
Flow

Flow

Shader pack for Unity by Davit Naskidashvili

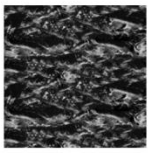
v 1.7

Contents

About shader

Using this shader it is possible to create texture flow effects using flow maps.

Simple texture

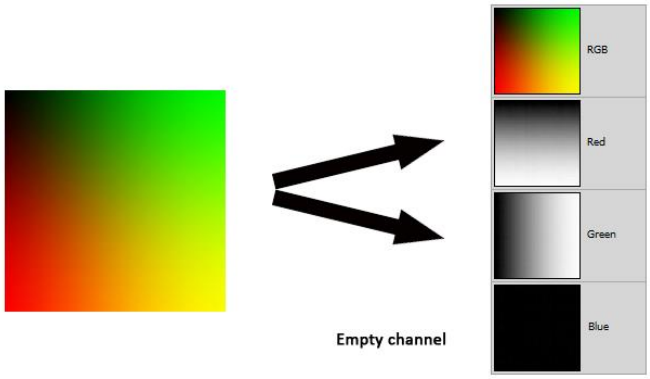


Flow map texture

Resul flow effect

What is Flow map

Flow map is a special texture like normal map, but only with two channels – **red** and **green**, blue channel is empty (zero).



Red channel determines strength by which texture is scrolling (moving) in **X** direction.

Green channel determins strength by which texture is scrolling (moving) in **Y** direction.

So flow map is a texture containing a unique 2D flow vectors for every point on the surface.

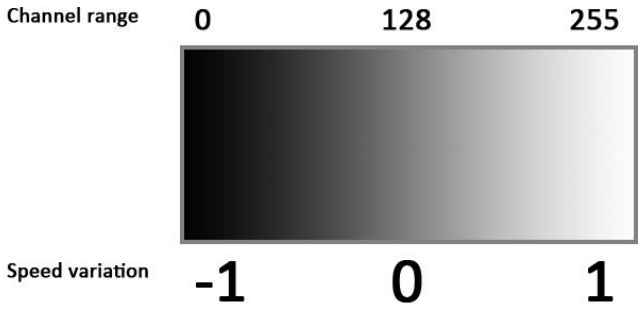
This shader does not generate or make flow map, but allows using them to create flow effect.

To get flow map there are special programs and tools over the net, some of them are free .

Free flow map generators:

- **Flowed** by ALGOholic - http://algoholic.eu/flow-field-editor-still-alive/
- **FlowMap Painter** by teckArtist - http://teckartist.com/?p=96
  Google for more apps and info.
  Also flow map can be painted yourself via Photoshop or similar program.
  For creating demos and examples for this shader – **FlowMap Painter** was used.

Note: Flow vectors strength and direction are stored inside channel:



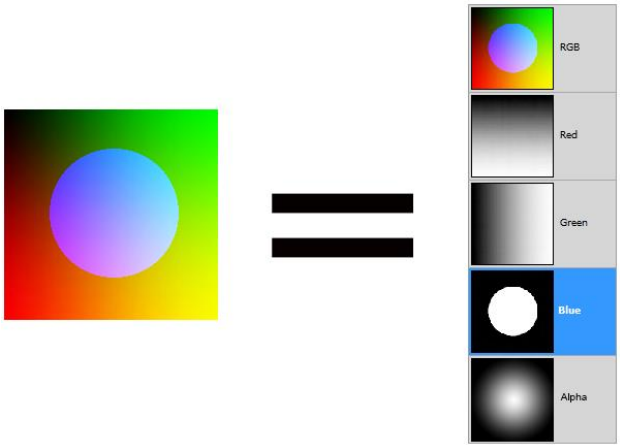
Before start using the shader

Prepare flow map

First it is necessary to prepare flow map. It was mentioned above that flow map is a texture, where **red** and **green** channels are used and **blue** channel is empty. It is also necessary to add alpha channel.

Blue – channel determines flow effect visibility

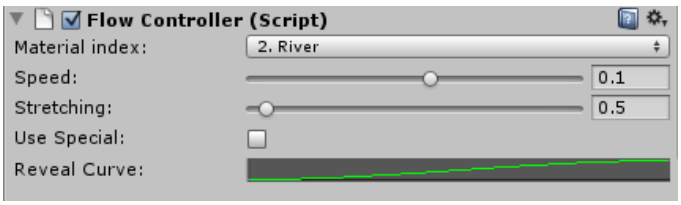
Alpha - channel determines flow revealing and its direction (from white to black). With this channel it is available to animate flow revealing/hiding.



