

Equipment list

Appendix 1 to the Tender Specifications

**Attached to the Invitation to tender N° EMSA/NEG/28/2016
for storage of oil pollution response equipment in Bulgaria**

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1. Equipment list

Ref. N°.	Category	No. *	Item	Additional info	Unit	ID Code	Purchase Date
2.1	Sweeping arms	2.1.1	Frame	Rigid, Lamor LSS 15	ITEM	GPRM362201	21/12/2012
		2.1.2	Frame	Rigid, Lamor LSS 15	ITEM	GPRM362202	21/12/2012
		2.1.3	Twist Locks	4 CONTAINER CORNERS FOR STIFF SWEEPING ARM TWIST LOCKS	SET	GPRM351201	21/12/2012
		2.1.4	Twist Locks	4 CONTAINER CORNERS FOR STIFF SWEEPING ARM TWIST LOCKS	SET	GPRM351202	21/12/2012
		2.1.5	Crane	DAVIT CRANE SYSTEM, LAMOR	ITEM	GPRM130001	21/12/2012
		2.1.6	Crane	DAVIT CRANE SYSTEM, LAMOR	ITEM	GPRM130002	21/12/2012
		2.1.7	Weir module	WEIR SKIMMER MODULE WITH DEBRIS SCREEN	ITEM	GPRM314401	21/12/2012
		2.1.8	Weir module	WEIR SKIMMER MODULE WITH DEBRIS SCREEN	ITEM	GPRM314402	21/12/2012
		2.1.9	Hydraulic hose(s)	SET FOR WEIR SKIMMER	SET	GPRM223801	21/12/2012
		2.1.10	Hydraulic hose(s)	SET FOR WEIR SKIMMER	SET	GPRM223802	21/12/2012
		2.1.11	Pump	SCREW/CENTRIFUGAL, MARIFLEX - MSP 150	ITEM	GPRM280001	21/12/2012
		2.1.12	Pump	SCREW/CENTRIFUGAL, MARIFLEX - MSP 150	ITEM	GPRM280002	21/12/2012
		2.1.13	Spare parts	SPARE PART KIT 2 FOR MSP 150	SET	GPRM343101	21/12/2012
		2.1.14	Hydraulic hose(s)	SET FOR MSP 150 PUMPS	SET	GPRM223803	21/12/2012
		2.1.15	Brush module	BRUSH SKIMMER UNIT, CONVEYOR BELT 5C	ITEM	GPRM310701	21/12/2012
		2.1.16	Brush module	BRUSH SKIMMER UNIT, CONVEYOR BELT 5C	ITEM	GPRM310702	21/12/2012
		2.1.17	Hydraulic hose(s)	HOSES FOR BRUSH MODULES	SET	GPRM223804	21/12/2012
		2.1.18	Cover	CANVAS FOR STIFF SWEEP BRUSH MODULE	ITEM	GPRM120001	21/12/2012
		2.1.19	Cover	CANVAS FOR STIFF SWEEP BRUSH MODULE	ITEM	GPRM120002	21/12/2012
		2.1.20	Pump	LAMOR GT A 140 with 6" outlet flange	ITEM	GPRM280003	21/12/2012
		2.1.21	Pump	LAMOR GT A 140 with 6" outlet flange	ITEM	GPRM280004	21/12/2012
		2.1.22	Spare parts	SPARE PART KIT 1 FOR GT a 140 PIUMP	SET	GPRM343102	21/12/2012

Ref. N°.	Category	No. *	Item	Additional info	Unit	ID Code	Purchase Date
2.1	Sweeping arms (continuation)	2.1.23	Water injection flange	WATER INJECTION KIT 3/4 I/O GTA 140, with WATER INJECTION OUTLET 5" GTA 140	ITEM	GPRM454701	21/12/2012
		2.1.24	Water injection flange	WATER INJECTION KIT 3/4 I/O GTA 140, with WATER INJECTION OUTLET 5" GTA 140	ITEM	GPRM454702	21/12/2012
		2.1.25	Hydraulic hose(s)	SET FOR GTA 140 PUMP, 30xTEMA M/F COUPLINGS	SET	GPRM223805	21/12/2012
		2.1.26	Storage reel	REEL FOR HOSE STORAGE	ITEM	GPRM353401	21/12/2012
		2.1.27	Storage reel	REEL FOR HOSE STORAGE	ITEM	GPRM353402	21/12/2012
		2.1.28	Cover	PLASTIC COVER FOR REEL	ITEM	GPRM120003	21/12/2012
		2.1.29	Cover	PLASTIC COVER FOR REEL	ITEM	GPRM120004	21/12/2012
		2.1.30	Control desk	REMOTE CONTROL BOX	ITEM	GPRM110001	21/12/2012
		2.1.31	Control desk	REMOTE CONTROL BOX	ITEM	GPRM110002	21/12/2012
		2.1.32	Oil hose(s)	SEMI RIGID, CAMLOCK, 10 pcs, 6"	SET	GPRM262801	21/12/2012
		2.1.33	Oil hose(s)	SEMI RIGID, CAMLOCK, 10 pcs, 6"	SET	GPRM262802	21/12/2012
		2.1.34	Oil hose(s)	SEMI RIGID, CAMLOCK, 10 pcs, 6"	SET	GPRM262803	21/12/2012
		2.1.35	Oil hose(s)	SEMI RIGID, CAMLOCK, 10 pcs, 6"	SET	GPRM262804	21/12/2012
		2.1.36	Towing lines set	BOW LINE PP 40 mm / 50 m FOR LSS SA AND TOWING CHAIN & SLINGS	SET	GPRM374201	21/12/2012
		2.1.37	Towing lines set	BOW LINE PP 40 mm / 50 m FOR LSS SA AND TOWING CHAIN & SLINGS	SET	GPRM374202	21/12/2012
		2.1.38	Towing lines set	BOW LINE PP 40 mm / 50 m FOR LSS SA AND TOWING CHAIN & SLINGS	SET	GPRM374203	21/12/2012
		2.1.39	Towing lines set	BOW LINE PP 40 mm / 50 m FOR LSS SA AND TOWING CHAIN & SLINGS	SET	GPRM374204	21/12/2012
		2.1.40	Storage container	10 FT CONTAINER WITH MISC. SPARES	ITEM	GPRM351203	21/12/2012
		2.1.41	Water injection pump	ELECTRIC WATER PUMP EVML5AISI 316, INEGRATED IN THE HOT WATER BOILER	ITEM	GPRM455001	21/12/2012
		2.1.42	Power pack spare parts	SPARE PARTS KIT 1 FOR LPP 90 CU	SET	GPRM343103	21/12/2012
		2.1.43	Power pack	LAMOR LPP 90 CU - Diesel hydraulic	ITEM	GPRM270001	21/12/2012

Ref. N° *	Category	No. *	Item	Additional info	Unit	ID Code	Purchase Date
2.2	Skimmer	2.2.1	Frame	LAMOR LWS 1300 WEIR SKIMMER MK II/MSP 150, WITH THRUSTERS	ITEM	GPRI302201	21/12/2012
		2.2.2	Brush module	LAMOR LWS 1300 BRUSH ADAPTOR LBA 1300 MK II	ITEM	GPRI310701	21/12/2012
		2.2.3	Cover	CANVAS FOR LBA 1300 MK II	ITEM	GPRI120001	21/12/2012
		2.2.4	Pump	LAMOR GTA 140 with WATER INJECTION KIT 3/4 I/O	ITEM	GPRI280001	21/12/2012
		2.2.5	Storage reel	HOSE REEL WITH 9-CH SWIVEL LHR 60	ITEM	GPRI353401	21/12/2012
		2.2.6	Hydraulic hose(s)	SET FOR LHR 60 9CH - 60 meters in length	SET	GPRI223801	21/12/2012
		2.2.7	Hooking system	SEA CATCH/RELEASE SET FOR LFF OFFSHORE SKIMMERS	ITEM	GPRI440001	21/12/2012
		2.2.8	Storage flat rack	CONTAINER 20`	ITEM	GPRI352001	21/12/2012
		2.2.9	Cover	CANVAS FOR LWS 1300 MK II	ITEM	GPRI120002	21/12/2012
		2.2.10	Cover	CANVAS FOR HOSE SET 60	ITEM	GPRI120003	21/12/2012
		2.2.11	Control desk	CONTROL PANEL 4 VALVES	ITEM	GPRI110001	21/12/2012
		2.2.12	Power pack	LAMOR LPP 90 CU - Diesel hydraulic	ITEM	GPRI270001	21/12/2012
		2.2.13	Pump	MARIFLEX MSP 150 - SCREW/CENTRIFUGAL - 350 m3/h	ITEM	GPRI280002	21/12/2012

