

# Call for Applications No. EMSA/SA/1/2024

## Sale of Assets: Sale of oil pollution response equipment

### Annex I.B Description of the Assets – Lot 2

Type of equipment	Item	No of items	First delivery	Description	Label 1	Label 2
1. Sweeping arm	Frame	1	04/10/2007	Lamor, LJS 12m, Rigid with weir skimmer module	CEGM362201	0568
	Frame	1		Lamor, LJS 12m, Rigid with weir skimmer module	CEGM362202	0569
	Brush module	1		5 chain conv., LJS 12	CEGM310701	0570
	Brush module	1		5 chain conv., LJS 12	CEGM310702	0571
	Pump	1		Lamor GTA 115 PDAS	CEGM283201	0572
	Pump	1		Lamor GTA 115 PDAS	CEGM283202	0573
	Hydraulic hose(s)	1		HYD. HOSE GT A 115 15m.*(1" 3/4" 3/8")	CEGM223801	0574
	Hydraulic hose(s)	1		HYD. HOSE GT A 115 15m.*(1" 3/4" 3/8")	CEGM223802	0575
	Oil hose(s)	1		5" OIL TRANSFER 10m	CEGM263801	0576
	Oil hose(s)	1		5" OIL TRANSFER 10m	CEGM263802	0577
	Ancillaries	1		RIGID SW. ARM FITTING ARRANG.	CEGM023201	0578
	Ancillaries	1		RIGID SW. ARM FITTING ARRANG.	CEGM023202	0579
	Storage container	1		10 ft. CONT. FOR HYD PW-PK LPP 120	CEGM351203	0580
	Storage container	1		10 ft CONTAINER	CEGM351201	0581
	Power pack	1		LPP 120 SISU DIESEL ENGINE	CEGM272801	0584
	Power pack	1		LPP 120 SISU DIESEL ENGINE	CEGM272802	0585
	Crane	1		Heila WITH 2 LIFTING POINTS	CEGM131501	0586
	Crane	1		Heila WITH 2 LIFTING POINTS	CEGM131502	0587
	Pump	1		Marflex, MSP 150-63 CENTRIFUGAL	CEGM283203	0588
	Pump	1		Marflex, MSP 150-63 CENTRIFUGAL	CEGM283204	0589
	Adaptor	1		FRAME AND ADAPTERS FOR MSP150	0EGM010101	0590
	Adaptor	1		FRAME AND ADAPTERS FOR MSP150	CEGM010102	0591

Type of equipment	Item	No of items	First delivery	Description	Label 1	Label 2
2. Skimmer	Brush module	1	04/10/2007	LFF 100 2c 2V*4 chain	CEGI310701	0592
	Thruster	1		FOR STEERING	CEGI324101	0593
	Thruster	1		FOR STEERING	CEGI324102	0594
	Pump	1		Lamor GTA 115 PDAS	CEGI283201	0595
	Hydraulic hose(s)	1		FOR LFF 100	CEGI223801	0596
	Storage reel	1		OIL HOSE WINDER including UMBILICAL CORD 60m.	CEGI353401	0597
	Remote control	1		FOR SKIMMER	CEGI291301	0598
	Storage flatrack	1		CONTAINER 20 ft.	CEGI352001	0599

Type of equipment	Item	No of items	First delivery	Description	Label 1	Label 2
3. Ancillaries	Power pack	1	18/07/2013	Markleen Diesel hydraulic	CEGA270001	0616
	Storage container	1		10'ft CONTAINER	CEGA351201	0617
	Air blower	1		Markleen Portable	CEGA030002	0618

## Equipment description

### 1. Sweeping arm

#### Manufacturer:

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The Sweeping Arm Set (LAMOR Stiff Sweeping Arms LJS 12m) consists of:

