports external recipe files exported from the software. Click **[File]** → **[Import Recipe File]**, as shown in Figure 3-1-2-2-1, and select a target file to import, as in Figure 3-1-2-2-2. Once imported, the parameters will be automatically displayed in the window and imported to the servo press. The recipe name field will display the external file location, as shown in Figure 3-1-2-2-3.



《Fig. 3-1-2-2-1》Import external recipe files



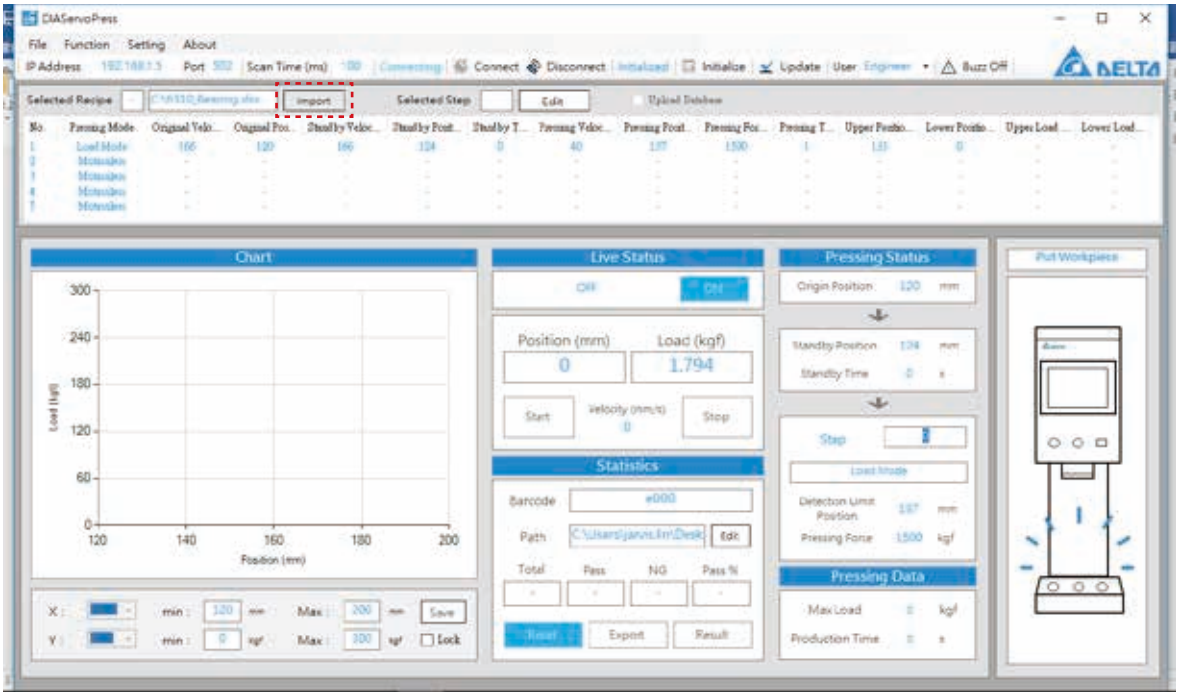
《Fig. 3-1-2-2-2》Select external recipe file



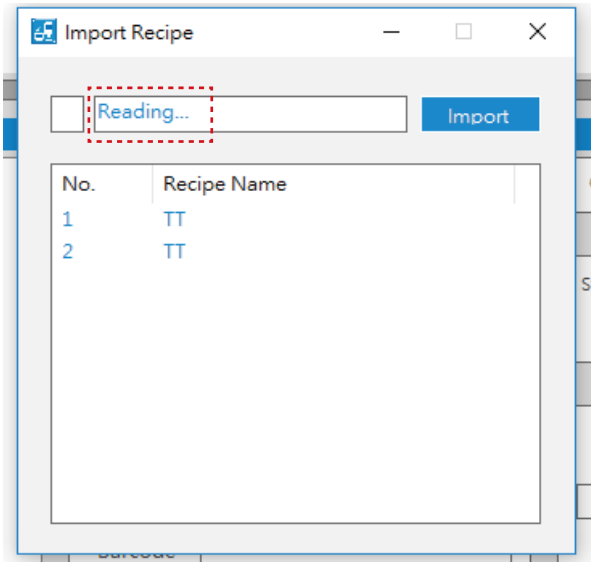
《Fig. 3-1-2-2-3》External recipe file location

3.1.3 Import HMI recipe

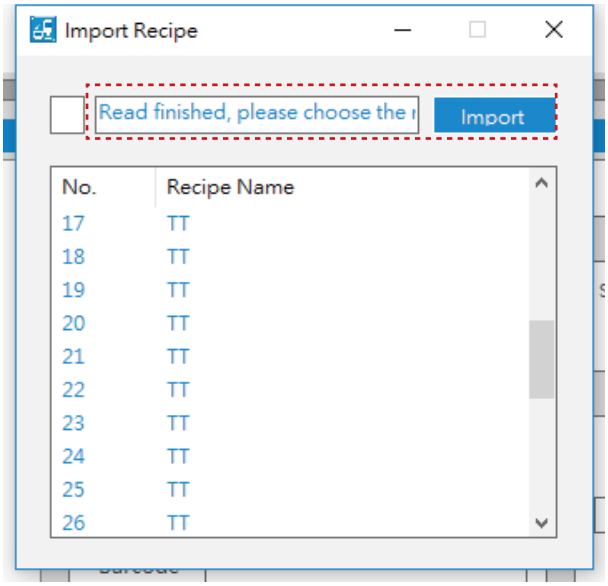
DIAServoPress imports recipe data stored in the HMI. Click **[Import]**, as in Figure 3-1-3-1, and open the **[Import]** window, as in Figure 3-1-3-2. When opened, the window will display **[Reading]**, indicating that HMI recipe data is being read. When reading is finished, the window will display **[Read finished, please choose the recipe]**, as shown in Figure 3-1-3-3. From the below list, select the name of the recipe to be imported and click **[Import]**, to import the selected recipe settings into DIAServoPress.



《Fig. 3-1-3-1》Import recipe data



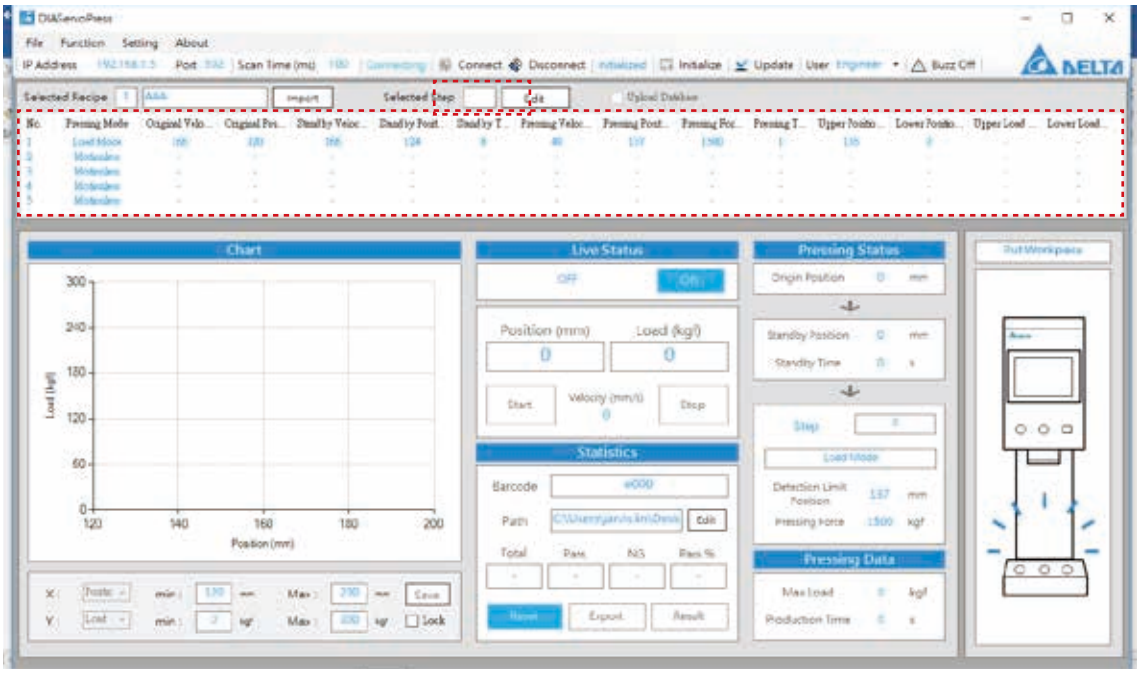
《Fig. 3-1-3-2》Recipe import window



《Fig. 3-1-3-3》Reading complete

3.2 Edit recipe

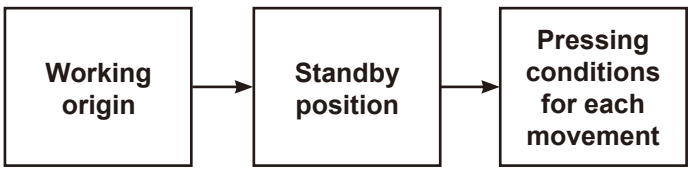
When DIAServoPress is connected to the servo press, the window will display the parameters set for the current recipe steps, as in Figure 3-2-1. If **[Engineer]** is selected as user access, then recipe step parameters may be modified when the machine is not **[On]**. First select the step to be modified in the window, and click **[Edit]** to enter the step modification window.

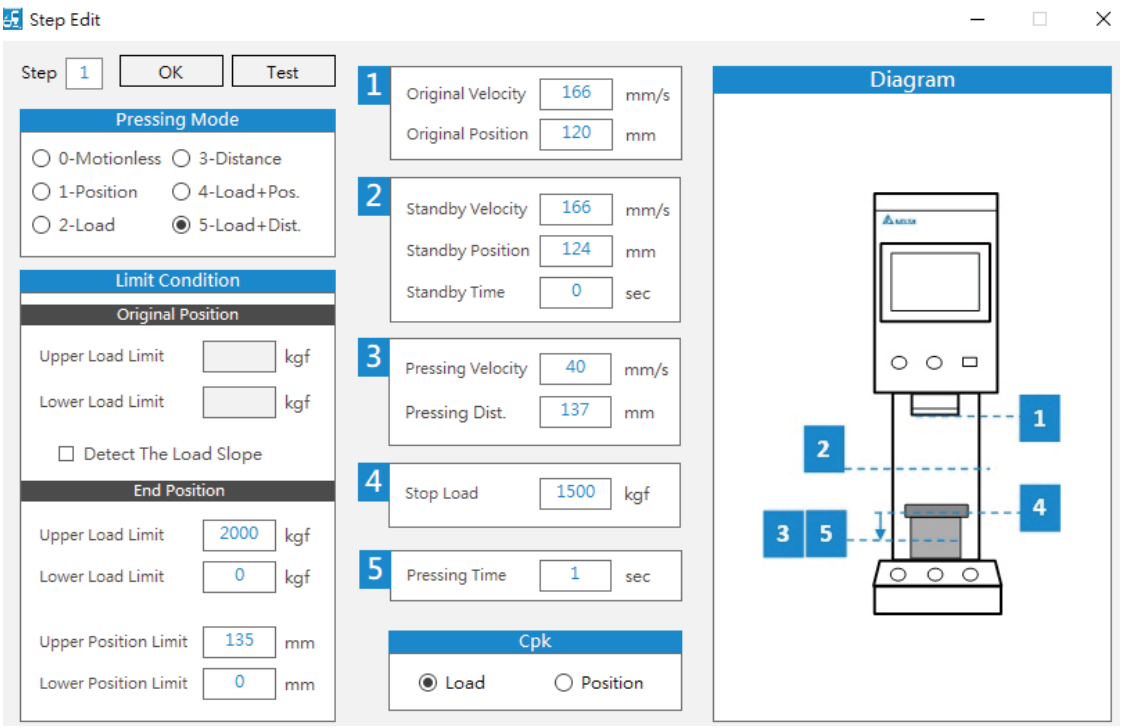


《Fig. 3-2-1》Recipe step window

The recipe step window uses a graphical interface to perform parameter modifications, as in Figure 3-2-2. Click on a movement mode in **[Pressing Mode]**. The diagram on right will display corresponding graphical parameter setting positions, while those that do not correspond to the mode will be hidden in the window.

The **working origin condition** (original velocity and origin position) and **standby condition** (standby velocity, standby position, and standby time) settings are only required for the first step. Steps 2-5 will follow the previous step to continue pressing.

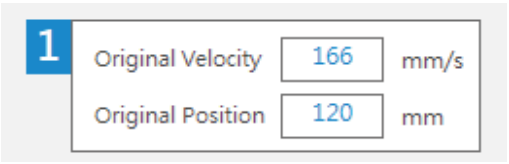




《Fig. 3-2-2》Recipe step window

3.2.1 Working origin condition setting

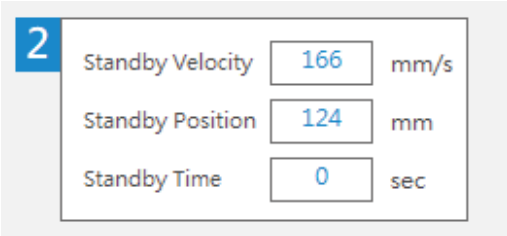
The working origin is the home position of each time pressing begins and returns, as shown in Figure 3-2-1-1. Once the servo press is [On], the main axis will move from the **[Mechanical Origin]** to the **[Working Origin]**, and return to the position from the end position when single pressings are done. The **[Original Velocity]** is the velocity for moving from the **[Mechanical Origin]** to the **[Working Origin]** and for returning to the **[Working Origin]**.



《Fig. 3-2-1-1》Working origin condition setting

3.2.2 Standby condition setting

The standby conditions are those when the main axis have moved downwards but have not yet pressed the work item, as shown in Figure 3-2-2-1. The **[Standby Position]** is the end position for the main axis's rapid downward movement from the working origin with a non-pressing empty load. After reaching the standby position, the main axis will follow mode settings to continue pressing. The **[Standby Velocity**] is the main axis' s velocity for movement from the working origin position to the **[Standby Position]**, and the **[Standby Time**] is the waiting time for the main axis at the standby position. When the **[Standby Time]** is up, the main axis will continue downward pressing.



《Fig. 3-2-2-1》Standby position condition setting

3.2.3 Mode condition settings during pressing

The main axis waits at the standby position and performs pressing movements after the standby time. The servo press has five modes plus no movement. Users may arrange modes according to process requirements with up to five steps for a single pressing movement.

Position mode: Press and stop when the designated position is reached.

Load Mode: Press and stop when the designated load is reached.

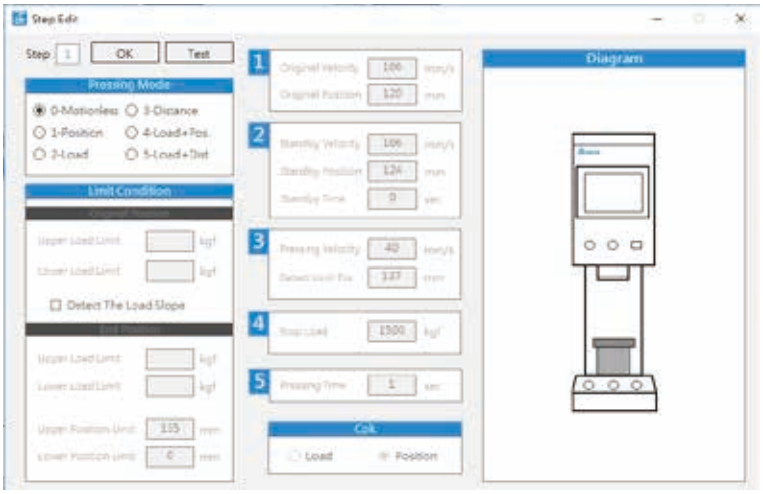
Distance mode: Press down a designated distance after contacting the work item.

Load & Position mode: Press until the designated load is reached and then until designated position is reached.

Load & Distance mode: Press until the designated load is reached and then until designated distance is reached.

3.2.3.1 Motionless

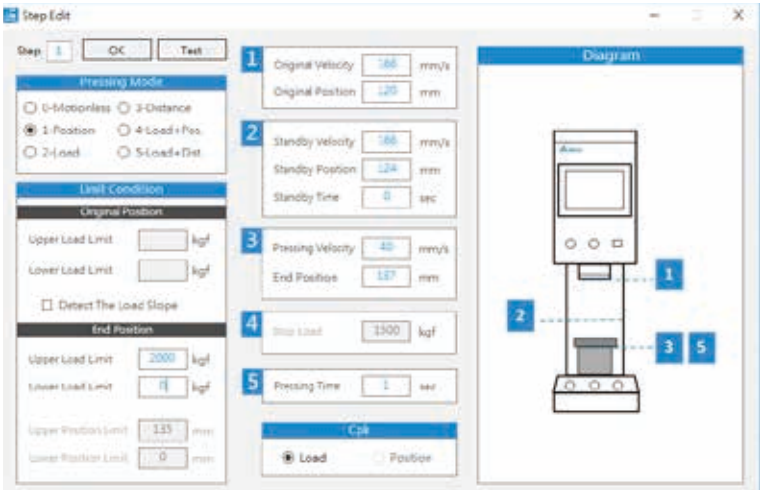
No pressing parameter setting required. This step will be passed over automatically during the process.



《Fig. 3-2-3-1-1》Motionless setting window

3.2.3.2 Position mode

The position mode has a clearly defined pressing End Position and will perform the downward press at the user-defined constant velocity.

