



Power. Thrust. Emotion.

Since 1979.

ARNESON
SURFACE DRIVES
BY TWIN DISC

W E P U T H O R S E P

1979 - 2009 thirty years of performance at the highest level.

The first articulated system released into the market, Twin Disc Arneson Surface Drives are the most efficient marine propulsion systems on the market today. They are designed to solve problems related to conventional shaft systems, for achieving speed over 35 knots.

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O W E R T O W O R K

For the ultimate in speed, maneuverability, efficiency and dependability, nothing matches Twin Disc Arneson Surface Drives. Their surface-piercing propeller design reduces underwater drag by 50% compared to conventional submerged propeller drive systems. The only parts that touch water are the propeller blades and a protective skeg. **This results in higher overall speed, faster acceleration and a better payload-to-power ratio.** And 50% less drag significantly improves fuel economy while lowering operating costs.



2

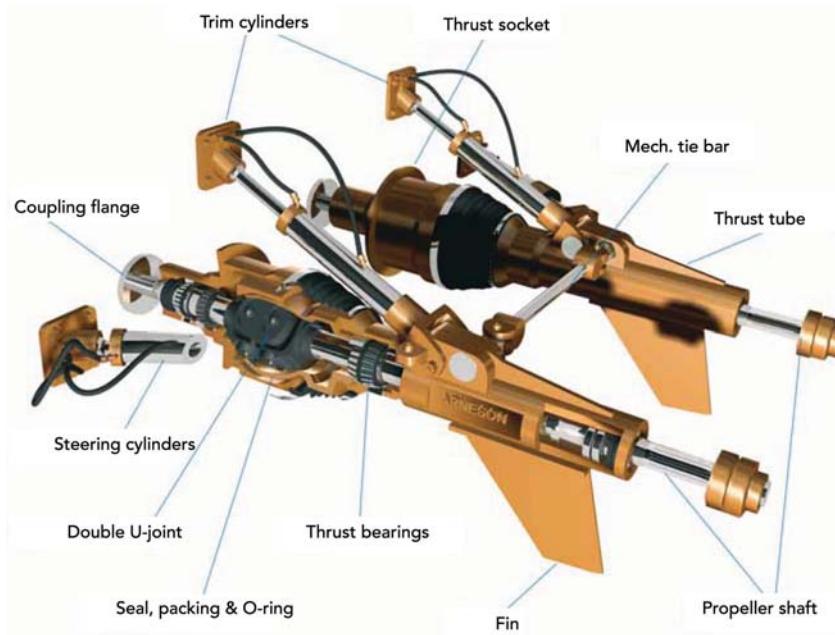
T E C H N I C A L F E A T U

Trimmability. The ability to trim up and down the Arneson Drives allows the propeller draft to match the engine horsepower output; thus more power is converted in producing thrust, while the engine is operating closer to its rated power curve. Propeller draft can be adjusted while underway, achieving the optimum thrust angle in any load and sea condition.

Reversibility. Arneson Surface Drives can be trimmed down during maneuvers at low speed, anchoring or reverse movement, allowing propellers to work in deep water and improving reversing. Blades design have been especially studied by Rolla to match pleasure as well as military vessel operating requirements thus improving reverse maneuverability.

Steerability. Steering control and response is maximized when the propellers function is directional force. Arneson Surface Drives directly set the propellers angle in the appropriate direction of motion. The ASD system can close-hauled turn, with greater control than fixed shaft drives; maneuverability is the best at any speed. Steering is power assisted via an engine driven pump located on engine. For safety reasons a double power steering pump installation is always suggested.

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R E S A N D B E N E F I T S

1. **15-30% speed increase** over conventional systems
2. **15-30% increase** in fuel efficiency
3. Shallow water maneuverability
4. Reduced cavitation
5. Larger selection of propellers
6. Reduced underwater appendage drag **up to 50%**
7. Positive thrust steering - superior maneuverability
8. Maintenance simplicity - **less than 20 moving parts**
9. Low maintenance requirements
10. Greater **flexibility** of engine placement
11. **Less vibration** - smoother running condition

Arneson makes the difference.