Ref. N°. *	Category	No.*	Item	Additional info	Unit	ID Code	Purchase Date
2.3	Boom	2.3.1	Segment	LAMOR HDB 2000, HEAVY DUTY, 250 m	ITEM	GPRA073801	21/12/2012
		2.3.2	Segment	LAMOR HDB 2000, HEAVY DUTY, 250 m	ITEM	GPRA073802	21/12/2012
		2.3.3	Storage reel	LAMOR HSR H 1822/PVG VALVE4 VCONTAINER /CORNER/CANVAS COVER	ITEM	GPRA353401	21/12/2012
		2.3.4	Storage reel	LAMOR HSR H 1822/PVG VALVE4 VCONTAINER /CORNER/CANVAS COVER	ITEM	GPRA353402	21/12/2012
		2.3.5	Hydraulic hose(s)	15m, 3/8, TEMA COUPLING	SET	GPRA223801	21/12/2012
		2.3.6	Hydraulic hose(s)	15m, 3/8, TEMA COUPLING	SET	GPRA223802	21/12/2012
		2.3.7	Towing bridles set	1 TOWING END/1 ATSM/1 ROPE 55M/24MM/1 BUOY 400MM	SET	GPRA370601	21/12/2012
		2.3.8	Towing bridles set	1 TOWING END/1 ATSM/1 ROPE 55M/24MM/1 BUOY 400MM	SET	GPRA370602	21/12/2012
		2.3.9	Towing bridles set	1 TOWING END/1 ATSM/1 ROPE 55M/24MM/1 BUOY 400MM	SET	GPRA370603	21/12/2012
		2.3.10	Towing bridles set	1 TOWING END/1 ATSM/1 ROPE 55M/24MM/1 BUOY 400MM	SET	GPRA370604	21/12/2012
		2.3.11	Towing bridles set	CROSS BRIDLE NO-450_600 S	SET	GPRA371601	21/12/2012
		2.3.12	Air blower	AIR BLOWER HAB 200/FILLING NOZZLE&T-KEY/1 AIR HOSE 3", 10M, CAMLOCK/2 AIR HOSES 2", 5 M, CAMLOCK	ITEM	GPRA030001	21/12/2012
		2.3.13	Hydraulic hose(s)	HOSES FOR AIR BLOWER HAB 200/2XHOSE 1/2", 15 M/1XHOSE3/8"	SET	GPRA223803	21/12/2012
		2.3.14	Power pack	LAMOR LPP 90 CU - Diesel hydraulic	ITEM	GPRA270001	21/12/2012

Ref. N°. *	Category	No. *	Item	Additional info	Unit	ID Code	Purchase Date
2.4	Communication	2.4.1	VHF Portable	VHF RADIO PHONE VXA-220 PILOT VI AIR BAND H/H	ITEM	GPRC390001	21/12/2012
		2.4.2	VHF Portable	VHF RADIO PHONE VXA-220 PILOT VI AIR BAND H/H	ITEM	GPRC390002	21/12/2012
2.5	Sampling/testing	2.5.1	Gas detector	PORTABLE GAS DETECTOR / EXPLOSIMETER GX-2009-B	ITEM	GPRH190001	21/12/2012
		2.5.2	Flash point tester	SETAFLASH SERIES 3 CLOSED CUP FLASH POINT TESTER	ITEM	GPRH170001	21/12/2012
		2.5.3	Mini lab	SAMPLING MINI LAB FOR OIL VISCOSITY AND DENSITY	ITEM	GPRH230001	21/12/2012
2.6	Cleaning	2.6.1	Cleaning machine	PORTABLE CLEANING SYSTEM, HIGH PRESSURE CLEANER	ITEM	GPRB090001	21/12/2012
		2.6.2	Cleaning machine	PORTABLE CLEANING SYSTEM, HIGH PRESSURE CLEANER	ITEM	GPRB090002	21/12/2012
		2.6.3	Cleaning machine	PORTABLE CLEANING SYSTEM, HIGH PRESSURE CLEANER	ITEM	GPRB090003	21/12/2012
2.7	Slick detection	2.7.1	Computer	MIROS WAVEX/OSD WITH KEYBOARD AND TRACKER BALL, WITH EXTENDED GUARANTEE	ITEM	GPRJ201001	21/12/2012
		2.7.2	Monitor	19" FLAT PANEL DISPLAY	ITEM	GPRJ202701	21/12/2012
		2.7.3	Wind sensor	NMEA INTERFACES TO GYRO, GPS, WIND SENSORS	ITEM	GPRJ203701	21/12/2012
		2.7.4	Interface box	MIROS RADAR INTERFACE UNIT EM -129 INTEGRATED VIDEO DIGITIZER	ITEM	GPRJ203702	21/12/2012
		2.7.5	Software	USER LICENSE FOR MIROS OSD SYSTEM SOFTWARE	ITEM	GPRJ330001	21/12/2012
		2.7.6	Radar	12 KW FURUNO X-BAND STANDARD RADAR	ITEM	GPRJ203301	21/12/2012
		2.7.7	Antenna	6,5` ANTENNA FOR RADAR	ITEM	GPRJ200301	21/12/2012
2.8	Heating	2.8.1	Boiler	Lesilmach-98, Portable 20 feet closed container	ITEM	GPRF060001	21/12/2012

Ref. N°.*	Category	No.*	Item	Additional info	Unit	ID Code	Purchase Date
2.9	Weir Boom	2.9.1	Segment	VIKOMA WEIR BOOM 180 - 370 M BOOM WITH 76 M WEIR SECTION, INCLUDING, INTERNAL TRANSFER PUMPS, HYDRAULIC AND DISCHARGE HOSES, 6" INTEGRATED FLOW-METER	ITEM	GPRA073801	26/02/2014
		2.9.2	Pump	WATER PUMP WITH FLOTATION ATTACHED TO THE BOOM	ITEM	GPRA280001	26/02/2014
		2.9.3	Pump	TRANSFER PUMP, ROTARY LOBE PUMP	ITEM	GPRA280002	26/02/2014
		2.9.4	Storage reel	WEIR BOOM DECK REEL WITH FLEETING ROLLER AND ARM TO ASSIST DURING THE RETRIEVAL	ITEM	GPRA353401	26/02/2014
		2.9.5	Oil hose(s)	4X5 M 8" SUCTION HOSES AND 3X15 M 6" DISCHARGE HOSES	ITEM	GPRA260001	26/02/2014
		2.9.6	Power pack	Diesel, EX 3G, IIB, 105 kW, T3 RATED FOR HAZARDOUS AREAS ZONE II.	ITEM	GPRA270001	26/02/2014
		2.9.7	Power pack	Diesel, EX 3G, IIB, 105 kW, T3 RATED FOR HAZARDOUS AREAS ZONE II.	ITEM	GPRA270002	26/02/2014
		2.9.8	Control desk	HYDRAULIC CONTROL DESK COMPLETE WITH MANIFOLDS , VALVING/CONTROLS	ITEM	GPRA110001	26/02/2014
		2.9.9	Hydraulic hose(s)	SET SUPPLIED TO RUN FROM POWER PACKS TO CONTROL CONSOLE AND FROM THE CONSOLE TO THE ANCILLARY EQUIPMENT (pressure, return & drain with connectors) - 20 m	SET	GPRA223801	26/02/2014
		2.9.10	Towing lines set	TOWING WARPS	SET	GPRA374201	26/02/2014
		2.9.11	Air blower	AIR INFLATION SYSTEM, BLOWER	ITEM	GPRA030001	26/02/2014
		2.9.12	Air hoses	1X10 METERS OF 3" FLEXIBLE HOSE WITH 1 X BOOM DEFLATION ADAPTOR	SET	GPRA053801	26/02/2014
		2.9.13	Hydraulic hose(s)	2 pcs, 5m, 1/2" - FOR AIR BLOWER	SET	GPRA223802	26/02/2014
		2.9.14	Storage flat rack	20' FLAT RACK for REEL WITH BOOM AND PUMPS	ITEM	GPRA352001	26/02/2014
		2.9.15	Storage container	20' CONTAINER	ITEM	GPRA351201	26/02/2014
		2.9.16	Spare parts	SPARE PARTS FOR AIR FAN, WEIR BOOM REEL, HOSE KIT, TRANSFER	SET	GPRA340001	26/02/2014

