

# 44

# TONS of Railroad Motive Power

*The Lightweight Champion*



**AMERICAN LOCOMOTIVE and GENERAL ELECTRIC**

# Work Them **ALL DAY** - - - and **ALL NIGHT, Too!**

1. Availability averages 90-95 per cent, or about 22 hours out of 24.
2. Often does the work of two steamers—releasing them for service elsewhere.
3. Its fast, flexible, responsive operation and quick reversing speed up switching.
4. Quiet and clean.
5. Track and bridge maintenance is less. Short wheel base negotiates curves with less resistance and rail wear. No dynamic augment, which is characteristic of reciprocating drives.
6. Because of the absence of boiler, firebox, and heavy reciprocating parts, maintenance work is greatly simplified. Slashes engine-house costs—no fire-cleaning, ash handling, or engine watchman.
7. No water tanks and pumping stations required.
8. Burns one gallon (5 to 8 cents) of fuel oil, where a steam locomotive would consume approximately 125 pounds of coal (12 to 30 cents).
9. Has time-tested reliable electric drive similar to that used on large diesel-electric locomotives.



RETURNS AS HIGH AS  
40 PER CENT  
ON INVESTMENT

# 44 Tons . . . 4 Axles . . . 380 or 410 Hp

## WEIGHT

Nominal . . . . . 88,000 lb  
 Total locomotive, light . . . . . 86,000 lb  
 On drivers, fully loaded . . . . . 89,000 lb  
 Per driving axle, fully loaded . . 22,250 lb

## TRACTIVE EFFORT

Starting (30 per cent adhesion) . 26,400 lb

## SPEED

Maximum . . . . . 35 mph

## OPERATION ON CURVE

50-foot radius—locomotive alone.  
 125-foot radius coupled to average freight car.

## DIESEL ENGINES

Choice of two Caterpillar, each nominally rated 190 hp at 1000 rpm—total, 380 hp; or, two Buda, each nominally rated 205 hp, 1050 rpm—total, 410 hp.

## MAIN GENERATORS

Two, 250-volt, single-bearing generators direct-connected to engine. Three-point power-plant support.

## TRACTION MOTORS

Four, heavy-duty, railway-type motors. Each pair is connected permanently in parallel to a generator. Geared for 35 mph.

## CONTROL

Single-station, single-unit. Reverser and motor contactors are mounted under platform and easily accessible from outside; auxiliary control is located in operating-cab compartment.

## STORAGE BATTERY

32-cell lead-acid battery for engine starting and 60-volt lighting.

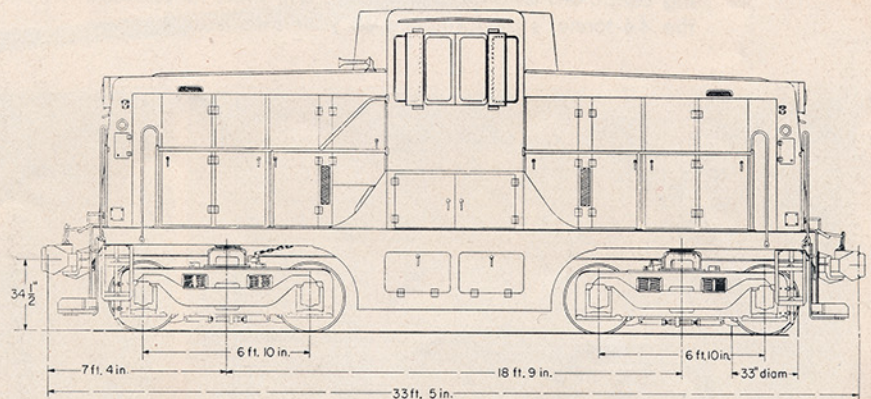
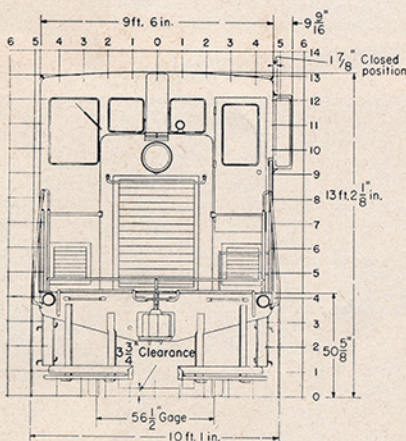
## AIR BRAKES

Straight and automatic, Schedule 14-EL. Two brake cylinders per truck. Reservoir capacity, 30,000 cubic inches.

## AIR COMPRESSORS

Two, air-cooled, two-stage; belt-driven from main engines. Displacement, 50 cfm each at full engine speed.

THIS LOCOMOTIVE MEETS ALL I.C.C. REQUIREMENTS



# A Triple-duty Workhorse

THE 44-ton diesel-electric locomotive is built to do three railroading jobs and do them well. It is admirably suited for road work up to 35 mph and for speeding cars to and from junctions and classification yards. Ease of control, speed of acceleration, high initial tractive effort, and excellent visibility permit fast, accurate, and safe switching.

From rail to cab roof, every part of this standard locomotive is specially selected and constructed. The electric drive, simple in arrangement and specially designed for this particular locomotive, provides smooth performance and excellent utilization of full engine horsepower throughout the operating range.

To obtain reliability in round-the-clock service there are two power plants, each complete with battery-charging generator, air-compressor, and traction motors which can be operated individually in an emergency. The motors are connected in parallel to provide smooth, steady traction for heavy loads with the minimum of wheel slippage.

Diesel-electric throttle control responds quickly and smoothly, and lessens the danger of damage to freight car lading.

The combination of high initial tractive effort, full weight on drivers, instant throttle response, and quick reversal of the locomotive results in improved and faster performance.

These curves show the high tractive effort and excellent performance of the Lightweight Champion under varying conditions of load and grade. Use them to estimate the 44-tonner's performance on your own lines.



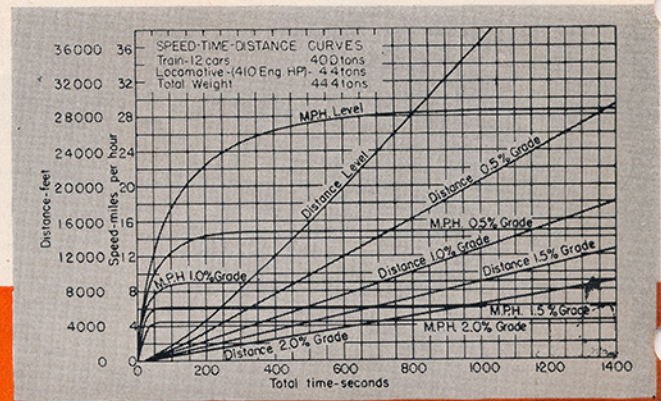
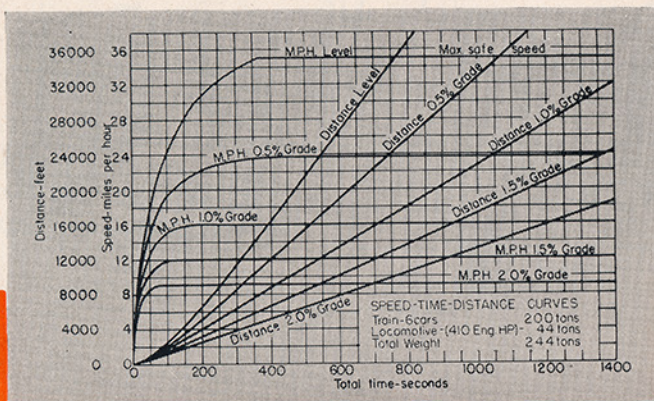
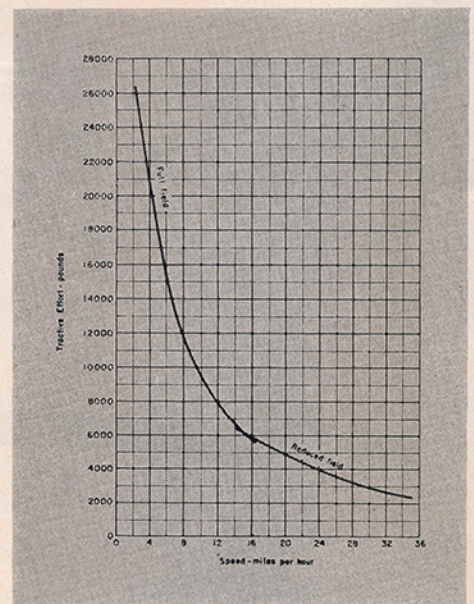
**ON THE ROAD**



