

THE HARTLEY TRAILER SAILER 16 ASSOCIATION OF AUSTRALIA

TS.16 CLASS TOLERANCE & MEASUREMENT FORM

SECTION 1: HULL MEASUREMENT FORM

Note :- measurement is not to be done if the number is not engraved on the centreboard case, port side, aft.

PLEASE BOAT NAME

USE

BLOCK MEMBERSHIP No ASSOC. BOAT/SAIL No

LETTERS

OWNERS NAME PHONE No (.....)

ADDRESS

..... POSTCODE

BUILDERS NAME DATE BUILT.....

CONSTRUCTION (Timber, Fibreglass, Composite, Foam Sandwich) PLAN Number

NATIONAL MANAGEMENT COMMITTEE USE. "A" CLASS APPROVAL YES / NO Date

MEASURERS DECLARATION

I hereby certify that the measurements recorded herein are a true and correct record of the measurement check made by me. I further certify that I consider the craft measured is built in accordance with the Plans and Specifications of this class and no departures from these plans has occurred, (except as recorded in the Measurers Remarks).

I declare that to the best of my knowledge, this craft is acceptable for registration under the Association's rules.

Authorised Measurer – Signed Date

Print Name Phone ()

MEASURERS REMARKS

OWNERS ACCEPTANCE

I hereby agree that boat No has been measured to my satisfaction in accordance with the measurement form of the HARTLEY T516 ASSOCIATION OF AUSTRALIA.

OWNER – Signed Date

NATIONAL MEASURERS REMARKS

BUILDERS' AND MEASURERS' INSTRUCTIONS

A) *All measurements submitted For "A" Class certification shall be recorded on the LATEST ISSUE measurement form, regardless of the age of the boat or when construction was started. If, because of a boat's age or time of construction, a measurement tolerance does not comply, that measurement shall be recorded. The Measurer shall enter a note, in the measurer's remarks, referring to that measurement with details of the reason for acceptance. Builders please check with your STATE MEASURER to ensure that the CURRENT ISSUE form is being used. Weighbridge dockets or State Association endorsed weighing certificates must be attached to this form when submitted.*

B) **A boat shall not be measured unless the Association Boat/Sail number is carved (or etched for FIBREGLASS/FOAM SANDWICH) on the after top port side of the centre case in figures not less than 25mm high and the owner is currently a financial member of the Association.**

C) Builders' attention is drawn to certain sections of the TS.16 Constitution that state that compliance with the Measurement Form alone is not sufficient to grant an "A" Class Certificate. The boat must also conform to the official plans of the Association and also, if applicable, the fibreglass specifications of the Association.

D) Except in the case of complete fibreglass hull and deck, options are allowed on the design of cabin windows, bulkhead openings and hatch sizes. Further latitude is allowed in the design of cabin floor, cockpit seats (excluding height), coamings, and outboard well, provided they conform to tolerances shown on the Measurement Form.

E) Hulls shall conform to the lines, dimensions, timber sizes and specifications detailed on the Official Plans and Measurement Form. Construction methods shall be as shown on the plan. All timbers as shown on the plan shall be used in construction and these timbers shall be of a minimum size as shown on the plan. An outboard well must be built into the main hull construction. It must be a minimum of 305mm in length, measured from the aft edge of the transom.

F) The cabin to conform to the shape and size of plan and to the dimensions of the Measurement Form. Windows may be placed as desired by the owner, and a bulkhead or doorway may be built in if desired. Handrails, ventilators, hatches, lifebuoy carriers, etc. may be added. All hatchways shall have adequate hatch covers. Built in cabin lockers, tables, shelves, or other fixtures may be added to the owner's taste, but all boats must provide at least two in-built bunks not below the size laid down in the Official Plans and Measurement Form.

G) Hulls may be sheathed with fibreglass to any desired level from the bottom of the deadwood to deck level. All surfaces above and including decking may be covered with any protective material, for that purpose.

H) Deck fittings for securing forestay and shrouds are optional as to type but must satisfy the Measurer and Management Committee as to strength, suitability and compliance with the Official Plans. Other fittings, eg. mooring cleats, toe rails and hatches, are optional as regards type and layout but must conform to accepted safety standards.

