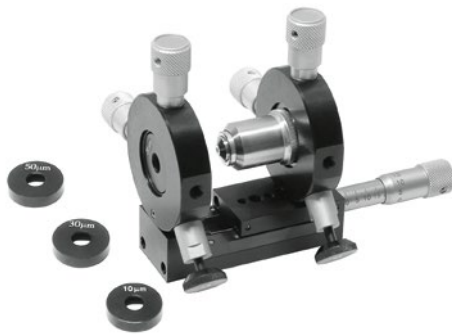




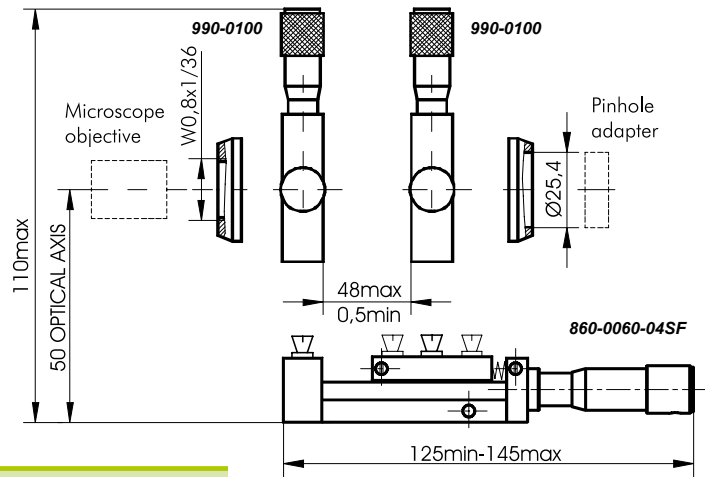
Dear Customers,

product prices provided in this brochure are outdated. Due to supply shortages and material price increases, some product prices have changed. We will update this brochure soon. Please contact us for a quotation with updated prices. Thank you for your understanding.

990-1000 PRECISION SPATIAL FILTER



990-1000 with Precision Pinholes and Microscope Objectives



- 3-axes adjustment with micrometers
- Accommodates virtually any microscope objective
- Unobscured view of a pinhole facilitates alignment
- Easy pinhole removal and replacement

Microscope Objective and Precision Pinholes can be supplied as option.

Precision Spatial Filter 990-1000 can be used to filter a beam of any power, generated by visible to near infrared laser. The result – the output beam is delivered with a smooth, near ideal intensity profile. The Spatial Filter consists of two YZ Positioners 990-0100 and Translation Stage 860-0060-04SF (modification of 860-0060-04). YZ Positioner for Lens, Pinholes and Objectives 990-0100 provides adjustment

of the pinhole and objective in two axes. The precision X axis motion is provided by Translation Stage 860-0060-04SF. The pinhole and the objective should be selected and ordered separately. Provided selection of interchangeable microscope objective lenses and precision pinholes allow to build the best spatial filter for your laser.

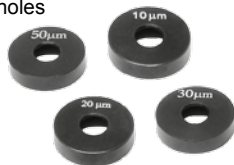
Code	Weight, kg	Price, EUR
990-1000	0.87	480

Complementary Products

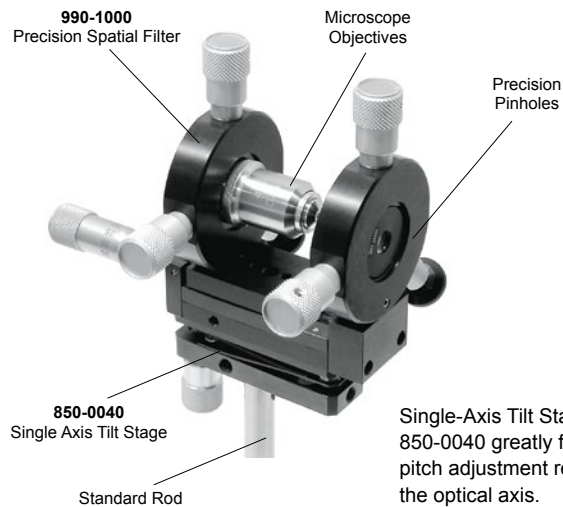
Code	Page
850-0040	8.100
860-0060-04	8.109
990-0100	7.21

RELATED PRODUCTS

Precision pinholes
See page 7.22



Microscope objectives
See page 7.22



Single-Axis Tilt Stage 850-0040 greatly facilitates pitch adjustment relative to the optical axis.

