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THE BRABY PUG : 498 Class Locomotive, by J. Sinclair.

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To understand the introduction of the 498 class engines in 1912 it is best to consider first the locomotive classes available at that time for shunting duties. The following table illustrates the physical and geometrical capabilities of the 782 class standard shunting 0-6-0 tank and the smaller 611 class 0-4-0 saddle tank (similar to the Drummond 262 class) by comparison.

Class	611	498	782
Tractive effort (lbs)	10,601	18,014	19,890
Wheelbase (ft)	7	10	16.25
Min. Radial Curvature (yds)	33	66	99

Although the 611 class could negotiate very tight rail curves it was restricted by both pulling power and short distance of operation. The absence of a coal bunker was often substituted with a close coupled, four-wheeled wagon suitable adapted. Due to the amount of overhang, the "tender" restricted the 0-4-0's turning capabilities. A practice of uncoupling the tender temporarily to use a method similar to rope shunting was adopted to overcome this problem. Unfortunately, this proved to be very dangerous and consequently at least one fatal accident occurred.

In contrast, the 782 class 0-6-0T had the pulling ability but could not negotiate sharp curves.

The 498 class was in effect a smaller version of the 782 class which was most noticeable by its much shorter wheelbase and boiler. Although the boilers of both classes were of the same diameter there was a difference of 2' in their lengths. The side tanks of the 498 class were likewise shorter. Less obvious from the outside was the reduced cab space of some 9.5" (between the backhead and bunker) which the footplate staff found comparatively restrictive to say the least. Another less noticeable point was that of the boiler being pitched 2" lower.

The much shorter wheelbase could not accommodate a fire grate nearly as large as 17 sq.ft.. However, the boiler pressure was rated 10 lbs./sq.in. higher despite the heating surface being only 860 sq.ft. compared with the 782 class's 1086 sq.ft. (tubes: 975 sq.ft., firebox: 111 sq.ft.). The

498 class was only lighter by 28 lbs. and the wheels were 6" smaller in diameter. The adhesion qualities must have been favourable whereby one Greenock driver testifies at easily pulling forty standard goods wagons situated on the level and from a standstill position. It is interesting to note that Ladyburn had, at any one time, at least four of these locomotives compared to only one 782 class, LMS no. 16288 (except during the few years LMS no. 16349 was allocated). It was common to see three of Ladyburn's 498 class engines work the "up sidings" at any one time, independently.

Nos. 498 and 499.

Initially, two locomotives were authorised and built by the C.M.E. responsible for their design, Mr. J.F. McIntosh.

No. 498 and founder of the class was kept at St.Rollox whereby it was allocated to the running shed there. It is best remembered by its shunting duties at the nearby Braby's Eclipse Works. Consequently, the unofficial name of Braby Pug was applied and often used to define the followers of this class.

No. 499 was sent ex-works to Polmadie for assessment where it spent at least six weeks before being allocated to Grangemouth for dockyard duties.

The Followers.

Nothing has ever been uncovered as to any decision taken by the Locomotive Sub-committee on design. No doubt nos. 498 and 499 proved to be a worthwhile design as within a year of Mr. W. Pickersgill taking over completely as C.M.E., production of further locomotives had begun. In his twelfth month of service No. 527, the first of the remaining twenty-one to be built, was sent to Polmadie. The 498 class became designated as a dock tank whereby it was allocated to sheds which featured dockyard duties on their work roster. The Allocations Table shows as accurately as possible their deployment from ex-works into L.M.S. days, B.R. service and final withdrawal.

Frames.

Engines built to order Y126 during 1920 and 1921 had their frame lengths increased to accommodate a larger bunker. The increase was 7.5' and the coal capacity increased from 2 to 2.5 tons. This modification is attributed to complaints of running short of coal on lengthy, double shifted workings. This modification was not noted on the last purely C.R. diagram book but the later L.M.S. diagram book showed an increase in length.

Boilers.

A comparison in boiler sizes may be made from the following special list drawn up by E.S. Cox.

