

SPEED UTV DESIGN PRESENTATION: 49



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El Jefe being assembled, in RG trim



Orange Cage, and Suspension is available only on RG Trim

El Jefe being assembled, in RG trim



Orange Cage, and Suspension is available only on RG Trim

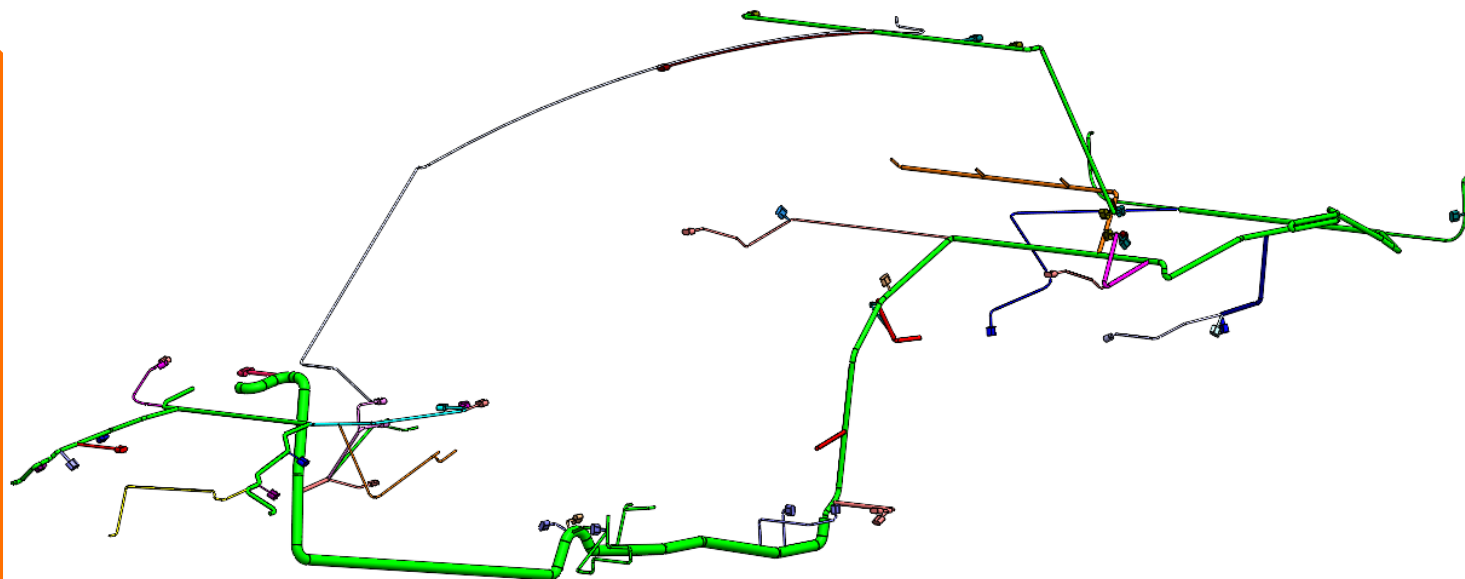
El Jefe being assembled, in RG trim



Orange Cage, and Suspension is available only on RG Trim

Splits into 6 Sections for easy service/replacement:

