ASSEMBLY DRAWINGS

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Industry-Sponsored Project
ENGG 501
Senior Capstone Design Project I

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DISCLAIMER

All drawings in this report were created to serve as a reference only. Due to the complexity and uniqueness of a conversion, the drawings should be used as a guideline to help identify possible solutions.

1. LOCATIONS

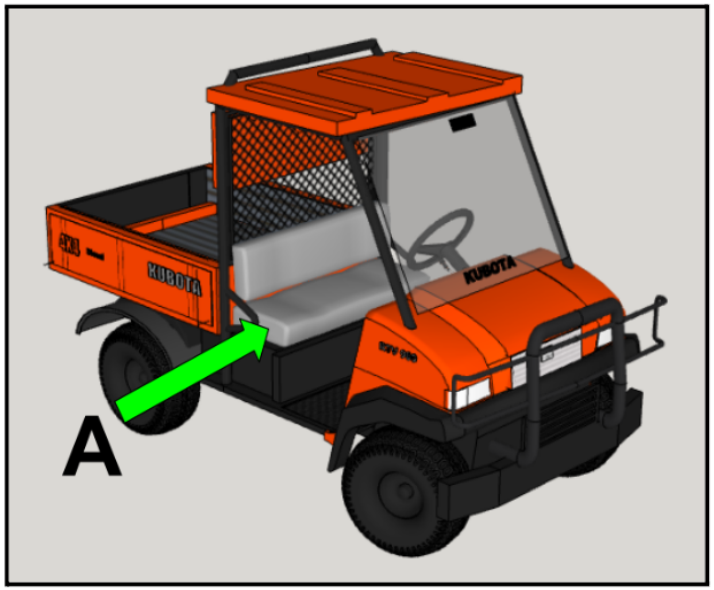


Figure 1: Location of Controller and Heat Sink

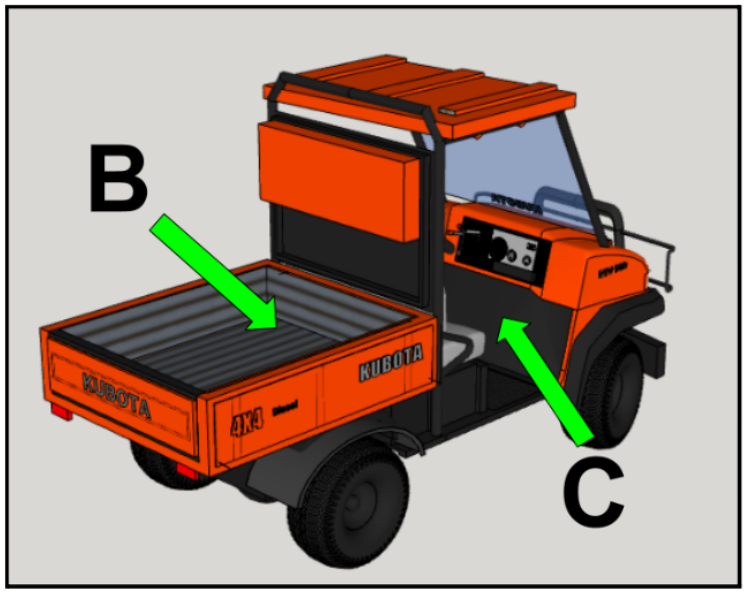


Figure 2: Location of Batteries, Motor, and Throttle

Location A: The controller will be housed, along with the heat sink and supports to keep the controller secured in place.

Location B: The lead acid batteries will be stored here.

Location C: The throttle system will be connected to the gas pedal in this location.

