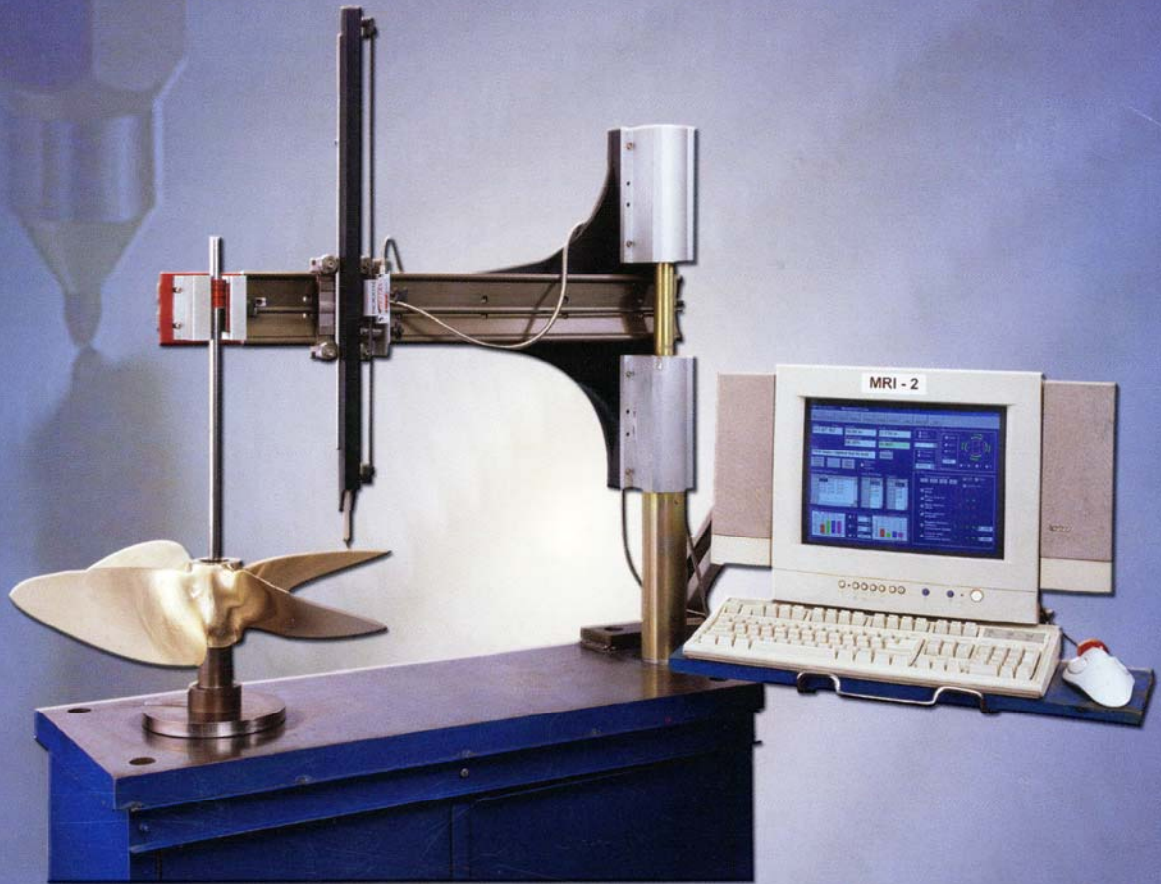


Hale

MRI

Measurement Recording Instrument



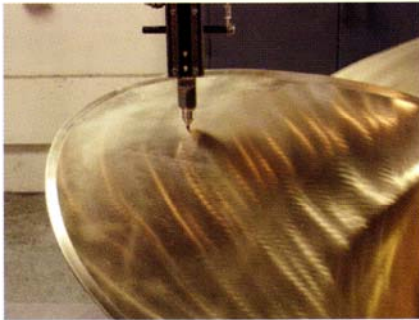
Michigan
Wheel Corporation

**Advanced Technology in Electronic
3-D Propeller Analysis**

MRI Features:

- Linear transducers that transmit extremely precise 3-D data to the computer.
- Measurements and reporting of **Pitch, Rake, Track, Spacing, Geometry, and Camber of ANY propeller.**
- Comparison of one propeller to another (right to left or two of the same rotation), enabling exact match of a set.
- Permanent computer record of pre and post repair effort, exportable via e-mail or floppy disc to any MRI user to permit exact duplicate of previous repair, or, supplied to manufacturer, to permit exact duplicate replacement manufacture.

