Highland Tank

Rectangular Oil/Water Separators

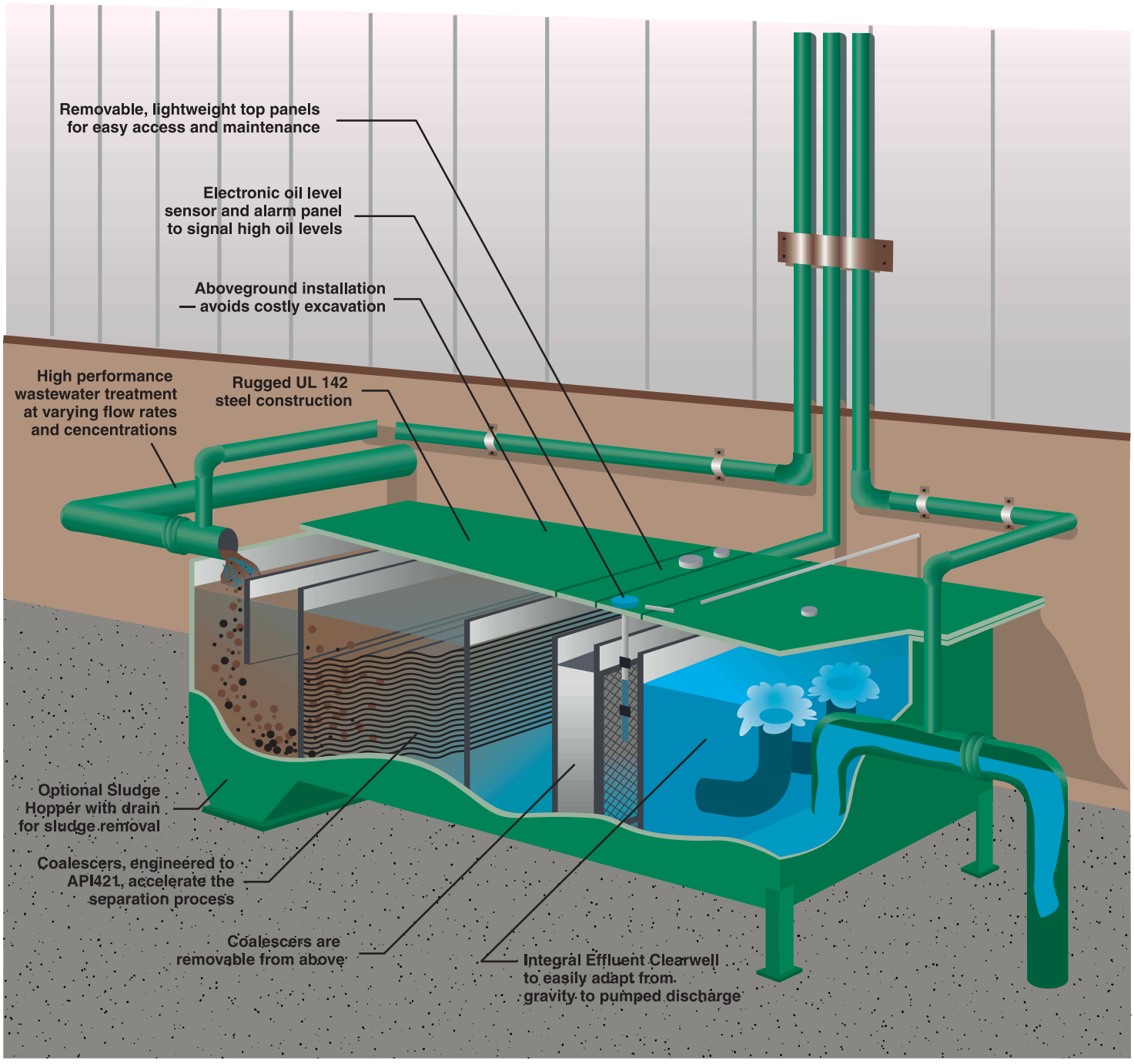
UL-SU-2215 Approved

Engineered Stand Alone and Packaged Aboveground Systems

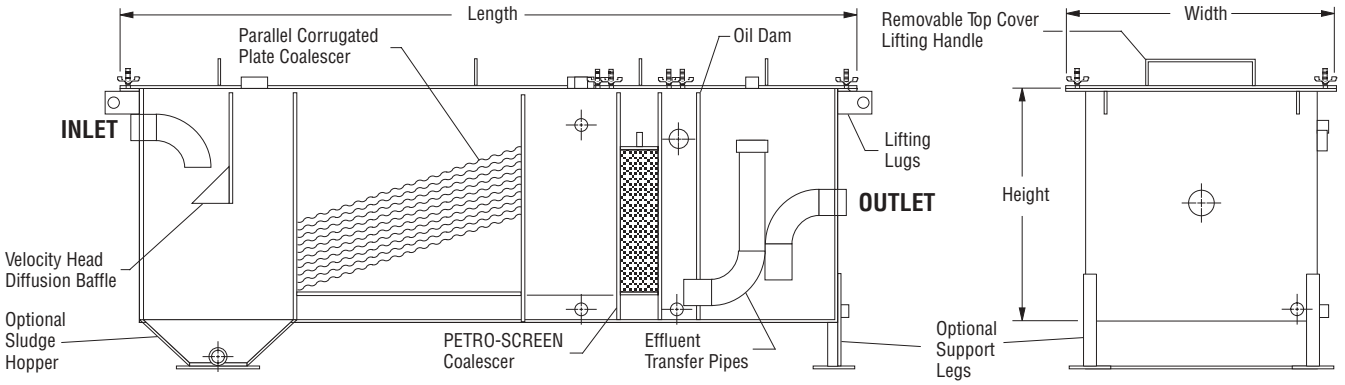
High-Performance Separators with Superior Structural Strength

- ***UL Approved HTC Models Certified for 10 ppm oil and grease discharge****
- ***Available in sixteen popular sizes - Custom systems available***
- ***Flow rates ranging 5 to 1,200 GPM***
- ***Patented internal baffles and coalescers for proven performance***
- ***Aboveground, grade-level or belowground vaulted installation***
- ***Rugged all-steel construction for superior structural strength***
- ***Removable, vapor-tight top covers for access and maintenance***
- ***Superior product compatibility***
- ***Exterior insulation and immersion heaters available for cold climate installations***
- ***Available with complete equipment packages including level sensors, alarm/control panels, and pump systems***

**Other non UL Labeled models are also available.*



Custom Designed and Fabricated to Your Needs



Highland Rectangular Oil/Water Separators

Highland Rectangular Oil/Water Separators are designed for the removal of free- floating oil, grease, and settleable oily coated solids from oil-water mixtures. These separators incorporate Highland's patented means of primary separation. Highland oil/water separators meet or exceed federal oil and grease discharge limitation requirements and can be engineered to meet more stringent state and local codes.

Typically Regulated Facilities

- Airport and Aircraft Services
- Automobile Dealers
- Bus Companies
- Construction Companies
- Emergency Services
- Garbage Carters
- Gasoline Service Stations
- Hazardous WasteSites
- Industrial Facilities
- Military and Govenrnment Facilities
- Municipalities
- Parking Areas and Buildings
- Petroleum Marketing Facilities
- Railroads
- Trucking and Trnsportation Companies
- Utility Switch Yards

Vehicle services associated with each of these facilities might include:

- Fueling Facilities
- Repair and Maintenance Shops
- Wash Areas

Model R-HTC	Nominal Capacity (Gallons)	Spill Capacity (Gallons)	Flow Rate (gpm)	Dimensions L x W x H	Inlet/Outlet Diameter	Approximate Wt. (lbs.)
100	100	40	5	4'0" x 1'6" x 3'0"	1"	600
200	200	80	10	5'0" x 2'0" x 3'0"	2"	900
300	300	100	25	7'0" x 2'0" x 3'0"	3"	1,200
600	600	200	50	9'0" x 3'0" x 3'0"	4"	1,900
900	900	300	75	10'0" x 3'0" x 4'0"	6"	2,850
1,000	1,000	400	100	11'0" x 4'0" x 4'0"	6"	3,620
2,000	2,000	750	200	12'0" x 5'0" x 5'0"	8"	6,550
3,000	3,000	900	300	18'0" x 5'0" x 5'0"	10"	6,780
4,000	4,000	1,200	400	18'0" x 6'0" x 5'0"	10"	7,730
5,000	5,000	1,500	500	20'0" x 6'0" x 6'0"	10"	9,520
6,000	6,000	1,800	600	19'2" x 7'0" x 6'0"	10"	11,800
7,000	7,000	2,100	700	19'2" x 7'0" x 7'0"	10"	13,600
8,000	8,000	2,400	800	19'2" x 6'0" x 6'0"	10"	15,000
9,000	9,000	2,700	900	18'10" x 8'0" x 8'0"	12"	17,000
10,000	10,000	3,000	1,000	20'11" x 8'0" x 8'0"	12"	17,680
12,000	12,000	3,600	1,200	19'10" x 9'0" x 9'0"	12"	21,000

Weights listed are for HTC models. Contact Highland for all other weights. Plate spacing and orientation may vary depending on site conditions.

Highland Tank Oil/Water Separators carry the following patents and approvals:

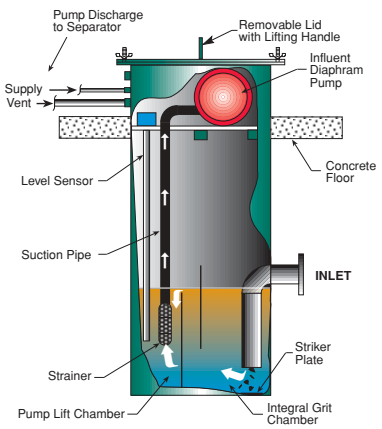
U.S. Patent # 4,722,800 • Canadian Patent # 1,296,263

Approved by: City of New York, Board of Standards and Appeals Under Calendar Number 1215-88-SA • Metropolitan Dade County, FL, Code #93-0512.01 • Massachusetts Board of State Examiners of Plumber and Gas Fitters Approval Code P1-0594-25 • Passed DIN 1999 Parts 4 & 5; DIN 38 409 Part 18 Testing and Analysis

Influent & Effluent Handling Systems

Highland custom fabricates oil/water separators to satisfy your specific needs. In addition, we can design an influent or effluent/product handling system to help maximize the oil/water separator operation. The following information illustrates some of the influent and effluent/product handling options available.

DSB Deep Sump Catch Basin



DSB - Deep Sump Basin

The DSB is a complete packaged system consisting of the Deep Sump Basin with Integral Grit and Pump Lift Chambers, Influent Pump Package, and Model HTC Rectangular Aboveground Oil/Water Separator.

DSB Systems are available in two standard flow rates. The DSB-300 sized for 0-25 GPM and the DSB-600 sized for 0-50 GPM. Higher flow rate systems are also available.

Standard Features

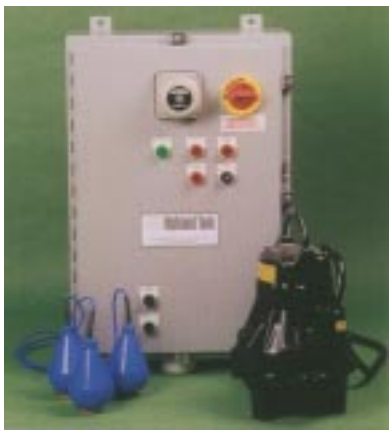
- DSB- Deep Sump Basin with Inlet
- Pneumatic Influent Diaphragm Pump with Air Filter Regulator, Suction Pipe and Strainer
- R-HTC-300 or R-HTC-600 Oil/Water Separator with Level Sensor and Controls
- New Systems or Retro-Fit Existing Sites

Pump and control packages are available in a variety of NEMA ratings and for explosion-proof environments.

Influent Pump Packaged System

Non-emulsifying influent pumps, sensors and controls are available. The wastewater is automatically pumped into the oil/water separator for treatment. Duplex pump systems and controls are also available

Effluent Pump Packaged System



Highland can customize separators to your specific needs with specialized effluent pump out systems. The submersible wastewater pumps and controls are mounted in the integral effluent compartment and are available for simplex and duplex systems.

