MLW Industries

MLW motive power!

MLW motive power!

3,600 hp M636 with Ferrocarril Del Pacifico in Mexico

Transportation Products of MLW Industries

- Locomotives (new and remanufactured)
- Diesel engines for rail, marine and stationary applications
- High speed rail passenger systems
- Rapid transit rolling stock

MX615 (1,500 hp) built for Malawi Railways.

Cover

Top
2,000 hp MX620 locomotive delivered to Tunisian Railway system.

Centre
M420 model 2,000 hp road locomotive with new control cab and trucks, built for Canadian National.

Bottom
Locomotive for LRC highspeed train developed for modern interurban passenger service.


4503
CP Rail
4574
4574

MLW Industries

An integrated locomotive builder for the world's railroads

MLW Industries is one of three major North American locomotive builders. The initials MLW (for the firm's former name, Montreal Locomotive Works) have been identified with successive generations of motive power designed and built in Canada for North American and overseas railroads since the first decade of the century.

Between 1904 and 1950 MLW produced more than 4,000 steam locomotives, many of them classic models for heavy-duty freight and passenger service in Canada and overseas.

In 1948 MLW manufactured the first Canadian-built production model diesel locomotive. In its first quarter century of diesel electric locomotive production, the company has sold approximately 2,500 units, 30% of them for delivery overseas.

In the late 1960s, in anticipation of the current worldwide growth of demand for high performance motive power, MLW began a vigorous program of modernization of locomotive designs.

Major railways now are operating the versatile high-revenue M-line of domestic locomotives, introduced in 1969, and the equally successful MX export series, in service since 1971.

These are the locomotives described in this booklet. They are a modern generation of motive power arrived at through continuing development of engines, chassis, electrics, interior environmental control and suspension systems. The designs are based on the North American preference for simple, rugged equipment with maximum standardization.

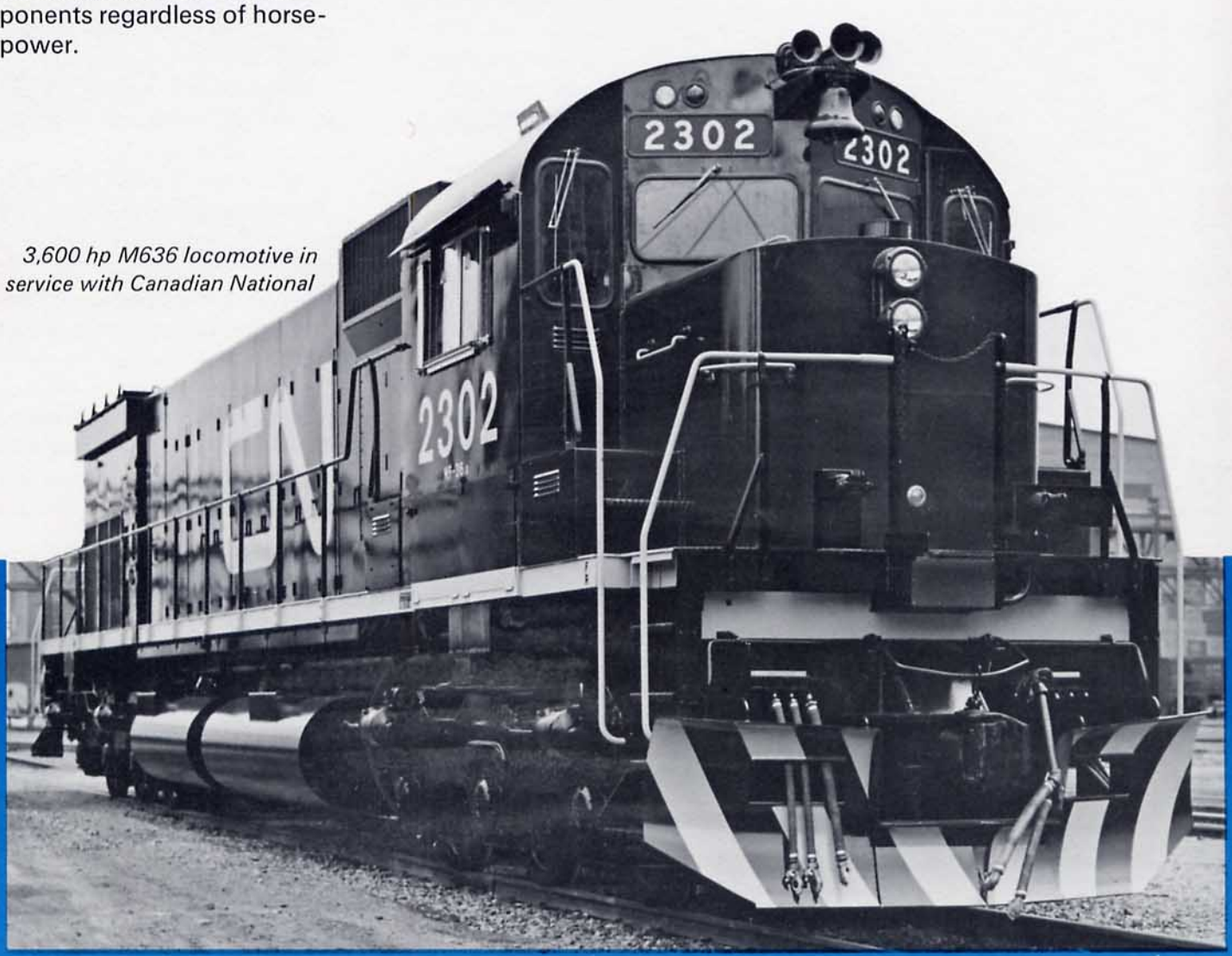
CP Rail coal haul unit train in Canadian Rockies. Locomotives are MLW 3,000 hp M630s.

