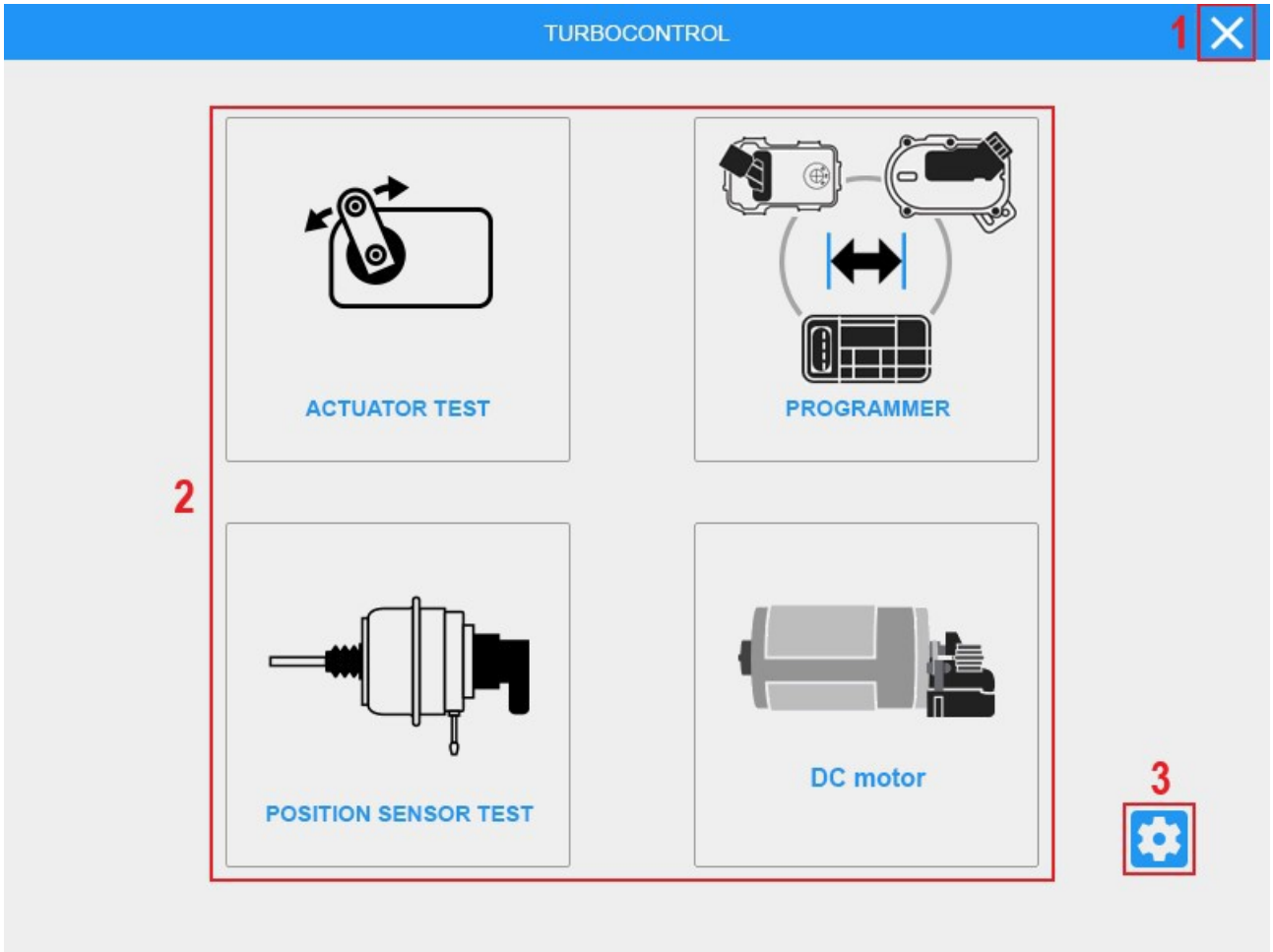
TurboControl

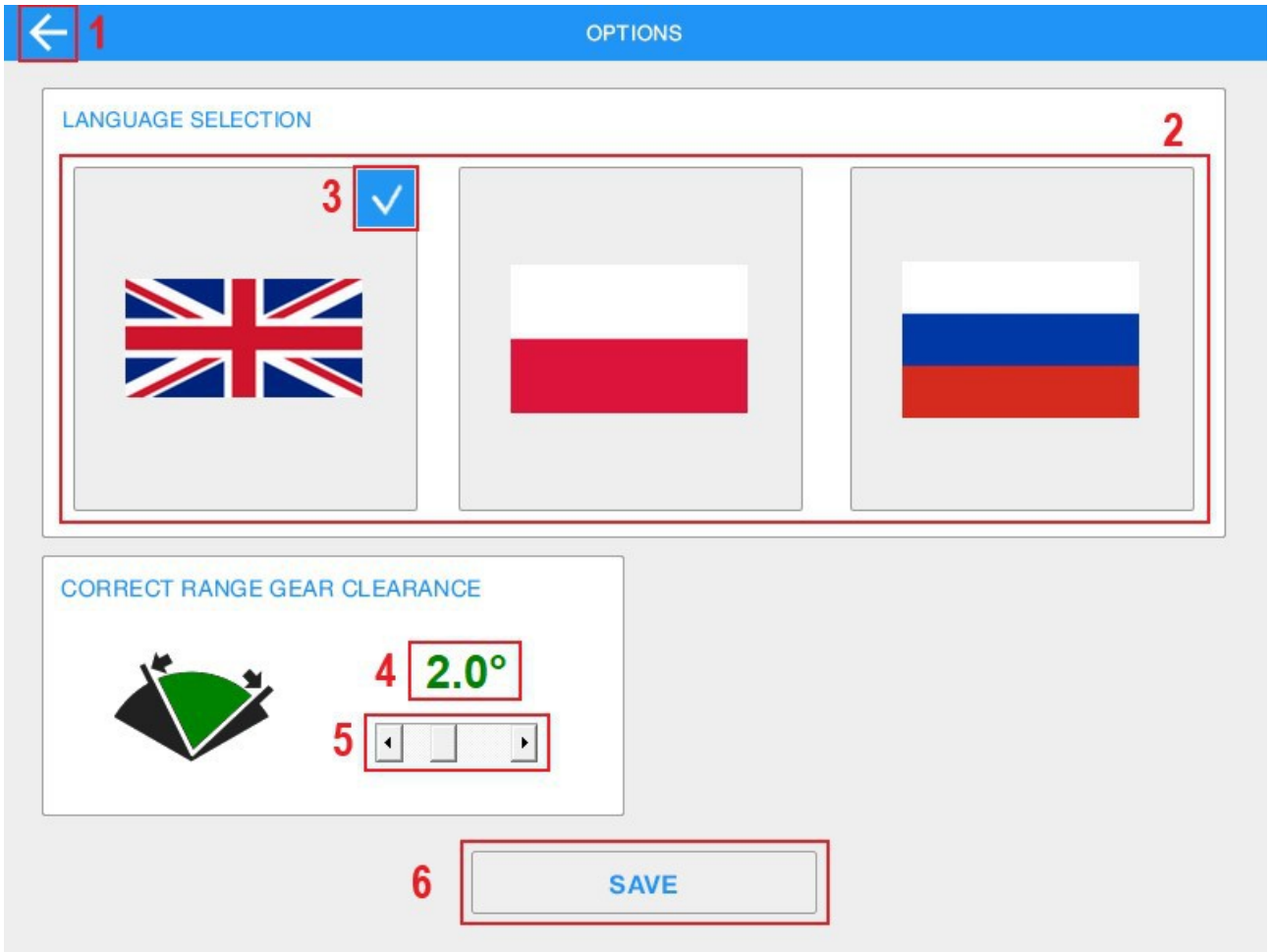
Manual Instruction

1. Main menu



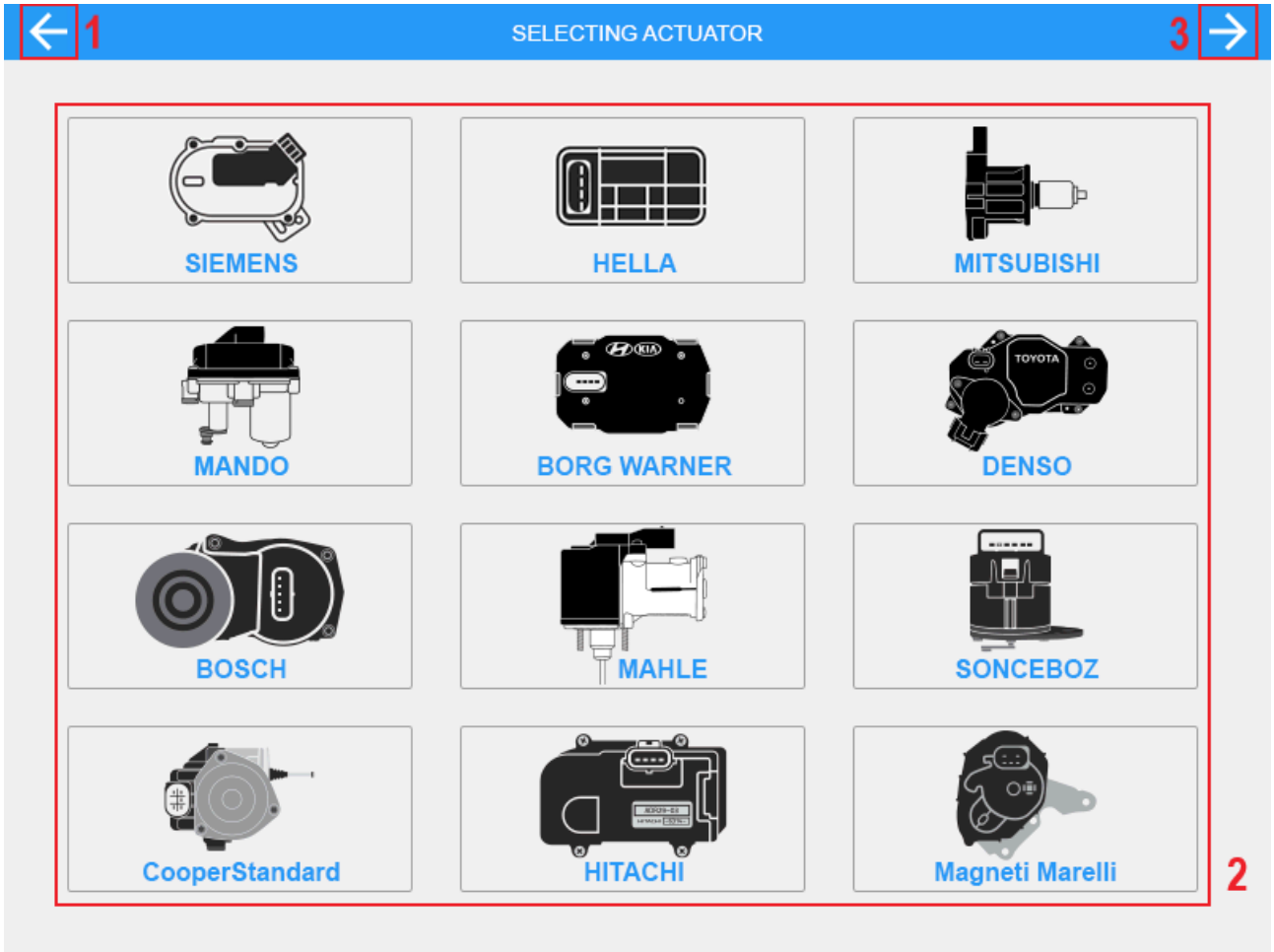
1. Close the program
2. Program selection buttons:
    - turbocharger actuator test
    - turbocharger actuator programmer
    - position sensor test
    - DC motor test
3. Program Configurations

2. Program Configurations



1. Return to the main program without saving changes made in the Program Configuations
2. Language selection
3. Currently selected language
4. The permissible value of the correct range of Hella actuator gear clearance (see functions available in the Hella programmer)
5. Change the permissible value of the correct range of Hella actuator gear clearance
6. Save changes made in the Program Configurations

