

Delta Servo Press - S Series Installation and Maintenance Instructions

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Delta Electronics Servo Press S-Series Installation and Maintenance Instructions

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1. Safety Information

1.1 Safety Information Before Use

Item	Description
<p>Power supply</p>	<p>Please shut down power before removing the external power lines to the unit so that the unit is in a disconnected state when the servo press will be out of service for an extended period of time.</p>
	<p>Please periodically check if the external button switch is functioning; in case of abnormality, please press the emergency stop button quickly.</p>
	<p>Please follow the main power and voltage requirements.</p>
	<p>Do not let the servo press or power lines get exposed to water or oil.</p>
	<p>Make sure that the power line is properly plugged and fastened.</p>
	<p>The emergency stop button needs to be kept clear of concealment by surrounding items.</p>
<p>Machinery</p>	<p>For long-term use, please periodically check if the screws fixating the unit are loose and re-fasten loose ones.</p>
	<p>While in operation, warning signs may be put up in the surroundings to prevent against possible danger.</p>
	<p>Do not modify or alter the equipment yourself.</p>
	<p>Use a hanging strap and a crane to move the unit.</p>
	<p>Do not work in areas with direct exposure to sunlight.</p>
	<p>During transfer, setup, and operations, avoid collisions with the equipment.</p>
	<p>Please check if the screws are fastened for a jig installed with the punch.</p>
	<p>Do not use the equipment in areas with dust and water vapor.</p>

1.2 Safety Information During Use

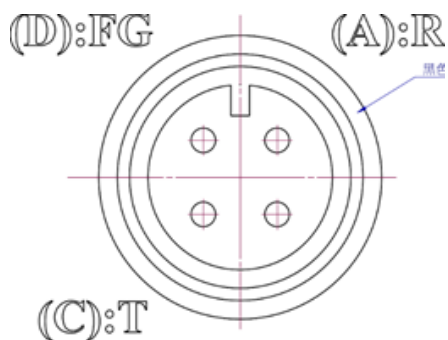
Item	Description
Equipment Surroundings and Operation	Please confirm there are if items interfering with punching and pressing in the surroundings of the equipment.
	The emergency stop button has to be reachable by the operator and make sure that it is not covered up by surrounding items.
While the Equipment is Active	While the equipment is active, do not enter the scope of operation of the equipment.
	While the equipment is active, in case of any foreign sound or burnt odor, press the emergency stop button right away and notify the Company (Delta Electronics) or the contract service provider.

1.3 Safety Information During Maintenance and Under Other Circumstances

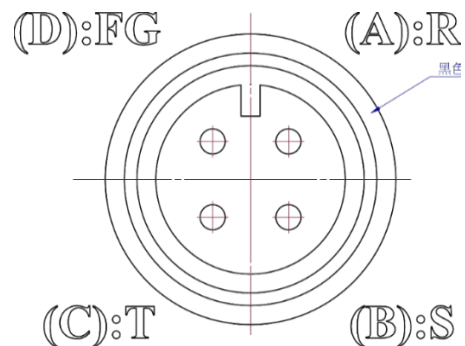
Item	Description
Equipment Operation	Make sure that the main power is off during checks and while oil is being applied.
	The emergency stop button has to be reachable by the operator and make sure that it is not covered up by surrounding items.
While the Equipment is Active	While the equipment is being checked, do not reach into the scope of operation of the equipment.

1.4 Powering System

Power Specifications	Model
AC single-phase three-wire 220V 50/60Hz, 10A	AM-ESP-S005-XXXX
	AM-ESP-S010-XXXX
AC three-phase four-wire 220V 50/60Hz, 30A	AM-ESP-S030-XXXX
	AM-ESP-S050-XXXX



