

Oleopator P Oil-Water Separator

Installation Operation Maintenance



### **Oleopator P Series**

ACO Oleopator P is a range of oil separators that allow sediments and oils to be separated out simultaneously in one tank. Separator systems are available with a range of different sludge and oil capacities to suit specific site requirements.

Alarm sensor systems are available to notify personnel when maintenance is required. Oil level sensors are required for compliance with UL 2215.

#### **Class I Light Oil Separators**

An included coalescence unit traps oil drops that are too small to float to the surface naturally and coalesces them to form larger oil drops capable of being separated out. These separators are certified capable to EN 858 and capable of achieving effluent quality of 5 ppm.

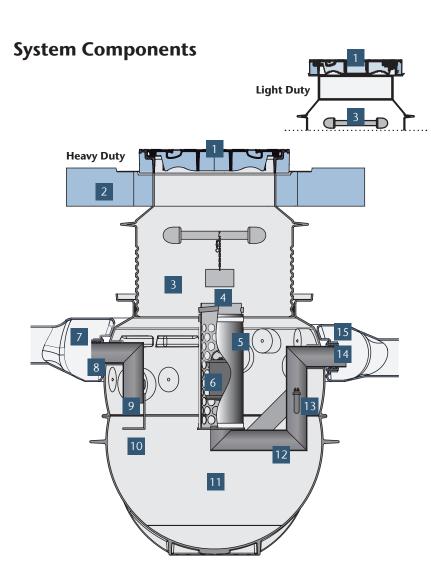
#### **Bypass Separators**

A bypass version is available for when full treatment of large flows is not required. The unit will fully treat flows until it reaches maximum inflow volume (GPM), at which point additional inflow bypasses the separator and diverts directly to the outlet pipe. Typically most pollutants are washed into the separator during the initial flow so effluent quality is not drastically affected.

#### **Product Information**

Detailed product information is available in associated spec info sheets, the EN100 ACO Environment Catalog, or www.acoenvironment.us.

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- 1. Cover
- 2. Load Distribution Plate\*
- 3. Extension Shaft
- 4. Identification Plate
- 5. Coalescence Unit
- 6. Float
- 7. Bypass Inlet\*\*
- 8. Inlet Connection

- 9. Inlet Pipe
- 10. Baffle Plate
- 11. Tank
- 12. Outlet Pipe
- 13. Sampler Connection
- 14. Outlet Connection
- 15. Bypass Outlet\*\*

<sup>\*</sup> Load Class D only. Cast in place by others.

<sup>\*\*</sup> Optional; sold as separate item.



#### **Safety Considerations**

The safety guidelines in this chapter are to be read before using the separator. Serious injuries or death could occur as a result of misuse.

#### 1.1 DESIGNATED USE

#### **Areas of Application**

Oleopator separators are designed to remove mineral light liquids from wastewater.

Applications where mineral oils or mineral light liquids are able to enter the sewer system should have separator systems connected downstream from drainage collection points. Such applications include gas stations, parking lots, roadways, car washes, engine washes, garages, vehicle recycling, scrap yards, fueling stations, tank pits and transformer stations

Stormwater from areas where no light liquids accumulate—such as roofs and courtyards—should not be fed into the separator.

Separators should be installed such that no light liquids can escape in the event of backflow from the sewer or automatic closure of the float. An automatic alarm may be required. Regulations may vary by state.

No soaps are allowed in water entering the separator, with the exception of specially-formulated soaps with short emulsification periods. No centrifugal pumps that lead to emulsification of oils are allowed prior to the separator.

#### Limitations

The separators are not to be installed for residential wastewater.

When delivering wastewater into the public sewer system, the local hydrocarbon limits should be observed. Further treatment may be required.

#### Foreseeable Misuse

No substances that pollute the water or limit the functionality of the separator should be introduced into the separator, including but not limited to the following:

- wastewater containing feces
- wastewater containing animal or vegetable greases
- wastewater in which a considerable amount of stable emulsions is present

#### 1.2 QUALIFICATIONS OF PERSONNEL

All work performed on the separator equipment is to be carried out by trained personnel.

#### 1.3 PERSONAL SAFETY EQUIPMENT

Personal safety equipment is necessary for a variety of works on the separator.

