
RICE
PROPULSION
The power of the Sea
ISO 9001
BUREAU VERITAS
Certification
BUREAU VERITAS
1828

TECHNOLOGY

Art meets technology

One of the most valuable part of a boat is the propeller.

With this in mind, **RICE PROPULSION** has crafted each propeller with expert technical achievement supported on the latest technology available.

Certified raw materials are used and we strictly supervise the process for composition and purity.

Alloys are developed to obtain the best anticorrosive properties without compromising optimal performance.

You can be sure that your propeller is a unique piece that will satisfy you for years.

That's why we call it...

"The art of building propellers".

Power now

Every single propeller and nozzle we manufacture is designed with the latest technology available that meets the most demanding standards.

Our commitment to continuous research and development is present in each one of our products.

We own a patent for our unique Rice Speed Nozzle now in use on boats all around the world.

This nozzle gives you over 10% more power on your boat without any further modifications.

The same technology is found on our propellers.


The United States of America

The Commissioner of Patents and Trademarks

United States Patent

US PATENT NO. 5799394

POWER

POWER AT EVERY LEVEL

At RICE PROPULSION we know that every boat has its own characteristics. That's why we have a full line of propellers and nozzles that meet any requirement. Our engineering & development department is at your service to assist you to determine the ideal propeller for your boat.

Logistic support

Rice's in-house logistics team offers 24/7 support year-round, for our products and systems.

Our facilities include equipment for the design, production, testing, installation, service, repair and over-haul of propulsion systems.

Engineering and development

Rice's technical knowledge, experience and comprehensive resources add up to capabilities which are among the best in the propulsion business.

We continue to explore new technologies through cooperative programs with naval research, development centers and leading testing facilities worldwide.

Power of the sea

Today at **RICE PROPULSION** we are committed to build propellers and nozzle systems for the shipbuilding industry, integrating the necessary technical characteristics to obtain the best performance out of every product. This philosophy, along with continuous training programs for our personnel, allow us to meet any quality standards and total customer satisfaction.

TITAN

3 TO 5 BLADES
30" - 160" DIAMETER

TITAN offers you:

PERFORMANCE

- Hard working propeller.
- Built to take heavy demands of tugs, workboats & heavy duty vessels.
- Greater thrust in a smaller diameter.

HEAVY-DUTY

- Blade sections are larger than standard propellers for vessels with limited propeller space.
- 3, 4 or 5 blades from 30" up to 160" diameter.

4 Blades 0.57 Dar. Diam.	W (kg)	Max Blade Width (in)	Area per blade (in^2)
30	52	11.5	118
32	60	12.6	135
34	70	13.0	152
36	80	13.8	170
38	93	14.0	190
40	115	15.4	210
42	130	16.1	232
44	146	16.9	255
46	164	17.7	278
48	183	18.4	303
50	217	19.2	329
52	240	20.0	356
54	265	20.7	384
56	291	21.5	413
58	336	22.3	443
60	367	23.1	474
62	400	23.8	506
64	445	24.6	539
66	481	25.4	573
68	521	26.1	608
70	585	26.9	645
72	630	27.7	682
74	676	28.4	720
76	739	29.2	760
78	791	30.0	800
80	846	30.8	842

The specifications on the table may vary according to customer needs. In the interest of continuous development and research, RICE PROPULSION reserves the right to modify any specifications stated herein.

We have a full line of Propellers and Nozzles to meet any requirement. Our engineering & development department is at your service to assist you to determine the ideal propeller for your boat. For more information, contact us and ask for the propeller selection questionnaire or visit our website www.ricepropulsion.com

NAUTILUS

3 TO 5 BLADES
30" - 160" DIAMETER

The Nautilus propeller is one of our latest developments. Its skewed design reduces the propeller pressure pulses to minimum level, allowing the smoothest and quietest operation.
It is ideal for applications where underwater noise and vibration requirements are critical.

NAUTILUS offers you:

PERFORMANCE

- Low noise and vibration.
- Smooth and quiet operation.

MED-HIGH SPEED

- Blade area ratio may vary to meet your requirements.
- 3, 4 or 5 blades, ISO Class S, from 30" to 60" in dia., Class I and II up to 150" in dia.

4 Blades 0.5 Dar. Diam.	W (kg)	Max Blade Width (in)	Area per blade (in^2)
30	38	8.4	88
32	43	8.9	101
34	50	9.5	113
36	65	10.1	127
38	73	10.6	142
40	82	11.2	157
42	104	11.8	173
44	115	12.3	190
46	126	12.9	208
48	239	13.4	226
50	153	14.0	245
52	176	14.6	265
54	192	15.1	286
56	209	15.5	308
58	237	16.2	330
60	257	16.8	353
62	278	17.4	377
64	301	17.9	402
66	326	18.5	428
68	351	19.1	454
70	410	19.6	481
72	439	20.2	509
74	470	20.7	538
76	529	21.3	567
78	563	21.9	597
80	599	22.4	628

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DELFIN

3 TO 5 BLADES
30" - 160" DIAMETER

DELFIN offers you:

PERFORMANCE

- Most Versatile.
- Based on famous B-Troost Series.
- Used Worldwide on fishing, supply and workboats.

