



Position Sensitive Shock Absorbers

Team: Shock and Roll



Team Members:

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Design Lead

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Manufacturing Lead

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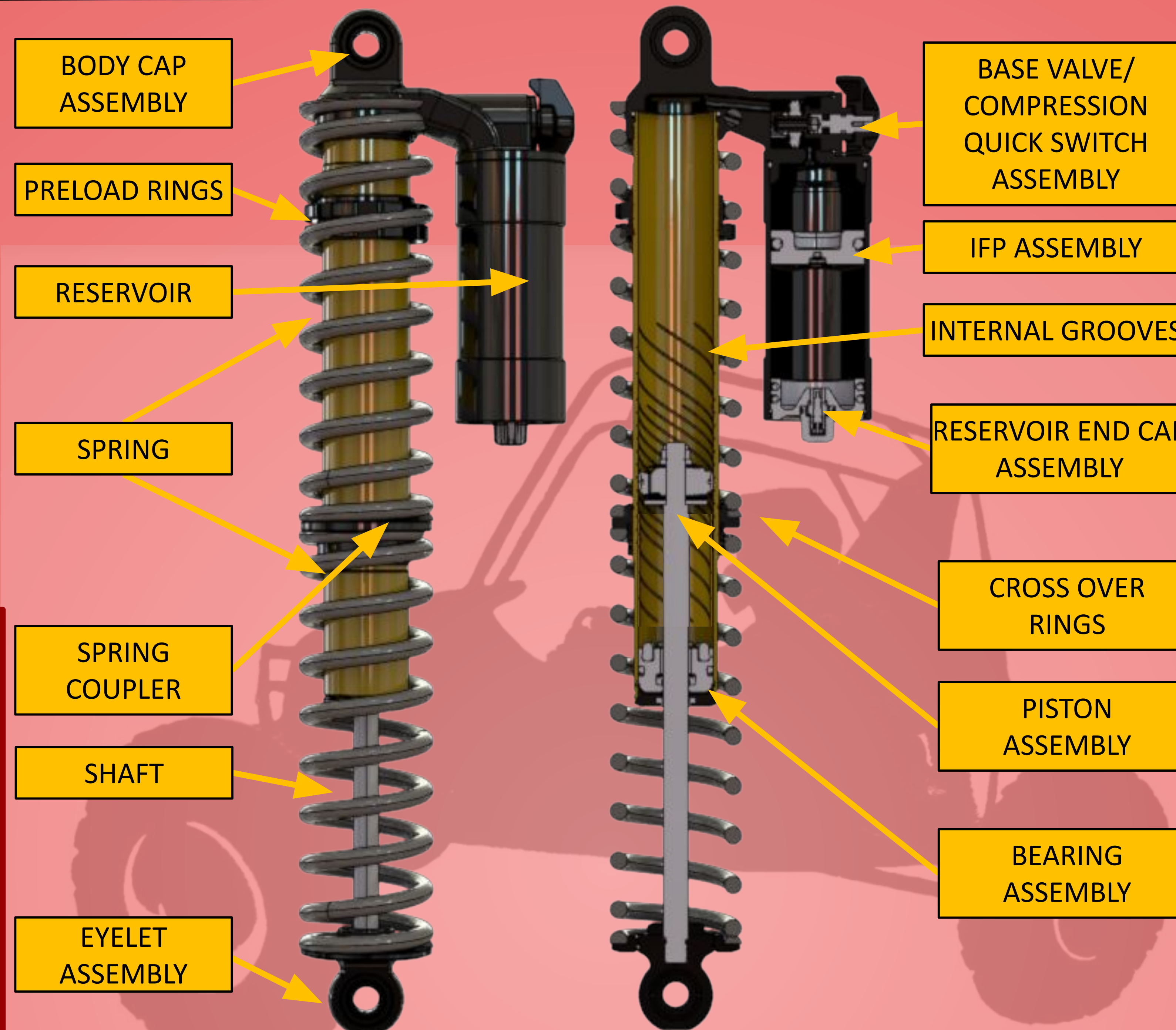
Brianna Torres
Project Lead

Design Advantages:

- Internal bypass reduces force generated within the vehicle ride zone
 - Increasing driver comfort and overall vehicle performance
- Piggyback reservoir allows for more nitrogen volume to be run at a lower pressure
- Integrated base valve with compression quick switch creates the ability to firm up the shock for specific competition events where a stiffer ride is needed