#### 1.4 RESPONSIBILITY OF OWNER

The owner is responsible for complying with the following points:

- Only operate the separator according to regulations and in proper conditions.
- Ensure that protection devices are functional.
- Adhere to a scheduled maintenance program and immediately repair faults. Only repair faults yourself if the measures are described in these operating instructions. Contact ACO for all other measures.
- Inspect data plate on the separator for completeness and legibility.
- Adequate personal safety equipment must be available and used.
- Provide complete and legible operating instructions at the separator's site of installation and training based on this.
- Only employ qualified and authorized personnel.

#### **HEALTH & SAFETY**

Safety instructions are intended to prevent injury to personnel or damage to equipment and must be read before any maintenance is performed.

The separated oils and any vapors are flammable and/or combustible. Care must be taken whenever the system is opened.

- All safety instruction labels must be replaced if they become detached or illegible.
- Gas concentrations MUST be tested before entering the separator; breathing apparatus is recommended for all personnel entering separator.
- Safety lines, harnesses and radios/ whistles are advised if entering separator.
- Smoking and naked lights are strictly forbidden anywhere in area surrounding the system.
- Installed devices (e.g. baffles, inlet and outlet parts, coalescence unit, etc.) are intended for operation of separator system and are not load bearing. They must not be used as steps, footholds or resting places for cleaning equipment etc.
- The separator system is defined as a Zone 0 Explosion Hazard Area. Only authorized, properly trained personnel are permitted to perform work on the electrical components of the separator (where used).
- Contact with wastewater containing light liquids—e.g. during maintenance—can lead to dry, irritated skin, skin infections, headaches, dizziness, nausea, vision problems, loss of consciousness, and—in serious cases—death. Ensure proper protective clothing is used and immediately wash any exposed skin.

# 2

#### Installation

Oleopator P separators are intended for in-ground installation. Care must be taken to determine correct installation to take into account site loadings and traffic patterns. Details are provided for both light duty and heavy duty applications.

Inspect Oleopator P upon delivery and before installation to check for damage that may have occurred during shipping or at the job site prior to installation.

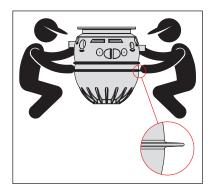
Light oil separators can be extremely large (depending upon flow and holding capacity). Ensure correct equipment is available for proper unloading, moving around site and lowering into required final position.

Remove floats and filters during installation and protect separator openings from site run-off as stones and debris may cause surface damage inside the separator.

#### 2.1 ONSITE HANDLING

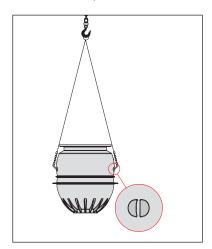
#### **Personnel**

Carry separator with two people using the circular ring as a grip and pipe connections for additional stability. Not suitable for single person lift.



#### Crane

Sling attachment points are provided for proper handling of the tank. Do not transport the separator with extension shaft sections and/or covers assembled.

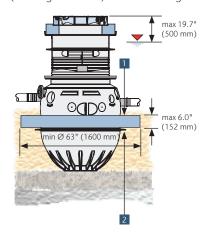


#### 2.2 GROUND CONDITIONS

Where groundwater is present, certain additional measures may need to be taken to prevent lifting.

#### Light Duty Applications - if

groundwater level is less than 19.7" (500 mm) below grade no additional measures are required. Where groundwater level is higher than 19.7" (500 mm) below grade, an on-site 63" (1600 mm) dia x 6" (152 mm) thick concrete ring 1 is cast in-situ over the large, lower tank ridge 2 (see diagram below) to avoid floating.



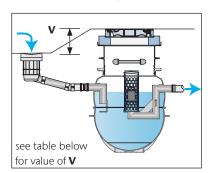
Heavy Duty Applications - no additional measures are required.

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#### 2.3 SEPARATOR POSITIONING

The purpose of a separator is to collect light oils for proper disposal. Timely emptying and maintenance is critical for effective operation. Alarm systems can help ensure light oils and sludge are removed in a timely fashion and can alert appropriate personnel to potential maintenance issues.

Alarm failure (or Failure to Action alarm alerts) and backflow from sewers are potential causes of operation error and pollution. These can be overcome in certain applications by adjusting the height of the separator relative to the collection vessel/drain. Super-elevated positioning is where the cover of the separator is higher by a minimum height (V) than the collection point and inlet.



