ANNEX A

Consultant’s test report June 2001

Protocol

On the testing and assessment of items 3.2 (stability and freeboard) and 3.3 (buoyancy and floatability) of annex I to Directive 94/25/EC as a component part of test module Aa for boats that are less than 12m in length

1. Order and test number, date of inspection

Registration number 10511-00, inspection and testing of the prototype on 16.06.01 on Lake Niederneuendorf in Berlin

2. Identification of the boat (type, designation, manufacturer, principal dimensions)

Sailing boat 'BEZ 2', Manufacturer: Manufacturer's P.H.U.P. 'Darek Co.' ul. Wojska Polskiego 70; PL-16-300 Augustow

Principal dimensions: Fuselage length L_H = 4.17m
Fuselage width B_H = 1,87m
Unladen mass M = ca.250kg

3. Intended design category

Category C ('Inshore waters')

4. Recommended total useful load (without fuel tank capacity) and recommended number of persons

Total useful load: 250kg Number of persons: 3

5. Testing and assessment

The boat was tested in accordance with draft standard prEN ISO 12217-3; option 9.

Item 7.3: The boat is fitted with floats.

See diagram 1	Bow		100 l
See diagram 2	Stern	below the cockpit	40 l.
		Below the berths	110 l.
Boat light weight 250 kg * 1.5 (average thickness)			166 l.

To comply with the standard further polystyrene floats were laminated in.

See diagram and photo 1	Cabin below floor	35 l.
	Cabin below seats	130 l.
See diagram 2	in the rear storage area	80 l.

Total float volume: 661 l.

The float elements comply with the requirements of annex C.

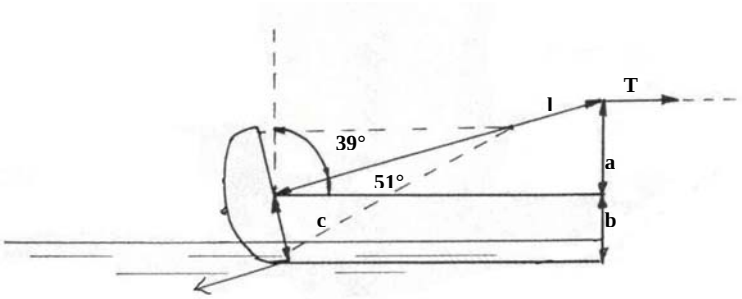
Item 7.6: Wind force

75kg plastic canisters filled with water were fixed to the cockpit floor. The boat was then heeled on the main halyard.

At an angle of 39 ° the lateral freeboard was reached and the force on the rope was 9.5 kp (kg). At an angle of 75° the force on the rope was zero.

Mast height 4.50 m + 0.5 m (height of cabin deck above the water line) = 5.00 m = l

c = 0.935 m ; T = 9.5 kp (kg)



The constant wind speed in accordance with prEN ISO 12217-3 is calculated according to the formula

$$v_W = \sqrt{\frac{13 \cdot hT + 390 \cdot B_H}{A_S \cdot (h_{CE} + h_{LP})(\cos\phi_T)^{1,3}}}$$

Where:
T = 9.5 kp(kg)
h = a + b = l*sin 51° + c*cos 51° = 4.47 m lever arm
As = 9 m² area of sail to the wind with main mainsail and Genua
HCE = 2.10 m height of the centre of mass above the water
HLP = 0.0 m height of the centre of gravity above the water

This gives a value of 11.21 m/s for VW. In accordance with ISO WD 12217-3 a minimum value of 11 m/s is required.

Description of the boat: see annex

- The cockpit is self-pumping and fitted with an outlet pipe leading below.
- The height of the cabin coaming is 0.24 m.
- The minimum lateral height of the laden boat measured at the rear cockpit edge was 0.42 m

Date/Signature

Z KOKPITU

GRÓDŹ RUFOWA
SKL. gr. 10

A

POKRYCIE KOI — MATERACE
PIANKOWE, W POKROWCACH
Z PŁÓTNA

B

MIECZ
SKL. gr. 20=(5+10+5)