**IN THE YARD**



**IN TRANSFER SERVICE**



The 44-tonner speeds freight car classification in the Boston & Maine yards at Biddeford, Maine.

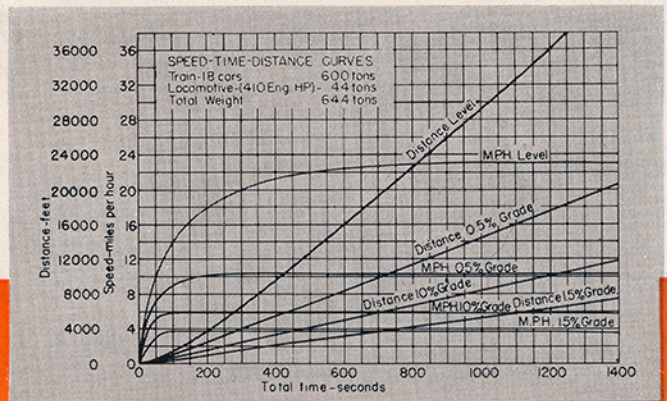
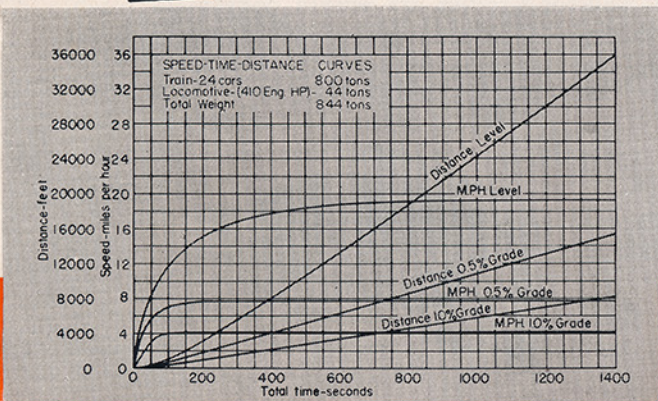


## LOOK AT THE TONNAGE IT HAULS!

Speed Mph	Tractive Effort	Level	0.5% Grade	1.0% Grade	1.5% Grade	2% Grade
5	17,500	2,016	902	570	411	317
7.5	12,300	1,405	622	388	276	210
10	9,650	1,091	478	285	206	154
15	6,600	734	313	188	128	92
20	4,750	516	213	123	79	54
25	3,750	398	159	88	54	33
30	3,050	315	121	63	35	19
35	2,350	233	83	39	17	5

Note: Resistance based on 8.5 pounds per ton.

Tonnages given do not include the weight of the locomotive.



# *Railroaders*

**LIKE THE**

# *Lightweight Champion*

## **Enginemen Like It Because—**

The center cab and low, narrow engine hoods allow excellent visibility in all directions.

The sliding cab windows are protected with rain gutters and have a comfortable, removable arm-rest on the sill.

The radiator shutters and engine-hood ventilators can be regulated from the cab.

The platforms and operating cab are accessible from either side by means of side steps on all corners.

It is designed for safety. Fire hazard is low. Safety-glass windows throughout. Walkways are roughened to prevent slipping, and safety hand rails are provided.

It is clean and comfortable. High-level exhaust. The cab is fully insulated against changes in temperature and is heated by two hot-water-type heaters. The insulation retains heat in winter and keeps it out in summer.

All control handles are within convenient reach, and the instrument panel is sloped so that instruments can be quickly and easily read.

## **Executives Like It Because—**

As compared with steamers, it does more work at less cost, reduces maintenance of roadways and bridges, and fewer locomotives are required.

Returns often reach 20 to 40 per cent on the purchase price.

Investment in locomotive-service facilities is low. It makes efficient use of vital materials.

