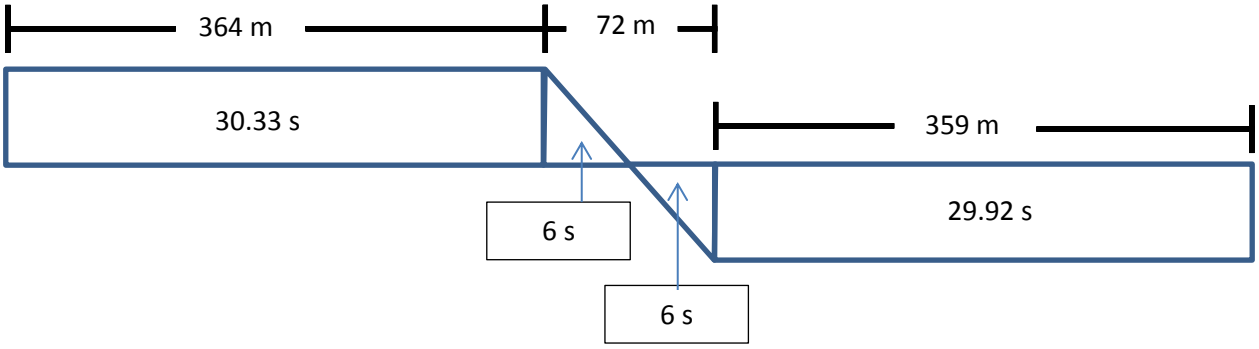
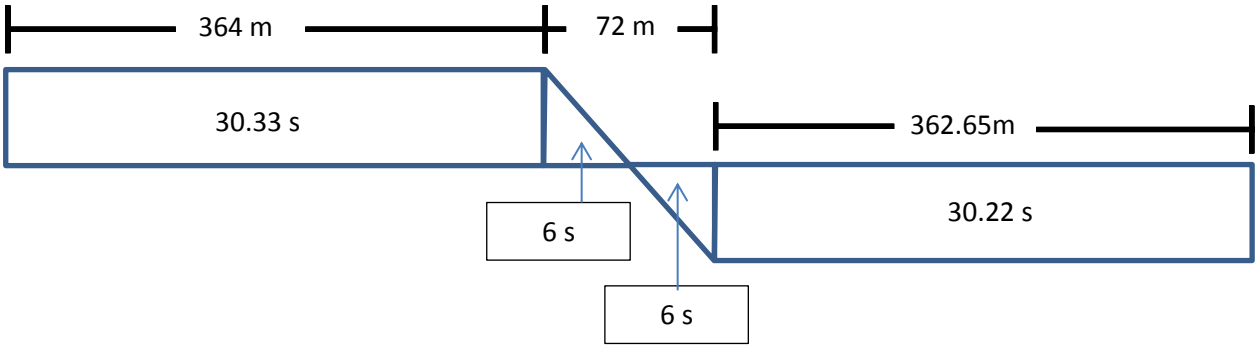
Running at 12m/s with an acceleration of $2m/s^2$

