
# Arctic Solutions

Your preferred partner on the journey towards a cleaner tomorrow

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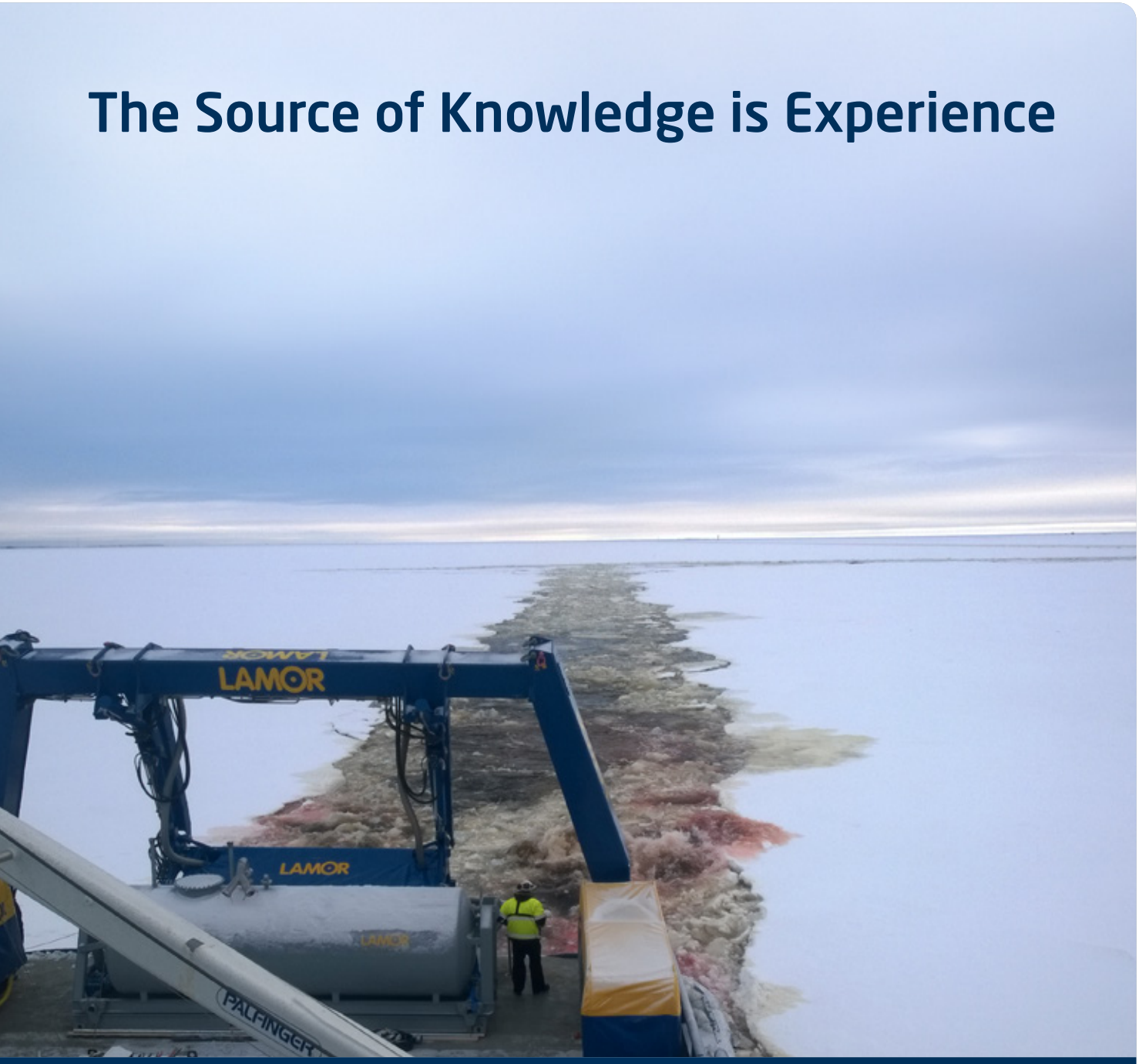
LAMOR

# Lamor is one of the world's leading providers of environmental solutions.

# Contents



# The Source of Knowledge is Experience




**Lamor Corporation offers optimal oil recovery solutions in all climatic conditions and environments. The source of knowledge is experience, and Lamor has for over 40 years developed advanced innovative expertise in Arctic, inland, nearshore, and offshore operations.**

# Global Leader in Arctic Innovation and Environmental Response

Through cooperative research, internal development and global involvement in Arctic advancements, Lamor has provided innovative and effective market leading Arctic technologies across the globe. The constant revision of these technologies, the development of new ideas, and improving response applications has and will remain a paramount focus for Lamer. These technologies will continue to preserve and defend the challenging, environmentally sensitive Arctic areas where there are evolving transportation, exploration and production activities.

The extensive portfolio of products and services also includes industrial applications, soil & site remediation, water treatment, plastics recycling, oily sludge/hydrocarbon treatment, drill cuttings management, waste management, including treatment and disposal of hazardous and non-hazardous waste.

The Lamor Response Team has managed countless other oil spills around the world in every type of environment, from the Arctic (where Lamor's expertise is unrivaled) to the Amazon. The company has sold oil spill response equipment to over 100 countries, including delivery of more than 2,200 vessel-mounted oil recovery systems to customers worldwide. Everwhere it operates, Lamor adheres to the Nordic traditions of green technology.

# Lamor Arctic Developments

| 1982 | 1991 | 1995 | 1999 | 2001 | 2002 | 2003 | 2004 |
|---|---|---|---|---|---|---|---|
| Stiff brush skimmer | Ice bow collector | Bucket skimmer | Minimax 12 skimmer | Winterized off- loading pumps | Oil ice separator LOIS | Arctic Skimmer | Rock Cleaner |

2006 — Winterized vessel system

2010 — Winterized multi-skimmers & LAM 50

2012 — Minimax 25 Skimmer

2013 — Sternmax 28 vessel skimmer system

2015 — Sternmax 20 vessel skimmer system

2016 — Oil recovery system for the first LNG icebreaker

2019 — Sternmax 10 vessel skimmer system

2025 — IMAROS 2

# Recovery of Low Sulphur Fuel Oils (LSFOs)

## New challenges in spill response

With the global transition to low sulphur fuels, oil spill responders now face new complexities. While **Low Sulphur Fuel Oils** (LSFOs, VLSFOs, ULSFOs) offer environmental benefits during combustion, their behavior in marine spills presents a distinct set of recovery challenges.

