



POLITECNICO  
MILANO 1863

# Elementi delle Macchine

## Progetto 2023

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# Normative

- Indicatori luminosi per la svolta: color giallo ambra; altezza tra 150mm e 1400mm da terra 
- Doppio freno: su entrambe le ruote; possono agire su ruota (pneumatico o cerchione), mozzo o organi di trasmissione 
- Veicolo a due assi con un solo motore elettrico, dotato di manubrio ma non di sedile 
- Munito di pneumatici (diametro minimo 203,2mm, cioè 8'') dotati di battistrada 
- Dotati di un regolatore di velocità 
- Dimensioni max: 2000mm di lunghezza, 750mm di larghezza nel punto più largo, 1500mm di altezza 
- Segnalatore acustico percepibile da almeno 30m di distanza 
- Posteriormente catadiottri rossi, lateralmente catadiottri gialli 
- Deve essere presente marcatura CE prevista dalla Direttiva 2006/42/CE 

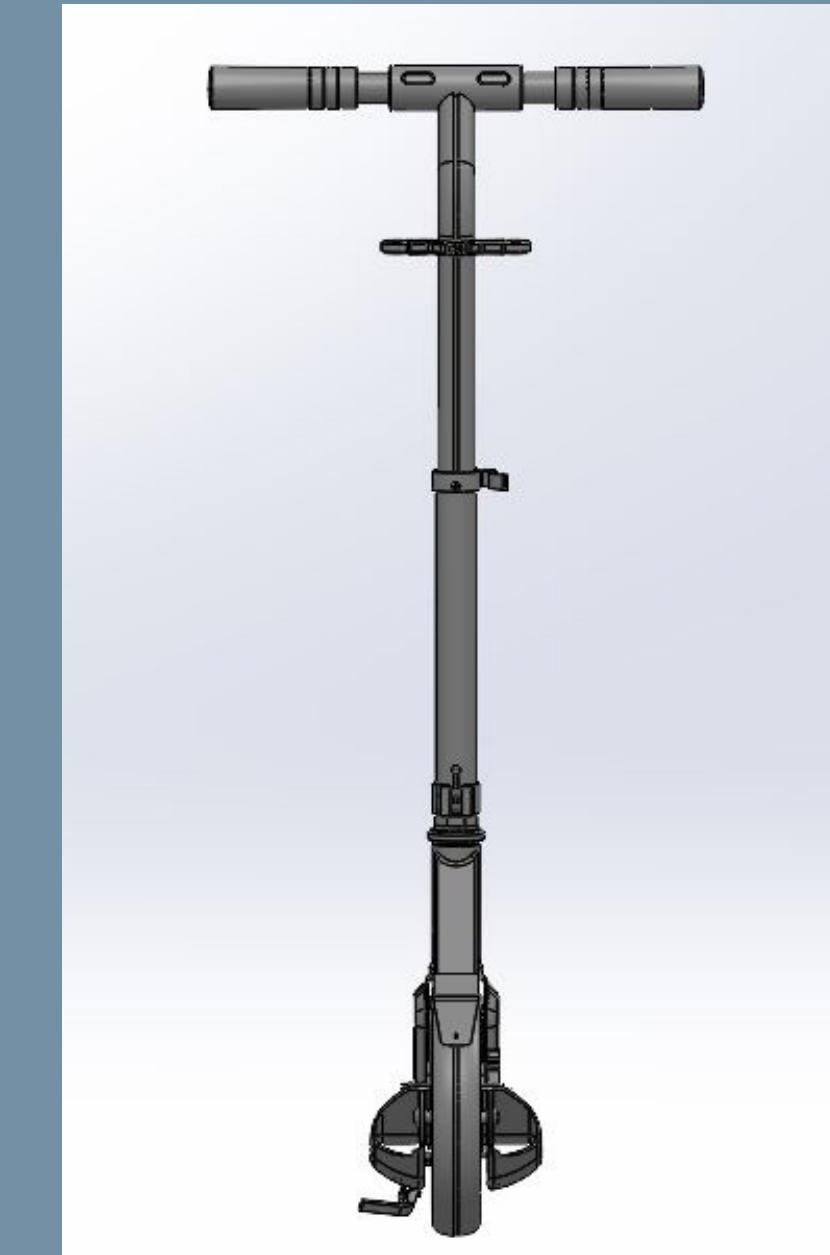


# Linee guida utilizzate

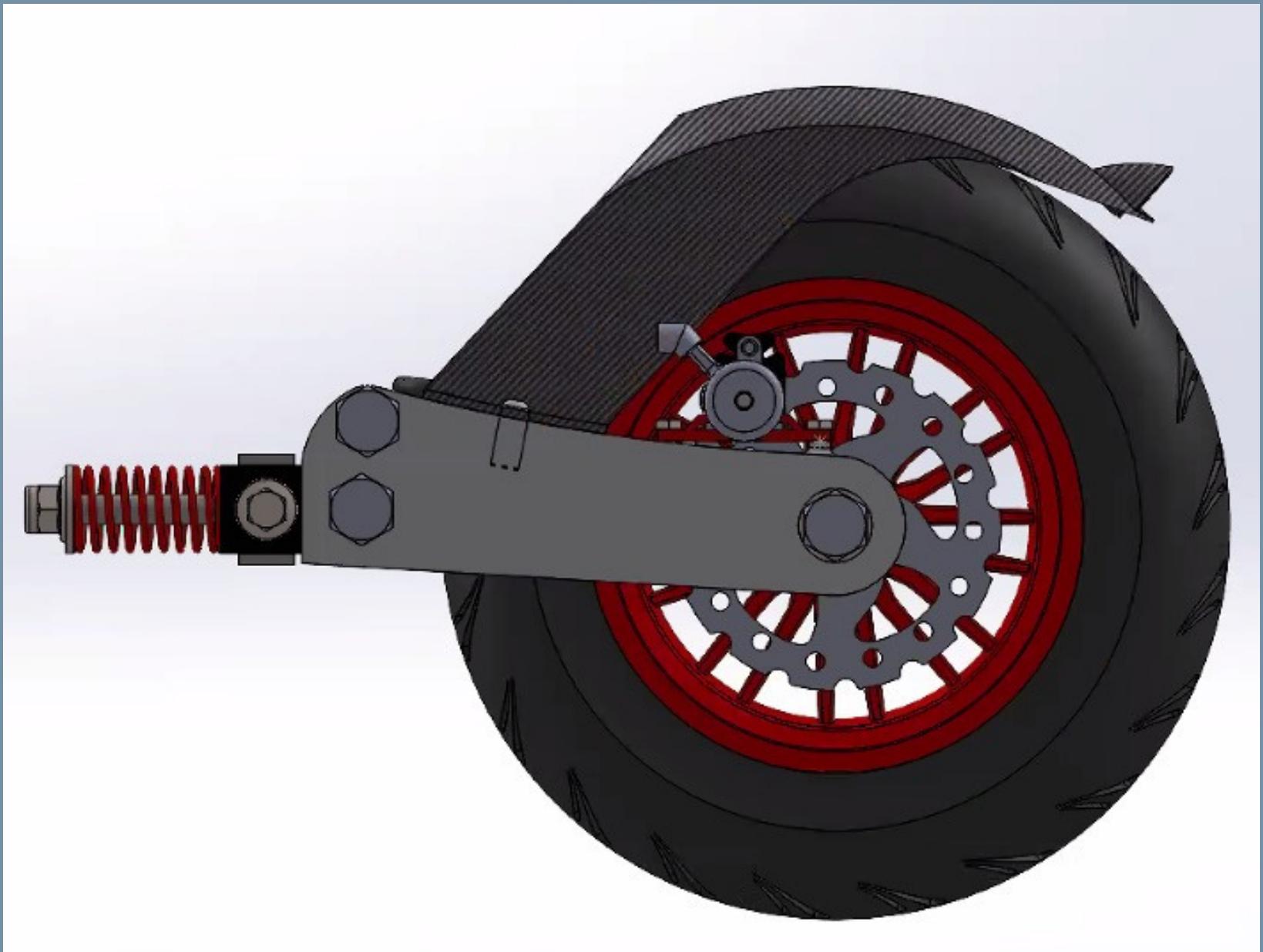
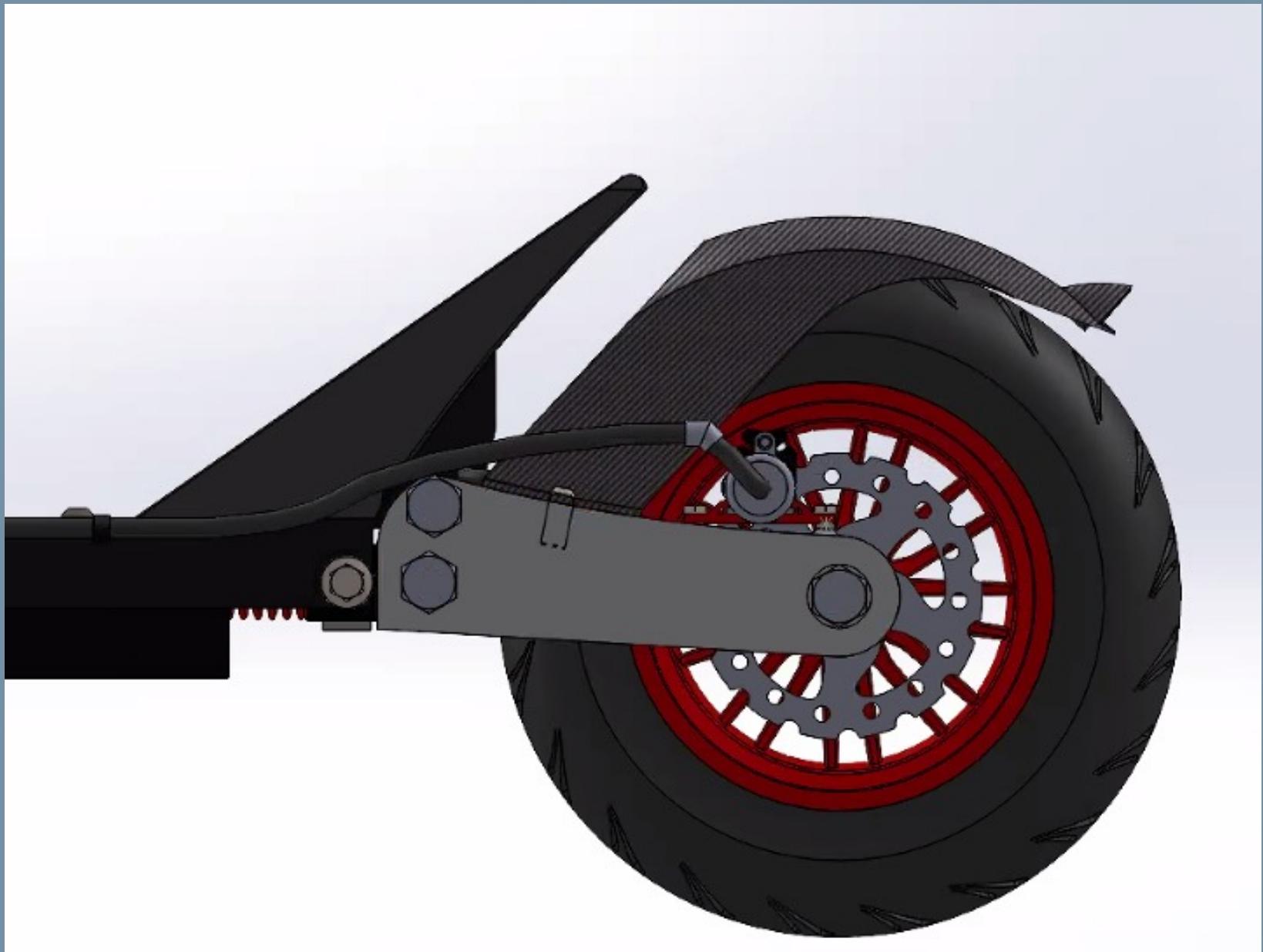
- Abbiamo seguito il sistema ISO (International Standards Organization) e il Metodo Europeo o del primo diedro
- **Quotature:** abbiamo cercato sempre di evitare intersezioni con linee di contorno e di riferimento e di distanziare le linee in modo uniforme, utilizzando quotature in serie quando volevamo dare importanza alla distanza tra due elementi contigui e in parallelo per evitare l'accumulo di errori costruttivi
- **Collegamenti:** abbiamo usato filettature metriche ISO, principalmente con profilo tondo e destrorse
- **Cuscinetti:** cuscinetti a sfere obliqui per carico radiale e assiale nel canotto e cuscinetti radiali a sfere per la ruota posteriore poiché il carico assiale è trascurabile
- **Strategie di modellazione:** sia bottom up che top-down

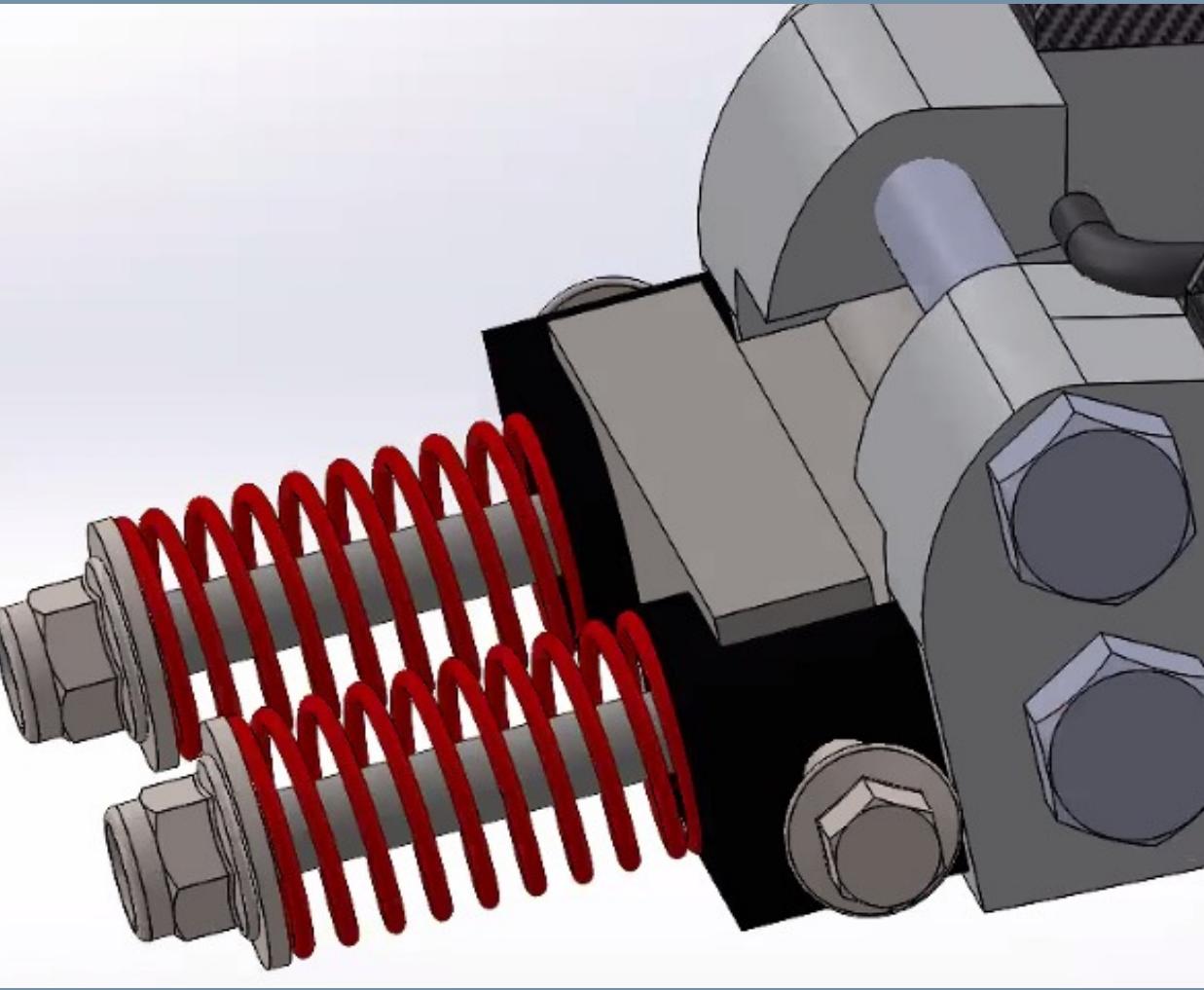
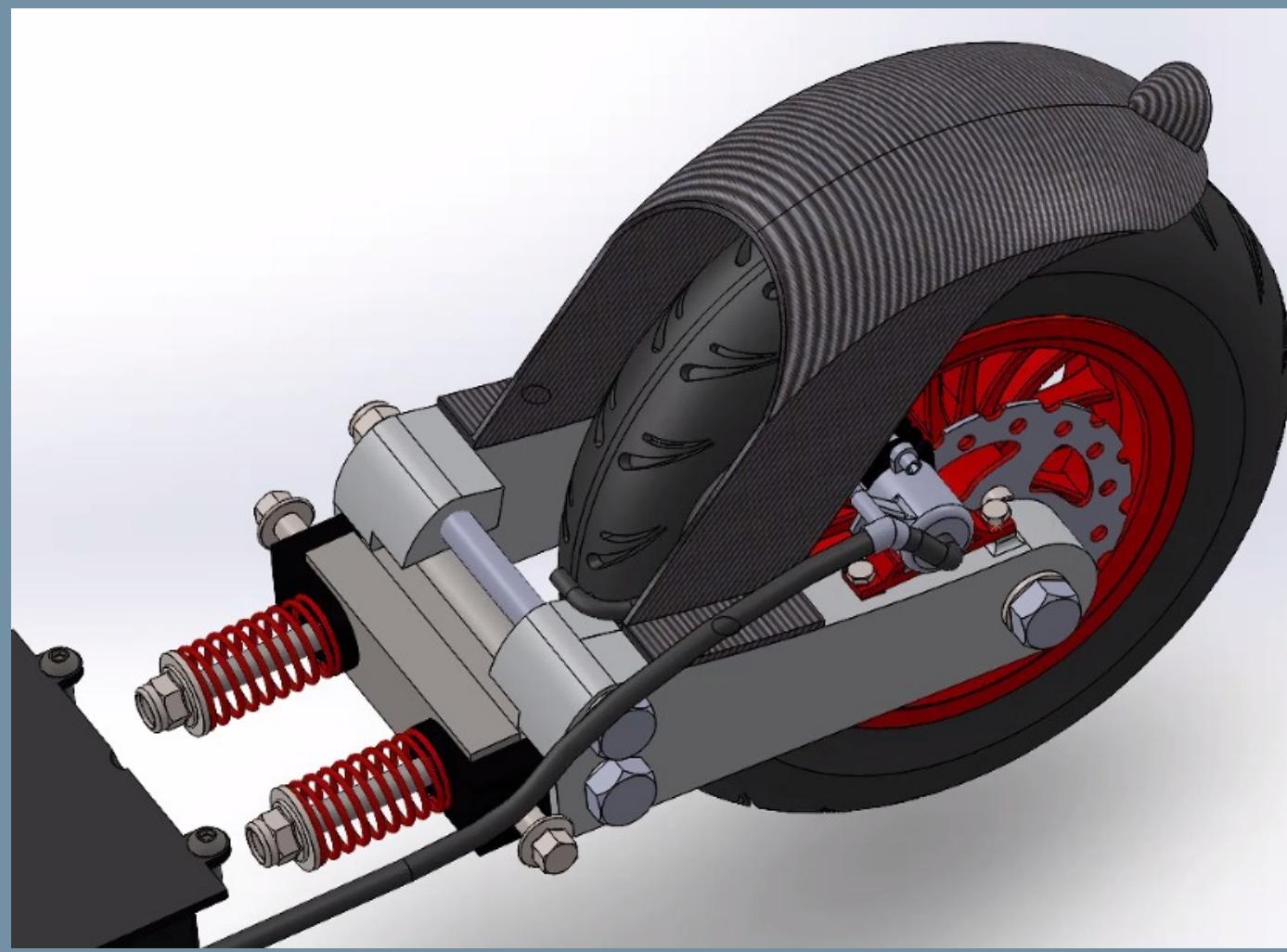
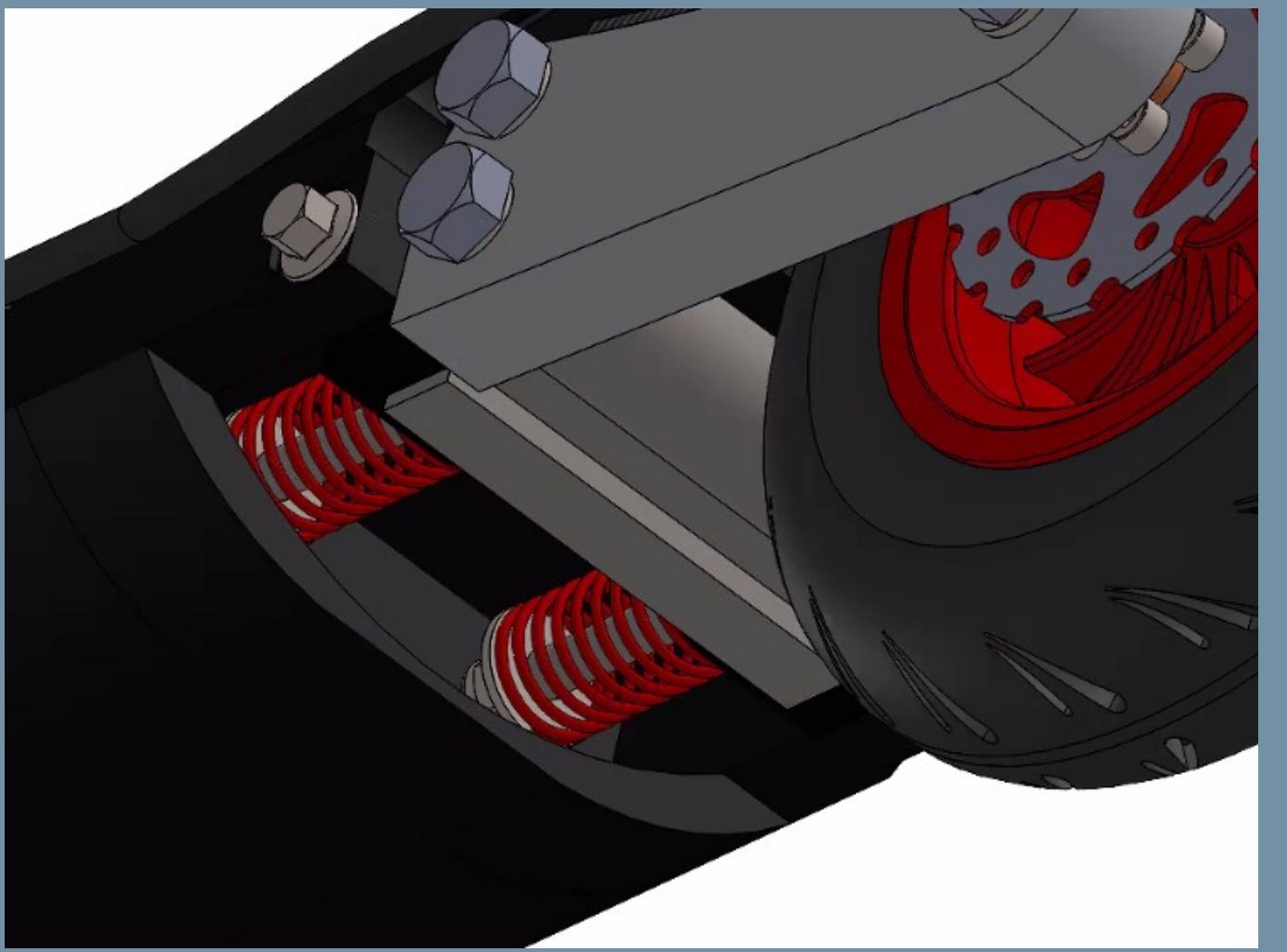


