Axles and Alloys
Hosted by Wolfe Games
v1.1

New to v1.1 - Flamethrowers, Spikes, Optional Turret Rules

Requirements
- Several d6, along with a d8 and a d12. A Games Workshop scatter die can be used instead of the d12
- One model car per player
- At least, one "Clockface" template (see below)
- Tape Measure(s)
- Pens and Paper
- A selection of oil slick, tin tack and mine counters, about 25mm square
- Scenery & a table top of 6' x 4' or larger.

Imperial Measurements
Axles and Alloys uses Imperial (a.k.a. English) measurements, i.e inches. If Imperial tape measures are not available (such as in Europe and Australia) then you can make measuring sticks from lengths of dowel marking off an inch every 25 millimetres. You will need to measure up to 24" inches which is about 60 centimetres. Alternatively just double all measurements and read centimetres for inches, which isn't accurate but is close enough.

"Clockfaces"
Cars turn using a clock face system. To make one, acquire a cheap protractor and mark off straight ahead, 1 o'clock, 2 o'clock, 10 o'clock and 11 o'clock. You don't need to mark 9 o'clock and 3 o'clock because these are the edges of the protractor! Having one for each player will speed things up no end.

General Conventions
We always measure from centre of roof (hood) to centre of roof. We don't allow pre-measuring or placing the clockface protractor next to a car until an order has been written. Much of the skill in Axles and Alloys is in visual estimation and selecting the right 'turn' and right speed to avoid obstacles.

Designing The Cars
For each car you will need to produce a Vehicle Sheet. This will list the vehicle's speed factors, hit points, components, and weaponry.
Vehicles are classified as one of three weights: light, medium or heavy.

- **Light** vehicles are dune buggies, sprint cars and hot rods with minimal bodywork.
- **Medium** vehicles are the majority vehicle type.
- **Heavy** vehicles are vans, ambulances and the like.

Hit Points record the damage that a vehicle can take. On a vehicle sheet, the Hit Points will consist of three lines of circles, each of equal length, in the following manner.

<div align="center">

OOOOO
OOOOO
OOOOO

</div>

Once a line of circles has been crossed out, the vehicle driver tests for the loss of components as detailed in the damage section below.

Light vehicles have 3 lines of 4 circles, and have 12 hit points.

Medium vehicles have 3 lines of 5 circles, and have 15 hit points.

Heavy vehicles have 3 lines of 6 circles, and have 18 hit points.

Some rare Light vehicles could have 3 lines of 3 circles (9 Hit Points) and some rare Heavies could have 3 lines of 7 circles (21 Hit Points).

Each vehicle has three factors that describe its speed. **MAX** describes the maximum speed in inches that a vehicle may travel at. **ACC** (acceleration) describes the number of inches that the vehicle may add to its speed in one turn. **DEC** (deceleration) describes the number of inches by which a vehicle may reduce its speed in one turn.

Typically a Medium vehicle will have a MAX in the region of 18-20, an ACC of 4 or 5 and a DEC of 5 or 6. Light ones will be faster, typically MAX of 22-24 with ACC of 5 or 6 and DEC of 6 or 7. Heavies are slower, typically MAX 15 to 18 with ACC of 3 or 4 and DEC of 3,4 or 5. I generally make vehicles that represent older cars bad at braking and worsen their DEC by a couple of points. It is recommended that you match speed factors to the appearance of a model!

The armament fitted to a vehicle will need to be decided upon and noted, along with the arcs in which a weapon can be fired. Refer to the FIRING section for more information on this.

The **components** fitted to a vehicle will need to be decided upon and noted. Refer to the Damage section for more information on this.

The inset box below represents a fairly typical car of saloon (sedan) size with two Machine Guns and an Oil Dropper. When designing cars bear in mind that light vehicles will generally have fewer guns than medium vehicles, which have less guns than heavy vehicles.

