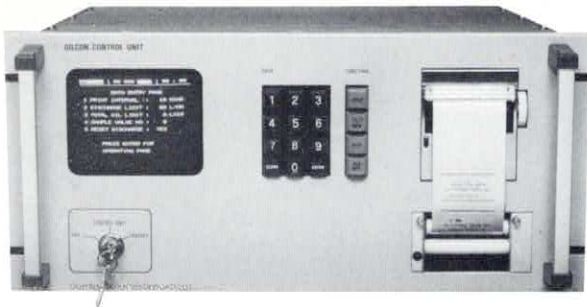




**Oilcon<sup>®</sup>  
Ballast  
Monitor  
From STC**

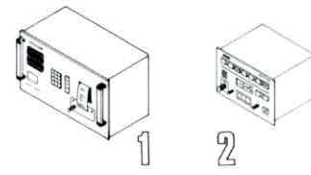
**STC INTERNATIONAL MARINE LTD**

**DISCHARGE CONTROL UNIT**

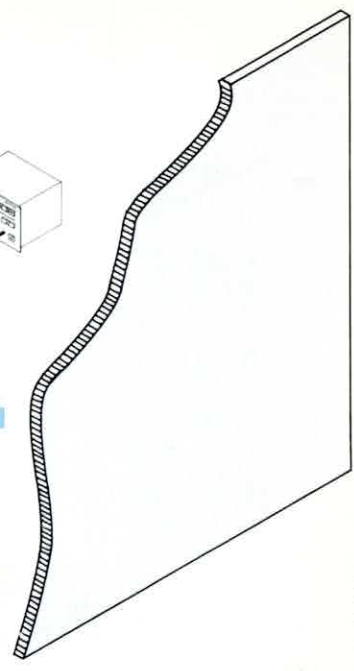


WEIGHT: 13.5 kg  
 DIMENSIONS: 483W x 222H x 440D  
 FOR DETAILS SEE SEPARATE LITERATURE

1



**CARGO CONTROL ROOM**



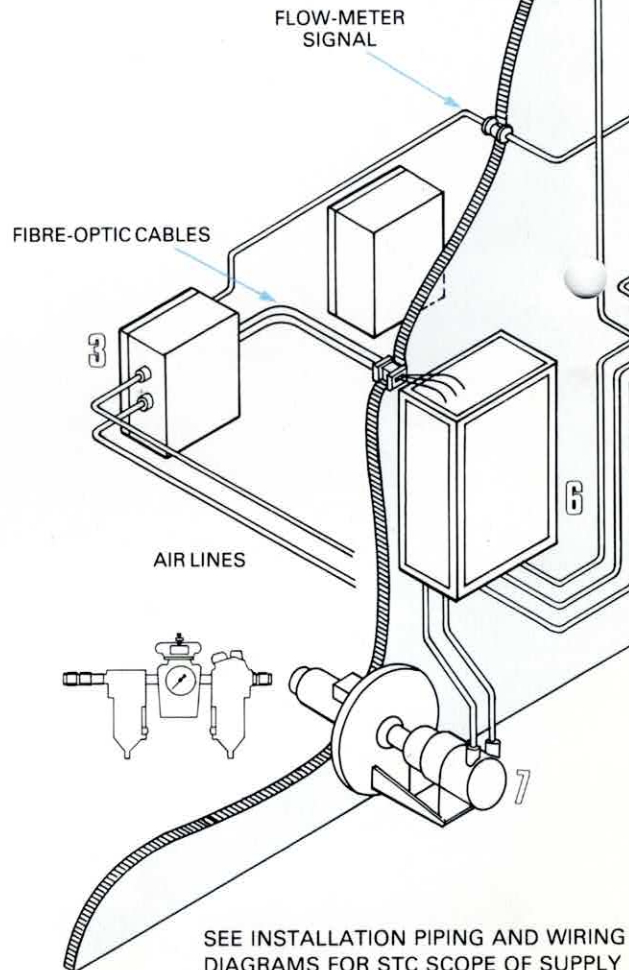
**CONTROL BOX**



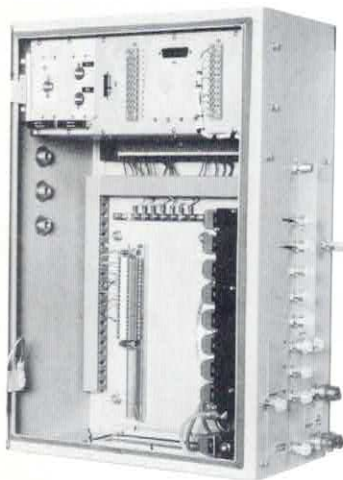
WEIGHT: 4.5 kg  
 DIMENSIONS: 224W x 135H x 250D