C

D

WAHLIWE Z
DWUPALNIK
GAZO
(MATERAC
SKLEJKOI

PR

WZMOCNIENIA PAWĘŻY

350

420

SKL. gr. 15

ACHTERPIK

640

20 dcm³

SZUFLADA

20 dcm³

F

55 dcm³

POŁKA

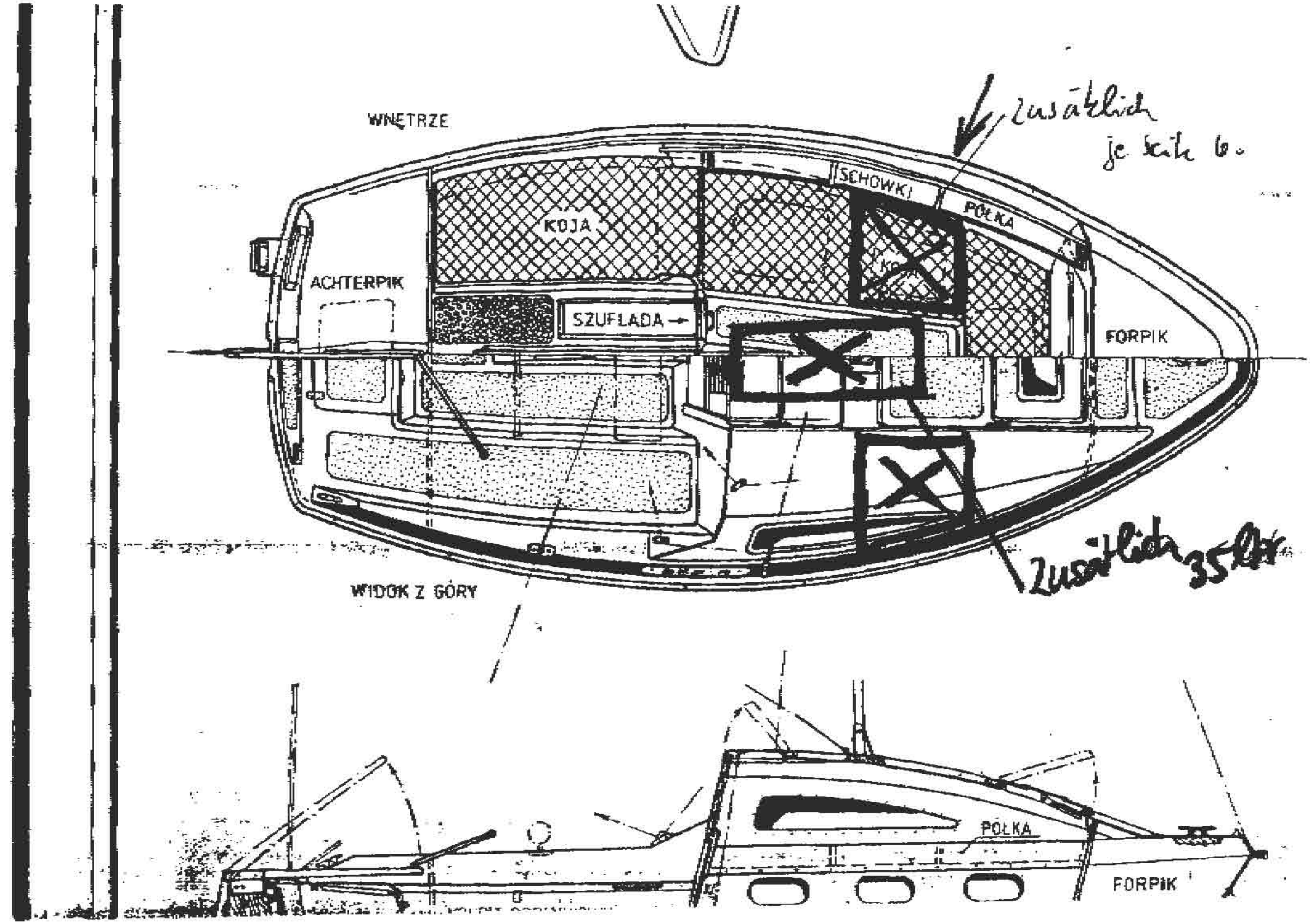
POKRYWY O
SKL. gr.

RUFOWE ZBIORNIKI
PŁYWALNOŚCIOWE
(TWORZYWO PIANKOWE)

MATERACE KOI ZDJĘTE

zu Säcklicher
Aufnäh für 40 Ltr

zusätzlich je Seite
65 Ltr.
Auftriebvolumen



ANNEX B

IMCI Statement of Conformity (2001)

INTERNATIONAL MARINE CERTIFICATION INSTITUTE

Rond Point Schuman 6, Box 6
B - 1040 BRUXELLES
BELGIQUE
tel: (32) 2-238-7892
fax: (32) 2-238-7700

Statement of Conformity

We hereby certify that the following boat type

P.H.U.P. "Darek Co."

BEZ 2

Boat type:	**Sail**
Boat design category:	**C**
Modul type:	**Aa**
Examination type:	**No**
Length of hull [m]:	**4,17**
Beam of hull [m]:	**1,87**
Loaded displacement mass [kg]:	**250**
Maximum rated engine power [kW]:	**0,0**
Number of Persons recommended:	**3**
Recommended load [kg]:	**250**
Certificate Number:	**BPHUP001**

meets the Essential Safety Requirements 3.2 for Stability and Freeboard and 3.3 for Buoyancy and Floatation of the EC Directive 94/25/EC for Recreational Craft

V. Hei-em

Ulrich Heinemann (Managing Director)

for EU - Notified Body : 0609

26-Sep-2001

This certificate is valid for boats identified by the HIN as a

2001 or

2002 model

ANNEX C

Manufacturer’s Declaration of Conformity

POLIGLASS BOAT YARD
BUILDER S CERTIFICATE

DECLARATION OF CONFORMITY

Declaration concerning finished boat according to the rules of European Union and Council 94/25/EC.

Producer :

PPUH POLIGLASS

Jerzy Małachowski
Rutki Nowe 82
16-323 Rutki
Poland
Tel.004887 64 42 032

This is certify that boat yard **PPUH POLIGLASS** hass built a boat for which the measurements displacement and description are give below.
We confirm that the boat conforms in design,type of construction,building quality and standards to EU reouirements for small craft.
This declaration becomes invalid if there are any changes to the specification of the boat which affect the basic design and not agreed in with us.

Type of boat : BEZ - 2

Design category : C

Principal data:

length 4.17	width .....1.87 m
height 1.30	weight..... 250 kg
Sails Surface.....7 m	max.number of persons.....2.3

Construction of the boat:
The boat is made of polyester-glass /GRP/.
The outer coat of laminate is a gelcoat of approx.0,8-1,0 mm thick
Structural layers are made of fibre-glass and glass fabric impregnated with Ashland resin compound.Thickness of the laminate approx. 3,7-7,0 mm.
Harmonized norms:
Stability and buoyancy according to ISO 12217-3
Hull identification according to ISO 10087
CE Classification : 10701-03
Serial number of the boat (HIN):PL-PGSB2002A505
Date : 31.01.2005

ANNEX D

Translated owner’s manual

Boatman's manual

for the sailboat "BEZ 2"

Darek Co.
ul. Wojska Polskiego 70

PL -16-300 Augustow
www.darekco.pl
Email:darekco@darekco.pl

This manual was compiled to enable you to enjoy sailing your vessel safely. It also contains maintenance and service information as well as information on the vessel itself, on provided or built in accessories and on its equipment. Please read it carefully and make yourself familiar with everything before you start sailing with the vessel.