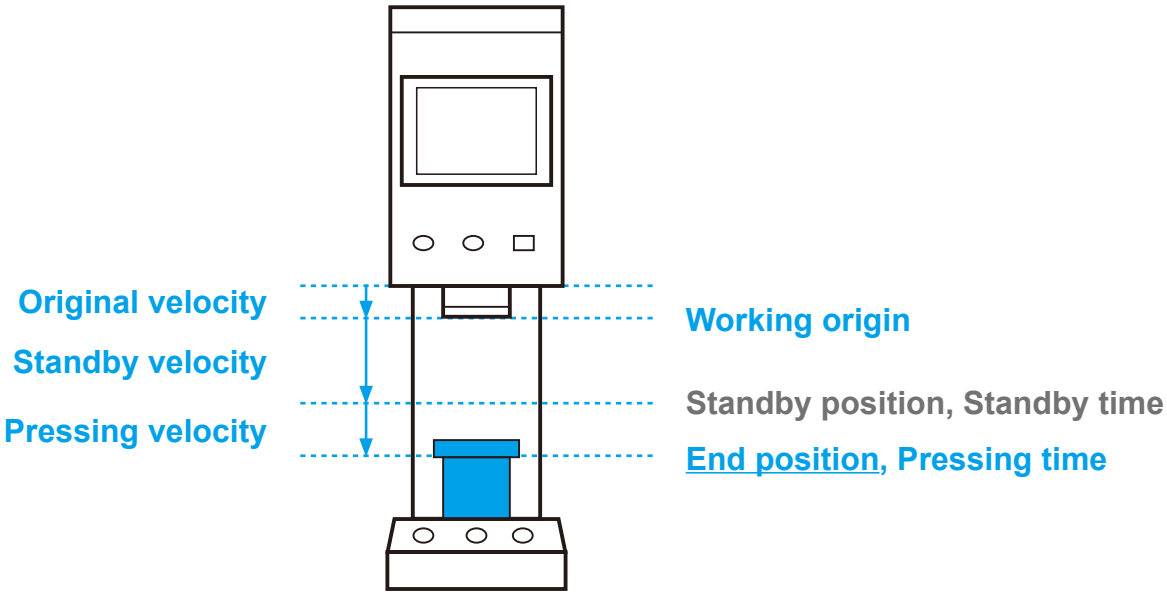


《Fig. 3-2-3-2-1》Position mode setting window

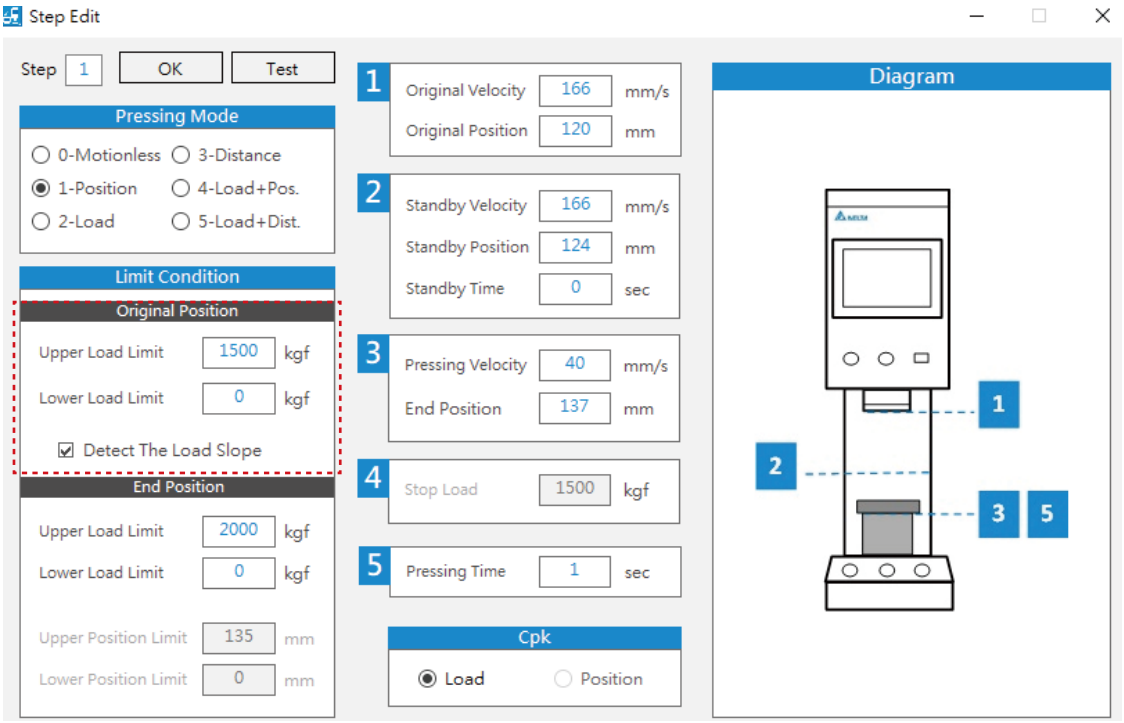
Pressing conditions: In position mode, the main axis will press down at **[Pressing Velocity]** to the **[End Position]**, wait for a **[Pressing Time]**, and return to the working origin.

Supplementary limiting conditions: Start position and end position conditions may be determined. If **[Detect The Load Slope]** is on, as in Figure 3-2-3-2-3, the servo press will automatically calculate the condition slope for the interval between start and end conditions by the two set condition points. Load not within the condition range during pressing will be judged NG.

If **[Detect The Load Slope]** is not on, then when the main axis reaches the **[End Position]**, the servo press will check if the load is between the [Upper Load Limit] and the **[Lower Load Limit]**. If yes, it will be judged OK, if not then NG.



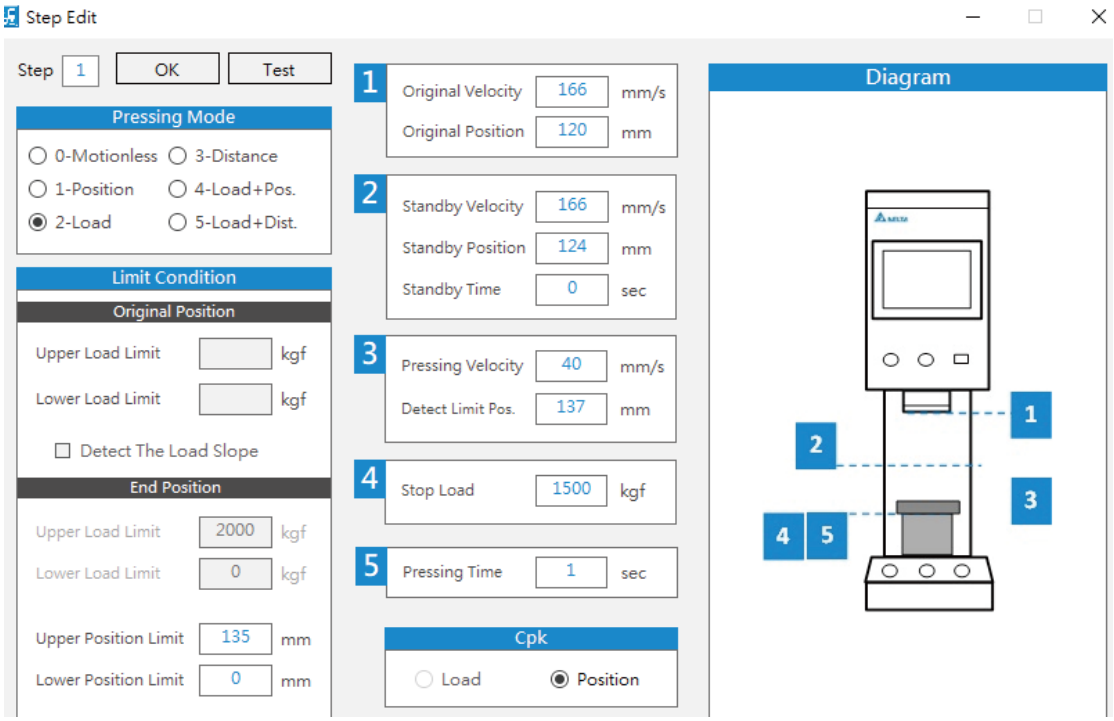
《Fig. 3-2-3-2-2》Position mode diagram



《Fig. 3-2-3-2-3》Supplementary limiting conditions - start position

3.2.3.3 Load Mode

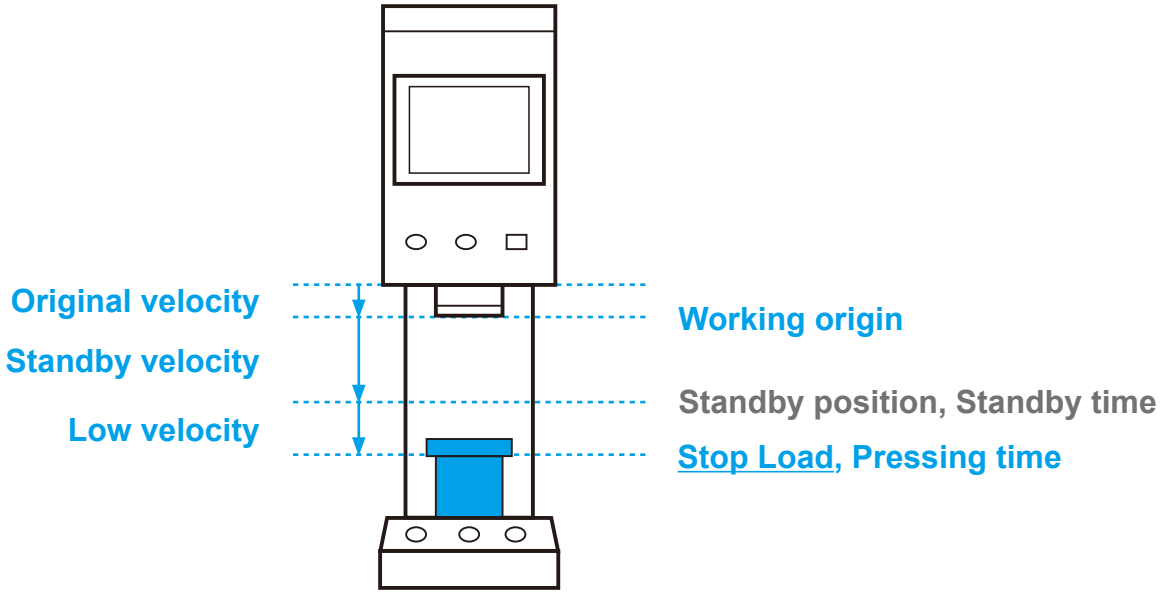
The Load mode clearly defines the Stop Load, and is suitable for where force is strictly regulated.



《Fig. 3-2-3-3-1》Load mode setting window

Pressing conditions: In Load mode, the main axis will refer to the **[Pressing Velocity]** for downward velocity adjustment until the **[Stop Load]** is detected. Then it will wait for the **[Pressing Time]** and return to the working origin position. If the **[Stop Load]** is not reached during the process, the main axis will return to the working origin from the **[Detect Limit Pos.]**.

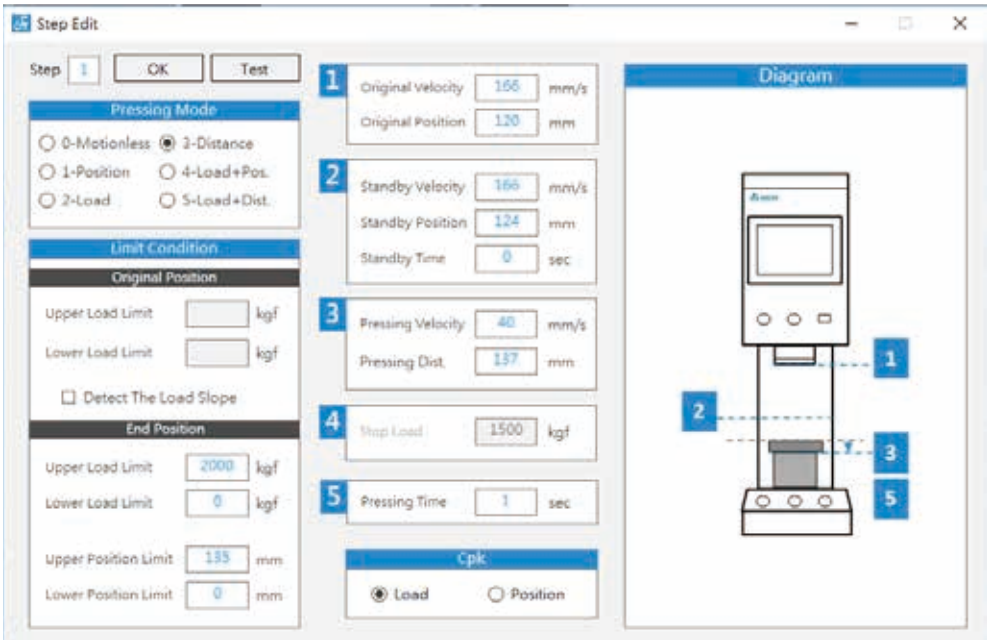
Supplementary limiting conditions: When the main axis reaches **[Stop Load]**, the servo press will check if the position is between the [Upper Position Limit] and the **[Lower Position Limit]**. If yes, it will be judged OK, if not then NG.



《Fig.3-2-3-3-2》Load Mode diagram

3.2.3.4 Distance mode

The distance mode clearly defines the Pressing Distance after contacting the work item, pressing consistently at user-defined velocity.

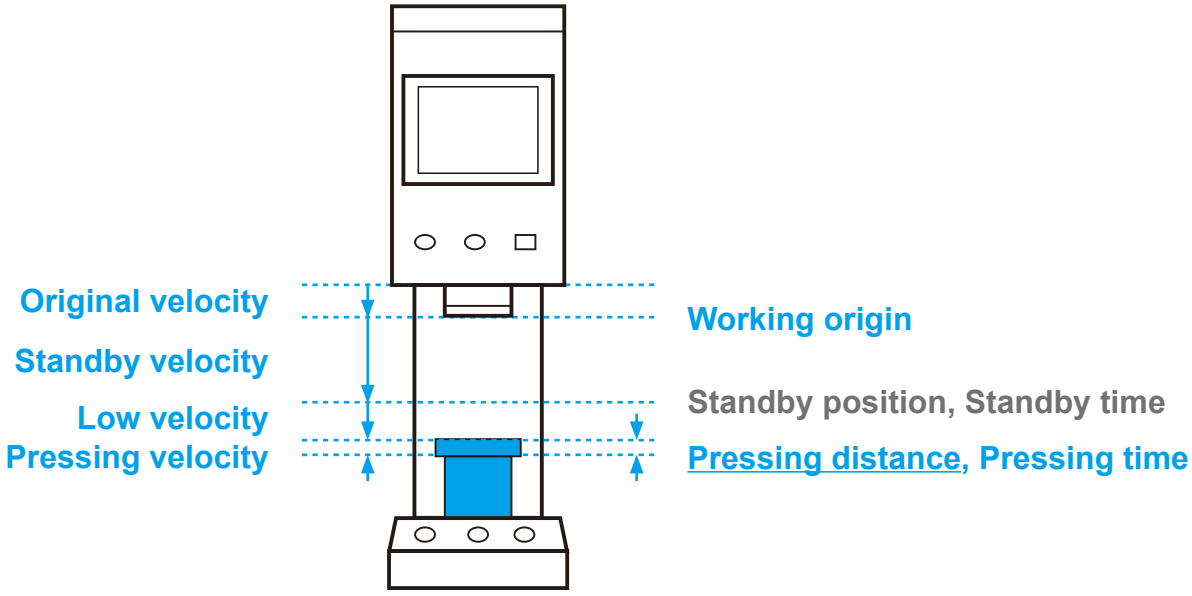


《Fig. 3-2-3-4-1》Distance mode setting window

Pressing conditions: In distance mode, the main axis will move down to detect the work item. Once it contacts the work item, it will continue at **[Pressing Velocity]** for the **[Pressing Distance]**, and wait for the **[Pressing Time]** at consistent force before returning to the working origin. If the work item is not detected throughout the process, the main axis will return to the working origin after reaching the **[Upper Position Limit]**.

Supplementary limiting conditions: Start position and end position conditions may be determined. If **[Detect The Load Slope]** is on, the servo press will automatically calculate the condition slope for the interval between start and end conditions by the two set condition points. Load not within the condition range during pressing will be judged NG.

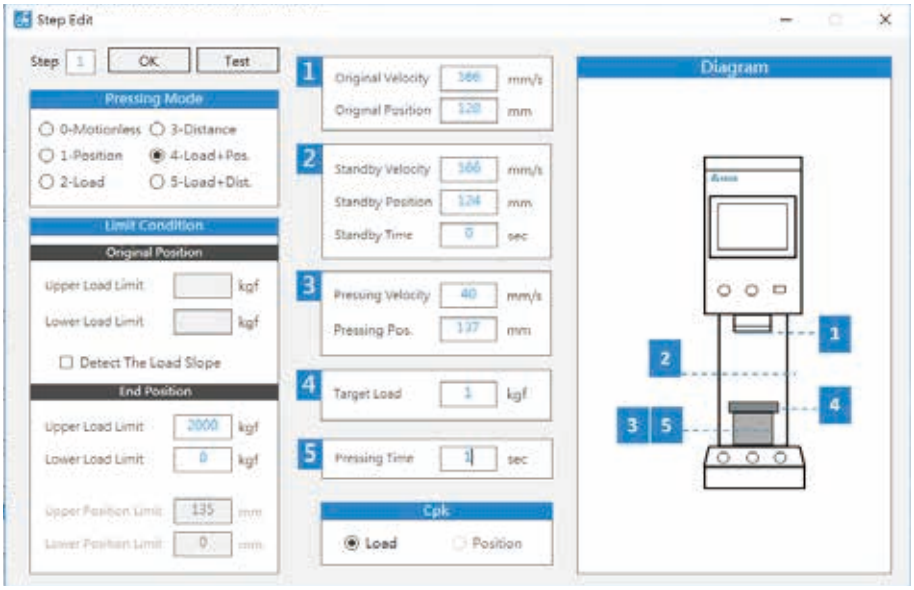
If **[Detect The Load Slope]** is not on, then when the main axis has moved the **[Pressing Distance]**, the servo press will check if the load is between the **[Upper Load Limit]** and the **[Lower Load Limit]**, and if the position is between the **[Upper Position Limit]** and **[Lower Position Limit]**. If yes, it will be judged OK, if not then NG. Since the distance mode supplementary limiting conditions include upper and lower limits for both load and position, please select **[Load]** or **[Position]** as the basis for Cpk calculation according to the production process.



