
märklin
HO
1987/88 E

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Federal Republic of Germany

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Titel:
Experimental layout in plexiglass, illuminated using ultra-violet light. Developed for the presentation of the Märklin Digital system. Photographed at the Märklin booth on the occasion of the 38th International Toy Fair in 1987 in Nürnberg.

Modul Size H0
Gauge 16.5 mm (5/8")
Scale 1:87

Prussian T 18 with double compartment cars of the Berlin Metropolitan Railroad, photographed on the layout scene "Berlin Viaducts" of the Brawa Company.

Contents

Reports and Commentary

The Märklin HO System

Explanation of Symbols

Special model characteristics and passages of text are designated with the following symbols:

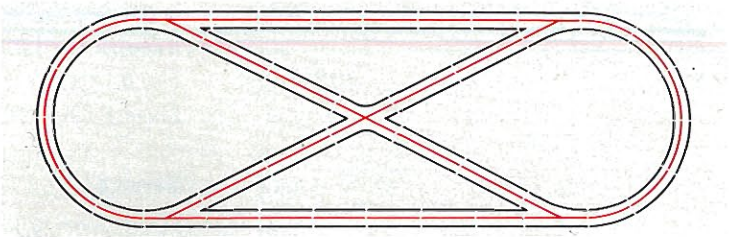
- N — New Item 1987
- This model is also available as a Digital locomotive.
- K M — Accessories for K track or M track
- ■ — Information about the prototype

The most important spare parts are represented with symbols and part numbers:

- Traction tire
- Pick-up shoe
- Light bulb

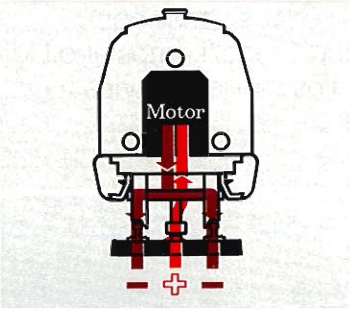
Simple Electrical System

The third rail-AC system makes it possible to build any kind of track plan without additional electrical circuits – even reverse loops and wyes.



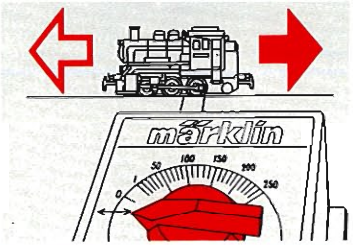
Reliable Operation

Continuous center stud contacts in the track and center pickup shoes on the locomotives guarantee absolutely reliable current conduction.



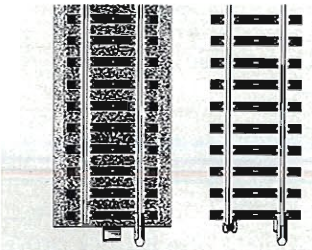
Reverse Unit

The direction of travel is switched in the locomotive and not in the track. The "built-in locomotive engineer" is thereby independent of the direction of travel of other locomotives, even when crossing from one track circuit to another.



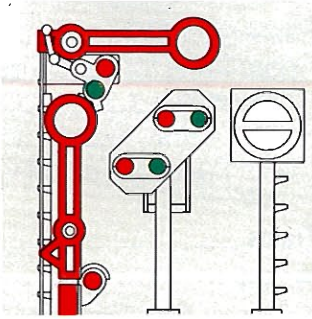
Track Program

There are two track programs to choose from: the robust M track with a metal base and the prototypical K track with plastic ties.



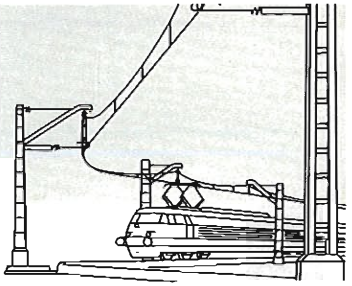
Signals

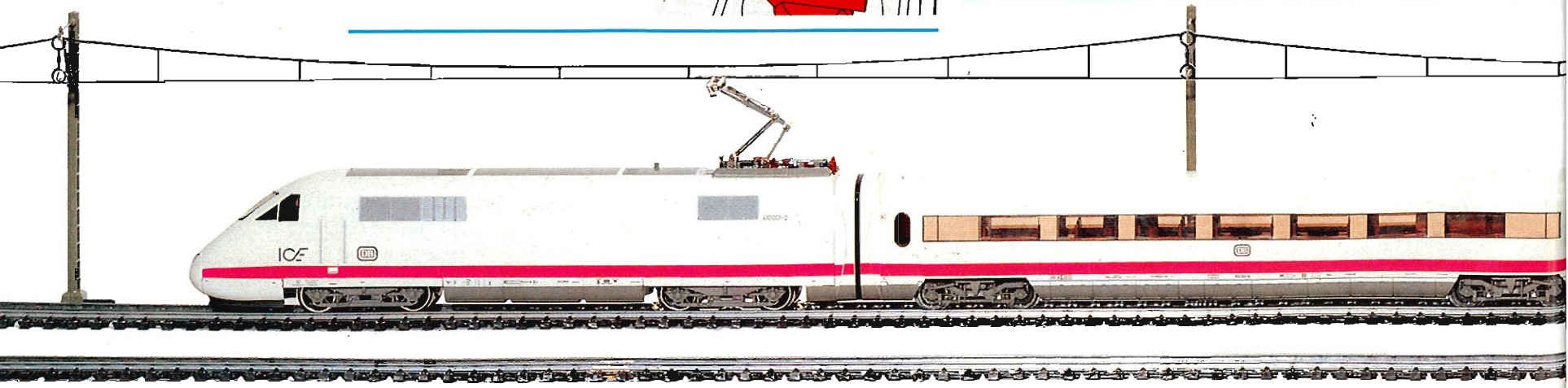
Märklin signals enable prototypical operation with genuine train control. With this you can protect traffic in the station or yard and in automatic signal block operation.



Catenary

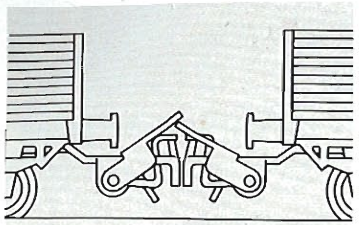
Märklin electric locomotives can be powered prototypically from the catenary. With this two trains can be controlled independently on the same track. The Märklin catenary is easy to set up and there are no tricks to hooking it up.





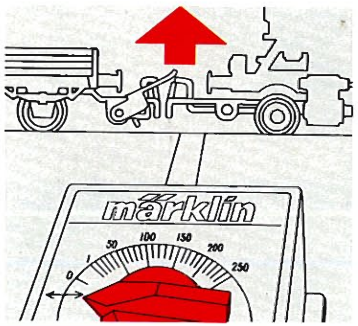
RELEX Coupler

Cars with RELEX couplers can be preuncoupled over the uncoupler track and pushed further down the track.



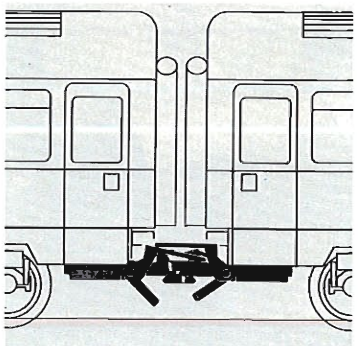
TELEX Coupler

Locomotives with TELEX couplers can be uncoupled from their cars by remote control at any spot on the layout.



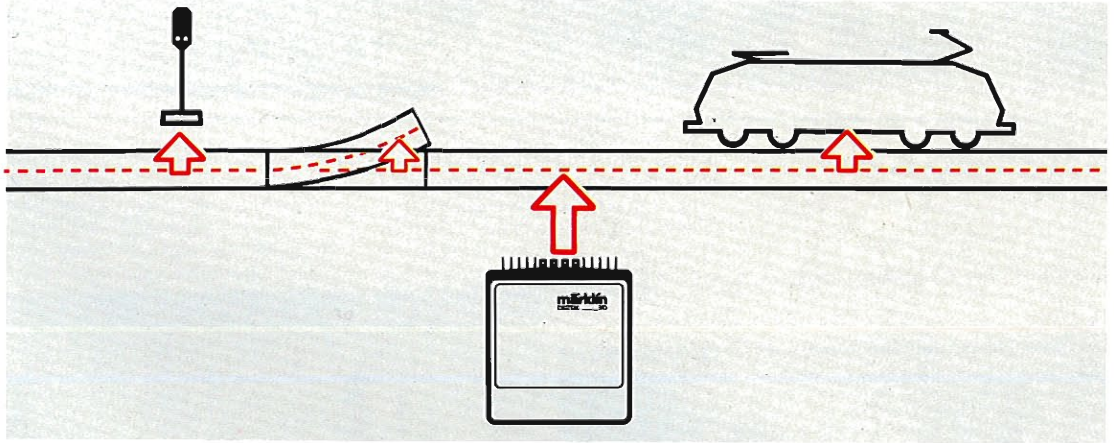
Close Coupler

Cars with close couplers can be coupled together with a prototypical spacing and can be preuncoupled over an uncoupler track. The Märklin close coupler can be used with other Märklin couplers without the need for retrofitting.



Digital System

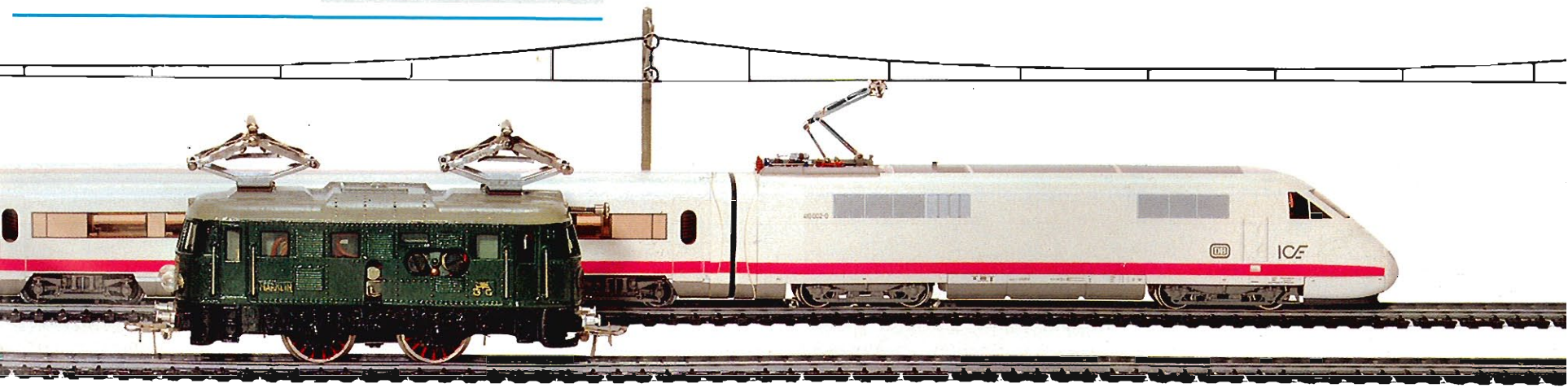
Märklin Digital is an electronic control system. Many locomotive, switches and signals can be controlled from a central control panel. With the Digital system it is possible to control entire routes, hook up track diagram control boards or control the entire layout by computer.



. . . and everything fits together

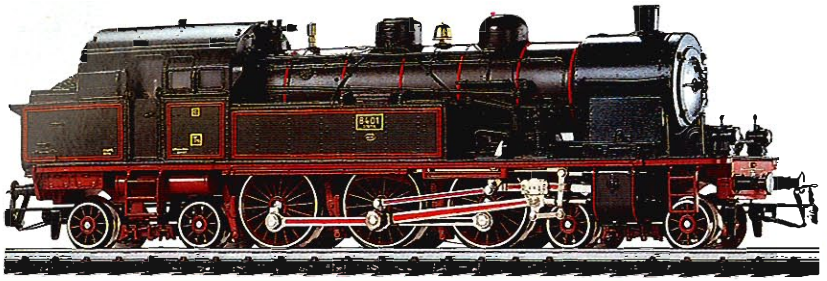
Märklin products both past and present can be combined with each other and used together in any way desired. Each development insures that existing layouts can be used to their fullest and that all products keep their value. With this compatibility between tradition and innovation Märklin H0 will always be the system that is reliable in the future.

Of course, all Märklin H0 layouts can be equipped entirely or partially for operation with the Märklin Digital electronic control system.



Steam Locomotives

The Württemberg C, photographed on the layout scene "Locomotive Sheds" of the Metakit Company.



3609 · Digital

3109 · Tank Locomotive · Royal Prussian Railroad Administration (KPEV) class T 18 · 3 axles powered · 2 traction tires · Illuminated dual headlight at each end · Metal boiler and frame · Coupling hooks with pre-uncoupler · Length over buffers 16.9 cm (6-5/8")

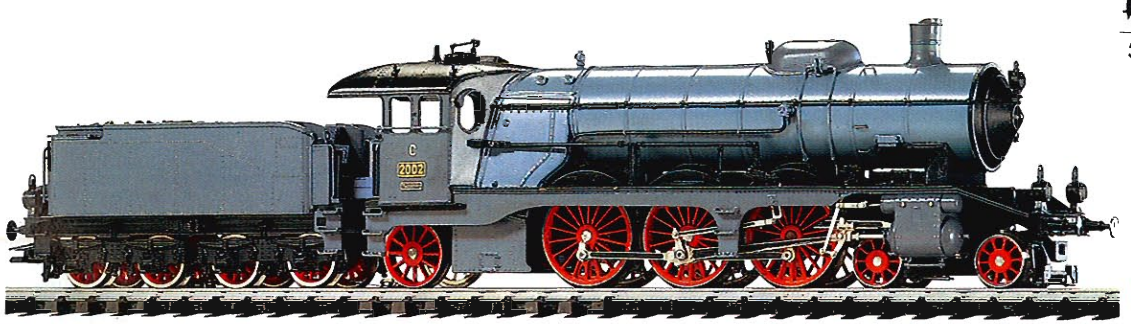
⓪=7153 =7164 =60015

■ Although they are scenically quite different, the rail lines Altefähr to Sassnitz auf Rügen or Mainz/Wiesbaden to Frankfurt do have something in common. For a long time they were in Prussian territory and it was necessary to operate heavy express trains at relatively high speeds over them for relatively short distances.

Since this was push/pull commuter service, the locomotives used in it had to be able to travel at rather high speeds equally well in both directions. Based on these requirements, the Royal Prussian Railroad Administration (KPEV) developed a tank locomotive with a symmetrical wheel arrangement 2'C2' (4–6–4). This class, designated the T 18 by the KPEV, replaced the T 12 at Rügen and the T 10 at Mainz. In 1912 the Vulcan Works in Stettin built the first T 18 of a series of 462 units produced for Prussia until 1923. It was the "Stettin 8401". 74 units were ordered by other German railroads and a number of units were sold abroad.

The T 18 represents the final development of Prussian passenger train tank locomotives; it is considered one of the most successful German steam locomotive designs. During the Reichsbahn (German State Railroad) period it was used extensively as the class 78. After World War II it could be found in service on both German railroads; the German Federal Railroad acquired approximately 400 units. The locomotives are 14.8 m long (48.56 feet), produce 1,140 horsepower and have a maximum speed of 100 km/h (62.5 m.p.h.).

On the occasion of the T 18's 75th anniversary, Märklin is presenting it in its provincial railroad version. This consists of the characteristic barrel-shaped cab roof, double headlight and a paint scheme in dark reddish brown and green with contrasting striping.



3611 · Digital

To be delivered spring 1988

3311 · Express Locomotive with Tender · Class C of the Royal Württemberg State Railways (K.W.St.E.) · 3 axles powered by side rods · 2 traction tires · High reduction, non-locking, miter gear drive · Märklin high-performance Faulhaber-type motor · Triple headlight at the front of the locomotive and double headlight on the rear of the tender · Headlights change over with the direction of travel · Maintenance-free LED's for headlight illumination · Metal frame, body and tender · Permanent close coupling between locomotive and tender · **Automatic close coupler** on rear of tender · Electronic reverse unit · Length over buffers 23.7 cm (9-5/16") · Equipped for installation of smoke generator (Seuthe no. 20)

⓪=7152 =28251

To be delivered spring 1988

■ After the turn of the century express train tonnage almost doubled within a few years. The Royal Württemberg State Railways (K.W.St.E.) were especially affected by this development because the Geislinger Grade on their main line from Stuttgart to Ulm placed additional demands on a locomotive's ability to pull. Powering trains with three locomotives – main unit, lead helper, and pusher – on the 1:45 grade between Geislingen and Amstetten was not economical in the long run. The K.W.St.E., therefore, decided to purchase a new express locomotive which would meet the special operating requirements between Stuttgart and Ulm. Close cooperation with the Esslingen Machine Company – the "in-house" supplier for the Württemberg State Railroad – resulted in the class C locomotive which has become known far beyond Swabia under the nickname "Beautiful Lady of Württemberg". Due to the hilly terrain, a driving wheel diameter of 1,800 mm (approx. 71 inches) was chosen and a compound, four cylinder frame was selected for its efficient utilization of fuel. The maximum speed was set at 115 km/h (72 m.p.h.).

The first series, consisting of units C 2001 to 2005, was delivered in 1909. The abilities of the class C were proven in measurements taken during tests with locomotive C 2003; a speed of 77 km/h (48.13 m.p.h.) was reached with a train weighing 477 tons (13 express passenger cars and 1 measurement car) on the stretch between Göppingen and Süssen with its easy grade. The maximum speed (with a helper locomotive) reached on the Geislinger Grade was a constant 40 km/h (25 m.p.h.). The prototype of the Märklin model, locomotive C 2007, is part of the second series delivered in 1911, consisting of units C 2006 to 2011. The class C locomotives up to and including C 2024 (placed in service in 1914) were equipped with the type Ic Württemberg "small tender" with a capacity of 6 tons of coal and 20 cubic meters (approx. 5284 gallons) of water. All locomotives delivered after this time were coupled to the type II "large tender" (9 tons of coal and 30 cubic meters (approx. 7,926 gallons of water)).

3000 · Tank Locomotive · Class 89 · 3 axles powered · 2 traction tires · Illuminated triple headlight · Metal frame · Coupling hooks · Length over buffers 11 cm (4-15/16")

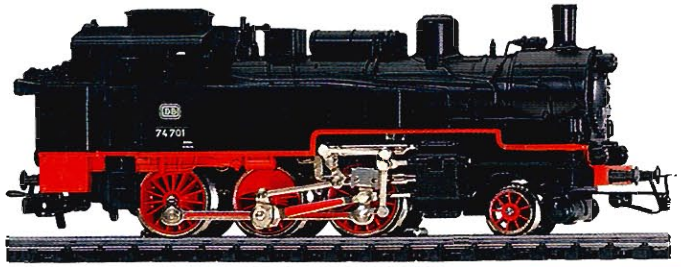
⓪=7154 =7185 =60010

3087 · Tank Locomotive · Based on a German provincial prototype · 1 axle powered · 2 traction tires · Metal frame · Coupling hooks · Length over buffers 10.8 cm (4-1/4")

⓪=7154 =7185

3095 · Tank Locomotive · German Federal Railroad class 74 · 3 axles powered · 2 traction tires · Illuminated triple headlight · Metal frame · Coupling hook with pre-uncoupler on the front, RELEX coupler on the rear · Length over buffers 13.5 cm (5-5/16")

⓪=7153 =7185 =60010



3003 · Locomotive with Tender · German Federal Railroad class 24 · 3 axles powered · 2 traction tires · Illuminated triple headlight · Metal frame · Coupling hook on front, RELEX coupler on tender · Length over buffers 20 cm (7-7/8")

⓪=7153 =7185 =60010

In tow or by piggyback

The steam locomotive always has something to pull behind the tender. Yet, the term "tender locomotive" is reserved for a particular group of motive power units, for those units that haul their coal and water supplies behind them. The others which "piggyback" their coal and water are called simply "tank locomotives".

The reason for the evolution of two such different types is that both design principles have their advantages and disadvantages. The geat-grandfather of our steam locomotives, George Stephenson's "Rocket", was a tender locomotive. It was used to power a train from point A to point B. Switching as well as turning the locomotive were done by hand. After all, the first consideration still was not rational train operation, but rather the quick transportation across land of loads that were too heavy for man or beast.

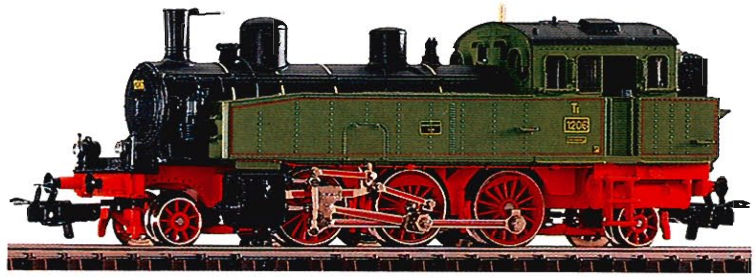
The longer the routes became, the greater the demands on the performance of the machines. Likewise the supplies of water, sand and coal the locomotives had to carry along became all the greater.

Later, cars had to be made up in different combinations and trains had to

be switched about. Locomotives doing this work did not have to go great distances and, moreover, remained within reach of the coaling station and water tower. For a long time the amount of coal and water carried by them did not have to be as great as that for road engines.

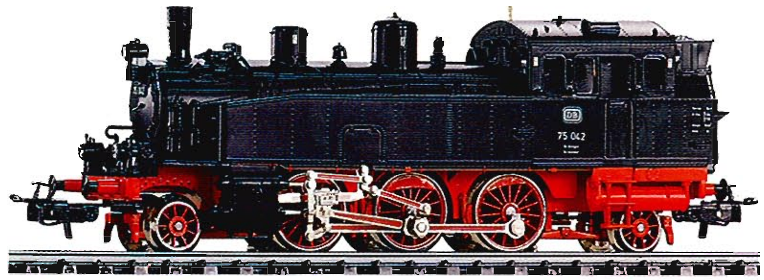
This, then, was the manner in which the tank locomotive developed. In addition to greater visibility and maneuverability in switching moves, this type of locomotive had another advantage which soon proved to be indispensable on short runs. Its frame could be designed symmetrically; the wheel arrangement is the same when viewed from the front or the rear, such as the 2'C2' (4-6-4) of the Prussian T 18. This permitted the same high speed forward or reverse and when the cab was properly designed, the tank locomotive did not have to be turned in order to reverse direction as is the case with most tender locomotives.

These growling giants were kept for high-performance operation on long runs. Enough time remained between trips to refuel and turn them for the return trip. At first this was done on small turntables operated by hand; later, as locomotive weights increased and human labor was valued more highly, this work was increasingly mechanized. In this way the tender locomotive could safely exercise its full power in the forward direction on the track.



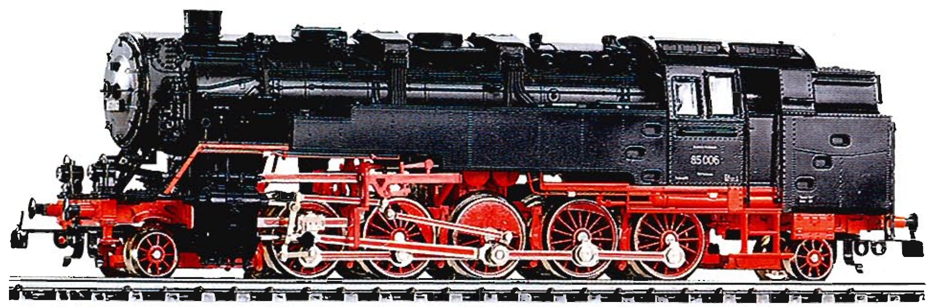
3312 · Tank Locomotive · Royal Wurttemberg State Railways (K.W.St.E.) class T 5, No. 1206 · 3 axles powered · 2 traction tires · Illuminated dual headlight at each end · Moveable smokestack lid · Metal boiler and frame · RELEX couplers · Electronic reverse unit · Length over buffers 14 cm (5-½")

=7153 =7185 =60019



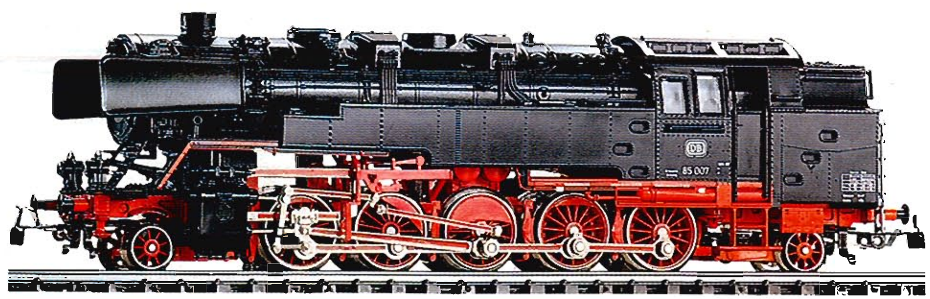
3313 · Tank Locomotive · German Federal Railroad class 75 · 3 axles powered · 2 traction tires · Illuminated triple headlight at each end · Metal boiler and frame · RELEX couplers · Electronic reverse unit · Length over buffers 14 cm (5-½").

=7153 =7185 =60019



3308 · Tank Locomotive · Class 85 of the former German State Railroad · 5 axles powered · 4 traction tires · Illuminated dual headlight at each end · Metal boiler and frame · Driving wheels divided into two coupled groups enabling the locomotive to negotiate sharp curves · Coupling hooks · Electronic reverse unit · Length over buffers 18.6 cm (7-5/16") · Equipped for installation of smoke unit 7226

=7153 =7164 =60010

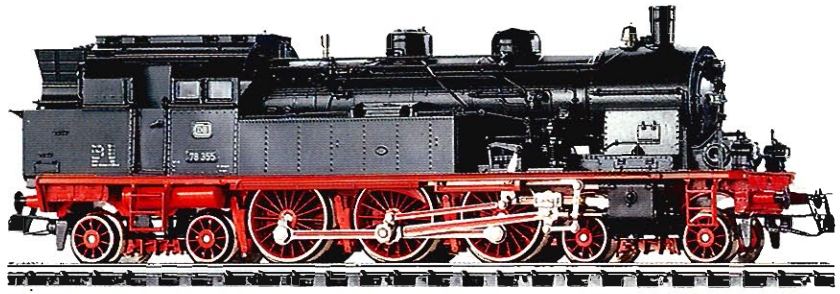


3309 · Tank Locomotive with TELEX Couplers · German Federal Railroad class 85 · 5 axles powered · 4 traction tires · Illuminated triple headlight at each end · Metal boiler and frame · Driving wheels divided into two coupled groups enabling the locomotive to negotiate sharp curves · Electronic reverse unit · Length over buffers 18.6 cm (7-5/16") · Equipped for installation of smoke unit 7226

=7153 =7164 =60019

3106 · Tank Locomotive · German Federal Railroad class 78 · 3 axles powered · 2 traction tires · Illuminated triple headlight at each end · Metal boiler and frame · Coupling hooks with pre-uncoupler · Length over buffers 16.9 cm (6-5/8")

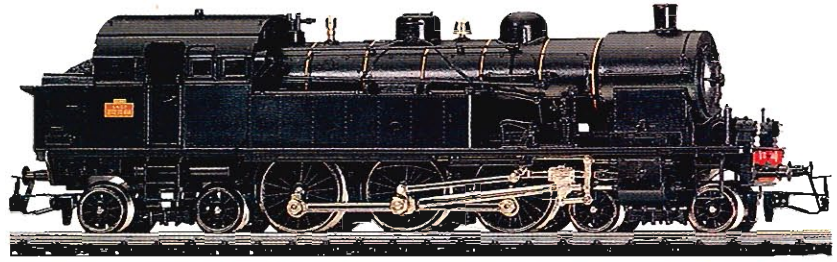
Ⓞ = 7153 = 7164 = 60015



France

3107 · Tank Locomotive · French State Railways (SNCF) class 232 TC · 3 axles powered · 2 traction tires · Illuminated dual headlight at each end · Metal boiler and frame · Coupling hooks with pre-uncoupler · Length over buffers 16.9 cm (6-5/8")

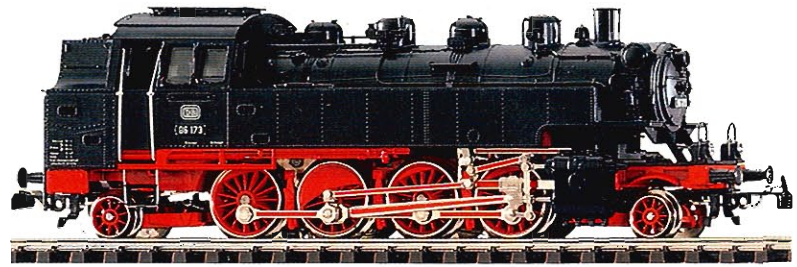
Ⓞ = 7153 = 7164 = 60015



3096 · Tank Locomotive with TELEX Couplers · German Federal Railroad class 86 · 4 axles powered by means of connecting rods · 2 traction tires · Illuminated triple headlight at each end · Metal frame · Length over buffers 15.8 cm (6-5/8")

Ⓞ = 7153 = 7164 = 60015

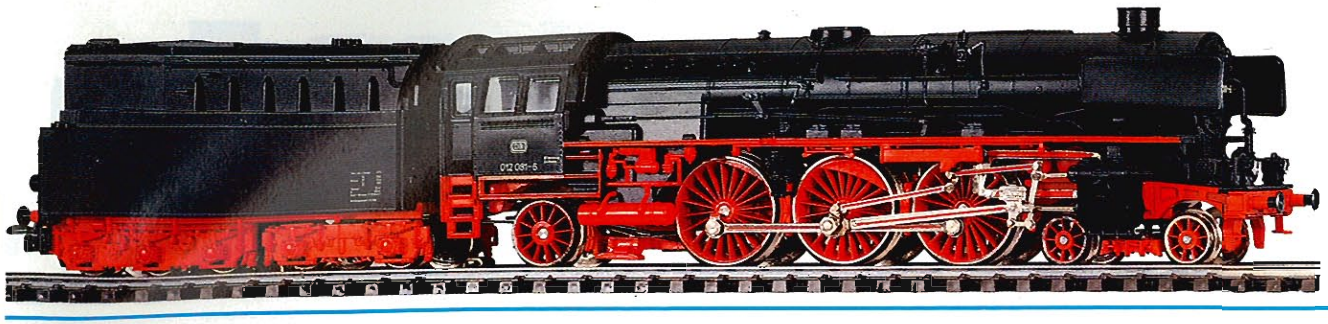
3696 · Digital



■ The class 86 is part of the program of standard locomotives of the German State Railroad, the aim of which was the standardization of motive power at the beginning of the 1920's. The initial plan did not include the class 86; the existing provincial railroad locomotives were thought sufficient for operation on branch lines. These engines were no longer satisfactory, however, when the maximum permissable speed on branch lines was raised from 50 to 60 km/h (31.25 to 37.5 m.p.h.). New locomotives were needed. The locomotives had to be capable of still higher speeds, since through trains were expected to operate on adjoining main lines. The maximum axle loading of 15 tons for branch line locomotives had to be maintained, however, due to the existing roadbed.

Of the three classes incorporated by the German State Railroad in 1925 into the standardization plans, one was the class 86 as a 1'D1' (2-8-2) tank locomotive. Its principal area of operation was to be hilly terrain. The Karlsruhe Machine Company delivered the first seven units in 1928. Almost all of the German locomotive builders were involved in subsequent orders. All total, 776 units of the class 86 were built.

The locomotives not only pulled freight trains on hilly terrain as planned, but also powered passenger trains. They were permitted speeds up to 70 km/h (43.75 m.p.h.); later, when the brakes had been beefed up, even 80 km/h (50 m.p.h.) was allowed. The fate of number 86457 is interesting; on August 8, 1972 it was retired and set up as a memorial two years later at the maintenance facility in Trier. For the 150th anniversary of German railroading it was taken down from its pedestal and put into running order. On February 24, 1985 it underwent a final test run. It is now part of the DB's group of operational museum steam locomotives.

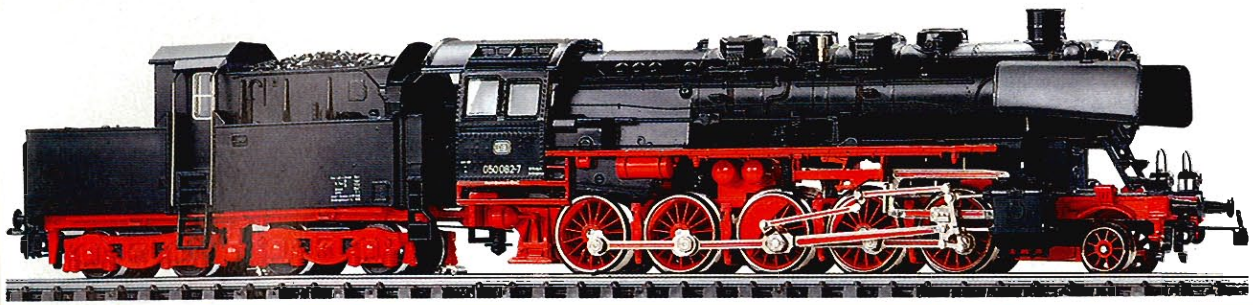


3610 · Digital

=60010

3310 · Express Locomotive with Tender · German Federal Railroad class 012 · 3 axles powered · 2 traction tires · Illuminated triple headlight at front of locomotive and rear of tender · Metal boiler and frame · RELEX coupler on tender · Electronic reverse unit · Length over buffers 27.8 cm (10-15/16") · Equipped for installation of smoke unit 7226

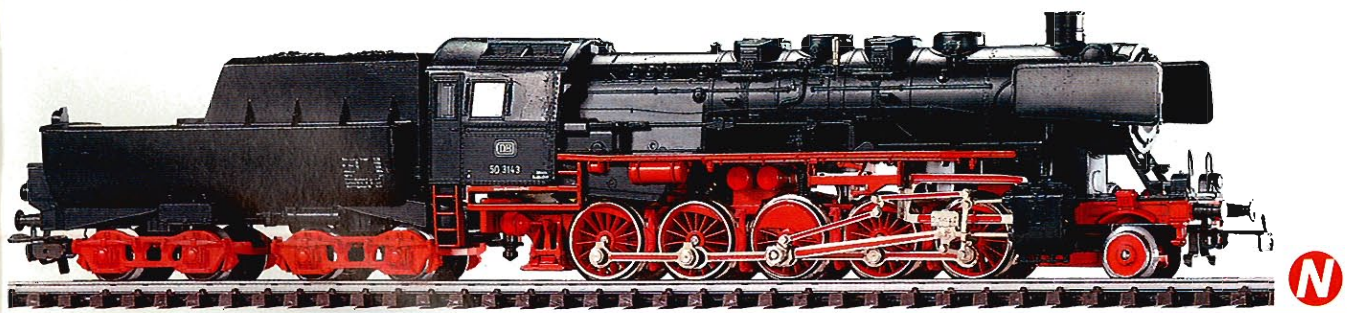
=7152 =7164 =60019



3684 · Digital

3084 · Freight Locomotive with Brakeman-Cab Tender · German Federal Railroad class 050 · 5 axles powered · 4 traction tires · Illuminated triple headlight · Metal boiler and frame · Driving wheels divided into two coupled groups enabling the locomotive to negotiate sharp curves · Coupling hook on front RELEX coupler on tender · Length over buffers 26.1 cm (10-1/4") · Equipped for installation of smoke unit 7226

=7153 =7164 =60015



3615 · Digital

3315 · Freight Locomotive with Bathtub-style Tender · German Federal Railroad class 50 · 5 axles powered · 4 traction tires · Illuminated triple headlight · Metal boiler and frame · Driving wheels divided into two groups, enabling the locomotive to negotiate sharp curves · Coupling hook in front, RELEX coupler on tender · Length over buffers 26.7 cm (10-3/8") · Equipped for installation of smoke unit 7226

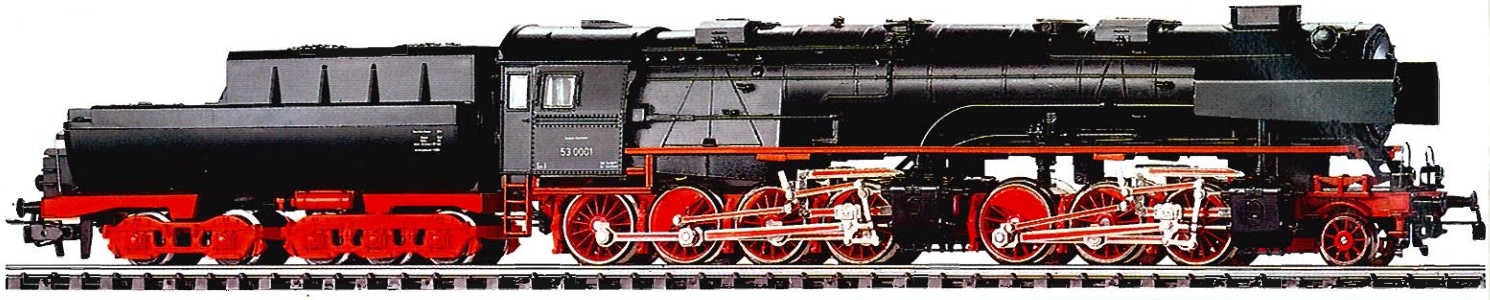
=7153 =28027 =60008

3082 · Freight Locomotive with Tender · German Federal Railroad class 41 · 4 axles powered · 2 traction tires · Illuminated triple headlight · Metal boiler and frame · Coupling hook at front of locomotive and RELEX coupler at rear of tender · Length over buffers 27.5 cm (10-13/16") · Equipped for installation of smoke unit 7226

=7153 =7164 =60015

3102 · Freight Locomotive with Tender · Based on a design by Borsig for the former German State Railroad · Mallet type · 4 axles powered · 4 traction tires · Illuminated dual headlight at front of locomotive and rear of tender · Metal boiler and frame · Driving wheels divided into two groups enabling the locomotive to negotiate sharp curves · Coupling hook at front, RELEX coupler on tender · Length over buffers 31.4 cm (12-3/8") · Equipped for installation of 2 smoke units 7226

⓪=7153 =7185 =60015



The Locomotive That Was Never Built.

■ In 1943 the former German State Railroad offered several locomotive builders the commission of developing an extra powerful freight locomotive. The chief requirements: Be able to pull 1,700 tons up an 0.8% grade on a 360 meter (1,181') curve while maintaining a speed of 20 km/h (12.5 m.p.h.), have a top speed of 80 km/h (50 m.p.h.) foward and reverse and an axle loading of 20 tons, be able to negotiate switches 1:7 with 140 meter (459') curves and fit on a 23 meter (75'6") turntable.

Further, the locomotive had to be manufactured as rationally as possible, given the technology available at the time. Among the designs tendered were two Borsig proposals. Borsig design I proposed a (1'C) Dh4G 78.20 (2-6-8-0). The boiler was to have a diameter of about 2 to 2.2 meters (6'6" to 7'3"). The flues were 6 meters (39'). It was to have two sets of drivers, each with 2 cylinders, and the boiler was to rest on a pivoting bolster.

7226 · Smoke Set · Includes smoke unit (for locomotives 3082, 3084, 3085, 3102, 3308, 3309, 3310, 3315, 3610, 3615 and 3684), extra smoke tube, cleaning wire, tweezers and a capsule of smoke fluid

0241 · Smoke Fluid · Plastic capsule refills for smoke set 7226

Genuine Steam Locomotive Atmosphere

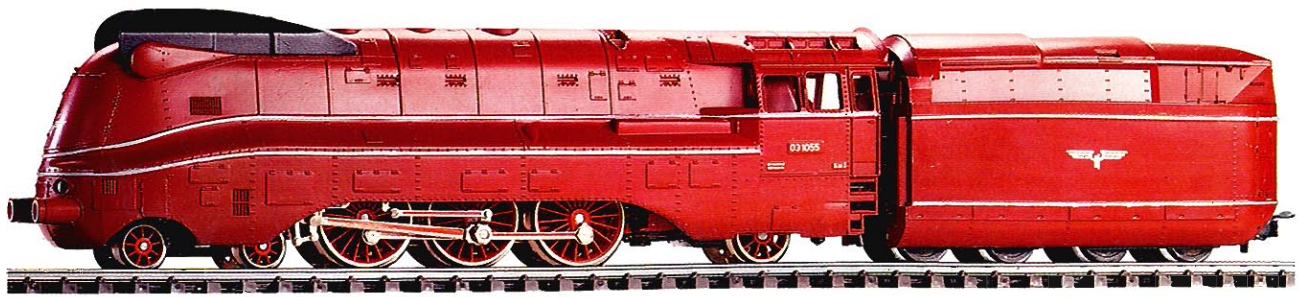
Steam locomotives can smoke on model railroads just like their big brothers. So, in addition to the prototypical appearance and impressive motion of the machines, there is also the realistic effect of the genuine steam locomotive atmosphere. The only things needed for this are the 7226 smoke kit and several drops of 0241 smoke fluid.

The smoke generator is quite simple to install, since many Märklin locomotives are already equipped for its use. You insert it into the smoke stack without taking the body off and it is ready to go. When the current is turned on, the smoke fluid poured in is electrically heated and in a few moments clouds of smoke come puffing up. The locomotive is thus accompanied by a stream of amazingly realistic smoke.

To insure reliable operation of the smoke generator, only the special smoke fluid designed for it should be used.

3089 · Streamlined Express Locomotive with Tender · Class 03[10] · 3 axles powered by means of connecting rods · 2 traction tires · 2 illuminated headlights · Metal body and frame · RELEX coupler on tender · Length over buffers 27.4 cm (10-3/4")

⓪=7152 =7185 =60015



3099 · Locomotive with Tender · Class 38 of the former German State Railroad · 3 axles powered · 2 traction tires · Illuminated triple headlight · Metal body and frame · Engineer and fireman figures · Coupling hook on front, RELEX coupler on tender · Length over buffers 21.8 cm (8-9/16″)

=7152 =7185 =60015

3092 · Express Locomotive with Tender · Royal Bavarian State Railroad (K.BAY.STS.B.) class S 3/6, series i · 3 axles powered by means of connecting rods · 2 traction tires · Illuminated triple headlight · Metal body and frame · RELEX coupler on tender · Length over buffers 24.9 cm (9-13/16″) · Equipped for installation of smoke unit (Seuthe No. 20)

=7152 =7185 =60015

3093 · Express Locomotive with Tender · German Federal Railroad class 18^4 (ex-S 3/6) · 3 axles powered by means of connecting rods · 2 traction tires · Illuminated triple headlight · Metal body and frame · RELEX coupler on tender · Length over buffers 24.9 cm (9-13/16″) · Equipped for installation of smoke unit (Seuthe No. 20)

=7152 =7185 =60015

3085 · Express Locomotive with Tender · German Federal Railroad class 003 · 3 axles powered · 2 traction tires · Illuminated triple headlight · Metal boiler and frame · RELEX coupler on tender · Length over buffers 27.7 cm (10-7/8″) · Equipped for installation of smoke unit 7226

=7152 =7164 =60010

Diesel Locomotives

The class 212 with Texaco tank cars, photographed on the layout scene "Refinery" of the Vollmer Company.

3665 · Digital

3065 · Diesel Switcher with TELEX Couplers · German Federal Railroad class 260 · 3 powered axles · 2 traction tires · Illuminated triple headlight · Metal frame · Length over buffers 12 cm (4-3/4")

⓪=7153 =7185 =60010

3672 · Digital

3072 · Multi-Purpose Diesel · German Federal Railroad class 212 · One truck powered · 4 traction tires · Illuminated triple headlight · Prototypically narrow ends · Metal frame · RELEX couplers · Length over buffers 14.1 cm (5-9/16")

⓪=7154 =7164 =60010

3075 · Multi-Purpose Diesel · German Federal Railroad class 216 · One truck powered · 4 traction tires · Illuminated triple headlight · Metal frame · RELEX couplers · Length over buffers 18.2 cm (7-3/16")

⓪=7154 =7164 =60015

3021 · Express Diesel · German Federal Railroad class 220 · One truck powered · 4 traction tires · Illuminated triple headlight · Metal body and frame · Coupling hooks with pre-uncoupler · Length over buffers 21 cm (8-1/4")

⓪=7154 =7183 =60010

3078 · Industrial Switcher · Type DHG 500 · 3 axles powered · 2 traction tires · Illuminated triple headlight · Metal frame · Coupling hooks · Length over buffers 11.2 cm (4-3/8")

⓪=7154 =7185 =60015

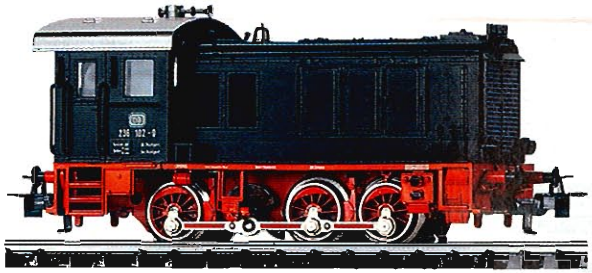
3080 · Industrial Switcher · 3 axles powered · 2 traction tires · Metal frame · Coupling hooks · Length over buffers 11.2 cm (4-3/8")

⓪=7154 =7185

3146 · Diesel Switcher · German Federal Railroad class 236 · 3 axles powered · 2 traction tires · Illuminated triple headlight · Metal frame · RELEX couplers · Length over buffers 10.6 cm (4-3/16")

⓪=7154 =7185 =60015

3646 · Digital



■ 250 of the WR 360 C 14 diesel locomotive were produced between 1936 and 1944. Later classified V 36 (236), the German Federal Railroad acquired 63 of these units. Almost all of these were still in service on the DB at the end of 1971.

Two speed ranges (0–30 km/h (0–18.75 m.p.h.) and 0–60 km/h (0–37.5 m.p.h.) made the class 236 suitable for a number of uses.

Due to a lack of locomotives in the 1950's, numerous class 236 diesels were used in commuter passenger traffic, in Bremen, Bremerhaven, Frankfurt and Wuppertal, for example. The prototype of Märklin's model 3146, diesel locomotive 236 102-0, was stationed between 1964 and 1978 in Ansbach, Nürnberg and finally in Stuttgart.

••• COMMENTARY ••• COMMENTARY ••• COMMENTARY ••• COMMENTARY ••• COMMENTARY ••• COMMENTARY ••

Dieseling electrically and hydraulically

A diesel locomotive is by no means just simply a diesel locomotive. There are two basic, fundamental principles of motive power with heavy oil as a source of energy, the diesel-electric and the diesel-hydraulic. The first named principle, hardly represented on the German Federal Railroad, has much more in common with electric motive power, as can be seen in its best known representative, the legendary F7 behemoths of the American railroads. The diesel-electric powered locomotive resembles the electric locomotive in design in that it uses electric traction motors for propulsion which are chiefly designed to power a single axle. These motors do not get their current from a catenary wire, but rather from a huge generator driven by a large diesel motor. Practically speaking, the diesel-electric locomotive always has its power station at hand from which the current comes.

It is different with the diesel-hydraulic principle. These locomotives, such as the class 212 and 216 of the German Federal Railroad, function in principle like a diesel automobile. Hydraulic and/or mechanical transmissions convert r.p.m. and torque which are produced by the large diesel motor. Extra electric motors are not used; the mechanical side is more extensive instead. The bottom line is that there is clearly less of an expenditure in space and weight which is immediately apparent when you compare the size and output of German and American locomotives. On the other hand, the diesel-hydraulic locomotive is more maintenance-intensive because more mechanical parts are used which are subject to wear. This disadvantage is offset in West Germany by being able to use a lighter weight frame which reduces to a minimum incalculable stesses and strains.

Although diesel-electric motive power has not been successful in Germany, German manufacturers have been able to hold their own with diesel-electric units in the export market, especially in the Third World countries.

3141 · Diesel Switcher · German Federal Railroad class 260 · 3 axles powered · 2 traction tires · Illuminated triple headlight · Metal frame · Coupling hooks with pre-uncoupler · Length over buffers 12 cm (4-¾")

=7153 =7185 =60010

3147 · Multi-Purpose Diesel · German Federal Railroad class 212 · One truck powered · 4 traction tires · Illuminated triple headlight · Prototypically narrow ends · Metal frame · RELEX couplers · Length over buffers 14.1 cm (5-9/16")

=7154 =7164 =60010

3674 · Digital

3074 · Multi-Purpose Diesel · German Federal Railroad class 216 · One truck powered · 4 traction tires · Illuminated triple headlight · Metal frame · RELEX couplers · Length over buffers 18.2 cm (7-3/16")

=7154 =7164 =60015

3081 · Express Diesel · German Federal Railroad class 220 · One truck powered · 4 traction tires · Illuminated triple headlight · Metal body and frame · Coupling hooks with pre-uncoupler · Length over buffers 21 cm (8-¼")

=7154 =7183 =60010

Belgium

3066 · Multi-Purpose Diesel · Belgian State Railways (NMBS/SNCB) class 204 · One truck powered · 4 traction tires · Illuminated triple headlight · Metal body and frame · Coupling hooks · Length over buffers 20.5 cm (8-1/16")

=7154 =7164 =60015

Denmark

3067 · Multi-Purpose Diesel · Danish State Railways (DSB) class MY 1100 · One truck powered · 4 traction tires · Illuminated triple headlight · Metal body and frame · Coupling hooks · Length over buffers 20.5 cm (8-1/16")

=7154 =7164 =60015

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A hint of the great, wide world

Since the middle of the 1950's the diesel-electric principle for internal combustion locomotives has repeatedly been in the limelight on railroads in countries bordering West Germany. This type of motive power is widely used in North America and its best known representatives in Europe are the locomotives built under license from the Electromotive Division of the international firm, General Motors, chiefly by the Swedish firm of NOHAB.

Many variations of it and its siblings are in use in the Scandinavian countries, Belgium, Luxemburg, and even in Hungary. Externally they are very reminiscent of those legendary, great locomotives which formed the backbone of the diesel motive power in the USA and Canada since the 1930's, some of which are still in use. The European units differ from them basically in their symmetrical design with two cabs and lower power output.

All total, NOHAB built 157 of these locomotives from 1957 to 1969. Before that time 40 units had been manufactured in Belgium. The Luxemburg Railways purchased four units in 1955 with 1,750 horsepower each in order to realize the required speed of 80 km/h (50 m.p.h.) on one of their international routes. Operations with steam locomotives at this speed had greatly damaged the roadbed. The locomotives operated by the Norwegian State Railways are externally especially striking due to their large snow plows for heavy snow in the mountains and grills over the windshields. They are often double-headed with others of this type which increases the impression of the "great, wide world" in the imposing fjord landscape.

The Belgian units in dark green with bright yellow striping were quickly given the nickname "Potato Bug". While the "Americans" built in Europe will probably not be in service much longer in Belgium and Luxemburg, their siblings in Norway and Denmark may still be used for a while, as well as the 20 NOHAB units delivered to Hungary in 1963.

USA

3060 · Road Diesel · General Motors EMD F 7 lettered and painted for the Atchison, Topeka and Santa Fe Railway · One truck powered · 4 traction tires · Illuminated dual headlight · Metal body and frame · Coupling hook with pre-uncoupler at cab end · RELEX coupler at other end · Length 17.5 cm (6-7/8")

=7154 =7185 =60015

USA

4060 · Dummy Road Diesel · Mates with the 3060 · Illuminated dual headlight · Metal body and frame · Coupling hook with pre-uncoupler at cab end · Coupling hook at other end · Length 17.5 cm (6-7/8")

=7185 =60015

USA

3129 · Road Diesel · General Motors EMD F 7 lettered and painted for the Southern Pacific Railroad · One truck powered · 4 traction tires · Illuminated dual headlight · Metal body and frame · Coupling hook with pre-uncoupler at cab end · RELEX coupler at other end · Length 17.5 cm (6-7/8")

=7154 =7185 =60015

USA

4129 · Dummy Road Diesel · Mates with the 3129 · Illuminated dual headlight · Metal body and frame · Coupling hook with pre-uncoupler at cab end · Coupling hook at other end · Length 17.5 cm (6-7/8")

=7185 =60015

4018 · Railbus Trailer · German Federal Railroad type 995 · Red end lights · Interior lighting · Special couplers providing close coupling designed for railbuses · Length over buffers 12 cm (4-¾″)

=7175 =60010

3016 · Railbus · German Federal Railroad type 795 · One axle powered · 2 traction tires · Illuminated triple headlight · Interior lighting · Metal frame · Special couplers providing close coupling · Length over buffers 14.7 cm (5-¾″)

=7153 =7164 =60010

3028 · Electric Railcar · German Federal Railroad class 515, accumulator battery-powered railcar · One truck powered · 4 traction tires · Triple white headlights and dual red end lights, illuminated according to direction of travel · Interior details · Interior lighting · Metal frame · Coupling hooks · Length over buffers 24 cm (9-½″)

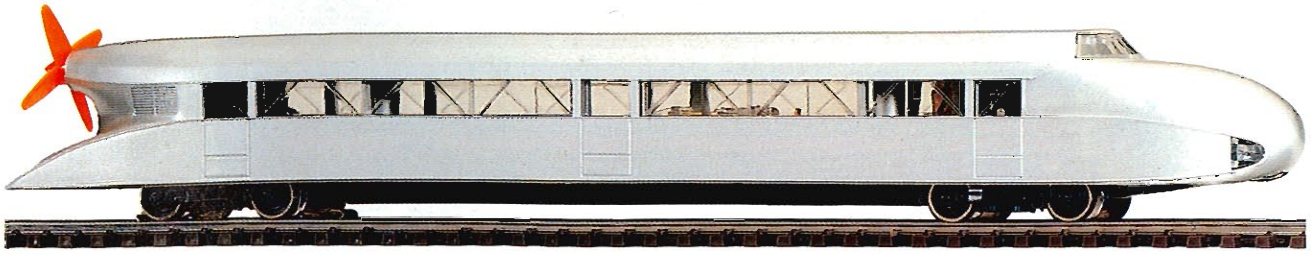
=7154 =7164 =60001 r
=60015 w

4028 · Control Car · For use with 3028 · German Federal Railroad type 815 · When coupled to 3028, three white headlights and two red end lights illuminate according to direction of travel · Interior details · Interior lighting · Coupler loop at one end, coupler hook at the other end of railcar · Length over buffers 24 cm (9-½″)

=7164 =60001 r
=60015 w

3077 · Rail Zeppelin · Based on Kruckenberg System · One truck powered · 4 traction tires · At 4 volts, the propeller is activated by a small motor and as more power is applied, the zeppelin begins to roll · Double headlight at the front · Metal frame · Length 28.8 cm (11-⅜″)

=7154 =7164 =60015



Restore. Repair.
Lovingly, accurately and thoroughly.

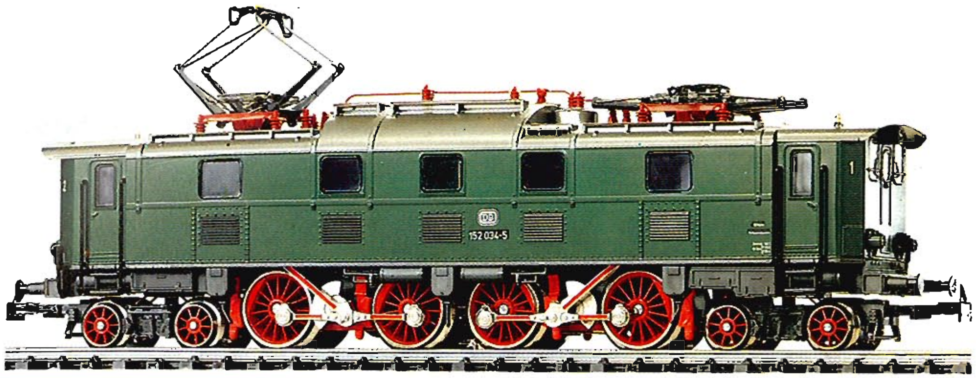
Collecting and caring for old Märklin models enjoys ever-increasing popularity. Our employees have the skills and know-how, based on decades of experience, to restore that older Märklin train to its original gleaming beauty. Of course, a cost estimate is provided before proceeding with the restoration.

In addition, the Märklin Service Center can perform repairs and inspections which your dealer may not be equipped to do.

Märklin Service.
See your dealer for details.

Electric Locomotives

The "Crocodile" and the "Bahn 2000" electric locomotive, photographed on the layout "Switzerland" of the Heki Company.



3366 · Electric Locomotive · German Federal Railroad class 152 (Bavarian EP 5) · 2 axles powered · 4 traction tires · Illuminated triple headlight · Metal frame · Articulated frame enabling the locomotive to negotiate sharp curves · 2 sprung pilot trucks · Coupling hooks · Electronic reverse unit · Length over buffers 19.8 cm (7-7/8")

=7153 =7164 =60008

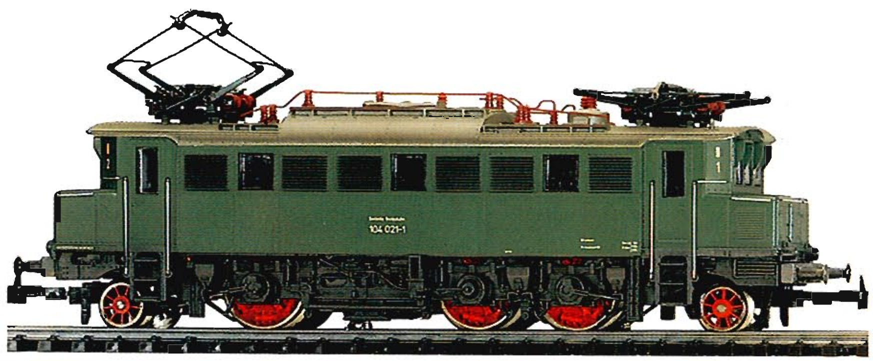
■ At the beginning of the 1920's the extensive electrification plans for the South German rail network were carried out and the Bavarian Group Administration of the German State Railroad purchased a new, powerful locomotive for operation on main lines, with both freight and passenger traffic being planned for it.

The locomotive has four motors rigidly mounted in its frame and their output is transmitted to the driving axles by means of rods. The motors are mechanically grouped in twos as double motors and the drive system is thereby divided into two groups. Pilot trucks are used at both ends of the locomotive to improve its running characteristics and to keep the axle loading within the permitted limit.

The locomotives were delivered in 1924 and 1925 with the Bavarian designation EP 5 21 501–535 and were reclassified later as the E 52 01–35. These units were reclassified a last time by the German Federal Railroad as 152.

The maximum speed of the locomotive was 90 km/h (56.25 m.p.h.) with an hourly rating of 2,200 kilowatts at a speed of 62.5 km/h (39.06 m.p.h.). The continuous rating was 1,660 kilowatts at a speed of 76.3 km/h (47.69 m.p.h.).

All of the locomotives were stationed from the day of their delivery until after 1945 at Munich's central station and in Garmisch. With the progressive electrification of the German Federal Railroad's track network, the locomotives were also stationed in Regensburg, Nürnberg, Stuttgart, Kaiserslautern, Frankfurt, Seelze and Osnabrück.



3049 · Express Locomotive · German Federal Railroad class 104 · Three axles powered · 2 traction tires · Illuminated triple headlight · Metal frame · 2 sprung pilot trucks · Coupling hooks · Length over buffers 17.8 cm (7")

=7153 =7185 =60015

3322 · Freight Locomotive · German Federal Railroad class 194 · One truck powered · 4 traction tires · Illuminated triple headlight · Articulated three-part metal body and frame · RELEX couplers · Electronic reverse unit · Length over buffers 21 cm (8-1/4")

=7153 =7164 =60010

3329 · Electric Locomotive · German Federal Railroad class 191 · 3 axles powered · 4 traction tires · Triple headlights at each end, illuminated according to direction of travel · Three-part metal body and frame · Automatic couplers · Electronic reverse unit · Length over buffers 19.9 cm (7-⅞")
⓪=7153 =7185 =60008

3629 · Digital

COMMENTARY ••• COMMENTARY ••• COMMENTARY ••• COMMENTARY ••• COMMENTARY ••• COMMENTARY •••

With 1,660 kilowatts continous rating through the Riesengebirge area

The E 91 99 is at Haltingen for special runs.

The German Federal Railroad electric freight locomotive 191 099 is one of two stored for "museum purposes" since this class was taken out of service in 1975. All total, there were only twelve of this class that had a continous rating of 1,660 kilowatts and powered heavy freight trains on the Silesian mountain routes after their introduction. Six of them were still in use on the German Federal Railroad after the war.

The storage and preparation for museum purposes, in this case for the Nürnberg Transportation Museum, does not absolutely mean that such units can move under their own power. Horst Troche, manager of the German Federal Railroad shops at the main headquarters in Mainz, relates, however, that the prototype of the Märklin H0 locomotive was in such good condition that preparing it for the Transportation Museum in Nürnberg was pretty much the same as readying it for normal operation.

Photo: E. A. Weigert

German State Railroad electric locomotive in 1985: The E 91 99 in the jubilee parade in Nürnberg.

The railroad accepted this slight extra expenditure and the locomotive was thoroughly gone over at the Munich-Freimann shops for the jubilee parade in the 1985 anniversary of German railroading. Of special note is the fact that it was not in the condition as when the German Federal Railroad last ran it, but rather in the original condition when the German State Railroad placed it in service at Breslau as E 91 99.

After use in the jubilee the locomotive was sent to the Haltingen shops south of Freiburg where it is serviced and kept running for excursion trains, for example, on loan for exhibitions or for the photos of Märklin's 1986/87 catalog cover. "Of course, we will not be doing many excursion runs", regrets Troche of the German Federal Railroad.

3657 · Digital

3357 · Express Locomotive · German Federal Railroad class 103 · One truck powered · 4 traction tires · Illuminated triple headlight · Metal frame · Coupling hooks · Electronic reverse unit · Length over buffers 21.9 cm (8-⅝")

⓪=7153 =7164 =60010

3653 · Digital

3153 · Multi-Purpose Locomotive · German Federal Railroad class 120 · One truck powered · 4 traction tires · Illuminated triple headlight · Metal frame · Coupling hooks · Length over buffers 22.1 cm (8-¾")

⓪=7153 =7164 =60015

3655 · Digital

3355 · Electric Locomotive · German Federal Railroad class 111 · One truck powered · 4 traction tires · Triple white headlight and dual red end light illuminated according to direction of travel · Decals indicating travel destination are included · Metal frame · RELEX couplers · Electronic reverse unit · Length over buffers 19.1 cm (7-½")

⓪=7153 =7164 =60007 r =60008 w

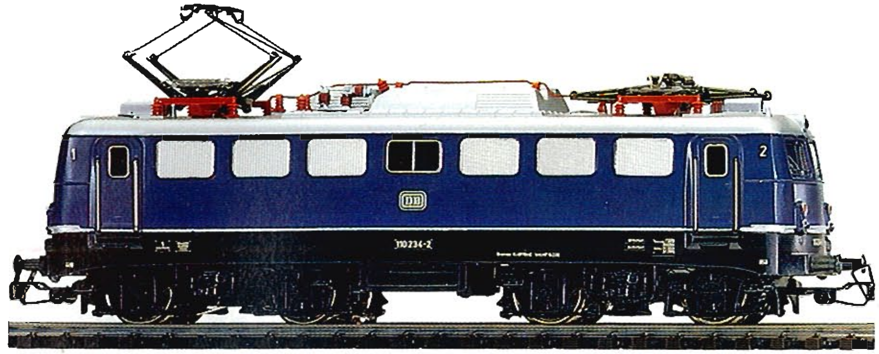
3172 · Express Locomotive · German Federal Railroad class 111 · Color scheme based on a design study for the German Federal Railroad · One truck powered · 4 traction tires · Illuminated triple headlight · Metal frame · RELEX couplers · Length over buffers 19.1 cm (7-½")

⓪=7153 =7164 =60008

Electric Locomotives

3039 · Express Locomotive ·
German Federal Railroad class 110 · One truck powered · 4 traction tires · Illuminated triple headlight · Metal body and frame · Coupling hooks with pre-uncoupler · Length over buffers 18.1 cm (7-⅛″)

=7153 =7164 =60015



3042 · Express Locomotive ·
German Federal Railroad class 111 · One truck powered · 4 traction tires · Illuminated triple headlight · Metal frame · RELEX couplers · Length over buffers 19.1 cm (7-½″)

=7153 =7164 =60008

3642 · Digital

3156 · Freight Locomotive · German Federal Railroad class 140 · One truck powered · 4 traction tires · Illuminated triple headlight · Metal body and frame · Coupling hooks with pre-uncoupler · Length over buffers 18.1 cm (7-⅛″)

=7153 =7164 =60015

3058 · Freight Locomotive · German Federal Railroad class 151 · One truck powered · 4 traction tires · Illuminated triple headlight · Metal frame · Coupling hooks · Length over buffers 22.2 cm (8-¾″)

=7153 =7164 =60015

3044 · Switch Engine · Multi-system industrial switcher, type EA 800 · 3 axles powered · 2 traction tires · Illuminated triple headlight · Metal frame · Coupling hooks · Length over buffers 11.2 cm (4-3/8″)

◯=7154 =7185 =60015

3157 · Electric Locomotive · German Federal Railroad class 160 · 3 axles powered · 2 traction tires · Illuminated triple headlight · Metal frame · RELEX couplers · Length over buffers 12.8 cm (5″)

◯=7153 =7185 =60010

3625 · Digital

France

3325 · Electric Locomotive · French State Railways (SNCF) class BB 7200 · One truck powered · 4 traction tires · Illuminated dual headlight according to direction of travel · Metal body and frame · Coupling hooks · Electronic reverse unit · Length over buffers 20 cm (7-7/8″)

◯=7153 =7164 =60010

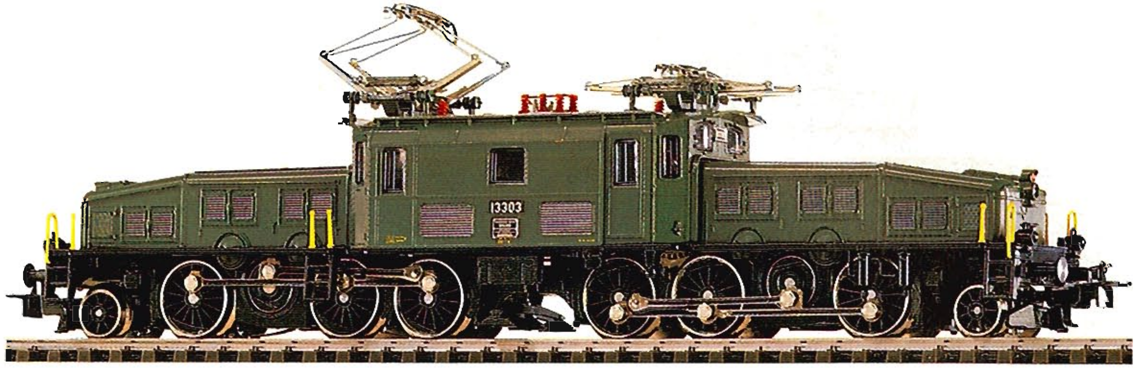
■ There are two versions of the French State Railways (SNCF) class BB 7200 electric locomotive. One series of these units has a maximum speed of 100 km/h (62.5 m.p.h.) and is conceived of as a multi-purpose locomotive similar to the DB's class 140. The other version, the prototype of the Märklin model, reaches speeds of 160 to 180 km/h (100 to 112.5 m.p.h.) and is thus especially suitable for heavy express passenger trains.

Common to both versions is the striking shape of the locomotive body with the characteristic end shapes and the cab windshields slanting diagonally toward the middle of the locomotive. Both versions of the BB 7200 weigh 85.5 tons and have an output of 4,000 kilowatts.

Switzerland

3356 · Freight Locomotive "Crocodile" · Swiss Federal Railways (SBB) class Be 6/8^{III} · 3 axles powered · 4 traction tires · Illuminated triple headlight · Three part body · Metal frame · Articulated construction enabling the locomotive to negotiate sharp curves · RELEX couplers · Electronic reverse unit · Length over buffers 23 cm (9-⅛")

=7153 =7164 =60008



0356 · The Book about the "Crocodile" · By H. S. Stammer · The most comprehensive publication on the famed Swiss "Crocodile" with dates, facts, dramatic stories and interesting anecdotes · Detailed presentation of the various models which Märklin has produced in the last 50 years · 96 pages · Size 26.4 × 22 cm (10-¼" × 8-¾") · German text

••• COMMENTARY ••• COMMENTARY ••• COMMENTARY ••• COMMENTARY ••• COMMENTARY ••• COMMENTARY •••

The welding equipment helped out, when the engineers almost froze

Winter operations with the legendary Crocodiles over the Gotthard Pass

Due to the diffcult winter operations over the Gotthard Pass, the legendary Ce 6/8 Swiss freight locomotives are among the few railroad engines to be honored with literary mention. Later generations are sometimes almost tempted to speak of "locomotive personality".

Emilio Geiler, Swiss novelist and former locomotive engineer, drove the giant electric locomotives and was especially taken by them. The young fireman, Battistino, appears in one of his books. He studied how to deal with electricity during his mechanics courses. On the other hand, Pianca, his engineer, switched form steam locomotives to the Crocodile after a short training period. "It was snowing hard during the lunch break", writes Geiler. "Pianca had raised the pantographs and turned on the locomotive. Due to the wet snow on the pantographs, only the rear unit had risen to the full up position. It was touching the wire, while the front one was stuck in a half raised position. There was current in the front pantograph despite its partially raised position, but Pianca, apparently not thinking of this, wanted to brush the snow off the pantograph with the broom so that it too would be fully raised.

Quickly Battistino ran through the side door to the front. Yell? That would have only startled Pianca and speeded up his plans. There was no more time to think about it. Battistino reacted instinctively. The broom was wet with snow and Pianca had already lifted it up. Battistino struck the broom from the engineer's hands. The engineer would also have all but fallen from the icy footpath."

Winter operations over the Gotthard Pass – in the beginning that meant a nasty draft in the cab. The locomotives had a door at each end of the cab on the left diagonal side to allow access from the cab to the footpaths along the "noses" of the Crocodile while it was in motion. Thus, all of the firstgeneration Crocodiles originally had six doors – two exterior doors for each cab and one from each cab for the footpaths.

"Villa Draft", the engineers moaned about conditions in the cabs. "It whistled and there were drafts all over." This was also true of the second generation units which only had the diagonal door to the front on the left side, the "fireman's side", and the exterior door on the engineer's side, altogether still four doors. It did not require a great deal of imagination to realize what kind of climate predominated in the control center of these heavy locomotives when operating in the high mountains in the icy cold. Finally, the welding equipment had to provide relief. It was a good 30 years before the undesirable draft in the locomotive was halfway stopped. Beginning in 1953 doors from the engineer's side of the cabs to the side passageway and the exterior doors on the engineer's side were welded shut. At the same time the steps and railings by these doors were removed.