At Lamor, our mission is to empower response teams with proven technologies and field-tested strategies to effectively manage these emerging fuel profiles. Drawing from research and trials including the IMAROS 2 project, Lamor leads the way in adapting oil spill recovery for modern fuels.

# Field validation through IMAROS 2 project

Lamor's innovations aren't theoretical. With over 40 years of experience, our technologies are tried and tested in the worlds harshest conditions.

The recent IMAROS 2 trials demonstrate:

- Possibility to recover in cold marine environments
- Capable of recovering both solid and semi-fluid LSFOs
- Enhanced operational control and reduced environmental impact

Read more about IMAROS 2 in our article

# Technical challenges of LSFO Spills

**Not all LSFOs behave alike and some variants exhibit properties that hinder traditional recovery techniques.**

## Common Behavioral Characteristics

1. Rapid solidification possible if water temperature is below average.
2. Forms tarballs or breaks into brittle chunks.
   Hinders pumping and storage.
3. Oil behaves more like floating sludge or slush ice.
4. Difficult for skimmers to “grab” or maintain recovery.
   Limits compatibility with common recovery equipment.
5. Lower evaporation
6. Dispersion is ineffective

# Limited effectiveness of conventional response methods

Traditional spill response methods are often ineffective against LSFOs due to their unique viscosity, cohesion, and dispersion properties.

## Effects on recovery operations

1. Can immobilize oil quickly, leading to reduced spreading.
2. Complicates containment and requires specialized handling. Can obstruct pumping and clog storage systems.
3. Reduces flowability, hindering mechanical recovery.
4. Leading to inefficient collection and increased oil loss. Demands customized recovery solutions due to difficulty of recovery.
5. Prolong environmental persistence and can increase cleanup timelines.
6. Limits chemical treatment options, increasing reliance on physical recovery methods.

# Sternmax 10

The groundbreaking Sternmax 10 is a high capacity stationary Arctic skimmer designed to separate oil from the drifting ice with a high recovery rate of more than 50 $m^3$/h.
The 10-brush wheel skimmer system can be equipped for example oil transfer GTA 50 pump for recovered oil off-loading.  The skimmer head has an ice and oil separating grate that collect oil with excellent ice handling capabilities in harsh Arctic climatic conditions.

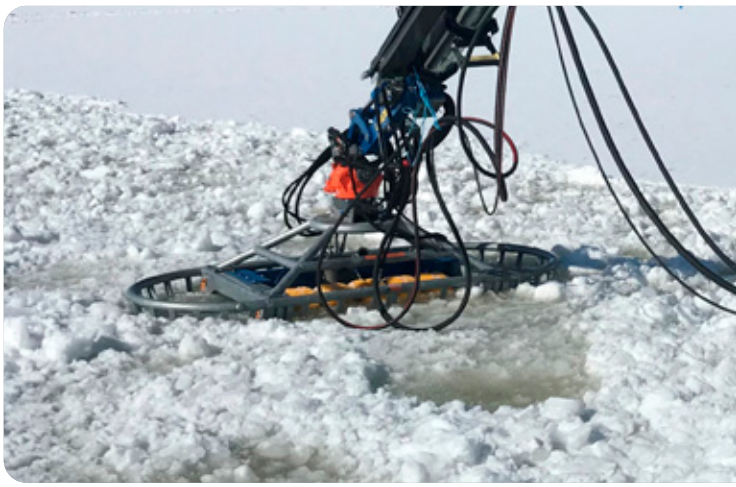
- The skimmer head is coupled to a knuckle head crane that can be existing on the vessel and can be quoted separately. The crane deploys the skimmer off the stern of the vessel from its storage cradle. Typical accessories are also Lamor Tilt Arm and Rototilt unit to enable efficient and flexible operation of the skimmer in ice and oil.
- As the vessel with ice breaking capabilities crushes the ice, the Sternmax is deployed from the rear of the vessel with the crane. The isolation grate pushes the large pieces of drifting crushed ice under the water, separating the oil and water from ice. The grate can be lifted and tilted to remove ice and debris. The oil is collected by the brush skimmer that separates the oil from the water and transfers the oil into a hopper equipped with the GTA pump(s).
- The skimmer head is winterized with a hot water/steam injection which allows the screen, hopper, brush scraper and pump pre-heating prior to deployment. This also keeps them warm and provides lubrication to support the flow of oil back to the vessel.
- The Sternmax 10 is a robust and durable vessel mounted, hydraulically driven system that utilizes Lamor's proven technology to enable successful Arctic oil spill response operations.

# Technical Specifications

| | Metric | Imperial |
|---|---|---|
| **Length (isolation grate)** | 4,369 mm | 14.3 ft |
| **Width (isolation grate)** | 1,900 mm | 6.2 ft |
| **Height (isolation grate)** | 794 mm | 2.6 ft |
| **Height w. Rototilt** | 2,050 mm | 6.7 ft |
| **Weight (Skimmer head)** | 1,400 kg | 3,090 lbs |
| **Weight with accessories (excluding crane)** | 2,400 kg | 5,290 lbs |
| **Capacity** | > 50 m³/h | > 13,200 gpm |
| **Hydraulic flow (depending on the pump used)** | ca. 160 l/min | 42.2 gpm |
| **Hydraulic pressure** | 210 bar | 3,047 psi |
| **Power** | ca. 56 kW | ca. 75 hp |
| **Operational reach** | Depending on the crane used | |

# Benefits

- Excellent crushed and drifting ice handling capabilities
- Ice, water and oil separation
- Hot water/steam injection
- Crane mounted maneuverable system
- 10 stiff brush wheel system
- Storage cradle for easy maintenance, cleaning and de-icing
- Positive Displacement Archimedes screw pump
- Removable isolation grate for non-Arctic operations
- Remote control Ex Zone 2
- Single operator



# Sternmax 20 & 28

The Lamor Sternmax is the world's largest skimmer that is vessel mounted dedicated to Arctic operations. The Sternmax comes in two different sizes, Sternmax 20 and 28, with a remarkable (skimmer) recovery capacity of up-to 560 $m^3$/h (2465 gpm). The brush wheel skimmer systems have two Lamor oil transfer GTA pumps attached and an ice and oil separating grate that collect oil with excellent ice handling capabilities in harsh Arctic climatic conditions.


