

CALEDONIAN RAILWAY CLASS 179 4-6-0

Jim Smellie

C.R. numbers 179-189;
L.M.S. numbers 17905-17915

General Description

Built at the St. Rollox works of the Caledonian Railway between December 1913 and March 1916 to order numbers Y107 (179-183) and Y112 (184-189), the Class 179 locomotive was designed by John F. McIntosh as a fast goods engine. In general design they were a superheated version of the earlier Class 908 engine having a 24 element 'Consolidated' type superheater. Externally the most striking features (in comparison to other Caley engines) were the side window cab first trialed on number 917, the last of the Class 908 engines, but carried by no other Caledonian designed engine before or since and the long smokebox to accommodate the superheater. Given that these were the last class of engine designed under McIntosh before he retired it is interesting (if pointless) to speculate if he would have continued the cab style.

These apart the class differed only a little from the Class 908 engines. The frame thickness was beefed up slightly by $\frac{1}{16}$ " to $1\frac{1}{8}$ " while the cylinder diameter rose 1" to 20" (the batch to Y112 had slightly smaller cylinders at $19\frac{1}{2}$ " diameter). Boiler pressure was 10 lb.in.⁻² lower at 170 lb.in.⁻².

Locomotive Dimensions

Height above rail :

Chimney 12'11"
Boiler centre line 8'6"

Width over :

Running plate 7'8 $\frac{1}{4}$ "
Cab sides 6'10 $\frac{1}{4}$ "
Length over buffers 34'7 $\frac{1}{2}$ " (engine only)
Total weight in working order 68T 10 cwt.
Total adhesive weight in working order 51T 5cwt.
Tractive effort (@ 85% WP) 20 704lb.

Frames and motion :

Frame length 33'6"
Frame thickness 1 $\frac{1}{8}$ "
Coupled wheelbase 6'8" + 6'8"
Bogie wheelbase 6'6"
Total wheelbase 26'1 $\frac{1}{2}$ " (engine only)
Driving wheel diameter 5'9", 20 spoke
Crankpin stroke 18"
Crankpin arrangement In line with spoke
Bogie wheel diameter 3'6", 10 spoke
Cylinder size

The driving axle journals were 9" long while the intermediate and trailing axle journals were 12" long and concave allowing a side play of $\frac{1}{8}$ ". A Wakefield 10 feed mechanical lubricator driven from the crosshead provided the front end lubrication.

Both the Caley's standard Westinghouse brake and vacuum brake equipment were provided – the latter principally for working fast fish trains which were comprised of "foreign" stock.

Livery apart these engines changed little over the years but as normal they lost their wingplates and tended to acquire pop safety values during the 1920s.

Held by many to be Macintoshes best 4-6-0 design they were however constrained by the same 21 ft² grate as the Class 908 which was quite inadequate for the size of boiler. That said when in good mechanical condition they showed a great fuel economy compared with the Class 908 requiring about 48lb per mile - over about 18 months this however rose to over 70lb per mile as the piston valve rings wore.

ffi107	20" by 26"
ffi112	19½" by 26"
Cylinder centres	2'1½"
Connecting rod length	6'6"
Eccentric length	4'2"
Driving journal length	9½"
Driving journal diameter	9"

Boiler :

Max. external diameter	5'3½"
Length between tubeplates	14'11 ⁷ / ₁₆ "
Outer firebox casing length	6'11"
Depth of firebox below boiler centre line :	
Front	5'0"
Rear	4'3"
Grate area	21 feet ²
Tubes	
Diameter	2"
Number	132
Superheater tubes	
Diameter	5"
Number	24
Working pressure	170 lb.in ⁻²
Heating surface :	
Tubes	1439 feet ²
Firebox	128 feet ²
Superheater	403 feet ²
Total	1970 feet ²

Allocation and duties

The engines were principally goods engines rarely appearing on passenger trains in C.R. days although No. 179 regularly worked the 10am Grampian Corridor Express out of Buchanan Street in 1914.

Numbers 179, 188 and 189 were allocated to Carlisle from new handling much of the fast night freight to the north, two to Perth returning the next night and the other to Dundee sharing the link with a Class 34 2-6-0. These were workings on which they largely remained until L.M.S. days.

Balornock received numbers 180-3. Two alternated on the midday goods to Aberdeen, a working known for some reason as the "Jubilee", while the other two handled another regular working to and from Aberdeen until they were joined by two class 908 at which time the Aberdeen working was alternated with a turn to Carlisle. During the Glasgow Fair holidays the four Balornock engines were regularly seen on passenger work as was everything else which possessed Westinghouse brake gear!

