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## 4 Black series lenses

### 4.0 Introduction

The black series lenses were introduced with the C220 and C330, c.1969, though there is a reference to the 55mm and 250mm alongside the C22/C33 as early as March 1967. The shutter is labelled Seiko (except for the 80mm f3.7, which is a Copal), and is all black. There are two designs of Seiko shutter which are only externally distinguished by the aperture click-stops on the later versions. Mamiya (America) announced in 1999 that some new parts for early Seiko shutters were exhausted and that they would not be able to undertake repairs.

Some lenses are labelled `Seiko' and some `Seiko - SLV' (examples of 180mm Super and 55mm are known).

Some, but certainly not all, black lenses have optical multi-coatings. Exactly what coatings were applied and to which lenses is a matter of debate. Given the number of years of production this isn't too surprising.

Both the shutter speed scale and aperture scales read against a common index mark on the left of the lens. Shutter adjustment is via a wide knurled ring, and apertures are set using a large knob on the right side of the lens opposite the scale. Speeds 1 - 1/500 + B.

There is some variation in specification within this group. The earliest versions (1960's) have the focal length given in centimetres (cm), and the last versions (from around 1980) had click-stops for the full aperture values. Mid-production lenses (1970's) were without aperture click-stops, and had the focal length engraved in millimetres. There are also some variations in the style of script used for lens markings, but it hasn't been possible to assign a date to these differences.

It seems that all lenses with 49mm filter threads were originally supplied with chrome 'keeper' rings to stiffen and protect the thin alloy mountings. Not surprisingly these are often absent now. These have concentric ribs inside that are often mistaken for a (strange)

filter thread. Some lenses, such as the early 80mm, have a chrome cosmetic ring around the outside of the filter thread, which should not be mistaken for a keeper ring.

This collection of lenses shows the relative size of the various focal lengths in the black series. The 65mm is missing, as I was unable to locate one when the photograph was made. Front row, left to right: 105mm DS, 80mm (with dented viewing lens thread), and 55mm. Rear row, left to right: 250mm, 180mm Super (with keeper rings mounted), and 135mm. Note that some lenses have haze/UV filters fitted.

#### 4.1 55mm f4.5

|  |  |
|--|--|
| <b>Composition</b>   | 9 elements, 7 groups   |
| <b>Picture angle</b>   | 70 degrees 30 minutes  |
| <b>Minimum aperture</b>  | f22  |
| <b>Filter diameter (mm)</b>  | 46   |
| <b>Lens hood diameter (mm)</b>                                       | 48   |
| <b>Closest focus (cm)</b>  | 24   |
| <b>Subject coverage and reproduction ratio at closest focus (cm)</b> | 6.4 x 6.4 1 to 1.14  |
| <b>Weight (grams)</b>  | 360  |
| <b>Flash synchronisation</b>   | X,M  |
| <b>Other characteristics</b>   | Retrofocus design. Cited in an American distributor's catalogue as early as 30th March 1967, but actual availability is unknown. An insert for the finder bases was produced to provide corrected parallax and exposure indices. See section 6.4 |

#### 4.2 65mm f3.5

|  |                      |
|--|----------------------|
| <b>Composition</b>   | 6 elements, 5 groups |
| <b>Picture angle</b>   | 63 degrees           |
| <b>Minimum aperture</b>  | f32                  |
| <b>Filter diameter (mm)</b>  | 49                   |
| <b>Lens hood diameter (mm)</b>                                       | 50                   |
| <b>Closest focus (cm)</b>  | 27                   |
| <b>Subject coverage and reproduction ratio at closest focus (cm)</b> | 6.7 x 6.7 1 to 1.2   |
| <b>Weight (grams)</b>  | 340                  |
| <b>Flash synchronisation</b>   | X,M                  |

|                              |  |
|------------------------------|--|
| <b>Other characteristics</b> | Originally supplied with chrome reinforcing rings in the filter threads. An insert for the finder bases was produced to provide corrected parallax and exposure indices. See section 6.4 |
|------------------------------|--|

