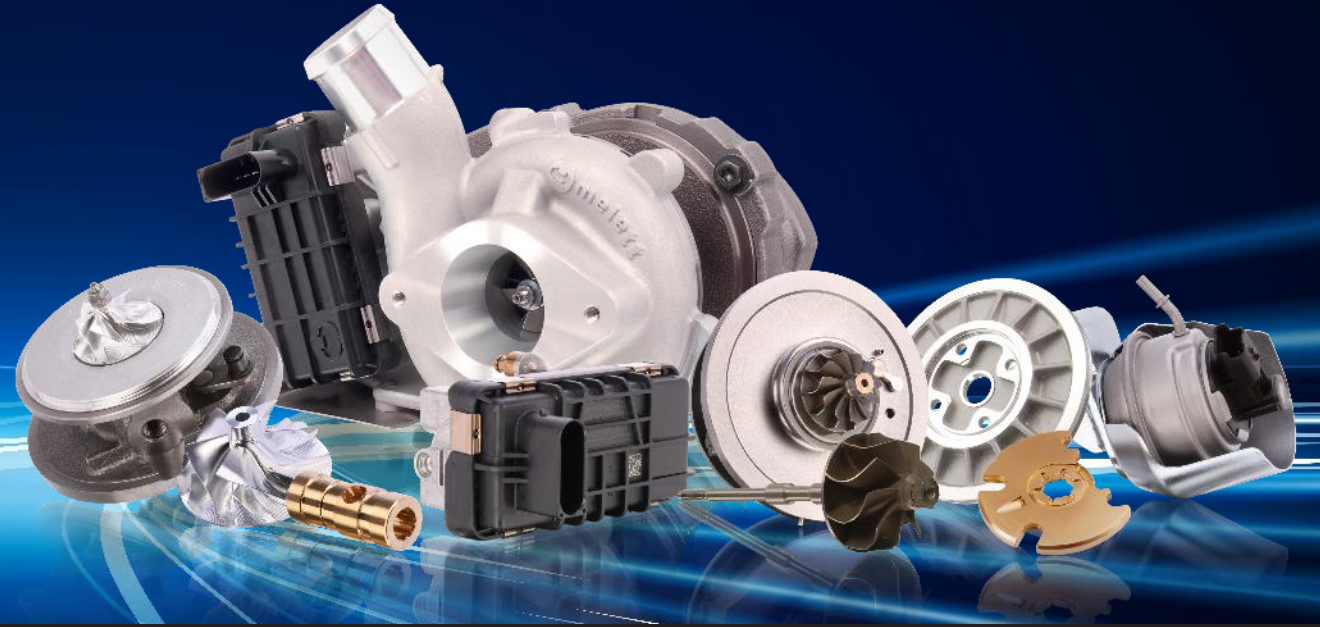


# Holset VGT™ Electronic Actuator

## Calibration Instructions



# Actuator Cross-Reference



*Please ensure part number cross-reference is checked before installation and calibration, as this actuator must only be used on OE part numbers in the table below. Warranty may be void if used on incorrect or modified applications.*

OE Actuator Part Number	Melett Part Number
4034315	1854-132-001
6382096	1854-132-001
5579127	1854-132-001
4034188	1854-132-002
6374772	1854-132-002
5452695	1854-132-002
6382093	1854-132-002
4034429	1854-132-002

# Calibration Instructions



To help Melett customers calibrate our VGT actuators, we have prepared step by step instructions for use on popular aftermarket calibration devices.

- [Holset eTool](#)
- [ATS tester](#)
- [CIMAT Turbotest](#)

Please note, Melett Holset VGT actuators have been confirmed to be compatible with the following calibration tools:

- Holset eTool
- ATS Tester
- CIMAT Turbotest
- Turboclinic – Turboscope.

# Holset eTool





# Holset eTool



The following slides are typical of the process of using a Holset eTool to perform installation and calibration of the Melett VGT actuator.