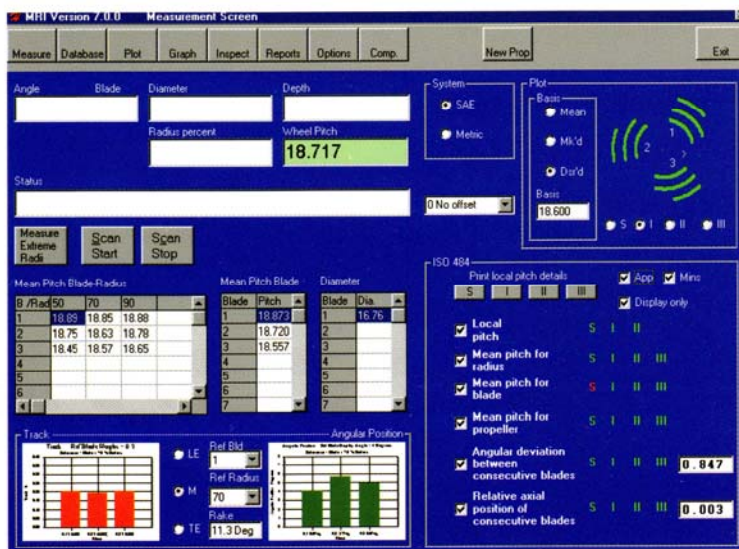
Experienced propeller shops prefer the Hale MRI. With the MRI reporting the propeller shop can get absolute recognition of propeller condition. With that data, the customer may be given a choice of different levels of reconditioning.



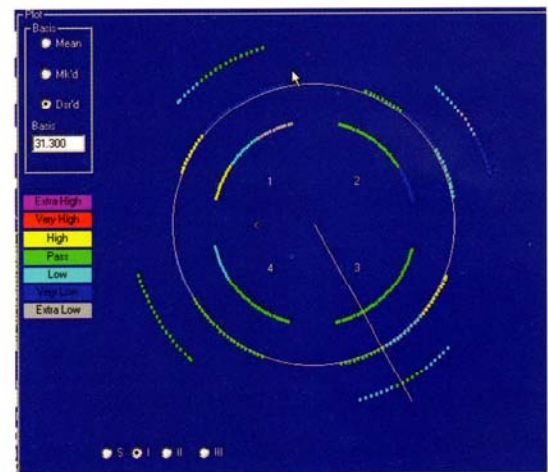
* Restore to original

* Restore and adjust for operating condition

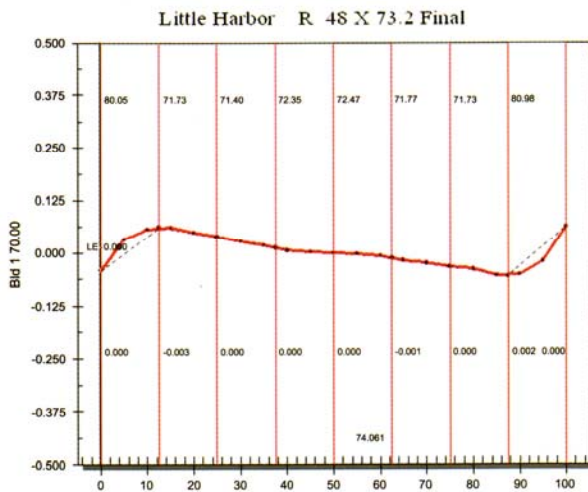
* Restore and modify optimize performance



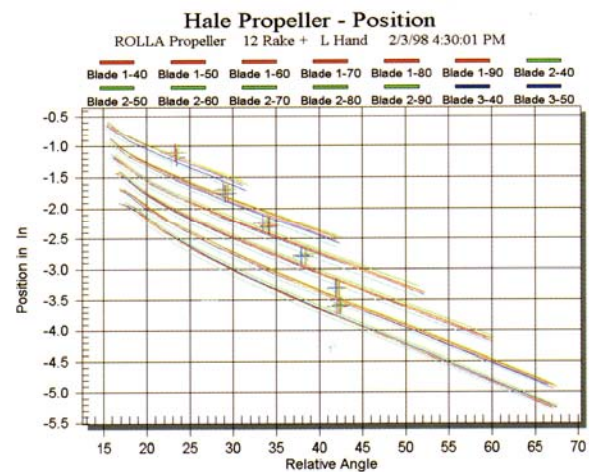
Measurement Screen - combines all MRI screens into one "easy to read" screen. Allows a quick reference for the technician that is doing the repair.



Plot Screen - As probe tip moves, so moves the diameter ring. The technician can turn propeller until diameter ring overlays against radius line's color coded pitch reading, showing the technician exactly where propeller is out and by how much.



Comparison Graph - compares actual pitch of propeller against manufacturers designed pitch. Black line is designed pitch, Red line is what propeller shows as actual pitch.



Position Screen - Check rake and track from blade to blade.

Michigan Wheel completed propeller MRI inspection report.



