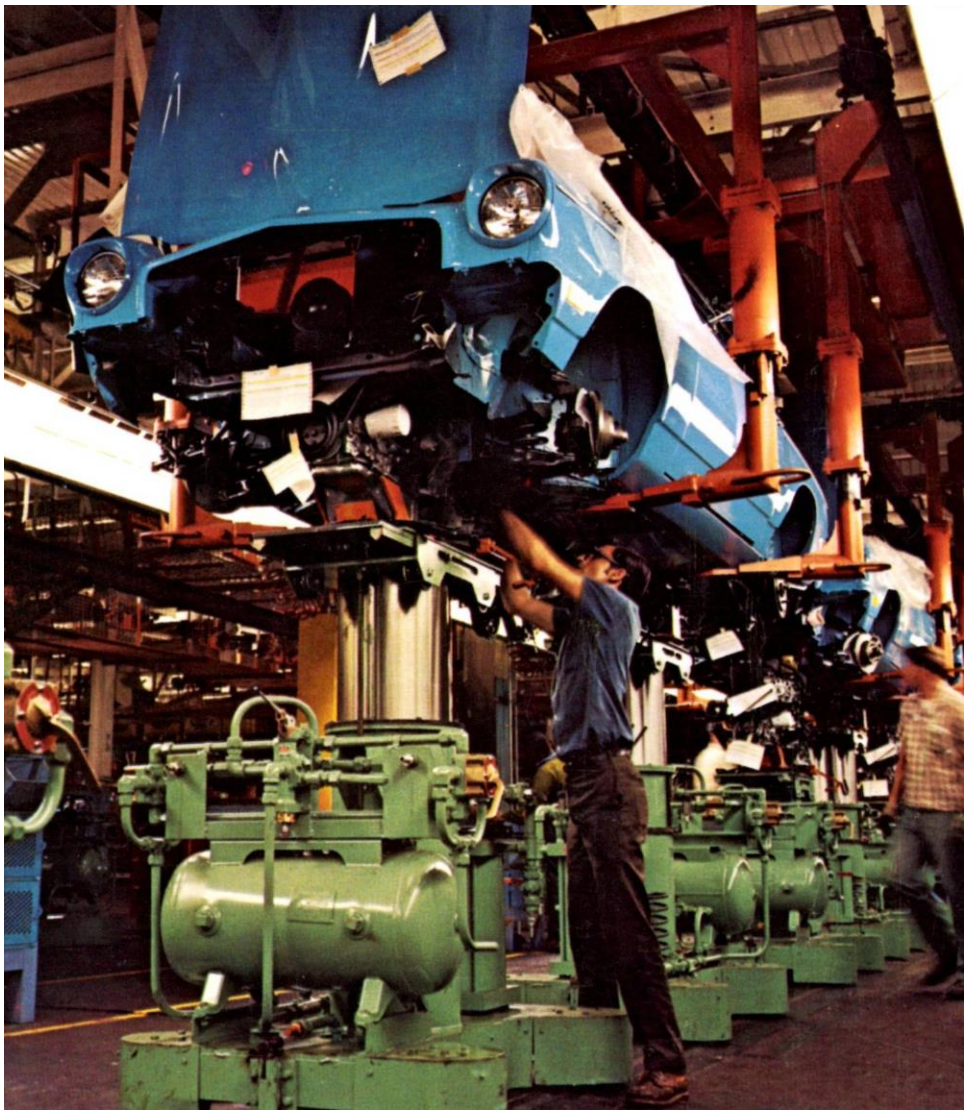
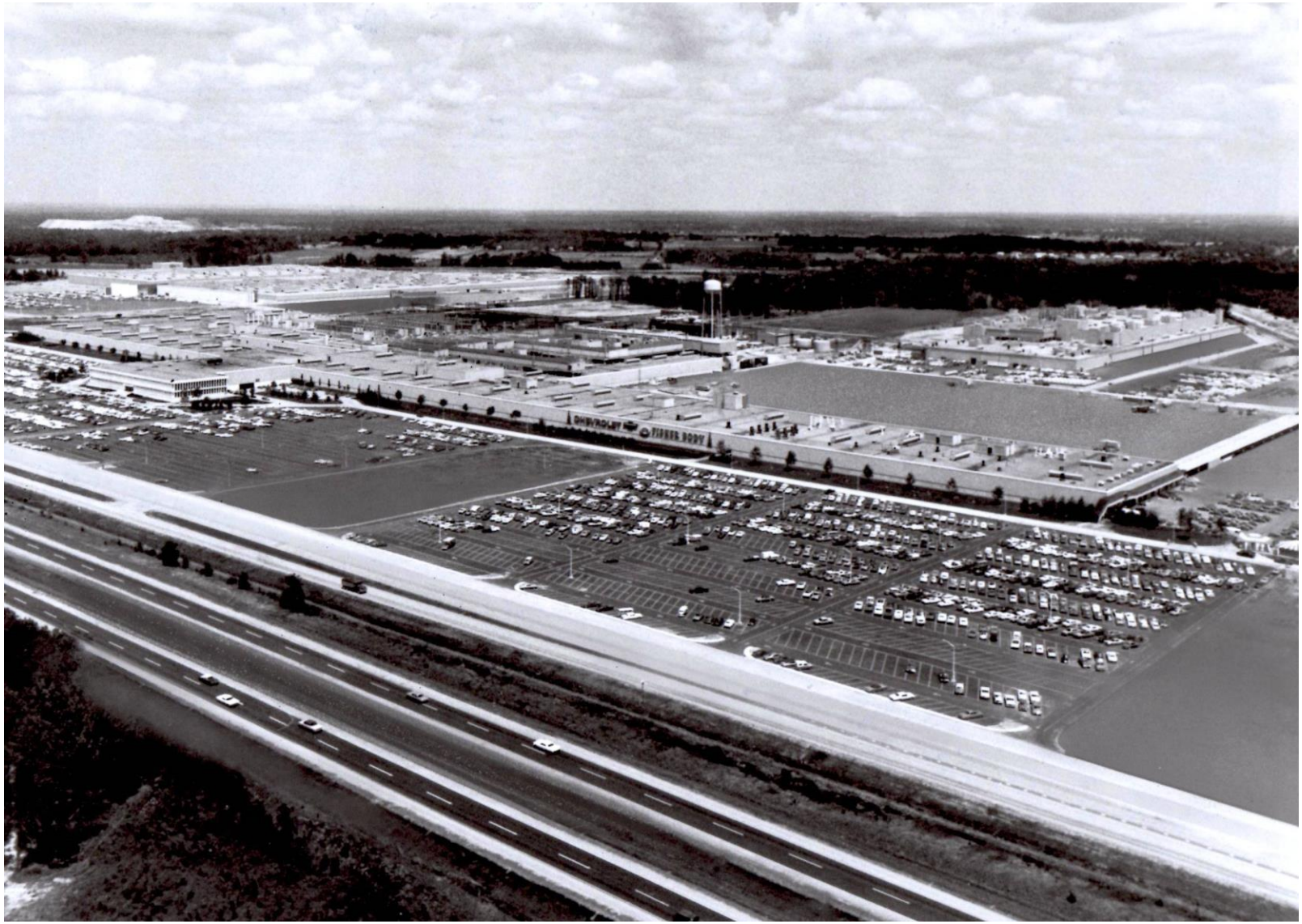
Vega Production at the Lordstown Assembly Plant

