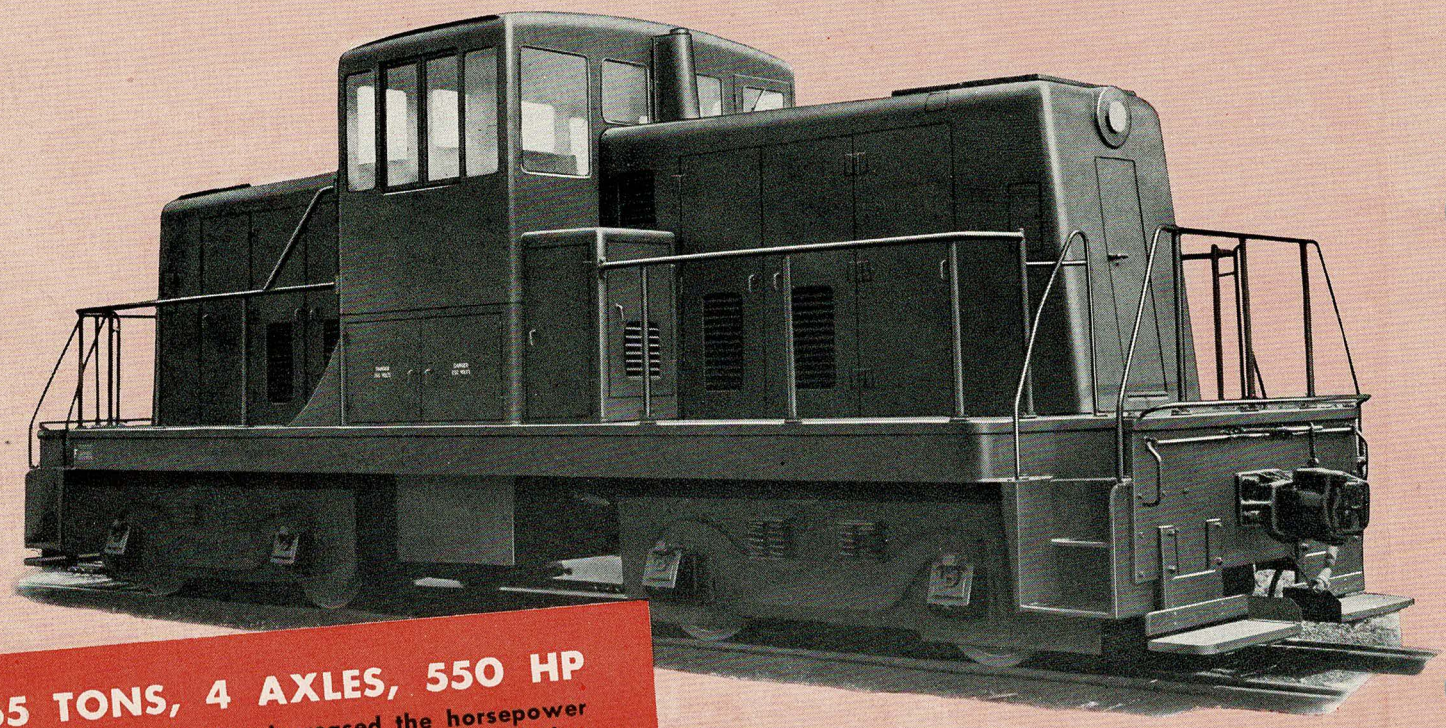
65-ton

DIESEL-ELECTRIC FOR INDUSTRIAL SWITCHING

GENERAL ELECTRIC

A NEW STANDARD UNIT FOR



65 TONS, 4 AXLES, 550 HP

General Electric has increased the horsepower of this popular size. The 65-tonner is now being built in quantities to make for quicker deliveries and low price.

It gives safe, fast, reliable, economical service. It is easy to operate, inspect, and maintain, and can be used for any switching service now handled by a steam locomotive of comparable size.

WEIGHT

Nominal	130,000 lb
Total locomotive, light	128,000 lb
On drivers, fully loaded	131,000 lb
Per driving axle, fully loaded	32,750 lb

TRACTIVE EFFORT

Starting (30 per cent adhesion) ..... 39,000 lb

SPEED

Maximum permissible, 30 mph.

MINIMUM CURVE RADIUS

75-foot radius (locomotive alone).

ENGINES

Two Cummins NHBIS-600 diesel engines; nominal rating of each, 275 hp at 2100 rpm.

GENERATORS

Two G-E Type GT-569 shunt-wound, direct-current, single-bearing generators, direct-connected to engine flywheel.

TRACTION MOTORS

Four Type GE-747 railway-type motors, with integral double-reduction gear drive.

AUXILIARY GENERATORS

Two, 750 watts each; one V-belt driven from each generator shaft.

CONTROL

Single-station, single-unit.

AIR BRAKES

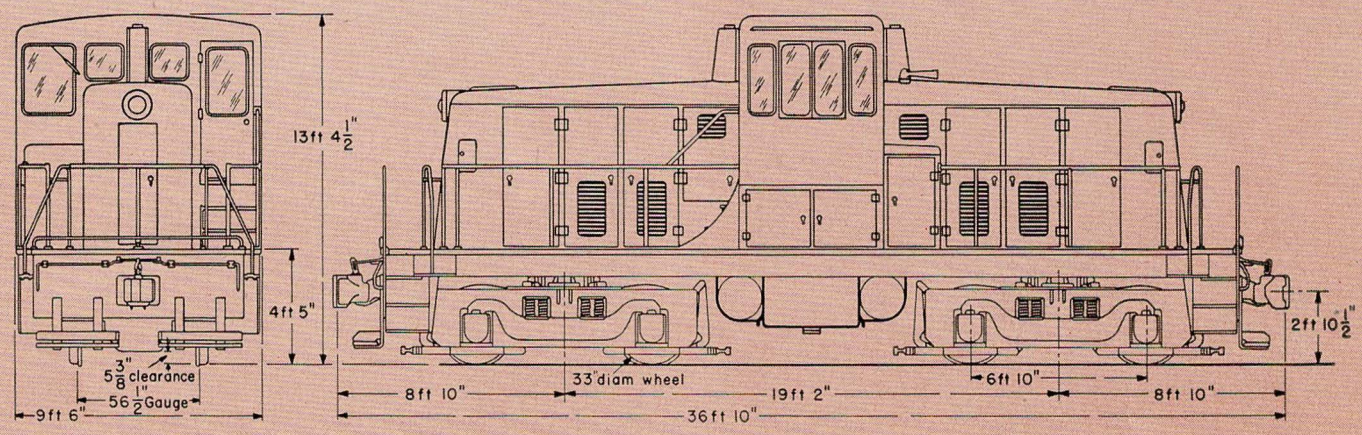
Independent and automatic, Schedule 14EL.

MEETS ICC REQUIREMENTS

The construction complies with United States Safety Appliance Standards and Rules for the Inspection and Testing of Locomotives other than Steam.

