NASA
Reference
Publication
1202

June 1988

Catalog of Open Clusters and Associated Interstellar Matter

David Leisawitz

NASA

NASA Reference Publication 1202

1988

Catalog of Open Clusters and Associated Interstellar Matter

David Leisawitz
Goddard Space Flight Center
Greenbelt, Maryland

National Aeronautics and Space Administration

Scientific and Technical Information Division

PREFACE

In this compilation, every effort has been made to report accurately the observations of a large number of investigators. However, since this will be the first widely distributed edition of the Catalog of Open Clusters and Associated Interstellar Matter, for there to be a few misquotations is inevitable. (I would greatly appreciate being informed of discrepancies when they are discovered.) For this reason, but, more importantly because measurements taken out of context are prone to misinterpretation, I recommend using this catalog as a guide to information available about the clusters rather than as a final source of information. The catalog format was designed to facilitate location of original references.

My objective was to make the database a useful research tool for optical observers and radio astronomers alike, and thus to help bridge a communication barrier that separates astronomical subdisciplines. The catalog description that follows was written with that objective in mind.

D. Leisawitz
March 1988

SUMMARY OF CONTENTS

CATALOG OF OPEN CLUSTERS AND ASSOCIATED INTERSTELLAR MATTER

David Leisawitz

INTRODUCTION

Data pertaining to 128 open clusters, and the interstellar matter associated or potentially associated with them, are compiled in this catalog. Common names, aliases, and galactic coordinates of the catalogued clusters are shown in Table 1. Also tabulated are the names of OB associations of which the clusters are members, and the Sharpless (S) and Westerhout (W) identifications of H II regions ionized by the clusters.

The Open Cluster Interstellar Matter (OCISM) database from which this catalog was produced is available in machine-readable form, with accompanying processing and analysis software, through the National Space Science Data Center (NSSDC) at the NASA Goddard Space Flight Center.

Below we describe briefly the criteria used to select clusters for this compilation; known selection effects as a result of which there are differences between the catalogued clusters and the population of all open clusters in the Galaxy; how information for the OCISM database was obtained; the database contents and catalog format; and the associated processing and analysis software.

CLUSTER SAMPLE SELECTION CRITERIA AND SELECTION EFFECTS

Clusters in the OCISM database satisfy four criteria: they are relatively well studied (photometrically and, often, spectroscopically); their declinations are $\gtrsim -20°$; they are more distant than ~1 kpc but not more distant than ~5 kpc; and they are younger than ~100 Myr. Of the approximately 1200 known open clusters, ~10% satisfy these conditions.

The OCISM database was created to document information that characterizes open clusters and their interaction with the interstellar medium and the sample selection criteria were specified accordingly. Because they are relatively young, most OCISM clusters can be expected to be surrounded by the interstellar

Table 1. Clusters in the Database

Number in Database	Number in OCL	l_{II} (deg)	b_{II} (deg)	Name of Cluster: Common	Name of Cluster: Alias	Member of Association	H II Region: S	H II Region: W
1	19	6.13	-1.36	NGC 6530	M8	SGR OB1	25	29
2	23	6.99	-0.25	NGC 6514	M20; TRIFID	SGR OB1	30	-
3	26	7.72	-0.44	NGC 6531	M21	SGR OB1	-	-
4	33	11.99	-0.94	MARKAR 38	BYURAKAN 5	SGR OB1	-	-
5	34	12.43	-3.22	TRUMP 33			-	-
6	35	12.80	-0.80	COLLIN 469		SGR OB1	-	-
7	36	12.86	-1.32	NGC 6603	M24		-	-
8	40	14.15	-1.01	NGC 6613	M18		-	-
9	44	15.09	-0.74	NGC 6618	M17	SER OB1	45	38
10	54	16.99	0.79	NGC 6611	M16	SER OB1	49	37
11	56	18.26	1.69	NGC 6604		SER OB2	-	35
12	66	21.64	-0.78	NGC 6649			-	-
13	67	23.86	-2.92	NGC 6694	M26		-	-
14	68	23.95	-0.50	NGC 6664		SCT OB2	-	-
15	74	26.28	-0.81	NGC 6683			-	-
16	77	27.36	-1.93	BASEL 1	APRIAMASVILI		-	-
17	82	28.23	-2.23	NGC 6704			-	-
18	83	28.29	-0.01	TRUMP 35			-	-
19	96	38.55	-1.70	NGC 6755			-	-
20	99	39.06	-1.69	NGC 6756			-	50
21	100	42.16	4.70	NGC 6709			-	-
22	122	59.16	-0.16	NGC 6820		VUL OB1	86	-
23	124	59.41	-0.15	NGC 6823		VUL OB1	86	55
24	125	60.14	-1.83	NGC 6830		VUL OB1	-	-
25	126	60.21	-0.29	ROSLUND 2		VUL OB1	-	-
26	134	65.70	1.18	NGC 6834	SNR DA495		-	-
27	138	66.96	-1.26	ROSLUND 4	IC 4954/5		-	-
28	148	72.64	2.08	NGC 6871		CYG OB3	-	-
29	149	72.73	1.74	BYURAKAN 1		CYG OB1	-	-
30	150	72.76	1.35	BYURAKAN 2		CYG OB1	-	-
31	152	73.29	1.19	NGC 6883		CYG OB1	-	-
32	157.1	74.91	3.29	BASEL 6			-	-
33	158	75.36	1.31	IC 4996		CYG OB1	-	-
34	161	75.71	0.31	BERK 87			-	-
35	167	76.66	1.26	BERK 86		CYG OB1	-	-

Table 1. (continued)

Number in Database	OCL	l_{II} (deg)	b_{II} (deg)	Name of Cluster Common	Alias	Member of Association	H II Region S	W
36	168	76.92	0.60	NGC 6913	M29	CYG OB9	-	-
37	177	78.09	2.79	COLLIN 419	SNR γCYG		-	-
38	181	78.66	2.03	NGC 6910	SNR γCYG		-	-
39	197	85.46	-0.47	NGC 6996	NGC 7000	CYG OB7	117	80
40	205	89.93	-2.72	NGC 7062			-	-
41	208	91.19	-1.67	NGC 7067			-	-
42	210	91.32	2.26	NGC 7031		CYG OB7	-	-
43	213	94.39	-5.50	IC 5146		CYG OB7	125	-
44	214	94.41	0.20	NGC 7086			-	-
45	218	97.35	0.42	NGC 7128			-	-
46	222	99.29	3.73	IC 1396	TRUMP 37	CEP OB2	131	-
47	224	101.36	-2.20	IC 1442			-	-
48	229	102.72	0.78	NGC 7235			-	-
49	231	103.10	-1.18	BERK 94			132	-
50	235	103.99	14.27	NGC 7023	VdB 139		-	-
51	236	104.02	6.45	NGC 7160		CEP OB2	-	-
52	237	104.04	0.86	NGC 7261		CEP OB2	-	-
53	-	106.76	5.30	S 140		CEP OB2	140	-
54	244	107.08	-0.90	NGC 7380		CEP OB1	142	-
55	256	110.96	0.05	NGC 7510	IC 1470	CAS OB2	156	-
56	257	111.36	-0.20	MARKAR 50	BYURAKAN 3	CAS OB2	157	-
57	260	112.76	0.46	NGC 7654	M52		-	-
58	273	116.21	-0.37	HARVARD 21			-	-
59	275	116.43	-0.79	NGC 7788		CAS OB5	-	-
60	276	116.59	-1.01	NGC 7790		CAS OB5	-	-
61	286	118.25	4.95	BERK 59		CEP OB4	171	1
62	291	119.80	-1.38	NGC 103		CAS OB4	-	-
63	294	120.25	-2.54	NGC 129			-	-
64	297	120.72	0.36	KING 14		CAS OB4	-	-
65	299	120.87	0.49	NGC 146		CAS OB4	-	-
66	306	122.09	1.33	KING 16		CAS OB7	-	-
67	307	122.29	1.54	BERK 4			-	-
68	313	123.13	-6.24	NGC 281			184	-
69	314	123.99	1.10	BERK 62		CAS OB7	-	-
70	316	124.68	-0.59	NGC 366		CAS OB1	-	-

Table 1. (continued)

Number in Database	Number in OCL	l_{II} (deg)	b_{II} (deg)	Name of Cluster: Common	Name of Cluster: Alias	Member of Association	H II Region: S	H II Region: W
71	319	125.90	-2.60	NGC 433			-	-
72	320	126.07	-3.91	NGC 436			-	-
73	321	126.56	-4.35	NGC 457			-	-
74	322	127.19	0.75	NGC 559			-	-
75	326	128.02	-1.76	NGC 581	M103	CAS OB8	-	-
76	328	128.22	-1.14	TRUMP 1			-	-
77	329	128.55	1.70	NGC 637			-	-
78	330	129.09	-0.35	NGC 654		CAS OB8	-	-
79	332	129.34	-1.51	NGC 659		CAS OB8	-	-
80	333	129.46	-0.94	NGC 663		CAS OB8	-	-
81	339	130.74	2.65	STOCK 5			-	-
82	345	132.39	-6.16	NGC 744			-	-
83	349.1	134.21	-2.64	BASEL 10		PER OB1	-	-
84	350	134.63	-3.72	NGC 869	h PERSEI	PER OB1	-	-
85	352	134.74	0.92	IC 1805		CAS OB6	190	3,4
86	353	135.08	-3.60	NGC 884	χ PERSEI	PER OB1	-	-
87	356	135.67	2.31	CZERNIK 13			-	-
88	357	135.78	1.48	NGC 1027		CAM OB1	-	-
89	359	135.79	-1.58	CZERNIK 8			-	-
90	360	135.84	0.27	BERK 65			-	-
91	361	136.02	-1.20	KING 4			-	-
92	362	136.34	-2.66	NGC 957			-	-
93	364	137.19	0.92	IC 1848		CAS OB6	199	5
94	383	143.65	7.62	NGC 1502		CAM OB1	-	-
95	394	148.16	-1.29	NGC 1444		CAM OB1	-	-
96	403	155.35	2.58	NGC 1624			212	-
97	404	157.08	-3.65	BERK 11			213	-
98	406	158.61	-1.58	NGC 1605			-	-
99	409	160.43	-17.74	IC 348		PER OB2	-	-
100	429	168.88	-2.00	NGC 1778		AUR OB1	-	-
101	439	173.59	-1.70	NGC 1893	IC 410	AUR OB2	236	-
102	441	173.90	0.28	NGC 1931		AUR OB1	237	-
103	445	174.52	1.04	NGC 1960	M36	AUR OB1	-	-
104	465	186.45	1.25	IC 2157			-	-
105	467	186.61	0.13	NGC 2129			-	-

Table 1. (continued)

Number in Database	OCL	l_{II} (deg)	b_{II} (deg)	Name of Cluster Common	Alias	Member of Association	H II Region S	W
106	476	190.20	0.42	NGC 2175		GEM OB1	252	-
107	481	195.63	-2.92	NGC 2169			-	-
108	495	202.94	2.20	NGC 2264		MON OB1	273	-
109	499	203.60	0.13	NGC 2251		MON OB1	-	-
110	502	204.62	13.96	NGC 2395			-	-
111	512	206.18	-2.29	NGC 2239		MON OB2	-	-
112	515	206.42	-2.02	NGC 2244	ROSETTE	MON OB2	275	16
113	518	207.14	-0.91	COLLIN 107		MON OB1	-	-
114	523	207.97	-3.38	COLLIN 96			-	-
115	527	208.56	-1.80	V D BERGH		MON OB1	-	-
116	548	215.32	-2.30	NGC 2286			-	-
117	-	218.13	-0.39	MONOCEROS			287	-
118	559	221.67	-1.24	NGC 2323	M50		-	-
119	562	223.62	-1.27	NGC 2335			-	-
120	565	224.32	-1.16	NGC 2343			-	-
121	567	224.72	0.38	NGC 2353		CMA OB1	-	-
122	575	226.57	-2.30	NGC 2345			-	-
123	594	230.82	1.00	HAFFNER 10			-	-
124	595	230.80	0.93	CZERNIK 29			-	-
125	598	231.41	1.96	NGC 2414			-	-
126	626	236.24	0.08	NGC 2421			-	-
127	633	238.18	-5.53	NGC 2362			310	-
128	668	243.14	0.41	NGC 2467		PUP OB2	311	-

gas and dust from whence they came, or at least by what remains of that material. The ages of clusters are gauged by comparing photometric and/or spectroscopic data with stellar evolution models and the theoretical H-R diagram. Clusters can be sorted or binned by age to evaluate the progress of the stellar-interstellar interaction. One virtue of this method, which has been employed with success by Gordon, Howard, and Westerhout (1968), Schwartz (1971), Bash, Green, and Peters (1977), and Leisawitz, Thaddeus, and Bash (1988), is that the chronometer is independent of the interaction. It is feasible to observe interstellar matter in a large number of regions, each ~50 pc in size, with several arcminute spatial resolution, and possible to resolve interesting interstellar structure, if the regions are at distances $\gtrsim$1 kpc and $\lesssim$5 kpc. For comparison, a typical open cluster diameter is ~3 pc (~10' at 1 kpc); a 50 pc molecular cloud is considered to be large; and the radiation energy density due to a typical young cluster is equal to the energy density of the background interstellar radiation field at ~40 pc. Clusters in the OCISM database can be observed from the northern hemisphere.

The decision to include a cluster in the catalog was based primarily on data tabulated by Alter, Ruprecht, and Vanysek (1970). Although recent analyses suggest that the selection criteria are violated by a few of the clusters so chosen, the offenders were retained.

Since open clusters in general are concentrated within ~100 pc of the galactic plane, the sample of all known clusters is intrinsically biased by the obscuring effect of dust in the Milky Way. Thus, for instance, only along relatively transparent lines of sight are clusters more distant than a few kpc observed optically. Such clear lines of sight are rare in the inner Galaxy (the direction of the Carina spiral arm is exceptional in this respect). Naturally, selection effects present in the population of all known clusters propagate to the OCISM sample.

Statistical properties (distances, sizes, masses, distribution in the Galaxy, etc.) of the clusters in the OCISM database were compared to the properties of all known clusters (see, e.g., Lyngå 1982) by Leisawitz (1985). In most respects, OCISM clusters are representative of the sample of all well-studied open clusters. However, old open clusters (~10^8 - 10^9 yr) and nearby clusters (d $\lesssim$1 kpc) are, by fiat, underrepresented in the database; and clusters in quadrants III and IV of galactic longitude are missing because of the declination limit.

SOURCES OF INFORMATION

A systematic survey of international astronomical literature was used to locate information about the clusters. Journal articles cited in the bibliographies of Alter, Ruprecht, and Vanysek (1970) and Ruprecht, Balazs, and White (1981), as well as articles cited in the Astronomy and Astrophysics Abstracts, were scanned manually. Most of the articles considered were published more recently than the early 1960s and the survey is essentially complete through late 1987.

In its present form, the database contains information from approximately 400 reference sources. Some sources are particularly valuable because they contain self-consistently evaluated descriptions of numerous clusters. Information from the surveys listed in Table 2 is heavily represented in the OCISM database.

DATABASE CONTENTS AND CATALOG FORMAT

The Catalog of Open Clusters and Associated Interstellar Matter was formatted by the processing software created to operate on the OCISM database. Information for each of the 128 OCISM clusters is presented on two pages. Every datum in the catalog is presented with a "reference code." A short, alphabetized table of references is displayed with the data for each cluster (a comprehensive reference list can be found at the back of this document). The clusters are catalogued in order of ascending galactic longitude. The data fields are described below.

Cluster Identification

The OCISM database can facilitate research related to the interstellar matter associated with young star clusters, an interdisciplinary endeavor, by linking the various names by which a cluster and the interstellar gas in its environment are referred. Molecular cloud observers, for example, relate their discoveries to stellar associations or to well-known H II regions, but seldom to the individual visible clusters of stars to which their clouds recently gave birth. Optical observers are vulnerable to being uninformed that the reddening that they measure photometrically sometimes is produced by dust in a known foreground molecular or atomic hydrogen cloud. Observers of interstellar clouds, in turn, may benefit by having constraints placed on the clouds' distances.

Table 2. Open Cluster and Related Interstellar Matter Surveys

Reference	Principal Contributions[a]
Johnson et al. (1961)	d, E(B-V), $(B-V)_t$, eSpT
Johnson and Svolopoulos (1961)	RV(*)
Becker (1963)	d, E(B-V), A_V, eSpT
Schmidt (1963)	M(*)
Hoag and Applequist (1965)	d, eSpT
Courtes, Cruvellier, and Georgelin (1966)	RV(H II)
Gordon, Howard, and Westerhout (1968)	RV(H I), M(H I)
Lindoff (1968)	cluster age
D'Odorico and Felli (1970)	M(dust)
Hagen (1970)	d, AD, E(B-V), RV(*)
Becker and Fenkart (1971)	d, AD, LD, E(B-V), A_V, eSpT
Reddish and Sloan (1971)	M(*)
van Schewick (1971)	cluster proper motion
Schwartz (1971)	M(H II)
Georgelin and coworkers (1970, 1973, 1975, 1976)	RV(H II), eSpT
Harris (1976)	cluster age
Fenkart and Binggeli (1979)	d, eSpT
Moffat and coworkers (1971, 1972, 1973, 1974, 1975, 1979)	d, AD, E(B-V), eSpT
Israel (1977, 1978, 1980)	M(H II)
Mermilliod (1981a, b)	cluster age
Nicolet (1981)	d, E(B-V)
Blitz, Fich, and Stark (1982)	RV(H_2)

Table 2. (continued)

Reference	Principal Contributions[a]
Janes and Adler (1982)	$(B-V)_t$
Bruch and Sanders (1983)	M(*)
Wramdemark (1983)	RV(*)
Lynga (1981, 1983, 1987)	d, AD, LD, E(B-V), A_V, age, eSpT, $(B-V)_t$, RV(*), M(*)
Hron (1987)	RV(*)
Leisawitz, Thaddeus, and Bash (1988)	$RV(H_2)$, $M(H_2)$

[a] Abbreviations:

d = distance; AD = cluster angular diameter; LD = cluster linear diameter; E(B-V) = reddening; A_V = visual extinction; eSpT = cluster member of earliest main sequence spectral type (photometric or spectroscopic type); $(B-V)_t$ = color of main sequence turnoff; RV = radial velocity; M = mass; * = pertaining to cluster stars; H II = pertaining to associated ionized gas; H I = pertaining to associated or potentially associated atomic gas; H_2 = pertaining to associated or potentially associated molecular gas.

Essentially all known open clusters have been assigned "OCL" numbers in the Catalog of Star Clusters and Associations (Alter, Ruprecht, and Vanysek 1970) or in its supplement (Ruprecht, Balazs, and White 1981). Clusters with NGC or Messier (M) numbers commonly are referred to by those numbers. Most young clusters are members of OB associations.

Many of the clusters in the OCISM database ionize H II regions because they contain O stars. Since the clusters are observed optically, the H II regions are characterized by nebulosity which can be seen in the Palomar Observatory Sky Survey and in the Parker, Gull, and Kirschner (1979) Emission Line Survey of the Milky Way. Most of the nebulae were catalogued by Sharpless (1959) and have "S" numbers. A handful of the H II regions are referred to by their Westerhout (1958) radio source (W) numbers.

Spatial Coordinates

Galactic and equatorial coordinates of the nominal cluster centers are tabulated. The galactic longitudes and latitudes are in units of degrees. Hours and minutes of right ascension are shown, as are degrees and arcminutes of declination. The equatorial coordinates are for epoch 1950.0.

Radial Velocities

Approximate coincidence of stellar and interstellar gas radial velocities often is the only clue that an association may exist between a star cluster and a particular parcel of interstellar material.

All radial velocities in the OCISM database are in the reference frame of the Local Standard of Rest (LSR). Stellar radial velocities and, occasionally, H II region velocities are published in the heliocentric reference frame. To convert to the LSR reference frame, a standard solar motion of 20 km s^{-1} in the direction $(l_{II}, b_{II}) = (56^{\circ}.2, +22^{\circ}.8)$ was assumed.

Stellar Clusters

The velocity dispersion among the stars in a typical open cluster is of the order of 1 km s^{-1} (see, e.g., Mathieu 1986) and, in principle, the cluster velocity is the average of the individual stellar velocities. Because of zero-point calibration uncertainties, intrinsically broad spectral lines in early-type stars, contamination of measurements by binary orbital velocities, and the fact that only a limited number of stars in open clusters have been observed with sufficiently high spectral resolution, the radial velocities of most young open clusters are known with an accuracy no better than $\pm$10 km s^{-1} (Hron 1987).

A theoretical radial velocity which is the velocity that the cluster, at a known distance, would have if it followed a circular orbit around the galactic center, was calculated for each OCISM cluster using the rotation curve model of Brand (1986). The dispersion of the differences between derived radial velocities and measured velocities, when available, is approximately 14 km s^{-1} (cf. Brand 1986; Hron 1987). For a large number of clusters, the "circular velocity" is practically as reliable an estimator of cluster radial velocity as any existing observation. This unfortunate state of affairs will persist until modern techniques and instruments are applied to measure the velocities of a large number of young clusters.

Lyngå (1987) and Hron (1987) incorporated in their catalogs the radial velocities compiled in unpublished work by Wramdemark. Agreement among the velocities credited to these sources therefore is not accidental.

· H II Regions

Radio and optical recombination lines provide information about the radial velocities of H II regions. Recombination lines are intrinsically broad (a typical FWHM linewidth is ~25 km s^{-1}), but the centroid velocities can be measured with an accuracy of the order of 1 km s^{-1} in the case of radio lines or a few km s^{-1} in the case of optical lines.

Differences among reported H II region radial velocities measured using radio recombination lines more often than not can be attributed to peculiar motions of the ionized gas and the fact that different lines of sight are observed (or that the observations are made with beam sizes that differ). For example, significant deviations from the "mean H II region velocity" often occur along lines of sight that contain molecular clouds. Whenever possible, the velocity tabulated in the OCISM database is one that is supposed to characterize the mean H II region velocity. In some cases, several distinct major emission features are reported in an article; these individual features are tabulated here if they are not too numerous.

· Molecular Clouds

The mean radial velocities of interstellar molecular clouds can be measured with an uncertainty less than 1 km s^{-1}. Molecular clouds are discovered and studied most commonly with observations of the spectral line emission from the fundamental rotation transition of carbon monoxide (^{12}CO) molecules. In most cases, ^{12}CO spectral lines are the sources of tabulated "CO cloud" velocities. In some cases, however, ^{13}CO or H_2CO line velocities are catalogued.

Different molecular clouds that are potentially associated with the same open cluster may have different radial velocities. Leisawitz, Thaddeus, and Bash (1988) describe and systematically apply criteria to decide if a molecular cloud is "associated" or "potentially associated" with a cluster. All major emission components reported to have been contributed by associated or potentially associated molecular clouds are recorded in the OCISM database. The Blitz, Fich, and Stark (1982) catalog of CO radial velocities toward H II regions also is frequently cited.

Proper Motions

Absolute proper motions (μ_x and μ_y) of the clusters are tabulated, in units of arcseconds per century. As is conventional, $\mu_x = \mu_\alpha \cos\delta$ and $\mu_y = \mu_\delta$ for the right ascension component of proper motion μ_α and the declination component μ_δ.

Distance

Among the many factors that might motivate one to study the interstellar matter associated with open clusters is the fact that, by astronomical standards, the distances of these objects are well known. Thus, masses of associated ionized, atomic, and molecular gas components and, for example, infrared luminosities of interstellar clouds can be measured with uncharacteristically small errors. The scatter among different authors' determinations of a cluster's distance indicates that the mean external error in distance for clusters in the OCISM database is ~15%; the corresponding uncertainty in gas mass or dust luminosity is ~30%.

A large number of researchers have constructed from photometric data dereddened color-magnitude diagrams (CMD) and, by the method of main sequence fitting (i.e., comparison with a "calibrated" CMD), have derived distance moduli. Absolute distance moduli, and cluster distances, generally are obtained by assuming a standard selective extinction ratio (e.g., $A_V/E(B-V) = 3.0$ or 3.1) to determine the extinction.

The distances to some open clusters have been derived using the method of spectroscopic parallax. Generally, distances derived in this way are not tabulated because only a few stars in each cluster are spectroscopically observed and, with poor statistics, the method is inferior to main sequence fitting (see, e.g., Hoag and Applequist 1965).

Many of the distances entered in the OCISM database are values that were adopted, rather than determined, by the authors cited. For example, Neckel (1967) adopted distances that were measured by Johnson et al. (1961).

Angular Diameter

Rigorous determination of a star cluster's angular diameter can be made by counting stars and calculating the radial distribution of stellar surface density (see, e.g., Danilov, Matkin, and Pyl'skaya 1985 and references therein). Such measurements suggest that clusters often have high density cores (or nuclei) and relatively low density halos (or coronas). Thus, what is meant by "the cluster angular diameter" is somewhat ambiguous. When an author reports measurements of core and halo diameters, both are entered in the OCISM database.

In most cases, cluster angular diameters are measured directly by inspection of a photographic plate or print. The cluster size determined in this manner may be investigator-dependent and may be a function of the limiting magnitude with which the cluster was observed.

The print inspection method was employed by Lyngå, who estimated the nuclear sizes of nearly all open clusters (Lyngå 1981; 1983; 1987). Lyngå's measurements are valuable particularly because of their self-consistency. His cluster diameters are contained in the OCISM database.

Linear Diameter

The linear diameters of well-studied open clusters are known because their distances and angular sizes have been measured. In addition to published estimates of the linear diameters of clusters, the OCISM database includes a value for the size of each cluster which is based on an adopted distance and angular diameter. The distance adopted for this calculation is either the average of two recently reported measurements or the average of all database distance entries if the dispersion among the entries is small. The angular diameters of Lyngå were assumed.

Age

Estimates have been published for the ages of a large number of open clusters based on several methods, most of which are related. Two premises generally are implicit in age determinations: (1) the stars in a cluster form coevally; and (2) the main sequence lifetime of the most massive unevolved cluster member is an estimator of cluster age. There is no consensus among researchers as to the validity of the first assumption (cf. Doom, De Greve, and de Loore 1985; Stahler 1985). For studies of the interaction between clusters and their surrounding interstellar matter, however, this may not be problematic because the derived age will be a measure of the time elapsed since the

formation of the most massive cluster stars and these are the stars that can be assumed to dominate the interaction. Only upper limits can be derived for the ages of clusters that are so young ($\lesssim$5 Myr) that they contain no evolved massive stars. In some cases, however, ages of very young clusters have been estimated by noting that low-mass stars have not yet reached the zero-age main sequence and by comparing photometric data with theoretical pre-main sequence isochrones (see, e.g., Moffat 1972).

Not all authors who report information sufficient to calculate a cluster's age also report the age implied by their observation. Typically what is published is the (B-V) color of the main sequence turnoff in the (dereddened) CMD, the corresponding "photometric spectral type," or the spectroscopically determined type of the brightest and bluest star on the cluster's main sequence. The information needed to interpret these parameters as measures of cluster age can be found in numerous articles (e.g., Lindoff 1968; Harris 1976; Janes and Adler 1982; Lyngå 1982; Mermilliod and Maeder 1986).

Published numerical estimates of the ages of clusters are entered in the OCISM database. Also included in the database are "earliest" main sequence spectral types and main sequence turnoff colors (in magnitudes). Lower case letters are used to designate photometrically determined stellar types and upper case letters are used for true spectral classifications.

Masses

In principle, one could measure the mass of stars in a cluster and inventory the masses of all interstellar matter components associated with the cluster to determine the "efficiency" with which stars form from dense interstellar clouds. What may well be an insurmountable barrier stands in the way of achieving this objective: to measure star formation efficiency, one must account correctly for all of the interstellar matter that participates in a cluster's formation; obviously, material that has participated (or will participate) in the formation of a significant additional stellar population must not be included in the analysis. At the very least, however, it is possible, and therefore sensible, to assemble the data needed to address this fundamental issue.

Considerable care is required to determine what components of molecular and atomic material observed in the direction of a star cluster are indeed associated with the cluster. On the other hand, it is generally unambiguous that ionized gas detected in the direction of a cluster with O star members is associated with the cluster. Fortunately, clear signs of interaction between H II regions and dense interstellar clouds, such as "bright rims" on the cloud

surfaces, occasionally enable one to conclude with confidence that a particular molecular cloud is associated with a cluster (see, e.g., Leisawitz, Thaddeus, and Bash 1988). More often, the only hint that a particular atomic or molecular cloud is associated with a cluster is a near-coincidence of stellar and interstellar radial velocities (see, e.g., Gordon, Howard, and Westerhout 1968).

Masses of ionized, atomic, and molecular gas components are derived with some assumption made about the distance of the emitting material. Masses reported in the OCISM database are the published masses; no adjustment has been applied to "correct" these values to a common reference distance, even if the distance assumed is discrepant with a cluster's distance.

· Stellar

The masses of large samples of clusters have been studied by Schmidt (1963), Reddish and Sloan (1971), and Bruch and Sanders (1983). Reddish and Sloan derived masses relative to the mass of Trumpler 1. The cluster masses credited to them in the OCISM database were derived by us assuming that Trumpler 1 has a mass of 63 $M_{\odot}$ (Schmidt 1963). Cluster masses quoted by Bruch and Sanders also are based on the Reddish and Sloan relative masses. Bruch and Sanders derived a new conversion factor for absolute mass which turned out to be close to the Schmidt mass estimate for Trumpler 1. Close agreement between the Reddish and Sloan masses and the Bruch and Sanders masses shown in the catalog is therefore fortuitous.

· Atomic Gas

Aside from the difficulty associated with determining that a cloud of atomic hydrogen is physically related to an open cluster (see above), there is the added complication that individual H I clouds, seen as features in the 21-cm line profile, generally are difficult to disentangle from "background" emission. Only Gordon, Howard, and Westerhout (1968) and Tovmassian et al. (1973) have published systematic studies of H I emission from the neighborhoods of open clusters (Dr. Bania, of Boston University, presently is observing H I emission from regions around a number of OCISM clusters).

· Ionized Gas

Published estimates of the mass of gas ionized by a young open cluster that are based on the flux from the entire H II region (or at least the bulk of it) are recorded in the OCISM database. Most of these estimates come from observations of radio continuum emission and thus are not affected by extinction.

· Molecular Clouds

The dynamical timescale for the interaction of molecular clouds and open clusters was first determined observationally by Bash, Green, and Peters (1977). The interaction has since been investigated in greater detail by Leisawitz, Thaddeus, and Bash (1988).

In the Leisawitz et al. CO survey, a distinction was made between catalogued molecular clouds that can be considered with confidence to be "associated" with clusters, clouds that are "potentially associated," and clouds that can be considered with confidence not to be associated. A single entry of data from the Leisawitz et al. survey is made in the OCISM database when the molecular clouds found in the region around a cluster are "potentially," but not conclusively, associated with the cluster; when some of the clouds are considered "associated," two entries are made, the second corresponding to "associated" clouds only and the first corresponding to the "associated" and the "potentially associated" clouds. The tabulated masses are sums of the masses of the clouds in each category. Some regions that were observed by Leisawitz et al. contained no CO emission considered to be even potentially associated with the clusters.

Since many H II region neighborhoods have been mapped for CO emission by millimeter wave observers, information about the masses of molecular clouds near very young open clusters is plentiful. A few H II regions in particular have recieved much attention, notably M 17 (NGC 6618) and W 3 (adjacent to IC 1805). A plethora of excellent articles have been neglected, for no reason other than to conserve space in the catalog, when the information they provide is essentially redundant with data already entered. Generally an entry is not made in the OCISM database for articles in which only a small portion of a molecular cloud is discussed.

· Dust

In rare instances, a value has been published for the mass of dust associated with an open cluster. D'Odorico and Felli (1970) conducted the only systematic survey of this nature of which we are aware. Although the D'Odorico and Felli masses are tabulated, it is important to note that, unlike the database entries for the masses of interstellar gas components, these dust mass estimates correspond only to dust concentrated in a relatively small region around the stars.

A crude but reasonable approximation for the total mass of dust in the extended cluster environment can be obtained by summing the masses of the various associated interstellar gas components and dividing by 100 since the "normal" interstellar gas-to-dust mass ratio is ~100 (see Savage and Mathis 1979 and references therein).

Visual Extinction

In a majority of cases, values published for the visual extinction of a cluster are derived from a measurement of the (B-V) color excess (reddening) with an assumed value of 3.1 or 3.0 for the ratio $A_V/E(B-V)$. Of course, the true distance modulus of a cluster will be estimated incorrectly if the selective extinction ratio assumed to obtain the extinction is not strictly applicable to the line of sight to the cluster.

Reddening

The reddening of cluster stars by foreground dust is deduced from multi-wavelength photometric studies of the clusters. Even when photometry in a system other than UBV is discussed, it is conventional for an equivalent (B-V) color excess to be provided (see, e.g., Nicolet 1981; Janes and Adler 1982).

It is not uncommon for an observer to report a finding of variable reddening toward a young cluster. In other words, the cluster stars show excessive scatter about the nominal main sequence relation in the color-color diagram (e.g., [U-B] shown as a function of [B-V]). Variable extinction is an indication of the presence of a foreground molecular or atomic cloud (which may or may not be physically related to the cluster). What is most often published, and what is tabulated in the catalog, is a value for the mean cluster reddening.

PROCESSING AND ANALYSIS SOFTWARE

The OCISM database is available on request from the NSSDC. It will be distributed with supporting documentation and with processing and analysis software coded in FORTRAN. The programs to operate on the database are menu-driven and should be self-explanatory. The basic processing options are as follows:

a) "change output device and/or format" - user can select output to file or to terminal; complete or limited amounts of output can be requested;

b) "select clusters on which to operate" - all clusters or a specifiable subset of the clusters in the database can be considered;

c) "type list of selected clusters" - list includes cluster coordinates and aliases;

d) "print catalog of cluster information" - in standard output format, this prints the database catalog as it appears on the following pages; a less voluminous output is generated if requested with option (a);

e) "mask out some references" - enables consideration of a subset of database entries selected either according to how currently articles were written or to specifiable article or compilation names (one might wish, for example, to examine database entries from the compilations of Lyngå); to generate a complete table of reference codes and corresponding references, send output to a file and select option (h) (see below); ask the program for a more detailed explanation and it will tell you the "masking rules";

f) "average unmasked data and tabulate" - produces table showing average value of a database parameter (e.g., distance) for each of the selected clusters; table includes standard deviation and number of database entries averaged (only entries that were not masked with option (e) are averaged);

g) "restore database" - necessary after masking either to mask differently or to proceed with no masking;

h) "type complete list of database references" - bibliography of all references cited with corresponding reference codes (132 column output field); codes are used to identify individual articles for "masking."

Acknowledgments

I am grateful to Dr. Gosta Lyngå who, long ago, encouraged me to pursue this compilation. His own Catalog of Open Cluster Data provided great inspiration as well as a wealth of information. I thank Dr. Wayne Warren for agreeing to incorporate the OCISM database in the NSSDC archives and to provide the support needed to distribute the database. The database was updated and prepared for presentation while I was supported first as a National Research Council Resident Research Associate at NASA/GSFC and later by a grant from the NASA Space Astrophysics Data Analysis Program (SADAP proposal R033-87).

CATALOG OF OPEN CLUSTERS AND ASSOCIATED INTERSTELLAR MATTER

CLUSTER IDENTIFICATION:

ALTER et al.: OCL 19
COMMON NAME: NGC 6530
ALTERNATE NAME: M8
SHARPLESS: S 25
WESTERHOUT: W 29
MEMBER OF ASSOC.: SGR OB1
DATA BASE NUM: 1

SPATIAL COORDINATES:

L II: 6.13 RA(1950.0): 18. 1.7
B II: -1.36 DEC(1950.0): -24. 20.

RADIAL VELOCITIES (w.r.t. LSR; km/s):

STELLAR:

VELOCITY	REF.
5.8	VCIRC
-2.4	JOS61
2.6	HAG70
20.7	HUM78
13.6	HUM78
0.6	WRA83
0.8	LYN87
0.5	HRO87

H II REGION:

VELOCITY	REF.
5.6	COU66
3.0	REI70
2.0	ELL84
11.0	ELL84
30.0	ELL84
0.0	SIM84
3.0	HAN85

CO CLOUDS:

VELOCITY	REF.
10.0	LAD76
17.0	LAD76
11.0	SIM84
12.0	FIC84

PROPER MOTION (arcsec/100 yr):

MU X	MU Y	REF.
-0.052	-0.054	ALT72

DISTANCE FROM SOLAR NEIGHBORHOOD (kpc):

DIST	REF.
1.40	JOH61
1.56	BEC63
1.70	HAG70
1.78	ALT72
2.00	LAD76
1.82	SAG78

ANGULAR DIAMETER (arcmin):

ANG D	REF.
14.0	ALT70
15.0	ALT70
20.0	LAD76
12.0	LAD76
15.0	LYN83

LINEAR DIAMETER (pc):

LIN D	REF.
7.6	LDCAL
7.0	LYN83

AGE ESTIMATES:

AGE (Myr):

AGE	REF.
1.	KIL77
3.	KIL77
2.	SAG78
2.	LYN83
5.	BOH84
0.	STA85
3.	STA85
2.	SAG86
10.	LYN87

EARLIEST MS SPECTRAL TYPE:

eSpT	REF.
o5	JOH61
05	BEC71
04	WAL72
B1	CHI81
05	LYN83

MS TURNOFF COLOR:

(B-V)	REF.
-0.32	JOH61
-0.35	HAG70
-0.30	KIL77
-0.30	SAG78
-0.28	CHI81

MASSES (SOLAR MASS UNITS):

STELLAR MASS:

MASS	REF.
1.68E+03	SCH63

MASS IN ASSOCIATED H I CLOUDS:

MASS	REF.
9.00E+02	VEN84

IONIZED HYDROGEN MASS:

MASS	REF.
8.00E+02	SCH71
7.20E+03	GOS84
7.00E+01	LIG84

MASS IN ASSOCIATED MOLECULAR CLOUDS:

MASS	REF.
2.00E+03	LAD76

ASSOCIATED MASS IN THE FORM OF DUST:

MASS	REF.
4.00E+00	LIG84

VISUAL EXTINCTION TOWARD CLUSTER (mag):

AV	REF.
0.96	LYN83

B-V COLOR EXCESS (mag):

E(B-V)	REF.
0.32	JOH61
0.33	BEC63
0.32	SCH63
0.30	BUS63
0.36	CHI81
0.35	HRO87
0.35	LYN87

1.91	CHI81	-0.32	BOH84
1.80	FIC84	-0.31	LYN87
1.53	LYN87		
1.69	HRO87		

REFERENCES

ALT70 Alter, G., Ruprecht, J., and Vanysek, V. 1970, The Catalog of Star Clusters and Associations (Budapest: Akad Kiado).
BEC63 Becker, W. 1963, Z. f. A., 57, 117.
BEC71 Becker, W. 1971, Astr. Ap. Suppl., 4, 241.
BOH84 Bohm-Vitense, E., Hodge, P., and Boggs, D. 1984, Ap. J., 287, 825.
BUS63 Buscombe, W. 1963, Mt. Stromlo Mimeogram, No. 6, pg. 24.
CHI81 Chini, R., and Neckel, Th. 1981, Astr. Ap., 102, 171.
COU66 Courtes, G., Cruvellier, P., and Georgelin, Y. 1966, J. des Obs., 49, 329.
ELL84 Elliot, K. H., Goudis, C., Hippelein, H., and Meaburn, J. 1984, Astr. Ap., 138, 451.
FIC84 Fich, M., and Blitz, L. 1984, Ap. J., 279, 125.
GOS84 Gosachinskij, I. V., and Khersonskij, V. K. 1984, Ap. Sp. Sci., 107, 289.
HAG70 Hagen, G. L. 1970, D. D. O. Pub., Univ. Toronto, 4.
HAN85 Hanel, A., and Gusten, R. 1985, Mitt. Astr. Ges., 63, 140.
HRO87 Hron, J. 1987, Astr. Ap., 176, 34.
HUM78 Humphreys, R. M. 1978, Ap. J. Suppl., 38, 309.
JOS61 Johnson, H. L., and Svolopoulos, S. N. 1961, Ap. J., 134, 868.
JOH61 Johnson, H. L., Hoag, A. A., Iriarte, B., Mitchell, R. I., and Hallam, K. L. 1961, Lowell Obs. Bull., 5, 133.
KIL77 Kilambi, G. C. 1977, MNRAS, 178, 423.
LAD76 Lada, C. J., Gull, T. R., Gottlieb, C. A., and Gottlieb, E. W. 1976, Ap. J., 203, 159.
LIG84 Lightfoot, J. F., et al. 1984, MNRAS, 208, 197.
LDCAL Linear diameter calculated from published ang. diam. and distance.
LYN83 Lynga, G. 1983, Catalogue of Open Cluster Data (3rd edition), available through NSSDC, Greenbelt, Maryland, USA
LYN87 Lynga, G. 1987, Catalogue of Open Cluster Data (5th edition), available through NSSDC, Greenbelt, Maryland, USA
VCIRC Radial velocity estimate based on cluster distance and rotation curve model of Brand 1986 (Ph. D. thesis, Leiden).
REI70 Reifenstein, E. C., Wilson, T. L., Burke, B. F., Mezger, P. G., and Altenhoff, W. J. 1970, Astr. Ap., 4, 357.
SAG78 Sagar, R., and Joshi, U. C. 1978, MNRAS, 184, 467.
SAG86 Sagar, R., Piskunov, A. E., Myakutin, V. I., and Joshi, U. C. 1986, MNRAS, 220, 383.
SCH63 Schmidt, von K.-H. 1963, Ast. Nach., 287, 41.
SCH71 Schwartz, R. 1971, Ap. Sp. Sci., 14, 286.
SIM84 Simon, M., et al. 1984, Ap. J., 278, 170.
STA85 Stahler, S. W. 1985, Ap. J., 293, 207.
ALT72 van Altena, W. F., and Jones, B. F. 1972, Astr. Ap., 20, 425.
VEN84 Venger, A. P., et al. 1984, Ap. Sp. Sci., 107, 271.
WAL72 Walborn, N. R. 1972, A. J., 77, 313.
WRA83 Wramdemark, S. 1983, private communication.

CLUSTER IDENTIFICATION:

ALTER et al.: OCL 23
COMMON NAME: NGC 6514
ALTERNATE NAME: M20;TRIFID
SHARPLESS: S 30
MEMBER OF ASSOC.: SGR OB1
DATA BASE NUM: 2

SPATIAL COORDINATES:

L II: 6.99 RA(1950.0): 17. 59.3
B II: -0.25 DEC(1950.0): -23. 2.

RADIAL VELOCITIES (w.r.t. LSR; km/s):
STELLAR:

VELOCITY	REF.
6.6	VCIRC
12.0	WRA83
12.0	LYN87
12.0	HRO87

H II REGION:

VELOCITY	REF.
11.1	COU66
16.4	REI70
13.0	CHA75

CO CLOUDS:

VELOCITY	REF.
20.0	CHA75
17.5	BLI82

PROPER MOTION (arcsec/100 yr):

NO VALUES AVAILABLE

DISTANCE FROM SOLAR NEIGHBORHOOD (kpc):

DIST	REF.
1.60	BUS63
2.34	ODE66
1.48	ODE66
1.40	OGU75
1.60	LYN83
1.80	FIC84
1.68	LYC85

ANGULAR DIAMETER (arcmin):

ANG D	REF.
20.0	ALT70
28.0	LYN83

LINEAR DIAMETER (pc):

LIN D	REF.
14.2	LDCAL
13.0	LYN83

AGE ESTIMATES:
AGE (Myr):

AGE	REF.
7.	OGU75

EARLIEST MS SPECTRAL TYPE:

eSpT	REF.
OE5	HUB22
B0	HUB22
O7.5	WAL73
O5	LYN83
O7	LYC85

MS TURNOFF COLOR:

NO VALUES AVAILABLE

MASSES (SOLAR MASS UNITS):
STELLAR MASS:

NO VALUES AVAILABLE

MASS IN ASSOCIATED H I CLOUDS:

NO VALUES AVAILABLE

IONIZED HYDROGEN MASS:

MASS	REF.
2.03E+03	ODE66
2.10E+02	CHA75
5.50E+02	LYC85
3.40E+02	LYN85

MASS IN ASSOCIATED MOLECULAR CLOUDS:

MASS	REF.
1.30E+03	CHA75
8.00E+02	LYN85

ASSOCIATED MASS IN THE FORM OF DUST:

MASS	REF.
6.00E+02	LYN85

VISUAL EXTINCTION TOWARD CLUSTER (mag):

AV	REF.
0.90	LYN83

B-V COLOR EXCESS (mag):

E(B-V)	REF.
0.30	BUS63
0.23	OGU75

REFERENCES

ALT70 Alter, G., Ruprecht, J., and Vanysek, V. 1970, The Catalog of Star Clusters and Associations (Budapest: Akad Kiado).
BLI82 Blitz, L., Fich, M. and Stark, A. A. 1982, Ap. J. Suppl., 49, 183.
BUS63 Buscombe, W. 1963, Mt. Stromlo Mimeogram, No. 6, pg. 24.
CHA75 Chaisson, E. J., and Willson, R. F. 1975, Ap. J., 199, 647.
COU66 Courtes, G., Cruvellier, P., and Georgelin, Y. 1966, J. des Obs., 49, 329.
FIC84 Fich, M., and Blitz, L. 1984, Ap. J., 279, 125.
HRO87 Hron, J. 1987, Astr. Ap., 176, 34.
HUB22 Hubble, E. 1922, Ap. J., 56, 162.
LDCAL Linear diameter calculated from published ang. diam. and distance.
LYN85 Lynds, B. T., and O'Neil, E. J. 1985, Ap. J., 294, 578.
LYC85 Lynds, B. T., Canzian, B. J., and O'Neil, E. J. 1985, Ap. J., 288, 164.
LYN83 Lynga, G. 1983, Catalogue of Open Cluster Data (3rd edition), available through NSSDC, Greenbelt, Maryland, USA
LYN87 Lynga, G. 1987, Catalogue of Open Cluster Data (5th edition), available through NSSDC, Greenbelt, Maryland, USA
ODE66 O Dell, C. R., Hubbard, W. B., and Peimbert, M. 1966, Ap. J., 143, 743.
OGU75 Ogura, K., and Ishida, K. 1975, P. A. S. Japan, 27, 119.
VCIRC Radial velocity estimate based on cluster distance and rotation curve model of Brand 1986 (Ph. D. thesis, Leiden).
REI70 Reifenstein, E. C., Wilson, T. L., Burke, B. F., Mezger, P. G., and Altenhoff, W. J. 1970, Astr. Ap., 4, 357.
WAL73 Walborn, N. R. 1973, A. J., 78, 1067.
WRA83 Wramdemark, S. 1983, private communication.

CLUSTER IDENTIFICATION:

ALTER et al.: OCL 26
COMMON NAME: NGC 6531
ALTERNATE NAME: M21
MEMBER OF ASSOC.: SGR OB1
DATA BASE NUM: 3

SPATIAL COORDINATES:

L II: 7.72
B II: -0.44
RA(1950.0): 18. 1.6
DEC(1950.0): -22. 30.

RADIAL VELOCITIES (w.r.t. LSR; km/s):
STELLAR:

VELOCITY	REF.
5.2	VCIRC
0.2	JOS61
3.2	HAG70
10.9	HUM78
2.0	HUM78
0.2	WRA83
0.2	LYN87
0.2	HRO87

H II REGION:

NO VALUES AVAILABLE

CO CLOUDS:

NO VALUES AVAILABLE

PROPER MOTION (arcsec/100 yr):

NO VALUES AVAILABLE

DISTANCE FROM SOLAR NEIGHBORHOOD (kpc):

DIST	REF.
1.25	JOH61
1.33	BEC63
1.45	HOA65
1.26	HOA65
1.30	HAG70
1.34	BEC71
1.42	BRD86
1.23	LYN87

ANGULAR DIAMETER (arcmin):

ANG D	REF.
12.0	ALT70
25.0	ALT70
5.0	HAG70
12.0	BEC71
13.0	LYN83

LINEAR DIAMETER (pc):

LIN D	REF.
5.0	LDCAL
5.1	LYN83

AGE ESTIMATES:
AGE (Myr):

AGE	REF.
5.	LYN83
7.	MER86
41.	LYN87

EARLIEST MS SPECTRAL TYPE:

eSpT	REF.
o9.5	JOH61
B0	HOA65
B0	BEC71
B0	LYN83
b0	LYN83

MS TURNOFF COLOR:

(B-V)	REF.
-0.30	JOH61
-0.20	HAG70
-0.20	LYN87

MASSES (SOLAR MASS UNITS):
STELLAR MASS:

MASS	REF.
1.34E+03	SCH63
2.02E+02	RED71
2.05E+02	BRU83

MASS IN ASSOCIATED H I CLOUDS:

NO VALUES AVAILABLE

IONIZED HYDROGEN MASS:

NO VALUES AVAILABLE

MASS IN ASSOCIATED MOLECULAR CLOUDS:

NO VALUES AVAILABLE

ASSOCIATED MASS IN THE FORM OF DUST:

NO VALUES AVAILABLE

VISUAL EXTINCTION TOWARD CLUSTER (mag):

AV	REF.
1.20	DLU65
0.81	NEC67
0.90	BEC71
0.90	LYN83

B-V COLOR EXCESS (mag):

E(B-V)	REF.
0.27	JOH61
0.30	BEC63
0.27	SCH63
0.30	BUS63
0.27	HAG70
0.27	LYN83
0.24	BRD86

REFERENCES

ALT70 Alter, G., Ruprecht, J., and Vanysek, V. 1970, The Catalog of Star Clusters and Associations (Budapest: Akad Kiado).
BEC63 Becker, W. 1963, Z. f. A., 57, 117.
BEC71 Becker, W. 1971, Astr. Ap. Suppl., 4, 241.
BRD86 Brown, P. J. F., Dufton, P. L., Lennon, D. J., Keenon, F. P., and Kilkenny, D. 1986, MNRAS, 220, 1003.
BRU83 Bruch, A., and Sanders, W. L. 1983, Astr. Ap., 121, 237.
BUS63 Buscombe, W. 1963, Mt. Stromlo Mimeogram, No. 6, pg. 24.
DLU65 Dluzhnevskaya, O. B. 1965, Nautch. Inf., No. 2.
HAG70 Hagen, G. L. 1970, D. D. O. Pub., Univ. Toronto, 4.
HOA65 Hoag, A. A., and Applequist, N. L. 1965, Ap. J. Suppl., 12, 215.
HRO87 Hron, J. 1987, Astr. Ap., 176, 34.
HUM78 Humphreys, R. M. 1978, Ap. J. Suppl., 38, 309.
JOS61 Johnson, H. L., and Svolopoulos, S. N. 1961, Ap. J., 134, 868.
JOH61 Johnson, H. L., Hoag, A. A., Iriarte, B., Mitchell, R. I., and Hallam, K. L. 1961, Lowell Obs. Bull., 5, 133.
LDCAL Linear diameter calculated from published ang. diam. and distance.
LYN83 Lynga, G. 1983, Catalogue of Open Cluster Data (3rd edition), available through NSSDC, Greenbelt, Maryland, USA
LYN87 Lynga, G. 1987, Catalogue of Open Cluster Data (5th edition), available through NSSDC, Greenbelt, Maryland, USA
MER86 Mermilliod, J.-C., and Maeder, A. 1986, Astr. Ap., 158, 45.
NEC67 Neckel, T. 1967, Heid. Ver., 19, 115.
VCIRC Radial velocity estimate based on cluster distance and rotation curve model of Brand 1986 (Ph. D. thesis, Leiden).
RED71 Reddish, V. C., and Sloan, C. 1971, Observatory, 91, 70.
SCH63 Schmidt, von K.-H. 1963, Ast. Nach., 287, 41.
WRA83 Wramdemark, S. 1983, private communication.

CLUSTER IDENTIFICATION:

ALTER et al.: OCL 33
COMMON NAME: MARKAR 38
ALTERNATE NAME: BYURAKAN 5
MEMBER OF ASSOC.: SGR OB1
DATA BASE NUM: 4

SPATIAL COORDINATES:

L II: 11.99 RA(1950.0): 18. 12.3
B II: -0.94 DEC(1950.0): -19. 1.

RADIAL VELOCITIES (w.r.t. LSR; km/s):
STELLAR:

VELOCITY	REF.
7.0	VCIRC
13.1	WRA83
13.1	LYN87
39.7	HRO87

H II REGION:

NO VALUES AVAILABLE

CO CLOUDS:

NO VALUES AVAILABLE

PROPER MOTION (arcsec/100 yr):

NO VALUES AVAILABLE

DISTANCE FROM SOLAR NEIGHBORHOOD (kpc):

DIST	REF.
1.00	MAR51
1.50	MOF75
1.85	MOF75
1.40	GRU80
1.00	LYN83

ANGULAR DIAMETER (arcmin):

ANG D	REF.
2.0	MAR51
2.5	GRU80
2.0	LYN83

LINEAR DIAMETER (pc):

LIN D	REF.
0.7	LDCAL
0.8	GRU80
0.6	LYN83

AGE ESTIMATES:
AGE (Myr):

AGE	REF.
10.	MOF75

EARLIEST MS SPECTRAL TYPE:

eSpT	REF.
B0	MAR51
b0	GRU80
B0	LYN83
B1	HRO87

MS TURNOFF COLOR:

NO VALUES AVAILABLE

MASSES (SOLAR MASS UNITS):
STELLAR MASS:

NO VALUES AVAILABLE

MASS IN ASSOCIATED H I CLOUDS:

NO VALUES AVAILABLE

IONIZED HYDROGEN MASS:

NO VALUES AVAILABLE

MASS IN ASSOCIATED MOLECULAR CLOUDS:

NO VALUES AVAILABLE

ASSOCIATED MASS IN THE FORM OF DUST:

NO VALUES AVAILABLE

VISUAL EXTINCTION TOWARD CLUSTER (mag):

NO VALUES AVAILABLE

B-V COLOR EXCESS (mag):

E(B-V)	REF.
0.34	MOF75

REFERENCES

GRU80 Grubissich, C., and Becker, W. 1980, Astr. Ap. Suppl., 40, 367.
HRO87 Hron, J. 1987, Astr. Ap., 176, 34.
LDCAL Linear diameter calculated from published ang. diam. and distance.
LYN83 Lynga, G. 1983, Catalogue of Open Cluster Data (3rd edition), available through NSSDC, Greenbelt, Maryland, USA
LYN87 Lynga, G. 1987, Catalogue of Open Cluster Data (5th edition), available through NSSDC, Greenbelt, Maryland, USA
MAR51 Markarian, V. E. 1951, Biur. Soob., 9, 7.
MOF75 Moffat, A. F. J., and Vogt, N. 1975, Astr. Ap., 41, 413.
VCIRC Radial velocity estimate based on cluster distance and rotation curve model of Brand 1986 (Ph. D. thesis, Leiden).
WRA83 Wramdemark, S. 1983, private communication.

CLUSTER IDENTIFICATION:

ALTER et al.: OCL 34
COMMON NAME: TRUMP 33
DATA BASE NUM: 5

SPATIAL COORDINATES:

L II: 12.43 RA(1950.0): 18. 21.8
B II: -3.22 DEC(1950.0): -19. 43.

RADIAL VELOCITIES (w.r.t. LSR; km/s):
STELLAR:

VELOCITY	REF.
8.1	VCIRC

H II REGION:

NO VALUES AVAILABLE

CO CLOUDS:

NO VALUES AVAILABLE

PROPER MOTION (arcsec/100 yr):

NO VALUES AVAILABLE

DISTANCE FROM SOLAR NEIGHBORHOOD (kpc):

DIST	REF.
1.30	GRU64
1.30	LIN68
1.32	BEC71
1.28	LYN87

ANGULAR DIAMETER (arcmin):

ANG D	REF.
7.0	LIN68
5.0	ALT70
8.0	ALT70
7.0	BEC71
7.0	LYN83

LINEAR DIAMETER (pc):

LIN D	REF.
2.7	LDCAL
2.7	LYN83

AGE ESTIMATES:
AGE (Myr):

AGE	REF.
13.	LIN68
13.	LYN83
18.	LYN87

EARLIEST MS SPECTRAL TYPE:

eSpT	REF.
b2	BEC63
B2	GRU64
b5	BEC71
b5	LYN83

MS TURNOFF COLOR:

(B-V)	REF.
-0.13	GRU64
-0.24	LYN87

MASSES (SOLAR MASS UNITS):
STELLAR MASS:

MASS	REF.
6.31E+02	LYN87

MASS IN ASSOCIATED H I CLOUDS:

NO VALUES AVAILABLE

IONIZED HYDROGEN MASS:

NO VALUES AVAILABLE

MASS IN ASSOCIATED MOLECULAR CLOUDS:

NO VALUES AVAILABLE

ASSOCIATED MASS IN THE FORM OF DUST:

NO VALUES AVAILABLE

VISUAL EXTINCTION TOWARD CLUSTER (mag):

AV	REF.
1.60	GRU64
1.60	BEC71
1.60	LYN83

B-V COLOR EXCESS (mag):

E(B-V)	REF.
0.63	BEC63
0.42	LYN87

REFERENCES

ALT70 Alter, G., Ruprecht, J., and Vanysek, V. 1970, The Catalog of Star Clusters and Associations (Budapest: Akad Kiado).
BEC63 Becker, W. 1963, Z. f. A., 57, 117.
BEC71 Becker, W. 1971, Astr. Ap. Suppl., 4, 241.
GRU64 Grubissich, C. 1964, Z. f. A., 58, 276.
LIN68 Lindoff, U. 1968, Arkiv Astr., 5, 1.
LDCAL Linear diameter calculated from published ang. diam. and distance.
LYN83 Lynga, G. 1983, Catalogue of Open Cluster Data (3rd edition), available through NSSDC, Greenbelt, Maryland, USA
LYN87 Lynga, G. 1987, Catalogue of Open Cluster Data (5th edition), available through NSSDC, Greenbelt, Maryland, USA
VCIRC Radial velocity estimate based on cluster distance and rotation curve model of Brand 1986 (Ph. D. thesis, Leiden).

CLUSTER IDENTIFICATION:

ALTER et al.: OCL 35
COMMON NAME: COLLIN 469
MEMBER OF ASSOC.: SGR OB1
DATA BASE NUM: 6

SPATIAL COORDINATES:

L II: 12.80
B II: -0.80
RA(1950.0): 18. 13.5
DEC(1950.0): -18. 14.

RADIAL VELOCITIES (w.r.t. LSR; km/s):
STELLAR:

VELOCITY	REF.
11.5	VCIRC
5.2	WIL53

H II REGION:

NO VALUES AVAILABLE

CO CLOUDS:

NO VALUES AVAILABLE

PROPER MOTION (arcsec/100 yr):

NO VALUES AVAILABLE

DISTANCE FROM SOLAR NEIGHBORHOOD (kpc):

DIST	REF.
1.97	GRU64
1.47	LIN68
1.47	BEC71
1.40	LYN87

ANGULAR DIAMETER (arcmin):

ANG D	REF.
3.5	LIN68
2.5	ALT70
13.0	ALT70
5.0	BEC71
5.0	LYN83

LINEAR DIAMETER (pc):

LIN D	REF.
2.5	LDCAL
1.5	LIN68
2.1	BEC71
2.9	LYN83

AGE ESTIMATES:
AGE (Myr):

AGE	REF.
20.	LYN83
12.	LYN87

EARLIEST MS SPECTRAL TYPE:

eSpT	REF.
B1	GRU64
b2	BEC71
b3	BEC71
b2	LYN83

MS TURNOFF COLOR:

(B-V)	REF.
-0.14	GRU64
-0.25	LYN87

MASSES (SOLAR MASS UNITS):
STELLAR MASS:

NO VALUES AVAILABLE

MASS IN ASSOCIATED H I CLOUDS:

NO VALUES AVAILABLE

IONIZED HYDROGEN MASS:

NO VALUES AVAILABLE

MASS IN ASSOCIATED MOLECULAR CLOUDS:

NO VALUES AVAILABLE

ASSOCIATED MASS IN THE FORM OF DUST:

NO VALUES AVAILABLE

VISUAL EXTINCTION TOWARD CLUSTER (mag):

AV	REF.
0.26	GRU64
2.26	BEC71
2.26	LYN83

B-V COLOR EXCESS (mag):

E(B-V)	REF.
0.60	LYN87

REFERENCES

ALT70 Alter, G., Ruprecht, J., and Vanysek, V. 1970, The Catalog of Star Clusters and Associations (Budapest: Akad Kiado).
BEC71 Becker, W. 1971, Astr. Ap. Suppl., 4, 241.
GRU64 Grubissich, C. 1964, Z. f. A., 58, 276.
LIN68 Lindoff, U. 1968, Arkiv Astr., 5, 1.
LDCAL Linear diameter calculated from published ang. diam. and distance.
LYN83 Lynga, G. 1983, Catalogue of Open Cluster Data (3rd edition), available through NSSDC, Greenbelt, Maryland, USA
LYN87 Lynga, G. 1987, Catalogue of Open Cluster Data (5th edition), available through NSSDC, Greenbelt, Maryland, USA
VCIRC Radial velocity estimate based on cluster distance and rotation curve model of Brand 1986 (Ph. D. thesis, Leiden).
WIL53 Wilson, R. E. 1953, General Catalog of Stellar Radial Velocities, (Washington, D.C.: Carnegie Institution, Pub 601).

CLUSTER IDENTIFICATION:

ALTER et al.: OCL 36
COMMON NAME: NGC 6603
ALTERNATE NAME: M24
DATA BASE NUM: 7

SPATIAL COORDINATES:

L II: 12.86 RA(1950.0): 18. 15.5
B II: -1.32 DEC(1950.0): -18. 26.

RADIAL VELOCITIES (w.r.t. LSR; km/s):
STELLAR:

VELOCITY	REF.
22.7	VCIRC
12.2	WIL53
20.9	HUM78
40.5	HUM78

H II REGION:

NO VALUES AVAILABLE

CO CLOUDS:

NO VALUES AVAILABLE

PROPER MOTION (arcsec/100 yr):

NO VALUES AVAILABLE

DISTANCE FROM SOLAR NEIGHBORHOOD (kpc):

DIST	REF.
2.88	BAR70
2.84	BEC71
2.88	LYN83

ANGULAR DIAMETER (arcmin):

ANG D	REF.
5.0	ALT70
11.0	ALT70
4.5	BEC71
5.0	LYN83

LINEAR DIAMETER (pc):

LIN D	REF.
4.2	LDCAL
4.2	LYN83

AGE ESTIMATES:
AGE (Myr):

NO VALUES AVAILABLE

EARLIEST MS SPECTRAL TYPE:

eSpT	REF.
b9	BEC71
b9	LYN83

MS TURNOFF COLOR:

NO VALUES AVAILABLE

MASSES (SOLAR MASS UNITS):
STELLAR MASS:

NO VALUES AVAILABLE

MASS IN ASSOCIATED H I CLOUDS:

NO VALUES AVAILABLE

IONIZED HYDROGEN MASS:

NO VALUES AVAILABLE

MASS IN ASSOCIATED MOLECULAR CLOUDS:

NO VALUES AVAILABLE

ASSOCIATED MASS IN THE FORM OF DUST:

NO VALUES AVAILABLE

VISUAL EXTINCTION TOWARD CLUSTER (mag):

AV	REF.
1.63	BEC71
1.63	LYN83

B-V COLOR EXCESS (mag):

NO VALUES AVAILABLE

REFERENCES

ALT70 Alter, G., Ruprecht, J., and Vanysek, V. 1970, The Catalog of Star Clusters and Associations (Budapest: Akad Kiado).
BAR70 Barkhatova, K. A. 1970, Ural U Z, 93, 50.
BEC71 Becker, W. 1971, Astr. Ap. Suppl., 4, 241.
HUM78 Humphreys, R. M. 1978, Ap. J. Suppl., 38, 309.
LDCAL Linear diameter calculated from published ang. diam. and distance.
LYN83 Lynga, G. 1983, Catalogue of Open Cluster Data (3rd edition), available through NSSDC, Greenbelt, Maryland, USA
VCIRC Radial velocity estimate based on cluster distance and rotation curve model of Brand 1986 (Ph. D. thesis, Leiden).
WIL53 Wilson, R. E. 1953, General Catalog of Stellar Radial Velocities, (Washington, D.C.: Carnegie Institution, Pub 601).

CLUSTER IDENTIFICATION:

ALTER et al.: OCL 40
COMMON NAME: NGC 6613
ALTERNATE NAME: M18
DATA BASE NUM: 8

SPATIAL COORDINATES:

L II: 14.15 RA(1950.0): 18. 17.0
B II: -1.01 DEC(1950.0): -17. 9.

RADIAL VELOCITIES (w.r.t. LSR; km/s):

STELLAR:

VELOCITY	REF.
8.4	VCIRC
5.6	SAN49
-0.4	SAN49
9.6	WIL53
1.1	ABT72
-0.4	WRA83
-0.4	HRO87
-0.4	LYN87

H II REGION:

NO VALUES AVAILABLE

CO CLOUDS:

NO VALUES AVAILABLE

PROPER MOTION (arcsec/100 yr):

NO VALUES AVAILABLE

DISTANCE FROM SOLAR NEIGHBORHOOD (kpc):

DIST	REF.
1.25	LIN71
1.25	MOF73
1.20	LYN87

ANGULAR DIAMETER (arcmin):

ANG D	REF.
10.0	ALT70
22.0	ALT70
9.0	LYN83

LINEAR DIAMETER (pc):

LIN D	REF.
3.2	LDCAL
3.4	LYN83

AGE ESTIMATES:

AGE (Myr):

AGE	REF.
15.	LIN71
30.	LIN71
32.	LYN83
41.	LYN87

EARLIEST MS SPECTRAL TYPE:

eSpT	REF.
B3	LIN71
b2	MOF73
B3	LYN83

MS TURNOFF COLOR:

(B-V)	REF.
-0.20	LIN71
-0.20	LYN87

MASSES (SOLAR MASS UNITS):

STELLAR MASS:

NO VALUES AVAILABLE

MASS IN ASSOCIATED H I CLOUDS:

NO VALUES AVAILABLE

IONIZED HYDROGEN MASS:

NO VALUES AVAILABLE

MASS IN ASSOCIATED MOLECULAR CLOUDS:

NO VALUES AVAILABLE

ASSOCIATED MASS IN THE FORM OF DUST:

NO VALUES AVAILABLE

VISUAL EXTINCTION TOWARD CLUSTER (mag):

AV	REF.
1.32	LYN83

B-V COLOR EXCESS (mag):

E(B-V)	REF.
0.47	HRO87
0.47	LYN87

REFERENCES

ABT72 Abt, H. A., and Biggs, E. S. 1972, Bibliography of Stellar Radial Velocities, (Latham Process Corp.: New York).
ALT70 Alter, G., Ruprecht, J., and Vanysek, V. 1970, The Catalog of Star Clusters and Associations (Budapest: Akad Kiado).
HRO87 Hron, J. 1987, Astr. Ap., 176, 34.
LIN71 Lindoff, U. 1971, Astr. Ap., 15, 439.
LDCAL Linear diameter calculated from published ang. diam. and distance.
LYN83 Lynga, G. 1983, Catalogue of Open Cluster Data (3rd edition), available through NSSDC, Greenbelt, Maryland, USA
LYN87 Lynga, G. 1987, Catalogue of Open Cluster Data (5th edition), available through NSSDC, Greenbelt, Maryland, USA
MOF73 Moffat, A. F. J., and Vogt, N. 1973, Astr. Ap., 23, 317.
VCIRC Radial velocity estimate based on cluster distance and rotation curve model of Brand 1986 (Ph. D. thesis, Leiden).
SAN49 Sanford, R. F. 1949, Ap. J., 110, 117.
WIL53 Wilson, R. E. 1953, General Catalog of Stellar Radial Velocities, (Washington, D.C.: Carnegie Institution, Pub 601).
WRA83 Wramdemark, S. 1983, private communication.

CLUSTER IDENTIFICATION:

ALTER et al.: OCL 44
COMMON NAME: NGC 6618
ALTERNATE NAME: M17
SHARPLESS: S 45
WESTERHOUT: W 38
MEMBER OF ASSOC.: SER OB1
DATA BASE NUM: 9

SPATIAL COORDINATES:

L II: 15.09 RA(1950.0): 18. 17.9
B II: -0.74 DEC(1950.0): -16. 12.

RADIAL VELOCITIES (w.r.t. LSR; km/s):
STELLAR:

VELOCITY	REF.
15.8	VCIRC
-1.2	HOB61
-27.2	HOB61
-16.2	HOB61
9.8	HOB61

H II REGION:

VELOCITY	REF.
23.1	COU66
17.2	REI70
19.0	GEO73
-46.2	MEA81
38.8	MEA81
18.0	GAR81
33.8	CLA85
22.8	CLA85
18.6	JON86
10.0	HIP86
30.0	HIP86
18.0	HIP86

CO CLOUDS:

VELOCITY	REF.
20.0	ELM79
24.0	GAR81
20.0	BLI82

PROPER MOTION (arcsec/100 yr):

NO VALUES AVAILABLE

DISTANCE FROM SOLAR NEIGHBORHOOD (kpc):

DIST	REF.
2.40	LAD75
1.30	OGU76
2.30	CRA78
2.20	CHI80
1.50	LYN83
2.20	FIC84

ANGULAR DIAMETER (arcmin):

ANG D	REF.
11.0	ALT70
23.0	ALT70
11.0	LYN83

LINEAR DIAMETER (pc):

LIN D	REF.
6.3	LDCAL
2.0	CHI80
4.8	LYN83

AGE ESTIMATES:
AGE (Myr):

AGE	REF.
1.	JON86

EARLIEST MS SPECTRAL TYPE:

eSpT	REF.
B0	MAR51
O	OGU76
O5	CRA78
O4	CHI80
B0	LYN83
B1	CHI85

MS TURNOFF COLOR:

NO VALUES AVAILABLE

MASSES (SOLAR MASS UNITS):
STELLAR MASS:

NO VALUES AVAILABLE

MASS IN ASSOCIATED H I CLOUDS:

MASS	REF.
1.10E+04	VEN84

IONIZED HYDROGEN MASS:

MASS	REF.
5.10E+03	HOB61
6.20E+03	GOS84

MASS IN ASSOCIATED MOLECULAR CLOUDS:

MASS	REF.
3.20E+05	ELM79

ASSOCIATED MASS IN THE FORM OF DUST:

MASS	REF.
1.00E+00	HIP86

VISUAL EXTINCTION TOWARD CLUSTER (mag):

AV	REF.
5.00	CHI80
11.00	CHI80
3.30	CHI85
4.00	HIP86

B-V COLOR EXCESS (mag):

E(B-V)	REF.
1.00	CHI85
1.06	CHI85

REFERENCES

ALT70 Alter, G., Ruprecht, J., and Vanysek, V. 1970, The Catalog of Star Clusters and Associations (Budapest: Akad Kiado).
BLI82 Blitz, L., Fich, M. and Stark, A. A. 1982, Ap. J. Suppl., 49, 183.
CHI85 Chini, R., and Krugel, E. 1985, Astr. Ap., 144, 175.
CHI80 Chini, R., Elsasser, H., and Neckel, Th. 1980, Astr. Ap., 91, 186.
CLA85 Clayton, C. A., Ivchenko, V. N., Meaburn, J., and Walsh, J. R. 1985, MNRAS, 216, 761.
COU66 Courtes, G., Cruvellier, P., and Georgelin, Y. 1966, J. des Obs., 49, 329.
CRA78 Crampton, D., Georgelin, Y. M., and Georgelin, Y. P. 1978, Astr. Ap., 66, 1.
ELM79 Elmegreen, B. G., Lada, C. J., and Dickinson, D. F. 1979, Ap. J., 230, 415.
FIC84 Fich, M., and Blitz, L. 1984, Ap. J., 279, 125.
GAR81 Gardner, F. F., and Whiteoak, J. B. 1981, Proc. Ast. Soc. Aust., 4, 240.
GEO73 Georgelin, Y. M., Georgelin, Y. P., and Roux, S. 1973, Astr. Ap., 25, 337.
GOS84 Gosachinskij, I. V., and Khersonskij, V. K. 1984, Ap. Sp. Sci., 107, 289.
HIP86 Hippelein, H. H., and Goudis, C. 1986, Astr. Ap., 155, 6.
HOB61 Hobbs, R. W. 1961, A. J., 66, 517.
JON86 Joncas, G., and Roy, J.-R. 1986, Ap. J., 307, 649.
LAD75 Lada, C. J., and Chaisson, E. J. 1975, Ap. J., 195, 367.
LDCAL Linear diameter calculated from published ang. diam. and distance.
LYN83 Lynga, G. 1983, Catalogue of Open Cluster Data (3rd edition), available through NSSDC, Greenbelt, Maryland, USA
MAR51 Markarian, V. E. 1951, Biur. Soob., 9, 7.
MEA81 Meaburn, J., and Walsh, J. R. 1981, Ap. Sp. Sci., 74, 169.
OGU76 Ogura, K., and Ishida, K. 1976, P. A. S. Japan, 28, 35.
VCIRC Radial velocity estimate based on cluster distance and rotation curve model of Brand 1986 (Ph. D. thesis, Leiden).
REI70 Reifenstein, E. C., Wilson, T. L., Burke, B. F., Mezger, P. G., and Altenhoff, W. J. 1970, Astr. Ap., 4, 357.
VEN84 Venger, A. P., et al. 1984, Ap. Sp. Sci., 107, 271.

CLUSTER IDENTIFICATION:

ALTER et al.:	OCL 54
COMMON NAME:	NGC 6611
ALTERNATE NAME:	M16
SHARPLESS:	S 49
WESTERHOUT:	W 37
MEMBER OF ASSOC.:	SER OB1
DATA BASE NUM:	10

SPATIAL COORDINATES:

L II:	16.99	RA(1950.0):	18. 16.0
B II:	0.79	DEC(1950.0):	-13. 48.

RADIAL VELOCITIES (w.r.t. LSR; km/s):
STELLAR:

VELOCITY	REF.
21.2	VCIRC
26.0	SAN49
39.4	JOS61
34.4	HAG70
38.9	HUM78
37.4	WRA83
30.9	BRO86
37.4	LYN87
37.4	HRO87

H II REGION:

VELOCITY	REF.
29.9	CRU67
27.9	CRU67
24.5	REI70
28.0	DOW80
23.5	DOW80
25.5	DOW80
-75.6	MEA86

CO CLOUDS:

VELOCITY	REF.
24.2	BLI82

PROPER MOTION (arcsec/100 yr):

MU X	MU Y	REF.
0.030	-0.010	TUC86

DISTANCE FROM SOLAR NEIGHBORHOOD (kpc):

DIST	REF.
2.50	JOH61
2.90	HAG70
1.70	SCH71
1.69	BEC71
1.60	KAM74
3.20	SAG79
2.57	NIC81
2.20	FIC84

ANGULAR DIAMETER (arcmin):

ANG D	REF.
15.0	ALT70
25.0	ALT70
8.0	BEC71
7.0	LYN83

LINEAR DIAMETER (pc):

LIN D	REF.
4.7	LDCAL
5.1	LYN83

AGE ESTIMATES:
AGE (Myr):

AGE	REF.
2.	HIL69
5.	KAM74
6.	SAG79
8.	LYN83
21.	SPA85
7.	SOF86
3.	SAG86
10.	LYN87

EARLIEST MS SPECTRAL TYPE:

eSpT	REF.
o5	JOH61
O5	HOA65
O5	HIL69
O7	BEC71
O4	CON77
O6	LYN83
O7	LYN83

MS TURNOFF COLOR:

(B-V)	REF.
-0.32	JOH61
-0.10	HAG70
-0.32	LYN87

MASSES (SOLAR MASS UNITS):
STELLAR MASS:

MASS	REF.
1.15E+04	SCH63
7.13E+02	RED71
7.23E+02	BRU83
3.98E+02	LYN83

MASS IN ASSOCIATED H I CLOUDS:

MASS	REF.
1.56E+03	DOD70
5.00E+03	TOV73
9.80E+03	VEN84
1.00E+04	SOF86

IONIZED HYDROGEN MASS:

MASS	REF.
3.50E+02	TOV67
1.30E+04	MEZ67
1.40E+03	SCH69
8.10E+03	GOS84
2.50E+03	SOF86

MASS IN ASSOCIATED MOLECULAR CLOUDS:

MASS	REF.
1.00E+05	ELM79

ASSOCIATED MASS IN THE FORM OF DUST:

MASS	REF.
3.03E+01	DOD70

VISUAL EXTINCTION TOWARD CLUSTER (mag):

AV	REF.
2.55	NEC67
2.22	BEC71
2.22	LYN83

B-V COLOR EXCESS (mag):

E(B-V)	REF.

2.82	SPA85
1.82	BRO86
2.75	LYN87

0.85	JOH61
0.80	BUS63
0.74	BEC63
0.95	SCH63
0.48	HAG70
0.75	NIC81
0.48	SPA85
0.80	LYN87

REFERENCES

ALT70 Alter, G., Ruprecht, J., and Vanysek, V. 1970, The Catalog of Star Clusters and Associations (Budapest: Akad Kiado).
BEC63 Becker, W. 1963, Z. f. A., 57, 117.
BEC71 Becker, W. 1971, Astr. Ap. Suppl., 4, 241.
BLI82 Blitz, L., Fich, M. and Stark, A. A. 1982, Ap. J. Suppl., 49, 183.
BRO86 Brown, P. J. F., Dufton, P. L., Lennon, D. J., Keenon, F. P., and Kilkenny, D. 1986, Astr. Ap., 155, 113.
BRU83 Bruch, A., and Sanders, W. L. 1983, Astr. Ap., 121, 237.
BUS63 Buscombe, W. 1963, Mt. Stromlo Mimeogram, No. 6, pg. 24.
CON77 Conti, P. S., and Frost, S. A. 1977, Ap. J., 212, 728.
CRU67 Cruvellier, P. 1967, Ann. Ap., 30, 1072.
DOD70 D Odorico, S., and Felli, M. 1970, Mem. Soc. Ast. Ital., 41, 89.
DOW80 Downes, D., Wilson, T. L., Bieging, J., and Wink, J. 1980, Astr. Ap. Suppl., 40, 379.
ELM79 Elmegreen, B. G., Lada, C. J., and Dickinson, D. F. 1979, Ap. J., 230, 415.
FIC84 Fich, M., and Blitz, L. 1984, Ap. J., 279, 125.
GOS84 Gosachinskij, I. V., and Khersonskij, V. K. 1984, Ap. Sp. Sci., 107, 289.
HAG70 Hagen, G. L. 1970, D. D. O. Pub., Univ. Toronto, 4.
HIL69 Hiltner, W. A., and Morgan, W. W. 1969, A. J., 74, 1152.
HOA65 Hoag, A. A., and Applequist, N. L. 1965, Ap. J. Suppl., 12, 215.
HRO87 Hron, J. 1987, Astr. Ap., 176, 34.
HUM78 Humphreys, R. M. 1978, Ap. J. Suppl., 38, 309.
JOS61 Johnson, H. L., and Svolopoulos, S. N. 1961, Ap. J., 134, 868.
JOH61 Johnson, H. L., Hoag, A. A., Iriarte, B., Mitchell, R. I., and Hallam, K. L. 1961, Lowell Obs. Bull., 5, 133.
KAM74 Kamp, L. W. 1974, Astr. Ap. Suppl., 16, 1.
LDCAL Linear diameter calculated from published ang. diam. and distance.
LYN83 Lynga, G. 1983, Catalogue of Open Cluster Data (3rd edition), available through NSSDC, Greenbelt, Maryland, USA
LYN87 Lynga, G. 1987, Catalogue of Open Cluster Data (5th edition), available through NSSDC, Greenbelt, Maryland, USA
MEA86 Meaburn, J., and Walsh, J. R. 1986, MNRAS, 220, 745.
MEZ67 Mezger, P. G., and Henderson, A. P. 1967, Ap. J., 147, 471.
NEC67 Neckel, T. 1967, Heid. Ver., 19, 115.
NIC81 Nicolet, B. 1981, Astr. Ap., 104, 185.
VCIRC Radial velocity estimate based on cluster distance and rotation curve model of Brand 1986 (Ph. D. thesis, Leiden).
RED71 Reddish, V. C., and Sloan, C. 1971, Observatory, 91, 70.
REI70 Reifenstein, E. C., Wilson, T. L., Burke, B. F., Mezger, P. G., and Altenhoff, W. J. 1970, Astr. Ap., 4, 357.
SAG79 Sagar, R., and Joshi, U. C. 1979, Ap. Sp. Sci., 66, 3.
SAG86 Sagar, R., Piskunov, A. E., Myakutin, V. I., and Joshi, U. C. 1986, MNRAS, 220, 383.
SAN49 Sanford, R. F. 1949, Ap. J., 110, 117.
SCH63 Schmidt, von K.-H. 1963, Ast. Nach., 287, 41.
SCH69 Schwartz, R. 1969, A G Mitt., 27, 178.
SCH71 Schwartz, R. 1971, Ap. Sp. Sci., 14, 286.
SOF86 Sofue, Y., Handa, T., Furst, E., Reich, W., and Reich, P. 1986, P. A. S. Japan, 38, 347.
SPA85 Spassova, N. M., and Baev, P. V. 1985, Ap. Sp. Sci., 112, 111.
TOV67 Tovmassian, H. M. 1967, IAU Symp. 31, H II Assoc w/ Young Stellar Clusters, ed. H. van Woerden, (Dordrecht: Reidel).
TOV73 Tovmassian, H. M., and Nersessian, S. E. 1973, Aust. J. Phys., 26, 861.
TUC86 Tucholke, H.-J., Geffert, M., and The, P. S. 1986, Astr. Ap. Suppl., 66, 311.
VEN84 Venger, A. P., et al. 1984, Ap. Sp. Sci., 107, 271.
WRA83 Wramdemark, S. 1983, private communication.