- As the vessel with ice breaking capabilities crushes the ice, the Sternmax is deployed from the stern of the vessel. The isolation grate pushes the large pieces of drifting crushed ice under the water, separating the oil and water from ice. The grate can be lifted and tilted to remove ice and debris. The oil is collected by the brush skimmer that separates the oil from the water and transfers the oil into a hopper equipped with two GTA 115 pumps.
- The Sternmax is supported by an A-frame that deploys the skimmer off the stern of the vessel from its storage cradle. It is a robust and durable vessel mounted, hydraulically driven system that utilizes Lamor's proven technology to enable successful Arctic oil spill response operations. The Sternmax is designed and certified in accordance with DNV 2.22 Lifting Appliances.
- A significant feature is that the tilt/tipping cylinders can be used to adjust the screen so the dense side of the screen is used for pushing blocks of ice down. Other features include a hollow frame equipped with steam inlets allowing the frame to be pre-heated prior to deployment. A hot water injection line keeps the system warm including the hopper and brush scraper and moreover provides lubrication to support the fl ow of oil back to the vessel. The whole system can be operated by one person from the vessel creating a safe and efficient oil spill recovery environment.
- The system is winterized with a hot water injection which e.g. keeps the screen, hopper, brush scraper and pump warm and provides lubrication to support the flow of oil back to the vessel.
- The whole system can be operated by one person from the vessel creating a safe and efficient oil spill recovery environment. The Sternmax minimizes the use of resources and man power, while providing ultimate control, combined with ice and oil handling and separation techniques that make this skimmer system a perfect solution for reliability, dependability, productivity, and cost effectiveness in Arctic conditions.

# Technical Specifications

| | Sternmax 20 | Sternmax 28 |
|---|---|---|
| **Length (isolation grate)** | 6,500 mm / 21,3 ft | 9,000 mm / 29,5 ft |
| **Width (isolation grate)** | 1,900 mm / 6,2 ft | 2,400 mm / 7.9 ft |
| **Height (isolation grate)** | 810 mm / 2,7 ft | 1,060 mm / 3,5 ft |
| **Weight (systems)** | 23 tonnes / 50,000 lbs | 32 tonnes / 70,000 lbs |
| **Capacity*** | 100 m³/h / 26,400 gpm | 560 m³/h* / 2,465 gpm |
| **Hydraulic flow** | 180 l/min / 47,6 gpm | 240 l/min / 63,4 gpm |
| **Hydraulic pressure** | 250 bar / 3,626 psi | 210 bar / 3,046 psi |
| **Power** | 110 kW / 150 hp | 110 kW / 150 hp |
| **Operational reach** | 4,5 m / 14,8 ft | 7 m / 23 ft |


*Capacity related to pump selection

# Benefits

- Excellent handling capabilities
- Max. ice thickness 1.1 m (43.3 in)
- Ice, water and oil separation
- Hot water injection
- Steam heated isolation grate
- A-frame mounted maneuverable system
- Stiff brush wheel system
- Storage cradle for easy maintenance , cleaning and de-icing
- Dual positive Archimedes pumps
- Removable isolation grate for non-Arctic operations
- Remote control Ex Zone 1
- Single operator

# Lamor Oil Recovery Bucket (LRB)

The Lamor Oil Recovery Bucket (LRB) system is ideal for pit cleaning and oil recovery operations on land, offshore and in Arctic conditions. The LRB is a light bucket skimmer that is based on the proven Lamor stiff brush wheel technology and it automatically separates oils, emulsions and oily debris from seawater or soils.

- Bucket skimmers are deployed in a stationary position in skimming operations from an e.g. vessel crane, dredging machine or excavator. They combine the efficient oil recovery function of the brush wheel skimmer with the scraping and digging functions of an excavator scoop. The product range is winterized with heated hopper, scraper and hot water injection. Bucket skimmers are unaffected by the floating debris and free water content in recovered oil is less than 2 %.
- The brush wheel can be lifted with the bucket to scoop and empty heavy oil sludge and other solid materials e.g. ice particles in offshore operations. These skimmer systems can be deployed rapidly and operated by a single operator. When the system is not in use, it is stored in its own storage cradle that can be used as a washing basin for cleaning.
- The Recovery Bucket should be a light Bucket Skimmer that can be effectively operated by a crane on board of a dredging barge, amphibious harvester or small on-land excavator. It should be primarily designed for pit cleaning and oil spills on land, shorelines, swamp areas or icy waters but should be usable in almost all types of spills. The complete system should also typically include a pump, oil storage facilities and all relevant hoses.
- The Recovery Bucket should be based on brush technology and offer the highest possible performance and safety levels in oil spill recovery operations. The skimmer brush must be operable in both directions depending of the oil type to be collected.
- Has excellent recovery of oil from top of the ice and in slushy ice.

# Technical Specifications

| | LRB 250 | LRB 150 | LRB 40 |
|---|---|---|---|
| **Length** | 2,480 mm / 98 in | 1,740 mm / 68,5 in | 880 mm / 35 in |
| **Width** | 2,900 mm / 114 in | 1,800 mm / 71 in | 680 mm / 27 in |
| **Height** | 1,450 mm / 57 in | 1,180 mm / 46,5 in | 800 mm / 31 in |
| **Weight** | 1,600 kg / 3530 lbs | 650 kg / 1430 lbs | 75 kg / 165 lbs |
| **Capacity** | 140 m3/h / 616 gpm | 50 m3/h / 220 gpm | 19 m3/h / 83 gpm |
| **Free water content** | <2% | <2% | <2% |
| **Hydraulic flow (without pump)** | 30l/min / 8 gpm | 30l/min / 8 gpm | 20l/min / 5.3 gpm |
| **Hydraulic pressure** | 210 bar / 3,045 psi | 210 bar / 3,045 psi | 210 bar / 3,045 psi |
| **Power** | 15 kW / 20 hp | 11 kW / 15 hp | 6 kW / 8 hp |
| **Suitable pump** | GTA 140 | GTA 50 | GTA 20/30 |

# Benefits

- Robust steel construction
- Light to heavy viscous/bitumen oils
- Header hopper for Arctic operations
- Remote controlled
- Single operator
- User friendly
- Can also be used as a scoop bucket
- Has water injection
- Steam or Glykol heating

# The Lamor Oil Recovery System (LORS)

The Lamor Oil Recovery System (LORS) is a vessel mounted advancing skimming system that is based on Lamor's proven conveyor chain brush technology. The system is designed for small workboats and tugs (7 – 15 m / 23 – 49 ft) up to medium and big vessels (15 – 85m / 49 – 278 ft) providing the highest possible performance and safety for oil spill recovery operations. Deployment of the LORS makes the entire vessel an "oil slick processing system".