	V - Super-elevated Positioning				
Size		Pedestrian in (mm)		Heavy Duty in (mm)	
		Cover Only	Cover & Shaft	Cover & Shaft	
EOPATOR P MODEL	NS3/450	1.78 (45)	2.75 (70)	5.90 (150)	
	NS3/670	1.78 (45)	2.75 (70)	5.90 (150)	
	N 3/950	1.78 (45)	2.75 (70)	5.90 (150)	
	NS6/660	1.57 (40)	2.56 (65)	5.71 (145)	
	NS6/1210	1.57 (40)	2.56 (65)	5.71 (145)	
10	NS10/1080	1.97 (50)	2.95 (75)	6.10 (155)	

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#### 2.3 SEPARATOR POSITIONING (cont.)

		INSTALLATION SITUATION		
Super-Elevated Positioning		No	No	
Ala	arm System	No	Yes	
	Ready for use			
		Normal operation	Normal operation	
OPERATING SITUATIONS	Max Oil = Float Closure = Blockage	Oil will leak from cover	Alarm will signal and oil will leak from cover	
	Backflow from sewer			
		Oil will leak from cover unless a backflow prevention pump is used downstream from separator	Alarm will signal and oil will leak from cover unless a backflow prevention pump is used downstream from separator	

		INSTALLATION SITUATION		
Super-Elevated Positioning		Yes	Yes	
Ala	arm System	No	Yes	
	Ready for use			
		Normal operation	Normal operation	
OPERATING SITUATIONS	Max Oil = Float Closure = Blockage	Oil will stay in separator, wastewater will flood from collection fixture	Alarm will signal and oil will stay in separator, wastewater will flood from collection fixture	
	Backflow from sewer	Oil will stay in separator, wastewater will flood from collection fixture	Alarm will signal and oil will stay in separator, wastewater will flood from collection fixture	

#### 2.4 INSTALLATION

#### **Light Duty Installations**

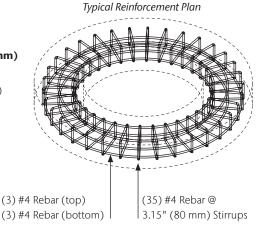
- Excavate area 60" (1524 mm) wider and 12" (305 mm) deeper than the separator; this allows for a 12" (305 mm) aggregate base compacted to Proctor density 97%.
- 2. Check level of unit and inverts of inlet/outlet pipes.
- Backfill in 12" (305 mm) layers around unit to the level of inlet/outlet pipes (backfill should be 2-16 mm sand/ gravel) and compact to Proctor density 97%; take care to not damage separator when compacting fill.
- Connect inlet/outlet pipes pipes should be resistant to hydrocarbons. Flexible couplings will be required as inlet/outlet pipes are metric dimensions.
- Inlet pipes should be installed with as few bends and slopes as possible to prevent blockages and reduce turbulence of incoming wastewater.
- Install extension shaft (if used) cut to required height, place provided seal in lowest notch of remaining section. Grease seal and tank collar with acidfree grease to ensure watertight seal.
- Install wiring conduit for alarm system (if used).
- 8. Recheck levels.
- 9. Continue to backfill and compact.
- Place cover with 4" (102 mm) deep concrete collar onto shaft/tank assembly.
- 11. Install alarm sensors (if used).

#### **Heavy Duty Installations**

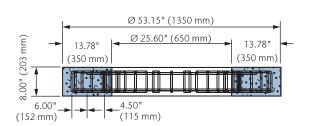
- Excavate area 60" (1524 mm) wider and 12" (305 mm) deeper than the separator; this allows for a 12" (305 mm) aggregate base compacted to Proctor density 97%.
- 2. Check level of unit and inverts of inlet/outlet pipes.
- 3. Backfill in 12" (305 mm) layers around unit to the level of inlet/outlet pipes (backfill should be 2-16 mm sand/ gravel) and compact to Proctor density 97%; take care to not damage separator when compacting fill.
- Connect inlet/outlet pipes pipes should be resistant to hydrocarbons. Flexible couplings will be required as inlet/outlet pipes are metric dimensions.
- Inlet pipes should be installed with as few bends and slopes as possible to prevent blockages and reduce turbulence of incoming wastewater.
- Install extension shaft cut to required height, place provided seal in lowest notch of remaining section. Grease seal and tank collar with acidfree grease to ensure watertight seal.
- Install wiring conduit for alarm system (if used).
- 8. Continue backfilling up to 8" (203 mm) below top of access shaft.
- Install reinforcement, form and pour concrete load distribution plate
   (203 mm) thick and extending
   13.75" (350 mm) around shaft in all directions (see next page for details).
- Install cover, frame and concrete adaptor plate to ensure it is held securely in place.
- 11. Install alarm sensors (if used).

