

Great Central Railway Robinson Class 8K 2-8-0 Locomotives (LNER & BR Class O4), and GWR Class 3000

By Peter Sheppard

The first class 8K 2-8-0 freight locomotive was built by the Great Central Railway (GCR) at their Gorton works in 1911. It was to a design by J. G. Robinson. Later there was a large order from the Railway Operating Division of the Royal Engineers (R.O.D.). Class 8M (later O5) locomotives built around the same time were later converted to Class O4. Some locomotives were sent to France during the First World War and were returned. On at least two occasions batches of locomotives were loaned to the GWR by the LNER and then were returned. Some locomotives were bought by the GWR, LNWR and LMS. Some locomotives were requisitioned by the government in 1943 and sent to the Middle East, they never came back. Five more were requisitioned in 1952 and sent to Egypt. Others were sold to Australia and China. Added to this various different modifications were made to the locomotives and each modification formed a different sub class. There were 9 such sub-classes and these were numbered Class O4/1 to O4/8. The reader may think that those numbers total 8 and not 9. The explanation is that there were two sub-classes O4/2. The requirement for the first sub-class O4/2 had ended in 1924 so when a need arose for a new sub class in 1925 the vacant number was re-used. Details of the various sub-classes are given later in this article. From 1944 58 locomotives were rebuilt as Class O1, details of these are given in a separate article.

In view of this confusing history it is appropriate to establish how many Class 8K locomotives were built. The answer is 666. This total is made up as follows: 126 built for the Great Central Railway (GCR); 521 built for the Railway Operating Division of the Royal Engineers (R.O.D.); 19 larger boyled 2-8-0s built by GCR as Class 8M (later O5) but which were all converted to class O4/6 by 1943.

At the grouping in 1923 the London North Eastern Railway (LNER) acquired 131 Class 8K 2-8-0 locomotives from the GCR. (the 126 built as Class 8K, 3 purchased by GCR from R.O.D in 1919 and 2 rebuilt from Class 8M). The LNER reclassified them as Class O4. In all 421 of the 666 were at some time owned by the LNER.

After the various acquisitions, disposals and rebuilds at the nationalisation of the railways in 1948, the LNER handed over 278 Class O4 locomotives to British Railways (BR). In addition in 1948 the Great Western Railway (GWR) handed over to BR 45 of its 3000 class 2-8-0s which were the survivors of 100 (class 8K) it had purchased from the R.O.D. between 1919 and 1925. Details of what happened to most of the 521 R.O.D. locomotives are given later in this article.

The following table below shows the chronology of the building, modification, rebuilding, purchases, sales and disposals of the 421 Class 8K (O4) locomotives that were at some time owned by either the GCR, LNER and BR

Number of locomotives	Narrative	Total
1	Prototype class 8K built by Great Central in 1911 (GCR No. 966; LNER Nos 5966, 3500 and 3572; BR No. 63572)	1
125	By 1914 Six batches of class 8K built by Great Central totalling 126 locomotives. The 126 included the prototype. 56 were built By GCR, Gorton; 50 by North British Locomotive Co, Hyde Park; and 20 by Kitson & Co.	126
3	GCR bought 3 locomotives from the Ministry of Munitions in 1919 being unwanted R.O.D.* locomotives which GCR had recently built at Gorton, they subsequently became BR Nos. 63626, 63627 and 63628.	129
2	By the grouping in 1923 2 class 8M had been converted to class 8K. These were LNER Nos. 5412 and 5413, later 3902 and 3903, and then BR Nos. 63902 and 63903	131
	In 1923 the LNER classified the class 8K locomotives as Class O4	
125	In December 1923 LNER purchased 125 from the R.O.D.*	256
48	In February 1925 LNER purchased 48 from the R.O.D.*	304
100	In February 1927 LNER purchased 100 from the R.O.D.*	404
1	Yeadon's Register Volume 24 refers to the LNER having 405 Class O4 by 1929. The difference is due to a further Class O5 (8M) having been converted to class O4 earlier in 1926. It was No. 5012 (later 3914, and BR number 63914)	405
15	Between 1932 and 1941 all but one of the remaining 16 Class O5 (formerly 8M) were converted to O4/6	420
-92	In Autumn 1941 the government requisitioned 92 locomotives for use by the military mainly in the Middle East they never returned. 61 of these were from the former R.O.D. locomotives 25 from the original Great Central Class 8K and 6 were locomotives converted to class O4 from class O5 (8M)	328
1	On 23 January 1943 the remaining class O5 was converted to class O4/6. It was No. 5422, later No. 3911 and BR No. 63911	329
-51	From 1944 to 31 December 1947 51 class O4 locomotives were rebuilt as Class O1 so that on 1 January 1948 BR acquired 278 class O4 and 51 Class O1 locomotives.	278
-7	In 1948 and 1949 7 more class O4 were rebuilt as class O1	271
-5	In 1952 5 Class O4/1 locomotives were converted to oil burning and sent to the Suez Canal zone for use on Egyptian State Railways. They were Nos. 63580, 63627, 63778, 63809 and 63849. They never returned.	266
-265	By 1966 all of the BR Class O4 locomotives except No. 63601 had been scrapped. 63601 (GCR No. 102 and LNER Nos. 5102 then 3509 and 3601) has been preserved and is owned by the National Railway Museum. It has been put in working order and is based at the Great Central Railway at Loughborough.	1