If this should be your first vessel or if you have changed to a type of a vessel you are not yet familiar with, please acquire handling and operation knowledge of the vessel for your own safety and convenience before taking over command. Your dealer or the national sailing and/or motorboat federation or yacht club will gladly inform you about local sailing schools or will recommend experienced teachers.

PLEASE KEEP THIS MANUAL IN A SAFE PLACE AND HAND IT OVER TO THE NEW OWNER, IF THE VESSEL IS SOLD.

HIN:

Built by:

P.H.U.P. „Darek Co"
ul. Wojska Polskiego 70

PL-16-300 Augustow

Hull length:	4.17 m
Beam of hull:	1.87 m
Unloaded displacement mass:	approx. 250 kg

Mast length:	approx.	4.20 m
Sail area:	approx.	9.00 m^2
Motor max.:		11 kW

BEZ 2 www.darekco .pl

You have purchased a fast, sporty and nevertheless safe sailboat with the "BEZ 2" sailboat, made of glass-fibre reinforced plastic (GRP), aluminium rigging and a sail manufactured of high-quality polyester sailcloth. There is ample storage space in the forepeak and under the afterdeck.
Waterproof flotation spaces make the boat unsinkable and allow it to be easily uprighted after capsizing. The collapsible mast heel provided with the standard version permits taking the mast down safely and quickly.
The "BEZ 2" was tested according to ISO CD 12217-3 concerning stability and freeboard, buoyancy and floatage. This resulted in the determination of the number of persons and payload. The manufacturer's tag, which is attached at the front inner wall next to the mast, has the following appearance:

P.H.U.P. "Darek Co"
ul. Wojska Polskiego; PL-16-300 Augustow
Sailboat "BEZ 2"

Design category C

Max.				=	**3**
Max.		+		=	**250 kg**
Max.				=	**11kW**

C € 0609

The boat is built for the design category C (offshore waters).

This reads:

Design category C: Offshore waters

Designed for sailing in offshore waters, large bays, estuaries, lakes and rivers, in which weather conditions with a wind force up to and including 6 and significant wave heights up to and including 2 m can occur.

Four persons can sail on the boat without problems with consideration to the safety of the boat and crew. Sailing fun and running speed are however substantially impaired in this case. Observe the total payload of 250 kg. The stability has been examined with regard to this value.

BEZ 2 www.darekco.pl

EEC-Declaration of conformity according to the Directive 94/25/EEC „Recreational craft", Annex XV

We herewith declare that the hereinafter described vessel complies with the basic safety and health requirements of the EEC-Directive "Recreational craft" in conception and design as well as in the model put into circulation. This declaration becomes void if modifications are made to the vessel, which affect the "fundamental safety requirements" and are not agreed with us:

Boat designation:	BEZ 2
Boat type:	Sailboat
Hull serial number:	
Design category:	C (Offshore waters)
Certification module:	A
Applicable Directives:	EEC-Directive "Recreational craft" (94/25) EEC-Directive "General Product Safety" (92/59/EEC)
Applied standards:	ISO 12217-3;14945;14946
Examining institution:	Ingenieurbuero Capt. Mueller
Address:	Sleipner Str. 52, D-13156 Berlin
Examination module: A	see annex
Certificate no.:	10701-03
Date of issue/signature of manufacturer	
Position of the signatory	

Shipyard: P.H.U.P. Darek Co; ul. Wojska Polskiego 70; PL - 16-300 Augustow

Ingenieurbüro Capt. Müller
Pleiner Str. 32 - D-13156 Berlin
Tel. +49-30-47755649 - Fax +49-30-47755650
email: info@ibm.de - internet: www.ibm.de

EC-Certificate of Conformity

This is to certify that "Ingenieurbüro Capt. Müller" did the test calculations and/or the control of the stability and buoyancy as detailed in Essential Requirements 3.2 and 3.3 for the Boat Design Category C Craft identified below to verify that these Essential requirements have been satisfied in accordance with the module A of the above Directive.
"Ingenieurbüro Capt. Müller" has not intervened in the control of the production as may be interfered by the affixing of their identification name after CE marking.

This certification is issued to:

Applicant	*P.H.U.P. "Darekco"* *ul. Wojska Polskiego 47* *16-300 Augustow / Poland*
Boat	*BEZ 2*
Boat type	*Sail*
Modul of certification	*A*
Hull length	*4,17 m*
Beam of hull	*1,80 m*
Loaded displacement mass	*500 kg*
Manufacturer's max. recommended load	*350 kg*
Maximum rated engine power	*3,0 kW*
Manufacturer's recommended max. number of persons	*3*
Specified standards	*ISO 12217-3:2002, Cat. C*
Certificate no.	*10701-03*
Date of issue	*2003, September 4th*

Capt. Müller Ingenieurbüro

Capt. Frank Müller
Dipl. engineer

concerning the provision of Capt. Müller and/or the contract under which such [illegible] Berlin Courts and Tribunals shall have [illegible] exclusive jurisdiction

Applied harmonised standards or draft standards on the items of the Directive 94/25/EEC

EEC Directive	ISO-Standard
1. Main dimensions	8666 (Draft)
2.1. Hull designation	10087
2.2. Manufacturer's tag / number of persons	14945 (Draft)
2.5. Boatman's manual	10240 (Draft)
3.1. Construction method	12215 part 1 (Draft)
3.2. Stability and freeboard	prENISO12217-3
3.3. Buoyancy and floatage	prEN ISO 12217-3
3.4. Recommended peak load	14946 (Draft)

Design and scope of delivery

Hull
Round frame two-shell construction with pronounced U-frame, aft support break with negative stern, double bottom with rib framework. Skirting board with high-strength rubber profile, continuous recessed grips.

