

YJKP - Adjustment force sensor

Step by step description to adjust the force sensor of the YJKP

YJKP

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1 Components/Software used

Type/Name	Version Software/Firmware	Date of manufacture
Servo press kit YJKP	General	--
Application software YJKP (GSAY-A4-F0-Z4-1.3.3)	V1.3.3	--
Firmware controller (CECC-X)	V3.4.6	--
Firmware motor controller (CMMP-AS)	V4.0.1501.2.4	--

Table 1.1: 1 Components/Software used

2 Application description

This application note shows step by step how to use the adjustment functionality of the YJKP both with IO control (WebVisu) and via host.

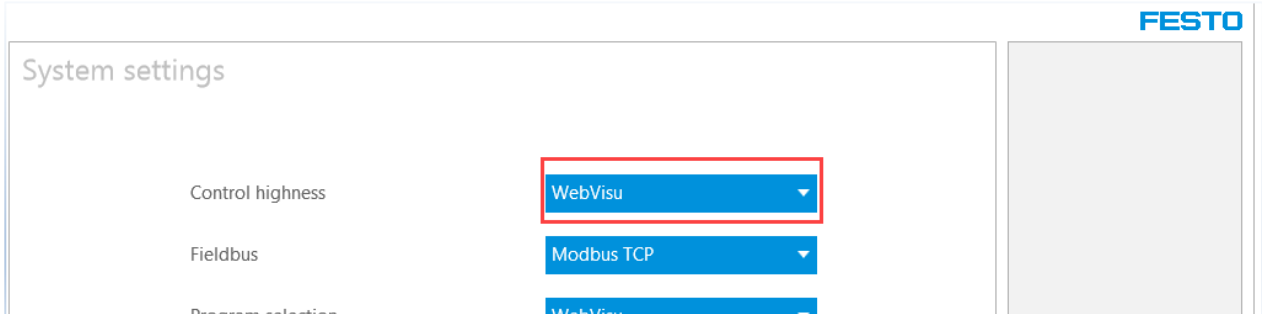
It is used to compare the characteristics of the force sensor with reference values or to reset them to factory settings.

It's not necessarily needed to adjust the sensor to have a fully functional YJKP.

3 Prerequisites

3.1 IO control / WebVisu

The control highness in the system settings is set to WebVisu.