- Rigid Sweeping Arm Structure
- Brush Skimmer Module
- Oil Transfer Pump
- Hydraulic Hose Set for PDAS Pump Lamor GT A 115
- Oil Transfer Hose Set for PDAS Pump Lamor GT A 115
- Weir Skimmer Module
- Marflex Centrifugal Pump MSP150-63
- Power Pack LPP120 E
- 10 ft. Container for Power Packs LPP 120
- Crane Heila (HMR 75/15-2S)

The sweeping arm system is supplied with an integrated weir skimmer and a brush module skimmer that can be assembled to the arm for recovery operations of high viscous oils. The weir skimmer may be equipped with a centrifugal pump with screw impeller, Marflex MSP150-63 or with a LAMOR PDAS GT A 115 pump. The sweeping system is made up of the following components:

#### 1.1 LAMOR Stiff Sweeping Arms LJS 12m Structure

Each sweeping arm consists of an outer pontoon, a bridge and an inner pontoon welded together. The inner pontoon contains the weir collection chamber in which the pump (centrifugal or PDAS) is fitted. In this inner pontoon may be fitted the Brush skimmer module.

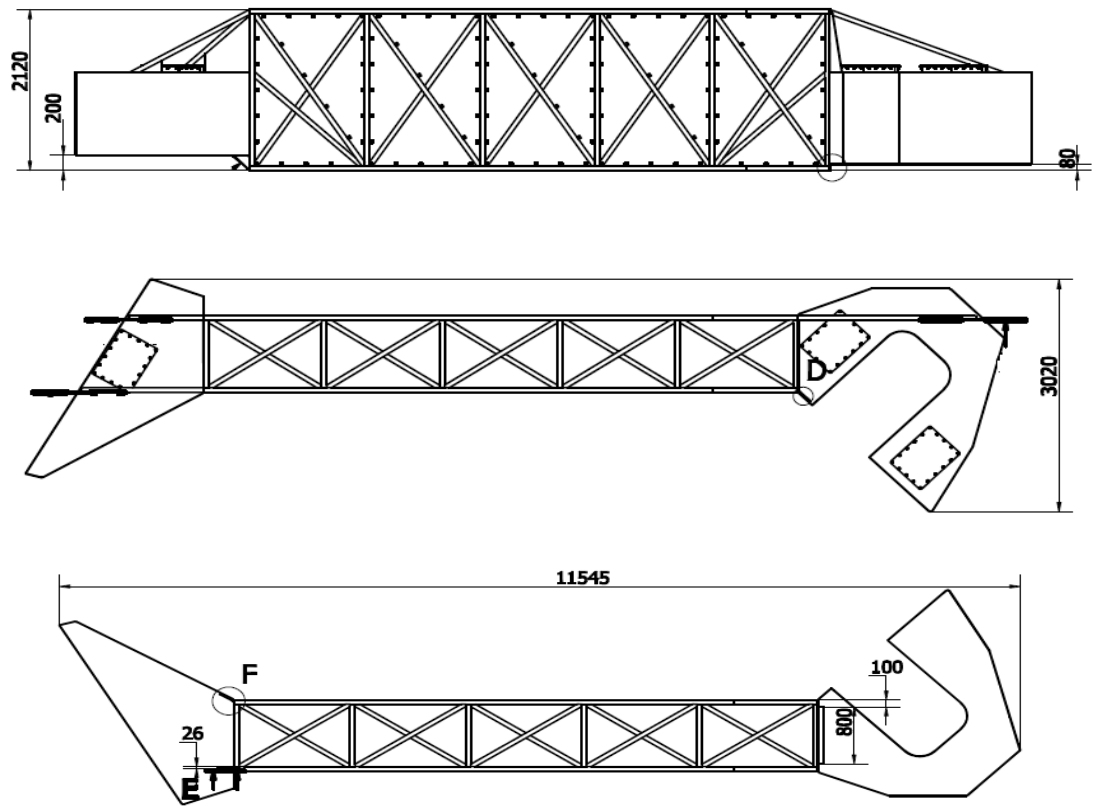
The free-floating frames can be fixed with twist locks on the deck. When in recovery position, the inner float leans against the ship side. The float is protected with round fenders allowing the arm to move with the ships rolling movement and waves.

