Spintires Plus

Developer documentation

旋转轮胎插件开发者文档

开发者：Localhost

翻译：烟雨三千年

版本：1.0.0.0

<Config DebugMode="true" //启用开发者模式（不懂的就别启用，会创建一个CMD窗口来显示游戏数据）

WireframeMode="false" //启用线框模式 （类似于透视图，用线框来渲染图形。F3切换到线框渲染模式，F2切换回正常渲染模式）

>

<BugFixes

DPIIndependentCursorSize="-1" //DPI独立光标大小，启用时请输入2的幂值 （针对2K、4K显示器，一般不要设置，如果你的显示器DPI大于100%时可启用）

FixSunkenMud="true" //修复泥浆凹陷 （如果你的车辆漂浮在空中且地面消失的话可以启用）

HandleCursorWithoutDirectX="false" //使用系统光标 （窗口模式下无效）

>

<WheelmassBug //轮胎BUG

SuspensionFix="true" //支持新的卡车XML模型

TireDeformationFix="true" //轮胎形变修复

MudSinkingFix="true" //泥浆沉没修复

MaxDeformationPressure="25e6" //最大形变压强（标准为25兆帕，不知道怎么改的就别乱改！）

/>

</BugFixes>

<Camera

CabinCameraMaxAngle="-1" //车厢摄像机左右最大角度 （默认正负90度，-1代表禁止使用该功能）

DetachCameraFromSteering="true" //禁止相机转到车轮转向点 （大角度转向时适用）

NoCabinCameraReset="true" //固定驾驶室视角 （如果启用，那么相机不会在车辆移动时自动向前复位）

NoAutoZoom="true" //禁止自动缩放视角

NoAdvancedAutoZoom="true" //禁止高级模式下自动缩放视角 （高级模式即行车中按下V键后的模式）

NoAutoZoomOnStations="true" //禁止车库顶点视角缩放

RightSideCameraKey="160" //锁定右侧相机视角 （此处值对应虚拟键码）

UncapZoom="true" //无限制缩放视角 （一般禁止启用，会导致视角反转并离开车辆）

UncapX360Zoom="false" //手柄无限制缩放视角 （一般禁止使用，会导致视角反转并离开车辆）

/>

<ExternalMinimap //外部迷你地图

EnableMinimap="false" //启用迷你地图

（启用一个窗口来显示当前的地图及卡车，窗口模式无效。并且需要多显示器支持）

MinimapPositionX="-1280" //迷你地图X轴

MinimapPositionY="0" //迷你地图Y轴

MinimapWidth="1280" //迷你地图宽度

MinimapHeight="1024" //迷你地图高度

MinimapMarkerSize="32" //迷你地图标记大小

/>

<Gameplay //游戏

AlternateDifflockDamage="false" //变换差速器压力计算法 （用另外一种更为贴近现实世界压力的方法来计算差速器的压力，与游戏默认的计算方法不同之处在于轮胎角速度上拥有更为严格的计算处理。）

AlwaysShowDevMenu="false" //总是显示DEV菜单 （所有游戏模式下都启用开发者模式，可生成、重新加载车辆）

AlwaysAllowSpawnLocators="false" //允许所有位置使用定位器

HardcoreAutoLogs="true" //专家模式自动加载日志

LegacyCloaks="false" //改变小地图阴影 （解锁小地图上重叠的阴影）

LoadPointsPerObjective="-1" //目标完成负载点 （游戏默认为8点，这里可以改变这个值，范围在0-127之内，最大值255，但可能会造成游戏崩溃。负值禁止使用这个功能）

NoDamage="true" //车辆无损伤

UnlimitedFuel="true" //油料无限

/>

<Graphics //图像

DisableDOF="true" //禁用景深

IncreaseTerrainLOD="false" //增强地形细节层次 （对于河流效果非常明显，配置差的机器不要使用）

NoVisualDamage="true" //屏蔽车辆损伤效果 （自慰功能，如果损伤点数满后，车辆仍然报废）

RenderDistanceIncrease="128" //增加泥浆渲染距离 （0-255数值可用，实际上受引擎限制，18以后几乎毫无意义）

AspectRatio="-1" //长宽比 （必须输入1.33333或1.25，而不是常见的16:9或4:3这种数值）

FOV="-1" //视角 （有效范围1-359，负值禁用此功能）

/>

<HUD //显示器

HideHUD\_SteamInfo="false" //隐藏Steam信息 （删除你的Steam头像和账户）

HideHUD\_3dUI="false" //隐藏3D UI信息 （删除罗盘之类的游戏HUD）

/>

<Misc //杂项

AllowCustomObjectsInMP="false" //允许自定义游戏 （屏蔽掉官方提示"检测到游戏数据错误"）

DisableSuspensionDamage="true" //屏蔽路面伤害 （屏蔽掉速度过快时车辆受到的来自路面的伤害，例如腾空落地时的伤害）

DifflockAutoEngageFix="true" //差速器自动修正 （防止在手动变速箱模式时自动打开差速器）

FasterFileAccess="true" //快速文件访问 （减少游戏读取文件所需时间，对于MOD非常多的用户十分有帮助）

HavokBufferSize="5000000" //游戏引擎缓冲区大小 （如果游戏经常崩溃或者地图有太多车辆又或者检测到车辆碰撞时，增加数值，默认为5000000,0代表禁用功能）

ShifterReleaseFix="true" //档位移位修复

TrailerLoadFix="true" //屏蔽拖车装载位置检测 （运输中等或长木材时，游戏会检测拖车停放位置是否正确，如果启用这个功能，那么将屏蔽这个检测强制装载木材。警告！距离过远会导致游戏崩溃！）

/>

<Modding //车辆改装

CustomizableTrailerBreakoffForce="true" //自定义挂车分离力量 （允许车辆模型自定义拖车分离车辆时的力度）

ExtraAddonProperties="true" //额外的附加属性

MapsCanOverrideCloakMesh="true" //自定义阴影外观 （地图制作人现在可以添加一个额外的XML文件来改变地图阴影的外观）

OrientableShafts="true" //定向轴

STPControlledConstraints="true" //增加控制模式 （允许用户增加一套新的键盘游戏模式，函数为ConstraintController，参数为ncreaseKey、DecreaseKey、ResetKey。需要使用虚拟键码，并且这个更改与手柄无关）

SupportCustomShafts="true" //支持自定义驱动轴模型

SupportSkidSteering="true" //支持履带车辆 （如果MOD中有履带车，必须启用）

SupportAdditionalConstraints="true" //支持额外物理约束参数

SupportSilentLinkedSteering="true" //恒速转向 （车辆在转向时无需加速，而是恒速转向）

SuspensionTunableInWheelsSets="true" //悬架可调车轮组

UnclampedXML="true" //允许编辑XML文件 （防止出现"Clamping node XXX value YYY (min/max is ZZZ)"错误）

