

Datamatrix stamps in the UK

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The experimental issue

Stamps with datamatrix labels attached had been issued in France, Germany and the USA from 2020. An experimental issue of a business sheet of 50 stamps with a datamatrix code by the side of the stamp was made in the UK on 23rd March 2021 as part of the continuing effort to counter the forgery of postage stamps. It was followed by similar attached codes on the Christmas issue later in 2021. These are wrongly known as bar codes by Royal Mail and others. However, bar codes are one-dimensional, whereas datamatrix codes, like QR codes, are two-dimensional and can carry much more data.

The business sheet has five panels, of which the first has two stamps and further information. Each of the other four panels has 12 stamps in three rows of four. They were printed by International Security Printers in their Wolverhampton factory and, as with previous business sheet stamps, they were printed on security backing paper and have the other security features of the overprint with source code MBIL, year code M21L and security slits. The stamp and label are a single entity, not to be separated, measuring 39×30mm, although there is a printed simulation of perforations between them. Unlike previous business sheets, it does not have a date stamped on the back of the top panel.

Front panel of business sheet



Christmas 2021

This first issue was followed at the end of the year by the issue of the NVI Christmas stamps with datamatrix codes from counter sheets of 50 and on a miniature sheet alongside the same designs as normal self-adhesive stamps in counter sheets and booklets and the denominated airmail values.



The full roll-out

On 1st February 2022 there was a major change in definitive stamps when the first issues were made of a range of NVI stamps from counter sheets of 50 and booklets of four and eight carrying attached datamatrix codes with the intention of further overcoming the problems of forgery. At the same time, the colours of the stamps were changed with the stamps for large mail having the same size as the stamps for normal mail but in different colours. On 28th February these were followed by the same four NVI values being issued in business sheets of 50, made up of five folding panels. The top panel contains two stamps plus other information whilst the other four panels each contains twelve stamps in three rows of four. The stamps on the counter sheets are printed sideways right, with the result that the backing paper on individual stamps is sideways when the stamp is viewed upright. All the stamps continue to carry the other security features with elliptical perforations, security code overprints with source and year codes, security slits, self-adhesive gum and printed backing paper. The stamps in booklets and business sheets are printed vertically inverted.

The first NVI definitives



On 4th April the full range of stamps was completed by the issue of the four denominated airmail values and the 'make-up' values from 1p to £5 in a 1-2-5-10 sequence plus a £3 value. A major change came with this latter group in that they have a white background with a coloured frame and Queen's head. They were only available from counter sheets of 25 for sale in post offices.





As a result of adding the datamatrix labels, the stamps and associated products have increased in size. The new stamps measure 25×30mm plus the label at 13.5mm making an overall size of 39×30mm as opposed to 20.5×24mm previously. With the backing paper, unused stamps from counter sheets are 43×35mm and are separated from each other by roulettes with a gauge of 6½. Retail booklets have increased in size from 79×57mm to 88×68mm. Each panel of a business sheet now measures 172×102mm. Prestige booklets measure 100×192mm – 4mm higher.

Other changes to booklets included reducing the numbers of stamps from six and twelve to four and eight to accommodate the larger stamps and no longer producing a proportion of booklets that include cylinder numbers. Also, commemorative booklets that contain both definitive and special stamps have so far not been produced due to size problems and allegedly production difficulties. It is also noted that the FSC approval is no longer restricted to the stamps so presumably now includes the covers as well.

Prestige booklets

The next step in the roll-out of stamps in the new format was the issue on 5th May of the first prestige booklet with datamatrix stamps with the title ‘Unsung Heroes’. This contained the usual page of definitive stamps but with many differences from the previous issues. The page contains five stamps plus a label rather than eight stamps plus a label, it is self-adhesive not gummed, is printed in gravure not offset lithography and the stamps have datamatrix labels. The stamps carry the M22L year code but do not have the usual MPIL source code, probably the result of an oversight. They do, however have the source code 8 for a prestige booklet in the datamatrix labels. The matrix around the stamps is not stripped which means that the security backing paper is not visible. This is sideways since the pages are printed sideways right to left as are the counter sheets. One feature that distinguishes these stamps from the superficially identical sheet stamps is that there are two small breaks in the die-cut perforations on each of the four sides.

Because of the larger size of the new stamps, the height of the pages in the booklet had to be increased from 96mm to 100mm – which makes the special-size Showgard mounts unusable.

