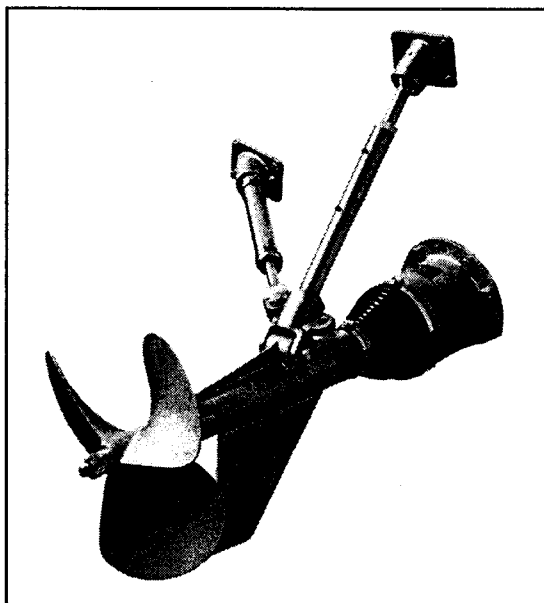

For Performance On A Higher Level...

For those seeking the ultimate in speed, maneuverability, efficiency and reliability, nothing matches the Twin Disc Surface Drive concept. Simply put, Twin Disc drives are among the most efficient marine propulsion systems in the world.

See The Difference It Can Make!

- 15-30% speed increase over conventional systems
- 15-30% increase in fuel efficiency
- Low maintenance requirements
- Maintenance simplicity - less than 20 moving parts
- Shallow water maneuverability
- Less vibration - smoother running conditions
- Reduces cavitation
- Larger selection of propellers
- Ability to change propellers in water
- Reduces underwater appendage drag up to 50%
- Positive thrust steering - superior maneuverability
- Greater flexibility of engine placement



Does This Fit Your Idea Of High Performance?

We've Just Scratched The Surface!

Twin Disc, Incorporated
1328 Racine Street
Racine, WI 53403
Telephone: 414-638-4000
Fax: 414-638-4484



ARNESON
by



Announcing... A New Generation Of Surface Drives

Twin Disc is proud to announce a new generation of Arneson Surface Drive that incorporates a dual-fin arrangement which replaces the traditional single-fin models invented by Mr. Howard Arneson in 1980. Results of an extensive testing program by Mr. Arneson and Twin Disc comparing performance of the single-fin models to the new dual-fin models showed a wide range of performance advantages pertaining to commercial, military, racing, and pleasure applications. Substantial gains in many aspects are realized that attribute directly to the new design.

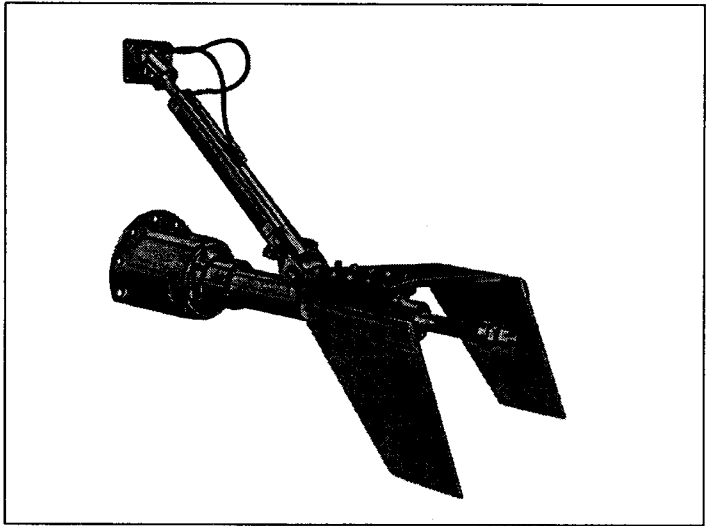
Just look at these benefits!

IMPROVED "ON-PLANE" TIME Due to the removal of the single center fin in front of the propeller, a cleaner flow of water enters the propeller. With more clean water reaching the propeller, the result is a faster planing hull. This also allows the vessel to maintain its plane at lower RPM, which results in a more efficient use of fuel. The flat horizontal surface provided by the underside of the fin structure will also act as a lifting aid to achieve plane.