Please note, some of Melett VGT actuator features differ from the OE actuator. These are as follows;

- A Span Check test cannot be performed until the actuator has been calibrated and installed.
- No time or temperature histography is recorded or reported with the eTool.
- The Hysteresis test can be performed successfully.
- The Learn test cannot be performed until after the actuator has been calibrated and installed.
- The Melett VGT actuator can be reconfigured for different physical stops settings (turbo frame sizes), which differs from OE actuators.

# Holset eTool



## Initial connection and configuration

Note that the Serial and Hardware part numbers are unique to the Melett actuator, as is the software version. Note that no stops data has been programmed, and that a Span Check test cannot be performed. The stops data will be set during the Calibration phase.

**Configuration**

Name	Value
Serial No.	4031 (0xFBFB)
HW Part No.	00000004031
Software Version	2.12.7
Voltage Rating	12
Voltage Measured	12.0
Open End Stop Drift	N/A
Closed End Stop Drift	N/A

Frame Size

**Span Check**

Current Span: 0

Response Time: N/A

Span Check Result:

- Min Span Check
- Max Span Check
- Response Time Check

# Holset eTool



## Potential communication dialogue

In some cases, the error message below may appear. If it does, disconnect and reconnect the actuator and tick 'ok' to return to Configuration.

The screenshot shows the 'Configuration' window in the Holset eTool software. The 'Configuration' button in the left-hand menu is highlighted with a red box. The main window displays a table of configuration parameters:

Name	Value
Serial No.	4031 (0xFBF)
HW Part No.	00000004031
Software Version	2.12.7
Voltage Rating	12
Voltage Measured	12.0
Open End Stop Drift	N/A
Closed End Stop Drift	N/A

Below the table, the 'Frame Size' is set to 'HE4XX'. An error dialog box is overlaid on the bottom right, displaying the message: 'The actuator is disconnected. Please connect the actuator.' with an 'OK' button.

# Holset eTool



## Installation and Calibration

Proceed to and complete the installation and calibration, confirming a successful calibrated span value. The Turbocharger and installed actuator is now ready for use on the engine, but further testing is possible as highlighted further.

**Install & Calibrate**

Configuration

**Install & Calibrate**

Temperature Histogram

Hysteresis

Learn

License

Disconnect Actuator: Confirm actuator is disconnected from turbo

Install Position: Select "Confirm" to move the actuator to the desired install position.

**Success**

Rotate Sector Gear Manually: Rotate to fully clockwise and select "Confirm" to continue

Install & Calibrate: Install actuator to the turbo and then select "Confirm" to run the Calibrate routine.

