

On the boiler shell;

Replace original plastic boiler shell with cast pewter boiler.
Replace original plastic cab with cast pewter cab.
Modify frame to allow new boiler casting to fit. Protrusion on each side of frame acting as a stop for the original boiler are removed. Rear part of frame is narrowed by filing to allow rear portion of new boiler to fit using tape to insulate boiler from frame.

On the front pilot deck;

Replace original pilot with new pilot casting.
Original pilot deck is modified to conform to new pilot.

On smoke box;

Install new cast smokebox front.

On the tender shell;

Frame has section removed and ends spliced together. Filled and filed to remove evidence of splice.
New tender shell fitted to frame.

On valve gear alterations;

Portion of valve gear hanger is removed to allow for Westinghouse compressor.

Installation of Detail Parts;

The following parts are from GHQ N scale detail manufacturer unless noted otherwise.

Boiler;

Remove stack from boiler casting and install taller stack.
Install sand dome casting between steam dome and stack.
Remove rearmost steam valve from valve turret (just in front of cab) and install alternate cast steam whistle.
Install cast steam generator. Add steam line to side of generator.
Install cast bell to top of boiler.
Install steam injector to top of boiler. Form from brass wire steam lines (two) and install from injector to cab (runs parallel to hand rail).
Install cast heat shields on boiler in front of cab (each side of valve turret).
Install metal heater plate castings just above walkway at front of boiler.
Install etched brass hand rail stanchions. Form hand rail from .015 brass wire and install.
Install cast power reverser on engineer's side below raised section of walk.
Install cast sand valves (total of four) to each side of sand dome. Form sand pipes from .015 wire and install per photos.
Form and install feedwater pipe on fireman's side from heater plate terminating approximately above second set of drivers with cast injector.
Install two Westinghouse compressors on fireman's side.
Install cast air tank on engineer's side below power reverser.
Form from .012 brass wire coiled piping with brackets made from .010 flat brass wire. This replaces etched brass piping from GHQ that did not represent piping satisfactorily (see additional photos). Piping both sides of boiler.
Form from brass wire feedwater heater supply line from smokebox to Coffin feedwater pump on engineer's side.

Add cast steps to front of walkways.

Add wire braces from boiler (attachment points under walkway) to pilot beam. Braces are fastened at boiler and rest in holes in beam allowing removal of boiler casting.

Install cast Coffin type feedwater heater pump to lower portion of fire box on engineer's side. Use brass wire to form feedwater supply lines.

* note * Most boiler piping fastened to boiler casting using very fine craft wire by drilling hole behind pipe and threading wire through hole, around pipe, and back through hole.

Smoke box;

Install cast headlight. Drill headlight and smoke box front to allow insertion of original plastic lens.

Add etched brass handrail to smoke box front, drill holes and install.

Install Gold Medal Models etched brass number board under head light facing forward.

Add Sunset Enterprise locomotive marker lamps (two).

Cab;

Install etched brass handrail grabs to front of cab at access doors.

Form two hand grabs from .010 brass wire for rear section of cab, drill holes and install.

Install window shade (two).

Form cab floor sliding plate from .005 styrene and glue to cab floor.

Drill and file hatch openings in roof of cab. Using brass hatch covers supplied in kit add hinge brackets made from etched brass hand rail stanchions. Thread .010 brass wire through "hinges" and bend down to fasten to cab roof by drilling holes in cab roof to accept wire. Roof hatches now can be placed in open or closed position.

Install window mullion castings in window openings.

Form engineer's and fireman's seats from styrene and glue in place.

Backhead from original boiler is cut off and installed in new cab to hide flywheel.

Pilot deck;

Add pilot step to top of pilot beam. Step scratch built from scrap pewter metal sprues.

Form coupler cut bar from .010 brass wire. Install with Gold Metal Models etched brass handrail standoffs.

Boiler saddle and cylinders;

Add cylinder detail castings positioned between steam cylinder and valve cylinder.

Add steam heater pipes to front of cylinders. Trim as needed to clear smokebox.

Remove cast steam supply pipes at top of cylinders to allow new boiler casting steam supply pipes to rest on top of cylinders.

Add piston rod extensions to front of steam cylinders.

Valve gear;

Provided running gear retainer is attached to frame (both sides) to add positive alignment of gear hanger due to alterations.

Add cast valve gear bracket to valve gear hanger (one each side).

Tender;

Form four hand grabs for front and rear corners, drill holes and install.

Form four hand grab for rear wall of tender, drill holes and install.

Form ladder from etched brass ladder stock, removing rungs as needed for hand rails. Drill holes and install.

Install rear tender headlight casting. Drill out casting to accept grain of wheat bulb. Form headlight lens from microscope slide glass. (note: took many attempts as glass is extremely fragile)

Install cast water fill hatch.

Form coupler cut bar from .010 brass wire. Install with Gold Metal Models etched brass handrail standoffs.

Install brakeman's doghouse casting. Install "glass" at window openings.

Add cast sloped corner castings to front of tender, each side of bunker opening.
Remove backing of forward tender steps to simulate open style step castings.
Install tool box casting at rear of coal bunker along side of doghouse.
Remove truck mounted coupler. Install Micro Trains Z scale coupler to bottom of tender.
File side frames of tender trucks and install cast side frames to trucks with CA glue.

Painting;

After cleaning, sandblast all surfaces to be painted. Dry brush carefully to remove all dust.
Prime all surfaces with Tester's metal primer gray airbrush. This type of primer is suited for pewter castings allowing better adhesion for final paint.
Paint all surfaces with Polly Scale steam engine black with airbrush.
Mask cab roof, paint with Polly Scale maroon with airbrush.
Mask steam box front, paint smoke box with a mixture of steam engine black, light gray, and silver to simulate graphite gray, with airbrush.
Hand brush fire box sides and Westinghouse air pumps with graphite mixture.
Paint faux marker lamp lenses with white and green gloss acrylic paint.

After decaling airbrush with Polly Scale acrylic semi-gloss clear coat.

Decals;

Paint number board with Polly Scale reefer white , install numbers from number decal set.
Place engine number under cab windows from number decal set.
Letter tender with name and tender data for the SouthWestern Railroad.

Scratch built items: Coiled piping
 Pilot step
 Tender headlight lens
 Cab roof hinged hatches
 Cab floor sliding plate
 Cab seats