I) Hulls constructed of fibreglass will be accepted into the Association and will be eligible for "A" Class Certification, provided that the hull conforms to the fibreglass specification and have been manufactured from a mould approved by the Association. Hulls built, using the foam sandwich method on a male jig, are eligible for A Class Certification, providing they comply with the specifications set out by the Association and the official Measurement Form, where relevant.

J) Composite construction using fibreglass hull, (to Association specification) using timber and plywood construction of cockpit, deck and cabin will be allowed if constructed in accordance with the Official Plans and Measurement Form. Attention is drawn to section 4 of the Tolerance and Measurement Form. From July 1984, timber hulls with fibreglass cockpit, deck and cabin mouldings will not be allowed.

K) The weight of the hull with decking, cabin, flooring, built in bunks, fixed fittings, centreboard, rudder, stock, tiller, hatches and other permanent built in fixtures (eg. tables, lockers, shelves etc.) but stripped of all other loose gear including sails and spars, shall be not less than **360kg**. If any weight addition is necessary to meet this figure it shall be distributed as follows:-

Additional weight up to a maximum total of **25kg** shall be distributed evenly fore and aft on either side of the centre case logs, the centre of which will be **685mm** aft of frame 3.

Additional weight in excess of **25kg** shall be distributed evenly between an area at the stern and an area at the bow. The stern weight shall be entirely above and fixed to the top surface of the cockpit floor within an area **76mm** either side of the centre line, the transom and a point **230mm** forward of the aft face of the transom at cockpit floor height. The bow weight shall be entirely above the top surface of the cabin bunk line within an area **75mm** either side of the centre line, the stem and a point **2460mm** forward of the aft face of the cabin.

Builders' attention should be drawn to the desirability of using lightweight materials.

L) Timber and plywood boats must carry at least **0.300 cubic metres** of approved buoyancy, or buoyancy material. Fibreglass and composite fibreglass/timber/plywood boats must carry at least **0.425 cubic metres** of approved buoyancy, or buoyancy material. The buoyancy must be fitted inside the boat in such a fashion as to prevent dislodgment in the event of a capsized or other accident, where the safety of the crew would be involved. Where buoyancy is in the form of sealed compartments, a drain hole and screw type plug shall be fitted to each compartment. There shall be a minimum of four (4) compartments unless supplemented by approved buoyancy material.

M) In the event that a combination of buoyancy material and sealed compartments are used, there shall be a minimum of two (2) compartments plus an additional **0.150 cubic metres** of approved buoyancy material fitted elsewhere within the boat. Effective buoyancy shall be calculated by the exclusion of the largest compartment from the total volume.

N) Aluminium and stainless steel are acceptable alternative materials for construction of the rudder stock, built to rudder and stock detail sheets included in this measurement form. Stainless steel is an acceptable alternative material for centreboards.

O) Aluminium spars shall conform strictly to the measurements and specifications detailed on the Official Plans and Measurement Form. The type of fittings used on spars is at the discretion of the boat owner.
Diamond spreaders may be angled.

P) Bands (Hull measurement form item No 52 and Sail Measurement Form item No 2.1) must be painted around the mast and boom, in a contrasting colour and must be not less than **20mm wide**.

Q) "Hiking Straps" (foot straps) and handles on cabin (provide that they do not extend the users grip beyond 50mm from the cabin side) are acceptable. Trapezes, swing planks or similar devices including comfort boards will not be permitted.

Any modifications, repairs or replacements must conform to the measurement form current at the time such alterations are carried out.

NOTE:- Prefix letters to the item number will indicate to which construction it is applicable:

T = Full Timber. F = Full Fibreglass. C = Fibreglass Hull with Timber/Plywood Deck and Cabin.
S = Foam Sandwich (male mould)

WARNING TO BUILDERS:

Due to paper stretch and other inaccuracies associated with plan reproduction, it is recommended that Frame No.4 (four) measurements be verified. This will ensure that the Beam measurement

Hull Measurement Form – Sheet 4 of 11 - Issued 14 January 2009

MyDocs/TSNat/Measurement/Measurement Form – Jan09BH

(Measurement 3) is within tolerance.