LOW-COST SWITCHING

GEA 3598B



Here are some of the users who have cut switching costs with G-E 65-ton diesel-electrics:

ALUMINUM

Carolina Aluminum Company (Badin, North Carolina)

CHEMICAL

American Viscose Corporation (Front Royal, Virginia)
Hanford Engineering Works (Hanford, Washington)
Solvay Process Division, Allied Chemical & Dye Corp. (Hopewell, Virginia)

STEEL AND IRON

American Bridge Company (Ambridge, Pennsylvania)
Atlantic Steel Company (Atlanta, Georgia)
Copperweld Steel Company (Warren, Ohio)
Dominion Steel & Coal Corp. (Sydney, Nova Scotia)
Interlake Iron Co. (Toledo, Ohio)
U. S. Pipe & Foundry Company (Bessemer, Alabama)
Worth Steel Company (Claymont, Delaware)

UTILITIES

Cleveland Electric Illuminating Co. (Cleveland, Ohio)
Detroit Edison Company (Detroit, Michigan)

PAPER

Hammermill Paper Company (Erie, Pennsylvania)
Nekoosa-Edwards Paper Company (Nekoosa, Wisconsin)

ROCK PRODUCTS

Georgia Marble Company (Tate, Georgia)
Marquette Cement Manufacturing Co. (Earlham, Iowa)
Permanente Cement Co. (Permanente, California)
Pacific Coast Aggregates, Inc. (Pleasanton, California)

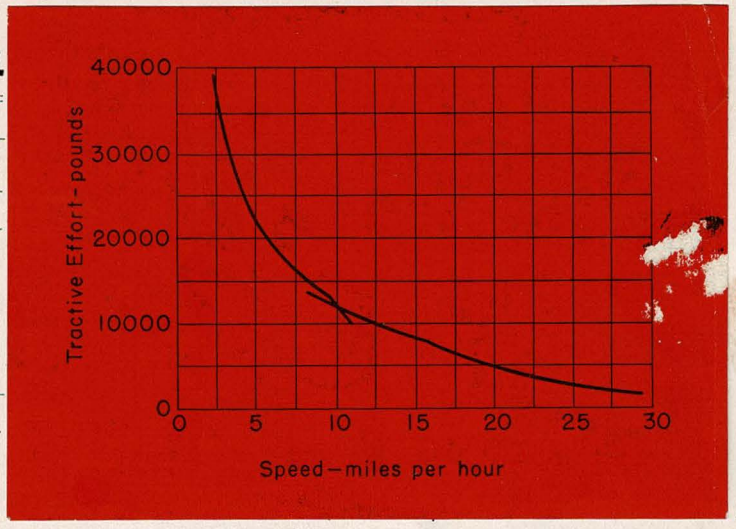
SUGAR

Spreckels Sugar Company (Spreckels, California)

TONS THIS LOCOMOTIVE CAN HAUL

Speed (mph)	GRADE						
	Level	0.5%	1.0%	1.5%	2.0%	2.5%	3.0%
Train Resistance, 10 lb per Ton							
4.2	2568	1251	812	593	462	374	311
5.0	2188	1061	686	498	386	310	257
7.0	1698	816	522	376	288	229	187
10.0	1188	561	352	248	186	144	114
15.0	788	361	219	148	106	77	57
20.0	478	206	116	71	44	25	....
25.0	278	106	49	21	....	....	....
30.0	168	51	....	....	....	....	....
Train Resistance, 20 lb per Ton							
4.2	1284	834	609	474	385	320	272
5.0	1094	708	514	398	321	266	225
7.0	849	544	392	300	240	196	163
10.0	594	374	264	198	155	123	100
15.0	394	241	164	118	88	66	50
20.0	239	138	87	56	36	22	....
25.0	139	71	37	....	....	....	....
30.0	84	34	....	....	....	....	....
Train Resistance, 30 lb per Ton							
4.2	856	626	488	395	330	280	242
5.0	729	531	412	332	275	233	200
7.0	566	408	314	250	205	172	145
10.0	396	281	212	165	132	108	89
15.0	262	181	132	99	75	58	44
20.0	159	103	70	47	31	....	....
25.0	92	53	30	....	....	....	....
30.0	56	26	....	....	....	....	....

Hauling capacity is conservatively based on 20 per cent maximum running adhesion, thus allowing for starting train. When a locomotive is used for switching or transfer service, there are no restrictions on the tonnages for speeds of 5 mph and higher. For loads that restrict speed to less than 5 mph, the maximum tonnage should be limited to that shown in the table; and movement should be confined to switching, unless transfer moves are of less than one-half hour continuous duration.



1. Maximum speed, 30 mph—provides ample margin against overspeed troubles in switching work.

2. Single motor connections, simple control, no transition, thus giving steady pull.

3. Full engine-horsepower utilization to 16 mph gives maximum output in switching service.

4. Smooth output curve automatically gives equivalent of infinite number of gear ratios.

5. Double-reduction drive gives high efficiency at switching speeds.

IT WILL WORK 'ROUND THE CLOCK

Saving Money

EVERY MINUTE

OFTEN RETURNS 20 TO 30% ON THE PURCHASE PRICE

1. Requires only one man for its operation.
2. Burns approximately one gallon of fuel oil where a steam locomotive burns one hundred pounds of coal.
3. Because of the absence of boiler, firebox, and heavy reciprocating parts, maintenance is greatly simplified.
4. Requires no fire cleaning, ash handling, watering, or watching; thus, engine-house attention is greatly reduced.
5. Its fast, flexible, responsive operation speeds up switching.
6. Low weight per axle, swivel trucks, and smooth torque reduce track maintenance appreciably.
7. Its exhaust is cleaner, thus building maintenance is less.

COMPARE THESE HOURLY COSTS

STEAM (65-TON)		DIESEL-ELECTRIC (65-TON)
$2.70 (2 men)	Crew wages	$1.50 (1 man)
1.50	Fuel	.40
.05	Lubricants	.10
.13	Other supplies	.04
.23	Engine-house expense	.06
1.50	Maintenance	.60
$6.11		$2.70

These are estimated costs based on experience with hundreds of diesel-electrics in many different industries.

YOU'LL WANT THESE *Features* IN YOUR OWN LOCOMOTIVE

THESE ITEMS PLEASE BRAKEMEN

Heavy divided end steps have splash guards.

Stair-type side steps are located at all four corners.

Uncoupling levers operate independently from either side of the locomotive.

Walkways and stair treads have nonskid surface.

Heavy steel handrails are placed along the sides and across the front of the locomotive for greater safety.

MAINTENANCE MEN LIKE THESE FEATURES

All-welded cab is smooth, and permanently tight and rigid.

Clasp brakes lengthen brake shoe life, run longer between adjustments.

Sealed beam headlights banish reflector cleaning and focusing. Fuel tank, radiators, and sandboxes can be filled quickly and easily.

Large steel doors on both sides of each engine hood provide easy accessibility to the power plant from the deck. The hoods are removable to facilitate the making of heavy repairs.

Ground relay protects equipment against damage from accidental grounds.

FEATURES THAT OPERATORS APPRECIATE

Elevated operator's position, 16 big windows, and low, narrow hood provide excellent visibility in all directions.

Double sliding windows are equipped with gutters to prevent dripping. A comfortable, removable arm rest is furnished for the sill.

Engine water temperature is regulated automatically.

Hood doors latch tightly at top and bottom and won't rattle.

Insulated cab is cooler in summer—warmer in winter.

Operating controls are simple, conveniently arranged and easy to operate.

Side steps and doors give access to platforms and operating cab from either side.

Metal window frames and steel, weather-stripped cab doors will not warp. Safety glass is used throughout. Two pneumatic window wipers are provided. Window in front of operator can be opened for additional cab ventilation on hot summer days.

High exhaust stack keeps the fumes above the cab.

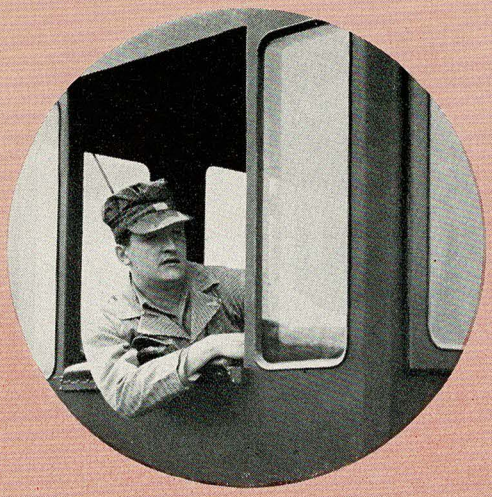
Walkways are roughened to prevent slipping, and safety handrails are provided all around. Air heater keeps the cab warm even in zero weather.

