



VCAS, P.O. Box 982, Simi Valley, CA 93062

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VCAS ALCor INFORMATION

Double Star Club / Certificate



Double Star Club Logo

Introduction:

Welcome to the Astronomical League's Double Star Club. The purpose of the Double Star Club is to introduce observers to 100 of the finest double and multiple stars in the heavens. You don't need a large, expensive telescope to view the objects on this list, a small refractor, Newtonian reflector, or Schmidt-Cassegrain will do just fine. All objects on this list were chosen to be observed with a three-inch refractor using between 75X and 150X. Double star observing can be very forgiving. You don't need the darkest skies, the clearest skies, or even a moonless night to observe many of these objects.

Rules and Regulations:

To qualify for the AL's Double Star Certificate and pin, you need only be a member of the Astronomical League, either through VCAS or as a Member-

at-Large, and observe the 100 selected objects on the included list. Any telescope may be used, but one with an objective 60mm in diameter or larger is recommended. It is preferred that the stars be found by star hopping and not by Go-To methods, although I will not insist on this if the rest of the observations are well done. Too, the recording by those who use Go-To's is hurried and unclear. You are also encouraged to look at the stars with varying powers as some of these doubles are very close and require substantial power to get a clean separation of the stars. (Gamma Virginis, for instance, is currently separated by under an arc second and is expected to close to around 0.3 arc seconds around 2007. It may require more power and not everyone will be able to split it. Just do the best you can and report what you see.)

To record your observations, you may use the log sheet provided, or one with similar information. If you use your own log sheets, they should include: object, date, time, power, seeing, instrument, and a drawing of the double or multiple system. Yes, I said a drawing of the double star. Now,



Zeta Ursa Major: Alcor & Mizar

before you panic, how hard is it to draw two dots in the box provided, with the size of the dot indicating magnitude, and the distance between the dots representing separation? **Please show North and either East or West in your drawing.**

A part of this exercise is to learn celestial directions so the position angles of the stars will be judged by your denotation of the directions. There is a line for a description, but this is optional and not required. It is included so that if you are inspired by any one double star, you can write your thoughts or feelings down for later reference.

To receive your Double Star Certificate and pin (or if you have any questions or need assistance), simply submit your log sheets along with your name, address, and phone number to the VCAS ALCor through VCAS or at :

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Some Suggested Resources:

Webb Society Deep-Sky Observer's Handbook, Volume 1—Double Stars, Second Edition, Webb Society

Jones, Kenneth Glyn

Double and Multiple Stars and How to Observe Them, Springer

Mullaney, James

Observing and Measuring Visual Double Stars, Springer

Argyle, Bob

Stars & Planets, Peterson Field Guides,

Pasachoff

www.astroleague.org

They have a great online bookstore, logsheets, and pertinent information on the various observing programs.

You can order books from Astronomical League Sales at

<http://www.astroleague.org/al/obsclubs/> or e-mail VCAS ALCor to receive all pertinent info on a single pdf file.

The Sky Software

All double star objects to be observed are listed in Right Ascension order so that you can view them as they rise, and so that you can properly plan your observing sessions to make the most of your time. Information provided on each object includes: a check box, object to be observed, Right Ascension, Declination, magnitudes of the component stars, separation, and position angle from the primary star in the double or multiple system. In some cases I have not listed multiples that might require a telescope larger than a 60mm or more power than 150X to see. Stretch yourself! See what you can find!

Double Star Observing List (Epoch 2000.0)

