

**TWIN SCREW MOTOR YACHT  
"KURPFALZ"  
CONDITION SURVEY**



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YOUR REF:

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## TWIN SCREW MOTOR YACHT "KURPFALZ" CONDITION SURVEY

### BACKGROUND

At the request of [REDACTED] a survey was carried out on the above vessel whilst lying in drydock at Port Medway Marina, on 10 July 2003, by the undersigned surveyor.

The survey was requested in order to provide a condition report prior to purchase. For the purpose of this survey it has been assumed that the vessel will be required to operate both on inland and coastal waters.

### GENERAL PARTICULARS (Details as advised and published but not checked)

Length Overall	17.0 m
Length Waterline	15.70 m
Beam	3.6 m
Draft	1.0 m
Built	1958
Builder	Schless-Werft
Where Built	Wesel a. Rhein
Official Number	N/A
Registered Tonnage	N/A
Engines	2 x Mercedes Benz type OM 355
Engine Power	2 x 240 bhp @ 2200 rpm
Maximum Speed	16-17 knots



## THE SURVEY

“KURPFALZ” has a hull of warped vee bottomed, single chine form with a raked stem and transom stern with propellers in semi tunnels. The hull, deck and superstructure construction is of riveted aluminium alloy. The internal fitout, other than the main bulkheads which are of aluminium alloy, is of timber construction.

It is understood that the vessel was originally built as a patrol boat for the German government and has subsequently been converted to a pleasure craft.

The hull and deck structure were visually inspected and tested as considered necessary and the defects found are listed together with recommendations.

## HULL EXTERIOR

### Bottom Shell

1. Random ultrasonic thickness readings were taken on the hull shell plating using a Touchstone 3 gauge and the results confirm that the plating remains within close tolerance of the original thicknesses shown on the supplied midship section drawing (viz. bottom shell A strake and side shell C strake 5mm with bottom shell B strake 4.5mm).
2. The bottom was found to have been satisfactorily washed off with no weed or barnacle growth remaining. The antifouling paint was generally intact with localised areas flaked or blistered. Small areas were scraped back to bare aluminium and the surface found satisfactory.
3. A welded external doubler approx 150 x 150 mm was noted on A strake starboard side in way of the forward accommodation bilge. On internal examination there appeared to be a minor indent in this area. As far as could be determined the doubler was fitted in way of local impact damage but appeared satisfactory.
4. The bottom plating was hammer tested throughout and appeared satisfactory except as noted below.
5. There was some localised pitting of the plating above the starboard propeller.

**Recommend** the affected area be thoroughly cleaned by wire brushing and the extent and depth of pitting be further examined. In the event that the depth of pitting is limited to about 1mm and is localised it is recommended that the pits be degreased and epoxy filled to prevent further pitting. Heavier pitting will require doubling or replating.

6. The bar keel was set up and distorted at five locations along its length. This damage is consistent with previous grounding(s).

**Recommend** the watertight integrity of the riveted connection in way of the damages be confirmed by part filling the bilges in way with fresh water. Provided this test proves satisfactory, the damage can be considered cosmetic and no further action be taken. The results of application of heat to the affected areas required to effect repair would be likely to result in subsequent leakage through the rivets.

7. The anodes (3 each side of bar keel and 3 across stern totalling 9) were found between 90% and 100% wasted.

**Recommend** the anodes be renewed using weights, type and location in accordance with anode manufacturers recommendations for an aluminium alloy hull of this size.

### Side Shell

8. The green paint finish is in generally fair condition with small areas of the top coat flaked off and a number of scraped/damaged areas.

**Recommend** locally touch in/repaint as required.

9. There is a heavy timber belting approx mid height of the topsides secured by vertical through bolts and screws to alloy angle retaining bars. The timber belting was found generally poorly coated and locally decayed at a number of the scarf joints.

**Recommend** the decayed sections of timber be cut out and new sections let in using scarf joints suitably sealed against the ingress of moisture. On completion the belting should be properly prepared and recoated.

