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## Facts & Figures: Detroit Assembly Complex – Mack

### Site History:

- 1916: Michigan Stamping Company, first automotive use for the Mack site
- 1920: Briggs Manufacturing purchases plant
- 1953: Chrysler Corporation purchases Briggs Manufacturing, acquires Mack property
- 1975: Chrysler builds 1 million-square-foot expansion next to the “Old Mack” plant
- 1982: Chrysler closes Old Mack, sells it to city of Detroit for redevelopment
- 1982-1989: Old Mack sits idle
- 1990: City of Detroit and Chrysler begin extensive cleanup of Old Mack site
- 1995: Old Mack plant leveled and entire site cleaned up
- 1991-1995: Dodge Viper produced at “New Mack” before it was moved to Conner Avenue Assembly plant
- 1996: Construction of Mack Engine begins; opens in 1998 to produce V-8 engines
- 2000: Mack Engine II construction completed; produces V-6 engines
- 2012: Mack Engine II idled
- 2019: \$1.6 billion investment announced to turn Mack Engine Complex into new assembly site for the all-new, three-row Jeep® Grand Cherokee, next-generation Grand Cherokee and electrified models
- 2021: Production of the all-new Jeep Grand Cherokee L launched in March
- 2022: Production of the all-new Jeep Grand Cherokee 4xe launched

### Plant Overview:

- More than 100 years of manufacturing on Mack site
- First new assembly plant in the city of Detroit in 30 years
- Investment: \$1.6 billion ([announced](#) February 2019)
- New jobs: 3,850; commitment to putting Detroiters first in the application process
  - 2,100 Detroiters have filled the new positions
- Construction: Began in Q2 2019; completed in less than two years
- Total floor space: 3 million square feet
- Acreage: 266
- Operating pattern: Three shifts, five days per week
- Employment: ~4,100
- Total production time: ~36 hours
- Three main production facilities: Body shop, paint shop and general assembly
- Logistics: 770 inbound trucks per day; 76 trucks and 95 railcars outbound per day

### Body Shop:

- Building: Formerly Mack Engine II; idled in 2012
- Floor space: 650,000 square feet
- Robots: 578
- Production time: 2 hours

### Net Form & Pierce

A net form is created for the [Jeep Grand Cherokee L](#) to establish the perfect dimensional environment to hang panels, such as the hood, liftgate, doors and fenders, before the body is pierced. Robots measure the gaps and fits to ensure they are symmetrical. There are 26 robots in the cell.

### Near-line Laser Radar

Radar technology is mounted on robots to measure hundreds of preprogrammed surface and alignment points to

verify the build process. This 45-minute validation test is performed on a select number of vehicles across all three production shifts and complements the inline measurement system that measures every Jeep Grand Cherokee L coming through the body shop.

#### **Paint Shop:**

- Building: All-new facility
- Floor space: 800,000 square feet (five floors)
- Robots: 124
- Production time: 12 hours
- Colors: 11
- Process: Fully automated; 100% robotic spray application
  1. Phosphate E-coat: First layer of corrosion protection
  2. Sealer: 28 robots; ~208 feet of sealer applied per car to prevent leaks, corrosion and wind noise
  3. Primer: 8 robots; provides smooth base layer and enhances paint durability
  4. Base paint coat: 21 robots (10 painting and 11 "opening")
  5. Clear coat: Final protective coating
  6. Finesse and polish: Identify and remove any imperfections to ensure smooth paint finish

#### **General Assembly:**

- Building: Formerly Mack Engine I; built the Pentastar engine family until December 2019
- Floor space: 1,000,000 square feet
- Stages: Trim, Chassis, Final
  - *Trim*: Installation of sunroof, wiring harness, major electrical, instrument panel and windshield, rear and half glass
  - *Chassis*: Engine dress; engine and chassis marriage; body and chassis decking; hose and electrical connections; fluid fill and functionality testing
  - *Final*: Installation of seats, steering wheel, major components; doors hung; wheels and tires; electrical test
    - Final validation: Aligners, headlight aim, rolls, ADAS (Automated Driver Assist System); BSR test track; inline water test; certification line

#### **Buzz, Squeak and Rattle (BSR) Test Track:**

- Completely enclosed
- Length: 2,000 feet
- 100% of vehicles tested
- Total test time: 3 minutes
- Simulates real-world driving conditions
- 11 different elements, including pot holes, manhole covers, rumble strips, cobblestones, speed bumps, gravel, Figure 8

#### **BSR Shaker:**

- Additional validation beyond test track
- Electro servo shaker, first of its kind in North America
- Test time replicating BSR track: 2 minutes, 40 seconds
- Additional testing of more aggressive conditions: 3-5 minutes

#### **Inline Water Test:**

- 100% of vehicles tested
- Total test time: 3 minutes
- 600 nozzles delivering water at 30 psi
- Additional validation performed in Nine Position Water Test; simulates different terrain (hills and inclines) and weather conditions

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