Car Name: Stilletto
Player Name: Owen

Size:	Medium	**Speed:**		
Hit Points:		Max: 20"		**Nitrous:**
OOOOOOX (Threshold Checks on 6)		Acc: 5"		XXXXXXXX
OOOOOOX (Threshold Checks on 5, 6)		Dec: 6"		
OOOOOOX (Destroyed)				

Components:		Destroyed	**Weapons:**	Driver	Gunner	Destroyed	Arc
	Driver	☐	Machine Gun (L)	☐	☐	☐	F
	Gunner	☒	Machine Gun (L)	☐	☐	☐	F
	Engine 1	☐	_____	☐	☐	☐	____
	Engine 2	☐	_____	☐	☐	☐	____
	Fuel	☐	**Special Equipment:**				
	Brakes	☐	Oil Dropper	☐	☐	☐	
	Steering	☐	_____	☐	☐	☐	
	Turret	☒	_____	☐	☐	☐	

In the interests of game balance, you might find it useful to limit Medium guns such as Rocket Launchers to a set limit of shots, such as 3.

Optional Systems Capacity Rules:
You may choose for vehicles to have a maximum number of systems – weapons, special equipment, and turrets – that they can carry. Light vehicles can carry a maximum of three systems, medium vehicles can carry four, and heavy vehicles can carry five plus one free turret (other vehicles must use up one system slot to account for the turret). Up to two weapons may be placed in a turret.

Turn Sequence
1.   Write Orders
2.   Move all cars (simultaneous)
3.   Fire weapons (simultaneous)

Movement

All movement is simultaneous and pre-plotted, so each driver writes down his next turn on paper. Once all drivers have written then down all 'orders' are revealed simultaneously.

Your speed is the distance your car travels in inches. This may be increased by a maximum of your Acc factor and decreased by a maximum of your Dec factor. Obviously you can never travel above your Max speed, except if your car is equipped with nitrous (see later). To reverse, a car must start the turn at speed 0. A car's maximum reverse speed is the same as its Acc factor.

> Example: A Car is traveling at 15", and it has an ACC of 6",
> a DEC of 4" and a MAX of 20". Its new speed may be
> between 11" and 20". If traveling at 4", its new speed may
> be between 0" and 10".

Turning

Imagine the car sitting in the middle of the face of a clock, traveling towards the 12 o'clock position. At the start of its move, it may be rotated to a new position on the clock face. This position may be between 9 o'clock and 3 o'clock, these two positions being the maximum a car may turn in one move.

Accordingly, 10 o'clock, 11 o'clock, 1 o'clock and 2 o'clock represent shallower turns and 12 o'clock represents straight ahead movement. A driver selects one of these positions and notes this on his order.

IMPORTANT - once moved a car remains pointing in the direction along which it was traveling - no further rotation is allowed!

Writing your Orders

Players will find it convenient to develop shorthand for writing orders. We write in the following fashion:

11" 2 O.C.

which means 11 inches in a 2 o'clock direction. Some players add an L or R to their order to indicate in which direction the car is turning.

Use of nitrous, drag 'chutes, oil droppers and mine droppers will need to be noted in the orders phase, but more information on this can be found in the Special Equipment section below.

Move Cars

Once everybody has written orders, they rotate their cars in the direction they are ordered to travel and move them their speed in inches. This distance may not be changed now and must be moved in full.

Crashing

The straight path that a car takes is slightly abstracted as the driver is assumed to be steering around obstacles. Only the end position is important. Accordingly, the straight path may travel through solid obstacles such as buildings, but if the final position of the car overlaps a solid obstacle it has crashed and is destroyed.

If at the end of a move, two cars have overlapped, then the players may elect to engage in a RAM.

An exception to the rule that 'only the final position matters' is in the case of mines and oil slicks. If the straight path runs over one of these, then its effect must be diced for immediately. The justification for this is that the actual counter only represents the 'epicentre' of the hazard.

