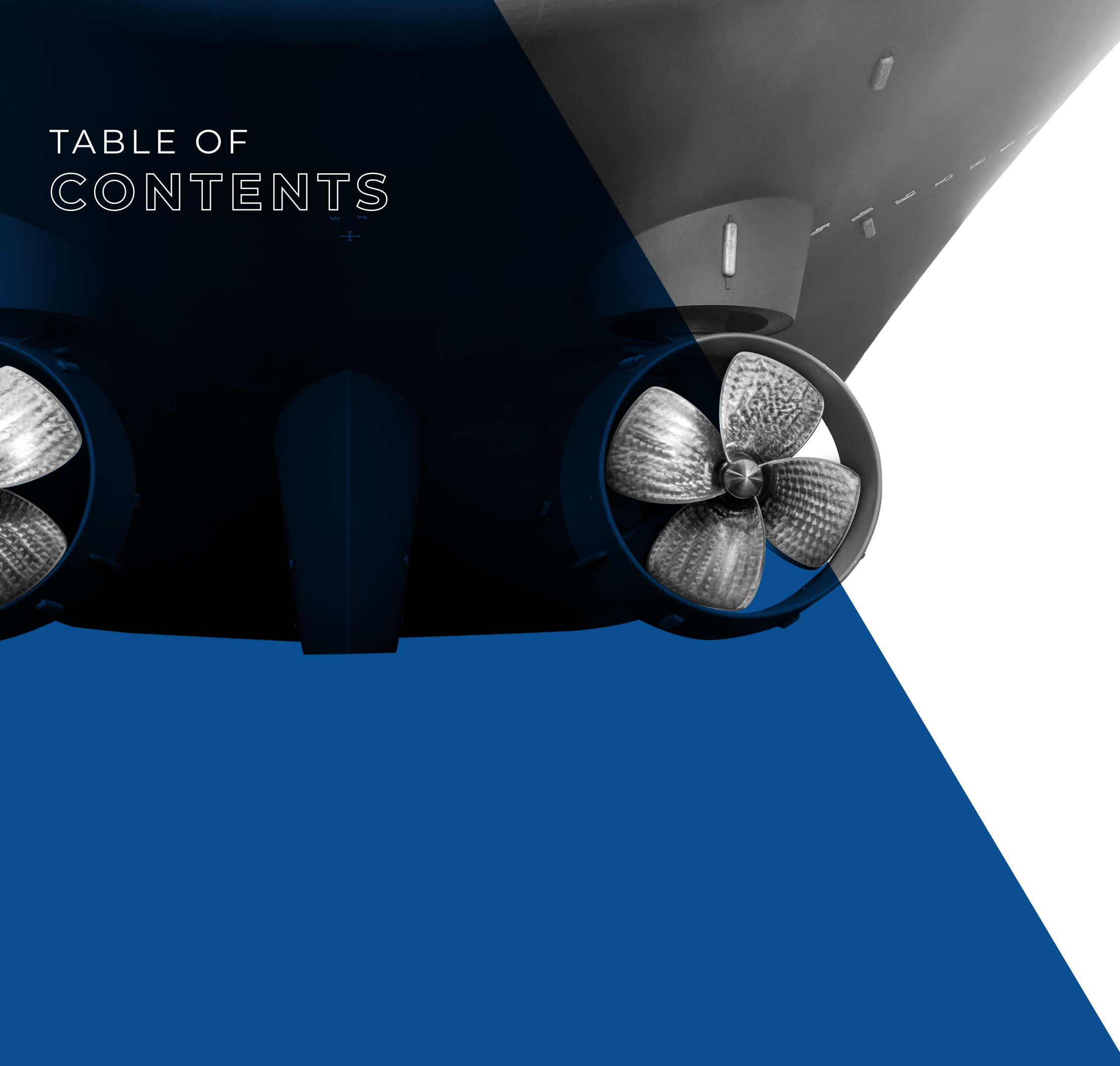




INBOARD
PROPELLER
CATALOG



TABLE OF CONTENTS



PG. 4	ABOUT US
PG. 6	LOCATIONS
PG. 8	MANUFACTURING PROCESSES
PG. 10	RECREATIONAL PROPELLERS
PG. 12-13	“X” Series Propellers
PG. 14-15	Dyna Series Propellers
PG. 16-17	HyTorq Propellers
PG. 18-19	Sailboat Propellers
PG. 20-21	“M” Series Propellers
PG. 22-23	“CX” Series Propellers
PG. 24-25	Marine Series Propellers
PG. 26	COMMERCIAL PROPELLERS
PG. 28-29	Work Horse & Machine Pitch Propellers
PG. 30-31	DQ Special / Dura Quad / Pac-Master
PG. 32-33	Kaplan Propellers & Nozzles
PG. 34-35	Weedless Propellers
PG. 36	Nakashima Propellers - CPP/FPP
PG. 37	Nakashima Bow Thrusters
PG. 38-39	Legacy Propellers
PG. 40	POWER TOW PROPELLERS
PG. 42	COMPREHENSIVE PROPULSION SYSTEMS
PG. 44	AQUALUBE BEARINGS
PG. 44-45	Aqualube Bearings
PG. 46-47	Aqualube Brass Bearings
PG. 48-49	Aqualube Phenolic Bearings
PG. 50	HALE MRI
PG. 52	COMPANY HISTORY
PG. 54	PROPELLER TERMS AND DEFINITIONS
PG. 56	MARINE PROPELLER SHAFT END DIMENSIONS
PG. 57	INBOARD PROPELLER INSTALLATION PROCEDURES
PG. 58	PROP-IT-RIGHT SIZING FORM
PG. 59	INBOARD WARRANTY

ABOUT US



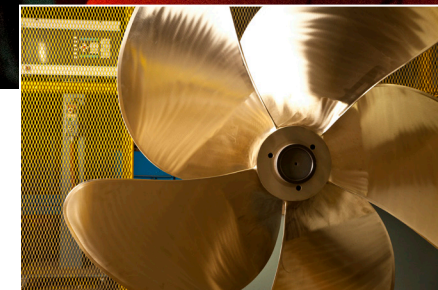
Michigan Wheel has been committed to excellence in propulsion for over 100 years. During this time Michigan Wheel has built a reputation of quality and performance by supplying recreational, commercial, and military vessels with the finest propellers available.

Being a leading global supplier of marine propulsion products requires a skilled team. Michigan Wheel's Engineering, Production, Quality, Sales, and Customer Service teams work together to supply products and services unmatched in the marine industry.

The engineering department uses the latest in CFD technology to create advanced designs. The

production team uses NC milling techniques to ensure accurate hydrodynamic surfaces. The quality team uses computerized measurement recording devices to measure our products and ensure they meet our strict tolerances. Finally, Michigan Wheel's Sales and Customer Service departments work closely with our network of experienced distributors to ensure users are provided the optimal equipment for their application.

Michigan Wheel is committed to providing superior products for their customers when they are on the water for recreation, work, or in service to their country.



“ MICHIGAN WHEEL IS COMMITTED TO PROVIDING SUPERIOR PRODUCTS FOR THEIR CUSTOMERS WHEN THEY ARE ON THE WATER FOR RECREATION, WORK, OR IN SERVICE TO THEIR COUNTRY. ”

LOCATIONS

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QUALITY MANUFACTURING

Control

Michigan Wheel controls every aspect of the production process to ensure the finished product is an accurate interpretation of the design. From the foundry to the shipping dock, our computerized planning systems track the part through the production process. By utilizing processes developed under ISO:9001 standards, our propellers are built with repeatable precision.

Tolerance

Michigan Wheel's manufacturing tolerances are based on the ISO-484/2 standards for marine propellers. By utilizing NC machining techniques and using the latest in propeller measurement technology, Michigan Wheel is able to build incredibly accurate propellers that meet the varied tolerance requirements of their customers.



| ABS Certification | ISO:9001

RECREATIONAL PROPELLERS



DJX



DQX



SAILER 2



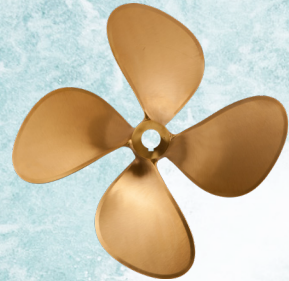
SAILER 3



DJ-355



DYNA-JET



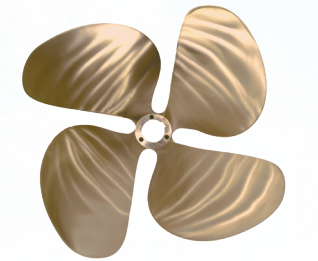
DYNA-QUAD



DQ-486



DQ-469



CX-400



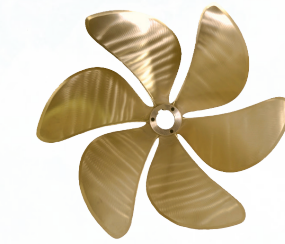
M-500



MY-T3



CX-500



CX-600



CX-700



MY-T4



MY-T5



CX-800



MARLIN



EQY



EPY

“X” SERIES



SPECIFICATIONS

DJX

BLADES 3

E.A.R. 0.61

DIAMETER RANGE 12” - 21”

SKEW 21°



DQX 17”-22”

BLADES 4

E.A.R. 0.735

DIAMETER RANGE 17” - 22”

SKEW 21°



DQX 23”-32”

BLADES 4

E.A.R. 0.810

DIAMETER RANGE 23” - 32”

SKEW 21°

Who Should Buy “X” Series Propellers?

The “X” Series is a high-performance line of machine finished propellers that fit a wide range of planing pleasure boats. The DJX and the DQX are evolutions of our classic Dyna-Jet and Dyna-Quad propeller designs, optimized to utilize the full power of modern engines. Designed with more efficient blade sections and increased blade area, “X” Series propellers are able to better manage cavitation and decrease vibration when compared to similar products.

“THE ‘X’ SERIES IS THE STANDARD FOR HIGH QUALITY, PERFORMANCE-ORIENTED PROPELLERS.”

Excellence in Propulsion.

Michigan Wheel uses NC machine finishing that ensures a more accurate propeller than standard hand finished propellers. This results in higher quality propellers that meet Michigan Wheel’s stringent tolerance requirements at competitive prices. The “X” Series is the standard for high quality, performance oriented propellers.

Unsure if this is the right propeller for you?
Contact your local Michigan Wheel Distributor, or the Michigan Wheel team to review your application.

DJX SPECIFICATIONS (0.61 E.A.R.)

DIAMETER		HUB DIMENSIONS (INCHES)			STANDARD TAPER BORE (INCHES)			MAXIMUM BLADE WIDTH (INCHES)	EXPANDED AREA PER BLADE (SQ.IN)	APPROX. NET WEIGHT (LBS.)	*WR ² (LBS.-IN ²)
INCHES	MM	AFT END	FORWARD END	LENGTH	MINIMUM BORE	MAXIMUM BORE	PILOT BORE				
12	305	1-5/8	1-7/8	2-3/8	7/8	1-1/8	7/8	5-7/16	22.7	5	41
13	330	1-5/8	1-7/8	2-3/4	7/8	1-1/8	7/8	6	26.8	6	61
14	356	1-7/8	2-1/16	2-3/4	1	1-1/4	1	6-1/2	31	8	90
15	381	1-7/8	2-1/16	2-3/4	1	1-1/4	1	6-7/8	35.8	10	126
16	406	2-1/8	2-7/16	3-1/4	1-1/8	1-1/2	1-1/8	7-3/8	40.5	12	172
17	432	2-1/8	2-7/16	3-1/4	1-1/4	1-1/2	1-1/4	7-7/8	45.4	14	232
18	457	2-3/8	2-11/16	3-3/4	1-1/4	1-3/4	1-1/4	8-5/16	51.3	16	307
19	483	2-3/8	2-11/16	3-3/4	1-1/4	1-3/4	1-1/4	8-3/4	57.3	19	401
20	508	2-3/8	2-11/16	3-3/4	1-1/4	1-3/4	1-1/4	9-1/4	63.8	21	516
21	533	2-7/8	3-1/4	4-1/8	1-3/8	2	1-3/8	9-3/4	69.9	26	660

*WR2 = ±10% in Air (inch squared lbs.)

M.W.R. = 0.37

B.T.F. = 0.048

DQX SPECIFICATIONS (0.735 E.A.R.)

DIAMETER		HUB DIMENSIONS (INCHES)			STANDARD TAPER BORE (INCHES)			MAXIMUM BLADE WIDTH (INCHES)	EXPANDED AREA PER BLADE (SQ.IN)	APPROX. NET WEIGHT (LBS.)	*WR ² (LBS.-IN ²)
INCHES	MM	AFT END	FORWARD END	LENGTH	MINIMUM BORE	MAXIMUM BORE	PILOT BORE				
17	432	2-1/8	2-7/16	3-1/4	1-1/4	1-1/2	1-1/4	7-3/16	41.4	16	279
18	457	2-3/8	2-11/16	3-1/4	1-1/4	1-3/4	1-1/4	7-5/8	46.4	18	370
19	483	2-3/8	2-11/16	3-3/4	1-1/4	1-3/4	1-1/4	8	51.9	21	482
20	508	2-3/8	2-11/16	3-3/4	1-1/4	1-3/4	1-1/4	8-7/16	57.7	24	621
21	533	2-3/4	3-1/4	4-1/8	1-3/8	2	1-3/8	8-7/8	63.2	29	794
22	559	2-7/8	3-1/4	4-1/8	1-3/8	2	1-3/8	9-5/16	69.6	33	997

*WR2 = ±10% in Air (inch squared lbs.)

M.W.R. = 0.33

B.T.F. = 0.046

DQX SPECIFICATIONS (0.81 E.A.R.)

DIAMETER		HUB DIMENSIONS (INCHES)			STANDARD TAPER BORE (INCHES)			MAXIMUM BLADE WIDTH (INCHES)	EXPANDED AREA PER BLADE (SQ.IN)	APPROX. NET WEIGHT (LBS.)	*WR ² (LBS.-IN ²)
INCHES	MM	AFT END	FORWARD END	LENGTH	MINIMUM BORE	MAXIMUM BORE	PILOT BORE				
23	406	2-7/8	3-1/4	FULL TAPER	1-1/2	2	1-1/2	10-5/8	83.7	45	1,392
24	432	3-1/8	3-1/2	FULL TAPER	1-1/2	2	1-1/2	11-1/16	91.4	50	1,714
25	457	3-1/2	3-7/8	FULL TAPER	1-3/4	2-1/4	1-3/4	11-9/16	98.6	60	2,111
26	483	3-1/2	3-7/8	FULL TAPER	1-3/4	2-1/4	1-3/4	12	106.9	65	2,557
27	508	3-7/8	3-7/8	FULL TAPER	2	2-1/2	2	12-1/2	114.8	77	3,099
28	533	3-7/8	3-7/8	FULL TAPER	2	2-1/2	2	12-15/16	123.8	83	3,700
30	559	4-1/8	4-5/8	FULL TAPER	2	2-3/4	2	13-7/8	141.5	110	5,240
32	584	4-1/2	5	FULL TAPER	2	3	2	14-3/4	161.8	126	7,176

*WR2 = ±10% in Air (inch squared lbs.)

M.W.R. = 0.37

B.T.F. = 0.046

WHY BUY “X” SERIES PROPELLERS?

Michigan “X” Series propellers are machine finished to provide some of the most accurate series propellers available. Increased blade area helps manage cavitation and vibration and ensures a smooth ride.



DYNA SERIES



SPECIFICATIONS

DYNA-JET

BLADES 3

E.A.R. 0.56

DIAMETER RANGE 12" - 21"

PITCH RANGE 0.7 - 1.1



DYNA-QUAD

BLADES 4

E.A.R. 0.69

DIAMETER RANGE 17" - 36"

PITCH RANGE 0.7 - 1.1



M-500

BLADES 5

E.A.R. 0.86

DIAMETER RANGE 24" - 46"

PITCH RANGE 0.75 - 1.3

Who Should Buy "Dyna" Series Propellers?

The Dyna Series is Michigan Wheel's classic line of performance pleasure boat propellers. Available in 3, 4, and 5 blade models to cover a wide range of vessels. The Dyna Series of propellers continues to be one of Michigan Wheel's most popular series of propellers and is considered by many to be the standard in recreational propellers.

"...ONE OF MICHIGAN WHEEL'S MOST POPULAR SERIES OF PROPELLERS, AND IS CONSIDERED BY MANY TO BE THE STANDARD IN RECREATIONAL PROPELLERS."

Excellence in Propulsion.

The Dyna blade design provides a great balance of performance and durability for recreational boats and is also a popular choice for higher speed commercial vessels. Dyna Series propellers are hand finished by Michigan Wheel's skilled craftsmen to ensure quality and performance that exceeds our customer's expectations.

Unsure if this is the right propeller for you?
Contact your local Michigan Wheel Distributor, or the Michigan Wheel team to review your application.