IMPROVED MANEUVERABILITY There are now two fins in the water acting as rudders instead of one. The increased stability provided by the dual-fin arrangement eliminates any handling concerns at high speeds. Howard Arneson proved this with his 40-ft. twin-turbine-powered cat recording official 2-way speeds of 160.184 miles per hour. Successful installations include Hustlers, Wellcrafts, and Cougar and Skater cats.

INCREASED PROPELLER PROTECTION Since dual-fin models have fins extended to the outside of the prop blade diameter, greater protection from damage occurs. Floating debris is deflected away from the prop and to the sides of the drive. Should the fin become damaged, it can be repaired or replaced by removing the mounting bolts. The fin blade area can be adjusted to optimize vessel performance.

VERSATILITY Certain applications may require removal of the inner fin on the dual-fin models. Conditions such as very close prop centers or drives installed at offset angles on cat hulls may cause the fins to interfere with each other or run in the tunnel flow. By removing the inner fin on each drive, this situation is eliminated. The vessel still has improved planing due to the offset fin that does not interrupt water to the prop. It also shows improved handling and backing-up capabilities. Tests on high-speed vessels have shown a slight increase in top speed, which is a direct benefit of the clean water flow.



The New Arneson Dual-Fin Surface Drive

In summary, if your high-speed performance boat is used for pleasure, work or military, the new Arneson Dual-Fin Surface Drive may improve your vessel's performance in all of the areas discussed above. The dual-fin model is interchangeable with existing ASD 8 and 10 drives in the drop-center and inline models. Contact Twin Disc, Inc. for further information and pricing.

See what it takes to become a leader in the world of high-performance boating!

Twin Disc, Incorporated
1328 Racine Street
Racine, WI 53403
Telephone: 414-638-4000
Fax: 414-638-4484



ARNESON
by



CONTACTS AT TDI FOR ASD INFORMATION

1) **Mark Wilson, Sales**

Twin Disc, Incorporated
1190 SW Dyer Point Road
Palm City, FL 34990
PH: 561-287-4201
FAX: 561-287-4019

Sales, application, technical information, and propeller specifications

2) **Dana Birkland, Product Support Manager**

Twin Disc, Incorporated
1328 Racine Street
Racine, WI 53403-1758
PH: (414) 638-4270
FAX: (414) 638-4484

Service, application, and technical information

3) **Fred Nystrom, Project Engineer**

Twin Disc, Incorporated
4600 21st Street
Racine, WI 53403-1758
PH: (414) 638-4000 ext. 3715
FAX: (414) 638-2769

Engineering related information

PROPELLER SUPPLIERS - SURFACE DRIVE DESIGN

- 1) Osbourne Propellers, British Columbia, Canada - ASD 6-14 Models**
Mfg: Nibral bronze - round ear design.

Contact: Bob Osbourne (604) 929-8407

- 2) Pacific Surface Drives, Vancouver, Canada - ASD 6-10 Models**
Mfg: Stainless steel round ear design to 24" diameter maximum.

Contact: Ken Martin (604) 278-2935

- 3) Rolla Propellers, Switzerland - ASD 6-18 Models**
Mfg: Nibral bronze, manganese bronze and stainless steel propellers in both conventional round ear design and high-performance cleaver-type.

Contact: Otello Sattin (011) 41-91-6952000

DISTRIBUTORS

Southern Diesel Systems

244 SW. 6th Street
Miami, FL 33130
PH: (305) 856-4202
Contact: Marcello Sans, Manager/Sales
Luis Diaz / Robert Barr, Service/Parts

Mill Log Marine, Inc.

18547 E. Valley Hwy.
Seattle, WA 98032
PH: (206) 251-3434
Contact: Ron Johnson, Sales
Doug Hanson, Service/Parts

Mill Log Equipment Company

90895 Roberts Road
Coburg, OR 97408
PH: (503) 485-2203
Contact: Kevin Greene

Pacific Surface Drives

2165-21000 Westminster Hwy.
Richmond, BC Canada V6W 1H3
PH: (604) 278-2935
Contact: Ken Martin

Twin Disc International (Twinsa)

Chaussee de Namur, 54, 1400 Nivelles
Belgium
PH: (011) 32-67-887-211
Contact: Jacques Pierquain
Pierre Coomans

Twin Disc Italia S.R.L.

