

Superassembly Overview

Shoulder exoskeleton to assist patients with Long COVID symptom : Post Viral Fatigue

Key Specifications

- Assisted Arm Flexion Range : $0^\circ - 160^\circ$
- Full Flexion < 5 seconds
- Battery Life : 5 hours
- Operating Noise < 44 dB

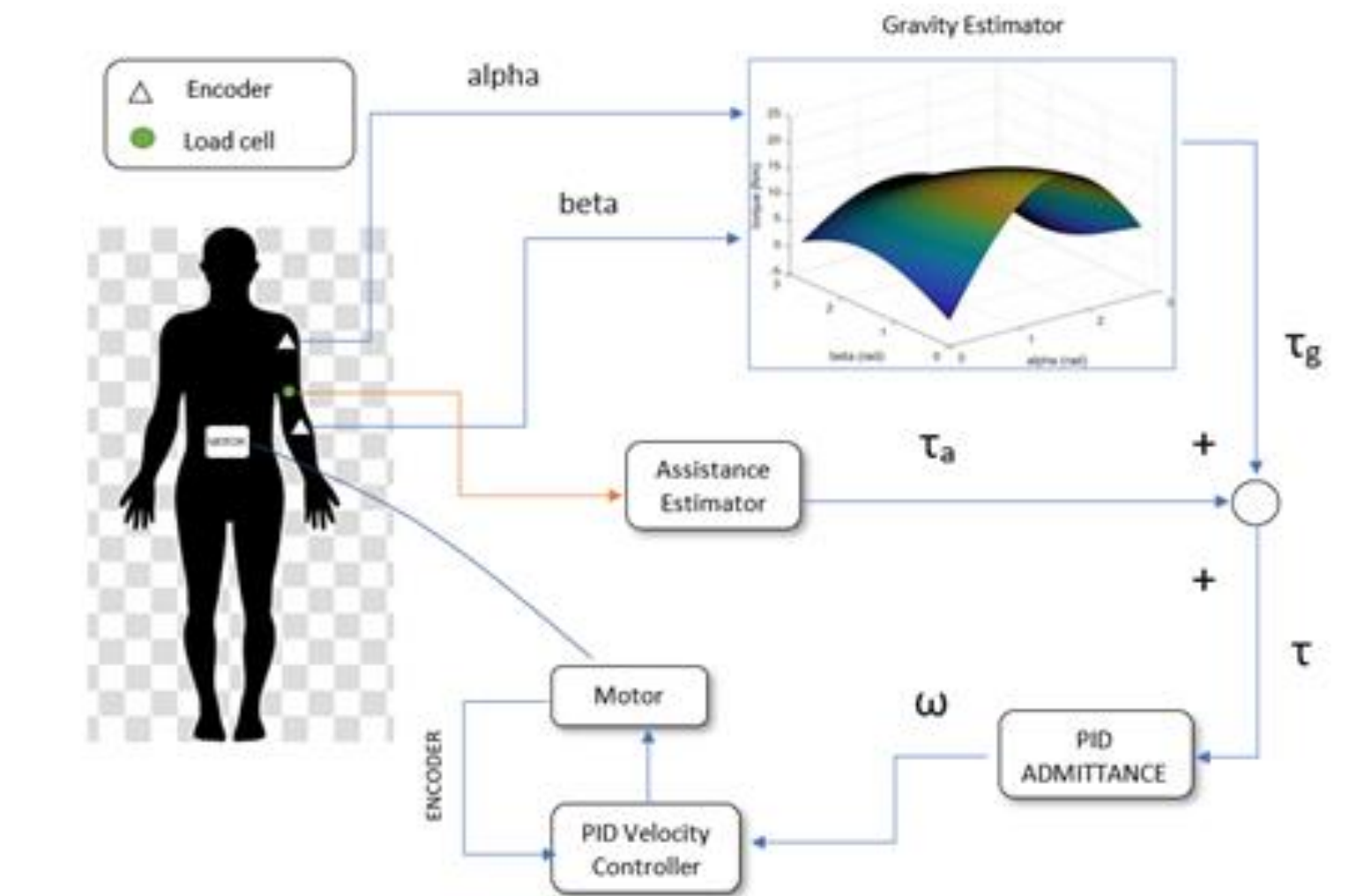
Actuation Subassembly Overview



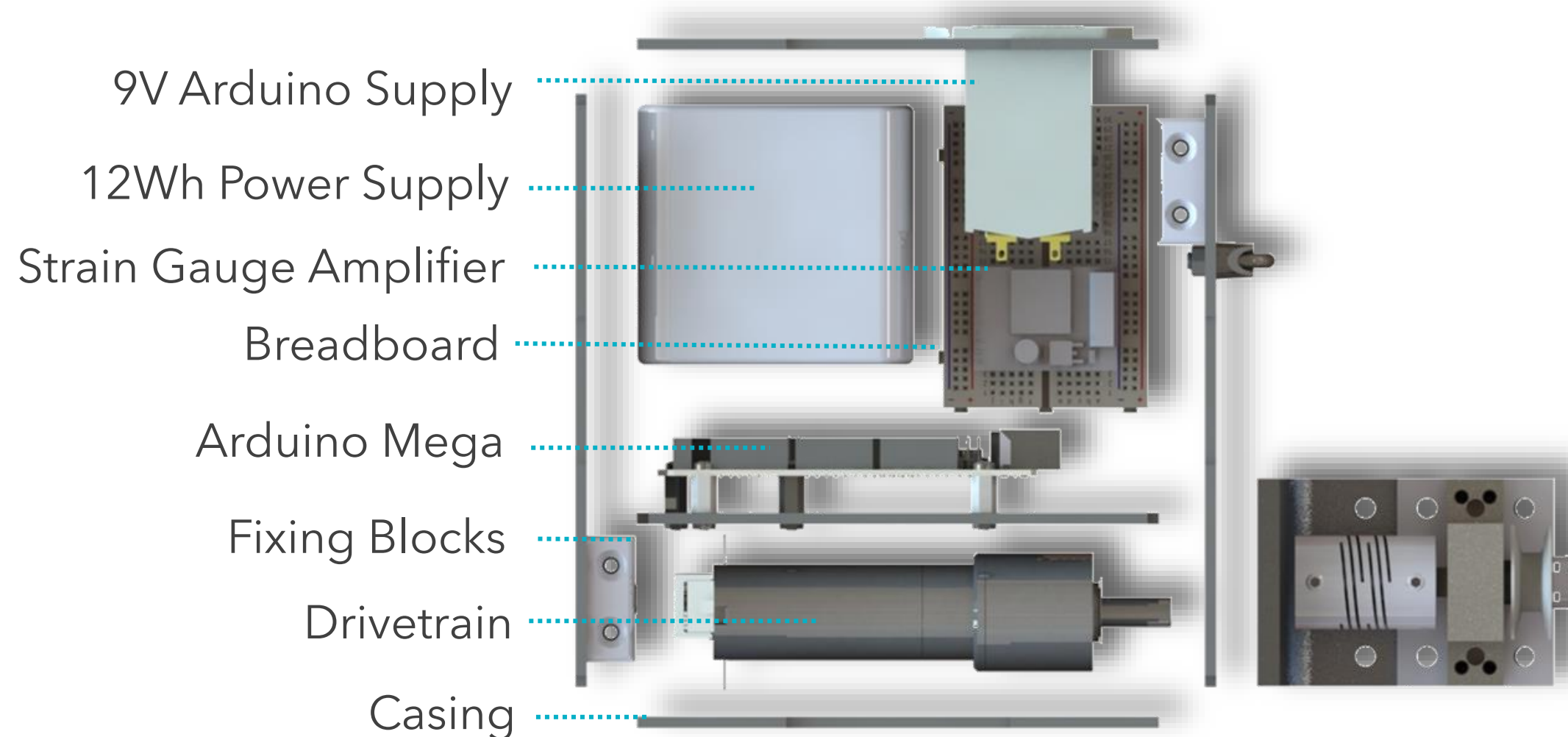
- 40 W DC Motor
- 172:1 Gearbox
- 77 Wh Rechargeable Battery
- PMMA Casing
- Spool-Shaft Assembly
- Gravity Compensation Control