CLUSTER IDENTIFICATION:

ALTER et al.: OCL 58
COMMON NAME: NGC 6604
WESTERHOUT: W 35
MEMBER OF ASSOC.: SER ØB2
DATA BASE NUM: 11

SPATIAL COORDINATES:

L II: 18.26 RA(1950.Ø): 18. 15.3
B II: 1.69 DEC(1950.Ø): -12. 15.

RADIAL VELOCITIES (w.r.t. LSR; km/s):
STELLAR:

VELOCITY	REF.
17.3	VCIRC
15.1	WIL53
18.1	HUM78
6.1	HUM78
26.1	WRA83
32.6	HRO85
34.8	HRO87
26.8	LYN87

H II REGION:

NO VALUES AVAILABLE

CO CLOUDS:

VELOCITY	REF.
27.6	BLI82

PROPER MOTION (arcsec/100 yr):

NO VALUES AVAILABLE

DISTANCE FROM SOLAR NEIGHBORHOOD (kpc):

DIST	REF.
2.96	DIE67
1.64	MFV75
2.10	FOR78
2.07	LYN87

ANGULAR DIAMETER (arcmin):

ANG D	REF.
3.Ø	ALT7Ø
40.Ø	ALT7Ø
2.Ø	LYN83

LINEAR DIAMETER (pc):

LIN D	REF.
1.1	LDCAL
1.2	FOR78
Ø.4	LYN83

AGE ESTIMATES:
AGE (Myr):

AGE	REF.
4.	FOR78
4.	LYN83
10.	LYN87

EARLIEST MS SPECTRAL TYPE:

eSpT	REF.
O9	SAN49
o5	MOF75
o7	MOF75
O5	MFV75
O9	LYN83

MS TURNOFF COLOR:

(B-V)	REF.
-Ø.3Ø	MOF75
-Ø.3Ø	FOR78
-Ø.32	LYN87

MASSES (SOLAR MASS UNITS):
STELLAR MASS:

NO VALUES AVAILABLE

MASS IN ASSOCIATED H I CLOUDS:

MASS	REF.
6.ØØE+Ø2	TOV73

IONIZED HYDROGEN MASS:

MASS	REF.
3.ØØE-Ø2	TOV67

MASS IN ASSOCIATED MOLECULAR CLOUDS:

NO VALUES AVAILABLE

ASSOCIATED MASS IN THE FORM OF DUST:

NO VALUES AVAILABLE

VISUAL EXTINCTION TOWARD CLUSTER (mag):

AV	REF.
3.ØØ	LYN83

B-V COLOR EXCESS (mag):

E(B-V)	REF.
Ø.97	LYN87

REFERENCES

ALT70 Alter, G., Ruprecht, J., and Vanysek, V. 1970, The Catalog of Star Clusters and Associations (Budapest: Akad Kiado).
BLI82 Blitz, L., Fich, M. and Stark, A. A. 1982, Ap. J. Suppl., 49, 183.
DIE67 Dieter, N. H. 1967, Ap. J., 150, 435.
FOR78 Forbes, D., and Dupuy, D. L. 1978, A. J., 83, 266.
HRO87 Hron, J. 1987, Astr. Ap., 176, 34.
HRO85 Hron, J., Maitzen, H. M., Moffat, A. F. J., Schmidt-Kaler, Th., and Vogt, N. 1985, Astr. Ap. Suppl., 60, 355.
HUM78 Humphreys, R. M. 1978, Ap. J. Suppl., 38, 309.
LDCAL Linear diameter calculated from published ang. diam. and distance.
LYN83 Lynga, G. 1983, Catalogue of Open Cluster Data (3rd edition), available through NSSDC, Greenbelt, Maryland, USA
LYN87 Lynga, G. 1987, Catalogue of Open Cluster Data (5th edition), available through NSSDC, Greenbelt, Maryland, USA
MFV75 Moffat, A. F. J., and Vogt, N. 1975, Astr. Ap. Suppl., 20, 160.
MOF75 Moffat, A. F. J., and Vogt, N. 1975, Astr. Ap., 41, 413.
VCIRC Radial velocity estimate based on cluster distance and rotation curve model of Brand 1986 (Ph. D. thesis, Leiden).
SAN49 Sanford, R. F. 1949, Ap. J., 110, 117.
TOV67 Tovmassian, H. M. 1967, IAU Symp. 31, H II Assoc w/ Young Stellar Clusters, ed. H. van Woerden, (Dordrecht: Reidel).
TOV73 Tovmassian, H. M., and Nersessian, S. E. 1973, Aust. J. Phys., 26, 861.
WIL53 Wilson, R. E. 1953, General Catalog of Stellar Radial Velocities, (Washington, D.C.: Carnegie Institution, Pub 601).
WRA83 Wramdemark, S. 1983, private communication.

CLUSTER IDENTIFICATION:

ALTER et al.: OCL 66
COMMON NAME: NGC 6649
DATA BASE NUM: 12

SPATIAL COORDINATES:

L II: 21.64
B II: -0.78

RA(1950.0): 18. 30.7
DEC(1950.0): -10. 26.

RADIAL VELOCITIES (w.r.t. LSR; km/s):
STELLAR:

VELOCITY	REF.
15.2	VCIRC
1.1	BAR80

H II REGION:

NO VALUES AVAILABLE

CO CLOUDS:

NO VALUES AVAILABLE

PROPER MOTION (arcsec/100 yr):

NO VALUES AVAILABLE

DISTANCE FROM SOLAR NEIGHBORHOOD (kpc):

DIST	REF.
2.09	TAM69
1.30	HAG70
1.90	TAL75
1.65	TUR81
1.55	LYN87
1.59	WAL87

ANGULAR DIAMETER (arcmin):

ANG D	REF.
6.5	LIN68
10.0	HAG70
8.0	ALT70
6.0	LYN83
5.0	WAL87

LINEAR DIAMETER (pc):

LIN D	REF.
2.6	LDCAL
2.9	TUR81
2.3	LYN83

AGE ESTIMATES:
AGE (Myr):

AGE	REF.
25.	LIN68
100.	TAL75
50.	TUR81
50.	LYN83
106.	LYN87

EARLIEST MS SPECTRAL TYPE:

NO VALUES AVAILABLE

MS TURNOFF COLOR:

(B-V)	REF.
-0.05	HAG70
-0.20	TAL75
-0.15	TUR81
-0.20	WAL87
-0.12	LYN87

MASSES (SOLAR MASS UNITS):
STELLAR MASS:

NO VALUES AVAILABLE

MASS IN ASSOCIATED H I CLOUDS:

NO VALUES AVAILABLE

IONIZED HYDROGEN MASS:

NO VALUES AVAILABLE

MASS IN ASSOCIATED MOLECULAR CLOUDS:

NO VALUES AVAILABLE

ASSOCIATED MASS IN THE FORM OF DUST:

NO VALUES AVAILABLE

VISUAL EXTINCTION TOWARD CLUSTER (mag):

AV	REF.
3.60	LYN83

B-V COLOR EXCESS (mag):

E(B-V)	REF.
1.20	THE63
1.26	STA68
1.22	HAG70
1.34	LYN87

REFERENCES

ALT70 Alter, G., Ruprecht, J., and Vanysek, V. 1970, The Catalog of Star Clusters and Associations (Budapest: Akad Kiado).
BAR80 Barrell, S. L. 1980, Ap. J., 240, 145.
HAG70 Hagen, G. L. 1970, D. D. O. Pub., Univ. Toronto, 4.
LIN68 Lindoff, U. 1968, Arkiv Astr., 5, 1.
LDCAL Linear diameter calculated from published ang. diam. and distance.
LYN83 Lynga, G. 1983, Catalogue of Open Cluster Data (3rd edition), available through NSSDC, Greenbelt, Maryland, USA
LYN87 Lynga, G. 1987, Catalogue of Open Cluster Data (5th edition), available through NSSDC, Greenbelt, Maryland, USA
VCIRC Radial velocity estimate based on cluster distance and rotation curve model of Brand 1986 (Ph. D. thesis, Leiden).
STA68 Starikova, G. A. 1969, Sov. Astr., 12, 632.
TAL75 Talbert, F. D. 1975, PASP, 87, 341.
TAM69 Tammann, G. A. 1969, Astr. Ap., 3, 308.
THE63 The, P.-S., and Roslund, C. 1963, Lemb. Contr., No. 19.
TUR81 Turner, D. G. 1981, A. J., 86, 231.
WAL87 Walker, A. R., and Laney, C. D. 1987, MNRAS, 224, 61.

CLUSTER IDENTIFICATION:

ALTER et al.: OCL 67
COMMON NAME: NGC 6694
ALTERNATE NAME: M26
DATA BASE NUM: 13

SPATIAL COORDINATES:

L II: 23.86 RA(1950.0): 18. 42.5
B II: -2.92 DEC(1950.0): -9. 27.

RADIAL VELOCITIES (w.r.t. LSR; km/s):
STELLAR:

VELOCITY	REF.
16.8	VCIRC
19.2	JOS61
19.2	WRA83
19.2	LYN87

H II REGION:

NO VALUES AVAILABLE

CO CLOUDS:

NO VALUES AVAILABLE

PROPER MOTION (arcsec/100 yr):

MU X	MU Y	REF.
-0.200	-0.130	LAT79

DISTANCE FROM SOLAR NEIGHBORHOOD (kpc):

DIST	REF.
1.50	JOH61
1.50	NEC67
1.44	LIN68
1.50	HAG70
1.55	BEC71
1.52	LYN87

ANGULAR DIAMETER (arcmin):

ANG D	REF.
6.0	ALT70
15.0	ALT70
8.0	HAG70
15.0	BEC71
15.0	LYN83

LINEAR DIAMETER (pc):

LIN D	REF.
6.8	LDCAL
6.8	LYN83

AGE ESTIMATES:
AGE (Myr):

AGE	REF.
89.	LIN68
94.	BAR69
45.	HAR76
87.	LYN87

EARLIEST MS SPECTRAL TYPE:

eSpT	REF.
b5	JOH61
B6	HOA65
B6	HOV65
B5	LYN83
B8	LYN83
b7	LYN83

MS TURNOFF COLOR:

(B-V)	REF.
-0.13	BEC58
-0.16	JOH61
-0.03	GRU67
-0.15	HAG70
-0.14	LYN87

MASSES (SOLAR MASS UNITS):
STELLAR MASS:

MASS	REF.
1.40E+03	SCH63
2.27E+02	RED71
2.30E+02	BRU83
1.58E+03	LYN83

MASS IN ASSOCIATED H I CLOUDS:

NO VALUES AVAILABLE

IONIZED HYDROGEN MASS:

NO VALUES AVAILABLE

MASS IN ASSOCIATED MOLECULAR CLOUDS:

NO VALUES AVAILABLE

ASSOCIATED MASS IN THE FORM OF DUST:

NO VALUES AVAILABLE

VISUAL EXTINCTION TOWARD CLUSTER (mag):

AV	REF.
1.74	NEC67
2.22	BEC71
2.22	LYN83

B-V COLOR EXCESS (mag):

E(B-V)	REF.
0.58	JOH61
0.60	BUS63
0.58	SCH63
0.57	BEC63
0.58	HAG70
0.57	LYN87

REFERENCES

ALT70 Alter, G., Ruprecht, J., and Vanysek, V. 1970, The Catalog of Star Clusters and Associations (Budapest: Akad Kiado).
BAR69 Barbaro, G., Dallaporta, N., and Fabris, G. 1969, Ap. Sp. Sci., 3, 123.
BEC63 Becker, W. 1963, Z. f. A., 57, 117.
BEC71 Becker, W. 1971, Astr. Ap. Suppl., 4, 241.
BEC58 Becker, W., and Stock, J. 1958, Z. f. A., 45, 269 (see also pg. 282).
BRU83 Bruch, A., and Sanders, W. L. 1983, Astr. Ap., 121, 237.
BUS63 Buscombe, W. 1963, Mt. Stromlo Mimeogram, No. 6, pg. 24.
GRU67 Grubissich, C. 1967, Z. f. A., 65, 105.
HAG70 Hagen, G. L. 1970, D. D. O. Pub., Univ. Toronto, 4.
HAR76 Harris, G. L. H. 1976, Ap. J. Suppl., 30, 451.
HOV65 Hoag, A. A. 1965, Vistas, 8, 139.
HOA65 Hoag, A. A., and Applequist, N. L. 1965, Ap. J. Suppl., 12, 215.
JOS61 Johnson, H. L., and Svolopoulos, S. N. 1961, Ap. J., 134, 868.
JOH61 Johnson, H. L., Hoag, A. A., Iriarte, B., Mitchell, R. I., and Hallam, K. L. 1961, Lowell Obs. Bull., 5, 133.
LAT79 Latypov, A. A. 1979, Sov. Astr., 23, 287.
LIN68 Lindoff, U. 1968, Arkiv Astr., 5, 1.
LDCAL Linear diameter calculated from published ang. diam. and distance.
LYN83 Lynga, G. 1983, Catalogue of Open Cluster Data (3rd edition), available through NSSDC, Greenbelt, Maryland, USA
LYN87 Lynga, G. 1987, Catalogue of Open Cluster Data (5th edition), available through NSSDC, Greenbelt, Maryland, USA
NEC67 Neckel, T. 1967, Heid. Ver., 19, 115.
VCIRC Radial velocity estimate based on cluster distance and rotation curve model of Brand 1986 (Ph. D. thesis, Leiden).
RED71 Reddish, V. C., and Sloan, C. 1971, Observatory, 91, 70.
SCH63 Schmidt, von K.-H. 1963, Ast. Nach., 287, 41.
WRA83 Wramdemark, S. 1983, private communication.

CLUSTER IDENTIFICATION:

ALTER et al.: OCL 68
COMMON NAME: NGC 6664
MEMBER OF ASSOC.: SCT OB2
DATA BASE NUM: 14

SPATIAL COORDINATES:

L II: 23.95
B II: -0.50

RA(1950.0): 18. 34.0
DEC(1950.0): -8. 16.

RADIAL VELOCITIES (w.r.t. LSR; km/s):
STELLAR:

VELOCITY	REF.
13.0	VCIRC
38.5	JOS61
51.0	BEA79
38.5	WRA83
51.8	BAR86
38.5	LYN87
38.5	HRO87

H II REGION:

NO VALUES AVAILABLE

CO CLOUDS:

NO VALUES AVAILABLE

PROPER MOTION (arcsec/100 yr):

NO VALUES AVAILABLE

DISTANCE FROM SOLAR NEIGHBORHOOD (kpc):

DIST	REF.
1.10	ALT70
1.50	ALT70
1.40	HAG70
1.17	BEC71
1.37	LYN87

ANGULAR DIAMETER (arcmin):

ANG D	REF.
20.0	ALT70
45.0	ALT70
20.0	BEC71
16.0	LYN83

LINEAR DIAMETER (pc):

LIN D	REF.
5.8	LDCAL
6.2	LYN83

AGE ESTIMATES:
AGE (Myr):

AGE	REF.
25.	LIN68
100.	BAR69
30.	CAN70
158.	VAS72
37.	LYN83
129.	LYN87

EARLIEST MS SPECTRAL TYPE:

eSpT	REF.
b8	JOH61
B3	BEC71
B3	LYN83
b3	LYN83

MS TURNOFF COLOR:

(B-V)	REF.
-0.10	JOH61
-0.10	HAG70
-0.10	LYN87

MASSES (SOLAR MASS UNITS):
STELLAR MASS:

MASS	REF.
7.01E+02	SCH63
6.31E+03	LYN83

MASS IN ASSOCIATED H I CLOUDS:

NO VALUES AVAILABLE

IONIZED HYDROGEN MASS:

NO VALUES AVAILABLE

MASS IN ASSOCIATED MOLECULAR CLOUDS:

NO VALUES AVAILABLE

ASSOCIATED MASS IN THE FORM OF DUST:

MASS	REF.
5.20E+01	DOD70

VISUAL EXTINCTION TOWARD CLUSTER (mag):

AV	REF.
1.92	LYN83

B-V COLOR EXCESS (mag):

E(B-V)	REF.
0.60	JOH61
0.58	KRA61
0.60	BUS63
0.60	SCH63
0.64	BEC63
0.66	DIC67
0.60	LYN87

REFERENCES

ALT70 Alter, G., Ruprecht, J., and Vanysek, V. 1970, The Catalog of Star Clusters and Associations (Budapest: Akad Kiado).
BAR69 Barbaro, G., Dallaporta, N., and Fabris, G. 1969, Ap. Sp. Sci., 3, 123.
BAR86 Barnes, T. G., Moffett, T. J., and Slovak, M. H. 1986, PASP, 98, 223.
BEA79 Beavers, W. I., Eitter, J. J., Ketelsen, D. A., Oesper, D. A. 1979, PASP, 91, 698.
BEC63 Becker, W. 1963, Z. f. A., 57, 117.
BEC71 Becker, W. 1971, Astr. Ap. Suppl., 4, 241.
BUS63 Buscombe, W. 1963, Mt. Stromlo Mimeogram, No. 6, pg. 24.
CAN70 Cannon, R. D. 1970, MNRAS, 150, 111.
DIC67 Dickens, R. S., and Carey, J. V. 1967, Roy. Obs. Bull., No. 129.
DOD70 D Odorico, S., and Felli, M. 1970, Mem. Soc. Ast. Ital., 41, 89.
HAG70 Hagen, G. L. 1970, D. D. O. Pub., Univ. Toronto, 4.
HRO87 Hron, J. 1987, Astr. Ap., 176, 34.
JOS61 Johnson, H. L., and Svolopoulos, S. N. 1961, Ap. J., 134, 868.
JOH61 Johnson, H. L., Hoag, A. A., Iriarte, B., Mitchell, R. I., and Hallam, K. L. 1961, Lowell Obs. Bull., 5, 133.
KRA61 Kraft, R. P. 1961, in IAU Trans. XIB, p. 298.
LIN68 Lindoff, U. 1968, Arkiv Astr., 5, 1.
LDCAL Linear diameter calculated from published ang. diam. and distance.
LYN83 Lynga, G. 1983, Catalogue of Open Cluster Data (3rd edition), available through NSSDC, Greenbelt, Maryland, USA
LYN87 Lynga, G. 1987, Catalogue of Open Cluster Data (5th edition), available through NSSDC, Greenbelt, Maryland, USA
VCIRC Radial velocity estimate based on cluster distance and rotation curve model of Brand 1986 (Ph. D. thesis, Leiden).
SCH63 Schmidt, von K.-H. 1963, Ast. Nach., 287, 41.
VAS72 Vasilevskii, A. E. 1972, Sov. Astr., 16, 308.
WRA83 Wramdemark, S. 1983, private communication.

CLUSTER IDENTIFICATION:

ALTER et al.: OCL 74
COMMON NAME: NGC 6683
DATA BASE NUM: 15

SPATIAL COORDINATES:

L II: 26.28 RA(1950.0): 18. 39.5
B II: -0.81 DEC(1950.0): -6. 20.

RADIAL VELOCITIES (w.r.t. LSR; km/s):
STELLAR:

VELOCITY	REF.
14.0	VCIRC

H II REGION:

NO VALUES AVAILABLE

CO CLOUDS:

NO VALUES AVAILABLE

PROPER MOTION (arcsec/100 yr):

NO VALUES AVAILABLE

DISTANCE FROM SOLAR NEIGHBORHOOD (kpc):

DIST	REF.
1.25	YIL66
1.25	SCH68
1.26	BEC71
1.20	LYN87

ANGULAR DIAMETER (arcmin):

ANG D	REF.
16.0	SCH68
3.0	ALT70
11.0	ALT70
11.0	BEC71
11.0	LYN83

LINEAR DIAMETER (pc):

LIN D	REF.
4.0	LDCAL
5.8	SCH68
4.0	BEC71
4.0	LYN83

AGE ESTIMATES:
AGE (Myr):

AGE	REF.
10.	LYN87

EARLIEST MS SPECTRAL TYPE:

eSpT	REF.
b4	YIL66
B4	YIL66
b2.5	BEC71
B4	LYN83
b2	LYN83

MS TURNOFF COLOR:

(B-V)	REF.
-0.14	YIL66
-0.26	LYN87

MASSES (SOLAR MASS UNITS):
STELLAR MASS:

NO VALUES AVAILABLE

MASS IN ASSOCIATED H I CLOUDS:

NO VALUES AVAILABLE

IONIZED HYDROGEN MASS:

NO VALUES AVAILABLE

MASS IN ASSOCIATED MOLECULAR CLOUDS:

NO VALUES AVAILABLE

ASSOCIATED MASS IN THE FORM OF DUST:

NO VALUES AVAILABLE

VISUAL EXTINCTION TOWARD CLUSTER (mag):

AV	REF.
2.01	BEC71
2.01	LYN83

B-V COLOR EXCESS (mag):

E(B-V)	REF.
0.54	LYN87

REFERENCES

ALT70 Alter, G., Ruprecht, J., and Vanysek, V. 1970, The Catalog of Star Clusters and Associations (Budapest: Akad Kiado).
BEC71 Becker, W. 1971, Astr. Ap. Suppl., 4, 241.
LDCAL Linear diameter calculated from published ang. diam. and distance.
LYN83 Lynga, G. 1983, Catalogue of Open Cluster Data (3rd edition), available through NSSDC, Greenbelt, Maryland, USA
LYN87 Lynga, G. 1987, Catalogue of Open Cluster Data (5th edition), available through NSSDC, Greenbelt, Maryland, USA
VCIRC Radial velocity estimate based on cluster distance and rotation curve model of Brand 1986 (Ph. D. thesis, Leiden).
SCH68 Schmidt-Kaler, Th. 1968, Bochum Ver., No. 1.
YIL66 Yilmaz, F. 1966, Z. f. A., 64, 61.

CLUSTER IDENTIFICATION:

ALTER et al.: OCL 77
COMMON NAME: BASEL 1
ALTERNATE NAME: APRIAMASVI
DATA BASE NUM: 16

SPATIAL COORDINATES:

L II: 27.36
B II: -1.93
RA(1950.0): 18. 45.5
DEC(1950.0): -5. 54.

RADIAL VELOCITIES (w.r.t. LSR; km/s):
STELLAR:

VELOCITY	REF.
18.0	VCIRC
50.9	ABT72
60.9	ABT72

H II REGION:

NO VALUES AVAILABLE

CO CLOUDS:

NO VALUES AVAILABLE

PROPER MOTION (arcsec/100 yr):

NO VALUES AVAILABLE

DISTANCE FROM SOLAR NEIGHBORHOOD (kpc):

DIST	REF.
1.33	GRU65
1.60	FEN65
1.33	LIN68
1.59	BEC71
1.36	LYN87

ANGULAR DIAMETER (arcmin):

ANG D	REF.
5.5	LIN68
8.0	ALT70
9.0	ALT70
8.0	BEC71
9.0	LYN83

LINEAR DIAMETER (pc):

LIN D	REF.
4.0	LDCAL
2.1	LIN68
3.7	BEC71
3.8	LYN83

AGE ESTIMATES:
AGE (Myr):

AGE	REF.
58.	LIN68
58.	LYN83
10.	LYN87

EARLIEST MS SPECTRAL TYPE:

eSpT	REF.
b5	FEN65
B4	FEN65
b5	BEC71
B4	LYN83
b5	LYN83

MS TURNOFF COLOR:

(B-V)	REF.
-0.18	FEN65
-0.18	GRU65
-0.29	LYN87

MASSES (SOLAR MASS UNITS):
STELLAR MASS:

NO VALUES AVAILABLE

MASS IN ASSOCIATED H I CLOUDS:

NO VALUES AVAILABLE

IONIZED HYDROGEN MASS:

NO VALUES AVAILABLE

MASS IN ASSOCIATED MOLECULAR CLOUDS:

NO VALUES AVAILABLE

ASSOCIATED MASS IN THE FORM OF DUST:

NO VALUES AVAILABLE

VISUAL EXTINCTION TOWARD CLUSTER (mag):

AV	REF.
2.15	BEC71
2.15	LYN83

B-V COLOR EXCESS (mag):

E(B-V)	REF.
0.57	LYN87

REFERENCES

ABT72 Abt, H. A., and Biggs, E. S. 1972, Bibliography of Stellar Radial Velocities, (Latham Process Corp.: New York).

ALT70 Alter, G., Ruprecht, J., and Vanysek, V. 1970, The Catalog of Star Clusters and Associations (Budapest: Akad Kiado).

BEC71 Becker, W. 1971, Astr. Ap. Suppl., 4, 241.

FEN65 Fenkart, R. P. 1965, Z. f. A., 62, 90.

GRU65 Grubissich, C. 1965, Z. f. A., 60, 249.

LIN68 Lindoff, U. 1968, Arkiv Astr., 5, 1.

LDCAL Linear diameter calculated from published ang. diam. and distance.

LYN83 Lynga, G. 1983, Catalogue of Open Cluster Data (3rd edition), available through NSSDC, Greenbelt, Maryland, USA

LYN87 Lynga, G. 1987, Catalogue of Open Cluster Data (5th edition), available through NSSDC, Greenbelt, Maryland, USA

VCIRC Radial velocity estimate based on cluster distance and rotation curve model of Brand 1986 (Ph. D. thesis, Leiden).

CLUSTER IDENTIFICATION:

ALTER et al.: OCL 82
COMMON NAME: NGC 6704
DATA BASE NUM: 17

SPATIAL COORDINATES:

L II: 28.23
B II: -2.23

RA(1950.0): 18. 48.2
DEC(1950.0): -5. 16.

RADIAL VELOCITIES (w.r.t. LSR; km/s):
STELLAR:

VELOCITY	REF.
22.6	VCIRC

H II REGION:

NO VALUES AVAILABLE

CO CLOUDS:

NO VALUES AVAILABLE

PROPER MOTION (arcsec/100 yr):

NO VALUES AVAILABLE

DISTANCE FROM SOLAR NEIGHBORHOOD (kpc):

DIST	REF.
1.81	GRU65
1.81	LIN68
1.81	BEC71
1.90	FOR78
1.94	LYN87

ANGULAR DIAMETER (arcmin):

ANG D	REF.
7.0	LIN68
5.0	ALT70
10.0	ALT70
5.0	BEC71
6.0	LYN83

LINEAR DIAMETER (pc):

LIN D	REF.
3.2	LDCAL
3.7	LIN68
2.6	BEC71
3.2	LYN83

AGE ESTIMATES:
AGE (Myr):

AGE	REF.
25.	LIN68
20.	FOR78
20.	LYN83
35.	LYN87

EARLIEST MS SPECTRAL TYPE:

eSpT	REF.
b2	GRU65
B2	GRU65
b2	BEC71
b3	BEC71
B2	LYN83
b2	LYN83

MS TURNOFF COLOR:

(B-V)	REF.
-0.18	GRU65
-0.20	FOR78
-0.21	LYN87

MASSES (SOLAR MASS UNITS):
STELLAR MASS:

NO VALUES AVAILABLE

MASS IN ASSOCIATED H I CLOUDS:

NO VALUES AVAILABLE

IONIZED HYDROGEN MASS:

NO VALUES AVAILABLE

MASS IN ASSOCIATED MOLECULAR CLOUDS:

NO VALUES AVAILABLE

ASSOCIATED MASS IN THE FORM OF DUST:

NO VALUES AVAILABLE

VISUAL EXTINCTION TOWARD CLUSTER (mag):

AV	REF.
3.18	BEC71
3.18	LYN83

B-V COLOR EXCESS (mag):

E(B-V)	REF.
0.72	LYN87

REFERENCES

ALT70 Alter, G., Ruprecht, J., and Vanysek, V. 1970, The Catalog of Star Clusters and Associations (Budapest: Akad Kiado).
BEC71 Becker, W. 1971, Astr. Ap. Suppl., 4, 241.
FOR78 Forbes, D., and Dupuy, D. L. 1978, A. J., 83, 266.
GRU65 Grubissich, C. 1965, Z. f. A., 60, 249.
LIN68 Lindoff, U. 1968, Arkiv Astr., 5, 1.
LDCAL Linear diameter calculated from published ang. diam. and distance.
LYN83 Lynga, G. 1983, Catalogue of Open Cluster Data (3rd edition), available through NSSDC, Greenbelt, Maryland, USA
LYN87 Lynga, G. 1987, Catalogue of Open Cluster Data (5th edition), available through NSSDC, Greenbelt, Maryland, USA
VCIRC Radial velocity estimate based on cluster distance and rotation curve model of Brand 1986 (Ph. D. thesis, Leiden).

CLUSTER IDENTIFICATION:

ALTER et al.: OCL 83
COMMON NAME: TRUMP 35
DATA BASE NUM: 18

SPATIAL COORDINATES:

L II: 28.29 RA(1950.0): 18. 40.3
B II: -0.01 DEC(1950.0): -4. 11.

RADIAL VELOCITIES (w.r.t. LSR; km/s):
STELLAR:

VELOCITY	REF.
19.6	VCIRC
2.3	WIL53
22.8	ABT72

H II REGION:

NO VALUES AVAILABLE

CO CLOUDS:

NO VALUES AVAILABLE

PROPER MOTION (arcsec/100 yr):

NO VALUES AVAILABLE

DISTANCE FROM SOLAR NEIGHBORHOOD (kpc):

DIST	REF.
2.50	JOH61
1.35	BEC63
2.63	HOA65
2.00	HAG70
1.62	BEC71
1.79	LYN87

ANGULAR DIAMETER (arcmin):

ANG D	REF.
5.0	ALT70
23.0	ALT70
6.0	HAG70
9.0	BEC71
9.0	LYN83

LINEAR DIAMETER (pc):

LIN D	REF.
4.2	LDCAL
3.0	LIN68
3.5	HAG70
11.8	LOH71
4.2	BEC71
4.2	LYN83

AGE ESTIMATES:
AGE (Myr):

AGE	REF.
42.	LIN68
42.	LYN83
78.	LYN87

EARLIEST MS SPECTRAL TYPE:

eSpT	REF.
b4	JOH61
B2	APR62
b4	BEC63
b5	YIL66
B4	LYN83
b4	LYN83

MS TURNOFF COLOR:

(B-V)	REF.
-0.18	JOH61
-0.15	HAG70
-0.15	LYN87

MASSES (SOLAR MASS UNITS):
STELLAR MASS:

MASS	REF.
9.35E+03	SCH63
5.55E+02	RED71
5.63E+02	BRU83
1.00E+04	LYN83

MASS IN ASSOCIATED H I CLOUDS:

NO VALUES AVAILABLE

IONIZED HYDROGEN MASS:

NO VALUES AVAILABLE

MASS IN ASSOCIATED MOLECULAR CLOUDS:

NO VALUES AVAILABLE

ASSOCIATED MASS IN THE FORM OF DUST:

NO VALUES AVAILABLE

VISUAL EXTINCTION TOWARD CLUSTER (mag):

AV	REF.
3.60	NEC67
3.54	BEC71
3.54	LYN83

B-V COLOR EXCESS (mag):

E(B-V)	REF.
1.20	JOH61
1.23	BEC63
1.22	SCH63
1.21	POL70
1.19	HAG70
1.19	LYN87

REFERENCES

ABT72 Abt, H. A., and Biggs, E. S. 1972, Bibliography of Stellar Radial Velocities, (Latham Process Corp.: New York).
ALT70 Alter, G., Ruprecht, J., and Vanysek, V. 1970, The Catalog of Star Clusters and Associations (Budapest: Akad Kiado).
APR62 Apriamashvili, C. 1962, Abas. Bull., 28, 157.
BEC63 Becker, W. 1963, Z. f. A., 57, 117.
BEC71 Becker, W. 1971, Astr. Ap. Suppl., 4, 241.
BRU83 Bruch, A., and Sanders, W. L. 1983, Astr. Ap., 121, 237.
HAG70 Hagen, G. L. 1970, D. D. O. Pub., Univ. Toronto, 4.
HOA65 Hoag, A. A., and Applequist, N. L. 1965, Ap. J. Suppl., 12, 215.
JOH61 Johnson, H. L., Hoag, A. A., Iriarte, B., Mitchell, R. I., and Hallam, K. L. 1961, Lowell Obs. Bull., 5, 133.
LIN68 Lindoff, U. 1968, Arkiv Astr., 5, 1.
LDCAL Linear diameter calculated from published ang. diam. and distance.
LOH71 Lohmann, W. 1971, Astr. Nach., 292, 193.
LYN83 Lynga, G. 1983, Catalogue of Open Cluster Data (3rd edition), available through NSSDC, Greenbelt, Maryland, USA
LYN87 Lynga, G. 1987, Catalogue of Open Cluster Data (5th edition), available through NSSDC, Greenbelt, Maryland, USA
NEC67 Neckel, T. 1967, Heid. Ver., 19, 115.
POL70 Polishchuk, E. P. 1970, Astr. Astrofiz., 9, 17.
VCIRC Radial velocity estimate based on cluster distance and rotation curve model of Brand 1986 (Ph. D. thesis, Leiden).
RED71 Reddish, V. C., and Sloan, C. 1971, Observatory, 91, 70.
SCH63 Schmidt, von K.-H. 1963, Ast. Nach., 287, 41.
WIL53 Wilson, R. E. 1953, General Catalog of Stellar Radial Velocities, (Washington, D.C.: Carnegie Institution, Pub 601).
YIL66 Yilmaz, F. 1966, Z. f. A., 64, 61.

CLUSTER IDENTIFICATION:

ALTER et al.: OCL 96
COMMON NAME: NGC 6755
DATA BASE NUM: 19

SPATIAL COORDINATES:

L II: 38.55
B II: -1.70

RA(1950.0): 19. 5.3
DEC(1950.0): 4. 9.

RADIAL VELOCITIES (w.r.t. LSR; km/s):
STELLAR:

VELOCITY	REF.
20.3	VCIRC
57.3	ABT72

H II REGION:

NO VALUES AVAILABLE

CO CLOUDS:

NO VALUES AVAILABLE

PROPER MOTION (arcsec/100 yr):

MU X	MU Y	REF.
0.210	-0.260	LAT79

DISTANCE FROM SOLAR NEIGHBORHOOD (kpc):

DIST	REF.
1.82	JOH61
1.82	NEC67
1.59	LIN68
1.80	HAG70
1.55	BEC71
1.67	LYN87

ANGULAR DIAMETER (arcmin):

ANG D	REF.
10.0	ALT70
30.0	ALT70
16.0	HAG70
30.0	BEC71
15.0	LYN83

LINEAR DIAMETER (pc):

LIN D	REF.
6.6	LDCAL
6.9	LIN68
8.4	HAG70
14.0	BEC71
6.6	LYN83

AGE ESTIMATES:
AGE (Myr):

AGE	REF.
36.	LIN68
36.	LYN83
29.	BAN83
12.	LYN87

EARLIEST MS SPECTRAL TYPE:

eSpT	REF.
B0	SVO65
B2	HOA65
b0	BEC71
B2	LYN83
b0	LYN83

MS TURNOFF COLOR:

(B-V)	REF.
-0.10	JOH61
-0.09	SVO65
-0.25	HAG70
-0.25	LYN87

MASSES (SOLAR MASS UNITS):
STELLAR MASS:

MASS	REF.
5.77E+03	SCH63
9.21E+02	RED71
9.34E+02	BRU83
6.31E+03	LYN83

MASS IN ASSOCIATED H I CLOUDS:

NO VALUES AVAILABLE

IONIZED HYDROGEN MASS:

NO VALUES AVAILABLE

MASS IN ASSOCIATED MOLECULAR CLOUDS:

NO VALUES AVAILABLE

ASSOCIATED MASS IN THE FORM OF DUST:

MASS	REF.
7.32E+01	DOD70

VISUAL EXTINCTION TOWARD CLUSTER (mag):

AV	REF.
2.79	NEC67
3.55	BEC71
3.55	LYN83

B-V COLOR EXCESS (mag):

E(B-V)	REF.
0.93	JOH61
0.90	BUS63
0.93	SCH63
0.95	BEC63
0.93	HAG70
0.93	LYN87

REFERENCES

ABT72 Abt, H. A., and Biggs, E. S. 1972, Bibliography of Stellar Radial Velocities, (Latham Process Corp.: New York).
ALT70 Alter, G., Ruprecht, J., and Vanysek, V. 1970, The Catalog of Star Clusters and Associations (Budapest: Akad Kiado).
BAN83 Bania, T. M. 1983, private communication.
BEC63 Becker, W. 1963, Z. f. A., 57, 117.
BEC71 Becker, W. 1971, Astr. Ap. Suppl., 4, 241.
BRU83 Bruch, A., and Sanders, W. L. 1983, Astr. Ap., 121, 237.
BUS63 Buscombe, W. 1963, Mt. Stromlo Mimeogram, No. 6, pg. 24.
DOD70 D Odorico, S., and Felli, M. 1970, Mem. Soc. Ast. Ital., 41, 89.
HAG70 Hagen, G. L. 1970, D. D. O. Pub., Univ. Toronto, 4.
HOA65 Hoag, A. A., and Applequist, N. L. 1965, Ap. J. Suppl., 12, 215.
JOH61 Johnson, H. L., Hoag, A. A., Iriarte, B., Mitchell, R. I., and Hallam, K. L. 1961, Lowell Obs. Bull., 5, 133.
LAT79 Latypov, A. A. 1979, Sov. Astr., 23, 287.
LIN68 Lindoff, U. 1968, Arkiv Astr., 5, 1.
LDCAL Linear diameter calculated from published ang. diam. and distance.
LYN83 Lynga, G. 1983, Catalogue of Open Cluster Data (3rd edition), available through NSSDC, Greenbelt, Maryland, USA
LYN87 Lynga, G. 1987, Catalogue of Open Cluster Data (5th edition), available through NSSDC, Greenbelt, Maryland, USA
NEC67 Neckel, T. 1967, Heid. Ver., 19, 115.
VCIRC Radial velocity estimate based on cluster distance and rotation curve model of Brand 1986 (Ph. D. thesis, Leiden).
RED71 Reddish, V. C., and Sloan, C. 1971, Observatory, 91, 70.
SCH63 Schmidt, von K.-H. 1963, Ast. Nach., 287, 41.
SVO65 Svolopoulos, S. N. 1965, Z. f. A., 61, 105.

CLUSTER IDENTIFICATION:

ALTER et al.: OCL 99
COMMON NAME: NGC 6756
WESTERHOUT: W 50
DATA BASE NUM: 20

SPATIAL COORDINATES:

L II: 39.06
B II: -1.69

RA(1950.0): 19. 6.2
DEC(1950.0): 4. 36.

RADIAL VELOCITIES (w.r.t. LSR; km/s):
STELLAR:

VELOCITY	REF.
22.2	VCIRC

H II REGION:

NO VALUES AVAILABLE

CO CLOUDS:

NO VALUES AVAILABLE

PROPER MOTION (arcsec/100 yr):

NO VALUES AVAILABLE

DISTANCE FROM SOLAR NEIGHBORHOOD (kpc):

DIST	REF.
1.65	LIN68
1.65	BEC71
1.51	LYN87

ANGULAR DIAMETER (arcmin):

ANG D	REF.
4.0	LIN68
3.0	ALT70
11.0	ALT70
4.0	BEC71
4.0	LYN83

LINEAR DIAMETER (pc):

LIN D	REF.
1.9	LDCAL
1.9	LIN68
1.9	BEC71
1.9	LYN83

AGE ESTIMATES:
AGE (Myr):

AGE	REF.
47.	LIN68
47.	LYN83
62.	LYN87

EARLIEST MS SPECTRAL TYPE:

eSpT	REF.
B3	SV065
b4	BEC71
B3	LYN83
b4	LYN83

MS TURNOFF COLOR:

(B-V)	REF.
-0.05	SV065
-0.17	LYN87

MASSES (SOLAR MASS UNITS):
STELLAR MASS:

NO VALUES AVAILABLE

MASS IN ASSOCIATED H I CLOUDS:

NO VALUES AVAILABLE

IONIZED HYDROGEN MASS:

NO VALUES AVAILABLE

MASS IN ASSOCIATED MOLECULAR CLOUDS:

NO VALUES AVAILABLE

ASSOCIATED MASS IN THE FORM OF DUST:

NO VALUES AVAILABLE

VISUAL EXTINCTION TOWARD CLUSTER (mag):

AV	REF.
4.41	LYN83

B-V COLOR EXCESS (mag):

E(B-V)	REF.
1.18	LYN87

ALT70	Alter, G., Ruprecht, J., and Vanysek, V. 1970, The Catalog of Star Clusters and Associations (Budapest: Akad Kiado).
BEC71	Becker, W. 1971, Astr. Ap. Suppl., 4, 241.
LIN68	Lindoff, U. 1968, Arkiv Astr., 5, 1.
LDCAL	Linear diameter calculated from published ang. diam. and distance.
LYN83	Lynga, G. 1983, Catalogue of Open Cluster Data (3rd edition), available through NSSDC, Greenbelt, Maryland, USA
LYN87	Lynga, G. 1987, Catalogue of Open Cluster Data (5th edition), available through NSSDC, Greenbelt, Maryland, USA
VCIRC	Radial velocity estimate based on cluster distance and rotation curve model of Brand 1986 (Ph. D. thesis, Leiden).
SV065	Svolopoulos, S. N. 1965, Z. f. A., 61, 105.

CLUSTER IDENTIFICATION:

ALTER et al.: OCL 100
COMMON NAME: NGC 6709
DATA BASE NUM: 21

SPATIAL COORDINATES:

L II: 42.16
B II: 4.70
RA(1950.0): 18. 49.1
DEC(1950.0): 10. 17.

RADIAL VELOCITIES (w.r.t. LSR; km/s):
STELLAR:

VELOCITY	REF.
12.2	VCIRC
3.5	JOS61
3.5	HAG70
8.5	ABT72
5.5	WRA83
5.5	LYN87

H II REGION:

NO VALUES AVAILABLE

CO CLOUDS:

VELOCITY	REF.
5.8	LEI88

PROPER MOTION (arcsec/100 yr):

MU X	MU Y	REF.
0.100	-0.390	LAT79

DISTANCE FROM SOLAR NEIGHBORHOOD (kpc):

DIST	REF.
0.91	JOH61
1.00	HOA65
0.91	NEC67
0.93	LIN68
0.90	HAG70
0.93	BEC71
0.89	LYN87

ANGULAR DIAMETER (arcmin):

ANG D	REF.
12.0	ALT70
18.0	ALT70
12.0	BEC71
13.0	LYN83

LINEAR DIAMETER (pc):

LIN D	REF.
3.6	LDCAL
3.7	LYN83

AGE ESTIMATES:
AGE (Myr):

AGE	REF.
65.	LIN68
200.	BAR69
78.	MER81
37.	BAN83
78.	LYN87

EARLIEST MS SPECTRAL TYPE:

eSpT	REF.
b5	JOH61
B9	HOV65
B8	BEC71
B5	LYN83
B8	LYN83
b6	LYN83

MS TURNOFF COLOR:

(B-V)	REF.
-0.16	JOH61
-0.15	HAG70
-0.15	LYN87

MASSES (SOLAR MASS UNITS):
STELLAR MASS:

MASS	REF.
7.42E+02	SCH63
2.40E+02	RED71
2.43E+02	BRU83

MASS IN ASSOCIATED H I CLOUDS:

MASS	REF.
2.40E+01	DOD70

IONIZED HYDROGEN MASS:

NO VALUES AVAILABLE

MASS IN ASSOCIATED MOLECULAR CLOUDS:

MASS	REF.
2.30E+02	LEI88

ASSOCIATED MASS IN THE FORM OF DUST:

MASS	REF.
2.40E+00	DOD70

VISUAL EXTINCTION TOWARD CLUSTER (mag):

AV	REF.
0.90	NEC67
1.02	BEC71
1.02	LYN83

B-V COLOR EXCESS (mag):

E(B-V)	REF.
0.30	JOH61
0.30	BUS63
0.34	BEC63
0.34	POL70
0.30	HAG70
0.30	LYN87

REFERENCES

ABT72 Abt, H. A., and Biggs, E. S. 1972, Bibliography of Stellar Radial Velocities, (Latham Process Corp.: New York).
ALT70 Alter, G., Ruprecht, J., and Vanysek, V. 1970, The Catalog of Star Clusters and Associations (Budapest: Akad Kiado).
BAN83 Bania, T. M. 1983, private communication.
BAR69 Barbaro, G., Dallaporta, N., and Fabris, G. 1969, Ap. Sp. Sci., 3, 123.
BEC63 Becker, W. 1963, Z. f. A., 57, 117.
BEC71 Becker, W. 1971, Astr. Ap. Suppl., 4, 241.
BRU83 Bruch, A., and Sanders, W. L. 1983, Astr. Ap., 121, 237.
BUS63 Buscombe, W. 1963, Mt. Stromlo Mimeogram, No. 6, pg. 24.
DOD70 D Odorico, S., and Felli, M. 1970, Mem. Soc. Ast. Ital., 41, 89.
HAG70 Hagen, G. L. 1970, D. D. O. Pub., Univ. Toronto, 4.
HOV65 Hoag, A. A. 1965, Vistas, 8, 139.
HOA65 Hoag, A. A., and Applequist, N. L. 1965, Ap. J. Suppl., 12, 215.
JOS61 Johnson, H. L., and Svolopoulos, S. N. 1961, Ap. J., 134, 868.
JOH61 Johnson, H. L., Hoag, A. A., Iriarte, B., Mitchell, R. I., and Hallam, K. L. 1961, Lowell Obs. Bull., 5, 133.
LAT79 Latypov, A. A. 1979, Sov. Astr., 23, 287.
LEI88 Leisawitz, D., Thaddeus, P., and Bash, F. N. 1988, in preparation for submission to Ap. J. Suppl.
LIN68 Lindoff, U. 1968, Arkiv Astr., 5, 1.
LDCAL Linear diameter calculated from published ang. diam. and distance.
LYN83 Lynga, G. 1983, Catalogue of Open Cluster Data (3rd edition), available through NSSDC, Greenbelt, Maryland, USA
LYN87 Lynga, G. 1987, Catalogue of Open Cluster Data (5th edition), available through NSSDC, Greenbelt, Maryland, USA
MER81 Mermilliod, J.-C. 1981, Astr. Ap., 97, 235.
NEC67 Neckel, T. 1967, Heid. Ver., 19, 115.
POL70 Polishchuk, E. P. 1970, Astr. Astrofiz., 9, 17.
VCIRC Radial velocity estimate based on cluster distance and rotation curve model of Brand 1986 (Ph. D. thesis, Leiden).
RED71 Reddish, V. C., and Sloan, C. 1971, Observatory, 91, 70.
SCH63 Schmidt, von K.-H. 1963, Ast. Nach., 287, 41.
WRA83 Wramdemark, S. 1983, private communication.

CLUSTER IDENTIFICATION:

ALTER et al.: OCL 122
COMMON NAME: NGC 6820
SHARPLESS: S 88
MEMBER OF ASSOC.: VUL OB1
DATA BASE NUM: 22

SPATIAL COORDINATES:

L II: 59.16 RA(1950.0): 19. 40.5
B II: -0.16 DEC(1950.0): 22. 58.

RADIAL VELOCITIES (w.r.t. LSR; km/s):
STELLAR:

VELOCITY	REF.
19.0	VCIRC

H II REGION:

VELOCITY	REF.
36.2	COU66

CO CLOUDS:

VELOCITY	REF.
26.8	BLI82

PROPER MOTION (arcsec/100 yr):

NO VALUES AVAILABLE

DISTANCE FROM SOLAR NEIGHBORHOOD (kpc):

DIST	REF.
1.90	BLI82

ANGULAR DIAMETER (arcmin):

ANG D	REF.
40.0	BLI82

LINEAR DIAMETER (pc):

LIN D	REF.
22.1	LDCAL
22.1	BLI82

AGE ESTIMATES:
AGE (Myr):

NO VALUES AVAILABLE

EARLIEST MS SPECTRAL TYPE:

NO VALUES AVAILABLE

MS TURNOFF COLOR:

NO VALUES AVAILABLE

MASSES (SOLAR MASS UNITS):
STELLAR MASS:

NO VALUES AVAILABLE

MASS IN ASSOCIATED H I CLOUDS:

NO VALUES AVAILABLE

IONIZED HYDROGEN MASS:

NO VALUES AVAILABLE

MASS IN ASSOCIATED MOLECULAR CLOUDS:

NO VALUES AVAILABLE

ASSOCIATED MASS IN THE FORM OF DUST:

NO VALUES AVAILABLE

VISUAL EXTINCTION TOWARD CLUSTER (mag):

NO VALUES AVAILABLE

B-V COLOR EXCESS (mag):

NO VALUES AVAILABLE

REFERENCES

BLI82 Blitz, L., Fich, M. and Stark, A. A. 1982, Ap. J. Suppl., 49, 183.
COU66 Courtes, G., Cruvellier, P., and Georgelin, Y. 1966, J. des Obs., 49, 329.
LDCAL Linear diameter calculated from published ang. diam. and distance.
VCIRC Radial velocity estimate based on cluster distance and rotation curve model of Brand 1988 (Ph. D. thesis, Leiden).

CLUSTER IDENTIFICATION:

ALTER et al.: OCL 124
COMMON NAME: NGC 6823
SHARPLESS: S 86
WESTERHOUT: W 55
MEMBER OF ASSOC.: VUL OB1
DATA BASE NUM: 23

SPATIAL COORDINATES:

L II: 59.41
B II: -0.15
RA(1950.0): 19. 41.0
DEC(1950.0): 23. 11.

RADIAL VELOCITIES (w.r.t. LSR; km/s):
STELLAR:

VELOCITY	REF.
24.8	VCIRC
20.4	JOS61
20.4	HAG70
22.2	HUM78
29.4	WRA83
29.4	LYN87
29.4	HRO87

H II REGION:

VELOCITY	REF.
36.2	COU66
31.4	GAR83
31.7	GAR83

CO CLOUDS:

VELOCITY	REF.
26.8	BLI82
23.1	LEI88
27.9	LEI88
33.2	LEI88

PROPER MOTION (arcsec/100 yr):

MU X	MU Y	REF.
-0.007	-0.007	BAR57

DISTANCE FROM SOLAR NEIGHBORHOOD (kpc):

DIST	REF.
1.65	JOH61
2.48	LIN68
1.60	HAG70
2.40	BEC71
1.65	LOH71
2.88	MOF72
1.90	FIC84
3.00	SPA85
2.62	LYN87

ANGULAR DIAMETER (arcmin):

ANG D	REF.
5.0	ALT70
15.0	ALT70
6.0	HAG70
7.0	BEC71
12.0	LYN83

LINEAR DIAMETER (pc):

LIN D	REF.
9.6	LDCAL
9.4	LYN83

AGE ESTIMATES:
AGE (Myr):

AGE	REF.
2.	MOF72
4.	HAR76
5.	LYN83
3.	BAN83
4.	SPA85
3.	SAG86
10.	LYN87

EARLIEST MS SPECTRAL TYPE:

eSpT	REF.
o9	JOH61
O7	HOA65
O7	BEC71
o5	MOF72
o6	MOF72
O7	MOF72
O7	LYN83
O9.5	STO85

MS TURNOFF COLOR:

(B-V)	REF.
-0.22	GRU60
-0.30	JOH61
-0.25	HAG70
-0.35	MOF72
-0.30	TUR73

MASSES (SOLAR MASS UNITS):
STELLAR MASS:

MASS	REF.
2.03E+03	SCH63
6.37E+02	RED71
1.64E+02	LOH72
6.46E+02	BRU83
2.00E+03	LYN83

MASS IN ASSOCIATED H I CLOUDS:

MASS	REF.
1.10E+03	DOD70
1.80E+03	TOV73

IONIZED HYDROGEN MASS:

MASS	REF.
1.90E+03	SCH69
3.00E+03	SCH71

MASS IN ASSOCIATED MOLECULAR CLOUDS:

MASS	REF.
3.00E+05	LEI88
1.00E+05	LEI88

ASSOCIATED MASS IN THE FORM OF DUST:

MASS	REF.
1.13E+01	DOD70

VISUAL EXTINCTION TOWARD CLUSTER (mag):

AV	REF.
2.40	NEC67
2.55	BEC71
2.55	LYN83

B-V COLOR EXCESS (mag):

E(B-V)	REF.
0.80	JOH61
0.88	STA68
0.73	POL70
0.82	HAG70

-Ø.34	LYN87	Ø.78	MOF72
		Ø.78	SPA85
		Ø.76	LYN87

REFERENCES

ALT7Ø Alter, G., Ruprecht, J., and Vanysek, V. 197Ø, The Catalog of Star Clusters and Associations (Budapest: Akad Kiado).
BAN83 Bania, T. M. 1983, private communication.
BAR57 Barkhatova, K. A. 1957, Sov. Astr., 1, 827.
BEC71 Becker, W. 1971, Astr. Ap. Suppl., 4, 241.
BLI82 Blitz, L., Fich, M. and Stark, A. A. 1982, Ap. J. Suppl., 49, 183.
BRU83 Bruch, A., and Sanders, W. L. 1983, Astr. Ap., 121, 237.
COU66 Courtes, G., Cruvellier, P., and Georgelin, Y. 1966, J. des Obs., 49, 329.
DOD7Ø D Odorico, S., and Felli, M. 197Ø, Mem. Soc. Ast. Ital., 41, 89.
FIC84 Fich, M., and Blitz, L. 1984, Ap. J., 279, 125.
GAR83 Garay, G., and Rodriguez, L. F. 1983, Ap. J., 266, 263.
GRU6Ø Grubissich, C. 196Ø, Z. f. A., 5Ø, 14.
HAG7Ø Hagen, G. L. 197Ø, D. D. O. Pub., Univ. Toronto, 4.
HAR76 Harris, G. L. H. 1976, Ap. J. Suppl., 3Ø, 451.
HOA65 Hoag, A. A., and Applequist, N. L. 1965, Ap. J. Suppl., 12, 215.
HRO87 Hron, J. 1987, Astr. Ap., 176, 34.
HUM78 Humphreys, R. M. 1978, Ap. J. Suppl., 38, 3Ø9.
JOS61 Johnson, H. L., and Svolopoulos, S. N. 1961, Ap. J., 134, 868.
JOH61 Johnson, H. L., Hoag, A. A., Iriarte, B., Mitchell, R. I., and Hallam, K. L. 1961, Lowell Obs. Bull., 5, 133.
LEI88 Leisawitz, D., Thaddeus, P., and Bash, F. N. 1988, in preparation for submission to Ap. J. Suppl.
LIN68 Lindoff, U. 1968, Arkiv Astr., 5, 1.
LDCAL Linear diameter calculated from published ang. diam. and distance.
LOH71 Lohmann, W. 1971, Astr. Nach., 292, 193.
LOH72 Lohmann, W. 1972, Astr. Nach., 293, 259.
LYN83 Lynga, G. 1983, Catalogue of Open Cluster Data (3rd edition), available through NSSDC, Greenbelt, Maryland, USA
LYN87 Lynga, G. 1987, Catalogue of Open Cluster Data (5th edition), available through NSSDC, Greenbelt, Maryland, USA
MOF72 Moffat, A. F. J. 1972, Astr. Ap. Suppl., 7, 355.
NEC67 Neckel, T. 1967, Heid. Ver., 19, 115.
POL7Ø Polishchuk, E. P. 197Ø, Astr. Astrofiz., 9, 17.
VCIRC Radial velocity estimate based on cluster distance and rotation curve model of Brand 1986 (Ph. D. thesis, Leiden).
RED71 Reddish, V. C., and Sloan, C. 1971, Observatory, 91, 7Ø.
SAG86 Sagar, R., Piskunov, A. E., Myakutin, V. I., and Joshi, U. C. 1986, MNRAS, 22Ø, 383.
SCH63 Schmidt, von K.-H. 1963, Ast. Nach., 287, 41.
SCH69 Schwartz, R. 1969, A G Mitt., 27, 178.
SCH71 Schwartz, R. 1971, Ap. Sp. Sci., 14, 286.
SPA85 Spassova, N. M., and Baev, P. V. 1985, Ap. Sp. Sci., 112, 111.
STA68 Starikova, G. A. 1969, Sov. Astr., 12, 632.
STO85 Stothers, R. B. 1985, Ap. J., 298, 521.
TOV73 Tovmassian, H. M., and Nersessian, S. E. 1973, Aust. J. Phys., 26, 861.
TUR79 Turner, D. G. 1979, J. R. Ast. Soc. Canada, 73, 74.
WRA83 Wramdemark, S. 1983, private communication.

CLUSTER IDENTIFICATION:

ALTER et al.: OCL 125
COMMON NAME: NGC 6830
MEMBER OF ASSOC.: VUL OB1
DATA BASE NUM: 24

SPATIAL COORDINATES:

L II: 60.14
B II: -1.83
RA(1950.0): 19. 48.9
DEC(1950.0): 22. 56.

RADIAL VELOCITIES (w.r.t. LSR; km/s):
STELLAR:

VELOCITY	REF.
15.8	VCIRC
22.1	WIL53
40.1	LYN81

H II REGION:

NO VALUES AVAILABLE

CO CLOUDS:

NO VALUES AVAILABLE

PROPER MOTION (arcsec/100 yr):

NO VALUES AVAILABLE

DISTANCE FROM SOLAR NEIGHBORHOOD (kpc):

DIST	REF.
1.74	JOH61
1.97	LIN68
1.70	HAG70
1.74	LOH71
1.47	BEC71
1.70	MOF72
1.70	LYN87

ANGULAR DIAMETER (arcmin):

ANG D	REF.
6.0	ALT70
20.0	ALT70
10.0	BEC71
17.0	MOF72
12.0	LYN83

LINEAR DIAMETER (pc):

LIN D	REF.
5.6	LDCAL
5.1	LYN83

AGE ESTIMATES:
AGE (Myr):

AGE	REF.
16.	LIN68
100.	MOF72
100.	LYN83
22.	BAN83
54.	LYN87

EARLIEST MS SPECTRAL TYPE:

eSpT	REF.
b0	JOH61
B6	HOV65
b6	MOF72
B6	MOF72
B0	LYN83
b4	LYN83

MS TURNOFF COLOR:

(B-V)	REF.
-0.29	JOH61
-0.20	HAG70
-0.15	MOF72
-0.18	LYN87

MASSES (SOLAR MASS UNITS):
STELLAR MASS:

MASS	REF.
1.68E+03	SCH63
3.22E+02	RED71
2.84E+02	LOH72
3.26E+02	BRU83
1.58E+03	LYN83

MASS IN ASSOCIATED H I CLOUDS:

NO VALUES AVAILABLE

IONIZED HYDROGEN MASS:

NO VALUES AVAILABLE

MASS IN ASSOCIATED MOLECULAR CLOUDS:

NO VALUES AVAILABLE

ASSOCIATED MASS IN THE FORM OF DUST:

NO VALUES AVAILABLE

VISUAL EXTINCTION TOWARD CLUSTER (mag):

AV	REF.
1.59	NEC67
1.74	BEC71
1.74	LYN83

B-V COLOR EXCESS (mag):

E(B-V)	REF.
0.53	JOH61
0.58	BEC63
0.48	STA68
0.53	POL70
0.53	HAG70
0.56	MOF72
0.56	LYN87

REFERENCES

ALT70 Alter, G., Ruprecht, J., and Vanysek, V. 1970, The Catalog of Star Clusters and Associations (Budapest: Akad Kiado).
BAN83 Bania, T. M. 1983, private communication.
BEC63 Becker, W. 1963, Z. f. A., 57, 117.
BEC71 Becker, W. 1971, Astr. Ap. Suppl., 4, 241.
BRU83 Bruch, A., and Sanders, W. L. 1983, Astr. Ap., 121, 237.
HAG70 Hagen, G. L. 1970, D. D. O. Pub., Univ. Toronto, 4.
HOV65 Hoag, A. A. 1965, Vistas, 8, 139.
JOH61 Johnson, H. L., Hoag, A. A., Iriarte, B., Mitchell, R. I., and Hallam, K. L. 1961, Lowell Obs. Bull., 5, 133.
LIN68 Lindoff, U. 1968, Arkiv Astr., 5, 1.
LDCAL Linear diameter calculated from published ang. diam. and distance.
LOH71 Lohmann, W. 1971, Astr. Nach., 292, 193.
LOH72 Lohmann, W. 1972, Astr. Nach., 293, 259.
LYN81 Lynga, G. 1981, Catalogue of Open Cluster Data, available through NSSDC, Greenbelt, Maryland, USA
LYN83 Lynga, G. 1983, Catalogue of Open Cluster Data (3rd edition), available through NSSDC, Greenbelt, Maryland, USA
LYN87 Lynga, G. 1987, Catalogue of Open Cluster Data (5th edition), available through NSSDC, Greenbelt, Maryland, USA
MOF72 Moffat, A. F. J. 1972, Astr. Ap. Suppl., 7, 355.
NEC67 Neckel, T. 1967, Heid. Ver., 19, 115.
POL70 Polishchuk, E. P. 1970, Astr. Astrofiz., 9, 17.
VCIRC Radial velocity estimate based on cluster distance and rotation curve model of Brand 1986 (Ph. D. thesis, Leiden).
RED71 Reddish, V. C., and Sloan, C. 1971, Observatory, 91, 70.
SCH63 Schmidt, von K.-H. 1963, Ast. Nach., 287, 41.
STA68 Starikova, G. A. 1969, Sov. Astr., 12, 632.
WIL53 Wilson, R. E. 1953, General Catalog of Stellar Radial Velocities, (Washington, D.C.: Carnegie Institution, Pub 601).

CLUSTER IDENTIFICATION:

ALTER et al.: OCL 126
COMMON NAME: ROSLUND 2
MEMBER OF ASSOC.: VUL OB1
DATA BASE NUM: 25

SPATIAL COORDINATES:

L II: 60.21
B II: -0.29

RA(1950.0): 19. 43.3
DEC(1950.0): 23. 48.

RADIAL VELOCITIES (w.r.t. LSR; km/s):
STELLAR:

VELOCITY	REF.
17.7	VCIRC
19.4	WIL53
19.4	HUM78

H II REGION:

NO VALUES AVAILABLE

CO CLOUDS:

NO VALUES AVAILABLE

PROPER MOTION (arcsec/100 yr):

NO VALUES AVAILABLE

DISTANCE FROM SOLAR NEIGHBORHOOD (kpc):

DIST	REF.
1.70	HUM78

ANGULAR DIAMETER (arcmin):

ANG D	REF.
45.0	NEL69
14.0	LYN87

LINEAR DIAMETER (pc):

LIN D	REF.
6.9	LDCAL
23.8	NEL69

AGE ESTIMATES:
AGE (Myr):

NO VALUES AVAILABLE

EARLIEST MS SPECTRAL TYPE:

eSpT	REF.
OB	ROS80

MS TURNOFF COLOR:

NO VALUES AVAILABLE

MASSES (SOLAR MASS UNITS):
STELLAR MASS:

NO VALUES AVAILABLE

MASS IN ASSOCIATED H I CLOUDS:

NO VALUES AVAILABLE

IONIZED HYDROGEN MASS:

NO VALUES AVAILABLE

MASS IN ASSOCIATED MOLECULAR CLOUDS:

NO VALUES AVAILABLE

ASSOCIATED MASS IN THE FORM OF DUST:

NO VALUES AVAILABLE

VISUAL EXTINCTION TOWARD CLUSTER (mag):

NO VALUES AVAILABLE

B-V COLOR EXCESS (mag):

NO VALUES AVAILABLE

REFERENCES

HUM78 Humphreys, R. M. 1978, Ap. J. Suppl., 38, 309.

LDCAL Linear diameter calculated from published ang. diam. and distance.

LYN87 Lynga, G. 1987, Catalogue of Open Cluster Data (5th edition), available through NSSDC, Greenbelt, Maryland, USA

NEL69 Nelson, R. M. 1969, PASP, 81, 900.

VCIRC Radial velocity estimate based on cluster distance and rotation curve model of Brand 1986 (Ph. D. thesis, Leiden).

ROS60 Roslund, C. 1960, PASP, 72, 205.

WIL53 Wilson, R. E. 1953, General Catalog of Stellar Radial Velocities, (Washington, D.C.: Carnegie Institution, Pub 601).

CLUSTER IDENTIFICATION:

ALTER et al.: OCL 134
COMMON NAME: NGC 6834
ALTERNATE NAME: SNR DA495
DATA BASE NUM: 26

SPATIAL COORDINATES:

L II: 65.70 RA(1950.0): 19. 50.2
B II: 1.18 DEC(1950.0): 29. 17.

RADIAL VELOCITIES (w.r.t. LSR; km/s):
STELLAR:

VELOCITY	REF.
16.0	VCIRC
6.8	WIL53
6.8	ABT72

H II REGION:

NO VALUES AVAILABLE

CO CLOUDS:

NO VALUES AVAILABLE

PROPER MOTION (arcsec/100 yr):

NO VALUES AVAILABLE

DISTANCE FROM SOLAR NEIGHBORHOOD (kpc):

DIST	REF.
3.03	JOH61
2.14	LIN68
2.50	HAG70
2.10	BEC71
3.03	LOH71
2.14	MOF72
2.17	LYN87

ANGULAR DIAMETER (arcmin):

ANG D	REF.
4.0	ALT70
14.0	ALT70
4.0	HAG70
8.0	BEC71
5.0	LYN83

LINEAR DIAMETER (pc):

LIN D	REF.
3.2	LDCAL
3.4	LYN83

AGE ESTIMATES:
AGE (Myr):

AGE	REF.
23.	LIN68
80.	MOF72
79.	LYN83
28.	BAN83
41.	LYN87

EARLIEST MS SPECTRAL TYPE:

eSpT	REF.
b2	JOH61
b2	BEC63
B5	HOA65
B5	MOF72
b4	MOF72
B2	LYN83
b3	LYN83

MS TURNOFF COLOR:

(B-V)	REF.
-0.23	JOH61
-0.15	HAG70
-0.20	MOF72
-0.19	LYN87

MASSES (SOLAR MASS UNITS):
STELLAR MASS:

MASS	REF.
5.70E+03	SCH63
3.66E+02	RED71
3.71E+02	BRU83
5.01E+03	LYN83

MASS IN ASSOCIATED H I CLOUDS:

NO VALUES AVAILABLE

IONIZED HYDROGEN MASS:

NO VALUES AVAILABLE

MASS IN ASSOCIATED MOLECULAR CLOUDS:

NO VALUES AVAILABLE

ASSOCIATED MASS IN THE FORM OF DUST:

MASS	REF.
3.06E+01	DOD70

VISUAL EXTINCTION TOWARD CLUSTER (mag):

AV	REF.
2.16	NEC67
1.83	BEC71
1.83	LYN83

B-V COLOR EXCESS (mag):

E(B-V)	REF.
0.72	JOH61
0.72	SCH63
0.74	BEC63
0.66	HAG70
0.72	MOF72
0.71	LYN87

REFERENCES

ABT72 Abt, H. A., and Biggs, E. S. 1972, Bibliography of Stellar Radial Velocities, (Latham Process Corp.: New York).
ALT70 Alter, G., Ruprecht, J., and Vanysek, V. 1970, The Catalog of Star Clusters and Associations (Budapest: Akad Kiado).
BAN83 Bania, T. M. 1983, private communication.
BEC63 Becker, W. 1963, Z. f. A., 57, 117.
BEC71 Becker, W. 1971, Astr. Ap. Suppl., 4, 241.
BRU83 Bruch, A., and Sanders, W. L. 1983, Astr. Ap., 121, 237.
DOD70 D Odorico, S., and Felli, M. 1970, Mem. Soc. Ast. Ital., 41, 89.
HAG70 Hagen, G. L. 1970, D. D. O. Pub., Univ. Toronto, 4.
HOA65 Hoag, A. A., and Applequist, N. L. 1965, Ap. J. Suppl., 12, 215.
JOH61 Johnson, H. L., Hoag, A. A., Iriarte, B., Mitchell, R. I., and Hallam, K. L. 1961, Lowell Obs. Bull., 5, 133.
LIN68 Lindoff, U. 1968, Arkiv Astr., 5, 1.
LDCAL Linear diameter calculated from published ang. diam. and distance.
LOH71 Lohmann, W. 1971, Astr. Nach., 292, 193.
LYN83 Lynga, G. 1983, Catalogue of Open Cluster Data (3rd edition), available through NSSDC, Greenbelt, Maryland, USA
LYN87 Lynga, G. 1987, Catalogue of Open Cluster Data (5th edition), available through NSSDC, Greenbelt, Maryland, USA
MOF72 Moffat, A. F. J. 1972, Astr. Ap. Suppl., 7, 355.
NEC67 Neckel, T. 1967, Heid. Ver., 19, 115.
VCIRC Radial velocity estimate based on cluster distance and rotation curve model of Brand 1986 (Ph. D. thesis, Leiden).
RED71 Reddish, V. C., and Sloan, C. 1971, Observatory, 91, 70.
SCH63 Schmidt, von K.-H. 1963, Ast. Nach., 287, 41.
WIL53 Wilson, R. E. 1953, General Catalog of Stellar Radial Velocities, (Washington, D.C.: Carnegie Institution, Pub 601).

CLUSTER IDENTIFICATION:

ALTER et al.: OCL 138
COMMON NAME: ROSLUND 4
ALTERNATE NAME: IC 4954/5
DATA BASE NUM: 27

SPATIAL COORDINATES:

L II: 66.96
B II: -1.26

RA(1950.0): 20. 2.9
DEC(1950.0): 29. 4.

RADIAL VELOCITIES (w.r.t. LSR; km/s):
STELLAR:

VELOCITY	REF.
16.7	VCIRC

H II REGION:

NO VALUES AVAILABLE

CO CLOUDS:

VELOCITY	REF.
11.6	BLI82
12.4	LEI88

PROPER MOTION (arcsec/100 yr):

NO VALUES AVAILABLE

DISTANCE FROM SOLAR NEIGHBORHOOD (kpc):

DIST	REF.
2.90	RAC69
2.90	MOF73
2.66	FEN78
2.65	LYN87

ANGULAR DIAMETER (arcmin):

ANG D	REF.
10.0	RAC69
6.0	LYN87

LINEAR DIAMETER (pc):

LIN D	REF.
8.4	LDCAL
6.0	RAC69
4.6	LYN87

AGE ESTIMATES:
AGE (Myr):

AGE	REF.
10.	RAC69
7.	BAN83
6.	LYN83
12.	LYN87

EARLIEST MS SPECTRAL TYPE:

eSpT	REF.
b2	MOF73

MS TURNOFF COLOR:

(B-V)	REF.
-0.28	RAC69
-0.25	LYN87

MASSES (SOLAR MASS UNITS):
STELLAR MASS:

NO VALUES AVAILABLE

MASS IN ASSOCIATED H I CLOUDS:

NO VALUES AVAILABLE

IONIZED HYDROGEN MASS:

NO VALUES AVAILABLE

MASS IN ASSOCIATED MOLECULAR CLOUDS:

MASS	REF.
9.50E+04	LEI88

ASSOCIATED MASS IN THE FORM OF DUST:

NO VALUES AVAILABLE

VISUAL EXTINCTION TOWARD CLUSTER (mag):

AV	REF.
2.70	RAC69

B-V COLOR EXCESS (mag):

E(B-V)	REF.
0.90	RAC69
0.91	LYN87

REFERENCES

BAN83 Bania, T. M. 1983, private communication.
BLI82 Blitz, L., Fich, M. and Stark, A. A. 1982, Ap. J. Suppl., 49, 183.
FEN78 Fenkart, R. P., and Binggeli, B. 1978, Astr. Ap. Suppl., 35, 271.
LEI88 Leisawitz, D., Thaddeus, P., and Bash, F. N. 1988, in preparation for submission to Ap. J. Suppl.
LDCAL Linear diameter calculated from published ang. diam. and distance.
LYN83 Lynga, G. 1983, Catalogue of Open Cluster Data (3rd edition), available through NSSDC, Greenbelt, Maryland, USA
LYN87 Lynga, G. 1987, Catalogue of Open Cluster Data (5th edition), available through NSSDC, Greenbelt, Maryland, USA
MOF73 Moffat, A. F. J., and Vogt, N. 1973, Astr. Ap., 23, 317.
RAC69 Racine, R. 1969, A. J., 74, 816.
VCIRC Radial velocity estimate based on cluster distance and rotation curve model of Brand 1986 (Ph. D. thesis, Leiden).

CLUSTER IDENTIFICATION:

ALTER et al.: OCL 148
COMMON NAME: NGC 6871
MEMBER OF ASSOC.: CYG OB3
DATA BASE NUM: 28

SPATIAL COORDINATES:

L II: 72.64
B II: 2.08

RA(1950.0): 20. 4.0
DEC(1950.0): 35. 38.

RADIAL VELOCITIES (w.r.t. LSR; km/s):
STELLAR:

VELOCITY	REF.
8.9	VCIRC
2.0	JOS61
4.0	HAG70
8.0	HUM78
3.0	WRA83
3.0	LYN87
3.0	HRO87

H II REGION:

NO VALUES AVAILABLE

CO CLOUDS:

NO VALUES AVAILABLE

PROPER MOTION (arcsec/100 yr):

NO VALUES AVAILABLE

DISTANCE FROM SOLAR NEIGHBORHOOD (kpc):

DIST	REF.
1.74	JOH61
1.74	WAL68
1.80	HAG70
1.66	SCH71
1.58	BEC71
2.50	WAL72
2.00	CRB74
1.73	NIC81
2.09	LUN84
1.75	LYN87

ANGULAR DIAMETER (arcmin):

ANG D	REF.
14.0	LIN68
25.0	ALT70
38.0	ALT70
20.0	BEC71
20.0	LYN83

LINEAR DIAMETER (pc):

LIN D	REF.
10.6	LDCAL
9.6	LYN83

AGE ESTIMATES:
AGE (Myr):

AGE	REF.
10.	LIN68
10.	LYN83
7.	BAN83
10.	DEL84
11.	MER86
12.	LYN87

EARLIEST MS SPECTRAL TYPE:

eSpT	REF.
b0	JOH61
O5	LOD63
O6	MAY64
B0.5	HOA65
O9	BEC71
O6	LYN83
O9	LYN83
B0	STO85

MS TURNOFF COLOR:

(B-V)	REF.
-0.24	JOH61
-0.25	HAG70
-0.25	LYN87

MASSES (SOLAR MASS UNITS):
STELLAR MASS:

MASS	REF.
2.98E+03	SCH63
3.85E+02	RED71
3.90E+02	BRU83
3.16E+03	LYN83

MASS IN ASSOCIATED H I CLOUDS:

NO VALUES AVAILABLE

IONIZED HYDROGEN MASS:

NO VALUES AVAILABLE

MASS IN ASSOCIATED MOLECULAR CLOUDS:

NO VALUES AVAILABLE

ASSOCIATED MASS IN THE FORM OF DUST:

NO VALUES AVAILABLE

VISUAL EXTINCTION TOWARD CLUSTER (mag):

AV	REF.
1.38	DLU65
1.38	NEC67
1.20	BEC71
1.20	LYN83

B-V COLOR EXCESS (mag):

E(B-V)	REF.
0.46	JOH61
0.40	BUS63
0.49	SCH63
0.40	BEC63
0.46	HAG70
0.51	NIC81
0.56	LUN84
0.46	LYN87

REFERENCES

ALT70 Alter, G., Ruprecht, J., and Vanysek, V. 1970, The Catalog of Star Clusters and Associations (Budapest: Akad Kiado).
BAN83 Bania, T. M. 1983, private communication.
BEC63 Becker, W. 1963, Z. f. A., 57, 117.
BEC71 Becker, W. 1971, Astr. Ap. Suppl., 4, 241.
BRU83 Bruch, A., and Sanders, W. L. 1983, Astr. Ap., 121, 237.
BUS63 Buscombe, W. 1963, Mt. Stromlo Mimeogram, No. 6, pg. 24.
CRB74 Crawford, D. L., Barnes, J. V., and Warren, W. H. 1974, A. J., 79, 623.
DEL84 Delgado, A. J., Alfaro, E. J., Garcia-Pelayo, J. M., Garrido, R., and Vidal, S. 1984, Astr. Ap. Suppl., 58, 447.
DLU65 Dluzhnevskaya, O. B. 1965, Nautch. Inf., No. 2.
HAG70 Hagen, G. L. 1970, D. D. O. Pub., Univ. Toronto, 4.
HOA65 Hoag, A. A., and Applequist, N. L. 1965, Ap. J. Suppl., 12, 215.
HR087 Hron, J. 1987, Astr. Ap., 176, 34.
HUM78 Humphreys, R. M. 1978, Ap. J. Suppl., 38, 309.
JOS61 Johnson, H. L., and Svolopoulos, S. N. 1961, Ap. J., 134, 868.
JOH61 Johnson, H. L., Hoag, A. A., Iriarte, B., Mitchell, R. I., and Hallam, K. L. 1961, Lowell Obs. Bull., 5, 133.
LIN68 Lindoff, U. 1968, Arkiv Astr., 5, 1.
LDCAL Linear diameter calculated from published ang. diam. and distance.
LOD63 Loden, L. O. 1963, Arkiv Astr., 3, 22.
LUN84 Lundstrom, I., and Stenholm, B. 1984, Astr. Ap. Suppl., 58, 163.
LYN83 Lynga, G. 1983, Catalogue of Open Cluster Data (3rd edition), available through NSSDC, Greenbelt, Maryland, USA
LYN87 Lynga, G. 1987, Catalogue of Open Cluster Data (5th edition), available through NSSDC, Greenbelt, Maryland, USA
MAY64 Mayer, P. 1964, Pub. Astr. Inst. Univ. Charles (Prague), S2, 37-41.
MER86 Mermilliod, J.-C., and Maeder, A. 1986, Astr. Ap., 158, 45.
NEC67 Neckel, T. 1967, Heid. Ver., 19, 115.
NIC81 Nicolet, B. 1981, Astr. Ap., 104, 185.
VCIRC Radial velocity estimate based on cluster distance and rotation curve model of Brand 1986 (Ph. D. thesis, Leiden).
RED71 Reddish, V. C., and Sloan, C. 1971, Observatory, 91, 70.
SCH63 Schmidt, von K.-H. 1963, Ast. Nach., 287, 41.
SCH71 Schwartz, R. 1971, Ap. Sp. Sci., 14, 286.
STO85 Stothers, R. B. 1985, Ap. J., 298, 521.
WAL72 Walborn, N. R. 1972, A. J., 77, 313.
WAL68 Walker, G. A. H., and Hodge, S. M. 1968, PASP, 80, 290.
WRA83 Wramdemark, S. 1983, private communication.

CLUSTER IDENTIFICATION:

ALTER et al.: OCL 149
COMMON NAME: BYURAKAN 1
MEMBER OF ASSOC.: CYG OB1
DATA BASE NUM: 29

SPATIAL COORDINATES:

L II: 72.73
B II: 1.74

RA(1950.0): 20. 5.6
DEC(1950.0): 35. 32.

RADIAL VELOCITIES (w.r.t. LSR; km/s):
STELLAR:

VELOCITY	REF.
6.4	VCIRC
12.9	WIL53
2.9	WIL53
12.5	RUB62
12.5	HUM78

H II REGION:

NO VALUES AVAILABLE

CO CLOUDS:

NO VALUES AVAILABLE

PROPER MOTION (arcsec/100 yr):

NO VALUES AVAILABLE

DISTANCE FROM SOLAR NEIGHBORHOOD (kpc):

DIST	REF.
1.66	RUB62

ANGULAR DIAMETER (arcmin):

ANG D	REF.
15.0	AMB49
15.0	LYN83

LINEAR DIAMETER (pc):

LIN D	REF.
7.2	LDCAL

AGE ESTIMATES:
AGE (Myr):

NO VALUES AVAILABLE

EARLIEST MS SPECTRAL TYPE:

NO VALUES AVAILABLE

MS TURNOFF COLOR:

NO VALUES AVAILABLE

MASSES (SOLAR MASS UNITS):
STELLAR MASS:

NO VALUES AVAILABLE

MASS IN ASSOCIATED H I CLOUDS:

NO VALUES AVAILABLE

IONIZED HYDROGEN MASS:

NO VALUES AVAILABLE

MASS IN ASSOCIATED MOLECULAR CLOUDS:

NO VALUES AVAILABLE

ASSOCIATED MASS IN THE FORM OF DUST:

NO VALUES AVAILABLE

VISUAL EXTINCTION TOWARD CLUSTER (mag):

NO VALUES AVAILABLE

B-V COLOR EXCESS (mag):

NO VALUES AVAILABLE

REFERENCES

AMB49 Ambartsumyan, V. A. 1949, Byur. Soob., 2, 9.
HUM78 Humphreys, R. M. 1978, Ap. J. Suppl., 38, 309.
LDCAL Linear diameter calculated from published ang. diam. and distance.
LYN83 Lynga, G. 1983, Catalogue of Open Cluster Data (3rd edition), available through NSSDC, Greenbelt, Maryland, USA
VCIRC Radial velocity estimate based on cluster distance and rotation curve model of Brand 1986 (Ph. D. thesis, Leiden).
RUB62 Rubin, V. C. et al. 1962, A. J., 67, 491.
WIL53 Wilson, R. E. 1953, General Catalog of Stellar Radial Velocities, (Washington, D.C.: Carnegie Institution, Pub 601).