UnclampedManualLoads="true" //允许手动编辑XML文件 （防止出现 "Clamping node XXX value YYY (min/max is ZZZ)" 错误，与上个参数不同的是，这个参数需要手动编辑）

UnpresetWheels="true" //新车胎支持 （支持5个新的XML车胎参数，这个设置为游戏引擎开发者使用，详见开发者文档）

WheelsetsCanRequireAddons="true" //默认轮对 （如果没有插件，隐藏无法使用的轮对）

>

<ConstraintController IncreaseKey="97" DecreaseKey="99" ResetKey="101"/>

<ConstraintController IncreaseKey="100" DecreaseKey="102" ResetKey="101"/>

<ConstraintController IncreaseKey="103" DecreaseKey="105" ResetKey="101"/>

</Modding>

<NewGameOptions //新游戏设置

AlternateTruckMenu="true" //更换新的卡车选择菜单 （更换为新的卡车选择菜单）

AlternateMapMenu="true" //更换新的地图选择菜单 （更换为新的地图选择菜单）

DisableCloaks="true" //消除地图阴影 （萌新可以启用这个功能）

ShowLockedTrucksAtSelectionScreen="false" //强制选择锁定卡车

>

<TruckGroup Name="Tractors"

Keyword="Type K-700"

Keyword="K-710"

Keyword="K701"

/>

<TruckGroup Name="Large vehicles"

Keyword="12x12"

Keyword="16x16"

Keyword="Maz 7410"

Keyword="Locomotive\_M62"

/>

<TruckGroup Name="4 Axle"

Keyword="8x8"

Keyword="T813"

Keyword="M1070"

Keyword="Type D-535"

Keyword="Type D-537"

Keyword="Type E-7310"

/>

<TruckGroup Name="3 Axle"

Keyword="6x6"

Keyword="KPA3-214"

Keyword="Type B-131"

Keyword="Type C-255"

Keyword="Type C-4310 (White)"

Keyword="Type C-4310"

Keyword="Type C-4320"

Keyword="Type C-432010 (blue)"

Keyword="Type C-432010"

Keyword="Type C-65111"

Keyword="Type C-65115"

Keyword="Type C-6520"

Keyword="Type C-6522"

/>

<TruckGroup Name="2 Axle"

Keyword="4x4"

Keyword="Type A-469"

Keyword="Type B-130"

Keyword="Type B-66"

Keyword="Type K-700"

/>

<TruckGroup Name="Default trucks"

Keyword="Type A-469"

Keyword="Type B-130"

Keyword="Type B-131"

Keyword="Type B-66"

Keyword="Type C-255"

Keyword="Type C-4310 (White)"

Keyword="Type C-4310"

Keyword="Type C-4320"

Keyword="Type C-432010 (blue)"

Keyword="Type C-432010"

Keyword="Type C-65111"

Keyword="Type C-65115"

Keyword="Type C-6520"

Keyword="Type C-6522"

Keyword="Type D-535"

Keyword="Type D-537"

Keyword="Type E-7310"

Keyword="Type K-700"

/>

<TruckGroup Name="1 Star"

Keyword="(\*)"

/>

<TruckGroup Name="2 Stars"

Keyword="(\*\*)"

/>

<TruckGroup Name="3 Stars"

Keyword="(\*\*\*)"

/>

<TruckGroup Name="4 Stars"

Keyword="(\*\*\*\*)"

/>

<TruckGroup Name="5+ Stars"

Keyword="(\*\*\*\*\*)"

Keyword="(\*\*\*\*\*\*)"

Keyword="(\*\*\*\*\*\*\*)"

/>

<MapGroup Name="Default maps"

Keyword="coast"

Keyword="flood"

Keyword="hill"

Keyword="plains"

Keyword="river"

Keyword="volcano"

/>

</NewGameOptions>

<TimeCycle

FreezeTimeOfDayAt="-1" //锁定游戏时间 (可以一直在白天工作，或者喜欢晚上开车？）

GameDayDurationInRealSeconds="-1" //用秒单位来计算游戏时间 （游戏中默认一天为2700秒，负值或0禁用此功能）

/>

<Winch

BatteryPoweredWinch="false" //绞车由蓄电池供电 （启用此功能代表即使你的卡车翻了肚皮，仍然也可以使用绞车）

ReleaseWinchKey="88" //释放绞车键

WinchRange="-1" //绞车范围 （1-40可用，负值禁用此功能）

/>

<OtherDlls

LoadDll="SpintiresPlusPlugin.dll" //允许第三方插件在游戏启动之前运行

LoadDll="Plugin2.dll"

d3d9DllOverride="" //加载DLL的完整路径，而不是系统默认路径。 （外挂必备~~）

/>

</Config>

<!--

DebugMode: creates an additional window and displays some mod-related information including per-tire ground pressure.

It is recommended to play the game in windowed mode when using this option.

TWoW means Total Weight on Wheel, it doe not include the wheel's own weight.

WireframeMode: displays 3d objects in wireframe mode. Objects with less than 3 polygons are still displayed in textured mode

or you wouldn't see anything (the game you see is a texture drawn on 2 triangles in front of your screen).

When this is enabled use F3 to switch to wireframe mode, and F2 to switch back to normal view.

///////////////////////////////////////////////////////

//////////////////// BUGFIXES SECTION////////////////////

///////////////////////////////////////////////////////

DPIIndependentCursorSize: prevents mouse cursor from disappearing when setting windows DPI to more than 100%.

You MUST set DPIIndependentCursorSize to a power of 2 ( 8, 16, 32, 64, 128, or 256... pixels).

At 100% DPI the game uses a 32 x 32 pixel cursor.

0 or negative values disable the feature.

Other values will make the cursor invisible.

FixSunkenMud: fixes a bug where the mud randomly becomes invisible and your vehicle appear to float over the ground. If your enable

wireframe mode you'll notice that the visual representation the mud is below the ground.

WARNING: if you have saved your game while the mud was below ground the bugfix cannot restore it.

HandleCursorWithoutDirectX: Use Windows itself to display the cursor ingame instead of DirectX. Try this if your cursor still

disappears with DPIIndependentCursorSize. HandleCursorWithoutDirectX only has an effect when you play in fullscreen mode (in

windowed mode the game already uses Windows' basic functions to displays the cursor).

///////////////////////////////////////////////////////

////////////// WHEELMASS BUG SECTION //////////////////

///////////////////////////////////////////////////////

SuspensionFix: supports 2 new truck xml tokens: SuspensionStrength\_Normalized and SuspensionDamping\_Normalized.