Span Limit Range 397 - 450  
Calibrated Span 447

Restart Confirm

Installation & Calibrate Result: **Success**

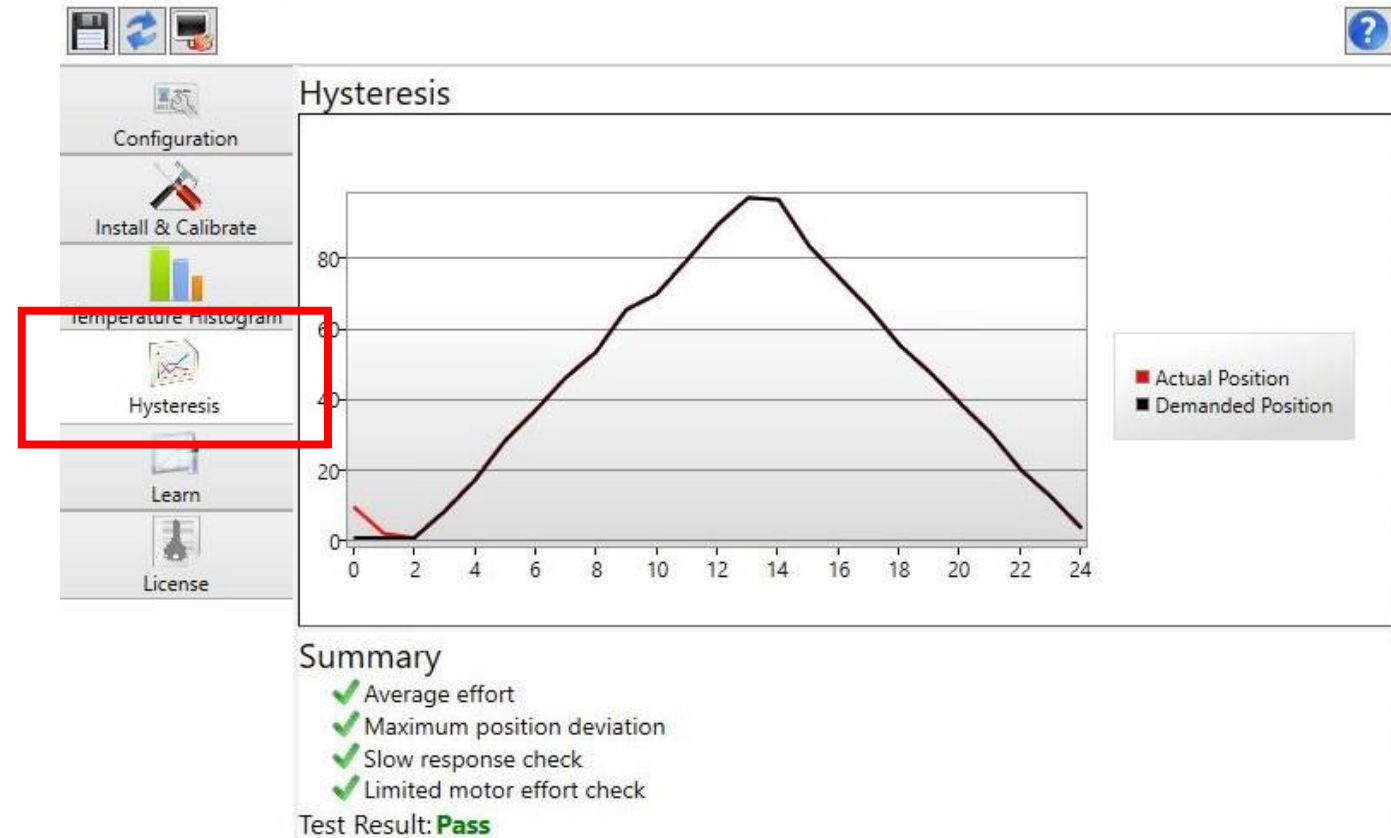


# Holset eTool



## Hysteresis Test

Test results will be typical of an OE actuator. Due to motor design updates, the graphed lines may appear to have less resolution.