CLUSTER IDENTIFICATION:

ALTER et al.: OCL 150
COMMON NAME: BYURAKAN 2
MEMBER OF ASSOC.: CYG OB1
DATA BASE NUM: 30

SPATIAL COORDINATES:

L II: 72.76
B II: 1.35

RA(1950.0): 20. 7.3
DEC(1950.0): 35. 20.

RADIAL VELOCITIES (w.r.t. LSR; km/s):
STELLAR:

VELOCITY	REF.
7.7	VCIRC
-19.1	WIL53
-11.1	WIL53

H II REGION:

NO VALUES AVAILABLE

CO CLOUDS:

NO VALUES AVAILABLE

PROPER MOTION (arcsec/100 yr):

NO VALUES AVAILABLE

DISTANCE FROM SOLAR NEIGHBORHOOD (kpc):

DIST	REF.
1.40	DUP76
1.50	BAN83
1.50	LYN87

ANGULAR DIAMETER (arcmin):

ANG D	REF.
13.0	AMB49
13.0	LYN83

LINEAR DIAMETER (pc):

LIN D	REF.
5.5	LDCAL

AGE ESTIMATES:
AGE (Myr):

AGE	REF.
10.	DUP76
6.	BAN83
1.	LYN83
10.	LYN87

EARLIEST MS SPECTRAL TYPE:

eSpT	REF.
B0	DUP76

MS TURNOFF COLOR:

(B-V)	REF.
-0.30	DUP76
-0.30	LYN87

MASSES (SOLAR MASS UNITS):
STELLAR MASS:

NO VALUES AVAILABLE

MASS IN ASSOCIATED H I CLOUDS:

NO VALUES AVAILABLE

IONIZED HYDROGEN MASS:

NO VALUES AVAILABLE

MASS IN ASSOCIATED MOLECULAR CLOUDS:

NO VALUES AVAILABLE

ASSOCIATED MASS IN THE FORM OF DUST:

NO VALUES AVAILABLE

VISUAL EXTINCTION TOWARD CLUSTER (mag):

NO VALUES AVAILABLE

B-V COLOR EXCESS (mag):

E(B-V)	REF.
0.41	LYN87

REFERENCES

AMB49 Ambartsumyan, V. A. 1949, Byur. Soob., 2, 9.
BAN83 Bania, T. M. 1983, private communication.
DUP76 Dupuy, D. L., and Zukauskas, W. 1976, J. R. Ast. Soc. Canada, 70, 169.
LDCAL Linear diameter calculated from published ang. diam. and distance.
LYN83 Lynga, G. 1983, Catalogue of Open Cluster Data (3rd edition), available through NSSDC, Greenbelt, Maryland, USA
LYN87 Lynga, G. 1987, Catalogue of Open Cluster Data (5th edition), available through NSSDC, Greenbelt, Maryland, USA
VCIRC Radial velocity estimate based on cluster distance and rotation curve model of Brand 1986 (Ph. D. thesis, Leiden).
WIL53 Wilson, R. E. 1953, General Catalog of Stellar Radial Velocities, (Washington, D.C.: Carnegie Institution, Pub 601).

CLUSTER IDENTIFICATION:

ALTER et al.: OCL 152
COMMON NAME: NGC 6883
MEMBER OF ASSOC.: CYG OB1
DATA BASE NUM: 31

SPATIAL COORDINATES:

L II: 73.29
B II: 1.19

RA(1950.0): 20. 9.4
DEC(1950.0): 35. 42.

RADIAL VELOCITIES (w.r.t. LSR; km/s):
STELLAR:

VELOCITY	REF.
7.2	VCIRC
11.2	SAN49
21.8	WIL53
7.8	WIL53
14.8	WIL53
9.8	WRA83
9.8	HRO87
9.8	LYN87

H II REGION:

NO VALUES AVAILABLE

CO CLOUDS:

NO VALUES AVAILABLE

PROPER MOTION (arcsec/100 yr):

NO VALUES AVAILABLE

DISTANCE FROM SOLAR NEIGHBORHOOD (kpc):

DIST	REF.
1.38	LIN68
1.39	BEC71
1.40	DUP76
1.38	LYN83
1.38	LUN84

ANGULAR DIAMETER (arcmin):

ANG D	REF.
12.0	ALT70
32.0	ALT70
15.0	BEC71
15.0	LYN83

LINEAR DIAMETER (pc):

LIN D	REF.
6.0	LDCAL
6.0	LYN83

AGE ESTIMATES:
AGE (Myr):

AGE	REF.
15.	LIN68
15.	LYN83

EARLIEST MS SPECTRAL TYPE:

eSpT	REF.
B3	BEC71
B3	LYN83
b0	LYN83
B3	LUN84

MS TURNOFF COLOR:

NO VALUES AVAILABLE

MASSES (SOLAR MASS UNITS):
STELLAR MASS:

MASS	REF.
7.29E+02	SCH63
6.31E+02	LYN83

MASS IN ASSOCIATED H I CLOUDS:

NO VALUES AVAILABLE

IONIZED HYDROGEN MASS:

NO VALUES AVAILABLE

MASS IN ASSOCIATED MOLECULAR CLOUDS:

NO VALUES AVAILABLE

ASSOCIATED MASS IN THE FORM OF DUST:

NO VALUES AVAILABLE

VISUAL EXTINCTION TOWARD CLUSTER (mag):

AV	REF.
1.30	PUR61
1.29	BEC71
1.29	LYN83

B-V COLOR EXCESS (mag):

E(B-V)	REF.
0.40	BUS63
0.50	SCH63
0.48	BEC63
0.31	LUN84

REFERENCES

ALT70 Alter, G., Ruprecht, J., and Vanysek, V. 1970, The Catalog of Star Clusters and Associations (Budapest: Akad Kiado).
BEC63 Becker, W. 1963, Z. f. A., 57, 117.
BEC71 Becker, W. 1971, Astr. Ap. Suppl., 4, 241.
BUS63 Buscombe, W. 1963, Mt. Stromlo Mimeogram, No. 6, pg. 24.
DUP76 Dupuy, D. L., and Zukauskas, W. 1976, J. R. Ast. Soc. Canada, 70, 169.
HR087 Hron, J. 1987, Astr. Ap., 176, 34.
LIN68 Lindoff, U. 1968, Arkiv Astr., 5, 1.
LDCAL Linear diameter calculated from published ang. diam. and distance.
LUN84 Lundstrom, I., and Stenholm, B. 1984, Astr. Ap. Suppl., 58, 163.
LYN83 Lynga, G. 1983, Catalogue of Open Cluster Data (3rd edition), available through NSSDC, Greenbelt, Maryland, USA
LYN87 Lynga, G. 1987, Catalogue of Open Cluster Data (5th edition), available through NSSDC, Greenbelt, Maryland, USA
PUR61 Purgathofer, A. 1961, Z. f. A., 52, 22.
VCIRC Radial velocity estimate based on cluster distance and rotation curve model of Brand 1986 (Ph. D. thesis, Leiden).
SAN49 Sanford, R. F. 1949, Ap. J., 110, 117.
SCH63 Schmidt, von K.-H. 1963, Ast. Nach., 287, 41.
WIL53 Wilson, R. E. 1953, General Catalog of Stellar Radial Velocities, (Washington, D.C.: Carnegie Institution, Pub 601).
WRA83 Wramdemark, S. 1983, private communication.

CLUSTER IDENTIFICATION:

COMMON NAME: BASEL 6
ALTERNATE NAME: OCL 157.1
DATA BASE NUM: 32

SPATIAL COORDINATES:

L II: 74.91
B II: 3.29

RA(1950.0): 20. 5.0
DEC(1950.0): 38. 12.

RADIAL VELOCITIES (w.r.t. LSR; km/s):
STELLAR:

VELOCITY	REF.
7.3	VCIRC

H II REGION:

NO VALUES AVAILABLE

CO CLOUDS:

NO VALUES AVAILABLE

PROPER MOTION (arcsec/100 yr):

NO VALUES AVAILABLE

DISTANCE FROM SOLAR NEIGHBORHOOD (kpc):

DIST	REF.
2.10	KIR69
2.11	BEC71

ANGULAR DIAMETER (arcmin):

ANG D	REF.
14.5	KIR69
14.0	BEC71
14.0	LYN83

LINEAR DIAMETER (pc):

LIN D	REF.
8.6	LDCAL
9.0	KIR69
8.6	BEC71
8.5	LYN83

AGE ESTIMATES:
AGE (Myr):

NO VALUES AVAILABLE

EARLIEST MS SPECTRAL TYPE:

eSpT	REF.
b3	KIR69
b4	KIR69
b4	BEC71
b4	LYN83

MS TURNOFF COLOR:

NO VALUES AVAILABLE

MASSES (SOLAR MASS UNITS):
STELLAR MASS:

NO VALUES AVAILABLE

MASS IN ASSOCIATED H I CLOUDS:

NO VALUES AVAILABLE

IONIZED HYDROGEN MASS:

NO VALUES AVAILABLE

MASS IN ASSOCIATED MOLECULAR CLOUDS:

NO VALUES AVAILABLE

ASSOCIATED MASS IN THE FORM OF DUST:

NO VALUES AVAILABLE

VISUAL EXTINCTION TOWARD CLUSTER (mag):

AV	REF.
1.96	BEC71
1.96	LYN83

B-V COLOR EXCESS (mag):

NO VALUES AVAILABLE

REFERENCES

BEC71 Becker, W. 1971, Astr. Ap. Suppl., 4, 241.
KIR69 Kiral, A. 1969, Astr. Ap., 2, 22.
LDCAL Linear diameter calculated from published ang. diam. and distance.
LYN83 Lynga, G. 1983, Catalogue of Open Cluster Data (3rd edition), available through NSSDC, Greenbelt, Maryland, USA
VCIRC Radial velocity estimate based on cluster distance and rotation curve model of Brand 1986 (Ph. D. thesis, Leiden).

CLUSTER IDENTIFICATION:

ALTER et al.: OCL 158
COMMON NAME: IC 4996
MEMBER OF ASSOC.: CYG OB1
DATA BASE NUM: 33

SPATIAL COORDINATES:

L II: 75.36
B II: 1.31

RA(1950.0): 20. 14.6
DEC(1950.0): 37. 29.

RADIAL VELOCITIES (w.r.t. LSR; km/s):
STELLAR:

VELOCITY	REF.
6.6	VCIRC
-29.4	ABT72
14.6	ABT72
6.6	HUM78
-4.4	WRA83
-4.4	LYN87
-4.4	HR087

H II REGION:

NO VALUES AVAILABLE

CO CLOUDS:

NO VALUES AVAILABLE

PROPER MOTION (arcsec/100 yr):

MU X	MU Y	REF.
-0.220	-0.390	HAG70

DISTANCE FROM SOLAR NEIGHBORHOOD (kpc):

DIST	REF.
1.50	JOH61
1.50	NEC67
1.70	LIN68
1.70	HAG70
1.78	BEC71
1.47	NIC81
1.93	ALF85
1.56	LYN87

ANGULAR DIAMETER (arcmin):

ANG D	REF.
6.0	ALT70
14.0	ALT70
6.0	BEC71
6.0	LYN83

LINEAR DIAMETER (pc):

LIN D	REF.
2.9	LDCAL
2.8	LYN83

AGE ESTIMATES:
AGE (Myr):

AGE	REF.
10.	LIN68
6.	BAN83
8.	ALF85
10.	LYN87

EARLIEST MS SPECTRAL TYPE:

eSpT	REF.
O9	SAN49
b0.5	JOH61
B3	HOA65
B0	BEC71
B0	LYN83
b0	LYN83

MS TURNOFF COLOR:

(B-V)	REF.
-0.28	JOH61
-0.40	HAG70
-0.40	LYN87

MASSES (SOLAR MASS UNITS):
STELLAR MASS:

MASS	REF.
9.38E+02	SCH63
4.98E+02	RED71
5.06E+02	BRU83
1.00E+03	LYN83

MASS IN ASSOCIATED H I CLOUDS:

NO VALUES AVAILABLE

IONIZED HYDROGEN MASS:

NO VALUES AVAILABLE

MASS IN ASSOCIATED MOLECULAR CLOUDS:

NO VALUES AVAILABLE

ASSOCIATED MASS IN THE FORM OF DUST:

NO VALUES AVAILABLE

VISUAL EXTINCTION TOWARD CLUSTER (mag):

AV	REF.
1.56	PUR61
1.92	NEC67
2.15	BEC71
2.15	LYN83
1.96	ALF85

B-V COLOR EXCESS (mag):

E(B-V)	REF.
0.64	JOH61
0.50	BUS63
0.62	SCH63
0.70	BEC63
0.64	HAG70
0.67	NIC81
0.64	LYN87

REFERENCES

ABT72 Abt, H. A., and Biggs, E. S. 1972, Bibliography of Stellar Radial Velocities, (Latham Process Corp.: New York).
ALF85 Alfaro, E. J., Delgado, A. J., Garcia-Pelayo, J. M., Garrido, R., and Saez, M. 1985, Astr. Ap. Suppl., 59, 441.
ALT70 Alter, G., Ruprecht, J., and Vanysek, V. 1970, The Catalog of Star Clusters and Associations (Budapest: Akad Kiado).
BAN83 Bania, T. M. 1983, private communication.
BEC63 Becker, W. 1963, Z. f. A., 57, 117.
BEC71 Becker, W. 1971, Astr. Ap. Suppl., 4, 241.
BRU83 Bruch, A., and Sanders, W. L. 1983, Astr. Ap., 121, 237.
BUS63 Buscombe, W. 1963, Mt. Stromlo Mimeogram, No. 6, pg. 24.
HAG70 Hagen, G. L. 1970, D. D. O. Pub., Univ. Toronto, 4.
HOA65 Hoag, A. A., and Applequist, N. L. 1965, Ap. J. Suppl., 12, 215.
HRO87 Hron, J. 1987, Astr. Ap., 176, 34.
HUM78 Humphreys, R. M. 1978, Ap. J. Suppl., 38, 309.
JOH61 Johnson, H. L., Hoag, A. A., Iriarte, B., Mitchell, R. I., and Hallam, K. L. 1961, Lowell Obs. Bull., 5, 133.
LIN68 Lindoff, U. 1968, Arkiv Astr., 5, 1.
LDCAL Linear diameter calculated from published ang. diam. and distance.
LYN83 Lynga, G. 1983, Catalogue of Open Cluster Data (3rd edition), available through NSSDC, Greenbelt, Maryland, USA
LYN87 Lynga, G. 1987, Catalogue of Open Cluster Data (5th edition), available through NSSDC, Greenbelt, Maryland, USA
NEC67 Neckel, T. 1967, Heid. Ver., 19, 115.
NIC81 Nicolet, B. 1981, Astr. Ap., 104, 185.
PUR61 Purgathofer, A. 1961, Z. f. A., 52, 22.
VCIRC Radial velocity estimate based on cluster distance and rotation curve model of Brand 1986 (Ph. D. thesis, Leiden).
RED71 Reddish, V. C., and Sloan, C. 1971, Observatory, 91, 70.
SAN49 Sanford, R. F. 1949, Ap. J., 110, 117.
SCH63 Schmidt, von K.-H. 1963, Ast. Nach., 287, 41.
WRA83 Wramdemark, S. 1983, private communication.

CLUSTER IDENTIFICATION:

ALTER et al.: OCL 161
COMMON NAME: BERK 87
DATA BASE NUM: 34

SPATIAL COORDINATES:

L II: 75.71
B II: 0.31
RA(1950.0): 20. 19.8
DEC(1950.0): 37. 12.

RADIAL VELOCITIES (w.r.t. LSR; km/s):
STELLAR:

VELOCITY	REF.
4.6	VCIRC
6.0	TUR82
14.0	TUR82

H II REGION:

VELOCITY	REF.
-4.8	REI70
27.0	SOL80
28.0	SOL80
3.5	CHU82

CO CLOUDS:

VELOCITY	REF.
0.0	BAU77

PROPER MOTION (arcsec/100 yr):

NO VALUES AVAILABLE

DISTANCE FROM SOLAR NEIGHBORHOOD (kpc):

DIST	REF.
1.10	SAN74
1.30	CRA78
0.50	EIR79
1.20	FOR80
0.60	STA81
0.95	TUR82
0.95	LUN84
0.84	LYN87

ANGULAR DIAMETER (arcmin):

ANG D	REF.
8.0	SET60
8.0	ALT70
12.0	ALT70
8.0	TUR82
12.0	LYN83

LINEAR DIAMETER (pc):

LIN D	REF.
3.3	LDCAL

AGE ESTIMATES:
AGE (Myr):

AGE	REF.
1.	TUR82
2.	TUR82
10.	LYN87

EARLIEST MS SPECTRAL TYPE:

eSpT	REF.
O8	EIR79
B0	EIR79
O7	GEH82
O9	GEH82
O	LYN83

MS TURNOFF COLOR:

(B-V)	REF.
-0.30	LYN87

MASSES (SOLAR MASS UNITS):
STELLAR MASS:

NO VALUES AVAILABLE

MASS IN ASSOCIATED H I CLOUDS:

NO VALUES AVAILABLE

IONIZED HYDROGEN MASS:

MASS	REF.
2.00E+00	CHU82

MASS IN ASSOCIATED MOLECULAR CLOUDS:

MASS	REF.
4.50E+02	CHU82

ASSOCIATED MASS IN THE FORM OF DUST:

NO VALUES AVAILABLE

VISUAL EXTINCTION TOWARD CLUSTER (mag):

NO VALUES AVAILABLE

B-V COLOR EXCESS (mag):

E(B-V)	REF.
1.35	TUR82
1.40	LUN84
1.35	LYN87

REFERENCES

ALT70 Alter, G., Ruprecht, J., and Vanysek, V. 1970, The Catalog of Star Clusters and Associations (Budapest: Akad Kiado).
BAU77 Baud, B. 1977, Astr. Ap., 57, 443.
CHU82 Churchwell, E., and Bieging, J. H. 1982, Ap. J., 258, 515.
CRA78 Crampton, D., Georgelin, Y. M., and Georgelin, Y. P. 1978, Astr. Ap., 66, 1.
EIR79 Eiroa, C., Elasser, H., and Lahulla, J. F. 1979, Astr. Ap., 74, 89.
FOR80 Forbes, D. 1980, J. R. Ast. Soc. Canada, 74, 360.
GEH82 Gehrz, R. D. et al. 1982, Ap. J., 254, 550.
LDCAL Linear diameter calculated from published ang. diam. and distance.
LUN84 Lundstrom, I., and Stenholm, B. 1984, Astr. Ap. Suppl., 58, 163.
LYN83 Lynga, G. 1983, Catalogue of Open Cluster Data (3rd edition), available through NSSDC, Greenbelt, Maryland, USA
LYN87 Lynga, G. 1987, Catalogue of Open Cluster Data (5th edition), available through NSSDC, Greenbelt, Maryland, USA
VCIRC Radial velocity estimate based on cluster distance and rotation curve model of Brand 1986 (Ph. D. thesis, Leiden).
REI70 Reifenstein, E. C., Wilson, T. L., Burke, B. F., Mezger, P. G., and Altenhoff, W. J. 1970, Astr. Ap., 4, 357.
SAN74 Sanduleak, N. 1974, PASP, 86, 74.
SET60 Setteducati, A. F., and Weaver, H. F. 1960, Newly Found Star Clusters, Radio Astr. Laboratory, Berkeley, CA, USA
SOL80 Solf, J. 1980, Astr. Ap., 92, 51.
STA81 Staude, H. J., Lenzen, R., Dyck, H. M., and Schmidt, G. D. 1981, Ap. J., 255, 95.
TUR82 Turner, D. G., and Forbes, D. 1982, PASP, 94, 789.

CLUSTER IDENTIFICATION:

ALTER et al.: OCL 167
COMMON NAME: BERK 86
MEMBER OF ASSOC.: CYG OB1
DATA BASE NUM: 35

SPATIAL COORDINATES:

L II: 76.66
B II: 1.26

RA(1950.0): 20. 18.6
DEC(1950.0): 38. 32.

RADIAL VELOCITIES (w.r.t. LSR; km/s):
STELLAR:

VELOCITY	REF.
5.7	VCIRC
20.4	WIL53
27.4	ABT72

H II REGION:

NO VALUES AVAILABLE

CO CLOUDS:

NO VALUES AVAILABLE

PROPER MOTION (arcsec/100 yr):

NO VALUES AVAILABLE

DISTANCE FROM SOLAR NEIGHBORHOOD (kpc):

DIST	REF.
1.80	SAN74
1.72	FOR81
1.74	LUN84
1.11	LYN87

ANGULAR DIAMETER (arcmin):

ANG D	REF.
8.0	SET60
8.0	LYN83

LINEAR DIAMETER (pc):

LIN D	REF.
4.0	LDCAL

AGE ESTIMATES:
AGE (Myr):

AGE	REF.
6.	FOR81
6.	BAN83
6.	LYN83
41.	LYN87

EARLIEST MS SPECTRAL TYPE:

eSpT	REF.
O9	FOR81

MS TURNOFF COLOR:

(B-V)	REF.
-0.20	LYN87

MASSES (SOLAR MASS UNITS):
STELLAR MASS:

NO VALUES AVAILABLE

MASS IN ASSOCIATED H I CLOUDS:

NO VALUES AVAILABLE

IONIZED HYDROGEN MASS:

NO VALUES AVAILABLE

MASS IN ASSOCIATED MOLECULAR CLOUDS:

NO VALUES AVAILABLE

ASSOCIATED MASS IN THE FORM OF DUST:

NO VALUES AVAILABLE

VISUAL EXTINCTION TOWARD CLUSTER (mag):

NO VALUES AVAILABLE

B-V COLOR EXCESS (mag):

E(B-V)	REF.
0.96	FOR81
0.86	LUN84
0.99	LYN87

REFERENCES

ABT72 Abt, H. A., and Biggs, E. S. 1972, Bibliography of Stellar Radial Velocities, (Latham Process Corp.: New York).
BAN83 Bania, T. M. 1983, private communication.
FOR81 Forbes, D. 1981, PASP, 93, 441.
LDCAL Linear diameter calculated from published ang. diam. and distance.
LUN84 Lundstrom, I., and Stenholm, B. 1984, Astr. Ap. Suppl., 58, 163.
LYN83 Lynga, G. 1983, Catalogue of Open Cluster Data (3rd edition), available through NSSDC, Greenbelt, Maryland, USA
LYN87 Lynga, G. 1987, Catalogue of Open Cluster Data (5th edition), available through NSSDC, Greenbelt, Maryland, USA
VCIRC Radial velocity estimate based on cluster distance and rotation curve model of Brand 1986 (Ph. D. thesis, Leiden).
SAN74 Sanduleak, N. 1974, PASP, 86, 74.
SET60 Setteducati, A. F., and Weaver, H. F. 1960, Newly Found Star Clusters, Radio Astr. Laboratory, Berkeley, CA, USA
WIL53 Wilson, R. E. 1953, General Catalog of Stellar Radial Velocities, (Washington, D.C.: Carnegie Institution, Pub 601).

CLUSTER IDENTIFICATION:

ALTER et al.: OCL 168
COMMON NAME: NGC 6913
ALTERNATE NAME: M29
MEMBER OF ASSOC.: CYG OB9
DATA BASE NUM: 36

SPATIAL COORDINATES:

L II: 76.92
B II: 0.60
RA(1950.0): 20. 22.1
DEC(1950.0): 38. 22.

RADIAL VELOCITIES (w.r.t. LSR; km/s):
STELLAR:

VELOCITY	REF.
5.1	VCIRC
-9.7	JOS61
-10.7	HAG70
-10.7	ABT72
-7.7	WRA83
-7.7	LYN87
-7.7	HRO87

H II REGION:

NO VALUES AVAILABLE

CO CLOUDS:

NO VALUES AVAILABLE

PROPER MOTION (arcsec/100 yr):

NO VALUES AVAILABLE

DISTANCE FROM SOLAR NEIGHBORHOOD (kpc):

DIST	REF.
1.15	JOH61
1.15	NEC67
1.58	WAL68
1.10	HAG70
1.25	BEC71
1.10	SAN73
1.48	SPA85
1.34	LYN87

ANGULAR DIAMETER (arcmin):

ANG D	REF.
6.0	LIN68
7.0	ALT70
32.0	ALT70
7.0	BEC71
7.0	LYN83

LINEAR DIAMETER (pc):

LIN D	REF.
2.8	LDCAL
2.5	LYN83

AGE ESTIMATES:
AGE (Myr):

AGE	REF.
10.	LIN68
8.	BAN83
1.	SPA85
1.	SAG86
10.	LYN87

EARLIEST MS SPECTRAL TYPE:

eSpT	REF.
b0	JOH61
O6	HAR61
O9	WAL68
B0	BEC71
B0	LYN83
b0	LYN83
O9.5	STO85

MS TURNOFF COLOR:

(B-V)	REF.
-0.28	JOH61
-0.25	HAG70
-0.28	LYN87

MASSES (SOLAR MASS UNITS):
STELLAR MASS:

MASS	REF.
1.95E+03	SCH63
3.28E+02	RED71
1.74E+02	LOH72
3.33E+02	BRU83
2.00E+03	LYN83

MASS IN ASSOCIATED H I CLOUDS:

NO VALUES AVAILABLE

IONIZED HYDROGEN MASS:

NO VALUES AVAILABLE

MASS IN ASSOCIATED MOLECULAR CLOUDS:

NO VALUES AVAILABLE

ASSOCIATED MASS IN THE FORM OF DUST:

NO VALUES AVAILABLE

VISUAL EXTINCTION TOWARD CLUSTER (mag):

AV	REF.
3.06	NEC67
2.91	BEC71
2.91	LYN83

B-V COLOR EXCESS (mag):

E(B-V)	REF.
1.02	JOH61
1.00	BUS63
0.97	BEC63
1.04	POL69
0.83	HAG70
0.78	LYN87

REFERENCES

ABT72 Abt, H. A., and Biggs, E. S. 1972, Bibliography of Stellar Radial Velocities, (Latham Process Corp.: New York).
ALT70 Alter, G., Ruprecht, J., and Vanysek, V. 1970, The Catalog of Star Clusters and Associations (Budapest: Akad Kiado).
BAN83 Bania, T. M. 1983, private communication.
BEC63 Becker, W. 1963, Z. f. A., 57, 117.
BEC71 Becker, W. 1971, Astr. Ap. Suppl., 4, 241.
BRU83 Bruch, A., and Sanders, W. L. 1983, Astr. Ap., 121, 237.
BUS63 Buscombe, W. 1963, Mt. Stromlo Mimeogram, No. 6, pg. 24.
HAG70 Hagen, G. L. 1970, D. D. O. Pub., Univ. Toronto, 4.
HAR61 Haradze, E. K., Bartaya, P. A. 1961, Abas. Bull., 26, 35.
HR087 Hron, J. 1987, Astr. Ap., 176, 34.
JOS61 Johnson, H. L., and Svolopoulos, S. N. 1961, Ap. J., 134, 868.
JOH61 Johnson, H. L., Hoag, A. A., Iriarte, B., Mitchell, R. I., and Hallam, K. L. 1961, Lowell Obs. Bull., 5, 133.
LIN68 Lindoff, U. 1968, Arkiv Astr., 5, 1.
LDCAL Linear diameter calculated from published ang. diam. and distance.
LOH72 Lohmann, W. 1972, Astr. Nach., 293, 259.
LYN83 Lynga, G. 1983, Catalogue of Open Cluster Data (3rd edition), available through NSSDC, Greenbelt, Maryland, USA
LYN87 Lynga, G. 1987, Catalogue of Open Cluster Data (5th edition), available through NSSDC, Greenbelt, Maryland, USA
NEC67 Neckel, T. 1967, Heid. Ver., 19, 115.
POL69 Polishchuk, E. P. 1969, Astr. Astrofiz., 8, 67.
VCIRC Radial velocity estimate based on cluster distance and rotation curve model of Brand 1986 (Ph. D. thesis, Leiden).
RED71 Reddish, V. C., and Sloan, C. 1971, Observatory, 91, 70.
SAG86 Sagar, R., Piskunov, A. E., Myakutin, V. I., and Joshi, U. C. 1986, MNRAS, 220, 383.
SAN73 Sanders, W. L. 1973, Astr. Ap. Suppl., 9, 221.
SCH63 Schmidt, von K.-H. 1963, Ast. Nach., 287, 41.
SPA85 Spassova, N. M., and Baev, P. V. 1985, Ap. Sp. Sci., 112, 111.
STO85 Stothers, R. B. 1985, Ap. J., 298, 521.
WAL68 Walker, G. A. H., and Hodge, S. M. 1968, PASP, 80, 290.
WRA83 Wramdemark, S. 1983, private communication.

CLUSTER IDENTIFICATION:

ALTER et al.: OCL 177
COMMON NAME: COLLIN 419
ALTERNATE NAME: SNR GAMCYG
DATA BASE NUM: 37

SPATIAL COORDINATES:

L II: 78.09 RA(1950.0): 20. 16.3
B II: 2.79 DEC(1950.0): 40. 34.

RADIAL VELOCITIES (w.r.t. LSR; km/s):
STELLAR:

VELOCITY	REF.
4.4	VCIRC
10.5	WIL53
10.5	WRA83
10.5	LYN87
10.5	HRO87

H II REGION:

NO VALUES AVAILABLE

CO CLOUDS:

NO VALUES AVAILABLE

PROPER MOTION (arcsec/100 yr):

NO VALUES AVAILABLE

DISTANCE FROM SOLAR NEIGHBORHOOD (kpc):

DIST	REF.
1.47	COL31
1.40	HRO87

ANGULAR DIAMETER (arcmin):

ANG D	REF.
4.0	COL31
4.5	LYN83

LINEAR DIAMETER (pc):

LIN D	REF.
1.9	LDCAL

AGE ESTIMATES:
AGE (Myr):

NO VALUES AVAILABLE

EARLIEST MS SPECTRAL TYPE:

eSpT	REF.
B2	COL31
O8	MAY64
O8	LYN81
B2	LYN83

MS TURNOFF COLOR:

NO VALUES AVAILABLE

MASSES (SOLAR MASS UNITS):
STELLAR MASS:

NO VALUES AVAILABLE

MASS IN ASSOCIATED H I CLOUDS:

NO VALUES AVAILABLE

IONIZED HYDROGEN MASS:

NO VALUES AVAILABLE

MASS IN ASSOCIATED MOLECULAR CLOUDS:

NO VALUES AVAILABLE

ASSOCIATED MASS IN THE FORM OF DUST:

NO VALUES AVAILABLE

VISUAL EXTINCTION TOWARD CLUSTER (mag):

NO VALUES AVAILABLE

B-V COLOR EXCESS (mag):

NO VALUES AVAILABLE

REFERENCES

COL31 Collinder, P. 1931, Ann. Lund Obs., No. 2.
HRO87 Hron, J. 1987, Astr. Ap., 176, 34.
LDCAL Linear diameter calculated from published ang. diam. and distance.
LYN81 Lynga, G. 1981, Catalogue of Open Cluster Data, available through NSSDC, Greenbelt, Maryland, USA
LYN83 Lynga, G. 1983, Catalogue of Open Cluster Data (3rd edition), available through NSSDC, Greenbelt, Maryland, USA
LYN87 Lynga, G. 1987, Catalogue of Open Cluster Data (5th edition), available through NSSDC, Greenbelt, Maryland, USA
MAY64 Mayer, P. 1964, Pub. Astr. Inst. Univ. Charles (Prague), S2, 37-41.
VCIRC Radial velocity estimate based on cluster distance and rotation curve model of Brand 1986 (Ph. D. thesis, Leiden).
WIL53 Wilson, R. E. 1953, General Catalog of Stellar Radial Velocities, (Washington, D.C.: Carnegie Institution, Pub 601).
WRA83 Wramdemark, S. 1983, private communication.

CLUSTER IDENTIFICATION:

ALTER et al.: OCL 181
COMMON NAME: NGC 6910
ALTERNATE NAME: SNR GAMCYG
DATA BASE NUM: 38

SPATIAL COORDINATES:

L II: 78.66 RA(1950.0): 20. 21.3
B II: 2.03 DEC(1950.0): 40. 37.

RADIAL VELOCITIES (w.r.t. LSR; km/s):
STELLAR:

VELOCITY	REF.
4.2	VCIRC
-25.7	JOS61
-14.0	DAV66
-13.0	HUM78
-12.7	WRA83
-12.7	LYN87
-12.7	HRO87

H II REGION:

VELOCITY	REF.
-11.2	DAV63

CO CLOUDS:

NO VALUES AVAILABLE

PROPER MOTION (arcsec/100 yr):

MU X	MU Y	REF.
0.270	-0.090	LAT79

DISTANCE FROM SOLAR NEIGHBORHOOD (kpc):

DIST	REF.
1.65	JOH61
1.82	WAL68
1.70	HAG70
1.58	BEC71
1.65	LOH71
1.60	SCH71
1.51	LYN87

ANGULAR DIAMETER (arcmin):

ANG D	REF.
8.0	ALT70
40.0	ALT70
10.0	HAG70
13.0	BEC71
8.0	LYN83

LINEAR DIAMETER (pc):

LIN D	REF.
3.8	LDCAL
4.6	LIN68
6.4	LOH71
3.8	LYN83

AGE ESTIMATES:
AGE (Myr):

AGE	REF.
3.	DAV63
3.	ALT70
10.	LYN87

EARLIEST MS SPECTRAL TYPE:

eSpT	REF.
b0	JOH61
O5	MAY64
O5	HOA65
O6	WAL68
O8	LYN83
B0	LYN83
b1	LYN83

MS TURNOFF COLOR:

(B-V)	REF.
-0.28	JOH61
-0.30	HAG70
-0.30	LYN87

MASSES (SOLAR MASS UNITS):
STELLAR MASS:

MASS	REF.
4.21E+03	SCH63
5.11E+02	RED71
3.01E+02	LOH72
5.18E+02	BRU83
3.98E+03	LYN83

MASS IN ASSOCIATED H I CLOUDS:

NO VALUES AVAILABLE

IONIZED HYDROGEN MASS:

NO VALUES AVAILABLE

MASS IN ASSOCIATED MOLECULAR CLOUDS:

NO VALUES AVAILABLE

ASSOCIATED MASS IN THE FORM OF DUST:

NO VALUES AVAILABLE

VISUAL EXTINCTION TOWARD CLUSTER (mag):

AV	REF.
3.15	NEC67
2.89	BEC71
2.89	LYN83

B-V COLOR EXCESS (mag):

E(B-V)	REF.
1.05	JOH61
0.90	BUS63
0.82	SCH63
0.96	BEC63
1.05	HAG70
1.05	LYN87

REFERENCES

ALT70 Alter, G., Ruprecht, J., and Vanysek, V. 1970, The Catalog of Star Clusters and Associations (Budapest: Akad Kiado).
BEC63 Becker, W. 1963, Z. f. A., 57, 117.
BEC71 Becker, W. 1971, Astr. Ap. Suppl., 4, 241.
BRU83 Bruch, A., and Sanders, W. L. 1983, Astr. Ap., 121, 237.
BUS63 Buscombe, W. 1963, Mt. Stromlo Mimeogram, No. 6, pg. 24.
DAV63 Davies, R. D., and Tovmassian, H. M. 1963, MNRAS, 127, 45.
DAV66 Davies, R. D., and Tovmassian, H. M. 1966, MNRAS, 132, 283.
HAG70 Hagen, G. L. 1970, D. D. O. Pub., Univ. Toronto, 4.
HOA65 Hoag, A. A., and Applequist, N. L. 1965, Ap. J. Suppl., 12, 215.
HRO87 Hron, J. 1987, Astr. Ap., 176, 34.
HUM78 Humphreys, R. M. 1978, Ap. J. Suppl., 38, 309.
JOS61 Johnson, H. L., and Svolopoulos, S. N. 1961, Ap. J., 134, 868.
JOH61 Johnson, H. L., Hoag, A. A., Iriarte, B., Mitchell, R. I., and Hallam, K. L. 1961, Lowell Obs. Bull., 5, 133.
LAT79 Latypov, A. A. 1979, Sov. Astr., 23, 287.
LIN68 Lindoff, U. 1968, Arkiv Astr., 5, 1.
LDCAL Linear diameter calculated from published ang. diam. and distance.
LOH71 Lohmann, W. 1971, Astr. Nach., 292, 193.
LOH72 Lohmann, W. 1972, Astr. Nach., 293, 259.
LYN83 Lynga, G. 1983, Catalogue of Open Cluster Data (3rd edition), available through NSSDC, Greenbelt, Maryland, USA
LYN87 Lynga, G. 1987, Catalogue of Open Cluster Data (5th edition), available through NSSDC, Greenbelt, Maryland, USA
MAY64 Mayer, P. 1964, Pub. Astr. Inst. Univ. Charles (Prague), S2, 37-41.
NEC67 Neckel, T. 1967, Heid. Ver., 19, 115.
VCIRC Radial velocity estimate based on cluster distance and rotation curve model of Brand 1986 (Ph. D. thesis, Leiden).
RED71 Reddish, V. C., and Sloan, C. 1971, Observatory, 91, 70.
SCH63 Schmidt, von K.-H. 1963, Ast. Nach., 287, 41.
SCH71 Schwartz, R. 1971, Ap. Sp. Sci., 14, 286.
WAL68 Walker, G. A. H., and Hodge, S. M. 1968, PASP, 80, 290.
WRA83 Wramdemark, S. 1983, private communication.

CLUSTER IDENTIFICATION:

ALTER et al.: OCL 197
COMMON NAME: NGC 6996
ALTERNATE NAME: NGC 7000
SHARPLESS: S117
WESTERHOUT: W 80
MEMBER OF ASSOC.: CYG OB7
DATA BASE NUM: 39

SPATIAL COORDINATES:

L II: 85.46 RA(1950.0): 20. 54.7
B II: -0.47 DEC(1950.0): 44. 26.

RADIAL VELOCITIES (w.r.t. LSR; km/s):
STELLAR:

VELOCITY	REF.
0.7	VCIRC
10.0	WIL53

H II REGION:

VELOCITY	REF.
0.0	PEN67
3.0	ISR78
4.4	ISR78
-0.8	PED80
-2.0	REY85

CO CLOUDS:

VELOCITY	REF.
4.4	ISR78
0.0	BLI82

PROPER MOTION (arcsec/100 yr):

NO VALUES AVAILABLE

DISTANCE FROM SOLAR NEIGHBORHOOD (kpc):

DIST	REF.
0.50	BAR58
0.80	FIC84

ANGULAR DIAMETER (arcmin):

ANG D	REF.
7.0	ALT70
15.0	ALT70
7.0	LYN83

LINEAR DIAMETER (pc):

LIN D	REF.
1.3	LDCAL
1.0	LYN83

AGE ESTIMATES:
AGE (Myr):

NO VALUES AVAILABLE

EARLIEST MS SPECTRAL TYPE:

NO VALUES AVAILABLE

MS TURNOFF COLOR:

NO VALUES AVAILABLE

MASSES (SOLAR MASS UNITS):
STELLAR MASS:

NO VALUES AVAILABLE

MASS IN ASSOCIATED H I CLOUDS:

NO VALUES AVAILABLE

IONIZED HYDROGEN MASS:

NO VALUES AVAILABLE

MASS IN ASSOCIATED MOLECULAR CLOUDS:

NO VALUES AVAILABLE

ASSOCIATED MASS IN THE FORM OF DUST:

NO VALUES AVAILABLE

VISUAL EXTINCTION TOWARD CLUSTER (mag):

AV	REF.
1.92	LYN83

B-V COLOR EXCESS (mag):

E(B-V)	REF.
0.64	BAR58

REFERENCES

ALT70 Alter, G., Ruprecht, J., and Vanysek, V. 1970, The Catalog of Star Clusters and Associations (Budapest: Akad Kiado).
BAR58 Barkhatova, K. A., and Driakhlushina, L. I. 1958, Ast. Zh., 35, 448.
BLI82 Blitz, L., Fich, M. and Stark, A. A. 1982, Ap. J. Suppl., 49, 183.
FIC84 Fich, M., and Blitz, L. 1984, Ap. J., 279, 125.
ISR78 Israel, F. P. 1978, Astr. Ap., 70, 769.
LDCAL Linear diameter calculated from published ang. diam. and distance.
LYN83 Lynga, G. 1983, Catalogue of Open Cluster Data (3rd edition), available through NSSDC, Greenbelt, Maryland, USA
PED80 Pedlar, A. 1980, MNRAS, 192, 179.
PEN67 Penfield, H., Palmer, P., and Zuckerman, B. 1967, Ap. J. (Letters), 148, L25.
VCIRC Radial velocity estimate based on cluster distance and rotation curve model of Brand 1986 (Ph. D. thesis, Leiden).
REY85 Reynolds, R. J. 1985, Ap. J., 294, 256.
WIL53 Wilson, R. E. 1953, General Catalog of Stellar Radial Velocities, (Washington, D.C.: Carnegie Institution, Pub 601).

CLUSTER IDENTIFICATION:

ALTER et al.: OCL 205
COMMON NAME: NGC 7062
DATA BASE NUM: 40

SPATIAL COORDINATES:

L II: 89.93 RA(1950.0): 21. 21.4
B II: -2.72 DEC(1950.0): 46. 10.

RADIAL VELOCITIES (w.r.t. LSR; km/s):
STELLAR:

VELOCITY	REF.
-4.6	VCIRC
-0.1	BOL84

H II REGION:

NO VALUES AVAILABLE

CO CLOUDS:

NO VALUES AVAILABLE

PROPER MOTION (arcsec/100 yr):

MU X	MU Y	REF.
0.010	0.010	SAN71

DISTANCE FROM SOLAR NEIGHBORHOOD (kpc):

DIST	REF.
1.76	JOH61
2.24	LIN68
1.70	HAG70
2.24	BEC71
1.76	LOH71
1.79	HAS73
1.72	SPA85
1.70	LYN87

ANGULAR DIAMETER (arcmin):

ANG D	REF.
4.5	ALT70
7.0	ALT70
7.0	BEC71
6.2	HAS73
7.0	LYN83

LINEAR DIAMETER (pc):

LIN D	REF.
3.7	LDCAL
3.9	LYN83

AGE ESTIMATES:
AGE (Myr):

AGE	REF.
800.	FEA65
280.	BAR69
750.	HAS73
631.	LYN83
100.	SPA85
493.	LYN87

EARLIEST MS SPECTRAL TYPE:

eSpT	REF.
b4	JOH61
b4	BEC63
a0	HAS73
A1	LYN83
a3	LYN83

MS TURNOFF COLOR:

(B-V)	REF.
-0.18	JOH61
0.20	HAG70
0.00	HAS73
-0.10	HAS73
0.06	LYN87

MASSES (SOLAR MASS UNITS):
STELLAR MASS:

MASS	REF.
1.64E+03	SCH63
3.34E+02	RED71
7.80E+02	LOH72
3.39E+02	BRU83
1.58E+03	LYN83

MASS IN ASSOCIATED H I CLOUDS:

MASS	REF.
1.20E+03	GOR68

IONIZED HYDROGEN MASS:

NO VALUES AVAILABLE

MASS IN ASSOCIATED MOLECULAR CLOUDS:

NO VALUES AVAILABLE

ASSOCIATED MASS IN THE FORM OF DUST:

MASS	REF.
7.30E+00	DOD70

VISUAL EXTINCTION TOWARD CLUSTER (mag):

AV	REF.
2.22	NEC67
1.35	BEC71
1.44	HAS73
1.35	LYN83

B-V COLOR EXCESS (mag):

E(B-V)	REF.
0.74	JOH61
0.70	BUS63
0.74	SCH63
0.25	HAG70
0.48	HAS73
0.25	SPA85
0.41	LYN87

REFERENCES

ALT70 Alter, G., Ruprecht, J., and Vanysek, V. 1970, The Catalog of Star Clusters and Associations (Budapest: Akad Kiado).
BAR69 Barbaro, G., Dallaporta, N., and Fabris, G. 1969, Ap. Sp. Sci., 3, 123.
BEC63 Becker, W. 1963, Z. f. A., 57, 117.
BEC71 Becker, W. 1971, Astr. Ap. Suppl., 4, 241.
BOL84 Bolte, M., and Mateo, M. 1984, PASP, 96, 784.
BRU83 Bruch, A., and Sanders, W. L. 1983, Astr. Ap., 121, 237.
BUS63 Buscombe, W. 1963, Mt. Stromlo Mimeogram, No. 6, pg. 24.
DOD70 D Odorico, S., and Felli, M. 1970, Mem. Soc. Ast. Ital., 41, 89.
FEA65 Fenkart, R. P. 1965, Contr. Obs. Ast. Univ. Padova in Asiago, No. 181.
GOR68 Gordon, C. P., Howard, W. E., and Westerhout, G. 1968, Ap. J., 154, 103.
HAG70 Hagen, G. L. 1970, D. D. O. Pub., Univ. Toronto, 4.
HAS73 Hassan, S. M. 1973, Astr. Ap. Suppl., 9, 261.
JOH61 Johnson, H. L., Hoag, A. A., Iriarte, B., Mitchell, R. I., and Hallam, K. L. 1961, Lowell Obs. Bull., 5, 133.
LIN68 Lindoff, U. 1968, Arkiv Astr., 5, 1.
LDCAL Linear diameter calculated from published ang. diam. and distance.
LOH71 Lohmann, W. 1971, Astr. Nach., 292, 193.
LOH72 Lohmann, W. 1972, Astr. Nach., 293, 259.
LYN83 Lynga, G. 1983, Catalogue of Open Cluster Data (3rd edition), available through NSSDC, Greenbelt, Maryland, USA
LYN87 Lynga, G. 1987, Catalogue of Open Cluster Data (5th edition), available through NSSDC, Greenbelt, Maryland, USA
NEC67 Neckel, T. 1967, Heid. Ver., 19, 115.
VCIRC Radial velocity estimate based on cluster distance and rotation curve model of Brand 1986 (Ph. D. thesis, Leiden).
RED71 Reddish, V. C., and Sloan, C. 1971, Observatory, 91, 70.
SAN71 Sanders, W. L. 1971, Astr. Ap., 14, 226.
SCH63 Schmidt, von K.-H. 1963, Ast. Nach., 287, 41.
SPA85 Spassova, N. M., and Baev, P. V. 1985, Ap. Sp. Sci., 112, 111.

CLUSTER IDENTIFICATION:

ALTER et al.: OCL 208
COMMON NAME: NGC 7067
DATA BASE NUM: 41

SPATIAL COORDINATES:

L II: 91.19 RA(1950.0): 21. 22.4
B II: -1.67 DEC(1950.0): 47. 48.

RADIAL VELOCITIES (w.r.t. LSR; km/s):
STELLAR:

VELOCITY	REF.
-25.9	VCIRC

H II REGION:

NO VALUES AVAILABLE

CO CLOUDS:

VELOCITY	REF.
-19.2	LEI88

PROPER MOTION (arcsec/100 yr):

NO VALUES AVAILABLE

DISTANCE FROM SOLAR NEIGHBORHOOD (kpc):

DIST	REF.
2.90	JOH61
2.90	NEC67
4.50	LIN68
3.60	HAG70
4.48	BEC71
4.41	HAS73
3.71	LYN87

ANGULAR DIAMETER (arcmin):

ANG D	REF.
1.0	ALT70
7.0	ALT70
4.0	HAG70
3.0	BEC71
3.0	LYN83

LINEAR DIAMETER (pc):

LIN D	REF.
3.9	LDCAL
3.0	LYN83

AGE ESTIMATES:
AGE (Myr):

AGE	REF.
13.	LYN83
41.	LYN87

EARLIEST MS SPECTRAL TYPE:

eSpT	REF.
b1	JOH61
O	BEC65
B0.5	HOA65
o	BEC71
b0.5	HAS73
B0	LYN83

MS TURNOFF COLOR:

(B-V)	REF.
-0.25	JOH61
-0.20	HAG70
-0.20	HAS73
-0.20	LYN87

MASSES (SOLAR MASS UNITS):
STELLAR MASS:

MASS	REF.
2.65E+03	SCH63
5.43E+02	RED71
5.50E+02	BRU83
2.51E+03	LYN83

MASS IN ASSOCIATED H I CLOUDS:

NO VALUES AVAILABLE

IONIZED HYDROGEN MASS:

NO VALUES AVAILABLE

MASS IN ASSOCIATED MOLECULAR CLOUDS:

MASS	REF.
2.50E+03	LEI88

ASSOCIATED MASS IN THE FORM OF DUST:

NO VALUES AVAILABLE

VISUAL EXTINCTION TOWARD CLUSTER (mag):

AV	REF.
2.52	NEC67
2.58	BEC71
2.58	LYN83

B-V COLOR EXCESS (mag):

E(B-V)	REF.
0.84	JOH61
0.80	BUS63
0.84	SCH63
0.85	HAG70
0.83	HAS73
0.84	LYN87

REFERENCES

ALT70 Alter, G., Ruprecht, J., and Vanysek, V. 1970, The Catalog of Star Clusters and Associations (Budapest: Akad Kiado).
BEC65 Becker, W. 1965, Contr. Obs. Ast. Univ. Padova in Asiago, No. 180.
BEC71 Becker, W. 1971, Astr. Ap. Suppl., 4, 241.
BRU83 Bruch, A., and Sanders, W. L. 1983, Astr. Ap., 121, 237.
BUS63 Buscombe, W. 1963, Mt. Stromlo Mimeogram, No. 6, pg. 24.
HAG70 Hagen, G. L. 1970, D. D. O. Pub., Univ. Toronto, 4.
HAS73 Hassan, S. M. 1973, Astr. Ap. Suppl., 9, 261.
HOA65 Hoag, A. A., and Applequist, N. L. 1965, Ap. J. Suppl., 12, 215.
JOH61 Johnson, H. L., Hoag, A. A., Iriarte, B., Mitchell, R. I., and Hallam, K. L. 1961, Lowell Obs. Bull., 5, 133.
LEI88 Leisawitz, D., Thaddeus, P., and Bash, F. N. 1988, in preparation for submission to Ap. J. Suppl.
LIN68 Lindoff, U. 1968, Arkiv Astr., 5, 1.
LDCAL Linear diameter calculated from published ang. diam. and distance.
LYN83 Lynga, G. 1983, Catalogue of Open Cluster Data (3rd edition), available through NSSDC, Greenbelt, Maryland, USA
LYN87 Lynga, G. 1987, Catalogue of Open Cluster Data (5th edition), available through NSSDC, Greenbelt, Maryland, USA
NEC67 Neckel, T. 1967, Heid. Ver., 19, 115.
VCIRC Radial velocity estimate based on cluster distance and rotation curve model of Brand 1986 (Ph. D. thesis, Leiden).
RED71 Reddish, V. C., and Sloan, C. 1971, Observatory, 91, 70.
SCH63 Schmidt, von K.-H. 1963, Ast. Nach., 287, 41.

CLUSTER IDENTIFICATION:

ALTER et al.: OCL 210
COMMON NAME: NGC 7031
MEMBER OF ASSOC.: CYG OB7
DATA BASE NUM: 42

SPATIAL COORDINATES:

L II: 91.32
B II: 2.26
RA(1950.0): 21. 5.7
DEC(1950.0): 50. 38.

RADIAL VELOCITIES (w.r.t. LSR; km/s):
STELLAR:

VELOCITY	REF.
-1.9	VCIRC

H II REGION:

NO VALUES AVAILABLE

CO CLOUDS:

NO VALUES AVAILABLE

PROPER MOTION (arcsec/100 yr):

NO VALUES AVAILABLE

DISTANCE FROM SOLAR NEIGHBORHOOD (kpc):

DIST	REF.
1.15	JOH61
1.15	NEC67
0.91	LIN68
1.10	HAG70
0.91	BEC71
0.73	HAB73
0.88	LYN83

ANGULAR DIAMETER (arcmin):

ANG D	REF.
4.0	ALT70
14.0	ALT70
5.0	LYN83

LINEAR DIAMETER (pc):

LIN D	REF.
1.4	LDCAL
1.5	LYN83

AGE ESTIMATES:
AGE (Myr):

AGE	REF.
480.	HAB73
56.	LYN83
117.	LYN87

EARLIEST MS SPECTRAL TYPE:

eSpT	REF.
B5	BEC71
B5	LYN83
b6	LYN83

MS TURNOFF COLOR:

(B-V)	REF.
-0.15	HAG70
-0.05	HAB73
-0.11	LYN87

MASSES (SOLAR MASS UNITS):
STELLAR MASS:

MASS	REF.
9.30E+02	SCH63
2.59E+02	RED71
2.55E+02	LOH72
2.62E+02	BRU83
1.00E+03	LYN83

MASS IN ASSOCIATED H I CLOUDS:

MASS	REF.
4.23E+01	DOD70

IONIZED HYDROGEN MASS:

NO VALUES AVAILABLE

MASS IN ASSOCIATED MOLECULAR CLOUDS:

NO VALUES AVAILABLE

ASSOCIATED MASS IN THE FORM OF DUST:

MASS	REF.
4.70E+00	DOD70

VISUAL EXTINCTION TOWARD CLUSTER (mag):

AV	REF.
2.79	NEC67
2.46	BEC71
2.46	LYN83

B-V COLOR EXCESS (mag):

E(B-V)	REF.
0.93	JOH61
0.90	BUS63
0.93	SCH63
0.82	BEC63
0.93	HAG70
0.83	LYN87

REFERENCES

ALT70 Alter, G., Ruprecht, J., and Vanysek, V. 1970, The Catalog of Star Clusters and Associations (Budapest: Akad Kiado).
BEC63 Becker, W. 1963, Z. f. A., 57, 117.
BEC71 Becker, W. 1971, Astr. Ap. Suppl., 4, 241.
BRU83 Bruch, A., and Sanders, W. L. 1983, Astr. Ap., 121, 237.
BUS63 Buscombe, W. 1963, Mt. Stromlo Mimeogram, No. 6, pg. 24.
DOD70 D Odorico, S., and Felli, M. 1970, Mem. Soc. Ast. Ital., 41, 89.
HAG70 Hagen, G. L. 1970, D. D. O. Pub., Univ. Toronto, 4.
HAB73 Hassan, S. M., and Barbon, R. 1973, Mem. Soc. Ast. Ital., 44, 39.
JOH61 Johnson, H. L., Hoag, A. A., Iriarte, B., Mitchell, R. I., and Hallam, K. L. 1961, Lowell Obs. Bull., 5, 133.
LIN68 Lindoff, U. 1968, Arkiv Astr., 5, 1.
LDCAL Linear diameter calculated from published ang. diam. and distance.
LOH72 Lohmann, W. 1972, Astr. Nach., 293, 259.
LYN83 Lynga, G. 1983, Catalogue of Open Cluster Data (3rd edition), available through NSSDC, Greenbelt, Maryland, USA
LYN87 Lynga, G. 1987, Catalogue of Open Cluster Data (5th edition), available through NSSDC, Greenbelt, Maryland, USA
NEC67 Neckel, T. 1967, Heid. Ver., 19, 115.
VCIRC Radial velocity estimate based on cluster distance and rotation curve model of Brand 1986 (Ph. D. thesis, Leiden).
RED71 Reddish, V. C., and Sloan, C. 1971, Observatory, 91, 70.
SCH63 Schmidt, von K.-H. 1963, Ast. Nach., 287, 41.

CLUSTER IDENTIFICATION:

ALTER et al.: OCL 213
COMMON NAME: IC 5146
SHARPLESS: S125
MEMBER OF ASSOC.: CYG OB7
DATA BASE NUM: 43

SPATIAL COORDINATES:

L II: 94.39
B II: -5.50

RA(1950.0): 21. 51.5
DEC(1950.0): 47. 2.

RADIAL VELOCITIES (w.r.t. LSR; km/s):
STELLAR:

VELOCITY	REF.
-3.3	VCIRC

H II REGION:

VELOCITY	REF.
2.8	WIL70
1.9	KUI76
4.8	ISR78

CO CLOUDS:

VELOCITY	REF.
4.0	CUT80
8.0	CUT80
8.1	ISR80
8.0	BLI82

PROPER MOTION (arcsec/100 yr):

NO VALUES AVAILABLE

DISTANCE FROM SOLAR NEIGHBORHOOD (kpc):

DIST	REF.
1.00	JOH61
1.00	NEC67
1.00	HAG70
0.96	BEC71
0.96	ROG82
1.10	FIC84
1.00	FOR84
0.96	LYN87

ANGULAR DIAMETER (arcmin):

ANG D	REF.
9.5	COL31
9.0	LYN83
2.8	FOR84

LINEAR DIAMETER (pc):

LIN D	REF.
2.6	LDCAL
2.8	LYN83
3.4	WIL84
0.8	FOR84

AGE ESTIMATES:
AGE (Myr):

AGE	REF.
3.	WAL59
0.	CUT82
229.	LYN83
2.	FOR84
199.	LYN87

EARLIEST MS SPECTRAL TYPE:

eSpT	REF.
B1	BEC71
B1	BER72
B0	CRA74
B0	LAD79
B1	LYN83
b1	LYN83

MS TURNOFF COLOR:

(B-V)	REF.
-0.05	HAG70
-0.05	LYN87

MASSES (SOLAR MASS UNITS):
STELLAR MASS:

MASS	REF.
2.39E+02	SCH63
2.00E+02	LYN83
1.40E+02	FOR84

MASS IN ASSOCIATED H I CLOUDS:

MASS	REF.
6.70E+02	RIE67
4.40E+02	ROG82

IONIZED HYDROGEN MASS:

MASS	REF.
6.00E+00	KUI76
7.00E+00	ISR77
1.00E+01	CUT82
9.80E+00	ROG82

MASS IN ASSOCIATED MOLECULAR CLOUDS:

MASS	REF.
6.30E+02	LAD79
1.95E+03	LAD79
1.00E+03	ISR80
1.50E+03	ROG82
4.30E+02	CUT82

ASSOCIATED MASS IN THE FORM OF DUST:

MASS	REF.
4.50E+00	SAM75

VISUAL EXTINCTION TOWARD CLUSTER (mag):

AV	REF.
1.35	NEC67
2.05	BEC71
2.05	LYN83
3.80	FOR84

B-V COLOR EXCESS (mag):

E(B-V)	REF.
0.45	JOH61

0.50	BUS63
0.45	SCH63
0.45	BEC63
0.46	STA68
0.45	HAG70
0.45	LYN87

REFERENCES

BEC63 Becker, W. 1963, Z. f. A., 57, 117.
BEC71 Becker, W. 1971, Astr. Ap. Suppl., 4, 241.
BER72 Bernacca, P. L., and Ciatti, F. 1972, Astr. Ap., 19, 482.
BLI82 Blitz, L., Fich, M. and Stark, A. A. 1982, Ap. J. Suppl., 49, 183.
BUS63 Buscombe, W. 1963, Mt. Stromlo Mimeogram, No. 6, pg. 24.
COL31 Collinder, P. 1931, Ann. Lund Obs., No. 2.
CRA74 Crampton, D., and Fisher, W. A. 1974, DAO Pub., 14, 83.
FIC84 Fich, M., and Blitz, L. 1984, Ap. J., 279, 125.
FOR84 Forte, J. C., and Orsatti, A. M. 1984, Ap. J. Suppl., 56, 211.
HAG70 Hagen, G. L. 1970, D. D. O. Pub., Univ. Toronto, 4.
ISR77 Israel, F. P. 1977, Astr. Ap., 60, 233.
ISR78 Israel, F. P. 1978, Astr. Ap., 70, 769.
ISR80 Israel, F. P. 1980, A. J., 85, 1612.
JOH61 Johnson, H. L., Hoag, A. A., Iriarte, B., Mitchell, R. I., and Hallam, K. L. 1961, Lowell Obs. Bull., 5, 133.
KUI76 Kuiper, T. B. H., Knapp, G. R., and Rodriguez-Kuiper, E. N. 1976, Astr. Ap., 48, 475.
LAD79 Lada, C. J., and Elmegreen, B. G. 1979, A. J., 84, 336.
LDCAL Linear diameter calculated from published ang. diam. and distance.
LYN83 Lynga, G. 1983, Catalogue of Open Cluster Data (3rd edition), available through NSSDC, Greenbelt, Maryland, USA
LYN87 Lynga, G. 1987, Catalogue of Open Cluster Data (5th edition), available through NSSDC, Greenbelt, Maryland, USA
CUT80 Mc Cutcheon, W. H., Dickman, R. L., Shuter, W. L. H., and Roger, R. S., 1980, Ap. J., 237, 9.
CUT82 Mc Cutcheon, W. H., Roger, R. S., and Dickman, R. L. 1982, Ap. J., 256, 139.
NEC67 Neckel, T. 1967, Heid. Ver., 19, 115.
VCIRC Radial velocity estimate based on cluster distance and rotation curve model of Brand 1986 (Ph. D. thesis, Leiden).
RIE67 Riegel, K. W. 1967, Ap. J., 148, 87.
ROG82 Roger, R. S., and Irwin, J. A. 1982, Ap. J., 256, 127.
SAM75 Samson, W. B. 1975, Ap. Sp. Sci., 34, 377.
SCH63 Schmidt, von K.-H. 1963, Ast. Nach., 287, 41.
STA68 Starikova, G. A. 1969, Sov. Astr., 12, 632.
WAL59 Walker, M. F. 1959, Ap. J., 130, 57.
WIL84 Wilking, B. A., Harvey, P. M., and Joy, M. 1984, A. J., 89, 496.
WIL70 Williamson, R. A. 1970, Ap. Sp. Sci., 6, 45.

CLUSTER IDENTIFICATION:

ALTER et al.: OCL 214
COMMON NAME: NGC 7086
DATA BASE NUM: 44

SPATIAL COORDINATES:

L II: 94.41
B II: 0.20
RA(1950.0): 21. 28.8
DEC(1950.0): 51. 22.

RADIAL VELOCITIES (w.r.t. LSR; km/s):
STELLAR:

VELOCITY	REF.
-4.6	VCIRC

H II REGION:

NO VALUES AVAILABLE

CO CLOUDS:

NO VALUES AVAILABLE

PROPER MOTION (arcsec/100 yr):

NO VALUES AVAILABLE

DISTANCE FROM SOLAR NEIGHBORHOOD (kpc):

DIST	REF.
1.40	JOH61
1.32	HOA65
1.17	HAS67
1.30	HAG70
1.40	LOH71
1.17	BEC71
1.18	LYN87

ANGULAR DIAMETER (arcmin):

ANG D	REF.
9.1	HAS67
5.8	ALT70
13.0	ALT70
9.0	LYN83

LINEAR DIAMETER (pc):

LIN D	REF.
3.3	LDCAL
3.2	LYN83

AGE ESTIMATES:
AGE (Myr):

AGE	REF.
600.	HAS67
85.	LIN68
85.	LYN83
129.	LYN87

EARLIEST MS SPECTRAL TYPE:

eSpT	REF.
b8	JOH61
B9.5	HAS67
a0	HAS67
A5	LYN83
A0	LYN83
b6	LYN83

MS TURNOFF COLOR:

(B-V)	REF.
-0.10	JOH61
-0.10	HAG70
-0.10	LYN87

MASSES (SOLAR MASS UNITS):
STELLAR MASS:

MASS	REF.
1.44E+03	SCH63
1.64E+02	RED71
3.76E+02	LOH72
1.66E+02	BRU83
1.58E+03	LYN83

MASS IN ASSOCIATED H I CLOUDS:

NO VALUES AVAILABLE

IONIZED HYDROGEN MASS:

NO VALUES AVAILABLE

MASS IN ASSOCIATED MOLECULAR CLOUDS:

NO VALUES AVAILABLE

ASSOCIATED MASS IN THE FORM OF DUST:

NO VALUES AVAILABLE

VISUAL EXTINCTION TOWARD CLUSTER (mag):

AV	REF.
2.16	NEC67
2.07	BEC71
2.07	LYN83

B-V COLOR EXCESS (mag):

E(B-V)	REF.
0.72	JOH61
0.69	HAS67
0.69	STA68
0.90	POL70
0.70	HAG70
0.70	LYN87

REFERENCES

ALT70 Alter, G., Ruprecht, J., and Vanysek, V. 1970, The Catalog of Star Clusters and Associations (Budapest: Akad Kiado).
BEC71 Becker, W. 1971, Astr. Ap. Suppl., 4, 241.
BRU83 Bruch, A., and Sanders, W. L. 1983, Astr. Ap., 121, 237.
HAG70 Hagen, G. L. 1970, D. D. O. Pub., Univ. Toronto, 4.
HAS67 Hassan, S. M. 1967, Z. f. A., 66, 6.
HOA65 Hoag, A. A., and Applequist, N. L. 1965, Ap. J. Suppl., 12, 215.
JOH61 Johnson, H. L., Hoag, A. A., Iriarte, B., Mitchell, R. I., and Hallam, K. L. 1961, Lowell Obs. Bull., 5, 133.
LIN68 Lindoff, U. 1968, Arkiv Astr., 5, 1.
LDCAL Linear diameter calculated from published ang. diam. and distance.
LOH71 Lohmann, W. 1971, Astr. Nach., 292, 193.
LOH72 Lohmann, W. 1972, Astr. Nach., 293, 259.
LYN83 Lynga, G. 1983, Catalogue of Open Cluster Data (3rd edition), available through NSSDC, Greenbelt, Maryland, USA
LYN87 Lynga, G. 1987, Catalogue of Open Cluster Data (5th edition), available through NSSDC, Greenbelt, Maryland, USA
NEC67 Neckel, T. 1967, Heid. Ver., 19, 115.
POL70 Polishchuk, E. P. 1970, Astr. Astrofiz., 9, 17.
VCIRC Radial velocity estimate based on cluster distance and rotation curve model of Brand 1986 (Ph. D. thesis, Leiden).
RED71 Reddish, V. C., and Sloan, C. 1971, Observatory, 91, 70.
SCH63 Schmidt, von K.-H. 1963, Ast. Nach., 287, 41.
STA68 Starikova, G. A. 1969, Sov. Astr., 12, 632.

CLUSTER IDENTIFICATION:

ALTER et al.: OCL 218
COMMON NAME: NGC 7128
DATA BASE NUM: 45

SPATIAL COORDINATES:

L II: 97.35
B II: 0.42
RA(1950.0): 21. 42.3
DEC(1950.0): 53. 29.

RADIAL VELOCITIES (w.r.t. LSR; km/s):
STELLAR:

VELOCITY	REF.
-18.1	VCIRC

H II REGION:

NO VALUES AVAILABLE

CO CLOUDS:

NO VALUES AVAILABLE

PROPER MOTION (arcsec/100 yr):

NO VALUES AVAILABLE

DISTANCE FROM SOLAR NEIGHBORHOOD (kpc):

DIST	REF.
2.50	JOH61
2.50	NEC67
3.10	LIN68
3.16	BAB69
2.50	HAG70
3.10	BEC71
2.31	LYN87

ANGULAR DIAMETER (arcmin):

ANG D	REF.
2.0	ALT70
9.0	ALT70
4.0	HAG70
3.2	BEC71
3.1	LYN83

LINEAR DIAMETER (pc):

LIN D	REF.
2.6	LDCAL
2.3	LYN83

AGE ESTIMATES:
AGE (Myr):

AGE	REF.
11.	BAB69
10.	LYN83
41.	LYN87

EARLIEST MS SPECTRAL TYPE:

eSpT	REF.
b2	JOH61
B2	HOA65
B2	BEC71
B2	LYN83
b1	LYN83

MS TURNOFF COLOR:

(B-V)	REF.
-0.24	JOH61
-0.20	HAG70
-0.20	LYN87

MASSES (SOLAR MASS UNITS):
STELLAR MASS:

MASS	REF.
1.92E+03	SCH63
3.66E+02	RED71
3.71E+02	BRU83
2.00E+03	LYN83

MASS IN ASSOCIATED H I CLOUDS:

NO VALUES AVAILABLE

IONIZED HYDROGEN MASS:

NO VALUES AVAILABLE

MASS IN ASSOCIATED MOLECULAR CLOUDS:

NO VALUES AVAILABLE

ASSOCIATED MASS IN THE FORM OF DUST:

NO VALUES AVAILABLE

VISUAL EXTINCTION TOWARD CLUSTER (mag):

AV	REF.
3.30	NEC67
3.06	BEC71
3.06	LYN83

B-V COLOR EXCESS (mag):

E(B-V)	REF.
1.10	JOH61
1.10	BUS63
1.00	STA68
1.14	POL70
0.92	HAG70
0.92	LYN87

REFERENCES

ALT70 Alter, G., Ruprecht, J., and Vanysek, V. 1970, The Catalog of Star Clusters and Associations (Budapest: Akad Kiado).
BAB69 Barbon, R. 1969, Mem. Soc. Ast. Ital., 40, 45.
BEC71 Becker, W. 1971, Astr. Ap. Suppl., 4, 241.
BRU83 Bruch, A., and Sanders, W. L. 1983, Astr. Ap., 121, 237.
BUS63 Buscombe, W. 1963, Mt. Stromlo Mimeogram, No. 6, pg. 24.
HAG70 Hagen, G. L. 1970, D. D. O. Pub., Univ. Toronto, 4.
HOA65 Hoag, A. A., and Applequist, N. L. 1965, Ap. J. Suppl., 12, 215.
JOH61 Johnson, H. L., Hoag, A. A., Iriarte, B., Mitchell, R. I., and Hallam, K. L. 1961, Lowell Obs. Bull., 5, 133.
LIN68 Lindoff, U. 1968, Arkiv Astr., 5, 1.
LDCAL Linear diameter calculated from published ang. diam. and distance.
LYN83 Lynga, G. 1983, Catalogue of Open Cluster Data (3rd edition), available through NSSDC, Greenbelt, Maryland, USA
LYN87 Lynga, G. 1987, Catalogue of Open Cluster Data (5th edition), available through NSSDC, Greenbelt, Maryland, USA
NEC67 Neckel, T. 1967, Heid. Ver., 19, 115.
POL70 Polishchuk, E. P. 1970, Astr. Astrofiz., 9, 17.
VCIRC Radial velocity estimate based on cluster distance and rotation curve model of Brand 1986 (Ph. D. thesis, Leiden).
RED71 Reddish, V. C., and Sloan, C. 1971, Observatory, 91, 70.
SCH63 Schmidt, von K.-H. 1963, Ast. Nach., 287, 41.
STA68 Starikova, G. A. 1969, Sov. Astr., 12, 632.

CLUSTER IDENTIFICATION:

ALTER et al.: OCL 222
COMMON NAME: IC 1396
ALTERNATE NAME: TRUMP 37
SHARPLESS: S131
MEMBER OF ASSOC.: CEP ØB2
DATA BASE NUM: 46

SPATIAL COORDINATES:

L II: 99.29
B II: 3.73
RA(1950.Ø): 21. 37.5
DEC(1950.Ø): 57. 16.

RADIAL VELOCITIES (w.r.t. LSR; km/s):
STELLAR:

VELOCITY	REF.
-4.2	VCIRC
6.3	RUF37
7.9	PET61
2.7	HUM78
-Ø.1	HUM78
33.9	HUM78
3.9	WRA83
3.9	HRØ87
3.9	LYN87

H II REGION:

VELOCITY	REF.
-Ø.3	COU66
-3.5	RIE77
-1.9	PED8Ø
Ø.Ø	HES85
-8.Ø	HES85

CO CLOUDS:

VELOCITY	REF.
-8.Ø	LOR75
Ø.Ø	BLI82
-5.Ø	HES85
5.Ø	HES85
-6.Ø	LEI88
-2.6	LEI88
-Ø.7	LEI88

PROPER MOTION (arcsec/1ØØ yr):

NO VALUES AVAILABLE

DISTANCE FROM SOLAR NEIGHBORHOOD (kpc):

DIST	REF.
Ø.83	SIM68
Ø.85	HAG7Ø
Ø.71	BEC71
1.ØØ	GAR76
Ø.86	FIC84
Ø.79	LYN87

ANGULAR DIAMETER (arcmin):

ANG D	REF.
Ø.Ø	
3Ø.Ø	ALT7Ø
115.Ø	ALT7Ø
6Ø.Ø	BEC71
5Ø.Ø	LYN83

LINEAR DIAMETER (pc):

LIN D	REF.
12.1	LDCAL
12.Ø	BEC71
12.Ø	LYN83

AGE ESTIMATES:
AGE (Myr):

AGE	REF.
4.	SIM76
1.	LYN83
4.	HES85
1Ø.	LYN87

EARLIEST MS SPECTRAL TYPE:

eSpT	REF.
O5	KIR58
O6	MAY64
O6.5	HUM78
O	LYN83
O6	CLA87

MS TURNOFF COLOR:

(B-V)	REF.
-Ø.35	HAG7Ø
-Ø.35	LYN87

MASSES (SOLAR MASS UNITS):
STELLAR MASS:

MASS	REF.
1.ØØE+Ø3	SIM76
1.ØØE+Ø3	LYN83
1.8ØE+Ø3	KUN86

MASS IN ASSOCIATED H I CLOUDS:

MASS	REF.
2.ØØE+Ø4	SIM76

IONIZED HYDROGEN MASS:

MASS	REF.
7.ØØE+Ø3	POT65
2.9ØE+Ø3	MAT8Ø

MASS IN ASSOCIATED MOLECULAR CLOUDS:

MASS	REF.
1.6ØE+Ø4	LEI88
1.1ØE+Ø4	LEI88

ASSOCIATED MASS IN THE FORM OF DUST:

NO VALUES AVAILABLE

VISUAL EXTINCTION TOWARD CLUSTER (mag):

AV	REF.
1.53	BEC71
1.53	LYN83

B-V COLOR EXCESS (mag):

E(B-V)	REF.
Ø.8Ø	BUS63
Ø.5Ø	HAG7Ø
Ø.54	KUN86
Ø.58	CLA87
Ø.5Ø	LYN87

REFERENCES

ALT70 Alter, G., Ruprecht, J., and Vanysek, V. 1970, The Catalog of Star Clusters and Associations (Budapest: Akad Kiado).
BEC71 Becker, W. 1971, Astr. Ap. Suppl., 4, 241.
BLI82 Blitz, L., Fich, M. and Stark, A. A. 1982, Ap. J. Suppl., 49, 183.
BUS63 Buscombe, W. 1963, Mt. Stromlo Mimeogram, No. 6, pg. 24.
CLA87 Clayton, G. C., and Fitzpatrick, E. L. 1987, A. J., 92, 157.
COU66 Courtes, G., Cruvellier, P., and Georgelin, Y. 1966, J. des Obs., 49, 329.
FIC84 Fich, M., and Blitz, L. 1984, Ap. J., 279, 125.
GAR76 Garrison, R. F., and Kormendy, J. 1976, PASP, 88, 865.
HAG70 Hagen, G. L. 1970, D. D. O. Pub., Univ. Toronto, 4.
HES85 Heske, A., and Wendker, H. J. 1985, Astr. Ap., 149, 199.
HRO87 Hron, J. 1987, Astr. Ap., 176, 34.
HUM78 Humphreys, R. M. 1978, Ap. J. Suppl., 38, 309.
KIR58 Kirillova, R. S. 1958, Trudy Gos. Ast. Inst. Pub., 29, 178.
KUN86 Kun, M. 1986, Ap. Sp. Sci., 125, 13.
LEI88 Leisawitz, D., Thaddeus, P., and Bash, F. N. 1988, in preparation for submission to Ap. J. Suppl.
LDCAL Linear diameter calculated from published ang. diam. and distance.
LOR75 Loren, R. B., Peters, W. L., and Vanden Bout, P. A. 1975, Ap. J., 195, 75.
LYN83 Lynga, G. 1983, Catalogue of Open Cluster Data (3rd edition), available through NSSDC, Greenbelt, Maryland, USA
LYN87 Lynga, G. 1987, Catalogue of Open Cluster Data (5th edition), available through NSSDC, Greenbelt, Maryland, USA
MAT80 Matthews, H. E., Haslam, C. G. T., Hills, D. L., and Salter, C. J. 1980, Astr. Ap., 88, 285.
MAY64 Mayer, P. 1964, Pub. Astr. Inst. Univ. Charles (Prague), S2, 37-41.
PED80 Pedlar, A. 1980, MNRAS, 192, 179.
PET61 Petrie, R. M., and Pearce, J. A. 1961, DAO Pub., 12, 1.
POT65 Pottasch, S. R. 1965, Vistas, 6, 149.
VCIRC Radial velocity estimate based on cluster distance and rotation curve model of Brand 1986 (Ph. D. thesis, Leiden).
RIE77 Rieu, N.-Q., and Pankonin, V. 1977, Astr. Ap., 60, 313.
RUF37 Rufus, W. C. 1937, Pub. Obs. Univ. Michigan, 5, 45.
SIM68 Simonson, S. C. 1968, Ap. J., 154, 923.
SIM76 Simonson, S. C., and van Someren-Greve, H. W. 1976, Astr. Ap., 49, 343.
WRA83 Wramdemark, S. 1983, private communication.

CLUSTER IDENTIFICATION:

ALTER et al.: OCL 224
COMMON NAME: IC 1442
DATA BASE NUM: 47

SPATIAL COORDINATES:

L II: 101.36
B II: -2.20

RA(1950.0): 22. 14.6
DEC(1950.0): 53. 48.

RADIAL VELOCITIES (w.r.t. LSR; km/s):
STELLAR:

VELOCITY	REF.
-12.2	VCIRC

H II REGION:

NO VALUES AVAILABLE

CO CLOUDS:

VELOCITY	REF.
-29.6	LEI88

PROPER MOTION (arcsec/100 yr):

NO VALUES AVAILABLE

DISTANCE FROM SOLAR NEIGHBORHOOD (kpc):

DIST	REF.
1.81	YIL70
1.74	LYN87

ANGULAR DIAMETER (arcmin):

ANG D	REF.
3.5	YIL70
2.0	YIL70
5.0	LYN87

LINEAR DIAMETER (pc):

LIN D	REF.
2.6	LDCAL
1.8	YIL70
1.0	YIL70

AGE ESTIMATES:
AGE (Myr):

AGE	REF.
126.	LYN83
35.	LYN87

EARLIEST MS SPECTRAL TYPE:

eSpT	REF.
b5	YIL70

MS TURNOFF COLOR:

(B-V)	REF.
-0.10	JAN82
-0.21	LYN87

MASSES (SOLAR MASS UNITS):
STELLAR MASS:

NO VALUES AVAILABLE

MASS IN ASSOCIATED H I CLOUDS:

NO VALUES AVAILABLE

IONIZED HYDROGEN MASS:

NO VALUES AVAILABLE

MASS IN ASSOCIATED MOLECULAR CLOUDS:

MASS	REF.
1.40E+03	LEI88

ASSOCIATED MASS IN THE FORM OF DUST:

NO VALUES AVAILABLE

VISUAL EXTINCTION TOWARD CLUSTER (mag):

AV	REF.
1.62	LYN83

B-V COLOR EXCESS (mag):

E(B-V)	REF.
0.53	JAN82
0.43	LYN87

REFERENCES

JAN82 Janes, K., and Adler, D. 1982, Ap. J. Suppl., 49, 425.

LEI88 Leisawitz, D., Thaddeus, P., and Bash, F. N. 1988, in preparation for submission to Ap. J. Suppl.

LDCAL Linear diameter calculated from published ang. diam. and distance.

LYN83 Lynga, G. 1983, Catalogue of Open Cluster Data (3rd edition), available through NSSDC, Greenbelt, Maryland, USA

LYN87 Lynga, G. 1987, Catalogue of Open Cluster Data (5th edition), available through NSSDC, Greenbelt, Maryland, USA

VCIRC Radial velocity estimate based on cluster distance and rotation curve model of Brand 1986 (Ph. D. thesis, Leiden).

YIL70 Yilmaz, F. 1970, Astr. Ap., 8, 213.

CLUSTER IDENTIFICATION:

ALTER et al.: OCL 229
COMMON NAME: NGC 7235
DATA BASE NUM: 48

SPATIAL COORDINATES:

L II: 102.72
B II: 0.78

RA(1950.0): 22. 10.8
DEC(1950.0): 57. 2.

