LOW POLY
VEHICLES CONTROLLER

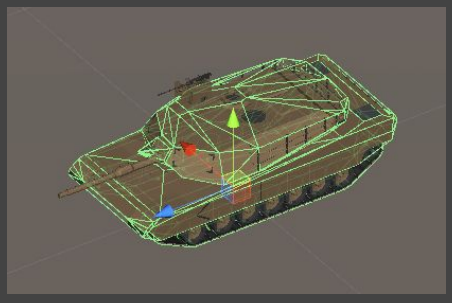
Summary

Quick Start

Quick start guide for the 'Low Poly Vehicles Controller'.

1. Model Requirements

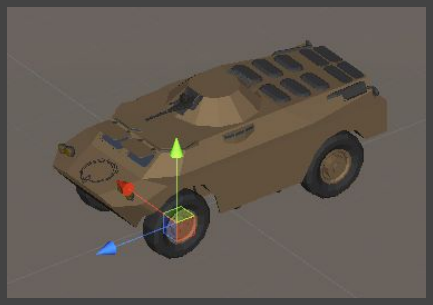
❏ A Game Ready model with correct axes: Z - Forward, Y - Up, X - Right.



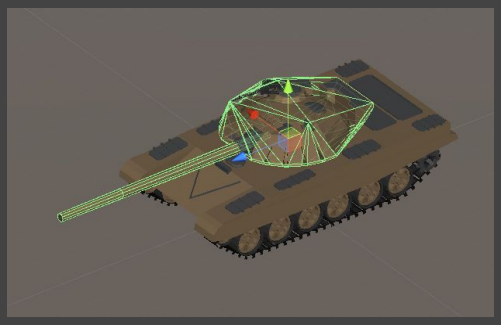
❏ For wheeled vehicles, each wheel (Object) must be separated from the rest using preferably a naming convention. E.g: Front_Left, Rear_Right.

❏ For tracked vehicles, each wheel (Object) and track (object) must be separated from the rest. E.g: Wheel_Left_01, Track_Left.

❏ Pivots must be centered in the tires, along all axes.



- ❏ For armored vehicles, separate the turret and set the gun as a children. (make sure to have a “barrel” children of the gun, if you want to apply recoil only on the barrel. E.g: Tanks.)



2. Component Requirements

- ❏ Add a ***rigidbody*** component on the main vehicle object (which can be an empty object as a parent.)
- ❏ Add an ***Audio Source*** component on the main object.
- ❏ Add a ***Vehicle Controller*** or a ***Tank Controller*** script on the main object.
- ❏ Duplicate the ***wheels mesh***, delete the mesh render, and add a ***wheel collider*** for each one. You can put them in two different folders. E.g:

- ❏ Add a ***mesh collider*** to the main vehicle mesh (body) and set it up to convex.

Setup Wheeled Vehicle

Vehicle Controller (Script)

a. Center Of Mass (**Vector3**): Set up the center of mass of the vehicle, the lower it is, the better the vehicle will hold the road.

b. Wheels (**List**):

- Size (**Float**): Input the number of wheel per side.
    - Wheel C (**Wheel Collider**): Input the Correct wheel Collider for the selected wheel.
    - Wheel T (**Transform**): Input the Correct wheel Transform for the selected wheel. (The same as the wheel Collider.)
    - Motor Torque (**Boolean**): If enabled, the selected wheel will receive Engine Force.
    - Steering (**Boolean**): If enabled, the wheel will be able to rotate on its Y axe, limited to the next float.
    - Steering Angle (**float**): Input the maximum angle of steering of the wheel, if applicable

c. Max Brake Torque (**Float**): Input the maximum brake force possible.

d. Motor Force (**Float**): Input the force of the engine.

e. Top Speed (**Float**): Set up the maximum speed (km/h) of the vehicle.

Setup Tracked Vehicle

Tanks Controller (Script)

a. Control Vehicle (**Boolean**): If disabled, you will not be able to control the vehicle.

b. Center Of Mass (**Vector3**): Set up the center of mass of the vehicle, the lower it is, the better the vehicle will hold the road.

c. Left & Right Track (**List**):

- Wheels Collider (**List**):
    - Size (Float): Input the number of wheels per side.
    - On each element; Input the correct Wheel Collider.
- Wheels Transform (**List**):
    - Size (Float): Input the number of wheels per side.
    - On each element; Input the correct Wheel Transform.

    .
- Wheels Bones (**List**):
    - Size (Float): Input the number of wheels per side.
    - On each element; Input the correct Wheel Bone.

d. Max Brake Torque (**Float**): Input the maximum brake force possible.

e. Motor Force (**Float**): Input the force of the engine.

f. Top Speed (**Float**): Set up the maximum speed (km/h) of the vehicle.

g. Right Track Material (**Material**): Input the Right Track materia (three base materials are provided in the package).

h. Left Track Material (**Material**): Input the Left Track material (three base materials are provided in the package).

i. Track Speed (**Float**): Input the Speed of the offset of the Track materials (Both Right and Left).