### Rudders

10. The rudders are of double plate hollow construction and the stainless steel stock is supported by upper roller bearings in the rudder tube and one bottom pintle supported by a skeg attached to the propeller "Y" brackets. The rudders were not lifted although the clearance in both bottom pintle and upper bearing appeared satisfactory. The upper bearings are greased by local nipple.
11. The steering was found to be excessively heavy and associated with a loud "groaning" sound when first tested. It was also noted that the vessel had been drydocked without any side or bilge shores, relying entirely on the twin rudder skegs to provide lateral support. The docking block timber capping was heavily crushed in way of the skegs. Subsequently the vessel was shored up on both chines and the capping cut away below the skegs. In this condition the steering was retested and full movement achieved without excessive stiffness or noise.

**Recommend** that the current geometry of the rudder skegs should be confirmed by measurement using an extension of the keel line by taut wire as datum. It is also **recommended** that full and free movement of the steering be reconfirmed once the vessel is refloated.

12. The nut at the lower pintle was not locked on the port rudder and the locking split pin on the starboard rudder was wasted.

**Recommend** both nuts are provided with substantial corrosion resistant locking arrangements

### Steering Gear

13. The vessel is fitted with chain and rod mechanical steering with a bulkhead mounted steering wheel in the wheelhouse and sheaves under the side deck on the starboard side. The starboard rudder stock is fitted with a quadrant to accept the chain, the port rudder stock is fitted with a tiller and the two stocks are connected by a tie bar. Emergency steering is provided by a hand tiller which can be dropped onto the square end of either stock through screwed deck plates.

Wear of the steering chain could not be accurately determined in situ.

**Recommend** the steering chain be checked for wear after releasing the tension.

### Propellers And Sterngear

14. Two three-bladed fixed pitch propellers and stainless steel tailshafts are fitted. The shafts appear to have bronze liners in way of the bearing surfaces and are supported by fabricated "Y" brackets with a water lubricated bearing of unknown type and water lubricated Cutless bearings in the sterntube. As far as can be seen in situ the tailshafts and propellers are satisfactory. The tailshafts have not been removed for examination at this survey.

**Recommend** that, as a minimum, shaft bearing clearances are measured by use of feeler gauge or by careful jacking against a clock gauge. It would, however, be preferable to draw the shafts for examination of the surfaces in way of bearings and glands.

### DECK

15. The deck is of riveted aluminium alloy construction using non slip "chequer plate" and appears externally satisfactory. Hinged aluminium hatches provide access to the forepeak and steering compartment.
16. Forepeak hatch not capable of being secured weathertight (locked with hasp and padlock only).

**Recommend** hatch securing arrangement be modified by fitting dogs with wedge action to positively pull cover down onto gasket.

### Guardrails And Handrails

Guardrails are fitted from near the bow to the stern with two openings each side for access. (Handrails are fitted to the casing top and alongside the wheelhouse P & S.)

17. The after side deck section of rails P & S are inadequately secured and the timber cappings loose. *Removed*

**Recommend** the stanchion base securing bolts be increased in size and suitable spacing pieces be fitted under the inboard edge of the bases to create a flat mating surface. The securing screws for the timber capping should be replaced as necessary

18. There is no chain across the gap in the rails at the bow and the after side deck.

**Recommend** safety chains be fitted.

### HULL INTERIOR

The general arrangement of the craft is as follows from forward:-

Forepeak  
Forward Accommodation  
Wheelhouse  
Engine Room

Aft Accommodation  
Steering Compartment

**ACCESS NOTE**

The hull and deck structure was not generally accessible for internal examination through the forepeak, accommodation and engine room areas due to fixed linings to deckhead and side shell. However, access was generally satisfactory below sole level except in the engine room where many of the floorplates were screwed down.

**Sea Inlets And Overboard Discharges**

19. The hull valves have not been opened up for internal examination at this survey but have been operated and their attachment to the hull examined and found satisfactory except as noted below. The valves examined included the following:-

Main engine and gearbox cooling sea inlets P & S  
After toilet holding tank sea inlet P  
After toilet compartment redundant sea inlet S  
Forward sea toilet inlet and discharge P  
Galley sink overboard S  
Bilge overboard S  
Redundant engine room overboard S

20. The redundant sea inlet valve outboard of the aft toilet compartment was found to have wasted and broken securing bolts. It was stated by the Vendors that an ingress of water had been noted in this area.

