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NEW ROLLING STOCK

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The motive power stock, coaches, wagons and service vehicles presented in the following pages are only a part of the wide range of rolling stock of modern design and new construction that the F.S. have studied, ordered and partly brought into service to potentiate their stock. Others will follow in the near future.

For each of the new rolling stock units brief pieces of information are given: however, some considerations of a general character can be given by way of introduction as these considerations have guided the entire production.

In the first place, the railway aims at raising all the characteristics that summarise a good transport service: speed and comfort, as well as, naturally, safety.

In various combinations, these characteristics are found to a high degree in the new units.

The electric locomotive E 444 can haul at 180 k.p.h. some ten vehicles weighing about 450 tons and with about 550 passengers; the Diesel-electric locomotives D 443 and D 343 will make an important contribution to the progressive elimination of team traction on the non-electrified lines, ensuring a performance very close to that of electric traction.

The coaches have a greater space available for each passenger; they are smoother and quieter running compared with previous types: the most outstanding improvement concerns 2nd class, in which the space in each compartment is divided between six seats instead of eight. The position of the seats (facing seats can be drawn together to give a more restful journey), heating, ventilation, panoramic windows, lighting, hygienic services are all in line with the best European standard.

Rolling stock is also being adapted to the demand of senders. The larger average dimensions permit a more economical utilisation of the vehicles — especially for full wagons loads — whilst the extension of bogie types makes it possible to haul freight train at higher speeds (up to 120 k.p.h.); the many systems of opening (wide side or end doors, roller or sliding roofs, etc.) permit easy and fast loading.

The automatic coupling, already applied experimentally to some vehicles, is a factor of decisive importance for a wider application on the railway of automation and cybernetics, able to greatly speed and improve the service and increase its efficiency.

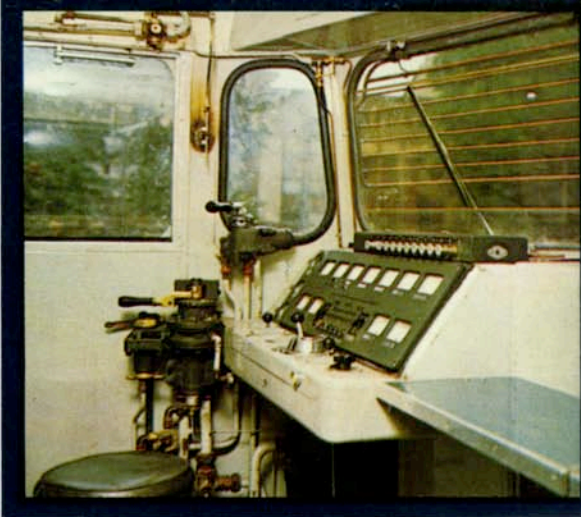
Naturally, the effort being made to improve the rolling stock would be quite useless if the stock were to be used on qualitatively unsuitable lines: and for this reason, the F.S. are increasing the capacity of the lines by rectification, track doubling, modernisation of the permanent way, application of automation to the systems of train routing, signalling and safety.

These works thus represent a pre-eminent part of the Ten-year Plan for the improvement of the Italian railway network, now on the threshold of the second

five-year period; its objectives will be reached with scrupulous punctuality, as was the case for the first five-year period, 1962-67.



**ELECTRIC
MAIN-LINE
LOCOMOTIVE**
Group É 444

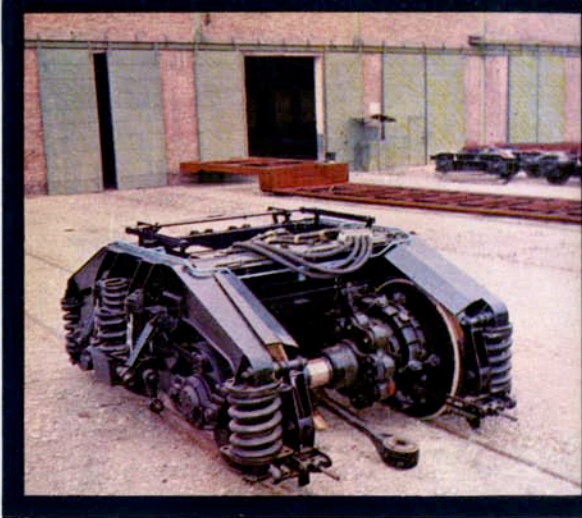


Direct current, 3 kv. Maximum speed 180 k.p.h., length 16.80 m. weight 80 tons., 2 bogies with four 750 kw. motors; tractive effort at maximum speed 5,000 kgs., rheostat braking.