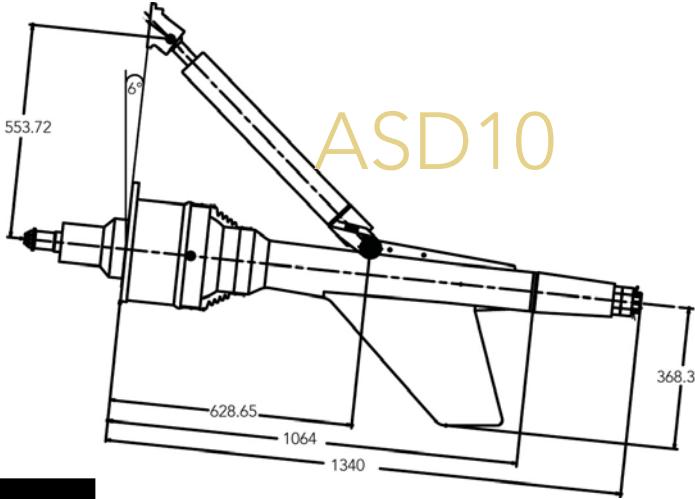
The proven performance and reliability of Arneson Surface Drives (ASD) is available for all craft ranging from **30 up to 200 feet**. 18 models are available and allow the selection of the most suitable ASD for any planning hull and engine.



MODEL	ASD8	ASD8i	ASD10	ASD11	ASD12S	ASD12L	ASD14	ASD15S	ASD15L	ASD16	ASD16L	ASD18S	
ASD INPUT SHAFT TORQUE LIMITS IN N*m Torque ratings shown are nominal and may change due to vessel characteristics	1625	1627	2710	4336	5695	6504	11525	14934	17200	22375	24500	*	
Nominal shaft size (mm)	50.8	50.8	63.5	73	76.2	83.8	88.9	115	120	114.3	108	*	
UNIT WEIGHT (dry) in Kg, includes: ASD unit, trim and steering cylinders, trim pump, reservoir, mounting hardware and hoses	B 130	B 243**	B 189	B 191	B 352	B 354	B 515	A 658	B 650 A 658	A 900	B 940 A 900	A 1270	
OVERALL EXTERNAL LENGTH (mm)	1066	990	1340	1412	1586	1608	1803	1978	1978	2184	2184	*	
THRUST SOCKET DIAMETER (mm)	222	222	262	262	327	327	376	435	435	482	482	*	
THRUST SOCKET FLANGE (mm)	312	*	349	349	431	431	482	540	540	584	584	*	
TURNING ANGLE (total)	40	40	40	40	40	40	40	36	36	36	36	*	
PROPELLER TRIM CONTROL (vertical travel)	15	15	15	15	15	15	15	15	15	15	15	*	
MATERIALS:													
A = ALMAC	SOCKET	B	B	B	B	B	B	B	A	A	A	A	A
B = BRONZE	BALL	B	B	B	B	B	B	B	SS	SS	SS	SS	SS
SS = STAINLESS STEEL	THRUST TUBE	B	B	B	B	B	B	B	A	A	A	A	A
	PROPELLER SHAFT	B	B	B	B	B	B	B	A	A	A	A	A

*Please, contact Twin Disc Technical Department. **Transmission weight included.