DYNA-JET & DYNA-QUAD SPECIFICATIONS

DYNA-JET & DYNA-QUAD SPECIFICATIONS								DYNA-JET (0.56 E.A.R.)				DYNA-QUAD (0.69 E.A.R.)			
DIAMETER		HUB DIMENSIONS (INCHES)			STANDARD TAPER BORE (INCHES)			MAXIMUM BLADE WIDTH (INCHES)	EXPANDED AREA PER BLADE (SQ.IN)	APPROX. NET WEIGHT (LBS.)	*WR ² (LBS.-IN ²)	MAXIMUM BLADE WIDTH (INCHES)	EXPANDED AREA PER BLADE (SQ.IN)	APPROX. NET WEIGHT (LBS.)	*WR ² (LBS.-IN ²)
INCHES	MM	AFT END	FORWARD END	LENGTH	MINIMUM BORE	MAXIMUM BORE	PILOT BORE								
9	229	1-3/8	1-1/2	2-1/8	3/4	7/8	3/4	3-7/8	11.7	2.5	10	-	-	-	-
10	254	1-1/2	1-5/8	2-1/4	3/4	1	3/4	4-5/16	14.5	3	17	-	-	-	-
11	279	1-1/2	1-5/8	2-1/4	3/4	1	3/4	4-3/4	17.7	4	26	-	-	-	-
12	305	1-5/8	1-3/4	2-3/8	7/8	1-1/8	7/8	5-3/16	21.1	5	40	-	-	-	-
13	330	1-5/8	1-13/16	2-3/4	1	1-1/8	1	5-5/8	24.8	6	60	-	-	-	-
14	356	1-7/8	2	2-3/4	1	1-1/4	1	6	28.7	8	86	-	-	-	-
15	381	1-7/8	2	2-3/4	1	1-1/4	1	6-7/16	33.1	9	120	-	-	-	-
16	406	2-1/8	2-3/8	3-1/4	1-1/8	1-3/8	1-1/8	6-7/8	37.5	11	167	-	-	-	-
17	432	2-1/8	2-3/8	3-1/4	1-1/4	1-3/8	1-1/4	7-5/16	42.8	13	224	6-3/4	38.7	14	257
17**	432	2-3/8	2-5/8	3-3/4	1-1/4	1-1/2	1-1/4	7-5/16	42.8	13	224	-	-	-	-
18	457	2-3/8	2-5/8	3-1/4	1-1/4	1-1/2	1-1/4	7-3/4	47.4	16	298	7-1/8	43.2	17	341
19	483	2-3/8	2-5/8	3-3/4	1-1/4	1-1/2	1-1/4	8-3/16	53.1	18	388	7-1/2	48.3	20	445
20	508	2-3/8	2-5/8	3-3/4	1-1/4	1-1/2	1-1/4	8-5/8	59.0	20	500	7-15/16	53.7	23	573
21	533	2-3/4	3	4-1/8	1-3/8	1-3/4	1-3/8	9-1/16	64.6	25	640	8-5/16	58.8	28	733
22	559	2-3/4	3	4-1/8	1-3/8	1-3/4	1-3/8	9-1/2	71.2	28	803	8-11/16	64.8	31	920
23	584	3	3-1/4	4-1/2	1-1/2	2	1-1/2	9-7/8	77.6	33	1,004	9-1/16	70.6	36	1,150
24	610	3	3-1/4	4-1/2	1-1/2	2	1-1/2	10-3/8	84.7	36	1,237	9-1/2	77.1	40	1,216
26	660	3-3/8	3-3/4	4-7/8	1-3/4	2-1/4	1-3/4	11-1/4	99.1	46	1,844	10-1/4	90.2	52	2,110
28	711	3-3/4	4-1/8	5-3/4	2	2-1/2	2	12-1/16	114.7	60	2,671	11-1/16	104.4	66	3,056
30	762	4-1/4	4-5/8	6	2	3	2	12-15/16	131.1	76	3,775	11-7/8	119.3	84	4,316
32	813	4-1/4	4-5/8	6	2	3	2	13-3/4	150.0	88	5,172	12-5/8	136.5	97	5,917
34	864	4-1/4	4-5/8	6-1/2	2-1/4	3	2-1/4	14-5/8	170.0	101	6,973	13-7/16	154.7	112	7,978
36	914	4-5/8	5-1/8	8	2-3/4	3-1/2	2-3/4	15-1/2	190.1	124	9,289	14-1/4	173.0	138	10,622
38	965	4-5/8	5-1/8	8	2-3/4	3-1/2	2-3/4	16-3/8	212.7	140	12,108	15	193.5	156	13,851
40	1,016	5	5-1/2	9	3	3-3/4	3	17-1/4	235.3	168	15,646	15-13/16	214.1	186	17,892
42	1,067	5-3/8	6	10-7/16	3	4	3	18-1/8	258.8	205	20,016	16-5/8	235.5	226	22,878
44	1,118	5-7/16	6-3/16	11	3	4	3	19	284.5	233	25,187	17-3/8	258.9	258	28,790
46	1,168	5-5/8	6-1/4	11-7/8	3	4	3	19-7/8	311.5	266	31,385	18-3/16	283.5	293	35,376

* WR2 = ±10% in Air (inch squared lbs.)

For Dyna-Jet M.W.R. = 0.33
For Dyna-Quad M.W.R. = 0.33

B.T.F. = 0.050
B.T.F. = 0.047

** For Dyna-Jet Series propellers only - Sizes (Dia. x Pitch) 17x16, 17x17 & 17x18 maximum bore is 1-1/2". All other 17" diameter sizes - maximum bore is 1-3/8".

M-500 SPECIFICATIONS (0.85 E.A.R.)

DIAMETER		HUB DIMENSIONS (INCHES)			STANDARD TAPER BORE (INCHES)			MAXIMUM BLADE WIDTH (INCHES)	EXPANDED AREA PER BLADE (SQ.IN)	APPROX. NET WEIGHT (LBS.)	*WR ² (LBS.-IN ²)
INCHES	MM	AFT END	FORWARD END	LENGTH	MINIMUM BORE	MAXIMUM BORE	PILOT BORE				
22	559	2-3/4	3	4-1/8	1-3/8	1-3/4	1-3/8	8-11/16	64.9	37	1,150
23	584	3-1/8	3-1/4	4-5/8	1-1/2	2	1-1/2	9-1/16	70.6	43	1,430
24	610	3-1/8	3-1/4	4-5/8	1-1/2	2	1-1/2	9-1/2	77.1	48	1,770
26	660	3-3/8	3-5/8	5	1-3/4	2-1/4	1-3/4	10-1/2	90.2	62	2,630
28	711	3-3/4	4	5-3/4	2	2-1/2	2	11-1/16	104.4	79	3,810
30	762	4	4-1/4	6	2	3	2	11-7/8	119.3	99	5,380
32	813	4-1/2	4-7/8	6	2	3	2	12-5/8	136.5	115	7,380
34	864	4-1/2	5	6-1/2	2-1/4	3	2-1/4	13-7/16	154.7	134	9,960
36	914	5	5-1/2	8-1/4	2-3/4	3-1/2	2-3/4	14-1/4	173.0	164	13,250
38	965	5-1/4	5-1/2	8-1/4	2-3/4	3-1/2	2-3/4	15	193.5	186	17,280
40	1,016	5-1/4	5-1/2	9	3	3-3/4	3	15-7/8	214.1	221	22,320
42	1,067	5-1/2	6	10-1/2	3	4	3	16-9/16	235.5	267	28,520
44	1,118	5-1/2	6	10-1/2	3	4	3	17-3/8	258.9	305	35,900
46	1,168	5-1/2	6-1/4	10-1/2	3	4	3	18-3/16	283.5	347	44,740

* WR2 = ±10% in Air (inch squared lbs.)

M.W.R. = 0.37

B.T.F. = 0.046



HYTORQ PROPELLERS



SPECIFICATIONS

MY-T3

BLADES 3

E.A.R. 0.56

DIAMETER RANGE 9" - 36"

PITCH RANGE 0.7 - 1.1



MY-T4

BLADES 4

E.A.R. 0.69

DIAMETER RANGE 17" - 46"

PITCH RANGE 0.7 - 1.1



MY-T5

BLADES 5

E.A.R. 0.86

DIAMETER RANGE 22" - 46"

PITCH RANGE 0.75 - 1.3

Who Should Buy HyTorq Series Propellers?

HyTorq propellers were originally designed for the pleasure boats and fishing vessels of the Canadian Maritime Provinces. These propellers were extremely successful and quickly became popular throughout North America among boaters and boat builders alike. HyTorq propellers come in 3, 4, and 5 blade configurations, allowing them to be a great fit for vessels of varying speeds, powers, and sizes.

Similar to our Dyna Series, our HyTorq line is a classic design well suited for a number of different recreational and commercial applications. Compared to the Dyna Series, HyTorq propellers have a slightly different blade shape and a touch thicker blade sections, making them a particularly good choice for commercial boats.

Excellence in Propulsion.

Unsure if this is the right propeller for you?
Contact your local Michigan Wheel Distributor, or the Michigan Wheel team to review your application.

HYTORQ SPECIFICATIONS

HYTORQ SPECIFICATIONS							HYTORQ MY-T3			HYTORQ MY-T4		
PROPELLER DIAMETER	AFT HUB DIAMETER	FORWARD HUB DIAMETER	HUB LENGTH	STANDARD TAPER BORE (INCHES)			WEIGHT (LB.)**	DEVELOPED AREA (IN ²)	WR ^{2**} (LB-IN ²)	WEIGHT (LB.)**	DEVELOPED AREA (IN ²)	WR ^{2**} (LB-IN ²)
				MINIMUM BORE	MAXIMUM BORE	PILOT BORE						
17	2-1/4	2-1/2	3-1/2	1-1/4	1-1/2	1-1/4	16	126.6	333	19	153.1	366
18	2-3/8	2-5/8	3-1/2	1-1/4	1-3/4	1-1/4	17	141.9	392	19	171.7	429
19	2-3/8	2-5/8	3-7/8	1-1/4	1-3/4	1-1/4	19	166.2	478	21	202.7	499
20	2-3/8	2-5/8	4	1-1/4	1-3/4	1-1/4	21	175.3	553	23	212.1	622
21	2-3/4	3	4-1/8	1-3/8	2	1-3/8	27	202.4	680	28	238.6	790
22	2-3/4	3	4-1/4	1-3/8	2	1-3/8	30	212.1	810	31	256.9	940
23	3-1/8	3-1/4	4-1/4	1-1/2	2	1-3/8	35	240.6	1,070	39	288.4	1,300
24	3-1/8	3-1/4	4-5/8	1-1/2	2	1-3/8	35	252.4	1,220	41	305.4	1,450
26	3-3/8	3-5/8	5	1-3/4	2-1/4	1-1/2	50	296.3	1,770	53	358.4	2,150
28	3-3/4	4	5-3/4	1-3/4	2-1/2	1-3/4	57	343.6	2,630	66	415.6	3,240
30	4	4-1/4	6	1-3/4	2-3/4	1-3/4	78	394.4	3,520	82	477.1	4,230
32	4-1/4	4-1/2	6	2	3	2	94	448.8	4,810	100	542.9	5,960
34	4-1/4	4-1/2	6-1/2	2	3	2	107	506.6	6,460	140	612.8	8,020
36	4-3/4	5-1/4	8-1/4	2-3/4	3-1/2	2-1/2	130	567.7	8,910	146	686.7	11,230
38	5-1/4	5-1/2	8-1/4	2-3/4	3-1/2	2-1/2	-	-	-	172	765.2	13,750
40	5-1/4	5-1/2	9	3	3-3/4	3	-	-	-	192	847.8	17,180
42	5-1/2	6	10-1/2	3	4	3	-	-	-	240	930.2	24,400
44	5-1/2	6-1/4	10-1/2	3	4	3	-	-	-	282	1,025.8	31,500
46	5-1/2	6-1/4	10-1/2	3	4	3	-	-	-	304	1,121.0	37,000
48	5-1/2	6-1/4	10-1/2	3	4	3	-	-	-	340	1,121.0	45,800

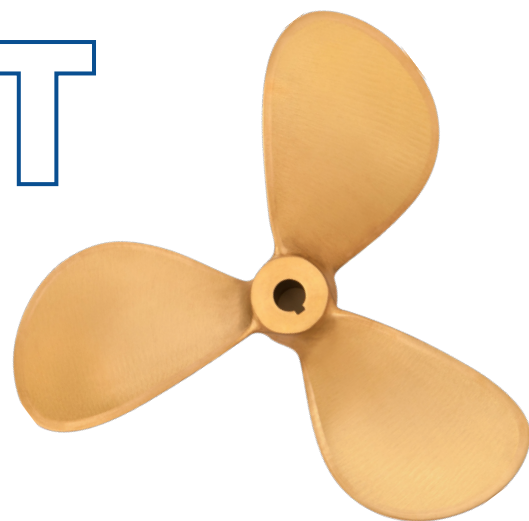
HYTORQ SPECIFICATIONS							HYTORQ MY-T5		
PROPELLER DIAMETER	AFT HUB DIAMETER	FORWARD HUB DIAMETER	HUB LENGTH	STANDARD TAPER BORE (INCHES)			WEIGHT (LB.)**	DEVELOPED AREA (IN ²)	WR ^{2**} (LB-IN ²)
				MINIMUM BORE	MAXIMUM BORE	PILOT BORE			
24	3-1/8	3-1/4	4-5/8	1-1/2	2	1-3/8	57	384	1,990
26	3-3/8	3-5/8	5	1-3/4	2-1/4	1-1/2	72	451	3,115
28	3-3/4	4	5-3/4	1-3/4	2-1/2	1-3/4	79	523	3,967
30	4	4-1/4	6	1-3/4	2-3/4	1-3/4	109	601	6,480
32	4-1/4	4-1/2	6	2	3	2	150	683	8,847
34	4-1/4	4-1/2	6-1/2	2	3	2	180	772	11,985
36	4-3/4	5-1/4	8-1/4	2-3/4	3-1/2	2-1/2	210	864	15,676
38	5-1/4	5-1/2	8-1/4	2-3/4	3-1/2	2-1/2	240	964	19,961
40	5-1/4	5-1/2	9	3	3-3/4	3	260	1,068	23,961
42	5-1/2	6	10-1/2	3	4	3	325	1,177	33,022
44	5-1/2	6-1/4	10-1/2	3	4	3	370	1,291	41,260
46	5-1/2	6-1/4	10-1/2	3	4	3	410	1,412	49,975

WHY BUY MY-T SERIES PROPELLERS?

Many builders rely on the continued quality and performance of the Hytorq Series of propellers. A significant amount of propellers built in the Michigan Wheel's Grand Rapids foundry are sold to OEMs or as original equipment replacements. By replacing a propeller with a new Michigan Wheel factory equivalent, boaters can guarantee continued performance from their vessel.



SAILBOAT PROPELLERS



SPECIFICATIONS

SAILER 2-BLADE

BLADES 2

E.A.R. 0.31

DIAMETER RANGE 10" - 10"

"M" SERIES 3-BLADE SAILER

BLADES 3

E.A.R. 0.44

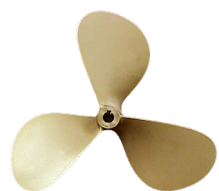
DIAMETER RANGE 10" - 18"

"M" SERIES MP3

BLADES 3

E.A.R. 0.53

DIAMETER RANGE 9" - 20"



SAILER 3-BLADE

BLADES 3

E.A.R. 0.46

DIAMETER RANGE 10" - 20"



"M" SERIES 2-BLADE SAILER

BLADES 2

E.A.R. 0.36

DIAMETER RANGE 10" - 18"

Who Should Buy Michigan "Sailboat" Series Propellers?

Don't let the lack of wind get you down; with Michigan Wheel Sailer series propellers you will always stay underway. Michigan Wheel Sailer propellers are available in 2- and 3-blade configurations, with skewed and non-skewed blades. Sailer series propellers are built with just the right amount of blade area to optimize efficiency when motoring or sailing.

The MP3 propeller is available with additional blade area for larger, high-powered engines. Whether you are chasing the wind, or riding it, Michigan Wheel Sailer propellers will ensure you are getting the best speed out of your sailboat.

Unsure if this is the right propeller for you?
Contact your local Michigan Wheel Distributor, or the Michigan Wheel team to review your application.