THESE ITEMS WILL PLEASE YOU

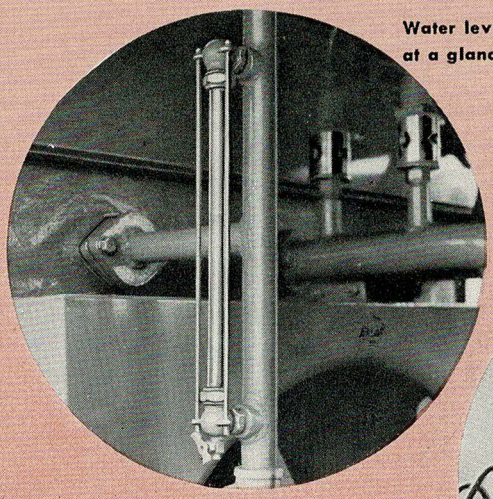
An availability of 90 to 95 per cent is probable with this locomotive. It is ready to go at the push of a button. It will operate for long periods between overhauls and requires only periodic inspection. Refueling and oiling can be done quickly between crew changes. Thus, an availability of 8000 out of a 8760 hour year can be expected which often tends to reduce the number of locomotives required.

Being quiet and clean, and presenting no fire hazard this diesel-electric can be safely operated inside as well as outside buildings.

A modest engine house is adequate for all its maintenance and servicing needs—eliminating extensive facilities such as water-treating plants, coal, and ash handling facilities.

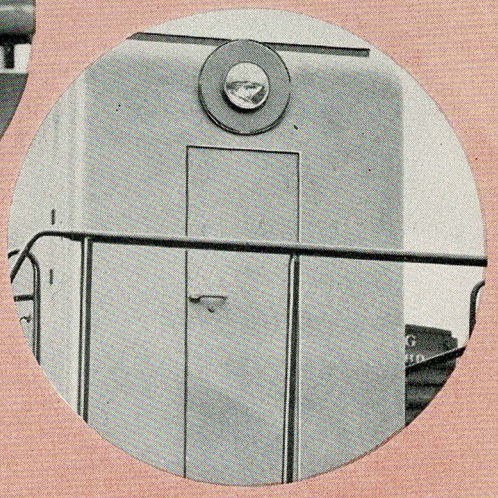


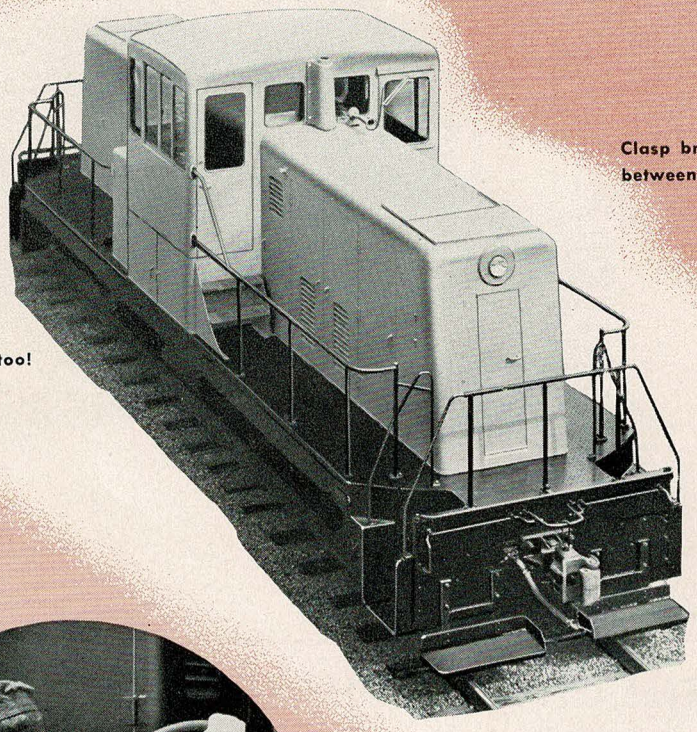
Double sliding windows furnish excellent visibility.



Water level in engine cooling system can be checked at a glance.

New sealed-beam headlights stay bright; eliminate reflector cleaning and lamp focusing.

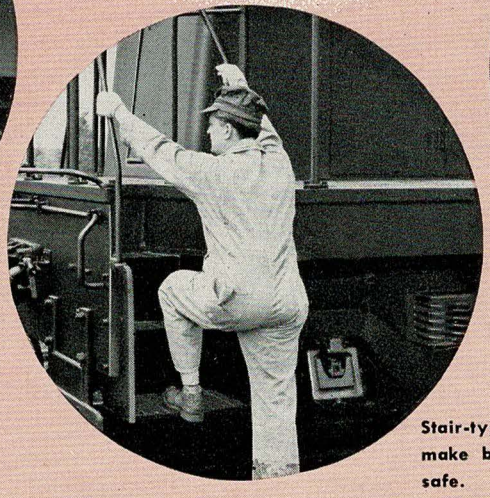




Streamlined too!

Clasp brakes lengthen time between brake adjustments.

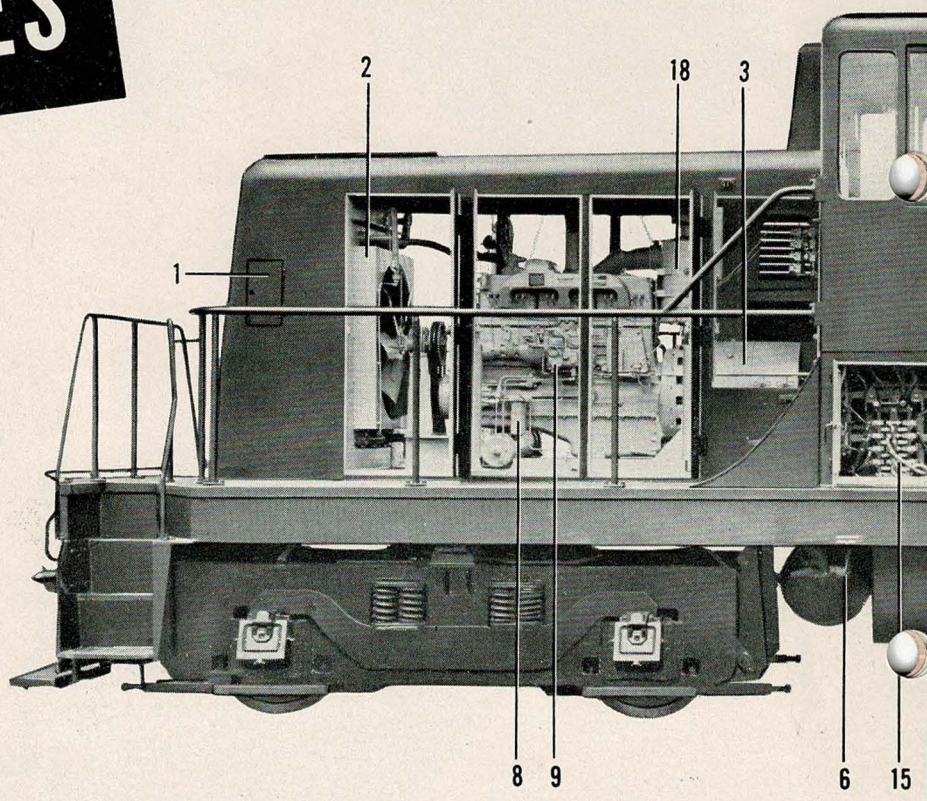
Fuel-filling pipes and level gages are conveniently located for fast refueling from the ground.



Stair-type side steps at all four corners make boarding and alighting easy and safe.

Sandboxes can be filled quickly and easily.

POWER PLANT and ACCESSORIES *Conveniently*



ENGINE AND GENERATOR MOUNTED AS A UNIT

The engine and generator are assembled as a compact unit and mounted together with the radiator, auxiliary generator and air compressor on a heavy steel subbase, which, in turn, is bolted to the locomotive bedplate. This minimizes connections between the power plant and the locomotive proper, and is a great help to the maintenance crew. Parts are readily accessible, and during major overhauls the entire power plant can be easily lifted out and placed on the shop floor.