**Recommend** the redundant fitting be replaced with a welded blanking plate or it be refitted using stainless steel bolts such that both the flange of the valve and the bolts be insulated from the alloy shell plating.

21. The galley sink valve was found seized.

**Recommend** valve be freed off

22. The bronze valve supplying the sewage holding tank port side aft was found connected to the hull penetration via a mild steel stub pipe threaded into the skin fitting. Whilst the current arrangement appears sound it is considered that the mixture of metals involved together with the distance of the valve from the hull penetration is unsatisfactory.

23. **Recommend** the valve be replaced with an aluminium alloy valve attached to a short stub piece welded to the shell plating.

**Forepeak**

24. The forepeak has been incorporated into the forward accommodation area in order to provide an additional double berth. *(Removes)*

25. The collision bulkhead has been crudely cut away thereby greatly reducing the strength of the support to the foredeck structure and invalidating the watertight subdivision of the hull. *TO FULL ANCHOR*

**Recommend** the collision bulkhead be reinstated using a welded aluminium insert

plate suitably stiffened. In the event that access is required through the bulkhead a watertight hinged hatch could be fitted which could be left open when alongside.

26. Polystyrene foam insulation has been used on the bulkhead.

**Recommend** the polystyrene be removed as it constitutes a fire hazard.

### Forward Accommodation

27. This space provides seating/berth space together with a galley area to starboard and a toilet compartment to port. It is concluded that the hinged skylight could provide a secondary means of escape from this space.

28. The collision bulkhead forepeak drain valve is not fitted with a handle and is corroded.

**Recommend** the valve be freed off and a handle provided or replace valve.

29. The port after portlight has a cracked glass

**Recommend** the glass be renewed

### Wheelhouse

30. The wheelhouse is fitted with 12 in number toughened glass windows set in rubber sections. The rubber glass retaining sections are generally perished and split.

**Recommend** as a minimum the rubber mouldings be renewed. It should be noted that this method of securing the glass is considered unsatisfactory for seagoing duty due to the possibility of the glass being pushed through the rubber. It is recommended that positive securing of the glass by fitting metallic frames be considered if the craft may be used in heavy weather.

### Engine Room (see also Machinery Installation)

An escape hatch is provided starboard side aft. A large section of the deckhead can be removed to permit engine removal.

31. The Webasto diesel fired hot air unit exhaust is lead through a flexible metallic hose to the deckhead. The flexible is unsupported and slack at the deckhead fitting allowing fumes to enter the space.

**Recommend** the exhaust hose be properly supported and the joints made gastight.

32. The forward bulkhead is partly covered with foam acoustic insulation.

**Recommend** the foam be tested for fire resistance and replaced if found combustible.

33. The controls, switchboard, etc are all labelled in the German language. (note this applies to other areas of the vessel including the wheelhouse)

**Recommend** that all labelling be translated into English for the new Owners.

### After Accommodation

This space provides two berths together with a toilet compartment to starboard. The toilet is connected to a plastic holding tank on the port side aft. Tank and piping integrity not tested.

34. The main engine exhausts and associated flanged joints are located within the wings of this space.

**Recommend** the joints be carefully checked during sea trials to ensure that no exhaust gases leak into this sleeping area.

### Steering Compartment

35. The port side hatch securing clip is heavily corroded.

**Recommend** the clip be renewed.

36. Polystyrene foam has been used to insulate areas of the deckhead.

**Recommend** the foam be removed as it constitutes a fire hazard

### Anchors & Cables

37. A stockless anchor is stowed in a hawse pipe on the starboard side connected to a substantial length of galvanised chain cable stowed in a locker within the forepeak. Hand operated windlass, free to turn, but windlass brake found inoperable.

**Recommend** the brake control spindle be freed off and the missing lower trunnion provided.

38. The current lead of the anchor cable from the chain pipe to the locker (hooked to the deckhead clear of the berth area) prevents ready use of the anchor.

**Recommend** anchor cable should lead directly from locker to chain pipe.

39. The chain cable was not ranged for examination

**Recommend** the chain be ranged, visually examined and gauged for wear. The length of cable should be verified as suitable for the intended area of operation.