SAILER 2 & 3 BLADE SPECIFICATIONS

DIAMETER		HUB DIMENSIONS (INCHES)			STANDARD TAPER BORE (INCHES)		
INCHES	MM	AFT END	FORWARD END	LENGTH	MINIMUM BORE	MAXIMUM BORE	PILOT BORE
10	254	1-7/16	1-5/8	2-1/4	3/4	7/8	3/4
11	280	1-7/16	1-5/8	2-1/4	3/4	7/8	3/4
12	305	1-9/16	1-3/4	2-3/8	7/8	1-1/8	7/8
13	330	1-9/16	1-3/4	2-3/4	1	1-1/8	1
14	356	1-3/4	2	2-3/4	1	1-1/8	1
15	381	1-3/4	2	2-3/4	1	1-1/8	1
16	406	1-15/16	2-3/16	3-1/4	1-1/8	1-1/4	1-1/8
17	432	2	2-5/16	3-1/4	1-1/8	1-3/8	1-1/8
18	457	2	2-5/16	3-1/4	1-1/8	1-3/8	1-1/8
19	483	2-1/8	2-7/16	3-3/4	1-1/4	1-3/8	1-1/4
20	508	2-1/8	2-7/16	3-3/4	1-1/4	1-3/8	1-1/4

"M" SERIES 2-BLADE & 3-BLADE SAILER SPECIFICATIONS

DIAMETER		HUB DIMENSIONS (INCHES)			STANDARD TAPER BORE (INCHES)		
INCHES	MM	AFT END	FORWARD END	LENGTH	MINIMUM BORE	MAXIMUM BORE	PILOT BORE
10	254	1-7/16	1-5/8	2-1/4	3/4	7/8	3/4
11	279	1-7/16	1-5/8	2-1/4	3/4	7/8	3/4
12	305	1-9/16	1-3/4	2-3/8	7/8	1-1/8	7/8
13	330	1-9/16	1-3/4	2-3/4	1	1-1/8	1
14	356	1-3/4	2	2-3/4	1	1-1/8	1
15	381	1-3/4	2	2-3/4	1	1-1/8	1
16	406	1-15/16	2-3/16	3-1/4	1-1/8	1-1/4	1-1/8
17	432	2	2-5/16	3-1/4	1-1/8	1-3/8	1-1/8
18	457	2	2-5/16	3-1/4	1-1/8	1-3/8	1-1/8

MP 3 SPECIFICATIONS - 0.53 E.A.R.

DIAMETER		HUB DIMENSIONS (INCHES)			STANDARD TAPER BORE (INCHES)			MAXIMUM BLADE WIDTH (INCHES)	EXPANDED AREA PER BLADE (SQ.IN)	APPROX. NET WEIGHT (LBS.)	*WR ² (LBS.-IN ²)
INCHES	MM	AFT END	FORWARD END	LENGTH	MINIMUM BORE	MAXIMUM BORE	PILOT BORE				
9	229	1-5/16	1-7/16	2-1/8	3/4	3/4	3/4	3-7/8	11.0	2.2	6
10	254	1-7/16	1-5/8	2-1/8	3/4	7/8	3/4	4-5/16	13.6	2.9	12
11	279	1-7/16	1-5/8	2-1/8	3/4	7/8	3/4	4-3/4	16.5	3.7	18
12	305	1-9/16	1-3/4	2-5/8	7/8	1-1/8	7/8	5-3/16	19.6	4.6	29
13	330	1-9/16	1-3/4	2-3/4	1	1-1/8	1	5-9/16	23.0	5.5	43
14	356	1-3/4	2	3	1	1-1/8	1	6	26.7	7.5	62
15	381	1-3/4	2	3	1	1-1/8	1	6-7/16	30.6	8.6	87
16	406	1-15/16	2-3/16	3-3/8	1-1/8	1-1/4	1-1/8	6-7/8	34.9	10.8	118
17	432	2	2-5/16	3-3/8	1-1/8	1-3/8	1-1/8	7-5/16	39.3	12.8	161
18	457	2	2-5/16	3-3/8	1-1/8	1-3/8	1-1/8	7-3/4	44.1	14.6	215
19	483	2-1/8	2-7/16	3-3/4	1-1/4	1-3/8	1-1/4	8-3/16	49.1	17.6	299
20	508	2-1/8	2-7/16	3-3/4	1-1/4	1-3/8	1-1/4	8-5/8	54.5	19.8	382



WHICH SAILER PROPELLER IS RIGHT FOR YOU?

Michigan Wheel knows that sailors demand the most out of their vessels. Incremental performance gains when under sail and motor are more significant in a sailing vessel. That is why Michigan Wheel offers a wide variety of options to choose from through its sailer line of propellers. This gives sailors the ability to work with Michigan's team to find the best propeller for their application, because we know every knot counts.



“M” SERIES



SPECIFICATIONS

DJ-355
BLADES 3
E.A.R. 0.56
DIAMETER RANGE 9” - 40”

M-506
BLADES 5
E.A.R. 1.06
DIAMETER RANGE 22” - 46”



DQ-469
BLADES 4
E.A.R. 0.70
DIAMETER RANGE 17” - 44”



DQ-486
BLADES 4
E.A.R. 0.86
DIAMETER RANGE 17” - 44”

Who Should Buy “M” Series Propellers?

Michigan Wheel M-Series propellers are globally sourced to offer a competitively priced product that still meets Michigan Wheel’s strict quality standards. M-Series propellers are built from materials that meet ABS type 2 Manganese Bronze and ABS type 4 NiBrAl specifications. These propellers meet the performance requirements for a number of different pleasure and commercial applications.

DJ355 and DQ469 propellers are 3 and 4 blade propellers built for a wide range of planing boat applications. DQ486 and M-506 are 4 and 5 blade propellers that utilize greater blade area and skew to handle higher power, diameter constrained applications. M-series propellers are available in range of sizes and special sizes are available by request.

Excellence in Propulsion.

Unsure if this is the right propeller for you?
 Contact your local Michigan Wheel Distributor, or the Michigan Wheel team to review your application.

DJ355 & DQ469 SPECIFICATIONS

DJ355 & DQ469 SPECIFICATIONS									DJ355 - 0.55 E.A.R.				DQ469 - 0.69 E.A.R.			
DIAMETER		HUB DIMENSIONS (INCHES)			STANDARD TAPER BORE (INCHES)				MAXIMUM BLADE WIDTH (INCHES)	EXPANDED AREA PER BLADE (SQ.IN)	APPROX. NET WEIGHT (LBS.)	*WR ² (LBS.-IN ²)	MAXIMUM BLADE WIDTH (INCHES)	EXPANDED AREA PER BLADE (SQ.IN)	APPROX. NET WEIGHT (LBS.)	*WR ² (LBS.-IN ²)
INCHES	MM	AFT END	FORWARD END	LENGTH	MINIMUM BORE	MAXIMUM BORE	PILOT BORE									
9	229	1-3/8	1-1/2	2-1/8	3/4	7/8	3/4	4-1/16	11.7	2.5	7	-	-	-	-	
10	254	1-1/2	1-5/8	2-1/4	3/4	1	3/4	4-1/2	14.4	3	12	-	-	-	-	
11	279	1-1/2	1-5/8	2-1/4	3/4	1	3/4	4-15/16	17.4	4	19	-	-	-	-	
12	305	1-5/8	1-3/4	2-3/8	7/8	1-1/8	7/8	5-3/8	20.7	5	31	-	-	-	-	
13	330	1-5/8	1-13/16	2-3/4	1	1-1/8	1	5-7/8	24.3	6	45	-	-	-	-	
14	356	1-7/8	2	2-3/4	1	1-1/4	1	6-5/16	28.2	8	65	-	-	-	-	
15	381	1-7/8	2	2-3/4	1	1-1/4	1	6-3/4	32.4	9	91	-	-	-	-	
16	406	2-1/8	2-3/8	3-1/4	1-1/8	1-3/8	1-1/8	7-1/4	36.9	11	127	-	-	-	-	
17	432	2-3/8	2-5/8	3-3/4	1-1/4	1-1/2	1-1/4	7-5/8	41.6	14	173	7-5/16	39.1	17	226	
18	457	2-3/8	2-5/8	3-3/4	1-1/4	1-1/2	1-1/4	8-1/8	46.7	16	227	7-3/4	43.9	20	300	
19	483	2-3/8	2-5/8	3-3/4	1-1/4	1-1/2	1-1/4	8-1/2	52.0	19	314	8-3/16	48.9	22	394	
20	508	2-3/8	2-5/8	3-3/4	1-1/4	1-1/2	1-1/4	9	57.6	21	403	8-5/8	54.2	25	505	
21	533	2-3/4	3	4-1/8	1-3/8	1-3/4	1-3/8	9-7/16	63.5	26	514	9	59.7	30	643	
22	559	2-3/4	3	4-1/8	1-3/8	1-3/4	1-3/8	9-7/8	69.7	29	647	9-7/16	65.5	34	811	
23	584	3	3-1/4	4-1/2	1-1/2	2	1-1/2	10-3/8	76.2	34	808	9-7/8	71.6	40	1,010	
24	610	3	3-1/4	4-1/2	1-1/2	2	1-1/2	10-5/8	82.9	37	1,004	10-5/16	78.0	45	1,250	
26	660	3-3/8	3-3/4	4-7/8	1-3/4	2-1/4	1-3/4	11-3/4	97.3	48	1,480	11-3/16	91.5	57	1,850	
28	711	3-3/4	4-1/8	5-3/4	2	2-1/2	2	12-5/8	112.9	62	2,150	12	106.2	73	2,680	
30	762	4-1/4	4-5/8	6	2	3	2	13-1/2	129.6	79	3,020	12-7/8	121.9	92	3,770	
32	813	4-1/4	4-5/8	6	2	3	2	14-3/8	147.4	90	4,140	13-3/4	138.7	107	5,180	
34	864	4-1/4	4-5/8	6-1/2	2-1/4	3	2-1/4	15-5/16	166.5	105	5,610	14-5/8	156.6	125	7,020	
36	914	4-5/8	5-1/8	8	2-3/4	3-1/2	2-3/4	16-3/16	186.6	130	7,420	15-7/16	175.5	153	9,260	
38	965	4-5/8	5-1/8	8	2-3/4	3-1/2	2-3/4	17-1/16	207.9	147	9,670	16-5/16	195.6	174	12,080	
40	1,016	5	5-1/2	9	3	3-3/4	3	18	230.4	183	13,150	17-3/16	216.7	215	16,440	
42	1,067	5-3/8	6	10-7/16	3	4	3	-	-	-	-	18	239.0	263	21,070	
44	1,118	5-7/16	6-3/16	11	3	4	3	-	-	-	-	18-7/8	262.3	301	26,460	

DQ486 & M-506 SPECIFICATIONS									DQ486 - 0.86 E.A.R.				M-506 - 1.06 E.A.R.			
DIAMETER		HUB DIMENSIONS (INCHES)			STANDARD TAPER BORE (INCHES)				MAXIMUM BLADE WIDTH (INCHES)	EXPANDED AREA PER BLADE (SQ.IN)	APPROX. NET WEIGHT (LBS.)	*WR ² (LBS.-IN ²)	MAXIMUM BLADE WIDTH (INCHES)	EXPANDED AREA PER BLADE (SQ.IN)	APPROX. NET WEIGHT (LBS.)	*WR ² (LBS.-IN ²)
INCHES	MM	AFT END	FORWARD END	LENGTH	MINIMUM BORE	MAXIMUM BORE	PILOT BORE									
17	432	2-3/8	2-5/8	3-3/4	1-1/4	1-1/2	1-1/4	8-1/2	45.4	20	282	-	-	-	-	
18	457	2-3/8	2-5/8	3-3/4	1-1/4	1-1/2	1-1/4	9	50.9	23	374	-	-	-	-	
19	483	2-3/8	2-5/8	3-3/4	1-1/4	1-1/2	1-1/4	9-1/2	56.7	26	491	-	-	-	-	
20	508	2-3/8	2-5/8	3-3/4	1-1/4	1-1/2	1-1/4	10	62.8	30	629	-	-	-	-	
21	533	2-3/4	3	4-1/8	1-3/8	1-3/4	1-3/8	10-1/2	69.3	36	799	-	-	-	-	
22**	559	2-3/4	3	4-1/8	1-3/8	1-3/4	1-3/8	11	76.0	40	1,010	11-1/4	76.8	48	1,270	
23	584	3	3-1/4	Full Taper	1-1/2	2	1-1/2	11-1/2	83.1	47	1,260	11-3/4	83.9	55	1,585	
24	610	3	3-1/4	Full Taper	1-1/2	2	1-1/2	12	90.5	52	1,560	12-1/4	91.4	62	1,960	
26	660	3-3/8	3-3/4	Full Taper	1-3/4	2-1/4	1-3/4	13	106.2	68	2,310	13-1/4	107.2	80	2,910	
28	711	3-3/4	4-1/8	Full Taper	2	2-1/2	2	14	123.2	85	3,340	14-1/4	124.4	101	4,200	
30	762	4-1/4	4-5/8	Full Taper	2	3	2	15	141.4	106	4,680	15-5/16	142.8	125	5,890	
32	813	4-1/4	4-5/8	Full Taper	2	3	2	16	160.9	124	6,430	16-5/16	162.5	146	8,105	
34	864	4-1/4	4-5/8	Full Taper	2-1/4	3	2-1/4	17	181.6	146	8,740	17-5/16	183.4	174	10,980	
36	914	4-5/8	5-1/8	Full Taper	2-3/4	3-1/2	2-3/4	18	203.6	178	11,520	18-3/8	205.6	210	14,555	
38	965	4-5/8	5-1/8	Full Taper	2-3/4	3-1/2	2-3/4	19	226.8	204	15,020	19-3/8	229.1	242	18,920	
40	1,016	5	5-1/2	Full Taper	3	3-3/4	3	20	251.3	250	20,400	20-3/8	253.8	283	24,380	
42	1,067	5-3/8	6	Full Taper	3	4	3	21	277.1	291	26,080	21-7/16	279.8	330	31,120	
44	1,118	5-7/16	6-3/16	Full Taper	3	4	3	22	304.1	330	32,740	22-7/16	307.1	374	38,980	
46	1,168	5-5/8	6-1/4	Full Taper	3	4	3	-	-	-	-	23-7/16	335.7	421	48,480	

** Hub Length for the M-506 is full taper.



“CX” SERIES



Design

Every CX propeller is designed using state of the art hydrodynamic software, including proprietary code developed by leading propulsion experts as well as cutting edge CFD (computational fluid dynamics). Some propeller manufacturers specify diameter, pitch, and blade area and consider it a custom design, but not Michigan Wheel. Our propulsion experts modify every aspect of the design, including: section shape, camber, thickness, pitch, chord length, rake, and skew for a truly custom design specific to your vessel.

Control

All CX propellers are fully NC machined for optimum accuracy. The use of 5 axis NC machine centers ensures that all hub and blade surfaces match the design geometry. Expert finishers then polish the propeller, leaving a smooth finish to minimize drag. All CX Series propellers are manufactured to close tolerance in accordance with the ISO 484/2 standard.

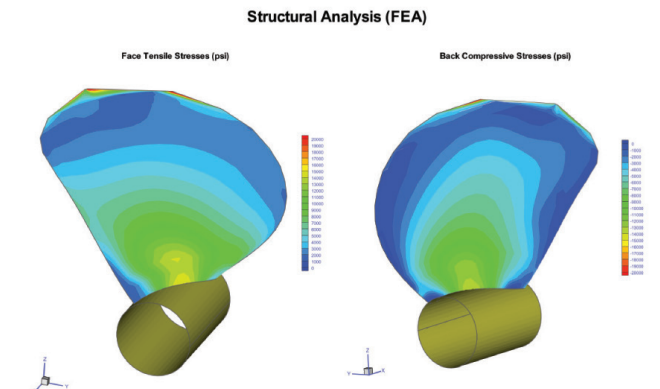
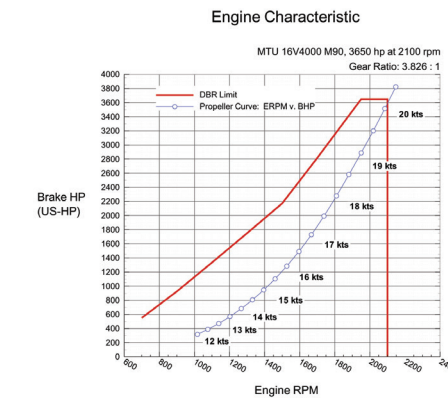
Performance

The combination of state-of-the-art design and highly accurate manufacturing yields optimum performance for your boat. Take advantage of the increased speed across all engine load, or run at the same speeds as before at lower engine load while burning less fuel. Under heavy use, the fuel savings can pay for the propellers in less than a season. Noise and vibration are also reduced, leading to a quieter and more comfortable ride. Feel confident that you have selected the best custom propeller on the market.

Unsure if this is the right propeller for you?
Contact your local Michigan Wheel Distributor, or the Michigan Wheel team to review your application.

Hull (Top Right) and engine (Bottom Left) characteristics are plotted against data provided by the builder/boat designer and the engine companies.

Consideration is given to the stresses on the propeller, in design. (Bottom Right)



“...THE CX SERIES OF PROPELLERS BY MICHIGAN WHEEL REPRESENT THE STATE-OF-THE-ART IN PROPELLER DESIGN, CONTROL, AND PERFORMANCE. EVERY YACHT OWNER WITH A CX SERIES PROPELLER CAN REST EASY KNOWING THEY HAVE THE BEST POSSIBLE PROPELLER UNDER THEIR BOAT.”

Excellence in Propulsion.



DESIGN CONSIDERATIONS
While working with builders, the Michigan Wheel design team utilizes a number of tools and programs to optimize propeller design.