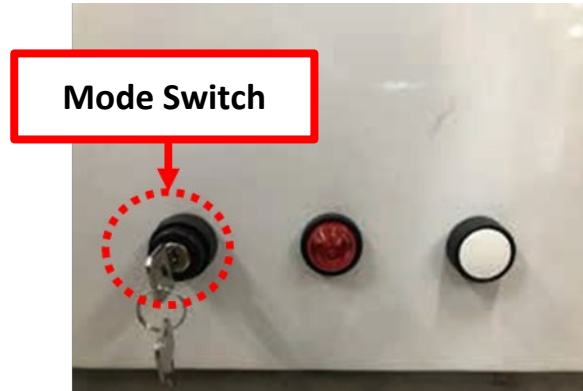
Single-phase three-wire



Three-phase four-wire

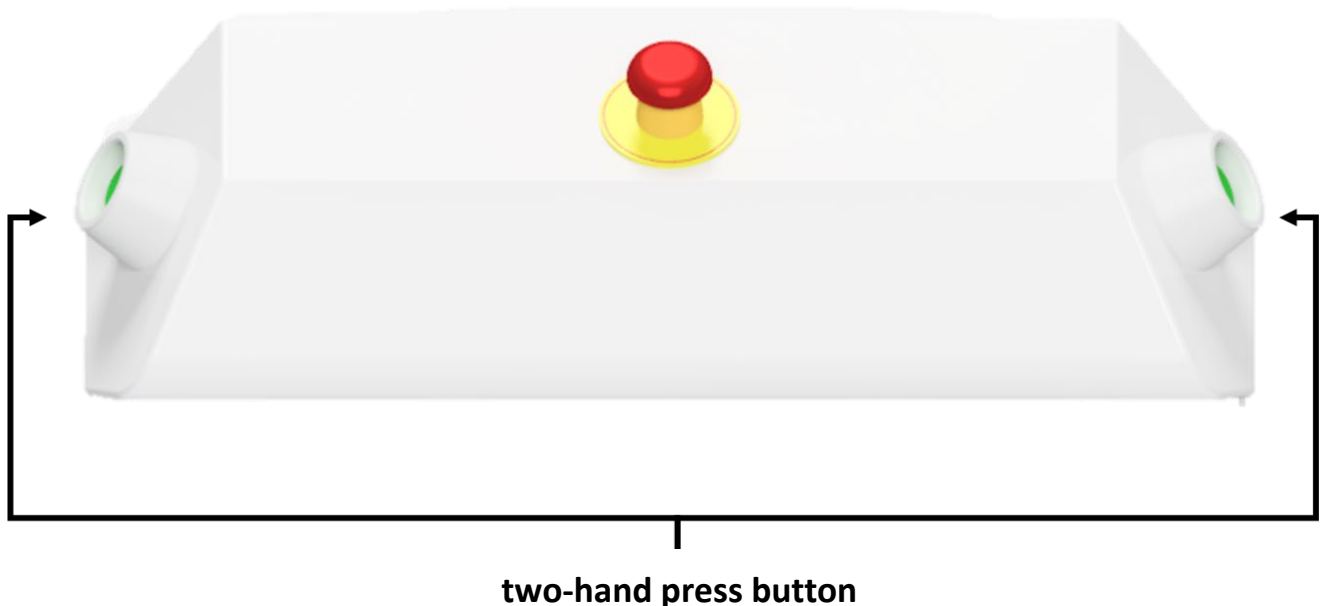
2. Basic Operation

There are the manual and external control modes for the operation. It can be switched from one mode to the other through the keyed switch.



2.1 Manual Operation Mode

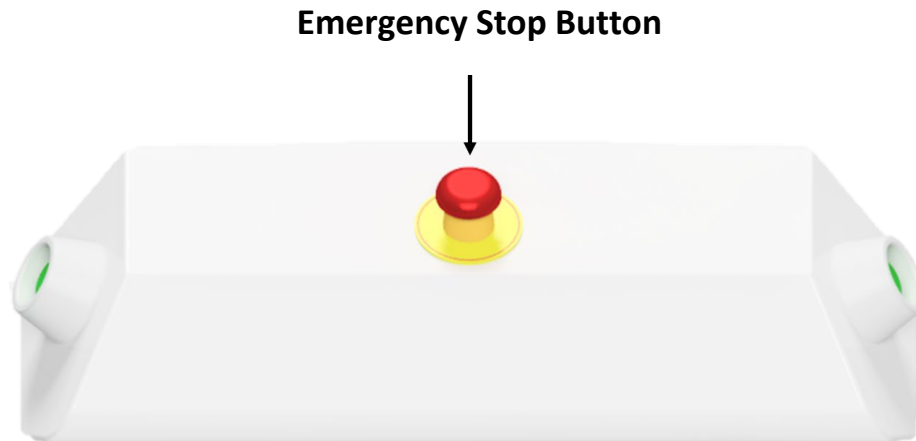
This is a two-hand press button-controlled operation model. To apply this operation mode, one has to press and hold two operation buttons at the same time for activation purpose. The operation buttons are located on the left and right sides of the operation box.



While the program runs the operation mode and the spindle will move to the end point of pressing, by letting go either or both operation buttons, it stops the depressing motion.

2.2 Emergency Stop Button

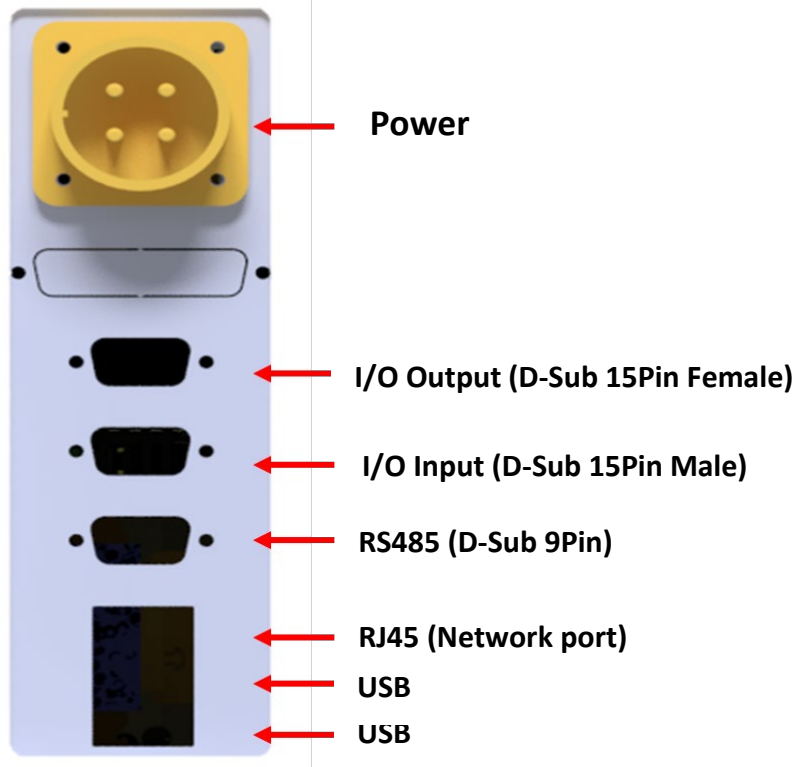
When the emergency stop button is pressed, the spindle operation will stop in an instant and the buzzer will sound. In addition, a warning message appears on the human-machine interface or teaching box. To reset the emergency stop state, simply turn the pressed emergency stop button clockwise. The figure below shows a device configured with the emergency stop button.



