

## Vehicles

*The Gemini rules originally were intended to be compatible with Games Workshop (GW) source material. Therefore, the vehicle rules below use the Armour Value (AV) damage system from WH40k 3<sup>rd</sup> edition and subsequent editions. I disliked having a distinct damage system just for vehicles, but made of it what I could. If you are using the [Gemini ARAP 2.4 system](#) feel free to use the 8<sup>th</sup> edition "Toughness" based system instead. To use this system you will need to use the "Damage" values for weapons I am in the process of adding to the [ARAP Weapons](#) pages.*

Rules for conveyances such as bikes, horses and jump packs are covered in more detail in [another section](#).

A vehicle (or unit of vehicles) rolls for actions like any other unit. A vehicle gets one firing phase and/or one movement phase per turn, which can be taken either phase first. What a vehicle can do in these phases depends on how many action points it has rolled. Activation number is based on the Initiative of the likely crew, assuming an average troop type. For most vehicles it will be 3, or for Marines and Eldar 4.

The total distance a vehicle moves in a turn cannot exceed the equivalent of its Battlefield Speed given in its profile. Each 45° turn counts as 2" of movement, each 1" reversed counts as 2". Battlefield Speed is increased by 6" on roads, reduced by certain other terrain types.

Vehicles can:

- Move the equivalent of 12" or less per turn: 1 action point.
- Move the equivalent of more than 12" per turn: 2 action points.
- Fire up to two defensive weapons: 1 action point.
- Fire one or two main weapons or a mix of two main and defensive weapons: 2 action points.
- Fire one ordinance weapon or primary weapon, Direct fire: 2 action points.
- Fire one ordinance weapon or primary weapon, Indirect fire: 3 action points



- Fire more than two or all of the vehicle's non-ordinance/primary weapons: 3 action points.

A vehicle with three action points and a Battlefield Speed of 14" could move 14" (two action points) and fire its defensive weapons (one action point). It could move, fire defensive weapons and move again so long as the total distance moved was no more than 14".

### Vehicle Movement

Official WH40K 3rd Ed rules gave the maximum speeds for all standard (tracked) vehicles as 12", Fast vehicles (usually Skimmers) can move at up to 24". All Dreadnoughts and other walking vehicles move a 6".

These are probably better thought of as "Battlespeed" or cross country speed rather than the maximum speed a vehicle can obtain.

12" sounds about right for a Predator or Land Raider. Something like the Rhino can probably manage 14" while a Baneblade chugs along at 8". Personally I think a Sentinel can probably manage to move a lot faster than 6", even over rough ground.

Distances involving vehicles are measured to or from the edge of the hull, ignoring features such as dozerblades etc. Shooting ranges for vehicle mounted weapons are measured from the weapon's mounting point rather than its muzzle.

Gemini ARAP Movement rules for battlefield conditions are as follows:

- Move the equivalent of 12" or less: 1 action point.
- Move the equivalent of more than 12": 2 action points.
- Each 45° turn or part of reduces the total distance the vehicle can move in a turn by 2". A Predator with a 12" move that turns 180° can only travel 4".
- A vehicle reversing uses up 2" of its movement allowance for every 1" it reverses. The Predator can reverse no more than 6".

These rules take into account Equivalent Move rather than the distance the vehicle ends up from where it started. A vehicle that travels 10" and makes a 90° turn has travelled the equivalent of 14" since each 45° turn uses 2" of move. A vehicle reversing 7" has used 2 action points so can only fire two defensive weapons if it has an action points remaining.

It is assumed that at battlefield speeds tanks and skimmers can slew on the spot and ground bikes and walkers can turn in a small enough space that there is no need to worry about Turn Radius Templates.

Wheeled or tracked vehicles moving on roads or any other flat firm terrain may increase their maximum Battle speed by 6". Under Gemini rules such a fast-moving vehicle may still Tank Shock and models may attempt to board or leave the vehicle (although this is highly risky - if boarding or leaving is attempted on a vehicle moving faster than 6" the models receive an automatic hit with no saving throw equal in strength to the vehicle speed minus 6, rounded up).

### Vehicles and Difficult and Dangerous Terrain

Terrain that is Difficult or Very Difficult for Infantry will not automatically be so for vehicles. Some terrain is more easily traversable by vehicles while sometimes the reverse is true, and infantry can move more easily. Certain types of terrain may halve or quarter the maximum speed of vehicles but the situations where this is the case will depend on the type of vehicle. Specific examples are detailed in the following sections.

Certain types of terrain may also require a vehicle to make a Dangerous Terrain test. There will also be situations where a vehicle will be slowed by the terrain as well as requiring a

Dangerous Terrain test. A tank that is moving over a barricade will be slowed but will also stand a chance of becoming stuck.

The Standard Dangerous Terrain test for vehicles is 1 in 6. A vehicle that attempts to enter dangerous terrain, is moving through it during a turn or is in dangerous terrain and attempts to move out of it must roll a D6. If a "1" is rolled the vehicle becomes immobilized for the rest of the game (or until repaired or recovered). *(In ARAP 2.4 rules this may be a roll of "6" rather than "1")*

If the vehicle is moving faster than 6" then two D6 are rolled. If a 1 is rolled on either dice the vehicle is immobilized. If both dice roll 1s the vehicle is automatically destroyed. Occupants react in the same way as a "Vehicle Destroyed" result on the Vehicle Damage Table.

The GM may modify the above as suits the situation. A failed Dangerous Terrain result if crossing thin ice would probably indicate that the vehicle fell through the ice and was lost rather than immobilized. Moving through a minefield without special equipment would be a 4+ chance of setting off a mine.

### Boarding and Leaving Vehicles

A unit cannot voluntarily board and disembark from a vehicle in the same turn. A unit that boards a vehicle must wait until their next turn to disembark. They may, however, embark then be forced to disembark due to damage to the transport or a special rule. Certain situations may mean they may be forced to do this as a compulsory move, for example if the vehicle takes a Vehicle Wrecked or worse damage result *(see below)*.

To safely disembark or board a vehicle it must be stationary or stopped. Vehicles that do not move that turn are obviously stationary. If a moving vehicle has a speed of 6" or less it can

at any point in that move stop to let passengers embark or disembark.

Under Gemini rules Troops can board or disembark a vehicle that does not stop during a turn although this counts as boarding or exiting a moving vehicle and runs the risk of injury. If boarding or leaving is attempted on a vehicle moving faster than 6" each model receives an automatic hit with equal in strength to the **vehicle speed minus 6 (round up)**. Invulnerable saves can be taken. Armour saves can only be taken for armour that would protect from a fall such as Carapace and Power Armour. At battlefield speeds the risk is small but players may come up with interesting scenarios such as outlaws trying to board a moving train, an agent jumping from a moving car etc.

To board a stationary or stopped vehicle the model must be within 2" of a door or access point or can move this close using their move allowance. If at least 25% of a unit can get within 2" of an access point then all models of a unit in coherency can board. An enemy unit between the model and the access point will obviously prevent it from being able to board. To board a moving vehicle 25% of the models in a coherent unit must be or be capable of moving to within 2" of the vehicle's wake. The vehicle must also have sufficient interior space free to carry them.

