

A division of Grindrod Shipping (South Africa) (Pty) Ltd

Memorandum

To	: As per distribution list	Our Ref	: Technical Circular
			: Tanker Operations and Cargo
			: Manual Sec 9 Ch 8.3
From	: DPA, CSO & Manager SHEQ	Date	: 02 Jan 2013

COMPANY CIRCULAR 05/13 (Tech)

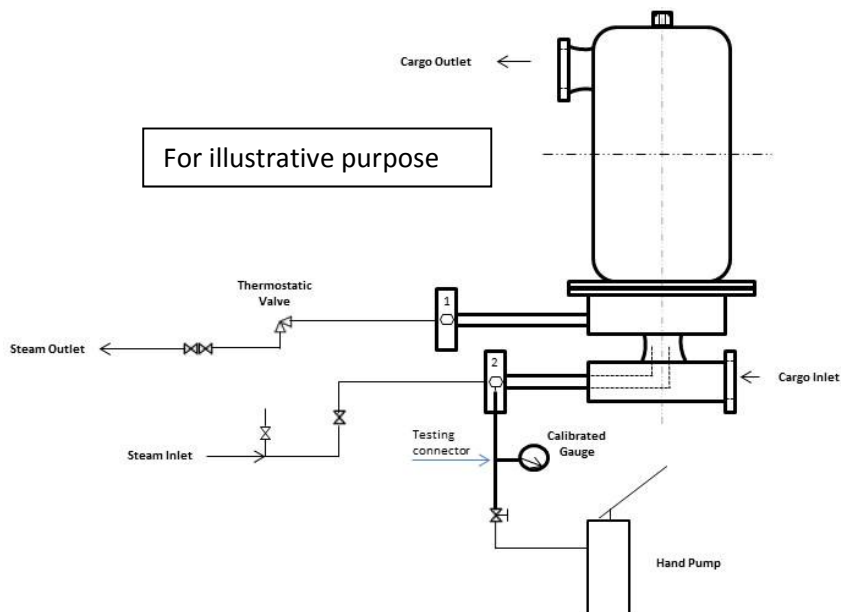
PRESSURE TESTING CARGO HEATERS, HEATING COILS & BUNKER LINES

1. PRESSURE TESTING CARGO HEATERS & HEATING COILS

All Deck mounted heaters and tank heating coils are to be tested annually under static liquid pressure of at least 1.5 times the maximum allowable working pressure. Heating coils/heaters should be blanked from the main steam system when the vessel is carry cargoes that do not require heating. Before blanking the system the heating line is to be blown dry with compressed air.

1.1 CARGO HEATERS TEST PROCEDURE

The working pressure for cargo heaters will normally be the same as the rated working pressure of the boilers, but consult the manuals if there is any form of pressure reducer on the line. Testing pressure will be 1.5 x working bars. (E.g. working pressure rated at 7 bars x 1.5 = 10.5 Bar)