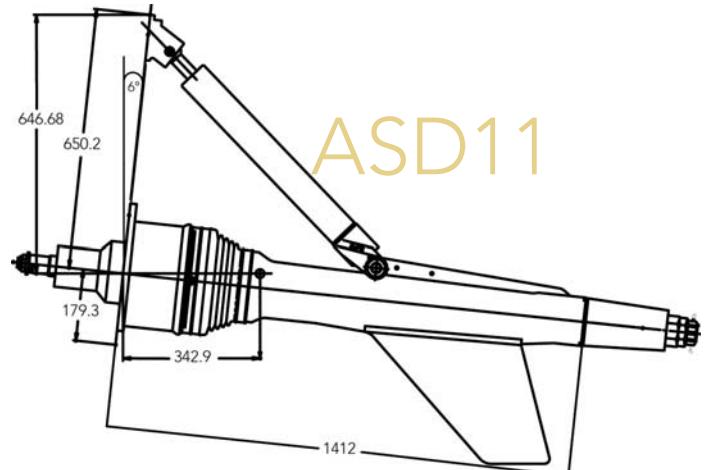
TECHNICAL FEATURE



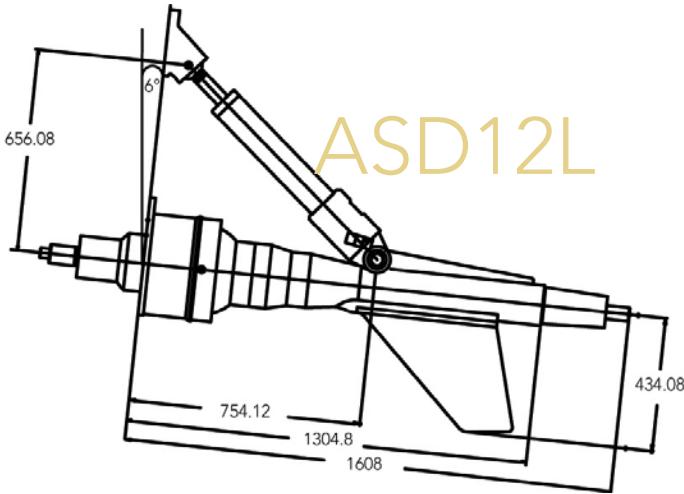
MODEL	ASD10
ASD INPUT SHAFT TORQUE LIMITS IN N*m	2710
Nominal shaft size (mm)	63.5
UNIT WEIGHT (dry) in Kg	189
OVERALL EXTERNAL LENGHT (mm)	1340
THRUST SOCKET DIAMETER (mm)	262
THRUST SOCKET FLANGE (mm)	349
TURNING ANGLE (total)	40
PROPELLER TRIM CONTROL (vertical travel)	15
MATERIALS	B/B/B

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MODEL	ASD11
ASD INPUT SHAFT TORQUE LIMITS IN N*m	4336
Nominal shaft size (mm)	73
UNIT WEIGHT (dry) in Kg	191
OVERALL EXTERNAL LENGHT (mm)	1412
THRUST SOCKET DIAMETER (mm)	262
THRUST SOCKET FLANGE (mm)	349
TURNING ANGLE (total)	40
PROPELLER TRIM CONTROL (vertical travel)	15
MATERIALS	B/B/B