990-0100 • 990-0200



990-0100

Y-Z Positioners for Lens, Pinholes and Objectives are compact mounts designed to precisely position optical components in the plane orthogonal to the optical axis. Ideal for microscope objectives, mounted pinholes, fiber optics chucks, and diode lasers.

The mounts provide 5 mm translation with sensitivity of 2 µm.

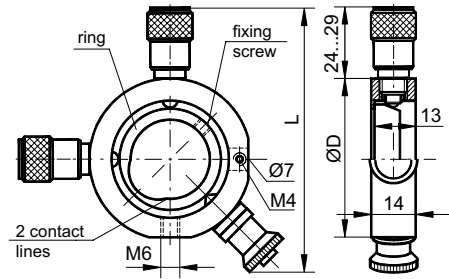
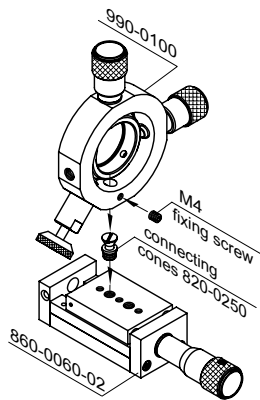
990-0100 may contain one of 1 inch rings: W0.8, A1 or B1.

990-0200 may contain one of 2 inch rings: A2 or B2.

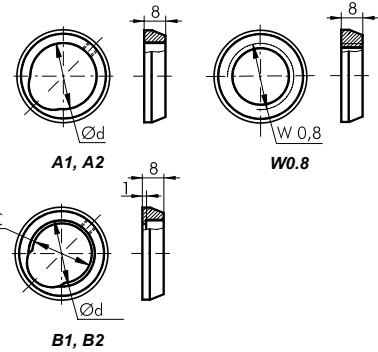
Two adjustment screws 870-0030 are used for positioning. They can be replaced with any screw or micrometer with M10×1 mounting thread.

Two ways to fasten positioner: mounting posts 820-0010 by an M6 hole; on a connecting cone 820-0250; 820-0254 by a Ø7 hole.

Material: black anodized aluminium.



Insert rings



ORDERING INFORMATION

990-0100-A1	1" Positioner with ring A1
990-0200-A2	2" Positioner with ring A2
990-0100-B1	1" Positioner with ring B1
990-0200-B2	2" Positioner with ring B2
990-0100-W0.8	1" Positioner with ring W0.8

Model	D, mm	d, mm	C, mm	L, mm	Weight, kg	Price, EUR
990-0100	58	25.5	24	102	0.26	149
990-0200	83	51	48	127	0.38	159

990-0050 • 990-0051

Y-Z POSITIONERS FOR LENS, PINHOLES AND OBJECTIVES



990-0050



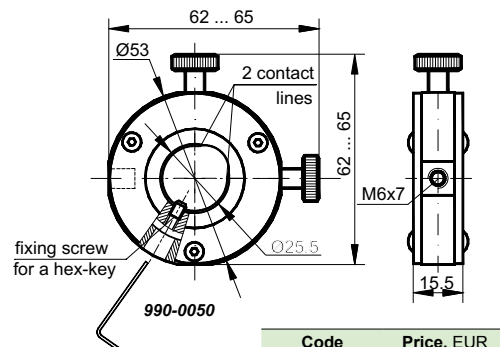
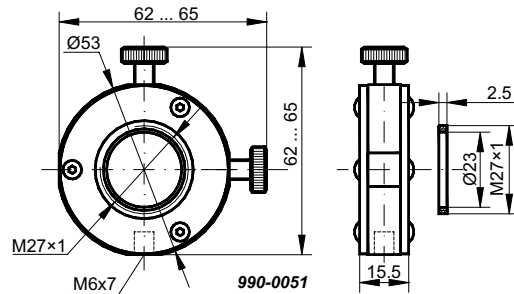
990-0051

- Travel range 3 mm
- Fine adjustment screws with 0.25 mm pitch
- The movable carriage could accept Ø25.4 optics up to 9 mm thick
- Alternatively, the movable carriage could be used to mount additional lens tubes

Y-Z Positioner 990-0050 accepts optics Ø25.4 mm. Optics is stopped by a rest-flange inside the central aperture of the platform and is secured by a hex fixing screw with hard plastic tip. 990-0050 is ideal for microscope objectives, mounted pinholes, fiber optics chucks and diode lasers.

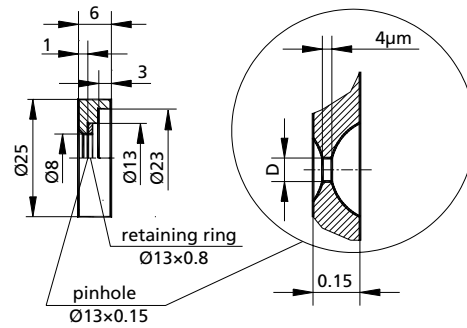
990-0051 includes two plastic padding rings and a retaining ring M27×1 to fix the optics.