# Efficient Oil Recovery with LORS Systems

- The system utilizes the vessel's forward motion to deflect surface water and oil from the collection area that is formed by the jib arm and deflection boom into the recovery process. The flow of water carries oil through the recovery channel where the oil is efficiently separated and recovered. The recovery channel recirculates surface water back into the recovery area increasing the system's overall throughput efficiency. The LORS operates at vessel speeds of 4 knots effectively in harsh weather and sea conditions with a high oil encounter rate with a free water content of < 5 % and does not diminish the vessel's maneuverability
- An effective flow through the oil recovery channels is achieved by the forward speed of the ship, which induces a pressure difference between the intake and exit and is enhanced with the flow impeller in the recovery system. The skimming systems are located so that pressure fluctuations caused by boat motions and waves are minimized.
- The flow of water carries oil into the recovery channel where the oil is efficiently separated by the brush pack and removed from the flow. The Brush System lifts oil, seaweed, and debris from the water which passes through the channel and returns to the collection area for further processing.
- The Brush conveyor belts collects oil of all types and is unhindered by floating debris or seaweed, and lifts the recovered material to a special cleaner. This cleaner can be supplied with an optional connection for steam heat if required for extreme, cold operations. The material falls down from the cleaner to a collecting hopper, from where it is transferred to a storage tank by a powerful GTA Positive Displacement Archimedes Screw-type oil transfer pump. The pump can be fitted for hot water injections when pumping heavy viscous oil and can be used to transfer recovered oil directly to a storage tanker, depending on the operational scenario.
- These proven LORS systems have been used in hundreds of spills around the world, and by many other high-level agencies, like the Coast Guards.

# Lamor Side Collector (LSC)

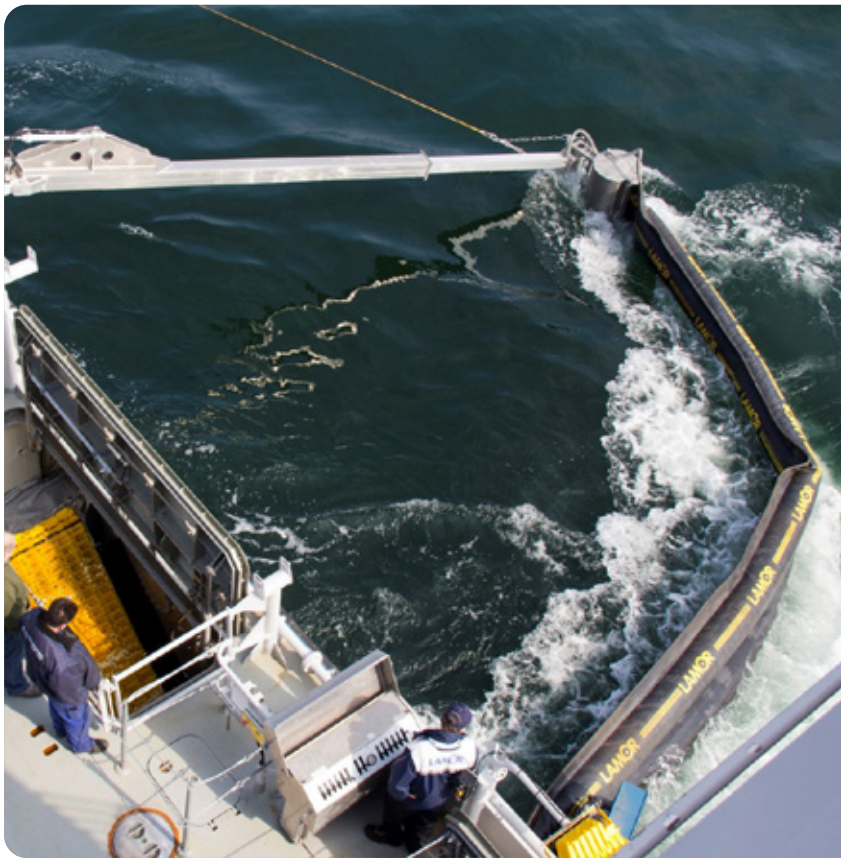
Lamor Side Collectors (LSC) are advanced vessel mounted skimming systems.

These systems are designed to be used either with new fleet or used in existing vessel fleet and in that way enhancing Oil Spill Response capabilities.


- The product range includes several systems for different uses and sizes of vessels: the Side Cassette Oil Recovery System is designed for offshore use in medium to large size vessels, where as Minibagger and MaxiBagger have versatile scenarios of use in both small as well large vessels.
- As they are named, side collectors are mounted on the side of vessels or boats. They are through the vessel or boat being driven and the sweeping arm collecting oily water at the same time. Thanks to the proven Lamor technology, these systems minimize the amount of water in the collected oil.

# Technical Specifications

| | Base unit |
|---|---|
| Item ID | 651308 / 400764 |
| Length | 1,800 mm / 70 in |
| Width | 1,450 mm / 57 in |
| Height | 3,300 mm / 130 in |
| Weight | 90-145 kg / 200-320 lbs |
| Draft | Adjustable |
| Light Oil Capacity | 25 m3/h / 110 gpm |
| Heavy Oil Capacity | 38 m3/h / 167 gpm |
| Hydraulic Flow | 15l/m / 66 gpm |
| Hydraulic pressure | 130 bar / 1,885 psi |
| Power | 3.3 kW / 4,4 hp |



| | 2 Chains | 3 Chains | 4 Chains | 5 Chains |
|---|---|---|---|---|
| Length | 1,500 mm / 59 in | 1,500-2,000 mm / 59-78 in | 1,800-2,300 mm / 70-90 in | 3,000-3,500 mm / 118 - 138 in |
| Width | 500 mm / 20 in | 835 mm / 33 in | 1,000 mm / 39 in | 1,400 mm / 55 in |
| Height | 1,700 mm / 67 in | 1,700 mm / 67 in | 1,900 mm / 75 in | 2,800-3,500 mm / 110 - 138 in |
| Weight min | 350 kg / 770 lbs | 350 kg / 770 lbs | 450 kg / 990 lbs | 850 kg / 1870 lbs |
| Design Capacity | 40 m3/h / 176 gpm | 60 m3/h / 264 gpm | 80 m3/h / 352 gpm | 100 m3/h / 440 gpm |
| Nameplate capacity | 82 m3/h / 361 gpm | 123 m3/h / 541 gpm | 164 m3/h / 722 gpm | 205 m3/h / 902 gpm |
| Recovery speed | 1 - 4 knots | 1 - 4 knots | 1 - 4 knots | 1 - 4 knots |
| Hydraulic flow (skimmer only) | 10-19 l/min / 2.6 - 5 gpm | 10-19 l/min / 2.6 - 5 gpm | 10-19 l/min / 2.6 - 5 gpm | 10-19 l/min / 2.6 - 5 gpm |
| Hydraulic pressure | 100-200 bar / 1450 - 2900 psi | 120-200 bar / 1450 - 2900 psi | 150-200 bar / 1450 - 2900 psi | 150-200 bar / 2175 |
| Power Requirement | 2 - 6 kW /2,7 - 8 hp | 2-6 kW / 2,7 - 8 hp | 2,5 - 6 kW / 3,3 - 8 hp | 2,5 - 6 kW / 3,3 - 8 hp |
| Hydraulic conn. for skimmer | TEMA 3800 | TEMA 3800 | TEMA 3800 | TEMA 3800 |
| Suitable pumps | GTA 20-70, MSP 100 | GTA 20-70, MSP 100 | GTA 50-140, MSP 150 | GTA 50-140, MSP 150 |

