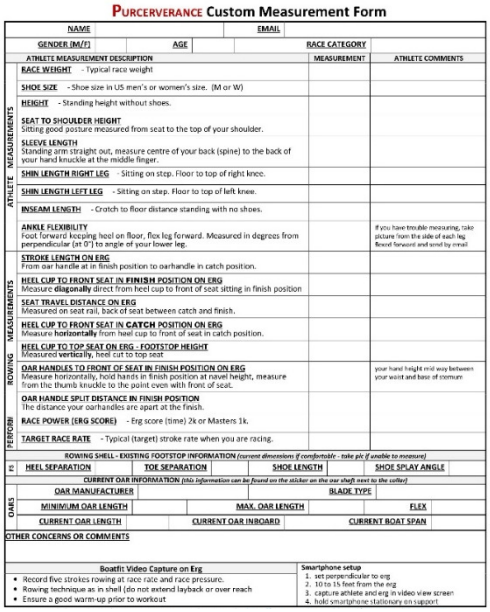
Boatfit - Custom Rigging

Custom rigging is the process of analyzing an individual's rowing technique and anthropometric measurements, including height, weight, limb lengths, flexibilities, and rowing measurements (Fitdata), to determine boat, rigger, and oar setup. The custom setup will provide comfort and efficiency to improve performance. Once the athlete has experience with the new rigging, follow-up Purcerverance video analysis will identify possible improvements to the rigging based on the athlete's rowing technique and power application. The Boatfit process is the ultimate in equipment preparation to allow the athlete to achieve maximum performance.



PURCERVERANCE Custom Measurement Form

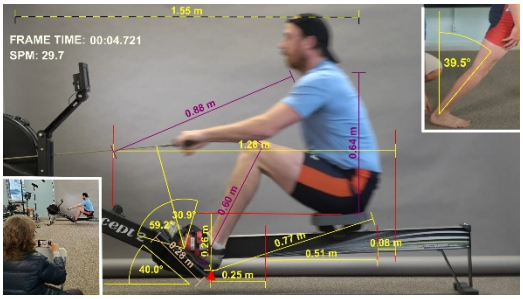
NAME		EMAIL	
GENDER (M/F)	AGE	RACE CATEGORY	
ATHLETE MEASUREMENT DESCRIPTION		MEASUREMENT	ATHLETE COMMENTS
ATHLETE MEASUREMENTS	RACE WEIGHT - Typical race weight		
	SHOE SIZE - Shoe size in US men's or women's size. (M or W)		
	HEIGHT - Standing height without shoes.		
	SEAT TO SHOULDER HEIGHT Sitting good posture measured from seat to the top of your shoulder.		
	SLEEVE LENGTH Standing arm straight out, measure centre of your back (spine) to the back of your hand knuckle at the middle finger.		
	SHIN LENGTH RIGHT LEG - Sitting on step. Floor to top of right knee.		
	SHIN LENGTH LEFT LEG - Sitting on step. Floor to top of left knee.		
	INSEAM LENGTH - Crotch to floor distance standing with no shoes.		
	ANKLE FLEXIBILITY Foot forward keeping heel on floor, flex leg forward. Measured in degrees from perpendicular (at 0°) to angle of your lower leg.		If you have trouble measuring, take picture from the side of each leg flexed forward and send by email
	STROKE LENGTH ON ERG From oar handle at in finish position to oarhandle in catch position.		
ROWING MEASUREMENTS	HEEL CUP TO FRONT SEAT IN FINISH POSITION ON ERG Measure diagonally direct from heel cup to front of seat sitting in finish position		
	SEAT TRAVEL DISTANCE ON ERG Measured on seat rail, back of seat between catch and finish.		
	HEEL CUP TO FRONT SEAT IN CATCH POSITION ON ERG Measure horizontally from heel cup to front of seat in catch position.		
	HEEL CUP TO TOP SEAT ON ERG - FOOTSTOP HEIGHT Measured vertically, heel cut to top seat		
	OAR HANDLES TO FRONT OF SEAT IN FINISH POSITION ON ERG Measure horizontally, hold hands in finish position at navel height, measure from the thumb knuckle to the point even with front of seat.		your hand height mid way between your waist and base of sternum
	OAR HANDLE SPLIT DISTANCE IN FINISH POSITION The distance your oarhandles are apart at the finish.		
PERFORM	RACE POWER (ERG SCORE) - Erg score (time) 2k or Masters 1k.		
	TARGET RACE RATE - Typical (target) stroke rate when you are racing.		
ROWING SHELL - EXISTING FOOTSTOP INFORMATION (current dimensions if comfortable - take pic if unable to measure)			
FS	HEEL SEPARATION	TOE SEPARATION	SHOE LENGTH / SHOE SPLAY ANGLE
CURRENT OAR INFORMATION (this information can be found on the sticker on the oar shaft next to the collar)			
OARS	OAR MANUFACTURER	BLADE TYPE	
	MINIMUM OAR LENGTH	MAX. OAR LENGTH	FLEX
	CURRENT OAR LENGTH	CURRENT OAR INBOARD	CURRENT BOAT SPAN
OTHER CONCERNS OR COMMENTS			
Boatfit Video Capture on Erg		Smartphone setup	
• Record five strokes rowing at race rate and race pressure. • Rowing technique as in shell (do not extend layback or over reach • Ensure a good warm-up prior to workout		1. set perpendicular to erg 2. 10 to 15 feet from the erg 3. capture athlete and erg in video view screen 4. hold smartphone stationary on support	

