CAR WARS®

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Introduction

Since *Car Wars* was first released in 1981, it's become one of the most popular tabletop games ever written. This box is intended to be a basic rule set . . . to let you get into the world of *Car Wars* quickly.

The rules in this set are 100% compatible with the most recent available editions of *Car Wars Compendium* and *Mini Car Wars*. So if you want more rules and even more detail, you can pick up the *Compendium* and it will fit in right away.

Chronology

Car Wars is set 50 years in the future. The "now" of the *Car Wars* world moves ahead as the real world does. It was 2031 when the game was first published and this edition first came out in 2040. It's a rough world . . . and "Drive Offensively" is its motto.

2000: Federal government moves to nationalize dwindling supplies of oil and natural gas production. Legislatures in Texas, Oklahoma, and Louisiana react by seceding, and nationalize these resources themselves. Pitched battles with federal forces follow, resulting in the destruction of several oilfield sites on both sides of the newly-established border.

2003: U.S. forces stopped in the hills of central Texas, ending bloody "Gulf or Bust" campaign. Rebel forces begin to retake lost territory.

2004: Texarkana Accords are signed, ending the Second Civil War. Oklahoma, Texas, and Louisiana become three separate sovereign nations, referred to as the Free Oil States.

2012: Grain blight breaks out in Nebraska, spreading rapidly to neighboring areas. A simultaneous blight takes root in the Ukraine. Accusations fly, charging deliberate biological war, followed by nuclear warheads. To everyone's surprise, satellite defenses stop most of the missiles. Meanwhile, the world's stock of grains, excluding barley and sesame, has been devastated. Severe food shortages spring up across the globe. The U.S. is in better short-term shape than most, since the blight apparently has no effect on foods with preservatives in them.

2016: The Food Riots. "Fortress" towns develop. National government fails to keep order throughout much of the U.S.

2018: Gangs rule most of the U.S. outside of the fortress towns. Country real estate becomes worthless; algae farms make up lost food production.

2020: Many large cities totally abandoned. National government regains authority but enforcement decentralized. Economy weak but stable, with food rationed and unemployment at 37%.

2022: Supreme Court decision decriminalizes manslaughter in arena games. "Death sports" become popular. Television becomes nation's number-two industry, just after food production.

2023: "Crazy Joe" Harshman wins Fresno destruction derby by mounting a surplus .50-caliber machine gun in his Chevy. Term "autoduelling" first used by sportswriters.

2024: Armadillo Autoduel Arena opens on site of former shopping mall in Austin, Texas.

2025: Autoduelling becomes most popular TV sport, edging out combat football and private wars. Eight more autoduel arenas open in North America. The American Autoduel Association (AADA) is formed.

2026: Utah autoduellists form vigilante group to counter Badlands cycle gangs. AADA holds first sanctioned "National Championship" in Austin, Texas. AADA also begins issuing area advisories and helping duellists organize against cycle gangs and other hazards, upsetting local police forces.

2027: Police admit inability to deal with duellist-armed vehicles in highway use. Informal duels increase in numbers.

2028: Many localities legalize vehicular weaponry of a "defensive nature" – very loosely defined. Duelling outside city limits

now legal in 14 states and tolerated in most others.

2029: A variety of weapons becomes available as "factory options" on all U.S. makes of cars and several imports.

2030: Statistics show "smash-and-grab" cycle and car gangs much reduced. Rural real estate begins to rise in value. Law-enforcement officials credit vehicular weaponry of private citizens, but most point out that "The gangs that are left are now better armed than we are . . .". Autoduelling now legal in 39 states, as well as the Free Oil States.

2033: *Autoduel Quarterly*, "The Journal of the American Autoduel Association," is first published. Autoduelling now legal in all 47 states in the U.S., as well as Texas, Oklahoma, Louisiana, most Canadian provinces, the Republic of Quebec, Australia, and Mexico.

2036: Gas-powered racing and duelling events begin to grow in popularity.

2037: Armed and armored boats become popular among coast-dwellers. Piracy rises dramatically but drops again by the end of the year as more and more boats have "defensive" modifications added.

2038: AADA recognizes boats and other watercraft events.

2040: In response to the increasing number of "sport" flyers armed with duel weaponry, the AADA sponsors several "aeroduel" events on a trial basis.

System Support

With over a million and a half products in the *Car Wars* line sold since 1981, the game has had a huge base of players. Steve Jackson Games provides several different kinds of support for the world of *Car Wars*, and we are always interested in your suggestions.

More than one hundred different *Car Wars* supplements have been published, including "straight" rules material, the official *Car Wars* magazine *Autoduel Quarterly*, and the *AADA Road Atlas and Survival Guide* roleplaying series. For a complete product listing, you can visit

carwars.sjgames.com. You can also see what's available in electronic format at **warehouse23.com**. Some of our offerings include great stuff like the *Car Wars Compendium*, which includes all of the rules for *Car Wars Deluxe Edition*, *Boat Wars*, *Dueltrack*, and *Uncle Albert's Catalogs*.

Autoduel Quarterly

For 10 years, *Autoduel Quarterly* was the official *Car Wars* magazine. It appeared four times a year until 1992, with new rules and variants, scenarios, background information, fiction, and other *Car Wars* material. You can now read some of the archived issues online at **carwars.sjgames.com**, plus acquire authentic PDF reproductions of all the *Autoduel Quarterly* magazines at **warehouse23.com**.

Errata Support

Errata updates for *Car Wars* products are available free from Steve Jackson Games; please visit **carwars.sjgames.com** to view them. If you locate new errata, please let us know by contacting our errata coordinator.

Other Website Resources

By visiting **carwars.sjgames.com**, you can also read our FAQ, learn about *Mini Car Wars*, and join in on forum discussions with other players.

Want Car Wars Sixth Edition?

So do we! That's why we're going to be Kickstarting it. Watch **sjgames.com** for news, and support the Kickstarter when it goes up.

1. Getting Started

In order to play *Car Wars*, you will need this set; several 6-sided dice; pencil and paper; and a table big enough to play on.

The game can be played solo, but is more fun with an opponent. It is probably best with 4 to 6 players. A game with over 8 players can take a very long time.

Dice

Car Wars uses 6-sided dice only. These rules use abbreviations to indicate what dice are to be rolled. For instance, "2d" means "2 dice." "2d–1" means "roll 2 dice and subtract 1 from the result." "3d+2" means "roll 3 dice and add 2." And so on.

Some weapons do "1/2d" of damage, or a "half-die." This means to roll one die and divide the result by 2, *rounding up*.

Game Setup

To start playing *Car Wars*:

(a) Decide what sort of scenario you want to play (see p. 62). Spread out one of the maps – we recommend that you tape it down – or draw up a map of your own.

(b) Select vehicles. Make a record sheet for each car. Pick a counter (or a miniature or model) for it. Set beginning speed and handling status for each vehicle. Mark them on the record sheet or a piece of paper.

(c) Roll for each driver's reflexes (see *Handling Class*, p. 9). Reflexes of characters other than drivers do not count.

(d) Place all vehicles in starting position – and go!

The Game Maps

This set includes two different maps, described below. Players can create their own maps. See *Scenarios*, p. 62, for more information.

Arena Map

This arena has six gates. The heavy black areas are concrete walls. Cars can't cross them, and pedestrians can't climb them. They have 80 DP (damage points – see pp. 28 and 36) which means that

nothing can shoot through them and almost nothing can crash through.

The black squares marked with a B are pedestrian bunkers. Any pedestrian who can enter the white "notch" on the side is automatically safe (but out of the event).

The white areas represent low walls. Vehicles may shoot over these walls but may not cross them (treat as a regular wall in case of a collision). A pedestrian may cross a low wall without stopping. A pedestrian who lies down behind a low wall cannot be hit by shots fired from the other side.

To change the arena, treat the low walls as regular walls – or the regular walls as low walls – or both.

Racetrack Map

The racetrack map can be used for scenarios in which cars have to follow a certain path or complete a certain number of laps. The winner is the first one to complete the path, regardless of what condition he's in when he finishes! Before the game starts, decide whether the track will be used in "oval" or "figure-8" configuration.

The boundaries of the racetrack are heavy walls with 80 DP. Cars cannot see or shoot through them. The dashed lines at intersections are merely lines on the road, and don't affect movement or combat.

The black dots at the road-forks represent *crash barriers*. If a car hits one of these, it takes only half damage.

Highway Chases

The racetrack map may also be used for *highway* scenarios. Most such scenarios involve pursuit. When the *lead* car in a pursuit comes to a fork in the road, ignore it if the angle is more than 90 degrees, and take the straighter path. If it is less than 90 degrees, roll one die. On a 1-2, the leader takes the right path. On a 3-4, the leader takes the left path. On a 5-6, the leader can choose which he wants. Other cars must follow or be lost.

When a fork appears and a 6 is rolled, the pursuing player can take 6 debris

markers and drop them in front of the lead car from a foot over the map. Any that lands closer to 6" from the lead car is dropped again, to give him a chance to avoid it!