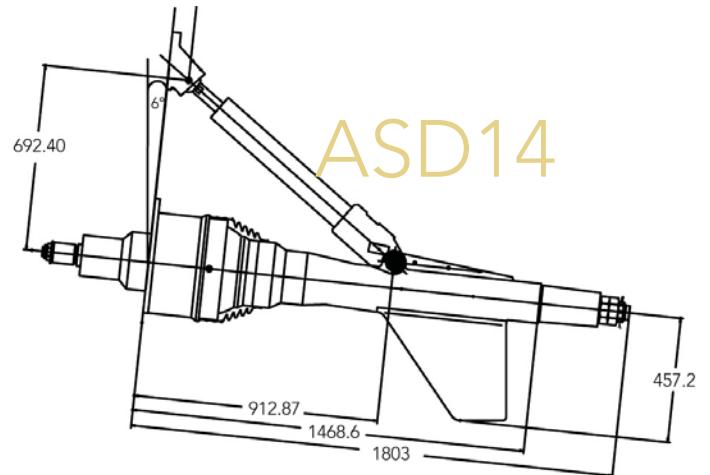
S A N D D I M E N S I O N S



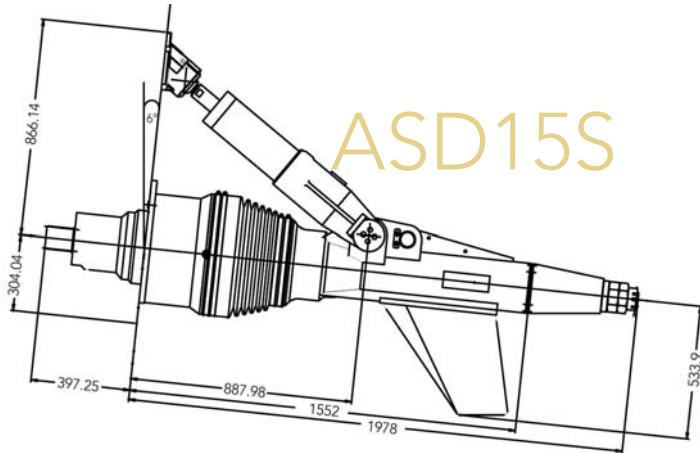
MODEL	ASD12L
ASD INPUT SHAFT TORQUE LIMITS IN N*m	6504
Nominal shaft size (mm)	83.8
UNIT WEIGHT (dry) in Kg	354
OVERALL EXTERNAL LENGHT (mm)	1608
THRUST SOCKET DIAMETER (mm)	327
THRUST SOCKET FLANGE (mm)	431
TURNING ANGLE (total)	40
PROPELLER TRIM CONTROL (vertical travel)	15
MATERIALS	B/B/B

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MODEL	ASD14
ASD INPUT SHAFT TORQUE LIMITS IN N*m	11525
Nominal shaft size (mm)	88.9
UNIT WEIGHT (dry) in Kg	515
OVERALL EXTERNAL LENGHT (mm)	1803
THRUST SOCKET DIAMETER (mm)	376
THRUST SOCKET FLANGE (mm)	482
TURNING ANGLE (total)	40
PROPELLER TRIM CONTROL (vertical travel)	15
MATERIALS	B/B/B



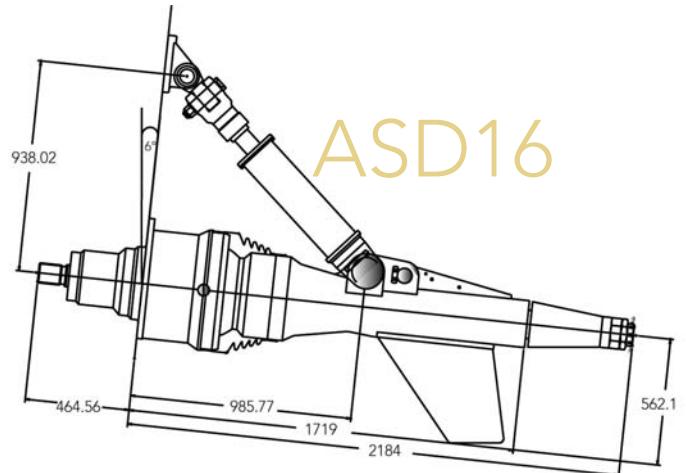
TECHNICAL FEATURE



MODEL	ASD15S
ASD INPUT SHAFT TORQUE LIMITS IN N*m	14934
Nominal shaft size (mm)	115
UNIT WEIGHT (dry) in Kg	658
OVERALL EXTERNAL LENGHT (mm)	1978
THRUST SOCKET DIAMETER (mm)	435
THRUST SOCKET FLANGE (mm)	540
TURNING ANGLE (total)	36
PROPELLER TRIM CONTROL (vertical travel)	15
MATERIALS	A/SS/A

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MODEL	ASD16
ASD INPUT SHAFT TORQUE LIMITS IN N*m	22375
Nominal shaft size (mm)	114.3
UNIT WEIGHT (dry) in Kg	900
OVERALL EXTERNAL LENGHT (mm)	2184
THRUST SOCKET DIAMETER (mm)	482
THRUST SOCKET FLANGE (mm)	584
TURNING ANGLE (total)	36
PROPELLER TRIM CONTROL (vertical travel)	15
MATERIALS	A/SS/A