This, however, did not sit well at all with many Crocodile engineers. For it had become a matter of status to distinguish between the engineer's door and the fireman's door. No fireman would have dared enter the Crocodile from the engineer's door on the right side of the locomotive. Enraged at the fact that they now had to enter through the fireman's door or – with second-generation Crocodiles – the diagonal door on the fireman's side, some especially indignant Crocodile

3652 · Digital

Switzerland

3352 · "Crocodile" Freight Locomotive · Swiss Federal (SBB) class Ce 6/8^{III} · 3 axles powered · 4 traction tires · Three headlights and 1 marker light, illuminated according to the direction of travel · Three part metal body and frame · Articulated construction enabling the locomotive to negotiate sharp curves · RELEX couplers · Electronic reserve unit · Length over buffers 23 cm (9-⅛")

⓪=7153 ⛴=7164 ⛽=60008

COMMENTARY ••• COMMENTARY ••• COMMENTARY ••• COMMENTARY ••• COMMENTARY ••• COMMENTARY •••

Photo: Schorno / Märklin Collection

Snow always made it difficult for the men in the Crocodile locomotives.

engineers were said to have taken their own personal ladders and climbed head first through the window of the now welded-shut engineer's door. As could be expected, this difficult type of protest which carried the risk of derision lasted only a few days.

Winter operations over the Gotthard Pass – it was also good for one of the many sayings about the magnificent mountain line through the Alps. The old Crocodile men get tickled pink over a foreigner who inquires about the significance of the walls along the steep slopes. Instead of telling him the truth, namely, that they are supposed to act as an obstacle to protect against avalanches, it was explained to the foreigner that these are the vineyards of the Gotthard Pass. It had to be in winter so that the man could not verify the truth of this information. But there is more to the story. On the advice of his informants the man actually ordered a bottle of "Vino Gottardo". What sort of drink he was finally served is, of course, not related.

(From the book "Märklin Crocodile" by H. S. Stammer, Märklin catalog no. 0356, German text only)

Switzerland

3125 · Self Propelled Railcar · Swiss Federal Railways (SBB) class RBe 2/4 "Red Arrow" · In original colors, as displayed now at the Swiss Transport Museum, Lucerne · One truck powered · 4 traction tires · Illuminated triple headlight · Inset windows · Interior details · Metal body and frame · Length over buffers 25.7 cm (10″)

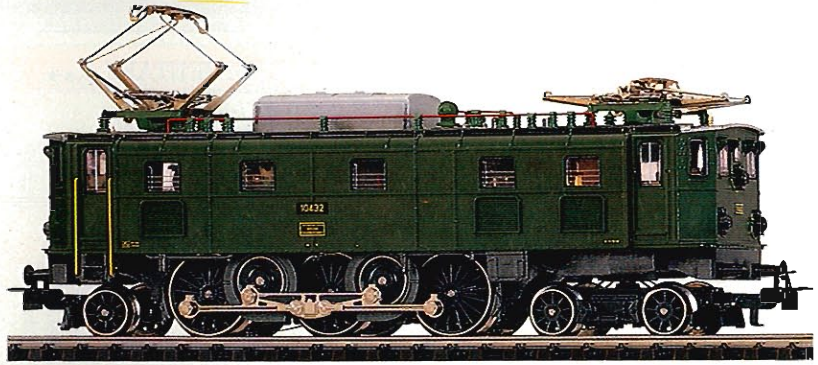
⓪=7154 =7164 =60008

3605 · Digital

Switzerland

3167 · Express Locomotive · Swiss Federal Railways (SBB) class Ae 3/6ᴵᴵ · 3 axles powered · 2 traction tires · Illuminated triple headlight · Metal frame · Sprung pilot and trailing truck · RELEX couplers · Length over buffers 16 cm (6-5⁄16″)

⓪=7153 =7185 =60015



Switzerland

3350 · Multi-Purpose Locomotive · Swiss Federal Railways (SBB) class Ae 6/6, No. 11439 · One truck powered · 4 traction tires · Illuminated triple headlight · Metal body and frame · With coat of arms of the cantonal capital, Schaffhausen · Additional canton coats of arms included · Coupling hooks · Electronic reverse unit · Length over buffers 20 cm (7-7⁄8″)

⓪=7153 =7164 =60008

3650 · Digital

Switzerland

3332 · Multi-Purpose Locomotive · Swiss Federal Railways (SBB) class Ae 6/6, No. 11429 · 3 axles powered · 4 traction tires · Illuminated triple headlight · Metal body and frame · Version with the coat-of-arms for the city of Altdorf · Other coats-of-arms included · Coupling hooks · Electronic reverse unit · Length over the buffers 20 cm (7-7⁄8″)

⓪=7153 =7164 =60008

3623 · Digital

Switzerland

3323 · Electric Locomotive · Swiss Federal Railways (SBB) class Re 4/4^{IV}, No. 10102 · One truck powered · 4 traction tires · Illuminated triple headlight · Metal body and frame · Coupling hooks · Electronic reverse unit · Length over buffers 18.1 cm (7-⅛")

⓪ = 7153 ⌓ = 7164 ♀ = 60010

Switzerland

3328 · Electric Locomotive · Swiss Federal Railways (SBB) class Re 4/4^{IV}, No. 10103 · One truck powered · 4 traction tires · Illuminated triple headlight · Metal body and frame · Coupling hooks · Electronic reverse unit · Length over buffers 18.1 cm (7-⅛")

⓪ = 7153 ⌓ = 7164 ♀ = 60010

3630 · Digital

Switzerland

3330 · Electric Locomotive · Swiss Federal Railways (SBB) class Re 4/4^{IV}, No. 10104 "Bahn 2000" ("Rail 2000") · 2 axles powered · 4 traction tires · Illuminated triple headlight · Metal body and frame · Outside rearview mirrors are hinged and moveable · Coupling hooks · Electronic reverse unit · Length over buffers 18.1 cm (7-⅛")

⓪ = 7153 ⌓ = 7164 ♀ = 60010

■ In 1978 the Swiss Federal Railways (SBB) ordered four prototypes of a multi-purpose, main line, electric locomotive. The units were classified Re 4/4^{IV} and have a continuous rating of 4,475 kilowatts and a maximum speed of 160 km/h (100 m.p.h.). These locomotives are intended to pull heavy express trains up to 700 tons on level ground, express or freight trains up to 650 tons on a 26% grade and heavy regional trains up to 500 tons on level ground. The end shape of the new locomotives was developed in a wind tunnel. The windowless, corrugated side walls guarantee increased structural stability of the body. At the same time, approximately 300 kilograms (approx. 661 lb.) in weight was saved through the use of lighter sheet metal (1.5 mm or .059 in.).

The lack of daylight in the engine room of the locomotive is made up for by an extensive lighting system. The cabs are structurally conceived for the best possible protection of the engineer at the throttle. Originally, all four units were painted and lettered differently on the sides in order to determine the best appearance. The ends of the locomotives were painted red to provide better visibility to oncoming trains.

In 1986 the locomotives were repainted totally in red and given the striking inscription "Bahn 2000" ("Rail 2000"). This is to promote the SBB's forward-looking program of extensive improvement in train travel.

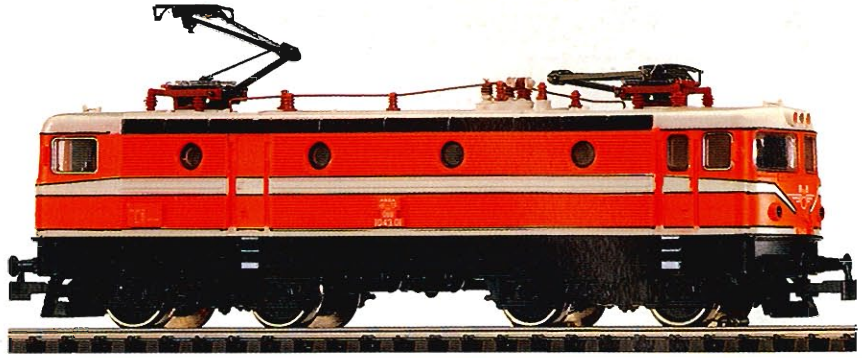
This version as a "Bahn 2000" locomotive has been refined further in contrast to the existing versions; the outside rear-view mirrors are hinged and moveable.

Electric Locomotives

Austria

3041 · Multi-Purpose Locomotive · Austrian Federal Railways (ÖBB) class 1043 · One truck powered · 4 traction tires · Illuminated quadruple headlight · Metal frame · Coupling hooks · Length over buffers 17.5 cm (6-7/8″)

⓪=7153 =7164 =60015



Belgium

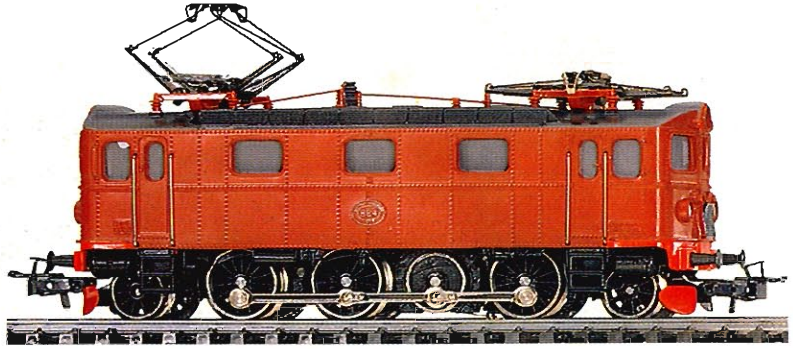
3163 · Four-System Express Locomotive · Belgian State Railways (NMBS/SNCB) class 16 · One truck powered · 4 traction tires · Illuminated triple headlight · Metal frame · RELEX couplers · Length over buffers 19.4 cm (7-5/8″)

⓪=7153 =7164 =60015

Sweden

3030 · Multi-Purpose Locomotive · Swedish State Railways (SJ) class Da · 3 axles powered · Jackshaft driven through gears · 2 traction tires · Illuminated triple headlight · Metal body and frame · RELEX couplers · Length over buffers 14.7 cm (5-3/4″)

⓪=7153 =7185 =60015



Sweden

3043 · Multi-Purpose Locomotive · Swedish State Railways (SJ) class Rc1 · One truck powered · 4 traction tires · Illuminated quadruple headlight · Metal frame · Coupling hooks · Length over buffers 17.5 cm (6-7/8″)

⓪=7153 =7164 =60015

Netherlands

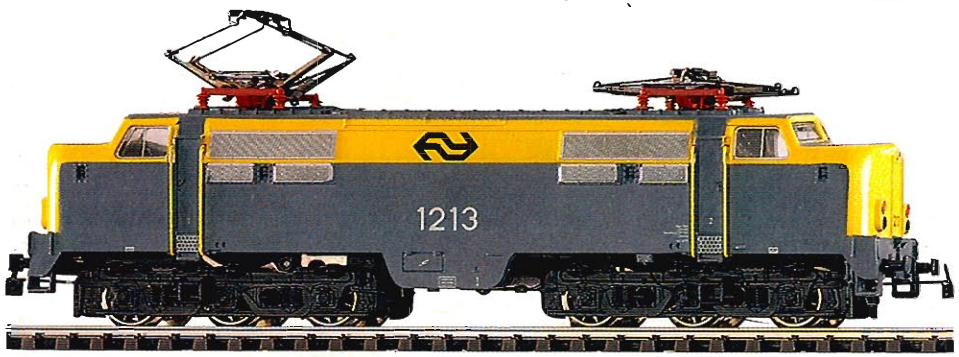
3327 · Multi-Purpose Locomotive · Netherlands Railways (NS) class 1100 · One truck powered · 4 traction tires · Illuminated triple headlight · Metal frame · RELEX couplers · Electronic reverse unit · Length over buffers 16.3 cm (6-3/8")

=7153 =7164 =60019

Netherlands

3324 · Multi-Purpose Locomotive · Netherlands Railways (NS) class 1100 · One truck powered · 4 traction tires · Illuminated triple headlight · Metal frame · RELEX couplers · Electronic reverse unit · Length over buffers 16.3 cm (6-3/8")

=7153 =7164 =60019



Netherlands

3168 · Electric Locomotive · Netherlands Railways (NS) class 1200 · One truck powered · 4 traction tires · Illuminated triple headlight · Metal body and frame · Coupling hooks · Length over buffers 19.6 cm (7-3/4")

=7154 =7164 =60015

Netherlands

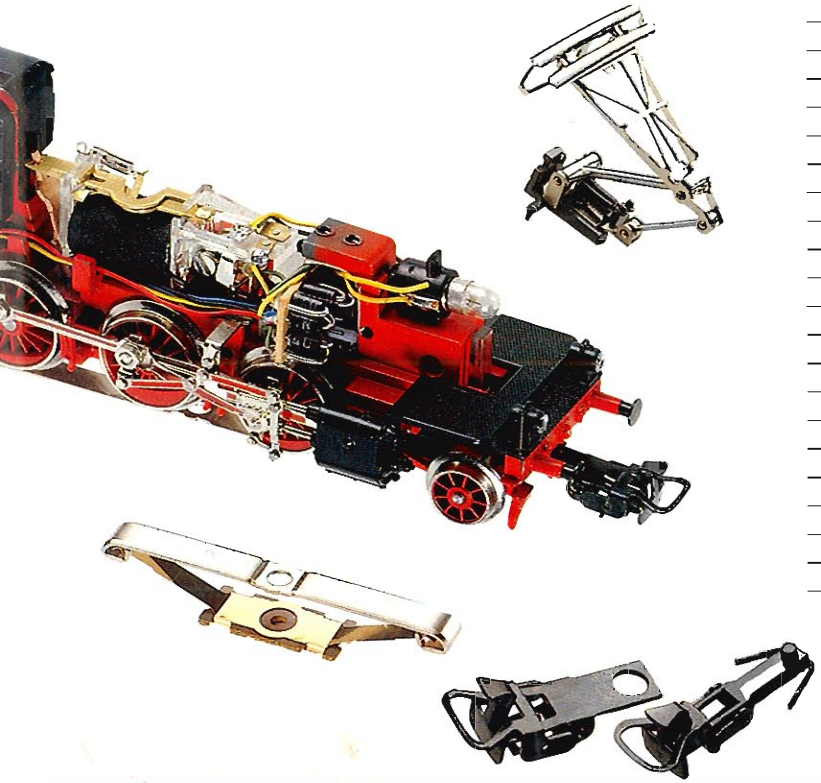
3326 · Electric Locomotive · Netherlands Railways (NS) class 1600 · One truck powered · 4 traction tires · Illuminated triple headlight · Metal body and frame · Coupling hooks · Electronic reverse unit · Length over buffers 20 cm (7-7/8")

=7153 =7164 =60019

Spare Parts for Locomotives

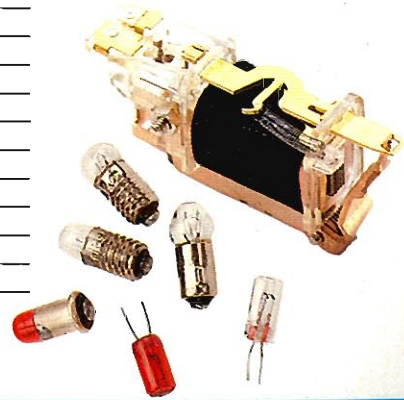
The installation of traction tires, pickup shoes, lamp bulbs and reverse unit springs is described in the operating instructions for each locomotive.

The table contains the most important spare parts for each locomotive. These parts can be ordered through your dealer.



Catalog Number	Traction Tires	Pickup Shoes	Panto-graphs	Light Bulbs	Brushes	Reverse Unit	Front Coupler	Rear Coupler
3000	7154	7185	–	60010	60030	20824	20001	20001
3003	7153	7185	–	60010	60030	20824	20214	70154
3016	7153	7164	–	60010	60030	20824	20989	20989
3021	7154	7183	–	60010	60030	20824	21166	21166
3028	7154	7164	–	60001	60030	21899	70412	70412
				60015				
3030	7153	7185	7218	60015	60030	20824	21128	21128
3039	7153	7164	7218	60015	60146	20824	21484	21484
3041	7153	7164	7219	60015	60030	20824	70412	70412
3042	7153	7164	7218	60008	60146	20824	70156	70156
3043	7153	7164	7218	60015	60030	20824	70412	70412
3044	7154	7185	7219	60015	60030	20824	20001	20001
3049	7153	7185	7207	60015	60146	20824	70412	70412
3058	7153	7164	7218	60015	60146	20824	70412	70412
3060	7154	7185	–	60015	60030	20824	21583	21586
3065	7153	7185	–	60010	60030	22970	21376	21376
							21377	21377
3066	7154	7164	–	60015	60030	20824	21783	21783
3067	7154	7164	–	60015	60030	20824	21783	21783
3071	7154	7164	–	60001	60030	22049	–	21929
		7175		60015				21951
								21954
3072	7154	7164	–	60010	60030	20824	21842	21842
3074	7154	7164	–	60015	60030	20824	70156	70156
3075	7154	7164	–	60015	60030	20824	70156	70156
3077	7154	7164	–	60015	60030	20824	–	–
3078	7154	7185	–	60015	60030	20824	20001	20001
3080	7154	7185	–	–	60030	20824	20001	20001
3081	7154	7183	–	60010	60030	20824	21166	21166
3082	7153	7164	–	60015	60146	20824	21843	21842
3084	7153	7164	–	60015	60146	20824	21843	21842
3085	7152	7164	–	60010	60146	20824	–	21842
3087	7154	7185	–	–	60030	20824	20001	20001
3089	7152	7185	–	60015	60030	20824	–	70154
3092	7152	7185	–	60015	60030	20824	–	21842
3093	7152	7185	–	60015	60030	20824	–	21842
3095	7153	7185	–	60010	60030	20824	22532	21842
3096	7153	7164	–	60015	60030	22970	24456	24456
							22897	22897
							22924	22924
3099	7152	7185	–	60015	60030	20824	22418	21842

Catalog Number	Traction Tires	Pickup Shoes	Panto-graphs	Light Bulbs	Brushes	Reverse Unit	Front Coupler	Rear Coupler
3102	7153	7185	–	60015	60146	20824	21843	21842
3106	7153	7164	–	60015	60146	20824	24281	24281
3107	7153	7164	–	60015	60146	20824	24281	24281
3109	7153	7164	–	60015	60146	20824	24281	24281
3125	7154	7164	25640	60008	–	–	–	–
3129	7154	7185	–	60015	60030	20824	21583	21586
3141	7153	7185	–	60010	60030	20824	21411	21411
3146	7154	7185	–	60015	60146	20824	70156	70156
3147	7154	7164	–	60010	60030	20824	21842	21842
3153	7153	7164	7208	60015	60146	20824	70412	70412
3156	7153	7164	7218	60015	60146	20824	21484	21484
3157	7153	7185	7218	60010	60146	20824	21842	21842
3163	7153	7164	7219	60015	60146	20824	70156	70156
3167	7153	7185	24800	60015	60146	20824	70156	70156
3168	7154	7164	7218	60015	60030	20824	21783	21783
3172	7153	7164	7218	60008	60146	20824	70156	70156
3308	7153	7164	–	60010	60146	25220	24456	24460
3309	7153	7164	–	60019	60146	22970	24456	24460
							24457	24461
							22924	22925
3310	7152	7164	–	60019	60146	25220	–	32540
3311	7152	28251	–	–	–	–	–	7202
3312	7153	7185	–	60019	60146	25220	21842	21842
3313	7153	7185	–	60019	60146	25220	21842	21842
3315	7153	28027	–	60008	60146	–	21843	21842
3322	7153	7164	25530	60010	60030	25220	21842	21842
3323	7153	7164	7219	60010	60146	25220	24810	24810
3324	7153	7164	7218	60019	60146	25220	70156	70156
3325	7153	7164	7219	60010	60146	25220	24810	24810
3326	7153	7164	7219	60019	60146	25220	24810	24810
3327	7153	7164	7218	60019	60146	25220	70156	70156
3328	7153	7164	7219	60010	60146	25220	24810	24810
3329	7153	7185	25783	60008	60146	25220	25776	25776
3330	7153	7164	7219	60010	60146	25220	24810	24810
3332	7153	7164	25069	60008	60030	25220	21708	21708
3350	7153	7164	25069	60008	60030	25220	21708	21708
3352	7153	7164	25953	60008	60146	25220	70156	70156
3355	7153	7164	7247	60007	60146	25220	70156	70156
				60008				
3356	7153	7164	25460	60008	60146	25220	70156	70156
3357	7153	7164	7247	60008	60146	25220	22313	22313
3366	7153	7164	7218	60008	60146	25220	70412	70412
3371	7154	7164	25445	60007	–	–	–	–
				60008				



Spare Parts for Locomotives

Locomotives which have been discontinued in the last 3 years:

Catalog Number	Traction Tires	Pickup Shoes	Panto-graphs	Light Bulbs	Brushes	Reverse Unit	Front Coupler	Rear Coupler
3035	7153	7164	7218	60 015	60 146	20 824	21 484	21 484
3050	7153	7164	7218	60 015	60 030	20 824	21 708	21 708
3104	7153	7185	–	–	60 146	20 824	20 001	20 001
3143	7154	7164	–	60 015	60 030	20 824	21 783	21 783
3144	7154	7185	–	60 015	60 030	20 824	20 001	20 001
3145	7154	7185	–	60 015	60 146	20 824	70 156	70 156
3149	7153	7185	–	60 010	60 030	20 824	21 411	21 411
3155	7153	7164	7218	60 015	60 146	20 824	70 156	70 156
3159	7153	7164	7218	60 015	60 030	20 824	21 842	21 842
3165	7153	7164	7218	60 015	60 146	20 824	21 773	21 773
3346	7154	7185	–	60 019	60 146	25 220	70 156	70 156

7247 · Single Arm Pantograph · German Federal Railroad type SBS 65 · With mounting screw · Base measures same as 7218 · For modern electric locomotives (3042, 3172, 3355 and 3357)

7207 · Scheren Pantograph · Type SBS 10 · With mounting screw · Base measures same as 7218 · For older classes of German electric locomotives (3049, 3157, 3366, etc.)

7194 · Reverse Unit Springs · Pack of 5 springs suitable for all conventional locomotives

7224 · Rerailing Ramp · Facilitates the placement of locomotives and cars with more than 2 axles on the track · Length 30 cm (11-13/16") · Height 2.5 cm (1")

7001 · Coupler Gauge · Nickel plated steel · For testing couplers

7226 · Smoke Set · Includes smoke unit (for locomotives 3082, 3084, 3085, 3102, 3308, 3309, 3310, 3315, 3610, 3615 and 3684), extra smoke tube, cleaning wire, tweezers and a capsule of smoke fluid

0241 · Smoke Fluid · Plastic capsule refills for smoke set 7226

7199 · Bottle of Oil · Contains 9 ml of a special oil for lubricating locomotives and cars

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Passenger Cars

Rebuild cars, commuter control car and express train compartment cars on the layout scene "Bremen Station", photographed at the Märklin Service Center.

Royal Prussian Railroad Administration (KPEV)

4207 · **Double Compartment Car** · B3/B3 for the Berlin Metropolitan Railroad · 2nd class · Interior details · Permanent close coupling between the two car halves · **Automatic close couplers** at the car ends · Length 26.4 cm (10-3/8")

4208 · **Double Compartment Car** · C3/C3 with brakeman's cab for the Berlin Metropolitan Railroad · 3rd class · Interior details · Permanent close coupling between the car halves · **Automatic close couplers** at the car ends · Length 26.7 cm (10-1/2")

4209 · **Double Compartment Car** · C3/C3 P with baggage compartment, for the Berlin Metropolitan Railroad · 3rd class · Interior details · Permanent close coupling between the two car halves · **Automatic close couplers** at the car ends · Length 26.7 cm (10-1/2")

■ Starting in 1890 the Royal Prussian Railroad Administration (KPEV) began to purchase three-axle compartment cars for the commuter traffic in and around Berlin. They were based on the conventional, three-axle compartment cars, but were built without restrooms on a 6.5 meter (21'4") wheelbase and had a narrow side corridor. Some of the cars were produced without handbrakes and therefore did not have a brakeman's cab. At the turn of the century the cars started being close-coupled in pairs in order to be able to offer an additional car's worth of seating at station platforms which had not been lengthened. The buffers were removed from the inner ends of the cars in this instance.

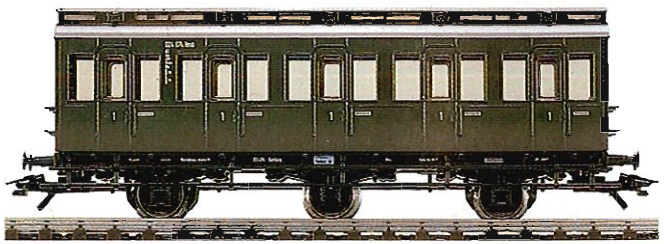
In accordance with Prussian practice, the paint scheme indicates what the car is used for: green for second class, brown for third class and reddish brown for baggage compartments. There were no fourth class cars in the Berlin commuter traffic, thus lessening the presence somewhat of this class' otherwise dominating gray color at Berlin stations.

The end for the twin compartment cars in Berlin came with the electrification of the Metropolitan Railroad and the introduction of self-propelled railcars. They were not immediately scrapped, but were transferred to other rail districts where some of them were still in use right up to World War II.

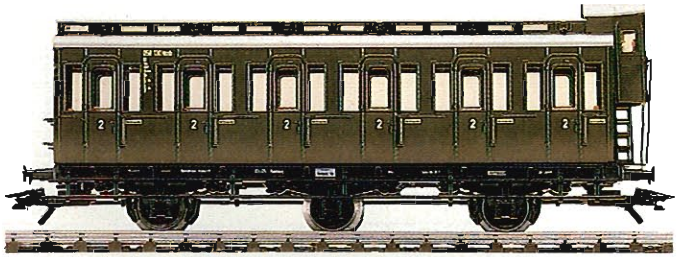
The three Märklin H0 models of the twin compartment cars document the beginning of modern commuter traffic in Germany. The two halves are coupled together prototypically without buffers to negotiate curves and even the lines for the gas lighting in the cars are reproduced on the roofs. Model 4209 has half of a twin built as a baggage area. There was only one door on either side of this part of the car.

German Federal Railroad (DB)

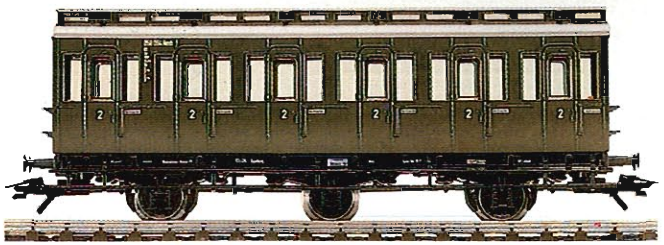
4200 · **Compartment Car** · A3 Pr 14 · 1st class · Interior details · **Automatic close couplers** · Length 13.5 cm (5-¼")



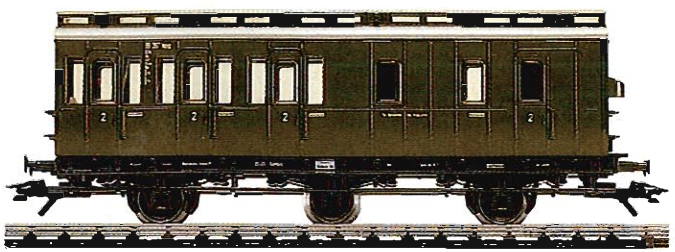
4201 · **Compartment Car with Brakeman's Cab** · B3 Pr 11a · 2nd class · Interior details · **Automatic close couplers** · Length 13.8 cm (5-5/16")



4202 · **Compartment Car** · B3 Pr 11b · 2nd class · Interior details · **Automatic close couplers** · Length 13.5 cm (5-¼")



4203 · **Compartment Car** · B3Ir Pr 14a · 2nd class for travelers with baggage · Interior details · **Automatic close couplers** · Length 13.8 cm (5-5/16")



Colorful variety on provincial railroad tracks

A comprehensive rail network did not come until later.

In the first two thirds of the 19th century Germany was a myriad of petty states and the construction of the first railroads mirrored this. Although Friedrich List (1789–1846), brilliant but persecuted and misunderstood during his life, had pointed out as early as 1841 the advantages of a comprehensive network of routes connected by rails in his work "The German Railroad System", only fragmentary routes in individual provinces came into being. It was seldom that any thought was given to later unification into a system. In Baden, for example, the state railroad initially wanted to build a 1.6 meter (5' 3") broad gauge until the standard gauge was settled on in a state treaty with Hesse and the independent city of Frankfurt in 1843. The Badeners did not convert locomotives, cars and stations until 11 years later however.

For the most part private companies initially conceived and built the first rail lines; sometimes they were viewed with suspicion, but for the most part they were supported by the different provinces, of course, which created expropriation laws or guaranteed interest rates. A cohesive network developed quite slowly in the second half of the century. The present day German railroad map still bears evidence in many places of the effects of province's individual interests in the location of routes.

The decentralized structure resulted in a highly varied development of the rolling stock which followed not only the different geographic demands of the individual provinces but also, from time to time, the personal preferences of the rulers or the railroad officials. In Prussia the compartment car without center or side aisle taken from a design derived from the horse-drawn coach was the design that won acceptance.

In Württemberg it was cars patterned after the American Pullman cars which did not give way to the compartment cars with middle aisles until nationalization in 1920.

The present-day model railroader may find the diversity pleasant, but the fact that during locomotive production no value was placed on interchangeability of parts across borders soon proved to be a disadvantage too. For this reason the German State Railroad company established in 1924 gave high priority to developing new locomotives to as standardized a design as possible, instead of producing more of the old provincial railroad designs to replenish motive power sharply reduced through wartime losses.

Standardization of those parts on rolling stock in contact with other rolling stock, such as buffers and couplers, was started along with that of track gauges in the middle of the 19th century. As a result the provincial railroads' transfer stations at borders disappeared very quickly and it was an everyday occurence for a Württemberg freight car to find its way to Bavaria. The model railroader wanting to model the provincial railroad period on his layout can be quite free in his selection of rolling stock.

Royal Württemberg State Railways (K.W.St.E.)

4210 · Passenger Car · BC4i Wü 00 · 2nd and 3rd class · Interior details · **Automatic close couplers** · Length 18.3 cm (7-3/16") · Equipped for installation of lighting kit 7330

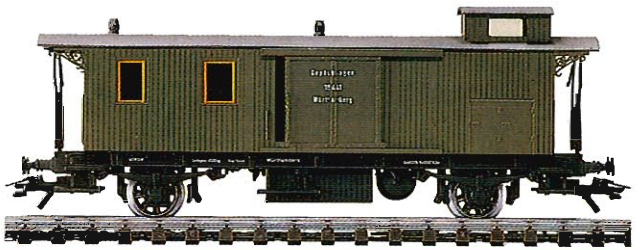
To be delivered spring 1988

N

4211 · Passenger Car · C4i Wü 01 · 3rd class · Interior details · **Automatic close couplers** · Length 18.3 cm (7-3/16") · Equipped for installation of lighting kit 7330

To be delivered spring 1988

N



4212 · Baggage Car · Pwi Wü 09 · **Automatic close couplers** · Length 13 cm (5-1/8")

To be delivered spring 1988

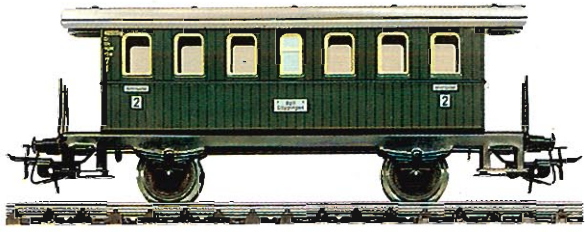
N

■ The prototype of the 2nd/3rd class passenger car was built in 1901 by the Karlsruhe company Schmieder and Mayer and is part of a series of 20 cars numbered by the K.W.St.E. 2451 to 2470. The asymmetrical window arrangement is due to the particular space configuration of the 2nd and 3rd class open seating compartments.

The prototype for the model of the 3rd class car is the CCi 4955, built in 1903 by the Rastatt Car Company of Baden. This car has a symmetrical arrangement for its interior and was given large windows in contrast to the double windows of the BCCi.

In 1910 97 two-axle baggage cars were delivered and numbered 15381 to 15477 by the K.W.St.E. The prototype of the Märklin model is part of a group built by Rastatt Car Company of Baden.

4040 · Coach · 2nd class · RELEX couplers · Length 11.5 cm (4-½")



10 Million of the 4040 Car

The most successful car in the Märklin H0 line is the no. 4040 passenger car. Since its introduction 25 years ago, 10 million of this car have been produced and sold worldwide. The reason for this is that the 4040 is not only available separately, but was also in the small starter sets.

Cars of Privately Owned Railways

4108 · Baggage Car · With conductor's coupola · RELEX couplers · Length 11 cm (4-⅜") · Equipped for installation of lighting kit 7323

4107 · Coach · Interior details · RELEX couplers · Length 11 cm (4-⅜") · Equipped for installation of lighting kit 7323

COMMENTARY ••• COMMENTARY ••• COMMENTARY ••• COMMENTARY ••• COMMENTARY ••• COMMENTARY •••

"Daddy, it just goes Ssss"

"Why choo-choo?", asked Nadine with wide eyes when her father showed her a passing train for the first time. "It just goes Ssss." Father had always described the trains with romantic steam locomotives in the picture books to the little child as going "choo-choo" and was just now aware that today they actually only go "Ssss".

The next weekend outing was to the nearby historical railroad. After all, Daddy does not want it said that he tells his child fairy tales. A little steam locomotive comes puffing at the head of "Thunder Boxes" and open platform cars from the time when Father used to go to school every day with the "choo-choo".

The locomotive engineer is dressed in black and his face is also black from soot. The conductor has a historical uniform on and punches a hole in the ticket. When the train finally starts moving, the father can explain to Nadine how the Thunder Boxes got their name. At a speed of 50 km/h (31.25 m.p.h.) in the narrow Mittelgebirge valley the pictures from the book suddenly come to life, while the steam locomotive keeps demonstrating that "choo-choo" once described the rhythm of the locomotive's sounds quite accurately. Only now Nadine asks, "Why does it do this?" And Father now has the delightful task of explaining to her how a steam locomotive functions.

Fortunately the engineer draws a shrill whistle from his machine at that precise moment because there is a tunnel. The little girl dispenses with further explanations of technical details, snuggles up to her father and is happy to see the bright light at the end of the tunnel shining through the windows. At the end of the ride she admires the devotion with which the organizers of the historical railroad polish the locomotive's builder plate. But she is not quite ready to believe that all train trips used to be so exciting. Perhaps Daddy will convince her on one of the next weekend outings to another historical railroad.

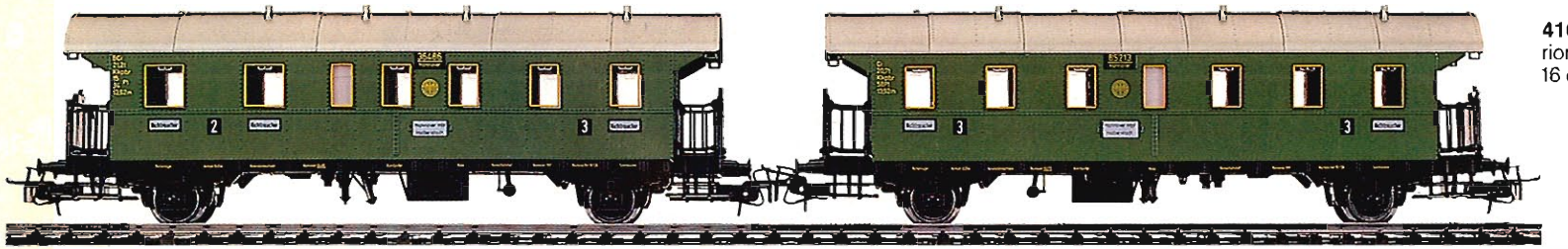
Photo: E. A. Weigert

Class 86 tank locomotive on a nostalgia trip (near Reichenschwand)

Standard Passenger Cars of the former German State Railroad (DR)

4102 · **Baggage Car** · Pwi 30 · 4 sliding doors · Interior details · RELEX couplers · Length 16 cm (6-5/16")

4103 · **Baggage Car** · Same as 4102 but with illuminated end marker lights
⇦ = 31051



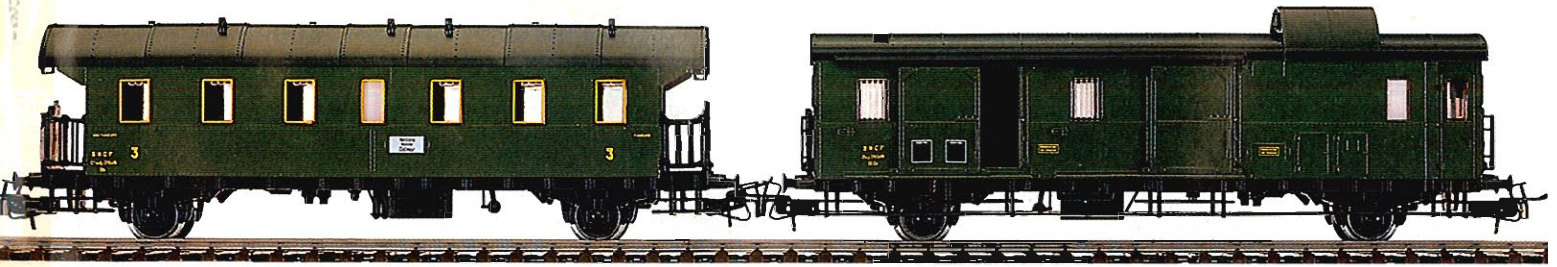
4100 · **Coach** · BCi 29 · 2nd and 3rd class · Interior details · RELEX couplers · Length 16 cm (6-5/16")

4101 · **Coach** · Ci 29 · 3rd class · Interior details · RELEX couplers · Length 16 cm (6-5/16")

French State Railways (SNCF)

France

4104 · **Coach** · $B^2C^{3\,1/2}$tmfp former BCi 29 of the German State Railroad · 2nd and 3rd class · Interior details · RELEX couplers · Length 16 cm (6-5/16")



France

4105 · **Coach** · C^6tmfp, former Ci 29 of the German State Railroad · 3rd class · Interior details · RELEX couplers · Length 16 cm (6-5/16")

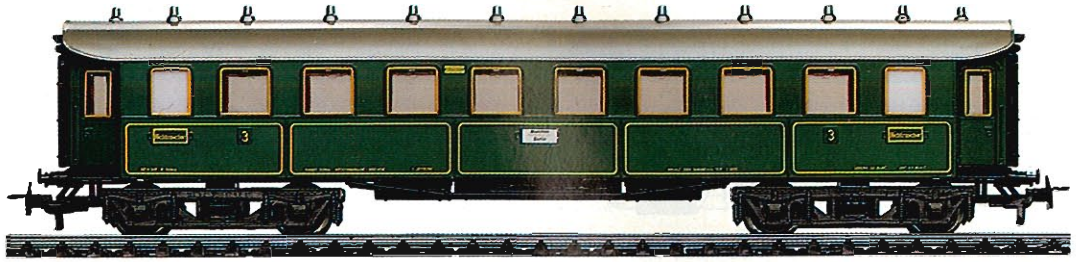
France

4106 · **Baggage Car** · Dmp, former Pwi 30 of the German State Railroad · 4 sliding doors · Interior details · RELEX couplers · Length 16 cm (6-5/16")

Express Coaches

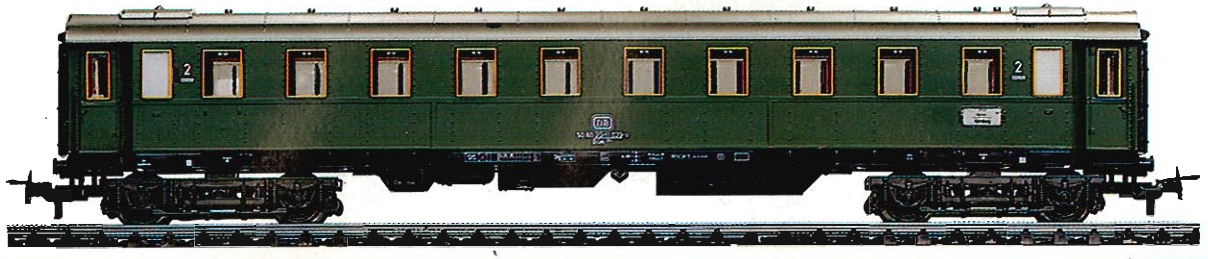
Royal Bavarian State Railroad (K.BAY.STS.B.)

4135 · **Coach** · CCü · 3rd class · Interior details · Automatic couplers · Length 22 cm (8-5/8") · Equipped for installation of lighting kit 7329



Standard Passenger Cars of the German Federal Railroad (DB)

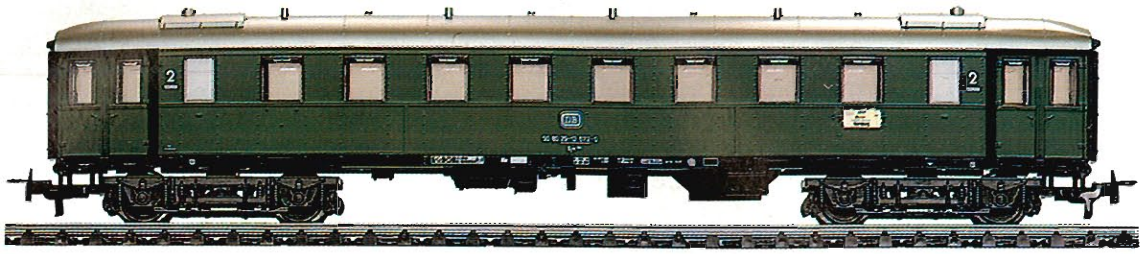
4139 · **Coach** · Büe354 · 2nd class · Interior details · Görlitz trucks · Automatic couplers · Length 24.3 cm (9-7/16") · Equipped for installation of lighting kit 7329



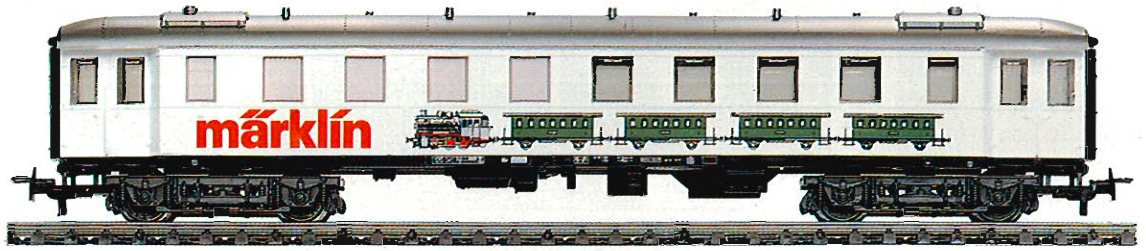
4145 · **Coach** · Ayse604 · 1st class · Interior details · Görlitz trucks · Automatic couplers · Length 24.3 cm (9-7/16") · Equipped for installation of lighting kit 7329

4140 · **Baggage Car** · Düe932 · Görlitz trucks · Automatic couplers · Length 22 cm (8-3/4") · Equipped for installation of lighting kit 7329

German Federal Railroad (DB)



4134 · Coach · Bye 664 · 2nd class · Interior details · Automatic couplers · Length 23 cm (9-1/16") · Equipped for installation of lighting kit 7329



4122 · Exhibition Car · D(Ausst.) 997 · Automatic couplers · Length 23 cm (9-1/16") · Equipped for installation of lighting kit 7329

■ "Rolling trade shows roll in new sales" is the slogan for a brochure from the "German Railroad Advertising" promoting exhibition trains. Companies can hold trade shows in a single exhibition car or in entire trains at any train platform. Conventional exhibits must be set up and taken down every time they are moved – that costs time and money. A "rolling trade show" is only set up once. The exhibitions take place during the day in various locations, while the night hours are used for transport.

The following cars are offered: Exhibit car type 1 offers an area of 64 square meters (576 square feet). It is equipped with a grid ceiling with fluorescent panel lighting, oil-fired, forced-air heating and ventilation, tie-down tracks for the exhibit equipment, loudspeakers and continuous wiring and, in some cases, restrooms. It is derived from the type X modern Intercity coaches.

The type 2 exhibit car offers an area of 42 square meters (452 square feet). It equipped with fluorescent strip lighting, Webasto heaters, electrical wall outlets, electrical outlet strips and motorized roof ventilators. It is based on the German State Railroad car design with recessed entry doors for fast passenger trains.

The refreshment car with a bar and kitchen has room for 35 guests. The bar is equipped with beer taps, a coffee maker, a refrigerator and a dishwasher. The kitchen is separate from the bar and fully equipped to prepare meals.

The conference car can be used in a variety of ways. There are partition walls which can be changed to create meeting rooms of any desired size.

When the exhibition train consists of several cars, the generator car is needed. It is equipped with two diesel engines and two generators. Their combined output is 50 kilowatts. A full fuel tank for the diesel engines is good for approximately 130 hours of operation.

The use of exhibit cars on a model railroad creates a colorful contrast with the other passenger cars. As with the prototype, individual cars or whole trains can be used. An exhibit on a siding in the station is prototypical; you have just created a mini-fair.

4121 · Exhibition Car · Lettered for Shell Oil · Automatic couplers · Length 23 cm (9-1/16") · Equipped for installation of lighting kit 7329

The closer it is, the more elegant it is – the comfortable togetherness

The new close coupler is compatible and reliable in operation.

The development of a close coupler that really does everything that the model railroader desires almost has to be compared in difficulty with the squaring of a circle. The connection between model railroad cars was, on the one hand, supposed to satisfy the ambitious hobbyists by making it possible for the train to get closer to the prototype in appearance. On the other hand, it was also supposed to be able to work on the model railroader's layout with sharp curves. Thirdly, and most importantly, the coupler was supposed to be compatible, i.e. "get along" with the conventional Märklin coupler. Moreover, it was supposed to offer the same advantages that have made the classic Märklin coupler so popular: easy coupling, reliable stability, easy uncoupling and pre-uncoupling.

The coupler's kinematics also received attention, those moveable elements which, so to speak, lengthen the coupler on curves so that the close-coupled cars do not push each other off the curve.

The Märklin close coupler now offers all of these advantages:

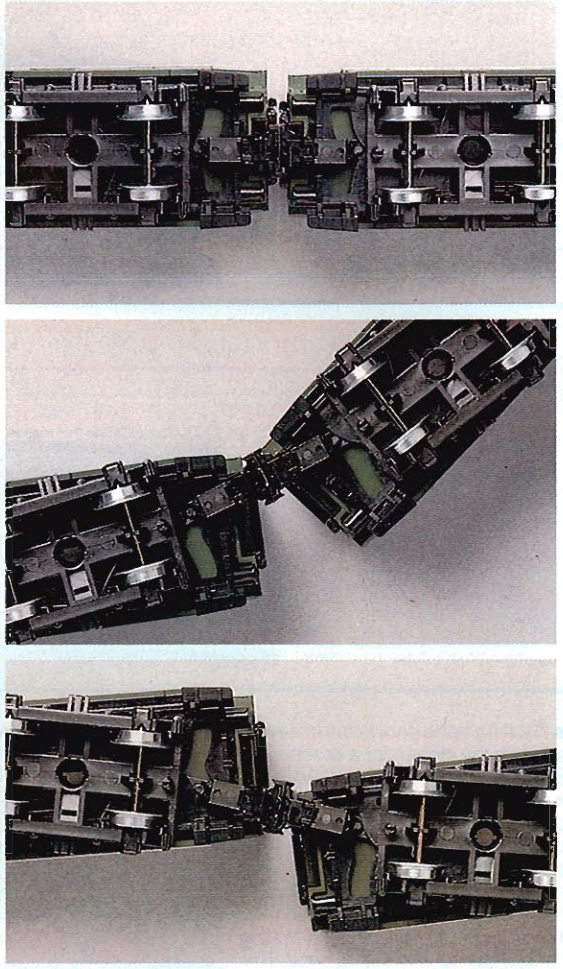
- It is compatible with the standard Märklin coupler and other couplers conforming to NEM norm 360.
- It can be used to push an uncoupled car further on to any spot on the layout.
- It has a universal mounting for a coupler pocket conforming to NEM norm 362 and can be used with cars by other manufacturers.
- The proven Märklin uncoupler track can be used without alterations.
- And, of course, it couples the cars close together.

For example, a train of the new, four-axle rebuild cars operates almost diaphragm-to-diaphragm. It does not require much imagination to

see the passengers going from one car to another during the trip without having to jump great distances.

Chiefly important for switching operations is the fact that the Märklin close couplers couple "softly". The cars are linked after the first attempt by a rigid "drawbar" which is necessary for the reliable movement of the kinematics. Trains can thus be pushed and pulled easily through straight track, curves or "S" curves with a radius of 360 mm (approx. 14–15 inches) or more.

The essence of the kinematics is a guide on the underside of the car floor. The coupler pocket is guided in such a way that the desired distance between the cars is automatically maintained. The shortest possible distance between the two cars is thereby achieved in any operating situation and the prototypical appearance is maintained.



Sliding guide for the close coupler on straight, curved and "S" curved track

The close coupler can be uncoupled with the uncoupler track, TELEX coupler or by hand using the uncoupler included with each car.

The pre-uncoupler feature is most evident in operation on yard tracks. Not every model railroader can afford to install uncoupler tracks all over his layout. For that reason he will do it only at places that are important in terms of operation, just before a yard throat or several sidings for example, and rely

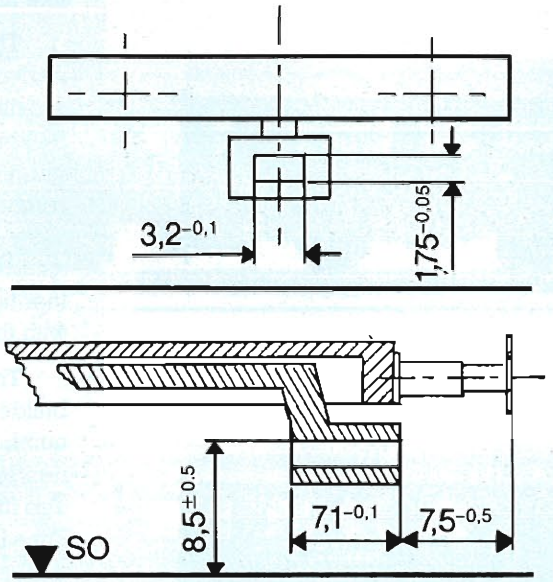
on the ability to pre-uncouple cars. At the uncoupler track the train is separated at the desired position in its length and the locomotive pushes it further down the track until the cars to be switched out are at their destination. This will work only if the couplers do not reengage at the already uncoupled position in the train. The maneuver is possible with the Märklin close coupler, just as it has been with the RELEX-coupler.

Operation on a hump track is similar. There the method of pre-uncoupling is particularly prototypical. Anyone who has had the opportunity to watch railroaders at work on a hump track, has observed that the cars are uncoupled by hand before they have crossed the summit of the hump and begun to roll towards their destination track. Moreover, the German Federal Railroad has, in this instance, taken the model as the prototype. Remote controlled locomotives are used with increasing frequency on hump tracks. This can be observed most impressively during a visit to the large, modern switching yard at Maschen south of Hamburg.

Imagine running a close coupler-equipped passenger car in a main line freight train with conventional couplers for the purpose of transferring the former to a maintenance facility for repairs. Anyone doing this will not run into difficulties because the close coupler can be coupled effortlessly to all previously produced versions of the standard Märklin coupler.

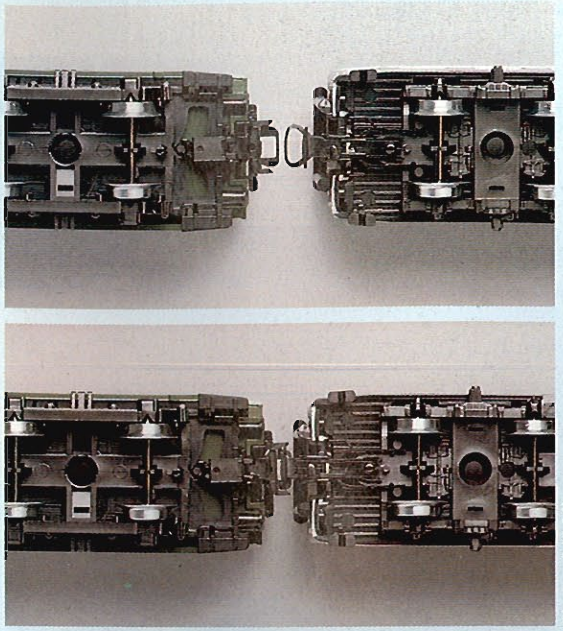
An additional idea is provided for any model railroader operating fixed train consists in which the order of the cars does not change often: The reproduction of the prototype coupler. It replaces two close couplers, giving a still "more genuine" appearance to the connection between the cars (and also freeing the close couplers for other cars). Of course, this connection, consisting as it does of a single part, can be separated only by hand by taking the two coupled cars off the track. This method must, however, be considered as a serious alternative on the parade track for the rebuild cars or the "Beautiful Lady of Württemberg" with its provincial cars.

The compatibility of the new close coupler was especially important for Märklin because it allows freedom of operation with all earlier types of the "Märklin-style" coupler. The model railroader is thus free to pick and choose which cars he wants to equip with the new coupler. He can also operate old cars on the layout which do not have the standard coupler pocket and he does not have to pay



European Model Railroad Norm NEM 362:
Pocket for interchangeable coupler heads

any heed during switching operations to which cars are equipped with which coupler. This is particularly important with locomotives which cannot be converted at all or only at great expense. The agony and irritation of not being able to couple a marvelously prototypically close coupled train to a locomotive because the latter's coupler is incompatible with the close coupler is not going to be found with Märklin. It is not necessary for the car coupled to the locomotive to have a close coupler at one end and a conventional coupler at the other.



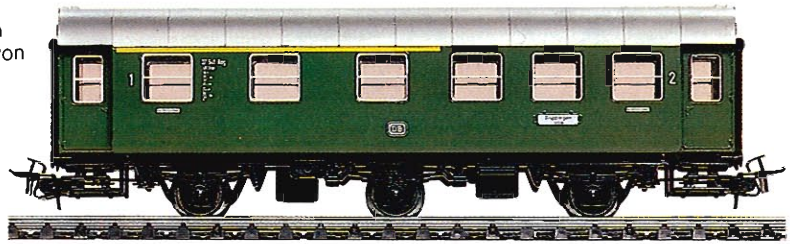
Photos: Märklin

Compatibility without retrofitting:
Close coupler and standard coupler

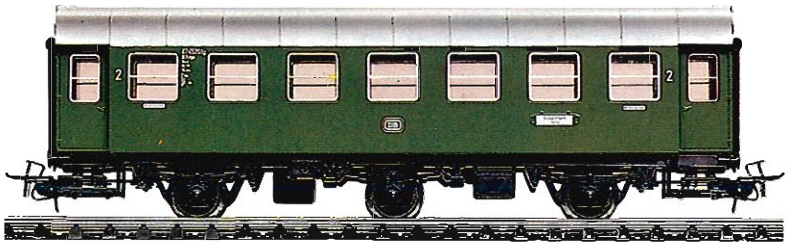
The uncoupler track also does not have to be modified. Two close couplers as well as a close coupler and a conventional coupler can be disengaged effortlessly and with no additional alterations to the track. This even holds true for the pre-uncoupler effect. The prototypical train composition of four-axle rebuild cars with Silver Liner cars can be switched in any fashion desired before the readied train pulls up to the station platform to take on passengers.

German Federal Railroad (DB)

4067 · Coach · AB3yge^{756} · 1st and 2nd class · RELEX couplers · Length 15.2 cm (6") · Equipped for installation of lighting kit 7074



4079 · Coach · B3yge^{761} · 2nd class · RELEX couplers · Length 15.2 cm (6") · Equipped for installation of lighting kit 7074



4080 · Coach with baggage Compartment · BD3yge^{766} · 2nd class · RELEX couplers · Length 15.2 cm (6") · Equipped for installation of lighting kit 7074

■ In 1951 the German Federal Railroad had 17,836 cars at its disposal for commuter traffic. 13,349 of these cars had two or three axles and wood bodies; this group consisted overwhelmingly of the well-known Prussian three-axle compartment cars. They were no longer satisfactory in terms of comfort, did not offer enough stability in accidents and had other defficiencies which were attributable to their age. Actually, the German Federal Railroad should have purchased new commuter cars, but its financial position did not permit this. Instead, the old three-axle cars with linked axles were rebuilt into modern coaches with steel bodies, while the original frames were kept. After constructing the first test car in January of 1954, the shops in Ludwigshafen began mass production. The shops at Hannover, Karlsruhe, Limburg and Neuaubing also participated in the rebuilding program. Each car took 1,690 hours of work at a cost of DM 30,200.00 (approximately $7,190.00 at 1954 exchange rates).

2nd class (originally 3rd class), 1st and 2nd class (originally 2nd and 3rd class) and baggage cars with 2nd class (originally 3rd class) were rebuilt. The control car "99301 Ffm" was the only such car built; its cab was later removed. In operation two each of these three-axle cars were permanently coupled as a unit. Running characteristics were achieved with this arrangement that were hardly inferior to a newer 26.4 meter (86' 7") car. These "pairs" were allowed to run at

(continued next page)

Inseparable after being rebuilt

Renovated three-axle cars were run in pairs.

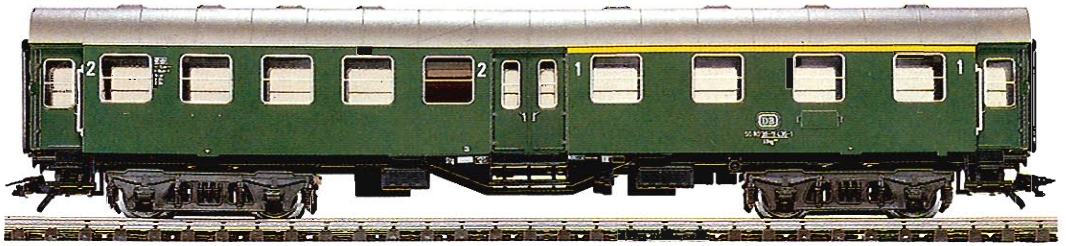
After World War II the German Federal Railroad's three-axle rebuild cars were almost inseparable, just like the three-axle Prussian compartment cars on the Berlin Metropolitan Railroad around 1895. Although they were not closed coupled like the "Prussian Pairs", they were always run in pairs.

The cars were, exactly like the four-axle versions, derived from old passenger cars, some dating back to the provincial railroad period. After the war the German Federal Railroad had modernized them in a large rebuilding program. The car bodies, some still made of wood, were removed and replaced with steel versions. Upholstered seats increased passenger comfort and the frames were standardized in size. This made it possible to build on weather-tight diaphragm connections between the cars, just as with the express passenger cars.

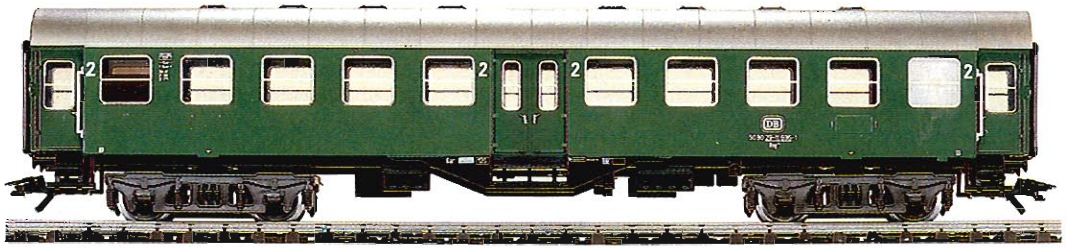
The reason for the program was the fact that the car builders did not have sufficient capacity to deliver large numbers of cars as quickly as the German Federal Railroad needed them in view of the emerging economic miracle. The first three-axle rebuild cars went into operation in 1954. For a long time they were, along with the four-axle versions, the backbone of the German Federal Railroad's commuter traffic until replaced by the Silver Liner cars. The German Federal Railroad not longer uses three-axle cars in passenger trains, but many museum railroads do.

A large number of cars had to undergo a second rebuilding. They were transformed into maintenance cars, chiefly at the Offenburg maintenance facility. They are now located at practically every station, in Federal Railroad turquoise, parked on a siding. They are transferred from station to station in freight trains and have taken over the function of mobile living quarters on track laying trains, often with the same reddish-brown shades at the windows and a yellow flag on each side.

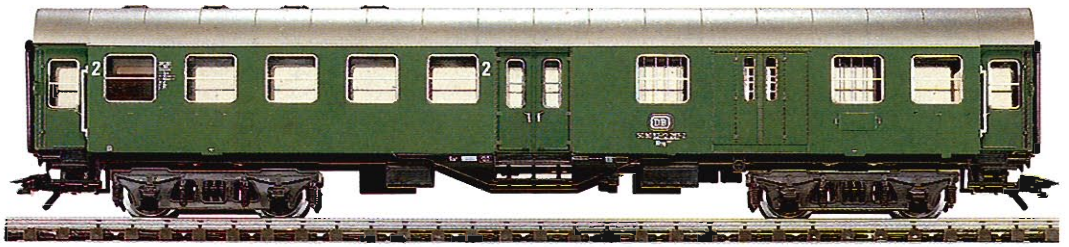
German Federal Railroad (DB)



4131 · **Coach** · AByg 503 · 1st and 2nd class · Interior details · **Automatic close couplers** · Length 22.4 cm (8-¾") · Equipped for installation of lighting kit 7329



4132 · **Coach** · Byg 515 · 2nd class · Interior details · **Automatic close couplers** · Length 22.4 cm (8-¾") · Equipped for installation of lighting kit 7329



4133 · **Coach with Baggage Compartment** · BDyg 533 · 2nd class · Interior details · **Automatic close couplers** · Length 22.4 cm (8-¾") · Equipped for installation of lighting kit 7329

(continued)

speeds of 100 km/h (62.5 m.p.h.). Separation of the double units was not possible during operation.

The rebuilding program was very successful. By 1958 6,500 cars had been rebuilt – this amounted to approximately 25% of the German Federal Railroad's passenger rolling stock at that time. In the winter schedule for 1985/86 the last three-axle rebuild cars were taken out of service. Not all of them have been scraped, however; some were rebuilt into maintenance cars and others went to private railroads.

A similar rebuilding program was carried out between 1958 and 1960 for older four-axle cars with wood bodies – also predominantly old Prussian compartment cars. Some of these cars are still in use on the DB.

In the 30 year history of their use the rebuild cars have been pulled by almost all the locomotives in operation on the DB. They were frequently seen behind tank locomotives, classes 74, 75, 78 and 86; the classes 24, 38, 41 and 50 were among those lender locomotives used. On electrified routes where steam motive power had already been discontinued, diesel locomotives, classes 212, 216, 220 and 236, pulled the trains. Rebuild cars were operated on routes other than branch lines; they also ran in commuter traffic under catenary in and around metropolitan areas. Electric locomotives used were the classes 104, 110, 111, 140 or 152.

A "classic" composition of three-axle rebuild cars consists of three "pairs", i.e. six cars: four 2nd class cars, one 1st and 2nd class car as well as a 2nd class car with baggage compartment. A train of four-axle cars "faithful to the period" operated, for example, with two 2nd class cars, one 1st and 2nd class car as well as a 2nd class car with baggage compartment.

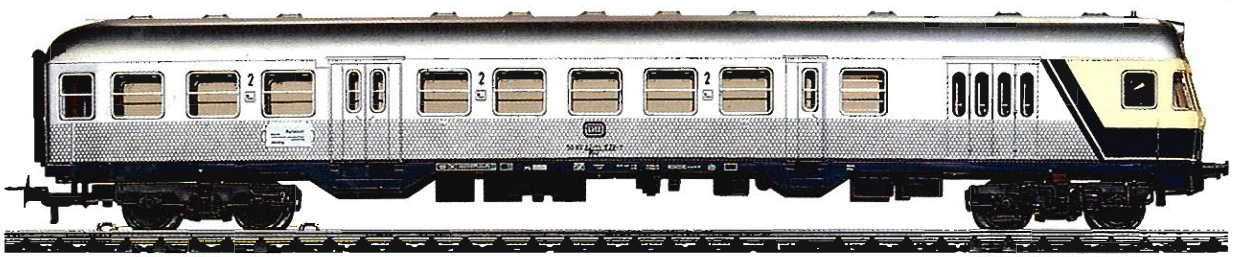
Colorfully mixed trains were even more common than these types of compositions. In these instances three and four-axle rebuild cars were used together in a train with totally different types of cars. These compositions contained, for example, Prussian compartment cars, older Reichsbahn period cars with inset double-entry doors or Silverliner commuter cars.

Commuter Cars of the German Federal Railroad (DB)

4158 · Commuter Car · ABnrzb 704 · 1st and 2nd class · Interior details · Automatic couplers · Length 26.4 cm (10-3/8") · Equipped for installation of lighting kit 7329

4159 · Commuter Car · Bnb 719 · 2nd class · Interior details · Automatic couplers · Length 26.4 cm (10-3/8") · Equipped for installation of lighting kit 7329

4160 · Control car with Baggage Compartment and Engineer's Cab · BDnf 735 · 2nd class · Interior details · Headlight or marker lights illuminated according to direction of travel · Illuminated destination signs at the end · Automatic couplers · Length 26.4 cm (10-3/8") · Equipped for installation of lighting kit 7329



■ After several test versions the German Federal Railroad began in 1960 to replace older passenger cars with new commuter cars having a length of 26.4 meters (87'7"). A typical feature of these cars was the shiny, silver stainless steel finish. Hence, the name "Silberlinge" ("Silverliners").

When operated control car first, triple white headlights shine.

When operated control car last, dual red marker lights shine.

Commuter Cars of the German Federal Railroad (DB)

4183 · **Suburban Coach** · ABx 791 · 1st and 2nd class · Interior details · **Automatic close couplers** · Length 24.5 cm (9-¾") · Equipped for installation of lighting kit 7330

4184 · **Suburban Coach** · Bx 794.1 · 2nd class · Interior details · **Automatic close couplers** · Length 24.5 cm (9-¾") · Equipped for installation of lighting kit 7330

4185 · **Suburban Control Car** · Bxf 796.1 · 2nd class · Interior details · Headlights or marker lights illuminated according to direction of travel · Illuminated destination signs at the end · **Automatic close couplers** · Length 25.3 cm (10-⅛") · Equipped for installation of lighting kit 7330

■ Unlike the suburban routes in centers like Munich, Hamburg, Berlin, Stuttgart or Frankfurt/Main, whose networks are relatively confined, the suburban network of the Ruhr region serves several large cities. Research conducted by the German Federal Railroad confirmed that locomotive-powered trains are better suited for the Ruhr suburban network than self-propelled cars. As a result, the German Federal Railroad, in cooperation with the German railroad car industry developed an entirely new generation of commuter cars.

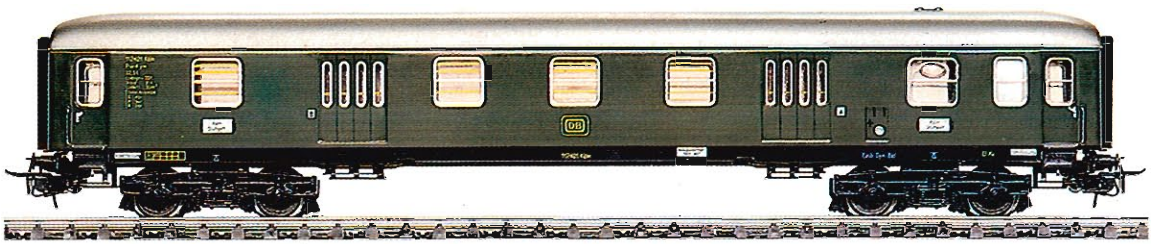
Special features include additional doors for quicker entraining and detraining of passengers, appealing interior decoration as well as the exterior paint scheme with orange striping. The class 111 electrics are push-pull engines and have the same suburban commuter train color scheme. The engine and cars form a complete unit.

When operated control car first, triple white headlights shine.

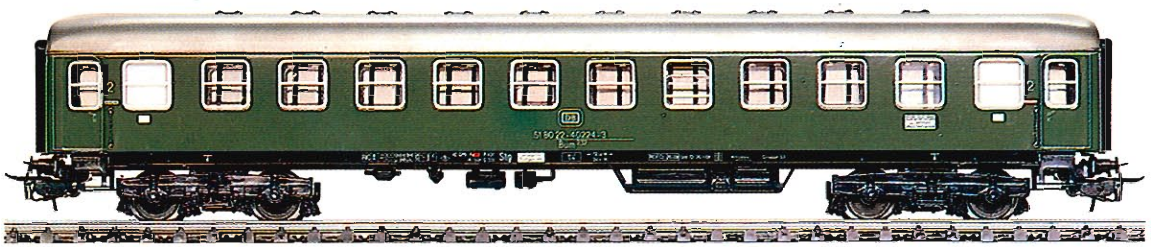
When operated control car last, dual red marker lights shine.

