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|------------------------------------------------------|--|-------------------|--|------------------------|-------|---------------------------|--------------|
|                                                      |  |                   |  |                        |       |                           |              |
|                                                      |  |                   |  |                        |       |                           |              |
| <div>B33:45 L6 Genset</div>                          |  |                   |  |                        |       |                           |              |
|                                                      |  | Engine No.: 22541 |  |                        |       |                           |              |
| <div>题目 TITLE:</div> <div>Technical Data Sheet</div> |  |                   |  |                        |       |                           |              |
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## Introduction

The B33:45 L6 engine is a liquid-cooled, four-stroke diesel engine with 6 cylinders mounted on the base frame.

Engine power definition is according ISO 3046-1. However the engine ratings are valid for the following reference condition.

Air inlet temperature 0°C - 45°C

Charge air LT inlet temp. max. 37 °C

Relative humidity 60 %

Specific fuel oil consumption is measured on testbed acc. to ISO 3046-1 using diesel-oil with a heating value of 42.7 MJ/kg and no engine-driven pumps. With engine-driven pumps, add 1 g/kWh for each pump. Specific lube oil consumption is for guidance only.



*Fig 1: B33:45 L6 Genset*

## Load profile

The diesel engine is an existing series model with good operational experience feedback and continuous power rating according to ISO 8528 and IEEE 387.

It will be capable of supplying the power of 3,500 kWel at the generator terminals for a cumulated length of time up to 25,000 hours (preventive maintenance presupposed).

Based on the specific on-site load sequence a load sequence calculation will be performed in order to evaluate the dynamic speed and voltage tolerances (increase / decrease) during loading, unloading and load-rejection



*Fig 2: B33:45 L6 Engine*



*Fig 3: B33:45 L6 Genset on test bench*

## Basic technical data

The basic data of the B33:45 L6 genset are contained in following table:

### Enginedata:

|                                           |     |       |
|-------------------------------------------|-----|-------|
| Number of cylinders                       | -   | 6     |
| Cylinder bore                             | mm  | 330   |
| Piston stroke                             | mm  | 450   |
| Rated power(MCR), engine:                 | kW  | 3600  |
| Rated power(ISO), engine:                 | kW  | 3600  |
| Rated active power, generator             | kW  | 3475  |
| Generator efficiency                      | -   | 0,965 |
| Rated output, electric with cos [phi]=0,8 | kVA | 4345  |
| Mean effective pressure                   | bar | 24,94 |
| Mean effective pressure(ISO)              | bar | 24,94 |
| Rated speed                               | RPM | 750   |
| Mean piston speed                         | m/s | 11,2  |
| Displacement                              | l   | 231   |

### Fuel oil data:

|                            |       |      |
|----------------------------|-------|------|
| Specific fuel consumption  | g/kWh | 177  |
| Fuel consumption at MCR    | l/h   | 770  |
| Fuel booster pump capacity | l/h   | 4200 |
| Daytank, 24hrs operation   | m³    | 18   |

### Nozzle oil data:

|                           |      |        |
|---------------------------|------|--------|
| Nozzle oil                | -    | SAE 40 |
| Pressure normal (+/- 0,2) | barg | 2.0    |
| Alarm, pressure low       | barg | 1.0    |
| Temp, normal (+/- 5)      | °C   | 90     |

### Start air data:

|                               |      |       |
|-------------------------------|------|-------|
| Start air pressure, max/min   | barg | 30/18 |
| Air consumption per. start    | m³n  | 4,2   |
| No of starts, 1000 l reciever | -    | 3     |
| No of starts, 1500 l reciever | -    | 5     |
| No of starts, 2000 l reciever | -    | 6     |

### Lubrication data:

|                             |       |        |
|-----------------------------|-------|--------|
| Lubrication oil             | -     | SAE 40 |
| Main pump capacity          | m³/h  | 79     |
| Priming pump capacity       | m³/h  | 15     |
| Lub. oil pressure:          |       |        |
| -normal                     | barg  | 4-5    |
| -alarm, pressure low        | barg  | 2,5    |
| -shut-down, pressure low    | barg  | 1,7    |
| Lub. oil temp engine inlet: |       |        |
| -normal                     | °C    | 60     |
| -alarm, temp high           | °C    | 70     |
| Spec. lub. oil consumption  | g/kWh | 0,8    |
| Lub. oil consumption        | kg/h  | 2,9    |
| Crankcase, lub oil volume:  |       |        |
| -high level                 | l     | 2200   |
| -low level                  | l     | 1800   |