1. Athlete Data Submission

The first step in the Boatfit process is for the athlete to measure and submit their Fitdata as outlined on the Custom Measurement Form, Figure A. The form outlines athlete measurements and provides space for information about the boat and oars. An optional video erg submission, easily captured from a cellphone, offers additional information about the athlete's body positions and rowing technique. The form provides space for the athlete to commend and add any specific concerns about their boat setup and rigging.

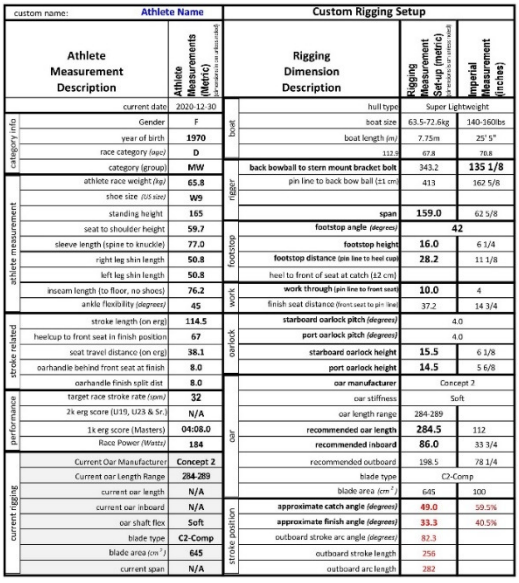
2. Rigging Setup Analysis

Purcerverance analyzes the Fitdata and video (Figure 2) to determine a rigging setup that provides comfort and efficiency. The Boatfit process connects the rigging dimension for length, load, stroke position, and athlete comfort to the submitted Fitdata. For example, the athlete's stroke length, sleeve length, power capacity, body weight, and target stroke rate determine the span rigging dimension. Other dimensions such as footstop height and angle relate to shoe size, ankle flexibility, shin and trunk lengths, and rowing technique. Once calculated, the Custom Rigging Setup sheet (Figure 3) provides the athlete and coach with all information required.



3. Adjust Boat and Oar to Setup Dimensions

The Custom Rigging Setup sheet provides dimensions to adjust the boat, rigger, and oar for comfort and efficiency. The measurements detail a rigging length and load to match the athlete's capacity. The setup shows the new stroke arc angle and position to maximize blade connection in the water. Once rigged to the dimensions on the sheet, the boat is ready to go.