Deck
Skid-proof profile on the accessible deck area. Large, lockable stowage in the bow and stern for outboard and lots of luggage.

Cockpit
Skid-proof profile in cockpit and on the lengthwise thwarts. Drain channels with covered suction bailer. Completely enclosed centreboard casing, moulded seats next to the mast step, adjustable straps for sitting out.

Rig
Mast and boom are made of saltwater-proof aluminium. Collapsible mast with stainless steel heel. Standing rigging: forestay, shrouds.

Sails
Main sails and foresail are made of Dacron with sail mark, continuous numbering, battens and sail bag. Accessories: Spinnaker and Genoa.

Fittings:
Forestay bracket with mooring eye, adjustable embedded sheet sliders for foresail and Genoa, two foresheet cam cleats, functional foresheet winch, main sheet lead, belay clamp for the sword, handles on the stern,

Rudder
Wooden adjustable rudder with aluminium. Tiller and tiller extension, continuously adjustable

Centreboard
Profile centreboard made of GRP, continuously adjustable

Maintenance notes

Cleaning

Use as little cleaning agent as possible and do not pour the used cleaning agents into the water,

- clean your vessel if possible ashore with clear fresh water;
- avoid scraping the hull, use high-pressure water cleaners;
- do not use solvents or aggressive cleaning agents;
- only rinse the sails with clear fresh water.

Repairs

Talk to your dealer, who can give you good advice and procure the suitable parts or materials for repairs, which you can accomplish yourself. You should allow specialists to undertake larger repairs on the hull or motor. Your dealer will take over such repairs or will assign a competent craftsman.

Modifications

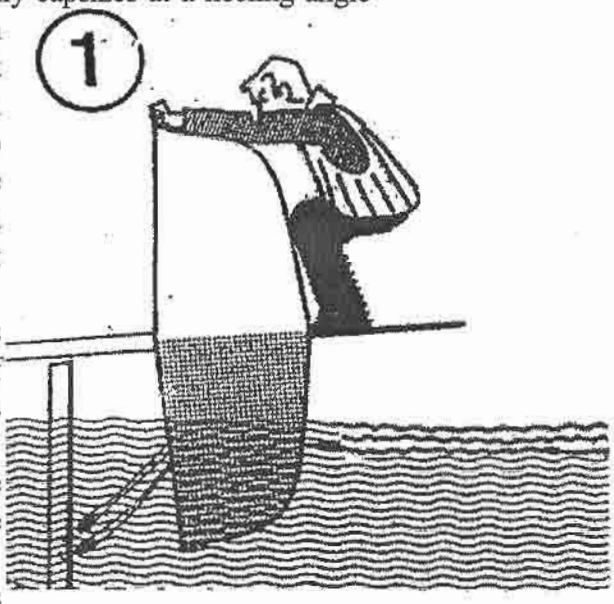
Ask your dealer for information on what you can do yourself and on what you should definitely not undertake. You could endanger your safety and lose your guarantee!

Safety note

Please ensure careful sealing if you should attach additional fittings to the deck or to the inner walls, because there are buoyancy spaces are underneath.

Notes on capsizing and uprighting the sailboat

The "BEZ 2" only capsizes at a heeling angle of 70°. Even in the last second it is still worthwhile to step onto the centreboard and to thus prevent capsizing.



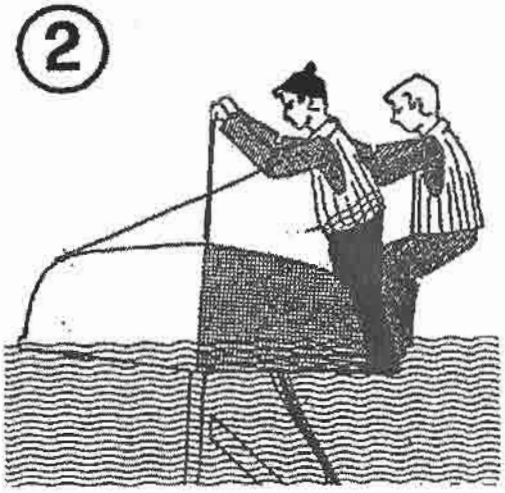
Uprighting is not a problem, if the boat has nevertheless capsized and the crew is in the water.

Proceed as follows: It is sufficient for a person to step on the centreboard as long as the boat has not yet completely capsized (fig. 1). The boat will then straighten up quickly. No water will remain in the cockpit.

Press one side under water, if the boat has completely capsized.

Both crewmembers position themselves on the railing strip for this purpose. One grasps the centrepiece that must be fully extended. The other one seizes the mainsheet or foresheet and helps lever the boat (fig. 2). The boat uprights itself once a heeling angle of 60° has been achieved.

Prevent overshooting and capsizing on the other side,



by catching the boat at the railing strip! Practice the whole procedure in quiet weather in deep water! You will then have fewer problems in case of an emergency.
You can by the way prevent complete capsizing, by attaching a float with 5 kg buoyancy to the top of the mast. It might not look very attractive but increases your safety.

Your dealer

Name:

Address:

is the representative of our company and will help you, if problems should occur. As soon as you have become owner, please fill out and sign the following acknowledgment of receipt and give (or send) it back to the dealer, so that you can call upon our guarantee services.

Guarantee conditions

The legal guarantee conditions apply.