The gray 1/2" areas at the edge of the road are *shoulders* in a highway game. At the players' option, the shoulders may have no effect . . . or they may give +D1 to any maneuver . . . or worse. A car that leaves the shoulder is "off-road" – see p. 23.

Vehicle Selection

The "stock car shopping list" (see Chapter 8, *Sample Vehicles*) gives several vehicles designed according to the construction rules (see Chapter 5, *Vehicle Design*). You will want to use "stock" cars the first few times you play. A sample car description:

Hotshot: Luxury, x-hvy. chassis, hvy. suspension, super power plant, 4 puncture-resistant tires, driver, 2 MGs linked front, 2 FTs linked back, 1 FT right, 1 FT left, Armor F20, R10, L10, B20, T10, U10. Fire ext. Accel. 5, top speed 100, HC 3; 6,600, $14,600.

Options: Remove any or all flamethrowers and replace with MGs. Each FT replaced by an MG saves enough weight to allow an extra 30 points of armor. For each FT replaced by an MG and 30 points of armor, the cost goes up by $1,350. One rear FT may be replaced by a minedropper and 30 points of armor, at an extra cost of $850.

Explanation: Car size is given first; then chassis, suspension, power plant and tires. The number of people the car can hold is given. Weapons are listed, with the position in which each is mounted. Next is the number of armor points on each of the vehicle's six sides: Front, Right, Left, Back, Top, and Underbody. Accessories are listed last. Acceleration and handling class are explained in Chapter 2. Weight is a vehicle's total weight with all seats filled and a full load of ammunition. Price is the vehicle's "sticker cost," and includes a full load of ammo.

Options are quick changes a player can make in a car; they've already been checked. If no price differential is given, an option does not change a car's cost. Note that some changes (e.g., computers, different suspensions) affect only a car's price – not its weight or available space.

After a car is selected, make up a record sheet for it as shown. This will show any modifications, options, ammo remaining, damage taken, etc., in a pictorial fashion.

The sample record sheet below shows a Hotshot (stock, no options) after a brief combat. All the armor on the right side has been destroyed, and the right FT has taken 1 hit of damage. The right front tire has taken 3 hits, and the front armor has taken 4 hits. There is no other damage. The front MGs have fired three times each, and the right FT has fired twice (shown by tally marks). The driver has no body armor, so he can take only 3 hits – therefore he is shown with only three damage boxes.
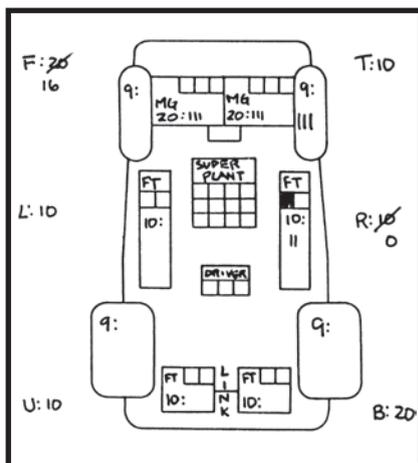
The Referee

A referee is never necessary. However, especially in a multi-player game, it can be good to have an arbiter and Game Master. The referee has three functions:

(1) He is the final arbiter of the rules. He may also double-check players' records, and has the final say on what bonuses the characters get while firing, etc.

(2) He keeps the movement chart, telling each player when to move his vehicle(s).

(3) In an arena scenario, he can serve as master of the arena, determining the scenario and setting prizes.

Refereeing can be as much fun as playing. Likewise, a big scenario moves faster, and is more fun, with a good ref to provide sports commentary and arbitration.

2. Movement

The road sections and maps used in *Car Wars* are marked with a square grid to control movement. The scale is 1/180; one inch equals 15 feet. The heavy lines are 1" (15 feet) apart. The light lines are 1/4" (3.75 feet) apart. Each turn represents one second. Each turn is divided into five "phases" of 1/5 second each.

A vehicle's speed determines how many times it will move each turn and when it will move, as shown on the Movement Chart below. There are five "phases" during each turn. During each phase, vehicles of certain speeds may move. For instance, vehicles going 30 mph will move 1" during phases 1, 3, and 5, as shown by the "1"s on the chart.

If a car is moving at an "even" speed (10, 20, 30 mph, etc.) below 60 mph, then all its moves will be "ordinary" 1" moves during which it may maneuver. These are shown by a "1" on the chart.

If a vehicle is moving at an "odd" speed (5, 15, 25 mph, etc.), then one of its moves each turn will be a "half-move." The vehicle must move straight ahead 1/2", and cannot maneuver. (*Exception:* See *Pivot*, p. 14.)

Vehicles traveling more than 50 mph will move more than 1" in some phases. In the phases marked by a "2" on the Movement Chart, a vehicle must move 2". A vehicle traveling at an "odd" speed greater than 50 (55, 65, 75 mph, etc.) must make a half-

Movement Chart

Speed	1	2	3	4	5	Ram
0						0
5	1/2					1d–4
10	1					1d–2
15	1		1/2			1d–1
20	1	1				1d
25	1		1		1/2	1d
30	1		1		1	1d
35	1	1/2	1		1	2d
40	1	1	1		1	3d
45	1	1	1	1/2	1	4d
50	1	1	1	1	1	5d
55	1 1/2	1	1	1	1	6d
60	2	1	1	1	1	7d
65	2	1	1 1/2	1	1	8d
70	2	1	2	1	1	9d
75	2	1	2	1	1 1/2	10d
80	2	1	2	1	2	11d
85	2	1 1/2	2	1	2	12d
90	2	2	2	1	2	13d
95	2	2	2	1 1/2	2	14d
100	2	2	2	2	2	15d
105	2 1/2	2	2	2	2	16d
110	3	2	2	2	2	17d
115	3	2	2 1/2	2	2	18d
120	3	2	3	2	2	19d
125	3	2	3	2	2 1/2	20d
130	3	2	3	2	3	21d
135	3	2 1/2	3	2	3	22d
140	3	3	3	2	3	23d
145	3	3	3	2 1/2	3	24d
150	3	3	3	3	3	25d
155	3 1/2	3	3	3	3	26d
160	4	3	3	3	3	27d
165	4	3	3 1/2	3	3	28d
170	4	3	4	3	3	29d
175	4	3	4	3	3 1/2	30d
180	4	3	4	3	4	31d
185	4	3 1/2	4	3	4	32d
190	4	4	4	3	4	33d
195	4	4	4	3 1/2	4	34d
200	4	4	4	4	4	35d
205	4 1/2	4	4	4	4	36d
210	5	4	4	4	4	37d
215	5	4	4 1/2	4	4	38d
220	5	4	5	4	4	39d
225	5	4	5	4	4 1/2	40d
230	5	4	5	4	5	41d
235	5	4 1/2	5	4	5	42d
240	5	5	5	4	5	43d
245	5	5	5	4 1/2	5	44d
250	5	5	5	5	5	45d
255	5 1/2	5	5	5	5	46d
260	6	5	5	5	5	47d
265	6	5	5 1/2	5	5	48d
270	6	5	6	5	5	49d
275	6	5	6	5	5 1/2	50d
280	6	5	6	5	6	51d
285	6	5 1/2	6	5	6	52d
290	6	6	6	5	6	53d
295	6	6	6	5 1/2	6	54d
300	6	6	6	6	6	55d

move during the phase indicated by a "1/2," in addition to its other movement during that phase.

Straight-Line Movement

The basic move in *Car Wars* is a straight line – usually 1". Since the maps are gridded, it is easiest to figure movement when the cars travel in straight N-S or E-W lines. However, a vehicle's straight-line movement can be calculated precisely, even if it is moving at an angle to the grid lines. This is because each car counter is exactly 1" long (the distance normally moved in one phase), while each cycle counter is 1/2" long. By setting one counter in front of another, you can determine where each vehicle will go on a straight course – even if the vehicle isn't following N-S or E-W lines. A ruler, or the Turning Key (see p. 11), can also be used to keep a car going straight.

Maneuvers and Speed Changes

A vehicle may only make one maneuver per phase. A maneuver (see p. 11) replaces 1" of ordinary forward movement. If a vehicle is moving at more than 1" per phase, the owner determines during which 1" move (if any) it will take its maneuver.

Once per turn, at the beginning of a phase, a vehicle may either accelerate or decelerate any amount up to its maximum. This is done before any movement is made; the speed change is immediate. Any control rolls are made before movement as well; all Crash Table results are handled in this phase.

Using the Movement Chart

The referee should have a copy of the Movement Chart and a control marker representing each vehicle. This control marker is placed along the edge of the Movement Chart, at the number representing the vehicle's speed, and moved whenever the vehicle changes speeds. A marker is then placed at the top of the chart at Phase 1 and moved along. When a mark appears in the row for a vehicle's speed, that vehicle moves in that phase. The referee keeps track of this, calling out the moves; i.e., "Phase 3. Car 12 moves, then 6, then 10."