# Lamor Arctic Skimmer (LAS)

The Arctic Skimmer is a special purpose oil recovery system designed for operations in extremely harsh conditions. The skimmer represents a technical breakthrough for equipment that provides an efficient and effective solution for recovery in all ice and Arctic conditions.


- The Arctic Skimmer is normally deployed by a crane or davit but can also be operated as a free-floating skimmer utilizing the optional floats when required. The skimmer incorporates static ice deflection pipes and rotating brush wheels for separation and collection of oil.
- It's equipped with a hot water injection system to improve recovery in Arctic conditions. The two brush wheels collect and separate the oil from the water and ice particles are crushed by the ice crushing screws installed in the hopper.
- Optionally the product can also be fitted with floats for use in open waters.

# Technical Specifications

| | Metric | Imperial |
|---|---|---|
| **Item ID** | 223086 | 223086 |
| **Length** | 1,850 mm | 73 in |
| **Width** | 1414 mm | 56 in |
| **Height** | 2,182 mm | 86 in |
| **Weight** | 950 kg | 2964 lbs |
| **Capacity w/ Brush Wheel** | 125 m3/h | 550 gpm |
| **Free Water Content** | <2% | <2% |
| **Hydraulic flow (skimmer)** | 40l/min | 10.5 gpm |
| **Hydraulic pressure** | 210 bar | 3,045 psi |
| **Power** | 30 kW | 40 hp |

# Benefits

- Designed for harsh Arctic conditions
- Deployable by crane or davit
- Optional floats for free-floating operation
- Rotating brush wheels for oil separation
- Hot water injection system
- Ice crushing screws in the hopper
- Certified recovery capacity (125 m³/h)
- Optional floats for open water use

# Lamor Free Floating Skimmer (LFF 100)

The Lamor Free Floating (LFF) Skimmer is a high capacity brush chain skimmer designed to recover oil in offshore operations. It has excellent wave following characteristics and is suitable for use in all environments, including Arctic conditions.

- The skimmer has two 4-row oleophilic V-brush chains that separate the oil from the water effectively and lifts the oil to a specially designed brush scraper from where the oil is directed to the oil transfer pump. The double rotation direction capability enhances the recovery of light to heavy viscous oils.
- The skimmer has a robust aluminum frame and floats with a single lifting point which makes the LFF 100 easy to lift, operate, clean and store.
- The LFF 100 has a heated scraper and hopper for effective skimming in Arctic conditions and is equipped with thrusters for mobility.

# Technical Specifications

| | LFF 100 |
|---|---|
| Item ID | 395330 |
| Length | 2,290 mm / 90 in |
| Width | 2,250 mm / 86 in |
| Height | 1,946 mm / 18 in |
| Weight | 700 kg / 1,540 lbs |
| Draft | 900 mm / 35 in |
| Certified capacity | 111 m3/h / 489 gpm |
| Free water collected | <5% |
| Hydraulic flow (skimmer) | 70l/min / 19 gpm |
| Hydraulic pressure | 210 bar / 3,045 psi |
| Power | 25 kW / 34 hp |


# Benefits

- High capacity brush chain skimmer
- Excellent wave following characteristics
- Suitable for all environments, including Arctic
- Effective oil-water separation
- Double rotation direction for light to heavy viscous oils
- Robust aluminum frame
- Single lifting point for easy handling
- Heated scraper and hopper for Arctic conditions
- Equipped with thrusters for mobility

# Minimax 25 (MM25)

The Minimax 25 skimmer is a light-weight new generation modular oil skimming unit that is easily transported and assembled. The Minimax 25 is designed to recover oil from e.g. inland waters, rivers, and nearshore, in all conditions including arctic.


- The Minimax 25 consists of only three easily assembled parts, a skimmer body, a collection hopper, and a brush module. Therefore it can be disassembled in less than a minute facilitating cleaning and service.
- Disc and drum modules are available as additional optional equipment. The skimmer utilizes the Lamor next generation brush wheel technology, which combines high oil recovery capacity with less than 2 % free water content.
- The skimmer's frame and hopper made of molded polyethylene are light-weight, durable and easy to clean. The skimmer is entirely hydraulically operated and its power requirement is low. The unit is intended to be connected to a suction pump or vacuum system.
- The recovery capacity of the Minimax 25 is certified by Bureau Veritas at 26.8 m³/h (118 gals/min). Moreover, the skimmer's recovery rate and efficiency have been fully tested at Ohmsett testing facilities.

# Technical Specifications

| | Metric | Imperial |
|---|---|---|
| **Item ID** | 366078 | 366078 |
| **Length** | 852 mm | 34 in |
| **Width** | 853 mm | 34 in |
| **Height** | 464 mm | 18 in |
| **Weight** | 22.5 kg | 50 lbs |
| **Capacity** | 26.3 m3/h | 118 gpm |
| **Free water collected** | <2% | <2% |
| **Hydraulic flow (skimmer)** | 1-3l/min | 0.3-0.8 gpm |
| **Hydraulic pressure** | 60-100 bar | 870-1,450 psi |
| **Power** | 0.5 kW | 0.7 hp |


# Benefits

- Lightweight and modular design
- Easy transportation and assembly
- Suitable for inland waters, rivers, and nearshore
- Usable in all terrains and environments, including Arctic
- Quick disassembly for cleaning and service
- Optional disc and drum modules
- High oil recovery capacity with less than 2% free water content
- Durable and easy-to-clean
- Low power requirement, hydraulically operated
- Connectable to suction pump or vacuum system
- Certified recovery capacity (26.8 m³/h) by Bureau Veritas

# Lamor Rock Cleaner (LRC)

Specially designed for use in rocky coastlines, ports, oil stations, ditches, roads, factories, airports and boats, the LRC features a small, hydraulically operated brush wheel to remove the oil from the rocks and separate it from the water.