POWER

- Blade area may vary without changing the number of blades to obtain greater thrust or more speed.
- 3 to 7 hydro-dynamic cross-section blades, with integrated hub shapes.

4 Blades 0.5 Dar. Diam.	W (kg)	Max Blade Width (in)	Area per blade (in^2)
30	32	8.1	88
32	43	8.7	101
34	49	9.2	113
36	56	9.8	127
38	64	10.3	142
40	82	10.9	157
42	91	11.4	173
44	107	12.0	190
46	113	12.5	208
48	126	13.1	226
50	152	13.9	245
52	167	14.1	265
54	183	14.7	286
56	200	15.2	308
58	235	15.8	330
60	255	16.3	353
62	276	16.9	377
64	307	17.4	402
66	331	18.0	428
68	357	18.5	454
70	406	19.1	481
72	435	19.6	509
74	465	20.2	538
76	510	20.7	567
78	544	21.1	597
80	579	21.8	628

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KAPLAN

3 TO 5 BLADES
30" - 160" DIAMETER

The Kaplan propeller is another example of our most advanced technology. This propeller is designed to be used with a nozzle in order to give shrimpers and workboats more thrust, by considerably increasing the efficiency of propellers carrying heavy loads while working at low speeds.

KAPLAN offers you:

PERFORMANCE

- Advanced technology.
- High efficiency with nozzle.
- More thrust from propellers carrying heavy loads at low speeds.
- Mn Bze, Stainless Bze or Aqualloy.

With our leading technology, we can offer you more efficient systems.

4 Blades 0.5 Dar. Diam.	W (kg)	Max Blade Width (in)	Area per blade (in^2)
39	78	10.8	149
41	86	11.3	165
43	94	11.9	182
45	108	12.5	199
47	127	13	217
49	137	13.6	236
51	159	14.1	255
53	172	14.7	276
55	197	15.2	297
57	211	15.8	319
59	228	16.4	342
61	252	16.9	365
63	281	17.5	390
65	309	18	415
67	348	18.6	441
69	370	19.1	467
71	394	19.7	495
73	446	20.2	523
75	473	20.8	552
77	501	21.4	582
79	565	21.9	613
83	730	23	676
87	807	24.2	743
91	941	25.3	813
95	1032	26.4	886
99	1189	27.5	962

The specifications on the table may vary according to customer needs. In the interest of continuous development and research, RICE PROPULSION reserves the right to modify any specifications stated herein.

We have a full line of Propellers and Nozzles to meet any requirement. Our engineering & development department is at your service to assist you to determine the ideal propeller for your boat. For more information, contact us and ask for the propeller selection questionnaire or visit our website www.ricepropulsion.com

KA-SPEED

3 TO 5 BLADES
30" - 160" DIAMETER
KA-SPEED offers you:

PERFORMANCE

- Reduced force-excitation level of the propeller.
- Better blade stress distribution.
- Smooth and silent operation (better than Kaplan propellers).
- Blade area ratio according to your needs.

The Ka-Speed was developed by adding the advantages of skewed propellers to the traditional Kaplan style. It was conceived to be installed into our Rice Speed Nozzle* for best performance, but it may also be installed in a Kort nozzle.

*U.S. Patent No. 5799394

4 Blades 0.5 Dar. Diam.	W (kg)	Max Blade Width (in)	Area per blade (in^2)
39	90	10.8	149
41	98	11.3	165
43	108	11.9	182
45	119	12.5	199
47	147	13	217
49	160	13.6	236
51	173	14.1	255
53	188	14.7	276
55	204	15.2	297
57	230	15.8	319
59	249	16.4	342
61	268	16.9	365
63	289	17.5	390
65	333	18	415
67	357	18.6	441
69	382	19.1	467
71	408	19.7	495
73	436	20.2	523
75	493	20.8	552
77	524	21.4	582
79	557	21.9	613
83	742	23	676
87	820	24.2	743
91	957	25.3	813
95	1050	26.4	886
99	1209	27.5	962

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CRUCERO

3 TO 5 BLADES
30" - 60" DIAMETER
CRUCERO offers you:

PERFORMANCE, COMFORT AND EFFICIENCY. A WAY OF LIFE AT RICE.

Designed for pleasure craft and crew boats, our Crucero propeller has become one of our most popular models.

The Crucero will help your boat reach its top performance levels and planning velocity while eliminating hull-damaging vibrations.

It provides a smooth and comfortable ride for you and your passengers.

4 Blades 0.67 Dar. Diam.	W (kg)	Max Blade Width (in)	Area per blade (in^2)
30	42	11.7	117
32	52	12.5	134
34	64	13.2	151
36	76	14.0	169
38	83	14.8	189
40	87	15.6	209
42	95	17.1	231
44	111	17.9	253
46	122	18.7	277
48	141	19.5	302
50	154	20.3	327
52	176	21.1	354
54	190	21.9	382
56	205	22.7	410
58	222	23.6	440
60	249	24.4	471

The specifications on the table may vary according to customer needs. In the interest of continuous development and research, RICE PROPULSION reserves the right to modify any specifications stated herein.