If a vehicle is moving at an uneven speed (e.g., 12.5 mph), its control marker is put between the bracketing speeds. It moves on the line below it, but goes only 1/4" in the half-move phase.

Often, vehicles of different speeds will move during the same phase. For instance, all cars traveling 45 mph or faster will move in Phase 4. When vehicles move during the same phase, the faster one moves first. For vehicles traveling the same speed, the one whose driver has the faster reflexes (see *Handling Class*, p. 9) may choose when he wants to move.

When vehicles are moving at high speeds in close quarters, it may be desirable to move the cars in alternating 1" increments during each phase, until that phase's movement is done. Keep in mind that each vehicle is still limited to one maneuver per phase.

A vehicle must move when the Movement Chart tells it to, and may never move at any other time.

Acceleration and Deceleration

At the beginning of each phase, any vehicle that has not accelerated or decelerated during previous phases of the turn may change speeds. A vehicle may only change speeds once per turn.

Acceleration: A vehicle's maximum acceleration is determined when it is built; see p. 51.

Deceleration: Any vehicle can decelerate up to 10 mph each turn without danger. Greater deceleration is possible, but risky (an Antilock Braking System, p. 59, helps). If control of a vehicle is lost due to rapid deceleration, roll on Crash Table 1 to determine effects.

Deceleration of 15 mph: Difficulty 1 (Dl) maneuver (see *Maneuvers*, p. 11).

Deceleration of 20 mph: D2 maneuver.
Deceleration of 25 mph: D3 maneuver.
Deceleration of 30 mph: D5 maneuver.
Deceleration of 35 mph: D7 maneuver, and each tire takes 2 hits of damage (see *Recording Damage*, p. 28).

Deceleration of 40 mph: D9 maneuver, and each tire takes 1d damage.

Deceleration of 45 mph: D11 maneuver, and each tire takes 1d +3 damage.

Deceleration of more than 45 mph in one turn is impossible without special devices. Continue the pattern for progression of difficulty ratings.

Handling Class

Each vehicle has a *handling class* (HC) which determines how maneuverable it is. The higher the handling class, the easier it is for the driver to keep control. A vehicle's basic handling class is determined by its suspension (see p. 49). Some tires and accessories can change HC.

Handling class is modified as follows:

Reflexes: Any vehicle driven by a character with very good reflexes will have an improved handling class. At the beginning of each combat, every driver of a vehicle rolls 1 die. This is called a *reflex roll*. A 5 or a 6 indicates exceptional reflexes. On a 5, the HC of the vehicle is raised by 1 for the duration of the combat; on a 6 (or higher), the HC goes up by 2.

Skill: The reflex roll can be modified by the skill of the character driving the vehicle (see *Driver*, p. 40). A Driver +2, for example, would get to add 2 to the die roll. The Cyclist skill is used when driving a motorcycle.

Attempting to drive a vehicle without the proper skill results in a *penalty* to the handling class (see specific skill descriptions).

Lost tires or wheels: Not only is losing a tire a hazard (see below), but it affects the vehicle's handling *class* permanently. All damage done to tires by maneuvers, debris, obstacles, spikes, mines, enemy gunfire, etc., is assessed against the damage points of the tire. If the final damage that destroys the tire comes from mines, grenades or enemy gunfire, then the entire *wheel* is considered lost.

A vehicle that loses all its *wheels* in one position (usually just one wheel, but 6-wheeled vehicles can have paired rear wheels) has its HC reduced by 3 permanently, starting on the next turn. If only the *tire(s)* are lost, HC drops by only

2. This loss *will* affect the number of points of handling status recovered each turn; see below.

Any vehicle that loses wheels on two corners (or any trike or cycle that loses one wheel) goes to Crash Table 1. It can no longer steer, accelerate, or brake. It must decelerate by 30 mph each turn.

Handling Status

Each vehicle record sheet includes a Handling Class chart, with a line for each game-turn. Mark on this chart (or keep track on a separate piece of paper) to show the vehicle's current *handling status*. This is a measure of how "in control" the vehicle is at that moment.

Each vehicle starts with a handling status equal to its handling *class*, as modified by the driver's reflexes. Each maneuver or hazard reduces handling status – for instance, a D3 hazard reduces status by 3. And *each time* handling status goes down, the player must roll on the Control Table (p. 10) to see if he loses control. If he loses control, he will have to roll on one of the Crash Tables (see pp. 17-18).

Thus, *frequent* maneuvers, as much as *extreme* ones, lead to danger.

Regaining Handling Status

Each vehicle's handling status is adjusted upward at the end of each turn – that is, once per second. This simulates the driver's ability to regain control of a vehicle over time. Increase handling status by a number equal to the vehicle's Handling Class (modified by the vehicle's suspension, other equipment, and tire or wheel losses) plus the driver's appropriate skill, with a minimum of 1 point recovered. Thus, a vehicle with Handling Class 2 and a Driver +1 would regain 3 points of handling status at the end of each turn.

Each vehicle will always recover at least 1 point of handling status at the end of each turn. However, a vehicle's handling status can never be adjusted above its starting Handling Class, as modified for the driver's skill and reflexes.

The Control Table

Speed	7	6	5	4	3	2	1	0	−1	−2	−3	−4	−5	−6	Modifier
5-10	safe	safe	safe	safe	safe	safe	safe	safe	safe	safe	safe	safe	safe	2	−3
15-20	safe	safe	safe	safe	safe	safe	safe	safe	safe	safe	safe	safe	2	3	−2
25-30	safe	safe	safe	safe	safe	safe	safe	safe	safe	safe	safe	safe	2	4	−1
35-40	safe	safe	safe	safe	safe	safe	safe	safe	safe	safe	safe	2	3	4	0
45-50	safe	safe	safe	safe	safe	safe	safe	safe	safe	safe	2	3	4	5	+1
55-60	safe	safe	safe	safe	safe	safe	safe	safe	safe	2	3	4	4	5	+1
65-70	safe	safe	safe	safe	safe	safe	safe	safe	safe	2	3	4	5	6	+2
75-80	safe	safe	safe	safe	safe	safe	safe	safe	safe	3	4	5	5	6	+2
85-90	safe	safe	safe	safe	safe	safe	safe	safe	2	3	5	5	6	XX	+2
95-100	safe	safe	safe	safe	safe	safe	safe	safe	2	4	5	6	6	XX	+3
105-110	safe	safe	safe	safe	safe	safe	safe	safe	3	4	6	6	XX	XX	+3
115-120	safe	safe	safe	safe	safe	safe	safe	2	3	5	6	XX	XX	XX	+3
125-130	safe	safe	safe	safe	safe	safe	safe	2	4	5	6	XX	XX	XX	+4
135-140	safe	safe	safe	safe	safe	safe	safe	3	4	6	XX	XX	XX	XX	+4
145-150	safe	safe	safe	safe	safe	safe	2	3	5	6	XX	XX	XX	XX	+4
155-160	safe	safe	safe	safe	safe	safe	2	4	5	6	XX	XX	XX	XX	+5
165-170	safe	safe	safe	safe	safe	safe	3	4	6	XX	XX	XX	XX	XX	+5
175-180	safe	safe	safe	safe	safe	2	3	5	6	XX	XX	XX	XX	XX	+5
185-190	safe	safe	safe	safe	safe	2	4	5	6	XX	XX	XX	XX	XX	+6
195-200	safe	safe	safe	safe	safe	3	4	6	XX	XX	XX	XX	XX	XX	+6
205-210	safe	safe	safe	safe	2	3	5	6	XX	XX	XX	XX	XX	XX	+6
215-220	safe	safe	safe	safe	2	4	5	6	XX	XX	XX	XX	XX	XX	+7
225-230	safe	safe	safe	safe	3	4	6	XX	XX	XX	XX	XX	XX	XX	+7
235-240	safe	safe	safe	2	3	5	6	XX	XX	XX	XX	XX	XX	XX	+7
245-250	safe	safe	safe	2	4	5	6	XX	XX	XX	XX	XX	XX	XX	+8
255-260	safe	safe	2	3	4	6	XX	XX	XX	XX	XX	XX	XX	XX	+8
265-270	safe	safe	2	3	5	6	XX	XX	XX	XX	XX	XX	XX	XX	+8
275-280	safe	2	3	4	5	6	XX	XX	XX	XX	XX	XX	XX	XX	+9
285-290	safe	2	3	4	6	XX	XX	XX	XX	XX	XX	XX	XX	XX	+9
295-300	safe	3	4	5	6	XX	XX	XX	XX	XX	XX	XX	XX	XX	+9
	7	6	5	4	3	2	1	0	−1	−2	−3	−4	−5	−6	

Whenever a vehicle makes a maneuver or undergoes a hazard that moves its handling status downward, a *control roll* may be necessary. Refer to the Control Table, above. Cross-index the handling status of your vehicle with its current speed. Handling status cannot get worse than −6, but a vehicle at −6 must still roll on the Control Table for each new maneuver or hazard.