#### Load Distribution Plate Ø 53.15"/25.60" x 8.00" (1350 mm/650 mm x 203 mm)

Concrete: 5,000 psi (35 MPa) Concrete Steel: #4 Rebar (10 M) Concrete Cover: 1.18" (30 mm)



#### **Cross-Section**





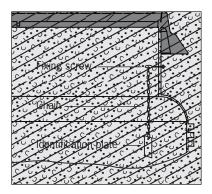
#### **Initial Set-Up/Commissioning**

#### 3.1 PRIOR TO FILLING THE SYSTEM

- Ensure all required air and water tests are completed before finished installation of unit.
- All system components—baffles, coalescence units and internal piping must be inspected to ensure that nothing is missing, loose or damaged.
- Install provided identification plate in the maintenance shaft as shown in the diagram below. This will assist in future maintenance and ordering of consumables etc.

Identification plate provides:

- Separator type identification
- Nominal size
- Class
- Number of the LGA Test report
- Volume of separator and sludge trap
- Maximum storage volume and maximum thickness of light oil layer
- Maximum permissible sludge thickness





#### 3.2 FILLING SEPARATOR SYSTEM

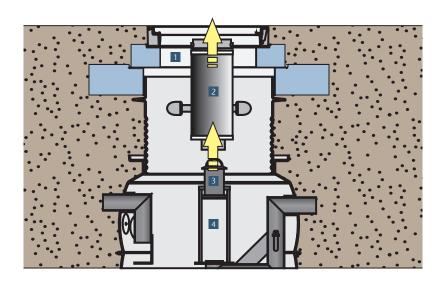
- System MUST NOT be filled until installation is complete and all mortared and sealed joints have been allowed to cure properly.
- System should be cleaned before use.
- Float must be removed before the separator is filled. Failure to do so may cause the outlet pipe to be blocked by the float and improper functioning of the separator may occur.

#### Removing Float & Coalescent Unit

- 1. Lift the coalescence unit 2 out of separator via extension system. 1
- 2. Remove float 3 located in the supporting cage. 4
- Store coalescence unit and float in water, in safe place until separator is filled and they are required for reinstallation.

#### **Filling Procedure**

- 1. Ensure inlet and outlet valves are open.
- Fill the separator with clean water, either via manhole cover or inlet/ trench drain.
- 3. When the separator is full, water will start to flow out of the outlet; this can be identified from the outlet sampling chamber/hose (if used), or when water reaches the outlet invert using a depth gauge stick.
- 4. Allow water to continue to run to check for blockages in the outlet pipe. If water depth remains constant then no blockage exists. If water starts to back-up, then an investigation into the cause of blockage is required.
- 5. Refit float and coalescent unit.
- 6. Fit and check alarm sensors if used.



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#### **Operation**

ACO Oleopator P is designed to be easy to operate with minimal intervention required.

#### 4.1 ENTERING THE SEPARATOR

All relevant local accident prevention regulations must be strictly observed when entering a separator. There is no need to enter a separator for regular maintenance.

Size NS 3 to NS 10 Separators can be entered via maintenance shaft located above the float cage. The following steps ensure easy accessibility:

- 1. Clean out separator sludge/oils.
- 2. Remove the coalescence unit (Class I separators only).
- 3. Remove the float.
- 4. Pull the float cage from the holder and remove it (if possible).

The separator can now be entered.

Once all work has been carried out, ensure original condition of separator is reinstated:

- Place the float cage back in the holder (taking care to properly align pins in the cage).
- 2. Replace float after the separator has been filled.
- 3. Install the coalescence unit (Class I separators only).



#### 4.2 OIL/SLUDGE LEVEL SENSORS

An optional alarm system makes operation easier and ensures compliance with UL2215. It does not replace visual maintenance but ensures timely disposal of oil and/or sludge to guarantee continued operation of the system.

