



Model
API

API
API Design Oil Water Separators

The API Series oil water separators are designed per the American Petroleum Institute (API) separator design guidelines.

Pan America Environmental API Series, steel oil/water separators are a gravity differential separation device for removal of free and finely dispersed oil droplets from oily wastestreams. The design follows the American Petroleum Institute's (API) #421 Design & Operation of Oil/Water Separators Manual, February 1990.

API performance: 100mg/L, 150-micron free, dispersed and non-emulsified oil droplets.

The typical use of the API separator is to reduce inlet loads of oil and suspended solids in refinery wastewater. Following the API further treatment may be required, i.e. coalescing oil water separator as a polishing step and treatment of dissolved organic materials with biological treatment, and/or other treatment technologies (DAF etc.).

The API steel design is just one of 8 different oil/water separator designs from Pan America Environmental that can be used singularly or in combination with other treatment processes such as emulsion cracking, DAF & clarifier pretreatment.

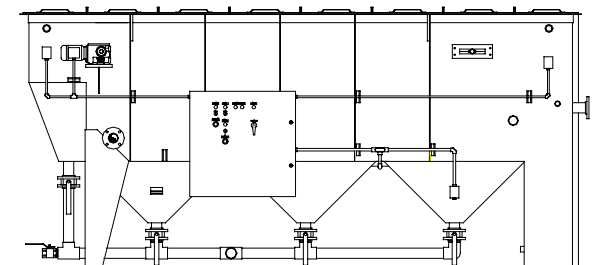
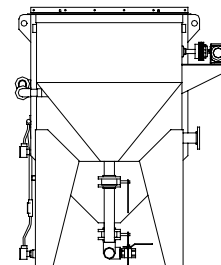
The API can be installed above, flush with or below grade. Conversion to a DAF can also be accomplished for flotation where needed.

Features:

- ◆ A-36 carbon steel
- ◆ Adjustable water weir
- ◆ Integral oil reservoir
- ◆ Influent diffuser
- ◆ Expandable effluent chamber
- ◆ Sealed/gasketed covers
- ◆ Internal/external epoxy coatings
- ◆ Lifting lugs
- ◆ Flat Bottom
- ◆ Skid mounted
- ◆ Multi-section cover

Typical applications:

- ◆ Groundwater remediation
- ◆ Mobile separation system
- ◆ DAF/Clarifier pretreatment
- ◆ Power plant water treatment
- ◆ Refinery process water
- ◆ Aircraft wash racks
- ◆ Machining coolant oil removal
- ◆ Tank farm tank bottoms
- ◆ Vehicle washwater treatment
- ◆ R.O. Filter pre-treatment
- ◆ Oil spill recovery
- ◆ Trench water treatment
- ◆ Bilge water treatment
- ◆ Hydraulic fluid tank de-watering



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Gravity Separation

The API separator separates via gravity and the density differential of liquids per Stokes Law, which defines the rise rate of an oil droplet based on its density and size. Typically, the difference between the specific gravity of the oil and water is much closer than the specific gravity of the suspended solids and water. Therefore, the design of the API separator is based on the difference in the specific gravity of the oil to be separated and the wastewater. Using this criteria results in most suspended solids settling in the API. API effluent is then treated further in most refinery wastewater treatment plants.

Per API guidelines design criteria are:

Depth to width ratio: A minimum depth to width ratio of 0.3 to 0.5 is specified so that separator does not increase droplet rise time to reach the water surface.

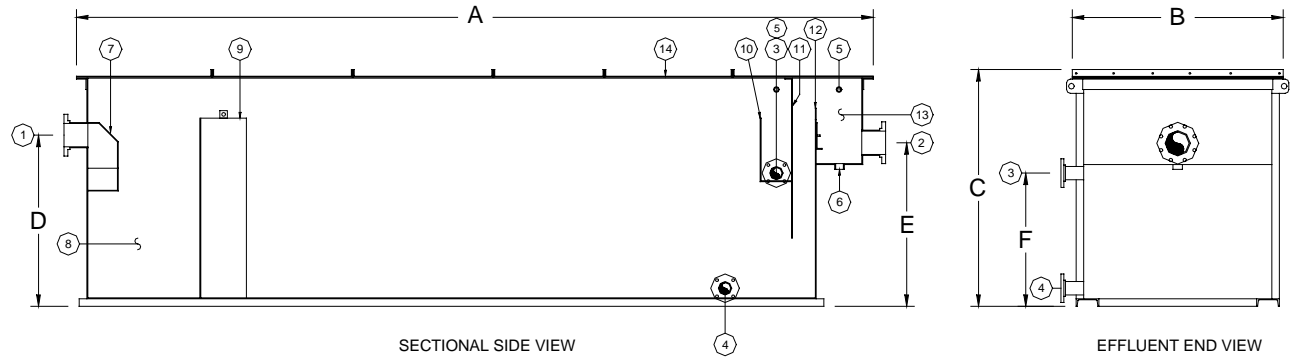
Length to width ratio: A minimum length to width ratio of 5:1 is specified for API separators to keep flow characteristics homogeneous, reducing short circuiting effects.

