GLOSSARY

AFT - in the neighborhood or direction of the stern.

BATTEN - A thin wooden or plastic strip placed in a pocket in the leech of a sail to help hold its form.

BLOCK - Pulley consisting of a frame in which is set one or more sheaves or rollers. Ropes are run over these rollers.

BOOM - Spar at the foot of the mainsail.

BOOM VANG - Tackle secured to the bottom of the boom about 3' aft of the gooseneck. The other block attaches to an eye at the base of the mast. The vang's purpose is to keep the boom steady and horizontal while sailing.

BOW - The forward part of a boat.

CENTERBOARD - A keel-like device that can be hoisted or lowered in a trunk that acts as a keel in some shoal-draft boats.

CENTERBOARD PENDANT - Line used to raise and lower centerboard.

CHAINPLATES - Strips of metal fastened to the boat's hull or deck designed to take the stress of stays.

CLEAT - A fitting to which ropes are made fast.

CLEVIS PIN - A small stainless steel pin that has a hole in one end for a cotter pin and is used to secure stays to chainplates and mast fittings.

CLEW - The aftermost lower corner of a sail.

COCKPIT - An open area lower than a boat's deck where the occupants sit.

COTTER PIN - A straight or circular split metal pin used to hold a clevis pin in place.

DOWNHAUL - A device used to tighten the luff of a sail.

FAIRLEAD - An eye used to lead line in the direction desired.

FOOT - The lower edge of a sail.

FURLING GEAR - A mechanical device which allows the jib or mainsail to be rolled up on its stay or spar for stowing.

GOOSENECK - A metal device that secures the boom to the mast.

GLOSSARY - Continued

GUDGEON - A metal socket attached to the transom to receive the pintle of the rudder.

GUNWALES - The upper edge of a boat's side, where it meets the deck.

HALYARD - A line for hoisting (or raising) the sails.

HEAD - The upper corner of a sail.

HEADBOARD - The fitting at the head of a sail with a hole in it to receive the main halyard.

HEADSTAY - The foremost stay on a sailboat. A jib is set on a headstay.

HULL - Main body of a boat.

JIB - A triangular sail set forward of the mast.

JIB SNAPS - Small fittings that are attached to the luff of a jib, which secure the jib to the headstay.

JIBE - The action of the mainsail when shifting from one side of the boat to the other, when heading down wind.

JIFFY REEFING - (See Reefing.) A quick method of reefing the mainsail, sometimes with one line.

LAZY JACKS - Light lines running from the mast to the boom. Their purpose is to contain the mainsail when it is lowered and to support the boom.

LEECH - The after edge of a sail.

LEEWARD - Away from the wind.

LINE - The common expression for a rope in use.

LUFF - The forward edge of a sail.

MAINSAIL - The principal sail on the main mast.

MAINSHEET - The line used to trim a mainsail.

MAST - An aluminum tube designed to stand on end so as to support a boom, plus one or more sails.

MASTHEAD - The top of the mast.

MASTHEAD FITTING - The fitting at the top of the mast.

GLOSSARY - Continued

MAST STEP - A metal fitting that holds the base of the mast in position.

OUTHAUL - A line used to haul the clew of a sail out to the end of the boom.

PINTLES - Pins on the forward side of a boat's rudder, designed to rest in and pivot on the gudgeons secured to the transom.

PORT - The left side of a vessel facing forward.

REEFING - To reduce a sail by rolling or folding up part of it.

RIGGING - The wire supporting the spars is called standing rigging (stays or shrouds) and the ropes used in setting and trimming sails are known as running rigging (halyards and sheets).

ROLLER FURLING - A means of reducing sail on a main or jib by rolling the sail around a rod or wire.

RUDDER - A vertical plate attached to the stern of a boat, used in steering it.

SELF-RESCUING - A feature which enables the crew to right and sail away a boat which has capsized.

SHACKLE - A U-shaped piece of metal with a pin across the open ends.

SHEET - A rope used to trim a sail.

SHROUD - Same as a stay.

SLACK - The opposite of taut. Slack away or off - to pay out.

SLOOP - A one-masted vessel with two or more sails.

SPAR - A mast, a boom, etc.

SPREADERS - Aluminum tubes that project from a mast in a traverse direction in order to keep a stay at proper tension and to help hold the mast erect.

STARBOARD - The right side of a boat, facing forward.

STAY - A length of wire used to support a spar.

STEMHEAD FITTING - The fitting nearest the bow on the deck where the headstay attaches.

STEP - To step a mast is to set it in position.

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C-O

GLOSSARY - Continued

STERN - The after part of a boat.

TABERNACLE - A fitting designed so that the mast can be lowered when passing under obstructions; also facilitates stepping and unstepping the mast.