Current Setups



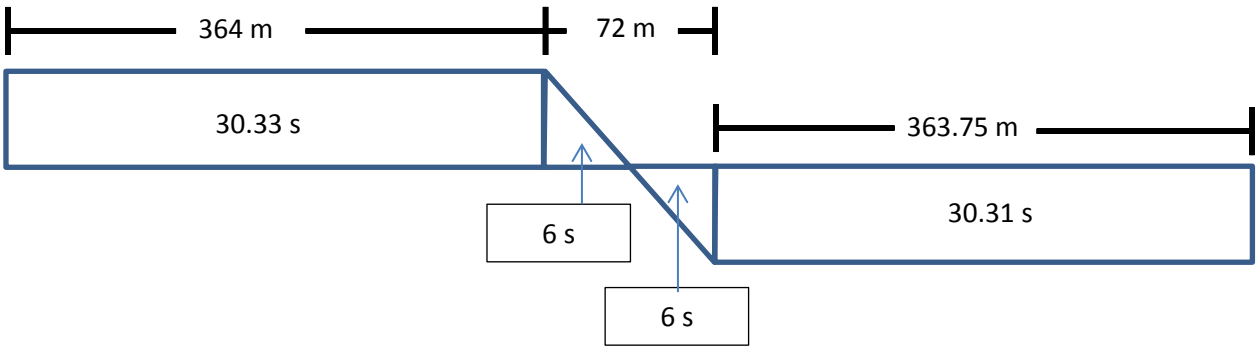
Total cycle time of 72.25 seconds

Max Cuts Setups



Total cycle time of 72.55 seconds

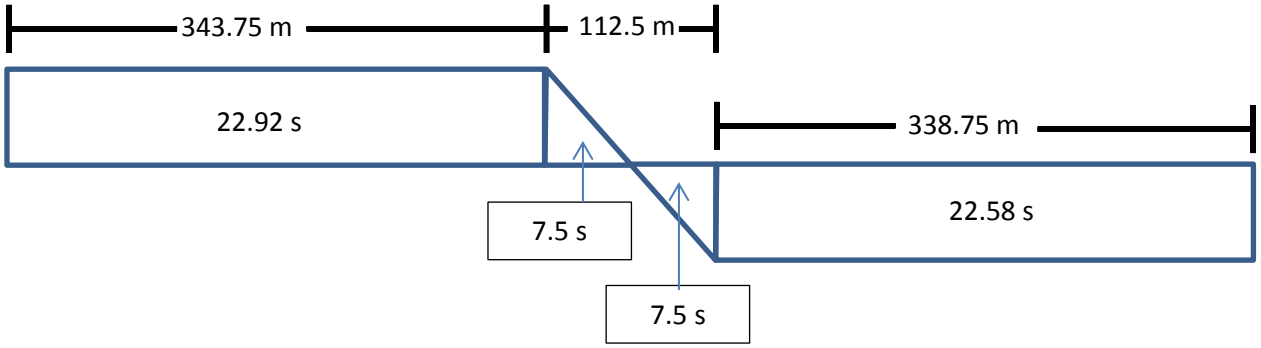
Min Cuts Setups



Total cycle time of 72.64 seconds

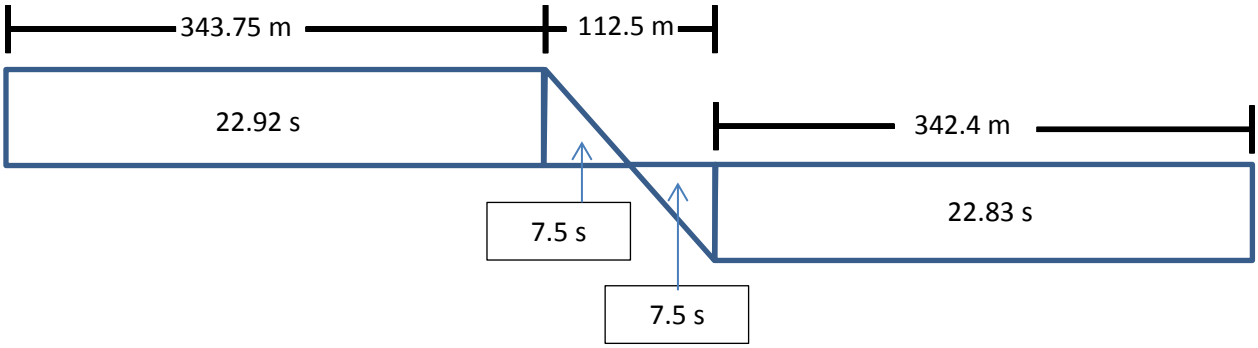
Running at 15m/s with an acceleration of $2m/s^2$