On open-topped military vehicles the troops also board by climbing in over the sides so there is no restriction on how many can enter or leave at a time, only the capacity of the vehicle. To climb into a vehicle in this way 25% of the unit must be within 2" of a side.

Military transports can be assumed to have large doors for easy access. For cramped or small vehicles such as city cars the GM may choose to use the following rules so that a single door

will only allow four human-sized creatures to board or leave in a turn. Each bulky Size Two creature counts as two models.

Basic Move Allowance. Models passing through door per turn

3 S"+	4 models
2S- 3S"	3 models
1S- 2S"	2 models
less than 1S"	1 model

Troops leaving a stationary or stopped vehicle must have at least one model placed in contact of any exit being used. The rest of the unit are placed in a semi-circle around these figures using a 1S" coherency distance. If troops are leaving a vehicle moving at more than 6" they are placed in one or more columns back along the path travelled by the vehicle that turn. These column(s) will be along a corridor of the same width as the vehicle if a rear exit was used and up to 1S" to either side if troops exited from the side. Elements of the column(s) should be positioned to maintain 3" unit coherency.

The 2" move on to a vehicle or exiting a vehicle is not subject to terrain or encumbrance modifiers but may not be made if the unit is immobilized for some reason. Disembarking is a free action and does not require the unit to be activated. The disembarked unit can then be activated if the player then wishes and move, shoot or charge as normal. There are no restrictions on what a disembarked unit can do in the turn they disembarked provided it has sufficient actions and that it normally makes such actions. Units cannot disembark into an area already occupied by another unit and if it disembarks too close to an enemy it may provoke a reaction. If all the available exits are blocked, such as by enemy units assaulting the vehicle a unit cannot disembark.

While embarked on a vehicle a unit cannot be targeted by many weapons, abilities or rules, including psychological and morale rules unless otherwise specified.

Models eligible to board a vehicle can instead cling on to the outside. This may be done if the vehicle is not designed to carry Troops and it is up to the GM if this is possible and how many can be carried. Troops that cling on to the outside of a vehicle are not protected by the vehicle's armour if they are fired upon. They will also be vulnerable to weapons fired at the vehicle they are riding on. For Area and Template weapons apply damage to any troops under the marker as well as the vehicle. For other weapons randomize hits between the vehicle and visible riders.

Surviving passengers disembarking from a vehicle that exploded automatically cannot be activated their next turn.

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### Vehicles Firing

Gemini ARAP Rules for Vehicles Firing are:

- Fire up to two defensive weapons: 1 action point.
- Fire one or two main weapons or a mix of two main and defensive weapons: 2 action points.
- Fire one ordinance or primary weapon, Direct fire: 2 action points
- Fire one ordinance or primary weapon, Indirect fire: 3 action points
- Fire more than two or all of the vehicle's non-ordinance weapons: 3 action points
- In Gemini Rules Defensive Weapons are defined as Strength 6 or less.

- Some weapons can take several types of ammo or have different firing modes of varying strengths. If a weapon is capable of firing in a mode with a strength of greater than 6 it is classed as a main weapon, even if the player does not use this ammo type/ mode. Missile Launchers, Ork Kannon, Chaos Blastmasters, and Tau Railguns are therefore main weapons. Deathwind, Whirlwind and Typhoon launchers, Tau Smart Missiles and Inferno cannon are also classed as main weapons.

For these rules a mounting with twin-linked or multiple weapons of the same type is defined as a Single Weapon. A sponson-mounted Hurricane bolter is six boltguns that fire as three twin-linked boltguns but this is counted as a single defensive weapon. A moving vehicle can therefore fire two sponsons of Hurricane bolters, or one sponson and one other weapon.

Rapid Fire weapons mounted on a vehicle may fire their normal allowed number of times to maximum range or once more than their allocated number to two-thirds their maximum range in each firing phase.

Assault weapons and heavy weapons fire their allowed number of times to maximum range.

Ranges for vehicle-mounted weapons are measured from the weapon's mounting, not its muzzle. Line of sight is determined from the weapon's mounting.

In Gemini Rules driven walkers such as the Sentinel are considered fast vehicles rather than dreadnoughts. Dreadnoughts, war robots, eldar War Walkers and similar vehicles all now belong to a class called "mechanoids" in Gemini rules.

### Firing from Vehicles, Horses etc

Weapons mounted on vehicles, bikes, war robots, dreadnoughts etc fire as if they were stationary even if the machine they are mounted on is moving. They may be considered to be stabilized so fire as if stationary even if the vehicle is moving at speed. Most vehicle-mounted weapons are considered to have powered-traverse so Heavy weapons can still fire if they traverse more than 90°. The firing of Mounted weapons is governed by the number of actions the vehicle rolls.

If the vehicle carries passengers another Activation roll can be made for these to allow them to fire their personal weaponry. Firing personal weapons from a moving horse or vehicle is -1 to hit and only can be done against targets at **Short Range** (12" or half maximum range). Shots can be made as normal if the vehicle is stationary and makes no moves that turn. Built-in or mounted vehicle weapons are not restricted by this rule – it mainly applies to personal weapons.

Some vehicle-mounted weapons may not be stabilized and are therefore subject to the -1 to-hit penalty if used from a moving vehicle. Most pintle-mounted weapons will be subject to this rule but it may also apply to turret or sponson mounted weapons on the more primitive or improvised combat vehicles.

Any number of models can fire from an open-topped vehicle if they have a target in range in LOS and target arc. As a rule of thumb up to half the models in an open topped vehicle can fire from any one side.

If the vehicle is moving (and lacks auto-drive) the driver can only use a pistol and the GM may decide to impose a further -1 to hit penalty.

Enclosed military vehicles often have firing ports. Basic rule is that normally the number of models that can fire from a vehicle would not exceed half the vehicle's potential capacity.

Obviously if only two models are in the back of a truck both will be able to fire, not just one. A military vehicle designed to transport 10 men will probably have 2-3 firing ports each side and two in the rear. A vehicle may have additional firing ports for the crew and the passengers may also fire from open roof hatches. The number of firing points may be specified in the vehicle description/profile.

### Firing at Vehicles

I quite like the 3<sup>rd</sup> Ed rules for shooting at vehicles. Roll to hit using the usual Gemini shooting rules, modifying for speed and size. In Gemini rules all targets are treated the same, there are no bonuses for skimmers other than any they have for speed or size.

For non-area and non-template direct fire weapons use the Armour Value of the side nearest the firing unit. If the unit can see two sides use the AV of the side nearest the Squad Leader.

Some attacks may hit the roof of the vehicle. For vehicles that are not Open-topped, treat the roof armour as equal in Armour Value/Toughness to that of the side armour. There may be exceptions. On a planet prone to meteorite storms, or where flying animals habitually attack with dropped rocks, the roof armour may be thicker than elsewhere.

### Vehicles and Psionics

Some Psionic powers use a target's Leadership. For most military vehicles use a value of 10. If the driver is exposed or the vehicle poorly protected such as a city care use the value most likely for the driver.

### Vehicles and Cover

The GM may rule that vehicles cannot claim hull-down protection when attacked by high trajectory and indirect fire. If 50% or more of the vehicle side being fired at cannot be seen the vehicle is considered to be in cover. A vehicle in soft cover is -1 to hit, while one behind hard cover is -2.

