

# LOCOMOTIVE SPECIFICATIONS

**GENERAL MOTORS  
MODEL GP38-2  
2000 HP DIESEL-ELECTRIC  
GENERAL PURPOSE LOCOMOTIVE**

**Electro-Motive Division  
La Grange, Illinois**



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# SECTION 1

## GENERAL INFORMATION AND IDENTIFICATION



<b>MODEL</b>	GP38-2 2000 HP Diesel-Electric General Purpose Locomotive.
<b>TYPE</b>	AAR Designation (B-B), Common designation (0440).
<b>ARRANGEMENT</b>	<p>The general arrangement of the locomotive is shown on Elevation and Floor Plan Drawing attached.</p> <p>The locomotive consists of one unit complete with engine, generator, trucks and all necessary accessories for single unit operation, with a control cab between the long and short hoods.</p>
<b>NOMINAL DIMENSIONS</b>	<p>Distance, pulling face of coupler to centerline of truck . . . . . 12' 7"</p> <p>Distance between bolster centers . . . . . 34' 0"</p> <p>Truck — rigid wheel base . . . . . 9' 0"</p> <p>Distance, pulling face front coupler to rear coupler . . . . . 59' 2"</p> <p>Width over cab sheeting . . . . . 10' 0"</p> <p>Width over handrail supports . . . . . 10' 3-1/8"</p> <p>Height, top of rail to top of cooling fan guard . . . . . 15' 4-7/16"</p> <p>Width over basic arm rests . . . . . 10' 4"</p>
<b>DRIVE</b>	<p>Driving motors . . . . . Four</p> <p>Driving wheels . . . . . 4 Pair</p> <p>Diameter wheels . . . . . 40"</p>
<b>WEIGHTS AND SUPPLIES</b>	<p>Total loaded weight on rails (approximately) . . . . . 250,000 lbs.</p> <p>Fuel . . . . . 1,700 gal.</p> <p>Sand . . . . . 56 cu. ft.</p> <p>Cooling water . . . . . 240 gal.</p> <p>Lubricating oil . . . . . 243 gal.</p>
<b>CLEARANCES</b>	Locomotive outline drawing found in rear of specification book illustrates clearance conditions.
<b>SAFETY APPLIANCES</b>	All steps, grab handles and other safety appliances cover EMD interpretation of Interstate Commerce Commission requirements.

**SECTION 1**

**General Information And Identification**



**CURVE  
NEGOTIATION**

Truck swing limits single unit curve negotiation to a 42° or 140 ft. radius curve.

Single unit coupled to a 50 ft. car is limited by car coupler swing to a 19° or 302 ft. radius curve.

Two units coupled in multiple limited by coupler swing to a 30° or 190 ft. radius curve.

## SECTION 2 CARBODY CONSTRUCTION



- FRAMING** Underframe is of constant section design and serves as main carrying member for hoods, cab and equipment. Two channel side sills supported by center sills support catwalk along side of hoods. Draft gear pockets are welded to the built-up platform construction between center sills. The structure is all welded construction.
- COLLISION POSTS** Collision posts are designed integrally with low front hood and welded to underframe.
- FLOORING** Floor plates with antiskid surface are welded to underframe on end platforms and along side of hoods. Plywood cab floor covered with linoleum.
- UNDERFRAME CENTER BEARINGS** Welded to body bolster assembly.
- COUPLERS** Type "E", 6-1/4" x 8" shank, 28-1/2" long. Maximum operational swing of coupler is 17° to either side of centerline. Maximum free (manual) swing is 4° from center.
- UNCOUPLING DEVICE** Each end of the locomotive is provided with a top operating device arranged to operate from either side of the locomotive.
- DRAFT GEAR** National Castings NC-391 rubber draft gear with alignment control.
- JACKING PADS** Combination jacking pad and cable sling is provided near each bolster at side sill.
- PLATFORM STEP** Steps are provided at each corner leading to locomotive platform.
- CAB** The floor is elevated above the top of the underframe. A trap door in cab floor and side drop doors provide access to equipment beneath cab floor. Doors are located at diagonally opposite corners leading to platform along-side hoods. Side windows on both sides of cab are sliding double sash type and fitted with latches. End windows in doors and cab are stationary and set in a special rubber retainer. Cab is of fabricated steel construction. Divided center window is provided over low short hood.

SECTION 2  
**Carbody Construction**



- WINDOWS** All windows and doors are provided with safety plate glass.
- DOOR LOCKS** The cab doors are fitted with an inside latch and provided with a lock. Doors are of honeycomb construction.
- INSULATION** Ceiling is lined with perforated metal for sound reduction; backed up by insulation. Acoustic and thermal type insulation is added to the cab side walls and the rear partition of the electrical cabinet.
- BATTERY BOX** Two battery boxes are provided, one on each side of the short hood. Trap doors in catwalk provided for servicing and bolted removable panels provided for removing batteries. Ventilation and drainage provided. Battery boxes are sized to fit either 17 or 25 plate batteries.
- HOOD** The power plant compartment is designed to a minimum width to provide a walkway around the hood. Doors are provided which give access to power plant equipment and allow removal of complete power assemblies. Hatches supporting cooling fans can be removed separately for removal of radiators. The hood is bolted to the inertial filter compartment and to the deck and can be removed complete with radiators and cooling fans for major repairs. When provided, dynamic brake hatch can be removed separately.
- HOOD DOORS** All side doors have suitable outside hinges and latches.
- LIFTING EYES** Provision is made for lifting eyes on hood and hatches to facilitate handling with a crane.
- BALLAST** The locomotive is basically designed for balance.