MARLIN SERIES



“**MARLIN SERIES PROPELLERS
CONSISTENTLY OUT-
PERFORM ALL OTHER
SPORTFISH PROPELLERS
ON THE MARKET IN SPEED
AND FUEL EFFICIENCY.**”

Excellence in Propulsion.

Who Should Buy Marlin Propellers?

Our Marlin is a subset of custom designs built for truly high speed vessels. Sportfish and Sportcruiser owners who want the best available propeller choose Marlin. Starting from a suite of high tech 4, 5, and 6 blade “parent” designs, each propeller in the Marlin Series is custom designed by Michigan Wheel engineers to work perfectly with your exact vessel.

The “parent” designs on which the Marlin Series is based were developed through a major research effort specifically aimed at optimizing high speed sportfish and sportcruiser propellers. Research involved high performance computer modeling and intensive scale model testing with the goal of managing cavitation and squeezing every last drop of performance from your engine.

Marlin Series propellers consistently out-perform all other sportfish propellers on the market in speed and fuel efficiency. High tech design offers superior top speed, fuel efficiency, and smoothness. By managing cavitation the user can often benefit from reduced maintenance costs and a longer propeller life. A custom designed propeller that is specifically for the boat provides optimal performance when cruising or competing.

Unsure if this is the right propeller for you?
Contact your local Michigan Wheel Distributor, or the
Michigan Wheel team to review your application.



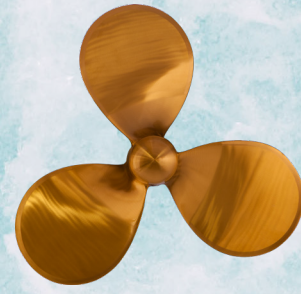
COMMERCIAL
PROPELLERS



NAKASHIMA
CONTROLLABLE PITCH



NAKASHIMA
FIXED PITCH



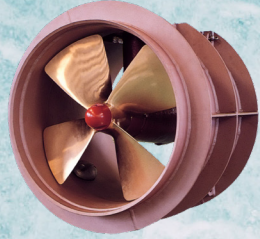
MACHINE PITCH



WORK HORSE



WORK HORSE 5



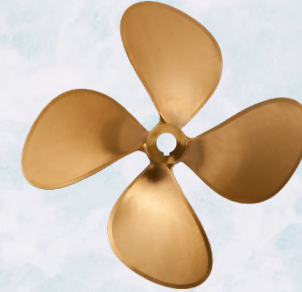
NAKASHIMA
TFN THRUSTER



NAKASHIMA
TCT THRUSTER



DQ SPECIAL



DURA-QUAD



PAC-MASTER



KAPLAN



WEEDLESS



MAXIMA

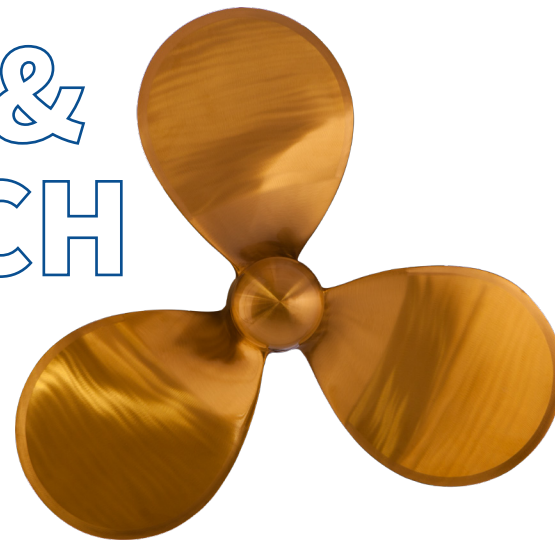


MP-3



TRAWLER

WORKHORSE & MACHINE PITCH PROPELLERS



SPECIFICATIONS

MACHINE PITCH

BLADES 3

E.A.R. 0.51 Diameter 9" - 60"

E.A.R. 0.47 Diameter 62" - 96"



WORK HORSE

BLADES 4

E.A.R. 0.71 Diameter 18" - 60"

E.A.R. 0.62 Diameter 62" - 96"



WORK HORSE 5

BLADES 5

E.A.R. 0.89

Who Should Buy "Work Horse" Series Propellers?

The Michigan Wheel Work Horse and Machine Pitch propellers are the best known commercial boat propellers in the world. Available in 3, 4, and 5 blade models to cover a wide range of commercial vessels. Non-standard blade areas available by request.

The blade design of Work Horse and Machine Pitch Propellers offers durability as well as performance for workboats that need to maximize bollard thrust when pushing and pulling. High quality materials make repairs by your local prop shop easier and help get your vessel back on the water faster. Commercial mariners trust Work Horse and Machine Pitch propellers to get the job done every day.

Excellence in Propulsion.

MACHINE PITCH & WORK HORSE SPECIFICATIONS

MACHINE PITCH & WORK HORSE SPECIFICATIONS										MACHINE PITCH		WORK HORSE		WORK HORSE 5	
DIAMETER		HUB DIMENSIONS (INCHES)			STANDARD TAPER BORE (INCHES)			MAXIMUM BLADE WIDTH (INCHES)	EXPANDED AREA PER BLADE (SQ. IN)	APPROX. NET WEIGHT (LBS.)	*WR ² (LBS.-IN ²)	APPROX. NET WEIGHT (LBS.)	*WR ² (LBS.-IN ²)	APPROX. NET WEIGHT (LBS.)	*WR ² (LBS.-IN ²)
INCHES	MM	AFT END	FORWARD END	LENGTH	MINIMUM BORE	MAXIMUM BORE	PILOT BORE								
9	229	1-5/16	1-7/16	2-1/8	3/4	3/4	3/4	3-7/8	11.8	2.5	13	-	-	-	-
10	254	1-7/16	1-5/8	2-1/8	3/4	7/8	3/4	4-5/16	14.5	3.5	21	-	-	-	-
11	279	1-7/16	1-5/8	2-1/8	3/4	7/8	3/4	4-5/8	17.6	4	34	-	-	-	-
12	305	1-9/16	1-3/4	2-5/8	7/8	1-1/8	7/8	5-1/16	20.9	5	50	-	-	-	-
13	330	1-9/16	1-3/4	2-3/4	1	1-1/8	1	4-15/16	22.7	6	65	-	-	-	-
14	356	1-3/4	2	3	1	1-1/8	1	5-5/16	26.4	8	90	-	-	-	-
15	381	1-3/4	2	3	1	1-1/8	1	5-5/8	30.3	9	120	-	-	-	-
16	406	1-15/16	2-3/16	3-3/8	1-1/8	1-1/4	1-1/8	6-15/16	34.5	11	160	-	-	-	-
17	432	2	2-5/16	3-3/8	1-1/8	1-3/8	1-1/8	6-7/16	38.9	12	210	-	-	-	-
18	457	2	2-5/16	3-3/8	1-1/8	1-3/8	1-1/8	6-7/8	43.6	14	280	17	370	-	-
19	483	2-1/8	2-7/16	3-3/4	1-1/4	1-3/8	1-1/4	7-1/4	48.6	16	350	20	480	-	-
20	508	2-1/8	2-7/16	3-3/4	1-1/4	1-3/8	1-1/4	7-1/2	53.8	18	470	23	630	-	-
21	533	2-7/16	2-13/16	4-1/8	1-3/8	1-1/2	1-3/8	8	59.4	22	590	28	790	-	-
22	559	2-7/16	2-13/16	4-1/8	1-3/8	1-1/2	1-3/8	8-3/8	65.1	25	760	32	1,020	-	-
23	584	2-13/16	3-3/16	4-1/2	1-1/2	1-3/4	1-1/2	8-7/8	71.2	30	940	38	1,250	-	-
24	610	2-13/16	3-3/16	4-1/2	1-1/2	1-3/4	1-1/2	9-1/8	77.5	33	1,140	41	1,510	-	-
26	660	3-3/16	3-5/8	5-1/4	1-3/4	2	1-3/4	9-7/8	91	44	1,710	54	2,280	-	-
28	711	3-1/2	4	5-1/4	1-3/4	2-1/4	1-3/4	10-5/8	105.5	55	2,490	68	3,320	-	-
30	762	3-13/16	4-3/8	6	2	2-1/2	2	11-3/8	124.7	70	3,460	87	4,590	108	6,100
32	813	4-1/4	4-13/16	6	2	3	2	12-3/16	141.8	97	5,960	121	7,920	150	10,526
34	864	4-7/16	5-1/16	6-3/4	2-1/4	3-1/4	2-1/4	12-7/8	160.1	114	7,810	142	10,380	177	13,795
36	914	4-3/4	5-1/2	7	2-1/2	3-1/2	2-1/2	13-5/8	179.5	136	10,350	170	13,750	211	18,274
38	965	5-1/16	5-13/16	7-1/4	2-1/2	3-3/4	2-1/2	14-7/16	200	159	13,200	198	17,540	246	23,311
40	1,016	5-1/16	5-13/16	7-3/4	2-3/4	3-3/4	2-3/4	15-3/16	221.6	177	16,600	221	22,070	275	29,331
42	1,067	5-1/4	6	8	2-3/4	3-3/4	2-3/4	15-15/16	244.3	211	22,620	265	30,090	329	39,990
44	1,118	5-1/4	6	8	2-3/4	3-3/4	2-3/4	16-3/4	268.1	232	27,820	293	37,010	364	49,186
46	1,168	6	6-3/4	10	3	4	3	17-7/16	293.1	285	34,170	354	45,400	440	60,337
48	1,219	6	6-3/4	10	3	4	3	18-1/4	319.1	309	41,290	386	54,900	480	72,962
50	1,270	6-9/16	7-3/8	10-3/4	3	4-1/2	3	19	346.2	362	49,820	447	66,190	556	87,967
52	1,320	6-9/16	7-3/8	10-3/4	3	4-1/2	3	19-3/4	374.5	390	59,370	485	78,900	603	104,858
54	1,371	6-9/16	7-3/8	10-3/4	3	4-1/2	3	20-1/2	408.8	420	70,320	526	93,510	654	124,275
56	1,422	7-5/8	8-3/8	11-1/2	3-1/4	5	3-1/4	21-1/4	434.3	498	83,470	615	110,830	764	147,293
58	1,473	7-5/8	8-3/8	11-1/2	3-1/4	5	3-1/4	21-7/8	465.9	533	97,700	661	129,810	822	172,517
60	1,524	7-5/8	8-3/8	12	3-1/2	5	3-1/2	22-3/4	498.6	572	113,880	713	151,360	886	201,157
62	1,575	9	10	13-1/4	4	6	4	22-1/2	492.8	737	143,870	902	190,790	-	-
64	1,625	9	10	13-1/4	4	6	4	23-1/8	525.1	781	165,830	961	220,060	-	-
66	1,676	9	10	13-1/4	4	6	4	23-15/16	558.4	828	190,420	1,024	252,850	-	-
68	1,727	10-1/2	11-3/4	14-1/2	5	7	5	24-5/8	592.8	987	221,140	1,199	292,710	-	-
70	1,778	10-1/2	11-3/4	14-1/2	5	7	5	25-3/8	628.1	1,039	251,690	1,269	333,450	-	-
72	1,823	10-1/2	11-3/4	14-1/2	5	7	5	26-1/8	664.5	1,094	285,590	1,342	378,650	-	-
74	1,879	10-1/2	11-3/4	14-1/2	6	7	6	26-7/8	702	1,159	340,800	1,436	452,320	-	-
76	1,930	10-1/2	11-3/4	14-1/2	6	7	6	27-9/16	740.4	1,228	388,680	1,529	516,160	-	-
78	1,981	10-1/2	11-3/4	14-1/2	6	7	6	28-1/4	779.9	1,301	441,530	1,626	586,630	-	-
80	2,032	11-1/8	12-1/2	17	6	7-1/2	6	29	820.4	1,493	503,610	1,844	668,350	-	-
82	2,083	11-1/8	12-1/2	17	6	7-1/2	6	29-3/4	862	1,574	568,320	1,952	754,640	-	-
84	2,134	11-1/8	12-1/2	17	6	7-1/2	6	30-7/16	904.5	1,659	639,650	2,064	849,740	-	-
86	2,184	11-1/8	12-1/2	17	6	7-1/2	6	31-3/16	948.1	1,748	718,600	2,183	955,010	-	-
88	2,235	11-1/8	12-1/2	17	6	7-1/2	6	31-15/16	992.7	1,842	805,280	2,308	1,070,600	-	-
90	2,286	11-7/8	13-1/4	18-1/4	6	8	6	32-5/8	1,038.3	2,048	903,200	2,547	1,199,900	-	-
92	2,337	11-7/8	13-1/4	18-1/4	6	8	6	33-3/8	1,085.0	2,150	1,003,950	2,683	1,338,260	-	-
94	2,388	11-7/8	13-1/4	18-1/4	6	8	6	34-1/16	1,132.7	2,256	1,119,400	2,825	1,488,200	-	-
96	2,438	11-7/8	13-1/4	18-1/4	6	8	6	34-13/16	1,181.4	2,263	1,238,750	2,869	1,648,600	-	-

Unsure if this is the right propeller for you?
 Contact your local Michigan Wheel Distributor, or the Michigan Wheel team to review your application.

COMMERCIAL PROPELLERS



SPECIFICATIONS

DQ SPECIAL

BLADES 4

E.A.R. 0.76 - 0.91

DIAMETER RANGE 32" - 56"

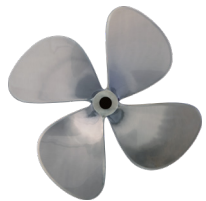


DURA-QUAD

BLADES 4

E.A.R. 0.76

DIAMETER RANGE 24" - 36"



PAC-MASTER

BLADES 4

E.A.R. 0.69

DIAMETER RANGE 20" - 30"

MATERIAL Stainless Steel

Who Should Buy Commercial Series Propellers?

Michigan Wheel Dyna-Quad (DQ) propellers have often been used for medium to higher speed commercial applications. Over the years we have created three specialized styles of DQ propellers that meet the needs of many of today's commercial applications.

"...THREE SPECIALIZED LINES OF DQ PROPELLERS THAT MEET THE NEEDS OF MANY OF TODAY'S COMMERCIAL APPLICATIONS."

Excellence in Propulsion.

The DQ Special propeller offers greater blade area than our standard DQ propellers, allowing today's high powered commercial applications to better control cavitation and effectively convert power into thrust.

Dura-Quad propellers utilize thicker blades to hold up better to heavy use in shallow water and contact with floating debris.

Pacmaster propellers offer the sleek design of DQ propellers for operators who prefer the toughness of stainless steel.

Unsure if this is the right propeller for you?
Contact your local Michigan Wheel Distributor, or the Michigan Wheel team to review your application.

DQ SPECIAL SPECIFICATIONS (0.86 E.A.R.)

DIAMETER		HUB DIMENSIONS (INCHES)			STANDARD TAPER BORE (INCHES)			MAXIMUM BLADE WIDTH (INCHES)	EXPANDED AREA PER BLADE (SQ.IN)	APPROX. NET WEIGHT (LBS.)	*WR ² (LBS.-IN ²)
INCHES	MM	AFT END	FORWARD END	LENGTH	MINIMUM BORE	MAXIMUM BORE	PILOT BORE				
32	813	4-1/4	4-7/8	FULL TAPER	2	3	2	15-11/16	173.1	128	8,250
34	864	4-1/2	5-1/8	FULL TAPER	2-1/4	3	2-1/4	16-11/16	196.3	152	11,150
36	914	4-7/8	5-9/16	FULL TAPER	2-3/4	3-1/2	2-3/4	17-11/16	219.5	184	14,850
38	965	4-7/8	5-9/16	FULL TAPER	2-3/4	3-1/2	2-3/4	18-5/8	245.5	207	19,270
40	1,016	4-7/8	5-11/16	FULL TAPER	3	3-3/4	3	19-5/8	271.6	233	24,710
42	1,067	5-3/8	6	FULL TAPER	3	4	3	20-5/8	298.8	275	31,620
44	1,118	5-3/8	6	FULL TAPER	3	4-1/4	3	21-9/16	328.5	300	39,630
46	1,168	6	6-3/4	FULL TAPER	3	4-1/2	3	22-9/16	359.6	352	46,690
48	1,219	6	6-3/4	FULL TAPER	3	4-1/2	3	23-3/8	387.5	390	61,190
50	1,270	6-3/4	7-1/2	FULL TAPER	3	5	3	24-7/16	420.5	460	75,570
52	1,321	6-3/4	7-1/2	FULL TAPER	3	5	3	25-7/16	456.2	505	91,460
54	1,372	6-3/4	7-1/2	FULL TAPER	3	5	3	26-7/16	493.3	552	109,740
56	1,422	6-3/4	7-1/2	FULL TAPER	3	5	3	27-3/8	531.9	604	131,130

Notes: 1. Mass moment of inertia properties calculated using minimum standard bore.
2. Mass moment of inertia properties calculated using bronze.
3. Some DQ Specials have blade area other than 0.86.

