# Contents

# Modeling the automobile industry

Railroads have long played a major role in the automobile industry, from the era of primitive converted wagons to today's high-performance cars. The industry offers many great modeling opportunities, from assembly plants, parts-production facilities, and transloading centers to distinctive rolling stock such as auto racks and high-cube parts boxcars.

The following chapters will provide an overview of the auto industry in North America, tracing the growth of major manufacturers, seeing how assembly plants operate, and following the progression to a true international market as imports and exports grew.

We'll then look at the railcars used to carry finished automobiles, starting with boxcars, rack-equipped boxcars, and finally to multi-level open and enclosed auto racks. Parts cars are highlighted as well, including the transition from older 50-foot boxcars to the development of specialized 60- and 86-foot high-cube boxcars in the 1960s and the customized flatcars that carry auto frames.

Auto manufacturing is a key market segment for railroads, so train schedules are often geared to production deadlines and needs. We'll look at how railroads handle auto and parts traffic, showing how dedicated trains meet the just-in-time requirements of assembly plant production.

## Modeling

You have many options for modeling the auto industry and its traffic, regardless of your modeling era or the region or specific railroads you model. You can model an auto assembly plant, provided you have the space and inclination to capture one of these huge complexes. An auto plant can be a layout unto itself—some had their own in-plant railroads—with multiple switching locomotives and dozens of places to spot cars.

On a smaller scale, you can model one of the hundreds of factories that supply parts and components to auto plants. These can be small operations shipping a few railcars a day or a large one with hundreds of daily movements. Another option is modeling a transloading facility, where inbound auto racks arriving from assembly plants are unloaded and reloaded onto truck auto carriers for final shipment to dealers.

You don't need an on-line plant or factory to model automobile and auto-parts traffic, such as the auto boxcars or auto racks that deliver completed automobiles. Auto parts cars are distinctive, especially if you include the 86- and 60-foot cars that began appearing in the 1960s, or the distinctive open loads of auto frames in gondolas or on flatcars. These can appear on your layout in priority trains on tight schedules, making operating sessions more interesting.

Turn the page and we'll start with a look at the history of the auto industry.


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Auto-rack cars allowed easy loading and unloading of multiple cars with end ramps. Here AMC cars are being loaded near Kenosha, Wis., on the Chicago & North Western in 1966. *Chicago & North Western, Keith Kohlmann collection*

Crosley had captured a niche with small cars that were affordable and fuel-efficient. However, the popularity of larger, more-powerful cars with bigger engines (and cheap gas) doomed Crosley, and the company went out of business in 1952.

Imported autos began appearing in the 1950s. Import sales were slow at first: only about 1 percent of total sales in the mid-1950s and 7 percent in 1960. Popular imports included Fiat, Opel, and Volkswagen.

Import sales began surging in the late 1960s. In 1969 VW sold 549,000 vehicles in the U.S. (mainly its Beetle), with Toyota adding another 127,000. Imports' popularity continued to grow with the gas crises of the early and mid-1970s, starting with small compacts and evolving to full-size sedans and trucks.

By 1978, imports accounted for 18 percent of total U.S. vehicle sales, and by 1982 it was 28 percent. This continued growth spurred U.S. makers to bring out more compact and subcompact cars.

## Modern era

Since the 1990s, the line between domestic and import has become fuzzy, with parts made in multiple countries being assembled at plants in multiple


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Newly designed 60-foot parts boxcars, like this one from Thrall, began arriving in 1963. Operated in pool service, the "27" above the reporting marks shows the plant assignment of this Rock Island car. *J. David Ingles collection*


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New 86-foot cars, designed to carry stampings and other lightweight parts, became common sights by the mid-1960s. This Pennsy car was built by Pullman in 1966. *J. David Ingles collection*

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The Santa Fe opened this automobile transload center near Houston in 1976. It has parking for 2,800 vehicles and 36 railcars. Vehicles arriving by rail are reloaded to tractor-trailers for final delivery to dealers in the region. *Jeff Wilson collection*

countries and finished vehicles from those plants shipped to multiple countries, **4**. Japan became world leader in auto production in 1980, with the U.S. regaining the no. 1 spot in 1994 and China becoming the leader in 2000.