German Federal Railroad (DB)

4026 · **Baggage Car** · Dyl[961] (Dym 961) · RELEX couplers · Length 24 cm (9-½") · Equipped for installation of lighting kit 7077 with pickup shoe 7198



4052 · **Coach** · Bm[232] (Büm 232) · 2nd class · Interior details · RELEX couplers · Length 24 cm (9-½") · Equipped for installation of lighting kit 7077 with pickup shoe 7198

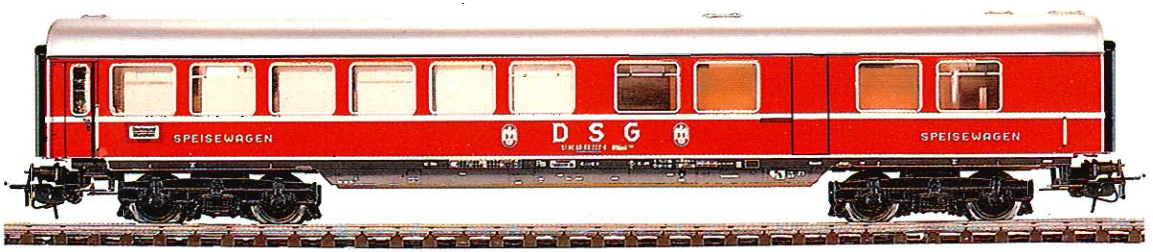


4051 · **Coach** · Am[202] (Aüm 202) · 1st class · Interior details · RELEX couplers · Length 24 cm (9-½") · Equipped for installation of lighting kit 7077 with pickup shoe 7198

4053 · **Coach** · Same as 4051 but with illuminated marker lights · Equipped for installation of lighting kit 7077

 = 7175

4188 · **Dining Car** · WRm[132] (WRümh 132) · Interior details · RELEX couplers · Length 24 cm (9-½") · Equipped for installation of lighting kit 7320



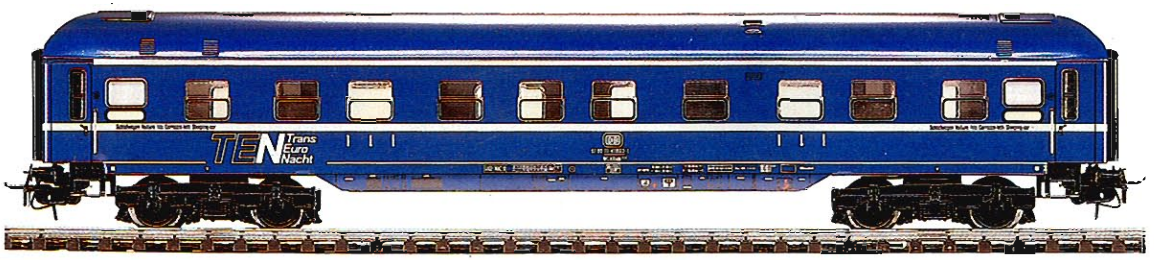
German Federal Railroad (DB)

4111 · **Coach** · Am^{202} (Aüm 202) · 1st class · Interior details · RELEX couplers · Length 24 cm (9-½") · Equipped for installation of lighting kit 7077 with pickup shoe 7198

4112 · **Coach** · Bm^{232} (Büm 232) · 2nd class · Interior details · RELEX couplers · Length 24 cm (9-½") · Equipped for installation of lighting kit 7077 with pickup shoe 7198

German Sleeping Car Company (DSG)

4064 · **Sleeping Car** · WLABm^{174} (WLABüm 174) · Series 33200 · 1st and 2nd class · RELEX couplers · Length 24 cm (9-½") · Equipped for installation of lighting kit 7320



German Federal Railroad (DB)

4130 · **Sleeping Car** · WLABm^{174} (WLABüm 174) · Series 33200 · 1st and 2nd class · RELEX couplers · Length 24 cm (9-½") · Equipped for installation of lighting kit 7320

N

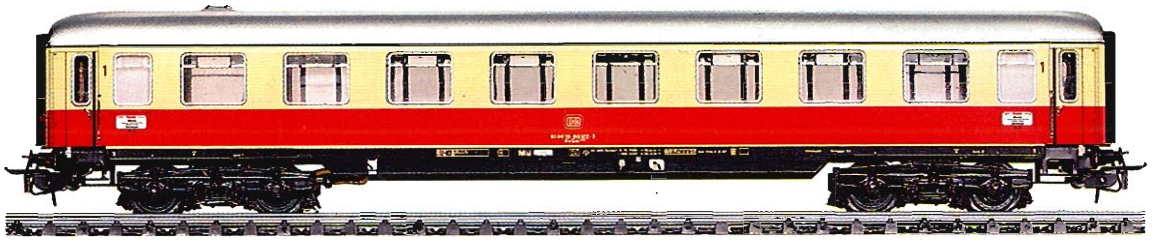
TEE/IC Passenger Cars 24 cm (9-½")

German Federal Railroad (DB)

4085 · **TEE/IC Compartment Car** · Avmh^{111} (Avüm 111) · 1st class · Interior details · RELEX couplers · Length 24 cm (9-½") · Equipped for installation of lighting kit 7320

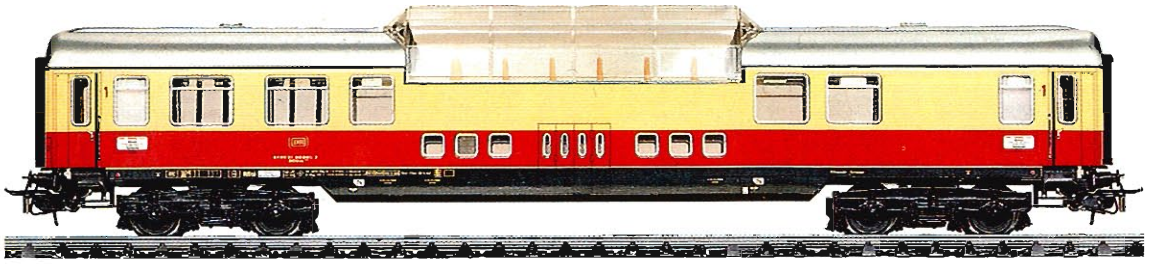
4089 · **TEE/IC Compartment Car** · Same as 4085 but with interior illumination and illuminated marker lights

=7175 =60015

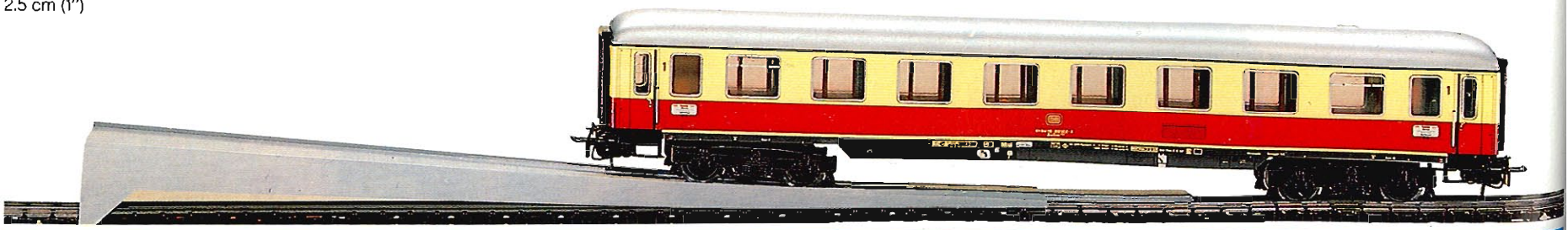


4087 · **TEE/IC Dining Car** · WRmh^{132} (WRümh 132) · Interior details · RELEX couplers · Length 24 cm (9-½") · Equipped for installation of lighting kit 7320

4090 · **TEE Vista Dome Car** · ADm^{101} (ADüm 101) · 1st class · Interior details · RELEX couplers · Length 24 cm (9-½") · Equipped for installation of lighting kit 7322



7224 · **Re-Railer** · Enables the placing of multi-axle cars and locomotives on the track · Length 30 cm (1') · Height 2.5 cm (1")



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Passenger Cars 27 cm (10-5/8")

German Federal Railroad (DB)

4091 · **Coach** · Am^{203} (Aüm 203) · 1st class · Interior details · Automatic couplers · Length 27 cm (10-5/8") · Equipped for installation of lighting kit 7329

4092 · **Coach** · Bm^{234} (Büm 234) · 2nd class · Interior details · Automatic couplers · Length 27 cm (10-5/8") · Equipped for installation of lighting kit 7329

4154 · **Coach** · Same as 4092, but with illuminated marker lights

⇦=41494

4093 · **Baggage Car** · Dm^{902} (Düms 902) · Sliding roll-doors on both sides · Automatic couplers · Length 27 cm (10-5/8") · Equipped for installation of lighting kit 7329

Mail Car of the German Federal Post Office (BP)

4157 · **Mail Car** · Post mrz 73076 · Interior details · Automatic couplers · Length 26.4 cm (10-3/8") · Equipped for installation of lighting kit 7329

German Federal Railroad (DB)

4175 · **Coach** · Entertainment Car WGm 842.0 · Interior details · Automatic couplers · Length 27 cm (10-5/8") · Equipped for installation of lighting kit 7329

4176 · **Coach** · Entertainment Car WGm 842.1 "German Wine Route" · Interior details · Automatic couplers · Length 27 cm (10-5/8") · Equipped for installation of lighting kit 7329

4177 · **Sleeping Car** · Bcm for charter trains of Hapag-Lloyd Tours · 2nd class · Interior details · Automatic couplers · Length 27 cm (10-5/8") · Equipped for installation of lighting kit 7329

■ In 1951 the German Federal Railroad placed long-distance passenger cars with a length of 26.4 meters (86'7-3/8") over the buffers in service for the first time. The railroad was exploring new territory with these cars; prewar long-distance cars were around 22 meters (72'2"). The first express car designs, built on a standard frame, appeared in 1953. The test cars delivered at this time still had concertina diaphragm connections at the car ends. They continued this way until the early 1960's when they were equipped with tubular rubber diaphragm connections. By contrast, the designs delivered beginning in 1955 were equipped right from the start with the latter type of car end connection. The following cars were produced on the standard frame with the same entry and restroom dimensions: 1st class, 2nd class, 1st/2nd class, slumber coach 2nd class, 2nd class with baggage area, 2nd class with dining area and baggage car. The German Federal Postal System likewise built mail cars on a 26.4 meter frame. The new design for dining cars are even longer at 27.5 meters (90'3").

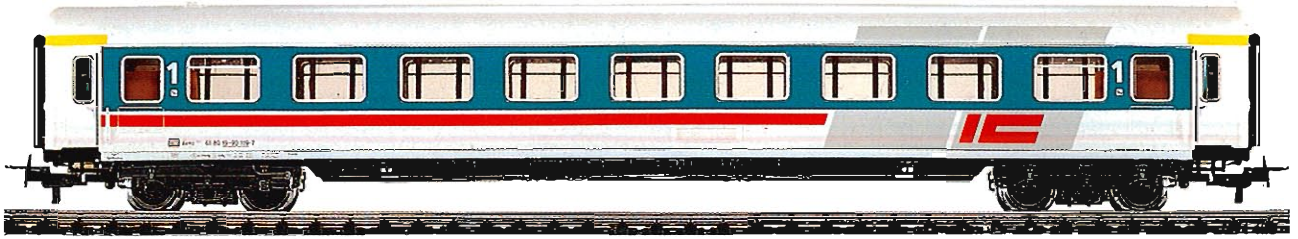
The window arrangement for individual types of cars is different according to the interior layout. Following recommendations from the International Railroad Association, UIC, the windows consist of a fixed lower half and a sliding upper half that sits in front of the lower half in the open position. This type of window is known as a sliding window. The cars are equipped with two two-axle Minden-Deutz trucks with a wheelbase of 2,500 millimeters (8'2").

In 1961 this car design developed by the German Federal Railroad was standardized by the UIC as the "Standard Type X". The UIC specified a higher degree of structural integrity for the car bodies than the DB. The result of this was a different construction for the end walls of the newer designs. This reinforcement necessitated the redesigning of the car end doors. Two-part sliding doors were installed instead of the four-part folding doors previously in use. Moreover, folding doors were used instead of the simple hinged doors for outside entry.

Other car designs were produced from this basic type of 26.4 meter car. An example is the entertainment car that the German Federal Railroad provides for special purposes.

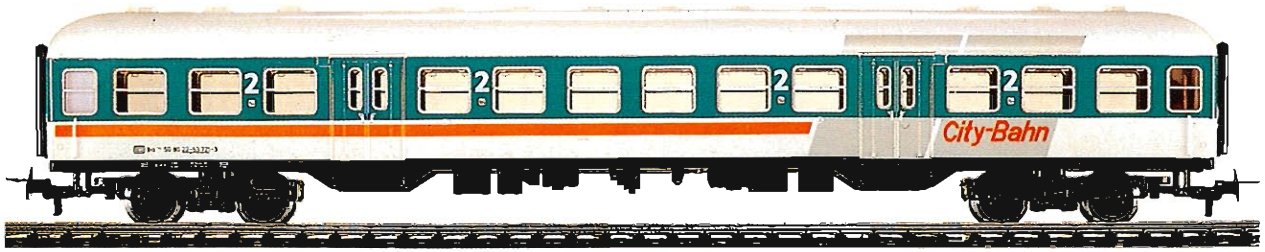
Proposed Passenger Car Color Schemes of the German Federal Railroad (DB)

4220 · IC Compartment Car · Avmz 111 · 1st class · Proposed color scheme as presented by the DB · Interior details · Automatic couplers · Length 27 cm (10-5/8") · Equipped for installation of lighting kit 7329



4221 · Coach · Bm 234 · 2nd class · Proposed color scheme as presented by the DB · Interior details · Automatic couplers · Length 27 cm (10-5/8") · Equipped for installation of lighting kit 7329

4222 · Commuter Car · Bnb 719 · 2nd class · Proposed color scheme as presented by the DB · Interior details · Automatic couplers · Length 26.4 cm (10-3/8") · Equipped for installation of lighting kit 7329



4223 · Baggage Car · Dms 905 · Proposed color scheme as presented by the DB · Sliding roll-doors on both sides · Automatic couplers · Length 27 cm (10-5/8") · Equipped for installation of lighting kit 7329

"Every hour – every class" in competition with the automobile

Intercitys have been operating on regular schedules since 1971

"Every hour, every class" or "Germany in hourly intervals". Using advertising slogans such as these the German Federal Railroad started a new phase in 1979 in the promotion of its offerings. They were intended to introduce the slow but constant transformation of the railroad from a wallflower existence in the transporation field to a modern means of conveyance oriented to the future. The competition with the automobile as a means of transportation had been accepted. It reached its temporary peak in 1987 with the German Federal Railroad's new fare structure.

The Intercity era had already begun between Munich and Augsburg in 1965 on the occasion of the International Transportation Show in Munich. The first line on which regular schedules were operated at 200 km/h (125 m.p.h.) opened the way to an efficient express train system which was intended to link the major metropolitan areas in the German Federal Republic. The workhorse for this system was the E 03, later 103, express locomotive with its unmistakable appearance which is currently still powering most of the Intercity trains.

The predecessor to the present daily Intercity network was first class only trains which linked the most important cities in West Germany on a two hour basis starting with the winter schedule in 1971/72. These trains were painted in the striking colors of red and cream and included the TEE trains then in use.

The number of passengers for these connections increased 48% which meant a 16% increase for total long distance travel. It quickly became evident that the every two hours schedule was not enough for the demand. An hourly schedule using additional trains was soon put in place for the routes along the Rhine.

The railroad suffered a setback in 1973 due to the first oil crisis. Initially, the car-free Sundays and increased environmental awareness gave it new passengers, but the subsequent economic crisis threatened especially to put the first class trains, which were tailored to business travel, in the red. So, private travel, previously restricted to the D-Zug express trains, was included in the Intercity system and the entire system was expanded as "IC 79" to an hourly schedule. Since then the Intercity trains have operated profitably from city to city in the already classic composition of "first class in cream and red, second class in turquoise and cream and a dining car in between".

Similar concepts took effect almost simultaneously in countries bordering West Germany, so that the switches have been set for an Intercity network in Western Europe. Since the beginning of the 1980's this has been demonstrated by the fact that many Intercity trains are operated across borders to Copenhagen, Klagenfurt, Milan and Paris, for example. The TEE system, by contrast, did not recover from the setbacks of the economic crises. There are only a few connec-

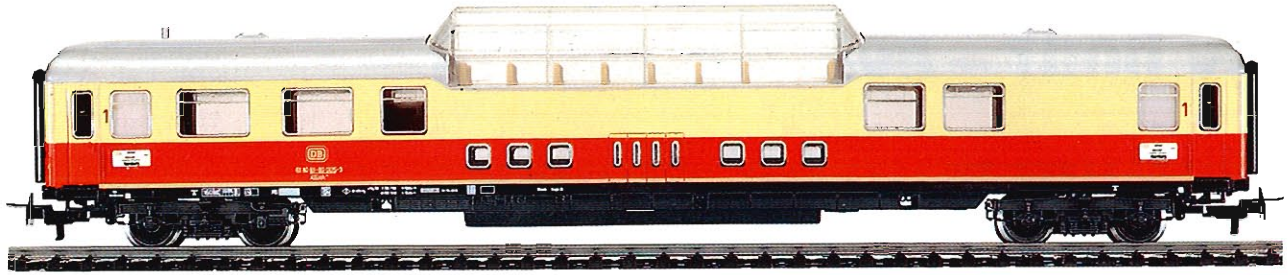
Photo: DB

The class 103 express locomotive demonstrates its abilities chiefly on IC trains.

TEE Vista Dome Car 27 cm (10-5/8")

German Federal Railroad (DB)

4099 · TEE Vista Dome Car · ADm[101] · 1st class · Interior details · Automatic couplers · Length 27 cm (10-5/8") · Equipped for installation of lighting kit 7329



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tions remaining which have more the character of tourist parade trains than of profitable services.

In 1985 the German Federal Railroad revised its Intercity system and quite clearly took up the competition with the airlines, at least on the domestic German routes. It incorporated the Frankfurt Airport into the Intercity system as the slogan "Half as fast as an airplane, twice as fast as a car" was being created for the emerging newly designed routes for the high speed trains of the 1990's. Moreover, the expansion program for routes was beginning to bear fruit. Travel times, chiefly in the north, were becoming increasingly shorter due to the fact that larger and larger portions of routes could be run at 200 km/h (125 m.p.h.).

Instead of an average of 100 km/h (62.5 m.p.h.), the average speed of all Intercity trains is now 108 km/h (67.5 m.p.h.), including all intermediate stops and slow speed areas such as the Geislingen Grade and the romantic Rhine Valley. Travel speeds will increase markedly when the newly designed routes from Hannover to Würzburg and Mannheim to Stuttgart are put into operation, even if the railroad cannot immediately start using the new high speed Intercity Express for "every hour, every class". Ten units of this pre-production version of the ICE were ordered on January 13, 1987. Other new route construction is in the planning stages, such as from Cologne to the Rhein-Main area or in the upper Rhine Valley. The strategists at the railroad's central management in Frankfurt are planning on a massive rate of growth because on many connections the automobile can be beat by the train's travel time and even the airplane is no longer competitive. For in addition to the greater comfort a train can offer travelers, it also travels from city center to city center. Troublesome transfers to public transportation or taxis are not necessary.

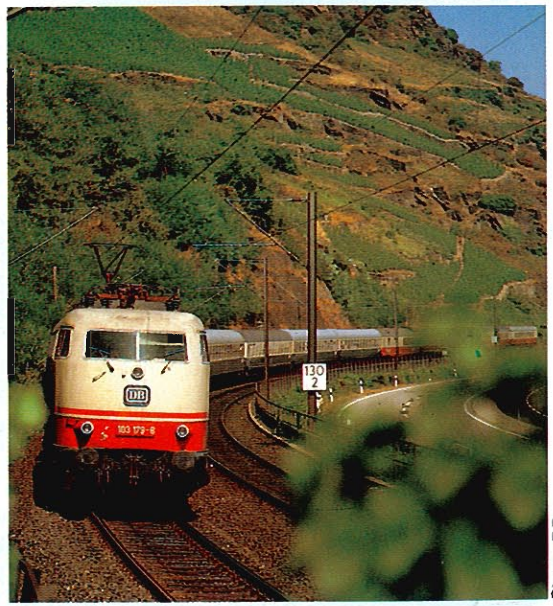


Photo: DB

IC train of the DB on the Rhine Valley line near Oberwesel.

And the traveler still does see something of the landscape, even if the critics occasionally dismiss the concept of the newly designed routes with their many tunnels and land cuts as the "longest subway in the world".

Moreover, the sweeping success of the hourly scheduling is also ushering in the slow disappearance of the D-Zug express trains from the master schedule book. A concept called "Interregio" is being prepared for the immediate future as a category within the Intercity trains. This category will include regular schedules for areas not served by Intercity trains and, at the same time, is supposed to be coordinated closely with the Intercity schedules.

German Federal Railroad (DB)

4095 · TEE/IC Compartment Car · Avmhz^{111} · 1st class · Interior details · Automatic couplers · Length 27 cm (10-5/8") · Equipped for installation of lighting kit 7329

4098 · TEE/IC Compartment Car · Same as 4095, but with illuminated marker lights

⌓ = 41494

4096 · TEE/IC Open Seating Coach · Apmz^{122} · 1st class · Interior details · Automatic couplers · Length 27 cm (10-5/8") · Equipped for installation of lighting kit 7329

4097 · TEE/IC Dining Car · WRmh^{132} (WRümh 132) · Interior details · Automatic couplers · Length 27 cm (10-5/8") · Equipped for installation of lighting kit 7329

4153 · TEE/IC Dining Car · WRmz 135 · Interior details · Automatic couplers · Length 27 cm (10-5/8") · · Equipped for installation of lighting kit 7329

EUROFIMA Passenger Cars 26.4 cm (10-3/8")

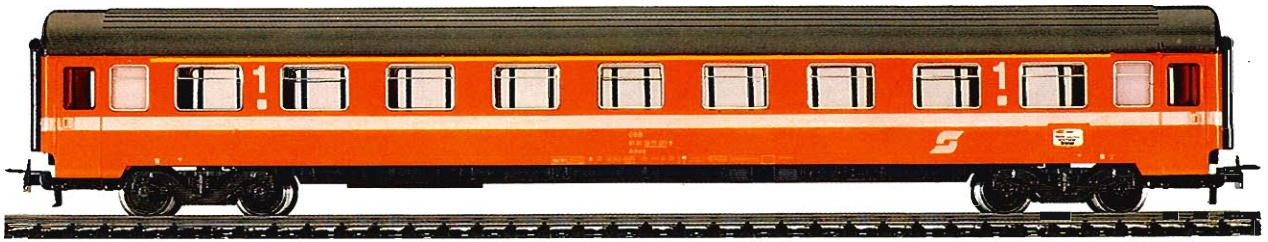
German Federal Railroad (DB)

4147 · Coach · Avmz^{207} (A9 EUROFIMA) · 1st class · Interior details · Automatic couplers · Length 26.4 cm (10-3/8") · Equipped for installation of lighting kit 7329

Austrian Federal Railways (ÖBB)

Austria

4149 · Coach · Amoz (A9 EUROFIMA) · 1st class · Interior details · Automatic couplers · Length 26.4 cm (10-3/8") · Equipped for installation of lighting kit 7329



Swiss Federal Railways (SBB)

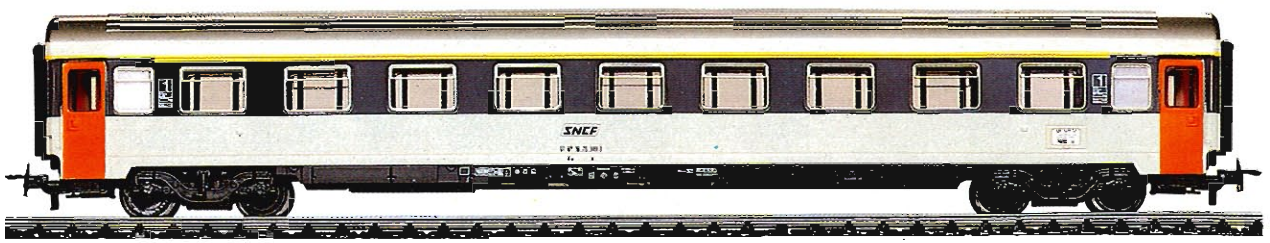
Switzerland

4162 · Coach · (A9 EUROFIMA) · 1st class · Interior details · Automatic couplers · Length 26.4 cm (10-3/8") · Equipped for installation of lighting kit 7329

French State Railways (SNCF)

France

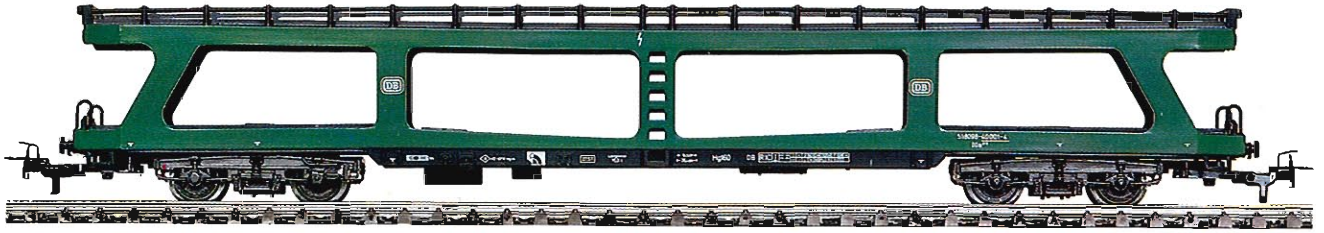
4161 · Coach · Type A9u (A9 EUROFIMA) · 1st class · "Corail" colors · Interior details · Automatic couplers · Length 26.4 cm (10-3/8") · Equipped for installation of lighting kit 7329



Belgian State Railways (NMBS/SNCB)

Belgium

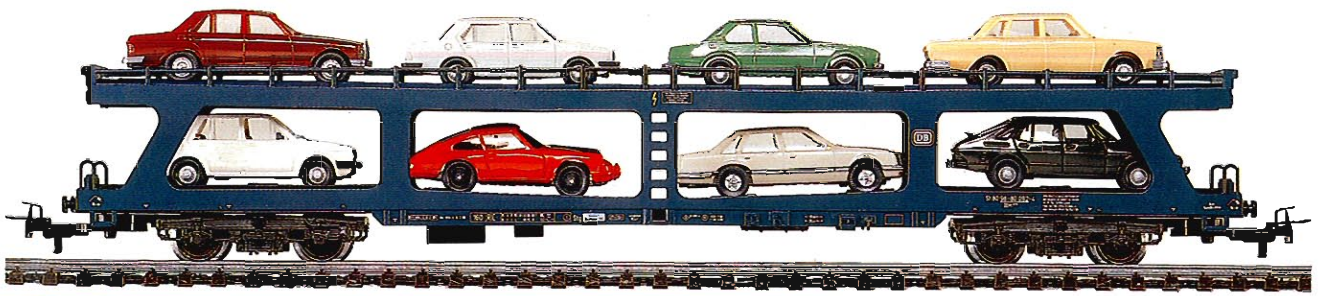
4166 · Coach · (B11 EUROFIMA) · 2nd class · Interior details · Automatic couplers · Length 26.4 cm (10-3/8") · Equipped for installation of lighting kit 7329



German Federal Railroad (DB)

4084 · Passenger Train Auto Carrier · DDm915 · Without autos · RELEX couplers · Length 26.4 cm (10-3/8")

4074 · Passenger Train Auto Carrier · DDm915 · 8 Wiking miniature cars · RELEX couplers · Length 26.4 cm (10-3/8")



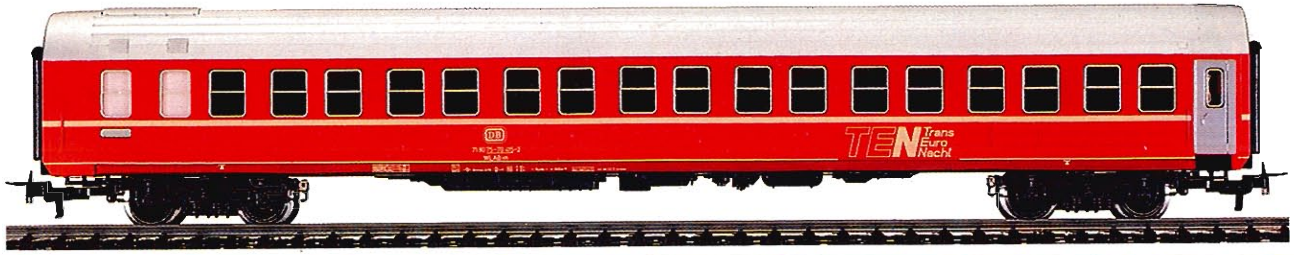
4234 · Passenger Train Auto Carrier · DDm915 · 8 Wiking miniature cars · RELEX couplers · Length 26.4 cm (10-3/8")

N

TEN Passenger Cars 27 cm (10-5/8")

German Federal Railroad (DB)

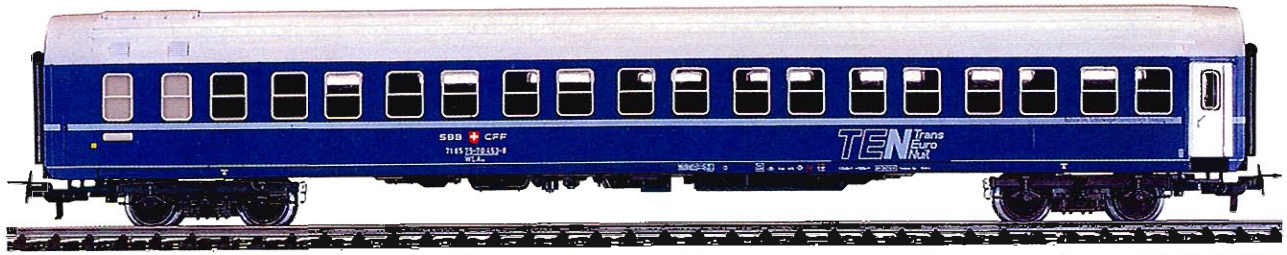
4150 · Sleeping Car · WLABsmh^{166} · 1st and 2nd class for TEN sleeping car pool · Interior details · Automatic couplers · Length 27 cm (10-5/8") · Equipped for installation of lighting kit 7329



Swiss Federal Railways (SBB)

Switzerland

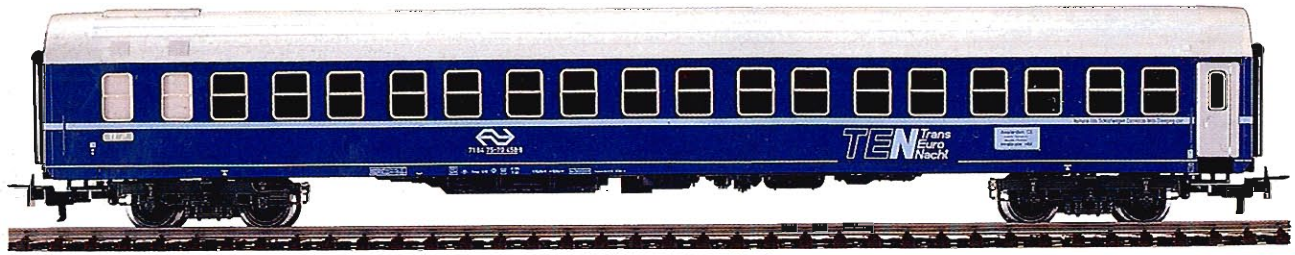
4182 · Sleeping Car · 1st and 2nd class for the TEN sleeping car pool · Interior details · Automatic couplers · Length 27 cm (10-5/8") · Equipped for installation of lighting kit 7329



Netherlands Railways (NS)

Netherlands

4151 · Sleeping Car · 1st and 2nd class for TEN sleeping car pool · Interior details · Automatic couplers · Length 27 cm (10-5/8") · Equipped for installation of lighting kit 7329



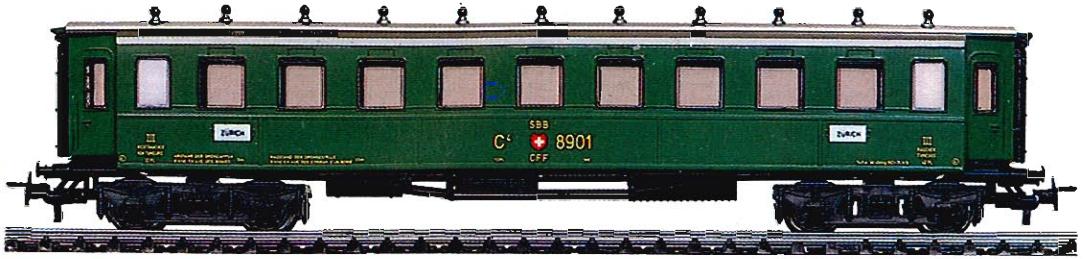
■ For over a century the sleeping car has been an essential part of comfort on the rails. The acceleration of rail traffic with the resultant shorter travel times has reduced the number of overnight connections with sleeping cars offered in West Germany in recent years. However, there are still many to be found at present on longer international routes, even though air travel has brought a reduction in the number of rail passengers here.

The "International Sleeping Car Company" (ISG/CIWL) provided a wide range of national and international sleeping car services between the two world wars. This operation was carried out with ISG-owned rolling stock. World War II caused the ISG to lose its dominant position. To a large extent the sleeping car services were "nationalized", i.e. transferred to the different railroads or to special national companies such as the "German Sleeping Car and Dining Car Company".

Finally, on July 1, 1971 the railroads in Belgium, Denmark, the Federal Republic of Germany, France, Italy, Luxemburg, Austria, the Netherlands and Switzerland established the "TEN pool". "TEN" stands for "Trans Euro Night". The TEN cars run in international trains that make overnight trips interesting for business people and vacationers. The intent is to improve international sleeping car service with coordinated schedules.

The type T2S standard sleeping car is being used in large numbers. One, two or three bedroom compartments can be set up according to the needs of the passengers. The size of the compartment and occupancy determine whether a first or second class ticket is required. In addition, a sleeping car ticket is necessary.

Each year over a million passengers make use of the "rolling hotels"; even in the future the sleeping car will continue to be an indispensable part of long-distance travel.



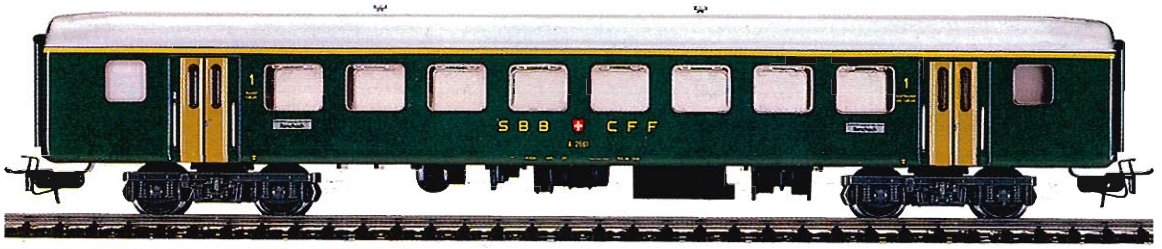
Swiss Federal Railways (SBB)

Switzerland

4138 · **Coach** · Older C4ü · 3rd class · Interior details · Automatic couplers · Length 22.2 cm (8-¾") · Equipped for installation of lighting kit 7329

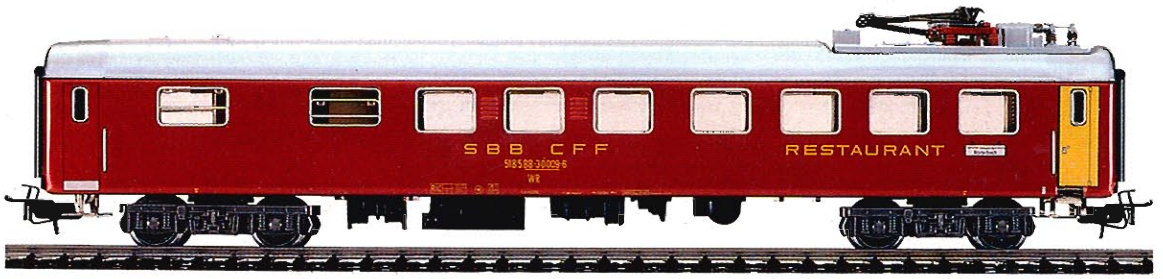
Switzerland

4146 · **Baggage Car** · Older F4ü · Automatic couplers · Length 23.2 cm (9") · Equipped for installation of lighting kit 7329



Switzerland

4066 · **Coach** · Series A 2500 · 1st class · RELEX couplers · Length 24 cm (9-½") · Equipped for installation of lighting kit 7320



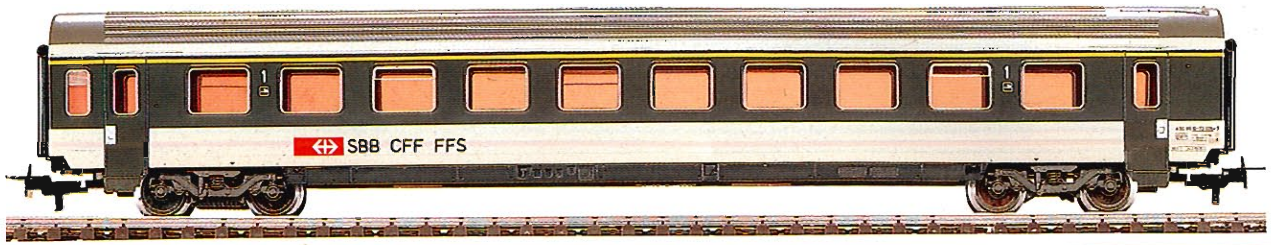
Switzerland

4068 · **Dining Car** · RIC · RELEX couplers · Length 24 cm (9-½") · Equipped for installation of lighting kit 7077

Swiss Federal Railways (SBB)

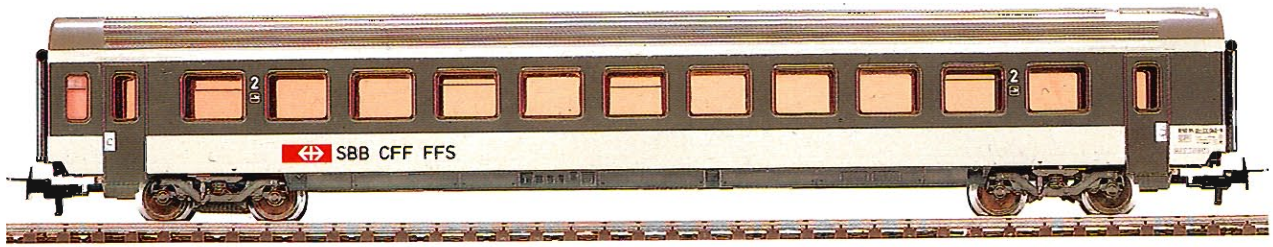
Switzerland

4123 · **Coach** · A, standard type IV · 1st class · Interior details · Automatic couplers · Length 26.4 cm (10-3/8") · Equipped for installation of lighting kit 7329



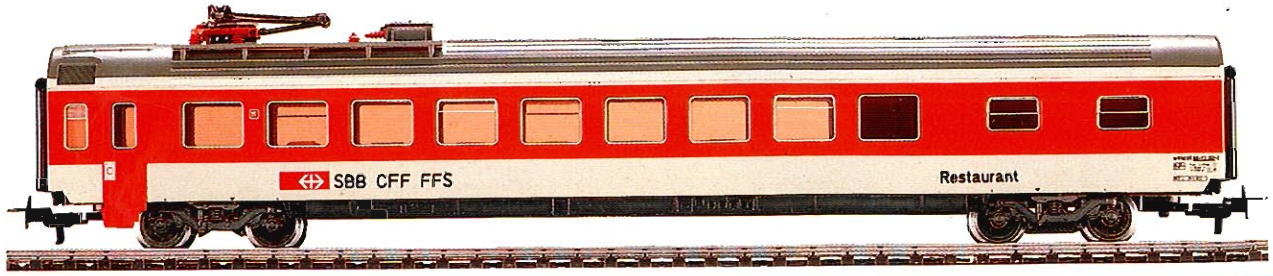
Switzerland

4124 · **Coach** · B, standard type IV · 2nd class · Interior details · Automatic couplers · Length 26.4 cm (10-3/8") · Equipped for installation of lighting kit 7329



Switzerland

4125 · **Dining Car** · WR, standard type IV · Interior details · Automatic couplers · Length 26.4 cm (10-3/8") · Equipped for installation of lighting kit 7329



Switzerland

4180 · **Entertainment Car** · SRm "Cafeteria" · Interior details · Automatic couplers · Length 27 cm (10-5/8") · Equipped for installation of lighting kit 7329

Swiss Federal Railways (SBB)

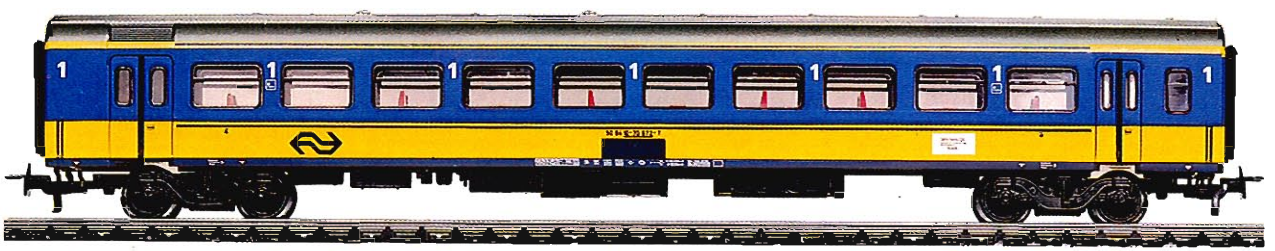
Switzerland

4168 · Sleeping Car · Bcm type UIC-Z1 · 2nd class · Interior details · Automatic couplers · Length 26.4 cm (10-3/8") · Equipped for installation of lighting kit 7329

Netherlands Railways (NS)

Netherlands

4049 · Coach · B 6600 · 2nd class · RELEX couplers · Length 24 cm (9-1/2") · Equipped for installation of lighting kit 7320



Netherlands

4164 · Intercity Coach · 1st class · Interior details · Automatic couplers · Length 26.4 cm (10-3/8") · Equipped for installation of lighting kit 7329

Netherlands

4165 · Intercity Coach · 2nd class · Interior details · Automatic couplers · Length 26.4 cm (10-3/8") · Equipped for installation of lighting kit 7329

Swedish State Railways (SJ)

Sweden

4072 · **Coach** · B1 · 2nd class · RELEX couplers · Length 24.4 cm (9-5/8") · Equipped for installation of lighting kit 7197

Sweden

4073 · **Dining Car** · R1 · RELEX couplers · Length 24.4 cm (9-5/8") · Equipped for installation of lighting kit 7197

Danish State Railways (DSB)

Denmark

4045 · **Coach** · B 2300 · 2nd class · RELEX couplers · Length 24 cm (10-3/8") · Equipped for installation of lighting kit 7077 with pickup shoe 7198

■ The 19 kilometer (11.88 miles) long route between Puttgarden in Germany and Rødby in Denmark offers the shortest connection between the mainland and Scandinavia. This connection is known as the "Vogelflugslinie" ("Route of the Crow's Flight") – after a route used since the beginning of time by migratory birds for their flight south.

The Vogelfluglinie was first operated in May of 1963. The arched bridge over the Fehmarnsund is a most remarkable structure in addition to the harbor facilities at both ferry stations. This bridge is often called the "Kleiderbügel" ("Coat Hanger") due to its appearance. It has created a permanent connection for rail and road traffic between the mainland and the Baltic island of Fehmarn. Passenger traffic has doubled since 1964, the first full year of operation, automobile traffic has tripled and truck and bus traffic has increased sevenfold. Not only road traffic, but also freight and passenger cars are transported via this connection. Numerous Scandinavian cars come to Germany in international passenger trains on this route. From the German side the trains are pulled by class 218 diesel locomotives; a few years ago the two-motor class 220 was also used here. The main lines in Schleswig-Holstein are not electrified, the only such area in West Germany. On the Danish side the multi-purpose diesel electric locomotive, class MY 1100, are used.

The constantly increasing ferry traffic requires not only an expansion of the facilities on land, but also the use of larger ferry ships. Thus, the German Federal Railroad put a new ship, the "Karl Carstens", in operation for the 1986 summer schedule. This new ferry is the largest in use on the Vogelfluglinie with a weight of 13,700 tons. It has space for 14 passenger cars on 405 meters (1,328 feet) of track; the automobile deck is laid out for 156 cars. An increase in capacity of approximately 60% was achieved in comparison to the "Theodor Heuss", its predecessor from 1957.

märklin video

Video special

„Tour de Sol" – Die verrückteste Rallye der Welt
Mit Sonnen-Fahrzeugen in die Zukunft

0271

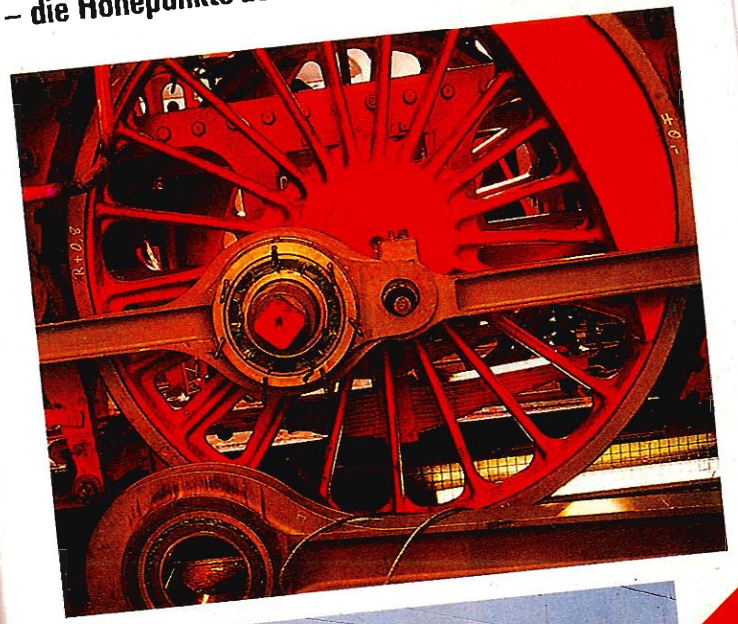
märklin video

Märklin Video-Magazin '86

0272

märklin Video

150 Jahre Deutsche Eisenbahnen
– die Höhepunkte der Nürnberger Jubiläumsparade



special

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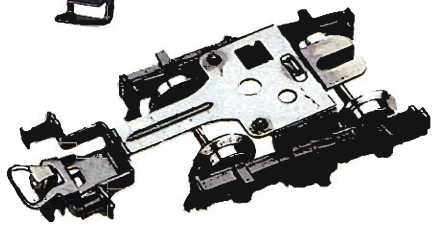
All spare parts can be ordered through your dealer.



7202 · Close Coupler · 2 pieces · For installation on cars and locomotives having NEM norm 362 coupler pockets and connecting link guides · Compatible with standard coupler (NEM norm 360)

7203 · Close Coupler · 50 pieces · For installation on cars and locomotives having NEM norm 362 coupler pockets and connecting link guides · Compatible with standard coupler (NEM norm 360)

7204 · Reproduktion Prototype Coupler · 50 pieces · For installation on cars and locomotives having NEM norm 362 coupler pockets and connecting link guides, for fixed train compositions

7001 · Coupling Gauge · Nickel plated steel · For checking couplers

7199 · Bottle of Oil · Contains 9 ml of a special oil for lubricating locomotives and cars

7224 · Re-Railer · Enables the placing of multi-axle cars and locomotives on the track · Length 30 cm (1') · Height 2.5 cm (1")

Catalog Number	Front Coupler	Rear Coupler	Truck with Coupler	Pickup Shoe	Light Bulb
4018	21 005	21 005	–	7175	60 010
4026	–	–	30 339	–	–
4028	70 412	70 412	–	7164	60 001
					60 015
4040	70 154	70 154	–	–	–
4045	–	–	30 339	–	–
4049	–	–	30 417	–	–
4051	–	–	30 339	–	–
4052	–	–	30 339	–	–
4053	–	–	30 339	7175	–
4060	21 583	21 622	–	7185	60 015
4064	–	–	30 339	–	–
4066	–	–	30 547	–	–
4067	32 540	32 540	–	–	–
4068	–	–	30 547	–	–
4071	21 951	21 954	–	–	–
4072	–	–	30 417	–	–
4073	–	–	30 417	–	–
4074	70 157	70 157	–	–	–
4079	32 540	32 540	–	–	–
4080	32 540	32 540	–	–	–
4084	70 157	70 157	–	–	–
4085	–	–	30 339	–	–
4087	–	–	30 339	–	–
4089	–	–	30 339	7175	60 015
4090	–	–	30 339	–	–
4091	70 158	70 158	–	–	–
4092	70 158	70 158	–	–	–
4093	70 158	70 158	–	–	–
4095	70 158	70 158	–	–	–
4096	70 158	70 158	–	–	–
4097	70 158	70 158	–	–	–
4098	70 158	70 158	–	41 494	–
4099	70 158	70 158	–	–	–
4100	32 540	32 540	–	–	–
4101	32 540	32 540	–	–	–
4102	32 540	32 540	–	–	–
4103	32 540	32 540	–	31 051	–
4104	32 540	32 540	–	–	–
4105	32 540	32 540	–	–	–
4106	32 540	32 540	–	–	–
4107	32 540	32 540	–	–	–
4108	32 540	32 540	–	–	–
4111	–	–	30 339	–	–
4112	–	–	30 339	–	–
4121	70 158	70 158	–	–	–
4122	70 158	70 158	–	–	–
4123	70 158	70 158	–	–	–
4124	70 158	70 158	–	–	–
4125	70 158	70 158	–	–	–
4129	21 583	21 622	–	7185	60 015
4130	–	–	30 339	–	–

Catalog Number	Front Coupler	Rear Coupler	Truck with Coupler	Pickup Shoe	Light Bulb
4131	7202	7202	–	–	–
4132	7202	7202	–	–	–
4133	7202	7202	–	–	–
4134	70 158	70 158	–	–	–
4135	70 158	70 158	–	–	–
4138	70 158	70 158	–	–	–
4139	70 158	70 158	–	–	–
4140	70 158	70 158	–	–	–
4145	70 158	70 158	–	–	–
4146	70 158	70 158	–	–	–
4147	70 158	70 158	–	–	–
4149	70 158	70 158	–	–	–
4150	70 158	70 158	–	–	–
4151	70 158	70 158	–	–	–
4153	70 158	70 158	–	–	–
4154	70 158	70 158	–	41 494	–
4157	70 158	70 158	–	–	–
4158	70 158	70 158	–	–	–
4159	70 158	70 158	–	–	–
4160	70 158	70 158	–	31 100	–
4161	70 158	70 158	–	–	–
4162	70 158	70 158	–	–	–
4164	70 158	70 158	–	–	–
4165	70 158	70 158	–	–	–
4166	70 158	70 158	–	–	–
4168	70 158	70 158	–	–	–
4171	25 434	25 402	–	–	60 008
4175	70 158	70 158	–	–	–
4176	70 158	70 158	–	–	–
4177	70 158	70 158	–	–	–
4180	70 158	70 158	–	–	–
4182	70 158	70 158	–	–	–
4183	7202	7202	–	–	–
4184	7202	7202	–	–	–
4185	7202	7202	–	31 545	–
4188	–	–	30 339	–	–
4200	7202	7202	–	–	–
4201	7202	7202	–	–	–
4202	7202	7202	–	–	–
4203	7202	7202	–	–	–
4207	7202	7202	–	–	–
4208	7202	7202	–	–	–
4209	7202	7202	–	–	–
4210	7202	7202	–	–	–
4211	7202	7202	–	–	–
4212	7202	7202	–	–	–
4220	70 158	70 158	–	–	–
4221	70 158	70 158	–	–	–
4222	70 158	70 158	–	–	–
4223	70 158	70 158	–	–	–
4234	70 157	70 157	–	–	–

With bands of light through the nocturnal landscape

Illuminated trains from the IC coach to the dining car.

The train platform and waiting room are dimly lit. The ticket window where tickets are sold during the day is dark. Further on, above the tracks, fluorescent lamps on a few high light poles provide just enough light on the tracks and cars so that the railroad workers can see what they are doing without needing additional aids. Over at the freight yard, where the crane is loading freight from freight cars on a siding onto trucks, powerful floodlights turn night into day. Nocturnal railroad scenes which can almost be done with greater effect on the model railroad layout than in real life. The Intercity train with its numerous coaches is in itself a fascinating thing to behold, but when it draws two bands of light from the reflection of the interior illumination along through the nocturnal landscapes, there is hardly anyone along its route who does not stop to watch.

Too much light on a small layout hurts the total effect. Sharp contrasts as descibed in the beginning further the desired illusion. Who has not looked out the window on a trip through the country at night and not been irritated that there was really very little to see? It is only really light in large cities and stations.

The model railroader has it fairly easy with open seating coaches; the light from their windows is generally equal in brightness. The same holds true for commuter cars where the passengers have no control over the lighting. In the compartment cars, on the contrary, there are reading lights which produce a spotlight effect only on the book you are reading, leaving the rest of the compartment in darkness. Or the passengers can content themselves with the emergency lighting and curl up in a corner for a nap.

Photo: E. A. Weigert

Nightfall in the winter and the lights go on in the compartment car.

It would thus be prototypical to leave one or more windows, i.e. compartments, dark in the night trains with compartment coaches. The light diffusers which can be installed in almost all express coaches accomplish this with the help of opaque strips of card stock which can be positioned anywhere on the light diffuser.

It is more difficult with sleeping cars or slumber coaches. In these most windows are dark at night and only a few passengers cannot sleep or do not want to. The corridor side of the car, by contrast, is bathed in dim light so that the conductor can see. The model railroader who is considerate of the passengers should therefore darken the greatest part of the light diffuser and illuminate only one or two compartment windows.

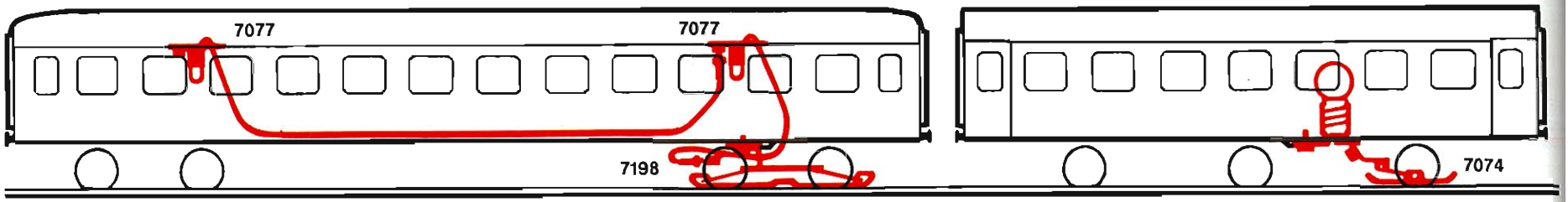
At stops in the station there should also be light in the cars so that passengers can comfortably get on and off. The model railroader should therefore be careful that the pickup shoes supplying current to the car lighting are always outside of the dead area of track by a red signal.

Digital operation, too, offers a great advantage for train lighting. The lighting remains constant without additional, complicated wiring because there is always constant high current in the rails. This can also be done with conventional operation by keeping the catenary for locomotive operation and using the track current for car lighting with the transformer voltage set at a halfway position for the latter.

The reverse would also be possible by drawing current for car lighting from the pantograph of a dining car. This is, of course, at the expense of prototypical accuracy. In real life operation the pantograph is normally only raised when the dining car needs power and is not coupled to a locomotive supplying it.

This scene can be repeated in the model station beneath a short, isolated section of catenary supplied with 16 volts from the accessory terminals. Dining cars are often still lighted after the end of the train's trip because they have to be cleaned.

Car Lighting

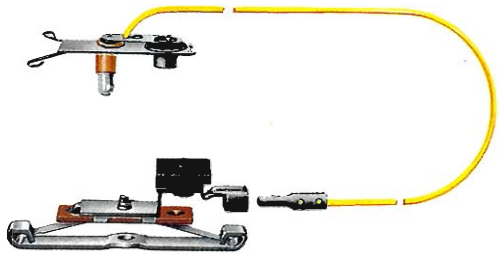


7077 · Interior Lighting Kit · For cars 4026, 4045, 4051 – 4053, 4068, 4111 and 4112 · Has socket for connecting additional kits · Bulbs

=60000

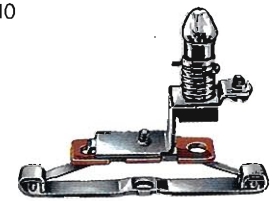
7198 · Pick-up Shoe · For interior lighting kit 7077

=7175



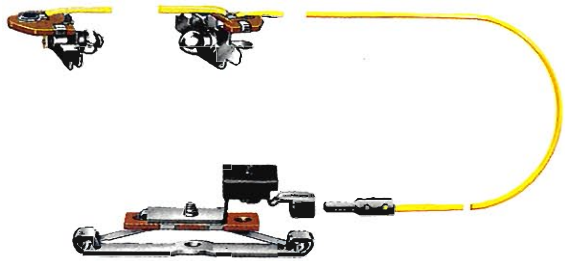
7323 · Interior Lighting Kit · For cars 4107 and 4108 · Bulb

=7175 =60010



7322 · Interior Lighting Kit · For TEE coach 4090 · Includes pick-up shoe 7198, 2 lamp sockets, 2 bulbs · Instructions included

=7175 =60015



7074 · Interior Lighting Kit · For cars 4067, 4079 and 4080 · Has socket for connecting additional lighting kits · Bulbs

=60020

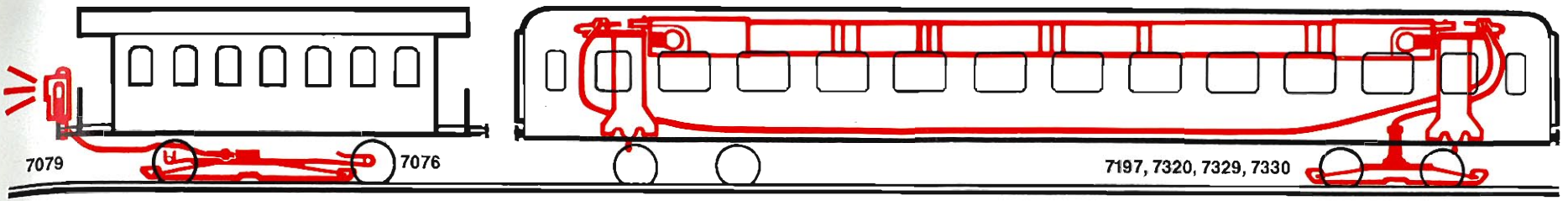
Interior details for cars 4045, 4049, 4066, 4067, 4072, 4073, 4079 and 4080

Interior details and figures are made of finely detailed plastic. Figures are hand painted.
Each set includes illustrated instructions.

0226 · Set of 10 Colorfully Painted Figures · For complimenting interior details

0225 · Interior Details Kit · Includes 18 double seats, 6 single seats, 2 rest rooms

The various styles of car lighting are illustrated in this schematic. Instructions for installation are included with each lighting kit.



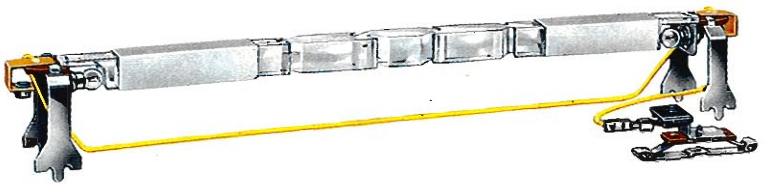
7079 · End Marker Light · With bulb · Clips onto buffer · Only for cars with metal buffers · Requires a 7074, 7076 or 7198 pick-up shoe to illuminate

=60001 (red)

7076 · Pick-up Shoe · For illuminating end marker light 7079 when used on a 4040 coach

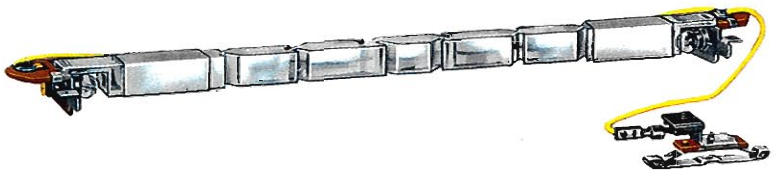
7197 · Interior Lighting Kit · For coaches 4072 and 4073 · Includes pick-up shoe 7198, light diffuser, 2 lamp sockets and 2 bulbs · Instructions included

=7175 =60015



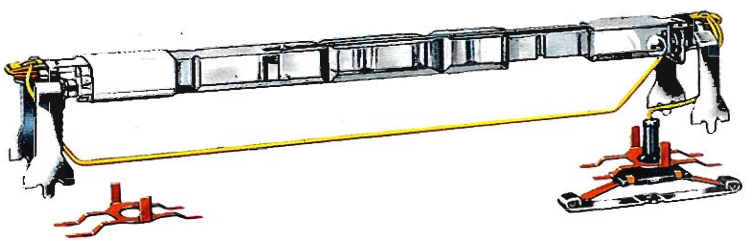
7320 · Interior Lighting Kit · For TEE coaches 4085, 4087 and coaches 4049, 4064, 4066, 4130 and 4188 · Includes pick-up shoe 7198, light diffuser, 2 lamp sockets and 2 bulbs · Instructions included

=7175 =60015



7329 · Interior Lighting Kit · With variable length light diffuser · For coaches 4091–4093, 4095–4099, 4121–4125, 4131–4135, 4138–4140, 4145–4147, 4149–4151, 4153, 4154, 4157–4162, 4164–4166, 4168, 4175–4177, 4180, 4182, 4220–4223 and train set 2856 · Includes pick-up shoe, light diffuser, 2 lamp sockets and 2 bulbs · Instructions included

=41494 =60015



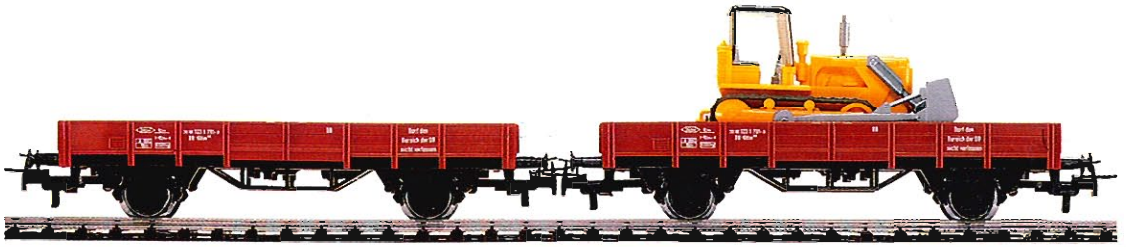
7330 · Interior Lighting Kit · For cars 4183, 4184, 4185, 4210 and 4211 · Includes pick-up shoe, light diffuser with lamp sockets and 2 bulbs · Complete instructions included

=41810 =60008

Freight Cars

E 040 gondola and Fc 090 self-discharging car, photographed on the layout scene "Loading Ballast" of the Preiser Company.

Germany Federal Railroad (DB)



4423 · Low-Sided Gondola · Kklm 505 · RELEX couplers · Length 11.5 cm (4-½")

4424 · Low-Sided Gondola · Kklm 505 · Loaded with Wiking bulldozer · RELEX couplers · Length 11.5 cm (4-½")

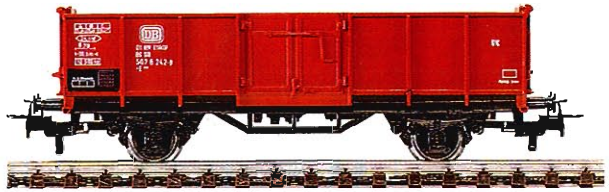
4474 · Low-Sided Gondola · Rlmms · Loaded with Wiking bulldozer and front end loader · RELEX couplers · Length 16 cm (6-5/16")

4473 · Low-Sided Gondola · Rlmms · RELEX couplers · Length 16 cm (6-5/16")

4475 · Low-Sided Gondola · Rlmms · With tarpaulin · RELEX couplers · Length 16 cm (6-5/16")

German Federal Railroad (DB)

4465 · **Gondola** · E 040 · RELEX couplers · Length 11.5 cm (4-½")



■ The International Railroad Association, UIC, developed a series of car designs in the 1950's with the purpose of standardizing the European rolling stock. Two gondolas were standardized in addition to box cars and were produced in large quantities by the European railroads. The standard gondola, type 2, is intended for bulk and volume freight. It is 10 meters long (32'10") and 2 meters high (6'6"). Its load surface measures 8.76 by 2.76 meters (28'9") by (9').

Despite all attempts at standardization there are differences among the cars of the different railroads. The most noticeable design difference are the doors on the Swiss version. The prototype of the Märklin model was placed into service as Omm 55 and was later designated E 040. Since 1983 some of these cars have undergone a total rebuilding and are permitted a maximum speed of 100 km/h (62.5 m.p.h.).

4430 · **Gondola** · El-u^{061} · RELEX couplers · Length 11.5 cm (4-½")

4431 · **Gondola** · El-u^{061} · With removable simulated coal load · RELEX couplers · Length 11.5 cm (4-½")

4460 · **Boxcar with Tilting Roof** · Taems^{890} (Taes 890) · RELEX couplers · Length 16 cm (6-5/16")

4414 · **Boxcar** · Ibbls · For carrying bananas · RELEX couplers · Length 11.5 cm (4-½")

4410 · **Boxcar** · Gs^{210} · RELEX couplers · Length 11.5 cm (4-½")

4411 · **Boxcar** · With illuminated marker light · Gs-uv^{213} (Grs-v 213) · Pickup shoe for electrical pickup · RELEX couplers · Length 11.5 cm (4-½")

41494 60015

■ The sales slogan "Fahrrad am Bahnhof" (Bike at the Station) is quite popular along the Austrian Federal Railways. In order to be prepared for sudden demands such as from travel groups, local events, etc., the ÖBB converted some type Gs boxcars into rolling bike rental depots. Depending upon the demand, these cars can be added to charter trains and transported to where the bikes are needed.

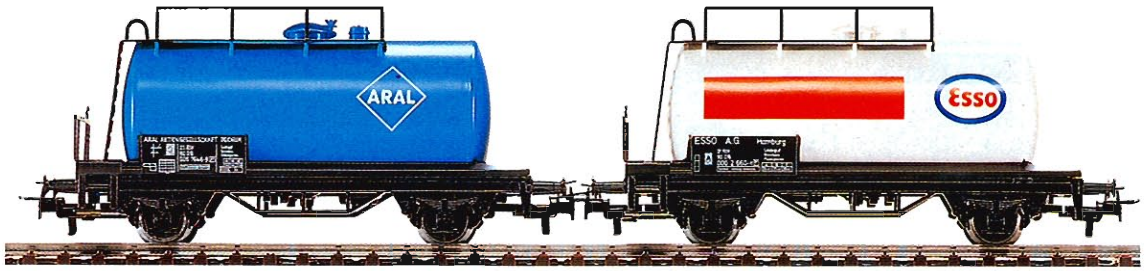
Austrian Federal Railways (ÖBB)

Austria

4412 · **Boxcar** · For carrying bicycles · RELEX couplers · Length 11.5 cm (4-½")

4413 · **Dump Car** · Bucket can be tipped to either side manually and locked in a stationary middle position · RELEX couplers · Length 11.5 cm (4-½")

4432 · **Wine Car** · Privately owned · RELEX couplers · Length 11.5 cm (4-½")



4440 · **Tank Car** · Aral · RELEX couplers · Length 11.5 cm (4-½")

4441 · **Tank Car** · Esso · RELEX couplers · Length 11.5 cm (4-½")

4442 · **Tank Car** · Shell · RELEX couplers · Length 11.5 cm (4-½")

Italy

4443 · **Tank Car** · Agip · RELEX couplers · Length 11.5 cm (4-½")

Freight Cars

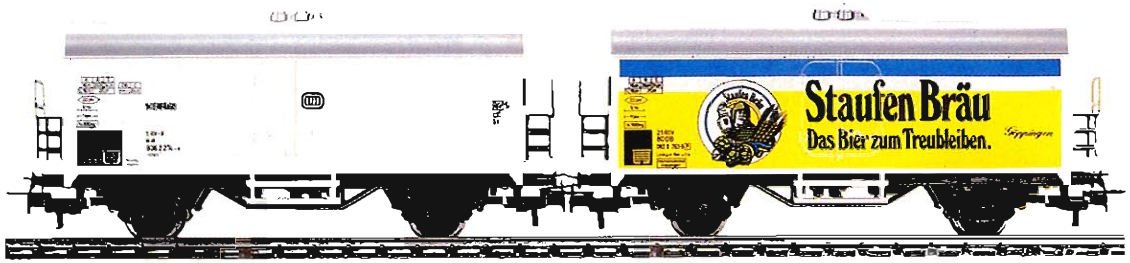
German Federal Railroad (DB)

4455 · **Container Car** · VDF · Loaded with a container · RELEX couplers · Length 11.5 cm (4-½")

4481 · **Container Car** · Märklin · Loaded with a container · RELEX couplers · Length 11.5 cm (4-½")

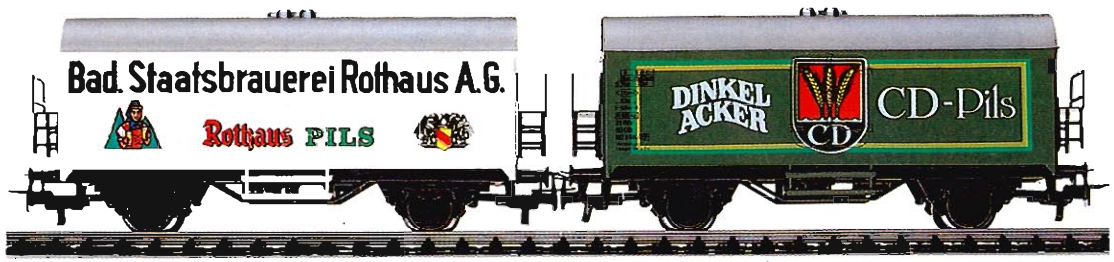
4415 · **Refrigerator Car** · Ichqs-u^{377} · (Ichqrs 377) · RELEX couplers · Length 11.5 cm (4-½")

4429 · **Beer Car** · Staufen Bräu · RELEX couplers · Length 11.5 cm (4-½")



4437 · **Beer Car** · Badischer Staatsbrauerei Rothaus AG · RELEX couplers · Length 11.5 cm (4-½")

4436 · **Beer Car** · C. Dinkelacker, Stuttgart · RELEX couplers · Length 11.5 cm (4-½")

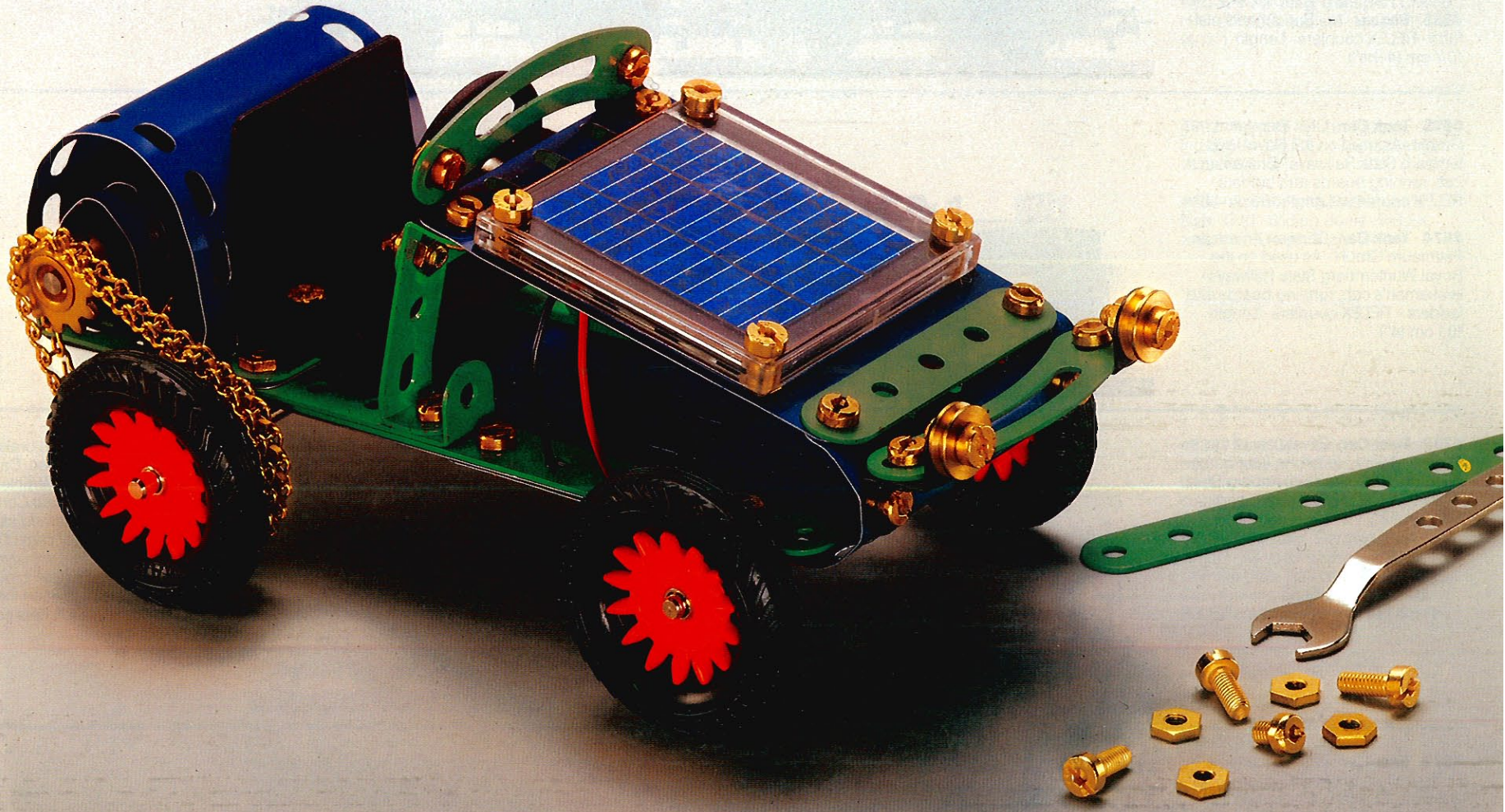


Switzerland

4428 · **Refrigerator Car** · Ovomaltine · RELEX couplers · Length 11.5 cm (4-½")

4426 · **Refrigerator Car** · Apollinaris · RELEX couplers · Length 11.5 cm (4-½")

märklin
metall



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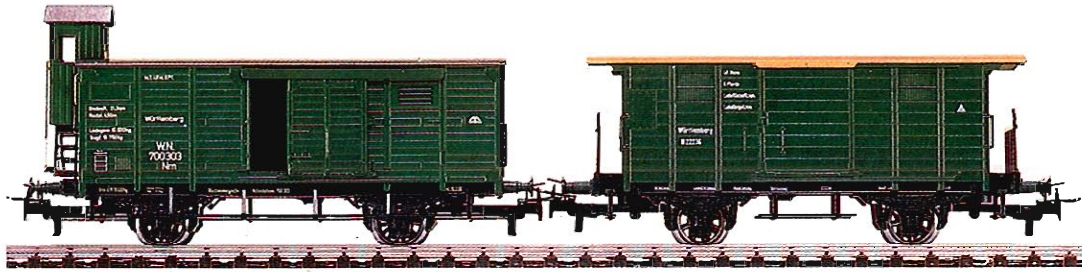
Royal Württemberg State Railways (K.W.St.E.)