DURA-QUAD SPECIFICATIONS (0.76 E.A.R.)

DIAMETER		HUB DIMENSIONS (INCHES)			STANDARD TAPER BORE (INCHES)				MAXIMUM BLADE WIDTH (INCHES)	EXPANDED AREA PER BLADE (SQ.IN)	APPROX. NET WEIGHT (LBS.)	*WR ² (LBS.-IN ²)
INCHES	MM	AFT END	FORWARD END	LENGTH	MINIMUM BORE	MAXIMUM BORE	PILOT BORE	PILOT S.E. BORE				
24	610	3	3-3/8	6	1-1/2	2	1-1/2	1.172	10-7/16	85.5	52	1,780
26	660	3-3/8	3-7/8	6-3/4	1-3/4	2-1/4	1-3/4	1.375	11-5/16	99.9	67	2,650
28	711	3-3/4	4-1/4	7-1/2	2	2-1/2	2	1.578	12-3/16	115.7	85	3,830
30	762	4-1/4	4-7/8	9	2	3	2	1.531	13-1/16	132.1	113	5,420
32	813	4-1/4	4-7/8	9	2	3	2	1.531	13-15/16	151.1	129	7,420
34	864	4-1/4	4-7/8	9	2	3	2	1.531	14-13/16	171.4	148	9,980
36	914	4-5/8	5-1/4	10-1/2	2-3/4	3-1/2	2-3/4	2.164	15-5/8	191.8	176	13,260

PAC-MASTER SPECIFICATIONS (0.69 E.A.R.)

DIAMETER		ROTATION	HUB DIMENSIONS (INCHES)			STANDARD TAPER BORE (INCHES)			MAXIMUM BLADE WIDTH (INCHES)	EXPANDED AREA PER BLADE (SQ.IN)	APPROX. NET WEIGHT (LBS.)	*WR ² (LBS.-IN ²)
INCHES			AFT END	FORWARD END	LENGTH	MINIMUM BORE	MAXIMUM BORE	PILOT BORE				
20 x 18	R		2-3/4	3	4-1/2	1-1/2	1-3/4	1-1/2	8-1/16	54.2	26	627
20 x 20	R		2-3/4	3	4-1/2	1-1/2	1-3/4	1-1/2	8-1/16	54.2	26	627
22 x 18	R		3	3-1/4	4-7/8	1-3/4	2	1-3/4	8-7/8	65.5	34	1,003
22 x 20	R		3	3-1/4	4-7/8	1-3/4	2	1-3/4	8-7/8	65.5	34	1,003
22 x 22	R		3	3-1/4	4-7/8	1-3/4	2	1-3/4	8-7/8	65.5	34	1,003
24 x 20	R & L		3-3/8	3-3/4	5-3/4	2	2-1/4	2	9-11/16	77.8	46	1,545
24 x 22	R & L		3-3/8	3-3/4	5-3/4	2	2-1/4	2	9-11/16	77.8	46	1,545
24 x 24	R & L		3-3/8	3-3/4	5-3/4	2	2-1/4	2	9-11/16	77.8	46	1,545
26 x 20	R & L		3-7/8	4-1/4	6	2	2-1/2	2	10-1/2	90.9	61	2,302
26 x 22	R & L		3-7/8	4-1/4	6	2	2-1/2	2	10-1/2	90.9	61	2,302
26 x 24	R & L		3-7/8	4-1/4	6	2	2-1/2	2	10-1/2	90.9	61	2,302
26 x 26	R & L		3-7/8	4-1/4	6	2	2-1/2	2	10-1/2	90.9	61	2,302
26 x 30	R & L		3-7/8	4-1/4	6	2	2-1/2	2	10-1/2	90.9	61	2,302
28 x 26	R & L		3-7/8	4-1/4	6	2	2-1/2	2	11-1/4	106.2	72	3,303
28 x 28	R & L		3-7/8	4-1/4	6	2	2-1/2	2	11-1/4	106.2	72	3,303
30 x 20	R		3-7/8	4-1/4	6-1/2	2	2-1/2	2	12-1/16	122.5	85	4,633
30 x 28	R & L		3-7/8	4-1/4	6-1/2	2	2-1/2	2	12-1/16	122.5	85	4,633
30 x 30	R		3-7/8	4-1/4	6-1/2	2	2-1/2	2	12-1/16	122.5	85	4,633

M.W.R. = 0.326

B.T.F. = 0.060

Odd diameter & pitch within 2" of listed are quoted on request.



KAPLAN PROPELLERS & NOZZLES



SPECIFICATIONS

KAPLAN

BLADES 3, 4, 5

E.A.R. Varies

DIAMETER RANGE Many Sizes Available

Who Should Buy Kaplan Series Propellers and Nozzles?

Vessels operating at low speeds can benefit from the use of a ducted propeller, which is a Kaplan style propeller operating inside a Kort nozzle. Switching to a ducted propeller from an open propeller is one of the most effective ways to get more thrust from a vessel for the same amount of input power.

Our nozzles are available in Type 19 and Type 37 configurations in addition to custom designs upon request. Type 19 nozzles are best used on boats where forward thrust is of highest importance and backing performance is less crucial. Type 37 nozzles are suggested when both ahead and astern performance is required.

Why Buy Kaplan Series Propellers and Nozzles?

Our high-quality Kaplan propellers are offered in a wide variety of designs and materials. Our high-quality nozzles are manufactured with a unique one-piece inner diameter skin, instead of welded segments which experience erosion at the seams. That, along with heavy duty interior structure and framing, make our nozzles last longer than other nozzles on the market. Simplify your procurement with propellers and nozzles from one source. Advanced, custom designs are available.

Unsure if this is the right propeller for you?
Contact your local Michigan Wheel Distributor, or the Michigan Wheel team to review your application.

KAPLAN SPECIFICATIONS (0.56 E.A.R.)

DIAMETER		HUB DIMENSIONS (INCHES)			STANDARD TAPER BORE (INCHES)			MAXIMUM BLADE WIDTH (INCHES)	EXPANDED AREA PER BLADE (SQ. IN.)	APPROX. NET WEIGHT (LBS.)	*WR ² (LBS.-IN ²)
INCHES	MM	AFT END	FORWARD END	LENGTH	MINIMUM BORE	MAXIMUM BORE	PILOT BORE				
35	889	4-3/4	5-1/2	7-1/2	2-1/2	3-1/2	2-1/2	10-9/16	135	117	6,650
39	991	5-1/16	5-13/16	8	2-3/4	3-3/4	2-3/4	11-3/4	167	154	11,300
43	1,090	5-1/4	6	8-1/4	2-3/4	3-3/4	2-3/4	12-7/8	203	196	18,240
45	1,140	6	6-3/4	10	3	4	3	13-9/16	222	246	23,220
47	1,190	6	6-3/4	10	3	4	3	14-3/16	243	269	28,650
51	1,300	6-9/16	7-3/8	10-3/4	3-1/2	4-1/2	3-1/2	15-3/8	286	341	43,110
53	1,350	6-9/16	7-3/8	10-3/4	3-1/2	4-1/2	3-1/2	15-7/8	309	371	51,920
55	1,400	7-5/8	8-3/8	11-1/2	4	5	4	16-5/8	333	445	63,600
59	1,500	7-5/8	8-3/8	12	4	5	4	17-3/4	383	521	89,230
63	1,600	9	10	13-1/4	4	6	4	19-3/16	436	701	126,330
67	1,700	10-1/2	11-3/4	14-1/2	5	7	5	20-5/8	494	907	175,980
71	1,800	10-1/2	11-3/4	14-1/2	5	7	5	21-11/16	554	1,011	231,530
75	1,905	10-1/2	11-3/4	14-1/2	5	7	5	22-3/4	618	1,128	300,500
79	2,006	11-1/8	12-1/2	17	6	7-1/2	6	24	687	1,350	391,360
83	2,108	11-1/8	12-1/2	17	6	7-1/2	6	25-1/16	758	1,493	495,870
87	2,209	11-1/8	12-1/2	17	6	7-1/2	6	26-1/8	832	1,650	621,740
91	2,311	11-7/8	13-1/4	18-1/4	6-1/2	8	6-1/2	27-7/16	911	1,915	780,850
95	2,413	11-7/8	13-1/4	18-1/4	6-1/2	8	6-1/2	28-1/2	993	2,104	961,860

*WR² = ±10% in Air (inch squared lbs.)
Greater area ratios available and quoted upon request.
For use in commercial Kort Nozzle applications, resulting in 25-50% increased thrust compared to an open wheel, on low speed trawlers, draggers, and harbor tugs.

NSMB TYPE 19 NOZZLE SPECIFICATIONS					NSMB TYPE 37 NOZZLE SPECIFICATIONS				
PRINCIPLE DIMENSIONS (INCHES)				APPROXIMATE NET WEIGHT (LBS.)	PRINCIPLE DIMENSIONS (INCHES)				APPROXIMATE NET WEIGHT (LBS.)
A	B	C	D		A	B	C	D	
36	18	43.60	38.16	300	36	18	43.80	41.67	300
40	20	48.45	42.40	585	40	20	48.67	46.30	585
44	22	53.30	46.64	870	44	22	53.53	50.93	870
46	23	55.72	48.75	1,000	46	23	55.97	53.24	1,000
48	24	58.14	50.88	1,150	48	24	58.40	55.56	1,150
52	26	62.98	55.12	1,425	52	26	63.27	60.19	1,425
54	27	65.41	57.24	1,600	54	27	65.70	62.51	1,600
56	28	67.83	59.36	1,725	56	28	68.14	64.82	1,725
60	30	72.68	63.60	2,000	60	30	73.00	69.45	2,000
64	32	77.52	67.84	2,450	64	32	77.87	74.08	2,450
68	34	82.36	72.08	2,850	68	34	82.74	78.71	2,850
72	36	87.21	76.32	3,150	72	36	87.60	83.34	3,150
76	38	92.06	80.56	3,650	76	38	92.47	87.97	3,650
80	40	96.90	84.80	4,150	80	40	97.34	92.60	4,150
84	42	101.74	89.04	5,050	84	42	102.20	97.23	5,050
88	44	106.59	93.28	5,800	88	44	107.07	101.86	5,800
92	46	111.44	97.52	6,500	92	46	111.94	106.49	6,500
96	48	116.28	101.76	7,500	96	48	116.80	111.12	7,500
100	50	121.12	106.00	8,500	100	50	121.67	115.75	8,500
104	52	125.97	110.24	9,600	104	52	126.54	120.38	9,600
108	54	130.82	114.48	11,000	108	54	131.40	125.01	11,000
112	56	135.66	118.72	12,250	112	56	136.27	129.64	12,250
116	58	140.50	122.96	13,750	116	58	141.14	134.27	13,750
120	60	145.35	127.20	16,000	120	60	146.00	128.90	16,000
124	62	150.20	131.44	18,000	124	62	150.87	143.38	18,000
128	64	155.04	135.68	20,000	128	64	155.74	148.16	20,000
132	66	159.88	139.92	23,000	132	66	160.60	152.79	23,000



WEEDLESS PROPELLERS



SPECIFICATIONS

WEEDLESS

BLADES 2

DIAMETER RANGE 10" - 30"

BORE Standard Taper & Straight Bore

Who Should Buy Weedless Propellers?

Michigan Wheel Weedless propellers are specialized propellers used on mudboats in shallow weed infested waters. Their unique highly skewed blades allow the propellers to run freely without becoming tangled in floating vegetation. Thick blades and heavy duty edges add durability when striking roots and other submerged debris. When you are navigating a swamp and need a propeller that will not fail and leave you stranded, choose a Michigan Weedless.

Weedless Propellers in Water Treatment Facilities

Weedless propellers have also become a preferred choice in many water treatment and other industrial applications. Frequently Michigan Wheel weedless propellers are used in projects around the world helping treat water in developing countries. Their unique design minimizes the collection of loose material while they are used to pump untreated water through the plants. Many sizes are available with oversized hubs to accommodate straight bores for connection to pump motor shafts.

Contact Michigan Wheel for help sizing and for availability of size and pitch combinations.

Unsure if this is the right propeller for you?
Contact your local Michigan Wheel Distributor, or the Michigan Wheel team to review your application.

WEEDLESS A-C SPECIFICATIONS

DIAMETER		AVAILABLE PITCH	HUB DIMENSIONS (INCHES)			MAXIMUM STRAIGHT BORE (INCHES)	MAXIMUM BLADE WIDTH (INCHES)	EXPANDED AREA PER BLADE (SQ.IN)	APPROX. NET WEIGHT (LBS.)	B.T.F.
INCHES	MM		AFT END	FORWARD END	LENGTH					
6	152		1	1-11/32	1-3/8	1/2	2-5/8	6.2	1	.042
7	178	4L	1-1/16	1-1/2	1-1/2	5/8	3-1/8	8.5	1.5	.042
8	203	6L	1-1/8	1-1/2	1-1/2	5/8	3-9/16	10.8	2	.042
9	229	6L, 7L, 8L	1-1/4	1-11/16	1-7/8	3/4	4-1/8	13.7	3	.042
10	254	6L, 10L	1-7/16	1-3/4	2-1/4	3/4	4-11/16	14.7	3.5	.042

WEEDLESS W-C SPECIFICATIONS

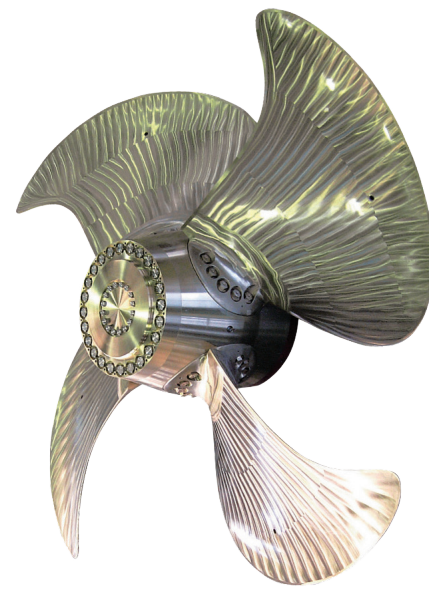
DIAMETER		AVAILABLE PITCH	HUB DIMENSIONS (INCHES)			MAXIMUM STRAIGHT BORE (INCHES)	MAXIMUM BLADE WIDTH (INCHES)	EXPANDED AREA PER BLADE (SQ.IN)	APPROX. NET WEIGHT (LBS.)	B.T.F.
INCHES	MM		AFT END	FORWARD END	LENGTH					
6	152	4L, 5L	1	1-11/32	1-3/8	1/2" Straight No Keyway	2-5/8	6.2	1	.042
7	178	4L, 5L, 8L, 10L	1-1/16	1-1/2	1-1/2	1/2" Straight No Keyway	3-1/8	8.5	1.5	.042
8	203	4L, 5L	1-1/8	1-1/2	1-1/2	5/8" Straight No Keyway	3-9/16	10.8	2	.042
9	229	5L, 6L	1-1/4	1-11/16	1-7/8	5/8" or 3/4" Straight & Slot	4-1/8	13.7	3	.042
10	254	5L, 9L	1-7/16	1-3/4	2-1/4	3/4" Taper & Keyway	4-11/16	14.7	3.5	.042

WEEDLESS SPECIFICATIONS

DIAMETER		AVAILABLE PITCH	HUB DIMENSIONS (INCHES)			MAXIMUM STANDARD TAPER BORE (INCHES)	MAXIMUM STRAIGHT BORE (INCHES)	MAXIMUM BLADE WIDTH (INCHES)	EXPANDED AREA PER BLADE (SQ.IN)	APPROX. NET WEIGHT (LBS.)	B.T.F.
INCHES	MM		AFT END	FORWARD END	LENGTH						
10	254	6R, 8, 10, 12	1-7/16	1-5/8	2-1/4	1	1	6-11/16	21	5	.058
11	279	8, 10, 12	1-7/16	1-5/8	2-1/4	1	1	7-7/16	25	6	.058
12	305	10, 12, 14	1-9/16	1-3/4	2-5/8	1-1/8	1-1/4	8	30	7.5	.058
13	330	8, 10, 12, 14	1-9/16	1-3/4	2-5/8	1-1/8	1-1/4	8-13/16	36	9	.058
14	356	8, 10, 12L, 14, 16	1-3/4	2	3	1-1/8	1-1/4	9-7/16	41	12	.058
15	381	8, 10, 12, 13L, 14, 16	1-3/4	2	3	1-1/8	1-1/4	10	47	14	.058
16	406	8-16 Even	1-15/16	2-3/16	3-3/8	1-1/4	1-3/8	10-11/16	55	16	.058



LARGE COMMERCIAL PROPELLERS



CONTROLLABLE PITCH PROPELLERS

- Two models available to fit a wide range of applications.
- XS for applications up to 5,000 HP uses hydraulic push rod for blade movement.
- XL for applications of 5,000 HP and more uses a highly efficient hydraulic cylinder pump package one-third the size of similar systems.
- Controllable pitch propeller blade replacement.