2. DESCRIPTION OF EQUIPMENT

2.1 Sweeping Arm System

Manufacturer:

Lamor Corporation Ab

Email: info@lamor.fi, Website: www.lamor.fi

Year of purchase: 2012



Figure 1 LAMOR Stiff Sweeping Arm system LSS 15m

The sweeping system includes the following components:

- Rigid Sweeping Arm Structure
- Brush Skimmer Module
- Weir Skimmer Module
- Pump Marflex Centrifugal MSP150-63
- Davit Crane System
- Towing lines set
- Hydraulic Hoses
- Oil Transfer Hoses
- Storage reel
- Power Pack LPP 90 CU
- Control desk
- Ancillaries: spare parts and canvas

2.1.1 – 2.1.2 Rigid LAMOR Stiff Sweeping Arms LSS 15m (Frames)

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.

Sweeping arm frame characteristics

Length:	15000 mm
Width:	3400 mm
Height:	1900 mm
Weight:	4500 kg
Hydraulic flow (skimmer only):	20 l/min
Hydraulic pressure:	210 bar
Power requirement	7 Kw

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.

2.1.3 – 2.1.4 Container Corners for LSS

There are 4 x corner fittings - 2 bottom right and 2 bottom left. This is a complete set assembled on the LSS. These are the fittings found on all ISO type Containers used in the intermodal shipping arena. They are designed to accept a variety of ISO standard Containers.

2.1.5 – 2.1.6 Davit Crane System Hidroacar

Manufacturer:

Hidroacar Ind. Machinery Industry&Trade Ltd. Co

Fax: 90-216-2901332

Mobile: 90-5334138739

Year of purchase: 2012



Figure 2 Davit Crane System Hidroacar

Technical Specifications

Capacity (SWL):	6 tons at 5,7 m
	4,5 tons at 12,7 m
Length of Jib (radius):	12,7 m
Height of mounting pedestal:	3074 mm
Construction material:	DIN 17100 ST-52-3, EN 10025 S355J2G3
Capacity of Hoisting Drum:	1. Hoisting Drum : 6 ton, single wire with 8.5t
	2. Hoisting Drum : 4,5 ton, single wire with 8.5t
Weight:	~ 8.000 kg
Hydraulic operation pressure:	max 210 bar

2.1.7 – 2.1.8 Weir Skimmer Module for Stiff Sweep

The weir skimmer module is a removable unit assembled in the apex of the stiff sweep skimmer arm. It can be replaced at any time with brush conveyor belt skimmer (see 2.1.15 / 2.1.16) for enhanced recovery of high viscous oils and reducing the amount of collected water. The weir skimmer module is also equipped with oil transfer pump.

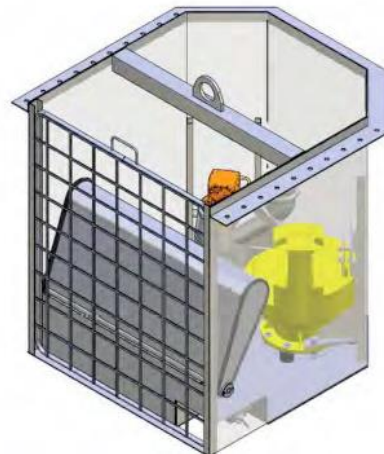


Figure 3 LAMOR Stiff Sweeping Arm LSS 15m – weir skimmer module

Technical Specifications

Length:	1290 mm
Width:	1291 mm
Height:	1436 mm
Weight:	210 kg

Weir module is installed in the sweeping arm frame and therefore it is transported together with the sweeping arm frame.

2.1.9 – 2.1.10 Hydraulic Hoses Set for Brush Skimmer and Weir

Complete set of compatible hydraulic hoses.

2.1.11 – 2.1.12 Mariflex Centrifugal Pump MSP150

Manufacturer:

Mariflex Group

E-mail: info@mariflex.net

<http://mariflexgroup.com/>

Year of purchase: 2012

The Mariflex pump type MSP-150 is a hydraulically driven portable single stage vertical centrifugal pump



Figure 4 Mariflex Centrifugal Pump MSP150

Technical Specifications

Outer Diameter:	490 mm
Height:	610 mm
Weight excluding hoses:	85 kg

2.1.13 Spare part kit 2 for MSP 150

The Lamor spare parts kit includes all necessary items for field repair and maintenance. The dimensions of the box are not specified but they can be estimated as follows:

Length: < 1000 mm

Width: < 700 mm

Height < 500 mm

Weight < 20 kg

2.1.14 Hydraulic Hose Set for MSP 150 and GT A 140

The same hydraulic hose set is used for pumps in weir skimmer units (MSP 150) and Brush Skimmer unit (GTA 140) accordingly which of the skimming units of Rigid Sweeping Arm is used.

Standard Hydraulic Hose Set for Lamor Positive Displacement Pumps include the following components:

1 x Hydraulic hose L-20m/84-16/TEMA 10011/10021

1 x Hydraulic hose L-20m/84-16/TEMA 7511/7521

1 x Hydraulic hose L-20m/84-16/TEMA 3821

2.1.15 – 2.1.16 Brush Module (Skimmer Unit), Conveyor Belt 5C

Technical Specifications

Length: ~ 1300 mm

Width: ~ 1300 mm

Height: ~ 1500 mm

Weight: ~ 210 kg



Figure 5 LAMOR Stiff Sweeping Arm Frame – brush skimmer module

Note: Brush modules are to be transported as separate items. The sweeping arm frames are equipped with the weir module (see 2.1.7 / 2.1.8).

2.1.17 Hydraulic hoses for brush module (see point 5.1.9)

2.1.18 – 5.1.19 Canvas for stiff sweep brush module

2 x covering canvas are included.