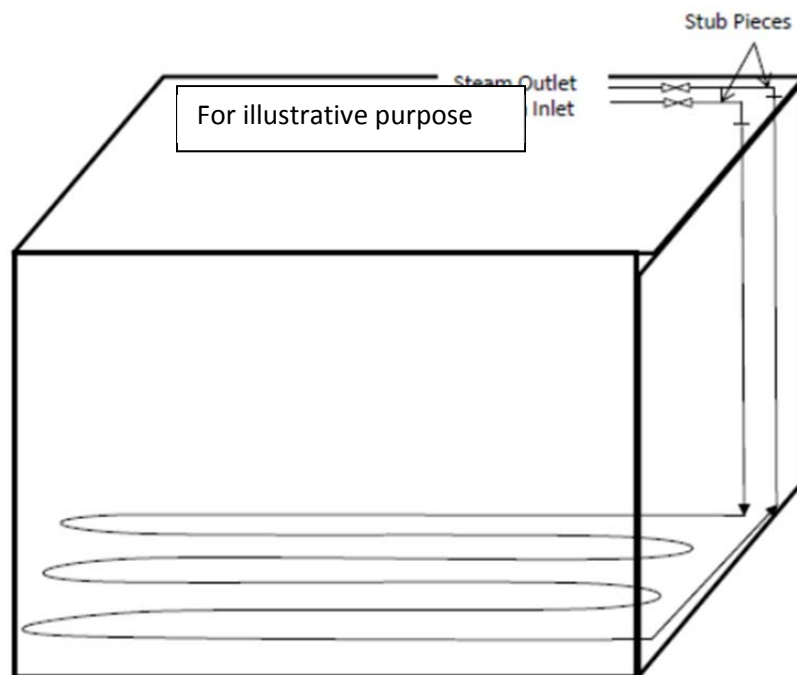


- a) Remove stub piece/blank at the steam outlet flange and fit a flange with small ball valve (PN16) attached, this will be used to purge the air from the heating system pipe line.
- b) Remove stub piece/blank at the steam inlet flange and fit a flange with T-Piece for the calibrated pressure gauge, ball valve (PN16) and “testing equipment coupler”.
- c) Fill the heater with fresh water using the testing equipment coupler (fitted to flange 2) and release air from system via fitted valve on flange (1),
- d) Connect the bucket/hand pump to the testing connector and raise the pressure to Working Pressure x 1.5. Close pump discharge valve. Keep the pressure for minimum 15 minutes and observe that there is no pressure drop. A drop off of pressure indicates a leak somewhere inside the heater.
- e) All vessels to use this principle to make up a ships specific test procedure.
- f) This test procedure and date of test per heater is to be included within BASSnet

The pressure testing of the cargo heaters is to be recorded in PMS and CNO cargo equipment files. The hydrostatic test date is to be stencilled on the heater.

1.2 CARGO TANK HEATING COIL TEST PROCEDURE

The working pressure for cargo heaters will normally be the same as the rated working pressure of the boilers, but consult the manuals if there is any form of pressure reducer on the line. Testing pressure will be 1.5 x working bars. (E.g. working pressure rated at 7 bars x 1.5 = 10.5 Bar)



- a) Remove stub piece/blank at the steam outlet flange and fit a flange with small ball valve (PN16) attached, this will be used to purge the air from the heating system pipe line.
- b) Remove stub piece/blank at the steam inlet flange and fit a flange with T-Piece for the calibrated pressure gauge, ball valve (PN16) and “testing equipment coupler”.
- c) Fill the heater with fresh water using the testing equipment coupler (fitted to flange 2) and release air from system via fitted valve on flange (1).
- d) Connect the bucket/hand pump to the testing connector and raise the pressure to Working Pressure x 1.5. Close pump discharge valve. Keep the pressure for minimum 15 minutes and observe that there is no pressure drop. A drop off of pressure indicates a leak somewhere inside the heater.
- e) Either an Officer or the pump-man is to walk the line whilst it is under pressure to look for any leaks on the system. Line fastening points to be inspected and any broken U-bolts or missing locking nuts noted and this to be rectified during the pressure testing.
- f) All vessels to use this principle to make up a ships specific test procedure. This test procedure and date of test per heater is to be included within BASSnet

The pressure testing of the cargo tank heating coils is to be recorded in PMS and CNO Cargo equipment files. The hydrostatic testing date of each coil is to be stencilled on the condensate return pipe line.

2 **HYDROSTATIC TESTING PROCEDURE FOR HEAVY FUEL/DIESEL OIL BUNKER LINES**

The United States Coast Guard regulation 33 CFR 156.170 states that each transfer system on board a vessel must be tested under static liquid pressure at least 1.5 times the maximum allowable working pressure at least once annually. This particular procedure is a generic procedure that covers both the HFO and DO Bunker lines, each vessel using this procedure should make up a ship specific test procedures listing all the valves necessary and their positions to run the test for both HFO and DO systems.