《Fig. 3-2-3-4-2》Distance mode diagram

3.2.3.5 Load & Position mode

The load & position mode defines the load and final pressing position, and is suitable for where load and pressing position are strictly regulated.

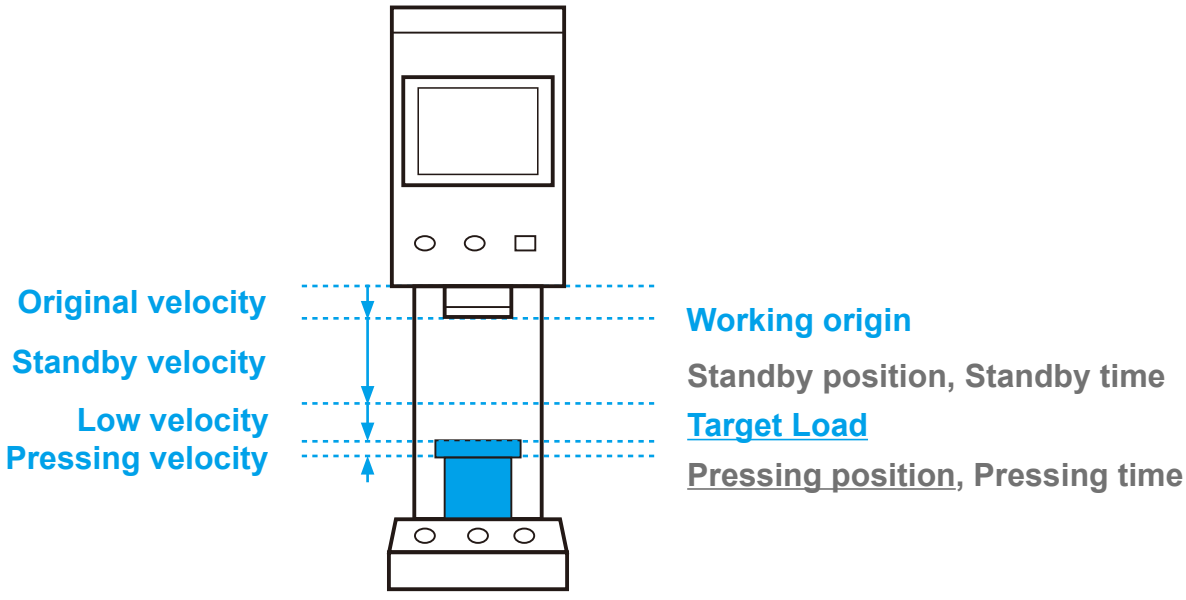


《Fig. 3-2-3-5-1》Load & position mode setting window

Pressing conditions: In load position mode, the main axis will move down to detect the **[Target Load]**, start moving continuously downward at **[Pressing Velocity]** to the **[Pressing Position]**, and wait for the **[Pressing Time]** at consistent force before returning to the working origin.

Supplementary limiting conditions: Start position and end position conditions may be determined. If **[Detect The Load Slope]** is on, the servo press will automatically calculate the condition slope for the interval between start and end conditions by the two set condition points. Load not within the condition range during pressing will be judged NG.

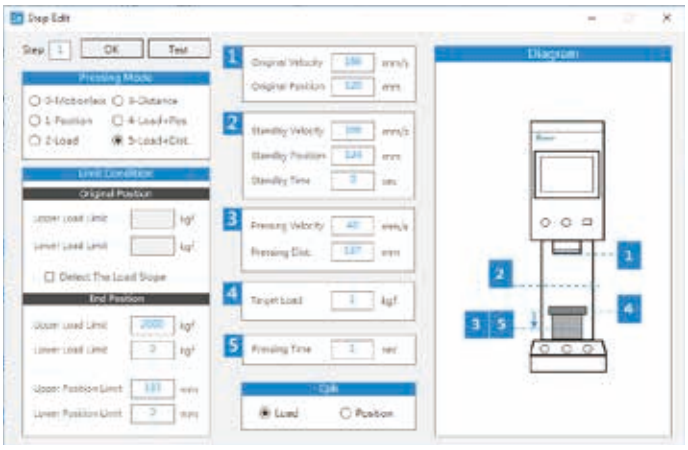
If [Detect The Load Slope] is not on, then when the main axis reaches the [Pressing Position], the servo press will check if the load is between the [Upper Load Limit] and the [Lower Load Limit]. If yes, it will be judged OK, if not then NG.



《Fig. 3-2-3-5-2》Load & Position mode diagram

3.2.3.6 Load & Distance mode

The load & position mode defines the oad and pressing distance, and is suitable for where load and pressing distance are strictly regulated.

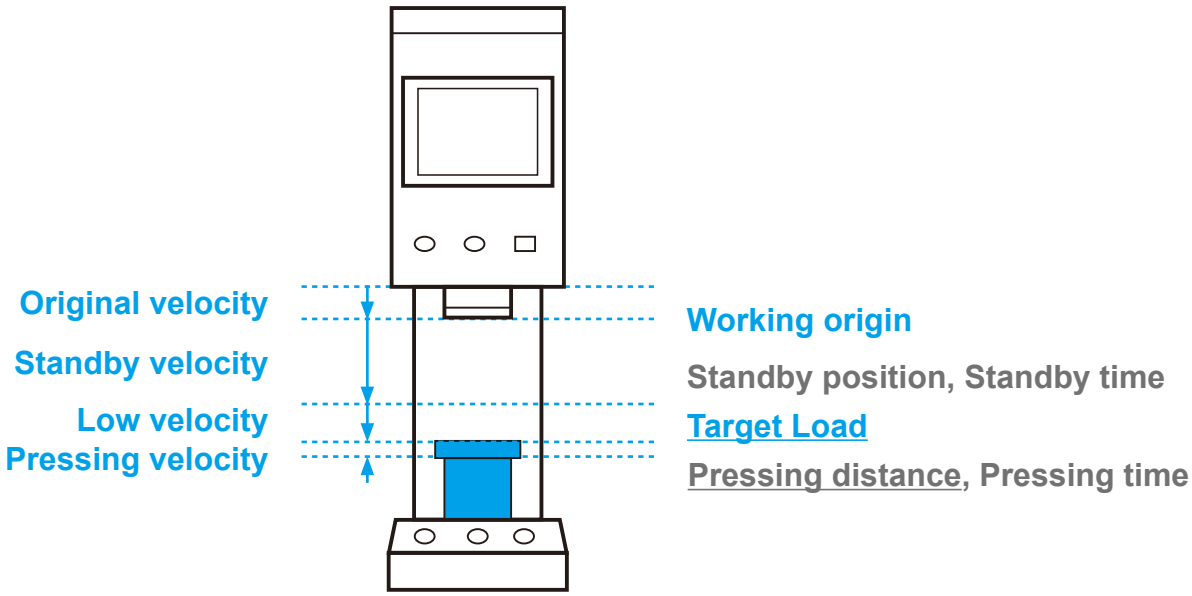


《Fig. 3-2-3-6-1》Load & distance mode setting window

Pressing conditions: In load & distance mode, the main axis will move down to detect the **[Target Load]**, start moving continuously downward at **[Pressing Velocity]** for the **[Pressing Distance]**, and wait for the **[Pressing Time]** at consistent force before returning to the working origin.

Supplementary limiting conditions: Start position and end position conditions may be determined. If **[Detect The Load Slope**] is on, the servo press will automatically calculate the condition slope for the interval between start and end conditions by the two set condition points. Load not within the condition range during pressing will be judged NG.

If **[Detect The Load Slope]** is not on, then when the main axis has moved to the **[Pressing Position**], the servo press will check if the load is between the **[Upper Load Limit]** and the **[Lower Load Limit]**, and if the position is between the **[Upper Position Limit]** and **[Lower Position Limit**]. If yes, it will be judged OK, if not then NG. Since the distance mode supplementary limiting conditions include upper and lower limits for both load and position, please select load or position as the basis for Cpk calculation according to the production process.



《Fig. 3-2-3-6-2》Load & distance mode diagram

4. Live monitoring and results

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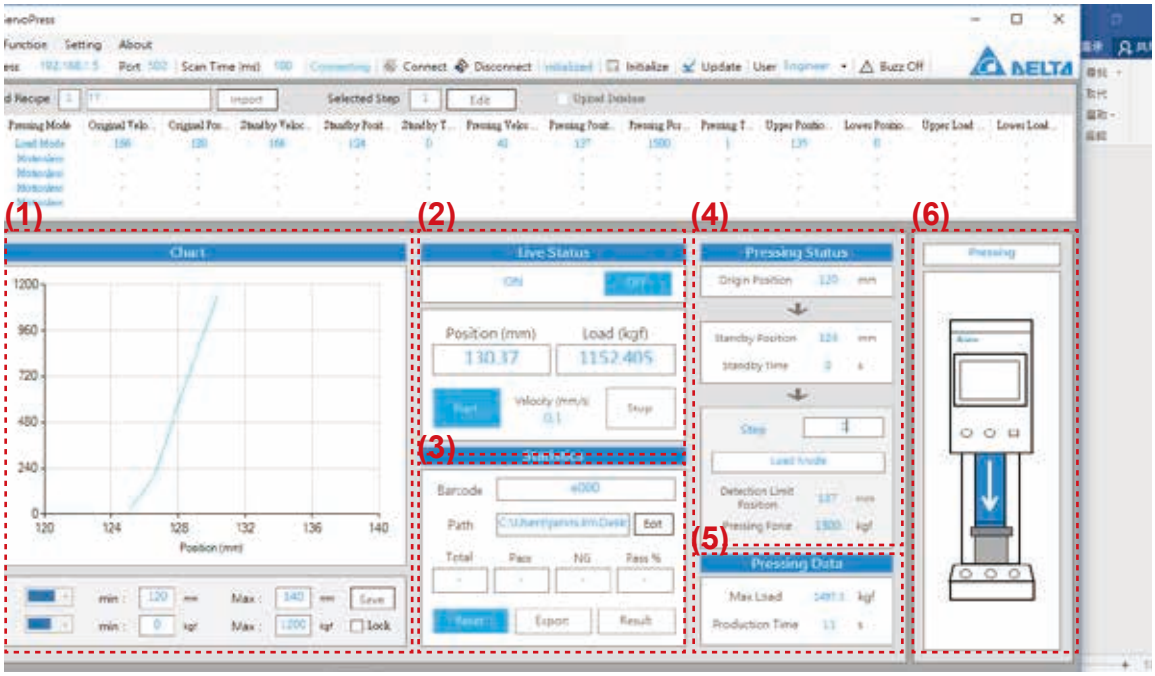
4. Live monitoring and results

The DIAServoPress offers live monitoring and batch statistics results. Information such as position, load, production quantity, and graphs may be displayed live on the software screen, while each single press information and batch statistical data may be calculated after the batch process ends. The results may be displayed on the software screen simultaneously or exported as an Excel spreadsheet. Graphs may also be displayed on-screen or saved as a separate file. Saved files are all re-accessible with the software for future tracking.



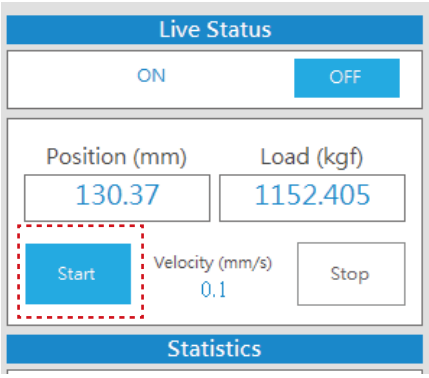
《Fig. 4-1》Live monitoring window

1. **Live chart:** Displays the current pressing data live during the pressing process. Corresponding parameters for the X-axis and Y-axis may be determined individually by the user. See Section 4.1: Live messages for details.
2. **Main control interface:** The user's main control screen during operation for starting, status recording, and live display of the current position, load, and velocity information. See Section 4.1: Live messages for details.
3. **Statistics display and setting:** Displays current statistics, including total production and pass rate. Information such as work order and statistics path may be determined. See Section 4.2: Statistical data for details.
4. **Live pressing status:** Divided into three areas, the working origin position, standby position, and pressing position. Displays the current running area and step in real time. See Section 4.1: Live messages for details.
5. **Live pressing data:** Displays pressing data, including maximum load and single production time.
6. **Servo press status:** Live display of the current servo press status. See Section 4.1: Live messages for details.

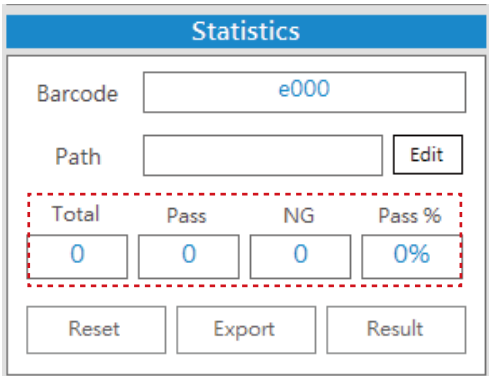
4.1 Live messages

4.1.1 Main control interface

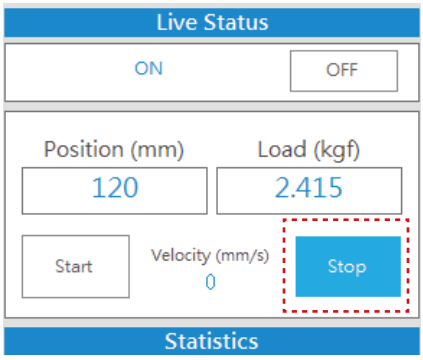
In auto control, click **[Start]**, as in Figure 4-1-1-1, and the software will display live **[Total]**, **[Pass]**, **[NG]**, and **[Pass %]**, as in Figure 4-1-1-2. To view statistical data during the process, click **[Stop]**, as in Figure 4-1-1-3, and the button for statistical data export will become available. Click to view the data. As in Fig. 4-1-1-4.



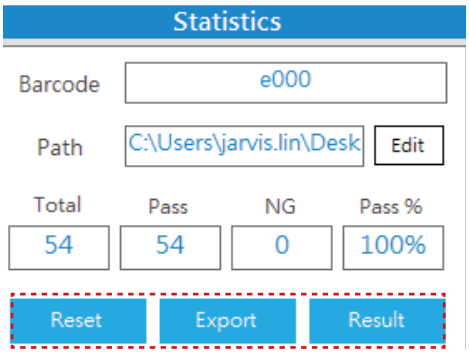
《Fig. 4-1-1-1》Start



《Fig. 4-1-1-2》Start



《Fig. 4-1-1-3》Stop

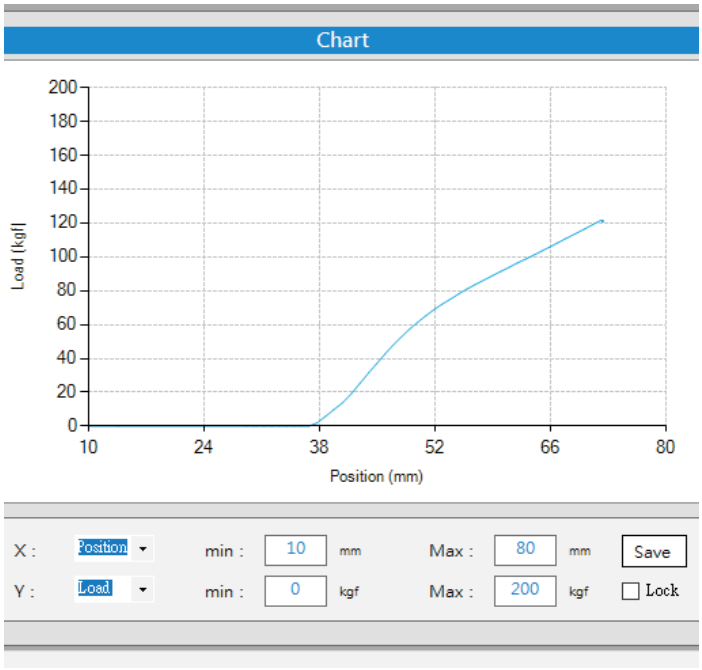


《Fig. 4-1-1-4》Statistical data display

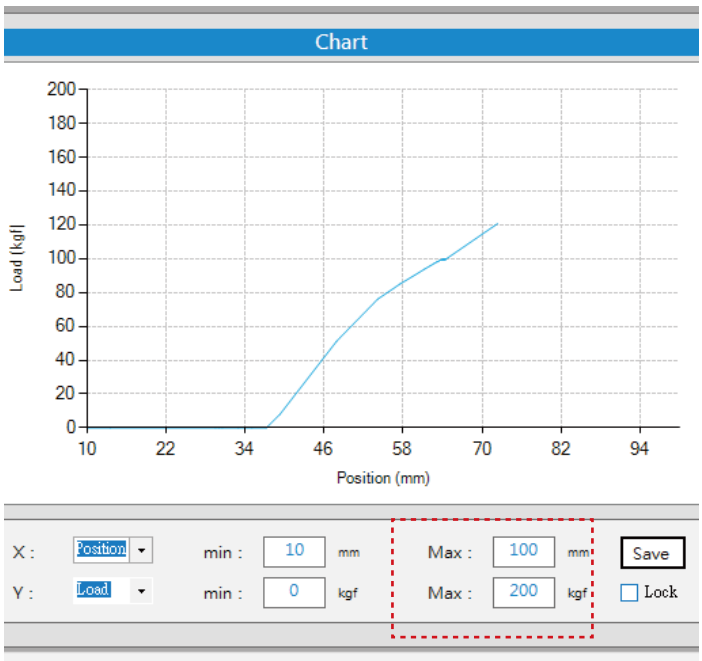
4.1.2 Live chart

The live chart plots information such as load during the pressing process, as in Figure 4-1-2-1. As the graph is plotted, the two axes' maximum values will adjust automatically. Alternatively, axis parameter change can be done by the user under **[Stop]** status through changing the values and clicking **[Change]**, as shown in Figure 4-1-2-2.