The LAMOR Oil Recovery System uses the forward motion of the vessel to deflect surface water and oil towards the collection area formed by the apex of the Stiff Sweeping Arm where is collected by the skimmer and pumped on board into the storage tanks. The Lamor Stiff-Sweep recovery system collects oil at speeds of up to 2 to 3 knots, depending on the wave height and other operating conditions.

The construction is made of aluminium and steel. The oil guiding plate is of polyethylene, an easy to clean, glossy surface where the oil does not stick.

Sweeping arm dimensions

Width	approx. 3300 mm
Length	approx. 12000 mm
Height	approx. 1900 mm
Weight	approx. 4000 kg





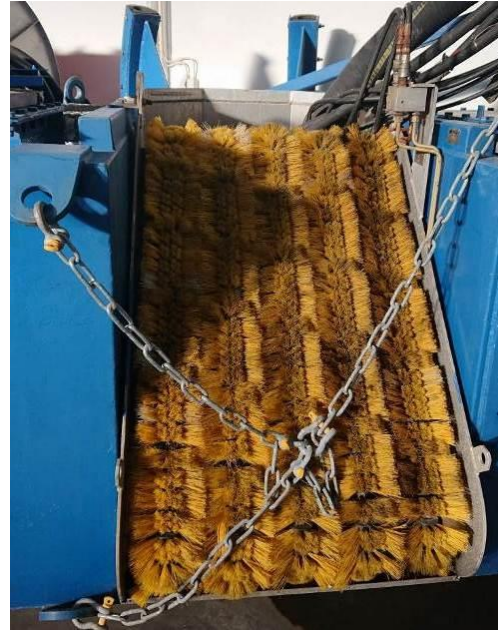
#### Sweeping arm performance parameters

Significant wave height:	1.5 m to 2 m
Recovery speed:	up to 3 knots
Sweeping width:	20 m + vessel beam
Recovered water:	< 5 % of total recovered volume (Brush skimmer pack)
Type of Oil to recover:	All grades and ages, including debris, seaweed and tar balls.
Min air temperature:	- 20 °C
Min water temperature:	0 °C
Max operating temperature:	+ 60 °C

### 1.2 Brush Skimmer Module

The LAMOR Brush Pack is a separation and recovery device. The Brush Pack consists of 5 parallel brush chains, driven by an electrical motor and controlled by a control panel. The “brush conveyor” is supported and protected within a stainless-steel frame. The brush cleaning mechanism is a comb-like device mounted at the upper end of the brush conveyor. During operation, the cleaner is positioned below the top axle of the conveyor, to allow recovered oil and debris to drop directly into the discharge chamber from which it is transferred to a storage tank on board by the oil transfer pumps. The conveyor belt is mounted in the apex of the Stiff arm and is removable. Once dismantled the sweeping arm recovers the oil directly with the weir skimmer.

For the operation with the brush skimmer module, the sweeping arms may be equipped with the LAMOR GT A 115 PDAS pumps as they are more adequate to handle high viscous oils and the pumping rate meets the feeding capacity of the brush chains.



#### Brush Conveyor technical specification

Skimmer Type:	Brush Chain Conveyor type
Make:	LAMOR
Model:	Brush Conveyor Belt 5 chains.
Operational Sea State:	Effective in 2-meter significant waves and wind driven chop. This is highly depending also on the vessel size used.
Viscosity Range:	0 to > 3,000,000 cSt
Dimensions:	5 Brush Chains mounted in steel frame approx. 2000 mm long (between shafts)
Brush Cleaner:	Patented cleaner/comb installed at upper end for gravity discharge of oil and debris into collection hopper.
Hydraulic Motor:	Danfoss type, Installed and fitted with Quick Disconnects.