If present they override SuspensionStrength and SuspensionDamping in a manner that makes suspension behavior

independent from wheel mass.

Typical order of magnitude: 5.0 for strength, 50 for damping.

To port an existing suspension use the formula: Normalized value=old value/(1/wheelmass + 1/parent frame mass)

If SuspensionFix is enabled but the truck does not have the \*\_Normalized tokens then your suspension still varies with wheelmass.

First component of the wheelmass bug fix.

TireDeformationFix: make tire softness independent from wheel mass. Can also prevent light soft wheels under heavy load from

clipping through the ground.

Second component of the wheelmass bug fix.

MudSinkingFix: completely changes the condition that determines whether you sink into the mud or not.

The old one made light wheels sink more than heavy ones, the new one is ground pressure based.

This affects how you sink under your own weight, not how fast your tires dig the ground when spinning/slipping.

Third component of the wheelmass bug fix.

MaxDeformationPressure: defines what ground pressure would give the (presumed) highest possible mud deformation when using

the MudSinkingFix feature. Surface is not deformed if you apply less than MaxDeformationPressure/255 so you could also

see this as a difficulty setting.

Has no effect if MudSinkingFix is turned off.

Defaults to 25MPa (25e6)

///////////////////////////////////////////////////////

//////////////////// CAMERA SECTION////////////////////

///////////////////////////////////////////////////////

CabinCameraMaxAngle: how far you can turn the cabin camera left and right, by default the game allows for +/- 90 deg

Only applies to cabin camera for which IsHood="true" (if it's false you already have +/-180 angle)

Negative values disable the feature.

DetachCameraFromSteering: prevents the camera from turning to point where your wheels are steering.

NoCabinCameraReset: prevents cabin camera from automatically resetting forward when the truck is moving.

NoAutoZoom: prevents automatic zoom reset after 64s.

NoAdvancedAutoZoom: prevents autozooming when entering/leaving advanced mode

NoAutoZoomOnStations: prevents automatic camera adjustments when stopping at a gas station, lumber yard, garage or objective.

RightSideCameraKey: hold this key while pressing the 1 or 2 keys to see your truck from

the right side instead of the left.

You must enter the "decimal virtual key code" of the desired key.

Google "decimal virtual key code" if you don't know what it is. When you find a table where 88 corresponds to X and 160 to left shift you're at the right place.

Negative values disable the feature.

UncapZoom: allows unlimited zooming/unzooming.

WARNING: zooming too much will make the camera flip and move away.

UncapX360Zoom: identical to UncapZoom, but for $#!%@ X360 controller users.

///////////////////////////////////////////////////////

/////////////// EXTERNAL MINIMAP SECTION///////////////

///////////////////////////////////////////////////////

EnableMinimap: Enables a separate window that display a simple map of the current level along with nearby trucks.

This feature REQUIRES to have more monitors that what the game uses in fullscreen mode.

MinimapPositionX, MinimapPositionY: coordinates of the minimap window on your desktop.

negative X are to the left of your main monitor.

Y=0 corresponds tot he top of your main monitor.

MinimapWidth,MinimapHeight: size in pixels of the minimap window

MinimapMarkerSize: size of the markers on the minimap.

///////////////////////////////////////////////////////

///////////////// GAMEPLAY SECTION ////////////////////

///////////////////////////////////////////////////////

AlternateDifflockDamage: use an alternate method to calculate difflock stress.

Slightly more realistic that the default one since it's based on the difference of angular speed of your wheels, and a lot less forgiving.

AlwaysShowDevMenu: shows the developer's menu (with options to spawn, reload, refill, vehicles) in all game modes.

AlwaysAllowSpawnLocators: allows using spawn locators outside the proving grounds

LegacyCloaks: changes what parts of the F1 minimap are revealed what several cloaks overlap.

With default cloaks everything around a cloak is revealed when you remove it, even it part are within the radius of action

of another cloak.

With legacy cloaks you have to remove ALL cloaks covering a spot to see it on the minimap.

HardcoreAutoLogs: allow automatically loading logs at lumber yards in hardcore mode.

LoadPointsPerObjective: the number of loadpoints needed to complete an objective.

Valid range: 0-127. Values 128 to 255 should also be possible but will cause glitches in the map.

Values past 255 are not supported.

-1 disables the feature

NoDamage: self explanatory.

UnlimitedFuel: self explanatory.

///////////////////////////////////////////////////////

////////////////// GRAPHICS SECTION ///////////////////

///////////////////////////////////////////////////////

DisableDOF: disables the depth of field feature (DoF blurs what is very close and very far from the camera).

IncreaseTerrainLOD: slightly increase terrain LOD, particularly visible inside rivers.

But uses a lot of CPU power.

NoVisualDamage: prevents visual representation of damage such as bumps and cracks on the chassis of the truck.

Your damage bar will still fill up and effects such as sparks, oil leak, smoke still trigger when your truck is damaged enough.

RenderDistanceIncrease: increase mud rendering distance by this amount, also affect some other objects, causes severe LOD popping.

Default value: 0, Max 255, 0 disables the feature, values past 18 are pretty much meaningless due to an additional engine limitation.

FYI the default rendering distance is 6 units, it becomes 6+RenderDistanceIncrease.

Aspect ratio: the ratio of your screen's width divided by its height. You've got to enter values like 1.33333 or 1.25, not 4:3 or 5:4.

default value: -1. Negative values disable the feature.

FOV: the width in degrees of the field of view of the camera.

Valid range 1-359, default value: -1. Negative values disable the feature

///////////////////////////////////////////////////////

//////////////////// HUD SECTION //////////////////////

///////////////////////////////////////////////////////

HideHUD\_SteamInfo: removes your steam account and avatar from the HUD.

WARNING: it also hides speed and AngVel from the Dev tools.

HideHUD\_3dUI: removes compass, shifter, and truckdata from the HUD.

///////////////////////////////////////////////////////

//////////////////// MISC SECTION /////////////////////

///////////////////////////////////////////////////////

AllowCustomObjectsInMP: prevents the "Game files differ from original package..." error when playing MP maps witch custom objects.

DisableSuspensionDamage: disables damage received when driving at medium speed over rough terrain

and disables speed damage (damage received when driving very fast over any terrain, even perfectly flat).

DifflockAutoEngageFix: prevents the game from automatically turning difflock ON when leaving auto gearbox mode.

FasterFileAccess: Reduces the time it takes the game to read files. Most visible consequence is faster menus (for those that need

to read many files), notably the garage menu, the truck selection, the map menu, and the new game menu.

This option should also reduce load times.

How it works? It tells PHYSFS not to check if each component if a path is a symbolic link.

