

BRONCO STEERING RACK

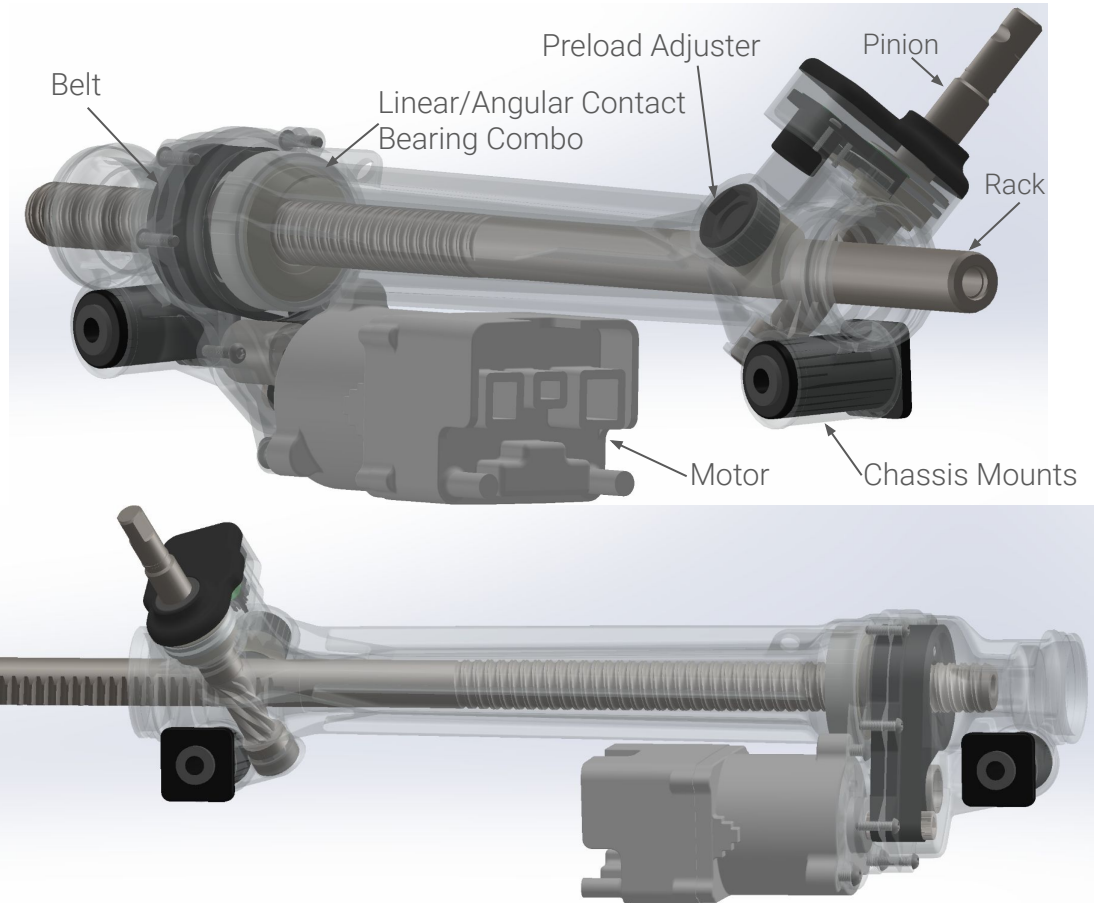
OVERVIEW

STOCK RACK

Construction

- Pinion gear and preload adjuster bear driver's side steering loads
- Linear/Angular contact combo bearing bears passenger side steering loads
- Clearance fit bushings are present outboard of pinion and linear bearing. Rack must deflect significantly before contact with bushing will occur.
- Housing made of brittle cast aluminum
- Minimal support of rack & pinion allows for ease of assembly at OEM scale
- Great design for mass production of racks capable of mild off-road use with small tires