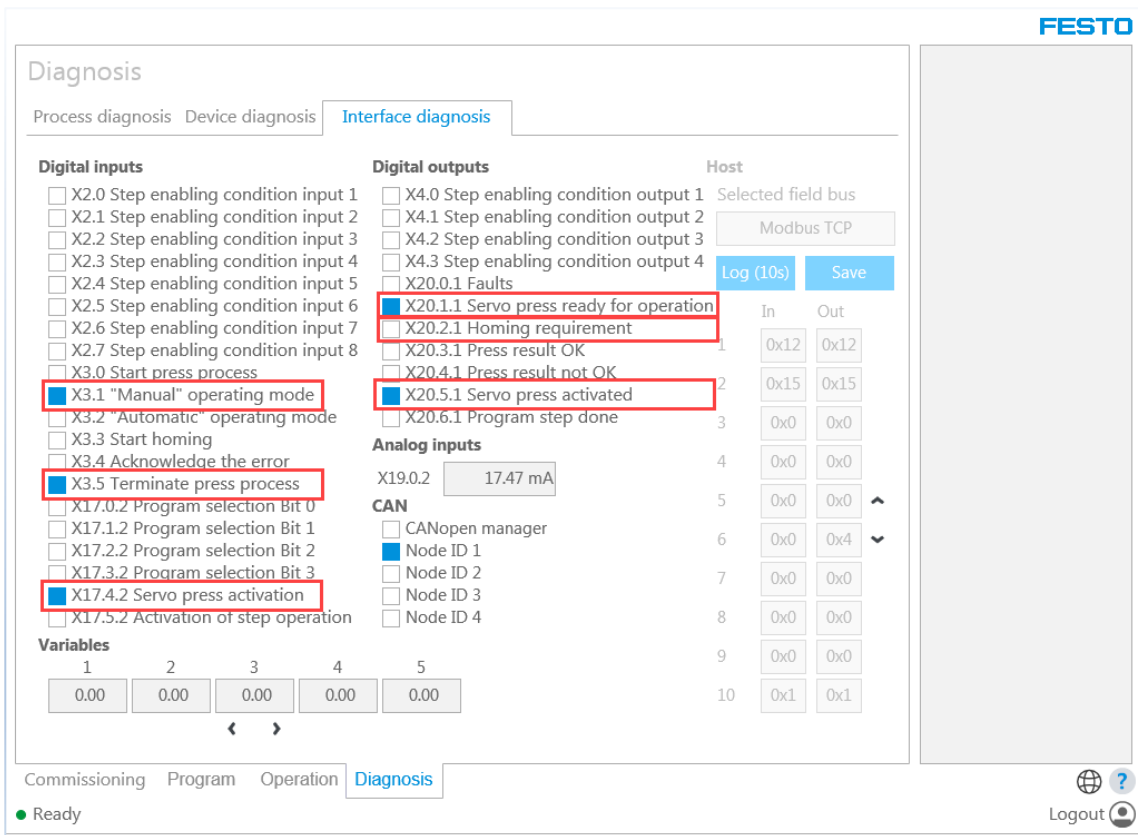


Required inputs:

- Manual mode (X3.1)
- Terminate press process (X3.5)
- Servo press activation (X17.4.2)

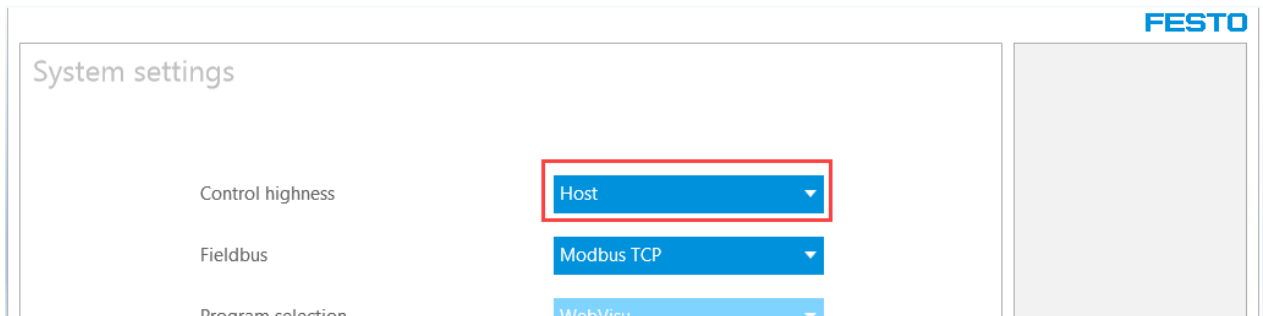
Required outputs:

- Servo press ready for operation (X20.1.1)
- Servo press activated (X20.5.1)
- **NOT** Homing required (X20.2.1)



3.2 Host control

The control highness in the system settings is set to Host.



Two function blocks are needed.

1. FB_Connect

Required inputs:

- xEnable := true;
- enTargetComMode := 0;

Required outputs:

- xActive = true;
- enActualComMode = 0;
- xConnected = true;

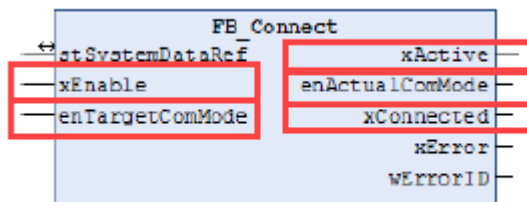


Figure 3-7: FB_Connect

2. FB_Manual

Required inputs:

- xEnable := true;
- xEnableSystem := true;
- xAbort := true;

Required outputs:

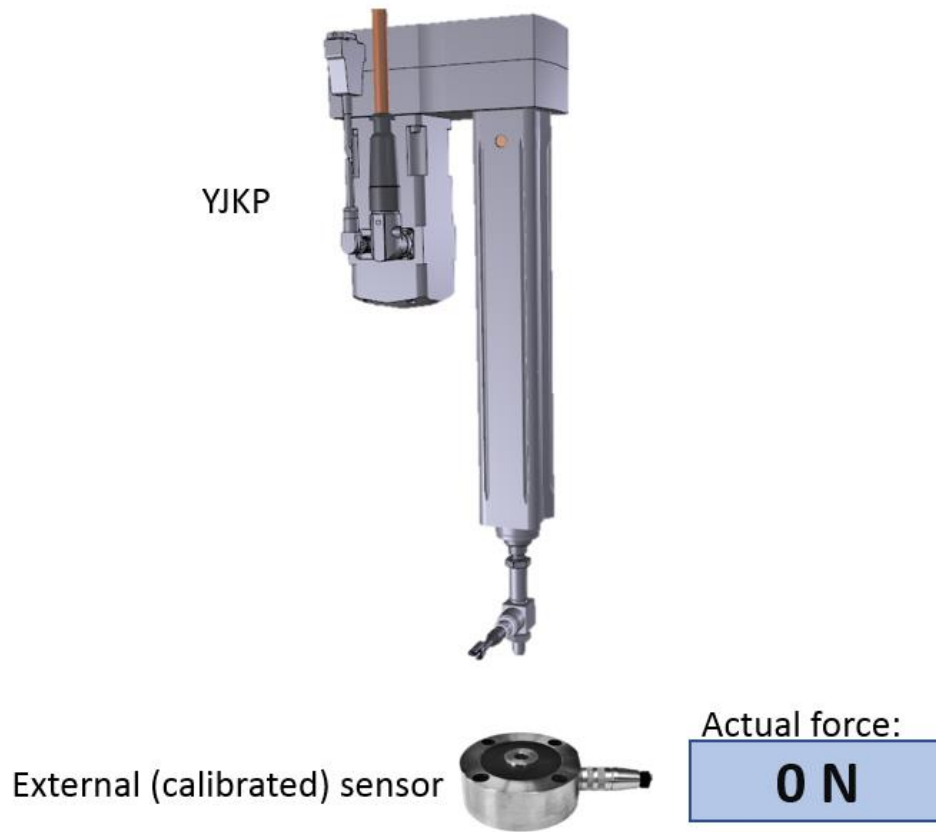
- xActive = true;
- xSystemEnabled = true;
- xSystemHomed = true;
- xInOperation = false;

FB_Manual	
← stSystemDataRef	xActive
xEnable	xSystemEnabled
xEnableSystem	xSystemIsHomed
xStartHoming	xInOperation
xAbort	xSystemError
xQuitSystemError	xTared
xTare	rActualOffsetForceSensor
rTargetOffsetForceSensor	enActualPosMode
enTargetPosMode	rActualMotionVelocity
rTargetMotionVelocity	rActualMotionPositionDistance
rTargetMotionPositionDistance	rActualPosition
xMove	rActualForce
xStopMove	rActualVelocity
xJogPos	xError
xJogNeg	wErrorID

Table 3-30: FB_Manual

3.3 Additional hardware and setup

To adjust the sensor of the YJKP you'll need an additional external (calibrated) sensor with the possibility to display or read its actual force value.



4 Adjusting the force sensor

1. Open the webvisu of the YJKP, login and go to the commissioning tab.

In this case the status of “Adjust force sensor” is red.

This only indicates, that default values are loaded.

It’s not a must to do the adjustment. The YJKP will also work with default values and status “red”.

2. Start the adjustment of the force sensor with “Adjust force sensor”.

The screenshot displays the FESTO webvisu commissioning interface. The main area is titled 'Commissioning' and contains a list of steps: Hardware configuration (green dot), Homing (red dot), Adjustment force sensor (red dot), Logging (red dot), and System settings (grey dot). Each step has a corresponding blue button: 'Configure hardware', 'Adjust force sensor' (highlighted with a red box), 'Configure logging', and 'Configure system settings'. The 'Adjust force sensor' button is also highlighted with a red box. To the right, there is a 'Released' status bar and a panel showing real-time data: 'Actual force' (11.73 N), 'Actual position' (-1.48 mm), and 'Actual velocity' (0.00 mm/s). Below this, there are 'Tare' and 'Offset' (0.00 N) options, and 'Motion' settings (Absolute, Relative, Jog). At the bottom, there is a navigation bar with 'Commissioning' (highlighted with a red box), 'Program', 'Operation', and 'Diagnosis'. A 'Logout' button is also visible.