2

**ENGINE ROOM**

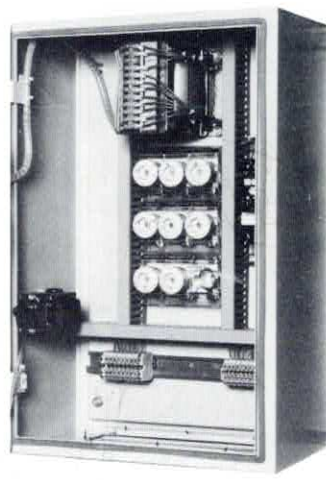


**OPTO-PNEUMATIC CABINET**



WEIGHT: 24 kg  
 DIMENSIONS: 400W x 600H x 250D

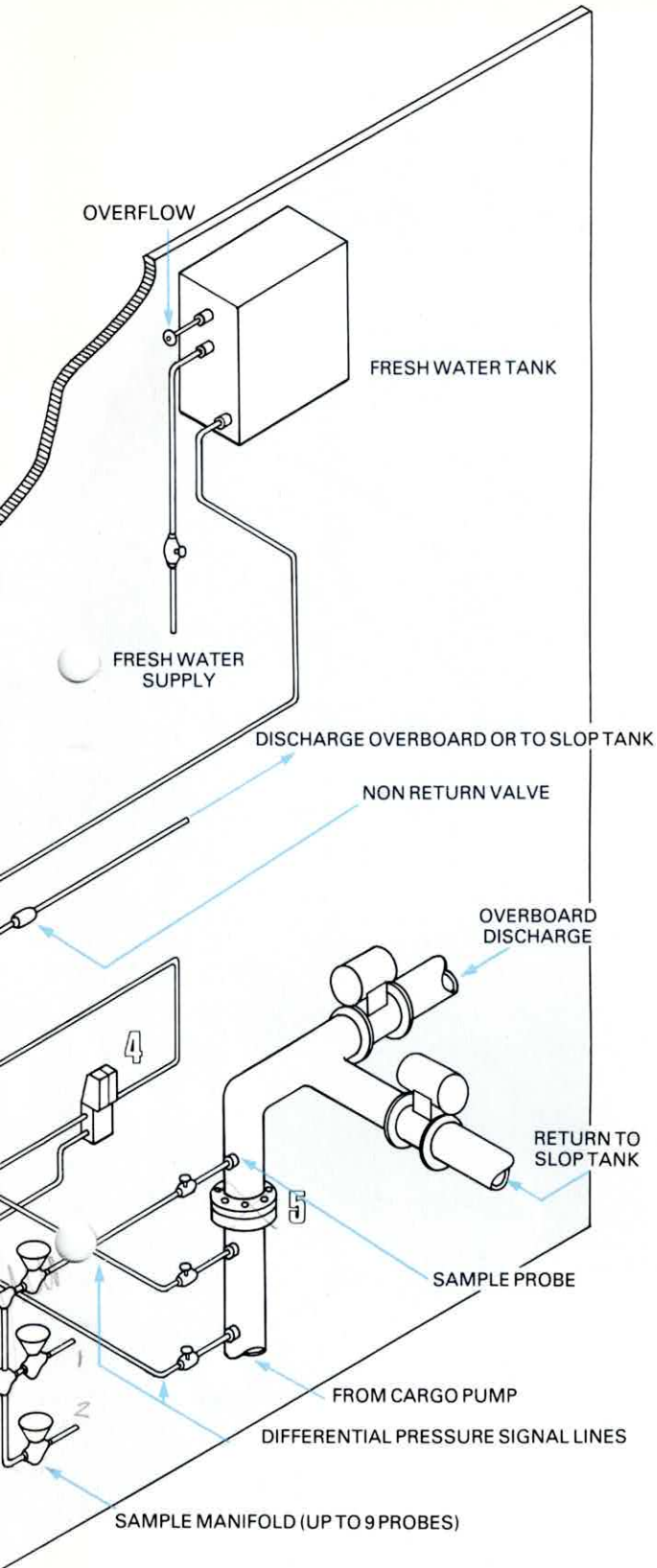
**INTERFACE CABINET**



WEIGHT: 30 kg  
 DIMENSIONS: 400W x 600H x 250D

3

SEE INSTALLATION PIPING AND WIRING DIAGRAMS FOR STC SCOPE OF SUPPLY



**PUMP ROOM**

**TYPICAL INSTALLATION OF OIL DISCHARGE MONITORING AND CONTROL SYSTEM**

**D.P. TRANSMITTER**



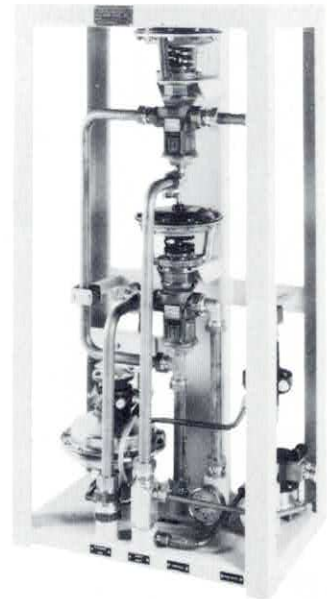
WEIGHT: 6.2 kg  
 DIMENSIONS: 186W x 144H x 192D  
 AIR CONNECTIONS – 6mm TUBE  
 WATER CONNECTIONS – 10mm TUBE

**5**

**ORIFICE PLATE**

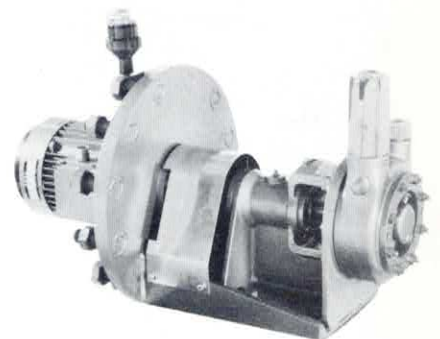
THICKNESS: 1/8 INCH  
 MATERIAL: STAINLESS STEEL  
 DIAMETER AND BORE: SPECIFIC TO EACH INSTALLATION

**BALLAST SKID**



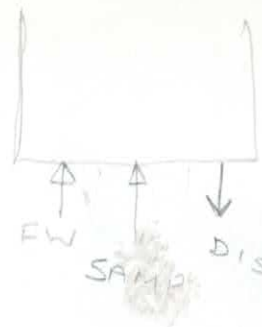
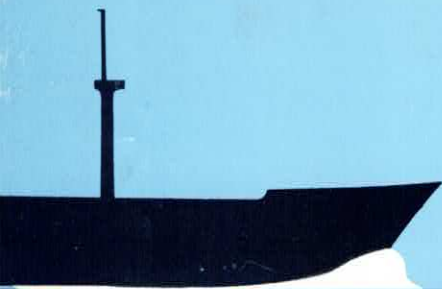
WEIGHT: 64 kg  
 DIMENSIONS: 500W x 990H x 320D  
 AIR CONNECTIONS: 6mm & 10mm TUBE  
 WATER CONNECTIONS: 22mm OD TUBE  
 OR 3/4 BSP FEMALE

**SAMPLE PUMP**



WEIGHT: 80 kg  
 LENGTH OVERALL: 715  
 CUTOUT DIAMETER: 295  
 CONNECTIONS: 22mm OD TUBE  
 OR 3/4 BSP FEMALE





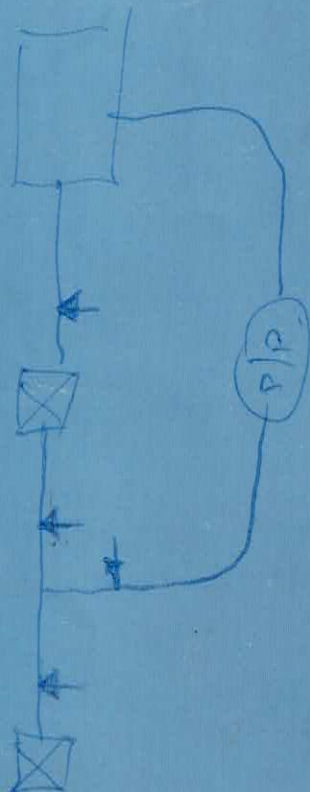
**Features**

- The *Oilcon*® has DOT and USCG approval based on the IMO Resolution A393(X) and complies fully with resolution A496(XII)
- Utilising laser and fibre optic technology significantly contributes towards safe operation in hazardous areas. DOT fire test approval granted for type A0, A15, A30, A60 fibre optic bulkhead penetrations
- Automatic backward and forward flushing of sampling lines minimises clogging
- Responds to both black and white oils as specified by IMO with one calibration
- Instantaneous response at the cell
- Designed to high reliability standards using advanced solid state technology
- Capable of operating at elevated water temperatures
- Selection of up to nine sample points
- Comprehensive alarms and controls
- Built-in test equipment allows rapid check out of system status
- Automatic window flush keeps measurement cell windows clean over long period

**Principle of operation**

The measurement technique used in the *Oilcon*® Ballast Monitor is based on scattered light. The sample of ballast water is passed through a measurement cell and, at the same time, light enters and leaves the cell. The sample flow being at right angles to the optical path.