### 4.3.1 80mm f2.8

|  |   |
|--|---|
| <b>Composition</b>   | 5 elements, 3 groups                                  |
| <b>Picture angle</b>   | 50 degrees 40 minutes                                 |
| <b>Minimum aperture</b>  | f32   |
| <b>Filter diameter (mm)</b>  | 46  |
| <b>Lens hood diameter (mm)</b>                                       | 48  |
| <b>Closest focus (cm)</b>  | 35.5  |
| <b>Subject coverage and reproduction ratio at closest focus (cm)</b> | 8.6 x 8.6 1 to 1.5                                    |
| <b>Weight (grams)</b>  | 310   |
| <b>Flash synchronisation</b>   | X,M   |
| <b>Other characteristics</b>   | Updated to become the `S' version. See section 4.3.2. |

### 4.3.2 80mm f2.8 `S'

|  |  |
|--|--|
| <b>Composition</b>   | 5 elements, 3 groups   |
| <b>Picture angle</b>   | 50 degrees 40 minutes  |
| <b>Minimum aperture</b>  | f32  |
| <b>Filter diameter (mm)</b>  | 46   |
| <b>Lens hood diameter (mm)</b>                                       | 48   |
| <b>Closest focus (cm)</b>  | 35.5   |
| <b>Subject coverage and reproduction ratio at closest focus (cm)</b> | 8.6 x 8.6 1 to 1.5   |
| <b>Weight (grams)</b>  | 310  |
| <b>Flash synchronisation</b>   | X,M  |
| <b>Other characteristics</b>   | 'S' version does not have markings surrounding the lens front elements. Lens details and serial on top of viewing lens. The viewing lens is of different design from the taking lens, and elements are definitely <u>not</u> interchangeable with the taking lens. |

### 4.4 80mm f3.7

|  |  |
|--|--|
| <b>Composition</b>   | Believed to be 4 elements in 3 groups (Tessar type)  |
| <b>Picture angle</b>   | As 80mm f2.8?  |
| <b>Minimum aperture</b>  | f32  |
| <b>Filter diameter (mm)</b>  | 40.5   |
| <b>Lens hood diameter (mm)</b>                                       | 42   |
| <b>Closest focus (cm)</b>  | As 80mm f2.8?  |
| <b>Subject coverage and reproduction ratio at closest focus (cm)</b> | As 80mm f2.8?  |
| <b>Weight (grams)</b>  |  |
| <b>Flash synchronisation</b>   | M,X  |
| <b>Other characteristics</b>   | Rare 'Budget' lens. From notes in C330 and C330s manuals, this lens was manually cocked. The shutter and aperture index and the cocking lever are on the right, adjacent to the shutter release lever. This is completely at odds with all the other lenses in the range. The shutter release lever will move even if the lens is not cocked - which can fool the double exposure prevention mechanism. Appears to have been discontinued during the life of the C330 as it is not cited in the system chart, though several chrome lenses are included. A Copal shutter was used, and the aperture ring has no click-stops. |

#### 4.5 105mm f3.5

|  |                       |
|--|-----------------------|
| <b>Composition</b>   | 4 elements, 3 groups  |
| <b>Picture angle</b>   | 41 degrees 20 minutes |
| <b>Minimum aperture</b>  | f32                   |
| <b>Filter diameter (mm)</b>  | 46                    |
| <b>Lens hood diameter (mm)</b>                                       | 48                    |
| <b>Closest focus (cm)</b>  | 64.5                  |
| <b>Subject coverage and reproduction ratio at closest focus (cm)</b> | 21.8 x 21.8           |
| <b>Weight (grams)</b>  |                       |
| <b>Flash synchronisation</b>   | X,M                   |
| <b>Other characteristics</b>   | Long focus            |

## 4.6 105mm f3.5 D & DS

|  |   |
|--|---|
| <b>Composition</b>   | 5 elements, 3 groups  |
| <b>Picture angle</b>   | 41 degrees 20 minutes   |
| <b>Minimum aperture</b>  | f32   |
| <b>Filter diameter (mm)</b>  | 46  |
| <b>Lens hood diameter (mm)</b>                                       | 48  |
| <b>Closest focus (cm)</b>  | 57.5  |
| <b>Subject coverage and reproduction ratio at closest focus (cm)</b> | 17 x 17 1 to 3  |
| <b>Weight (grams)</b>  | 365   |
| <b>Flash synchronisation</b>   | X,M,V (self-timer on DS model)  |
| <b>Other characteristics</b>   | The 105mm D appears to be an optical re-design from the earlier 105mm black, with a consequent change in back-focus. At the moment the best evidence suggests that only the last DS variant had a viewing lens diaphragm and depth of field calculator ring. Most users agree that the DOF preview is of limited utility, but the DOF calculator is useful if treated conservatively. Long focus. Focus scales may not match on pre C330s cameras. The D or DS engraving is in red. |

