

Inland Waterway Vessels - Fitness for Purpose Inspection **Scheme - 2005/6**

Foreword

This scheme has been developed for application to United Kingdom (UK) existing inland waterways vessels, which are not passenger ships or pleasure vessels, but which operate commercially on category A, B, C or D waters.

The scheme is based on the experience of the PLA and BW schemes for fitness for purpose, but now includes relevant requirements of current UK Merchant Shipping regulations. These requirements are those in Statutory Instruments applicable to Class IX(A) vessels but adjusted, where appropriate, to be not above the proposed National Standards for new inland waterways vessels. The requirements also include some items which are not in current class IX(A) regulations but were mentioned in original outline proposals and these items are based upon the proposed National Standards.

The outline proposals upon which this scheme was based went out to public consultation at the end of 2003. The proposals were in Annex 4 of the consultation documents. The proposals were also commented upon later by experts from the industry, in the working group on Inland Waterways National Standards prior to this final draft.

The aim of the scheme is to inspect vessels currently operating on particular categories of water or areas or even particular rivers or stretches of water. The vessel, if it passes, can be provided with a Fitness for Purpose Certificate of Inspection, MSF 1116, indicating that it has been inspected and found to be in accordance with the scheme and fit to continue operating; but only on that particular waterway. This scheme does not require any structural alterations to the vessel. However, a minimum level of safety, equipment and pollution prevention is required.

The record of inspection section of the Fitness for Purpose certificate of Inspection is in two parts. i.e:-

- Part A Compliance with requirements of the scheme. Listed as Articles 1 to 5.
- Part B. Other items, listed as check list items 1 to 6 for which no standards are currently specified by UK regulations but need to be inspected/checked and watertightness, operability effectiveness and /or condition, as appropriate for the item, recorded.

Definitions

The definitions to be used are as follows and are based upon those to be found in the UK Inland Waterways National Standards:

1. 'Inland waterways vessel' a vessel intended solely or mainly for use on inland waterways.
2. 'Motor vessel' a vessel built to navigate independently under its own power.
3. 'Tug' a vessel specially built to tow other vessels.

4. 'Pusher-tug' a vessel specially built or adapted to push a push-tow formation.
5. 'Engine room' Those rooms and trunks to such rooms which contain:
 - a) internal combustion machinery used for main propulsion; or
 - b) internal combustion machinery used for purposes other than main propulsion where such machinery has in the aggregate a total power output of not less than 375 kW; or
 - c) any oil-fired boiler or oil fuel unit designed to produce steam or a thermal fluid with a pressure greater than 0.18N/mm^2 . Oil fuel unit includes any equipment used for the preparation and delivery of oil fuel, heated or not, to boilers (including inert gas generators) and engines (including gas turbines) at a pressure of more than 0.18 N/mm^2 ; **or**
 - d) inert gas generators, incinerators greater than 75kW, waste disposal units; **or**
 - e) oil fuel pumps with pressure greater than 0.98 N/mm^2 .
6. 'Superstructure' a watertight permanent structure with rigid boundaries joined to the deck in a permanent and watertight manner.
7. 'Wheelhouse' the space containing the controls and instruments necessary for manoeuvring the craft.
8. 'Accommodation' the space intended for the use of persons normally on board including galley, food store, toilet, bathroom, passageways and stairwell but not including the wheelhouse.
9. 'Hold' the part of the vessel, with a bulkhead at either end, intended to contain the cargo, either open topped or closed by means of hatches.
10. 'Tank' a tank permanently part of the vessel, the boundaries of the tank being either the hull itself or a separate 'skin'.
11. 'Plane of maximum draught' the plane corresponding to the maximum draught at which the craft is permitted to operate.
12. 'Safety clearance' the distance between the plane of maximum draught and a parallel plane passing through the lowest point at which the vessel is no longer deemed to be watertight.
13. 'Freeboard (F)' the distance between the plane of maximum draught and the parallel plane through the lowest point of the deck-side or, where there is no deck-side, the lowest point of the top of the hull side.
14. 'Bulkhead' a division of a given height, usually vertical, that separates areas of the ship and delimited by the vessel's bottom, side plating or other bulkheads.

15. Length (L)' the maximum length of the hull in metres, excluding rudder and bowsprit.
16. 'Weathertight' a component, device or a closing appliance is considered weathertight if it is designed to prevent the passage of water into the vessel in any normal operating conditions.
17. 'Watertight' a structural component or device fitted out in such a manner as to prevent any ingress of water.