with captions by John Hinckley, GMAD-Lordstown Vega Launch Coordinator

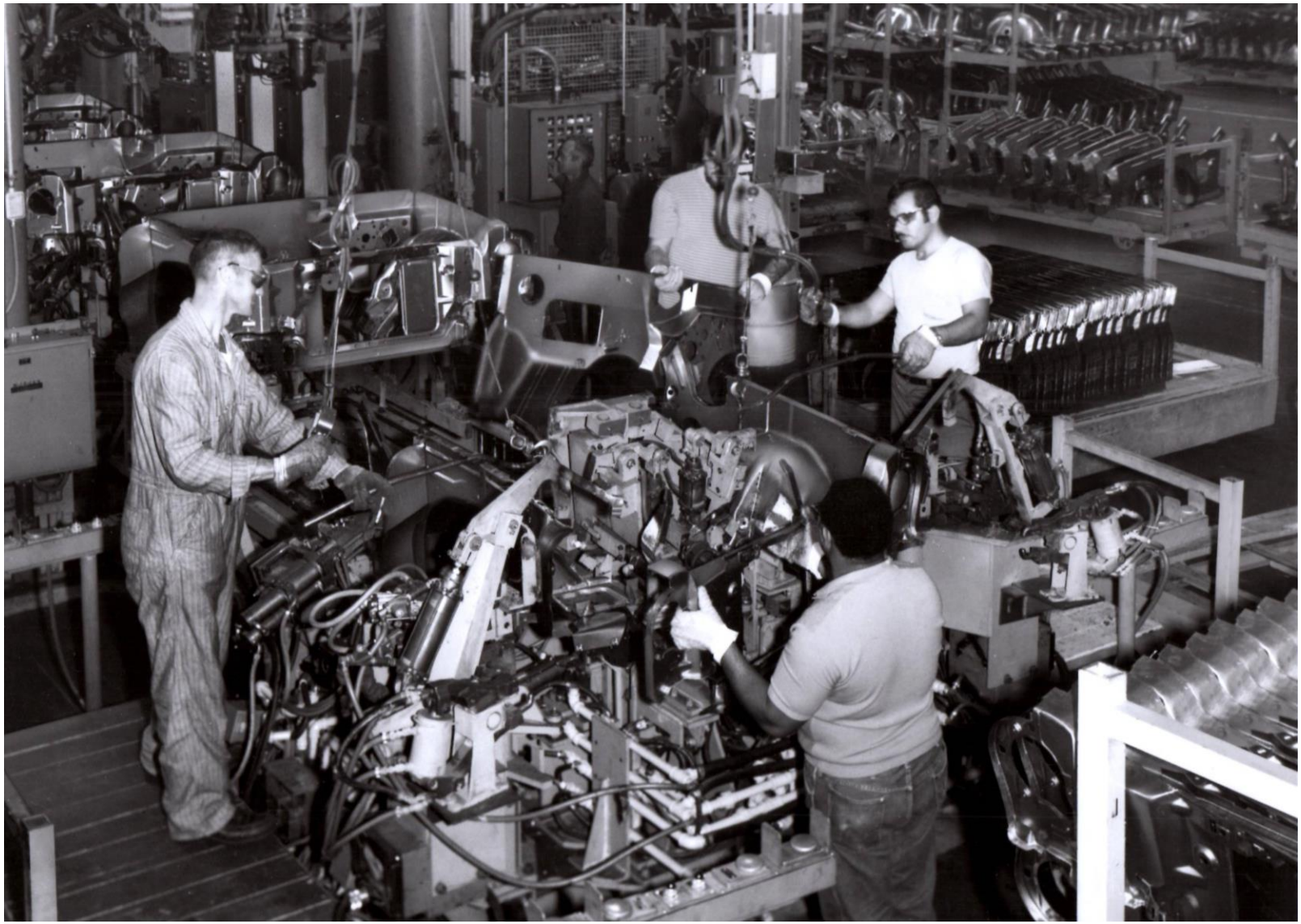


Compiled and edited by Kurt Sonen

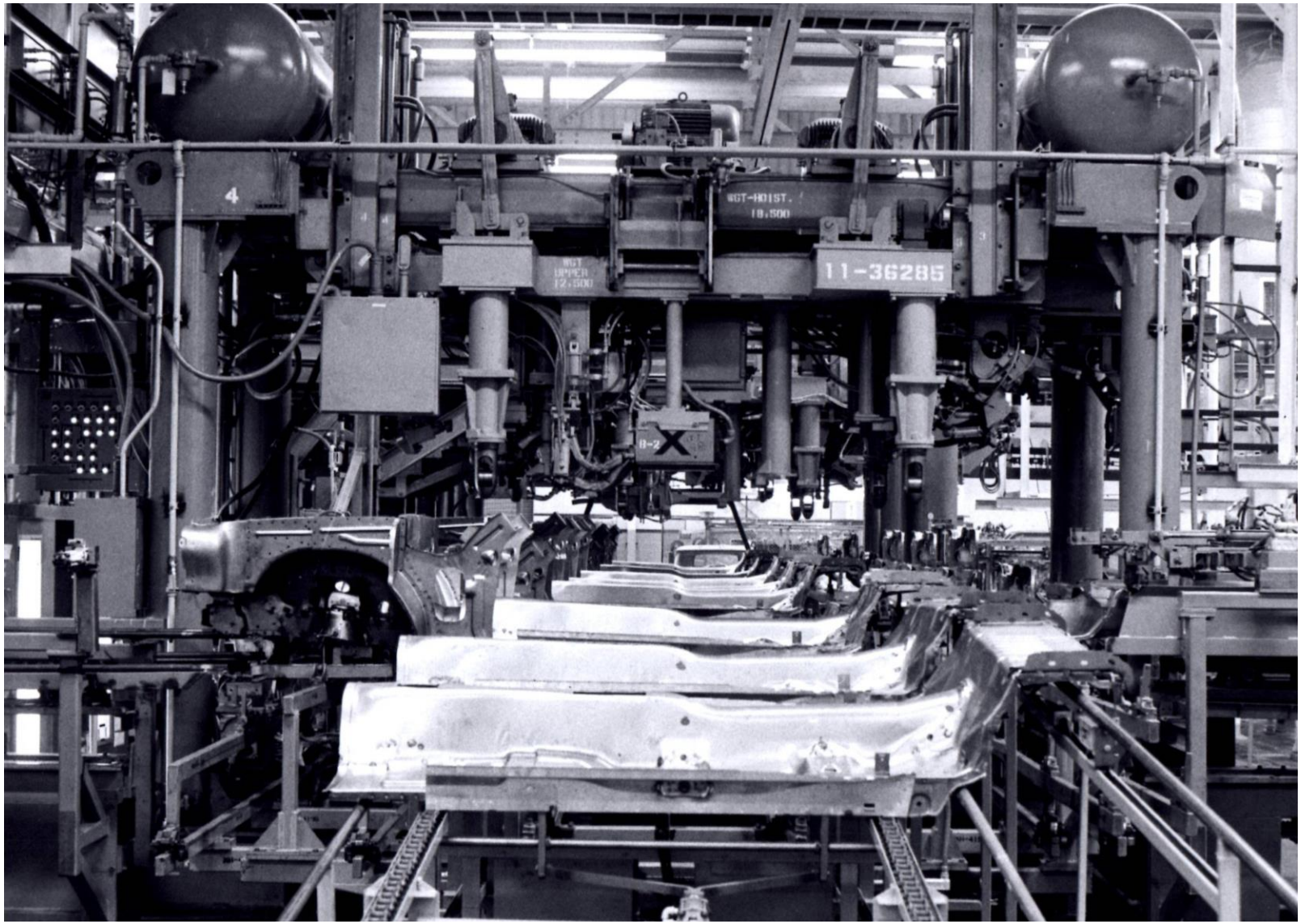
P.R. shot showing the front of the Chevrolet side of the Lordstown plant.