LOCOMOTIVE
DIESEL-ELECTRIC



**MAIN-LINE
DIESEL-ELECTRIC
LOCOMOTIVE**
Group D 443

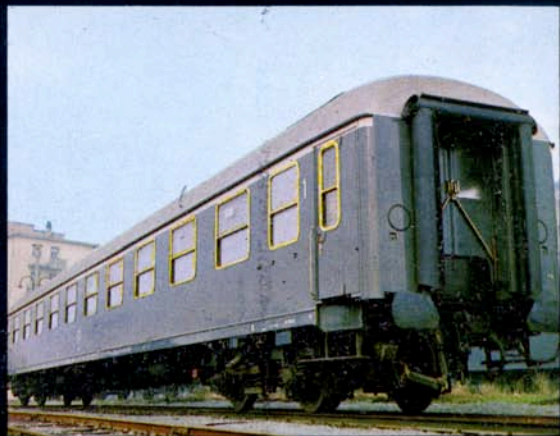
Maximum speed 130 k.p.h., length 14.10 m., weight 69.5 tons. Diesel engine Fiat 2312 - SSF or Breda 12YLCL, 4,000 h.p., 4-stroke direct injection, supercharged, intermediate cooling of supercharger air. Autonomy on level lines, 700 kms.





Suitable for speeds up to 200 k.p.h.. Length 26.40 m., tare 41 tons, high-speed brake. 10 compartments with 60 seats, seats in sponge rubber, fluorescent lighting, steam and electric heating with thermostat control in each compartment.

1st CLASS COACH UIC-X
Series Az 15,000



Upholstery: in green printed velvet, mixed wool and polyester fibre, or red wool (in coaches with forced-draught heating) or red synthetic fibre.





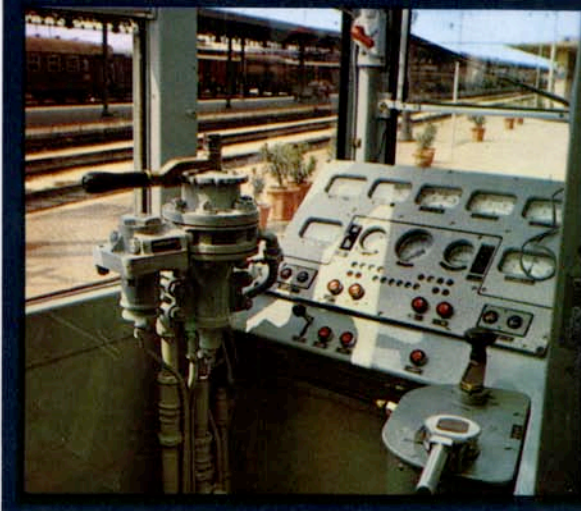


**1st AND 2nd CL. COACH
UIC-X
Series ABz 55,000**

Suitable for speeds up to 200 k.p.h. Length 26.4 m., tare 42.4 tons, high-speed brake, 5 first-class compartments with 36 seats, 9 supplementary folding seats in the corridor. Seats in sponge rubber with red wool velvet in 1st class compartments and with elastic plastified fabric in 2nd class. Fluorescent lighting, steam and electric heating with thermostat control in each compartment.







**2nd CLASS
DRIVING COACH
FOR VICINAL TRAINS**
Series npBdz 68.500

For mass commuter transport; length 26.40 m.. It has a driving cab, a guard's compartment, and a baggage compartment. The height of the floor in the central portion is the minimum possible to facilitate boarding and alighting of passengers. Pneumatic doors operated by the driver; 76 seats distributed in 3 compartments; fluorescent lighting, electric heating.





TYPE CIMT - FOREST
Series Ts 21.83.570.1000

ROLLER-ROOF WAGONS



TYPE
MC GREGOR - COMARAIN
Series Ts 21.83.570.0.100



Derived from standard high-sider open wagon. They have horizontally sliding roofs, consisting in a corrugated steel-plate on the Mac-Gregor-Comarain and in jointed sections on the CIMT-Forest. Length 10,50 m., capacity 48 cu.m., tare 12,5 tons, load 27,5 tons.



COVERED WAGON WITH TILTING ROOF
FS type series Tbs 21.83.571.0.000



Derived from standard covered wagon type 2. It has 4 upper and 4 lower ventilation panels in each side. The roof tilts on both sides, in glassresin: it can thus be used as either closed or open wagon. Length 11.08 m., capacity 64 cu.m., tare 13 tons, load 27 tons.



**HIGH-CAPACITY
COVERED WAGON**

Series Hbcqrs 21.83.213.4.002.6

Derived from standard wagon type 1 with doors at both ends, it is also suitable for loading motor cars. Length 14.02 m., capacity 85 cu.m., tare 14 tons, load 26 tons.