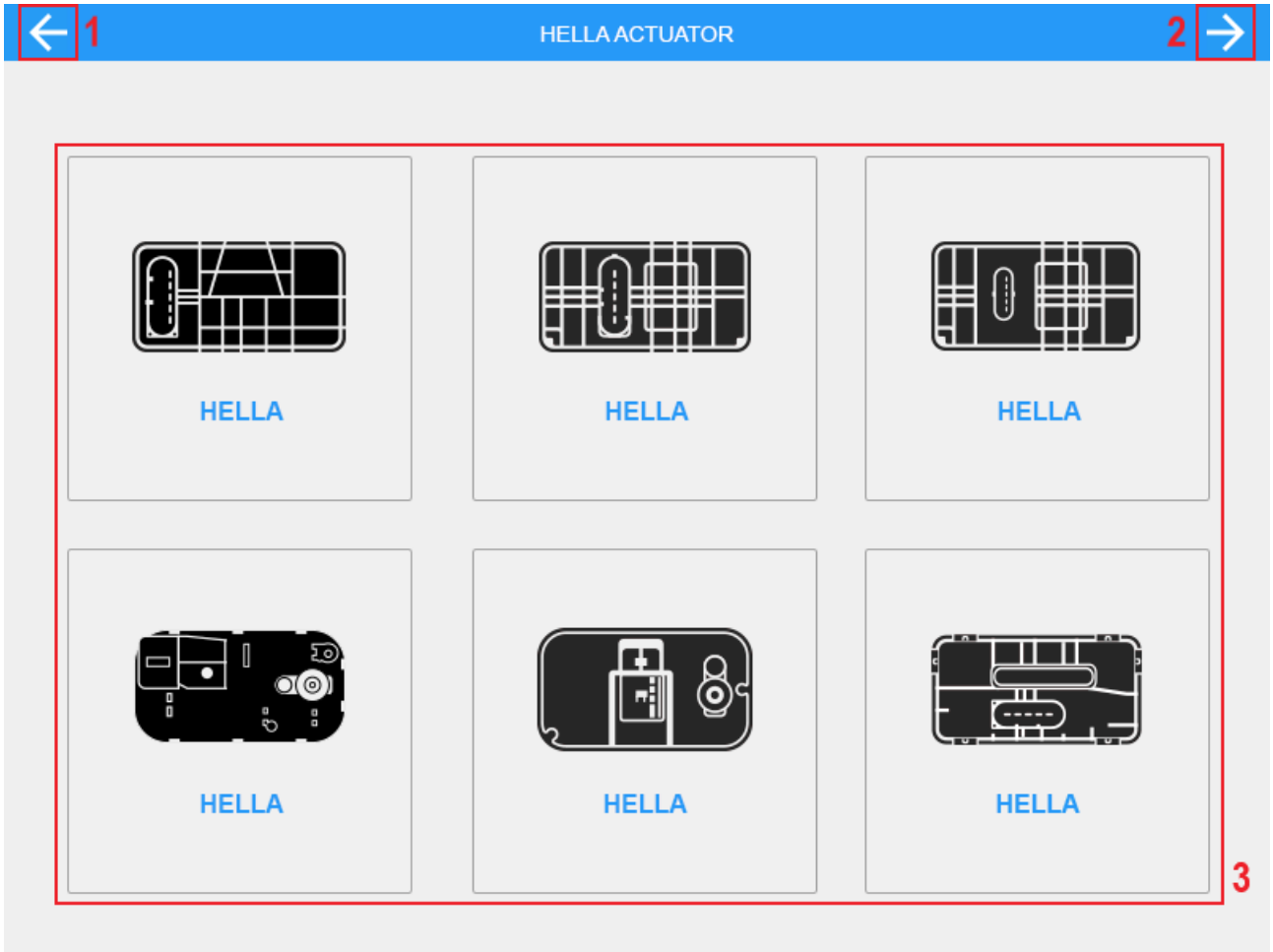
3. Actuator test module



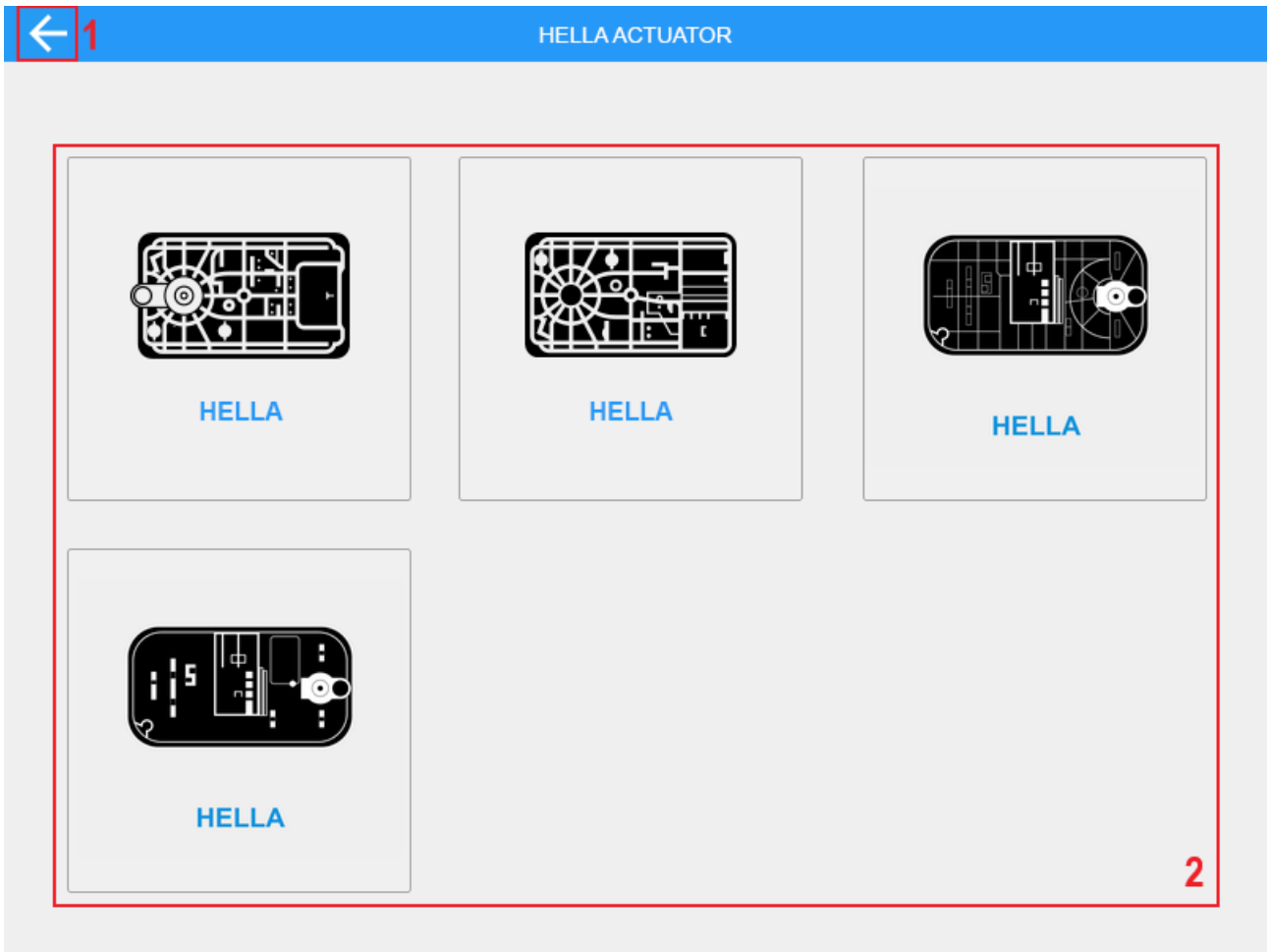
1. Return to the main menu window
2. Select the actuator to test
3. Go to the next page of the available actuators

3.1 Selecting actuator to test

Selecting actuator to test on the example of the Hella actuator. In other cases, the procedure is similar - it requires the selection of the right connector type, turbine number or actuator number.

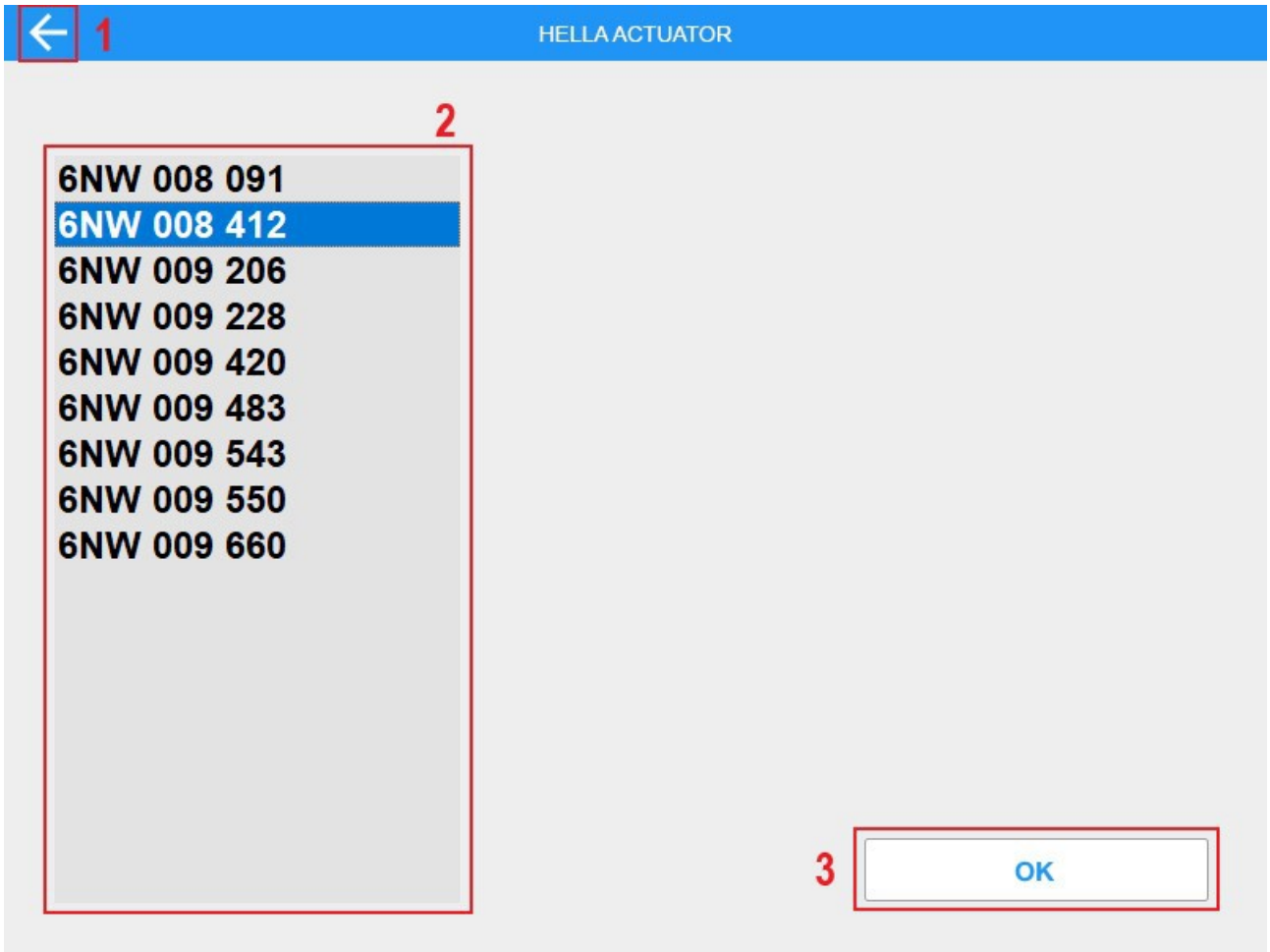


1. Return to the previous screen
2. Open next screen with available actuator types
3. Select the actuator based on the connector type



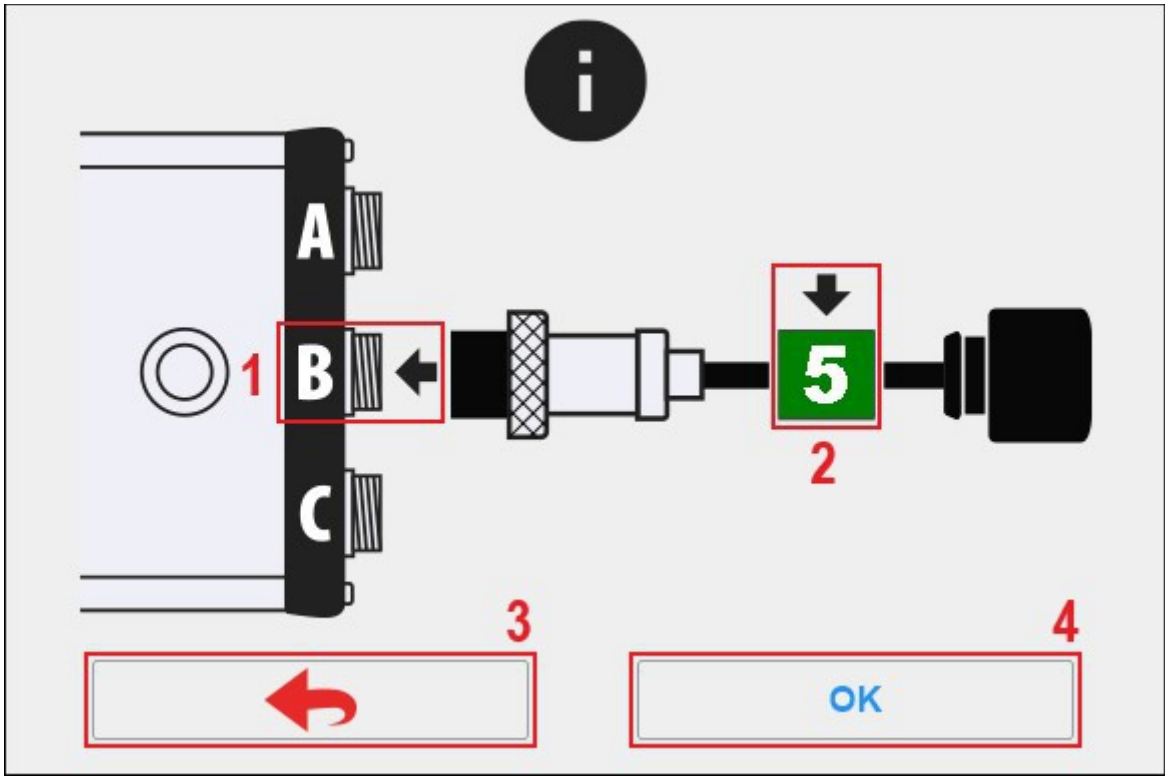
1. Return to the previous screen
2. Select the actuator based on the connector type

After selecting the actuator, a window with the actuator numbers will appear.



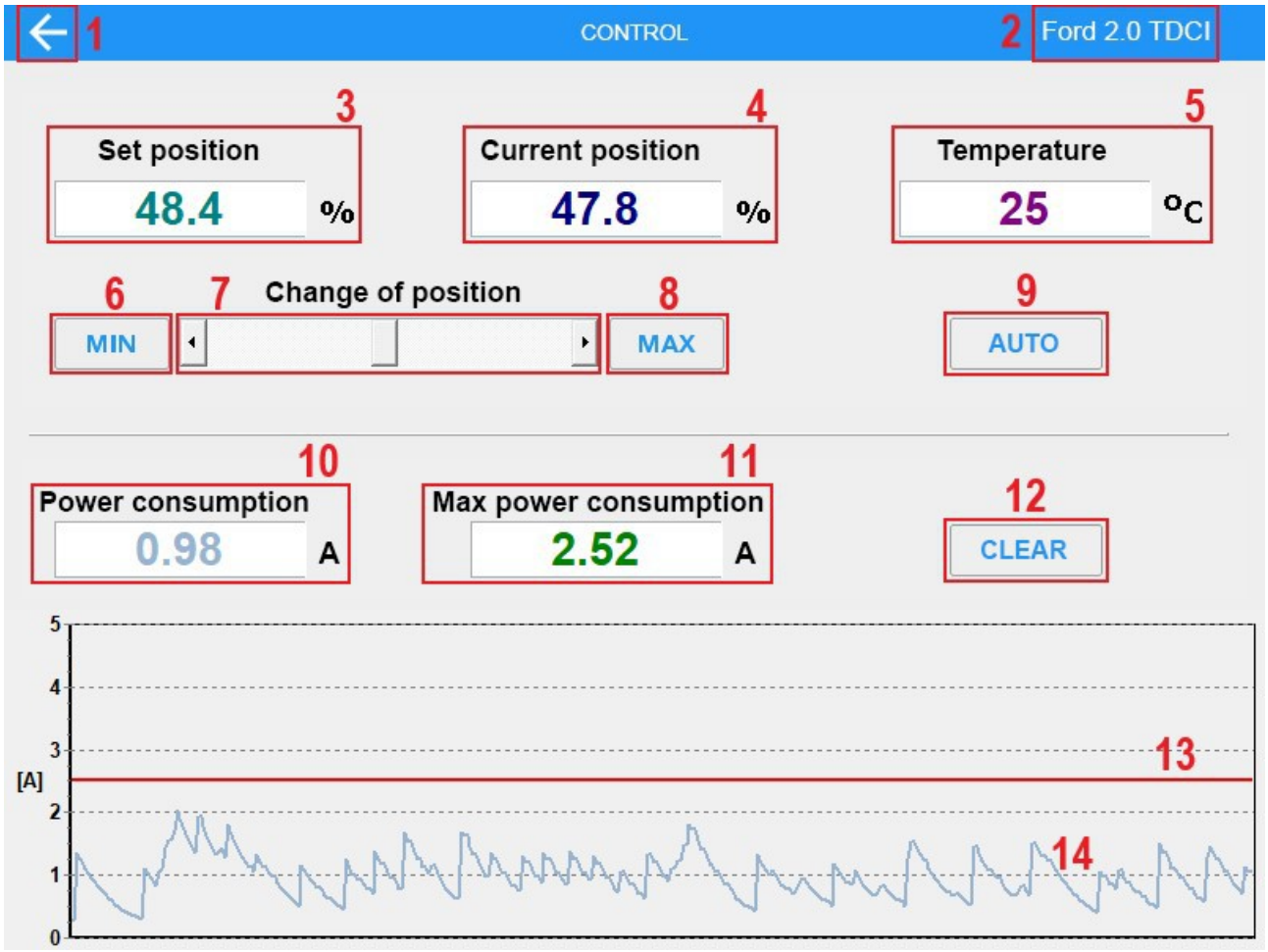
1. Return to the previous screen
2. Select the Hella actuator number
3. Confirm

After confirming the selection of the actuator number, information about the right cable number required to connect the actuator to the tester interface is displayed.