2.1.20 – 2.1.21 LAMOR GT A 140 with 6" outlet flange

SIZE AND WEIGHT

Height without inlet grid	570 mm
Height with inlet grid	598 mm
Length	500 mm
Width	300 mm
Weight	71 kg / 156 lbs

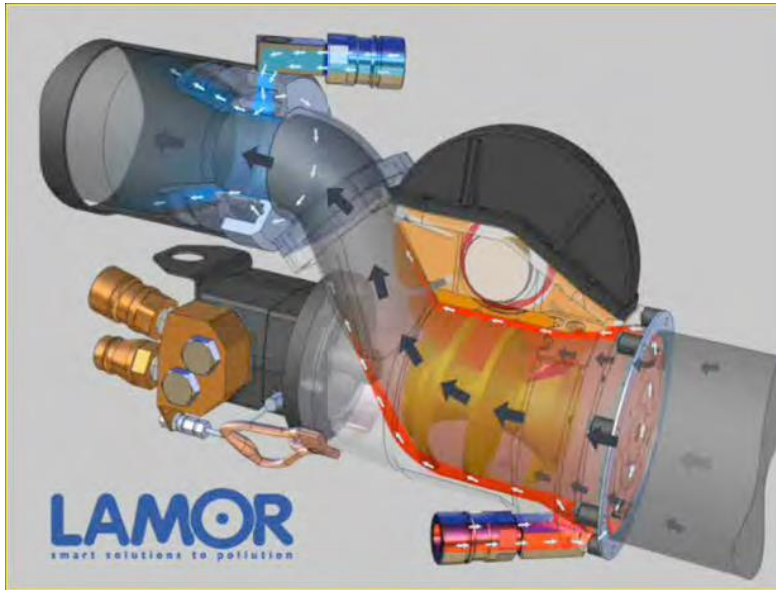


Figure 6 - LAMOR GT A 140

2.1.22 Spare parts (kit 1 for GT A 140)

The Lamor spare parts kit includes all necessary items for field repair and maintenance. The dimensions of the box are not specified but they can be estimated as follows:

Length: < 1000 mm

Width: < 700 mm

Height < 500 mm

Weight < 20 kg

2.1.23 – 521.24 Water injection flange - kit 3/4" I/O GTA 140 with Water injection outlet 5" GTA 140

The kit is retrofitted by removing the original outlet assembly with the Camlock (4 bolts) and bolting on the new assembly. It is integrated part of the pump.

2.1.25 Hydraulic Hose Set for GT A 140, 30xTEMA M/F COUPLING

Set of hydraulic hoses for the GTA 140 Pump.

2.1.26 – 5.1.27 Storage Reel for Hose Storage (Winder LHW 40/2-AL)

The Lamor Hose Reel is designed to store hydraulic and oil transfer hoses. The frame is produced in steel protected with marine grade painting. The reels are sea water resistant aluminium. The frame is equipped with 4-point lifting points and forklift channels.



Figure 7 - 2 Hose Winders LHW 40/2-AL with hydraulic hoses for LSS 15m

Technical Specifications

Max. capacity:	40 m hydraulic hoses and 200 m layflat hose (alternatively approx. 40 m rigid transfer hose).
Hose reel package weight:	40 m Hydraulic hose weight approx. 40 kg 200 m Layflat oil transfer hose weight approx. 450 kg With the hose winder (110 kg) the whole package weight is approx. 600 kg.
Length:	1300 mm
Width:	1300 mm
Height;	1535 mm
Weight:	110 kg
Capacity;	40+200 m
Reel diameter:	1300 mm

2.1.28 – 2.1.29 Cover - Canvas for Hose Winder LHW

Canvas for manual Hose winders LHW, 1300 mm.

- black
- A4 side pocket
- 2 open corners
- rope in sleeve
- 2 Lamor logo on long sides

2.1.30 – 2.1.31 Control desk – Remote Control Panel, 7 valves

The Lamor Hydraulic Control Panel uses Danfoss proportional PVG-32/100 valves and operates the oil recovery system, oil transfer pumps, oil boom winder and other related equipment as required. The control valves are installed in a separate aluminum box that can be placed anywhere on the deck to ensure safe and reliable operation

Estimated dimensions and weight:

Length: < 1000 mm

Width: < 1000 mm

Height: < 1500 mm

Weight: < 50 kg



Figure 8 - Control desk – Remote Control Panel, 7 valves

2.1.32 - 2.1.35 Oil hoses, Semi-Rigid Oil Transfer Hose 6" x 10m, Camlock

The equipment is supplied with 4 Semi-Rigid Oil Transfer Hose 6" x 10m, Camlock

Technical Specifications

Inner diameter:	152 mm
Outer diameter:	170 mm
Bending radius:	1220 mm
Working pressure:	15 bar
Weight (total operational):	5,2 kg/m
Length:	10000 mm



Figure 9 LSS 15 m, oil hose connected to weir skimmer module

2.1.36 – 2.1.39 Towing lines and chains set

The Towing lines and chains set consists of:

- 50 meter / 40 mm ropes for securing the LSS sweep arm;
- Towing chains and slings for securing the LSS sweep arm.

2.1.40 Storage container - 10 ft container with misc. spares

The container is fitted with double doors on the long side as well as standard end doors. The container is tailored for equipment storage or for other purposes. Inside, the container is fitted with plywood floor tie down points for equipment and shelving.



Figure 10 Storage container

Technical Specifications

Length:	2970 mm
Width:	2500 mm
Height:	2590 mm
Weight:	1800 kg
Inner length:	2080 mm
Inner width:	2330 mm
Inner height	2370 mm
Capacity	16 m ³

2.1.41 Water Injection Pump

Installed inside the 20' container of the heating system (boiler) – see 2.8

2.1.42 Power pack spare parts

- Spare part Kit for the power pack LPP 90 Cu

The Lamor spare parts kit include all necessary items for field repair and maintenance. The dimensions of the box are not specified but they can be estimated as follows:

Length: < 1000 mm

Width: < 700 mm

Height < 500 mm

Weight < 30 kg

2.1.43 Hydraulic Power Pack LPP 90 Cu



Figure 11 Hydraulic Power Pack LPP 90 Cu

The Lamor Power Pack LPP 90 Cu is powered by a water cooled Cummins turbocharged/intercooled diesel engine and serves as a high capacity multipurpose power pack designed for the flexible operation of many types of hydraulically operated oil spill clean-up equipment.

Technical Specifications

Length:	ca 2300 mm
Width:	ca 1400 mm
Height:	ca 1800 mm
Weight:	ca 2000 kg

Power:	90 kW
Hydraulic flow;	320 l/min
Hydraulic pressure:	210 bar
Fuel tank capacity:	200 l
Hydraulic oil tank capacity:	400 l
Speed:	2200 rpm

2.2 Lamor LWS 1300 Weir Skimmer Mk II / MSP 150 with thrusters

Main elements of the system:

- Weir/Brush skimmer (see 2.2.1 and 2.2.2)
- Hose reel (see 2.2.5)

The system is transported on a 20 feet flat rack (see 2.2.8)

2.2.1 Weir Skimmer LWS 1300 Mk II / MSP150 with thrusters

Year of purchase: 2012



Figure 12 – Weir Skimmer LWS 1300 Mk II with brush and weir modules

Technical Specifications

Length:	2850 mm
Width:	2590 mm
Height;	1830 mm
Diameter	weir: 1300 mm
Weight	~ 400 kg (including thrusters)
Draft	1100 mm
Design Capacity:	250 m ³ /h
Capacity, certified ASTM	112,2 m ³ /h
Capacity, certified max	360 m ³ /h

2.2.2 Brush adapter LBA 1300 Mk II

The Lamor Brush Adapter LBA 1300 Mk II is a brush-type oil recovery module designed to fit quickly and easily onto the hopper of the Off-Shore Weir Skimmer Lamor LWS 1300 Mk II.

Technical Specifications

Length:	2050 mm
Width:	1800 mm
Height;	570 mm
Weight	220 kg

2.2.3 Canvas cover for LBA 1300 Mk II

Canvas cover for LBA 1300 Mk II, black with yellow Lamor-logo. 900gsm fabric with A4 document pocket.

Technical Specifications

Length:	2100 mm
Width:	1805 mm
Height;	570 mm

2.2.4 Oil Transfer PDAS Pump Lamor GTA 140

The Lamor GT A 140 pump is a multipurpose submersible Archimedes screw pump.

