

ScorSkim 60

Free-Floating, Dual Oil Recovery Bank, Skimmer

With integrated high-capacity pump



Operation Manual

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1. Safety

1.1. Warning Symbols



General danger symbol



Danger due to electrical voltage

DANGER! Negligence of this warning may cause loss of life or damage to the equipment.

WARNING! Incorrect handling or use may cause personal or property damage, to the equipment, other equipment or personnel.

CAUTION! Negligence of this sign will weaken or damage the operating safety and reliability of the equipment.



NOTE! This sign indicates useful information on safe and effective product handling.

1.2. General Safety Guidelines

Safety instructions and warnings are guidelines for proper and safe use. Situational awareness is essential to promoting a safe workplace and for the safety instructions to be properly implemented.

The operator should be aware that the equipment may be dangerous if improperly used.

If the safety instructions are not carefully read, understood and complied with the equipment there may be a danger to the user.

The user must carefully read and follow the equipment instructions, as well as the operating instructions for other manufacturer's equipment incorporated into the system, before operating or servicing the equipment.

In addition to following the basic safety instructions presented in this user guide, the operator of the equipment should follow safety instructions for handling hazardous materials and follow the guidelines for worker protection (HAZWOPER, OSHA) to prevent injury, loss of life, or damage to the equipment or property.



DANGER! The correct personal protective equipment (PPE) should be worn at all times when operating the equipment. Failure to follow this protocol may result in personal injury and in some cases may result in death.



DANGER! Danger zones are present during equipment deployment and recovery and can be created by equipment movement. These areas can occur between:

- Equipment and beach
- Equipment and work platform
- Equipment and vessel
- Equipment and other equipment
- Equipment and open water

1.3. Safety Devices



DANGER! Safety devices should not be removed or from the equipment nor modified before, after or during operation. Doing so may cause injury, loss of life and/or damage to equipment or property.

DANGER! Appropriate safety devices should be used when securing, loading and transporting equipment. Failure to do so may result in injury, loss of life and/or damage to equipment or property.

2. Transportation, Lifting & Storage

2.1. Transportation

Always transport the equipment in an upright position.



CAUTION! For both transporting and storing the equipment, ensure that the hydraulic connections are protected. Do not place a heavy load on the connections or use them as lifting points.

WARNING! Always use appropriate transport and safety equipment when transporting equipment. Safety straps and proper load bearing equipment should always be used. The equipment must be properly secured while in transit and on the deployment platform to minimize movement, shifting and/or possible overturning. When standing freely, the equipment might not be sufficiently stable.

To transport the skimmer with a forklift, place it and secure it on a palette.

2.2. Lifting



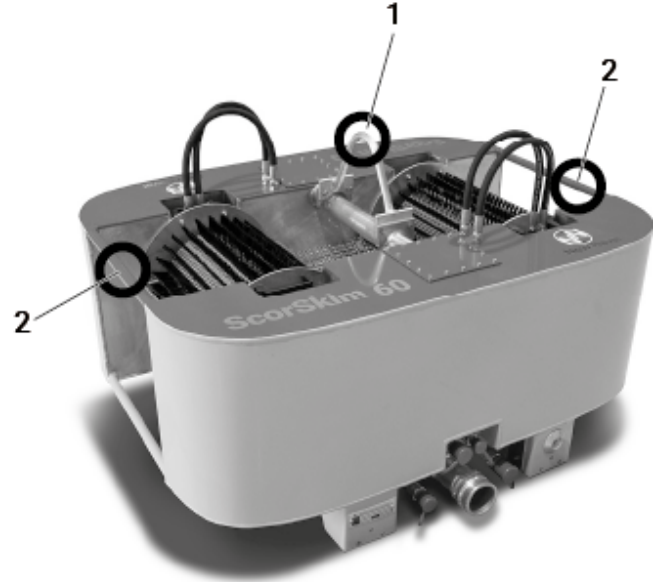
DANGER! Never stand or work underneath suspended load.

General guidelines:

- All lifting operations must be carefully planned and appropriately supervised.
- Lifting operations should always be based on an updated and valid risk assessment.
- Use of a safety line helps accurate control of suspended loads and precise location and arrangement.
- Place and secure the skimmer onto a pallet, if forklift is required.

2.2.1. Designated Lifting Points

CAUTION! To lift with a crane, always use the designated equipment lifting point, along with appropriate lifting kit. See picture below:



To lift by mechanical means, use the inverted V shaped loop (1) located at the middle of the skimmer's frame.

To lift the skimmer by hand, use the side handles (2).



WARNING! Do not lift or move the skimmer by the hydraulic motors, drive shafts, recovery banks, hydraulic hoses or any other part of the skimmer as these cannot stand the weight of the skimmer.

2.3. Storage

- If provided, use the assorted storage box.
- Store to a dry and protected location.
- Disconnect all ancillary equipment (i.e. hoses).
- Clean and dry the equipment prior to storage.



CAUTION! It is important that all water be removed from the equipment otherwise damage may occur.



CAUTION! Do not place heavy objects on the equipment.



CAUTION! Ensure that the recovery banks and specifically the brush bristles or discs, are free from pressure or they may bend and affect the performance of the equipment.

3. Proper Use

Recovery banks should change according to oil/fluid viscosity. Typically, the brush recovery bank is a lot more efficient with heavier viscosity fluids, whereas disc and drum are intended for less viscous pollutants.