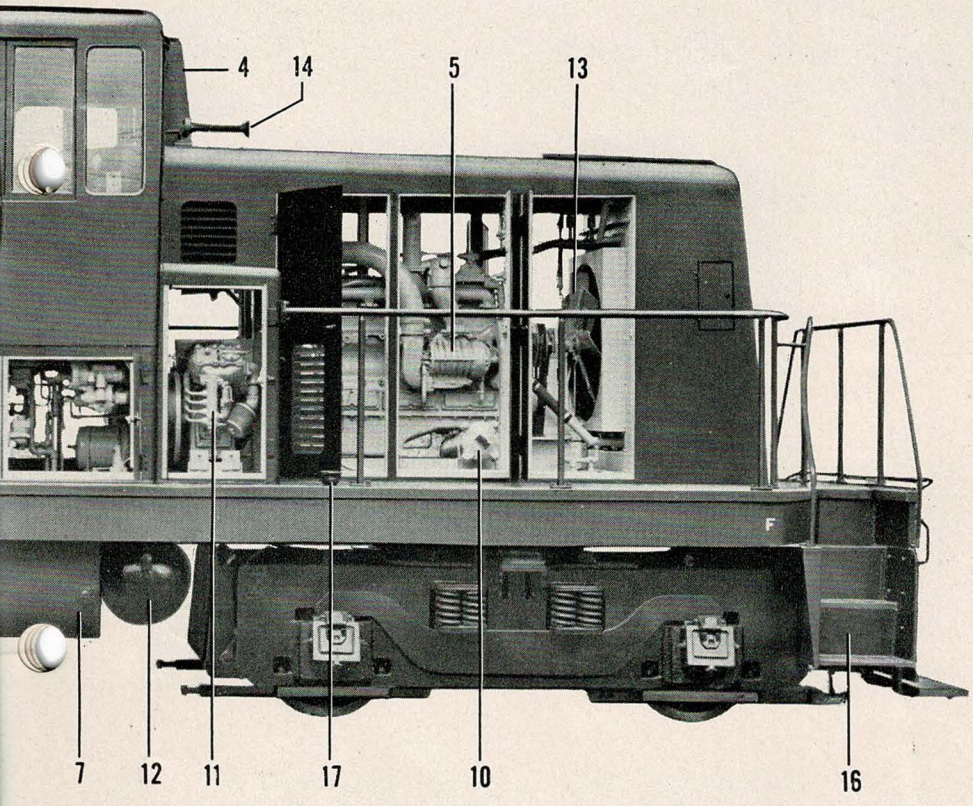
The magnet frame of the generator is bolted solidly to the engine-flywheel housing. The armature is connected to the engine flywheel by a laminated-steel disk flexible coupling. The other end of the armature is supported by an antifriction, grease-lubricated bearing in the outboard frame head. A machined rabbet fit automatically aligns the generator with the engine.

The three-point suspension of the engine-generator unit on the subbase, with a resilient mounting at each point of support, minimizes vibration and eliminates shimming. The two supports at the generator end of the set are in the form of jaws to prevent longitudinal movement.

DIESEL ENGINE

Two supercharged diesel engines, each nominally rated 275 hp at 2100 rpm are direct-connected to the main generators. They are the same dependable type that has proved so economical to operate

Located...Readily Accessible



NOMENCLATURE

1 Sandbox Cover
2 Radiator
3 Traction Generator
4 Exhaust Stack
5 Supercharger
6 Emergency Fuel-shutoff Handle
7 Fuel Tank
8 Fuel-oil Filter
9 Fuel-oil Pump
10 Lubricating-oil Filter
11 Air Compressor
12 Air Reservoirs
13 Radiator Fan
14 Air Horn
15 Reverser
16 Stair-type Side Steps
17 Fuel-tank Filling Pipe
18 Air Intake Filter

in thousands of heavy-duty applications all over the United States.

MAIN GENERATOR

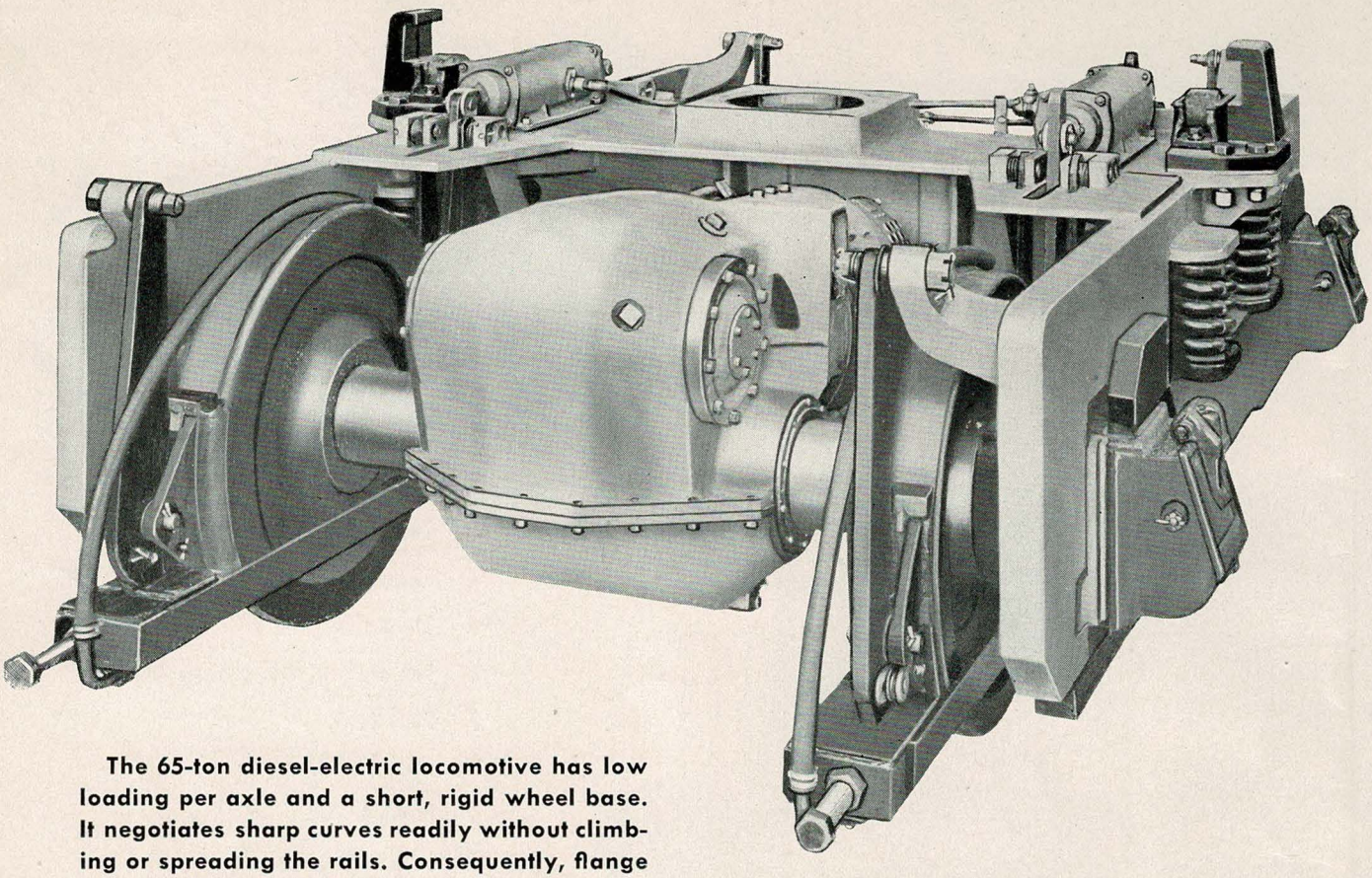
The two direct-current, self-excited, shunt-wound generators are conservatively rated, and have Class B insulation for long life and low maintenance.