## SECTION 3

# TRUCKS



### TRUCK ASSEMBLIES

Two four-wheel truck assemblies are provided per locomotive and are interchangeable.

Fully flexible bolster supported on springs providing vertical movement; swing hangers provide lateral movement. The truck frame is supported on each of the four journal boxes by twin coil springs.

Each of the four motors is supported by the driving axle to which it is geared, and a special suspension on the truck transom provides a flexible support, dampening the torque shocks of the motor.

### AXLES

Axles with journals to suit Hyatt roller bearings. Axle material conforms to physical properties of current AAR specifications.

### WHEELS

Rolled or cast steel, heat treated, rim quenched, 40" diameter with 2-1/2" rim. Wheel treads are finished smooth and concentric. AAR diameter index groove is provided to indicate wheel wear.

### JOURNAL BOXES

Locomotive equipped with Hyatt roller bearings 6-1/2" journals of special EMD design. Improved rear cover seal and oil fill cup for improved oil retention and inspection provided. Crowned rollers extend bearing life. Lateral thrust is taken through a cushioning arrangement directly by the box with improved oil flow over thrust block characteristics. Journal box pedestal guides provided with spring steel wear plates.

### PEDESTALS

Lined with composition nylon plates bolted to frame.

### PEDESTAL TIE BARS

Fitted and applied at the lower end of the pedestal legs, held in position by bolts.

### TRUCK CENTER BEARING RECEPTACLE

Truck center bearing receptacle provided with wear plates and dust guard.

### SIDE BEARINGS

Friction type side bearings.

### INTERLOCKS

Body and truck interlocks provided each side of the center plate, serving as antisluing device in case of derailment.

**SECTION 3**

**Trucks**



**TRUCK BRAKES** Clasp brake rigging provided on each wheel, operated by individual brake cylinders.

**SLACK  
ADJUSTERS** Pin type slack adjusters.

**BRAKE PINS** All pins and bushings hardened and ground.

**HAND BRAKE** Hand brake provided for the locomotive connected to one brake cylinder lever only. All trucks provided with lever for hand brake connection, making trucks interchangeable.



# SECTION 4

## POWER PLANT AND TRANSMISSION



<b>ENGINE</b>	General Motors sixteen cylinder, 2 cycle diesel engine. Power assemblies arranged in 45 degree V, with 9-1/16" bore, 10" stroke, and unit injection. Roots blower scavenging through cylinder wall intake, and multivalve exhaust. Water cooled cylinder liners and heads, oil cooled pistons, ten bearing crankshaft, drop forged connecting rods, and floating piston assembly. Isochronous governor speed control, separate overspeed trip and high crank-case pressure protection. Engine shipped without lubricating oil.
<b>MAIN GENERATOR</b>	EMD AC main generator with rectified output for delivery to traction motors, 600 volt (nominal) direct current rating, ventilated by blower. Armature shaft supported by single bearing with direct connection to engine crankshaft through alternator rotor and flexible coupling. Adequate capacity to continuously transmit the rated output of the engine under all conditions for which the locomotive is designed.
<b>GENERATOR EXCITATION</b>	Excitation for main generator supplied from the alternator through silicon controlled rectifiers.
<b>ALTERNATOR</b>	EMD 200 volt, 3-phase, 16 pole alternator, built integral with main generator, to supply AC power to induction motors driving engine cooling fans.
<b>LOCOMOTIVE CONTROL</b>	Permanent parallel connection with no motor field shunting or fully automatic transition with no motor field shunting, dependent upon selection of gear ratio. High voltage circuits safeguarded by ground protective relay. Full range wheel slip control with automatic sanding under wheel slip conditions.
<b>LOAD CONTROL</b>	Load control provided to automatically maintain horsepower output in accordance with the published tractive effort characteristics of the locomotive.
<b>TRACTION MOTORS</b>	Four EMD direct current, series wound, forced ventilated, axle hung motors with high capacity roller type armature bearings, new bearing seals, Teflon covered string bands and improved pinion gear contour are all provided.
<b>AUXILIARY GENERATOR</b>	Direct current generator, driven from engine gear train, provides current for control circuits, lighting, battery charging, and separate excitation of main generator. Voltage automatically controlled by static voltage regulator.
<b>ENGINE STARTING</b>	Engine is started by using two 32 volt series connected motors, energized from the locomotive batteries. Engine start switch at governor end of engine.
<b>STORAGE BATTERY</b>	32 cell, 64 volt, 420 ampere hour capacity (8 hour rating) battery housed in two boxes located under catwalks adjacent to short hood.