TACK - The lower forward corner of a sail.

TILLER - A piece of wood connected with the rudder head. By this the rudder is moved as desired.

TOPPING LIFT - A wire and/or rope that attaches to the top of the mast and fastens to the end of the boom. Its purpose is to hold the end of the boom up when the mainsail is lowered.

TRIM - To trim sails. To put them in correct relation to the wind by means of sheets.

TRUNK - A centerboard housing.

TURNBUCKLE - A device used to maintain correct tension on rigging.

WINDWARD - Toward the wind.

12-22-87
C-O

Owner: Robert Seymour
O'DAY 280 - 1989
NAME: AT LAST
Registration: NJ 6558 FP

O'DAY 280

SPECIFICATIONS

HULL DIMENSIONS

o LOA	-	26' 11"
o LWL	-	22' 11"
o Beam	-	9' 0"
o Draft	-	3' 0"
o Ballast	-	1,865 Lbs.
o Base Boat Weight	-	5,400 Lbs.

RIG DIMENSIONS

o I	-	30' 10"
o J	-	10' 6"
o P	-	26' 1"
o E	-	10' 6"

SAIL AREA

o Mainsail	-	136.9 Sq. Ft.
o 130% Genoa	-	220 Sq. Ft.

MAST HEIGHT ABOVE DWL - 34' 10"

MISCELLANEOUS

o Berths	-	4
o Fresh Water	-	30 Gallons
o Icebox	-	3.0 Cubic Ft.
o Head Holding Tank	-	30 Gallons
o Fuel Tank	-	9 Gallons
o Inboard Engine	-	12 HP, 2 Cylinder, Fresh-water cooled Diesel engine; 1" bronze shaft, 2-blade propeller. 12" diameter x 9" right-hand drive