### 1.3 Oil Transfer PDAS Pump Lamor GT A 115

The pump is multipurpose submersible Archimedes screw pumps with a pumping capacity of 115 m<sup>3</sup>/h. This type of pump has been designed for use in skimmers and transfer or offloading pump applications and are able to pump a wide range of liquids ranging from water to the heaviest debris-laden viscous oils. The pumps can deliver a maximum of 12 bar outlet pressure, benefits from water/steam annular injection flange on the inlet as standard and debris cutting knife to handle solids such as seaweed, plastics, and ropes.

The GT A pump range is constructed from robust seawater resistant aluminium for the casings and stainless, acid proof steel internals with special seals that ensure the pump remains “dry”. The pump can



handle solids up to 30 mm in diameter, should the pump become clogged, and it can be reversed to expel the blockage. The GT A pump received accreditation from Bureau Veritas confirming their recovery capacities with oils of varying viscosities. The pump speed can be adjusted freely between 0...100 % from the control panel on the deck. It is capable of pumping oils with viscosities up to 3,000,000 cSt.



Technical specification of the PDAS Pump Lamor GT A 115

Length	500 mm
Width	300 mm
Height	598 mm
Weight	71 kg
Capacity	115 m³/h
Hydraulic flow	160 max l/min
Hydraulic pressure	210 max bar
Power req.	56 max kW
Discharge pressure	12 bar

#### 1.4 Hydraulic Hose Set for PDAS Pump Lamor GT A 115

The hoses are manufactured in a durable material for long service and supplied with reliable stainless steel “Tema” connectors for secure linkages.

- 1 pc(s) Hydraulic Hose 1" x 15m Q/R Tema 10021 (male)
- 1 pc(s) Hydraulic Hose 3/4" x 15m Q/R Tema 7511 (female)
- 1 pc(s) Hydraulic Hose 3/8" x 15m Drain, Aeroquip (male)

#### 1.5 Oil Transfer Hose Set for PDAS Pump Lamor GT A 115

- 1 pc(s) Rigid Hose 5" x 10m, Camlock

## 1.6 Weir Skimmer Module

The brush conveyor belt can be removed from the skimmer apex to create a weir type skimming system. The weir module consists of a stainless-steel hopper in which bottom is fitted the oil pump. In the fore part of the hopper is assembled a plate that hinges up and down depending on the oil-water inflow rate. For the operation with the weir skimmer the sweeping arms may be fit with the Centrifugal screw impeller pumps MSP 150/63 which have a discharging capacity of 300 m<sup>3</sup> per hour whilst the LAMOR GT A 115 reaches just 115 m<sup>3</sup> per hour.



## 1.7 Marflex Centrifugal Pump MSP150-63

### Manufacturer:

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The Marflex pump type MSP-150-63 is a hydraulically driven portable single stage vertical centrifugal pump that has been designed for efficient handling of viscous liquids, bulky solids, and shear-sensitive liquids. The MSP 150 portable pump is based upon a centrifugal screw impeller that combines the properties of a screw pump with those of a centrifugal one.

The pump impeller is keyed directly onto the hydraulic motor shaft. The high-pressure oil is led into the hydraulic motor through the pressure hose, the leak oil connection is connected to the return oil outlet port on the hydraulic motor, the return oil flows back to the main hydraulic system. A special shaft seal arrangement has been developed in the hydraulic motor to segregate the hydraulic and the cargo.



Technical specification of the Marflex Centrifugal Pump MSP150-63

Design	Single stage centrifugal
Capacity/Head	360m <sup>3</sup> /h-40 mcl
Viscosity/Specific Gravity	1.0 Cst. At 20°C/1.0
Speed	2000 rpm. maximum
Required Power	45 kW
Hydraulic Motor Type	Axial Plunger with Mechanical Seal.
Hydraulic working Pressure	200 bar
Maximum Pressure	320 bar
Maximum Return Pressure	6 bar
Maximum oil flow	130 l/min
Outer Diameter	490 mm
Height	610 mm
Weight excluding hoses	83 kg
Hydraulic connections (Tema quick couplings)	1" Tema 10021, 3/4" Tema 7511, drain 3/8" aeroequip.
Power required	50 kW
Discharge connector	6" Camlock or flange (included adaptor to 5")
Materials	Housing – Aluminium Impeller – Nodular Cast Iron Seals – Nitrile Hydraulic Motor – Cast Steel Quick Couplings – Yellow Passivated Steel