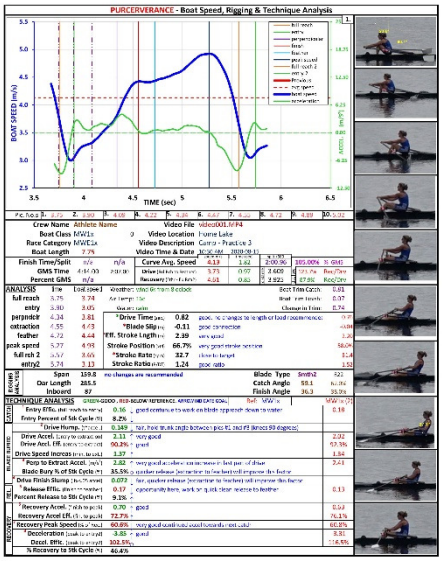


custom name: Athlete Name

	Athlete Measurement Description	Athlete Measurements (Metric) (kg, cm, sec, watts, m/s, m/s/s, m/s/s/s)		Rigging Dimension Description	Rigging Measurement Set-up (metric) (cm, kg, sec, watts, m/s, m/s/s)	Imperial Measurement (inches)
	current date	2020-12-30				
			boat	hull type	Super Lightweight	
category info	Gender	F		boat size	63.5-72.6kg	140-160lbs
	year of birth	1970		boat length (m)	7.75m	25' 5"
	race category (age)	D			112.8	67.8	70.8
	category (group)	MW	rigger	back bowball to stern mount bracket bolt	343.2	135 1/8
athlete measurement	athlete race weight (kg)	65.8		pin line to back bow ball (±1 cm)	413	162 5/8
	shoe size (US size)	W9				
	standing height	165		span	159.0	62 5/8
	seat to shoulder height	59.7	footstop	footstop angle (degrees)	42	
	sleeve length (spine to knuckle)	77.0		footstop height	16.0	6 1/4
	right leg shin length	50.8		footstop distance (pin line to heel cup)	28.2	11 1/8
	left leg shin length	50.8		heel to front of seat at catch (±2 cm)		
	inseam length (to floor, no shoes)	76.2	work	work through (pin line to front seat)	10.0	4
	ankle flexibility (degrees)	45		finish seat distance (front seat to pin line)	37.2	14 3/4
stroke related	stroke length (on erg)	114.5	oarlock	starboard oarlock pitch (degrees)	4.0	
	heelcup to front seat in finish position	67		port oarlock pitch (degrees)	4.0	
	seat travel distance (on erg)	38.1		starboard oarlock height	15.5	6 1/8
	oarhandle behind front seat at finish	8.0		port oarlock height	14.5	5 6/8
	oarhandle finish split dist	8.0	oar	oar manufacturer	Concept 2	
performance	target race stroke rate (spm)	32		oar stiffness	Soft	
	2k erg score (U19, U23 & Sr.)	N/A		oar length range	284-289	
	1k erg score (Masters)	04:08.0		recommended oar length	284.5	112
	Race Power (Watts)	184		recommended inboard	86.0	33 3/4
current rigging	Current Oar Manufacturer	Concept 2		recommended outboard	198.5	78 1/4
	Current oar Length Range	284-289		blade type	C2-Comp	
	current oar length	N/A		blade area (cm^2)	645	100
	current oar inboard	N/A	stroke position	approximate catch angle (degrees)	49.0	59.5%
	oar shaft flex	Soft		approximate finish angle (degrees)	33.3	40.5%
	blade type	C2-Comp		outboard stroke arc angle (degrees)	82.3	
	blade area (cm^2)	645		outboard stroke length	256	
	current span	N/A		outboard arc length	282	

4. Follow-up Video Analysis

Once the athlete is comfortable with the new rigging, a follow-up video of the athlete rowing in the shell is used for further analysis. Video captured will quantify the rigging factors with values based on rowing technique and power application criteria. Analysis factors of Drive Time, Blade Slip, Effective Stroke Length, Stroke Position, Stroke Rate, and Stroke Ratio provide insight into rigging efficiencies. The video analysis also provides a boat speed curve that identifies new speed opportunities when linked to the rowing technique. Athletes receive a summary to fine-tune the rigging and recommendations for rowing technique modifications for performance improvement.



5. Opportunities

The Purcerverance Boat Speed Rigging and Technique Analysis sheet explains the rigging adjustments and the rowing technique opportunities to improve speed. The sheet also provides pictures taken from the video to allow athletes and coaches to visualize the technique. This visual link between boat speed and rowing technique offers coaches and athletes a targeted goal for technique modifications. For more information on Custom Rigging and rowing technique analysis, go to the Purcerverance webpage at https://purcerverance.ca/coach-support.