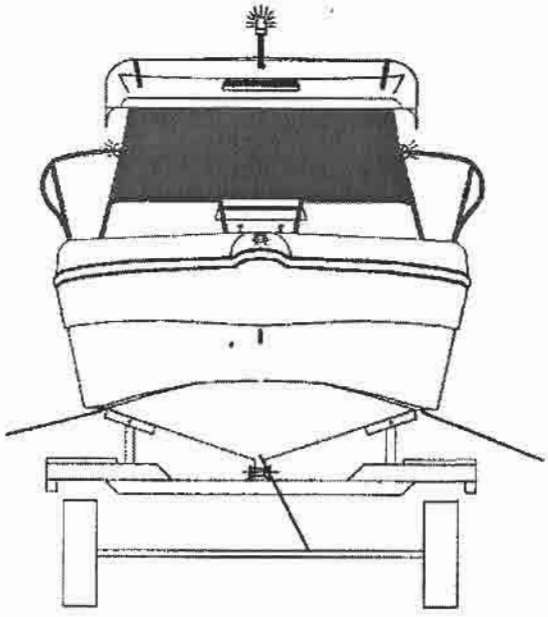
Note
We are constantly working on the further development of our boats. Please acknowledge that we reserve the right to modify shape, equipment and technology. For this reason, no claims can be derived from any specifications, illustrations and descriptions in this manual. Your contracting party will inform you about correct operation and maintenance, if your boat should be provided with equipment, which is not described in the manual and/or for which there is no description in the owner folder.
There is no direct contractual relationship between shipyard and end customer since the boats manufactured by "DarekCo" P.H.U.P. are sold in principle via the specialised trade.
Contractual details are therefore not known to "DarekCo" P.H.U.P. and it is not necessary that your contractual partner takes on our guarantee conditions to the full extent.

It is therefore absolutely necessary that you contact your contractual partner in the case of guarantee claims.

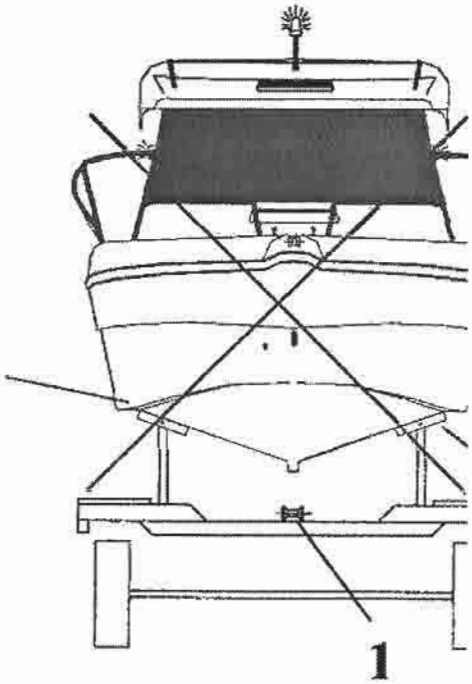
BEZ 2

www.darekco.pl

Transporting the boat on the boat trailer



1



1

YES NO

1 -Centre support (Keel support)
2 -Lateral support

The boat should rest on the keel support (1) and on the lateral support (2) (see fig. A)

Acknowledgment of receipt, please return signed

to:

P.H.U.P. „Darek Co" ul.
Wojska Polskiego 70

PL-16-300 Augustow

Acknowledgment of receipt

Name:

Address:

Owner of sailboat „BEZ 2" HIN

This small vessel is subject to guarantee services, which are specified in the manual for boatsmen, shipped with the craft.

This guarantee starts on | (Date)

Signature:

ANNEX E

RYA test report

Bez 2 Sailing Boat

Assessment against ISO 12217-3

Report by the RYA Technical Department – October 2005

1. Background

The RYA Technical Department was requested by the MAIB to test the Bez 2 sailing boat against the requirements of BS EN ISO 12217-3, using each of the three main tests;-

- Capsize Recovery Test,
- Knockdown Recovery Test
- Wind Stiffness Test.

The tests are outlined in the ISO 12217-3 test option table as detailed below. As the boat was not considered to be fully decked (due to the cockpit not meeting the requirements of BS EN ISO 11812 – Watertight cockpits and quick-draining cockpits) the options available to test the boat were restricted to 7, 8 or 9. Each of these options additionally requires a flotation test as either part of the main test (option 7) as an additional test (option 8 and 9).

Test Option of ISO 12217	**7[a]**	**8[a]**	**9[a]**	**10**	**11**
Categories possible	C and D	C and D	C and D	C and D	C and D
Applicable to hull types	All	Monohull only	Monohull only	All	All
Decking or covering	Any amount	Any amount	Any amount	Fully decked	Fully decked
Downflooding height test	-	-	-	7.2	7.2
Flotation standard cat C	-	Level	Level[b]	-	-
Flotation standard cat D	-	Basic	Basic[b]	-	-
Flotation test	-	7.3	7.3[b]	-	-
Flotation elements	Annex C	Annex C	Annex C	-	-
Capsize recovery test	7.4	-	-	-	-
Knockdown recovery test	-	7.5	-	7.5	-
Wind stiffness test	-	-	7.6	-	7.6

a Boats using options 7, 8 and 9 are considered to be susceptible to swamping when used in their design category, excepting those boats using option 9 and covered by the exemptions described in Note (b).

b Flotation testing is not required for boats satisfying the exemptions given in 7.3.1 or 7.3.2.

As the boat design had been first assessed prior to the finalisation of BS EN ISO 12217-3, consideration was also given to the requirements of ISO/DIS 12217-3 against which the design had been first assessed during 2001. Whilst this standard was only at the Draft stage at the time, as there was no alternative option available, it had been agreed by the Notified Bodies within the RSG (Recreational Craft Sectoral Group) that the Draft version could be used for assessment.

The tests were carried out at Southampton Water Activities Centre (SWAC) on the 4 October 2005, the conditions were as detailed on RYA Form ENV_IR and the River Itchen.

