

14

Final Trim Line Assembly

The ULSAB-AVC vehicle incorporates modular component subassemblies into the vehicle design.

14.1 BACKGROUND

The ULSAB-AVC vehicle incorporates modular component subassemblies into the vehicle design. Therefore, having these modules pre-assembled, and supplied track-side by approved suppliers can reduce the assembly process. Current practices do not usually incorporate such modular approaches and typically most subassemblies would be built track-side, which would increase the overall time and area required for vehicle assembly. The closure panels are delivered track-side from the paint shop, where they are sub-assembled into modules where required, and attached to the vehicle. *PES* and *Mercia* reviewed the assembly process for the best utilization of manpower and robots, based on the volume requirements.

For the purpose of this report, the vehicle assembly has been categorized into the following subassemblies:

- Underbody Installation
- System Installation
- Interior Trim Installation
- Miscellaneous Installation
- Vehicle Hookup
- Closures and Glazing
- Miscellaneous Installation
- Vehicle Testing and Preparation for Shipping

More detailed information, including a full list of components and equipment used, can be found in Figures 14.1-1 or in the Appendix - Section 1.

Trim Line Assembly Sequence

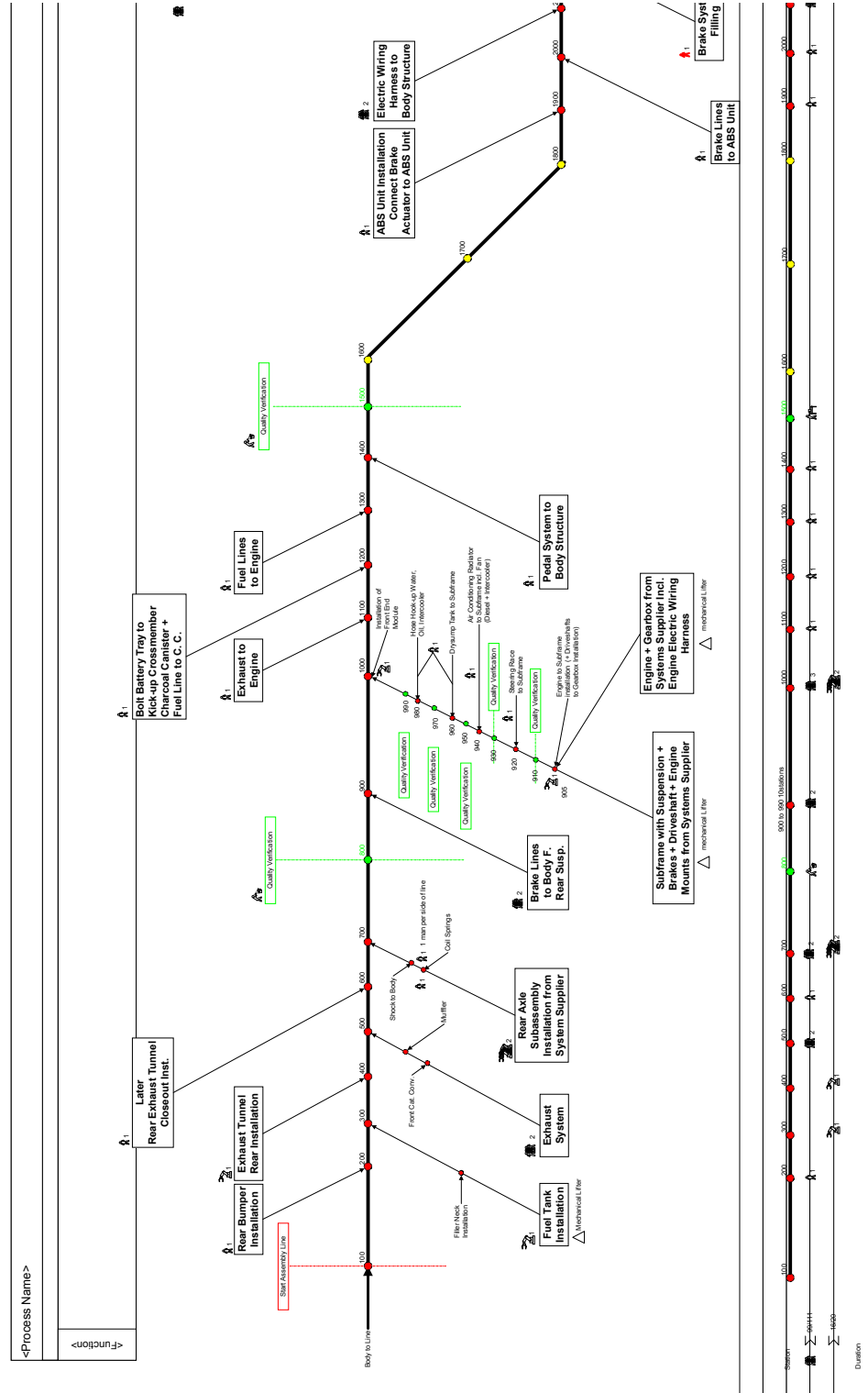


Figure 14.1-1 ULSAB-AVC Final Trim Line - Part 1

Trim Line Assembly Sequence

ULSAB-AVC Assembly

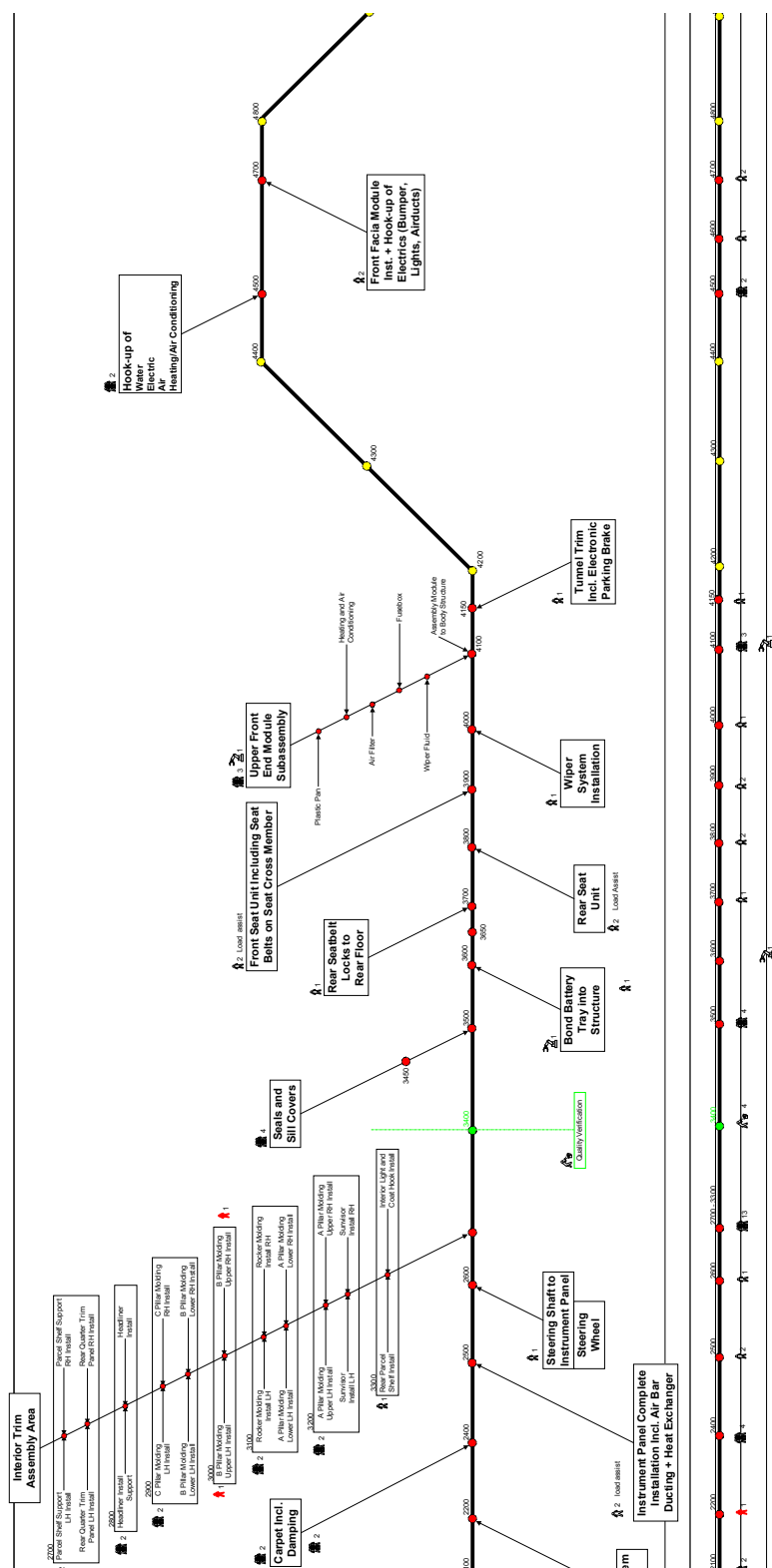


Figure 14.1-1 ULSAB-AVC Final Trim Line - Part 2

Trim Line Assembly Sequence

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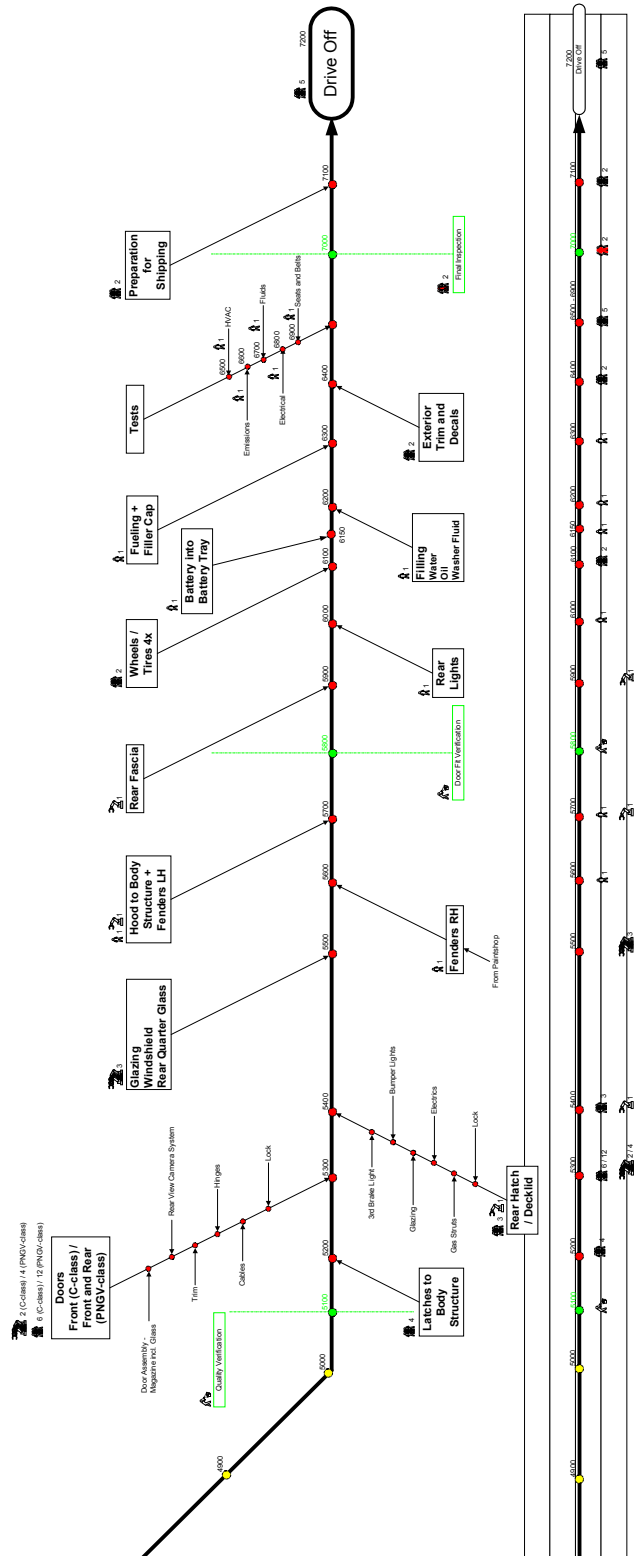