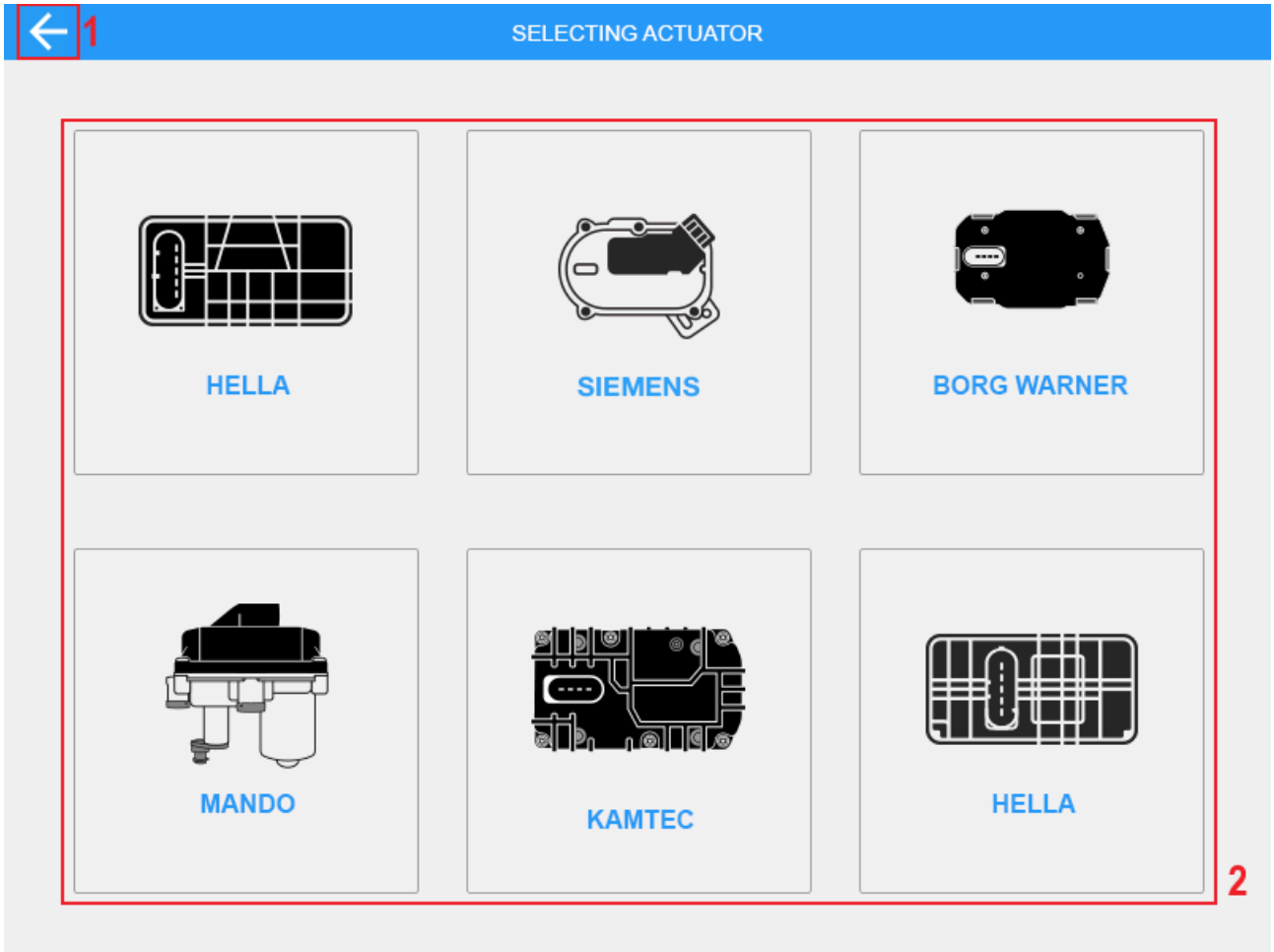
1. Identification of the interface socket to which the cable should be connected
2. Cable number
3. Return to the previous screen
4. Press OK to open the control screen that allows the actuator to be tested

3.2 Control



1. Return to actuator number selection (end of test)
2. Make and type of car in which the actuator is present (only given for some Hella actuators)
3. Set position of the variable geometry position lever or the relief flap
4. Current position of the variable geometry position lever or the relief flap - the position value given by the actuator. If there is no value in this area, it means that the actuator does not provide information about the current position of the lever.
5. Internal temperature of the actuator (only some Hella actuators)
6. Minimum position
7. Change of the set position - full range
8. Maximum position
9. Activate the automatic mode - cyclical change of the actuator lever position to the minimum and maximum positions (0-100%)
10. Current power consumption of the actuator
11. Maximum value of power consumed by the actuator achieved during the test
12. Clear the maximum power value
13. Line showing the power limit value for the tested actuator after which the actuator is considered to be out of order
14. Graph indicating the current power consumption of the actuator

4. Actuator programmer module

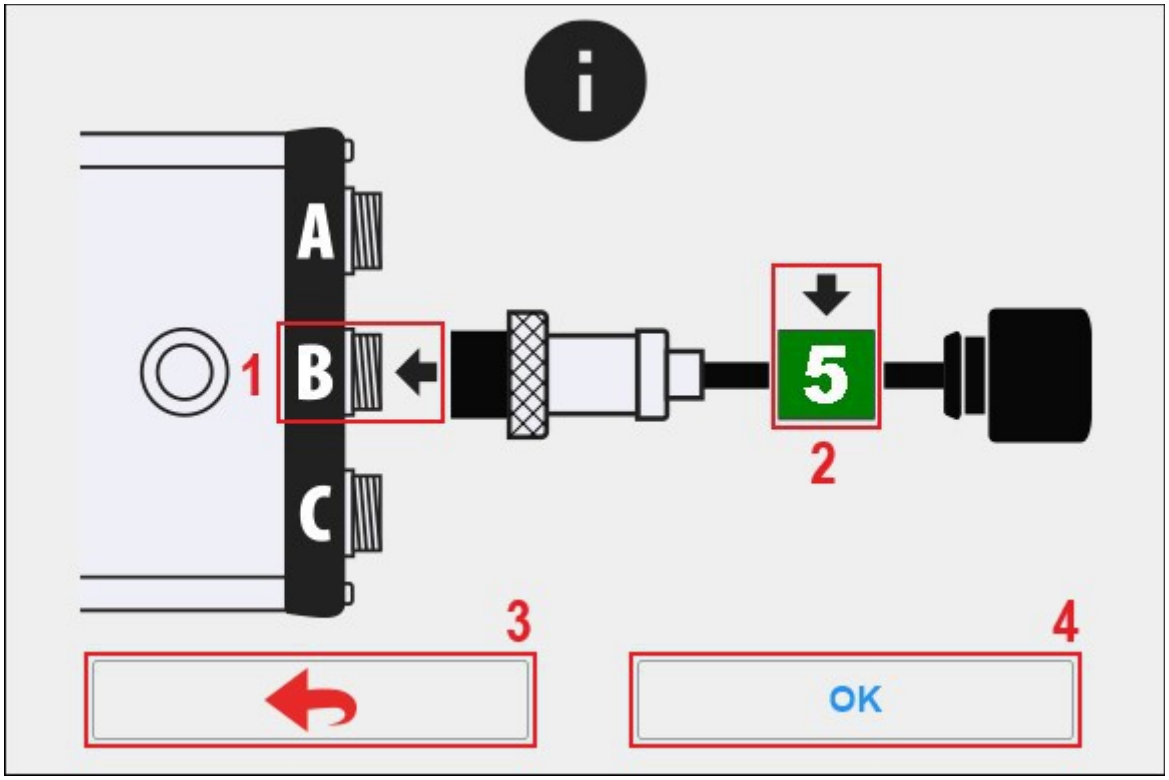


1. Return to the main menu
2. Select the actuator to program

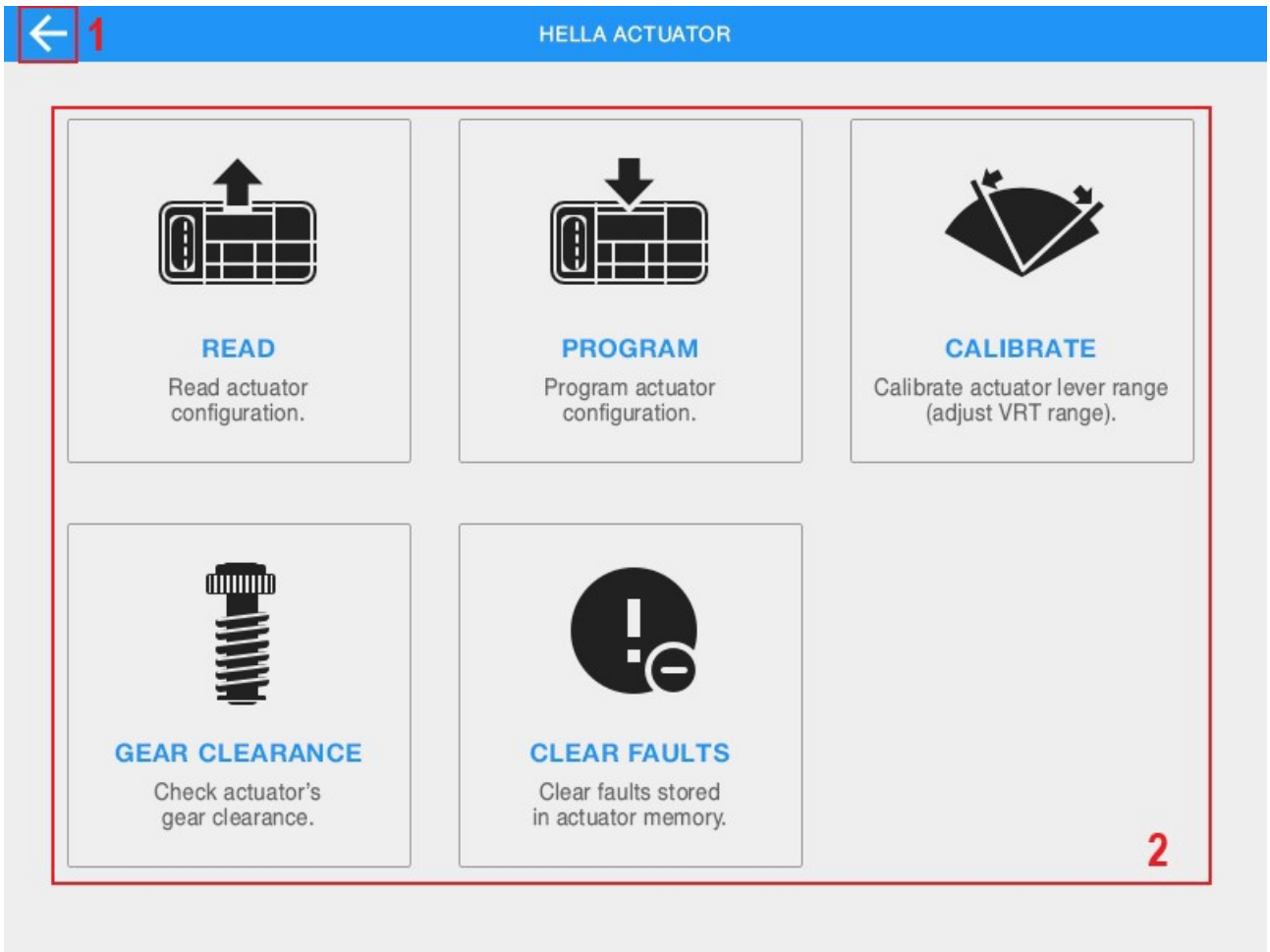
4.1 Programming Hella actuators

The programmer supports Hella actuators with the following electronics:
712120
730314
781751
763797

After pressing the Hella programming button, information about the use of the right cable is displayed.



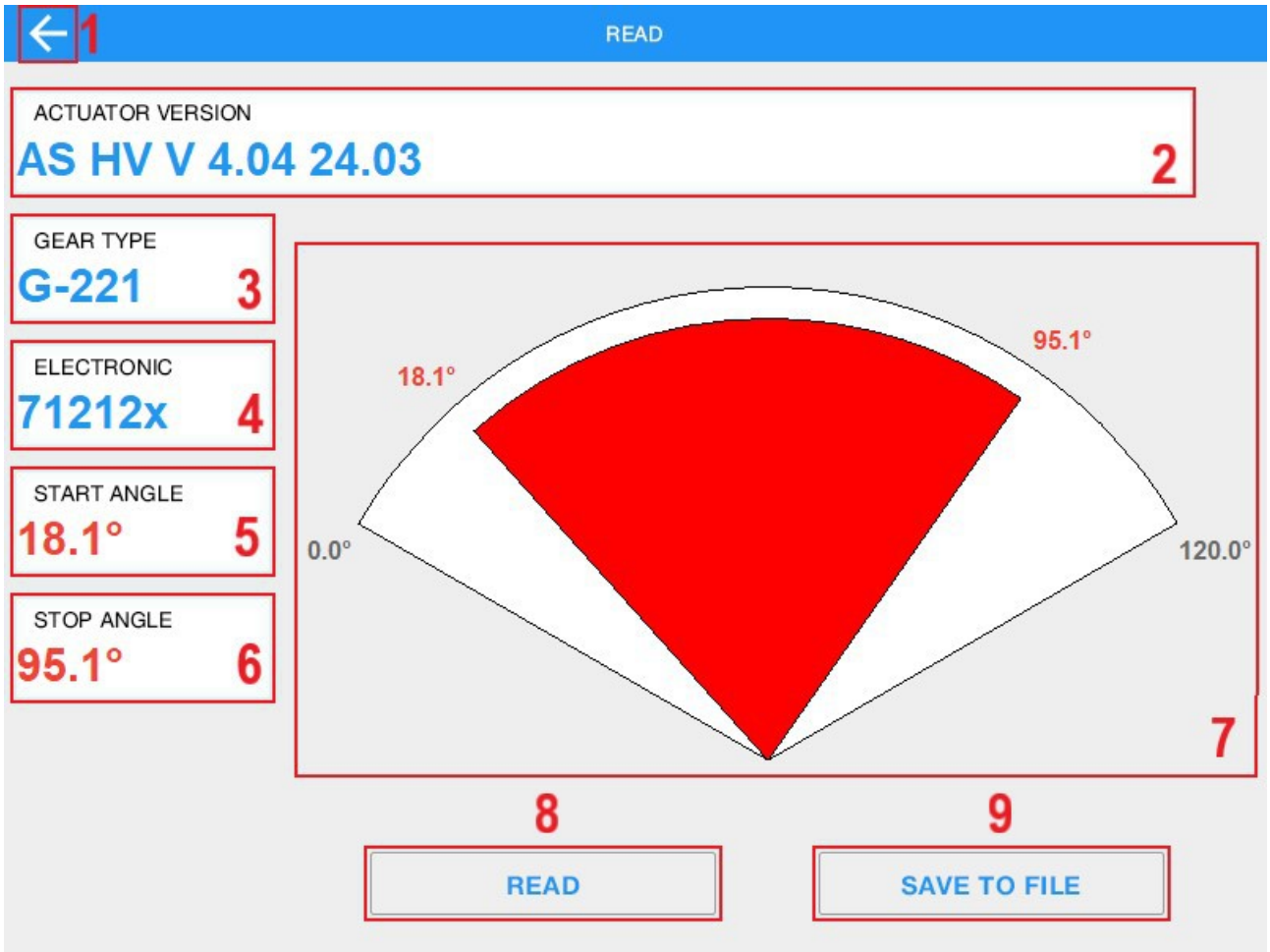
1. Identification of the interface socket to which the cable should be connected
2. Cable number
3. Return to the previous screen
4. Press OK to open the control screen that allows the actuator to be tested



1. Return to the previous screen
2. Hella programmer functions
   - Read - read the current actuator parameters (version, gear type, type of electronics used, etc.)
   - Program - save parameters to the actuator's memory
   - Calibrate - read the current operating range of the actuator
   - Gear clearance - check actuator's gear clearance
   - Clear faults - clear faults stored in actuator memory

4.1.1 "Read" function

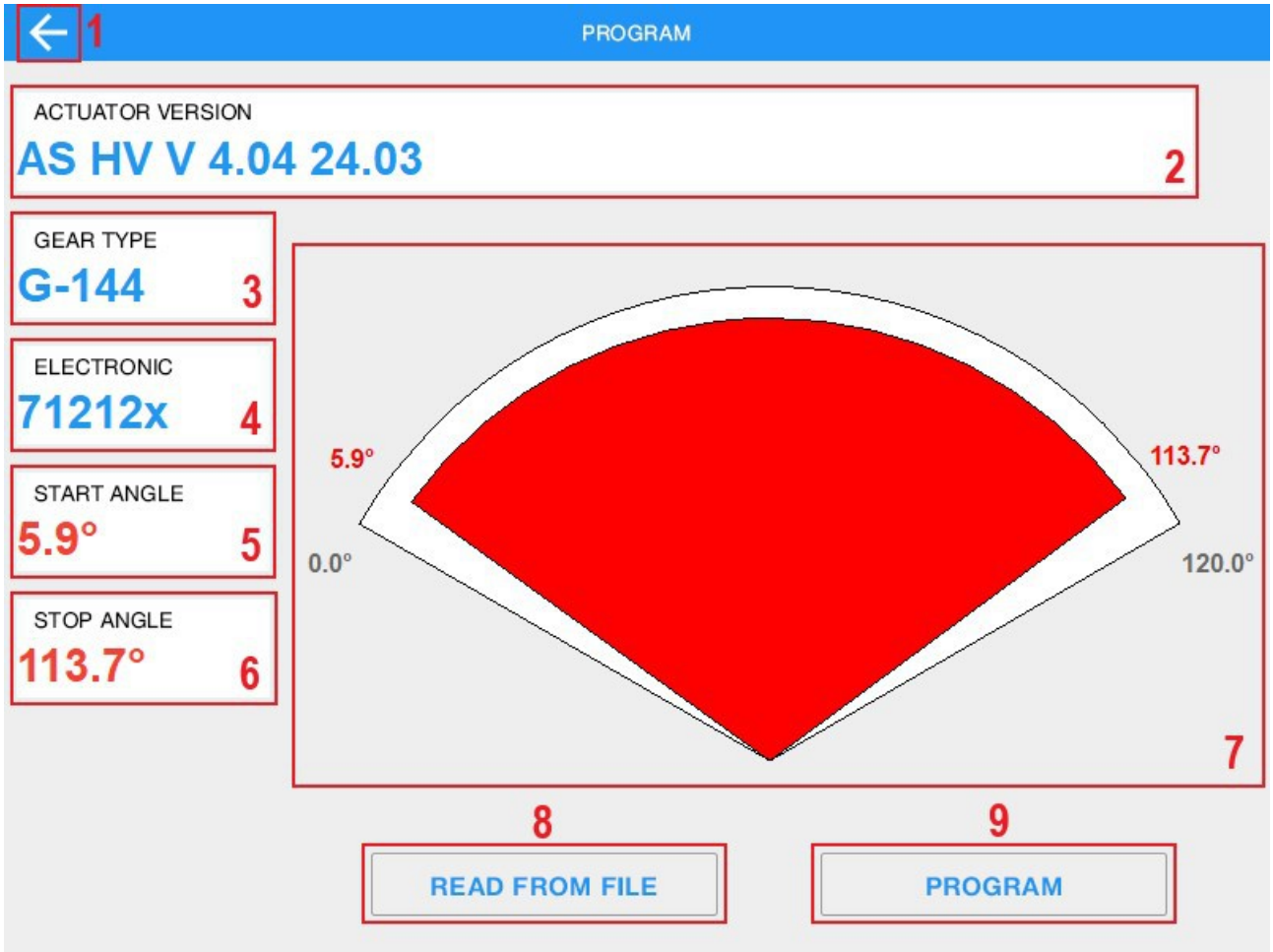
This function allows you to view the current parameters of the actuator.