Recommended Operating Conditions:

Air	-20°C to +70°C (-4°F to 158°F)
Water	0°C to +70°C (32°F to +158°F)
Wave Height	1m (3 ft) max

Check regularly the temperature of the power pack's engine to make sure it is not overheating. Ensure that nothing flammable is on the equipment during operation.



CAUTION! Rotating modules create pinch zones. Keep away your hands from a rotating module. Do not wear loose or protruded clothes that may get entangled to the recovery banks while rotating.



WARNING! A clear communication between the operators should be established at all times to avoid serious or even fatal personnel injuries due to mishandling or ill operation.



WARNING! New Naval shall not be liable for personnel accidents, injuries (fatal or not) or equipment damage due to insufficient specialized training of personnel, adverse weather conditions, mishandling or other uncontrollable factors that may aggravate or result in the failure of operations.



CAUTION! If the air temperature goes below 0°C (32°F), remove water from the equipment after use to prevent damage from freezing.



NOTE! Use only the lubricants recommended by the manufacturers of the engine and hydraulic system (refer to the specific manuals for each component or the assembly section for more information).



DANGER! Any other use of equipment besides its designated purpose may result in injury, loss of life or damage to equipment or property.



NOTE! Modifying or rebuilding equipment will invalidate all warranty terms and any and all liability clauses.



WARNING! Surfaces that become heated during operation can cause burns to operators if they aren't aware and if proper PPE is not used. Stay clear of the exhaust pipe during operations as it may become hot.



WARNING! If applicable, do not run the oil transfer pump without oil or fluid. Do not start the pump before you have filled the collection hopper by running the recovery bank.

Bigger particles such as wooden pieces, bottles etc. should be collected manually from the water before starting operation.

Don't place heavy loads on the equipment.

Do not remove oil transfer hose during operation.

Limits specified in the operating conditions, technical description and data are not to be exceeded.

If the recovery bank stops due to debris or for any other reason, always stop all operations including the power unit before lifting and clearing or fixing the skimmer (in accordance to chapter 7: Operating Instructions).

Do not remove any hydraulic hoses during operation.



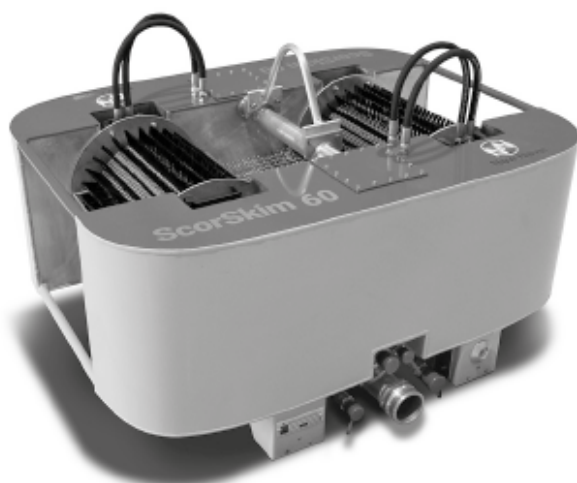
DANGER! Incorrect or careless use may cause danger to life, equipment and property.

All operators should wear appropriate PPE and PFD devices at all times.

When working from vessels, a lifeline should be used for operations close to the bulwarks.

4. Product Information

4.1. Technical Specifications



ScorSkim 60

Certified Recovery Capacity with 2x Brush Recovery Banks Up to 108 (2x54) m³/h*

Certified Recovery Capacity with 2x Disc Recovery Banks Up to 81.6 (2x40.8) m³/h*

Certified Recovery Capacity with 2x Drum Recovery Banks Up to 26.4 (2x13.2) m³/h*

Dimensions (LxWxH) 1300 x 1020 x 660mm

Draft 160 mm

Weight (with no banks) 77 kg

Weight (with banks) 90 kg

Skimmer Frame Aluminum

Discharge Pump 3" Hydraulic Submersible Utility Pump – S3TC

Discharge Connection (Camlock) 3"

Skimmer Hydraulic Flow rate 6.0 lpm

Skimmer Hydraulic Pressure (max.) 60 bar

Pump Hydraulic Flow rate 24 lpm

Pump Hydraulic Pressure (max.) 170 bar

Hydraulic Connections Flat ½" & Flat ¾"

* ASTM F2709 - Light Oil - Visc: 132.1 cSts @23°C

4.2. Unit Identification

An identification plate on the equipment provides product information and identification.

- New Naval contact information
- Serial #: Equipment designated serial number
- Date: Manufacture date
- Weight (kg): Equipment weight



New Naval

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2nd km Lavriou-Souniou | Lavrio 195 00 | Greece
info@newnaval.gr | www.newnaval.com

Serial #:

Date:

Weight (kg):



NOTE! Do not remove the nameplate, as the corresponding item will not be identifiable or trackable without it.

5. System Description & Functions

The ScorSkim 60 is an oleophilic, free-floating skimmer designed for oil recovery operations in varying environments and scenarios. The modular system allows fast interchange from dual brush, to disc or drum recovery banks depending on the viscosity of the target oil. Proven oleophilic technology allows the system to achieve oil recovery rates of up to 98%. The light-weight system is designed to be maneuverable allowing rapid deployment from work platforms in emergency operations. Designed with a shallow draft and stable core, the skimmer is effective in operations from inland environments to nearshore and offshore applications.