Class	782	498
Boiler dia.	4' 7.25"	4' 7.25"
Barrel length	10' 9"	8' 9"
Firebox length	5' 5"	4' 9"
Height	7' 3"	7' 1"

The boiler diameter shown in the table is probably that of the outside or overall size which would mean a wall thickness of 1.5625".

Desanding Gear.

This was a curious one as during the mid 1930s about 12 of the 782 class were fitted with this apparatus for the purpose of washing the rails. Seven of the 498s also had this fitted (see table of Building, modifications and withdrawal dates). However, this could not have been a success whereby it was removed later from both classes never to be recorded in the works records.

Reduced Heating Surface.

This was done by removing at least three tubes and replacing them with longitudinal stays from the firebox to the front tubeplates. it should be noted that not all locomotives were so treated (see table for dates). 15 new boilers were built between 1941-9 with reduced heating surface.

New Boilers.

Some remained at the same depot for years on end and most were fitted with new boilers in due course. Many of the original boilers received new fireboxes between 1934-40 and were utilised indiscriminately later. During C.R. days the engine number was also the boiler number. When in the works for repair and if the boiler required heavy repair, it was removed whereby the engine lay in wait for its return. This was the reason Pickersgill tried, unsuccessfully, to get a spare boiler pool set up in 1914. It was finally started in 1922 in a rather odd way, pre-empting the Derby directive to set up a complete new boiler pool. The intention was to cut down time involved in shop repairs. New boilers for the 498s have been traced and are as follows :-

Built	1944	1946	1948	1948/9
Order No.	M3535	M3560	M3616	M3717
Boiler No.	2522-5	2568-72	12616-7	12755-60
No. off	4	5	2	6

Engine Nos. 55164/5/8/9/70/73

The actual engines to receive the above boilers was never fully recorded as after 1950 and the departure of Mr. McCallum who kept the records, his successors did not trouble themselves greatly. They merely indicated against each relevant engine a "Boiler Change". As Beeching and modernisation were on the horizon it followed that steam would go so no one bothered keeping records efficiently.

Modifications.

Apart from the normal, gradual transition to Ross-pop safety valves in L.M.S. days and smokeboxes becoming noticeably riveted on reboiling the only other substantial recorded modification was that of the steam-brake control in the cab being repositioned. This was to allow the driver ability to operate both brake and reversing gear with ease. Previously it was the fireman who operated the reversing gear. The brake valve position was modified in all but four (56152/62/65/71) in 1954-6 at a cost of £11-14/- per locomotive.

Stovepipe Chimneys.

At some stage or another, a number of engines suffered the indignity of receiving the awful Stovepipe Chimney which did absolutely nothing to enhance their appearance. 16154/58 received them in late L.M.S. days while 56151/53/55/57/58/60/61/65/70/72 and possibly, latterly 56173 all received them under B.R.

In L.M.S. days 16151 was fitted with a spark arrester and both 16152 and 16154 sported small spark arresters at some time according to information supplied by Mr. W.T. Stubbs.

Maintenance.

Routine maintenance of oiling the slide-bars, crosshead etc. was easy compared to the valve gear which was awkwardly positioned between the frames. One Greenock driver advises that this was not a popular job as it had to be tackled from the pit.

Liveries.

Being a goods class locomotive, the livery was lined "Goods Black". The Company's coat of arms was carried on the sidetanks between the letters "C.R." and the number carried on the bunker back panel. Always in black throughout their working life, they carried the usual changes in locomotive insignia etc. but only 56154 and 56158 received the B.R. second (post-1957) emblem. 56158 was, in 1958, the last of the class to be serviced as the Beeching programme of the previous year became effective and the

rundown of steam commenced. This brief explanation cannot do justice to this subject as it merits an article of its own. Perhaps sufficient material will be released to make this a possibility.

Nicknames.