The second prestige booklet was issued on 1st September with the title ‘Transformers’. It was similar to the previous issue but had only four stamps on the definitive pane, two 50p and two £1, with two labels. An error occurred on the upper left-hand £1 stamp where a line from the drawing on the left-hand part of the pane encroaches on the stamp near its bottom left-hand corner. The oversight of the first issue was corrected on this and later issues and the stamps carry the source code MPIL.

The third booklet was issued on 24th November with the title ‘Tutankhamum’ with two 10p, two 20p and a £1.85 stamp and a label on the definitive pane. In the first two booklets the definitive panes were printed in gravure, but although the information for this booklet says it was also, it was actually printed in offset lithography as with the other pages in the booklet.

A fourth booklet was issued on 16th February 2023 with stamps that still contained images of the Queen. The definitive pane had two 2nd class stamps, two £1 stamps and two labels, all of which were printed in offset lithography. The stamps have M22L year code and MPIL source code. As with the

previous booklet, the information in the booklet wrongly states that the stamps were printed in gravure.

A fifth booklet was issued on 9th March 2023 containing the last stamps to bear the image of HM Queen Elizabeth II. The definitive pane had three 20p stamps and a single £2 stamp plus two labels, all of which were printed in offset lithography. The stamps have M22L year code and MPIL source code. As with the previous two booklets, the information in the booklet wrongly states that the stamps were printed in gravure. A departure not seen previously in any printing lay in the backing paper in which it is printed with the words ROYAL MAIL in straight lines at about 26.5° to the vertical with alternate lines in larger and smaller fonts and alternate pairs reversed.

The 50p and £1 stamps in the first two issues have different dates on the datamatrix labels, one day apart as do the three values on the Tutankhamum pane and the two values on the X-Men and Flying Scotsman panes. For the first two, the fourth and fifth issues there were also separate printings for FDCs with label source code 0 but not for the third, Tutankhamum, issue and these coil printings also have different label dates that follow immediately after those from the booklet pane.

Country stamps

Country definitives were issued with datamatrix labels attached on 11th August 2022. They are the same size as the national definitives but printed in offset lithography by Cartor Security Printers in counter sheets of 25. The sheets carry the FSC logo and licence number for the Wolverhampton factory but have C1 cylinder numbers. As with the national definitives they are self-adhesive, printed on security backing paper and have die-cut pseudo perforations with oval security holes but there is no overprinting on the stamps with year and source codes. However, the datamatrix labels carry the source code 4 for stamps in sheets of 25 and source code 0 for sideways-printed stamps in coils affixed to first-day covers.

The stamps for all four nations use the same basic designs and colours as for the previous issues but with the Queen's head reversed out on all stamps and in a larger size. Three values were issued – first-class, second class and £1.85. On all stamps the security backing paper is of type SBP2(L)Ls except for the Wales second-class which is SBP2(L)sL. The last two digits of the first part of the datamatrix codes now give the country as follows: 03 for England, 04 for Wales, 05 for Scotland and 06 for Northern Ireland.

An error occurred on the Wales first-class stamps printed in coils for first-day covers where the letters AF are in a sans-serif font whereas the sheet stamps have AF in a serif font.

The four first-class country stamps



Christmas 2022

The Christmas 2022 stamps were issued on 3rd November. All six values have datamatrix labels attached and still have the late Queen's head. They were all available in counter sheets of 50, a miniature sheet and an A4 'collector's sheet' of 20 stamps that has eight each of the 1st and 2nd class normal stamps and two each of the airmail values. The first and second-class stamps for normal size mail were also available in booklets of eight. All stamps were printed by Cartor Security Printers, the counter sheets and booklets were printed in gravure at their Wolverhampton factory and the others in offset lithography in France.

Christmas 2022 miniature sheet



The colours of the labels and booklet covers are the same as those for the definitive stamps of the same respective values. The booklet covers are very similar to those for the definitive values but with the words **Christmas Stamps** on the front and information on latest posting dates for Christmas on the back. The stamps on the miniature sheet have label source code 7 and those on the collectors' sheet have label source code A.

Christmas 2022 booklet cover



The codes interpreted

It is possible to read the codes using the camera on a smart phone or tablet, but the full meaning of the character strings is still open to some speculation since Royal Mail have not published any details, though they have done so for other uses of datamatrix codes within the organisation.