The generators are equipped with starting windings for cranking the diesel engines; thus, separate starting motors, ring gears, and associated equipment, and—obviously—attendant maintenance are eliminated. Power for starting is supplied by a 16-cell, lead-acid type storage battery.

AUXILIARIES

Two 750-watt auxiliary generators, one driven by each engine, assure adequate power for control, lights, and battery charging. They maintain approximately constant potential over the entire operating range of engine speeds.

The radiators for cooling the engine water are the reliable flat-tube, continuous-fin type. Each engine has two lubricating-oil filters and its own exhaust muffler. A 400-gallon fuel-oil reservoir system, complete with two level gages, two filling connections, one drain valve, and a spring-operated emergency shut-off valve with remote control trips, is provided.



The 65-ton diesel-electric locomotive has low loading per axle and a short, rigid wheel base. It negotiates sharp curves readily without climbing or spreading the rails. Consequently, flange wear is slight and it is easy on the track.

Powerful TWO-MOTOR

TRUCK FRAMES

The parts are cut from heavy carbon-steel plate, and are securely arc welded to form a uniformly strong, rigid unit. This same type of sturdy construction is now used on hundreds of G-E diesel-electric switchers. The center plate bearing is integral with the frame, has a renewable steel lining, and is arranged for oil lubrication. Side bearings are of the roller type and have renewable, hardened-steel wear plates.

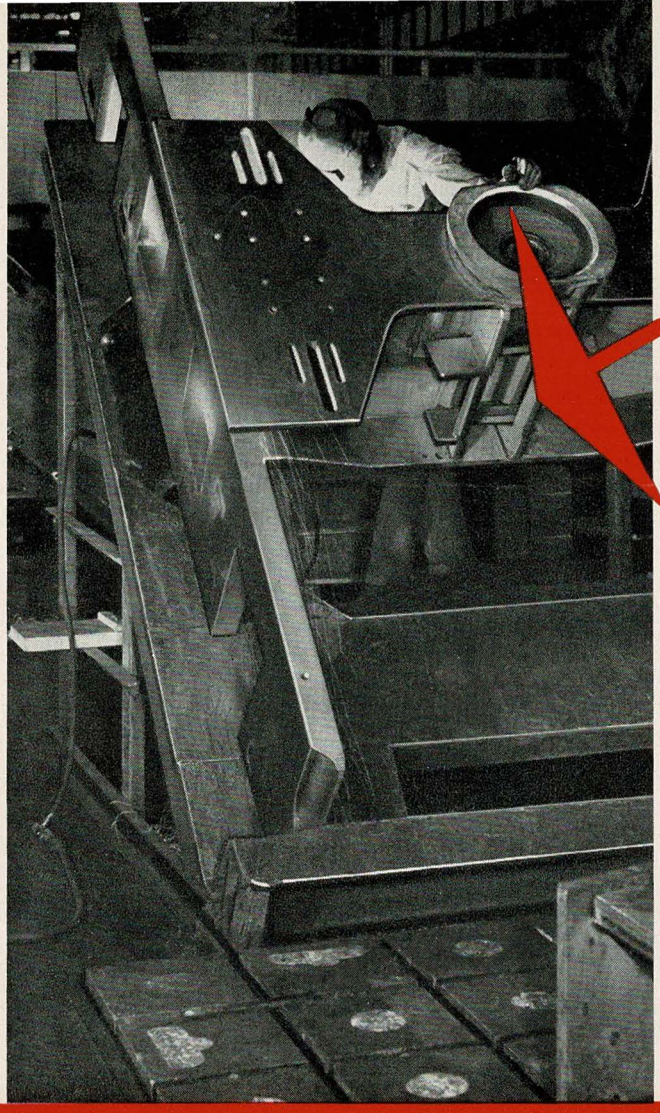
JOURNAL BOXES

Cast-steel journal boxes with lift-type lids and renewable steel pedestal liners are used.

They are fitted with deep-sided babbitted brasses of standard A.T.A. design, and have bronze thrust plates which bear against the ends of the axles. The pedestal tie bars have tapered dowels that fit into tapered recesses in the pedestal to prevent spreading; no shearing stress is placed on the bolts.

SPRING RIGGING

Groups of oil-tempered, carbon-steel coil springs with friction snubbers cushion the locomotive from road shocks. Twin equalizers of the drop-center type, cut from heavy steel plate, compensate for track irregularities.



sturdy, all-welded construction

A huge tilting table permits the truck frame to be positioned in such a way that all welds can be made horizontally. This gives a uniform joint that is stronger than the carbon steel from which the frame is fabricated. This method of welding is always used where strength and sturdiness are of paramount importance.

SWIVEL TRUCKS

The complete assembly has practically no wearing parts to require periodic replacement.

WHEELS

The wheels are of solid-rolled steel, with heat-treated rims 2½ inches thick, providing sufficient material for several re-turnings. The contour of the tread and flange is A.A.R. standard. The forged carbon-steel axles are carefully machined, and all surfaces are finished-ground to remove tool marks.

MOTORS

Each axle of the truck is individually motor-driven through double reduction gearing. The motor-gear unit is mounted on the axle by means of two oil-lubricated sleeve bearings, one on each side of the axle gear.

The other end is supported on the truck frame by a spring support.

BRAKE EQUIPMENT

Two double-acting brake cylinders, mounted on each truck, operate simple, fully equalized brake rigging that applies two shoes to each wheel.

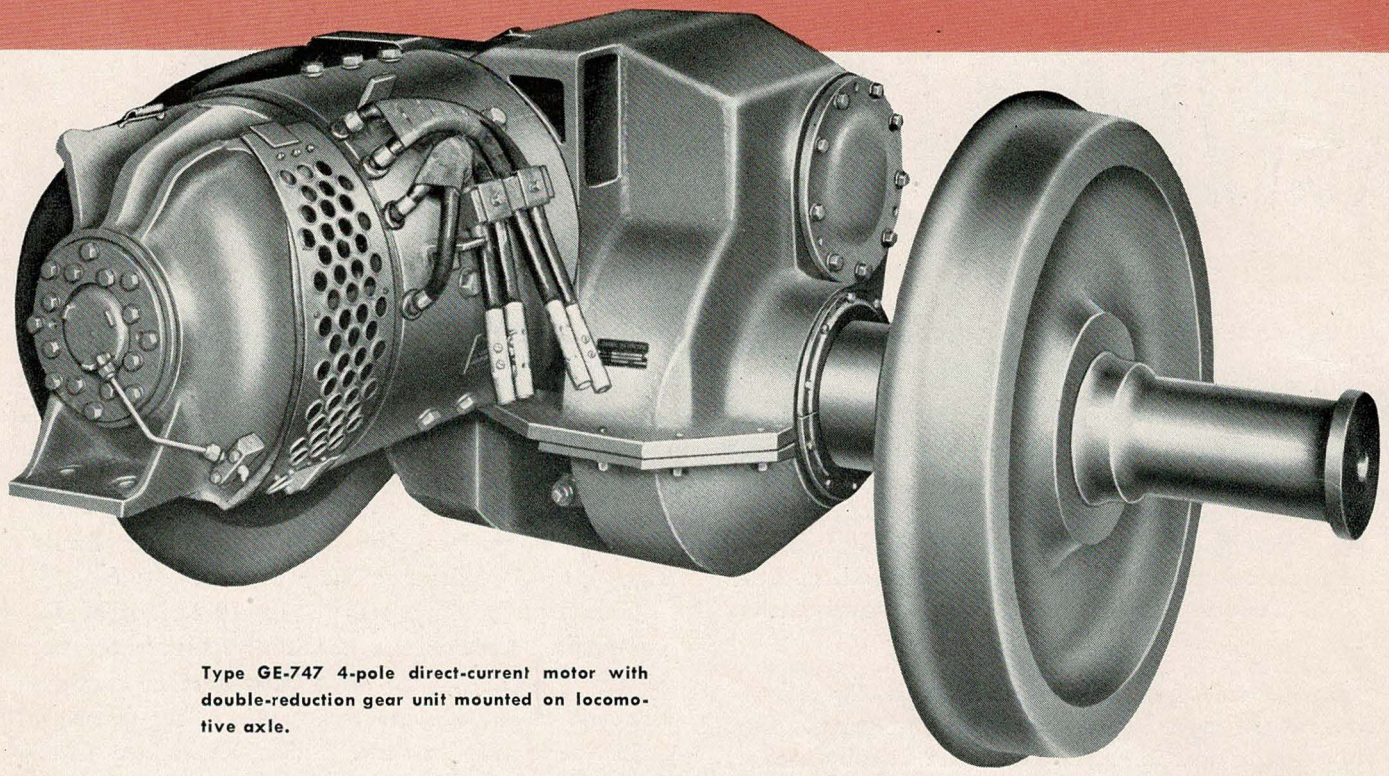
The shoes are applied on opposite sides of the wheel and thus eliminate side pressures on the journal bearings. The large shoe area cuts down the rate of brake shoe wear and makes frequent adjustment unnecessary. Brake levers are fitted with renewable self-lubricating bushings and hardened steel pins.