# Completa riprogettazione del veicolo

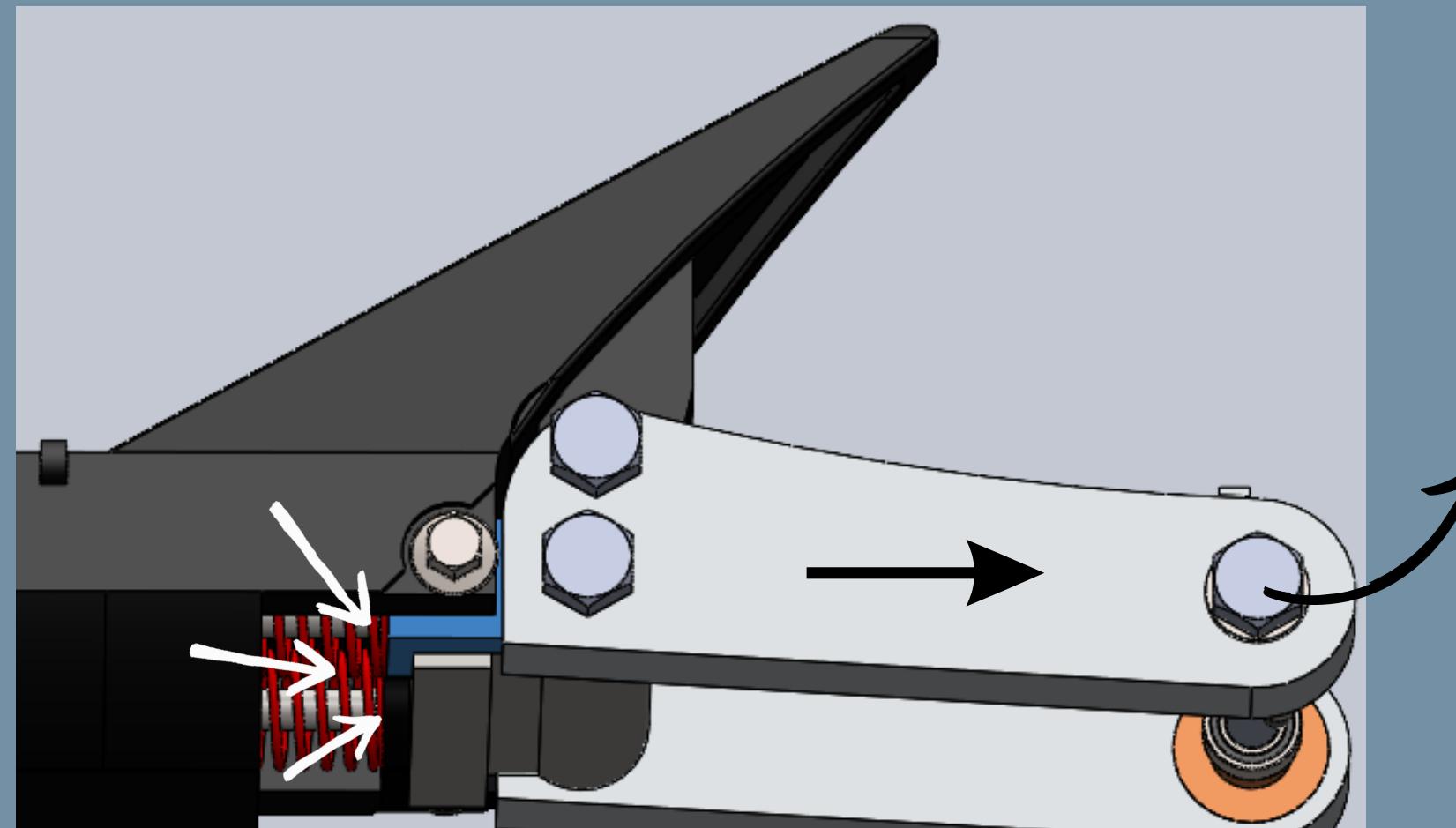
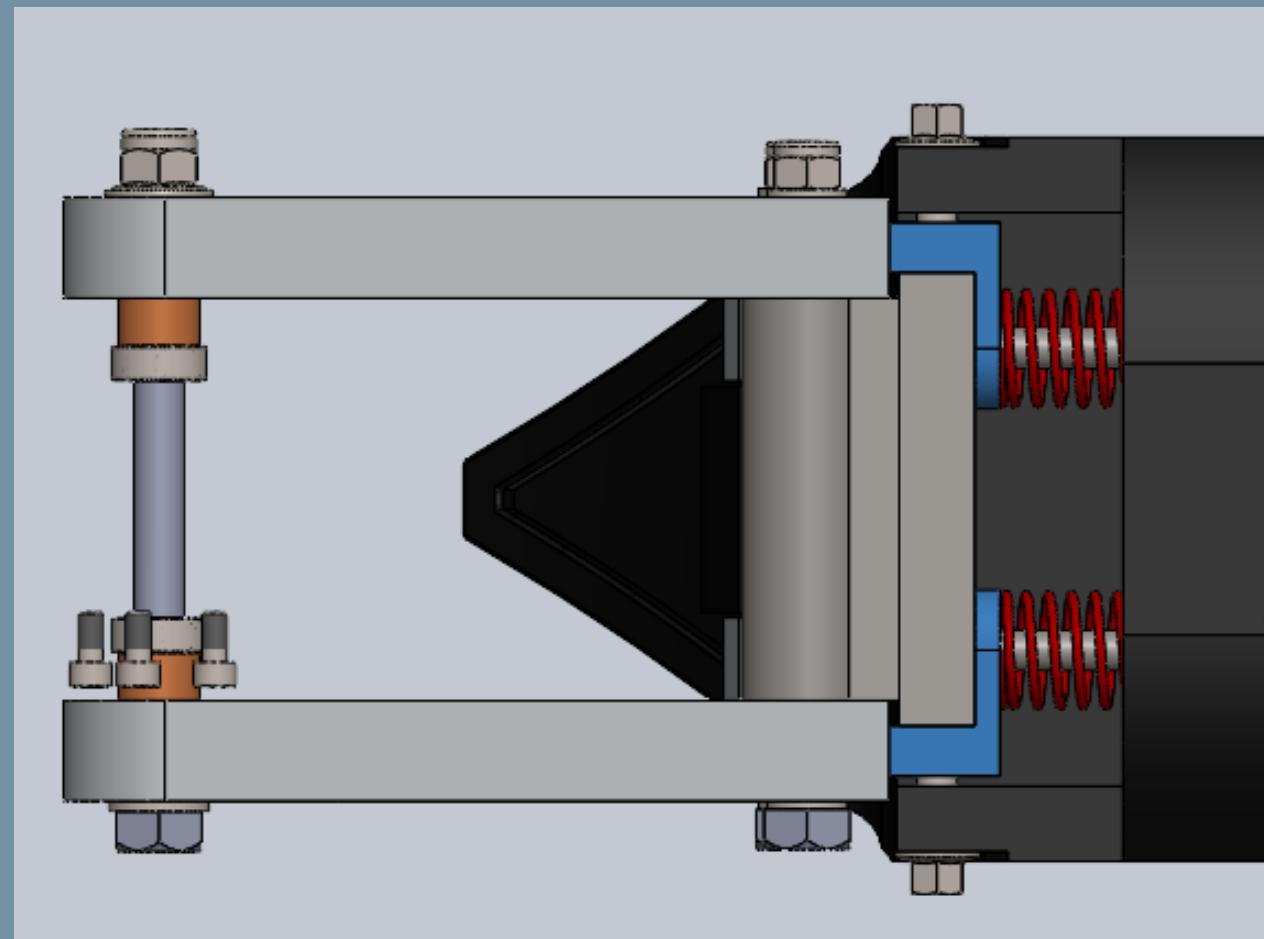
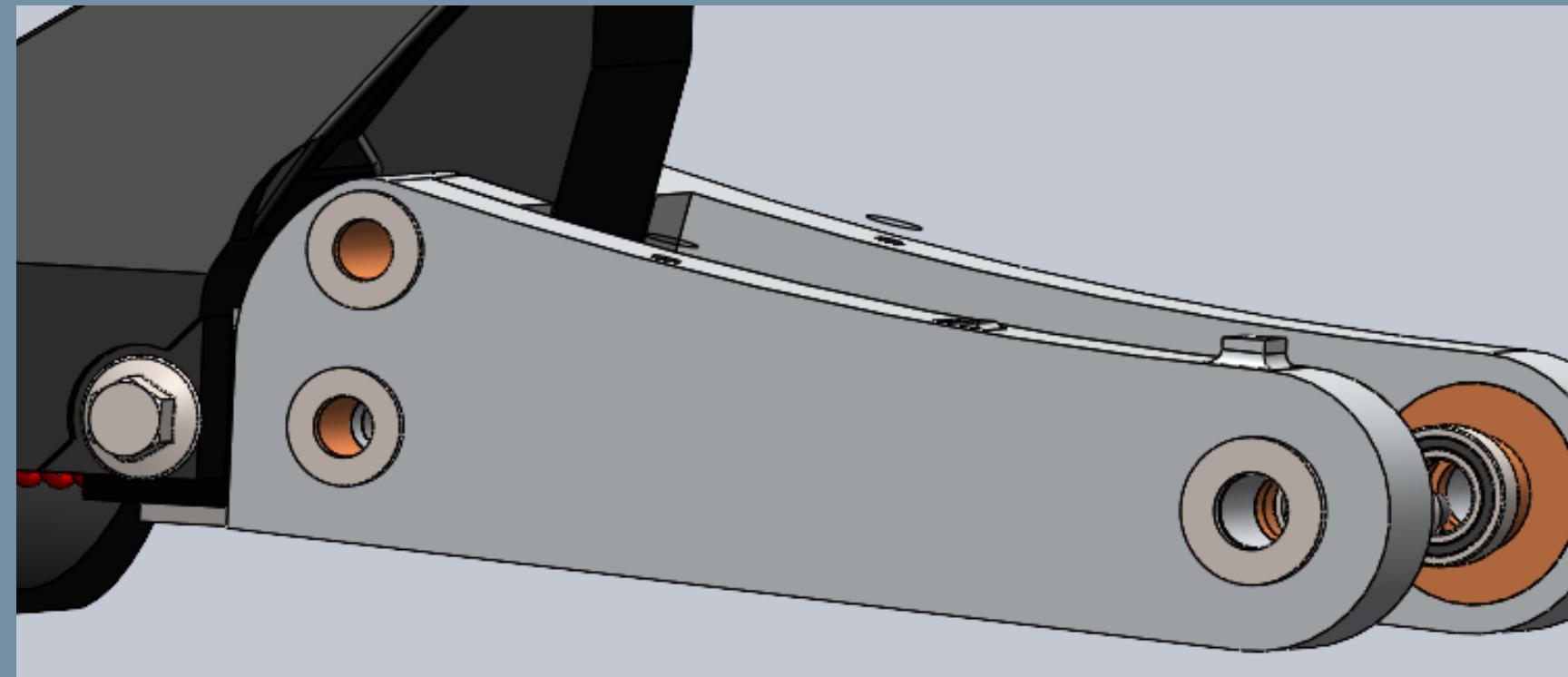
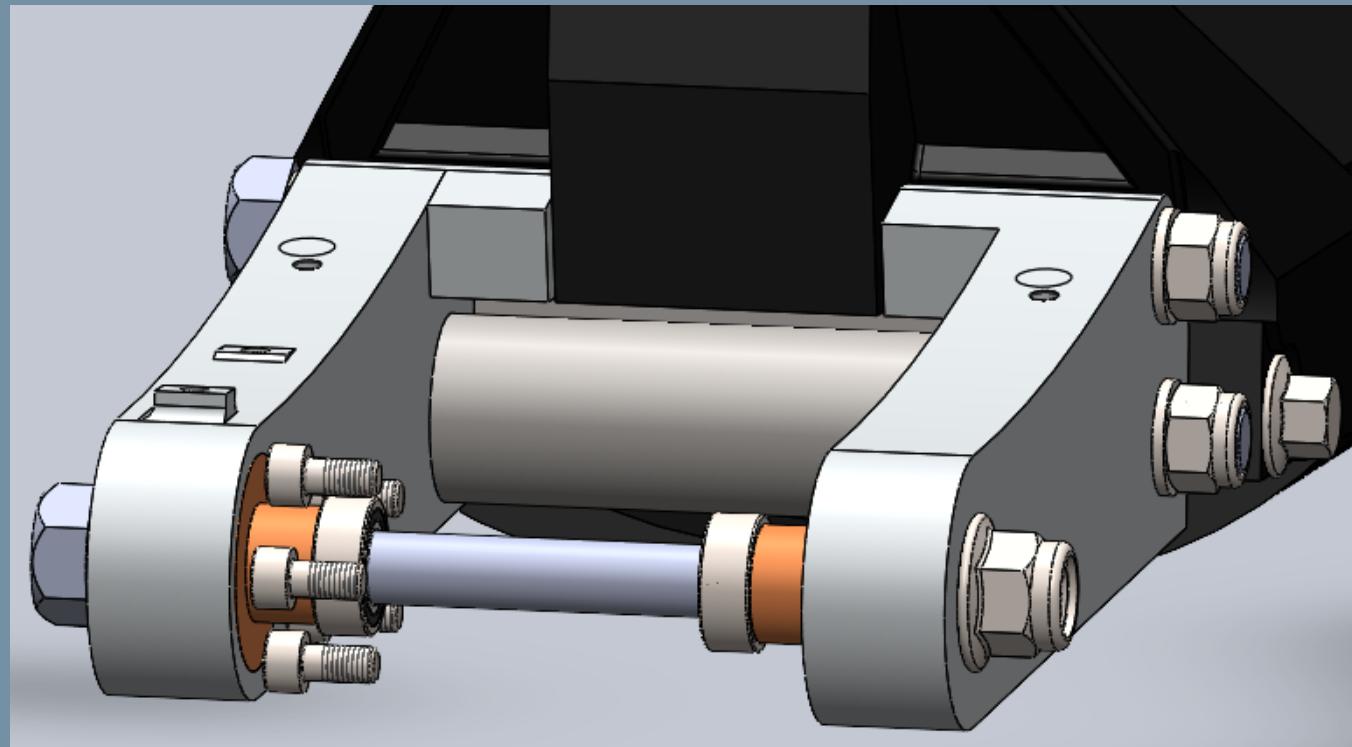