Control System

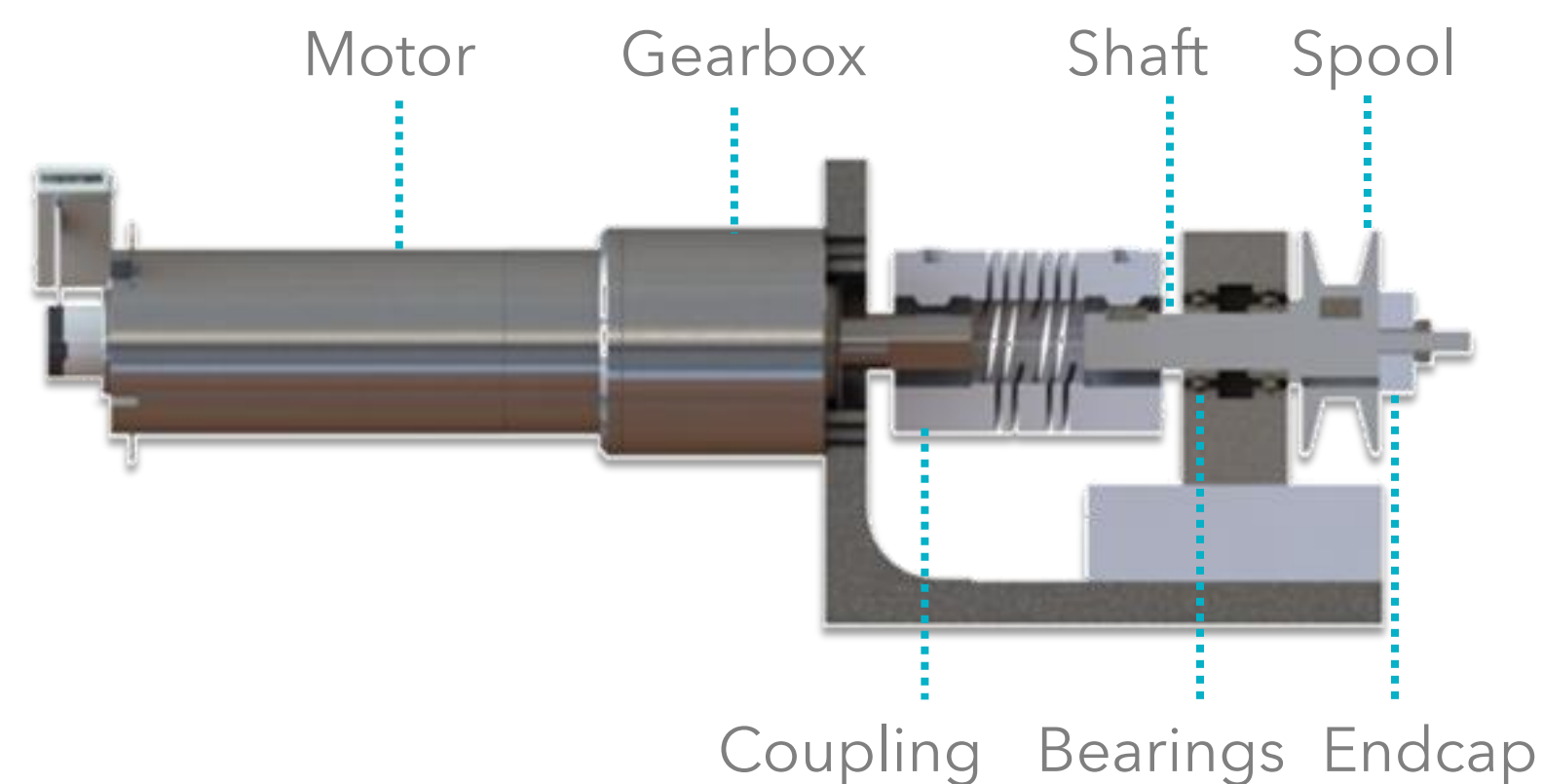
Gravity Compensation with Position & Force sensors