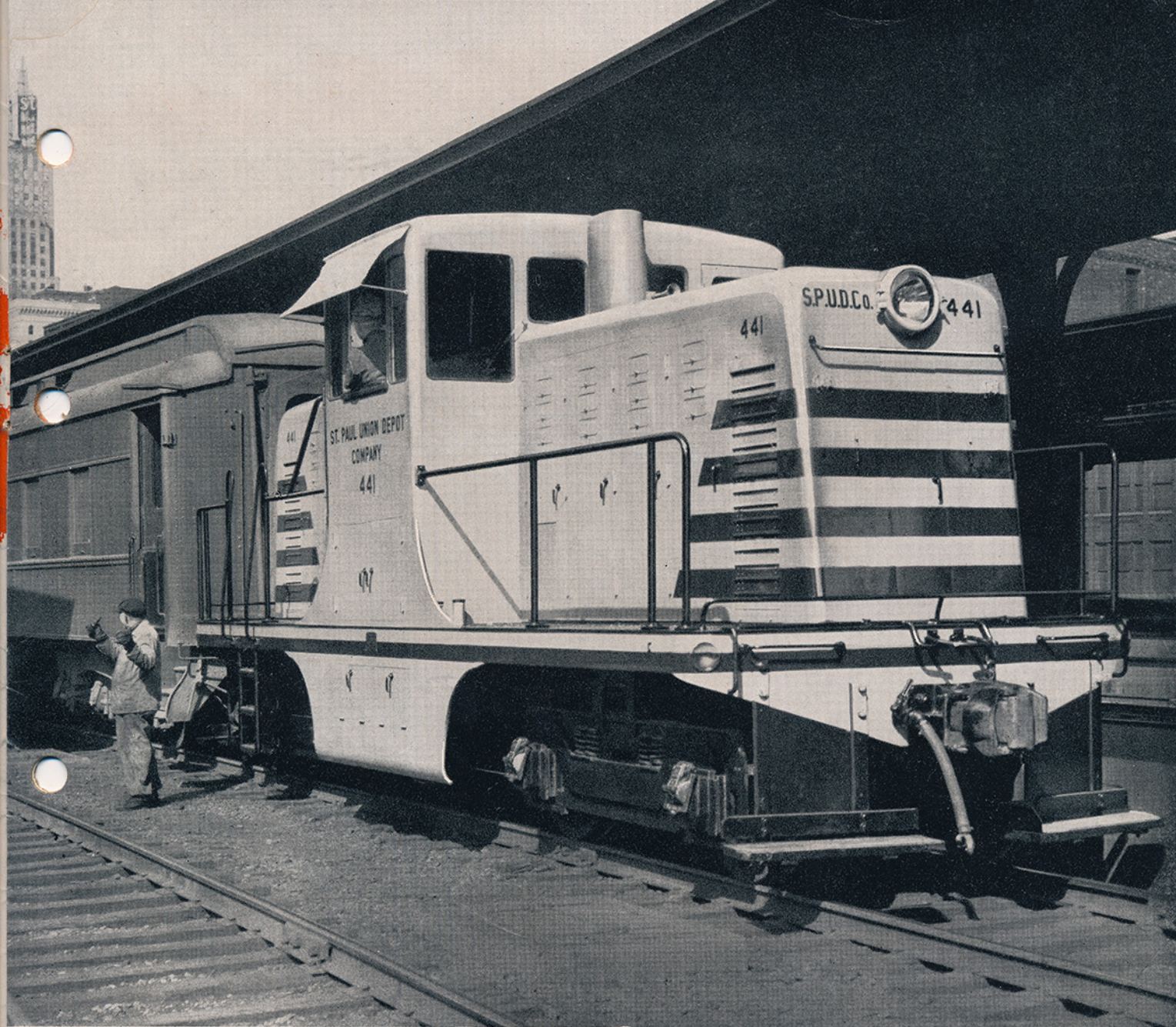
## **Switchmen Like It Because—**

Steps at all four corners permit switchmen to board the locomotive readily and to ride near the front end.

Air-hose angle cocks are on the engineman's side at both ends of the locomotive.

Hand-high steel hand rails line the roughened platform walkways and lessen the chance of accidents.





### Maintenance Men Like It Because—

The power plants are readily accessible from either side through four large, removable steel doors. The entire hood can be removed when heavy repairs are necessary.

Fuel-tank fillers with fuel gages are provided on both sides of the locomotive.

Electric drive and simplified control mean low maintenance.

Engine-generator set has 3-point mounting, and is arranged to permit access to under parts for inspection and cleaning.

The fuel tank holds 250-gallons of fuel, which is enough to keep the 44-tonner in operation for 30 to 60 hours without refilling.

The St. Paul Union Depot Company uses this 44-tonner for switching passenger equipment of eight railroads entering St. Paul.



# CONVENIENT ACCESSIBLE from COUPLER TO COUPLER

**I**N EACH end of this Lightweight Champion there is a complete, self-contained power plant composed of one diesel engine, one generator, one exciter, and two traction motors connected permanently in parallel to the main generator. The two 50-cubic-foot air compressors, the battery-charging generators, and the air-brake valves are under the cab floor. This design packs plenty of power, tractive effort, and round-the-clock hauling capacity into a small "package." Both sets of equipment operate together, but either set can be operated singly; and that means increased reliability.

Every part of the locomotive is readily accessible. The auxiliaries, including the compressors, are conveniently reached through compartment doors from the outside.

## Equipment Mounting

The generator is connected to the engine through a flexible coupling, and the frame is bolted to the engine-flywheel housing to form a compact, rigid unit. This design preserves power-plant alignment and facilitates maintenance during overhaul, as the entire power plant can be removed as a single unit and placed on the shop floor.

The engine-generator unit is supported at three points by a resilient mounting. This isolates the power plant from the locomotive structure and reduces vibration stresses.

One end of the single-bearing generator armature is supported by an antifriction bearing mounted in the frame

head, and the other end is connected directly to the engine flywheel through a laminated-steel-disk flexible coupling.

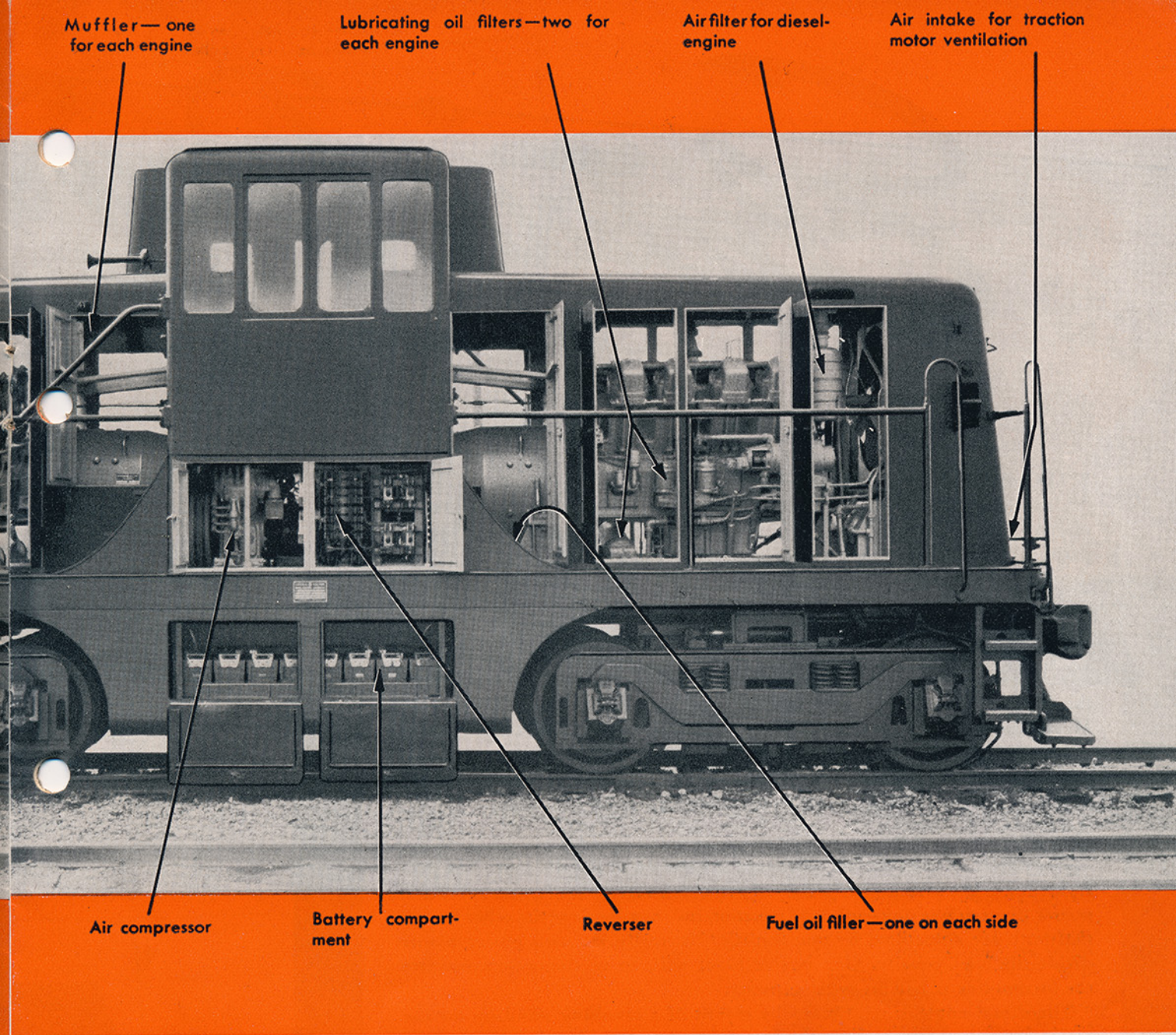
## Diesel Engine

Two diesel engines are the prime movers. One is mounted on each end of the 44-tonner. There is a choice of diesel engines—either the Caterpillar (nominally rated 190 hp at 1000 rpm, total hp 380) or the Buda (nominally rated 205 hp at 1050 rpm, total hp 410).