# Sospensione posteriore

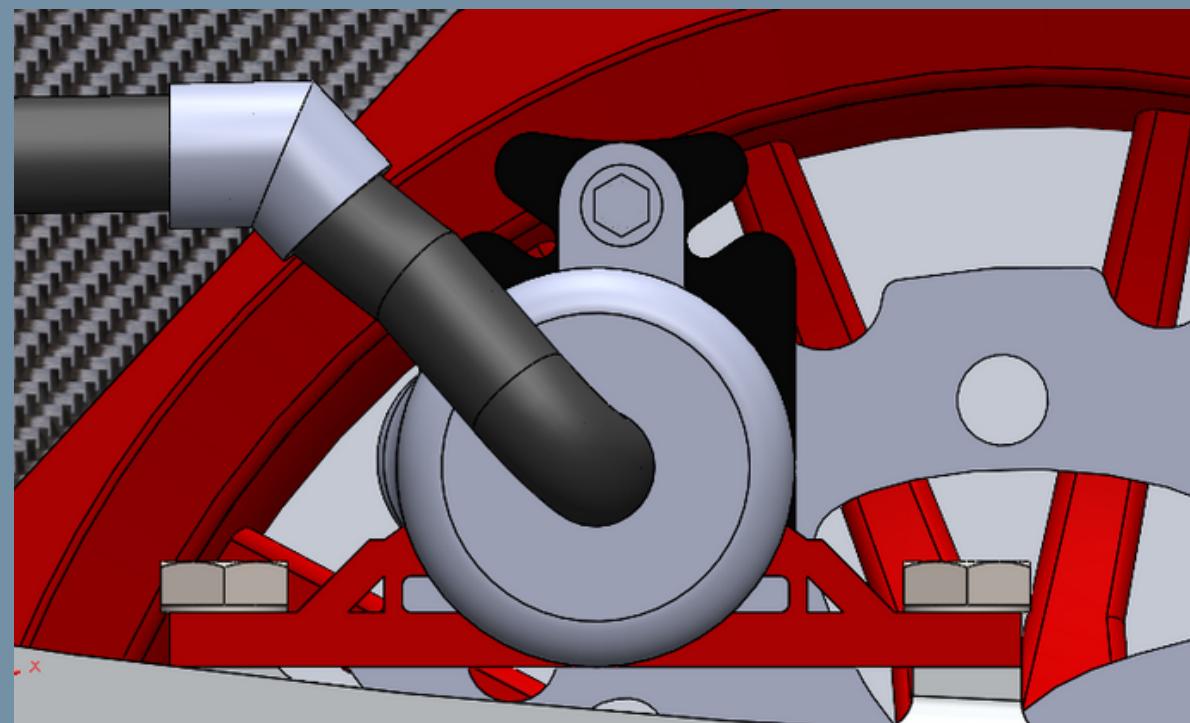
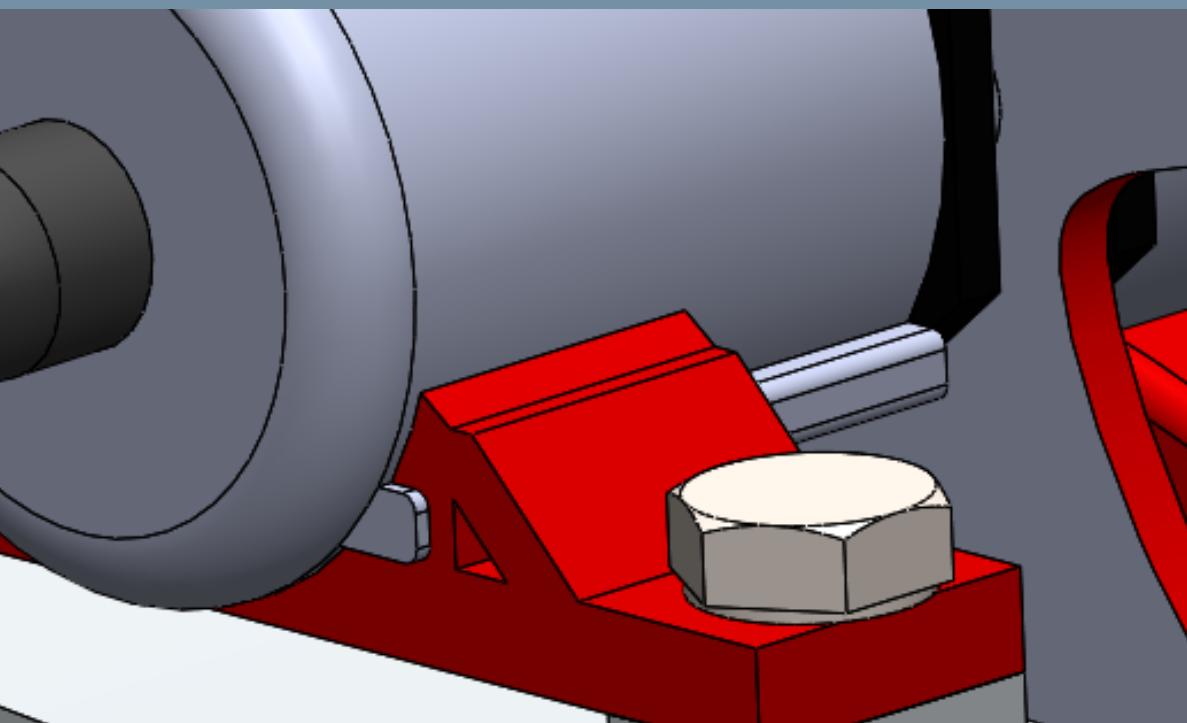
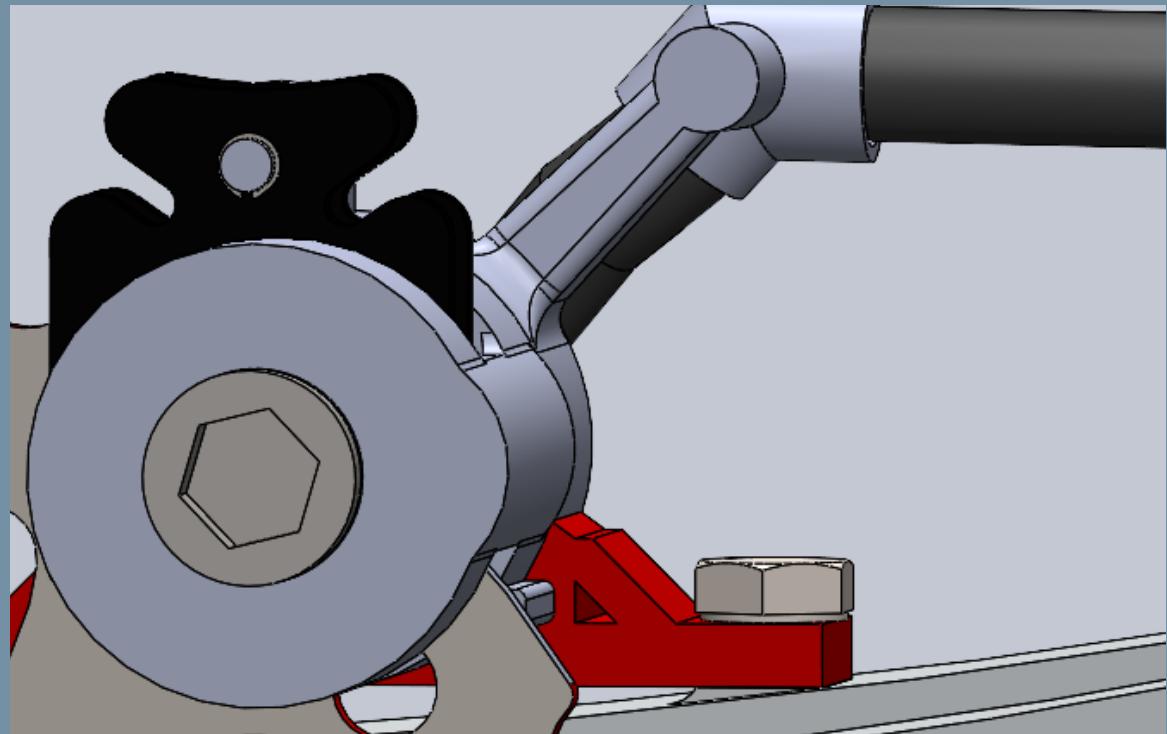
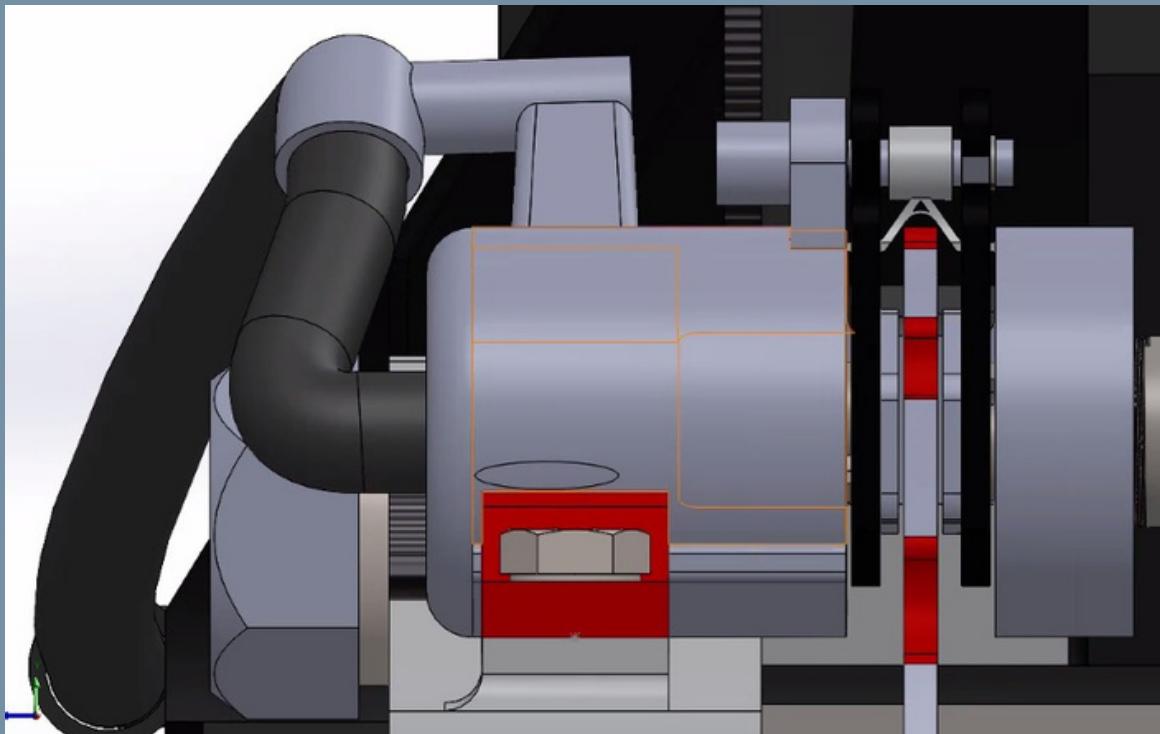
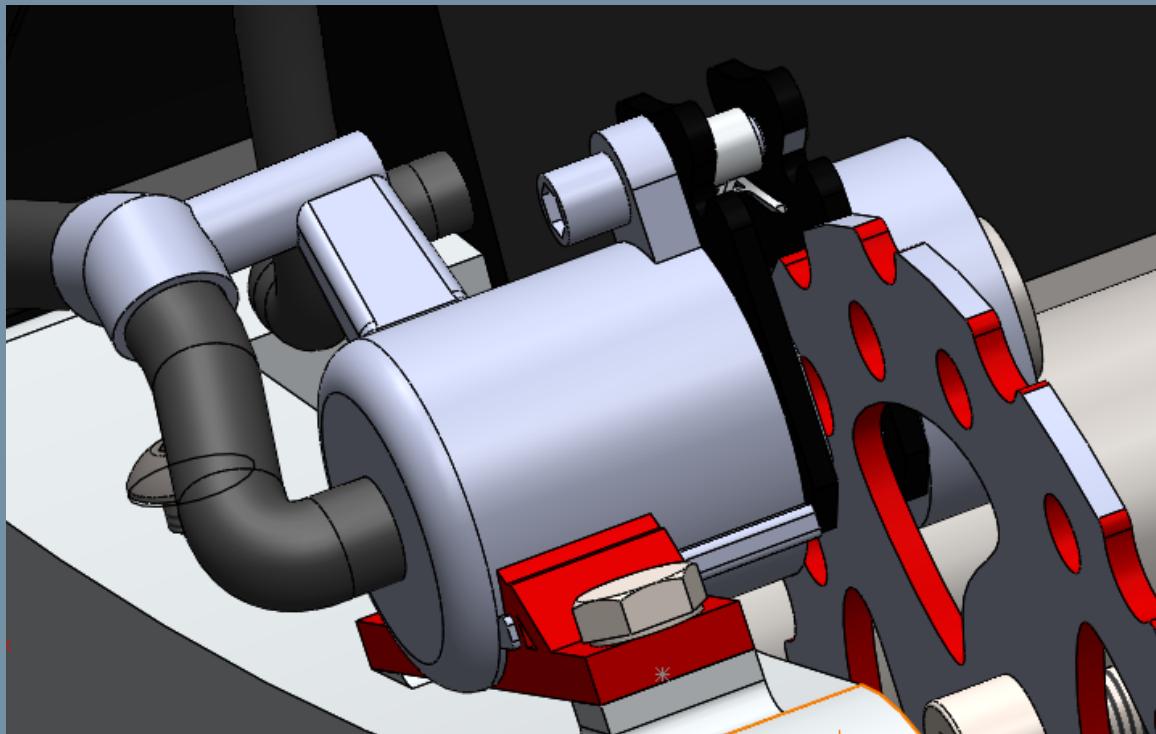