The table will give one of three results: "Safe," "XX," or a number.

"*Safe*" means the vehicle is still safe; no roll is necessary.

"XX" means a loss of control is unavoidable. Go directly to the appropriate Crash Table. Crash Table 1 is used for maneuvers; Crash Table 2 is for hazards.

If the table shows a *number*, it means that the driver *may* be able to keep control. Roll 1 die; this is called a *control roll*. If you roll the number shown or higher, you keep control of the car. If you roll lower, you lose control; go to the appropriate Crash Table.

Crash Modifier: The last column on the Control Table is the "modifier" column. If you lose control of a vehicle for *any* reason, and go to the Crash Table, refer to this column to get the Crash Modifier for your speed. The Crash Modifier will be *added* to your Crash Table roll. Low speeds have a negative Crash Modifier; high speeds are much more dangerous and have a positive Crash Modifier.

Example: During one turn, a car traveling 60 mph attempts three maneuvers. Its handling class is 2, and it started the turn with a handling status of 2. The first maneuver is a "drift" (Difficulty 1, or D1). Subtract 1 from handling status, reducing handling status to 1. Cross-indexing 60 mph

Movement

Figure 1 – Bends

15° 30° 45° 60° 75°
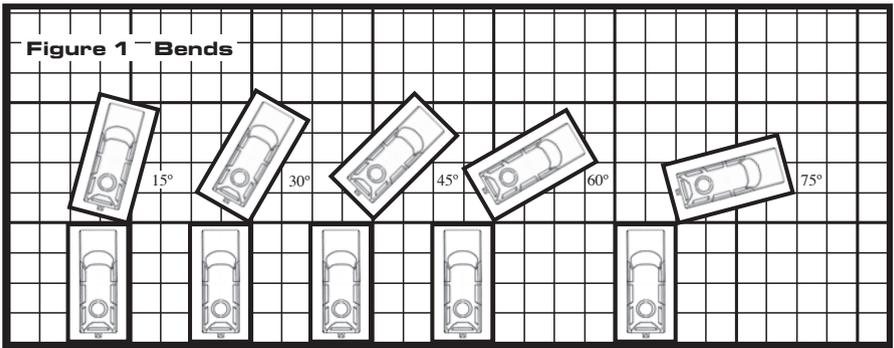
and status 1, we see that no roll is required for control.

The second maneuver is a "steep drift," which is D3. Subtracting 3 from handling status moves it to –2. The table shows that a control roll is required; the player must roll a 2 or better.

The third maneuver is another drift – D1 again. Subtract one more from handling status and roll again; this time a roll of 3 or better is needed.

Maneuvers

Any change of vehicle direction is called a *maneuver*. Each maneuver has a *Difficulty Class*, expressed as D1 for Difficulty 1, and so on. The more difficult a maneuver, the more it will reduce the vehicle's handling status, and the more likely the vehicle will skid, flip, etc. Maneuvers at low speed are easy. As speed goes up, the danger increases.

Any time vehicle weapons are fired on the *same phase* as a maneuver, the D value of the maneuver is subtracted from the to-hit roll. For example, a vehicle fires a machine gun (7 to hit) in the same phase it does a steep drift (D3). The player rolls a 9, then subtracts 3 for a to-hit roll of 6 – a miss!

Figures 1 through 8 show basic maneuvers. Where no separate cycle diagram is shown, use the same diagrams, with the square cycle counter in place of the front half of the car.

Bend

The vehicle moves 1" forward, and then angles to one side, keeping one rear corner

Figure 2 – Turning Key

All maneuvers and Crash Table results can use the *turning key* shown here. To make a maneuver, place the key next to the counter at the point that corresponds to the desired maneuver. Then move the vehicle along the edge of the turning key. Pictorial examples of all maneuvers and Crash Table results are shown below.

The turning key makes it possible to play on a gridless map, allowing play in any scale (toy cars, 1/24 scale models, 100% scale, etc.). All you need is a properly scaled turning key.
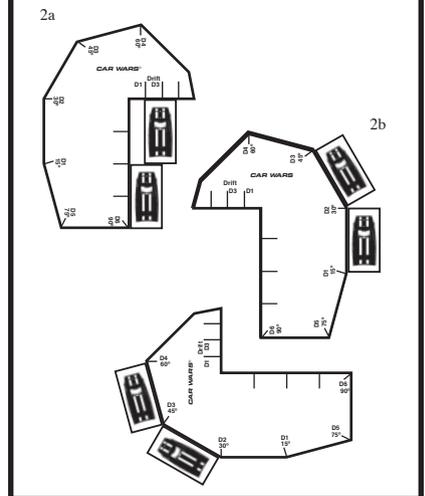
in the same place. Figure 1 shows bends from 15° to 75°. A 90° bend, of course, is a right-angle turn.

Bends are a D1 maneuver for every 15° of the bend, as shown below. See Figures 2b and 2c for examples of bends performed with a Turning Key.

Difficulty Ranges

Up to 15° – D1
16 to 30° – D2
31 to 45° – D3
46 to 60° – D4
61 to 75° – D5
76 to 90° – D6

Drift

The vehicle moves 1" forward and 1/4" (or less) to either side, while facing the same direction. This is a D1 maneuver. A vehicle can also do a *Steep Drift*, moving 1" forward and between 1/4" and 1/2" to one side. This is a D3 maneuver. See Figure 3.

Figure 2a shows a drift performed with a Turning Key.

Figure 3 – Drifts

Drift (D1)   Steep Drift (D3)
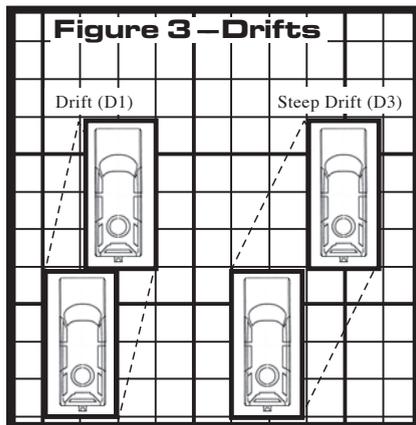
Swerve

The swerve is a 1/4" drift, followed by an angle turn as for a bend, all in the same phase. The bend must be in the *opposite* direction from the drift. A swerve has the difficulty of the equivalent bend, plus 1. The drift *must* be performed before the bend.

Figure 4 shows a swerve made up of a drift to the right followed by a 30° bend to the left.

Figure 4 Swerve
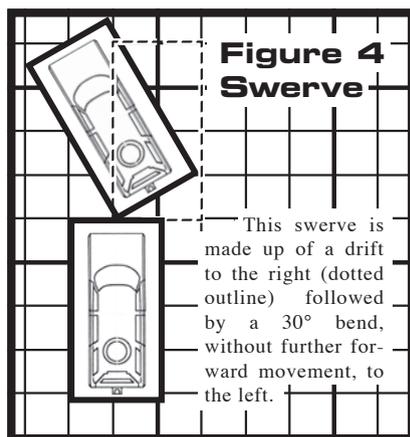
This swerve is made up of a drift to the right (dotted outline) followed by a 30° bend, without further forward movement, to the left.

Controlled Skid

To perform a controlled skid, make any bend, or swerve in the regular manner, and then *immediately* declare how far you wish to skid. Assess the difficulty of the combined maneuver (see below) and make a control roll if necessary.

If control is maintained, perform the skid on your *next* move. Start by "skidding" for the chosen distance: without changing the direction in which the car is going, move it in the direction it was traveling *before* the original maneuver. If the skid was less than 1", move the rest of the inch straight ahead. For example, on a 3/4" skid, you would skid for 3/4", then move 1/4" straight ahead. See Figure 5, p. 13.

Deliberate skids increase the difficulty of the bend or swerve that begins the skid. They also cause weapons-fire modifiers, slow down the vehicle, and can damage its tires.

1/4" skid – Adds +D1 to the difficulty of the bend or swerve, −1 to aimed weapons fire, no deceleration, no tire damage.

1/2" skid – +D2 difficulty, −3 to aimed weapons fire, −5 mph deceleration, no tire damage.

3/4" skid – +D3 difficulty, −6 to aimed weapons fire, −5 mph deceleration, 1 point damage to each tire.

1" skid – +D4 difficulty, aimed weapons fire prohibited for the rest of the turn, −10 mph deceleration, 2 points damage to each tire.

Movement

The tire damage is applied immediately after the skid. Handling status is reduced and a control roll is made (if necessary) *after* the maneuver but *before* the skid. Any deceleration is applied at the beginning of the next phase.

The weapons-fire modifiers are lower on this chart because this is a controlled (instead of uncontrolled) skid.

Bootlegger Reverse

This is a special maneuver – the old moonshiner's trick of using a controlled skid to reverse direction. Police departments call it the "J-turn." It works, but it's dangerous.