Engine cooling is thermostatically controlled for all-weather operation. When starting the engines in extremely cold weather, the engine cooling water is cut off from the radiator by a thermostat valve and circulated through the engine block until a predetermined temperature opens the thermostat valve and permits normal circulation through the radiator. The engine thus comes







up to running temperature quickly. Separate kerosene heaters are provided to heat the engine block for easier starting in cold weather, thus reducing stress on the battery and engine.

Each engine has two lubricating-oil filters and an exhaust-silencing muffler. A 250-gallon fuel-oil reservoir is provided complete with level gage, filling connection, drain valve, and emergency shut-off valves with remote control trips both in the cab and on either side of the locomotive. These features promote long engine life, quietness, convenience of servicing, and safety.

#### Welded Cab and Frame

The equipment is housed in a strong, durable cab made of welded rolled carbon-steel sheets, plates and shapes—there are no bolts or rivets. It is sturdily constructed to withstand the buffing stresses of railroad operation.

The underframe has a steel floor plate supported on two full-length deep, H-beam center sills and cross bolsters welded together into a sturdy integral structure. The fuel tank is built into the underframe and serves to further stiffen the locomotive. The frame can be jacked up easily to remove the trucks.

If necessary, the entire locomotive can be lifted at the ends.

#### Swivel Trucks

Since the trucks have a one-piece welded frame, they require little attention. However, those items that need periodic attention, such as motor brushes, bearings, and brake shoes are readily accessible. The trucks are easily removed by jacking up the locomotive; or, if desired, one axle and motor only can be dropped. The side bearing, with renewable steel surfaces, also serves as an anti-slewing device and a lifting lug.

# Electric Drive

**E**LECTRIC drive delivers full engine horsepower to the wheels smoothly and at all locomotive speeds. In effect, it provides an infinite number of gear ratios which change automatically to meet load conditions, and it permits full diesel-engine output throughout the speed range of the locomotive, regardless of grades or trailing load. Thus, the 44-tonner is admirably suited to the widely varying requirements of road work, transfer service, and yard switching.

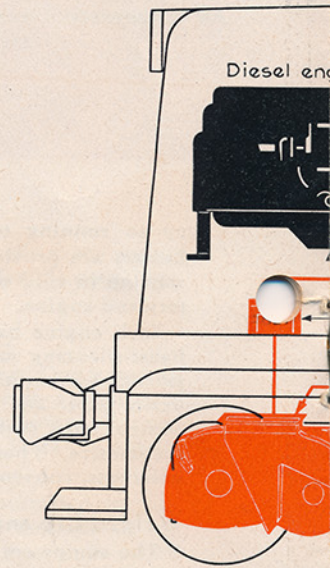
In addition to its availability and reliability, electric drive has many advantages. There is no rigid connection between the prime mover and the driving wheels; thus electric drive serves as a cushion for road shocks. Moreover, there are few moving parts—inspection and maintenance require relatively little time. A mechanic who is familiar with electric motors can easily perform the regular inspections and make the occasional adjustments required to keep the equipment in excellent operating condition.

## Operation

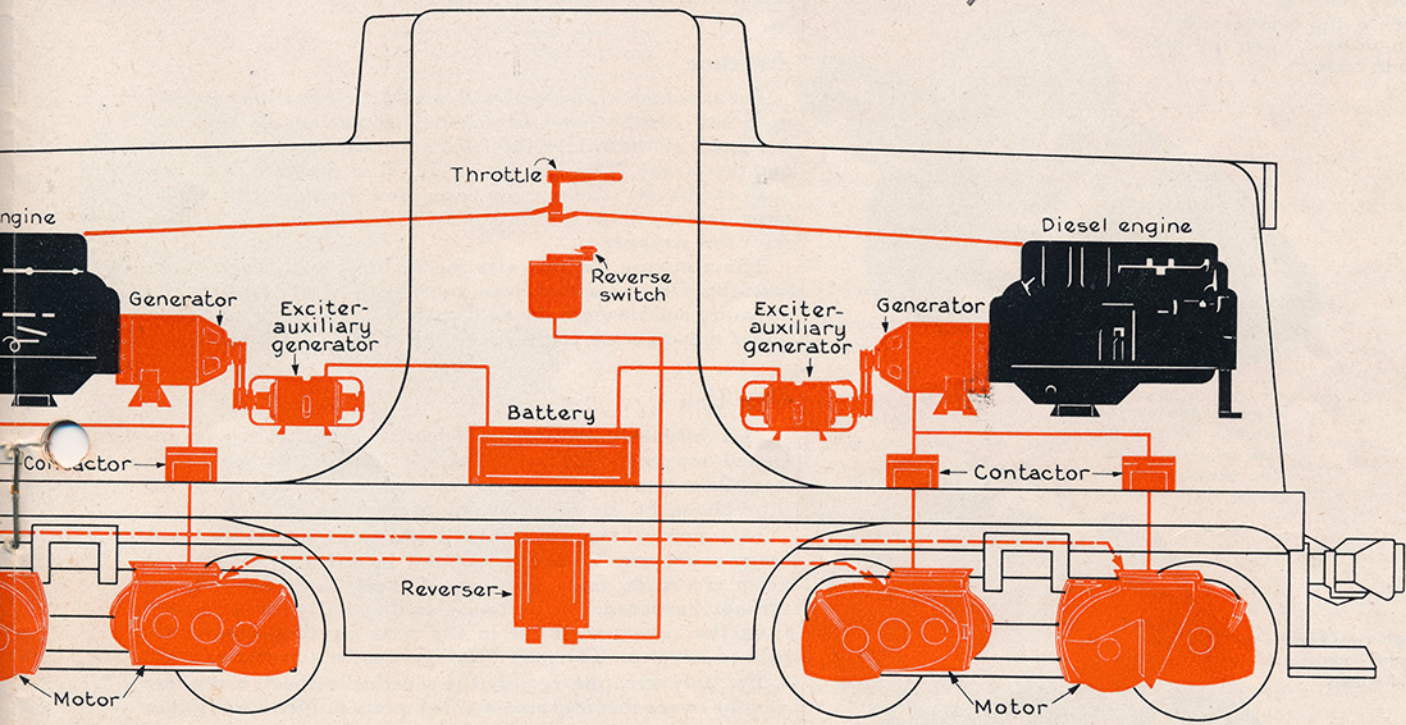
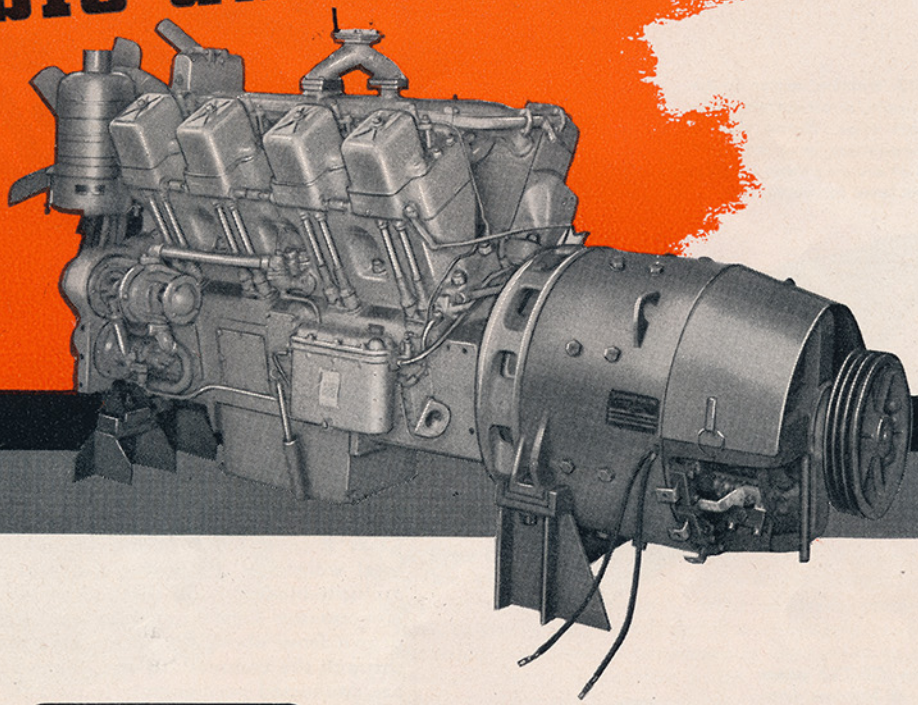
The power circuits for the 44-tonner are shown in the diagram. The performance of the locomotive is the same in either direction of operation. Each power plant drives one truck, and operates independently of the other except that both are controlled by one throttle. Normally, the two power plants divide the load equally. One power plant will, in an emergency, operate the locomotive at half its rated capacity.