## SECTION 4

# Power Plant And Transmission



### ENGINE COOLING

Pressurized cooling system consisting of direct driven centrifugal water pump on the engine, radiators, and AC motor driven cooling fans located above radiators at rear of long hood. Water cooled oil cooler and water tank mounted as a unit directly in rear of the governor end of engine, automatic water temperature control, hot engine alarm, and engine shutdown in the event of low water level, are included. Improved water fill system to prevent inadvertent opening of the pressure cap is provided. Water level inspection window in hood is provided.

### ENGINE LUBRICATION

The engine lubricating oil system is a pressure system using two positive displacement gear type pumps combined in a single unit. One pump delivers oil for the pressure lubricating system, the other for piston cooling. The oil supply to these pumps is drawn from the oil strainer chamber through a common suction pipe.

A scavenging oil pump is used to draw oil from the engine oil pan through a strainer, pump it through the full flow lube oil filter to the cooler core section of the cooler tank and return it to the strainer chamber. Low oil pressure and high oil temperature protection is provided resulting in engine shutdown.

### ENGINE AIR INTAKE FILTERS

Paper filters provided for engine intake air.

### ENGINE EXHAUST

Two sets of dual fabricated chambers, each set with an independent exhaust.

### ENGINE FUEL SYSTEM

Return flow, single DC motor driven gear pump, protected by suction strainer, and discharge filters with filter by-pass and indicator to insure clean fuel for the engine. Sight glasses permit visual inspection of fuel flow, and relief valve offers protection against excessive pressures.

### FUEL TANK

1700 gallon capacity, fuel tank built of heavy gauge steel, with baffle plates, located underneath the locomotive body. One filling station on each side. Tank equipped with venting, cleanout plug, and nonremovable water drain.

One dial type fuel gauge on right side of tank and one direct reading type fill sight glass on each side of tank. Each filling station provided with electric emergency fuel cutoff actuating button. Similar pushbutton located in cab. When operated, engine stops immediately.

### ENGINEER'S CONTROL STATION

Control station, located conveniently to the left of the engineer's seat, includes the engine speed throttle, locomotive reverse lever, automatic and independent brake valve. The lever arrangement is such that the throttle must be in idle before the reverse lever can be removed to isolate the controller. The horn valve, bell valve and independent sander switch are also located in the control stand.

## SECTION 4

# Power Plant And Transmission



### **ENGINEER'S CONTROL SWITCHES**

Control and lighting switches located within reach of the engineer, including switches for control and fuel pump, generator field, engine run, gauge lights, headlight "bright" front and rear, headlight "dim" front and rear. Engine stop, number and class light and isolation switches located on rear cab wall. Cab heater switches are located on cab heaters, providing individual control.

### **ENGINEER'S INSTRUMENT PANEL**

A lighted instrument panel is provided on top of the engineer's controller containing 4-1/2" air brake gauges, wheel slip light, ground relay light, PCS "open" light, and the traction motor load indicating ammeter.

### **SPEED RECORDER**

A combination instrument containing the speed indicating dial, speed recorder, tape, and mileage odometer is provided on the front cab wall.

### **EQUIPMENT AIR SUPPLY**

An inertial separator, roof mounted in a separate compartment behind the cab, supplies filtered intake air to major components. The separated contaminants are blown out by an AC fan incorporated in the separator. Filtered air is supplied to the combination traction motor and main generator blower and the engine air filters. Traction motor air is delivered to a duct and plenum chamber system on the underframe and supplies the traction motors with cooling air. The main supply air duct forms the left side walkway. Generator discharge air is used to pressurize the engine compartment. Electrical cabinet is ventilated through four element filter using standard pleated paper lube oil filters from the blower air supply.

### **ELECTRICAL CONTROL CABINET**

A totally enclosed, readily accessible, cabinet houses the locomotive high and low voltage control equipment. Fault annunciator panel is provided within the cabinet to indicate equipment malfunctions.

An additional cabinet, mounted in the engine room, houses the control equipment for the radiator cooling fan motors. Fuse panel is provided for cooling fan protection.

Control equipment includes a full complement of control circuit plug-in modules, high capacity power contactors, and gang operated reverser and transfer switches.