To attempt a bootlegger reverse, a vehicle must start the turn at between 20 and 35 mph. It can't slow to 35 and then try a reverse, all in one turn.

Figure 6 shows the bootlegger reverse. On the phase that a vehicle starts the reverse, it skids from A to B. This is a D7 maneuver, and does 1 point of damage to each tire. If the vehicle makes its Control Roll, it will automatically go to C on its next movement phase, and stop (speed goes to 0), facing the way it came. Properly executed on a road, the J-turn leaves you in the correct lane for your new direction!

If it goes out of control and/or loses a tire, it will roll or skid sideways next phase, in the direction shown by the heavy arrow, and will lose speed only as dictated by the roll or skid result.
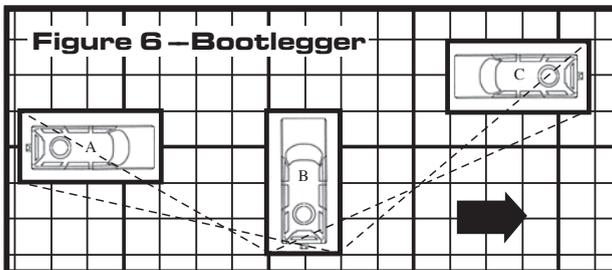
Figure 5 – Bend and Controlled Skid
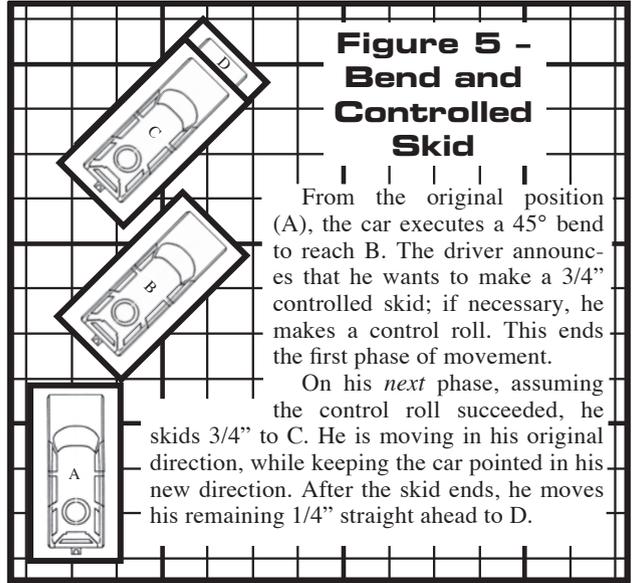
From the original position (A), the car executes a 45° bend to reach B. The driver announces that he wants to make a 3/4" controlled skid; if necessary, he makes a control roll. This ends the first phase of movement.

On his *next* phase, assuming the control roll succeeded, he skids 3/4" to C. He is moving in his original direction, while keeping the car pointed in his new direction. After the skid ends, he moves his remaining 1/4" straight ahead to D.

Once a vehicle begins a J-turn, it cannot fire aimed weapons until it stops moving (the occupants are too busy). Weapons on automatic (see *Automatic Fire*, p. 31) will still fire. Cycles and oversized vehicles cannot try this maneuver. No other maneuvers (skids, swerves, etc.) can be combined with a bootlegger.

T-Stop

This is an extreme maneuver used for emergency deceleration. It consists of rotating your car 90° to either side and moving forward one inch – identical to beginning a roll. See Figure 7. The car then continues skidding sideways A to B until it slows to a halt, at C.

The vehicle decelerates 20 mph per inch of movement. Each tire will take 1 point of damage for every full 20 mph of speed lost, immediately after each movement phase. The difficulty of this maneuver is a D1 for every 10 mph of deceleration, and the control roll is made when the maneuver is begun.

If the control roll is missed, add 1 to the Crash Table roll for every 20 mph (or fraction

Figure 6 —Bootlegger

Figure 7 —T-Stop

thereof) of deceleration – in *addition* to the regular speed modifier (based on the vehicle's original speed) on the Control Table.

Once a vehicle starts a T-Stop, it can't fire aimed weapons. Only vehicles which start the turn between 20 and 35 mph can perform a T-Stop.

Pivot

This maneuver can be made only by a vehicle moving at 5 mph. To pivot, a vehicle (a) moves 1/4" in a straight line, and (b) keeps one rear corner fixed at the same point, while pivoting about that corner any amount in any direction. This is a D0 maneuver, due to the low speed. A vehicle traveling 5 mph may choose between this maneuver and the normal 1/2" half-move in a straight line.

Deceleration

Rapid deceleration counts as a maneuver. Handling status is adjusted at the beginning of the phase – when the deceleration is announced – and the control roll is made at the *original* speed. All this must happen before the vehicle can move or fire on that phase.

Evening-Out

After coming out of a maneuver parallel to the grid lines, a counter may be moved a fraction of a square in any direction (owner's choice) to get it exactly on the grid lines. This does not affect speed or handling, and is a D0 maneuver.

Reverse Movement

Any vehicle except a cycle may move in reverse at up to 1/5 of its top speed. A vehicle cannot go from forward to backward speed (or vice versa) without stopping for one turn. Acceleration rules are the same as for forward movement. Any maneuver may be made in reverse; the difficulty class is one higher.

A cycle may be pushed backward by the cyclist at 2.5 mph.

Fishtail

A fishtail cannot be chosen as a *deliberate* maneuver, for two reasons. One is that a fishtail combined with a bend is very similar to a tighter bend, and is virtually identical to a swerve. The second is that a 90° bend combined with a major fishtail can result in a controlled 120° turn – not very reasonable. Thus, the only fishtails are Crash Table results.

Fishtails

Figure 8a

1/2" Fishtail

1/4" Fishtail
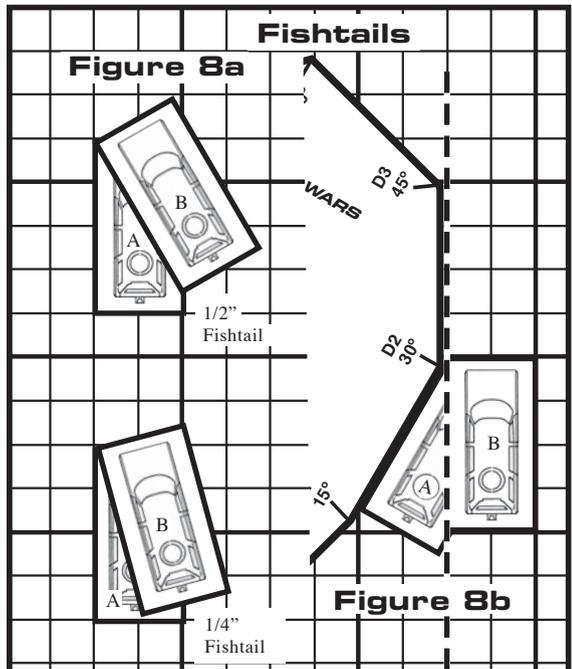
Figure 8b

To perform a fishtail on the square grid, hold one front corner still, and move the opposite rear corner 1/4" or 1/2", as appropriate, on the opposite direction. See Figure 8a A to B.

To perform a fishtail using the turning key, line the vehicle up with the 15° bend (for a 1/4" fishtail) or the 30° bend (for a 1/2" fishtail). Keeping the front corner motionless next to the key, pivot the vehicle so it lines up with the next angle of the turning key. See Figure 8b; position A is the original location of the car, and position B is its location after the fishtail, lined up with the turning key along the dotted line.

Hazards and Road Conditions

Hazards are outside events (enemy fire, for instance) that can affect vehicles. They are treated like maneuvers – each one has a difficulty rating.

Each enemy attack produces a separate hazard. If a vehicle is struck by three weapons in one turn, each attack would move the handling marker down and require a separate die roll on the Control Table. Mines are "enemy fire." Spikes, debris, obstacles, etc., are not.

Road conditions (like oil, ice, or rain) present no danger in themselves but add to the difficulty of any hazard or maneuver the vehicle undergoes. A few road conditions (such as banked curves) can *reduce* the difficulty of maneuvers.

Hazards

Hitting curb, obstacle or pedestrian: D3.
Hitting loose debris: D1.
Enemy fire does 1 to 5 hits of damage: D1.
Enemy fire does 6 to 9 hits of damage: D2.
Enemy fire does 10+ hits of damage: D3.
Driver injured or killed: D2.

Tire Blowouts

Losing the first wheel or tire of a pair is a D2 hazard. If a vehicle has more than one wheel at that corner, *all* wheels must be intact (though tires may be damaged or lost), or handling class is reduced by 3.

Losing the last wheel or tire on a corner drops the vehicle's handling status to −6 immediately. Handling *class* drops by 2 if only the tire(s) are lost, or by 3 if the whole wheel was lost. Treat losing the last wheel or tire on a corner as a D6 hazard for the crash table roll.

Any vehicle that loses wheels on *two* corners (or any trike or cycle that loses one wheel) goes to Crash Table 1. It can no longer steer, accelerate, or brake. It must decelerate by 30 mph each turn.