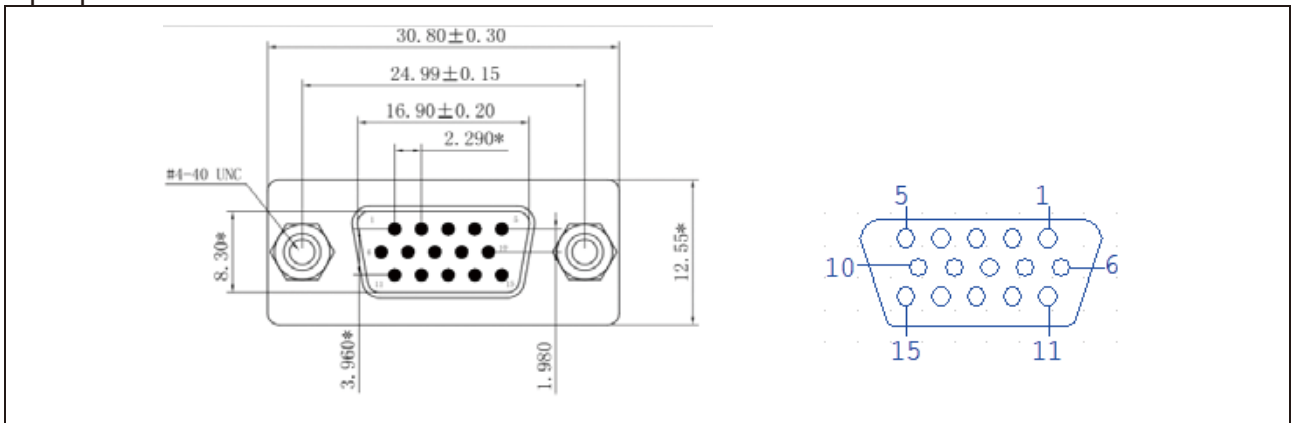
Caution: After emergency stop is released and before it returns to the operation mode, the spindle has to be initialized.

2.3 External Control Mode

The external control mode exercises control through communication. The following shows the I/O signal contacts.

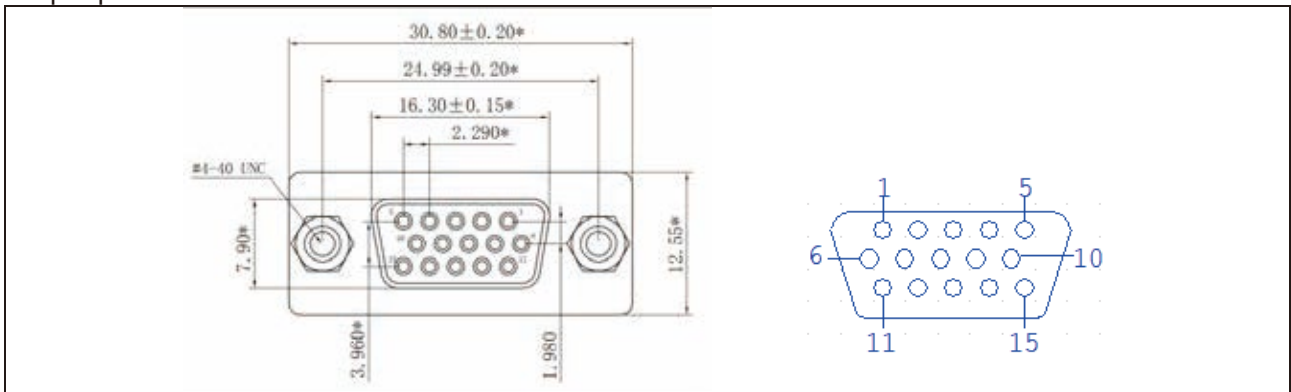


Input pins



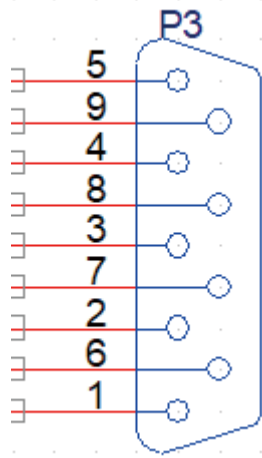
Pin	Definition	Pin	Definition
1	24V (Input)	9	Recipe 3
2	On	10	
3	Trigger	11	
4	Alarm Reset	12	
5	Safety Signal	13	
6	Recipe 0	14	
7	Recipe 1	15	
8	Recipe 2		

Output pins



Pin	Definition	Pin	Definition
1	24G (Input)	9	
2	Ready	10	
3	Waiting	11	
4	Alarm	12	
5	OK/NG	13	
6		14	
7		15	
8			