Modern Machinery keeps the M-line ahead of the field

The M-line of diesel electric locomotives was introduced in 1969 with basic design characteristics that proved immediately successful and have been retained through successive stages of MLW motive power development in the 1970s.

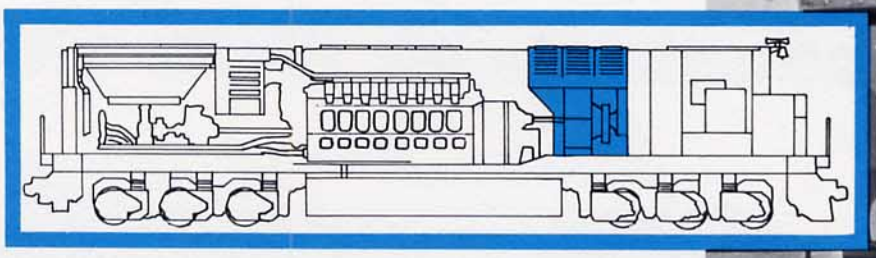
M-line features

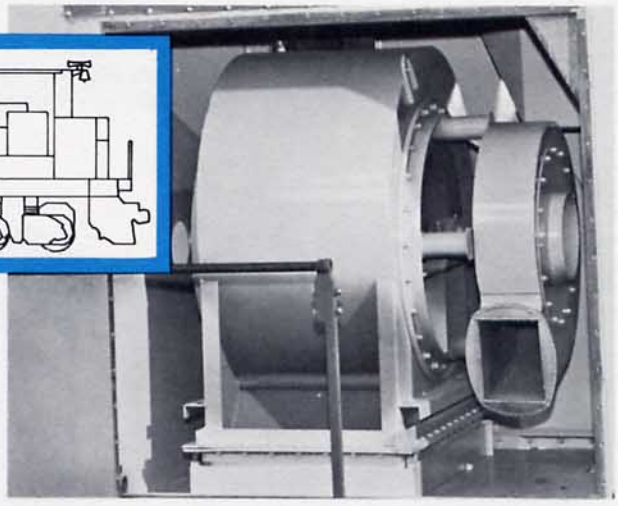
- A high degree of modular design in underframe, electrical compartment, cab and hoods to permit maximum interchangeability of components regardless of horsepower.
- A unitized air brake package.
- Improved flow cooling water and lubricating systems.
- The MLW simplified, centralized air handling and ventilating system.
- A whole new family of suspension systems which include the high-adhesion three-axle truck and the zero weight transfer two-axle unit with revenue-boosting innovations unavailable in any other line of locomotives.
- The new Model 251 diesel engine, prime power source in all MLW locomotives, with intensive ongoing diesel engine research and component improvement, applicable to all new and existing engines.
- Well proven electrics: Canadian General Electric DC and AC/DC transmissions with modern transistorized controls.



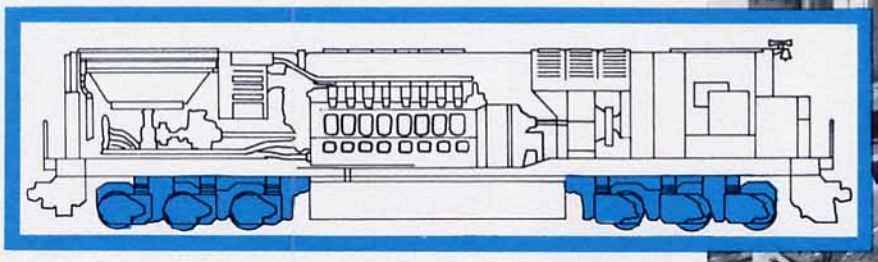
3,600 hp M636 locomotive in service with Canadian National