Assembly/Manufacturing Summary

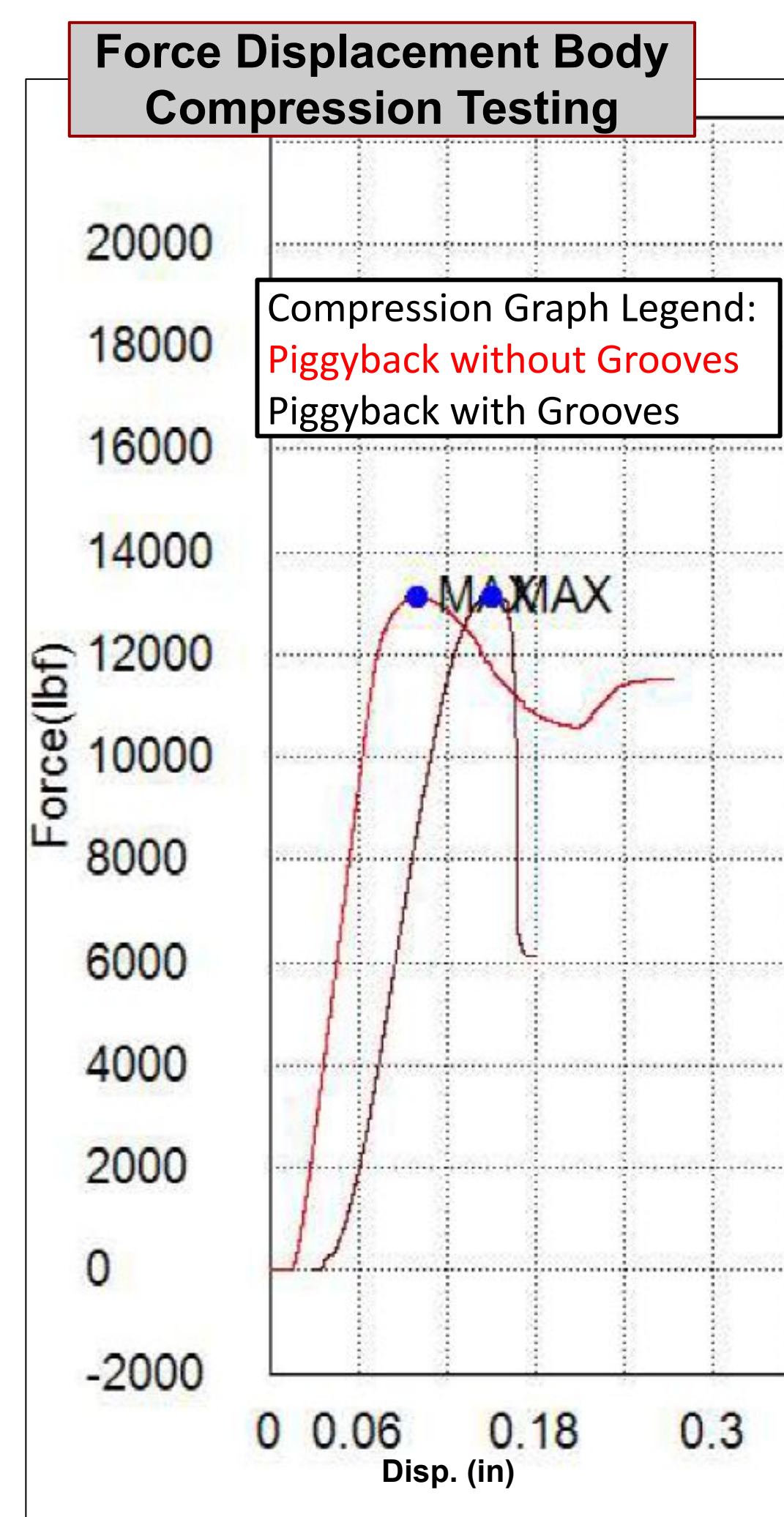
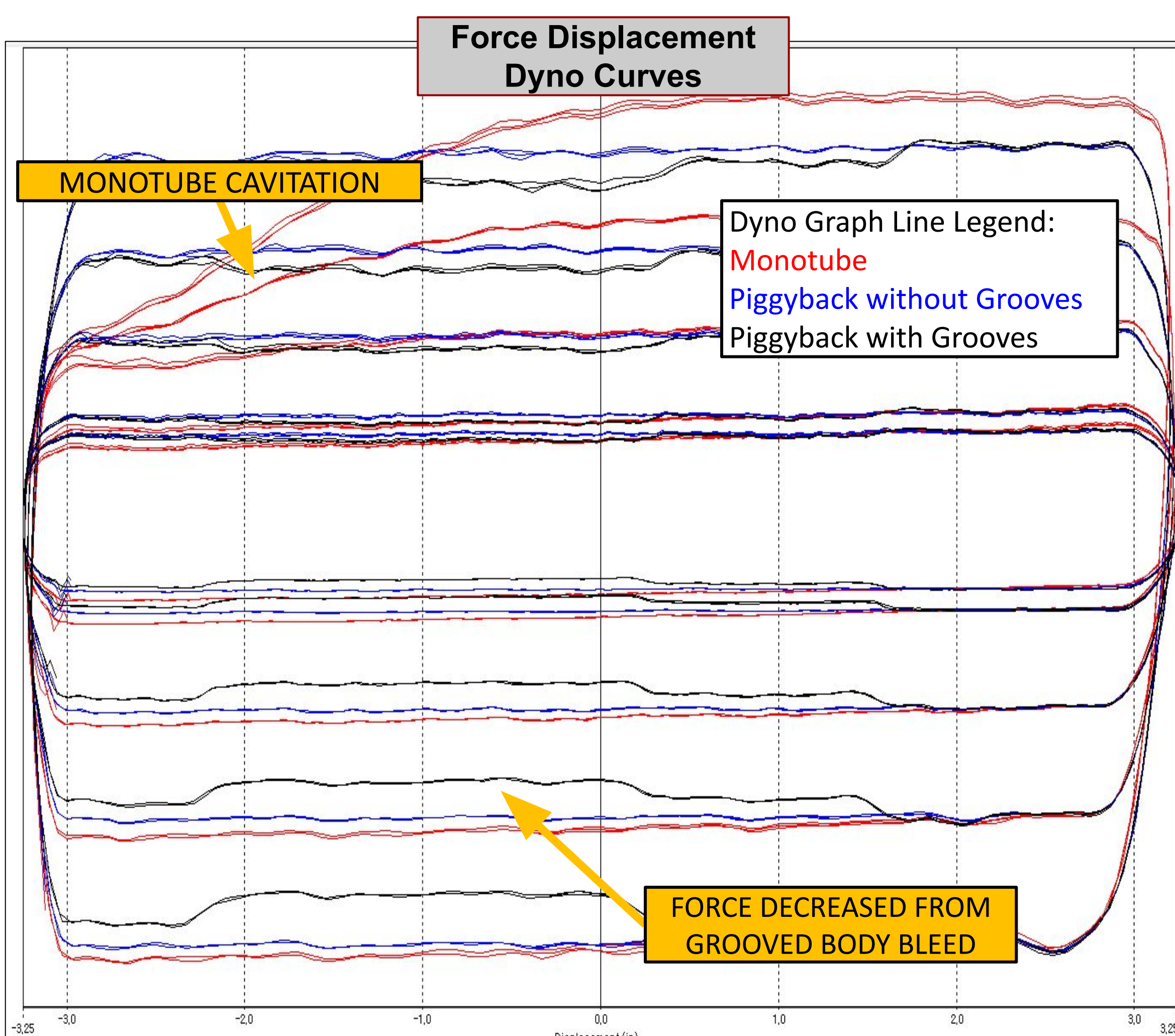
The design was implemented using off the shelf parts from Fox Factory, which were then modified by the team. Using a prototrak lathe, the internal grooves were cut into a monotube body. Final assembly took place at Fox Factory, where all team members worked together to build twelve shocks.



Project Overview:

To design position sensitive technology through research and development of additional features to be integrated with the current Fox shock absorbers to avoid harsh bottom-outs on tough terrain and for an overall performance improvement. The design must adhere to all mandated Baja SAE rules to increase innovation points for the design presentation portion of the competition.

Testing Summary



The results to the left show the force-displacement results for the regular monotube and grooved body monotube done on a dyno at Fox Factory's engineering lab. By adding a base valve and larger nitrogen chamber, cavitation on the compression stroke was much less significant. An additional takeaway is the noticeable drop in force in the ridezone, which should improve vehicle drivability.

Additional tests showed that the newly machined grooves inside the body did not impact the structural integrity. The Aztec Baja Car suspension arms yield at +/- 4000 lbf and the shock bodies yield at 13132 lbf.

Final Body Grooves