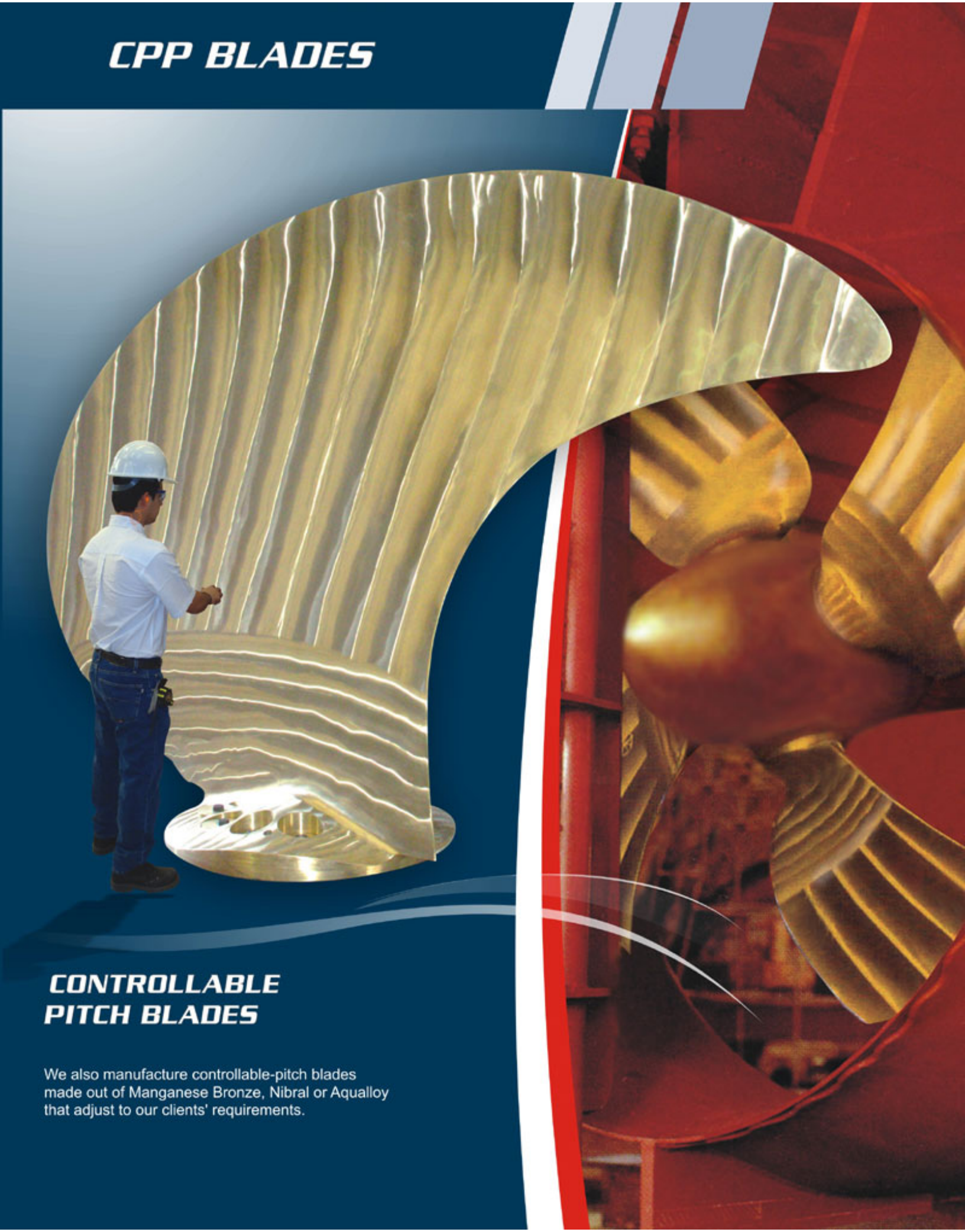
We have a full line of Propellers and Nozzles to meet any requirement. Our engineering & development department is at your service to assist you to determine the ideal propeller for your boat. For more information, contact us and ask for the propeller selection questionnaire or visit our website www.ricepropulsion.com

HEAVY DUTY RIVER PROPELLERS

3 TO 5 BLADES
30" - 160" DIAMETER

- Exclusive designs, customized according to the needs of each and every one of our clients.
- Extra heavy-duty sections for river applications.
- Designs available to be used either as open wheel or inside a nozzle.
- General use for river workboats.
- Blade area is larger than standard for boast with limited propellers space.
- 3, 4 or 5 blades from 30" up to 150" in diameter.

CPP BLADES



CONTROLLABLE PITCH BLADES

We also manufacture controllable-pitch blades made out of Manganese Bronze, Nibral or Aqualloy that adjust to our clients' requirements.

