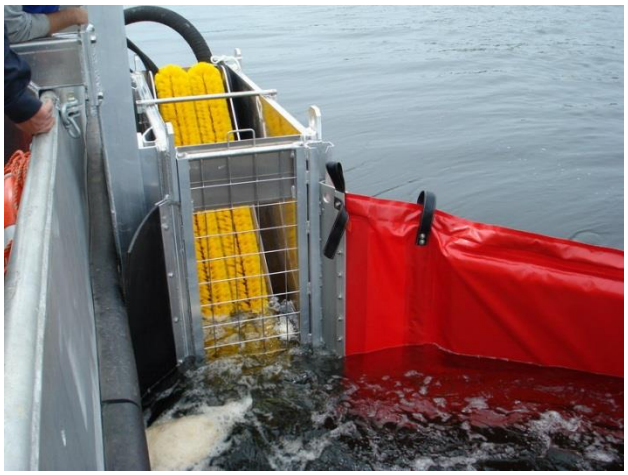
01C Skimmers - Vessel mounted

Side Collector LSC 2C/1500 - 206925



The Lamor Side Collector (LSC-C) is based upon the proven stiff brush oil recovery technology, offers high performance and safety for offshore oil spill recovery operations. The LSC-C is supplied with an outrigger and sweeping boom, which deflect oil and debris from a wide area into the side box for processing. The LSC systems are designed to be used with GTA or MSP pumps.

The LSC-C operates effectively at vessel speeds up to 4 knots, which results in excellent vessel maneuverability and a very high oil encounter rate.

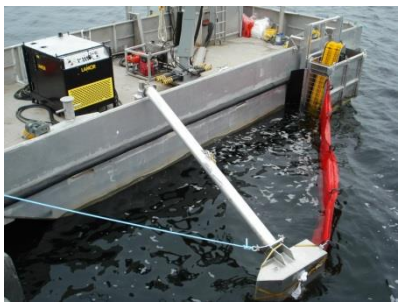
The unique Side Collector design processes surface water and oil through the brush system for recovery while water pressure is relieved through the back of the cassette.

The LSC-C is designed as a chain brush conveyor oil recovery system and the number of brush rows is selected based on vessel size and required capacity. The chain brush conveyor system is deployed to recover high viscosity oils, tar balls, etc and can be used when large amounts of floating debris is present, while recovering very little water.

The LSC-C can operate in adverse weather and sea conditions without losing its performance. LSC-C has been designed with quick and efficient deployment in mind as well as being simple to operate for a small crew.

The LSC system can be fitted in various types and sizes of vessels allowing them to serve as oil recovery units. The LSC system can be installed in new-buildings as well as in existing vessels. Detailed drawings and design of the system are tailor-made for each individual vessel for optimized efficiency, operation and safety, taking into account vessel particulars, capacity requirements and other factors.

Please note that the specifications shown below are examples for a single side system including the cassette only.



TECHNICAL SPECIFICATIONS

Parameter/Type	**2C**	**3C**	**4C**	**5C**	
Length	1500	1500-2000	1800 – 2300	3000-3500	mm
Width	500	835	1000	1400	mm
Height	1700	1700	1900	2800-3500	mm
Weight min	350	350	450	850	kg
Design Capacity	40	60	80	150	m³/h
Name plate capacity	82	123	164	205	m³/h
Recovery speed	1 – 4				knots
Hydraulic flow (skimmer only)	10-19				l/min
Hydraulic pressure	100-200		150 – 200		bar
Power requirement	2.5	4	3	7.5	kW
Hydraulic conn. for skimmer	TEMA 3800				
Suitable pumps	GTA 20-70, MSP 100		GTA 50-140, MSP 150		

Example Scope of Supply

- **LSC**

- **Frame**
- **Winch**
- **GT A Pump**
- **Hydraulic hoses (skimmer and pump)**
- **Oil transfer hose**
- **Jib rigging arm (manual/automatic)**
- **Lifting sling for jib, frame, LSC**
- **Sweep boom (foam/air filled)**
- **Sweep boom winder**
- **Lamor power-pack (depending on LSC/pump)**
- **Flat Rack**
- **Air blower**
- **Tow line for sweep**
- **Accessories**