The diesel engines are started by means of a cranking winding on the main generator which draws power from the storage battery when the starting buttons are pushed. The locomotive speed is controlled by the throttle, which controls the output of the diesel engine. The electric power supplied to the traction motors is automatically controlled by the generator. The locomotive is reversed when the throttle is in idling position by the traction motor reverser, electro-pneumatically operated from a reverser in the cab. The throttle is interlocked with the electric control to provide proper application of power to the traction motors and to prevent reversal of the motors under load.

The two traction motors on each truck are connected permanently in parallel. This completely eliminates transition from series to parallel connection. It provides a steady and uniform application of power from start to top speed, making the locomotive "stick" to the rails and automatically balancing the load between the two motors in the same truck. For example, when one pair of wheels slip, the driving motor on that axle unloads itself until the wheels take hold again, and it is not necessary to shut off the throttle and start again.



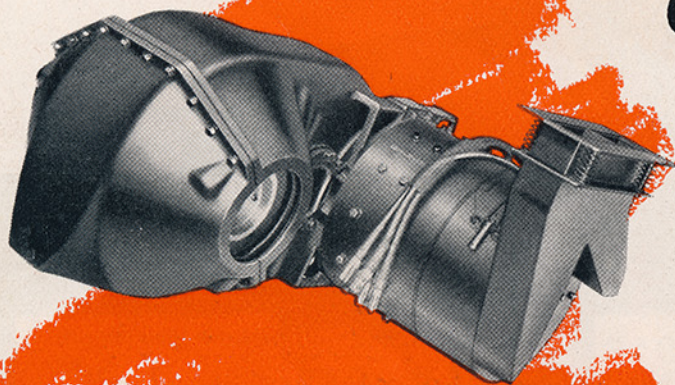
# Reliable and Economical



# HEAVY-DUTY

# Electric

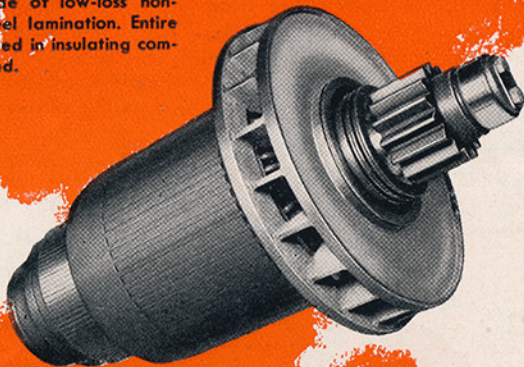
This GE-733 traction motor is the 250-volt, 6-pole, direct-current, commutating-pole type. Shown also is the double-reduction gear box and the method of drawing clean air from the platform level for ventilation.



## Traction Motors

The four GE-733 traction motors are of the 250-volt, 6-pole, direct-current, commutating-pole type, complete with a double-reduction gear box and gearing. This motor is built for a continuous locomotive rating of 13,000 pounds' tractive force and a maximum permissible speed of 35 mph. It is Class B insulated for long life and low maintenance. The total weight of the motor and gearing is 2,500 pounds. A multiple-blade fan on the end of the armature opposite the commutator furnishes clean ventilating air, because it is drawn from above the locomotive platform level and enters through the commutator end. The two motors on each truck are connected permanently in parallel to one generator.

This armature for the GE-733 motor has a core made of low-loss non-aging silicon steel lamination. Entire armature is dipped in insulating compound and baked.



## Armature

The armature is equipped with antifriction bearings at both ends and can be removed without disturbing the specially designed, all-metal labyrinth seal between the ventilating fan and the pinion. This seal keeps the oil in the gear case. The shaft can be replaced without disturbing windings or commutator. The windings are insulated with felted-asbestos, flexible-mica slot wrapper.

The armature fan provides for multiple ventilation of the machine. One stream of clean, outside air is drawn over the armature and through the field coils, and the other is drawn under the armature and through the core.

Trough drains the splashing oil into the axle bearings to provide continuous lubrication.

## Gear Unit

This oil-lubricated double-reduction drive unit was designed especially for use on the 44-tonner. All gears are straddle-mounted, and under normal conditions will last throughout the life of the locomotive.

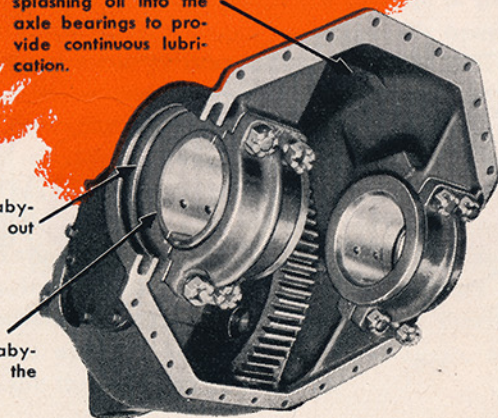
This sturdy, compact unit is built to withstand the hard usage and heavy loads encountered in railroad service. All gears are made from heat-treated steel forgings and are through-hardened. All parts are automatically oil-lubricated from the reservoir of oil in the gear housing—no waste-packed bearings. The gear bearings are the antifriction type.

The only attention required is a periodic check every few months to see that oil is maintained at the proper levels in the gear housing.

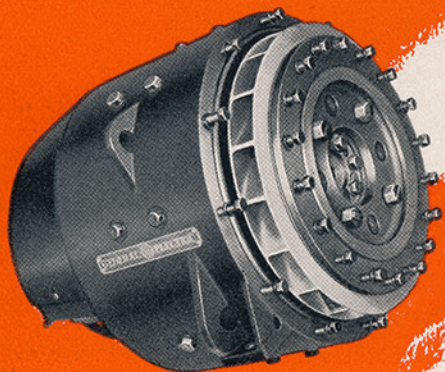
The total gear reduction is 11.25 to 1.

Outer groove of labyrinth seal keeps out dirt and water.