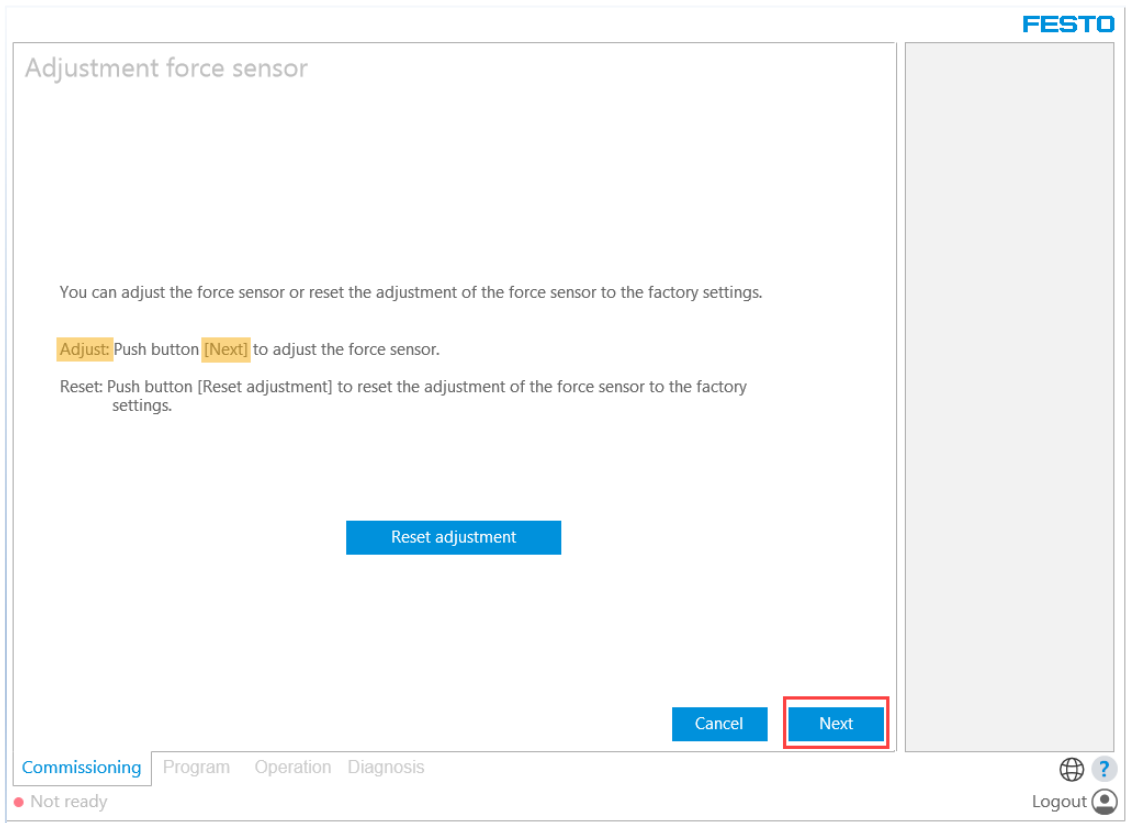
3. The adjustment of the force sensor is done with a two point adjustment. This means you need two different force values, which are optimally as far apart as possible.

Example in this application note:

Value 1: 25N

Value 2: 730N

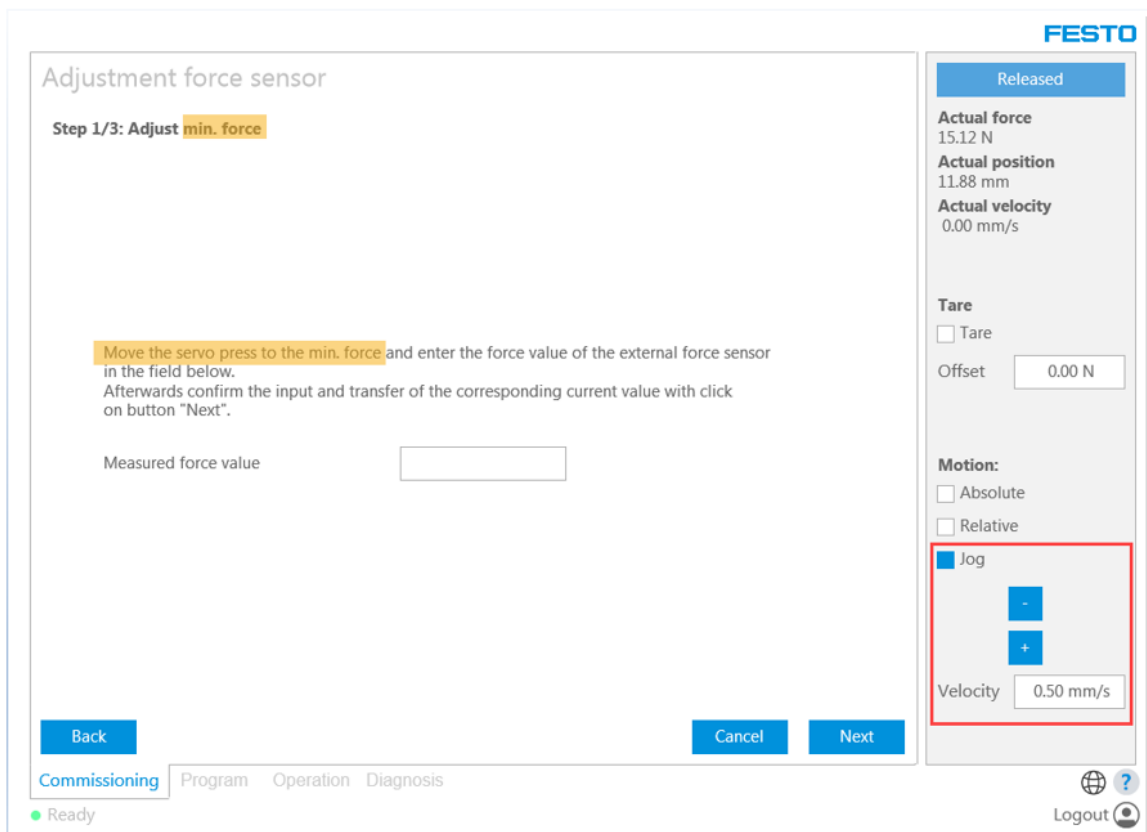
4. To start a new adjustment, go over this screen with “Next”.