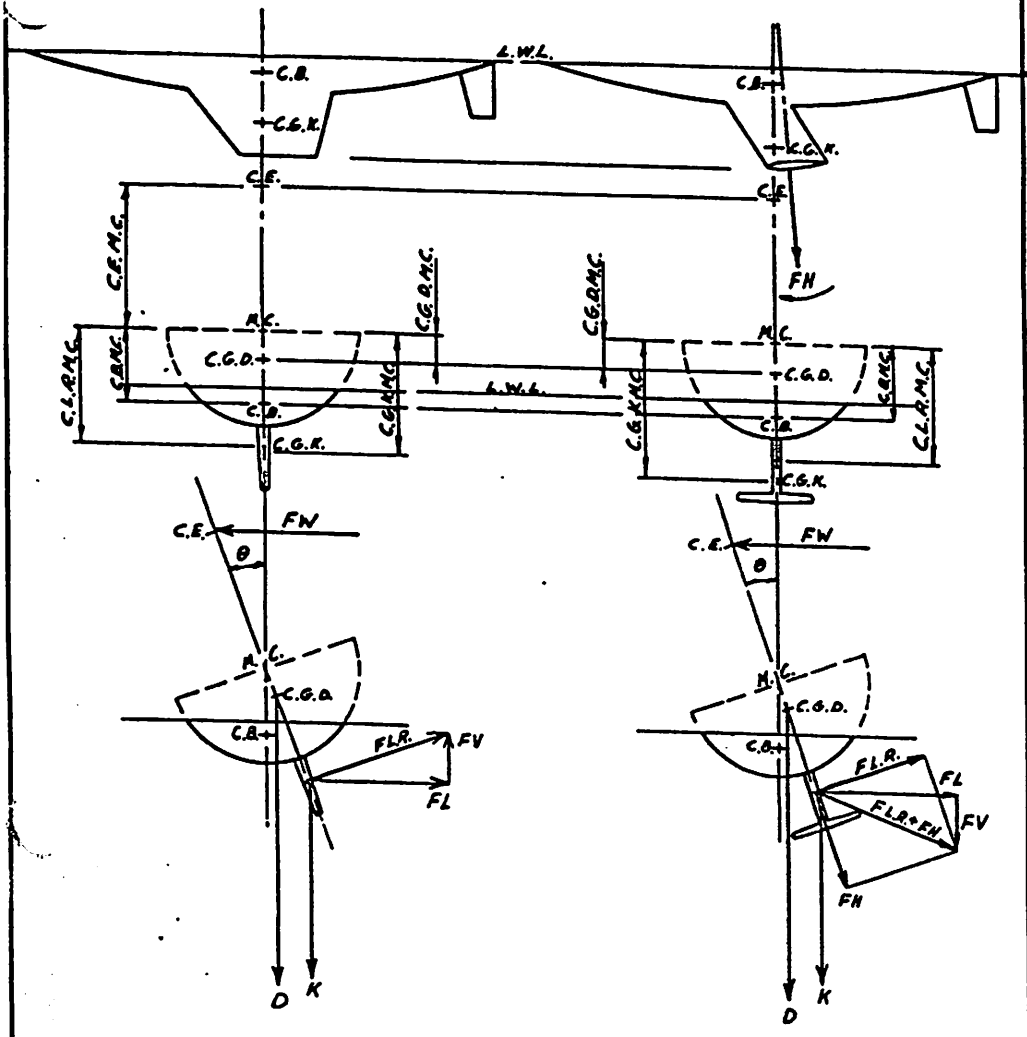
Displacement - length Ratio D/L

$$\frac{\text{boat's Weight in tons}}{.01^3} \times LWL$$

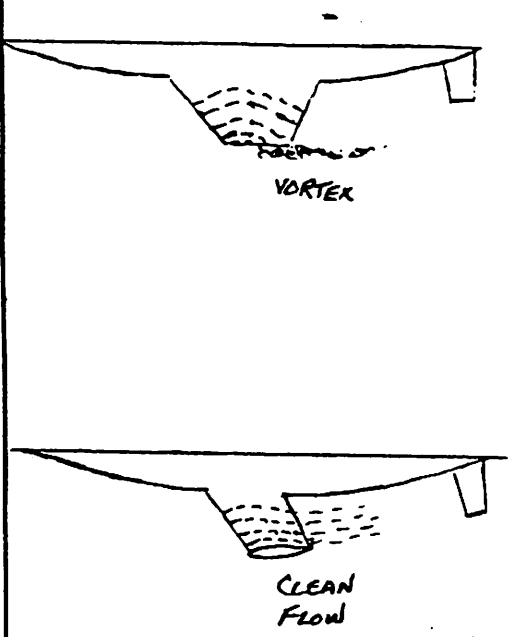
$$\frac{(5400 \div 2000)}{.000001} \times 13 =$$

CONVENTIONAL KEEL

HYDROKEEL™



Waterflow



UNITED STATES PATENT NO. 4,193,366

Dec. 11.84. Reg J Salminen

KEY TO ABBREVIATIONS:

D	BOAT WEIGHT LESS KEEL WEIGHT
K	KEEL WEIGHT
F	FORCE
L	LATERAL
V	VERTICAL
W	WIND
H	HYDRO
C.G.	CENTER OF GRAVITY
C.B.	CENTER OF BUOYANCY
C.E.	CENTER OF EFFORT
C.L.R.	CENTER OF LATERAL RESISTANCE
L.R.	LATERAL RESISTANCE
M.C.	METACENTRE
θ	HEEL ANGLE

CONVENTIONAL KEEL

CAPSIZING MOMENTS:
FWx(C.E.M.C.xCOSθ+C.B.M.C.)
FLx(C.L.R.M.C.xCOSθ-C.B.M.C.)
FVxC.L.R.M.C.xSINθ

UPRIGHTING MOMENTS:
DxC.G.D.M.C.xSINθ
KxC.G.K.M.C.xSINθ

NOTE: FW=FL
FL=FL.R.xCOSθ
FV=FL.R.xSINθ=FLxTANθ

CANADIAN PATENT NO. 1,172,915

HYDROKEEL™

CAPSIZING MOMENTS:
DITTO
DITTO

UPRIGHTING MOMENTS:
DITTO
DITTO
FVxC.L.R.M.C.xSINθ

NOTE: FW=FL
FL=FHxSINθ+FL.R.xCOSθ
FV=FHxCOSθ-FL.R.xSINθ

AUSTRALIAN PATENT NO. 533,353

WHY THE HYDROKEEL (TM) WORKS BETTER
(A QUASI-TECHNICAL EXPLANATION)
BY REIJO SALMINEN (HYDROKEEL DESIGNER)

GREATER RIGHTING MOMENT:

First, sails provide a sailboat with a driving force which is focused in the center of effort of the sail plan. Second, there is the hull which provides buoyancy. The third element is the keel and rudder which provide stability and control. These three forces need to be in balance for proper handling and performance. The force in the sail plan is a capsizing force, and the force on the vertical section of the keel is another capsizing force. This is where the major difference is in using the HYDROKEEL. There is a capsizing force on the vertical section of the HYDROKEEL, but it is substantially less than on a conventional fin keel because our chord length is typically 2/3 less, and we have developed a new force that is perpendicular to the wing, which is pulling the wing down (anti-capsizing) into the water. We call our keel the HYDRO-KEEL, because it is opposite from a hydrofoil which provides upward lift. When the boat heels, the downward force through the center line of the boat is always on the high side of the center of buoyancy, and it is an uprighting force. For the boat traveling through the water, the smaller vertical part of our keel develops less capsizing force because part of the side force is developed with the wing, which has the downward (anti-capsizing) force. The difference from a conventional fin keel, which develops its uprighting moment purely from gravity, is substantial.