Sensors will signal when:

- Oil has reached 80% maximum capacity (once oil reaches 100% capacity the float will sink and close the outlet pipe)
- Sludge has reached 50% maximum capacity (once sludge reaches 100% capacity the inlet pipe will become blocked)
- When liquids in the separator reach a specific level, alarm indicates that the outlet pipe is blocked

When any of these events occur a signal is sent to the building management system which can send out audio, visual and SMS alerts to ensure maintenance can be carried out before the separator system fails.



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#### Maintenance

#### **5.1 MAINTENANCE SCHEDULE**

Table below provides a recommended schedule of maintenance and inspection to ensure trouble-free operation of the separator.

Note: Refer to 4.1 Entering the Separator (pg 13) before maintenance is undertaken.

Measures	What must be done?	Who should do it?	Interval
Visual Inspection & Maintenance	Check proper functioning of self-actuating closure and coalescence unit in the separator  Measuring thickness and volume of oil layer separated out at top of separator  Measuring height of sludge layer in sludge trap  Empty and clean separator as required (see disposal requirements)  Remove any coarse floating material  Inspect all components of alarm system (if used)  Immediately rectify any faults identified  Report findings and any work carried out in operating	Properly Qualified Operative	Maximum every 6 months and immediately after any large oil spill incident and/ or excessive rainstorm.
Disposal Service	The separator must be emptied when:  80% of the maximum oil storage volume has been reached, and/or  50% of the max sludge trap volume has been reached	Properly Authorized Disposal Company	As required, but at least every year. Observe local municipal and environmental requirements.
General Inspection	Separator must be emptied and contents properly disposed of Inside of separator must be cleaned Check proper functioning of selfactuating closure Check water-tightness of the system Check condition of installed devices and interior surface condition	Properly Qualified Technician	Prior to initial use and then every five years.

#### 5.2 CLEANING COALESCENCE UNITS

Coalescence unit must be removed periodically for cleaning. The separator is not functional during this process.

- 1. Ensure inlet/outlet valves are closed.
- Pull the coalescence unit up above water level in the separator, using a hoist where necessary.
- Allow water to drip into the separator before removing the coalescence unit.
- Clean the coalescence unit in a bucket or other appropriate area to contain wastewater for proper disposal (contaminated water can be poured back into the separator).
- Completely remove all dirt\* by spraying with clean water from either:
  - a) minimum ¾" hose, under mains pressure (minimum 58 psi), or
  - b) high pressure device using cold water at a maximum of 870 psi.
- Rinse thoroughly with a high pressure device with max 870 psi and 140 °F (60 °C).

#### \* Only use cleaning products when absolutely necessary. Ensure cleaning agent will not damage the separator by consulting cleaning product MSDS details for suitability.

#### **Removing Coalescence Mats**

Coalescence mats are attached to a supporting basket at the top and bottom of the coalescence unit with tensioners and Velcro strips (fluffy side outwards). Once these supports are removed, mats can be unwound from basket. Mats only need to be removed from the basket if soiling is particularly bad.

#### **Replacing Coalescence Mats**

To replace coalescence mats, wrap the mat around the supporting basket and replace tensioners and Velcro straps (fluffy side outwards). When wrapping the mat around the basket ensure no openings are left that could allow wastewater to flow through untreated. Avoid wrapping coalescence mats too tightly to prevent damage.

Tip – Lengthy operational hold-ups can be prevented by swapping dirty coalescence units for clean back-up/spare coalescence unit. The dirty coalescence unit can be stored in a water-filled container until—to prevent dirt drying hard onto unit—it can be cleaned.

#### 5.3 OIL/SLUDGE DISPOSAL

Maximum levels for emptying the separator are when:

- 80% of maximum oil storage has been reached, and/or
- 50% of maximum sludge trap volume has been reached

The identification plate shows maximum thicknesses of each layer (the identification plate is located inside the separator).

Even if levels remain below these limits, the separator should be emptied at least every year.

- Contents of the separator must be disposed of by an authorized disposal company.
- Care must be taken not to damage inside walls and internal equipment of the separator.
- Rinse down walls and the base of the separator using hot water to loosen hardened solids and suction out leftover slurry.
- Refill the separator with clean cold water, following initial set-up procedure (See 3.2 Filling Separator System on pg. 12).