Via Coppino, 425-427, 55049 Viareggio
(LU), Italy
PH: (011) 39-584-387797
Contact: David Bisogni

Twin Disc (Pacific) Ltd. (Twinpac)

40 Telford Street, P.O. Box 442,
Virginia, Queensland 4014, Australia
PH: (011) 61-7-265-1200
Contact: Colin Rawlings

Acomplamento Comercio e Importacao Ltda.

Rua Jose Jorge Nardi de Souza 50,
18.047-670 CEP, Sorocaba-SP Brazil
PH: (011) 55-152-324438
Contact: J.L. Rolim Nunes

R. da Assembleia 77-190 Andar
Rio de Janeiro - RJ Brazil
PH: (011) 55-21-2242050
Contact: Carloman Maia

Almendar Onuk

Kemiklidere Mevkii, Kaynarca
8150 Pendik/Istanbul, Turkey
PH: (011) 90-216-396-37-70
Contact: Ekber Onuk

Marine Propulsion S.R.L. (Italy)

Via Monfalcone 25-19123
La Spezia, Italy
PH: (011) 390187712098
FAX: (011) 390187712066
Contact: Francesco Frediani

JET DRIVE vs ARNESON SURFACE DRIVE

Project Specifications

	<u>Jet Drive</u>	<u>Arneson Drive</u>
LOA:	18 ft.	18 ft.
Weight:	4000 lbs.	4000 lbs.
Engine:	460 Ford	460 Ford
Horsepower:	450 hp	450 hp
Trans:	N/A	B.W. Velvet Drive 72C.
Ratio:	N/A	1:1
Drive:	Berkley Pump	ASD 6A2S615 (1.5:1 Red.)
Propeller:	N/A	16 3/4 X 21 3 Blade Bronze Hi-Rake

Project Results

	<u>Jet Drive</u>	<u>Arneson Drive</u>
Top speed (driver only)	67 mph/5400	88 mph/4800
Top speed (two persons)	64 mph/5300	82 mph/4200
2000 rpm	not on plane	37 mph
3000 rpm	29 mph	58 mph
4000 rpm	42 mph	78 mph
30-60 mph acceleration	9.3 sec.	6.5 sec.
Fuel consumption 35 mph	3.18 mpg	4.85 mpg
Fuel consumption 45 mph	2.55 mpg	3.90 mpg
Fuel consumption 55 mph	1.90 mpg	3.25 mpg
Fuel consumption 65 mph	1.65 mpg	2.85 mpg

UNDERWATER SHAFT vs ARNESON SURFACE DRIVE

This example looks at two 53 ft. Magnum vessels. The first boat is equipped with underwater shafts while the second vessel has Arneson Model 12s installed. Listed below are details.

1. Vessel #1 - 53 ft. Magnum Hull #040

LOA: 53 ft.
Engine: 12V92 (Twins)
Hspwr: 1080 @ 2300 RPM
Reduction: 1.5:1
Prop Size: 29-1/2" x 34" 4 Blade Rolla
Weight: 57,500 lbs (400 gals fuel)
Year Built: 1990
Drive: Shafts
Top Speed: 45 MPH

2. Vessel #2 - 53 ft. Magnum Hull #53-052

LOA: 53 ft.
Engine: 12V92 (Twins)
Hspwr: 1080 @ 2300 RPM
Reduction: 1.5:1
Prop Size: 31" x 41" 5 Blade Rolla
Weight: 59,500 lbs (400 gals fuel)
Year Built: 1992
Drive: ASD 12B1S
Top Speed: 56 MPH

Summary: Identical vessels were compared. The ASD 12 equipped vessel speed was 11 mph faster than shaft driven vessel. The vessel with the ASD system planed faster compared to the shaft driven vessel.