S A N D R E F E R E N C E S

Over 20 governmental agencies around the world have recognized the many advantages of ASD performance for patrol boats and commercial crafts. The most important shipyards of pleasure boats prefer Arneson:

SHIPYARD	BOAT	ASD MODEL
AZIMUT	AZ86	ASD15A1S
ADRIATIC SHIPYARDS	DEMON 75	ASD15A1L
C.N.M.	CONTINENTAL 50	ASD11B1L
CANADOS INTERNATIONAL	CANADOS 90	ASD15A1L
CANTIERE NAVALE ARNO	LEOPARD 27	ASD15A1S
CANTIERI DI BAIA	AQVA 54	ASD12B1L
CANTIERI DI BAIA	AZZURRA 63	ASD14B1L
CANTIERI DI BAIA	ITALIA 70	ASD14B1L
CANTIERI DI BAIA	ATLANTICA 78	ASD15A1L
CANTIERI DI BAIA	BAIA ONE 42	ASD10B1L
CANTIERI DI BAIA	BAIA FLASH	ASD10B1L
CANTIERI DI BAIA	ONE HUNDRED	ASD16A1LU
CANTIERI DI BAIA	ONE HUNDRED	ASD18A1S
CANTIERI DI FIUMICINO	ALFAMARINE 78	ASD15A1S
CANTIERI DI FIUMICINO	ALFAMARINE 72	ASD14B1L
CANTIERI MAGAZZÙ	M-11	ASD6A1S
CANTIERI NAVALI LEONARD	LEONARD 72 OPEN	ASD14B1L
CANTIERI NAVALI SPERTINI	ALALUNGA 85 HT	ASD15A1L
CERRI CANTIERI NAVALI	CERRI 86	ASD15A1L
COSTES ONE	COSTES CY58	ASD12B1L
FERRETTI GROUP	PERSHING 56	ASD12B1L
FERRETTI GROUP	PERSHING 64	ASD14B1L
FERRETTI GROUP	PERSHING 72	ASD14B1L
FERRETTI GROUP	PERSHING 80	ASD15A1L
FERRETTI GROUP	PERSHING 90	ASD16A1LU
FERRETTI GROUP	ITAMA 75	ASD14B1L
ITALCRAFT	ITALCRAFT MV 105	ASD16A1LU
JSC ALMAZ SHIPBUILDING COMPANY	SOBOL 122	ASD15A1S
JSC VYMPER SHIPYARD	MANGUST 12	ASD14B1L
O.T.A.M.	MILLENNIUM 55	ASD14B1L
OVERMARINE	MANGUSTA 80	ASD15A1L
OVERMARINE	MANGUSTA 72	ASD14B1L
SEGEL MASTEN YACHTEN	A18M	ASD10B1L
TECNOMAR	MADRAS 27	ASD15A1S
ZEN YACHT	ZEN 70	ASD14B1L

R E L I A B I L I T Y I N

Getting on plane. A surface propulsion system requires a lot of attention in hull design. Propellers are designed to operate with only half of the blade area immersed thus requiring much more torque to spin the propellers at a given engine RPM and turn fast enough to get the boat on plane. So, designers and boat builders, in cooperation with Twin Disc Technical Department and Rolla propeller manufacturers, have to be particularly diligent in checking boat displacement, positioning the center of gravity and selecting the reduction ratio to be used for the gear box, in order to obtain the best compromise between top speed and "get on plane" capability. Deeper ratios, therefore larger propeller diameters, may help in over coming this problem.

Arneson Surface Drives have **no geometric and technical limitation** in propeller diameter, leaving designers free from restrictions; designers are able to use a much deeper reduction ratio with a larger and more efficient propeller. Furthermore, one of the advantages of the Arneson trimmability is the improved capability to **get on plane efficiently.** Positioning the ASD down, the thrust forces generated by the propellers pass well above the dynamic center of pressure and the center of gravity. This causes the vessel bow to stay lower down the sea surface and makes easier reaching planning speed. Drives have to remain in this position until the boat is over the hump (maximum hull resistance) and then can be trimmed up for optimum performance.