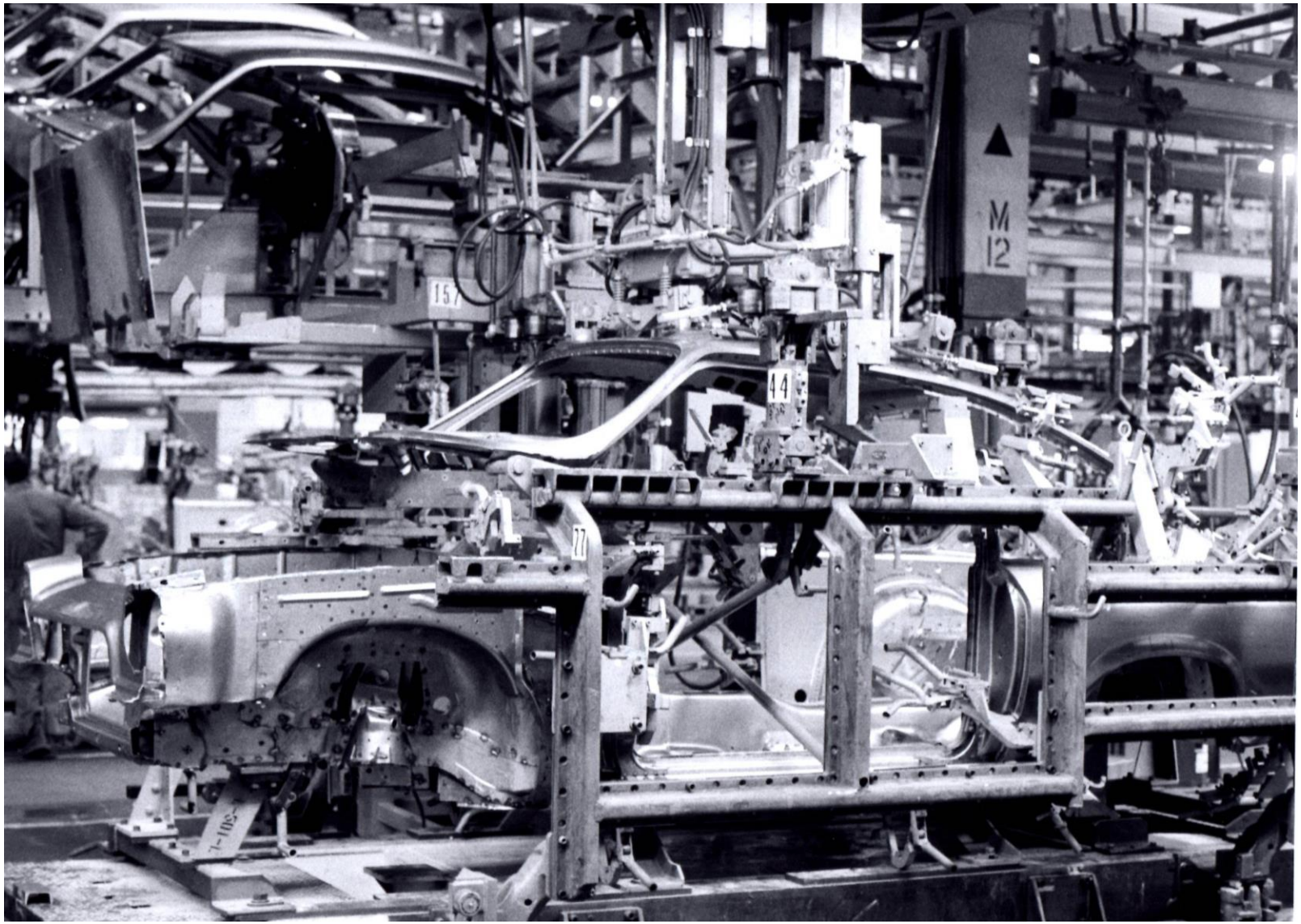
Aerial shot of the Lordstown complex; Fisher Body Fabricating (Stamping) plant at the upper left, Fisher Body/Chevrolet assembly plant in the foreground, and the Chevrolet Van assembly plant at the upper right. About 11,000 people were employed on the 1000 acre site.