Magnum Marine uses ASD units on 95% of the vessels produced. Superior handling is also a major factor in the ASD equipped vessels.

FIXED SURFACE DRIVE vs ARNESON SURFACE DRIVE

Project Specifications

	<u>Fixed Drive</u>	<u>Arneson Drive</u>
LOA:	26 ft.	26 ft.
Weight:	9500 lbs.	9500 lbs.
Engine:	Twin Yanmar	Twin Yanmar
Horsepower:	170 hp each	170 hp each
Trans:	Twin Disc	Twin Disc
Ratio:	1.5:1	1.5:1
Drive:	Fixed S/D	ASD 6 A1S
Propeller:	17 x 20 (4B1)	18 x 21 (4B1)
Vessel Style:	Tunnel Hull	Tunnel Hull
Trade Name:	Sea-Skimmer	Sea-Skimmer
Built by:	J & L Equipment 5375 LaBounty Drive Ferndale, WA 98248	Owner: Mr. Jerry Hermanson Seattle, WA

Project Results

	<u>Fixed Drive</u>	<u>Arneson Drive</u>
Top Speed:	37 mph	42 mph
Cruise Speed: 2700 rpm	27 mph	33 mph
Upper Cruise: 3000 rpm	30 mph	37 mph
Fuel Consumption: @ 2700 rpm	10 gph	8 gph

NOTE: With the Arneson drive, the vessel came out of the hole much faster and did not require trim tabs. With the fixed surface drive, trim tabs had to be utilized to get on plane.

100 FOOT CAMCRAFT RETROFIT

The use of a much deeper reduction ratio, and a larger, lightly-loaded propeller than most of us are used to has shown some very interesting results. One such example is the 100 ft. Camcraft conversion that was undertaken recently.

The vessel was originally built by Camcraft as a supply boat for offshore oil field service. As built, the boat was powered by three 12V.71 Detroit Diesels turning individual shafts. Top speed was 24.3 knots. In 1988 this vessel underwent a conversion from a supply boat to a yacht. The center engine was removed and the wing engine horsepower increased by 50 hp from 600 hp to 650 hp. The total installed horsepower dropped by 500 hp to a net installed horsepower of 1300 with a speed of 23.7 knots.

Specifications as originally built

- Length Overall: 100 ft.
Length Waterline: 91 ft.
Chine Beam: 17.5 ft.
Displacement: 120,000 lbs.

Propulsion Specifications

Power: 600 hp @ 2100 rpm
Reduction Ratio: 2.50:1
Propeller Size: 32" x 30" 4-blade Columbian Bronze Workboat Style.
Number of Shafts: 3
Performance: 24.3 knots

Specifications after retrofit

Length Overall: 100 ft.
Length Waterline: 91 ft.
Chine Beam: 17.5 ft.
Displacement: 120,000 lbs.

Propulsion Specifications

Power: 650 hp @ 2100 rpm
Reduction Ratio: 3.50:1
Propeller Size: 52" x 50" 4-blade Rolla Surface Piercing Propellers
Number of Shafts: 2
Performance: 23.7 knots

Illustrated are the resistance and fuel differences between the two installations. For comparative purposes the resistance of this vessel was calculated using the Savitsky planing resistance analysis that has been modified by Arneson Marine to include added wave drag through the pre-planning region.

The EHP figures for the original and ASD retrofit are shown respectively. The propulsive efficiency, (QPC) is calculated by:

$$QPC = \frac{\text{effective horsepower}}{\text{delivered horsepower}}$$

Conditions:

0.4	Fuel consumption (lbs/hp/hr)
\$1.00	Diesel cost per gal (\$)
7.216	Weight of 1 gal diesel

Resistance / EHP

	Vessel speed (knots)	bare hull drag (lbs)	added wave drag (lbs)	appendage & air drag (lbs) (lbs)	Total Drag	EHP
Original vessel	24.3	8459	2731	1315	12505	933
ASD retrofit	23.7	8242	2885	336	11463	834