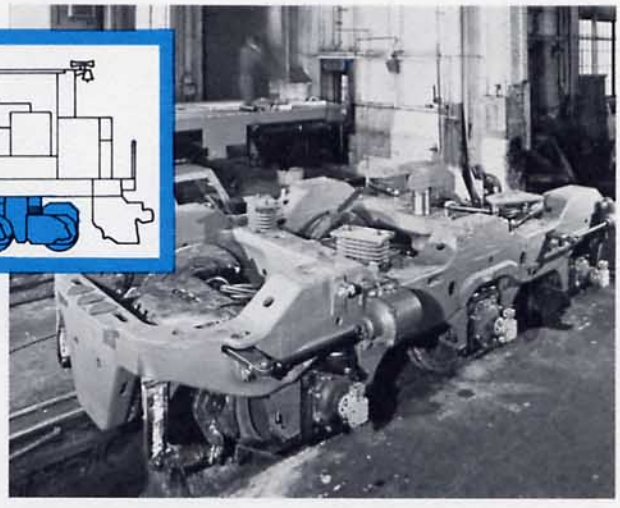
MLW unitized air handling



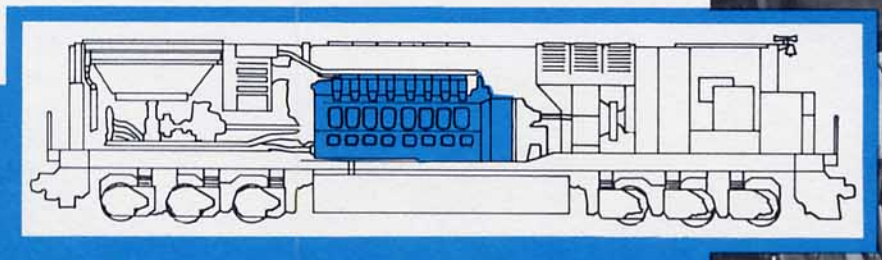


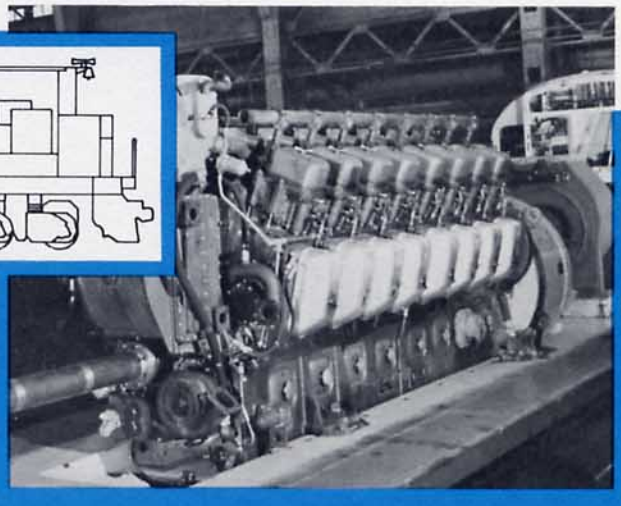
MLW suspension and traction





MLW power and transmission

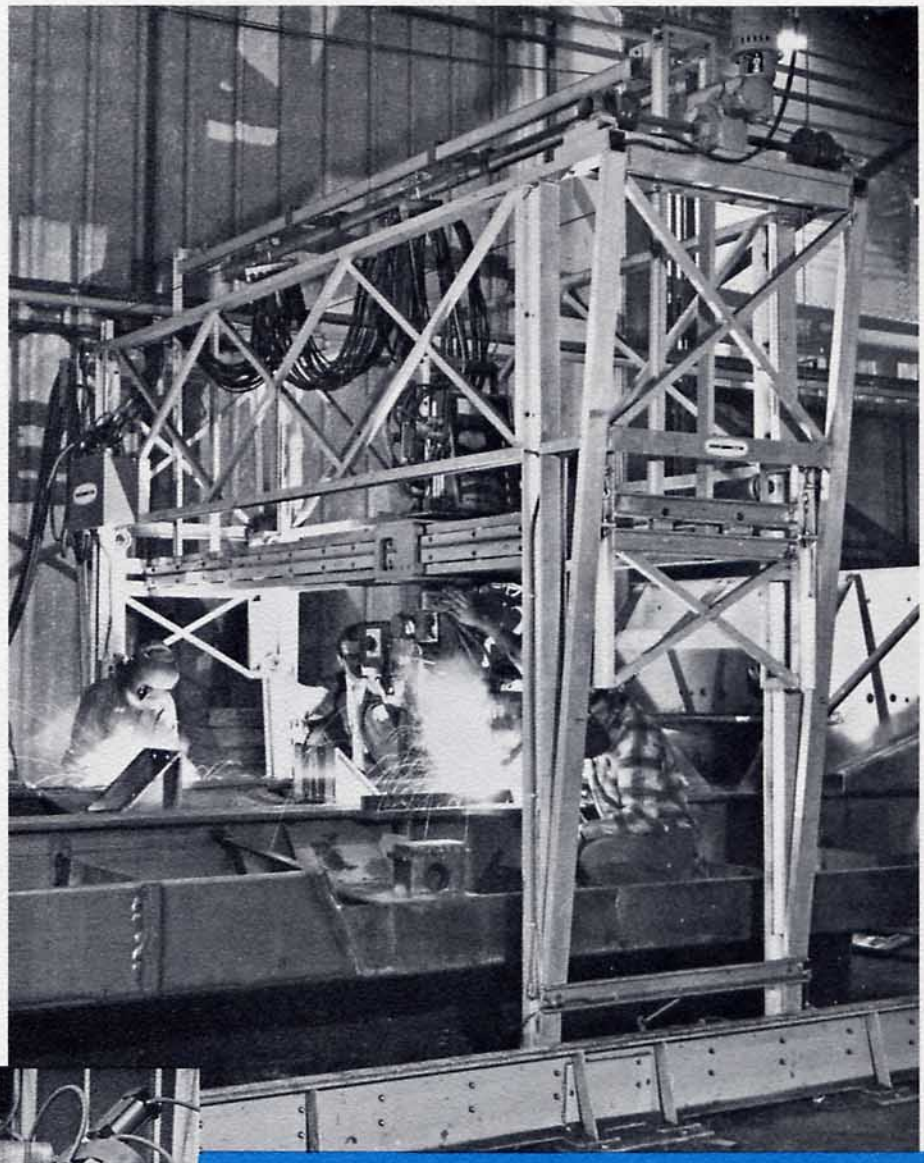




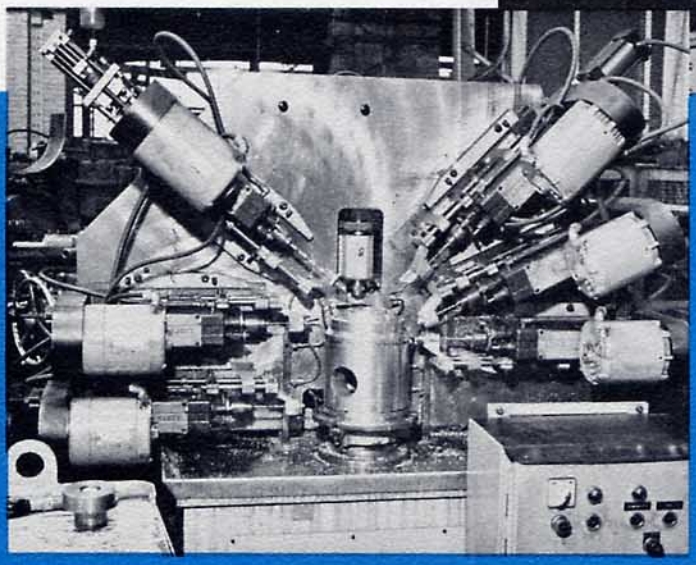
Engineering/Manufacturing integrated productivity

MLW's investment in tooling and new machinery keeps pace with outlays on product development.

