Pneumatic Shift System for Formula SAE Application

The Technology and Innovation

- This type of system exists on other FSAE cars
- One way air piston
- Two way air piston
- Three way solenoids
- Compressed air tank, regulator, and pressure gauge
- Two custom designed and manufactured brackets
- One custom designed and manufactured clutch lever
- Controller [Engine Control Module]

Community/Industry Impact and Value

- Consideration of FSAE rules in the packaging of the system to avoid any violation that may stop the team from competing.
- Preliminary packaging based on existing CAD models
- Ensuring that our system would fit in current and future car designs
- Ensuring that the products we used would be able to handle the air pressures required
- Producing parts from materials that were required and on hand
- Ensuring that the products used would seamlessly work with our engine control module.
- After manufacture ensuring that packaging worked on the real model

Community/Industry Engagement

- Automation Direct provided discounts on components
- Formula SAE team collaboration

Team Composition

- Richard Le Page, ME
- Mohammed Kakli, ME
- Gregory Deneszczuk, ME
- Francisco Furtado, ME

Further Research and Development

- Continued testing of Formula SAE vehicle
- Continued decreasing of shift time
- Continued safety testing

Learning Experiences

- Collaboration with Formula SAE team
- Milling and lathing of components
- Tig Welding
- Assembly and Manufacturing of vehicle components
- Weight and Time-line consideration
- Vehicle testing and tuning

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