Cover has another effect for vehicles. Vehicles that are at least 50% out of line of sight due to being hull-down or otherwise concealed by terrain features have a 3+ chance of any Penetrating hits scored being Glancing hits.

### Damaging Vehicles

Damage is Weapon Strength + D6, although at under half-range some weapons such as melta-guns and multi-meltas add an additional D6, so are S + 2D6. If the score equals or exceeds the vehicle's armour value a roll is made on the table. *In*

*ARAP 2.4 rules a dice roll of a natural 1 automatically causes no damage.*

If you prefer, calculate damage using Strength vs Toughness and a Save, as per 8<sup>th</sup> edition or later rules. Everyone in a game must agree what system is to be used.

A glancing hit removes one hull point/damage point, and only rolls on the [damage table](#) when no more hull points/damage points remain. A penetrating hit removes hull point(s) and rolls on the [damage table](#).

For weapons that cause multiple damage points, a glancing hit only removes one hull point.

### Armour Value into Toughness

If you are post-7<sup>th</sup> edition vehicle profiles, or just prefer, the armour value (AV) for a vehicle surface may be converted into a toughness value and saving throw.

The quick and dirty way to do this is to treat Toughness as AV-5, which gives a figure between 5 and 9. Treat a Toughness of 9 as T8+4 additional Hull Points

For standard sized vehicles, use a save of 3+. Lighter vehicles are 4+ or possibly 5+. Heavy and Superheavy vehicles are 2+. Standard vehicles have 10 to 12 Hull Points. Light

vehicles generally have 10 or less. Heavy vehicles have 12 or more, superheavy, 25+.

***Suggested Conversion:***

AV 10 light vehicle = T5/Save 4+/Hull Points 5

AV 11-12 open-topped = T6/Save 3+/Hull Points 10

AV 11-12 standard vehicle = T7/Save 3+/Hull Points 10

AV 13-14 standard vehicle = T8/Save 3+/Hull Points 12

AV 14 heavy vehicle = T8/Save 2+/Hull Points 12+

AV 14 superheavy = T8/Save 2+/Hull Points 25+

**Very Big and Very Tough Vehicles**

All vehicles roll against the appropriate damage chart whenever a Glancing or Penetrating hit is scored. Super Heavy vehicles have more Hull points than smaller vehicles but also get to ignore certain results on the Vehicle Damage table.

For really big vehicles such as Titans, Trains and Juggernauts it may be prudent to consider it to be built up of several sections, each roughly equivalent in size to a normal-size vehicle. How the damage to one section affects the rest of the vehicle is up to the GM to decide.

**Glancing Hits**

Each successful Glancing hit removes one hull point from the vehicle. Glancing hits only ever remove a single hull point, even if they would remove multiple points on a penetrating hit.

Glancing hits only roll against the Vehicle Damage table once the vehicle has reached zero hull points.

Glancing hits have their roll on the damage table modified by -2. For convenience a column already modified by -2 is provided on the table. For Glancing hits just read the dice value rolled off the leftmost column and apply other modifiers.

If using Strength vs Toughness rules, a roll to damage that achieves the minimum value needed may be considered a glancing hit. Hence if a 4+ was needed and a 4 rolled, the hit is treated as glancing if rolled on the tables.

**Penetrating Hits**

Each successful Penetrating Hit removes one Hull point from the vehicle and rolls against the Vehicle Damage table.

**“AP–” Weapons**

Weapons shown as “AP–” or “AP 0” suffer a modifier of -1 to the roll on the Vehicle Damage table.

**“AP 2” Weapons**

Hits from AP 2 Weapons add a modifier of +1 to the roll on the Vehicle Damage table.

**“AP 1” Weapons**

Hits from AP 1 Weapons add a modifier of +2 to the roll on the Vehicle Damage table.

**Open-Topped Vehicles**

Damage rolls for Open-topped vehicles receive a +1 modifier.

**“Tanks”**

Heavily armoured vehicles are generically classed as “Tanks”, irrespective of their actual role or even their means of propulsion. In Gemini-ARAP rules, a Tank could also be a Skimmer. All vehicles with this designation have a -1 modifier on the Vehicle Damage table.

**Structure Points and Hull Points**

In older rulesets such as Forgeworld books and Apocalypse datasheets, Very Heavy Vehicles and some buildings have “Structure Points”. A Structure Point is equivalent to three Hull Points.

**Very Heavy Vehicles**

Very Heavy Vehicles have a -3 modifier as long as they have any Structure Points remaining. This modifier cannot be combined with the Tank modifier if the vehicle also has this.

New official rules use Hull Points (HP). Three HP are equivalent to one Structure Point so the -3 modifier applies if the Super-Heavy Vehicle has 3 or more HP remaining.

**Vehicle Damage Roll Modifiers:**

Glancing hit	-2
Hit by “AP–” or “AP 0” Weapon	-1
Target not under centre of blast marker.	-3
Target is a “Tank”	-1
Damage from “Blunt” Ramming	-1
For every point of AV higher than colliding vehicle.	-1
Hit by “AP 2” Weapon	+1
Hit by “AP 1” Weapon	+2
Target is Open-Topped	+1

**VEHICLE DAMAGE RESULTS**

This table is slightly different to the GW Official ones.

D6 Result

Glancing Hit	Penetrating Hit	
1		No Effect

2		Crew Shaken
3	1	Crew Stunned
4*	2*	Damage: Armament Destroyed*
5*	3*	Damage: Immobilized*
6+	4	Vehicle Wrecked
	5	Vehicle Wrecked and Flipped
	6	Vehicle Explodes.
	7+	Vehicle Annihilated.

- Crews of Vehicles that take an Immobilizing or Armament destroying hit from an Ordinance weapon also take a Crew Stunned result.

**Crew Shaken:** Vehicle may move but shoots at BS1 till the end of the following game turn. Shaken results only last until the end of the next game turn, even if multiple Crew Shaken results were rolled in a turn. Passengers cannot shoot. Embarked troops can disembark but not shoot. If this result is taken by a crew that was already Shaken the crew become Stunned.

Super Heavy vehicles ignore this result.

**Crew Stunned:** Vehicle may not move or shoot until the end of the next game turn. Passengers cannot shoot. Embarked troops can not disembark. Stuns only last until the end of the next game turn, even if multiple stuns were scored in a turn. A

skimmer with a stunned crew drifts D6" in a random direction next turn (but stays facing original direction). A Stunned Dreadnought cannot fight in Close Combat for the following turn. If this result is taken by a crew that was already Stunned a weapon was destroyed instead.

Super Heavy vehicles ignore this result.

Flying Aircraft move 18" but cannot turn, pivot or shoot.

**Armament Destroyed:** Weapon Destroyed results affect weapons of S4 or higher first. Once all weapons have been destroyed or the vehicle was permanently unable to shoot for another reason further Weapon Destroyed results count as

Immobilized. A hit from an Ordinance weapon also inflicts a Crew Stunned result.

Super Heavy vehicles ignore this result.

**Immobilized:** Vehicle can no longer move but can still shoot. A hit from an Ordinance weapon also inflicts a Crew Stunned result.