As described earlier, the 498s were known as "Braby Pugs". Other names applied were inspired by the locomotive's character such as "Wee Cuddies" to which the Greenock footplate staff were accustomed. This was inspired by its pulling ability relative to its size. Enthusiasts were known to refer to the 498s as "Beetlecrushers" but the Greenock staff applied this to the smaller 0-4-0STs due to their appearance. Elsewhere the 498s were called "Bulldogs" and "Hercules".

At least one member of the class found its way south when, in 1925, L.M.S. no. 16156 was sent to Burton-on-Trent, Staffordshire for a six week period. The purpose being to consider what potential it had for working the breweries there. It proved to be too heavy for this duty whereby an 0-4-0T had to be used instead.

These spartan and powerful little pugs were credited with a life expectancy of fifty years. Had it not been for the radical Beeching policy this would easily have been a possibility as the St. Rollox locomotive no. 498 came within four months of fifty years service - a credit to any class of locomotive.

The 498s are the only C.R. class I can remember seeing any examples of in working life. As a schoolboy, an occasional ogle from the road bridge at Ladyburn was indulged. From here it was ideal for watching shunting operations taking place on the up-sidings. Most likely, the Bogston pilot, B.R. no. 56166, would have been at work here at this time.

Acknowledgements.

A sure recipe for a successful article on one's first attempt is to be fully supported and encouraged by the celebrated authority on Caledonian matters, Mr. Alan G. Dunbar to whom I express much appreciation. Also my appreciation to Mr. H.J.C. Cornwell whose book "Forty Years of Caledonian Locomotives" was consulted.

Leading Dimensions

Cylinders (outside)	17" diameter by 22" stroke		
Driving Wheels	4' diameter		
Wheelbase	10' (5' between centres)		
Turning Circle	3 chains (66 yards) minimum radius		
Boiler Pressure	160 lbs./sq.in.		
Heating Surface	Tubes	(original)	210 @ 1.75" dia. 786 sq.ft.
		(reduced)	208 @ 1.75" dia. 779 sq.ft.
	Firebox		74 sq.ft.
	Total	(original)	860 sq.ft.
		(reduced)	853 sq.ft.
	Grate area	14.25 sq.ft.	
Valve gear	Slide (Stephenson)		
Water capacity	1000 gallons		
Coal capacity	2 tons		
Weight of engine	(working)	47 tons 15 cwt.	
	(empty)	37 tons 19 cwt.	
Tractive Effort at 85% B.P.	18014 lbs. (8.041 tons)		
Overall length (inc. buffers)	ex. Y126	26' 9.75"	
	Y126 only	27' 5.25"	

Allocations

C.R. No.	1912	1915	1918	1920	1921	1933	1945	1950	1958	1959	1960	1961	1962
498	St.Rollox	=	=	=	=	=	=	=	=	=	=	Dawsholm	(Sept.)
499	Grangemouth	=	=	=	=	=	=	=	=	=	Eastfield	(March)	
527	Polmadie	=	=	=	=	=	=	=	=	(June)			
528	Polmadie	=	=	=	=	=	=	=	=	(July)			
529	Polmadie	=	=	=	=	=	=	=	(Sept.)				
530	Balornock	=	Greenock	Balornock	Greenock	=	Corkerhill	(Oct.)					
531	Balornock	=	Dalry Road	=	Greenock	=		(Jan.)					
532	Dawsholm	=	=	=	=	=	Polmadie	(Jan.)					
533	Polmadie	=	Polmadie	=	=	=	=	=					(Apr.)*
534	Polmadie	=	Polmadie	=	=	=	=	(July)					
535	Dawsholm	=	Dawsholm	=	=	Polmadie	Kipps	(Dec.)					
536	Yoker	=	Yoker	=	=	Polmadie	=	Greenock	(Feb.)				
537	Yoker/Greenock	=	Yoker/Greenock	=	=	=	=	=					
538	Dumbarton	=	Dumbarton	=	Grangemouth	=	=	St.Rollox	(Nov.)				
502		Greenock	=	Greenock	=	=	=	(Jan.)					
503		Dundee/Greenock	=	Dundee/Greenock	=	=	=	(June)					
504		Greenock	=	Greenock	=	Polmadie	Dawsholm	Greenock	(June)				
510		Dawsholm	=	Dawsholm	=	=	=	=				(May)	
511		Dawsholm	=	Dawsholm	=	St.Rollox	=	St.Rollox				(March)	
512		Dawsholm	Yoker	Dawsholm	=	Kipps	Greenock	Greenock	(Feb.)				
513		Greenock	Yoker	Dawsholm	=	=	=	=					(Feb.)
514		Dalry Rd.	Polmadie	=	Polmadie	=	Kipps	Polmadie	Greenock	(Sept)			
515		Dalry Rd.	Dundee	Greenock	=	=	=	=				(May)	