HavokBufferSize: The size in bytes of the buffer havok uses to store temporary data (such as collisions). Try increasing this if the game crashes

when spawning too many objects or when 2 vehicles approaches each other.

By default the game uses 500000.

0 disables the feature.

ShifterReleaseFix: prevent the game from turning off cruise controls when you engage the auto gearbox.

TrailerLoadFix: allows forcefully loading logs onto a trailer even if your truck is "incorrectly positioned".

The further you are from the correct position, the more likely you are to trigger an Havok explosion.

///////////////////////////////////////////////////////

////////////////// MODDING SECTION// //////////////////

///////////////////////////////////////////////////////

tldr: additional features that mods using SpintiresPlus may need/use.

ConstraintController: see STPControlledConstraints

CustomizableTrailerBreakoffForce: Allows the modders to define the force needed for their trailers to break off trucks.

Modders, please keep in mind that an unbreakable trailer link is unrealistic, but it can be though.

An example is available in the example section.

ExtraAddonProperties: Allows addons to modify more properties of your turck:

Damage sensation (snorkels):

Damage sensation defined in addons overwrites the one defined in the truck, coordinates are relative to the truck's frame (not the addon's).

WARNING for modders: only one snorkel can be active per truck at a given time. If you mount 2 snorkel addons on a truck, only the damage sensation

from the first one is taken in account. Please make your snorkels mutually exclusive.

Engine torque (turbocharger, secondary engines...):

Torque modifiers are expressed as a multiplier to engine torque. You can have several addons that modify torque, they are

multiplicatively combined.

Since any\_value/0.0 = infinity, multiplying your engine torque by 0 cannot be undone when removing the addon.

An example is available in the example section.

Gearbox (gearbox addons):

Gearbox addons work like snorkels, with the same restriction of being unable to have 2 gearbox addons installed at

the same time.

MapsCanOverrideCloakMesh: map makers can now include an additional xml file with their maps to change how cloaks will look like

on their maps

An example is available in the example section.

OrientableShafts: Allows forcing the endpoints of shafts (BoneStart and BoneEnd) to be along a specific axis relative to the truck

rathen than being along truck X.

In the base game, shaft endpoints are automatically rotated so that they face each other. This is disabled for shafts that use

a custom orientation.

An example is available in the example section.

STPControlledConstraints: Adds a new form of controlled constraints that can be moved without going into the advanced menu.

Each STPControlledConstraint in the mod(s) specifies what ConstraintController drives it, and you, the reader

have to create <ConstraintController/> in SpintiresPlus\_config.xml to assign keys to constraint controllers and

those keys will drive the associated articulation(s) on your truck.

Several constraints can use the same controller.

ConstraintController have 3 properties:

-IncreaseKey: they key used to move the articulation(s) in one direction.

-DecreaseKey: they key used to move the articulation(s) in the other direction.

-ResetKey: they key used to reset the articulation(s) to its/their default position.

The default 3 ConstraintController use numpad keys 1,4,7 to move in one direction and 3,6,9 for the other.

They all use numpad 5 to reset, but it is not required to use the same reset key for all.

Once again, you define keys by giving their virtual key code. Google "decimal virtual key code" if you don't

know what it is. When you find a table where 88 corresponds to X and 160 to left shift you're at the right place.

There is no limit to the number of constraint controllers you can define.

An example showing how to create an STPControlledConstraint is available in the example section, along with additional

information for modders.

For an example of ConstraintController, look up.

PS: constraint controllers have nothing to do with xbox controllers or gamepads.

SupportCustomShafts: Allows specifying custom models fro driveshafts in the <Shaft> nodes.

An example is available in the example section.

SupportSkidSteering: supports the SkidSteeringMode XML token in Truck/Wheels/Wheel, which allows for tank-like steering.

SkidSteeringMode has 2 possible values:

-ForwardReverse, which makes wheels/tracks on one side go forward, and those on the other side go backward when you steer.

-ForwardBrake is like ForwardReverse but wheels/tracks are braked instead of going backward.

Both modes only differ when steering in 1st gear or reverse. At higher gears, brakes are used to steer anyway.

Information for DRIVERS:

-ForwardReverse only engages reverse mode in 1st and reverse gears, when you are steering as sharp as possible. In all other cases (small

deviations at any speed, sharp turns at high speed...) only the brakes are used for steering.

-All wheels of a side are "locked" at the same speed, always. This will not cause difflock damage. Admittedly, my locking system still has room for improvement...

-Difflocking obviously disables steering.

-AWD mode has no effect.

-Skid steering vehicles can stall an any gear if they don't have enough power to pull your stuff.

Information for MODDERS:

-All wheels using SkidSteeringMode are powered.

-Skid steering wheels are put in 2 groups: left-side group or right-side goup depending on if they have RightSide="true".

-If a vehicle has at least one wheel using SkidSteeringMode, then wheels not using skid steering are NOT powered.

-All wheels on a side are locked at the same PERIPHERAL speed, meaning that wheels of different sizes rolling on the same track are supported.

-Your vehicle will not work if all skid steering wheels are on the same side.

-Skid steering requires using a gearbox in STP format, which basically means that:

-you supply maximum ENGINE torque instead of wheel torque in the <Motor> section

-you supply total transmission ratio for each gear in the <Gear> section. Give a positive ratio for reverse gear.

-obviously this is not compatible with the base game's gearbox, so all non-skid steering wheels are not powered.

-STP uses the an engine map inspired by a Caterpillar C15, that means:

50% to full torque from 0 to 1000 RPM

full torque from 1000 to 1500RPM

full to 0 torque from 1500 to 3500RPM.

-MaxDeltaAngVel is repurposed as a fuel consumption multiplier.

-it is strongly recommended to set SteeringAngle to 0 on all wheels using SkidSteeringMode, or your wheels will use both steering modes at once.

Tip : keep in mind that skid steering requires a lot of torque! If you run into cases where your vehicle refuses to steer at high gears even on flat hard ground, add torque.

An example is available in the example section.

SuspensionTunableInWheelsSets: supports tuning suspension and hardpoint offsets from inside the WheelsSets section

Consult the Example section for a list of available tokens.

SupportAdditionalConstraints: supports 2 new constraints between physical bodies: PointToPlane, PointToPath.

PointToPlane:

Point to plane allows all rotations and blocks one translation.

Picture yourself a ball on a table: it can roll in any direction, you can push it parallely to the table but you

cannot ram it through the table (and in this case, you cannot lift it either).

You define a PointToPlane constraint by giving a vector perpendicular to the table (AxisLocal) and one point that belongs to the table (PivotOffset)

PointToPlane does NOT support motors, but should be breakable or malleable (not tested).

PointToPlane will trigger the error "Unsupported constraint type '14'". Ignore it.