Technical Specifications

Length:	500 mm
Width:	300 mm
Height:	598 mm
Weight:	71 kg
Capacity:	140 m ³ /h
Hydraulic flow:	160 max l/min
Hydraulic pressure:	210 max bar
Power req.:	56 max kW
Discharge pressure:	12 bar



Figure 13 Oil Transfer PDAS Pump Lamor GTA 140

2.2.5 Hose Reel with 9-ch Swivel LHR 60 9ch

The light weight reel frame is manufactured in steel and the spool in marine grade aluminium. The reel frame comprises fork lift channels and 4-point lifting points as standard for easy handling both on and offshore. The capacity of the reel is approx. 60 m of hydraulic and oil transfer hoses with PVC hose floatation for a skimmer/oil transfer pump system. The winder frame comprises fork lift channels and 4 point lifting points as standard for easy handling both on- and offshore. Marine twist locks and container corner guides can be fitted as desired.

Technical Specifications

Length:	2020 mm
Width:	1630 mm
Height:	1880 mm
Weight:	reel only ca. 500 kg
Capacity:	60 m
Reel diameter:	1540 mm
Reel inner width	10 l/min
Hydraulic flow	1538 mm
Reel material	Aluminium
Frame material	Steel
Forklift channels	Yes
4-point lifting rings	Yes
Hydraulic pressure	200 bar
Power requirement	3 kW

2.2.6 Hydraulic hose Set 60m for LHR 60 9ch (stored on the hose reel point 2.2.5)

The standard Lamor hose set for free floating off-shore skimmers is designed not only to support the hydraulic and transfer hoses but also to act as an oil boom supporting and feeding the skimmer with oil during operation.

The floating hose set includes the following components:

2 x Layflat 5" transfer hose length 40m each, totally 80m with 5 " Camlock

1 x hydraulic hoses 1 1/4" length 80m (return) with TEMA 15011

1 x hydraulic hoses 1" length 80m (pressure) with TEMA 10021

1 x hydraulic hose 3/8" length 80m (drain) with Aeroquip 3/8"

1 x hydraulic hose 1/2" length 80m (LS) with TEMA 3821

1 x electric cable (inside 1/2" protective hose) for radio remote control, length 80m

1 x Water injection hose 80m

Length 60m

Weight ca. 700 kg

2.2.7 Sea Catch/Release Set for LFF Offshore Skimmers

Off-Shore Skimmer deploying and retrieving is easily and safely carried out by using the Sea Catch

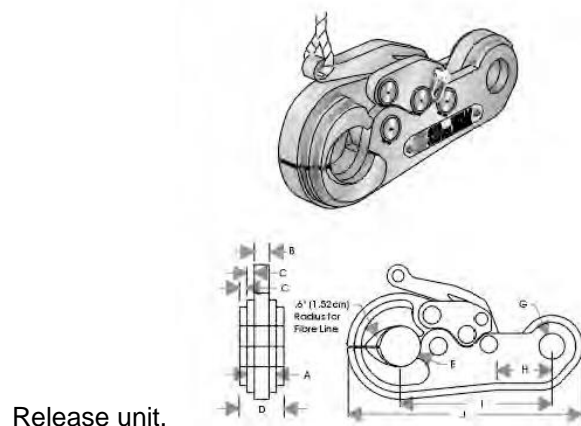


Figure 14 Sea Catch/Release Set for LFF Offshore Skimmers

The following components are included in the Catch/Release Set:

SeaCatch TR 7 LM hook	C2-201218
Aluminum lifting stick with support for S425 hook, L-5m	C2-208433
Lifting hook S425, aluminum	C2-205341
Duplex webbing lifting sling 60mm 2T L-2m	C2-208360
Lifting ring 2,2T (60x110) 8-7 NOR87	C2-208361
Shackle 22mm, bow-type	C2-208358
Shackle 19mm, bow-type	C2-208359
Rope 8mm 15m blue	
Rope 8mm 15m red	

2.2.8 Flatrack for skimmer system

20 ft flatrack black.

Technical Specifications

Length:	6056 mm
Width:	2437 mm
Height:	320 mm
Weight:	1550 kg
Footprint:	20 ft cont

2.2.9 Canvas for LWS 1300 Mk II

1x canvas is included.

2.2.10 Canvas for Hose Set 60

1x canvas is included.

5.2.11 Control Panel, 4 valves

The Danfoss proportional PVG-32 valves operate the oilboom winder and the airblower. The control valves are installed in a separate aluminium box that can be place anywhere on the deck to ensure safe and reliable operation.

Technical Specifications

Width:	450 mm
Height:	750 mm
Weight:	50 kg

2.2.12 Hydraulic Power Pack LPP 90 Cu (see point 5.1.43 and 5.3.14)

2.2.13 Mariflex Centrifugal Pump MSP150 (see point 5.1.11)

2.3 Boom set

Manufacturer:

Lamor Corporation Ab

Email: info@lamor.fi Website: www.lamor.fi

Year of purchase: 2012

2.3.1/ Oil Boom Set – Lamor Heavy Duty Boom (HDB) 2000

The Lamor Heavy Duty Oil Boom (HDB) is specifically suited for use in open seas, harbours, semi-sheltered waters and permanent installations such as oil terminals and power plants. The boom is equipped with galvanized ballast chain that guarantees correct deployment in sweeping operations and promotes sea keeping properties. The total boom weight is given including the ballast chain weight.

The system includes 2 units of 250m of boom on storage reels with all necessary deployment equipment including air inflation system.

The Lamor – HDB 2000 set includes:

- 2 x 250 m Boom sections on 2 Boom reels,
- Towing set
- Cross Bridle
- Power pack
- Hydraulic hoses
- Hydraulic air blower and air hoses



Figure 15 Oil Boom – Lamor Heavy Duty Boom (HDB) 2000

Lamor HDB is stored on a dedicated hydraulically powered reel.



Figure 16 Lamor HDB 2000 Boom

Technical specifications HDB 2000

Freeboard	560 mm
Draft	1160 mm
Boom Height	2000 mm
Standard Length	250 m
Colour	Black
Flotation	Air (atmospheric pressure)
Weight	17.1 kg/m
Ballast weight	4.4 Kg/m
Ballast Material	Galvanised Steel Chain
Temperature resistance	-40 ... +60°C
Base fabric	EP 400

Fabric tensile strength	20000 N/5cm
Air chamber length	3 m
Efficient in waves	Up to 4.5 m

2.3.3 -2.3.4 Boom Reel Heavy Construction HSR H 1822/corners/canvas cover

The reel frame is manufactured in steel and the spool in marine grade aluminum. The winder frame comprises fork lift channels and 4-point lifting points as standard for easy handling both on and offshore. Marine twist locks and container corner guides can be fitted as desired.

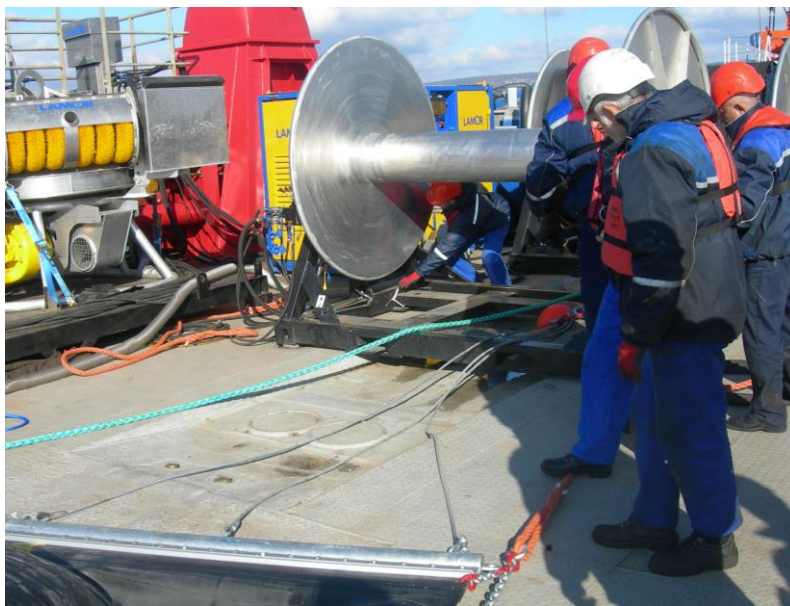


Figure 17 Boom Reel Heavy Construction HSR H 1822

Technical specifications

Length	2900 mm
Width	1800 mm
Height	2114 mm
Weight	790 kg

Reel diameter	1800 mm
Reel inner width	2200 mm
Reel material	Aluminium
Frame material	Steel
Forklift channels	Yes
4-point lifting rings	Yes

Container Corners for Boom Reels

There are 4 corner fittings used for standard boom reels - 2 bottom right and 2 bottom left. This set is sold complete assembled on the reel frame. These are the fittings found on all ISO type Containers used in the intermodal shipping arena. They are designed to accept a variety of ISO standard Containers.