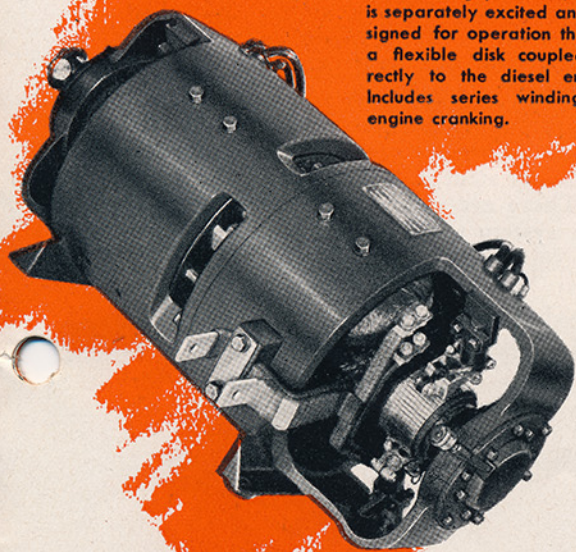
Inner groove of labyrinth seal keeps the lubricant in.



# Equipment



This GT-555 main generator is a 4-pole, direct-current, commutating pole unit, which is separately excited and designed for operation through a flexible disk coupled directly to the diesel engine. Includes series winding for engine cranking.



This GMG-140 exciter-auxiliary generator has two armatures on one shaft. One armature excites the main generator and the other supplies low-voltage power for battery charging, locomotive lights and control.

## Main Generators

This modern traction generator gives the G-E 44-tonner its smooth-operating characteristics. The self-excited field, together with the split-pole exciter, gives a characteristic that follows closely the diesel-engine output and permits utilization of full engine output over a wide range of locomotive speeds. Thus, throttle response is quick and locomotive acceleration is both smooth and snappy.

The Type GT-555 traction generator is built especially for use in this 44-ton locomotive. It is a direct-current, commutating-pole, separately excited, self-ventilated, shunt-wound machine, conservatively rated, and it was designed specifically for operation with motors permanently connected in parallel. Exceptionally large inspection holes make the commutator and brush rigging readily accessible.

The generator fan is mounted integrally with the flexible disk coupling and provides for multiple ventilation of the machine. One stream of air is drawn over the armature and between the field coils, and the other under the commutator and through the core.

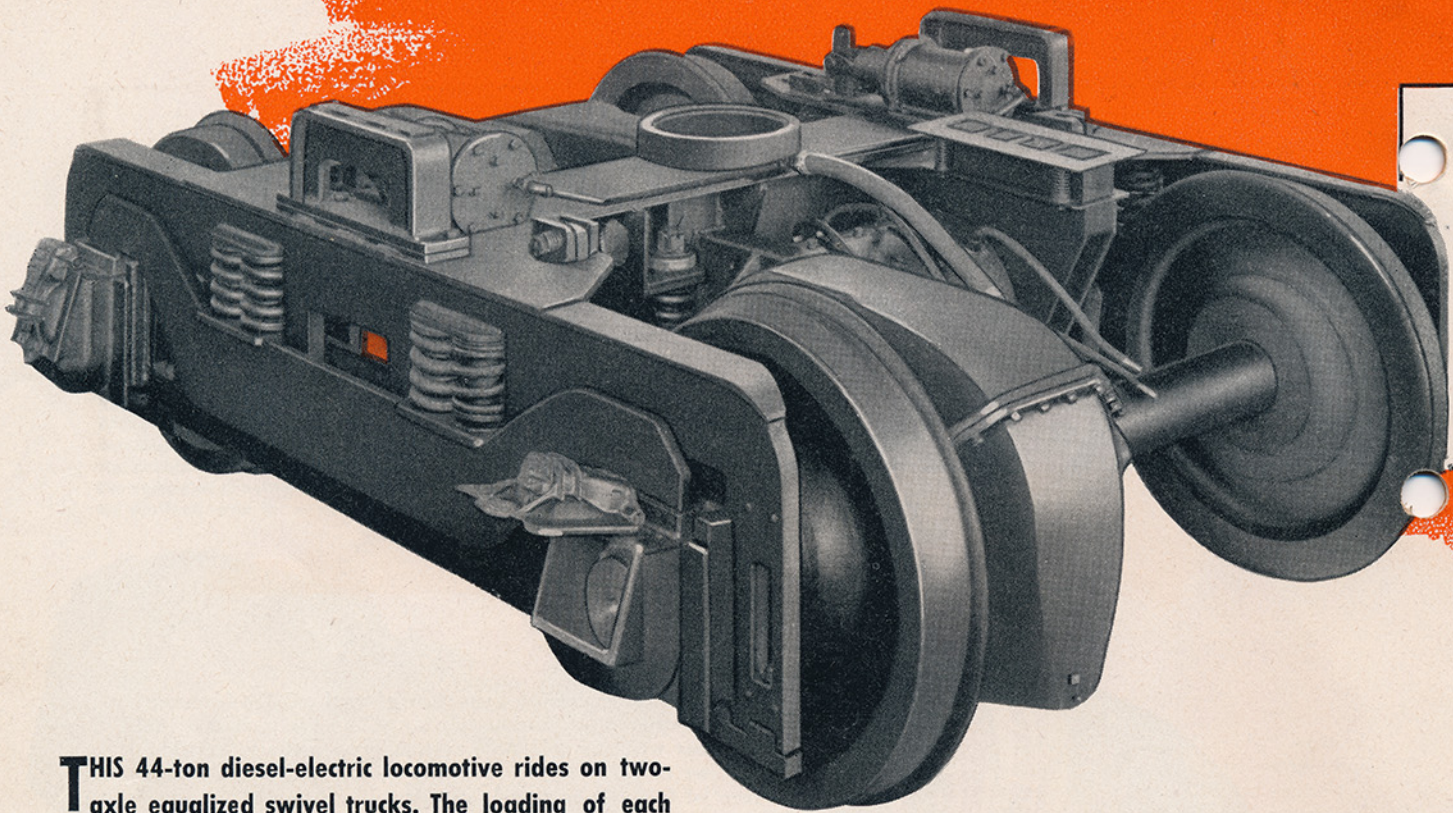
The generators are equipped with starting windings for cranking the engine, thus eliminating separate starting motors, ring gear, and associated equipment, and also their attendant maintenance.

## Exciter-auxiliary Generators

The Type GMG-140 exciter-auxiliary generator set consists of two armatures on a common shaft. One supplies excitation to each main generator. The other operates in conjunction with a suitable regulator to supply power at fixed low voltage for battery charging, locomotive lights, and control. Both exciter and auxiliary are commutating-pole-type generators. This machine is rated at 1.75 kw and is belt-driven from the main generator. Two exciter-auxiliary units are provided, one for each main generator.

## Battery Charging

The two generators supplying auxiliary power are connected in parallel to the battery, and the voltage of each is held at 74 volts by its voltage-control relay. If there is a tendency for this load to become unbalanced, a special control circuit adjusts the voltage-control relays to compensate for it by slightly raising the voltage of one machine and dropping that of the other. This system is doubly reliable and assures that the same load will be placed on both engines.



**T**HIS 44-ton diesel-electric locomotive rides on two-axle equalized swivel trucks. The loading of each axle and the short, rigid wheel base enables it to negotiate sharp curves without rail-climbing or rail-spreading. Wheel-flange wear is slight, and track maintenance is low.