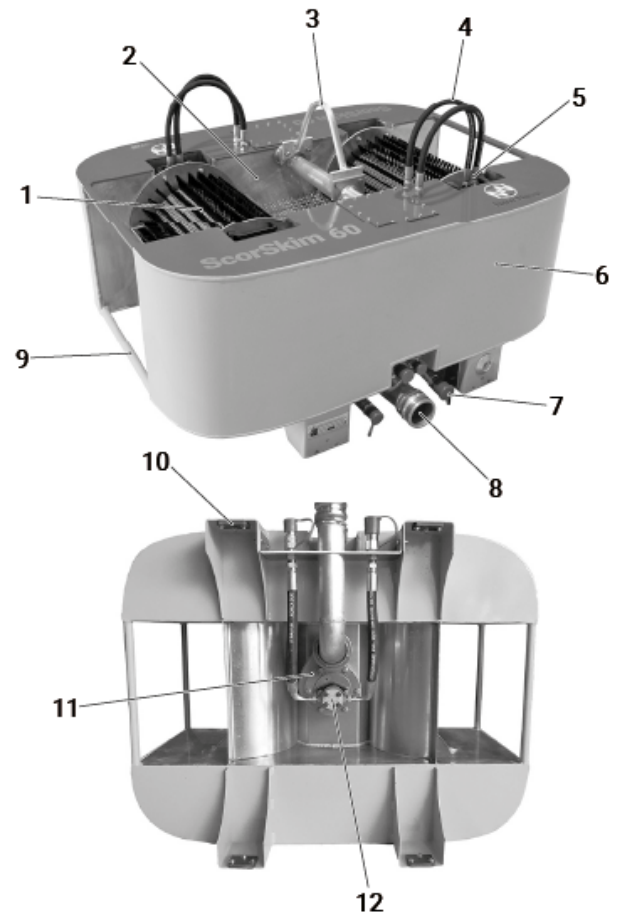
5.1. Main Characteristics:

Class	Free-floating
Type	Oil spill recovery skimmer
Recovery Method	Modular Recovery Banks
Recovery Applications	Stationary / Free-floating

The basic advantages of the ScorSkim60Skimmer are the following:

- Modular system with dual interchangeable recovery banks (brush, disc and drum banks) for light to heavy viscous oils
- 99% oil, <2% water content brush recovery bank capability
- Light-weight system, easily transported and deployed
- Integrated pump
- Hydraulically driven with low power requirements and utilizes hydraulic quick-couplings that can be easily connected to a dedicated power pack or directly to the vessel's hydraulic system when available.

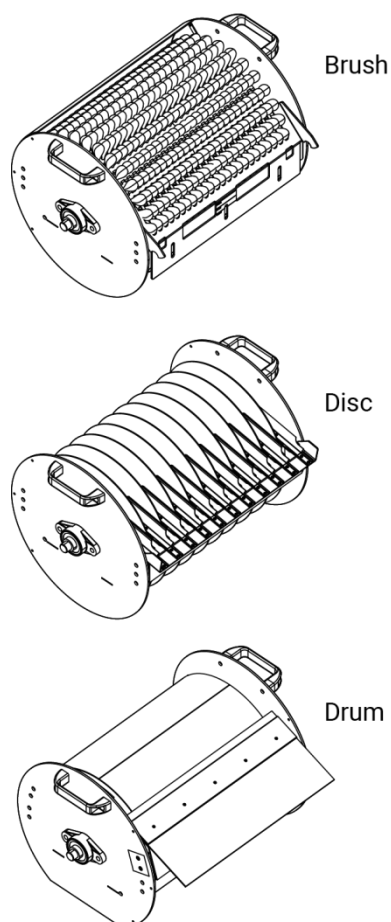
5.2. Main Components:



1	Recovery Module
2	Collection Hopper
3	Lifting Loop
4	Hydraulic Hoses
5	Module Hydraulic Connections
6	Skimmer Frame
7	Hydraulic Inlet / Outlet
8	Discharge Outlet 3"
9	Handles
10	Skimmer Feet
11	Integrated Pump
12	Hydraulic Pump Motor

5.3. Main Functions:

5.3.1. Recovery Banks (Modules):



The recovery banks, either brush disc or drum, are installed into the skimmer frame so that they operate slightly below waterline.

The banks are driven by a drive shaft, rotated by a hydraulic motor that is driven by a hydraulic power unit.

The rotation speed of the recovery banks is controlled by the amount of hydraulic flow provided by the hydraulic power unit.

Adjust the speed of the bank by adjusting the hydraulic flow from the controls on the power unit.

Please refer to the manual for the power pack, and also reference the technical specifications of the skimmer so that hydraulic pressure limits are not exceeded.

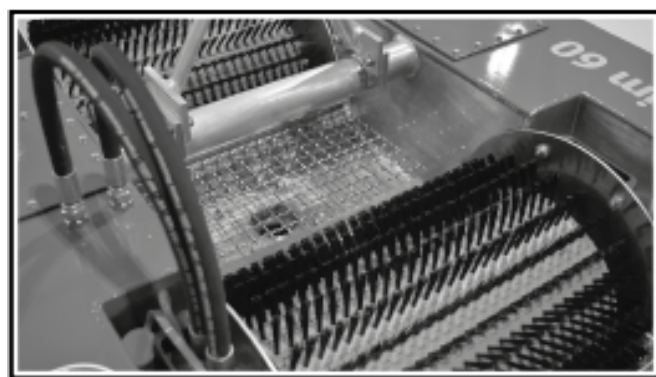


Fig. 6 – Brush Modules & Collection Hopper with Debris Screen (steel net)

5.3.2. On-board Pump:

The on-board oil transfer pump provides suction to remove the collected oil, that remains in the collection hopper after it is collected from the top of the water's surface.