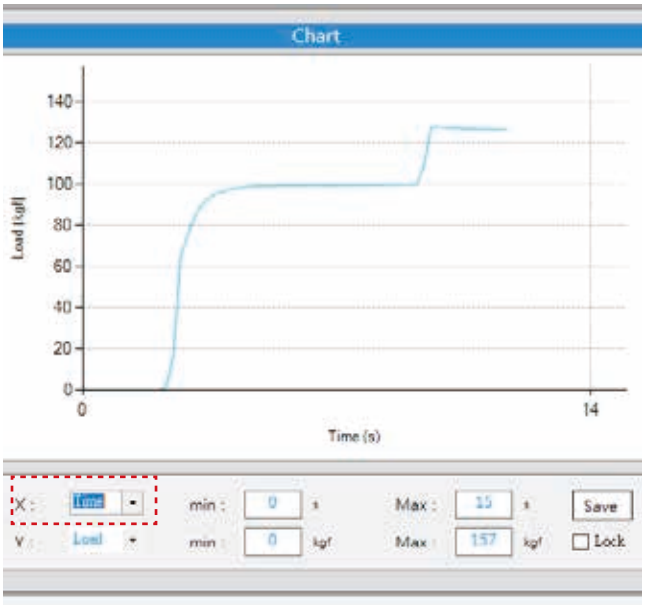
X-axis and Y-axis record items may also be determined by the user. The X-axis may be set for position or time. The Y-axis may be set for load, velocity, or position, as per Figure 4-1-2-3.



《Fig. 4-1-2-1》Graph - Position vs load



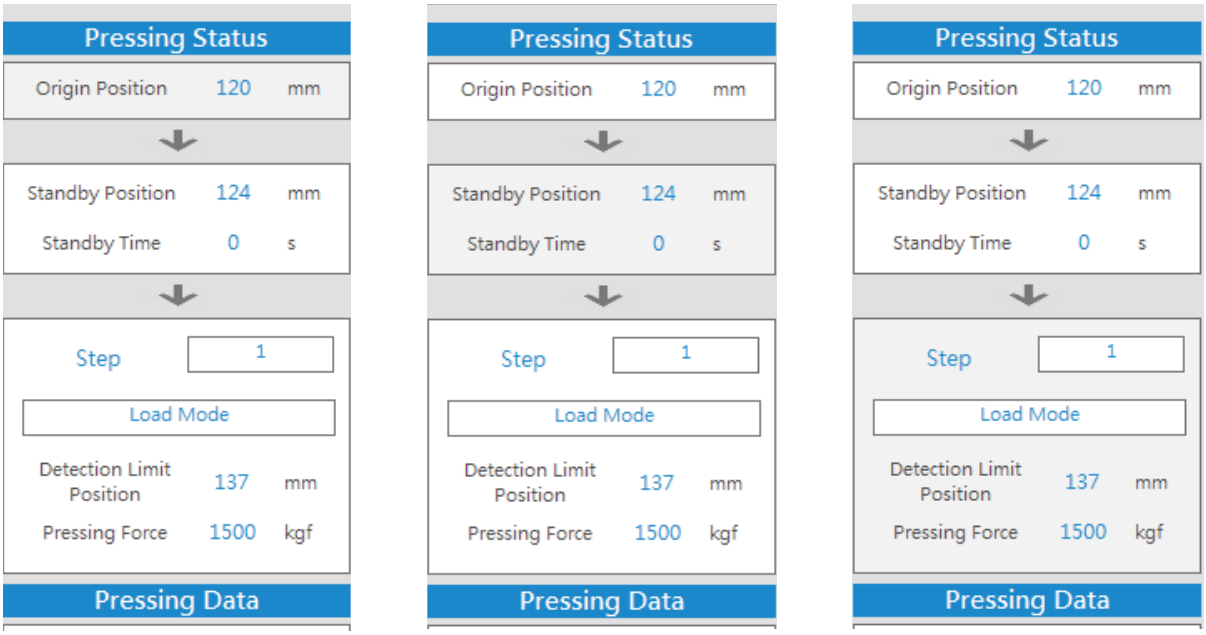
《Fig. 4-1-2-2》Graph - Maximum value editing



《Fig. 4-1-2-3》Graph - Position vs velocity

4.1.3 Live pressing status

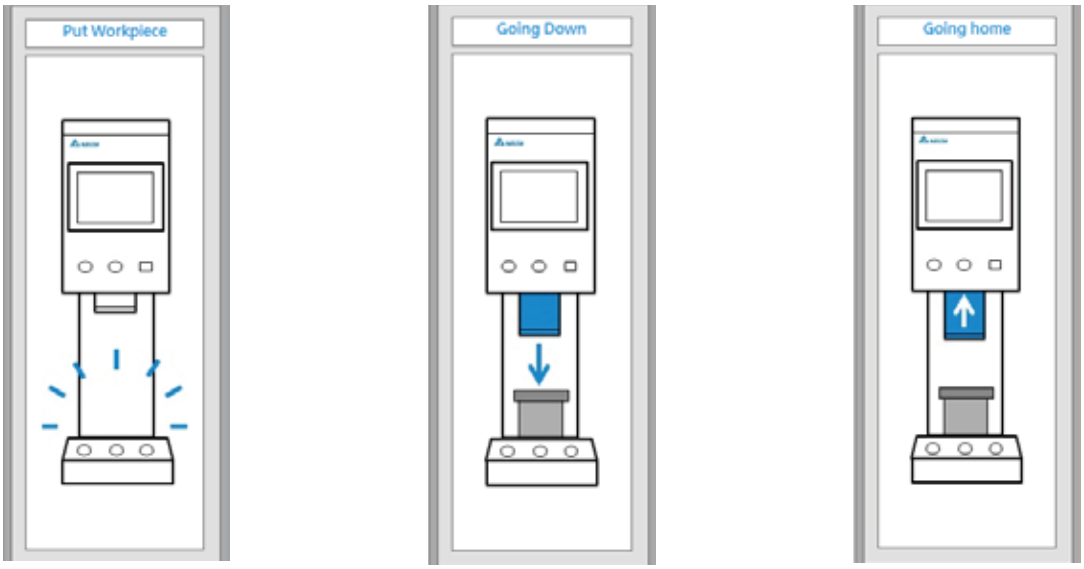
This display is divided into three areas, the working origin position, standby position, and pressing position. It displays the current running area and step in real time. When the main axis moves to the target area, that area will have a darker background color, and the corresponding position will be displayed, as in Figure 4-1-3-1. The pressing position area will display the current step as well as this step's movement mode and corresponding parameters, so that the user may have knowledge of the current pressing conditions.



《Fig. 4-1-3-1》Live pressing status

4.1.4 Servo press status

This window displays the live servo press status, including status displays such as Going down, Pressing, and Press finished and Going home.



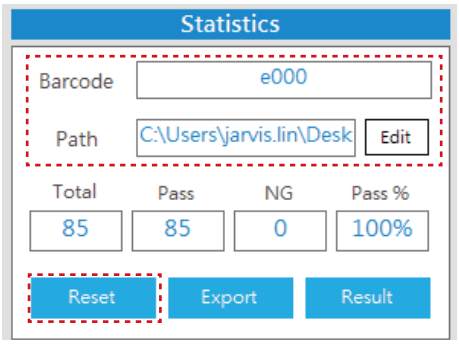
《Fig. 4-1-4-1》Servo press status

4.2 Exporting statistical data

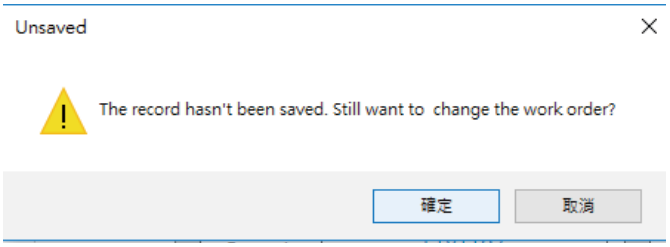
4.2.1 Setting barcodes and paths

Barcodes are the exported spreadsheets' file names and titles for future process records and tracking. Before clicking **[Start]** and undergoing the pressing process, make sure that the **[Barcode]** and **[Path]** are correctly entered. If the user does not enter a barcode, the DIAServoPress will use the current date and time as the default barcode, the program installation path as the default saving path, and the default barcode plus a serial number as the spreadsheet file name.

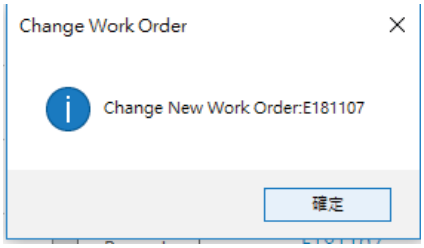
If the barcode is to be changed after a batch is finished, change the barcode text directly and click **[Reset]**, as in Figure 4-2-1-1. If the original barcode already contains pressing records but the batch statistical data has not yet been saved, DIAServoPress will display a notice to confirm whether the barcode is to be reset unsaved, as shown in Figure 4-2-1-2. Once reset, a success message will be shown, as in Figure 4-2-1-3.



《Fig. 4-2-1-1》Barcode



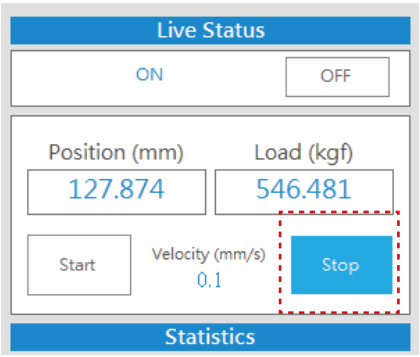
《Fig. 4-2-1-2》Reset notice window



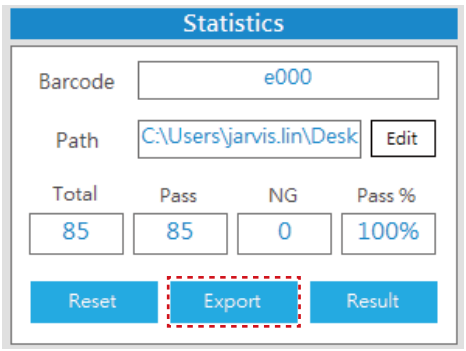
《Fig. 4-2-1-3》Reset

4.2.2 Results

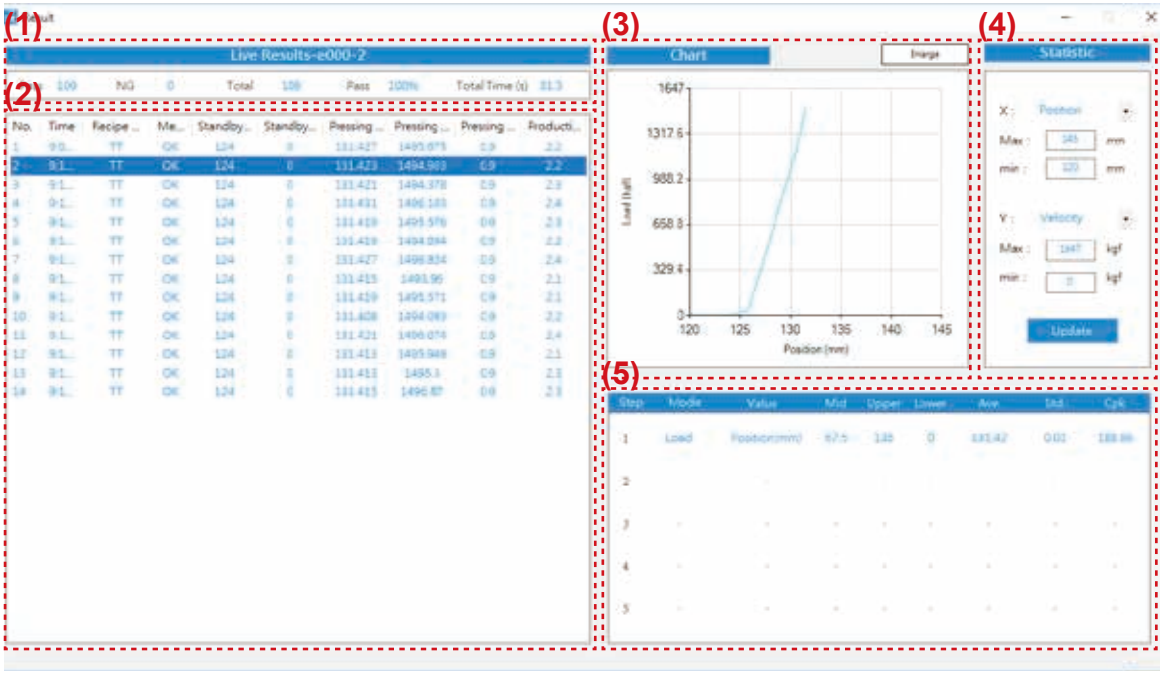
After batch pressing, click on **[Stop]**, as shown in Figure 4-2-2-1. The DIAServoPress will undergo batch recording and statistical analysis. Clicking on **[Result]**, as in Figure 4-2-2-2, will open the **[Result]** window as shown in Figure 4-2-2-3. The contents of each area in the window are described below:



《Fig. 4-2-2-1》Stop



《Fig. 4-2-2-2》Results



《Fig. 4-2-2-3》Results

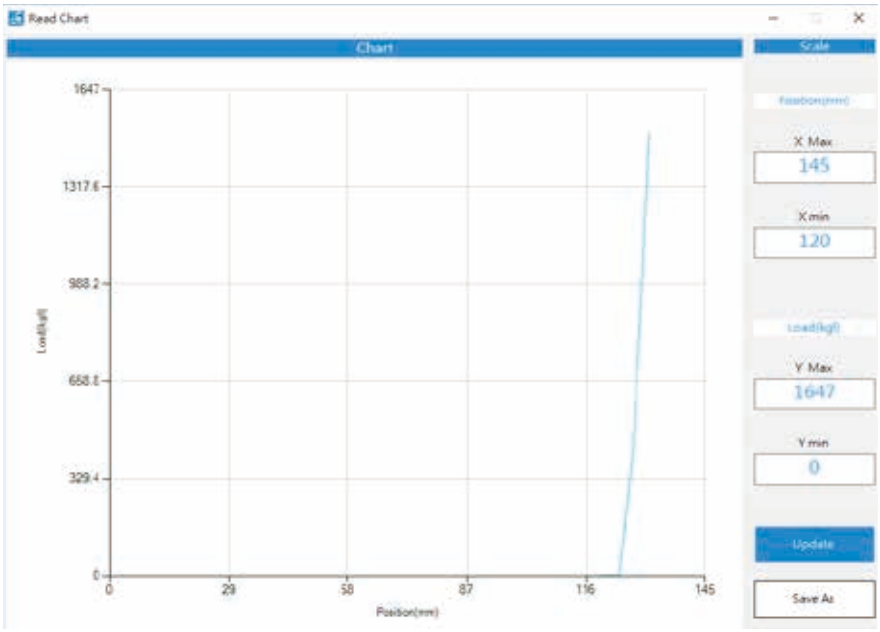
1. **Overview**
   This area will display production information such as the barcode, pass count, NG count, pass rate, total count, and total time.

2. **Single pressing result list**
   This list records each single press result in the batch, including information on measurements, standby position, standby time, pressing position, pressing force, pressing time, maximum load, and production time.

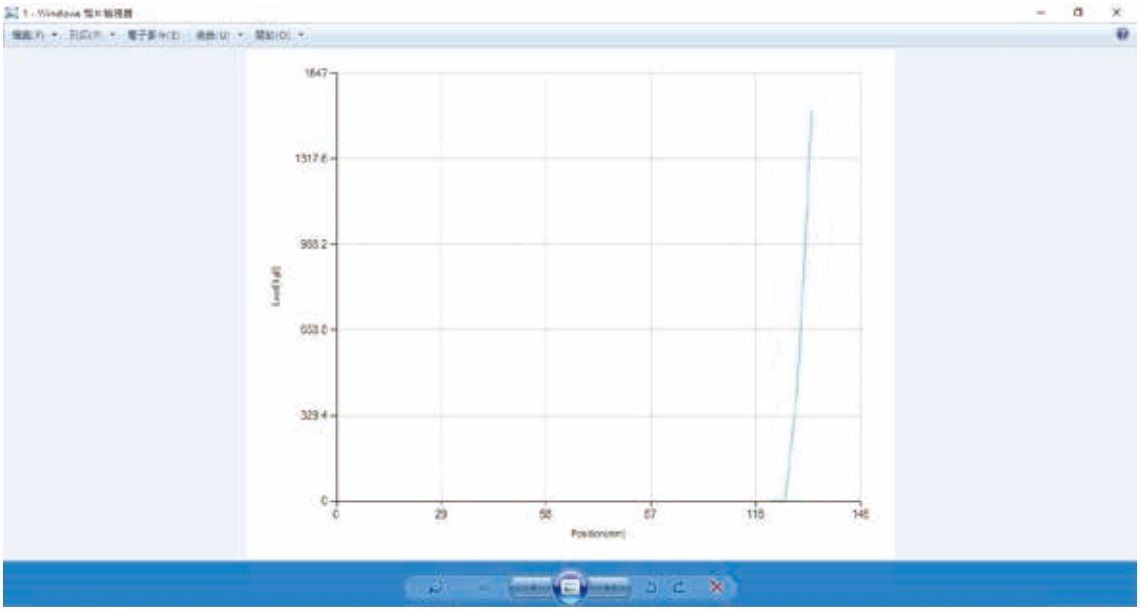
3. **Single pressing graph**
   This graph plots the values recorded during pressing. The X and Y axes may be designated by the user's choice, and the window displays graphical data according to the single pressing items selected in (2). Alternatively, click on **[Enlarge]** to open a new window and re-display the corresponding graph, as in Figure 4-2-2-4. Click on **[Save As**] to access the jpg format file export function, as in Figure 4-2-2-5.