Maximum channel width and depth: The maximum API separator channel width is 20 ft; maximum depth is 8 ft.

Horizontal velocity: Maintaining a horizontal velocity of no more than 3.0 ft/sec to minimize turbulence and its interference with the separation process.

Influent distributor: Minimization of high influent velocity into the API separator, and possible short circuiting associated with these high velocities, a diffuser directs flow across the width and depth of the inlet chamber.

Oil droplet size: Most oil droplets in refinery wastewaters are 150 micron or larger. The API design standards were based on this droplet. Droplets smaller than 150 micron typically escape API separators and further treatment processes, unless allowances are made in the sizing of the API separator to remove these smaller particles.



| MODEL | Length | Width | Height | Influent | Effluent | Oil Outlet | Oil Chamber (Gals) | Influent Size | Effluent Size | Drain Fitting Size | Oil Fitting Size | Empty Weight | Operating Weight | Flow Rate |
|---------|--------|--------|--------|----------|----------|------------|--------------------|---------------|---------------|--------------------|------------------|--------------|------------------|-----------|
| | A | B | C | D | E | F | | | | | | | | |
| API-15 | 10'-0" | 4'-0" | 4'-3" | 2'-2" | 1'-8" | 1'-8" | 15 | 2" | 2" | 2" | 2" | 1880 | 5660 | 15 |
| API-25 | 13'-0" | 4'-6" | 4'-3" | 2'-2" | 1'-8" | 1'-8" | 20 | 3" | 2" | 2" | 3" | 2600 | 6800 | 25 |
| API-50 | 16'-0" | 4'-6" | 4'-3" | 2'-2" | 1'-8" | 1'-8" | 25 | 4" | 4" | 2" | 3" | 3200 | 8365 | 50 |
| API-100 | 26'-0" | 5'-6" | 5'-2" | 2'-7" | 2'-1" | 2'-1" | 25 | 6" | 6" | 3" | 3" | 6050 | 20300 | 100 |
| API-150 | 26'-0" | 7'-6" | 5'-6" | 2'-10" | 2'-4" | 2'-4" | 35 | 6" | 6" | 4" | 4" | 8250 | 29770 | 150 |
| API-200 | 33'-0" | 7'-6" | 5'-9" | 3'-0" | 2'-6" | 2'-6" | 35 | 6" | 6" | 4" | 4" | 10150 | 41100 | 200 |
| API-250 | 42'-0" | 7'-6" | 5'-9" | 3'-0" | 2'-6" | 2'-6" | 50 | 8" | 8" | 4" | 4" | 12500 | 52200 | 250 |
| API-300 | 43'-0" | 9'-6" | 5'-10" | 3'-2" | 2'-8" | 2'-8" | 75 | 8" | 8" | 4" | 6" | 15345 | 69000 | 300 |
| API-400 | 50'-0" | 9'-6" | 5'-10" | 3'-2" | 2'-8" | 2'-8" | 75 | 8" | 8" | 4" | 6" | 17660 | 80130 | 400 |
| API-500 | 62'-0" | 9'-6" | 5'-10" | 3'-2" | 2'-8" | 2'-8" | 100 | 10" | 10" | 4" | 6" | 21910 | 99710 | 500 |
| API-600 | 60'-0" | 10'-6" | 6'-2" | 3'-6" | 3'-0" | 3'-0" | 250 | 10" | 10" | 4" | 6" | 25235 | 128080 | 600 |

| Item | Qty | Description | Item | Qty | Description | Item | Qty | Description | Item | Qty | Description | Item | Qty | Description |
|------|-----|-------------|------|-----|--------------|------|-----|-----------------------|------|-----|--------------------|------|-----|------------------|
| 1 | 1 | Inlet | 4 | 1 | Drain | 7 | 1 | Inlet Diffuser | 10 | 1 | Oil Skimmer/Reserv | 13 | 1 | Effluent Chamber |
| 2 | 1 | Outlet | 5 | 4 | Vent 1" NPT | 8 | 1 | Influent Chamber | 11 | 1 | Oil Baffle | 14 | 1 | Cover |
| 3 | 1 | Oil Outlet | 6 | 1 | Drain 2" NPT | 9 | - | Flopak Media (option) | 12 | 1 | Water Weir | | | |



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