Type	Ref	Detail	Plan	Max	Min	Actual
			mm	mm	mm	mm
S/T/F/C	1a	Net weight. Compensating weight correctly positioned as per builders & measurers instructions	360kg		360kg	
S/T/F/C	1b	Compensating weight at centre case logs		25kg	0kg	
S/T/F/C	1c	Total compensating weight at bow & stern		No max	0kg	
S/T/F/C	2	Length of hull at sheer (stem less stem capping to transom at sheer) +20mm S/F/C	4972	4995	4945	
S/T/F/C	3	Beam of hull at sheer at frame 4 (excluding gunwhales) at cabin bulk head S/F/C	2222	2245	2195	
T/C	4	Thickness of all plywood (excluding centre case).	6		6	
T/C	5	Curve of stem, frames, spring and beams (foredeck and cabin) to be as shown on official full size plan. Templates may be applied.		+10	-10	
T/C	6	Frames to be in proper station. Stem & Frame tolerances to be measured from the aft face of frame one at the Spreader line, (no false or half frames). Beams (foredeck and cabin) to be in proper station. Note: Measurements to be determined in accordance with the Instructions to Measurers in the State Measurers handbook		+25	-25	
S/T/C	7	Transom width at sheer.	1905	1930	1880	
S/T/C	8	Transom width at lower chine.	1422	1450	1400	
S/T/C	9	Transom depth (outside of hull planking at heel to top of decking at sheer).	527	545	510	
S/T/C	10	Transom angle control (outside planking at heel to plumbline at centre line suspended from top of decking at sheer).	102	80	125	
S/T/C	11	Deadwood, bottom lower edge (measured horizontal). Maximum taper 457mm, Minimum width 25mm, maximum corner radius of 13mm.				
S/T/C	12	Deadwood depth (at aft end of 457mm taper)	19	None	19	
S/T/F/C	13	Chainplate to bow (measured along the centre line, excluding stem capping).	2286	2435	2135	
S/T/F/C	14	Bow (excluding stem capping) to fore edge of mast. +20mm F/C/S.	1651	1675	1625	
S/T/C	15	Bow (excluding stem capping) to cabin front (at centre line) +20mm F/C/S.	1270	1295	1245	

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MyDocs/TSNat/Measurement/Measurement Form – Jan09BH

Type	Ref	Detail	Plan	Max	Min	Actual
			mm	mm	mm	mm
S/T/C	16	Cabin sides (vertical height at front above deck).	305	355	255	
S/T/C	17	Fore width of cabin (at deck level).	1359	1410	1310	
S/T/C	18	Aft width of cabin (at deck level)	1905	1930	1880	
S/T/C	19.	Length of cabin overall.	1803	1830	1780	
T	20.	Cabin height from top of keelson at aft end (exclude hatches and estimate cabin curve).	1143	1195	1095	
S/C	20a	Cabin height from top of keelson at aft end (exclude hatches and estimate cabin curve).		1205	1105	
S/C	21.	Distance from aft face of cabin bulkhead to the outer edge of the transom (at deck level)	1908	1920	1896	
T	23.	Centre board bolt centre to aft face of frame 3. Only one bolt position permitted.	203	215	190	
S/F/C	23a	Centre board bolt centre to forward end of centre case slot at the keel. Only one bolt position permitted.	N/A	92	86	
S/T/F/C	24	Centre board case slot width.	19	23	15	
S/T/F/C	25	Centre board case slot length at keel.	1346	1365	1325	
T	26.	Centre board case height from top of keelson at frame 4 (excluding capping).	483	495	470	
S/C	26a	Centre board case height (exclude capping)		515	490	
S/T/F/C	27	Centre board, mild or stainless steel (no ballast). Fairing allowed to a max of 38mm from any edge.	As plan	10	8	
S/T/F/C	28.	Centre board shape. Tang may be up to 30mm longer than plan	As plan	+6	-6	
T	29.	Centre case capping length from aft end of case	750	750	685	
S/F/C	29a	Centre board, capping length from aft end of case.	720	720	655	
T	30	Frames (at any point). Maximum rounding 5mm radius	63x19	66x21	63x19	
S/T	31	Chines (allow for bevelling). Maximum rounding 5mm radius.	44x32	47x35	44x32	
T	32	Stringers (16 as per plan). Maximum rounding 5mm radius.	38x16	41x18	38x16	
S/T	33	Bunks, length at centre line from aft side of frame 1	1905	No max	1905	
S/T	34	Bunks, width at frame 3.	838	none	610	
T/C	35.	All other structural timbers to be as per plan. Maximum rounding 5mm	Sizes			
		Under 25mm		+1.5	-0	
		Over 25mm		+3	-0	