2. CONTROLLER AND HEAT SINK ASSEMBLY (A)

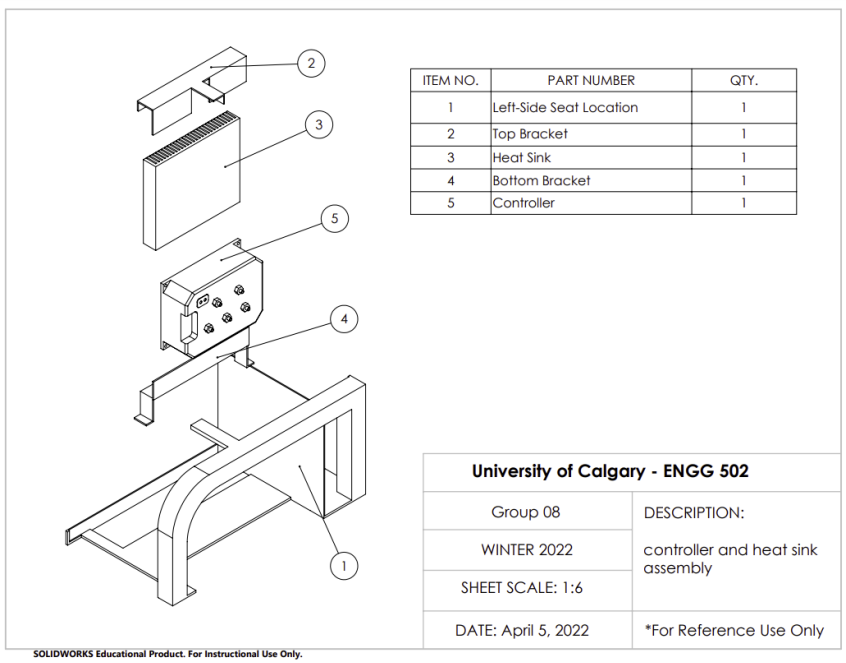


Figure 3: Controller and Heat Sink Assembly

Parts 2 and 4 in the above drawing were manufactured in order to secure the controller and the heat sink to the UTV. Similar brackets may be required for other conversions. This location is under the seat and allows for the wires to be hidden and protected from accidental contact.

3. TRANSMISSION - MOTOR ASSEMBLY (B)

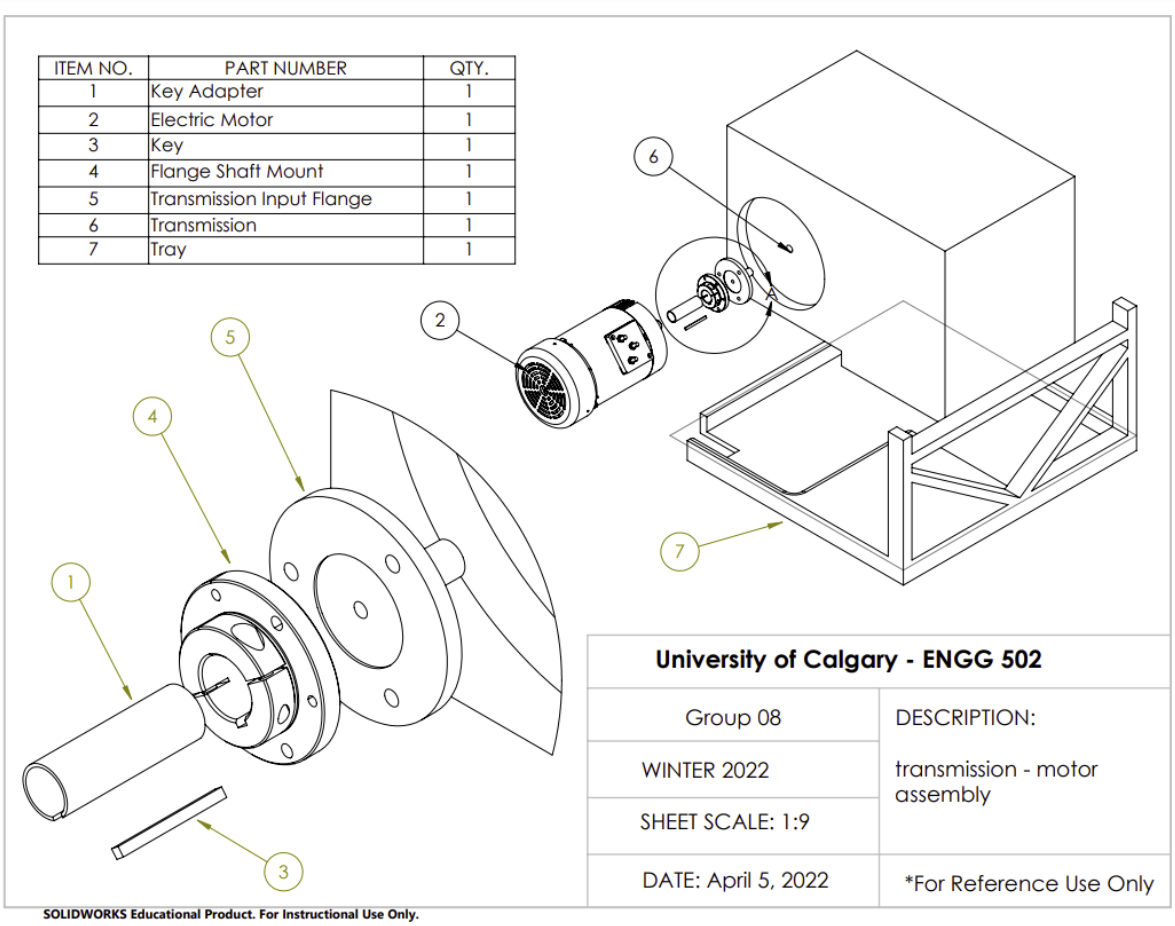
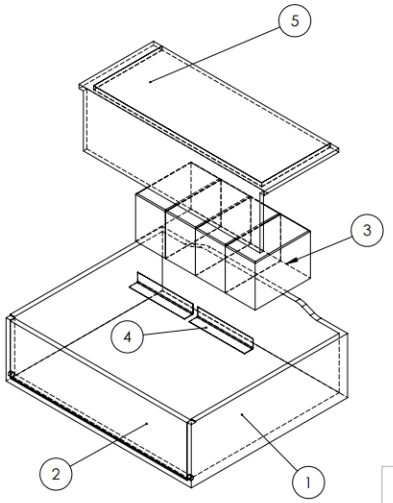


Figure 4: Transmission - Motor Assembly

In most cases, parts 4 and 5 will not have holes that align concentrically. As such, it is recommended that if drilling new holes, a milling machine, or another accurate drilling machine be used to drill the holes in order to avoid vibrational issues.