- The Rock Cleaner has a small hydraulic brush that removes oil from rocks and separates oil and water. The collected oil passes into the funnel behind the brush, from where the oil is sucked with a separate suction pump.
- The Rock cleaner is controlled by a control handle and carrying harnesses.
- Includes a portable suction nozzle, with an integrated wiper blade to improve the efficiency of oil recovery. It is specially designed for use in rocky coastlines, ports, oil stations, ditches, roads, factories, airports and boats.
- Features a small, hydraulically operated brush wheel to remove the oil from the rocks and separate it from the water. The Rock Cleaner is made of aluminum and weighs only 6.5 kg (14.3 pounds).

# Technical Specifications

| | Metric | Imperial |
|---|---|---|
| **Item ID** | 226010 | 226010 |
| **Height** | 1,500 mm | 60 in |
| **Width** | 400 mm | 16 in |
| **Weight** | 6.5 kg | 14.3 lbs |
| **Capacity** | 9.7 m3/h | 43 gpm |
| **Hydraulic flow** | 1-3 l/min | 0.3-0.8 gpm |
| **Hydraulic pressure** | 60-100 bar | 870-1,450 psi |
| **Power** | 0.5 kW | 0.7 hp |


# Benefits

- Designed for rocky coastlines, ports, oil stations, ditches, roads, factories, airports, and boats
- Small, hydraulically operated brush wheel
- Efficient oil and water separation
- Portable suction nozzle with integrated wiper blade
- Controlled by handle and carrying harnesses
- Lightweight aluminum construction (6.5 kg / 14.3 pounds)
- Easy to use, deploy, and transport

# Heavy Duty Boom (HDB)

The Heavy Duty Boom is a robust and durable air-inflated boom that covers the increasing demand for offshore operations and for permanent installations at e.g. exposed ports, oil terminals, refineries and power plants. Moreover, the HDB can be utilized in all climatic conditions and environments, including Arctic scenarios.


- The Lamor Heavy Duty Boom (HDB) is most commonly stored on a Boom Reel and capacity can range from 200m to 300m depending upon the overall size of the boom. A powerpack allows the boom reel to deploy the boom into the water and retrieve the boom back onto the reel for storage.
- As the HDB boom is being deployed operators fill each individual air chamber with air from a backpack style air blower or integrated blower for buoyancy. Trained operators can deploy 250m of Heavy Duty Boom within 30 minutes.
- The boom is manufactured with either two layers of synthetic fabric vulcanized together with four layers of UV and oil resistant synthetic rubber or heavy-duty flexible neoprene material. The stiffeners, anchoring points, and ASTM fixing plates are vulcanized between the fabric layers of the boom. These features ensure a robust structure, in addition to easy cleaning and maintenance.
- The boom is equipped with yellow stripes and reflectors for improved visibility. The HDB boom's ballast is a hot-dip galvanized steel chain that gives strength and skirt support, The patented Lamor F1 air valve makes the inflation and deflation by a single operator of the HDB significantly easier and quicker than other valves on the market. The F1 air valve features flat design with an incorporated airlock without removable parts. The HBD neoprene option utilizes Munson style air valves.
- The HDB preferred end connector is ASTM; however can also be stainless steel hinge and pin if required.

# Technical Specifications

| HDB | HDB 900/ 50-100m | HDB 1200/ 50-100m | HDB 1500/ 50-100m | HDB 1800/ 50-100m | HDB 2000/ 50-100m |
|---|---|---|---|---|---|
| Length (section) | 50-100m / 164-328 ft | 50-100m / 164-328 ft | 50-100m / 164-328 ft | 50-100m / 164-328 ft | 50-100m / 164-328 ft |
| Height (deflated) | 900 mm / 35 in | 1,200 mm / 47 in | 1,500 mm / 59 in | 1,800 mm / 71 in | 2,000 mm / 79 in |
| Weight | 8.1 kg/m / 5.4 lbs/ft | 10 kg/m / 6.7 lbs/ft | 12.1 kg/m / 8.13 lbs/ft | 15.9 kg/m / 10.68 lbs/ft | 17.2 kg/m / 11.56 lbs/ft |
| Freeboard | 350 mm / 14 in | 440 mm / 17 in | 445 mm / 18 in | 560 mm / 22 in | 560 mm / 22 in |
| Draft | 450 mm / 18 in | 560 mm / 22 in | 848 mm / 33 in | 960 mm / 38 in | 1,160 mm / 46 in |
| Buoyancy / weight ratio | 8:1 | 9:1 | 8:1 | 11:1 | 10:1 |
| Air Chamber length | 3m / 9.8 ft | 3m / 9.8 ft | 3m / 9.8 ft | 3m / 9.8 ft | 3m / 9.8 ft |
| Base Fabric | EP 400 | EP 400 | EP 400 | EP 400 | EP 400 |
| Fabric tensile strength | 20 000 N/5 cm / 354 lbf/in | 20 000 N/5 cm / 354 lbf/in | 20 000 N/5 cm / 354 lbf/in | 20 000 N/5 cm / 354 lbf/in | 20 000 N/5 cm / 354 lbf/in |
| End connector | ASTM F962 as standard | ASTM F962 as standard | ASTM F962 as standard | ASTM F962 as standard | ASTM F962 as standard |

# Benefits

- Stored on Boom Reel
- Capacity ranges from 200m to 300m
- Powerpack for deployment and retrieval
- Quick deployment (250m in 30 minutes)
- Synthetic fabric with UV and oil resistance
- Easy cleaning and maintenance
- Yellow stripes and reflectors for visibility
- Hot-dip galvanized steel chain ballast
- Patented Lamor F1 air valve
- ASTM or stainless steel hinge and pin connectors
- Suitable for offshore and permanent installations
- Usable in all climatic conditions, including Arctic

# Foam Filled Oil Boom (FOB)

The Foam Filled Oil Boom (FOB) is a solid light-weight internal foam float containment boom that is easy to use, deploy, retrieve and store. The boom is ideal for emergency rapid response use in a variety of sea conditions including arctic. The boom can be used in lakes, harbors, marinas, ports, power plants and refineries.