Engineering ideas at work are providing MLW's customers with an ever-increasing range of products and parallel advances in productivity are making these engineering achievements available to customers at costs that meet worldwide competition.



Semi-automatic gantry welding machine speeds work on locomotive underframe.



New diesel engine piston nears completion in multi-spindle milling and drilling machine.

Continued leadership in new truck design

ZWT 2-axle truck

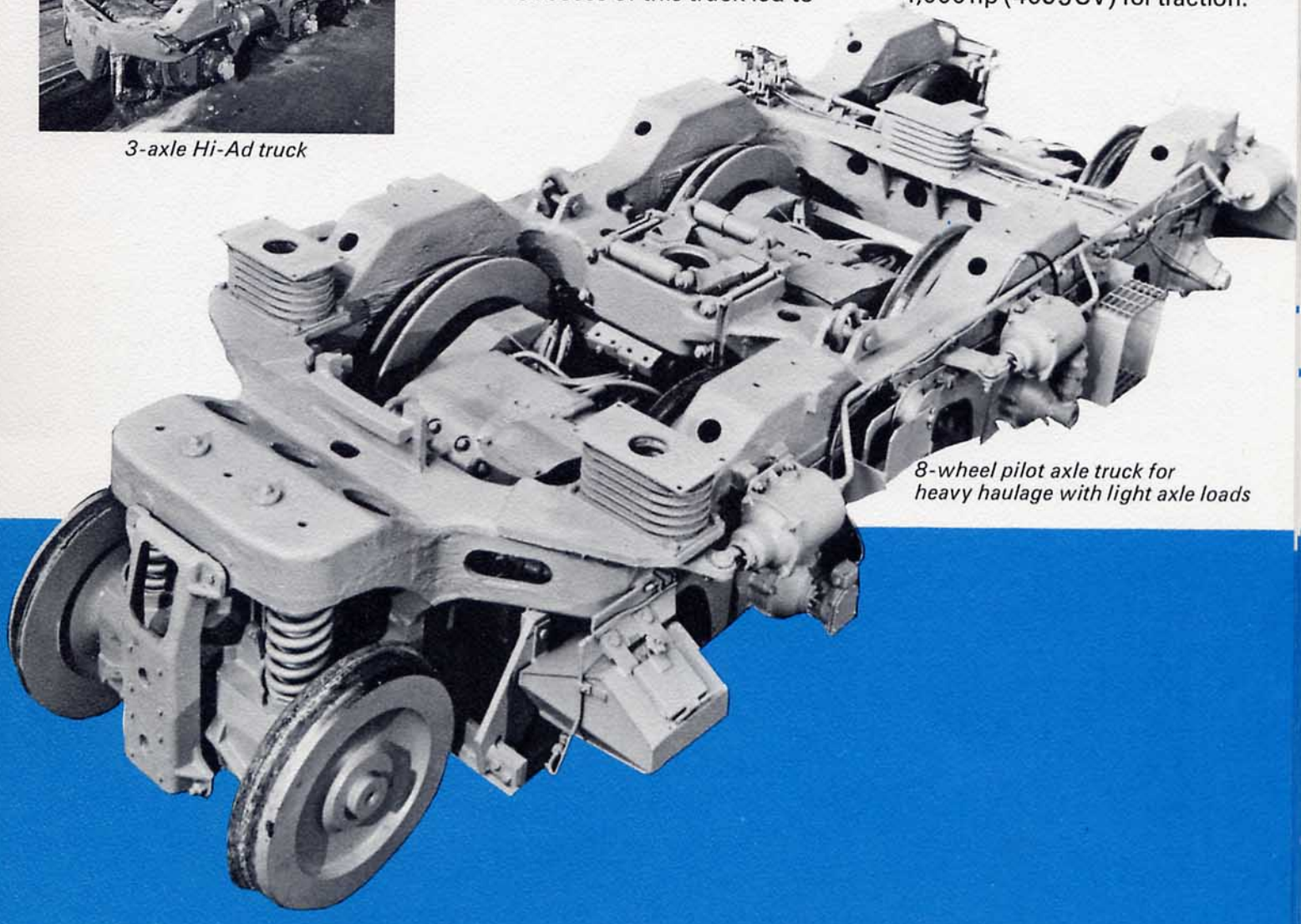
3-axle Hi-Ad truck

MLW's modern suspension systems emphasize low weight transfer characteristics and performance and maintenance advantages achieved through extensive use of rubber-in-shear for wearless, frictionless limited motion bearings and springs.

In 1967 MLW introduced the 3-axle Hi-Ad truck which provided as much as 15% more revenue carrying capacity than other mainline domestic trucks then in service.

Success of this truck led to development of a similar 3-axle truck for the lighter export services. Several variations of the export truck, including the eight-wheel pilot axle unit illustrated are now in operation.

