= British Rail Class 47 =

The British Rail Class 47 is a class of British railway diesel @-@ electric locomotive that was developed in the 1960s by Brush Traction . A total of 512 Class 47s were built at Crewe Works and Brush 's Falcon Works , Loughborough between 1962 and 1968 , which made them the most numerous class of British mainline diesel locomotive .

They were fitted with the Sulzer 12LDA28C twin @-@ bank twelve @-@ cylinder unit producing 2 @,@ 750 bhp (2 @,@ 050 kW) - though this was later derated to 2 @,@ 580 bhp (1 @,@ 920 kW) to improve reliability - and have been used on both passenger and freight trains on Britain 's railways for over 50 years . Despite the introduction of more modern types of traction , a significant number are still in use , both on the mainline and on heritage railways . As of July 2015 , 82 locomotives still exist as Class 47s , with further examples having been converted to other classes ; approximately 30 retain " operational status " on the mainline .

= = Origins = =

The Class 47 history begins in the early 1960s with the stated aim of the British Transport Commission (BTC) to completely remove steam locomotives from British Rail by a target date of 1968 . They therefore required a large build of lightweight Type 4 locomotives to achieve this aim . This required locomotives producing at least 2 @,@ 500 bhp (1 @,@ 900 kW) but with an axle load of no more than 19 long tons (19 t) . However , the BTC were not convinced that the future of diesel traction lay down the hydraulic transmission path of the Western Region , and began looking at various diesel @-@ electric designs .

Despite the construction of two demonstration locomotives (D0260 LION , produced by AEI and BRC & W using a Sulzer engine , and D0280 FALCON , built by Brush Traction using Maybach engines) , the need for a large number of locomotives quickly was deemed paramount , and the pilot build of what would become Class 47 began before the prototypes could be comprehensively assessed . This initial build of 20 locomotives (Nos. D1500 to D1519) were mechanically different from the remainder of the type , and would be withdrawn earlier . However , based on these and the success of LION , an order for 270 locomotives was made , which was later revised upwards a number of times to reach the final total of 512 . Five locomotives , Nos. D1702 to D1706 , were fitted with a Sulzer V12 12LVA24 power unit and classified as Class 48s ; the experiment was not deemed a success , and they were later converted to standard 47s .

= = In service = =

Eventually , 310 locomotives were constructed by Brush in Loughborough , and the remaining 202 at BR 's Crewe Works . The first 500 locomotives were numbered sequentially from D1500 to D1999 , with the remaining twelve being numbered from D1100 to D1111 . The locomotives went to work on passenger and freight duties on all regions of British Rail . Large numbers went to replace steam locomotives , especially on express passenger duties .

The locomotives , bar a batch of 81 built for freight duties , were all fitted with steam heating boilers for train heat duties . The initial batch of twenty , plus D1960 and D1961 , were also fitted with electric train heating (ETH) . With this type of heating becoming standard , a further large number of locomotives were later fitted with this equipment .

In the mid 1960s , it was decided to de @-@ rate the engine output of the fleet from 2 @,@ 750 bhp (2 @,@ 050 kW) to 2 @,@ 580 bhp (1 @,@ 920 kW) . This significantly improved reliability by reducing stresses on the power plant , whilst not causing a noticeable reduction in performance .

= = Sub @-@ Classes = =

In the early 1970s , the fleet was renumbered into the 47xxx series to conform with the computerised TOPS systems . This enabled a number of easily recognisable sub @-@ classes to

be created , depending on the differing equipment fitted . The original series were based on train heating capability and were as follows ;
Class 47 / 0 : Locomotives with steam heating equipment .
Class 47 / 3 : Locomotives with no train heating .
Class 47 / 4 : Locomotives with dual or electric train heating .
However , this numbering system was later disrupted as locomotives were fitted with extra equipment and were renumbered into other sub @-@ classes . For an overview of the renumbering see the Class 47 renumbering page . This section summarises the main sub @-@ classes that were created .