	Object	Right Ascension	Declination	Magnitude.	Separation	Position Angle
[]	Eta Cassiopeiae	00 ^h 49 ^m .1	+57° 49'	3.4, 7.5	12"	307°
[]	65 Piscium	00 ^h 49 ^m .9	+27° 43'	6.3, 6.3	4.4"	297°
[]	Psi 1 Piscium	01 ^h 05 ^m .6	+21° 28'	5.6, 5.8	30"	159°
[]	Zeta Piscium	01 ^h 13 ^m .7	+07° 35'	5.6, 6.5	23"	63°
[]	Gamma Arietis	01 ^h 53 ^m .5	+19° 18'	4.8, 4.8	7.8"	0°
[]	Lambda Arietis	01 ^h 57 ^m .9	+23° 36'	4.9, 7.7	37"	46°
[]	Alpha Piscium	02 ^h 02 ^m .0	+02° 46'	4.2, 5.1	1.7"	50°
[]	Gamma Andromedae	02 ^h 03 ^m .9	+42° 20'	2.3, 5.5	9.8"	63°
[]	Iota Trianguli	02 ^h 12 ^m .4	+30° 18'	5.3, 6.9	3.9"	71°
[]	Alpha Ursa Minoris	02 ^h 31 ^m .8	+89° 16'	2.0, 9.0	18.4"	218°
[]	Gamma Ceti	02 ^h 43 ^m .3	+03° 14'	3.5, 7.3	2.8"	294°
[]	Eta Persei	02 ^h 50 ^m .7	+55° 54'	3.8, 8.5	28.3"	300°
[]	Struve 331	03 ^h 00 ^m .9	+52° 21'	5.3, 6.7	12.1"	85°
[]	32 Eridani	03 ^h 54 ^m .3	-02° 57'	4.8, 6.1	6.8"	347°
[]	Chi Tauri	04 ^h 22 ^m .6	+25° 38'	5.5, 7.6	19.4"	24°
[]	1 Camelopardalis	04 ^h 32 ^m .0	+53° 55'	5.7, 6.8	10.3"	308°
[]	55 Eridani	04 ^h 43 ^m .6	-08° 48'	6.7, 6.8	9.2"	317°
[]	Beta Orionis	05 ^h 14 ^m .5	-08° 12'	0.1, 6.8	9.5"	202°
[]	118 Tauri	05 ^h 29 ^m .3	+25° 09'	5.8, 6.6	4.8"	204°
[]	Delta Orionis	05 ^h 32 ^m .0	-00° 18'	2.2, 6.3	52.6"	359°
[]	Struve 747	05 ^h 35 ^m .0	-06° 00'	4.8, 5.7	35.7"	223°
[]	Lamda Orionis	05 ^h 35 ^m .1	+09° 56'	3.6, 5.5	4.4"	43°
[]	Theta 1 Orionis	05 ^h 35 ^m .3	-05° 23'	6.7, 7.9, 5.1, 6.7	8.8",13", 21.5"	31° , 132°, 96°
[]	Iota Orionis	05 ^h 35 ^m .4	-05° 55'	2.8, 6.9	11.3"	141°
[]	Theta 2 Orionis	05 ^h 35 ^m .4	-05° 25'	5.2, 6.5	52"	92°
[]	Sigma Orionis	05 ^h 38 ^m .7	-02° 36'	4.0, 7.5, 6.5	12.9",43"	84° , 61°
[]	Zeta Orionis	05 ^h 40 ^m .8	-01° 57'	1.9, 4.0.	2.4", 58"	162° , 10°