() dates are, where known, actual withdrawal dates. Some locomotives came back into service for a short period.

* in storage for some time at Princes Pier during 1962 and returned to service in May for about 3 weeks.

Building, modification and withdrawal dates

C.R. No.	Order No.	Cost (£)	Date Built.	Original		De- sander Fitted	B.R. No.	Re- numbered	Heating Taken		Residual Value.(£)
				L.M.S. No.	Boiler No.				Boiler Scrapped	Surface Reduced service.	
498	Y100	1800	01/12	16151	1226	01/47	56151	08/49	01/47	09/61	772-1/9
499	Y100	1800	01/12	16152	1227	08/34	56152	12/49	01/47	03/59	734-14/7
527	Y111	1928	04/15	16153	1357	12/49	56153	04/50	02/50	06/59	857-9/5
528	Y111	1928	05/15	16154	1358	09/34	56154	05/50	—	07/59	857-9/5
529	Y111	1928	05/15	16155	1359	10/50	56155	09/50	—	09/58	786-19/2
530	Y111	1928	05/15	16156	1360	12/45	56156	08/49	—	10/59	857-9/5
531	Y111	1928	05/15	16157	1361	02/52	56157	02/50	01/46	12/58	734-18/1
532	Y111	1928	06/15	16158	1362	12/45	56158	05/49	—	01/61	772-1/9
533	Y121	3342	08/18	16159	1565	02/44	56159	03/49	03/46	04/62	772-1/9
534	Y121	3342	09/18	16160	1566	1943	56160	1950	11/45	07/59	772-1/9
535	Y121	3342	09/18	16161	1567	10/44	56161	02/49	—	12/58	734-18/1
536	Y121	3342	10/18	16162	1568	04/45	56162	08/49	—	02/59	734-13/1
537	Y121	3342	10/18	16163	1569	08/47	56163	10/49	04/47	06/59	856-9/5
538	Y121	3342	10/18	16164	1570	01/48	56164	1950	01/48	11/58	734-18/1
502	Y126	4499	11/20	16165	1621	06/34	56165	11/48	11/48	01/60	857-9/5
503	Y126	4499	12/20	16166	1622	12/45	56166	01/50	01/50	06/59	857-9/5
504	Y126	4499	12/20	16167	1623	04/51	56167	05/49	05/46	03/61	772-1/9
510	Y126	4499	12/20	16168	1624	01/47	56168	02/49	03/49	05/61	772-1/9
511	Y126	4499	12/20	16169	1625	12/46	56169	1950	11/45	03/61	772-1/9
512	Y126	5142	01/21	16170	1626	07/51	56170	1950	12/49	02/60	857-9/5
513	Y126	5142	02/21	16171	1627	03/51	56171	09/50	—	02/61	772-1/9
514	Y126	5142	02/21	16172	1628	02/51	56172	02/51	—	09/60	857-9/5
515	Y126	5142	02/21	16173	1629	11/49	56173	10/49	10/49	05/61	772-1/9

* Sold to J. McConnell Co. Ltd.

† Sold to Motherwell Machinery and Scrap Co.

‡ Scrapped at Kilmarnock works.

Caledonian Railway Class 498 0-6-0T
Drawn by J. Sinclair.
Scale 4mm = 1ft.