The speed of the recovery is controlled by the speed of the transfer pump.

The speed of the pump is controlled by adjusting the hydraulic flow from the power unit (hydraulically powered pump).



NOTE! The right pump speed depends on the type of oil and thickness of the oil layer that will be recovered. In most cases when recovering thicker oil or thicker oil slicks the pump will need to be run at lower rpms. The reverse is true for lighter oils and thinner oil slicks.

The pump houses an efficient channel impeller which offers excellent overall performance. The pump has an aluminum body.

5.3.3. Hydraulic Ports

The skimmer connects to the hydraulic power unit through the ports located at the bottom back of the skimmer. The hydraulic flow enters and exits the skimmer's circuit from the corresponding inlets/outlets. The hoses connect with quick release couplings, creating a firm and secure connection.

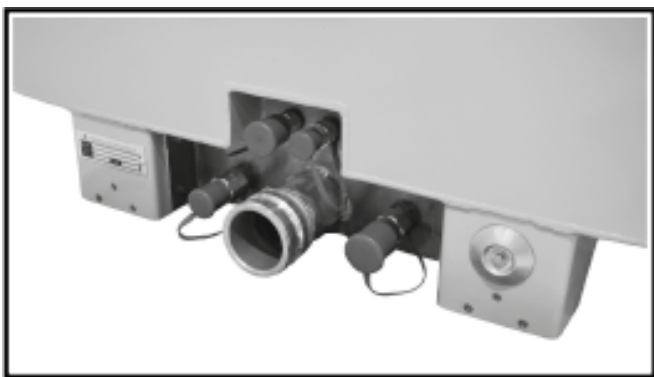


Fig. 7 – Hydraulic Inlets/Outlets & Discharge Port

5.3.4. Recovery Bank Scraper and Hopper

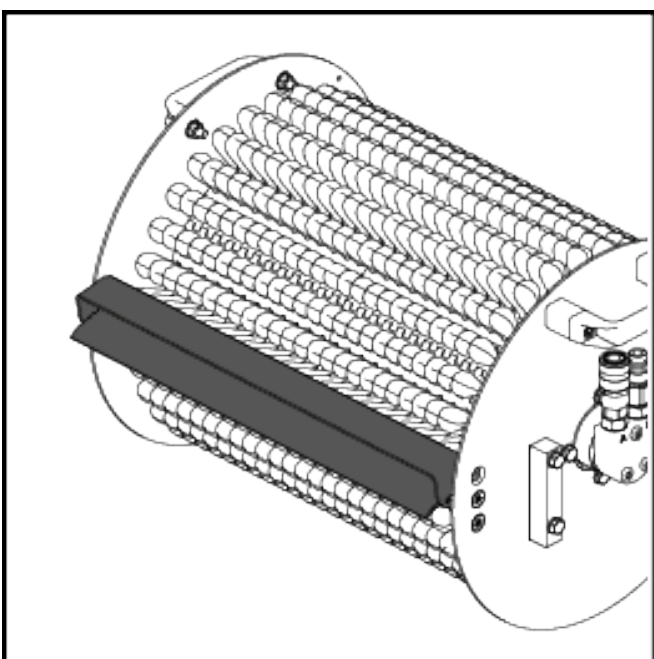


Fig. 8 – Brush Bank Scraper

The scraper is placed against and through the brushes or discs, or presses up against the drum bank to remove recovered oil.

The oil is collected into the collection hopper (Fig.6).

The angle of the scraper can be adjusted by loosening the screws that hold the scraper in place. The scraper is then moved to the desired position and the screws are tightened.

The scraper should be adjusted to address the type of oil to be recovered and the size of the operation at hand. Please refer to section **6.2.2. Scraper Adjustment** for more information.

6. Installation & Assembly

6.1. Installation



DANGER! Personnel working near the water's edge should wear a personal floatation device as well as proper PPE.



WARNING! Prior to installation examine and define the operation's nature. Proper installation can improve efficiency and safety of an operation.

It is strongly recommended to take the following steps through installation.

1. Examine the work site and plan a layout to set up the equipment so that is in easily deployed.
2. Place and set up any safety or containment equipment that may be necessary.
3. Identify any potential safety risks or factors that may be debilitate the operation.
4. Transport the equipment to the working site.
5. Place the power unit on a horizontal flat surface on the shore or working area, as near as possible to the recovery area with the thickest oil layer, so that the operator can monitor the skimmer during operation.
6. Place the storage receptacle in a location that the transfer hoses can reach but will not be a hindrance to the operation.
7. Place all ancillary equipment next to the where it will be connected to (i.e. hoses).
8. Take a moment before the assembly and make sure all operators involved understand the procedure and the safety risks at hand.

6.2. Assembly

6.2.1. Recovery Bank Installation

Once the skimmer is in position next to the deployment area, select the appropriate recovery bank and install it into the skimmer frame.

Recovery bank selection depends on the recovery operation at hand and oil to be recovered. Consult the table below:

Brush	Heavy Oils
Disc	Medium to Light Oils
Drum	Oil Slick

Please take the following steps for recovery banks installation.

1. Slide recovery bank into the skimmer frame. Hydraulic motor and hydraulic connections must be on the same side (Fig. 10).
2. Connect the banks hydraulic motors with the quick release couplings available.
3. Check that the recovery bank can move freely and there are no obstructions.
4. Check that the scrapper is in the proper position.
5. Check that the collection hopper is clear and clean of all materials.
6. Connect the skimmer with the power unit with the hydraulic hoses and through the hydraulic ports (Fig. 7).