2. Tests and Results

2.1 Wind Stiffness Test

This was the first of the tests to be conducted. The pontoons in Ocean Village Marina were used for the test with the boat set up as detailed in Clause 7.6 of BS EN ISO 12217-3. As required, one-crew member was positioned on the centreline within the reach of the helm. The mass of the crewmember used was 81.2kg.

The sail area and centres of area were taken from the supplied sail plan drawing. Additionally the actual sails supplied were measured. Both sources gave a sail area of $9m^2$.

Heel measurements were taken using Stabila 86, digital spirit levels. The calibration checks are detailed on RYA Forms – SPIRIT IR.

Crew mass was determined using RYA PS 100 – Serial Number 13742, calibration checks are detailed on the RYA form SCALES_IR.

Heeling moment was determined using the RYA 200kg Loadlink Lite, Serial Number LLL70 – Calibration Certificate *attached.*

As there was no method of securing the keel in the down position, the boat was tested with the keel in both the up and down positions. The test results were as in the results table.

The minimum calculated windspeed required by the Standard to meet Category C is 11m/s and Category D is 6 m/s.

Results Table 1

Condition	Full Sail Calculated Windspeed	Reefed Calculated Windspeed	BS EN ISO 12217-3 – Design Category	ISO/DIS 12217-3 – Design Category
Keel Down	9.87 m/s	11.99 m/s	C[1]	D
Keel Up	10.00 m/s	12.15 m/s	C[1]	D

[1] – BS EN ISO 12217-3 allows the reefed sail area to be used in the calculations if:

- the reefed sail area is not less than two-thirds of the actual profile projected area of the standard sail plan.
- the Beauford wind force at which reefing becomes necessary is cleary stated in the Owner's Manual.
- Warning symbols are displayed at the main control position

Applying BS EN ISO 12217-3 for assessment the boat met the requirement for Design Category C using the Wind Stiffness Test in the reefed condition only. Information to this effect would need to be included in the Owner's Manual and Warning Symbols displayed.

Applying ISO/DIS 12217-3, used to perform the *original* assessment, does not allow the option of using the reefed sail area. Against this standard the boat would only meet the requirements for Design Category D.

2.2 Knockdown Recovery Test

Following the Wind Stiffness Test, a Knockdown Recovery Test was attempted.
The boat was set up as detailed in Clause 7.5 of BS EN ISO 12217-3 to demonstrate compliance by a practical test. Crew, with a total mass of 232kg to represent the three persons shown on the builder's plate (225kg), was used for this test

The standard requires the boat to be pulled over by a line attached to the mast until the masthead touched the water surface where it is required to be held for 60 seconds before being released and the boat returning upright.

This was attempted however, once the angle of heel reached 70 degrees there was no longer a positive righting moment and it became the natural intention of the boat to invert. Releasing the mast quickly at a heel angle of approximately 80 degrees demonstrated that the boat would invert from this position. At this point the masthead was between 1.5 – 2 m above the water surface.

The result from this test demonstrated that the boat would not have met the requirements of BS EN ISO 12217-3 or ISO/DIS 12217-3 for the Knockdown Recovery Test.

2.3 Capsize Recovery Test

This test was carried out on the River Itchen at slack water.

For this test all void compartments not meeting the requirements for air tanks in Annex C of BS EN ISO 12217-3 shall be opened. However, owing to the design of the boat, this was not possible allowing some trapped air to be present during the test.

In conducting the test the boat capsized easily and initially floated high in the water.

The boat floated in this position for the required 5 minutes.

After this time one person with a mass of 66.1 kg attempted to right the boat.

This attempt was hampered by the keel falling back into its housing. Only after the keel halyard had been used to pull and secure the keel out of its housing was the attempt possible.

This demonstrated that the one person was unable to right the boat within 5 minutes.

A second person was added giving a combined crew mass of 150.8kg. Again, with this combination of persons the boat was unable to righted within 5 minutes.

A final attempt was made by a *lone* third person with a mass of 81.2kg, this single person was able to right the boat within the required 5 minutes.

Having righted the boat it is a requirement that it floats with a residual freeboard sufficient to enable it to be pumped or bailed out with one person aboard.

To demonstrate this, one person attempted to board the boat but this caused the boat to capsize. After righting the boat again, a further attempt was made for one person to board and bail the boat. On this attempt the boat kept upright but only by movement of the crewmember to counteract the movement of the water that was flooding the boat.

This demonstrated that the boat *does not* meet the requirements of the test as a crewmember was not be able keep the boat upright *and* bail the boat.

The final part of this test is a demonstration that the boat whilst swamped can support the full crew to the crew limit. As the boat sank by the stern and capsized this was impossible and hence the boat *does not* meet the requirements of this test.

2.4 Flotation Tests

The Standard assessment options 8 (Wind Stiffness Test) and 9 (Knockdown Recovery Test) also require the boat pass a Flotation Test. (An equivalent to a Flotation Test is incorporated as part of the Capsize Recovery Test procedure).

BS EN ISO 12217-3 requires Level Floatation for a boat to be assigned Design Category C and Basic Floatation for Design Category D.

ISO/DIS 12217-3 requires only Basic Floatation for Design Category C or D.

Basic Flotation Test – This requires that by test or calculation it shall be demonstrated that when swamped the boat will float in any attitude.

In conducting the tests it was shown that the boat did meet this requirement.

Level Flotation Test – This test requires that by test it shall be demonstrated that the boat will float approximately level with more than two-thirds of the length of the top of the gunwale or coamings above water.

In conducting the tests it was shown that the boat met Basic Floatation but not Level Floatation.