FINDINGS, CONCLUSIONS

Original Vessel	Retrofit with ASDs	
24.3	23.7	Boat speed (knots)
600	650	Horsepower (continuous)
3	2	Number of engines
1800	1300	Total delivered horsepower
933	834	EHP from resistance table
52%	64%	Propulsive efficiency (QPC) (calculated: EHP/developed hp)
100	72	Fuel consumption/hr (gal)
\$99.78	\$72.06	Fuel cost/HR (\$)
	28	Fuel savings gal/hr
	\$27.72	Fuel savings \$/hr

MILITARY VESSELS EQUIPPED WITH ARNESON SURFACE DRIVES (ASD)

<u>Builder/Designer</u>	<u>Vessel Type</u> <u>Location</u>	<u>ASD Model</u> <u>Number Eng's.</u>	
Vosper 68'	Patrol	ASD 14/2	Singapore
VPW 32'	Attack	ASD 6/2	Taiwan
VPW 42'	Special Forces	ASD 12/2	Taiwan
Setouchi 39'	Police	ASD 10/2	Japan
Djupviks 42'	Attack	ASD 10/2	Sweden
Robert Allen 50'	Patrol	ASD 12/2	Canada
Munson 50'	Police	ASD 10/2	USA
AN Marine 60'	Patrol	ASD 10/2	Thailand
Boghammer 70'	Landing Craft	ASD 14/2	Sweden
P.T. Tristar 41'	Patrol	ASD 8/2	Indonesia
P.T. Tristar 32'	Patrol	ASD 8/1	Indonesia
P.T. Tristar 50'	Patrol	ASD 14/2	Indonesia
MerCougar 47'	Attack	ASD 10/2	Venezuela
MerCougar 42'	Patrol	ASD 8/2	Venezuela
MerCougar 29'	Patrol/Medical	ASD 8/2	Venezuela
MerCougar 61'	Landing Craft	ASD 10-1/2	Venezuela
Magnum 40'	Patrol	ASD 10/2	USA
Moss Point 40'	Patrol/Attack	ASD 8-3/2	USA
Harley 42'	Patrol	ASD 8-1/2	USA
Munson 44'	Landing Craft	ASD 10-1/2	USA
Uniflite 26'	Survey Craft	ASD 10-1/2	USA (Army Corps)
White 36'	Utility	ASD 8-1/2	USA (Army Corps)
Trinity Marine 82'	Patrol	ASD 14/3	Mexico
Trinity Marine	Patrol	ASD 14/3	USA
Magnum Marine/ McDonnell Douglas 40'	Patrol	ASD 10/2	USA (Various)
Bristol 50'	Patrol	ASD 10/2	India
Marlborough 28'	Patrol	ASD 6/2	Malaysia
I.N. Dabur 65'	Patrol	ASD 14	Israel
I.N. Zharon	Special Forces	ASD 10	Israel
IAI Super Dvora MK II	Patrol	ASD 16	Israel
IAI Super Dvora MK II	Patrol	ASD 14	Eritrea
IAI Super Dvora MK II	Patrol	ASD 14	Sri Lanka
IAI Super Dvora MK II	Patrol	ASD 16	Sri Lanka

Three operational scenarios were run showing the fuel usage and cost based on 2,000, 1,500 and 1,000 operation hours per year. As the engine ratings on this application are continuous ratings all calculations shown are based on this. In actual service the amount of full power time would be somewhat less than this condition.

2,000 Operating Hours Per Year:

199,557	144,124	Fuel consumption/year (gal)
\$199,556.54	\$144,124.17	Fuel cost/year (\$)
	55,432	Fuel savings gal/year
	\$55,432.37	Fuel savings/year (\$)

1,500 Operating Hours Per Year:

149,667	108,093	Fuel consumption/year (gal)
\$149,667.41	\$108,093.47	Fuel cost/year (\$)
	41,574	Fuel savings gal/year
	\$41,574.28	Fuel savings/year (\$)

1,000 Operating Hours Per Year:

99,778	72,062	Fuel consumption/year (gal)
\$99,778.27	\$72,062.08	Fuel cost/year (\$)
	27,716	Fuel savings gal/year
	\$27,716.19	Fuel savings/year (\$)

What is clearly indicated by this analysis is that the payback time for the capitol equipment shows beyond any shadow of a doubt that the Arneson Surface Drives are a recoverable cost- in this case, with a payback of less than two (2) years (based on 2,000 hrs/yr). Not a bad investment by anyone's standard!