RADIAL VELOCITIES (w.r.t. LSR; km/s):
STELLAR:

VELOCITY	REF.
-30.5	VCIRC
-38.5	HUM78
-45.9	HUM78
-39.2	WRA83
-39.2	LYN87
-39.2	HRO87

H II REGION:

NO VALUES AVAILABLE

CO CLOUDS:

NO VALUES AVAILABLE

PROPER MOTION (arcsec/100 yr):

NO VALUES AVAILABLE

DISTANCE FROM SOLAR NEIGHBORHOOD (kpc):

DIST	REF.
3.03	JOH61
4.09	LIN68
3.50	HAG70
4.08	BEC71
3.03	LOH71
3.16	MOF72
3.16	LYN87

ANGULAR DIAMETER (arcmin):

ANG D	REF.
3.5	ALT70
12.0	ALT70
4.5	BEC71
4.0	MOF72
4.0	LYN83

LINEAR DIAMETER (pc):

LIN D	REF.
4.2	LDCAL
4.1	HAG70
5.3	BEC71
4.4	LYN83

AGE ESTIMATES:
AGE (Myr):

AGE	REF.
2.	MOF72
10.	HAR76
2.	LYN83
10.	LYN87

EARLIEST MS SPECTRAL TYPE:

eSpT	REF.
b0	JOH61
B1	HOA65
o	BEC71
B0	MOF72
b0.5	MOF72
B0	LYN83

MS TURNOFF COLOR:

(B-V)	REF.
-0.28	JOH61
-0.30	HAG70
-0.30	MOF72
-0.30	LYN87

MASSES (SOLAR MASS UNITS):
STELLAR MASS:

MASS	REF.
4.14E+03	SCH63
7.57E+02	RED71
7.68E+02	BRU83
3.98E+03	LYN83

MASS IN ASSOCIATED H I CLOUDS:

NO VALUES AVAILABLE

IONIZED HYDROGEN MASS:

NO VALUES AVAILABLE

MASS IN ASSOCIATED MOLECULAR CLOUDS:

NO VALUES AVAILABLE

ASSOCIATED MASS IN THE FORM OF DUST:

NO VALUES AVAILABLE

VISUAL EXTINCTION TOWARD CLUSTER (mag):

AV	REF.
2.76	NEC67
2.94	BEC71
2.94	LYN83

B-V COLOR EXCESS (mag):

E(B-V)	REF.
0.92	JOH61
0.90	BUS63
0.92	SCH63
0.95	HAG70
0.96	MOF72
0.96	LYN87

REFERENCES

ALT70 Alter, G., Ruprecht, J., and Vanysek, V. 1970, The Catalog of Star Clusters and Associations (Budapest: Akad Kiado).
BEC71 Becker, W. 1971, Astr. Ap. Suppl., 4, 241.
BRU83 Bruch, A., and Sanders, W. L. 1983, Astr. Ap., 121, 237.
BUS63 Buscombe, W. 1963, Mt. Stromlo Mimeogram, No. 6, pg. 24.
HAG70 Hagen, G. L. 1970, D. D. O. Pub., Univ. Toronto, 4.
HAR76 Harris, G. L. H. 1976, Ap. J. Suppl., 30, 451.
HOA65 Hoag, A. A., and Applequist, N. L. 1965, Ap. J. Suppl., 12, 215.
HRO87 Hron, J. 1987, Astr. Ap., 176, 34.
HUM78 Humphreys, R. M. 1978, Ap. J. Suppl., 38, 309.
JOH61 Johnson, H. L., Hoag, A. A., Iriarte, B., Mitchell, R. I., and Hallam, K. L. 1961, Lowell Obs. Bull., 5, 133.
LIN68 Lindoff, U. 1968, Arkiv Astr., 5, 1.
LDCAL Linear diameter calculated from published ang. diam. and distance.
LOH71 Lohmann, W. 1971, Astr. Nach., 292, 193.
LYN83 Lynga, G. 1983, Catalogue of Open Cluster Data (3rd edition), available through NSSDC, Greenbelt, Maryland, USA
LYN87 Lynga, G. 1987, Catalogue of Open Cluster Data (5th edition), available through NSSDC, Greenbelt, Maryland, USA
MOF72 Moffat, A. F. J. 1972, Astr. Ap. Suppl., 7, 355.
NEC67 Neckel, T. 1967, Heid. Ver., 19, 115.
VCIRC Radial velocity estimate based on cluster distance and rotation curve model of Brand 1986 (Ph. D. thesis, Leiden).
RED71 Reddish, V. C., and Sloan, C. 1971, Observatory, 91, 70.
SCH63 Schmidt, von K.-H. 1963, Ast. Nach., 287, 41.
WRA83 Wramdemark, S. 1983, private communication.

CLUSTER IDENTIFICATION:

ALTER et al.: OCL 231
COMMON NAME: BERK 94
SHARPLESS: S132
DATA BASE NUM: 49

SPATIAL COORDINATES:

L II: 103.10 RA(1950.0): 22. 20.8
B II: -1.18 DEC(1950.0): 55. 36.

RADIAL VELOCITIES (w.r.t. LSR; km/s):
STELLAR:

VELOCITY	REF.
-36.8	VCIRC

H II REGION:

VELOCITY	REF.
-50.5	CRA78
-45.2	PED80
-46.5	GAR83
-46.2	GAR83
-48.0	REY85

CO CLOUDS:

VELOCITY	REF.
-48.5	BLI82

PROPER MOTION (arcsec/100 yr):

NO VALUES AVAILABLE

DISTANCE FROM SOLAR NEIGHBORHOOD (kpc):

DIST	REF.
1.61	YIL70
5.00	WRA78
5.70	CRA78
3.18	HAR78
4.30	GAR83
4.20	FIC84
2.11	LYN87

ANGULAR DIAMETER (arcmin):

ANG D	REF.
4.0	SET60
2.3	YIL70
4.0	LYN83

LINEAR DIAMETER (pc):

LIN D	REF.
5.0	LDCAL
1.9	LYN83

AGE ESTIMATES:
AGE (Myr):

AGE	REF.
10.	WRA78
63.	LYN83
24.	LYN87

EARLIEST MS SPECTRAL TYPE:

eSpT	REF.
B6	YIL70
b3	YIL70
OB	SAN74
O7	CRA78

MS TURNOFF COLOR:

(B-V)	REF.
0.00	YIL70
-0.30	WRA78
-0.22	LYN87

MASSES (SOLAR MASS UNITS):
STELLAR MASS:

NO VALUES AVAILABLE

MASS IN ASSOCIATED H I CLOUDS:

NO VALUES AVAILABLE

IONIZED HYDROGEN MASS:

NO VALUES AVAILABLE

MASS IN ASSOCIATED MOLECULAR CLOUDS:

NO VALUES AVAILABLE

ASSOCIATED MASS IN THE FORM OF DUST:

NO VALUES AVAILABLE

VISUAL EXTINCTION TOWARD CLUSTER (mag):

AV	REF.
2.00	WRA78
1.80	LYN83

B-V COLOR EXCESS (mag):

E(B-V)	REF.
0.61	LYN87

REFERENCES

BLI82 Blitz, L., Fich, M. and Stark, A. A. 1982, Ap. J. Suppl., 49, 183.
CRA78 Crampton, D., Georgelin, Y. M., and Georgelin, Y. P. 1978, Astr. Ap., 66, 1.
FIC84 Fich, M., and Blitz, L. 1984, Ap. J., 279, 125.
GAR83 Garay, G., and Rodriguez, L. F. 1983, Ap. J., 266, 263.
HAR78 Harten, R. H., Felli, M., and Tofani, G. 1978, Astr. Ap., 70, 205.
LDCAL Linear diameter calculated from published ang. diam. and distance.
LYN83 Lynga, G. 1983, Catalogue of Open Cluster Data (3rd edition), available through NSSDC, Greenbelt, Maryland, USA
LYN87 Lynga, G. 1987, Catalogue of Open Cluster Data (5th edition), available through NSSDC, Greenbelt, Maryland, USA
PED80 Pedlar, A. 1980, MNRAS, 192, 179.
VCIRC Radial velocity estimate based on cluster distance and rotation curve model of Brand 1986 (Ph. D. thesis, Leiden).
REY85 Reynolds, R. J. 1985, Ap. J., 294, 256.
SAN74 Sanduleak, N. 1974, PASP, 86, 74.
SET60 Setteducati, A. F., and Weaver, H. F. 1960, Newly Found Star Clusters, Radio Astr. Laboratory, Berkeley, CA, USA
WRA78 Wramdemark, S. 1978, Astr. Ap., 66, 137.
YIL70 Yilmaz, F. 1970, Astr. Ap., 8, 213.

CLUSTER IDENTIFICATION:

ALTER et al.:	OCL 235
COMMON NAME:	NGC 7023
ALTERNATE NAME:	VDB 139
DATA BASE NUM:	50

SPATIAL COORDINATES:

L II:	103.99	RA(1950.0):	20. 59.9
B II:	14.27	DEC(1950.0):	67. 58.

RADIAL VELOCITIES (w.r.t. LSR; km/s):
STELLAR:

VELOCITY	REF.
-2.6	VCIRC
14.5	ABT72

H II REGION:

VELOCITY	REF.
2.0	PAN78

CO CLOUDS:

VELOCITY	REF.
2.7	ELM78
2.4	PAN78
1.7	KUT80
3.9	KUT80

PROPER MOTION (arcsec/100 yr):

NO VALUES AVAILABLE

DISTANCE FROM SOLAR NEIGHBORHOOD (kpc):

DIST	REF.
0.44	VIO69
0.40	SIM76
0.44	SAN80
0.35	WIT80

ANGULAR DIAMETER (arcmin):

ANG D	REF.
5.0	ALT70
18.0	ALT70
5.0	LYN83

LINEAR DIAMETER (pc):

LIN D	REF.
0.6	LDCAL
4.0	COL31
0.6	SAN80

AGE ESTIMATES:
AGE (Myr):

NO VALUES AVAILABLE

EARLIEST MS SPECTRAL TYPE:

eSpT	REF.
B5	RAC68
B5	SAN80

MS TURNOFF COLOR:

NO VALUES AVAILABLE

MASSES (SOLAR MASS UNITS):
STELLAR MASS:

MASS	REF.
1.50E+02	AVE69
1.00E+02	WAT86

MASS IN ASSOCIATED H I CLOUDS:

NO VALUES AVAILABLE

IONIZED HYDROGEN MASS:

NO VALUES AVAILABLE

MASS IN ASSOCIATED MOLECULAR CLOUDS:

MASS	REF.
6.00E+02	ELM78

ASSOCIATED MASS IN THE FORM OF DUST:

NO VALUES AVAILABLE

VISUAL EXTINCTION TOWARD CLUSTER (mag):

AV	REF.
1.36	WIC80

B-V COLOR EXCESS (mag):

E(B-V)	REF.
0.29	VIO69
0.44	WIC80

REFERENCES

ABT72 Abt, H. A., and Biggs, E. S. 1972, Bibliography of Stellar Radial Velocities, (Latham Process Corp.: New York).
ALT70 Alter, G., Ruprecht, J., and Vanysek, V. 1970, The Catalog of Star Clusters and Associations (Budapest: Akad Kiado).
AVE69 Aveni, A. F., and Hunter, J. H. 1969, A. J., 74, 1021.
COL31 Collinder, P. 1931, Ann. Lund Obs., No. 2.
ELM78 Elmegreen, D. M., and Elmegreen, B. G. 1978, Ap. J., 220, 510.
KUT80 Kutner, M. L., Machnik, D. E., Tucker, K. D., and Dickman, R. L. 1980, Ap. J., 237, 734.
LDCAL Linear diameter calculated from published ang. diam. and distance.
LYN83 Lynga, G. 1983, Catalogue of Open Cluster Data (3rd edition), available through NSSDC, Greenbelt, Maryland, USA
PAN78 Pankonin, V., and Walmsley, C. M. 1978, Astr. Ap., 67, 129.
RAC68 Racine, R. 1968, A. J., 73, 223.
VCIRC Radial velocity estimate based on cluster distance and rotation curve model of Brand 1986 (Ph. D. thesis, Leiden).
SAN80 Sanqvist, A., and Bernes, C. 1980, Astr. Ap., 89, 187.
SIM76 Simonson, S. C., and van Someren-Greve, H. W. 1976, Astr. Ap., 49, 343.
VIO69 Viotti, R. 1969, Mem. Soc. Ast. Ital., 40, 75.
WAT86 Watt, G. D., Burton, W. B., Choe. S.-U., and Liszt, H. S. 1986, Astr. Ap., 163, 194.
WIC80 Witt, A. N., and Cottrell, M. J. 1980, Ap. J., 235, 899.
WIT80 Witt, A. N., and Cottrell, M. J. 1980, A. J., 85, 22.

CLUSTER IDENTIFICATION:

ALTER et al.: OCL 236
COMMON NAME: NGC 7160
MEMBER OF ASSOC.: CEP OB2
DATA BASE NUM: 51

SPATIAL COORDINATES:

L II: 104.02
B II: 6.45

RA(1950.0): 21. 52.3
DEC(1950.0): 62. 22.

RADIAL VELOCITIES (w.r.t. LSR; km/s):
STELLAR:

VELOCITY	REF.
-5.6	VCIRC
-11.8	JOS61
-11.8	HAG70
-9.8	CON70
-11.8	WRA83
-11.8	LYN87
-11.8	HRO87

H II REGION:

NO VALUES AVAILABLE

CO CLOUDS:

VELOCITY	REF.
-12.1	LEI88
-7.8	LEI88
-1.7	LEI88
-22.7	LEI88

PROPER MOTION (arcsec/100 yr):

NO VALUES AVAILABLE

DISTANCE FROM SOLAR NEIGHBORHOOD (kpc):

DIST	REF.
0.84	JOH61
0.71	LIN68
0.95	SIM68
0.83	CON70
0.85	HAG70
0.70	BEC71
0.74	MEB81
0.81	NIC81
0.81	LYN87

ANGULAR DIAMETER (arcmin):

ANG D	REF.
5.0	ALT70
16.0	ALT70
14.0	HAG70
10.0	BEC71
7.0	LYN83

LINEAR DIAMETER (pc):

LIN D	REF.
1.7	LDCAL
2.0	LYN83

AGE ESTIMATES:
AGE (Myr):

AGE	REF.
10.	LIN68
18.	CON70
10.	LYN83
7.	MER86
41.	LYN87

EARLIEST MS SPECTRAL TYPE:

eSpT	REF.
o9.5	JOH61
B1	HOV65
B2	BEC71
B1	LYN83
B2	LYN83

MS TURNOFF COLOR:

(B-V)	REF.
-0.30	JOH61
-0.20	HAG70
-0.23	CON70
-0.20	LYN87

MASSES (SOLAR MASS UNITS):
STELLAR MASS:

MASS	REF.
6.69E+02	SCH63
2.65E+02	RED71
2.69E+02	BRU83
6.31E+02	LYN83

MASS IN ASSOCIATED H I CLOUDS:

NO VALUES AVAILABLE

IONIZED HYDROGEN MASS:

NO VALUES AVAILABLE

MASS IN ASSOCIATED MOLECULAR CLOUDS:

MASS	REF.
5.10E+03	LEI88

ASSOCIATED MASS IN THE FORM OF DUST:

NO VALUES AVAILABLE

VISUAL EXTINCTION TOWARD CLUSTER (mag):

AV	REF.
0.90	NEC67
1.62	BEC71
1.62	LYN87

B-V COLOR EXCESS (mag):

E(B-V)	REF.
0.30	JOH61
0.30	BUS63
0.30	SCH63
0.54	BEC63
0.40	CON70
0.30	HAG70
0.35	NIC81
0.30	LYN87

REFERENCES

ALT70 Alter, G., Ruprecht, J., and Vanysek, V. 1970, The Catalog of Star Clusters and Associations (Budapest: Akad Kiado).
BEC63 Becker, W. 1963, Z. f. A., 57, 117.
BEC71 Becker, W. 1971, Astr. Ap. Suppl., 4, 241.
BRU83 Bruch, A., and Sanders, W. L. 1983, Astr. Ap., 121, 237.
BUS63 Buscombe, W. 1963, Mt. Stromlo Mimeogram, No. 6, pg. 24.
CON70 Conti, P. S., and van den Heuvel, E. P. J. 1970, Astr. Ap., 9, 466.
HAG70 Hagen, G. L. 1970, D. D. O. Pub., Univ. Toronto, 4.
HOV65 Hoag, A. A. 1965, Vistas, 8, 139.
HRO87 Hron, J. 1987, Astr. Ap., 176, 34.
JOS61 Johnson, H. L., and Svolopoulos, S. N. 1961, Ap. J., 134, 868.
JOH61 Johnson, H. L., Hoag, A. A., Iriarte, B., Mitchell, R. I., and Hallam, K. L. 1961, Lowell Obs. Bull., 5, 133.
LEI88 Leisawitz, D., Thaddeus, P., and Bash, F. N. 1988, in preparation for submission to Ap. J. Suppl.
LIN68 Lindoff, U. 1968, Arkiv Astr., 5, 1.
LDCAL Linear diameter calculated from published ang. diam. and distance.
LYN83 Lynga, G. 1983, Catalogue of Open Cluster Data (3rd edition), available through NSSDC, Greenbelt, Maryland, USA
LYN87 Lynga, G. 1987, Catalogue of Open Cluster Data (5th edition), available through NSSDC, Greenbelt, Maryland, USA
MEB81 Mermilliod, J.-C. 1981, Astr. Ap. Suppl., 44, 467.
MER86 Mermilliod, J.-C., and Maeder, A. 1986, Astr. Ap., 158, 45.
NEC67 Neckel, T. 1967, Heid. Ver., 19, 115.
NIC81 Nicolet, B. 1981, Astr. Ap., 104, 185.
VCIRC Radial velocity estimate based on cluster distance and rotation curve model of Brand 1986 (Ph. D. thesis, Leiden).
RED71 Reddish, V. C., and Sloan, C. 1971, Observatory, 91, 70.
SCH63 Schmidt, von K.-H. 1963, Ast. Nach., 287, 41.
SIM68 Simonson, S. C. 1968, Ap. J., 154, 923.
WRA83 Wramdemark, S. 1983, private communication.

CLUSTER IDENTIFICATION:

ALTER et al.: OCL 237
COMMON NAME: NGC 7261
MEMBER OF ASSOC.: CEP OB2
DATA BASE NUM: 52

SPATIAL COORDINATES:

L II: 104.04
B II: 0.86

RA(1950.0): 22. 18.6
DEC(1950.0): 57. 50.

RADIAL VELOCITIES (w.r.t. LSR; km/s):
STELLAR:

VELOCITY	REF.
-22.4	VCIRC

H II REGION:

NO VALUES AVAILABLE

CO CLOUDS:

NO VALUES AVAILABLE

PROPER MOTION (arcsec/100 yr):

NO VALUES AVAILABLE

DISTANCE FROM SOLAR NEIGHBORHOOD (kpc):

DIST	REF.
0.70	JOH61
3.23	FEN68
0.80	LIN68
0.75	HAG70
3.24	BEC71
2.20	JEN75
2.12	LYN87

ANGULAR DIAMETER (arcmin):

ANG D	REF.
6.0	LIN68
5.5	ALT70
10.0	ALT70
1.6	BEC71
6.0	LYN83

LINEAR DIAMETER (pc):

LIN D	REF.
4.8	LDCAL
1.6	LYN83

AGE ESTIMATES:
AGE (Myr):

AGE	REF.
40.	LIN68
10.	FEN68
720.	VAS72
200.	JEN75
40.	LYN83
29.	LYN87

EARLIEST MS SPECTRAL TYPE:

eSpT	REF.
b8	JOH61
B2	HOA65
b1	BEC71
B2	LYN83
b1	LYN83

MS TURNOFF COLOR:

(B-V)	REF.
-0.10	JOH61
-0.25	FEN68
0.00	HAG70
-0.22	LYN87

MASSES (SOLAR MASS UNITS):
STELLAR MASS:

MASS	REF.
4.35E+02	SCH63
1.83E+02	RED71
1.86E+02	BRU83

MASS IN ASSOCIATED H I CLOUDS:

NO VALUES AVAILABLE

IONIZED HYDROGEN MASS:

NO VALUES AVAILABLE

MASS IN ASSOCIATED MOLECULAR CLOUDS:

NO VALUES AVAILABLE

ASSOCIATED MASS IN THE FORM OF DUST:

NO VALUES AVAILABLE

VISUAL EXTINCTION TOWARD CLUSTER (mag):

AV	REF.
1.74	NEC67
3.00	BEC71
3.00	LYN83

B-V COLOR EXCESS (mag):

E(B-V)	REF.
0.58	JOH61
0.60	BUS63
0.58	SCH63
1.06	POL70
0.58	HAG70
0.94	LYN87

REFERENCES

ALT70 Alter, G., Ruprecht, J., and Vanysek, V. 1970, The Catalog of Star Clusters and Associations (Budapest: Akad Kiado).
BEC71 Becker, W. 1971, Astr. Ap. Suppl., 4, 241.
BRU83 Bruch, A., and Sanders, W. L. 1983, Astr. Ap., 121, 237.
BUS63 Buscombe, W. 1963, Mt. Stromlo Mimeogram, No. 6, pg. 24.
FEN68 Fenkart, R. P. 1968, Mem. Soc. Ast. Ital., 39, 85.
HAG70 Hagen, G. L. 1970, D. D. O. Pub., Univ. Toronto, 4.
HOA65 Hoag, A. A., and Applequist, N. L. 1965, Ap. J. Suppl., 12, 215.
JEN75 Jennens, P. A., and Helfer, H. L. 1975, MNRAS, 172, 667.
JOH61 Johnson, H. L., Hoag, A. A., Iriarte, B., Mitchell, R. I., and Hallam, K. L. 1961, Lowell Obs. Bull., 5, 133.
LIN68 Lindoff, U. 1968, Arkiv Astr., 5, 1.
LDCAL Linear diameter calculated from published ang. diam. and distance.
LYN83 Lynga, G. 1983, Catalogue of Open Cluster Data (3rd edition), available through NSSDC, Greenbelt, Maryland, USA
LYN87 Lynga, G. 1987, Catalogue of Open Cluster Data (5th edition), available through NSSDC, Greenbelt, Maryland, USA
NEC67 Neckel, T. 1967, Heid. Ver., 19, 115.
POL70 Polishchuk, E. P. 1970, Astr. Astrofiz., 9, 17.
VCIRC Radial velocity estimate based on cluster distance and rotation curve model of Brand 1986 (Ph. D. thesis, Leiden).
RED71 Reddish, V. C., and Sloan, C. 1971, Observatory, 91, 70.
SCH63 Schmidt, von K.-H. 1963, Ast. Nach., 287, 41.
VAS72 Vasilevskii, A. E. 1972, Sov. Astr., 16, 308.

CLUSTER IDENTIFICATION:

COMMON NAME: S 140
SHARPLESS: S140
MEMBER OF ASSOC.: CEP OB2
DATA BASE NUM: 53

SPATIAL COORDINATES:

L II: 106.76
B II: 5.30

RA(1950.0): 22. 17.5
DEC(1950.0): 63. 1.

RADIAL VELOCITIES (w.r.t. LSR; km/s):
STELLAR:

VELOCITY	REF.
-7.1	VCIRC
-9.8	CRA74
-10.5	CRA74

H II REGION:

VELOCITY	REF.
-10.0	ISR78
-9.6	PIS79
-3.3	PED80

CO CLOUDS:

VELOCITY	REF.
-8.0	BLA78
-8.5	BLI82
-6.0	HAY85
-8.0	HAY85
-8.0	UNG86
-6.7	UNG86

PROPER MOTION (arcsec/100 yr):

NO VALUES AVAILABLE

DISTANCE FROM SOLAR NEIGHBORHOOD (kpc):

DIST	REF.
0.91	CRA74
0.91	PIS79
0.90	BLI82

ANGULAR DIAMETER (arcmin):

ANG D	REF.
6.0	PIS79

LINEAR DIAMETER (pc):

LIN D	REF.
1.6	LDCAL
1.5	PIS79

AGE ESTIMATES:
AGE (Myr):

NO VALUES AVAILABLE

EARLIEST MS SPECTRAL TYPE:

eSpT	REF.
B0	BLA78
B0.5	PIS79
B0	FAL81

MS TURNOFF COLOR:

NO VALUES AVAILABLE

MASSES (SOLAR MASS UNITS):
STELLAR MASS:

NO VALUES AVAILABLE

MASS IN ASSOCIATED H I CLOUDS:

NO VALUES AVAILABLE

IONIZED HYDROGEN MASS:

NO VALUES AVAILABLE

MASS IN ASSOCIATED MOLECULAR CLOUDS:

MASS	REF.
2.30E+03	BLA78

ASSOCIATED MASS IN THE FORM OF DUST:

NO VALUES AVAILABLE

VISUAL EXTINCTION TOWARD CLUSTER (mag):

NO VALUES AVAILABLE

B-V COLOR EXCESS (mag):

NO VALUES AVAILABLE

REFERENCES

BLA78 Blair, G. N., Evans, N. J., Vanden Bout, P. A., and Peters, W. L. 1978, Ap. J., 219, 896.
BLI82 Blitz, L., Fich, M. and Stark, A. A. 1982, Ap. J. Suppl., 49, 183.
CRA74 Crampton, D., and Fisher, W. A. 1974, DAO Pub., 14, 83.
FAL81 Falgarone, E., and Gilmore, W. 1981, Astr. Ap., 95, 32.
HAY85 Hayashi, M., Omodaka, T., Hasegawa, T., and Suzuki, S. 1985, Ap. J., 288, 170.
ISR78 Israel, F. P. 1978, Astr. Ap., 70, 769.
LDCAL Linear diameter calculated from published ang. diam. and distance.
PED80 Pedlar, A. 1980, MNRAS, 192, 179.
PIS79 Pismis, P., Moreno, M. A., and Hasse, I. 1979, Rev. Mex. Astr. Af., 4, 331.
VCIRC Radial velocity estimate based on cluster distance and rotation curve model of Brand 1986 (Ph. D. thesis, Leiden).
UNG86 Ungerechts, H., Walmsley, C. M., and Winnewisser, G. 1986, Astr. Ap., 157, 207.

CLUSTER IDENTIFICATION:

ALTER et al.: OCL 244
COMMON NAME: NGC 7380
SHARPLESS: S142
MEMBER OF ASSOC.: CEP OB1
DATA BASE NUM: 54

SPATIAL COORDINATES:

L II: 107.08
B II: -0.90

RA(1950.0): 22. 45.0
DEC(1950.0): 57. 50.

RADIAL VELOCITIES (w.r.t. LSR; km/s):

STELLAR:

VELOCITY	REF.
-30.3	VCIRC
-25.5	JOS61
-24.5	PAL77
-28.7	HUM78
-50.3	HUM78
-26.5	WRA83
-26.5	LYN87
-27.5	HRO87

H II REGION:

VELOCITY	REF.
-34.9	COU66
-45.3	MIL68
-41.0	WIL70
-45.3	CRA78
-43.3	PED80
-37.2	GAR83
-35.6	JON84
-41.0	REY85
-35.6	ROY85

CO CLOUDS:

VELOCITY	REF.
-41.1	ISR80
-42.8	ISR80
-41.0	BLI82
-54.2	LEI88
-49.7	LEI88
-40.2	LEI88

PROPER MOTION (arcsec/100 yr):

MU X	MU Y	REF.
-0.290	0.180	PAL77

DISTANCE FROM SOLAR NEIGHBORHOOD (kpc):

DIST	REF.
2.10	JOH61
2.38	LIN68
2.10	HAG70
2.82	BEC71

ANGULAR DIAMETER (arcmin):

ANG D	REF.
8.0	ALT70
30.0	ALT70
11.0	HAG70
9.0	BEC71
12.0	LYN83
18.0	BAA83

LINEAR DIAMETER (pc):

LIN D	REF.
11.5	LDCAL
13.0	LYN83

AGE ESTIMATES:

AGE (Myr):

AGE	REF.
3.	SAN63
15.	LIN68
2.	MOF71
4.	HAR76
4.	LYN83
3.	BAA83
2.	JON84
10.	LYN87

EARLIEST MS SPECTRAL TYPE:

eSpT	REF.
o9	JOH61
O6	HOA65
O6	UND69
O9	BEC71
O6	HUM78
O6	LYN83
O9	LYN83
o9	LYN83

MS TURNOFF COLOR:

(B-V)	REF.
-0.30	JOH61
-0.15	HAG70
-0.35	MOF71
-0.29	LYN87

MASSES (SOLAR MASS UNITS):

STELLAR MASS:

MASS	REF.
1.98E+03	SCH63
4.61E+02	RED71
4.40E+02	MOF71
4.67E+02	BRU83
2.00E+03	LYN83

MASS IN ASSOCIATED H I CLOUDS:

MASS	REF.
3.00E+03	JON85

IONIZED HYDROGEN MASS:

MASS	REF.
1.40E+03	SCH71
2.00E+03	JON84
4.20E+03	DEW84
4.00E+03	JON85

MASS IN ASSOCIATED MOLECULAR CLOUDS:

MASS	REF.
1.75E+02	ISR80
7.60E+04	LEI88
1.50E+04	LEI88

ASSOCIATED MASS IN THE FORM OF DUST:

MASS	REF.
1.00E+01	SCH71

VISUAL EXTINCTION TOWARD CLUSTER (mag):

AV	REF.
1.74	NEC67
1.95	BEC71
1.95	LYN83

B-V COLOR EXCESS (mag):

E(B-V)	REF.
0.58	JOH61
0.60	BUS63
0.63	STA68

3.60	MOF71	0.61	POL70
3.20	SCH71	0.50	HAG70
3.20	BAA83	0.58	BAA83
3.40	FIC84	0.56	LYN87
2.98	LYN87		

REFERENCES

ALT70 Alter, G., Ruprecht, J., and Vanysek, V. 1970, The Catalog of Star Clusters and Associations (Budapest: Akad Kiado).
BAA83 Baade, D. 1983, Astr. Ap. Suppl., 51, 235.
BEC71 Becker, W. 1971, Astr. Ap. Suppl., 4, 241.
BLI82 Blitz, L., Fich, M. and Stark, A. A. 1982, Ap. J. Suppl., 49, 183.
BRU83 Bruch, A., and Sanders, W. L. 1983, Astr. Ap., 121, 237.
BUS63 Buscombe, W. 1963, Mt. Stromlo Mimeogram, No. 6, pg. 24.
COU66 Courtes, G., Cruvellier, P., and Georgelin, Y. 1966, J. des Obs., 49, 329.
CRA78 Crampton, D., Georgelin, Y. M., and Georgelin, Y. P. 1978, Astr. Ap., 66, 1.
DEW84 Dewdney, P. E., Higgs, L. A., Joncas, G., and Roy, J.-R. 1984, BAAS, 16, 463.
FIC84 Fich, M., and Blitz, L. 1984, Ap. J., 279, 125.
GAR83 Garay, G., and Rodriguez, L. F. 1983, Ap. J., 266, 263.
HAG70 Hagen, G. L. 1970, D. D. O. Pub., Univ. Toronto, 4.
HAR76 Harris, G. L. H. 1976, Ap. J. Suppl., 30, 451.
HOA65 Hoag, A. A., and Applequist, N. L. 1965, Ap. J. Suppl., 12, 215.
HRO87 Hron, J. 1987, Astr. Ap., 176, 34.
HUM78 Humphreys, R. M. 1978, Ap. J. Suppl., 38, 309.
ISR80 Israel, F. P. 1980, A. J., 85, 1612.
JOS61 Johnson, H. L., and Svolopoulos, S. N. 1961, Ap. J., 134, 868.
JOH61 Johnson, H. L., Hoag, A. A., Iriarte, B., Mitchell, R. I., and Hallam, K. L. 1961, Lowell Obs. Bull., 5, 133.
JON84 Joncas, G., and Roy, J.-R. 1984, Ap. J., 283, 640.
JON85 Joncas, G., Dewdney, P. E., Higgs, L. A., and Roy, J.-R. 1985, Ap. J., 298, 596.
LEI88 Leisawitz, D., Thaddeus, P., and Bash, F. N. 1988, in preparation for submission to Ap. J. Suppl.
LIN68 Lindoff, U. 1968, Arkiv Astr., 5, 1.
LDCAL Linear diameter calculated from published ang. diam. and distance.
LYN83 Lynga, G. 1983, Catalogue of Open Cluster Data (3rd edition), available through NSSDC, Greenbelt, Maryland, USA
LYN87 Lynga, G. 1987, Catalogue of Open Cluster Data (5th edition), available through NSSDC, Greenbelt, Maryland, USA
MIL68 Miller, J. S. 1968, Ap. J., 151, 473.
MOF71 Moffat, A. F. J. 1971, Astr. Ap., 13, 30.
NEC67 Neckel, T. 1967, Heid. Ver., 19, 115.
PAL77 Palous, J., Ruprecht, J., Dluzhnevskaya, O. B., and Piskunov, T. 1977, Astr. Ap., 61, 27.
PED80 Pedlar, A. 1980, MNRAS, 192, 179.
POL70 Polishchuk, E. P. 1970, Astr. Astrofiz., 9, 17.
VCIRC Radial velocity estimate based on cluster distance and rotation curve model of Brand 1986 (Ph. D. thesis, Leiden).
RED71 Reddish, V. C., and Sloan, C. 1971, Observatory, 91, 70.
REY85 Reynolds, R. J. 1985, Ap. J., 294, 256.
ROY85 Roy, J.-R., and Joncas, G. 1985, Ap. J., 288, 142.
SAN63 Sandage, A. 1963, Ap. J., 138, 863.
SCH63 Schmidt, von K.-H. 1963, Ast. Nach., 287, 41.
SCH71 Schwartz, R. 1971, Ap. Sp. Sci., 14, 286.
STA68 Starikova, G. A. 1969, Sov. Astr., 12, 632.
UND69 Underhill, A. B. 1969, Astr. Ap., 1, 356.
WIL70 Williamson, R. A. 1970, Ap. Sp. Sci., 6, 45.
WRA83 Wramdemark, S. 1983, private communication.

CLUSTER IDENTIFICATION:

ALTER et al.: OCL 256
COMMON NAME: NGC 7510
ALTERNATE NAME: IC 1470
SHARPLESS: S156
MEMBER OF ASSOC.: CAS OB2
DATA BASE NUM: 55

SPATIAL COORDINATES:

L II: 110.96 RA(1950.0): 23. 9.4
B II: 0.05 DEC(1950.0): 60. 18.

RADIAL VELOCITIES (w.r.t. LSR; km/s):
STELLAR:

VELOCITY	REF.
-50.2	VCIRC
-55.4	JOS61
-55.4	LYN81
-49.0	LOZ86
-49.4	HRO87

H II REGION:

VELOCITY	REF.
-50.0	DIC74
-50.3	KAZ77
-64.7	ISR78
-51.7	CRA78

CO CLOUDS:

VELOCITY	REF.
-52.0	DIC74
-50.0	BLA75
-54.0	BLA75
-51.0	BLI82

PROPER MOTION (arcsec/100 yr):

NO VALUES AVAILABLE

DISTANCE FROM SOLAR NEIGHBORHOOD (kpc):

DIST	REF.
3.30	JOH61
3.16	HOA65
3.30	NEC67
2.90	LIN68
3.30	HAG70
2.88	BEC71
5.70	KAZ77
6.40	CRA78
6.40	FIC84
3.14	FEN85
3.10	LYN87

ANGULAR DIAMETER (arcmin):

ANG D	REF.
2.0	ALT70
17.0	ALT70
5.0	HAG70
6.0	BEC71
4.0	LYN83

LINEAR DIAMETER (pc):

LIN D	REF.
5.9	LDCAL
3.7	LYN83

AGE ESTIMATES:
AGE (Myr):

AGE	REF.
10.	LYN83
5.	LOZ86
80.	LOZ86

EARLIEST MS SPECTRAL TYPE:

eSpT	REF.
o9	JOH61
O9	HOV65
B2	BEC71
O9	LYN83
B2	LYN83
o6	FEN85

MS TURNOFF COLOR:

(B-V)	REF.
-0.30	JOH61
-0.10	HAG70
-0.32	FEN85
-0.26	LYN87

MASSES (SOLAR MASS UNITS):
STELLAR MASS:

MASS	REF.
1.19E+04	SCH63
1.49E+03	RED71
1.51E+03	BRU83
1.26E+04	LYN83

MASS IN ASSOCIATED H I CLOUDS:

MASS	REF.
2.20E+02	DOD70

IONIZED HYDROGEN MASS:

MASS	REF.
7.60E+01	KAZ77

MASS IN ASSOCIATED MOLECULAR CLOUDS:

NO VALUES AVAILABLE

ASSOCIATED MASS IN THE FORM OF DUST:

MASS	REF.
1.11E+01	DOD70

VISUAL EXTINCTION TOWARD CLUSTER (mag):

AV	REF.
2.24	NEC67
3.30	BEC71
3.30	LYN83
3.59	FEN85

B-V COLOR EXCESS (mag):

E(B-V)	REF.
1.08	JOH61
1.30	BUS63
1.15	STA68
1.07	POL70
0.89	HAG70
1.20	CHO73
1.16	FEN85
1.06	LYN87

REFERENCES

ALT70 Alter, G., Ruprecht, J., and Vanysek, V. 1970, The Catalog of Star Clusters and Associations (Budapest: Akad Kiado).
BEC71 Becker, W. 1971, Astr. Ap. Suppl., 4, 241.
BLA75 Blair, G. N., Peters, W. L., and Vanden Bout, P. A. 1975, Ap. J. (Letters), 200, L161.
BLI82 Blitz, L., Fich, M. and Stark, A. A. 1982, Ap. J. Suppl., 49, 183.
BRU83 Bruch, A., and Sanders, W. L. 1983, Astr. Ap., 121, 237.
BUS63 Buscombe, W. 1963, Mt. Stromlo Mimeogram, No. 6, pg. 24.
CHO73 Chopinet, M., Georgelin, Y. M., and Lortet-Zuckermann, M. C. 1973, Astr. Ap., 29, 225.
CRA78 Crampton, D., Georgelin, Y. M., and Georgelin, Y. P. 1978, Astr. Ap., 66, 1.
DIC74 Dickinson, D. F., Frogel, J. A., and Persson, S. E. 1974, Ap. J., 192, 347.
DOD70 D Odorico, S., and Felli, M. 1970, Mem. Soc. Ast. Ital., 41, 89.
FEN85 Fenkart. R. P., and Schroder, A. 1985, Astr. Ap. Suppl., 59, 83.
FIC84 Fich, M., and Blitz, L. 1984, Ap. J., 279, 125.
HAG70 Hagen, G. L. 1970, D. D. O. Pub., Univ. Toronto, 4.
HOV65 Hoag, A. A. 1965, Vistas, 8, 139.
HOA65 Hoag, A. A., and Applequist, N. L. 1965, Ap. J. Suppl., 12, 215.
HRO87 Hron, J. 1987, Astr. Ap., 176, 34.
ISR78 Israel, F. P. 1978, Astr. Ap., 70, 769.
JOS61 Johnson, H. L., and Svolopoulos, S. N. 1961, Ap. J., 134, 868.
JOH61 Johnson, H. L., Hoag, A. A., Iriarte, B., Mitchell, R. I., and Hallam, K. L. 1961, Lowell Obs. Bull., 5, 133.
KAZ77 Kazes, I., Walmsley, C. M., and Churchwell, E. 1977, Astr. Ap., 60, 293.
LIN68 Lindoff, U. 1968, Arkiv Astr., 5, 1.
LDCAL Linear diameter calculated from published ang. diam. and distance.
LOZ86 Lozinskaya, T. A., Sitnik, T. G., and Lomovskii, A. I. 1986, Ap. Sp. Sci., 121, 357.
LYN81 Lynga, G. 1981, Catalogue of Open Cluster Data, available through NSSDC, Greenbelt, Maryland, USA
LYN83 Lynga, G. 1983, Catalogue of Open Cluster Data (3rd edition), available through NSSDC, Greenbelt, Maryland, USA
LYN87 Lynga, G. 1987, Catalogue of Open Cluster Data (5th edition), available through NSSDC, Greenbelt, Maryland, USA
NEC67 Neckel, T. 1967, Heid. Ver., 19, 115.
POL70 Polishchuk, E. P. 1970, Astr. Astrofiz., 9, 17.
VCIRC Radial velocity estimate based on cluster distance and rotation curve model of Brand 1986 (Ph. D. thesis, Leiden).
RED71 Reddish, V. C., and Sloan, C. 1971, Observatory, 91, 70.
SCH63 Schmidt, von K.-H. 1963, Ast. Nach., 287, 41.
STA68 Starikova, G. A. 1969, Sov. Astr., 12, 632.

CLUSTER IDENTIFICATION:

ALTER et al.: OCL 257
COMMON NAME: MARKAR 5Ø
ALTERNATE NAME: BYURAKAN 3
SHARPLESS: S157
MEMBER OF ASSOC.: CAS OB2
DATA BASE NUM: 56

SPATIAL COORDINATES:

L II: 111.36 RA(1950.Ø): 23. 13.1
B II: -Ø.2Ø DEC(1950.Ø): 6Ø. 12.

RADIAL VELOCITIES (w.r.t. LSR; km/s):
STELLAR:

VELOCITY	REF.
-21.6	VCIRC
-7Ø.5	CRA75
-7Ø.5	WRA83
-7Ø.5	LYN87
-7Ø.5	HRO87

H II REGION:

VELOCITY	REF.
-37.1	GEO7Ø
-46.Ø	DEH74
-43.Ø	PED8Ø
-53.Ø	LOZ86
-33.Ø	LOZ86
-55.Ø	LOZ86
-48.Ø	LOZ86

CO CLOUDS:

VELOCITY	REF.
-46.Ø	DIC74
-42.8	ISR78
-43.Ø	BLI82

PROPER MOTION (arcsec/1ØØ yr):

NO VALUES AVAILABLE

DISTANCE FROM SOLAR NEIGHBORHOOD (kpc):

DIST	REF.
2.25	LIN68
2.2Ø	HAG7Ø
2.21	BEC71
2.25	GEO73
2.51	CRA75
1.9Ø	FEN85
3.42	LYN87

ANGULAR DIAMETER (arcmin):

ANG D	REF.
4.Ø	LIN68
1.5	ALT7Ø
5.Ø	ALT7Ø
5.Ø	BEC71
5.Ø	LYN83

LINEAR DIAMETER (pc):

LIN D	REF.
3.2	LDCAL
3.3	LYN83

AGE ESTIMATES:
AGE (Myr):

AGE	REF.
1Ø.	CRA75
8.	LOZ86
2Ø.	LOZ86
1Ø.	LYN87

EARLIEST MS SPECTRAL TYPE:

eSpT	REF.
O	GRU65
BØ	GRU65
bØ	BEC71
O8	CHO73
BØ	LYN83
bØ	LYN83

MS TURNOFF COLOR:

(B-V)	REF.
-Ø.25	HAG7Ø
-Ø.27	LYN87

MASSES (SOLAR MASS UNITS):
STELLAR MASS:

NO VALUES AVAILABLE

MASS IN ASSOCIATED H I CLOUDS:

NO VALUES AVAILABLE

IONIZED HYDROGEN MASS:

MASS	REF.
7.3ØE+Ø1	ISA77

MASS IN ASSOCIATED MOLECULAR CLOUDS:

NO VALUES AVAILABLE

ASSOCIATED MASS IN THE FORM OF DUST:

NO VALUES AVAILABLE

VISUAL EXTINCTION TOWARD CLUSTER (mag):

AV	REF.
2.58	GRU65
2.58	BEC71
2.8Ø	CRA75
2.58	LYN83
2.33	FEN85

B-V COLOR EXCESS (mag):

E(B-V)	REF.
Ø.86	HAG7Ø
Ø.9Ø	CHO73
Ø.94	CRA75
Ø.75	FEN85
Ø.9Ø	LYN87

REFERENCES

ALT70 Alter, G., Ruprecht, J., and Vanysek, V. 1970, The Catalog of Star Clusters and Associations (Budapest: Akad Kiado).
BEC71 Becker, W. 1971, Astr. Ap. Suppl., 4, 241.
BLI82 Blitz, L., Fich, M. and Stark, A. A. 1982, Ap. J. Suppl., 49, 183.
CHO73 Chopinet, M., Georgelin, Y. M., and Lortet-Zuckermann, M. C. 1973, Astr. Ap., 29, 225.
CRA75 Crampton, D. 1975, PASP, 87, 523.
DEH74 Deharveng, L. 1974, Astr. Ap., 35, 63.
DIC74 Dickinson, D. F., Frogel, J. A., and Persson, S. E. 1974, Ap. J., 192, 347.
FEN85 Fenkart. R. P., and Schroder, A. 1985, Astr. Ap. Suppl., 59, 83.
GEO73 Georgelin, Y. M., Georgelin, Y. P., and Roux, S. 1973, Astr. Ap., 25, 337.
GEO70 Georgelin, Y. P., and Georgelin, Y. M. 1970, Astr. Ap., 6, 349.
GRU65 Grubissich, C. 1965, Z. f. A., 60, 249.
HAG70 Hagen, G. L. 1970, D. D. O. Pub., Univ. Toronto, 4.
HRO87 Hron, J. 1987, Astr. Ap., 176, 34.
ISA77 Israel, F. P. 1977, Astr. Ap., 59, 27.
ISR78 Israel, F. P. 1978, Astr. Ap., 70, 769.
LIN68 Lindoff, U. 1968, Arkiv Astr., 5, 1.
LDCAL Linear diameter calculated from published ang. diam. and distance.
LOZ86 Lozinskaya, T. A., Sitnik, T. G., and Lomovskii, A. I. 1986, Ap. Sp. Sci., 121, 357.
LYN83 Lynga, G. 1983, Catalogue of Open Cluster Data (3rd edition), available through NSSDC, Greenbelt, Maryland, USA
LYN87 Lynga, G. 1987, Catalogue of Open Cluster Data (5th edition), available through NSSDC, Greenbelt, Maryland, USA
PED80 Pedlar, A. 1980, MNRAS, 192, 179.
VCIRC Radial velocity estimate based on cluster distance and rotation curve model of Brand 1986 (Ph. D. thesis, Leiden).
WRA83 Wramdemark, S. 1983, private communication.

CLUSTER IDENTIFICATION:

ALTER et al.: OCL 260
COMMON NAME: NGC 7654
ALTERNATE NAME: M52
DATA BASE NUM: 57

SPATIAL COORDINATES:

L II: 112.76
B II: 0.46

RA(1950.0): 23. 22.0
DEC(1950.0): 61. 19.

RADIAL VELOCITIES (w.r.t. LSR; km/s):
STELLAR:

VELOCITY	REF.
-13.9	VCIRC
-42.8	JOS61
-24.8	HAG70
-24.8	WRA83
-24.8	LYN87

H II REGION:

NO VALUES AVAILABLE

CO CLOUDS:

NO VALUES AVAILABLE

PROPER MOTION (arcsec/100 yr):

MU X	MU Y	REF.
-0.420	0.100	LAT79
0.040	0.030	LAT79
0.200	0.390	LAT79

DISTANCE FROM SOLAR NEIGHBORHOOD (kpc):

DIST	REF.
2.10	JOH61
1.90	HAG70
1.53	BEC71
2.40	VOR72
1.58	SCH77
1.47	DAN81
1.21	FEN85
1.57	LYN87

ANGULAR DIAMETER (arcmin):

ANG D	REF.
14.0	LIN68
8.0	ALT70
35.0	ALT70
13.0	BEC71
13.0	LYN83

LINEAR DIAMETER (pc):

LIN D	REF.
5.4	LDCAL
6.1	LYN83

AGE ESTIMATES:
AGE (Myr):

AGE	REF.
35.	LIN68
50.	BAR69
60.	PAN81
36.	LYN83
169.	LYN87

EARLIEST MS SPECTRAL TYPE:

eSpT	REF.
b3	JOH61
B3	HOV65
B7	BEC71
B6	LYN83
B7	LYN83
b4	LYN83
b3	FEN85

MS TURNOFF COLOR:

(B-V)	REF.
-0.20	JOH61
-0.10	HAG70
-0.14	FEN85
-0.06	LYN87

MASSES (SOLAR MASS UNITS):
STELLAR MASS:

MASS	REF.
6.10E+03	SCH63
5.11E+02	RED71
5.18E+02	BRU83
6.31E+03	LYN83

MASS IN ASSOCIATED H I CLOUDS:

NO VALUES AVAILABLE

IONIZED HYDROGEN MASS:

NO VALUES AVAILABLE

MASS IN ASSOCIATED MOLECULAR CLOUDS:

NO VALUES AVAILABLE

ASSOCIATED MASS IN THE FORM OF DUST:

NO VALUES AVAILABLE

VISUAL EXTINCTION TOWARD CLUSTER (mag):

AV	REF.
2.04	NEC67
1.86	BEC71
1.53	FEN85
1.86	LYN87

B-V COLOR EXCESS (mag):

E(B-V)	REF.
0.68	JOH61
0.62	BEC63
0.66	SCH63
0.60	HAG70
0.74	VOR72
0.49	FEN85
0.57	LYN87

REFERENCES

ALT70 Alter, G., Ruprecht, J., and Vanysek, V. 1970, The Catalog of Star Clusters and Associations (Budapest: Akad Kiado).
BAR69 Barbaro, G., Dallaporta, N., and Fabris, G. 1969, Ap. Sp. Sci., 3, 123.
BEC63 Becker, W. 1963, Z. f. A., 57, 117.
BEC71 Becker, W. 1971, Astr. Ap. Suppl., 4, 241.
BRU83 Bruch, A., and Sanders, W. L. 1983, Astr. Ap., 121, 237.
DAN81 Danforth, S. C., and Thomas, J. 1981, PASP, 93, 447.
FEN85 Fenkart. R. P., and Schroder, A. 1985, Astr. Ap. Suppl., 59, 83.
HAG70 Hagen, G. L. 1970, D. D. O. Pub., Univ. Toronto, 4.
HOV65 Hoag, A. A. 1965, Vistas, 8, 139.
JOS61 Johnson, H. L., and Svolopoulos, S. N. 1961, Ap. J., 134, 868.
JOH61 Johnson, H. L., Hoag, A. A., Iriarte, B., Mitchell, R. I., and Hallam, K. L. 1961, Lowell Obs. Bull., 5, 133.
LAT79 Latypov, A. A. 1979, Sov. Astr., 23, 287.
LIN68 Lindoff, U. 1968, Arkiv Astr., 5, 1.
LDCAL Linear diameter calculated from published ang. diam. and distance.
LYN83 Lynga, G. 1983, Catalogue of Open Cluster Data (3rd edition), available through NSSDC, Greenbelt, Maryland, USA
LYN87 Lynga, G. 1987, Catalogue of Open Cluster Data (5th edition), available through NSSDC, Greenbelt, Maryland, USA
NEC67 Neckel, T. 1967, Heid. Ver., 19, 115.
PAN81 Panagia, N., and Tosi, M. 1981, Astr. Ap., 96, 306.
VCIRC Radial velocity estimate based on cluster distance and rotation curve model of Brand 1986 (Ph. D. thesis, Leiden).
RED71 Reddish, V. C., and Sloan, C. 1971, Observatory, 91, 70.
SCH77 Schmidt, E. C. 1977, PASP, 89, 546.
SCH63 Schmidt, von K.-H. 1963, Ast. Nach., 287, 41.
VOR72 Voroshilov, V. I., Kalandadze, N. B., and Kuznetsov, V. I. 1972, Abast. Ast. Obs. Bull., 43, 67.
WRA83 Wramdemark, S. 1983, private communication.

CLUSTER IDENTIFICATION:

ALTER et al.: OCL 273
COMMON NAME: HARVARD 21
DATA BASE NUM: 58

SPATIAL COORDINATES:

L II: 116.21
B II: -0.37

RA(1950.0): 23. 51.6
DEC(1950.0): 61. 29.

RADIAL VELOCITIES (w.r.t. LSR; km/s):
STELLAR:

VELOCITY	REF.
-37.4	VCIRC

H II REGION:

NO VALUES AVAILABLE

CO CLOUDS:

NO VALUES AVAILABLE

PROPER MOTION (arcsec/100 yr):

NO VALUES AVAILABLE

DISTANCE FROM SOLAR NEIGHBORHOOD (kpc):

DIST	REF.
3.70	COL31
3.40	BAR63

ANGULAR DIAMETER (arcmin):

ANG D	REF.
2.5	ALT70
5.0	ALT70
4.0	LYN83

LINEAR DIAMETER (pc):

LIN D	REF.
4.1	LDCAL
4.3	COL31

AGE ESTIMATES:
AGE (Myr):

NO VALUES AVAILABLE

EARLIEST MS SPECTRAL TYPE:

eSpT	REF.
B9	LYN81

MS TURNOFF COLOR:

NO VALUES AVAILABLE

MASSES (SOLAR MASS UNITS):
STELLAR MASS:

NO VALUES AVAILABLE

MASS IN ASSOCIATED H I CLOUDS:

NO VALUES AVAILABLE

IONIZED HYDROGEN MASS:

NO VALUES AVAILABLE

MASS IN ASSOCIATED MOLECULAR CLOUDS:

NO VALUES AVAILABLE

ASSOCIATED MASS IN THE FORM OF DUST:

NO VALUES AVAILABLE

VISUAL EXTINCTION TOWARD CLUSTER (mag):

NO VALUES AVAILABLE

B-V COLOR EXCESS (mag):

E(B-V)	REF.
0.69	BAR63

REFERENCES

ALT70 Alter, G., Ruprecht, J., and Vanysek, V. 1970, The Catalog of Star Clusters and Associations (Budapest: Akad Kiado).
BAR63 Barkhatova, K. A. 1963, Ural Sb., 1, 33.
COL31 Collinder, P. 1931, Ann. Lund Obs., No. 2.
LDCAL Linear diameter calculated from published ang. diam. and distance.
LYN81 Lynga, G. 1981, Catalogue of Open Cluster Data, available through NSSDC, Greenbelt, Maryland, USA
LYN83 Lynga, G. 1983, Catalogue of Open Cluster Data (3rd edition), available through NSSDC, Greenbelt, Maryland, USA
VCIRC Radial velocity estimate based on cluster distance and rotation curve model of Brand 1986 (Ph. D. thesis, Leiden).

CLUSTER IDENTIFICATION:

ALTER et al.: OCL 275
COMMON NAME: NGC 7788
MEMBER OF ASSOC.: CAS OB5
DATA BASE NUM: 59

SPATIAL COORDINATES:

L II: 116.43
B II: -0.79

RA(1950.0): 23. 54.2
DEC(1950.0): 61. 7.

RADIAL VELOCITIES (w.r.t. LSR; km/s):
STELLAR:

VELOCITY	REF.
-25.5	VCIRC
-46.0	HRO87

H II REGION:

NO VALUES AVAILABLE

CO CLOUDS:

NO VALUES AVAILABLE

PROPER MOTION (arcsec/100 yr):

MU X	MU Y	REF.
-0.150	-0.220	LAT79

DISTANCE FROM SOLAR NEIGHBORHOOD (kpc):

DIST	REF.
2.41	NEC67
2.41	LIN68
2.40	HAU70
2.41	BEC71
2.37	SPA85
2.33	LYN87

ANGULAR DIAMETER (arcmin):

ANG D	REF.
2.0	ALT70
20.0	ALT70
6.0	HAG70
9.0	BEC71
9.0	LYN83

LINEAR DIAMETER (pc):

LIN D	REF.
6.3	LDCAL
6.3	LYN83

AGE ESTIMATES:
AGE (Myr):

AGE	REF.
16.	LYN83
16.	SPA85
78.	LYN87

EARLIEST MS SPECTRAL TYPE:

eSpT	REF.
B1	BEC71
B4	LYN83
B1	LYN83
b2	LYN83

MS TURNOFF COLOR:

(B-V)	REF.
-0.15	HAG70
-0.15	LYN87

MASSES (SOLAR MASS UNITS):
STELLAR MASS:

NO VALUES AVAILABLE

MASS IN ASSOCIATED H I CLOUDS:

NO VALUES AVAILABLE

IONIZED HYDROGEN MASS:

NO VALUES AVAILABLE

MASS IN ASSOCIATED MOLECULAR CLOUDS:

NO VALUES AVAILABLE

ASSOCIATED MASS IN THE FORM OF DUST:

NO VALUES AVAILABLE

VISUAL EXTINCTION TOWARD CLUSTER (mag):

AV	REF.
0.84	NEC67
0.84	BEC71
0.84	LYN83

B-V COLOR EXCESS (mag):

E(B-V)	REF.
0.50	BAR63
0.30	BUS63
0.28	BEC63
0.31	POL70
0.28	HAG70
0.28	SPA85
0.28	LYN87

REFERENCES

ALT70 Alter, G., Ruprecht, J., and Vanysek, V. 1970, The Catalog of Star Clusters and Associations (Budapest: Akad Kiado).
BAR63 Barkhatova, K. A. 1963, Ural Sb., 1, 33.
BEC63 Becker, W. 1963, Z. f. A., 57, 117.
BEC71 Becker, W. 1971, Astr. Ap. Suppl., 4, 241.
BUS63 Buscombe, W. 1963, Mt. Stromlo Mimeogram, No. 6, pg. 24.
HAG70 Hagen, G. L. 1970, D. D. O. Pub., Univ. Toronto, 4.
HAU70 Haug, U. 1970, Astr. Ap. Suppl., 1, 35.
HRO87 Hron, J. 1987, Astr. Ap., 176, 34.
LAT79 Latypov, A. A. 1979, Sov. Astr., 23, 287.
LIN68 Lindoff, U. 1968, Arkiv Astr., 5, 1.
LDCAL Linear diameter calculated from published ang. diam. and distance.
LYN83 Lynga, G. 1983, Catalogue of Open Cluster Data (3rd edition), available through NSSDC, Greenbelt, Maryland, USA
LYN87 Lynga, G. 1987, Catalogue of Open Cluster Data (5th edition), available through NSSDC, Greenbelt, Maryland, USA
NEC67 Neckel, T. 1967, Heid. Ver., 19, 115.
POL70 Polishchuk, E. P. 1970, Astr. Astrofiz., 9, 17.
VCIRC Radial velocity estimate based on cluster distance and rotation curve model of Brand 1986 (Ph. D. thesis, Leiden).
SPA85 Spassova, N. M., and Baev, P. V. 1985, Ap. Sp. Sci., 112, 111.

CLUSTER IDENTIFICATION:

ALTER et al.: OCL 276
COMMON NAME: NGC 7790
MEMBER OF ASSOC.: CAS OB5
DATA BASE NUM: 60

SPATIAL COORDINATES:

L II: 116.59 RA(1950.0): 23. 55.9
B II: -1.01 DEC(1950.0): 60. 56.

RADIAL VELOCITIES (w.r.t. LSR; km/s):
STELLAR:

VELOCITY	REF.
-33.9	VCIRC

H II REGION:

NO VALUES AVAILABLE

CO CLOUDS:

NO VALUES AVAILABLE

PROPER MOTION (arcsec/100 yr):

MU X	MU Y	REF.
-0.140	-0.250	LAT79

DISTANCE FROM SOLAR NEIGHBORHOOD (kpc):

DIST	REF.
3.60	JOH61
3.60	NEC67
3.15	LIN68
3.60	HAG70
3.16	BEC71
2.49	SCH81
2.88	PED84
3.54	SPA85
2.96	LYN87

ANGULAR DIAMETER (arcmin):

ANG D	REF.
4.5	ALT70
17.5	ALT70
5.4	HAG70
4.5	BEC71
17.0	LYN83
5.0	PED84

LINEAR DIAMETER (pc):

LIN D	REF.
15.8	LDCAL
16.0	LYN83

AGE ESTIMATES:
AGE (Myr):

AGE	REF.
22.	SAN63
28.	LIN68
70.	BAR69
120.	PAN81
78.	LYN83
36.	SPA85
29.	LYN87

EARLIEST MS SPECTRAL TYPE:

eSpT	REF.
OB	STO57
b4	JOH61
b0	BEC71
B4	LYN83
b0	LYN83

MS TURNOFF COLOR:

(B-V)	REF.
-0.18	JOH61
-0.20	HAG70
-0.24	PED84
-0.22	LYN87

MASSES (SOLAR MASS UNITS):
STELLAR MASS:

MASS	REF.
1.46E+03	SCH63
1.26E+02	RED71
1.28E+02	BRU83
1.58E+03	LYN83

MASS IN ASSOCIATED H I CLOUDS:

NO VALUES AVAILABLE

IONIZED HYDROGEN MASS:

NO VALUES AVAILABLE

MASS IN ASSOCIATED MOLECULAR CLOUDS:

NO VALUES AVAILABLE

ASSOCIATED MASS IN THE FORM OF DUST:

NO VALUES AVAILABLE

VISUAL EXTINCTION TOWARD CLUSTER (mag):

AV	REF.
1.56	NEC67
1.60	BEC71
1.60	LYN83

B-V COLOR EXCESS (mag):

E(B-V)	REF.
0.52	JOH61
0.50	BUS63
0.52	SCH63
0.53	BEC63
0.52	STA68
0.52	HAG70
0.64	PED84
0.52	SPA85
0.62	LYN87

REFERENCES

ALT70 Alter, G., Ruprecht, J., and Vanysek, V. 1970, The Catalog of Star Clusters and Associations (Budapest: Akad Kiado).
BAR69 Barbaro, G., Dallaporta, N., and Fabris, G. 1969, Ap. Sp. Sci., 3, 123.
BEC63 Becker, W. 1963, Z. f. A., 57, 117.
BEC71 Becker, W. 1971, Astr. Ap. Suppl., 4, 241.
BRU83 Bruch, A., and Sanders, W. L. 1983, Astr. Ap., 121, 237.
BUS63 Buscombe, W. 1963, Mt. Stromlo Mimeogram, No. 6, pg. 24.
HAG70 Hagen, G. L. 1970, D. D. O. Pub., Univ. Toronto, 4.
JOH61 Johnson, H. L., Hoag, A. A., Iriarte, B., Mitchell, R. I., and Hallam, K. L. 1961, Lowell Obs. Bull., 5, 133.
LAT79 Latypov, A. A. 1979, Sov. Astr., 23, 287.
LIN68 Lindoff, U. 1968, Arkiv Astr., 5, 1.
LDCAL Linear diameter calculated from published ang. diam. and distance.
LYN83 Lynga, G. 1983, Catalogue of Open Cluster Data (3rd edition), available through NSSDC, Greenbelt, Maryland, USA
LYN87 Lynga, G. 1987, Catalogue of Open Cluster Data (5th edition), available through NSSDC, Greenbelt, Maryland, USA
NEC67 Neckel, T. 1967, Heid. Ver., 19, 115.
PAN81 Panagia, N., and Tosi, M. 1981, Astr. Ap., 96, 306.
PED84 Pedreros, M., Madore, B. F., and Freedman, W. L. 1984, Ap. J., 286, 563.
VCIRC Radial velocity estimate based on cluster distance and rotation curve model of Brand 1986 (Ph. D. thesis, Leiden).
RED71 Reddish, V. C., and Sloan, C. 1971, Observatory, 91, 70.
SAN63 Sandage, A. 1963, Ap. J., 138, 863.
SCH81 Schmidt, E. G. 1981, A. J., 86, 242.
SCH63 Schmidt, von K.-H. 1963, Ast. Nach., 287, 41.
SPA85 Spassova, N. M., and Baev, P. V. 1985, Ap. Sp. Sci., 112, 111.
STA68 Starikova, G. A. 1969, Sov. Astr., 12, 632.
ST057 Stock, J. 1957, private communication to Alter et al. 1970.

CLUSTER IDENTIFICATION:

ALTER et al.: OCL 286
COMMON NAME: BERK 59
SHARPLESS: S171
WESTERHOUT: W 1
MEMBER OF ASSOC.: CEP OB4
DATA BASE NUM: 61

SPATIAL COORDINATES:

L II: 118.25
B II: 4.95

RA(1950.0): 0. 0.0
DEC(1950.0): 67. 6.

RADIAL VELOCITIES (w.r.t. LSR; km/s):
STELLAR:

VELOCITY	REF.
-9.4	VCIRC
-39.0	GRA87

H II REGION:

VELOCITY	REF.
-5.7	COU66
-1.8	COU66
-13.4	COU66
-12.8	ISR78
-4.0	ROS80
-9.0	ROS80
-14.0	ROS80
-9.2	PED80

CO CLOUDS:

VELOCITY	REF.
-12.0	ISR78
-12.1	LEI88
-5.8	LEI88
-8.2	LEI88

PROPER MOTION (arcsec/100 yr):

NO VALUES AVAILABLE

DISTANCE FROM SOLAR NEIGHBORHOOD (kpc):

DIST	REF.
0.87	OST57
0.83	HAN62
0.88	WAL65
0.85	MAC68
1.00	SAN74
0.84	FIC84

ANGULAR DIAMETER (arcmin):

ANG D	REF.
10.0	SET60
10.0	LYN83

LINEAR DIAMETER (pc):

LIN D	REF.
2.6	LDCAL

AGE ESTIMATES:
AGE (Myr):

AGE	REF.
2.	MAC68
2.	COH76

EARLIEST MS SPECTRAL TYPE:

eSpT	REF.
O7	BLA59
O7	MAY64
OB	SAN74

MS TURNOFF COLOR:

NO VALUES AVAILABLE

MASSES (SOLAR MASS UNITS):
STELLAR MASS:

NO VALUES AVAILABLE

MASS IN ASSOCIATED H I CLOUDS:

MASS	REF.
3.00E+02	GRA80

IONIZED HYDROGEN MASS:

NO VALUES AVAILABLE

MASS IN ASSOCIATED MOLECULAR CLOUDS:

MASS	REF.
6.64E+04	LEI88
6.56E+04	LEI88

ASSOCIATED MASS IN THE FORM OF DUST:

NO VALUES AVAILABLE

VISUAL EXTINCTION TOWARD CLUSTER (mag):

NO VALUES AVAILABLE

B-V COLOR EXCESS (mag):

E(B-V)	REF.
1.52	MAC68

REFERENCES

BLA59 Blanco, V. M., and Williams, A. D. 1959, Ap. J., 130, 482.
COH76 Cohen, M., and Kuhi, L. 1976, Ap. J., 210, 365.
COU66 Courtes, G., Cruvellier, P., and Georgelin, Y. 1966, J. des Obs., 49, 329.
FIC84 Fich, M., and Blitz, L. 1984, Ap. J., 279, 125.
GRA80 Grayzeck, E. J. 1980, A. J., 85, 1631.
GRA87 Grayzeck, E. J. 1987, private communication.
HAN62 Hanson, J. N., unpublished Master's thesis, Case Inst. of Technology.
ISR78 Israel, F. P. 1978, Astr. Ap., 70, 769.
LEI88 Leisawitz, D., Thaddeus, P., and Bash, F. N. 1988, in preparation for submission to Ap. J. Suppl.
LDCAL Linear diameter calculated from published ang. diam. and distance.
LYN83 Lynga, G. 1983, Catalogue of Open Cluster Data (3rd edition), available through NSSDC, Greenbelt, Maryland, USA
MAC68 MacConnell, D. J. 1968, Ap. J. Suppl., 16, 275.
MAY64 Mayer, P. 1964, Pub. Astr. Inst. Univ. Charles (Prague), S2, 37-41.
OST57 Osterbrock, D. E. 1957, Ap. J., 125, 622.
PED80 Pedlar, A. 1980, MNRAS, 192, 179.
VCIRC Radial velocity estimate based on cluster distance and rotation curve model of Brand 1986 (Ph. D. thesis, Leiden).
ROS80 Rossano, G. S., Angerhofer, P. E., and Grayzeck, E. J. 1980, A. J., 85, 716.
SAN74 Sandulеak, N. 1974, PASP, 86, 74.
SET60 Setteducati, A. F., and Weaver, H. F. 1960, Newly Found Star Clusters, Radio Astr. Laboratory, Berkeley, CA, USA
WAL65 Walker, G. A. H. 1965, Ap. J., 141, 660.

CLUSTER IDENTIFICATION:

ALTER et al.: OCL 291
COMMON NAME: NGC 103
MEMBER OF ASSOC.: CAS OB4
DATA BASE NUM: 62

SPATIAL COORDINATES:

L II: 119.80 RA(1950.0): 0. 22.5
B II: -1.38 DEC(1950.0): 61. 4.

RADIAL VELOCITIES (w.r.t. LSR; km/s):
STELLAR:

VELOCITY	REF.
-33.0	VCIRC
-3.0	LYN81
-3.0	HRO87

H II REGION:

NO VALUES AVAILABLE

CO CLOUDS:

VELOCITY	REF.
-35.3	LEI88

PROPER MOTION (arcsec/100 yr):

NO VALUES AVAILABLE

DISTANCE FROM SOLAR NEIGHBORHOOD (kpc):

DIST	REF.
2.98	HAR60
2.98	JOH61
2.98	NEC67
3.05	LIN68
3.03	BEC71
2.86	LYN87

ANGULAR DIAMETER (arcmin):

ANG D	REF.
4.0	LIN68
4.0	ALT70
13.0	ALT70
4.0	BEC71
5.0	LYN83

LINEAR DIAMETER (pc):

LIN D	REF.
4.4	LDCAL
4.8	LYN83

AGE ESTIMATES:
AGE (Myr):

AGE	REF.
38.	LYN83
29.	LYN87

EARLIEST MS SPECTRAL TYPE:

eSpT	REF.
b6	JOH61
B3	BEC71
B3	LYN83
b5	LYN83

MS TURNOFF COLOR:

(B-V)	REF.
-0.10	HAR60
-0.13	JOH61
-0.22	LYN87

MASSES (SOLAR MASS UNITS):
STELLAR MASS:

MASS	REF.
7.03E+02	SCH63
6.31E+02	LYN83

MASS IN ASSOCIATED H I CLOUDS:

NO VALUES AVAILABLE

IONIZED HYDROGEN MASS:

NO VALUES AVAILABLE

MASS IN ASSOCIATED MOLECULAR CLOUDS:

MASS	REF.
4.50E+03	LEI88

ASSOCIATED MASS IN THE FORM OF DUST:

NO VALUES AVAILABLE

VISUAL EXTINCTION TOWARD CLUSTER (mag):

AV	REF.
1.38	NEC67
1.68	BEC71
1.68	LYN83

B-V COLOR EXCESS (mag):

E(B-V)	REF.
0.46	JOH61
0.50	BUS63
0.46	SCH63
0.56	BEC63
0.42	STA68
0.38	LYN87

REFERENCES

ALT70 Alter, G., Ruprecht, J., and Vanysek, V. 1970, The Catalog of Star Clusters and Associations (Budapest: Akad Kiado).
BEC63 Becker, W. 1963, Z. f. A., 57, 117.
BEC71 Becker, W. 1971, Astr. Ap. Suppl., 4, 241.
BUS63 Buscombe, W. 1963, Mt. Stromlo Mimeogram, No. 6, pg. 24.
HAR60 Hardorp, J. 1960, Ast. Abh. Hamb. Sternw. Berg., 5, 215.
HRO87 Hron, J. 1987, Astr. Ap., 176, 34.
JOH61 Johnson, H. L., Hoag, A. A., Iriarte, B., Mitchell, R. I., and Hallam, K. L. 1961, Lowell Obs. Bull., 5, 133.
LEI88 Leisawitz, D., Thaddeus, P., and Bash, F. N. 1988, in preparation for submission to Ap. J. Suppl.
LIN68 Lindoff, U. 1968, Arkiv Astr., 5, 1.
LDCAL Linear diameter calculated from published ang. diam. and distance.
LYN81 Lynga, G. 1981, Catalogue of Open Cluster Data, available through NSSDC, Greenbelt, Maryland, USA
LYN83 Lynga, G. 1983, Catalogue of Open Cluster Data (3rd edition), available through NSSDC, Greenbelt, Maryland, USA
LYN87 Lynga, G. 1987, Catalogue of Open Cluster Data (5th edition), available through NSSDC, Greenbelt, Maryland, USA
NEC67 Neckel, T. 1967, Heid. Ver., 19, 115.
VCIRC Radial velocity estimate based on cluster distance and rotation curve model of Brand 1986 (Ph. D. thesis, Leiden).
SCH63 Schmidt, von K.-H. 1963, Ast. Nach., 287, 41.
STA68 Starikova, G. A. 1969, Sov. Astr., 12, 632.

CLUSTER IDENTIFICATION:

ALTER et al.: OCL 294
COMMON NAME: NGC 129
DATA BASE NUM: 63

SPATIAL COORDINATES:

L II: 120.25
B II: -2.54
RA(1950.0): 0. 27.1
DEC(1950.0): 59. 57.

RADIAL VELOCITIES (w.r.t. LSR; km/s):
STELLAR:

VELOCITY	REF.
-17.9	VCIRC
-7.3	KRA59
-6.3	JOS61
-6.3	PAL77
-5.3	WRA83
-5.3	LYN87

H II REGION:

NO VALUES AVAILABLE

CO CLOUDS:

NO VALUES AVAILABLE

PROPER MOTION (arcsec/100 yr):

MU X	MU Y	REF.
-0.190	-0.080	PAL77
-0.200	-0.140	LAT79
-0.160	-0.100	LAT79

DISTANCE FROM SOLAR NEIGHBORHOOD (kpc):

DIST	REF.
1.66	JOH61
1.70	HAG70
1.70	SCH71
1.74	BEC71
1.82	FRO73
1.53	SCH80
1.55	DAN85
1.67	SPA85
1.59	LYN87

ANGULAR DIAMETER (arcmin):

ANG D	REF.
15.0	LIN68
5.5	ALT70
50.0	ALT70
13.0	BEC71
21.0	LYN83
27.8	DAN85

LINEAR DIAMETER (pc):

LIN D	REF.
9.8	LDCAL
9.8	LYN83
12.5	DAN85

AGE ESTIMATES:
AGE (Myr):

AGE	REF.
100.	BAR67
47.	LIN68
60.	BAR69
90.	DLU72
151.	LYN83
49.	SPA85
47.	LYN87

EARLIEST MS SPECTRAL TYPE:

eSpT	REF.
b5	JOH61
B3	BEC71
B5	LYN83
B3	LYN83
b5	LYN83
F5Ib	SCH84

MS TURNOFF COLOR:

(B-V)	REF.
-0.15	HAR60
-0.16	JOH61
-0.20	HAG70
-0.19	LYN87

MASSES (SOLAR MASS UNITS):
STELLAR MASS:

MASS	REF.
1.77E+03	SCH63
2.35E+03	POP69
4.67E+02	RED71
4.74E+02	BRU83
1.58E+03	LYN83

MASS IN ASSOCIATED H I CLOUDS:

MASS	REF.
6.00E+02	DOD70

IONIZED HYDROGEN MASS:

NO VALUES AVAILABLE

MASS IN ASSOCIATED MOLECULAR CLOUDS:

NO VALUES AVAILABLE

ASSOCIATED MASS IN THE FORM OF DUST:

MASS	REF.
2.26E+01	DOD70

VISUAL EXTINCTION TOWARD CLUSTER (mag):

AV	REF.
1.59	DLU65
1.74	NEC67
1.83	BEC71
1.83	LYN87

B-V COLOR EXCESS (mag):

E(B-V)	REF.
0.58	JOH61
0.53	DIC67
0.56	STA68
0.58	POL70
0.57	HAG70
0.61	SPA85
0.58	LYN87

REFERENCES

ALT70 Alter, G., Ruprecht, J., and Vanysek, V. 1970, The Catalog of Star Clusters and Associations (Budapest: Akad Kiado).
BAR67 Barbaro, G. 1967, Contr. Obs. Ast. Univ. Padova in Asiago, No. 138.
BAR69 Barbaro, G., Dallaporta, N., and Fabris, G. 1969, Ap. Sp. Sci., 3, 123.
BEC71 Becker, W. 1971, Astr. Ap. Suppl., 4, 241.
BRU83 Bruch, A., and Sanders, W. L. 1983, Astr. Ap., 121, 237.
DAN85 Danilov, V. M., Matkin, N. V., and Pyl'skaya, O. P. 1985, Sov. Astr., 29, 621.
DIC67 Dickens, R. S., and Carey, J. V. 1967, Roy. Obs. Bull., No. 129.
DLU65 Dluzhnevskaya, O. B. 1965, Nautch. Inf., No. 2.
DLU72 Dluzhnevskaya, O. B., and Piskunov, A. E. 1972, Nautch. Inf., 21, 58.
DOD70 D Odorico, S., and Felli, M. 1970, Mem. Soc. Ast. Ital., 41, 89.
FRO73 Frolov, V. N. 1973, Astr. Tsirk., 771, 1.
HAG70 Hagen, G. L. 1970, D. D. O. Pub., Univ. Toronto, 4.
HAR60 Hardorp, J. 1960, Ast. Abh. Hamb. Sternw. Berg., 5, 215.
JOS61 Johnson, H. L., and Svolopoulos, S. N. 1961, Ap. J., 134, 868.
JOH61 Johnson, H. L., Hoag, A. A., Iriarte, B., Mitchell, R. I., and Hallam, K. L. 1961, Lowell Obs. Bull., 5, 133.
KRA59 Kraft, R. P. 1959, Ap. J., 130, 704.
LAT79 Latypov, A. A. 1979, Sov. Astr., 23, 287.
LIN68 Lindoff, U. 1968, Arkiv Astr., 5, 1.
LDCAL Linear diameter calculated from published ang. diam. and distance.
LYN83 Lynga, G. 1983, Catalogue of Open Cluster Data (3rd edition), available through NSSDC, Greenbelt, Maryland, USA
LYN87 Lynga, G. 1987, Catalogue of Open Cluster Data (5th edition), available through NSSDC, Greenbelt, Maryland, USA
NEC67 Neckel, T. 1967, Heid. Ver., 19, 115.
PAL77 Palous, J., Ruprecht, J., Dluzhnevskaya, O. B., and Piskunov, T. 1977, Astr. Ap., 61, 27.
POL70 Polishchuk, E. P. 1970, Astr. Astrofiz., 9, 17.
POP69 Popova, E. I. 1969, Nautch. Inf., 11, 85.
VCIRC Radial velocity estimate based on cluster distance and rotation curve model of Brand 1986 (Ph. D. thesis, Leiden).
RED71 Reddish, V. C., and Sloan, C. 1971, Observatory, 91, 70.
SCH80 Schmidt, E. G. 1980, A. J., 85, 695.
SCH84 Schmidt, E. G. 1984, Ap. J. Suppl., 55, 455.
SCH63 Schmidt, von K.-H. 1963, Ast. Nach., 287, 41.
SCH71 Schwartz, R. 1971, Ap. Sp. Sci., 14, 286.
SPA85 Spassova, N. M., and Baev, P. V. 1985, Ap. Sp. Sci., 112, 111.
STA68 Starikova, G. A. 1969, Sov. Astr., 12, 632.
WRA83 Wramdemark, S. 1983, private communication.

CLUSTER IDENTIFICATION:

ALTER et al.: OCL 297
COMMON NAME: KING 14
MEMBER OF ASSOC.: CAS OB4
DATA BASE NUM: 64

SPATIAL COORDINATES:

L II: 120.72 RA(1950.0): 0. 29.0
B II: 0.36 DEC(1950.0): 62. 53.

RADIAL VELOCITIES (w.r.t. LSR; km/s):
STELLAR:

VELOCITY	REF.
-27.7	VCIRC

H II REGION:

NO VALUES AVAILABLE

CO CLOUDS:

NO VALUES AVAILABLE

PROPER MOTION (arcsec/100 yr):

NO VALUES AVAILABLE

DISTANCE FROM SOLAR NEIGHBORHOOD (kpc):

DIST	REF.
2.88	HAR60
2.88	SCH63
1.96	LIN68
2.40	HAU70
2.40	BEC71
2.77	LYN87

ANGULAR DIAMETER (arcmin):

ANG D	REF.
7.0	MAN54
7.5	LIN68
6.5	BEC71
7.0	LYN83

LINEAR DIAMETER (pc):

LIN D	REF.
5.1	LDCAL
4.3	LIN68
4.5	BEC71
5.5	LYN83

AGE ESTIMATES:
AGE (Myr):

AGE	REF.
16.	LIN68
16.	LYN83
41.	LYN87

EARLIEST MS SPECTRAL TYPE:

eSpT	REF.
OB	STO56
B1	JAS64
B2	BEC71
B2	LYN83
b2	LYN83

MS TURNOFF COLOR:

(B-V)	REF.
-0.20	HAR60
-0.20	LYN87

MASSES (SOLAR MASS UNITS):
STELLAR MASS:

MASS	REF.
9.80E+02	SCH63

MASS IN ASSOCIATED H I CLOUDS:

NO VALUES AVAILABLE

IONIZED HYDROGEN MASS:

NO VALUES AVAILABLE

MASS IN ASSOCIATED MOLECULAR CLOUDS:

NO VALUES AVAILABLE

ASSOCIATED MASS IN THE FORM OF DUST:

NO VALUES AVAILABLE

VISUAL EXTINCTION TOWARD CLUSTER (mag):

AV	REF.
1.71	BEC71
1.71	LYN87

B-V COLOR EXCESS (mag):

E(B-V)	REF.
0.42	SCH63
0.57	BEC63
0.47	LYN87

REFERENCES

BEC63 Becker, W. 1963, Z. f. A., 57, 117.
BEC71 Becker, W. 1971, Astr. Ap. Suppl., 4, 241.
HAR60 Hardorp, J. 1960, Ast. Abh. Hamb. Sternw. Berg., 5, 215.
HAU70 Haug, U. 1970, Astr. Ap. Suppl., 1, 35.
JAS64 Jasevicius, V. 1964, Bull. Vilnius Ast. Obs., No. 13, 1.
LIN68 Lindoff, U. 1968, Arkiv Astr., 5, 1.
LDCAL Linear diameter calculated from published ang. diam. and distance.
LYN83 Lynga, G. 1983, Catalogue of Open Cluster Data (3rd edition), available through NSSDC, Greenbelt, Maryland, USA
LYN87 Lynga, G. 1987, Catalogue of Open Cluster Data (5th edition), available through NSSDC, Greenbelt, Maryland, USA
MAN54 Manova, G. A. 1954, Astr. Tsirk., 153, 9.
VCIRC Radial velocity estimate based on cluster distance and rotation curve model of Brand 1986 (Ph. D. thesis, Leiden).
SCH63 Schmidt, von K.-H. 1963, Ast. Nach., 287, 41.
STO56 Stock, J. 1956, private communication to Alter et al. 1970.