RS485 pins

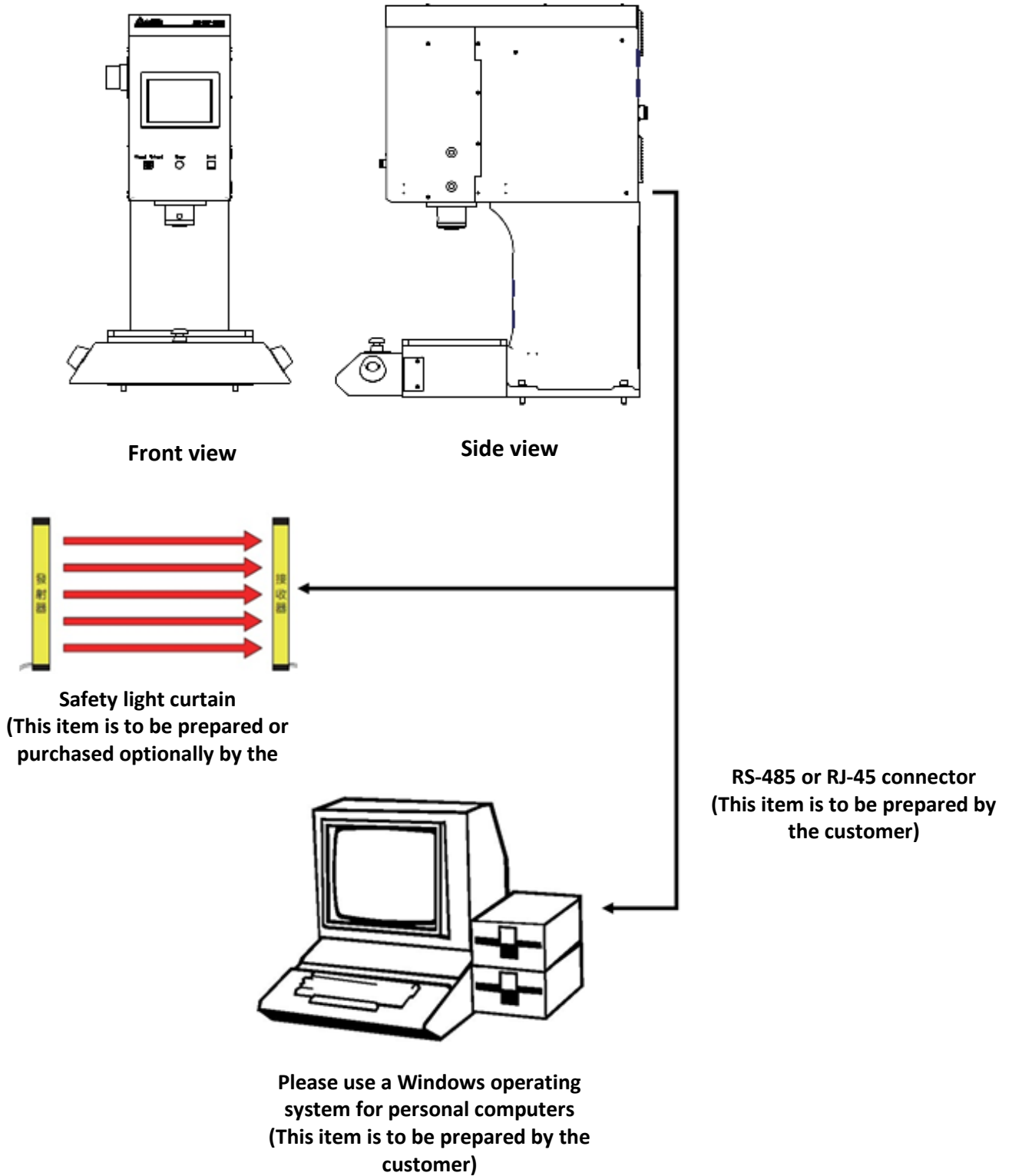


Pin	Definition
1	RS485 D+
2	RS485 D+
3	FG
4	
5	
6	
7	
8	
9	

3. Comprehensive System Structure

3.1 S-Series

The following figure uses the AM-ESP-S010-XXXX as an example:

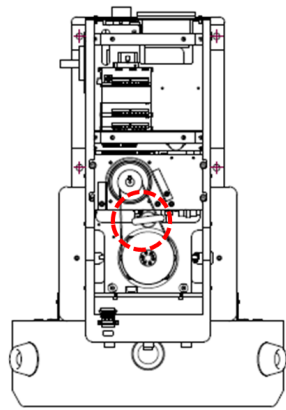


4. Installation Setup

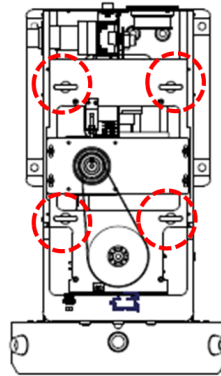
4.1 Method for Transporting Standard Models, and the Weight of the Whole Machine

This unit comes with a hanging strap to facilitate transfer or transport of the servo press by the customer. In addition, when installing the hanging strap, please remember to remove the upper cover (the details are shown in the Quick Start Guide) before taking out the hanging strap and inserting it into the corresponding lock hole. Please make sure to lock the strap firmly. When the servo press is being transported, it might topple. Please pay close attention.

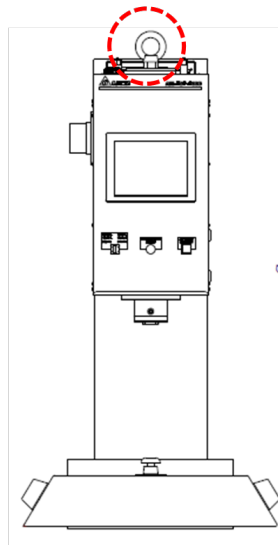
Model	Type of hanging strap	Quantity	Weight (kg)
AM-ESP-S005-XXXX, AM-ESP-S010-XXXX	M16	1	230±1%
AM-ESP-S030-XXXX, AM-ESP-S050-XXXX	M20	4	1100±1%



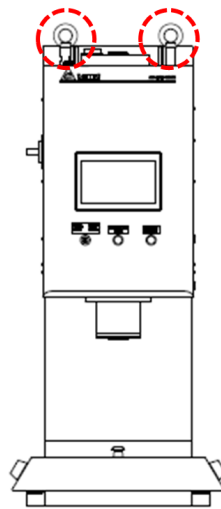
Top view




Top view



Front view



Front view

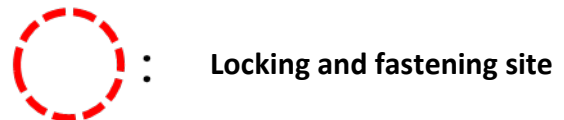
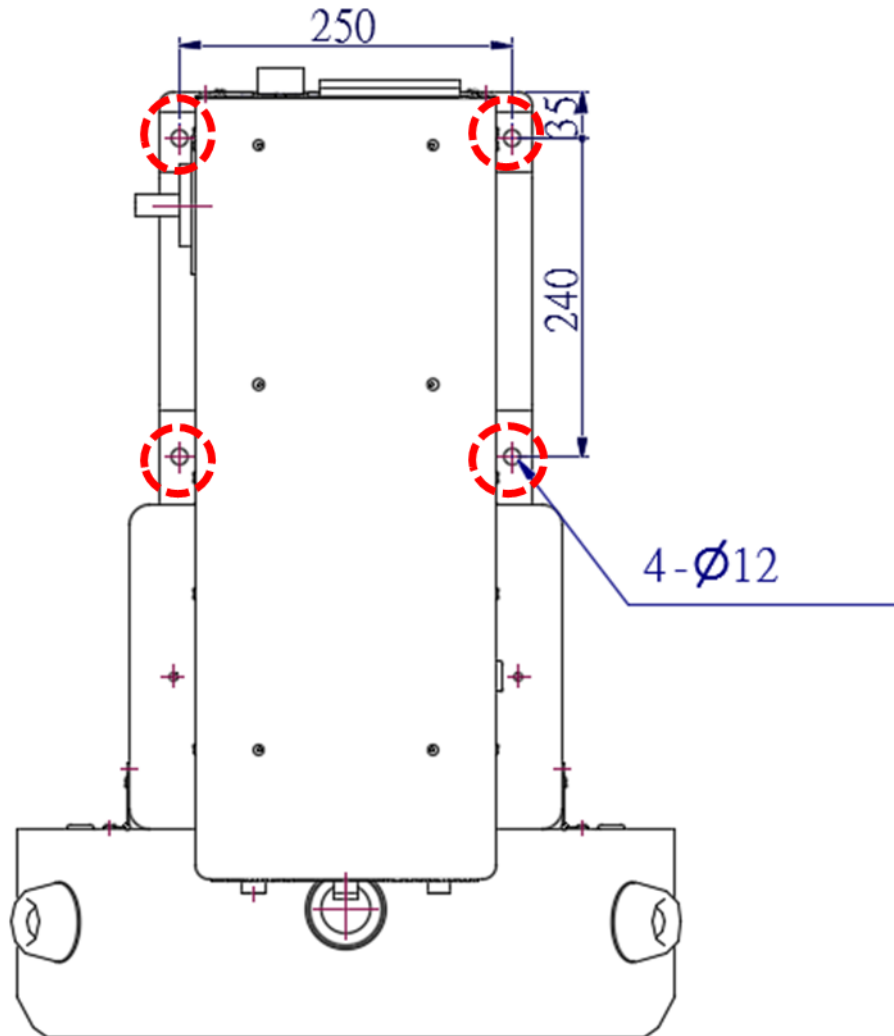
 : Locking and fastening site for the hanging strap