Figure 14.1-1 ULSAB-AVC Final Trim Line - Part 3

14.2. Underbody Installation (Stations 100 to 1600)

This first stage of the assembly (see Figure 14.1-1 - Part 1) process is performed on a raised platform to allow access to the underside of the vehicle. The Rear Axle subassembly is assembled by the supplier, delivered track-side and bolted directly to the vehicle.

The Subframe Module consisting of front suspension, brakes, driveshaft and engine mounts is assembled by the supplier and delivered to station 905. In this subassembly, line 905 to 990, various components are added including the assembled Engine and Transmission Module, which incorporates the wiring harness. Quality verification is performed after each stage of this assembly before a complete Front End Module is installed to the vehicle at station 1000.

14.3. Systems Installation (Stations 1700 to 2600)

This stage of the vehicle assembly (see Figure 14.1-1 - Part 1 and Part 2) includes two (2) idle stations, which allow the vehicle to be lowered to normal track height to allow access to the interior of the vehicle. Here various components and connections are made to previously installed components including brakes and electrical. The Instrument Panel, which is pre-assembled by the supplier and delivered track-side is installed in station 2500.

14.4. Interior Trim Installation (Stations 2700 to 3400)

This stage of the vehicle installation (see Figure 14.1-1 - Part 2) covers all interior trim parts and moldings including headliner, A-Pillar trim, B-Pillar trim, C-Pillar trim, rear quarter trim panels, rocker moldings, parcel shelf and sun visors. Station 3400 is a quality verification station.

14.5. Miscellaneous Installation (Stations 3500 to 4200)

This stage of the vehicle installation (see Figure 14.1-1 - Part 2) includes various interior and electrical connections and hookups. The Front Seat Module, which includes crossmember and seat belts, is installed in station 3900. The rear seat module is installed prior to the Front Seat Module, in station 3800. The Upper

Front End Module subassembly, which includes air filter, fuse box, wiper fluid, heating and air conditioning, is installed in station 4100.

14.6. Vehicle Hookup (Stations 4200 to 5100)

This stage of the vehicle assembly (see Figure 14.1-1 - Part 2 and Part 3) includes three (3) idle stations to raise the assembly line to allow access to the underside of the vehicle. This station covers all hook ups including air, water, electric and heating. It also includes the hookup of the Front End Module electrics for bumper lights and air ducts and a quality verification station.

14.7. Closures and Glazing (Stations 5200 to 5800)

This stage of the vehicle assembly (see Figure 14.1-1 - Part 3) includes all doors latches and glazing components. The front doors are pre-assembled track-side and include the following door magazine, including glass and door mechanism for windows and wiring, rear view camera systems, hinges, cable and lock. Front doors are installed in station 5300. Rear hatch or Decklid are assembled track-side and include gas struts, lock, electrics, glazing, bumper lights and 3rd brake light. The Hood and Fenders are bolted to the vehicle and the rear quarter glass installed. Station 5800 is a quality verification station for door fit and function.

14.8. Miscellaneous Installation (Stations 5900 to 6400)

This stage (see Figure 14.1-1 - Part 3) covers the installation of various components including wheels and tires, rear lights, Rear Fascia, fuel cap, battery and filling of water, oil, washer fluid. Vehicle decals (e.g. warning labels, handling advice labels) and exterior trim are also installed.

14.9. Vehicle Testing and Preparation for Shipping (Stations 6500 to 7100)

This stage of the vehicle assembly (see Figure 14.1-1 - Part 3) covers the testing of HVAC, emissions, fluids, electrical seals and belts. The vehicle then goes through a final inspection area before being prepped for shipment and driven off.