



photo by Dick Scheel

G. C. & E. Shay



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The Greenbrier, Cheat & Elk Shay

The main feature of this locomotive design is the use of a vertically-mounted engine located on the right-hand side forward of the cab, connected to all driven wheels by shafts through universals, slip joints and bevel gears. Due to the lack of counterweights on the driven wheels, the rail is not subjected to “hammer blow” and hence the Shay is able to operate over lighter rail with less maintenance than conventional rod locomotives. The bevel gear drive to all axles also means that the full weight of the locomotive and tender is available to provide the maximum drawbar pull.

Aster’s Greenbrier, Cheat & Elk River Road’s No. 12 represents the locomotive as constructed by the Lima Locomotive Works in 1921. With 48 inch drivers and 18 inch cylinders, the locomotive weighed 150 tons. In 1937, No. 12 was converted to a four-truck locomotive at the Cass shops. This added an extra 42 tons, making it the largest Shay in the world. She was taken out of service in 1950 and scrapped in 1955.

Specifications

Weight: 6.4 kg (14.1 lbs)

Dimensions: Length 640 mm (25.2 inches) x Width 108 mm (4.25 inches) and Height 148 mm (5.8 inches)

Wheels: (3 trucks) Diameter 38 mm made of stainless steel

Gear Ratio: 2:1

3 Cylinder Engine:

Vertical 3 cylinder engine (cylinders made of phosphor bronze)

Bore 10 mm x Stroke 12 mm

2 piston rings made of Rulon around pistons, miniature ball bearings on crank shaft

Valve Gear: Stephenson type
Valve Travel 4.6 mm, cut-off 75%

Boiler Type: Center Flue type boiler with 3 fire tubes
Gas (Butane) firing

Capacity: 340 cc of water at 80% full

Fittings: 2 x Safety Valves, Regulator valve, Pressure Gauge, Water gauge, Water check valve, Super Heater

Fuel Tank Capacity: 90 cc of butane gas

Tender Water Tank: Capacity 280 cc of water + available space for R/C equipment

Hand Operation Feed Water Pump installed (Bore 8 mm x stroke 16 mm)

Axle Driven Feed Water Pump: Bore 6 mm x stroke 6 mm mounted on the leading truck wheels axle

Lubricator: Roscoe Displacement

Couplers: Open Jaw Knuckle Coupler