Builder/Designer	Vessel Type	ASD Model # Eng's	Location	Speed
Vosper 68'	Patrol	ASD 14/2	Singapore	45 KNOTS
VPW 32'	Attack	ASD 6/2	Taiwan	55+KNOTS
VPW 42'	Special Forces	ASD 12/2	Taiwan	60+KNOTS
Setouchi 39'	Police	ASD 10/2	Japan	48 KNOTS
Djupviks 42'	Attack	ASD 10/2	Sweden	40 KNOTS
Robert Allen 50'	Patrol	ASD 12/2	Canada	45 KNOTS
AN Marine 60'	Patrol	ASD 10/2	Thailand	
Boghammer 70'	Landing Craft	ASD 14/2	Sweden	25 KNOTS
P.T. Tristar 41'	Patrol	ASD 8/2	Indonesia	47 KNOTS
P.T. Tristar 32'	Patrol	ASD 8/1	Indonesia	50 KNOTS
MerCougar 47'	Attack	ASD 10/2	Venezuela	50 KNOTS
MerCougar 42'	Patrol	ASD 8/2	Venezuela	
Mercougar 29'	Patrol/Medical	ASD 8/2	Venezuela	60 KNOTS
MerCougar 61'	Landing Craft	ASD 10-1/2	Venezuela	30 KNOTS
Magnum 40'	Patrol	ASD 10/2	USA	46 KNOTS
Moss Point 40'	Patrol/Attack	ASD 8-3/2	USA	
Harley 42'	Patrol	ASD 8-1/2	USA	50 KNOTS
Munson 40'	Landing Craft	ASD 10-1/2	USA	34 KNOTS
Uniflite 26'	Survey Craft	ASD 10-1	USA (Army Corps)	24 KNOTS
White 36'	Utility	ASD 8-1/2	USA (Army Corps)	
Trinity Marine 82'	Patrol	ASD 14/3	Mexico	50 KNOTS
Trinity Marine 82'	Special Forces	ASD 14/3	USA (Navy)	50 KNOTS
Anita Corp 30'	Police	ASD 8/3	Japan	48 KNOTS
P.T. Tristar	Police/CG	ASD 8/1	Indonesia	42 KNOTS
Magnum Marine/McDonnell Douglas 40'	Patrol	ASD 10/2	USA (various)	48 KNOTS
Bristol 50' sm 45	Patrol	ASD 10/2	India	28 KNOTS
Marlborough 28'	Patrol	ASD 6/2	Malaysia	65 KNOTS
I.N. Dabur 65'	Patrol	ASD 14/2	Israel	35 KNOTS
I.N. Zharon	Special Forces	ASD 10/2	Israel	41 KNOTS
IAI Super Dvora MK II	Patrol	ASD 16/2	Israel	
IAI Super Dvora MK II	Patrol	ASD 14/2	Eritrea	40 KNOTS

ASD Military Vessel Applications Log

IAI Super Dvora MK II	Police	ASD 14/2	Malawi	40 KNOTS
IAI Super Dvora MK II	Patrol/Coast Guard	ASD 14/2	Slovenia	40 KNOTS
IAI Super Dvora MK II	Patrol	ASD 14/2	Sri Lanka	40 KNOTS
IAI Super Dvora MK II	Fast Attack Craft	ASD 16/2	Sri Lanka	47 KNOTS
IAI Super Dvora MK II	Extra Fast Attack Craft	ASD 16/2	India	47 KNOTS
Lurssen VSV	Stealth/Patrol	ASD 10/2	Indonesia	50 KNOTS
Alemdar/Onuk	Coast Guard/Patrol	ASD 12/2	Turkey	54 KNOTS
Cougar 42'	Special Forces	ASD 8/2	Kuwait/Qatar	44 KNOTS
Wuhan (China) 13.65 M.	Fast Patrol	ASD 12/2	China	52 KNOTS
Allied Shipbuilding 64'	Fast Patrol (RCMP)	ASD 12/2	Canada	35 KNOTS
Stingray Marine	Fast Patrol	ASD 10/2	Israel	36 KNOTS
Simonneau 16 M.	UFPB	ASD 12/2	Middle East	50 KNOTS
CMN 15.6 M.	Patrol	ASD 10/2	France	54 KNOTS