2.1 **Test Procedure**

Before any pressure testing occurs, the Chief Engineer will setup an engine room meeting describing the full testing procedure. All personal are to be aware of the location of all the valves that will be utilised and familiar with the bunker layout. A check should be done to see for any poor or leaking flanges, pipes or gaskets which could rupture during the testing procedure sufficient crew members must be present and placed at intervals along the bunker line to monitor for leaks. Furthermore Bridge and Chief Navigational

Officer is to be informed. All scuppers must be plugged on deck and fire hoses are to be rigged, SOPEP equipment on standby and any safety recommendations as per Risk Assessment to be put into place. If the vessel is fitted with an emergency stop for the bunker transfer pump, this should be tested.

- a) Ascertain the level in the HFO/DO Settling and Service tanks to ensure that there is sufficient HFO/DO, for the duration of the testing period. Check the last calibration of the pressure gauges on the manifold and calibrate. This should be done annually to coincide with the bunker line testing. Remove the temperature gauge at one of the forward most bunker manifolds and fit a PN (10) rated ball valve and attach a steel riser pipe with U-bend and at the top. Fit a clear flexible hose to guide any air/fuel mixture into 210 ltr drum. Make sure vessel has stern trim and reasonable list to opposing the side of testing location.
- b) Put the HFO or DO Transfer pump on manual mode. All manifold valves should be open with and the manifold blanks fitted, it is imperative to check the tightness of the bolts and ensure they are in good condition. Check that all other valves in the system are closed except those necessary for the running of the test (refer to notes from the pre-testing meeting). Open valves should include: suction valve from the HFO/DO Storage tank, HFO or DO pump suction and discharge valves and isolation valve to deck. The HFO or DO transfer pump is to be setup, by closing the discharge valve to the Settling and service tanks and opening the supply valve from the transfer pump back to the to the Storage tanks/Manifold. Ensuring that the cross over valve connection between the HFO and DO transfer pump is closed. All the supply valves to the HFO Storage tanks should be closed and open the valve for supply to the manifold.
- c) Before the transfer pump is started it is important to check and recheck the valves are lined up as described and that there are personal at the manifold port and starboard, on deck and in the engine room to monitor for any leaks or ruptures. Crack open one of the bunker tank supply valves on the opposite side to list to purge air from the system and to regulate the build-up of pressure on the system, the pump suction to be lined up to the same tank. Crank the safety valve down on the HFO/DO transfer pumps to minimum and test the valve by throttling the discharge valve. Using radios and an adept Officer/crew member at the manifold fill the bunker line slowly by starting and stopping the transfer pump whilst monitoring the discharge from the flexible hose. Once a reasonable flow of fuel with minimal air is noted from discharge of the flexible pipe, close the ball valve to the u-bend vent and the cracked bunker tank valve. Bring the system pressure up to 3.5 bars or higher depending on the pump rating, by increasing the setting of the pump relief valve. Once reaching the pumps rated pressure stop the pump and close the discharge valve.
- d) The normal operation pressure on the bunker lines will be found in the ships drawings. The bunker system is to be pressure tested to 1.5 times the normal operation pressure, i.e. $3.32 \times 1.5 = 4.95$ bar. The remaining pressure can be built

up using the bucket pump connected to either the manifold drain valve or fitting fitted to the venting line, this will depend on the vessel. Once the pressure of 4.95 bars in this example is reached the pressure must be kept for a period of 10 minutes. Crew members should walk the line and inspect for drips inspect all the U-bolts and pads at the same time.

- e) After successful completion of the testing procedure, the any one of the supply valves connected to the HFO or DO tanks depending on which line was being tested can be cracked open and the pressure vented off back to the tank. The valve can be left open for a few hours to drain the system back to the fuel tanks.

The date of the test, pressure tested to and type of test (hydrostatic) must be stencilled on the bunker line. A record is also to be put in the Deck Log Book, Oily Record Book and Engine Room Log Book. All vessels to revert with a ship specific procedure by the 30 November 2012



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