To model railroaders, the key is the traffic and equipment itself. The widespread plants and variety of companies have resulted in a fascinating mix of traffic, with loads of finished autos traveling in all directions.

Beginning in 1978, many foreign car companies began building cars in the U.S. Volkswagen was the first, completing an unfinished Chrysler plant in New Holland, Pa., but it was Honda at Marysville, Ohio, in 1982, that started a wave of new plants, followed by Toyota and Nissan. By the 1990s they were joined by BMW, Daimler-Benz, Hyundai, and Kia.

Today the U.S. has more than 200 assembly plants and parts manufacturing facilities, including 32 assembly plants owned by international auto companies. As of 2017, there were about 70 vehicle assembly plants in North America.

The signing of the North American Free Trade Agreement (NAFTA) in 1994 led to construction of many auto plants in Mexico. Production there rose from 1.2 million vehicles in 1994 to 3.2 million in 2014, with most (80 percent) exported. A majority of these cars go to the U.S., but Mexico also exports vehicles to Europe, South America, and China. Mexican plants also ship large quantities of parts to the U.S.

General Motors remains the largest U.S. manufacturer, still building Buick, Cadillac, Chevrolet, and GMC brands. Older divisions that are no longer produced include Oldsmobile (discontinued in 2005), Pontiac (2010), and Saturn (2011).

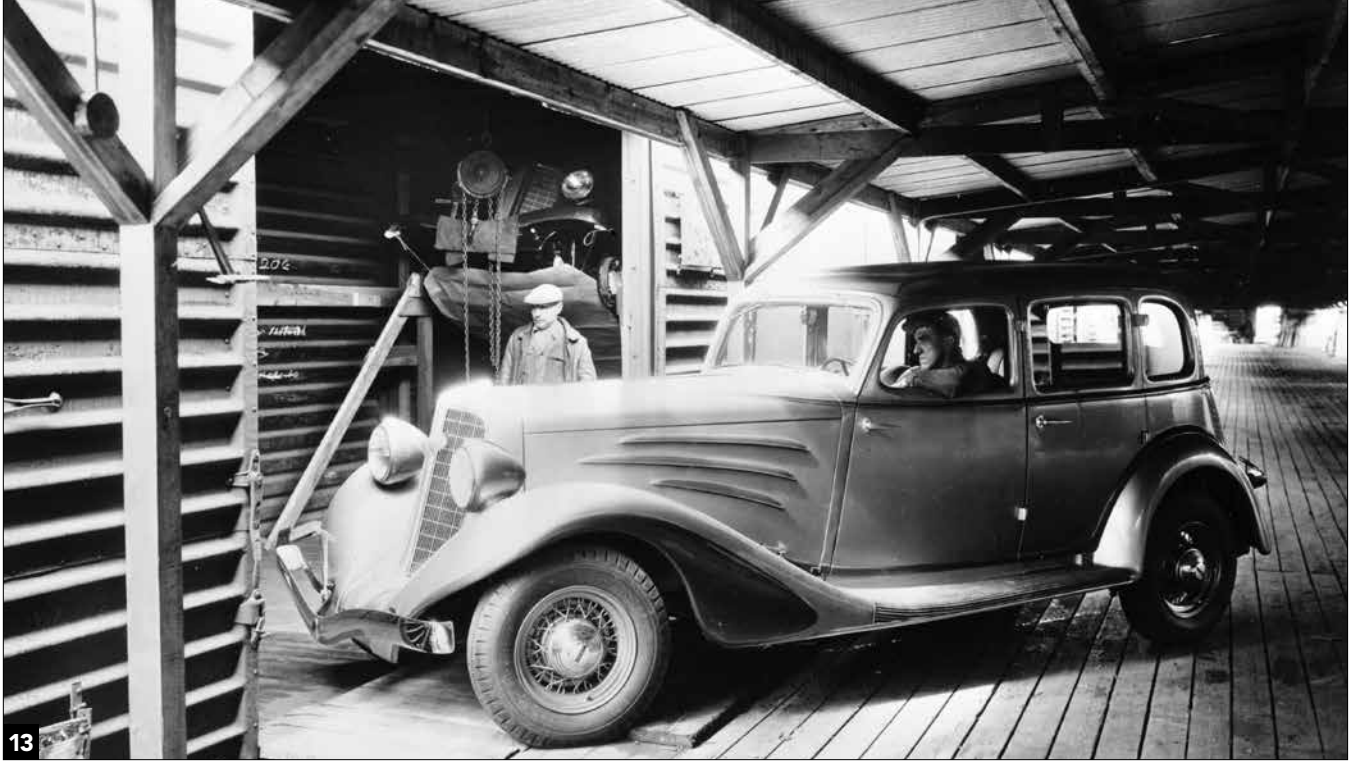
Ford is second in domestic production, **5**, building vehicles in the Ford and Lincoln lines (Mercury was dropped in 2011).