The label carries a datamatrix code 2D type 29 that has 16x48 dots providing for up to 70 characters. It has solid lines on two adjacent sides and alternate dots on the other two and can be read with a smart phone that can read QR codes. On reading, this gives rise to a string of 56 alphanumeric characters in three groups, of which the last group of 18 characters is a random string giving a unique code for each stamp. In the main group of 33 characters there are several subgroups – one gives details of the stamp, another a stamp identifier, another the selling price and another a date.

First class stamp from a counter sheet with the contents of its datamatrix code



JGB

S11151017031029954810008501122101

402121E1AFB118C601

In the code above, the first line has the letters **JGB**. This prefix appears to be in all datamatrix codes in use in the UK. It prefaces all uses of datamatrix codes by Royal Mail as well as codes on documents from the DVLA, TV licensing and private companies. The table below gives the meaning of the remainder as known in November 2022 based on information from Cartor, the Deegam Handbook and reading the codes on the stamps themselves.

Field name	Length (Start)	Values	Comment
Product type	1(5)	S	
Version	1(6)	1	
Stamp type	1(7)	1 normal-size NVI 2 large NVI 9 denominated	
Stamp class	1(8)	1 1 st class 2 2 nd class 9 standard	
Source code	1(9)	0 coil for FDC 1 booklet of 4 2 booklet of 8 3 business sheet 4 counter sheet of 25 5 counter sheet of 50 6 7 miniature sheet 8 prestige booklet 9 A label sheet	
Supply chain	7(10)	1017031	Fixed
'Sheet serial no'	6(17)		Unique number
Stamp position	2(23)	01 to 00	
Postal tariff	5(25)		Pence
Date	6(30)	ddmmyy	
Campaign ID	2(36)	01 Machin 02 Christmas 03 England 04 Wales 05 Scotland 06 Northern Ireland	

The third line is a string of 18 characters that is unique to each stamp.

Information about datamatrix codes says that they contain redundant information so that damage to the label may not prevent the information being read. However, in practice postmarks that encroach onto the labels do generally prevent them from being read. In Germany the labels are all printed in black and this problem was solved by changing the colour of postmarks to light blue. The solution adopted by Royal Mail was to have a cancellation with only three wavy lines and to attempt to keep the cancellation as far to the left as possible as on the example here, although it does seem that if the three lines do cover part of the label it is still readable.



First-day covers

With each new issue of definitive stamps on sheets and in prestige booklet panes, first-day cover facilities are available from the Philatelic Bureau in Edinburgh and from specialist dealers. It had been the policy for some years to make separate printings of stamps to be put on these covers in coils to make it easier and faster to attach them to the envelopes, and this was continued with the datamatrix stamps.

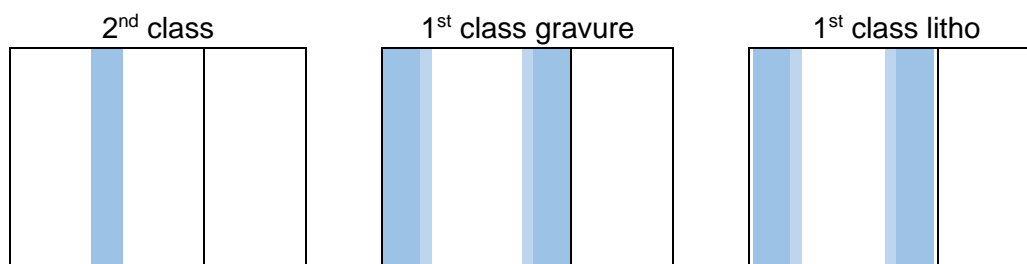
For one or two years these separate printings were available in presentation packs but when this was discontinued the only source was from the FDCs. Before the issue of datamatrix stamps, stamps in counter sheets and prestige panes were printed vertically and those in coils for FDCs horizontally. With the gravure printing it is possible, with difficulty, to distinguish between the two.

This practice continued with the datamatrix stamps with stamps in sheets and prestige booklets being printed sideways as well as those in coils for FDCs. However, the source codes in the datamatrix labels are 4 or 5 for sheet stamps and 8 for prestige booklets whereas those printed in coils for FDCs have a source code of 0. The only sources of such stamps are the FDCs so there are no unused specimens available.

Phosphor bands

The stamps have phosphor bands printed with phosphor type A2B fluorescing blue. All second-class stamps for normal-sized mail have a single phosphor band down the middle of the stamp with a width of 4.5mm.

