

## PRO Effects: FPS Muzzle flashes & Impacts

```
public class AutoDestroyer : MonoBehaviour
Component to destroy object with delay from OnEnable event.

    private float destroyDelay
    Destroy delay in seconds.

public class CollisionPlacer : MonoBehaviour, ICollisionHandler, IAutoPlacer
Component that helps to place object on collision point or by raycast to ground.

    private LayerMask mask
    Raycast mask.

    private float autoPlaceMaxDistance
    Raycast max distance

    public void CollisionEnter(Collision collision)
    ICollisionHandler.CollisionEnter implementation. Places at average point from
    collision contacts.

    public void AutoPlace()
    IAutoPlacer.AutoPlace implementation. Places at raycast hit point with direction
    Vector3.down.
```

```

public class FlashbangPostprocess : MonoBehaviour, IBlinder
Flashbang blind postprocess component.

    private float blindDuration
    Total blind duration.

    private AnimationCurve whiteScreenCurve
    White screen blending curve.

    private AnimationCurve lastFrameCurve
    Last frame blending curve.

    private Material material
    Post process material.

    private AnimationCurve distanceAmountCurve
    Blending amount curve by distance.

    private float maxDistance
    Max distance to blind.

    private AnimationCurve angleAmountCurve
    Blending amount curve by angle (dot result values [-1;1]).

    public void Blind(float amount, Vector3 position)
    IBlinder.Blind implementation. Blinds attached camera.
    amount - amount multiplier
    position - blind source position

public class ParticleGroupEmitter : MonoBehaviour
Particle group emitter component.

    private ParticleSystem[] particleSystems
    Particle systems array.

    private int countMultiplier
    Particle count multiplier.

    public void Emit(int count)
    Emits particles from particleSystems array with count multiplier.
    count - count multiplier

public class ParticleGroupPlayer : MonoBehaviour
Particle group player component

    private ParticleSystem[] particleSystems
    Particle systems array.

    public void Play()
    Plays particle systems from particleSystems array.

    public void Stop()
    Stops particle systems from particleSystems array.

```

```
public class SimpleDecal : MonoBehaviour, IDecal
Simple decal component.
```

```
private bool canRotate
Determines decal can be rotated or not.
```

```
public bool CanRotate
Determines decal can be rotated or not.
```

```
public class SmokeController : MonoBehaviour
Smoke controller component.
```

```
private Color startColor
Start color of particles.
```

```
private Color endColor
End color of particles.
```

```
private float startEmission
Start emission of particles.
```

```
private float endEmission
End emission of particles.
```

```
private float shapeRadiusStart
Start shape radius of particles emission.
```

```
private float shapeRadiusEnd
End shape radius of particles emission.
```

```
private float duration
Duration of animation.
```

## Knife/Distortion

Shader creates warp distortion by normal of space.

Texture2D \_NormalMap - first normal map for distortion.  
Texture2D \_NormalMap2 - second normal map for distortion.  
Float \_DistortionAmount - amount of distortion by first normal map.  
Float \_DistortionAmount2 - amount of distortion by second normal map.  
Texture2D \_AlphaMask - mask of distortion amount (red channel only).  
Float \_TwoNormals - enables second normal map from inspector. Keyword \_TWONormals\_ON.  
Vector \_DistortionSpeed - speed of uv animation of first normal map.  
Vector \_DistortionSpeed2 - speed of uv animation of second normal map.  
Float \_Debug - disables distortion and shows alpha mask. Keyword \_DEBUG\_ON  
Float \_ScreenSpaceUV - determines how normal maps will be sampled (in uv space or in screen space). Keyword \_SCREENSPACEUV\_ON  
Float \_Tiling1 - tiling of first normal map.  
Float \_Tiling2 - tiling of second normal map.

## Knife/Fire PBR

Shader is for creating fire effect with particles (Lit).

Shader requires Custom Vertex Streams in particle system. You should add Custom1.xy (TEXCOORD0.zw).

Custom.x - rotation of particle (used to eliminate noise rotation).  
Custom.y - noise softness multiplier.

Texture2D \_Noise - noise texture to create fire gradient.  
Texture2D \_Alpha - alpha mask texture (red channel only)  
Color \_Color0 - gradient first color.  
Color \_Color1 - gradient second color.  
Float \_Opacity - opacity multiplier of particle.  
Float \_NoiseSoftness - softness of noise gradient.  
Vector \_NoiseSpeed - speed of noise uv animation.  
Float \_DepthFade - smooth depth intersection distance.  
Float \_Rotation - rotation of uv coordinates.  
Vector \_Offset - offset of uv coordinates.  
Float \_AlphaSoftness - softness of alpha mask.