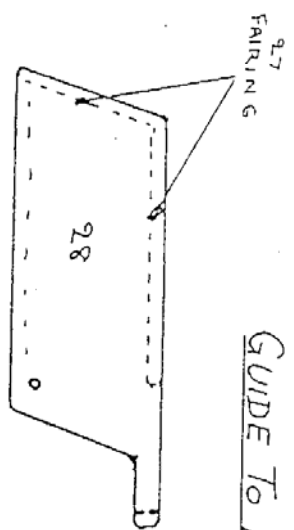
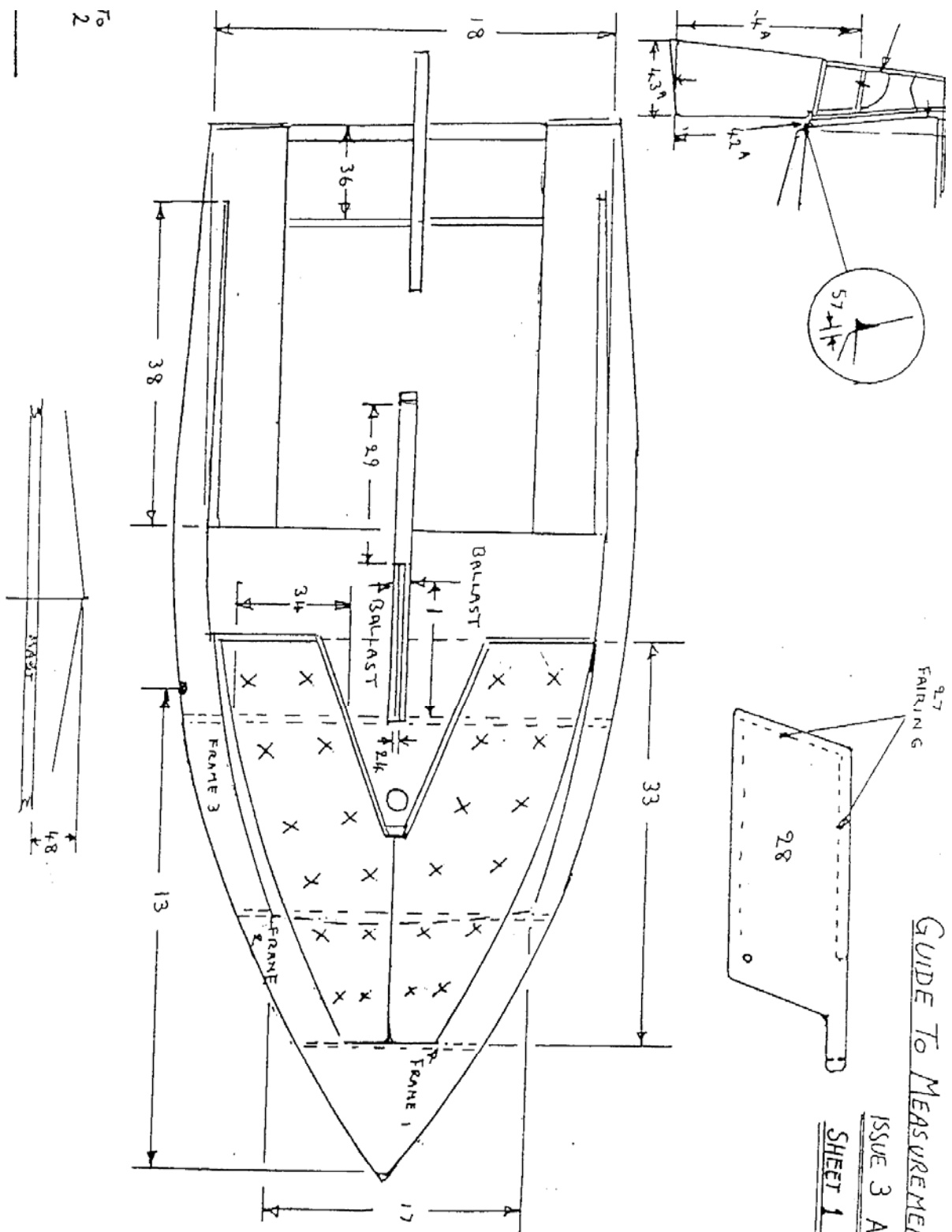
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MyDocs/TSNat/Measurement/Measurement Form – Jan09BH