A tightening key for the retaining ring is available on request.



Code	Price, EUR
990-0050	119
990-0051	119

PRECISION PINHOLES

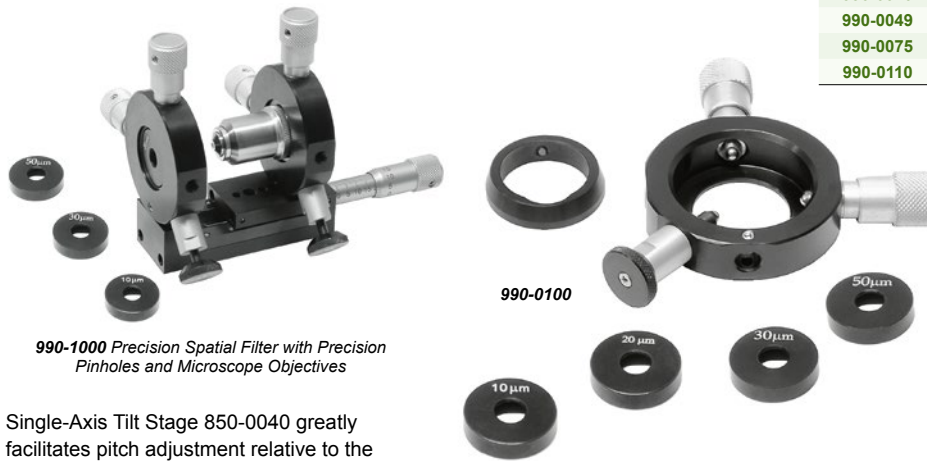


- For diffraction experiments, alignment purposes, projection applications
- Chemically etched apertures
- Apertures formed in vacuum
- 4 µm thick pinhole in a kovar foil
- Ultra-thin substrate minimizes laser power loss
- Chemically inert

Precision Pinhole is a round aperture precisely formed and controlled in a kovar foil. To facilitate handling, a pinhole foil is mounted in Ø25 mm black metal donut. Precision Pinholes can be used in Precision Spatial Filters 990-1000 or YZ Positioner for Lens, Pinholes and Objectives 990-0100.

We also offer pinholes with diameter D in the range of 45–100 µm every 5 µm. Pinholes of custom diameters up-to 200 µm are available on request.

Model	D, µm	Price, EUR
990-0010	10±0.5	39
990-0020	20±0.5	34
990-0030	30±0.5	29
990-0040	40±0.5	29
990-0049	50±0.5	29
990-0075	75±0.5	29
990-0110	100±0.5	29



990-1000 Precision Spatial Filter with Precision Pinholes and Microscope Objectives

Single-Axis Tilt Stage 850-0040 greatly facilitates pitch adjustment relative to the optical axis.

Complementary Products

Code	Page
990-1000	7.20
990-0100	7.21

MICROSCOPE OBJECTIVES



- Plan Achromat or Achromat Design
- Wide range of magnifications available
- Ideal for Imaging or Focusing Laser Light
- RMS (0.800"-36) Threading

Complementary Products

Code	Page
840-0120	8.83
990-1000	7.20

Model	990-0410	990-1125	990-2040	990-4065	990-1025
Magnification	4x	10x	20x	40x	100x
Numerical aperture	0.10	0.25	0.40	0.65	1.25
Focal length, mm	40	16	8	4	1.6
Working distance, mm	23.40	13.13	1.70	0.41	0.10
Design type	Air immersion			Oil immersion	
Mechanical tube length, mm	160				
Optical scheme	Plan Achromat		Achromat		
Mounting thread	0.8"-36 RMS				
Wavelength range	Visible Spectrum				

992 • 993 • 994

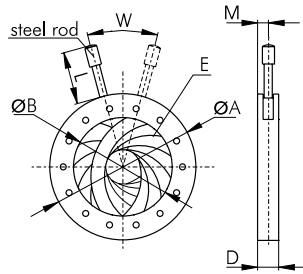
UNMOUNTED IRIS DIAPHRAGMS

EKSMA OPTICS offers three types of unmounted Iris Diaphragms: Zero aperture Iris Diaphragms (992 series), standard iris diaphragms with retainer (993 series), standard iris diaphragms screwed (994 series).