## SECTION 5

# AIR BRAKES



<b>AIR BRAKES</b>	26L brake schedule including self-lapping independent and standard 26F control valve portions.
<b>FOUNDATION BRAKES</b>	9" x 8" cylinders, 5.65:1 lever ratio, 14" cast iron brake shoes.
<b>BRAKE PIPING</b>	Wrought steel pipe with AAR fittings are used. Generally, all piping 1/2" O.D. and under uses nominal size steel tubing with SAE fittings.
<b>MAIN RESERVOIR</b>	Two 15" diameter x 152" steel reservoirs mounted beneath the underframe. Total capacity: 49,000 cu. in. No. 1 main reservoir equipped with an air operated automatic drain valve.
<b>AIR COMPRESSOR</b>	<p>One two stage, three cylinder, water cooled direct coupled compressor, having a displacement of 254 cu. ft. per minute at 900 RPM. Compressor is equipped with large oil capacity and disposable intake air filter.</p> <p>Electric air compressor governor adjusted to maintain reservoir pressure between 130 and 140 psi.</p>
<b>SAND CAPACITY</b>	<p>Two sand boxes with a total capacity of 56 cu. ft.</p> <p>Sand boxes are filled from the outside of locomotive on top of hoods.</p>
<b>SANDING</b>	Sanding systems are controlled electrically. Manual sanding switch or automatic sanding in power operates eight single line sand traps, four traps for forward movement and four traps for reverse movement. A separate switch is provided for lead axle sanding only. Sandtrap cutoff valves are provided. Outside access is provided for trap maintenance.
<b>CONDUCTOR'S BRAKE VALVE</b>	Conductor's brake valve is provided on the left side of the cab.
<b>GAUGES AND TEST FITTINGS</b>	Large 4-1/2" air gauges fitted with gauge test fittings are standard. Test fitting also supplied at compressor unloader switch.

## SECTION 6

# EQUIPMENT



**CAB HEATING AND VENTILATING** Two combination hot water cab heaters and defrosters with fan driven air circulating system, and selective outside air intake. Each heater is provided with three speed switch for control of fan speed.

**WINDOW WIPERS** Total of six air operated window wipers are provided for front and rear windows on both sides of cab and center windshields.

**SUN VISORS** Total of four adjustable metal sun visors are provided.

**CAB SEATS** The two wall mounted upholstered cab seats have forward and backward as well as height adjustments. Both seats can be turned 180 degrees. Arm rests are provided outside the side windows.

**FIRE EXTINGUISHERS** Two 20 lb. Ansul, one located in cab, the other in the engine compartment.

**HEADLIGHT** Twin sealed-beam headlights, front and rear, are equipped with two 200 watt, 30 volt sealed beam units. Bright and dimmer switch for each light provided in operator's cab.

**WARNING DEVICES** Three chime diaphragm type air horn, two bells pointing forward and one to the rear with lever operated modulating horn valve. Horn is located on center line of cab roof.

One 12" locomotive bell with internal pneumatic ringer, located in underframe.

**LOCOMOTIVE LIGHTING** Lights and outlets are as follows:

1. Two ceiling cab lights
2. Two engine room lights
3. Two ground lights
4. Eight number lights
5. Three gauge lights
6. Outlet receptacles: one in engine room, one in cab
7. One short hood compartment light
8. Four classification lights
9. Two platform lights, one each end

**SECTION 6**  
**Equipment**



**MARKER AND  
FLAG BRACKETS**

Four standard combination flag and light brackets are provided, two each are located at front and rear of locomotive.

**NUMBER BOXES**

Four lighted number boxes, two on each end of locomotive, mounted at an angle for both forward and side visibility. Numbers are painted on glass windows and are not removable.

**CLASSIFICATION  
LIGHTS**

Classification lights built into each corner of front and rear hood.

**MISCELLANEOUS**

Two coat hooks provided in cab.

# SECTION 7 LOCOMOTIVE MODIFICATIONS



The following modifications can be supplied on request to satisfy various operating requirements. The base price of the locomotive described in this specification does not include these modifications.

- |                                     |  |
|-------------------------------------|--|
| <b>MULTIPLE CONTROL</b>             | Multiple control equipment available to allow operating two or more units from one cab. Locomotive equipped with one 27 point power plant receptacle per end and one power plant jumper cable is provided. |
| <b>AIR COMPRESSOR</b>               | Two stage, six cylinder air compressor, water cooled, having a displacement of 401 cu. ft. per minute at 900 RPM.  |
| <b>WATER COOLER</b>                 | Water cooler or refrigerator cooler with cup dispenser is available.   |
| <b>TOILET</b>                       | Toilet of incinerating, chemical, flush type with water tank, or dry hopper type is available.   |
| <b>FUEL TANK</b>                    | 3600 gallon fuel tank is available.  |
| <b>CAB SEAT</b>                     | Third cab seat, slide rail mounted is available.   |
| <b>SAND BOX CAPACITY</b>            | Sand boxes can be provided with a total capacity of 36 cu. ft. per end.  |
| <b>TRACTION MOTOR ACCESS COVERS</b> | Quick access bottom traction motor covers are available as a modification.   |
| <b>SPARK ARRESTOR MANIFOLDS</b>     | Retention trap type spark arrestor manifolds are available.  |
| <b>JACKING PADS</b>                 | Combination jacking pad and cable sling can be provided at four corners behind step wells.   |
| <b>DEEP SUMP OIL PAN</b>            | Engine usable oil capacity increased 137 gallons and total capacity increased 153 gallons.   |
| <b>SIDE FOOT BOARDS</b>             | Side foot boards at each corner of locomotive, meeting Federal Railroad Administration requirements for locomotives used in switching service, are available.  |

## SECTION 7

# Locomotive Modifications



### **SINGLE SHOE BRAKE TRUCK ASSEMBLIES**

Interchangeable, four wheel, single shoe brake truck assemblies are available as a modification.