Near infra-red monochromatic light is generated by a Gallium Aluminium Arsenide laser and transmitted along a fibre optic linkage to the measurement cell and leaves the cell via two windows and along fibre optic linkages to two silicon detectors. One detector receives the direct (or straight through) light beam and is used for automatic zero setting, and compensation for any deposits on the optical windows. The other detector receives the light which has been scattered by the small oil droplets present in the water. Both of the received light signals are used to compute an electrical output signal which is proportional to the oil concentration present in the sample passing through the cell.



The electrical signal is passed both to the read out box giving a continuous digital display of the oil content in ppm., and may also be recorded on a chart recorder (optional supply) providing a permanent record of the amount of oil in ppm which has been discharged into the sea.

Automatic sequential control of forward and backward flushing at start up and shut down of the Monitor keeps sampling lines clean. This minimises system deterioration when not in use and ensures reliable start up.

**System arrangement**

- The *Oilcon*® Ballast Monitor has the following main units:-
- Sampling assembly unit (Skid) mounted in the pump room as close as possible to the ballast discharge lines this unit contains the measurement cell, the various changeover valves and window wash pump
- The sample pump and its drive motor
- The opto-pneumatic cabinet, mounted on the engine room side of the bulkhead, which generates pneumatic signals for valve operation and for the window wash pump. It also contains the logic circuits
- The interface cabinet which transforms the ship's power supply into supplies required by the monitor
- The control box which provides control for the complete system and also provides digital readout of oil in water level
- The chart recorder which provides an analogue readout and permanent record of oil in water measurements
- Utilising a laser and fibre optic linkages eliminates the necessity to pass electrical circuits into the cargo pump room, since this is a hazardous area. All electrical circuits in the system are contained in a non-hazardous space. Penetrations of the engine room/pump room bulkhead are required for:
  - Pneumatic signals for valve operation
  - Fibre optic linkages passing light signals to and from the measurement cell
  - Mechanical drive between sample pump and sample pump drive motor

|                                |                                                                     |                                            |                                                              |                      |                                                                                                                                                               |
|--------------------------------|---------------------------------------------------------------------|--------------------------------------------|--------------------------------------------------------------|----------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Specification</b>           |                                                                     | <b>Alarm adjustment</b>                    | 0-1000 ppm                                                   | <b>Low alarm set</b> | Two thirds of setpoint for high alarm                                                                                                                         |
| <b>Range</b>                   | 0-1000 ppm                                                          | <b>Alarm outputs</b>                       | Normally open or normally closed contacts (2A at 220V max)   | <b>Sample switch</b> | Automatic sensing of sample pump operation and line filling. Initiates system flushing, automatic calibration of the measuring circuits and the sampling pump |
| <b>Accuracy</b>                | ± 10 ppm or ± 20% of reading whichever is greater                   | <b>Supplies</b>                            | 380V, ± 10%, 50 Hz<br>± 5% 440V ± 10%,<br>60 Hz ± 5% 3 phase | <b>Window wash</b>   | Automatic during sampling approximately every three minutes, with manual override                                                                             |
| <b>Response time</b>           | Less than 10 seconds                                                | <b>Electronic controls and Sample Pump</b> |                                                              | <b>System flush</b>  | Manual override of automatic system                                                                                                                           |
| <b>Sample flow rate</b>        | Between 800 and 1100 litres per hour                                | <b>Air Supply</b>                          | 2.5-7 bar                                                    | <b>BITE</b>          | Built-in test equipment - may be used during sampling                                                                                                         |
| <b>Zero noise and Drift</b>    | Less than 2 ppm and nil when changing from sea water to fresh water | <b>Controls and readout</b>                |                                                              |                      |                                                                                                                                                               |
| <b>Response to oils</b>        | In accordance with IMO specification                                | <b>ppm meter</b>                           | Digital Display                                              |                      |                                                                                                                                                               |
| <b>Sensitivity to solids</b>   | Change is less than 10% for IMO specified mixture                   | <b>Recorder</b>                            | Linear                                                       |                      |                                                                                                                                                               |
| <b>Fouling</b>                 | Clears in less than one minute after the IMO fouling test           | <b>Sample selection</b>                    | Up to 9 sample points                                        |                      |                                                                                                                                                               |
| <b>Water temperature range</b> | 5°C-65°C                                                            | <b>Alarm signals</b>                       | Manually adjustable setting; audible warning signal          |                      |                                                                                                                                                               |
|                                |                                                                     | <b>High alarm set</b>                      | Set at maximum pollution level permitted                     |                      |                                                                                                                                                               |

STC reserve the right to alter or amend any specification contained in this publication without prior notice.



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