PointToPath:

Locks the position of the child object on a path and allows all rotations. Typically used to keep track segments on a path looping

around the wheels.

PointToPath does NOT support motors, but should be breakable or malleable (not tested).

PointToPath will trigger the error "Unsupported constraint type '3'". Ignore it.

PointToPath has 3 modes:

-PositionOnly where the child body's origin is locked onto the path

-AlignXToPath where additionally the child object's X vector is forced to be along the path

-FullyConstrained to path, like X aligned but the child's Z vector also points in a direction of your choosing.

Upon creation, ST+ will display the coordinates of the child body relative to its parent in the debug console. You can use that

to build up your path.

Chain:

Allows all rotations and blocks all translations between a long chain of bodies (20+). While you could achieve a similar result by putting ragdoll

constraints between each element of the chain, the point of the Chain constaint is increased stability (ie: less Havokslposions and twitching).

For technical reasons (ex: the chain requires many bodies, but typical constrains only have 2) the Chain is build as a parasite inside

the PointToPlane and PointToPath constraints. Chain-specific attributes all start with "Chain\_" .

Basically you create your PointTo\*\*\* constraint as usual, then add Chain\_Mode="StartChain" to make its (child) body the first of the chain.

Same thing for the next body, but you add Chain\_Mode="ContinueChain" inside the constraint.

For the last body, add Chain\_Mode="EndChain", but there is a catch: when ending a chain, the chain constraint get created instead of

the PointTo\*\*\* one, so you have the create the last PointTo\*\*\* constraint again (but without Chain\_Mode this time).

You cannot add bodies to 2 chains at the same time, you must start one chain, fill it up, end it, and THEN you can start another.

One body cannot be put twice in chain (ie: no looping chains).

Chains do not support BreakOffThreshold and MalleableStrength (use Chain\_Stiffness instead).

Tip 1: if you're making tracks, don't forget that you need to constraint at least every other (1 out of 2) track element if you

use point to plane, or likely all elements if you use point to path.

Tip 2: if you're making tracks, the use of \_templates is HIGHLY recommended.

Examples are available in the example section.

Additionally each STP constraint allows to override the "quality" of its bodies. Quality reflects the amount of CPU time havok will spend

in trying to prevent those objects from clipping through others.

You override quality by defining SetChildQuality or SetParentQuality in a constraint. Use those if you can't prevent clipping by increasing

the size of your cdt mesh.

Valid values are 0 to 8, where 8 is the most CPU expensive. Telekinesys's recommendations are:

0: for fixed bodies.

1: for moving objects with infinite mass

2: for debris objects

3: for debris objects with simplified collisions with fixed/landscape objects. Spintires uses this by default.

4: for moving bodies, which should not leave the world, but you rather prefer those objects to tunnel through the world than dropping frames because the engine.

5: for objects which you cannot afford to tunnel through the world at all.

6: for very fast objects (bullets).

7: custom, don't use.

8: for rigid body character controllers.

SupportSilentLinkedSteering: allows using IsLinkedSteering=true without revving up the engine when steering.

An example is available in the example section.

UnclampedXML: prevents the "Clamping node XXX value YYY (min/max is ZZZ)" error and allows any value for those settings.

UnclampedManualLoads: prevents the "Clamping node XXX value YYY (min/max is ZZZ)" error on the ManualLoads paremeter.

Seperated from UnclampedXML because UnclampedManualLoads does NOT work on the editor, but UnclampedXML does.

UnpresetWheels: supports 5 new wheel xml tokens:

- Mass\_Numeric is the wheel's mass in kg

- Friction\_Numeric is its friction coefficient, typically in the 0.0 to 2.0 range.

- SubstanceFriction\_Numeric same as Friction\_Numeric, but used when in the mud. Chained wheels have it at 1.8.

- Softness\_Numeric ranges from 0.0 to 1.0, where 1 means hard tires.

- Havok\_AllowedPenetrationDepth determines how deep a wheel can clip through other objects for the sake of resolving "impossible" constraints.

It has nothing to do with mud/water.

This setting should only be used by people familiar with Havok's inner workings. The game defaults this to radius/2, Havok recommends 5-20%

of the smallest length of the object.

If present the \_Numeric tokens override the mass/softness/friction presets.

Keep in mind that the softness preset also sets RadiusDelta (difference between wheel radius and collision cylinder radius)

which is not overwritten by this mod.

An example is available in the example section.

WheelsetsCanRequireAddons: Hides some wheelsets in the garage menu if you don't have the addons they require.

Removing an addon that is required for your current wheelset changes your wheels to default wheelset.

You cannot put RequiredAddons for the default wheelset.

WARNING: when exporting your mode to the workshop, RequiredAddons are NOT automatically converted to modstring codes. You'll

have to do the replacement manually.

An example is available in the example section.

///////////////////////////////////////////////////////

///////////////// NEW GAME SECTION ////////////////////

///////////////////////////////////////////////////////

AlternateMapMenu: replaces the map selection menu by a scrollable, sortable, and searchable one. Like with the AlternateTruckMenu,

you have to define your own sorting categories if you want any sorting.

Map categories are defined like truck categories, just with "MapGroup" instead of "TruckGroup".

FasterFileAccess="true" is recommended when using this option.

AlternateTruckMenu: Replaces the truck selection menu with one that is faster, allows searching, configuring addons/wheelsets, and

where trucks are sorted by categories. You must define your own categories if you want trucks to be sorted.

Enabling AlternateTruckMenu also enables AlternateMapMenu (I need it to reset addon selection when you change maps).

FasterFileAccess="true" is recommended when using this option.

Catergories are defined like this:

<NewGameOptions/>

...

<TruckGroup Name="Tractors" //name of the 1st category

Keyword="Type K-700" //case sensitive keyword to match

Keyword="K-710"

Keyword="K701"

/>

<TruckGroup Name="Large trucks" //name of the 2nd category

Keyword="12x12" //case sensitive keyword to match

Keyword="16x16"

Keyword="Maz 7410"

/>

</NewGameOptions>

Truck names that match match at least one keyword are added to the category.

Trucks can appear in several categories.

There is no limit to the number of categories (except RAM amount :) ).

TIp: searching for "\*" on the addon/trailer menu shows addons/trailers currently selected.

DisableCloaks: self explanatory. Takes effect when starting a new map.

ShowLockedTrucksAtSelectionScreen: Locked trucks also appear in the startup truck selection list and can be customized.

Warning: there is no way to tell if a truck is locked or not at this screen.

MapGroup: see AlternateMapMenu

TruckGroup: see AlternateTruckMenu

///////////////////////////////////////////////////////

///////////////// TIME CYCLE SECTION //////////////////

///////////////////////////////////////////////////////

FreezeTimeOfDayAt: locks time of day at a specific hour.