1. Return to the previous screen
2. Actuator version
3. Actuator gear type
4. The type of electronics used in the actuator
5. The value of the start lever angle of the actuator
6. The value of the final lever angle of the actuator
7. Graphic representation of the range of motion of the control lever
8. Read current parameters of the actuator
9. Save the read actuator parameters to file

4.1.2 "Program" function

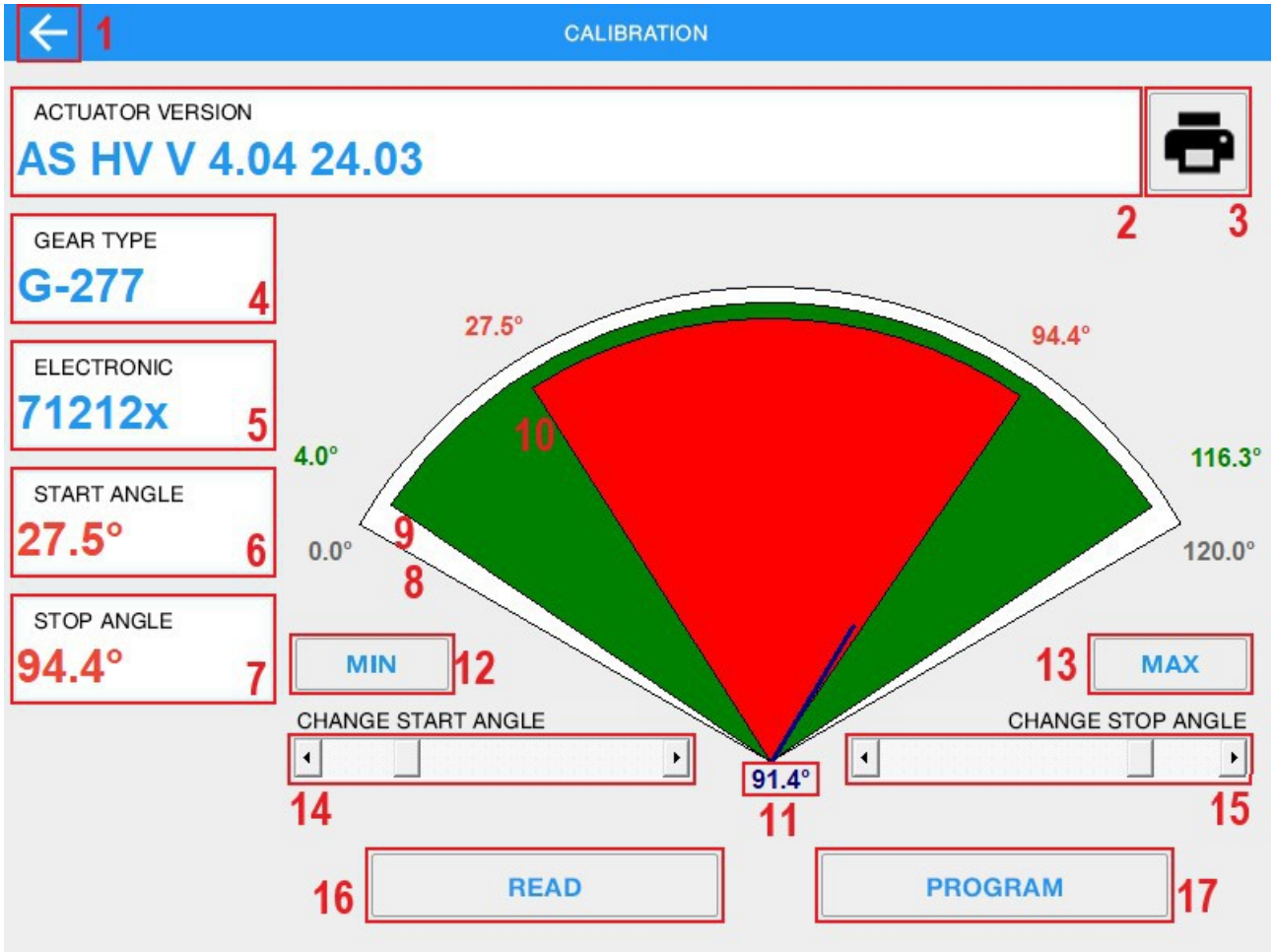
This function saves the parameters read from the file to the actuator memory (G-numbers of the actuators are in the database attached to the program). It also allows you to copy the actuators.



1. Return to the previous screen
2. Actuator version (to program)
3. Gear type of the actuator (to program)
4. Type of actuator electronic (to program)
5. Value of the start angle of the actuator lever to program
6. Value of the stop angle of the actuator lever to program
7. Graphic representation of the range of motion of the actuator lever that will be programmed
8. Read actuator parameters from a file (database)
9. Save (program) parameters to the actuator

4.1.3 "Calibrate" function

This function reads the current operating ranges (physical and programmed) of the actuator lever. It also allows you to change the scope of work.

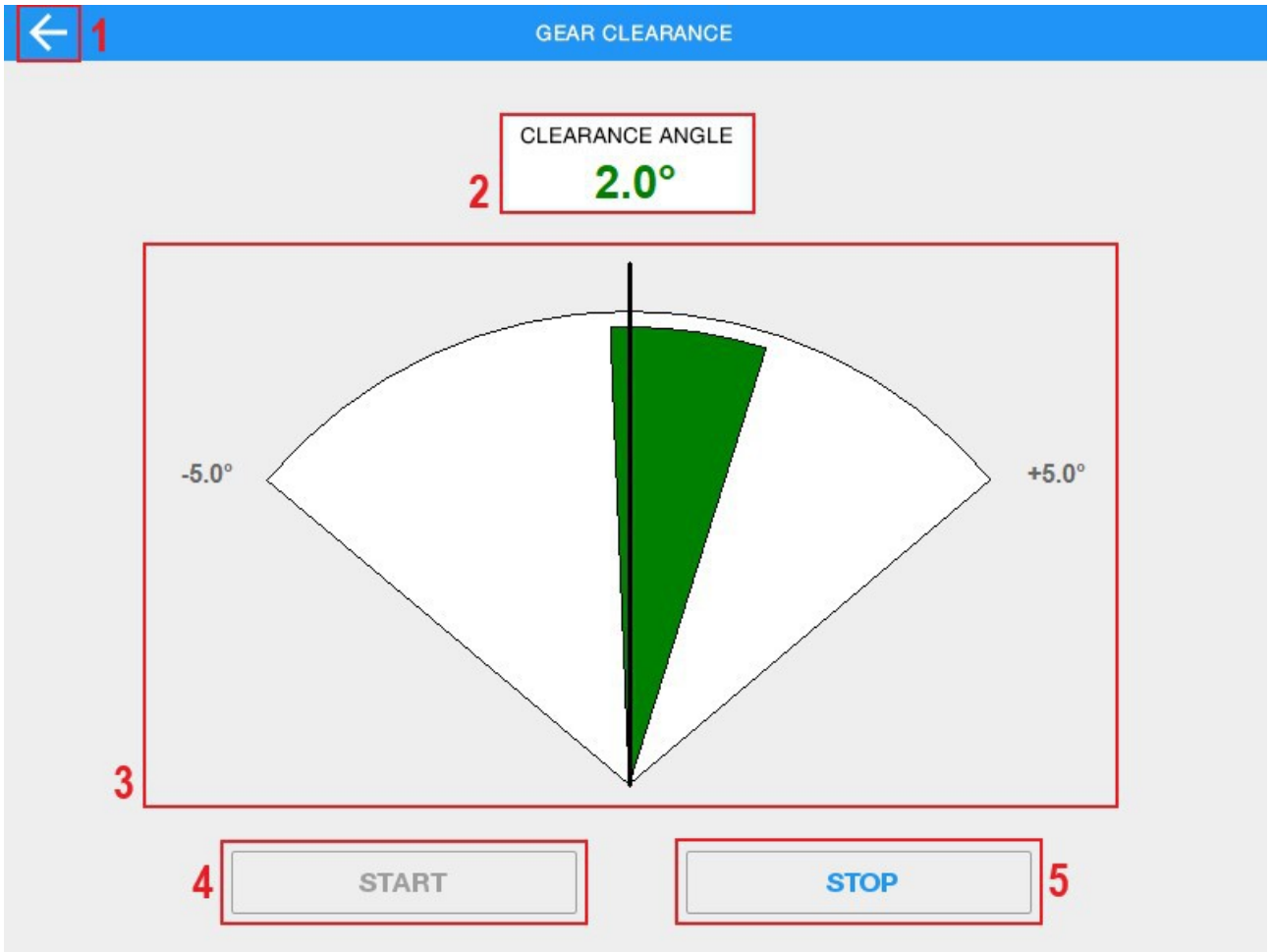


1. Return to the previous screen
2. Actuator version
3. Print out the read ranges of work (report)
4. Actuator gear type
5. Type of electronics used in the actuator
6. Value of the actuator lever start angle
7. Value of the actuator lever stop angle
8. Range of possible actuator lever movement (white)
9. Range of physical movement of the control lever or geometry, if the actuator is mounted on a turbocharger (green colour)
10. Range of programmed actuator lever movement (red colour)
11. Value of the lever's initial position (in this position the lever is set after connecting the power supply to the actuator)
12. Set the actuator lever in the minimum position (fully open variable geometry)
13. Set the actuator lever in the maximum position (fully closed variable geometry)
14. Change the start angle of the actuator lever
15. Change the end angle of the actuator lever
16. Read the calibration parameters

17. Prgram the calibration patameters. It must be pressed to save the changes made. Correct saving ends with the message "Programming completed".

4.1.4 "Gear clearance" function

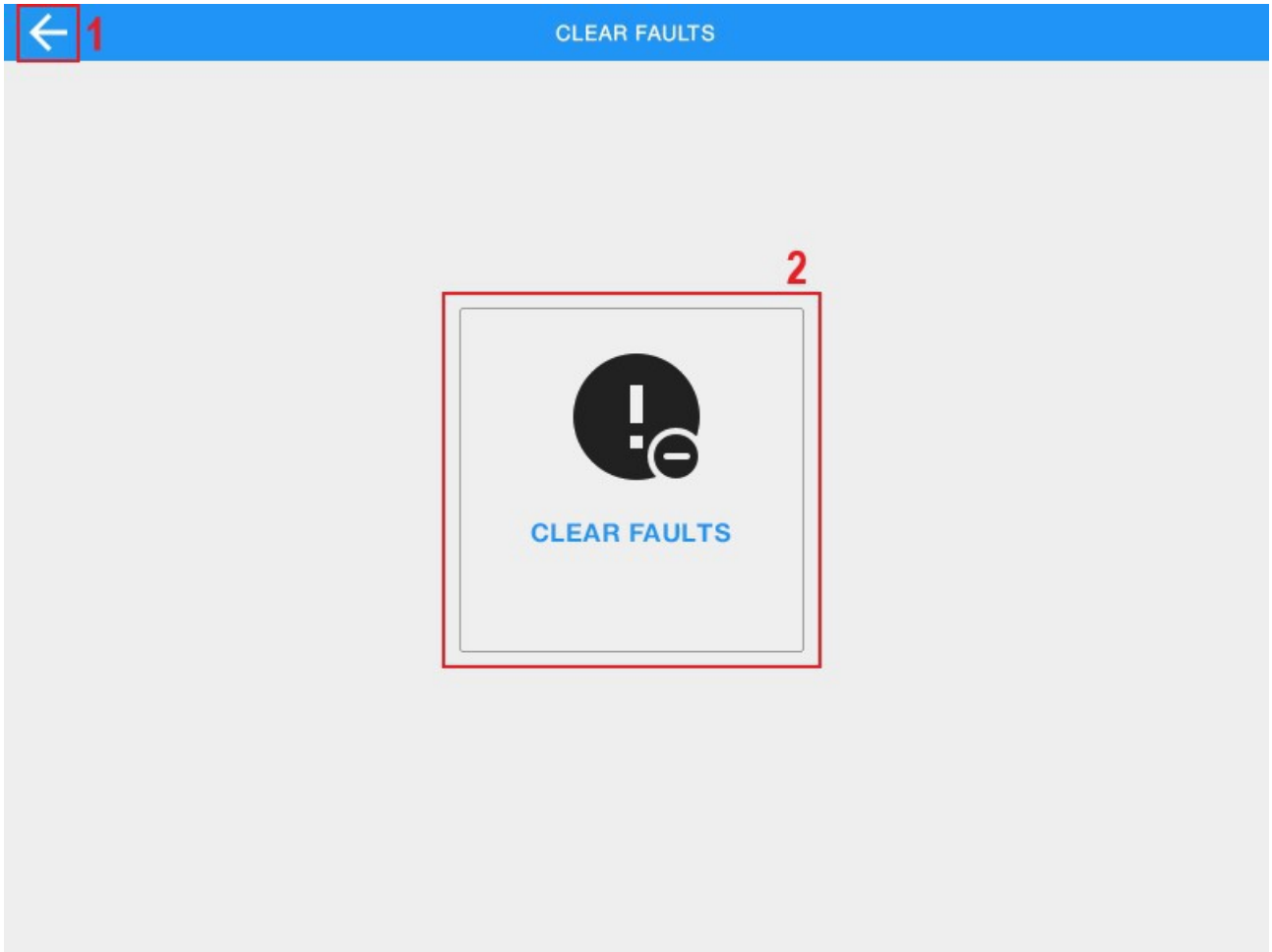
This function allows you to check actuator's gear clearance. After pressing START, move the actuator lever in both directions until it meets resistance.