Iris diaphragm provides a continuously variable field stop for controlling the focal

length of an optical system or for adjusting the diameter of a beam. Iris diaphragms enable smooth operation over the lever travel, from maximum to minimum aperture. Lever actuators of the iris diaphragms are either of plastic tab or steel pin. Zero Aperture iris diaphragms provide total light extinction.

Zero Aperture Iris Diaphragms (992 Series)

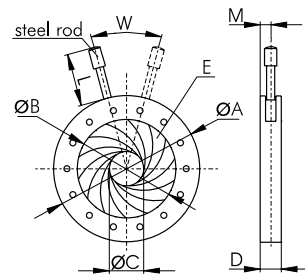


- AR - Leaves with AR coating, for temperatures up to 180 °C
- N - Springsteel, black finished, for temperatures up to 250 °C
- H - Stainless steel, for temperatures up to 400 °C
- HT - High-temperature alloy for up to 1000 °C

Code	A, Outer Diameter, mm	B, Max. Aperture, mm	D, Thickness, mm	E, Number of Leaves	Tab/ Pin	L, mm	M, mm	W, mm	N/H/HT
992-2008	20	8	4	8	Tab	6	2	90	H/N
992-2512	25	12	5	12	Pin	12	2.5	96	H/N
992-2915	29	15	5	12	Pin	12	2.5	97	H/N
992-3922	39	22	5	14	Pin	12	2.5	99	H/N
992-4830	48	30	5	14	Tab	11	2.5	100	H/N/HT
992-6940	69	40	6.5	14	Tab	16	3.3	96	H/N/HT
992-7950	79	50	7	18	Pin	20	3.5	100	H/N/HT
992-9460	94	60	9	16	Tab	25	4.5	98	H/N/HT
992-1177	117	75	9.5	18	Tab	53	4.8	97	H/N/HT
992-1258	125	85	9.5	18	Tab	50	4.8	98	H/N/HT
992-1359	135	98	8.5	20	Tab	50	4.3	102	H/N/HT
992-1601	160	113	13	20	Pin	18	6.5	99	N/H/NT

Please add letter H, N or HT to code to indicate temperature needed.

Iris Diaphragms with Retainer (993 Series)



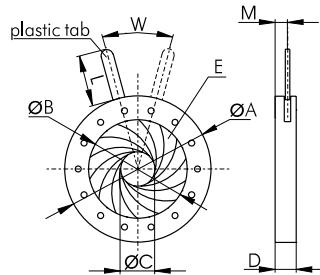
- AR - Leaves with AR coating, for temperatures up to 180 °C
- N - Springsteel, black finished, for temperatures up to 250 °C
- H - Stainless steel, for temperatures up to 400 °C
- HT - High-temperature alloy for up to 1000 °C

Code	A, Outer Diameter, mm	B, Max. Aperture, mm	C, Min. Aperture, mm	D, Thickness, mm	E, Number of Leaves	Tab/ Pin	L, mm	M, mm	W, mm	AR/N/H
993-1005	10	5	0.5	4	8	Pin	4	2.4	78	AR/N
993-1207	12	7	0.5	4	8	Pin	6	2.4	88	AR/N
993-1482	14	8.2	0.8	4	8	Pin	6	2.4	80	N
993-1488	14.8	8	1	4.5	9	Pin	6	2.5	77	N
993-1610	16	10	1	4	10	Pin	6	2.4	83	N
993-1912	19.8	12	1	5	11	Pin	10	2.7	89	AR/H/N
993-2214	22	14	1	5	10	Pin	10	2.7	94	AR/N
993-2415	24	15	1	5	12	Pin	13	2.7	89	H/N
993-2818	28	18	1	5	12	Pin	13	2.7	90	AR
993-3020	30	20	1.2	5.5	12	Pin	13	2.9	90	AR/H/N