FIXED PITCH PROPELLERS

- Michigan Wheel can now offer some of the largest propellers in the world.
- Cutting edge fixed pitch propeller design and innovations such as composite propellers and propeller fin boss caps.
- Advanced blade machining and expert hand polishing.
- Nakashima offers many years of experience building and designing large propellers.

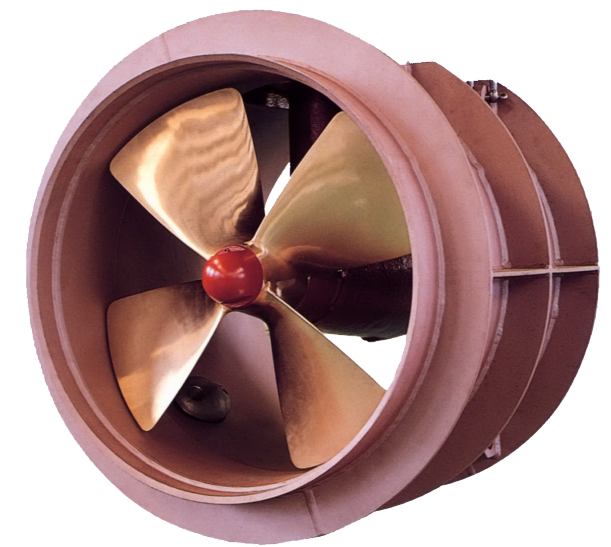
Partners in Propulsion

Michigan Wheel is always looking for new ways to provide cutting edge propulsion technologies to its customers. A natural progression of this is to align with other companies that have the same goals of offering high quality propulsion equipment and excellent service.

Nakashima Propeller Co., Ltd. is a world renowned propeller manufacturer and has built a reputation for offering some of the best propulsion equipment on the market. Michigan Wheel has partnered with Nakashima to expand their offering with a variety of marine propulsion products. This includes fixed and controllable pitch propellers, as well as fixed and controllable pitch thrusters.

Partners in Propulsion.

BOW THRUSTERS



FIXED PITCH BOW THRUSTERS

- Model TFN tunnel thrusters utilize fixed pitch propellers to minimize maintenance costs.
- The tunnel assembly is built with a reinforced structure to allow it to be easily mounted in various types of vessels.



CONTROLLABLE PITCH BOW THRUSTERS

- Model TCT is a high performance tunnel thruster with controllable blades.
- Design has been optimized by use of tank tests to maximize thrust while minimizing noise and vibration.
- Available with propeller diameters ranging from 700mm (27.55") to 3,150mm (124").
- Bolt on blades can be easily removed for replacement or repair.

Partners in Propulsion

As a general propulsion system manufacturer, Nakashima designs and manufactures a variety of tunnel thrusters. Nakashima side thrusters can be used in a wide range of vessels including freighters, fishing vessels, ferries, roll-on/roll-off vessels, container ships, offshore supply vessels, and patrol craft.

Partners in Propulsion.

NAKASHIMA
We Go Beyond



LEGACY SERIES



About our Legacy Series

Over the past century, Michigan Wheel has built many propellers for many different applications. Our pattern vault houses almost ten thousand patterns to support all the various designs required by the countless different applications. As boats have changed over the years and new propeller designs have been developed, some of our propeller designs have become less prominent. Since many of these legacy designs are highly effective for their applications, Michigan Wheel still supports them and can build brand new replacement propellers to offer the same performance as the original equipment. Replacing propellers with designs not specialized for your application can result in haul-outs, pitch changes, new vibrations, and decreased performance.

“REPLACING PROPELLERS WITH DESIGNS NOT SPECIALIZED FOR YOUR APPLICATION CAN RESULT IN HAUL-OUTS, PITCH CHANGES, NEW VIBRATIONS, AND DECREASED PERFORMANCE.”

Excellence in Propulsion.

Unsure if this is the right propeller for you?
Contact your local Michigan Wheel Distributor, or the Michigan Wheel team to review your application.



TRAWLER

BLADES 4

E.A.R. 0.44

DIAMETER RANGE 36" - 72"

Commercial Applications

The Trawler series gives four blade performance without reduced diameter, and is primarily used on shrimp boats, trawlers, and similar vessels that need thrust and smooth running performance.



MAXIMA

BLADES 3 / 4

E.A.R. 0.63 / 0.836

DIAMETER RANGE 32" - 50"

Commercial Applications

The heavy-duty blade thickness distribution makes the Maxima the most durable commercial offering. The blade design is wider than the standard for applications that require maximum thrust, including: moderate-speed crew supply; high horsepower applications, and passenger boats requiring maximum thrust.



"Y" SERIES

BLADES 3 / 4 / 5

E.A.R. 0.66 / 0.835 / 0.935

APPLICATION Pleasure

Recreational Applications

The chosen combination of blade area and skew in this series, along with variable pitch and camber, make for a close efficiency match throughout the entire power curve. Years of propeller design experience have allowed our naval architects to optimize the "Y" design to maximize the performance of virtually all planing hulls. Boat builders choose the "Y" series as standard equipment after appreciating the difference in sea trials compared to less sophisticated product.



"HX" SERIES

BLADES 4 / 5

E.A.R. Varies

APPLICATION Pleasure

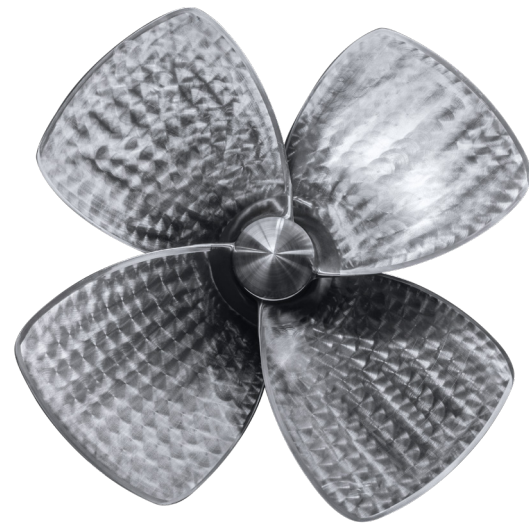
Recreational Applications

The Federal HX series offers high tolerance hand finish propeller manufacture in a variety of design configurations. This series is primarily constant pitch, with expanded area ratios. High horsepower pleasure and commercial applications require specific propellers to achieve maximum thrust, speed, and smoothness. The proven pitch geometry yields exceptional performance without the additional cost associated with custom, CNC machined propellers.

Our pattern vault houses almost ten thousand patterns to support all the various designs required by countless different applications.



POWER TOW PROPELLERS



SPECIFICATIONS

POWERTOW

DESIGN VESSEL Towboats, Pushboats

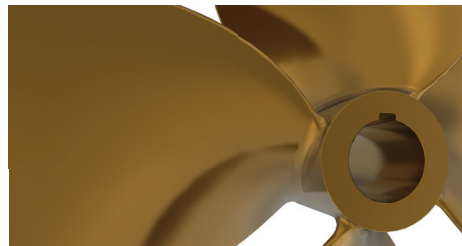
BLADE NUMBER 3,4,5

SIZE RANGE 18" to say 180"
depending upon material

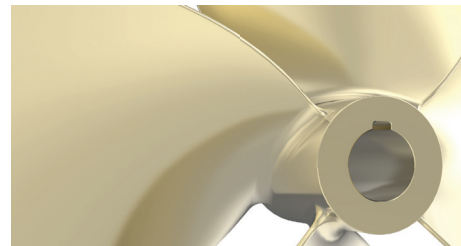
Michigan Power Tow delivers the maximum thrust vessels need, with the fuel efficiency you want.

Each propeller is expertly engineered and built to Michigan Wheel's high quality material standards. Keeping an earned reputation of reliable, repairable propellers for over 100 years.

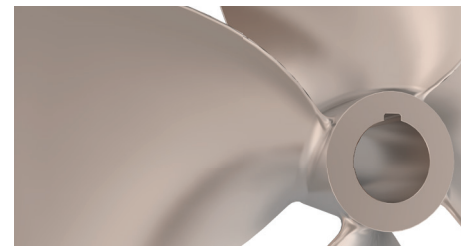
AVAILABLE MATERIAL



Bronze



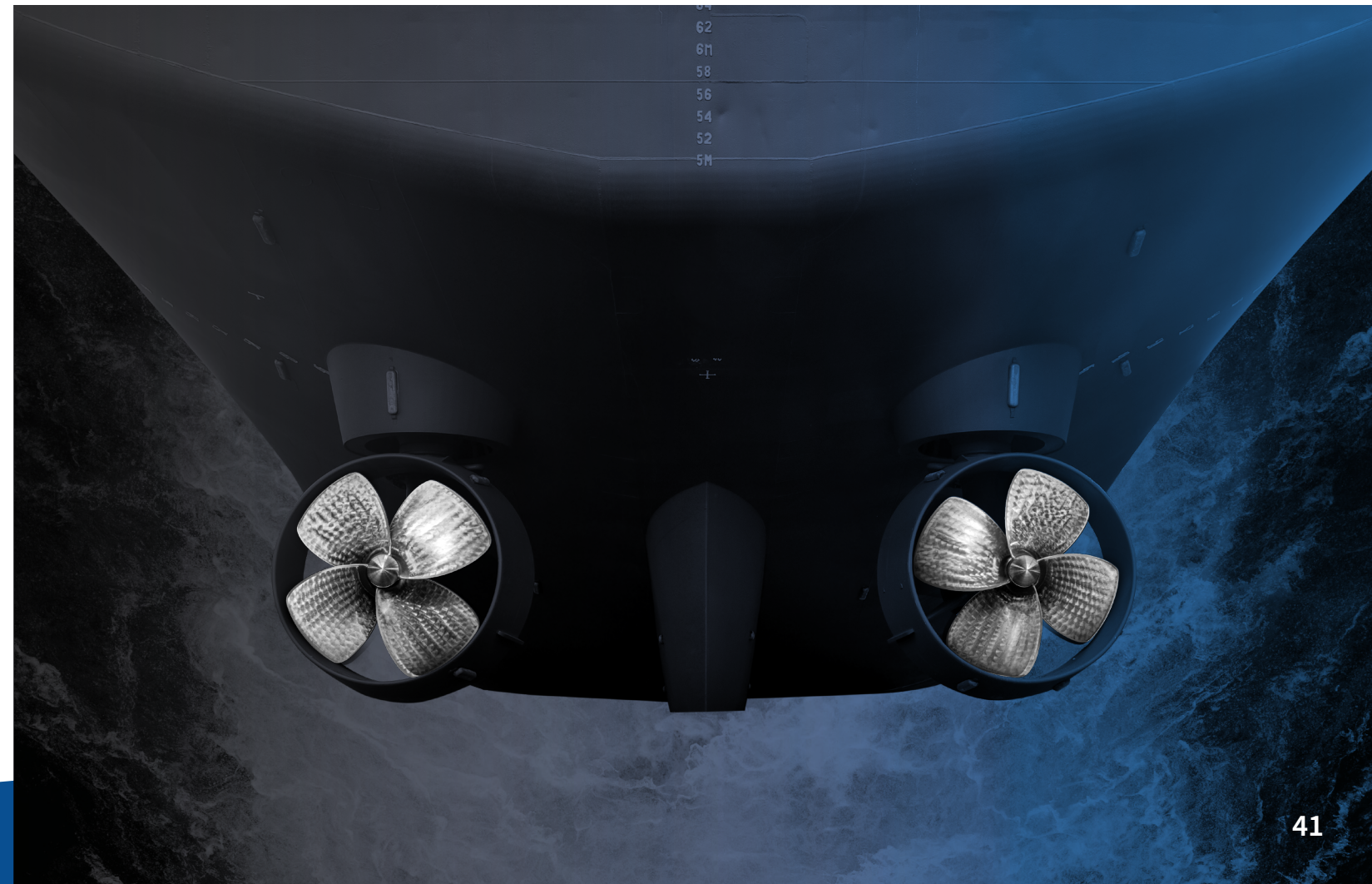
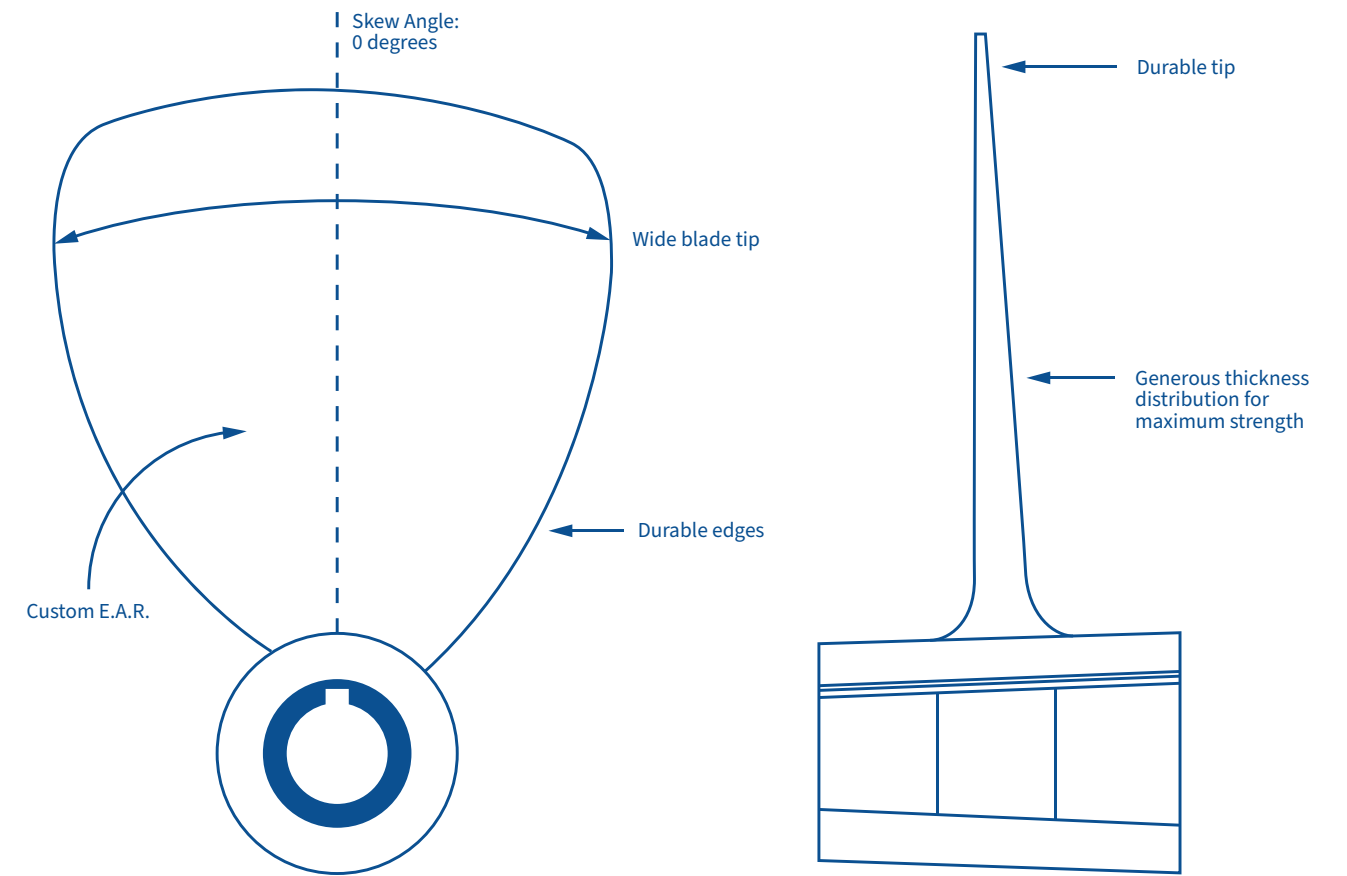
NiBrAl



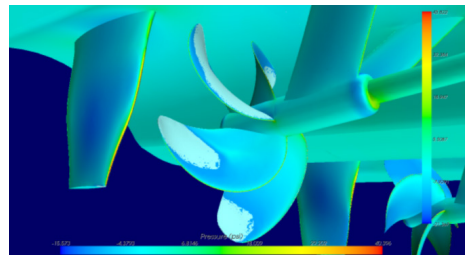
Stainless Steel

- Heavy duty edges.
- Excellent durability and service life.
- Manufactured to Michigan Wheel's strict tolerances to ensure performance.

Unsure if this is the right propeller for you?
Contact your local Michigan Wheel Distributor, or the Michigan Wheel team to review your application.