Side Cassette Oil Recovery System LSC

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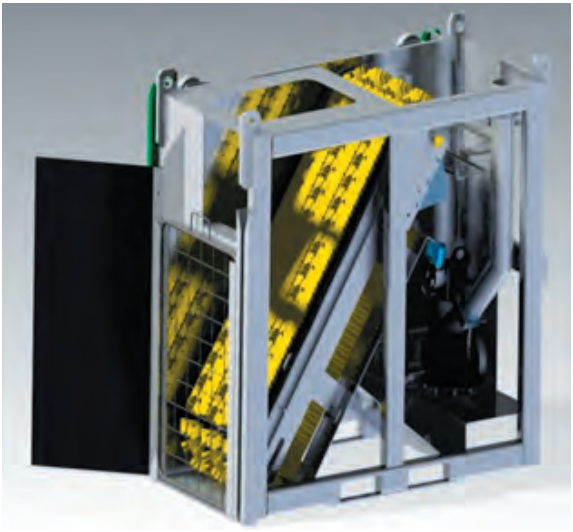
The Lamor Side Cassette Oil Recovery System LSC is a vessel mounted advancing skimming system for medium to large size vessels. Its design is based on the proven stiff brush oil recovery technology that offers high performance and safety for offshore oil spill recovery operations.

The LSC is supplied with an outrigger arm and sweeping boom that deflect oil and debris from a wide area into its side box for processing. The remarkable oil recovery rate of < 5 % water intake is achieved at vessel speeds of up to 4 knots. The LSC can be operated by a small crew.

The unique side collector design processes surface water and oil to the brush system for recovery while water pressure is released from the rear bottom of the cartridge. The LSC is a chain brush conveyor oil recovery system that is very effective when recovering high viscosity oils, emulsions and tar balls. It can also be deployed when large amounts of floating debris are present.

The recovery capacity has been certified by Bureau Veritas and tested by e.g. the Swedish Coast Guard.

Please note that product configurations may impact on technical specifications. The following is an example of a LSC 5C system.



Side Cassette Oil Recovery System LSC

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Every LSC system is built in accordance with the customer's specifications and the work vessel. Required system components will vary pending customer's requirements and the LSC system.

Required System Components

- Vessel with adequate freeboard for the LSC system
- Crane (vessel or independent)
- Side Collector (LSC)
- Sweep boom (solid or inflatable)
- Jib arm with floats (telescopic or manual)
- Oil transfer pump (selection dependent upon system size)
- Power pack (hydraulic or electric). Hydraulic power from vessel's own system or from separate hydraulic power pack
- Hydraulic hoses
- Oil transfer hose
- Stabilizing ropes
- Storage for collection of recovered oil

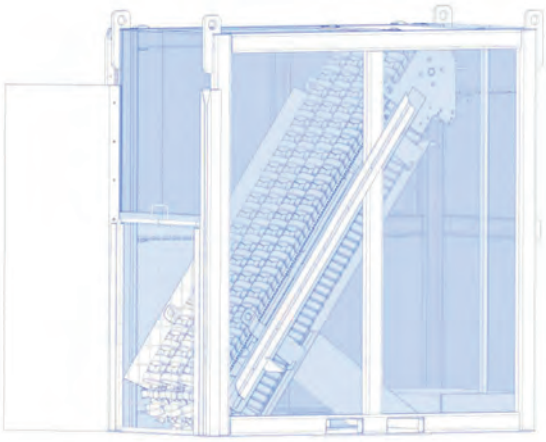
Optional System Components

- Vertical adjustment winch for LSC guide frame
- Tilting launch pad (guide frame) for LSC
- Sweep boom reel
- Flow impeller

Side Cassette Oil Recovery System LSC 180101

- Air supply for inflatable sweep boom
- 10-20’ flat rack for storage of power pack, crane, jib arm and LSC

Side Collector Main Components



Brush Pack

The brush pack is based on Lamor’s proven stiff brush technology that offers high performance and safety for near and offshore oil spill recovery. Mounted on a chain conveyor system, the brush pack is able to achieve a very high oil recovery rate with low free water content of less than five percent.

The LSC brush conveyor belt is a double acting skimming system which has brush chains that can be rotated in both directions and a double brush scraper that allows two-way operation of the brush pack. The scraper is adjustable to 3 different positions allowing the skimmer to efficiently recover heavy to light viscous oils.

The length of the brush pack can be modified to the vessel particulars i.e. size, usage areas etc. The brush pack and LSC are capacity certified by Bureau Veritas.

Collector Frame

The collector frame consists of the skimmer bay, the recovery channel, the collection hopper, and the mounting rails that fit to the guide frame. The system frame has 4 built in lifting eyes on the top of the frame and forklift slots. Two removable debris grates, one at the entrance to the recovery channel and one at the brush pack offloading point to the oil collection hopper. The size of the frame pack can be modified to the vessel particulars i.e. size, usage areas etc.