The remaining engines, numbers 184-7, went to Perth. Three of them counter-balanced the Carlisle engines on the overnight Perth and Dundee freights while the fourth worked by day to Aberdeen alternating with an Aberdeen based 4-4-0 as Aberdeen had no 4-6-0 allocation.

Judging from their boiler repair records which were started in the late 1920s and early 1930s the class was, in the main, still finding good employ in the years leading up to withdrawal. With the exception of 170 itself (and possibly 195 for which no record has been traced) the engines were clocking up an rough average of a quarter of a million miles a year. For some reason 179 only managed 20001 miles in the 4½ years between September 1930 and its withdrawal in April 1935 - presumably it was laid up for much of the time. Note that Baxter gives its withdrawal date as 1945 but I feel this is a typo; the records show its boiler was scrapped in 1935 and there were no spare boilers and there does not appear to be a suitable boiler which could have come from another loco which was being scrapped.

Tenders

These tenders were of a type originally built for the Class 600 0-8-0s and the Classes 908, 918 and 179 4-6-0s between 1901 and 1914. As with many Caledonian designs, they were evolutionary rather than revolutionary being derived from a Lambie design of 1894 but with a wider platform and benefiting from a water-level gauge. The basic design was still in use by Pickersgill at the end of the Caley and indeed some largely similar tenders were built by the L.M.S. for their continuation of the Class 60 4-6-0 series.

In the late 1920s and early 1930s as these classes the tenders were decanted onto 4-4-0s such as the Dunalastair III displacing large bogie tenders. By the 1930s such massive tenders were no longer required for two main reasons :-

- 1) The L.M.S. had fitted the Caley main lines with water troughs, and
- 2) The Caledonian 4-4-0s were no longer top link locomotives making regular long runs.

Water capacity was no longer at a premium and the smaller 6 wheel tenders were lighter to haul and cheaper to maintain being mechanically less complicated than the bogie tenders.

3570 Gallon Tender Dimensions

Wheelbase :

Total 13'0" (6'6" + 6'6")

Frames :

Length 22'1"

Depth 2'4³/₄"

Tank :

Length 20'

Breadth 7'1¹/₄"

Depth 4'4¹/₂"

Well Length 15'0¹/₄"

Platform Width 7'8"

Length over buffers 23'9¹/₂" (tender only)

Wheel Diameter 4'

Coal Capacity 4¹/₂T

Weight in Working Order 41T 0¹/₂ cwt.

Tender Numbering and Subsequent History

The tenders were assigned numbers by the L.M.S. (in Caledonian days I believe they were simply known by the engine number as tender swapping was rare). The batch built for the Class 170 were given the numbers 6049-6059 in sequence with the engine numbers.

As previously stated, after the withdrawal of the Class 179 engines the tender were allocated to other engines. For example it is known that the following 0-6-0 engines of the 812 class ran with the following ex-Class 179 tenders:

Engine	Tender	Dates
17575	6049	09/08/46 - 03/05/54
17605	6049	07/06/54 - 05/05/60 (Tender withdrawn)
17577	6058	05/12/57 - 30/07/62 (Tender withdrawn)
17633	6056	05/08/50 - 11/12/61 (Tender withdrawn)

CR #	LMS #	Built	Boiler #	Allocation When New	Allocation c 1921	Allocation c 1933	Year Firebox Renewed	Mileage At Renewal	Date LMS Record Card Started	Mileage At That Date	Withdrawn	Mileage When Withdrawn	Notes
179	17905	12/1913	1299	Carlisle	Carlisle	Carlisle ?		329738	23/09/30	486447	1945 ? 04/1935	506448	Boiler scrapped 1935. Possible loco given another boiler and not scrapped until 1945. Possible previous replacement firebox at an unknown date.
180	17906	12/1913	1300	Ballornock	Ballornock	Ballornock	1930	556486	24/12/30	556486	02/1936	673973	Possible previous replacement firebox at an unknown date.
181	17907	01/1914	1301	Ballornock	Ballornock	Ballornock	1929	525559	14/11/29	525559	11/1935	682212	Possible previous replacement firebox at an unknown date.
182	17908	01/1914	1302	Ballornock	Ballornock	Ballornock		381323	10/07/30	540711	02/1946	854468	01/06/35 @ 636558 miles : Boiler repaired receiving a set of new steel tubes and a set of superheater tubes: cost £22. Firebox copper stays set up: cost £11.
183	17909	01/1914	1389	Ballornock	Ballornock	Ballornock	1924	333162	27/08/32	556723	11/1936	663976	07/08/41 @ 775583 miles : Boiler repaired receiving 132 repaired steel tubes and 24 repaired superheater tubes: cost £35. Firebox repaired receiving 2 copper patches on each of the crown, doorplate and tubeplate and 385 copper stays: cost £143.
184	17910	12/1914	1386	Perth	Perth	Perth	1925	373327	03/03/30	513328	09/1936	673782	30/08/33 @ 592559 miles : Boiler repaired receiving a set of new steel tubes and a set of superheater tubes: cost £51. Firebox repaired receiving a new copper tubeplate and 100 copper stays: cost £69.
185	17911	12/1914		Perth	Perth	Perth					04/1935		
186	17912	01/1915	1384	Perth	Perth	Perth	1930	530861	26/04/30	530861	06/1937	700785	Possible previous replacement firebox at an unknown date.
187	17913	02/1916	1385	Perth	Perth	Perth	1924	340082	17/08/31	518973	11/1934	595793	02/12/34 @ 639229 miles : Boiler repaired receiving a set of new steel tubes and a set of superheater tubes: cost £13. Firebox repaired receiving 270 copper stays: cost £27.
188	17914	02/1916	1388	Carlisle	Carlisle	Carlisle ?	1929	509328	30/11/29	509328	06/1935	646469	Possible previous replacement firebox at an unknown date.
189	17915	03/1916	1387	Carlisle	Carlisle	Carlisle ?	1925	342839	12/12/31	530722	03/1935	606335	