Skimmers moving 6" or less that suffer an Immobilized result crash land but are not destroyed. Skimmers travelling faster crash and are destroyed. Further Immobilized results remove an additional Hull point if the vehicle is already Immobilized. Immobilized vehicles with no weapons remaining count as Wrecked.

Super Heavy vehicles ignore this result.

A flying aircraft that takes this result rolls a D6. A 3+ results in Crew Stunned result instead. A 1 or 2 results in a Crash and Burn.

**Vehicle Wrecked:** Crew are all killed. Passengers are placed around the vehicle within 2" and must take a Morale Test even if Fearless or Dogged. If the test is failed the unit cannot be Activated their next turn, nor can they make reactions. If attacked in close combat they may fight as normal. If they failed the test they cannot claim the wreckage as being in cover if assaulted.

Super Heavy vehicles ignore this result and instead lose an additional D3 hull points in addition to that from the Glancing or Penetrating Hit.

Flying Aircraft **Crash and Burn.**

**Vehicle Wrecked and Flipped:** As for Vehicle Wrecked but vehicle is also thrown D6" by Scatter dice. Rolling a HIT flips the vehicle over, so that it rests on its roof. Passengers take an S4 hit but may roll saves. Passengers placed around vehicle within 2" and must take a Morale Test with the same

consequences as described under "Vehicle Wrecked". Passengers in Open-topped vehicles take a S3 hit since they are more readily thrown clear.

Super Heavy vehicles ignore this result and instead lose an additional D3 hull points in addition to that from the Glancing or Penetrating Hit.

Flying Aircraft **Crash and Burn.**

**Vehicle Explodes:** As for Vehicle Wrecked but passengers take an S5 hit. Saves may be taken. Flaming debris thrown over D6" radius and any model within this range takes a S4 hit (Saves allowed). Nearby Vehicles are unaffected by the debris. Surviving passengers disembark but are tangled in the wreckage so automatically cannot be activated next turn nor make reactions.

Super Heavy vehicles ignore this result and instead lose an additional D3 hull points in addition to that lost from the Glancing or Penetrating Hit.

Flying Aircraft **Crash and Burn.**

**Vehicle Annihilated:** As for Vehicle Wrecked but Vehicle is blown to pieces. All crew and passengers killed. Fragments are thrown 6". Any model within this range takes an S4 hit (Saves allowed). Nearby Vehicles are unaffected. Only a smoking crater which counts as difficult ground is left behind.

Super Heavy vehicles ignore this result and instead lose an additional D3 hull points in addition to that from the Glancing or Penetrating Hit.

Flying Aircraft **Crash and Burn.**

**Crash and Burn:** The aircraft or spaceship explodes. Roll a Hit/Scatter dice and move the 5" marker 2D6". All models under the marker take a S6 AP- hit.

### **Area and Ordinance Weapons against Vehicles.**

To attack a vehicle with an Area or Ordinance weapon place the marker on the vehicle (Direct fire) or on the guessed range (High trajectory and Indirect fire). Work out scatter as appropriate. If any part of the vehicle is still within the marker or touching the edge the vehicle is hit. If the centre hole of the marker is on any part of the vehicle the Attack is at S + D6 (or 2D6 for Meltas under half-range) or S + Higher D6/D6 for Ordinance weapons. For direct fire the Armour value of the side closest to the shooter is used. High trajectory and Indirect fire uses the Armour value of the rear armour.

An Ordinance or Blast weapon only applies its full force if it scores a direct hit. If the vehicle is still in the marker but not covered by the centre hole a -3 modifier applies to the Damage table roll. Damage is determined using the armour value of the side closest to the centre of the marker or ruled most exposed. If exposure seems about even use the lower value.

Even if an Area or Ordinance weapon fired against a vehicle doesn't penetrate the armour it will still affect infantry near the vehicle at full force. Any such figures within the blast template roll S vs T and any saving rolls.

### **Shooting at Open-Topped Vehicles**

Shooting hits that result in Glancing or Penetrating hits against open topped vehicles are made at +1 on the appropriate damage charts.

Troops in open-topped vehicles or troops using top hatches can be targeted if within short range. At longer ranges hits are randomized between the passengers and vehicle, with vehicle hits being made on a 4+ roll of a D6. Area effect weapons may hit both. Depending on vehicle design the GM may rule that passengers within short range count as being in Hard cover (-2 to hit) or may disallow hits on at passengers at long range, working all hits as being against the vehicle.

Unarmoured enclosed vehicles such as the City Car are treated the same as open-topped vehicles if they take Glancing or Penetrating hit.

### **Shooting at Firing Ports**

Firing through the firing ports of vehicles at the occupants is treated in the same way as for buildings with firing ports with the exception that shots may also be subject to speed modifiers. The GM may rule which vehicles have ports that can be fired through.

- Firing ports, loopholes and slots are -2 to hit. The additional -1 to hit modifier for Thrown weapons such as grenades applies so grenades are -3. Area Weapons add +2 to their Scatter distance before the Shooter's BS is subtracted.
- For normal (Non-Area and Non-Template) weapons it is very difficult to see a shooter using a firing port so the number of hits scored is halved, rounding down.
- For Area weapons rolled hits have only a 50% chance of passing through the opening. For an Area weapon the firing port may be hit if a Hit is rolled on the Hit/Scatter dice or the scatter distance after modifiers and BS are subtracted is 0 or less. Roll a 4+ to see if the hit actually passes through the port. On a 3 or less treat the shot as scattered in the direction of the face arrow if the Scatter distance was greater than 0. Scattered shots always scatter outside the vehicle. If a Hit was rolled but it failed to pass through the opening it explodes outside the vehicle. Shots that manage to pass inside the vehicle are treated as an Area weapon hit to a whole compartment section or a confined space.
- Hand thrown grenades have a minimum -3 to-hit modifier against Firing Ports (-2 for the Port size and -1 for being a grenade). A roll against BS is always made to

throw a grenade through a very small target opening, no matter how close the thrower is. 50% of hits rolled will not pass through and will scatter outside the building as described for Area Weapons.

- To fire a template weapon through a very small opening such as a firing port the BS roll must be exceeded by 2. If this is achieved all figures under the template are hit automatically unless they have the benefit of some interior cover. Interior cover conveys an additional -1 or -2 to the needed target roll value to hit automatically. If the roll to fire through the small opening is not made the shot hits the outside of the vehicle. Flames may still enter through openings so any models within 1" of an opening may be hit on a 4+.
- The interior of a vehicle usually has little in the way of interior hard cover but very large vehicles may be different.
- Weapon ports on vehicles and bunkers usually have armoured shutters. If this is the case the GM may rule that shots through firing ports can only be made if the occupants have used the ports to fire from in a previous turn.

A Grenade, Template or Area weapon can be thrown/shot through an open vehicle hatch or normal-sized window using the same procedure as for building windows.

### Mêlée Against Vehicles

A vehicle can be charged and attacked in Close Combat by foot troops using the **Mêlée rules** with a few variations.

To attack a vehicle it must either be in charge range or the path the vehicle moved along on its last move must be in charge range. The vehicle is assumed to have been intercepted

in its course by the charging unit. If immobilized or destroyed the vehicle is moved back to where the combat took place.