CLUSTER IDENTIFICATION:

ALTER et al.: OCL 299
COMMON NAME: NGC 146
MEMBER OF ASSOC.: CAS OB4
DATA BASE NUM: 65

SPATIAL COORDINATES:

L II: 120.87 RA(1950.0): 0. 30.2
B II: 0.49 DEC(1950.0): 63. 1.

RADIAL VELOCITIES (w.r.t. LSR; km/s):
STELLAR:

VELOCITY	REF.
-28.7	VCIRC

H II REGION:

NO VALUES AVAILABLE

CO CLOUDS:

NO VALUES AVAILABLE

PROPER MOTION (arcsec/100 yr):

NO VALUES AVAILABLE

DISTANCE FROM SOLAR NEIGHBORHOOD (kpc):

DIST	REF.
2.44	LIN68
2.44	BEC71
3.19	LYN87

ANGULAR DIAMETER (arcmin):

ANG D	REF.
7.0	ALT41
5.5	LIN68
7.5	BEC71
7.0	LYN83

LINEAR DIAMETER (pc):

LIN D	REF.
5.3	LDCAL
5.9	LYN83

AGE ESTIMATES:
AGE (Myr):

AGE	REF.
13.	LYN83
41.	LYN87

EARLIEST MS SPECTRAL TYPE:

eSpT	REF.
OB	STO56
B1	JAS64
B3	BEC71
B3	LYN83
b1	LYN83

MS TURNOFF COLOR:

(B-V)	REF.
-0.20	HAR60
-0.20	LYN87

MASSES (SOLAR MASS UNITS):
STELLAR MASS:

MASS	REF.
8.55E+02	SCH63

MASS IN ASSOCIATED H I CLOUDS:

NO VALUES AVAILABLE

IONIZED HYDROGEN MASS:

NO VALUES AVAILABLE

MASS IN ASSOCIATED MOLECULAR CLOUDS:

NO VALUES AVAILABLE

ASSOCIATED MASS IN THE FORM OF DUST:

NO VALUES AVAILABLE

VISUAL EXTINCTION TOWARD CLUSTER (mag):

AV	REF.
2.16	BEC71
2.16	LYN83

B-V COLOR EXCESS (mag):

E(B-V)	REF.
0.49	SCH63
0.72	BEC63
0.58	LYN87

REFERENCES

ALT41 Alter, G. 1941, MNRAS, 101, 298.
BEC63 Becker, W. 1963, Z. f. A., 57, 117.
BEC71 Becker, W. 1971, Astr. Ap. Suppl., 4, 241.
HAR60 Hardorp, J. 1960, Ast. Abh. Hamb. Sternw. Berg., 5, 215.
JAS64 Jasevicius, V. 1964, Bull. Vilnius Ast. Obs., No. 13, 1.
LIN68 Lindoff, U. 1968, Arkiv Astr., 5, 1.
LDCAL Linear diameter calculated from published ang. diam. and distance.
LYN83 Lynga, G. 1983, Catalogue of Open Cluster Data (3rd edition), available through NSSDC, Greenbelt, Maryland, USA
LYN87 Lynga, G. 1987, Catalogue of Open Cluster Data (5th edition), available through NSSDC, Greenbelt, Maryland, USA
VCIRC Radial velocity estimate based on cluster distance and rotation curve model of Brand 1986 (Ph. D. thesis, Leiden).
SCH63 Schmidt, von K.-H. 1963, Ast. Nach., 287, 41.
STO56 Stock, J. 1956, private communication to Alter et al. 1970.

CLUSTER IDENTIFICATION:

ALTER et al.: OCL 306
COMMON NAME: KING 16
MEMBER OF ASSOC.: CAS OB7
DATA BASE NUM: 66

SPATIAL COORDINATES:

L II: 122.09 RA(1950.0): 0. 40.7
B II: 1.33 DEC(1950.0): 63. 55.

RADIAL VELOCITIES (w.r.t. LSR; km/s):
STELLAR:

VELOCITY	REF.
-25.8	VCIRC

H II REGION:

NO VALUES AVAILABLE

CO CLOUDS:

NO VALUES AVAILABLE

PROPER MOTION (arcsec/100 yr):

NO VALUES AVAILABLE

DISTANCE FROM SOLAR NEIGHBORHOOD (kpc):

DIST	REF.
2.30	AMP64
2.30	LYN83

ANGULAR DIAMETER (arcmin):

ANG D	REF.
3.0	ALT70
4.0	ALT70
3.0	LYN83

LINEAR DIAMETER (pc):

LIN D	REF.
2.0	LDCAL
2.0	LYN83

AGE ESTIMATES:
AGE (Myr):

NO VALUES AVAILABLE

EARLIEST MS SPECTRAL TYPE:

eSpT	REF.
OB	ST056
OB	LYN83

MS TURNOFF COLOR:

NO VALUES AVAILABLE

MASSES (SOLAR MASS UNITS):
STELLAR MASS:

NO VALUES AVAILABLE

MASS IN ASSOCIATED H I CLOUDS:

NO VALUES AVAILABLE

IONIZED HYDROGEN MASS:

NO VALUES AVAILABLE

MASS IN ASSOCIATED MOLECULAR CLOUDS:

NO VALUES AVAILABLE

ASSOCIATED MASS IN THE FORM OF DUST:

NO VALUES AVAILABLE

VISUAL EXTINCTION TOWARD CLUSTER (mag):

NO VALUES AVAILABLE

B-V COLOR EXCESS (mag):

NO VALUES AVAILABLE

REFERENCES

ALT70 Alter, G., Ruprecht, J., and Vanysek, V. 1970, The Catalog of Star Clusters and Associations (Budapest: Akad Kiado).
AMP64 Ampel, R. 1964, Acta Astr., 14, 52.
LDCAL Linear diameter calculated from published ang. diam. and distance.
LYN83 Lynga, G. 1983, Catalogue of Open Cluster Data (3rd edition), available through NSSDC, Greenbelt, Maryland, USA
VCIRC Radial velocity estimate based on cluster distance and rotation curve model of Brand 1986 (Ph. D. thesis, Leiden).
STO56 Stock, J. 1956, private communication to Alter et al. 1970.

CLUSTER IDENTIFICATION:

ALTER et al.: OCL 307
COMMON NAME: BERK 4
DATA BASE NUM: 67

SPATIAL COORDINATES:

L II: 122.29
B II: 1.54

RA(1950.0): 0. 42.5
DEC(1950.0): 64. 8.

RADIAL VELOCITIES (w.r.t. LSR; km/s):
STELLAR:

VELOCITY	REF.
-38.3	VCIRC

H II REGION:

NO VALUES AVAILABLE

CO CLOUDS:

NO VALUES AVAILABLE

PROPER MOTION (arcsec/100 yr):

NO VALUES AVAILABLE

DISTANCE FROM SOLAR NEIGHBORHOOD (kpc):

DIST	REF.
3.50	SAN74

ANGULAR DIAMETER (arcmin):

ANG D	REF.
5.0	SET80
5.0	LYN83

LINEAR DIAMETER (pc):

LIN D	REF.
5.1	LDCAL

AGE ESTIMATES:
AGE (Myr):

NO VALUES AVAILABLE

EARLIEST MS SPECTRAL TYPE:

eSpT	REF.
OB	SAN74

MS TURNOFF COLOR:

NO VALUES AVAILABLE

MASSES (SOLAR MASS UNITS):
STELLAR MASS:

NO VALUES AVAILABLE

MASS IN ASSOCIATED H I CLOUDS:

NO VALUES AVAILABLE

IONIZED HYDROGEN MASS:

NO VALUES AVAILABLE

MASS IN ASSOCIATED MOLECULAR CLOUDS:

NO VALUES AVAILABLE

ASSOCIATED MASS IN THE FORM OF DUST:

NO VALUES AVAILABLE

VISUAL EXTINCTION TOWARD CLUSTER (mag):

NO VALUES AVAILABLE

B-V COLOR EXCESS (mag):

NO VALUES AVAILABLE

REFERENCES

LDCAL Linear diameter calculated from published ang. diam. and distance.
LYN83 Lynga, G. 1983, Catalogue of Open Cluster Data (3rd edition), available through NSSDC, Greenbelt, Maryland, USA
VCIRC Radial velocity estimate based on cluster distance and rotation curve model of Brand 1986 (Ph. D. thesis, Leiden).
SAN74 Sanduleak, N. 1974, PASP, 86, 74.
SET60 Setteducati, A. F., and Weaver, H. F. 1960, Newly Found Star Clusters, Radio Astr. Laboratory, Berkeley, CA, USA

CLUSTER IDENTIFICATION:

ALTER et al.: OCL 313
COMMON NAME: NGC 281
SHARPLESS: S184
DATA BASE NUM: 68

SPATIAL COORDINATES:

L II: 123.13
B II: -6.24

RA(1950.0): 0. 49.9
DEC(1950.0): 58. 21.

RADIAL VELOCITIES (w.r.t. LSR; km/s):
STELLAR:

VELOCITY	REF.
-26.5	VCIRC
-17.7	WIL53
-19.9	ABT72
-19.0	CRU74
-21.7	HRO87

H II REGION:

VELOCITY	REF.
-27.4	COU66
-26.4	WIL70
-28.6	ROG81
-19.9	ROG81
-26.5	GAR83
-30.0	REY85

CO CLOUDS:

VELOCITY	REF.
-30.4	BLI82
-30.6	LEI88
-43.9	LEI88

PROPER MOTION (arcsec/100 yr):

NO VALUES AVAILABLE

DISTANCE FROM SOLAR NEIGHBORHOOD (kpc):

DIST	REF.
1.66	WAL68
2.30	ROG81
2.20	BLI82
2.50	GUE85

ANGULAR DIAMETER (arcmin):

ANG D	REF.
4.0	ALT70
16.0	ALT70
4.0	LYN83

LINEAR DIAMETER (pc):

LIN D	REF.
2.7	LDCAL
2.6	BLI82

AGE ESTIMATES:
AGE (Myr):

NO VALUES AVAILABLE

EARLIEST MS SPECTRAL TYPE:

eSpT	REF.
OE5	HBB22
B0	HBB22
O5.5	WAL68
O6.5	WAL71
O8	LYN83

MS TURNOFF COLOR:

NO VALUES AVAILABLE

MASSES (SOLAR MASS UNITS):
STELLAR MASS:

NO VALUES AVAILABLE

MASS IN ASSOCIATED H I CLOUDS:

MASS	REF.
1.05E+04	ROG81

IONIZED HYDROGEN MASS:

MASS	REF.
2.20E+02	ROG81

MASS IN ASSOCIATED MOLECULAR CLOUDS:

MASS	REF.
2.00E+03	ELL78
2.00E+04	LEI88
1.60E+04	LEI88

ASSOCIATED MASS IN THE FORM OF DUST:

NO VALUES AVAILABLE

VISUAL EXTINCTION TOWARD CLUSTER (mag):

NO VALUES AVAILABLE

B-V COLOR EXCESS (mag):

E(B-V)	REF.
0.41	MOR69
0.39	GUE85

REFERENCES

ABT72 Abt, H. A., and Biggs, E. S. 1972, Bibliography of Stellar Radial Velocities, (Latham Process Corp.: New York).
ALT70 Alter, G., Ruprecht, J., and Vanysek, V. 1970, The Catalog of Star Clusters and Associations (Budapest: Akad Kiado).
BLI82 Blitz, L., Fich, M. and Stark, A. A. 1982, Ap. J. Suppl., 49, 183.
COU66 Courtes, G., Cruvellier, P., and Georgelin, Y. 1966, J. des Obs., 49, 329.
CRU74 Cruz-Gonzales, C., Recillas-Cruz, E., Costero, R., Peimbert, M., Torres-Peimbert, S. 1974, Rev.Mex.Astr.Af., 1, 211.
ELL78 Elmegreen, B. G., and Lada, C. J. 1978, Ap. J., 219, 467.
GAR83 Garay, G., and Rodriguez, L. F. 1983, Ap. J., 266, 263.
GUE85 Guetter, H. H., Turner, D. G., and Scrimger, J. N. 1985, BAAS, 17, 557.
HRO87 Hron, J. 1987, Astr. Ap., 176, 34.
HBB22 Hubble, E. 1922, Ap. J., 56, 184.
LEI88 Leisawitz, D., Thaddeus, P., and Bash, F. N. 1988, in preparation for submission to Ap. J. Suppl.
LDCAL Linear diameter calculated from published ang. diam. and distance.
LYN83 Lynga, G. 1983, Catalogue of Open Cluster Data (3rd edition), available through NSSDC, Greenbelt, Maryland, USA
MOR69 Morton, D. C. 1969, Ap. J., 158, 629.
VCIRC Radial velocity estimate based on cluster distance and rotation curve model of Brand 1986 (Ph. D. thesis, Leiden).
REY85 Reynolds, R. J. 1985, Ap. J., 294, 256.
ROG81 Roger, R. S., and Pedlar, A. 1981, Astr. Ap., 94, 238.
WAL71 Walborn, N. R. 1971, Ap. J. Suppl., 23, 257.
WAL68 Walker, G. A. H., and Hodge, S. M. 1968, PASP, 80, 290.
WIL70 Williamson, R. A. 1970, Ap. Sp. Sci., 6, 45.
WIL53 Wilson, R. E. 1953, General Catalog of Stellar Radial Velocities, (Washington, D.C.: Carnegie Institution, Pub 601).

CLUSTER IDENTIFICATION:

ALTER et al.: OCL 314
COMMON NAME: BERK 62
MEMBER OF ASSOC.: CAS OB7
DATA BASE NUM: 69

SPATIAL COORDINATES:

L II: 123.99 RA(1950.0): 0. 57.9
B II: 1.10 DEC(1950.0): 63. 41.

RADIAL VELOCITIES (w.r.t. LSR; km/s):
STELLAR:

VELOCITY	REF.
-23.4	VCIRC

H II REGION:

NO VALUES AVAILABLE

CO CLOUDS:

VELOCITY	REF.
-44.6	LEI88
-12.7	LEI88

PROPER MOTION (arcsec/100 yr):

NO VALUES AVAILABLE

DISTANCE FROM SOLAR NEIGHBORHOOD (kpc):

DIST	REF.
2.05	FOR81
1.90	LYN87

ANGULAR DIAMETER (arcmin):

ANG D	REF.
10.0	SET60
11.0	FOR81
10.0	LYN83

LINEAR DIAMETER (pc):

LIN D	REF.
6.0	LDCAL
6.6	FOR81

AGE ESTIMATES:
AGE (Myr):

AGE	REF.
10.	FOR81
10.	LYN87

EARLIEST MS SPECTRAL TYPE:

eSpT	REF.
OB	SAN74
B1	FOR81

MS TURNOFF COLOR:

(B-V)	REF.
-0.31	LYN87

MASSES (SOLAR MASS UNITS):
STELLAR MASS:

NO VALUES AVAILABLE

MASS IN ASSOCIATED H I CLOUDS:

NO VALUES AVAILABLE

IONIZED HYDROGEN MASS:

NO VALUES AVAILABLE

MASS IN ASSOCIATED MOLECULAR CLOUDS:

MASS	REF.
5.90E+03	LEI88

ASSOCIATED MASS IN THE FORM OF DUST:

NO VALUES AVAILABLE

VISUAL EXTINCTION TOWARD CLUSTER (mag):

NO VALUES AVAILABLE

B-V COLOR EXCESS (mag):

E(B-V)	REF.
0.86	FOR81
0.86	LYN87

REFERENCES

FOR81 Forbes, D. 1981, PASP, 93, 441.
LEI88 Leisawitz, D., Thaddeus, P., and Bash, F. N. 1988, in preparation for submission to Ap. J. Suppl.
LDCAL Linear diameter calculated from published ang. diam. and distance.
LYN83 Lynga, G. 1983, Catalogue of Open Cluster Data (3rd edition), available through NSSDC, Greenbelt, Maryland, USA
LYN87 Lynga, G. 1987, Catalogue of Open Cluster Data (5th edition), available through NSSDC, Greenbelt, Maryland, USA
VCIRC Radial velocity estimate based on cluster distance and rotation curve model of Brand 1986 (Ph. D. thesis, Leiden).
SAN74 Sanduleak, N. 1974, PASP, 86, 74.
SET60 Setteducati, A. F., and Weaver, H. F. 1960, Newly Found Star Clusters, Radio Astr. Laboratory, Berkeley, CA, USA

CLUSTER IDENTIFICATION:

ALTER et al.: OCL 316
COMMON NAME: NGC 366
MEMBER OF ASSOC.: CAS OB1
DATA BASE NUM: 70

SPATIAL COORDINATES:

L II: 124.68 RA(1950.0): 1. 3.3
B II: -0.59 DEC(1950.0): 61. 58.

RADIAL VELOCITIES (w.r.t. LSR; km/s):
STELLAR:

VELOCITY	REF.
-26.2	VCIRC

H II REGION:

NO VALUES AVAILABLE

CO CLOUDS:

NO VALUES AVAILABLE

PROPER MOTION (arcsec/100 yr):

NO VALUES AVAILABLE

DISTANCE FROM SOLAR NEIGHBORHOOD (kpc):

DIST	REF.
2.30	KOP52

ANGULAR DIAMETER (arcmin):

ANG D	REF.
3.0	MAR51
3.0	LYN83

LINEAR DIAMETER (pc):

LIN D	REF.
2.0	LDCAL
2.0	KOP52

AGE ESTIMATES:
AGE (Myr):

NO VALUES AVAILABLE

EARLIEST MS SPECTRAL TYPE:

eSpT	REF.
B0	KOP53
B0	LYN83

MS TURNOFF COLOR:

NO VALUES AVAILABLE

MASSES (SOLAR MASS UNITS):
STELLAR MASS:

NO VALUES AVAILABLE

MASS IN ASSOCIATED H I CLOUDS:

NO VALUES AVAILABLE

IONIZED HYDROGEN MASS:

NO VALUES AVAILABLE

MASS IN ASSOCIATED MOLECULAR CLOUDS:

NO VALUES AVAILABLE

ASSOCIATED MASS IN THE FORM OF DUST:

NO VALUES AVAILABLE

VISUAL EXTINCTION TOWARD CLUSTER (mag):

NO VALUES AVAILABLE

B-V COLOR EXCESS (mag):

NO VALUES AVAILABLE

REFERENCES

KOP52 Kopylov, I. M. 1952, Crim. Izv., 8, 122.
KOP53 Kopylov, I. M. 1953, Crim. Izv., 10, 120.
LDCAL Linear diameter calculated from published ang. diam. and distance.
LYN83 Lynga, G. 1983, Catalogue of Open Cluster Data (3rd edition), available through NSSDC, Greenbelt, Maryland, USA
MAR51 Markarian, V. E. 1951, Biur. Soob., 9, 7.
VCIRC Radial velocity estimate based on cluster distance and rotation curve model of Brand 1986 (Ph. D. thesis, Leiden).

CLUSTER IDENTIFICATION:

ALTER et al.: OCL 319
COMMON NAME: NGC 433
DATA BASE NUM: 71

SPATIAL COORDINATES:

L II: 125.90
B II: -2.60
RA(1950.0): 1. 12.1
DEC(1950.0): 59. 52.

RADIAL VELOCITIES (w.r.t. LSR; km/s):
STELLAR:

VELOCITY	REF.
-47.6	VCIRC

H II REGION:

NO VALUES AVAILABLE

CO CLOUDS:

VELOCITY	REF.
-23.0	LEI88
-21.4	LEI88
-10.6	LEI88

PROPER MOTION (arcsec/100 yr):

NO VALUES AVAILABLE

DISTANCE FROM SOLAR NEIGHBORHOOD (kpc):

DIST	REF.
4.50	ALT44
4.50	TUM48

ANGULAR DIAMETER (arcmin):

ANG D	REF.
2.5	ALT70
5.0	ALT70
2.5	LYN83

LINEAR DIAMETER (pc):

LIN D	REF.
3.3	LDCAL

AGE ESTIMATES:
AGE (Myr):

NO VALUES AVAILABLE

EARLIEST MS SPECTRAL TYPE:

eSpT	REF.
OB	STO57
OB	LYN83

MS TURNOFF COLOR:

NO VALUES AVAILABLE

MASSES (SOLAR MASS UNITS):
STELLAR MASS:

NO VALUES AVAILABLE

MASS IN ASSOCIATED H I CLOUDS:

NO VALUES AVAILABLE

IONIZED HYDROGEN MASS:

NO VALUES AVAILABLE

MASS IN ASSOCIATED MOLECULAR CLOUDS:

MASS	REF.
3.80E+04	LEI88

ASSOCIATED MASS IN THE FORM OF DUST:

NO VALUES AVAILABLE

VISUAL EXTINCTION TOWARD CLUSTER (mag):

NO VALUES AVAILABLE

B-V COLOR EXCESS (mag):

NO VALUES AVAILABLE

REFERENCES

ALT44 Alter, G. 1944, MNRAS, 104, 179.
ALT70 Alter, G., Ruprecht, J., and Vanysek, V. 1970, The Catalog of Star Clusters and Associations (Budapest: Akad Kiado).
LEI88 Leisawitz, D., Thaddeus, P., and Bash, F. N. 1988, in preparation for submission to Ap. J. Suppl.
LDCAL Linear diameter calculated from published ang. diam. and distance.
LYN83 Lynga, G. 1983, Catalogue of Open Cluster Data (3rd edition), available through NSSDC, Greenbelt, Maryland, USA
VCIRC Radial velocity estimate based on cluster distance and rotation curve model of Brand 1986 (Ph. D. thesis, Leiden).
STO57 Stock, J. 1957, private communication to Alter et al. 1970.
TUM48 Tumanian, B. E. 1948, Armen. Dokl., 9, 7.

CLUSTER IDENTIFICATION:

ALTER et al.: OCL 320
COMMON NAME: NGC 436
DATA BASE NUM: 72

SPATIAL COORDINATES:

L II: 126.07
B II: -3.91

RA(1950.0): 1. 12.5
DEC(1950.0): 58. 33.

RADIAL VELOCITIES (w.r.t. LSR; km/s):
STELLAR:

VELOCITY	REF.
-24.6	VCIRC
-25.2	WIL53
-28.2	ABT72

H II REGION:

NO VALUES AVAILABLE

CO CLOUDS:

NO VALUES AVAILABLE

PROPER MOTION (arcsec/100 yr):

NO VALUES AVAILABLE

DISTANCE FROM SOLAR NEIGHBORHOOD (kpc):

DIST	REF.
2.15	NEC67
2.15	LIN68
2.15	BEC71
2.06	DAN85
2.11	LYN87

ANGULAR DIAMETER (arcmin):

ANG D	REF.
6.0	LIN68
4.0	ALT70
10.0	ALT70
6.0	BEC71
6.0	LYN83
21.6	DAN85

LINEAR DIAMETER (pc):

LIN D	REF.
3.7	LDCAL
3.8	LYN83
13.0	DAN85

AGE ESTIMATES:
AGE (Myr):

AGE	REF.
79.	LYN83
142.	LYN87

EARLIEST MS SPECTRAL TYPE:

eSpT	REF.
OB	ST057
B5	BEC63
B5	BEC71
B5	LYN83
b6	LYN83

MS TURNOFF COLOR:

(B-V)	REF.
-0.12	BEC58
-0.09	LYN87

MASSES (SOLAR MASS UNITS):
STELLAR MASS:

MASS	REF.
1.00E+03	LYN83

MASS IN ASSOCIATED H I CLOUDS:

NO VALUES AVAILABLE

IONIZED HYDROGEN MASS:

NO VALUES AVAILABLE

MASS IN ASSOCIATED MOLECULAR CLOUDS:

NO VALUES AVAILABLE

ASSOCIATED MASS IN THE FORM OF DUST:

NO VALUES AVAILABLE

VISUAL EXTINCTION TOWARD CLUSTER (mag):

AV	REF.
0.37	NEC67
0.47	BEC71
0.47	LYN83

B-V COLOR EXCESS (mag):

E(B-V)	REF.
0.20	BUS63
0.18	BEC63
0.19	LYN87

REFERENCES

ABT72 Abt, H. A., and Biggs, E. S. 1972, Bibliography of Stellar Radial Velocities, (Latham Process Corp.: New York).
ALT70 Alter, G., Ruprecht, J., and Vanysek, V. 1970, The Catalog of Star Clusters and Associations (Budapest: Akad Kiado).
BEC63 Becker, W. 1963, Z. f. A., 57, 117.
BEC71 Becker, W. 1971, Astr. Ap. Suppl., 4, 241.
BEC58 Becker, W., and Stock, J. 1958, Z. f. A., 45, 269 (see also pg. 282).
BUS63 Buscombe, W. 1963, Mt. Stromlo Mimeogram, No. 6, pg. 24.
DAN85 Danilov, V. M., Matkin, N. V., and Pyl'skaya, O. P. 1985, Sov. Astr., 29, 621.
LIN68 Lindoff, U. 1968, Arkiv Astr., 5, 1.
LDCAL Linear diameter calculated from published ang. diam. and distance.
LYN83 Lynga, G. 1983, Catalogue of Open Cluster Data (3rd edition), available through NSSDC, Greenbelt, Maryland, USA
LYN87 Lynga, G. 1987, Catalogue of Open Cluster Data (5th edition), available through NSSDC, Greenbelt, Maryland, USA
NEC67 Neckel, T. 1967, Heid. Ver., 19, 115.
VCIRC Radial velocity estimate based on cluster distance and rotation curve model of Brand 1986 (Ph. D. thesis, Leiden).
STO57 Stock, J. 1957, private communication to Alter et al. 1970.
WIL53 Wilson, R. E. 1953, General Catalog of Stellar Radial Velocities, (Washington, D.C.: Carnegie Institution, Pub 601).

CLUSTER IDENTIFICATION:

ALTER et al.: OCL 321
COMMON NAME: NGC 457
DATA BASE NUM: 73

SPATIAL COORDINATES:

L II: 126.56
B II: -4.35

RA(1950.0): 1. 15.9
DEC(1950.0): 58. 4.

RADIAL VELOCITIES (w.r.t. LSR; km/s):
STELLAR:

VELOCITY	REF.
-33.8	VCIRC
-37.4	JOS61
-32.4	BRO64
-35.4	HAG70
-37.4	PAL77
-24.5	HUM78
-28.4	WRA83
-28.4	HRO87
-28.4	LYN87

H II REGION:

NO VALUES AVAILABLE

CO CLOUDS:

NO VALUES AVAILABLE

PROPER MOTION (arcsec/100 yr):

MU X	MU Y	REF.
0.090	-0.150	PAL77
0.110	-0.170	LAT79
-0.080	-0.410	LAT79

DISTANCE FROM SOLAR NEIGHBORHOOD (kpc):

DIST	REF.
2.88	PES59
2.88	JOH61
2.88	NEC67
2.76	LIN68
2.90	HAG70
2.76	BEC71
3.16	MOF72
2.20	NIC81
1.78	EGG82
3.30	BAA83
2.72	DAN85
3.23	SPA85
3.05	LYN87

ANGULAR DIAMETER (arcmin):

ANG D	REF.
16.0	LIN68
7.0	ALT70
60.0	ALT70
12.0	BEC71
13.0	LYN83
15.0	BAA83
18.4	DAN85

LINEAR DIAMETER (pc):

LIN D	REF.
11.4	LDCAL
11.0	LYN83
14.6	DAN85

AGE ESTIMATES:
AGE (Myr):

AGE	REF.
20.	BAR67
11.	LIN68
12.	BAR69
20.	MOF72
25.	LYN83
5.	BAA83
20.	BAA83
13.	SPA85
14.	MER86
10.	LYN87

EARLIEST MS SPECTRAL TYPE:

eSpT	REF.
b2	JOH61
B1	HOA65
O9.5	HOA65
B0	MOF72
b0.5	MOF72
B2	LYN83
b1	LYN83

MS TURNOFF COLOR:

(B-V)	REF.
-0.27	PES59
-0.25	JOH61
-0.25	HAG70

MASSES (SOLAR MASS UNITS):
STELLAR MASS:

MASS	REF.
4.92E+03	SCH63
3.99E+03	POP69
5.81E+02	RED71
1.77E+03	LOH71
5.89E+02	BRU83
5.01E+03	LYN83

MASS IN ASSOCIATED H I CLOUDS:

MASS	REF.
7.50E+02	DOD70

IONIZED HYDROGEN MASS:

NO VALUES AVAILABLE

MASS IN ASSOCIATED MOLECULAR CLOUDS:

NO VALUES AVAILABLE

ASSOCIATED MASS IN THE FORM OF DUST:

MASS	REF.
4.10E+01	DOD70

VISUAL EXTINCTION TOWARD CLUSTER (mag):

AV	REF.
1.41	NEC67
1.47	BEC71
1.47	LYN83

B-V COLOR EXCESS (mag):

E(B-V)	REF.
0.50	PES59
0.47	JOH61
0.50	BUS63
0.29	SCH63
0.49	BEC63
0.48	HAG70
0.45	MOF72
0.47	NIC81
0.52	EGG82
0.45	BAA83
0.45	SPA85

-0.30	MOF72	0.50	ROS86
-0.28	LYN87	0.46	LYN87

REFERENCES

ALT70 Alter, G., Ruprecht, J., and Vanysek, V. 1970, The Catalog of Star Clusters and Associations (Budapest: Akad Kiado).
BAA83 Baade, D. 1983, Astr. Ap. Suppl., 51, 235.
BAR67 Barbaro, G. 1967, Contr. Obs. Ast. Univ. Padova in Asiago, No. 138.
BAR69 Barbaro, G., Dallaporta, N., and Fabris, G. 1969, Ap. Sp. Sci., 3, 123.
BEC63 Becker, W. 1963, Z. f. A., 57, 117.
BEC71 Becker, W. 1971, Astr. Ap. Suppl., 4, 241.
BRO64 Bronnikova, N. M. 1964, Pulkova Izv., 23, 139.
BRU83 Bruch, A., and Sanders, W. L. 1983, Astr. Ap., 121, 237.
BUS63 Buscombe, W. 1963, Mt. Stromlo Mimeogram, No. 6, pg. 24.
DAN85 Danilov, V. M., Matkin, N. V., and Pyl'skaya, O. P. 1985, Sov. Astr., 29, 621.
DOD70 D Odorico, S., and Felli, M. 1970, Mem. Soc. Ast. Ital., 41, 89.
EGG82 Eggen, O. 1982, PASP, 94, 952.
HAG70 Hagen, G. L. 1970, D. D. O. Pub., Univ. Toronto, 4.
HOA65 Hoag, A. A., and Applequist, N. L. 1965, Ap. J. Suppl., 12, 215.
HRO87 Hron, J. 1987, Astr. Ap., 176, 34.
HUM78 Humphreys, R. M. 1978, Ap. J. Suppl., 38, 309.
JOS61 Johnson, H. L., and Svolopoulos, S. N. 1961, Ap. J., 134, 868.
JOH61 Johnson, H. L., Hoag, A. A., Iriarte, B., Mitchell, R. I., and Hallam, K. L. 1961, Lowell Obs. Bull., 5, 133.
LAT79 Latypov, A. A. 1979, Sov. Astr., 23, 287.
LIN68 Lindoff, U. 1968, Arkiv Astr., 5, 1.
LDCAL Linear diameter calculated from published ang. diam. and distance.
LOH71 Lohmann, W. 1971, Astr. Nach., 292, 193.
LYN83 Lynga, G. 1983, Catalogue of Open Cluster Data (3rd edition), available through NSSDC, Greenbelt, Maryland, USA
LYN87 Lynga, G. 1987, Catalogue of Open Cluster Data (5th edition), available through NSSDC, Greenbelt, Maryland, USA
MER86 Mermilliod, J.-C., and Maeder, A. 1986, Astr. Ap., 158, 45.
MOF72 Moffat, A. F. J. 1972, Astr. Ap. Suppl., 7, 355.
NEC67 Neckel, T. 1967, Heid. Ver., 19, 115.
NIC81 Nicolet, B. 1981, Astr. Ap., 104, 185.
PAL77 Palous, J., Ruprecht, J., Dluzhnevskaya, O. B., and Piskunov, T. 1977, Astr. Ap., 61, 27.
PES59 Pesch, P. 1959, Ap. J., 130, 764.
POP69 Popova, E. I. 1969, Nautch. Inf., 11, 85.
VCIRC Radial velocity estimate based on cluster distance and rotation curve model of Brand 1986 (Ph. D. thesis, Leiden).
RED71 Reddish, V. C., and Sloan, C. 1971, Observatory, 91, 70.
ROS86 Rosenzweig, P., and Morrison, N. D. 1986, Ap. J., 306, 522.
SCH63 Schmidt, von K.-H. 1963, Ast. Nach., 287, 41.
SPA85 Spassova, N. M., and Baev, P. V. 1985, Ap. Sp. Sci., 112, 111.
WRA83 Wramdemark, S. 1983, private communication.

CLUSTER IDENTIFICATION:

ALTER et al.: OCL 322
COMMON NAME: NGC 559
DATA BASE NUM: 74

SPATIAL COORDINATES:

L II: 127.19
B II: 0.75

RA(1950.0): 1. 26.1
DEC(1950.0): 63. 3.

RADIAL VELOCITIES (w.r.t. LSR; km/s):
STELLAR:

VELOCITY	REF.
-13.3	VCIRC

H II REGION:

NO VALUES AVAILABLE

CO CLOUDS:

NO VALUES AVAILABLE

PROPER MOTION (arcsec/100 yr):

NO VALUES AVAILABLE

DISTANCE FROM SOLAR NEIGHBORHOOD (kpc):

DIST	REF.
0.87	NEC67
1.30	LIN68
1.30	HAG70
0.87	BEC71
1.45	VAS72
1.14	LYN87

ANGULAR DIAMETER (arcmin):

ANG D	REF.
7.0	LIN68
4.4	ALT70
14.0	ALT70
6.0	HAG70
4.4	LYN83

LINEAR DIAMETER (pc):

LIN D	REF.
1.4	LDCAL
1.1	LYN83

AGE ESTIMATES:
AGE (Myr):

AGE	REF.
1200.	LIN68
700.	CAN70
870.	BEC71
1260.	LYN83
462.	LYN87

EARLIEST MS SPECTRAL TYPE:

eSpT	REF.
b7	LYN83

MS TURNOFF COLOR:

(B-V)	REF.
-0.44	KRU59
0.15	LIN69
0.20	HAG70
-0.09	GRU75
0.05	LYN87

MASSES (SOLAR MASS UNITS):
STELLAR MASS:

MASS	REF.
4.05E+02	SCH63
5.01E+02	LYN83

MASS IN ASSOCIATED H I CLOUDS:

NO VALUES AVAILABLE

IONIZED HYDROGEN MASS:

NO VALUES AVAILABLE

MASS IN ASSOCIATED MOLECULAR CLOUDS:

NO VALUES AVAILABLE

ASSOCIATED MASS IN THE FORM OF DUST:

NO VALUES AVAILABLE

VISUAL EXTINCTION TOWARD CLUSTER (mag):

AV	REF.
2.22	NEC67
2.81	BEC71
2.81	LYN83

B-V COLOR EXCESS (mag):

E(B-V)	REF.
0.90	BUS63
0.90	SCH63
1.05	BEC63
0.45	HAG70
0.54	LYN87

REFERENCES

ALT70 Alter, G., Ruprecht, J., and Vanysek, V. 1970, The Catalog of Star Clusters and Associations (Budapest: Akad Kiado).
BEC63 Becker, W. 1963, Z. f. A., 57, 117.
BEC71 Becker, W. 1971, Astr. Ap. Suppl., 4, 241.
BUS63 Buscombe, W. 1963, Mt. Stromlo Mimeogram, No. 6, pg. 24.
CAN70 Cannon, R. D. 1970, MNRAS, 150, 111.
GRU75 Grubissich, C. 1975, Astr. Ap. Suppl., 21, 99.
HAG70 Hagen, G. L. 1970, D. D. O. Pub., Univ. Toronto, 4.
KRU59 Kruspan, E. 1959, Z. f. A., 48, 1.
LIN68 Lindoff, U. 1968, Arkiv Astr., 5, 1.
LIN69 Lindoff, U. 1969, Arkiv Astr., 5, 221.
LDCAL Linear diameter calculated from published ang. diam. and distance.
LYN83 Lynga, G. 1983, Catalogue of Open Cluster Data (3rd edition), available through NSSDC, Greenbelt, Maryland, USA
LYN87 Lynga, G. 1987, Catalogue of Open Cluster Data (5th edition), available through NSSDC, Greenbelt, Maryland, USA
NEC67 Neckel, T. 1967, Heid. Ver., 19, 115.
VCIRC Radial velocity estimate based on cluster distance and rotation curve model of Brand 1986 (Ph. D. thesis, Leiden).
SCH63 Schmidt, von K.-H. 1963, Ast. Nach., 287, 41.
VAS72 Vasilevskii, A. E. 1972, Sov. Astr., 16, 308.

CLUSTER IDENTIFICATION:

ALTER et al.: OCL 326
COMMON NAME: NGC 581
ALTERNATE NAME: M103
MEMBER OF ASSOC.: CAS OB8
DATA BASE NUM: 75

SPATIAL COORDINATES:

L II: 128.02
B II: -1.76

RA(1950.0): 1. 29.9
DEC(1950.0): 60. 27.

RADIAL VELOCITIES (w.r.t. LSR; km/s):
STELLAR:

VELOCITY	REF.
-27.9	VCIRC
-34.5	JOS61
-34.5	PAL77
-36.3	HUM78
-51.8	HUM78
-31.5	WRA83
-31.5	LYN87
-31.5	HRO87

H II REGION:

NO VALUES AVAILABLE

CO CLOUDS:

NO VALUES AVAILABLE

PROPER MOTION (arcsec/100 yr):

MU X	MU Y	REF.
0.220	-0.210	PAL77
0.180	-0.220	LAT79

DISTANCE FROM SOLAR NEIGHBORHOOD (kpc):

DIST	REF.
2.60	JOH61
2.46	LIN68
2.50	HAG70
2.45	BEC71
2.40	SCH71
2.44	MOF72
2.26	NIC81
2.33	OSM84
2.49	SPA85
2.49	LYN87

ANGULAR DIAMETER (arcmin):

ANG D	REF.
3.3	ALT70
80.0	ALT70
7.0	BEC71
6.0	MOF72
6.0	LYN83
8.5	OSM84

LINEAR DIAMETER (pc):

LIN D	REF.
4.3	LDCAL
5.1	LYN83
5.8	OSM84

AGE ESTIMATES:
AGE (Myr):

AGE	REF.
100.	SAN63
10.	LIN68
15.	BAR69
9.	STE74
22.	LYN83
31.	OSM84
28.	SPA85
21.	MER86
3.	SAG86
29.	LYN87

EARLIEST MS SPECTRAL TYPE:

eSpT	REF.
b3	JOH61
B2	HOA65
B2	BEC71
B2	MOF72
b3	MOF72
B2	LYN83
b2	LYN83
B2	STO85

MS TURNOFF COLOR:

(B-V)	REF.
-0.50	KRU59

MASSES (SOLAR MASS UNITS):
STELLAR MASS:

MASS	REF.
2.20E+03	SCH63
1.96E+03	POP69
3.22E+02	RED71
3.26E+02	BRU83
2.00E+03	LYN83

MASS IN ASSOCIATED H I CLOUDS:

MASS	REF.
1.40E+02	DOD70

IONIZED HYDROGEN MASS:

NO VALUES AVAILABLE

MASS IN ASSOCIATED MOLECULAR CLOUDS:

NO VALUES AVAILABLE

ASSOCIATED MASS IN THE FORM OF DUST:

MASS	REF.
5.40E+00	DOD70

VISUAL EXTINCTION TOWARD CLUSTER (mag):

AV	REF.
1.15	MCC64
1.11	NEC67
1.20	BEC71
1.20	LYN83

B-V COLOR EXCESS (mag):

E(B-V)	REF.
0.37	JOH61
0.40	BUS63
0.37	STA68
0.28	POL70
0.39	HAG70
0.39	MOF72
0.45	NIC81
0.40	OSM84
0.39	SPA85

-0.21	JOH61	0.40	LYN87
-0.20	HAG70		
-0.20	MOF72		
-0.14	STE74		
-0.19	SGJ78		
-0.22	LYN87		

REFERENCES

ALT70 Alter, G., Ruprecht, J., and Vanysek, V. 1970, The Catalog of Star Clusters and Associations (Budapest: Akad Kiado).
BAR69 Barbaro, G., Dallaporta, N., and Fabris, G. 1969, Ap. Sp. Sci., 3, 123.
BEC71 Becker, W. 1971, Astr. Ap. Suppl., 4, 241.
BRU83 Bruch, A., and Sanders, W. L. 1983, Astr. Ap., 121, 237.
BUS63 Buscombe, W. 1963, Mt. Stromlo Mimeogram, No. 6, pg. 24.
DOD70 D Odorico, S., and Felli, M. 1970, Mem. Soc. Ast. Ital., 41, 89.
HAG70 Hagen, G. L. 1970, D. D. O. Pub., Univ. Toronto, 4.
HOA65 Hoag, A. A., and Applequist, N. L. 1965, Ap. J. Suppl., 12, 215.
HRO87 Hron, J. 1987, Astr. Ap., 176, 34.
HUM78 Humphreys, R. M. 1978, Ap. J. Suppl., 38, 309.
JOS61 Johnson, H. L., and Svolopoulos, S. N. 1961, Ap. J., 134, 868.
JOH61 Johnson, H. L., Hoag, A. A., Iriarte, B., Mitchell, R. I., and Hallam, K. L. 1961, Lowell Obs. Bull., 5, 133.
KRU59 Kruspan, E. 1959, Z. f. A., 48, 1.
LAT79 Latypov, A. A. 1979, Sov. Astr., 23, 287.
LIN68 Lindoff, U. 1968, Arkiv Astr., 5, 1.
LDCAL Linear diameter calculated from published ang. diam. and distance.
LYN83 Lynga, G. 1983, Catalogue of Open Cluster Data (3rd edition), available through NSSDC, Greenbelt, Maryland, USA
LYN87 Lynga, G. 1987, Catalogue of Open Cluster Data (5th edition), available through NSSDC, Greenbelt, Maryland, USA
MCC64 Mc Cuskey, S. W., and Houk, N. 1964, A. J., 69, 412.
MER86 Mermilliod, J.-C., and Maeder, A. 1986, Astr. Ap., 158, 45.
MOF72 Moffat, A. F. J. 1972, Astr. Ap. Suppl., 7, 355.
NEC67 Neckel, T. 1967, Heid. Ver., 19, 115.
NIC81 Nicolet, B. 1981, Astr. Ap., 104, 185.
OSM84 Osman, A. et al. 1984, in IAU Symp. 105, eds. A. Maeder and A. Renzini (Dordrecht: Reidel), p. 119.
PAL77 Palous, J., Ruprecht, J., Dluzhnevskaya, O. B., and Piskunov, T. 1977, Astr. Ap., 61, 27.
POL70 Polishchuk, E. P. 1970, Astr. Astrofiz., 9, 17.
POP69 Popova, E. I. 1969, Nautch. Inf., 11, 85.
VCIRC Radial velocity estimate based on cluster distance and rotation curve model of Brand 1986 (Ph. D. thesis, Leiden).
RED71 Reddish, V. C., and Sloan, C. 1971, Observatory, 91, 70.
SGJ78 Sagar, R., and Joshi, U. C. 1978, B. A. S. India, 6, 83.
SAG86 Sagar, R., Piskunov, A. E., Myakutin, V. I., and Joshi, U. C. 1986, MNRAS, 220, 383.
SAN63 Sandage, A. 1963, Ap. J., 138, 863.
SCH63 Schmidt, von K.-H. 1963, Ast. Nach., 287, 41.
SCH71 Schwartz, R. 1971, Ap. Sp. Sci., 14, 286.
SPA85 Spassova, N. M., and Baev, P. V. 1985, Ap. Sp. Sci., 112, 111.
STA68 Starikova, G. A. 1969, Sov. Astr., 12, 632.
STE74 Steppe, H. 1974, Astr. Ap. Suppl., 15, 91.
STO85 Stothers, R. B. 1985, Ap. J., 298, 521.
WRA83 Wramdemark, S. 1983, private communication.

CLUSTER IDENTIFICATION:

ALTER et al.: OCL 328
COMMON NAME: TRUMP 1
DATA BASE NUM: 76

SPATIAL COORDINATES:

L II: 128.22
B II: -1.14

RA(1950.0): 1. 32.3
DEC(1950.0): 61. 2.

RADIAL VELOCITIES (w.r.t. LSR; km/s):
STELLAR:

VELOCITY	REF.
-28.2	VCIRC
-59.5	LYN81
-59.5	HRO87

H II REGION:

NO VALUES AVAILABLE

CO CLOUDS:

NO VALUES AVAILABLE

PROPER MOTION (arcsec/100 yr):

MU X	MU Y	REF.
0.110	-0.470	LAT79

DISTANCE FROM SOLAR NEIGHBORHOOD (kpc):

DIST	REF.
2.19	NEC67
2.20	ALT70
2.50	HAG70
2.45	BEC71
3.30	JOS77
2.32	LYN87

ANGULAR DIAMETER (arcmin):

ANG D	REF.
4.0	ALT70
11.0	ALT70
4.8	BEC71
4.5	LYN83

LINEAR DIAMETER (pc):

LIN D	REF.
3.2	LDCAL
3.4	BEC71
2.9	LYN83

AGE ESTIMATES:
AGE (Myr):

AGE	REF.
26.	JOS77
26.	LYN83
26.	SPA85
25.	SAG86
41.	LYN87

EARLIEST MS SPECTRAL TYPE:

eSpT	REF.
O9	HAR61
B2	BEC71
B2	LYN83
b2	LYN83

MS TURNOFF COLOR:

(B-V)	REF.
-0.31	KRU59
-0.35	HAG70
-0.14	STE74
-0.20	JOS77
-0.20	LYN87

MASSES (SOLAR MASS UNITS):
STELLAR MASS:

MASS	REF.
6.31E+01	SCH63
6.40E+01	BRU83
6.31E+02	LYN83

MASS IN ASSOCIATED H I CLOUDS:

NO VALUES AVAILABLE

IONIZED HYDROGEN MASS:

NO VALUES AVAILABLE

MASS IN ASSOCIATED MOLECULAR CLOUDS:

NO VALUES AVAILABLE

ASSOCIATED MASS IN THE FORM OF DUST:

NO VALUES AVAILABLE

VISUAL EXTINCTION TOWARD CLUSTER (mag):

AV	REF.
1.73	MCC64
1.48	NEC67
1.35	BEC71
1.35	LYN87

B-V COLOR EXCESS (mag):

E(B-V)	REF.
0.60	BUS63
0.60	SCH63
0.69	BEC63
0.37	POL70
0.58	HAG70
0.52	SPA85
0.53	LYN87

REFERENCES

ALT70 Alter, G., Ruprecht, J., and Vanysek, V. 1970, The Catalog of Star Clusters and Associations (Budapest: Akad Kiado).
BEC63 Becker, W. 1963, Z. f. A., 57, 117.
BEC71 Becker, W. 1971, Astr. Ap. Suppl., 4, 241.
BRU83 Bruch, A., and Sanders, W. L. 1983, Astr. Ap., 121, 237.
BUS63 Buscombe, W. 1963, Mt. Stromlo Mimeogram, No. 6, pg. 24.
HAG70 Hagen, G. L. 1970, D. D. O. Pub., Univ. Toronto, 4.
HAR61 Haradze, E. K., Bartaya, P. A. 1961, Abas. Bull., 26, 35.
HRO87 Hron, J. 1987, Astr. Ap., 176, 34.
JOS77 Joshi, U. C., and Sagar, R. 1977, Ap. Sp. Sci., 48, 225.
KRU59 Kruspan, E. 1959, Z. f. A., 48, 1.
LAT79 Latypov, A. A. 1979, Sov. Astr., 23, 287.
LDCAL Linear diameter calculated from published ang. diam. and distance.
LYN81 Lynga, G. 1981, Catalogue of Open Cluster Data, available through NSSDC, Greenbelt, Maryland, USA
LYN83 Lynga, G. 1983, Catalogue of Open Cluster Data (3rd edition), available through NSSDC, Greenbelt, Maryland, USA
LYN87 Lynga, G. 1987, Catalogue of Open Cluster Data (5th edition), available through NSSDC, Greenbelt, Maryland, USA
MCC64 Mc Cuskey, S. W., and Houk, N. 1964, A. J., 69, 412.
NEC67 Neckel, T. 1967, Heid. Ver., 19, 115.
POL70 Polishchuk, E. P. 1970, Astr. Astrofiz., 9, 17.
VCIRC Radial velocity estimate based on cluster distance and rotation curve model of Brand 1986 (Ph. D. thesis, Leiden).
SAG86 Sagar, R., Piskunov, A. E., Myakutin, V. I., and Joshi, U. C. 1986, MNRAS, 220, 383.
SCH63 Schmidt, von K.-H. 1963, Ast. Nach., 287, 41.
SPA85 Spassova, N. M., and Baev, P. V. 1985, Ap. Sp. Sci., 112, 111.
STE74 Steppe, H. 1974, Astr. Ap. Suppl., 15, 91.

CLUSTER IDENTIFICATION:

ALTER et al.: OCL 329
COMMON NAME: NGC 637
DATA BASE NUM: 77

SPATIAL COORDINATES:

L II: 128.55
B II: 1.70

RA(1950.0): 1. 39.4
DEC(1950.0): 63. 45.

RADIAL VELOCITIES (w.r.t. LSR; km/s):
STELLAR:

VELOCITY	REF.
-25.2	VCIRC
-42.2	LYN81
-39.2	HRO87

H II REGION:

NO VALUES AVAILABLE

CO CLOUDS:

NO VALUES AVAILABLE

PROPER MOTION (arcsec/100 yr):

NO VALUES AVAILABLE

DISTANCE FROM SOLAR NEIGHBORHOOD (kpc):

DIST	REF.
2.10	NEC67
2.09	BEC71
2.45	GRU75
2.40	LYN87

ANGULAR DIAMETER (arcmin):

ANG D	REF.
2.5	ALT70
9.0	ALT70
3.5	BEC71
3.5	LYN83

LINEAR DIAMETER (pc):

LIN D	REF.
2.2	LDCAL
2.1	LYN83

AGE ESTIMATES:
AGE (Myr):

AGE	REF.
40.	LYN83
218.	LYN87

EARLIEST MS SPECTRAL TYPE:

eSpT	REF.
OB	ST056
B0	BEC63
B0	BEC71
B0	LYN83
b2	LYN83

MS TURNOFF COLOR:

(B-V)	REF.
-0.22	KRU59
-0.14	GRU75
-0.04	LYN87

MASSES (SOLAR MASS UNITS):
STELLAR MASS:

MASS	REF.
2.98E+02	SCH63
3.16E+02	LYN83

MASS IN ASSOCIATED H I CLOUDS:

NO VALUES AVAILABLE

IONIZED HYDROGEN MASS:

NO VALUES AVAILABLE

MASS IN ASSOCIATED MOLECULAR CLOUDS:

NO VALUES AVAILABLE

ASSOCIATED MASS IN THE FORM OF DUST:

NO VALUES AVAILABLE

VISUAL EXTINCTION TOWARD CLUSTER (mag):

AV	REF.
0.96	NEC67
1.21	BEC71
1.21	LYN87

B-V COLOR EXCESS (mag):

E(B-V)	REF.
0.40	BUS63
0.40	SCH63
0.45	BEC63
0.38	LYN87

REFERENCES

ALT70 Alter, G., Ruprecht, J., and Vanysek, V. 1970, The Catalog of Star Clusters and Associations (Budapest: Akad Kiado).
BEC63 Becker, W. 1963, Z. f. A., 57, 117.
BEC71 Becker, W. 1971, Astr. Ap. Suppl., 4, 241.
BUS63 Buscombe, W. 1963, Mt. Stromlo Mimeogram, No. 6, pg. 24.
GRU75 Grubissich, C. 1975, Astr. Ap. Suppl., 21, 99.
HRO87 Hron, J. 1987, Astr. Ap., 176, 34.
KRU59 Kruspan, E. 1959, Z. f. A., 48, 1.
LDCAL Linear diameter calculated from published ang. diam. and distance.
LYN81 Lynga, G. 1981, Catalogue of Open Cluster Data, available through NSSDC, Greenbelt, Maryland, USA
LYN83 Lynga, G. 1983, Catalogue of Open Cluster Data (3rd edition), available through NSSDC, Greenbelt, Maryland, USA
LYN87 Lynga, G. 1987, Catalogue of Open Cluster Data (5th edition), available through NSSDC, Greenbelt, Maryland, USA
NEC67 Neckel, T. 1967, Heid. Ver., 19, 115.
VCIRC Radial velocity estimate based on cluster distance and rotation curve model of Brand 1986 (Ph. D. thesis, Leiden).
SCH63 Schmidt, von K.-H. 1963, Ast. Nach., 287, 41.
STO56 Stock, J. 1956, private communication to Alter et al. 1970.

CLUSTER IDENTIFICATION:

ALTER et al.: OCL 330
COMMON NAME: NGC 654
MEMBER OF ASSOC.: CAS OB8
DATA BASE NUM: 78

SPATIAL COORDINATES:

L II: 129.09
B II: -0.35

RA(1950.0): 1. 40.6
DEC(1950.0): 61. 38.

RADIAL VELOCITIES (w.r.t. LSR; km/s):
STELLAR:

VELOCITY	REF.
-26.1	VCIRC
-25.6	HAG70
-28.0	HUM78
-25.6	WRA83
-25.6	LYN87
-25.6	HRO87

H II REGION:

NO VALUES AVAILABLE

CO CLOUDS:

VELOCITY	REF.
-34.1	LEI88
-13.9	LEI88

PROPER MOTION (arcsec/100 yr):

NO VALUES AVAILABLE

DISTANCE FROM SOLAR NEIGHBORHOOD (kpc):

DIST	REF.
1.55	JOH61
2.53	LIN68
2.90	HAG70
2.53	BEC71
2.04	MOF72
2.40	STO77
2.51	MEB81
2.14	SPA85
1.98	LYN87

ANGULAR DIAMETER (arcmin):

ANG D	REF.
11.0	ALT70
6.0	HAG70
5.5	BEC71
5.0	MOF72
5.0	LYN83

LINEAR DIAMETER (pc):

LIN D	REF.
3.3	LDCAL
5.1	HAG70
4.6	LOH71
4.0	BEC71
3.0	MOF72
2.3	LYN83

AGE ESTIMATES:
AGE (Myr):

AGE	REF.
15.	LIN68
15.	LYN83
34.	SPA85
14.	MER86
40.	SAG86

EARLIEST MS SPECTRAL TYPE:

eSpT	REF.
o9.5	JOH61
O9.5	HOV65
OB-	MOF72
b2.5	MOF72
B0	LYN83
b0	LYN83

MS TURNOFF COLOR:

(B-V)	REF.
-0.30	JOH61
-0.30	HAG70
-0.25	MOF72
-0.30	STO80
-0.27	LYN87

MASSES (SOLAR MASS UNITS):
STELLAR MASS:

MASS	REF.
1.68E+03	SCH63
4.67E+02	RED71
4.97E+02	LOH72
4.00E+03	SMS75
4.74E+02	BRU83
1.58E+03	LYN83

MASS IN ASSOCIATED H I CLOUDS:

NO VALUES AVAILABLE

IONIZED HYDROGEN MASS:

NO VALUES AVAILABLE

MASS IN ASSOCIATED MOLECULAR CLOUDS:

MASS	REF.
1.50E+05	LEI88

ASSOCIATED MASS IN THE FORM OF DUST:

NO VALUES AVAILABLE

VISUAL EXTINCTION TOWARD CLUSTER (mag):

AV	REF.
2.53	MCC64
2.70	NEC67
2.67	BEC71
2.67	LYN87

B-V COLOR EXCESS (mag):

E(B-V)	REF.
0.90	JOH61
0.92	STA68
0.80	POL70
0.93	HAG70
0.98	MOF72
0.86	MEB81
0.98	SPA85
0.96	LYN87

REFERENCES

ALT70 Alter, G., Ruprecht, J., and Vanysek, V. 1970, The Catalog of Star Clusters and Associations (Budapest: Akad Kiado).
BEC71 Becker, W. 1971, Astr. Ap. Suppl., 4, 241.
BRU83 Bruch, A., and Sanders, W. L. 1983, Astr. Ap., 121, 237.
HAG70 Hagen, G. L. 1970, D. D. O. Pub., Univ. Toronto, 4.
HOV65 Hoag, A. A. 1965, Vistas, 8, 139.
HRO87 Hron, J. 1987, Astr. Ap., 176, 34.
HUM78 Humphreys, R. M. 1978, Ap. J. Suppl., 38, 309.
JOH61 Johnson, H. L., Hoag, A. A., Iriarte, B., Mitchell, R. I., and Hallam, K. L. 1961, Lowell Obs. Bull., 5, 133.
LEI88 Leisawitz, D., Thaddeus, P., and Bash, F. N. 1988, in preparation for submission to Ap. J. Suppl.
LIN68 Lindoff, U. 1968, Arkiv Astr., 5, 1.
LDCAL Linear diameter calculated from published ang. diam. and distance.
LOH71 Lohmann, W. 1971, Astr. Nach., 292, 193.
LOH72 Lohmann, W. 1972, Astr. Nach., 293, 259.
LYN83 Lynga, G. 1983, Catalogue of Open Cluster Data (3rd edition), available through NSSDC, Greenbelt, Maryland, USA
LYN87 Lynga, G. 1987, Catalogue of Open Cluster Data (5th edition), available through NSSDC, Greenbelt, Maryland, USA
MCC64 Mc Cuskey, S. W., and Houk, N. 1964, A. J., 69, 412.
MEB81 Mermilliod, J.-C. 1981, Astr. Ap. Suppl., 44, 467.
MER86 Mermilliod, J.-C., and Maeder, A. 1986, Astr. Ap., 158, 45.
MOF72 Moffat, A. F. J. 1972, Astr. Ap. Suppl., 7, 355.
NEC67 Neckel, T. 1967, Heid. Ver., 19, 115.
POL70 Polishchuk, E. P. 1970, Astr. Astrofiz., 9, 17.
VCIRC Radial velocity estimate based on cluster distance and rotation curve model of Brand 1986 (Ph. D. thesis, Leiden).
RED71 Reddish, V. C., and Sloan, C. 1971, Observatory, 91, 70.
SAG86 Sagar, R., Piskunov, A. E., Myakutin, V. I., and Joshi, U. C. 1986, MNRAS, 220, 383.
SMS75 Samson, W. B. 1975, Ap. Sp. Sci., 34, 363.
SCH63 Schmidt, von K.-H. 1963, Ast. Nach., 287, 41.
SPA85 Spassova, N. M., and Baev, P. V. 1985, Ap. Sp. Sci., 112, 111.
STA68 Starikova, G. A. 1969, Sov. Astr., 12, 632.
STO77 Stone, R. C. 1977, Astr. Ap., 54, 803.
STO80 Stone, R. C. 1980, PASP, 92, 426.
WRA83 Wramdemark, S. 1983, private communication.

CLUSTER IDENTIFICATION:

ALTER et al.: OCL 332
COMMON NAME: NGC 659
MEMBER OF ASSOC.: CAS OB8
DATA BASE NUM: 79

SPATIAL COORDINATES:

L II: 129.34 RA(1950.0): 1. 40.8
B II: -1.51 DEC(1950.0): 60. 27.

RADIAL VELOCITIES (w.r.t. LSR; km/s):
STELLAR:

VELOCITY	REF.
-24.9	VCIRC
-17.5	ABT72

H II REGION:

NO VALUES AVAILABLE

CO CLOUDS:

VELOCITY	REF.
-10.9	LEI88

PROPER MOTION (arcsec/100 yr):

NO VALUES AVAILABLE

DISTANCE FROM SOLAR NEIGHBORHOOD (kpc):

DIST	REF.
2.10	NEC67
2.10	LIN68
2.30	HAG70
2.10	BEC71
2.28	STE74
2.52	LYN87

ANGULAR DIAMETER (arcmin):

ANG D	REF.
4.0	LIN68
2.5	ALT70
10.0	ALT70
5.0	BEC71
5.0	LYN83

LINEAR DIAMETER (pc):

LIN D	REF.
3.1	LDCAL
3.0	LYN83

AGE ESTIMATES:
AGE (Myr):

AGE	REF.
20.	LIN68
9.	STE74
20.	LYN83
78.	LYN87

EARLIEST MS SPECTRAL TYPE:

eSpT	REF.
B5	KOP53
OB	BEC71
B7	LYN81
B5	LYN83
b2	LYN83

MS TURNOFF COLOR:

(B-V)	REF.
-0.26	KRU59
-0.20	HAG70
-0.14	STE74
-0.14	LYN87

MASSES (SOLAR MASS UNITS):
STELLAR MASS:

MASS	REF.
7.67E+02	SCH63
2.02E+02	LOH72
7.94E+02	LYN83

MASS IN ASSOCIATED H I CLOUDS:

NO VALUES AVAILABLE

IONIZED HYDROGEN MASS:

NO VALUES AVAILABLE

MASS IN ASSOCIATED MOLECULAR CLOUDS:

MASS	REF.
5.30E+03	LEI88

ASSOCIATED MASS IN THE FORM OF DUST:

NO VALUES AVAILABLE

VISUAL EXTINCTION TOWARD CLUSTER (mag):

AV	REF.
1.44	NEC67
1.82	BEC71
1.82	LYN83

B-V COLOR EXCESS (mag):

E(B-V)	REF.
0.59	POL70
0.58	HAG70
0.55	LYN87

REFERENCES

ABT72 Abt, H. A., and Biggs, E. S. 1972, Bibliography of Stellar Radial Velocities, (Latham Process Corp.: New York).
ALT70 Alter, G., Ruprecht, J., and Vanysek, V. 1970, The Catalog of Star Clusters and Associations (Budapest: Akad Kiado).
BEC71 Becker, W. 1971, Astr. Ap. Suppl., 4, 241.
HAG70 Hagen, G. L. 1970, D. D. O. Pub., Univ. Toronto, 4.
KOP53 Kopylov, I. M. 1953, Crim. Izv., 10, 120.
KRU59 Kruspan, E. 1959, Z. f. A., 48, 1.
LEI88 Leisawitz, D., Thaddeus, P., and Bash, F. N. 1988, in preparation for submission to Ap. J. Suppl.
LIN68 Lindoff, U. 1968, Arkiv Astr., 5, 1.
LDCAL Linear diameter calculated from published ang. diam. and distance.
LOH72 Lohmann, W. 1972, Astr. Nach., 293, 259.
LYN81 Lynga, G. 1981, Catalogue of Open Cluster Data, available through NSSDC, Greenbelt, Maryland, USA
LYN83 Lynga, G. 1983, Catalogue of Open Cluster Data (3rd edition), available through NSSDC, Greenbelt, Maryland, USA
LYN87 Lynga, G. 1987, Catalogue of Open Cluster Data (5th edition), available through NSSDC, Greenbelt, Maryland, USA
NEC67 Neckel, T. 1967, Heid. Ver., 19, 115.
POL70 Polishchuk, E. P. 1970, Astr. Astrofiz., 9, 17.
VCIRC Radial velocity estimate based on cluster distance and rotation curve model of Brand 1986 (Ph. D. thesis, Leiden).
SCH63 Schmidt, von K.-H. 1963, Ast. Nach., 287, 41.
STE74 Steppe, H. 1974, Astr. Ap. Suppl., 15, 91.

CLUSTER IDENTIFICATION:

ALTER et al.: OCL 333
COMMON NAME: NGC 663
MEMBER OF ASSOC.: CAS OB8
DATA BASE NUM: 80

SPATIAL COORDINATES:

L II: 129.46
B II: -0.94

RA(1950.0): 1. 42.6
DEC(1950.0): 61. 0.

RADIAL VELOCITIES (w.r.t. LSR; km/s):
STELLAR:

VELOCITY	REF.
-24.3	VCIRC
-26.8	JOS61
-26.8	HAG70
-24.8	HUM78
-34.8	HUM78
-26.8	WRA83
-26.8	LYN87
-26.8	HRO87

H II REGION:

NO VALUES AVAILABLE

CO CLOUDS:

VELOCITY	REF.
-32.2	LEI88

PROPER MOTION (arcsec/100 yr):

MU X	MU Y	REF.
-0.200	-0.010	LAT79

DISTANCE FROM SOLAR NEIGHBORHOOD (kpc):

DIST	REF.
2.30	JOH61
2.13	LIN68
2.10	HAG70
2.13	BEC71
2.29	MOF72
2.04	VDB78
1.84	MEB81
2.22	LYN87

ANGULAR DIAMETER (arcmin):

ANG D	REF.
17.0	LIN68
33.0	ALT70
14.0	BEC71
15.0	MOF72
16.0	LYN83

LINEAR DIAMETER (pc):

LIN D	REF.
9.8	LDCAL
11.0	LYN83

AGE ESTIMATES:
AGE (Myr):

AGE	REF.
8.	SAN63
10.	LIN68
90.	TOS79
22.	MEB81
60.	PAN81
22.	LYN83
21.	MER86
10.	LYN87

EARLIEST MS SPECTRAL TYPE:

eSpT	REF.
b0	JOH61
B1	BEC71
b0	MOF72
B1	LYN83
b0	LYN83

MS TURNOFF COLOR:

(B-V)	REF.
-0.28	JOH61
-0.25	HAG70
-0.35	MOF72
-0.30	VDB78
-0.32	LYN87

MASSES (SOLAR MASS UNITS):
STELLAR MASS:

MASS	REF.
6.50E+03	SCH63
7.89E+02	RED71
8.00E+02	BRU83
6.31E+03	LYN83

MASS IN ASSOCIATED H I CLOUDS:

MASS	REF.
1.90E+03	GOR68

IONIZED HYDROGEN MASS:

NO VALUES AVAILABLE

MASS IN ASSOCIATED MOLECULAR CLOUDS:

MASS	REF.
4.30E+03	LEI88

ASSOCIATED MASS IN THE FORM OF DUST:

MASS	REF.
7.84E+01	DOD70

VISUAL EXTINCTION TOWARD CLUSTER (mag):

AV	REF.
0.84	MCC64
2.55	NEC67
2.43	BEC71
2.43	LYN83

B-V COLOR EXCESS (mag):

E(B-V)	REF.
0.85	JOH61
0.82	STA68
0.75	POL70
0.83	HAG70
0.86	MOF72
0.80	VDB78
0.76	MEB81
0.87	LYN87

REFERENCES

ALT70 Alter, G., Ruprecht, J., and Vanysek, V. 1970, The Catalog of Star Clusters and Associations (Budapest: Akad Kiado).
BEC71 Becker, W. 1971, Astr. Ap. Suppl., 4, 241.
BRU83 Bruch, A., and Sanders, W. L. 1983, Astr. Ap., 121, 237.
DOD70 D Odorico, S., and Felli, M. 1970, Mem. Soc. Ast. Ital., 41, 89.
GOR68 Gordon, C. P., Howard, W. E., and Westerhout, G. 1968, Ap. J., 154, 103.
HAG70 Hagen, G. L. 1970, D. D. O. Pub., Univ. Toronto, 4.
HRO87 Hron, J. 1987, Astr. Ap., 176, 34.
HUM78 Humphreys, R. M. 1978, Ap. J. Suppl., 38, 309.
JOS61 Johnson, H. L., and Svolopoulos, S. N. 1961, Ap. J., 134, 868.
JOH61 Johnson, H. L., Hoag, A. A., Iriarte, B., Mitchell, R. I., and Hallam, K. L. 1961, Lowell Obs. Bull., 5, 133.
LAT79 Latypov, A. A. 1979, Sov. Astr., 23, 287.
LEI88 Leisawitz, D., Thaddeus, P., and Bash, F. N. 1988, in preparation for submission to Ap. J. Suppl.
LIN68 Lindoff, U. 1968, Arkiv Astr., 5, 1.
LDCAL Linear diameter calculated from published ang. diam. and distance.
LYN83 Lynga, G. 1983, Catalogue of Open Cluster Data (3rd edition), available through NSSDC, Greenbelt, Maryland, USA
LYN87 Lynga, G. 1987, Catalogue of Open Cluster Data (5th edition), available through NSSDC, Greenbelt, Maryland, USA
MCC64 Mc Cuskey, S. W., and Houk, N. 1964, A. J., 69, 412.
MEB81 Mermilliod, J.-C. 1981, Astr. Ap. Suppl., 44, 467.
MER86 Mermilliod, J.-C., and Maeder, A. 1986, Astr. Ap., 158, 45.
MOF72 Moffat, A. F. J. 1972, Astr. Ap. Suppl., 7, 355.
NEC67 Neckel, T. 1967, Heid. Ver., 19, 115.
PAN81 Panagia, N., and Tosi, M. 1981, Astr. Ap., 96, 306.
POL70 Polishchuk, E. P. 1970, Astr. Astrofiz., 9, 17.
VCIRC Radial velocity estimate based on cluster distance and rotation curve model of Brand 1986 (Ph. D. thesis, Leiden).
RED71 Reddish, V. C., and Sloan, C. 1971, Observatory, 91, 70.
SAN63 Sandage, A. 1963, Ap. J., 138, 863.
SCH63 Schmidt, von K.-H. 1963, Ast. Nach., 287, 41.
STA68 Starikova, G. A. 1969, Sov. Astr., 12, 632.
TOS79 Tosi, M. 1979, Mem. Soc. Ast. Ital., 50, 245.
VDB78 van den Bergh, S., and de Roux, J. 1978, A. J., 83, 1075.
WRA83 Wramdemark, S. 1983, private communication.

CLUSTER IDENTIFICATION:

ALTER et al.: OCL 339
COMMON NAME: STOCK 5
DATA BASE NUM: 81

SPATIAL COORDINATES:

L II: 130.74
B II: 2.65

RA(1950.0): 2. 0.8
DEC(1950.0): 64. 12.

RADIAL VELOCITIES (w.r.t. LSR; km/s):
STELLAR:

VELOCITY	REF.
-20.5	VCIRC
-14.7	WIL53
-11.9	WIL53
-13.8	SCH61
-14.7	PET61
-15.3	ABT72
-11.9	ABT72
-12.7	WRA83
-12.7	HRO87
-12.7	LYN87

H II REGION:

NO VALUES AVAILABLE

CO CLOUDS:

VELOCITY	REF.
-7.5	LEI88
-3.9	LEI88
0.9	LEI88

PROPER MOTION (arcsec/100 yr):

NO VALUES AVAILABLE

DISTANCE FROM SOLAR NEIGHBORHOOD (kpc):

DIST	REF.
1.90	SCH61
1.60	HRO87

ANGULAR DIAMETER (arcmin):

ANG D	REF.
15.0	STO56
15.0	LYN83

LINEAR DIAMETER (pc):

LIN D	REF.
7.6	LDCAL

AGE ESTIMATES:
AGE (Myr):

AGE	REF.
6.	SCH61

EARLIEST MS SPECTRAL TYPE:

eSpT	REF.
OB	STO56
OB	LYN83

MS TURNOFF COLOR:

NO VALUES AVAILABLE

MASSES (SOLAR MASS UNITS):
STELLAR MASS:

NO VALUES AVAILABLE

MASS IN ASSOCIATED H I CLOUDS:

NO VALUES AVAILABLE

IONIZED HYDROGEN MASS:

NO VALUES AVAILABLE

MASS IN ASSOCIATED MOLECULAR CLOUDS:

MASS	REF.
4.50E+04	LEI88

ASSOCIATED MASS IN THE FORM OF DUST:

NO VALUES AVAILABLE

VISUAL EXTINCTION TOWARD CLUSTER (mag):

NO VALUES AVAILABLE

B-V COLOR EXCESS (mag):

E(B-V)	REF.
0.62	SCH61

REFERENCES

ABT72 Abt, H. A., and Biggs, E. S. 1972, Bibliography of Stellar Radial Velocities, (Latham Process Corp.: New York).

HRO87 Hron, J. 1987, Astr. Ap., 176, 34.

LEI88 Leisawitz, D., Thaddeus, P., and Bash, F. N. 1988, in preparation for submission to Ap. J. Suppl.

LDCAL Linear diameter calculated from published ang. diam. and distance.

LYN83 Lynga, G. 1983, Catalogue of Open Cluster Data (3rd edition), available through NSSDC, Greenbelt, Maryland, USA

LYN87 Lynga, G. 1987, Catalogue of Open Cluster Data (5th edition), available through NSSDC, Greenbelt, Maryland, USA

PET61 Petrie, R. M., and Pearce, J. A. 1961, DAO Pub., 12, 1.

VCIRC Radial velocity estimate based on cluster distance and rotation curve model of Brand 1986 (Ph. D. thesis, Leiden).

SCH61 Schmidt-Kaler, Th. 1961, Z. f. A., 53, 1.

STO56 Stock, J. 1956, private communication to Alter et al. 1970.

WIL53 Wilson, R. E. 1953, General Catalog of Stellar Radial Velocities, (Washington, D.C.: Carnegie Institution, Pub 601).

WRA83 Wramdemark, S. 1983, private communication.

CLUSTER IDENTIFICATION:

ALTER et al.: OCL 345
COMMON NAME: NGC 744
DATA BASE NUM: 82

SPATIAL COORDINATES:

L II: 132.39
B II: -6.16
RA(1950.0): 1. 55.1
DEC(1950.0): 55. 14.

RADIAL VELOCITIES (w.r.t. LSR; km/s):
STELLAR:

VELOCITY	REF.
-17.8	VCIRC

H II REGION:

NO VALUES AVAILABLE

CO CLOUDS:

VELOCITY	REF.
-17.8	LEI88
-10.2	LEI88
-3.7	LEI88

PROPER MOTION (arcsec/100 yr):

NO VALUES AVAILABLE

DISTANCE FROM SOLAR NEIGHBORHOOD (kpc):

DIST	REF.
1.49	JOH61
1.50	BUS63
1.49	NEC67
1.52	LIN68
1.40	HAG70
1.52	BEC71
1.39	LYN87

ANGULAR DIAMETER (arcmin):

ANG D	REF.
7.0	ALT70
18.0	ALT70
11.0	HAG70
14.0	BEC71
11.0	LYN83

LINEAR DIAMETER (pc):

LIN D	REF.
4.8	LDCAL
4.8	LYN83

AGE ESTIMATES:
AGE (Myr):

AGE	REF.
39.	LIN68
39.	LYN83
199.	LYN87

EARLIEST MS SPECTRAL TYPE:

eSpT	REF.
b9	JOH61
A0	HOA65
B7	BEC71
B9	LYN83
B7	LYN83
b8	LYN83

MS TURNOFF COLOR:

(B-V)	REF.
-0.08	JOH61
-0.05	HAG70
-0.05	LYN87

MASSES (SOLAR MASS UNITS):
STELLAR MASS:

MASS	REF.
2.56E+03	SCH63
3.41E+02	RED71
3.46E+02	BRU83
3.16E+03	LYN83

MASS IN ASSOCIATED H I CLOUDS:

MASS	REF.
2.60E+01	GOR68
2.00E+01	DOD70

IONIZED HYDROGEN MASS:

NO VALUES AVAILABLE

MASS IN ASSOCIATED MOLECULAR CLOUDS:

MASS	REF.
6.70E+03	LEI88

ASSOCIATED MASS IN THE FORM OF DUST:

MASS	REF.
1.00E+01	DOD70

VISUAL EXTINCTION TOWARD CLUSTER (mag):

AV	REF.
1.23	NEC67
1.20	BEC71
1.20	LYN83

B-V COLOR EXCESS (mag):

E(B-V)	REF.
0.41	JOH61
0.40	BUS63
0.42	STA68
0.46	POL70
0.41	HAG70
0.41	LYN87

REFERENCES

ALT70 Alter, G., Ruprecht, J., and Vanysek, V. 1970, The Catalog of Star Clusters and Associations (Budapest: Akad Kiado).
BEC71 Becker, W. 1971, Astr. Ap. Suppl., 4, 241.
BRU83 Bruch, A., and Sanders, W. L. 1983, Astr. Ap., 121, 237.
BUS63 Buscombe, W. 1963, Mt. Stromlo Mimeogram, No. 6, pg. 24.
DOD70 D Odorico, S., and Felli, M. 1970, Mem. Soc. Ast. Ital., 41, 89.
GOR68 Gordon, C. P., Howard, W. E., and Westerhout, G. 1968, Ap. J., 154, 103.
HAG70 Hagen, G. L. 1970, D. D. O. Pub., Univ. Toronto, 4.
HOA65 Hoag, A. A., and Applequist, N. L. 1965, Ap. J. Suppl., 12, 215.
JOH61 Johnson, H. L., Hoag, A. A., Iriarte, B., Mitchell, R. I., and Hallam, K. L. 1961, Lowell Obs. Bull., 5, 133.
LEI88 Leisawitz, D., Thaddeus, P., and Bash, F. N. 1988, in preparation for submission to Ap. J. Suppl.
LIN68 Lindoff, U. 1968, Arkiv Astr., 5, 1.
LDCAL Linear diameter calculated from published ang. diam. and distance.
LYN83 Lynga, G. 1983, Catalogue of Open Cluster Data (3rd edition), available through NSSDC, Greenbelt, Maryland, USA
LYN87 Lynga, G. 1987, Catalogue of Open Cluster Data (5th edition), available through NSSDC, Greenbelt, Maryland, USA
NEC67 Neckel, T. 1967, Heid. Ver., 19, 115.
POL70 Polishchuk, E. P. 1970, Astr. Astrofiz., 9, 17.
VCIRC Radial velocity estimate based on cluster distance and rotation curve model of Brand 1986 (Ph. D. thesis, Leiden).
RED71 Reddish, V. C., and Sloan, C. 1971, Observatory, 91, 70.
SCH63 Schmidt, von K.-H. 1963, Ast. Nach., 287, 41.
STA68 Starikova, G. A. 1969, Sov. Astr., 12, 632.

CLUSTER IDENTIFICATION:

COMMON NAME: BASEL 10
ALTERNATE NAME: OCL 349.1
MEMBER OF ASSOC.: PER OB1
DATA BASE NUM: 83

SPATIAL COORDINATES:

L II: 134.21 RA(1950.0): 2. 15.2
B II: -2.64 DEC(1950.0): 58. 5.

RADIAL VELOCITIES (w.r.t. LSR; km/s):
STELLAR:

VELOCITY	REF.
-29.9	VCIRC

H II REGION:

NO VALUES AVAILABLE

CO CLOUDS:

NO VALUES AVAILABLE

PROPER MOTION (arcsec/100 yr):

NO VALUES AVAILABLE

DISTANCE FROM SOLAR NEIGHBORHOOD (kpc):

DIST	REF.
2.84	W0071
2.56	MFV73
2.60	LYN87

ANGULAR DIAMETER (arcmin):

ANG D	REF.
4.8	W0071
3.5	W0071
4.8	W0071
4.0	MFV73
2.0	LYN87

LINEAR DIAMETER (pc):

LIN D	REF.
1.6	LDCAL
4.0	W0071
3.0	MFV73

AGE ESTIMATES:
AGE (Myr):

AGE	REF.
16.	LYN83
10.	LYN87

EARLIEST MS SPECTRAL TYPE:

eSpT	REF.
b6	W0071
B2	MFV73
b2	MOF73

MS TURNOFF COLOR:

(B-V)	REF.
-0.09	W0071
-0.35	MFV73
-0.31	LYN87

MASSES (SOLAR MASS UNITS):
STELLAR MASS:

NO VALUES AVAILABLE

MASS IN ASSOCIATED H I CLOUDS:

NO VALUES AVAILABLE

IONIZED HYDROGEN MASS:

NO VALUES AVAILABLE

MASS IN ASSOCIATED MOLECULAR CLOUDS:

NO VALUES AVAILABLE

ASSOCIATED MASS IN THE FORM OF DUST:

NO VALUES AVAILABLE

VISUAL EXTINCTION TOWARD CLUSTER (mag):

AV	REF.
3.30	LYN83

B-V COLOR EXCESS (mag):

E(B-V)	REF.
1.10	MFV73
0.98	LYN87

REFERENCES

LDCAL Linear diameter calculated from published ang. diam. and distance.
LYN83 Lynga, G. 1983, Catalogue of Open Cluster Data (3rd edition), available through NSSDC, Greenbelt, Maryland, USA
LYN87 Lynga, G. 1987, Catalogue of Open Cluster Data (5th edition), available through NSSDC, Greenbelt, Maryland, USA
MFV73 Moffat, A. F. J., and Vogt, N. 1973, Astr. Ap. Suppl., 11, 3.
MOF73 Moffat, A. F. J., and Vogt, N. 1973, Astr. Ap., 23, 317.
VCIRC Radial velocity estimate based on cluster distance and rotation curve model of Brand 1986 (Ph. D. thesis, Leiden).
WOO71 Wooden, W. H. 1971, Astr. Ap., 13, 218.

CLUSTER IDENTIFICATION:

ALTER et al.: OCL 350
COMMON NAME: NGC 869
ALTERNATE NAME: H PERSEI
MEMBER OF ASSOC.: PER OB1
DATA BASE NUM: 84

SPATIAL COORDINATES:

L II: 134.63 RA(1950.0): 2. 15.5
B II: -3.72 DEC(1950.0): 56. 55.