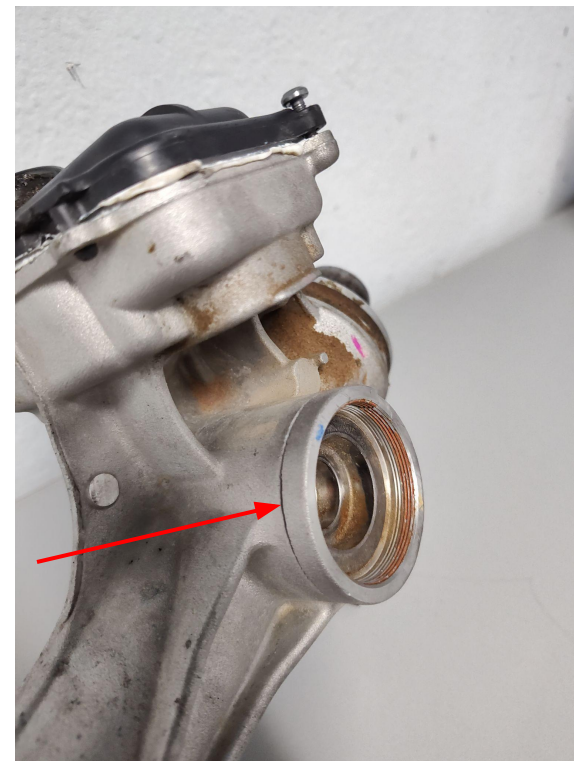
Tie Rod Load



STOCK RACK

Failures

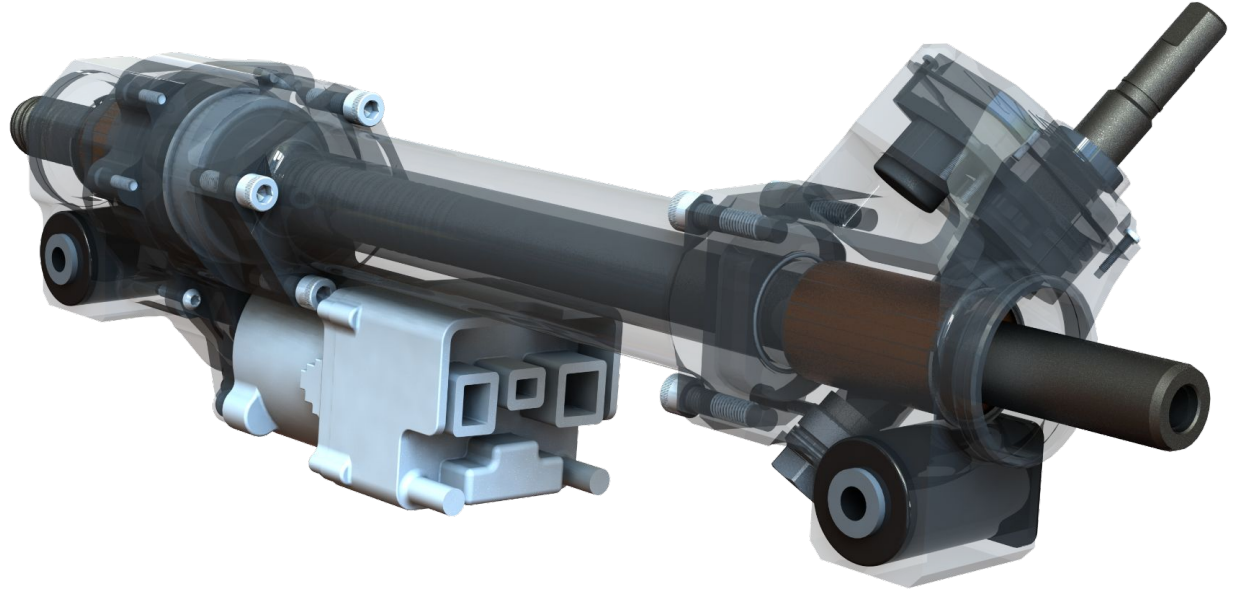
- Catastrophic failure of the stock housing is common
 - Fracture of the passenger side belt housing/end cap
 - Fracture of the driver's side preload adjuster housing
- The clearance-fit bushings show signs of wear from contact with the rack gear, indicating significant deflection of the gear prior to housing failure
- Gears and bearings appear to hold up well to loads that destroy the rack housing



74WELD RACK

Construction

- Machined from 6061 Aluminum
- Beefed up housing profile
- Rack supported by bushings
- Re-Use gears, bearings and motor



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6061 Material

- Independent of any other changes, switching from cast to billet aluminum is a massive improvement
- Billet 6061 is ductile and will not shatter in an impact event
- Billet 6061 has higher strength thresholds