1. Return to the previous screen
2. Value showing the gear clearance in degrees (angle)
3. Graphic representation of the gear clearance
4. Activate the function of checking the gear clearance
5. Stop the function of checking the gear clearance

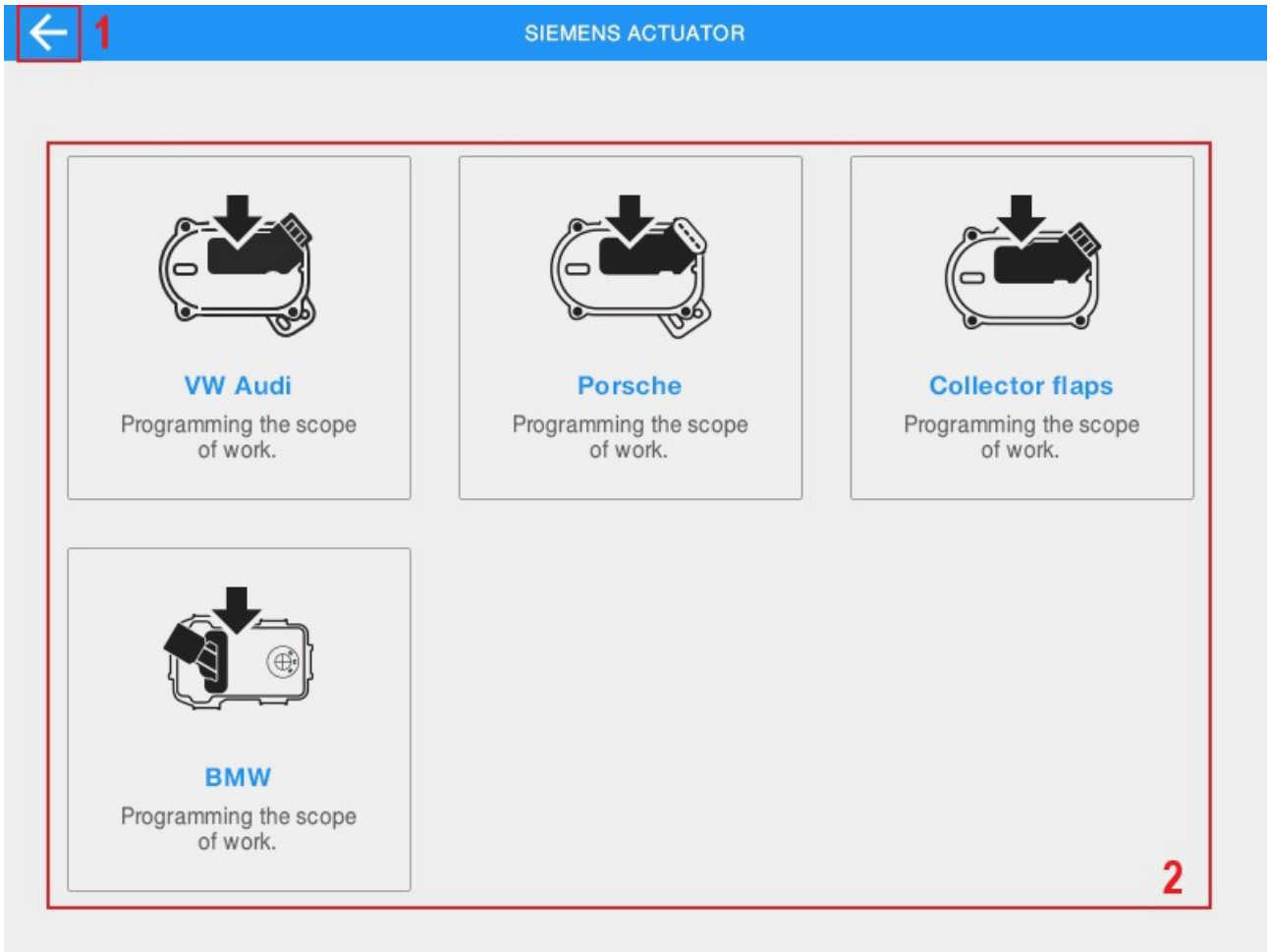
4.1.5 "Clear faults" function

This function enables you to clear information about the occurrence of malfunctions or the faults from the actuator memory, during the actuator operation.



1. Return to the previous screen
2. Start the procedure of clearing faults in the actuator's memory

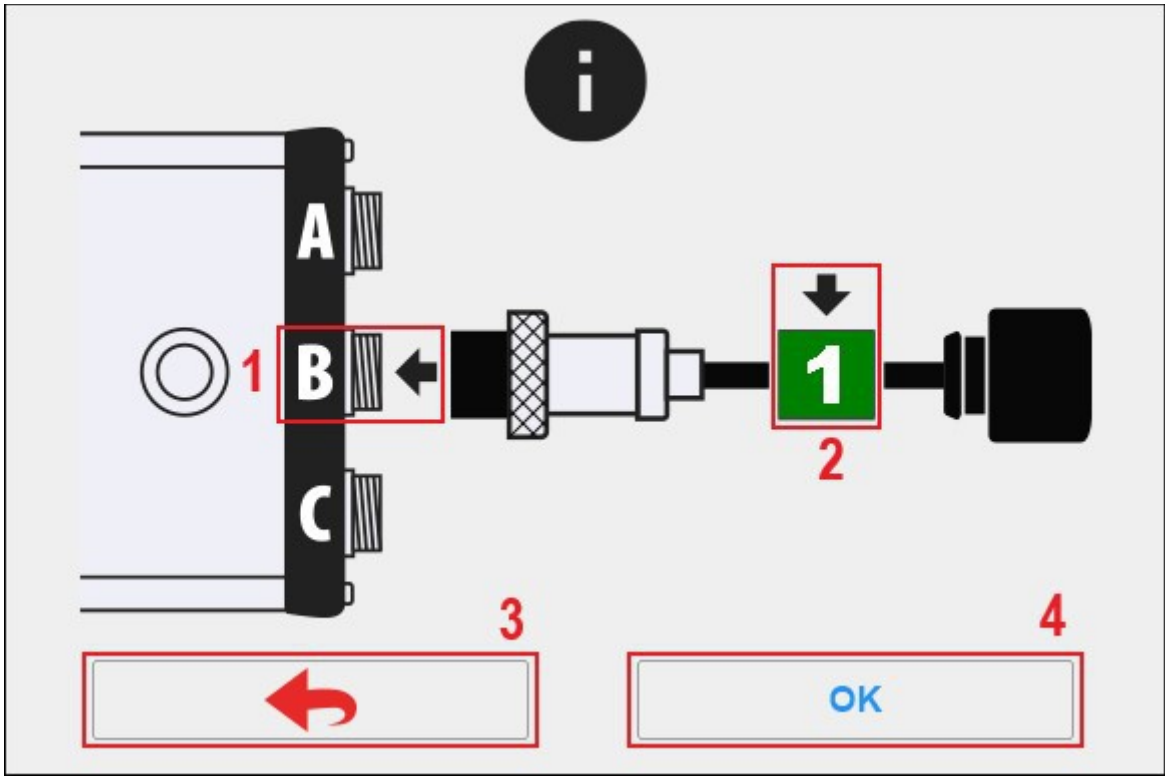
4.2 Programming the scope of work of Siemens actuators



1. Return to the previous screen
2. Types of programmable actuators
   - programming the Siemens actuator for VW / Audi
   - programming the Siemens actuator for Porsche
   - programming the Siemens actuator used to change the position of the intake flaps on VW / Audi cars
   - programming the Siemens actuator for BMW

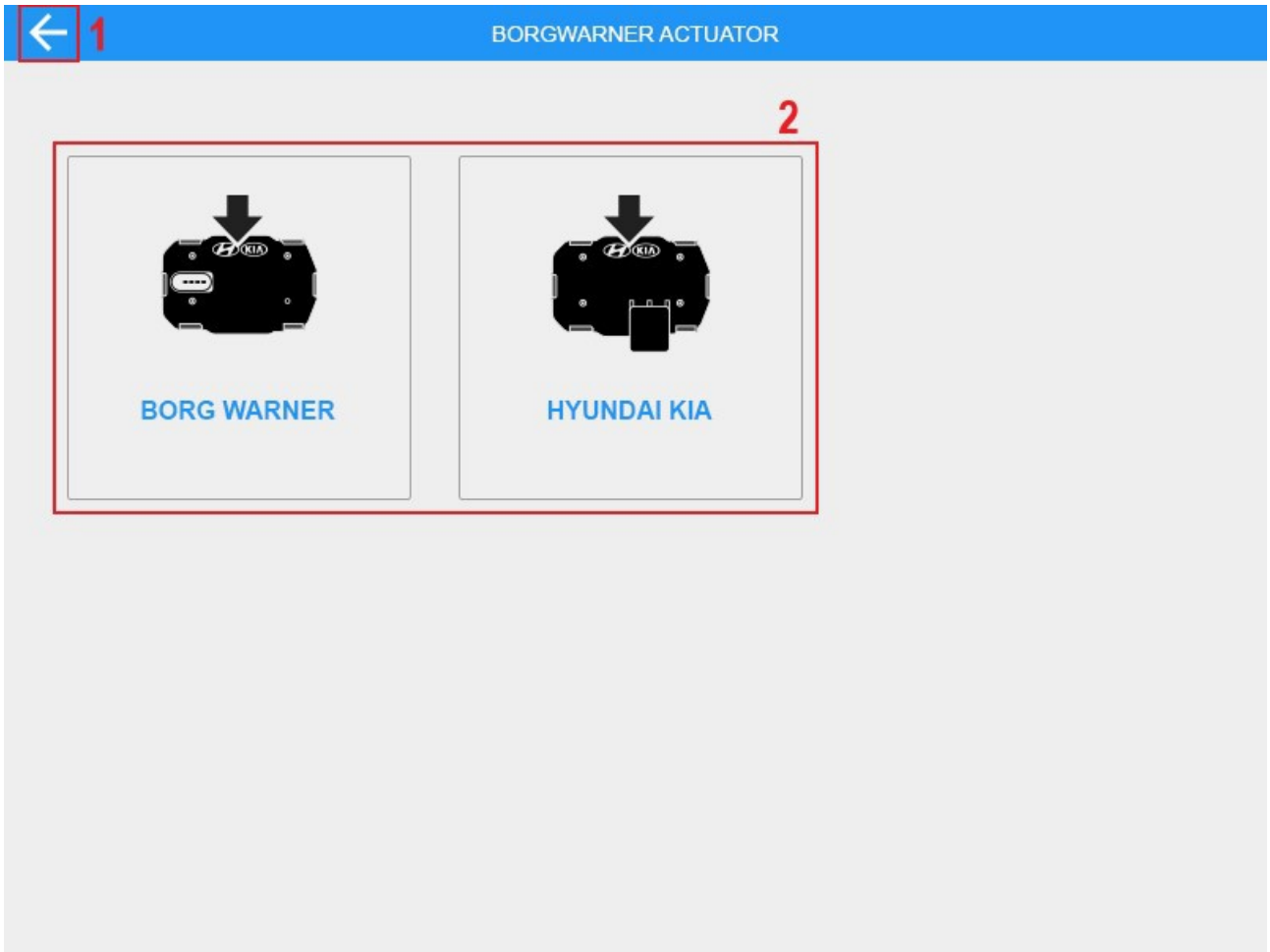
NOTE: Programming Siemens actuators should only be carried out after installing the actuator on the turbocharger.

After pressing the appropriate button, a message is displayed asking you to use the right cable.



1. Identification of the interface socket to which the cable should be connected
2. Cable number
3. Return button to choose the actuator number
4. Press OK to open the control screen that allows the actuator to be tested

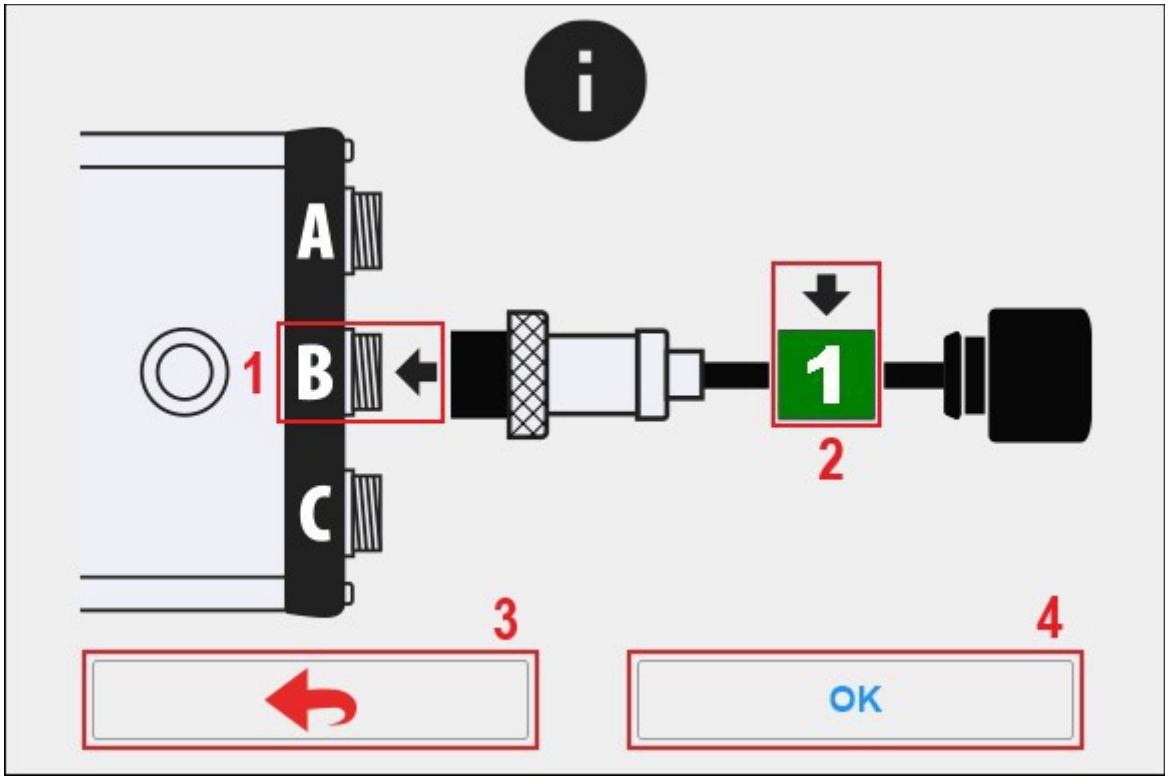
4.3 Programming the scope of work of Borg Warner actuators



1. Return to the previous screen
2. Types of BorgWarner programmable actuators used in Hyundai and KIA cars

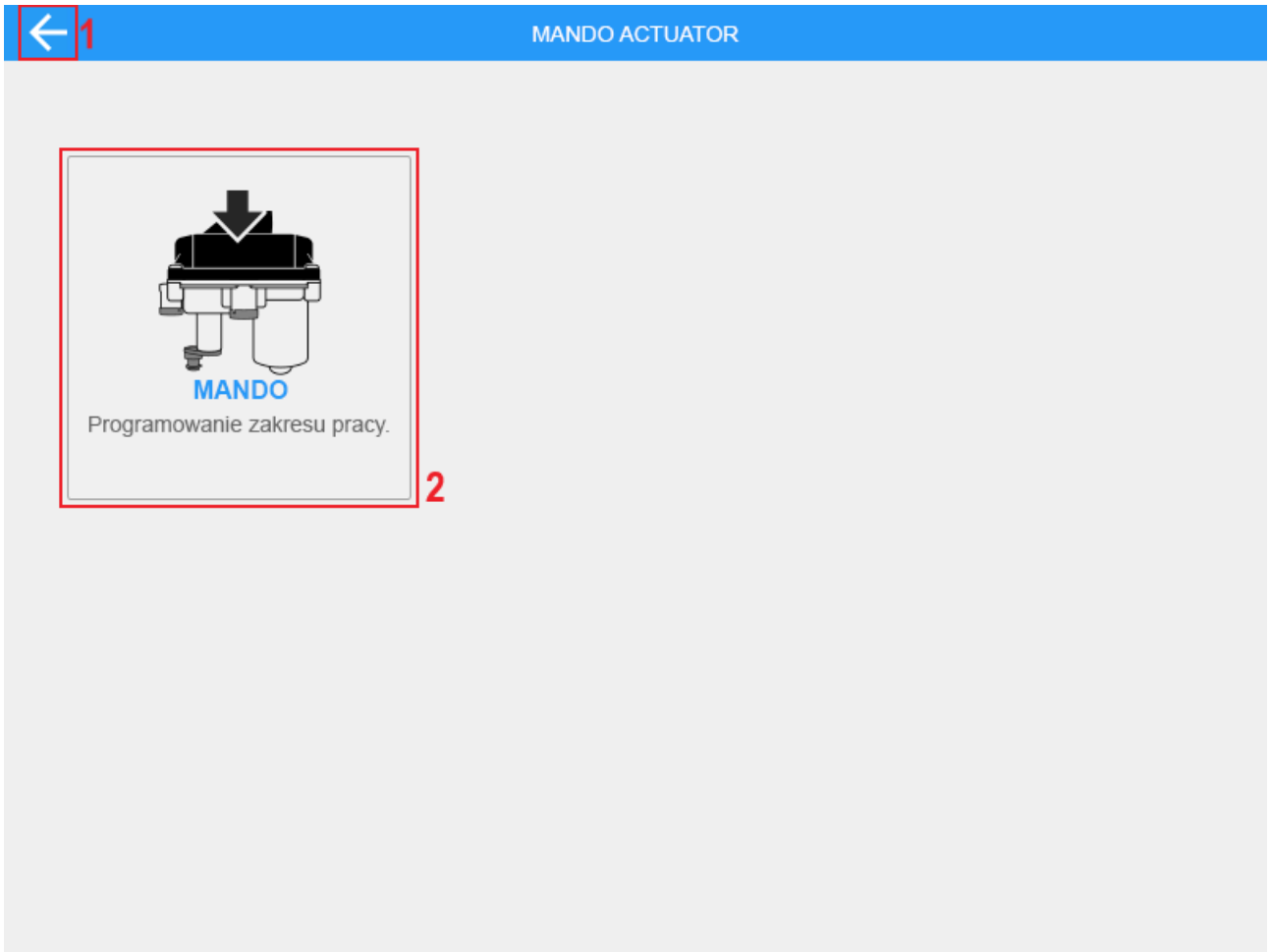
NOTE: Programming of BorgWarner actuators should be performed only after installing the actuator on the turbocharger and limiting the geometry movement to the correct range.