Follow reverse procedure to remove and change recovery bank.

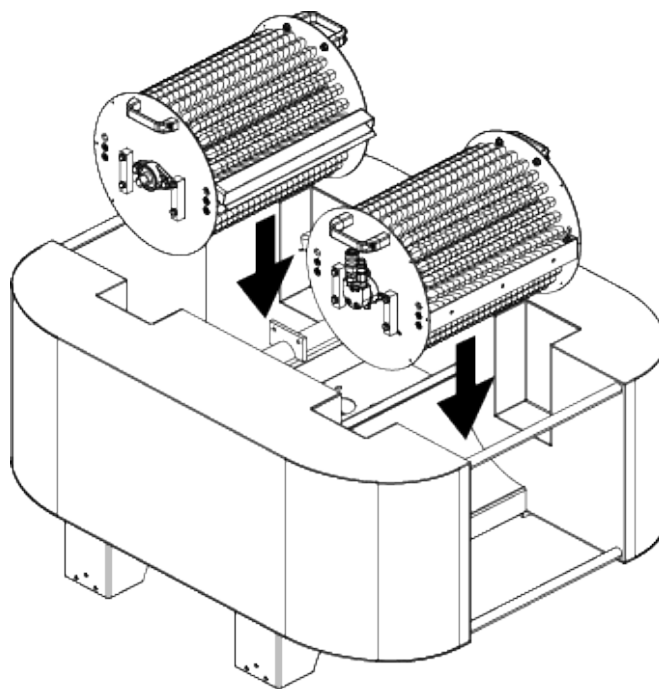


Fig. 9

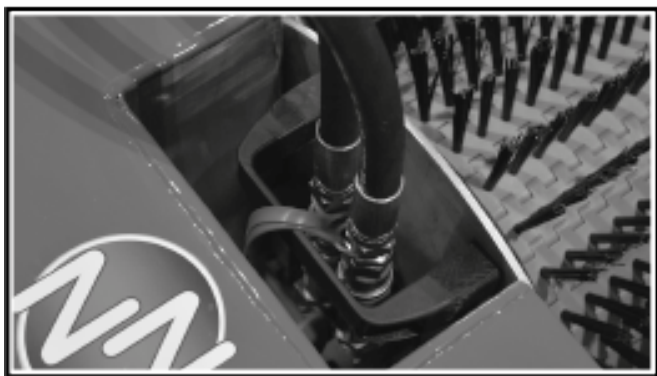


Fig. 10 – Module Hydraulic Motor Connections

Hydraulic connections explained thoroughly to section 6.2.4 below.

6.2.2. Scrapper Adjustment

To adjust the brush scrapper for the type and thickness of oil to be recovered, follow the procedure below:

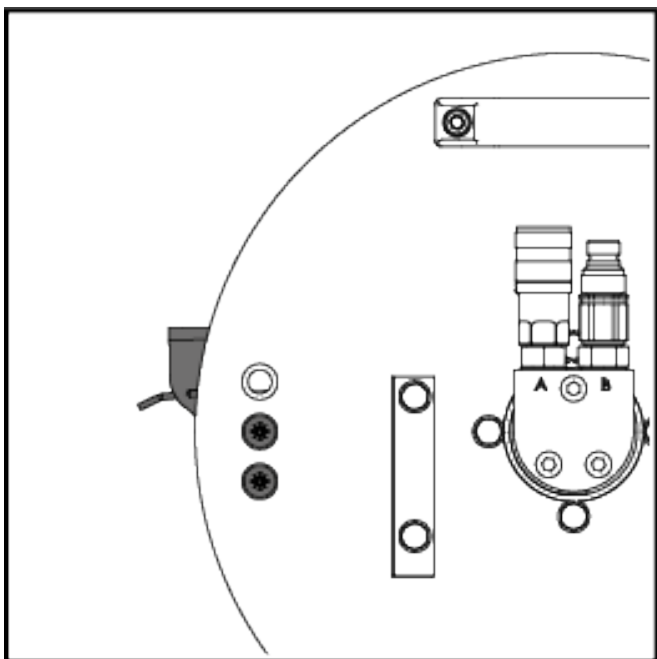


Fig. 11 – Release the highlighted screws (two in each side)

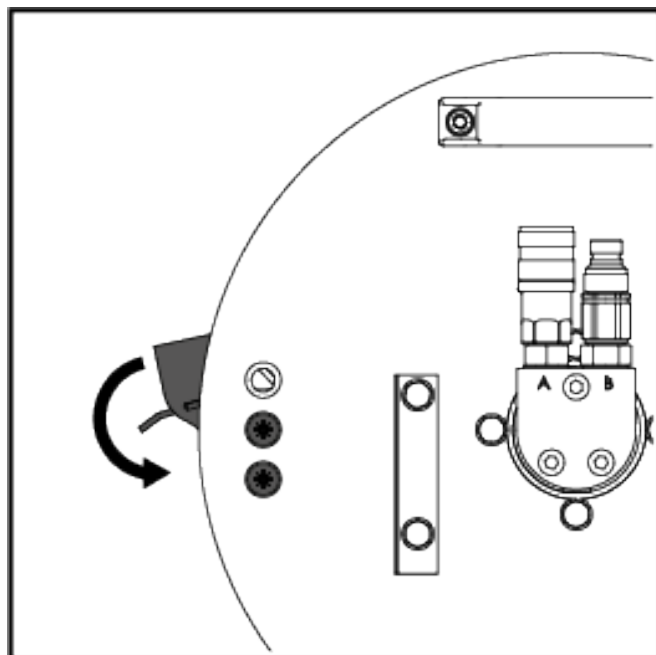


Fig. 12 – Rotate the scrapper to the desired position and tighten the screws in each side.