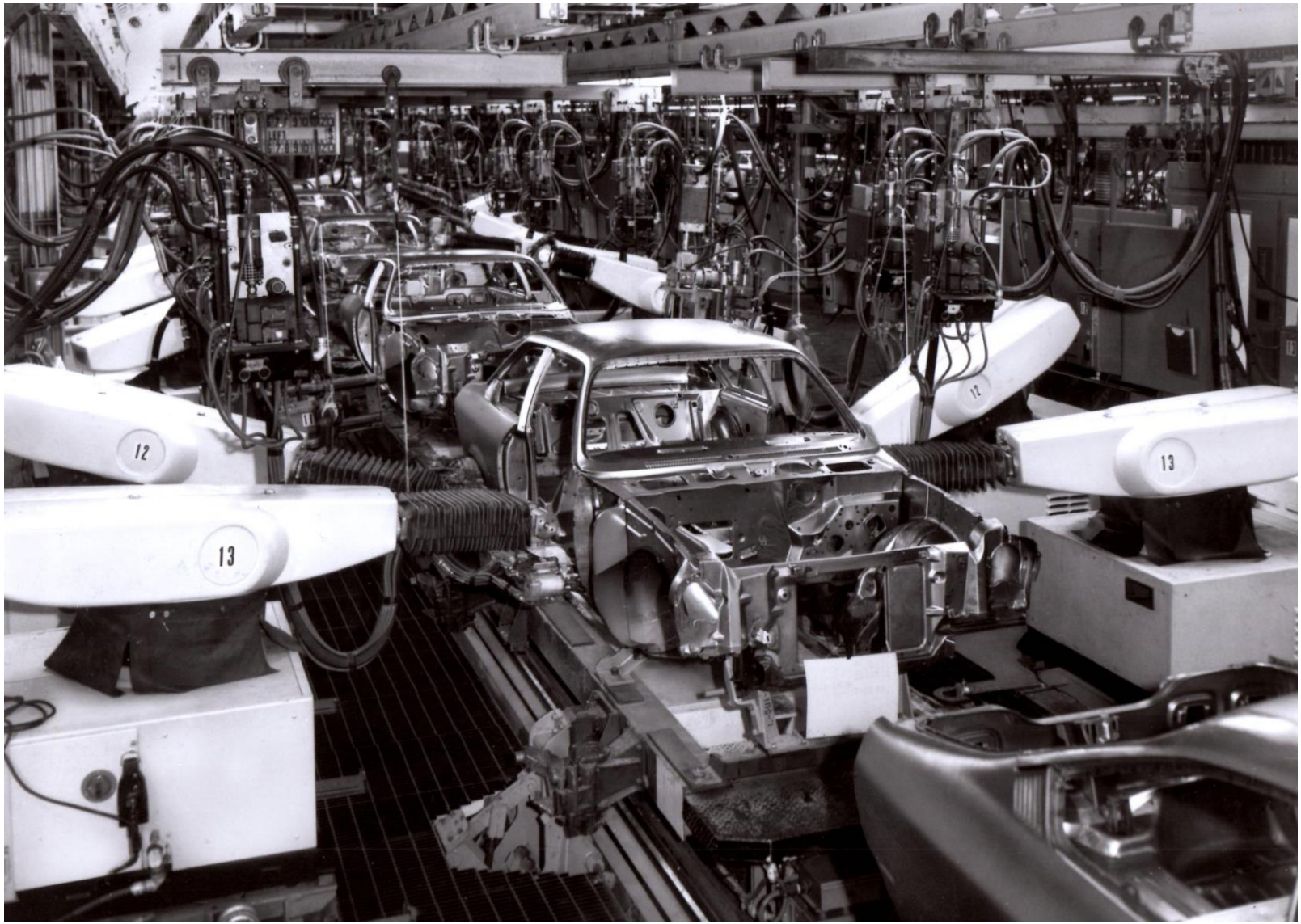
Start of the body assembly process – the dash panel, radiator support, and engine compartment side panels are loaded into the automatic welding fixture that creates the engine compartment.



The underbody press-welders – this 5-stage system automatically welded the engine compartment, floor pan, and rear compartment pan together to form the completed underbody assembly; it ran at 140 units per hour.