After pressing the appropriate button, a message is displayed asking you to use the right cable.



1. Identification of the interface socket to which the cable should be connected
2. Cable number
3. Return button to choose the actuator number
4. Press OK to open the control screen that allows the actuator to be tested

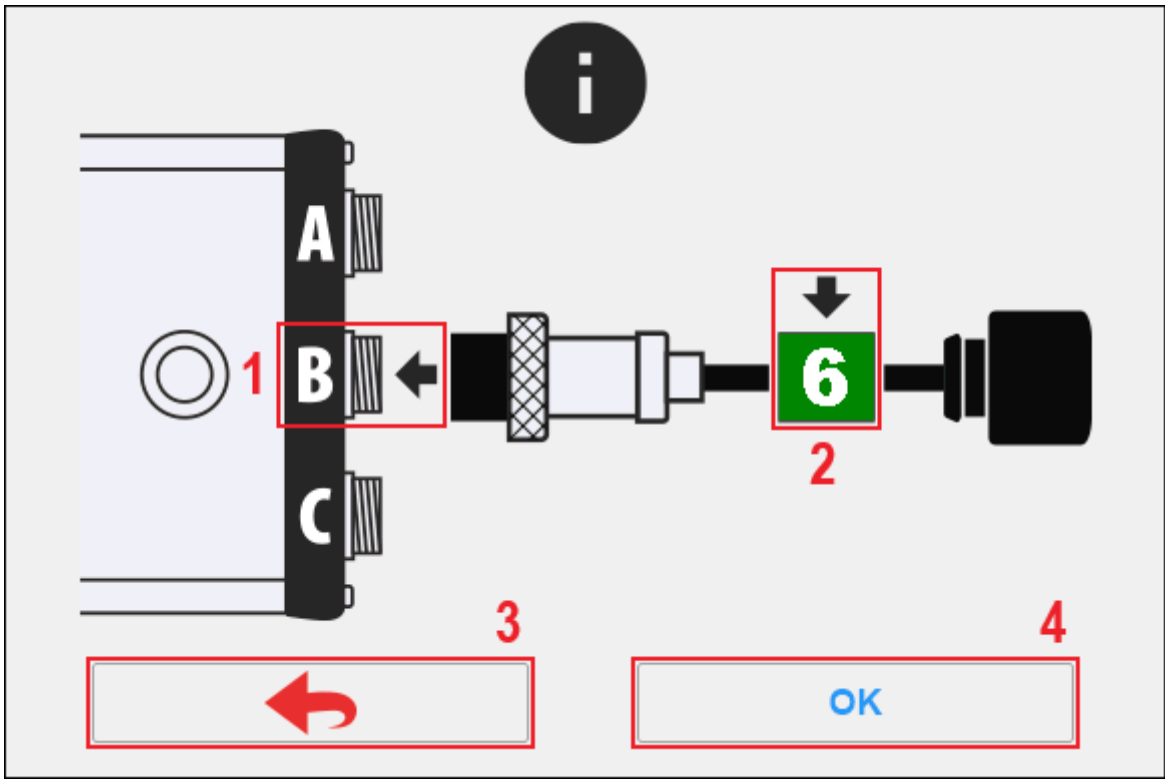
4.4 Programming the scope of work of Mando actuators



1. Return to the previous screen
2. Types of Mando programmable actuators.

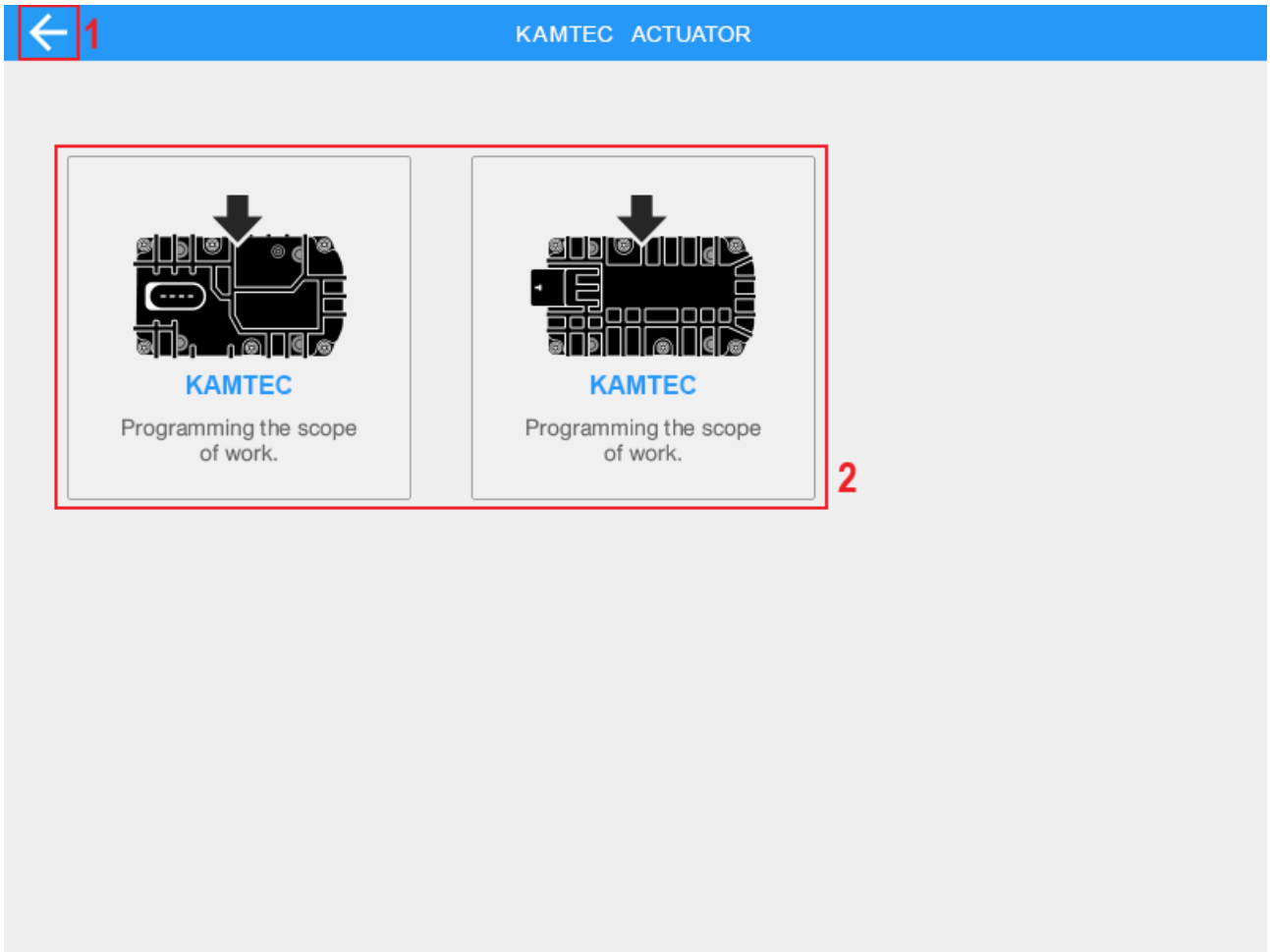
NOTE: Programming of Mando actuators should be performed only after installing the actuator on the turbocharger and limiting the geometry movement to the correct range.

After pressing the appropriate button, a message is displayed asking you to use the right cable.



1. Identification of the interface socket to which the cable should be connected
2. Cable number
3. Return button to choose the actuator number
4. Press OK to open the control screen that allows the actuator to be tested

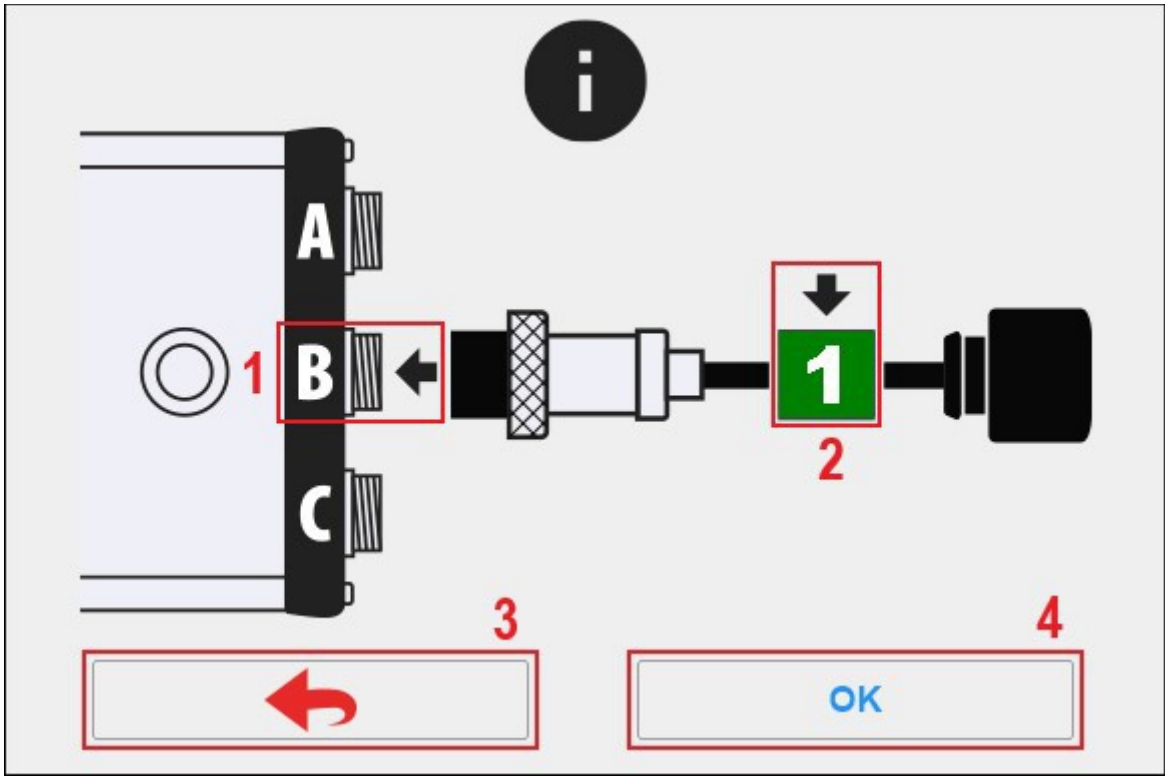
4.5 Programming the scope of work of Kamtec actuators



1. Return to the previous screen
2. Types of Mando programmable actuators.

NOTE: Programming of Kamtec actuators should be performed only after installing the actuator on the turbocharger and limiting the geometry movement to the correct range.

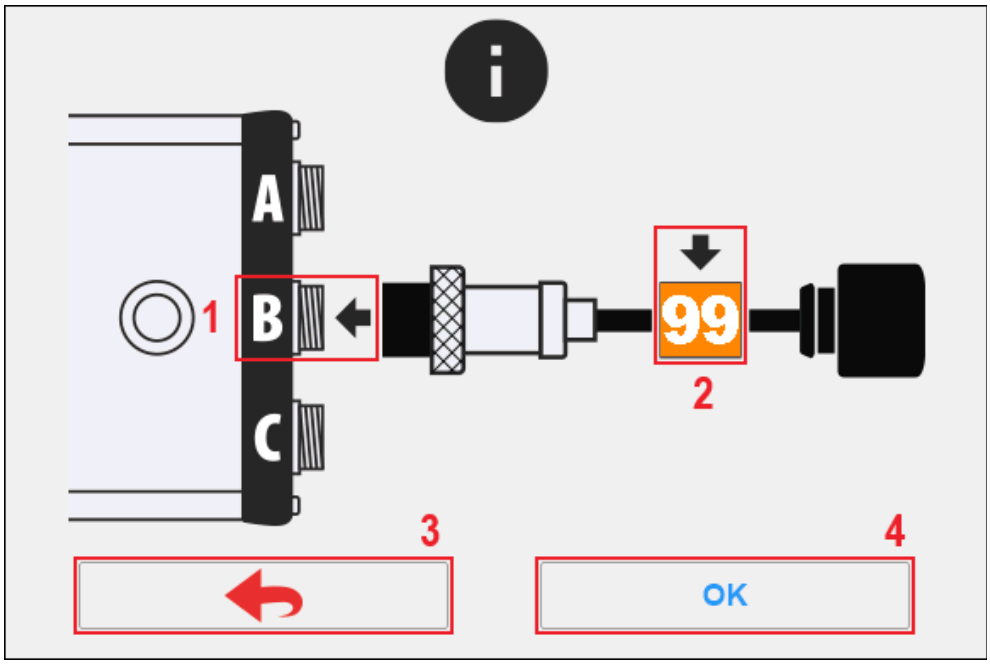
After pressing the appropriate button, a message is displayed asking you to use the right cable.



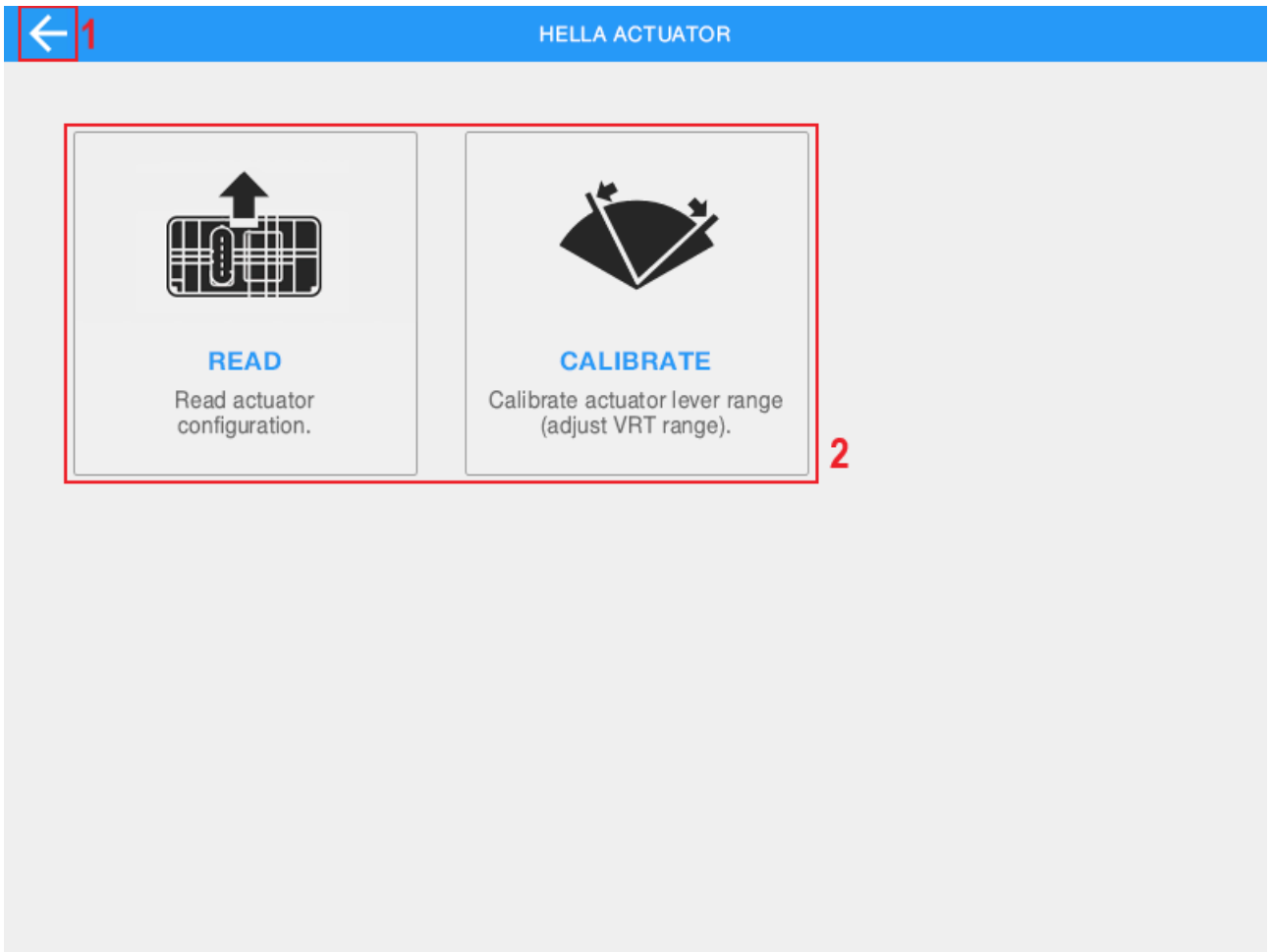
1. Identification of the interface socket to which the cable should be connected
2. Cable number
3. Return button to choose the actuator number
4. Press OK to open the control screen that allows the actuator to be tested

4.6 Programming the scope of work of Hella 6NW010099-XX actuators

After pressing the Hella 6NW010099-XX programming button, information about the use of the right cable is displayed.