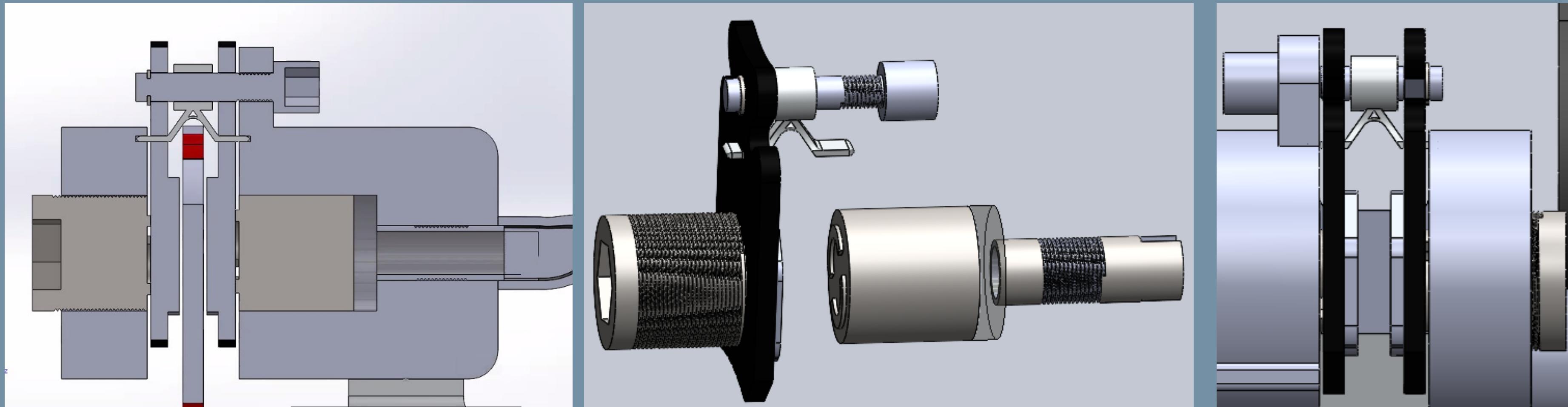


# Forcellone e l'imboccaggio

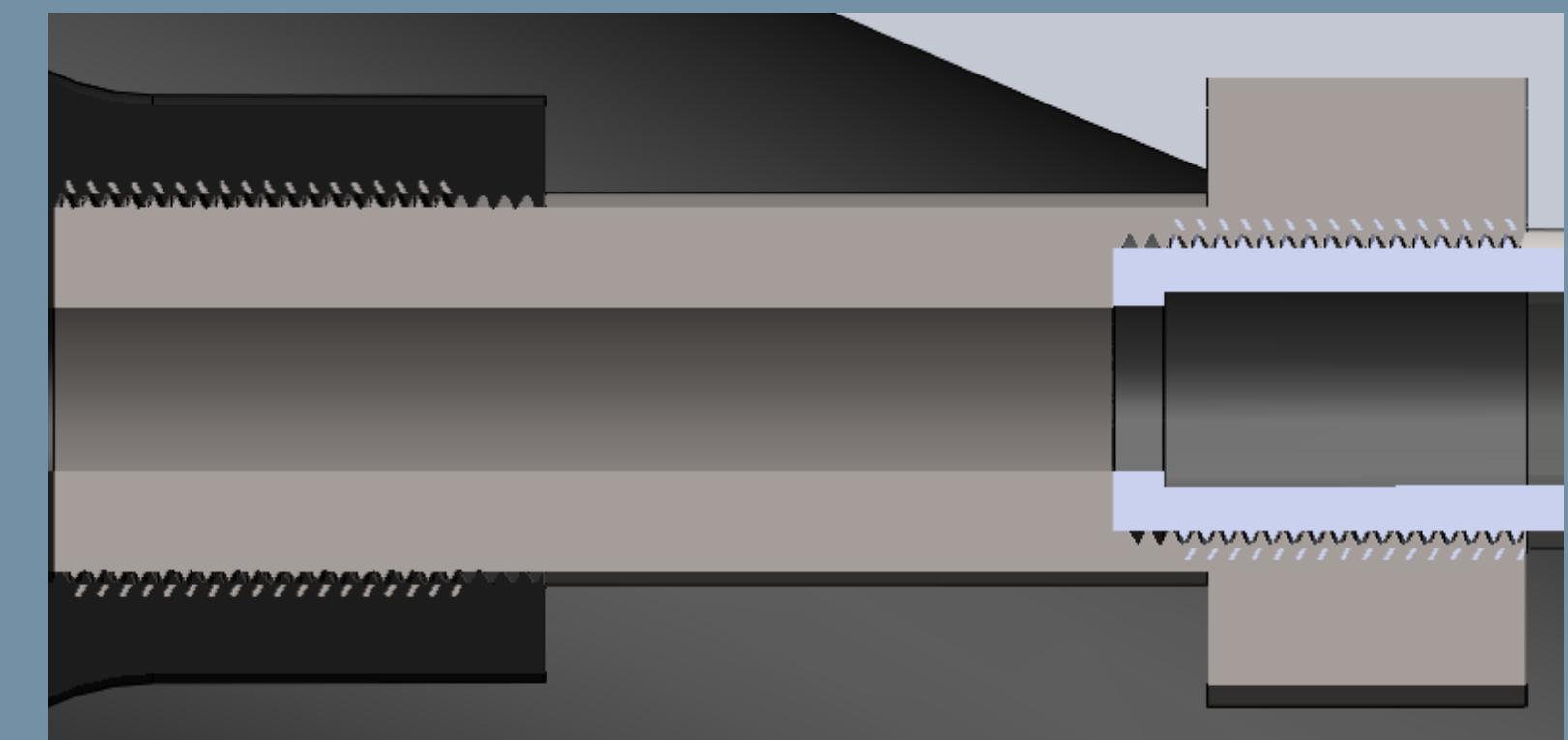
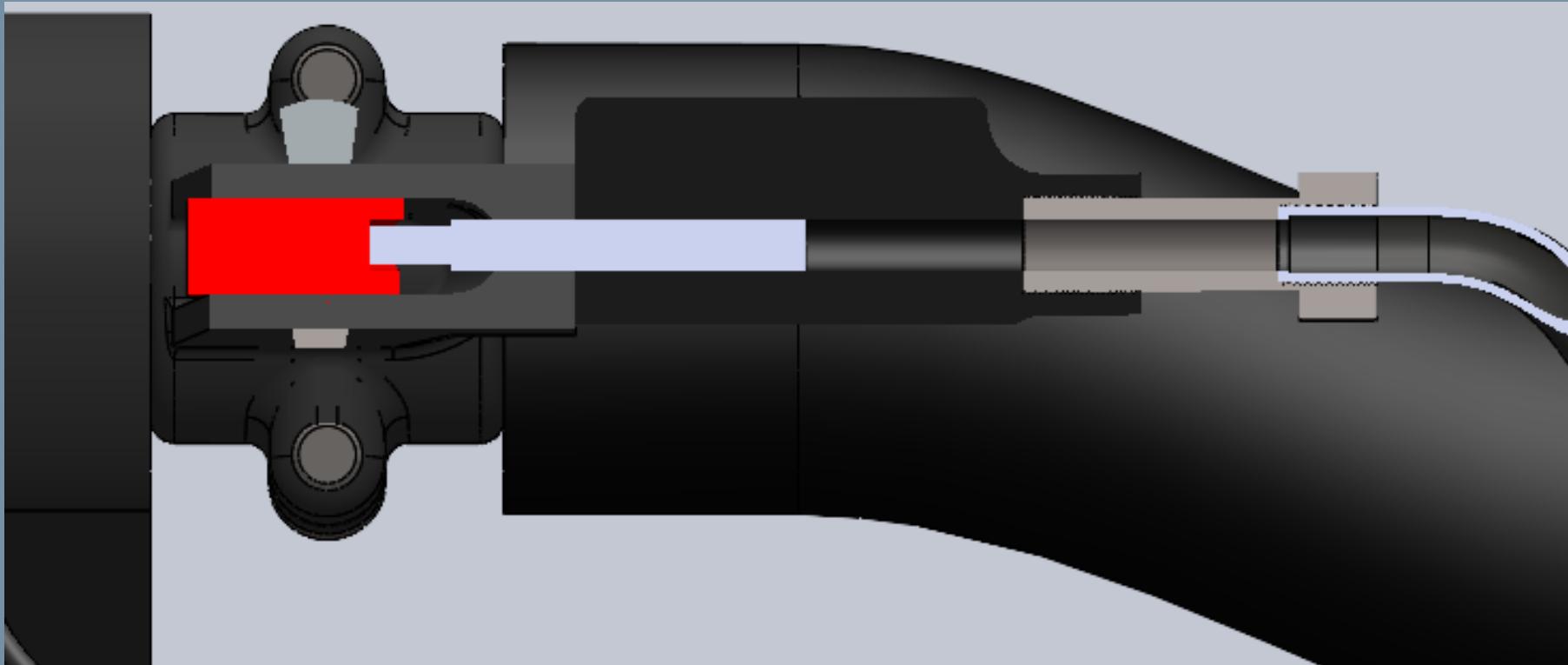
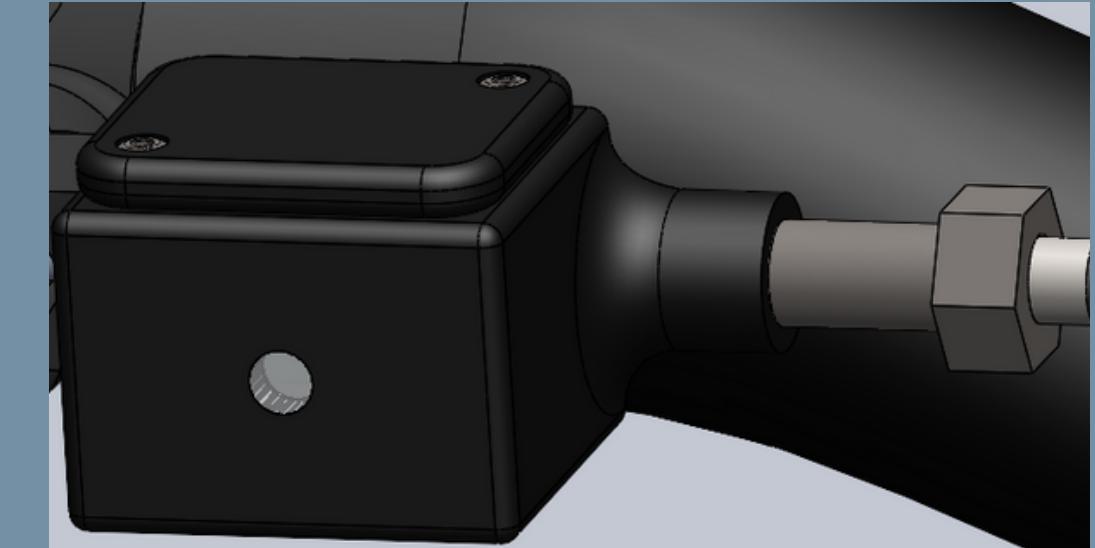
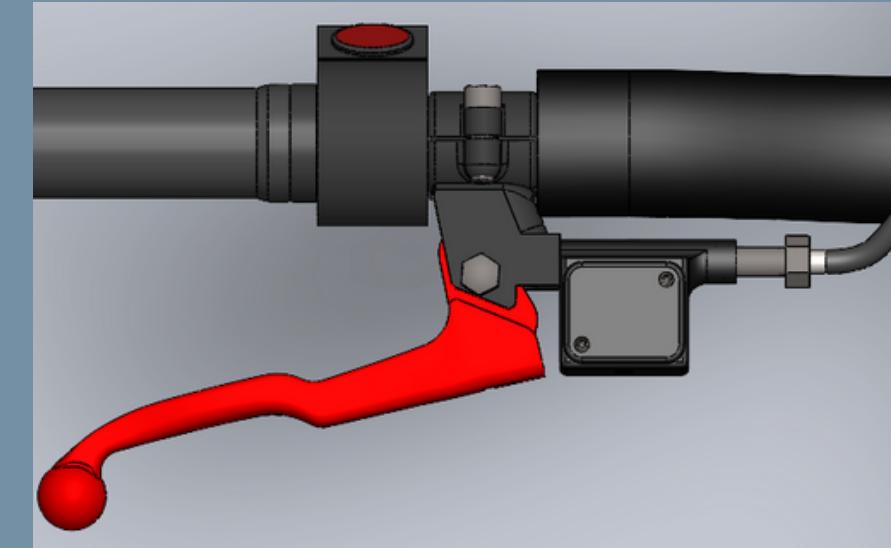
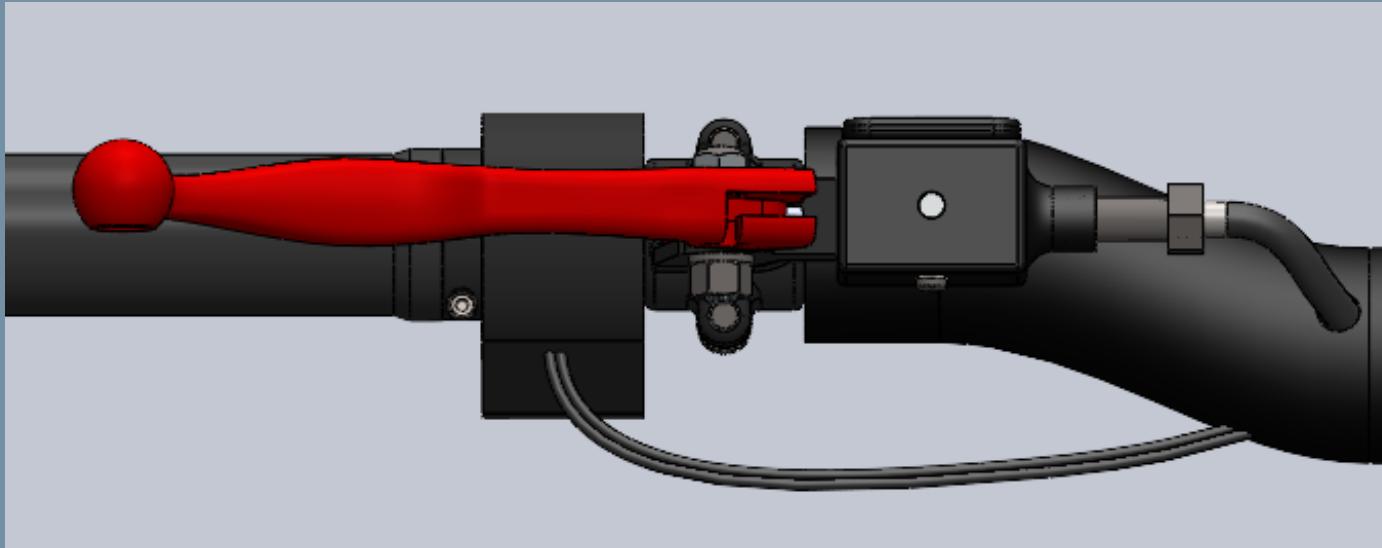


# Pinza flottante

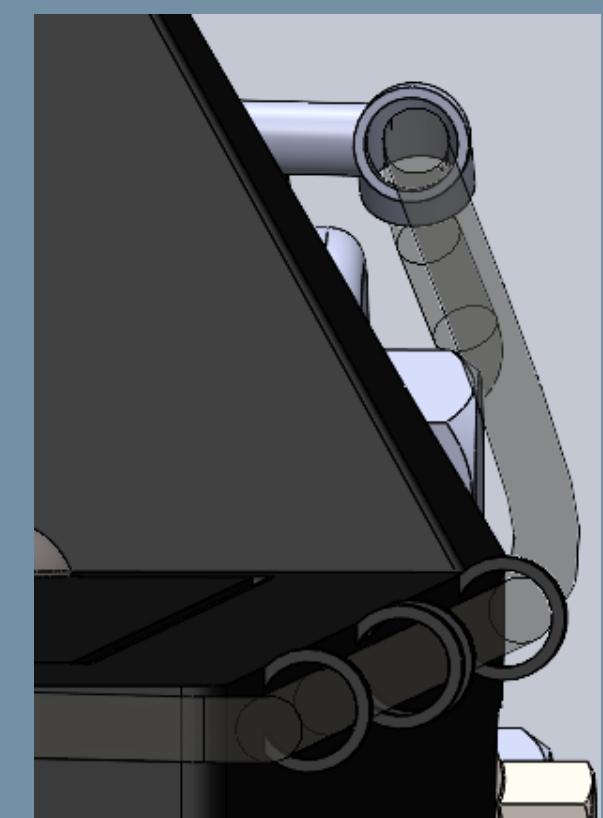
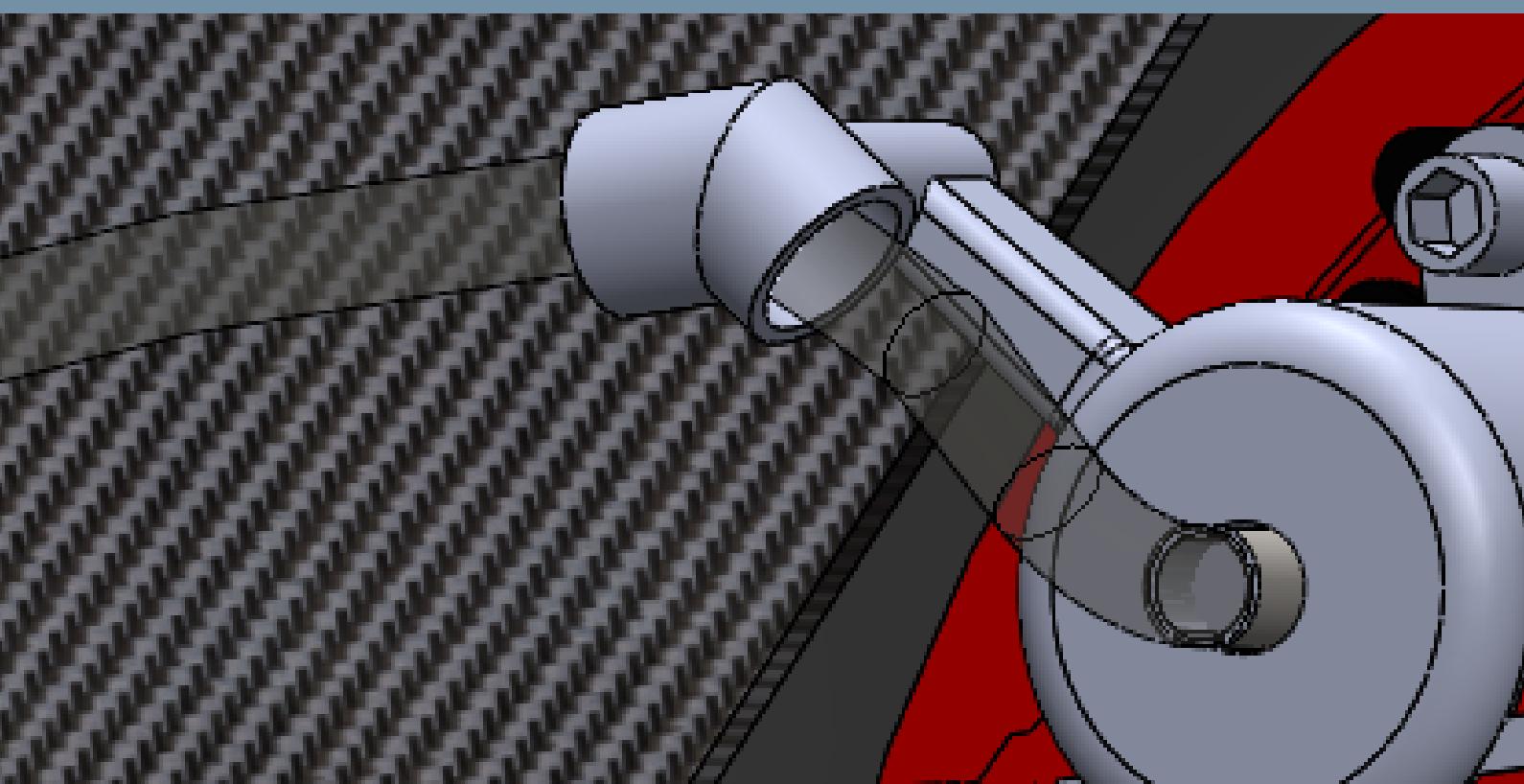
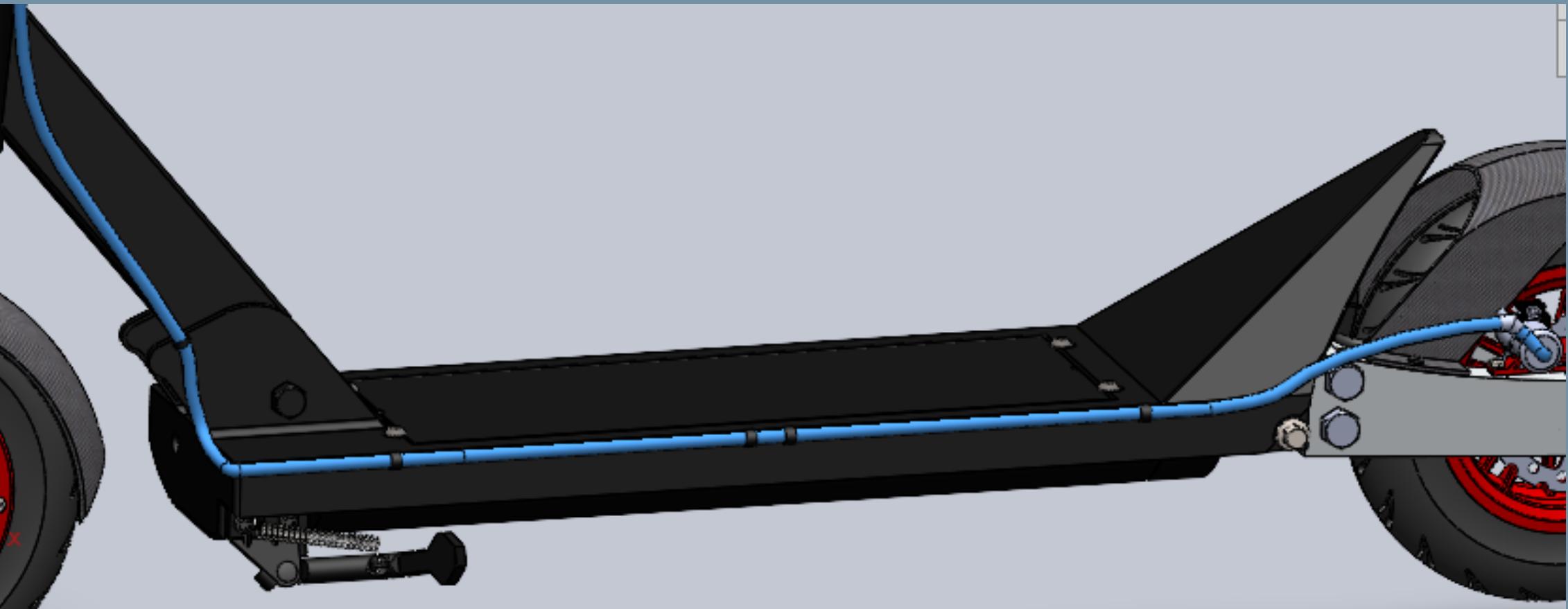