5. Step 1/3:
In this step you first have to apply a small force value to the YJKP.

Use the jogging functionality to move the YJKP on the external sensor. By changing the velocity you can fine-tune your desired value.

Min. force in that case doesn't mean the minimum value of the force range of the YJKP, but just the lower force value of the two force values required for the adjustment.



Using a host PLC, you can jog the YJKP with the FB_manual and the following inputs:

- enTargetPosMode := 0;
- rTargetMotionVelocity := >0;
- xJogPos or xJogNeg := true;

outputs:

- enActualPosMode = 0;
- rActualMotionVelocity = rTargetMotionVelocity;

FB_Manual	
stSystemDataRef	xActive
xEnable	xSystemEnabled
xEnableSystem	xSystemIsHomed
xStartHoming	xInOperation
xAbort	xSystemError
xQuitSystemError	xTared
xTare	rActualOffsetForceSensor
rTargetOffsetForceSensor	enActualPosMode
enTargetPosMode	rActualMotionVelocity
rTargetMotionVelocity	rActualMotionPositionDistance
rTargetMotionPositionDistance	rActualPosition
xMove	rActualForce
xStopMove	rActualVelocity
xJogPos	xError
xJogNeg	wERRORID

Table 3-30: FB_Manual

6. Use the jogging functionality to move the YJKP on the external sensor. Apply a small force to the external sensor and read the value.
Example: 25N



7. Enter the force value of the external force sensor in the marked field. The actual force value in the WebVisu has no meaning at this point. Proceed with "Next".

Adjustment force sensor

Step 1/3: Adjust min. force

Move the servo press to the min. force and enter the force value of the external force sensor in the field below. Afterwards confirm the input and transfer of the corresponding current value with click on button "Next".

Measured force value

Actual force: 25 N

Commissioning Program Operation Diagnosis

● Ready

FESTO

Released

Actual force
15.12 N

Actual position
11.88 mm

Actual velocity
0.00 mm/s

Tare

Tare

Offset

Motion:

Absolute

Relative

Jog

Velocity

Logout

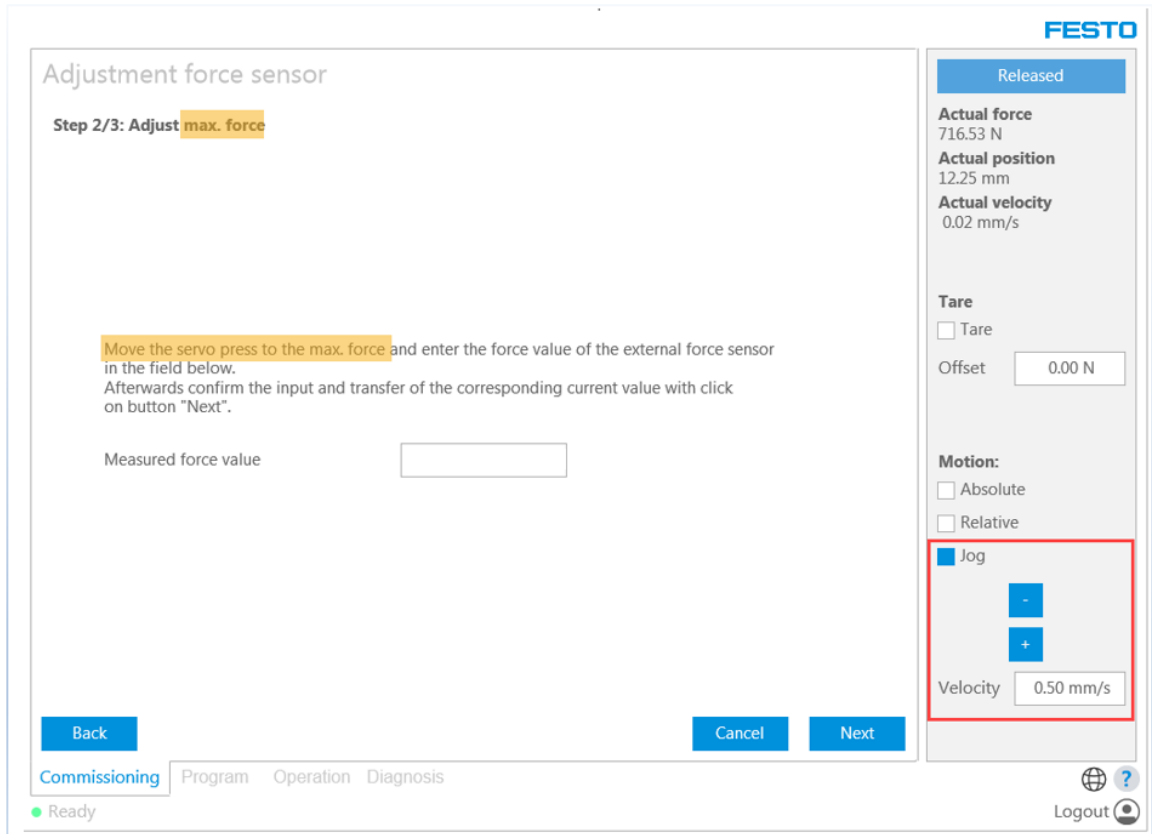
Adjusting the force sensor

8. Step 2/3:

In the second step you have to apply a high force value to the YJKP.

Use the jogging functionality to move the YJKP on the external sensor. By changing the velocity you can fine-tune your desired value.

Max. force in that case doesn't mean the maximum value of the force range of the YJKP, but just the higher force value of the two force values required for the adjustment.



Using a host PLC, you can jog the YJKP with the FB_manual and the following inputs:

- enTargetPosMode := 0;
- rTargetMotionVelocity := >0;
- xJogPos or xJogNeg := true;

outputs:

- enActualPosMode = 0;
- rActualMotionVelocity = rTargetMotionVelocity;

FB_Manual	
stSystemDataRef	xActive
xEnable	xSystemEnabled
xEnableSystem	xSystemIsHomed
xStartHoming	xInOperation
xAbort	xSystemError
xQuitSystemError	xTared
xTare	rActualOffsetForceSensor
rTargetOffsetForceSensor	enActualPosMode
enTargetPosMode	rActualMotionVelocity
rTargetMotionVelocity	xActualMotionPositionDistance
rTargetMotionPositionDistance	rActualPosition
xMove	rActualForce
xStopMove	rActualVelocity
xJogPos	xError
xJogNeg	wErrorID

Table 3-30: FB_Manual

- Use the jogging functionality to move the YJKP on the external sensor. Apply a high force to the external sensor and read the value. Example: 730N



- Enter the force value of the external force sensor in the marked field. The actual force value in the WebVisu has no meaning at this point. Proceed with "Next".

Adjustment force sensor
FESTO

Step 2/3: Adjust max. force

Move the servo press to the max. force and enter the force value of the external force sensor in the field below. Afterwards confirm the input and transfer of the corresponding current value with click on button "Next".