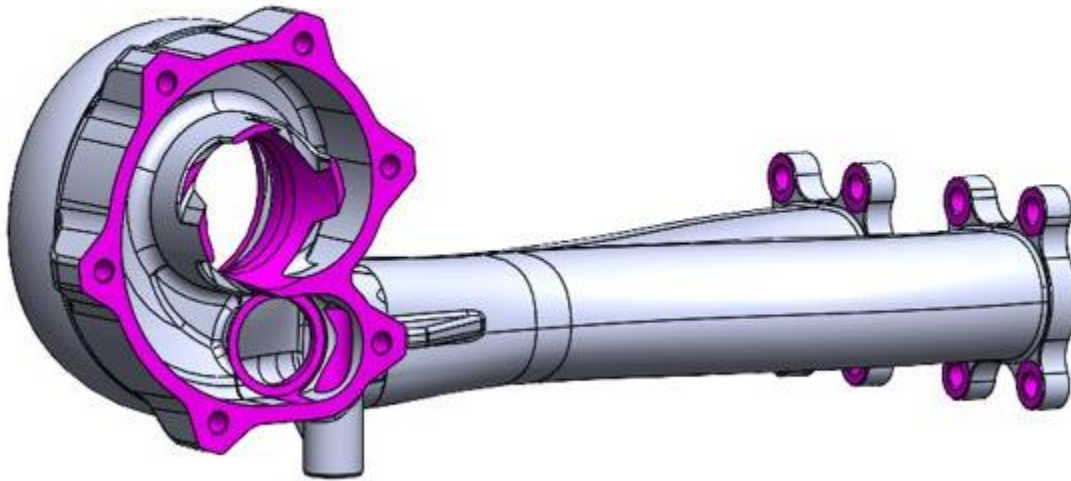
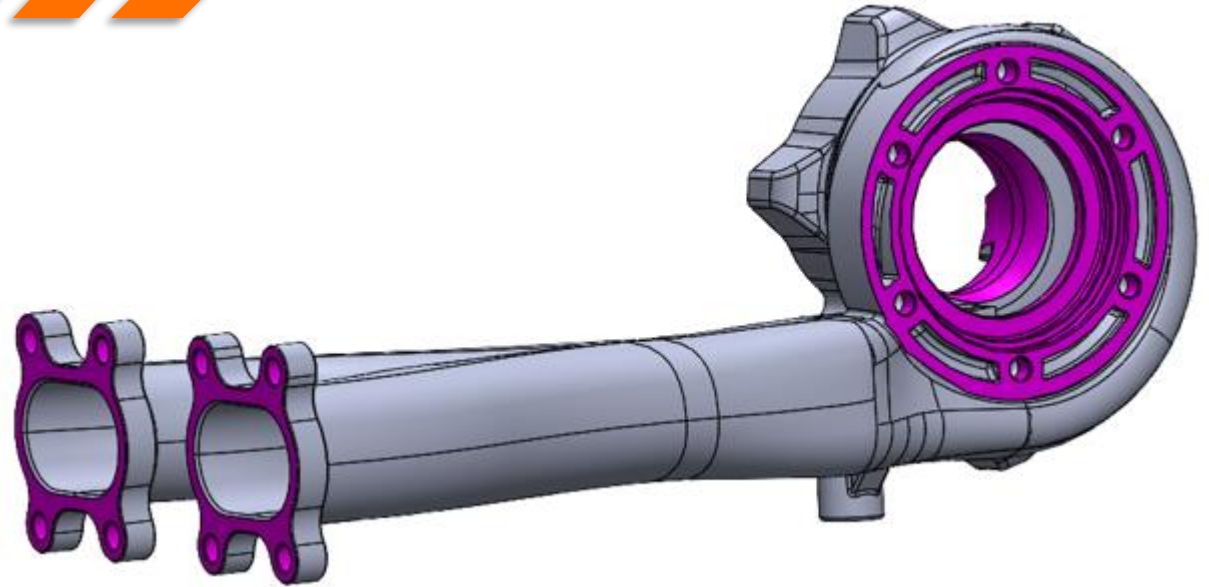
- **Engine**
- **Front End (Headlights)**
- **Rear End (Fans/Taillights)**
- **Center Section (Main Cabin/dash/accessories)**
- **Rear Cage (chase light/whip lights)**
- **Radio Antenna**



All connectors are waterproof automotive grade

SPEED UTV – Integrated Turbine Manifold

**The one-piece,
integrated exhaust manifold
and turbine housing is a part
critical to vehicle performance
and reliability**