All other stamps have two phosphor bands at left and right, that are vignettted as in the picture below. The majority of stamps have two bands with a band of width 5mm with a brighter blue phosphor with a band to the inside of it with a width of 1.5mm of a lighter blue phosphor, so that there is a gap of 12mm between bands. On stamps in prestige booklets the wider band is 4.5mm and the narrower 2.0mm. On country stamps the bands are inset at left and right by about 0.5mm so that the space between the bands is about 11mm. There appears to be some variation in the amount of inset so it can be slightly greater or less than 0.5mm on either side.



Dates

There are four potential dates associated with each datamatrix stamp:

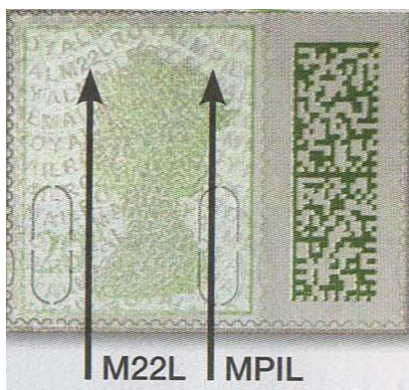
1. Date of issue.
2. Date of first use. For new issues this generally the date of issue but local postmasters have been known to sell stamps a day or two before they should. For reprints of existing issues this date is inferred from users' reports.
3. Printing date. For definitive stamps from counter sheets, this is assumed to be the date printed in the sheet margin. For booklets this is assumed to be date printed on the outside of packs of booklets and for business sheets this was the date stamped on the back of the top panel.
4. For stamps with datamatrix labels there is a date on the label but the significance of the date on the labels is unclear. It was initially assumed to be a printing date but is almost never the same as that printed in a sheet margin, though it is generally close to it, and stamps of different denominations on prestige definitive panes and miniature sheets have different dates. Stamps in a set of consecutive values have labels with consecutive dates, leaving out weekends and bank holidays. Label dates are unique and reprints have different label dates from the original issue.

There is a regularly updated report, DGR998 associated with the Deegam Handbook that contains a list of all the label dates and for each one the deegam identifier, the backing paper and the source including dates for counter sheets. Superficially identical stamps with different label dates do not have different deegam identifiers. This list shows some interesting features: neither the sheet dates nor the label dates, with minor exceptions, fall on a weekend or bank holiday. A label date has only one sheet date associated with it.

However, two examples are known in which a 2p stamp with a sheet date of 10/01/22 has a label date of 30/3/22 instead of the correct 05/01/22. The fact that a reprint of the 2p stamp with a sheet date of 04/04/22 also has a label date of 30/03/22 suggests that the computer supplying data for the label printer picked up the wrong profile on part of the print run.

Security features

The first security features were introduced in 1993 with the use of an elliptical perforation spanning three normal perforations near the bottom of each side of the stamp and the introduction of self-adhesive stamps that are difficult or impossible to remove when applied to mail. From 2009 two further features were added – two pairs of U-shade cuts near the bottom the stamps and an overprint in slightly fluorescent pale ink of ROYAL MAIL in wavy lines across the face of the stamp. One letter in one of the words was changed to provide a code for the source of the stamp (sheet, booklet etc) and from 2010 two letters in another word were substituted with digits to give a year code. From 2015 a similar ROYAL MAIL printing in pairs of wavy lines in a larger and smaller font was applied to booklets and business sheets, extended to sheets through 2016 and 2017. This practice has been continued with datamatrix stamps as shown in the image below.



This image is of a 20p stamp on the definitive pane of the Tutankhamun' prestige booklet. It shows the ROYAL MAIL overprint on the stamp and the positions of the year and source codes. This overprint is not always easy to see and even more difficult to photograph.

Image taken from the Machin Watch article by John Deering in the March 2023 issue of GSM.

Sheet layout and markings

Denominated values of counter sheets of datamatrix stamps printed by Cartor Security Printers in their factory in Wolverhampton are of 200 stamps divided into eight panes of 25 with four rows and two columns. Within each pane there are roulette perforations with a gauge of 6½ between the rows and the columns to facilitate separation.

The stamps are on a printed backing paper that has the words ROYAL MAIL in wavy lines with alternate lines in a larger and smaller font as described below.

Counter sheet of 25 2p stamps



The above sheet is anomalous in that the sheet date (presumed to be the print date) does not correspond with the label date. 2p stamps in this issue should have label dates of 05/01/22, whereas the label dates on these stamps are 30/3/22 which is the label date on stamps of the reprint that carries a sheet date of 4/04/22. One other stamp is known with the same anomaly.