THE HEAVY-DUTY DOUBLE-REDUCTION DRIVE

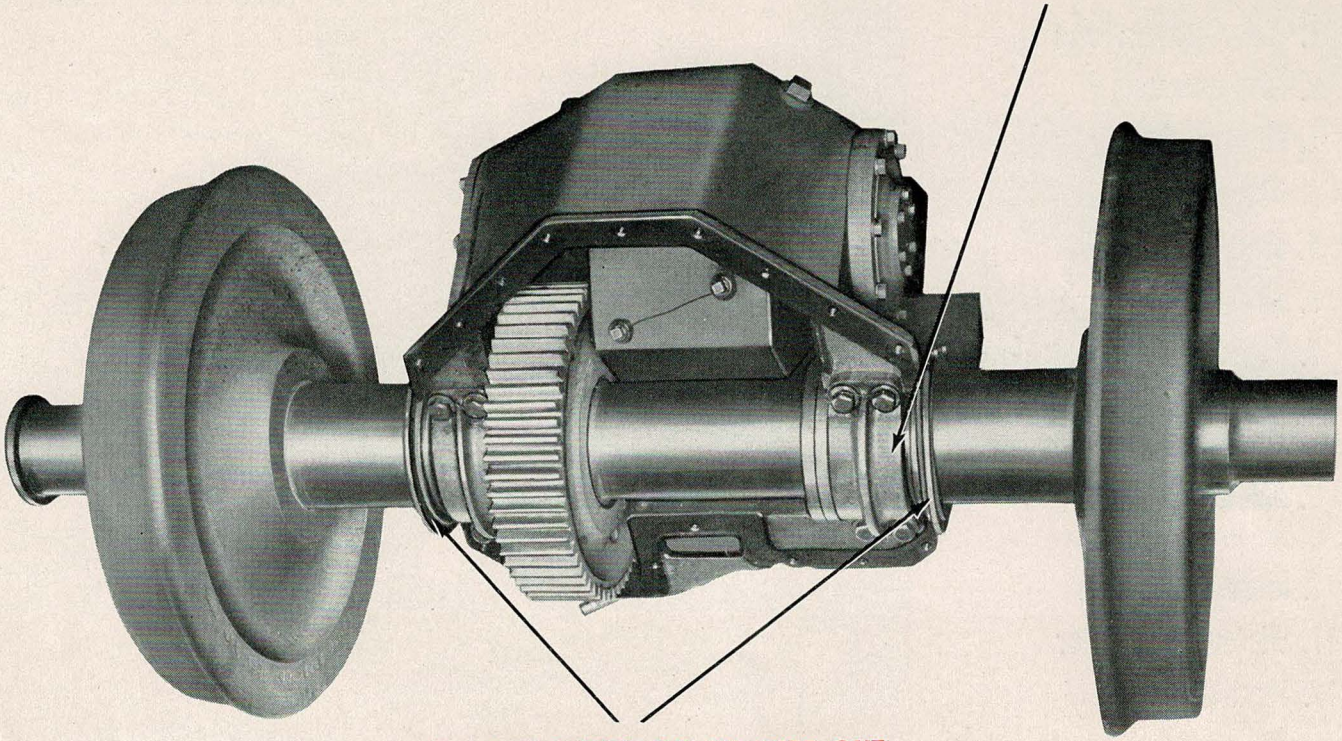
This sturdy, compact motor-gear unit is powerful and efficient. It is built to withstand hard usage and heavy loads, thus requires little servicing. Especially developed for use on diesel-electric locomotives it delivers a high tractive effort at the low speeds employed in industrial switching.

The oil-tight gear case is formed of welded steel plate. All gears are straddle-mounted and flood lubricated, and under normal conditions will last throughout the life of the locomotive.

The four-pole, direct-current commutating pole railway motor is Class B insulated. It is self-ventilated—gets good ventilation even at low locomotive speeds. Large holes are provided on both sides for commutator inspection and easy accessibility to brush rigging.



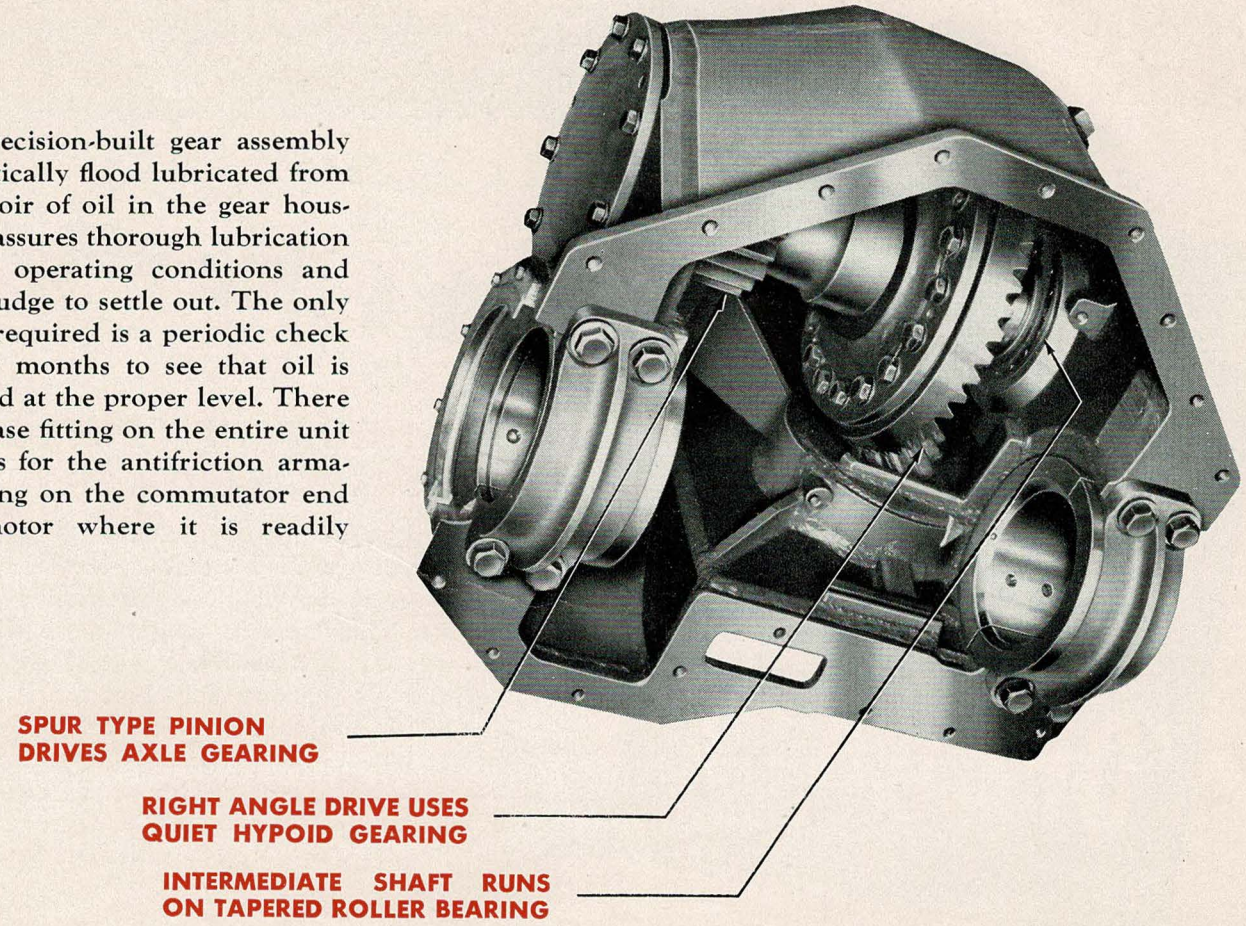
Type GE-747 4-pole direct-current motor with double-reduction gear unit mounted on locomotive axle.