Valid range: 0-24. For example 14.5 would lock time at 2h30 PM.

Negative values disable the feature.

GameDayDurationInRealSeconds: the duration of a game day in real life seconds. This does NOT affect fuel consumption even

if it is expressed in liters per real life minute.

The original game uses 1 day = 2700s.

Negative values or 0 disable the feature.

///////////////////////////////////////////////////////

///////////////// WINCH SECTION ////////////////////

///////////////////////////////////////////////////////

BatteryPoweredWinch: replaces Power Take Off winches with battery powered winches.

It allows winching when the engine is not running (even if your car went belly up).

ReleaseWinchKey: press this key to release the winch if one is currently attached.

You must enter the decimal virtual key code of the desired key.

Google "decimal virtual key code" if you don't know what it is. When you find a table where 88 corresponds to X and 160 to left shift you're at the right place.

Negative values disable the feature.

WinchRange: the length in meters of your winch cable. Due to engine limitations you cannot go past 40m.

Default value is 14m.

Any negative value disables the feature.

///////////////////////////////////////////////////////

////////////// 3RD PARTY DLL SECTION //////////////////

///////////////////////////////////////////////////////

LoadDll: allows loading other 3rd party dlls/plugins at startup

Those dll's DllMain() will be executed before the game's code executes (at this stage it is still encrypted by steam)

They may additionally export an \_\_stdcall void OnD3DCreate9(void) function that will be called before the game creates its

direct3d context (hint: it's a good time to patch the game's code).

d3d9DllOverride: full path to a dll to load instead of windows\system32\d3d9.dll .

Try it if you are using an overlay/graphic enhancer/other hacks that do not work as a plugin.

//////////////////////////////////////////////////////////////////////////

////////////// XML Examples (this section is for modders) ////////////////

//////////////////////////////////////////////////////////////////////////

All new XML tokens are mentioned in at least one example.

They are marked with a "//". Same goes for repurposed tokens.

If it's not in the examples, it does not exist.

All new tokens can be used in \_templates and are compatible with inheritance (\_parent files).

----

SuspensionFix:

example in classes/trucks/kraz255.xml

section \_templates/Wheel/RearWheel

<RearWheel

ConnectedToHandbrake="true"

DefaultWheelType="kraz\_rear"

HardpointOffsetY="-0.244"

SuspensionMin="-0.4"

SuspensionStrength="0.02"

SuspensionStrength\_Normalized="5" //Wheelmass independent suspension stiffness

SuspensionDamping\_Normalized="50" //Wheelmass independent suspension damping

Torque="default"

/>

Those tokens can also be added directly in Truck/Wheels/Wheel that way:

<Wheel \_template="FrontWheel" HardpointX="3.8"

SuspensionStrength\_Normalized="5" //Wheelmass independent suspension stiffness

SuspensionDamping\_Normalized="50" //Wheelmass independent suspension damping

/>

----

CustomizableTrailerBreakoffForce:

example in classes/trucks/trailer\_tent.xml

section Truck/TruckData

<TruckData

TrailerCanDetach="true" --TrailerBreakOffThreshold is not read if the trailer can't detach

TrailerBreakOffThreshold="30000.0" //How hard you must crash your truck before the trailer detaches.

//The default value in the base game is 16000.

>

...

</TruckData>

----

ExtraAddonProperties:

example in classes/trucks/kraz\_protector.xml

<TruckAddon>

<TruckData>

------------- damage sensation -----------

<Damage //New section, added for the sole purpose of containing sensation data.

//Those 2 will replace what is defined

SensationMin="(1.77; 3.00; -0.77)" //in truck.xml/Truck/TruckData/Damage/SensationMin or SensationMax

SensationMax="(2.72; 3.00; 0.77)" //You specify the absolute coordinates in the truck's referential

//of the water-damage sensing box.

/>

--------------- Torque part --------------

<TruckMotorOverrides TorqueFactor="1.05" > //this addon will add 5% engine torque.

--------------- Gearbox part -------------

<ReverseGear

AngVel="0.2" //This addon will REPLACE the truck's gearbox

GearRatio="0.001" //Please provide both AngVel and GearRatio for compatibility with normal and

//skid steering vehicles.

//(if you don't, a default conversion factor of 157 will be used)

/>

<HighGear AngVel="6.0" GearRatio="0.04" />

<Gear\_1 AngVel="0.2" GearRatio="0.001" />

<Gear\_2 AngVel="1" GearRatio="0.006"/>

<Gear\_3 AngVel="2" GearRatio="0.013"/>

<Gear\_5 AngVel="3" GearRatio="0.02"/> //Note that Gear\_5 here will have NO EFFECT because Gear\_4 is missing.

//Even if the base truck has a 5th gear.

</TruckMotorOverrides>

</TruckData>

...

</TruckAddon>

----

OrientableShafts

example in classes/trucks/kraz\_255.xml

section Truck/TruckData/

<Shafts>

...

<Shaft

SocketPointA="Shaft4a"

SocketPointB="Shaft4b"

SocketAOrientation="(0;0;1)" //the shaft's endpoint on SocketPointA will point toward truck Z

SocketBOrientation="(0;1;0)" //the shaft's endpoint on SocketPointB will point toward truck Y

/>

</Shafts>

----

SupportCustomShafts:

example in classes/trucks/kraz\_255.xml

section Truck/TruckData/

<Shafts>

<Shaft SocketPointA="Shaft1a" SocketPointB="Shaft1b"

Mesh="env/My\_shaft1" //custom shaft mesh

/>

<Shaft SocketPointA="Shaft2a" SocketPointB="Shaft2b"

Mesh="env/My\_shaft2" //another custom shaft mesh

/>

<Shaft SocketPointA="Shaft3a" SocketPointB="Shaft3b"

Mesh="env/Invalid\_mesh\_\*##%" //will use default shaft and log an error

/>

<Shaft SocketPointA="Shaft4a" SocketPointB="Shaft4b" /> <-will use default shaft, no error displayed

</Shafts>

----

SuspensionTunableInWheelsSets:

example in classes/truck/kraz255.xml

section Truck/TruckData/WheelsSets

<WheelsSets>

<WheelsSet Title="TunedWheelSet">

<WheelType

Type="kraz\_front\_highway"

Wheels="0,1"

SuspensionStrength\_Normalized="5.0" //Overwrites suspension stiffness and damping when

SuspensionDamping\_Normalized="50.0" //using TunedWheelSet.

//This modification only applies to wheels 0 and 1 as defined in the Wheels token.

SuspensionMin\_Offset="-.5" //This is ADDED to the default wheels' SuspensionMin

HardpointOffsetX="0" //X/Y/Z offsets are ADDED to offsets defined for the default

HardpointOffsetY="-.5" //wheels in Truck/Wheels/Wheel.