#### Truck Frame

Side frames and transoms are cut from heavy carbon-steel plate, and are integrally arc-welded to form a strong, rigid unit. The center plate is built into the frame, has a removable steel lining, and is oil lubricated.

#### Motors

Each truck has two motors—one on each axle—driving through double-reduction spur gearing. These motors are mounted on the axles by means of two sleeve-type suspension bearings for each motor. These bearings are oil-lubricated. Each motor is spring-supported by a nose suspension on the truck frame, and is provided with a safety strap.

#### Brake Rigging

Four brake cylinders are provided. One cylinder actuates the brake rigging for each pair of wheels on each side of each truck. The rigging is fully equalized, and it applies one shoe to each wheel. It can be easily adjusted to compensate for brake-shoe wear. Adjustment for brake-shoe wear is infrequent.

#### Journal Boxes

The journal boxes are of cast steel with malleable-iron lift-type lids and are fitted with deep-sided babbitted brasses of standard ATA design for 5-inch by 9-inch journals.

#### Spring Rigging

Four tempered carbon-steel coil springs are placed between the truck frame and equalizer bar on each side of the truck. One of these is of the snubber type to dampen vibration. The equalizers are cut from heavy steel plate and are of the drop-center type. There are virtually no wearing parts in the spring system to require periodic replacement.

#### Wheels and Axles

The wheels are 33 inches in diameter and are of solid rolled steel, with heat-treated rims. Standard AAR tread and flange. The axles are of forged carbon-steel and are carefully machined. All surfaces are finished-ground to remove tool marks, and have 5-inch by 9-inch collar-type journals.

#### Side Bearings

Each truck is equipped with two side bearings having renewable hardened-steel wear plates. The structure of the bearing supports acts as an anti-slewing device in the event of a derailment.

# TWO-AXLE

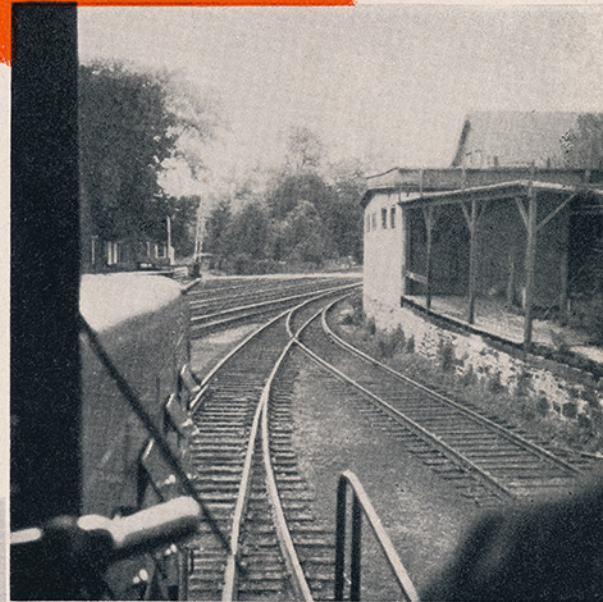
## EQUALIZED SWIVEL TRUCKS

### Brake Equipment

Combined straight and automatic Schedule 14-EL air brakes are standard equipment. The braking power is approximately 64 per cent, with 50-pound cylinder pressure.

Two air-cooled, belt-driven compressors, operating against a reservoir pressure of 140 pounds, are provided. Each compressor has a piston displacement of 50 cfm when operating at a speed which corresponds to the full-load speed of the engine. The main reservoir capacity is approximately 30,000 cubic inches.

A drop-lever-type hand brake is provided to apply the brakes on one pair of wheels for holding the locomotive at standstill.



# A CLEAR VIEW AHEAD from a Comfortable Seat

THE engineer's position provides an unobstructed view of the tracks to the front and the rear. The controls are grouped conveniently within arm's length, and the engineer can easily read the instrument panel without diverting his attention from the track ahead. Push a button, pull the throttle, and the Lightweight Champion instantly responds with quick, smooth acceleration. To reverse, the throttle is placed in the idling position, the reverse handle is thrown, and throttle opened.

The cab is clean, quiet, and comfortable. It is insulated to keep the heat in in cold weather and keep it out in warm weather. From Alaska to Florida a growing number of engineers like these diesel-electrics because they are comfortable and easy to operate.

Switch Panel  
Control  
Cab light  
Gage lights  
Headlights  
Cab heaters  
Classification marker

Engine-compartment ventilator handle

Gage panel  
Water temperature  
Air brakes  
Oil pressure  
Battery charging

Whistle cord

Engine-starting buttons

Air brakes  
Straight  
Automatic

Throttle

Reverse handle





# MULTIPLE-UNIT OPERATION IN ROAD SERVICE

In Mississippi, the Fernwood, Columbia & Gulf Railroad has found it profitable to operate two Lightweight Champions in multiple with one engine crew. This gives a total of 760 hp and retains the light locomotive-axle loading required by some railroads.




## THESE ITEMS ARE INCLUDED AS STANDARD EQUIPMENT:

1. Two AAR, Type E automatic couplers with 6-inch by 6-inch shank, and pocket bolted to end frame.
2. Thirty-two-cell, lead-acid-type storage battery for engine starting and for control and lights.
3. Two headlights, each with 12-inch-diameter silvered-glass reflectors and 250-watt, 60-volt lamps.
4. Instrument panel, complete with lubricating-oil pressure gages, water-temperature indicators, battery-charging voltmeter, air-brake gages, and load indicators.
5. One 250-gallon fuel-oil tank with two gages and filling connections, and drain valve on either side of the locomotive.
6. Two hot-water-type cab heaters, one connected to each engine and provided with motor-driven fans.
7. Two water heaters of the nonautomatic oil-burning type, and fuel tank that holds a 36-hour supply of fuel.
8. Two mufflers—one for each engine.
9. Four classification-light brackets and plug receptacles.
10. 15-watt, 60-volt cab lights for illuminating cab and gage panels.
11. One air-operated diaphragm-type horn.
12. One 40-pound bell with air-operated ringer and valve.
13. Four sand traps, controlled by one duplex valve.
14. Two "air push" window wipers, with individual operating valves.
15. Side-vision mirrors.
16. One 1½-quart fire extinguisher of the carbon-tetrachloride pump type.
17. One upholstered window arm-rest.
18. One swivel upholstered seat with back-rest.
19. One metal clothes locker and tool cabinet.
20. One extension lamp, with guard and 25-foot cord.