Federal 32 L 48 CX-400 9/24/02

Customer Bore

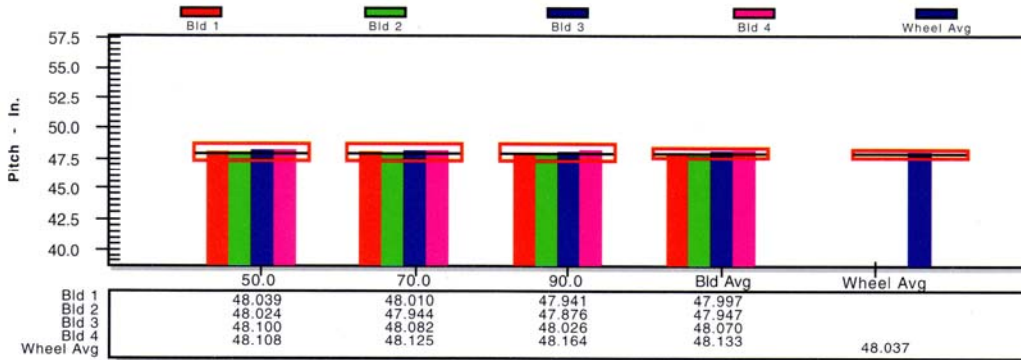
VIKING YACHT CO.
2 3/4

Part Number
Material

355997
NiBrAl

Serial Number
Cupping

64285
6 - .089



Local Pitch: LE< >TE

Pitch per Blade at Radius - Average Pitch per Blade - Average Pitch for Wheel

r/R	Blade 1			Blade 2			Blade 3			Blade 4		
50.0%	48.27	47.94	47.91	48.32	47.87	47.88	48.19	48.05	48.05	48.31	48.06	47.95
70.0%	48.16	47.98	47.90	48.02	47.90	47.92	48.22	48.00	48.03	48.29	48.08	48.01
90.0%	48.05	47.95	47.83	47.93	47.93	47.77	47.96	48.08	48.04	48.21	48.10	48.18

Radius / Diameter - Track - Chord Length:

Blade	Rad / Dia.	Track	50.0 % Rad.	70.0 % Rad.	90.0 % rad.
1	16.02 / 32.03	0.000	14.02	16.24	12.09
2	16.05 / 32.09	-0.018	14.03	16.29	12.08
3	16.05 / 32.10	-0.022	14.09	16.29	12.20
4	16.04 / 32.07	-0.030	14.10	16.30	12.26

Tolerance List Basis = 48 In Diameter = 32 In

	Radius	Local Pitch	Section Pitch	Blade Avg. Pitch	Prop Avg. Pitch	Track
	0.3 %	+/- 0.05 In	16.0 / 15.95 In			
	2 %	+/- 0.96 In	48.96 / 47.04			
	1.5 %	+/- 0.72 In	48.72 / 47.28 In			
	1 %	+/- 0.48 In	48.48 / 47.52 In			
	0.75 %	+/- 0.36 In	48.36 / 47.64 In			
		0.32 In				

ACCEPTABLE	YES	NO
Blade Surface		
Blade Edges		
Balance		
Thickness		
Bore/Key		
Exceptions		
Approval		Date

Why select an MRI Shop?

- The MRI shops are staffed by propeller repair professionals, with years of developed repair skills.
- The MRI is an instrument that gives the shop accurate information to enhance their repair capability.
- Repair with MRI creates a detailed report of propeller condition. Both the shop and boat owner have a clear future reference.
- Once desired performance is obtained, future propeller repair or manufacture can match an individual MRI file.
- On full custom Propellers the precision MRI system is necessary to fully integrate sophisticated design and permit repair. The MRI system can recognize and apply original design data supplied by the propeller manufacturer. The MRI can also interpret to the original inspection reports typically supplied with full custom propellers.
- On both custom and standard series propellers, the MRI provides information from which the propeller shop and customer can address performance issues. Properly restored or corrected propellers can:

* Synchronize propeller loading

* Improve speed and fuel economy

* Minimize vibration and noise.

No matter where you are, there is a MRI shop near you.

Hale
MRI




The Hale MRI is distributed by Michigan Wheel Corporation. Technical support is supplied by MWC and Hale Propeller.

Units are supplied complete with stand, table, arbors, measurement arm, computer and computer monitor. On site set-up and training is typically available.

Base model HP-50, measuring from 10" through 50" diameter propellers, is available from MWC stock. Units of different scale are available on a custom order basis; units measuring to 150" diameter have been built.

For further detail and a listing of users for the Hale MRI units, check www.halepropeller.com or www.miwheel.com.

For pricing and availability contact Michigan Wheel Corporation.

Michigan Wheel Corporation 

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E-mail: info@miwheel.com • Website: www.miwheel.com