Straight across bolster is supported at each end by rubber spring pads on the frame. The truck frame is supported at each of the four journals by standard twin coil journal springs. Two hydraulic dampers are located between frame and journal box, at diagonally opposite corners, to insure vertical stability. Swing hangers are shorter and safety straps redesigned compared to the clasp brake truck. Each of the four motors is supported by the driven axle to which it is geared. Special nose support on the truck transom provides flexible support to dampen motor torque shocks.

16" composition brake shoes, on SD type brake heads, are utilized on single shoe brake rigging which utilizes same cylinder levers, brackets and air cylinder mounting as used on GP clasp brake trucks. Other brake levers are designed especially for this single shoe truck. Two brake cylinders (9" x 8"), diagonally located and frame mounted are provided.

Hand brake application is same as for the clasp brake truck.

### **DYNAMIC BRAKES**

Variable dynamic brakes use the traction motors as generators, with the power being dissipated through force ventilated grid resistors located in the engine hatch. Variable voltage type control is standard with dynamic brakes. Positive indication of "power" or "dynamic brake" mode of operation is clearly shown at controller.

Extended range dynamic braking providing high brake effort at low speed is also available. Parallel grid connection to improve wheel slide protection is provided. 4-1/2" zero-center ammeter contains both "brake" and "power" indication, reading in opposite directions from center for each function. Enforced time delay from "power" to "brake" is standard.

A grid current trainline control feature is available, if desired.

Grid blower protection is available preventing dynamic brake operation as result of stalled blower motor or no motor current.

### **SELF LOAD TEST**

A self load test feature permitting locomotive loading on its own dynamic brake grids is available.



## SECTION 8

# PAINING



<b>OUTSIDE FINISH</b>	Color arrangement and design to agree with railroad's requirement.
<b>ENGINE ROOM</b>	Inside finished in suede gray. All air, fuel, water and lube oil piping color coded at points of connection.
<b>UNDER CARRIAGE</b>	Black unless otherwise specified.
<b>CAB</b>	Inside finished in suede gray.
<b>TRUCKS &amp; TANKS</b>	Black unless otherwise specified.

# SECTION 9 PERFORMANCE DATA



## OPTIONAL GEAR RATIOS

The choice of gear combinations will depend upon the service contemplated

GEAR RATIO	62:15	61:16	60:17
MAX. SPEED	65	70	76
MINIMUM CONTINUOUS SPEED (MPH)	10.9	11.6	12.5

## HORSEPOWER RATING

The GP38-2 locomotive develops 2000 nominal horsepower into the generator for traction at 900 RPM of the engine under the following conditions:

- 60° F air intake temperature
- 29.9 inches hg barometer (minimum)
- 0.845 specific gravity fuel
- .83 engine governor rack setting
- 60° F fuel temperature

# SPECIFICATION AMENDMENT



Electro-Motive Division Locomotive Specification No. 8090 is amended to incorporate certain Remanufactured components.

The items listed below constitute the maximum number of Remanufactured components that may be incorporated in the GP38-2 replacement locomotive.

## ENGINE PARTS

- Crankshaft
- Camshafts
- Cam blocks
- Harmonic balancer
- Lube oil scavenging pump
- Piston cooling and pressure pump
- Accessory drive housing
- Engine blowers
- Water pumps
- Fuel pump
- Camshaft drive housing