RADIAL VELOCITIES (w.r.t. LSR; km/s):
STELLAR:

VELOCITY	REF.
-24.1	VCIRC
-40.8	JOS61
-18.8	HAG70
-40.5	HUM78
-38.5	HUM78
-36.8	WRA83
-38.8	LAC85
-36.8	LYN87
-36.8	HRO87

H II REGION:

NO VALUES AVAILABLE

CO CLOUDS:

NO VALUES AVAILABLE

PROPER MOTION (arcsec/100 yr):

NO VALUES AVAILABLE

DISTANCE FROM SOLAR NEIGHBORHOOD (kpc):

DIST	REF.
2.36	JOH61
2.30	HAG70
2.15	BEC71
2.25	VOG71
2.10	WAL72
2.09	VAS72
1.61	NIC81
2.23	SPA85
2.23	LYN87

ANGULAR DIAMETER (arcmin):

ANG D	REF.
15.0	ALT70
60.0	ALT70
52.0	VOG71
30.0	BEC71
30.0	LYN83

LINEAR DIAMETER (pc):

LIN D	REF.
18.5	LDCAL
19.0	LYN83

AGE ESTIMATES:
AGE (Myr):

AGE	REF.
10.	LIN68
12.	BAR69
10.	CAN70
20.	VOG71
6.	LYN83
10.	SPA85
18.	LYN87

EARLIEST MS SPECTRAL TYPE:

eSpT	REF.
b0.5	JOH61
O9	POP68
O6.5	CON71
B0	LYN83
B1	LYN83
b0	LYN83

MS TURNOFF COLOR:

(B-V)	REF.
-0.28	JOH61
-0.25	HAG70
-0.24	LYN87

MASSES (SOLAR MASS UNITS):
STELLAR MASS:

MASS	REF.
1.34E+04	SCH63
3.90E+03	VOG71
5.38E+03	LOH72
2.00E+03	LYN83

MASS IN ASSOCIATED H I CLOUDS:

NO VALUES AVAILABLE

IONIZED HYDROGEN MASS:

NO VALUES AVAILABLE

MASS IN ASSOCIATED MOLECULAR CLOUDS:

NO VALUES AVAILABLE

ASSOCIATED MASS IN THE FORM OF DUST:

NO VALUES AVAILABLE

VISUAL EXTINCTION TOWARD CLUSTER (mag):

AV	REF.
1.68	DLU65
1.68	NEC67
1.68	BEC71
1.85	TAP83
1.68	LYN83

B-V COLOR EXCESS (mag):

E(B-V)	REF.
0.56	JOH61
0.60	BUS63
0.56	SCH63
0.57	STA68
0.56	HAG70
0.53	VOG71
0.58	NIC81
0.54	FRA85
0.56	SPA85
0.54	LYN87

REFERENCES

ALT70 Alter, G., Ruprecht, J., and Vanysek, V. 1970, The Catalog of Star Clusters and Associations (Budapest: Akad Kiado).
BAR69 Barbaro, G., Dallaporta, N., and Fabris, G. 1969, Ap. Sp. Sci., 3, 123.
BEC71 Becker, W. 1971, Astr. Ap. Suppl., 4, 241.
BUS63 Buscombe, W. 1963, Mt. Stromlo Mimeogram, No. 6, pg. 24.
CAN70 Cannon, R. D. 1970, MNRAS, 150, 111.
CON71 Conti, P. S., and Alschuler, W. R. 1971, Ap. J., 170, 325.
DLU65 Dluzhnevskaya, O. B. 1965, Nautch. Inf., No. 2.
FRA85 Franco, M. L., Magazzu, A., and Stalio, R. 1985, Astr. Ap., 147, 191.
HAG70 Hagen, G. L. 1970, D. D. O. Pub., Univ. Toronto, 4.
HR087 Hron, J. 1987, Astr. Ap., 176, 34.
HUM78 Humphreys, R. M. 1978, Ap. J. Suppl., 38, 309.
JOS61 Johnson, H. L., and Svolopoulos, S. N. 1961, Ap. J., 134, 868.
JOH61 Johnson, H. L., Hoag, A. A., Iriarte, B., Mitchell, R. I., and Hallam, K. L. 1961, Lowell Obs. Bull., 5, 133.
LIN68 Lindoff, U. 1968, Arkiv Astr., 5, 1.
LDCAL Linear diameter calculated from published ang. diam. and distance.
LOH72 Lohmann, W. 1972, Astr. Nach., 293, 259.
LYN83 Lynga, G. 1983, Catalogue of Open Cluster Data (3rd edition), available through NSSDC, Greenbelt, Maryland, USA
LYN87 Lynga, G. 1987, Catalogue of Open Cluster Data (5th edition), available through NSSDC, Greenbelt, Maryland, USA
LAC85 McLachlan, A., and Nandy, K. 1985, MNRAS, 215, 473.
NEC67 Neckel, T. 1967, Heid. Ver., 19, 115.
NIC81 Nicolet, B. 1981, Astr. Ap., 104, 185.
POP68 Popova, E. I. 1968, Nautch. Inf., 8, 66.
VCIRC Radial velocity estimate based on cluster distance and rotation curve model of Brand 1986 (Ph. D. thesis, Leiden).
SCH63 Schmidt, von K.-H. 1963, Ast. Nach., 287, 41.
SPA85 Spassova, N. M., and Baev, P. V. 1985, Ap. Sp. Sci., 112, 111.
STA68 Starikova, G. A. 1969, Sov. Astr., 12, 632.
TAP83 Tapia, M., et al. 1983, in IAU Symp. 105, eds. A. Maeder and A. Renzini (Dordrecht: Reidel), p. 353.
VAS72 Vasilevskii, A. E. 1972, Sov. Astr., 16, 308.
VOG71 Vogt, N. 1971, Astr. Ap., 11, 359.
WAL72 Walborn, N. R. 1972, A. J., 77, 313.
WRA83 Wramdemark, S. 1983, private communication.

CLUSTER IDENTIFICATION:

ALTER et al.:	OCL 352
COMMON NAME:	IC 1805
ALTERNATE NAME:	W3
SHARPLESS:	S190
WESTERHOUT:	W 4
MEMBER OF ASSOC.:	CAS OB6
DATA BASE NUM:	85

SPATIAL COORDINATES:

L II:	134.74	RA(1950.0):	2. 28.9
B II:	0.92	DEC(1950.0):	61. 14.

RADIAL VELOCITIES (w.r.t. LSR; km/s):
STELLAR:

VELOCITY	REF.
-24.5	VCIRC
-32.2	JOS61
-34.0	HAG70
-44.2	ISH70
-30.2	PAL77
-32.2	WRA83
34.2	GEY85
-32.2	LYN87
-32.2	HRO87

H II REGION:

VELOCITY	REF.
-42.4	COU66
-47.2	COU66
-43.4	COU66
-42.5	WIL70
-40.7	GEO76
-46.0	GEO76
-41.8	PED80

CO CLOUDS:

VELOCITY	REF.
-40.0	LAD78
-48.0	LAD78
-40.5	DIC80
-47.0	DIC80
-43.0	DIC80
-46.0	BLI82
-43.0	THR86

PROPER MOTION (arcsec/100 yr):

MU X	MU Y	REF.
-0.540	-0.060	PAL77

DISTANCE FROM SOLAR NEIGHBORHOOD (kpc):

DIST	REF.
2.10	JOH61
2.00	HAG70

ANGULAR DIAMETER (arcmin):

ANG D	REF.
17.5	ALT70
47.0	ALT70
20.0	BEC71
20.0	MOF72
22.0	LYN83
26.0	BAA83
21.7	DAN85

LINEAR DIAMETER (pc):

LIN D	REF.
13.8	LDCAL
5.7	ISH69
14.0	BEC71
13.0	MOF72
13.0	LYN83
12.7	DAN85

AGE ESTIMATES:
AGE (Myr):

AGE	REF.
1.	MOF72
2.	MOF72
6.	STO72
25.	ABT80
1.	LYN83
2.	BAA83
4.	SPA85
1.	FEI86
1.	SAG86
10.	LYN87

EARLIEST MS SPECTRAL TYPE:

eSpT	REF.
o5	JOH61
O5	HOA65
O6.5	CON71
O5	MOF72
O7	MOF72
O5	LYN83
O6	LYN83

MASSES (SOLAR MASS UNITS):
STELLAR MASS:

MASS	REF.
3.93E+03	SCH63
6.50E+02	RED71
6.59E+02	BRU83
3.98E+03	LYN83
3.00E+03	THR86

MASS IN ASSOCIATED H I CLOUDS:

NO VALUES AVAILABLE

IONIZED HYDROGEN MASS:

MASS	REF.
8.50E+02	SCH69
3.00E+03	SCH71

MASS IN ASSOCIATED MOLECULAR CLOUDS:

MASS	REF.
7.00E+04	LAD78
7.00E+04	COH84
1.80E+04	THR85
5.00E+03	THR86

ASSOCIATED MASS IN THE FORM OF DUST:

NO VALUES AVAILABLE

VISUAL EXTINCTION TOWARD CLUSTER (mag):

AV	REF.
2.46	NEC67
2.55	BEC71
2.55	LYN83
1.90	KOL86

B-V COLOR EXCESS (mag):

E(B-V)	REF.
0.82	JOH61
0.85	STA68
0.83	POL70

2.50	SCH71	B0	STO85	0.76	HAG70
2.40	BEC71			0.81	MOF72
2.19	MOF72	MS TURNOFF COLOR:		0.86	NIC81
0.49	ABT80			0.78	BAA83
1.82	NIC81	(B-V)	REF.	0.81	SPA85
2.35	BAA83	-0.32	JOH61	0.81	LYN87
2.10	FIC84	-0.25	HAG70		
2.02	DAN85	-0.35	MOF72		
2.27	SPA85	-0.35	LYN87		
2.20	KOL86				
2.21	LYN87				

REFERENCES

ABT80 Abt, H. A., Perry, C. L., Olsen, E. H., and Graner, A. D., 1980, PASP, 92, 60.
ALT70 Alter, G., Ruprecht, J., and Vanysek, V. 1970, The Catalog of Star Clusters and Associations (Budapest: Akad Kiado).
BAA83 Baade, D. 1983, Astr. Ap. Suppl., 51, 235.
BEC71 Becker, W. 1971, Astr. Ap. Suppl., 4, 241.
BLI82 Blitz, L., Fich, M. and Stark, A. A. 1982, Ap. J. Suppl., 49, 183.
BRU83 Bruch, A., and Sanders, W. L. 1983, Astr. Ap., 121, 237.
COH84 Cohen, R. J. 1984, MNRAS, 208, 101.
CON71 Conti, P. S., and Alschuler, W. R. 1971, Ap. J., 170, 325.
COU66 Courtes, G., Cruvellier, P., and Georgelin, Y. 1966, J. des Obs., 49, 329.
DAN85 Danilov, V. M., Matkin, N. V., and Pyl'skaya, O. P. 1985, Sov. Astr., 29, 621.
DIC80 Dickel, H. R., Dickel, J. R., Wilson, W. J., and Werner, M. W. 1980, Ap. J., 237, 711.
FEI86 Feinstein, A., Vazquez, R. A., and Benvenuto, O. G. 1986, Astr. Ap., 159, 223.
FIC84 Fich, M., and Blitz, L. 1984, Ap. J., 279, 125.
GEO76 Georgelin, Y. M., and Georgelin, Y. P. 1976, Astr. Ap., 49, 57.
GEY85 Geyer, E. H., and Nelles, B. 1985, Astr. Ap. Suppl., 62, 301.
HAG70 Hagen, G. L. 1970, D. D. O. Pub., Univ. Toronto, 4.
HOA65 Hoag, A. A., and Applequist, N. L. 1965, Ap. J. Suppl., 12, 215.
HRO87 Hron, J. 1987, Astr. Ap., 176, 34.
ISH69 Ishida, K. 1969, MNRAS, 144, 55.
ISH70 Ishida, K. 1970, P. A. S. Japan, 22, 277.
JOS61 Johnson, H. L., and Svolopoulos, S. N. 1961, Ap. J., 134, 868.
JOH61 Johnson, H. L., Hoag, A. A., Iriarte, B., Mitchell, R. I., and Hallam, K. L. 1961, Lowell Obs. Bull., 5, 133.
KOL86 Kolesnik, L. N. 1986, Astr. Ap., 169, 268.
LAD78 Lada, C. J., Elmegreen, B. G., Cong, H.-I., and Thaddeus, P. T. 1978, Ap. J. (Letters), 226, L39.
LDCAL Linear diameter calculated from published ang. diam. and distance.
LYN83 Lynga, G. 1983, Catalogue of Open Cluster Data (3rd edition), available through NSSDC, Greenbelt, Maryland, USA
LYN87 Lynga, G. 1987, Catalogue of Open Cluster Data (5th edition), available through NSSDC, Greenbelt, Maryland, USA
MOF72 Moffat, A. F. J. 1972, Astr. Ap. Suppl., 7, 355.
NEC67 Neckel, T. 1967, Heid. Ver., 19, 115.
NIC81 Nicolet, B. 1981, Astr. Ap., 104, 185.
PAL77 Palous, J., Ruprecht, J., Dluzhnevskaya, O. B., and Piskunov, T. 1977, Astr. Ap., 61, 27.
PED80 Pedlar, A. 1980, MNRAS, 192, 179.
POL70 Polishchuk, E. P. 1970, Astr. Astrofiz., 9, 17.
VCIRC Radial velocity estimate based on cluster distance and rotation curve model of Brand 1986 (Ph. D. thesis, Leiden).
RED71 Reddish, V. C., and Sloan, C. 1971, Observatory, 91, 70.
SAG86 Sagar, R., Piskunov, A. E., Myakutin, V. I., and Joshi, U. C. 1986, MNRAS, 220, 383.
SCH63 Schmidt, von K.-H. 1963, Ast. Nach., 287, 41.
SCH69 Schwartz, R. 1969, A G Mitt., 27, 178.
SCH71 Schwartz, R. 1971, Ap. Sp. Sci., 14, 286.
SPA85 Spassova, N. M., and Baev, P. V. 1985, Ap. Sp. Sci., 112, 111.
STA68 Starikova, G. A. 1969, Sov. Astr., 12, 632.
STO72 Stothers, R. 1972, Ap. J., 175, 431.
STO85 Stothers, R. B. 1985, Ap. J., 298, 521.
THR86 Thronson, H. A. 1986, Ap. J., 306, 160.
THR85 Thronson, H. A., Lada, C. J., and Hewagama, T. 1985, Ap. J., 297, 662.
WIL70 Williamson, R. A. 1970, Ap. Sp. Sci., 6, 45.
WRA83 Wramdemark, S. 1983, private communication.

CLUSTER IDENTIFICATION:

ALTER et al.: OCL 353
COMMON NAME: NGC 884
ALTERNATE NAME: XI PERSEI
MEMBER OF ASSOC.: PER OB1
DATA BASE NUM: 86

SPATIAL COORDINATES:

L II: 135.08 RA(1950.0): 2. 18.9
B II: -3.60 DEC(1950.0): 56. 53.

RADIAL VELOCITIES (w.r.t. LSR; km/s):
STELLAR:

VELOCITY	REF.
-25.6	VCIRC
-40.9	JOS61
-17.9	HAG70
-36.9	HUM78
-41.9	HUM78
-17.9	LYN81
36.9	WRA83
-16.9	LAC85
-36.9	HRO87

H II REGION:

NO VALUES AVAILABLE

CO CLOUDS:

NO VALUES AVAILABLE

PROPER MOTION (arcsec/100 yr):

MU X	MU Y	REF.
0.160	-0.350	LAT79
0.130	-0.240	LAT79

DISTANCE FROM SOLAR NEIGHBORHOOD (kpc):

DIST	REF.
2.36	JOH61
2.46	LIN68
2.60	HAG70
2.48	BEC71
2.20	VOG71
2.09	VAS72
2.06	NIC81
2.45	SPA85
2.22	LYN87

ANGULAR DIAMETER (arcmin):

ANG D	REF.
6.0	HAG70
60.0	ALT70
48.0	VOG71
30.0	BEC71
30.0	LYN83

LINEAR DIAMETER (pc):

LIN D	REF.
19.8	LDCAL
20.0	LYN83

AGE ESTIMATES:
AGE (Myr):

AGE	REF.
10.	LIN68
12.	BAR69
10.	CAN70
10.	VOG71
3.	LYN83
7.	SPA85
4.	ROT86
11.	MER86

EARLIEST MS SPECTRAL TYPE:

eSpT	REF.
b0.5	JOH61
O9	POP68
O6.5	CON71
B0	LYN83
B1	LYN83
b0	LYN83
B1	STO85
O5.5	SCH86

MS TURNOFF COLOR:

(B-V)	REF.
-0.28	JOH61
-0.25	HAG70
-0.27	LYN87

MASSES (SOLAR MASS UNITS):
STELLAR MASS:

MASS	REF.
3.30E+03	VOG71
5.64E+03	LOH72
2.00E+03	LYN83

MASS IN ASSOCIATED H I CLOUDS:

NO VALUES AVAILABLE

IONIZED HYDROGEN MASS:

NO VALUES AVAILABLE

MASS IN ASSOCIATED MOLECULAR CLOUDS:

NO VALUES AVAILABLE

ASSOCIATED MASS IN THE FORM OF DUST:

NO VALUES AVAILABLE

VISUAL EXTINCTION TOWARD CLUSTER (mag):

AV	REF.
1.68	DLU65
1.68	BEC71
1.85	TAP83
1.68	LYN83

B-V COLOR EXCESS (mag):

E(B-V)	REF.
0.56	JOH61
0.60	BUS63
0.56	BEC63
0.57	STA68
0.56	HAG70
0.61	VOG71
0.51	NIC81
0.56	SPA85
0.60	LYN87

C-2

REFERENCES

ALT70 Alter, G., Ruprecht, J., and Vanysek, V. 1970, The Catalog of Star Clusters and Associations (Budapest: Akad Kiado).
BAR69 Barbaro, G., Dallaporta, N., and Fabris, G. 1969, Ap. Sp. Sci., 3, 123.
BEC63 Becker, W. 1963, Z. f. A., 57, 117.
BEC71 Becker, W. 1971, Astr. Ap. Suppl., 4, 241.
BUS63 Buscombe, W. 1963, Mt. Stromlo Mimeogram, No. 6, pg. 24.
CAN70 Cannon, R. D. 1970, MNRAS, 150, 111.
CON71 Conti, P. S., and Alschuler, W. R. 1971, Ap. J., 170, 325.
DLU65 Dluzhnevskaya, O. B. 1965, Nautch. Inf., No. 2.
HAG70 Hagen, G. L. 1970, D. D. O. Pub., Univ. Toronto, 4.
HRO87 Hron, J. 1987, Astr. Ap., 176, 34.
HUM78 Humphreys, R. M. 1978, Ap. J. Suppl., 38, 309.
JOS61 Johnson, H. L., and Svolopoulos, S. N. 1961, Ap. J., 134, 868.
JOH61 Johnson, H. L., Hoag, A. A., Iriarte, B., Mitchell, R. I., and Hallam, K. L. 1961, Lowell Obs. Bull., 5, 133.
LAT79 Latypov, A. A. 1979, Sov. Astr., 23, 287.
LIN68 Lindoff, U. 1968, Arkiv Astr., 5, 1.
LDCAL Linear diameter calculated from published ang. diam. and distance.
LOH72 Lohmann, W. 1972, Astr. Nach., 293, 259.
LYN81 Lynga, G. 1981, Catalogue of Open Cluster Data, available through NSSDC, Greenbelt, Maryland, USA
LYN83 Lynga, G. 1983, Catalogue of Open Cluster Data (3rd edition), available through NSSDC, Greenbelt, Maryland, USA
LYN87 Lynga, G. 1987, Catalogue of Open Cluster Data (5th edition), available through NSSDC, Greenbelt, Maryland, USA
LAC85 McLachlan, A., and Nandy, K. 1985, MNRAS, 215, 473.
MER86 Mermilliod, J.-C., and Maeder, A. 1986, Astr. Ap., 158, 45.
NIC81 Nicolet, B. 1981, Astr. Ap., 104, 185.
POP68 Popova, E. I. 1968, Nautch. Inf., 8, 66.
VCIRC Radial velocity estimate based on cluster distance and rotation curve model of Brand 1986 (Ph. D. thesis, Leiden).
ROT86 Roth-Hoppner, M. L., Hoppner, W., and Winter, L. 1986, Mitt. Astr. Ges., 67, 367.
SCH86 Schild, H., and Berthet, S. 1986, Astr. Ap., 162, 369.
SPA85 Spassova, N. M., and Baev, P. V. 1985, Ap. Sp. Sci., 112, 111.
STA68 Starikova, G. A. 1969, Sov. Astr., 12, 632.
STO85 Stothers, R. B. 1985, Ap. J., 298, 521.
TAP83 Tapia, M., et al. 1983, in IAU Symp. 105, eds. A. Maeder and A. Renzini (Dordrecht: Reidel), p. 353.
VAS72 Vasilevskii, A. E. 1972, Sov. Astr., 16, 308.
VOG71 Vogt, N. 1971, Astr. Ap., 11, 359.
WRA83 Wramdemark, S. 1983, private communication.

CLUSTER IDENTIFICATION:

ALTER et al.: OCL 356
COMMON NAME: CZERNIK 13
DATA BASE NUM: 87

SPATIAL COORDINATES:

L II: 135.67
B II: 2.31

RA(1950.0): 2. 40.8
DEC(1950.0): 62. 8.

RADIAL VELOCITIES (w.r.t. LSR; km/s):
STELLAR:

VELOCITY	REF.
-43.6	VCIRC

H II REGION:

NO VALUES AVAILABLE

CO CLOUDS:

VELOCITY	REF.
-47.0	BLI82

PROPER MOTION (arcsec/100 yr):

NO VALUES AVAILABLE

DISTANCE FROM SOLAR NEIGHBORHOOD (kpc):

DIST	REF.
4.34	MFV73
4.34	LYN87

ANGULAR DIAMETER (arcmin):

ANG D	REF.
6.0	MFV73
6.0	LYN83

LINEAR DIAMETER (pc):

LIN D	REF.
7.6	LDCAL
7.6	MFV73

AGE ESTIMATES:
AGE (Myr):

AGE	REF.
10.	LYN87
1.	LYN87

EARLIEST MS SPECTRAL TYPE:

eSpT	REF.
B4	MFV73

MS TURNOFF COLOR:

(B-V)	REF.
-0.30	MFV73
-0.30	LYN87

MASSES (SOLAR MASS UNITS):
STELLAR MASS:

NO VALUES AVAILABLE

MASS IN ASSOCIATED H I CLOUDS:

NO VALUES AVAILABLE

IONIZED HYDROGEN MASS:

NO VALUES AVAILABLE

MASS IN ASSOCIATED MOLECULAR CLOUDS:

NO VALUES AVAILABLE

ASSOCIATED MASS IN THE FORM OF DUST:

NO VALUES AVAILABLE

VISUAL EXTINCTION TOWARD CLUSTER (mag):

NO VALUES AVAILABLE

B-V COLOR EXCESS (mag):

E(B-V)	REF.
0.77	MFV73
0.77	LYN87

REFERENCES

BLI82 Blitz, L., Fich, M. and Stark, A. A. 1982, Ap. J. Suppl., 49, 183.
LDCAL Linear diameter calculated from published ang. diam. and distance.
LYN83 Lynga, G. 1983, Catalogue of Open Cluster Data (3rd edition), available through NSSDC, Greenbelt, Maryland, USA
LYN87 Lynga, G. 1987, Catalogue of Open Cluster Data (5th edition), available through NSSDC, Greenbelt, Maryland, USA
MFV73 Moffat, A. F. J., and Vogt, N. 1973, Astr. Ap. Suppl., 11, 3.
VCIRC Radial velocity estimate based on cluster distance and rotation curve model of Brand 1986 (Ph. D. thesis, Leiden).

CLUSTER IDENTIFICATION:

ALTER et al.: OCL 357
COMMON NAME: NGC 1027
MEMBER OF ASSOC.: CAM OB1
DATA BASE NUM: 88

SPATIAL COORDINATES:

L II: 135.78 RA(1950.0): 2. 38.8
B II: 1.48 DEC(1950.0): 61. 20.

RADIAL VELOCITIES (w.r.t. LSR; km/s):
STELLAR:

VELOCITY	REF.
-11.7	VCIRC
-37.5	BOL84

H II REGION:

NO VALUES AVAILABLE

CO CLOUDS:

NO VALUES AVAILABLE

PROPER MOTION (arcsec/100 yr):

NO VALUES AVAILABLE

DISTANCE FROM SOLAR NEIGHBORHOOD (kpc):

DIST	REF.
1.28	JOH61
1.28	NEC67
0.80	LIN68
1.30	HAG70
0.80	BEC71
0.96	DAN85
1.21	LYN87

ANGULAR DIAMETER (arcmin):

ANG D	REF.
20.0	LIN68
7.0	ALT70
8.0	HAG70
21.0	BEC71
20.0	LYN83
134.4	DAN85

LINEAR DIAMETER (pc):

LIN D	REF.
5.7	LDCAL
4.6	LIN68
3.0	HAG70
4.9	BEC71
5.8	LYN83
37.5	DAN85

AGE ESTIMATES:
AGE (Myr):

AGE	REF.
13.	SAN63
63.	LIN68
350.	TOS79
347.	LYN83
78.	LYN87

EARLIEST MS SPECTRAL TYPE:

eSpT	REF.
a0	JOH61
B9	HOA65
B3	BEC71
B3	LYN83
b7	LYN83

MS TURNOFF COLOR:

(B-V)	REF.
-0.02	JOH61
-0.15	HAG70
-0.15	LYN87

MASSES (SOLAR MASS UNITS):
STELLAR MASS:

MASS	REF.
1.84E+03	SCH63
1.83E+02	RED71
7.92E+02	LOH72
1.86E+02	BRU83
2.00E+03	LYN83

MASS IN ASSOCIATED H I CLOUDS:

NO VALUES AVAILABLE

IONIZED HYDROGEN MASS:

NO VALUES AVAILABLE

MASS IN ASSOCIATED MOLECULAR CLOUDS:

NO VALUES AVAILABLE

ASSOCIATED MASS IN THE FORM OF DUST:

NO VALUES AVAILABLE

VISUAL EXTINCTION TOWARD CLUSTER (mag):

AV	REF.
1.20	NEC67
1.02	BEC71
1.02	LYN87

B-V COLOR EXCESS (mag):

E(B-V)	REF.
0.40	JOH61
0.40	BUS63
0.41	STA68
0.40	POL70
0.40	HAG70
0.40	LYN87

REFERENCES

ALT70 Alter, G., Ruprecht, J., and Vanysek, V. 1970, The Catalog of Star Clusters and Associations (Budapest: Akad Kiado).
BEC71 Becker, W. 1971, Astr. Ap. Suppl., 4, 241.
BOL84 Bolte, M., and Mateo, M. 1984, PASP, 96, 784.
BRU83 Bruch, A., and Sanders, W. L. 1983, Astr. Ap., 121, 237.
BUS63 Buscombe, W. 1963, Mt. Stromlo Mimeogram, No. 6, pg. 24.
DAN85 Danilov, V. M., Matkin, N. V., and Pyl'skaya, O. P. 1985, Sov. Astr., 29, 621.
HAG70 Hagen, G. L. 1970, D. D. O. Pub., Univ. Toronto, 4.
HOA65 Hoag, A. A., and Applequist, N. L. 1965, Ap. J. Suppl., 12, 215.
JOH61 Johnson, H. L., Hoag, A. A., Iriarte, B., Mitchell, R. I., and Hallam, K. L. 1961, Lowell Obs. Bull., 5, 133.
LIN68 Lindoff, U. 1968, Arkiv Astr., 5, 1.
LDCAL Linear diameter calculated from published ang. diam. and distance.
LOH72 Lohmann, W. 1972, Astr. Nach., 293, 259.
LYN83 Lynga, G. 1983, Catalogue of Open Cluster Data (3rd edition), available through NSSDC, Greenbelt, Maryland, USA
LYN87 Lynga, G. 1987, Catalogue of Open Cluster Data (5th edition), available through NSSDC, Greenbelt, Maryland, USA
NEC67 Neckel, T. 1967, Heid. Ver., 19, 115.
POL70 Polishchuk, E. P. 1970, Astr. Astrofiz., 9, 17.
VCIRC Radial velocity estimate based on cluster distance and rotation curve model of Brand 1986 (Ph. D. thesis, Leiden).
RED71 Reddish, V. C., and Sloan, C. 1971, Observatory, 91, 70.
SAN63 Sandage, A. 1963, Ap. J., 138, 863.
SCH63 Schmidt, von K.-H. 1963, Ast. Nach., 287, 41.
STA68 Starikova, G. A. 1969, Sov. Astr., 12, 632.
TOS79 Tosi, M. 1979, Mem. Soc. Ast. Ital., 50, 245.

CLUSTER IDENTIFICATION:

ALTER et al.: OCL 359
COMMON NAME: CZERNIK 8
DATA BASE NUM: 89

SPATIAL COORDINATES:

L II: 135.79
B II: -1.58
RA(1950.0): 2. 29.3
DEC(1950.0): 58. 31.

RADIAL VELOCITIES (w.r.t. LSR; km/s):

STELLAR:

VELOCITY	REF.
-27.0	VCIRC
-55.9	WIL53
-55.9	ABT72

H II REGION:

NO VALUES AVAILABLE

CO CLOUDS:

NO VALUES AVAILABLE

PROPER MOTION (arcsec/100 yr):

NO VALUES AVAILABLE

DISTANCE FROM SOLAR NEIGHBORHOOD (kpc):

DIST	REF.
2.45	MFV73
2.47	LYN87

ANGULAR DIAMETER (arcmin):

ANG D	REF.
7.0	MFV73
7.0	LYN83

LINEAR DIAMETER (pc):

LIN D	REF.
5.0	LDCAL
4.9	LYN83

AGE ESTIMATES:

AGE (Myr):

AGE	REF.
50.	TUR77
1.	LYN83
10.	LYN87

EARLIEST MS SPECTRAL TYPE:

eSpT	REF.
B5	MFV73

MS TURNOFF COLOR:

(B-V)	REF.
-0.35	MFV73
-0.35	LYN87

MASSES (SOLAR MASS UNITS):

STELLAR MASS:

NO VALUES AVAILABLE

MASS IN ASSOCIATED H I CLOUDS:

NO VALUES AVAILABLE

IONIZED HYDROGEN MASS:

NO VALUES AVAILABLE

MASS IN ASSOCIATED MOLECULAR CLOUDS:

NO VALUES AVAILABLE

ASSOCIATED MASS IN THE FORM OF DUST:

NO VALUES AVAILABLE

VISUAL EXTINCTION TOWARD CLUSTER (mag):

AV	REF.
3.18	LYN83

B-V COLOR EXCESS (mag):

E(B-V)	REF.
1.06	MFV73
1.06	LYN87

REFERENCES

ABT72 Abt, H. A., and Biggs, E. S. 1972, Bibliography of Stellar Radial Velocities, (Latham Process Corp.: New York).

LDCAL Linear diameter calculated from published ang. diam. and distance.

LYN83 Lynga, G. 1983, Catalogue of Open Cluster Data (3rd edition), available through NSSDC, Greenbelt, Maryland, USA

LYN87 Lynga, G. 1987, Catalogue of Open Cluster Data (5th edition), available through NSSDC, Greenbelt, Maryland, USA

MFV73 Moffat, A. F. J., and Vogt, N. 1973, Astr. Ap. Suppl., 11, 3.

VCIRC Radial velocity estimate based on cluster distance and rotation curve model of Brand 1986 (Ph. D. thesis, Leiden).

TUR77 Turner, D. G. 1977, PASP, 89, 277.

WIL53 Wilson, R. E. 1953, General Catalog of Stellar Radial Velocities, (Washington, D.C.: Carnegie Institution, Pub 601).

CLUSTER IDENTIFICATION:

ALTER et al.: OCL 360
COMMON NAME: BERK 65
DATA BASE NUM: 90

SPATIAL COORDINATES:

L II: 135.84 RA(1950.0): 2. 35.2
B II: 0.27 DEC(1950.0): 60. 12.

RADIAL VELOCITIES (w.r.t. LSR; km/s):
STELLAR:

VELOCITY	REF.
-35.1	VCIRC

H II REGION:

NO VALUES AVAILABLE

CO CLOUDS:

NO VALUES AVAILABLE

PROPER MOTION (arcsec/100 yr):

NO VALUES AVAILABLE

DISTANCE FROM SOLAR NEIGHBORHOOD (kpc):

DIST	REF.
3.31	MOF73
3.31	LYN87

ANGULAR DIAMETER (arcmin):

ANG D	REF.
5.0	MFV73
5.0	LYN83

LINEAR DIAMETER (pc):

LIN D	REF.
4.8	LDCAL
5.0	MFV73
4.8	LYN83

AGE ESTIMATES:
AGE (Myr):

AGE	REF.
6.	LYN83
12.	LYN87

EARLIEST MS SPECTRAL TYPE:

eSpT	REF.
B2	MFV73
b2	MOF73
OB	SAN74

MS TURNOFF COLOR:

(B-V)	REF.
-0.25	MFV73
-0.25	LYN87

MASSES (SOLAR MASS UNITS):
STELLAR MASS:

NO VALUES AVAILABLE

MASS IN ASSOCIATED H I CLOUDS:

NO VALUES AVAILABLE

IONIZED HYDROGEN MASS:

NO VALUES AVAILABLE

MASS IN ASSOCIATED MOLECULAR CLOUDS:

NO VALUES AVAILABLE

ASSOCIATED MASS IN THE FORM OF DUST:

NO VALUES AVAILABLE

VISUAL EXTINCTION TOWARD CLUSTER (mag):

AV	REF.
3.39	LYN83

B-V COLOR EXCESS (mag):

E(B-V)	REF.
1.13	MFV73
1.13	LYN87

REFERENCES

LDCAL Linear diameter calculated from published ang. diam. and distance.
LYN83 Lynga, G. 1983, Catalogue of Open Cluster Data (3rd edition), available through NSSDC, Greenbelt, Maryland, USA
LYN87 Lynga, G. 1987, Catalogue of Open Cluster Data (5th edition), available through NSSDC, Greenbelt, Maryland, USA
MFV73 Moffat, A. F. J., and Vogt, N. 1973, Astr. Ap. Suppl., 11, 3.
MOF73 Moffat, A. F. J., and Vogt, N. 1973, Astr. Ap., 23, 317.
VCIRC Radial velocity estimate based on cluster distance and rotation curve model of Brand 1986 (Ph. D. thesis, Leiden).
SAN74 Sanduleak, N. 1974, PASP, 86, 74.

CLUSTER IDENTIFICATION:

ALTER et al.: OCL 361
COMMON NAME: KING 4
DATA BASE NUM: 91

SPATIAL COORDINATES:

L II: 136.02 RA(1950.0): 2. 32.0
B II: -1.20 DEC(1950.0): 58. 47.

RADIAL VELOCITIES (w.r.t. LSR; km/s):
STELLAR:

VELOCITY	REF.
-24.7	VCIRC
-55.9	WIL53
-2.9	ABT72

H II REGION:

NO VALUES AVAILABLE

CO CLOUDS:

NO VALUES AVAILABLE

PROPER MOTION (arcsec/100 yr):

NO VALUES AVAILABLE

DISTANCE FROM SOLAR NEIGHBORHOOD (kpc):

DIST	REF.
1.80	KAR68
4.72	WOO71
2.19	MFV73
2.13	TUR77
3.40	LYN87

ANGULAR DIAMETER (arcmin):

ANG D	REF.
2.0	KAR68
4.4	WOO71
3.0	MFV73
3.0	LYN83

LINEAR DIAMETER (pc):

LIN D	REF.
1.9	LDCAL
1.1	KAR68
3.4	WOO71
2.0	MFV73
1.9	LYN83

AGE ESTIMATES:
AGE (Myr):

AGE	REF.
50.	TUR77
32.	LYN83
10.	LYN87

EARLIEST MS SPECTRAL TYPE:

eSpT	REF.
B4	KAR68
b3	WOO71
B6	MFV73

MS TURNOFF COLOR:

(B-V)	REF.
-0.18	WOO71
-0.20	MFV73
-0.16	TUR77
-0.26	LYN87

MASSES (SOLAR MASS UNITS):
STELLAR MASS:

NO VALUES AVAILABLE

MASS IN ASSOCIATED H I CLOUDS:

NO VALUES AVAILABLE

IONIZED HYDROGEN MASS:

NO VALUES AVAILABLE

MASS IN ASSOCIATED MOLECULAR CLOUDS:

NO VALUES AVAILABLE

ASSOCIATED MASS IN THE FORM OF DUST:

NO VALUES AVAILABLE

VISUAL EXTINCTION TOWARD CLUSTER (mag):

AV	REF.
2.58	LYN83

B-V COLOR EXCESS (mag):

E(B-V)	REF.
0.86	MFV73
1.01	TUR77
0.86	LYN87

REFERENCES

ABT72 Abt, H. A., and Biggs, E. S. 1972, Bibliography of Stellar Radial Velocities, (Latham Process Corp.: New York).

KAR68 Karimie, M. T. 1968, Bonn Veroff., No. 78.

LDCAL Linear diameter calculated from published ang. diam. and distance.

LYN83 Lynga, G. 1983, Catalogue of Open Cluster Data (3rd edition), available through NSSDC, Greenbelt, Maryland, USA

LYN87 Lynga, G. 1987, Catalogue of Open Cluster Data (5th edition), available through NSSDC, Greenbelt, Maryland, USA

MFV73 Moffat, A. F. J., and Vogt, N. 1973, Astr. Ap. Suppl., 11, 3.

VCIRC Radial velocity estimate based on cluster distance and rotation curve model of Brand 1986 (Ph. D. thesis, Leiden).

TUR77 Turner, D. G. 1977, PASP, 89, 277.

WIL53 Wilson, R. E. 1953, General Catalog of Stellar Radial Velocities, (Washington, D.C.: Carnegie Institution, Pub 601).

WOO71 Wooden, W. H. 1971, Astr. Ap., 13, 218.

CLUSTER IDENTIFICATION:

ALTER et al.: OCL 362
COMMON NAME: NGC 957
DATA BASE NUM: 92

SPATIAL COORDINATES:

L II: 136.34
B II: -2.66

RA(1950.0): 2. 30.0
DEC(1950.0): 57. 19.

RADIAL VELOCITIES (w.r.t. LSR; km/s):
STELLAR:

VELOCITY	REF.
-23.2	VCIRC
-32.2	JOS61
-32.2	HAG70
-40.2	HUM78
-33.2	WRA83
-33.2	LYN87
-33.2	HRO87

H II REGION:

NO VALUES AVAILABLE

CO CLOUDS:

NO VALUES AVAILABLE

PROPER MOTION (arcsec/100 yr):

NO VALUES AVAILABLE

DISTANCE FROM SOLAR NEIGHBORHOOD (kpc):

DIST	REF.
2.25	JOH61
1.91	HOA65
2.10	LIN68
2.20	HAG70
2.10	BEC71
1.85	GIM80
2.03	LYN87

ANGULAR DIAMETER (arcmin):

ANG D	REF.
8.5	LIN68
19.0	ALT70
8.0	HAG70
9.0	BEC71
11.0	LYN83

LINEAR DIAMETER (pc):

LIN D	REF.
6.6	LDCAL
7.0	LYN83

AGE ESTIMATES:
AGE (Myr):

AGE	REF.
16.	LYN83
14.	MER86
12.	LYN87

EARLIEST MS SPECTRAL TYPE:

eSpT	REF.
b1	JOH61
B1	HOA65
B1	BEC71
B1	MER81
B1	LYN83
b0	LYN83

MS TURNOFF COLOR:

(B-V)	REF.
-0.26	JOH61
-0.25	HAG70
-0.25	LYN87

MASSES (SOLAR MASS UNITS):
STELLAR MASS:

MASS	REF.
2.64E+03	SCH63
5.11E+02	RED71
5.18E+02	BRU83
2.51E+03	LYN83

MASS IN ASSOCIATED H I CLOUDS:

NO VALUES AVAILABLE

IONIZED HYDROGEN MASS:

NO VALUES AVAILABLE

MASS IN ASSOCIATED MOLECULAR CLOUDS:

NO VALUES AVAILABLE

ASSOCIATED MASS IN THE FORM OF DUST:

NO VALUES AVAILABLE

VISUAL EXTINCTION TOWARD CLUSTER (mag):

AV	REF.
2.40	NEC67
2.34	BEC71
2.34	LYN83

B-V COLOR EXCESS (mag):

E(B-V)	REF.
0.80	JOH61
0.80	BUS63
0.77	STA68
0.80	POL70
0.80	HAG70
0.80	LYN87

REFERENCES

ALT70 Alter, G., Ruprecht, J., and Vanysek, V. 1970, The Catalog of Star Clusters and Associations (Budapest: Akad Kiado).
BEC71 Becker, W. 1971, Astr. Ap. Suppl., 4, 241.
BRU83 Bruch, A., and Sanders, W. L. 1983, Astr. Ap., 121, 237.
BUS63 Buscombe, W. 1963, Mt. Stromlo Mimeogram, No. 6, pg. 24.
GIM80 Gimenez, A., and Garcia-Pelayo, J. 1980, Astr. Ap. Suppl., 41, 9.
HAG70 Hagen, G. L. 1970, D. D. O. Pub., Univ. Toronto, 4.
HOA65 Hoag, A. A., and Applequist, N. L. 1965, Ap. J. Suppl., 12, 215.
HRO87 Hron, J. 1987, Astr. Ap., 176, 34.
HUM78 Humphreys, R. M. 1978, Ap. J. Suppl., 38, 309.
JOS61 Johnson, H. L., and Svolopoulos, S. N. 1961, Ap. J., 134, 868.
JOH61 Johnson, H. L., Hoag, A. A., Iriarte, B., Mitchell, R. I., and Hallam, K. L. 1961, Lowell Obs. Bull., 5, 133.
LIN68 Lindoff, U. 1968, Arkiv Astr., 5, 1.
LDCAL Linear diameter calculated from published ang. diam. and distance.
LYN83 Lynga, G. 1983, Catalogue of Open Cluster Data (3rd edition), available through NSSDC, Greenbelt, Maryland, USA
LYN87 Lynga, G. 1987, Catalogue of Open Cluster Data (5th edition), available through NSSDC, Greenbelt, Maryland, USA
MER81 Mermilliod, J.-C. 1981, Astr. Ap., 97, 235.
MER86 Mermilliod, J.-C., and Maeder, A. 1986, Astr. Ap., 158, 45.
NEC67 Neckel, T. 1967, Heid. Ver., 19, 115.
POL70 Polishchuk, E. P. 1970, Astr. Astrofiz., 9, 17.
VCIRC Radial velocity estimate based on cluster distance and rotation curve model of Brand 1986 (Ph. D. thesis, Leiden).
RED71 Reddish, V. C., and Sloan, C. 1971, Observatory, 91, 70.
SCH63 Schmidt, von K.-H. 1963, Ast. Nach., 287, 41.
STA68 Starikova, G. A. 1969, Sov. Astr., 12, 632.
WRA83 Wramdemark, S. 1983, private communication.

CLUSTER IDENTIFICATION:

ALTER et al.: OCL 364
COMMON NAME: IC 1848
SHARPLESS: S199
WESTERHOUT: W 5
MEMBER OF ASSOC.: CAS OB6
DATA BASE NUM: 93

SPATIAL COORDINATES:

L II: 137.19
B II: 0.92

RA(1950.0): 2. 47.3
DEC(1950.0): 60. 14.

RADIAL VELOCITIES (w.r.t. LSR; km/s):
STELLAR:

VELOCITY	REF.
-24.0	VCIRC
-14.0	JOS61
-19.0	WRA83
-19.0	LYN87
-19.0	HRO87

H II REGION:

VELOCITY	REF.
-28.8	COU66
-45.1	COU66
-34.6	COU66
-37.0	DIE67
-38.0	HAP76
-37.6	ISR78
-38.9	PED80
-34.0	PIS84

CO CLOUDS:

VELOCITY	REF.
-38.7	LOR78
-39.0	BLI82
-38.0	LEI88

PROPER MOTION (arcsec/100 yr):

NO VALUES AVAILABLE

DISTANCE FROM SOLAR NEIGHBORHOOD (kpc):

DIST	REF.
2.20	JOH61
2.20	HAG70
2.31	BEC71
2.29	MOF72
2.10	FIC84
2.29	LYN87

ANGULAR DIAMETER (arcmin):

ANG D	REF.
12.0	ALT70
48.0	ALT70
22.0	BEC71
18.0	MOF72
12.0	LYN83

LINEAR DIAMETER (pc):

LIN D	REF.
7.5	LDCAL
10.4	LOH71
15.0	BEC71
12.0	MOF72
7.7	LYN83

AGE ESTIMATES:
AGE (Myr):

AGE	REF.
1.	MOF72
1.	VAL79
1.	LYN83
10.	LYN87

EARLIEST MS SPECTRAL TYPE:

eSpT	REF.
o9	JOH61
O7	HOA65
O9	CON71
O7	MOF72
o5	MOF72
o6	MOF72
O7	LYN83
O6.5	FEI86

MS TURNOFF COLOR:

(B-V)	REF.
-0.29	JOH61
-0.30	HAG70
-0.35	MOF72
-0.35	LYN87

MASSES (SOLAR MASS UNITS):
STELLAR MASS:

MASS	REF.
1.58E+03	SCH63
2.78E+02	RED71
3.95E+02	LOH72
2.82E+02	BRU83
1.58E+03	LYN83

MASS IN ASSOCIATED H I CLOUDS:

NO VALUES AVAILABLE

IONIZED HYDROGEN MASS:

MASS	REF.
1.70E+03	SCH69
3.50E+03	SCH71
4.60E+03	VAL79

MASS IN ASSOCIATED MOLECULAR CLOUDS:

MASS	REF.
1.80E+03	LOR78
3.80E+03	LOR78
1.00E+05	WIL83
8.70E+04	LEI88
8.50E+04	LEI88

ASSOCIATED MASS IN THE FORM OF DUST:

NO VALUES AVAILABLE

VISUAL EXTINCTION TOWARD CLUSTER (mag):

AV	REF.
1.83	NEC67
1.98	BEC71
1.98	LYN83

B-V COLOR EXCESS (mag):

E(B-V)	REF.
0.61	JOH61
0.66	HOA65
0.60	STA68

0.60	POL70
0.61	HAG70
0.72	MOF72
0.72	LYN87

REFERENCES

ALT70 Alter, G., Ruprecht, J., and Vanysek, V. 1970, The Catalog of Star Clusters and Associations (Budapest: Akad Kiado).
BEC71 Becker, W. 1971, Astr. Ap. Suppl., 4, 241.
BLI82 Blitz, L., Fich, M. and Stark, A. A. 1982, Ap. J. Suppl., 49, 183.
BRU83 Bruch, A., and Sanders, W. L. 1983, Astr. Ap., 121, 237.
CON71 Conti, P. S., and Alschuler, W. R. 1971, Ap. J., 170, 325.
COU66 Courtes, G., Cruvellier, P., and Georgelin, Y. 1966, J. des Obs., 49, 329.
DIE67 Dieter, N. H. 1967, Ap. J., 150, 435.
FEI86 Feinstein, A., Vazquez, R. A., and Benvenuto, O. G. 1986, Astr. Ap., 159, 223.
FIC84 Fich, M., and Blitz, L. 1984, Ap. J., 279, 125.
HAG70 Hagen, G. L. 1970, D. D. O. Pub., Univ. Toronto, 4.
HAP76 Hart, L., and Pedlar, A. 1976, MNRAS, 176, 135.
HOA65 Hoag, A. A., and Applequist, N. L. 1965, Ap. J. Suppl., 12, 215.
HRO87 Hron, J. 1987, Astr. Ap., 176, 34.
ISR78 Israel, F. P. 1978, Astr. Ap., 70, 769.
JOS61 Johnson, H. L., and Svolopoulos, S. N. 1961, Ap. J., 134, 868.
JOH61 Johnson, H. L., Hoag, A. A., Iriarte, B., Mitchell, R. I., and Hallam, K. L. 1961, Lowell Obs. Bull., 5, 133.
LEI88 Leisawitz, D., Thaddeus, P., and Bash, F. N. 1988, in preparation for submission to Ap. J. Suppl.
LDCAL Linear diameter calculated from published ang. diam. and distance.
LOH71 Lohmann, W. 1971, Astr. Nach., 292, 193.
LOH72 Lohmann, W. 1972, Astr. Nach., 293, 259.
LOR78 Loren, R. B., and Wootten, H. A. 1978, Ap. J. (Letters), 225, L81.
LYN83 Lynga, G. 1983, Catalogue of Open Cluster Data (3rd edition), available through NSSDC, Greenbelt, Maryland, USA
LYN87 Lynga, G. 1987, Catalogue of Open Cluster Data (5th edition), available through NSSDC, Greenbelt, Maryland, USA
MOF72 Moffat, A. F. J. 1972, Astr. Ap. Suppl., 7, 355.
NEC67 Neckel, T. 1967, Heid. Ver., 19, 115.
PED80 Pedlar, A. 1980, MNRAS, 192, 179.
PIS84 Pismis, P., Hasse, I., and Moreno, M. 1984, BAAS, 16, 959.
POL70 Polishchuk, E. P. 1970, Astr. Astrofiz., 9, 17.
VCIRC Radial velocity estimate based on cluster distance and rotation curve model of Brand 1986 (Ph. D. thesis, Leiden).
RED71 Reddish, V. C., and Sloan, C. 1971, Observatory, 91, 70.
SCH63 Schmidt, von K.-H. 1963, Ast. Nach., 287, 41.
SCH69 Schwartz, R. 1969, A G Mitt., 27, 178.
SCH71 Schwartz, R. 1971, Ap. Sp. Sci., 14, 286.
STA68 Starikova, G. A. 1969, Sov. Astr., 12, 632.
VAL79 Vallee, J. P., Hughes, V. A., and Viner, M. R. 1979, Astr. Ap., 80, 186.
WIL83 Wilking, B. A., Harvey, P. M., Lada, C. J., Joy, M., and Doering, C. R. 1984, Ap. J., 279, 291.
WRA83 Wramdemark, S. 1983, private communication.

CLUSTER IDENTIFICATION:

ALTER et al.: OCL 383
COMMON NAME: NGC 1502
MEMBER OF ASSOC.: CAM OB1
DATA BASE NUM: 94

SPATIAL COORDINATES:

L II: 143.65
B II: 7.62

RA(1950.0): 4. 3.3
DEC(1950.0): 62. 12.

RADIAL VELOCITIES (w.r.t. LSR; km/s):
STELLAR:

VELOCITY	REF.
-9.9	VCIRC
-10.2	JOS61
8.8	BRO64
6.8	PAL77
0.2	HUM78
-16.2	WRA83
-16.2	LYN87
-16.2	HRO87

H II REGION:

VELOCITY	REF.
-17.0	DAV66

CO CLOUDS:

NO VALUES AVAILABLE

PROPER MOTION (arcsec/100 yr):

MU X	MU Y	REF.
-0.390	-0.030	PAL77

DISTANCE FROM SOLAR NEIGHBORHOOD (kpc):

DIST	REF.
0.88	JOH61
0.88	NEC67
0.88	LIN68
0.90	HAG70
0.88	SCH71
0.86	BEC71
0.74	NIC81
0.81	LYN87
0.96	REI87

ANGULAR DIAMETER (arcmin):

ANG D	REF.
6.0	LIN68
6.0	ALT70
15.0	ALT70
8.0	BEC71
8.0	LYN83

LINEAR DIAMETER (pc):

LIN D	REF.
2.1	LDCAL
1.5	LIN68
2.0	BEC71
2.2	LYN83

AGE ESTIMATES:
AGE (Myr):

AGE	REF.
1.	SAN63
3.	BLA64
16.	LIN68
20.	LYN83
7.	MER86
11.	REI87
10.	LYN87

EARLIEST MS SPECTRAL TYPE:

eSpT	REF.
b0	JOH61
O9	SAN63
B1	HOA65
B0	BEC71
B0	LYN83
b0	LYN83

MS TURNOFF COLOR:

(B-V)	REF.
-0.29	JOH61
-0.30	HAG70
-0.22	REI87
-0.30	LYN87

MASSES (SOLAR MASS UNITS):
STELLAR MASS:

MASS	REF.
1.24E+03	SCH63
8.00E+02	BLA64
2.52E+02	RED71
1.26E+02	LOH72
2.56E+02	BRU83
1.26E+03	LYN83

MASS IN ASSOCIATED H I CLOUDS:

NO VALUES AVAILABLE

IONIZED HYDROGEN MASS:

NO VALUES AVAILABLE

MASS IN ASSOCIATED MOLECULAR CLOUDS:

NO VALUES AVAILABLE

ASSOCIATED MASS IN THE FORM OF DUST:

NO VALUES AVAILABLE

VISUAL EXTINCTION TOWARD CLUSTER (mag):

AV	REF.
2.31	DLU65
2.31	NEC67
2.22	BEC71
2.22	LYN83

B-V COLOR EXCESS (mag):

E(B-V)	REF.
0.77	JOH61
0.80	BUS63
0.71	STA68
0.78	POL70
0.77	HAG70
0.79	NIC81
0.78	REI87
0.77	LYN87

REFERENCES

ALT70 Alter, G., Ruprecht, J., and Vanysek, V. 1970, The Catalog of Star Clusters and Associations (Budapest: Akad Kiado).
BEC71 Becker, W. 1971, Astr. Ap. Suppl., 4, 241.
BLA64 Blaauw, A. 1964, Ann. Rev. Astr. Ap., 2, 213.
BRO64 Bronnikova, N. M. 1964, Pulkova Izv., 23, 139.
BRU83 Bruch, A., and Sanders, W. L. 1983, Astr. Ap., 121, 237.
BUS63 Buscombe, W. 1963, Mt. Stromlo Mimeogram, No. 6, pg. 24.
DAV66 Davies, R. D., and Tovmassian, H. M. 1966, MNRAS, 132, 283.
DLU65 Dluzhnevskaya, O. B. 1965, Nautch. Inf., No. 2.
HAG70 Hagen, G. L. 1970, D. D. O. Pub., Univ. Toronto, 4.
HOA65 Hoag, A. A., and Applequist, N. L. 1965, Ap. J. Suppl., 12, 215.
HRO87 Hron, J. 1987, Astr. Ap., 176, 34.
HUM78 Humphreys, R. M. 1978, Ap. J. Suppl., 38, 309.
JOS61 Johnson, H. L., and Svolopoulos, S. N. 1961, Ap. J., 134, 868.
JOH61 Johnson, H. L., Hoag, A. A., Iriarte, B., Mitchell, R. I., and Hallam, K. L. 1961, Lowell Obs. Bull., 5, 133.
LIN68 Lindoff, U. 1968, Arkiv Astr., 5, 1.
LDCAL Linear diameter calculated from published ang. diam. and distance.
LOH72 Lohmann, W. 1972, Astr. Nach., 293, 259.
LYN83 Lynga, G. 1983, Catalogue of Open Cluster Data (3rd edition), available through NSSDC, Greenbelt, Maryland, USA
LYN87 Lynga, G. 1987, Catalogue of Open Cluster Data (5th edition), available through NSSDC, Greenbelt, Maryland, USA
MER86 Mermilliod, J.-C., and Maeder, A. 1986, Astr. Ap., 158, 45.
NEC67 Neckel, T. 1967, Heid. Ver., 19, 115.
NIC81 Nicolet, B. 1981, Astr. Ap., 104, 185.
PAL77 Palous, J., Ruprecht, J., Dluzhnevskaya, O. B., and Piskunov, T. 1977, Astr. Ap., 61, 27.
POL70 Polishchuk, E. P. 1970, Astr. Astrofiz., 9, 17.
VCIRC Radial velocity estimate based on cluster distance and rotation curve model of Brand 1986 (Ph. D. thesis, Leiden).
RED71 Reddish, V. C., and Sloan, C. 1971, Observatory, 91, 70.
REI87 Reimann, H.-G., and Pfau, W. 1987, Astr. Nach., 308, 111.
SAN63 Sandage, A. 1963, Ap. J., 138, 863.
SCH63 Schmidt, von K.-H. 1963, Ast. Nach., 287, 41.
SCH71 Schwartz, R. 1971, Ap. Sp. Sci., 14, 286.
STA68 Starikova, G. A. 1969, Sov. Astr., 12, 632.
WRA83 Wramdemark, S. 1983, private communication.

CLUSTER IDENTIFICATION:

ALTER et al.: OCL 394
COMMON NAME: NGC 1444
MEMBER OF ASSOC.: CAM OB1
DATA BASE NUM: 95

SPATIAL COORDINATES:

L II: 148.16
B II: -1.29

RA(1950.0): 3. 45.6
DEC(1950.0): 52. 31.

RADIAL VELOCITIES (w.r.t. LSR; km/s):
STELLAR:

VELOCITY	REF.
-10.1	VCIRC
1.7	HUM78
1.2	WRA83
1.2	LYN87
1.2	HRO87

H II REGION:

NO VALUES AVAILABLE

CO CLOUDS:

VELOCITY	REF.
-25.6	LEI88
0.2	LEI88
5.2	LEI88

PROPER MOTION (arcsec/100 yr):

NO VALUES AVAILABLE

DISTANCE FROM SOLAR NEIGHBORHOOD (kpc):

DIST	REF.
1.00	JOH61
1.00	NEC67
1.12	LIN68
1.10	SCH69
1.00	HAG70
0.93	BEC71
0.94	LYN87

ANGULAR DIAMETER (arcmin):

ANG D	REF.
6.5	LIN68
11.0	ALT70
12.0	HAG70
3.5	BEC71
4.0	LYN83

LINEAR DIAMETER (pc):

LIN D	REF.
1.1	LDCAL
2.1	LIN68
3.5	HAG70
0.9	BEC71
1.2	LYN83

AGE ESTIMATES:
AGE (Myr):

AGE	REF.
162.	LIN68
25.	LYN83
41.	LYN87

EARLIEST MS SPECTRAL TYPE:

eSpT	REF.
o	JOH61
B0	BEC71
B0	LYN83
b2	LYN83

MS TURNOFF COLOR:

(B-V)	REF.
-0.32	JOH61
-0.20	HAG70
-0.20	LYN87

MASSES (SOLAR MASS UNITS):
STELLAR MASS:

MASS	REF.
6.65E+02	SCH63
2.59E+02	RED71
2.62E+02	BRU83
6.31E+02	LYN83

MASS IN ASSOCIATED H I CLOUDS:

NO VALUES AVAILABLE

IONIZED HYDROGEN MASS:

MASS	REF.
1.60E+01	SCH69
5.00E+00	SCH71

MASS IN ASSOCIATED MOLECULAR CLOUDS:

MASS	REF.
1.80E+03	LEI88

ASSOCIATED MASS IN THE FORM OF DUST:

NO VALUES AVAILABLE

VISUAL EXTINCTION TOWARD CLUSTER (mag):

AV	REF.
2.10	NEC67
2.22	BEC71
2.22	LYN83

B-V COLOR EXCESS (mag):

E(B-V)	REF.
0.70	JOH61
0.70	BUS63
0.70	STA68
0.67	POL70
0.70	HAG70
0.70	LYN87

REFERENCES

ALT70 Alter, G., Ruprecht, J., and Vanysek, V. 1970, The Catalog of Star Clusters and Associations (Budapest: Akad Kiado).
BEC71 Becker, W. 1971, Astr. Ap. Suppl., 4, 241.
BRU83 Bruch, A., and Sanders, W. L. 1983, Astr. Ap., 121, 237.
BUS63 Buscombe, W. 1963, Mt. Stromlo Mimeogram, No. 6, pg. 24.
HAG70 Hagen, G. L. 1970, D. D. O. Pub., Univ. Toronto, 4.
HRO87 Hron, J. 1987, Astr. Ap., 176, 34.
HUM78 Humphreys, R. M. 1978, Ap. J. Suppl., 38, 309.
JOH61 Johnson, H. L., Hoag, A. A., Iriarte, B., Mitchell, R. I., and Hallam, K. L. 1961, Lowell Obs. Bull., 5, 133.
LEI88 Leisawitz, D., Thaddeus, P., and Bash, F. N. 1988, in preparation for submission to Ap. J. Suppl.
LIN68 Lindoff, U. 1968, Arkiv Astr., 5, 1.
LDCAL Linear diameter calculated from published ang. diam. and distance.
LYN83 Lynga, G. 1983, Catalogue of Open Cluster Data (3rd edition), available through NSSDC, Greenbelt, Maryland, USA
LYN87 Lynga, G. 1987, Catalogue of Open Cluster Data (5th edition), available through NSSDC, Greenbelt, Maryland, USA
NEC67 Neckel, T. 1967, Heid. Ver., 19, 115.
POL70 Polishchuk, E. P. 1970, Astr. Astrofiz., 9, 17.
VCIRC Radial velocity estimate based on cluster distance and rotation curve model of Brand 1986 (Ph. D. thesis, Leiden).
RED71 Reddish, V. C., and Sloan, C. 1971, Observatory, 91, 70.
SCH63 Schmidt, von K.-H. 1963, Ast. Nach., 287, 41.
SCH69 Schwartz, R. 1969, A G Mitt., 27, 178.
SCH71 Schwartz, R. 1971, Ap. Sp. Sci., 14, 286.
STA68 Starikova, G. A. 1969, Sov. Astr., 12, 632.
WRA83 Wramdemark, S. 1983, private communication.

CLUSTER IDENTIFICATION:

ALTER et al.: OCL 403
COMMON NAME: NGC 1624
SHARPLESS: S212
DATA BASE NUM: 96

SPATIAL COORDINATES:

L II: 155.35 RA(1950.0): 4. 36.6
B II: 2.58 DEC(1950.0): 50. 21.

RADIAL VELOCITIES (w.r.t. LSR; km/s):
STELLAR:

VELOCITY	REF.
-35.8	VCIRC

H II REGION:

VELOCITY	REF.
-39.4	GE070

CO CLOUDS:

VELOCITY	REF.
-35.3	BLI82
-35.0	JAC82
-35.8	LEI88

PROPER MOTION (arcsec/100 yr):

NO VALUES AVAILABLE

DISTANCE FROM SOLAR NEIGHBORHOOD (kpc):

DIST	REF.
3.00	MAR51
5.00	GE073
6.00	MOF79
6.00	FIC84

ANGULAR DIAMETER (arcmin):

ANG D	REF.
1.9	COL31
2.0	MAR51
1.9	LYN83

LINEAR DIAMETER (pc):

LIN D	REF.
3.3	LDCAL
1.7	MAR51

AGE ESTIMATES:
AGE (Myr):

NO VALUES AVAILABLE

EARLIEST MS SPECTRAL TYPE:

eSpT	REF.
OE5	HUB22
O5	MAY64
O6.5	MAY73
O5.5	MOF79
O	LYN83

MS TURNOFF COLOR:

(B-V)	REF.
-0.32	MOF79

MASSES (SOLAR MASS UNITS):
STELLAR MASS:

NO VALUES AVAILABLE

MASS IN ASSOCIATED H I CLOUDS:

MASS	REF.
1.30E+03	WAL86

IONIZED HYDROGEN MASS:

MASS	REF.
4.50E+02	WAL86

MASS IN ASSOCIATED MOLECULAR CLOUDS:

MASS	REF.
2.90E+03	JAC82
5.30E+04	LEI88

ASSOCIATED MASS IN THE FORM OF DUST:

NO VALUES AVAILABLE

VISUAL EXTINCTION TOWARD CLUSTER (mag):

NO VALUES AVAILABLE

B-V COLOR EXCESS (mag):

E(B-V)	REF.
0.90	MOF79

REFERENCES

BLI82 Blitz, L., Fich, M. and Stark, A. A. 1982, Ap. J. Suppl., 49, 183.
COL31 Collinder, P. 1931, Ann. Lund Obs., No. 2.
FIC84 Fich, M., and Blitz, L. 1984, Ap. J., 279, 125.
GE073 Georgelin, Y. M., Georgelin, Y. P., and Roux, S. 1973, Astr. Ap., 25, 337.
GE070 Georgelin, Y. P., and Georgelin, Y. M. 1970, Astr. Ap., 6, 349.
HUB22 Hubble, E. 1922, Ap. J., 56, 162.
JAC82 Jackson, P. D., and Sewall, J. R. 1982, in Regions of Recent Star Formation, eds. Roger/Dewdney, (Dordrecht: Reidel)
LEI88 Leisawitz, D., Thaddeus, P., and Bash, F. N. 1988, in preparation for submission to Ap. J. Suppl.
LDCAL Linear diameter calculated from published ang. diam. and distance.
LYN83 Lynga, G. 1983, Catalogue of Open Cluster Data (3rd edition), available through NSSDC, Greenbelt, Maryland, USA
MAR51 Markarian, V. E. 1951, Biur. Soob., 9, 7.
MAY64 Mayer, P. 1964, Pub. Astr. Inst. Univ. Charles (Prague), S2, 37-41.
MAY73 Mayer, P., and Macak, P. 1973, Bull. Astr. Inst. Czech., 24, 50.
MOF79 Moffat, A. F. J., FitzGerald, M. P., and Jackson, P. D. 1979, Astr. Ap. Suppl., 38, 197.
VCIRC Radial velocity estimate based on cluster distance and rotation curve model of Brand 1986 (Ph. D. thesis, Leiden).
WAL86 Wall, W. F., and McCutcheon, W. H. 1986, J. R. Ast. Soc. Canada, 80, 275.

CLUSTER IDENTIFICATION:

ALTER et al.:	OCL 404
COMMON NAME:	BERK 11
SHARPLESS:	S213
DATA BASE NUM:	97

SPATIAL COORDINATES:

L II:	157.08	RA(1950.0):	4. 17.0
B II:	-3.65	DEC(1950.0):	44. 48.

RADIAL VELOCITIES (w.r.t. LSR; km/s):

STELLAR:

VELOCITY	REF.
-16.2	VCIRC

H II REGION:

NO VALUES AVAILABLE

CO CLOUDS:

VELOCITY	REF.
-31.0	BLI82
-31.5	LEI88
-22.2	LEI88
-8.6	LEI88
-0.7	LEI88

PROPER MOTION (arcsec/100 yr):

NO VALUES AVAILABLE

DISTANCE FROM SOLAR NEIGHBORHOOD (kpc):

DIST	REF.
2.20	JAC80
7.36	FIC84
2.19	LYN87

ANGULAR DIAMETER (arcmin):

ANG D	REF.
6.0	ALT70
5.4	JAC80
6.0	LYN83

LINEAR DIAMETER (pc):

LIN D	REF.
3.8	LDCAL
3.5	JAC80
3.8	LYN83

AGE ESTIMATES:

AGE (Myr):

AGE	REF.
30.	JAC80
30.	LYN83
10.	LYN87

EARLIEST MS SPECTRAL TYPE:

eSpT	REF.
b4	JAC80

MS TURNOFF COLOR:

(B-V)	REF.
-0.31	LYN87

MASSES (SOLAR MASS UNITS):

STELLAR MASS:

NO VALUES AVAILABLE

MASS IN ASSOCIATED H I CLOUDS:

NO VALUES AVAILABLE

IONIZED HYDROGEN MASS:

NO VALUES AVAILABLE

MASS IN ASSOCIATED MOLECULAR CLOUDS:

MASS	REF.
2.30E+04	LEI88

ASSOCIATED MASS IN THE FORM OF DUST:

NO VALUES AVAILABLE

VISUAL EXTINCTION TOWARD CLUSTER (mag):

NO VALUES AVAILABLE

B-V COLOR EXCESS (mag):

E(B-V)	REF.
0.96	JAC80
0.96	LYN87

REFERENCES

ALT70 Alter, G., Ruprecht, J., and Vanysek, V. 1970, The Catalog of Star Clusters and Associations (Budapest: Akad Kiado).
BLI82 Blitz, L., Fich, M. and Stark, A. A. 1982, Ap. J. Suppl., 49, 183.
FIC84 Fich, M., and Blitz, L. 1984, Ap. J., 279, 125.
JAC80 Jackson, P. D., Fitzgerald, M. P., and Moffat, A. F. J. 1980, Astr. Ap. Suppl., 41, 211.
LEI88 Leisawitz, D., Thaddeus, P., and Bash, F. N. 1988, in preparation for submission to Ap. J. Suppl.
LDCAL Linear diameter calculated from published ang. diam. and distance.
LYN83 Lynga, G. 1983, Catalogue of Open Cluster Data (3rd edition), available through NSSDC, Greenbelt, Maryland, USA
LYN87 Lynga, G. 1987, Catalogue of Open Cluster Data (5th edition), available through NSSDC, Greenbelt, Maryland, USA
VCIRC Radial velocity estimate based on cluster distance and rotation curve model of Brand 1986 (Ph. D. thesis, Leiden).

CLUSTER IDENTIFICATION:

ALTER et al.: OCL 406
COMMON NAME: NGC 1605
DATA BASE NUM: 98

SPATIAL COORDINATES:

L II: 158.61
B II: -1.58
RA(1950.0): 4. 31.4
DEC(1950.0): 45. 9.

RADIAL VELOCITIES (w.r.t. LSR; km/s):
STELLAR:

VELOCITY	REF.
-18.4	VCIRC

H II REGION:

NO VALUES AVAILABLE

CO CLOUDS:

VELOCITY	REF.
-26.3	LEI88

PROPER MOTION (arcsec/100 yr):

NO VALUES AVAILABLE

DISTANCE FROM SOLAR NEIGHBORHOOD (kpc):

DIST	REF.
1.48	BAR61
2.75	FAN70
2.72	BEC71
2.56	LYN87

ANGULAR DIAMETER (arcmin):

ANG D	REF.
4.5	ALT70
7.0	ALT70
4.5	FAN70
4.5	BEC71
5.0	LYN83

LINEAR DIAMETER (pc):

LIN D	REF.
4.0	LDCAL
4.1	LYN83

AGE ESTIMATES:
AGE (Myr):

AGE	REF.
126.	LYN83
41.	LYN87

EARLIEST MS SPECTRAL TYPE:

eSpT	REF.
b3	FAN70
b3	BEC71
b3	LYN83

MS TURNOFF COLOR:

(B-V)	REF.
-0.09	FAN70
-0.20	LYN87

MASSES (SOLAR MASS UNITS):
STELLAR MASS:

NO VALUES AVAILABLE

MASS IN ASSOCIATED H I CLOUDS:

NO VALUES AVAILABLE

IONIZED HYDROGEN MASS:

NO VALUES AVAILABLE

MASS IN ASSOCIATED MOLECULAR CLOUDS:

MASS	REF.
1.30E+04	LEI88

ASSOCIATED MASS IN THE FORM OF DUST:

NO VALUES AVAILABLE

VISUAL EXTINCTION TOWARD CLUSTER (mag):

AV	REF.
3.65	BEC71
3.65	LYN83

B-V COLOR EXCESS (mag):

E(B-V)	REF.
0.97	LYN87

REFERENCES

ALT70 Alter, G., Ruprecht, J., and Vanysek, V. 1970, The Catalog of Star Clusters and Associations (Budapest: Akad Kiado).
BAR61 Barkhatova, K. A., and Chentsov, E. L. 1961, Sov. Astr., 4, 812.
BEC71 Becker, W. 1971, Astr. Ap. Suppl., 4, 241.
FAN70 Fang, C. 1970, Astr. Ap., 4, 75.
LEI88 Leisawitz, D., Thaddeus, P., and Bash, F. N. 1988, in preparation for submission to Ap. J. Suppl.
LDCAL Linear diameter calculated from published ang. diam. and distance.
LYN83 Lynga, G. 1983, Catalogue of Open Cluster Data (3rd edition), available through NSSDC, Greenbelt, Maryland, USA
LYN87 Lynga, G. 1987, Catalogue of Open Cluster Data (5th edition), available through NSSDC, Greenbelt, Maryland, USA
VCIRC Radial velocity estimate based on cluster distance and rotation curve model of Brand 1986 (Ph. D. thesis, Leiden).

CLUSTER IDENTIFICATION:

ALTER et al.: OCL 409
COMMON NAME: IC 348
MEMBER OF ASSOC.: PER OB2
DATA BASE NUM: 99

SPATIAL COORDINATES:

L II: 160.43
B II: -17.74

RA(1950.0): 3. 41.4
DEC(1950.0): 32. 8.

RADIAL VELOCITIES (w.r.t. LSR; km/s):
STELLAR:

VELOCITY	REF.
-2.5	VCIRC
11.3	WRA83
11.3	LYN87

H II REGION:

NO VALUES AVAILABLE

CO CLOUDS:

VELOCITY	REF.
8.0	SNG74
6.5	BAC84

PROPER MOTION (arcsec/100 yr):

NO VALUES AVAILABLE

DISTANCE FROM SOLAR NEIGHBORHOOD (kpc):

DIST	REF.
0.40	BUS63
0.38	LIN68
0.38	HAG70
0.35	VSH71
0.32	STR74
0.41	GUE77
0.24	FEN78
0.23	NIC81
0.20	BAC84
0.33	LYN87

ANGULAR DIAMETER (arcmin):

ANG D	REF.
7.0	LYN83

LINEAR DIAMETER (pc):

LIN D	REF.
0.7	LDCAL
0.9	LYN83

AGE ESTIMATES:
AGE (Myr):

AGE	REF.
126.	LIN68
5.	STR74
20.	STR74
126.	LYN83
18.	LYN87

EARLIEST MS SPECTRAL TYPE:

eSpT	REF.
B5	HAR54
B6	LYN83

MS TURNOFF COLOR:

(B-V)	REF.
0.00	HAG70
-0.25	STR74
-0.24	LYN87

MASSES (SOLAR MASS UNITS):
STELLAR MASS:

MASS	REF.
4.00E+01	BLA62
1.58E+03	LYN83

MASS IN ASSOCIATED H I CLOUDS:

MASS	REF.
2.00E+03	SNG74

IONIZED HYDROGEN MASS:

NO VALUES AVAILABLE

MASS IN ASSOCIATED MOLECULAR CLOUDS:

MASS	REF.
1.00E+04	SNG74
7.00E+02	BAC84
7.45E+03	CER85

ASSOCIATED MASS IN THE FORM OF DUST:

NO VALUES AVAILABLE

VISUAL EXTINCTION TOWARD CLUSTER (mag):

AV	REF.
1.20	LYN83

B-V COLOR EXCESS (mag):

E(B-V)	REF.
0.40	BUS63
0.47	HAG70
0.42	NIC81
0.62	LYN87

REFERENCES

BAC84 Bachiller, R., and Cernicharo, J. 1984, Astr. Ap., 140, 414.
BLA62 Blaauw, A. 1962, in Interstellar Matter in Galaxies, ed. L. Woltjer, (W. A. Benjamin, Inc.: New York).
BUS63 Buscombe, W. 1963, Mt. Stromlo Mimeogram, No. 6, pg. 24.
CER85 Cernicharo, J., Bachiller, R., and Duvert, G. 1985, Astr. Ap., 149, 273.
FEN78 Fenkart, R. P., and Binggeli, B. 1978, Astr. Ap. Suppl., 35, 271.
GUE77 Guetter, H. H. 1977, A. J., 82, 598.
HAG70 Hagen, G. L. 1970, D. D. O. Pub., Univ. Toronto, 4.
HAR54 Harris, D. L., Morgan, W. W., and Roman, N. G. 1954, Ap. J., 119, 622.
LIN68 Lindoff, U. 1968, Arkiv Astr., 5, 1.
LDCAL Linear diameter calculated from published ang. diam. and distance.
LYN83 Lynga, G. 1983, Catalogue of Open Cluster Data (3rd edition), available through NSSDC, Greenbelt, Maryland, USA
LYN87 Lynga, G. 1987, Catalogue of Open Cluster Data (5th edition), available through NSSDC, Greenbelt, Maryland, USA
NIC81 Nicolet, B. 1981, Astr. Ap., 104, 185.
VCIRC Radial velocity estimate based on cluster distance and rotation curve model of Brand 1986 (Ph. D. thesis, Leiden).
SNG74 Sancisi, R., and Goss, W. M. 1974, Astr. Ap., 35, 445.
STR74 Strom, S. E., Strom, K. M., and Carrasco, L. 1974, PASP, 86, 798.
VSH71 van Schewick, H. 1971, Ver. Ast. Inst. Bonn, 84.
WRA83 Wramdemark, S. 1983, private communication.

CLUSTER IDENTIFICATION:

ALTER et al.: OCL 429
COMMON NAME: NGC 1778
MEMBER OF ASSOC.: AUR OB1
DATA BASE NUM: 100

SPATIAL COORDINATES:

L II: 168.88
B II: -2.00

RA(1950.0): 5. 4.7
DEC(1950.0): 36. 59.

RADIAL VELOCITIES (w.r.t. LSR; km/s):
STELLAR:

VELOCITY	REF.
-6.1	VCIRC

H II REGION:

NO VALUES AVAILABLE

CO CLOUDS:

NO VALUES AVAILABLE

PROPER MOTION (arcsec/100 yr):

NO VALUES AVAILABLE

DISTANCE FROM SOLAR NEIGHBORHOOD (kpc):

DIST	REF.
1.38	JOH61
1.38	NEC67
1.40	HAG70
1.12	BEC71
1.67	BAR73
1.70	JOS74
1.64	SPA85
1.48	LYN87

ANGULAR DIAMETER (arcmin):

ANG D	REF.
10.0	LIN68
6.0	ALT70
17.0	ALT70
10.0	BEC71
7.0	LYN83

LINEAR DIAMETER (pc):

LIN D	REF.
3.1	LDCAL
3.3	LIN68
3.3	BEC71
2.8	LYN83

AGE ESTIMATES:
AGE (Myr):

AGE	REF.
32.	LIN68
150.	BAR73
260.	JOS74
158.	LYN83
71.	SPA85
251.	SAG86
129.	LYN87

EARLIEST MS SPECTRAL TYPE:

eSpT	REF.
b8	JOH61
B6	HOA65
b7	BEC71
B7	BAR73
B6	LYN83
b7	LYN83

MS TURNOFF COLOR:

(B-V)	REF.
-0.10	JOH61
-0.10	HAG70
-0.10	BAR73
-0.10	LYN87

MASSES (SOLAR MASS UNITS):
STELLAR MASS:

MASS	REF.
7.34E+02	SCH63
1.70E+02	RED71
3.32E+02	LOH72
1.73E+02	BRU83
7.94E+02	LYN83

MASS IN ASSOCIATED H I CLOUDS:

NO VALUES AVAILABLE

IONIZED HYDROGEN MASS:

NO VALUES AVAILABLE

MASS IN ASSOCIATED MOLECULAR CLOUDS:

NO VALUES AVAILABLE

ASSOCIATED MASS IN THE FORM OF DUST:

NO VALUES AVAILABLE

VISUAL EXTINCTION TOWARD CLUSTER (mag):

AV	REF.
1.02	NEC67
0.99	BEC71
1.02	JOS74
0.99	LYN87

B-V COLOR EXCESS (mag):

E(B-V)	REF.
0.34	JOH61
0.30	BUS63
0.34	STA68
0.31	POL70
0.34	HAG70
0.34	JOS74
0.33	SPA85
0.34	LYN87

REFERENCES

ALT70 Alter, G., Ruprecht, J., and Vanysek, V. 1970, The Catalog of Star Clusters and Associations (Budapest: Akad Kiado).
BAR73 Barbon, R., and Hassan, S. M. 1973, Astr. Ap. Suppl., 10, 1.
BEC71 Becker, W. 1971, Astr. Ap. Suppl., 4, 241.
BRU83 Bruch, A., and Sanders, W. L. 1983, Astr. Ap., 121, 237.
BUS63 Buscombe, W. 1963, Mt. Stromlo Mimeogram, No. 6, pg. 24.
HAG70 Hagen, G. L. 1970, D. D. O. Pub., Univ. Toronto, 4.
HOA65 Hoag, A. A., and Applequist, N. L. 1965, Ap. J. Suppl., 12, 215.
JOH61 Johnson, H. L., Hoag, A. A., Iriarte, B., Mitchell, R. I., and Hallam, K. L. 1961, Lowell Obs. Bull., 5, 133.
JOS74 Joshi, U. C., Sagar, R., and Pandey, P. 1974, B. A. S. India, 2, 34.
LIN68 Lindoff, U. 1968, Arkiv Astr., 5, 1.
LDCAL Linear diameter calculated from published ang. diam. and distance.
LOH72 Lohmann, W. 1972, Astr. Nach., 293, 259.
LYN83 Lynga, G. 1983, Catalogue of Open Cluster Data (3rd edition), available through NSSDC, Greenbelt, Maryland, USA
LYN87 Lynga, G. 1987, Catalogue of Open Cluster Data (5th edition), available through NSSDC, Greenbelt, Maryland, USA
NEC67 Neckel, T. 1967, Heid. Ver., 19, 115.
POL70 Polishchuk, E. P. 1970, Astr. Astrofiz., 9, 17.
VCIRC Radial velocity estimate based on cluster distance and rotation curve model of Brand 1986 (Ph. D. thesis, Leiden).
RED71 Reddish, V. C., and Sloan, C. 1971, Observatory, 91, 70.
SAG86 Sagar, R., Piskunov, A. E., Myakutin, V. I., and Joshi, U. C. 1986, MNRAS, 220, 383.
SCH63 Schmidt, von K.-H. 1963, Ast. Nach., 287, 41.
SPA85 Spassova, N. M., and Baev, P. V. 1985, Ap. Sp. Sci., 112, 111.
STA68 Starikova, G. A. 1969, Sov. Astr., 12, 632.