Road Conditions

Off-road: adds D1 to any maneuver.
Light rain: adds D1 to any hazard or maneuver.
Heavy rain: adds D2 to any hazard or maneuver.
Gravel on road: adds D1 to any hazard or maneuver. Note that many roads have gravel on the shoulder.
Oil on road: adds D2 to any hazard or maneuver.
Light snow: adds D2 to any hazard or maneuver.
Heavy snow: adds D3 to any hazard or maneuver.
Ice or packed snow: adds D4 to any hazard or maneuver.

Banked Curves

Many racetracks and arenas include turns that are specially banked to ease driving around them. Such slopes reduce the difficulty of any bend or swerve made toward the inside edge of the turn by −D1; bends or swerves made toward the outside edge are increased by +D1. Drifting outward is at a −D1, while drifting inward is at a +D1. Very steep curves reduce inward maneuvers by −D2, but increase outward maneuvers by +D2.

Jumping and Falling

With a good takeoff angle (20° to 40°), a vehicle will fly 15 feet for every 10 mph of takeoff speed over 20 (30 mph yields 15 feet of flight, 40 mph results in a 30-foot flight, etc.). A flatter or steeper angle (15° to 19° or 41° to 45°) will cut the distance

traveled in half. Inclines flatter than 15°, or steeper than 45°, cannot be used to launch a jump.

Landing is a D1 hazard; +D1 for every full 30 feet of flight. Thus, a 15-foot jump is a D1 hazard, a 30- to 59-foot jump is a D2 hazard, a 60- to 89-foot jump is a D3 hazard, and so on. Subtract 1 from the hazard if you land on a downward slope (because all your wheels hit at about the same time). Add 1 to the hazard if you land on an upward slope. On landing from a jump, roll 1 die for each tire except solids. On a 1, 2, or 3, that tire takes 1 point of damage.

Falling

Whenever a vehicle drives off a cliff, curb, or crevasse, it will begin to fall. If the vehicle drove off an upward slope, it will jump, rather than fall, as per the jumping rules above; if, at the end of the jump, the vehicle has not contacted solid ground, it falls anyway. A falling vehicle hits the ground after a certain length of time, as per the following table. Obviously, vehicles cannot accelerate, decelerate, maneuver, or jump while in flight. Weapon fire is allowed, at −2.

Height	Time	Damage
1/4"	2 phases	1d−2
1/2"	3 phases	1d−1
3/4"	4 phases	1d−1
1"	1 turn	1d
1 1/4"	1 turn, 1 phase	1d
1 1/2"	1 turn, 1 phase	1d
1 3/4"	1 turn, 2 phases	1d
2"	1 turn, 2 phases	1d
2 1/4"	1 turn, 2 phases	1d
2 1/2"	1 turn, 3 phases	1d
2 3/4"	1 turn, 3 phases	2d
3"	1 turn, 3 phases	2d
3 1/4"	1 turn, 4 phases	2d
3 1/2"	1 turn, 4 phases	3d
3 3/4"	1 turn, 4 phases	3d
4"	2 turns	3d

Height is the height from which the vehicle began the fall. *Time* is the elapsed time after which the vehicle will land. This time is counted beginning with the phase in which the last portion of the vehicle left the ground; the vehicle takes damage at the beginning of the first movement phase after it lands.

Example: A 1" fall takes 1 second. If a vehicle moving 20 mph ends Phase 3 at the edge of a 1" cliff, it will drive completely off the cliff on Phase 4. It will hit the ground below, after 2" of forward movement, at the beginning of its move in Phase 4 of the next turn. Finally, *Damage* is the collision damage assessed to the vehicle.

Dropping one corner over an edge has the same effect as losing all tires on that corner, except that all penalties are removed as soon as the corner is back on the ground.

If a vehicle skids, fishtails, or drifts so that both corners of one side (not the front or back) are unsupported, a Control Roll is required. On a successful roll, the vehicle takes collision damage to the underbody but doesn't fall over the edge! It decelerates at 30 mph per turn. Under most circumstances, the services of a wrecker will be required to get it onto flat ground again.

On a failed control roll, the vehicle will roll over the edge! It continues at its original speed, rolling one side per movement phase. When it lands, assess the damage to that side (or to each tire if it lands on its wheels). Reduce handling status to −6, and make a control roll at the vehicle's original speed. If control is regained, the vehicle stops. If the vehicle stays out of control, it continues its roll normally. On a roll of 4 to 6 on 1 die, it also catches fire.

If a vehicle drops its two front or back corners off an edge, it continues at its original speed, flipping one facing per *phase* (it progresses from underbody to front to top to back to underbody). Once it lands, assess damage to the proper side. If the vehicle landed on its front, the very next phase it will fall forward, landing on its top (and taking 1d damage to that location). If on its back, it will fall onto its tires, taking 1d to each. The vehicle then continues on in a straight line, driving normally if on its wheels or decelerating 30 mph per turn if on its roof.

For these rules, a motorcycle has two "corners," one each at the midpoint of the front and back sides. A trike has three, one in the middle of the front (back for a reversed trike) and one at each side on the opposite end.

Movement

The Crash Tables

If a vehicle rolls on the Control Table and misses its roll, it has gone out of control. The Crash Tables show the different things (all bad) that can happen. A Crash Table roll is made on 2 dice. The higher the roll, the worse the result. Results may range from mild (a light skid) to disastrous (vehicle rolls and burns).

If a car or cycle loses control during a maneuver, it uses Crash Table 1. If it loses control because of a hazard, it uses Crash Table 2.

If during the course of resolving a Crash Table result a vehicle is again required to roll on the tables, he only suffers the *worst* result rolled.

Example: Wildman Al starts to spin out due to an encounter with a flamethrower, and is hit by enemy fire. He rolls for control and fails; he now rolls a Minor Skid on the Crash Table. All Al does is keep spinning.

Crash Table Modifiers

Skill bonus: The driver's Driver skill bonus (or Cyclist, if appropriate) is *subtracted* from all Crash Table rolls.

Difficulty of maneuver or hazard: The difficulty of the maneuver (or hazard) that caused the loss of control plays an important part in determining a crash result. Take the *modified* Difficulty rating of the hazard or maneuver, subtract 3, and add the result (negative or positive) to the Crash Table roll. Thus, a D4 maneuver gives a +1 to the roll, while a D1 maneuver gives a –2.

Speed: Loss of control at high speed is more dangerous. When you go to the Crash Tables for any reason, add or subtract the number in the Control Table "modifier" column from your speed – i.e., at 20 mph, you would subtract 2 from your roll on either Crash Table.

Crash Table Results

The result of a Crash Table roll is applied at the beginning of the next phase in which a vehicle moves. A vehicle that fishtails may move normally after it fishtails. A vehicle that skids must move straight ahead for the rest of that phase – i.e., if it skids 1/4", it must move 3/4" forward (the direction its nose is pointing) after the skid. If a vehicle is on its half-move, it cannot skid more than 1/2".

A vehicle that encounters a hazard while skidding or fishtailing must make another control roll, and may lose control again, affecting it on the next phase it moves. No vehicle may skid more than once per phase.

A vehicle that loses control will suffer a penalty on any aimed weapon fire for the rest of the turn, as shown by the asterisks on the Crash Table entries:

* Any further aimed weapon fire from this vehicle on this turn will be at a –3 to hit.

** Any further aimed weapon fire from this vehicle on this turn will be –6 to hit.

*** No further aimed weapon fire permitted from this vehicle this turn.

Crash Table 1 Skids & Rolls

2 or less – Trivial skid. The vehicle keeps the same orientation, but moves 1/4" in the direction it was going before the maneuver in which it lost control. Therefore, it may skid in a direction other than the one it is pointing – see Figure 5, p. 13. *

3, 4 – Minor skid. As above, but the vehicle skids 1/2". Speed is reduced by –5 mph. **

5, 6 – Moderate skid. As above, but the vehicle skids 3/4", and each tire takes 1 point of damage. Speed is reduced by 10 mph. It then performs a trivial skid on its next move. **

7, 8 – Severe skid. As above, but car skids 1" and each tire takes 2 points of damage. Speed is reduced by 20 mph. On its next move, it performs a minor skid. ***

9, 10 – Spinout. Vehicle spins, rotating 90° and moving 1" in the direction it was previously traveling (before the maneuver or hazard which caused the spinout) per phase of movement required. All rotations must be in the same direction. If the vehicle fishtailed into the spinout, the rotations are in the same direction the fishtail took; otherwise, roll randomly. Each tire takes 1d of damage at the start of the spinout. The vehicle decelerates 20 mph/turn, and the spin stops when the vehicle comes to

a halt. A driver may try to recover from a spinout. To do so, roll for control at HC –6. If the roll is successful the spinout stops. If the roll is missed the spinout continues normally. If control is regained, and the vehicle is facing the direction it is moving, movement continues on as usual. If the car is facing sideways it must perform an immediate T-stop. It may discontinue a T-stop by turning "into" the direction of the skid and then continue the turn. If the vehicle is facing backward and is traveling faster than its reverse top speed, it must slow down by at least 5 mph per turn until it is under its normal top speed for reverse.***

