# Check if DC Motors Work Continuously with Rated Current

# Summary

## Location & Date

TBD

## Description & Aim

DC motors will probably work continuously during the game. Thus, we need to check if they can properly work continuously without interruption or hazard. In this test, we aims to assure that dc motors can work at least 10 minutes without interruption with rated current.

## Participants

TBD

# Preconditions & Environment Requirements

1. DC Motors which are connected with wheels
2. DC Supply
3. Digital Multimeter

# Scenario

|  |  |  |  |
| --- | --- | --- | --- |
| **Step** | **Data** | **Expected Result** | **Actual Result** |
| Connect 1 of the dc motors to the supply | - | - |  |
| Then, activate power supply with zero voltage & current | 0V,0A | No motion observed |  |
| Then, increase voltage limit | 9V | No motion observed because supply is at CC mode |  |
| Then, starts to increase current | 0.10A | Motor starts to run with low speed |  |
| Then, set current value to the rated current of dc motor | 0.5A | Motor speed increases,  Motor temperature increases |  |
| Then, wait 10 minutes to observe if motor has been damaged or not | 10 minutes | Motor should run continuously without interruption  Motor temperature should not be high |  |

# Check If Maximum Power Consumption of All Motor Units is In Proper Limits

# Summary

## Location & Date

TBD

## Description & Aim

In the project, we are going to use batteries to power up all motor components. Since the batteries has some current limits, we need to check our maximum power ratings to run our system in proper limits.

In this test, all motors are run at their rated currents and maximum current rate will be observed. Then, it is optimized according to batteries capability.

## Participants

TBD

# Preconditions & Environment Requirements

1. DC Supply
2. Battery
3. Digital Multitemer \*2
4. DC Motors

# Scenario

|  |  |  |  |
| --- | --- | --- | --- |
| **Step** | **Data** | **Expected Result** | **Actual Result** |
| Connect all dc motors at the same dc supply | - | - |  |
| Then, activate power supply with zero voltage & current | 0V,0A | No motion observed |  |
| Then, increase voltage limit | 9V | No motion observed because supply is at CC mode |  |
| Then, starts to increase current | 0.3A | Motors start to run with low speed |  |
| Then, increate the current up to DC supply enters VC mode | - | Motors reach top speed.  At 9V case, maximum current is observed.  Check the 1 series 9V battery capability to run all motors at the same time. |  |

# Check If Mechanical Components Fits Our Purpose After Printing Them

# Summary

## Location & Date

TBD

## Description & Aim

Some mechanical components are printed in 3D printer. Since they are all plastic, their mechanical strength should be checked. Note that this test doesn’t aim to broke printed material. This test only aims to be assure that if printed component is suitable for us or not.

## Participants

TBD

# Preconditions & Environment Requirements

1. Printed Barrel
2. Printed Wheels
3. Printed Floor
4. Printed Motor Bed
5. Printed Screw Bed
6. Other Printed Components

# Scenario

|  |  |  |  |
| --- | --- | --- | --- |
| **Step** | **Data** | **Expected Result** | **Actual Result** |
| Check Barrel | Ball can pass inside it |  |  |
| Check DC Motor Bed | Motor Fit In Bed |  |  |
| Check Screw Bed is Capable to Carry all Balls etc. |  |  |  |
| Check Whells fit into Barrel and DC Motor Mill |  |  |  |
| Check if Floor can capable to carry weight | Floor can carry all balls. | Up to 1.5KG |  |
|  |  |  |  |