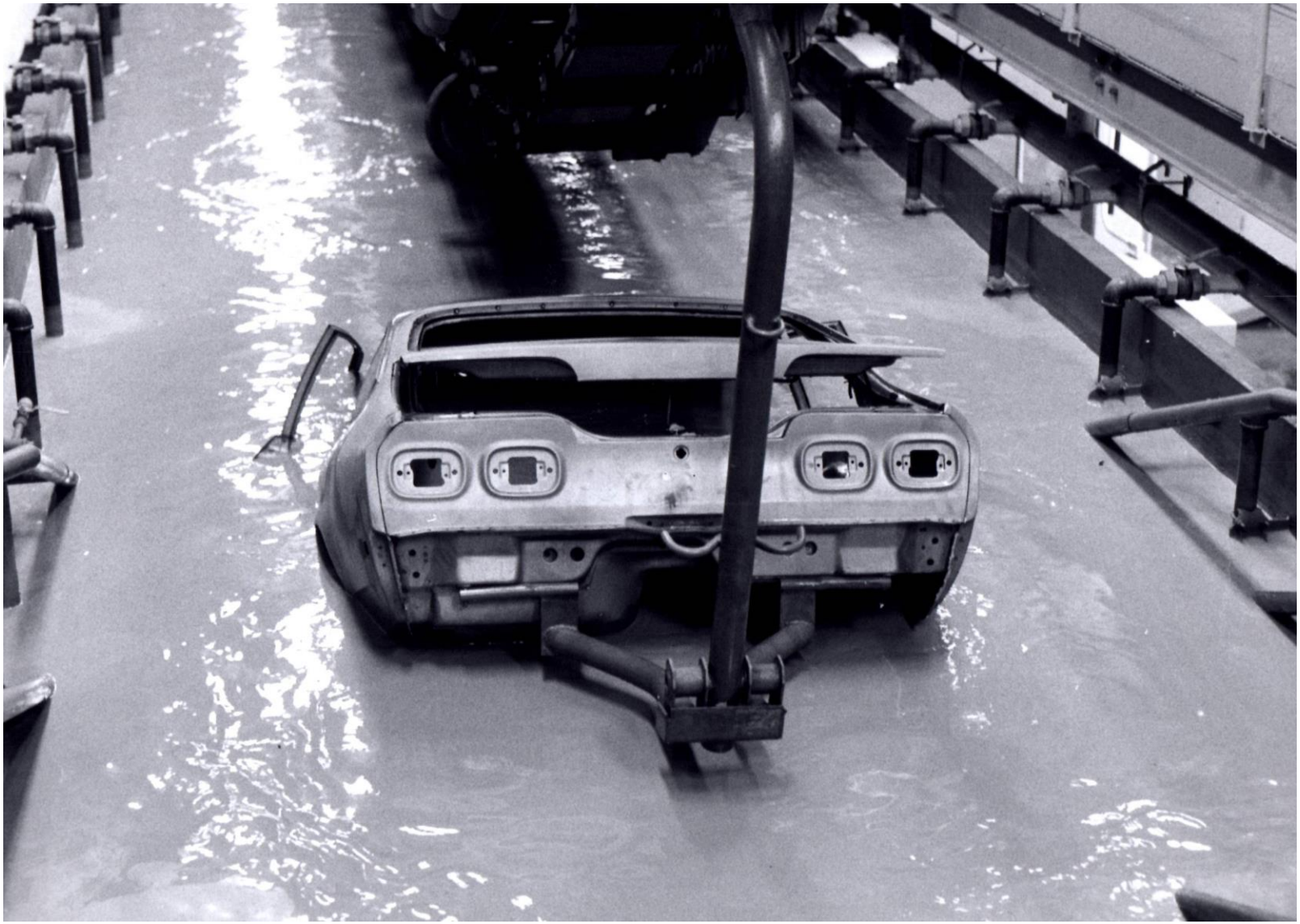


The body framing line – the body side assemblies, built up in the side frame fixtures, join the underbody assembly and the roof in these moving fixtures to form the body shell. After tack-welding the four major components together, the side frame fixtures are removed and the body shell proceeds into the robotic welding line.



The “Unimate Line”, the first fully-robotic automated body welding line in the industry; 26 Unimate hydraulic robots in 11 stations completed all body structural welding following