PROPELLER REPAIR

MARINE
Propulsion Repairs

ISO 9001
BUREAU VERITAS
Certification

BACKGROUND

With the rise in metal prices, propeller repair has become an economic necessity. The increase in repair demand, including a contract with the U.S. Coast Guard (USCG) to repair its propellers and CPP blades, speaks highly of the confidence our clients have in the quality of our repair services, therefore, we decided to create new facilities and infrastructure exclusively for this purpose.

EXPERIENCE

We have 50 years' experience in both the manufacture and repair of propellers.

ADDED VALUE

At MARINE PROPULSION REPAIRS we are experienced in the manufacture and welding of graftings, making this process more efficient compared to the normal process of filling-in completely with weld.

Moreover, our repairs may be certified by any classification society if so required by our client.

QUALITY POLICY

At MARINE PROPULSION REPAIRS we are committed to repair bronze propellers that meet or exceed our clients' requirements, guaranteeing our repair quality and continually improving the efficiency of our processes and quality systems.

PROPELLER REPAIR

SERVICES WE OFFER

Repair of propellers that meet established international norms, while offering the following services:

- Main dimensions readings.
- Pitch modifications.
- Static or dynamic balancing, as needed.
- Dye check (NDT).
- Analysis tests of chemical and mechanical properties.
- Cleaning.
- Regeneration of damaged areas by welding or grafting (if required).
- Straightening of battered areas.
- Blade shape modifications (open wheel to nozzle application and vice versa).
- On site urgent repairs to large vessels, propellers such as tankers, cruise ships, etc.

REPAIR PROCESS

Repairs may be done in-house, afloat or on site

.

A preliminary diagnostic test is done of the condition of the propeller, to determine the best work strategy to use according to the damage or modification to be done, which may include: pitch correction, thicknesses, widths, implants, balancing, etc.

PROPELLER TYPES THAT WE REPAIR

We can repair any design of blades and propellers in today's market.

INFRASTRUCTURE

Our new facilities cover an area of more than 11,000 square feet. We have all the necessary equipment to maneuver, weld, balance, and modify propellers that weigh up to 20 tons, as well as highly-skilled personnel with ample experience in the manufacture and repair of propellers.

PROPELLER REPAIR

ON SITE REPAIRS

AFLOAT REPAIRS

IN-HOUSE REPAIRS

EQUIPMENT WE USE

We use advanced technology in tools and measuring equipment to diagnose and repair propellers, such as the spectro that helps identify the alloys, digital pitch meters, gauges, CNC and digital lathes, stress relief, and static and dynamic balancing.

CAPABILITIES

At MARINE PROPULSION REPAIRS we employ highly qualified staff to repair, recondition and modify propellers up to 20 tons of weight, resulting in better performance and fuel savings.

SPECIALIZED WORKFORCE

Our staff has the approval of different classification societies to ensure the professional-quality work. We use state-of-the-art technology and highly-specialized staff to make our repair processes more efficient and precise.

MATERIALS AND ALLOYS

We repair bronze, nibral, aqualloy and stainless steel propellers. We use the right weld according to the alloy of the propeller to assure the proper adhesion with the adequate mechanical properties.

QUALITY STANDARDS

Our repair service is controlled by international standards ISO 484 Class S, I and II, and repair methods endorsed by various certification agencies such as DNV, ABS, Lloyd's Register, CCS, Germanisher Lloyd's, RINA and Bureau Veritas.

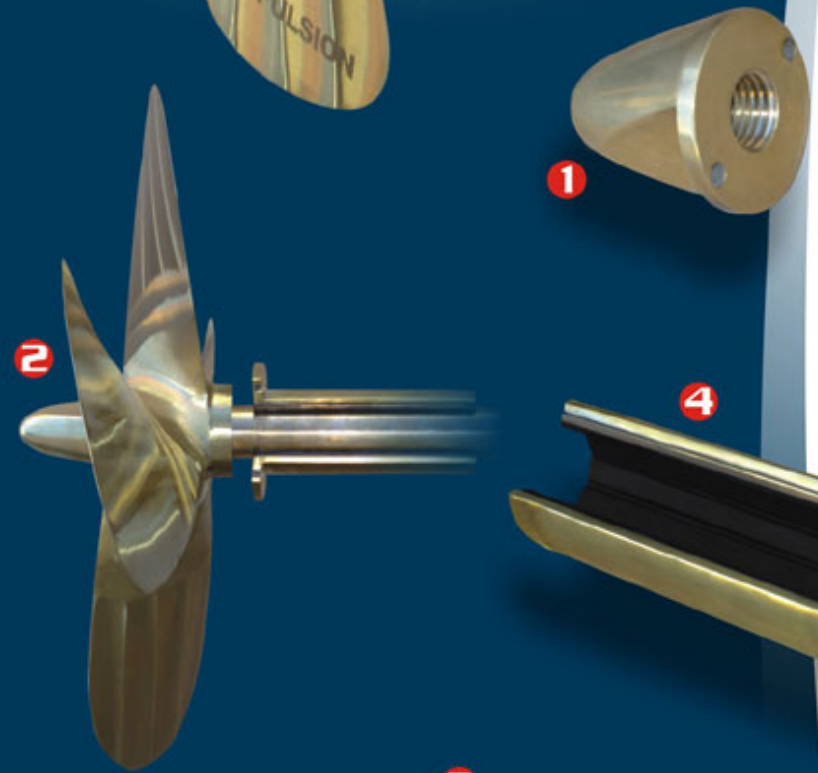
SATISFIED CUSTOMERS

We have a long track record of satisfied clients that have trusted us to restore their propellers to their original working condition or increase their efficiency, to mention a few:

- **United States Coast Guard (USCG)**
- **Dragas Mexicanas SA de CV (DRAGAMEX)**
- **Petroleos Mexicanos (PEMEX)**

…among many others.