The image on the left is the AM-ESP-S005-XXXX, AM-ESP-S010-XXXX
The image on the right is the AM-ESP-S030-XXXX, AM-ESP-S050-XXXX

4.2 Repair

4.2.1 AM-ESP-S005-XXXX / AM-ESP-S010-XXXX Standard Type

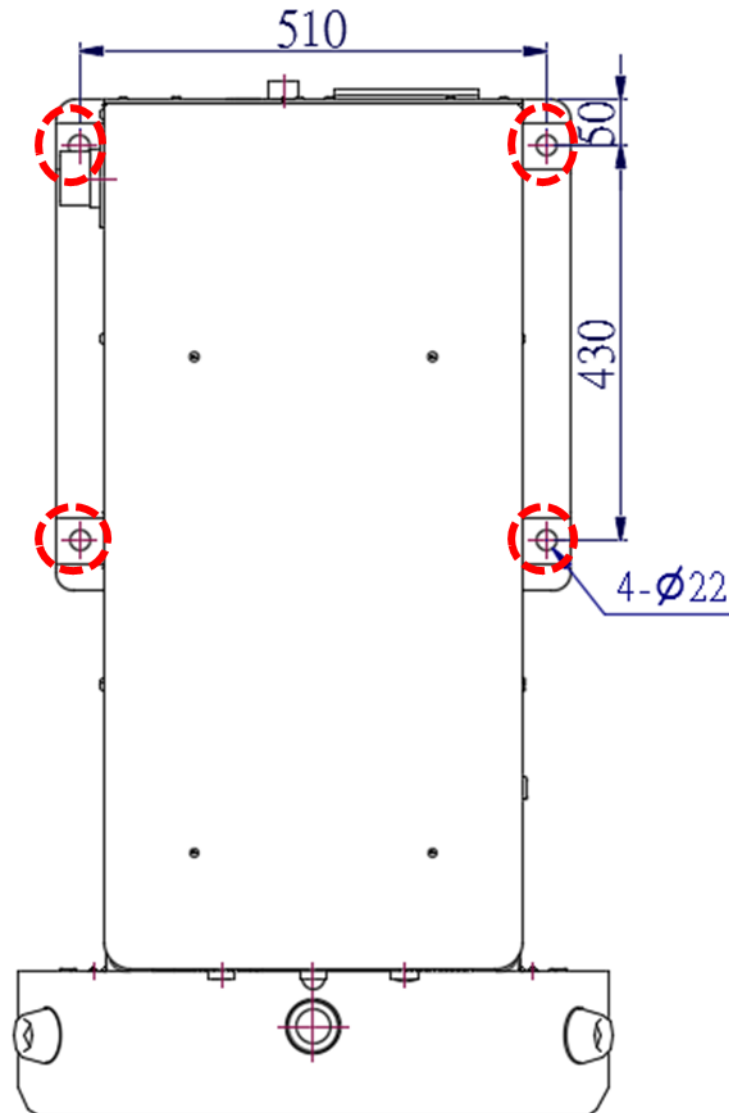
The fastening ports for attaching the servo press are shown in the figure below. Please use 4 general M10X1.5 hex screws (JIS strength 12.9, length 45) and apply the tightening torque of 240 kgf-cm.



Caution: Please note that the equipment has to be closely attached to the locking and fastening platform while fastening the servo press.

4.2.2 AM-ESP-S030-XXXX / AM-ESP-S050-XXXX Standard Type

The fastening ports for attaching the servo press are shown in the figure below. Please use 4 general M20X2.5 hex screws (JIS strength 12.9, length 80) and apply the tightening torque of 2001 kgf-cm.