Code	A, Outer Diameter, mm	B, Max. Aperture, mm	C, Min. Aperture, mm	D, Thickness, mm	E, Number of Leaves	Tab/ Pin	L, mm	M, mm	W, mm	AR/N/H
993-3322	33	22	1.5	5.5	14	Pin	13	2.9	94	N
993-3725	37	25	1.5	5.5	15	Pin	13	3	93	H/N
993-4027	40	27	1.5	5.5	12	Pin	13	3	90	AR/H/N
993-4330	43	30	1.5	5.5	14	Pin	13	3	92	AR/H/N
993-4934	49	34	2	6.5	14	Pin	13	3.5	91	AR/H/N
993-5036	50	36	2.5	6	16	Pin	13	3.2	92	H/N
993-5337	53	37	2.5	6	16	Pin	13	3.2	89	N
993-5842	58	42	2.5	6.5	18	Pin	13	3.3	93	H/N
993-6040	60	40	2.5	6.5	12	Pin	13	3.3	88	H/N
993-6445	64	45	2.5	7	14	Pin	13	3.8	92	H/N
993-7050	70	50	2.5	7	18	Pin	15	4	94	H/N
993-8260	82	60	4	8	17	Pin	13	4.4	91	H/N
993-1075	100	75	4	9	20	Pin	15	4.5	95	H/N
993-1181	110	81	3	10	16	Pin	15	5	94	AR
993-1290	120	90	3.5	12	20	Pin	15	6.5	97	AR
993-1398	130	98	4	12	20	Pin	20	6.5	97	H/N
993-1513	150	113	6	13	20	Pin	20	7.2	95	H/N
993-1612	165	120	6	15	18	Pin	20	7.9	94	H/N
993-1914	195	145	8	16	18	Pin	18	8.9	93	N

Please add letter AR, N or H to code to indicate temperature needed.

Screwed Iris Diaphragms (994 Series)



AR - Leaves with AR coating, for temperatures up to 180 °C

N - Springsteel, black finished, for temperatures up to 250 °C

H - Stainless steel, for temperatures up to 400 °C

HT - High-temperature alloy for up to 1000 °C

Code	A, Outer Diameter, mm	B, Max. Aperture, mm	C, Min. Aperture, mm	D, Thickness, mm	E, Number of Leaves	Tab/ Pin	L, mm	M, mm	W, mm	N
994-1508	15	8	1	5.3	9	Tab	5	2.5	81	N
994-1585	15.5	8.5	1	5.3	9	Tab	8	2.6	75	N
994-2214	22	14	1	6	10	Tab	12	3	90	AR/N
994-3118	31	18	1.5	6.5	11	Tab	10	3.4	85	N
994-4027	40	27	1.5	6.2	12	Tab	11	3.5	90	AR/N
994-4830	48.5	30	1.2	7	10	Tab	10	3.6	86	N
994-6040	60	40	2.5	7.8	12	Tab	13	4.6	88	N
994-7050	70	50	2.5	7	18	Tab	13	4	94	N
994-8260	82	60	4	10	17	Tab	11	5.4	91	N

Please add letter AR or N to code to indicate temperature needed.

992 · 993 · 994

MOUNTED IRIS DIAPHRAGMS



In optics there are a lot of fields where accurate amount of light, precise projection, specific depth of focus and other requirements are necessary. For such areas the use of iris diaphragms is one of the best options. These applications are met in industry of optics, opto-electronics, laser and medical technology, lightening technology and other. Our iris diaphragms are made of high quality materials. Also, we use highest manufacturing standards. These points lead to reliability and durability of our products.

DESIGN

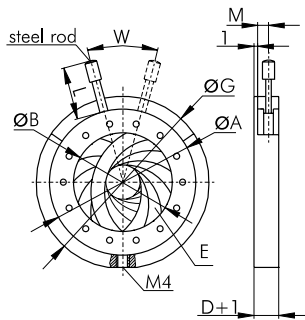
Our iris diaphragms consist of leaves and case. Leaves are made of hardened spring steel. Stainless chrome nickel steel can be used when better resistance to heat is necessary. The surface of leaves is polished and reducing the reflections. The edges of the leaves are rounded to

achieve smooth operation. For increasing the slip of leaves an invisible coating is applied. Next, protection from corrosion is guaranteed by particular polishing process. Further, for producing the case, corrosion resistant aluminum alloy is used. Fine mat black look is achieved by black-anodizing the surface of the case.

CUSTOM MODELS

We have a wide variety of iris diaphragms that suit to different applications. Also, we introduce the series of fully closing iris diaphragms to meet the needs of all customers. Nevertheless, if you don't find a suitable model, we can make custom iris diaphragm. The changes can be made in dimensions, form; it can be adapted to high temperatures, adapted for special fastening or modified according to your other requests.