*The Railway Operating Division of the Royal Engineers (R.O.D.) had ordered a total of 521 class 8K locomotives during the First World War. They were ordered in 3 batches 223 between February and

June 1917, 100 between February and August 1918 and 188 in Autumn 1918. These locomotives were mainly built by North British Locomotive Company (369) and Robert Stephenson & Co (82). The remaining 70 were built by Nasmyth Wilson & Co. (32), Kitson & Co. (32) and Great Central Railway, Gorton works (6).

The 521 were disposed of by R.O.D. between 1919 and 1925.

3 surplus locomotives were sold by the Ministry of Munitions to the Great Central Railway in 1919 who had just built them so they ended up in LNER stock in 1923.

The Great Western Railway bought 20 in 1919. They were almost new. They became the 3000 class and were numbered 3000 to 3019. They bought a further 80 in 1925, some of these they had already used on loan. In 1926/7 the GWR sorted through these and numbered the best thirty 3020 to 3049. They gave them a full overhaul at Swindon. The remaining 50 locomotives were given a light overhaul and were run until they failed and were withdrawn and scrapped. By 1930 they had all gone although some swapping of numbers had taken place when "good" locomotives failed. Withdrawals had started in 1927 but around 45 of these locomotives were transferred to BR ownership in 1948. By 1957 only 5 locomotives Nos. 3011, 3015, 3024, 3036 and 3041 were left, the final 3 being withdrawn in 1958.

The LNWR bought 30 in 1920. These became part of LMS stock at the grouping. The LMS purchased 75 in 1927 mainly for their tenders. 25 of the 75 were scrapped between 1927 and 1930. 20 more were scrapped between 1930 and 1932. The remaining 30 locomotives minus tenders were sold in 1932 to Armstrong Whitworth who in turn sold them to China where they were known as Class KD4.

Between 1923 and 1927 the LNER acquired 273 as detailed above.

This leaves 40 to be accounted for. It is known that 13 were sold to J & A Brown of New South Wales Australia for use on the Richmond Vale Mining Railway. Three of these locomotives have been preserved. These are R.O.D. No.1984 (North British No. 22042) and R.O.D. No. 2003 one of the six built at Gorton. These two are owned by the Dorrigo Steam Railway & Museum Ltd in New South Wales. The third preserved locomotive is R.O.D. No.2004 also built at Gorton. It is preserved at the Richmond Vale Mining Museum which includes a preserved railway. The locomotive is currently undergoing restoration.

What happened to the other 27 is unclear, evidently some went to China.