body framing. Each body build truck weighed 14,000 pounds, and the conveyor drive system shuttled the entire line in unison from station to station every 30 seconds (120 units per hour).

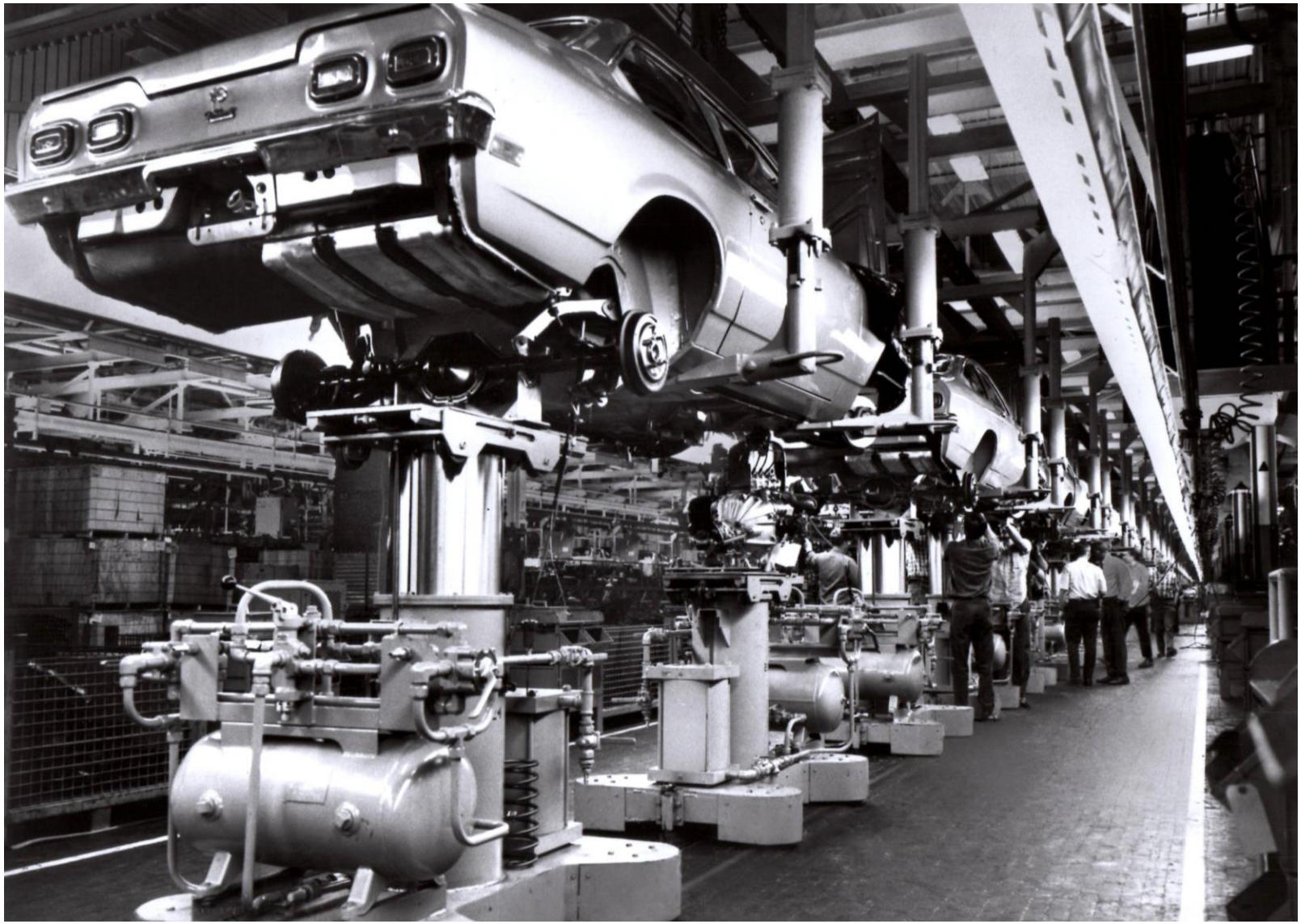
Unimate robot in action – the large device at the lower right is a hydraulically-operated toggle that locks the body build truck in position before the robot begins its welding cycle. The robots are mounted on tracks so they can be easily pulled back from the line for access for preventive maintenance from the aisle.