A further development, now in domestic service, is the 2-axle zero weight transfer (ZWT) truck employing unique design features and complete rubber suspension to accommodate all modes of truck motion. This truck is designed for 4-axle locomotives rated up to 4,000 hp (4055 CV) for traction.



8-wheel pilot axle truck for heavy haulage with light axle loads

Model 251 diesel engines

The 4-cycle turbocharged Model 251 diesel engine provides power for all MLW locomotives. It has a growing variety of marine and stationary applications in its full range of 5 sizes, 6, 8, 12, 16 and 18 cylinders, and power ratings from 875 BHP to 4500 BHP (887 CV to 4563 CV).

The 251's universal popularity is a tribute to its reliability, low weight, durability and low cost. Behind the Model 251 is 30 years' experience in the development of 4-cycle, high-output engines.

It offers

- Low fuel consumption.
- Low thermal loading for rated BMEP.
- Tolerance to a wide variety of fuels.
- Ease of installation.
- Ease of maintenance.
- Durability.

In North America the Model 251 engine is manufactured by MLW and by Alco Engines Division of White Industrial Power, Inc., Auburn, N.Y.

4,500 hp (4563 CV) 18-cylinder engine installed on locomotive chassis

Diesel engines R&D

Five thousand Model 251 engines now in service represent a worldwide customers' investment of more than $300 million. To protect such an investment — to assure a long and productive life for every engine, regardless of when it is purchased — MLW maintains a continuing program of diesel engine research and development with emphasis on improvement of existing equipment.

In Montreal MLW operates the only privately-owned diesel laboratory in Canada. Its work is integrated with the efforts of the licensor, White/Alco, in the United States and world-renowned engine consultants in Europe.

Engine improvements are laboratory tested and undergo extensive field tests in revenue service. When fully proved they are built into new engines and are offered to owners of existing 251 engines as replacement parts and modification kits.

6-cylinder engine in MLW diesel laboratory

The Model 251 Marine engine

Special duty tug equipped with two 1,800 hp Model 251 engines berths iron ore carriers

Model 251 engines have a proven record of durability and versatility in sea-going, inshore and many specialized marine applications in ice-breakers and other ice-reinforced vessels, military craft, tugs, ferries, dredges, floating cranes and oil rigs.

The 251 marine engine offers

- Fuel economy.
- Simplicity of mounting for engine and engine-generator.
- Deep or dry sump.
- Flexibility of size and output.
- Low service requirements.
- Compact dimensions.

The MLW marine engine is available in all basic Model 251 sizes and power ratings from 875 BHP to 4000 BHP (887 CV to 4055 CV).

MLW diesel generator sets

MLW power packages for indoor or outdoor use are supplied with all Model 251 engines for generation of continuous power of 850 KW to 3175 KW. Generator sets equipped with the Model 251 engine offer these advantages for reliability and economy in base load, peaking and emergency service :

- Ease of installation.
- 10-second start up.
- 25,000 hours (3 years) average continuous service between overhauls.
- Engine-mounted generators with trouble free shaft alignment.
- Full factory testing of diesel generating units under severe load conditions.

Specifications of Model 251 diesel engines for locomotive, marine and generator applications available on request (see back cover).

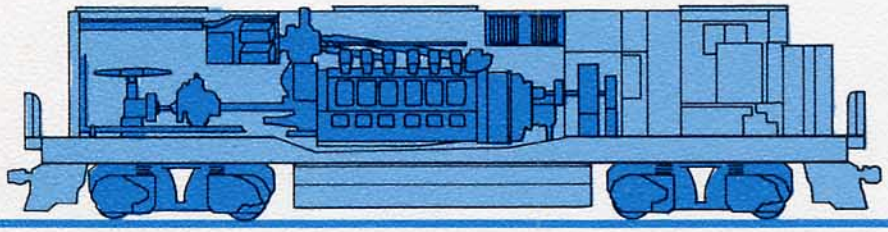
MLW motive power range -

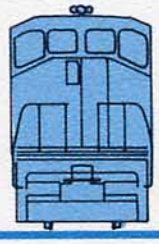
Locomotives for all applications permitting North American axle loads and AAR clearance outlines. Minimum track gauge 4'–8½" (1435 mm), 1,000 hp to 4,000 hp (1013 CV to 4055 CV). Axle loads indicated are subject to modification depending on customers' requirements for equipment and supplies.

M420 2,000 hp (2027 CV)

A versatile unit introducing the first zero weight transfer truck to go into revenue service in North America and the modern Crew Comfort cab designed and built to new standards of efficiency.

Wheel arrangement	B-B (Bo-Bo)	Axle load	60,000 to 68,000 lb. (27,216 to 30,844 kg)
Horsepower, traction	2,000 (2027 CV)		
Engine	12V251	Transmission	AC/DC, 4 traction motors

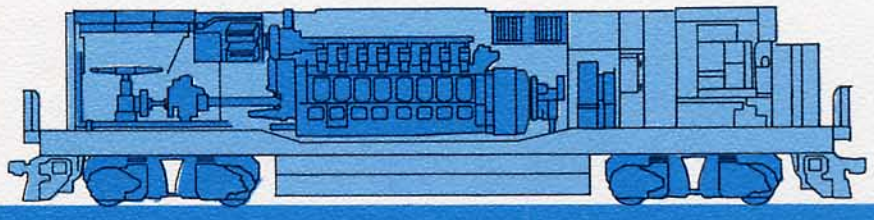


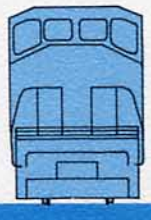


M430, 3,000 hp (3014 CV)

A development in the same series as the M420, taking maximum advantage of the adhesion levels of the zero weight transfer two- axle truck.