ASD PLEASURE VESSEL APPLICATIONS LOG

BUILDER/OWNER	LOA (FT)	LWL (FT)	WEIGHT (LBS)	HP (MAX)	RPM (MAX)	GEAR RATIO	C.G. (CALC.)	C.G. (ACTUAL)	SPEED (CALC.)	SPEED (ACTUAL)	ASD MODEL	PROPELLER SIZE
BAIA (93)	80'	63'	84,000	1400 X 2	2300	1.5				47mph	14	35.5 x 41 Radice
ADRIATICO (93)	70'	55'	77,160	1450 x 2	2300	1.5	21.65			55mph	14	32.5 x 37 6B FH
MANGUSTA (94)	80'	64'	90,388	1450 x 2	2300	1.5	24.27			51mph	14	36 x 38 4B Rolla
MANGUSTA (94)	80'	65'	114,638	1600 x 2	2300	2.0				48mph	14	
TECNOMARINE (90)	76'	59'	92,592	1450 x 2	2300	1.5	24.21			51mph	14	34 x 41 4B FH
ADRIATICO (94)	75'			1350 x 2	2300	1.5				55mph	14	Rolla
MANGUSTA *	80'			1850 x 2	2300	1.5				mph	14	
AZIMUT (94)	78'		127,865	1400 X 2	2300	2.5				36mph	14	48 x 42 5P Rolla
DENISON	86'	72'	90,000	2400 x 2	2300	2.06	34.00		44mph	49mph	16	46 x 52 4B
DENISON	140'	125'	400,000	2700 x 2	1800	1.5			26mph	22mph	18	60 x 66 5B Rolla+
YONTECH	95'	80'	132,000	1500 x 2	2340	2.03	30.00		33mph	35mph	14	37 x 41 4B
CARY	68'	52'	90,000	4000 x 2	2200				75mph	mph	16	32 x 39 x 5
GENTRY EAGLE	110'		154,000	4500 x 1	2200				80mph	80mph	16	31 x 42 5B
PALMER JOHNSON	78'	56'	108,000	1800 x 2	2100		20.50		55mph	55mph	16	47 x 61 4B
MAGNUM	70'	60'	85,000	1650 x 2	2075	2.0			51mph	51mph	14	38 x 45 x 5
DENISON	82'	70'	78,000	1800 x 2	2100	1.5	28.50		42mph	44mph	16	46 x 54 x 4
BAIA	40'	32'10"	23,800	425 x 2	2300	1.5				44mph	10	22-28/23-31
BAIA	43'	37'2"	27,500	425 x 2	2300	1.5				43mph	10	23-27
BAIA	50'	40'	36,000	770 x 2	2300	1.5				44mph	12	28-38
BAIA	55'	44'5"	44,000	770 x 2	2300	1.5				40mph	12	29.5-38
BAIA	60'	45'6"	54,000	1180 x 2	2300	1.5				43mph	12	850-1200
BAIA	80'	63'2"	84,000	1400 x 2	2300	1.5				42mph	14	35.5-41
MAGNUM	52'11"		50,000	1200 x 2	2300	1.5			57	56.9	12	33 x 45 x 5
MAGNUM	52'11"		50,000	1080 x 2	2300	1.5			55	56.0	12	32 x 40 x 4
MAGNUM	52'11"		50,000	1000 x 2	2300	1.5			53	49.6	12	31 x 41 x 4
MAGNUM	50'		45,000	1080 x 2	2300	1.5			57	55.9	12	31 x 43 x 4
WARLOCK	67'10"		50,000	1450 x 2	2300	1.5			62	63.3	14	
CAREY	70'			1000 x 3	2300	1.5					12	
BAIA	43'		27,500	425 x 2	2800	1.5			47	50.7	10	
BAIA	62		54,000	1080 x 2	2300	1.5			53	57.6	12	
BAIA	80'9"		72,000	1450 x 2	2300	1.5			53	55.3	14	
BAIA	80'9"		72,000	1600 x 2	2300	1.5			55	59.9	14	
CAREY	50'	45'	32,000	435 x 3	2800	1.48			51	49.0	8	21.7 x 33 x 5
CMN	51.2'		25,140	840 x 2	3000	1.025			63		10	
HOPE	50.8'		31,325	600 x 2	2300	1.48			50		10	
BOWPICKERx	39'		19,000	306 x 2	2800	1.5			43		8	
HYUNDIA	25'		11,200	375 x 1	2800	1.408			44		8	
HOPE	47'		38,100	485 x 2	2100	1.5			39		12	
HOPE	52'		48,532	600 x 2	2100	2.0			38		12	
HOPE	17'6"		2,720	215 x 1	4300	2.0			64		6	
HOPE	32'		25,000	130 x 1	2600	3.0			19		8	
HOPE	46'		36,000	740 x 2	2300	1.5			48		12	
MARSUN	90'		72,000	870 x 2	2300	2.5			38		14	
NAUTISM	54'		55,150	1000 x 2	2300	1.5			45		12	
OMAN	33'		14,000	450 x 2	2850	1.09			59		8	
AERO	31'		5,000	420 x 2	5000				90		6 CB	