4. **Graph axis editing**
   Graph X and Y axes may be selected by the user, with the maximum and minimum values adjusted for the best viewing conditions. Select determined items and confirm the X and Y axis values, then click **[Update]** to update the graph.

5. **Quality control statistics**
   Quality control statistics calculate statistical parameters such as mean, standard deviation, and Cpk by the load or position according to the user-defined Cpk item for each step.



《Fig. 4-2-2-4》Enlarge



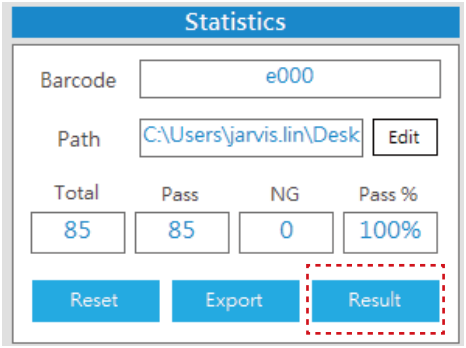
《Fig. 4-2-2-5》Save as

4.2.3 Save results as

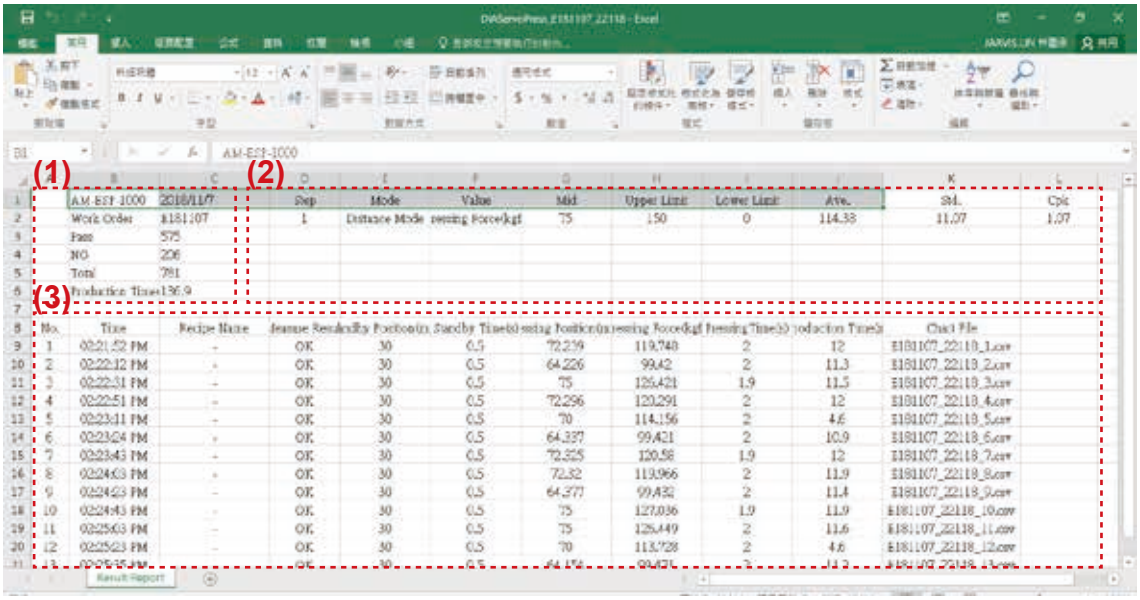
DIAServoPress offers statistical data report and graphic export functions. The statistical data will be exported as Excel spreadsheets, and the graphics containing load and position plots for each process will be recorded in an individual csv file per pressing. The csv files can be re-accessed with DIAServoPress for future tracking replotting (refer to Section 4.3).

Click **[Export]** for data export, as shown in Figure 4-2-3-1. Files will be saved at the designated **[Path]**, and DIAServoPress will export external Excel files according to the work order statistics, as in Figure 4-2-3-2. Contents of each item in the table are described as below:

1. **Statistical data**
   Batch overview statistical data, including production data such as machine model, production date, barcode, pass count, NG count, total yield, and total time.
2. **Step statistics**
   Batch statistics calculated by the user-defined Cpk calculation items for each step.
3. **Single pressing result list**
   This list records each single press result in the batch, including information on measurements, standby position, standby time, pressing position, pressing force, pressing time, maximum load, and production time.

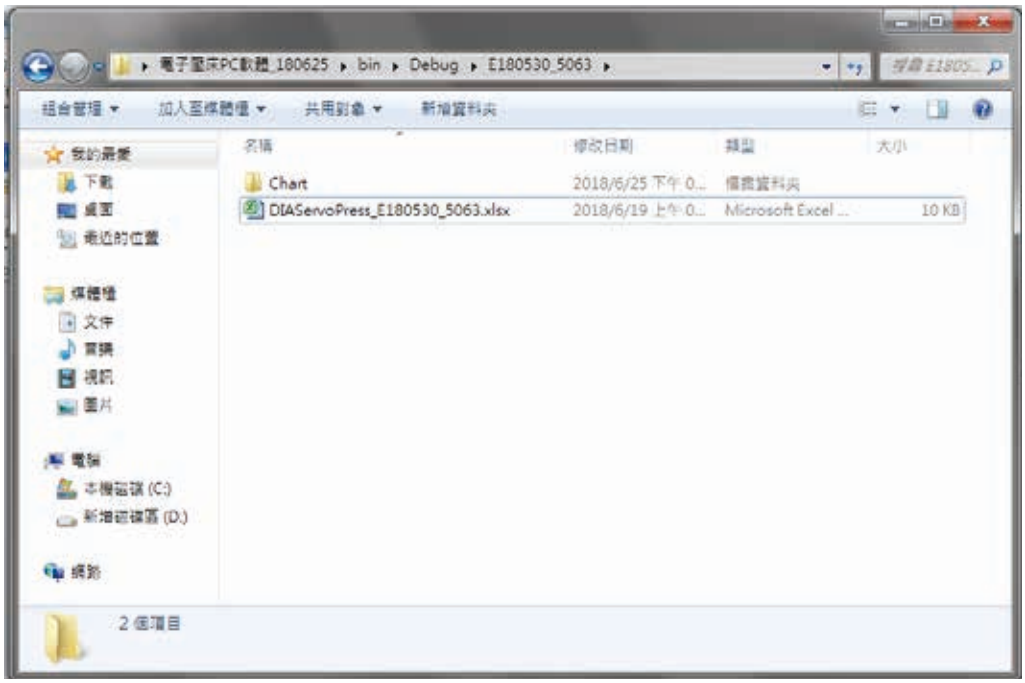


《Fig. 4-2-3-1》Result file

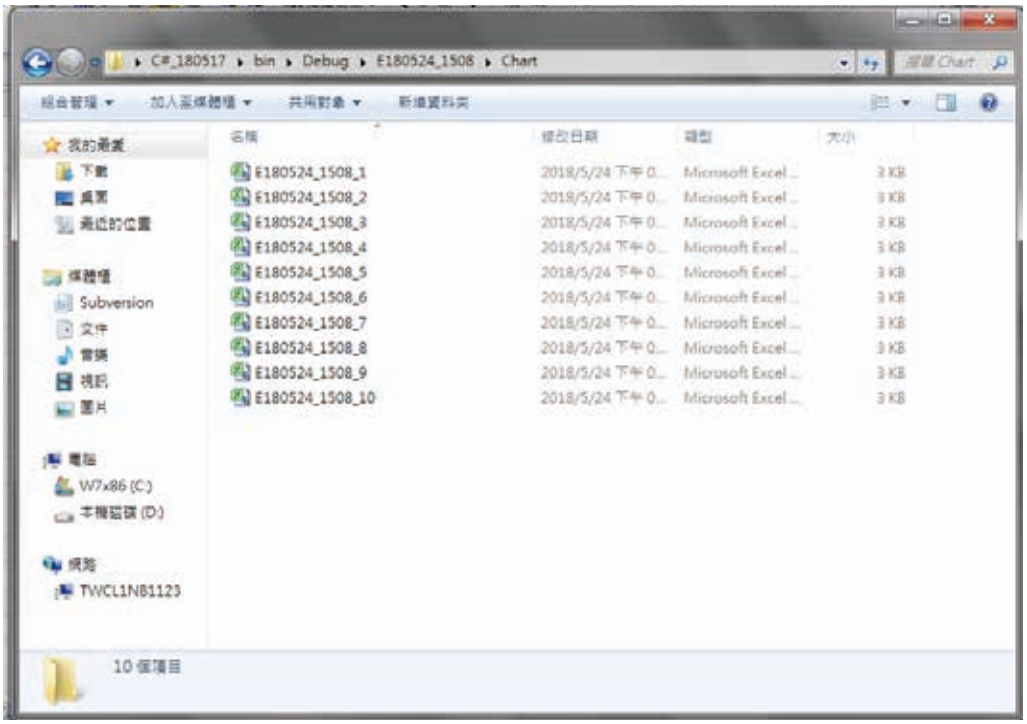


《Fig. 4-2-3-2》Excel spreadsheet

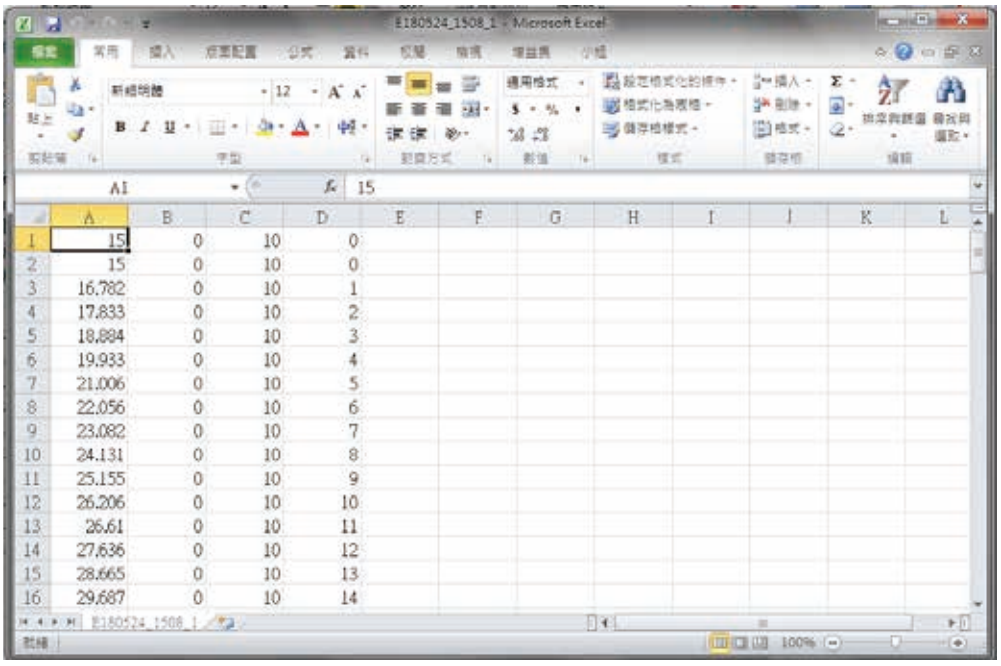
The Excel file will be saved in the designated directory with the **[Barcode]** plus a serial number as the folder name, as in Figure 4-2-3-3. The folder will contain an Excel spreadsheet and a Chart folder with a csv data file for each single pressing process, as in Figure 4-2-3-4. The csv file records position, load, velocity, and time parameters independently, as in Figure 4-2-3-5. To open the designated pressing's csv file, refer to the table in the Excel file, as shown in Figure 4-2-3-6, or re-plot a graph directly through opening the file in DIAServoPress (refer to Section 4.3)



《Fig. 4-2-3-3》Export file folder



《Fig. 4-2-3-4》 Load position plot coordinate csv record files



	A	B	C	D
1	15	0	10	0
2	15	0	10	0
3	16.782	0	10	1
4	17.833	0	10	2
5	18.884	0	10	3
6	19.933	0	10	4
7	21.006	0	10	5
8	22.056	0	10	6
9	23.082	0	10	7
10	24.131	0	10	8
11	25.155	0	10	9
12	26.206	0	10	10
13	26.61	0	10	11
14	27.636	0	10	12
15	28.665	0	10	13
16	29.687	0	10	14

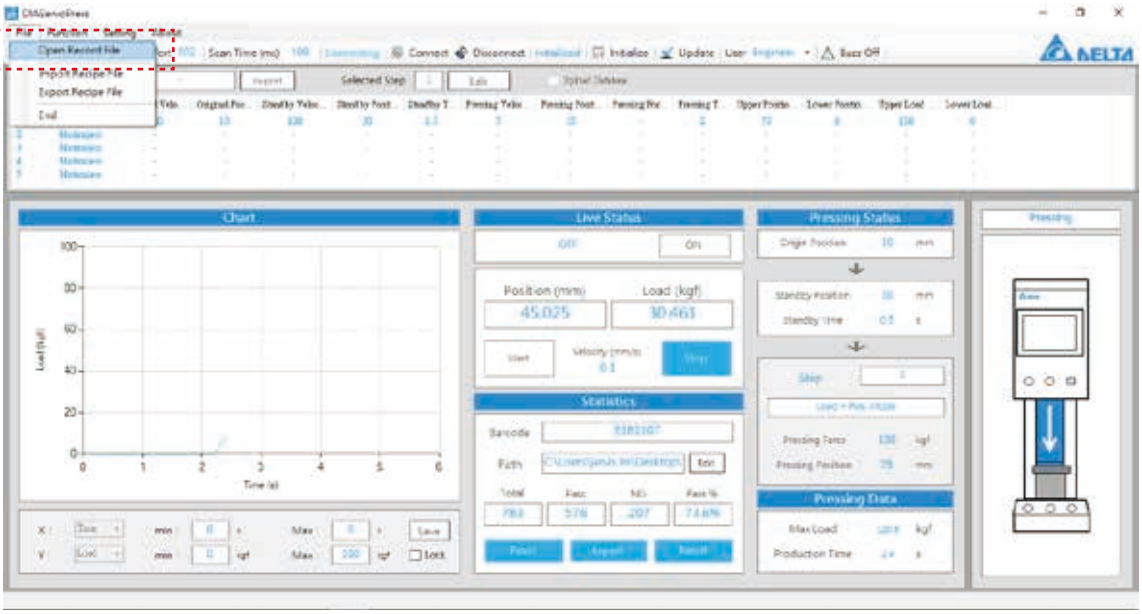
《Fig. 4-2-3-5》Plot coordinate csv record file

	EP-1000ED	20180524	步序	模式	判定值	中間值	上限值	下限值	平均值	標準差	Cpk
	機種	E180524	1	位置模式	成型壓力	163.5	165	162	163.77	0.68	0.6
	良品數	10									
	不良品數	0									
	生產總數	10									
	生產時間(s)	130.9									
編號	時間	配方名稱	量測結果	預熱(位置mm)	預熱時間(s)	成型位置(mm)	成型壓力(kgf)	成型時間(s)	最大壓力(kgf)	生產時間(s)	圖表檔案
1	下午01:50	8	OK	50	1	80	163.452	0	163.452	13.1	E180524_1508_1.csv
2	下午01:50	8	OK	50	1	80	162.877	0	163.452	13.1	E180524_1508_2.csv
3	下午01:53	8	OK	50	1	80	163.385	0	163.452	13.1	E180524_1508_3.csv
4	下午01:53	8	OK	50	1	80	163.093	0	163.452	13.1	E180524_1508_4.csv
5	下午01:53	8	OK	50	1	80	163.611	0	163.611	13.1	E180524_1508_5.csv
6	下午01:54	8	OK	50	1	80	163.543	0	163.611	13.1	E180524_1508_6.csv
7	下午01:54	8	OK	50	1	80	162.896	0	163.611	13.1	E180524_1508_7.csv
8	下午01:54	8	OK	50	1	80	164.313	0	163.611	13.1	E180524_1508_8.csv
9	下午01:55	8	OK	50	1	80	164.427	0	163.611	13	E180524_1508_9.csv
10	下午01:55	8	OK	50	1	80	164.485	0	163.611	13.1	E180524_1508_10.csv

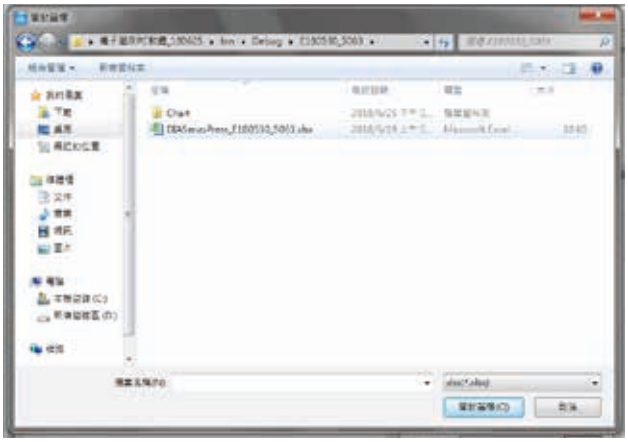
《Fig. 4-2-3-6》Graph file information in Excel