4679 · Boxcar with Brakeman's Cab · Class Nm as used on Württemberg branch lines around 1910 · Sliding doors · RELEX couplers · Length 11 cm (4″)

4685 · Boxcar · Ni · Brakeman's platform · RELEX couplers · Length 10.7 cm (4-3/16″)



4675 · Tank Car · Olex Petroleum GmbH · As used on the Royal Württemberg State Railways · Brakeman's cab, running boards and ladders · RELEX couplers · Length 10.1 cm (4″)

4674 · Tank Car · German American Petroleum GmbH · As used on the Royal Württemberg State Railways · Brakeman's cab, running boards and ladders · RELEX couplers · Length 10.1 cm (4″)

4780 · Beer Car · Private car of the Cluss Brewery, Heilbronn (Germany) · Used on the Royal Württemberg State Railways · RELEX couplers · Length 11 cm (4-3/8″)

■ Like the locomotives and passenger cars, the Württemberg freight cars from the early period are patterned after American designs. They were therefore produced as four-axle cars with trucks. In contrast to passenger car construction, this was not technically necessary for the shorter freight cars. Starting in the 1870's the Württemberg freight cars were built as two-axle cars as a rule.

The Ni box car with open brakeman's platforms was widely used. Cars 700 302 and 303 of the Württemberg Secondary Lines Railroad Company were, by contrast, patterned after Prussian designs. The tank cars of the period were equipped with riveted tanks. The beer cars were provided with insulated walls to keep the loads cold. Additionally, such cars could be cooled with ice.

4677 · Beer Car · Württemberg-Hohenzollern Brewery English Gardens, Stuttgart · As used on the Royal Württemberg State Railways · RELEX couplers · Length 11 cm (4-3/8″)

4678 · Beer Car · Wulle Brewery, Stuttgart · As used on the Royal Württemberg State Railways · RELEX couplers · Length 11 cm (4-3/8″)

Former German State Railroad (DR)

4696 · Gondola with Brakeman's Cab · O 10 · RELEX couplers · 10.1 cm (4″)

4697 · Flat Car with Brakeman's Cab and Pivoting Transport Cradle · H 10 · RELEX couplers · Length 11.5 cm (4-½″)

4692 · Boxcar · Gr 20 "Kassel" · Sliding doors · RELEX couplers · Length 10.5 cm (4-⅛″)

4695 · Boxcar with Brakeman's Cab · G 10 · Sliding doors · RELEX couplers · Length 11 cm (4-⅜″)

4680 · Beer Car · Leicht "Schwabenbräu", Stuttgart · As used on the former German State Railroad · RELEX couplers · Length 11 cm (4-⅜″)

4676 · Tank Car · German Shell GmbH · As used on the former German State Railroad · Brakeman's Cab, running boards and ladders · RELEX couplers · Length 10.1 cm (4″)

■ A decisive event in the development of freight car standards was the creation of the German State Railway Car Association in 1909. Freight car designs were standardized, with cars of the individual provincial railroads being built strictly to the detailed Association specifications. This resulted in enormous savings in the cars' construction and maintenance and made possible the wider utilization of these cars within the Association's territory.

The Märklin models 4695, 4696 and 4697 are examples of Association designs.

After the merger of the German provincial railways into a unified national network in 1920, the standardization of freight car designs continued. Car designs using interchangeable parts were produced.

The Märklin model 4692 is an example of this type of construction.

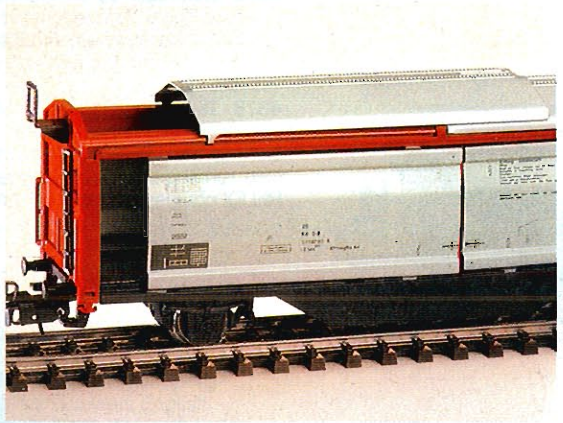
How the sheet metal coils get to the assembly line in the factory

Functional freight cars bring life to the loading track.

"Slam!" the passengers waiting for the commuter train jumped. A worker had slammed the door shut of a box car on the loading track across the way after the forklift hat unloaded the last pallet with orange crates. "Can't he do it more quietly?" grumbled a passenger to himself.

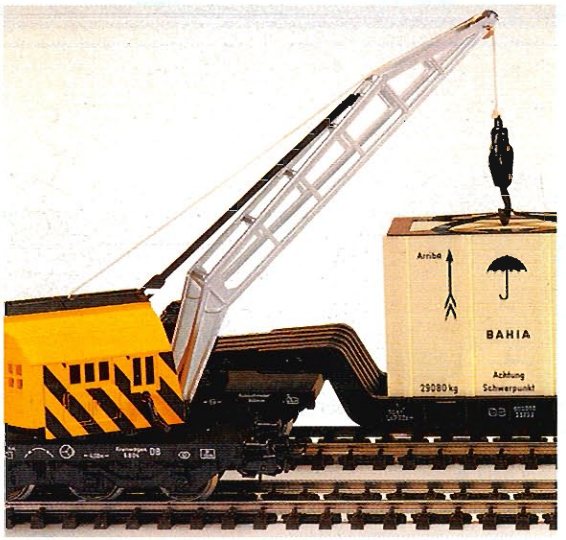
Of course it is done more quietly – on a model railroad layout. The sliding door of the model of the Swiss box car (4698) can be opened and closed almost without a sound. Indeed, it just takes a gentle touch to maneuver the miniature pallets onto the tiny forklift.

It is much easier in real life or on the layout to work with the 4633 Tbis sliding roof and wall box car which can be loaded from the top as well as the sides. For this reason the German Federal Railroad has purchased it in large



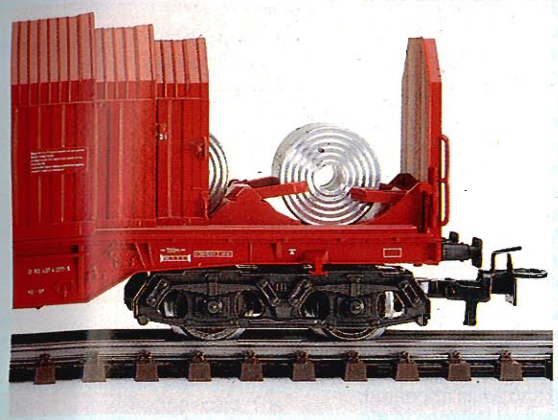
Photos: Märklin

numbers. With the remote control crane 7051 even distant spots on the layout can be loaded or unloaded without resorting to manual operations. This can be done by loading the sliding roof car from above. This crane can also be used in the port to maneuver a large crate out of the ship and onto the 4618 depressed-center flat car. Afterwards the crate could be transferred to a distant loading track of a freight yard or to the siding of a private firm – it could be "Import and Export, Inc., after all, the crate is lettered "Bahia". If, contrary to expectations, the private firm has neither the workers nor the machinery to unload the crate from the car, then the German Federal Railroad would send a crane car, the prototype of the 4671 for example, to the siding. The crane car would set the crate down next to the depressed-center flat car.



Using the crane car prototypically in a track laying train, you still have to fumble quite a bit with it to unload stacked rails off of a flat car at the work site. It is best if the stanchions are folded down on the side of the 4663 flat car facing the work site. The ballast for the work is transported in the 4631 self-discharging hopper car. It can be loaded with one of the electric conveyor belts or a gravel loader available from the accessory companies, and, of course, by hand "out of the bag". It can be unloaded by manually opening the hatches or by using an uncoupler track to activate the mechanism from below. Generally, the ballast will land on the left or right side of the roadbed where the track workers can spread it out. And if the uncoupler track has been placed correctly, we can uncouple the locomotive from the train, while the track workers are doing their job. It can then switch the 4693 telescoping car out of a long freight train and spot it on the siding for the company that processes sheet metal.

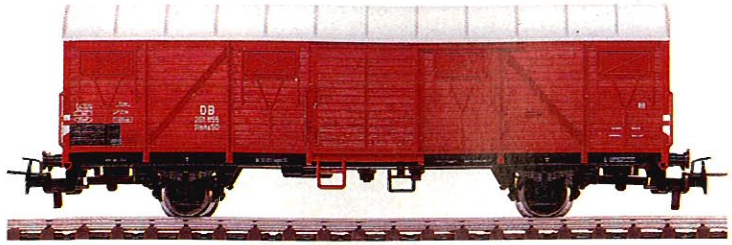
It would likewise be practical to have a crane here to lift the shiny coils from the car after the covers have been slid back and load them on a truck. The latter could transport them to the assembly line, where they are unrolled and come out at the other end of the factory as computer housings. After final inspection the finished product would disappear into cartons or crates and be loaded for a



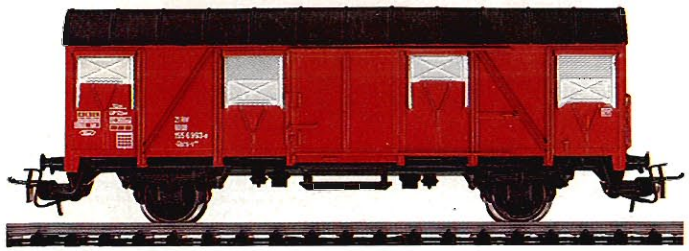
trip by a forklift on the previously mentioned 4633 sliding roof and wall box car.

Warning: If you read the inscriptions on the prototype or the model of this car closely, you know that this car may not be moved for safety reasons, either in switching or in a train, until all of the walls are locked in the closed position. This is also recommended for the layout. Otherwise, valuable freight might fall out on a part of the layout that is difficult to reach.

German Federal Railroad (DB)



4700 · **Boxcar** · Glmhs 50 (Gbs 245) · RELEX couplers · Length 14.2 cm (5-5/8")



4627 · **Boxcar** · Gos-uv^{245} (Gbrs-v 245) · RELEX couplers · Length 13.3 cm (4-1/2")

4664 · **Container Car** · With 2 removable TFG containers · RELEX couplers · Length 15.6 cm (6-1/8")

4693 · **Telescoping Freight Car** · Shimms^{708} (Shis 708) · Fixed end walls · 3 telescoping body parts which can be slid to both ends of the car · 5 built-in bays with adjustable restraint arms · 3 realistic looking steel coils for freight · RELEX couplers · Length 13.8 cm (5-3/8")

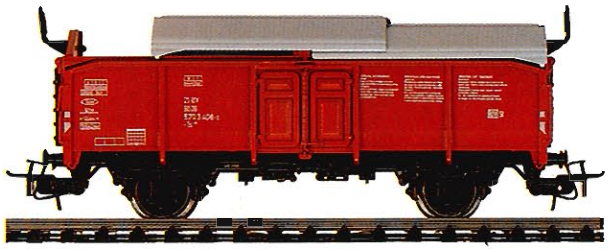
German Federal Railroad (DB)

4699 · Package Car · Pwg Pr014 · Sliding doors · RELEX couplers · Length 9.8 cm (3-7/8")

■ The purpose of the package car (Pwg) for freight trains is to offer space for the conductor and for the train's waybills which may still have to be processed during the trip. In addition, since the Pwg has a small area for freight, it can also be loaded with express freight or railroad supplies. The Prussian Pwg, with a wheelbase of 4.70 meters (15'5") and a raised conductor's seat with roof cupola, was widely used as it was produced in large quantities beginning at the turn of the century. Initially, this design still had charcoal briquet heating, but it was soon equipped with steam and stove heating as well as gas lighting. This freight train baggage car was built until the provincial railroads were transformed into the German State Railroad.

These cars were in use for many years after the Second World War on both German railroads. With the introduction of freight trains without conductors, the need for freight train package cars disappeared.

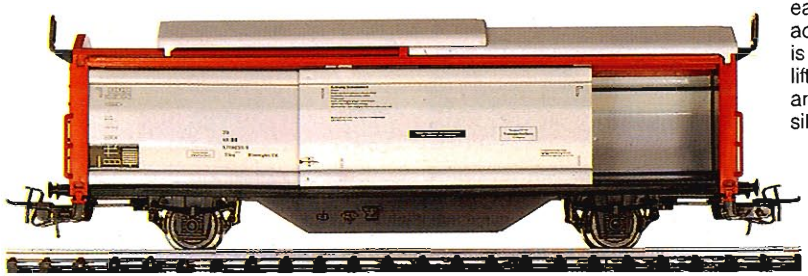
4619 · Covered Gondola · Tms^{851} (Ts 851) · Sliding roof halves · RELEX couplers · Length 11.5 cm (4-1/2")



■ The Tms^{851} sliding roof car was built starting in 1949 as type Kmmks 51. The two-part sliding roof is made of light-weight metal while the car body and end doors are sheet steel. These cars serve as multi-purpose vehicles for the transportation of moisture-sensitive bulk and piece freight. Loading is very easy with bulk material loaders or with a crane through the roof which can be opened a half at a time. With bulk material, unloading can be done using dumping equipment; for that reason the end walls are constructed as hinged hatches.

A number of these cars are equipped with special load cradles for coils of sheet metal. They are classed as Thms^{851}.

4633 · Gondola with Sliding Roof and Sides · Tbis^{870} · Roof halves and sides slide to either end · RELEX couplers · Length 15.7 cm (6-3/16")

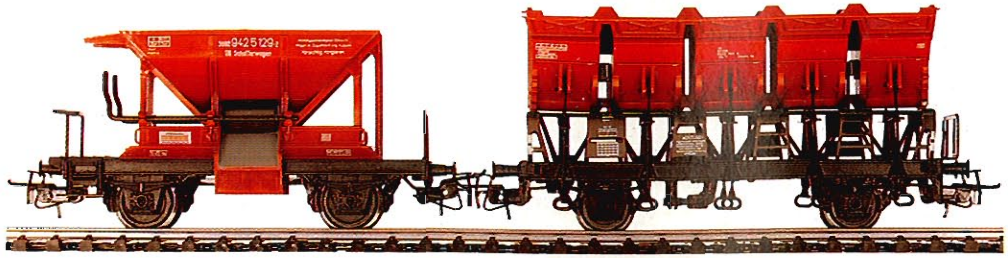


■ The first large, two-axle freight cars with a sliding roof and walls appeared on the German Federal Railroad in the early 1960's. The sliding walls allow access to half of the load surface. This is advantageous for loading with forklifts. A special feature of the Tbis^{870} are the skirted, fish belly-shaped side sills.

4613 · Auto Carrier · With loading ramp · With 4 Wiking miniature automobiles · RELEX couplers · Length 11.5 cm (4-1/2")

4612 · Auto Carrier · With loading ramp · Without automobiles · RELEX couplers · Length 11.5 cm (4-1/2")

■ On the German Federal Railroad auto carriers are permanently coupled together and carry the designation Laaekms^{541} (Laaes 541).

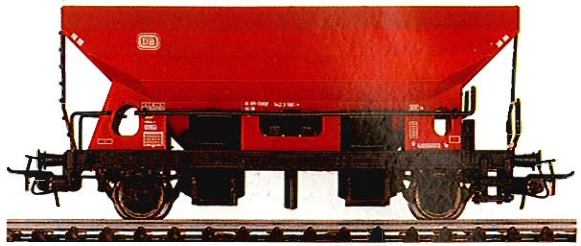


German Federal Railroad (DB)

4610 · Ballast Car · Manually operated hopper · RELEX couplers · Length 9.5 cm (3-¾″)

4635 · Multi-Section Dump Car · F-z^{120} · Buckets can be tipped by releasing latch · RELEX couplers · Length 10.5 cm (4-⅛″)

This car can be unloaded manually or by using the remote controlled uncoupling tracks 2297 or 5112.



4631 · Side-Unloading Hopper Car · Fc^{090} · (Ed 090) · RELEX couplers · Length 11.2 cm (4-⅜″)

■ The large, four-axle self-discharging hopper cars are part of the special design group of hopper cars. The German State Railroad made use of such cars, although at first they were not equipped with trucks, but rather with four linked axles. In the course of time this car type was continuously refined and adapted to new requirements and possibilities. Size, service weight and speed increased continuously. Cars of this type are used to transport volume freight such as coal, coke, or ore in unit trains.

The heaviest trains are currently operated between the "Hansaport" ore transfer facility in the Hamburg harbor and Salzgitter. The 5,400 ton load necessitates the use of two class 151 locomotives. The trains are equipped with automatic, center-buffer couplers because conventional couplers are not built for this load.

4624 · High Capacity Hopper Car · (Saddle car) · Fals^{176} (Fads 176) · RELEX couplers · Length 13.3 cm (5-¼″)

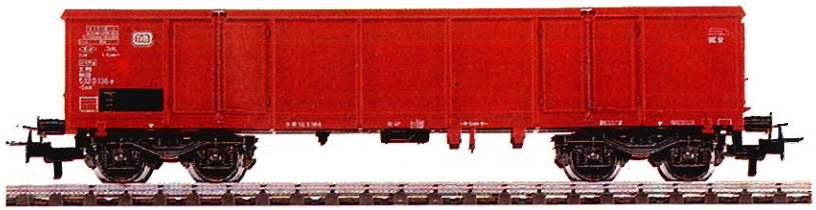
■ Several four-axle, self-discharging, high-volume class Fals freight cars were equipped with hinged roof hatches. This conversion to a car with an opening roof caused them to be reclassified under the designation T. The two rows of individually opened hatches enable the transportation of moisture sensitive freight.

This form of cover does present problems, however; in the open position the hatches project into the loading gauge and operating them is time consuming. For this reason subsequent classes of self-discharging cars were equipped with an opening roof having pivoting roof sections.

4626 · High-Capacity Covered Hopper Car · Tad-u 961 · Roof hatches open · RELEX couplers · Length 13.3 cm (5-¼″)

German Federal Railroad (DB)

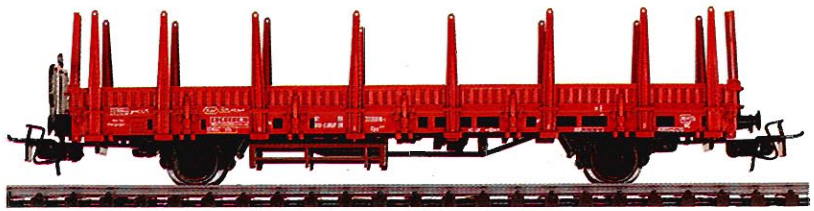
4690 · **Gondola** · Eaos 106 · RELEX couplers · Length 16.1 cm (6-½")



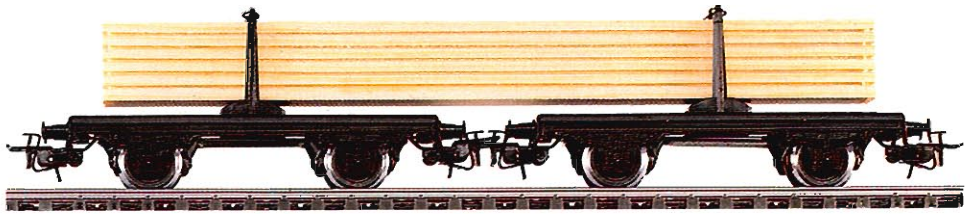
■ The type Eaos cars are gradually replacing the conventional two-axle gondolas due to the former's greater capacity.

Different kinds of freight such as stone, coal, pulp wood, ballast, barrels and much more are transported in these cars. Weather-sensitive freight can also be carried in the Eaos gondolas because the sides are equipped with rings to which tarpaulins can be tied down.

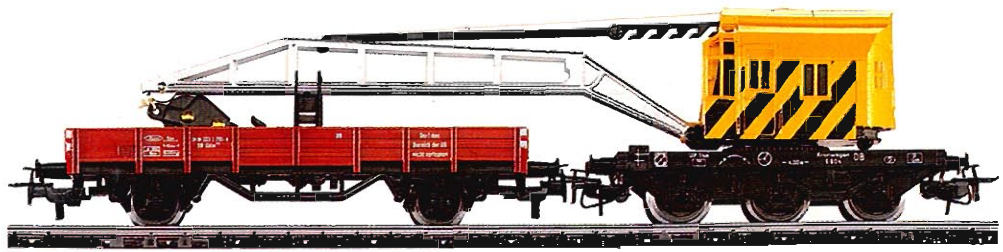
4694 · **Flat Car** · Kbs^{443} · Removable stakes · RELEX couplers · Length 15.7 cm (6-3⁄16")

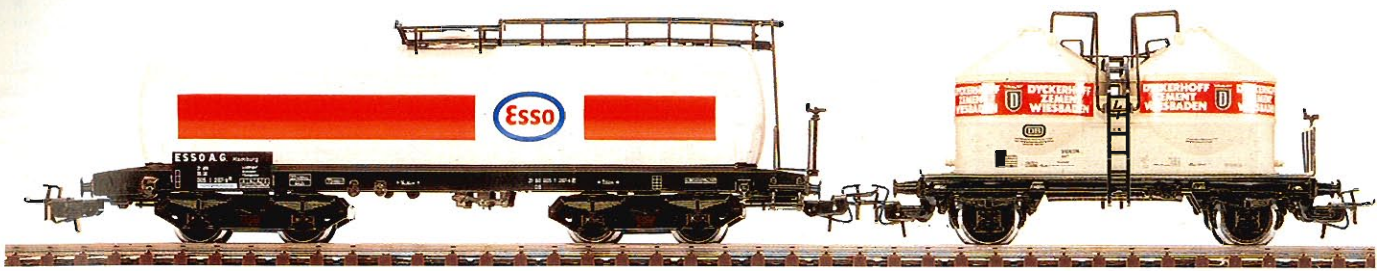


4665 · **Lumber Car** · 2 short flat cars · With finished lumber load · RELEX couplers · Length 19.5 cm (7-¾")



4671 · **Crane Car** · With rotating crane, moveable boom and boom supports · Hook operates manually · RELEX couplers · Length 8.3 cm (3-¼") · Low-sided gondola 4423 is not included but is recommended as a support for the crane boom during transport





4650 · Tank Car · Esso · RELEX couplers · Length 16.4 cm (6-½")

4761 · Cement Car · Ucs[908] of the German Federal Railroad · Lettered for Dyckerhoff Cement, Wiesbaden · RELEX couplers · Length 10 cm (4")

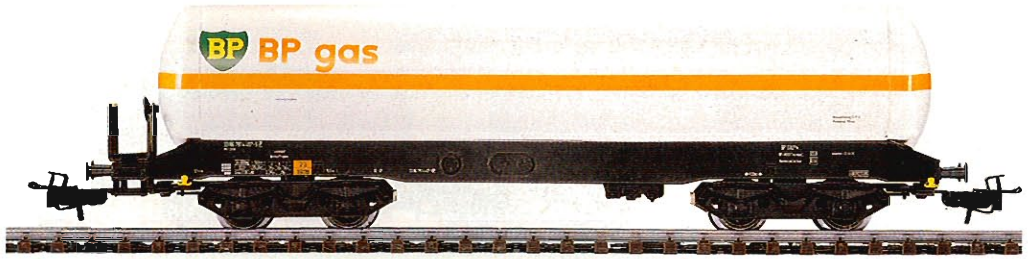
4651 · Tank Car · Shell · RELEX couplers · Length 16.4 cm (6-½")

4644 · Tank Car · BP · RELEX couplers · Length 10 cm (4")

4643 · Tank Car · Aral · RELEX couplers · Length 16.4 cm (6-½")

4750 · Tank Car · Texaco · RELEX couplers · Length 10 cm (4")

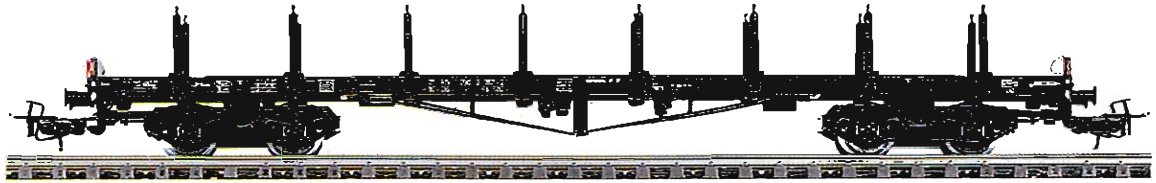
■ The majority of all privately owned cars used on the German Federal Railroad are tank cars. There are numerous, different special cars for different types of liquid freight produced by the oil and chemical industries. Thus, for example, the prototype of this model is intended for the transportation of gas; the car can be loaded with butane or propane. It is currently used by BP as a private car in the rolling stock of the Danish State Railways (DSB).



4748 · Pressurized Gas Tank Car · BP Gas · RELEX couplers · Length 19.5 cm (7-¾")

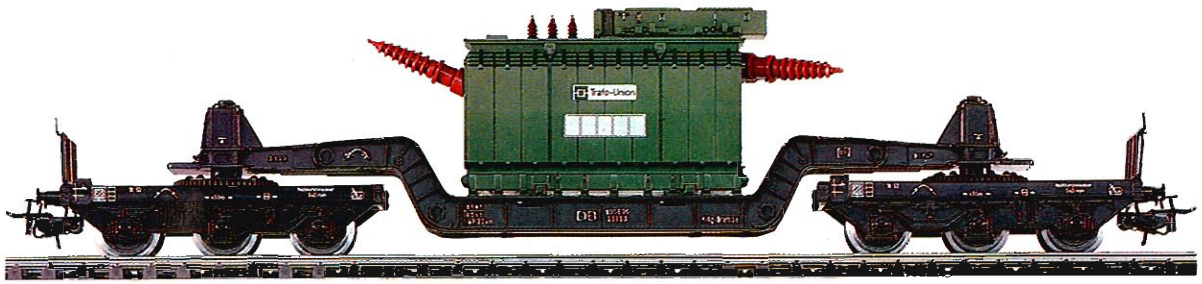
German Federal Railroad (DB)

4663 · **Flat Car** · Rs^{680} · Collapsible stakes · Metal body · RELEX couplers · Length 22.7 cm (9″)



4618 · **Depressed-Center Flat Car** · Loaded with crate · RELEX couplers · Length 25 cm (9-⅞″)

4617 · **Depressed-Center Flat Car** · Loaded with transformer · RELEX couplers · Length 25 cm (9-⅞″)



French State Railways (SNCF)

France

4681 · **Gondola** · E 3 01 · RELEX couplers · Length 11.5 cm (4-½″)

Netherlands Railways (NS)

Netherlands

4639 · **Gondola** · RELEX couplers · Length 11.5 cm (4-½″)

■ Sheet metal is transported in the form of heavy rolls or coils. In a cooperative effort the European railroads have specially developed the class Shimms Telescoping car for the transportation of weather-sensitive coils. The sheet metal rolls lie in load cradles and adjustable restraint arms are used to keep the load from shifting or causing accidents. Three telescoping covers can be slid together, thus allowing access to two thirds of the load surface.

Swiss Federal Railways (SBB)

Switzerland

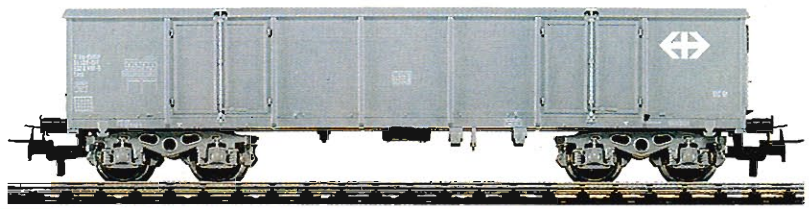
4687 · Telescoping Freight Car · Shimms · Fixed end walls · 3 telescoping body parts which can be slid to both ends of the car · 5 built-in bays with adjustable restraint arms · 3 realistic looking steel coils for freight · RELEX couplers · Length 13.8 cm (5-3/8″)

■ The Swiss Federal Railways (SBB) have undertaken a remarkable color experiment with freight cars. Several four-axle gondolas of the UIC standard class Eaos have been painted fuchsia. An entire series of Shimms telescoping cars have been painted clear blue. The object of the experiment is to try new paint schemes for freight cars which will improve the railroad's image in freight traffic.

Switzerland

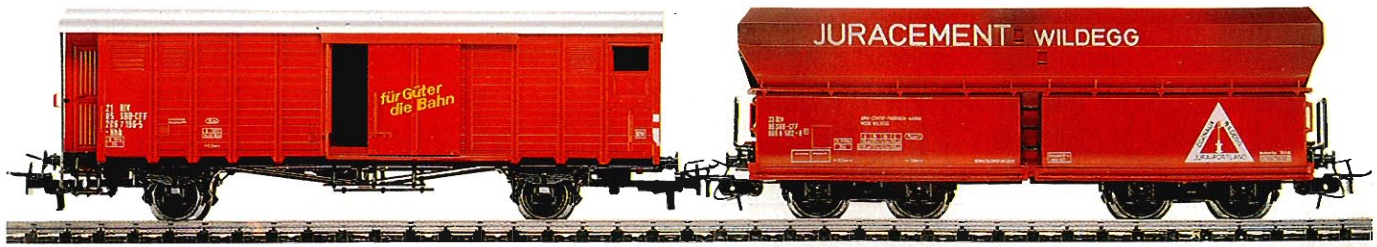
4718 · Gondola · Eaos · RELEX couplers · Length 16.1 cm (6-1/8″)

■ The current Swiss color schemes are not the first time that the SBB has painted its freight cars in colors different from those of the other European railroads. The other railroads' four-axle standard class UIC Eaos gondolas are painted brown while the SBB decided on a light gray color.



Switzerland

4689 · Gondola · Eaos · RELEX couplers · Length 16.1 cm (6-1/8″)



Switzerland

4698 · Boxcar with Brakeman's Cab · H h k · Sliding doors · RELEX couplers · Length 14 cm (5-1/2″)

Switzerland

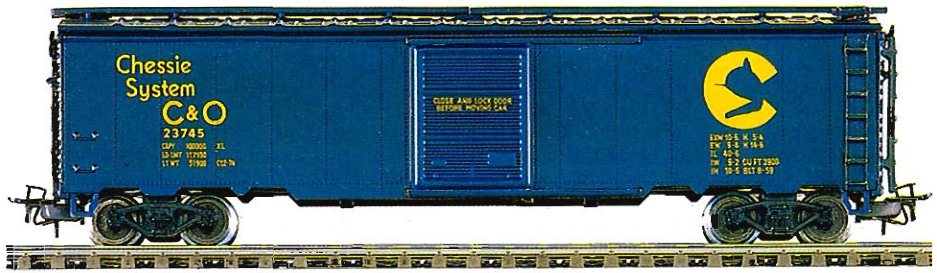
4691 · High Capacity Cement Car · Lettered for Juracement Company Aarau · Bilingual inscriptions (German, French) · RELEX couplers · Length 13.3 cm (5-1/4″)

USA

4574 · **Gondola** · Union Pacific Railroad Company · Trucks have pivoting sideframes · RELEX couplers · Length 17 cm (6-⅝")

USA

4564 · **Boxcar** · Chesapeake & Ohio Railway Company · Removable roof with catwalk · Sliding doors · Trucks have pivoting sideframes · RELEX couplers · Length 18.4 cm (7-¼")



USA

4563 · **Caboose** · Southern Pacific Railroad Company · Catwalk and ladders · RELEX couplers · Length 12.5 cm (5")

■ American railroads are quite a bit different from their European counterparts. This is reflected in the fact that American railroad builders had practically unlimited space in which to build; hence, the rolling stock is considerably larger in size than in Europe. As a rule, freight cars ride on two two-axle trucks.

Numerous American railroad lines date from the previous century. Often they are obsolete and worn out. Railroad car construction takes this condition into account, and the trucks used on the cars allow them to roll well on poor track.

American freight trains are usually quite long. Several locomotives, operating in tandem, pull countless boxcars, gondolas, and other freight cars. The conductor and rear brakeman ride in the caboose. These typically American cars are used by all of the railroads in the USA. Even boxcars and gondolas of the various railroads often differ only in their paint and lettering schemes.

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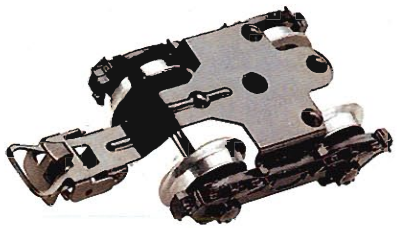

7001 · Coupling Gauge · Nickel plated steel · For checking couplers

7199 · Bottle of Oil · Contains 9 ml of a special oil for lubricating locomotives and cars

7224 · Re-Railer · Enables the placing of multiaxle cars and locomotives on the track · Length 30 cm (1') · Height 2.5 cm (1")

Catalog Number	Coupler	Truck with Coupler	Pickup Shoe	Light Bulb
4410	70157	–	–	–
4411	70157	–	41494	60015
4412	70157	–	–	–
4413	70157	–	–	–
4414	70157	–	–	–
4415	70157	–	–	–
4423	70157	–	–	–
4424	70157	–	–	–
4426	70157	–	–	–
4428	70157	–	–	–
4429	70157	–	–	–
4430	70157	–	–	–
4431	70157	–	–	–
4432	70157	–	–	–
4436	70157	–	–	–
4437	70157	–	–	–
4440	70157	–	–	–
4441	70157	–	–	–
4442	70157	–	–	–
4443	70157	–	–	–
4455	70157	–	–	–
4460	70157	–	–	–
4465	70157	–	–	–
4473	70157	–	–	–
4474	70157	–	–	–
4475	70157	–	–	–
4481	70157	–	–	–
4563	–	32289	–	–
4564	–	32311	–	–
4574	–	32570	–	–
4610	70154	–	–	–
4612	70154	–	–	–
4613	70154	–	–	–
4617	70154	–	–	–
4618	70154	–	–	–
4619	70154	–	–	–
4624	–	32339	–	–
4626	–	32339	–	–
4627	70154	–	–	–

Catalog Number	Coupler	Truck with Coupler	Pickup Shoe	Light Bulb
4631	21842	–	–	–
4633	32540	–	–	–
4635	21842	–	–	–
4639	70154	–	–	–
4643	32399	–	–	–
4644	32540	–	–	–
4650	32399	–	–	–
4651	32399	–	–	–
4663	32399	–	–	–
4664	32540	–	–	–
4665	70154	–	–	–
4671	70154	–	–	–
4674	70157	–	–	–
4675	70157	–	–	–
4676	70157	–	–	–
4677	70157	–	–	–
4678	70157	–	–	–
4679	70157	–	–	–
4680	70157	–	–	–
4681	70154	–	–	–
4685	70157	–	–	–
4687	70157	–	–	–
4689	70157	–	–	–
4690	70157	–	–	–
4691	–	32339	–	–
4692	70157	–	–	–
4693	70157	–	–	–
4694	32540	–	–	–
4695	70157	–	–	–
4696	70157	–	–	–
4697	70157	–	–	–
4698	70157	–	–	–
4699	70157	–	–	–
4700	70157	–	–	–
4718	70157	–	–	–
4748	32402	–	–	–
4750	32540	–	–	–
4761	70154	–	–	–
4780	70157	–	–	–

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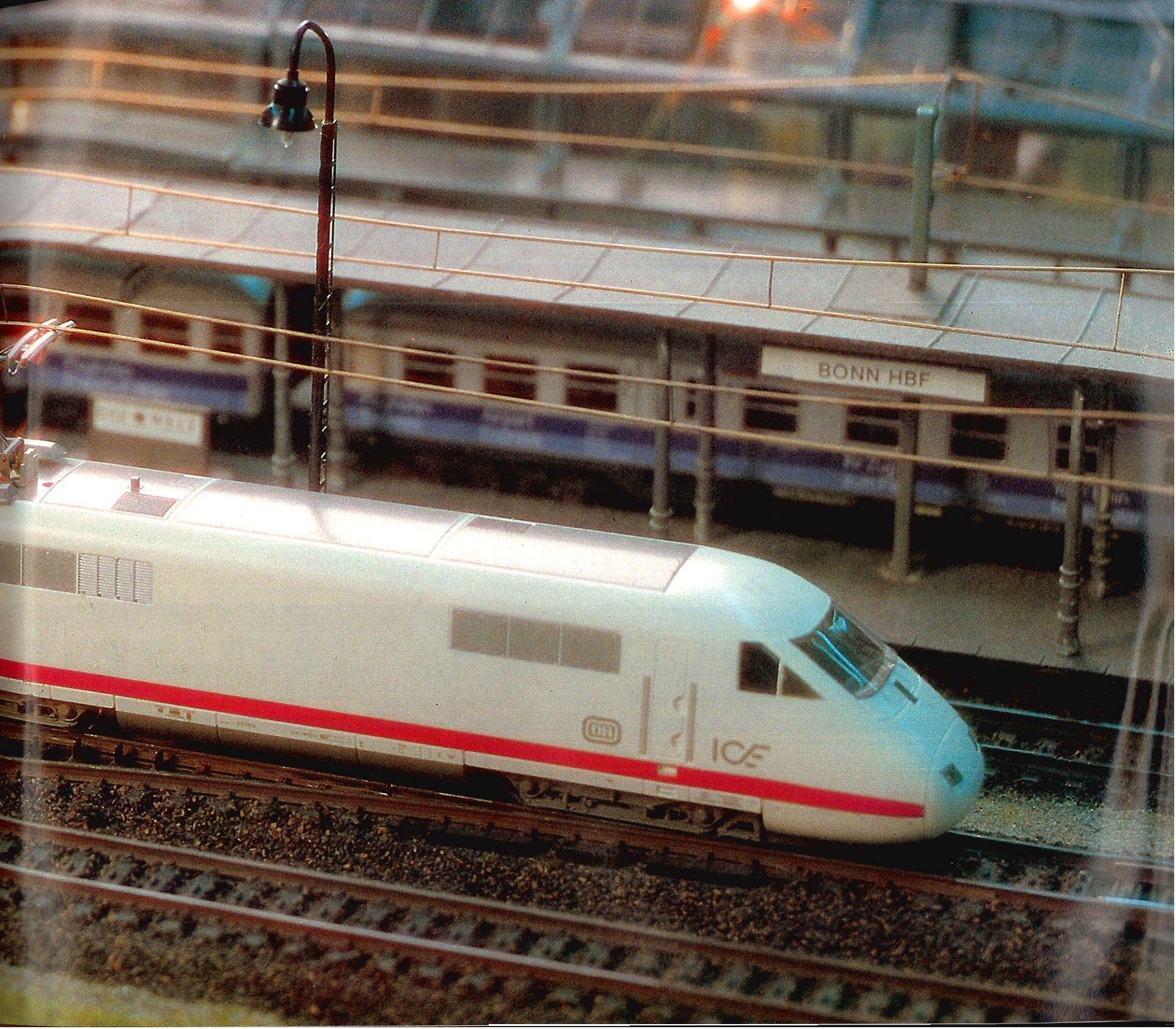
See your dealer.

High speed ICE train and airport train, photographed on the layout scene "Bonn Station" of the Falter Company.


BONN HBF
ICE

These trains are treasured gifts, beautifully packaged faithful reproductions of real trains. The sets contain items not available separately.

2858 · Passenger Train of the German Federal Railroad · Contents: 1 class V 36 239 diesel locomotive, 1 1st/2nd class 2-axle coach and 3 2nd class 2-axle coaches with individual car numbers · Locomotive and cars have special paint schemes and lettering · Cars and locomotive not available separately · Train length 79 cm (2' 6")

■ During the 1950's, the German Federal Railroad has a pressing need for self propelled train sets for commuter service. Because there was a shortage of equipment, the class V 36 diesels were used with standard passenger cars as commuter trains. Cars used in this type of service received the red paint scheme normally applied to self-propelled trains used for commuters.

These trains were used in suburban service and on branch lines.

4071

2856 · Airport Train of the German Federal Railroad · Includes: 1 class 111 electric locomotive with new road number and single-arm pantograph, 1 1st/2nd class commuter car and 2 2nd class commuter cars with individual car numbers · Entire train has special lettering · Cars and locomotive not available separately · Train length 102 cm (3' 4-½") · Cars equipped for installation of interior lighting kit 7329

■ The German Federal Railroad employs the "Airport Train" as a direct connection between Ludwigshafen and the Frankfurt/M airport. The train makes three round trips daily and offers intermediate stops at Mannheim, Weinheim, Heppenheim, Bensheim and Darmstadt.

3071 · TEE Self Propelled Train · Dutch-Swiss TRANS-EUROP-EXPRESS train · 3 part

Locomotive: One power truck · 4 traction tires · Metal frame

Combined dining and first class car and a control car with a large first-class seating area

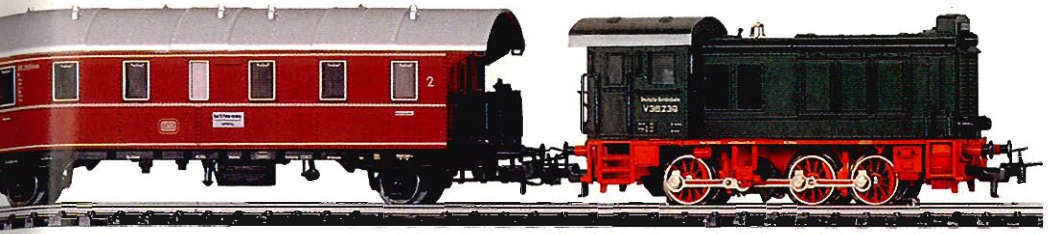
Special couplers provide very close spacing between the cars · Closely fitting corridor end connections · Triple white headlights and dual red end lights in each end car, illuminated according to the direction of travel · Each end car equipped with a pick-up shoe which acts as an electrical pick-up according to the direction of travel · Train length 70 cm (27-⅝")

0=7154 =7164 =60001 r
=7175 =60015 w

4071 · Compartment Car · Mates with TEE Self Propelled Train set 3071 · 1st class · Flexible corridor end connections · Special couplers mate only with TEE equipment · Length 23.3 cm (9-3/16")

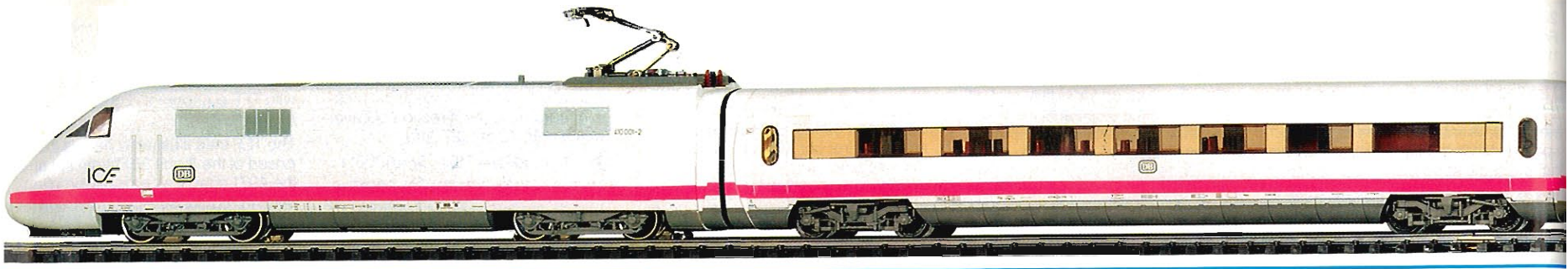
The TEE train illustrated here is composed of the 3 unit 3071 train set and the 4071 coach, a composition often seen in regular service. The 4 unit train measures 93.3 cm (36-¾").

2858



2856

3071



3671 · Digital

High Speed Train of the German Federal Railroad (DB)

3371 · Self Propelled Train · 4-Part · 2 powered end units and 2 intermediate cars

Power Unit: One powered truck · 2 traction tires · Metal frame

Intermediate Cars: Interior lighting

Special couplers connect the 4 units very closely with each other · The special corridor end connections give an almost seamless appearance · Triple headlight and dual red end lights illuminated according to the direction of travel · Each powered end unit has its own pick-up shoe which serves as electrical pick-up for the entire train according to the direction of travel · Electronic reverse unit · Train length 91.5 cm (36")

7154 = 7164 60007 r 60008 w

4171 · Intermediate Car · Mates with ICE self propelled trains sets 3371 and 3671 · Flexible corridor and connections · Interior illumination · Special couplers mate only with ICE train · Length 24.5 cm (9-3/8")

COMMENTARY ••• COMMENTARY ••• COMMENTARY ••• COMMENTARY ••• COMMENTARY ••• COMMENTARY •••

On the hunt for a new world record on rails with a plywood board

345 km/h (221.25 m.p.h.) with the ICE on the Franconian test track

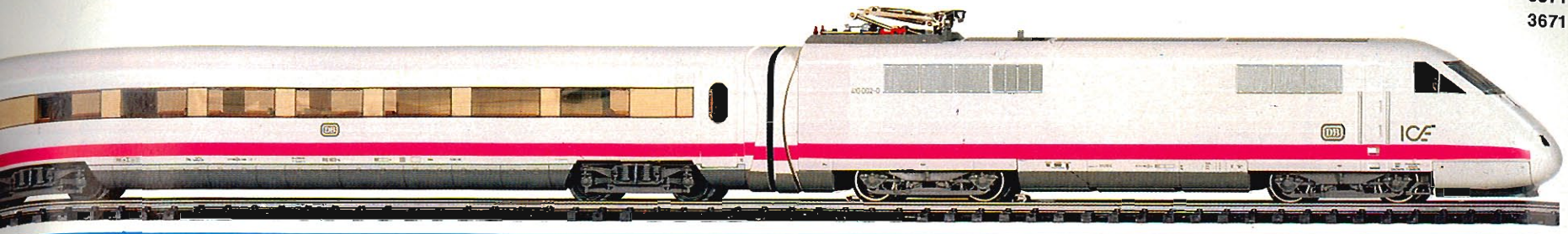
Since August of 1986 railroad fans all over Germany had been excited about an event that was supposed to take place at Burgsinn, the German Federal Railroad's new maintenance facility in the delightful Franconian Jossa Valley. 330 km/h (206.25 m.p.h.) was announced, the fastest speed ever for a ground vehicle in Germany. The vehicle was the ICE, the more than 70 million Deutschmark (approx. US$ 38 million) high speed train of the German Federal Railroad.

It was supposed to undergo test trials starting in September on the first completed section of the newly designed route between Hannover and Würzburg. September 19 was picked as the day of the record event. The West German transportation minister, the German Federal Railroad board of directors, prominent people from business and industry as well as the press were supposed to be on board. The ICE was sent to the location two weeks in advance. It was supposed to grope towards the 300 km/h (187.5 m.p.h.) mark in steps in order to ultimately satisfy the instructions in the specifications for reaching a speed of 350 km/h (218.75 m.p.h.) and prove that an efficient network for the fastest trains can also be built in the Federal Republic of Germany.

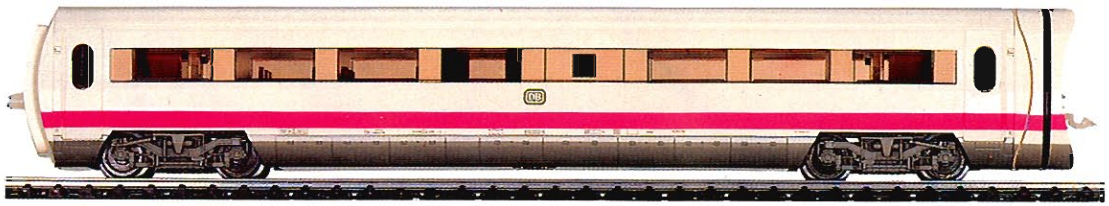
The high speed train near Oelde on the Neubeckum – Brackwede line.

Yet, on the very first day of the experiment the noble train derailed on a switch that had been changed too soon. At a walking pace. A railroad

3371
3671



4171



COMMENTARY ••• COMMENTARY ••• COMMENTARY ••• COMMENTARY ••• COMMENTARY ••• COMMENTARY •••

worker had changed it before the train had cleared it. One part of the train had to be sent to Munich and the test run was conducted with the remaining half of the ICE whose exposed end was protected by a plywood board. More than 250 km/h (156.25 m.p.h.) was not possible. The date for the record run was postponed until November 17. A few days before railroad spokesman Gerhard Scheuber said cautiously, "We will go ahead only if there is no fog." The weather cooperated. All of the guests assembled in the afternoon of this November day, among them guests from France who made comparisons with the TGV (the ones concerning the interior space were favorable for the ICE) and guests from Texas who also wanted to have this type of train. Others tried out the telephone and journalists crowded around Trade Minister Dollinger and DB president Gohlke who spoke about the future of the railroad.

The train was already doing 120 (75 m.p.h.). Everyone stared spellbound at the digital speedometers over their heads whose readout slowly climbed higher. At 200 (125 m.p.h.) many said, "Just like being at 100 (62.5 m.p.h.)", then they fell silent. At the ends of tunnels they felt the pressure on their ears. At 331 (206.88 m.p.h.) some said "Oh!" The target mark was surpassed. At 3 : 25 in the middle of the tunnel the speedometer stood at 345 (215.63 m.p.h.). None of the passengers had ever moved so fast on the ground.

Many photographers did not click the shutter. They thought, "Now he'll also do 350 (218.75 m.p.h.)." Mistake: The braking distance on the 28 kilometer (17.5 miles) test track was too short. And no one wanted to depend on an emergency brake application now.

It is 40 kilometers (25 miles) more to the TGV record. Some railroad people croaked, "The French will do 405 (253 m.p.h.) the day before the German Federal Railroad does 400 (250 m.p.h.)." The chase goes on. At any rate, it is great advertising. Internally it has already been decided that 280 (175 m.p.h.), not 250 (156.25 m.p.h.), will be the scheduled speed, just as in France.

In the ICE cockpit at 345 km/h (215.63 m.p.h.): digital readout of the record speed.

Photos: DB

For the right start

The new way to play – simply digital, photographed with the new Digital Starter Set.

2600 100 Volts Japan
2601 110 Volts (60 Hz)
2602 220 Volts
2603 240 Volts

Digital Starter Set · 2 Freight Trains with Large M Track Layout and Transformer · Contents: diesel-hydraulic switch engine class 260 with TELEX couplers, 3665, tank locomotive class 89 with headlights, 2 low side cars 4423, 1 gondola 4430, 1 container car, 14 sections of 5100 curved track, 4 sections of 5106 straight track, 1 section of straight track 5107, 1 feeder track 5111, 1 uncoupler track 5112, 1 pair of 5140 switches, 6 sections of 5200 curved track, instruction book · 1 Central Control (combining Keyboard, Central Unit and Control 80 functions) for operating 4 solenoid accessories and 4 Digital locomotives with an auxiliary function and fixed addresses · All Digital components can be connected to the Central Control for expansion · Decoder is already built into the switches and uncoupler track · 1 Transformer with an output of 52 VA (42 VA in USA) · Set can be expanded with entire M track program · The digital entry into model railroading

The Central Control in the starter set is not available separately.

Connect the transformer to AC outlets only

2602
128 × 84 cm
(51 × 33″)

The Small and Large Start (S)

2900 220 Volts
2901 100 Volts Japan
2902 110 Volts (60 Hz)
2903 240 Volts

Passenger Train Set with M Track Oval and Transformer · Contents: Tank locomotive 3087, 2 passenger cars, 12 sections of 5100 curved track, 1 section of 5106 straight track, 1 feeder track 5131 with built-in condenser to prevent interference with radio and television reception, 1 10 VA transformer with speed controller and connections for accessories · Illustrated instruction booklet with many tips and suggestions · Can be expanded with SET program or with entire M track program · The ideal start into the world of model railroading

2900
94 × 76 cm
(37 × 30″)

The transformer with the starter sets has connections to hook up the train and accessories. Larger locomotives or additional switches or signals can also be operated with the transformer.

The transformer from the starter sets is not available separately.

Connect the transformer to AC outlets only

2910 220 Volts
2911 100 Volts Japan
2912 110 Volts (60 Hz)
2913 240 Volts

Freight Train Set with M Track Oval and Transformer · Contents: DHG 500 diesel locomotive with headlights, 1 dump car, 1 low side car with skip loader, 12 sections of 5100 curved track, 1 section of 5106 straight track, 1 feeder track 5131 with built-in condenser to prevent interference with radio and television reception, 1 10 VA transformer with speed controller and connections for accessories · Dump car and skip loader can be used for loading and unloading functions · Illustrated instruction booklet with many tips and suggestions · Can be expanded with SET program or with the entire M track program · The ideal start into the world of model railroading

2910
94 × 76 cm
(37 × 30″)

2950 220 Volts
2954 240 Volts
2957 110 Volts (60 Hz)
2959 100 Volts Japan

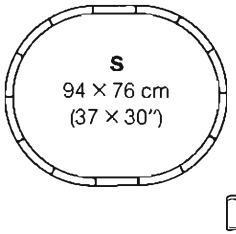
Freight Train Set with M Track and Transformer · Contents: Tank locomotive 3000 with headlights, 1 dump car 4413, 1 low side car 4423, 1 gondola 4430, 13 sections of 5100 curved track, 5 sections of 5106 straight track, 1 section of 5107 straight track, 1 uncoupler track 5112, 1 light pole 5113, 1 feeder track 5131 with built-in condenser to prevent interference with radio and television reception, 1 left-hand manual switch 5221, 1 control box 7072, 1 bumper 7190, wire, plugs, sockets, freight, 1 10 VA transformer with speed controller and connections for accessories · Illustrated instruction booklet with many tips and suggestions · Can be expanded with the entire M track program · The versatile way into the fun-filled world of model railroading

2950 130 × 76 cm (52 × 30″)

For a Well Planned Layout (E+T)

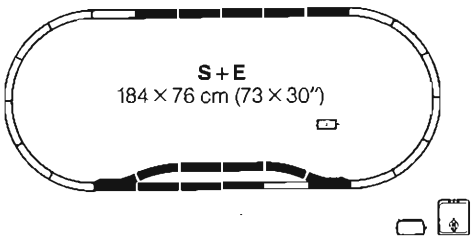
A lot begins with the simple oval included with beginner sets 2902 (S), 2912 (S) and 2957. The first add-on can be either the extension set 5190 (E) with manual switches or set 5191 (E) with electric switches. Additional add-ons can be installed in any sequence and include set 5192 (T1), 5193 (T2) and 5194 (T3).

These track plans illustrate the step by step construction

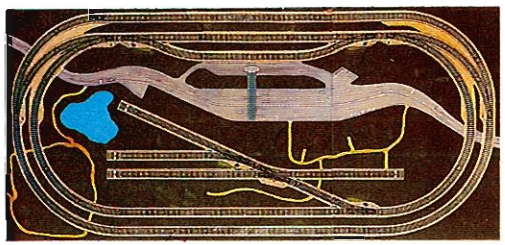


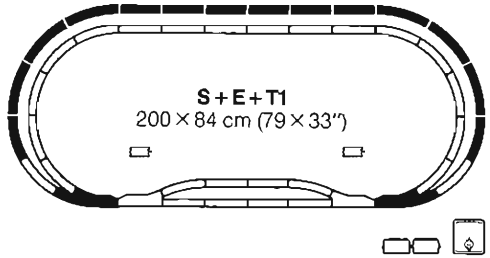
5190 · Extension Set E · Includes: 10 straight tracks, 2 curved tracks, 1 pair manual switches and instructions

5191 · Extension Set E · Includes: 10 straight tracks, 2 curved tracks, 1 pair electric switches, control box, distribution strip, wiring and instructions

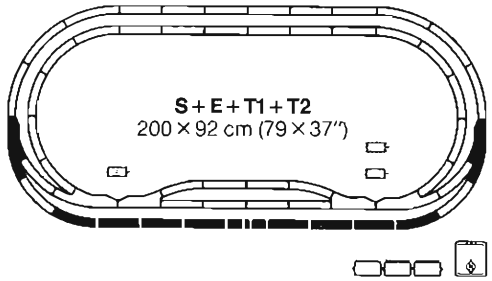


7298 · Toporama for the Set Extension Program · Realistic landscaping rolled in a tube · Multi-colored · Printed track layout · Realistic effect provided by flocked grass · Size 205 × 97 cm (80-¾ × 38-3/16″)

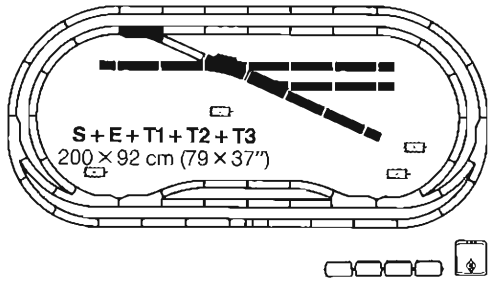




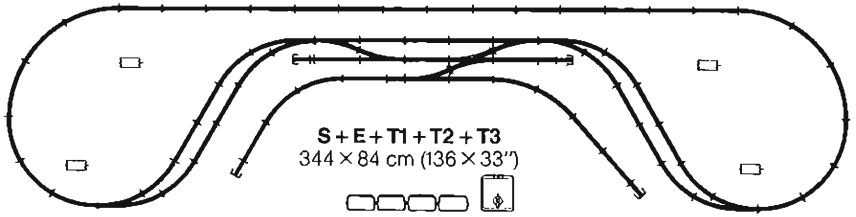
5192 · Double Track Set T1 · Includes: 6 straight tracks, 8 curved tracks, 1 pair electric curved switches, control box, distribution strip, wiring and instructions



5193 · Station Track Set T2 · Includes: 9 straight tracks, 2 curved tracks, 1 pair electric curved switches, control box, distribution strip, wiring and instructions

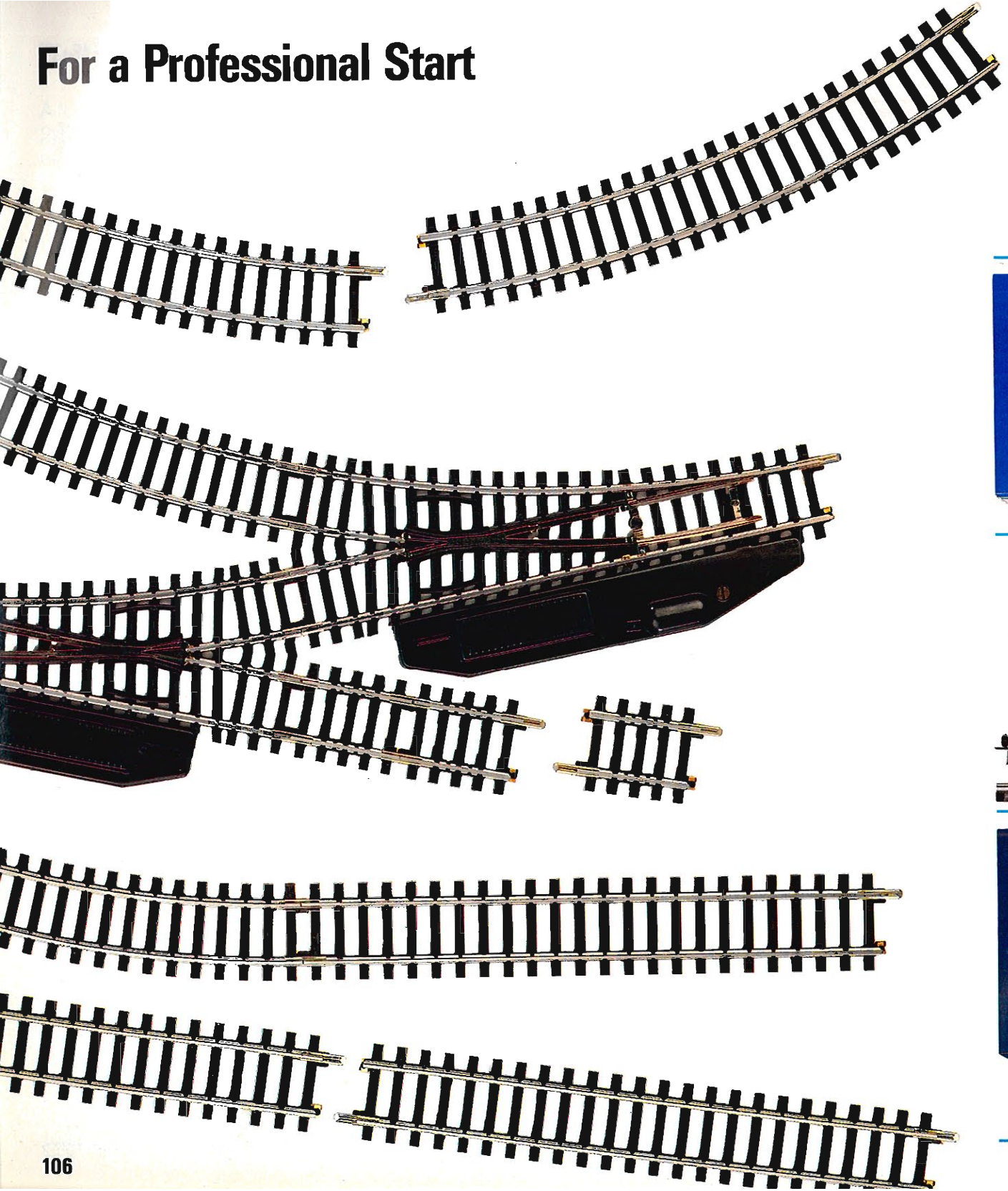


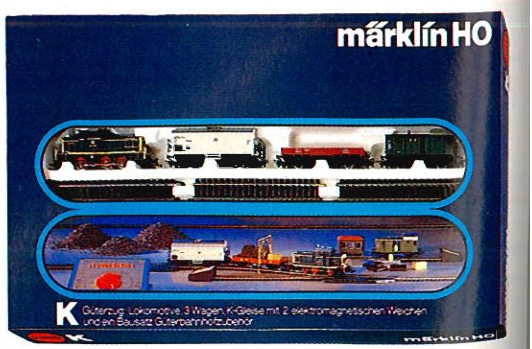
5194 · Yard Track Set T3 · Includes: 9 curved tracks, 1 pair electric switches, double slip switch, 4 bumpers, control box, distribution strip, wiring and instructions



This example shows that other layouts can be built using the track sets from the SET program. A little tip: The SET program makes excellent gifts for any layout. Because **every** SET add-on can be used to expand **any** layout.

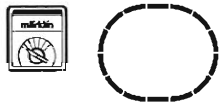
For a Professional Start





2970 220 Volts
2971 100 Volts Japan
2972 110 Volts (60 Hz)
2973 240 Volts

Passenger Train Set with K Track Oval and Transformer · Contents: Tank locomotive 3000 with headlights, 2 passenger cars 4107 with interiors, 1 section of 2200 straight track, 12 sections of 2221 curved track, 1 feeder track 2292 with hookup wires and built-in condenser to prevent interference with radio and television reception, 1 10 VA transformer with speed controller and connections for accessories · Illustrated information booklet on introduction to building and operating a model railroad · Can be expanded with the entire K track program · The ideal start for realistic model railroading

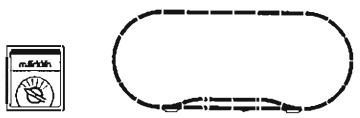


2970
94 × 76 cm
(33 × 30″)

2980 220 Volts

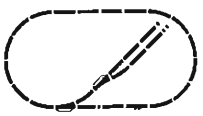
Freight Train Set with K Track and Transformer · Contents: Diesel locomotive 3141, 1 refrigerator car 4415, 1 low-side gondola car 4423, 1 package car 4699, 9 sections of 2200 straight track, 2 sections of 2207 straight track, 4 sections of 2208 straight track, 12 sections of 2221 curved track, 2 sections of 2232 curved track, 1 pair of electric switches 2261, 1 feeder track 2292 with hookup wires and built-in condenser to prevent interference with radio and television reception, 1 kit of freight yard accessories, 1 control box 7072, wire, plugs, sockets, 1 10 VA transformer with speed controller and connections for accessories · Instructions with different construction ideas · Can be expanded with entire K track program · A great way to enter the world of model railroading

Note: Not available in the USA

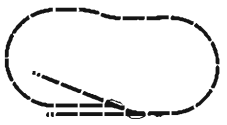


2980 186 × 78 cm (74 × 31″)

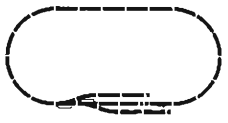
The track supplied with this starter set can also be used to make the following layouts:



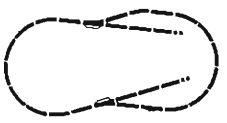
150 × 78 cm (60 × 31″)



165 × 85 cm (65 × 34″)



168 × 85 cm (67 × 34″)



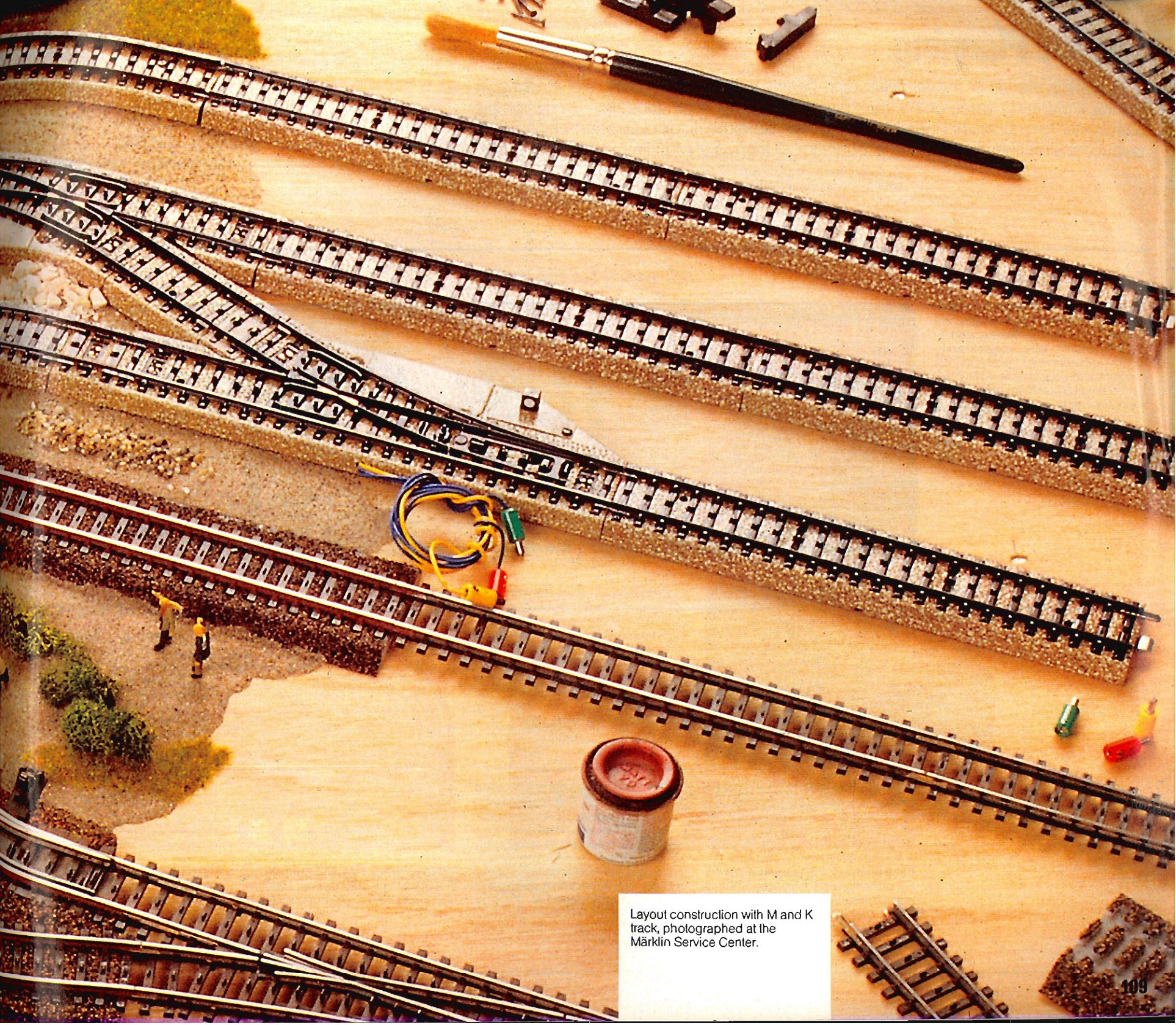
163 × 92 cm (65 × 37″)

The transformer in the starter sets has connections for hooking up the train and accessories. Larger locomotives or additional switches or signals can also be operated with the transformer.