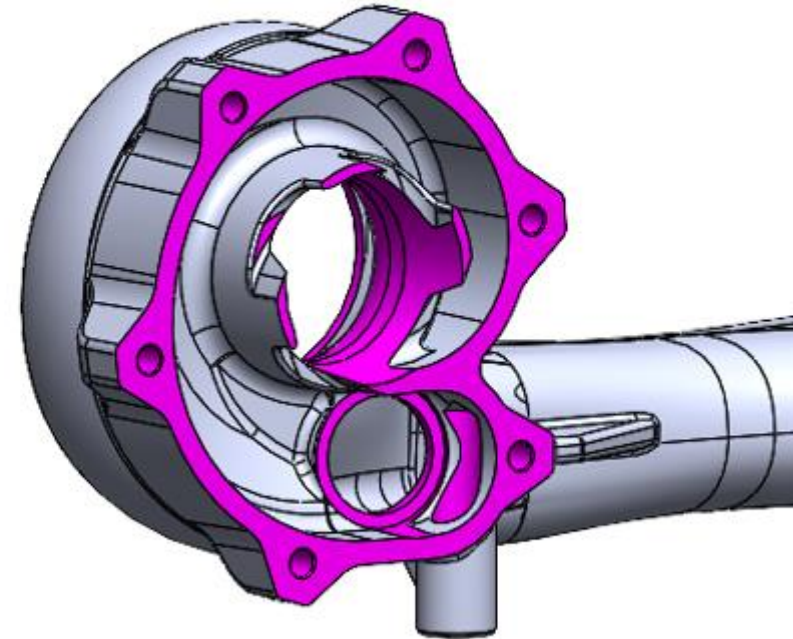
A one piece manifold/turbine housing is the best solution because it eliminates all failure points. We have experienced failures at every other type of connection attempted (bolts, v-band, expansion joints)

None of the other methods can withstand the extreme temperature, vibration and shock loading that this will be subject to on our vehicle

SPEED UTV – Integrated Turbine Manifold

The turbine housing geometry provides 3 key performance and drivability benefits:

- **Less drive pressure**
- **Improved wastegate actuation**
- **Better exhaust connection**

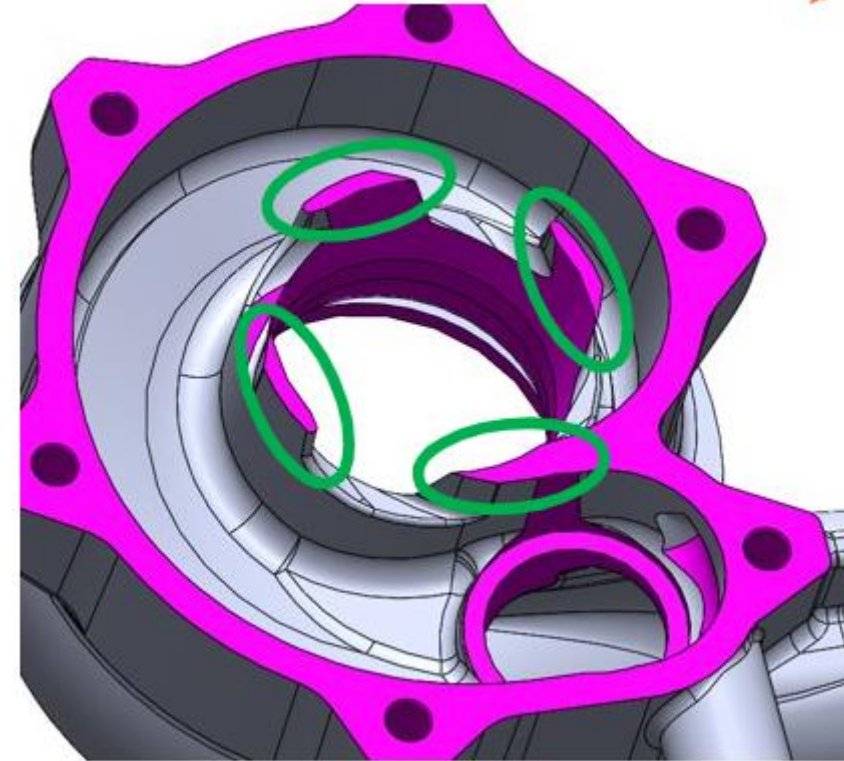


The next few slides will detail some of the core features.