Canvas for HSR H models

Canvas for Hydraulic Boom Reel HSR H models.

-yellow

-A4 side pocket

-2 Lamor logo on long sides

2.3.5 – 2.3.6 Hydraulic hoses set for HSR L/H

Hydraulic hose set for Lamor Oil Boom Reels consists of 2 x 15 m 3/8" hydraulic hoses and with standard Tema couplings 3811 and 3821 (M/F).

2.3.7 – 2.3.10 Towing bridle set

The Lamor TS HDB 2000 towing set consists of an aluminium ASTM connector bolted to a galvanized steel towing post fitted with a certified 3-point wire towing bridle, 12mm/4m. This configuration ensures even and stable operation when towing, mooring or trawling with the boom. Also supplied with the set is 55 m of 24 mm diameter towing warp and 400 mm diameter buoy.

Towing set for HDB 1800 components:

- 1 pc towing end
- 1 pc ASTM
- 1 pc braided polypropylene rope 24mm/55m
- 1 pc towing wire 12mm/4m
- 1 pc buoy 400mm



Figure 18 Towing Set

2.3.11 Cross Bridle

The cross bridle is a net piece that can be mounted on the boom to give it desirable shape if it is to be towed in a J-formation. The cross bridle towline allows boom to form a straight line 90 degree angle from reel/vessel to form the J- or U-sweep. The net is installed on the boom and stored together of the boom on the boom reel.

2.3.12 – 2.3.13 Hydraulic Air Blower HAB 200 and air hoses

The Hydraulic Airblower HAB 200 is used for inflating the Lamor Inflatable Booms. The air blower consists of a hydraulic motor and air blower installed in a portable aluminum frame. The unit is supplied with hydraulic quick release TEMA couplings.



Figure 19 Hydraulic Air Blower HAB 200 and air hoses

Components and accessories included:

- HAB 200 air blower
- filling nozzle & T-key
- air hose 3" Camlock L-10 m with Y-junction (2" / 3" / 2" Camlocks)
- 2 x air hose 2" Camlock L-5 m to be connected to the Y-junction

Technical specifications

Length:	550 mm
Width:	410 mm
Height:	600 mm
Weight:	40 kg

2.3.14 Hydraulic Power Pack LPP 90 Cu

See 2.1.43

2.4 Communication equipment

2.4.1 - 2.4.2 VHF Portable Radio Phone VXA-220 Pilot VI airband H/H

The Vertex Standard VXA-220 Pro VI is a compact, stylish, solid, aluminum case submersible (IP7: 1 m for 30 minutes) hand-held transceiver providing communication (transmit and receive) capability on the International Aircraft Communication Band ("COM" band: 118 ~ 136.975 MHz), and it additionally provides receive on the "NAV" band (108 ~ 117.975 MHz).



Figure 20 VHF Portable Radio Phone VXA-220 Pilot VI airband H/H

Technical Specifications

Length:	60 mm
Width:	30 mm
Height:	125 mm
Weight:	0,36 kg

2.5 Sampling and testing equipment

Year of purchase: 2012

2.5.1. Portable Gas detector

The gas detector model is GX-2009B, O₂, H₂S with charger. It detects simultaneous and real-time 4 gases LEL, O₂, H₂S and CO.



Figure 21 Gas Detector

2.5.2 Flash point tester - Setaflash Series 3 Closed Cup

33000-0 Setaflash 3 is an easy to use instrument that can complete a flash/no-flash test in less than two minutes, or determine the flash point of a sample within a temperature range of 0 to 300°C in typically 8 minutes.

Technical Specifications

Length:	280 mm
Width:	260 mm
Height:	260 mm
Weight:	4 kg



Figure 22 Flash point tester

2.5.3 Mini-Lab for Oil Viscosity and Density

C2-211730 - Digital Paddle Viscometer, 200 to 230 V The Digital Paddle Viscometer has been designed to accurately measure the viscosity of asphalt emulsions, suspensions, marine fuels, residual oils, slurries, paints and similar materials.

Technical Specifications

Length:	~ 250 mm
Width:	~ 250 mm
Height:	~ 260 mm
Weight:	~4 kg



Figure 23 Mini-Lab for Oil Viscosity and Density

2.6 Cleaning equipment

2.6.1 – 2.6.3 Portable Cleaning equipment - Hi-Pressure Cleaner

The Lamor High Pressure Cleaner to use vessels hot water supply is designed to meet all the demands of use in maritime environmental protection. The Lamor HHC is the machine of choice for multi-purpose cleaning tasks, such as removing oil pollution from different surfaces such as rocky coastlines, harbour walls, boats and oil spill equipment.

2.7 MIROS Oil Slick Detection System

Manufacturer:

Miros AS

<http://www.miros.no>

Year of purchase: **2012**

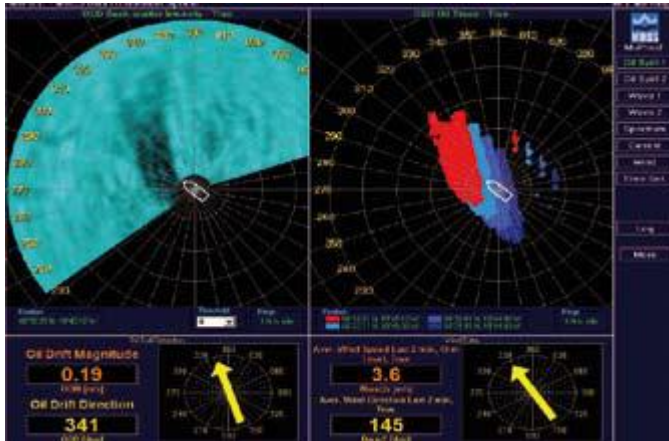


Figure 24 MIROS OSD

2.7.1 Computer MIROS WAVEX/OSD

A typical Miros OSD system hardware configuration comprises the following components:

- Type approved Maritime System Computer
- Flat-screen monitor with night vision dimming functionality
- Integrated Video Digitizer unit
- Display, keyboard & mouse/joystick
- Gyro, GPS and Wind sensor interfaces
- Marine X-band radar, either the ship's navigation radar or a dedicated OSD radar

The Wavex Computer is equipped with two network interfaces. The main Wavex system components are communicating on an internal LAN (local sub-net), while all communication with the external world is via the customer LAN.

The SM-135 Wavex Computer is a fan-less maritime computer type.

