

# ***Diesel*** ***Locomotives***

**ELECTRICAL EQUIPMENT**

A PRACTICAL TREATISE ON THE  
OPERATION AND MAINTENANCE  
OF RAILWAY DIESEL LOCOMOTIVES

**by JOHN DRANEY**

PAST PRESIDENT, UNITED ASSOCIATIONS OF  
RAILROAD VETERANS

ILLUSTRATED

1945

**AMERICAN TECHNICAL SOCIETY, PUBLISHERS**  
CHICAGO, U.S.A.

# CONTENTS

	Page
Current Electricity . . . . .	1
ELECTRIC CURRENT—AMPERES—AMMETER—PRESSURE—VOLT—VOLT-METER—RESISTANCE—OHM—INSULATORS AND CONDUCTORS—SOURCES OF ELECTRIC CURRENT.	
Principles of a Generator . . . . .	15
ESSENTIAL PARTS OF A DYNAMO—PRODUCING AN E.M.F.—RIGHT-HAND RULE—SIMPLE GENERATOR—SLIP RINGS—COMMUTATORS—ARMATURE WINDINGS.	
Ohm's Law . . . . .	35
ELECTRICAL MEASUREMENTS—THREE FACTORS OF CIRCUIT—APPLICATIONS—PRESSURE—POWER EQUATION.	
Electrical Power Measurements . . . . .	47
WORK AND POWER—HORSEPOWER—ELECTRIC POWER—DIRECT-CURRENT POWER MEASUREMENTS.	
Transmission Equipment . . . . .	59
MAIN GENERATORS—TRACTION MOTORS—AUXILIARY GENERATORS—DIFFERENTIAL FIELD EXCITERS—GENERAL ELECTRIC DRIVE SYSTEM—ELECTRICAL AUXILIARIES—CONTROL APPARATUS AND CIRCUITS—KEYS TO THE STUDY OF DIESEL ELECTRIC SYSTEMS—SYMBOLS—TRAIN MOVEMENT—MOTIVE POWER.	
General Electric Light Weight Diesel Locomotive . . . . .	111
FINGER-TIP CONTROL—HEAVY-DUTY GENERATOR—MOTOR-GEAR UNIT—SINGLE-REDUCTION DRIVE—ONE THROTTLE OPERATES BOTH POWER PLANTS.	
Baldwin-Westinghouse Equipment for Switching Locomotives . . . . .	115
ESSENTIAL ELEMENTS—ELECTRICAL APPARATUS—GENERATING EQUIPMENT AND CONTROL DEVICES—PERFORMANCE—GENERATOR UNIT—TOOLS FOR GENERATOR UNIT—TRACTION MOTORS—COMMUTATORS—ELECTRO-PNEUMATIC SWITCHES—ELECTRO-PNEUMATIC REVERSER—CONTROL MAGNET VALVES—ELECTRO-MAGNETIC CONTACTORS—CARBONSTAT AND REGULATING VALVE.	
Electro-Motive Equipment . . . . .	201
TRANSITION—MAIN GENERATOR—AUXILIARY GENERATOR—TRACTION MOTORS—CONTACTORS—LIGHTING AND CONTROL SWITCHES—BATTERY—HEADLIGHTS—FUSES—HOT JOURNAL ALARM THERMOCOUPLES.	
Alco-G.E. 660 Hp. and 1000 Hp. Diesel-Electric Locomotives . . . . .	241
MAINTENANCE—HIGH POTENTIAL TESTS—HIGH POTENTIAL VOLTAGES—ARMATURES—COMMUTATORS—BRUSHES AND BRUSHHOLDERS—LUBRICATION—MOTOR AXLE BEARINGS—TRACTION GENERATOR—TRACTION MOTOR—CONTROL EQUIPMENT.	
Alco-G.E. Diesel Electric Road Locomotive 2000 Hp. Equipment . . . . .	347
PROPULSION EQUIPMENT—CONTROL EQUIPMENT—ELECTRICAL TROUBLES—BLOWN FUSES—ELECTRICAL EQUIPMENT—CONTACTOR AND RELAY SEQUENCES—SCHEMATIC DIAGRAMS.	
Index . . . . .	381