01	02	03	04	05	51	52	53	54	55	01	02	03	04	05	51	52	53	54	55
06	07	08	09	10	56	57	58	59	60	06	07	08	09	10	56	57	58	59	60
11	12	13	14	15	61	62	63	64	65	11	12	13	14	15	61	62	63	64	65
16	17	18	19	20	66	67	68	69	70	16	17	18	19	20	66	67	68	69	70
21	22	23	24	25	71	72	73	74	75	21	22	23	24	25	71	72	73	74	75
26	27	28	29	30	76	77	78	79	80	26	27	28	29	30	76	77	78	79	80
31	32	33	34	35	81	82	83	84	85	31	32	33	34	35	81	82	83	84	85
36	37	38	39	40	86	87	88	89	90	36	37	38	39	40	86	87	88	89	90
41	42	43	44	45	91	92	93	94	95	41	42	43	44	45	91	92	93	94	95
46	47	48	49	50	96	97	98	99	00	46	47	48	49	50	96	97	98	99	00

Backing papers

Before the issue of datamatrix stamps self-adhesive stamps had been printed on a backing paper that had ROYAL MAIL printed on it in wavy lines as in the examples below. Several ways to describe these were proposed but that devised by Jon Deering in his articles for Gibbons Stamp Monthly were adopted by Gibbons in their catalogues. These are used in the examples below where SBP stands for Security Backing Paper. Type 1 has alternate rows in a larger and smaller font and can be found upright or inverted. Type 2 has alternate pairs of lines upright and inverted and Ls specifies versions where the larger font is above the smaller and sL is the reverse.

Sheet stamps with datamatrix codes are printed with the backing paper having the rows of text reading from left to right but the stamps printed on the sheet sideways with the Queen's head facing down the sheet. Since the sheets are passed through the printer from top to bottom, it follows that the stamps are printed sideways from right to left. The result is that, when an individual stamp on the backing paper is viewed normally, the backing paper appears sideways. The redundant matrix of paper between the stamps has been stripped so that the printed backing is visible.

All booklets and business sheets are printed upright on their backing paper, so the wavy lines of ROYAL MAIL read left to right.



Printers and printing

De La Rue started printing British stamps in 1855 until 1907 when they lost the contract to Harrisons but in 1997 De La Rue took over Harrisons so once again became one of the main printers with the photogravure (now gravure) process alongside other firms that were using gravure and offset lithography. One of these was Walsall Security Printers and for a number of years De La Rue printed the sheet definitives and Walsall the booklets and business sheets until in 2018 the contract for printing the sheet stamps passed to Walsall. By then Walsall was part of International Security Printers alongside Cartor in France who specialise in offset lithography. The first experimental datamatrix issue in March 2021 was printed at the ex-Walsall factory in Wolverhampton and later that year the company name was changed to Cartor Security Printers. Since then, all counter sheets, booklets and business sheets have been printed in Wolverhampton, including the country stamps even though the stamps are printed in offset lithography. The miniature sheet for the 2021 Christmas issue was printed in offset lithography in France.

The datamatrix labels are printed digitally by an inkjet digital print module in a separate operation in the Digital Hybrid Print System. For the gravure stamps they are printed in the same colour as the stamp but for the country stamps printed in offset lithography they are printed in one of the colours from the stamp palette. whilst for the Christmas stamps they use the colours of the current definitives. The method of printing and the ink used mean that the labels appear much shinier than the adjacent stamp image.

In addition there is a simulated perforation printed between the stamp image and the label. For the stamps printed in gravure this is also printed in gravure in the same colour as the stamp whilst for those printed in offset lithography it is printed with the label in the label colour.

A Digital Hybrid Print System



Invalidation of existing issues

Soon after the issue of the new stamps in February 2022, it was announced that all existing definitive stamps would be invalidated for postal use from 31st January 2023. There was initially some confusion, but it was eventually made clear that this did not include any special or commemorative stamps (whether definitive size or not) nor Christmas stamps or Post-and-go. Those stamps to be invalidated include all denominated and NVI definitives, country stamps, E stamps, airmail rates and signed-for and special delivery stamps. Following public disquiet and a newspaper campaign Royal Mail announced in November that the deadline would be delayed by six months to 31st July 2023. However, confusion continued since many reports in the press continued to refer to the earlier date until January, as did cancellations used by Royal Mail itself!