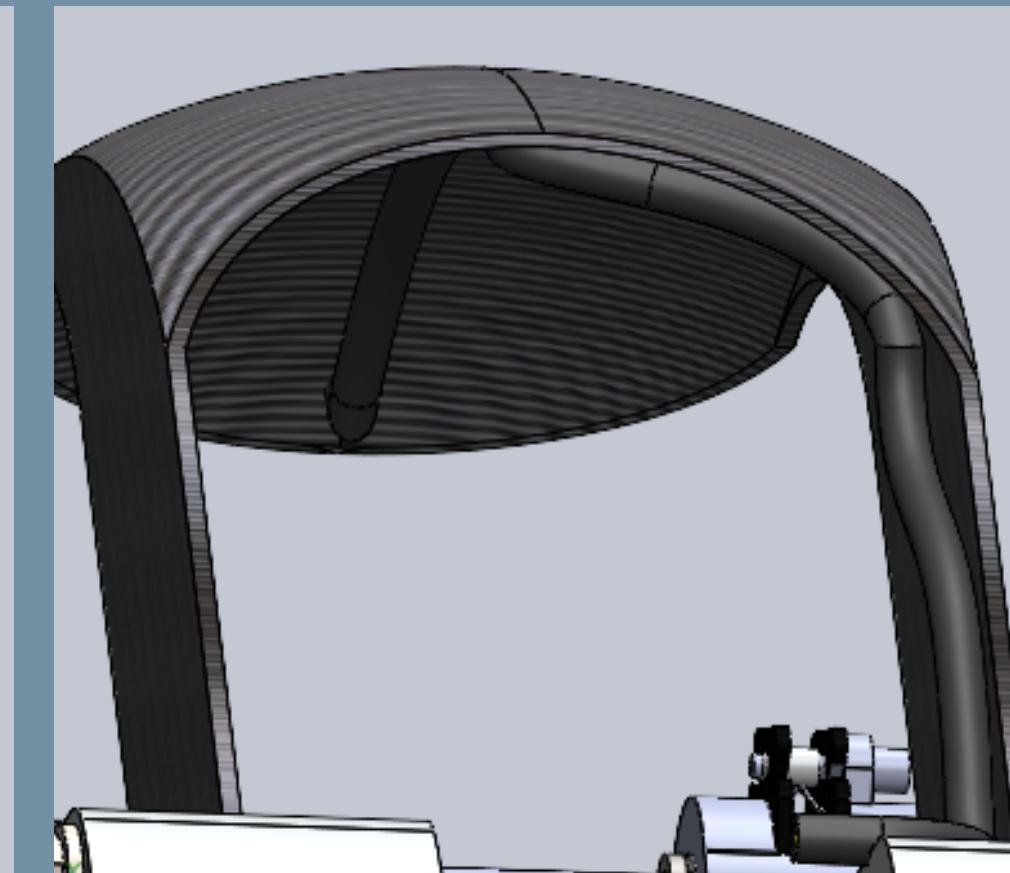
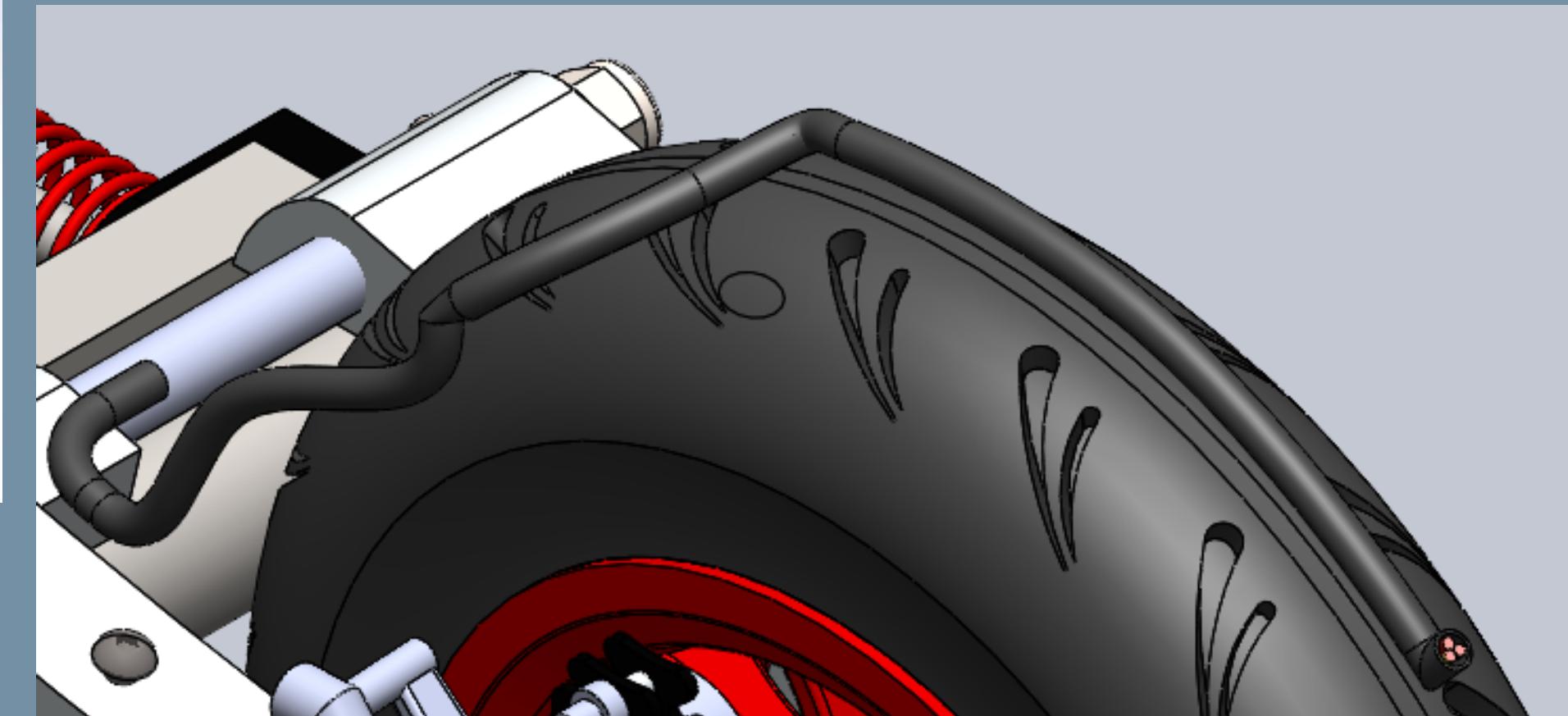
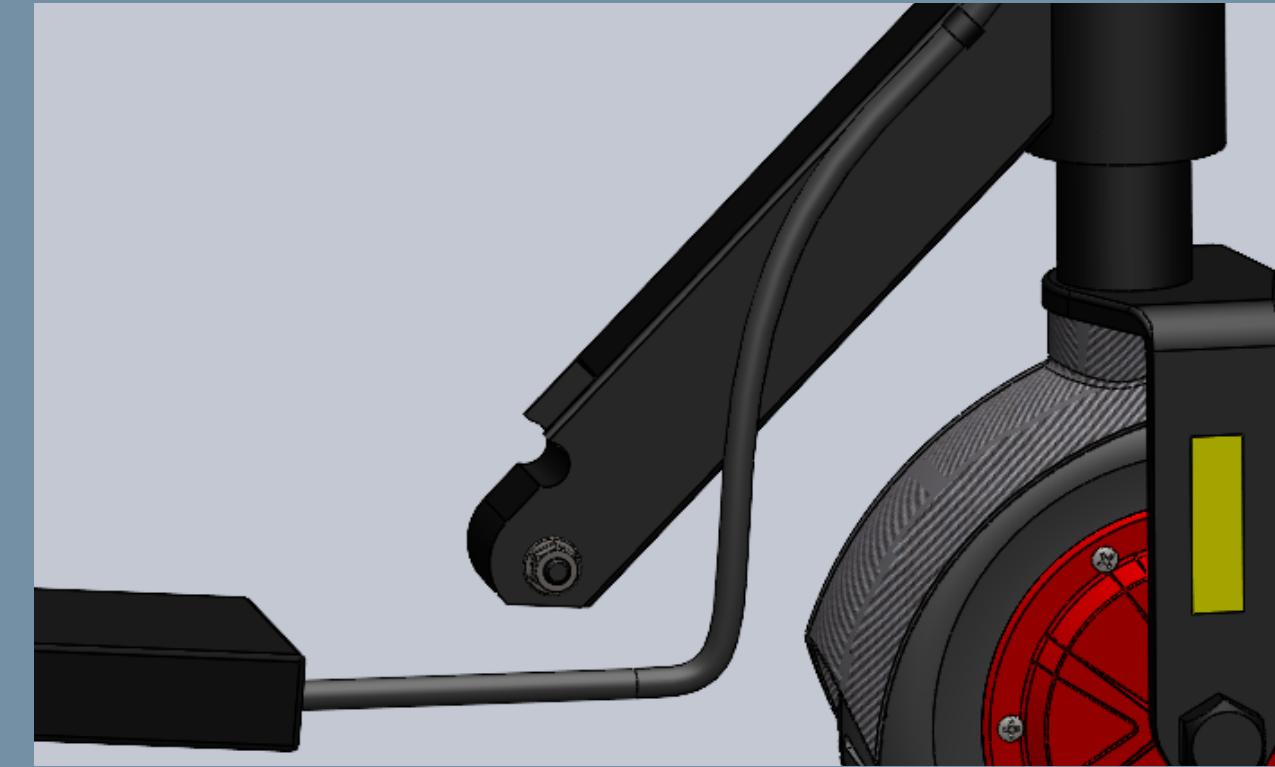
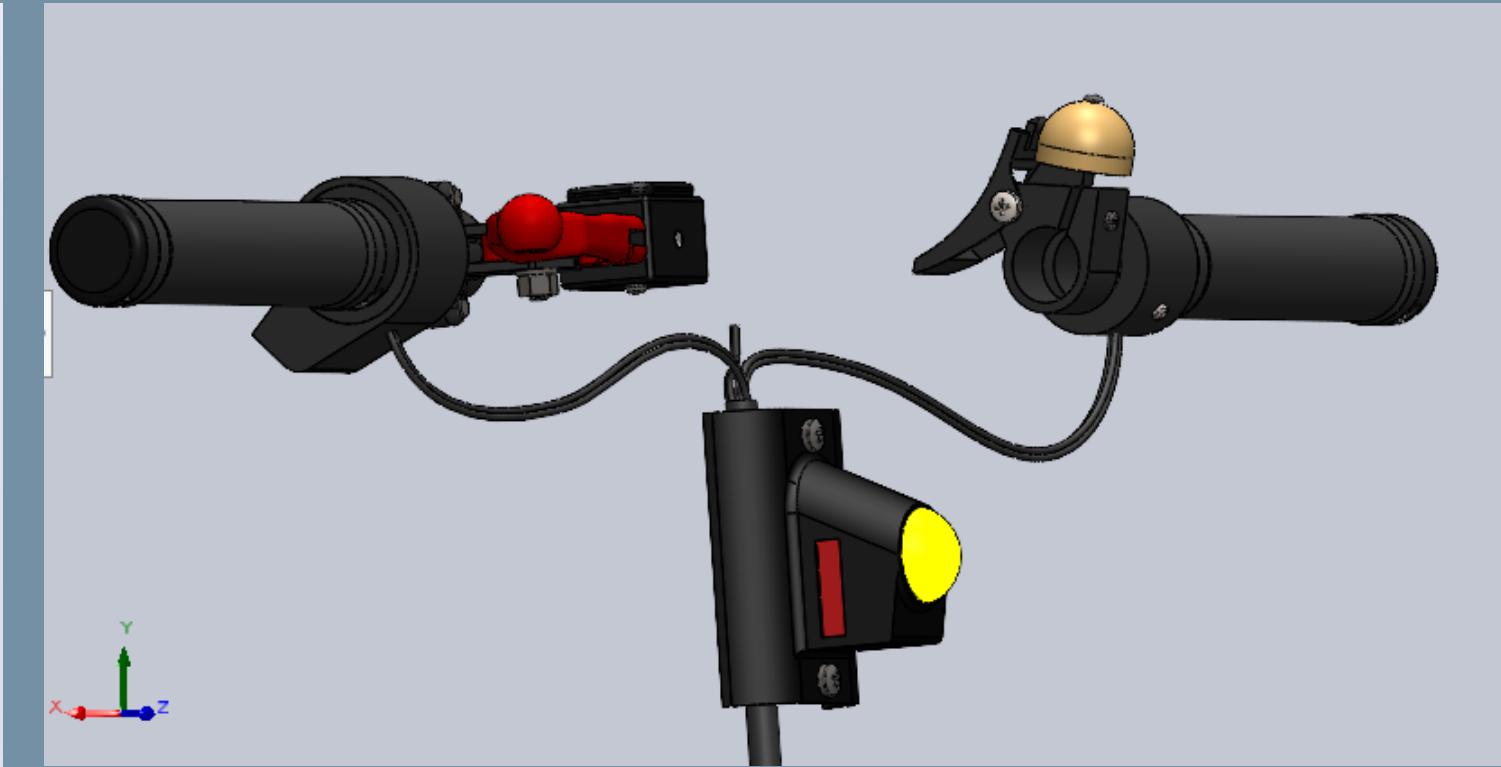
# Leva freno e pompa dell'olio

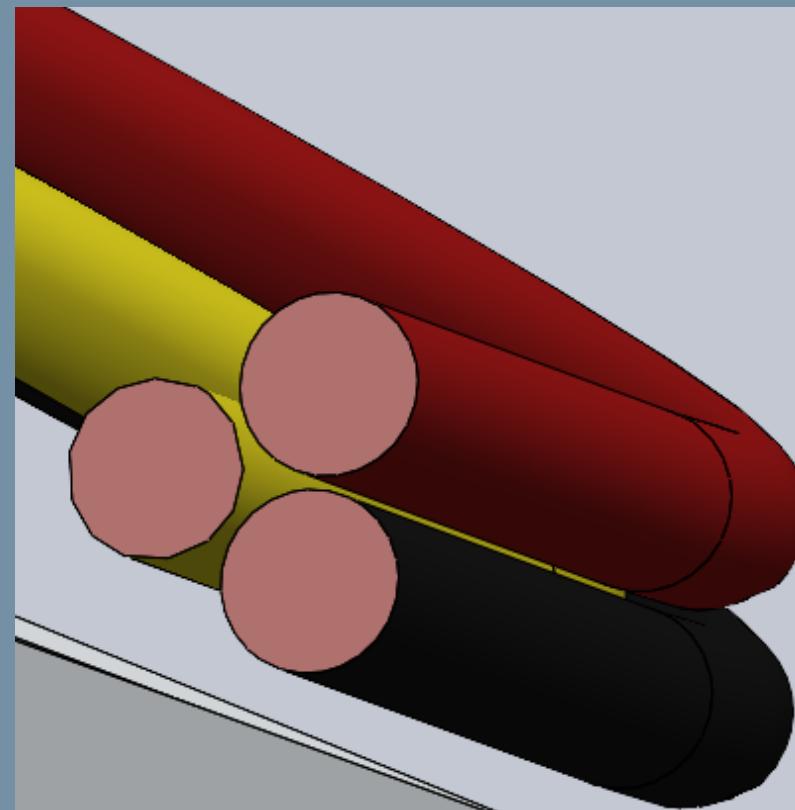
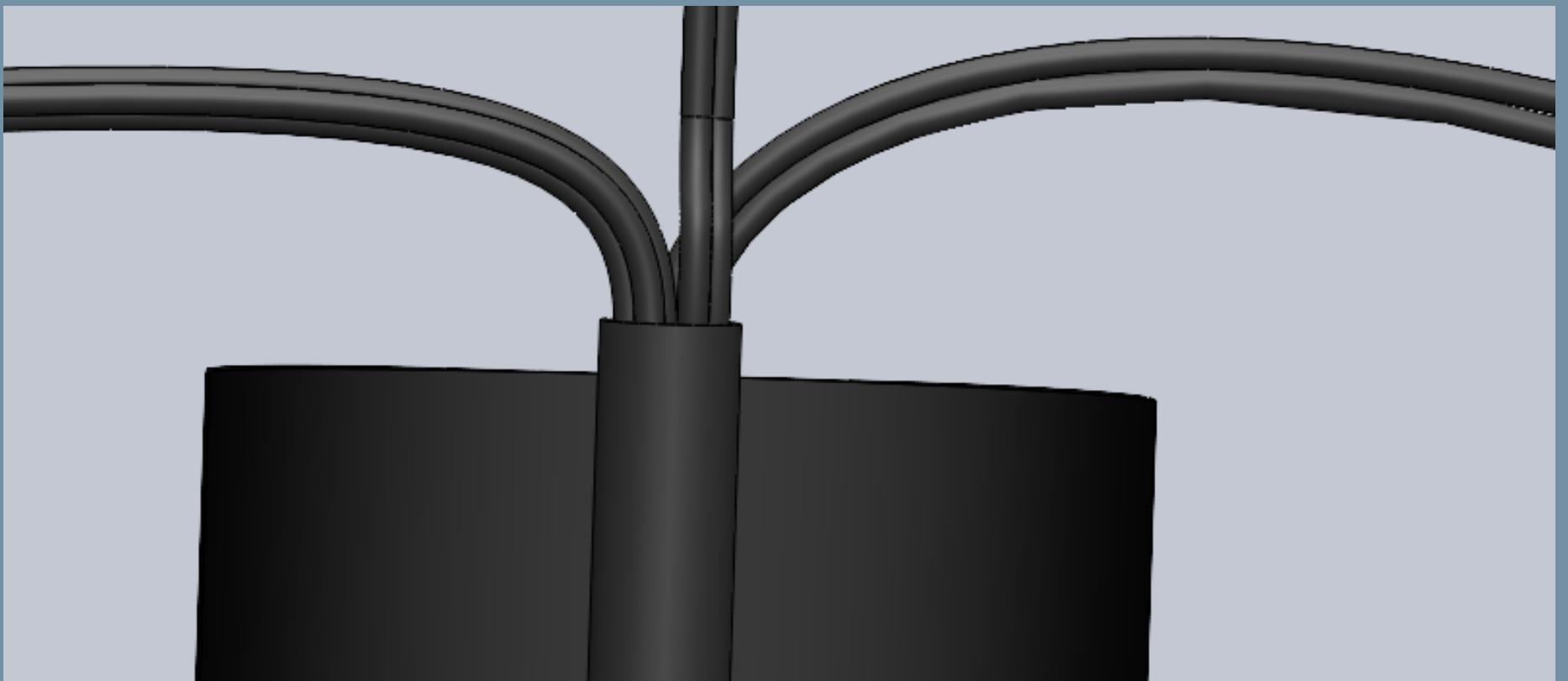
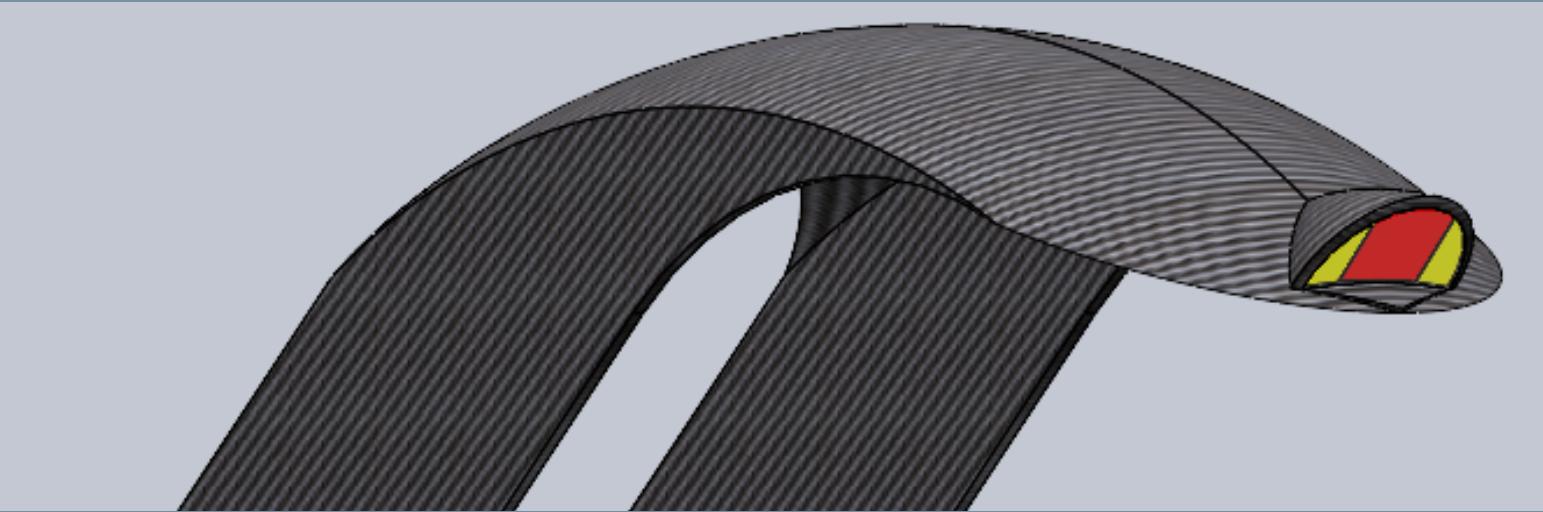
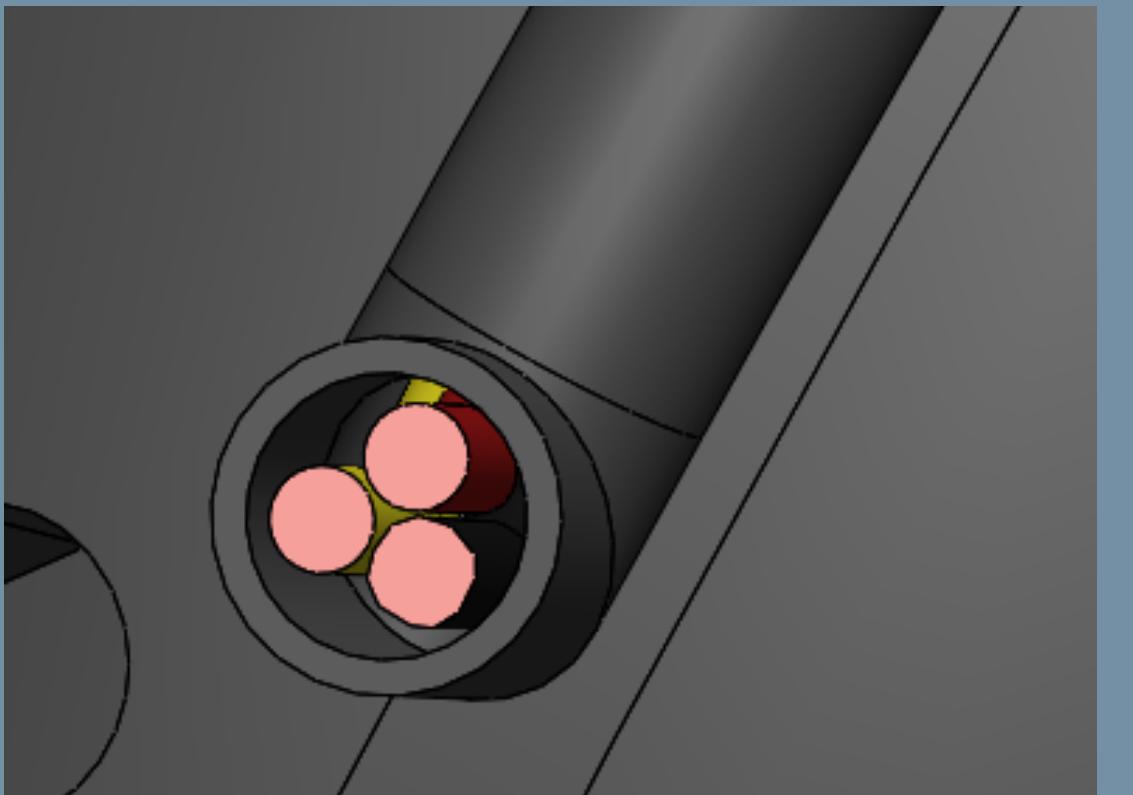