Current Setups



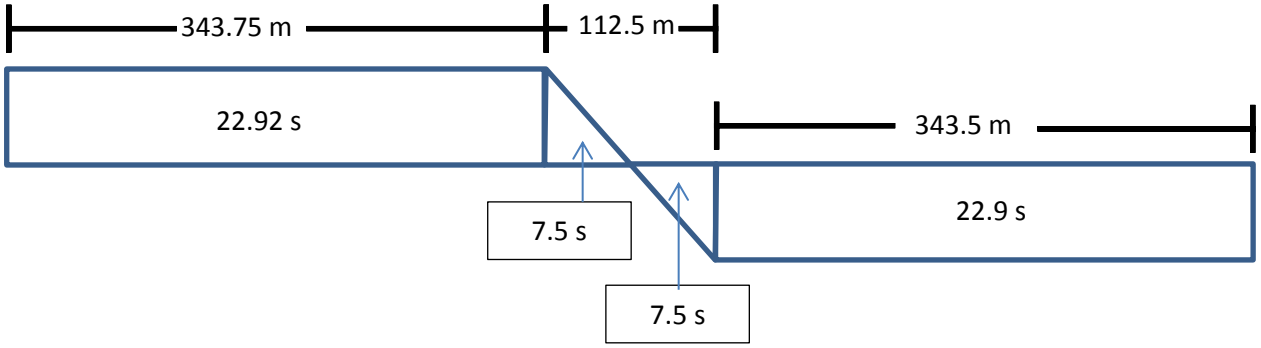
Total cycle time of 60.5 seconds

Max Cuts Setups



Total cycle time of 60.75 seconds

Max Cuts Setups



Total cycle time of 60.82 seconds

During any operation the temperature of components and status of the safety devices is constantly monitored.

Startup protocol

1. Test all sensors to ensure they are functioning properly
    a. Temperature sensors
    b. Encoders
    c. Safety interlocks
    d. IR sensors
    e. Safety door interlocks
    f. Load cells
    g. Velocity sensors
    h. Lock sensors
2. Verify component temperatures are within specification
3. Verify all safety door interlocks are secured

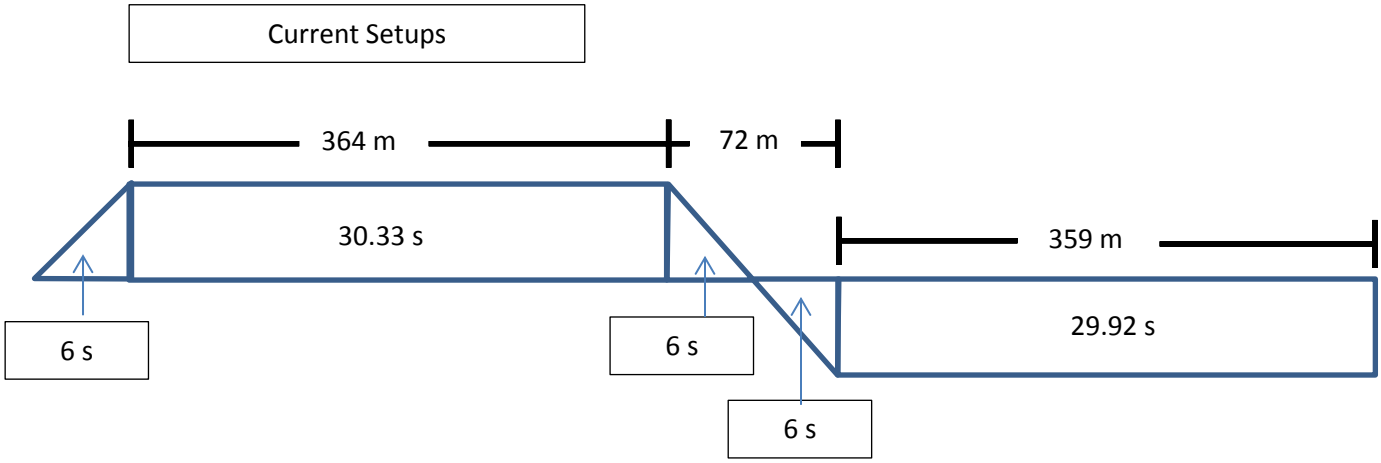
Normal operation during acceleration and deceleration phase