### Jacket water waste recovery: (NB! System dependent)

|                       |    |      |
|-----------------------|----|------|
| Waste heat, 100% load | kW | 1280 |
| Waste heat, 80% load  | kW | 880  |
| Waste heat, 50% load  | kW | 435  |



**Cooling water data:**

Two-stage charge air cooler:

-Low temp, stage:

-temp at inlet, max °C 37

-Water flowrate, normal @ ISO m³/h 25

-Water flowrate, max design m³/h 70

-High temp, stage:

-Water flowrate, normal m³/h 63

Jacket water system:

-HT pump flowrate m³/h 63

-normal stop/shut-down barg 1.0

-water quantity, engine block l 250

-Temp. at engine outlet:

-nominal (max) °C 90

-alarm, temp. high °C 95

-shut-down, temp. high °C 98

-temp. rise in engine, max °C 5,5

-incl. high temp, ca cooler °C 17,5

-Expansion tank:

-volume, single-engined l 300

-volume, multi-engined l 500

-height above engine m 3-10

**Air data:**

Turbocharger type ABB A150-M

Charge air cooler type - RR3345L6

Air consumption m³n/h 18000

Air consumption kg/h 23300

Charge air pressure barg 4,1

Charge air temperature:

-normal °C 55

-alarm, temp high °C 65

Turbocharger speed alarm rpm 32301

**Exhaust data:**

Mass flow kg/h 24000

Volume flow ,after turbine m³/h 41500

Temp. after cylinder °C 415

Temp. after turbine °C 330

Back pressure, max mmWG 300

Part load data:

-Mass flow, 90% load kg/h 21200

-Temp. after turbine °C 330

-Mass flow, 80% load kg/h 19200

-Temp. after turbine °C 340

-Mass flow, 50% load kg/h 13000

-Temp. after turbine °C 370

**Heat dissipation:**

Lubrication data:

Lub oil cooler kW 435

Cooling water data:

Low temp stage kW 295

High temp stage kW 875

Jacket water cooler:

-Heat dissipation, engine kW 405

-incl. high temp. ca cooler kW 1280

Ventilation data:

Radiation engine kW 120

Engine power definition is according to ISO 3046-1.  
However the engine ratings are valid for the following reference condition:  
Air inlet temperature  
Air inlet temperature  
Charge air low temp fresh water inlet temp.  
Relative humidity