# Circuito dell'olio

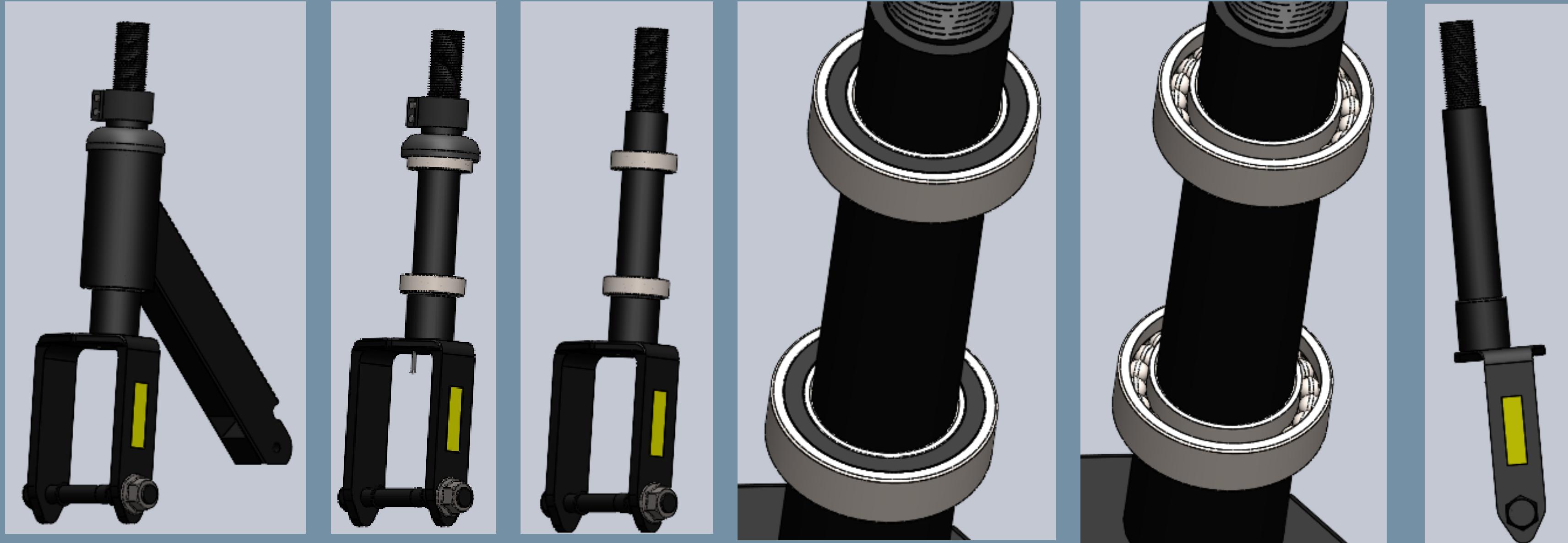


# Circuito elettrico

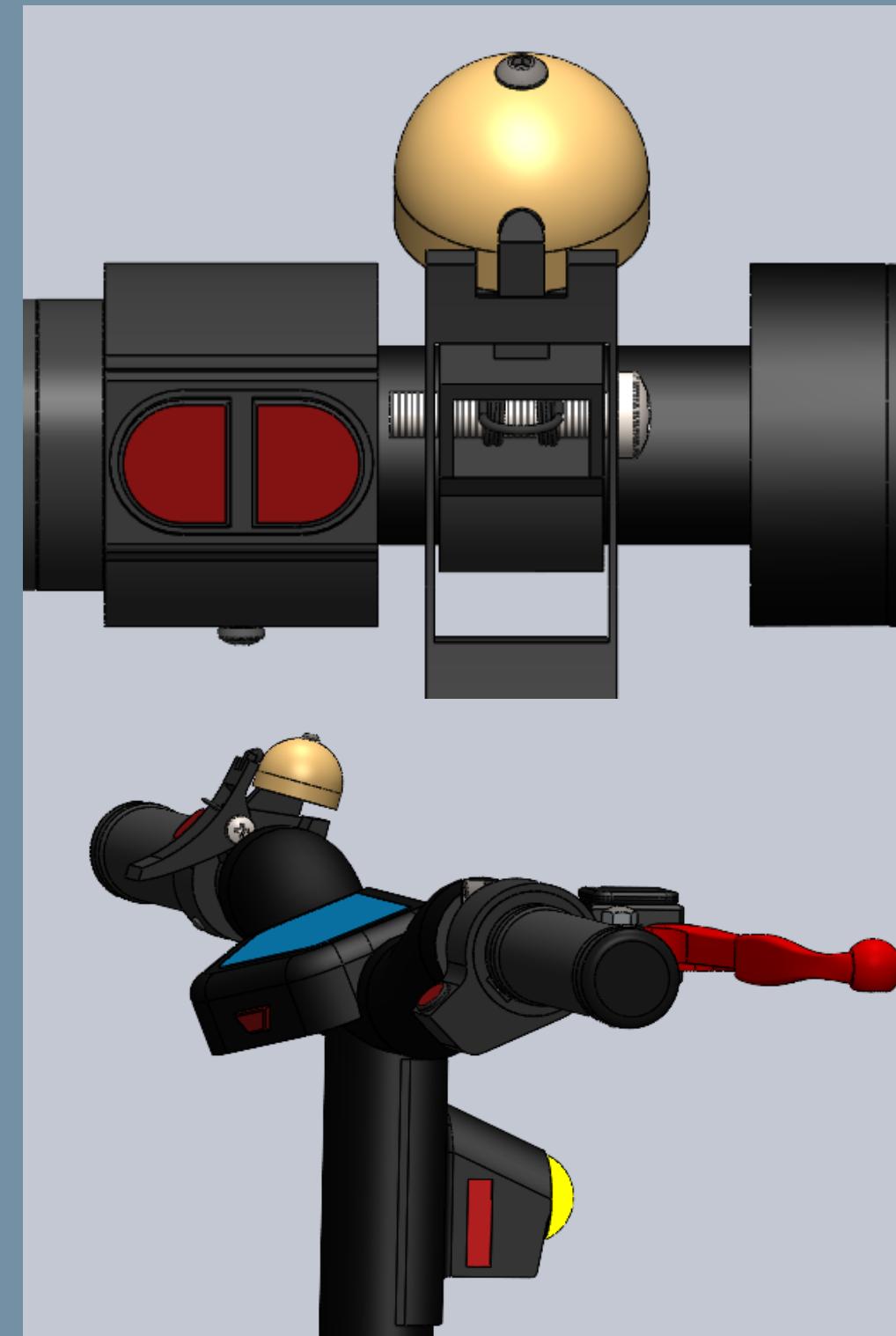
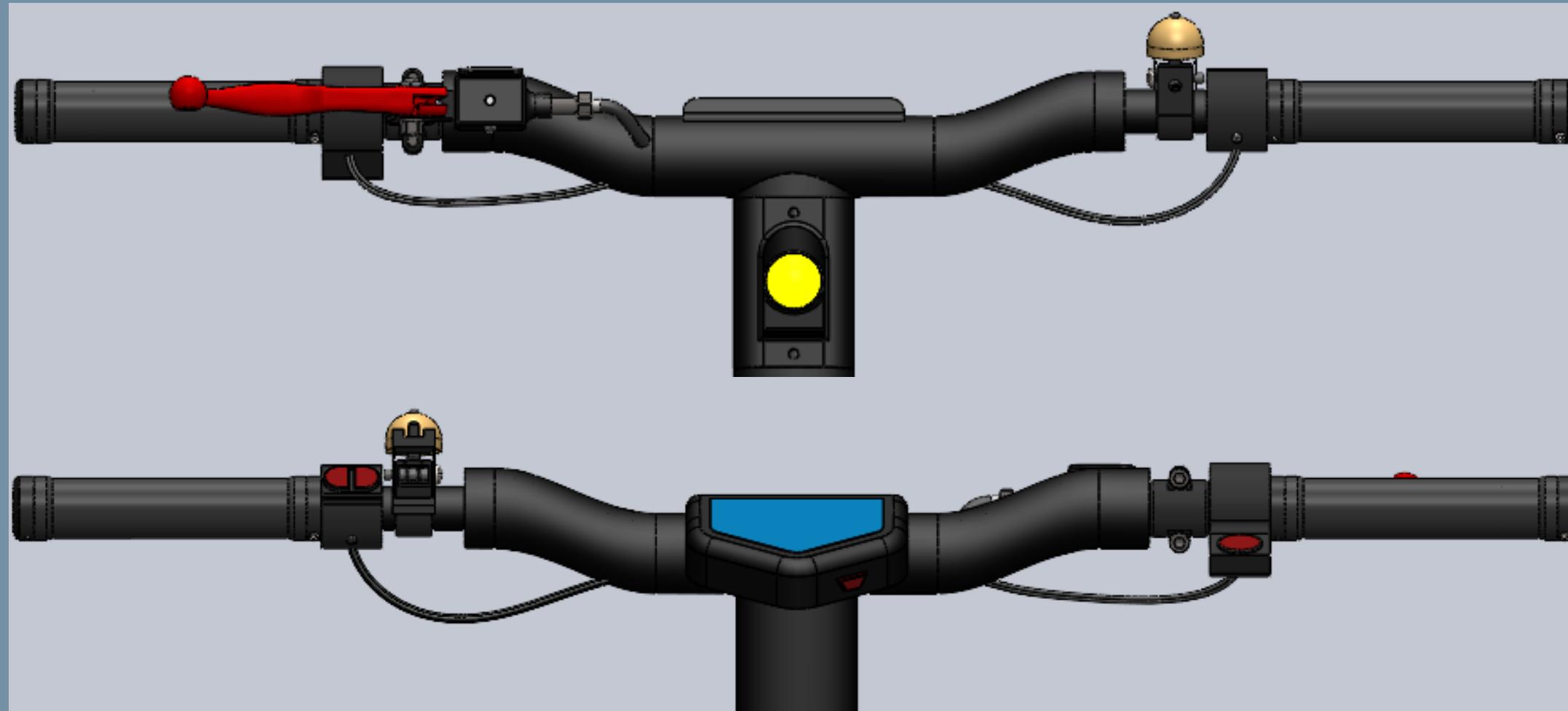




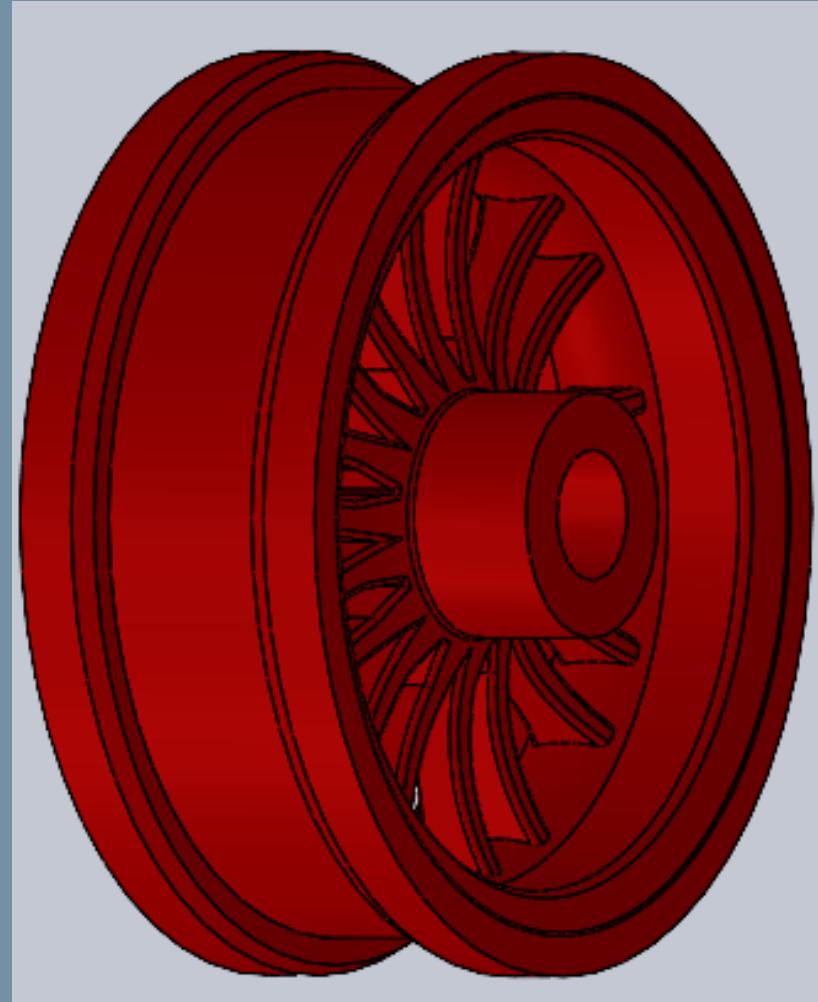
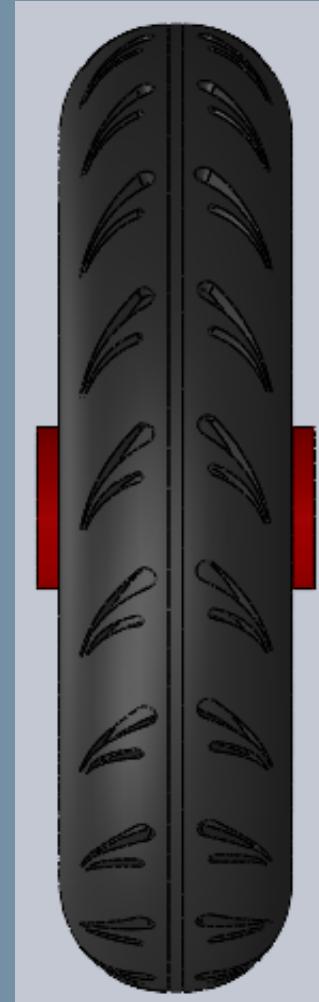
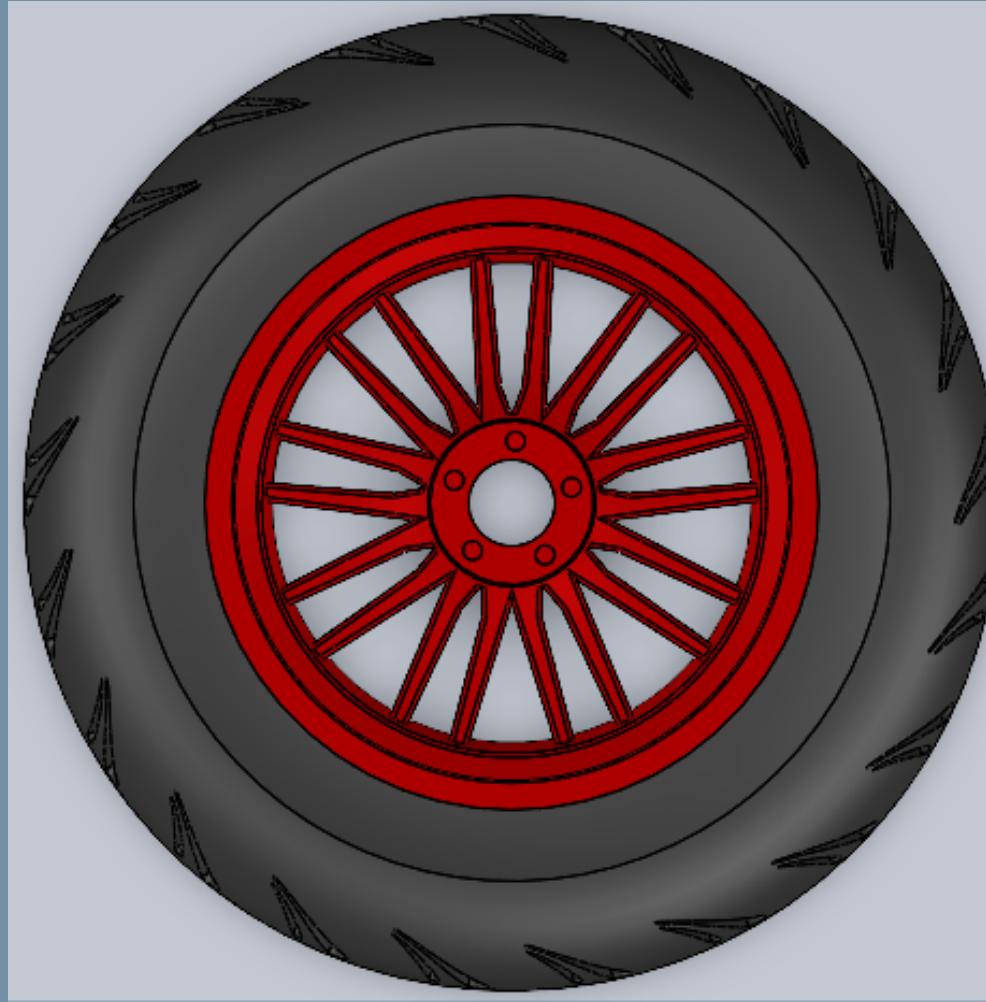
# Forcella