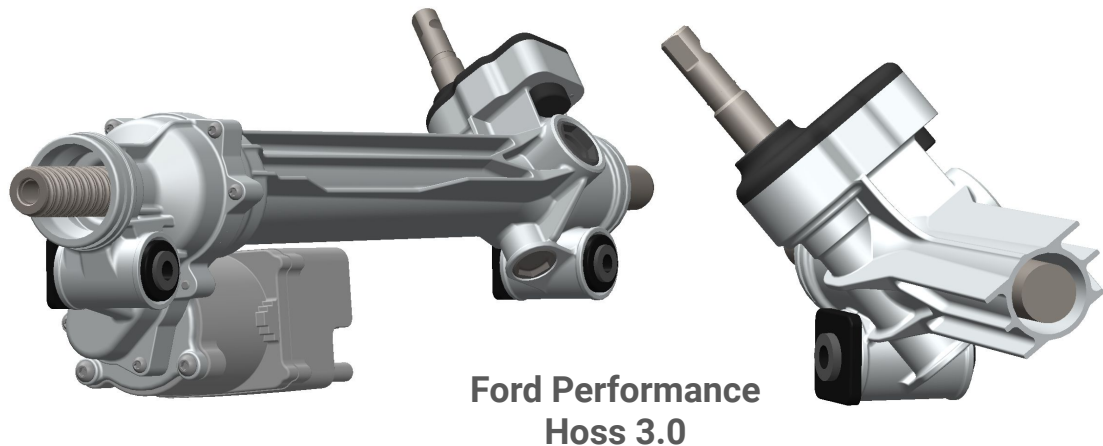
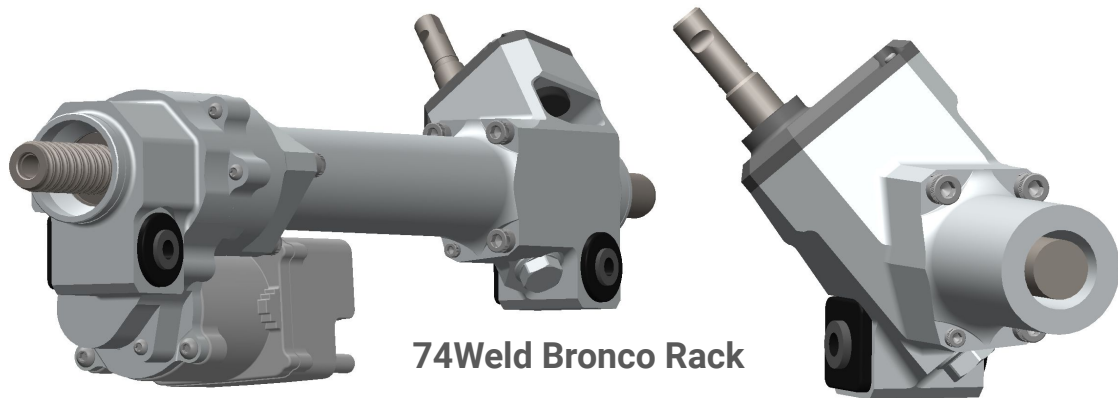
	Typical Cast Aluminum	6061-T6
% Elongation at Break	1-6%	17%
Yield Strength	15-30 ksi	40 ksi
Tensile Strength	25-35 ksi	45 ksi

1 ksi = 1,000 pounds/square inch

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Beefed-Up Housing Profile

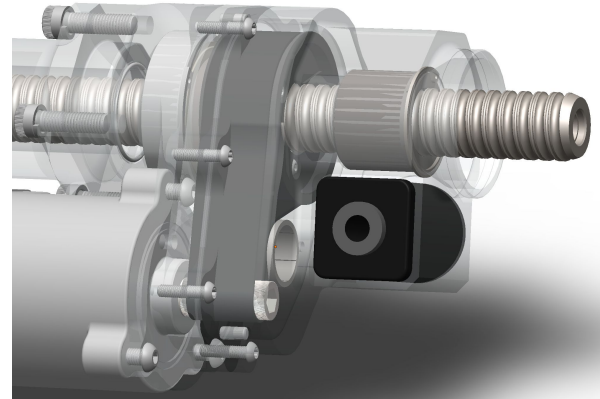
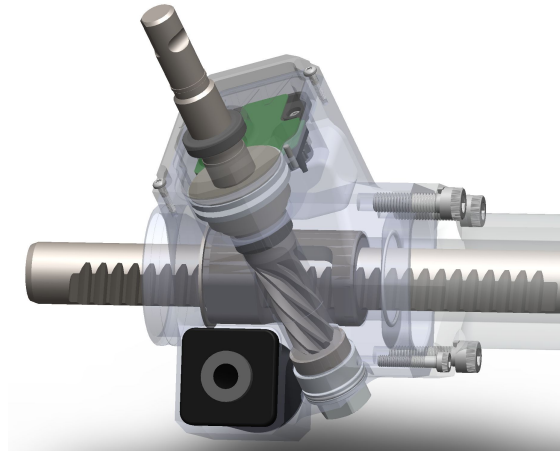
- Thicker sections than Hoss 3.0 rack housing
- More material present in high stress zones to prevent deformation and fracture



74WELD RACK

Rack Support Bushings

- Rack is supported on both ends by bushings
- Takes eccentric loading off of gear set and bearings
- Gear set backlash is set by precision machining, not preload adjuster
- No preload adjuster present to blow out
- Tight fit bushings minimize rack deflection



74WELD RACK