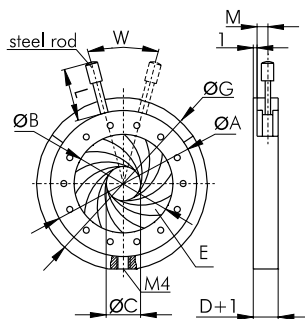
Mounted Zero Aperture Iris Diaphragms (992 Series)



Code	A, Outer Diameter, mm	G, mm	B, Max. Aperture, mm	C, Min. Aperture, mm	D, Thickness, mm	E, Number of Leaves	Tab/ Pin	L, mm	M, mm	W, mm	N/H
992-2512M	25	32.5	12	-	5	12	Pin	12	2.5	96	H/N
992-2915M	29	36.5	15	-	5	12	Pin	12	2.5	97	H/N
992-3922M	39	46	22	-	5	14	Pin	11	2.5	99	H/N

AR - Leaves with AR coating, for temperatures up to 180 °C
 H - Stainless steel, for temperatures up to 400 °C
 N - Springsteel, black finished, for temperatures up to 250 °C
 HT - High-temperature alloy for up to 1000 °C

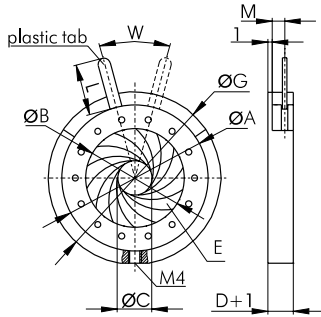
Mounted Iris Diaphragms with Retainer (993 Series)



Code	A, Outer Diameter, mm	G, mm	B, Max. Aperture, mm	C, Min. Aperture, mm	D, Thickness, mm	E, Number of Leaves	Tab/ Pin	L, mm	M, mm	W, mm	AR/N/H
993-2214M	22	29.5	14	1	5	10	Pin	10	2.7	94	AR/N
993-2415M	24	31	15	1	5	12	Pin	13	2.7	89	N/H
993-3725M	37	44	25	1.5	5.5	15	Pin	13	3	94	N/H
993-4934M	49	56	34	2	6.5	14	Pin	13	3.4	93	AR/H
993-5036M	50	57	36	2.5	6	16	Pin	13	3.2	93	N
993-7050M	70	77	50	2.5	7	18	Pin	15	3.8	93	N
993-1488M	14.8	23	8	1	4.5	9	Pin	6	2.5	77	N
993-1482M	14	22	8.2	0.5	4	8	Pin	6	2.4	84	N

AR - Leaves with AR coating, for temperatures up to 180 °C
 H - Stainless steel, for temperatures up to 400 °C
 N - Springsteel, black finished, for temperatures up to 250 °C
 HT - High-temperature alloy for up to 1000 °C

Mounted Screwed Iris Diaphragms (994 Series)

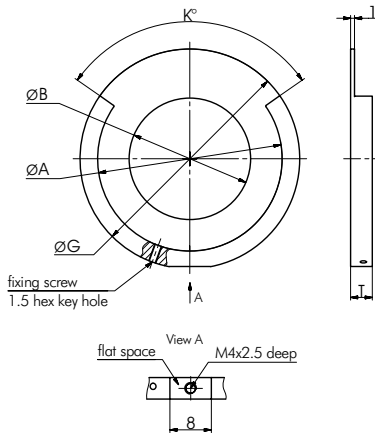


Code	A, Outer Diameter, mm	G, mm	B, Max. Aperture, mm	C, Min. Aperture, mm	D, Thickness, mm	E, Number of Leaves	Tab/Pin	L, mm	M, mm	W, mm	AR/N/H
994-2214M	22	29.5	14	1	6	10	Tab	12	2.8	91	N
994-3118M	31	38	18	1.5	6.5	11	Tab	10	3.4	85	N
994-4830M	48.5	55.5	30	1.2	7	10	Tab	10	3.7	87	N
994-7050M	70	77	50	2.5	7	18	Tab	13	3.9	93	N
994-1508M	15	23	8	1	5.3	9	Tab	5	2.3	75	N
994-1585M	15.5	23	8.5	1	5.3	9	Tab	8	2.3	85	N

AR - Leaves with AR coating, for temperatures up to 180 °C
 H - Stainless steel, for temperatures up to 400 °C
 N - Springsteel, black finished, for temperatures up to 250 °C
 HT - High-temperature alloy for up to 1000 °C