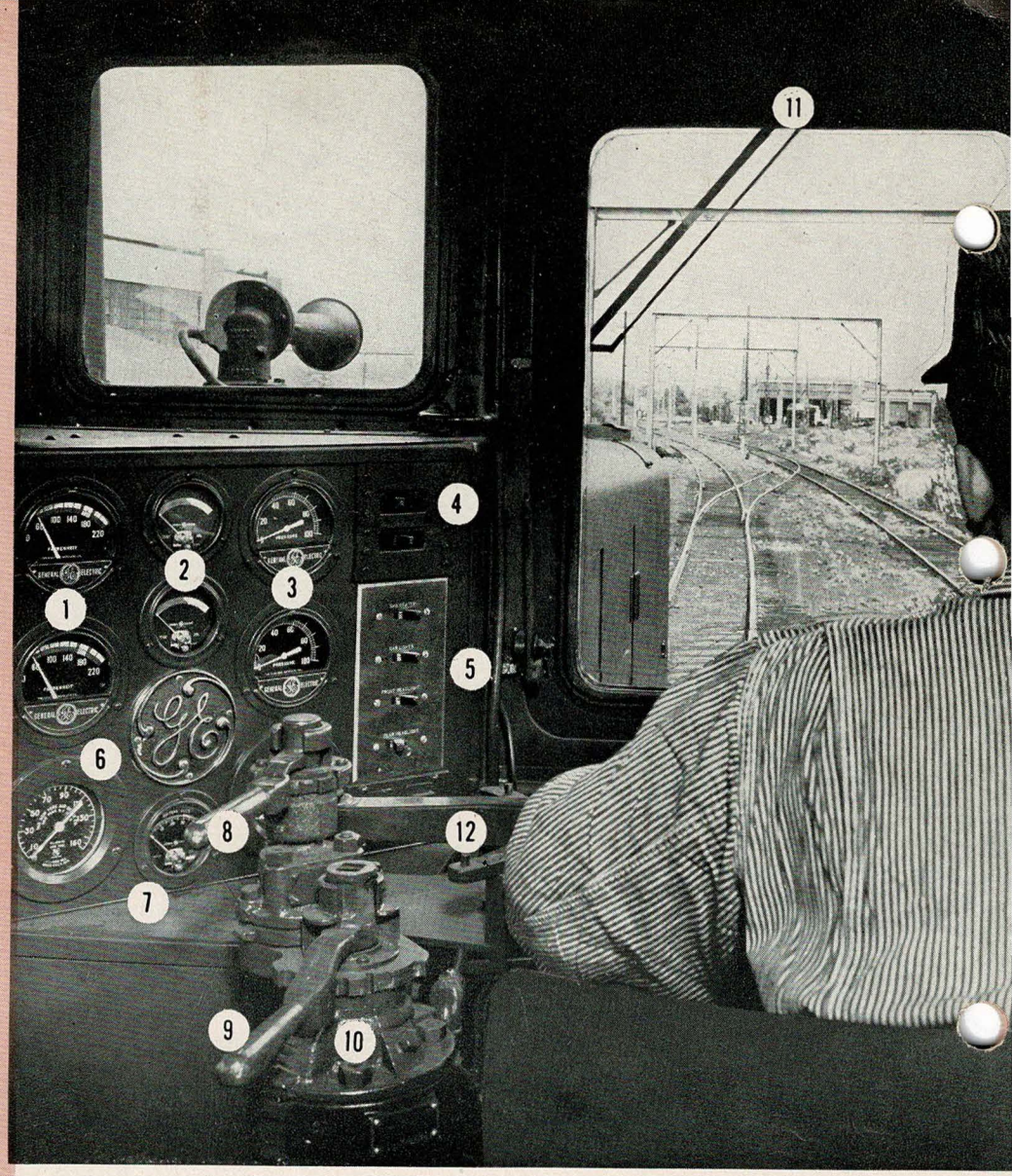
The welded steel gear case has a readily removable cover to give access to the axle suspension bearings. Oil seals are provided where the locomotive axle enters the gear case to prevent oil leakage and entry of dirt into the case.

The motor is easily disassembled from the gear unit by removing ten bolts. A rabbet fit between the gear case and the motor automatically aligns the two parts.

This precision-built gear assembly is automatically flood lubricated from the reservoir of oil in the gear housing. This assures thorough lubrication under all operating conditions and permits sludge to settle out. The only attention required is a periodic check every few months to see that oil is maintained at the proper level. There is one grease fitting on the entire unit and this is for the antifriction armature bearing on the commutator end of the motor where it is readily accessible.



1. Water Temperatures
2. Load Indicators
3. Oil Pressures
4. Circuit Breakers
5. Switch Panel
6. Air Gage
7. Battery Voltmeter
8. Independent Air Brake Handle
9. Automatic Air Brake Handle
10. Brake Valve
11. Window-wiper Motor
12. Throttle



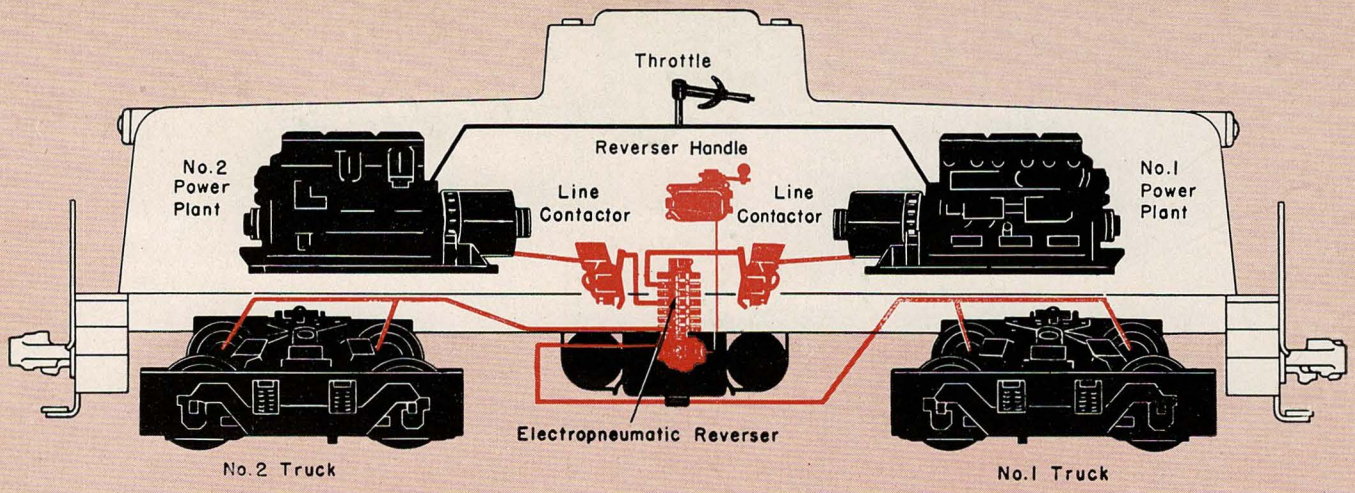
IT'S EASY TO OPERATE

. . . with a clear view ahead

FINGER-TIP CONTROL FOR SAFER, FASTER SWITCHING

The operator sits up high with a clear view in both directions, the controls conveniently grouped within arm's length. The locomotive is easy to operate. The operator simply opens the throttle and it responds instantly, accelerating quickly and smoothly. Cars can be spotted accurately. Reversing is equally simple—the operator just closes the throttle and moves the reversing lever.