## 1.8 Power Packs LPP 120

### Manufacturer:

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Two Lamor LPP 120 Hydraulic Power Packs integrated in 10 ft container are provided to operate the oil recovery equipment. The Lamor multipurpose power pack is designed for flexible operation of many types of hydraulically operated oil spill clean-up equipment.

The power pack is containerized and has a steel frame with perforated cover to ensure a good cooling for the air-cooled diesel engine. Each Power Pack is driven by a 4 cylinders Diesel Engine Sisu 420 DSIM of 110 kW at 2200 rpm. Each is driving 3 hydraulic circuits which can be used to power multiple users such as a skimmer and the boom winder, respectively.

The two power packs are integrated in one container Explosion Proof (BV) Zone II.

The power packs are equipped with air start and incorporate an easily accessible control panel and hydraulic oil cooler into the framework. This equipment utilizes Sauer-Danfoss Proportional Hydraulic Valve Systems making it possible to easily adjust the flow of oil to the supplied components. The flow will always remain even when the pressure varies according to consumption.



#### Technical specification of the Power Pack - LAMOR LPP 120

Diesel engine	Sisu 420 DSIM
Cylinders	4
Max. RPM	2200
Power	110 kW
Air starter	20 bar
Fuel tank	600 l
Hydraulic oil tank	600 l
Hydraulic pump	Sauer Danfoss ERR_147LS
Displacement	147cm <sup>3</sup>
Max. pressure	210 bars
Max. oil output setting	300l/min
Hydraulic valve	Danfoss PVG-32/100
Hydraulic filter	UFI FRA 52 B16 NCD
Hydraulic oil cooler	AKG T6
Couplings	Centaflex FL-SAE3-12-127-65487

#### 1.9 10 ft. Container for Power Pack LPP 120

The 10 ft. steel container (service container (ISO 10') - 2990 x 2438 x 2591) is used for the storage and transportation of the LPP 120 2x power packs. The container is equipped with air intake and exhaust pipes. The power packs are operated inside the container when installed on board. There is an anti-slip floor for safety. The hydraulic couplings are located on the outside wall of the container for an easy connection.



Dimensions of the 10 ft. Power Pack Container

Length	3060 mm
Width	2440 mm
Height	2500 mm
Weight	4800 mm
Inner length	2880 mm
Inner width	2330 mm
Inner height	2370 mm
Capacity	16 m <sup>3</sup>

#### 1.10 10 ft. Container for storage

The 10 ft. steel container (ISO 10' - 2990 x 2438 x 2591) was used as a storage unit.



### 1.11 Hydraulic Flow Control Panel

Hydraulic elements of the sweeping arm (pump, brushes, skimmer lift) are controlled through the Hydraulic Flow Control Panel. The panel can also be used to control the boom reel and the air compressor.





## 1.12 Crane Heila (HMR 75/15-2S)

### Manufacturer:

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Website: [www.heila.com](http://www.heila.com)

Crane Heila (HMR 75/15-2S) is an electric/hydraulic powered telescopic marine deck crane for load handling. The column of the crane is connected to the base by means of slewing ball bearing. The ball bearing is mounted onto an adapter pedestal that can be bolted directly on a counter flanged pedestal pipe. The main boom is turning in the column and is activated by means of two hydraulic topping cylinders. The two hydraulic boom extensions are activated by means of one hydraulic telescopic cylinder that is mounted inside the main boom.

The crane is controlled from a control seat mounted on the left side of the column and all crane functions are controlled by a standard manual hydraulic control valve block.