40. No kedge anchor or cable provided.

**Recommend** second anchor and cable be provided.

### Fire Equipment

41. The equipment appears to consist of one 6 Kg dry powder extinguisher in the engine room with no evidence of service since manufacture in 1988. Fire equipment considered inadequate.

**Recommend** that, as a minimum, the following fire equipment be provided in accordance with Boat Safety Scheme or possibly MCA standards:-

3 Multi-purpose fire extinguishers with fire rating 5A/34B (combined rating at least 21A/144B)

Fire blanket for galley

In view of the size and complexity of the machinery installation it is strongly **recommended** that a fixed fire extinguishing system be provided in the engine room

### **Life-Saving Appliances**

42. There appears to be only one lifebuoy on board which is in poor condition.

**Recommend** the vessel's operators should ensure that LSA's appropriate to the service of the craft are provided, again to recognised standard e.g. MCA or BSS as appropriate.

### **Navigational Equipment**

43. The following equipment was found on board but not seen working:-

- a. Apelco VXE75 VHF radiotelephone
- b. Fluxgate compass repeater
- c. VDO echosounder
- d. Krupp clearview screen
- e. JFS Electronic radar (scanner only sighted - display stated available)

44. Electronic equipment not tested at time of survey

**Recommend** equipment be tested at time of machinery trials

### **LPG Installation**

45. The gas installation consists of a supply to the galley cooker by copper pipe with a flexible joining hose within the locker from a single gas bottle stored in a self draining steel locker on deck just aft of the wheelhouse starboard side. It should be noted that the BSS requirements for LPG installations are comprehensive and include testing of the system to BS 5482-3. No gas detection system is fitted. The single bottle installation is unlikely to provide adequately for long periods of living on board.

**Recommend** system to be tested and serviced as necessary by a CORGI registered engineer.

46. It is unclear whether the cooker is fitted with a flame failure device.

**Recommend** the cooker be replaced if not of flame failure type.

47. The supply is currently provided by a butane bottle temporarily situated alongside the bottle locker and connected by a flexible hose dated March 1990.

**Recommend** the gas bottle be relocated inside the locker and the flexible hose be renewed.

## Machinery Installation

The propulsion machinery consists of two flexibly mounted Mercedes Benz type OM355 6 cylinder diesels with ZF type BW55G reversing gearboxes. From enquiries of the engine manufacturer's UK office it appears that the engine is later than 1958 suggesting that the craft has been re-engined. The gearboxes are marked with date 1958.

Engine cooling appears to be achieved by fresh water via either "keel cooling" to external coolers mounted in recesses in the bottom shell port and starboard amidships or by heat exchangers located outboard of each engine.

The drive is through an intermediate shaft with two flexible couplings to a conventional tailshaft. Profiseal type sterntube seals are fitted at the inboard ends of the sterntubes. Main engine exhausts are water injected and run aft to the transom above the waterline. Access to the installation is considered good.

48. No tests or trials were carried out on the machinery.

**Recommend** the Purchasers should satisfy themselves as to the condition of the machinery by a suitable test and trials program and test for leaks. In view of the relative complexity of the systems the vessel's operators should thoroughly familiarise themselves with the arrangements before proceeding to sea.

49. In view of the fact that the engine and gearbox are obsolete (believed manufactured 1974), spare parts availability is unclear (although stated good by Mercedes Benz UK for the base unmarinised engine).

**Recommend** the Purchasers investigate the availability of spare parts for the engines and gearboxes.

50. Remote wire operated fuel stops to both engines have been disconnected.

**Recommend** remote stops be reinstated unless alternative arrangements have been provided.

## Oil Fuel Tanks

Two mild steel tanks are provided which are located at the forward end of the engine room port and starboard. The fuel levels are indicated by sight glasses with self closing valves at the lower end. The tanks are vented to atmosphere at the engine room casing sides. Drain cocks are fitted in sumps under each tank

51. No provision is made to shut off fuel supplies remotely in the event of a fire

**Recommend** a valve is fitted at each fuel tank with means of operating from outside the engine room.

52. The tank sight glasses are not protected against damage.

**Recommend** protective cages be fitted around the sight glasses (BSS requirement)

53. The fuel tank vent openings are not fitted with flame arrester gauzes

**Recommend** vent end fittings incorporating gauzes be fitted (BSS requirement)

## **Bilge Pumping**

The bilge pumping system consists of suctions with strainers from forward accommodation, engine room, aft accommodation and steering compartment bilges. These suctions are controlled by a valve chest on the starboard side of the engine room. The forepeak is drained via local cock into the forward accommodation.