As a guideline, for heavier oils the bristles should be as close to the scrapper's comb as possible. The opposite applies for lighter oils.

6.2.3. Oil Transfer Hose Connection

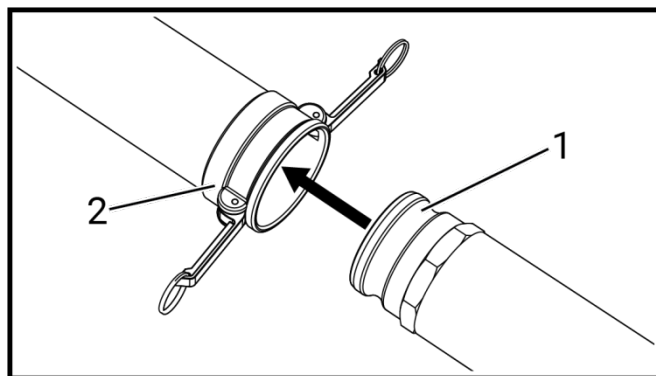


Fig. 13

Transfer hoses connections are secured via 3" Camlocks. Push the male connector (Fig. 13 – 1) into the female connector (Fig. 13 – 2).

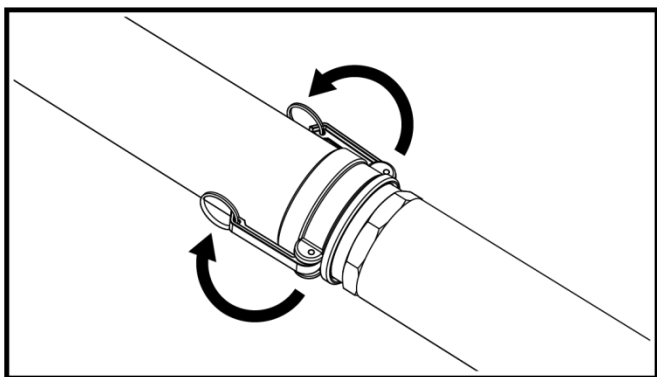


Fig. 14

Secure the connection by rotating flat the levers on each side of the female coupling. Lock the fasteners in place by installing the securing pin on the outer side of the lever hinge.

Place the discharge end of the hose to a proper tank for waste storage.



WARNING! Ensure that the transfer pump is off duty during the process of connection.



WARNING! Make sure the power unit is off during the connection process.



WARNING! Check connections are firm and secure.

6.2.4. Hydraulic Connections

The system uses two hydraulic power lines, one for powering the pump and one for powering the recovery banks. Each line accommodates 2 hydraulic hoses (pressure/return), with 2 different sizes of quick release couplings (male/female) for each line.

Consult the table below:

3/4" couplings line	Powers the Pump
1/2" couplings line	Powers the Recovery Banks

To connect the power unit to the skimmer:

1. Pair the connections with the corresponding coupling size.
2. Remove the dust caps.
3. Connect the hoses to the skimmer and power unit.



CAUTION! Take note of the label regarding maximum operating hydraulic flow and pressure.



NOTE! Remove the plastic dust caps prior to connecting the couplings.



WARNING! Make sure the power unit is off during the connection process.



WARNING! Check connections are firm and secure.

6.2.5. Preparing the Hydraulic Power Unit

Check the levels and add, if necessary, of the:

- Hydraulic oil
- Engine oil
- Fuel

Check that the hydraulic hoses are connected correctly and secured.

Start the power unit engine (refer to operation manual) and check that all components are functioning correctly. Allow the engine to run for a few minutes before operating the skimmer.

Adjust the speed of the recovery banks and the oil transfer pump to the necessary speed for the task at hand by using the hydraulic valves and the dial on the power unit. The correct rotating speed depends on the thickness of the oil layer being recovered. Thicker oil requires lower rpm's and vice versa.

Turn off power unit and prepare to deploy the equipment.

7. Operation



DANGER! All personnel should use fully approved PPE during operation of the equipment.



WARNING! Check that all hydraulic control levers are in the neutral position.

7.1. Recommended Operating Conditions



CAUTION! Below 0°C (32°F), remove water from the equipment after use to prevent damage from freezing.

Ideal conditions for equipment usage are:

Air Temp. -20°C to +70°C (-4°F to 158°F)

Water Temp. 0°C to +70°C (32°F to +158°F)

Wave Height 1m (3 feet) (max.)

7.2. Pre-Operation Checklist

Prior to start of operation take the following steps for preparation of the equipment:

1. Select the appropriate recovery bank, depending on targeted pollutant. Check the recovery bank is properly installed. Refer to section 6.2.1.
2. Check that the recovery banks are secure and installed in the frame correctly can rotate freely and that the scrapper is in the appropriate position for the recovery operation at hand.
3. Connect the oil transfer hose connected to the Camlock/pump to a tank (or similar storage unit).
4. Check that all hydraulics are connected and secured.
5. It is recommended to package the hydraulic lines and oil transfer hose together and to equip this hose package with hose floats. Hose floats allow the operator to see where the hose package is

located in regard to the operation and also reduces stress on the hose connections to the skimmer and the pump (Fig. 15).