## 4.7 135mm f4.5

|  |   |
|--|---|
| <b>Composition</b>   | 4 elements, 3 groups  |
| <b>Picture angle</b>   | 33 degrees  |
| <b>Minimum aperture</b>  | f45   |
| <b>Filter diameter (mm)</b>  | 46  |
| <b>Lens hood diameter (mm)</b>                                       | 48  |
| <b>Closest focus (cm)</b>  | 90.2  |
| <b>Subject coverage and reproduction ratio at closest focus (cm)</b> | 25.2 x 25.2 1 to 5.5  |
| <b>Weight (grams)</b>  | 370   |
| <b>Flash synchronisation</b>   | X,M   |
| <b>Other characteristics</b>   | The lens diaphragm and shutter is located behind the lens elements, and is exposed when the rear cap is removed. Long focus design. |

## 4.8 180mm f4.5

|  |                       |
|--|-----------------------|
| <b>Composition</b>   | 4 elements, 3 groups  |
| <b>Picture angle</b>   | 24 degrees 30 minutes |
| <b>Minimum aperture</b>  | f45                   |
| <b>Filter diameter (mm)</b>  | 49                    |
| <b>Lens hood diameter (mm)</b>                                       | 50                    |
| <b>Closest focus (cm)</b>  | 129                   |
| <b>Subject coverage and reproduction ratio at closest focus (cm)</b> | 27.5 x 27.5 1 to 5    |
| <b>Weight (grams)</b>  | ? Probably about 600  |
| <b>Flash synchronisation</b>   | X,M                   |
| <b>Other characteristics</b>   | Telephoto design      |

## 4.9 180mm f4.5 Super

|  |  |
|--|--|
| <b>Composition</b>   | 5 elements, 4 groups   |
| <b>Picture angle</b>   | 24 degrees 30 minutes  |
| <b>Minimum aperture</b>  | f45  |
| <b>Filter diameter (mm)</b>  | 49   |
| <b>Lens hood diameter (mm)</b>                                       | 50   |
| <b>Closest focus (cm)</b>  | 129  |
| <b>Subject coverage and reproduction ratio at closest focus (cm)</b> | 27.5 x 27.5 1 to 5   |
| <b>Weight (grams)</b>  | 640  |
| <b>Flash synchronisation</b>   | X,M  |
| <b>Other characteristics</b>   | Optical redesign from the earlier version. The filter ring is very thin and exposed, and is easily dented. Some lenses come with alloy rings which stiffen the threads when filters are not attached. Telephoto design, which is more complex than the earlier model. The word 'Super' is engraved on the bezel around the front element in red, and the `180' engraving on top of the viewing lens is also red. One example has been reported that does not have the `180' engraving and the shutter is marked `Seiko - SLV'. |

## 4.10 250mm f6.3

|  |  |
|--|--|
|  |  |
|--|--|

|  |   |
|--|---|
| <b>Composition</b>   | 6 elements, 4 groups  |
| <b>Picture angle</b>   | 18 degrees  |
| <b>Minimum aperture</b>  | f64   |
| <b>Filter diameter (mm)</b>  | 49  |
| <b>Lens hood diameter (mm)</b>                                       | 50  |
| <b>Closest focus (cm)</b>  | 205   |
| <b>Subject coverage and reproduction ratio at closest focus (cm)</b> | 31.1 x 31.1 1 to 6.6  |
| <b>Weight (grams)</b>  | 645   |
| <b>Flash synchronisation</b>   | X,M   |
| <b>Other characteristics</b>   | Manual cocking on all bodies. Telephoto design. Cited in an American distributor's catalogue as early as 30 <sup>th</sup> March 1967, but actual availability is unknown. |

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