Application

This scheme applies to vessels operating commercially on the UK's inland waterways mentioned in the **Foreword** except the following:-

1. Passenger ships
2. Fishing vessels
3. Pleasure vessels
4. Naval vessels

Requirements – Part A

The following items are the requirements as may be applicable to the type of vessel, and/or category of water, for the Fitness for Purpose Inspection scheme and are contained in Part A of the certificate as follows:-

Article 1. Safety clearance/free board and draught marking

1.1 Safety clearance

1. The safety clearance shall be at least 250 mm in category A waters, 300 mm in category B, 500mm in category C and 750 mm in category D waters.
2. The safety clearance in the case of vessels whose openings cannot be closed by weather tight devices, and for vessels sailing with their holds uncovered, shall be increased in such a way that each of those openings shall be at least 500 mm from the plane of maximum draught.
3. Vessels operating in category D waters shall have weathertight hatches. Vessels designed to operate in D waters with no hatch covers to be specially considered by the MCA

1.2 Freeboard

1. The minimum freeboard of vessels with a continuous deck shall be 150 mm.
2. In category A, B and C waters the minimum freeboard of vessels with sheer and superstructures may be reduced in accordance with the formula in **Appendix 1**.

1.3 Minimum freeboard

In view of the reductions referred to in Article 1.2.2 the minimum freeboard shall not be less than 80 mm.

1.4 Draught marks

1. The plane of maximum draught shall be determined in such a way that the specifications concerning minimum freeboard and minimum safety clearance are both met

at the same time. However, for safety reasons, the certifying authority may lay down a greater value for the safety clearance or freeboard.

2. The plane of maximum draught shall be indicated by means of highly visible, indelible draught marks on each side of the vessel.

3.1 The basic pair of draught marks, for a vessel certificated to operate in only one category of water, shall be horizontal lines 450 millimetres long and 25 millimetres wide. The top of the line shall be horizontal and coincide with the plane of maximum authorised draught. The centre of the line to be positioned amidships.

3.2 For vessels certified to operate in more than one category of water, the draught marks referred to in 3.1 shall be supplemented by the addition of a 25 millimetre wide vertical line to which one, or in the case of more categories certificated, several lines shall be affixed. These affixed lines shall be positioned at the forward end of basic marks and shall be 150 millimetres long by 25 millimetres wide. (For example of multi-category draught mark, together with typical examples (including a basic draft mark), - **see figure 1**. Note that the examples are all based upon category B waters basic marks. If the waters for which the vessel is certificated do not start at category B then similar principles to be followed).

3.3 Letter(s) marking the water categories for which the vessel is certified shall be marked at the forward ends of the line(s). The lettering shall be 60 mm high by 40mm wide.

4. Additionally, where the line of the deck is not immediately discernable, a vessel should be provided with a deck line. The deck line positioned and centred above the basic draught marks, should be permanent and be painted on a contrasting background and be a bar of 300 millimetres in length and 25 millimetres wide.

5. Draught marks may only be altered with the approval, and under the supervision of, the certifying authority.

6. Draught marks shall only be marked for the categories of water in which a vessel is authorised by its certificate to operate.

(Note: Amidships relates to half way along length (L))

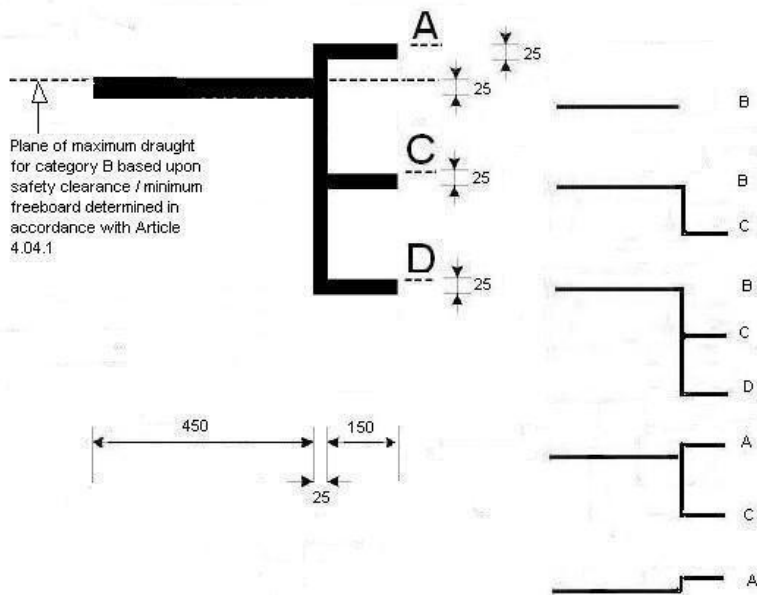


Figure 1. DRAUGHT MARKS (Dimensions and Examples)

