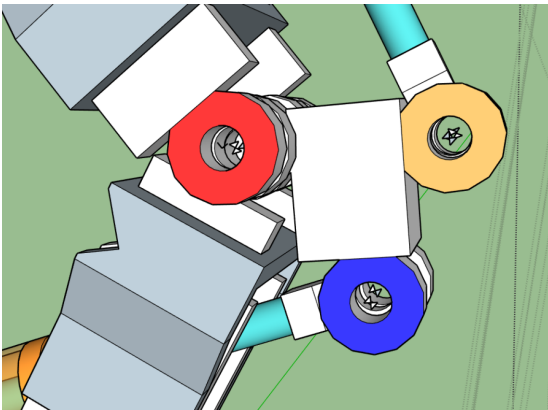


Selected Measurements of Pistonrobot

Parameters to Calculate Wattage of Walking:

- 1) Height of robot top of head to bottom of foot 72 in
- 2) Leg length hip to bottom of foot 30 in
- 3) Stride length 37 in, Center of Gravity Robot moves vertically up and then back down by 3inches twice for each stride, stride = 2mph on level ground
- 4) wt of whole robot (669 cu in x density 2205 alloy stainless steel) = 198lbs
wt of robot walking = robot 198lbs + 1.5 gal diesel fuel + engine wt 23lbs
- 5) wt of one leg hip to foot (80 cu in x density 2205 alloy) = 23lbs
- 6) femur length 324 mm, tibia length 321 mm
- 7) cross connection activity for hydraulic fluid flow management for robot parts management for walking: cross connection is enabled

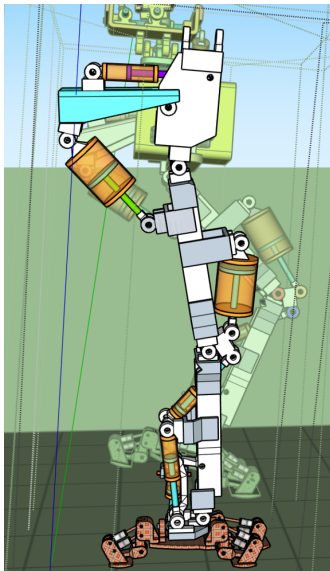


Robot Knee

red to yellow 50 mm

red to blue 50 mm

blue to yellow 43 mm



Robot Leg

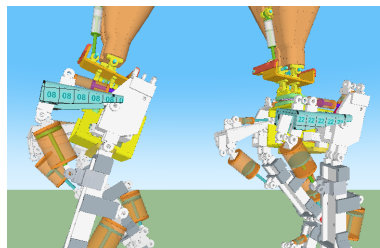
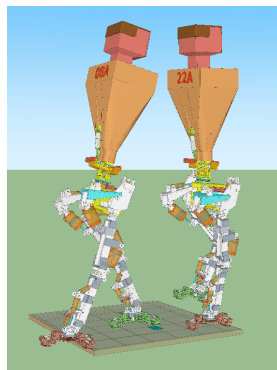
Diam Purple Piston Rod Cyl 28mm

Diam Green Piston Rod Cyl 69mm

Diam Quad Femoris Cyl 69 mm



Distance
Red hip joint bearing
to blue femur bearing
= 4.41 mm



For right leg one stride full
extension to full flexion

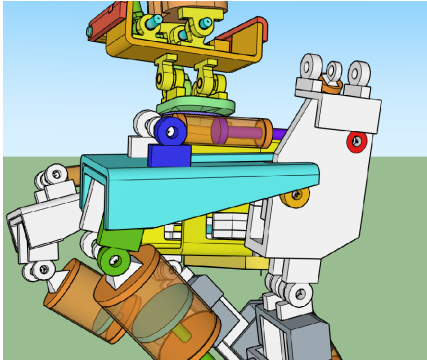
Piston rod length outside
of the cylinder

Purple rod stance 08A 70 mm

Purple rod stance 22A 62 mm

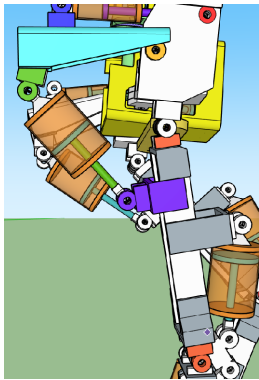
Green Rod stance 08A 4.7mm

Green Rod stance 22A 46 mm



Yellow Bearing center to Blue Bearing Center 86 mm

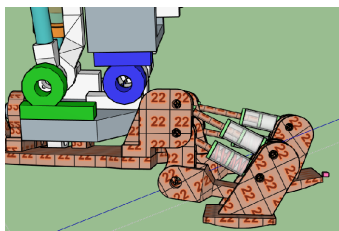
Yellow Bearing Center to Green Bearing Center 177 mm



Femur Length 324 mm Orange Hip Pivot to Orange Knee Pivot

Purple Bearing Center to Orange Femur Pivot Bearing Center 114 mm

Tibia Length Orange Knee Tibia Pivot to Tibia Ankle Pivot Blue 321 mm



In the ankle Blue Bearing is Tibia to Foot pivot point

Blue Bearing Center to Green Bearing Center 49 mm

Blue Bearing Center to Pink Box at Toe Tip 145 mm

These two measurements pages about Pistonrobot help to establish the math to determine:

- 1) the Wattage of Walking of Pistonrobot including with 1.g gal diesel fuel the robot can walk on level ground at 2 mph for 100 hours
- 2) the Pistonrobot (total wt 198 lbs) can begin by standing upright with its weight evenly distributed to both feet, shift itself so all of its weight is on one foot, lift the other foot off the ground, and staying balanced on the one foot on the ground, bring itself into a deep knee bend, that is femur almost vertical is brought to femur horizontal (parallel to ground), stand stable in this deep knee bend with almost no energy required, then, when its cpu requests, it can go from deep knee bend (femur horizontal) to standing (femur almost vertical). The movement speed for the quadriceps femoris pistonrod can do this at any speed from slow speed and anywhere in between up to a max pistonrod movement speed of 20 cm/sec
- 3) The Pistonrobot can do a "kick" that is it can move its leg and foot in a controlled and balanced manner so that anywhere between slow speed to a max speed of 3600 cm/sec, the robot can create a rapid forward motion of its foot. The robot can allow this foot to run into a solid object and transfer to that object a substantial impact force and energy.

1), 2), and 3) can be done repeatedly and do not cause any damage to the robot.