HardpointOffsetZ="-.5" //Z offset is also additively combined with Z offset from the wheel.xml.

/>

<WheelType

Type="kraz\_double\_highway"

Wheels="2,3"

SuspensionStrength\_Normalized=".05" //Same idea as above, but for wheels 2 and 3 this time...

SuspensionDamping\_Normalized=".005" //

SuspensionMin\_Offset="0" //

HardpointOffsetX="1.5" //

HardpointOffsetY="1" //

HardpointOffsetZ="0" //

/>

Etc...

</WheelsSet>

</WheelsSets>

----

UnpresetWheels:

example in classes/wheels/kraz\_front.xml

<TruckWheel

Friction="Offroad"

Friction\_Numeric="2.0" //Gives excellent traction on road (ie: highway wheels)

SubstanceFriction\_Numeric="0.1" //Gives very poor traction in the mud.

//Those 2 overwrite what Friction="Offroad" defined

Mass="Heavy"

Mass\_Numeric="75.5" //Overwrites what Mass="Heavy" defined

Softness="Average"

Softness\_Numeric="1.0" //Stiffest possible tire

Mesh="wheels/kraz\_front"

Radius="0.6"

Tracks="offroad"

Width="0.52"

Havok\_AllowedPenetrationDepth="0.06" //allow up to 6cm of clipping.

/>

----

WheelsetsCanRequireAddons:

example in classes/truck/kraz255.xml

section Truck/TruckData/WheelsSets

<WheelsSets>

<WheelsSet

Title="highway\_wheels"

RequiredAddons="kraz\_protector,kraz\_carriage" //The highway\_wheels set will only appear in the garage menu if

//you have mounted kraz\_protector and kraz\_carriage on your truck.

//Note:" MyAddon" is a valid addon name that is different from "MyAddon"

>

<WheelType Type="kraz\_front\_highway" Wheels="0,1" />

<WheelType Type="kraz\_double\_highway" Wheels="2,3,4,5" />

</WheelsSet>

</WheelsSets>

----

SupportAdditionalConstraints

example in any classes/trucks/whatever.xml

section Truck/PhysicsModel (or actually any PhysicsModel section)

\*\*\* PointToPlane

<Constraint

ModelFrameParent="Chassis\_cdt"

ModelFrameChild="TrackSegment\_cdt"

Type="PointToPlane" //we want a PointToPlane constraint

AxisLocal="(0;0;1)" //we want to block translation along the chassis' z axis

PivotOffset="(0;0;-0.7)" //we want TrackSegment\_cdt to stay at z=-0.7

/>

\*\*\* PointToPath

<Constraint

ModelFrameParent="Chassis\_cdt"

ModelFrameChild="TrackSegment\_cdt"

Type="PointToPath" //we want a PointToPath constraint

Path\_Mode="FullyConstrained" //PointToPath has 3 modes:

//1-PositionOnly: where it only makes sure the origin of the child body stays on the path.

//2-AlignXToPath: PositionOnly + the X vector of the child points along the path.

//3-FullyConstrained: AlignXToPath + the Z vector of the child points along NeverParallelDir

Loop="true" //specify that this path is looping, a line will link the first node

//and the last to close. DO NOT manually close the path

//by adding duplicate nodes (this is done automatically)

Node0="(-1.509;0.342;0)" //The coordinates of the first point of the path, relative to the parent's frame.

Node1="(1.572;0.301;0)" //Nodes are linked in a straight line from the previous node.

Node2="(1.701;0.155;0)" //There is NO LIMIT TO THE NUMBER OF NODES, the parser will just keep looking

Node3="(1.75;-0.09;0)" //for nodes until it doesn't find one.

Node4="(1.668;-0.299;0)" //PointToPath constrained bodies will start/spawn atttached to their closest position on

Node5="(0.681;-0.6;0)" //the path.(ie: no need to adjust the path's start position for every track segment)

Node6="(-1.136;-0.6;0)"

Node7="(-1.785;-0.183;0)"

Node8="(-1.757;0.174;0)"

Node8\_Tolerance="0.1" //How far (in meters) we can deviate from the path between node 8 and the next (node 0).

//If NeverParallelDir is all 0 then the tolerance applies in any direction (ie: child elements must

//stay within a tube arround each path segment).

//If NeverParallelDir is set, then only deviations perpendicular to NeverParallelDir are allowed.

//For tracks, with NeverParallelDir along Z axis, child element will be able to deviate from path along

//X and Y (suspension dir...).

//The actual tolerance is linearily interpolated with the tolerance at the previous or next segment.

PivotOffset="(0;0;0)" //Convenience, same as adding those 3 values to each path node.

SmoothFactor="0.2" //Smooths the edges at each node. Valid range: 0 to 0.5. Smoothing creates a quadratic bezier curve

//starting at SmoothFactor ratio of the segment, and using one end as control point.

NeverParallelDir="(0;0;1)" //A vector that is never parallel to the path.

//This is used when Path\_Mode="FullyConstrained" or when you use Node\*\_Tolerance.

//For tracks you typically want to use the truck's Z vector.

//Try to put a negative value if your tracks are upside down.

FrictionForceAlongPath="10" //Friction force, in Newtons, that resists movement along the path.

//This has nothing to do with a tank's grip on the ground.

SetChildQuality="4" //Raises the child body's quality. Depending on the size of your cdt it might be enough

//to prevent track segment from clipping through large rocks, other vehicles, woodpiles, etc...

SetParentQuality="3" //Same as SetChildQuality, but for the parent.

//Usually the chassis, being large and heavy it doesn't need a raise though.

/>

\*\*\* Chain

<Constraint

ModelFrameParent="Chassis\_cdt"

ModelFrameChild="TrackSegment1\_cdt"

Type="PointToPlane"

AxisLocal="(0;0;1)" ------ until there we are just defining a typical PointToPlane constraint

Chain\_Mode="StartChain" //create a new chain and add TrackSegment1\_cdt as the first element

Chain\_PreviousLinkToJointOffset="(-0.25;0;0)" //the distance between TrackSegment1\_cdt's origin and the articulation between the

//next link and this one. Expressed in TrackSegment1\_cdt's frame.

Chain\_NextLinkToJointOffset="(0;0;0)" //the distance between the next link's origin and the articulation with this body.

//Expressed in next link's frame.

------------------------- optonal parameters for advanced use only -------------------------

Chain\_MaxErrorDistance="0.05" //If a body of a chain is further than that from where it should be, then havok will

//trigger a special anti-havoksplosion algorithm. Disabled by default. Expressed in meters.