Computer specifications:

Physical

Size (w x l x h): 310 x 368 x 100

Weight: 5kg

Material: Aluminium

Colour: Black

Electrical

Power requirements: 115/230VAC, 100 W

Environmental

EMC: IEC-60945

Temperature: -15°C to +55°C (operating)

Humidity: 95%

2.7.2 Monitor - 19" flat panel display

Recommended marine type approved monitors and associated equipment include 19" model from Hatteland-Display:

Specifications:

Power requirements: 115 & 230VAC - 50 / 60Hz

Temperature: -15°C to +55°C

Humidity: 95%

EMC: IEC-60945

Size: 483 (W) x 444 (H) x 82 (D) mm

Weight: 12 kg (approx. w/bracket)

Power consumption: 47.2 W (typical)



Figure 25 MIROS OSD display

2.7.3 Wind sensor - NMEA interfaces to gyro, gps, wind sensors

The SM-098 wind sensor is a special configuration of the Ultrasonic Gill sensor WindObserverII – 1390. The sensor comes with a 15 m long cable tail, type MP-303 mounting bracket and provides digital output data on RS422 format.

Electrical, environmental and physical specifications

Power requirements: 9-30VDC, 60mA

Serial interface: RS422

Weight sensor: 3kg (5kg inclusive mounting bracket)

Size (length x dia) 380 x 210 mm (sensor)

2.7.4 Interface box - MIROS radar interface unit em -129 integrated video digitizer

The Miros EM-129 Integrated Video Digitizer is designed for the Miros Wavex Wave Monitoring and Oil Spill Detection (OSD) systems. It comprises a radar interface board (EU-044) and a powerful radar image processing board (EU-043).

2.7.5 Software - user license for Miros osd system software

The computer comes delivered with Miros Software installed. In addition to the Miros specific software, the computer comes with support applications and certain windows components.

2.7.6 Radar - 12 kW Furuno X-band standard radar

In principle any X-band marine navigation radar can be used with the Wavex system, either an existing radar, shared with a navigation system or a dedicated radar. In this case a dedicated 12 kW X-band radar is installed to avoid any possible conflict with navigational requirements.

2.7.7 Antenna - 6,5` antenna for radar

It is a 6,5` antenna for the radar, upgraded with 42 RPM scanner motor.

2.8 Heating Boiler

The boiler and all its ancillaries are located inside a 20 feet closed ISO container.

2.9 Weir boom set

The complete boom set is composed from:

- **20 feet container** (with 2 power packs, pumps, controls and ancillaries) Weight: 7500 kg
- **Storage Reel** (see 2.9.4); Weight: 5790 kg



Figure 26 Weir boom system

Manufacturer:

Vikoma International Ltd

Telephone: +44 (0)1983 200560

E-mail: sales@vikoma.com

Year of purchase: 2014

2.9.1 VIKOMA WEIR BOOM180 - 370 m boom with 76 m weir section, including, internal transfer pumps, hydraulic and discharge hoses, 6" integrated flow-meter

The Weir Boom 180, recovers up to 180 m³ per hour. An upper air tube and lower water ballasted stabilising tube run the entire length of the boom. Where the weirs and Weir Pumps are located the Water Tube is of a larger diameter, this provides more stability to offset any effects of turbulence

around the pumps. The Water Ballast Tube is not a sealed tube it has holes along its entire length and an opening at the extreme end nearest to the Secondary vessel. The Weir Boom section of the boom also has attached to it an extra buoyancy tube, which also carries the hydraulic hoses to the Weir Pumps. Below the extra buoyancy tube is the discharge tube in which the Weir Pumps are mounted. The Weir and Deflector booms are similarly constructed and joined together during manufacture to form a continuous boom of some 370 metres long. The 4-tube section, 70.5 metres long, being termed the Weir Boom and the 2-tube section, 300 metres long, being termed as the Deflector Boom. Access to the weir pumps and the hydraulic connections are through zippers in the discharge and extra buoyancy tubes. The gallery is accessible for cleaning purposes. A Pressure Relief Valve the DUMP VALVE is mounted in the end of the discharge tube. The boom is anchored to the Primary vessel by a rope attached to a strop bolted to the boom end. A rope and strop assembly bolted to the boom end anchors the deflector boom end to the secondary vessel.

2.9.2 Pump - water pump with flotation attached to the boom

The water tube ballast pump is an axial propeller pump, used to pump sea water into the ballast tube of Vikoma Weir Boom. The pump is attached to the Weir Boom Buoy end assembly.

Construction

Outer Casing	Rolled marine grade aluminium alloy sheet with stainless steel debris guard.
Impeller	Polypropylene

Hydraulics

Drive	Hydraulic motor directly coupled to propeller.
Demand	Maximum 25 litres per minute @ 140 bar
Displacement	48.35 cm ³

Controls

Speed control mounted on the control console



Figure 27 Water ballast pump

2.9.3 Pump - transfer pump, rotary lobe pump

Hydraulically driven positive displacement pump which is specially designed to be mounted within the discharge tube of the Weir Boom. The function of the vane pumps is to transfer oil from the weir into and along the discharge tube towards the Recovered Oil Discharge Pump which is sited on the vessel. The pump is light in weight but extremely strong in order to withstand the crushing loads when it is loaded onto a reel. The vane pump copes well with a wide range of viscosities. Access to the pump when mounted within the weir boom is facilitated by large heavy duty zips. Hydraulic fittings are stainless steel to ensure good corrosion resistance. Maintenance of the pumps is easy, access to pump internals is gained by removing the end cap.



Figure 28 Oil transfer pump inside the tube

Pump

Type Positive displacement, vane Drive Hydraulic

Dimensions

Length 667 mm

Diameter 306 mm

Weight 25 kg

Hydraulic Requirements

Maximum flow 16.5 lpm

Maximum pressure 140 bar

Pump manifold fitted with fixed flow limiter.

Construction

Casings FRE (glass, carbon fibre)

Rotor PET/PETP for high mechanical strength and wear resistance.

Vanes Composite – high strength, water lubricated.

Manifold Marine grade aluminium with stainless fittings.

Performance

Maximum flow	60 m ³ /h
Maximum head	3.9 m (water)

This discharge pump is a hydraulically driven, positive displacement, self-priming rotary lobe pump, which has the ability to pump normal and high viscosity fluids. The pump unit is mounted in a steel drip tray.

Dimensions

Length	122 cm
Width	92 cm
Height	69 cm
Weight	340 Kg

Construction

Pump	Cast iron housing with oil resistant rotary lobes.
Trip tray	Painted mild steel. Mild steel work shot blasted, 2 coats epoxy primer and 2 coats polyurethane enamel – Orange RAL 2008

Lifting

4 lifting eyes.

Forklift pockets

Pump Features

Sealed flexible coupling

Hydraulic drive

8" male Camlock connector on inlet

6" male Camlock connectors on outlet

Quick release hydraulic couplings

Pump Capacities

MAXIMUM (not available simultaneously)

Volume	180 m ³ /h
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Suction lift (restricted)	2.5 m head water
Discharge Pressure	3.5 bar
Suction line limiting valve	250 mbar
Hydraulic requirement	110 litre/min@140bar