## Knife/Fire

Shader is for creating fire effect with particles (Unlit).

Shader requires Custom Vertex Streams in particle system. You should add Custom1.xy (TEXCOORD0.zw).

Custom.x - rotation of particle (used to eliminate noise rotation).  
Custom.y - noise softness multiplier.

Texture2D \_Noise - noise texture to create fire gradient.  
Texture2D \_Alpha - alpha mask texture (red channel only)  
Color \_Color0 - gradient first color.  
Color \_Color1 - gradient second color.  
Float \_Opacity - opacity multiplier of particle.  
Float \_NoiseSoftness - softness of noise gradient.  
Vector \_NoiseSpeed - speed of noise uv animation.  
Float \_DepthFade - soft depth intersection distance.  
Float \_Rotation - rotation of uv coordinates.  
Vector \_Offset - offset of uv coordinates.  
Float \_AlphaSoftness - softness of alpha mask.

### Knife/Liquid/Errosion

Shader is for liquid particle imitation with dissolve animation.

Shader requires Custom Vertex Streams in particle system. You should add Custom1.x (TEXCOORD0.z).

Custom.x - particle dissolve amount.

Texture2D \_MainTex - main mask (red channel only).

Texture2D \_Normal - normal map.

Float \_Errosion - dissolve amount.

Float \_Softness - softness of dissolve effect.

Float \_Smoothness - smoothness of particle.

Float \_NormalScale - normal scale.

CUBE \_ReflectionMap - fake reflection cubemap.

Float \_Specular - specular amount.

Color \_Tint - main color.

Float \_SpecularNormalMul - fake reflections distortion by normal.

Float \_FadeDistance - soft depth intersections distance.

Float \_FaceCull - face culling mode.

Color \_SpecularColor - specular color.

### Knife/Particle Channel Packed

Shader for particle texture sheet animation that packed into 4 channels of texture.

For example, if 1 channel has 4 rows and 8 columns, so total animation frames count is  $4 \times 8 \times 4 = 128$ .

Shader requires Custom Vertex Streams in particle system.

Custom.x (TEXCOORD0.z) - current frame number.

Custom.y (TEXCOORD0.w) - emission multiplier or subtrahend (Emission dissolve)

Rotation (TEXCOORD1.x) - rotation of particle (used to eliminating of emission texture rotation, optional by EliminateEmissionRotation).

StableRandom.x (TEXCOORD1.y) - random offset for emission texture (optional by EliminateEmissionRotation).

Float \_Rows - rows count in channel.

Float \_Columns - columns count in channel.

Color \_Color - color of particle.

Texture2D \_MainTex - texture sheet.

Float \_MainTexSmoothstep - enables smoothstep function for main tex values. Keyword \_MAINTEXSMOOTHSTEP\_ON.

Float \_MainSoftnessMin - minimum value for smoothstep function for MainTex.

Float \_MainSoftnessMax - maximum value for smoothstep function for MainTex.

Float \_AlphaSoftness - softness of frame sample.

Float \_DepthSoftness - soft depth intersections distance.

Float \_AlphaDissolve - alpha will be dissolved by VertexColor alpha values. Keyword \_ALPHADISSOLVE\_ON.

Color \_Emission - emission color.

Float \_EmissionDissolve - emission will be dissolved by Custom.y value. Keyword \_EMISSIONDISSOLVE\_ON.

Texture2D \_EmissionTex - emission dissolve texture (used only when \_EmissionDissolve enabled).

Float \_EmissionSoftness1 - minimum value for smoothstep function for Emission texture.

Float \_EmissionSoftness2 - maximum value for smoothstep function for Emission texture.

Float \_FinalAlphaSmoothstep - enables final alpha smoothstep function. Keyword \_FINALALPHASMOOTHSTEP\_ON.

Float `_FinalAlphaSmoothstepMin` - minimum value for smoothstep function for final alpha.

Float `_FinalAlphaSmoothstepMax` - maximum value for smoothstep function for final alpha.

Float `_EmissionAlpha` - when enabled alpha will affect to emission. Keyword `_EMISSIONALPHA_ON`.

Float `_FinalEmissionSmoothstep` - enables final emission smoothstep function. Keyword `_FINALEMISSIONSMOOTHSTEP_ON`.

Float `_FinalEmissionSmoothstepMin` - minimum value for smoothstep function for final emission.