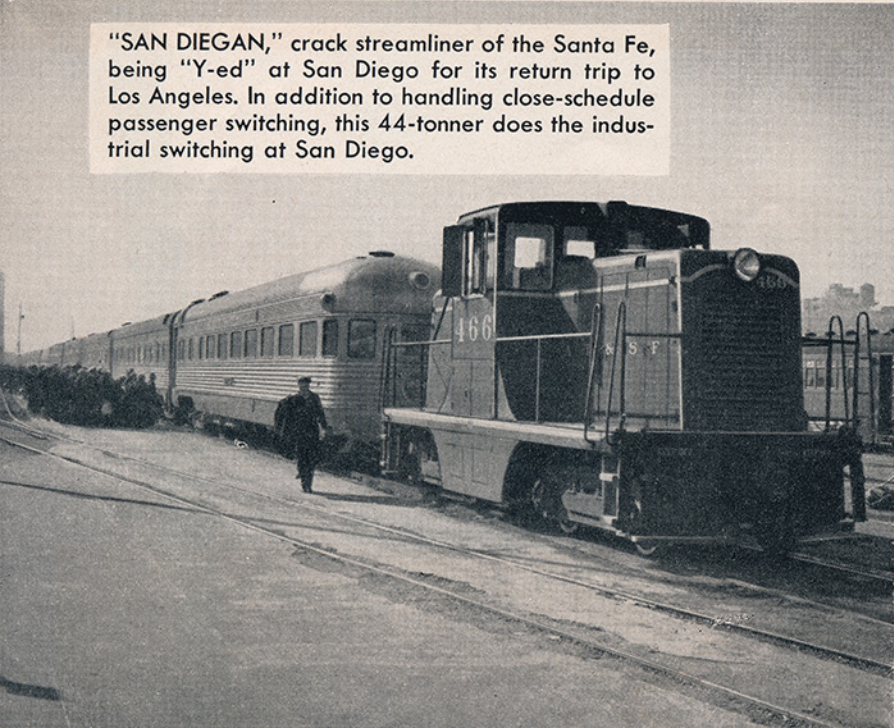
# On Railroads

## FROM COAST TO COAST

Here are railroads that are slashing the cost of road work, transfer service, and yard switching with G-E 44-ton diesel-electric locomotives.

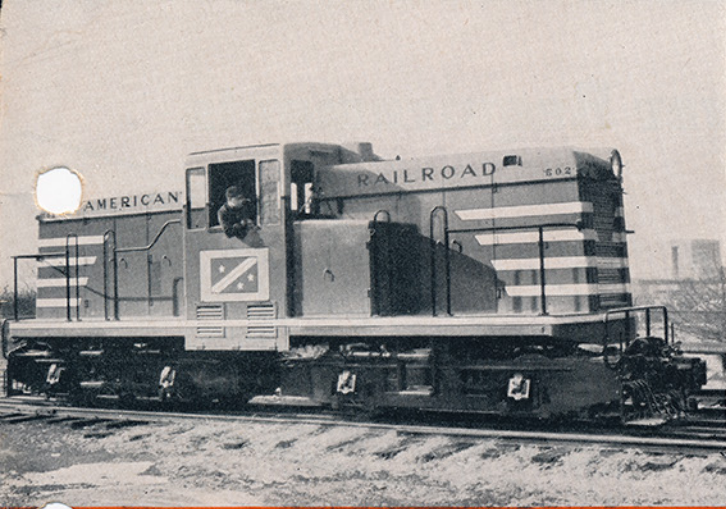


"To say that we are pleased with our 44-tonners is expressing it mildly—they have given us entire satisfaction," says the Vice President and General Manager of the Washington and Old Dominion Railroad.



"SAN DIEGAN," crack streamliner of the Santa Fe, being "Y-ed" at San Diego for its return trip to Los Angeles. In addition to handling close-schedule passenger switching, this 44-tonner does the industrial switching at San Diego.

Amador Central  
American Railroad of Puerto Rico  
Arcade & Attica  
Aroostook Valley  
Atchison, Topeka & Santa Fe  
Atlantic & East Carolina  
Boston & Maine  
Chicago, Burlington & Quincy  
Chicago, Milwaukee, St. Paul & Pacific  
Chilean State Railways  
Denver & Rio Grande Western  
Fernwood, Columbia & Gulf  
Guayaquil & Quito  
Great Northern  
Greater Winnipeg Water District Ry.  
High Point, Thomasville & Denton  
Lehigh Valley  
Maine Central  
Mexican Government Railways  
Middletown & Unionville  
Minneapolis & St. Louis  
Minneapolis, St. Paul & Sault Ste. Marie  
Mississippi Export  
Missouri & Illinois Bridge & Belt  
Missouri Pacific  
New York, New Haven & Hartford  
Union Freight Railroad  
New York, Ontario & Western  
Northern Pacific  
Oahu Railway & Land Company  
Quincy Railroad  
St. Louis-San Francisco  
St. Paul Union Depot  
San Francisco & Napa Valley  
Southern Railway System  
Chattanooga Traction  
Alabama Great Southern  
Cincinnati, New Orleans & Texas Pacific  
New Orleans & Eastern  
Southern  
Southern Pacific System  
Pacific Electric Railway  
Southern Pacific Company  
Visalia Electric Railway  
Western Maryland  
Washington & Old Dominion  
Winona Railroad



Twelve of these 380-hp, meter-gage units are used for switching and road service by the American Railroad of Puerto Rico.



This 44-tonner operates only about ten hours a day on the Arcade and Attica, yet it effects a saving of \$6,000 a year on fuel costs alone.



Five of these Lightwight Champion diesel-electrics are averaging 16 hours' daily work on the Frisco Lines; two are in Memphis, and the other three are at Hugo, Okla., Neodesha, Kan., and Cape Girardeau, Mo.

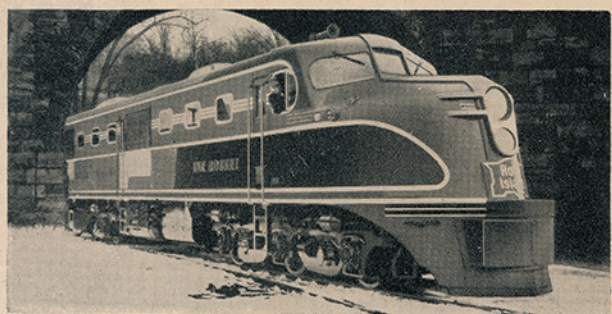
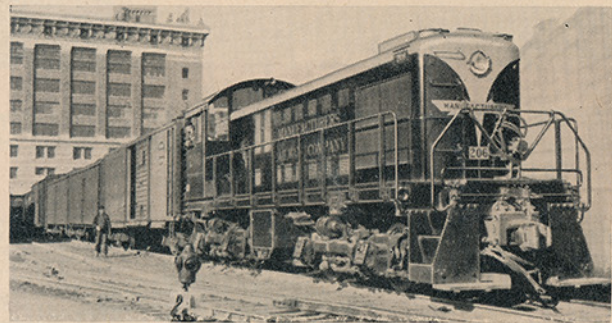


New Haven placed its first 44-tonner in service in 1940. In operation 16 hours a day, this locomotive made such a fine record on availability, maintenance, and fuel consumption, that they ordered six more.



Operating eight hours a day, this locomotive is saving \$8,400 a year for the Milwaukee Railroad. It has cut in half the vital fuel, lubricants, and supplies required for operation.

# For Heavier Motive-power Requirements Use These Alco-G.E. Diesel-electrics



**660-hp and 1000-hp** switchers that will give you reliable, round-the-clock switching at low cost. They are easy to operate, to inspect, and to maintain. For heavier work, two of these switchers may be coupled together in multiple operation.

**1000-hp** combination road and switching locomotives that combine in one unit the high speed, sturdy construction, and train-heating facilities necessary in a general-purpose locomotive. This unit is ideally suited for general-purpose duty on smaller roads and on branch lines of larger roads.

**2000-hp** streamlined locomotives—like all units in the Alco-G.E. complete line—that are sturdily built and modern in appearance. Alco's 4-cycle diesel engine and G.E.'s improved electric drive are combined to provide exceptionally high availability—the average is 95 per cent.



## AMERICAN LOCOMOTIVE and GENERAL ELECTRIC

Information about these units can be obtained through either your Alcoa or your G-E representative.