2.9.4 Storage reel - weir boom deck reel with fleeting roller and arm to assist during the retrieval



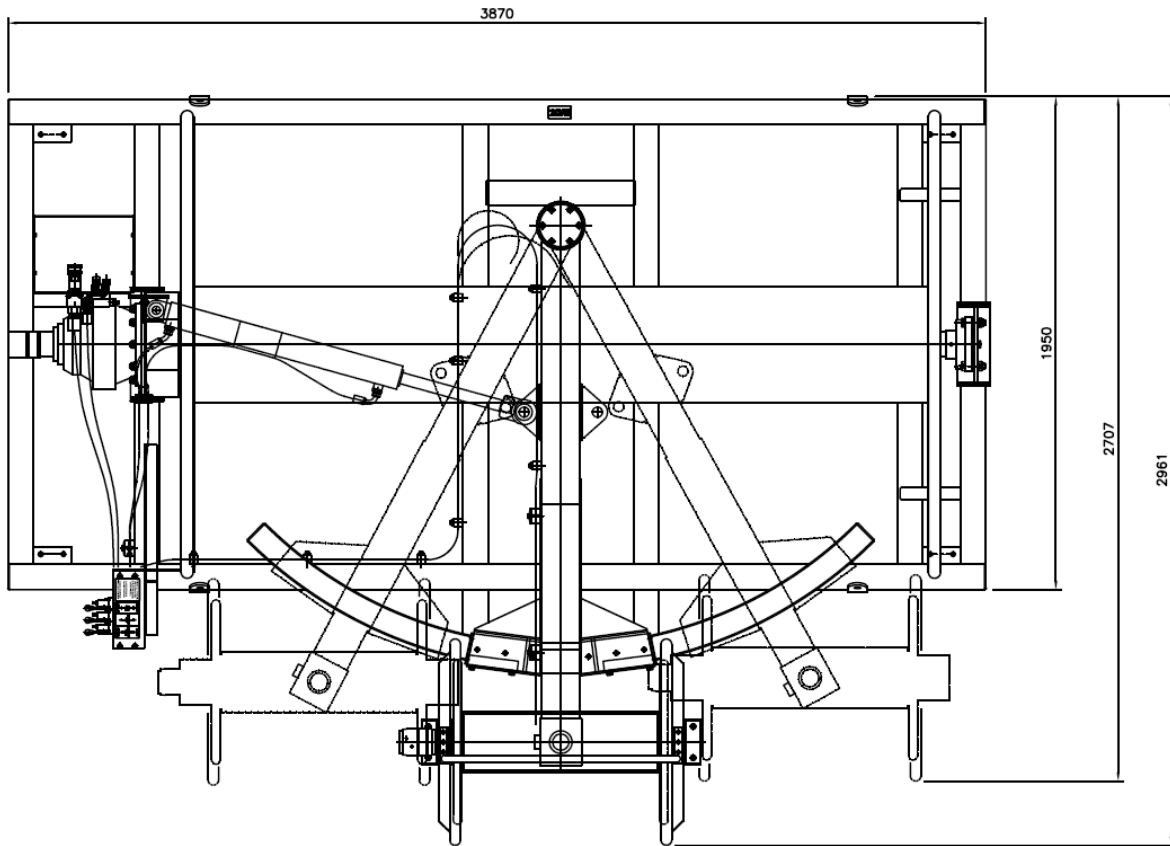


Figure 29 Weir boom storage reel and dimensions

Length: 3870 mm

Width: 2961 mm

Height: 2540mm

Weight: 5750 kg

2.9.5 Oil hoses

The set includes 4x5 m 8" suction hoses and 3x15 m 6" discharge hoses.

2.9.6 – 2.9.7 Power pack - Diesel, EX 3G, IIB, 105 kW, T3 rated for hazardous areas zone II

Hydraulic power is provided by 2 similar diesel driven Power Packs located in the container from which they are to be operated. Both Power Packs exhausts are vented through the container side. Either of the 2 units have the ability to recover the boom from the water should one or the other fail. This GP70 ATEX version powerpack is configured to supply the hydraulic power necessary to operate

the Weirboom System or other Vikoma equipment via a separate dedicated control console. The powerpack is ATEX compliant for Zone II, category 3G, gas group IIB, temperature class T3.



Figure 30 Vikoma weir boom power packs in container

Dimensions

Length	1900 mm
Width	1100 mm
Height	1895 mm

Construction

Base Frame	Mild steel
Hydraulic tank	SS304 with 200 litre capacity
Diesel Fuel Tank	SS304 with 100 litre capacity
Paint finish	2 coats polyurethane primer and 2 coats polyurethane top coat RAL 2008
Lifting	Fork pockets on all sides. (Lifting eyes on top are to lift cover only)

Performance

160 bar maximum system pressure.

Engine

A Yanmar 4TNV98-ZNS naturally aspirated diesel engine drives the hydraulic system. Four cylinder; water-cooled; diesel emission compliant to Stage 3A & Interim Tier 4.

Power rating	47 kW at 2,100 rpm
Maximum engine speed	2200 rpm
Idle engine speed	800 rpm
Safety Devices	Automatic air intake shut off valve for over speed protection. Exhaust spark arrestor. Low engine oil pressure shutdown. High coolant temperature shutdown. Hydraulic oil low level shutdown. Hydraulic oil high temperature shutdown.

Hydraulics

Hydraulic Pump	Axial piston type directly coupled to engine
Cooling	Hydraulic oil cooled via a secondary radiator
Max. Output	125 litres/min @ 160 bar
Hydraulic Couplings	Quick release couplings 2 x Pressure: Female 1" 2 x Return: Male 1¼" 2 x Drain: Male 3/8"

Instrumentation / Controls

Hydraulic

Pressure control

Pressure relief valve

System pressure gauge

Oil level sight glass

Oil level indicator warning light

Oil high temp indicator warning light

Engine

Speed control

Fuel level sight gauge

Battery isolator Main switch

Alternator light

Stop control

Electric start

Oil pressure indicator warning light

Coolant temp indicator warning light

Exhaust high temp indicator warning light

2.9.8 Control desk - hydraulic control desk complete with manifolds, valving/controls

The Control Console can be moved around the deck area to enable the operator to observe the boom during deployment and recovery. It receives hydraulic power from both No 1 and No 2 Power Packs. Hydraulic power is distributed and controlled from No1 Power Pack to the Weir Pumps, Water Pump and Air Fan. Hydraulic power from No2 Power Pack is distributed and controlled to the Reel and Recovered Oil Discharge Pump. Flow gauges are provided to observe the Weir Pumps and Discharge Pump speed and operation. The console also provides the facility to allow No 1 &2 Power Packs to provide hydraulic power to the services run by either Power Pack should one of them fail. Disconnecting the hoses at the QRC's on the failed unit and connecting to the QRC's provided achieve this. The control console has COLOUR coded indicators to correspond to the appropriate COLOUR coded system hose connection.



Figure 31 Control desk

2.9.9 Hydraulic hoses

A set of hoses (pressure, return and drain with connections) from power packs to control console and from console to the ancillary equipment, 20 m.

2.9.10 Towing lines set - towing warps

Webbing towing strops and tow ropes

2.9.11 Air blower - air inflation system, blower

The Vikoma boom air inflation fan provides continuous buoyancy during the deployment, operation and recovery of the weir boom. The adaptor between air fan and boom is fitted with a non-return valve. The standby air fan adaptor connects to the GRP adaptor by a quick release fitting.

Construction

Framework	Marine grade aluminium alloy
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Hydraulics

Drive	Hydraulic motor directly coupled to impellor
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Demand	Max 28 litres per minute @ 140 bar
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Dimensions

Length	88 cm
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Width 62 cm

Height 72 cm

Weight 73 Kg

Controls

Speed control mounted on control console

Output

28m³/minute @ 0.02 bar



Figure 32 Air blower

2.9.12 Air hoses

2 hoses, 5m, 1/2" for the air blower

2.9.13 Hydraulic hoses

2 hoses, 5m, 1/2" for the air blower

2.9.14 Storage flat rack - 20' flat rack for reel with boom and pumps

The Weir boom/deflector boom complete with Vane Pumps, Pressure Relief Valve and hydraulic hoses are stored on a hydraulically powered reel. The reel is used during the deployment and

recovery of the boom. A hydraulically powered fleeting arm and roller provide assistance to fleet the boom across the entire width of the reel during the recovery operation. Controls for these operations are mounted on the reel.

2.9.15 Storage container – 20' container

20ft ISO container for storage of powerpacks, discharge pump, air fan, discharge & hydraulic hoses, control console, discharge assembly and spare

2.9.16 Spare parts - spare parts for air fan, weir boom reel, hose kit, transfer pump, vane pump, water pump and weir boom

Spares Kit, Cold Glue Repair Kit, Weir Pump , System Hoses, Pump, 1 metre Site Press