The transformers in the starter sets are not available separately.

Connect the transformer to AC outlets only

Layout Construction



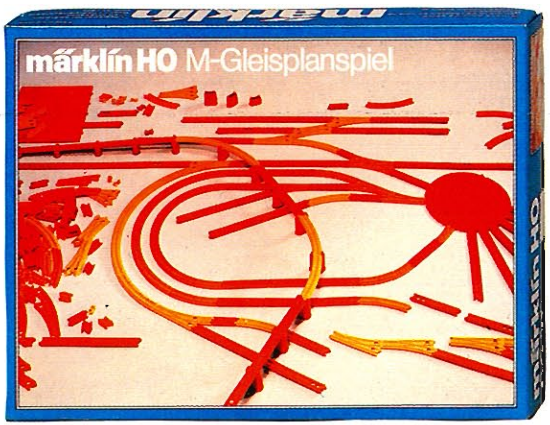
Layout construction with M and K track, photographed at the Märklin Service Center.

Layout Planning

With Märklin the fun of model railroading begins right at the planning stage. Using the track planning game or the track planning stencils, each modeler can design his own layout to express his individuality. Märklin literature is full of tips and ideas on layout construction and creating scenery for all friends of Märklin model railraoding.

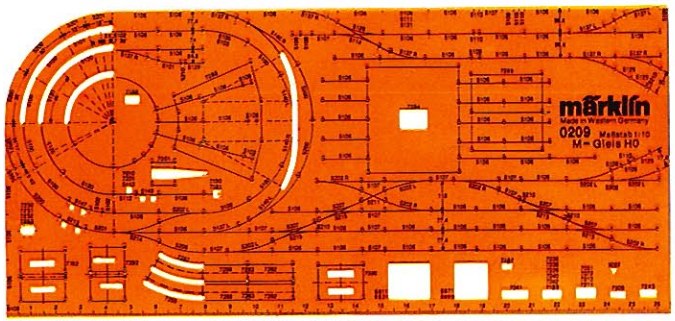
Track Planning Games

0230 M · Track Planning Game · For planning and designing M track layouts · All M track sections scaled 1 : 5 · Has transfer table, turntable and pillars · Enough parts to plan a medium-sized layout · All pieces have corresponding part numbers on both sides · Pieces have one of 4 colors (3 curve radii and straight tracks) · Pieces can be connected to each other snugly and easily

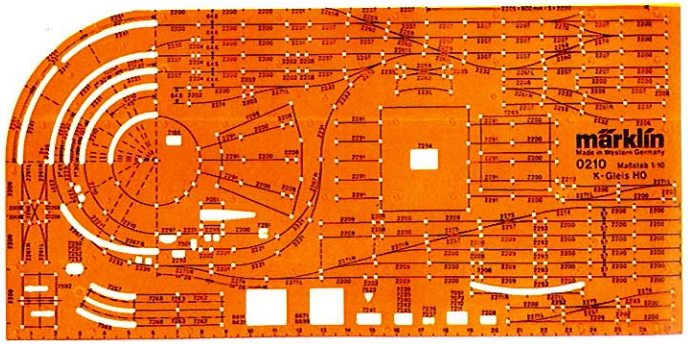


0231 K · Track Planning Game · For planning and designing K track layouts · All K track sections scaled 1 : 5 · Has transfer table, turntable and pillars · Enough parts to plan a medium-sized layout · All pieces have corresponding part numbers on both sides · Pieces have one of 7 colors (5 curve radii, straight tracks and the 14° 26′ switch) · Pieces can be connected to each other snugly and easily

Track Planning Stencils



0209 M · Track Planning Stencils · For planning M track layouts, 5100 and 5200 series · All track sections are scaled 1 : 10 on the stencil and can be traced on paper with a sharp pencil · Instructions included

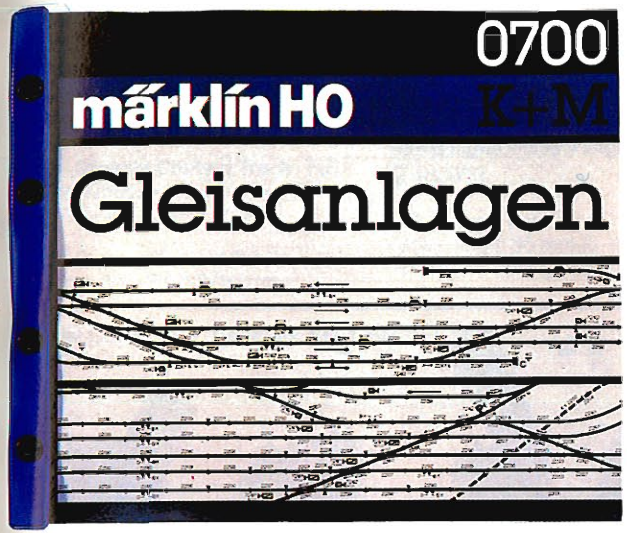


0210 K · Track Planning Stencils · For planning K track layouts, 2200 series · All track sections are scaled 1 : 10 on the stencil and can be traced on paper with a sharp pencil · Instructions included

Digital Book

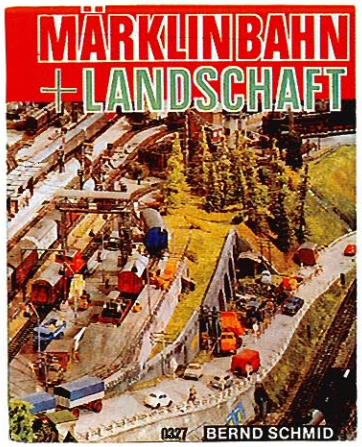
0303 · Digital Book · Contents: All components of the Märklin Digital system · How does Digital work? · From the decoder panel to the control panel to the track detection unit · Directions for using a computer with the Digital system · Possible prototypical applications of the Digital system, for example: signal block and staging yard operation · Examples of circuits and control systems for model railroad equipment of different gauges, systems and manufacturers · English text

Layout Book

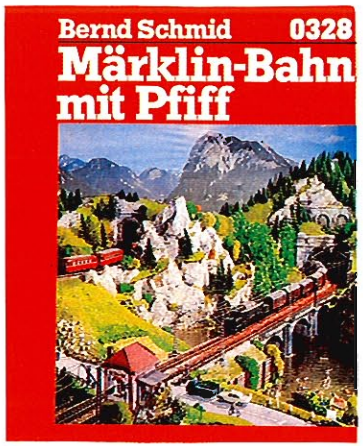


0702 K + M · H0 Layout Book · 30 Layouts, 15 for K track and 15 for M track · A supplement has M track equivalents for 14 K track layouts and K track equivalents for 15 M track layouts · Each layout example includes a 1 : 10 track plan with wiring schematic, catenary, landscaping, color photos of completed layouts, tips and suggestions for laying track and adding scenery · Special space saving layout ideas such as narrow shelf layouts, diagonal layouts, U-shaped layouts, as well as schematic layouts which can stand by themselves or be add-ons for existing layouts · 186 pages · Size 22 × 26.4 cm (8-¾" × 10-½") · English text

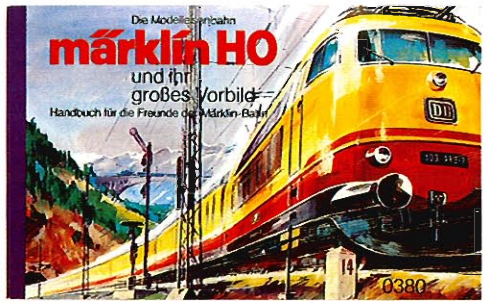
Right-of-Way and Scenery Tips



0327 · Märklin-Bahn + Landschaft · By Bernd Schmid · An excellent aid for building free-lance layouts · Technical details, roadbed design, landscaping and accessory information · Well illustrated, many color photos · 192 pages · Size 16.4 × 20.3 cm (6-½" × 8") · German text



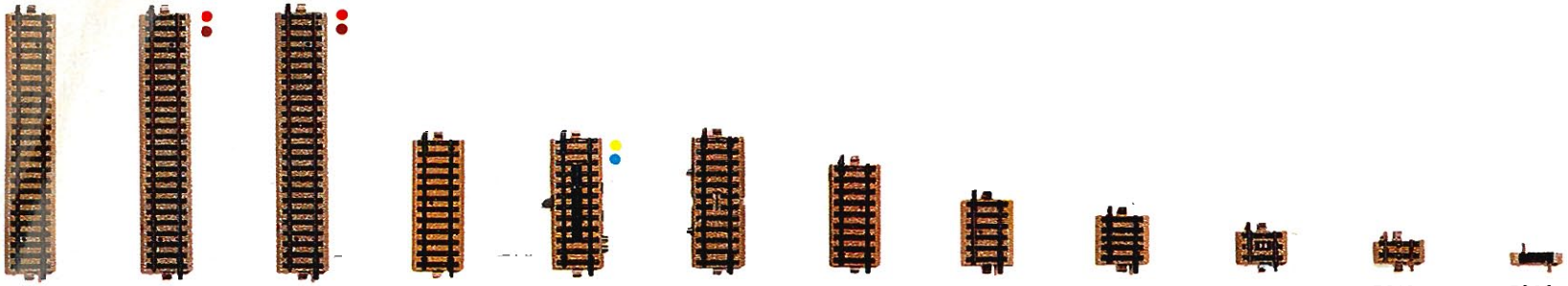
0328 · Märklin-Bahn mit Pfiff · By Bernd Schmid · Many additional tips on railroad construction for the more demanding modeler · Mr. Schmid's first book (0327) described how to do things; this second book describes what to do in model railroading · In depth discussion of all kinds of construction topics · Well illustrated, many color photos · 262 pages · Size 22 × 17 cm (8-¾" × 6-¾") · German text



0356 · The Book about the "Crocodile" · By H. S. Stammer · The most comprehensive publication on the famed Swiss "Crocodile" with dates, facts, dramatic stories and interesting anecdotes · Detailed presentation of the various models which Märklin has produced in the last 50 years · 96 pages · Size 26.4 × 22 cm (10-¼" × 8-¾") · German text

0380 · Die Modelleisenbahn Märklin H0 und ihre großes Vorbild · A handbook for Märklin railroaders · Suggestions on building Märklin layouts, Märklin models and their prototypes; includes signals, operating rules of the prototype railroads, the railroad traffic department, examples of switching circuits for multi-train operation and much more · 228 pages · Size 15 × 24 cm (5" × 9") · German text

Overview of M Track



5106 5111 5131 5107 5112 5146 5129 5108 5109 5110 5210 5208

5106 · Straight Track · Full section, length = 180 mm (7-3/32″)

5111 · Feeder Track · Full section, length = 180 mm (7-3/32″) · 2 feeder wires

5131 · Feeder Track · Full section, length = 180 mm (7-3/32″) · 2 feeder wires · Built-in condenser to suppress interference with radio and television reception

5107 · Straight Track · ½ section, length = 90 mm (3-9/16″)

5112 · Uncoupler Track · With solenoid operation ½ section, length = 90 mm (3-9/16″) · 2 connecting wires

5146 · Straight Circuit Track · ½ section, length = 90 mm (3-9/16″) · Momentary contact by means of pickup shoes

5129 · Straight Track · Length 70 mm (2-3/4″)

5108 · Straight Track · ¼ section, length = 45 mm (1-3/4″)

5109 · Straight Track · 3/16 section, length = 33.5 mm (1-5/16″)

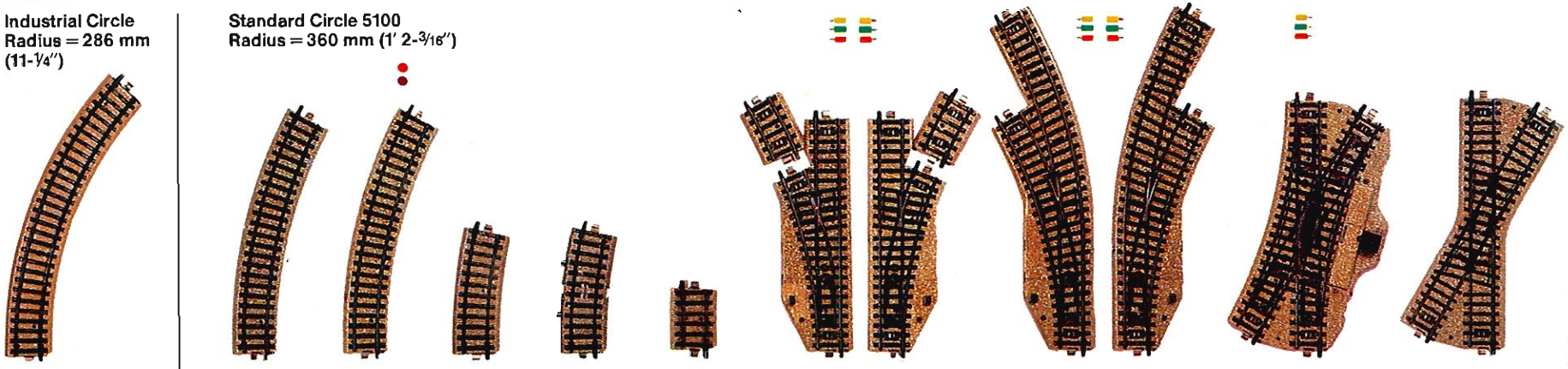
5110 · Straight Track · ⅛ section, length = 22.5 mm (7/8″)

5210 · Straight Track · Length 16 mm (5/8″)

5208 · Straight Track · Length 8 mm (5/16″)

Industrial Circle
Radius = 286 mm
(11-1/4″)

Standard Circle 5100
Radius = 360 mm (1′ 2-3/16″)



5120 5100 5103 5101 5147 5102 5137 5140 5128 5114

5120 · Curved Track · Full section = 45° · Sharp radius for branch lines and industrial sidings · For use with short locomotives and cars only

5100 · Curved Track · Full section = 30°

5103 · Curved Feeder Track · Full section = 30° · 2 feeder wires

5101 · Curved Track · ½ section = 15°

5147 · Circuit Track · ½ section = 15° · Momentary contact by means of pickup shoes

5102 · Curved Track · ¼ section = 7° 30′

5137 · Pair of Switches · With solenoid operation · Length of straight side 180 mm (7-3/32″) · Add 5102 curved section (included) to curved branch to form 5100 section · 3 connecting wires · Illuminated lanterns

⚲ = 60000

5140 · Pair of Curved Switches · With solenoid operation · Inner curve 30° section · Outer curve 30° section with parallel spacing of 77.4 mm (3-1/16″) · 3 connecting wires · Illuminated lanterns

⚲ = 60000

5128 · Double Slip Switch · With solenoid operation · 30° crossing angle · Length of straight section 193 mm (7-5/8″) · Can be operated manually · 3 connecting wires · Illuminated lantern to indicate switch setting (crossing or curves)

⚲ = 60000

5114 · Crossing · 30° crossing angle · Length 193 mm (7-5/8″) · Third "rails" insulated from each other electrically

All switches have sprung points. The electromagnetic switches 5137, 5140, 5202, the double slip switches 5128, 5207 and the three-way switch 5214 have double solenoids for remote operation. All pairs of switches consist of a right and left switch.


5145


5115

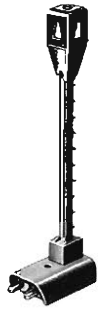

5116



7190



7191


5113


7171


7195


7299


5004


2291


5022

5145 · Contact Track Set · 2 half sections, length = 2 × 90 mm (3-9/16") · Long term contact effected by train wheels · Contact area can be extended with 5115 and 5116 contact track sections

5115 · Straight Contact Track · Full section, length = 180 mm (7-3/32") · For extending contact areas

5116 · Curved Contact Track · Full section = 30° · Radius 360 mm (1' 2-3/16") · For extending contact areas

7190 · Bumper · Length 70 mm (2-3/4")

7191 · Bumper · Length 70 mm (2-3/4") · With illuminated lantern
=60000

5113 · Light Pole · For 5112 uncoupler track · Height 85 mm (3-3/8") · Lantern illuminated during uncoupling operation
=60010

2291 · Adapter Track · Full section, length = 180 mm (7-3/32") · For connecting K track to M track

7171 · Sound Deadening Strips · Package of 50 strips and 50 wood screws for quieter train operation

7195 · Number Sign Set · Contents: 12 bases and signs numbered 1–24 · For identifying switches and signals

7299 · Wood Screws · Contents: 200 screws · For mounting M track

5004 · Center Rail Feeder Wire · Length 750 mm (2' 5-1/2") · Connects at joints in center rail

5022 · Center Rail Insulators · Insulator is placed between the center rail clips of a track joint to separate track circuits

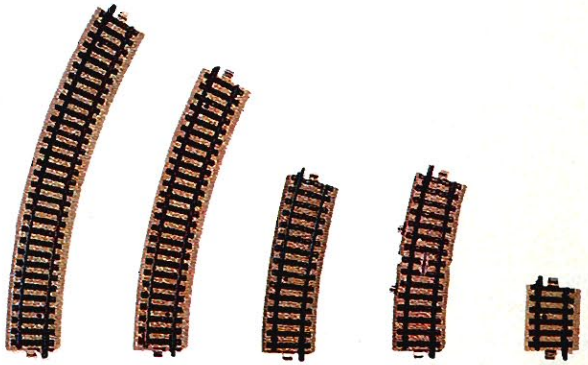
N

7555 · Contact Set · Reed contact switches for installation in track · Activaled by magnet 7556

N

7556 · Magnet Set · 6 magnets for installation on car or locomotive floors · For activating 7555 reed contact switches

Parallel Circle 5200 · Radius = 437.4 mm (1' 5-1/8")

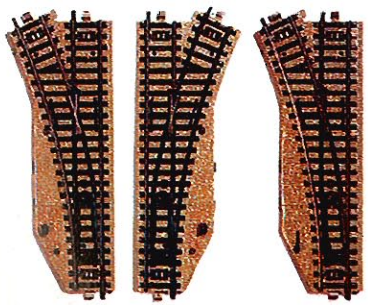

5200

5206

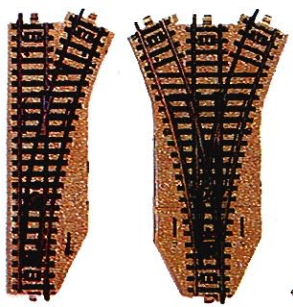
5201

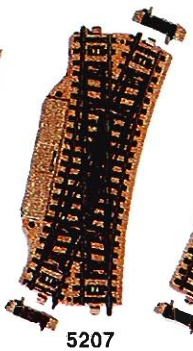
5213

5205


5202


5221


5214


5207


5215


5211

5200 · Curved Track · Full section = 30°

5206 · Curved Track · Section = 24° 17' · Same as 5202 and 5221 curved branch

5201 · Curved Track · 1/2 section = 15°

5213 · Curved Circuit Track · 1/2 section = 15° · Momentary contact by means of pickup shoes

5205 · Curved Track · Section = 5° 43' · Extends 5206 section to a 5200 section

5202 · Pair of Switches · With solenoid operation · Length of straight side 180 mm (7-3/32") · Curved branch 24° 17' · 3 connecting wires · Illuminated lanterns
=60000

5221 · Pair of Switches · Manually operated · Length of straight side 180 mm (7-3/32") · Curved branch 24° 17'

5214 · Symmetrical Three-Way Switch · With solenoid operation · Length of the straight section 180 mm (7-3/32") · Curved branches 24° 17' · 5 connecting wires · 2 additional levers for manual operation

5207 · Double Slip Switch · With solenoid operation · Crossing angle 24° 17' · Length of the straight section 180 mm (7-3/32") · 3 connecting wires · Additional lever for manual operation · 2 5208 straight sections included

5215 · Crossing · Crossing angle 24° 17' · Length 180 mm (7-3/32") · Third "rails" insulated from each other · 2 5208 straight sections included

5211 · Crossing · Crossing angle 48° 30' · Length 98 mm (3-7/8") · Third "rails" insulated from each other

M Track / Straight and Curved Track

The special feature about M track is that its metal roadbed is an integral part of the track, thus giving it the durability necessary for layouts that are changed often. M track is easy for children to put together.

The track sections are 37.5 mm (1-15/32") wide. Therefore 37.5 mm (1-15/32") must be subtracted from the center-to-center track spacings indicated to determine the spacing needed for clearance.

The 2291 adapter track section is available for combining M and K track.

Straight Track

5106 · Full section, length = 180 mm (7-3/32")

5107 · 1/2 section, length = 90 mm (3-9/16")

5108 · 1/4 section, length = 45 mm (1-3/4")

5109 · 3/16 section, length = 33.5 mm (1-5/16")

5110 · 1/8 section, length = 22.5 mm (7/8")

5129 · Length 70 mm (2-3/4")

5208 · Length 8 mm (5/16")

5210 · Length 16 mm (5/8")

Curved Track

Industrial Circle · Radius 286 mm (11-1/4")

5120 · Full section = 45°

Standard Circle · Radius 360 mm (1' 2-3/16")

5100 · Full section = 30°

5101 · 1/2 section = 15°

5102 · 1/4 section = 7° 30'

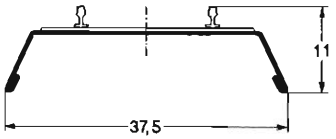
Parallel Circle · Radius 437.4 mm (1' 5-1/8")

5200 · Full section = 30°

5201 · 1/2 section = 15°

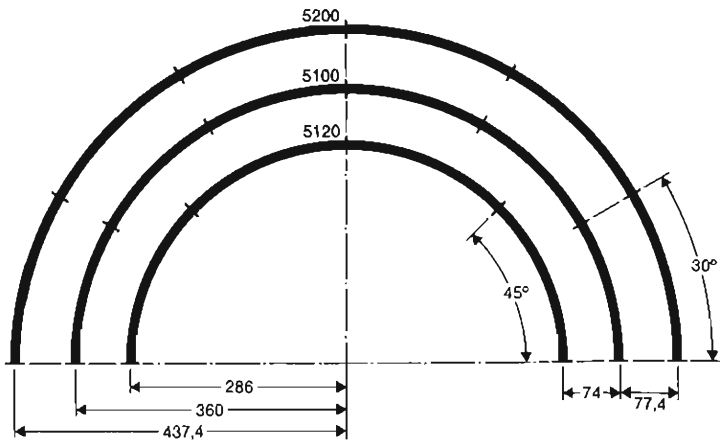
5205 · Section = 5° 43'

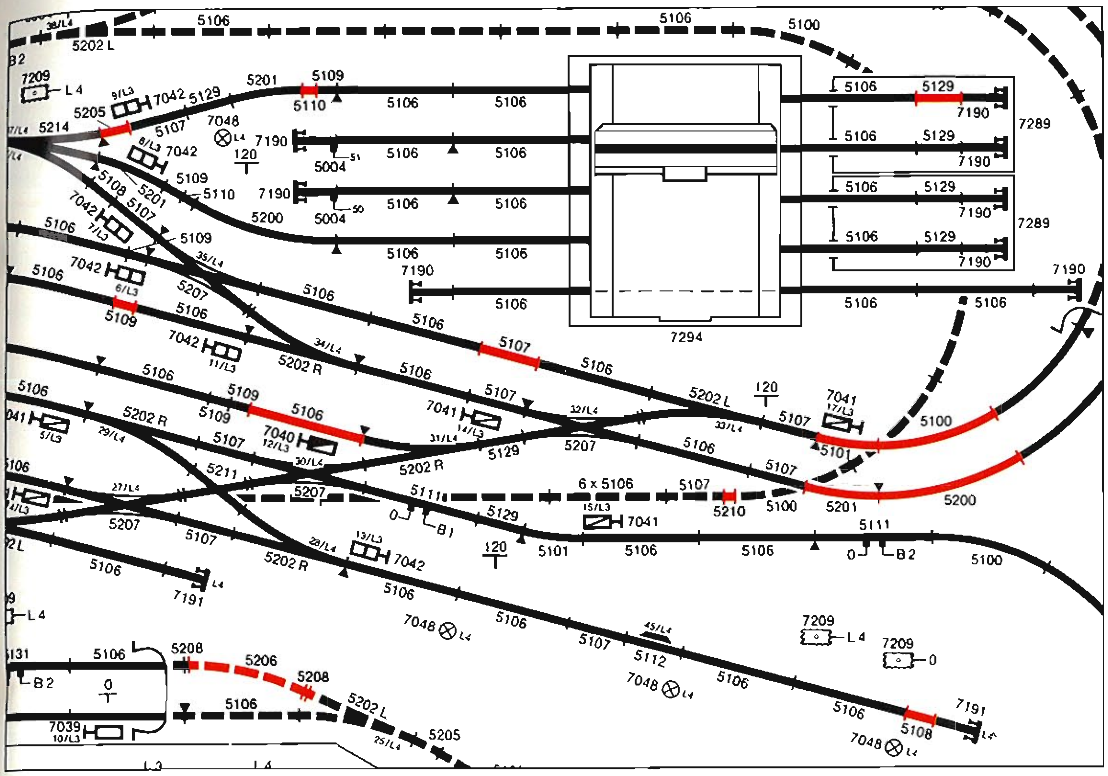
5206 · Section = 24° 17'

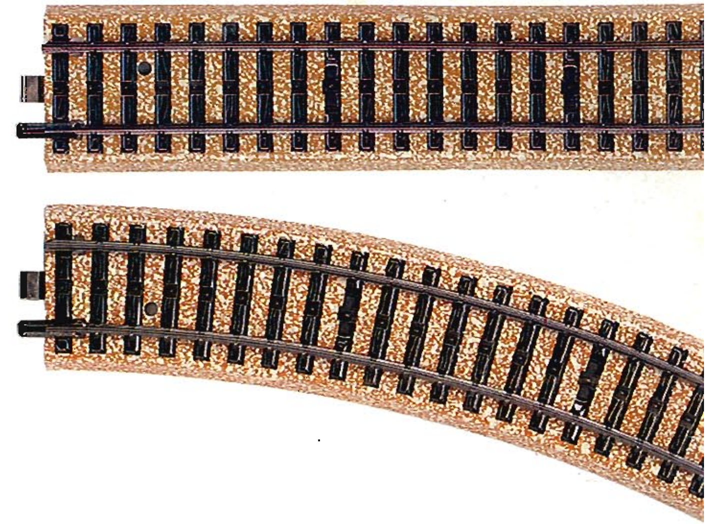


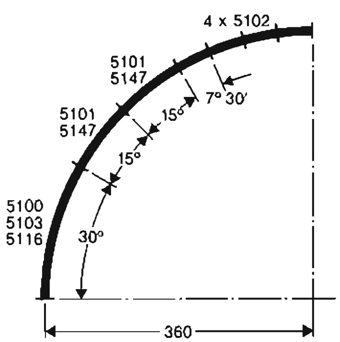
The 3 Track Radii

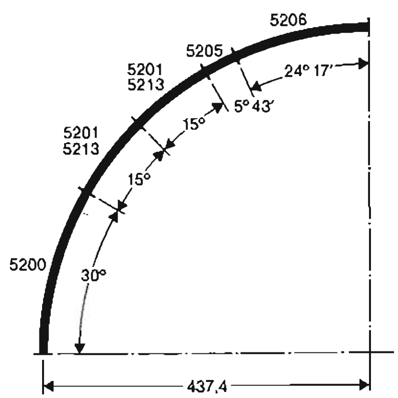
Switches 5202, 5221 or 5140 are necessary for the transition from standard circle 5100 to parallel circle 5200.

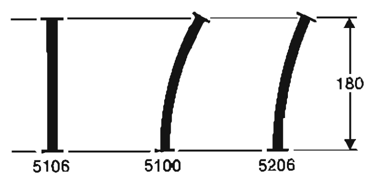


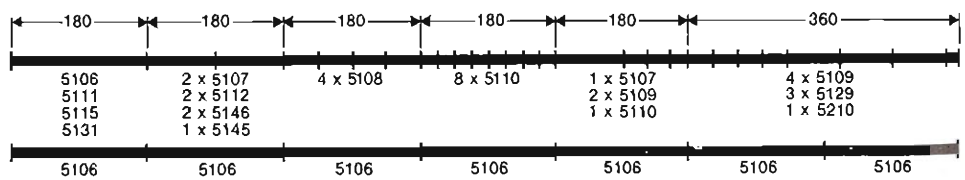





4 x 5102
5101
5147
5101
5147
7° 30′
15°
15°
5100
5103
5116
30°
360


5206
5205
5201
5213
24° 17′
5° 43′
15°
5201
5213
15°
5200
30°
437,4


180
5106
5100
5206


180
180
180
180
180
360
5106
5111
5115
5131
2 x 5107
2 x 5112
2 x 5146
1 x 5145
4 x 5108
8 x 5110
1 x 5107
2 x 5109
1 x 5110
4 x 5109
3 x 5129
1 x 5210
5106
5106
5106
5106
5106
5106
5106

All switches are equipped with sprung points, thus allowing trains to run "against" the switch.

The electric switches, double slip switches, threeway and curved switches all have double solenoids for remote operation.

The electric switches can be operated using the 7072 control box, 5146, 5147 and 5213 circuit tracks or 7555 reed contact switch.

All switches can be operated on the Märklin Digital system.

Standard Circle · Radius 360 mm (1′ 2-3/16″)

5137 · **Electric Pair of Switches** · 180 mm (7-3/32″) · 22° 30′ · Can be extended to 30° using the 5102 section included

5128 · **Double Slip Switch** · Length 193 mm (7-5/8″) · 30° · Curve same as 5100

5114 · **Crossing** · Length 193 mm (7-5/8″) · 30° · Dimensions same as 5128

Parallel Circle · Radius 437.4 mm (1′ 5-1/8″)

5202 · **Electric Pair of Switches** · 180 mm (7-3/32″) · 24° 17′ · Curve same as 5206

5221 · **Manual Pair of Switches** · 180 mm (7-3/32″) · 24° 17′ · Curve same as 5206

5207 · **Double Slip Switch** · 180 mm (7-3/32″) · 24° 17′ · Two 5208 sections included · 5206 curve produced by addition of 5208 sections

5215 · **Crossing** · 180 mm (7-3/32″) · 24° 17′ · Two 5208 sections included · Dimensions same as 5207

5211 · **Crossing** · 98 mm (3-7/8″) · 48° 30′ · For double crossovers

Adjustment Track Sections

5109 · **Straight Track** · 33.5 mm (1-5/16″) · Can be used to adjust length on "S" curves with 5128 (5114) double slip switch

5110 · **Straight Track** · 22.5 mm (7/8″) · Can be used to adjust length on "S" curves with 5128 (5114) double slip switch

5129 · **Straight Track** · 70 mm (2-3/4″) · Can be used to adjust length on "S" curves with 5128 (5114) double slip switch and 5137 switch (track spacing 54.8 mm (2-1/8″))

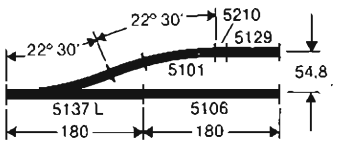
5208 · **Straight Track** · 8 mm (5/16″) · Can be used to adjust length on diagonal straight sections of 5207 (5215)

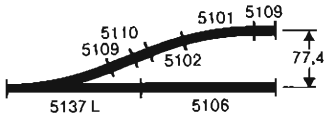
5210 · **Straight Track** · 16 mm (5/8″) · Can be used to adjust length on "S" curves with 5137 switch (track spacing 54.8 mm (2-1/8″)), diagonally installed 5202 switch and 5207 (5215) double slip switches installed in succession

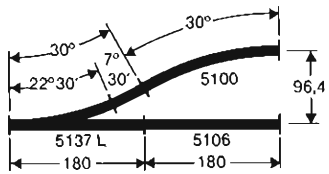
5205 · **Curved Track** · 5° 43′ · Radius 437.4 mm (1′ 5-1/8″) · Produces 5200 section when combined with 5206

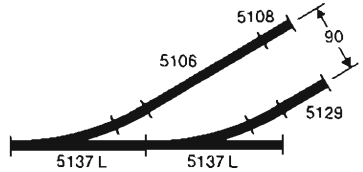
5206 · **Curved Track** · 24° 17′ · Radius 437.4 mm (1′ 5-1/8″) · Complementary curve to 5202, 5221 switches and 5207 double slip switch for parallel track spacing of 77.4 mm (3-1/16″)

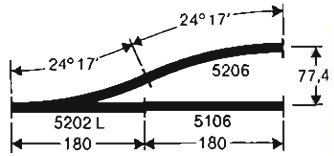
Switches for Standard Circle 5100



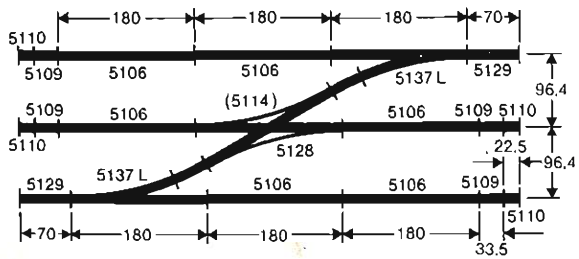


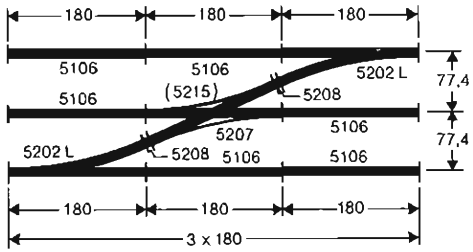


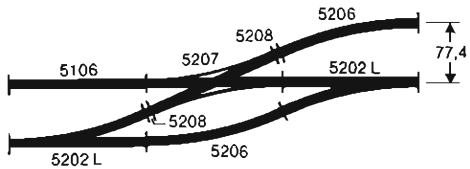


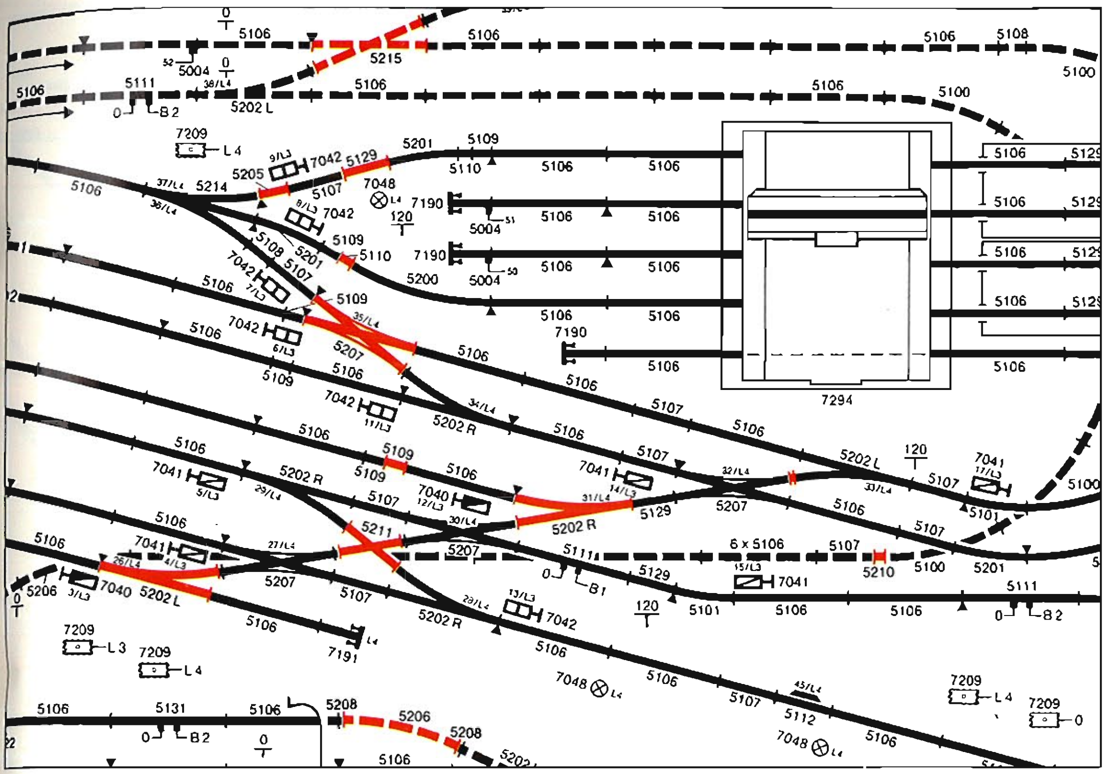


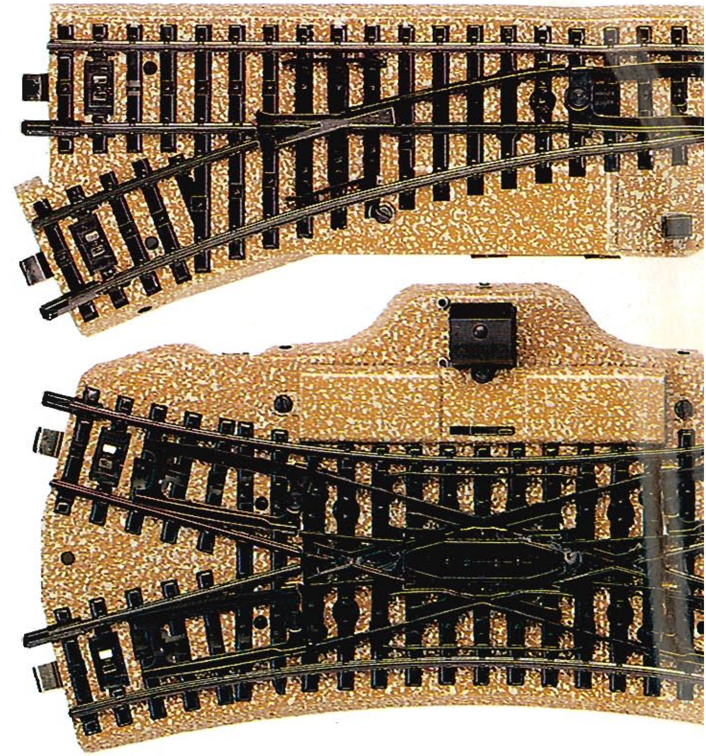
Switches for Parallel Circle 5200

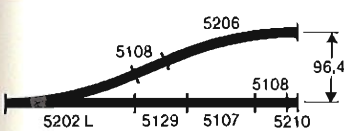


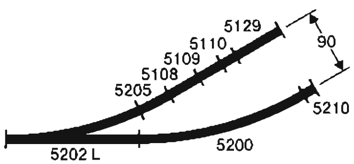









5206
5108
96,4
5108
5202 L
5129
5107
5210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5110
5109
5108
5205
90
5210
5202 L
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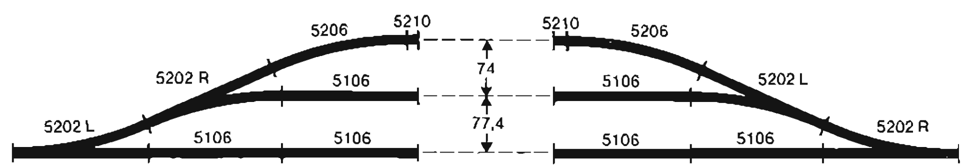
5206
5210
5202 R
5106
5202 L
5106
5106
74
77,4
5210
5206
5106
5202 L
5106
5106
5202 R


5107
5108
5109
96,4
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5128
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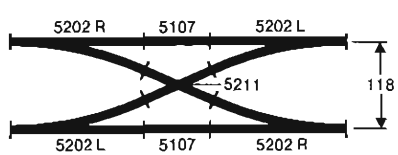
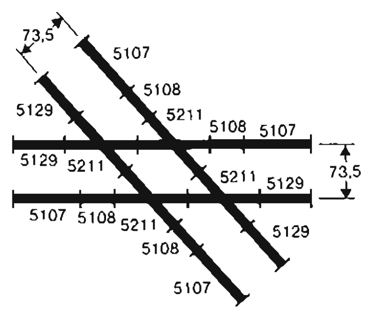

5202 R
5107
5202 L
5211
118
5202 L
5107
5202 R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5211
5129
5108
5107

Curved Switches

Sidings and branches can be started on curves using curved switches. This increases considerably the usable area on straight portions of track.

The curved switch allows a harmonious transition from the standard circle 5100 (radius 360 mm (1′ 2-3⁄16″)) to the parallel circle 5200 (radius 437.4 mm (1′ 5-1⁄8″)). With a switch angle of 30° it is possible to install curved switches in existing parallel circles without using adjustment sections.

5140 · **Electric Pair of Curved Switches** · Inner and outer curves 30° · Radius 360 mm (1′ 2-3⁄16″) with a parallel spacing of 77.4 mm (3-1⁄16″) · Inner curve same as 5100

5214 · **Symmetrical Three-Way Switch** · 180 mm (7-3⁄32″) · 2 × 24° 17′ · Radius of the branches 437.4 mm (1′ 5-1⁄8″)

5206 · **Curved Track** · Section 24° 17′ · Radius 437.4 mm (1′ 5-1⁄8″) · Complementary curve for parallel track spacing of 77.4 mm (3-1⁄16″) when using 5214 three-way switch

Three-Way Switch

The three-way switch combines a left and right switch in the space of a normal switch. This results in a savings in space in yards, stations and other areas with concentrations of switches.

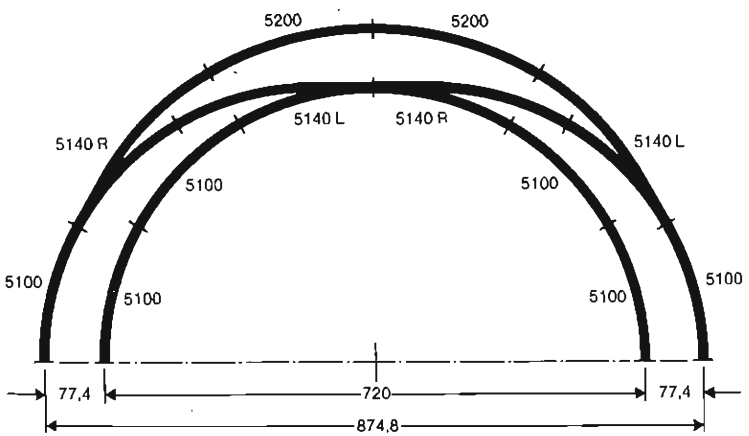
The three-way switch has two double solenoids for remote operation.

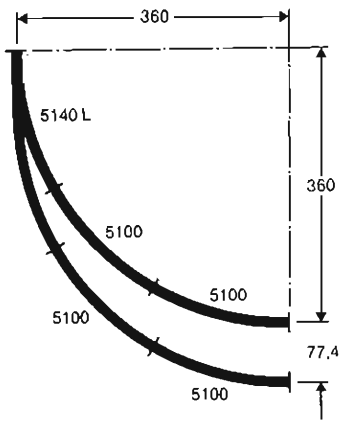
Both curved branches have the same radius and length as that of the 5202 switch.

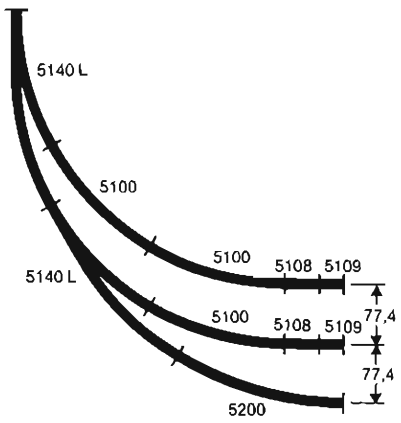
The track spacing of 77.4 mm (3-1⁄16″) is maintained when the 5206 is used with this switch.

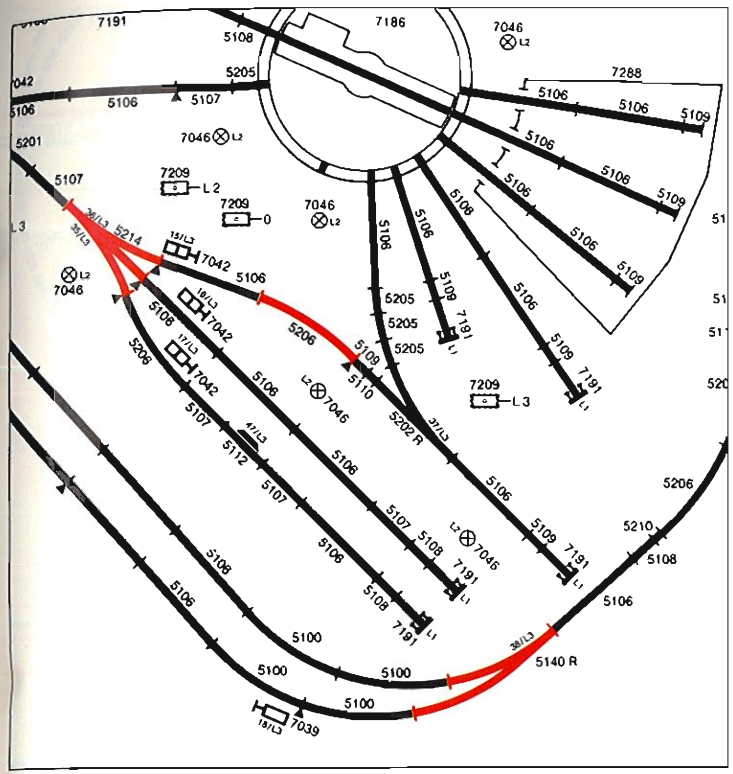
A three-way switch can be used for direct approach to the 7288 locomotive roundhouse.

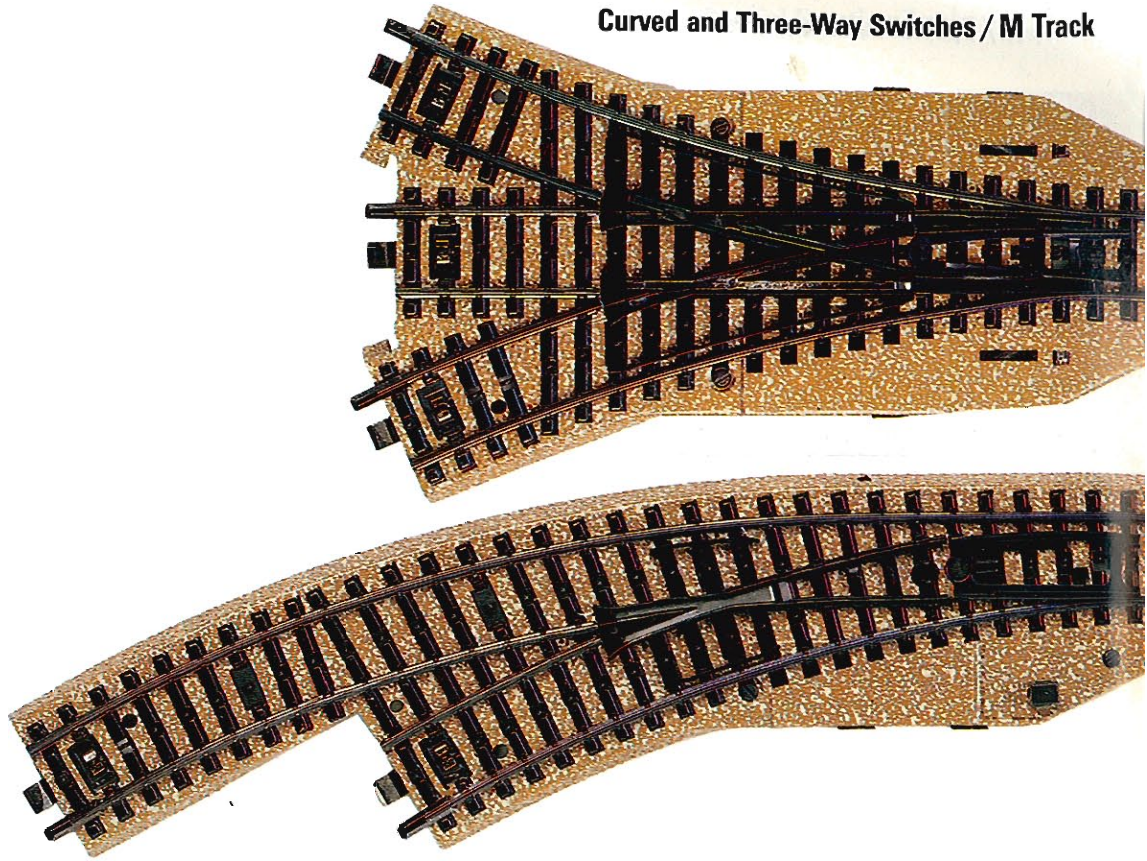
Curved Switches 5140



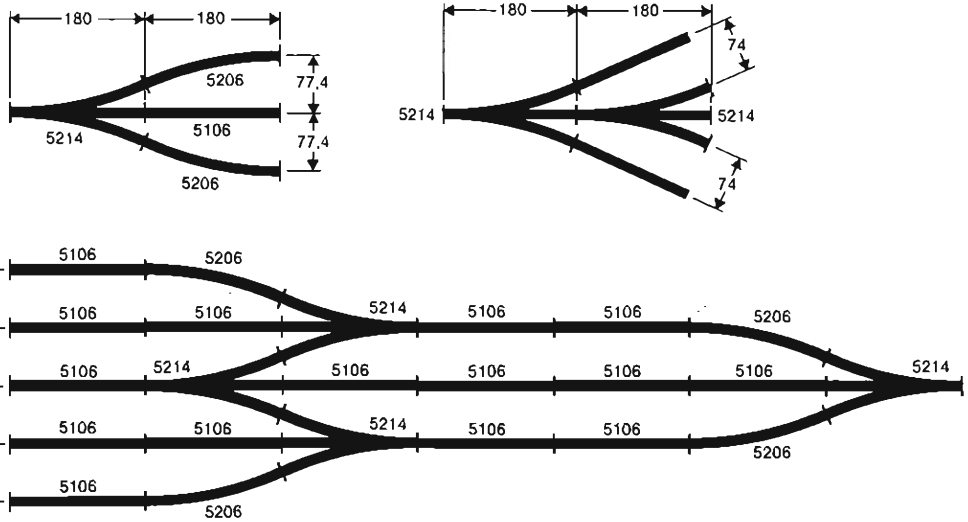








Three-Way Switch 5214



Suggested combination of the three-way switch 5214 with the locomotive shed 7288

Circuit Tracks

The circuit tracks (5146, 5147 and 5213) enable the automatic control of switches and signals by trains in motion. Activated by locomotive and car pickup shoes, different, independent switching functions can be carried by them in either direction. The control impulses are accepted at two electrically separated sockets.

Contact Tracks

A train passing over an insulated length of rail produces an electrical contact. The track detection function made possible by this results from the wheels passing over the insulated rail. The contact area can be lengthened with the 5115 and 5116 sections.

Switching Contacts

The contact switch can be installed anywhere on the track. The reed switch in the switching contact produces an impulse when a train with a switching magnet passes over it. This type of contact switch allows differentiation among specific locomotives and/or cars.

Uncoupler Tracks

Automatic couplers and RELEX couplers can be separated automatically by remote control using an uncoupler track. Close couplers can also be uncoupled without any modifications. The uncoupler track has a solenoid to raise the uncoupler ramp located in the middle of the track. It can be operated from the 7072 control box or manually using the hand lever. When a 5113 light pole is attached to the uncoupler track, the light will be illuminated during the uncoupling procedure.

Feeder Tracks

Current is fed to the third rail and returned from the two running rails using the feeder track. A feeder track should be installed for every track circuit – at least every 5 meters (16′ 5″) of track. To prevent interference with radio and television, it is recommended that a feeder track with a condenser (5131) be used for each track circuit. Only feeder tracks without condensers are to be used in the Märklin Digital system.

Straight Special Function Tracks

2291 · **Adapter Track from M to K Track** · Full section, length = 180 mm (7-3⁄32″)

5111 · **Feeder Track** · Full section, length = 180 mm (7-3⁄32″) · Also for Märklin Digital

5131 · **Feeder Track** · Full section, length = 180 mm (7-3⁄32″) · Built-in condenser to suppress interference with radio and television reception

5112 · **Uncoupler Track** · 1/2 section, length = 90 mm (3-9⁄16″)

5113 · **Light Pole** · Height 85 mm (3-3⁄8″) · For uncoupler track 5112

5115 · **Contact Track** · Full section, length = 180 mm (7-3⁄32″) · To extend a contact area with 5145 and crossing gates

5145 · **Contact Track Set** · 2 half sections, length = 2 × 90 mm (3-9⁄16″) · With insulated section of rail for track detection function by means of car and locomotive wheels · Contact area be lengthened with 5115 or 5116 sections

5146 · **Circuit Track** · 1/2 section, length = 90 mm (3-9⁄16″)

Curved Special Function Tracks

5103 · **Feeder Track** · Full section = 30° · Radius 360 mm (1′ 2-3⁄16″) · Also for Märklin Digital

5116 · **Contact Track** · Full section = 30° · Radius 360 mm (1′ 2-3⁄16″) · To extend a contact area with 5145 and crossing gates

5147 · **Circuit Track** · 1/2 section = 15° · Radius 360 mm (1′ 2-3⁄16″)

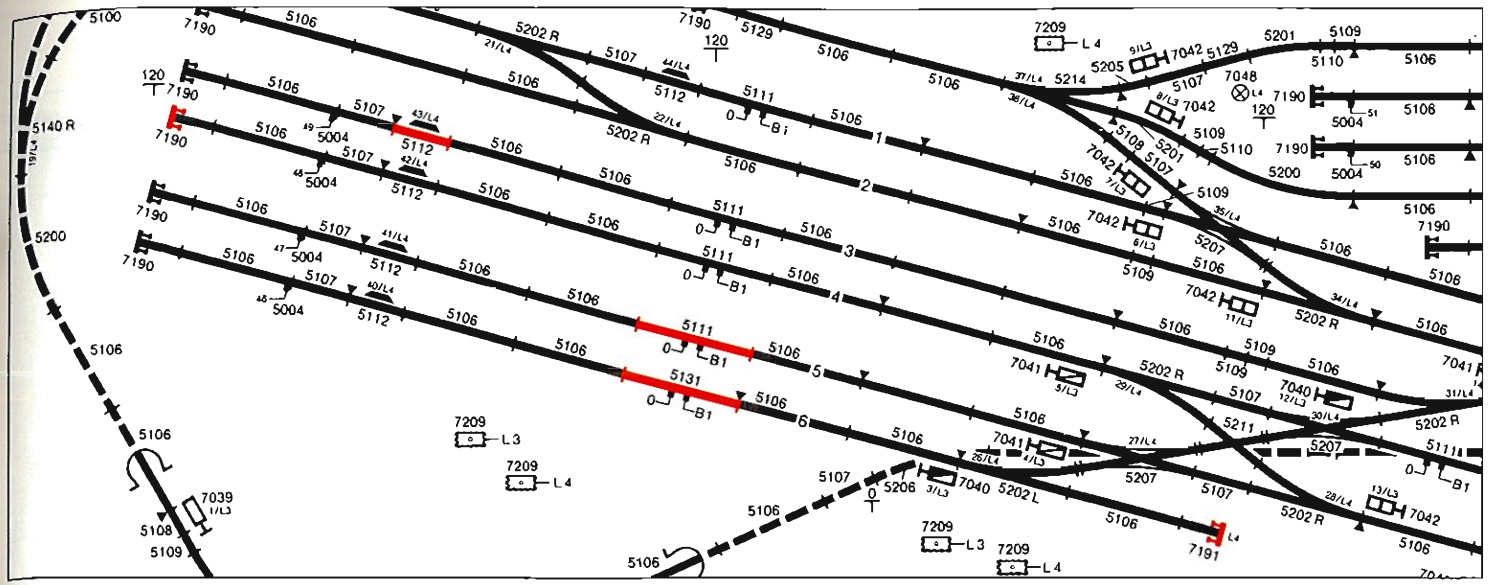
5213 · **Circuit Track** · 1/2 section = 15° · Radius 437.4 mm (1′ 5-1⁄8″)

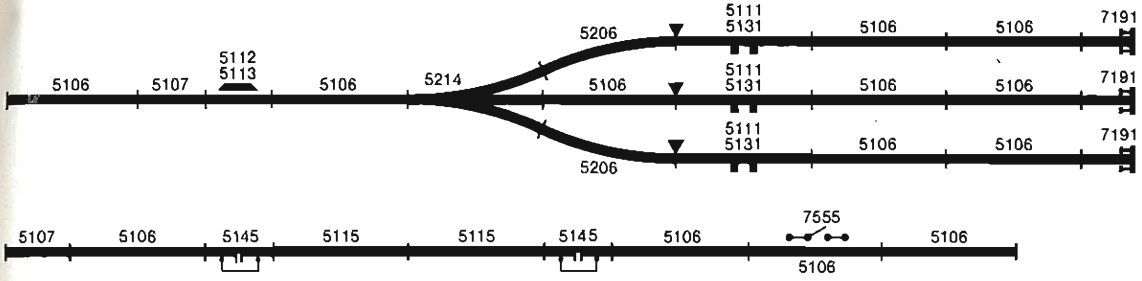
7190 · **Bumper** · Length 70 mm (2-3⁄4″)

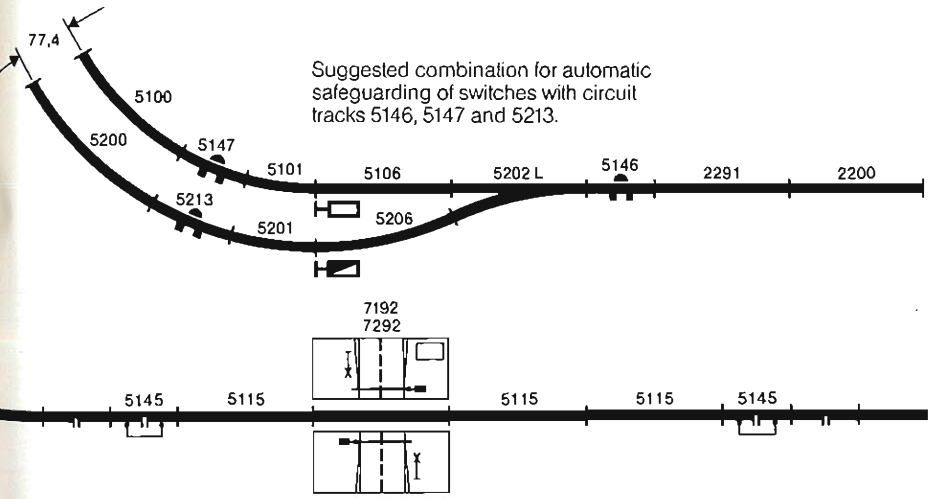
7191 · **Bumper with Illuminated Lantern** · Length 70 mm (2-3⁄4″)

7555 · **Switching Contact** · Reed contact switches for installation in track Ⓝ

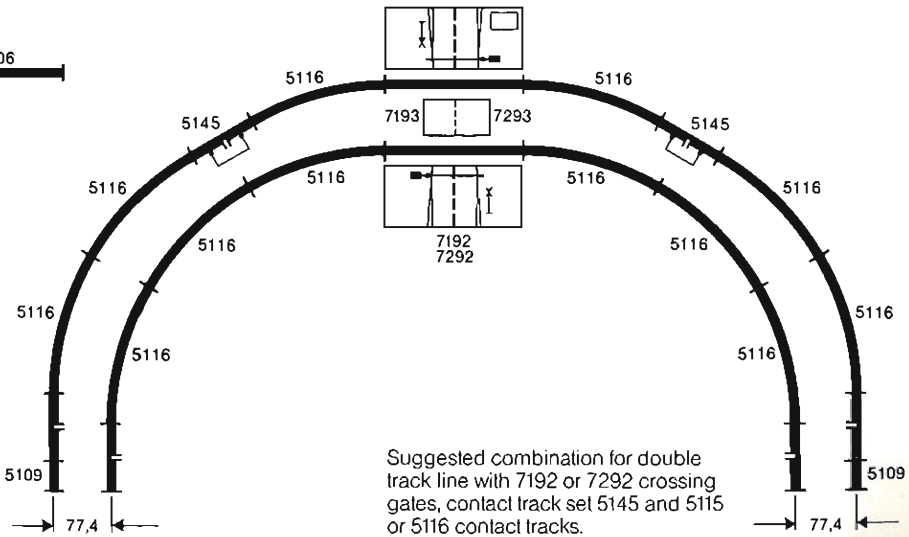
7556 · **Magnet Set** · 6 switching magnets for activating 7555 switching contacts Ⓝ







Suggested combination for automatic safeguarding of switches with circuit tracks 5146, 5147 and 5213.



Suggested combination for double track line with 7192 or 7292 crossing gates, contact track set 5145 and 5115 or 5116 contact tracks.

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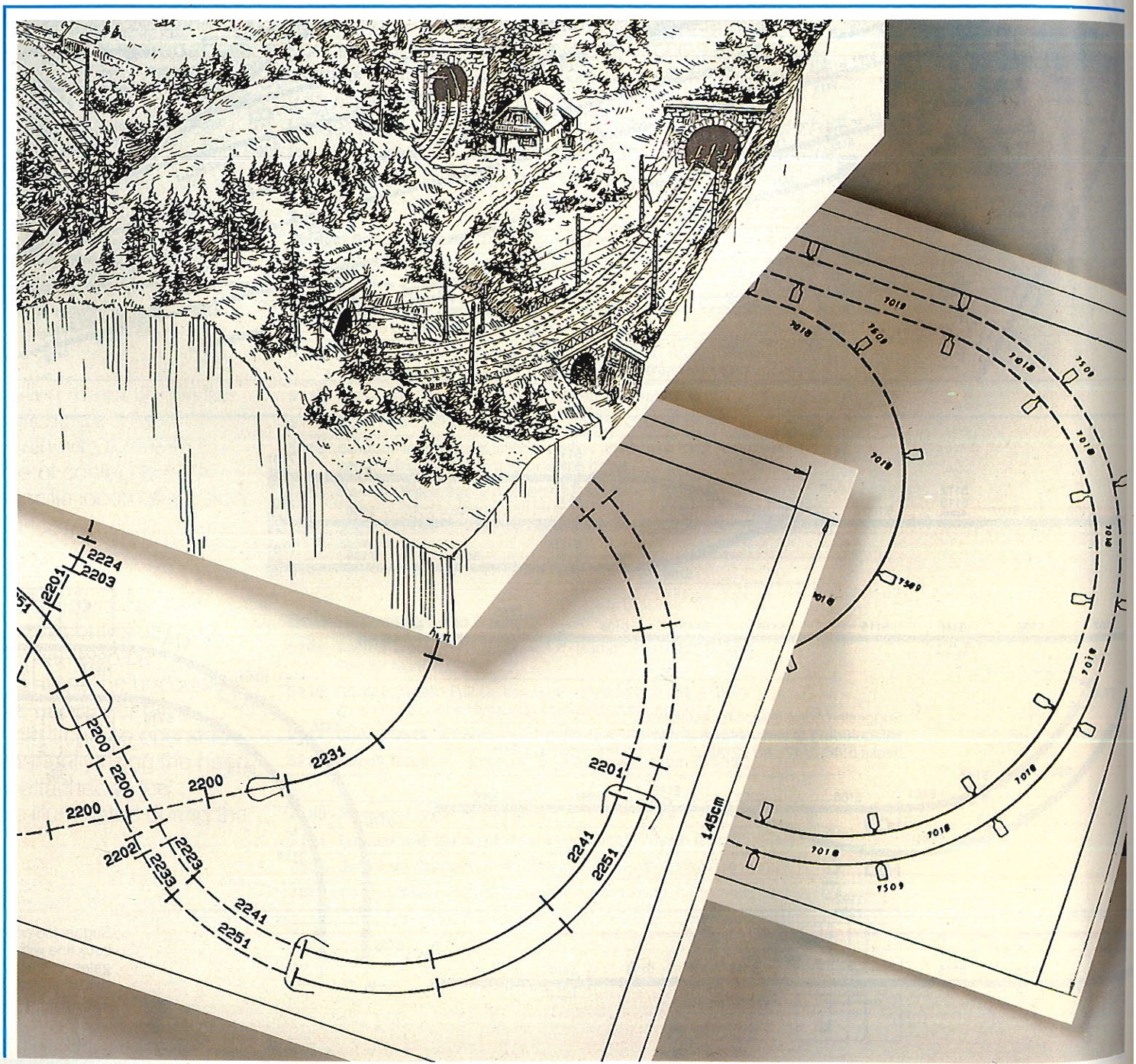

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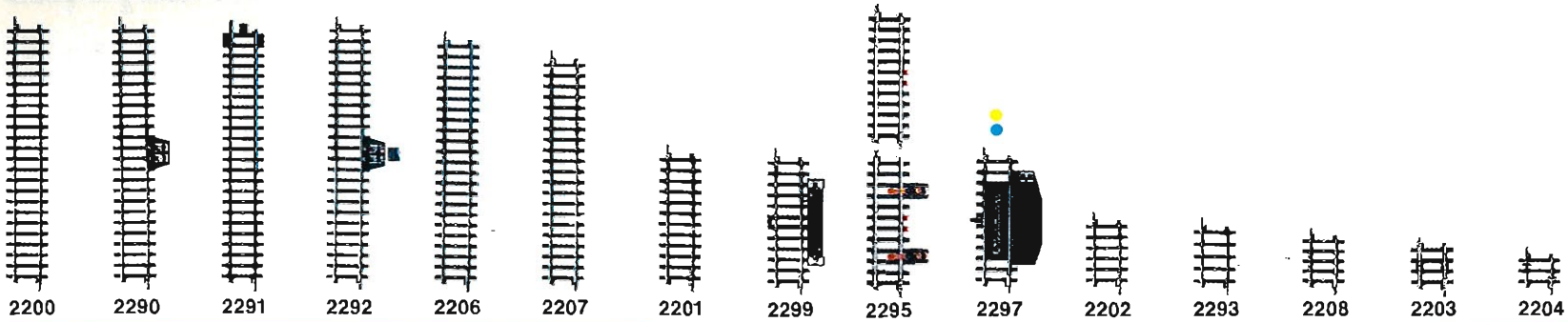
Overview of K Track



2200 · Straight Track · Full section, length = 180 mm (7-3/32″)

2290 · Feeder Track · Full section, length = 180 mm (7-3/32″) · 2 clips for feeder wires

2291 · Straight Adapter Track · Full section, length = 180 mm (7-3/32″) · Enables the transition from K to M track

2292 · Straight Feeder Track · Full section, length = 180 mm (7-3/32″) · 2 clips for feeder wires · Built-in condenser to supress interference with radio and television reception

2206 · Straight Track · Length 168.9 mm (6-5/8″) · Same length as 2261

2207 · Straight Track · Length 156 mm (6-1/8″) · For complementary curve to 2261

2201 · Straight Track · ½ section, length = 90 mm (3-9/16″)

2299 · Straight Circuit Track · ½ section, length = 90 mm (3-9/16″) · Momentary contact by means of pickup shoes

2295 · Contact Track Set · 2 half sections, length = 2 × 90 mm (3-9/16″) · Long term contact effected by train wheels · Contact area can be extended with regular curved and straight track sections

2297 · Uncoupler Track · With solenoid operation · ½ section, length = 90 mm (3-9/16″) · 2 connecting wires

2202 · Straight Track · ¼ section, length = 45 mm (1-3/4″)

2293 · Straight Track · Length 41.3 mm (1-5/8″)

2208 · Straight Track · Length 35.1 mm (1-3/8″)

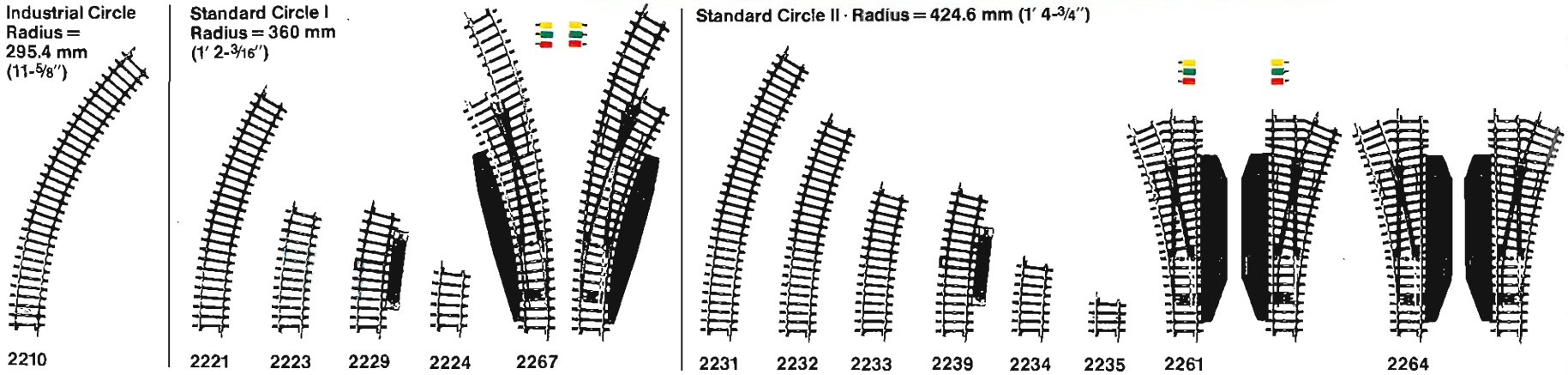
2203 · Straight Track · ⅛ section, length = 30 mm (1-3/16″)

2204 · Straight Track · ⅛ section, length = 22.5 mm (7/8″)

Industrial Circle
Radius = 295.4 mm (11-5/8″)

Standard Circle I
Radius = 360 mm (1′ 2-3/16″)

Standard Circle II · Radius = 424.6 mm (1′ 4-3/4″)



2210 · Curved Track · Full section = 45° · Sharp radius for branch lines and industrial sidings · For short locomotives and cars only

2221 · Curved Track · Full section = 30°

2223 · Curved Track · ½ section = 15°

2229 · Curved Circuit Track · ½ section = 15° · Momentary contact by means of pickup shoes

2224 · Curved Track · ¼ section = 7° 30′

2267 · Pair of Curved Switches · With solenoid operation · Inner curve 30° section · Outer curve 30° section with parallel spacing of 64.6 mm (2-17/32″) · 3 connecting wires · Hand lever for manual operation

2231 · Curved Track · Full section = 30°

2232 · Curved Track · ¾ section = 22° 30′

2233 · Curved Track · ½ section = 15°

2239 · Curved Circuit Track · ½ section = 15° · Momentary contact by means of pickup shoes

2234 · Curved Track · ¼ section = 7° 30′

2235 · Curved Track · ⅛ section = 3° 45′

2261 · Pair of Switches · With solenoid operation · Length of straight side 168.9 mm (6-5/8″) · Curved branch 22° 30′ · 3 connecting wires · Hand lever for manual operation · Illuminated lanterns

= 60000

2264 · Pair of Switches · Manually operated · Length of straight side 168.9 mm (6-5/8″) · Curved branch 22° 30′


2209


2205


7549


7548


7391


7599


7500


7504


7522

2209 · Straight Track · Length 217.9 mm (8-9/16″)

2205 · Flex Track · 5 full sections, length = 900 mm · (2′ 11-7/16″) · Can be used to produce curves of different radii · Can be cut with a coping or track saw · Add rail joiners and track clips 7595 to the cut ends

7595 · Rail Joiners and Track Clips · Contents: 10 of each · Required for connecting cut sections of 2205 with other track

7549 · Electric Switch Machine · For 2271 switches and 2275 double slip switch · Momentary current contacts · Can be connected to a track detection circuit · Can be mounted under the layout using under-layout mounting kit 7548

7548 · Under-Layout Mounting Kit · For mounting 7549 switch machine beneath the layout · Adjustable for board thicknesses 6–16 mm (1/4″ to 5/8″)

7391 · Bumper · Length 38 mm (1-1/2″) · Clips onto the rails · Round head wood screws included

7599 · Wood Screws · Contents: 200 screws · For mounting K track

7500 · Ground Terminal Clip · Can be attached under the rails at any spot desired

7504 · Center Rail Terminal Clip · Connects at joints in the center rail

7522 · Center Rail Insulator · Insulator is placed between the center rail clips of a track joint to separate track circuits

Ⓝ

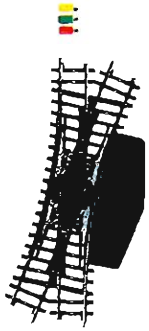
7555 · Contact Set · Reed contact switches for installation in track · Activated by magnet 7556

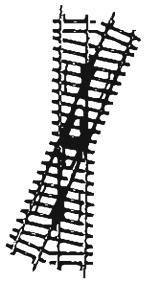
Ⓝ

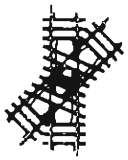
7556 · Magnet Set · 6 magnets for installation on car or locomotive floors · For activating 7555 reed contact switches

Standard Circle II · Radius = 424.6 mm (1′ 4-3/4″)

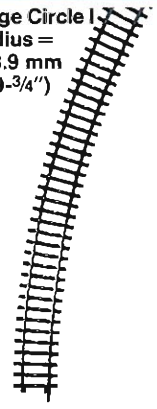

2270


2260

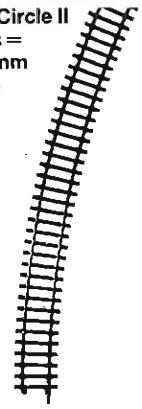

2259


2258

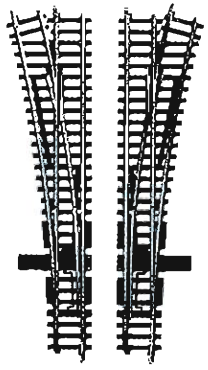
Large Circle I · Radius = 553.9 mm (1′ 9-3/4″)


2241

Large Circle II · Radius = 618.5 mm (2′ 1/4″)

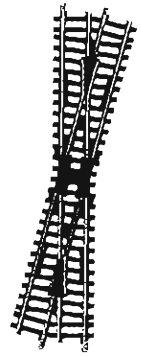

2251

Wide Radius Switches · Radius = 902.4 mm (2′ 11-5/8″)


2271


2274


2275


2257

All switches have sprung points. The electromagnetic switches 2261, 2267, the double slip switch 2260 and the three-way switch 2270 have double solenoids for remote operation. All pairs of switches consist of a right and left switch.