Oil Pump-Out Packaged System

Highland can incorporate an Oil Pump-out system with pump, sensors and controls. The pump can be mounted on the tank or mounted remotely. The self-priming centrifugal pumps are available with explosion-proof components.

Advanced Secondary Treatment System

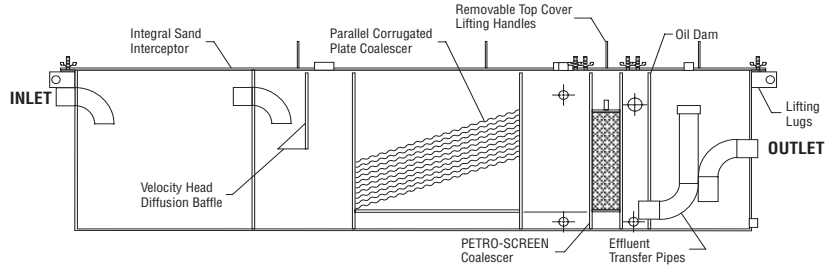
Highland's Advanced Secondary Treatment Systems are used in applications where strict water quality discharges are mandated. These convenient, compact, modular systems use a proprietary media to remove impurities from wastewater by physical adsorption.

Pre-Engineered Design Options

Separator installations vary greatly with each location. Highland custom fabricates oil/water separators to satisfy your specific needs. The following information illustrates some of the design options available.

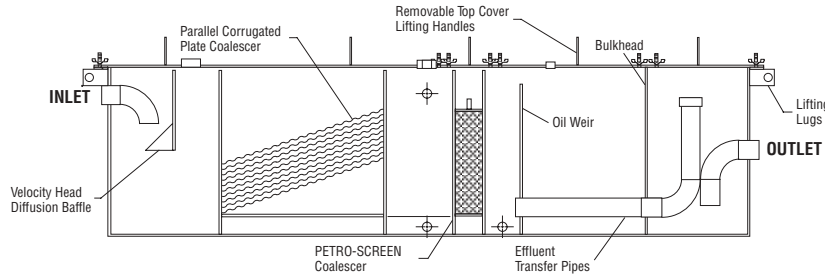
Series G

Series G oil/water separators feature an integral sand interceptor compartment to permit sand and gravel to settle out before the wastewater enters the separation chamber.



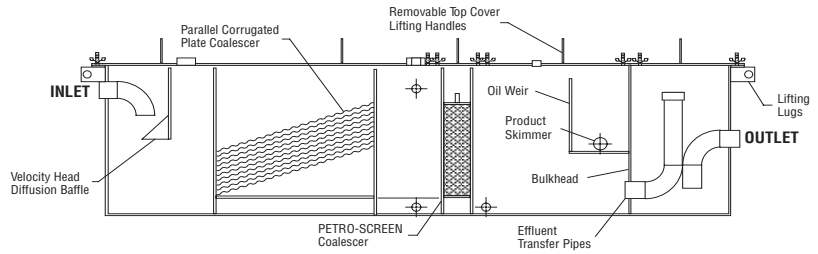
Series H

Series H oil/water separators feature an integral product sump for storing separated oil. A special product weir permits the removal of only the skimmed oil. The oil is removed by pump or gravity through a side port to a remote oil storage tank. The effluent is discharged either by pump or gravity flow.



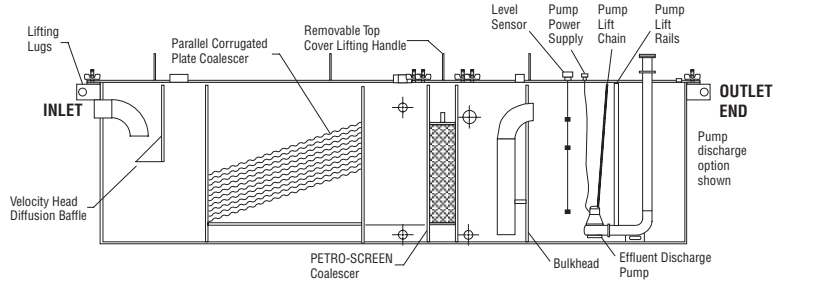
Series I

Series I oil/water separators feature an integral product reservoir for receiving skimmed oil. A special product weir permits the removal of only skimmed oil. The oil is removed by pump or gravity through a side port to a remote oil storage tank. The effluent is discharged either by pump or gravity flow.