The crane is equipped with a winch mounting plate integrated under the main boom structures for retro fitting a winch.







Technical specification of the Crane Heila HMR 75/15-2S

Max. slewing torque	17000 kgm
Max. Outreach horizontal	15m
Performance at 14.90 m	4200 S.W.L (kg)
Performance at 11.40	5800 S.W.L (kg)
Performance at 7.90	8800 S.W.L (kg)
Max. Slewing range	360° endless
Slewing time	1.5 rpm
Luffing time- approx.	35 sec
Boom out extension time – approx	65 sec
Boom in retraction time - approx	65 sec
Recommended oil flow	100 l/min
Max. working pressure	200 bar
Recommended oil tank capacity	250 l
Mass. Weight of crane approx	6900 kg
Slewing ring manufacturer	Rothe-Erde or equal
Slewing gearbox manufacturer	Brevini or equal

## 2. Skimmer

### Manufacturer:

Lamor Corporation Ab

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The skimmer set consists of:

- Skimmer Module
- Steering Thrusters for the Skimmer LFF 100 2C
- Pump Oil Transfer PDAS Pump Lamor GT A 115
- Oil & Hydraulic Hose Set for LFF 100 2C
- Hose Winder 1514
- Remote Control
- Flat Rack Container 20 ft. for Skimmer Set

All elements of the skimmer set are integrated on the 20 ft. flat rack container.



### 2.1 Skimmer Module LFF 100 2C

The Lamor Free Floating Offshore Skimmer is a very high-capacity free-floating skimmer designed for open ocean oil recovery operations.



The LFF 100 2C is fitted with two V-chain-pocket- brush type conveyors for collection of all types of floating oil from light to high viscosity oils and emulsion. The skimmer is designed to collect these heavy materials floating on the water surface or submerged below the surface and feed the oil into a collection tank from where is pumped out by means of a high-volume Positive displacement Archimedes Screw type pump (Lamor GT A 115) with capacity 115 m<sup>3</sup>/hr.

Each brush chain conveyor consists of four brush chains. A hydraulic motor handles the rotation of the belts via a set of V-belt wheels, one for each belt section. To improve the flow to the skimmer unit, it is equipped with a flow impeller behind the brush conveyors. The skimmer is hydraulically operated and fitted with two thrusters to allow the operator to manoeuvre the skimmer where oil is most heavily concentrated.

#### Technical specification of the Skimmer LFF 100 2C

Length	2740 mm
Width	2280 mm
Height	1950 mm
Draft	870 mm
Weight	820 kg
Weight with pump (GTA115)	895 kg
Hydraulic flow	200 l/min
Hydraulic pressure	210 bar
Power req.	70 kW
Speed	2 knots
Capacity	115 m <sup>3</sup> /h - IFO 40/ 105m <sup>3</sup> /h – bitumen 1 million cSt.

The skimmer operation requires a crane with enough lifting capacity and range to place the unit in the water from the storage position. The Lamor LFF 100 2C is fitted with a “sea catch” quick-release hook to facilitate the deployment.

### **2.3 Oil Transfer PDAS Pump Lamor GT A 115**

For description see point 1.3.



### **2.4 Oil & Hydraulic Hose Set for LFF 100 2C**

The umbilical is made up of the necessary hydraulic hoses to operate the offshore skimmer and associated oil pump as well as the oil transfer hoses. The hose flotation made of PVC binds the hoses and also protect them from possible damage.

The floating hose set includes the following components:

3 x Layflat 5" transfer hose length 20m each, tot. 60m

2 x hydraulic hoses 1" length 60m

1 x hydraulic hose 3/8" length 60m

1 x hydraulic hose 1/4" length 60m

1 x electric cable for radio remote control, length 60m

### **2.5 Hose Winder 1514**

The Lamor Hose Reel is designed to store hydraulic and oil transfer hoses. The frame of the reel is produced of steel protected with marine grade painting. The reel is built of sea water resistant aluminium. The construction allows the transfer hoses and the hydraulic hoses to be winded and locked separately.