Wheel arrangement	B-B (Bo-Bo)	Axle loads	65,000 to 72,000 lb. (29,484 to 32,659 kg)
Horsepower, traction	3,000 (3014 CV)		
Engine	16V251	Transmission	AC/DC, 4 traction motors



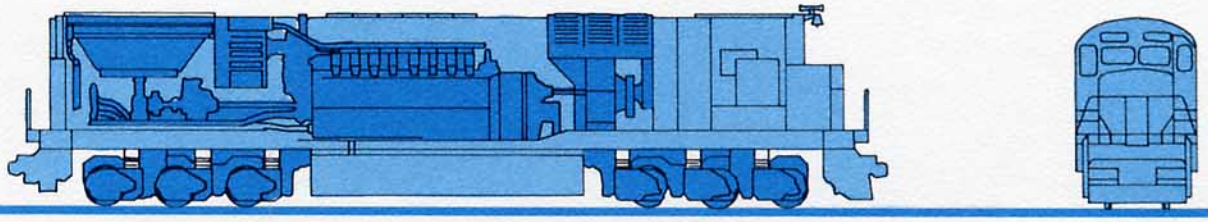


Detailed specifications including full performance characteristics available from MLW on request (see back cover).

North American models

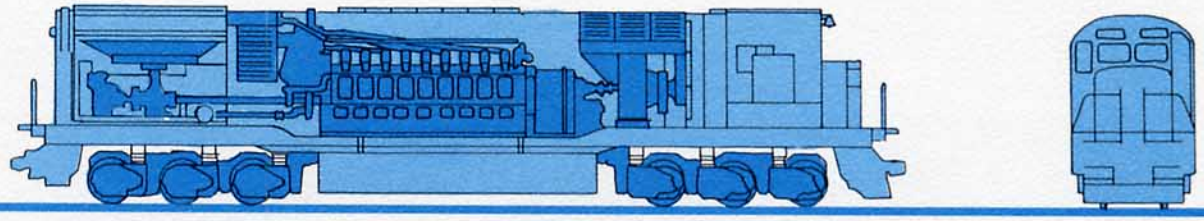
M630/M636 3,000/3,600 hp (3041 to 3649 CV) Six-axle mainline locomotives for heavy-duty haulage, with three-axle high adhesion trucks.

Wheel arrangement	C-C (Co-Co)	Axle loads	60,000 to 70,000 lb. (27,216 to 31,751 kg)
Horsepower, traction	3,000/3,600 (3041/3649 CV)		
Engine	16V251	Transmission	AC/DC, 6 traction motors



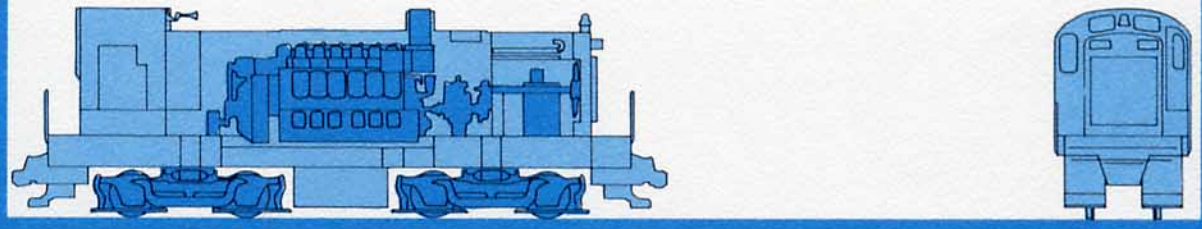
M640 4,000 hp (4055 CV) A heavy duty locomotive providing maximum cost efficiency in the application of the technology and propulsion power of the MLW M-line.

Wheel arrangement	C-C (Co-Co)	Axle loads	64,000 to 70,000 lb. (29,030 to 31,751 kg)
Horsepower, traction	4,000 (4055 CV)		
Engine	18V251	Transmission	AC/DC, 6 traction motors



DL411 1,000 hp (1013 CV) A multi-purpose switching and branch line locomotive of proven economy and durability.

Wheel arrangement	B-B (Bo-Bo)	Axle load	57,500 lb. (27,071 kg)
Horsepower, traction	1,000 (1013 CV)	Transmission	DC, 4 traction motors
Engine	6 (in-line) 251		



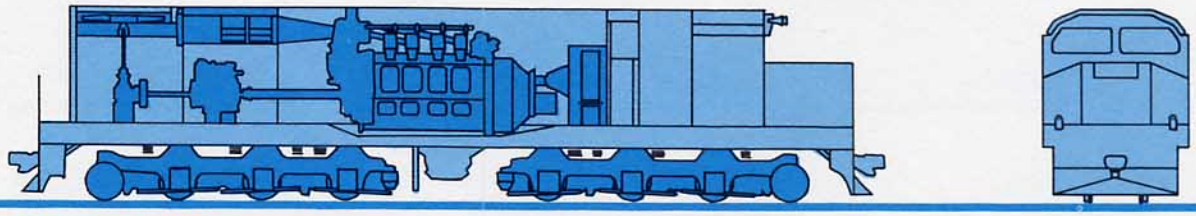
MLW motive power range -

Locomotives designed for worldwide applications offering optimum accommodation to geographical and climatic conditions, limited axle loads from approximately 26,455 lb. to 55,000 lb. (12,000 kg to 24,948 kg), and all U.I.C., African and other reduced clearance structure gauges. High adhesion trucks (bogies) maximize effective adhesive weight; all can be offered with pilot axles and/or interbogie control.