CLUSTER IDENTIFICATION:

ALTER et al.: OCL 439
COMMON NAME: NGC 1893
ALTERNATE NAME: IC 410
SHARPLESS: S236
MEMBER OF ASSOC.: AUR OB2
DATA BASE NUM: 101

SPATIAL COORDINATES:

L II: 173.59
B II: -1.70

RA(1950.0): 5. 19.4
DEC(1950.0): 33. 21.

RADIAL VELOCITIES (w.r.t. LSR; km/s):

STELLAR:

VELOCITY	REF.
-7.4	VCIRC
-18.7	JOS61
-18.7	HAG70
-16.7	WRA83
-16.7	LYN87
-16.7	HRO87

H II REGION:

VELOCITY	REF.
-3.4	COU66
8.4	COU66
6.3	JOH80
11.3	JOH80
25.3	JOH80

CO CLOUDS:

VELOCITY	REF.
-7.2	BLI82
-6.4	LEI88

PROPER MOTION (arcsec/100 yr):

NO VALUES AVAILABLE

DISTANCE FROM SOLAR NEIGHBORHOOD (kpc):

DIST	REF.
4.00	JOH61
4.17	WAL68
4.00	HAG70
3.70	BEC71
3.98	MOF72
3.60	CUF73
3.20	FIC84
3.72	DAN85
3.96	LYN87

ANGULAR DIAMETER (arcmin):

ANG D	REF.
8.0	HAG70
15.0	BEC71
12.0	MOF72
17.0	CUF73
11.0	LYN83
20.0	DAN85

LINEAR DIAMETER (pc):

LIN D	REF.
12.4	LDCAL
18.0	CUF73
13.0	LYN83
21.6	DAN85

AGE ESTIMATES:

AGE (Myr):

AGE	REF.
0.	CUN68
8.	BAR69
1.	MOF72
1.	LYN83
10.	LYN87

EARLIEST MS SPECTRAL TYPE:

eSpT	REF.
O5	SHA54
o5	JOH61
O5.5	WAL68
O5.5	WAL68
o	BEC71
O5	MOF72
O6	MOF72
O4	HUM78

MS TURNOFF COLOR:

(B-V)	REF.
-0.34	JOH61
-0.20	HAG70
-0.35	MOF72
-0.20	CUF73

MASSES (SOLAR MASS UNITS):

STELLAR MASS:

MASS	REF.
5.55E+03	SCH63
7.13E+02	RED71
7.23E+02	BRU83
6.31E+03	LYN83

MASS IN ASSOCIATED H I CLOUDS:

MASS	REF.
1.15E+03	DOD70

IONIZED HYDROGEN MASS:

NO VALUES AVAILABLE

MASS IN ASSOCIATED MOLECULAR CLOUDS:

MASS	REF.
5.30E+04	LEI88
3.60E+04	LEI88

ASSOCIATED MASS IN THE FORM OF DUST:

MASS	REF.
1.80E+02	DOD70

VISUAL EXTINCTION TOWARD CLUSTER (mag):

AV	REF.
1.77	NEC67
1.68	BEC71
1.20	CUF73
1.68	LYN83

B-V COLOR EXCESS (mag):

E(B-V)	REF.
0.59	JOH61
0.51	STA68
0.60	POL70
0.44	HAG70
0.55	MOF72
0.40	CUF73
0.54	LYN87

REFERENCES

BAR69 Barbaro, G., Dallaporta, N., and Fabris, G. 1969, Ap. Sp. Sci., 3, 123.
BEC71 Becker, W. 1971, Astr. Ap. Suppl., 4, 241.
BLI82 Blitz, L., Fich, M. and Stark, A. A. 1982, Ap. J. Suppl., 49, 183.
BRU83 Bruch, A., and Sanders, W. L. 1983, Astr. Ap., 121, 237.
COU66 Courtes, G., Cruvellier, P., and Georgelin, Y. 1966, J. des Obs., 49, 329.
CUF73 Cuffey, J. 1973, A. J., 78, 747.
CUN68 Cunningham, A. A. 1968, Ap. J., 151, 945.
DAN85 Danilov, V. M., Matkin, N. V., and Pyl'skaya, O. P. 1985, Sov. Astr., 29, 621.
DOD70 D Odorico, S., and Felli, M. 1970, Mem. Soc. Ast. Ital., 41, 89.
FIC84 Fich, M., and Blitz, L. 1984, Ap. J., 279, 125.
HAG70 Hagen, G. L. 1970, D. D. O. Pub., Univ. Toronto, 4.
HRO87 Hron, J. 1987, Astr. Ap., 176, 34.
HUM78 Humphreys, R. M. 1978, Ap. J. Suppl., 38, 309.
JOS61 Johnson, H. L., and Svolopoulos, S. N. 1961, Ap. J., 134, 868.
JOH61 Johnson, H. L., Hoag, A. A., Iriarte, B., Mitchell, R. I., and Hallam, K. L. 1961, Lowell Obs. Bull., 5, 133.
JOH80 Johnson, P. G., and White, N. J. 1980, Ap. Sp. Sci., 73, 411.
LEI88 Leisawitz, D., Thaddeus, P., and Bash, F. N. 1988, in preparation for submission to Ap. J. Suppl.
LDCAL Linear diameter calculated from published ang. diam. and distance.
LYN83 Lynga, G. 1983, Catalogue of Open Cluster Data (3rd edition), available through NSSDC, Greenbelt, Maryland, USA
LYN87 Lynga, G. 1987, Catalogue of Open Cluster Data (5th edition), available through NSSDC, Greenbelt, Maryland, USA
MOF72 Moffat, A. F. J. 1972, Astr. Ap. Suppl., 7, 355.
NEC67 Neckel, T. 1967, Heid. Ver., 19, 115.
POL70 Polishchuk, E. P. 1970, Astr. Astrofiz., 9, 17.
VCIRC Radial velocity estimate based on cluster distance and rotation curve model of Brand 1986 (Ph. D. thesis, Leiden).
RED71 Reddish, V. C., and Sloan, C. 1971, Observatory, 91, 70.
SCH63 Schmidt, von K.-H. 1963, Ast. Nach., 287, 41.
SHA54 Sharpless, S. 1954, Ap. J., 119, 334.
STA68 Starikova, G. A. 1969, Sov. Astr., 12, 632.
WAL68 Walker, G. A. H., and Hodge, S. M. 1968, PASP, 80, 290.
WRA83 Wramdemark, S. 1983, private communication.

CLUSTER IDENTIFICATION:

ALTER et al.: OCL 441
COMMON NAME: NGC 1931
SHARPLESS: S237
MEMBER OF ASSOC.: AUR OB1
DATA BASE NUM: 102

SPATIAL COORDINATES:

L II: 173.90 RA(1950.0): 5. 28.1
B II: 0.28 DEC(1950.0): 34. 13.

RADIAL VELOCITIES (w.r.t. LSR; km/s):
STELLAR:

VELOCITY	REF.
-4.3	VCIRC

H II REGION:

NO VALUES AVAILABLE

CO CLOUDS:

VELOCITY	REF.
-4.3	BLI82
-17.1	LEI88
-3.4	LEI88

PROPER MOTION (arcsec/100 yr):

NO VALUES AVAILABLE

DISTANCE FROM SOLAR NEIGHBORHOOD (kpc):

DIST	REF.
1.66	COL31
3.50	CRA78
1.80	MOF79
1.80	FIC84
2.16	PAN86

ANGULAR DIAMETER (arcmin):

ANG D	REF.
1.0	ALT70
3.0	ALT70
1.0	LYN83

LINEAR DIAMETER (pc):

LIN D	REF.
0.6	LDCAL
3.7	BLI82

AGE ESTIMATES:
AGE (Myr):

AGE	REF.
6.	PAN86

EARLIEST MS SPECTRAL TYPE:

eSpT	REF.
OB	CHO73
B0.5	GLU75
B0	CRA78
B0	MOF79

MS TURNOFF COLOR:

NO VALUES AVAILABLE

MASSES (SOLAR MASS UNITS):
STELLAR MASS:

NO VALUES AVAILABLE

MASS IN ASSOCIATED H I CLOUDS:

NO VALUES AVAILABLE

IONIZED HYDROGEN MASS:

NO VALUES AVAILABLE

MASS IN ASSOCIATED MOLECULAR CLOUDS:

MASS	REF.
8.30E+03	LEI88

ASSOCIATED MASS IN THE FORM OF DUST:

NO VALUES AVAILABLE

VISUAL EXTINCTION TOWARD CLUSTER (mag):

NO VALUES AVAILABLE

B-V COLOR EXCESS (mag):

E(B-V)	REF.
0.70	MOF79
0.73	PAN86

REFERENCES

ALT70 Alter, G., Ruprecht, J., and Vanysek, V. 1970, The Catalog of Star Clusters and Associations (Budapest: Akad Kiado).
BLI82 Blitz, L., Fich, M. and Stark, A. A. 1982, Ap. J. Suppl., 49, 183.
CH073 Chopinet, M., Georgelin, Y. M., and Lortet-Zuckermann, M. C. 1973, Astr. Ap., 29, 225.
COL31 Collinder, P. 1931, Ann. Lund Obs., No. 2.
CRA78 Crampton, D., Georgelin, Y. M., and Georgelin, Y. P. 1978, Astr. Ap., 66, 1.
FIC84 Fich, M., and Blitz, L. 1984, Ap. J., 279, 125.
GLU75 Glushkov, Y. I., Denisyuk, E. K., and Karyagina, Z. V. 1975, Astr. Ap., 39, 481.
LEI88 Leisawitz, D., Thaddeus, P., and Bash, F. N. 1988, in preparation for submission to Ap. J. Suppl.
LDCAL Linear diameter calculated from published ang. diam. and distance.
LYN83 Lynga, G. 1983, Catalogue of Open Cluster Data (3rd edition), available through NSSDC, Greenbelt, Maryland, USA
MOF79 Moffat, A. F. J., FitzGerald, M. P., and Jackson, P. D. 1979, Astr. Ap. Suppl., 38, 197.
PAN86 Pandey, A. K., and Mahra, H. S. 1986, Ap. Sp. Sci., 120, 107.
VCIRC Radial velocity estimate based on cluster distance and rotation curve model of Brand 1986 (Ph. D. thesis, Leiden).

CLUSTER IDENTIFICATION:

ALTER et al.: OCL 445
COMMON NAME: NGC 1960
ALTERNATE NAME: M36
MEMBER OF ASSOC.: AUR OB1
DATA BASE NUM: 103

SPATIAL COORDINATES:

L II: 174.52
B II: 1.04

RA(1950.0): 5. 32.8
DEC(1950.0): 34. 6.

RADIAL VELOCITIES (w.r.t. LSR; km/s):
STELLAR:

VELOCITY	REF.
-2.6	VCIRC
-14.6	JOS61
3.4	BRO64
-12.6	PAL77
-12.6	WRA83
-12.6	LYN87
-12.6	HRO87

H II REGION:

NO VALUES AVAILABLE

CO CLOUDS:

NO VALUES AVAILABLE

PROPER MOTION (arcsec/100 yr):

MU X	MU Y	REF.
0.160	-0.060	PAL77
0.200	-0.660	LAT79
0.650	-0.900	LAT79

DISTANCE FROM SOLAR NEIGHBORHOOD (kpc):

DIST	REF.
1.26	JOH61
1.26	NEC67
1.27	LIN68
1.30	HAG70
1.26	BEC71
1.23	MEB81
1.15	NIC81
1.28	DAN85
1.20	BAR85
1.23	LYN87

ANGULAR DIAMETER (arcmin):

ANG D	REF.
22.0	LIN68
9.0	JON69
12.0	ALT70
16.0	BEC71
12.0	LYN83
15.0	BAR85
43.0	BAR85
40.2	DAN85

LINEAR DIAMETER (pc):

LIN D	REF.
4.4	LDCAL
8.2	LIN68
5.9	BEC71
4.4	LYN83
5.3	BAR85
15.0	DAN85

AGE ESTIMATES:
AGE (Myr):

AGE	REF.
10.	SAN63
29.	LIN68
40.	PAN81
25.	LYN83
32.	BAR85
14.	MER86
41.	LYN87

EARLIEST MS SPECTRAL TYPE:

eSpT	REF.
B2	BER70
B3	BEC71
B3	LYN81
B2	LYN83
b3	LYN83

MS TURNOFF COLOR:

(B-V)	REF.
-0.24	JOH61
-0.20	HAG70

MASSES (SOLAR MASS UNITS):
STELLAR MASS:

MASS	REF.
3.31E+03	SCH63
3.16E+03	LYN83
4.80E+02	BAR85

MASS IN ASSOCIATED H I CLOUDS:

NO VALUES AVAILABLE

IONIZED HYDROGEN MASS:

MASS	REF.
5.00E-01	GLU75

MASS IN ASSOCIATED MOLECULAR CLOUDS:

NO VALUES AVAILABLE

ASSOCIATED MASS IN THE FORM OF DUST:

NO VALUES AVAILABLE

VISUAL EXTINCTION TOWARD CLUSTER (mag):

AV	REF.
0.72	DLU65
0.72	NEC67
0.66	BEC71
0.66	LYN83
0.72	BAR85

B-V COLOR EXCESS (mag):

E(B-V)	REF.
0.24	JOH61
0.20	BUS63
0.24	SCH63
0.22	STA68
0.25	POL70
0.24	HAG70
0.25	NIC81
0.24	BAR85
0.24	LYN87

-0.24 BAR85
-0.20 LYN87

REFERENCES

ALT70 Alter, G., Ruprecht, J., and Vanysek, V. 1970, The Catalog of Star Clusters and Associations (Budapest: Akad Kiado).
BAR85 Barkhatova, K. A., Zakharova, P. E., Shashkina, L. P., Orekhova, L. K. 1985, Sov. Astr., 29, 499.
BEC71 Becker, W. 1971, Astr. Ap. Suppl., 4, 241.
BER70 Bernacca, P. L. 1970, Contr. Obs. Ast. Univ. Padova in Asiago, No. 239.
BRO64 Bronnikova, N. M. 1964, Pulkova Izv., 23, 139.
BUS63 Buscombe, W. 1963, Mt. Stromlo Mimeogram, No. 6, pg. 24.
DAN85 Danilov, V. M., Matkin, N. V., and Pyl'skaya, O. P. 1985, Sov. Astr., 29, 621.
DLU65 Dluzhnevskaya, O. B. 1965, Nautch. Inf., No. 2.
GLU75 Glushkov, Y. I., Denisyuk, E. K., and Karyagina, Z. V. 1975, Astr. Ap., 39, 481.
HAG70 Hagen, G. L. 1970, D. D. O. Pub., Univ. Toronto, 4.
HRO87 Hron, J. 1987, Astr. Ap., 176, 34.
JOS61 Johnson, H. L., and Svolopoulos, S. N. 1961, Ap. J., 134, 868.
JOH61 Johnson, H. L., Hoag, A. A., Iriarte, B., Mitchell, R. I., and Hallam, K. L. 1961, Lowell Obs. Bull., 5, 133.
JON69 Jones, K. G. 1969, J. Brit. Astr. Assoc., 79, 357.
LAT79 Latypov, A. A. 1979, Sov. Astr., 23, 287.
LIN68 Lindoff, U. 1968, Arkiv Astr., 5, 1.
LDCAL Linear diameter calculated from published ang. diam. and distance.
LYN81 Lynga, G. 1981, Catalogue of Open Cluster Data, available through NSSDC, Greenbelt, Maryland, USA
LYN83 Lynga, G. 1983, Catalogue of Open Cluster Data (3rd edition), available through NSSDC, Greenbelt, Maryland, USA
LYN87 Lynga, G. 1987, Catalogue of Open Cluster Data (5th edition), available through NSSDC, Greenbelt, Maryland, USA
MEB81 Mermilliod, J.-C. 1981, Astr. Ap. Suppl., 44, 467.
MER86 Mermilliod, J.-C., and Maeder, A. 1986, Astr. Ap., 158, 45.
NEC67 Neckel, T. 1967, Heid. Ver., 19, 115.
NIC81 Nicolet, B. 1981, Astr. Ap., 104, 185.
PAL77 Palous, J., Ruprecht, J., Dluzhnevskaya, O. B., and Piskunov, T. 1977, Astr. Ap., 61, 27.
PAN81 Panagia, N., and Tosi, M. 1981, Astr. Ap., 96, 306.
POL70 Polishchuk, E. P. 1970, Astr. Astrofiz., 9, 17.
VCIRC Radial velocity estimate based on cluster distance and rotation curve model of Brand 1986 (Ph. D. thesis, Leiden).
SAN63 Sandage, A. 1963, Ap. J., 138, 863.
SCH63 Schmidt, von K.-H. 1963, Ast. Nach., 287, 41.
STA68 Starikova, G. A. 1969, Sov. Astr., 12, 632.
WRA83 Wramdemark, S. 1983, private communication.

CLUSTER IDENTIFICATION:

ALTER et al.: OCL 465
COMMON NAME: IC 2157
DATA BASE NUM: 104

SPATIAL COORDINATES:

L II: 186.45
B II: 1.25

RA(1950.0): 6. 1.9
DEC(1950.0): 24. 0.

RADIAL VELOCITIES (w.r.t. LSR; km/s):
STELLAR:

VELOCITY	REF.
4.5	VCIRC

H II REGION:

NO VALUES AVAILABLE

CO CLOUDS:

NO VALUES AVAILABLE

PROPER MOTION (arcsec/100 yr):

NO VALUES AVAILABLE

DISTANCE FROM SOLAR NEIGHBORHOOD (kpc):

DIST	REF.
2.00	BUS63
1.99	NEC67
2.00	BEC71
1.90	GRU73
1.88	LYN87

ANGULAR DIAMETER (arcmin):

ANG D	REF.
4.0	ALT70
13.0	ALT70
5.5	BEC71
8.0	GRU73
7.0	LYN83

LINEAR DIAMETER (pc):

LIN D	REF.
4.0	LDCAL
3.2	BEC71
4.6	GRU73
4.1	LYN83

AGE ESTIMATES:
AGE (Myr):

AGE	REF.
100.	LYN83
70.	LYN87

EARLIEST MS SPECTRAL TYPE:

eSpT	REF.
b4	BEC71
B4	GRU73
b4	GRU73
OB	LYN83
b4	LYN83

MS TURNOFF COLOR:

(B-V)	REF.
-0.22	BEC58
-0.01	GRU73
-0.16	LYN87

MASSES (SOLAR MASS UNITS):
STELLAR MASS:

NO VALUES AVAILABLE

MASS IN ASSOCIATED H I CLOUDS:

NO VALUES AVAILABLE

IONIZED HYDROGEN MASS:

NO VALUES AVAILABLE

MASS IN ASSOCIATED MOLECULAR CLOUDS:

NO VALUES AVAILABLE

ASSOCIATED MASS IN THE FORM OF DUST:

NO VALUES AVAILABLE

VISUAL EXTINCTION TOWARD CLUSTER (mag):

AV	REF.
1.35	NEC67
1.71	BEC71
1.71	LYN83

B-V COLOR EXCESS (mag):

E(B-V)	REF.
0.60	BUS63
0.64	BEC63
0.50	LYN87

REFERENCES

ALT70	Alter, G., Ruprecht, J., and Vanysek, V. 1970, The Catalog of Star Clusters and Associations (Budapest: Akad Kiado).
BEC63	Becker, W. 1963, Z. f. A., 57, 117.
BEC71	Becker, W. 1971, Astr. Ap. Suppl., 4, 241.
BEC58	Becker, W., and Stock, J. 1958, Z. f. A., 45, 269 (see also pg. 282).
BUS63	Buscombe, W. 1963, Mt. Stromlo Mimeogram, No. 6, pg. 24.
GRU73	Grubissich, C. 1973, Astr. Ap. Suppl., 11, 287.
LDCAL	Linear diameter calculated from published ang. diam. and distance.
LYN83	Lynga, G. 1983, Catalogue of Open Cluster Data (3rd edition), available through NSSDC, Greenbelt, Maryland, USA
LYN87	Lynga, G. 1987, Catalogue of Open Cluster Data (5th edition), available through NSSDC, Greenbelt, Maryland, USA
NEC67	Neckel, T. 1967, Heid. Ver., 19, 115.
VCIRC	Radial velocity estimate based on cluster distance and rotation curve model of Brand 1986 (Ph. D. thesis, Leiden).

CLUSTER IDENTIFICATION:

ALTER et al.: OCL 467
COMMON NAME: NGC 2129
DATA BASE NUM: 105

SPATIAL COORDINATES:

L II: 186.61
B II: 0.13

RA(1950.0): 5. 58.0
DEC(1950.0): 23. 18.

RADIAL VELOCITIES (w.r.t. LSR; km/s):
STELLAR:

VELOCITY	REF.
4.6	VCIRC
5.1	JOS61
6.1	HAG70
8.4	HUM78
15.6	HUM78
2.1	WRA83
2.1	LYN87
2.1	HRO87

H II REGION:

NO VALUES AVAILABLE

CO CLOUDS:

VELOCITY	REF.
1.3	LEI88
4.5	LEI88
6.7	LEI88

PROPER MOTION (arcsec/100 yr):

NO VALUES AVAILABLE

DISTANCE FROM SOLAR NEIGHBORHOOD (kpc):

DIST	REF.
2.10	JOH61
2.10	NEC67
1.93	LIN68
2.10	HAG70
1.87	BEC71
1.99	LYN87

ANGULAR DIAMETER (arcmin):

ANG D	REF.
6.0	LIN68
14.0	ALT70
12.0	HAG70
7.0	BEC71
7.0	LYN83

LINEAR DIAMETER (pc):

LIN D	REF.
4.0	LDCAL
3.4	LIN68
7.3	HAG70
3.8	BEC71
4.1	LYN83

AGE ESTIMATES:
AGE (Myr):

AGE	REF.
16.	LYN83
41.	LYN87

EARLIEST MS SPECTRAL TYPE:

eSpT	REF.
b1	JOH61
B1	BEC71
B0	KUZ72
B1	LYN83
b0	LYN83

MS TURNOFF COLOR:

(B-V)	REF.
-0.22	BEC58
-0.27	JOH61
-0.20	HAG70
-0.20	LYN87

MASSES (SOLAR MASS UNITS):
STELLAR MASS:

MASS	REF.
1.26E+03	SCH63
2.33E+02	RED71
2.37E+02	BRU83
1.26E+03	LYN83

MASS IN ASSOCIATED H I CLOUDS:

NO VALUES AVAILABLE

IONIZED HYDROGEN MASS:

NO VALUES AVAILABLE

MASS IN ASSOCIATED MOLECULAR CLOUDS:

MASS	REF.
2.20E+04	LEI88

ASSOCIATED MASS IN THE FORM OF DUST:

NO VALUES AVAILABLE

VISUAL EXTINCTION TOWARD CLUSTER (mag):

AV	REF.
2.01	NEC67
2.04	BEC71
2.04	LYN83

B-V COLOR EXCESS (mag):

E(B-V)	REF.
0.67	JOH61
0.70	BUS63
0.67	SCH63
0.70	STA68
0.67	HAG70
0.67	LYN87

REFERENCES

ALT70 Alter, G., Ruprecht, J., and Vanysek, V. 1970, The Catalog of Star Clusters and Associations (Budapest: Akad Kiado).
BEC71 Becker, W. 1971, Astr. Ap. Suppl., 4, 241.
BEC58 Becker, W., and Stock, J. 1958, Z. f. A., 45, 269 (see also pg. 282).
BRU83 Bruch, A., and Sanders, W. L. 1983, Astr. Ap., 121, 237.
BUS63 Buscombe, W. 1963, Mt. Stromlo Mimeogram, No. 6, pg. 24.
HAG70 Hagen, G. L. 1970, D. D. O. Pub., Univ. Toronto, 4.
HRO87 Hron, J. 1987, Astr. Ap., 176, 34.
HUM78 Humphreys, R. M. 1978, Ap. J. Suppl., 38, 309.
JOS61 Johnson, H. L., and Svolopoulos, S. N. 1961, Ap. J., 134, 868.
JOH61 Johnson, H. L., Hoag, A. A., Iriarte, B., Mitchell, R. I., and Hallam, K. L. 1961, Lowell Obs. Bull., 5, 133.
KUZ72 Kuznetsov, V. I. 1972, Astr. Astrofiz. Kiev, No. 15, 22.
LEI88 Leisawitz, D., Thaddeus, P., and Bash, F. N. 1988, in preparation for submission to Ap. J. Suppl.
LIN68 Lindoff, U. 1968, Arkiv Astr., 5, 1.
LDCAL Linear diameter calculated from published ang. diam. and distance.
LYN83 Lynga, G. 1983, Catalogue of Open Cluster Data (3rd edition), available through NSSDC, Greenbelt, Maryland, USA
LYN87 Lynga, G. 1987, Catalogue of Open Cluster Data (5th edition), available through NSSDC, Greenbelt, Maryland, USA
NEC67 Neckel, T. 1967, Heid. Ver., 19, 115.
VCIRC Radial velocity estimate based on cluster distance and rotation curve model of Brand 1986 (Ph. D. thesis, Leiden).
RED71 Reddish, V. C., and Sloan, C. 1971, Observatory, 91, 70.
SCH63 Schmidt, von K.-H. 1963, Ast. Nach., 287, 41.
STA68 Starikova, G. A. 1969, Sov. Astr., 12, 632.
WRA83 Wramdemark, S. 1983, private communication.

CLUSTER IDENTIFICATION:

ALTER et al.: OCL 476
COMMON NAME: NGC 2175
SHARPLESS: S252
MEMBER OF ASSOC.: GEM OB1
DATA BASE NUM: 106

SPATIAL COORDINATES:

L II: 190.20
B II: 0.42

RA(1950.0): 6. 6.8
DEC(1950.0): 20. 20.

RADIAL VELOCITIES (w.r.t. LSR; km/s):
STELLAR:

VELOCITY	REF.
7.4	VCIRC
10.3	GE075
6.5	HUM78
9.2	HR087

H II REGION:

VELOCITY	REF.
9.6	MIL68
9.7	GE070
6.8	GE073
4.0	FAL80
9.0	FAL80
8.5	FOU83

CO CLOUDS:

VELOCITY	REF.
7.5	LAW79
7.5	BLI82
8.1	HAI86
9.2	HAI86
7.2	LEI88
-0.7	LEI88

PROPER MOTION (arcsec/100 yr):

NO VALUES AVAILABLE

DISTANCE FROM SOLAR NEIGHBORHOOD (kpc):

DIST	REF.
2.87	DIE67
1.95	PIS70
2.60	GRA75
1.50	BLI82
2.20	HAI86
2.70	LYN87

ANGULAR DIAMETER (arcmin):

ANG D	REF.
15.0	ALT70
18.0	ALT70
14.4	PIS70
18.0	LYN83

LINEAR DIAMETER (pc):

LIN D	REF.
10.9	LDCAL
8.1	PIS70
10.0	LYN83

AGE ESTIMATES:
AGE (Myr):

AGE	REF.
2.	GRA75
1.	LYN83
1.	HAI86
10.	LYN87

EARLIEST MS SPECTRAL TYPE:

eSpT	REF.
O5	KIR58
O6	MAY64
O9	CH073
O6.5	GRA75
O6.5	FAL80
O6	LYN83
O6.5	SCH86

MS TURNOFF COLOR:

(B-V)	REF.
-0.35	GRA75
-0.35	LYN87

MASSES (SOLAR MASS UNITS):
STELLAR MASS:

NO VALUES AVAILABLE

MASS IN ASSOCIATED H I CLOUDS:

NO VALUES AVAILABLE

IONIZED HYDROGEN MASS:

MASS	REF.
4.00E+03	TER65
3.40E+01	TOV67
1.40E+03	TOS73
5.20E+03	FEL77

MASS IN ASSOCIATED MOLECULAR CLOUDS:

MASS	REF.
2.50E+04	LAW79
1.38E+06	LEI88
1.37E+06	LEI88

ASSOCIATED MASS IN THE FORM OF DUST:

NO VALUES AVAILABLE

VISUAL EXTINCTION TOWARD CLUSTER (mag):

AV	REF.
1.20	LYN83

B-V COLOR EXCESS (mag):

E(B-V)	REF.
0.40	BUS63
0.69	CH073
0.63	GRA75
0.63	LYN87

REFERENCES

ALT70 Alter, G., Ruprecht, J., and Vanysek, V. 1970, The Catalog of Star Clusters and Associations (Budapest: Akad Kiado).
BLI82 Blitz, L., Fich, M. and Stark, A. A. 1982, Ap. J. Suppl., 49, 183.
BUS63 Buscombe, W. 1963, Mt. Stromlo Mimeogram, No. 6, pg. 24.
CHO73 Chopinet, M., Georgelin, Y. M., and Lortet-Zuckermann, M. C. 1973, Astr. Ap., 29, 225.
DIE67 Dieter, N. H. 1967, Ap. J., 150, 435.
FAL80 Falchi, A. D., Felli, M., and Tofani, G. 1980, Astr. Ap., 89, 363.
FEL77 Felli, M., Habing, H. J., and Israel, F. P. 1977, Astr. Ap., 59, 43.
FOU83 Fountain, W. F., Gary, G. A., and O'Dell, C. R. 1983, Ap. J., 273, 639.
GEO75 Georgelin, Y. M. 1975, Ph. D. Thesis, Universite de Provence Marseille, France.
GEO73 Georgelin, Y. M., Georgelin, Y. P., and Roux, S. 1973, Astr. Ap., 25, 337.
GEO70 Georgelin, Y. P., and Georgelin, Y. M. 1970, Astr. Ap., 6, 349.
GRA75 Grasdalen, G. L., Carrasco, L. 1975, Astr. Ap., 43, 259.
HAI86 Haikala, L. 1986, Ap. Sp. Sci., 128, 125.
HRO87 Hron, J. 1987, Astr. Ap., 176, 34.
HUM78 Humphreys, R. M. 1978, Ap. J. Suppl., 38, 309.
KIR58 Kirillova, R. S. 1958, Trudy Gos. Ast. Inst. Pub., 29, 178.
LAW79 Lada, C. J., and Wooden, D. 1979, Ap. J., 232, 158.
LEI88 Leisawitz, D., Thaddeus, P., and Bash, F. N. 1988, in preparation for submission to Ap. J. Suppl.
LDCAL Linear diameter calculated from published ang. diam. and distance.
LYN83 Lynga, G. 1983, Catalogue of Open Cluster Data (3rd edition), available through NSSDC, Greenbelt, Maryland, USA
LYN87 Lynga, G. 1987, Catalogue of Open Cluster Data (5th edition), available through NSSDC, Greenbelt, Maryland, USA
MAY64 Mayer, P. 1964, Pub. Astr. Inst. Univ. Charles (Prague), S2, 37-41.
MIL68 Miller, J. S. 1968, Ap. J., 151, 473.
PIS70 Pismis, P. 1970, Bol. Obs. Ton. Tac., 5, 219.
VCIRC Radial velocity estimate based on cluster distance and rotation curve model of Brand 1986 (Ph. D. thesis, Leiden).
SCH86 Schild, H., and Berthet, S. 1986, Astr. Ap., 162, 369.
TER65 Terzian, Y. 1965, Ap. J., 142, 135.
TOV67 Tovmassian, H. M. 1967, IAU Symp. 31, H II Assoc w/ Young Stellar Clusters, ed. H. van Woerden, (Dordrecht: Reidel).
TOS73 Tovmassian, H. M., and Shahbazian, E. T. 1973, Aust. J. Phys., 26, 837.

CLUSTER IDENTIFICATION:

ALTER et al.: OCL 481
COMMON NAME: NGC 2169
DATA BASE NUM: 107

SPATIAL COORDINATES:

L II: 195.63
B II: -2.92

RA(1950.0): 6. 5.6
DEC(1950.0): 13. 58.

RADIAL VELOCITIES (w.r.t. LSR; km/s):
STELLAR:

VELOCITY	REF.
5.8	VCIRC
2.6	JOS61
1.6	HAG70
2.1	REN78
1.6	WRA83
1.6	LYN87
2.2	HRO87

H II REGION:

NO VALUES AVAILABLE

CO CLOUDS:

NO VALUES AVAILABLE

PROPER MOTION (arcsec/100 yr):

NO VALUES AVAILABLE

DISTANCE FROM SOLAR NEIGHBORHOOD (kpc):

DIST	REF.
1.10	JOH61
0.93	BEC71
0.83	SAG76
1.50	ABT77
0.71	REN78
1.12	PER78
0.92	LYN87

ANGULAR DIAMETER (arcmin):

ANG D	REF.
4.5	ALT70
13.0	ALT70
21.0	BEC71
7.0	LYN83

LINEAR DIAMETER (pc):

LIN D	REF.
2.0	LDCAL
1.9	LIN68
5.7	BEC71
2.2	LYN83

AGE ESTIMATES:
AGE (Myr):

AGE	REF.
37.	BAR69
9.	SAG76
50.	REN78
23.	PER78
50.	LYN83
7.	MER86
29.	LYN87

EARLIEST MS SPECTRAL TYPE:

eSpT	REF.
b1	JOH61
B2	HOA65
B1	BEC71
B2.5	ABT77
B1	LYN83
b0	LYN83

MS TURNOFF COLOR:

(B-V)	REF.
-0.27	JOH61
-0.20	HAG70
-0.25	SAG76
-0.25	PER78
-0.22	LYN87

MASSES (SOLAR MASS UNITS):
STELLAR MASS:

MASS	REF.
6.63E+02	SCH63
8.20E+01	RED71
8.30E+01	BRU83
6.31E+02	LYN83

MASS IN ASSOCIATED H I CLOUDS:

MASS	REF.
1.10E+01	GOR68

IONIZED HYDROGEN MASS:

NO VALUES AVAILABLE

MASS IN ASSOCIATED MOLECULAR CLOUDS:

NO VALUES AVAILABLE

ASSOCIATED MASS IN THE FORM OF DUST:

NO VALUES AVAILABLE

VISUAL EXTINCTION TOWARD CLUSTER (mag):

AV	REF.
0.54	NEC67
0.39	BEC71
1.03	SAG76
0.39	LYN83

B-V COLOR EXCESS (mag):

E(B-V)	REF.
0.18	JOH61
0.19	STA68
0.14	HAG70
0.18	SAG76
0.16	REN78
0.16	LYN87

REFERENCES

ABT77 Abt, H. A. 1977, PASP, 89, 646.
ALT70 Alter, G., Ruprecht, J., and Vanysek, V. 1970, The Catalog of Star Clusters and Associations (Budapest: Akad Kiado).
BAR69 Barbaro, G., Dallaporta, N., and Fabris, G. 1969, Ap. Sp. Sci., 3, 123.
BEC71 Becker, W. 1971, Astr. Ap. Suppl., 4, 241.
BRU83 Bruch, A., and Sanders, W. L. 1983, Astr. Ap., 121, 237.
GOR68 Gordon, C. P., Howard, W. E., and Westerhout, G. 1968, Ap. J., 154, 103.
HAG70 Hagen, G. L. 1970, D. D. O. Pub., Univ. Toronto, 4.
HOA65 Hoag, A. A., and Applequist, N. L. 1965, Ap. J. Suppl., 12, 215.
HRO87 Hron, J. 1987, Astr. Ap., 176, 34.
JOS61 Johnson, H. L., and Svolopoulos, S. N. 1961, Ap. J., 134, 868.
JOH61 Johnson, H. L., Hoag, A. A., Iriarte, B., Mitchell, R. I., and Hallam, K. L. 1961, Lowell Obs. Bull., 5, 133.
LIN68 Lindoff, U. 1968, Arkiv Astr., 5, 1.
LDCAL Linear diameter calculated from published ang. diam. and distance.
LYN83 Lynga, G. 1983, Catalogue of Open Cluster Data (3rd edition), available through NSSDC, Greenbelt, Maryland, USA
LYN87 Lynga, G. 1987, Catalogue of Open Cluster Data (5th edition), available through NSSDC, Greenbelt, Maryland, USA
MER86 Mermilliod, J.-C., and Maeder, A. 1986, Astr. Ap., 158, 45.
NEC67 Neckel, T. 1967, Heid. Ver., 19, 115.
PER78 Perry, C. L., Lee, P. D., and Barnes, J. V. 1978, PASP, 90, 73.
VCIRC Radial velocity estimate based on cluster distance and rotation curve model of Brand 1986 (Ph. D. thesis, Leiden).
RED71 Reddish, V. C., and Sloan, C. 1971, Observatory, 91, 70.
SAG76 Sagar, R. 1976, Ap. Sp. Sci., 40, 447.
SCH63 Schmidt, von K.-H. 1963, Ast. Nach., 287, 41.
STA68 Starikova, G. A. 1969, Sov. Astr., 12, 632.
REN78 van Rensbergen, W., Hammerschlag-Hensberge, G., and van den Heuvel, E. P. J. 1978, Astr. Ap., 64, 131.
WRA83 Wramdemark, S. 1983, private communication.

CLUSTER IDENTIFICATION:

ALTER et al.: OCL 495
COMMON NAME: NGC 2264
SHARPLESS: S273
MEMBER OF ASSOC.: MON OB1
DATA BASE NUM: 108

SPATIAL COORDINATES:

L II: 202.94
B II: 2.20
RA(1950.0): 6. 38.3
DEC(1950.0): 9. 56.

RADIAL VELOCITIES (w.r.t. LSR; km/s):
STELLAR:

VELOCITY	REF.
6.8	VCIRC
6.9	JOS61
5.9	PAL77
1.4	HUM78
6.9	WRA83
6.9	LYN87
6.9	HRO87

H II REGION:

VELOCITY	REF.
1.9	ISR78

CO CLOUDS:

VELOCITY	REF.
5.0	RIC77
6.5	RIC77
8.0	RIC77
7.0	BLI82
5.0	WOU84
8.0	WOU84

PROPER MOTION (arcsec/100 yr):

MU X	MU Y	REF.
-0.490	-0.560	PAL77

DISTANCE FROM SOLAR NEIGHBORHOOD (kpc):

DIST	REF.
0.80	WAL56
0.75	JOH61
0.76	RAI66
0.75	NEC67
0.85	HAG70
0.72	BEC71
0.76	WLK72
0.78	TUR76
0.88	MEN80
0.85	NIC81
0.80	FIC84
0.83	SPA85
0.79	LYN87

ANGULAR DIAMETER (arcmin):

ANG D	REF.
20.0	LIN68
20.0	ALT70
38.0	ALT70
30.0	BEC71
20.0	LYN83

LINEAR DIAMETER (pc):

LIN D	REF.
4.7	LDCAL
4.3	WAL56
4.2	LIN68
6.2	BEC71
4.4	LYN83

AGE ESTIMATES:
AGE (Myr):

AGE	REF.
3.	WAL56
25.	LIN68
20.	CRU78
3.	MEN80
20.	LYN83
1.	STA85
6.	STA85
14.	SPA85
3.	MER86
10.	SAG86
10.	LYN87

EARLIEST MS SPECTRAL TYPE:

eSpT	REF.
O7	WAL56
o9.5	JOH61
O7	MAY64
O8	BEC71
O7	LYN83
O8	LYN83

MS TURNOFF COLOR:

(B-V)	REF.
-0.30	JOH61

MASSES (SOLAR MASS UNITS):
STELLAR MASS:

MASS	REF.
4.50E+02	WAL56
1.01E+03	SCH63
8.00E+02	BLA64
1.20E+02	RED71
1.00E+03	LYN83

MASS IN ASSOCIATED H I CLOUDS:

NO VALUES AVAILABLE

IONIZED HYDROGEN MASS:

MASS	REF.
7.70E+00	TOV67
6.00E+01	TOS73

MASS IN ASSOCIATED MOLECULAR CLOUDS:

MASS	REF.
2.00E+04	CRU78
1.10E+05	WOU84
7.50E+02	SCH85

ASSOCIATED MASS IN THE FORM OF DUST:

NO VALUES AVAILABLE

VISUAL EXTINCTION TOWARD CLUSTER (mag):

AV	REF.
0.24	DLU65
0.30	NEC67
0.21	BEC71
0.21	LYN83

B-V COLOR EXCESS (mag):

E(B-V)	REF.
0.10	JOH61
0.10	BUS63
0.10	SCH63
0.06	SMA64
0.06	STA68
0.08	HAG70

-0.25	HAG70	0.07	NIC81
-0.30	LYN87	0.08	SIT84
		0.08	SPA85
		0.06	LYN87

REFERENCES

ALT70 Alter, G., Ruprecht, J., and Vanysek, V. 1970, The Catalog of Star Clusters and Associations (Budapest: Akad Kiado).
BEC71 Becker, W. 1971, Astr. Ap. Suppl., 4, 241.
BLA64 Blaauw, A. 1964, Ann. Rev. Astr. Ap., 2, 213.
BLI82 Blitz, L., Fich, M. and Stark, A. A. 1982, Ap. J. Suppl., 49, 183.
BUS63 Buscombe, W. 1963, Mt. Stromlo Mimeogram, No. 6, pg. 24.
CRU78 Crutcher, R. M., Hartkopf, W. I., and Giguere, P. T. 1978, Ap. J., 226, 839.
DLU65 Dluzhnevskaya, O. B. 1965, Nautch. Inf., No. 2.
FIC84 Fich, M., and Blitz, L. 1984, Ap. J., 279, 125.
HAG70 Hagen, G. L. 1970, D. D. O. Pub., Univ. Toronto, 4.
HRO87 Hron, J. 1987, Astr. Ap., 176, 34.
HUM78 Humphreys, R. M. 1978, Ap. J. Suppl., 38, 309.
ISR78 Israel, F. P. 1978, Astr. Ap., 70, 769.
JOS61 Johnson, H. L., and Svolopoulos, S. N. 1961, Ap. J., 134, 868.
JOH61 Johnson, H. L., Hoag, A. A., Iriarte, B., Mitchell, R. I., and Hallam, K. L. 1961, Lowell Obs. Bull., 5, 133.
LIN68 Lindoff, U. 1968, Arkiv Astr., 5, 1.
LDCAL Linear diameter calculated from published ang. diam. and distance.
LYN83 Lynga, G. 1983, Catalogue of Open Cluster Data (3rd edition), available through NSSDC, Greenbelt, Maryland, USA
LYN87 Lynga, G. 1987, Catalogue of Open Cluster Data (5th edition), available through NSSDC, Greenbelt, Maryland, USA
MAY64 Mayer, P. 1964, Pub. Astr. Inst. Univ. Charles (Prague), S2, 37-41.
MEN80 Mendoza, E. E., and Gomez, T. 1980, MNRAS, 190, 623.
MER86 Mermilliod, J.-C., and Maeder, A. 1986, Astr. Ap., 158, 45.
NEC67 Neckel, T. 1967, Heid. Ver., 19, 115.
NIC81 Nicolet, B. 1981, Astr. Ap., 104, 185.
PAL77 Palous, J., Ruprecht, J., Dluzhnevskaya, O. B., and Piskunov, T. 1977, Astr. Ap., 61, 27.
VCIRC Radial velocity estimate based on cluster distance and rotation curve model of Brand 1986 (Ph. D. thesis, Leiden).
RAI66 Raimond, E. 1966, B. A. N., 18, 191.
RED71 Reddish, V. C., and Sloan, C. 1971, Observatory, 91, 70.
RIC77 Rickard, L. J, Palmer, P., Buhl, D., and Zuckerman, B. 1977, Ap. J., 213, 654.
SAG86 Sagar, R., Piskunov, A. E., Myakutin, V. I., and Joshi, U. C. 1986, MNRAS, 220, 383.
SCH63 Schmidt, von K.-H. 1963, Ast. Nach., 287, 41.
SCH85 Schwartz, P. R., et al. 1985, Ap. J., 292, 231.
SIT84 Sitko, M. L. Simon, T., and Meade, M. R. 1984, PASP, 96, 54.
SMA64 Smak, J. 1964, Ap. J., 139, 1095.
SPA85 Spassova, N. M., and Baev, P. V. 1985, Ap. Sp. Sci., 112, 111.
STA85 Stahler, S. W. 1985, Ap. J., 293, 207.
STA68 Starikova, G. A. 1969, Sov. Astr., 12, 632.
TOV67 Tovmassian, H. M. 1967, IAU Symp. 31, H II Assoc w/ Young Stellar Clusters, ed. H. van Woerden, (Dordrecht: Reidel).
TOS73 Tovmassian, H. M., and Shahbazian, E. T. 1973, Aust. J. Phys., 26, 837.
TUR76 Turner, D. G. 1976, Ap. J., 210, 65.
WAL56 Walker, M. F. 1956, Ap. J. Suppl., 2, 365.
WLK72 Walker, M. F. 1972, Ap. J., 175, 89.
WOU84 Wouterloot, J. G. A. 1984, Astr. Ap., 134, 244.
WRA83 Wramdemark, S. 1983, private communication.

CLUSTER IDENTIFICATION:

ALTER et al.: OCL 499
COMMON NAME: NGC 2251
MEMBER OF ASSOC.: MON OB1
DATA BASE NUM: 109

SPATIAL COORDINATES:

L II: 203.60 RA(1950.0): 6. 32.0
B II: 0.13 DEC(1950.0): 8. 24.

RADIAL VELOCITIES (w.r.t. LSR; km/s):
STELLAR:

VELOCITY	REF.
11.9	VCIRC
-7.5	JOS61
-5.3	REN78
-7.5	LYN81

H II REGION:

NO VALUES AVAILABLE

CO CLOUDS:

NO VALUES AVAILABLE

PROPER MOTION (arcsec/100 yr):

NO VALUES AVAILABLE

DISTANCE FROM SOLAR NEIGHBORHOOD (kpc):

DIST	REF.
1.58	JOH61
1.58	NEC67
1.41	LIN68
1.60	HAG70
1.42	BEC71
1.32	REN78
1.56	LYN87

ANGULAR DIAMETER (arcmin):

ANG D	REF.
9.5	LIN68
14.0	ALT70
12.0	HAG70
7.0	BEC71
10.0	LYN83

LINEAR DIAMETER (pc):

LIN D	REF.
4.3	LDCAL
3.9	LIN68
5.6	HAG70
2.9	BEC71
4.7	LYN83

AGE ESTIMATES:
AGE (Myr):

AGE	REF.
87.	LIN68
300.	REN78
302.	MER81
302.	LYN83
462.	LYN87

EARLIEST MS SPECTRAL TYPE:

eSpT	REF.
b5	JOH61
b5	BEC63
b3	BEC71
b3	LYN81
B3	LYN83

MS TURNOFF COLOR:

(B-V)	REF.
-0.16	JOH61
0.05	HAG70
0.05	LYN87

MASSES (SOLAR MASS UNITS):
STELLAR MASS:

MASS	REF.
8.93E+02	SCH63
2.02E+02	RED71
2.05E+02	BRU83
1.00E+03	LYN83

MASS IN ASSOCIATED H I CLOUDS:

MASS	REF.
2.90E+03	DOD70

IONIZED HYDROGEN MASS:

NO VALUES AVAILABLE

MASS IN ASSOCIATED MOLECULAR CLOUDS:

NO VALUES AVAILABLE

ASSOCIATED MASS IN THE FORM OF DUST:

MASS	REF.
1.30E+00	DOD70

VISUAL EXTINCTION TOWARD CLUSTER (mag):

AV	REF.
0.60	NEC67
0.72	BEC71
0.72	LYN83

B-V COLOR EXCESS (mag):

E(B-V)	REF.
0.20	JOH61
0.20	BUS63
0.20	SCH63
0.24	BEC63
0.21	STA68
0.20	HAG70
0.20	LYN87

REFERENCES

ALT70 Alter, G., Ruprecht, J., and Vanysek, V. 1970, The Catalog of Star Clusters and Associations (Budapest: Akad Kiado).
BEC63 Becker, W. 1963, Z. f. A., 57, 117.
BEC71 Becker, W. 1971, Astr. Ap. Suppl., 4, 241.
BRU83 Bruch, A., and Sanders, W. L. 1983, Astr. Ap., 121, 237.
BUS63 Buscombe, W. 1963, Mt. Stromlo Mimeogram, No. 6, pg. 24.
DOD70 D Odorico, S., and Felli, M. 1970, Mem. Soc. Ast. Ital., 41, 89.
HAG70 Hagen, G. L. 1970, D. D. O. Pub., Univ. Toronto, 4.
JOS61 Johnson, H. L., and Svolopoulos, S. N. 1961, Ap. J., 134, 868.
JOH61 Johnson, H. L., Hoag, A. A., Iriarte, B., Mitchell, R. I., and Hallam, K. L. 1961, Lowell Obs. Bull., 5, 133.
LIN68 Lindoff, U. 1968, Arkiv Astr., 5, 1.
LDCAL Linear diameter calculated from published ang. diam. and distance.
LYN81 Lynga, G. 1981, Catalogue of Open Cluster Data, available through NSSDC, Greenbelt, Maryland, USA
LYN83 Lynga, G. 1983, Catalogue of Open Cluster Data (3rd edition), available through NSSDC, Greenbelt, Maryland, USA
LYN87 Lynga, G. 1987, Catalogue of Open Cluster Data (5th edition), available through NSSDC, Greenbelt, Maryland, USA
MER81 Mermilliod, J.-C. 1981, Astr. Ap., 97, 235.
NEC67 Neckel, T. 1967, Heid. Ver., 19, 115.
VCIRC Radial velocity estimate based on cluster distance and rotation curve model of Brand 1986 (Ph. D. thesis, Leiden).
RED71 Reddish, V. C., and Sloan, C. 1971, Observatory, 91, 70.
SCH63 Schmidt, von K.-H. 1963, Ast. Nach., 287, 41.
STA68 Starikova, G. A. 1969, Sov. Astr., 12, 632.
REN78 van Rensbergen, W., Hammerschlag-Hensberge, G., and van den Heuvel, E. P. J. 1978, Astr. Ap., 64, 131.

CLUSTER IDENTIFICATION:

ALTER et al.: OCL 502
COMMON NAME: NGC 2395
DATA BASE NUM: 110

SPATIAL COORDINATES:

L II: 204.62 RA(1950.0): 7. 24.3
B II: 13.96 DEC(1950.0): 13. 41.

RADIAL VELOCITIES (w.r.t. LSR; km/s):

STELLAR:

VELOCITY	REF.
10.2	VCIRC

H II REGION:

NO VALUES AVAILABLE

CO CLOUDS:

NO VALUES AVAILABLE

PROPER MOTION (arcsec/100 yr):

NO VALUES AVAILABLE

DISTANCE FROM SOLAR NEIGHBORHOOD (kpc):

DIST	REF.
0.65	NEC67
1.20	LIN68
1.20	HAG70
1.20	BEC71
1.18	LYN87

ANGULAR DIAMETER (arcmin):

ANG D	REF.
8.0	LIN68
12.5	ALT70
21.0	ALT70
14.0	BEC71
12.0	LYN83

LINEAR DIAMETER (pc):

LIN D	REF.
4.2	LDCAL
2.8	LIN68
4.9	BEC71
4.4	LYN83

AGE ESTIMATES:

AGE (Myr):

AGE	REF.
50.	LIN68
50.	LYN83
41.	LYN87

EARLIEST MS SPECTRAL TYPE:

eSpT	REF.
b5	BEC63
b4	BEC71
b4	LYN83

MS TURNOFF COLOR:

(B-V)	REF.
-0.20	HAG70
-0.20	LYN87

MASSES (SOLAR MASS UNITS):

STELLAR MASS:

NO VALUES AVAILABLE

MASS IN ASSOCIATED H I CLOUDS:

NO VALUES AVAILABLE

IONIZED HYDROGEN MASS:

NO VALUES AVAILABLE

MASS IN ASSOCIATED MOLECULAR CLOUDS:

NO VALUES AVAILABLE

ASSOCIATED MASS IN THE FORM OF DUST:

NO VALUES AVAILABLE

VISUAL EXTINCTION TOWARD CLUSTER (mag):

AV	REF.
0.30	NEC67
2.16	BEC71
2.16	LYN83

B-V COLOR EXCESS (mag):

E(B-V)	REF.
0.72	BEC63
0.72	CHI63
0.71	STA68
0.72	HAG70
0.72	LYN87

REFERENCES

ALT70 Alter, G., Ruprecht, J., and Vanysek, V. 1970, The Catalog of Star Clusters and Associations (Budapest: Akad Kiado).
BEC63 Becker, W. 1963, Z. f. A., 57, 117.
BEC71 Becker, W. 1971, Astr. Ap. Suppl., 4, 241.
CHI63 Chincarini, G. 1963, Contr. Obs. Ast. Univ. Padova in Asiago, 133, 11.
HAG70 Hagen, G. L. 1970, D. D. O. Pub., Univ. Toronto, 4.
LIN68 Lindoff, U. 1968, Arkiv Astr., 5, 1.
LDCAL Linear diameter calculated from published ang. diam. and distance.
LYN83 Lynga, G. 1983, Catalogue of Open Cluster Data (3rd edition), available through NSSDC, Greenbelt, Maryland, USA
LYN87 Lynga, G. 1987, Catalogue of Open Cluster Data (5th edition), available through NSSDC, Greenbelt, Maryland, USA
NEC67 Neckel, T. 1967, Heid. Ver., 19, 115.
VCIRC Radial velocity estimate based on cluster distance and rotation curve model of Brand 1986 (Ph. D. thesis, Leiden).
STA68 Starikova, G. A. 1969, Sov. Astr., 12, 632.

CLUSTER IDENTIFICATION:

ALTER et al.: OCL 512
COMMON NAME: NGC 2239
MEMBER OF ASSOC.: MON OB2
DATA BASE NUM: 111

SPATIAL COORDINATES:

L II: 206.18
B II: -2.29

RA(1950.0): 6. 28.3
DEC(1950.0): 4. 59.

RADIAL VELOCITIES (w.r.t. LSR; km/s):
STELLAR:

VELOCITY	REF.
13.8	VCIRC

H II REGION:

NO VALUES AVAILABLE

CO CLOUDS:

VELOCITY	REF.
14.3	BLI82

PROPER MOTION (arcsec/100 yr):

NO VALUES AVAILABLE

DISTANCE FROM SOLAR NEIGHBORHOOD (kpc):

DIST	REF.
1.60	BLI82

ANGULAR DIAMETER (arcmin):

ANG D	REF.
16.0	REI28
16.0	LYN83

LINEAR DIAMETER (pc):

LIN D	REF.
7.5	LDCAL
7.4	BLI82

AGE ESTIMATES:
AGE (Myr):

NO VALUES AVAILABLE

EARLIEST MS SPECTRAL TYPE:

NO VALUES AVAILABLE

MS TURNOFF COLOR:

NO VALUES AVAILABLE

MASSES (SOLAR MASS UNITS):
STELLAR MASS:

NO VALUES AVAILABLE

MASS IN ASSOCIATED H I CLOUDS:

NO VALUES AVAILABLE

IONIZED HYDROGEN MASS:

NO VALUES AVAILABLE

MASS IN ASSOCIATED MOLECULAR CLOUDS:

NO VALUES AVAILABLE

ASSOCIATED MASS IN THE FORM OF DUST:

NO VALUES AVAILABLE

VISUAL EXTINCTION TOWARD CLUSTER (mag):

NO VALUES AVAILABLE

B-V COLOR EXCESS (mag):

NO VALUES AVAILABLE

REFERENCES

BLI82 Blitz, L., Fich, M. and Stark, A. A. 1982, Ap. J. Suppl., 49, 183.
LDCAL Linear diameter calculated from published ang. diam. and distance.
LYN83 Lynga, G. 1983, Catalogue of Open Cluster Data (3rd edition), available through NSSDC, Greenbelt, Maryland, USA
VCIRC Radial velocity estimate based on cluster distance and rotation curve model of Brand 1986 (Ph. D. thesis, Leiden).
REI28 Reinmuth, K. 1928, Heid. Abh., 13, 23.

CLUSTER IDENTIFICATION:

ALTER et al.:	OCL 515
COMMON NAME:	NGC 2244
ALTERNATE NAME:	ROSETTE
SHARPLESS:	S275
WESTERHOUT:	W 16
MEMBER OF ASSOC.:	MON OB2
DATA BASE NUM:	112

SPATIAL COORDINATES:

L II:	206.42	RA(1950.0):	6. 29.7
B II:	-2.02	DEC(1950.0):	4. 54.

RADIAL VELOCITIES (w.r.t. LSR; km/s):

STELLAR:

VELOCITY	REF.
14.2	VCIRC
15.7	JOS61
17.7	HAG70
13.7	HUM78
26.7	HUM78
21.0	BLI80
16.7	WRA83
16.7	LYN87
16.7	HRO87

H II REGION:

VELOCITY	REF.
19.0	DAV66
15.7	SMI73
14.3	PED73
16.5	FOU79
16.0	GAR83
16.7	CEL85
16.9	CEL85
-54.0	MEA86
1.0	MEA86

CO CLOUDS:

VELOCITY	REF.
14.3	BLI80
11.0	WOU84
13.0	WOU84
13.1	BLI86

PROPER MOTION (arcsec/100 yr):

NO VALUES AVAILABLE

DISTANCE FROM SOLAR NEIGHBORHOOD (kpc):

DIST	REF.
1.66	JOH61
1.70	HAG70
1.62	BEC71
1.26	WAL72

ANGULAR DIAMETER (arcmin):

ANG D	REF.
13.5	ALT70
60.0	ALT70
27.0	BEC71
24.0	LYN83

LINEAR DIAMETER (pc):

LIN D	REF.
11.5	LDCAL
13.0	BEC71
12.0	LYN83

AGE ESTIMATES:

AGE (Myr):

AGE	REF.
6.	RAI66
10.	LIN68
3.	HEI77
4.	OGU81
3.	LYN83
3.	SPA85
4.	DOR86
10.	LYN87

EARLIEST MS SPECTRAL TYPE:

eSpT	REF.
o5	JOH61
O5	MAY64
O5.5	PET65
O4	MOR65
O5	BEC71
O5	LYN83
O4.9	CEL85

MS TURNOFF COLOR:

(B-V)	REF.
-0.32	JOH61
-0.30	HAG70
-0.31	LYN87

MASSES (SOLAR MASS UNITS):

STELLAR MASS:

MASS	REF.
1.00E+03	RAI66
5.00E+03	OGU81

MASS IN ASSOCIATED H I CLOUDS:

MASS	REF.
1.50E+05	MEN62
6.40E+03	RAI66
1.57E+05	CEL86

IONIZED HYDROGEN MASS:

MASS	REF.
8.60E+03	WES58
1.10E+04	MEN62
1.00E+04	SCH69
9.00E+03	SCH71
1.59E+04	CEL85
2.00E-01	LEA85

MASS IN ASSOCIATED MOLECULAR CLOUDS:

MASS	REF.
8.00E+02	SHH80
1.30E+05	BLI80
2.30E+05	WOU84

ASSOCIATED MASS IN THE FORM OF DUST:

MASS	REF.
1.90E+03	CEL86
1.10E+04	CEL86

VISUAL EXTINCTION TOWARD CLUSTER (mag):

AV	REF.
1.38	DLU65
1.65	NEC67
2.34	DUF70
1.41	BEC71
1.41	LYN83

1.59	TUR76
1.56	HEI77
1.42	OGU81
1.49	NIC81
1.70	GUS84
1.60	FIC84
1.62	SPA85
1.50	LYN87

B-V COLOR EXCESS (mag):

E(B-V)	REF.		
0.55	JOH61	0.47	OGU81
0.60	BUS63	0.44	NIC81
0.47	BEC63	0.46	SPA85
0.46	STA68	0.45	MAS86
0.46	HAG70	0.47	LYN87
0.58	DUF70		

REFERENCES

ALT70 Alter, G., Ruprecht, J., and Vanysek, V. 1970, The Catalog of Star Clusters and Associations (Budapest: Akad Kiado).
BEC63 Becker, W. 1963, Z. f. A., 57, 117.
BEC71 Becker, W. 1971, Astr. Ap. Suppl., 4, 241.
BLI86 Blitz, L., and Stark, A. A. 1986, Ap. J. (Letters), 300, L89.
BLI80 Blitz, L., and Thaddeus, P. 1980, Ap. J., 241, 676.
BUS63 Buscombe, W. 1963, Mt. Stromlo Mimeogram, No. 6, pg. 24.
CEL85 Celnik, W. E. 1985, Astr. Ap., 144, 171.
CEL86 Celnik, W. E. 1986, Astr. Ap., 160, 287.
DAV66 Davies, R. D., and Tovmassian, H. M. 1966, MNRAS, 132, 283.
DLU65 Dluzhnevskaya, O. B. 1965, Nautch. Inf., No. 2.
DOR86 Dorland, H., Montmerle, T., and Doom, C. 1986, Astr. Ap., 160, 1.
DUF70 Dufour, R. J., and Lee, P. 1970, Ap. J., 160, 357.
FIC84 Fich, M., and Blitz, L. 1984, Ap. J., 279, 125.
FOU79 Fountain, W. F., Gary, G. A., and O'Dell, C. R. 1979, Ap. J., 229, 971.
GAR83 Garay, G., and Rodriguez, L. F. 1983, Ap. J., 266, 263.
GUS84 Guseva, N. G., Kolesnik, I. G., and Kravchuk, S. G. 1984, Sov. Astr. Lett., 10, 309.
HAG70 Hagen, G. L. 1970, D. D. O. Pub., Univ. Toronto, 4.
HEI77 Heiser, A. M. 1977, A. J., 82, 973.
HRO87 Hron, J. 1987, Astr. Ap., 176, 34.
HUM78 Humphreys, R. M. 1978, Ap. J. Suppl., 38, 309.
JOS61 Johnson, H. L., and Svolopoulos, S. N. 1961, Ap. J., 134, 868.
JOH61 Johnson, H. L., Hoag, A. A., Iriarte, B., Mitchell, R. I., and Hallam, K. L. 1961, Lowell Obs. Bull., 5, 133.
LEA85 Leahy, D. A. 1985, MNRAS, 217, 69.
LIN68 Lindoff, U. 1968, Arkiv Astr., 5, 1.
LDCAL Linear diameter calculated from published ang. diam. and distance.
LYN83 Lynga, G. 1983, Catalogue of Open Cluster Data (3rd edition), available through NSSDC, Greenbelt, Maryland, USA
LYN87 Lynga, G. 1987, Catalogue of Open Cluster Data (5th edition), available through NSSDC, Greenbelt, Maryland, USA
MAS86 Massa, D., and Fitzpatrick, E. L. 1986, Ap. J. Suppl., 60, 305.
MAY64 Mayer, P. 1964, Pub. Astr. Inst. Univ. Charles (Prague), S2, 37-41.
MEA86 Meaburn, J., and Walsh, J. R. 1986, MNRAS, 220, 745.
MEN62 Menon, T. K. 1962, Ap. J., 135, 394.
MOR65 Morgan, W. W., Hiltner, W. A., Neff, J. S., and Garrison, R. 1965, Ap. J., 142, 974.
NEC67 Neckel, T. 1967, Heid. Ver., 19, 115.
NIC81 Nicolet, B. 1981, Astr. Ap., 104, 185.
OGU81 Ogura, K., and Ishida, K. 1981, P. A. S. Japan, 33, 149.
PED73 Pedlar, A., and Matthews, H. E. 1973, MNRAS, 165, 381.
PET65 Petrie, R. M. 1965, DAO Pub., 12, 317.
VCIRC Radial velocity estimate based on cluster distance and rotation curve model of Brand 1986 (Ph. D. thesis, Leiden).
RAI66 Raimond, E. 1966, B. A. N., 18, 191.
SHH80 Schneps, M. H., Ho, P. T. P., and Barrett, A. H. 1980, Ap. J., 240, 84.
SCH69 Schwartz, R. 1969, A G Mitt., 27, 178.
SCH71 Schwartz, R. 1971, Ap. Sp. Sci., 14, 286.
SMI73 Smith, M. G. 1973, Ap. J., 182, 111.
SPA85 Spassova, N. M., and Baev, P. V. 1985, Ap. Sp. Sci., 112, 111.
STA68 Starikova, G. A. 1969, Sov. Astr., 12, 632.
TUR76 Turner, D. G. 1976, Ap. J., 210, 65.
WAL72 Walborn, N. R. 1972, A. J., 77, 313.
WES58 Westerhout, G. 1958, B. A. N., 14, 215.
WOU84 Wouterloot, J. G. A. 1984, Astr. Ap., 134, 244.
WRA83 Wramdemark, S. 1983, private communication.

CLUSTER IDENTIFICATION:

ALTER et al.: OCL 518
COMMON NAME: COLLIN 107
MEMBER OF ASSOC.: MON OB1
DATA BASE NUM: 113

SPATIAL COORDINATES:

L II: 207.14 RA(1950.0): 6. 35.0
B II: -0.91 DEC(1950.0): 4. 47.

RADIAL VELOCITIES (w.r.t. LSR; km/s):
STELLAR:

VELOCITY	REF.
14.8	VCIRC
4.8	LYN83

H II REGION:

NO VALUES AVAILABLE

CO CLOUDS:

NO VALUES AVAILABLE

PROPER MOTION (arcsec/100 yr):

NO VALUES AVAILABLE

DISTANCE FROM SOLAR NEIGHBORHOOD (kpc):

DIST	REF.
1.74	SCH68
1.70	ISS72
1.66	ISS73
1.74	LYN87

ANGULAR DIAMETER (arcmin):

ANG D	REF.
35.0	SCH68
35.0	LYN83

LINEAR DIAMETER (pc):

LIN D	REF.
17.1	LDCAL
17.0	LYN83

AGE ESTIMATES:
AGE (Myr):

AGE	REF.
10.	LYN87

EARLIEST MS SPECTRAL TYPE:

eSpT	REF.
OB	STO56
B	STO56
OB	LYN83

MS TURNOFF COLOR:

(B-V)	REF.
-0.30	LYN87

MASSES (SOLAR MASS UNITS):
STELLAR MASS:

NO VALUES AVAILABLE

MASS IN ASSOCIATED H I CLOUDS:

NO VALUES AVAILABLE

IONIZED HYDROGEN MASS:

NO VALUES AVAILABLE

MASS IN ASSOCIATED MOLECULAR CLOUDS:

NO VALUES AVAILABLE

ASSOCIATED MASS IN THE FORM OF DUST:

NO VALUES AVAILABLE

VISUAL EXTINCTION TOWARD CLUSTER (mag):

AV	REF.
1.50	LYN83

B-V COLOR EXCESS (mag):

E(B-V)	REF.
0.54	LYN87

REFERENCES

ISS72 Isserstedt, J., and Schmidt-Kaler, Th. 1972, A. G. Mitt., 31, 132.
ISS73 Isserstedt, J., and Schmidt-Kaler, Th. 1973, Astr. Ap. Suppl., 10, 365.
LDCAL Linear diameter calculated from published ang. diam. and distance.
LYN83 Lynga, G. 1983, Catalogue of Open Cluster Data (3rd edition), available through NSSDC, Greenbelt, Maryland, USA
LYN87 Lynga, G. 1987, Catalogue of Open Cluster Data (5th edition), available through NSSDC, Greenbelt, Maryland, USA
VCIRC Radial velocity estimate based on cluster distance and rotation curve model of Brand 1986 (Ph. D. thesis, Leiden).
SCH68 Schmidt-Kaler, Th. 1968, Bochum Ver., No. 1.
STO56 Stock, J. 1956, private communication to Alter et al. 1970.

CLUSTER IDENTIFICATION:

ALTER et al.: OCL 523
COMMON NAME: COLLIN 96
DATA BASE NUM: 114

SPATIAL COORDINATES:

L II: 207.97 RA(1950.0): 6. 27.7
B II: -3.38 DEC(1950.0): 2. 54.

RADIAL VELOCITIES (w.r.t. LSR; km/s):
STELLAR:

VELOCITY	REF.
10.4	VCIRC
-4.7	WIL53

H II REGION:

NO VALUES AVAILABLE

CO CLOUDS:

NO VALUES AVAILABLE

PROPER MOTION (arcsec/100 yr):

NO VALUES AVAILABLE

DISTANCE FROM SOLAR NEIGHBORHOOD (kpc):

DIST	REF.
1.10	MV075
1.13	LYN87

ANGULAR DIAMETER (arcmin):

ANG D	REF.
8.0	COL31
8.0	LYN83

LINEAR DIAMETER (pc):

LIN D	REF.
2.6	LDCAL
2.6	LYN83

AGE ESTIMATES:
AGE (Myr):

AGE	REF.
25.	LYN83
41.	LYN87

EARLIEST MS SPECTRAL TYPE:

eSpT	REF.
b3	MV075

MS TURNOFF COLOR:

(B-V)	REF.
-0.20	MV075
-0.20	LYN87

MASSES (SOLAR MASS UNITS):
STELLAR MASS:

NO VALUES AVAILABLE

MASS IN ASSOCIATED H I CLOUDS:

NO VALUES AVAILABLE

IONIZED HYDROGEN MASS:

NO VALUES AVAILABLE

MASS IN ASSOCIATED MOLECULAR CLOUDS:

NO VALUES AVAILABLE

ASSOCIATED MASS IN THE FORM OF DUST:

NO VALUES AVAILABLE

VISUAL EXTINCTION TOWARD CLUSTER (mag):

AV	REF.
1.44	LYN83

B-V COLOR EXCESS (mag):

E(B-V)	REF.
0.48	LYN87

REFERENCES

COL31 Collinder, P. 1931, Ann. Lund Obs., No. 2.
LDCAL Linear diameter calculated from published ang. diam. and distance.
LYN83 Lynga, G. 1983, Catalogue of Open Cluster Data (3rd edition), available through NSSDC, Greenbelt, Maryland, USA
LYN87 Lynga, G. 1987, Catalogue of Open Cluster Data (5th edition), available through NSSDC, Greenbelt, Maryland, USA
MVO75 Moffat, A. F. J., and Vogt, N. 1975, Astr. Ap. Suppl., 20, 85.
VCIRC Radial velocity estimate based on cluster distance and rotation curve model of Brand 1986 (Ph. D. thesis, Leiden).
WIL53 Wilson, R. E. 1953, General Catalog of Stellar Radial Velocities, (Washington, D.C.: Carnegie Institution, Pub 601).

CLUSTER IDENTIFICATION:

ALTER et al.: OCL 527
COMMON NAME: V D BERGH
MEMBER OF ASSOC.: MON OB1
DATA BASE NUM: 115

SPATIAL COORDINATES:

L II: 208.56 RA(1950.0): 6. 34.4
B II: -1.80 DEC(1950.0): 3. 7.

RADIAL VELOCITIES (w.r.t. LSR; km/s):
STELLAR:

VELOCITY	REF.
15.5	VCIRC

H II REGION:

NO VALUES AVAILABLE

CO CLOUDS:

NO VALUES AVAILABLE

PROPER MOTION (arcsec/100 yr):

NO VALUES AVAILABLE

DISTANCE FROM SOLAR NEIGHBORHOOD (kpc):

DIST	REF.
2.30	LIN68
1.70	LYN83

ANGULAR DIAMETER (arcmin):

ANG D	REF.
5.0	LIN68
5.0	LYN83

LINEAR DIAMETER (pc):

LIN D	REF.
2.5	LDCAL
3.4	LIN68

AGE ESTIMATES:
AGE (Myr):

AGE	REF.
50.	LIN68

EARLIEST MS SPECTRAL TYPE:

NO VALUES AVAILABLE

MS TURNOFF COLOR:

NO VALUES AVAILABLE

MASSES (SOLAR MASS UNITS):
STELLAR MASS:

NO VALUES AVAILABLE

MASS IN ASSOCIATED H I CLOUDS:

NO VALUES AVAILABLE

IONIZED HYDROGEN MASS:

NO VALUES AVAILABLE

MASS IN ASSOCIATED MOLECULAR CLOUDS:

NO VALUES AVAILABLE

ASSOCIATED MASS IN THE FORM OF DUST:

NO VALUES AVAILABLE

VISUAL EXTINCTION TOWARD CLUSTER (mag):

AV	REF.
2.19	LYN83

B-V COLOR EXCESS (mag):

E(B-V)	REF.
0.70	BUS63
0.76	SCH63
0.73	BEC63

REFERENCES

BEC63 Becker, W. 1963, Z. f. A., 57, 117.
BUS63 Buscombe, W. 1963, Mt. Stromlo Mimeogram, No. 6, pg. 24.
LIN68 Lindoff, U. 1968, Arkiv Astr., 5, 1.
LDCAL Linear diameter calculated from published ang. diam. and distance.
LYN83 Lynga, G. 1983, Catalogue of Open Cluster Data (3rd edition), available through NSSDC, Greenbelt, Maryland, USA
VCIRC Radial velocity estimate based on cluster distance and rotation curve model of Brand 1986 (Ph. D. thesis, Leiden).
SCH63 Schmidt, von K.-H. 1963, Ast. Nach., 287, 41.

CLUSTER IDENTIFICATION:

ALTER et al.: OCL 548
COMMON NAME: NGC 2286
DATA BASE NUM: 116

SPATIAL COORDINATES:

L II: 215.32 RA(1950.0): 6. 45.1
B II: -2.30 DEC(1950.0): -3. 7.

RADIAL VELOCITIES (w.r.t. LSR; km/s):
STELLAR:

VELOCITY	REF.
13.9	VCIRC

H II REGION:

NO VALUES AVAILABLE

CO CLOUDS:

NO VALUES AVAILABLE

PROPER MOTION (arcsec/100 yr):

NO VALUES AVAILABLE

DISTANCE FROM SOLAR NEIGHBORHOOD (kpc):

DIST	REF.
1.30	HAG70
1.28	BEC71
1.27	LYN87

ANGULAR DIAMETER (arcmin):

ANG D	REF.
9.0	ALT70
15.0	ALT70
9.0	BEC71
15.0	LYN83

LINEAR DIAMETER (pc):

LIN D	REF.
5.6	LDCAL
3.4	BEC71
5.7	LYN83

AGE ESTIMATES:
AGE (Myr):

AGE	REF.
313.	LYN87

EARLIEST MS SPECTRAL TYPE:

eSpT	REF.
b5	BEC63
b4	BEC71
b4	LYN83

MS TURNOFF COLOR:

(B-V)	REF.
0.00	HAG70

MASSES (SOLAR MASS UNITS):
STELLAR MASS:

NO VALUES AVAILABLE

MASS IN ASSOCIATED H I CLOUDS:

NO VALUES AVAILABLE

IONIZED HYDROGEN MASS:

NO VALUES AVAILABLE

MASS IN ASSOCIATED MOLECULAR CLOUDS:

NO VALUES AVAILABLE

ASSOCIATED MASS IN THE FORM OF DUST:

NO VALUES AVAILABLE

VISUAL EXTINCTION TOWARD CLUSTER (mag):

AV	REF.
1.23	BEC71
1.23	LYN83

B-V COLOR EXCESS (mag):

E(B-V)	REF.
0.41	CHI63
0.41	BEC63
0.41	HAG70
0.41	LYN87

REFERENCES

ALT70 Alter, G., Ruprecht, J., and Vanysek, V. 1970, The Catalog of Star Clusters and Associations (Budapest: Akad Kiado).
BEC63 Becker, W. 1963, Z. f. A., 57, 117.
BEC71 Becker, W. 1971, Astr. Ap. Suppl., 4, 241.
CHI63 Chincarini, G. 1963, Contr. Obs. Ast. Univ. Padova in Asiago, 133, 11.
HAG70 Hagen, G. L. 1970, D. D. O. Pub., Univ. Toronto, 4.
LDCAL Linear diameter calculated from published ang. diam. and distance.
LYN83 Lynga, G. 1983, Catalogue of Open Cluster Data (3rd edition), available through NSSDC, Greenbelt, Maryland, USA
LYN87 Lynga, G. 1987, Catalogue of Open Cluster Data (5th edition), available through NSSDC, Greenbelt, Maryland, USA
VCIRC Radial velocity estimate based on cluster distance and rotation curve model of Brand 1986 (Ph. D. thesis, Leiden).

CLUSTER IDENTIFICATION:

COMMON NAME: MONOCEROS
SHARPLESS: S287
DATA BASE NUM: 117

SPATIAL COORDINATES:

L II: 218.13
B II: -0.39

RA(1950.0): 6. 57.1
DEC(1950.0): -4. 43.

RADIAL VELOCITIES (w.r.t. LSR; km/s):
STELLAR:

VELOCITY	REF.
31.8	VCIRC
40.0	GRA71

H II REGION:

NO VALUES AVAILABLE

CO CLOUDS:

VELOCITY	REF.
27.2	BLI82
27.1	LEI88

PROPER MOTION (arcsec/100 yr):

NO VALUES AVAILABLE

DISTANCE FROM SOLAR NEIGHBORHOOD (kpc):

DIST	REF.
3.00	GRA71
3.20	MOF79
3.20	FIC84

ANGULAR DIAMETER (arcmin):

ANG D	REF.
12.0	MOF79
12.0	BLI82

LINEAR DIAMETER (pc):

LIN D	REF.
11.2	LDCAL

AGE ESTIMATES:
AGE (Myr):

AGE	REF.
5.	LEI88

EARLIEST MS SPECTRAL TYPE:

eSpT	REF.
B0IV	CRA71
O9.5	GEO73
O9.5	MOF79

MS TURNOFF COLOR:

(B-V)	REF.
-0.32	GRA71
-0.30	MOF79

MASSES (SOLAR MASS UNITS):
STELLAR MASS:

NO VALUES AVAILABLE

MASS IN ASSOCIATED H I CLOUDS:

NO VALUES AVAILABLE

IONIZED HYDROGEN MASS:

NO VALUES AVAILABLE

MASS IN ASSOCIATED MOLECULAR CLOUDS:

MASS	REF.
3.50E+04	LEI88

ASSOCIATED MASS IN THE FORM OF DUST:

NO VALUES AVAILABLE

VISUAL EXTINCTION TOWARD CLUSTER (mag):

AV	REF.
1.59	GRA71

B-V COLOR EXCESS (mag):

E(B-V)	REF.
0.53	GRA71
0.74	MOF79

REFERENCES

BLI82 Blitz, L., Fich, M. and Stark, A. A. 1982, Ap. J. Suppl., 49, 183.
CRA71 Crampton, D. 1971, A. J., 76, 260.
FIC84 Fich, M., and Blitz, L. 1984, Ap. J., 279, 125.
GEO73 Georgelin, Y. M., Georgelin, Y. P., and Roux, S. 1973, Astr. Ap., 25, 337.
GRA71 Graham, J. A. 1971, A. J., 76, 1079.
LEI88 Leisawitz, D., Thaddeus, P., and Bash, F. N. 1988, in preparation for submission to Ap. J. Suppl.
LDCAL Linear diameter calculated from published ang. diam. and distance.
MOF79 Moffat, A. F. J., FitzGerald, M. P., and Jackson, P. D. 1979, Astr. Ap. Suppl., 38, 197.
VCIRC Radial velocity estimate based on cluster distance and rotation curve model of Brand 1986 (Ph. D. thesis, Leiden).

CLUSTER IDENTIFICATION:

ALTER et al.: OCL 559
COMMON NAME: NGC 2323
ALTERNATE NAME: M50
DATA BASE NUM: 118

SPATIAL COORDINATES:

L II: 221.67
B II: -1.24

RA(1950.0): 7. 0.8
DEC(1950.0): -8. 16.