## AUXILIARY GENERATOR

## D14 ALTERNATOR

## TRACTION MOTOR PARTS

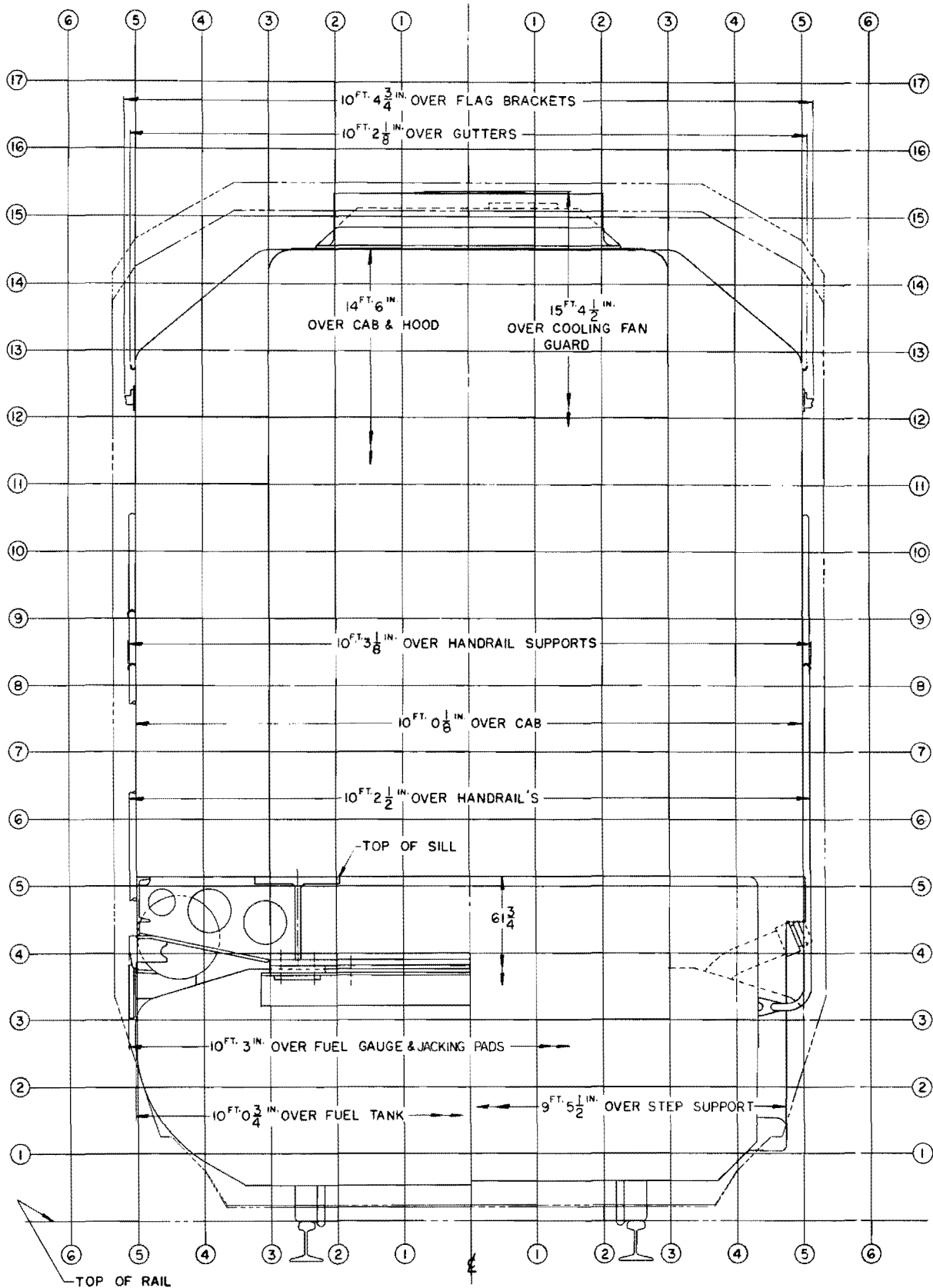
- Frame assembly and pole pieces
- Armature core, commutator,  
and armature shaft
- Bearing housing and assembly parts

## TRUCK ASSEMBLY PARTS

- Axles and axle gears
- Frame, bolster, spring plank, safety straps,  
side bearing clips, and pedestal tie bars
- Coil and elliptic springs and coil spring seats
- Brake cylinders
- Brake levers, straps, and slack adjusters
- Roller bearing journal box assemblies