* NOT YET LAUNCHED

+ EXCESSIVE OVERWEIGHT CONDITIONS ON FINAL DELIVERY

x COMMERCIAL APPLICATION

ASD PLEASURE APPLICATIONS LOG

BUILDER/OWNER	LOA (FT)	LWL (FT)	WEIGHT (LBS)	HP (MAX)	RPM (MAX)	GEAR RATIO	C.G. (CALC.)	C.G. (ACTUAL)	SPEED (CALC.)	SPEED (ACTUAL)	ASD MODEL	PROPELLER SIZE
COLOMBO	41'	34.77	18,077	425x2	2800	1.5:1	14.95		44km	48km	8	22X32 4B
AZIMUT	65'	53.96	83,774	1100x2	2300	2:1	22.24		36km	36.25km	14	36X40 4B
C&B	38'	32.45	12,345	300x2	2800	1.5:1	11.48		44km	48km	8	22X30 4B
C.N.ADRIATICO	70'	55.31	77,160	1450x2	2300	1.5:1	21.65		45.5km	47km	14	32.5X37 4B
ALFA MARINE	63'	66.07	66,137	430x2	2000	2:1	29.85		27.5km	25km	12	33.5X36 4B
INTERMARINE	40'	31.56	19,841	680x2	2800	1.17:1	9.84	9.18	58km	58km	8	22X30 4B
MANGUSTA	80'	64.63	90,388	1450x2	2300	4.5:1	24.27	24.24	42km	44km	14	36X38 4B
VERKSCRAFT	66'	49.86	94,800	1450x2	2300	2:1	19.00		43km	44km	14	38X48 4B
TECHNOMARINE	76'	59.21	92,592	1450x2	2300	1.5:1	24.21		42km	44km	14	34X41 4B
PERSHING	50'	41.17	55,114	1150X2	2400	1.5:1				49km		ROLLA RSP 30
PERSHING	60'	45.14	63,932	1250X2	2300	1.5:1				50km	12	ROLLA RSP 31
PERSHING	70'	55.31	81,569	1250X2	2300	1.5:1				47km	14	ROLLA RSP 31
ANTAGO 21	69.6'	54.79	92,000	1200X2	2300	2.5:1	23.26		38km	40.41km	14	
MANGUSTA	80'	64.63	114,638	1850X2	2300	1.5:1	24.27	24.24		44km	14	ROLLA RSP 34
MANGUSTA	80'	67.15	110,229	1550X2	2300	2:1				41km	14	ROLLA RSP 39
CHEROKEE	80'		77,160	1450X2	2300	1.5:1				54km	14	ROLLA RSP 31
LEOPARD 27	85'	68.83	127,865	1850X2	2300	1.5:1		26.82		40km	14	40X44 5B

April 15, 1996