#### 5.4 GENERAL INSPECTION

Prior to initial use and thereafter at regular five-year intervals, a properly qualified technician\* must inspect the separator to ensure it is in good condition and operating properly.

The separator must be completely emptied and cleaned before general inspection can be carried out.

An integral part of every general inspection is a water-tightness test carried out in accordance with EN 858-2.

- 1. Close inlet & outlet pipes.
- 2. Fill the separator with water until full.
- 3. Check for changes in water level indicating possible leaks.
- 4. Investigate/repair/replace as required.
- \* "Properly qualified technician" is defined as equipped staff of independent companies, independent experts, or other institutions with certified special technical knowledge on the operation, maintenance and testing of the separators described here.



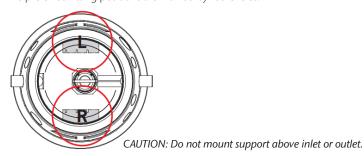
#### **Alarms Assembly & Initialization Instructions**

#### 6.1 FITTING POSITION OF SENSOR SUPPORT

The illustrations below depict correct fitting position of sensor support with separators without and with top system. The sensor cables or the extension cables (optional) are laid up to the monitoring device through an in-situ empty tube.

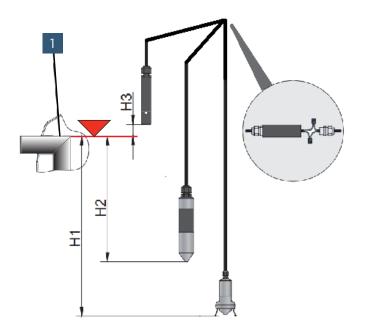
# Separator with Access Shaft Separator with Access Shaft

The preferred fitting positions are marked by red circles.



#### **6.2 SENSOR SETTING**

The illustration below depicts the completely mounted sensors. The detail shows the extension of the sensor cable; also see hanging instructions in the idOil-30 Installation and Maintenance Manual. The height of the sensors is relative to the upper edge of the inlet pipe 11 and must be set per the table and diagram below.

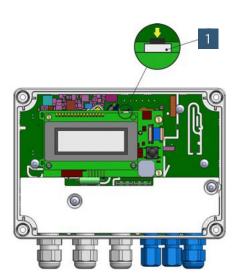


Oleopator P Model	H1 Sludge Sensor Height in (mm)	H2 Oil Sensor Height in (mm)	H3 High Level Sensor Height in (mm)
NS3/450	30.32 (770)	11.02 (280)	1.38 (35)
NS3/670	34.25 (870)	11.02 (280)	1.38 (35)
NS3/950	38.19 (970)	11.02 (280)	1.38 (35)
NS6/660	34.65 (880)	12.99 (330)	0.59 (15)
NS6/1210	46.46 (1180)	12.99 (330)	0.59 (15)
NS10/1080	46.46 (1180)	12.99 (330)	0.59 (15)

#### **6.3 SIMPLE COMMISSIONING (MANDATORY)**

To initialize alarm, a commissioning procedure must be followed:

- 1. Connect all required sensors.
- 2. Power up alarm unit.
- 3. Press sensor identification button on panel.



#### 6.4 ADVANCED COMMISSIONING (OPTIONAL)

Advanced commissioning allows the operator to perform the following actions:

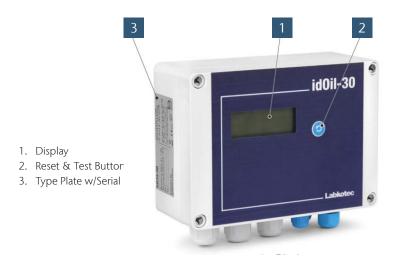
- Set Date/Time
- Add Unit Name
- Access Alarm Log

Advanced commissioning is performed as follows::

- 1. Press reset button on panel twice to initialize panel wifi signal.
- Connect phone/tablet/computer to panel wifi signal "idOil30". Network password
  will be five zeros (00000) + final eight digits of serial number found on panel. (i.e. if
  serial number is 8540564\_1112118], the password would be 000001112118])
- 3. Open web browser of your device and enter the web address of: 192.168.0.1
- 4. A connection to the alarm unit has now been formed, settings can be updated, wifi signal will auto shutoff after 10 minutes of non-use.

Note: Certain settings may require an additional password on the browser interface; this password is **1234** 

See Labkotec idOil30 installation manual included with alarm for additional instructions and details.



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