Cruising. It is possible to reduce the boat speed and stay on plane by lowering the drives and increasing intermediate range speed. Usually ASD should be trimmed down at low speed and trimmed up at high speed.

When boat displacement is over the project displacement ASD should be trimmed some degrees up to reduce the torque absorbed by the propeller. Engine can work closer to its rated power curve.

Trim can be also used to suit different sea conditions.

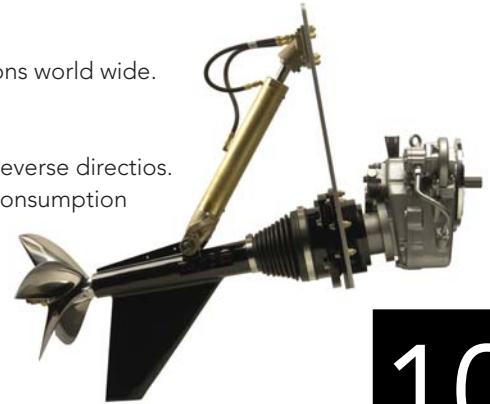
Arneson Surface Drives have always shown superior sea keeping ability thanks to the trimming function.



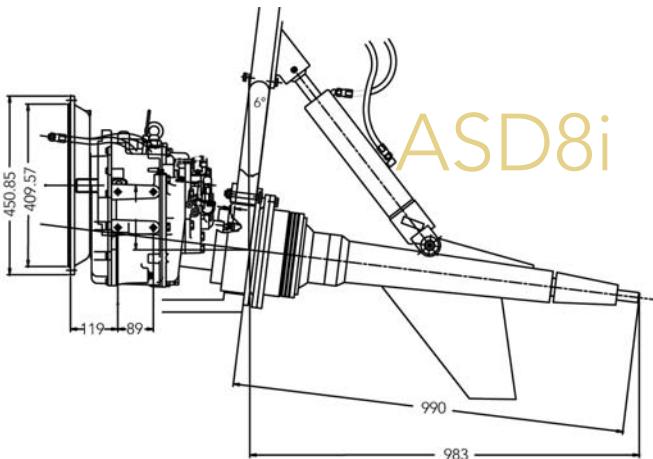
C O N S T R U C T I O N

New Arneson Integral 8 offers big performance in a compact package.

- Surface piercing drive system with integral marine gear.
- Based on the Arneson ASD 8 which is proven reliable in thousands of applications world wide.
- Suited for modern high performance marine diesel engines.
- High propeller shaft torque rating allows selection of optimal gear ratio.
- Steerable thrust provides high maneuverability at all speeds both forward and reverse directions.
- Highly efficient power transmission through double cardan joint for lower fuel consumption and lower lube oil temperatures.
- Shallow draft.
- Compact arrangement saves space in the engine room.
- Exposed driveline and related maintenance is eliminated.
- No complicated engine alignment required.
- Low maintenance.
- High efficiency for all planing craft provides reduced fuel consumption and increased range.
- All in water components are made of corrosion resistant bronze or stainless steel providing years of service.
- All Arneson Surface Drives utilize long life components and corrosion resistant materials to provide long service intervals and virtually eliminate time for repairs.



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MODEL	ASD8i
ASD INPUT SHAFT TORQUE LIMITS IN N*m	1627
Nominal shaft size (mm)	50.8
UNIT WEIGHT (dry) in Kg + transmission	243
OVERALL EXTERNAL LENGTH (mm)	990
THRUST SOCKET DIAMETER (mm)	222
THRUST SOCKET FLANGE (mm)	*
TURNING ANGLE (total)	40
PROPELLER TRIM CONTROL (vertical travel)	15
MATERIALS	B/B/B

*Please, contact Twin Disc Technical Department.



ARNESON
SURFACE DRIVES
BY TWIN DISC

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