Float `_FinalEmissionSmoothstepMax` - maximum value for smoothstep function for final emission.

Float `_NormalMapEnabled` - enables normal map texture sheet. Keyword `_NORMALMAPENABLED_ON`.

Texture2D `_NormalMap` - normal map texture sheet. We can't pack normal map to 4 channels, because normal value requires vector3. So normal map sheet should be whole. For example, if main texture sheet has 4 rows and 4 columns and 4 channels (64 frames), so normal map should have 8 rows and 8 columns.

Float `_NormalScale` - normal scale.

Float `_AlphaEmissionDissolveSub` - enables emission dissolve alpha factor. Keyword `_ALPHAEMISSIONDISSOLVESUB_ON`.

Float `_EmissionSubValue` - factor how much alpha will affect on emission dissolve (enabled `EmissionAlpha` and `AlphaEmissionDissolveSub` required).

Vector `_EmissionSpeed` - speed of emission uv animation.

Float `_EliminateEmissionRotation` - enables emission texture rotation eliminating. Keyword `_ELIMINATEEMISSIONROTATION_ON`.

Float `_CullMode` - face culling mode.

#### Knife/Particle Channel Packed Unlit

Shader for particle texture sheet animation that packed into 4 channels of texture. For example, if 1 channel has 4 rows and 8 columns, so total animation frames count is  $4 \times 8 \times 4 = 128$ .

Shader requires Custom Vertex Streams in particle system.

Custom.x (`TEXCOORD0.z`) - current frame number.

Custom.y (`TEXCOORD0.w`) - emission multiplier or subtrahend (Emission dissolve)

Float `_Rows` - rows count in channel.

Float `_Columns` - columns count in channel.

Color `_Color` - color of particle.

Texture2D `_MainTex` - texture sheet.

Float `_MainTexSmoothstep` - enables smoothstep function for main tex values. Keyword `_MAINTEXSMOOTHSTEP_ON`.

Float `_MainSoftnessMin` - minimum value for smoothstep function for MainTex.

Float `_MainSoftnessMax` - maximum value for smoothstep function for MainTex.

Float `_AlphaSoftness` - softness of frame sample.

Float `_DepthSoftness` - soft depth intersections distance.

Float `_AlphaDissolve` - alpha will be dissolved by VertexColor alpha values. Keyword `_ALPHADISSOLVE_ON`.

Color `_Emission` - emission color.

Float `_EmissionDissolve` - emission will be dissolved by Custom.y value. Keyword `_EMISSIONDISSOLVE_ON`.

Texture2D `_EmissionTex` - emission dissolve texture (used only when `_EmissionDissolve` enabled).

Vector `_EmissionSpeed` - speed of emission uv animation.

Float `_EmissionSoftness1` - minimum value for smoothstep function for Emission texture.

Float `_EmissionSoftness2` - maximum value for smoothstep function for Emission texture.

Float `_FinalAlphaSmoothstep` - enables final alpha smoothstep function. Keyword `_FINALALPHASMOOTHSTEP_ON`.

Float `_FinalAlphaSmoothstepMin` - minimum value for smoothstep function for final alpha.

Float `_FinalAlphaSmoothstepMax` - maximum value for smoothstep function for final alpha.

Float `_EmissionAlpha` - when enabled alpha will affect to emission. Keyword `_EMISSIONALPHA_ON`.

Float `_FinalEmissionSmoothstep` - enables final emission smoothstep function. Keyword `_FINALEMISSIONSMOOTHSTEP_ON`.

Float `_FinalEmissionSmoothstepMin` - minimum value for smoothstep function for final emission.

Float `_FinalEmissionSmoothstepMax` - maximum value for smoothstep function for final emission.

Float `_AlphaEmissionDissolveSub` - enables emission dissolve alpha factor. Keyword `_ALPHAEMISSIONDISSOLVESUB_ON`.

Float `_EmissionSubValue` - factor how much alpha will affect on emission dissolve (enabled `EmissionAlpha` and `AlphaEmissionDissolveSub` required).

#### **Knife/Particle Specular (and Knife/Particle Specular Transparent)**

Shader represents simple PBR shader for particles.

Color `_Color` - main color.

Texture2D `_MainTex` - albedo texture.

Float `_Cutout` - cutout value (only for **Knife/Particle Specular**).

Texture2D `_NormalMap` - normal map texture.

Float `_NormalScale` - scale of normals.

Texture2D `_Specular` - specular map texture.

Float `_Smoothness` - smoothness multiplier.

Color `_SpecularColor` - additive specular color.