Livery

In C.R. days these locomotives, despite being goods engines, would have carried the blue passenger livery but without any gilt scrolls either side of the coat of arms on the tender side these being reserved for "proper" passenger engines. Lining, consisting of a black band $1\frac{3}{8}$ " wide edged either side by a white line $\frac{3}{16}$ " wide, was applied to the cab sides, cab front, splashers, tenders sides, tender rear, gangway doors, Westinghouse pump and boiler bands (note that the width of the black band effectively meant the bands were painted black and edged with a white line). The cab roof, smokebox, chimney and tender interior were all painted black. Polished parts included the smokebox door hinges, handle and wheel, the whistle and handrails although it was not uncommon for individual crews to polish other parts such as the edges of the wing plates. The buffer beams, valance and step brackets (but not the steps themselves which were black) were painted crimson lake and lined white inside black. The buffer housings were also painted crimson lake with a band of standard lining near the front end. The upper half of the cab interior was painted a creamy yellow colour and the lower half black.

The outside of the frames were painted black with vermilion used for the insides. The motion plate, and axles were also vermilion. The bosses, spokes and rims of the wheels were painted blue to match the superstructure and sometimes, after 1919, white lined tyres were to be seen.

A vermilion panel, edged with white, was applied to the front buffer beam between the buffers and the letters C.R. (with a square full stop between them) appeared on this panel to the left of the hook and the number to the right in gilt with a red shading below and to the left. The number also appeared in gilt (shaded red) on the centre of the tender rear. The crest was applied to the tender sides flanked the letters C and R and also to the middle splasher of the engine. The number plate was carried on the cab side and surrounded on the cab panel by a black border which was edged with a white line to the outside. These number plates were of the "McIntosh" style which was a cast brass oval plate 18" by $11\frac{1}{2}$ " with raised figures, lettering and border. The background of these plates could be blue or red (which seems to have disappeared by 1922) with some sources also listing black as a possibility.

The plates were lettered as shown in the sketch below. The height of the locomotive number was $3\frac{7}{8}$ ".



Works plates were not originally carried by these engines as the information was incorporated in the number plate however the L.M.S. affixed small oval works plates with raised lettering which were fitted to the splasher. These were rather anachronistically lettered as illustrated below with the third row being the year of building — i.e. many a year before the formation of the L.M.S. !



After the demise of the Caley all the locomotives painted in unlined L.M.S. goods black.

The locomotive number was carried in large figures on the tender side with the company designation carried on a panel on the cab side. This panel could either have rounded corners or "cut away" corners which were the standard design. Smokebox number plates were normally carried at this time.

In 1928 the L.M.S. changed its livery policy, a change which little affected these engines apart from insignia placement. The company initials were now carried in large letters on the tender and the locomotive number on the cab side officially in as large a size of transfer as could be carried. In practice this meant 14" for these engines. Smokebox numberplates were officially dispensed with at this time and the power classification mark of 3F began to appear in $2\frac{1}{4}$ " figures just below the cab-side lamp bracket.

Confirmed liveries include :-

Pre 1928, 18" figures, standard cab panels

17905/6/9/12/15

Pre 1928, 18" figures, rounder corner cab panels

17907/8/14

Post 1927, Pain straw insignia with 14" figures

17905/9/10/11/12/13

Post 1927, Yellow/Red insignia, 10" figures

17908

Drawings

The drawing which accompanies this article show the engine and tender in original condition

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