= = = Class 47 / 0 = = =

Originally numbered from 47001 to 47298 , these locomotives were the " basic " Class 47 with steam heating equipment fitted . In the 1970s and 1980s , with steam heating of trains gradually being phased out , all locomotives fitted with the equipment gradually had their steam heating boilers removed . Some were fitted with ETH and became 47 / 4s , whilst the others remained with no train heating capability and were therefore used mainly on freight work . In the 1990s , the class designation 47 / 2 was applied to some class 47 / 0s and class 47 / 3s after they were fitted with multiple working equipment . The locomotives involved also had their vacuum braking systems removed or isolated , leaving them air braked only . This was mainly a paper exercise , however , and the locomotives were not renumbered ; in this article they are included in Class 47 / 0 .

= = = Class 47 / 3 = = =

Originally numbered from 47301 to 47381 , this sub @-@ class was originally built with no train heating equipment and therefore remained as freight locomotives almost exclusively for their working lives . They were all fitted with slow speed control for working MGR coal trains (as were a number of Class 47 / 0s) . However , during the summer months when train heat was not required , 47 / 3s could regularly be found hauling the extra trains that the holiday season brought . The sub @-@ type remained stable until withdrawals started , although an " extra " 47 / 3 , No.47300 , was created in 1992 when No.47468 had its train heating equipment removed and was renumbered . This was a direct replacement for collision damaged 47343 . Also , No.47364 was renumbered to 47981 in 1993 for use on RTC test trains .

= = = Class 47 / 4 = = =

The designation for standard locomotives fitted with ETH and therefore used for passenger , mail and parcels use . 133 locomotives had been fitted by the time renumbering occurred , and shortly afterwards the sub @-@ class had settled down to 154 locomotives , numbered 47401 @-@ 47547 and 47549 @-@ 47555 . Later , further class 47 / 0s were converted to class 47 / 4s and renumbered into the series from 47556 onwards , which eventually reached 47665 .

= = = Class 47 / 6 and Class 47 / 9 = = =

After being severely damaged in a derailment near Peterborough in 1974 , locomotive 47046 was selected to be a testbed for the projected Class 56 , and was fitted with a 16 @-@ cylinder Ruston 16RK3CT engine rated at 3 @,@ 250 bhp (2 @,@ 420 kW) for assessment purposes . To identify it as unique , it was renumbered 47601 (at the time the number range for Class 47s only extended as far as 47555) . Later , in 1979 , it was used again for the Class 58 project , fitted with a 12 @-@ cylinder Ruston engine (this time of 3 @,@ 300 bhp (2 @,@ 500 kW)) , and renumbered 47901 . It continued with this non @-@ standard engine fitted until its withdrawal in 1990 .

= = = Class 47 / 7 = = =

In the late 1970s , BR authorities identified a need to replace the ageing trains operating the Glasgow to Edinburgh shuttle services , in order to increase speed and reliability . The trains were operated by pairs of Class 27s , one at each end of this train . It was decided to convert twelve 47 / 4s to operate the service in push @-@ pull mode . The locomotives would be known as Class 47 / 7 and would be fitted with TDM push @-@ pull equipment and long @-@ range fuel tanks , and be maintained to operate at 100 mph (160 km / h) . The conversions began in 1979 and the service was operated completely by them from 1980 . In 1985 , the push @-@ pull service spread to Glasgow @-@ Aberdeen services , and a further four locomotives were converted . The sub @-@ class therefore comprised Nos. 47701 to 47716 , though a further locomotive , 47717 , was converted in 1988 after the fire @-@ damaged 47713 was withdrawn .

= = = Class 47 / 7b and 47 / 7c = = =

In the 1990s , further 47 / 4s were converted with long @-@ range fuel tanks and equipment to allow them to work with a type of rolling stock known as propelling control vehicles @-@ PCV , which utilised RCH (Railway Clearing House) cables to allow the PCV driver to signal to the driver on the locomotive to apply power and operate the brakes - neither these locomotives or the PCVs were equipped with TDM push @-@ pull equipment . They were also numbered into the 47 / 7 series , from 47721 onwards . With dwindling passenger work for them , a number of 47 / 8s , already fitted with the extra fuel tanks , were also renumbered into this series .

Two locomotives , 47798 Prince William and 47799 Prince Henry , were dedicated for use on the Royal Train , and were designated as Class 47 / 7c .