992-34

MOUNTS FOR IRIS DIAPHRAGMS



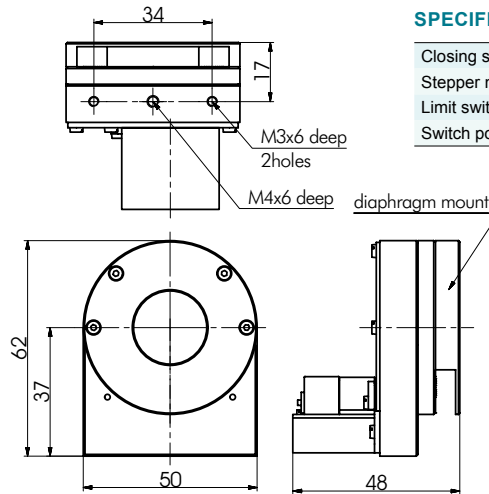
Code	G, mm	A, mm	B, mm	T, mm	K, deg
992-34-10	18	10	6	6	106
992-34-12	20	12	9	6	122
992-34-14	22	14	10	6	140
992-34-14.8	23	14.8	10	6	130
992-34-15	23	15	10	6.3	123
992-34-15.5	23	15.5	10.5	6.3	125
992-34-19.8	28	19.8	14	7	125
992-34-22	29.5	22	16	7	130
992-34-24	31	24	17	6	123
992-34-25	32.5	25	14	6	127
992-34-28	35.5	28	20	6	125
992-34-29	36.5	29	17	6	125
992-34-30	37.5	30	22	6.5	125
992-34-31	38	31	20	7.5	110
992-34-37	44	37	27	6.5	116
992-34-39	46	39	24	6	120
992-34-40	48	40	29	7	112
992-34-48	55.5	48	32	6	116
992-34-48.5	55.5	48.5	32	8	104
992-34-49	56	49	36	7.5	110
992-34-50	57	50	38	7	110
992-34-60	67	60	42	8	104
992-34-70	77	70	52	8	105
992-34-82	89	82	62	9	105

995 Series

MOTORIZED IRIS DIAPHRAGMS
(Max. Aperture Range 5-27 mm)



995 Series Motorized Iris Diaphragms are available with a wide range of apertures (from 5 mm to 98 mm). Irises with max. apertures from 5 mm to 27 mm are shown on this page. Irises with max. apertures up to 27 mm close from min. to max. in 1.2 seconds with resolution depending on aperture size (see table below). Zero aperture motorized iris diaphragms are available on request, max. aperture sizes from 12 mm to 40 mm.



SPECIFICATIONS

Closing speed (min to max)	1.2 seconds
Stepper motor/gear	50:1
Limit switch	2 mechanical
Switch polarity	pushed is closed

TEMPERATURE LIMITS

- AR - Leaves with AR coating, for temperatures up to 180 °C
- N - Springsteel, black finished, for temperatures up to 250 °C
- H - Stainless steel, for temperatures up to 400 °C

Catalogue number	Diaphragm Used	Min. Clear Aperture, mm	Max. Clear Aperture, mm	Resolution, steps per mm
995-1005-AR	993-1005-AR	0.5	5	385
995-1005-N	993-1005-N	0.5	5	385
995-1207-AR	993-1207-AR	0.5	7	301
995-1207-N	993-1207-N	0.5	7	301
995-1488-N	993-1488-N	0.8	8	244
995-1482-N	993-1482-N	0.5	8.2	240
995-1912-AR	993-1912-AR	1	12	180
995-1912-H	993-1912-H	1	12	180
995-1912-N	993-1912-N	1	12	180
995-2214-AR	993-2214-AR	1	14	161
995-2214-N	993-2214-N	1	14	161
995-2415-H	993-2415-H	1	15	141
995-2415-N	993-2415-N	1	15	141
995-2818-AR	993-2818-AR	1	18	118
995-3020-AR	993-3020-AR	1.2	20	106
995-3020-H	993-3020-H	1.2	20	106
995-3020-N	993-3020-N	1.2	20	106
995-3725-N	993-3725-N	1.5	25	89
995-4027-AR	993-4027-AR	1.5	26	79
995-4027-H	993-4027-H	1.5	26	79
995-4027-N	993-4027-N	1.5	26	79

RECOMMENDED CONTROLLERS

980-1045
see page 8.183



996 Series

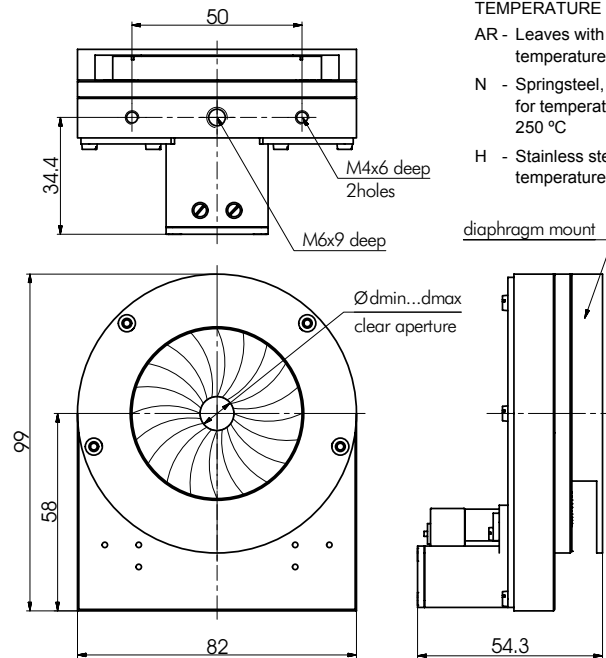
**MOTORIZED IRIS DIAPHRAGMS
(Max. Aperture Range 30-50 mm)**



Irises with max. apertures from 30 mm to 50 mm close from min. to max. in 2 seconds with resolution depending on aperture size (see table below). Zero aperture motorized iris diaphragms are available on request, max. aperture sizes from 12 mm to 40 mm.