3. Conclusions

The results of the tests demonstrated that the highest design category the boat was able to achieved against either, BS EN ISO 12217-3 or ISO/DIS 12217-3, was Design Category D

Summary of Results Against BS EN ISO 12217-3

Test	Test Design Category	Floatation Test	Final Design Category
Wind Stiffness Test	Category C (Only In Reefed Condition)	Basic - D	**D**
Knockdown Recovery Test	Fail	Basic - D	**Fail**
Capsize Recovery Test	Fail		**Fail**

Summary of Results Against ISO/DIS 12217-3

Test	Test Design Category	Floatation Test	Final Design Category
Wind Stiffness Test	D	Basic - C	**D**
Knockdown Recovery Test	Fail	Basic - C	**Fail**
Capsize Recovery Test	Fail		**Fail**

4. References

- BS EN ISO 12217-3:2002 Small craft – Stability and buoyancy assessment and categorization – Part 3: Boats of hull length less than 6m.
- ISO/DIS 12217-3 (09/02/1999) Small craft – Stability and buoyancy assessment and categorization – Part 3: Boats of hull length less than 6m.
- BS EN ISO 11812:2002 Small craft – Watertight cockpits and quick-draining cockpits.

Signed

Ken Kershaw
RYA Technical Department
14 November 2005

ANNEX F

Photographs taken during RYA tests

Annex F - Figure 1

BEZ 2 in the water before testing

Annex F - Figure 2

BEZ 2 during knockdown recovery test

Annex F - Figure 3

BEZ 2 being capsized

Annex F - Figure 4

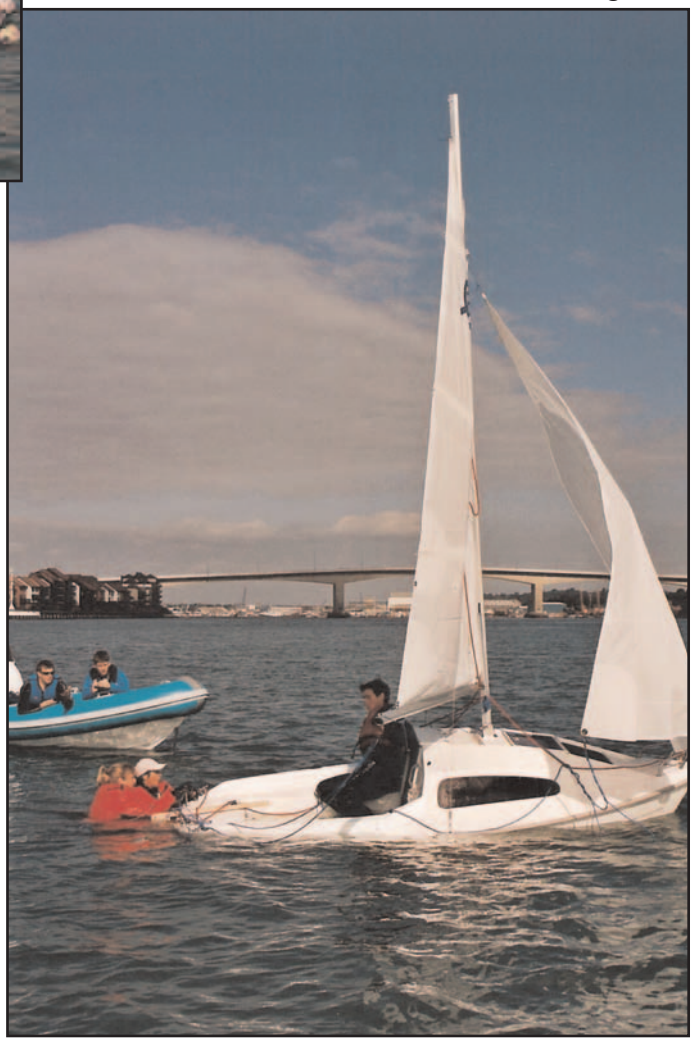
BEZ 2 capsized and ‘turtled’
(metal centre board retracted)

Attempted righting

Annex F - Figure 7

Crewman climbing on board

Annex F - Figure 8



Crewman on board

Annex F - Figure 9

Crewman attempting to bale - boat steadied by remaining crew

Annex F - Figure 10

BEZ 2 - cockpit fully swamped

ANNEX G

Recommended format for declarations of conformity

DECLARATION OF CONFORMITY

RECREATIONAL CRAFT

Directive 94/25/EC

Name of the manufacturer:

Address: _____

Postcode: _____ **City:** _____

Country: (code) _____ (printed) _____

Conformity assessment module(s) used (check):

A ☐ Aa ☐ B + C ☐ B + D ☐ B + F ☐ G ☐ H ☐

IF THE DECLARATION IS MADE BY AN AUTHORISED REPRESENTATIVE ESTABLISHED IN THE EEA

Name of the authorised representative:

Address: _____

Postcode: _____ **City:** _____

Country: (code) _____ (printed) _____

IF THE INTERVENTION OF A NOTIFIED BODY IS REQUIRED

Name: **Identification number:** _____

Address: _____

Postcode: _____ **City:** _____

Country: (code) _____ (printed) _____

If EC type-examination certificate is issued (number and date yy/mm/dd) ___ / ___ / ___

DESCRIPTION OF THE CRAFT

Hull identification number (HIN): ☐ ☐☐☐☐☐☐☐☐☐☐☐☐

Brand name of the craft: _____

Type or number: _____

Design category .....:_____

Type of craft * (* See codes on opposite page) .....:_____

Type of hull * (* See codes on opposite page) .....:_____

Deck * (* See codes on opposite page) .....:_____

Construction material * (* See codes on opposite page).....:

Propulsion * (* See codes on opposite page).....:

Type of engine * (* See codes on opposite page) .....:_____

Maximum recommended engine power (kW) .....:_____

Length and beam of hull (m) .....:_____/_____

Draught (m) .....:_____

I declare at my own and sole responsibility that the craft mentioned above complies with all applicable essential safety requirements in the way mentioned overleaf (and is in conformity with the type for which the abovementioned EC type-examination certificate has been issued) **

Name: _____ **Signature and title:** _____

(Identification of the person empowered to sign on behalf of the manufacturer or his authorised representative) (or an equivalent marking)

(yy/mm/dd): ___ / ___ / ___ (** Include text between brackets only if such certificate has been issued.)

