

Scope of Supply for 7 units of MAN Diesel Propulsion Engines


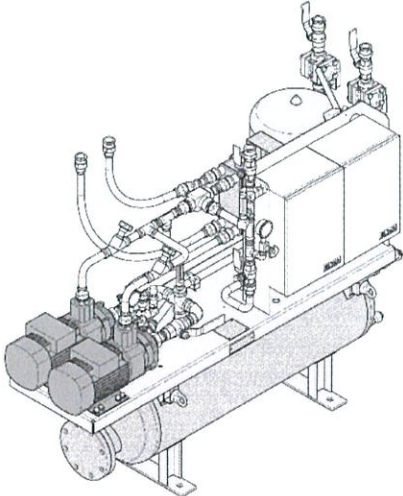

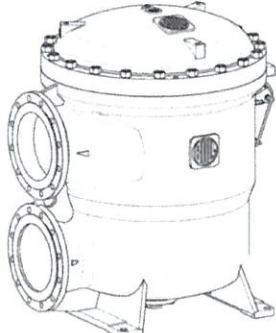

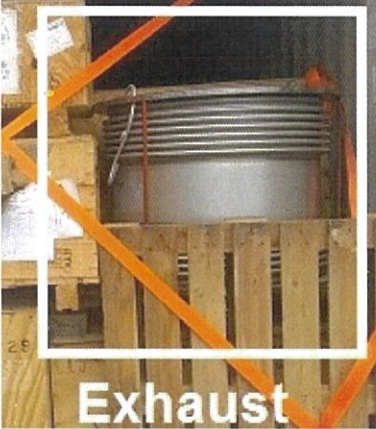
(Unused; Year of Built : 2011 ; Engine Made in Germany)

S/No.	Equipment Name	Q'ty	Dimension/Weight
1	MAN Diesel Engine(s) type 10L32/44CR MCR : 5600KW (each), 7616 BHP at a speed of 750rpm, rotation anti-clockwise for diesel-mechanic propulsion for HFO operation, acceptance by DNV, unmanned engine room certificate acc. To IMO MARPOL, Annex VI-2008, reg. 13(4)/NOx – TIER2. ° With DNV Certificates Maximum continuous rating (MCR) measured at crankshaft flange, at <ul style="list-style-type: none"> - Intake air temperature max. 45°C - LT cooling water temperature before charge air cooler max. 38°C - Air pressure 1 bar - Fuel admission blocked at 100% - Fuel consumption acc. to ISO 3046-1 : 2002, based on a net calorific value of 42700kj/kg at a rating of 85% MCR without attached pumps fulfilling the above NOx emission limitations 177g/kWh corresponding to 130g/HPh (+5% tolerance). - Lube oil consumption approx. 0.5g/kWh (+20% tolerance) 	7 Units	8.54m / 2.55m / 4.45m / 63 tons Each
2	Boilers	4 units	See Sub-listing
3	SCR	8 units	ditto
4	40' HC Containers for loose equipment	7 Containers	As per packing list
5	Instrumentation Panels	7 cases	See Sub-listing
6	HFO Booster Unit (for 2 engines)	4 units	ditto
7	Nozzle Cooling Unit (for 2 engines)	4 units	ditto
8	Lube oil pump set, free standing	7 units	ditto
9	Lube Oil Auto backwash filter	7 nos.	ditto
10	Plate Type Lube Oil Cooler	7 units	ditto
11	Exhaust Expansion Bellow	7 units	ditto
12	Pre Heater for HT Cooling System	7 units	ditto
13	HFO Separator with control panel	4 units	ditto

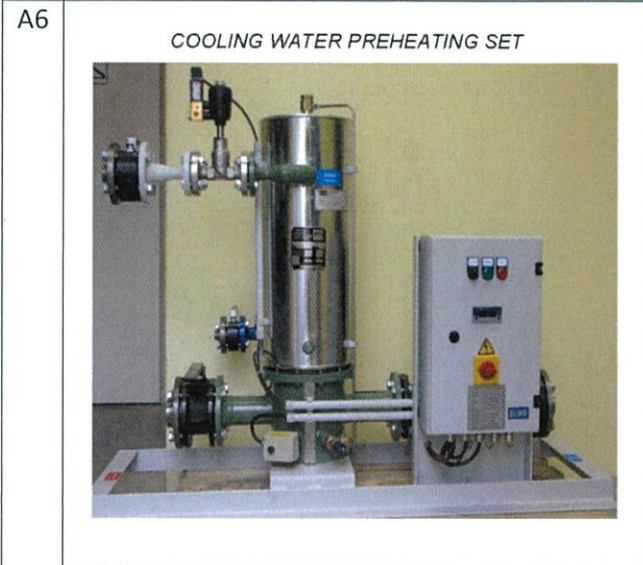
MAN 10L32/44 CR – 7 sets

PRELIMINARY LISTING OF MAJOR LOOSE ITEMS

This listing is preliminary summary for major loose items based on available photographs, manuals and packing lists. Verification is required by physical inspection at Bintan, including for all other smaller items.

A PART A: ITEMS WITHIN THE MAN PACKAGE	
<p>A1</p> 	<p>A2</p> <p>Nozzle cooling water unit DKW-8</p> 
<p>HFO BOOSTER UNIT (for 2 Engines): 4 SETS Site voltage to verify</p>	<p>NOZZLE COOLING UNIT (for 2 Engines): 4 SETS Site voltage to verify</p>
<p>A3</p> 	<p>A4</p>  <p>BOLL & KIRCH Filterbau GmbH</p>
<p>LUBE OIL PUMPSET, FREE STANDING: 7 Site voltage to verify</p>	<p>LUBE OIL AUTO BACKWASH FILTER: 7 (THIS ITEM HAS BEEN MOUNTED ON ENGINE)</p>
<p>A5</p> 	<p>A6</p>  <p>Exhaust</p>
<p>PLATE-TYPE LUBE OIL COOLER: 7</p>	<p>EXHAUST EXPANSION BELLOW: 7</p>

A PART A: ITEMS WITHIN THE MAN PACKAGE, continued



PRE HEATER (FOR HT COOLING SYSTEM): 7
Site voltage to verify

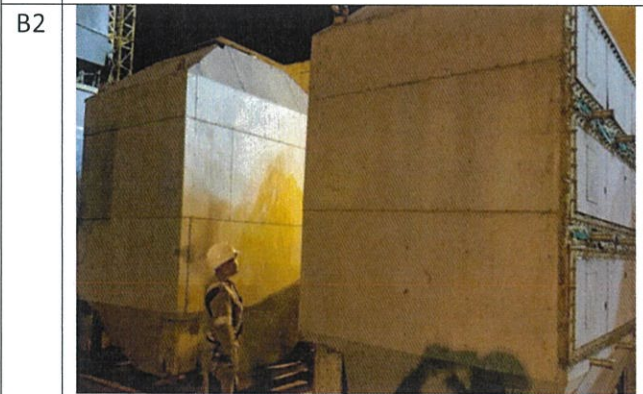


INSTRUMENTATION PANELS: 7 CASES
(L133 x W108 x H236, each 627kg)

B PART B: EXTRA ITEMS SUPPLIED, BEYOND THE MAN PACKAGE



HFO SEPARATORS WITH CONTROL PANEL: 4 (2 ENGINES PER SET)
Vendor: GEA



SCR, SELECTIVE CATALYTIC REDUCTION : 8
Vendor: YARA



EXHAUST BOILERS: 4 (2 ENGINES PER SET)
Vendor: AALBORG / ALFA-LAVAL