BETTER WATER FLOW AND LESS DRAG:

With a conventional keel, the water-flow pattern over the keel is rarely in a horizontal line. If the forward edge of the keel is raked backwards, the water flow starts upwards towards the hull over the first portion of the keel and over the middle to latter portion of the keel curves downwards, even when the boat goes straight forward through the water. When the water heels, the curvature of the water flow over the keel is accentuated, and, at the bottom of the keel, the flow is almost vertical, and that is where vortex drag is created. With the HYDROKEEL, the vertical section still has the water flow starting upwards from the leading edge and curving a little bit down, but because of the wing at the bottom, the flow will never go past, or across the wing; therefore, all the water leaving the top of the wing will actually be focused up under the stern. So, now, instead of wasting the water flow going down and creating a vortex and drag, we are directing the flow in a helpful pattern up under the stern of the boat where otherwise the hull would have to suck water from the side to fill the space where the boat has been, thereby reducing stern wave formation. This reduces drag from the entire hull.

2-13-89
O'Day

BETTER WATER FLOW AND LESS DRAG: - Continued

With a conventional keel, all the keel force has to be developed by leeway of the boat, which typically is from 6 to 9 degrees. Since with the HYDROKEEL, part of that force is developed with the wing, the vertical portion needs to do less work and leeway is typically only 2/3 that of a conventional keel to produce the same lift. Now the hull does not move 6 to 9 degrees sideways, but rather only 4 to 6 degrees; therefore, the induced drag (that increases exponentially with greater amounts of leeway) is reduced dramatically - as much as 50%.

2-13-89
O'Day

O'DAY 280

IV OPERATION

Construction Details And General Information

A. Hull
B. Deck
C. Hull-To-Deck Joint
   - o Hull-To-Deck Joint Drawing
D. Keel
   - o Keel/Hull Joint Drawing
E. Mast And Rigging
F. Rudder
G. Thru Hulls And Shut Off Valves
   - o Thru Hulls Location Drawing
H. Operation Of The Jib Furling System
   - o Hoisting The Sail
   - o To Furl The Sail
   - o Reefing The Sail
   - o Unfurling The Sail
I. Mainsail Reefing
   - o To Rig The Single Line Reef
   - o To Reef
   - o O'Day 280 Rigging Drawing
J. Plumbing
   - o Water System Drawing
K. Head System
   - o Optional Overboard Discharge
   - o Sanitation System Drawing
L. Electrical System
   - o DC - 12 Volt System
   - o Circuit Breakers
   - o 110-115 Volt AC Power
   - o Ground Fault Interrupter
   - o Preventive Maintenance
   - o AC Electrical System Drawing
   - o AC Wiring Diagram
   - o DC Electrical System
   - o DC Wiring Diagram
M. Navigation Lights
   - o Bow/Steaming/Anchor Light
N. Bonding System
O. Inboard Engine Operating Instruction
   - o Alignment Of Engine To Shaft
   - o Stuffing Box
   - o Flooding Of Engine With Water
   - o Sea Flooding
   - o Operator Error
   - o Fueling Procedure
   - o Fuel System Drawing
   - o Steering
   - o Steering Compass
   - o Edson International Transom Hung Rudder Steerer Instructions
P. Alcohol Stoves

V MAINTENANCE

Maintenance

- A. Sail Care
- B. Interior Maintenance
  - o Curtains
  - o Cushions
  - o Ports And Hatches
  - o Icebox
  - o Sinks
  - o High-Pressure Laminate
  - o Heads/Holding Tanks
  - o Stove
  - o Teak
  - o Bilge
  - o General
- C. Exterior Maintenance
  - o Gelcoat
  - o Mast And Boom
  - o Running And Standing Rigging
  - o Furling Gear
  - o Winches, Blocks, Tackles, Etc.
  - o Lifelines, Stanchions, Bow Pulpits And Stern Pulpits
  - o Teak

Basic Rules For Battery Care And Maintenance

Gaskets

Winterizing Your Boat

- A. Exterior
- B. Interior
- C. Water System
- D. Head System
- E. Electrical System
- F. Inboard Engine
- G. Outboard Engine

Periodic Maintenance

Periodic Maintenance Schedule

VI MANUALS

Cal/O'Day Suppliers

Foss Foam, Inc.//Polyurethane Foam

O'Day Sportswear Order Form

The Reefer I (TM) Spool Information

Head Treatment System (TM) Information