Measured force value 730.00 N

Actual force:
730 N

Back
Cancel
Next

Commissioning
Program
Operation
Diagnosis

● Ready

Released

Actual force
716.53 N

Actual position
12.25 mm

Actual velocity
0.02 mm/s

Tare

Tare

Offset

Motion:

Absolute

Relative

Jog

Velocity

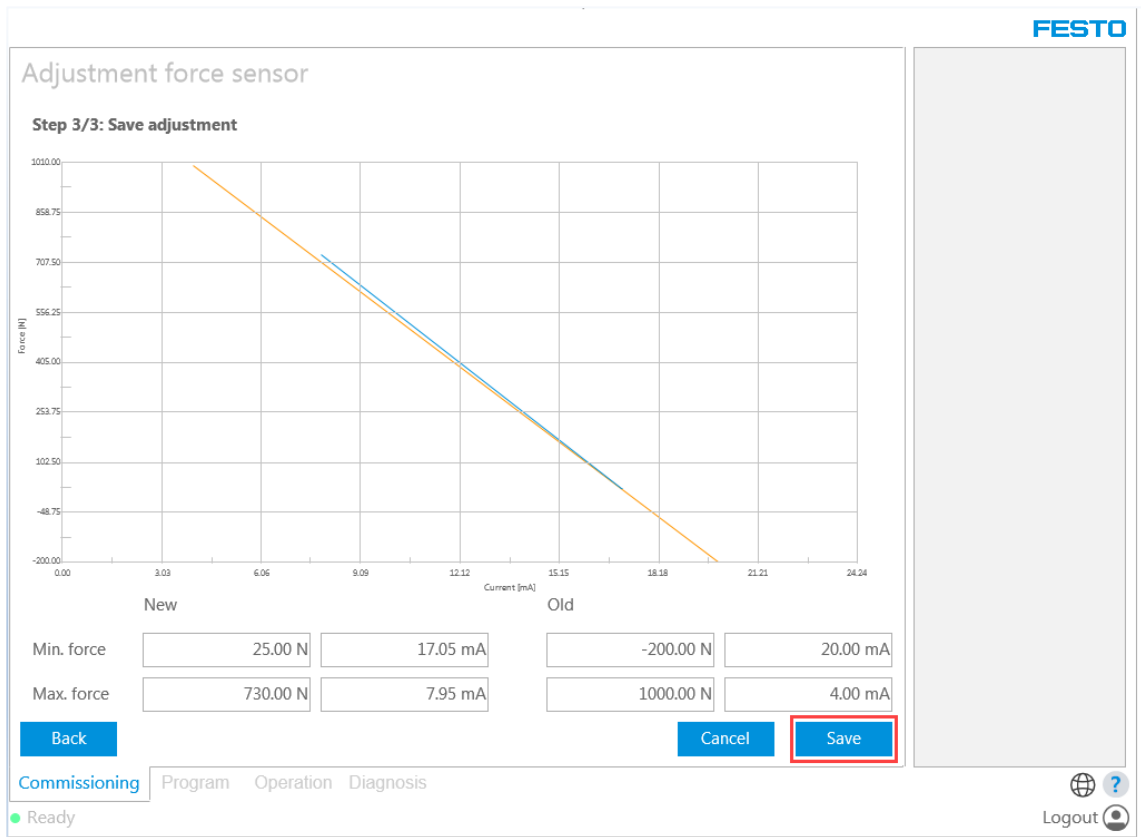
Logout

Adjusting the force sensor

11. Step 3/3:

In the last step you'll see a summary of the entered values and the new graph in comparison to the old values.

Finish the adjustment with "Save".



12. As soon as an adjustment is saved, the status "Adjustment force sensor" turns to green. There is no check for reasonability of the entered values.

Commissioning

Released

- Hardware configuration
- Homing
- Adjustment force sensor**
- Logging
- System settings

Buttons: Configure hardware, Adjust force sensor, Configure logging, Configure system settings

Start homing over button (Input X3.3 => Rising edge)
=> Modes of operation: Manual mode (Input X3.1 => True)