Side Cassette Oil Recovery System LSC

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Guide Frame

Sliding rails on the frame gives mobility to the side cassette from transport to its operating/skimming position.

The guide frame on the side of the vessel can be installed permanently by welding or temporarily mounted and secured. Guide frames are designed according to the operating vessel freeboard and space requirements.

Side Collector Brush Pack Models

LSC 2C

- 2 chain, brush pack conveyor oil recovery system
- ideal for small vessel installations
- Coastal and open water applications

LSC 3C

- 3 chain, brush pack conveyor oil recovery system
- Ideal for small to medium vessel installations
- Coastal and open water applications

Side Cassette Oil Recovery System LSC

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LSC 4C

- 4 chain, brush pack conveyor oil recovery system
- Ideal for medium vessel installations
- Coastal and offshore applications

LSC 5C

- 5 chain, brush pack conveyor oil recovery system
- Ideal for medium vessel installation
- Offshore applications

Side Cassette Oil Recovery System LSC

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Sweep Boom Models

Solid Sweep Boom (Foam Filled Boom)

- No inflation needed
- Coastal and open water applications

The solid sweep boom is made of reinforced PVC/PU fabric and incorporates internal foam floatation. It is equipped with a stainless steel wire in the skirt to make it stable during operations. The boom is fitted with necessary strengthening parts, weights and supporting lines.

Inflatable Sweep Boom (Heavy Duty Boom)

- Excellent wave conformance characteristics
- Durable
- Offshore applications

The Lamor sweeping boom is made of heavy duty inflatable rubber fabric. It is also equipped with a stainless steel wire in the skirt to make it stable during operations. The inflatable oil boom has excellent wave following characteristics which allows oil spill clean-up operations in rough seas with 10 - 15 m (33-50 ft) long jib arms. The boom is fitted with necessary strengthening parts, weights and supporting lines.
The Inflatable boom needs an air supply from the vessel or a separate air supply.

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Jib Arm Models

Manual Jib Arm

The vessel mounted square aluminum Jib Arm 10 m (33 ft) is a cost effective manually operated support for the outer end of the deflection boom in the sweeping boom system for oil recovery operations.

The inner end of the jib arm is connected to the bulwark of the vessel with a universal joint. This allows the jib arm to move flexibly together with the boom during deployment as well as keeping excellent wave following characteristics. The float, with a volume size of 330 l (87 gal), is attached to the outer end of the jib arm and connects the jib arm to the deflection boom. The inner end of the jib arm consists of standard deck fittings and basement. Pending the vessel type and design, the inner end fitting may have to be customized.

Telescopic Jib Arm

The telescopic jib arm provides easy and safe deployment of the automatic inflatable sweeping boom system at all waterline heights and has a compact storage dimension when not in use. One operator controls the vertical and longitudinal position of the jib arm, extends the length of the arm and controls the connection between the inflation/towing apparatus and the towing bar of the sweeping boom, while standing safely on deck. The telescopic jib arm with an extension range of up to 12 m (39 ft) and has a base assembly with U joint with semi-permanent deck installation. The sweeping boom system includes: vertical and horizontal positioning cylinders, locking and inflation device for the oil boom, and air delivery system with connection for the blower on deck.

Side Cassette Oil Recovery System LSC

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Optional Additions

Vertical adjustment winch for LSC guide frame

Tilting launch pad (guide frame) for LSC

Sweep boom reel

The side collector cartridge is equipped with a hydraulically operated deflection boom reel. The sweep boom is deployed into a sweeping position and simultaneously filled with air when using the automatic jib arm.

The automatic oil boom reel, located at the rear of side collector fram, stores the heavy duty inflatable boom that is required for sweeping operations. The robust rubber boom is stored on the reel and is quickly deployed and retrieved and is adjusted remotely for efficient and effective sweeping performance. The unit can easily be removed from the cassette for clean-up.

The automatic sweep boom reel and frame is made of marine grade aluminum.

Flow impeller

10-20’ flat rack for power pack, crane, jib and LSC

Oil transfer pump with optional water injection

Electric or diesel hydraulic power pack

Hydraulic hose sets

Side Cassette Oil Recovery System LSC

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Oil transfer hoses

Control panel or radio remote control

Air supply for sweep boom

Flat rack for easy storage

Davit crane system

Installation pre-fittings