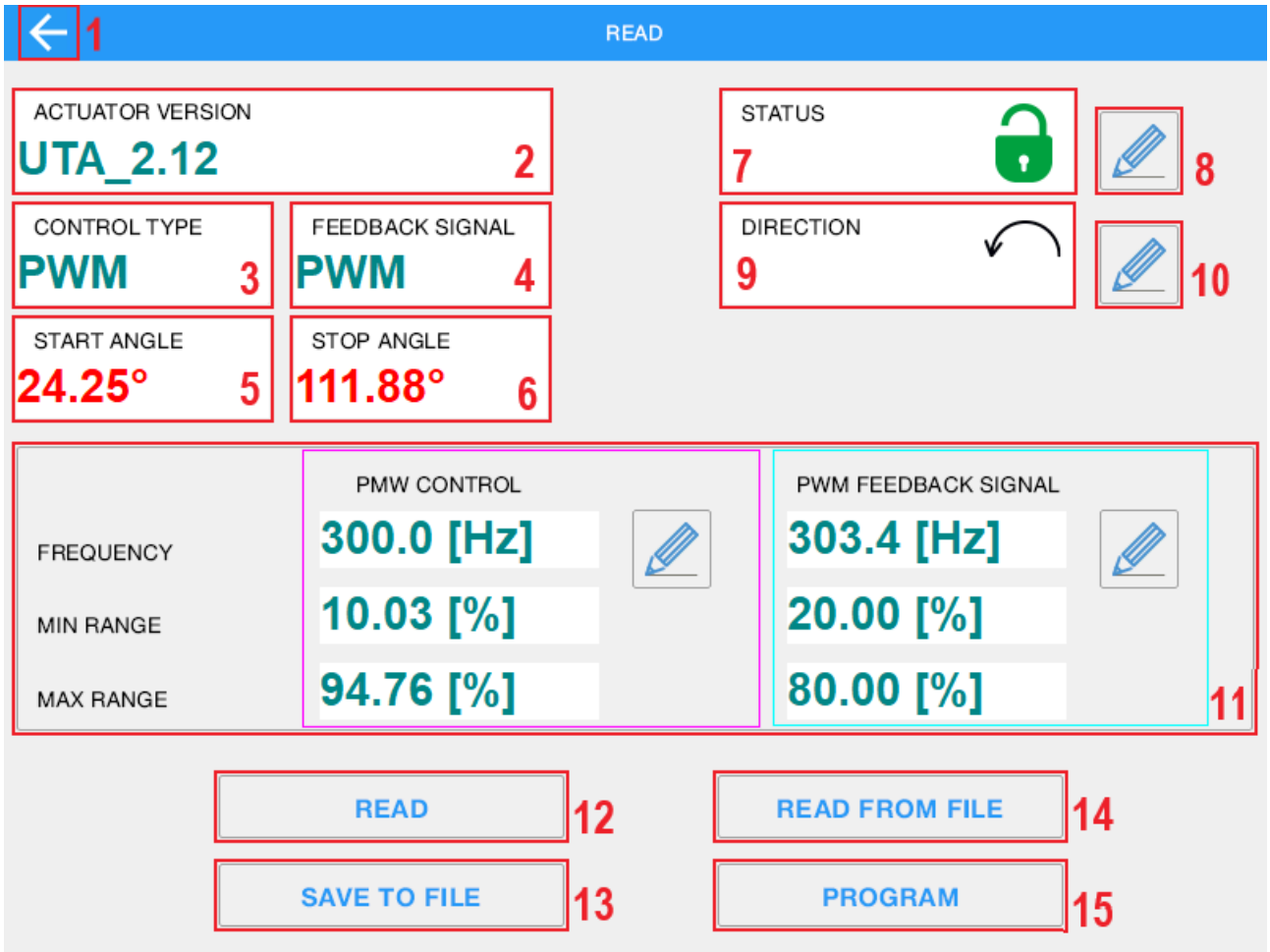


1. Identification of the interface socket to which the cable should be connected
2. Cable number
3. Return button to choose turbocharger number
4. Press OK to open the control screen that allows the actuator to be tested

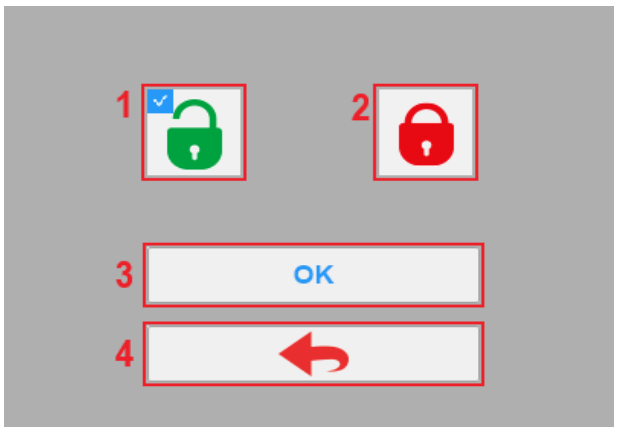


1. Return to the previous screen
2. Hella 6NW01099-XX programmer functions
   - Read - read the current actuator parameters (version, gear type, type of electronics used, etc.)
   - Calibrate - read the current operating range of the actuator

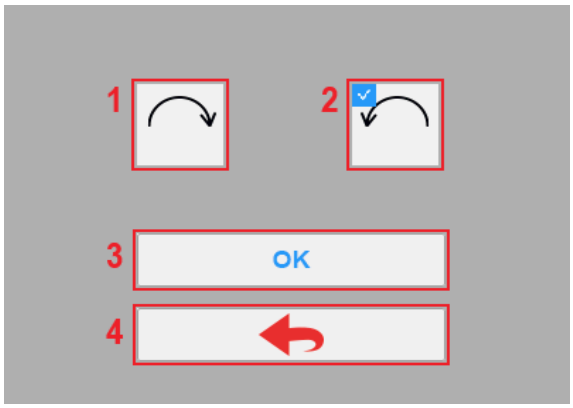
4.6.1 Read



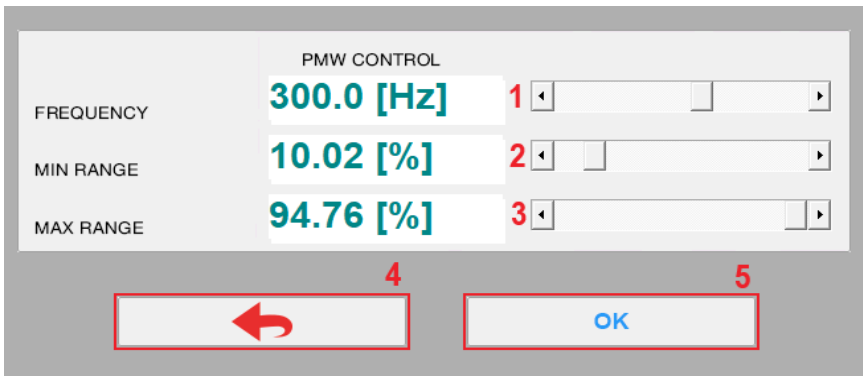
1. Return to the previous screen
2. Actuator version
3. Control type of the actuator
4. Feedback signal of actuator
5. Value of the start angle of the actuator lever to program
6. Value of the stop angle of the actuator lever to program
7. Status of the actuator (locked or unlocked)
8. Edit status of the actuator
9. Direction of the actuator's work
10. Edit direction of the actuator's work
11. Templates of the actuator (frequency)
12. Read current parameters of the actuator
13. Save the read actuator parameters to file
14. Read actuator parameters from a file (database)
15. Save (program) parameters to the actuator



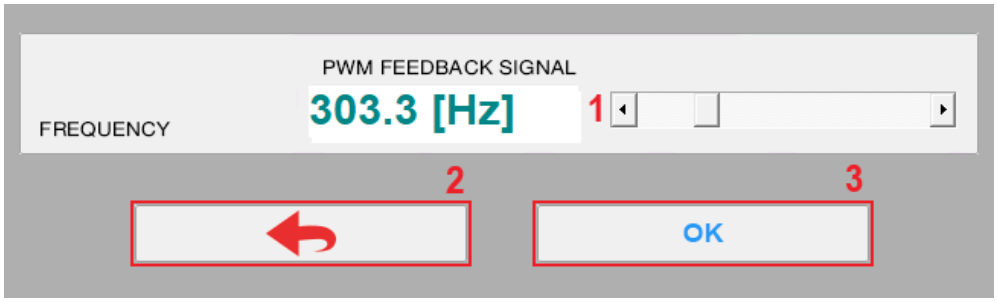
1. Actuator unlocked.
2. Actuator locked.
3. Confirm
4. Return



1. Right direction
2. Left direction
3. Confirm
4. Return

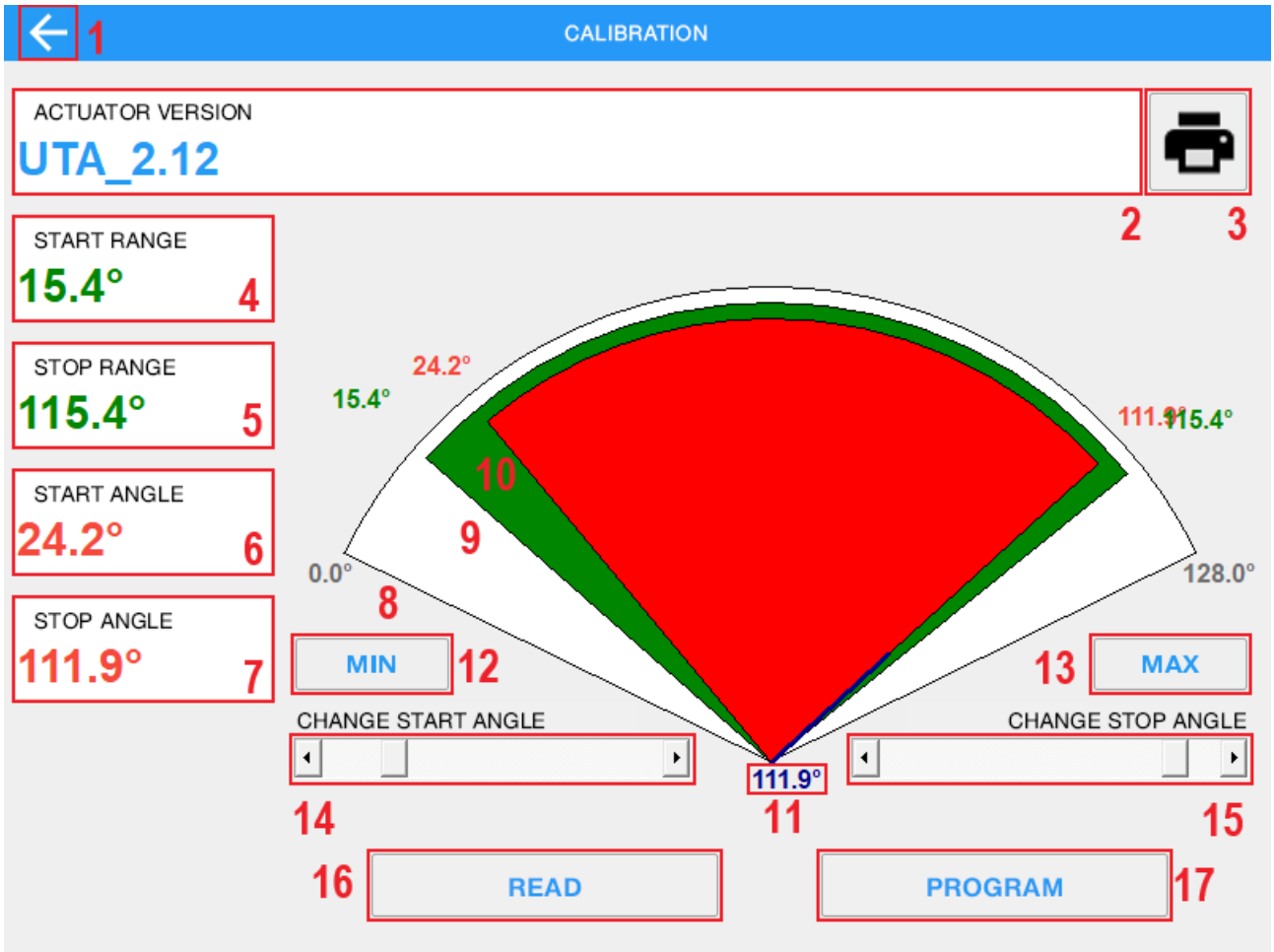


1. Change of frequency. ATTENTION! Should not be changed without a specific purpose (changing the steering to a different type of vehicle)
2. Changing the minimum range
3. Changing the maximum range
4. Exit the function
5. Confirm



1. Change of frequency. ATTENTION! Should not be changed without a specific purpose (changing the steering to a different type of vehicle)
2. Exit the function
3. Confirm

4.6.2 Calibration

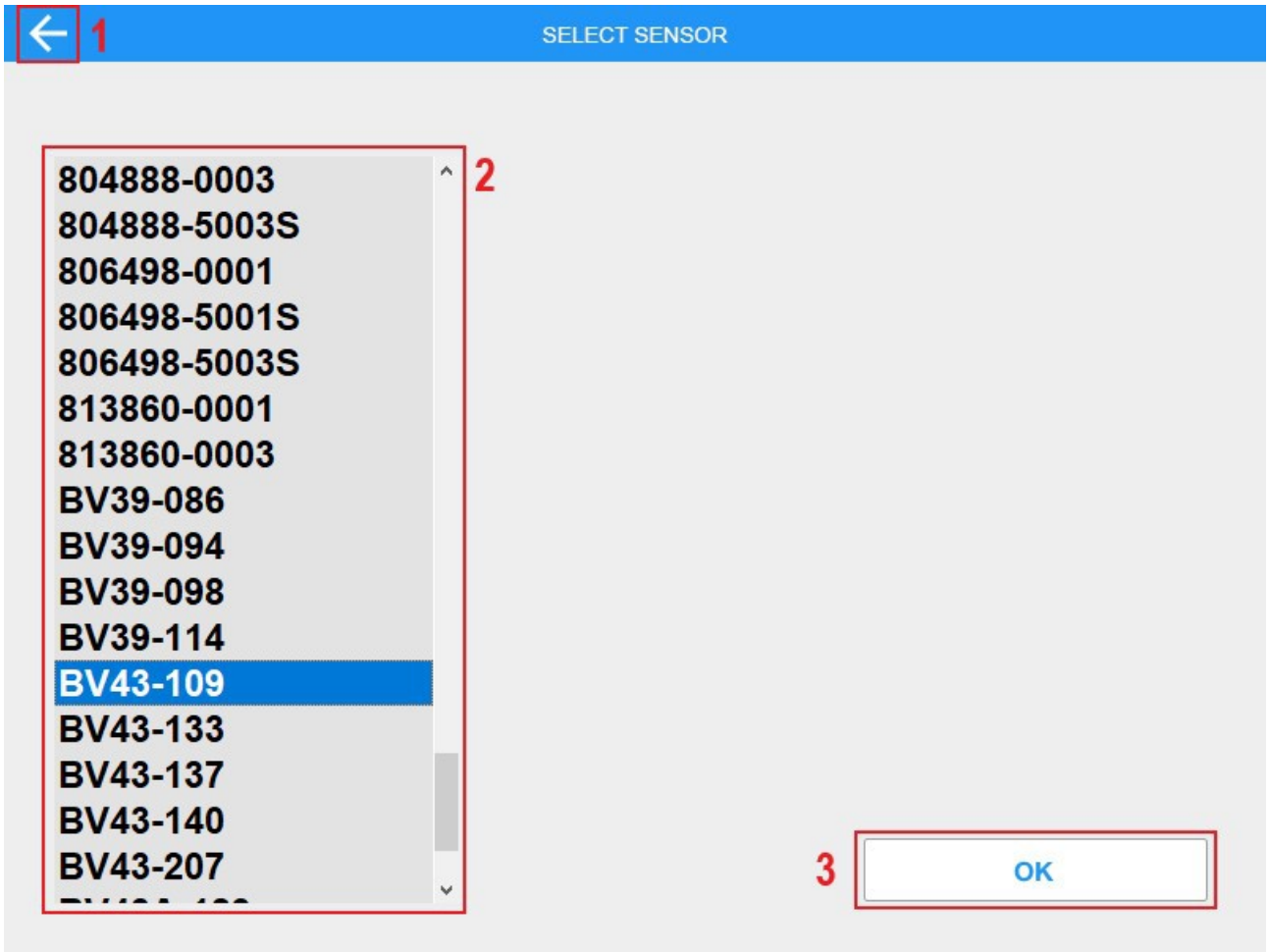


1. Return to the previous screen
2. Read actuator version
3. Print out the read ranges of work (report)
4. The read range of the physical movement of the controller lever or geometry, if the actuator is mounted on the turbocharger (green color)
5. Read range of the physical movement of the controller lever or geometry, if the actuator is mounted on the turbocharger (red color)
6. Read value of the actuator lever start angle
7. Read value of the actuator lever stop angle
8. Range of possible actuator lever movement (white)
9. Range of physical movement of the control lever or geometry, if the actuator is mounted on a turbocharger (green colour)
10. Range of programmed actuator lever movement (red colour) - It can be freely reprogrammed to the correct VNT flow
11. Value of the lever's initial position (in this position the lever is set after connecting the power supply to the actuator)
12. Set the actuator lever in the minimum position (fully open variable geometry)
13. Set the actuator lever in the maximum position (fully closed variable geometry)
14. Change the start angle of the actuator lever
15. Change the end angle of the actuator lever

16. Read the calibration parameters
17. Prgram the calibration patameters. It must be pressed to save the changes made. Correct saving ends with the message "Programming completed".