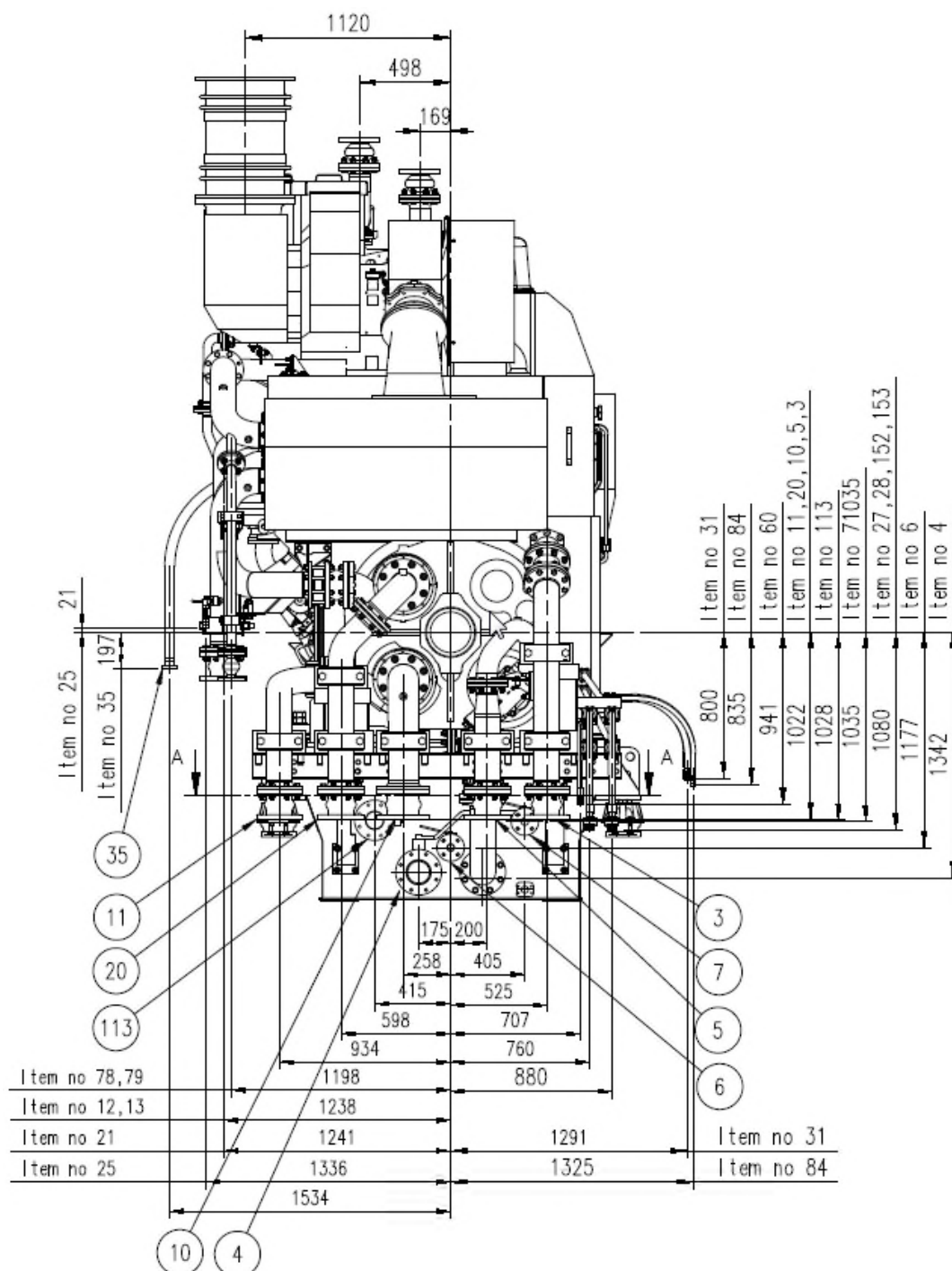
NOx according to Tier 2 of Annex VI MARPOL 73/78

Specific fuel oil consumption is measured on testbed according to ISO 3046-1, using diesel-oil with a net heating value of 42.7 MJ/kg and no engine-driven pumps. With engine-driven pumps, add 1 g/kWh for each pump.  
Spes. lub. Oil consumption is for guidance only.  
max. 45°C  
min. 0°C  
max. 37°C  
60 %

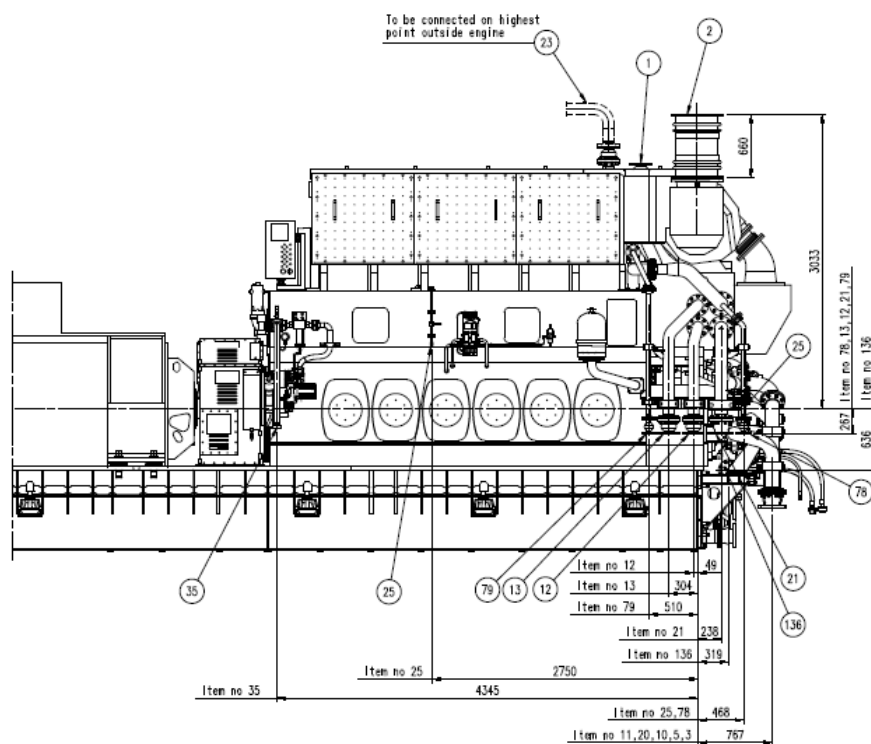
NOTE! Due to continuous development, some data may change.