2270 · Symmetrical Three-Way Switch · With solenoid operation · Length of the straight section 168.9 mm (6-5/8″) · Curved branches 22° 30′ · 6 connecting wires · 2 hand levers for manual operation

2260 · Double Slip Switch · With solenoid operation · Crossing angle 22° 30′ · Length of the straight section 168.9 mm (6-5/8″) · 3 connecting wires · Hand lever for manual operation

2259 · Crossing · Crossing angle 22° 30′ · Length 168.9 mm (6-5/8″)

2258 · Crossing · Crossing angle 45° · Length 90 mm (3-9/16″)

2241 · Curved Track · Full section = 30°

2251 · Curved Track · Full section = 30°

2271 · Pair of Switches · Manually operated · Length of straight section 225 mm (8-1/8″) · Curved branch 14° 26′ · Can be equipped with electric switch machine 7549 · Moveable frog

2274 · Curved Track · Section = 14° 26′ · Complementary curve to curved branch of 2271 switch

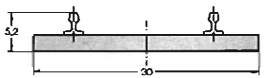
2275 · Double Slip Switch · Manually operated · Crossing angle 14° 26′ · Length of straight section 225 mm (8-1/8″) · Can be equipped with two 7549 switch machines · Each point lined separately

2257 · Crossing · Crossing angle 14° 26′ · Length 225 mm (8-1/8″)

K track has five track radii, prototypical solid rails, flex track and wide radius switches, thus offering the discriminating model railroader many possibilities such as elegant, sweeping main lines, parallel tracks with minimum center-to-center spacings, and gentle curves and magnificent straight stretches.

The track is 30 mm (1-3⁄16″) wide. Therefore 30 mm (1-3⁄16″) must be subtracted from the center-to-center track spacings indicated to determine the spacing needed for clearance.

The 2291 adapter track section is available for combining M and K track.



Straight Track

2200 · Full section, length = 180 mm (7-3⁄32″)

2201 · 1/2 section, length = 90 mm (3-9⁄16″)

2202 · 1/4 section, length = 45 mm (1-3⁄4″)

2203 · 1/6 section, length = 30 mm (1-3⁄16″)

2204 · 1/8 section, length = 22.5 mm (7⁄8″)

2205 · 5 full sections, length = 900 mm (2′ 11-7⁄16″) · Flexible · Can be cut shorter

2206 · Length 168.9 mm (6-5⁄8″)

2207 · Length 156 mm (6-1⁄8″)

2208 · Length 35.1 mm (1-3⁄8″)

2209 · Length 217.9 mm (8-9⁄16″)

2293 · Length 41.3 mm (1-5⁄8″)

Curved Track

Industrial Circle · Radius 295.4 mm (11-5⁄8″)

2210 · Full section = 45°

Standard Circle I · Radius 360 mm (1′ 2-3⁄16″)

2221 · Full section = 30°

2223 · 1/2 section = 15°

2224 · 1/4 section = 7° 30′

Standard Circle II · Radius 424.6 mm (1′ 4-3⁄4″)

2231 · Full section = 30°

2232 · 3/4 section = 22° 30′

2233 · 1/2 section = 15°

2234 · 1/4 section = 7° 30′

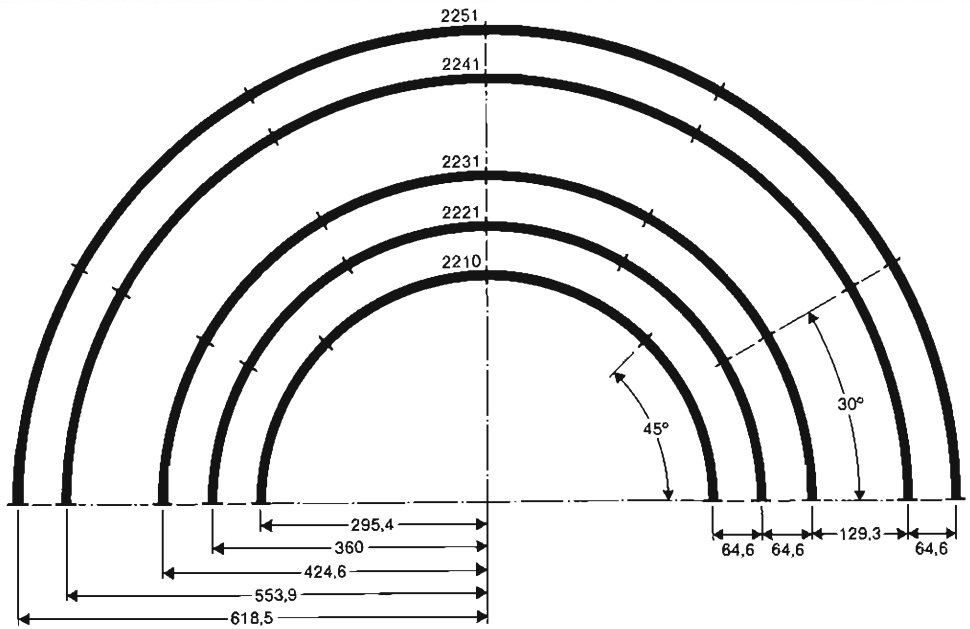
2235 · 1/8 section = 3° 45′

Large Circle I · Radius 553.9 mm (1′ 9-3⁄4″)

2241 · Full section = 30°

Large Circle II · Radius 618.5 mm (2′ 1⁄4″)

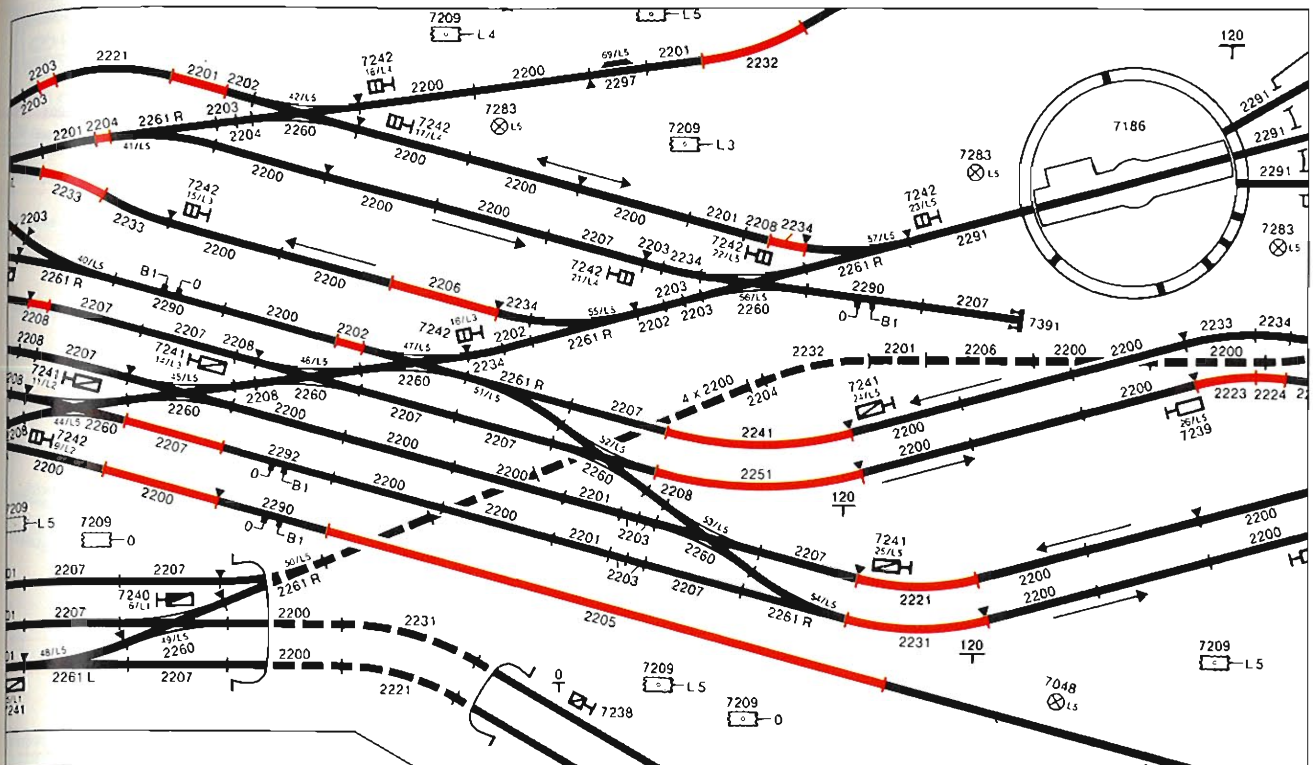
2251 · Full section = 30°

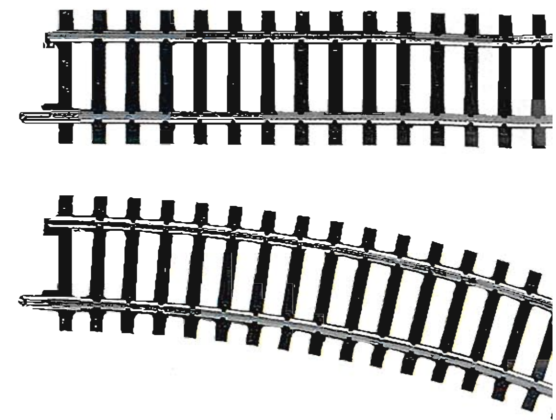


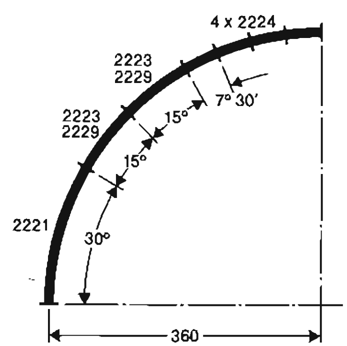
The 5 Track Radii

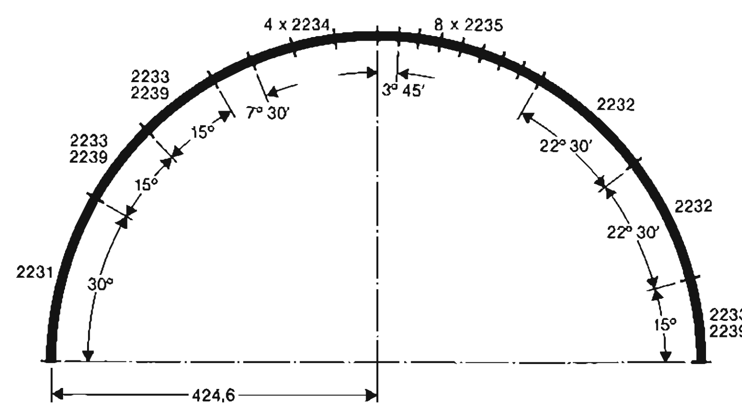
For Standard Circle **I** (2221), all track sections have a **2** for the **second digit** (2221, 2223, 2224).

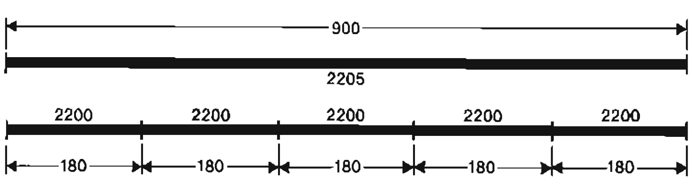
For Standard Circle **II** (2231), all track sections have a **3** for the **second digit** (2231, 2232, 2233, 2234, 2235).

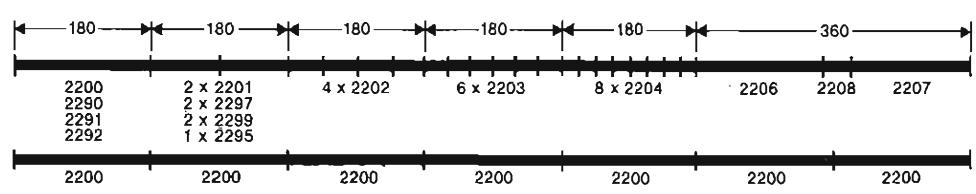





4 x 2224
2223
2229
2223
2229
2221
7° 30'
15°
15°
30°
360


4 x 2234
8 x 2235
2233
2239
2233
2239
2231
7° 30'
15°
15°
30°
3° 45'
2232
22° 30'
2232
22° 30'
2233
2239
15°
424,6


900
2205
2200
2200
2200
2200
2200
180
180
180
180
180


180
180
180
180
180
360
2200
2290
2291
2292
2 x 2201
2 x 2297
2 x 2299
1 x 2295
4 x 2202
6 x 2203
8 x 2204
2206
2208
2207
2200
2200
2200
2200
2200
2200
2200

The switches are designed for a standard center-to-center spacing of 64.6 mm (2-17/32"). The shorter design reduces the space needed for sidings and yards.

All switches and the 2259 crossing are interchangeable. They can be installed straight or diagonally without affecting the track spacing or the layout geometry.

The switches are equipped with sprung points, thus allowing trains to run "against" the switch.

The 2260 double slip switch is produced with inset points.

The electric switches, double slip switches, three-way and curved switches all have double solenoids for remote operation.

The electric switches can be operated using the 7072 control box, 2229, 2239 and 2299 circuit tracks or 7555 reed contact switch.

All switches can be operated on the Märklin Digital system.

Standard Circle II · Radius 424.6 mm (1' 4-3/4")

2261 · **Electric Pair of Switches** · 168.9 mm (6-5/8") · 22° 30' · Radius of curved branch 424.6 mm (1' 4-3/4")

2264 · **Manual Pair of Switches** · 168.9 mm (6-5/8") · 22° 30' · Radius of curved branch 424.6 mm (1' 4-3/4")

2260 · **Double Slip Switch** · 168.9 mm (6-5/8") · 22° 30' · Radius of curved branches 424.6 mm (1' 4-3/4")

2259 · **Crossing** · 168.9 mm (6-5/8") · 22° 30'

2258 · **Crossing** · 90 mm (3-9/16") · 45°

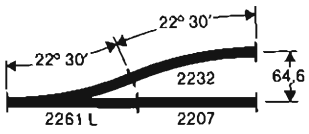
Adjustment Track Sections

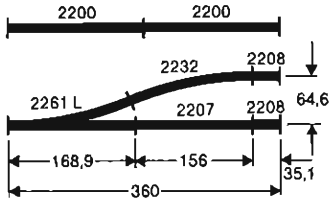
2206 · **Straight Track** · 168.9 mm (6-5/8") · Same length as 2261 switch

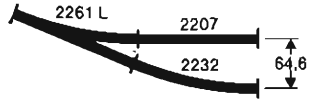
2207 · **Straight Track** · 156 mm (6-1/8") · Can be used to adjust length on "S" curves with 2261 (2264) switch as well as 2260 (2259) double slip switch

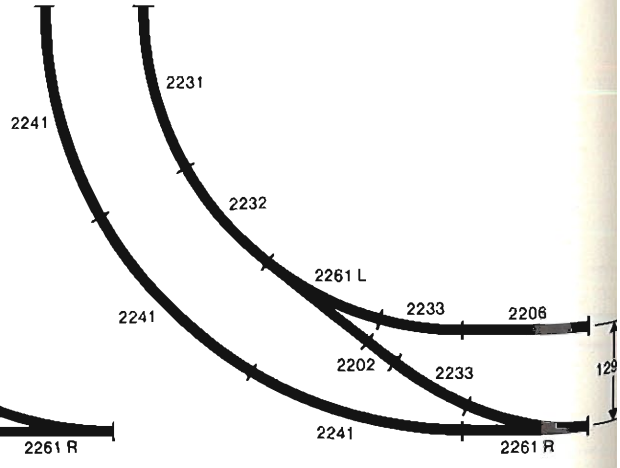
2208 · **Straight Track** · 35.1 mm (1-3/8") · Can be used to adjust length on "S" curves with 2261 (2264) switch as well as 2260 (2259) double slip switch

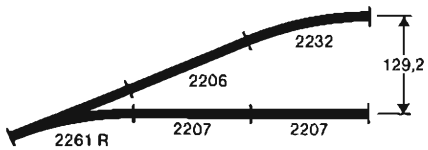
2232 · **Curved Track** · 3/4 = 22° 30' · Radius 424.6 mm (1' 4-3/4") · Can be used to adjust length on the "S" curve of the 2261 (2264) switch as well as the 2260 (2259) double slip switch for center-to-center spacing of 64.6 mm (2-17/32")

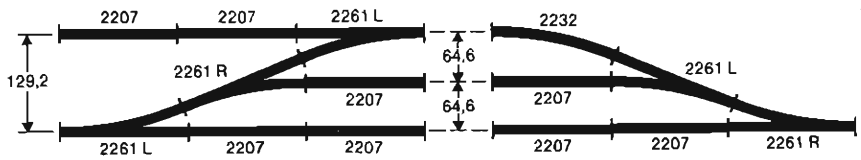


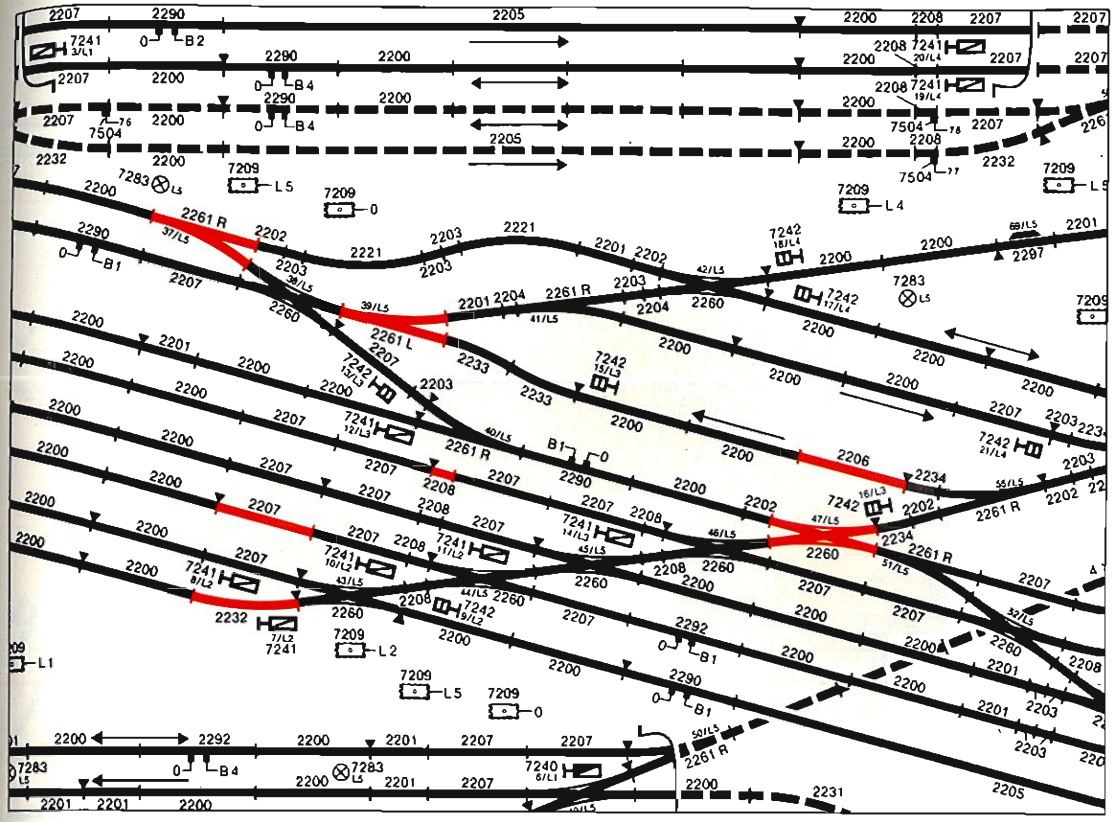


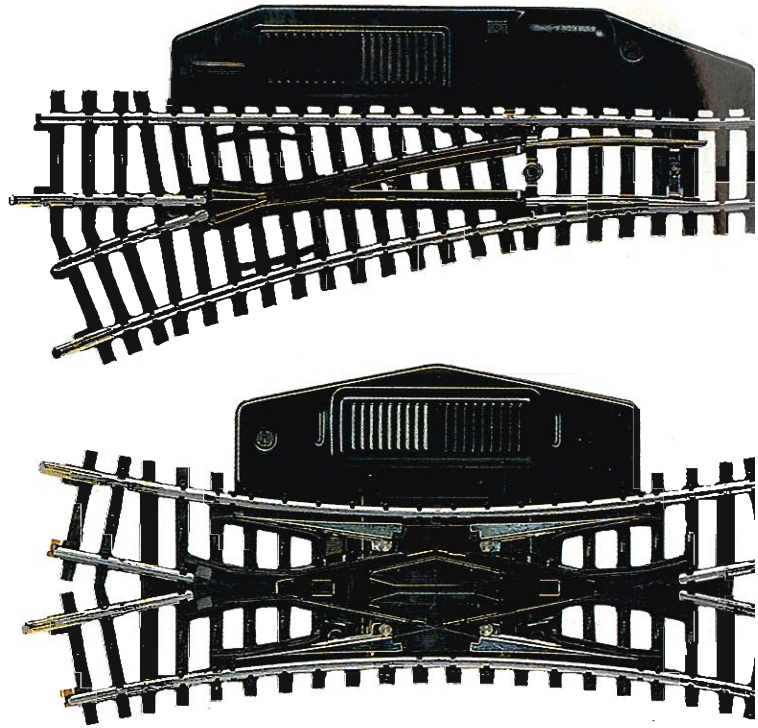


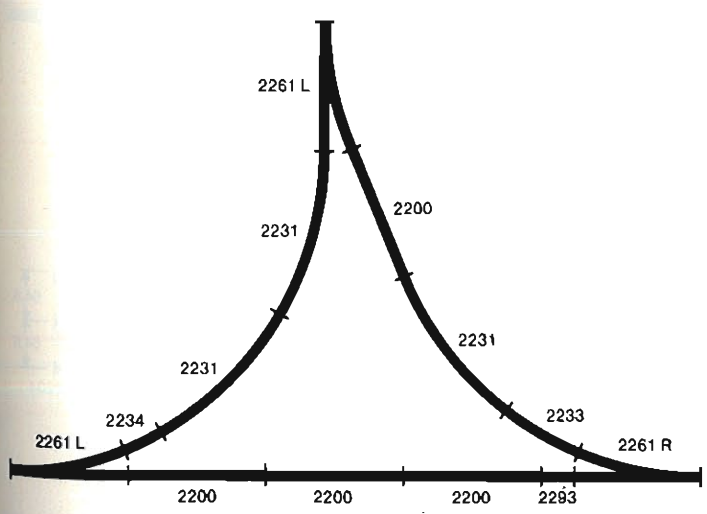


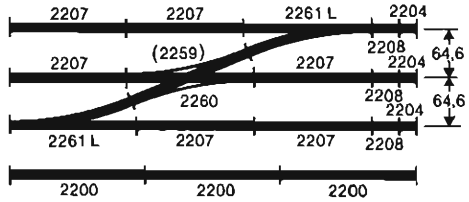









2261 L
2231
2200
2231
2231
2234
2233
2261 L
2261 R
2200
2200
2200
2293


2207
2207
2261 L
2204
2207
(2259)
2207
2208
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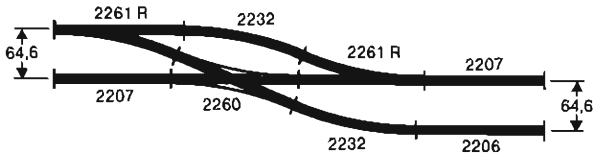
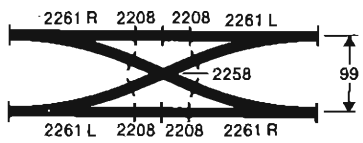
64,6
2260
2208
2204
64,6
2261 L
2207
2207
2208
2200
2200
2200


2261 R
2232
64,6
2261 R
2207
2207
2260
64,6
2232
2206


2207
2206
2208
2208
2261 L
2261 L
2201
2201
99
2207
2259
2261 L
2208
64,6
2261 L
2208
2206
2232
2206
64,6
129,2
2200
2261 L
2200
2200
2204


2261 R
2208
2208
2261 L
2258
99
2261 L
2208
2208
2261 R

Curved Switches

Sidings and branches can be started on curves by using curved switches. This increases considerably the usable area on straight portions of track.

The curved switch allows a harmonious transition between the two standard circles radius 360 mm (1′ 2-3⁄16″) and 424.6 mm (1′ 4-3⁄4″). With a switch angle of 30°, it is possible to install curved switches in existing parallel circles without using adjustment sections.

2267 · **Electric Pair of Curved Switches** · Inner and outer curves 30° · Radius 360 mm (1′ 2-3⁄16″) with a parallel spacing of 64.6 mm (2-17⁄32″) · Inner curve same as 2221

2270 · **Symmetrical Three-Way Switch** · 168.9 mm (6-5⁄8″) · 2 × 22° 30′ · Radius of the branches 424.6 mm (1′ 4-3⁄4″)

Three-Way Switches

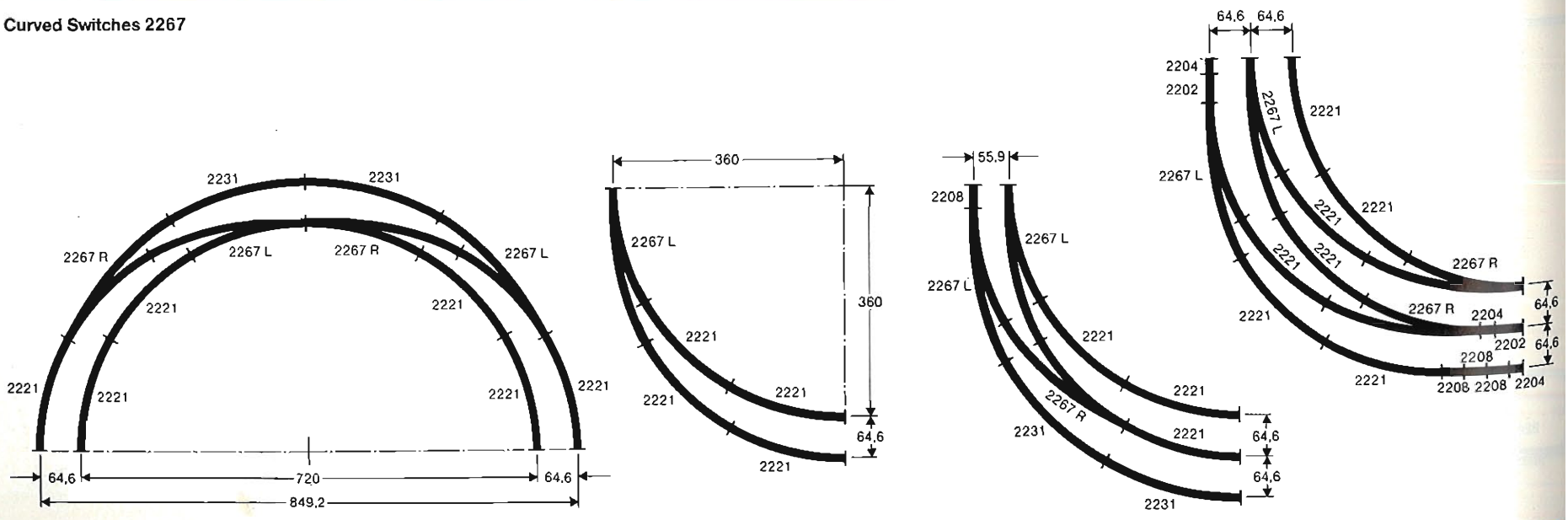
The three-way switch combines a left and right switch in the space of a normal switch. This results in a savings of space in yards, stations and other areas with concentrations of switches.

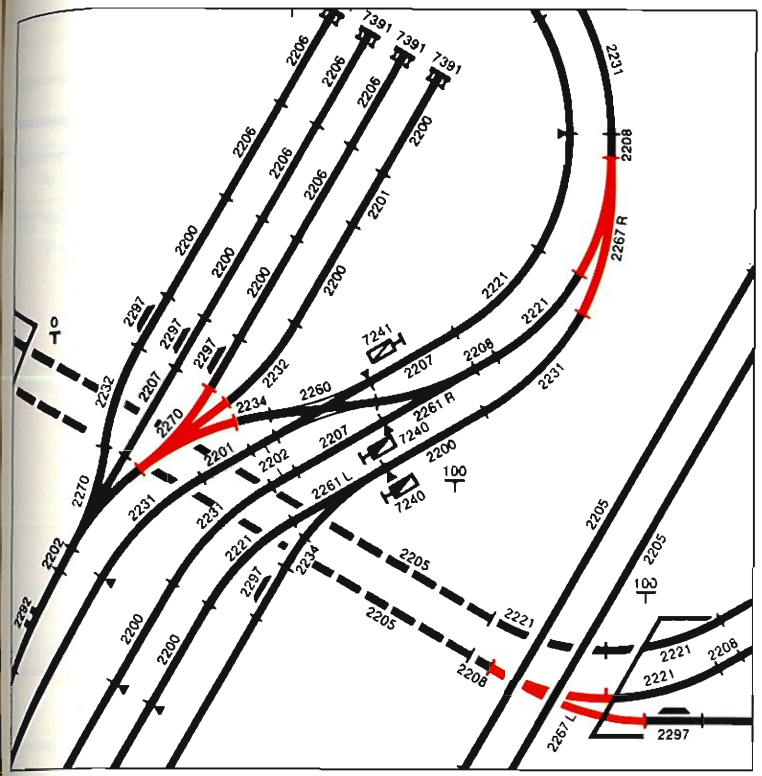
The three-way switch has two double solenoids for remote operation.

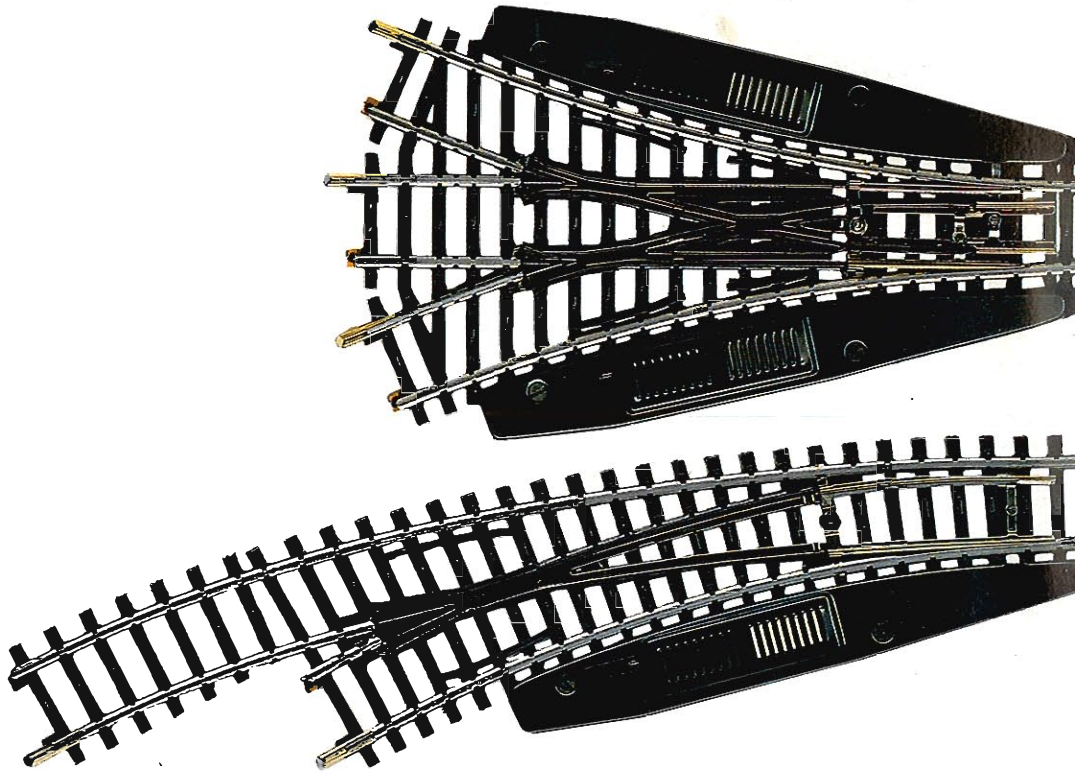
Both curved branches have the same radius and length as that of the 2261 switch.

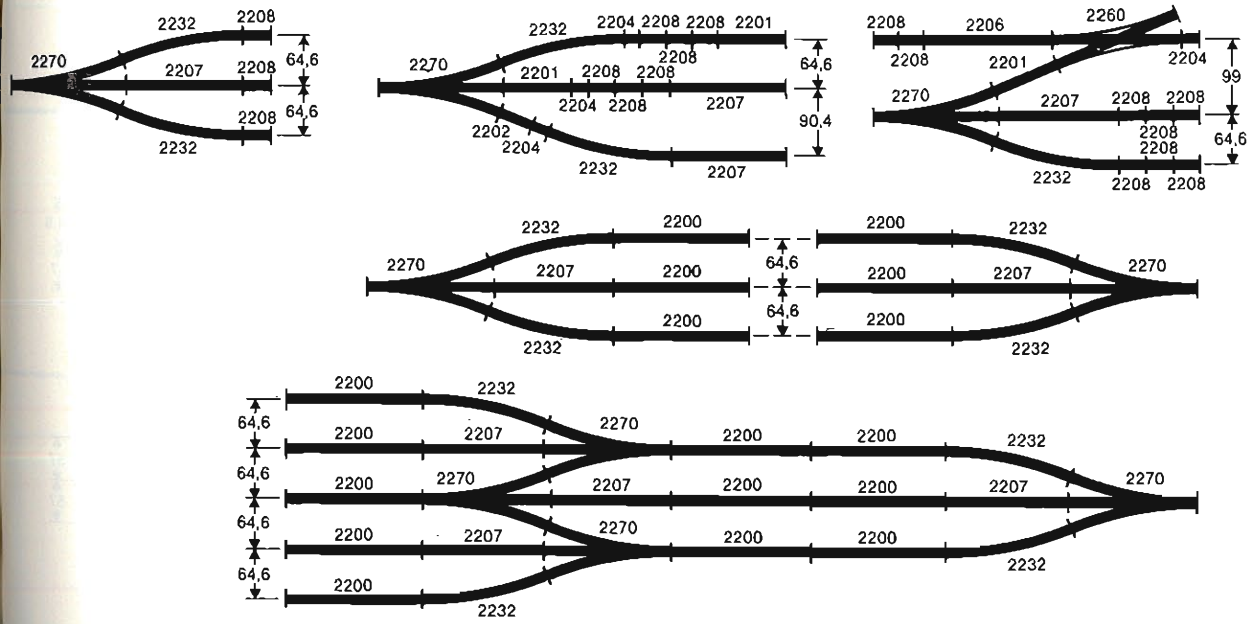
A three-way switch can be used for direct approach to the 7288 locomotive roundhouse.

Curved Switches 2267

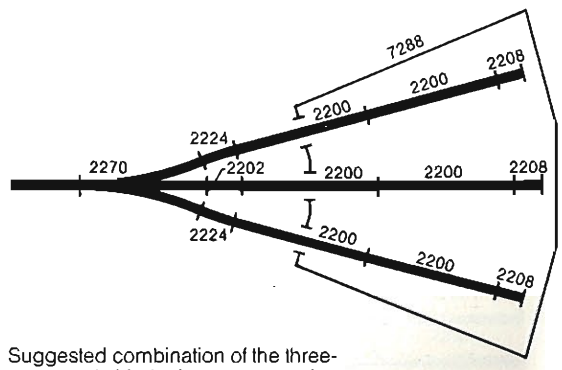








Three-Way Switch 2270



Suggested combination of the three-way switch 2270 with the locomotive shed 7288

The wide radius switches and crossings have a switch angle of 14° 26′ and a center-to-center spacing starting at 57 mm (2-¼″) which makes it possible to construct the elegant, sweeping track configurations desired by discriminating model railroaders.

The hand levers on the switches as well as the double slip switch can be mounted on the left or right and can be replaced by the 7549 electric switch machine.

The 2271 switch has a movable frog like the DB's high-speed switches. This results in a consistently smooth, gap-free path.

The independent points on the 2275 double slip switch allow four separate routes to be set.

The 7549 switch machine is equipped with momentary contacts and allows the easy installation of a track detection circuit.

The 7549 switch machine can be mounted beneath the layout baseboard with the 7548 under-layout mounting kit.

2271 · **Pair of Manual Switches** · 225 mm (8-⅛″) · 14° 26′ · Radius of the branch 902.4 mm (2′ 11-⅝″)

2275 · **Manual Double Slip Switch** · 225 mm (8-⅛″) · 14° 26′ · Radius of the branches 902.4 mm (2′ 11-⅝″)

2257 · **Crossing** · 225 mm (8-⅛″) · 14° 26′

Adjustment Track Sections

2202 · **Straight Track** · 45 mm (1-¾″) · Can be used to adjust length on "S" curves of the 2271 switch as well as the double slip switch 2275 (2257)

2203 · **Straight Track** · 30 mm (1-3/16″) · Can be used to adjust length for center-to-center spacing of 64.6 mm (2-17/32″)

2204 · **Straight Track** · 22.5 mm (⅞″) · Can be used to adjust length when installing 2271 switch as well as the double slip switch 2275 (2257)

2209 · **Straight Track** · 217.9 mm (8-9/16″) · Can be used to adjust length when the 2271 switch is installed diagonally

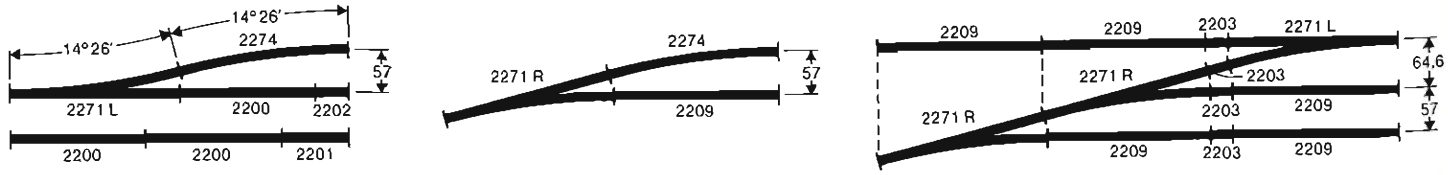
2293 · **Straight Track** · 41.3 mm (1-⅝″) · Can be used to adjust length on "S" curves of the 2275 (2257) double slip switch

2274 · **Curved Track** · 14° 26′ · Radius 902.4 mm (2′ 11-⅝″) · Complementary curve for 2271 switch for center-to-center spacing of 57 mm (2-¼″)

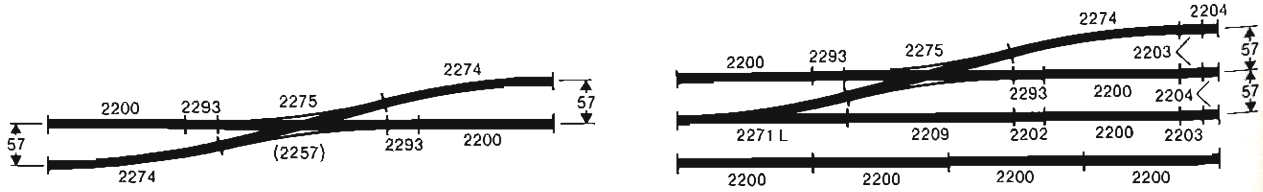
7548 · **Under-Layout Mounting Kit** · For mounting 7549 switch machine beneath the layout baseboard

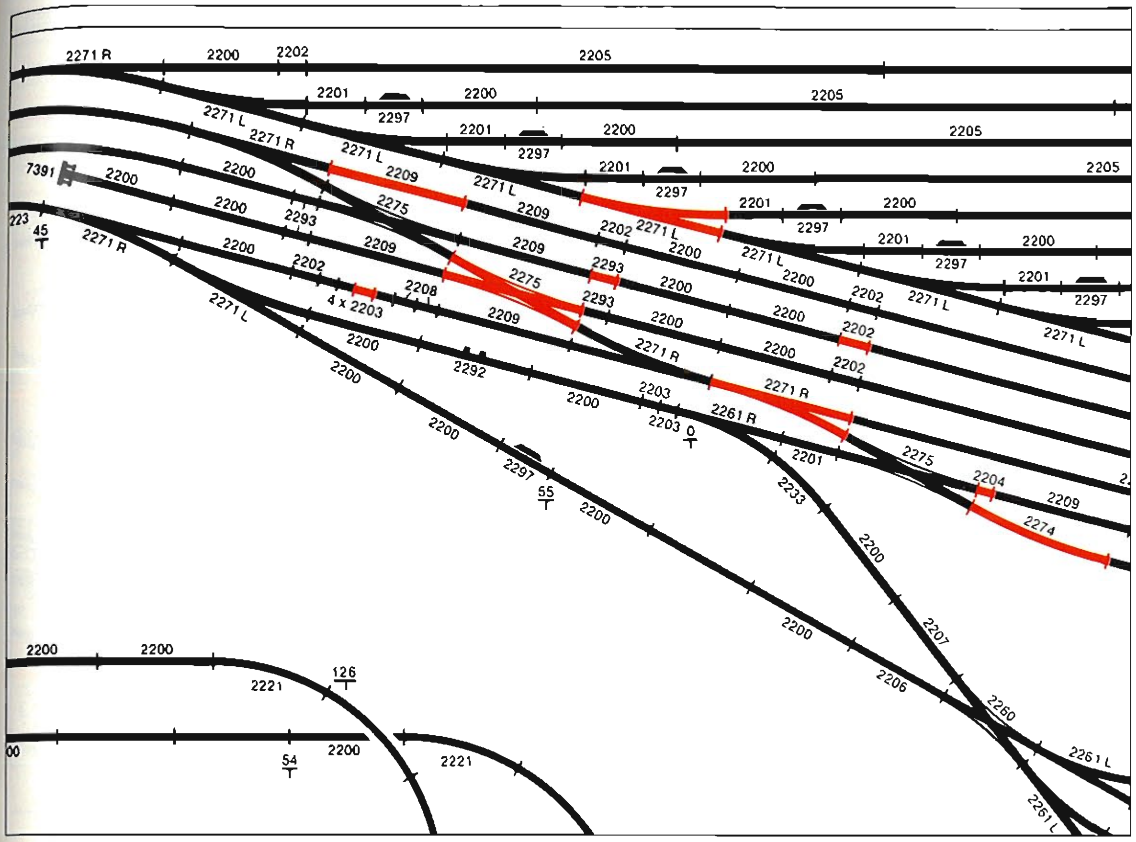
7549 · **Electric Switch Machine** · For 2271 switches and 2275 double slip switch

Wide Radius Switches 2271



Wide Radius Double Slip Switch 2275 or Crossing 2257




2271 R
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2205
2201
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2205
2271 L
2271 R
2201
2297
2200
2205
7391
2200
2200
2271 L
2209
2201
2297
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2271 L
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2202
2271 L
2297
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2271 R
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2202
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2293
2200
2271 L
2201
2297
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2275
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2271 L
2201
2297
2271 L
4 x 2203
2209
2200
2200
2202
2271 L
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2271 R
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2271 R
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2203
2261 R
2200
2201
2275
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2209
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2200
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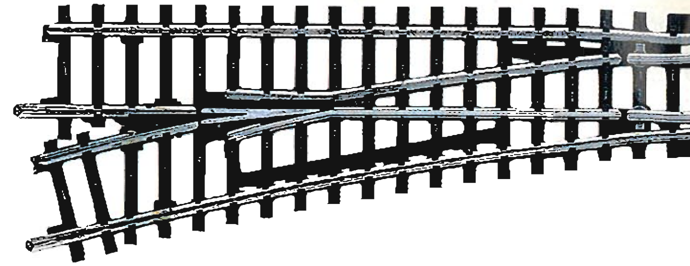

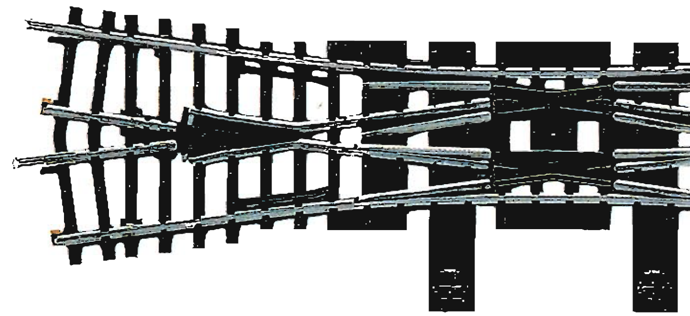

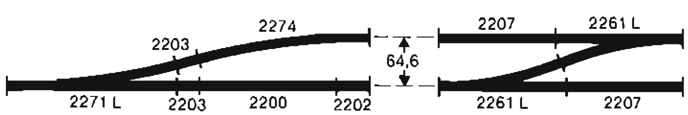
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2271 L
2203
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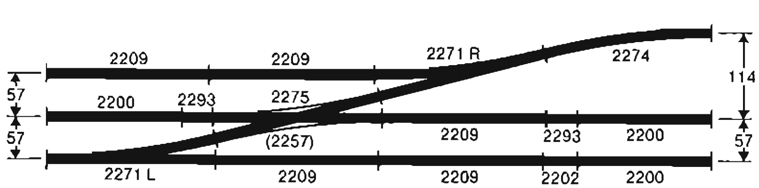
2202
2261 L
2207


2209
2209
2271 R
2274
114
57
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(2257)
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2271 L
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2209
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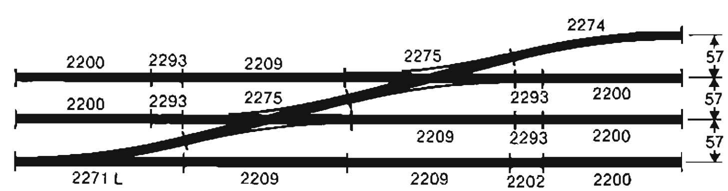
2200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2209
2202
2200

Circuit Tracks

The circuit tracks (2229, 2239, 2299) enable the automatic control of switches and signals by trains in motion. Activated by locomotive and car pickup shoes, different, independent switching functions can be carried out by them in either direction. The control impulses are accepted at two electrically separated sockets.

Contact Tracks

A train passing over an insulated length of rail produces an electrical contact. The track detection function made possible by this results from the wheels passing over the insulated rail. The contact area can be lengthened with normal straight and curved sections of track.

Switching Contacts

The contact switch can be installed anywhere on the track. The reed switch in the switching contact produces an impulse when a train with a switching magnet passes over it. This type of contact switch allows differentiation among specific locomotives and/or cars.

Uncoupler Tracks

Automatic couplers and RELEX couplers can be separated automatically by remote control using an uncoupler track. Close couplers can also be uncoupled without any modifications. The uncoupler track has a solenoid to raise the uncoupler ramp located in the middle of the track. It can be operated from the 7072 control box or manually using the hand lever.

Feeder Tracks

Current is fed to the third rail and returned from the two running rails using the feeder track. A feeder track should be installed for every track circuit – at least every 5 meters (16′ 5″) of track. To prevent interference with radio and television, it is recommended that a feeder track with a condenser (2292) be used for each track circuit. Only feeder tracks without condensers are to be used in the Märklin Digital system.

Straight Special Function Tracks

2291 · **Adapter Track from K to M Track** · Full section, length = 180 mm (7-3⁄32″)

2290 · **Feeder Track** · Full section, length = 180 mm (7-3⁄32″) · Also for Märklin Digital

2292 · **Feeder Track** · Full section, length = 180 mm (7-3⁄32″) · Built-in condenser to supress interference with radio and television reception

2295 · **Contact Track Set** · 2 half sections, length = 2 × 90 mm (3-9⁄16″) · With insulated section of rail for track detection function by means of car and locomotive wheels · Contact area can be lengthened with normal straight and curved track sections

2297 · **Uncoupler Track** · 1/2 section, length = 90 mm (3-9⁄16″)

2299 · **Circuit Track** · 1/2 section, length = 90 mm (3-9⁄16″)

Curved Special Function Tracks

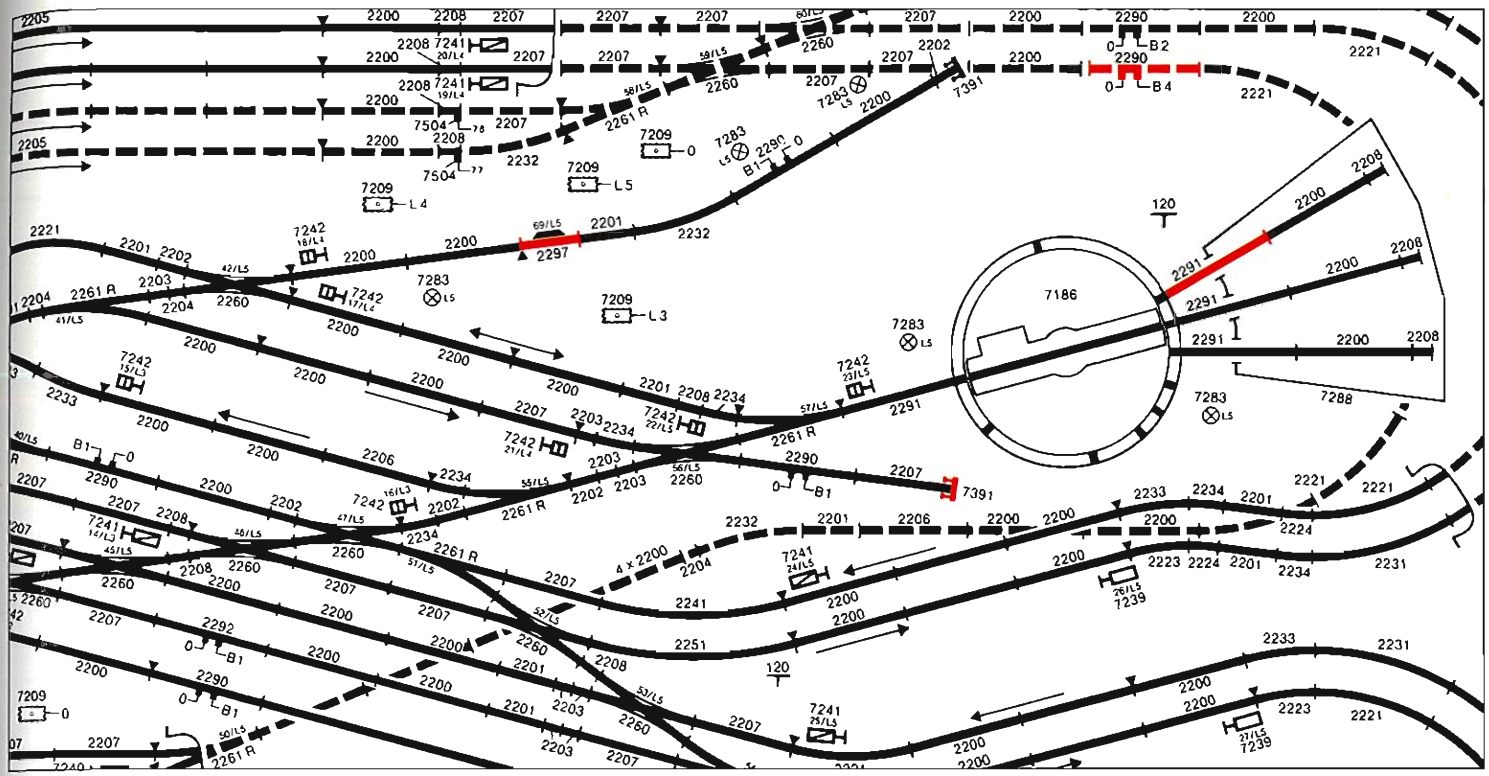
2229 · **Circuit Track** · 1/2 section = 15° · Radius 360 mm (1′ 2-3⁄16″)

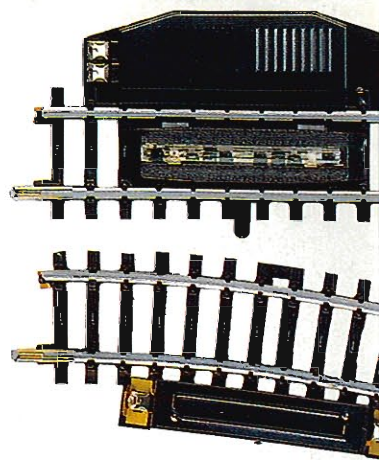
2239 · **Circuit Track** · 1/2 section = 15° · Radius 424.6 mm (1′ 4-3⁄4″)

7391 · **Bumper** · Length 38 mm (1-1⁄2″) · Clips onto track

7555 · **Switching Contact** · Reed contact switches for installation in track Ⓝ

7556 · **Magnet Set** · 6 switching magnets for activating 7555 switching contacts Ⓝ





Suggested combination for automatic safeguarding of switches with circuit tracks 2229, 2239, and 2299

Signals

Prototypically safeguarded station exit on the main line signal block, photographed at the Märklin Service Center.

From horizontal arm movement to continous cab signalling

Signals in real life and on a model railroad layout

"Dear Railroad Enthusiast", starts a red booklet which was on sale in train station newsstands in 1959, "For the first time the German Federal Railroad is offering you a genuine workrules handbook in the station book shop." It was the railroad signal rules which had just been put into effect on December 15 of the same year and it came with an introduction to signalling for nonrailroaders. If you had thought up till then that signals were just high masts with black, red and white semaphores or colorful lights, you were about to be set right.

Take for example the signal "Ra 2". In switching operations it means "Come towards me" and is produced with a whistle or horn whereby the person signalling gives "two moderately long tones" with his instrument. As this is not enough, he must also "wave his arm slowly back and forth in a horizontal manner", holding a lantern when at night. The painstaking model railroader should therefore place an appropriate figure at spots that are important in terms of operation. He will have to use the whistle or horn himself, however, before setting the train in motion.

Out on the line a whistle and horn are not used of course. There an ingenious system of distant and home signals, safety controllers, switch stops or continous cab control signalling sees to the proverbial safety of train operations. Since 1959 electronics have been introduced which facilite the job of the workers in the signal towers, the control centers of the railroads, and also eliminate "human error" to a large extent.

As a rule the traveller sees only the most visible symbols of this alongside the track which are either mechanical semaphore signals or color light signals. Due to the high cost of the newer technolocy, the old semaphore signals with their large semaphores up to 2 meters (6' 6") in length are still in use in many areas, but the color light signals are fast replacing them. For the model railroader this means that he can set up both types on his layout. Even a semaphore signal taken out of service, at a recently abandoned station for example, is prototypical. The station or the signal's semaphore must have a white "X" attached to indicate this. This can be looked up in Rule 5 of the DB's signalling handbook.

Home signals indicate whether the train must stop, may continue at a slower speed or continue at its original speed. Distant signals show the position of the home signal ahead so that the locomotive engineer can brake in time. Signals control entry to and exit from a station or junction, they open and close blocks and safeguard sidings and switches.

All of this can be reproduced on the model railroad. With train control, with circuit and contact tracks and universal relay switches the layout builder can choose whether he wants to have his trains stop automatically or whether the first level of command should be that vigilant man or woman at the control panel with automatic controls taking over at the first sign of human error as in real life. The individual who wants to get the best use out of storage sidings in conventional operation should equip them with block signals and install train control.

In addition, he can set up fully automatic, multi-train operation on his layout using the instructions in the Märklin signal books.

Photo: DB

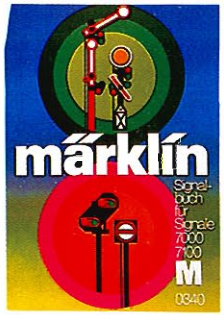
Signal arrangement at the approach to the German Federal Railroad's main station in Frankfurt (M)

Signals for M Track

All Märklin home signals and block signals have train control functions. The signals are activated either by a controller 7072 or by a train passing over a contact track. Center-rail insulators and connectors are included with these signals.

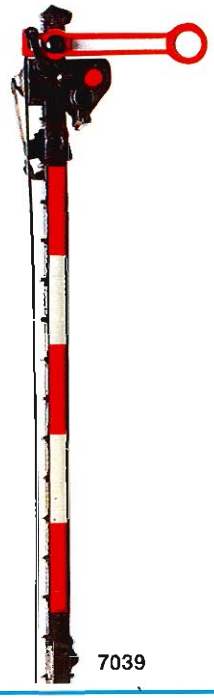
Distant signals do not have train control functions. They operate in conjunction with home signals.

Instructions are included with each signal.



0342 M · Märklin Manual for the 7000 and 7100 Signals · Detailed explanations with many color photos showing how to install and use the 7000 and 7100 signals as well as how to use the universal relay · For M track · 28 pages · Size 18 × 25 cm (7-⅛" × 9-⅞") · English text

7036



7039

7036 · Distant Signal · Moveable disc · Lights change from yellow/yellow to green/green · Double solenoid · Base plate · W 28 mm (1-⅛") · L 65 mm (2-9⁄16") · H 73 mm (2-⅞") · ⚲ = 60000

7039 · Home Signal · One semaphore arm · Lights change from red to green · Double solenoid · Base plate · W 27 mm (1-1⁄16") · L 70 mm (2-¼") · H 125 mm (5") · ⚲ = 60000

7038

7040

7038 · Distant Signal · Moveable disc and moveable semaphore arm · Lights change as 7036 or from yellow/yellow to yellow/yellow/green · 2 double solenoids · Base plate · W 28 mm (1-⅛") · L 65 mm (2-9⁄16") · H 73 mm (2-⅞") · ⚲ = 60000

7040 · Home Signal · Two coupled semaphore arms · Lights change from red to green/yellow · Double solenoid · Base plate · W 27 mm (1-1⁄16") · L 70 mm (2-¾") · H 125 mm (5") · ⚲ = 60000

The signals can be operated conventionally with the control boxes or electronically with the new Märklin Digital control system.

Usually used on mainlines or at stations where where there are no branches or sidings.

7036

Distant Signal: Prepare to stop

7039

Home Signal: Stop

7036

Distant Signal: Prepare to proceed at speed

7039

Home Signal: Proceed at speed

Usually used at or near station where trains are switched from the main track.

7038

Distant Signal: Prepare to stop

7040

Home Signal: Stop

7038

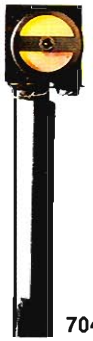
Distant Signal: Prepare to slow down

7040

Home Signal: Proceed slowly


7041

7041 · Home Signal · Two independent semaphore arms · Lights change from red to green or red to green/yellow · 3 solenoids · Base plate · W 27 mm (1-1/16″) · L 97 mm (2-9/16″) · H 125 mm (5″)
💡=60000


7042

7042 · Block signal · Mast with moveable front and rear discs · Double solenoid · Base plate · W 28 mm (1-1/8″) · L 70 mm (2-3/4″) · H 70 mm (2-3/4″)
💡=60000


7187


7188

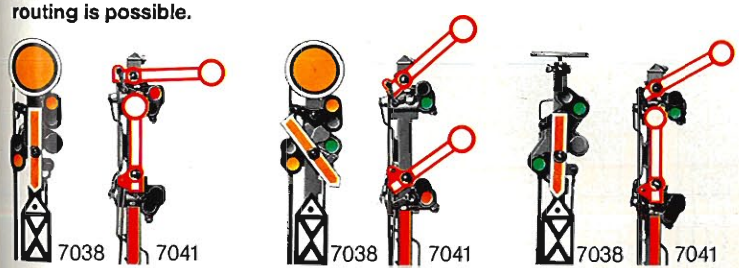
7187 · Color Light Distant Signal · Lights change from green/green to yellow/yellow · W 16 mm (5/8″) · L 11 mm (7/16″) · H 60 mm (2-3/8″)
💡=60202 green 💡=60204 orange

7188 · Color Light Home Signal · Lights change from red to green · Double solenoid · Has hand lever · Pair of sockets for connecting to a distant signal 7187 · Base plate · W 28 mm (1-1/8″) · L 70 mm (2-3/4″) · H 90 mm (3-1/2″)
💡=60001 red 💡=60002 green


7339

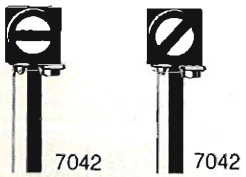
7339 · Color Light Home Signal · Manually operated signal · Lights change from red to green with simultaneous control of track current in M track section attached to signal base · Includes special 90 mm (3-1/2″) track section with gapped center rail · W 55 mm (2-3/16″) · L 90 mm (3-1/2″) · H 90 mm (3-1/2″)
💡=60001 red 💡=60002 green

Used at or near stations where diversion or direct routing is possible.



Distant Signal: Prepare to stop
Home Signal: Stop
Distant Signal: Prepare to slow down
Home Signal: Proceed slowly
Distant Signal: Prepare to proceed at speed
Home Signal: Proceed at speed

Usually used in terminal or yard areas.

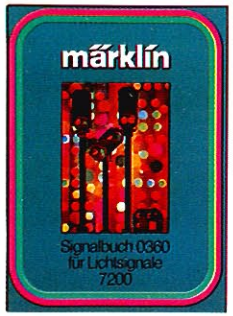


Block Signal: Stop
Proceed

Signals for K Track and M Track

The 7200 series color light home signals and block signals have relays enabling them to control current in the catenary or center rail within the block governed by the signal.

The light housing for the 7242 block signal and the signal masts of the other 7200 series signals can be detached from their relays and mounted separately. When doing so, a 7230 bracket is required.



0361 K · Märklin Manual for the 7200 Signals · Detailed explanations with color photos on how to use and install 7200 series signals and advice on using the universal relay switch with K track · 48 pages · Size 18 × 25 cm · (7-1/8" × 9-7/8") · English text


7236


7239

7236 · Color Light Distant Signal · Lights change from yellow/yellow to green/green · With bracket 7230 and base plate · W 16 mm (5/8") · L 28 mm (1-1/8") · H 67 mm (2-5/8")
= 60202 green = 60204 orange

7239 · Color Light Home Signal · Lights change from red to green and track current is controlled by a double solenoid · Has hand lever · Base plate · W 30 mm (1-3/16") · L 70 mm (2-3/4") · H 90 mm (3-1/2")
= 60201 red = 60202 green


7237

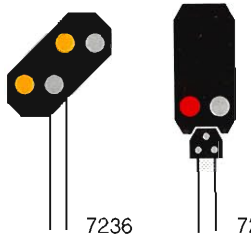

7240

7237 · Color Light Distant Signal · Lights change from yellow/yellow to yellow/green · With bracket 7230 and base plate · W 16 mm (5/8") · L 28 mm (1-1/8") · H 67 mm (2-5/8")
= 60202 green = 60204 orange

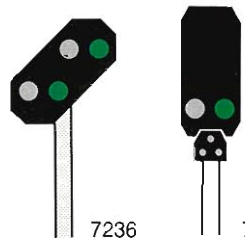
7240 · Color Light Home Signal · Lights change from red to green/yellow and track current is controlled by a double solenoid · Has hand lever · Base plate · W 30 mm (1-3/16") · L 70 mm (2-3/4") · H 90 mm (3-1/2")
= 60201 red = 60202 green
= 60204 orange

The signals can be operated conventionally with the control boxes or electronically with the new Märklin Digital control system.

Usually used on mainlines or at stations where there are no branches or sidings.

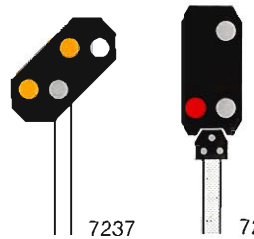

7236 7239

Distant Signal: Prepare to stop
Home Signal: Stop

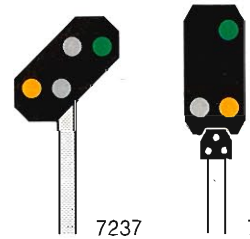

7236 7239

Distant Signal: Prepare to proceed at speed
Home Signal: Proceed at speed

Usually used at or near station where trains are switched from the main track.


7237 7240

Distant Signal: Prepare to stop
Home Signal: Stop


7237 7240

Distant Signal: Prepare to slow down
Home Signal: Proceed slowly


7238


7241


7242


7245

7238 · Color Light Distant Signal · Lights change from yellow/yellow to green/green or yellow/green · Double solenoid for the yellow/green position · Base plate · W 30 mm (1-3⁄16″) · L 70 mm (2-3⁄4″) · H 67 mm (3-1⁄2″)

= 60202 green = 60204 orange

7241 · Color Light Home Signal · Lights change from red to green or green/yellow and track current is controlled by a double solenoid; a third solenoid governs the green/yellow position · Has two hand levers · Base plate · W 30 mm (1-3⁄16″) · L 95 mm (3-3⁄4″) · H 90 mm (3-1⁄2″)

= 60201 red = 60202 green

= 60204 orange

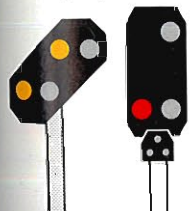
7242 · Block Signal · Lights change from red/red to white/white and track current is controlled by a double solenoid · Has hand lever · W 30 mm (1-3⁄16″) · L 70 mm (2-3⁄4″) · H 18 mm (1 1⁄16″)

= 60200

7245 · Universal Relay · Two single-pole switches and one double throw switch for various circuits · Operates 3 functions simultaneously · Possible uses described in signal manuals 0342 and 0361 · Double solenoid operation · Can be operated with a contact track, control box or manually · W 30 mm (1-1⁄8″) · L 70 mm (2-3⁄4″) · H 8 mm (5⁄16″)

7230 · Bracket · For mounting the masts of the signals 7238, 7239, 7240, 7241, and the light housing of the 7242 block signal when these are detached from their relays

Used at or near stations where diversion or direct routing is possible.