PROPULSION SYSTEMS



HYDRODYNAMIC NUT 1

Manufactured out of Mn bronze, NiBrAl or Aqualloy allows the best water exit performance by providing a hydrodynamic profile.

PROPELLER 2

Manufactured in bronze. We offer different standard styles, and we can also manufacture any kind of propeller according to specifications. Our engineering department will gladly help you with calculations and selection of propeller for your application. Contact us for more information.

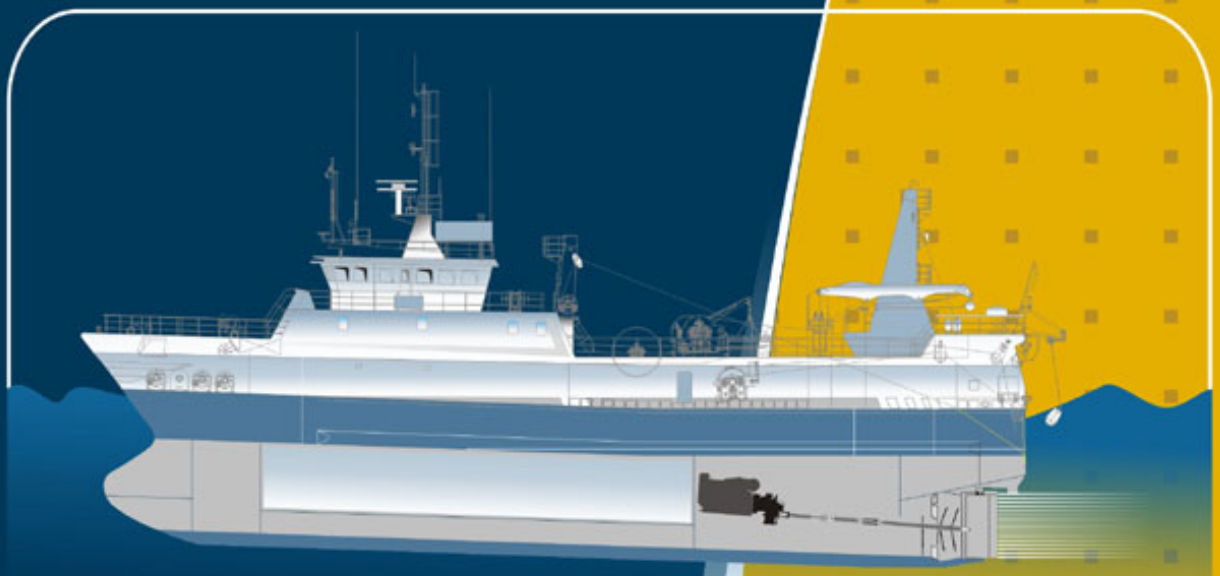
SHAFT 3

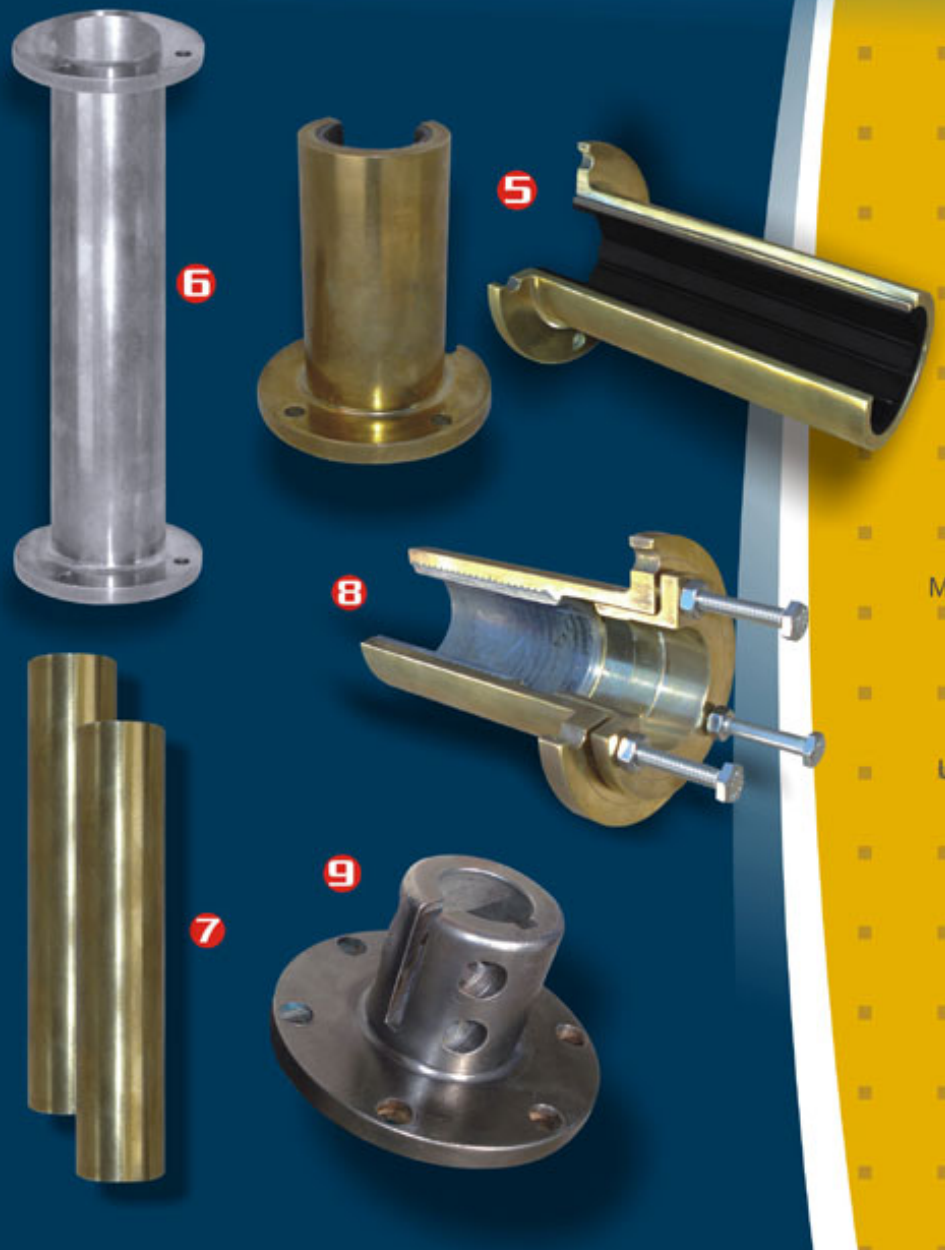
Manufactured in stainless or carbon steel, depending of needs and characteristics of the vessel. Fully machined according SAE-J755 norm, or may be custom-machined according to customer's specifications.

BRONZE RUBBER BEARING 4