Type	Ref	Detail	Plan	Max	Min	Actual
			mm	mm	mm	mm
S/T/C	36.	Outboard well, width from rear of transom edge	305	535	305	
S/T/C	37.	Outboard well, lowest point of cutaway on transom below top of decking at sheer.	20	20	nil	
S/T/C	38.	Coamings (in line with cabin).				
		Length.	1575	1775	1375	
		Height, at cabin.	114	125	100	
		Height, 1370mm aft of cabin.	38	50	25	
		TOP TO BE IN A STRAIGHT LINE.				
S/T/C	38a	Coamings (on gunwale).				
		Length.	1575	1775	1375	
		Height, at cabin.	152	165	140	
		Height, 1370mm aft of cabin.	51	65	40	
		TOP TO BE IN A STRAIGHT LINE.				
S/T/C	39	Cabin hatch openings (optional). Width	760	760	nil	
		Length	457	915	nil	
S/T/F/C	39a	Cabin hatch or hatches to suit. Must be of same material and construction as the cabin top.				
		RUDDER if all wood, then to plan				
		ALTERNATIVE RUDDER				
S/T/F/C	40a	Stock - Aluminium square tube (sq stainless steel of equivalent strength is acceptable)	25x25x 3mm	No max	25x25x 3mm	
S/T/F/C	41a	Thickness of blade before fairing.	25	25	20	
S/T/F/C	42a	Depth (below the outside planking when hung on pintles, leading edge vertical).	635	660	610	
S/T/F/C	43a	Blade width at bottom edge excluding round corners, shape according to plan. Maximum Radius of bottom corners 65mm. Template may be used	432	445	420	
S/T/F/C	44a	Centre of blade at bottom to pivot pin	845	860	830	

SPARS AND RIGGING

Type	Ref	Detail	Plan	Max	Min	Actual
			mm	mm	mm	mm
S/T/F/C	45.	Mast section, aluminium - no taper. Capral K4596	89x59			
S/T/F/C	46.	Boom section, aluminium.	64 x 45	89 x 59 K4596	64 x 45	
S/T/F/C	47	Jib pole, effective operating length	2515	2590	None	
S/T/F/C	48.	Spreaders, mast side to wires.	279	305	255	
S/T/F/C	49.	Spreaders, height from foot of mast to centre line of spreaders (see note 52d).	2743	2770	2720	
S/T/F/C	50	Hounds (shrouds, diamonds, forestay and jib halyard) fitting from foot of mast (see note 52d)	4877	4877	4725	
S/T/F/C	50a	Diamond stays – lower terminating point from mast base (see note 52d)	686	700	660	
S/T/F/C	51.	Rigging - Adequacy of fittings, shrouds, forestay, diamond stays, halyards and cleats. Shroud to be attached to chain plates & secured within 25mm of skin at deck level. Shrouds to be in a straight line from deck to mast at hound height. Forestay extensions over the bow not permitted.				
S/T/F/C	52.	Black Bands - (min. 20mm wide)				
		a. Aft side of mast, excluding sail-track to inner edge of band on boom.	3405	3405	No min	
		b. Bottom of mast to upper edge of lower black band	355	395	355	
		c. Distance between inner edges of top and bottom bands on mast.	5790	5790	No min	
		d. Mast step base thickness in excess of 25mm to be added to bottom of mast for determining items 49, 50, 50a & 52b.				
		SATISFACTORY				YES/NO
S/T/SC	53	Buoyancy- At least 0.3cu. metres.				
F/C	53a	Buoyancy- At least 0.425cu. metres.				
S/T/F/C	54	Strength of flooring.				
S/T/F/C	55.	Centre board tackle and cleat.				
S/T/F/C	56	Paddles (min 2). O.A. length 1200mm Blade area 0.04m ²				
S/T	57.	Transom Trim, 12mm maximum allowed.				
S/T/F/C	58	Tiller and tiller extension				
S/T/F/C	59	Rudder hold-down method - shock cord allowed.				