Ramming

Both players roll a d6 and the higher wins. If a car is equipped with Ramming Plates or a Ramming Spar, the driver may add +1. If a car is equipped with a buzzsaw then the driver may add +2. Note that the actual position of the spar, plates or buzzsaw on a model is unimportant. These should be noted under the Special Equipment section on your record sheet.

On a draw, both cars count as the winner of the ram.

The winner takes d3 damage. His car remains in place. On a draw, both cars follow this rule.

The loser takes d6 damage and suffers Loss of Control.

Loss of Control

A car suffering from loss of control skids wildly in a random direction. It may roll over during the skid but is always assumed to land on its wheels.

There are three methods for randomizing the direction of a skid, depending upon what you have available:

    1.   Roll 1d12 and the car travels in that direction on 'clockface' direction where 12 o'clock is the direction the vehicle is pointing in. Clockfaces between 4 and 8 can be determined by placing the Clockface template behind the vehicle.

2. Roll a Games Workshop scatter die.
3. Spin a pencil.

The distance skidded depends upon the speed.

Speed of Car	Distance Skidded
0" to 12"	d6"
13" to 20"	d8"
21"+	d6+d8"

The actual facing of the car after the skid is unimportant. The driver will now miss a round while he restarts the car and takes a deep breath. After that he can drive off in any direction, so long as he notes it down in his orders.

Firing

Astute gamers will notice that the firing and damage systems owe a considerable amount to Jon Tuffley's *Full Thrust* starship combat rules. A vehicle may fire all weapons at once, and all firing is considered simultaneous.

Light weapons (C-class batteries in *Full Thrust*) include Machine Guns, Light Lasers, Handguns, and Crossbows.
Medium weapons (B-class batteries in *Full Thrust*) include Rocket Launchers, Grenade Launchers, and Medium Lasers.
Heavy weapons (A-class batteries in *Full Thrust*) include Heavy Lasers and Multiple Rocket Launcher systems. They are too huge to be fitted to a vehicle so are included out of completeness more than anything.

When firing, the attacking player rolls the following dice for each weapon:
- Light weapons Roll **1d6 up to 12"**
- Medium weapons Roll **2d6 up to 12"** and **1d6 up to 24"**
- Heavy weapons Roll **3d6 up to 12", 2d6 up to 24"** and **1d6 up to 36"**

Damage done depends upon the speed of the target:

Target Speed	Damage Taken
0"	4s and 5s do 2 hit points, 6s do 4 hit points
1" to 12"	4s and 5s do 1 hit point, 6s do 2 hit points
13" to 20"	5s and 6s do 1 hit point
21"+	6s do 1 hit point

Fixed weapons have a 45º arc. Turreted weapons have a 360º arc. Regardless of the position of the weapon upon the model, we always measure from the centre of the roof.

Limiting Turret Arcs (Optional Rule)

Some players may find that the 360º fire arc of a turret is too powerful, and we have noticed that the usefulness of turrets is in indirect proportion to the size of the table (in plain English that means turrets are more powerful on a small table than a large one). As a result you might like to ban turrets from firing directly behind them, in the clockfaces 5 to 7, i.e. a 60º arc to the rear.

Flamethrowers

Flamethrowers count as a Light (C-class) weapon with a range of 12". Regardless of the number of barrels modeled on a car flamethrower, they only ever count as one weapon - i.e. one attack, one dice. Any flamethrower hit will cause a FIRE; this should be noted on the player's sheet and maybe marked on the model car with a paint-daubed piece of cotton wool.

At the end of each turn, roll d6 for each FIRE.
> 1,2 - The FIRE goes out
> 3,4 - The FIRE burns on. Car takes an extra damage point
> 5,6 - The FIRE rages. Car takes an extra two damage points

Regardless of the number of Flamethrower hits, a car can only suffer one FIRE at a time.

Damage

Once a vehicle takes damage, start crossing out the circles on the first line of circles. Once a line has had all circles crossed out, the vehicle must take a threshold check, at which point critical damage to systems may occur.