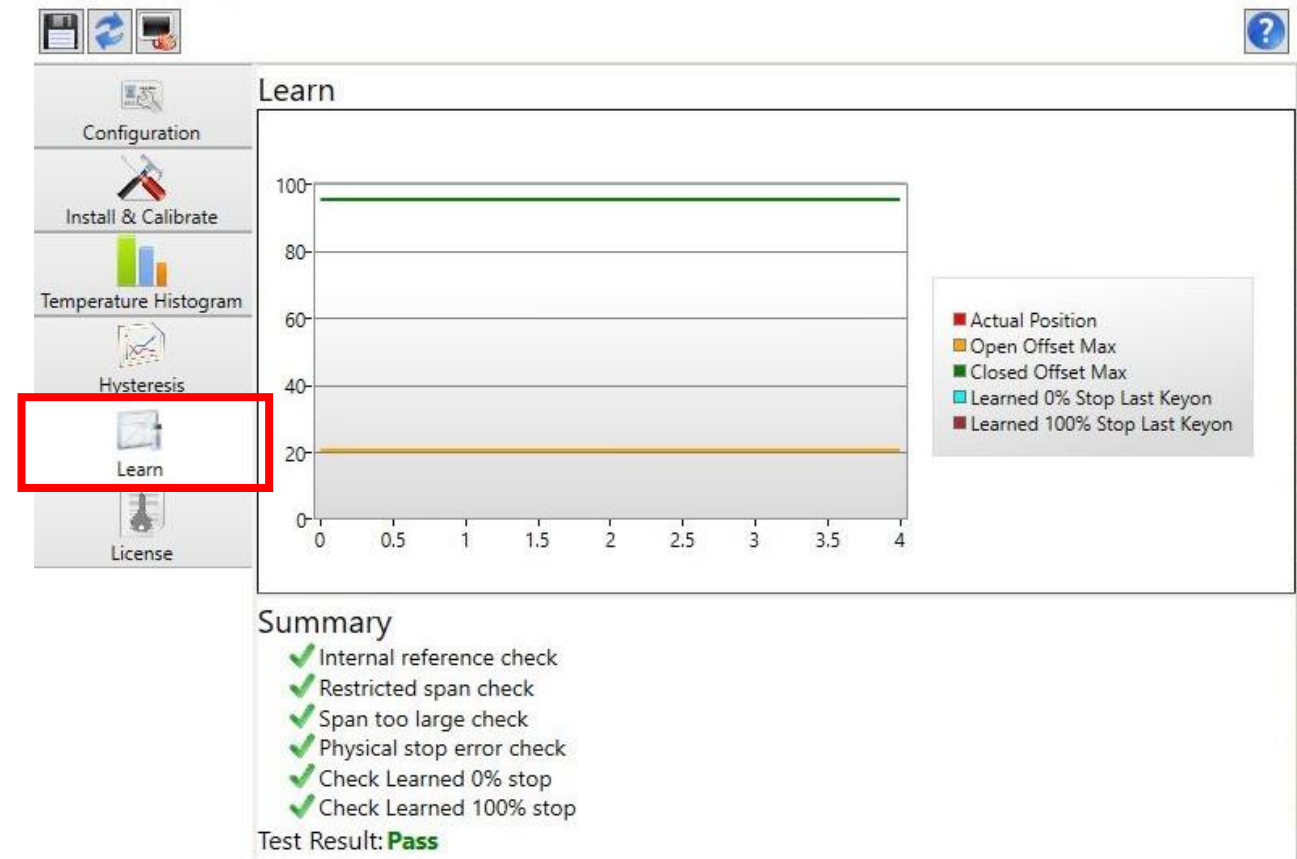


# Holset eTool



## Learn Test

This test must be performed after installation and calibration ONLY and will not provide a graphic representation typical of an OE actuator, but it will report the Summary data accurately and it will confirm PASS or FAIL.



# Holset eTool



## Span Check Test

As with Learn testing, this must be done ONLY after the actuator is calibrated, otherwise an error message may occur, indicating that no stops setting data has been recorded. However, after calibration, the Span Check Test can be performed and with success, it will show Span and Response Time data.

## Span Check

Current Span	447	<input type="button" value="Check Span"/>
Response Time	207.4 ms	
Span Check Result: <b>Pass</b>		
✓	Min Span Check	
✓	Max Span Check	
✓	Response Time Check	

# ATS Benchtop Tester



**melett**

PRECISION ENGINEERED  
TURBOCHARGERS & PARTS

A **Wabtec**  
Company



**Wabtec**  
CORPORATION



# ATS Benchtop Tester



The process is identical to that of the OE Actuator, except that the ATS tester will report time and temperature histogram data.