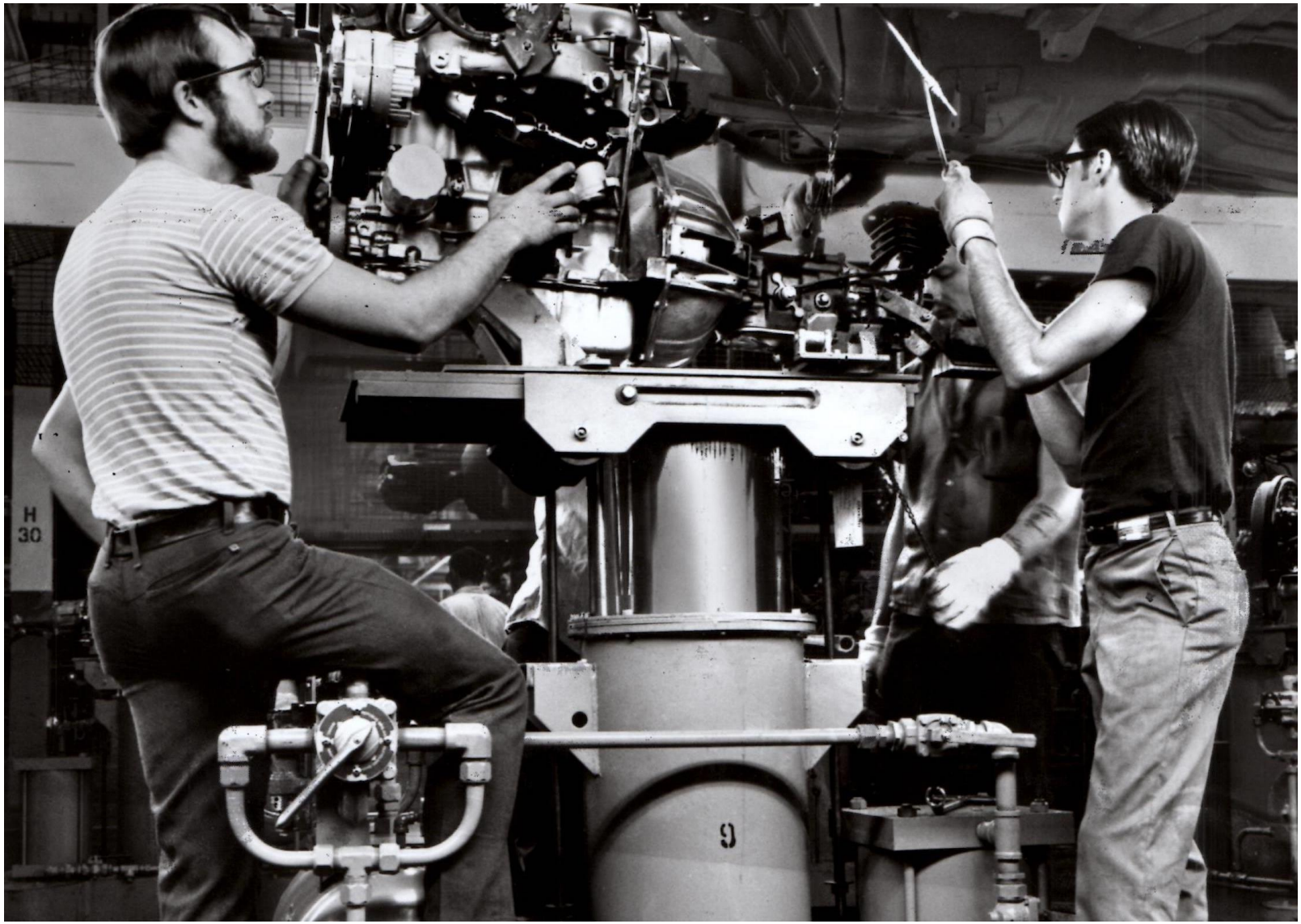
Vega entering the 65,000-gallon “ELPO” dip prime tank after numerous cleaning and phosphating stages; the body is charged negatively at high voltage, and the primer tank is positively charged to ensure full and evenly-distributed film build throughout the body structure. Clamps were added to the conveyor hangers later to avoid bodies “floating” off the hangers and sinking in the tank.