54. There is no bilge pump currently connected to the valve chest in the engine room.

**Recommend** that bilge pumps be provided in accordance with ISO 15083 or equivalent recognised standard, viz:-

1 primary pump which should be power operated and capable of being controlled from the wheelhouse. This pump could be main engine or electrically driven and connected to the existing valve chest.

1 secondary pump which may be hand or power operated (alternatively individual electric submersible pumps may be used for each compartment)

Each of the above must be able to pump from any compartment and have a capacity of at least 30 litres/min

## **Electrical Installation**

A 24 volt DC system is installed serving engine starting, navigation and domestic lighting and domestic pumping. Two heavy duty 12 volt lead acid low maintenance batteries connected in series are fitted on the port side of the engine room. A single pole master switch is provided at the battery connection. A switchboard with fuses for all main circuits is located on the engine room after bulkhead. A 230v 50Hz AC system is also provided with circuit breakers below the main switchboard. Each main engine has a belt driven alternator providing battery charging.

55. The electrical supply is provided by a single source

**Recommend** a second battery bank be installed together with a changeover/isolation switch and split charging. This would then provide backup supply for essential services such as engine starting and radiotelephone.

56. The batteries are not secured against movement and the terminals are not covered.

**Recommend** the batteries be suitably secured and covered (BSS requirement)

57. Whilst the original cabling has been well installed and supported on cable trays more recent additions are inadequately supported and with poor end connections. For example a number of cables run loose through the bilge area below the forward WC compartment and the cable supplying the stern light has poor quality connection below deck wrapped in insulating tape. The main battery supply cables are unsupported.

**Recommend** all cabling be routed as high as is practicable and properly secured, rerouted through conduits or on cable trays and all connections be checked and where necessary junction boxes provided.

58. The original cabling is now over 40 years old and the efficiency of the insulation is uncertain.

**Recommend** the circuits are subject to an insulation resistance "megger" test by a reputable marine electrical engineer.

### Pollution

59. There are no drip trays under the engines/gearboxes

**Recommend** drip trays be fitted (BSS requirement)

### BOAT SAFETY SCHEME (BSS)

60. In the event that the vessel is to be used on UK inland waterways it will be necessary for a BSS examination to be carried out and Boat Safety Certificate issued. Some of the requirements are indicated by notes against specific recommendations above.

### AIR DRAFT

61. At the request of the client an approximate measurement of air draft was carried out based on waterline marks on the antifouling and the results found as follows:-
- |  |          |
|--|----------|
| Height from waterline to top of wheelhouse roof (without fittings) | = 2.70 m |
| Height from waterline to top of signal mast (bolted to tabernacle) | = 4.60 m |
| Height from waterline to top of radar scanner                      | = 3.40 m |

### SUMMARY

"KURPFALZ" was found to be well constructed and examination of the aluminium alloy structure revealed no major structural failures. However, attention is drawn to the desirability of reinstating the collision bulkhead and checking for rivet leaks along the keel and the pitting in way of the propeller.

The method of supporting the hull in drydock using only the twin skogs gives some cause for concern as to the possible damage to the structure in way and particularly the alignment of upper and lower rudder stock bearings.

The complex machinery installation is considered a significant part of this vessel and it is most strongly recommended that extensive machinery trials be carried out.

The vessel's safety equipment is unsatisfactory and should be brought up to current standards.

Provided attention is given to all the items indicated in this report the condition of the "KURPFALZ" can be regarded as satisfactory for continued operation.

  
 P. SURVEYOR

(Signed on behalf of Roger Bell in his absence)

(see notes over page)

I have not inspected any parts of the structure which are covered (including coatings), unexposed or inaccessible and I am therefore unable to report that any such parts of the structure are free from defect.

This report is the property of Mr Charles Christian and the Surveyor accepts no responsibility for any information herein contained if used by other parties.

I have not investigated or examined the vessel for compliance with any regulations which might apply to the build or operation of this craft although some indications of standard requirements are given.