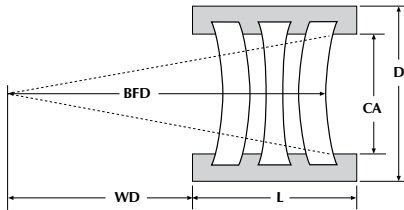
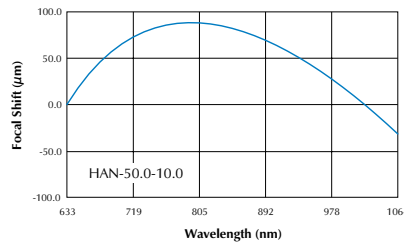


HAP Series Positive Laser Achromats



HAN Series Negative Laser Achromats



Chromatic focal shift vs. wavelength for HAN-50.0-10.0 1064/633 achromat.

Substrate Material	BK7 and SF11 glass
Surface Quality	40-20 per MIL-PRF-13830B
Housing Tolerance	± 0.005"
Antireflection Coating	R ≤ 0.5% per surface at 1064nm and 633nm
Transmitted Wavefront Distortion	λ/2 p-v over 95% of CA at 633nm
Damage Threshold	4J/cm ² , 20ns, 20Hz at 1064nm

- **Dual wavelength beamsteering applications**
- **Same focal length for 1064nm and 633nm**
- **Excellent achromatic performance for Ti:Sapphire at 800nm**
- **Air-spaced design for high energy laser applications**
- **All surfaces AR coated for both 1064nm and 633nm**

These lenses are corrected for spherical aberration at 1064nm and 633nm and for coma at 1064nm. Because they are air-spaced, they can be used in high power Nd:YAG applications. The coatings are designed to give reflection losses of less than 0.5% per surface at 1064nm and 633nm.

To compare the performance of these lenses with that of telescope objectives, one can ray-trace representative telescopes consisting of two CVI cemented aplanats and two high power achromats. The high power achromats offer high wavefront quality and achromatization at two useful laser wavelengths. The inner surfaces are air-spaced and coated with high efficiency anti-reflection coatings and are suitable for high power applications that would cause telescope objectives to fail.

These air-spaced triplets have the same focal length at 1064nm and 633nm. They can be used to focus a Nd:YAG beam and HeNe beam to align to the same point. They can also be used to form beam expanders that collimate Nd:YAG and HeNe beams at the same lens spacing.

1064/633nm Air-Spaced Laser Achromats

Part Number	Focal Length	Clear Aperture CA	Working Distance WD	Back Focal Distance BFD	Outside Diameter D	Length L
Positive Achromats						
HAP-10.0-2.0	10.0	2.0	7.0	7.7	12.7	4.3
HAP-15.0-3.0	15.0	3.0	10.0	11.7	12.7	11.4
HAP-25.0-5.0	25.0	5.0	20.6	21.6	19.0	8.0
HAP-50.0-10.0	50.0	10.0	41.0	45.7	19.0	11.8
HAP-75.0-15.0	75.0	15.0	64.0	68.7	25.4	14.7
HAP-100.0-20.0	100.0	20.0	90.1	93.3	28.6	14.4
HAP-125.0-25.0	125.0	25.0	112.0	119.4	31.8	19.0
HAP-150.0-30.0	150.0	30.0	135.0	143.1	40.6	19.0
HAP-200.0-40.0	200.0	40.0	184.0	190.6	50.8	22.4
HAP-250.0-50.0	250.0	50.0	233.0	239.6	61.3	24.7
Negative Achromats						
HAN-10.0-2.0	-10.0	2.0	12.0	-11.4	12.7	7.4
HAN-15.0-3.0	-15.0	3.0	18.0	-17.1	12.7	8.1
HAN-25.0-5.0	-25.0	5.0	30.0	-30.5	14.0	12.7
HAN-50.0-10.0	-50.0	10.0	57.0	-54.1	19.0	16.9

Unless otherwise noted, all measurements in mm.