4.3 Opening record files

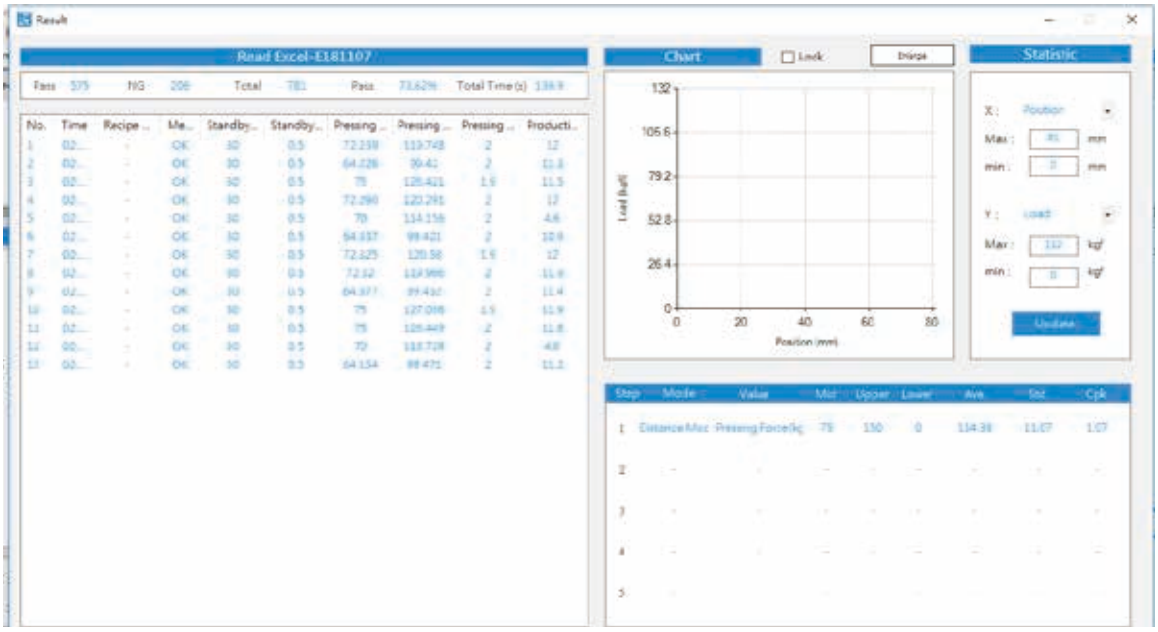
DIAServoPress may open Excel record files and csv graph plot coordinate files that are exported from it. Click **[File]** → **[Open Record File]**, as shown in Figure 4-3-1, and select the Excel spreadsheet to be opened, as in Figure 4-3-2. DIAServoPress will open a record window while reading the related data in the Excel spreadsheet and all csv files in the folder, as in Figure 4-3-3.



《Fig. 4-3-1》Opening record files



《Fig. 4-3-2》Excel file path selection



《Fig. 4-3-3》Opening record files

5. Functions

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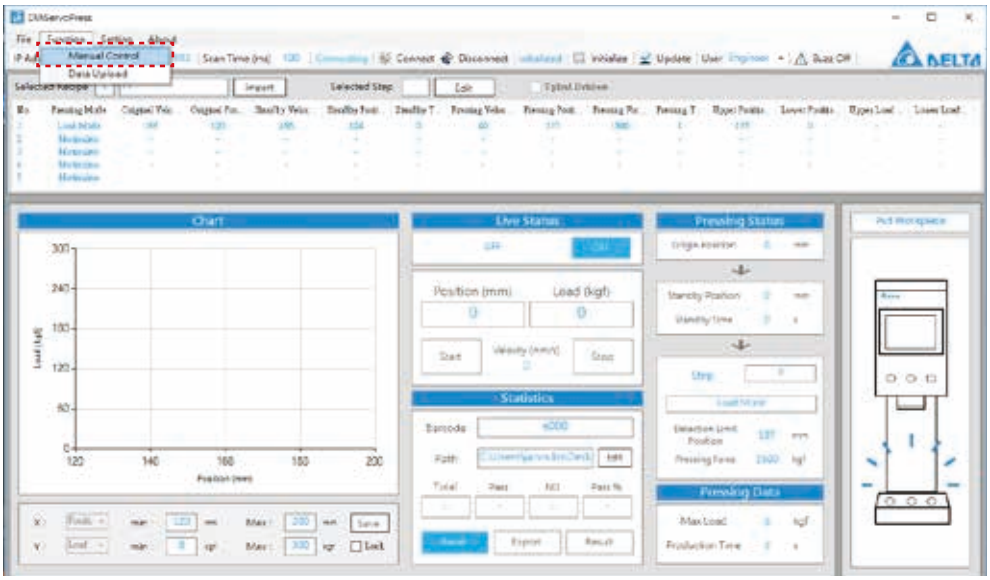
5. Functions

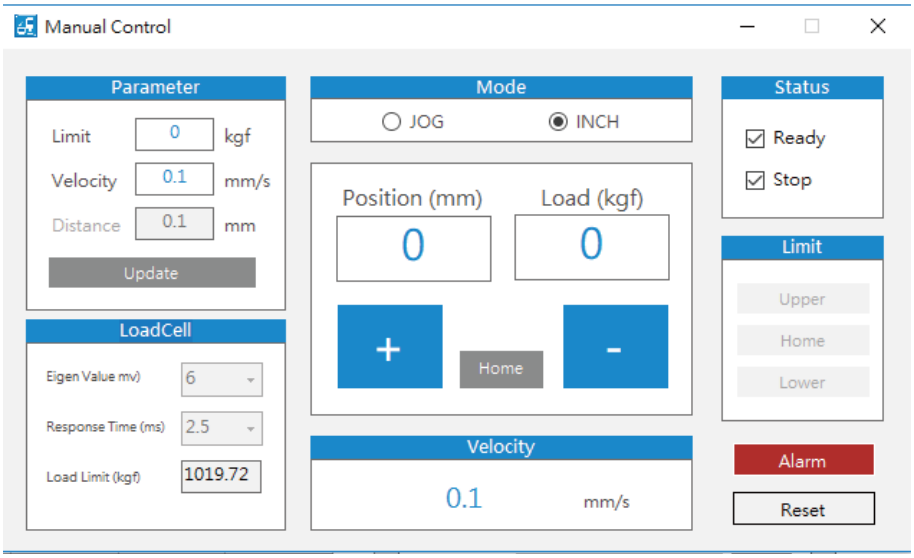
5.1 Manual control



《Fig. 5-1-1》Starting manual control

Manual control allows users to control the main axis position through JOG or INCH, as shown in Figure 5-1-1. The manual control window includes functions such as mode selection, main axis up/down, live info display, inching parameter settings, and load sensing.

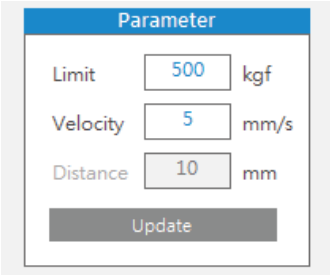
Under JOG mode, press [+] (positive for downwards) or [-] (negative for upwards) to move the main axis. It will stop once the buttons are released. Under INCH mode, the main axis will move a set distance according to **[Distance]** settings each time the button is pressed. **[Position]** and **[Load]** will display live info of the main axis in real time. **[Velocity]** will display the live current velocity in manual mode operation. Select **[Home]** and the main axis will return to the mechanical origin position.



《Fig. 5-1-2》Manual control window

5.1.1 Parameters

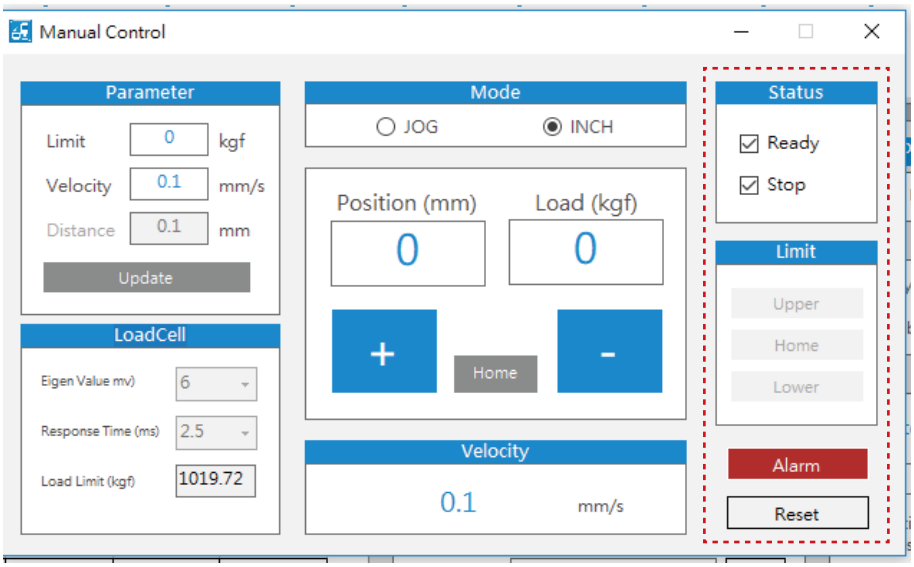
This parameter applies minute adjustments to the JOG or INCH mode movement parameters. Maximum [Limit] and moving [Velocity] under manual control can be adjusted for both modes. For INCH mode, the movement [Distance] for each press must be determined.



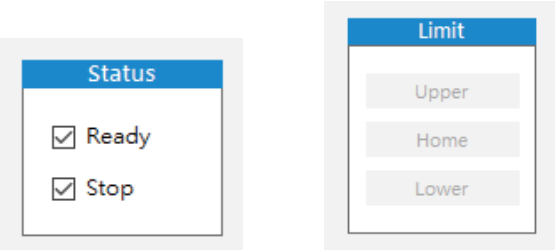
《Fig. 5-1-1-1》Parameters

5.1.2 Status & Limit

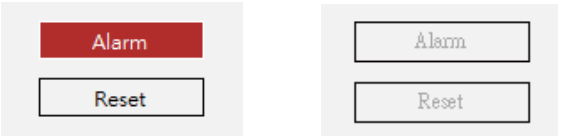
This area displays the current manual control running status, which mainly consists of **[Status]**, [Limit], and [Alarm] monitoring, as shown in Figure 5-1-2-1. The status area includes [Ready] and [Stop]. When the servo press is ready, the [Ready] box will be checked and manual control may be performed normally. When the main axis is currently motionless, the [Stop] box will be checked. [Limit] displays are according to the current main axis position. [Upper] and [Lower] indicate that the main axis has exceeded limit positions and should be moved into the limited range. [Home] indicates that the main axis is currently at the origin position, as shown in Figure 5-1-2-2. If an alarm occurs during a servo press run, [Alarm] will turn red, as shown in Figure 5-1-2-3. Click [Reset] to remove the alarm status after clearing the cause of alarm.



《Fig. 5-1-2-1》Status & Limit



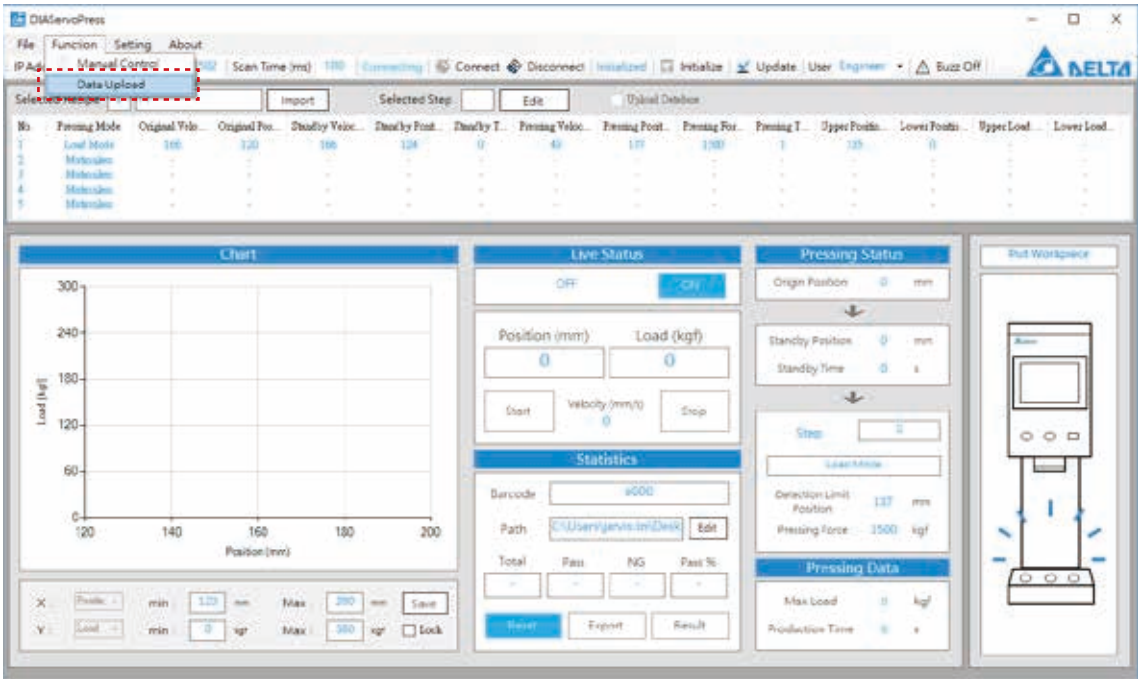
《Fig. 5-1-2-2》Status & Limit



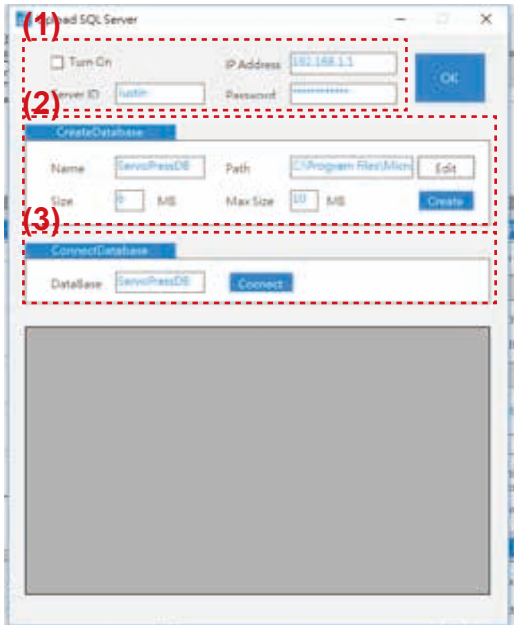
《Fig. 5-1-2-3》Alarm status and alarm clearance

5.2 Data uploading

DIAServoPress offers a database upload function for pressing data. Users can upload data to SQL databases for each pressing immediately after the process. Uploaded data includes work order number, time, recipe name, measurement results, standby position, standby time, pressing position, pressing force, pressing time, maximum load, and production time. Database and field establishment, as well as server connection, must be performed before using. Start the function only after checking for proper connection. Select **[Function]** → **[Data Upload]** to open the **[Data Upload]** window, as shown in Figure 5-2-1.

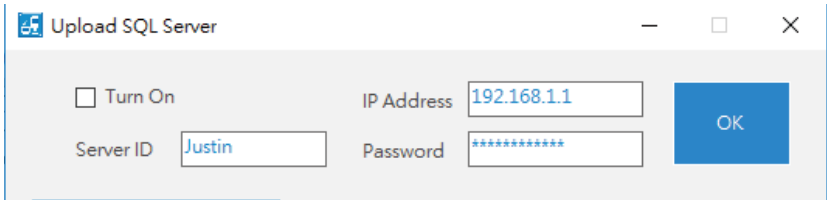


《Fig. 5-2-1》Open data upload window



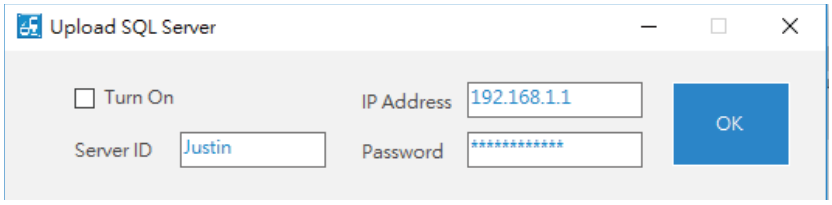
《Fig. 5-2-2》Open data upload window

1. **SQL database basic connection setting:** Mainly defines basic SQL server connection parameters, including whether to turn on SQL upload, database IP address, and database account password, as shown in Figure 5-2-3. If **[Turn on]** is checked, DIAServoPress will upload pressing data to the connected SQL server database after each pressing. Server connection data includes the IP address, connection account, and connection password, which are to be used together with **[Create Database]** and **[Connect Database]**. Be sure to complete valid server and database connections before performing uploads.