				9.9		
[]	Gamma Leporis	05 ^h 44 ^m .5	-22° 27'	3.7, 6.3	96"	350°
[]	Theta Aurigae	05 ^h 59 ^m .7	+37° 13'	2.6, 7.1	3.6"	313°
[]	Epsilon Monocerotis	06 ^h 23 ^m .8	+04° 36'	4.5, 6.5	13.4"	27°
[]	Beta Monocerotis	06 ^h 28 ^m .8	-07° 02'	4.7, 5.2	7.3"	132°
[]	12 Lyncis	06 ^h 46 ^m .2	+59° 27'	5.4, 7.3	8.7"	308°
[]	Epsilon Canis Majoris	06 ^h 58 ^m .6	-28° 58'	1.5, 7.4	7.5"	161°
[]	Delta Geminorum	07 ^h 20 ^m .1	+21° 59'	3.5, 8.2	6.8"	211°
[]	19 Lyncis	07 ^h 22 ^m .9	+55° 17'	5.6, 6.5	14.8"	315°
[]	Alpha Geminorum	07 ^h 34 ^m .6	+31° 53'	1.9, 2.9	2.2"	171°
[]	Kappa Puppis	07 ^h 38 ^m .8	-26° 48'	4.5, 4.7	9.9"	318°
[]	Zeta Cancri	08 ^h 12 ^m .2	+17° 39'	5.6, 6.0	5.9"	89°
[]	Iota Cancri	08 ^h 46 ^m .7	+28° 46'	4.2, 6.6	30"	307°
[]	38 Lyncis	09 ^h 18 ^m .8	+36° 48'	3.9, 6.6	2.7"	229°
[]	Alpha Leonis	10 ^h 08 ^m .4	+11° 58'	1.4, 7.7	177"	307°
[]	Gamma Leonis	10 ^h 20 ^m .0	+19° 51'	2.2, 3.5	4.4"	122
[]	54 Leonis	10 ^h 55 ^m .6	+24° 45'	4.5, 6.3	6.5"	110°
[]	N Hydrae	11 ^h 32 ^m .3	-29° 16'	5.8, 5.9	9.2"	210°
[]	Delta Corvi	12 ^h 29 ^m .9	-16° 31'	3.0, 9.2	24.2"	214°
[]	24 Comae Berenices	12 ^h 35 ^m .1	+18° 23'	5.2, 6.7	20.3"	271°
[]	Gamma Virginis	12 ^h 41 ^m .7	-01° 27'	3.5, 3.5	3.6"	293°
[]	32 Camelopardalis	12 ^h 49 ^m .2	+83° 25'	5.3, 5.8	21.6"	326°
[]	Alpha Canum Venaticorum	12 ^h 56 ^m .0	+38° 19'	2.9, 5.5	19.4"	229°
[]	Zeta Ursa Majoris	13 ^h 23 ^m .9	+54° 56'	2.3, 4.0, 4.0	14.4", 709"	152°, 71°
[]	Kappa Bootis	14 ^h 13 ^m .5	+51° 47'	4.6, 6.6	13.4"	236°
[]	Iota Bootis	14 ^h 16 ^m .2	+51° 22'	4.9, 7.5	38"	33°
[]	Pi Bootis	14 ^h 40 ^m .7	+16° 25'	4.9, 5.8	5.6"	108°
[]	Epsilon Bootis	14 ^h 45 ^m .0	+27° 04'	2.5, 4.9	2.8"	339°
[]	Alpha Librae	14 ^h 50 ^m .9	-16° 02'	2.8, 5.2	231"	314°