1.5 Maximum loaded draught of craft whose hulls are not always closed so as to be sprayproofed and weathertight.

1. If the plane of maximum draught is determined by assuming that the holds may be closed in such a way as to make them weathertight and the safety clearance is less than the 500 mm prescribed by Article 1.1.2 then the maximum draught for sailing with uncovered holds shall be determined and indicated by 2 pairs of additional basic draught marks. One pair shall be placed not further forward than one sixth (L) from the after end of the vessel and the other pair at a similar distance from the forward end.

The marking of the additional basic draught marks shall follow the same principles described in Article 1.4 but as the safety clearance is the same for more than one category, as per Article 1.1.2 then additional letters indicating the other categories for which the vessel is certificated will need to be marked at the forward end of the draught mark line. I.e. AB, or ABC, or BC.

2. If the vessel operates only with uncovered holds and the above draught marks are affixed then the amidships marks may be omitted.

3. Also, to make clear that the additional draft marks relate to when operating with uncovered holds, the letter 'O' to be marked at the after end of the draft mark line(s).

4. Letters shall be positioned in a similar way as shown in **Figure 1**, and shall be 60mm high by 40mm wide.

Article 2. Safety Equipment

2.1 Lifebuoys, life jackets and liferafts

1. There shall be at least two lifebuoys on vessels of less than 24m in length and four lifebuoys on vessels of 24m or more in length, at least one of which shall be located by the wheelhouse.

2. Lifebuoys and holders shall comply with harmonized standards BS EN 14144:2003 'Lifebuoys Requirements & tests' and BS 14145:2003 'Holders for Lifebuoys'. For category C and D waters, at least one of the lifebuoys shall be fitted with a buoyant line and one with a battery powered light which will not be extinguished in water.

3. Quoits, or other suitable buoyant devices, may be used as an alternative to lifebuoys on category A and B waters.

4. In category B, C and D water there shall be one life jacket per crew member plus one spare; this requirement is recommended for category A waters. These may be inflatable lifejackets providing they are not orally inflatable. Lifejackets shall comply with BS EN 396 and shall be maintained in accordance with manufacturer's instructions.

5. Vessels operating in Category D waters shall have a liferaft (open reversible inflatable type (ORIL)). Recommended also for category C waters.

2.2 Other equipment

1. The following shall be on board:

(a) A heaving line;

(b) A radar reflector, for non-metallic hulls on category B, C and D waters.

(c) A first aid kit

(d) Two red hand flares and two buoyant smoke signals (3 minute type) shall be provided for operation on category C & D waters; rocket flares are recommended for category D waters and may be required on the advice of the navigation authority.

Article 3. Fire protection.

3.1 Fire extinguishers

1. There shall be on board at least:

- | | | |
|-----|--|-------------------------------|
| (a) | In the wheelhouse: | 1 portable fire extinguisher; |
| (b) | Close to each means of access to the deck and accommodation; | 1 portable fire extinguisher; |
| (c) | Close to each means of access to service premises that are not accessible from the accommodation, and which contain heating, cooking or refrigeration equipment using solid or liquid fuels: | 1 portable fire extinguisher; |
| (d) | At each entrance to the engine room and boiler rooms: | 1 portable fire extinguisher; |
| (e) | At suitable points in engine rooms and boiler rooms such that no position in the space is more than 10 metres away from an extinguisher, unless this provision is met by (d). | 1 portable fire extinguisher; |
| (f) | By the galley | 1 fire blanket. |

2. Portable fire extinguishers shall meet the following conditions:

(a) Portable fire extinguishers required by section 1 shall be of an approved type meeting the requirements of BS EN3 Series:1996 and have a rating of at least 13A/113B. If the vessel is less than 15 metres in length the rating shall be at least 5A/34B for (a),(b) and (c) requirement.

(b) The extinguishing substance used in the portable fire extinguishers required by section 1 shall be suitable for at least the fire category that is most likely to occur within the area for which the extinguishers is intended.

The extinguishing substance on board vessels whose electrical systems have a service voltage of more than 50 V shall also be suitable for fighting electrical fires. The instructions for use shall be clearly set out on each portable extinguisher.