11, 12 – Car turns sideways (as in a T-stop; see Figure 7, p. 14) and rolls. The driver is no longer in control. The car decelerates at 20 mph per turn. Each phase it moves, it goes 1" in the direction it was traveling and rolls 1/4 of a complete roll – e.g., in the first phase it moves 1", turns sideways, and rolls onto its side; the next phase it moves, it goes 1" and rolls onto its top, etc. It takes 1d damage to the side (top, etc.) rolled onto each phase. When the bottom hits, each tire takes 1d damage. After all tires are gone, the bottom takes damage when it hits. Occupants may jump out at any time, or stay inside and hope that no damage reaches the interior. A car or trike may be driven after it stops rolling if it is right side up and has tires on at least three corners. A cycle won't be drivable after a roll.***

13, 14 – As above, but vehicle is burning on a roll of 4, 5, or 6 on 1 die. (For more information on burning vehicles, see *Fire and Explosion*, pp. 30.)***

15 or more – The vehicle vaults into the air by the side (or front) tires, the tires doing the vaulting taking 3d of damage. The vehicle will then fly through the air for 1 to 6 inches (roll 1 die) in the direction the vehicle was traveling before the crash result, revolving two sides for every inch traveled. When it lands, the side that hits takes collision damage at the vehicle's initial speed. If the attempted maneuver was a tight bend or a hard swerve, the vehicle will flip end over end. Upon landing, the vehicle will continue to roll as per result 11 on this table. All occupants take 1 point of damage automatically. Body armor does not protect against this damage.***

Crash Table 2
Fishtails

1-4 – Minor fishtail. Roll randomly to see if fishtail will be left or right. If, for instance, it is left, keep vehicle's right front corner in the same square, and move the left rear corner 1 square left. Reverse for a right fishtail. *

5-8 – Major fishtail. As above, but rear corner moves 2 squares. **

9, 10 – Execute a minor fishtail and roll again on Crash Table 1. ***

11-14 – Execute a major fishtail and roll again on Crash Table 1. ***

15 or more – Execute a major and a minor fishtail (for a total of 3 squares movement in one direction) and roll again on Crash Table 1. ***

Collisions

When a vehicle counter touches a fixed object or another counter, a collision has occurred. Even though all *Car Wars* vehicle counters are a minimum 1/2" wide (7 1/2 feet in game scale), the referee should use common sense when determining whether a collision has occurred. A motorcycle can squeeze into tighter spots than a truck, even though the counters are the same width. If a player wants to take his motorcycle down a four-foot-wide alley, let him. The driver of a van can't do it.

Collision damage is based on the type of collision, the weight of the vehicles involved, and their relative speeds. To find the result of a collision, determine the type of collision (T-Bone, Head-On, Rear-End or Sideswipe) from the collision diagrams in Figure 9. Every collision can be classified as one of these four types. When a vehicle is driving in reverse, rolling over, etc., designations of "front," "side," etc., are sometimes inappropriate. A rolling car can have a "head-on" collision in which a side strikes first, for example. If a car is doing a bootlegger, consider the leading side as its "front," moving at 15 mph. In general, use common sense in determining the type of collision. Then follow the instructions for that type, and the steps below,

to find damage, final speed, and final position for both vehicles.

1) From the *Collision Damage Table* (below), find the *Damage Modifier* (DM) corresponding to your vehicle's weight. A Shogun 100 (800 lbs.) has a DM of 1/3. A Killer Kart (2,300 lbs.) has a DM of 2/3. A Hotshot (6,600 lbs.) has a DM of 1. (Figure weight at the beginning of a trip; don't bother recalculating every time you expend a shell.) A pedestrian has a DM of 1/5.

2) When a collision occurs, determine the collision speed according to the formula given under each type of collision. The number of dice of damage a collision of that speed will cause can be found in the far right column of the Movement Chart (see p. 7), under the heading "Ram." Multiply the "ram" damage rolled on the dice

Collision Damage Table

Vehicle Weight	Damage Modifier
0-2,000	1/3
2,001-4,000	2/3
4,001-8,000	1
8,001-12,000	2
12,001-16,000	3
16,001-20,000	4
20,001-24,000	5

DM increases by 1 for every additional 4,000 lbs.

Collision Types

A Head-On collision occurs any time one vehicle collides with another from within the 90° shaded arc of Figure 9a.

A Rear End collision (Figure 9b) is similar to a Head-On, except that the two vehicles are heading in roughly the same direction.

A T-Bone collision occurs when one vehicle collides with another from within the 90° shaded arc of Figure 9c.

There are two types of Sideswipe. In one case, the vehicles are traveling in the same direction, nearly parallel to each other (i.e., within the 45° shaded arc of Figure 9d). The second type is similar, except that the vehicles are going in opposite directions, but still nearly parallel to one another (see Figure 9e). Fishtails are a major cause of both types of Sideswipe.

Figure 9 – Collisions

9a: HEAD-ON

9b: REAR-END

9c: T-BONE

9d: SIDESWIPE (same direction)

9e: SIDESWIPE (opposite direction)
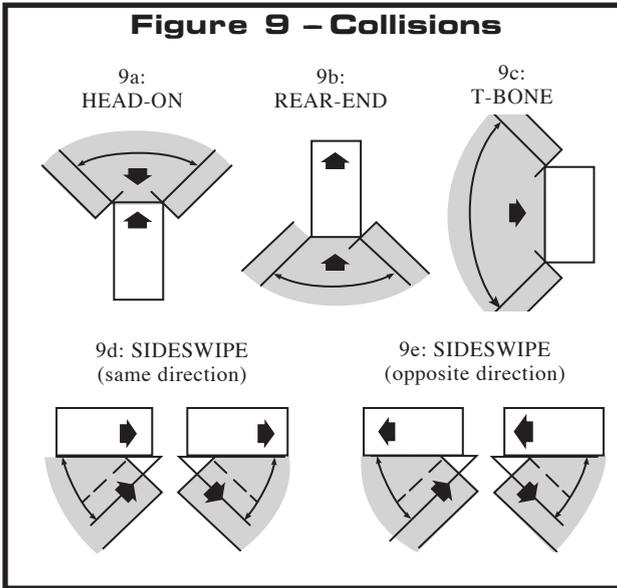
by your vehicle's DM. That is the damage you cause to your opponent. The damage you sustain is the product of his DM multiplied by the same base damage rolled.

Example: A Killer Kart (DM 2/3) collides with a Hotshot (DM 1) at a net speed of 40 mph. A 40-mph collision results in 3d damage, and a 14 is rolled. The Kart gives the Hotshot $(14 \times 2/3) = 9$ points of damage (rounding down). The Hotshot gives the Kart $(14 \times 1) = 14$ points of damage.

"Conforming" Movement

When one vehicle pushes another one out of the way, the second vehicle is "conforming" to the first. A vehicle conforms to another by pivoting on one corner until, through regular movement, the two vehicles are no longer in contact. The driver of the conforming vehicle selects an appropriate pivot corner from the choices shown in Figure 10. In each case, V2 is "conforming"

to V1. During its own movement phase, V2 does not pivot; it moves normally as its driver maneuvers it (or as required by the Crash Table, if it is out of control).

If a collision occurs and it is on the border of two types of collisions, the defender decides what type of collision it is. For example, if Car A is hit by Car B on the line between a Rear-End and a T-Bone, Car A gets to decide which of the two it will be.

Note that subsequent phases in which the vehicles are still in contact are not new collisions. Do not assess additional damage or adjust speed again unless a vehicle hits something else. For example, a car might sideswipe a trailer, slide along its side (accumulating no new damage) and then collide with the tractor, which had turned into the car's path (a new collision). Or a car might sideswipe a building and then have a new collision with a projecting wing of that same building.

Collision Procedure

Head-On Collisions (Figure 9a)

1) A Head-On collision affects the front armor of both vehicles.

2) Collision speed is that of V1 plus V2; apply ram damage at this speed, as modified by each vehicle's DM.

3) (a) Compute the "Temporary Speed" for V1 and V2 from the *Temporary Speed Table* (TST) on p. 21.

(b) Subtract the speed of the slower vehicle from the speed of the faster vehicle. The faster vehicle is now moving at this new speed; the slower has speed 0.

(c) Adjust the markers on the Movement Chart.

(d) If the phasing vehicle is still moving, complete this movement phase.

Figure 10 — Conforming Movement

(e) The slower vehicle (now at 0 mph) "conforms" itself to the faster one.

4) Check for concussion (see p. 21).

5) Reduce the handling status of each vehicle by 1 for every 10-mph change in speed (rounding up) and make a control roll for each one at its original speed. Apply at least a D1 hazard to each one, even if it lost no speed.