COMPREHENSIVE PROPULSION SYSTEMS



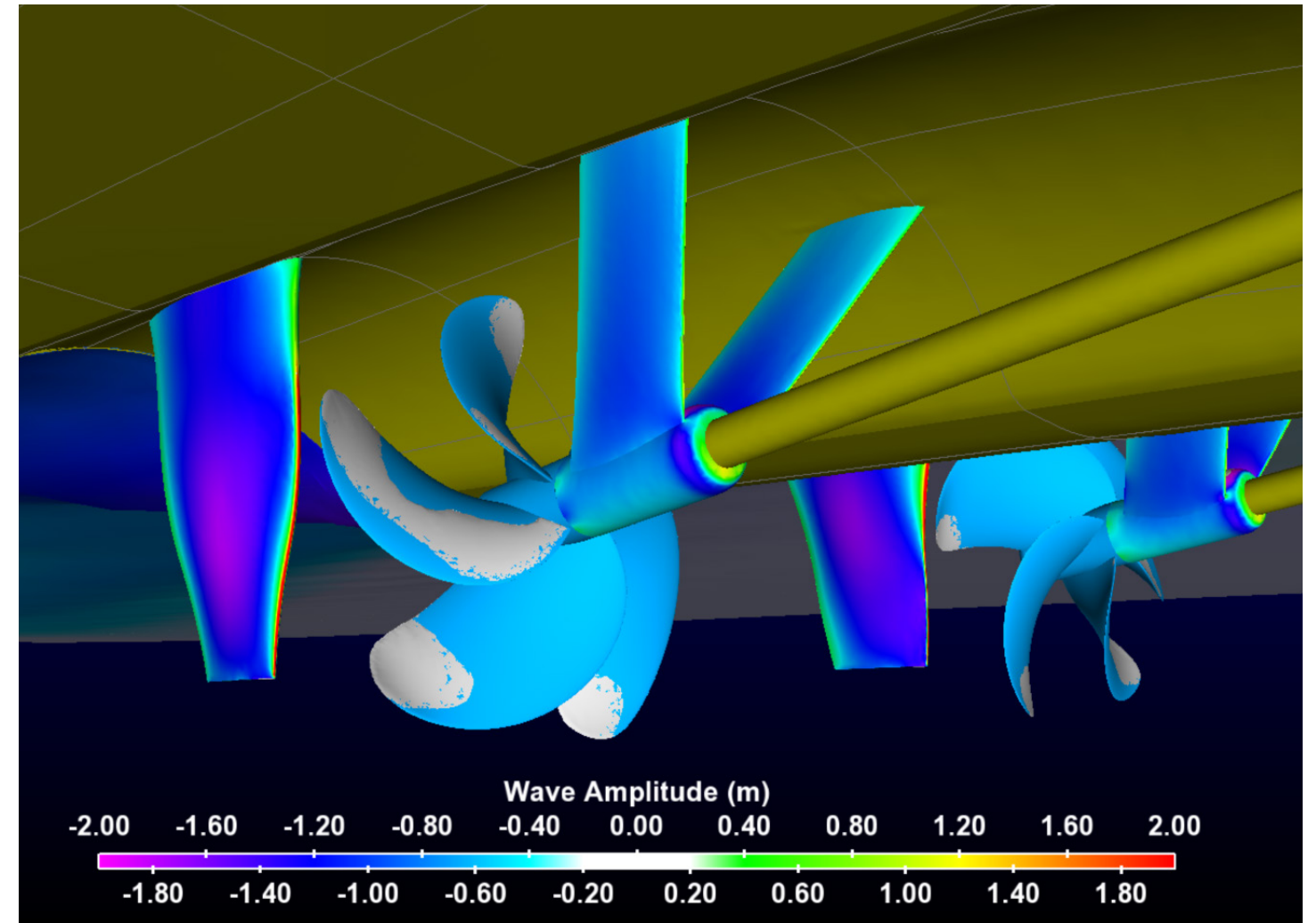
Propulsion Solutions

While our CX and Marlin propellers are custom designed for a boat's specific engine power, shaft RPM, and top speed, Michigan Wheel has the capability to go one step further. Through advanced computer modeling and simulation, our engineering team can examine a boat's wake and design a propeller specifically for that wake. Due to different hull shapes, shaft and strut configurations, and other differences, each boat design has its own wake characteristics. Wakes also change with speed as well as load and trim conditions.

Propellers operate in this region of disturbed water called the wake, and the conditions have a large effect on propeller efficiency and vibration characteristics. A propeller that is designed to take into account these conditions is called a wake-adapted propeller. Wake-adapted propellers offer significant efficiency gains, speed gains, and reductions in vibration.

For a long time, wake-adapted technology was only available through expensive model testing. The advent of high performance computers has allowed highly educated engineers to model the entire boat and appendages and run simulations to analyze the wake and its effect on propellers. Not only is it significantly less costly and less time consuming compared to model testing, but it also allows the propeller designer to study propeller and flow characteristics that would be impossible to measure with model testing.

Michigan Wheel has had great success designing and manufacturing wake-adapted propellers for pleasure craft, work boats, and patrol boats. Benefits compared to off the shelf propellers include reduced fuel costs, higher top speed, and greatly reduced vibrations.

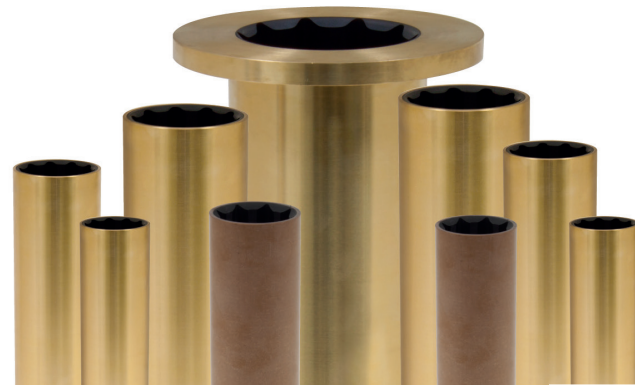


“**SIGNIFICANT REDUCTION IN FUEL COSTS;
SIGNIFICANT REDUCTION IN VIBRATION
AMPLITUDE; AND AN INCREASE IN TOP
SPEED ARE ALL BENEFITS TO MICHIGAN
WHEEL’S WAKE-ADAPTED PROPELLERS.**”

Excellence in Propulsion.



AQUALUBE BEARINGS



WHY CHOOSE THE MICHIGAN AQUALUBE?

- Consistent high quality
- High resistance to abrasion
- High grade materials
- Hydrodynamic wedge formation
- Engineering excellence
- Large warehouse inventory
- 100% inspection procedure

Our Product:

The Aqualube range of rubber sleeved bearings are designed for marine and industrial applications. The Bearings feature a specially formulated nitrile rubber which offers outstanding resistance to abrasion and wear.

Michigan Wheel USA's comprehensive range of standard brass shell bearings, with tolerances suited for American shaft and strut standards, will be stocked in shaft diameter sizes 1" through 10".

We can also quote, upon request, an expanded range of bearings including:

- Sizes for shafting up to 10" in diameter.
- Metric sizes from 20mm through 260mm.
- Flanged, non-metallic (phenolic) shelled, and spiral fluted bearings.

Principle of Operation:

Rubber and water make the perfect combination for a bearing material and a lubricant. The natural resilience of rubber gives the bearing its shock, vibration and noise absorption properties.

The unique shape of the Aqualube bearing strips allow a hydrodynamic water wedge to form between shaft and bearing, even at low shaft speeds.

Water is the perfect lubrication medium, particularly for marine craft. When the water enters the bearing through the longitudinal grooves it moves radially between the propeller shaft and the bearing face in a thin film. Once this film, or wedge, has developed, the shaft will not come into contact with the bearing.

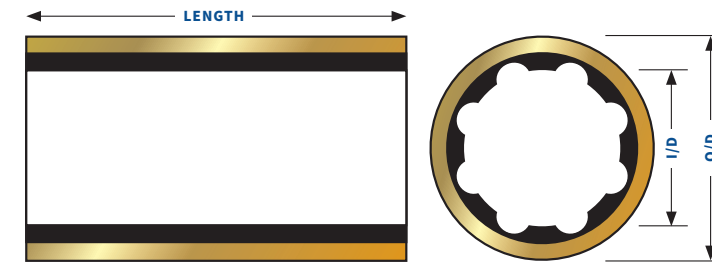
Excellence in Propulsion.

Unsure if this is the right propeller for you?
Contact your local Michigan Wheel Distributor, or the Michigan Wheel team to review your application.

Construction of AQUALUBE Bearings:

Aqualube bearings are molded from a specially compounded oil and chemical resistant nitrile rubber. The nitrile rubber demonstrates an excellent resistance to wear and abrasion and is also tough and durable. Bonding techniques developed by Michigan Wheel ensure that the strength of the bond to the shell is at least equal to the strength of the rubber itself.

The finished product has a smooth, shiny surface to the rubber lining which, when compared with similar products on the market, provides visual testament to the quality of the bearing. Aqualube bearing shells are manufactured from either centrifugally cast superior marine bronze or non-metallic (phenolic) material. Aqualube bearings can be supplied with integral cast flanges.



AQUALUBE SPIRAL BEARINGS

Available for order.

Abrasion Resistance:

The unique shape of the Aqualube bearing gives it an excellent resistance to abrasion. This helps to reduce wear on the bearing surfaces in environments where sand and other abrasive particles are held in suspension, as found in shallow water. The bearing is designed to let these abrasive particles pass over its surface and into the grooves where it is flushed out by the water feed pressure. This system prevents the particles from getting embedded into the bearing surface and causing severe wear on the propeller shaft.

Lubrication - Wear and Durability:

All types of water lubricated rubber bearings will eventually experience wear in service, even bearings operating in clean water. It is recommended that bearings should be inspected for wear whenever the vessel is hauled for storage or service. In cases where the bearing is operating in shallow water an annual inspection is recommended. Bearings fitted to struts and completely immersed pump bearings have adequate lubrication. However, where bearings are installed in a position where the water flow is marginal, they should be lubricated by a forced water flow system. This also applies to bearings which have to cope with low shaft speed and high loads.

Shaft Speed:

The minimum to maximum operating speed of an Aqualube bearing is in the range of 100 - 6,900 feet per minute (0.5 - 35 meters per second). For applications outside these parameters the Michigan Wheel technical department should be consulted as special provision for lubrication may be required.

Load and Deflection:

Aqualube water lubricated bearings have a Shore hardness of 70±3 and are suitable for operation in a temperature range of -13°F to 185°F (-25°C to 85°C). For temperatures above 86°F (30°C) bearing to shaft clearances may need to be adjusted. The load which can be carried by an Aqualube bearing is dependent upon the quality of the lubricating water, shaft tolerance and deflection of the shaft. A normal working load of 36 psi (2.5kgs/cm²) is acceptable.

Inspection:

Prior to shipping each bearing is subject to a 100% inspection procedure. Bearings are thoroughly inspected for dimensional accuracy, rubber hardness and integrity of bond between rubber and shell.



PHENOLIC BEARINGS



BEARING I.D.	O.D. TOLERANCE (P6)
METRIC	METRIC
20 mm - 35 mm	+0.026mm - +0.042mm
38 mm	+0.032mm - +0.051mm
40 mm - 45 mm	+0.032mm - +0.051mm
50 mm - 60 mm	+0.032mm - +0.051mm
65 mm - 75 mm	+0.037mm - +0.059mm
80 mm - 95 mm	+0.037mm - +0.059mm
96 mm - 100 mm	+0.043mm - +0.068mm
105 mm - 110 mm	+0.043mm - +0.068mm
115 mm - 125 mm	+0.043mm - +0.068mm
135 mm	+0.043mm - +0.068mm
140 mm - 150 mm	+0.050mm - +0.079mm
155 mm - 160 mm	+0.050mm - +0.079mm
165 mm - 170 mm	+0.050mm - +0.079mm
175 mm - 180 mm	+0.050mm - +0.079mm
190 mm - 260 mm	+0.056mm - +0.088mm

High-Performance Water Lubricated Aqualube Bearings

Michigan Wheel's Aqualube bearings offer a high quality solution for water lubricated shaft applications. Aqualube bearings are designed with longitudinal grooves that form a hydrodynamic wedge, or water film, between the shaft and the bearing, even during slow speed operation. This water film is capable of absorbing shock, and reducing vibration and noise.

Aqualube bearings are built from chemical and oil resistant nitrile rubber, and are available with brass and non-metallic (Phenolic) shells to fit many applications. Every bearing is inspected to ensure quality. Michigan Wheel stocks a large inventory of common sizes, and special sizes are available upon request.

Why Buy Aqualube Phenolic Bearings?

All Aqualube bearings are engineered to be compatible with metric or imperial shaft tolerances. 100% of the bearings produced are inspected for quality and must meet Michigan's strict quality standards before they are released to our customers. Phenolic shells are less reactive and can help reduce chances of corrosion in some applications such as aluminum hulls.

*Available in Metric & Imperial Sizes.
Phenolic, Brass, and Flanged styles available.*

*Unsure if this is the right propeller for you?
Contact your local Michigan Wheel Distributor, or the
Michigan Wheel team to review your application.*

PHENOLIC BEARINGS

IMPERIAL PHENOLIC BEARINGS				IMPERIAL PHENOLIC BEARINGS				IMPERIAL PHENOLIC BEARINGS			
PART NUMBER	ID	OD	LENGTH	PART NUMBER	ID	OD	LENGTH	PART NUMBER	ID	OD	LENGTH
961020	3/4"	1-1/4"	3"	961970	1-7/8"	2-15/16"	7-1/2"	962940	3-3/4"	5"	15"
961060	7/8"	1-1/4"	3-1/2"	962000	2"	2-5/8"	8"	962960	3-3/4"	5-1/4"	15"
961070	7/8"	1-3/8"	3-1/2"	962010	2"	2-3/4"	8"	962980	3-7/8"	5-1/4"	15-1/2"
961080	7/8"	1-1/2"	3-1/2"	962020	2"	3"	8"	963020	4"	5"	16"
961102	1"	1-1/4"	4"	962060	2-1/8"	2-3/4"	8-1/2"	963030	4"	5"	16-1/4"
961110	1"	1-3/8"	4"	962070	2-1/8"	2-15/16"	8-1/2"	963040	4"	5-1/4"	16"
961120	1"	1-1/2"	4"	962100	2-1/4"	2-15/16"	9"	963060	4-1/8"	5-1/4"	16-1/2"
961130	1"	1-5/8"	4"	962120	2-1/4"	3"	9"	963080	4-1/4"	5-1/2"	17"
961150	1"	2"	4"	962140	2-1/4"	3-1/8"	9"	963100	4-3/8"	5-3/4"	17-1/2"
961300	1-1/8"	1-1/2"	4-1/2"	962160	2-1/4"	3-3/8"	9"	963120	4-1/2"	5-1/2"	18"
961320	1-1/8"	1-5/8"	4-1/2"	962220	2-3/8"	3-3/8"	9-1/2"	963140	4-1/2"	5-3/4"	18"
961340	1-1/8"	1-3/4"	4-1/2"	962320	2-1/2"	3-1/8"	10"	963180	4-5/8"	6-1/8"	18-1/2"
961360	1-1/8"	2"	4-1/2"	962330	2-1/2"	3-1/4"	10"	963200	4-3/4"	6-1/8"	19"
961500	1-1/4"	1-1/2"	5"	962340	2-1/2"	3-3/8"	10"	963220	4-7/8"	6-1/8"	19-1/2"
961520	1-1/4"	1-5/8"	5"	962350	2-1/2"	3-1/2"	10"	963320	5"	6-1/8"	20"
961540	1-1/4"	1-3/4"	5"	962420	2-5/8"	3-3/8"	10-1/2"	963340	5"	6-1/2"	20"
961560	1-1/4"	2"	5"	962520	2-3/4"	3-3/8"	11"	963360	5-1/4"	6-3/4"	21"
961580	1-1/4"	2-1/8"	5"	962530	2-3/4"	3-1/2"	11"	963370	5-1/4"	7"	21"
961700	1-3/8"	1-7/8"	5-1/2"	962540	2-3/4"	3-3/4"	11"	963400	5-3/8"	6-3/4"	21-1/2"
961720	1-3/8"	2"	5-1/2"	962580	2-7/8"	3-1/2"	11-1/2"	963410	5-3/8"	7"	21-1/2"
961740	1-3/8"	2-1/8"	5-1/2"	962620	3"	3-3/4"	12"	963420	5-1/2"	7"	22"
961760	1-3/8"	2-3/8"	5-1/2"	962640	3"	4"	12"	963440	5-1/2"	7-1/4"	22"
961800	1-1/2"	2"	6"	962680	3-1/8"	4-1/4"	12-1/2"	963500	5-5/8"	7"	22-1/2"
961820	1-1/2"	2-3/8"	6"	962720	3-1/4"	4"	13"	963620	5-3/4"	7"	23"
961860	1-5/8"	2-1/8"	6-1/2"	962740	3-1/4"	4-1/4"	13"	963660	5-7/8"	7-1/2"	24"
961870	1-5/8"	2-5/8"	6-1/2"	962780	3-3/8"	4-1/2"	13-1/2"	963720	6"	7-1/2"	24"
961900	1-3/4"	2-3/8"	7"	962820	3-1/2"	4-1/4"	14"				
961920	1-3/4"	2-5/8"	7"	962840	3-1/2"	4-1/2"	14"				
961940	1-3/4"	2-1/2"	7"	962880	3-5/8"	4-1/2"	14-1/2"				
961960	1-7/8"	2-5/8"	7-1/2"	962920	3-3/4"	4-1/2"	15"				

METRIC PHENOLIC BEARINGS				METRIC PHENOLIC BEARINGS			
PHENOLIC PART NUMBER	ID	OD	LENGTH	PHENOLIC PART NUMBER	ID	OD	LENGTH
AMNM025	25MM	40MM	100MM	AMNM070	70MM	90MM	280MM
AMNM028	28MM	42MM	112MM	AMNM075	75MM	95MM	300MM
AMNM030A	30MM	40MM	120MM	AMNM075A	75MM	100MM	300MM
AMNM030	30MM	45MM	120MM	AMNM080	80MM	100MM	320MM
AMNM032	32MM	45MM	128MM	AMNM085	85MM	105MM	340MM
AMNM035	35MM	50MM	140MM	AMNM090	90MM	110MM	360MM
AMNM035B	35MM	55MM	140MM	AMNM090C	90MM	115MM	360MM
AMNM038	38MM	55MM	152MM	AMNM095	95MM	115MM	380MM
AMNM040A	40MM	50MM	160MM	AMNM100	100MM	125MM	400MM
AMNM040	40MM	55MM	160MM	AMNM105	105MM	130MM	420MM
AMNM045	45MM	65MM	180MM	AMNM110	110MM	135MM	440MM
AMNM050	50MM	70MM	200MM	AMNM115	115MM	145MM	460MM
AMNM055	55MM	75MM	220MM	AMNM120A	120MM	155MM	480MM
AMNM060	60MM	3-1/4"	240MM	AMNM130	130MM	170MM	520MM
AMNM060	60MM	80MM	240MM	AMNM140	140MM	180MM	560MM
AMNM065	65MM	85MM	260MM				

“AQUALUBE BEARINGS ARE MOLDED FROM A SPECIALLY COMPOUNDED OIL AND CHEMICAL RESISTANT NITRILE RUBBER. THE NITRILE RUBBER DISPLAYS AN EXCELLENT RESISTANCE TO WEAR AND ABRASION AND IS ALSO TOUGH AND DURABLE. BONDED TECHNIQUES DEVELOPED BY MICHIGAN WHEEL ENSURE THAT THE STRENGTH OF THE BOND TO THE SHELL IS AT LEAST EQUAL TO THE STRENGTH OF THE RUBBER ITSELF.”