RADIAL VELOCITIES (w.r.t. LSR; km/s):
STELLAR:

VELOCITY	REF.
12.5	VCIRC
-9.0	WRA83
-9.0	LYN87

H II REGION:

NO VALUES AVAILABLE

CO CLOUDS:

NO VALUES AVAILABLE

PROPER MOTION (arcsec/100 yr):

NO VALUES AVAILABLE

DISTANCE FROM SOLAR NEIGHBORHOOD (kpc):

DIST	REF.
0.91	JOH61
1.16	LIN68
1.00	HAG70
1.17	BEC71
1.02	LYN87

ANGULAR DIAMETER (arcmin):

ANG D	REF.
12.0	LIN68
25.0	ALT70
12.0	HAG70
20.0	BEC71
16.0	LYN83

LINEAR DIAMETER (pc):

LIN D	REF.
4.9	LDCAL
4.1	LIN68
3.5	HAG70
6.8	BEC71
4.4	LYN83

AGE ESTIMATES:
AGE (Myr):

AGE	REF.
35.	LIN68
60.	BAR69
63.	HAR76
78.	MER81
78.	LYN87

EARLIEST MS SPECTRAL TYPE:

eSpT	REF.
b3	JOH61
B6	HOA65
B3	HOV65
B8	BEC71
B6	LYN83
B8	LYN83
b4	LYN83

MS TURNOFF COLOR:

(B-V)	REF.
-0.19	JOH61
-0.15	HAG70
-0.15	LYN87

MASSES (SOLAR MASS UNITS):
STELLAR MASS:

MASS	REF.
1.72E+03	SCH63
5.05E+02	RED71
4.50E+02	LOH72
5.12E+02	BRU83
1.58E+03	LYN83

MASS IN ASSOCIATED H I CLOUDS:

NO VALUES AVAILABLE

IONIZED HYDROGEN MASS:

NO VALUES AVAILABLE

MASS IN ASSOCIATED MOLECULAR CLOUDS:

NO VALUES AVAILABLE

ASSOCIATED MASS IN THE FORM OF DUST:

NO VALUES AVAILABLE

VISUAL EXTINCTION TOWARD CLUSTER (mag):

AV	REF.
0.78	NEC67
0.93	BEC71
0.93	LYN83

B-V COLOR EXCESS (mag):

E(B-V)	REF.
0.26	JOH61
0.30	BUS63
0.26	SCH63
0.24	STA68
0.24	HAG70
0.24	LYN87

REFERENCES

ALT70 Alter, G., Ruprecht, J., and Vanysek, V. 1970, The Catalog of Star Clusters and Associations (Budapest: Akad Kiado).
BAR69 Barbaro, G., Dallaporta, N., and Fabris, G. 1969, Ap. Sp. Sci., 3, 123.
BEC71 Becker, W. 1971, Astr. Ap. Suppl., 4, 241.
BRU83 Bruch, A., and Sanders, W. L. 1983, Astr. Ap., 121, 237.
BUS63 Buscombe, W. 1963, Mt. Stromlo Mimeogram, No. 6, pg. 24.
HAG70 Hagen, G. L. 1970, D. D. O. Pub., Univ. Toronto, 4.
HAR76 Harris, G. L. H. 1976, Ap. J. Suppl., 30, 451.
HOV65 Hoag, A. A. 1965, Vistas, 8, 139.
HOA65 Hoag, A. A., and Applequist, N. L. 1965, Ap. J. Suppl., 12, 215.
JOH61 Johnson, H. L., Hoag, A. A., Iriarte, B., Mitchell, R. I., and Hallam, K. L. 1961, Lowell Obs. Bull., 5, 133.
LIN68 Lindoff, U. 1968, Arkiv Astr., 5, 1.
LDCAL Linear diameter calculated from published ang. diam. and distance.
LOH72 Lohmann, W. 1972, Astr. Nach., 293, 259.
LYN83 Lynga, G. 1983, Catalogue of Open Cluster Data (3rd edition), available through NSSDC, Greenbelt, Maryland, USA
LYN87 Lynga, G. 1987, Catalogue of Open Cluster Data (5th edition), available through NSSDC, Greenbelt, Maryland, USA
MER81 Mermilliod, J.-C. 1981, Astr. Ap., 97, 235.
NEC67 Neckel, T. 1967, Heid. Ver., 19, 115.
VCIRC Radial velocity estimate based on cluster distance and rotation curve model of Brand 1986 (Ph. D. thesis, Leiden).
RED71 Reddish, V. C., and Sloan, C. 1971, Observatory, 91, 70.
SCH63 Schmidt, von K.-H. 1963, Ast. Nach., 287, 41.
STA68 Starikova, G. A. 1969, Sov. Astr., 12, 632.
WRA83 Wramdemark, S. 1983, private communication.

CLUSTER IDENTIFICATION:

ALTER et al.: OCL 562
COMMON NAME: NGC 2335
DATA BASE NUM: 119

SPATIAL COORDINATES:

L II: 223.62
B II: -1.27

RA(1950.0): 7. 4.2
DEC(1950.0): -10. 0.

RADIAL VELOCITIES (w.r.t. LSR; km/s):
STELLAR:

VELOCITY	REF.
12.8	VCIRC
7.8	CLR85

H II REGION:

NO VALUES AVAILABLE

CO CLOUDS:

NO VALUES AVAILABLE

PROPER MOTION (arcsec/100 yr):

NO VALUES AVAILABLE

DISTANCE FROM SOLAR NEIGHBORHOOD (kpc):

DIST	REF.
1.10	SGW71
1.11	SEG71
1.02	CLA73
1.15	CLR85
1.02	LYN87

ANGULAR DIAMETER (arcmin):

ANG D	REF.
10.0	ALT70
21.0	ALT70
10.8	SEG71
12.0	LYN83

LINEAR DIAMETER (pc):

LIN D	REF.
3.8	LDCAL
3.5	SEG71
3.5	LYN83

AGE ESTIMATES:
AGE (Myr):

AGE	REF.
200.	SEG71
150.	CLA73
159.	LYN83
65.	NAK84
106.	LYN87

EARLIEST MS SPECTRAL TYPE:

eSpT	REF.
B9	ALT70
b6	FEN78
b7	FEN78
B9	LYN83

MS TURNOFF COLOR:

(B-V)	REF.
-0.13	SEG71
-0.10	CLA73
-0.11	LYN87

MASSES (SOLAR MASS UNITS):
STELLAR MASS:

NO VALUES AVAILABLE

MASS IN ASSOCIATED H I CLOUDS:

NO VALUES AVAILABLE

IONIZED HYDROGEN MASS:

MASS	REF.
0.00E+00	NAK84

MASS IN ASSOCIATED MOLECULAR CLOUDS:

NO VALUES AVAILABLE

ASSOCIATED MASS IN THE FORM OF DUST:

NO VALUES AVAILABLE

VISUAL EXTINCTION TOWARD CLUSTER (mag):

AV	REF.
1.20	CLA73
1.20	LYN83

B-V COLOR EXCESS (mag):

E(B-V)	REF.
0.40	CLA73
0.47	CLR85
0.38	LYN87

REFERENCES

ALT70 Alter, G., Ruprecht, J., and Vanysek, V. 1970, The Catalog of Star Clusters and Associations (Budapest: Akad Kiado).
CLA73 Claria, J. J. 1973, Astr. Ap. Suppl., 9, 251.
CLR85 Claria, J. J. 1985, Astr. Ap. Suppl., 59, 195.
FEN78 Fenkart, R. P., and Binggeli, B. 1978, Astr. Ap. Suppl., 35, 271.
LDCAL Linear diameter calculated from published ang. diam. and distance.
LYN83 Lynga, G. 1983, Catalogue of Open Cluster Data (3rd edition), available through NSSDC, Greenbelt, Maryland, USA
LYN87 Lynga, G. 1987, Catalogue of Open Cluster Data (5th edition), available through NSSDC, Greenbelt, Maryland, USA
NAK84 Nakano, M. 1984, P. A. S. Japan, 36, 517.
VCIRC Radial velocity estimate based on cluster distance and rotation curve model of Brand 1986 (Ph. D. thesis, Leiden).
SEG71 Seggewiss, W. 1971, Ver. Ast. Inst. Bonn, 83.
SGW71 Seggewiss, W. 1971, Ver. Ast. Inst. Bonn, 82.

CLUSTER IDENTIFICATION:

ALTER et al.: OCL 565
COMMON NAME: NGC 2343
DATA BASE NUM: 120

SPATIAL COORDINATES:

L II: 224.32
B II: -1.16

RA(1950.0): 7. 5.9
DEC(1950.0): -10. 34.

RADIAL VELOCITIES (w.r.t. LSR; km/s):
STELLAR:

VELOCITY	REF.
10.4	VCIRC

H II REGION:

NO VALUES AVAILABLE

CO CLOUDS:

NO VALUES AVAILABLE

PROPER MOTION (arcsec/100 yr):

NO VALUES AVAILABLE

DISTANCE FROM SOLAR NEIGHBORHOOD (kpc):

DIST	REF.
0.71	SEG71
0.98	CLA72
0.70	FEN78
0.94	FEN78
0.95	CLR85
0.87	LYN87

ANGULAR DIAMETER (arcmin):

ANG D	REF.
5.0	ALT70
12.0	ALT70
6.6	SEG71
13.0	CLA72
7.0	LYN83

LINEAR DIAMETER (pc):

LIN D	REF.
2.3	LDCAL
1.4	SEG71
3.6	CLA72
2.0	LYN83

AGE ESTIMATES:
AGE (Myr):

AGE	REF.
300.	SEG71
110.	CLA73
100.	WAL75
100.	LYN83
50.	NAK84
78.	LYN87

EARLIEST MS SPECTRAL TYPE:

eSpT	REF.
A0	LYN83

MS TURNOFF COLOR:

(B-V)	REF.
-0.13	SEG71
-0.15	CLA72
-0.14	LYN87

MASSES (SOLAR MASS UNITS):
STELLAR MASS:

NO VALUES AVAILABLE

MASS IN ASSOCIATED H I CLOUDS:

NO VALUES AVAILABLE

IONIZED HYDROGEN MASS:

MASS	REF.
0.00E+00	NAK84
3.01E+02	PYA86

MASS IN ASSOCIATED MOLECULAR CLOUDS:

NO VALUES AVAILABLE

ASSOCIATED MASS IN THE FORM OF DUST:

NO VALUES AVAILABLE

VISUAL EXTINCTION TOWARD CLUSTER (mag):

AV	REF.
0.60	CLA73
0.60	LYN83

B-V COLOR EXCESS (mag):

E(B-V)	REF.
0.20	CLA72
0.29	CLR85
0.16	LYN87

REFERENCES

ALT70 Alter, G., Ruprecht, J., and Vanysek, V. 1970, The Catalog of Star Clusters and Associations (Budapest: Akad Kiado).
CLA72 Claria, J. J. 1972, A. J., 77, 868.
CLA73 Claria, J. J. 1973, Astr. Ap. Suppl., 9, 251.
CLR85 Claria, J. J. 1985, Astr. Ap. Suppl., 59, 195.
FEN78 Fenkart, R. P., and Binggeli, B. 1978, Astr. Ap. Suppl., 35, 271.
LDCAL Linear diameter calculated from published ang. diam. and distance.
LYN83 Lynga, G. 1983, Catalogue of Open Cluster Data (3rd edition), available through NSSDC, Greenbelt, Maryland, USA
LYN87 Lynga, G. 1987, Catalogue of Open Cluster Data (5th edition), available through NSSDC, Greenbelt, Maryland, USA
NAK84 Nakano, M. 1984, P. A. S. Japan, 36, 517.
PYA86 Pyatunina, T. B., and Taraskin, Yu. M. 1986, Sov. Astr., 30, 648.
VCIRC Radial velocity estimate based on cluster distance and rotation curve model of Brand 1986 (Ph. D. thesis, Leiden).
SEG71 Seggewiss, W. 1971, Ver. Ast. Inst. Bonn, 83.
WAL75 Wallenquist, A. 1975, Uppsala Ast. Obs. Ann., Band 5, No. 8.

CLUSTER IDENTIFICATION:

ALTER et al.: OCL 567
COMMON NAME: NGC 2353
MEMBER OF ASSOC.: CMA OB1
DATA BASE NUM: 121

SPATIAL COORDINATES:

L II: 224.72
B II: 0.38
RA(1950.0): 7. 12.2
DEC(1950.0): -10. 13.

RADIAL VELOCITIES (w.r.t. LSR; km/s):
STELLAR:

VELOCITY	REF.
13.9	VCIRC
3.0	JOS61
14.7	HUM78
9.0	WRA83
9.0	LYN87
9.0	HRO87

H II REGION:

NO VALUES AVAILABLE

CO CLOUDS:

NO VALUES AVAILABLE

PROPER MOTION (arcsec/100 yr):

NO VALUES AVAILABLE

DISTANCE FROM SOLAR NEIGHBORHOOD (kpc):

DIST	REF.
1.05	JOH61
1.05	NEC67
1.32	LIN68
1.00	HAG70
1.30	BEC71
1.04	LYN87

ANGULAR DIAMETER (arcmin):

ANG D	REF.
8.0	LIN68
20.0	ALT70
30.0	ALT70
10.0	HAG70
20.0	BEC71
20.0	LYN83

LINEAR DIAMETER (pc):

LIN D	REF.
5.1	LDCAL
3.1	LIN68
2.9	HAG70
7.6	BEC71
6.4	LYN83

AGE ESTIMATES:
AGE (Myr):

AGE	REF.
13.	LYN83
13.	PYA86
78.	LYN87

EARLIEST MS SPECTRAL TYPE:

eSpT	REF.
O9	SAN49
b1	JOH61
B0	BEC71
B0	LYN83
b1	LYN83

MS TURNOFF COLOR:

(B-V)	REF.
-0.25	JOH61
-0.15	HAG70
-0.15	LYN87

MASSES (SOLAR MASS UNITS):
STELLAR MASS:

MASS	REF.
9.25E+02	SCH63
2.97E+02	RED71
3.01E+02	BRU83
1.00E+03	LYN83

MASS IN ASSOCIATED H I CLOUDS:

NO VALUES AVAILABLE

IONIZED HYDROGEN MASS:

NO VALUES AVAILABLE

MASS IN ASSOCIATED MOLECULAR CLOUDS:

NO VALUES AVAILABLE

ASSOCIATED MASS IN THE FORM OF DUST:

NO VALUES AVAILABLE

VISUAL EXTINCTION TOWARD CLUSTER (mag):

AV	REF.
0.36	NEC67
0.30	BEC71
0.30	LYN83

B-V COLOR EXCESS (mag):

E(B-V)	REF.
0.12	JOH61
0.10	BUS63
0.12	SCH63
0.12	STA68
0.12	HAG70
0.12	LYN87

REFERENCES

ALT70 Alter, G., Ruprecht, J., and Vanysek, V. 1970, The Catalog of Star Clusters and Associations (Budapest: Akad Kiado).
BEC71 Becker, W. 1971, Astr. Ap. Suppl., 4, 241.
BRU83 Bruch, A., and Sanders, W. L. 1983, Astr. Ap., 121, 237.
BUS63 Buscombe, W. 1963, Mt. Stromlo Mimeogram, No. 6, pg. 24.
HAG70 Hagen, G. L. 1970, D. D. O. Pub., Univ. Toronto, 4.
HRO87 Hron, J. 1987, Astr. Ap., 176, 34.
HUM78 Humphreys, R. M. 1978, Ap. J. Suppl., 38, 309.
JOS61 Johnson, H. L., and Svolopoulos, S. N. 1961, Ap. J., 134, 868.
JOH61 Johnson, H. L., Hoag, A. A., Iriarte, B., Mitchell, R. I., and Hallam, K. L. 1961, Lowell Obs. Bull., 5, 133.
LIN68 Lindoff, U. 1968, Arkiv Astr., 5, 1.
LDCAL Linear diameter calculated from published ang. diam. and distance.
LYN83 Lynga, G. 1983, Catalogue of Open Cluster Data (3rd edition), available through NSSDC, Greenbelt, Maryland, USA
LYN87 Lynga, G. 1987, Catalogue of Open Cluster Data (5th edition), available through NSSDC, Greenbelt, Maryland, USA
NEC67 Neckel, T. 1967, Heid. Ver., 19, 115.
PYA86 Pyatunina, T. B., and Taraskin, Yu. M. 1986, Sov. Astr., 30, 648.
VCIRC Radial velocity estimate based on cluster distance and rotation curve model of Brand 1986 (Ph. D. thesis, Leiden).
RED71 Reddish, V. C., and Sloan, C. 1971, Observatory, 91, 70.
SAN49 Sanford, R. F. 1949, Ap. J., 110, 117.
SCH63 Schmidt, von K.-H. 1963, Ast. Nach., 287, 41.
STA68 Starikova, G. A. 1969, Sov. Astr., 12, 632.
WRA83 Wramdemark, S. 1983, private communication.

CLUSTER IDENTIFICATION:

ALTER et al.: OCL 575
COMMON NAME: NGC 2345
DATA BASE NUM: 122

SPATIAL COORDINATES:

L II: 226.57
B II: -2.30

RA(1950.0): 7. 6.0
DEC(1950.0): -13. 5.

RADIAL VELOCITIES (w.r.t. LSR; km/s):
STELLAR:

VELOCITY	REF.
20.4	VCIRC

H II REGION:

NO VALUES AVAILABLE

CO CLOUDS:

NO VALUES AVAILABLE

PROPER MOTION (arcsec/100 yr):

NO VALUES AVAILABLE

DISTANCE FROM SOLAR NEIGHBORHOOD (kpc):

DIST	REF.
1.75	MOF74
1.75	LYN87

ANGULAR DIAMETER (arcmin):

ANG D	REF.
10.0	ALT70
17.0	ALT70
12.0	LYN83

LINEAR DIAMETER (pc):

LIN D	REF.
6.1	LDCAL
6.3	LYN83

AGE ESTIMATES:
AGE (Myr):

AGE	REF.
60.	MOF74
78.	LYN87

EARLIEST MS SPECTRAL TYPE:

eSpT	REF.
B4	MOF74
A2	LYN83

MS TURNOFF COLOR:

(B-V)	REF.
-0.15	MOF74
-0.15	LYN87

MASSES (SOLAR MASS UNITS):
STELLAR MASS:

NO VALUES AVAILABLE

MASS IN ASSOCIATED H I CLOUDS:

NO VALUES AVAILABLE

IONIZED HYDROGEN MASS:

NO VALUES AVAILABLE

MASS IN ASSOCIATED MOLECULAR CLOUDS:

NO VALUES AVAILABLE

ASSOCIATED MASS IN THE FORM OF DUST:

NO VALUES AVAILABLE

VISUAL EXTINCTION TOWARD CLUSTER (mag):

AV	REF.
1.80	LYN83

B-V COLOR EXCESS (mag):

E(B-V)	REF.
0.70	LYN87

REFERENCES

ALT70 Alter, G., Ruprecht, J., and Vanysek, V. 1970, The Catalog of Star Clusters and Associations (Budapest: Akad Kiado).
LDCAL Linear diameter calculated from published ang. diam. and distance.
LYN83 Lynga, G. 1983, Catalogue of Open Cluster Data (3rd edition), available through NSSDC, Greenbelt, Maryland, USA
LYN87 Lynga, G. 1987, Catalogue of Open Cluster Data (5th edition), available through NSSDC, Greenbelt, Maryland, USA
MOF74 Moffat, A. F. J. 1974, Astr. Ap. Suppl., 16, 33.
VCIRC Radial velocity estimate based on cluster distance and rotation curve model of Brand 1986 (Ph. D. thesis, Leiden).

CLUSTER IDENTIFICATION:

ALTER et al.: OCL 594
COMMON NAME: HAFFNER 10
DATA BASE NUM: 123

SPATIAL COORDINATES:

L II: 230.82
B II: 1.00

RA(1950.0): 7. 26.3
DEC(1950.0): -15. 17.

RADIAL VELOCITIES (w.r.t. LSR; km/s):
STELLAR:

VELOCITY	REF.
32.5	VCIRC
35.8	WIL53

H II REGION:

NO VALUES AVAILABLE

CO CLOUDS:

NO VALUES AVAILABLE

PROPER MOTION (arcsec/100 yr):

NO VALUES AVAILABLE

DISTANCE FROM SOLAR NEIGHBORHOOD (kpc):

DIST	REF.
2.90	FIT80
2.94	LYN87

ANGULAR DIAMETER (arcmin):

ANG D	REF.
1.6	HAF57
2.0	FIT80
1.6	LYN83

LINEAR DIAMETER (pc):

LIN D	REF.
1.4	LDCAL
3.0	FIT80
4.0	FIT80

AGE ESTIMATES:
AGE (Myr):

AGE	REF.
200.	FIT80
6.	LYN83
12.	LYN87

EARLIEST MS SPECTRAL TYPE:

NO VALUES AVAILABLE

MS TURNOFF COLOR:

(B-V)	REF.
-0.25	FIT80
-0.25	LYN87

MASSES (SOLAR MASS UNITS):
STELLAR MASS:

NO VALUES AVAILABLE

MASS IN ASSOCIATED H I CLOUDS:

NO VALUES AVAILABLE

IONIZED HYDROGEN MASS:

NO VALUES AVAILABLE

MASS IN ASSOCIATED MOLECULAR CLOUDS:

NO VALUES AVAILABLE

ASSOCIATED MASS IN THE FORM OF DUST:

NO VALUES AVAILABLE

VISUAL EXTINCTION TOWARD CLUSTER (mag):

NO VALUES AVAILABLE

B-V COLOR EXCESS (mag):

E(B-V)	REF.
0.55	LYN87

REFERENCES

FIT80 Fitzgerald, M. P., and Moffat, A. F. J. 1980, PASP, 92, 489.
HAF57 Haffner, H. 1957, Z. f. A., 43, 89.
LDCAL Linear diameter calculated from published ang. diam. and distance.
LYN83 Lynga, G. 1983, Catalogue of Open Cluster Data (3rd edition), available through NSSDC, Greenbelt, Maryland, USA
LYN87 Lynga, G. 1987, Catalogue of Open Cluster Data (5th edition), available through NSSDC, Greenbelt, Maryland, USA
VCIRC Radial velocity estimate based on cluster distance and rotation curve model of Brand 1986 (Ph. D. thesis, Leiden).
WIL53 Wilson, R. E. 1953, General Catalog of Stellar Radial Velocities, (Washington, D.C.: Carnegie Institution, Pub 601).

CLUSTER IDENTIFICATION:

ALTER et al.: OCL 595
COMMON NAME: CZERNIK 29
DATA BASE NUM: 124

SPATIAL COORDINATES:

L II: 230.80 RA(1950.0): 7. 26.0
B II: 0.93 DEC(1950.0): -15. 18.

RADIAL VELOCITIES (w.r.t. LSR; km/s):
STELLAR:

VELOCITY	REF.
32.5	VCIRC
35.8	WIL53

H II REGION:

NO VALUES AVAILABLE

CO CLOUDS:

NO VALUES AVAILABLE

PROPER MOTION (arcsec/100 yr):

NO VALUES AVAILABLE

DISTANCE FROM SOLAR NEIGHBORHOOD (kpc):

DIST	REF.
2.90	FIT80
2.94	LYN87

ANGULAR DIAMETER (arcmin):

ANG D	REF.
8.0	CZE66
2.0	FIT80
8.0	LYN83

LINEAR DIAMETER (pc):

LIN D	REF.
6.8	LDCAL
3.0	FIT80
4.0	FIT80

AGE ESTIMATES:
AGE (Myr):

AGE	REF.
60.	FIT80
63.	LYN83
78.	LYN87

EARLIEST MS SPECTRAL TYPE:

NO VALUES AVAILABLE

MS TURNOFF COLOR:

(B-V)	REF.
-0.15	FIT80
-0.15	LYN87

MASSES (SOLAR MASS UNITS):
STELLAR MASS:

NO VALUES AVAILABLE

MASS IN ASSOCIATED H I CLOUDS:

NO VALUES AVAILABLE

IONIZED HYDROGEN MASS:

NO VALUES AVAILABLE

MASS IN ASSOCIATED MOLECULAR CLOUDS:

NO VALUES AVAILABLE

ASSOCIATED MASS IN THE FORM OF DUST:

NO VALUES AVAILABLE

VISUAL EXTINCTION TOWARD CLUSTER (mag):

NO VALUES AVAILABLE

B-V COLOR EXCESS (mag):

E(B-V)	REF.
0.55	LYN87

REFERENCES

CZE66 Czernik, M. 1966, Acta Astr., 16, 93.
FIT80 Fitzgerald, M. P., and Moffat, A. F. J. 1980, PASP, 92, 489.
LDCAL Linear diameter calculated from published ang. diam. and distance.
LYN83 Lynga, G. 1983, Catalogue of Open Cluster Data (3rd edition), available through NSSDC, Greenbelt, Maryland, USA
LYN87 Lynga, G. 1987, Catalogue of Open Cluster Data (5th edition), available through NSSDC, Greenbelt, Maryland, USA
VCIRC Radial velocity estimate based on cluster distance and rotation curve model of Brand 1986 (Ph. D. thesis, Leiden).
WIL53 Wilson, R. E. 1953, General Catalog of Stellar Radial Velocities, (Washington, D.C.: Carnegie Institution, Pub 601).

CLUSTER IDENTIFICATION:

ALTER et al.: OCL 598
COMMON NAME: NGC 2414
DATA BASE NUM: 125

SPATIAL COORDINATES:

L II: 231.41
B II: 1.96
RA(1950.0): 7. 31.0
DEC(1950.0): -15. 20.

RADIAL VELOCITIES (w.r.t. LSR; km/s):
STELLAR:

VELOCITY	REF.
44.5	VCIRC
57.2	HUM78
56.9	WRA83
45.9	HRO85
56.9	LYN87
46.4	HRO87

H II REGION:

NO VALUES AVAILABLE

CO CLOUDS:

NO VALUES AVAILABLE

PROPER MOTION (arcsec/100 yr):

NO VALUES AVAILABLE

DISTANCE FROM SOLAR NEIGHBORHOOD (kpc):

DIST	REF.
2.50	BUS63
4.15	VOG72
4.20	FIM80
4.15	LYN87

ANGULAR DIAMETER (arcmin):

ANG D	REF.
3.0	ALT70
10.0	ALT70
8.0	VOG72
2.0	FIM80
4.0	LYN83

LINEAR DIAMETER (pc):

LIN D	REF.
4.9	LDCAL
10.0	VOG72
2.9	LYN83

AGE ESTIMATES:
AGE (Myr):

AGE	REF.
6.	LYN83
12.	LYN87

EARLIEST MS SPECTRAL TYPE:

eSpT	REF.
b1	FEN78

MS TURNOFF COLOR:

(B-V)	REF.
-0.25	VOG72
-0.25	LYN87

MASSES (SOLAR MASS UNITS):
STELLAR MASS:

NO VALUES AVAILABLE

MASS IN ASSOCIATED H I CLOUDS:

NO VALUES AVAILABLE

IONIZED HYDROGEN MASS:

NO VALUES AVAILABLE

MASS IN ASSOCIATED MOLECULAR CLOUDS:

NO VALUES AVAILABLE

ASSOCIATED MASS IN THE FORM OF DUST:

NO VALUES AVAILABLE

VISUAL EXTINCTION TOWARD CLUSTER (mag):

AV	REF.
1.65	LYN83

B-V COLOR EXCESS (mag):

E(B-V)	REF.
0.55	FIM80
0.55	LYN87

REFERENCES

ALT70 Alter, G., Ruprecht, J., and Vanysek, V. 1970, The Catalog of Star Clusters and Associations (Budapest: Akad Kiado).
BUS63 Buscombe, W. 1963, Mt. Stromlo Mimeogram, No. 6, pg. 24.
FEN78 Fenkart, R. P., and Binggeli, B. 1978, Astr. Ap. Suppl., 35, 271.
FIM80 Fitzgerald, M. P., and Moffat, A. F. J. 1980, MNRAS, 193, 761.
HRO87 Hron, J. 1987, Astr. Ap., 176, 34.
HRO85 Hron, J., Maitzen, H. M., Moffat, A. F. J., Schmidt-Kaler, Th., and Vogt, N. 1985, Astr. Ap. Suppl., 60, 355.
HUM78 Humphreys, R. M. 1978, Ap. J. Suppl., 38, 309.
LDCAL Linear diameter calculated from published ang. diam. and distance.
LYN83 Lynga, G. 1983, Catalogue of Open Cluster Data (3rd edition), available through NSSDC, Greenbelt, Maryland, USA
LYN87 Lynga, G. 1987, Catalogue of Open Cluster Data (5th edition), available through NSSDC, Greenbelt, Maryland, USA
VCIRC Radial velocity estimate based on cluster distance and rotation curve model of Brand 1986 (Ph. D. thesis, Leiden).
VOG72 Vogt, N., and Moffat, A. F. J. 1972, Astr. Ap. Suppl., 7, 33.
WRA83 Wramdemark, S. 1983, private communication.

CLUSTER IDENTIFICATION:

ALTER et al.: OCL 626
COMMON NAME: NGC 2421
DATA BASE NUM: 126

SPATIAL COORDINATES:

L II: 236.24 RA(1950.0): 7. 34.1
B II: 0.08 DEC(1950.0): -20. 30.

RADIAL VELOCITIES (w.r.t. LSR; km/s):
STELLAR:

VELOCITY	REF.
21.5	VCIRC

H II REGION:

NO VALUES AVAILABLE

CO CLOUDS:

NO VALUES AVAILABLE

PROPER MOTION (arcsec/100 yr):

NO VALUES AVAILABLE

DISTANCE FROM SOLAR NEIGHBORHOOD (kpc):

DIST	REF.
1.87	MV075
1.86	LYN87

ANGULAR DIAMETER (arcmin):

ANG D	REF.
8.0	ALT70
14.0	ALT70
10.0	LYN83

LINEAR DIAMETER (pc):

LIN D	REF.
5.5	LDCAL
5.5	LYN83

AGE ESTIMATES:
AGE (Myr):

AGE	REF.
25.	LYN83
41.	LYN87

EARLIEST MS SPECTRAL TYPE:

eSpT	REF.
b0.5	MV075

MS TURNOFF COLOR:

(B-V)	REF.
-0.20	MOF75
-0.20	LYN87

MASSES (SOLAR MASS UNITS):
STELLAR MASS:

NO VALUES AVAILABLE

MASS IN ASSOCIATED H I CLOUDS:

NO VALUES AVAILABLE

IONIZED HYDROGEN MASS:

NO VALUES AVAILABLE

MASS IN ASSOCIATED MOLECULAR CLOUDS:

NO VALUES AVAILABLE

ASSOCIATED MASS IN THE FORM OF DUST:

NO VALUES AVAILABLE

VISUAL EXTINCTION TOWARD CLUSTER (mag):

AV	REF.
1.41	LYN83

B-V COLOR EXCESS (mag):

E(B-V)	REF.
0.47	LYN87

REFERENCES

ALT70	Alter, G., Ruprecht, J., and Vanysek, V. 1970, The Catalog of Star Clusters and Associations (Budapest: Akad Kiado).
LDCAL	Linear diameter calculated from published ang. diam. and distance.
LYN83	Lynga, G. 1983, Catalogue of Open Cluster Data (3rd edition), available through NSSDC, Greenbelt, Maryland, USA
LYN87	Lynga, G. 1987, Catalogue of Open Cluster Data (5th edition), available through NSSDC, Greenbelt, Maryland, USA
MOF75	Moffat, A. F. J., and Vogt, N. 1975, Astr. Ap., 41, 413.
MVO75	Moffat, A. F. J., and Vogt, N. 1975, Astr. Ap. Suppl., 20, 85.
VCIRC	Radial velocity estimate based on cluster distance and rotation curve model of Brand 1986 (Ph. D. thesis, Leiden).

CLUSTER IDENTIFICATION:

ALTER et al.: OCL 633
COMMON NAME: NGC 2362
SHARPLESS: S310
DATA BASE NUM: 127

SPATIAL COORDINATES:

L II: 238.18
B II: -5.53

RA(1950.0): 7. 16.7
DEC(1950.0): -24. 51.

RADIAL VELOCITIES (w.r.t. LSR; km/s):
STELLAR:

VELOCITY	REF.
16.9	VCIRC
16.9	JOS61
22.9	BRO64
13.9	HAG70
20.9	HUM78
14.9	WRA83
14.9	LYN87
14.9	HRO87

H II REGION:

NO VALUES AVAILABLE

CO CLOUDS:

VELOCITY	REF.
22.3	BLI82

PROPER MOTION (arcsec/100 yr):

NO VALUES AVAILABLE

DISTANCE FROM SOLAR NEIGHBORHOOD (kpc):

DIST	REF.
1.41	JOH50
1.50	JOH61
1.50	NEC67
1.55	LIN68
1.60	HAG70
1.54	BEC71
1.38	MEB81
1.50	FIC84
1.47	BRD86
1.57	LYN87

ANGULAR DIAMETER (arcmin):

ANG D	REF.
8.0	LIN68
7.0	ALT70
20.0	ALT70
8.8	BEC71
8.0	LYN83

LINEAR DIAMETER (pc):

LIN D	REF.
3.5	LDCAL
3.6	LIN68
3.9	BEC71
2.6	LOH77
4.0	LYN83

AGE ESTIMATES:
AGE (Myr):

AGE	REF.
25.	LIN68
25.	LYN83
7.	MER86
10.	LYN87

EARLIEST MS SPECTRAL TYPE:

eSpT	REF.
b0.5	JOH61
O9	MAY64
O8	BEC71
O8	LYN83
b0	LYN83

MS TURNOFF COLOR:

(B-V)	REF.
-0.28	JOH61
-0.30	HAG70
-0.30	LYN87

MASSES (SOLAR MASS UNITS):
STELLAR MASS:

MASS	REF.
1.98E+03	SCH63
2.00E+03	LYN83

MASS IN ASSOCIATED H I CLOUDS:

NO VALUES AVAILABLE

IONIZED HYDROGEN MASS:

MASS	REF.
8.00E+00	SCH69

MASS IN ASSOCIATED MOLECULAR CLOUDS:

NO VALUES AVAILABLE

ASSOCIATED MASS IN THE FORM OF DUST:

NO VALUES AVAILABLE

VISUAL EXTINCTION TOWARD CLUSTER (mag):

AV	REF.
0.30	FEN62
0.33	DLU65
0.33	NEC67
0.36	BEC71
0.36	LYN83

B-V COLOR EXCESS (mag):

E(B-V)	REF.
0.11	JOH61
0.10	BUS63
0.10	SCH63
0.12	BEC63
0.06	STA68
0.11	HAG70
0.09	BRD86
0.11	LYN87

REFERENCES

ALT70 Alter, G., Ruprecht, J., and Vanysek, V. 1970, The Catalog of Star Clusters and Associations (Budapest: Akad Kiado).
BEC63 Becker, W. 1963, Z. f. A., 57, 117.
BEC71 Becker, W. 1971, Astr. Ap. Suppl., 4, 241.
BLI82 Blitz, L., Fich, M. and Stark, A. A. 1982, Ap. J. Suppl., 49, 183.
BRO64 Bronnikova, N. M. 1964, Pulkova Izv., 23, 139.
BRD86 Brown, P. J. F., Dufton, P. L., Lennon, D. J., Keenon, F. P., and Kilkenny, D. 1986, MNRAS, 220, 1003.
BUS63 Buscombe, W. 1963, Mt. Stromlo Mimeogram, No. 6, pg. 24.
DLU65 Dluzhnevskaya, O. B. 1965, Nautch. Inf., No. 2.
FEN62 Fenkart, R. P. 1962, Z. f. A., 54, 49.
FIC84 Fich, M., and Blitz, L. 1984, Ap. J., 279, 125.
HAG70 Hagen, G. L. 1970, D. D. O. Pub., Univ. Toronto, 4.
HRO87 Hron, J. 1987, Astr. Ap., 176, 34.
HUM78 Humphreys, R. M. 1978, Ap. J. Suppl., 38, 309.
JOH50 Johnson, H. L. 1950, Ap. J., 112, 240.
JOS61 Johnson, H. L., and Svolopoulos, S. N. 1961, Ap. J., 134, 868.
JOH61 Johnson, H. L., Hoag, A. A., Iriarte, B., Mitchell, R. I., and Hallam, K. L. 1961, Lowell Obs. Bull., 5, 133.
LIN68 Lindoff, U. 1968, Arkiv Astr., 5, 1.
LDCAL Linear diameter calculated from published ang. diam. and distance.
LOH77 Lohmann, W. 1977, Ap. Sp. Sci., 51, 173.
LYN83 Lynga, G. 1983, Catalogue of Open Cluster Data (3rd edition), available through NSSDC, Greenbelt, Maryland, USA
LYN87 Lynga, G. 1987, Catalogue of Open Cluster Data (5th edition), available through NSSDC, Greenbelt, Maryland, USA
MAY64 Mayer, P. 1964, Pub. Astr. Inst. Univ. Charles (Prague), S2, 37-41.
MEB81 Mermilliod, J.-C. 1981, Astr. Ap. Suppl., 44, 467.
MER86 Mermilliod, J.-C., and Maeder, A. 1986, Astr. Ap., 158, 45.
NEC67 Neckel, T. 1967, Heid. Ver., 19, 115.
VCIRC Radial velocity estimate based on cluster distance and rotation curve model of Brand 1986 (Ph. D. thesis, Leiden).
SCH63 Schmidt, von K.-H. 1963, Ast. Nach., 287, 41.
SCH69 Schwartz, R. 1969, A G Mitt., 27, 178.
STA68 Starikova, G. A. 1969, Sov. Astr., 12, 632.
WRA83 Wramdemark, S. 1983, private communication.

CLUSTER IDENTIFICATION:

ALTER et al.: OCL 668
COMMON NAME: NGC 2467
SHARPLESS: S311
MEMBER OF ASSOC.: PUP OB2
DATA BASE NUM: 128

SPATIAL COORDINATES:

L II: 243.14
B II: 0.41

RA(1950.0): 7. 50.5
DEC(1950.0): -26. 15.

RADIAL VELOCITIES (w.r.t. LSR; km/s):
STELLAR:

VELOCITY	REF.
39.3	VCIRC
54.8	PIS76
9.8	HUM78
58.8	HUM78

H II REGION:

NO VALUES AVAILABLE

CO CLOUDS:

VELOCITY	REF.
51.0	BLI82

PROPER MOTION (arcsec/100 yr):

NO VALUES AVAILABLE

DISTANCE FROM SOLAR NEIGHBORHOOD (kpc):

DIST	REF.
2.30	GRU69
2.50	BEC71
4.20	HAV72
3.17	DAR73
4.10	GEO75
4.10	BLI82
4.02	LYN87

ANGULAR DIAMETER (arcmin):

ANG D	REF.
12.0	ALT70
16.0	ALT70
16.0	HAG70
16.0	BEC71
16.0	LYN83

LINEAR DIAMETER (pc):

LIN D	REF.
17.3	LDCAL
19.5	HAG70
12.0	BEC71
16.0	LYN83

AGE ESTIMATES:
AGE (Myr):

AGE	REF.
2.	HAV72
2.	PIS76
1.	LYN83

EARLIEST MS SPECTRAL TYPE:

eSpT	REF.
O6	MAY64
O5	CRA71
O6	BEC71
O5	LYN83
O6	LYN83

MS TURNOFF COLOR:

(B-V)	REF.
-0.35	HAG70

MASSES (SOLAR MASS UNITS):
STELLAR MASS:

NO VALUES AVAILABLE

MASS IN ASSOCIATED H I CLOUDS:

NO VALUES AVAILABLE

IONIZED HYDROGEN MASS:

NO VALUES AVAILABLE

MASS IN ASSOCIATED MOLECULAR CLOUDS:

NO VALUES AVAILABLE

ASSOCIATED MASS IN THE FORM OF DUST:

NO VALUES AVAILABLE

VISUAL EXTINCTION TOWARD CLUSTER (mag):

AV	REF.
1.20	BEC71
1.20	LYN83

B-V COLOR EXCESS (mag):

E(B-V)	REF.
0.38	STA68
0.40	GRU69
0.54	HAG70
0.54	DAR73

REFERENCES

ALT70 Alter, G., Ruprecht, J., and Vanysek, V. 1970, The Catalog of Star Clusters and Associations (Budapest: Akad Kiado).
BEC71 Becker, W. 1971, Astr. Ap. Suppl., 4, 241.
BLI82 Blitz, L., Fich, M. and Stark, A. A. 1982, Ap. J. Suppl., 49, 183.
CRA71 Crampton, D. 1971, A. J., 76, 260.
DAR73 Darsa, S., and Hidajat, B. 1973, Inf. Bull. South. Hem., 22, 24.
GE075 Georgelin, Y. M. 1975, Ph. D. Thesis, Universite de Provence Marseille, France.
GRU69 Grubissich, C. 1969, Astr. Ap., 2, 245.
HAG70 Hagen, G. L. 1970, D. D. O. Pub., Univ. Toronto, 4.
HAV72 Havlen, R. J. 1972, Astr. Ap., 17, 413.
HUM78 Humphreys, R. M. 1978, Ap. J. Suppl., 38, 309.
LDCAL Linear diameter calculated from published ang. diam. and distance.
LYN83 Lynga, G. 1983, Catalogue of Open Cluster Data (3rd edition), available through NSSDC, Greenbelt, Maryland, USA
LYN87 Lynga, G. 1987, Catalogue of Open Cluster Data (5th edition), available through NSSDC, Greenbelt, Maryland, USA
MAY64 Mayer, P. 1964, Pub. Astr. Inst. Univ. Charles (Prague), S2, 37-41.
PIS76 Pismis, P., and Moreno, M. A. 1976, Rev. Mex. Astr. Af., 1, 373.
VCIRC Radial velocity estimate based on cluster distance and rotation curve model of Brand 1986 (Ph. D. thesis, Leiden).
STA68 Starikova, G. A. 1969, Sov. Astr., 12, 632.

REFERENCES

Abt, H. A. 1977, PASP, **89**, 646.

Abt, H. A., and Biggs, E. S. 1972, Bibliography of Stellar Radial Velocities, (Latham Process Corp.: New York).

Abt, H. A., Perry, C. L., Olsen, E. H., and Graner, A. D., 1980, PASP, **92**, 60.

Alfaro, E. J., Delgado, A. J., Garcia-Pelayo, J. M., Garrido, R., and Saez, M. 1985, Astr. Ap. Suppl., **59**, 441.

Alter, G. 1941, MNRAS, **101**, 298.

Alter, G. 1944, MNRAS, **104**, 179.

Alter, G., Ruprecht, J., and Vanysek, V. 1970, The Catalog of Star Clusters and Associations (Budapest: Akad Kiado).

Ambartsumyan, V. A. 1949, Byur. Soob., **2**, 9.

Ampel, R. 1964, Acta Astr., **14**, 52.

Apriamashvili, C. 1962, Abas. Bull., **28**, 157.

Aveni, A. F., and Hunter, J. H. 1969, A. J., **74**, 1021.

Baade, D. 1983, Astr. Ap. Suppl., **51**, 235.

Bachiller, R., and Cernicharo, J. 1984, Astr. Ap., **140**, 414.

Bania, T. M. 1983, private communication.

Barbaro, G. 1967, Contr. Obs. Ast. Univ. Padova in Asiago, No. 138.

Barbaro, G., Dallaporta, N., and Fabris, G. 1969, Ap. Sp. Sci., **3**, 123.

Barbon, R. 1969, Mem. Soc. Ast. Ital., **40**, 45.

Barbon, R., and Hassan, S. M. 1973, Astr. Ap. Suppl., **10**, 1.

Barkhatova, K. A. 1957, Sov. Astr., **1**, 827.

Barkhatova, K. A. 1963, Ural Sb., **1**, 33.

Barkhatova, K. A. 1970, Ural U Z, **93**, 50.

Barkhatova, K. A., and Chentsov, E. L. 1961, Sov. Astr., **4**, 812.

Barkhatova, K. A., and Driakhlushina, L. I. 1958, Ast. Zh., **35**, 448.

Barkhatova, K. A., Zakharova, P. E., Shashkina, L. P., Orekhova, L. K. 1985, Sov. Astr., **29**, 499.

Barnes, T. G., Moffett, T. J., and Slovak, M. H. 1986, PASP, **98**, 223.

Barrell, S. L. 1980, Ap. J., **240**, 145.

Bash, F. N., Green, E., and Peters, W. L. 1977, Ap. J., **217**, 464.

Baud, B. 1977, Astr. Ap., **57**, 443.

Beavers, W. I., Eitter, J. J., Ketelsen, D. A., Oesper, D. A. 1979, PASP, **91**, 698.

Becker, W. 1963, Z. f. A., **57**, 117.

Becker, W. 1965, Contr. Obs. Ast. Univ. Padova in Asiago, No. 180.

Becker, W., and Fenkart, R. 1971, Astr. Ap. Suppl., **4**, 241.

Becker, W., and Stock, J. 1958, Z. f. A., **45**, 269 (see also pg. 282).

Bernacca, P. L. 1970, Contr. Obs. Ast. Univ. Padova in Asiago, No. 239.
Bernacca, P. L., and Ciatti, F. 1972, Astr. Ap., 19, 482.
Blaauw, A. 1962, in Interstellar Matter in Galaxies, ed. L. Woltjer, (W. A. Benjamin, Inc.: New York).
Blaauw, A. 1964, Ann. Rev. Astr. Ap., 2, 213.
Blair, G. N., Evans, N. J., Vanden Bout, P. A., and Peters, W. L. 1978, Ap. J., 219, 896.
Blair, G. N., Peters, W. L., and Vanden Bout, P. A. 1975, Ap. J. (Letters), 200, L161.
Blanco, V. M., and Williams, A. D. 1959, Ap. J., 130, 482.
Blitz, L., Fich, M. and Stark, A. A. 1982, Ap. J. Suppl., 49, 183.
Blitz, L., and Stark, A. A. 1986, Ap. J. (Letters), 300, L89.
Blitz, L., and Thaddeus, P. 1980, Ap. J., 241, 676.
Bohm-Vitense, E., Hodge, P., and Boggs, D. 1984, Ap. J., 287, 825.
Bolte, M., and Mateo, M. 1984, PASP, 96, 784.
Bronnikova, N. M. 1964, Pulkova Izv., 23, 139.
Brown, P. J. F., Dufton, P. L., Lennon, D. J., Keenon, F. P., and Kilkenny, D. 1986, MNRAS, 220, 1003.
Brown, P. J. F., Dufton, P. L., Lennon, D. J., Keenon, F. P., and Kilkenny, D. 1986, Astr. Ap., 155, 113.
Bruch, A., and Sanders, W. L. 1983, Astr. Ap., 121, 237.
Buscombe, W. 1963, Mt. Stromlo Mimeogram, No. 6, pg. 24.
Cannon, R. D. 1970, MNRAS, 150, 111.
Celnik, W. E. 1985, Astr. Ap., 144, 171.
Celnik, W. E. 1986, Astr. Ap., 160, 287.
Cernicharo, J., Bachiller, R., and Duvert, G. 1985, Astr. Ap., 149, 273.
Chaisson, E. J., and Willson, R. F. 1975, Ap. J., 199, 647.
Chincarini, G. 1963, Contr. Obs. Ast. Univ. Padova in Asiago, 133, 11.
Chini, R., Elsasser, H., and Neckel, Th. 1980, Astr. Ap., 91, 186.
Chini, R., and Krugel, E. 1985, Astr. Ap., 164, 175.
Chini, R., and Neckel, Th. 1981, Astr. Ap., 102, 171.
Chopinet, M., Georgelin, Y. M., and Lortet-Zuckermann, M. C. 1973, Astr. Ap., 29, 225.
Churchwell, E., and Bieging, J. H. 1982, Ap. J., 258, 515.
Claria, J. J. 1972, A. J., 77, 868.
Claria, J. J. 1973, Astr. Ap. Suppl., 9, 251.
Claria, J. J. 1985, Astr. Ap. Suppl., 59, 195.
Clayton, G. C., and Fitzpatrick, E. L. 1987, A. J., 92, 157.
Clayton, C. A., Ivchenko, V. N., Meaburn, J., and Walsh, J. R. 1985, MNRAS, 216, 761.
Cohen, M., and Kuhi, L. 1976, Ap. J., 210, 365.
Cohen, R. J. 1984, MNRAS, 208, 101.
Collinder, P. 1931, Ann. Lund Obs., No. 2.

Conti, P. S., and Alschuler, W. R. 1971, Ap. J., 170, 325.
Conti, P. S., and Frost, S. A. 1977, Ap. J., 212, 728.
Conti, P. S., and van den Heuvel, E. P. J. 1970, Astr. Ap., 9, 466.
Courtes, G., Cruvellier, P., and Georgelin, Y. 1966, J. des Obs., 49, 329.
Crampton, D. 1971, A. J., 76, 260.
Crampton, D. 1975, PASP, 87, 523.
Crampton, D., and Fisher, W. A. 1974, DAO Pub., 14, 83.
Crampton, D., Georgelin, Y. M., and Georgelin, Y. P. 1978, Astr. Ap., 66, 1.
Crawford, D. L., Barnes, J. V., and Warren, W. H. 1974, A. J., 79, 623.
Crutcher, R. M., Hartkopf, W. I., and Giguere, P. T. 1978, Ap. J., 226, 839.
Cruvellier, P. 1967, Ann. Ap., 30, 1072.
Cruz-Gonzales, C., Recillas-Cruz, E., Costero, R., Peimbert, M., Torres-Peimbert, S. 1974, Rev. Mex. Astr. Af., 1, 211.
Cuffey, J. 1973, A. J., 78, 747.
Cunningham, A. A. 1968, Ap. J., 151, 945.
Czernik, M. 1966, Acta Astr., 16, 93.
Danforth, S. C., and Thomas, J. 1981, PASP, 93, 447.
Danilov, V. M., Matkin, N. V., and Pyl'skaya, O. P. 1985, Sov. Astr., 29, 621.
Darsa, S., and Hidajat, B. 1973, Inf. Bull. South. Hem., 22, 24.
Davies, R. D., and Tovmassian, H. M. 1963, MNRAS, 127, 45.
Davies, R. D., and Tovmassian, H. M. 1966, MNRAS, 132, 283.
Deharveng, L. 1974, Astr. Ap., 35, 63.
Delgado, A. J., Alfaro, E. J., Garcia-Pelayo, J. M., Garrido, R., and Vidal, S. 1984, Astr. Ap. Suppl., 58, 447.
Dewdney, P. E., Higgs, L. A., Joncas, G., and Roy, J.-R. 1984, BAAS, 16, 463.
Dickel, H. R., Dickel, J. R., Wilson, W. J., and Werner, M. W. 1980, Ap. J., 237, 711.
Dickens, R. S., and Carey, J. V. 1967, Roy. Obs. Bull., No. 129.
Dickinson, D. F., Frogel, J. A., and Persson, S. E. 1974, Ap. J., 192, 347.
Dieter, N. H. 1967, Ap. J., 150, 435.
Dluzhnevskaya, O. B. 1965, Nautch. Inf., No. 2.
Dluzhnevskaya, O. B., and Piskunov, A. E. 1972, Nautch. Inf., 21, 58.
D'Odorico, S., and Felli, M. 1970, Mem. Soc. Ast. Ital., 41, 89.
Doom, C., De Greve, J. P., and de Loore, C. 1985, Ap. J., 290, 185.
Dorland, H., Montmerle, T., and Doom, C. 1986, Astr. Ap., 160, 1.
Downes, D., Wilson, T. L., Bieging, J., and Wink, J. 1980, Astr. Ap. Suppl., 40, 379.
Dufour, R. J., and Lee, P. 1970, Ap. J., 160, 357.

Dupuy, D. L., and Zukauskas, W. 1976, J. R. Ast. Soc. Canada, 70, 169.
Eggen, O. 1982, PASP, 94, 952.
Eiroa, C., Elasser, H., and Lahulla, J. F. 1979, Astr. Ap., 74, 89.
Elliot, K. H., Goudis, C., Hippelein, H., and Meaburn, J. 1984, Astr. Ap., 138, 451.
Elmegreen, B. G., and Lada, C. J. 1978, Ap. J., 219, 467.
Elmegreen, B. G., Lada, C. J., and Dickinson, D. F. 1979, Ap. J., 230, 415.
Elmegreen, D. M., and Elmegreen, B. G. 1978, Ap. J., 220, 510.
Falchi, A. D., Felli, M., and Tofani, G. 1980, Astr. Ap., 89, 363.
Falgarone, E., and Gilmore, W. 1981, Astr. Ap., 95, 32.
Fang, C. 1970, Astr. Ap., 4, 75.
Feinstein, A., Vazquez, R. A., and Benvenuto, O. G. 1986, Astr. Ap., 159, 223.
Felli, M., Habing, H. J., and Israel, F. P. 1977, Astr. Ap., 59, 43.
Fenkart, R. P. 1962, Z. f. A., 54, 49.
Fenkart, R. P. 1965, Contr. Obs. Ast. Univ. Padova in Asiago, No. 181.
Fenkart, R. P. 1965, Z. f. A., 62, 90.
Fenkart, R. P. 1968, Mem. Soc. Ast. Ital., 39, 85.
Fenkart, R. P., and Binggeli, B. 1978, Astr. Ap. Suppl., 35, 271.
Fenkart. R. P., and Schroder, A. 1985, Astr. Ap. Suppl., 59, 83.
Fich, M., and Blitz, L. 1984, Ap. J., 279, 125.
Fitzgerald, M. P., and Moffat, A. F. J. 1980, MNRAS, 193, 761.
Fitzgerald, M. P., and Moffat, A. F. J. 1980, PASP, 92, 489.
Forbes, D. 1980, J. R. Ast. Soc. Canada, 74, 360.
Forbes, D. 1981, PASP, 93, 441.
Forbes, D., and Dupuy, D. L. 1978, A. J., 83, 266.
Forte, J. C., and Orsatti, A. M. 1984, Ap. J. Suppl., 56, 211.
Fountain, W. F., Gary, G. A., and O'Dell, C. R. 1979, Ap. J., 229, 971.
Fountain, W. F., Gary, G. A., and O'Dell, C. R. 1983, Ap. J., 273, 639.
Franco, M. L., Magazzu, A., and Stalio, R. 1985, Astr. Ap., 147, 191.
Frolov, V. N. 1973, Astr. Tsirk., 771, 1.
Garay, G., and Rodriguez, L. F. 1983, Ap. J., 266, 263.
Gardner, F. F., and Whiteoak, J. B. 1981, Proc. Ast. Soc. Aust., 4, 240.
Garrison, R. F., and Kormendy, J. 1976, PASP, 88, 865.
Gehrz, R. D. et al. 1982, Ap. J., 254, 550.
Georgelin, Y. M. 1975, Ph. D. Thesis, Universite de Provence Marseille, France.
Georgelin, Y. M., and Georgelin, Y. P. 1976, Astr. Ap., 49, 57.
Georgelin, Y. M., Georgelin, Y. P., and Roux, S. 1973, Astr. Ap., 25, 337.
Georgelin, Y. P., and Georgelin, Y. M. 1970, Astr. Ap., 6, 349.
Geyer, E. H., and Nelles, B. 1985, Astr. Ap. Suppl., 62, 301.
Gimenez, A., and Garcia-Pelayo, J. 1980, Astr. Ap. Suppl., 41, 9.

Glushkov, Y. I., Denisyuk, E. K., and Karyagina, Z. V. 1975, Astr. Ap., 39, 481.
Gordon, C. P., Howard, W. E., and Westerhout, G. 1968, Ap. J., 154, 103.
Gosachinskij, I. V., and Khersonskij, V. K. 1984, Ap. Sp. Sci., 107, 289.
Graham, J. A. 1971, A. J., 76, 1079.
Grasdalen, G. L., Carrasco, L. 1975, Astr. Ap., 43, 259.
Grayzeck, E. J. 1980, A. J., 85, 1631.
Grayzeck, E. J. 1987, private communication.
Grubissich, C. 1960, Z. f. A., 50, 14.
Grubissich, C. 1964, Z. f. A., 58, 276.
Grubissich, C. 1965, Z. f. A., 60, 249.
Grubissich, C. 1967, Z. f. A., 65, 105.
Grubissich, C. 1969, Astr. Ap., 2, 245.
Grubissich, C. 1973, Astr. Ap. Suppl., 11, 287.
Grubissich, C. 1975, Astr. Ap. Suppl., 21, 99.
Grubissich, C., and Becker, W. 1980, Astr. Ap. Suppl., 40, 367.
Guetter, H. H. 1977, A. J., 82, 598.
Guetter, H. H., Turner, D. G., and Scrimger, J. N. 1985, BAAS, 17, 557.
Guseva, N. G., Kolesnik, I. G., and Kravchuk, S. G. 1984, Sov. Astr. Lett., 10, 309.
Haffner, H. 1957, Z. f. A., 43, 89.
Hagen, G. L. 1970, D. D. O. Pub., Univ. Toronto, 4.
Haikala, L. 1986, Ap. Sp. Sci., 128, 125.
Hanel, A., and Gusten, R. 1985, Mitt. Astr. Ges., 63, 140.
Hanson, J. N., unpublished Master's thesis, Case Inst. of Technology.
Haradze, E. K., Bartaya, P. A. 1961, Abas. Bull., 26, 35.
Hardorp, J. 1960, Ast. Abh. Hamb. Sternw. Berg., 5, 215.
Harris, D. L., Morgan, W. W., and Roman, N. G. 1954, Ap. J., 119, 622.
Harris, G. L. H. 1976, Ap. J. Suppl., 30, 451.
Harten, R. H., Felli, M., and Tofani, G. 1978, Astr. Ap., 70, 205.
Hart, L., and Pedlar, A. 1976, MNRAS, 176, 135.
Hassan, S. M. 1967, Z. f. A., 66, 6.
Hassan, S. M. 1973, Astr. Ap. Suppl., 9, 261.
Hassan, S. M., and Barbon, R. 1973, Mem. Soc. Ast. Ital., 44, 39.
Haug, U. 1970, Astr. Ap. Suppl., 1, 35.
Havlen, R. J. 1972, Astr. Ap., 17, 413.
Hayashi, M., Omodaka, T., Hasegawa, T., and Suzuki, S. 1985, Ap. J., 288, 170.
Heiser, A. M. 1977, A. J., 82, 973.
Heske, A., and Wendker, H. J. 1985, Astr. Ap., 149, 199.
Hiltner, W. A., and Morgan, W. W. 1969, A. J., 74, 1152.
Hippelein, H. H., and Goudis, C. 1986, Astr. Ap., 155, 6.
Hoag, A. A. 1965, Vistas, 8, 139.

Hoag, A. A., and Applequist, N. L. 1965, Ap. J. Suppl., 12, 215.
Hobbs, R. W. 1961, A. J., 66, 517.
Hron, J. 1987, Astr. Ap., 176, 34.
Hron, J., Maitzen, H. M., Moffat, A. F. J., Schmidt-Kaler, Th., and Vogt, N. 1985, Astr. Ap. Suppl., 60, 355.
Hubble, E. 1922, Ap. J., 56, 162.
Hubble, E. 1922, Ap. J., 56, 184.
Humphreys, R. M. 1978, Ap. J. Suppl., 38, 309.
Ishida, K. 1969, MNRAS, 144, 55.
Ishida, K. 1970, P. A. S. Japan, 22, 277.
Israel, F. P. 1977, Astr. Ap., 59, 27.
Israel, F. P. 1977, Astr. Ap., 60, 233.
Israel, F. P. 1978, Astr. Ap., 70, 769.
Israel, F. P. 1980, A. J., 85, 1612.
Isserstedt, J., and Schmidt-Kaler, Th. 1972, A. G. Mitt., 31, 132.
Isserstedt, J., and Schmidt-Kaler, Th. 1973, Astr. Ap. Suppl., 10, 365.
Jackson, P. D., and Sewall, J. R. 1982, in Regions of Recent Star Formation, eds. Roger/Dewdney (Dordrecht: Reidel).
Jackson, P. D., Fitzgerald, M. P., and Moffat, A. F. J. 1980, Astr. Ap. Suppl., 41, 211.
Janes, K., and Adler, D. 1982, Ap. J. Suppl., 49, 425.
Jasevicius, V. 1964, Bull. Vilnius Ast. Obs., No. 13, 1.
Jennens, P. A., and Helfer, H. L. 1975, MNRAS, 172, 667.
Johnson, H. L. 1950, Ap. J., 112, 240.
Johnson, H. L., Hoag, A. A., Iriarte, B., Mitchell, R. I., and Hallam, K. L. 1961, Lowell Obs. Bull., 5, 133.
Johnson, H. L., and Svolopoulos, S. N. 1961, Ap. J., 134, 868.
Johnson, P. G., and White, N. J. 1980, Ap. Sp. Sci., 73, 411.
Joncas, G., Dewdney, P. E., Higgs, L. A., and Roy, J.-R. 1985, Ap. J., 298, 596.
Joncas, G., and Roy, J.-R. 1984, Ap. J., 283, 640.
Joncas, G., and Roy, J.-R. 1986, Ap. J., 307, 649.
Jones, K. G. 1969, J. Brit. Astr. Assoc., 79, 357.
Joshi, U. C., and Sagar, R. 1977, Ap. Sp. Sci., 48, 225.
Joshi, U. C., Sagar, R., and Pandey, P. 1974, B. A. S. India, 2, 34.
Kamp, L. W. 1974, Astr. Ap. Suppl., 16, 1.
Karimie, M. T. 1968, Bonn Veroff., No. 78.
Kazes, I., Walmsley, C. M., and Churchwell, E. 1977, Astr. Ap., 60, 293.
Kilambi, G. C. 1977, MNRAS, 178, 423.
Kiral, A. 1969, Astr. Ap., 2, 22.
Kirillova, R. S. 1958, Trudy Gos. Ast. Inst. Pub., 29, 178.
Kolesnik, L. N. 1986, Astr. Ap., 169, 268.
Kopylov, I. M. 1952, Crim. Izv., 8, 122.

Kopylov, I. M. 1953, Crim. Izv., 10, 120.
Kraft, R. P. 1959, Ap. J., 130, 704.
Kraft, R. P. 1961, in IAU Trans. XIB, p. 298.
Kruspan, E. 1959, Z. f. A., 48, 1.
Kuiper, T. B. H., Knapp, G. R., and Rodriguez-Kuiper, E. N. 1976, Astr. Ap., 48, 475.
Kun, M. 1986, Ap. Sp. Sci., 125, 13.
Kutner, M. L., Machnik, D. E., Tucker, K. D., and Dickman, R. L. 1980, Ap. J., 237, 734.
Kuznetsov, V. I. 1972, Astr. Astrofiz. Kiev, No. 15, 22.
Lada, C. J., and Chaisson, E. J. 1975, Ap. J., 195, 367.
Lada, C. J., and Elmegreen, B. G. 1979, A. J., 84, 336.
Lada, C. J., Elmegreen, B. G., Cong, H.-I., and Thaddeus, P. T. 1978, Ap. J. (Letters), 226, L39.
Lada, C. J., Gull, T. R., Gottlieb, C. A., and Gottlieb, E. W. 1976, Ap. J., 203, 159.
Lada, C. J., and Wooden, D. 1979, Ap. J., 232, 158.
Latypov, A. A. 1979, Sov. Astr., 23, 287.
Leahy, D. A. 1985, MNRAS, 217, 69.
Leisawitz, D. 1985, Ph. D. thesis, The University of Texas at Austin.
Leisawitz, D., Thaddeus, P., and Bash, F. N. 1988, in preparation for submission to Ap. J. Suppl.
Lightfoot, J. F., et al. 1984, MNRAS, 208, 197.
Lindoff, U. 1968, Arkiv Astr., 5, 1.
Lindoff, U. 1969, Arkiv Astr., 5, 221.
Lindoff, U. 1971, Astr. Ap., 15, 439.
Loden, L. O. 1963, Arkiv Astr., 3, 22.
Lohmann, W. 1971, Astr. Nach., 292, 193.
Lohmann, W. 1972, Astr. Nach., 293, 259.
Lohmann, W. 1977, Ap. Sp. Sci., 51, 173.
Loren, R. B., and Wootten, H. A. 1978, Ap. J. (Letters), 225, L81.
Loren, R. B., Peters, W. L., and Vanden Bout, P. A. 1975, Ap. J., 195, 75.
Lozinskaya, T. A., Sitnik, T. G., and Lomovskii, A. I. 1986, Ap. Sp. Sci., 121, 357.
Lundstrom, I., and Stenholm, B. 1984, Astr. Ap. Suppl., 58, 163.
Lynds, B. T., and O'Neil, E. J. 1985, Ap. J., 294, 578.
Lynds, B. T., Canzian, B. J., and O'Neil, E. J. 1985, Ap. J., 288, 164.
Lyngå, G. 1981, Catalogue of Open Cluster Data, available through NSSDC, Greenbelt, Maryland, USA.
Lyngå, G. 1982, Astr. Ap., 109, 213.
Lyngå, G. 1983, Catalogue of Open Cluster Data (3rd edition), available through NSSDC, Greenbelt, Maryland, USA.

Lyngå, G. 1987, Catalogue of Open Cluster Data (5th edition), available through NSSDC, Greenbelt, Maryland, USA.
MacConnell, D. J. 1968, Ap. J. Suppl., 16, 275.
Manova, G. A. 1954, Astr. Tsirk., 153, 9.
Markarian, V. E. 1951, Biur. Soob., 9, 7.
Massa, D., and Fitzpatrick, E. L. 1986, Ap. J. Suppl., 60, 305.
Mathieu, R. 1986, in IAU Symposium 113, Dynamics of Star Clusters, eds. J. Goodman and P. Hut (Dordrecht: Reidel), p. 427.
Matthews, H. E., Haslam, C. G. T., Hills, D. L., and Salter, C. J. 1980, Astr. Ap., 88, 285.
Mayer, P. 1964, Pub. Astr. Inst. Univ. Charles (Prague), S2, 37-41.
Mayer, P., and Macak, P. 1973, Bull. Astr. Inst. Czech., 24, 50.
McCuskey, S. W., and Houk, N. 1964, A. J., 69, 412.
McCutcheon, W. H., Dickman, R. L., Shuter, W. L. H., and Roger, R. S., 1980, Ap. J., 237, 9.
McCutcheon, W. H., Roger, R. S., and Dickman, R. L. 1982, Ap. J., 256, 139.
McLachlan, A., and Nandy, K. 1985, MNRAS, 215, 473.
Meaburn, J., and Walsh, J. R. 1981, Ap. Sp. Sci., 74, 169.
Méaburn, J., and Walsh, J. R. 1986, MNRAS, 220, 745.
Mendoza, E. E., and Gomez, T. 1980, MNRAS, 190, 623.
Menon, T. K. 1962, Ap. J., 135, 394.
Mermilliod, J.-C. 1981a, Astr. Ap., 97, 235.
Mermilliod, J.-C. 1981b, Astr. Ap. Suppl., 44, 467.
Mermilliod, J.-C., and Maeder, A. 1986, Astr. Ap., 158, 45.
Mezger, P. G., and Henderson, A. P. 1967, Ap. J., 147, 471.
Miller, J. S. 1968, Ap. J., 151, 473.
Moffat, A. F. J. 1971, Astr. Ap., 13, 30.
Moffat, A. F. J. 1972, Astr. Ap. Suppl., 7, 355.
Moffat, A. F. J. 1974, Astr. Ap. Suppl., 16, 33.
Moffat, A. F. J., FitzGerald, M. P., and Jackson, P. D. 1979, Astr. Ap. Suppl., 38, 197.
Moffat, A. F. J., and Vogt, N. 1973a, Astr. Ap. Suppl., 11, 3.
Moffat, A. F. J., and Vogt, N. 1973b, Astr. Ap., 23, 317.
Moffat, A. F. J., and Vogt, N. 1975a, Astr. Ap. Suppl., 20, 160.
Moffat, A. F. J., and Vogt, N. 1975b, Astr. Ap., 41, 413.
Moffat, A. F. J., and Vogt, N. 1975c, Astr. Ap. Suppl., 20, 85.
Morgan, W. W., Hiltner, W. A., Neff, J. S., and Garrison, R. 1965, Ap. J., 142, 974.
Morton, D. C. 1969, Ap. J., 158, 629.
Nakano, M. 1984, P. A. S. Japan, 36, 517.
Neckel, T. 1967, Heid. Ver., 19, 115.
Nelson, R. M. 1969, PASP, 81, 900.

Nicolet, B. 1981, Astr. Ap., 104, 185.
O'Dell, C. R., Hubbard, W. B., and Peimbert, M. 1966, Ap. J., 143, 743.
Ogura, K., and Ishida, K. 1975, P. A. S. Japan, 27, 119.
Ogura, K., and Ishida, K. 1976, P. A. S. Japan, 28, 35.
Ogura, K., and Ishida, K. 1981, P. A. S. Japan, 33, 149.
Osman, A. et al. 1984, in IAU Symp. 105, eds. A. Maeder and A. Renzini (Dordrecht: Reidel), p. 119.
Osterbrock, D. E. 1957, Ap. J., 125, 622.
Palous, J., Ruprecht, J., Dluzhnevskaya, O. B., and Piskunov, T. 1977, Astr. Ap., 61, 27.
Panagia, N., and Tosi, M. 1981, Astr. Ap., 96, 306.
Pandey, A. K., and Mahra, H. S. 1986, Ap. Sp. Sci., 120, 107.
Pankonin, V., and Walmsley, C. M. 1978, Astr. Ap., 67, 129.
Parker, R. A. R., Gull, T. R., and Kirschner, R. P. 1979, An Emission Line Survey of the Milky Way, (Washington, D. C.: NASA SP-434).
Pedlar, A. 1980, MNRAS, 192, 179.
Pedlar, A., and Matthews, H. E. 1973, MNRAS, 165, 381.
Pedreros, M., Madore, B. F., and Freedman, W. L. 1984, Ap. J., 286, 563.
Penfield, H., Palmer, P., and Zuckerman, B. 1967, Ap. J. (Letters), 148, L25.
Perry, C. L., Lee, P. D., and Barnes, J. V. 1978, PASP, 90, 73.
Pesch, P. 1959, Ap. J., 130, 764.
Petrie, R. M. 1965, DAO Pub., 12, 317.
Petrie, R. M., and Pearce, J. A. 1961, DAO Pub., 12, 1.
Pismis, P. 1970, Bol. Obs. Ton. Tac., 5, 219.
Pismis, P., Hasse, I., and Moreno, M. 1984, BAAS, 16, 959.
Pismis, P., and Moreno, M. A. 1976, Rev. Mex. Astr. Af., 1, 373.
Pismis, P., Moreno, M. A., and Hasse, I. 1979, Rev. Mex. Astr. Af., 4, 331.
Polishchuk, E. P. 1969, Astr. Astrofiz., 8, 67.
Polishchuk, E. P. 1970, Astr. Astrofiz., 9, 17.
Popova, E. I. 1968, Nautch. Inf., 8, 66.
Popova, E. I. 1969, Nautch. Inf., 11, 85.
Pottasch, S. R. 1965, Vistas, 6, 149.
Purgathofer, A. 1961, Z. f. A., 52, 22.
Pyatunina, T. B., and Taraskin, Yu. M. 1986, Sov. Astr., 30, 648.
Racine, R. 1968, A. J., 73, 223.
Racine, R. 1969, A. J., 74, 816.
Raimond, E. 1966, B. A. N., 18, 191.
Reddish, V. C. 1967, MNRAS, 135, 251.
Reddish, V. C., and Sloan, C. 1971, Observatory, 91, 70.
Reifenstein, E. C., Wilson, T. L., Burke, B. F., Mezger, P. G., and Altenhoff, W. J. 1970, Astr. Ap., 4, 357.

Reimann, H.-G., and Pfau, W. 1987, Astr. Nach., 308, 111.
Reinmuth, K. 1928, Heid. Abh., 13, 23.
Reynolds, R. J. 1985, Ap. J., 294, 256.
Rickard, L. J, Palmer, P., Buhl, D., and Zuckerman, B. 1977, Ap. J., 213, 654.
Riegel, K. W. 1967, Ap. J., 148, 87.
Rieu, N.-Q., and Pankonin, V. 1977, Astr. Ap., 60, 313.
Roger, R. S., and Irwin, J. A. 1982, Ap. J., 256, 127.
Roger, R. S., and Pedlar, A. 1981, Astr. Ap., 94, 238.
Rosenzweig, P., and Morrison, N. D. 1986, Ap. J., 306, 522.
Roslund, C. 1960, PASP, 72, 205.
Rossano, G. S., Angerhofer, P. E., and Grayzeck, E. J. 1980, A. J., 85, 716.
Roth-Hoppner, M. L., Hoppner, W., and Winter, L. 1986, Mitt. Astr. Ges., 67, 367.
Roy, J.-R., and Joncas, G. 1985, Ap. J., 288, 142.
Rubin, V. C. et al. 1962, A. J., 67, 491.
Rufus, W. C. 1937, Pub. Obs. Univ. Michigan, 5, 45.
Ruprecht, J., Balazs, B., and White, R. E. 1981, Catalog of Star Clusters and Associations, Supplement 1, (Budapest: Akademiai Kiado).
Sagar, R. 1976, Ap. Sp. Sci., 40, 447.
Sagar, R., and Joshi, U. C. 1978, MNRAS, 184, 467.
Sagar, R., and Joshi, U. C. 1979, Ap. Sp. Sci., 66, 3.
Sagar, R., and Joshi, U. C. 1978, B. A. S. India, 6, 83.
Sagar, R., Piskunov, A. E., Myakutin, V. I., and Joshi, U. C. 1986, MNRAS, 220, 383.
Samson, W. B. 1975, Ap. Sp. Sci., 34, 363.
Samson, W. B. 1975, Ap. Sp. Sci., 34, 377.
Sancisi, R., and Goss, W. M. 1974, Astr. Ap., 35, 445.
Sandage, A. 1963, Ap. J., 138, 863.
Sanders, W. L. 1971, Astr. Ap., 14, 226.
Sanders, W. L. 1973, Astr. Ap. Suppl., 9, 221.
Sanduleak, N. 1974, PASP, 86, 74.
Sanford, R. F. 1949, Ap. J., 110, 117.
Sanqvist, A., and Bernes, C. 1980, Astr. Ap., 89, 187.
Savage, B. D., and Mathis, J. S. 1979, Ann. Rev. Astr. Ap., 17, 73.
Schild, H., and Berthet, S. 1986, Astr. Ap., 162, 369.
Schmidt-Kaler, Th. 1961, Z. f. A., 53, 1.
Schmidt-Kaler, Th. 1968, Bochum Ver., No. 1.
Schmidt, E. C. 1977, PASP, 89, 546.
Schmidt, E. G. 1980, A. J., 85, 695.
Schmidt, E. G. 1981, A. J., 86, 242.
Schmidt, E. G. 1984, Ap. J. Suppl., 55, 455.

Schmidt, J. von K. H. 1963, Ast. Nach., **287**, 41.
Schneps, M. H., Ho, P. T. P., and Barrett, A. H. 1980, Ap. J., **240**, 84.
Schwartz, P. R., et al. 1985, Ap. J., **292**, 231.
Schwartz, R. 1969, A G Mitt., **27**, 178.
Schwartz, R. 1971, Ap. Sp. Sci., **14**, 286.
Seggewiss, W. 1971, Ver. Ast. Inst. Bonn, **83**.
Seggewiss, W. 1971, Ver. Ast. Inst. Bonn, **82**.
Setteducati, A. F., and Weaver, H. F. 1960, Newly Found Star Clusters, Radio Astr. Laboratory, Berkeley, CA, USA.
Sharpless, S. 1954, Ap. J., **119**, 334.
Sharpless, S. 1959, Ap. J. Suppl., **4**, 257.
Simon, M., et al. 1984, Ap. J., **278**, 170.
Simonson, S. C. 1968, Ap. J., **154**, 923.
Simonson, S. C., and van Someren-Greve, H. W. 1976, Astr. Ap., **49**, 343.
Sitko, M. L. Simon, T., and Meade, M. R. 1984, PASP, **96**, 54.
Smak, J. 1964, Ap. J., **139**, 1095.
Smith, M. G. 1973, Ap. J., **182**, 111.
Sofue, Y., Handa, T., Furst, E., Reich, W., and Reich, P. 1986, P. A. S. Japan, **38**, 347.
Solf, J. 1980, Astr. Ap., **92**, 51.
Spassova, N. M., and Baev, P. V. 1985, Ap. Sp. Sci., **112**, 111.
Stahler, S. W. 1985, Ap. J., **293**, 207.
Starikova, G. A. 1969, Sov. Astr., **12**, 632.
Staude, H. J., Lenzen, R., Dyck, H. M., and Schmidt, G. D. 1981, Ap. J., **255**, 95.
Steppe, H. 1974, Astr. Ap. Suppl., **15**, 91.
Stone, R. C. 1977, Astr. Ap., **54**, 803.
Stone, R. C. 1980, PASP, **92**, 426.
Stothers, R. 1972, Ap. J., **175**, 431.
Stothers, R. B. 1985, Ap. J., **298**, 521.
Strom, S. E., Strom, K. M., and Carrasco, L. 1974, PASP, **86**, 798.
Strom, S. E., Vrba, F. J., and Strom, K. M. 1976, A. J., **81**, 314.
Svolopoulos, S. N. 1965, Z. f. A., **61**, 105.
Talbert, F. D. 1975, PASP, **87**, 341.
Tammann, G. A. 1969, Astr. Ap., **3**, 308.
Tapia, M., et al. 1983, in IAU Symp. 105, eds. A. Maeder and A. Renzini (Dordrecht: Reidel), p. 353.
Terzian, Y. 1965, Ap. J., **142**, 135.
The, P.-S., and Roslund, C. 1963, Lemb. Contr., No. **19**.
Thronson, H. A. 1986, Ap. J., **306**, 160.
Thronson, H. A., Lada, C. J., and Hewagama, T. 1985, Ap. J., **297**, 662.
Tosi, M. 1979, Mem. Soc. Ast. Ital., **50**, 245.

Tovmassian, H. M. 1967, IAU Symp. 31, H II Associated With Young Stellar Clusters, ed. H. van Woerden, (Dordrecht: Reidel).
Tovmassian, H. M., and Nersessian, S. E. 1973, Aust. J. Phys., 26, 861.
Tovmassian, H. M., and Shahbazian, E. T. 1973, Aust. J. Phys., 26, 837.
Tucholke, H.-J., Geffert, M., and The, P. S. 1986, Astr. Ap. Suppl., 66, 311.
Tumanian, B. E. 1948, Armen. Dokl., 9, 7.
Turner, D. G. 1976, Ap. J., 210, 65.
Turner, D. G. 1977, PASP, 89, 277.
Turner, D. G. 1979, J. R. Ast. Soc. Canada, 73, 74.
Turner, D. G. 1981, A. J., 86, 231.
Turner, D. G., and Forbes, D. 1982, PASP, 94, 789.
Underhill, A. B. 1969, Astr. Ap., 1, 356.
Ungerechts, H., Walmsley, C. M., and Winnewisser, G. 1986, Astr. Ap., 157, 207.
Vallee, J. P., Hughes, V. A., and Viner, M. R. 1979, Astr. Ap., 80, 186.
van Altena, W. F., and Jones, B. F. 1972, Astr. Ap., 20, 425.
van den Bergh, S., and de Roux, J. 1978, A. J., 83, 1075.
van Rensbergen, W., Hammerschlag-Hensberge, G., and van den Heuvel, E. P. J. 1978, Astr. Ap., 64, 131.
van Schewick, H. 1971, Ver. Ast. Inst. Bonn, 84.
Vasilevskii, A. E. 1972, Sov. Astr., 16, 308.
Venger, A. P., et al. 1984, Ap. Sp. Sci., 107, 271.
Viotti, R. 1969, Mem. Soc. Ast. Ital., 40, 75.
Vogt, N. 1971, Astr. Ap., 11, 359.
Vogt, N., and Moffat, A. F. J. 1972, Astr. Ap. Suppl., 7, 33.
Voroshilov, V. I., Kalandadze, N. B., and Kuznetsov, V. I. 1972, Abast. Ast. Obs. Bull., 43, 67.
Walborn, N. R. 1971, Ap. J. Suppl., 23, 257.
Walborn, N. R. 1972, A. J., 77, 313.
Walborn, N. R. 1973, A. J., 78, 1067.
Walker, A. R., and Laney, C. D. 1987, MNRAS, 224, 61.
Walker, G. A. H. 1965, Ap. J., 141, 660.
Walker, G. A. H., and Hodge, S. M. 1968, PASP, 80, 290.
Walker, M. F. 1956, Ap. J. Suppl., 2, 365.
Walker, M. F. 1959, Ap. J., 130, 57.
Walker, M. F. 1972, Ap. J., 175, 89.
Wallenquist, A. 1975, Uppsala Ast. Obs. Ann., Band 5, No. 8.
Wall, W. F., and McCutcheon, W. H. 1986, J. R. Ast. Soc. Canada, 80, 275.
Watt, G. D., Burton, W. B., Choe. S.-U., and Liszt, H. S. 1986, Astr. Ap., 163, 194.
Westerhout, G. 1958, B. A. N., 14, 215.
Wilking, B. A., Harvey, P. M., and Joy, M. 1984, A. J., 89, 496.

C-4

Wilking, B. A., Harvey, P. M., Lada, C. J., Joy, M., and Doering, C. R. 1984, Ap. J., 279, 291.
Williamson, R. A. 1970, Ap. Sp. Sci., 6, 45.
Wilson, R. E. 1953, General Catalog of Stellar Radial Velocities, (Washington, D.C.: Carnegie Institution, Pub 601).
Witt, A. N., and Cottrell, M. J. 1980, Ap. J., 235, 899.
Witt, A. N., and Cottrell, M. J. 1980, A. J., 85, 22.
Wooden, W. H. 1971, Astr. Ap., 13, 218.
Wouterloot, J. G. A. 1984, Astr. Ap., 134, 244.
Wramdemark, S. 1978, Astr. Ap., 66, 137.
Wramdemark, S. 1983, private communication.
Yilmaz, F. 1966, Z. f. A., 64, 61.
Yilmaz, F. 1970, Astr. Ap., 8, 213.

☆U.S. GOVERNMENT PRINTING OFFICE: 1988-526-06/86004

NASA National Aeronautics and Space Administration

Report Documentation Page

1. Report No.	2. Government Accession No.	3. Recipient's Catalog No.
NASA RP-1202		

4. Title and Subtitle

Catalog of Open Clusters and Associated Interstellar Matter

5. Report Date

June 1988

6. Performing Organization Code

680

7. Author(s)

David Leisawitz

8. Performing Organization Report No.

88B0152

10. Work Unit No.

9. Performing Organization Name and Address

Goddard Space Flight Center
Greenbelt, Maryland 20771

11. Contract or Grant No.

13. Type of Report and Period Covered

Reference Publication

12. Sponsoring Agency Name and Address

National Aeronautics and Space Administration
Washington, D.C. 20546-0001

14. Sponsoring Agency Code

15. Supplementary Notes

16. Abstract

The Catalog of Open Clusters and Associated Interstellar Matter summarizes observations of 128 open clusters and their associated ionized, atomic, and molecular interstellar matter. Cluster sizes, distances, radial velocities, ages, and masses, and the radial velocities and masses of associated interstellar medium components, are given. The database contains information from approximately 400 reference sources published in the scientific literature before 1988.

17. Key Words (Suggested by Author(s))	18. Distribution Statement
Open Clusters Interstellar Matter Astronomy Database	Unclassified-Unlimited Subject Category 90

19. Security Classif. (of this report)	20. Security Classif. (of this page)	21. No. of pages	22. Price
Unclassified	Unclassified	300	A13