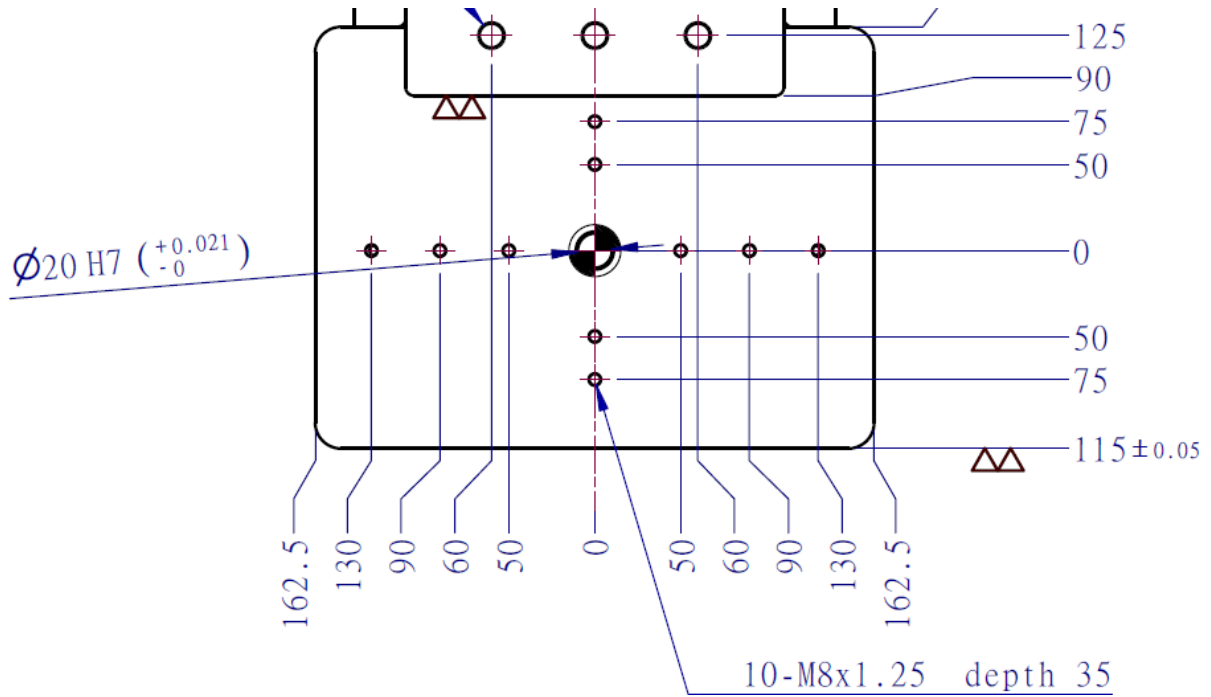
 : Locking and fastening site

Caution: Please note that the equipment has to be closely attached to the locking and fastening platform while fastening the servo press.

4.3 Standard Stand-alone Model Working Platform

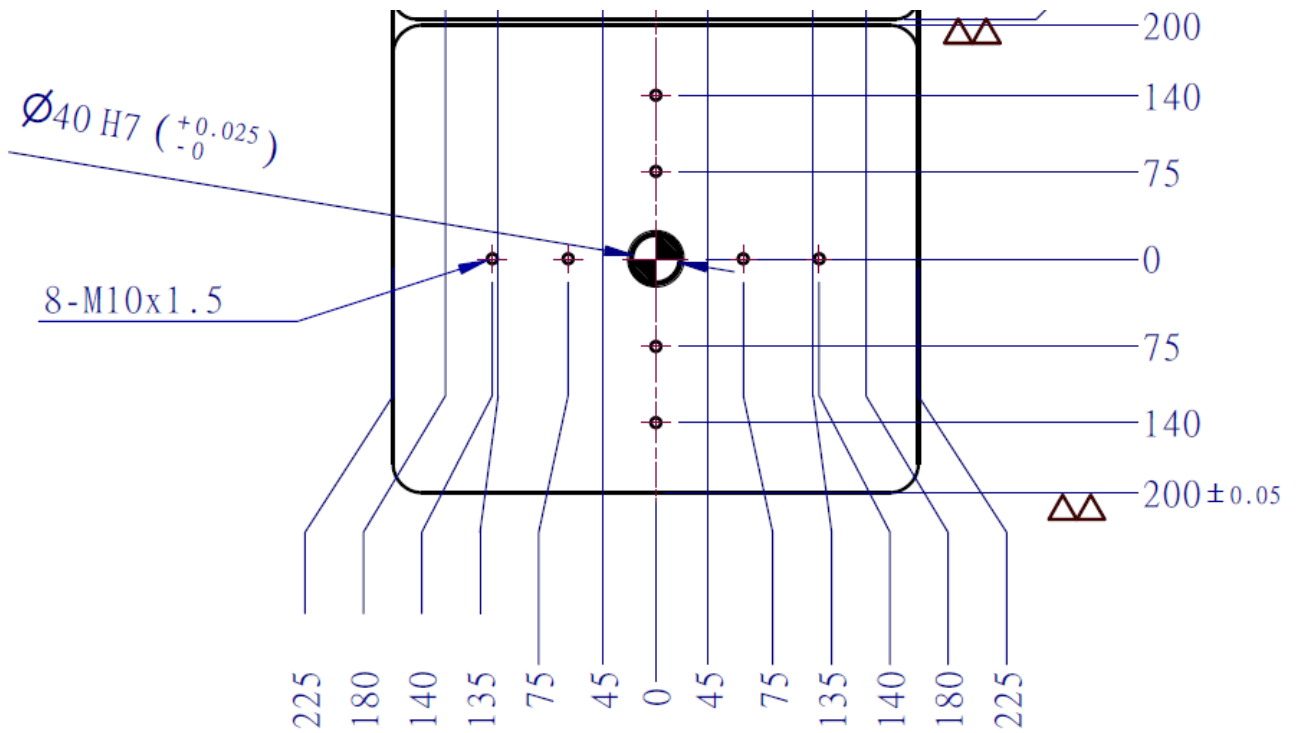
4.3.1 AM-ESP-S005-XXXX / AM-ESP-S010-XXXX Standard Type

Please produce the processing jig according to the dimensions shown in the figure.



4.3.2 AM-ESP-S030-XXXX / AM-ESP-S050-XXXX Standard Type

Please produce the processing jig according to the dimensions shown in the figure.