SPECIFICATIONS

Closing speed (min to max)	2 seconds
Stepper motor/gear	50:1
Limit switch	2 mechanical
Switch polarity	pushed is closed
Stepper motor	PG15/50



TEMPERATURE LIMITS

- AR - Leaves with AR coating, for temperatures up to 180 °C
- N - Springsteel, black finished, for temperatures up to 250 °C
- H - Stainless steel, for temperatures up to 400 °C

Catalogue number	Diaphragm Used	dmin Aperture, mm	dmax Aperture, mm	Resolution, steps per mm
996-4330-H	993-4330-H	1.5	30	125
996-4330-N	993-4330-N	1.5	30	125
996-4934-AR	993-4934-AR	2	34	111
996-4934-N	993-4934-N	2	34	111
996-5036-N	993-5036-N	2.5	36	106
996-5337-N	993-5337-N	2.5	37	100
996-6040-N	993-6040-N	2.5	40	90
996-5842-N	993-5842-N	2.5	42	91
996-6445-H	993-6445-H	2.5	45	84
996-6445-N	993-6445-N	2.5	45	84
996-7050-N	993-7050-N	2.5	50	75

RECOMMENDED CONTROLLERS

980-1045

see page 8.183

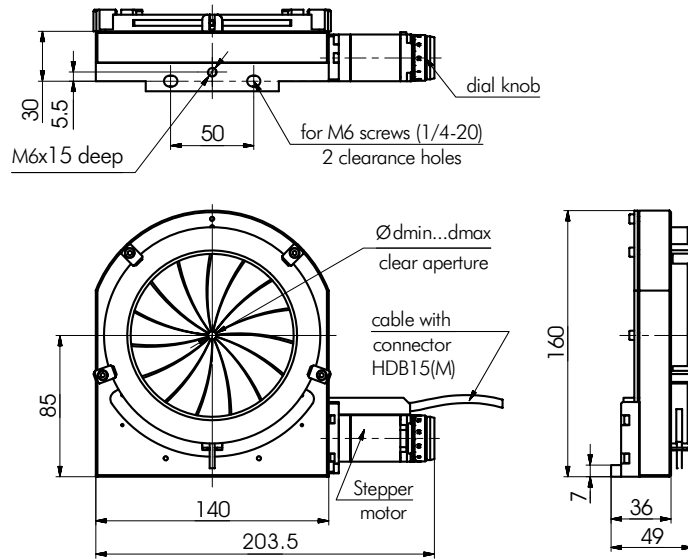


997 Series

MOTORIZED IRIS DIAPHRAGMS
(Max. Aperture Range 60-98 mm)



- Smooth and fast operation
- Continuously adjustable light attenuation
- Compact design
- Control via PC through USB or RS232
- Adjustable inserts



997 Series Motorized Iris Diaphragm Mount was developed due to interest in our previously presented motorized iris 993 Series. Iris diaphragms cannot be changed by the user, because every diaphragm has its own adapter ring and requires calibration.

SPECIFICATIONS

Closing speed (min to max)	3 sec
Stepper motor/gear	195:1
Limit switch	2, mechanical
Switch polarity	pushed is closed

TEMPERATURE LIMITS

- AR - Leaves with AR coating, for temperatures up to 180 °C
- N - Springsteel, black finished, for temperatures up to 250 °C
- H - Stainless steel, for temperatures up to 400 °C

Catalogue number	Diaphragm used	Max. aperture, mm	Min. aperture, mm	Resolution, steps per mm
997-8260-H	993-8260-H	60	4	178
997-8260-N	993-8260-N	60	4	178
997-1075-H	993-1075-H	75	4	143
997-1075-N	993-1075-N	75	4	143
997-1181-AR	993-1181-AR	81	3	132
997-1290-AR	993-1290-AR	90	3.5	122
997-1398-H	993-1398-H	98	4	112
997-1398-N	993-1398-N	98	4	112

RECOMMENDED CONTROLLERS

980-1045
see page 8.183