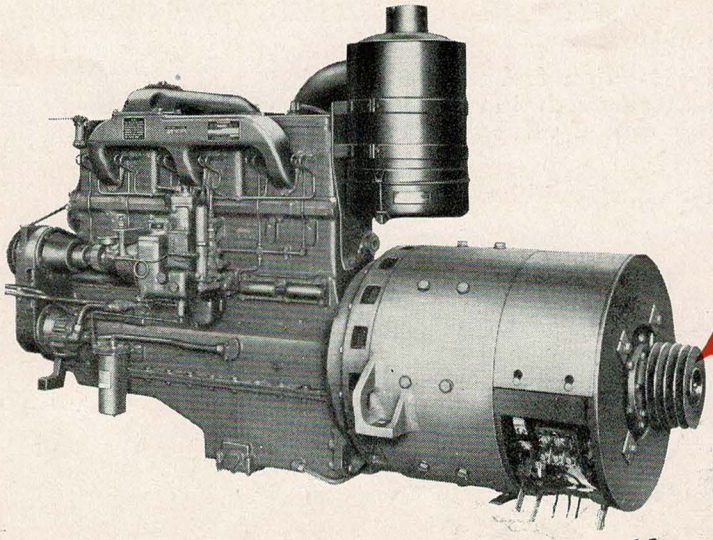
It's clean and comfortable in the cab, too. This is another reason why operators prefer diesel-electrics . . . why you will get *safer, faster switching.*



COMPACT POWER PLANTS ...are simply designed

The power plants, circuits, and controls are easy to maintain because they are simply designed. Each power plant operates independently except both are controlled by one throttle. Normally, the two power plants share the trailing load equally, but in an emergency one power plant will operate the locomotive at half its rated capacity.

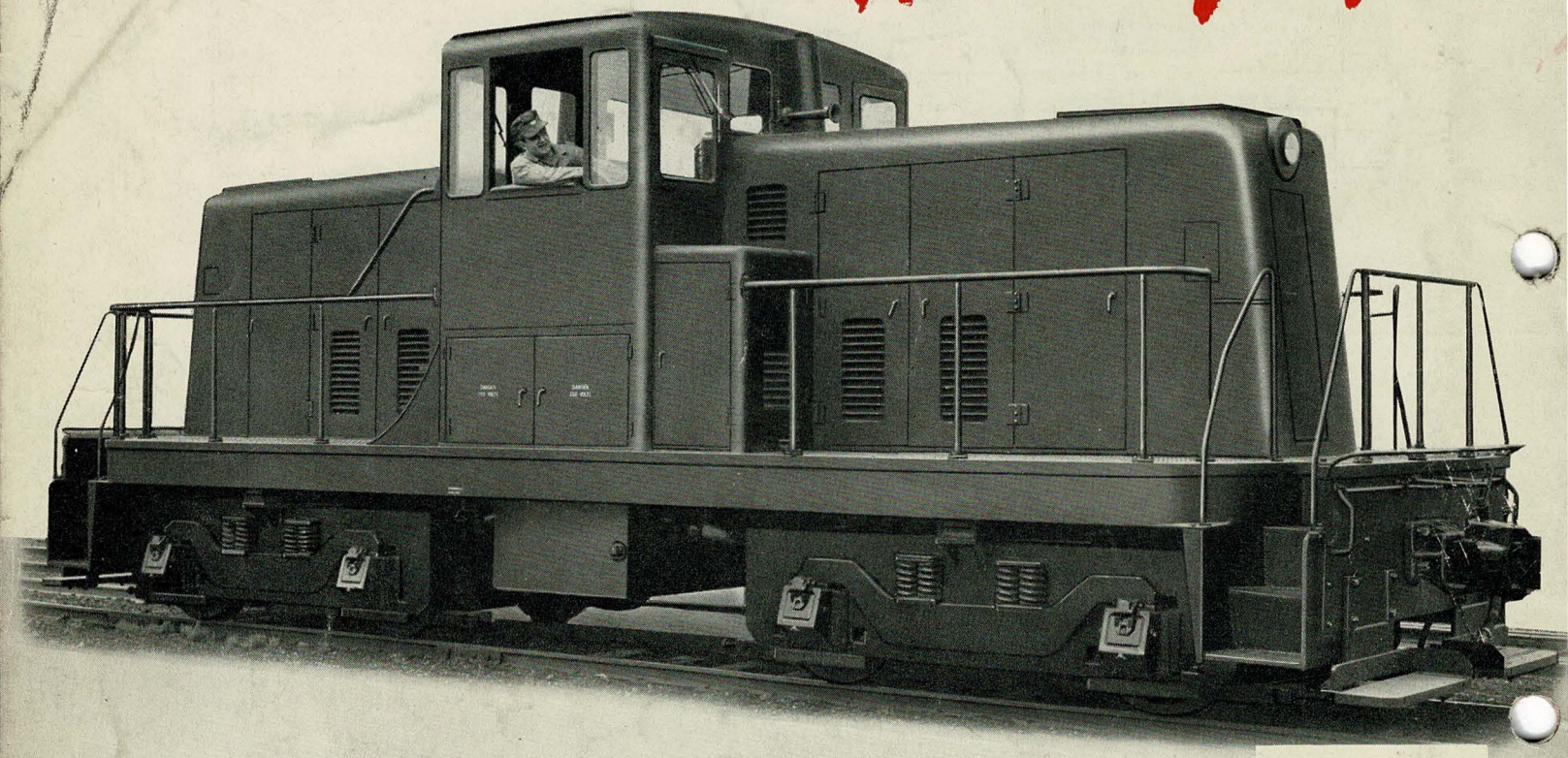
The power circuits and electric controls for this 65-ton switcher are simple, and their operation is completely automatic. They require only periodic attention, and are standard, time-tested devices that any plant electrician can service readily.



This modern traction generator gives the 65-tonner smooth operating characteristics. The double-excited split field gives a generator characteristic that follows closely the diesel-engine output. Thus throttle response is quick and locomotive acceleration is both smooth and snappy.

Another important feature of this generator is its excellent commutation. The commutator is carefully seasoned after assembly and the brush rigging is of a special, simple design that gives the brushes unusual riding quality. Large inspection holes make the commutator and brush rigging easy to service.

FULLY EQUIPPED *All ready to go!*



ALL THESE ITEMS ARE STANDARD EQUIPMENT

1. Four air-operated sanders for sanding the rails for either direction of operation.
2. Bell, with air-operated ringer.
3. Air horn.
4. Two 200-watt sealed-beam headlights.
5. Lights for the cab and the gage panel.
6. Two air-operated window wipers.
7. Fan-blown, hot-water cab heater.
8. Swiveled, upholstered seat for operator.
9. Upholstered arm rest.
10. One 1½-quart, carbon-tetrachloride fire extinguisher.
11. A set of tools.
12. Extension lamp with guard and 35-foot cord.
13. Fuel and lubricating-oil pressure gages, water-temperature indicators, battery-charging voltmeter, air-brake gages, load indicators, and fuel-tank-level indicators.
14. A 400-gallon fuel tank with filling connections, drain valve, and emergency shutoff valve with remote control trips.
15. 16-cell lead-acid battery.

. . . ***And your name on both sides***

OTHER STANDARD SIZES AVAILABLE:

25-ton

45-ton

80-ton

APPARATUS DEPARTMENT

GENERAL ELECTRIC

SCHENECTADY, N. Y.

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