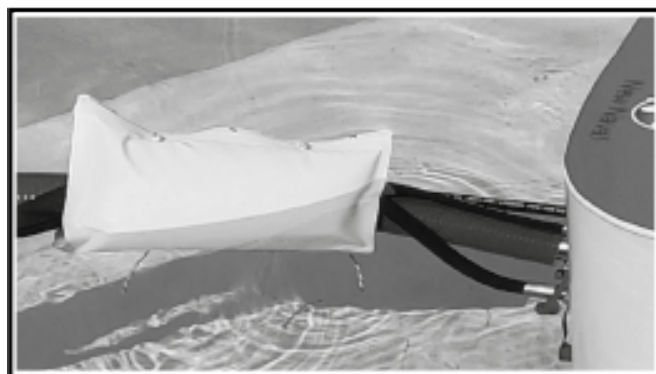


Fig. 15

6. Start the hydraulic power unit and allow it to warm up.
7. Engage the hydraulics to the recovery banks and check that the bank is running properly. Stop the hydraulics.
8. If the skimmer will be moved by mechanical means connect the proper lifting gear to the skimmer.
9. Lift or move the skimmer to the deployment location.

7.3. Operating the Equipment



WARNING! If the recovery bank stops due to debris stop the power unit and all operations before recovering the skimmer and addressing the problem.



WARNING! Do not engage the pump before the collection hopper has been filled with liquid.

Deploy the skimmer. Lift the skimmer by hand or crane. Always utilize the proper PPE.

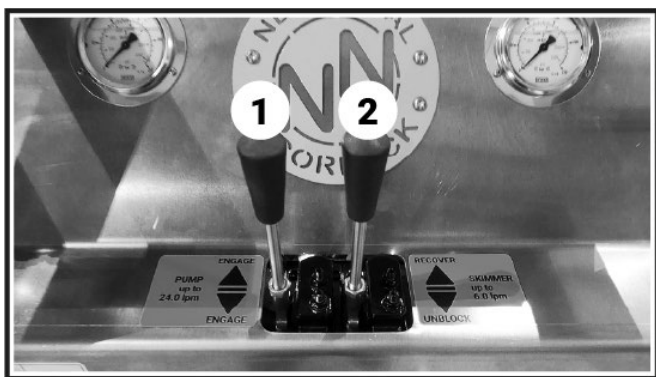


Fig. 16

Control 1 engages the pump.

Control 2 engages the recovery banks.

Engage Pump with control 1 (Fig. 16). Adjust pump speed depending on viscosity of collected fluid. The flow increases proportionally by engaging the lever. Maximum speed is achieved in terminal position. In most cases the following rule of thumb applies: The heavier the oil the lower the RPMs of the pump. Push the lever as to desired speed.

Engage the skimmer's recovery banks with control 2 (Fig. 16). Push to forward (recovery banks rotate to collect), draw to reverse. The flow increases proportionally by engaging the lever. Maximum speed is achieved in terminal position. Same rule applies here: The heavier the oil the lower the RPMs of the recovery bank. In the event of debris attached on the recovery bank, engage reverse to remove it.



NOTE! Observe the labels on the power pack.

If the recovery bank stops due to debris or the collection hopper blocks:

1. Stop the power pack.
2. Recover the skimmer.
3. Remove any debris/blockage that may be inhibiting the recovery bank or any debris that may be clogging the collection hopper.
4. Check that the recovery bank and the scrapper are in the correct position.
5. If necessary, re-adjust the position of the brush scrapper.
6. Deploy the skimmer back to the area of operation.

7. Restart power unit and resume recovery operations.

7.4. Stopping Operation

To terminate the operation:

1. Lift the skimmer out of the water and let the oil transfer pump run for a few seconds to empty the collection hopper and the pump itself of recovered oil.
2. Turn the hydraulic power source to idle before turning it off.
3. Turn the battery switch to OFF.
4. Recover the skimmer to the deployment/work area. Take proper contamination containment measures to prevent oil contamination and protect work areas.
5. Disconnect the oil transfer hoses and connect both ends together to avoid unnecessary contamination.
6. Disconnect the hydraulic hoses from the skimmer and the pump. Place the dust caps to prevent contamination or damage to the couplings.
7. Take proper actions on draining the pump. Ensure proper measures are taken to catch any contaminated liquids, etc. (Refer to the pump's operating manual).
8. Begin cleaning operations of the equipment or transport the equipment to a suitable place for cleaning.



WARNING! Do not remove any hydraulic hoses while the system is still operative.



WARNING! Release hydraulic pressure before removing hydraulic hoses:

1. Turn system off.
2. While hydraulic hoses are connected, engage manual hydraulic controls to allow the pressure to move hydraulic oil through the system while relieving pressure.



WARNING! New Naval will carry no responsibility for equipment damage caused by incorrect or irresponsible handling.

8. Cleaning



DANGER! Always unplug the battery, before cleaning.



WARNING! Always use appropriate PPE like protective clothing and gloves. Cleaning without adequate personal protection may lead tool exposure, which imposes hazards to the operator's health.



CAUTION! Use only fresh water to rinse equipment. If needed use only mild detergents. Harsh or abrasive clean chemicals may deteriorate or even damage parts of the equipment.

8.1. Cleaning the skimmer frame

Rinse the aluminum frame with fresh water with mild temperature, to wash off salt sea water.

If frame is oiled use mild detergents and lukewarm water (max temperature +50°C/120°F).