= = = Class 47 / 8 = = =

The last of the original 47 / 4 conversions , from 47650 to 47665 , were fitted with extra fuel tanks , giving them an extended range . Four earlier Class 47 / 4s were also converted . In 1989 it was decided to give these locomotives easy recognisability , and so these locomotives were renumbered into their own series from 47801 to 47820 . At the same time , further locomotives were fitted with extra fuel tanks and renumbered ; the series eventually reached 47854 . After the privatisation of British Rail , the locomotives in the 47 / 8 number range were mainly used by Virgin Trains on cross @-@ country work until the introduction of their Voyager trains . These duties have kept them maintained in serviceable condition , allowing them to remain operational longer than the majority of their classmates . As a consequence most of them received relatively recent overhauls . The locomotives in this number range are officially Class 47 / 4s under the TOPS system .

= = Decline = =

By 1986 , only five of the original 512 locomotives had been withdrawn from service , all because of serious accident damage . However , with work for the class declining due to the introduction of new rolling stock , and spare parts becoming difficult to source , some inroads started being made .

The first locomotives to be targeted were the non @-@ standard pilot batch of 20 , now numbered 47401 @-@ 47420 . Three locomotives were withdrawn as life @-@ expired in February 1986 , and the remainder of the batch that had not recently been overhauled followed in the next two years . All 20 were withdrawn by 1992 .

Meanwhile , BR drew up a ' hit @-@ list ' of locomotives for early withdrawal , mainly including those with non @-@ standard electrical equipment , known as series parallel locomotives . In the outset , withdrawals were slow , mainly due to the surplus of spare parts and new flows of freight traffic which required extra locomotives ; only 61 locomotives had been withdrawn by the end of 1992 . However , with the introduction of new locomotives , the rate of withdrawal quickly rose , with 86 more 47s reaching the end of their lives in the next three years . With most of the non @-@ standard locomotives withdrawn , the reduction of the fleet again proceeded more slowly . The

privatisation of British Rail also produced new independent rail companies needing available traction until they could order new locomotives . From 1996 to 2006 , an average of around fifteen locomotives per year were taken out of service .

During the decline in passenger work a number of locomotives were painted in " celebrity " colours , depicting various liveries that the type had carried during its history . This continued a tradition of painting 47s in unusual liveries , which dates back to 1977 , when Stratford depot in East London painted two locomotives with huge Union Flags to celebrate the Silver Jubilee of Queen Elizabeth II .

= = Current mainline operation = =

In October 2015 , after over 53 years of front line passenger and freight operations , 27 locomotives retain operational status on the National network . The following is a list of companies currently operating Class 47s .

Direct Rail Services (DRS) locomotives appear on freight , stock movements , charter trains and spot @-@ hire duties . Locomotives currently operational are 47790 , 47805 , 47810 , 47813 , 47818 , 47828 and 47853 . Currently 47810 / 13 / 18 / 28 / 53 are registed as for sale .

West Coast Railway Company is primarily a charter train operator , and expanded its fleet by overhauling withdrawn locomotives . Locomotives currently operational are 47237 , 47245 , 47270 , 47746 , 47760 , 47786 , 47802 , 47804 , 47826 , 47832 , 47851 and 47854 .

Riviera Trains is a company based at Crewe with a fleet of locomotives which are mainly used to haul charter trains , but have since been hired out for use with GBRf , maintained by HNRC . Locomotives currently operational are 47812 , 47815 , 47843 , 47847 and 47848 .

Colas Rail owns a small fleet of locomotives for duties hauling its track maintenance trains and occasional steel traffic . Locomotives currently operational are 47727 and 47739 .

Freightliner Group , a freight company , operate 47830 (D1645) , which was named Beeching 's Legacy on 12 November 2015 to mark 50 years since the first container train ran under British Rail . The ceremony was held at the National Railway Museum at York , with the Secretary of State for Transport , Patrick McLoughlin in attendance .

A number of other locomotives are stored in a serviceable condition by these operators , and both these and some preserved locomotives that are maintained to mainline standards (such as " Royal Train " locomotive 47798 , along with 47580 and 47773) may appear on the network at any time . Approximately 20 further locomotives are owned by the companies above and others , and remain in non @-@ operational " stored " condition .

The stored (out of use) locos on 17 / 10 / 15 are 47194 , 236 , 270 , 355 , 368 , 488 , 492 , 500 , 501 , 526 , 701 , 703 , 714 , 715 , 744 , 749 , 761 , 768 , 769 , 772 , 776 , 787 , 810 , 811 , 813 , 816 , 841 and 853 . Some are used for spares , some are awaiting scrapping and the rest are being return to the main line .