- The booms are manufactured with PVC fabric in high visibility color, which is oil resistant and has ultra-violet (UV) inhibitors. The internal floats are made with closed-cell foam and vary in size depending upon application. The boom has reflectors and pouches for optional boom lights for night operations.
- The Lamor Foam Filled Boom (FOB) is designed for emergency, rapid response use in protected waters nearshore and in calm water areas.
- The FOB is manufactured in a wide variety of overall heights with different freeboards and drafts each designed for a specific environmental application.
- This boom can be stored on Stackable Aluminum Racks, on a Boom Reel or inside a special Side Door Container for rapid response.

# Technical Specifications

| | Metric | Imperial |
|---|---|---|
| **Height** | 350-1,500 mm | 14-59 in |
| **Section length** | 25 m | 82 ft |
| **Freeboard** | 150-500 mm | 6-20 in |
| **Draft** | 200-1,000 mm | 8-39 in |
| **Weight** | 3.5-7.5 kg/m | 2.4-5.0 lbs/ft |
| **Ballast chain DIN 763** | 10 or 13 mm | 3/8 or 1/2 in |
| **Coating / Base fabric** | PVC, 1100 dtex polyester | |
| **Fabric Weight** | 950 g/mÂ² | 17,285 oz/ydÂ² |
| **Tensile strength** | 14,000 N/5 cm | 913 lbf/2 in |
| **End connector** | ASTM Z, F962 as standard | |


# Benefits

- Lightweight and easy to use
- Ideal for emergency rapid response
- Suitable for various sea conditions
- Usable in lakes, harbors, marinas, ports, power plants, and refineries
- Effective in all climatic conditions, including arctic
- High visibility PVC fabric with UV inhibitors
- Closed-cell foam internal floats
- Reflectors and pouches for optional boom lights
- Available in various heights, freeboards, and drafts
- Storable on Stackable Aluminum Racks, Boom Reel, or Side Door Container

# Permanent Fence Boom (PFB) MK 8

The Permanent Fence Boom Mk 8 is a heavy-duty solid float boom that is designed specifically for permanent installations in e.g. ports, harbors and water inlets. The MK 8 boom's strength, high freeboard, and reserve buoyancy flotation make it effective under harsh conditions.

- A typical installation may include a Bulkhead Riser and Track (link to photo or tech specs), which connects the Mk 8 boom to the shorelines' vertical wall, a Cable Weight and Strongback (link to photo or tech specs), which connects the Mk 8 boom to cable along the pier that allows the boom rise and fall with changing water levels, a Piling Tether (link to photo or tech specs), which connects the Mk 8 boom to various size pilings securing the boom with the pier structure along with other similar components.
- The Mk 8 is manufactured from strong PVC or Urethane coated belting fabric together with durable polyethylene floats. The Mk 8 floats are made with an exclusive, unique extruding and molding process only available through Lamor.
- The Lamor float is a solid molded closed-cell polyethylene foam that is high temperature pressed to form the outer skin incorporating a unique splash guard and lift handle. The booms and floats have marine growth inhibitors and UV resistance. The boom is equipped with galvanized steel ballast weights to keep the skirt vertical in the water column. The boom sections are supplied with ASTM Z or Slide type connectors, made in accordance with the ASTM F962 standard.
- The Mk 8 oil containment and protection boom is durable and can withstand the impacts of heavy debris and ice concentrations. The Mk 8 has a long service life and can typically last 7 to 10 years or more with proper maintenance.

# Technical Specifications

| | Metric | Imperial |
|---|---|---|
| **Height** | 460-910 mm | 18-36 in |
| **Section length** | 15-30 m | 50-100 ft |
| **Freeboard** | 205-256 mm | 8-10 in |
| **Draft** | 255-660 mm | 10-26 in |
| **Weight** | 6.9-8.3 kg/m | 4.6-5.3 lbs/ft |
| **Buoyancy/weight ratio** | 12.5 | 12.5 |
| **Fabric Weight** | 5,925 g/mÂ² | 175 oz/ydÂ² |
| **Tensile strength** | 133,400 N/5 cm | 29,430 lbf/2 in |
| **End connector** | ASTM Z / Slide | |

# Benefits

- Engineered for permanent installations
- Strong PVC or Urethane coated fabric
- Durable polyethylene floats
- Unique extruding and molding process
- Solid molded closed-cell polythylene foam
- Marine growth inhibitors and UV resistance
- Withstands heavy debris and ice
- Long service life
- Effective under harsh conditions

# Powerpacks

Lamor supplies a wide variety of portable and mobile power sources for effective and flexible operation of oil spill response equipment, such as skimmer systems, oil containment boom reels etc.


- Depending on the scenario, the climatic conditions and overall recovery operation, numerous types of multi-purpose hydraulic, electric as well ex-proof electric power-packs can be supplied with varying technical parameters pending the needs i.e. assembled powerful oil transfer pumps, Chalwyn valves, spark arrestors, container corners, stainless steel couplings, remote controls etc.
- Lamor is recognized for its high-quality, robust and durable power- packs, guaranteeing a long service life even in harsh climatic conditions. To ensure operational efficiency in harsh Arctic conditions, the powerpacks are winterized to utilize only Arctic compatible engine oils and hydraulic oil. Special engine block heaters and hydraulic oil heaters are fitted on the power-packs. Moreover, larger battery power sources and battery maintenance chargers are included as standard. Power capacities vary from e.g. 3 kW to 200 kW.
- Due to stricter emission legislation worldwide, Lamor has developed a brand new product range of power-packs thus reducing the environmental footprints. The new ranges of power-packs are remote controlled and by using different modes enable simultaneous utilization of a selection of various oil spill response equipment, such as skimmers, oil boom reels etc. Hence, one single power source is needed versus several different types of power-packs as a power source for various functions and OSR equipment. Moreover, the state-of-the art power-packs have reduced noise emissions.