Note: If **blue** or **alpha** channels are empty(black, zero), there will not be flow effect(invisible) and image remain non movable, also if it is totally white entirely texture will flow.

Add controller script

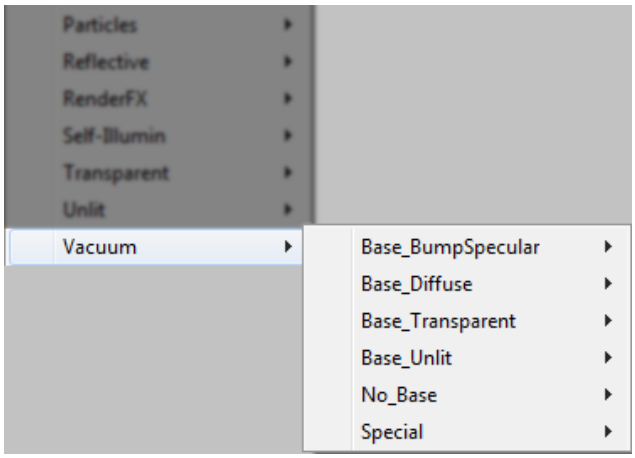
Script – ***Flow Controller*** – controls materials behavior and should be attached to the same object. Without script flow shader **will not work**.



- **Material index** - Material index which is controlled by this script.
- **Speed** controls flow speed and direction. Negative value changes direction to the opposite.
- **Stretching** controls texture stretching length.
- **Use Special** – is described below in section ***Special*** and is used only by special type of flow.
- **Reveal Curve** – Allows to animate Flow Reveal Size parameter.

Shader description

Flow shader remains inside folder ***Vacuum*** and contains several subfolders describing shaders type.



There are three types of **Flow:**

- Flow without base (folder: *No_Base*)
- Flow with base (folder: *Base_BumpSpecular, Base_Diffuse, Base_Transparent, Base_Unlit*)
- Special flow (folder: *Special*)

Flow without base

Flows without base are main and the simplest shaders in the pack and are inside subfolder – ***No_Base***.

Here we have 7 shaders:

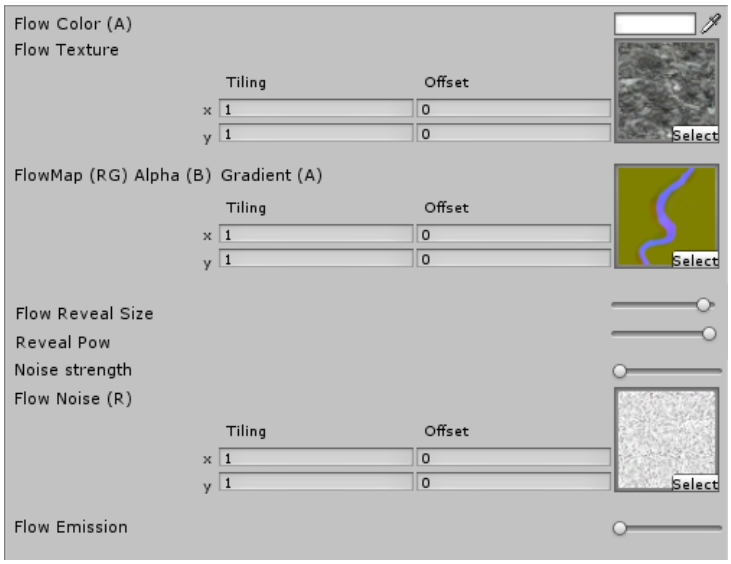
- Flow_Diffuse
- Flow_Specular
- Flow_BumpSpecular
- Flow_Reflective
- Flow_Refractive
- Flow_Paralax
- Flow_Unlit

All flow shaders in the pack use parameters from these group, but with adding additional features. Knowing these 6 shaders means you know all the shaders in the pack.

Shaders in these group are transparent.

Flow_Diffuse

It is a core for all shaders and has parameters used by all others.