**HIGH-CAPACITY
COVERED WAGON**

Series Hfhs-v 21.83.214.8.000

Ferry wagon (thus also suitable for traffic with Great Britain). Length 14.02 m., capacity 65 cu.m., tare 14.5 tons, load 25.5 tons.



WELL WAGON

Series Uai 20.83.999.7.000-2



For the transport of exceptional loads weighing up to 180 tons. The load is distributed over 4 three-axle bogies, connected in pairs. Length of well, 8.30 m., longitudinal girders giving variable widths from a minimum of 0.88 m. to a maximum of 3.06 m. according to the load. Hydraulic jacks for the transversal and vertical movement of the carrying girder. Tare 88 tons, length 32.40 m., maximum width 3.90 m.

**WAGON
FOR HEAVY LOADS**
Series Uai 21.83.999.1.100

WELL WAGON
Series Uai 21.83.929.4.000



Suitable for exceptional loads up to 128 tons. It is made up of 2 four-axle bogies and two girders connected by two end beams in which are incorporated two hydraulic jacks to raise the girders, and thus the load, by 350 mms. The lower part of the girders can be connected with four transversal carrying beams, thus creating a bed for the load. Tare 32 tons, length 20.39 m., maximum width 3.15 m.

Bogie wagon, for the transport of items of considerable volume and weight. Length of well 10 m. Length 21.44 m. tare 24 tons, load 56 tons.





**COMPOSITE BAGGAGE
AND MAIL VAN**
Series DUz 93,250

Bogie van for internal services. Postal compartment, baggage compartment, compartment for FS crew. Fluorescent lighting, steam and electric heating, and supplementary heating with two stoves. Length 23.61 m., tare 35.6 tons, load 6 tons.



BAGGAGE VAN
Series Dz 80,200



Bogie van with baggage compartment and compartment for FS crew. Fluorescent lighting, electric and steam heating. Length 23.61 m., tare 36 tons, load 12 tons.

**COMPOSITE BAGGAGE
AND MAIL VAN**
Series DUI 97,100

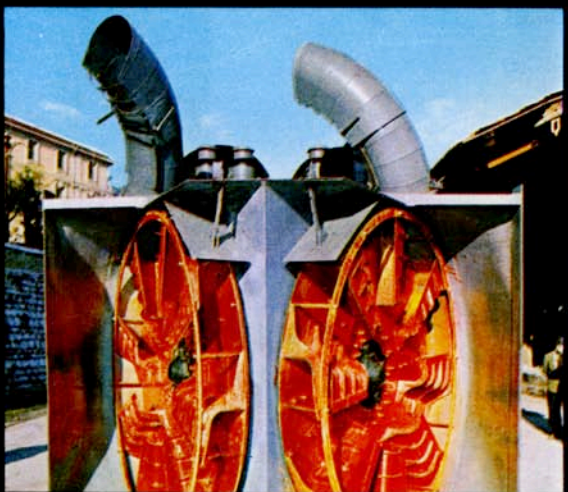
Two axles, for light internal services. Postal compartment, baggage compartment, compartment for F.S. crew. Incandescent lighting, steam and electric heating. Length 12.35 m. tare 18.3 tons, load 5 tons.



ROTARY SNOWPLOW



Formed by a rubber-tired tractor equipped with a 110 h.p. Diesel engine, four-wheel drive, carrying two coupled frontal rotors driven by two 120 h.p. Diesel engines. Rotors variable according to the type of snow. Clearing capacity 750-800 tons per hour. The snowplough is loaded on a flat bogie wagon suitable for speeds up to 80 k.p.h., fitted with a ramp for the tractor: it is thus carried on the wagon as near as possible to the point where it will be used; it leaves the wagon under its own power and attacks the snow from the most convenient side.

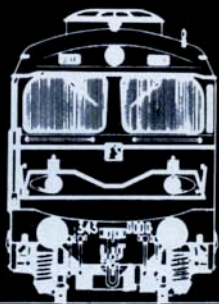
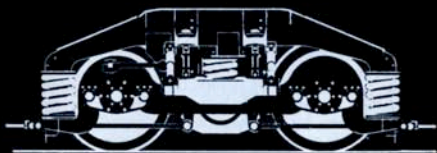
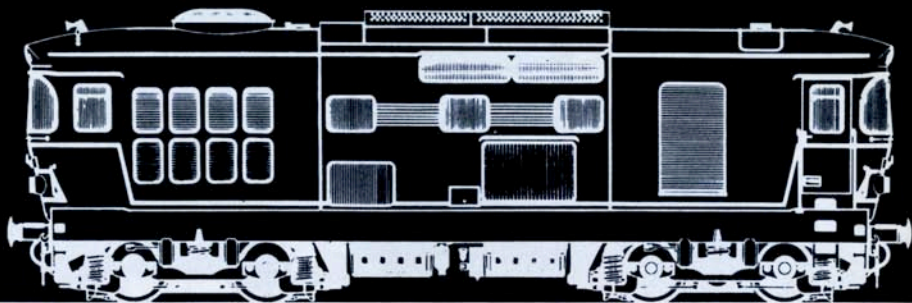