# Technical Specifications

| Powerpack | LPP 23 | LPP 35 | LPP 58 | LPP 77 | LPP 119 | LPP 150 | LPP 200 |
|---|---|---|---|---|---|---|---|
| Length | 1,345mm / 53 in | 1,330 mm / 52 in | 1,600mm / 63 in | 2,000mm / 79 in | 2,300mm / 90 in | 2,650mm / 104 in | 2,650mm / 104 in |
| Width | 810 mm / 32 in | 800 mm / 31 in | 1,050 mm / 41 in | 1,300 mm / 51 in | 1,400 mm / 55 in | 1,440 mm / 57 in | 1,440 mm / 57 in |
| Height | 1,100 mm / 43 in | 1,000 mm / 39 in | 1,340 mm / 53 in | 1,600 mm / 63 in | 1,800 mm / 71 in | 1,900 mm / 75 in | 1,900 mm / 75 in |
| Weight | 530 kg / 1170 lbs | 570 kg / 1260 lbs | 900 kg / 1980 lbs | 1480 kg / 3260 lbs | 2000 kg / 4410 lbs | 2300 kg / 5070 lbs | 2300 kg / 5070 lbs |
| Hydraulic flow | 73 l/min / 19 gpm | 110 l/min / 29 gpm | 160 l/min / 42 gpm | 230 l/min / 60 gpm | 320 l/min / 85 gpm | 300 l/min / 79 gpm | 420 l/min / 110 gpm |
| Hydraulic pressure (bar) | 180 bar / 2,610 psi | 180 bar / 2,610 psi | 210 bar / 3,045 psi | 210 bar / 3,045 psi | 210 bar / 3,045 psi | 210 bar / 3,045 psi | 210 bar / 3,045 psi |
| Power (kW) | 23 kw / 30 hp | 35 kw / 47 hp | 58 kw / 77 hp | 77 kw / 103 hp | 120 kw / 160 hp | 150 kw / 200 hp | 200 kw / 268 hp |

# Benefits

- Multi-purpose
- Robust and durable
- Engine and oil heaters
- Reduced environmental footprint
- Remote controlled
- Simultaneous equipment utilization
- Reduced noise emissions
- Wide range of options

# GTA Pumps

The GTA Pump series are multi-purpose submersible Archimedes positive displacement high-performance screw pumps. In addition to being a primary oil transfer pump, the GTA pumps can be utilized for numerous applications such as offloading emergency pumping of heavy crude, bitumen, tank cleaning, pipeline maintenance, sludge removal, etc.
These pumps also come in a stainless steel series, specially designed for long-term permanent use on Vessels.


- GTA pumps are easy to deploy and versatile to use. For example, an oil skimmer fitted with a GTA pump can easily have its pump removed and used for other pumping duties.
- The special internal geometry of the GTA pump design ensures a gentle pumping action that will not emulsify the liquid and ensures the efficient movement of the fluid through the unit.The smooth operation and easy flow control also reduce cavitation for a constant flow. Because the pumps never lose their prime, they are operational from the moment they hit the liquid.
- The screw pump, although an ancient Egyptian invention from more than 2,000 years ago, continues to prove its worth in modern industries with its reliability, versatility, and efficiency. It pumps fluids of high viscosity and handles large pressure changes with little impact on performance.
- Lamor's GTA Pump series are multi-purpose, high-performance, hydraulically driven submersible positive displacement Archimedes screw pumps. The capacities of the GTA pumps are certified by Bureau Veritas in varying oil viscosities.
- The high-torque hydraulic motors make the pumps extremely efficient. Pump models and capacities vary from 20 $m^3$/h to 140 $m^3$/h (88–616 gpm) and operate in temperatures ranging from –20 to +60°C (–4 to 140°F), reaching up to 14 bar outlet pressure.
- The pump casing is compact and, depending on the model and intended application, made of robust yet lightweight aluminum or stainless steel. All internal components are made of acid-proof steel with specialized seals for reliable operation and longevity.

# Technical Specifications

| | GTA 20 | GTA 30 | GTA 50 | GTA 70 | GTA 115 | GTA 140 |
|---|---|---|---|---|---|---|
| **Length** | 300 mm / 12 in | 300mm / 12 in | 400 mm / 16 in | 400 mm / 16 in | 500 mm / 20 in | 500 mm / 20 in |
| **Width** | 195 mm / 8 in | 195 mm / 8 in | 250 mm / 10 in | 250 mm / 10 in | 300 mm / 11 in | 300 mm / 11 in |
| **Height** | 435 mm / 17 in | 435 mm / 17 in | 500 mm / 20 in | 500 mm / 20 in | 598 mm / 24 in | 598 mm / 24 in |
| **Weight** | 25 kg / 55 lbs | 26 kg / 57 lbs | 49 kg / 108 lbs | 47 kg / 104 lbs | 71 kg / 157 lbs | 71 kg / 157 lbs |
| **Manhole diameter** | 300 mm / 11.8 in | 300 mm / 11.8 in | 400 mm / 16 in | 400 mm / 16 in | 520 mm / 21 in | 520 mm / 21 in |
| **Solid handling** | 25 mm / 1 in | 25 mm / 1 in | 30 mm / 1.18 in | 30 mm / 1.18 in | 30 mm / 1.18 in | 30 mm / 1.18 in |
| **Certified capacity** | 21 m³/h / 92 gal/min | 31 m³/h / 136 gal/min | 61 m³/h / 268 gal/min | 84 m³/h / 369 gal/min | 119 m³/h / 524 gal/min | 142 m³/h / 625 gal/min |
| **Certified discharge pressure** | 14 bar / 203 psi | 14 bar / 203 psi | 14 bar / 203 psi | 10 bar / 145 psi | 12 bar / 174 psi | 10 bar / 145 psi |
| **Hydraulic flow (max)** | 80 l/min / 21 gpm | 75 l/min / 20 gpm | 160 l/min / 42 gpm | 92 l/min / 24 gpm | 160 l/min / 42 gpm | 160 l/min / 42 gpm |
| **Hydraulic pressure (max)** | 210 bar / 3,045 psi | 210 bar / 3,045 psi | 210 bar / 3,045 psi | 210 bar / 3,045 psi | 210 bar / 3,045 psi | 210 bar / 3,045 psi |

Technical specifications are for the GTA Archimedes pump, the SS and ATEX versions vary slightly.

# Benefits

- Multi-purpose use
- Easy deployment
- Smooth operation
- High viscosity handling
- Efficient hydraulic motors
- Certified capacities
- Wide operational range
- Robust and lightweight
- Durable components

LAMOR

Let's clean the world

## Lamor in brief

Lamor is one of the world's leading providers of environmental solutions. For four decades, we have worked to clean up and prevent environmental incidents on land and at sea.

Environmental protection, soil remediation and material recycling: Our innovative technologies, services and tailored solutions, ranging from oil spill response, waste management and water treatment to soil remediation and plastic recycling, benefit customers and environments all over the world.

We are capable of vast and fast operations thanks to our connected ecosystem of local partners, steered by our experts. Lamor's share is listed on the Nasdaq Helsinki (ticker: LAMOR). Further information: www.lamor.com

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