MX615 1,500 hp (1520 CV)

Maximum adhesive weight and tractive capability for low axle loads and low rail stress limitations.

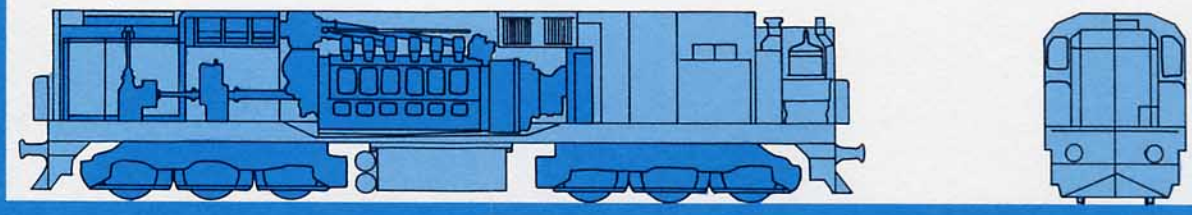
Wheel arrangement	C-C/1-C-C-1 (Co-Co/1-Co-Co-1)	Axle load	Co-Co 30,196 lb. (14,033 kg) 1-Co-Co-1 23,675 lb. (10,605 kg)
Horsepower, traction	1,500 (1520 CV)		
Engine	8V251	Transmission	DC, 6 traction motors



MX620/627 2,000 to 2,700 hp (2028 to 2737 CV)

A general purpose mainline locomotive for heavy haulage on light axle loads around the world. Built with or without steam generators.

Wheel arrangement	C-C (Co-Co)	Axle load	32,000 to 39,000 lb. (14,515 to 17,690 kg)
Horsepower, traction	2,000/2,700 (2028 to 2737 CV)		
Engine	12V251	Transmission	DC, 6 traction motors or AC/DC, 6 traction motors



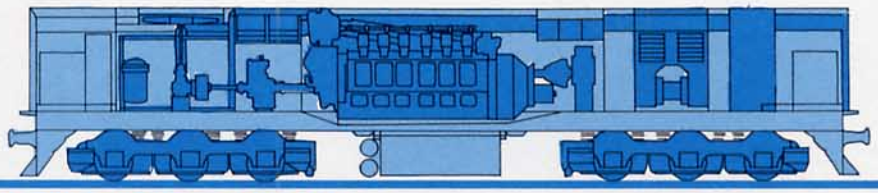
Detailed specifications including full performance characteristics available from MLW on request (see back cover).

export models

MXS624 2,400 hp (2433 CV)

A road locomotive with the same proven power train as others in the MX620 series designed with an operating cab at each end and fully enclosed car body. Other powers also available in this style.

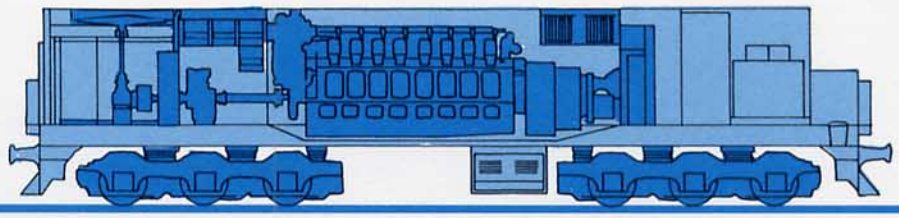
Wheel arrangement	C-C (Co-Co)	Axle load	36,016 lb. (16,337 kg)
Horsepower, traction	2,400 (2433 CV)	Transmission	DC, 6 traction motors
Engine	12V251	or	AC/DC, 6 traction motors



MX636 3,550 hp (3599 CV)

An AC/DC power plant and high adhesion low weight transfer trucks furnish high traction capability with low axle loading. Available with steam generator or electric train heating.

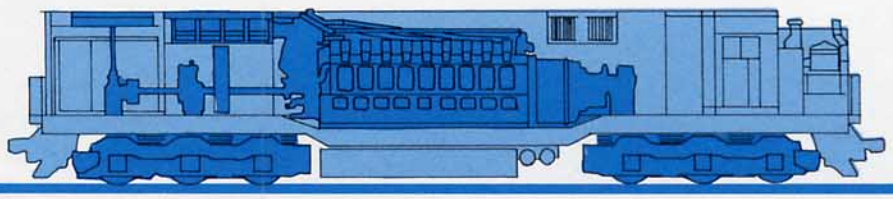
Wheel arrangement	C-C (Co-Co)	Axle load	43,650 lb. (19,797 kg)
Horsepower, traction	3,550 (3599 CV)	Transmission	AC/DC, 6 traction motors
Engine	16V251		



MX640 4,000 hp (4055 CV)

A heavy haulage locomotive with the 18-cylinder power plant for operation where slightly higher axle loads are permitted.

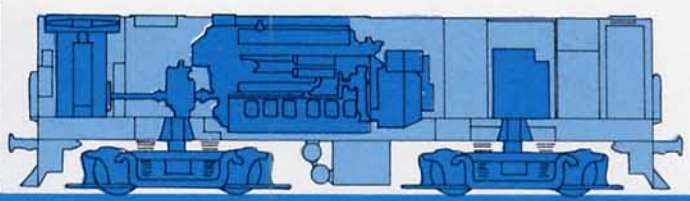
Wheel arrangement	C-C (Co-Co)	Axle load	45,666 lb. (20,714 kg)
Horsepower, traction	4,000 (4055 CV)	Transmission	AC/DC, 6 traction motors
Engine	18V251		



DL532B 950 hp (963 CV)

A reliable, lightweight all-purpose locomotive, the standard unit for many railroad operations.