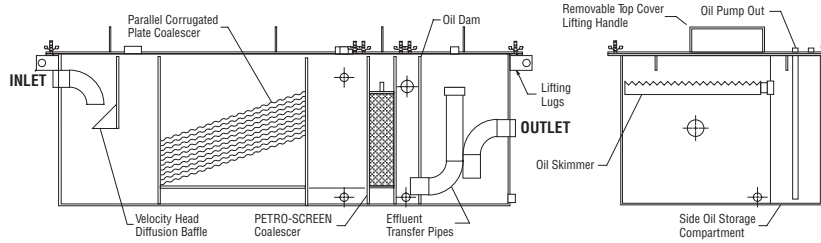
Series J

Series J oil/water separators feature an integral effluent pump-out chamber with level controls to operate a pump at prescribed levels. The pumped effluent can then be routed through Highland's advanced secondary treatment system to further reduce the ppm count.

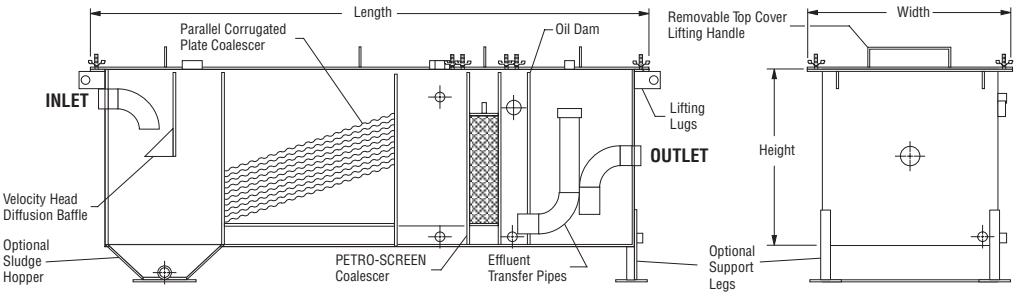


Series S

Series S oil/water separators feature an integral side product sump for storing separted oil. The special side product sump permits the removal of only the skimmed oil by pump-out. The effluent is discharged either by pump or gravity flow.



R-HTC General Arrangement



Model R-HTC with optional Sludge Hopper for 10 ppm oil/grease discharge (shown)

Recommended Guideline Specifications
Provide and install _____ Highland Tank _____ gallon capacity, UL-SU-2215 Listed, Model R-HTC Oil Water Separator. Separator(s) shall be:
_____ (L) x _____ (W) x _____ (H).

Application
The separator shall be designed for gravity separation of free oils (hydrocarbons and other petroleum products) along with some settleable solids from waste water. Separator shall be installed above-ground, at grade level or below ground in a vault. The source of the influent to the separator shall be gravity flow from surface runoff and spills.

Performance Characteristics
The separator shall be listed to Underwriter's Laboratories UL-SU-2215. Provide certification documentation showing criteria under which the system was tested. The separator shall also be evaluated and tested in accordance with DIN 1999. Certification for DIN 1999 shall also be provided.

Influent Characteristics
The separator shall be designed for intermittent and variable flows of water, oil or any combination of non-emulsified oil-water mixtures ranging from zero to _____, the units rated GPM flow. Operating temperatures of the influent oil in water mixture shall range from 40° to 100° F. The specific gravities of the oils at operating temperatures shall range from 0.68 to 0.95. The specific gravity of the fresh water at operating temperatures shall range from 1.00 to 1.03.
Effluent Characteristics
The free oil and grease concentration in the effluent from the separator shall not exceed 10 mg/l (10 ppm). To achieve this goal, it will be necessary to remove all free oil droplets equal to and greater than 20 microns.

Design Criteria
Construction and performance cerfication of the separator shall be in strict accordance with Underwriter's Laboratories Subject 2215. Separator shall bear UL-SU-2215 label.

Separator shall be designed in accordance with Stokes Law and the American Petroleum Institute Publication 421, "Monographs on Refinery Environmental Control - Management of Water Discharges, Design and Operation of Oil-Water Separators."