(c) The extinguishing substance may be neither halon nor contain a product which is likely to release toxic gases during use, such as carbon tetrachloride. Portable fire extinguishers using CO₂ may only be used to fight fires at specific locations such as control panels, kitchens; the quantity of CO₂ should not constitute a health hazard.

(d) Extinguishers that are sensitive to freezing or to heat shall be installed or protected in such a way that their proper functioning is always guaranteed.

3. Fire extinguishers shall be serviced at the manufacturer's recommended service intervals by an approved service agent.

4. If extinguishers are installed in such a way that they are out of sight the panel covering them shall be identified by an appropriate symbol accordance with MSN 1763 (M+F).

3.2 Fuel Tank Shut offs

1. Directly at tank outlets the pipe work for the distribution of liquid fuels shall be fitted with a shutoff device that can be operated from the deck. This requirement shall not apply to tanks mounted directly on the engine.

Article 4. Navigational Aids.

4.1 Compass and navigation publications

1. A magnetic compass shall be provided for use at the steering position in vessels that operate in category C and D waters. A deviation card shall be provided. A fluxgate compass may be used as an alternative, providing it is connected to the emergency power supply.
2. Publications are to be carried sufficient to plan, monitor and display the ship's route for the intended trip, and where appropriate to plot positions throughout. The publications will include appropriate charts or waterway maps for the area of operation and, depending on availability, tide tables as appropriate and local notices to shipping from statutory navigation authorities. A consolidated nautical almanac may be used for coastal areas. An electronic chart display and information system (ECDIS) may be accepted, provided that an appropriate folio of paper charts is carried as a back-up.

4.2 Navigation lights, light signals and sound signals - control and monitoring

1. Lights, Shapes and Signals are to be fitted in compliance with COLREGS.
2. Current indicating lights or any other equivalent devices, like indicating lights for monitoring the navigation lights shall be installed in the wheelhouse unless that monitoring can be performed direct from the wheelhouse.
3. Back up lights for the prescribed mooring lights.

4.3 Other equipment

1. The following shall be on board:
 - (a) An appliance to provide sound signals, a basic set of shapes (not required on category A waters) and a searchlight (this need not be fixed);
 - (b) A fixed VHF radio for operation in category B, C and D waters. Vessels transiting category B waters (i.e. which normally operate in category A only) may use a portable(i.e. hand held) VHF radio.
 - (c) A pair of binoculars, minimum 7 x 50 (Category B, C & D waters only)

Article 5. Crew Accommodation

Every motor vessel or manned dumb vessel should have at least one toilet
Toilet(s) shall discharge to black waste holding tank(s). If any of the toilets on board do not discharge into black waste holding tank(s) then permanent provision to be made to ensure no overboard discharge.

Checklist – Part B

The following items, for which no standards are specified in this scheme, are to be checked/inspected with respect to watertightness, operability, effectiveness and/or condition as deemed to be appropriate for the type of vessel and its area of operation.

1. Marking

1.1 The vessels name and, as applicable, registration number or letters to be conspicuously marked and clearly visible.

1.2 Clearly visible draft scales to be marked on vessel's sides port and starboard at forward and after ends.

Note:- If vessel is registered at Registry of Shipping and Seamen at Cardiff the port of choice together with its official number and register tonnage is also to be marked. All of these marks, including its name and the draft scales are to be in accordance with the requirements of Schedule 3 of the Merchants Shipping (Registration of ships) Regulations 1993. For vessels not so registered the schedule can be guidance for the name and draft scales.

2. Hull and machinery

2.1 Condition of hull , closing devices and deck fittings

This is to be an in-water inspection of the hull and closing devices including coamings, hatch covers, weathertight doors and vents. The surveyor is to confirm that in normal operation conditions they consider the vessel will remain weathertight; this will not represent an assessment of the structural integrity of the hull structure – this will remain the responsibility of the owner. However, where there are obvious deficiencies (holes/excessive corrosion in structure/bulkheads, detached frames etc) a surveyor will still have a professional duty of care to raise these with the owner. This can be by recommendations in the Fitness for Purpose Certificate Record of Inspection (section 7) or if considered a serious deficiency this certificate is to be withheld and the report of Inspection form MSF 1602 with associated deficiencies form MSF 1603 issued instead.

Check list items to include:

- Structure weathertight i.e. no holes or excessive corrosion
- Hatch covers, securing devices, access hatches, penetrations, doors and vents – to be in good and effective order with all securing devices to be available and effective.
- Deck fittings – bollards, fairleads, bulwarks and guard rails to be in good order.