7238

Distant Signal: Prepare to stop

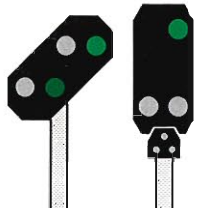
7241

Home Signal: Stop


7238 7241

Distant Signal: Prepare to slow down

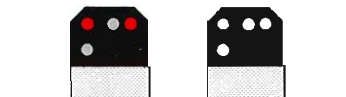
Home Signal: Proceed slowly


7238 7241

Distant Signal: Prepare to proceed at speed

Home Signal: Proceed at speed

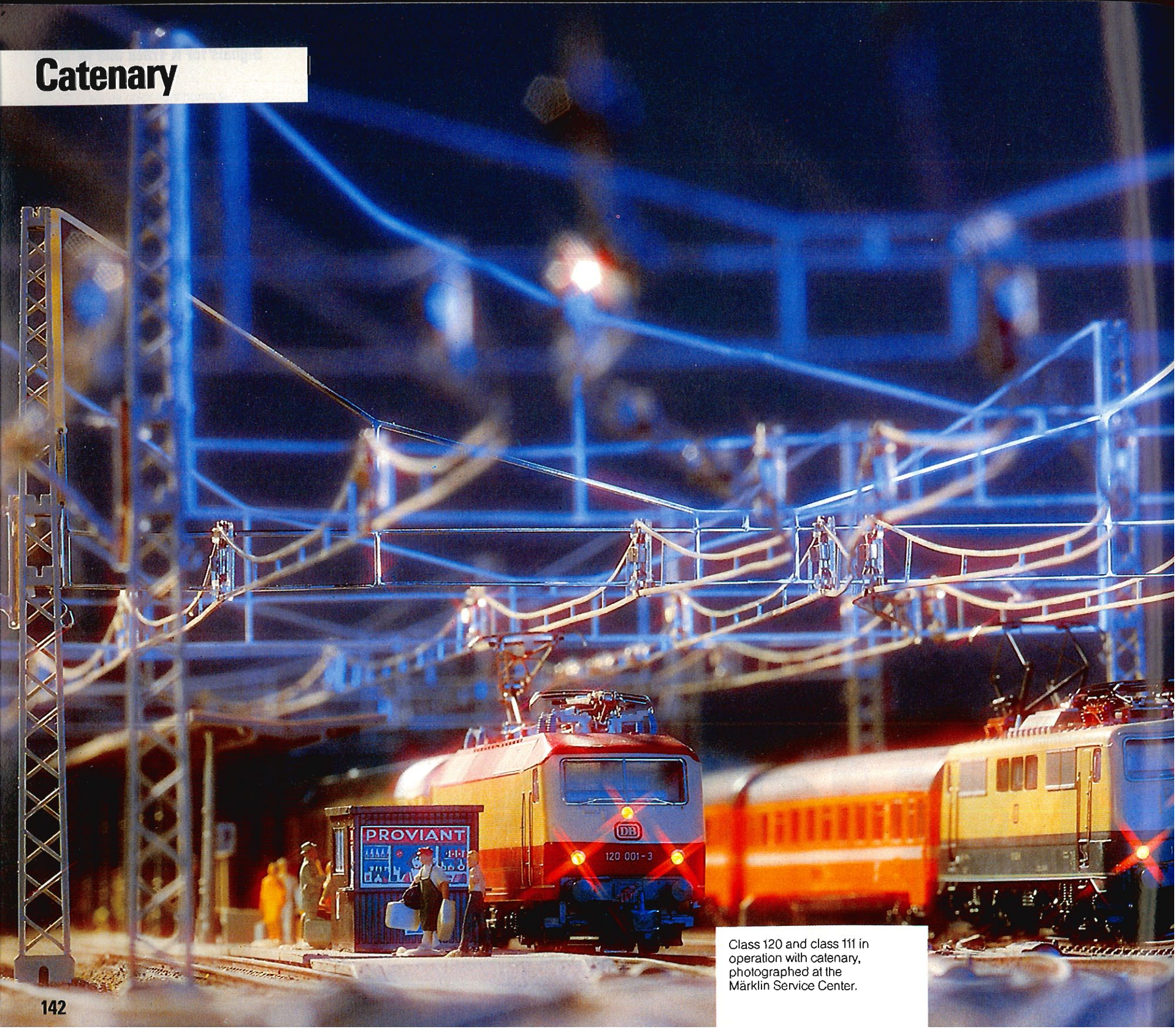
Usually used in terminal or yard areas.


7242 7242

Block Signal: Stop

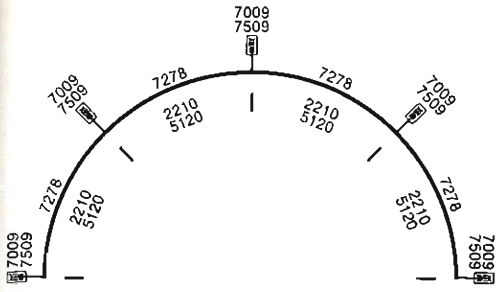
Proceed

Catenary

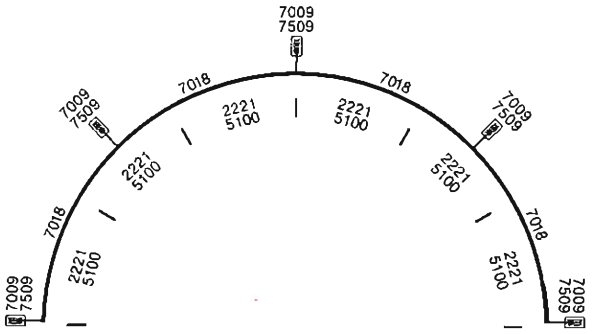


Class 120 and class 111 in operation with catenary, photographed at the Märklin Service Center.

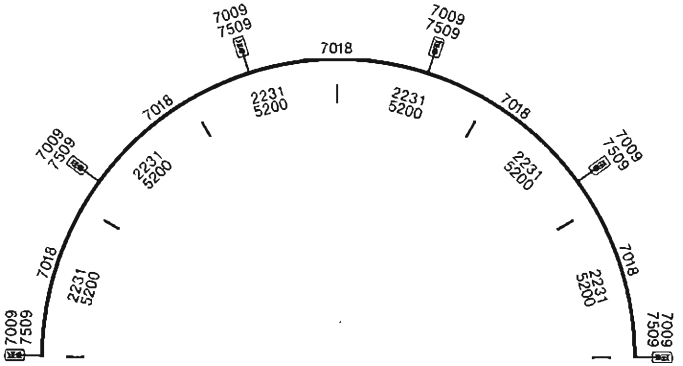
Industrial Circle



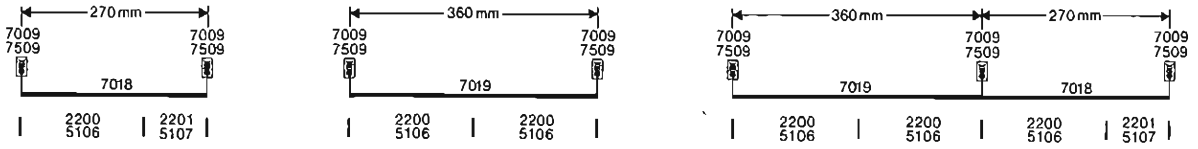
Normal Circle



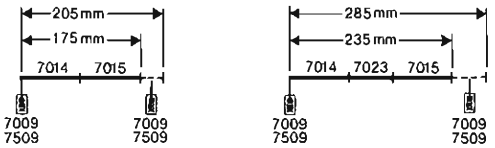
Parallel Circle



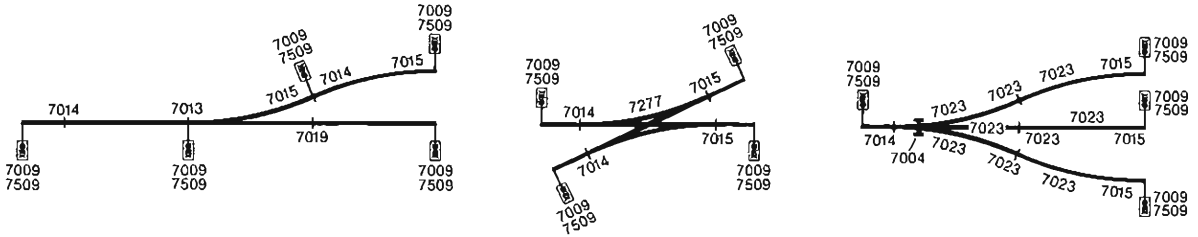
Straight Sections



Intermediate Lengths



Switches



Switches
2261, 2264, 2271
5137, 5140, 5202, 5221

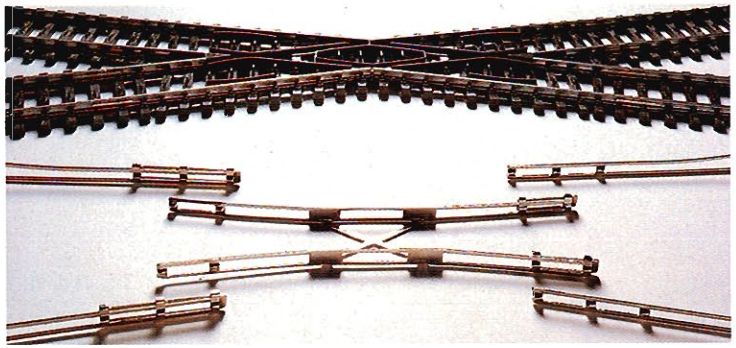
Crossings
2257, 2258, 2259, 2260, 2275
5114, 5128, 5207, 5211, 5215

Three-Way Switches
2270
5214

These illustrations show the required number of wire sections and masts for layouts with M or K track.

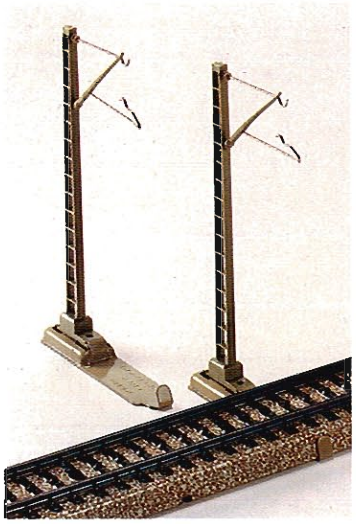
The number of required masts is always one more than the number of 7018 or 7019 wire sections. Intermediate lengths using a 7014/7015 or 7014/7023/7015 can be treated as a single unit.

Finally, catenary is quite flexible and the difference between theory and practice is often only one or two masts or wire sections.

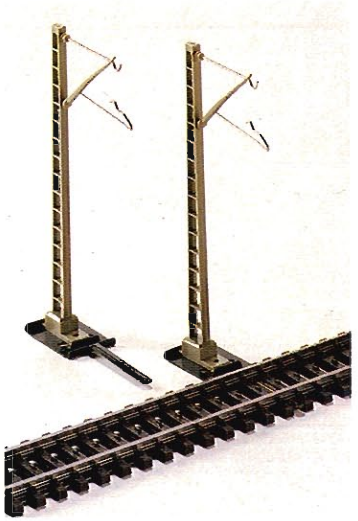


1. Always start at a crossing (with a 7277 section) or at a switch (with a 7013 section).

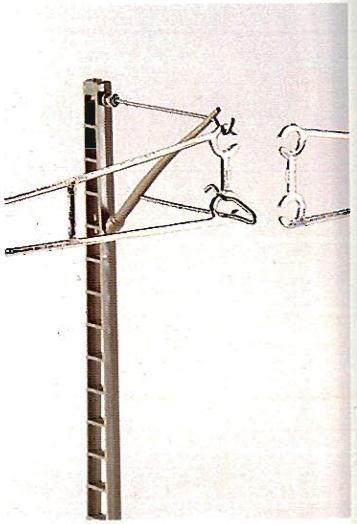
2. Connect a 7014 or 7015 to the above piece. Remember to bend wire to conform to track curvature.

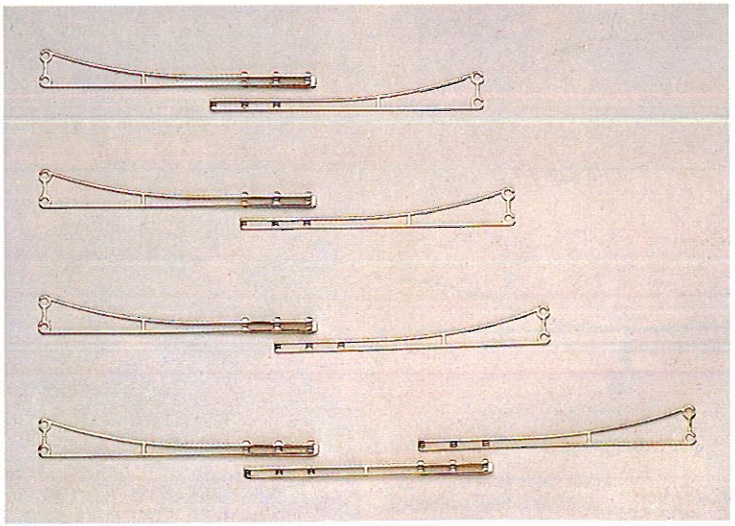


3. Now position the first masts and string the wire.



4. On one or two track lines continue adding wire sections and masts until a switch or crossing is reached which must be handled as above.

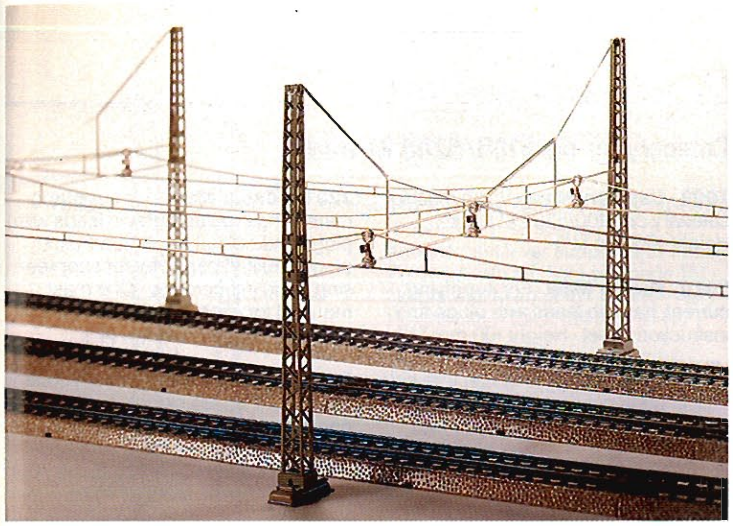


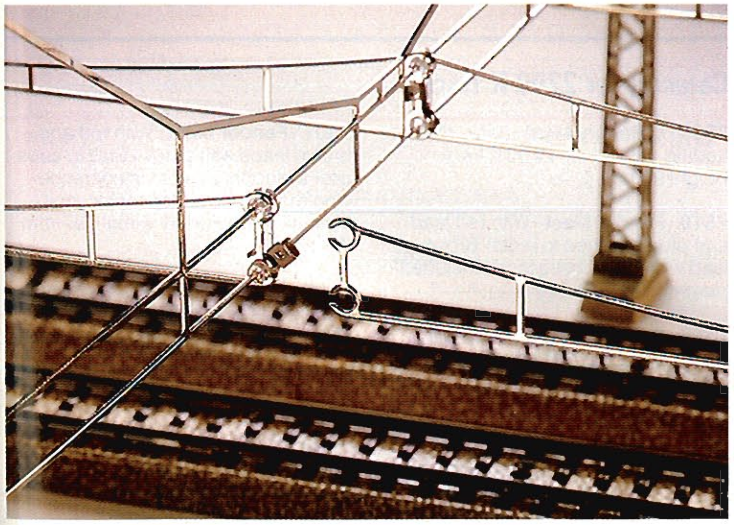


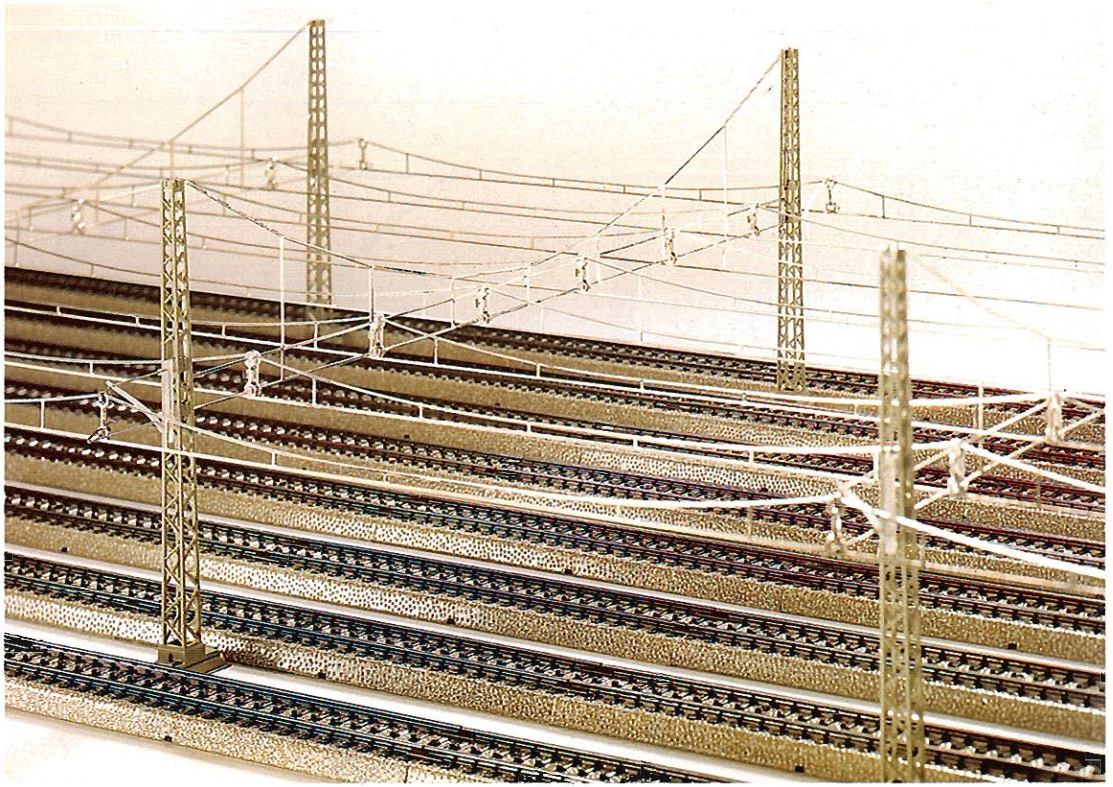
5. The stretch between the last mast and the next switch requires either a 7014–7015 or a 7014–7023–7015 combination. These sections are always used in special situations such as this.

6. For three and four track lines, use tower mast 7021 and cross span 7017 for holding the contact wires.

7. On five and six track lines, use the cross span 7016. The cantilever support arm 7525 can be used to hang catenary over a single track outside of the cross spans and tower masts 7021. Remember, that on multi-track lines supporting masts should always be directly opposite each other.





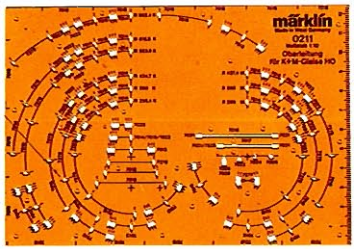


8. This photo shows how contact wires are hung on cross spans.

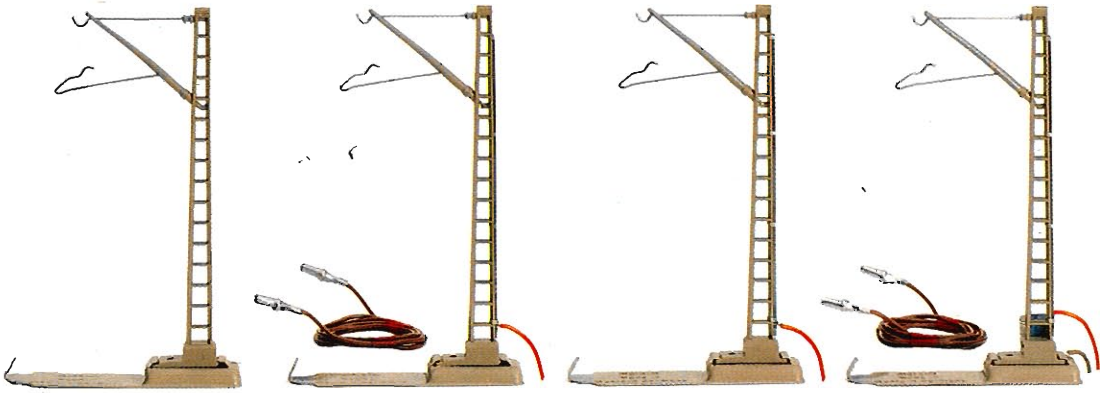
Catenary construction over bridges or with signals (for train control) or with additional transformers or for more power feeds is also easy to install.

Catenary (or overhead wires) provides more than just realism and added enjoyment to a layout. It can also be used to control trains.

The contact wire of the catenary serves the same function as the center rail in the track. By connecting the catenary to an additional transformer, two trains can be operated independently of each other on the same track. The track current can also be used for constant train lighting.



0211 · K + M · Catenary Stencil · For designing an overhead system · For K or M tracks · All masts and wire sections on the stencil scaled 1 : 10 for straight sections and all M and K curve radii · Use a sharp pencil to lay out the position of the catenary wires and masts · Instructions included



Catenary for the 5100/5200 M Track

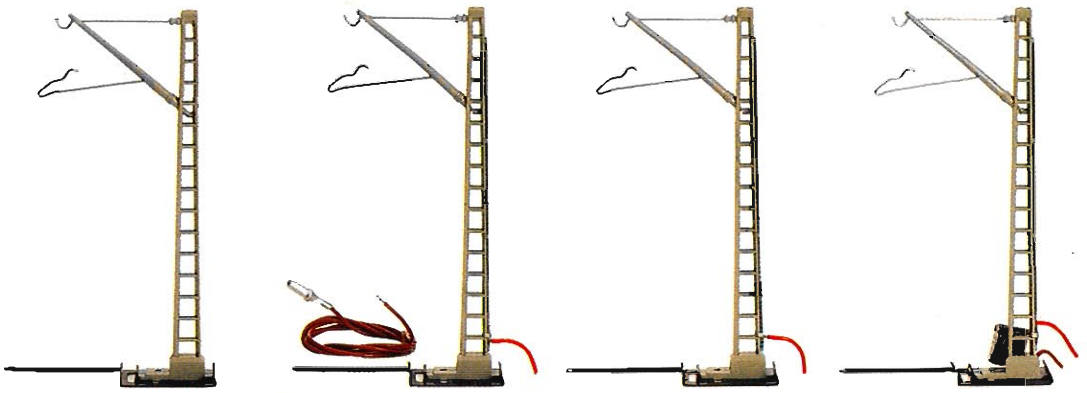
7009 · Catenary Mast · Basic mast for catenary on 5100/5200 M track · Height 100 mm (4″)

7010 · Feeder Mast · For supplying current, has two leads with plugs and instruction sheet · Height 100 mm (4″)

7012 · Feeder Mast · For use with signals in conjunction with catenary · Has one lead with plug · Height 100 mm (4″)

7201 · Feeder Mast · For supplying current, has red and brown leads with plugs · Additional brown lead with plugs · Built-in capacitor for suppressing radio interference · One mast required for each circuit · Instructions included · Height 100 mm (4″)

7005 · Catenary Set · For train control using 7000 series signals not located near tower masts · Includes two feeder masts 7012, two insulated wire sections 7022 and two wire sections 7014



Catenary for 2200 K Track

7509 · Catenary Mast · Basic mast for adding catenary to 2200 K track · Height 97 mm (3-7/8″)

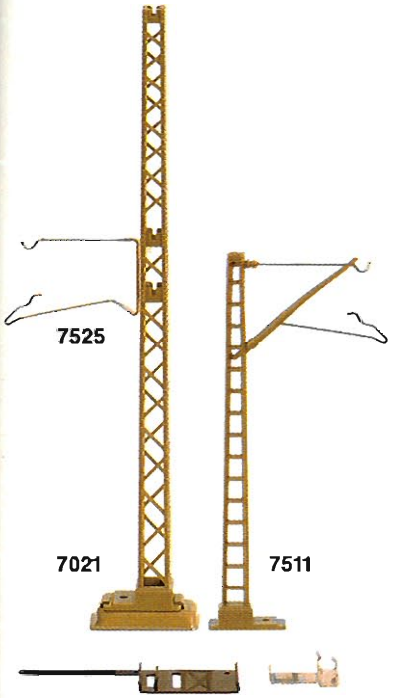
7510 · Feeder Mast · With red lead and plug attached to mast · Brown lead with plug · Instructions included · Height 97 mm (3-7/8″)

7512 · Feeder Mast · For use with home signal in conjunction with catenary, red lead with plug attached · Height 97 mm (3-7/8″)

7501 · Feeder Mast · With red and brown leads with plugs · Built in capacitor to suppress radio interference · One mast required for each circuit · Instructions included · Height 97 mm (3-7/8″)

7505 · Catenary Set · For train control with 7200 series signals not located near tower masts · Includes two feeder masts 7512, two insulated wire sections 7022 and two wire sections 7014 · For 2200 series K track

Catenary for K and M Track



7003 · Catenary System Feeder Lead · For use with signals when tower masts are used and for supplying current to any point · Length 600 mm (23-5/8″)

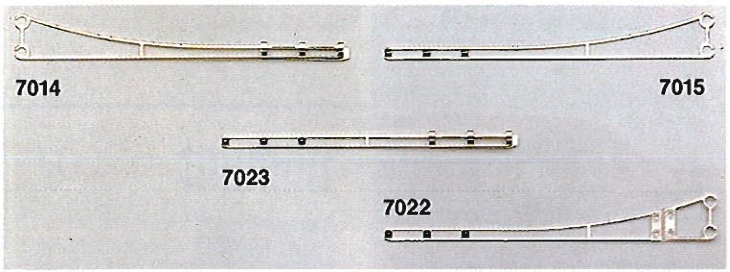
7004 · Fastening Kit · Includes 5 bolts, 5 nuts, 5 washers · For use in special situations where the normal push-in connection cannot provide a secure connection

7006 · Contact Wire Insulation · For insulating sections of contact wires from cross spans · One required for each track and cross span connection · 15 × 6 mm (5/8″ × 1/4″)

7525 · Cantilever Support Arm · For hanging a single or double catenary line in conjunction with tower mast 7021

7021 · Tower Mast · With recesses for mounting cross spans 7016 or 7017 and the cantilever support arm 7525 · For mast with arc light see page 151 · Height with M track 157 mm (6-13/16″) · Height with K track 154 mm (6-1/16″)

7511 · Bridge Mast · For attaching to sides of plastic bridges and ramps · Height 97 mm (3-7/8″)

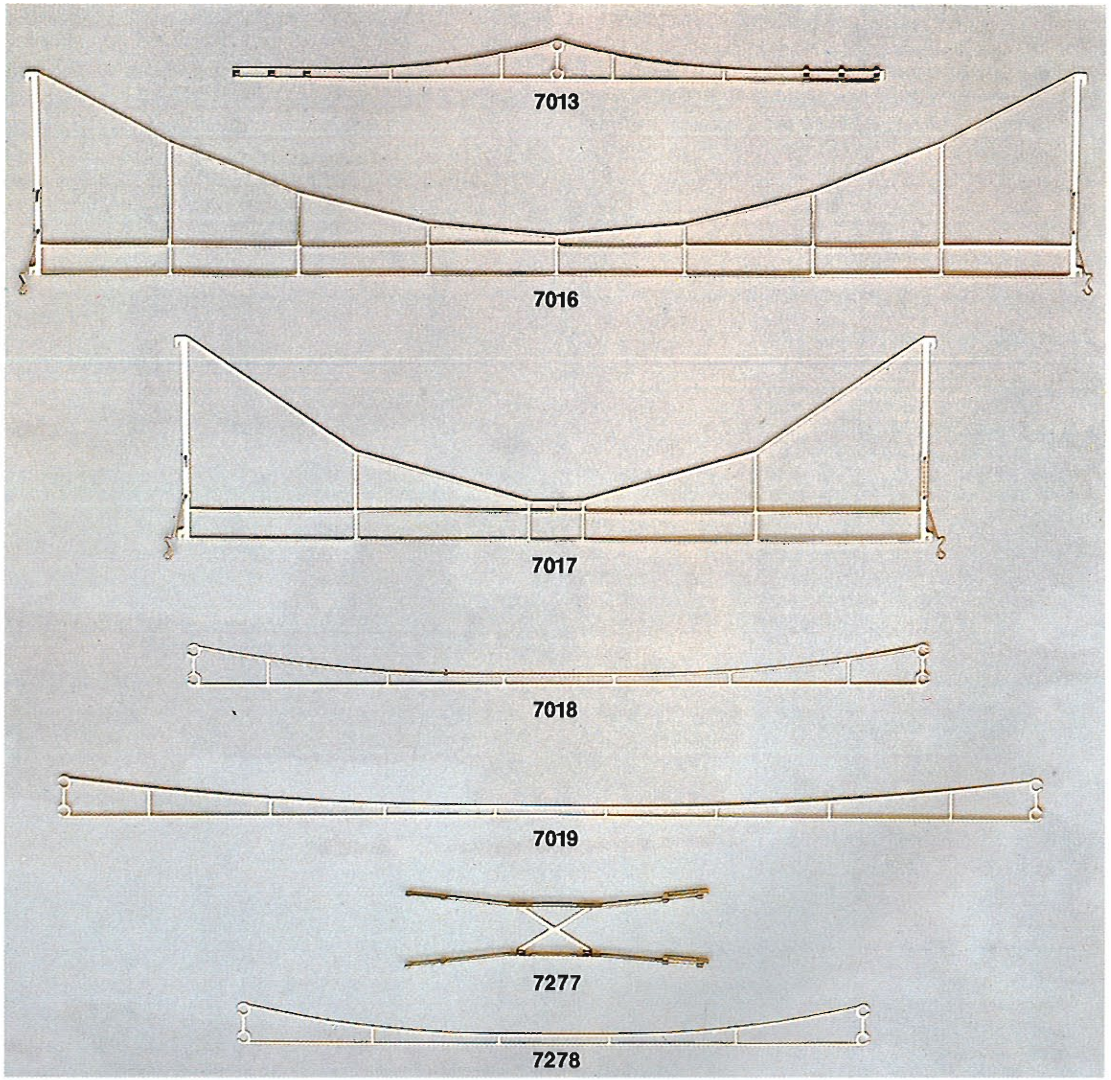


7014 · Contact Wire Section · Female section for push-in connection · Length 115 mm (4-1/2″)

7015 · Contact Wire Section · Male section for push-in connection · Length 115 mm (4-1/2″)

7022 · Insulated Section · Male section for push-in connection · For interrupting current flow · Length 115 mm (4-1/2″)

7023 · Adjustment Section · For push-in connections · Length 100 mm (4″)



All contact wire sections are nickel-plated.

7013 · Contact Wire Sections · Especially for switches · Length 240 mm (9-1/2″)

7016 · Cross Span · Connects to tower masts · Spans up to 6 tracks · Length 390 mm (15-1/4″)

7017 · Cross Span · Connects to tower masts · Spans up to 4 tracks · Length 280 mm (11″)

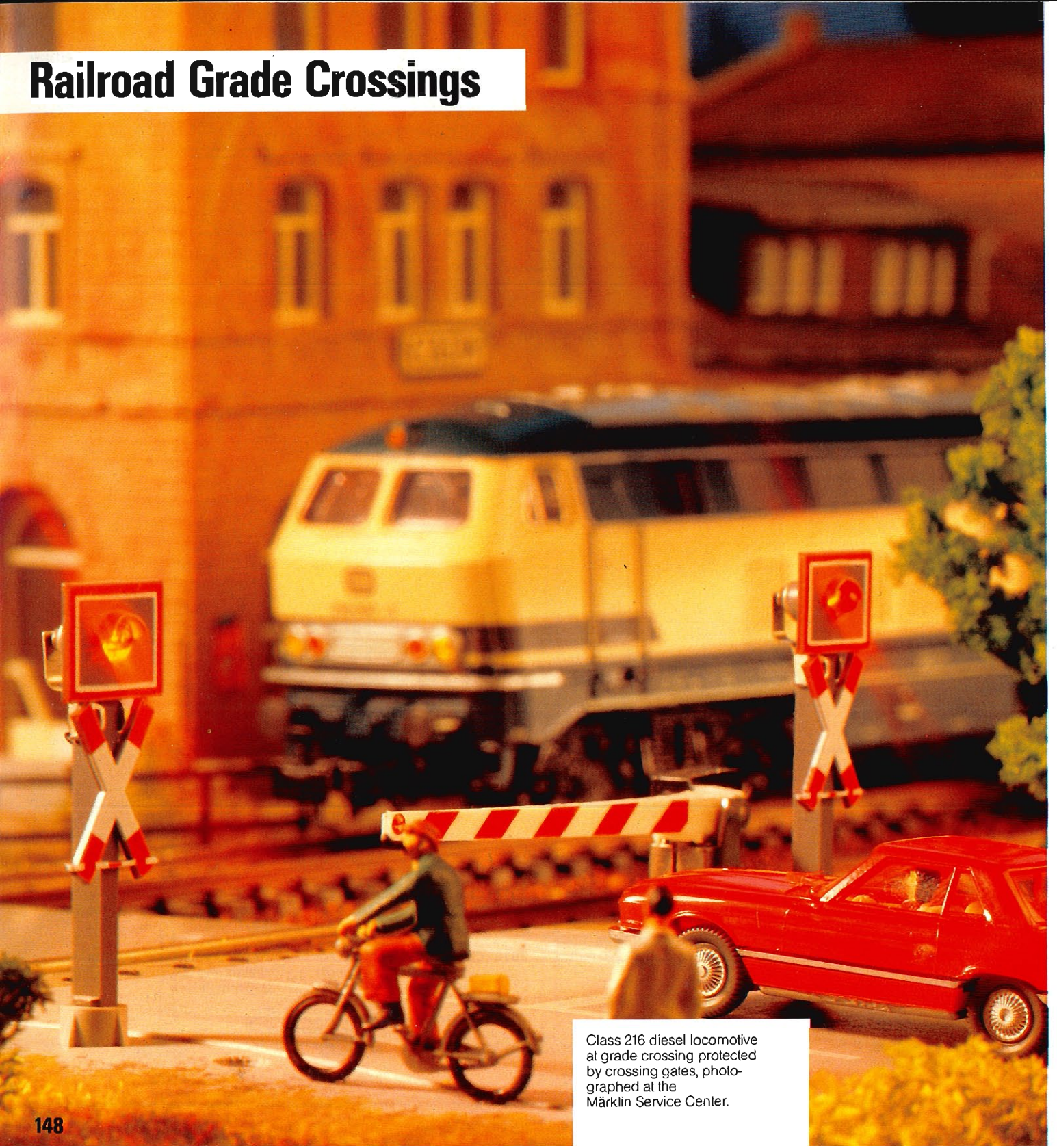
7018 · Contact Wire Section · For straight and curved tracks · Length 270 mm (10-5/8″)

7019 · Contact Wire Section · For straight tracks only · Length 360 mm (14-3/8″)

7277 · Crossing Section · For 2257, 2258, 2259, 2260, 2275, 5114, 5128, 5207, 5211 and 5215

7278 · Contact Wire Section · For straight and curved tracks · Length 230 mm (9-1/16″)

Railroad Grade Crossings



Class 216 diesel locomotive at grade crossing protected by crossing gates, photographed at the Märklin Service Center.

As a train approaches the grade crossing and rolls over the contact track sections, the crossing gates descend. The gates rise again only after the last car in the train clears the contact track sections on the other side of the grade crossing. The contact track sections can be extended to any length. With M track, use the 5115 and 5116 sections as well as the contact track set 5145. With K track, any normal section of straight or curved track will work.

Contact Track Sections

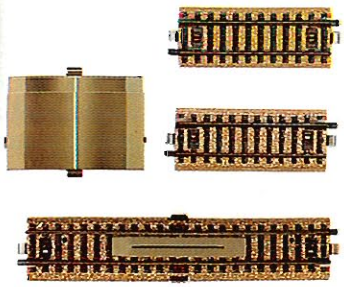
5115 · Straight · Length 180 mm (7-3/32″)

5116 · Curved · Diameter 720 mm (28-3/8″)

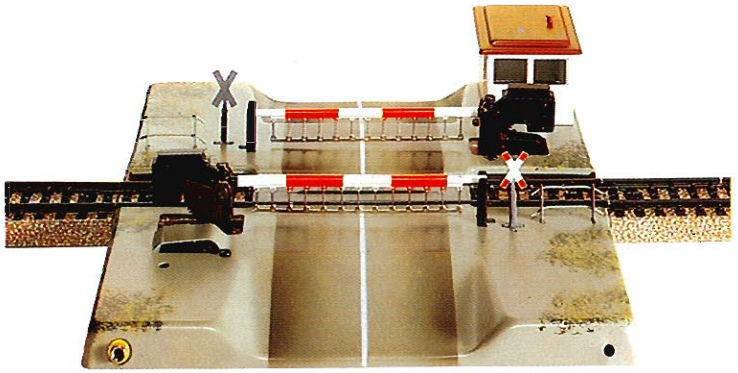
Contact Track Set

5145 · Two straight tracks · Length of each 90 mm (3-9/16″)

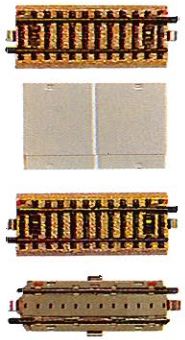
M track sections 5115 and 5116 as well as the contact track set 5145 can be used to extend the contact area of the grade crossings 7192 and 7292 as well as the add-on sets 7193 and 7293. The contact area can **only** be extended with the track sections 5115 and 5116 or with the contact track set 5145.



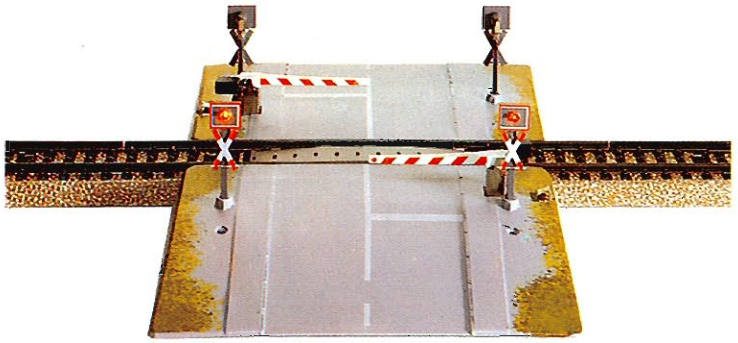
7193 M · Add-On Set · For the fully automatic grade crossing 7192 · Required for each additional parallel track · Includes a set of contact tracks (2 straight tracks) and a section of highway to be placed between the tracks



7192 M · Fully Automatic Railroad Grade Crossing · With M tracks · Set includes 2 magnetically controlled gates with gate operator's hut, warning crosses as well as a set of contact tracks (2 straight tracks) · Size of each base 180 × 90 mm (7-3⁄32″ × 3-9⁄16″)



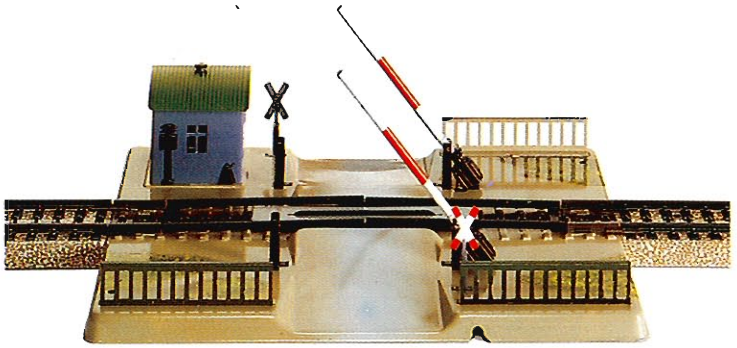
7293 M · Add-On Set · For the fully automatic railroad grade crossing 7292 · Required for each additional parallel track · Includes a set of contact tracks (one and a half straight sections) and a piece of highway adjustable between 43 and 78 mm (1-11⁄16″ to 3-1⁄16″) for the area between the tracks



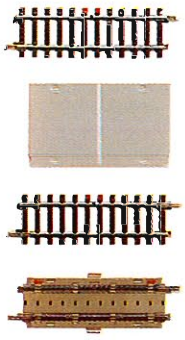
7292 M · Fully Automatic Railroad Grade Crossing · With half-length gates for M track · Set includes 2 magnetically controlled gates, 2 red warning lights which illuminate when gates are down, as well as a set of contact tracks (one and a half straight sections) · Size of each base 137 × 95 mm (5-3⁄8″ × 3-3⁄4″)

💡 = 60201

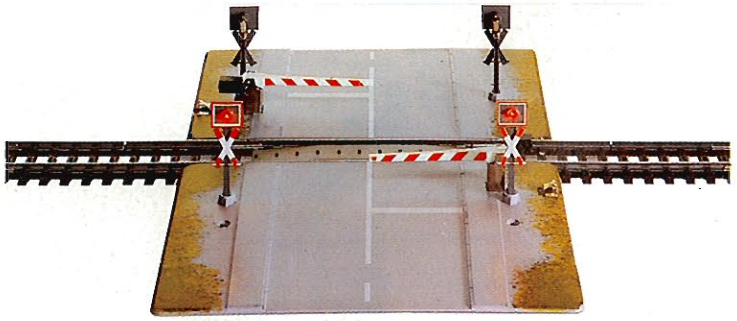
Adapter Track 2291
Allows K track to be connected to the railroad grade crossings 7192 and 7390.



7390 M · Manually Operated Railroad Grade Crossing · For single track M track routes · Gates are activated by train's weight on rocker-type running rails · Track sections have the same length as the 5106 track · Base 135 × 180 mm (5-3⁄8″ × 7-1⁄8″)



7593 K · Add-On Set · For the fully automatic grade crossing 7592 · Required for each additional parallel track · Includes a set of contact tracks (one and a half straight sections) and a piece of highway adjustable between 43 and 78 mm (1-11⁄16″ to 3-1⁄16″) for the area between the tracks



7592 K · Fully Automatic Railroad Grade Crossing · With half-length gates for K track · Set includes 2 magnetically controlled gates, 2 red warning lights which illuminate when gates are down, as well as a set of contact tracks (one and a half straight sections) · Size of each base 137 × 95 mm (5-3⁄8″ × 3-3⁄4″)

💡 = 60201

Rotary Crane / Lamps and Lights

Transferring concrete forms at night from the rails to the street, photographed at the Märklin Service Center.

Crane

7051 · Remote Control Crane with Lifting Magnet · Separate motors rotate crane and lift hook · Electrically operated magnet can lift iron or objects containing iron · Boom manually adjustable · Illuminated cab · Height 260 mm (10-¼") · Base 90 × 90 mm (3-½" × 3-½") · 1 combined controller and on/off switch panel

Bulb = 60000
Pair of brushes = 60030

Load and unload cars realistically with this crane. Although the magnet can only lift iron, other items can be lifted if iron is strategically hidden such as a screw or nail inside a model wood box or crate, or remove the magnet and let the big hook do the work. All the different activities possible with this crane can be remotely controlled, thus expanding the possibilities for fun on a model railroad and creating realistic transportation activities.

Lamps and Lights

The lights can be activated singly or in groups using the controllers 7210 or 7211. They can also be activated by passing trains tripping a contact track. Additional information is in the Signal Manuals 0342 M or 0361 K.

7046 · Arc Lamp with Lattice Mast · For use with M track catenary · Height 192 mm (7-⁹⁄₁₆") · Base 14 × 28 mm (⁹⁄₁₆" × 1-⅛")

= 60010

7048 · Arc Lamp · Height 156 mm (6-⅛") · Base diameter 29 mm (1-⅛")

= 60010

7283 · Tower Mast Lamp · Mounted on lattice mast · With base plate · Can be used with catenary · Height 170 mm (6-¾")

= 60000

7280 · Street Lamp · Height 117 mm (4-⅝") · Base diameter 25 mm (1")

= 60000

7281 · Station Platform Light · Twin lights · Height 97 mm (3-⅞") · Base diameter 25 mm (1")

= 60000

7282 · Street Light · Twin lights · Height 120 mm (4-¾") · Base diameter 25 mm (1")

= 60000

7284 · Park Light · Height 63 mm (2-½") · Base diameter 15 mm (1-1⁄16")

= 60000

7047 · Modern Street Light · Height 127 mm (5") · Base diameter 27 mm (1-1⁄16")

= 60010

The mini-vans' path through the maze of the switch yard

Radar traps and switches beyond the hump track

Every morning at about five a freight train regularly arrives at the Frankfurt switch yard from Seelze near Hannover. Mini-vans shipped by rail from the Volkswagen factory to wholesale distributors are often part of its load. When the train slowly rolls onto the receiving tracks, the workers in the switch yard already know what freight it has without having to look at it. The position of each car in the train and its destination were telexed or transmitted by computer to them when the train departed.

When the road engine uncouples from the train on the receiving track, a worker is already walking the length of it to determine by means of the waybills located on each car which classification track of the 50 possible each individual car is to be sent out on in the process of making up new trains. Another switchman loosens the couplers to create slack so that a third man can stand at the top of the hump track and uncouple cars by lifting the loop from the hook using a bar.

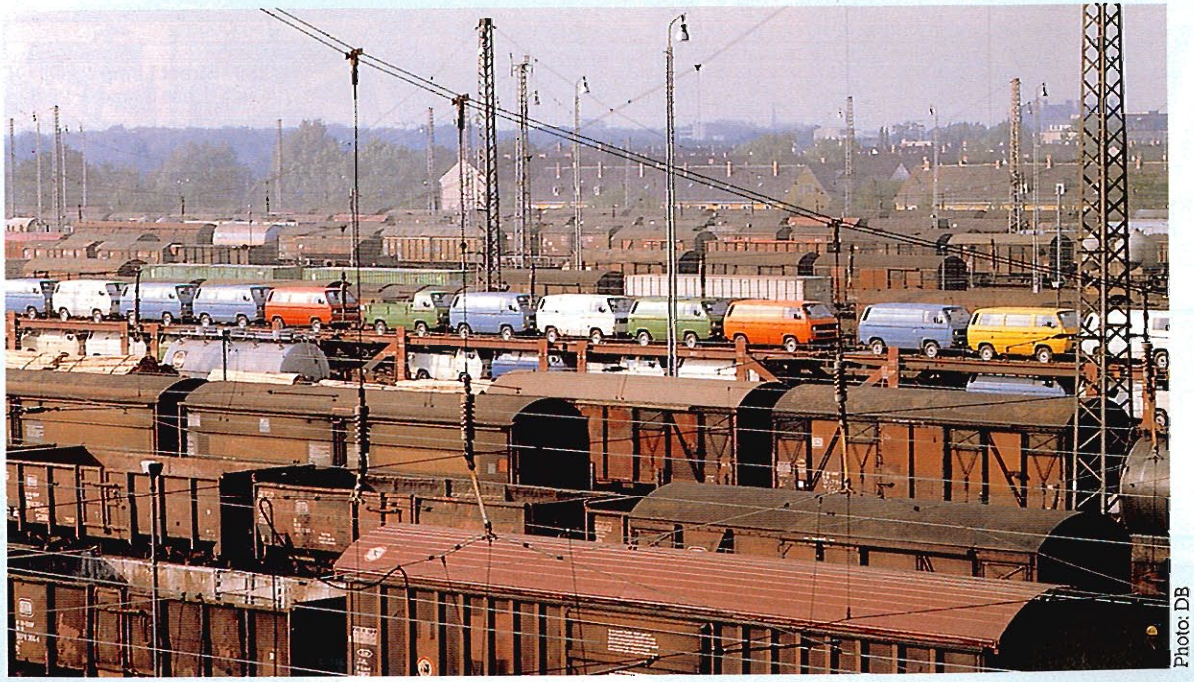


Photo: DB

Freight trains in the Frankfurt (M) freight yard

When it is known which cars are to be directed to which tracks, a corresponding list is transmitted from the end of the train to the hump track and to the main signal tower. A program is developed from it for the computer which controls the switches beyond the hump track.

While the teletype machine is still clicking, a switch engine has coupled to the end of the train and starts the trip over Frankfurt's smallest mountain, the 4.1 meter (13' 6") high hump track. Just before the summit a man is standing with an iron bar and separates the cars.

Individually, in pairs or in multiples they roll through the maze of track over different switches which are controlled by computer and are set as if by ghosts, so that our example of the mini-vans is switched onto the classification track for the train being assembled for Saarbrücken. Computer-controlled retarders ensure that the mini-vans come into their classification track at the right speed. The retarders act by pressing against the car wheels to slow the cars down and prevent derailments. With the help of radar traps the computer notices if cars are rolling down the hump track too fast because they are too well oiled or too heavy, for example. At some switch yards acceleration devices built in between the tracks provide for the opposite situation so that a car does not come to a premature stop because it is not lubricated well enough.

Moreover, freight trains sometimes have more than just freight cars. Now and then there is an Intercity or D-Zug passenger car in amongst the freight. These are cars needing repairs which have been uncoupled from their scheduled trains and are being transferred by freight train to the maintenance shops.

The cars for the mini-vans, along with other cars destined for Saarbrücken, make up a new train. The stations before Frankfurt from which these cars originate are Bebra, Würzburg, Hanau or Kassel, for example. The personnel in the signal tower have already sent word ahead to the Saarbrücken switch yard when the locomotive for the new train begins to move at about nine o'clock.

The switchmen and the computer place some of the double-decked cars with the vans on the classification track for Frankfurt-Ost for the situation in which some of the mini-vans are to be delivered to Frankfurt dealers. Another switch engine will pick them up along with other cars. At Frankfurt-Ost the car carriers are switched out und pushed onto a siding where the vans can be driven off the railroad cars. If they are going to a dealer who is located at some distance from the tracks, then they are loaded on a truck and transported to their final destination.

At the time that the S-Bahn (fast interurban) and U-Bahn (subway) were being built, quite special freight was standing on a siding in the Frankfurt switch yard. Large monsters covered with white canvas on four-axle low side cars. It was escalators for the underground S-Bahn stations. They were brought by a switch engine to the construction sites at night when the public commuter traffic in the tunnels was not in service – a photo opportunity of great rarity for railroad fans. For how often do you see a class 260 in an S-Bahn tunnel?

Photo: B. Stein

Remote controlled track retarders in the classification tracks – Mannheim switch yard

Light Bulbs for Accessories

Light Bulbs

60 000	Car lighting kit 7077	
	Switches 2261, 5128, 5137, 5140, 5202	
	Bumper 7191	
	Signals 7036, 7038, 7039, 7040, 7041, 7042	
	Lamps 7280, 7281, 7282, 7283, 7284	
	Crane 7051	
red 60 001	Car lighting kit 7079	
	Signals 7188, 7339	
green 60 002	Signals 7188, 7339	
60 008	Car lighting kit 7330	
60 010	Car lighting kit 7323	
	Light pole 5113	
	Lamps 7046, 7047, 7048	
60 015	Car lighting kit 7197, 7320, 7322, 7329	
60 020	Car lighting kit 7074	
60 200	Signal 7242	
red 60 201	Signals 7239, 7240, 7241	
	Railroad grade crossings 7292, 7592	
green 60 202	Signals 7187, 7236, 7237, 7238,	
	7239, 7240, 7241	
orange 60 204	Signals 7187, 7236, 7237, 7238,	
	7240, 7241	

Bridges

Express train on long series of bridges, photographed at the Märklin Service Center.

7263 K + M · Arched Bridge · For K and M tracks · Has 6 clips for securing K tracks · Instructions · Bridge height 117 mm (4-5⁄8″) · Length 360 mm (1′ 2-1⁄16″)

7262 K + M · Truss Bridge · Can be used alone or with the 7263 bridge · For K or M tracks · 3 clips for securing K tracks · Instructions · Height 45 mm (1-3⁄4″) · Length 180 mm (7-3⁄32″)

7569 for K only · Curved Ramp · Radius 424.6 mm (1′ 4-3⁄4″) · Only for K track (standard circle II) · 3 clips for securing track · Length and radius same as 2231 track section

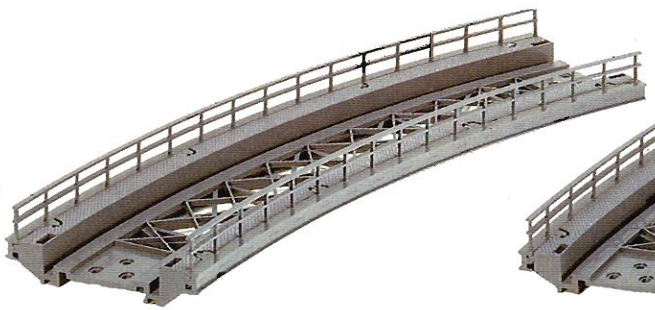
7269 for M only · Curved Ramp · Radius 437.4 mm (1′ 4-1⁄8″) · Only for 5200 series M track · Length and radius same as 5200 track section

7267 K + M · Curved Ramp · Radius 360 mm (1′ 2-1⁄16″) · For K or M track · 3 clips for securing K track · Length and radius same as track sections 2221 and 5100

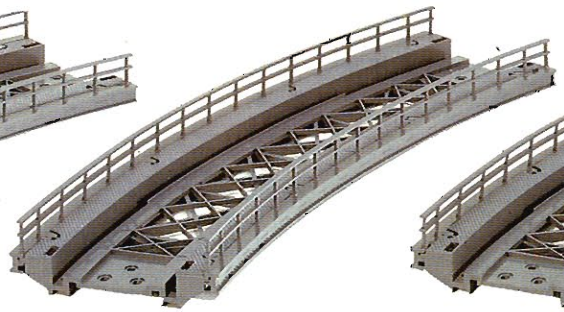
7268 K + M · Straight Ramp · For K or M track · 3 clips for securing K track · Length 180 mm (7-3⁄32″)

7263 K+M

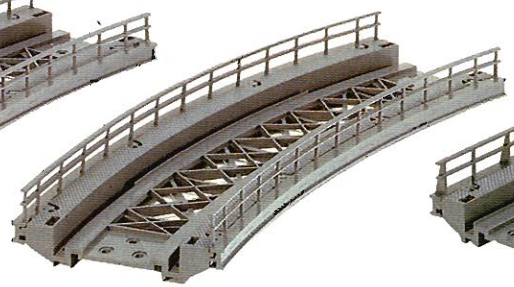
7262 K+M



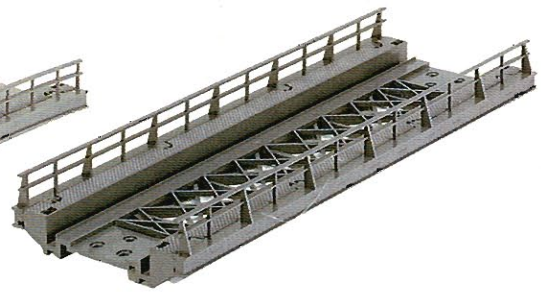
7569 for K only



7269 for M only



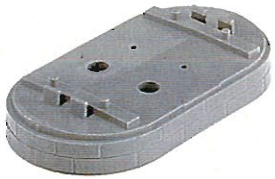
7267 K+M



7268 K+M

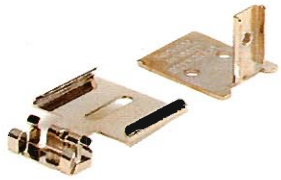
7250

7251



7252

7253



7234

7250 · Base Plate · 2.5 mm high (1⁄10″) · For pillar foundation

7251 · Base Plate · 3 mm high (1⁄8″) · Can only be used in conjunction with 7250

7252 · Pillar · 6 mm high (1⁄4″) · For building ramps in 6 mm (1⁄4″) increments

7253 · Pillar · 30 mm high (1-3⁄16″)

7234 · Base Plate · For attaching 7200 series signals to bridges

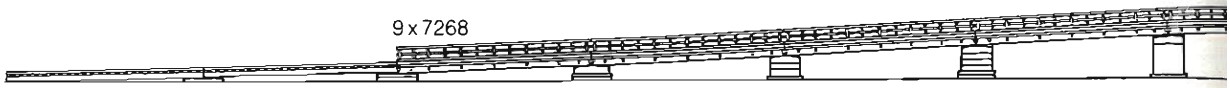
Bridge Approaches

These drawings show how many track sections and bridge pillars are required for approach ramps. Thus, each modeler can check for himself how a stretch of track with grades and bridges should be constructed. The grade is 5% and is decreased at the ends of the approach ramp.

Bridges and approach ramps can be placed in any desired combination and length. The pillar sections 7252 and 7253, which connect to each other like building blocks, allow the construction of pillars in 6 mm (¼") increments. Smaller increments (3 mm – ⅛") are possible with the base plates 7250 and 7251. Pillar sections and base plates can be fastened to the trackboard with the 7599 wood screws.

A Grade with M Track for Steam and Diesel Locomotives

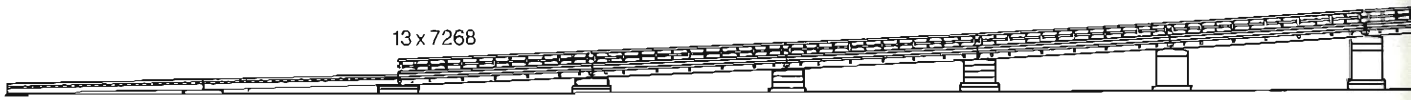
11 x 18 cm (7-⅛") track sections



Pillar 1	Pillar 2	Pillar 3	Pillar 4	Pillar 5	Pillar 6
Height 2.5 mm (3/32")	Height 5.5 mm (7/32")	Height 11.5 mm (29/64")	Height 20.5 mm (13/16")	Height 29.5 mm (1-5/32")	Height 38.5 mm (1-33/64")
1 x 7250	1 x 7250	1 x 7250 1 x 7252	1 x 7250 1 x 7250 4 x 7252		1 x 7250 1 x 7253
	1 x 7251	1 x 7251	3 x 7252 1 x 7251		1 x 7252

A Grade with M Track for Electric Locomotives with Catenary

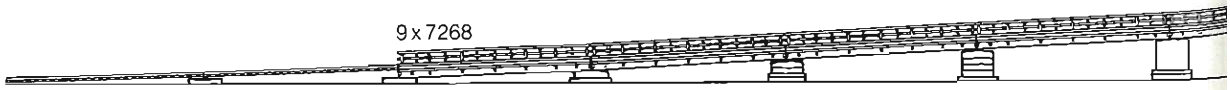
15 x 18 cm (7-⅛") track sections



Pillar 1	Pillar 2	Pillar 3	Pillar 4	Pillar 5	Pillar 6	Pillar 7
Height 2.5 mm (3/32")	Height 5.5 mm (7/32")	Height 11.5 mm (29/64")	Height 20.5 mm (13/16")	Height 29.5 mm (1-5/32")	Height 38.5 mm (1-33/64")	Height 47.5 mm (1-7/8")
1 x 7250	1 x 7250	1 x 7250 1 x 7252	1 x 7250 1 x 7250 4 x 7252		1 x 7250 1 x 7253	1 x 7250 2 x 7252
	1 x 7251	1 x 7251	3 x 7252 1 x 7251		1 x 7252	1 x 7251 1 x 7253

A Grade with K Track for Steam and Diesel Locomotives

11 x 18 cm (7-⅛") track sections

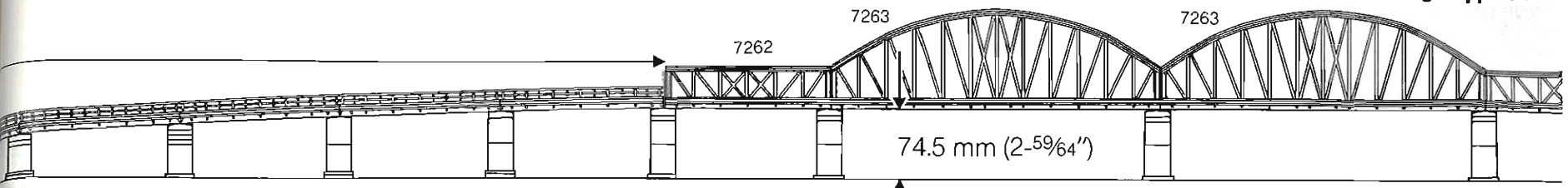


Pillar 1	Pillar 2	Pillar 3	Pillar 4	Pillar 5	Pillar 6
Height 2.5 mm (3/32")	Height 2.5 mm (3/32")	Height 8.5 mm (11/32")	Height 17.5 mm (11/16")	Height 26.5 mm (1-3/64")	Height 35.5 mm (1-13/62")
1 x 7250	1 x 7250	1 x 7250	1 x 7250 2 x 7252	1 x 7250	1 x 7250 1 x 7253
		1 x 7252	1 x 7251	4 x 7252	1 x 7251

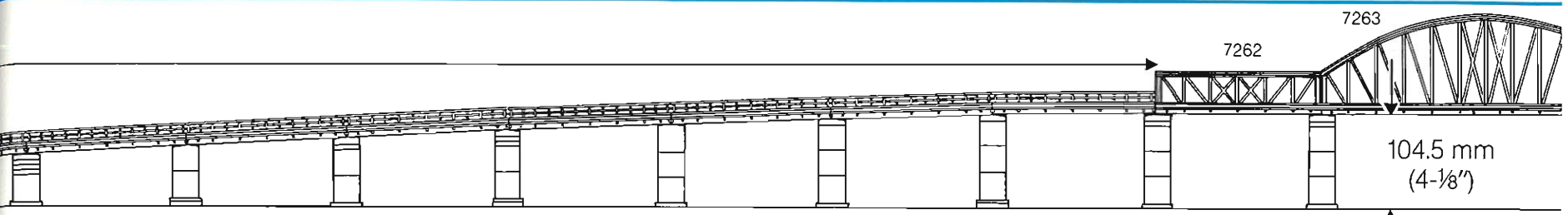
A Grade with K Track for Electric Locomotives with Catenary

14 x 18 cm (7-⅛") track sections

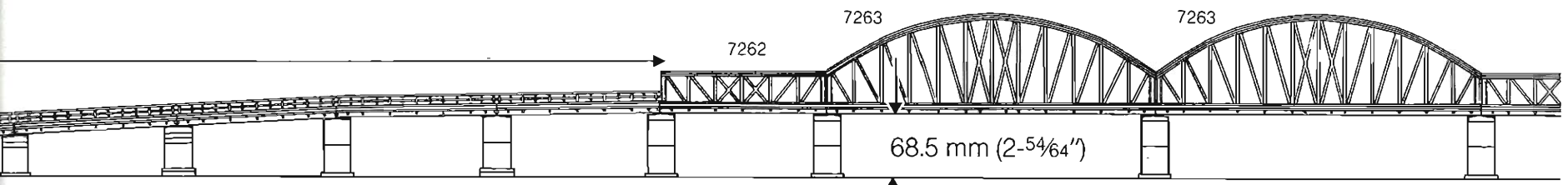
Pillar 1	Pillar 2	Pillar 3	Pillar 4	Pillar 5	Pillar 6	Pillar 7
Height 2.5 mm (3/32")	Height 2.5 mm (3/32")	Height 8.5 mm (11/32")	Height 17.5 mm (11/16")	Height 26.5 mm (1-3/64")	Height 35.5 mm (1-13/32")	Height 44.5 mm (1-3/4")
1 x 7250	1 x 7250	1 x 7250	1 x 7250	1 x 7250	1 x 7250	1 x 7250
		1 x 7252	1 x 7251	4 x 7252	1 x 7251	2 x 7252
			2 x 7252		1 x 7253	1 x 7253



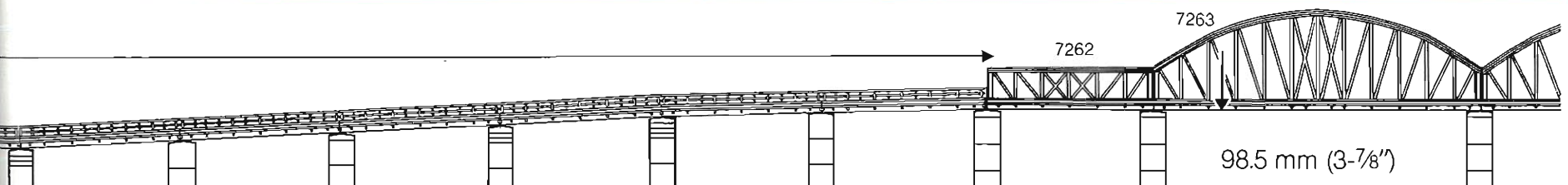
Pillar 7	Pillar 8	Pillar 9	Pillar 10	Pillar 11
Height 47.5 mm	Height 56.5 mm	Height 65.5 mm	Height 71.5 mm	Height 74.5 mm
(1-7/8")	(2-15/64")	(2-37/64")	(3-13/16")	(2-59/64")
1 x 7250 2 x 7252	1 x 7250 1 x 7253	1 x 7250 2 x 7253	1 x 7250 1 x 7252	1 x 7250 2 x 7253
1 x 7251 1 x 7253	4 x 7252	1 x 7251	1 x 7251 2 x 7253	2 x 7252



Pillar 8	Pillar 9	Pillar 10	Pillar 11	Pillar 12	Pillar 13	Pillar 14	Pillar 15
Height 56.5 mm	Height 65.5 mm	Height 74.5 mm	Height 83.5 mm	Height 92.5 mm	Height 98.5 mm	Height 101.5 mm	Height 104.5 mm
(2-15/64")	(2-37/64")	(2-59/64")	(3-9/32")	(3-31/32")	(3-7/8")	(4")	(4-1/8")
1 x 7250 1 x 7253	1 x 7250 2 x 7253	1 x 7250 2 x 7253	1 x 7250 3 x 7252	1 x 7250	1 x 7250 3 x 7253	1 x 7250 1 x 7252	1 x 7250 3 x 7253
4 x 7252	1 x 7251	2 x 7252	1 x 7251 2 x 7253	3 x 7253	1 x 7252	1 x 7251 3 x 7253	2 x 7252

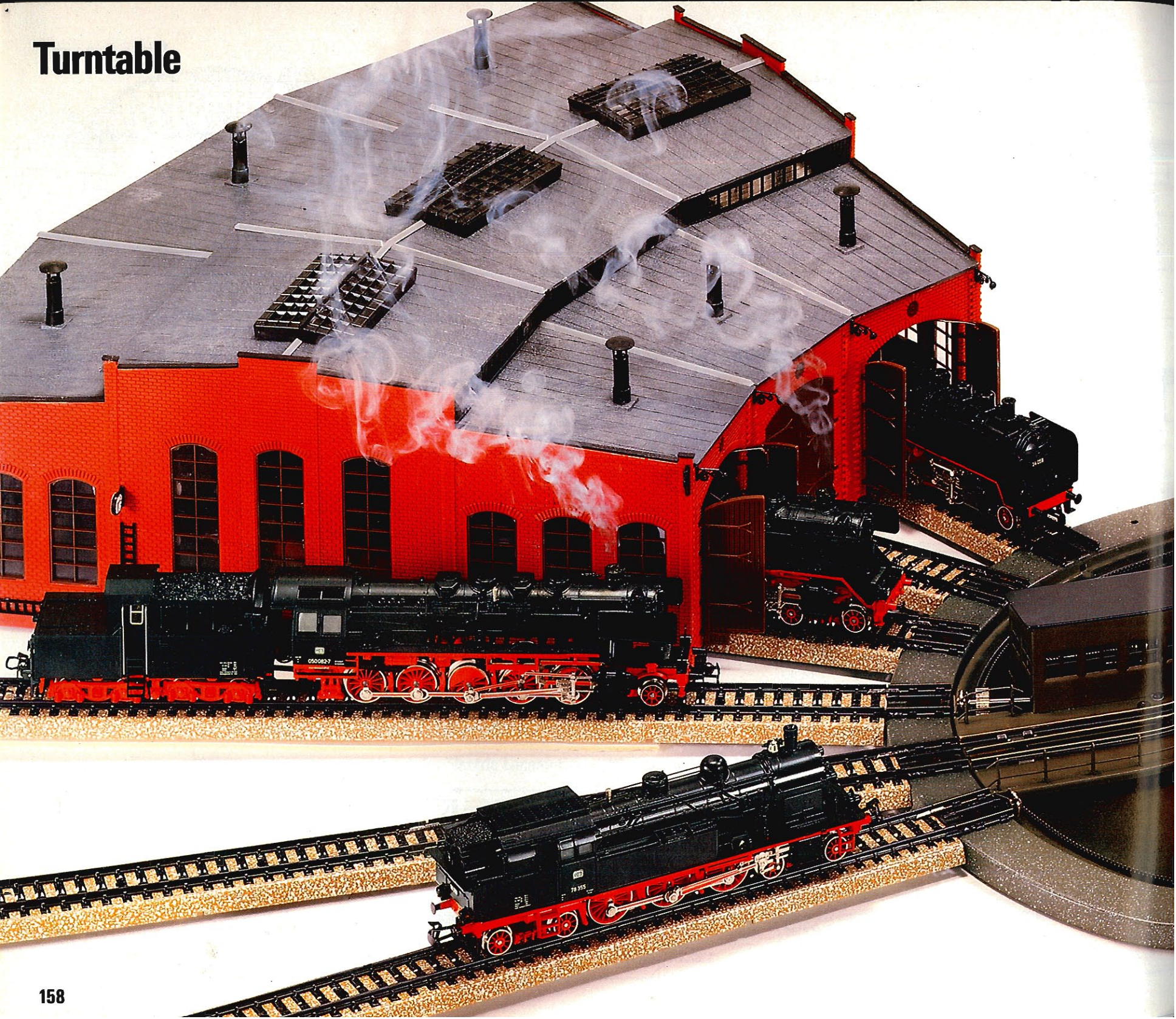


Pillar 7	Pillar 8	Pillar 9	Pillar 10	Pillar 11
Height 44.5 mm	Height 53.5 mm	Height 62.5 mm	Height 65.5 mm	Height 68.5 mm
(1-3/4")	(2-7/64")	(2-15/32")	(2-37/64")	(2-54/64")
1 x 7250 1 x 7253	1 x 7250 3 x 7252	1 x 7250	1 x 7250 2 x 7253	1 x 7250 2 x 7253
2 x 7252	1 x 7251 1 x 7253	2 x 7253	1 x 7251	1 x 7252

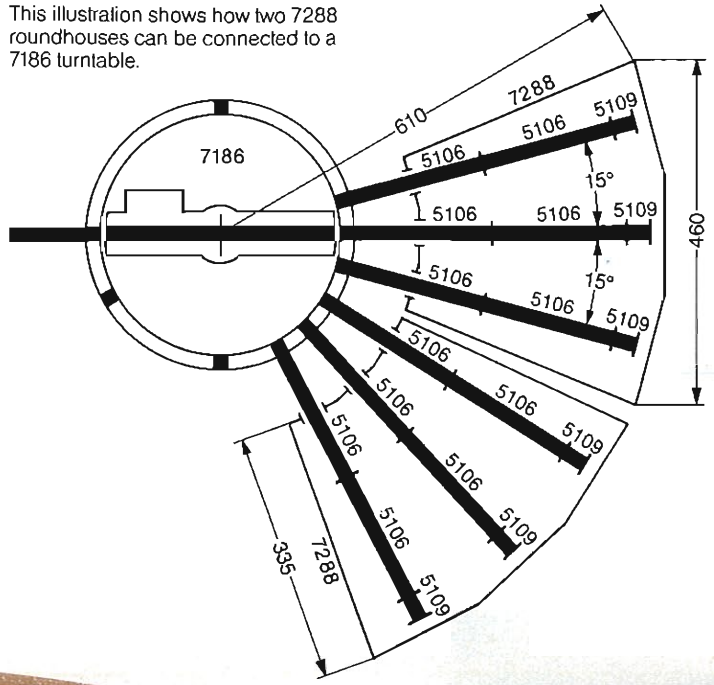


Pillar 8	Pillar 9	Pillar 10	Pillar 11	Pillar 12	Pillar 13	Pillar 14
Height 53.5 mm	Height 62.5 mm	Height 71.5 mm	Height 80.5 mm	Height 89.5 mm	Height 95.5 mm	Height 98.5 mm
(2-7/64")	(2-15/32")	(2-13/16")	(3-11/64")	(3-17/32")	(3-3/4")	(3-7/8")
1 x 7250 3 x 7252	1 x 7250	1 x 7250 1 x 7252	1 x 7250	1 x 7250 4 x 7252	1 x 7250	1 x 7250
1 x 7251 1 x 7253	2 x 7253	1 x 7251 2 x 7253	3 x 7252	1 x 7251 2 x 7253	1 x 7251	1 x 7252
			2 x 7253		3 x 7253	3 x 7253

Turntable



This illustration shows how two 7288 roundhouses can be connected to a 7186 turntable.

