

1 - PURPOSE

The purpose of this leaflet is to specify the method of calculation to be used for determining the nominal power of locomotives or railcars fitted with internal combustion engines.

The nominal power thus calculated shall be the only one used for the requirements of UIC Railways when defining or designing locomotives and railcars with internal combustion engines, in all cases and, particularly, in all documents.

2 - DEFINITION OF THE NOMINAL POWER

The nominal power of locomotives and railcars with internal combustion engines is the maximum power available at the shafts of electric traction motors or at the output shafts of gearboxes, calculated in accordance with Article 3.

3 - CALCULATION OF THE NOMINAL POWER

3.1 - The nominal power of locomotives and railcars with internal combustion engines is calculated on the basis of the maximum service outputs of the internal combustion engines supplying the tractive power; this maximum service output is defined in § 2.4 of leaflet 623 or in § 4 of leaflet 631.

3.2 - In order to obtain the nominal power, the quantities listed below are deducted from the sum of the maximum service outputs of the internal combustion engines supplying the tractive power for the locomotive or railcar :

3.2.1 - The sum of powers supplied by these internal combustion engines to directly or indirectly driven auxiliaries, e.g. devices other than the equipment transmitting the power to the axles. The power supplied for engine auxiliaries

already taken into consideration in the effective rating of the internal combustion engine, as defined in § 2.2 of Leaflet 623 or in § 4 of Leaflet 631 is not deducted. Each auxiliary is presumed to absorb its minimum power compatible with the operation of the engines at their maximum service output.

In accordance with general practice, this power is taken, for each auxiliary, as equivalent to two-thirds of the power shown on the characteristic curves for the devices, at a rotational speed corresponding to the full service output for the main engines. However, for auxiliaries driven directly by the Diesel engines, which have a non-adjustable load, the full power is to be deducted.

3.2.2 - Minimum value of the power losses in the actual transmission components when the internal combustion engines develop their maximum service output, i.e. in :

- the main generators and the traction motors of electric transmission systems,
- the gear boxes of non-electric transmission systems.

The minimum value of the losses in a transmission system, when the engine develops its maximum service output, is deducted from the characteristic curves of the transmission system.

In the case of electric transmissions, the characteristic curves are prepared in accordance with the regulations of Leaflet 619.