Chain\_CFM="0" //Not too sure about this one myself, so I'll just quote Telekinesys in this:

//"Constraint force mixing parameter. Value added to the diagonal of the constraint matrix.

//Should be zero or tiny, e.g. a fraction of HK\_REAL\_EPSILON. When this value is zero, then

//some chain configurations may result in a division by zero when solving."

//HK\_REAL\_EPSILON = 0.0000001192092896

Chain\_Stiffness="0.1" //DO NOT use them unless you understand "Havok has a main solver, chains have their own solver,

Chain\_Damping="0.1" //those are its tau and damping parameters".

/>

<Constraint

ModelFrameParent="Chassis\_cdt"

ModelFrameChild="TrackSegment2\_cdt"

Type="PointToPlane"

AxisLocal="(0;0;1)" ------ until there we are just defining a typical PointToPlane constraint

Chain\_Mode="ContinueChain" //adds TrackSegment2\_cdt to the previous chain

Chain\_PreviousLinkToJointOffset="(-0.25;0;0)" //

Chain\_NextLinkToJointOffset="(0;0;0)" //

/>

... a couple ContinueChain later ...

<Constraint

ModelFrameParent="Chassis\_cdt" -- in EndChain mode, ModelFrameParent is irrelevant, just make sure it exists to keep the game happy.

ModelFrameChild="TrackSegment99\_cdt"

Type="PointToPlane" -- in EndChain mode, the base constraint's parameters are not even read

Chain\_Mode="EndChain" //adds TrackSegment99\_cdt to the previous chain, and terminate the chain

Chain\_PreviousLinkToJointOffset="(-0.25;0;0)" //

Chain\_NextLinkToJointOffset="(0;0;0)" //

/>

<Constraint --and now you create the PointToPlane that wasn't created when we ended the chain above

ModelFrameParent="Chassis\_cdt"

ModelFrameChild="TrackSegment99\_cdt"

Type="PointToPlane"

AxisLocal="(0;0;1)"

/>

----

SupportSilentLinkedSteering:

example in classes/trucks/kirovets700.xml

section Truck/ControlledConstraints

<ControlledConstraints>

<Constraint

Id="chassis\_steer"

IsLinkedSteering="true"

TriggerEngineSound="false" //Driving this constraint will not cause engine sound

Name="ChassisSteer"

/>

</ControlledConstraints>

----

SupportSkidSteering:

example in classes/trucks/uaz469.xml

section \_templates/Wheel/UazWheel (also applies to Truck/Wheels/Wheel)

<UazWheel

DefaultWheelType="uaz"

HardpointOffsetY="-0.12"

SuspensionDamping="0.3"

SuspensionMin="-0.3"

SuspensionStrength="0.03"

SkidSteeringMode="ForwardBrake" //When turning left, left side wheels will brake,

//right side wheels will go forward.

//You can put "ForwardReverse" instead for classic tank steering.

SteeringAngle="0" <-Not needed, but recommended

/>

...

<Truck>

<TruckData>

<Motor

MaxDeltaAngVel="2.0" //twice the fuel consumption

Torque="1640" //the the max torque outside the engine

>

<ReverseGear AngVel="0.08" /> //total transmission ratios when this gear is selected

<HighGear AngVel="0.1" /> //wheel RPM = engine RPM \* these numbers

<Gear AngVel="0.08" /> //If all goes well your wheels will spin at about

<Gear AngVel="0.09" /> //2100 RPM(219 angvel) \* these numbers

<Gear AngVel="0.16" /> //

<Gear AngVel="0.25" /> //

</Motor>

----

MapsCanOverrideCloakMesh:

example in levels/level\_coast.xml

<SpintiresPlusConfig

CloakMesh="trucks/kraz255" //next time you play coast, the cloaks will look like a rotating kraz

//chassis inside a black circle.

/>

----

STPControlledConstraints:

example in trucks\ural\_cart.xml

section TruckAddon/PhysicsModel/Body/Body

<Body Mass="400" ModelFrame="BoneRotationBase\_cdt"> --this body is the base of the crane

<Constraint

AxisLocal="(0;1;0)"

MinLimit="-350"

MaxLimit="350"

Name="STPControlledConstraint" --This name tells ST+ that it must handle this constraint.

--ST+ will not drive constraints with other names.

--Referencing this name elsewhere (ie: powered or controlled constrains) will not work

--since ST+ will mangle it.

Type="Hinge" --Note that only Hinges and Prismatic constraints are supported.

--UnlimitedHinges are NOT supported.

ControllerIndex="0" //What controller drives this constraint (0=first controller, 1=second, etc...)

Speed="30" //At which speed we try to actuate this constaint, in deg/s for hinges or m/s for prismatics

//Negative values are supported.

//Keep in ming that the speed in game might be slower if your motor

//is not strong enough.

ResetSpeed="60" //Like Speed, but for when we are recentering the constraint

//(hint: you can use that to emulate BackSteerSpeed)

//Also, negative ResetSpeed are a bad idea.

ResetPosition="45" //To what position we should go when resetting, in degrees or meters.

//Defaults to 0 if omitted.

ResetWithTruckMovement="false" //if true the constraint will move toward reset position when the truck is rolling.

//if false, the constraint will only reset when you press the reset key.

//Defaults to false if omitted.

>

<Motor Force="40000" Tau="0.04" Type="Position" />

</Constraint>

<Body Mass="20" ModelFrame="BoneChair\_cdt">

...

-------------------------------------

SpintiresPlus relies on a modified version of AntTweakBar http://anttweakbar.sourceforge.net/doc/ used under zlib license.

SpintiresPlus and its source code are released under the terms of the MIT license:

Copyright (c) 2016 Localhost

Permission is hereby granted, free of charge, to any person obtaining a copy of this software and

associated documentation files (the "Software"), to deal in the Software without restriction,

including without limitation the rights to use, copy, modify, merge, publish, distribute, sublicense,

and/or sell copies of the Software, and to permit persons to whom the Software is furnished to do so,

subject to the following conditions:

-The above copyright notice and this permission notice shall be included in all copies or substantial

portions of the Software.

THE SOFTWARE IS PROVIDED "AS IS", WITHOUT WARRANTY OF ANY KIND, EXPRESS OR IMPLIED, INCLUDING BUT NOT

LIMITED TO THE WARRANTIES OF MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE AND NONINFRINGEMENT.

IN NO EVENT SHALL THE AUTHORS OR COPYRIGHT HOLDERS BE LIABLE FOR ANY CLAIM, DAMAGES OR OTHER LIABILITY,

WHETHER IN AN ACTION OF CONTRACT, TORT OR OTHERWISE, ARISING FROM, OUT OF OR IN CONNECTION WITH THE

SOFTWARE OR THE USE OR OTHER DEALINGS IN THE SOFTWARE.

-->