## SPEED RECORDER AND RIGHT ANGLE DRIVE

# GP38-2 CLEARANCE DIAGRAM

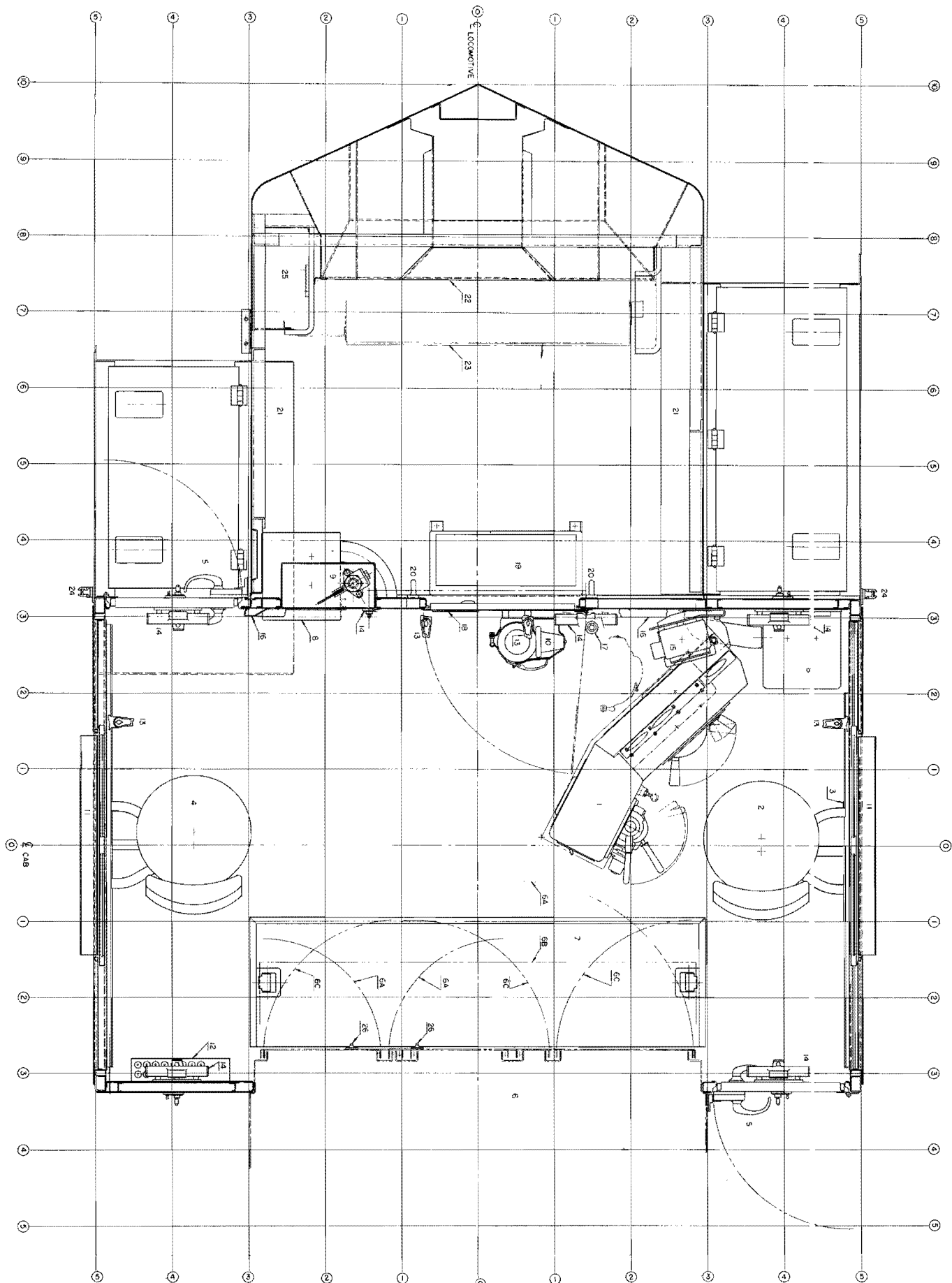


NOTE:  
 LOCO. HEIGHT TOLERANCE =  $\pm 1\frac{1}{2}$ "  
 LOCO. WIDTH TOLERANCE =  $\pm \frac{1}{2}$ "  
 TRUCK LATERAL AT BOLSTERS =  $2\frac{1}{4}$ " NOM.

LOCOMOTIVE IS SHOWN INCLUDING HALF VARIABLE SUPPLIES AND IN NEW CONDITION, STANDING STILL ON LEVEL AND TANGENT TRACK. VERTICAL DIMENSIONS WILL BE  $1\frac{1}{2}$ " LESS WITH FULL WHEEL WEAR. VERTICAL DIMENSIONS CAN ALSO VARY  $\pm \frac{3}{8}$ " DUE TO VARIABLE SUPPLIES.

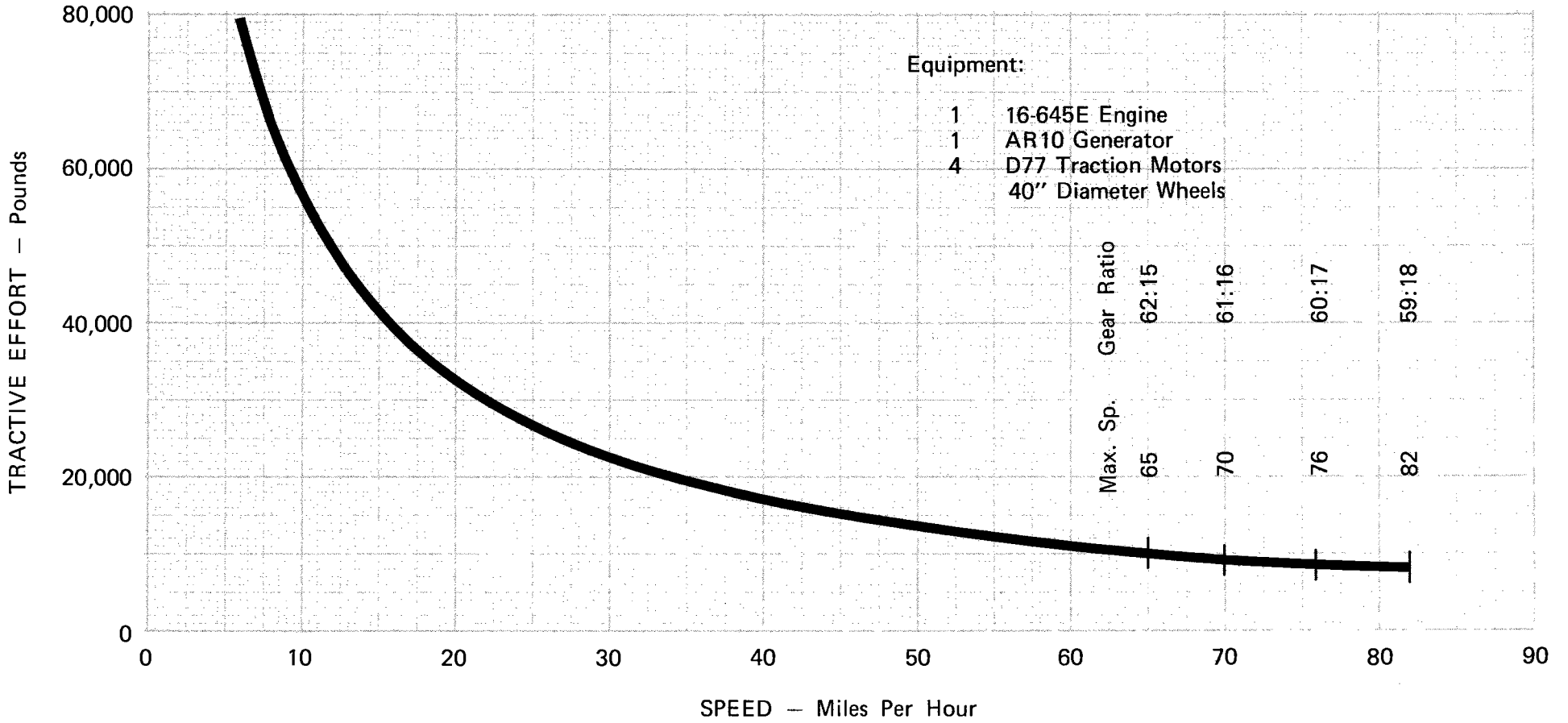
CLEARANCE OUTLINE:  
 A.A.R. PLATE "B" DATED MARCH 1, 1968 -----  
 A.A.R. PLATE "C" DATED MARCH 1, 1968 -----