## Genset interface data

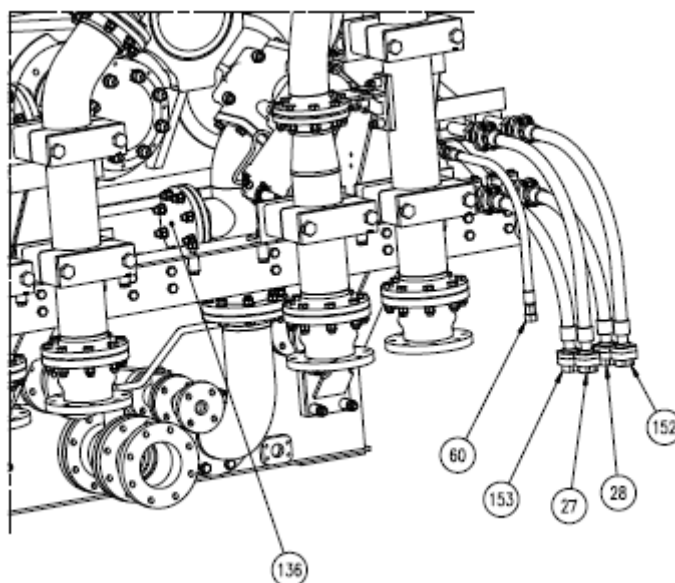
### Mechanical interfaces



Pipe connections B33:45 L6 (1)

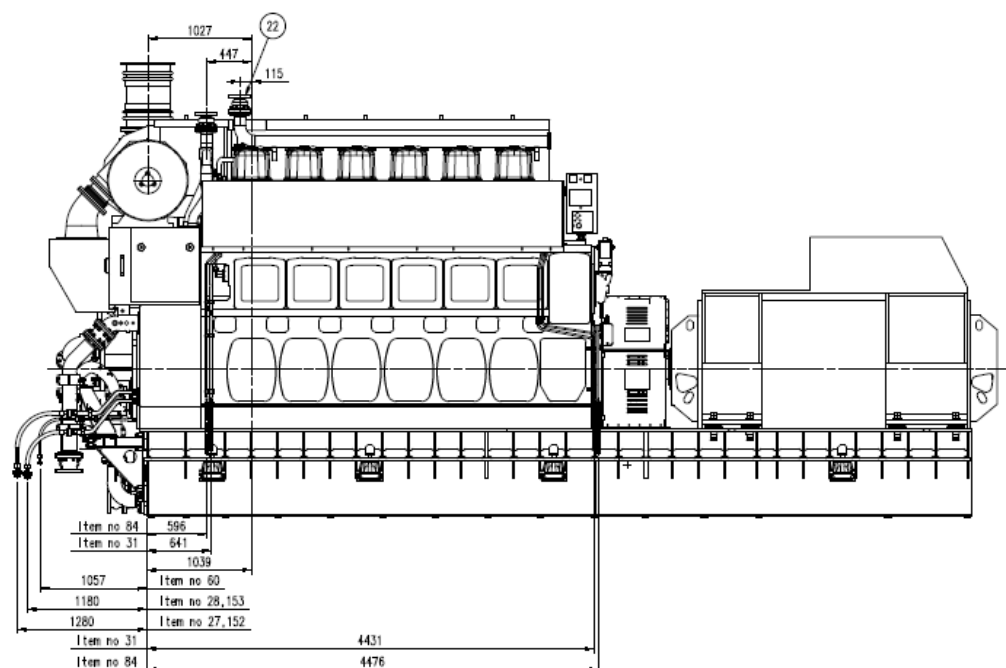


Pipe connections B33:45 L6 (2)