4. CARGO BOX AND BATTERIES ASSEMBLY WITH WATERPROOF CASING (B)

Figure 5: Cargo Box and Batteries Assembly with Waterproof Casing



ITEM NO.	PART NUMBER	QTY.
1	Cargo Box	1
2	Cargo Box Door	1
3	Batteries	4
4	Battery L-Brackets	2
5	Waterproof Battery Roof	1

University of Calgary - ENGG 502	
Group 08	DESCRIPTION:
WINTER 2022	cargo box and batteries assembly with waterproof casing
SHEET SCALE: 1:15	
DATE: April 5, 2022	*For Reference Only

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Due to the size of the lead acid batteries, for this conversion they were housed in the cargo box. For other conversions where smaller batteries, or lithium ion batteries are used, other locations should be found in order to keep the center of gravity of the UTV low to prevent risk of roll over on high speed turns. Weather caps were placed on each of the battery terminals, and a plastic cover roof was made in order to shelter the batteries from weather and water.

5. THROTTLE CONNECTION ASSEMBLY (C)

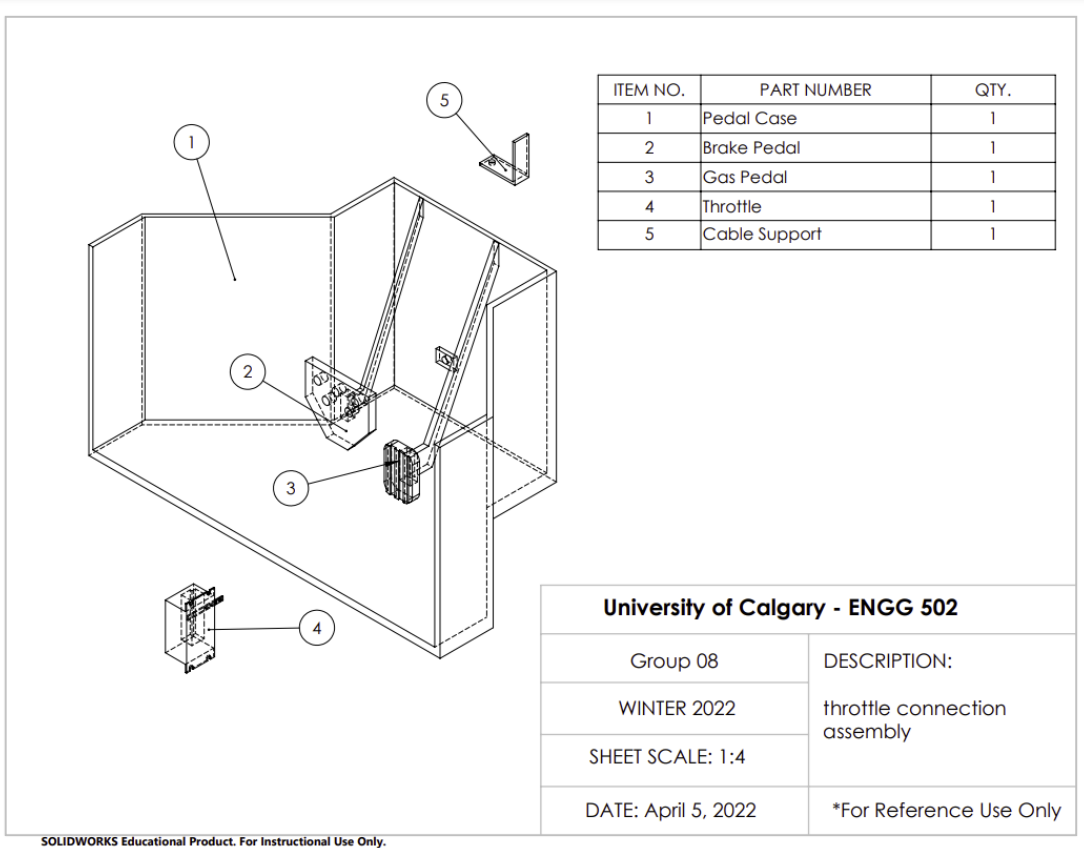

Figure 6: Throttle Connection Assembly

With the limited space in the pedal area of this UTV, a bicycle brake cable (not shown in drawing) was used to connect the electric throttle to the gas pedal through a pulley type system using a cable support shown as part 5. Considerations should be made to ensure that the travel of the gas pedal aligns with the travel of the throttle in order to ensure a steady operation.