Bonus attacks for charging and multiple weapons apply, unless **Planting Charges** (see below). A charged vehicle may fire its weapons at a charging unit like any other charged unit Standing and Firing. It rolls two D6 against its Activation number. If a vehicle rolls one success it may engage the chargers with up to two defensive weapons. If a vehicle rolls two successes it may fire any combination of two main or defensive weapons. Passengers using hatches, windows or firing ports may fire at a charging unit if they make their own rolls. This follows all the Stand and Fire rules even though the vehicle is moving rather than standing, so all shots are at -1 to-hit. Slow and Heavy weapons on the vehicle or used by passengers are considered to be stationary. Passengers shooting may be at an additional -1 to-hit their targets if the vehicle is moving. *In ARAP 2.4 rules all Stand and Fire shots are taken with BS 1.*

Since a vehicle has no WS it is hit on the roll of a 4+ and it cannot hit back. A vehicle moving faster than 6" is only hit on a 6. Hits are automatic against a stationary or immobilized vehicle. The 3rd Ed rules have Skimmers only ever hit on a 6 but it can be argued that a slow or stationary skimmer can be hit just as easily as a tank. In Gemini Rules it's the speed not the vehicle type that determines how easily a vehicle can be hit. The exception to this are Flying Skimmers, which unless Immobilized are only hit on a 6 since they are too high to be easily attacked with contact weapons and must be shot at or pelted with missiles. Troops in close combat can target vulnerable points of a vehicle so attack using the vehicle's lowest armour value, which is usually that of the rear.

*In ARAP 2.4 rules all slow or stationary vehicles are hit on a 3 or less, fast moving vehicles on a 1.*

Attacks against vehicles are made weapon Strength + D6 vs vehicle rear armour value. Rolls that exceed or equal the armour value roll against the Glancing and Direct hit tables.

Firing ports can be used to fire at chargers but once the troops are in Close Combat with the vehicle they are considered too close to be fired upon from firing ports. Likewise, they can't shove grenades or fire weapons into the ports -it can be assumed the troops inside lock the ports shut when the vehicle is assaulted.

If a vehicle has an open top or exposed crew these can be fought and fight back using normal mklñe rules. In an enclosed vehicle the crew may choose to remain buttoned up or fight from hatches. If the vehicle is moving the GM may rule that the driver fights at a reduced WS. If the vehicle is tall the GM may rule that crew and passengers can't be attacked except with pistols and projectile attacks or long weapons (spears). Similar restrictions may apply to the crew's armament when they are fighting back.

### **Planting Charges**

"Planting Charges" is a special attack against vehicles, dreadnoughts, large robots and monstrous and gargantuan creatures. A unit must have grenades or bombs that can be planted such as melta-bombs or krak grenades. Other types of grenade will usually have little effect against armour. Each model can make only one attempt per round. Models with more than one attack cannot also make other mklñe attacks if planting charges. Charge bonus and extra attacks for multiple weapons cannot be used if planting charges. Planting a charge takes some time and the model will need time to get clear! A to-hit roll to plant charges has a -1 modifier so needs a 5+ or a

7+ for a moving vehicle or no roll if the vehicle is static. *(In ARAP 2.4 rules 2 or less or a roll of 1/3).* A planted charge does not have an effect area but instead does special damage, which may be greater than its performance when thrown. Against a machine/creature with WS the attempt to plant charges counts as an Initiative 1 attack. *A to-hit roll of a 6 against a target with WS results in the grenade or bomb detonating while still held by the fighter attempting to plant it! The bomber, vehicle and surrounding comrades will be in any effect area.*

A Melta-bomb does S8+ 2D6 (S8 AP1) and a Krak grenade S6+D6 (S6 AP4).

Attempting to throw grenades through open hatches, firing ports or open tops are Shooting actions and cannot be attempted while in Close Combat.

Vehicles don't lose or rout, they just move away or continue to be attacked. A vehicle that moves away is not "breaking off". A vehicle that is attacked may have sufficient move left for the end point of its travel to be some distance from the unit that attacked it. If the attackers fail to cause sufficient damage the vehicle will continue moving to this point, or its move on its next MOVEMENT phase will carry it further than the Assaulting unit can charge to continue contact.

### **"It's Going to Blow!" Rule**

Troops in Close Combat with a vehicle that achieve a "Vehicle Explodes" or similar result are automatically moved D6" away from the vehicle before the explosion damage and effects are worked out. This does not occur when a 6 to-hit roll occurs when planting charges.

### Machines with WS

In pre-8<sup>th</sup> edition rules only some machines or vehicles have a WS value. This includes dreadnoughts, the sentinel walker and war robots. These become locked in combat like infantry.

Dreadnoughts and the sentinel are fought against using the machine's WS, but damage is worked out as for vehicles. Machines with a WS always use their frontal armour value/toughness when determining Close Combat damage. Any "Immobilization", or "Stunned" result reduces the dreadnought or robot's attacks by 1 to a minimum of 1. "Shaken" results have no effect while in Close Combat.

Because of their reach and dexterity, dreadnoughts are considered to have a 180° "Claw" attack and can fight against models in front of and beside them. Dedicated assault dreadnoughts (those with two or more Close Combat weapons) are considered to have a Stomp attack and can attack 360°. Driven walkers and robots can only attack to the front 90°.

Dreadnoughts and driven walkers have a Melee Radius of 3". Robots vary in size, but most warbots are bulky Size two and therefore have a 2" Melee Radius.

For purposes of attempting to plant charges, dreadnoughts or robots are considered to be fast moving targets. Infantry cannot plant charges unless they roll a 7+ and each can make only one attempt per model per round. If the machine is stunned or immobilized charges can be planted on a 5+. *(2 or less with ARAP 2.4)*. This rule also applies to most walker vehicles or any other target that has a WS value.

When fighting a dreadnought each damage roll counts as a wound for purposes of working out the winner of the round. When fighting a robot each unsaved Damage Point inflicted counts as a wound. Dreadnoughts and robots don't take

morale rolls or Rout if they lose a round of combat and are not affected by the No Retreat rules for Fearless creatures.

---

### Vehicle Collisions and Ramming

When I first wrote these rules the Official WH40K 3<sup>rd</sup> edition rules had no rules for ramming. WH40K-RT rules didn't work since vehicles now had armour values rather than toughness.

WH40K 5<sup>th</sup> edition introduced some ramming rules, and these are somewhat easier to remember than those I originally came up with, so I have adapted these to Gemini. An advantage of the WH40K 5<sup>th</sup> edition Ramming rules is it can also be used to work out the strength of impacts of moving objects that lack an Armour Value. If you ever need to know the effect of a bike, Tau Drone or Kamikaze Ptera-squirrel impacting a Land-Raider, use these rules. It may be an idea to apply a -2 impact strength modifier to Size One creatures. The rules I wrote are included on the older Gemini Rules pages.

In WH40K 5<sup>th</sup> edition a ram is made instead of shooting and is treated as a Tank Shock with the vehicle required to move at maximum speed. Rams can only be made against vehicles. It is possible for a vehicle to Tank Shock a unit of infantry and then ram a vehicle beyond. In Gemini rules a vehicle may ram at any speed and may fire if it has sufficient actions. Gemini rules allow a vehicle to ram targets other than other vehicles.