SPEED UTV – Integrated Turbine Manifold

Reduced drive pressure:

The blades on the exit of the turbine help control the main flow of gasses without being interrupted by the wastegate flow. The wastegate flow is introduced to the main flow by creating low pressure zones which pull the wastegate flow in (almost like a venturi effect)

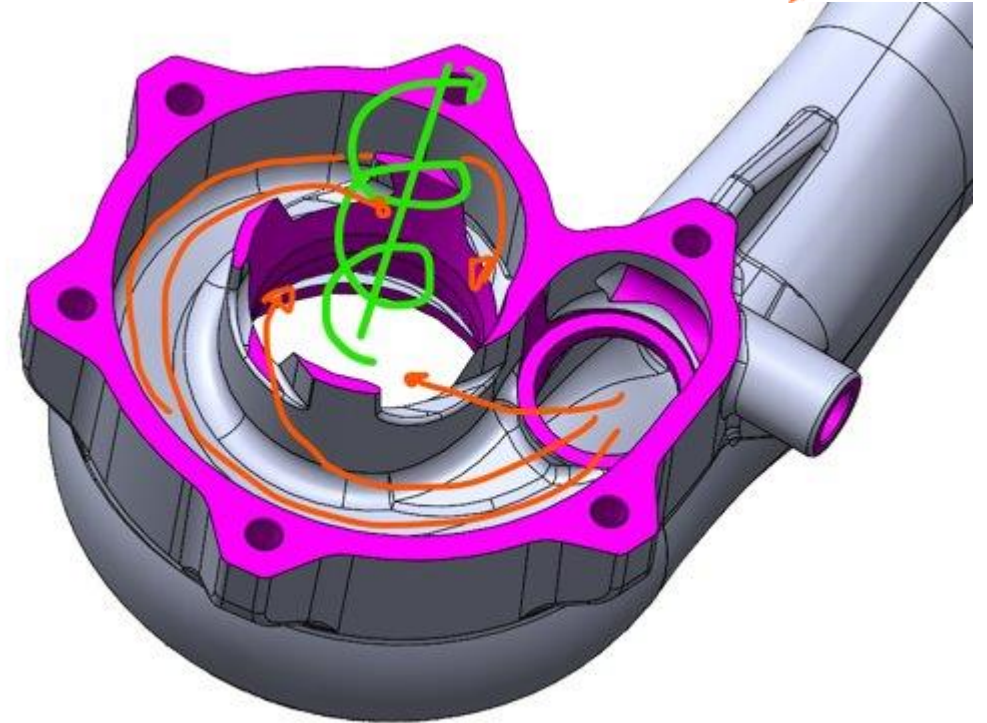


A reduction in drive pressure helps reduce the torsional load on the turbo shaft and reduce exhaust gas temperatures

SPEED UTV – Integrated Turbine Manifold

Improved wastegate actuation

- **By separating the exhaust flow through the wastegate and reintroducing it to the main flow in a vortex fashion we can control the actuation of the wastegate more precisely without risk of boost creep""**