2.2 Condition of main machinery, engine controls and fuel tanks

Check list to include:

- State main engine details including controls type. Inspection to verify that the operation of these controls is unambiguously clear and that they are readily available for use. Operation of controls to be tested. The inspection to verify that

the engine controls are suitable and in good order to adequately control the propulsion of the vessel.

- The condition of the main engine(s) to be indicated.
- Fuel tanks condition

In respect of the condition of the main engine and the fuel tanks due regard is to be paid to risk of fire and/or pollution.

2.3 Condition of other machinery

Check list items include:

- Steering gear – the inspection to verify that the means is suitable, and in good order, to adequately steer the vessel. The position of the vessels controls for steering must be unambiguously clear and the controls readily available for use. There is to be a general inspection of the condition of cables /chains /linkages or hydraulics and the operation is to be tested.
- Emergency steering (if fitted) – type to be stated, its condition inspected and its operation tested.
- Rudder(s) - type to be stated and condition inspected (if visible)
- Bilge pumps – the inspection to verify that bilge pump(s) are fitted and functional. The number of pumps is to be stated together with type and what compartments are served and whether tested.
- Bilge alarm(s) – the presence of any bilge alarms is to be noted including whether tested
- State of bilges – The condition of the engine room bilges is to be noted together with whether pollution prevention measures are satisfactory and if pollution risks are apparent.
- Engine room maintenance – Inspect engine room log (if available) and note date and detail of last maintenance.

2.4 Condition of Electrical Installation

A general inspection to be carried out to check for potential fire hazards risk from sources of ignition. The check list to include:-

- Generator(s) – state number and whether secured on deck
- Switchgear/fuses – Inspect to see if adequate access to these is maintained.
- Batteries – are these adequately ventilated and secured

The general condition of the fixed wiring, the electrical fittings (such as plugs, switches etc.) as well as electrical equipment the batteries to be noted. State if electrical inspection/ test record is available and state date of last inspection/test.

2.5 Onboard cranes

If any cranes on board; note type(s) and Safe Working Load(s) and if fitted with alarms for maximum loads/outreach. Check general condition and dates on test certificate(s) and inspection/maintenance records.

3 Fire Protection

3.1 General and Engine Room equipment.

(a) General. The following (if fitted) to be checked/inspected:

- Fire main – state if tested
- Fire pump(s) – state number type number of outlets, and if all tested
- Hoses – state type, number on board and condition
- Nozzles – state numbers and if every hose has a nozzle

(b) Engine Room.

- Fixed extinguishing installation in Engine Room (If fitted) - state type, capacity and date of last inspection date by service technician.

A general inspection to check for potential fire hazards to include engine room cleanliness, storage of inflammable material, sources of ignition. In particular the following:

- E/R bulkhead penetrations – are any a fire risk
- Fuel tank vents – check if flash gauzes are fitted.
- E/R vent fire flaps – check if operational
- E/R skylights (if any) – check if operational

3.2 Other fire risks

In respect of other fire risks the surveyor to verify that fire risks are controlled and the inspection to include the following:

- Cooking Facility – state type and whether the fire blanket is in the vicinity
- Combustible materials (if any) – state if properly stowed
- LPG – If any LPG is onboard is gas detection fitted. Check if installation complies with BS 5482-3 or equivalent. Are the bottles stored on deck (away from heat source) and vented and, if available, what is the CORGI test certificate date.

4. Mooring Equipment

The surveyor will verify that suitable means are available, in good order and operable, to adequately moor the vessel.

Check list items to include.

- Anchor(a) - number, type and condition
- Cables – number, size and length
- Mooring ropes – number and condition

- Fenders –number and condition
- Boat hook – state if available
- Towing bridles (if any) – state number and condition
- Winches (if any) state number, type and condition
- Windlass(es) – state number, type and condition

Also, the availability of test certificates for any of the above mooring equipment to be checked and listed (including expiry dates)

5. Cargo Tanks

The number of cargo tanks and slops tanks to be noted and their general condition inspected. The methods of loading and discharge of cargo to be checked, and the type indicated; together with condition of manifold(s), pipes, valves, flexible hoses, gantry, etc. The pollution prevention methods to be clearly stated

6 Other

Surveyor to check if there is an unobstructed view from the wheelhouse, commenting if considered necessary.

The availability of a water resistant torch is to be checked.