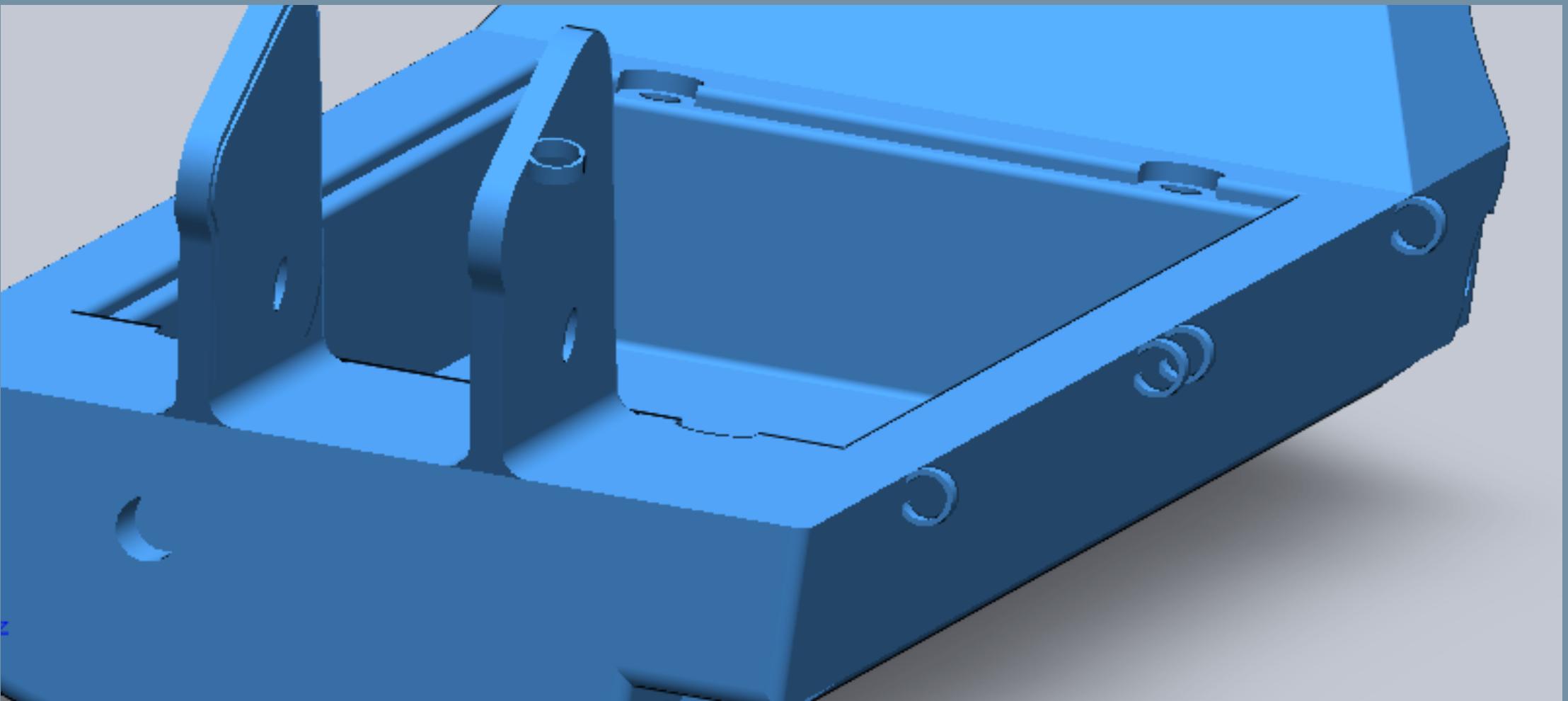
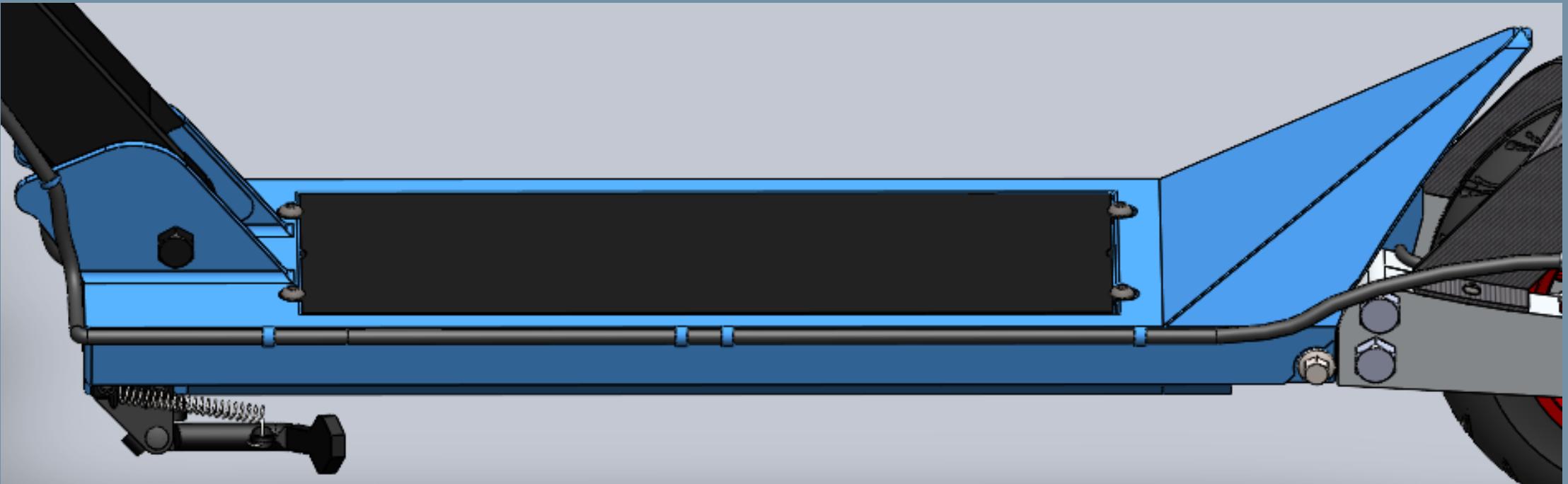
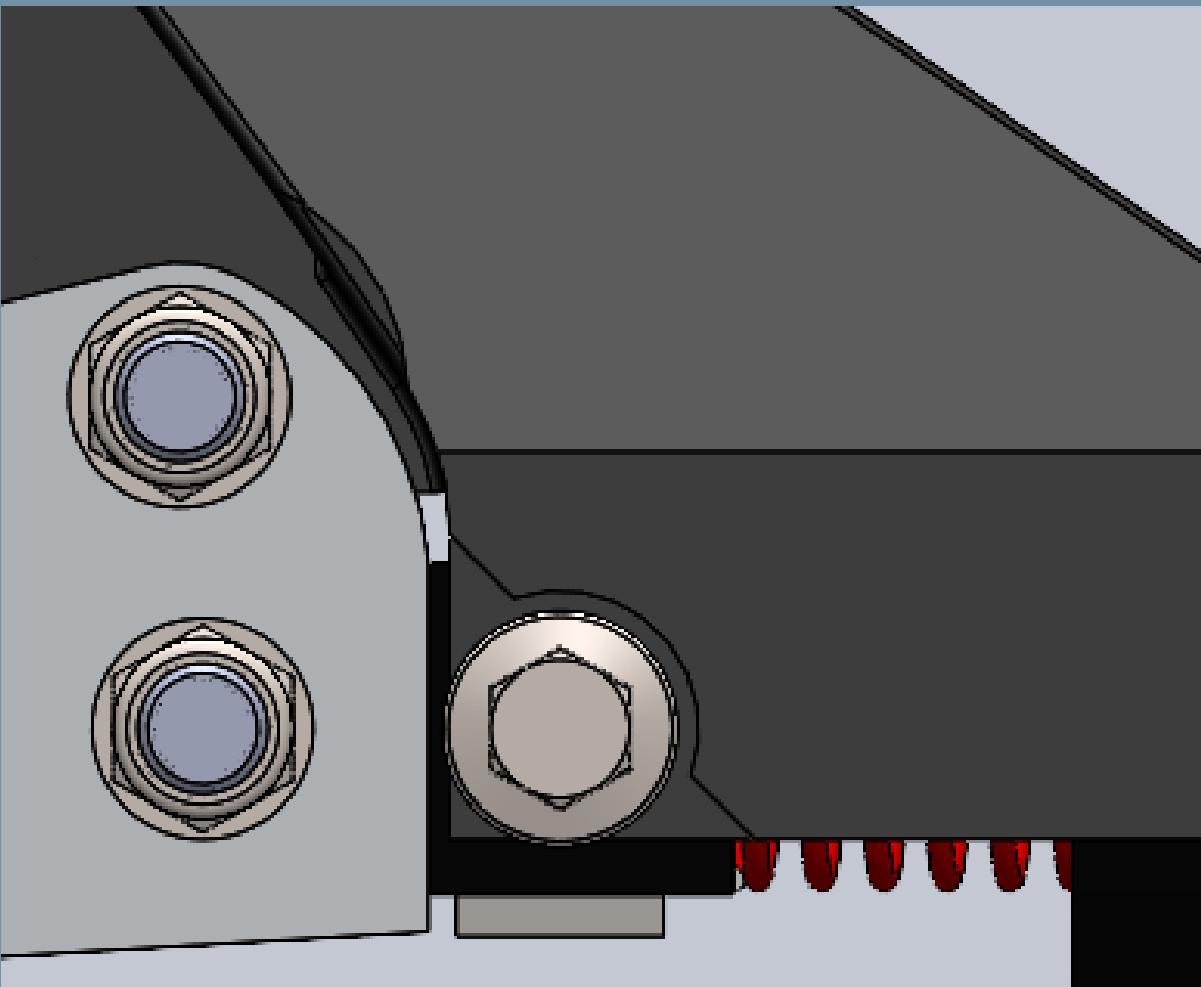
# Manubrio

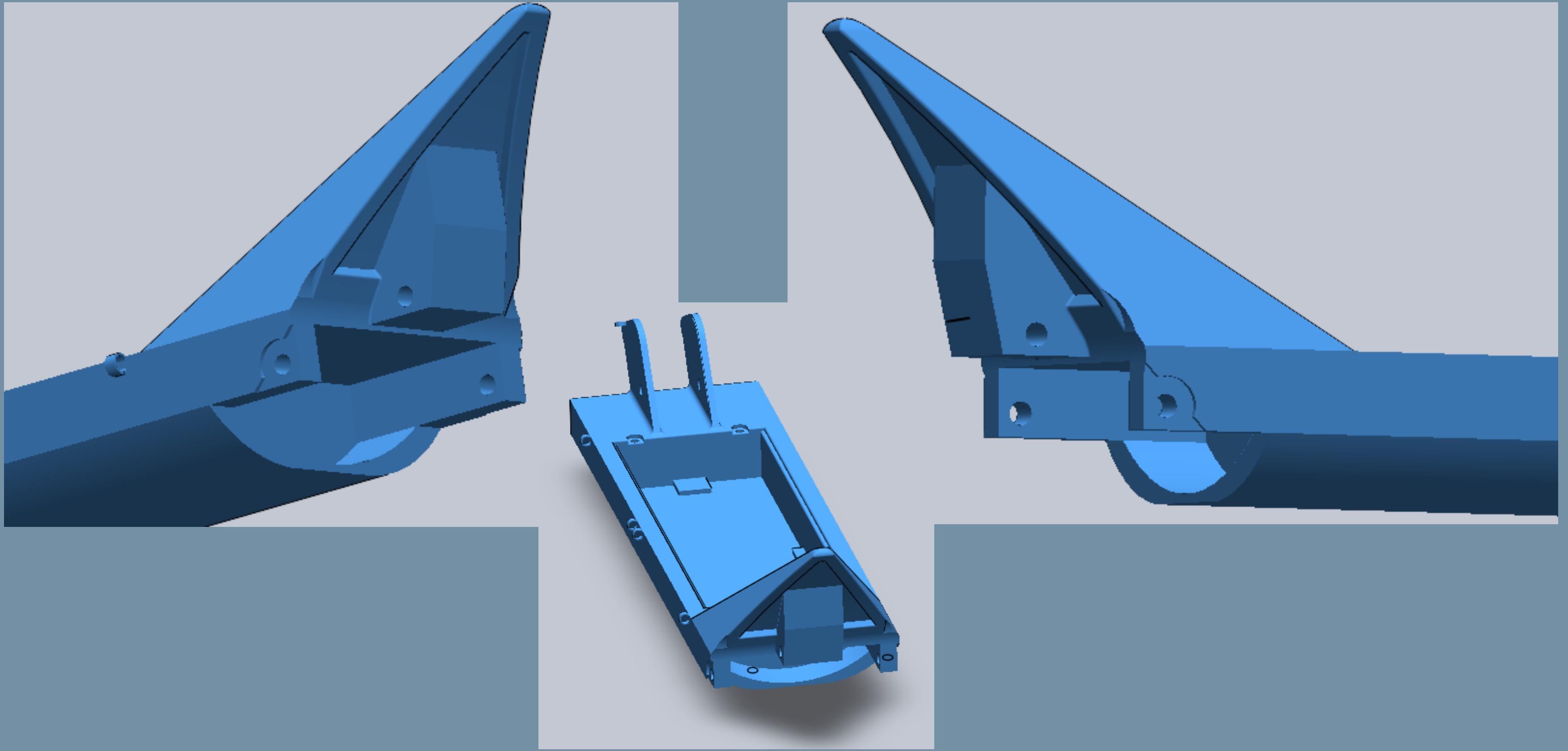


# Ruota posteriore

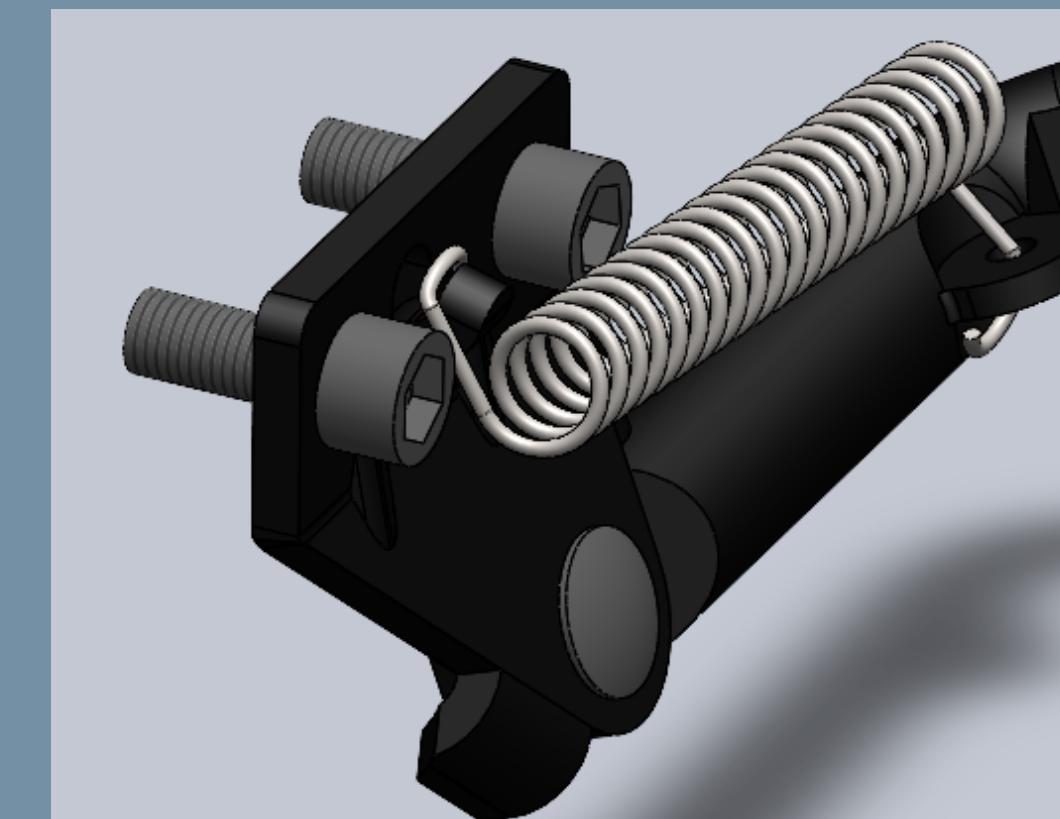
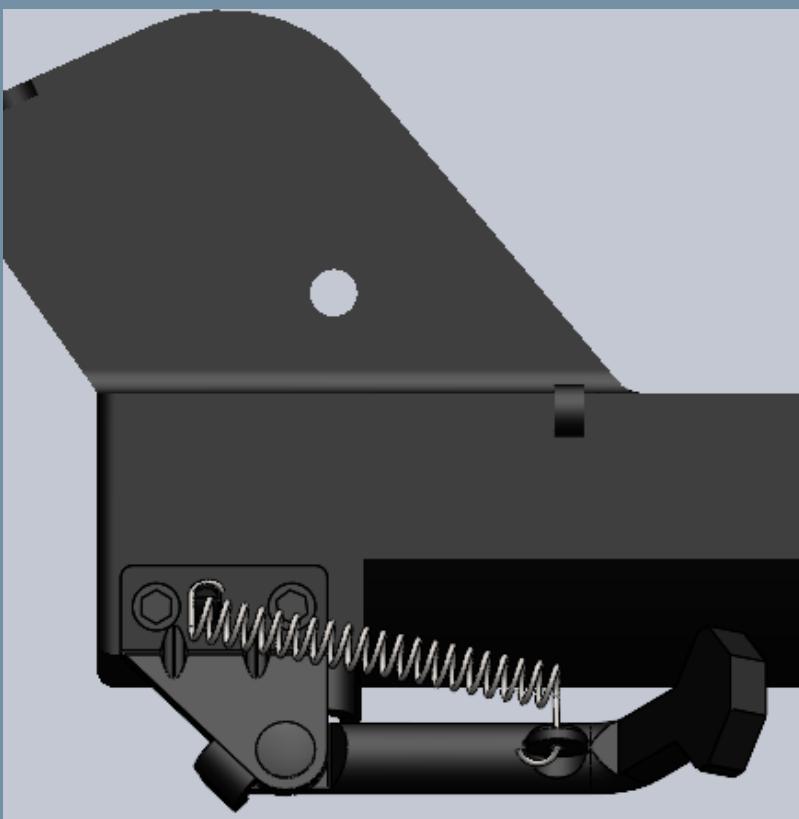
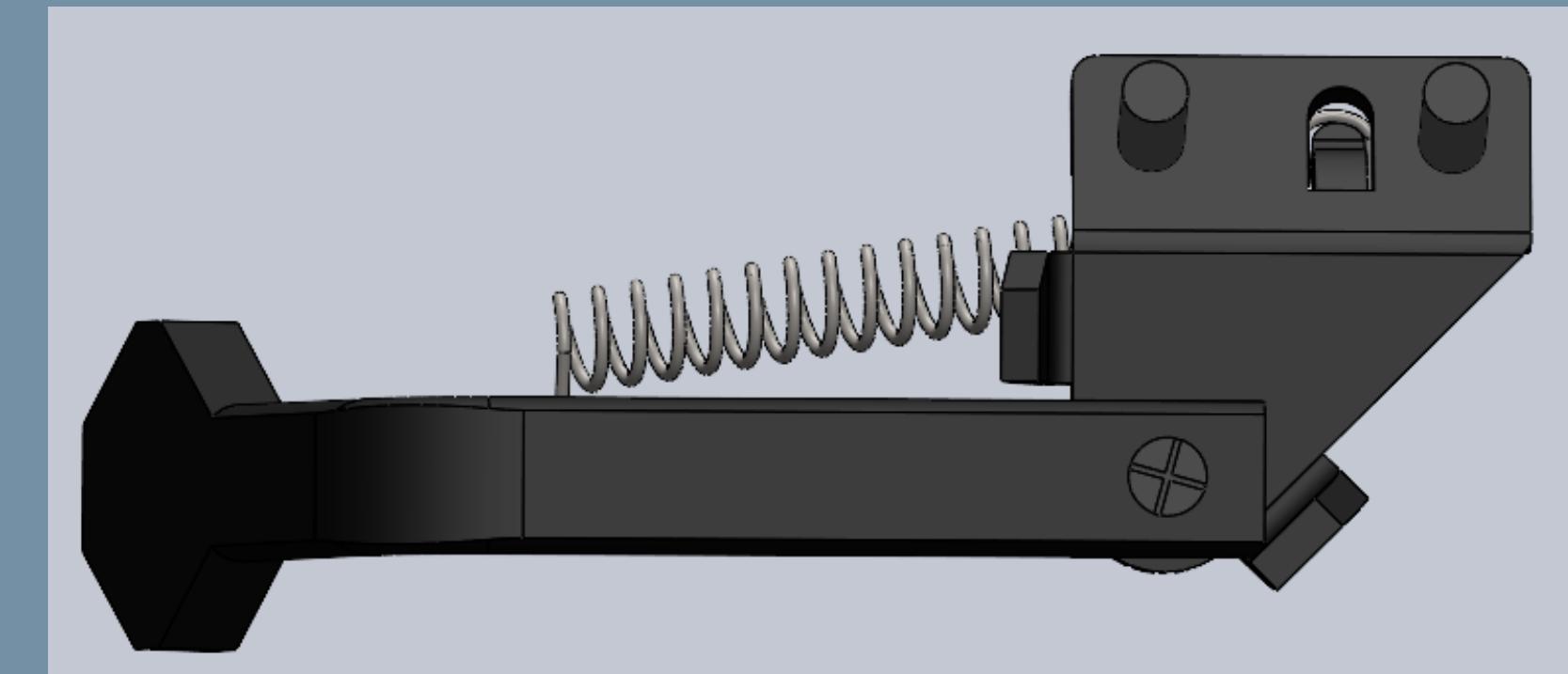
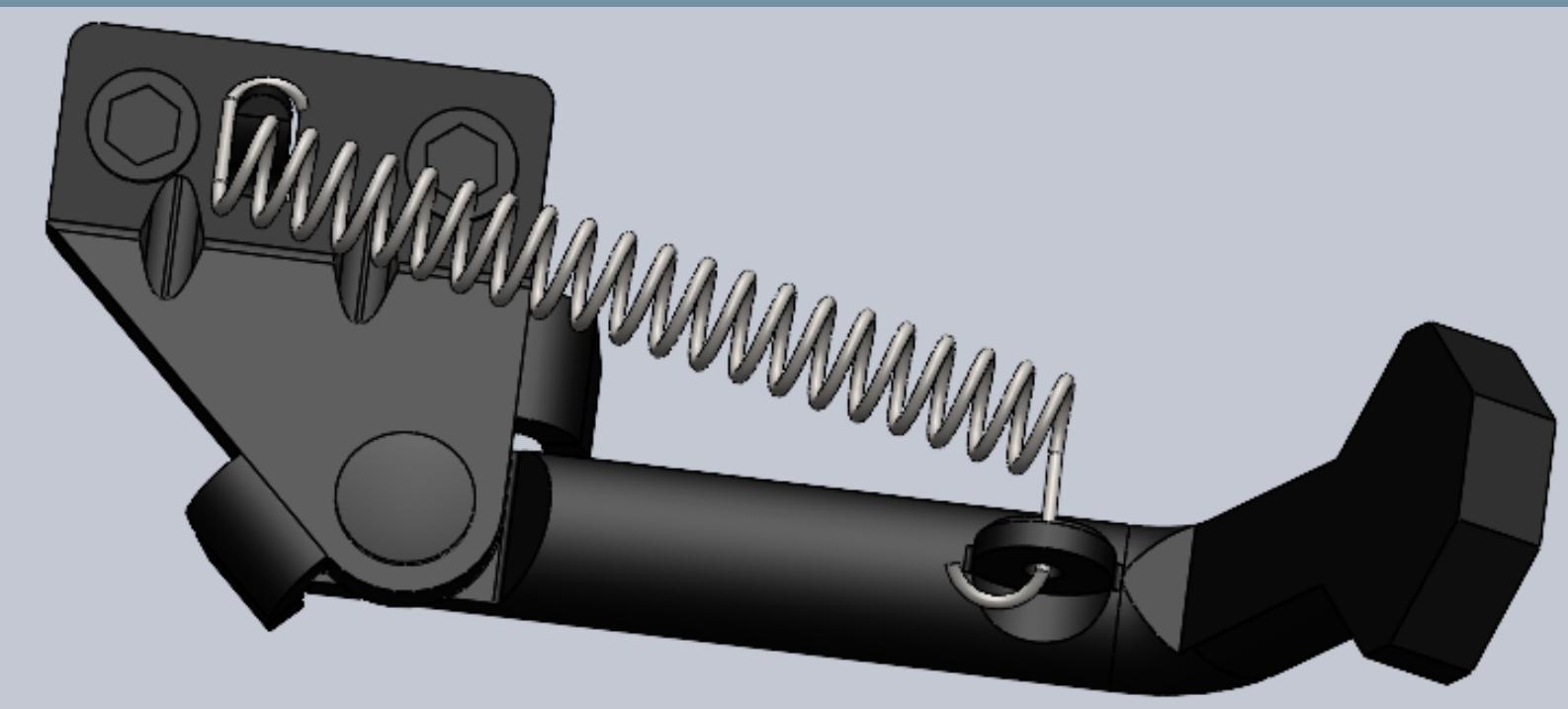


