Homing Sequence

Description of how the homing of an axis works

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Homing sequence using a home switch

When using a home switch, the homing sequence consists of two or three distinct phases, each occurring more slowly than the previous phase. To use a home switch for the initial seek, bit 2 of the HOME keyword must be set to 0.

Initial seek

The initial seek can be performed in a forward or reverse direction, as defined by bit 1 of the HOME keyword. The definition of forward/reverse or positive/negative movement depends upon the application, but for this example it will be assumed that the axis will start by going in a reverse/negative direction.

· The homing sequence is initiated using the HOME keyword, which is also used to define the various parameters for the homing move.
· The axis accelerates at the rate defined by HOMEACCEL (or ACCEL on some controllers) in a reverse direction, until it reaches the speed defined by HOMESPEED.
· The initial seek phase ends when the controller detects that the home switch (i.e. HOMEINPUT) has become active. The axis decelerates to rest at HOMEDECEL (or DECEL on some controllers).

Back-off phase

While decelerating at the end of the initial seek phase, the axis will probably overshoot the required home position. It must change direction ('back-off') to move back towards the home position.

· The axis changes direction and accelerates at the rate defined by HOMEACCEL (or ACCEL on some controllers) until it reaches the speed defined by HOMEBACKOFF, which represents a fraction of the HOMESPEED. For example, if HOMEBACKOFF is set to 10, then the back-off speed will be a 1/10 of the HOMESPEED used for the initial seek phase.
· The axis continues to back-off until the HOMEINPUT becomes inactive (if bit 0 of the HOME keyword is set to zero).
· Optionally, the back-off phase can require the next index pulse to be found (if bit 0 of the HOME keyword is set to 1). The axis decelerates to rest at HOMEDECEL (or DECEL on some controllers).

Creep phase

When the index pulse is used to end the back-off phase, it is possible that the axis will overshoot the brief index pulse. This is particularly true if the back-off speed is too fast. The axis must once more change direction and move even more slowly ('creep') until the index pulse is detected. However, if there has been no overshoot and the axis is already on the index pulse, the creep phase will not be performed.

· The axis changes direction and starts to move backwards at a very slow speed. This very slow speed is defined by HOMECREEPSPEED, which is defined in user units
· The axis continues to creep until an index pulse is detected.
· This completes the homing move. The axis' position, POS, is set to zero and the axis is now ready to use (except for absolute encoders).