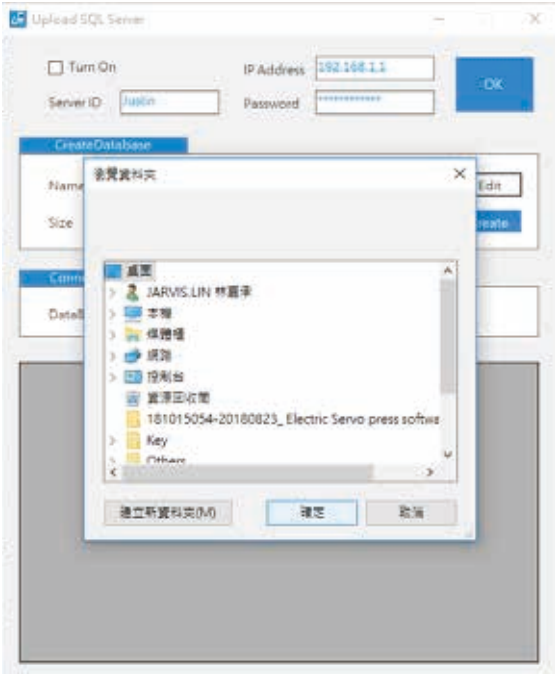


《Fig. 5-2-3》SQL database basic connection setting

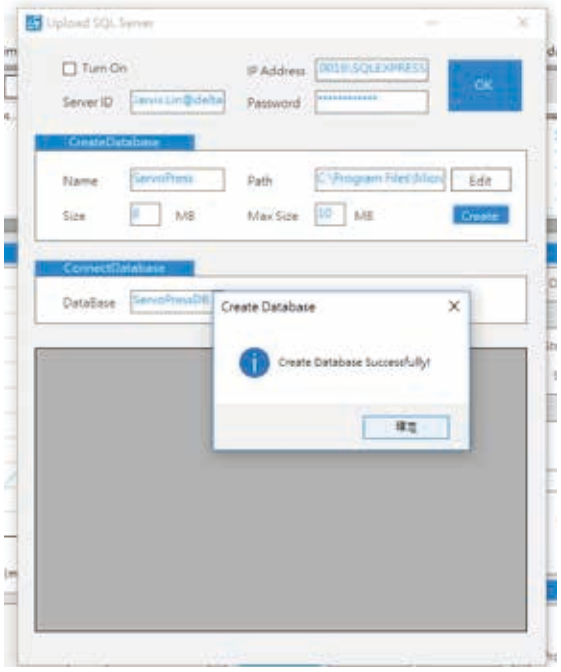
2. **Create database:** This function creates a dedicated database including database name, database path, file size, and max file size for DIAServoPress data uploads in the connectable server, as shown in Figure 5-2-4. The database is named by the user. Once created, subsequent usage through **[Connect Database]** must be connected by this name. The database path is the created database's file access location, as in Figure 5-2-5. The file size is the initial size of the database file. The max file size is the upper limit for database file size after data augmentation. Click **[Create]** after finishing setting. If proper connection is established, DIAServoPress will automatically create fields and display a Creation Successful window on completion, as in Figures 5-2-6.



《Fig. 5-2-4》Create database

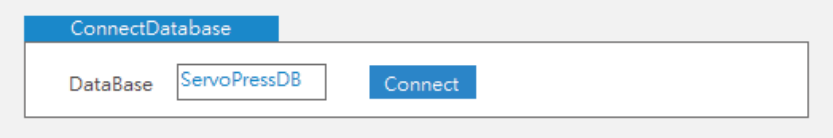


《Fig. 5-2-5》Change database path



《Fig. 5-2-6》Database successfully created

3. **Connect Database:** If the current server contains dedicated databases created by DIAServoPress, it can be accessed directly through the Connect function according to the database name, as in Figure 5-2-8. Check **[Turn on]** and click **[Connect]**. The target database fields and existing data will be displayed in the below window, as in Figure 5-2-9. Verify proper connection before turning on the SQL database upload function.



《Fig. 5-2-8》Connect Database

《Fig. 5-2-9》Database connection test completed

6. Settings

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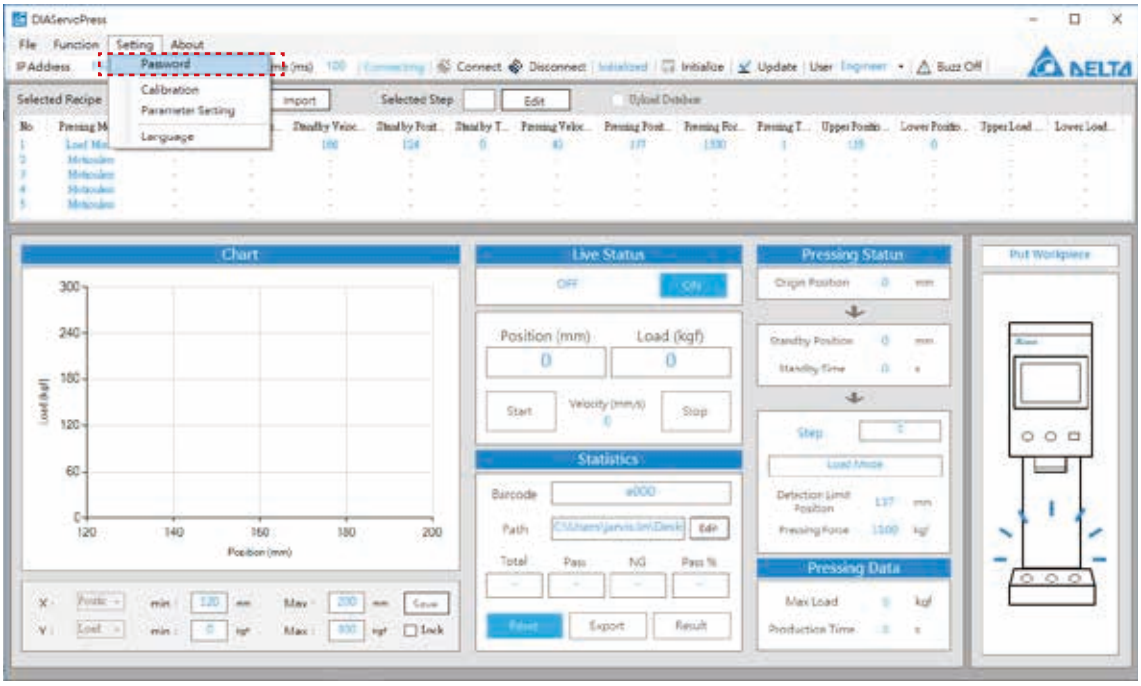
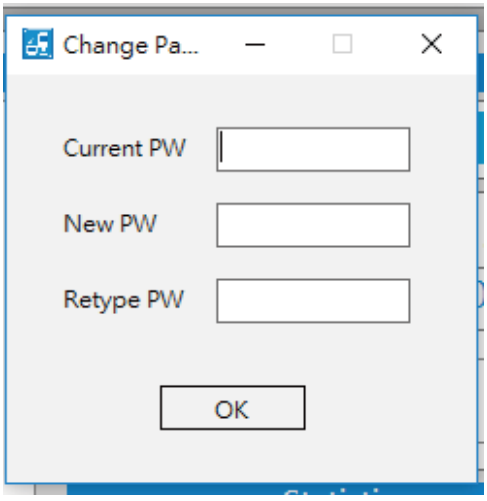
6. Settings

6.1 Change password

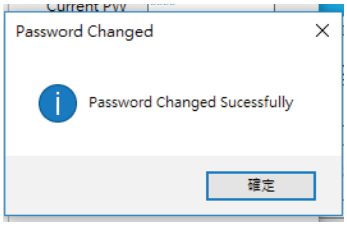
A system password is required to change user access. To change the system password, click **[Setting]** → **[Password]**, as shown in Figure 6-1-1, and open the password window, as Figure 6-1-2. To change the password, first enter the original password, and then enter the new password twice in succession. Password change may only be done when the original password is correct and the two new password inputs are matching.



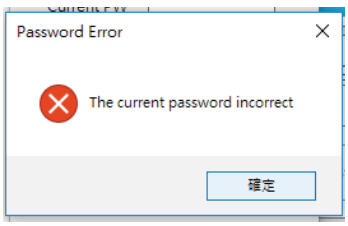
《Fig. 6-1-1》Change password



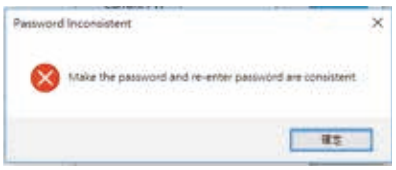
《Fig. 6-1-2》Change password



《Fig. 6-1-3》Change password successful



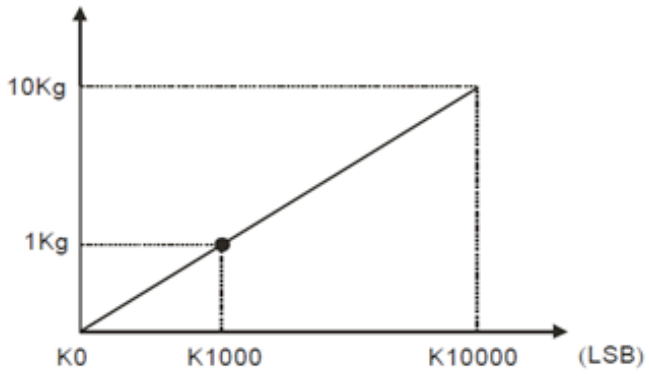
《Fig. 6-1-4》Unmatching new password



《Fig. 6-1-5》Wrong original password

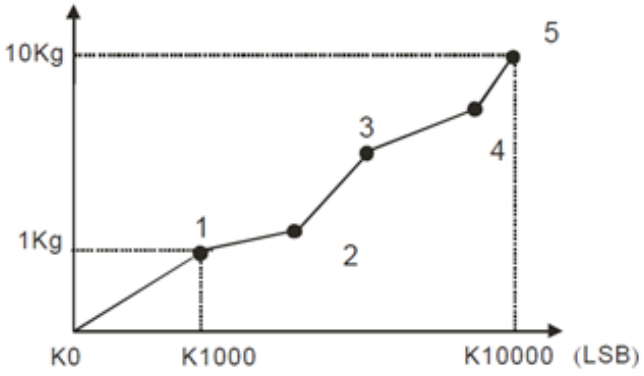
6.2 Load Cell calibration

The main goal for load cell calibration is to correlate the load cell value and the module display value. Generally the load cell is calibrated with at least 2 end points, as shown in Figure 6-2-1. One is the no empty-load zero point, and the other has a known load value which is used for calibration.



《Fig. 6-2-1》Two-point calibration

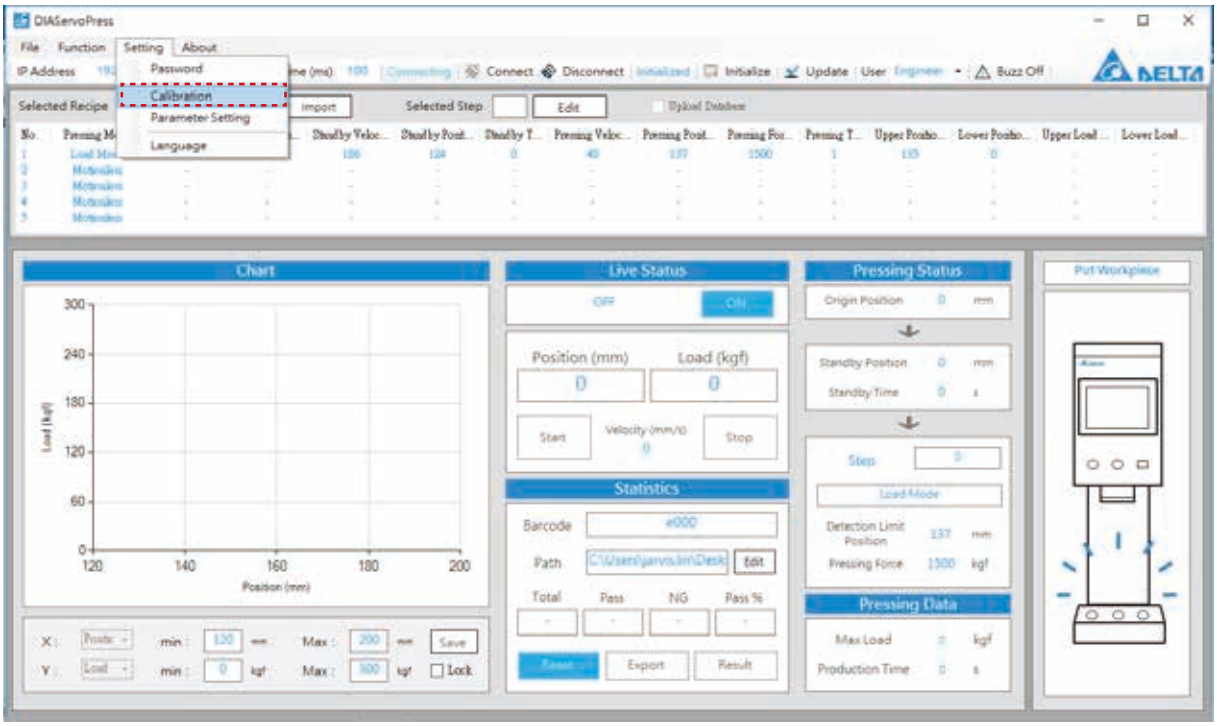
Besides 2-point calibration, the servo press supports up to 20-point calibration for curves with different characteristics, as in Figure 6-2-2.



《Fig. 6-2-2》Multi-point calibration

Before using, perform load cell calibration as per the following steps.

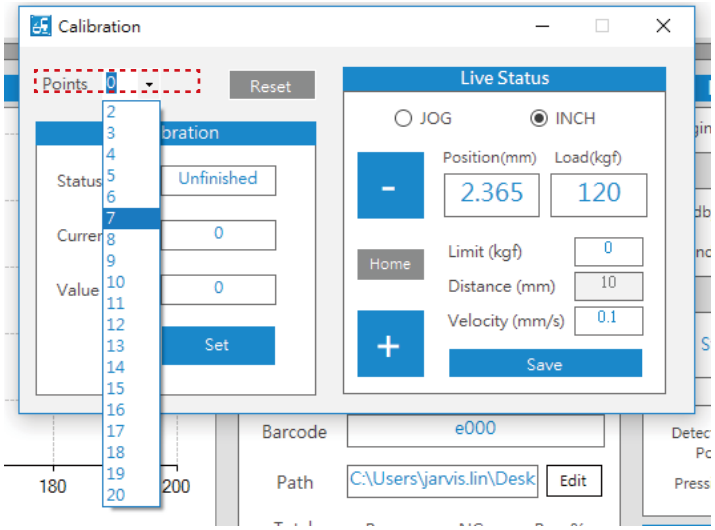
1. Click on [Calibration] to enter the page



《Fig. 6-2-3》Open load cell calibration window

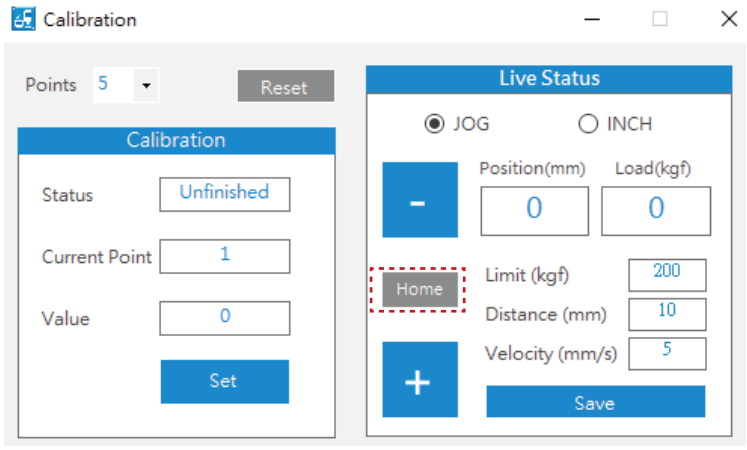
2. Select [Points]

Select the number of points from this parameter to divide into for calibration. The 1-ton model has a maximum load of 1000kg. If divided into 5 points, the software will apply 200kg intervals. The more points divided into, the smaller the intervals. As in Fig. 6-2-4.