On the first threshold, roll a d6 for each 'component'. It is destroyed on a 6. On the second threshold, roll a d6 for each 'component'. It is destroyed on a 5 or 6. A car reduced to 0 hit points is destroyed, although fuel or driver hits may destroy the car before that happens.

Components

All vehicles have the following components:

Fuel: If destroyed, vehicle is destroyed

Driver: If destroyed, vehicle suffers Loss of Control and driver is dead

Engine: On the first 'destroyed', the Max speed is halved. If destroyed a second time (i.e. on the 5 or 6 threshold) the engine is totally gone. The cars speed will decrease by 2" per turn, and can no longer accelerate.

Brakes: If destroyed, the Dec factor is reduced to 2"

Steering: If destroyed, the vehicle may no longer to turn to 9 o'clock or 3 o'clock. Shallower turns are still permitted. It can be seen that loss of this Component is more representative of damage to steering components and wheels rather than outright destruction.

Weapons: One component per weapon fitted. If destroyed, weapon is lost

Additional **Special Equipment** will count as components. See Special Equipment.

Ramming a Stationary Vehicle

To ram a stationary vehicle, all a driver has to do is select a 'straight path' that overruns the enemy vehicle. The rammer then stops at the stationary car and takes d3 damage. The rammed car takes d6 damage DOUBLED (d6x2) and suffers LOSS OF CONTROL. The rammers speed is automatically reduced to a figure equal to the distance that he had to move to strike the car, rounded UP to the nearest inch.

Running over Mines

IF a vehicle's straight path crosses a mine counter, there is a chance that the vehicle will run over and detonate a landmine. A light vehicle will set off a mine on a 4+. A medium vehicle will set off a mine on a 3+. A heavy vehicle will set off a mine on a 2+. If a mine is set off, the victim's car takes 2d6 damage and suffers Loss of Control. The mine counter is then removed.

Running over Oil Slicks

If a vehicle's straight path crosses an oil slick, it automatically suffers from Loss of Control. The oil slick counter stays in place.

Running over Spikes

If a vehicle's straight path crosses a Spikes counter it automatically suffers from the 'Steering' component loss effect, representing the shredding of the tires that occurs. The Spikes counter stays in place.

Vehicles with Gunners as well as Drivers

If a vehicle just has a driver, then the driver is responsible for firing all weapons, deploying all droppers and engaging nitrous and drag chutes. If a passenger is carried then the passenger (a.k.a. gunner) will be responsible for firing weapons. Division of labour should be noted on the vehicles sheet so that is obvious which crew member fires which guns. The passenger counts as a component and if destroyed (killed) his weapons may not be fired.

Another use for a passenger is for him to fire a light weapon from his side of the car in a 45º arc.

Passengers tend to be an extra complication and beginners can ignore them initially.

Special Equipment
Ramming Spars or Plates
This vehicle is equipped with massive armour plates for ramming or sharp protuberances designed to perform the same task. These must be modeled on the vehicle. These add +1 to the d6 in a RAM and count as a component. If destroyed, the spars or plates are lost.
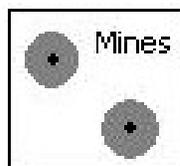
Buzzsaw
A vicious circular saw designed to chop through enemy cars at close quarters. This must be modeled on the vehicle. This adds +2 to the d6 in a RAM and count as a component. If destroyed, the buzzsaw is lost.

Oil Dropper
A remote-controlled dropper that dumps an oil slick counter behind the car of about 1" square in size (the size of 25mm x 25mm Citadel slottabase BTW). It is a one shot weapon and counts as a component. If destroyed, the oil dropper is lost.