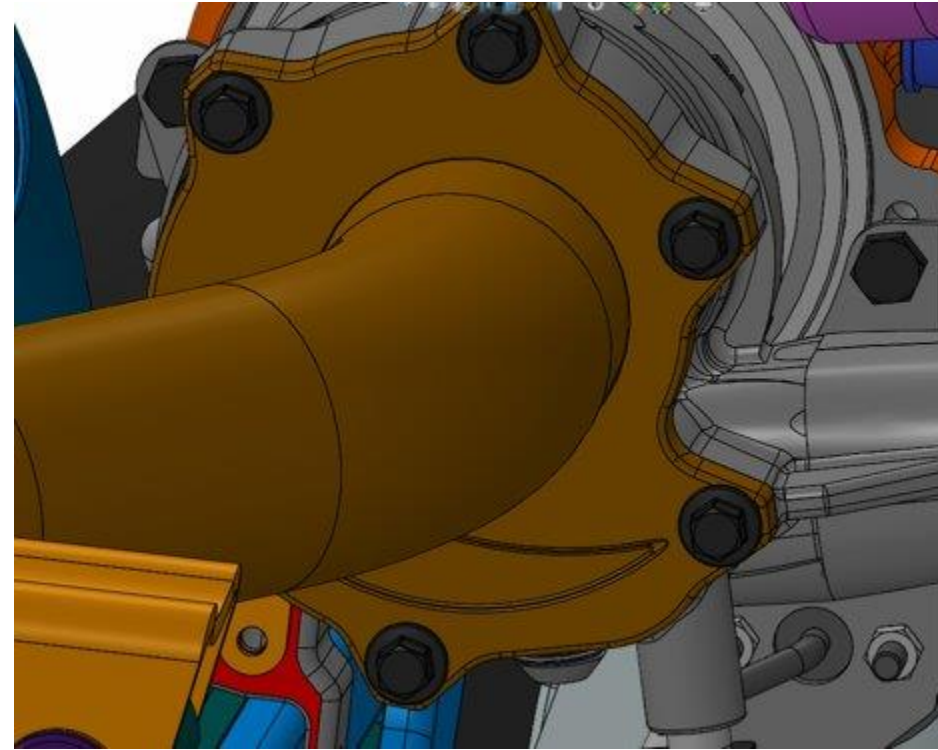


Boost creep is an issue we encountered while testing on the dyno with an early turbo set up. It is when the wastegate is opened (to reduce or maintain desired boost level) but the actual boost pressure continues to increase, this occurs because the exhaust flow through the turbine overpowers the flow through the wastegate. This can have bad consequences because the turbo is producing more boost that the tune is commanding and could cause a lean condition resulting in detonation or other negative engine impacts

SPEED UTV – Integrated Turbine Manifold

Better exhaust connection

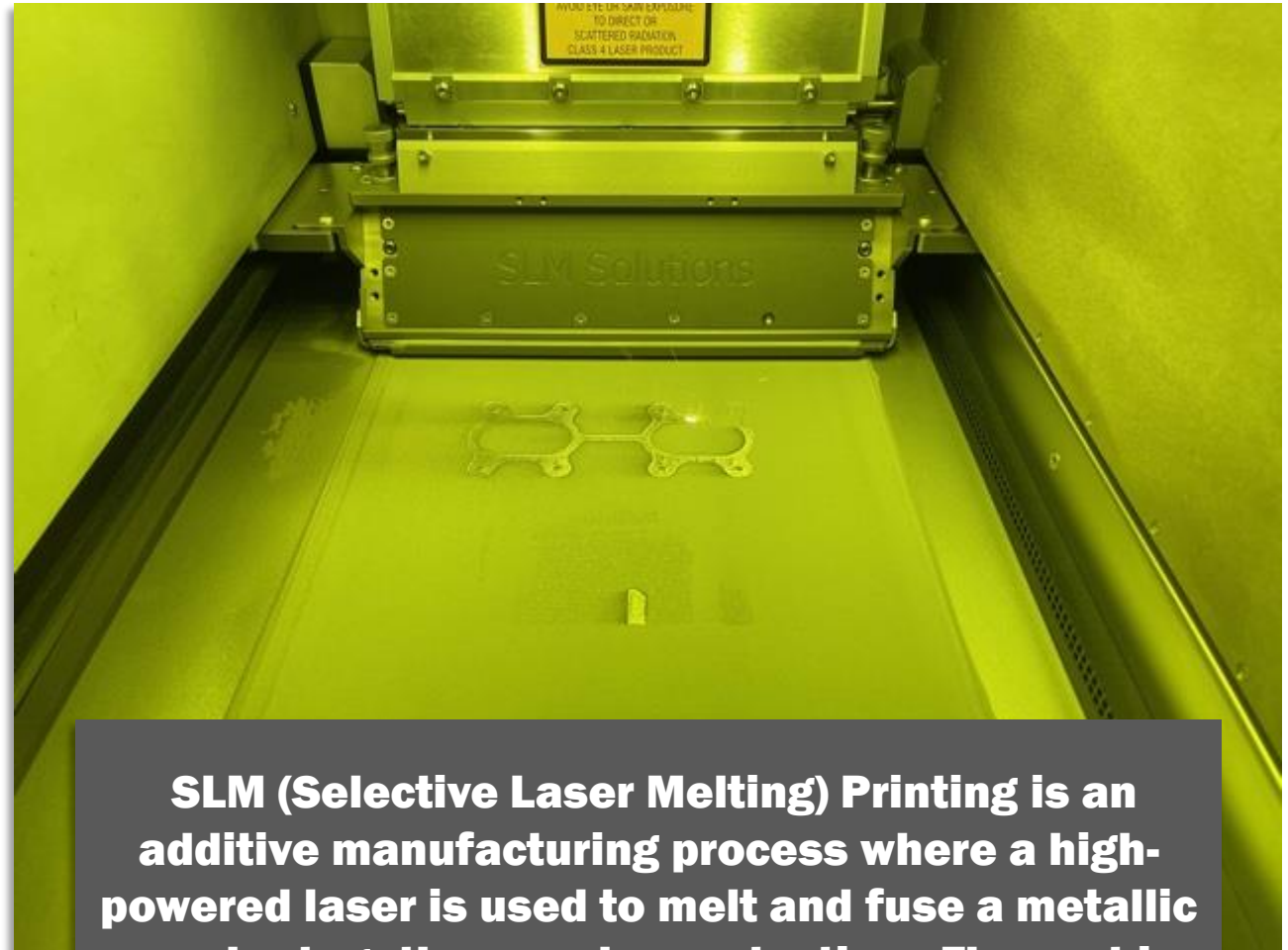
- **The backing plate of this turbine housing is designed to fit a round 2.5" exhaust and still allow adequate clearance to the mounting bolts.**