Excellence in Propulsion.





Advanced Technology in Electronic 3-D Propeller Analysis

Experienced propeller repair facilities prefer the Hale MRI for performing detailed and accurate propeller measurement. With the MRI's comprehensive reporting capability, the propeller technician can record and

document the exact condition of a customer's propeller. The resulting concise and visual summary can assist customers in determining the optimal repair or reconditioning service best suited for their needs



Accurate recording of propeller condition. Precise measurements of: pitch, rake, track, spacing, geometry, and camber.

MRI Features Include:

- Compatibility with Windows 7.
- Durable rotary and linear encoders that provide continuous and highly accurate 3D readings to the computer for analysis and recording.
- Measurements and reporting of Pitch, Rake, Track, Angular Spacing, Section Face Camber, and other geometric features for ANY propeller.
- Ability to compare one propeller to another, such as left hand vs. right hand rotation, or two of the same rotation. This allows for the exact matching of a propeller set.
- Permanent computer record of pre and post repair activities, which can be transferred to another MRI user via e-mail or data storage devices. With this information, any MRI user has the necessary details to provide a subsequent repair or recondition service resulting in a finished propeller closely matching the original. If replacement is necessary, the detailed dimensional information can be supplied to the propeller manufacturer for review and determination of an optimal new propeller.

COMPANY HISTORY

Today, Michigan Wheel offers tens of thousands of variations of propellers, and still retains its leadership position in original equipment and aftermarket propeller supply. The “Michigan” name is recognized and demanded worldwide. Much of

the credit goes to the loyal and supportive Michigan Wheel distributor and builder base, and with the dedicated Michigan Wheel employees.

1903

Michigan Wheel is organized by Harry Perkins as a machine shop for the production of a variety of items, including marine propellers.

1934

Hall & Stavert is founded as a two man partnership. It will grow to become the largest propeller manufacturer in Canada.

1949

Michigan Wheel Company purchases Federal Propellers, uniting the primary suppliers of recreational propellers. With a combined volume in production, Michigan Wheel Company is able to incorporate efficient manufacturing processes.

1970-1979

Under new ownership by the Dana Corporation, the Michigan Wheel Company becomes Michigan Wheel Corporation, and buys Coolidge Propeller in Seattle, WA; and Gulf Coast Propeller in Pascagoula, MS.

1980-1989

Computer-controlled milling gains favor, and Michigan Wheel takes advantage as one of the first to implement NC machining. Michigan Wheel’s CAD-CAM abilities are unsurpassed in the ranks of propeller manufacturers.

1997

Michigan Wheel acquires Canadian propeller competitor Hall & Stavert, manufacturer of the HyTorq Propeller series.

2005

Michigan Wheel opens a facility in the UK, Michigan Wheel - Europe, launching a new range of inboard propellers - GOLD Line.

2009

Under new ownership (The Anderson Group), Michigan Wheel Corporation is reorganized as Michigan Wheel Marine.

2010

Michigan Wheel opens a facility in Dubai, United Arab Emirates, Michigan Wheel MEAA.

2010

Michigan Wheel acquires UK bearing manufacturer Shearwater Marine, and introduces Aqualube to the American marketplace.

2013

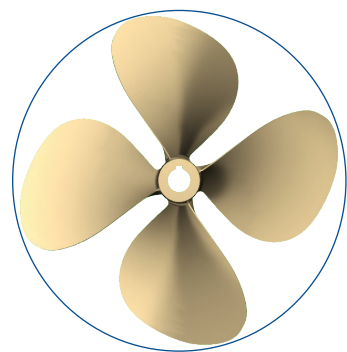
Michigan Wheel and Nakashima Propeller form a strategic partnership, allowing Michigan Wheel to offer propellers up 13m in diameter, controllable pitch propellers, and thrusters.



“ WITH OVER A CENTURY OF HISTORY, MICHIGAN WHEEL HAS BECOME SYNONYMOUS WITH RELIABLE, QUALITY PROPELLERS. DESPITE CHANGES IN OWNERSHIP AND CYCLES IN THE MARINE INDUSTRY, MICHIGAN WHEEL HAS REMAINED A DEDICATED SUPPLIER OF MARINE PROPELLERS TO THE RECREATIONAL AND COMMERCIAL MARINE INDUSTRY. ”

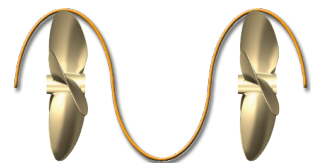
Excellence in Propulsion.

PROPELLER TERMS AND DEFINITIONS



DIAMETER

The diameter of the imaginary circle scribed by the blade tips as the propeller rotates.



PITCH

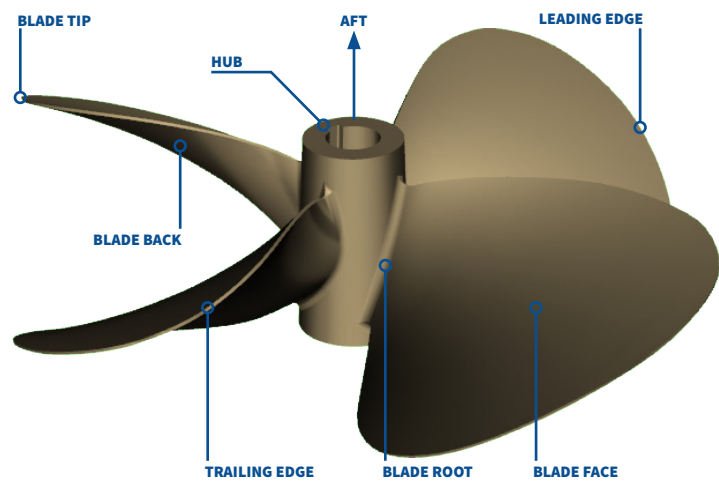
The linear distance that a propeller would move in one revolution with no slippage.

BLADE NUMBER

Equal to the number of blades on the propeller. (4-blade shown.)

RADIUS

The distance from the axis of rotation to the blade tip. The radius multiplied by two is equal to the diameter.



LEADING EDGE

The edge of the propeller blade adjacent to the forward end of the hub. When viewing the propeller from astern, this edge is furthest away. The leading edge leads into the flow when providing forward thrust.

TRAILING EDGE

The edge of the propeller adjacent to the forward end of the hub. When viewing the propeller from astern, this edge is closest. The trailing edge retreats from the flow when providing forward thrust.

BLADE TIP

Maximum reach of the blade from the center of the hub. Separates the leading and trailing edges.

BLADE ROOT

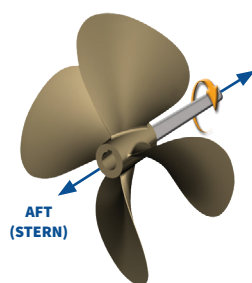
Fillet area. The region of transition from the blade surfaces and edges to the hub periphery. The area where the blade attaches to the hub.

BLADE BACK

Suction side. Forward side of the blade (surface facing the bow).

BLADE FACE

Pressure side; pitch side. Aft side of the blade (surface facing the stern).



ROTATION

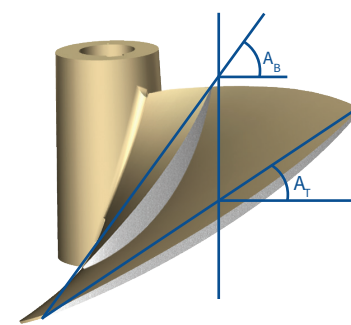
When viewed from the stern (facing forward): Right-Hand propellers rotate clockwise to provide forward thrust; Left-Hand propellers rotate counter-clockwise.

HUB

Solid cylinder located at the center of the propeller. Bored to accommodate the engine shaft. Hub shapes include cylindrical, conical, radius, and barreled.

CUP

Small radius of curvature located on the trailing edge of the blade.



PITCH REFERENCE LINE

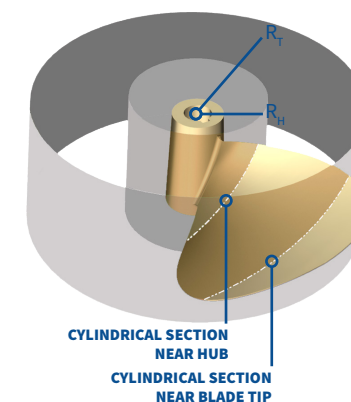
Reference line used to establish the geometric pitch angle for the section. This line may pass through the leading and trailing edges of the section and may be equivalent to the chord line. (Image shown.)

TRACK

The absolute difference of the actual individual blade height distributions to the other blade height distributions. Always a positive value, and represents the spread between individual blade height distributions.

GEOMETRIC PITCH ANGLE

The angle between the pitch reference line and a line perpendicular to the propeller axis of rotation.



CYLINDRICAL SECTION

A cross section of a blade cut by a circular cylinder whose centerline is the propeller axis of rotation.

r_t = The radius of a cutting cylinder near the hub. The cylindrical section near the hub is located on the surface of this cylinder.

r_h = The radius of a cutting cylinder near the tip. The cylindrical section near the tip is located on the surface of this cylinder.

CONTROLLABLE PITCH PROPELLER

The propeller blades mount separately to the hub, each on an axis of rotation, allowing a change of pitch in the blades and thus the propeller.

FIXED PITCH PROPELLER

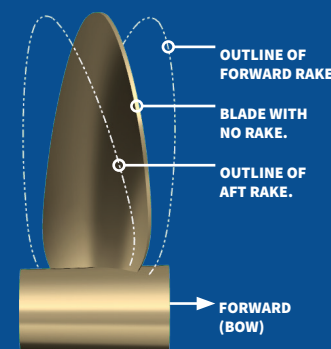
The propeller blades are permanently mounted and do not allow a change in the propeller pitch.

CONSTANT PITCH PROPELLER

The propeller blades have the same value of pitch from root to tip, and from leading edge to trailing edge.

VARIABLE PITCH PROPELLER

The propeller blades have sections designed with varying values of local face pitch to pitch.



AFT RAKE

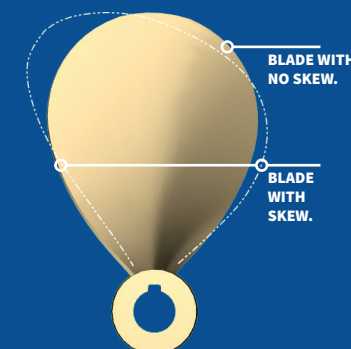
Positive rake. Blades slant toward the aft end of the hub.

RAKE

The fore or aft slant of a blade with respect to a line perpendicular to the propeller axis of rotation.

FORWARD RAKE

Negative rake. Blades slant toward the forward end of the hub.



AFT SKEW

Positive skew. Blade sweep in direction opposite of rotation.

SKEW

The transverse sweeping of a blade such that viewing the blades from fore or aft shows an asymmetrical shape.

FORWARD SKEW

Negative skew. Blade sweep in the same direction as rotation.

Name: _____ Address: _____ Project: _____ Date: _____
 Company: _____ City/State/Zip: _____ Email: _____ Phone/Fax: _____

Boat Information

Manufacturer: _____ Model: _____ **Pleasure:** **Commercial:**
 New Model Existing Model Alternative Power Configuration

Boat Type - Use: _____ For Fishing, Tug or, Pushboat - Working Speed: _____

Overall Length (LOA): _____ Waterline Length (LWL): _____ Displacement: _____ Pockets: _____
 Beam (B): _____ Draft (T): _____ LCG from Stern: _____
 Deadrise Angle at Stern: _____ Running Trim Angle: _____ Shaft Inclination Angle: _____ Tunnels: _____

Distance: Shaft Centerline @ Propeller to Bottom: _____ Maximum Desired Propeller Diameter: _____ Desired Number of Blades: _____
 Distance: Shaft Centerline @ Propeller to Waterline: _____ Projected Vessel Speed: _____ Other: _____

Engine Information

Manufacturer: _____ Single: Triple: Other: Year: _____ Diesel: Gas:
 Engine Rating _____ Shaft: _____ Horsepower _____ Continuous: _____ **Desired Engine RPM:** _____
 Brake: _____ Intermittent: _____ RPM _____ Gear Reduction Ratio: _____

Shaft - Other Information

Shaft-Bore Diameter: _____ Full Taper Hub Requested
 Wake Fraction (WF): _____

Current or Previous Propulsion System Information for This Vessel

Engine Information

Manufacturer: _____ Single: Twin: Triple: Other: Year: _____ Diesel: Gas:
 Model: _____ Horsepower _____ RPM _____

Engine Rating _____ Shaft: _____ Continuous: _____ Gear Reduction Ratio: _____
 Brake: _____ Intermittent: _____ RPM _____

Propeller Information

Manufacturer: _____ Model: _____ Diameter: _____ Pitch: _____ Num. blades: _____ Area: _____
 Material: Bronze Stainless Steel TE Cup Propeller blade tip to hull clearance: _____
 NiBrAl Other No TE Cup Notes: _____

Performance

Full Throttle: _____ RPM _____ Speed _____
 Cruise: _____ RPM _____

Vessel Displacement during performance run: _____

Any existing performance information assists in providing a more accurate propeller suggestion.

Seller warrants to Buyer that the supplies or articles furnished hereunder shall at time of shipment conform to and be in accordance with the specifications, if any, referred to in this document. Propeller warranty will be considered for any claims against defects in material and workmanship within a period of one year from date of purchase. No claims will be allowed for propellers modified from factory standards. Unless certified by Seller's engineering department, performance expectation shortfall, or incorrect recommendation of propeller size, are not due cause for warranty claim. Seller's obligation under this warranty is limited to Seller's repair or replacement, at Seller's sole discretion, of those goods sold by Seller to Buyer that do not satisfy this warranty. Written notice of the warranty claim must be given to Seller by Buyer within fifteen (15) days after the warranty claim is discovered. Buyer shall obtain R.G.A. number (Return Goods Authorization) and directive of incoming transportation from Seller. Return shipment shall be prepaid at Buyer's expense and shall occur within (10) days after receipt by Buyer of Seller's written authorization. This warranty sets forth Seller's obligations and Buyer's exclusive remedy for defective products.

The determination of whether a defect exists shall be made solely by Seller. Buyer shall not return any goods to Seller until Seller has been provided a reasonable opportunity to inspect and sample the goods to determine whether a valid warranty claim exists and whether the goods should be repaired or replaced. In any event, Buyer shall not return any goods until authorized in writing by Seller.

Notwithstanding any other provision in the document, Seller expressly disclaims and excludes all other warranties, expressed or implied, including the warranties of merchantability and fitness for particular purpose and also disclaims and excludes all liability for incidental, consequential, indirect or any other special damages, including lost profits, tor breach of warranty or of contract or otherwise.



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