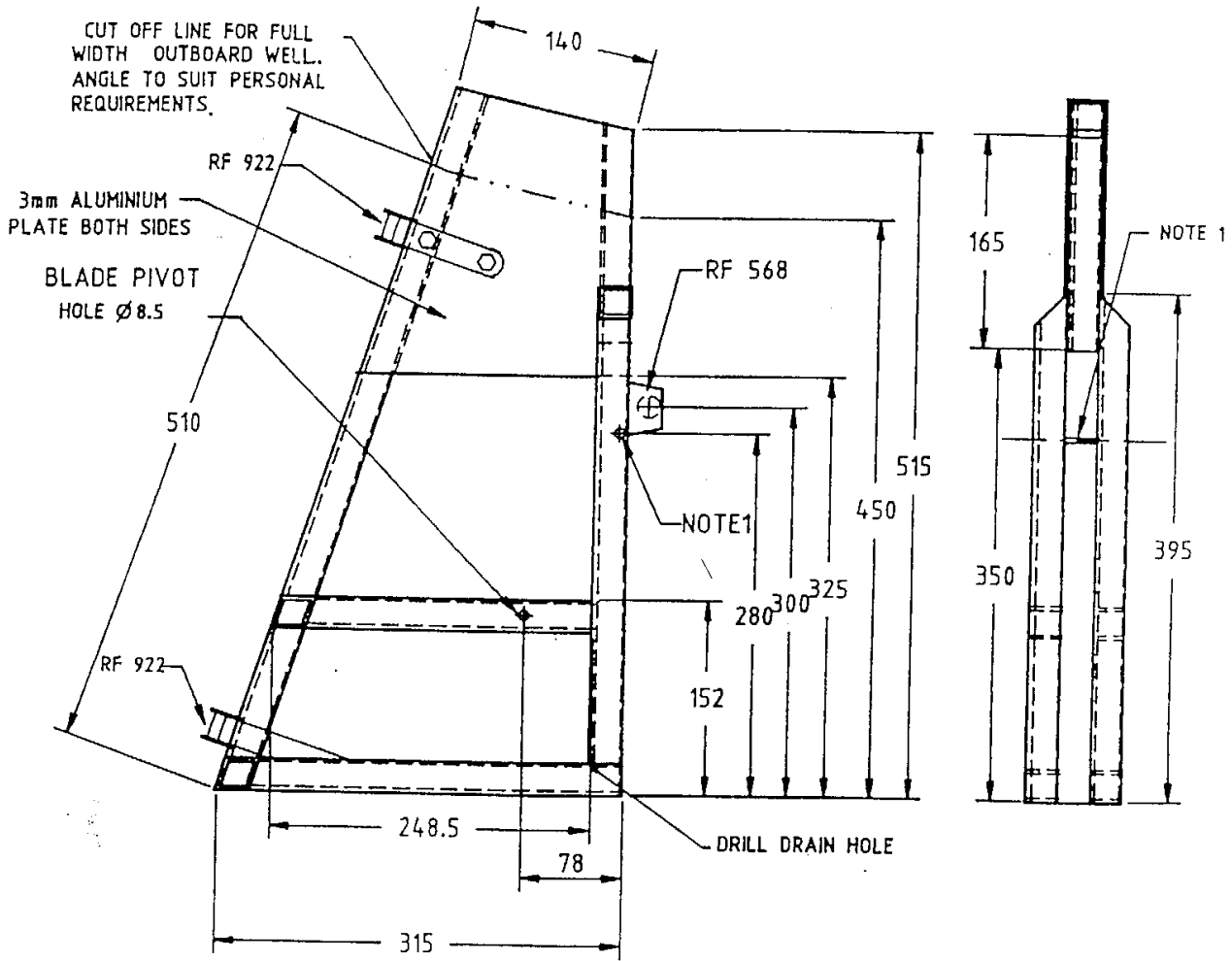


GUIDE TO MEASUREMENT POINTS

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SHEET 1 of 2

TOIN TO SHEET 2.