Freeboard

In accordance with **Article 1.1.2 Freeboard** the minimum freeboard may be reduced for vessels operating in A, B and C waters, with sheer and superstructure in accordance with the following formula:

$$F = 150 (1 - \alpha) - \frac{\beta_v \cdot Se_v + \beta_a \cdot Se_a}{15} \text{ [mm]}$$

where:

- α is a correction coefficient that takes account of all the superstructures involved
- β_v is a coefficient for correcting the effect of the forward sheer resulting from the presence of superstructures in the forward quarter length L of the vessel;
- β_a is a coefficient for correcting the effect of the aft sheer resulting from the presence of superstructures in the aft quarter of length L of the vessel;
- Se_v is the effective forward sheer in mm;
- Se_a is the effective aft sheer in mm.

3. The coefficient α is calculated via the following formula:

$$\alpha = \frac{\sum le_a + \sum le_m + \sum le_v}{L}$$

where:

- le_m is the effective length in m of the superstructures located in the median part corresponding to half of length L of the vessel;
- le_v is the effective length in m of a superstructure in the forward quarter of vessel length L;
- le_a is the effective length in m of a superstructure in the aft quarter of vessel length L;

The effective length of a superstructure is calculated via the following formulae:

$$le_m = l \left(2.5 \cdot \frac{b}{B} - 1.5 \right) \cdot \frac{h}{0.36} \quad \text{[m]}$$

$$le_v \text{ and } le_a = l \left(2.5 \cdot \frac{b}{B_1} - 1.5 \right) \cdot \frac{h}{0.36} \quad \text{[m]}$$

where:

- l is the effective length, in m, of the superstructure involved;
- b is the width, in m, of the superstructure involved;
- B_1 is the width of the vessel, in m, measured on the outside of the vertical sideplates at deck level halfway along the superstructure involved.
- h is the height, in m, of the superstructure involved. However, in the case of hatches, h is obtained by reducing the height of the coamings by half the safety distance referred to in Article 4.01. In no case will a value exceeding 0.36m be taken for h.

If $\frac{b}{B}$ or $\frac{b}{B_1}$ is less than 0.6 the effective length l_e of the superstructure will be zero.

4. Coefficients β_v and β_a are calculated via the following formulae:

$$\beta_v = 1 - \frac{3 \cdot l_{e_v}}{L}$$

$$\beta_a = 1 - \frac{3 \cdot l_{e_a}}{L}$$

5. The effective aft/forward shears Se_v/Se_a are calculated via the following formulae:

$$Se_v = S_v \cdot p$$

$$Se_a = S_a \cdot p$$

where:

S_v is the actual forward shear, in mm; however S_v shall not be taken to be more than 1 000mm;

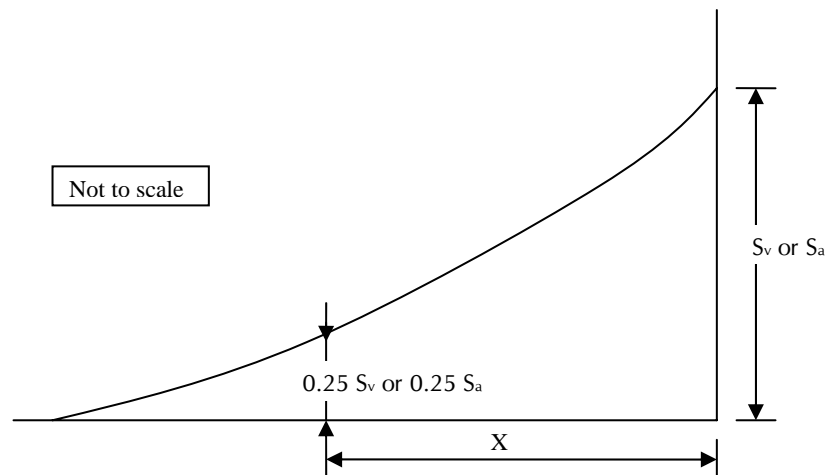
S_a is the actual aft shear at the rear, in mm; however S_a may not be taken to be more than 500mm.

p is a coefficient calculated by the following formula.

$$p = 4 \cdot \frac{X}{L}$$

X is the abscissa measured from the extremity of the point where the shear is 0.25 S_v or 0.25 S_a respectively (see drawing).

However, coefficient p will not be taken to be more than 1.



6. If $\beta_a \cdot Se_a$ is greater than $\beta_v \cdot Se_v$, the value of $\beta_v \cdot Se_v$ will be taken as being the value for $\beta_a \cdot Se_a$.