- Flow Color – Color of the texture (Flow Texture). **Alpha** determines entirely flow effects transparency and reveals distortion.
- Flow Texture – Texture which is flowed.
- FlowMap(RG) Alpha(B) – FlowMap texture storing flow direction data inside **red** and **green** channels. **Blue** channel determines flow effect's visibility (see section - *Prepare flow map*).
- Flow Reveal Size – Size of gradient value, stored inside Flow Maps **alpha** channel. Parameter changes [-1, 1] and reveals or hides flow effect.
- Reveal Pow – Math power of gradient (**alpha** channel). This parameter is not available in mobile group.
- Noise strength – Strength of noise texture.
- Flow Noise – Texture adds noise and creates various effect above flow texture. Reads data from **red** channel.
- Flow Emission – Emission strength of the shader.

Flow_Specular

Same as *Flow_Diffuse* but with two additional parameters

- Flow Specular Color (A) – Specular color and intensity (**alpha**).
- Flow Shininess – Specular shinines.

Flow_BumpSpecular

Same as *Flow_Specular* with bump map.

Flow_Paralax

Same as *Flow_BumpSpecular* with **Parallax Height** parameter.

Flow_Reflective

Same as *Flow_BumpSpecular* but with two additional parameters

- Reflective Color(A) – Reflective color and intensity (**alpha**).
- Reflective Cubemap – Cubemap to reflect.

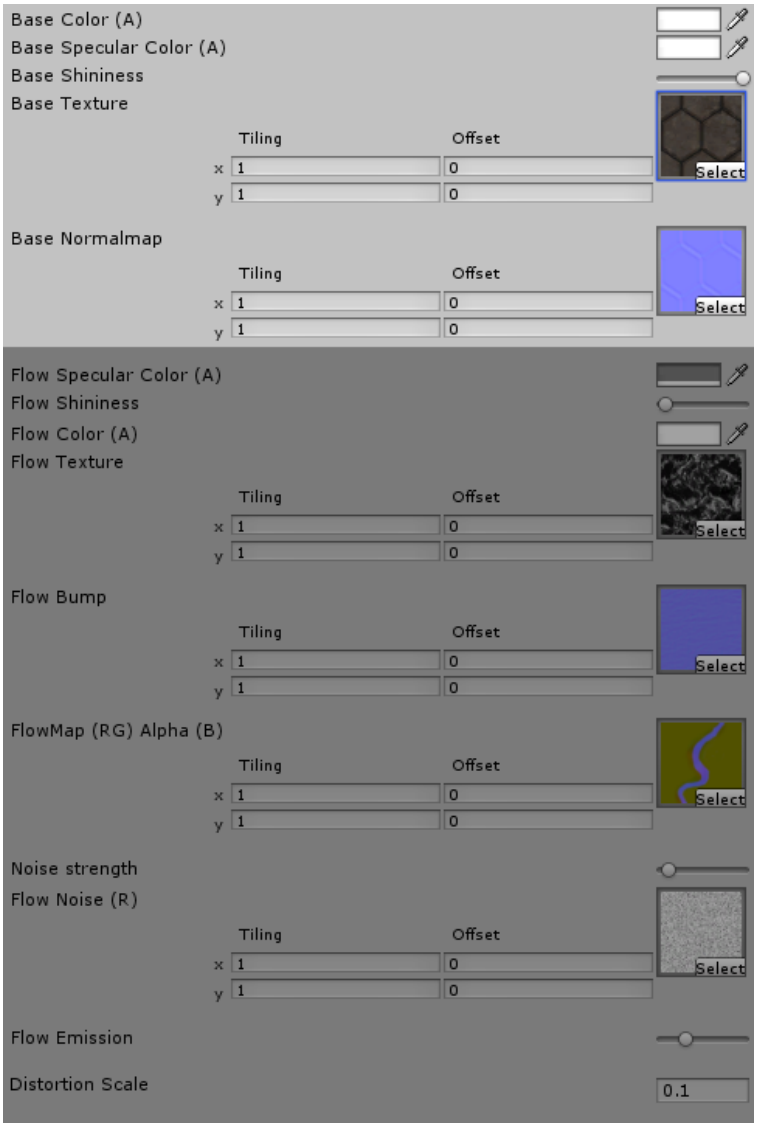
Flow with base

Flows with base are same as - *flow without base*, but with one more layer for projecting flow effect on this surface. This type of shaders are inside subfolders:

- Base_BumpSpecular – Base surface has parameters for **bump** and **specular.**
- Base_Diffuse – Only **diffuse** slot is available for base surface.
- Base_Transparent - Base surface is **transparent**. Flow effect transparency is controlled by flowap's **blue** channel (see section - *Prepare flow map*).
- Base_Unlit - **Unlit** version of shader. Base surface and flow effect are not effected by light.