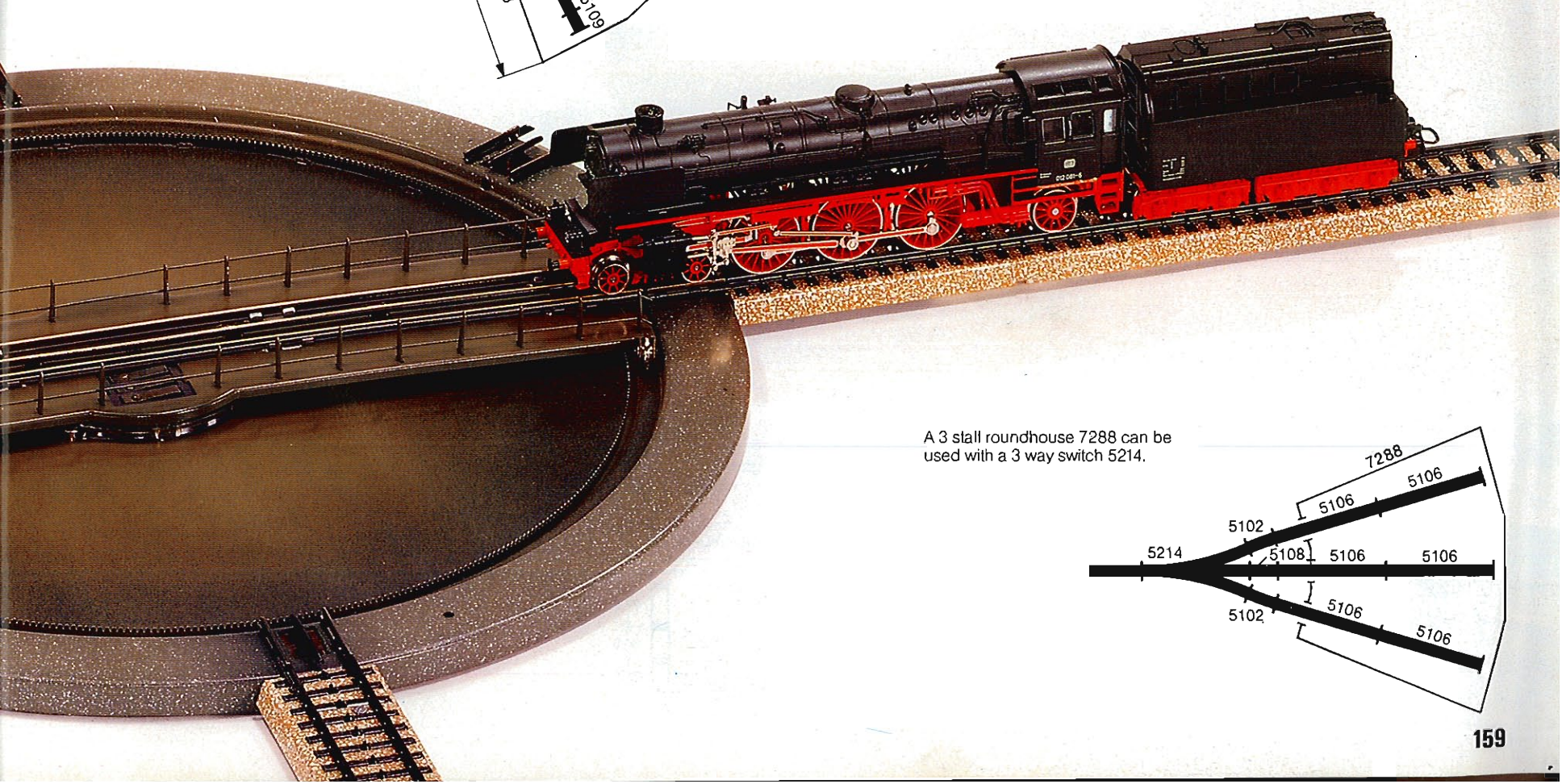


7186 · Remote Controlled Turntable · Includes a 360 mm (14-⅛″) turntable which moves in either direction by remote control, with necessary controls and wiring · Track current automatically cut off to any track not in alignment with bridge

Brushes = 60030

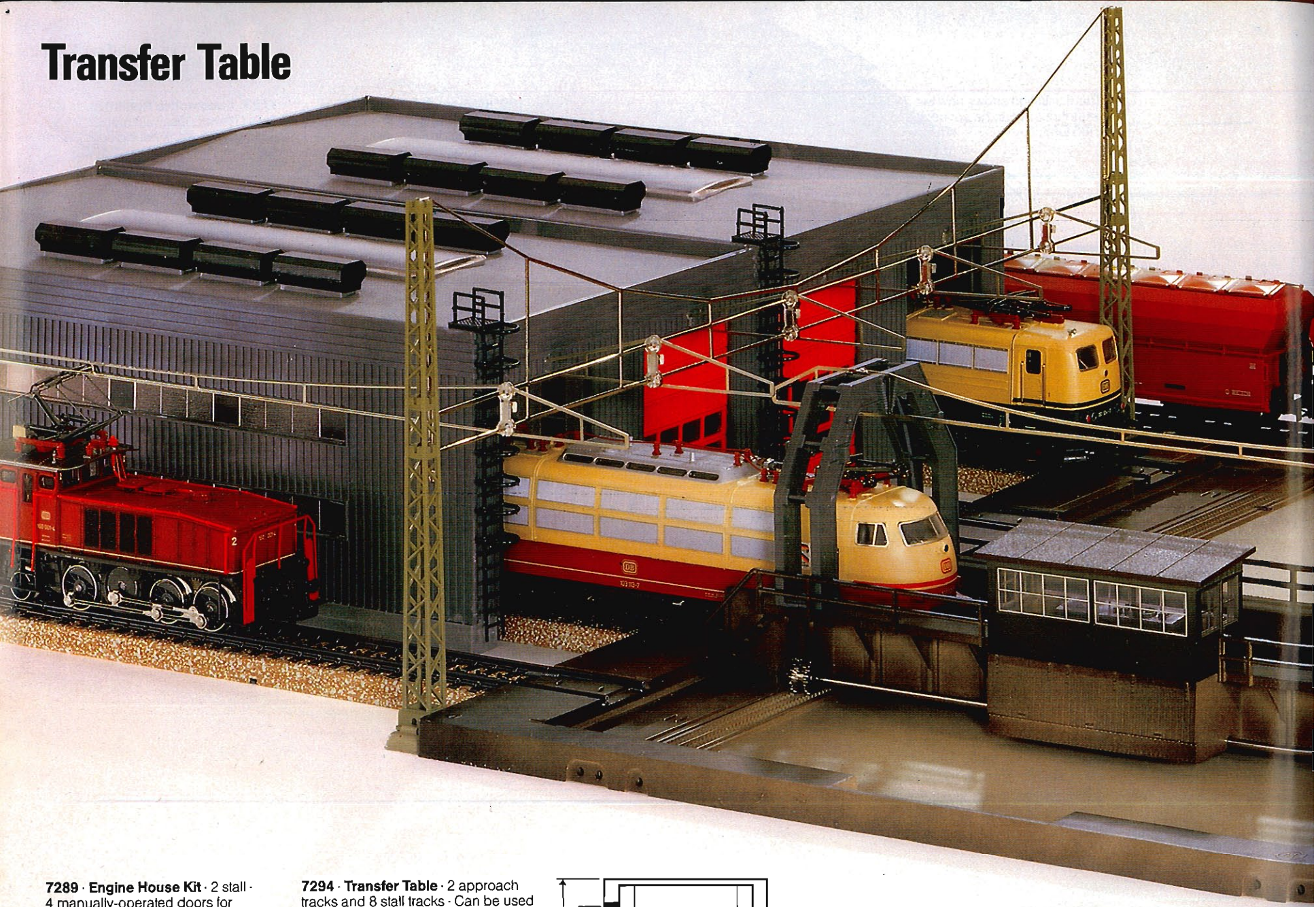
Adapter Track 2291
For connecting K track to the 7186 turntable.

7288 · Locomotive Roundhouse Kit · 3 stall roundhouse with manually operated doors · (track not included) · Size 335 × 460 mm (1′ 5-⅜″ × 1′ 1-¾″) · Height 128 mm (5″)



A 3 stall roundhouse 7288 can be used with a 3 way switch 5214.

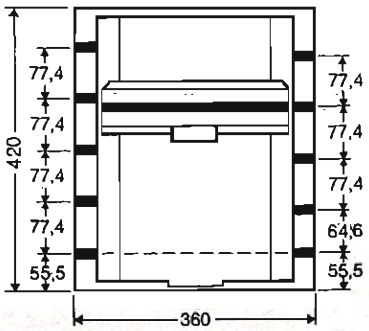
Transfer Table



7289 · Engine House Kit · 2 stall · 4 manually-operated doors for 2 tracks · (track not included) · Size 280 × 150 mm (11″ × 6″)

The prototype for this kit stands in Maschen, Federal Republic of Germany, Europe's most modern classification yard.

7294 · Transfer Table · 2 approach tracks and 8 stall tracks · Can be used with engine house 7289 · Includes controller · Operates by electric motor · Current automatically cut off to tracks not in allignment with bridge · Each stall track can be equipped with catenary · Size of base 360 × 420 mm (1′ 2-⅛″ × 1′ 4-½″)



7295 · Catenary Set for Transfer Table · Includes 2 overhead support gantries, one piece catenary wire with leads soldered on and 10 short catenary wires for stall tracks

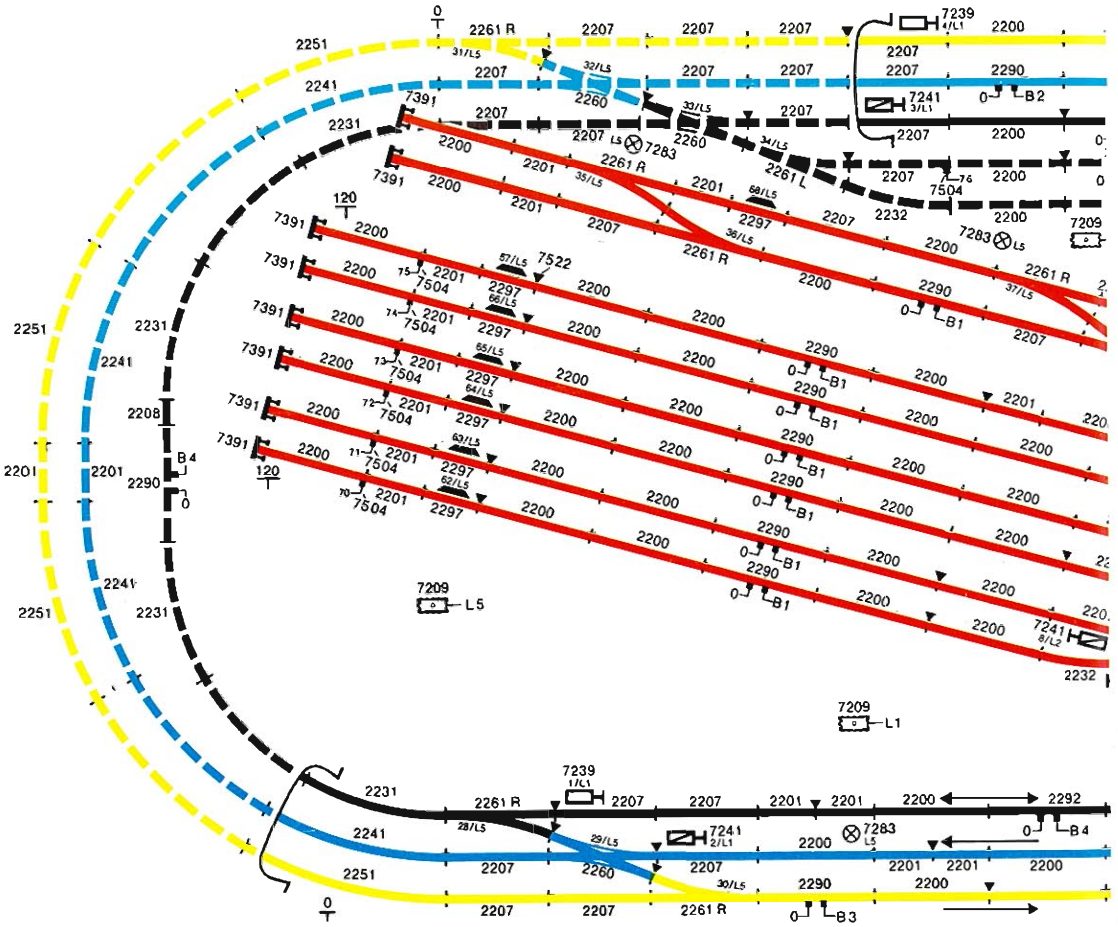
Adapter Track 2291
For connecting K track to the 7294 transfer table.

Multi-Train Operation

On conventional layouts multi-train operation is possible by dividing the layout into several track circuits. Each circuit has its own transformer and at least one feeder track. The track circuits are kept insulated from each other with center rail insulators 5022 or 7522. Different trains can then be operated simultaneously at different speeds.

Parts List

109 – 2200	Straight track, 180 mm (7-⅛")
30 – 2201	Straight track, 90 mm (3-9⁄16")
6 – 2202	Straight track, 45 mm (1-¾")
12 – 2203	Straight track, 30 mm (1-3⁄16")
3 – 2204	Straight track, 22.5 mm (⅞")
7 – 2205	Flex track, 900 mm (2' 11-½")
2 – 2206	Straight track, 168.9 mm (6-⅝")
58 – 2207	Straight track, 156 mm (6-⅛")
19 – 2208	Straight track, 35.1 mm (1-⅜")
23 – 2221	Curved track, r 360 mm (1' 2-¼"), 30°
2 – 2223	Curved track, r 360 mm (1' 2-¼"), 15°
2 – 2224	Curved track, r 360 mm (1' 2-¼"), 7° 30'
21 – 2231	Curved track, r 424.6 mm (1' 4-¾"), 30°
5 – 2232	Curved track, r 424.6 mm (1' 4-¾"), 22° 30'
4 – 2233	Curved track, r 424.6 mm (1' 4-¾"), 15°
6 – 2234	Curved track, r 424.6 mm (1' 4-¾"), 7° 30'
7 – 2241	Curved track, r 553.9 mm (1' 9-¾"), 30°
7 – 2251	Curved track, r 618.5 mm (2' ¼"), 30°
16 – 2260	Double slip switch
4 – 2261	Electric switches, pair
10 – 2261 R	Electric switch, right
19 – 2290	Straight feeder track, 180 mm (7-⅛")
4 – 2291	Straight adaptor track, 180 mm (7-⅛")
4 – 2292	Straight feeder track, 180 mm (7-⅛")
8 – 2297	Uncoupler track, 90 mm (3-9⁄16")
2 – 7048	Arc lamp
21 – 7072	Control box
1 – 7186	Turntable
14 – 7209	Distribution plate
3 – 7210	Control box
2 – 7238	Color light distant signal
4 – 7239	Color light home signal
1 – 7240	Color light home signal
13 – 7241	Color light home signal
9 – 7242	Block signal
9 – 7283	Tower mast lamp
1 – 7288	Locomotive shed kit
11 – 7391	Track bumper
9 – 7504	Center rail feeder
12 – 7522	Center rail insulator
1 – 6001	Transformer 42 VA, 110 volts · UL-tested
4 – 6627	Transformer 30 VA, 110 volts (60 Hz) · UL-tested



One Transformer = One Circuit

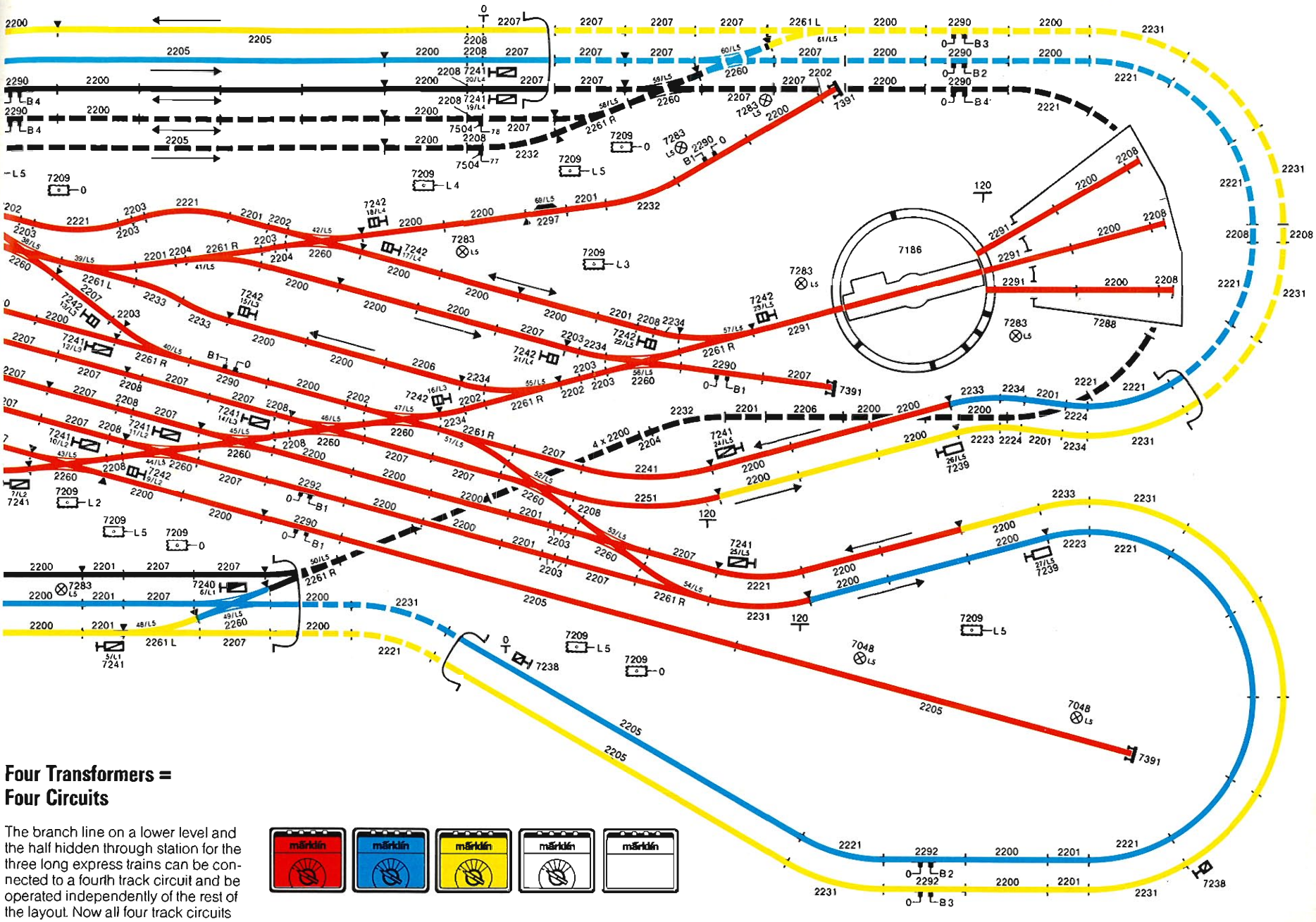
On our layout all trains travel at the same speed, going faster or slower according to the speed setting on the transformer. By using signals or track blocks, trains can be stopped independently of each other, in a yard for example. Changing the direction of one train is possible only when the others are stopped before signals.

Two Transformers = Two Circuits

If the main line is wired to a second transformer, through trains can be operated independently on it. Operations in the yard become independent of those on the main line.

Three Transformers = Three Circuits

When the second main line is connected to a third track circuit, both lines can be operated independently of each other. Signals control entry to the stub end yard.



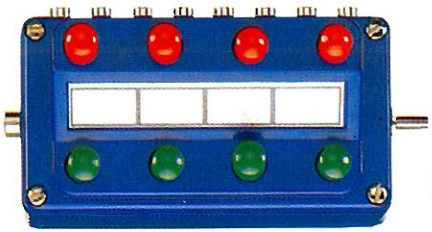
Four Transformers = Four Circuits

The branch line on a lower level and the half hidden through station for the three long express trains can be connected to a fourth track circuit and be operated independently of the rest of the layout. Now all four track circuits are operated independently of each other.

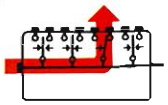
Layout size: 460 x 150/210 cm (15' 2" x 5'/8' 1/4")

Control Boxes

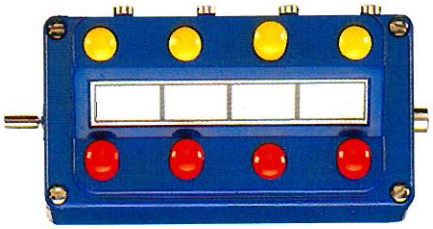
For Remote Control Operation



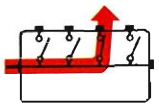
Schematic of 7072
(Control switch 3 closed)



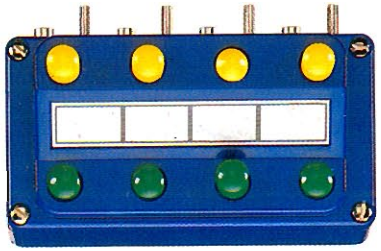
7072 · Control Box · With 8 sockets for connecting 4 double solenoid accessories · Position of button indicates position of signals, switches etc. · Length 80 mm (3-⅛") · Width 40 mm (1-9⁄16")



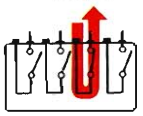
Schematic of 7210
(Control switch 3 closed)



7210 · Control Box · For dividing track or accessory circuits into four separately controlled circuits · For example for controlling current to 4 sidings · Length 80 mm (3-⅛") · Width 40 mm · (1-9⁄16")



Schematic of 7211
(Control switch 3 closed)



7211 · Control Box · On/off switches for 4 different track or accessory circuits · For example, controlling current to 4 sidings in 4 different track circuits · Length 80 mm (3-⅛") · Width 40 mm (1-9⁄16")

The Standard Wire Colors of the Märklin H0 System

Red = Track current (Transformer to center rail or catenary)

Yellow = Lights and accessories

Brown = Ground lead from track or control box to transformer

Blue = Return lead for accessories to control boxes or contact tracks (with green, red and orange plugs)

Wire

This flexible wire consists of 24 strands, each 10 mm (.004") thick for a total thickness of 0.19 mm² (.096"). This is fully sufficient for carrying current supplied by 40 VA transformers, even in the event of a short circuit.

7100 · Wire · Gray · 10 m (33')
7101 · Wire · Blue · 10 m (33')
7102 · Wire · Brown · 10 m (33')
7103 · Wire · Yellow · 10 m (33')
7105 · Wire · Red · 10 m (33')

Staples

7000 · Staples · Pack of 50 · For securing wires to wooden bases

Sockets

7111 = brown
7112 = yellow
7113 = green
7114 = orange
7115 = red
7117 = gray

Plugs with cross socket

7131 = brown
7132 = yellow
7133 = green
7134 = orange
7135 = red
7137 = gray

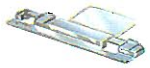
Distribution Plate

7209 · Distribution Plate · With 11 single pole sockets · Size 50 × 20 mm (2-¾" × 1-1⁄16")

Plug and Socket Assortment

7130 · Plug and Socket Assortment · 100 pieces (66 plugs and 34 sockets) · Quantities for various colors selected according to average requirements

5022 · Center Rail Insulators · For M track · Insulator is placed between the center rail clips of a track joint to separate track circuits



7522 · Center Rail Insulators · For K track · Insulator is placed between the center rail clips of a track joint to separate track circuits

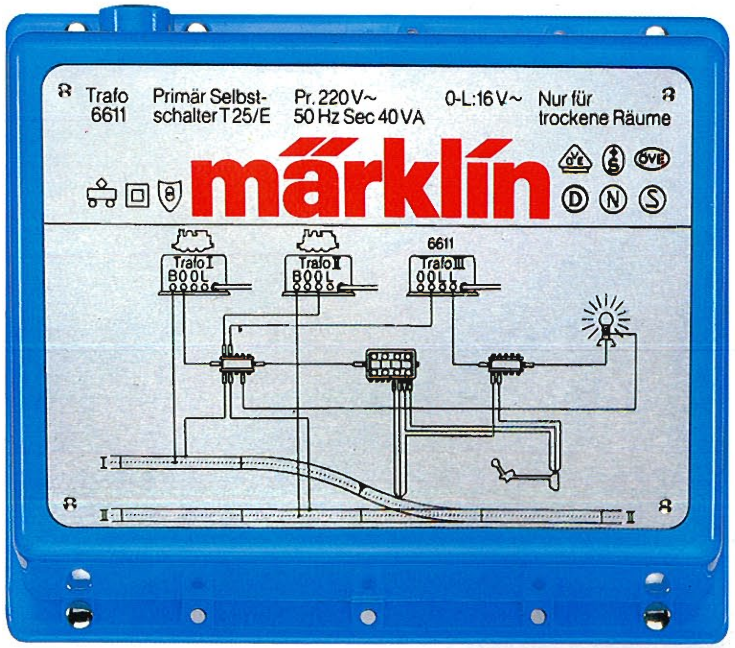
5004 · Center Rail Feeder Wire · For M track · Connects at joints in center rail · Length 750 mm (2' 5-½")

7504 · Center Rail Feeder · For K track · Connects at joints in center rail

7500 · Ground Connector · For K track · To establish ground connection

6671 16 VA

6631 30 VA



6611 40 VA

6671 220 Volt
6660 100 Volt Japan
6667 110 Volt (60 Hz) USA · UL-tested
6669 240 Volt

Transformer · 16 VA output · Track current adjustable from 4 to 16 volts · 16 volts accessory current · Plastic housing · Weight 1.2 kg (2-½ lb) · Dimensions 125 × 135 × 75 mm (5″ × 5-⅜″ × 3″)

6631 220 Volt
6620 100 Volt Japan
6627 110 Volt (60 Hz) USA · UL-tested
6629 240 Volt

Transformer · 30 VA output · Track current adjustable between 4 and 16 volts · 16 volts accessory current · Plastic housing · Red pilot light · Weight 2.1 kg (4-¾ lb) · Dimensions 158 × 135 × 75 mm (6-½″ × 5-⅜″ × 3″)

Märklin transformers are safe because they have insulation which has been tested to withstand several thousand volts. Also, built-in circuit breakers are included to automatically cut off power when short circuits occur or when the transformer becomes overloaded. A standard wire and plug connects the transformer to house current.

Märklin transformers – Safety tested around the world.

We guarantee trouble free operation of Märklin trains only when used with original Märklin transformers. The transformers must be protected from dampness and are not designed for outdoor operation. Connect only to AC outlets.

Power Consumption of Locomotives and Lights
Example of calculations:
Here is a way to compute how many items a given transformer can power: a 3000 tank locomotive and a 3085 locomotive each require 9 VA, the 3021 diesel about 12 VA.

The wattage left over can be used for train and layout illumination, allowing 1 VA per bulb. Additional examples appear in the booklet 0380 "Die Modelleisenbahn Märklin H0 und ihr grosses Vorbild" (German text).
Note: 1 VA = 1 watt.

6611 220 Volt

Transformer for Lights and Accessories · 40 VA output · Approximately 16 volts available for accessories · Plastic housing · Weight 2.0 kg (4-½ lb) · Dimensions 158 × 135 × 75 mm (6-½″ × 5-⅜″ × 3″)
Note: Not available in USA · For accessory transformer, use 6001 Digital transformer with 42 VA output

Class 152, class 050 and class 216, photographed on the layout "Mosel" of the Faller Company.

The effortless transition to computer-aided control operations

Märklin Digital moves into the train room and the classroom.

Let us assume there is a Mr. Huber sitting at the track diagram control board in the German Federal Railroad's first electronic signal tower in the town of Murnau in Upper Bavaria. It is just possible that when he comes home in the evening he sees his son Klaus sitting at the screen of his home computer. He is looking at a track plan on the monitor and trying to emulate his father. This is possible with Märklin Digital.

The individual installing the components of this electronic control system on his layout has made the effortless transition from the electrical age via electronics to the computer age. Even if he does not use one of the classic computers with a video screen and keyboard for controlling his switches and signals, he is still playing with microchips which silently perform their tasks in control components, locomotives and decoders.

The results are tremendous; up to 80 locomotives can be controlled independently of each other without setting up separate circuits. 256 solenoid accessories can be connected up, although the "wiring mess" under the layout is considerably reduced.

Klaus has, namely, undertaken the step-by-step conversion of his layout from conventional to digital operation. First up were the switches, uncoupler tracks and signals far from the transformer which he had avoided wiring up for years because it involved endless hours of stringing wire. With the k 83 decoder it was done in a jiffy:

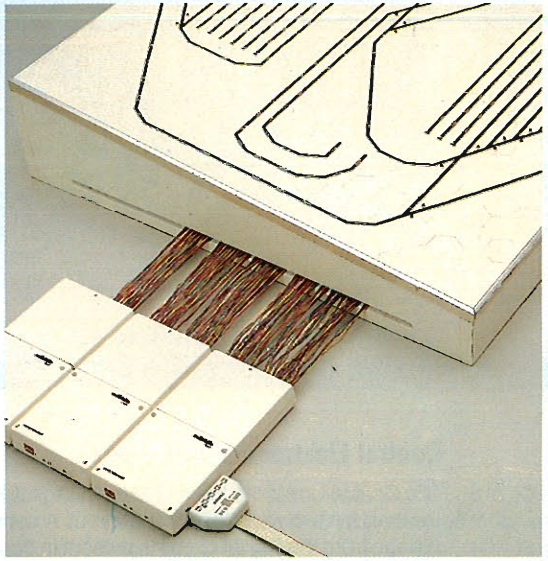


Photo: Märklin

The Switchboard makes it possible to hook up a track diagram control board.

the digital current drawn from the rails, fed into the decoder and the solenoid accessories wired up in close proximity – done. No more yards of wire to the control panel. The rails have taken over the transmission of the digital impulse. And this is the way it went bit by bit. In addition, there was always a locomotive to be converted for Christmas or birthdays and the largest part of the layout was quickly digitalized. A lot sooner than with the German Federal Railroad.

The possibilities for the chips can be expanded considerably with additional components – and without a home computer.

- The Memory controls entire routes by assembling individual commands, logically processing them and storing them.
- The Switchboard turns the track diagram control board into a command center controlled by microchips.

In other words, the individual operating the track diagram control board on his layout using the Switchboard is already a step ahead of the German Federal Railroad. The Switchboard is already being mass produced; the digitally controlled signal tower in Murnau where Mr. Huber works is still a pilot project. It must be mentioned here that it is somewhat more complex and above all more expensive for the German Federal Railroad to controll real-life switches and signals digitally. On the other hand, the railroad is as advanced as Märklin is with the trains. The continuous cab signalling, a system located between the tracks and optically similar to the third rail of Märklin's track, controls trains on all of the DB's high-speed routes with the engineer performing a monitoring function.

The Interface creates the link with the computer. This not only expands the possibilities for controlling a model railroad right up to fully automatic, selfcontrolled operation, it also opens up a new world to the computer user. In this way Klaus can see and experience in three dimensions how the computer "thinks".

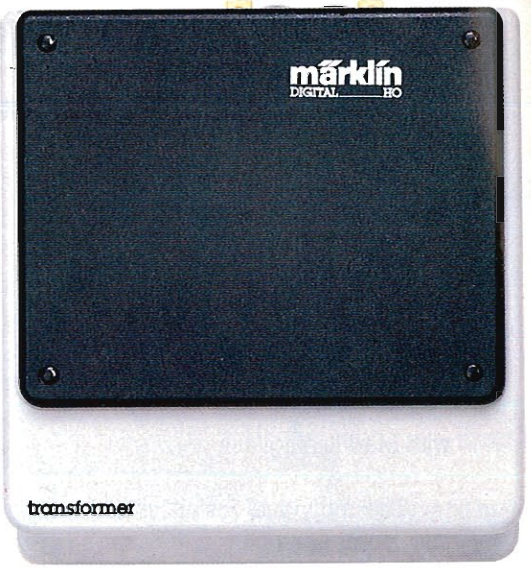
What otherwise can only be seen on the terminal screen or, at best, on the paper from a printer and plotter, can now be "felt". With appropriate commands from the central processor of the computer trains stop and go, switches are set as pro-

(continued on page 176)

Märklin Digital is an electronic control system using the most modern micro-processor technology. With Märklin Digital any arrangement of locomotives, switches and signals can be operated without the wiring that is necessary in conventional systems – and without a computer too, of course.

Your conventional H0 layout can be converted to Digital operation at any time: Passenger trains, freight trains, tracks, catenary, signals, circuit tracks and blocks do not need to be altered.

In 1985 Märklin introduced the first step of its continuing Digital electronic control system to the market.



Central Electronics

The Central Unit is the heart of Märklin Digital. From the Central Unit two wires lead to the layout. A constant voltage from the Digital circuit is present in the rails of the entire layout. Information and power are transmitted by means of the Central Unit to the entire layout (locomotives and switches as well as signals). The decoders in the locomotives or solenoid accessories evaluate the control information from the Central Unit. You have direct access to any locomotive on your layout. Up to 80 locomotives can be controlled independently at the same time. Up to 256 switches or signals can be activated. The other Digital control components such as Control 80 (locomotive throttle), Interface (the link to the computer), Keyboard (controller for switches and signals), Memory (route controller) or Switchboard (the link to track diagram control boards) are simply plugged on the left or right of the Central Unit without any additional wiring.

Transformer

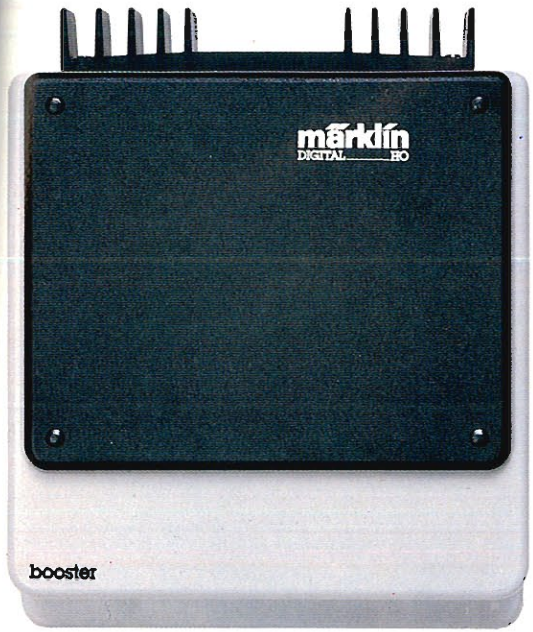
The transformer supplies current for Märklin Digital layouts. With an output of 52 VA (42 VA in the USA), the transformer supplies the electronic components of the digital system as well as all locomotives, switches and signals with power. The Digital components use an insignificant amount of current, thus leaving virtually the entire output available for the layout.

Energy requirements
for locomotives: approx. 10 VA (only when in operation)

for switches, signals: approx. 6 VA (only when activated)

for light bulbs: approx. 1.5 VA

Note: 1 VA = 1 watt

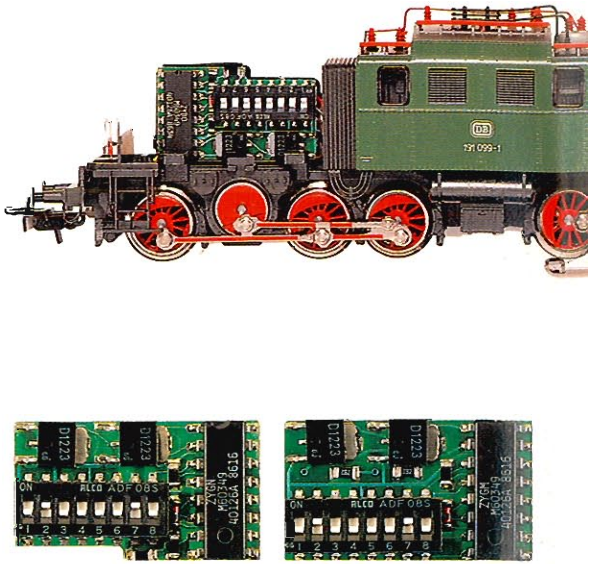


Booster

On large layouts, when the power requirements exceed the output of the Central Unit, additional power can be supplied to a part of the layout using the Booster and another transformer. In principle, any Märklin transformer supplying 16 volts and at least 30 VA can be used to power Märklin Digital layouts.

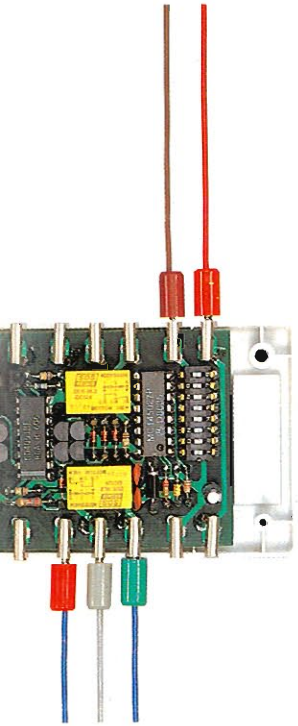
Locomotive Control

With a Control 80 (locomotive throttle) up to 80 locomotives can be called up and operated independently of each other on a layout. The number of the engine called up is indicated on the Control 80 by a two digit display. Up to 10 Control 80's can be connected to each other. Any locomotive can be called up and operated by any Control 80. When calling up another locomotive number, the locomotives called up previously retain the commands last sent to them – i.e. speed, direction of travel and auxiliary function. Thus, several Digital H0 locomotives can be operated with a single Control 80. Each digital locomotive can have an auxiliary function – lighting, smoke, TELEX couplers – activated by the Control 80. Interior lighting and end marker lights on cars used on a digital layout will burn with constant brilliance. After pausing at a signal, the digital locomotives will preceed according to the last command transmitted to them. The emergency button will stop all locomotives immediately.



Locomotive Decoder

Märklin Digital H0 locomotives can also be operated on conventional layouts. Conventional Märklin locomotives can be retrofitted with the decoder c 80 for digital operation. Also, locomotives with a DC motor and third rail pickup shoe can be converted with the decoder c 81 to Märklin Digital by your Digital dealer. The c 80 and c 81 decoders are equipped with a set of 8 coding switches with which each locomotive can be individually coded with an address. The codes can be changed at any time. The coding switches are used to set an address between 01 and 80 which is then called up from the Control 80.

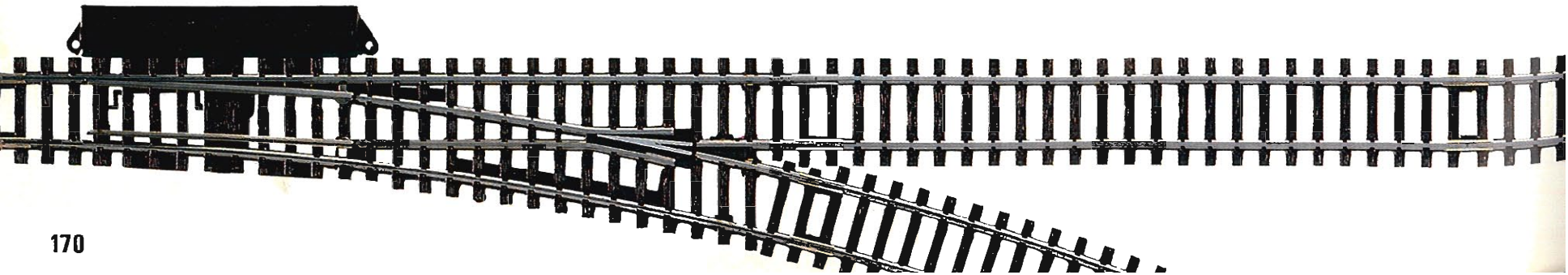


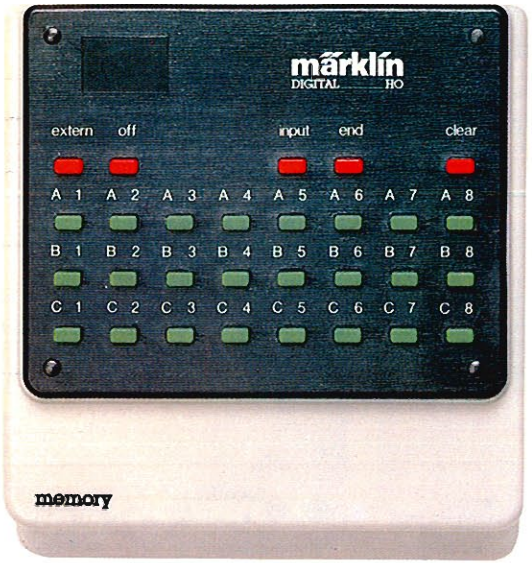
Switch and Signal Control

Up to 16 solenoid accessories (switches, signals or uncoupler tracks) can be controlled using the Keyboard with its 32 buttons. Up to 16 Keyboards can be connected to a Central Unit. Thus, up to 256 switches or signals can be connected to Märklin Digital. The settings for the solenoid accessories are indicated by LED's. The last setting entered for a solenoid accessory remains stored in the Keyboard after the power to the layout is shut off.

Switch and Signal Decoder

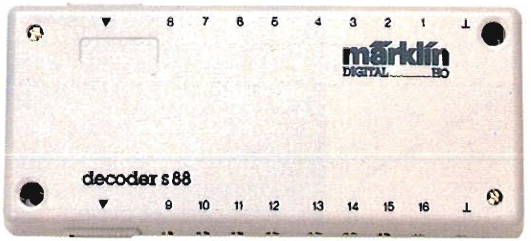
Four k 83 decoders (for switches and signals) or k 84 decoders (for continuous contact) can be controlled from a Keyboard. The built-in coding switches for the k 83 and k 84 decoders are used to set the decoders to the Keyboard addresses. A k 83 decoder activates 4 switches or signals by means of a momentary impulse. With the k 84 decoder, 4 motors or banks of lighting, for example, can be turned on and off with the built-in relays.





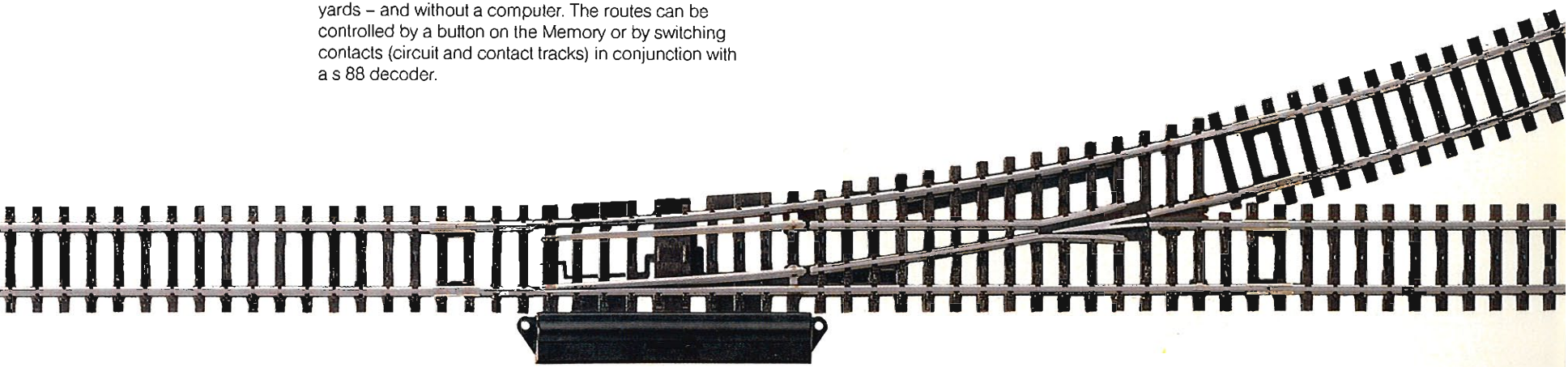
Route Control

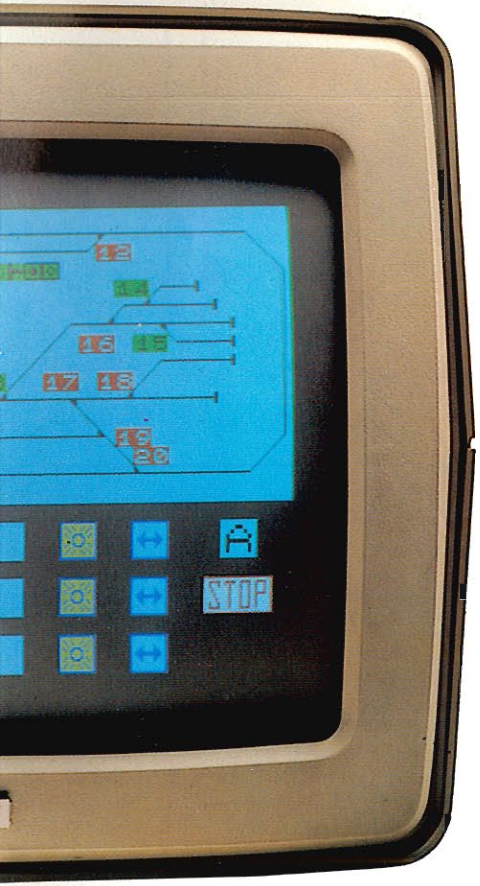
Memory is a digital routing control unit. Memory makes possible the control of switches and signals along given routes independently of the computer. Memory opens up many new model railroading opportunities on digital layouts, for example, the planning of a prototypical routing concept, automatic block control operation and the control of switches and signals in staging yards – and without a computer. The routes can be controlled by a button on the Memory or by switching contacts (circuit and contact tracks) in conjunction with a s 88 decoder.

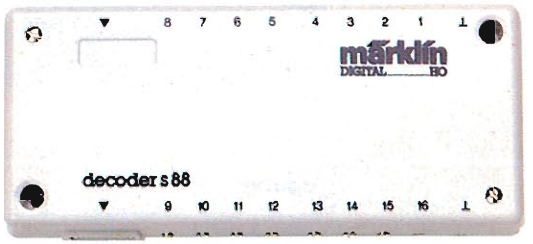


Track Detection Module

Each Memory can store up to 24 routes. Each route can store up to 20 settings for switches or signals. When a route is selected, the switches and signals involved in it align themselves in succession one after another. Routes can be extended to any length by means of automatic interlinking. Thus, route length is variable. The settings for switches and signals can be entered with a Keyboard or the Switchboard (the link to a track diagram board). The routes can be programmed and changed as desired. An interlocking feature can be selectively turned on. Interlocked routes are protected against other routes being called up which adjoin or intersect them in any way. The programmed routes remained stored even in the event of alterations and can be called up at any time. Memory is a decisive step towards universal digital control of all model railroad gauges and systems.







Computer Hook-up

The Interface is the link between a computer and a Märklin Digital model railroad layout. With the serial interface connection, a hook-up is possible to almost any computer system. The s 88 decoder (Track Detection Module) is used to transmit data about the settings of circuit tracks and track contacts via the Interface to the computer. Now you can program as many schedules as you wish. With circuit tracks and track contacts as the controlling element, all sorts of automatic train operations are possible. Other locomotives and solenoid accessories can be manually operated with the Control 80 (locomotive throttle) or Keyboard (switch and signal controller) at the same time as the computer is used to control trains. Your Märklin Digital dealer has information about software as well as connecting cables for the more popular computers.

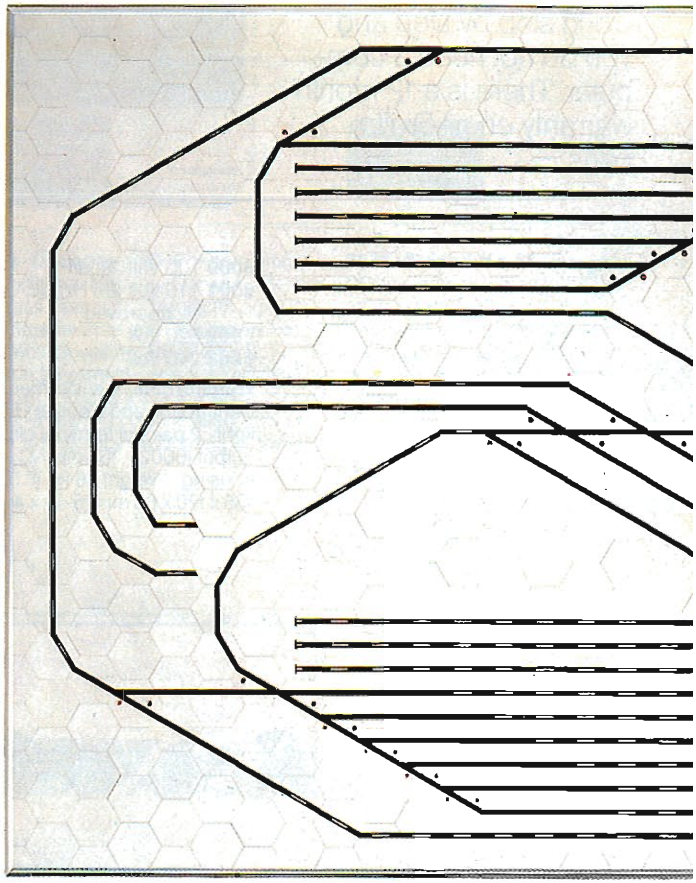
Track Detection Module

Track Diagram Control Board Hook-Up

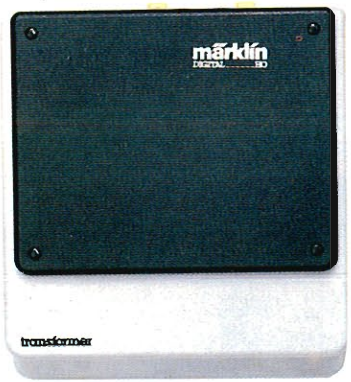
The Switchboard is the link to many of the commercially available track diagram control boards. It carries out the exact same function as a Keyboard, only the buttons and indicators are now on a track diagram control board. A Switchboard can be used along with a Keyboard or it can replace a Keyboard. It is connected to the left side of the Central Unit with an adapter cable. The Switchboard is very flat so that it can be installed in the base of the track diagram control board. Each Switchboard can handle the circuit for 16 solenoid accessories. 5 sockets are provided for each solenoid accessory:

Three are for the control buttons/levers. The remaining two are to provide power to the lighting on the track diagram control board for each individual controller. The lighting sockets can have their own source of power separate from that of the controller sockets, so that they do not rob power from the Digital circuit.

Bulbs and LED's in the track diagram control board can be provided with power as well as controlled with Märklin Digital commands.

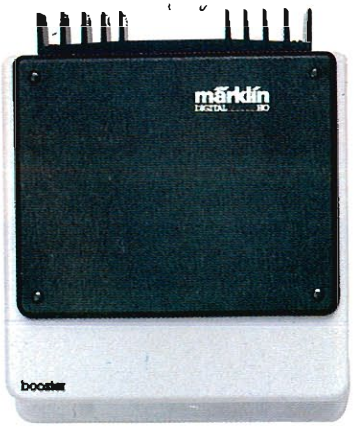


You do not have to install the entire system all at once to operate the model railroad of the future. You can expand your Digital world step by step and you do not need a computer. There is a 12 month warranty on all Digital parts.



6000 100 Volt Japan
6001 110 Volt (60 Hz) USA · 42 VA · UL approved
6002 220 Volt
6003 240 Volt

Transformer · Transformer to power Central Unit and Booster · LED pilot light · 2 pairs of terminal clips · 52 VA output (6002) · 16 volts AC · Plastic housing · Weight 1.6 kg (3.52 lb.) · Size 135 x 120 x 80 mm (5-½ x 4-⅞ x 3-½")



6015 · **Booster** · Signal booster for sections of large, digitally controlled layouts · Output current up to a maximum of 2.5 amps · LED pilot light · Two pairs of terminal clips, one for track and one for transformer · One connecting socket for Central Unit and for additional Booster · One adapter cable for connecting to Central Unit · Size 135 x 120 x 80 mm (5-½ x 4-⅞ x 3-½")

6043 · **Memory** · Route control unit · Stores the settings of digitally controlled accessories (switches and signals) for up to 24 routes for immediate access · Routes can be programmed from the Keyboard or Interface · Direct call-up using buttons or track detection contacts · LED's indicate route availability · Socket for s 88 decoder · Routes remain in memory storage even when the layout is turned off · Size 135 x 120 x 80 mm (5-½ x 4-⅞ x 3-½")

6040 · **Keyboard** · Controller for 16 double solenoid (switches, signals) or 32 single solenoid (uncoupler tracks) accessories · LED's indicate settings of switches or signals · Group of 4 coding switches which can be set to control a particular group of 16 solenoid accessories · The last LED setting entered remains in storage when the layout is turned off · Size 135 x 120 x 80 mm (5-½ x 4-⅞ x 3-½")

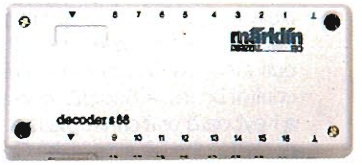
N

2600 100 Volt Japan
2601 110 Volt (60 Hz)
2602 220 Volt
2603 240 Volt

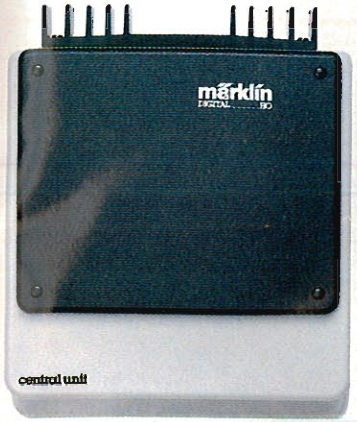
Digital Starter Set · 2 Freight Trains with Large M Track Layout and Transformer · Contents: diesel-hydraulic switch engine class 260 with TELEX couplers, 3665, tank locomotive class 89 with headlights, 2 low side cars 4423, 1 gondola 4430, 1 container car, 14 sections of 5100 curved track, 4 sections of 5106 straight track, 1 section of straight track 5107, 1 feeder track 5111, 1 uncoupler track 5112, 1 pair of 5140 switches, 6 sections of 5200 curved track, instruction book · 1 Central Control (combining Keyboard, Central Unit and Control 80 functions) for operating 4 solenoid accessories and 4 Digital locomotives with an auxiliary function and fixed addresses · All Digital components can be connected to the Central Control for expansion · Decoder is already built into the switches and uncoupler track · 1 Transformer with an output of 52 VA (42 VA in USA) · Set can be expanded with entire M track program · The digital entry into model railroading

6083 · **Decoder k 83** · Decoder panel for switches, signals or uncoupler tracks on Märklin Digital model railroad layouts · For 4 double or 8 single solenoid accessories · 4 triple sockets for accessories · 2 pairs of sockets for connecting to the track or another decoder · Coding switches which can be set for any of a number of possible addresses · Size 22 x 54 x 100 mm (1 x 2 x 4")

6084 · **Decoder k 84** · Decoder panel for switching on and off any kind of illumination, motors and other electric accessories on any digital layout · 4 triple sockets with potential-free on/off switches · 2 pairs of sockets for connecting directly to a Central Unit, to the track or to other k 84 or k 83 decoders · Coding switches which can be set for any of a number of possible addresses · Size 22 x 54 x 100 mm (⅞ x 2 x 4-¼")



6088 · **Decoder s 88** · Track detection module for contact/circuit tracks on Märklin Digital model railroad layouts · Works in conjunction with a Memory unit or Interface and a computer · Special cable for connections to Memory or Interface · Connections for additional s 88 decoders · 16 sockets for contact connections · Size 23 x 54 x 124 mm (1 x 2-¼ x 5")



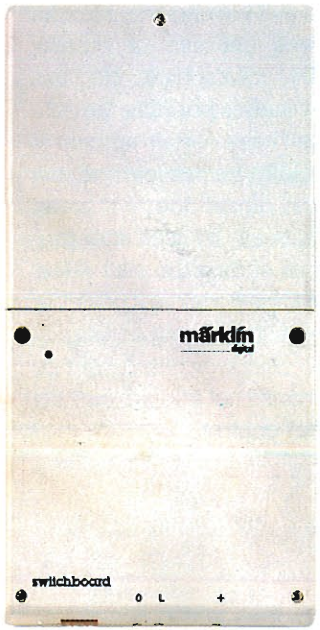
6020 · Central Unit · Supplies the layout with power and command controls via two wires · 2 pairs of terminal clips for connections to the transformer and track · 2.5 amps maximum output · LED pilot light · Size 135 x 120 x 80 mm (5-½ x 4-⅞ x 3-½")

6035 · Control 80 · Locomotive throttle controller · Controls up to 80 digital locomotives · 10 key buttons for entering locomotive addresses · Two-digit LED indicator display · Buttons for emergency stop and resumption of operation · On/off switches for auxiliary function · Size 135 x 120 x 80 mm (5-½ x 4-⅞ x 3-½")

6050 · Interface · For connecting with a computer · Serial interface connection RS 232 C (V.24), can be switched to TTL level · Positive or negative logic can be used · Socket for connecting to computer · Socket for connecting to s 88 decoder · Size 135 x 120 x 80 mm (5-½ x 4-⅞ x 3-½")

6080 · Decoder c 80 · For converting conventional Märklin H0 locomotives to digital operation · Replaces conventional reverse unit · Set of coding switches for setting adresses · Connection for remote controlled auxiliary function · Size 36 x 21 x 9 mm (1-⅞ x 13/16 x ⅜") · Guaranteed only when installed by authorized Digital dealers

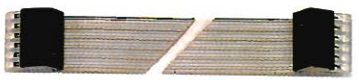
6081 · Decoder c 81 · For converting DC powered engines to "third rail" center stud digital operation · Replaces existing reverse unit · Set of coding switches for setting addresses · Connection for remote controlled auxiliary function · Size 36 x 21 x 9 mm (1-⅞ x 13/16 x ⅜") · Guaranteed only when installed by authorized Digital dealers



6041 · Switchboard · Digital link to track diagram control boards by other manufacturers · Keyboard functions transferred to track diagram control board · 16 five position sockets for switches, signals and illuminated indicators on track diagram control board · Track diagram control board can be powered directly from the Switchboard · Switchboard connects to Central Unit, Keyboard or Memory with Adapter 60 or Adapter 180 using the multipin connections on the unit's right side · Coding switches which can be set in various ways for allocation of specific groups of solenoid accessories · Settings shown on track diagram control board are stored after power to the layout is shut off · Size 210 x 110 x 32 mm (8-¼ x 4-5/16 x 1-¼")

6038 · Adapter 180 · Extension cable for remote installations of Control 80 or Keyboard or Memory units · Flat ribbon cable with 2 multipin connectors for the side sockets on Digital components · Length 180 cm (71")

6039 · Adapter 60 · Extension cable for remote installations of Control 80 or Keyboard or Memory units · Flat ribbon cable with 2 multipin connectors for the side sockets on Digital components · Length 60 cm (23-½")



6089 · Adapter s 88 · Extension cable for use between s 88 track detection modules, Memory or Interface · Flat ribbon cable with multipin connectors · Length 200 cm (78-¾")

0303 · Digital Book · Contents: All components of the Märklin Digital system · How does Digital work? · From the decoder panel to the control panel to the track detection unit · Directions for using a computer with the Digital system · Possible prototypical applications of the Digital system, for example: signal block and staging yard operation · Examples of circuits and control systems for model railroad equipment of different gauges, systems and manufacturers · English text

(continued from page 167)

grammed, signals give the "high ball" or switch engines are set in motion to perform uncoupling and switching maneuvers. Also, if Klaus makes a mistake while using the computer, it does not just simply show up as an incorrect printout from the printer. Rather, it may happen that a collision or accident occurs on the layout. The learning experience is considerably greater in this way.

Theoretically, it would even be possible for Mr. Huber to test digitally beforehand on his son's model railroad what he does in real life in his daily work. Now he will probably not have enough space in the railroad and computer room to model true-to-scale the entire area controlled from his signal tower. A kilometer (.625 miles) is a normal length for a small yard, but it comes out at 11.5 meters (37' 9") on an H0 layout at a scale of 1 : 87.

What Klaus notices when he makes a mistake and what his father could theoretically do with the layout and the computer, come together in the learning system "Märklin train-ing". This has given Märklin a digital entry into the information systems curriculum in schools. The teachers use the linkage of the digital control of a model railroad with the possibilities of a home computer to demonstrate to their students how computers, programs and programmers are influencing the work patterns in all areas of daily life.

Everything is integrated in a complete didatic concept which uses the idea of "playing" to achieve success in learning with a model railroad and a computer. It encompasses not only the hardware – i.e. track, switches and locomotives as well as controls, interface and transformer – but also instructions, series of tasks and teaching units. As an aid there is a package of disks with installation and test programs as well as disks for tasks and learning units.

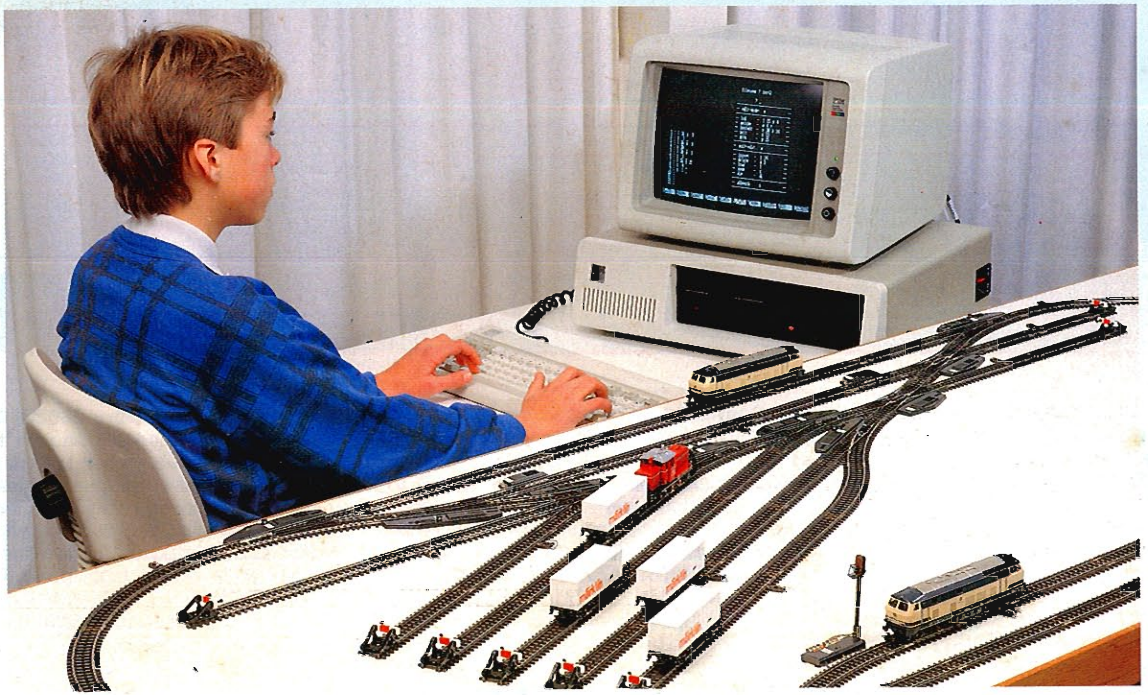


Photo: Märklin

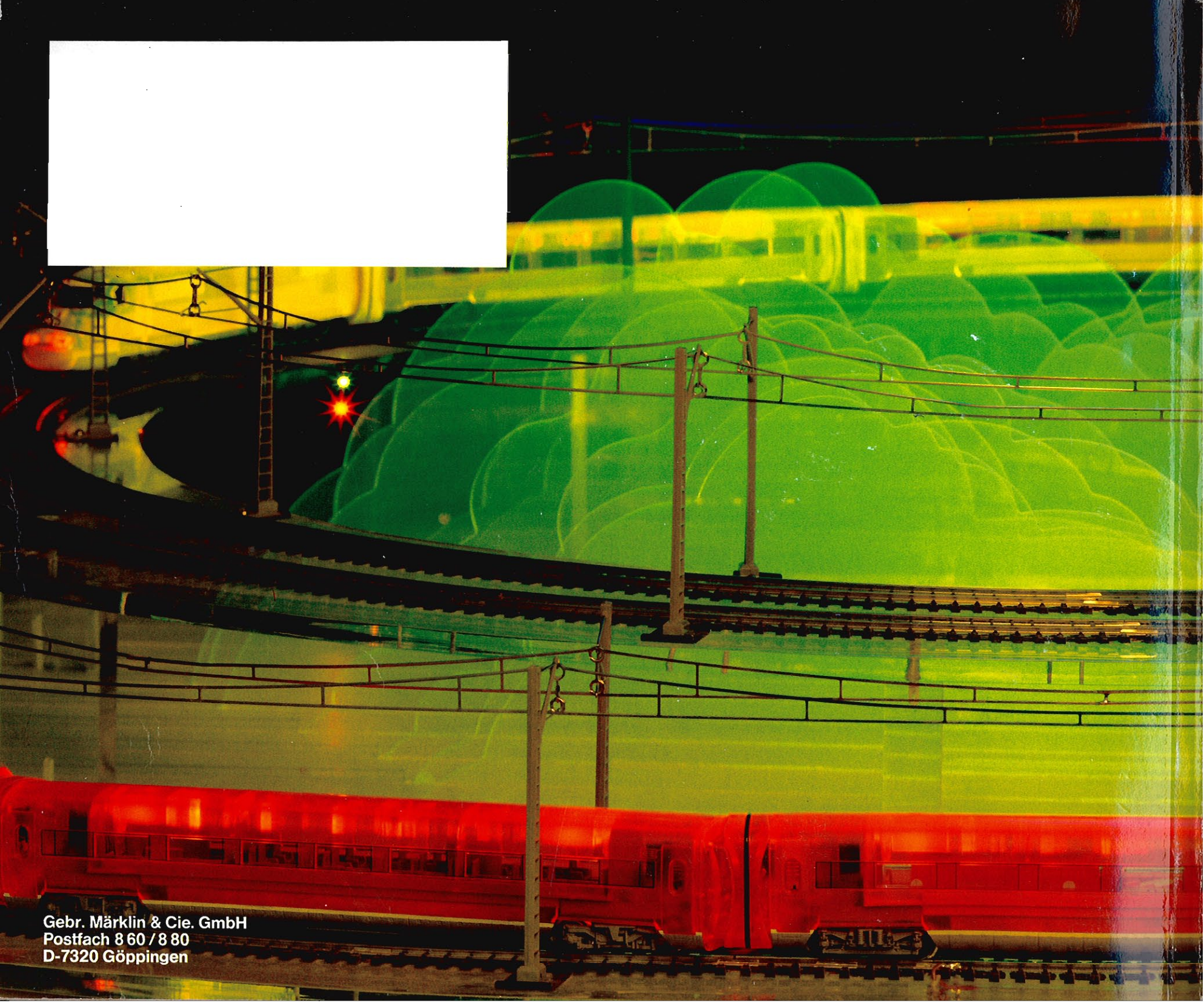
Train-ing: Märklin Digital in schools

As early as the beginning of 1987 model railroads were made a part of the curriculum in more than 30 schools in the federal states of Baden-Württemberg, Rhineland Palatinate, Lower Saxony and North Rhine-Westphalia in order to provide content for instruction on technology and information systems that is based on practice and oriented toward problem-solving in a way that is vivid and attractive.

Klaus' contempories will not be thrust relatively unprepared into the computer age on leaving school as was the case with previous generations. Rather, they have already completed learning programs which have shown them how control technologies are mastered by the computer, the latter in turn being controlled by human beings.

He has also learned that playing with Märklin Digital by itself involves the use of current impulses controlled by microchips. He has learned that the Memory makes possible the control of processes and itself has a certain amount of storage capacity. And finally, he has learned that the joining of railroad and digital does not mean that the railroad runs practically by itself after programming is finished, thus ending the play value. On the contrary, Märklin Digital makes it possible to master complex operations without constantly producing monumental chaos on the layout or paralyzing parts of it because not enough circuits or hands are available for control.

Text: Thomas Rietig



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