The Class O4 locomotives were used extensively on the Eastern Region working heavy coal trains along the East Coast main line and over the cross country lines over the Pennines between Yorkshire and Lancashire. They were a common sight between the North East, York, Leeds, Doncaster, Hull, Peterborough and March. They were used extensively on the Manchester, Sheffield and Wath line supplementing the class 76 electrics. They could also be seen on Cheshire Lines Committee metals through Heaton Mersey as far as Northwich. The O4s were based at exotic places such as Colwick (Nottingham), Frodingham (Scunthorpe), Gorton (Manchester), Langwith Junction (Shirebrook near Mansfield), and Mexborough (near Rotherham). The locomotives usually had heavy repairs and overhauls at Gorton. Being Great Central locomotives one would assume that they would not be found in Scotland. That assumption is wrong, no fewer than 19 were allocated to depots in Scotland, many of them remained for nearly 20 years. They are listed in a table below which shows that Parts

O4/1, O4/2 and O4/7 all worked in Scotland. In 1943 all but one remaining in Scotland were transferred south, (the last one left in January 1944). The transfers followed the arrival of Riddles Class 07 2-8-0s better known as the WD Austerity 2-8-0s.

Table of Class O4 locomotives that were allocated to depots in Scotland

LNER Number	Subsequent BR Number	Class	Depot	Date Allocated	Date left
5393	63618	O4/1 G	Thornton Junction	10 Feb 1943	2 Oct 1943
6185	Note 1.	O4/1 K	Thornton Junction	6 June 1923	2 Nov 1923
6220	63803	O4/1* N	Dunfermline	10 Feb 1943	14 Jul 1943
6286	63880	O4/2# N	Dunfermline	19 Aug 1924	12 Mar 1931
			Dundee	12 Mar 1931	Sep 1931
			Aberdeen Ferryhill	Sep 1931	22 Jul 1943
6288	63882	O4/2* N	Thornton Junction	18 Jul 1924	29 Jul 1943
			Dunfermline	29 Jul 1943	1 Oct 1943
6290	63847	O4/2 N	Thornton Junction	22 Aug 1924	28 Jul 1943
6291	63848	O4/2 N	Dunfermline	14 Aug 1924	12 Mar 1931
			Dundee	12 Mar 1931	24 Jul 1943
	Note 2	O4/7	Aberdeen Ferry hill	24 Jul 1943	9 Jan 1944
6328	63725	O4/2* S	Dunfermline	13 Aug 1924	24 Jul 1943
6346	Note 1.	O4/2 S	Thornton Junction	18 Jul 1924	27 Sep 1941
6351	63674	O4/2+ S	Aberdeen Ferryhill	19 Aug 1924	22 Jul 1943
6352	63673	O4/2 S	Dunfermline	9 Aug 1924	22 Aug 1924
			Thornton Junction	22 Aug 1924	1940
	Note 2	O4/7	Thornton Junction	1940	1 Oct 1943
6370	63653	O4/2+ K	Aberdeen Ferryhill	20 Aug 1924	27 Oct 1939
			Carlisle Canal	27 Oct 1939	2 Nov 1939
			Aberdeen Ferryhill	2 Nov 1939	16 Jul 1943
6372	63648	O4/2 K	Dundee	30 Aug 1924	15 Jul 1943
			Dunfermline	15 Jul 1943	30 Sep 1943
6543	63644	O4/2+ K	Thornton Junction	23 Mar 1929	3 Oct 1943
6544	63647	O4/2+ K	Dunfermline	19 Dec 1928	27 Jul 1943
6548	63682	O4/2 S	Dunfermline	3 Nov 1928	6 Oct 1943
6550	63704	O4/2+ S	Thornton Junction	10 Nov 1928	12 Sep 1943
6551	Note 1.	O4/2 S	Dundee	1 Dec 1928	20 Sep 1941
6582	63766	O4/2 N	Aberdeen Ferryhill	15 Jan 1929	Oct 1930
			Dundee	Oct 1930	29 Jul 1943
			Dunfermline	29 Jul 1943	30 Sep 1943

*Subsequently rebuilt as Class O1

#Subsequently modified to Class O4/7

+Subsequently modified to Class O4/8

Note 1

6185 renumbered 730 and sent to Middle East via Greenock 14 Sep 1941

6346 renumbered 757 and sent to Middle East 25 Oct 1941

6551 renumbered 741 and sent to Middle East via Bidston 15 Oct 1941

Note 2

6291 modified to a class O4/7 at Gorton, completed 24 Jul 1943

6352 modified to a class O4/7 at Gorton, completed 16 Mar 1940

Modifications and improvements were made to the Class O4 locomotives over the years. The LNER regarded some of these as sub-classes. By the time British Railways took over the locomotives there had been 8 sub-classes and 51 rebuilds which were considered to be a new class O1. In BR days 7 more O4s were rebuilt as Class O1.