SELF-PROPELLING HYDRAULIC CRANE



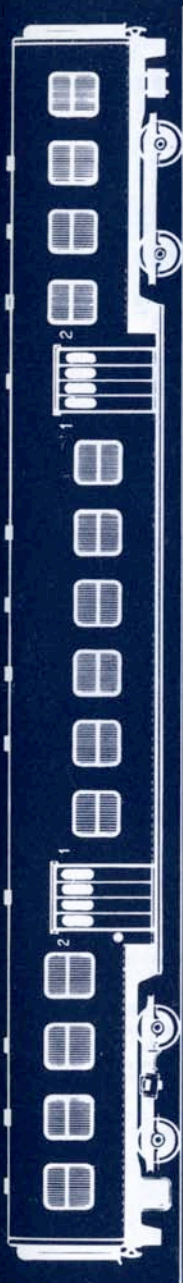
Vehicle on tyred wheels, with two Diesel engines of 180 h.p. Able to travel over very rough ground. The mobile jib, mounted on a turntable and movable along the longitudinal axis, is driven by a Diesel engine and — contrary to traditional cranes — lifts from below instead of from above, thus remaining within gauge. Maximum lift 50 tons, which can be raised to 70 tons by blocking the jib with special jacks. It has winches for vertical lift and horizontal haul. It is taken to the site on a wagon with twin three-axle bogies which can be hauled at the maximum speed of 80 k.p.h.





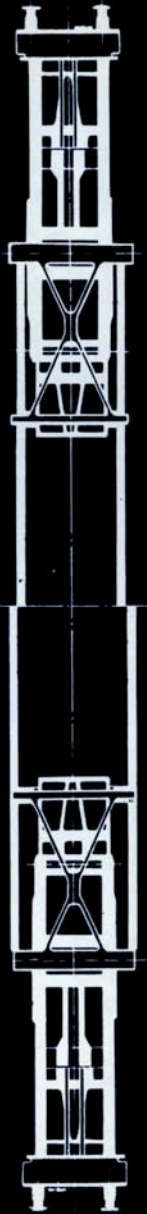
DIESEL ELECTRIC MAIN-LINE LOCOMOTIVE Group D 343

Maximum speed 130 k.p.h., length 13.24 m., weight 59.65 tons. Engine: Fiat 218 SSF or Breda Isotta Fraschini 12 JCL 1,500 h.p., 4-stroke, direct injection, supercharged, intermediate cooling of supercharger air. Autonomy on level lines 650 kms.



1st AND 2nd CLASS COACH FOR VICINAL TRAINS Series nABz 68.600

The main characteristics are those of the driving coach np8Dz 68.500. In the available space, which is greater in the absence of the driver's cab, the guard's compartment and the baggage compartment, there are 100 seats, 44 first class and 56 second. The similar all second class coach also has 100 seats.



HIGH-CAPACITY WELL WAGON

Series Uai 20.83.999.6.000-3

For the transport of exceptional loads weighing up to 150 tons. The load is distributed over 4 three-axle bogies, connected in pairs. The longitudinal girders have a variable spacing from a minimum of 2.47 m. to a maximum of 2.65 m. Hydraulic jacks for the transversal or vertical movement of the load, which can be carried out either on the upper wings of the girders or on the transversal beams connecting the lower wings. Tare 90 tons, length 30.64 m. maximum width 3.18 m.

AUTOMATIC COUPLING

HEAD — Standard type for all the European railways and able to be coupled with the automatic coupling adopted by the USSR railways.

BREDA-type locking organs with the automatic coupling of two compressed air pipes and the electrical circuits.

SUSPENSION - BREDA-type, with two rest positions; for normal gauge and wide gauge (USSR) networks.

Traction and buffer block, BREDA-type.



Entails the abolition of the traditional buffers; permits tensile loads of up to 150 tons (instead of the present 85 tons) and compression stresses of up to 200 tons. It has the following advantages:

- acceleration and simplification of train composition and splitting operations in the big marshalling yards;
- possibility of forming longer and heavier trains, and thus a better utilisation of motive power, vehicles and lines;
- elimination of manual coupling and, consequently, of the danger of accidents.