Type of craft:
01 sailboat
02 inflatable
03 other (specify):

Type of hull:
01 monohull
02 multihull
03 other (specify):

Construction material:
01 aluminium, aluminium alloys
02 plastic, fibre reinforced plastic
03 steel, steel alloys
04 wood
05 other (specify):

Propulsion:
01 sails
02 petrol engine
03 diesel engine
04 electrical motor
05 oars
06 other (specify):

Type of engine:
01 outboard
02 inboard
03 z or stern drive (lift)
04 other (specify):

Deck:
01 decked
02 partly decked
03 open

ESSENTIAL SAFETY REQUIREMENTS (reference to relevant points in Annex I to Directive 94/25/EC)	Harmonised standards used	ISO standards used	Other normative documents used	See the technical file
General requirements (2)				
Hull identification number — HIN (2.1)				
Builder's plate (2.2)				
Protection from falling overboard and means of reboarding (2.3)				
Visibility from the main steering position (2.4)				
Owner's manual (2.5)				
Integrity and structural requirements (3)				
Structure (3.1)				
Stability and freeboard (3.2)				
Buoyancy and flotation (3.3)				
Openings in hull, deck and superstructure (3.4)				
Flooding (3.5)				
Manufacturer's maximum recommended load (3.6)				
Liferaft stowage (3.7)				
Escape (3.8)				
Anchoring, mooring and towing (3.9)				
Handling characteristics (4)				
Installation requirements (5)				
Engines and engine spaces (5.1)				
Inboard engine (5.1.1)				
Ventilation (5.1.2)				
Exposed parts (5.1.3)				
Outboard engines starting (5.1.4)				
Fuel system (5.2)				
General — fuel system (5.2.1)				
Fuel tanks (5.2.2)				
Electrical system (5.3)				
Steering system (5.4)				
General — steering system (5.4.1)				
Emergency arrangements (5.4.2)				
Gas system (5.5)				
Fire protection (5.6)				
General — fire protection (5.6.1)				
Fire-fighting equipment (5.6.2)				
Navigation lights (5.7)				
Discharge prevention (5.8)				

ANNEX H

Wind stiffness calculations

WIND STIFFNESS CALCULATIONS

$$v_w = \sqrt{\frac{13.hT + 390.B_H}{As.(h_{CE} + h_{LP})(\cos\phi_T)^{1,3}}}$$

$$v_w = \sqrt{\frac{13.*(4.47)*(9.5) + 390*(1.87)}{9*(2.10 + 0.0)*(\cos 39°)^{1,3}}}$$

$$v_w = \sqrt{\frac{552.05 + 729.3}{18.9*(0.777)^{1,3}}}$$

$$v_w = \sqrt{\frac{1281.345}{13.618}}$$

$$v_w = \sqrt{94.092}$$

$$v_w = 9.70 ms^{-1}$$

ANNEX I

Letter to MG Boats Dealerships

Recreational Craft Directive and *Bez 2* sailing boat

Following the recent Marine Accident Investigation Branch (MAIB) investigation of the fatal capsize in July 2005 of a *Bez 2* sailing boat, the British Marine Federation (BMF) has offered to assist the official UK importer, MG Boats of Sheringham, by contacting all dealers selling the *Bez 2* to alert them to findings of the MAIB report and specific recommendations regarding compliance with the Recreational Draft Directive (RCD). BMF is undertaking this notification exercise in support of MG Boats as a Member of BMF and is in no way responsible for, nor assuming any future responsibility for, the *Bez 2* sailing boat or issues that may arise following implementation of the actions required below.

Based on stability testing in 2001 and 2003 undertaken by the builder of the Bez 2 in association with a competent third party, the boat was designated Design Category C, indicating suitability for 'inshore' conditions. The RCD defines the conditions for Design Category C as maximum wind strength Beaufort 6 and maximum significant wave height 2m. However, the MAIB investigation found that the RCD design category assigned to the *Bez 2* during manufacture was inappropriate and that without regard to this in operation of existing models there exists the potential for similar accidents.

During stability testing of the *Bez 2* to ISO 12217-3, it was established that the boat would not meet the criteria for Design Category C but would, with relevant warning notices and information in the Owner's Manual, meet the criteria for Design Category D. However, it should also be noted that the testing highlighted a propensity that, when inverted, following a capsize and having taken on some water, the boat was susceptible to further water ingress via the hull and hull/deck seams, rendering the boat extremely tender and unable to be safely righted. It is believed that this failure was the cause of the capsize and non-recovery, during which two persons died.

The recommendation from MAIB to MG Boats is that owners of the *Bez 2* are contacted as soon as possible to advise them of these issues. Owners should be notified in writing to alert them of the fact that the boat is considered suitable for use only in conditions limited to Design Category D. The RCD defines the conditions for Design Category D, 'sheltered waters' as maximum wind strength Beaufort 4 and maximum significant wave height 0.3m.

In a parallel investigation by North Norfolk Trading Standards, MG Boats were required to withdraw the *Bez 2* from sale and to make necessary modifications to relevant documentation, including Owner's Manual, Declaration of Conformity and Builder's Plate. This requirement extends to all dealers holding stock of the *Bez 2*.

In assisting MG Boats to communicate the above issues and notify dealers and owners of existing boats, I would request that you confirm, in writing, receipt of this letter and detail actions taken as required above. In due course I will report to MAIB so that the file on the *Bez 2* may be updated to record action taken: I would be grateful therefore if you would respond by end of February 2006.

Yours sincerely