The sub-classes were labelled class O4/1 to O4/8.

Class O4/1

These were the locomotives built to the original Robinson Great Central Class 8K design introduced in 1911 and which had not been modified by the date of the grouping. Its features included a small, boiler, Belpaire firebox, steam and vacuum brakes and water scoop. To this group were added the three locomotives originally built by the GCR for R.O.D but which the GCR purchased from them in 1919. They had detail differences most of which were quickly eradicated notably Westinghouse brakes were replaced by steam brakes plus vacuum ejector. The obvious remaining difference was a 3,250 gallon tender which lacked water pick up equipment gear, This did not compare favourably to the 4,000 gallon tenders with water scoops fitted to the original engines. The three locomotives 5377, 5380 and 5383 (later to become 63602, 63605 and 711 respectively) were briefly classified as O4/2 but by the end of 1924 reverted to O4/1 when 4,000 gallon tenders were provided for them even though the tenders for 5380 and 5383 were not actually fitted until 1925. In December 1940 Parts 1 and 3 were merged and all locomotives forming part 3 at that time were reclassified as O4/1

Class O4/2

This sub class was created in 1925 following the modification of ten locomotives by Darlington between February and July 1924. To these six further locomotives were added in 1928. All sixteen were ex R.O.D. locomotives recently purchased by LNER and then classified Class O4/3. The locomotives were modified with copper inner fireboxes replacing steel ones and with reduced height of cab and boiler mountings to allow the locomotives to work on North British lines. LNER created a standard loading gauge to which most of its engines were modified over time. This was completed by 1946 at which time the need for the sub-class was redundant and the locomotives if they had received no other modification reverted to Class O4/1. The numbers of the 16 locomotives modified from Part O4/3 to Part O4/2 are included in the Table of O4 locomotives that were allocated to depots in Scotland, see above.

Class O4/3

This part originally comprised the 273 locomotives purchased by the LNER from the Ministry of Munitions between 1923 and 1927. For some reason it did not include the three similar locomotives acquired by the GCR in 1919.

There were few differences between the R.O.D. locomotives and the existing GCR O4s. The main differences being steel inner fireboxes rather than copper; and the locomotives had Westinghouse brake equipment for use on the continent. This was removed over time as locomotives were overhauled. None were fitted with vacuum brake. The tenders had no water scoop and this was

never fitted. They did carry one ton of coal more than the original GCR locomotives. In December 1940 Parts 1 and 3 were merged and Part 3 was dispensed with.

Class O4/4

In July 1929 two class O4/3 engines Nos. 6287 (later to become 63882) and 6371 (later to become 63652) were fitted with O2 type larger 5ft 6ins diameter boilers.

No. 6371 was rebuilt to a class O1 at Gorton in December 1945. No.6287 was renumbered 3882 and was then rebuilt to class O4/8 in August 1947. Thus by nationalisation in 1948 this sub-class was extinct and no Class O4/4 locomotives were passed to British Railways.

Class O4/5

In 1932 Four Class O4/1 locomotives (Nos. 5008, 6207, 6232 and 6242) were modified with shorter O2 boilers which did not require the frame extensions necessary for the Class O4/4 engines. In 1939 five more locomotives (Nos. 6299, 6320, 6500, 6592 and 6606) all from Class O4/3 were similarly modified but they retained the original cab. The brake arrangements of the former part 1 and 3 engines was not changed. The former O4/1 engines kept their vacuum ejectors whilst the former Class O4/3 engines were steam brake only. Seven of these locomotives were subsequently modified or rebuilt to Parts O4/7, O4/8 or Class O1. The remaining two No. 6207 as BR No. 63745 and No.6299 as BR No. 63851 were both withdrawn from service in April 1959 making Part O4/5 extinct.