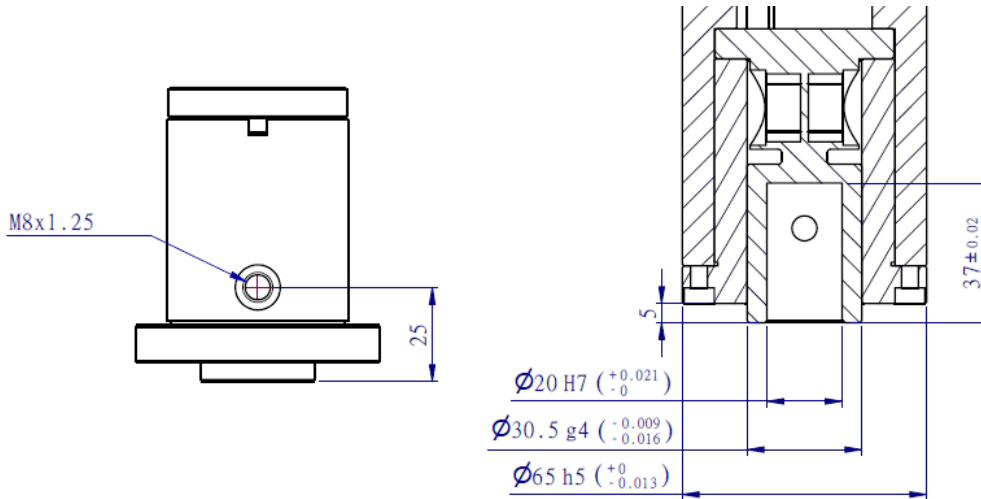


4.4 Loading and Unloading Spindle Punch

Recommended punch jig design is provided in this section to facilitate realistic application by users.

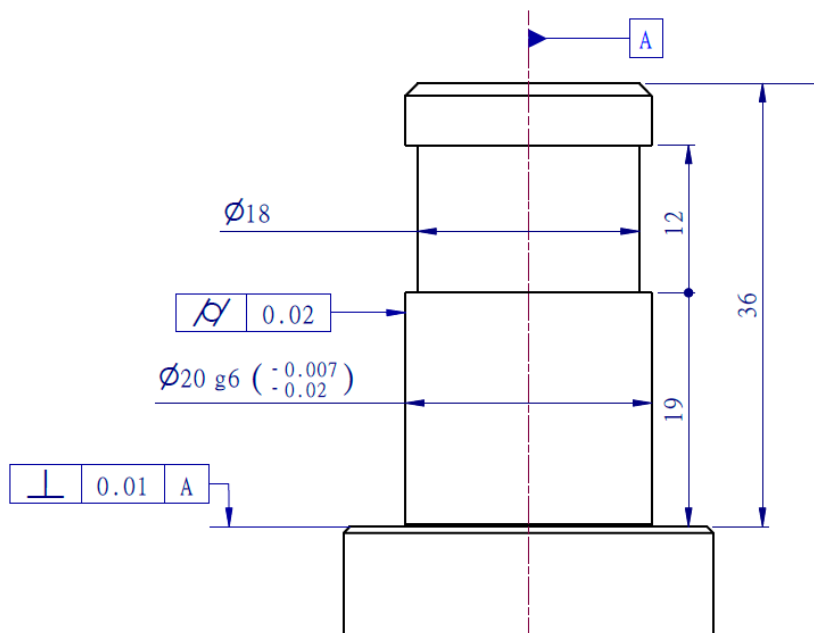
4.4.1 AM-ESP-S005-XXXX / AM-ESP-S010-XXXX Standard Type

The cross-section of the spindle is shown below. For the punch jig, please use M8 x 1.25 length 8mm set screws.



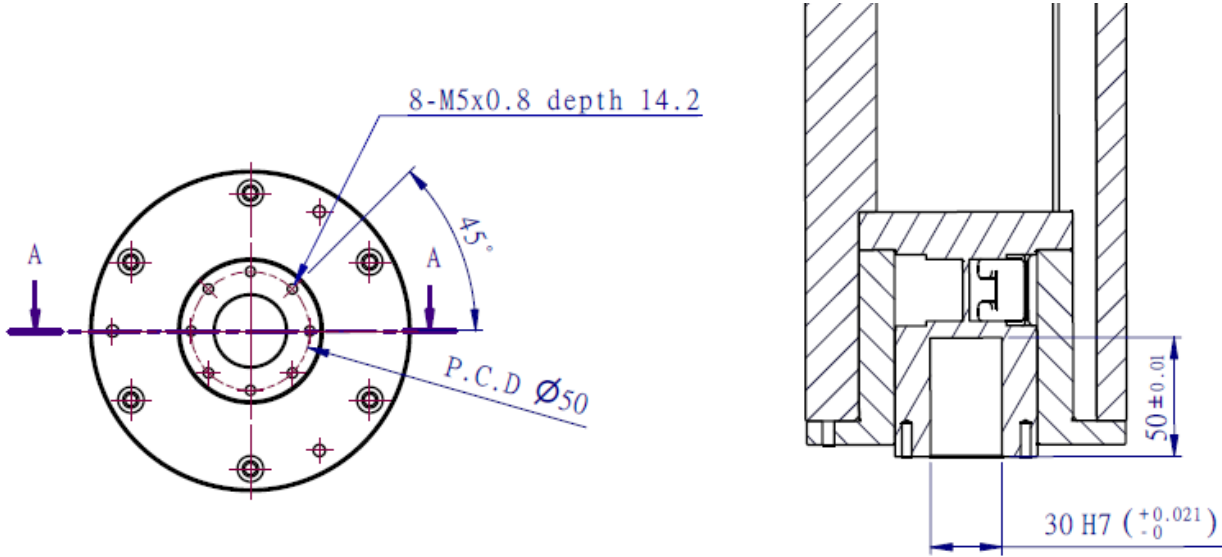
Caution: The top of the spindle punch is installed with the load cell. Do not assemble tools in a way that could result in deviations or impacts.

※ The recommended dimensions of the jig spindle are shown in the figure below. Ø18, in particular, is meant to avoid the bur that occurs on the spindle as the jig is removed multiple times and will accordingly make it impossible to remove the jig out of the spindle.