For the reliable bedding of propeller shafts in your boat, ready to be installed.

PROPULSION SYSTEMS





STERN TUBE BEARING 5

Designed to allow an unrestricted and smooth rotation of the propeller shaft.

STERN TUBE 6

Typically provided with bronze rubber bearings, designed and built to customer specifications.

SLEEVES 7

Manufactured in manganese bronze, provides contact point between s haft and bearings, protecting shaft of wear during use.

STUFFING BOX 8

Used to prevent water from entering the hull while still allowing the propeller shaft to turn, made to fit std SAE J755 shafts or custom made according to customer specifications.

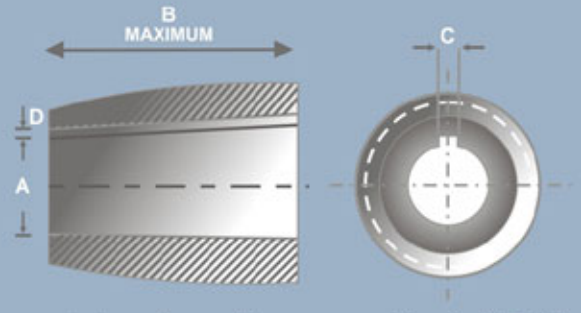
COUPLINGS 9

Manufactured in steel, provides connection between shaft and gear box, or a connection between the tail shaft and intermediate shafts.