# Pedana





# Cavalletto

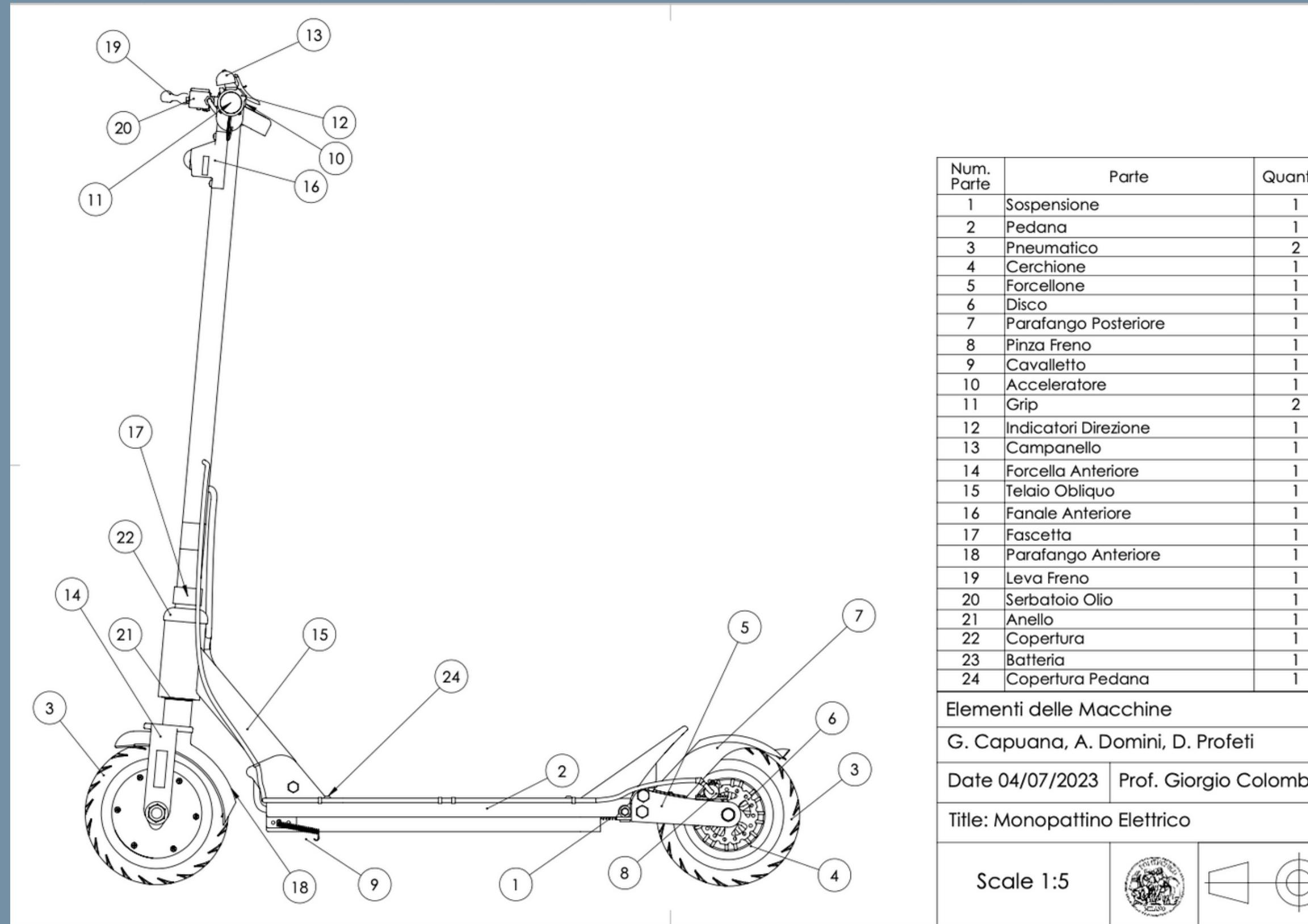


# Tavole

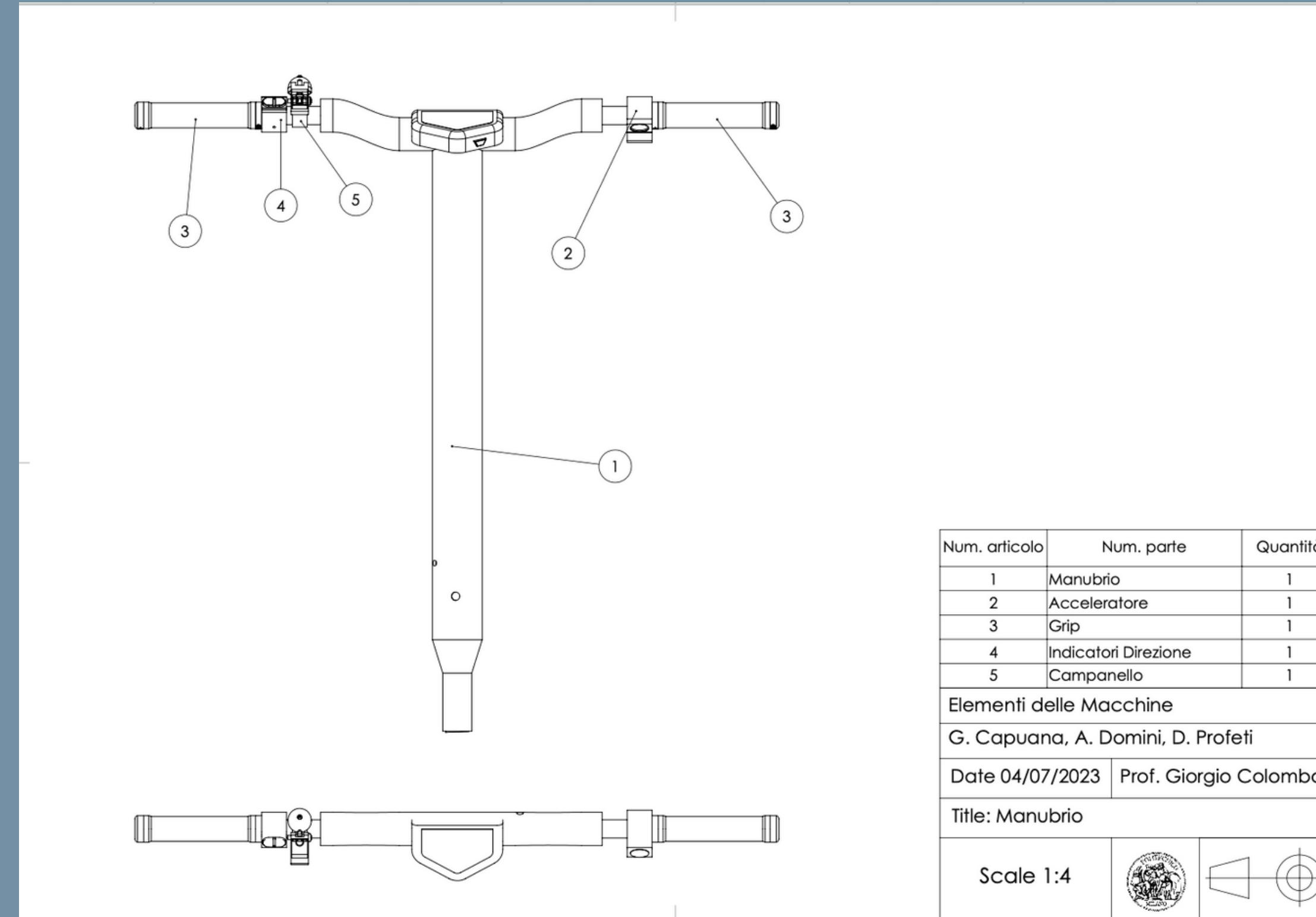
- Convenzione europea metodo del primo diedro
- Abbiamo cercato di inserire il minor numero di viste possibili necessarie alla comprensione del disegno
- Abbiamo rimosso tutti i raccordi e gli smussi
- Abbiamo inserito tutte le linee di mezzeria e le tacche di centratura
- Abbiamo inserito la distinta base degli elementi principali attaccata al margine destro ed adiacente al cartiglio ed eseguito la bollatura
- **Sezioni:** tratteggio eseguito con linee continue sottili e parallele inclinate di 45° rispetto assi del pezzo



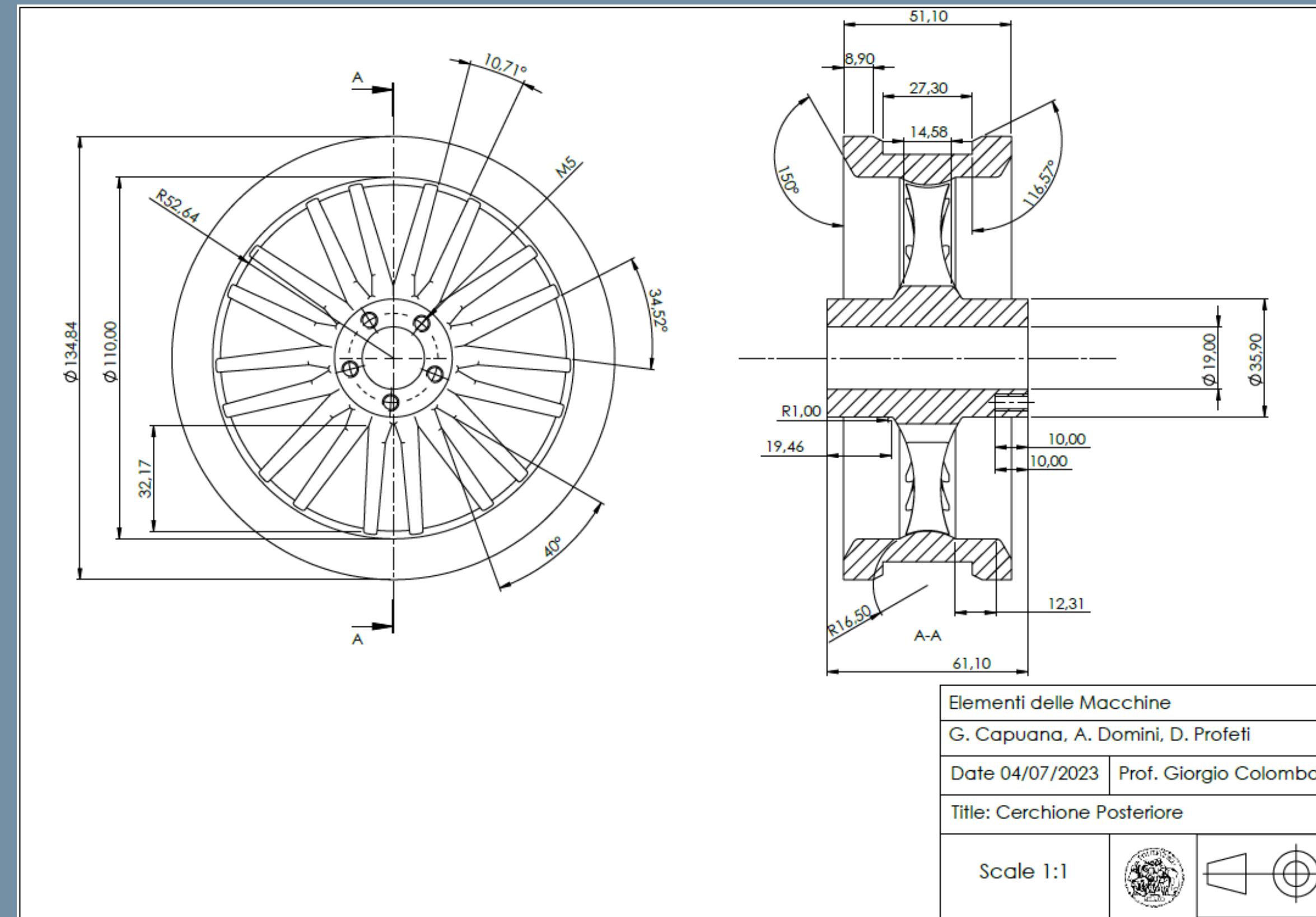
# Monopattino completo



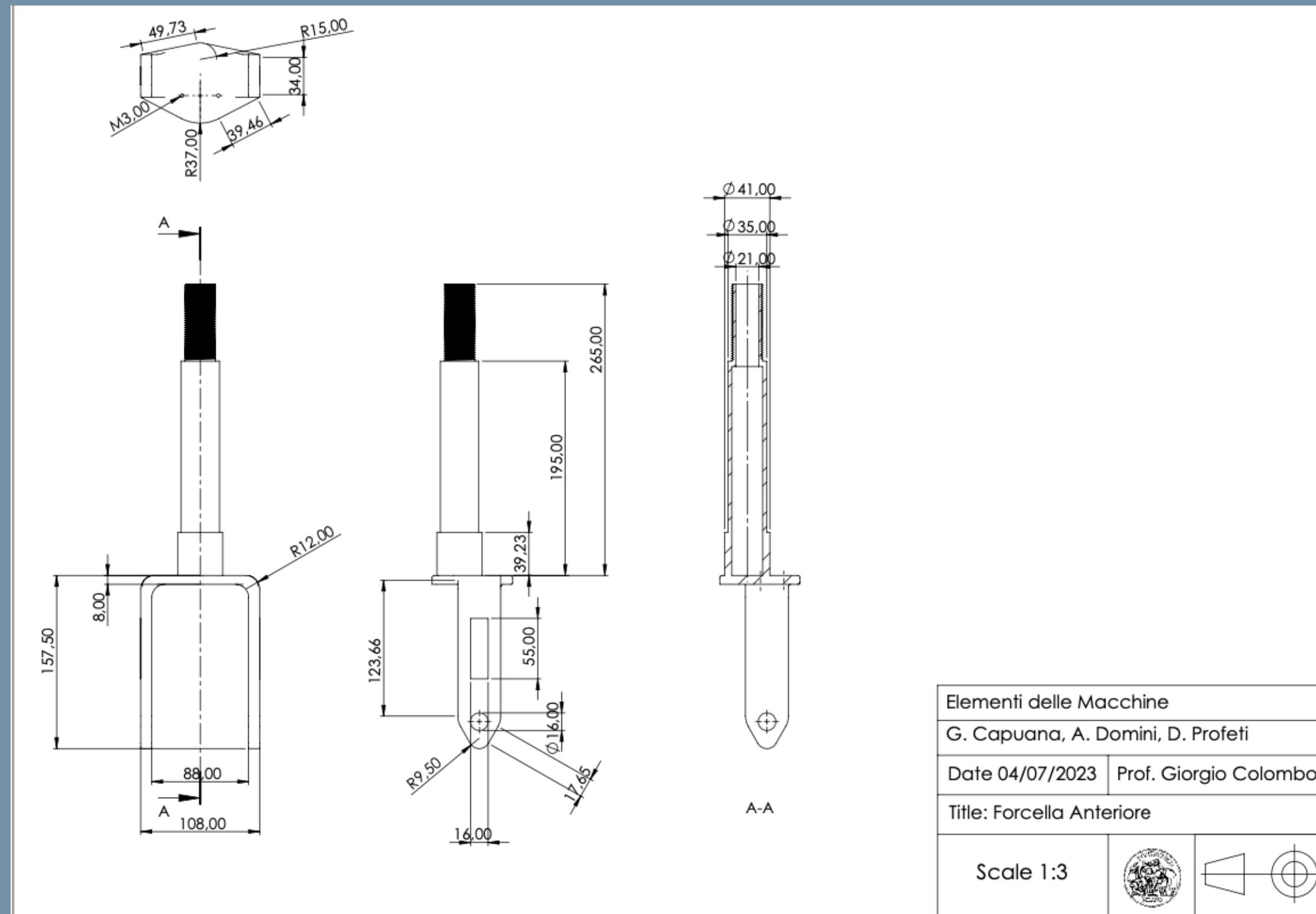
# Manubrio



# Cerchione posteriore



# Forcella anteriore



# FINE