Tare: Tare

Offset: 0.00 N

Motion: Absolute, Relative, Jog

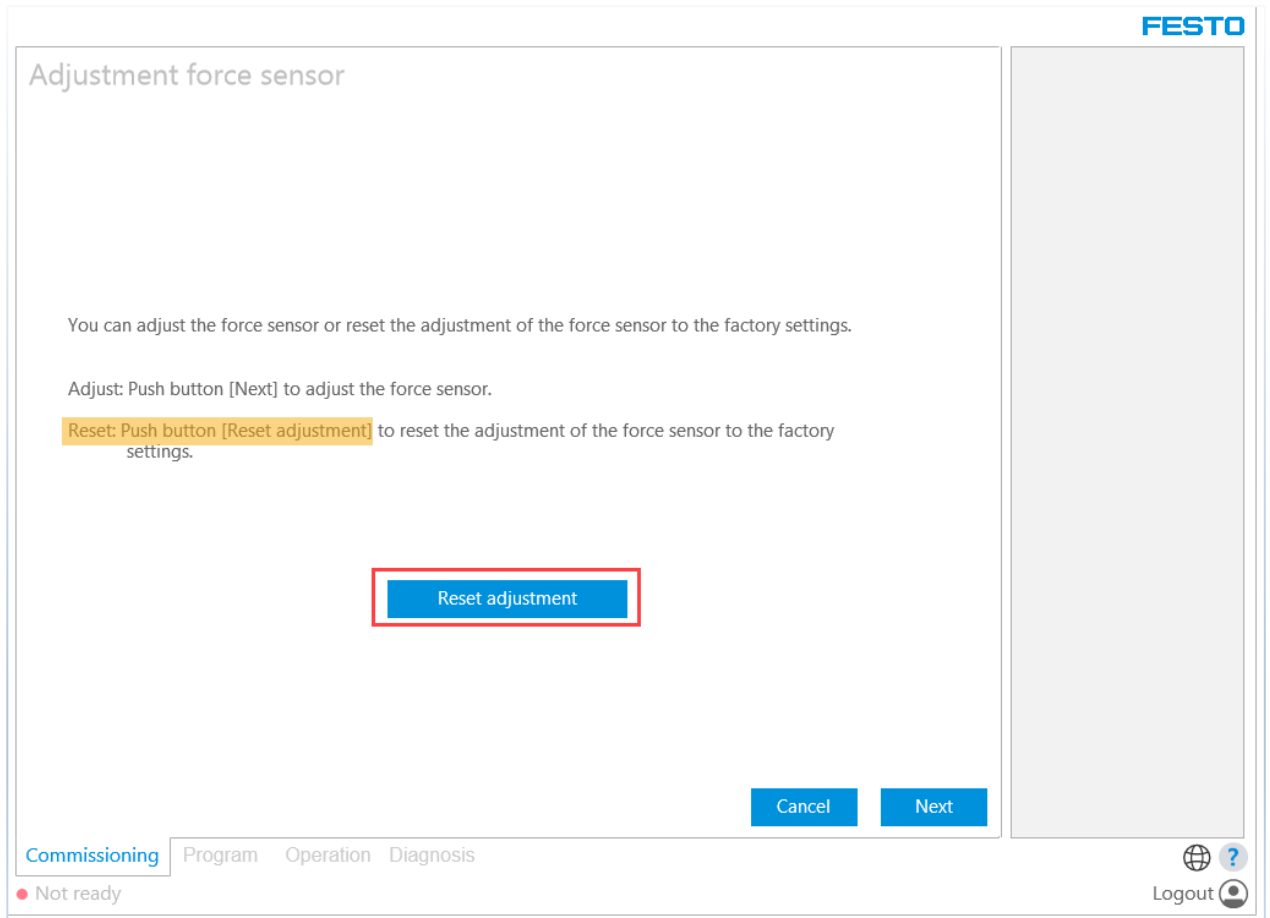
Velocity: 0.50 mm/s

Commissioning | Program | Operation | Diagnosis

Ready

Logout

13. It's possible to reset the adjustment and load the default values again. Just enter again the adjust force sensor function and press the button "Reset adjustment". It will directly jump into step 3/3, where you can save the default values.



The screenshot shows the 'Adjustment force sensor' interface. The title 'Adjustment force sensor' is at the top left. The Festo logo is in the top right corner. The main content area contains the following text:

You can adjust the force sensor or reset the adjustment of the force sensor to the factory settings.

Adjust: Push button [Next] to adjust the force sensor.

Reset: Push button [Reset adjustment] to reset the adjustment of the force sensor to the factory settings.

The 'Reset adjustment' button is highlighted with a red rectangular box. At the bottom right of the main content area, there are 'Cancel' and 'Next' buttons. At the bottom left, there is a navigation bar with 'Commissioning' (highlighted), 'Program', 'Operation', and 'Diagnosis'. Below this bar, it says '● Not ready'. At the bottom right, there is a 'Logout' button with a globe icon and a question mark icon.