MARINE PROPELLER

MARINE PROPELLER HUB DIMENSION-SAE-J755

SHAFTS WITH SLEEVE			MARINE PROPELLER HUB BORE DIMENSIONS								
C'bore Depth	Counterbore Dia.		Nom. Bore Dia	Dia. Small End "A"		Max Lenght	Keyway Width "C"			Keyway side Depth. "D"		
	MIN.	MAX		MIN.	MAX.	"B"	NOM.	MIN.	MAX.			
			3/4	.608	.610	2 1/4	3/16	.1865	.1875	3/32	.098	.100
			7/8	.710	.712	2 5/8	1/4	.249	.250	1/8	.129	.131
			1	.812	.814	3	1/4	.249	.250	1/8	.129	.131
			1 1/8	.913	.915	3 3/8	1/4	.249	.250	1/8	.129	.131
			1 1/4	1.015	1.017	3 3/4	5/16	.3115	.3125	5/32	.162	.165
			1 3/8	1.116	1.118	4 1/8	5/16	.3115	.3125	5/32	.161	.164
			1 1/2	1.218	1.220	4 1/2	3/8	.374	.375	3/16	.195	.198
			1 3/4	1.421	1.423	5 1/4	7/16	.4365	.4375	7/32	.226	.229
			2	1.624	1.626	6	1/2	.499	.500	1/4	.259	.262
			2 1/4	1.827	1.829	6 3/4	9/16	.561	.5625	9/32	.291	.294
			2 1/2	2.030	2.032	7 1/2	5/8	.6235	.625	5/16	.322	.325
			2 3/4	2.233	2.235	8 1/4	5/8	.6235	.625	5/16	.322	.325
			3	2.437	2.439	9	3/4	.7485	.750	5/16	.323	.326
7/8	3.875	3.878	3 1/4	2.640	2.642	9 3/4	3/4	.7485	.750	5/16	.323	.326
7/8	4.125	4.128	3 1/2	2.843	2.845	10 1/2	7/8	.8735	.875	5/16	.324	.327
7/8	4.375	4.378	3 3/4	3.046	3.048	11 1/4	7/8	.8735	.875	5/16	.324	.327
1 1/8	4.625	4.628	4	3.249	3.251	12	1	.9985	1.000	5/16	.326	.229
1 1/8	5.250	5.253	4 1/2	3.796	3.798	11 1/4	1 1/8	1.123	1.125	3/8	.388	.391
1 1/8	6.000	6.003	5	4.218	4.220	12 1/2	1 1/4	1.248	1.250	7/16	.450	.453
1 1/8	6.500	6.503	5 1/2	4.640	4.642	13 3/4	1 1/4	1.248	1.250	7/16	.450	.453
1 1/4	7.000	7.003	6	4.749	4.751	15	1 3/8	1 373	1 375	1/2	.517	.520
1 1/4	7.500	7.503	6 1/2	5.145	5.145	16 1/4	1 3/8	1 373	1 375	1/2	.516	.519
1 3/8	8.125	8.128	7	5.541	5.147	17 1/2	1 1/2	1.1498	1.500	9/16	.579	.582
1 3/8	8.625	8.628	7 1/2	5.937	5.543	18 3/4	1 1/2	1.1498	1.500	9/16	.579	.582
1 3/8	9.250	9.253	8	6.332	6.334	20	1 3/4	1.748	1.750	9/16	.582	.585



NOTES

1. In order to assure precision, all propellers are machined with finished bores where possible. When the machining is done in the field, the propellers should be machined from the pilot bore and not from the base of the hub or tip of the blades.
2. In shafts up to 5 ½" diameter, the taper is 3/4" per foot or 1/16" per inch. The angle with the center line is 1° 47´ 23".
3. Hub lengths of the propellers are less than the maximum longitude B, when requested.
4. For measurements of intermediate diameter, please refer to SAE standards or contact our offices.
5. In Shafts of 6" to 8", the taper is 1" per foot. The angle to the center line is 2° 23´ 9".
6. The keyway should be cut parallel to the taper.
7. Shaft sleeves are optional, but their use is recommended. The counterbore of the hub is used only with shafts that are sleeved.

WARRANTY

To complement the high quality of Rice products and protect our client's interests, Rice propellers are guaranteed against defects in materials and/or workmanship for a period of (1) year from the purchase date by the client. Rice's liability shall be limited to the value of the product involved and shall in no case include liabilities of any other kind.

RICE NOZZLES

US PATENT NO. 5799394

The most advanced PROPULSION SYSTEM

With Rice Speed Nozzle and Ka-Speed Propeller

To demonstrate the advantages of the Rice Speed Nozzle (RSN) vs. the Kort 19-A Nozzle and an open propeller, a series of tests were conducted in a 72' trawler-365 Hp-1800 RPM-6:1 gear red.

- MORE BOLLARD PULL
- MAXIMUM FUEL SAVING
- MORE FREE RUNNING SPEED

FUEL CONSUMPTION

OPEN PROPELLER 23% MORE FUEL

KORT 19-A SYSTEM 7% MORE FUEL

RICE SPEED NOZZLE WITH KA-SPEED PROPELLER

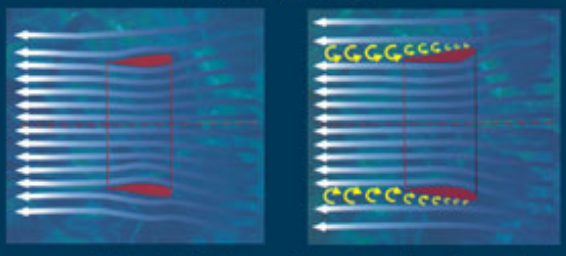
IMPROVING FUEL ECONOMY!