Main downdraft exterior color spray booth; the interior has already been painted trim color and has been masked off (note masking paper on the dash of the dark car in the center of the photo). Note quick-color-change hoses and manifolds on the wall behind the sprayers. Ideally, colors were "batched" for two or three units in a row of the same color, as each color change sent about $2.00 worth of lacquer and solvent down the drain to flush the lines to the spray guns.

Four-minute deluge full-body water-test in the Trim Shop; the water contained a special dye that showed up under ultraviolet light in order to trace the source of any leaks.



View of the main portion of the Towveyor Line; the unit in the foreground shows the rear axle nearly in position (note rear coil spring in position on the base of the Towveyor for the assembler). Fuel tank was installed earlier, exhaust system was installed further down the overhead line.



The “Towveyor” air-over-hydraulic lift that raised the engine (and, separately, the rear axle) into position; they were pulled by an under-floor conveyor chain that was synchronized with the drive for the overhead conveyor carrying the body. There was less than an inch of clearance between the engine and the engine compartment structure during this installation; guide pins were used during the lift to maintain clearance.

Tire and wheel installation, using a multiple nutrunner. Tires were mounted and balanced in an automated system across the aisle at 550 assemblies per hour and delivered by overhead roller conveyors to the assembler in the roller chute at lower right; the fifth (spare) tire was diverted to another conveyor chute much further down the line for installation with the car at floor level. Note the machine-readable traveling inspection ticket under the windshield wiper, and the undercoating in the wheel well (sprayed in a booth in the background).

Grille installation – note plastic spacers to center it; the plastic nuts that accepted the grille screws were white so the assembler could see them clearly through the screw holes in the grille. Note the half-size broadcast sheet taped to the hood; teletype printers of the time couldn't print full 8.5"x 11" sheets at 102 units per hour, so two separate half-length sheets were created. The one on the hood is the "Body" broadcast, and the one below the grille is the "Chassis" broadcast; each carried unique and separate information for those assembly areas.

Nearly-completed Vega preparing to transfer from the overhead conveyor to the moving “Flat-Top” floor conveyor plates on the Final Assembly Line; the rollers under the car center it for proper positioning on the conveyor.

Nearing the end of the Final Line – in a major departure from traditional practice, Vega seats were assembled across the aisle and were installed last to provide better assembly access to the interior of the car all the way through the assembly process. Front seat installation was simplified by having studs on the tracks that went through holes in the floor, and the nuts were secured from the center pit area between the conveyor tracks.

The first Vega built after the three-month national GM strike comes off the line in November, 1970; the two executives at right are the Chevrolet and Fisher Body Plant Managers.

One lane (of four lanes) of the final functional test section as the Vega came off the line. The first test was a road simulator with four independent hydraulic cylinders that shook the car with the engine off to spot any squeaks or rattles, the second was a brake tester that measured braking force at each wheel as the driver drove in and stomped on the brakes, and the third was a dynamic roll-test where the car was driven on rollers at road speed and then had toe-in set with the front wheels turning. Massive ductwork draws exhaust fumes out of the area.

Finished Vegas roll out of the Shipping Building, where they received another complete final inspection before being released to the shipper.

The Shipping Yard, with cars lined up by geographic zones, awaiting either truck loading for local delivery or rail loading for remote destinations.

The Vert-A-Pac rail loading area, where Vegas were shipped, 30 to each special rail car, nose-down and fully protected from the elements and vandalism. Four cast iron sockets were inserted in reinforced holes in the underbody, then the cars were driven onto the lowered rail car door; when the rail car door was raised, the cars rolled a few inches forward and the sockets engaged four steel hooks on the rail car door.

All Vega fluid containers (fuel tank, carburetor, battery, washer fluid, engine crankcase, etc.) were designed so the vent locations were above their fluid levels whether the car was level or standing vertically on its nose. Note the traditional tri-level Stac-Pac rail cars on the right which could only hold up to 15 cars vs 30 cars with Vert-A-Pac.

Vert-A-Pac was only used for Westbound shipments, as most railroad underpasses on the East Coast were too low to clear the very tall Vert-A-Pac rail cars; Eastbound rail shipments used conventional tri-level rail cars. Vert-A-Pac was a joint venture between GM and the Southern Pacific Railroad; the railroad supplied the basic “chassis” of the rail car, and GM paid for all the structure and mechanisms from there up.