ATS Diesel Performance Turbo Calibration Tool

USB Working!!! Status: Operating

Commanded Position: 0

Feedback Position: 0

Actuator Load: 9

Actuator Temp: 84 °F | 29 °C

CPU Temp: 86 °F | 30 °C

Supply Voltage (12v): 12.1

Cummins HE351VE

Adapter Part Number: BT100

Part Number: 4031

Serial Number: 4031

Firmware Version: 0.0.0

Power Cycles: 1

Operating Time: 0 (Hrs) : 6 (Min)

Max Temp: 85°F | 29 °C

Manual Control: 0

Oscillate Menu

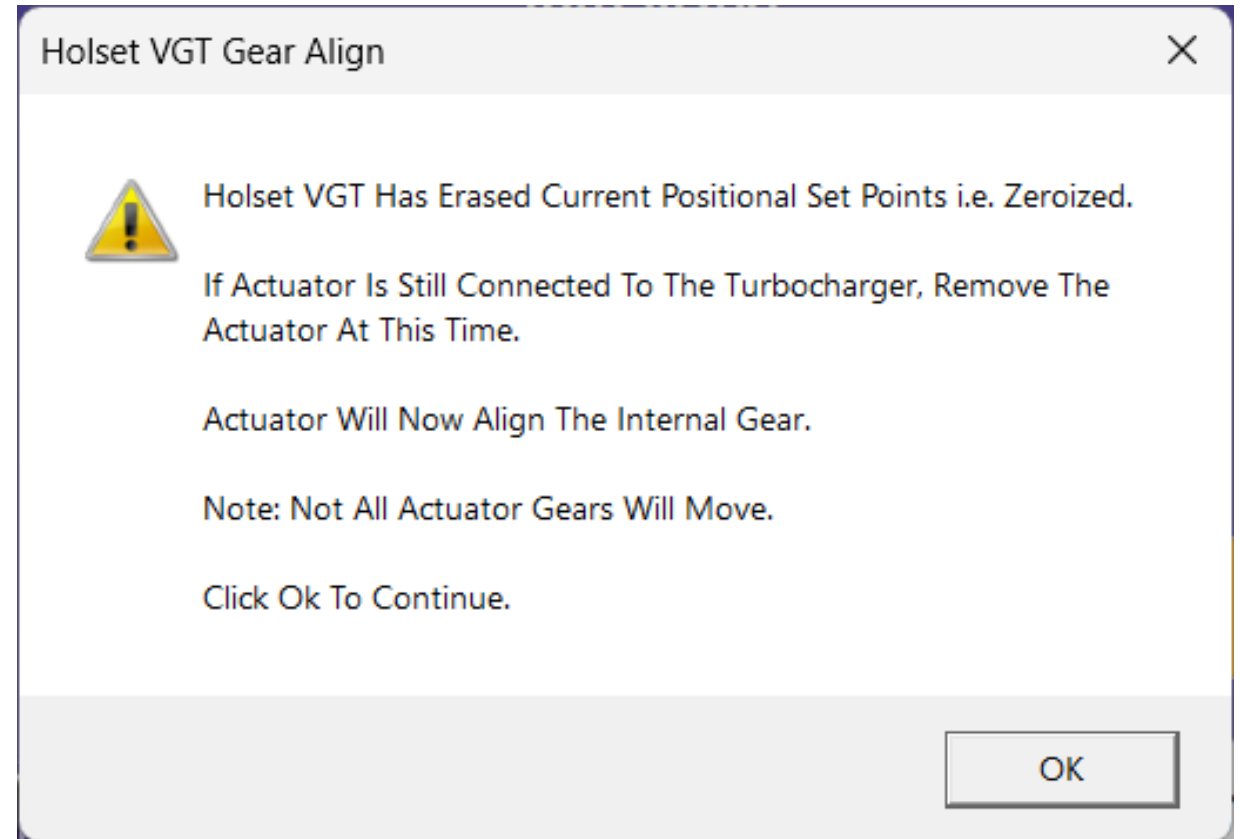
Software Version: 1.04 Firmware Version: 1.02 Serial Number: 0004018529000000

# ATS Benchtop Tester



## Set point calibration

The ATS tester will always erase existing set point data, prior to installation and calibration.



# ATS Benchtop Tester



## Installation and calibration

The calibration process is similar to that of the eTool and status is reported throughout the process. No further action is required after this process is complete, but further testing is possible, noted in the following slide.