Strength of a Ram is determined by:

- **Armour:** +1 for each point of AV above 10 or point of Toughness above T5.

- **Speed:** +1 for each full 3" moved by rammer (or 3" of Relative Speed).
- **Mass:** +1 if the other vehicle has heavy armour. (Hull Points 11 or more) These are the vehicles called "Tanks" in the official rules, although many are technically not true tanks. Heavy and Super Heavy Vehicles and Buildings add +2.
- **Size:** -1 if a participant is Size Two, -2 if Size One.

*Example.* An Ork biker moving fast at 14" collides with a Land Raider advancing at 6".

The bike takes a hit of 2 (Land Raider Speed is 2 full 3") +4 (Land Raider Armour=14) +1 (Mass) for a Strength 7 hit.

The Land Raider takes a hit +4 (bike speed) -1 (bike is Size Two) for a Strength 3 hit.

Strength of impact is worked out separately for both rammer and rammed vehicle. The rammed vehicle uses the ramming vehicle's frontal armour value unless the rammer backed into the target. The ramming vehicle uses the armour value of the side of the target it impacts.

If a penetrating or glancing hit is caused there are two additional modifiers for the roll on the damage table.

If both parties involved in the collision have AV then the one with a higher relevant AV gets a -1 modifier for every point of AV higher.

Since the force of the impact is spread over a broad area both vehicles take a -1 modifier to their damage roll. The GM may waive this modifier for one party if some form of ramming spike or sharp pointed defence is involved.

Skimmers and Flying Skimmers can avoid being rammed by a non-skimmer AFV ("Tank") on a +3. Flying Skimmers may be flying too high to be rammed by some vehicles.

Mechanoids such as Dreadnoughts can choose to either brace for impact and be rammed normally or make a "Death or

Glory" attack. It cannot make a Death or Glory attack if rammed in its rear arc. If the Death or Glory attack is failed the ram is worked out against the Dreadnought's rear Armour Value.

If a wall is damaged in a collision, it is assumed D6 points of damage on the wall are inflicted. This information is need to establish whether a door is broken down, the wall demolished or how big a hole is created.

For an added level you can use the vehicles' relative speeds, although this does require keeping a note of how far the target vehicle moved in its previous turn.

The relative speed of an impact will depend on which quadrant of the target vehicle the rammer hits. A ram that hits a vehicle perpendicularly to its direction of movement is obviously a side impact. A ram at 0 degrees to the line of travel is obviously a head on collision and one at 180 degrees obviously a rear impact. Side Impacts are considered to be impacts that hit the quadrants that are between 45-135° and 225-315°, or from NE to SE and NW to SW in compass terms if the vehicle is taken as travelling "North". Impacts outside this arc are either frontal or rear impacts.

If the vehicle is rammed in the rear quadrant while moving forward the relative speed is that of the faster vehicle with that of the slower subtracted. A slower vehicle can ram a faster in the rear if it intercepts at an angle, so this is allowed.

If one vehicle rams another in the side quadrant the relative speed is the speed of the ramming vehicle. This is also the relative speed used for rams against vehicles or objects that are not moving. This is known as a T-bone and applies the rammer's frontal armour against the target's side.

A collision or ram against the front of a vehicle uses the combined speeds of the two vehicles.

Rakes and Sideswipes are ramming attacks made against the side armour of the target by a rammer following a parallel course. A Rake comes from the opposite direction so relative speed is the sum of the two vehicles' speeds. A Sideswipe comes from the rear so relative speed is the difference in speeds. Rakes and Sideswipes are always worked out using the target's and rammer's side armour value and can only ever inflict Glancing hits. Unless a swerve is made the rammer assumes a course parallel to the target's direction of travel after making a Rake or Sideswipe, and if it has any move allowance left will continue to move in this direction.

A head on collision will usually halt both vehicles while a Rake allows the rammer to keep moving. Sideswipes maintain a pursuit and often allow multiple attacks.

### **Swerves and Ramming**

Swerves can be attempted to avoid a ram. A ram to the side of a vehicle may cause it to swerve automatically.

Swerving to avoid a ram requires a successful Leadership test.

If the ram was to the front or rear quadrant the vehicle is moved to the side so that it is just out of the path of the would-be rammer. The nose of the swerving vehicle is moved 45 degrees outward from the rammer. If the rammer has any move allowance left it is moved past the other vehicle.

For a T-bone ram the behaviour of the rammed vehicle depends on whether the evasion was successful or the ram connected and caused damage. In all cases the end of the target vehicle is moved so it is just outside the path of the rammer. If the ram was evaded the target vehicle is pivoted 45 degrees away from the direction the ram came from. If the vehicle took damage the impact pivoted it towards the direction the ram came from. If the vehicle was hit but took no damage it is moved past the rammer's path but not pivoted.

The rammer uses any remaining move allowance to pass past the target's tail.

Sideswipes and Rakes can be evaded. On a successful Ld roll the vehicle pivots 45 degrees away from the rammer and does not take damage. The rammer may use remaining movement but cannot attempt another ram on the same target.

If a Sideswipe does connect the vehicle that takes the greater damage automatically swerves 45 degrees away from the impact.

If a Rake connects and causes any damage both vehicles automatically swerve 45 degrees away from each other.

### **Playing Chicken (Optional)**

Both vehicles are set up for a head-on ram. Each player takes a dice and selects or rolls a number which they keep hidden. 1-2, swerve left, 3-4 go straight, 5-6 swerve right. When the vehicles meet the dice numbers are revealed and the vehicle positions adjusted accordingly and any damage worked out.

### **Running over Pedestrians and Foot Troops**

If a vehicle is traveling at 6" or less it is assumed that troops automatically move out of the way. To avoid being run over by a faster vehicle a Move Save is made.

The Move save is made by rolling a D6 equal to or less than the model's Initiative but is subject to the following modifiers.

- Models with a move of 2" or less roll against Int-1.
- Models with a move greater than 2" and less than or equal to 4" roll against Initiative.
- Models with a move of greater than 4" roll against Int+1.

The move value used is the current move allowance modified by factors such as encumbrance and terrain, not the

basic move in the profile. Troops in boggy ground will be much easier for a vehicle run over, while troops with Jump Packs will be near impossible.

Models that fail to move out the way take a hit equal in Strength for Ramming as described above. Roll to damage and armour save as normal.

A vehicle may attempt to run over more than unit of models. The second unit it attempts this against makes its move save at +1, the third group at +2 and so on. To be considered distinct groups there must be more than 3" between the units. Individual characters are treated as units of one unless they are within coherency distance of a friendly unit.

### **Tank Shock**

Official 5<sup>th</sup> edition GW rules for Tank Shock and Ramming were flawed. It was impossible to Tank Shock a Fearless creature, yet one could not run over a non-vehicle.

In Gemini rules units that have a vehicle attempting to run them over will also have to test for Tank Shock. A successful Death or Glory attempt can prevent a vehicle running them down.

“Tank Shock” reflects the psychological aspects of having a large vehicle try to run you down. Tank shock is usually only

allowed to vehicles that have the designation “Tank” in their profile but the GM should also allow this for other impressively massive unarmoured vehicles such as a bulldozer or large civilian freight truck.