Fiat Chrysler continues to market vehicles in the Chrysler, Dodge, and Jeep lines, although Plymouth was discontinued in 2001.

The recession of 2008-2009 hit the auto industry hard, with North American vehicle production dropping from 15.4 million vehicles in 2007 to just 8.8 million in 2009. The industry rebounded with the economy and has remained strong through the mid-2010s, producing 17.5 million vehicles in 2017—about 70 percent of which traveled to their destination by rail.

## Autos by rail

Most facets of the automobile industry lend themselves to rail traffic, including parts and raw materials as well as finished vehicles. Although the traffic



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Workers load autos into double-door boxcars at the Cord (former Lexington) factory in Connersville, Ind., in 1934. Note the auto already hoisted in the Evans rack in the background. *Historic American Engineering Record*

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Wheeled jacks ("skates") were sometimes used to swing the back end of an auto into position for loading. These are Chevrolets in the late 1930s. *Jeff Wilson collection*

men to remove bodies and wheels from chassis. Bodies were then loaded in one end of a boxcar, standing on end and covered to protect them.

Chassis were then hand-carried into the other half of the boxcar and stacked at angles, with blocks securing them to the car side. Fenders, wheels, and other removable parts were then stowed in the middle of the car.

It took about 20 minutes to load a car with three or four partially disassembled autos. At Ford's Highland Park plant, about 200 boxcars a day were loaded and shipped this way in the late 1910s.

By the late 1920s and early 1930s, as auto design evolved to stylized enclosed bodies with integral doors, the body could no longer be easily removed for shipping. Vehicles were shipped fully assembled and driveable.

This meant automobile boxcars could now hold just two finished vehicles, compared to three or four disassembled autos. At the same time, tractor-trailer trucks—as well as the growth in assembly plants throughout the country—were lowering railroads' share of finished auto traffic. Railroads hauled 55 percent of autos in 1930, compared to 70 percent in the early 1920s.

The innovation that slowed the movement to trucks was the Evans Auto Loader, developed in 1932.

The Evans Loader was a skeleton-style loading-rack system installed in 40- and 50-foot double-door auto boxcars. It allowed each car to carry four automobiles (more on the cars themselves in Chapter 3). The auto racks suspended an auto upward at an angle at each end of the boxcar, allowing two additional autos to be anchored (with tie-down hooks and chains) to the floor.

Loading platforms at assembly plants were generally covered, with a track on one or both sides of the car-floor-level deck, **12**. A string of auto boxcars was parked at the platform, the doors opened, and bridge plates set in place between the platform and car door opening.

The first vehicle was pushed and steered into the boxcar and onto the auto rack, which was lowered to the floor. When the car was anchored to the rack, a winch pulled the end of the rack upward, raising the nose of the car toward the roof. A paper or cloth sheet was attached to the underside of the car to prevent any fluids from dripping onto the cars to be loaded later.

When the first two autos were secured to their racks and elevated, the bottom two vehicles were moved into position one at a time, **13**. To make it easier to swing the back end of an auto


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This Whitehead & Kales elevating rack has a different style and pattern of posts and cross bracing compared to the Paragon design. The decks on this Norfolk & Western ETTX car are in the low position. *J. David Ingles collection*


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A worker with a power wrench positions the deck of a Pennsylvania Railroad LoHiTri rack. *Pennsylvania RR*

The result was a variety of tri-level racks in broad categories known as "western" and "eastern" cars, **15**. A western rack was the most basic (and least expensive) car: a fixed-deck rack atop a standard-height flatcar. These could travel on most routes west and southwest of Michigan (and the concentration of auto plants in the Midwest). There were also fixed-level racks atop low-level cars, which were sometimes used on restricted routes. Fixed-deck racks on 85- to 89-foot cars carried RTTX reporting marks (TTRX for later 89'-4" cars).