Setup General Gun

Turret Controller (Script)

Look

a. Cam (**GameObject**): Input the camera that you want to use as the main one.

b. Camera Target (**Transform**): Setup the target (**GameObject**) and the main camera will follow (must be children of the main vehicle).

c. Look Pos Max Distance (**float**): The higher is the value, the more precise will the gun be.

d. Turn Rate (**float**): Speed of rotation of the turret, in degree per second.

Base Turret

a. Base Turret (**Transform**): Point of rotation on the turret, it can be the turret mesh, or an **EmptyObject**, if you want to change the center of the turret.

b. Initial Base Rotation (**Vector3**): Initial rotation of the turret. Default is 0.

c. Limit Rotation (**Boolean**): If enabled, rotation of the turret will be clamped on the Y axe. Linked to the next two Floats.

d. Left Limit (**Float**, **Range**): Restrict Turret Rotation on the left side. Value expressed in degrees.

e. Right Limit (**Float**, **Range**): Restrict Turret Rotation on the right side. Value expressed in degrees.

Barrel Turret

a. Barrel Turret (**Transform**): Main gun transform, this transform is used to provide the angle (X axe) of the gun.

b. Initial Barrel Rotation (**Vector3**): Initial rotation of the Barrel. Default is 0.

c. Up limit (**Float**, **Range**):Restrict Barrel Rotation on the X positive angle. Value expressed in degrees.

d. Down Limit (**Float**, **Range**):Restrict the Barrel Rotation on the X negative angle. Value expressed in degrees.

Gun Controller (Script)

Bullet Actions

a. Gun Active (**Boolean**): If disabled, gun will not be usable.

b. Current Bullets (**Float**): Current bullets left in the magazine (Updated by the Max Bullet Per Mag value, and Fire Rate value.)

c. Max Bullets Per Mag (**Float**): Maximum number of bullets per magazine. Default is 300.

d. Bullet Left (**Float**): Bullet Left in the magazine. (Updated by the Max Bullet Per Mag value, and Fire Rate value.)

e. Fire Rate (**Int**): Time between two shots actions. The value is expressed in seconds.

Audio Actions

f. Shot Sound (**SoundEffect**): Input the sound effect you want to use for the Shot Sound.

g. Barrel Source (**AudioSource**): Drag the Audio Source component of the barrel in this Audio Source value.

h. Min Pitch (**Float**): Minimum Pitch for the gunshot sound effect. default is 0.9.

i. Max Pitch (**Float**): Maximum Pitch for the gunshot sound effect. default is 1.1.

Recoil Actions

j. Recoil Force (**Float**): Force of the recoil of the main gun. (Can influence the physics of the whole vehicle).

k. Recoil Position (**Transform**): Transform which is the base of the recoil force.

Shot Actions

l. Random Rotation (**Vector3**): Vector 3, Allowing to input a random rotation to the Eject point. (Value in degrees.)

m. Shell Prefab (**Prefab**): Prefab field for the bullet. Drag the bullet of your choice in this one.

n. Shell Velocity (**Float**): Initial velocity of the Bullet Prefab.

o. Hit Prefab (**Prefab**): Hit prefab, including a Particles System for the impact.

p. Hit Destroy Time (**Float**): Destroy time for the hit prefab, chose a longer time than the particles system duration.

q. Muzzle Flash (**Particles System**): Muzzle flash prefab field; input the muzzle flash prefab here.

r. Eject Point (**Transform**): Choose where the bullet will spawn. (Align Z+ with the barrel axe.)

Barrel Recoil Actions

s. Recoil Barrel Transform (**Transform**): Input the mesh of the barrel. (The three next variables, will influence its position).

t. Kick Back Recoil Barrel (**Vector3**): Direction and length of the barrel recoil default is one the Z axe, at 0.15m.

u. Kick Back Speed (**Float**): Speed of the barrel recoil; a ratio of 4:1 for the barrel Kick Speed will end up creating a good Barrel Return Speed.

v. Barrel Return Speed (**Float**): Return in place time for the barrel mesh. four time less than the Recoil speed is good.

Mine Controller

Mine (Script)

Make sure to add the “Mine” tag on the prefab!

a. Explosion Force (**Float**): Force of the explosion if the mine is triggered.

Tanks Damage Controller (Script)

a. Destroy Track (**Prefab**): Prefab of the destroyed track, might include a Particles System.

b. Left Track (**GameObject**): GameObject of the Left Track of the tank, drag the mesh from the model that you are using.

c. Right Track (**GameObject**): GameObject of the Right Track of the tank. Drag the mesh from the model that you are using.

Track Damage (Script)

a. Spawn Point (**Transform**): Empty object, at the ground level. This is the place where the damaged track will spawn.

b. Track (**List**): Choose the Left or Right Track, for the corresponding one.