

Barcode Format

A barcode is a series of vertical bars of varying width representing numbers or letters. The Dynix system uses standard Codabar 14 digit barcodes. A patron barcode starts with the number "2" and item barcodes start with the number "3". The last digit is called the 'check digit' or 'checksum character'. The check digit is found when the barcode is created by an arithmetic calculation on the digits in the barcode. When the barcode is read and decoded by the Dynix system, this same arithmetic operation is performed and the resulting value is checked against the value of the check digit in the barcode. If the check digit is valid, the process continues.

The following is the check digit calculation using an example item barcode:

3 3191 00010586 4

The first number "3" indicates the type of barcode: 2 for patron or 3 for item

The next 4 digits "3191" are the library's institution code.

The next 9 digits "00010 586" indicates the unique serial (sequential) number of the item or patron.

The last digit is the calculated check digit for this barcode.

To calculate the check digit of the above barcode, the calculation will use the first 13 digits:

There are 7 ODD position digits: 3 1 1 0 1 5 6

There are 6 EVEN position digits: 3 9 0 0 0 8

1. Start with total set to 0.

If ODD position digit: number = digit multiplied by 2.

If EVEN position digit: add to total.

If number is greater than or equal to 10 then number = number – 9.

2. Add number to total (total will be the sum of the calculation of the 13 digits).

3. Calculate the remainder of total divided by 10.

4. If the remainder = 0, that is the check digit.

If the remainder is not 0, then the check digit = 10 – Remainder.

Example Codabar Check Digit Calculation:

Barcode: 3 3191 00010586 4

3 3 1 9 1 0 0 0 1 0 5 8 6 4

o e o e o e o e o e o e o check digit

$$(3 \times 2) + 3 + (1 \times 2) + 9 + (1 \times 2) + 0 + (0 \times 2) + 0 + (1 \times 2) + 0 \\ + ((5 \times 2) - 9) + 8 + ((6 \times 2) - 9) =$$

$$6 + 3 + 2 + 9 + 2 + 0 + 0 + 0 + 2 + 0 + 1 + 8 + 3 \\ = 36$$

Remainder: $36 / 10 = 3.6$

Check digit: $10 - 6 = 4$