8.2. Cleaning the recovery bank

Diesel oil should be used for initial decontamination to remove sticky black oil from the bank.

To clean the recovery bank, keep the bank under motion on low speed. Spray diesel oil or detergent solution over the brushes, as the bank rotates. Bank scrapper should collect any pollutant left over after the recovery operation.

8.3. Cleaning the oil transfer hoses

Inject fresh water or mild detergent solution inside the hoses. Flush thoroughly.

8.4. Cleaning the hydraulic hoses

Keep exterior surfaces clean.

Grease hydraulic connections after cleaning and prior to storing.

Place dust caps.

8.5. Cleaning the oil transfer pump

Fill the pump with solvent solution and then start the motor. Keep pump at low speed while water and solvent is being filled into the pump.

When the pump is clean run the pump to remove excess water. Turn the pump off and open drain valves if applicable.

If needed clean the pump case the motor and the frame with warm water and suitable solvent.

9. Maintenance



NOTE! Equipment should be serviced following a maintenance schedule based on the frequency of the equipment use and the environment that the equipment is operated in. Failure to carry out scheduled maintenance can result in damage to the equipment and malfunction in an oil spill recovery operation.

Failure to carry out scheduled maintenance can result in damage to the equipment and malfunction in an oil spill recovery operation.

It's the user's responsibility to maintain and test their equipment.

Regular maintenance intervals, e.g. 6-month and 12-month maintenance program are recommended so that response equipment is functioning at full capability and prepared for immediate use during oil spill response operations.

A maintenance schedule should be created according to the amount of use of the equipment, whether for training or actual spill response. The environment the equipment is deployed in also impacts maintenance intervals.

A maintenance record should also be kept.

Servicing and lubrication intervals depend mainly on the circumstances of use and the storage environment. This table may be used for reference values:

Environment/conditions	Lubrication Interval
Dry & Clean Workspace	300 hours or 6 months
Exposed/Outdoors Conditions	100-200 hours or 4 months
Harsh/Dirty/Corrosive/Arctic Conditions or >70 hours of use per week	50 hours or 2 months
Extreme Conditions	Continuous lubrication or central lubrication system

Regardless of how many hours the equipment has been used, after each operation the equipment should always be inspected, serviced and cleaned.

Any worn or damaged parts should be replaced.

Maintenance on each component varies depending on working conditions and time used, therefore it is important to read the manuals and maintenance guides of each component e.g., engine, hydraulics, etc. to ensure the proper maintenance is carried out.



WARNING! The system should never be powered or connected to a power source during maintenance.

PERIODIC MAINTENANCE TABLE

○ : Check ◇ : Replace

System	Check Item	Before Use	After Use	Every 3 Months	Every 50 Hours	Every 2000 hours	Every Year	Every 10 Years
Hydraulics	Check that hydraulic hoses & fittings are in safe working condition (Qualified Personnel only).					○ or every 12 months		
	Replace damaged hydraulic hoses or fittings (Qualified Personnel only).					◇ or every 12 months		
	Replace all hydraulic hoses (Qualified Personnel only).							◇
Frame / Float	Inspect the frame for cracks, bends, or other damages.	○						
Recovery Banks	Check for bends, cracks & other deformation signs.	○						
	Check lubrication of shaft bearings. Lubricate if needed.	○						
	Lubrication of shaft bearings.				○			
Bolts & Screws	Check that the screwed and bolted connections fastening the machine are tight.					○ or every 12 months		
	Tighten any loose screws or bolted connections.					○ or every 12 months		
Lifting Points	Check functionality of lifting points.	○						
	Visually check physical integrity for damages & deformations.	○						
Anode	Change the anode (if available).						◇	
General	Clean the Skimmer with fresh water and let it dry before storage.		○					
	Flush the pump with fresh water and let it dry before storage.		○					

10. Troubleshooting

	Problem	Possible Solution
1.	Oil recovery bank not rotating	Make sure that the bank rotates freely. If not, remove anything that blocks the space between the bank and the frame.
		Check that the hydraulics hoses are properly connected.
		Make sure the scrapper is correctly adjusted.
2.	Oil recovery bank is rotating but not collecting oil	Check that the scrapper is properly adjusted and not impeding the movement of the bank.
3.	Skimmer overflows with oil	The pump may not be working – restart the pump (refer to the pump's operation manual if necessary).
		The oil collection channel is blocked. Clear and clean the channel.
		The oil transfer hose is blocked – remove the blockage or change the hose.
4.	Cannot connect hydraulics	Check that the hydraulic connections are paired correctly.
		Check that the hydraulic connectors are not damaged.
		If the hydraulic connections are paired correctly and they connectors are in good working condition then the hydraulic lines are pressurized and therefore cannot be easily connected.
		To depressurize hydraulic lines: With 2 adjustable wrenches loosen the quick release hydraulic connector from the hose coupling and the pressure will be released along with some hydraulic oil. The hydraulic connector is screwed on to the hose coupling. Please contain hydraulic oil.
5.	Engine is overheating	Check fluid levels
		Check the cooler is working properly
		Check that the exhaust is breathing properly
6.	Pump is working but hydraulic flow is inconsistent, failing, or insufficient	Check that all connections are correct and secure
		Check that duty lift does not exceed pump's standard capability.
		Check that all hydraulic hoses are undamaged.
		Ensure the engine is running properly.
		Check all hoses, fittings and joints for air leaks
		Check hydraulic oil viscosity
		Check hydraulic oil level

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