# CAB ARRANGEMENT



- |  |  |   |  |  |
|--|--|---|--|--|
| <p>1 Engineers Control Stand<br/>                 2 Engineers Seat<br/>                 3 Seat Stop-Permanent<br/>                 4 Auxiliary Seat<br/>                 w/Adjustable Stop<br/>                 5 Cab Door (2)<br/>                 6 Electrical Cabinet</p> | <p>6A Upper Doors<br/>                 6B Middle Door<br/>                 6C Lower Doors<br/>                 7 Trap Door<br/>                 8 Cab Heater -<br/>                 Hot Water (2)<br/>                 9 Emergency Brake Valve</p> | <p>10 Fire Extinguisher-20 Lb.<br/>                 11 Arm Rest (2)<br/>                 12 Fuse Rack<br/>                 13 Sun Visor (4)<br/>                 14 Window Wiper (6)<br/>                 15 Speed Recorder</p> | <p>16 Defroster Duct<br/>                 17 Door Stop<br/>                 18 Short Hood Door<br/>                 19 Step-Down to Short Hood<br/>                 20 Grab Iron (2)<br/>                 21 Battery Box (2)</p> | <p>22 Stand Box<br/>                 23 Stand Box -<br/>                 Extra Capacity<br/>                 24 Lamp Bracket<br/>                 25 Hand Brake Recess<br/>                 26 Coat Hook (2)</p> |
|--|--|---|--|--|

**COMPARATIVE SPEED TRACTIVE EFFORT CURVE**  
**2000 HP Model GP38-2 Locomotive**



# MODEL GP38-2 — 2000 HP GENERAL PURPOSE LOCOMOTIVE

- |                                      |                                   |
|--------------------------------------|-----------------------------------|
| 1. ENGINE 16-645E                    | 19. BATTERIES                     |
| 2. GENERATOR-ALTERNATOR AR10E1-D14   | 20. FUEL TANK (1700 GAL. SHOWN)   |
| 3. TRACTION MOTOR - GENERATOR BLOWER | 21. MAIN AIR RESERVOIRS           |
| 4. AUXILIARY GENERATOR               | 22. COOLING AIR INLET SHUTTERS    |
| 5. ELECTRICAL CONTROL CABINET        | 23. LUBE OIL FILTER               |
| * 6. AIR COMPRESSOR (WBG SHOWN)      | 24. ENGINE AIR FILTER             |
| 7. ENGINE EXHAUST STACK              | 25. INERTIAL AIR SEPARATOR        |
| 8. HANDBRAKE                         | 26. NUMBER BOX                    |
| 9. SAND BOX FILLER                   | 27. TRACTION MOTOR AIR DUCT       |
| 10. LUBE OIL COOLER                  | 28. BELL                          |
| 11. ENGINE WATER TANK                | *29. DYNAMIC BRAKE FAN            |
| 12. 48 INCH COOLING FAN              | 30. PILOT                         |
| 13. RADIATOR                         | 31. COUPLER                       |
| 14. HORN                             | 32. FUEL FILTER                   |
| 15. EXHAUST MANIFOLD                 | 33. TRUCK - 4 WHEEL               |
| 16. SAND BOX                         | 34. ELECTRICAL CABINET AIR FILTER |
| *17. FUEL FILLER                     |                                   |
| 18. HEADLIGHT                        |                                   |

**NOTE:**

LOCOMOTIVE HEIGHT TOLERANCE =  $\pm 1\frac{1}{2}$  IN.  
 LOCOMOTIVE WIDTH TOLERANCE =  $\pm 1\frac{1}{2}$  IN.  
 TRUCK LATERAL AT BOLSTER: =  $\pm 1\frac{1}{4}$  IN. NOM.

Locomotive is shown including half variable supplies and in new condition standing still on level and tangent track.

\*MODIFICATION