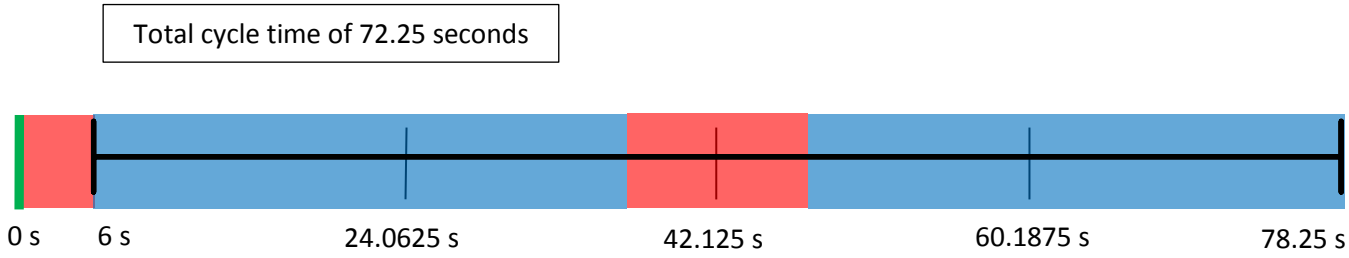
1. Guide rollers receive a constant acceleration profile
2. Take-up spool receives a constant acceleration profile
3. Guide pulley encoders reads and measure velocity mismatch
    a. Velocity adjustments are made according to the mismatch
4. Wire tension is monitored
5. Dancer pulley position is monitored
    a. Take-up and supply spool speeds adjust according to dancer pulley position
6. Work piece movement fixture speed is monitored constantly
7.

Normal operation during continuous velocity phase

1. Guide roller motors receive a constant velocity signal
2. Take-up and supply spools receive a constant velocity signal based on the spool speed and diameter
3. All Encoders read and measure velocity mismatch
    a. Velocity adjustments are made according to the mismatch
4. Wire tension is monitored
5. Dancer pulley position is monitored
    a. Take-up and supply spool speeds adjust according to dancer pulley position
6. Work piece movement fixture speed is monitored constantly

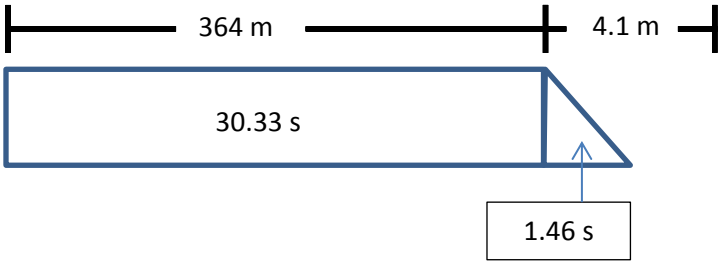
Running at 12m/s with an acceleration of $2m/s^2$



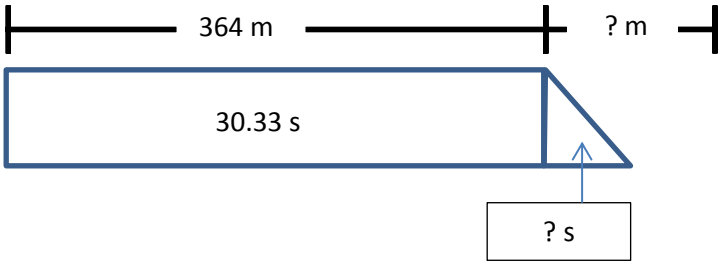


Running at 12 m/s and something occurs requiring the machine to stop

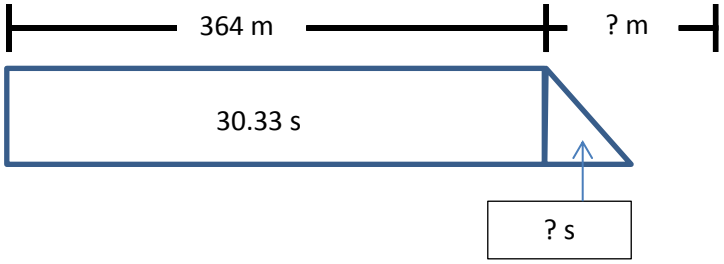
Controlled stop



Soft stop

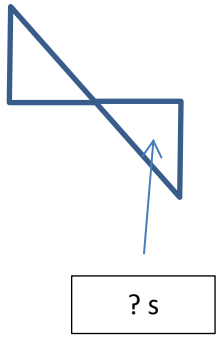


Hard stop

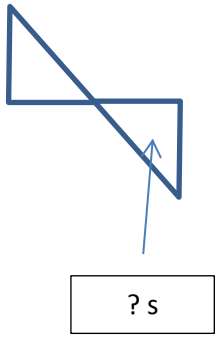


During the acceleration phase

Emergency



Soft stop



Hard stop