Main Components



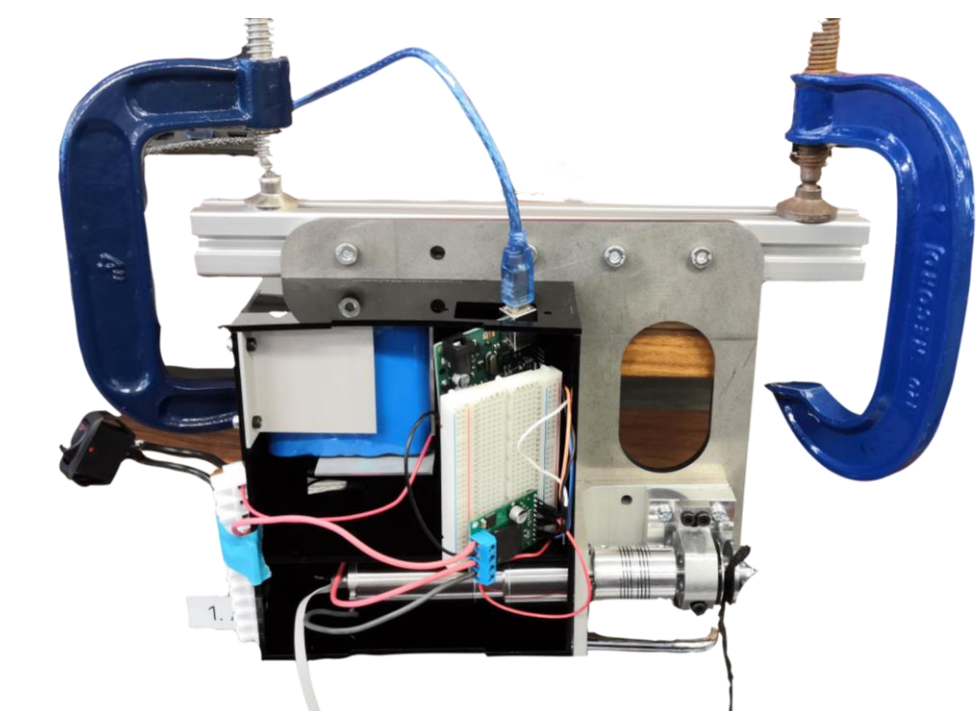
Drivetrain



Testing

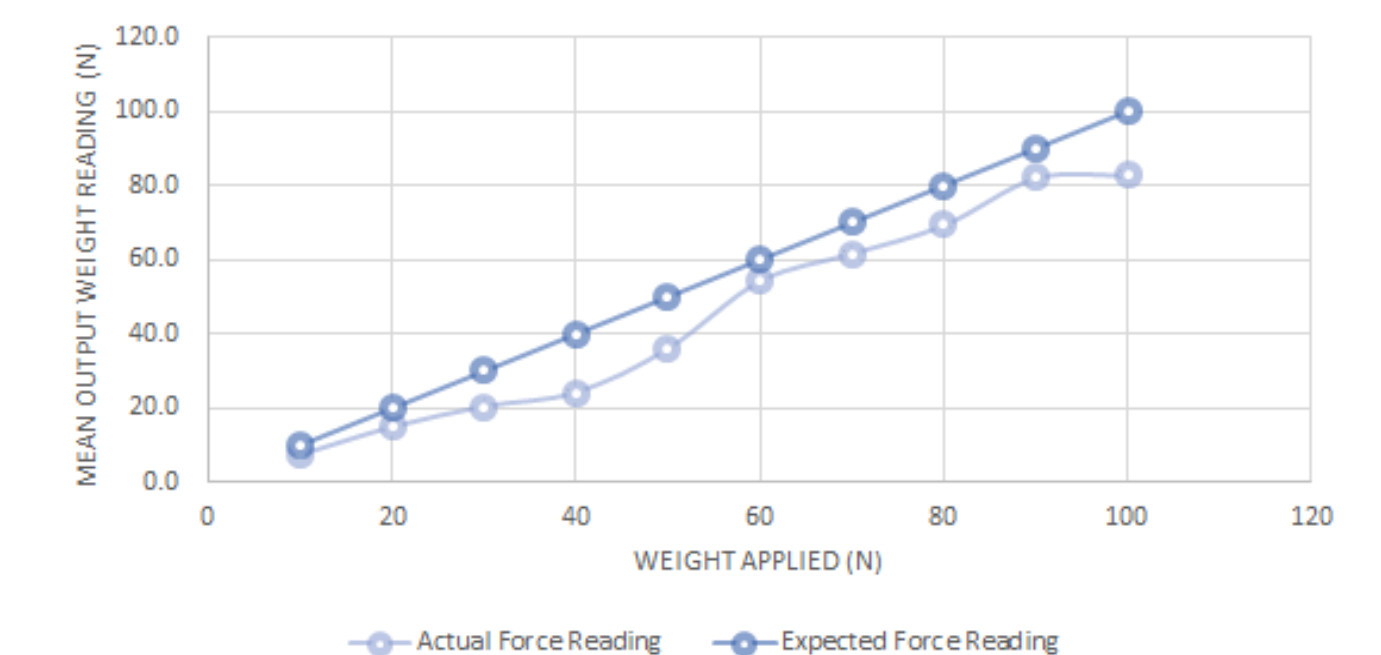
Shaft-Spool Assembly

Static & Dynamic Loading [Max. 450 N]
Back Drivable Mechanism



Strain Gauge Configuration

Correlative
Moderate Inaccuracies
Minimal Temporal Drift Of Readings



Actuation
Cable-driven actuation with gravity compensation control

Structural
Device mounting onto user

Limb Support
Enables flexion by arm supports

