

# Origin Search

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Version: 1.0.0

The cool muscle motor is capable of performing an origin search and home itself automatically, or on command. Homing can be performed to an origin switch or to a hard stop. There are six different K parameters that define the operation of the origin search:

Parameter	Description
<a href="#">K42</a>	Origin Search Speed
<a href="#">K43</a>	Origin Search Acceleration
<a href="#">K45</a>	Origin Search Direction
<a href="#">K46</a>	Origin Search Method
<a href="#">K47</a>	Origin Stopper Torque
<a href="#">K48</a>	Origin Offset Distance

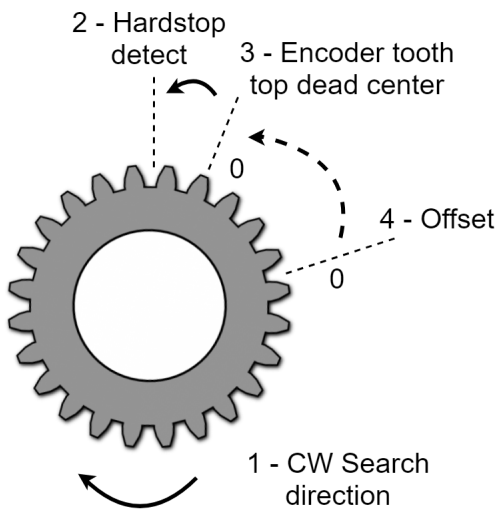
The origin search will timeout after 5 minutes.

## Homing Methods

Two distinct methods are available when executing a home routine.

1. Hardstop detect - the motor moves towards a hardstop. When the hardstop is reached the driver reads the position of the magnetic encoder. It then moves back 2 teeth of the encoder gear to set the absolute position. Moving back the two teeth allows for high repeatability as fatigue and variance in the hardstop detect can be accounted for automatically.
2. Sensor detect - the motor moves towards a home sensor. When the sensor is triggered the driver interrupt captures the motor position. The motor decelerates and moves back to the captured position.
  - a. If the sensor is detect when the home routine is first initiated the motor will move off the sensor first in the opposite direction to the defined origin search direction.

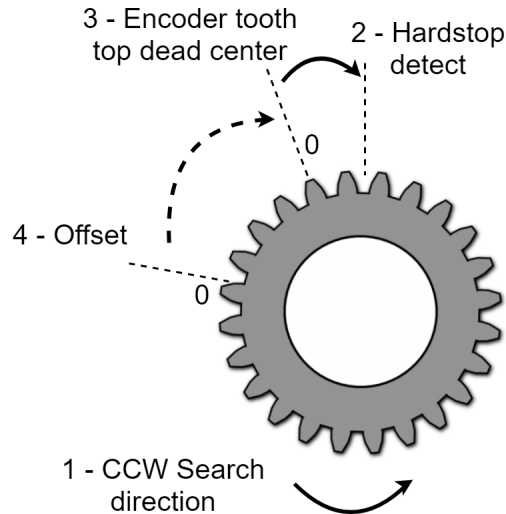
### Hardstop CW -



1. Motor runs CW towards a hardstop.
2. The driver monitors the motor current and detects when a hardstop has been reached.

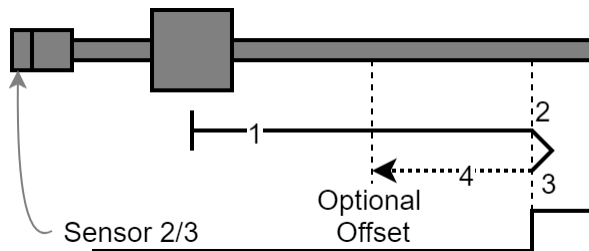
3. Motor backs up CCW to the 2nd previous encoder tooth (improved repeatability) and sets the position to 0.
4. If an offset is set the motor moves the offset distance
  - a. Care should be taken not to set a +ve offset as this will move the load into the hardstop
5. Sets the final position to 0.

## Hardstop CCW -



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2. The driver monitors the motor current and detects when a hardstop has been reached.
3. Motor backs CW up to the 2nd previous encoder tooth (improved repeatability) and sets the position to 0.
4. If an offset is set the motor moves the offset distance.
  - a. Care should be taken not to set a -ve offset as this will drive the load into the hardstop
5. Sets the final position to 0.

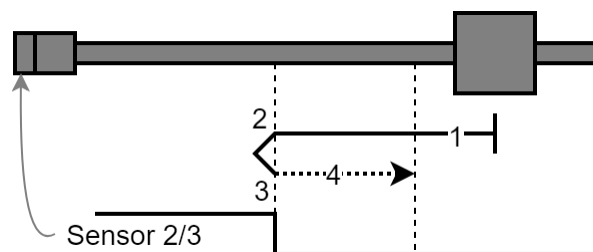
## Sensor CW -



- Diagram shown with motor connected to linear actuator.
  - CW rotation moves the load left to right
- Sensor is connected directly on IN2 or IN3

1. Motor runs CW waiting for sensor input
2. Sensor rising edge triggers the input, motor captures encoder position, decelerates and reverses direction
3. Motor stops on captured position and sets position to 0
4. If an offset is defined the motor continues to the defined offset and sets the final target position to 0.
  - a. Offset could be +ve or -ve. The above diagram shows a -ve offset

## Sensor CCW -



- Diagram shown with motor connected to linear actuator.
  - CCW rotation moves the load right to left
- Sensor is connected directly on IN2 or IN3