Because the wastegate flow is re-integrated into the main exhaust flow, there is no need for a complex housing shape to trap and capture the wastegate air as well

SPEED UTV – Integrated Turbine Manifold

The cast parts are still a few weeks away so we are 3D printing a test piece out of Inconel 625.

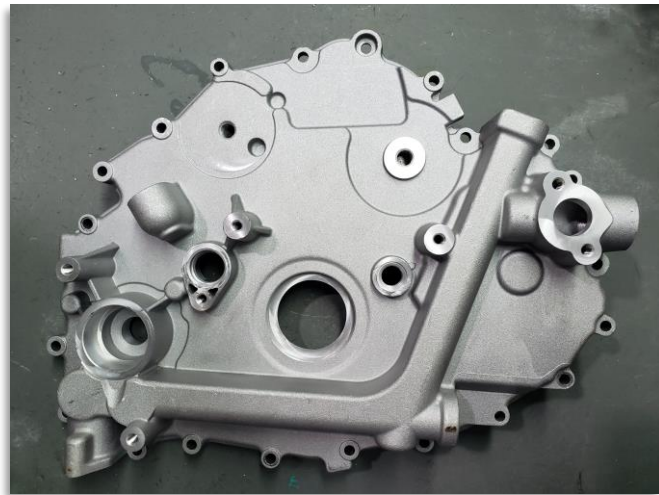


SLM (Selective Laser Melting) Printing is an additive manufacturing process where a high-powered laser is used to melt and fuse a metallic powder together one layer at a time. The part is slowly built up to create the final shape