Fuel consumption and free running speed of three trawlers working together were measured in comparison with Rice Speed Nozzle and Ka-Speed Propeller, with the following results:

▸ FREE RUNNING SPEED

▸ BOLLARD PULL

▸ RESULTS



8% - 12% More Free Running Speed

4% - 6% More Bollard Pull

8% - 10% More Trawling Thrust

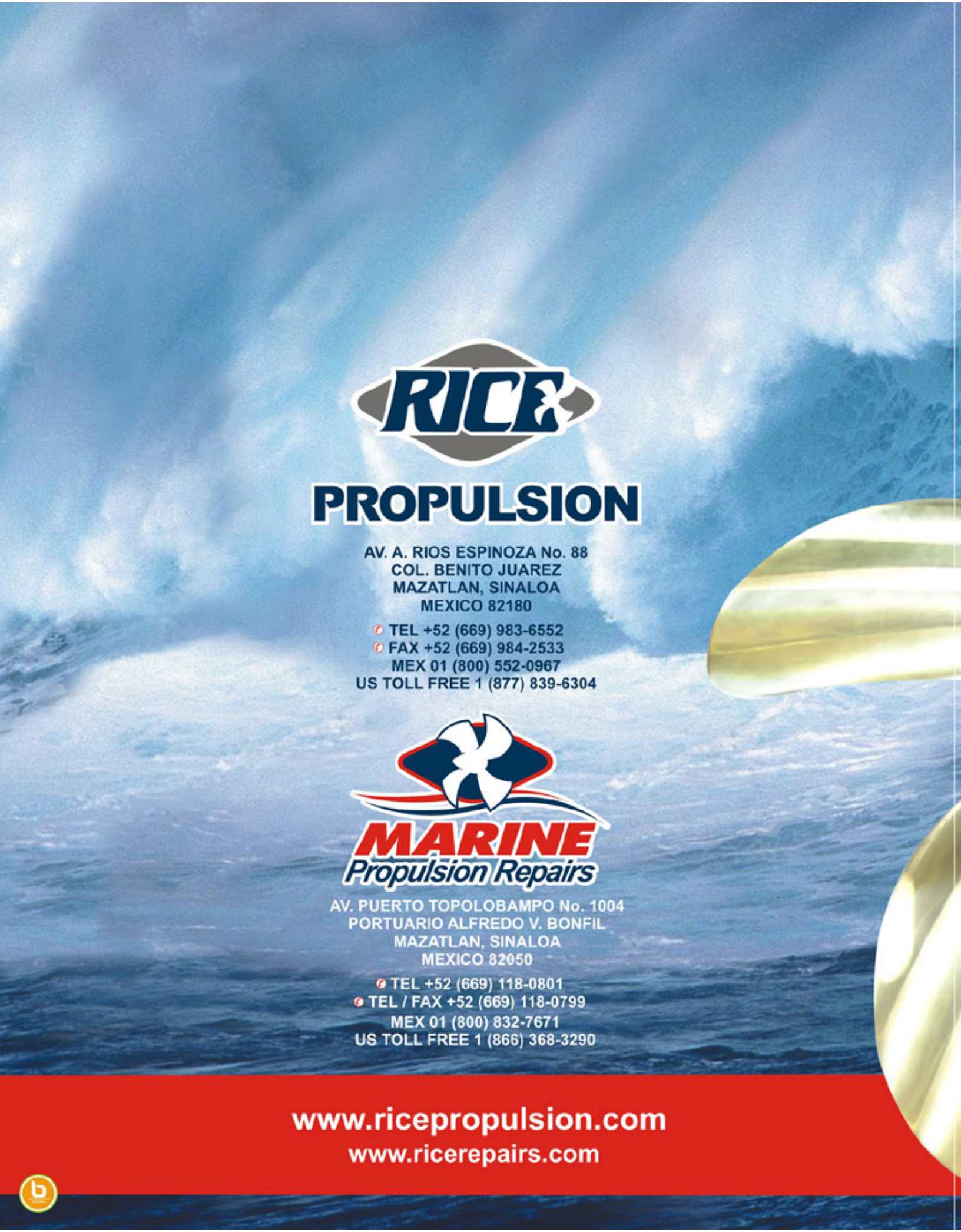
(When compared to Kort 19-A)

HISTORY

RICE

PROPULSION

- 1909 Maximino Rice establishes in Mazatlan as a Blacksmith, founding Maximino Rice e Hijos.
- 1911 First bronze casting.
- 1919 Propeller manufacturing begins.
- 1935 Rice Brothers is created.
- 1959 Rice Propulsion is officially established.
- 1961 A new marine propeller is designed and patented in the USA.
- 1970 Increases capacity for casting larger propellers.
- 1976 Nozzle manufacturing begins.
- 1978 Rice Nozzles is officially established for nozzle manufacturing.
- 1984 Rice companies´ 75th Anniversary.
- 1997 Propeller # 20,000 and nozzle # 5,000 are manufactured.
- 1998 Rice acquires patent for the Rice Speed Nozzle.
- 1998 First CNC machined propeller.
- 2001 ISO 9001: 1994 certification is granted.
- 2003 ISO 9001: 2000 certification is granted.
- 2006 Expansion of facilities for manufacturing propellers of up to 160" in diameter.
- 2007 The United States Coast Guard awards Rice the first repair contract for patrol propellers.
- 2008 Acquisition of 160" swing vertical turret lathe.
- 2009 Marine Propulsion Repairs is established.
- 2009 Rice Propulsion celebrates its 50th Anniversary.
- 2009 100 years serving the industry.
- 2010 Manufacture of highly skewed cpp blades.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