User Guide for the Breaking Wave OTL

To install the digital asset for the breaking wave, first go to **File > Install Digital Asset Library** in a Houdini scene. Then specify the path where the wave.otl is contained, use the **Install Library To** option to choose where the type library would be available, then press **Accept**. [21]

The breaking wave digital asset exists within the **Geometry Level**, so lay down a **Geometry Object** in the **Scene Level**, then dive inside it, delete the default **File SOP**. Press the **Tab** key and type **Breaking Waves,** select and press **Enter** to put down the asset.

Breaking Waves is used for generating breaking ocean waves. This asset allows the user the create the geometry, animation, shading and whitewater for the wave.

Parameters

Wave Geometry

Wave Height	This is the height of the wave.
Wavelength	This is the length of a wave from one crest/or trough to another.
Translate	The location to put down the breaking wave.
Smooth	This is the overall smoothness of the surface. It controls the amount the wave surface is subdivided.
Fractal Depth	This is the number of iterations of the fractal Brownian motion noise on the wave surface.
Roughness	Fractal roughness.
Height	Displacement amount of the height of the fractal noise on the wave surface.
Frequency	Noise frequency.
Offset	Noise offset.

Animation

Control Type	Choose whether the animation is using an Auto or a Custom control.

Auto

Center	This is the point along the center of the cross-section wave profile curves that the wave starts to break.
Span	How wide the breaking wave is.
Falloff	Adds non-linear variation to the wave shape. When the Falloff is greater than 1, it has an ease out effect on the breaking wave. If the Falloff is less than 1, the life-cycle of the breaking wave tends to be shorter.
Time	Controls the evolution of a breaking wave. 0 means at the beginning of the breaking wave's life-cycle. As the value increases, the wave shape evolves and deforms out of the centre line of the surface. Time = 1 means that the wave reaches the very end of its life-cycle.
Speed	How fast the wave is moving forward.

Custom

Wave Profile (s)	Controls the evolution of a single breaking wave profile curve.
Forward (s)	This is the forward motion of a single breaking wave profile curve.

Whitewater

Mist

Display	This is whether to display the particles or not.
Birth Rate	Number of particles to emit.
Life Expectancy	How long the particle will live (in seconds).
Life Variance	Particles will live the number of seconds in Life expectancy, plus or minus this number of seconds. Use 0 for no variance.
Initial Velocity	Set or add to velocity attribute.
Variance	Variance to the initial velocity set above
Attractor Scale	This is how strong the attractor (moving along the surface) affects the particles moving direction.
Turbulence	Number of iterations of fractal noise to add.
Noise Frequency	Spatial frequency of noise field in X, Y, and Z.
Noise Amplitude	Maximum value of noise field.
Gravity	This is how strong the gravity affects the particles.

Splash

Display	This is whether to display the particles or not.
Birth Rate	Number of particles to emit.
Life Expectancy	How long the particle will live (in seconds).
Life Variance	Particles will live the number of seconds in Life expectancy, plus or minus this number of seconds. Use 0 for no variance.
Initial Velocity	Set or add to velocity attribute.
Variance	Variance to the initial velocity set above
Splash Up	How high the particles will travel.
Splash Spread	How wide the particles will travel.
Jitter	Overall scale of the jitter effect.
Gravity	This is how strong the gravity affects the particles.

Shading

Surface

Diffuse

Diffuse Intensity	The contribution of diffuse to the material.
Diffuse Color	This is the diffuse color.
Diffuse Roughness	This controls the size or spread of the diffuse contribution.

Lighting Effects

Shadows

Shadow Color	This value is used to tint the color of the shadow.

SSS

Subsurface Intensity	This is used to control the intensity of the returned color.
Subsurface Color	The color used to tint the color returned from the subsurface scatter calculation.
Index of Refraction	This is the Index of Refraction used in the subsurface scattering calculation to determine how muchlight bends as it pass through the surface.
Depth	This specifies how far the light travels after it pass through the surface.
Ensure Faces Point Forward	This toggle will change the normal to face forward towards the camera. It is recommended this toggle be on.

Specular

Specular Intensity	A multiplier for the specular contribution to the material.
Specular Color	The specular highlight color.
Specular U Roughness	This value controls the size or spread of the specular highlight. If Anisotropic is selected, this value controls the specular highlight in only the U direction.
Specular V Roughness	If Anisotropic is selected, this value controls the specular highlight in only the V direction. It is ignored with any other specular function.
Specular Sharpness	This value controls the sharpness of the edge of the specular highlight. It is used only if Glossy specular is selected.
Specular Type	A selector for the specular function.

Reflections

Reflection Intensity	A multiplier for the reflection contribution to the material.
Reflection Tint	This is a tint color for reflections.

Ray Trace

Refraction Intensity	A multiplier for the refraction contribution to the material.
Refraction Tint	This is a tint color for refraction.
Index of Refraction	This determines how much the ray bends as it passes from one material into another. Usually for water this is 1.333.
Jitter Amount	This controls how randomly the samples are distributed.
Ray Bias	This is typically a small number used to help solve self-intersection issues.
Area Samples	The number samples to calculate. The more samples, the better the quality, the slower the render.

Environment Map

Environment Map	If there is the path to a texture here and ray trace is turned off, then this map is used to calculate the reflection contribution. If ray trace is on and there is a texture, then the texture color is returned, when the ray does not hit anything.
Transform Space	he reflection ray used to do the look up in the map is transformed into this space.
Background Color	This color is returned when the ray does not hit anything and there is no environment map specified.

Displacement

Frequency	This is the scale of the noise pattern. Larger values give smaller, but not more detailed, patterns. Smaller values will benefit from higher Octaves values.
Offset	This vector positions the noise on the object in x, y and z.
Noise Bias	This value shifts the median value of the noise by passing it through a power function. Values greater than 1, will dampen the noise down, whereas values less than 1 will sharpen the contrast between the noise values.
Lower Noise Range	Control the size of the space between the rough areas.
Upper Noise Range	Control the height of the rough areas.