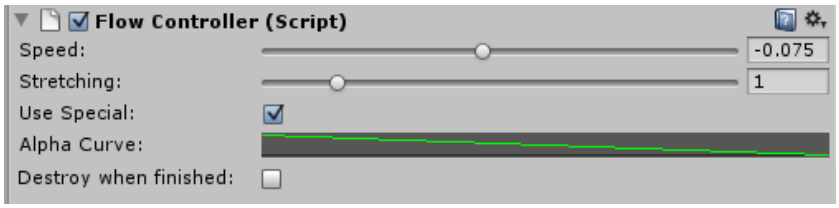
Base surface parameters are self explanatory.

Base colors **alpha** is for mesh's **alpha** controlling.



Special Flow

Special type of shader where flow effect remains only ones. With other type of shader it is able to create continual (looping) flow effect, but this type of shader will stop after certain amount of time, determined by **Stretching** parameter of the script – Flow Controller. **Speed** controls speed of time out, when flow effect stops.

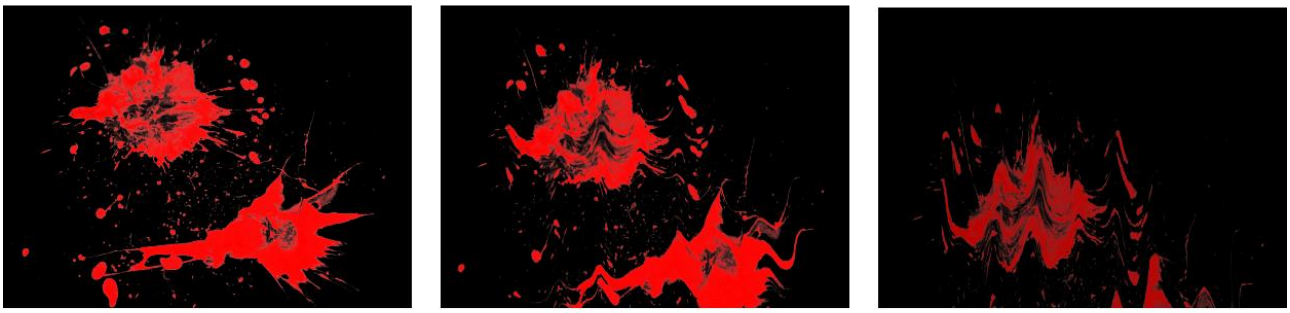


To activate **Special Flow** inside **Flow Controller** script check – Use Special. This toggles field **Alpha Curve**, which is used for fading out entirely mesh with flow effect. It overrides **Flow Color**'s alpha value inside shader.

- Destroy when finished - Will destroy gameobject when time is out.

Note: Using **Special** check of the script is allowed only with these type of shader, otherwise effect is not predictable. Becouse shader is addative type Flow maps **blue** channel has no effect, effects visibility is controlled by **Flow Texture**'s alpha channel instead.

Example of special flow:



With fading alpha:

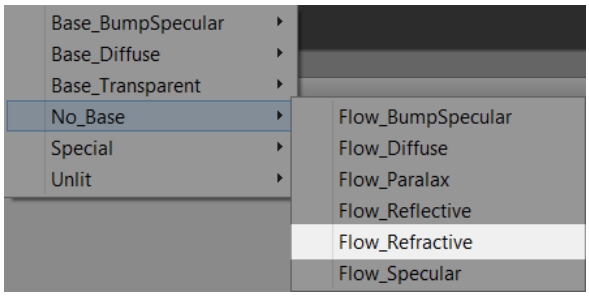
Refractions

There are two types of refraction in Flow:

- Realtime refraction with GrabPass (requires Unity Pro)
- Fake refraction (does not require Unity Pro)