Class O4/6

This sub classification was given to those 19 locomotives rebuilt to Class O4 from Class O5 Two by the Great Central Railway in 1922 and the remaining 17 by the LNER. The two rebuilt by the Great Central were Nos. 5412 and 5413 (later 63902 and 770). The 17 rebuilt by the LNER were numbered 5414 to 5422 inclusive and 5011 to 5015 inclusive, 5017, 5019 and 5022. These became BR Nos. 63904 to 63908 inclusive, 733, 781, 63911 to 63915 inclusive, 787, 63917, 766, 721 and 63920 respectively. Nos. 733, 781, 787, 766, and 721 were withdrawn and sent to the Middle East in October 1941. The aforementioned No. 770 was also sent in November 1941.

The locomotives retained the higher cab (and thus despite a fairly comprehensive programme to standardise locomotives to the LNER Composite Load Gauge the cab dimensions meant that a separate sub class was necessary to distinguish locomotives which were outside the composite load gauge. The cabs of Nos. 5014, 5015, 5017, 5019 and 5022 (787, 63917, 766, 721, and 63920) were fitted with additional side windows and a roof extension. A distinctive feature of Nos. 5014, 5015, 5019, 5022 and 5420 (787, 63917, 721, 63920, and 733) was that they were fitted with battleaxe head shaped wheel balance weights. It is thought that No. 5420 acquired these from No. 5013 in 1923.

Class O4/7

In 1939 part 7 was created by Gresley when he fitted a shorter version of the Diagram 15A boiler (see part O4/5) to one of the locomotives. This change was applied to a total of 41 locomotives including 14 from part 1, 2 from Part 2, 24 from Part 3 and one from part 5 . Before all the conversions had been made Thompson had introduced the Diagram 100A boiler on to an O4 class. It is therefore surprising that further O4/7 conversions took place. The GCR pattern smokebox was retained. It had the same diameter as on Class O5. This made the O4/7s recognisable from the other

O4s. One O4/7 was subsequently built as a class O1, 6 were later modified to class O4/8 and 34 remained as O4/7s to withdrawal

Class O4/8

99 locomotives were modified to sub class O4/8 from all the sub-classes. The modification was introduced in 1944 by fitting a diagram 100A boiler, and a new side window cab. A new smokebox saddle was put on to the frames to accommodate the smokebox. The original cylinders and motion were retained. If the cylinders were found to be defective then B1 type cylinders would have been fitted and the modification would have been treated as a rebuild to a class O1. The LNER created 16 Class O4/8 by nationalisation. BR converted 13 more between 1952 and 1954 but then created 70 more between 1955 and 1958.

Models of Class O4 (8K)

Manufacturer	Catalogue No.	Locomotive No.	Livery	Scale
Bachmann	31-001	63601	BR Black late Crest	OO RTR
	31-002	63635	BR Black early emblem	OO RTR
	31-003	6190	LNER Black	OO RTR
	31-004	63598	BR Black weathered early crest	OO RTR
	31-005	3547	LNER Black	OO RTR
Falcon Brassworks	LK287	Class O4	Modeller's choice	OO kit (not currently available)
	LK 309	With R.O.D. original fittings	Modeller's choice	OO kit (not currently available)
Foxhunter	Kit 6	Class O4	Modeller's choice	N kit
Gladiator	GTR2	Class O4/1	Modeller's choice	O kit
	GTR13	Class O4/7	Modeller's choice	O kit
K's				OO kit (discontinued)
Little Engines				OO kit
Nu-cast				OO kit (discontinued)
Proscale	PS10	Class O4	Modeller's choice	OO kit
3SMR	LS30	Class O4 Loco only	Modeller's choice	3mm kit
	LT8	Tender etched brass	Modeller's choice	3mm kit
	LT103	Tender white metal	Modeller's choice	3mm kit

Models of GWR 3000 class

Bachmann	31-127	3023	BR Black early emblem	OO RTR
	31-128	3036	BR Black weathered, early emblem	OO RTR
	31-129	3028	GWR green	OO RTR
Gladiator	GTR2	Modeller's choice	Modeller's choice	O kit