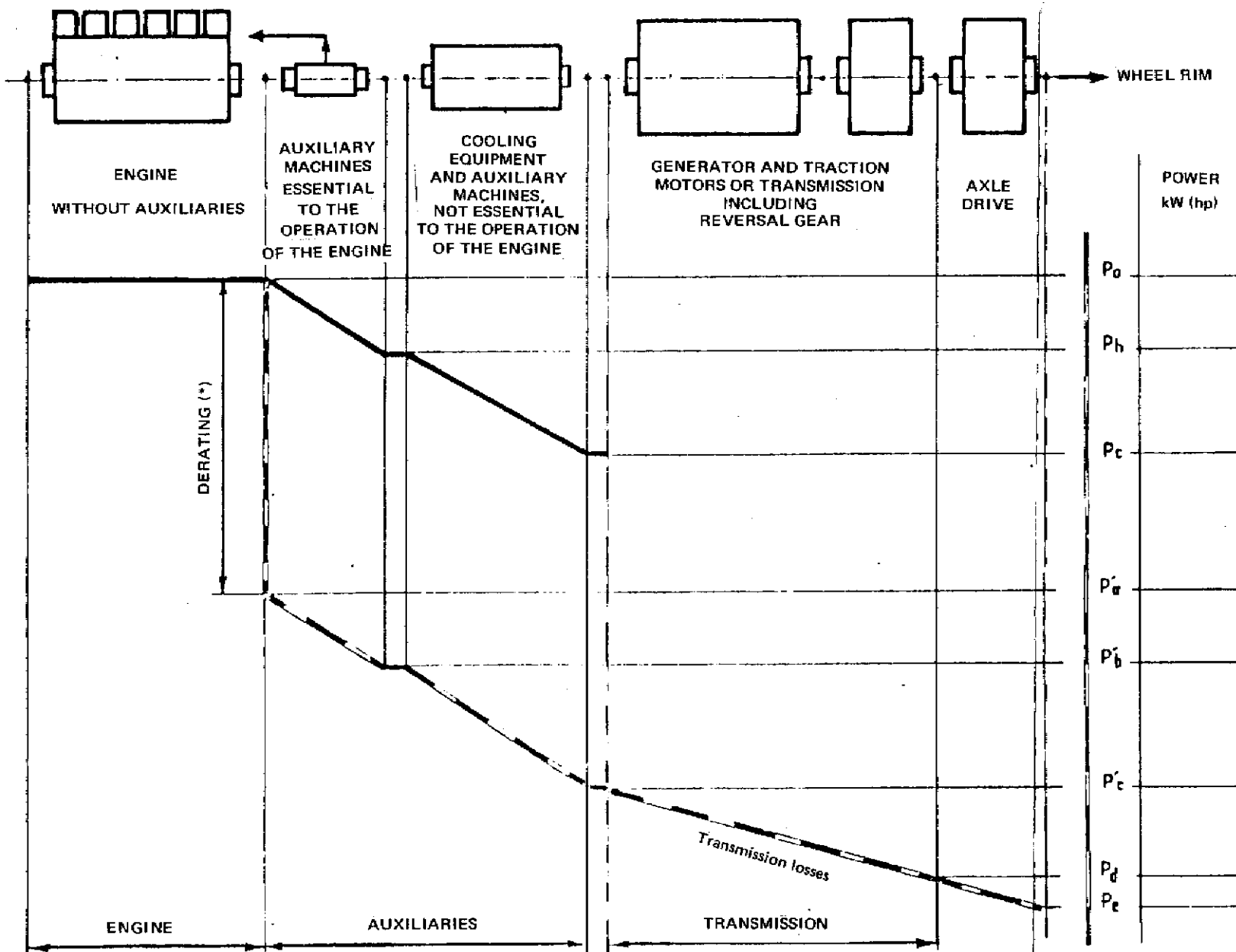
3.3 - The nominal power of locomotives and railcars with internal combustion engines must not exceed the sum of the traction motor outputs at their shafts or the outputs of gear boxes at their output shafts under the following conditions :

3.3.1 - In the case of electric transmissions at the continuous rating of either generators or traction motors,

3.3.2 - In the case of hydraulic transmissions, when they are absorbing their maximum power at the input shaft of the gearbox.

3.3.3 - In the case of mechanical transmissions, when the gearbox transmits its maximum guaranteed power.

3.4 - The appended table specifies the concepts of international rating (UIC Leaflet 623) and maximum service rating (UIC Leaflet 623) of motors, and the nominal rating of locomotives (UIC Leaflet 622).



(*) Derating of engine output may result from :
 1) Site conditions
 2) Physical limits of the transmission
 3) Measures to increase the reliability of the locomotive.

P_h Nominal power (Leaflet 623, § 2.3)
 P'_b Maximum service output (Leaflet 623, § 2.4)
 P_d Nominal power of the locomotive (Leaflet 622)

Nominal power
 Wheel tread power
 POWER OF THE LOCOMOTIVE

Engine Power

APPLICATION

As from 1 July 1980.

All Railways belonging to the Union.

RECORD REFERENCES

Headings under which the question has been dealt with :

- Examination of the possibility of defining the power of the various types of tractive stock (steam locomotives and mechanical, hydraulic and hydro-mechanical Diesel locomotives), in order to show, in the UIC Statistics, comparable values of their tractive capacity as well as that of the whole of the stock.

(5th Committee -R.S.- : Lausanne, June 1952. - Board of Management : November, 1952).

- Definition of the reference output of powered units. Possible amendment of Leaflets 614 and 622).

(5th Committee -M.P.- : Leipzig, May, 1965).

- Addition to Leaflet 622.

(5th Committee -M.P.- : Florence, May 1968).

- Modification of Leaflet 622.

(Working Party 5/B for Diesel Traction : Paris, June 1977).

- *Question 5/B/FIC* : Approval of the new version of Leaflet 622.

(Traction and Rolling Stock Committee : Paris, June 1979).

- Examination of comments on the draft Leaflet 622.

(Working Party for Diesel Traction : Paris, January 1980).