The screenshot shows the software interface with the following elements:

- Window Title: ATS Diesel Performance Turbo Calibration Tool
- Status: **Calibrating** (highlighted in orange)
- USB Working!!! (green bar)
- Holset Error Codes**: Actuator Is Not Calibrated, Unknown Error
- Holset VGT Calibration**:
  - Initialized: **Initialized** (green button)
  - Zeroize: **Zeroed** (green button)
  - Set Gear: **Set** (green button)
  - Calibrate: **Calibrating** (yellow button)
- A red box highlights a yellow **Working** button.
- Navigation buttons: **Calibrate** (green), **VGT Control** (grey), **Menu** (grey)
- Logos: **AURORA benchtop TURBO CALIBRATION TOOL**
- Footer: Software Version: 1.04 Firmware Version: 1.02 Serial Number: 0004018529000000

The screenshot shows the software interface with the following elements:

- Window Title: ATS Diesel Performance Turbo Calibration Tool
- Status: **Operating** (green bar)
- USB Working!!! (green bar)
- Commanded Position: 0
- Feedback Position: 0
- Actuator Load: 9
- Actuator Temp: 87 °F | 31 °C
- CPU Temp: 86 °F | 30 °C
- Supply Voltage (12v): 12.1
- Holset VGT Calibration**:
  - Initialized: **Initialized** (green button)
  - Zeroize: **Zeroed** (green button)
  - Set Gear: **Set** (green button)
  - Calibrate: **Calibrated** (green button)
- A red box highlights a green **Finished** button.
- Navigation buttons: **Calibrate** (grey), **VGT Control** (grey), **Menu** (grey)
- Logos: **AURORA benchtop TURBO CALIBRATION TOOL**
- Footer: Software Version: 1.04 Firmware Version: 1.02 Serial Number: 0004018529000000

# ATS Benchtop Tester



## Manual control

This would be similar to the eTool 'span check' or 'hysteresis' testing. Other than that, the ATS Tester allows full manual control. The screenshots below indicate manual testing of 0-100% and continued 'oscillation' testing.

The screenshot shows the software interface for the ATS Diesel Performance Turbo Calibration Tool. The status is 'Operating' and 'USB Working!!!'. The commanded position is 0, and the feedback position is 0. The actuator load is 9. The actuator temperature is 87 °F | 31 °C, and the CPU temperature is 86 °F | 30 °C. The supply voltage (12v) is 12.1. The manual control slider is set to 0, highlighted with a red box. The interface also displays the adapter part number (BT101) and the turbo model (Cummins HE300VG). The Aurora Benchtop Turbo Calibration Tool logo is visible at the bottom left, and the software version (1.04), firmware version (1.02), and serial number (000401852900000) are at the bottom.

The screenshot shows the software interface for the ATS Diesel Performance Turbo Calibration Tool. The status is 'Operating' and 'USB Working!!!'. The commanded position is 100, and the feedback position is 100. The actuator load is 9. The actuator temperature is 87 °F | 31 °C, and the CPU temperature is 84 °F | 29 °C. The supply voltage (12v) is 12.1. The manual control slider is set to 100, highlighted with a red box. The interface also displays the adapter part number (BT101) and the turbo model (Cummins HE300VG). The Aurora Benchtop Turbo Calibration Tool logo is visible at the bottom left, and the software version (1.04), firmware version (1.02), and serial number (000401852900000) are at the bottom.



