

Notes on injectors fitted to locos operated by Steam Incorporated

There were two types of Davies & Metcalfe exhaust steam injectors used on NZR locomotives; the Class H and the Class J.

Both types of injector comprise two principle parts,

- 1) The injector proper, that contains most of the cones, the water regulator, overflow valve and delivery valve.
- 2) The control section, that contains the valves used to control the flow of exhaust steam into the injector, the water shut off valve (Class J only), the automatic choke (to compensate for variations in boiler pressure), the valves to automatically change over from live steam to exhaust steam operation, and the supplementary live steam cone.

The main differences between the two types of injector are as follows:-

- 1) Class H. The water regulator only moves the exhaust steam cone. Water feed to the injector is automatically controlled by a steam operated water valve, so there is no need to alter the water feed when the injector is turned off. Exhaust steam feed to the injector is controlled by two flap valves.
- 2) Class J. The water regulator not only moves the exhaust steam cone but also operates the water valve. There is no steam operated water valve so the water regulator has to be returned to the "Off" position after the injector is turned off, otherwise the water will run to waste through the overflow. Exhaust steam feed to the injector is controlled by a double-seat poppet valve.

Exhaust steam and hot-water injectors are not lifting and are always located below the level of the bottom of the tender tank.

Sellers injectors are designed to lift their water and are always located in the loco cab. Sellers injectors manufactured by Davies & Metcalfe were known as Class K and were a size 8 injector body but fitted with 7.5mm cones.

Injectors are nominally sized by the diameter, in millimetres, of the entry end of the delivery cone. In practice, the diameter of the cone is not always exactly the designated size.

Loco	Injectors fitted	Injector size	Notes
Ab608	Two Sellers live steam.	7.5	(Some Ab locos had one Sellers and one complete size 8 Class H exhaust steam injector)
J1234	One Sellers live steam.	7.5	Class H injector, Class J control section.
	One D&M exhaust steam.	8	
Ja1271	One Sellers live steam.	7.5	Class H injector, Class J control section.
	One D&M exhaust steam.	8	
Ka945	One D&M hot-water.	11	On RH side below footplate.
	One D&M Class J exhaust steam.	9	Complete Class J injector.