If a Tank or similar massive vehicle (11 or more Hull Points) drives through a formation of infantry (or cavalry or beasts) and any members survive, the unit makes a Morale test. If the test is failed, the unit is subject to a one dice activation penalty for its next turn. It must roll at least two dice and takes one less action than successes it rolls. If the Morale test is failed and the unit lost 25% or more of its strength from the collision, the unit is Pinned and takes two less actions than they roll next turn. If the unit passes the test, they may be arranged facing any direction and can attempt a reaction against the vehicle.

### **Death or Glory**

Instead of taking a Move save troops may elect to attempt a Stand and Fire reaction against a vehicle trying to run them over. Alternately they may make Close Combat attacks against the vehicle’s frontal armour, including Grenade and Melta-bomb attacks. Psionic powers can also be tried. If unit stuns, immobilizes or destroys the vehicle it is immediately halted. If, however, they fail to cause damage that stops the vehicle many members of the unit will be hit by the vehicle.

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## **Special Characteristics of Different Vehicle Types**

### **Military Tracked Vehicles**

- Can move over most ground that infantry treat as difficult with no penalty.
- Normal Woodland can be moved through at half-rate. Dense Woodland or equivalent is impassable. The GM may allow a vehicle to attempt to push through at quarter rate, treating

the area as Dangerous ground. A roll of 1 on a D6 means the vehicle is hung-up or stuck and therefore immobilized.

- Bogs or loose ground areas are treated as Dangerous Terrain. Roll a D6. On a 1 the vehicle is stuck and cannot move itself for the game.
- Most Linear obstacles can be crossed at no penalty. Movement over stone walls and the like

can be done at no more than half maximum battle speed. Exceeding this speed results in the vehicle colliding with the wall (use **Ramming rules**). On a roll of 1 on a D6 the vehicle becomes stuck halfway over the wall.

- Streams and rivers can be crossed without penalty. It is assumed that 41st Millennium Imperial military tracks can either swim or deep ford. This may not be true of more primitive users.

Battle speed can be taken as 12" or between 8-14" depending on vehicle weight and size. The Salamander scout vehicle has a battlefield speed of 24" so is a fast vehicle.

A typical maximum speed for a tracked vehicle would be between 16-24" or 2D6+8".

#### **Skimmers**

- Cross linear obstacles such as hedges and low walls at up to half maximum battle speed.
- Normal Woodland can be moved through at half-rate. Cannot operate in dense woods, stalagmite forests etc
- No penalty over water, bogs or soft ground.

Most skimmers have a speed of 16-24" (use 2D6+12" to generate a random figure). The Imperial Land Speeder has a maximum of 24". Since Skimmers aren't really affected by ground conditions the road speed and battlefield speed are essentially the same.

#### **Flying Skimmers**

Many Skimmers such as the Land Speeder are ground vehicles that float only one or two metres above the ground. Other vehicles such as Eldar Jet Bikes and Grav-Tanks are actually flyers operating at low level. These are essentially

treated the same as Skimmers but a few alternate rules are allowed if the player desires. Vehicles that come under these rules are termed "Flying Skimmers".

Further details for such vehicles are in the **Flier Rules**.

- Flying Skimmers are considered to be moving at least 3-4 metres off the ground so do not block line of sight to infantry units and ground vehicles behind them. Troops can fire underneath the Flying Skimmer.
- Flying Skimmers can fly over area terrain, obstacles or infantry units. An infantry unit that is flown over is not subject to Tank Shock. Flying Skimmers that fly over terrain such as forests rather than through it cannot claim cover or concealment from the terrain.
- Flying Skimmers can cross linear obstacles such as walls at any speed with no risk.
- Flying Skimmers assaulted in close combat are only hit on a 6 unless Immobilized.

#### **Walkers**

- Ignore all movement penalties for terrain except for woods and deep water
- A sealed walker can walk along the bottom of a sea bed at half rate. Streams and shallow water can be walked through at no penalty.
- Woods and equivalent terrain types are passable at half-rate or less.

Walker speed varies between 12-20" or 2D6+8". These figures mainly apply to light vehicles like the Sentinel. Heavily armoured beasts like the Dreadnought vary between 4-8" with 6" being typical. Since they are not as affected by ground

conditions as many other vehicle types battle speed and maximum speed are very similar.

### Road-Wheeler

A road-wheeler is something like a civilian car or truck designed to move on good roads. Working vehicles of this type are rare on a battlefield. Most have been wrecked or had their tires eaten by Gretchen.

- Cannot cross linear obstacles of any kind. Attempting to do so counts as a collision and stops the vehicle.
- Cannot enter woods etc
- Difficult ground and very difficult ground impassable at speeds of more than 4". Roll a D6 EVERY turn the vehicle is in such terrain. It becomes stuck on a roll of 1

Movement of Road-Wheelers would usually be made with ["Street Race"](#) rules. See later in this chapter for these.

The City car is an unarmoured and flimsy vehicle. Treat as an Open-topped vehicle for purposes of damage determination. Shooting hits that result in Glancing or Penetrating hits against such vehicles are made at +1 on the appropriate damage charts. Unless the City Car really is Open-topped passengers take a hit of S4 or greater in the event of a Vehicle Destroyed or Flipped result.

Many civilian vehicles used are unarmed. An "Armament destroyed" roll can be re-rolled, taken as a passenger killed or as a Loss of Control result.

Typical/Random City Car.

Max Speed	Acc/Dec	TRR	AV Front	AV Sides and Rear
24-32" or 2D6 + 20"	6-12" or 2D4 + 4"	1	9	8

The Maximum Speed given already assumes road travel. Don't add a further 6".

### Limbering/Unlimbering Towed Weapons and Trailers

It is assumed that most of the vehicles on a battlefield other than Bikes and Trikes can tow weapons or trailers. It is assumed weapon crew ride the vehicle or hang onto the weapon. Some Trikes may also be able to tow some loads.

Loads are limbered to a vehicle as an action. The vehicle and load must be static and within 3". At Battlefield Speeds there is no penalty for towing reasonable loads. To unlimber a load the vehicle must be static for that Movement phase. The same rules are used for animal towed loads.

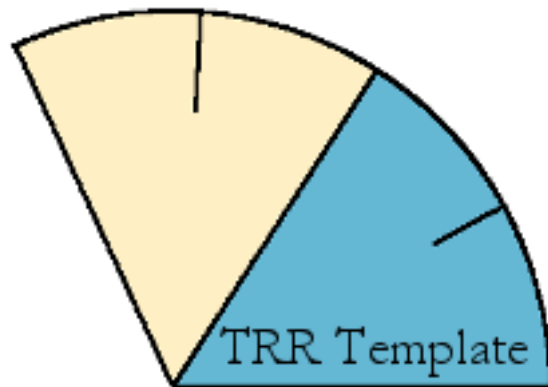
Orks have a special unlimbering technique that only Orks are insane enough to use. While the vehicle is still moving the coupling is whacked and the weapon bounces D6" in a random direction and at a random facing. If the weapon collides with anything it follows the Collision and Ramming rules and is assumed to have an Armour Value of 11 and a speed equal to that of the towing vehicle. The Ork crew leap from the vehicle and may take damage if the vehicle is moving faster than 6". Damage is an automatic hit equal in Strength to Vehicle speed minus 6 with no saving throw.