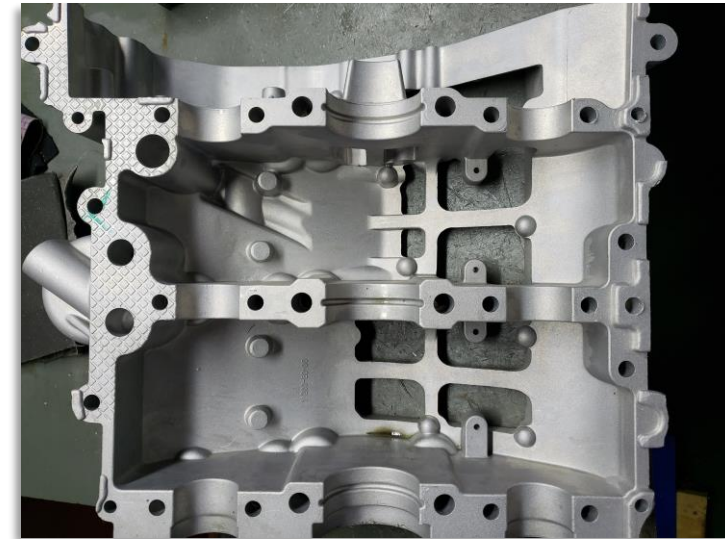
SPEED UTV – MOTOR

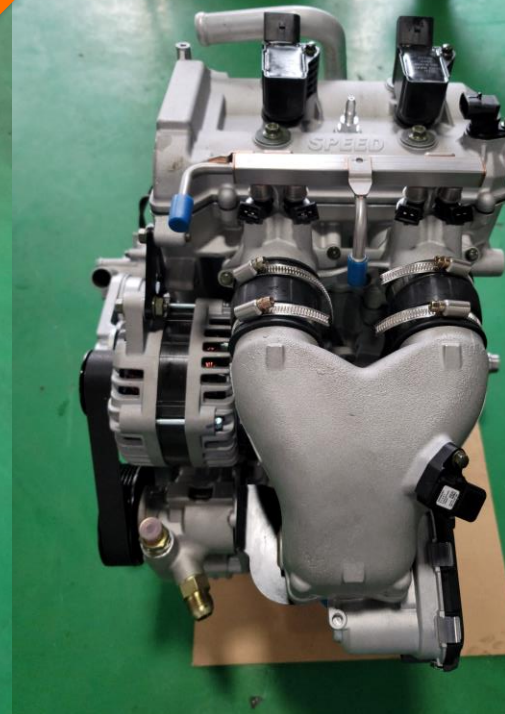
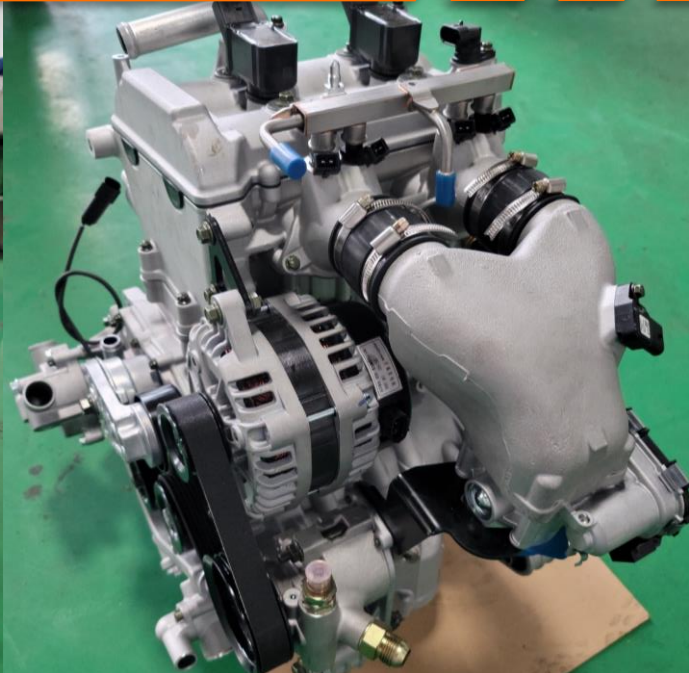
Motor:

- 999 cc
- Turbocharged
- 230hp pump gas
- 300hp E-85



SPEED UTV





SPEED UTV – FAMILY

SPEED  **UTV**



Call in with your questions:

704-949-1255



Lucky Caller gets a prize