The frame is equipped with 4-point lifting points and forklift channels and is integrated in a 20ft. flat rack container. The maximum storage capacity of the winder is 60 m of hydraulic hoses and 60 m oil transfer hose.



Dimensions of the Hose Winder 1514

Length	900 mm
Diameter	750 mm
Height	860 mm
Weight	34 kg
Capacity	60 m hydraulic hoses and 60 m oil transfer hose

## 2.6 Remote Control for the Skimmer

The LFF 100 2C is designed for deployment from a vessel into an area where oil has been contained. The Remote Radio Control allows controlling the skimmer's thrusters, pump and brushes.



## 2.7 Flat Rack Container 20 ft. for Skimmer Set

The flat rack container, ISO standardised 20 ft, is equipped with lifting hooks and forklift channels as standard. It is also fitted with anti-slip floor for safety and brackets for equipment to be safely secured.

Dimensions of the 20 ft. flat rack container

Length	6050 mm
Width	2440 mm
Height	2590 mm
Weight	2250 kg

## 3. Ancillaries

### 3.1 Power pack (inside a 10 ft container)

Markleen powerpack **DHPP 90** with two-way manoeuvring panel installed inside a 10' container with air vents (diesel John Deere, model 4045TF250VS, 93 kW, 2400 rpm, hydraulic pump Sauer Danfoss, series 45).

This additional power pack was used to drive some of the equipment installed onboard the vessel (sweeping arm / boom reel / skimmer).



### Technical Specifications

Structure	Frame / Side panels / Tanks: AISI 304 stainless steel Top cover: Magnal 30 marine grade aluminium
Engine	John Deere 4-cylinder water-cooled diesel engine model 4045TF250VS
Starter	Electric. 12 V / 95 Ah battery



Max. rated power	93 kW @ 2400 rpm
Hydraulic pump	Variable displacement pump
Heat exchanger	Air / Oil
Max. hydraulic oil flow rate [l/min]	235
Max. hydraulic oil pressure [bar]	210
Number of hydraulic circuits	1
Fuel tank capacity [litres]	115
Hydraulic oil tank capacity [litres]	300
Hydraulic couplings (*)	Pressure: 1" male / Return: 1" female / Drain: 3/8" female
Controls	Engine management system, accelerator, emergency stop button and battery isolator switch.
Instruments	Pressure gauge, hydraulic oil level and temp. gauges, fuel level gauge.
Handling and transport	4 hoist points, 2 ISO fork tunnels plus iso corners.
Measurements (l x w x h) [mm]	1770 x 1170 x 2000
Weight (dry/ full tanks) [kg]	1140 / 1480

### 3.2 Air compressor

Markleen portable diesel driven compressor (1400 l/min, 7 bar) Model DRW 714 – 1010. The compressor was used for inflation of booms (type Norlense 800 R, 2x250 m). It is permanently stowed on-board inside the same 10 feet container together with the power pack described above.



<b>MODEL</b>	<b>Unit</b>	<b>DRW 714</b>
Working pressure	bar	7
Real Air Yield	m <sup>3</sup> /min	1,4
Oil chamber capacity <sup>(1)</sup>	kg	2
LOMBARDINI Motor <sup>(2)</sup>	LDW 702 FOCS	
Cylinder Number	2	
Motor cooling	Fluid	
Max RPM	Turn/min	3000
Max Power during normal running	kW	9,6
Oil basin capacity	kg	1,5
Fuel tank capacity	L	10
Guaranteed noise power level <sup>(2)</sup>	dB(A)	97

(1) According to PN2CPTC3 or ISO 1217

(2) With reference to Directive 2000/14/EEC

Length	A	mm	1150
Width	B	mm	650
Height	H	mm	775
Total dry Weight	kg		220
Total Weight when ready for operation	kg		230