### Street Race Rules

If your scenario includes lots of high-speed chases and the like you may want to use “Street Race Rules.” To use Street Race Rules two new characteristics need to be known for a vehicle: the Acc/Dec value and the TRR.

Acc/Dec is simply the number by which a vehicle can increase or decrease its move allowance/speed each turn.

Turn Ratio Radius (TRR) is simply a means to easily calculate the radius of the turning circle of a vehicle at any given speed. If a vehicle has a move of 8" and a TRR of 1 then it has an 8" radius turn circle. Under game rules it can't move more than 8" along the circumference of that circle each turn.



A bit of quick geometry tells us that if the length of an arc is equal to its radius the vehicle cannot travel an angle more than one Radian (about 57.3°). You may use 57° for play purposes. Better still, print out the radian protractor [here](#) and use it to construct a turn template or click on the image on the right.

All you really need to work out turn circles is a tape measure but if you are going to use them a lot make some templates. This can be anything marked with a one radian/57-degree angle (or multiples of). A template for a TRR=1 turn would resemble a 57 degree/ one radian slice of cake. A two-radian template will prove useful for TRR=S vehicles.

To use a TRR template:

- For a TRR of 1 measure from the side of a vehicle a distance equal to its speed. If TRR of S measure a distance equal to half the speed.
- Place the apex of the template at this point with one straight edge pointing at the vehicle.
- Measure from the apex the same distance along the other straight edge.
- The point measured to is the “End Point” - where the vehicle would finish if it used its whole movement allowance to turn.
- If the vehicle uses its full move place it at the end point.
- If it only uses part of its move to turn use the tape measure to measure along the arc between the start and end points.

A vehicle with a TRR of S uses half the speed as a turn radius and can therefore travel two radians/114° per turn. If you make a two radian/114° template mark it off in 57 and 28.5 degree or one and half radian increments so you can also use it with TRR 1 and 2 vehicles. A TRR 2 vehicle obviously uses a radius twice its speed and turns no more than half a radian per turn.

- Most vehicles, including tracked vehicles moving at speed and road wheelers have a TRR of 1.

- Bikes have a TRR of S. Walkers moving at high speed (12" or faster) also have a TRR of S. A bike carrying a passenger would have its TRR increased to 1.

Few vehicles have a TRR greater than 1. A Tunneler would have 2 and a Juggernaut 7. On the very rare occasions when you need to know turning circle of a Juggernaut so don't bother making a template, just use a tape measure.

Example: The roadster is travelling at a speed of 12" and 2" from a junction tries to make a 90° turn. Radius of turn will be 12" since TRR is 1. The vehicle moves along the arc its remaining 8" of move. This only turns the vehicle about 23° and it crashes into a shop front.

Many vehicles used with Street Race rules are unarmed. An "Armament destroyed" roll can be re-rolled, taken as a passenger killed or as a Loss of Control result.

A "Crew Stunned" result on a damage chart and certain other situations will result in a vehicle obeying Street Race rules losing control.

### **Loss of Control**

Roll two pairs of D6, each pair of a different colour. One pair represents acceleration, the other deceleration. Subtract the lower score from the higher. If the deceleration roll was higher subtract the difference in scores from the vehicle's speed. If acceleration was higher add the difference to the vehicle's current speed to get its new speed. Roll another D6.

- 1-2 the vehicle turns left at the new speed
- 3-4 it moves straight ahead at the new speed
- 5-6 it turns right at the new speed.

Radius of any turns is equal to the new speed, irrespective of the usual TRR the vehicle uses.

An out of control Skimmer or Flying Skimmer rolls an additional D6. On a 1 the Skimmer crashes into the ground. On a 2-5 it stays level. On a 6 the nose raises the vehicle stalls and it flips over crashing 2D6" in a direction determined by Scatter dice.

### **Reversing**

A vehicle using Street Race rules can reverse at up to half its top speed. To reverse a vehicle must arrest all of its forward momentum. If a vehicle has a sufficient Acc/Dec and is traveling slow enough it halt its forward movement and begin reversing in the same turn.

Example. A city car is moving at 6" when it spots a mine field. Since it has a Acc/Dec of 8" it can use 6" of this allowance halting and still have enough remaining to reverse 2".

It is up to the GM as to whether bikes can reverse. Military or Judge's bikes or other bikes with Auto-drive can probably reverse under power. Civilian Bikes can be walked back using the rider's standard move allowance.

### **Slow Manoeuvres**

Instead of using the TRR a vehicle can by make three 1" moves, each forward or reverse as the player wishes, each ending in a turn of up to 45°. This method can be used to make fine manoeuvres such as three point turns.

### **Bootlegger Turns**

Bootlegger Turn is used as a generic term in Street Race Rules for any fast, tight 180 degree turn. Skimmers, Wheelers, Bikes and Walkers all use different methods to achieve such turns but the result is the same and they are therefore treated the same.

- To make a bootlegger turn the vehicle must be moving forward.
- During the turn the vehicle will travel through a half circle equal in radius to the vehicle's length. If there are any obstructions in this half circle the turn cannot be completed. If this half circle enters an area of dangerous ground, mine field or similar the effects are worked out against the vehicle.
- To make a successful Bootlegger turn the driver must roll for success. For a normal driver not used to high-speed manoeuvres this will be on a D6. A more experienced high-speed driver will roll a D10 while an expert driver rolls a D12. On a roll of a 1 the vehicle goes Out of Control as described above. Once the out of control vehicle

has been placed in its new position a Scatter dice is rolled to determine which way the vehicle's nose ends up pointing. A "Hit" result means the vehicle has flipped over onto its roof and is considered to be stationary.

- A successful Bootlegger Turn reduces the vehicle's speed by D6+1". A zero or negative result means the vehicle has come to a halt.

### J-Turns

A J-turn is a useful manoeuvre to avoid roadblocks and ambushes. It is a 180 degree turn that the vehicle reverses into. In game turns it is treated exactly the same as a Bootlegger turn but is executed by a vehicle that is stationary or reversing at the start of the manoeuvre. The vehicle is subject to all the usual restrictions for moving backwards.

If you are looking for more detailed driving rules then the [Gorkamorka Rulebook](#) is worth looking at, especially the section on swerving in the Ramming section.

Another ruleset worth looking at are the [5th Edition Car Wars rules](#), which can be picked up at a very reasonable price. SJ Games offers the [basic rules for free](#). The Car Wars Manoeuvring Template can easily be scaled up for larger vehicles.

### Waterworlds?

The movement rules for Street Race might also be used for boat movement to give a scenario with a maritime flavour. This gives plenty of scope for boarding actions etc.

The GM should feel free to invent rules that he considers to be necessary. Boats move as ground vehicles but Dec rate is half Acc rate. Reversing is done at half Acc rate and can only reach a quarter of maximum forward speed.

Some rules for models swimming are given on the main [Movement section](#). Amphibious creatures such as Slann, Loxatl and Tyrannids move at their normal land allowance in water but cannot move at double rate if charging.



[Psychology.](#)

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