It was advised that people holding stamps to be invalidated should attempt to use them before the deadline, otherwise a swap-out scheme was announced on 31st March by which the old stamps could be exchanged for datamatrix stamps to the same postal value. Where there are current stamps with the same value they would be exchanged on a like-for-like basis but where that is not the case, as for example with the E stamps, they would be exchanged with second-class NVI to the current postal value, rounded up. Guidance was provided as to how the stamps should be submitted. For up to £200 worth a form could be downloaded and sent to a Freepost address. Over £200 a different form should be used with more secure postage. Along with the deadline extension it was also announced that forms and pre-paid envelopes would be available from post offices.

Why the change?

This is Royal Mail's latest effort in its war against forgery. They will maintain a database with the unique identifiers of all stamps printed so will be able to check whether a stamp going through the post is or is not on the database and, if it is not, reject the mail item. Furthermore, if all post items are checked then the database can be updated to show it has been used and again reject attempts at reuse. There is also the possibility of users reading the label and then tracking their mail through the postal system, but this is not a facility currently available.

This development fits in with the continuing computerisation of the postal system. The same technology had already been in use in some countries for a few months, notably France, Germany and the USA.

Among the advantages cited by Royal Mail is that it will be almost impossible to produce forgeries. However, forgeries have appeared on eBay, but it is not clear whether these are aimed at the philatelic market or at small shopkeepers who may be persuaded to buy a product that is invalid for use and illegal. It has also been stated that the change in colours of the NVI stamps overcomes problems encountered with the previous colours.

Another advantage promoted is the ability of senders and recipients of mail to view a short video of Shaun the Sheep with a mail man produced by Aardman Animations. This requires the Royal Mail app to be first downloaded to a smart phone or tablet before reading the datamatrix label with the device's camera. Further videos have been promised for the future.



What's next?

There are still a number of uncertainties over what further items might be produced by Royal Mail. There has not been a reissue of coil stamps and it may be that the larger stamps resulting in larger coils would be incompatible with the machines used for franking mail.

Also there have been no commemorative booklets containing definitive NVI stamps and special stamps. Although booklet sizes have increased it may not be sufficient to accommodate two datamatrix stamps and two or more special stamps.

Stanley Gibbons has begun a new numbering series for datamatrix stamps with a V prefix and a T series of groups for booklets. The way in which datamatrix stamps will be described and handled in the marketplace is still evolving. Because all stamps are now unique, decisions need to be made as to how far to go in classifying stamps. Listings will continue of the different date and source security codes but so far there has been no mention of any of the label content. The first datamatrix stamps have been listed in the 2022 edition of the Gibbons GB Concise catalogue but there is no indication yet as to what further information might be included in part 4 of the SG specialised catalogues.

The Complete Deegam Machin Handbook, now available to download, is the most comprehensive list of all Machin stamps since their first issue in 1971 and has three levels of detail in the descriptions, of which level three is the most detailed. Reports of new developments are issued at three-month intervals and, whilst the meaning of the datamatrix labels is discussed in detail, their content is not used to define a different stamp

There is also the question as to what level of detail will be used by dealers. The likelihood is that specialist dealers and offerings on eBay will roughly follow the SG GB Concise.

The death of H M the Queen has inevitably brought an end to the Machin era with stamps having an image of the new King. The new stamps will also have datamatrix labels and will be in most respects the same as the current Machin issues. Current stamps with the Machin head will not be invalidated for postal use except for those already scheduled for invalidation after 31st July 2023. The first new stamps to be issued were on 4th April 2023 with the four NVI values in sheets and booklets and the basic European and worldwide airmail value changed as a result of the annual change in postage rates. The codes in use in the labels are the same as those for the Elizabethan issue, including code 1 as the design code at the end. All booklets contain the letters KC in the bottom right-hand corner and these are visible when the booklet is closed, presumably so that they can be told apart from the previous issue. Also, some booklets have been seen with cylinder numbers. These now have the letter C rather than W following the change of company name, even though they are printed in the factory in Wolverhampton. There will not be a reissue of make-up values or general availability of NVI values until existing stocks of the Machin stamps are exhausted.



First-class stamp issued on 4th April 2023

A statement from the Deegam Handbook says that, despite the end of the Machin era, they will continue to include the stamps of King Charles III in the catalogue.

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- The Complete Deegam Machin Handbook
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- BB Stamps price list and website
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