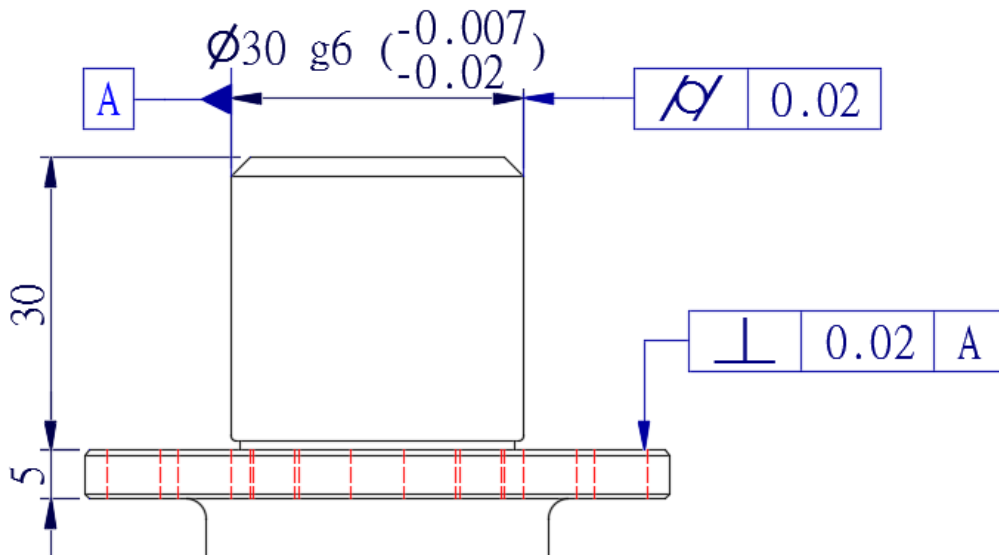
4.4.2 AM-ESP-S030-XXXX / AM-ESP-S050-XXXX Standard Type

The cross-section of the spindle is shown below. For the punch jig, please use M5 x 0.8 length 12mm hex screws.



Caution: The top of the spindle punch is installed with the load cell. Do not assemble tools in a way that could result in deviations or impacts.

※The recommended jig spindle size is shown in the figure below.



4.4.3 Restriction of Jigs

Punch dimensions and recommended jig designs are provided in the preceding three sections. Extended descriptions and precautions are provided hereunder. See the table below:

Item	Description
Jig weight (Payload)	For the weight limits, please follow those shown in the catalog [front-end load requirements of the spindle]. When the limits are exceeded, it will result in the spindle moving downwards due to gravity upon shutdown.
Center of the jig	Efforts should be made during design to have the center of the jig overlap the core of the spindle. Otherwise, the partial load will damage the loaded elements.

5. Equipment Care and Maintenance

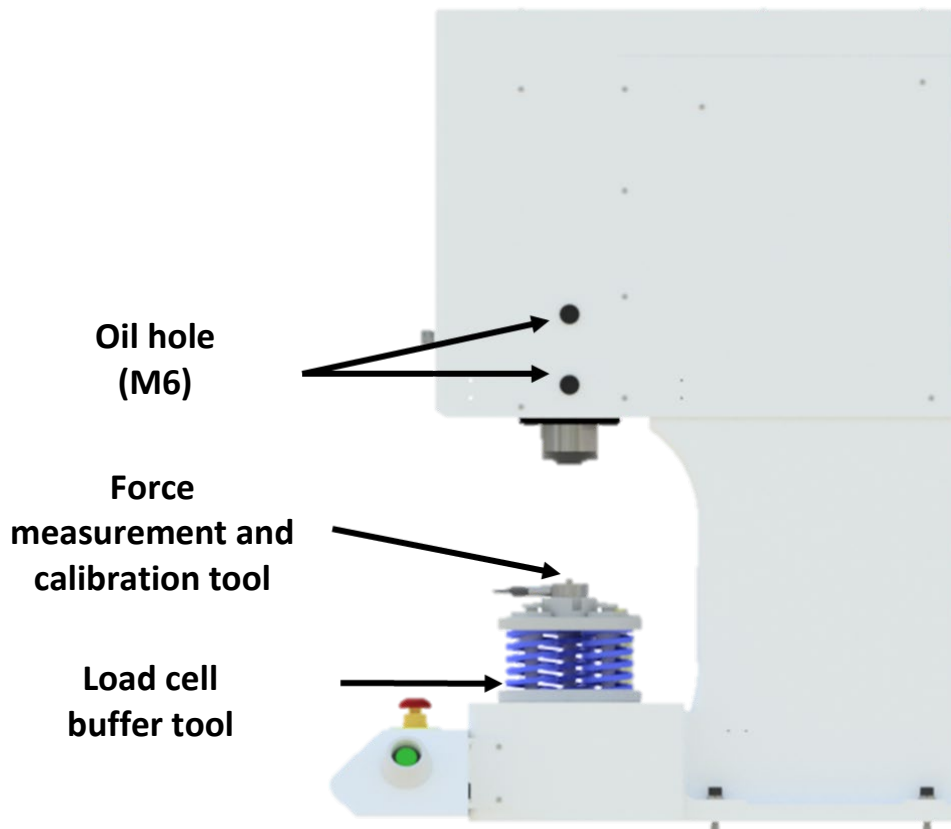
5.1 Applying Oil to Equipment

Please replenish the spindle lubricant. Replenish the oil through the inlet shown in the figure. Regular oil replenishment is required to prevent shortening the machine's working life.

*It is recommended to use NSK LR3.

*Recommended oil injector: KCG-470H (Brand: Alba)

*Single injection volume: 40 ml



Caution: When replenishing the lubricant, make sure to shut down main power first.

5.2 Load Cell Calibration

In order for the servo press to maintain precise quality, please perform load cell calibration if unusual force levels appear, or perform load cell calibration on a regular basis (after the warranty period expires). The load cell calibration tool is shown in the figure. Please follow the Operating Instructions while performing calibration and qualification or contact the Company (Delta Electronics) or contract service providers.

5.3 Periodic Inspection

Servo press maintenance and inspection shall be carried out based on the usage conditions; please contact our company (Delta Electronics) or contract service providers for the maintenance and inspection.



Smarter. Greener. Together.

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