To use an oil dropper, the driver notes his intention to use it when writing his orders. He must note whether to use it at the start of his move or the end of his move. If the former, the oil slick is placed behind the car before moving it; if at the end, it is placed behind the car once it has finished its move. Note that if another vehicle is directly behind the dropper when dropped, the other vehicle will be too close to avoid it and will automatically hit it. This is a good tactic to use against tailgaters!
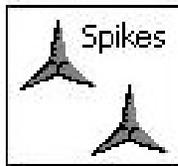
Mine Dropper
A remote-controlled dropper that dumps a bunch of contact mines behind the car of about 1" square in size (the size of 25mm x 25mm Citadel slottabase BTW). It is a one shot weapon and counts as a component. If destroyed, the mine dropper is lost.

To use a mine dropper, the driver notes his intention to use it when writing his orders. He must note whether to use it at the start of his move or the end of his move. If the former, the mine counter is placed behind the car before moving it; if at the end, it is placed behind the car once it has finished its move. Note that if another vehicle is directly behind the dropper when dropped, the other vehicle

will be too close to avoid it and will automatically hit it. This is a good tactic to use against tailgaters! Note - the Tin Tacks rules can be used for police-style 'Stingers' as well.

Spikes

A remote-controlled dropper that dumps a quantity of spikes or caltrops behind the car of about 1" square in size (the size of 25mm x 25mm Citadel slottabase BTW). It is a one shot weapon and counts as a component. If destroyed, the spike dropper is lost.

To use a spike dropper, the driver notes his intention to use it when writing his orders. He must note whether to use it at the start of his move or the end of his move. If the former, the spike counter is placed behind the car before moving it; if at the end, it is placed behind the car once it has finished its move. Note that if another vehicle is directly behind the dropper when dropped, the other vehicle will be too close to avoid it and will have to roll to avoid setting them off. This is a good tactic to use against tailgaters!

Drag 'chute

A dragster-style parachute. Included in the game because several of my Hot Wheels are dragsters and carry 'chutes. The chute can be used once to double the Dec factor of the vehicle. Intention to use it must be noted in the driver's orders. It counts as a component and is lost if destroyed.

Nitrous Oxide

A car equipped with nitrous rolls d6 for the number of 'uses' it starts the game with. When used a car is moved normally, then a d8 is rolled and the car is advanced that number of inches. This modified speed counts as the vehicle's speed for being shot at and Loss of Control, but at the start of next turn, the vehicle's speed does not include this 'free' speed. Intention to use a 'use' of nitro must be noted in the driver's orders. The nitro delivery system counts as a component and is lost if destroyed.

Vehicle Record Sheets

Car Name: _____
Player Name: _____

Size: _____ **Speed:**

Hit Points: Max: _____ **Nitrous:**

OOOOOO (Threshold Checks on 6) Acc: _____   OOOOOO

OOOOOO (Threshold Checks on 5, 6) Dec: _____

OOOOOO (Destroyed)

Components:	Destroyed	**Weapons:**	Driver	Gunner	Destroyed	Arc
Driver	☐	_____	☐	☐	☐	_____
Gunner	☐	_____	☐	☐	☐	_____
Engine 1	☐	_____	☐	☐	☐	_____
Engine 2	☐	_____	☐	☐	☐	_____
Fuel	☐	**Special Equipment:**				
Brakes	☐	_____	☐	☐	☐	
Steering	☐	_____	☐	☐	☐	
Turret	☐	_____	☐	☐	☐	

Car Name: _____
Player Name: _____

Size: _____ **Speed:**

Hit Points: Max: _____ **Nitrous:**

OOOOOO (Threshold Checks on 6) Acc: _____   OOOOOO

OOOOOO (Threshold Checks on 5, 6) Dec: _____

OOOOOO (Destroyed)

Components:	Destroyed	**Weapons:**	Driver	Gunner	Destroyed	Arc
Driver	☐	_____	☐	☐	☐	_____
Gunner	☐	_____	☐	☐	☐	_____
Engine 1	☐	_____	☐	☐	☐	_____
Engine 2	☐	_____	☐	☐	☐	_____
Fuel	☐	**Special Equipment:**				
Brakes	☐	_____	☐	☐	☐	
Steering	☐	_____	☐	☐	☐	
Turret	☐	_____	☐	☐	☐	