Separator shall be the standard product of a steel tank manufacturer regularly engaged in the production of such equipment. No subcontracting of tank fabrication shall be permitted.

Separator shall be fabricated, inspected and tested for leakage before shipment from the factory as a completely assembled vessel ready for installation.

Separator shall be rectangular, horizontal, atmospheric-type steel vessel intended for the separation and storage of flammable and combustible liquids. The separator shall have the structural strength to withstand static and dynamic hydraulic loading while empty and during operating conditions. The Oil Water Separator shall have an oil storage capacity equal to 30% of the total vessel volume and an emergency oil spill capacity equal to 60% of the total vessel volume.

Separator shall consist of inlet and outlet connections, non-clogging flow distributor and energy dissipator device, stationary under flow baffle, presettling chamber for solids, sludge baffle, oil coalescing chamber with removable inclined parallel corrugated plate and polypropylene impingement coalescers to optimize separation of free oil from liquid carrier, oil dam, effluent transfer pipes, effluent downcomer at the outlet end of the separator to allow for discharge from the bottom of the effluent clearwell only, access cover(s) for each chamber, fittings for vent, oil and sludge pump-out, sampling, gauging, drain, and lifting lugs.

General Description
Separator shall be a rectangular inclined parallel corrugated plate oil water separator with removable top cover(s). The separator shall be a pre-packaged, pre-engineered, ready to install unit consisting of:

An influent connection _____ inch. An internal influent nozzle at the inlet end of the separator, located at the furthest diagonal point from the effluent discharge opening.

A velocity head diffusion baffle at the inlet end to:
- reduce horizontal velocity and flow turbulence
- distribute the flow equally over the separator's cross sectional area
- direct the flow in a serpentine path to enhance hydraulic characteristics and fully utilize all separator volume
- completely isolate all inlet turbulence from the separation chamber

A sediment chamber to disperse flow and collect oily solids and sediments.

A sludge baffle to retain settleable solids and sediment preventing them from entering the separation chamber.

An Oil Water Separation Chamber containing a removable inclined parallel corrugated plate coalescer to:
- shorten the vertical distance than an oil globule has to rise for effective removal.
- enhance coalescence by generating a slight sinusoidal (wave like) flow pattern thereby causing smaller, slow rising oil globules to coalesce together on the undersides of the plates forming larger, rapidly rising sheets of oil.
- direct the paths of the separated oil to the surface of the separator.

and a removable "PETRO-SCREEN™" polypropylene impingement coalescer designed to intercept oil globules ≥ 20 microns in diameter.

An oil dam with two (2) effluent transfer pipes.

An effluent downcomer at the outlet end of the separator, to allow for discharge from the bottom of the clearwell only.

An effluent connection _____ inch.

Fittings for vent, interface/level sensor, and waste oil and sludge pump-out, sampling, drain, and gauge.

Removable top cover(s) with gaskets and bolts.

Lifting lugs at balancing points for handling and installation.

Identification plates: Plates to be affixed in prominent location and be durable and legible throughout equipment life.

Internal surfaces commercial sand-blast, coated with 10 mils DFT Polyurethane or as specified.

External surfaces commercial sand-blast, coated with Polyurethane or as specified.

For information and specifications on models other than the R-HTC, contact Highland Tank or an authorized factory representative.

Accessories and Options
Oil level controls to activate audible and visual alarms at predetermined oil levels. All components are intrinsically safe and enclosed in NEMA IV enclosures.

Oil level/liquid level controls to start and stop an explosion proof oil pump and to activate audible and visual alarms at predetermined oil levels. All components are intrinsically safe and enclosed in NEMA IV enclosures.

Slotted pipe oil skimmer which can be manually adjusted to drain off precisely the amount of oil desired.

Effluent level controls to start and stop an explosion proof effluent pump and to activate audible and visual alarms at predetermined levels in the effluent clearwell. All components are intrinsically safe and enclosed in NEMA IV enclosures.

Consult Highland Tank for:
- Special coatings (interior or exterior)
- I-Beam Saddles or Skids
- Integral Oil Compartment
- Sludge Hopper
- Level Controls
- Heating Systems, Electric or Steam
- Storage Tanks and Accessories

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