The typical eastern tri-level was a low-level car with a rack that had the middle (B) deck hinged for clearance (during loading and unloading) at each end. The most popular of these were the W&K Lo-Tri-Pak and the Paragon ParaPak. The hinged-deck cars up to 89 feet had KTTX reporting marks, with later 89'-4" cars carrying TTKX marks.

The most-extreme approach to dealing with clearance issues were "elevating" racks, where the entire B and C decks could be raised for loading and lowered for transit. Trailer Train's cars had ETTX reporting marks (the "E" was for "elevating").

The most common of these was the Paragon LoHiTri, **16**, **17**, and W&K's similar cars, **18**. The decks were elevated for loading, then lowered before moving to provide improved clearance (the B deck lowered about 10" and the C deck about 20"), **19**. Note how the B and C decks of the loaded LoHiTri in **17** are noticeably lower than the framework, easily spotted in comparing it to the unloaded car in **16**.

Elevating racks began appearing in 1961, with almost 600 in service by the end of 1964. They were used almost exclusively on eastern routes. However, they proved to be high-maintenance cars and they suffered from stability issues as well. Some had their decks welded in place in the mid- and late 1960s, and most were retired by 1970.

## Spotting features and evolution

Construction details varied among manufacturers, and many features and details evolved through the years. The primary spotting feature is the vertical posts (number, spacing, style, and how they connect to the flatcar). Posts can be structural steel (I- or H-shaped), "hat-shaped" stampings, tubular (square), or a pair of tubular posts connected by a series of short horizontal links ("ladder-style").

Posts may or may not have gussets at the base and under each deck. Some tubular and stamped posts have


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CHAPTER SEVEN

# Distribution and reload centers

The coming of open auto racks in the early 1960s led to the creation of transloading centers, where autos were shipped for reloading to trucks for final delivery. Railroads often added ramps to the ends of existing yard tracks to handle the traffic, as the Pennsy did with this rail-mounted Buck ramp in the early 1960s. *Pennsylvania Railroad*

Automobile distribution centers are vital connection points in getting new automobiles from assembly plants to dealers and final customers, **1**. Theses installations are easily modeled and can be the focal point of a layout or scene.



2

Chessie System's Lordstown, Ohio, transload center represents a typical facility in the 1980s. Three through tracks at right held rack cars, with a large paved, fenced-in parking area and spots for multiple haulaway trailers (yellow ramps toward top left). *Chessie System*

Automobiles are loaded, unloaded, and reloaded to railcars at many locations. First is the assembly plant itself. The cars loaded there can be destined for regional distribution centers, where they are unloaded and transferred to tractor-trailer auto carriers for delivery to dealers, **2**.

Some distribution centers serve as "mixing" or "reload" facilities, where autos from multiple assembly plants are unloaded, regrouped by final destination, and reloaded into auto racks.

Prior to auto rack cars, boxcars of autos from assembly plants were often destined for team tracks or railroad freight houses in the cities of the dealers to which they were being shipped.

Some manufacturers prefer to ship autos to their own assembly plants in regions where they're being delivered. For example, a Ford built in Detroit and bound for a dealer in Alabama would be shipped by rail from Detroit to Ford's Atlanta assembly plant, where it would be reloaded into a truck and hauled by highway the final 200 miles to the dealer.

This allows full control over unloading, and allows manufacturers' own employees to prep and set up vehicles before delivery. This also means that yes, it's prototypical to deliver finished autos *to* an assembly plant.

International shipping ports are another load/unload point for rail auto traffic. Most modern ports have extensive staging areas for inbound and outbound autos, with rail access and berths dedicated to auto-carrying ships.


3

Seaboard Air Line had a covered platform/dock dedicated to unloading automobiles in Jacksonville, Fla., through the steam era. *James G. LaVake*