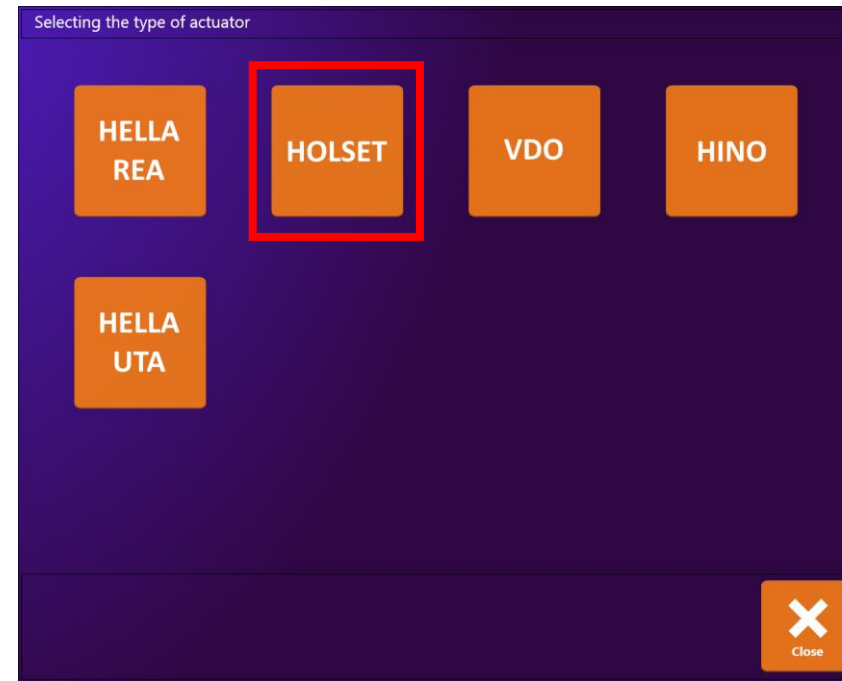
# CIMAT Turbotest



# CIMAT Turbotest



This process is similar to both the eTool and ATS tester, with similar reporting capabilities. The initial screen requires the operator to select the actuator type (in this case, “Holset”) to proceed.



# CIMAT Turbotest



## Initial connection and configuration

The correct cable is chosen, voltage selected, then the initial parameters can be confirmed, including internal part and serial numbers, software, average temperature and time in operation. From there, the command to initialize the actuator can be made, with the actuator removed from the turbocharger. Completion of the initialization process can then be followed by installation of the actuator to the turbocharger.

HOLSET

**Actuator identification**

Cable: R - 22

24V | 12V

**Actuator**

Current consumption [mA]

Current [mA]	Position
267,6	511

Turn on | Turn off

Calibration | Initialization | **Parameters** | Report | Close

**Actuator parameters**

Serial number	4031	Part number (HW)	4031
Parameters   Temperature			
Soft version	02.0<.07		
Number of cycles	1		
Average temperature [°C]	29,44		
Time [t:min]	0:12		

HOLSET

**Actuator identification**

Cable: R - 22

24V | 12V

**Actuator**

Current consumption [mA]

Current [mA]	Position
267,6	511

Turn on | Turn off

Calibration | **Initialization** | Parameters | Report | Close

**Actuator parameters**

Serial number	4031	Part number (HW)	4031
Parameters   Temperature			
Soft version	02.0<.07		
Number of cycles	1		
Average temperature [°C]	29,44		
Time [t:min]	0:12		

# CIMAT Turbotest



## Installation and Calibration

Once the actuator is installed, the final calibration can be made, at which point the turbocharger is ready for installation on the engine.

The screenshot displays the HOLSET software interface. On the left, under 'Actuator identification', there is a 'Cable' dropdown menu set to 'R - 22' and two buttons for '24V' and '12V'. Below this is the 'Actuator' section with a 'Current consumption [mA]' graph and a table showing 'Current [mA]' and 'Position' both at 0. At the bottom left, a green 'Calibration' button is highlighted with a red box. On the right, the 'Actuator parameters' section shows a table with the following data:

Serial number	4031	Part number (HW)	4031
Parameters   Temperature			
Soft version	02.0<.07		
Number of cycles	1		
Average temperature [°C]	29,44		
Time [h:min]	0:14		

At the bottom right of the interface are buttons for 'Report' and 'Close'.

Do you want to calibrate your HOLSET actuator?