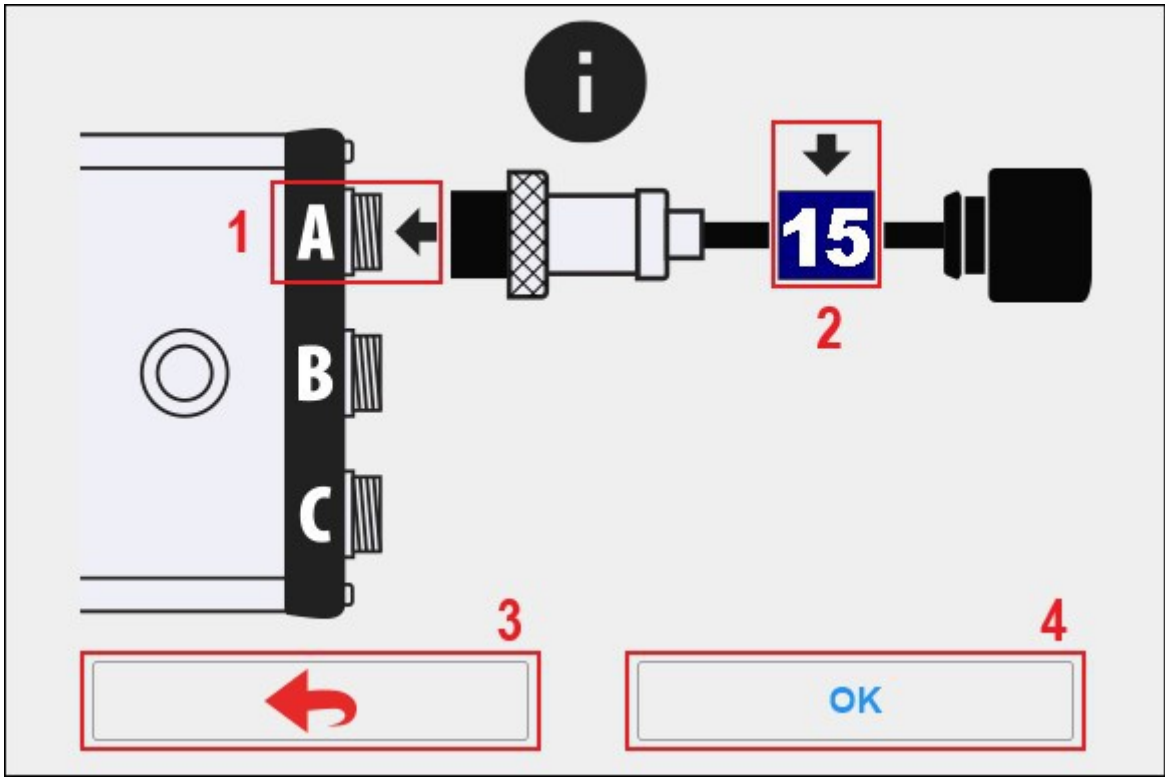
5. Variable geometry position sensor test module

After selecting the sensor test, specify the number of turbochargers in which the sensor was used or select an empty field if the turbocharger is not on the list.

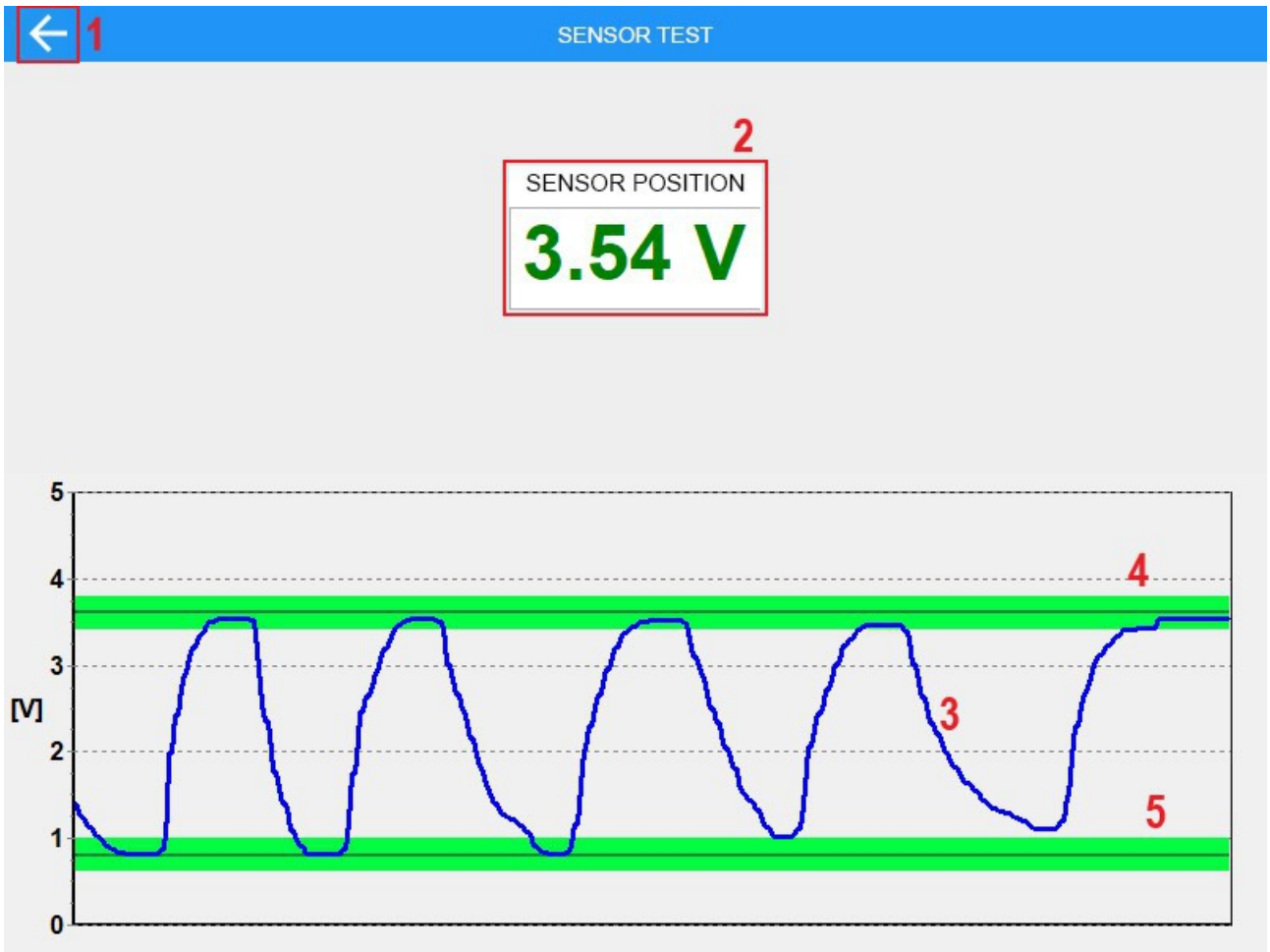


1. Return to the main menu
2. Select the turbocharger number
3. Confirm

After confirming the selection of the turbocharger number, information about the cable number to be used to connect the sensor to the tester interface is displayed.



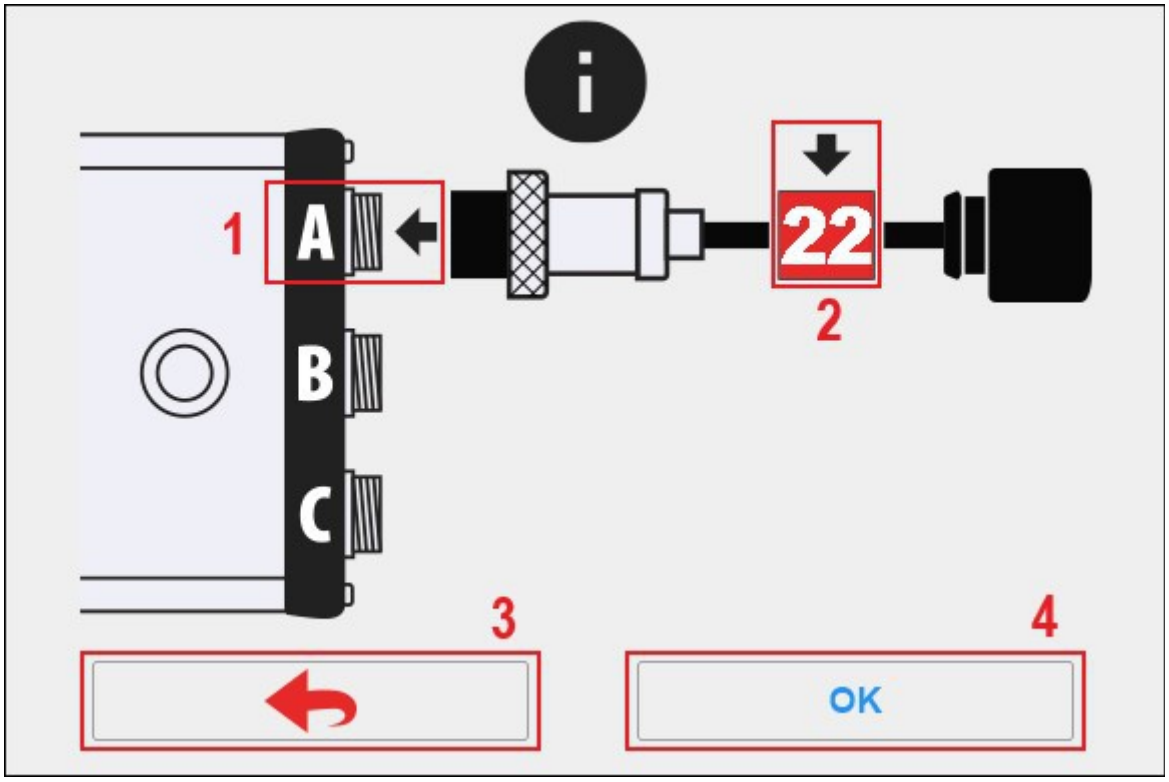
1. Identification of the interface socket to which the cable should be connected
2. Cable number
3. Return button to choose turbocharger number
4. Press OK to move to the position sensor test



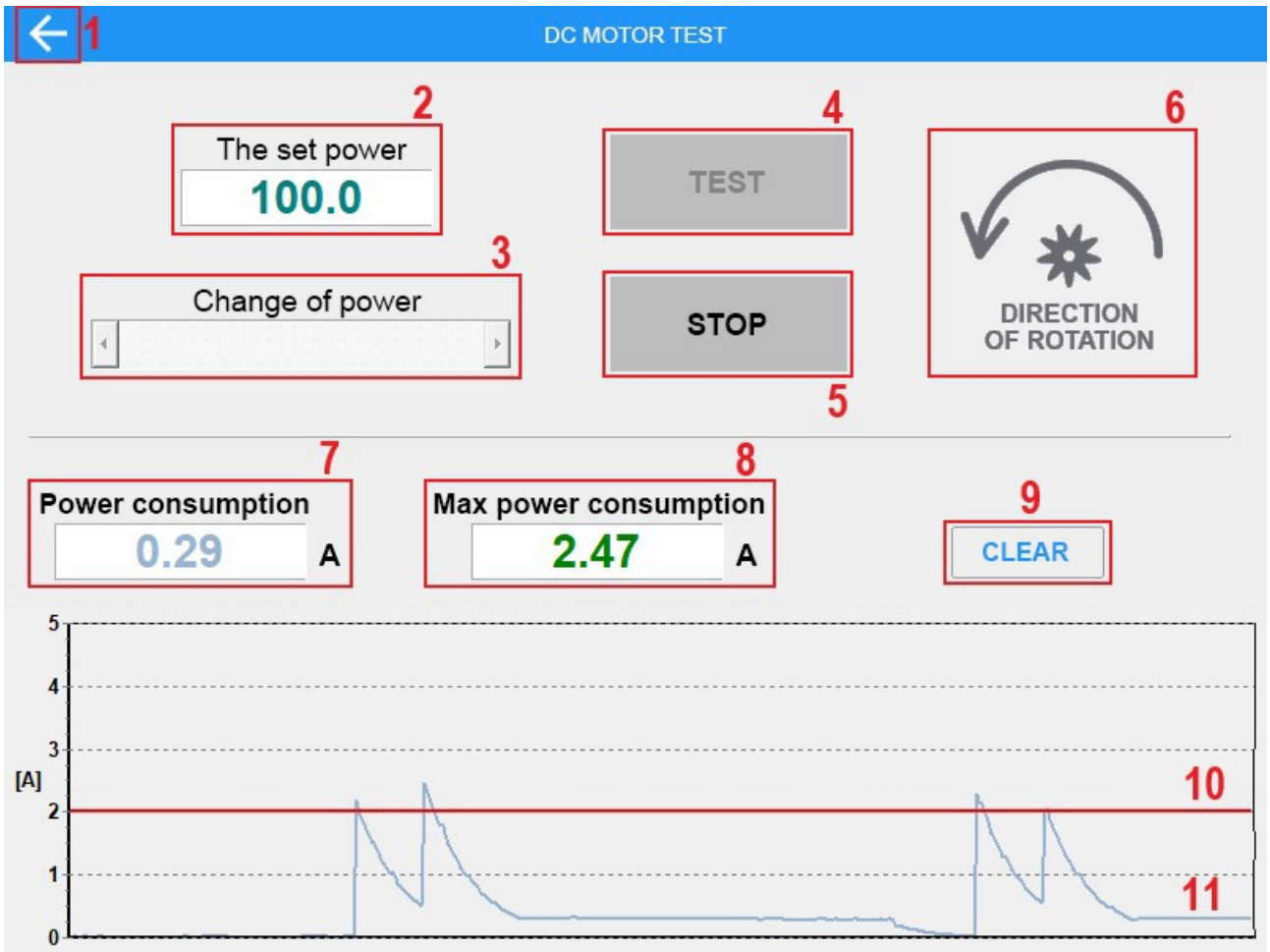
1. Return to the previous screen
2. Current value of the variable geometry position sensor
3. Graph of the current value of the variable geometry position sensor
4. Permissible range of sensor values in the case of fully closed/open geometry
5. Permissible range of sensor values in the case of fully open/closed geometry

6. DC motor test module

After selecting the DC motor test, information about the cable number to be used to connect the sensor to the tester interface is displayed.



1. Identification of the interface socket to which the cable should be connected
2. Cable number
3. Return to module selection
4. Press OK to go to the DC motor test



1. Return to program module selection
2. Power value expressed in [%] transmitted to the engine
3. Change of power transmitted to the engine (full range 0-100%)
4. Engine test enable button for determining the power consumption when delivering full power (100%) to the engine. The engine is considered functional if the current consumption during the test does not exceed 0.25A in both directions
5. Test stop button
6. Button for changing the direction of rotation of the motor axis
7. Current value of the current consumed by the motor
8. Maximum value of current consumed by the motor achieved during the test
9. Maximum current value reset button
10. Line indicating the current limit for the tested motor
11. Graph showing current power consumption of the motor