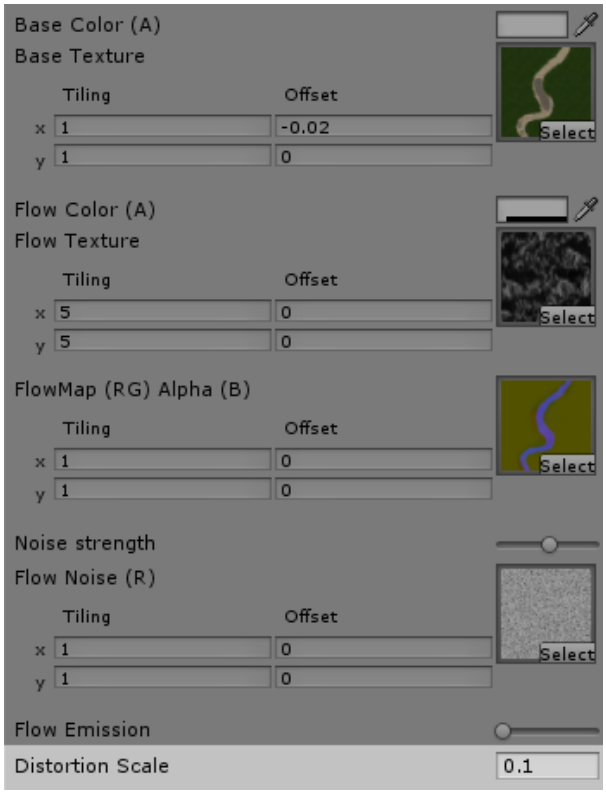
Flow has only two realtime refraction shaders, separated in their groups.

- No_base
- Special



All other group shaders support fake refractions. To reveal distortion reduse – FlowColor's alpha.

All mobile shaders support refractions.

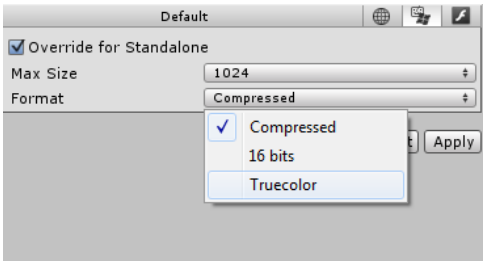


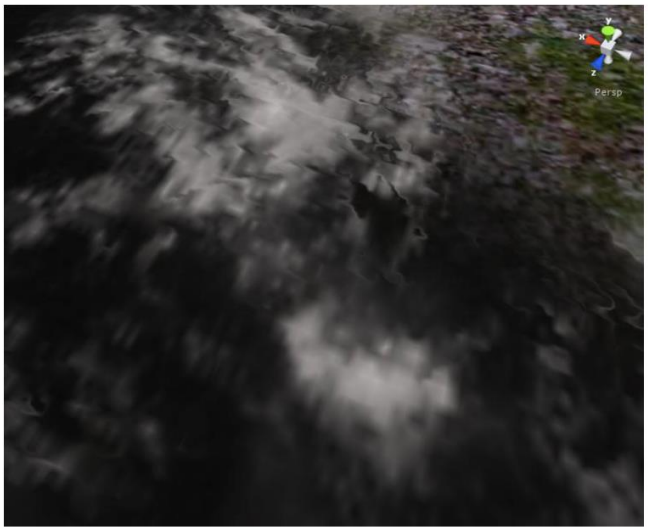
Mobile Flow

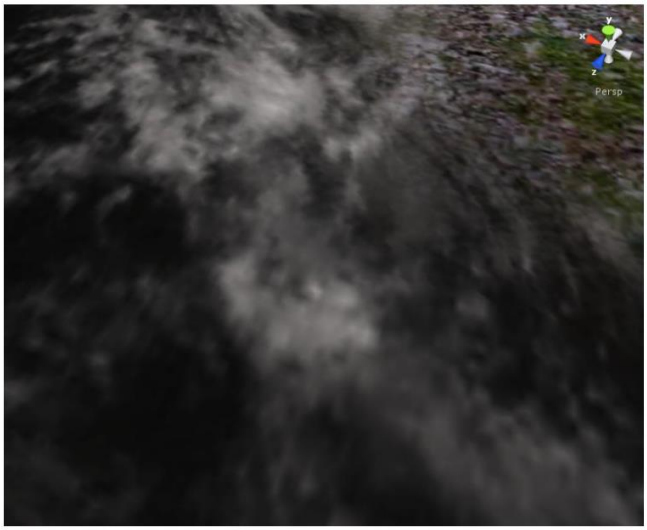
Mobile version of flow works the same way, but with some restrictions:

- Mobile shaders do not support reflection, parallax, emission and noise parameters.
- No specular color
- Specular map inside flow texture **alpha** channel
- Specular lighting directions are approximated per vertex
- Normalmap uses Tiling/Offset of the Base texture
- No Deferred Lighting support
- Supports ONLY 1 directional light. Other lights are completely ignored.

Note: If imported flowmap texture generates some bad ares, change textures compression to **TrueColor**. Or use small values inside FlowController script – **Stretching**.







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2014