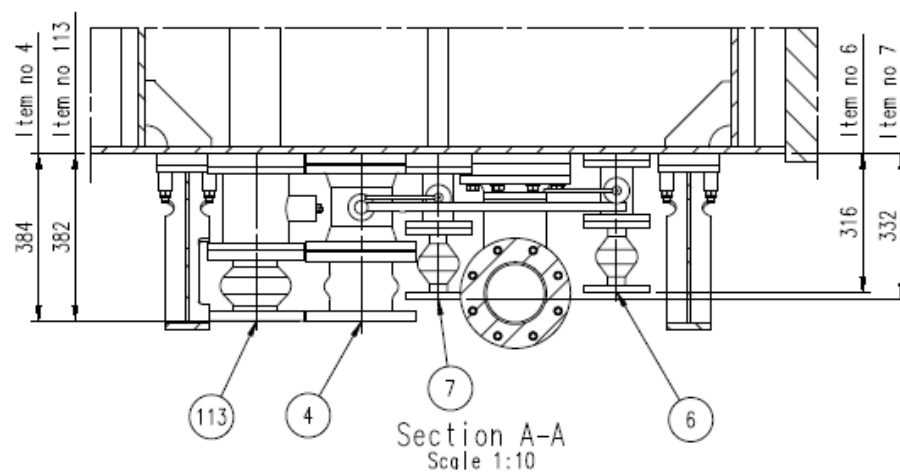


Pipe connections B33:45 L6 (3)





Pipe connections B33:45 L6 (4)



Pipe connections B33:45 L6 (5)

| Item | Syst.code | Function                     | Connection  | Standard  |
|------|-----------|------------------------------|-------------|-----------|
| 1    | LO        | Crankcase ventilation        | DN100, PN16 | EN 1092-1 |
| 2    | EX        | Exhaust outlet               | DN400, PN6  | DIN 2501  |
| 3    | LO        | Lubr oil inlet               | DN125, PN16 | EN 1092-1 |
| 4    | LO        | Lubr oil to standby pump     | DN125, PN16 | EN 1092-1 |
| 5    | LO        | Lubr oil outlet from pump    | DN125, PN16 | EN 1092-1 |
| 6    | LO        | Lubr oil to separator        | DN40, PN16  | EN 1092-1 |
| 7    | LO        | Lubr oil from separator      | DN40, PN16  | EN 1092-1 |
| 10   | LT        | Inlet cooling water pump     | DN150 PN16  | EN 1092-1 |
| 11   | LT        | Outlet cooling water pump    | DN125, PN16 | EN 1092-1 |
| 12   | LT        | Inlet charge air cooler      | DN100, PN16 | EN 1092-1 |
| 13   | LT        | Outlet charge air cooler     | DN100, PN16 | EN 1092-1 |
| 20   | HT        | Inlet cooling water pump     | DN125, PN16 | EN 1092-1 |
| 21   | HT        | Inlet from standby tank      | DN125, PN16 | EN 1092-1 |
| 22   | HT        | Outlet from engine           | DN125, PN16 | EN 1092-1 |
| 23   | HT        | Air ventilation to exp. tank | FM, G1/4"   | ISO 228   |
| 25   | HT        | Jacket water drain           | FM, G1/4"   | ISO 228   |
| 27   | DO        | Inlet from tank              | FM, G1 1/4" | ISO 228   |
| 28   | DO        | Outlet to tank               | FM, G1 1/4" | ISO 228   |
| 31   | DO        | Fuel oil drain               | FM, G3/4"   | ISO 228   |
| 35   | SA        | Inlet starting air           | SAE 1 1/2"  | SAE 3000  |
| 60   | RC        | Air supply, remote control   | FM, G1/2"   | ISO 228   |
| 78   | HT        | Inlet from preheater         | DN40, PN16  | EN 1092-1 |
| 79   | HT        | Outlet to preheater          | DN40, PN16  | EN 1092-1 |
| 84   | DO/LO     | Waste oil drain              | FM, G1/2"   | ISO 228   |
| 113  | LO        | Lubr oil to priming pump     | DN100, PN16 | EN 1092-1 |
| 136  | LO        | Outlet oil for flushing      | DN100, PN16 | EN 1092-1 |
| 152  | DO        | Fuel oil to filter           | FM, G1 1/4" | ISO 228   |
| 153  | DO        | Fuel oil from filter         | FM, G1 1/4" | ISO 228   |

#### Pipe connections B33:45 L6 (6)

#### Additional note concerning item 1 Pipe connections B33:45 L6 (6) Crankcase ventilation interface

The vent pipe system (diameter and length) to be designed according to the following, applicable for engine types B33:45L for fuel oil operation:

Max. allowable back pressure: 15 mm WG

Gas flow (design flow): 0.5% of combustion air consumption.

The vent pipe is to be independent for each engine and should have a continuous upward gradient of minimum 15 degrees. Steel pipes are to be used in the ventilation system. In order to avoid condensation, the ventilation pipes should not be directed through cold areas.

## **Drawings**

Main dimension drawing