T.S. 16 RUDDER STOCK

DESIGNED AND DEVELOPED IN SOUTH AUSTRALIA

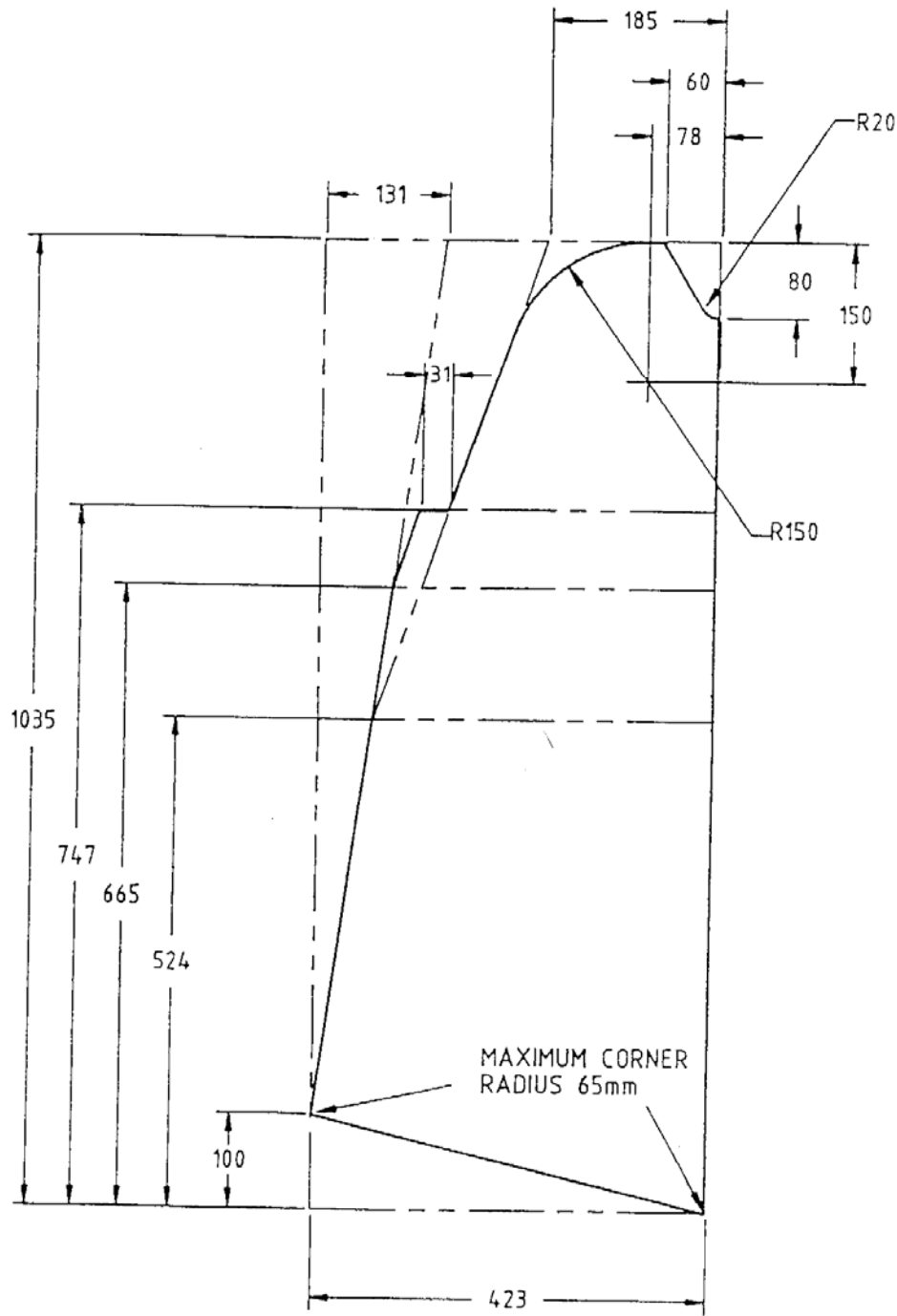
NOTE 1: M5 THREADED STUD, FULL WIDTH WITH 25mm SPACER TUBE

MATERIAL: ALUMINIUM

25 x 25 x 3mm TUBE E 20782 OR EQUAL

3mm MARINE GRADE FLAT AT TOP OF CHEEKS

WELDED JOINTS (UNDERCUT)



ALTERNATIVE RUDDER BLADE - APPROVED PROFILE

TOLERANCE ON BLADE PROFILE $\pm 12\text{mm}$

NOTE TOP PROFILE TO BE ADJUSTED TO SUIT ANGLE OF TRANSOM AND REQUIRED RAKE OF BLADE.