Wheel arrangement	B-B (Bo-Bo)	Axle load	34,500 lb. (15,648 kg)
Horsepower, traction	950 hp (963 CV)	Transmission	DC, 4 traction motors
Engine	6 (in-line) 251		



LRC New comfort for passengers New economy for operators

State-of-the-art technology and materials are combined in this passenger train to create a new intercity system that offers high average speed and maximum comfort for passengers and multiple cost saving features for operators.

LRC (for lightweight, rapid, comfortable) was developed by MLW in a joint venture with Alcan Canada Products Limited and Dominion Foundries and Steel, Limited (Dofasco). It consists of power-banked coaches 85 feet long and matching low centre of gravity diesel electric locomotives in a flexible system that can provide train lengths varying from one locomotive and one coach (1-1) to a basic train of 1-5 which can be twinned to 1-10-1 with an ultimate makeup of 2-20-2.

Top rated speed is 120 mph (193 kmph), sufficient to maintain terminal-to-terminal speeds of up to 100 mph (160 kmph) on existing mainline track with 4° curves.

Passengers benefit from unrivalled standards of comfort and safety and city-centre-to-city-centre speeds that compete with all other interurban transportation modes.

Operators are offered the cost-saving advantages of powered banking to yield high average speed with low maximum power requirements, extensive use of aluminum and stressed skin coach structure for low overall weight, economical MLW diesel electric motive power, integrated maintenance, fast turnaround and high availability.

LRC systems can be designed for most of the world's track gauges.

Rapid transit

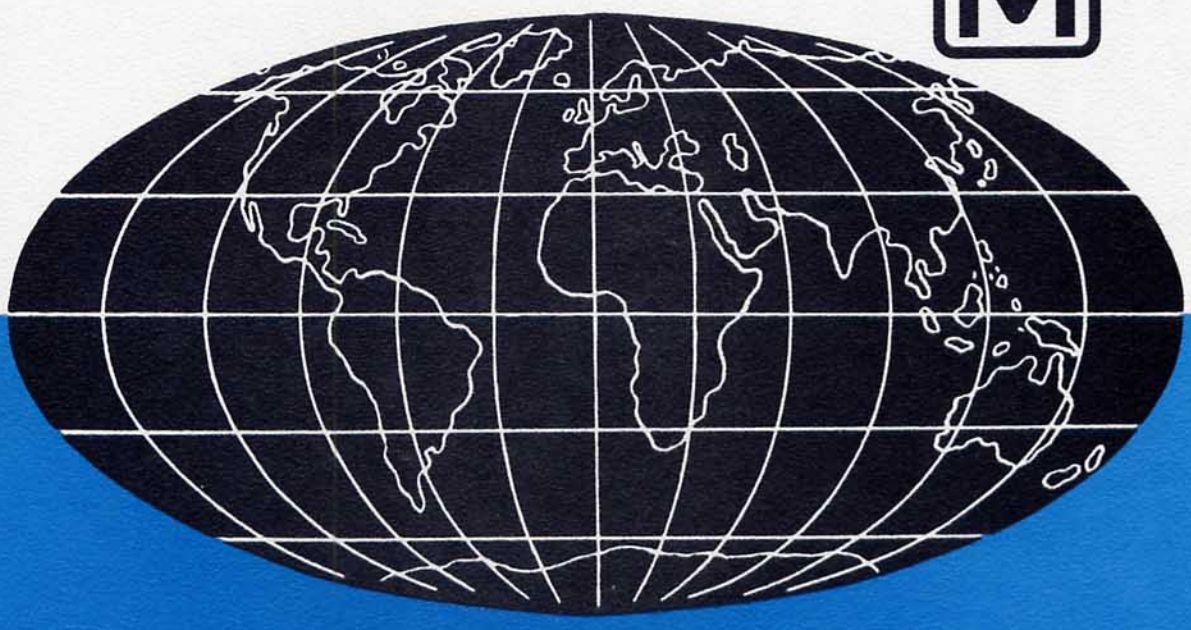
MLW pioneered design and manufacture of lightweight high-capacity rapid transit cars and maintains full engineering and plant facilities required for the customer-oriented, individually designed rolling stock characteristic of today's underground transit systems.

Rapid transit car built by MLW for Toronto Transit Commission

MLW's worldwide customer services

Railroads on six continents employ MLW motive power. The company's customer services are organized on a worldwide scale.

- Application studies. Available to operators to assist in analysis of their equipment requirements.
- Technical assistance. Supplied according to the customer's requirements for varying periods after delivery of locomotives.
- Technical liaison. Available to all users of MLW transportation and stationary power. MLW service representatives are stationed in North and South America, Africa, Europe, Asia and Australia. A full technical and parts information service keeps all customers up-to-date with product developments.
- Technical training. In Montreal MLW maintains a fully equipped training school to provide instruction for technical personnel on service and maintenance of new equipment.
- Spare parts supply. A special division of MLW in Montreal is fully organized to deal rapidly with customers' requirements. Customer representatives maintain direct contact with MLW product users. Computerized inventory control speeds fulfilment of orders.
- Overhaul and repair facilities. Available to owners of all MLW products.



Rail transportation products
designed, engineered and manufactured
for the railways of the world.

Details and specifications of all
equipment are available on request.

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