= = Other working locomotives = =

Class 47s have proved very popular with preservationists and private railways , and 32 are currently in preservation , with the majority in working order . A full list can be found at list of preserved British Rail Class 47 locomotives .

Thirty @-@ three locomotives were rebuilt with EMD engines and re @-@ classified as Class 57s . Freightliner took 12 , Virgin Trains 16 and First Great Western five . Today these are owned by Direct Rail Services (22) , Great Western Railway (four) and West Coast Railway Company (eight , including the prototype passenger class 57 , 57601) .

= = Accidents and incidents = =

11 January 1965 : D1734 was severely damaged after the freight train it was hauling ran out of control near Shrewsbury , eventually demolishing a signal box . It was withdrawn two months later ,

becoming the first Class 47 withdrawn after a working life of only eight months .

17 December 1965 : D1671 THOR was derailed near Bridgend whilst hauling a train of empty coaches . Shortly afterwards , a freight train collided heavily with the wreckage , killing the drivers of both locomotives . D1671 was withdrawn some four months later . Its nameplates were salvaged , and transferred to No . D1677 .

8 April 1969 : D1908 was badly damaged when , while hauling a freight train at Monmore Green , it was struck head @-@ on by a passenger train that had passed a signal at danger . D1908 caught fire after the accident and became the third Class 47 withdrawn .

13 March 1971 : D1562 was wrecked after its power unit , which had been experimentally uprated , exploded at Haughley Junction while the locomotive was hauling a Liverpool Street to Norwich express .

11 June 1972 : D1630 was involved in the Eltham Well Hall rail crash in which six people were killed . The locomotive was repaired , but much later in its life when numbered 47849 , it was withdrawn from the Class 57 rebuilding programme after damage was discovered which was thought to have dated back to the accident .

16 March 1976 : 47274 collided with a lorry that had fallen from a bridge onto the line near Eastriggs . The drivers of both the train and the lorry were killed .

5 September 1977 : 47402 was hauling a mail train when it was in a head @-@ on collision with a diesel multiple unit at Farnley Junction , Leeds , West Yorkshire due to a signalling fault . Two people were killed and fifteen were injured .

22 October 1979 : 47208 became the fifth Class 47 to be withdrawn after suffering severe damage in a fatal accident at Invergowrie in Scotland . 47208 was hauling a Glasgow to Aberdeen service which collided with a local train which had stopped in front .

9 December 1983 : 47299 (formerly 47216) was involved in a serious accident at Wrawby Junction in Lincolnshire , when whilst hauling an oil train , the locomotive collided with a local train resulting in the death of a passenger . It later emerged that the locomotive 's renumbering was allegedly due to a warning given to BR by a clairvoyant who claimed to have foreseen a serious accident involving a locomotive numbered 47216 .

30 July 1984 : 47707 Holyrood was propelling the 17 : 30 express from Edinburgh to Glasgow from the rear , when the train collided with a cow near Polmont and was derailed , resulting in 13 deaths . The accident raised serious concerns about the safety of push @-@ pull operation where the locomotive was at the rear of the train .

20 December 1984 : Summit Tunnel fire : Locomotive 47125 was hauling a freight train of petrol tankers which derailed and caught fire in Summit Tunnel , on the Lancashire / West Yorkshire border .

9 March 1986 : Locomotive No. 47334 was one of two light engines that were hit head @-@ on by a passenger train at Chinley , Derbyshire due to a signalman 's error . One person was killed . Lack of training and a power cut were contributory factors .

20 February 1987 : 47089 Amazon was hauling a freight train that ran away and was derailed by trap points at North Junction , Chinley , Derbyshire . Another train ran into the wreckage and was derailed .

24 March 1987 : 47202 was hauling a freight train that overran signals and was in a head @-@ on collision with a passenger train (hauled by 33032) at Frome North Junction , Somerset . Several people were seriously injured .

= = Gallery of liveries = =

= = Cuba = =

Between 1963 and 1966 ten locomotives similar to the British Rail Class 47 were supplied to Ferrocarriles de Cuba (Cuban National Railways) .