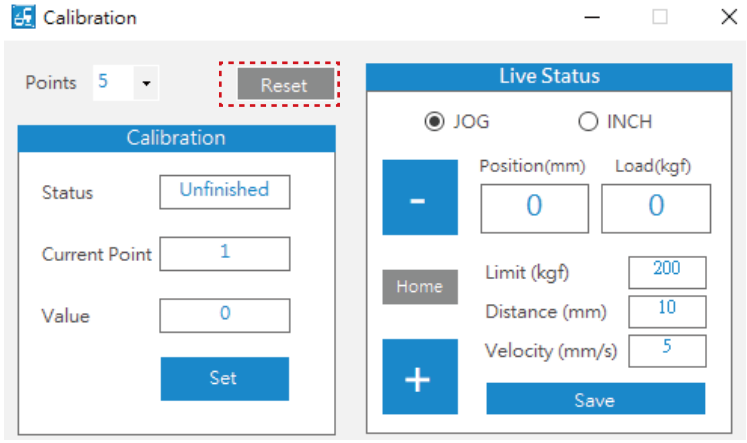
《Fig. 6-2-4》Load cell calibration point selection

3. **Click on [Home] to return the main axis home**

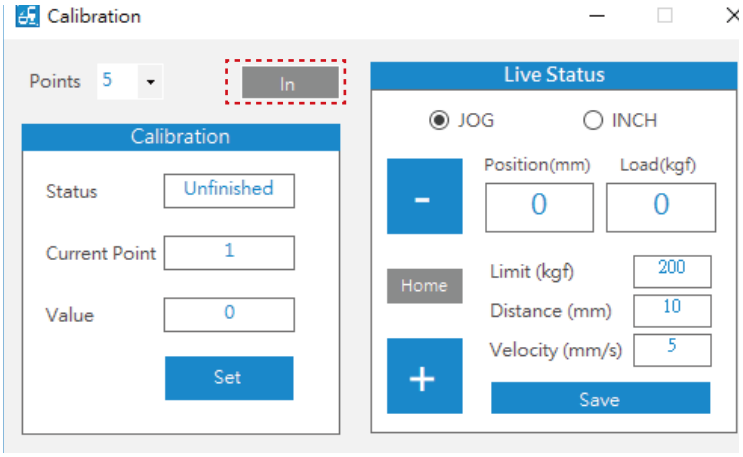


《Fig. 6-2-5》 Load cell calibration - Home

4. **Click [Reset] to start calibrating the load cell. [In Calibration] will be displayed**

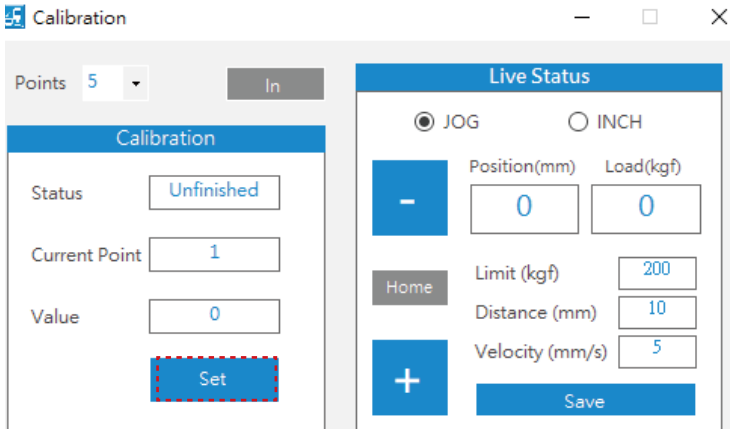


《Fig. 6-2-6》Load cell calibration - Reset



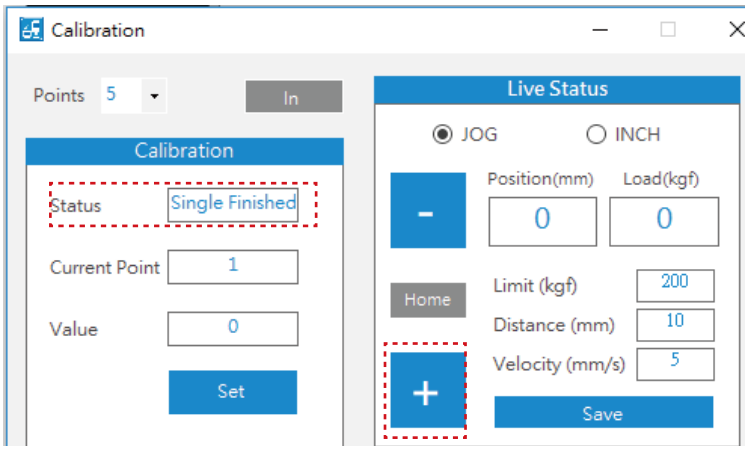
《Fig. 6-2-7》Load cell calibration - Enter numerical value

5. **Ensure that there are no items being pressed, and then click on [Set] to zero the load cell.**



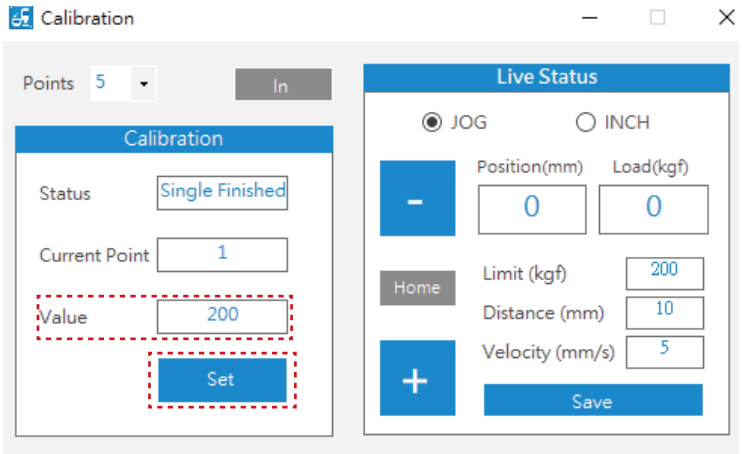
《Fig. 6-2-8》Load cell calibration - Set

6. **Once [Single Finished] lights up, press down the main axis through manual control until it reaches the below load cell calibration tool.**



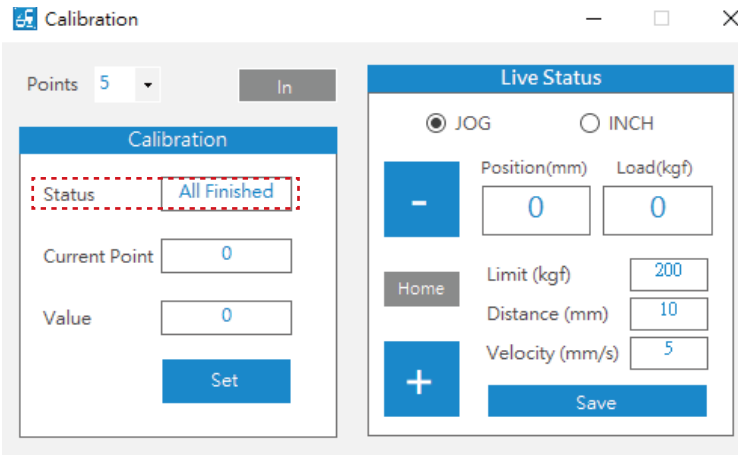
《Fig. 6-2-9》Load cell calibration - Single finished

7. **When the load cell calibration tool reaches the required load, wait for the value to stabilize and enter this value. Click [Set].**



《Fig. 6-2-10》Load cell calibration - Enter numerical value

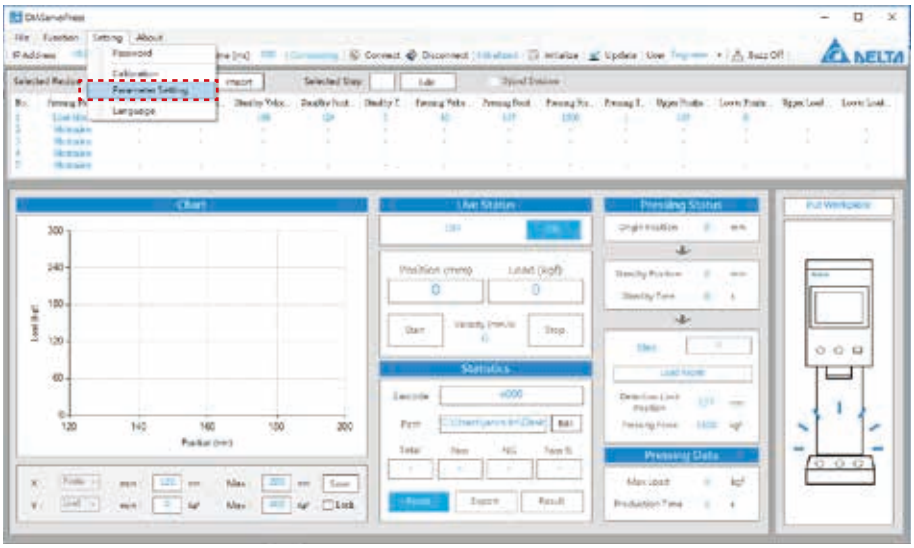
8. **When [Status] shows Single finished, repeat operation (6) until the status shows [Calibration Finished]. Calibration is then completed.**



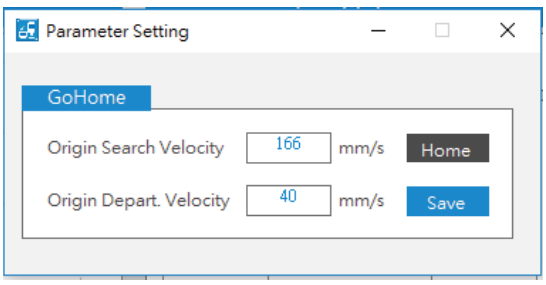
《Fig. 6-2-11》Load cell calibration - Calibration finished

6.3 Parameter settings

Parameter settings is mainly for configuration of Home parameters, including Origin search velocity and Origin leaving velocity. Click **[Setting]** → **[Parameter Setting]**, as Figure 6-3-1, to open the parameter settings window for related parameter configuration, as Figure 6-3-2.



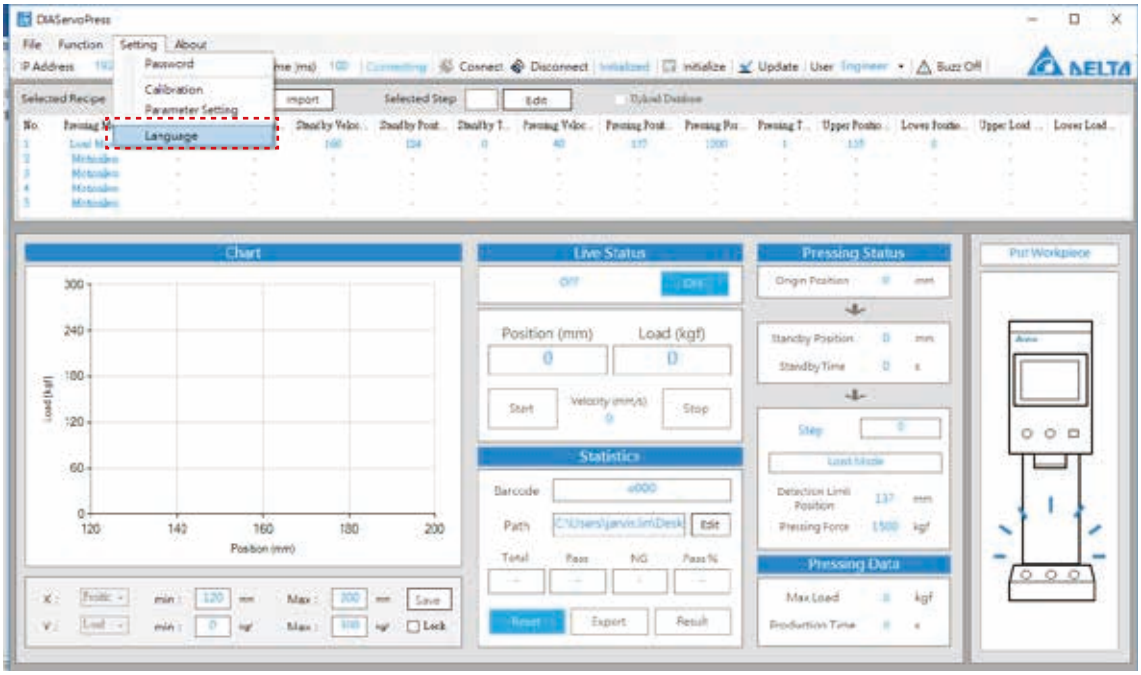
《Fig. 6-3-1》Open parameter settings



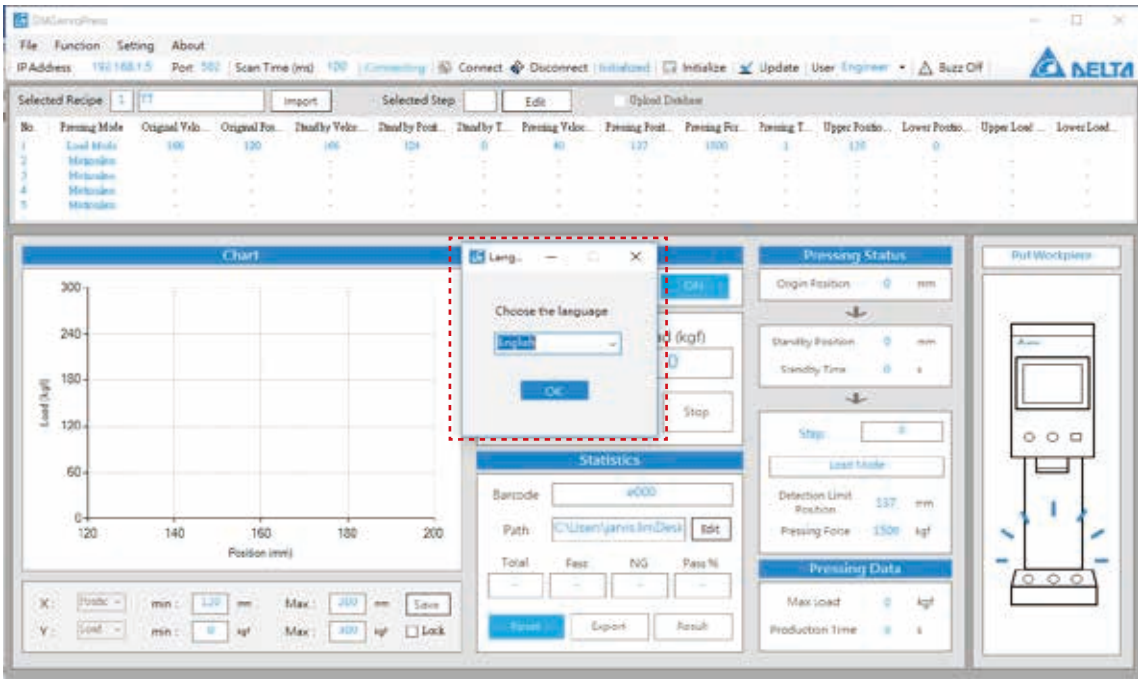
《Fig. 6-3-2》Parameter settings window

6.4 Language

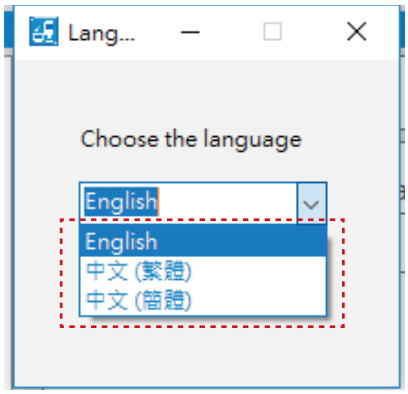
ServoPress offers users different language options. To change the language currently in use, click **[Setting]** → **[Language]**, as shown in Figure 6-4-1. The language selection window will display. Select the language to be changed into, as in Figures 6-4-2 to 6-4-4, and click OK to complete language change, as in Figure 6-4-5. This change will be saved in the program profile and will be retained after closing the software.



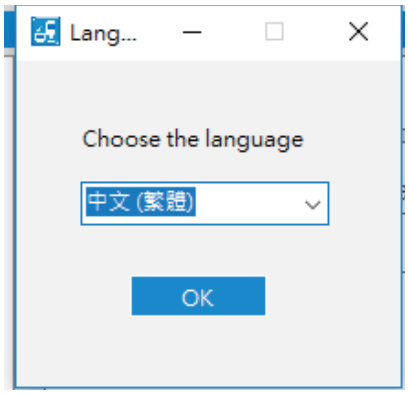
《Fig. 6-4-1》Language



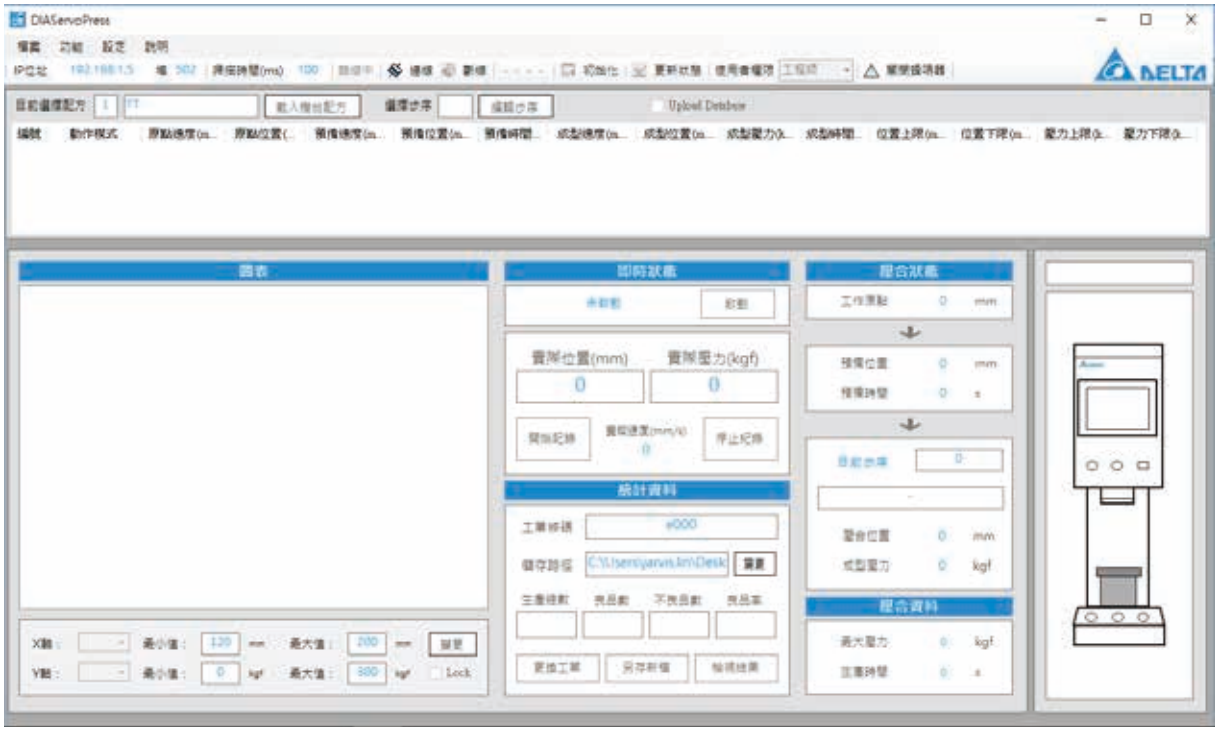
《Fig. 6-4-2》Language



《Fig. 6-4-3》Language



《Fig. 6-4-4》Language



《Fig. 6-4-5》Parameter settings window

Smarter. Greener. Together.

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