Driveline and Chassis of the Saab Turbo X
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AWD Organization
- Showcasing global strength

Global AWD Centers: Benchmark & strategies. Concept selection, base development & calibration
Regional AWD Centers: Final integration & calibration. Serial production
Technical Data

- **Engine**: 2.8L V6, twin-scroll turbo, VVT (inlet)
  Max. Power: 206kW @ 5300 rpm
  Max. Torque: 400Nm @ 1900-4500 rpm

- **Driveline**: Transverse mounted engine, Active-On-Demand AWD + eLSD
  6-speed manual or automatic transmission

- **Suspensions**
  Front: MacPherson
  Rear: four-link with self-leveling dampers

- **Wheels, Tires:**
  18x7.5”, 235/45R18
  19x7.5”, 235/40R19

- **Brakes**:
  Hydraulic, dual circuit, vacuum booster.
  Discs: 345mm / 292mm (all ventilated)
Performance Data

- **Acceleration 0-100 km/h [s]**
  - Sport Sedan: 5.7 (manual); 7.2 (automatic)
  - Sport Combi: 5.9 (manual); 7.4 (automatic)

- **Top Speed [km/h]**
  - Sport Sedan: 250 (manual); 250 (automatic)
  - Sport Combi: 250 (manual); 250 (automatic)

- **Fuel Consumption [l/100km]**
  - Urban / Extra Urban / Combined EU
  - Sedan: M6 15.9/7.5/10.6; A6 18.0/7.4/11.3
  - Combi: M6 16.5/7.8/11.0; A6 18.6/7.7/11.7
Market Leading AWD Technology
- Debuting on the Saab Turbo X

High torque, pre-emptive, active on demand AWD system with a unique rear eLSD (electronically controlled Limited Slip Differential)

- Improved acceleration
- Offer excellent driving dynamics – traction, control, safety
- Provides excellent stability under all conditions
Market Leading AWD Technology
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- Power Take-off Unit
- Torque Transfer Device
- Electronic Limited Slip Differential
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Power Take-off Unit
Ratio: 2.782

Torque Transfer Device
2800Nm capacity*
Ratio: 2.769

Electronic Limited Slip Differential
1200Nm capacity*

*equivalent wheel torque
Underbody Package
Rear Drive Module

- Differential
- Pressure accumulator
- Electric Pump
- Proportional Valve
- eLSD Clutch
- TTD Clutch
- Proportional valve
- ECU
eLSD Principle

The diagram illustrates the traction limit and eLSD torque. The variables $T_{\text{inner}}$ and $\Sigma T$ represent the inner and total torques, respectively. The triangle formed by $\Delta T$, $T_{\text{eLSD}}$, and $T_{\text{outer}}$ represents the traction limit of the eLSD system.
eLSD Yaw Damping – Throttle Release in Turn

- Speed = 70km/h
- Steering wheel angle = 90 deg.
- Engine braking with -0.1g at t=10s

Graph showing:
- Yaw Rate [deg/s] vs. Time [s]
- Speed [km/h] vs. Time [s]

Legend:
- Blue: without eLSD
- Green: with eLSD

Arrow pointing to graph:
- eLSD eliminates yaw-overshoot caused by load transfer
Rear Suspension Development

FWD Version

AWD Version
Some remarks…

”The system corrects the dynamic stability of the vehicle, something you physically experience” – Auto Motor & Sport

”A landmark car for Saab” - AutoCar

”… there is only one conclusion: The XWD works, and brilliantly”- AutoCar

”It goes beyond the grip and balance you get with any all-wheel-drive system. The 2008 Saab 9-3 Aero XWD engages your emotions when you’re at the wheel. It makes you care it’s a Saab, something not uniquely different, but also uniquely good” - Edmunds