[]	Xi Bootis	14 ^h 51 ^m .4	+19° 06'	4.7, 7.0	6.9"	332°
[]	Delta Bootis	15 ^h 15 ^m .5	+33° 19'	3.5, 8.7	105"	79°
[]	Mu Bootis	15 ^h 24 ^m .5	+37° 23'	4.3, 7.0	108"	171°
[]	Delta Serpentis	15 ^h 34 ^m .8	+10° 32'	4.2, 5.2	3.9"	178°
[]	Zeta Corona Borealis	15 ^h 39 ^m .4	+36° 38'	5.1, 6.0	6.3"	305°
[]	Xi Scorpii	16 ^h 04 ^m .4	-11° 22'	4.8, 7.3	7.6"	51°
[]	Struve 1999	16 ^h 04 ^m .4	-11° 27'	7.4, 8.1	11.6"	99°
[]	Beta Scorpii	16 ^h 05 ^m .4	-19° 48'	2.6, 4.9	13.6"	21°
[]	Kappa Herculis	16 ^h 08 ^m .1	+17° 03'	5.3, 6.5	28"	12°
[]	Nu Scorpii	16 ^h 12 ^m .0	-19° 28'	4.3, 6.4	41"	337°
[]	Sigma Corona Borealis	16 ^h 14 ^m .7	+33° 52'	5.6, 6.6	6.2"	233°
[]	16/17 Draconis	16 ^h 36 ^m .2	+52° 55'	5.4, 6.4, 5.5	3.4, 90	108°, 194°
[]	Mu Draconis	17 ^h 05 ^m .3	+54° 28'	5.7, 5.7	2.0"	42°
[]	Alpha Herculis	17 ^h 14 ^m .6	+14° 23'	3.5, 5.4	4.7"	107°
[]	Delta Herculis	17 ^h 15 ^m .0	+24° 50'	3.1, 8.2	8.9"	236°
[]	36 Ophiuchi	17 ^h 15 ^m .3	-26° 36'	5.1, 5.1	4.4"	154°
[]	Omicron Ophiuchi	17 ^h 18 ^m .0	-24° 17'	5.4, 6.9	10.3"	355°
[]	Rho Herculis	17 ^h 23 ^m .7	+37° 09'	4.6, 5.6	4.1"	316°
[]	Nu Draconis	17 ^h 32 ^m .2	+55° 11'	4.9, 4.9	62"	312°
[]	Psi Draconis	17 ^h 41 ^m .9	+72° 09'	4.9, 6.1	30.3"	15°
[]	40/41 Draconis	18 ^h 00 ^m .2	+80° 00'	5.7, 6.1	19.3"	232°
[]	95 Herculis	18 ^h 01 ^m .5	+21° 36'	5.0, 5.1	6.3"	258°
[]	70 Ophiuchi	18 ^h 05 ^m .5	+02° 30'	4.2, 6.0	2.8"	72°
[]	Epsilon Lyrae	18 ^h 44 ^m .3	+39° 40'	5.0, 6.1, 5.2, 5.5	208", 2.6", 2.3"	357°, 173°, 94°
[]	Zeta Lyrae	18 ^h 44 ^m .8	+37° 36'	4.3, 5.9	44"	150
[]	Beta Lyrae	18 ^h 50 ^m .1	+33° 22'	3.4, 8.6	46"	149°
[]	Struve 2404	18 ^h 50 ^m .8	+10° 59'	6.9, 8.1	3.6"	183°
[]	Otto Struve 525	18 ^h 54 ^m .9	+33° 58'	6.0, 7.7	45"	350°

[]	Theta Serpentis	18 ^h 56 ^m .2	+04° 12'	4.5, 5.4	22.3"	104°
[]	Beta Cygni	19 ^h 30 ^m .7	+27° 58'	3.1, 5.1	34.4"	54°
[]	57 Aquilae	19 ^h 54 ^m .6	-08° 14'	5.8, 6.5	36"	170°
[]	31 Cygni	20 ^h 13 ^m .6	+46° 44'	3.8, 6.7, 4.8	107", 337"	173°, 323°
[]	Alpha Capricornus	20 ^h 18 ^m .1	-12° 33'	3.6, 4.2	378"	291°
[]	Beta Capricornus	20 ^h 21 ^m .0	-14° 47'	3.4, 6.2	206"	267°
[]	Gamma Delphinus	20 ^h 46 ^m .7	+16° 07'	4.5, 5.5	9.6"	268°
[]	61 Cygni	21 ^h 06 ^m .9	+38° 45'	5.2, 6.0	28"	146°
[]	Beta Cephei	21 ^h 28 ^m .7	+70° 34'	3.2, 7.9	13.3"	249°
[]	Struve 2816	21 ^h 39 ^m .0	+57° 29'	5.6, 7.7, 7.8	11.7", 20"	121°, 339°
[]	Epsilon Pegasi	21 ^h 44 ^m .2	+09° 52'	2.4, 8.4	142"	320°
[]	Xi Cephei	22 ^h 03 ^m .8	+64° 38'	4.4, 6.5	7.7"	277°
[]	Zeta Aquarii	22 ^h 28 ^m .8	-00° 01'	4.3, 4.5	1.8"	266°
[]	Delta Cephei	22 ^h 29 ^m .2	+58° 25'	3.9, 6.3	41"	192°
[]	8 Lacerta	22 ^h 35 ^m .9	+39° 38'	5.7, 6.5	22.4"	186°
[]	94 Aquarii	23 ^h 19 ^m .1	-13° 28'	5.3, 7.3	12.7"	350°
[]	Sigma Cassiopeiae	23 ^h 59 ^m .0	+55° 45'	5.0, 7.1	3"	326°

Object:	Date:	Time:	N
Instrument:	Seeing:	Power:	
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Object:	Date:	Time:	N
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