Rear-End Collisions (Figure 9b)

1) A Rear-End collision affects V1's front armor and V2's back armor.

2) Collision speed is that of V1 minus V2; apply ram damage at this speed, as modified by each vehicle's DM.

3) (a) Compute "Temporary Speed" of V1 and V2 from the TST.

(b) Add these two speeds together. Both V1 and V2 are now moving at this speed.

(c) Adjust the markers on the Movement Chart.

(d) If V1's DM is higher than V2's DM, complete its movement for this phase. Otherwise, do not complete its movement.

4) Check for concussion effects (see p. 21).

5) Reduce the handling status of each vehicle and make a control roll for each as described for Head-On collisions.

T-Bone Collisions (Figure 9c)

1) A T-Bone collision affects V1's front armor and V2's side armor.

2) Collision speed is that of V1; apply ram damage at this speed, as modified by each vehicle's DM.

3) (a) Compute V1's "Temporary Speed" from the TST. This becomes its actual speed after the collision; adjust its marker on the Movement Chart. V2 does not change speed as a result of this collision, even though its direction may be shifted by V1's subsequent movement.

(b) If V1's new speed is above 0, and it was making its move when the collision took place, it completes this phase's movement, and V2 "conforms" to V1's movement. If V2 was
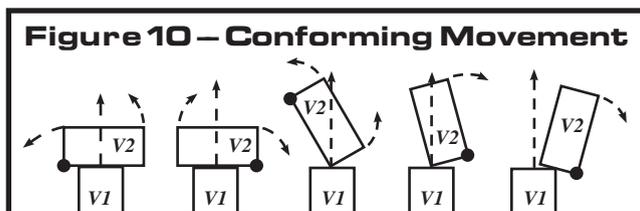
making its move when the collision took place, and if V2's DM is higher than V1's DM, complete V2's movement for this phase. Otherwise do not complete V2's movement.

4) Check for concussion effects (see below).

5) Reduce handling status for both vehicles and make a control roll for each vehicle as described for a Head-On collision.

Sideswipes (Figures 9d and 9e)

1) A Sideswipe affects the side armor of both vehicles.

2) (a) Determine the net speed of the collision. If both vehicles are going in the same direction (Figure 9d) subtract the lower speed from the higher. If they are going in opposite directions (Figure 9e), add the two speeds.

(b) Divide net speed by 4, rounding up to the nearest 5 mph. This is the collision's "Swipe-Speed."

3) Apply ram damage at the "Swipe-Speed," as modified by each vehicle's DM.

4) If the phasing vehicle's DM is lower than the other vehicle's DM, it finishes its movement by sliding along the other vehicle.

5) Reduce the handling status of each vehicle by 1 for each 10 mph of "Swipe-Speed," and make a control roll for each.

6) If either vehicle fishtails as a result of this control roll, the fishtail will be in the direction away from the collision which just occurred.

7) A Sideswipe does not affect the actual speed of either vehicle.

Concussion from Rams (Optional)

When any vehicle is involved in a collision, all occupants must roll for concussion effects from the ram. Take the speed *change* that resulted from that ram (in T-Bone collisions, take the speed change of the ramming vehicle and apply it to both vehicles), divide that speed by 10 (thus, a 35-mph speed change from a 70-mph T-Bone

Temporary Speed Table

Find your vehicle's *Damage Modifier* (DM) on the left and cross-index it with the opposing vehicle's (or obstacle's) DM across the top. The result (1, 3/4, 1/2 ,1/4, 0) is a *preliminary* indication of how your speed was affected. Multiply your original speed by this number, rounding up to the nearest 5 mph. This is your "Temporary Speed."

Your DM | *Opposing DM*

Your DM	1/3	2/3	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
1/3	1/2	1/4	1/4	1/4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2/3	3/4	1/2	1/2	1/4	1/4	1/4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1	3/4	1/2	1/2	1/4	1/4	1/4	1/4	1/4	1/4	0	0	0	0	0	0	0	0	0	0	0	0	0
2	3/4	3/4	3/4	1/2	1/2	1/4	1/4	1/4	1/4	1/4	1/4	1/4	1/4	1/4	1/4	0	0	0	0	0	0	0
3	1	3/4	3/4	1/2	1/2	1/2	1/4	1/4	1/4	1/4	1/4	1/4	1/4	1/4	1/4	1/4	1/4	1/4	1/4	1/4	1/4	1/4
4	1	3/4	3/4	3/4	1/2	1/2	1/2	1/2	1/4	1/4	1/4	1/4	1/4	1/4	1/4	1/4	1/4	1/4	1/4	1/4	1/4	1/4
5	1	1	3/4	3/4	3/4	1/2	1/2	1/2	1/2	1/2	1/4	1/4	1/4	1/4	1/4	1/4	1/4	1/4	1/4	1/4	1/4	1/4
6	1	1	3/4	3/4	3/4	3/4	1/2	1/2	1/2	1/2	1/2	1/4	1/4	1/4	1/4	1/4	1/4	1/4	1/4	1/4	1/4	1/4
7	1	1	3/4	3/4	3/4	3/4	3/4	1/2	1/2	1/2	1/2	1/2	1/4	1/4	1/4	1/4	1/4	1/4	1/4	1/4	1/4	1/4
8	1	1	1	3/4	3/4	3/4	1/2	1/2	1/2	1/2	1/2	1/2	1/2	1/4	1/4	1/4	1/4	1/4	1/4	1/4	1/4	1/4
9	1	1	1	3/4	3/4	3/4	3/4	1/2	1/2	1/2	1/2	1/2	1/2	1/2	1/4	1/4	1/4	1/4	1/4	1/4	1/4	1/4
10	1	1	1	3/4	3/4	3/4	3/4	3/4	1/2	1/2	1/2	1/2	1/2	1/2	1/2	1/4	1/4	1/4	1/4	1/4	1/4	1/4
11	1	1	1	3/4	3/4	3/4	3/4	3/4	3/4	1/2	1/2	1/2	1/2	1/2	1/2	1/2	1/4	1/4	1/4	1/4	1/4	1/4
12	1	1	1	3/4	3/4	3/4	3/4	3/4	3/4	3/4	1/2	1/2	1/2	1/2	1/2	1/2	1/2	1/2	1/2	1/2	1/2	1/4
13	1	1	1	3/4	3/4	3/4	3/4	3/4	3/4	3/4	3/4	1/2	1/2	1/2	1/2	1/2	1/2	1/2	1/2	1/2	1/2	1/2
14	1	1	1	1	3/4	3/4	3/4	3/4	3/4	3/4	3/4	1/2	1/2	1/2	1/2	1/2	1/2	1/2	1/2	1/2	1/2	1/2
15	1	1	1	1	3/4	3/4	3/4	3/4	3/4	3/4	3/4	1/2	1/2	1/2	1/2	1/2	1/2	1/2	1/2	1/2	1/2	1/2
16	1	1	1	1	3/4	3/4	3/4	3/4	3/4	3/4	3/4	1/2	1/2	1/2	1/2	1/2	1/2	1/2	1/2	1/2	1/2	1/2
17	1	1	1	1	3/4	3/4	3/4	3/4	3/4	3/4	3/4	3/4	1/2	1/2	1/2	1/2	1/2	1/2	1/2	1/2	1/2	1/2
18	1	1	1	1	3/4	3/4	3/4	3/4	3/4	3/4	3/4	3/4	1/2	1/2	1/2	1/2	1/2	1/2	1/2	1/2	1/2	1/2
19	1	1	1	1	3/4	3/4	3/4	3/4	3/4	3/4	3/4	3/4	1/2	1/2	1/2	1/2	1/2	1/2	1/2	1/2	1/2	1/2
20	1	1	1	1	3/4	3/4	3/4	3/4	3/4	3/4	3/4	3/4	3/4	1/2	1/2	1/2	1/2	1/2	1/2	1/2	1/2	1/2

would yield a 4) and roll 2 dice for each crew member involved. If the roll is equal to or higher than that number, the crewman is unaffected. If the roll is lower, that crewman is stunned (unable to do any firing actions or operate any vehicle controls) for as many phases as he missed the roll by (at least to the end of the turn). Safety seats add +1 to the roll, as do Impact Armor and Roll Cages. Stunning a driver adds a D2 to the total collision hazard.

Fixed Objects

A fixed object will cause exactly as much damage as it takes, up to the point at which the fixed object breaks. All fixed objects have a DP rating, which is the number of Damage Points they can take before they are destroyed.

Example: A 20-point tree gets in the way of a luxury car going 40 mph. The "ram" damage at 40 mph is 3d, and a luxury car's DM is usually 1. A 12 is rolled on 3 dice, and multiplied by 1 for a result of 12. That's how much damage the car does to the tree, and it's also how much damage the tree does to the car.

Now, let's send the same car into the same tree at 80 mph. The "ram" damage at that speed is 11d, and this time the total is 41. The tree only has 20 DP, so it is destroyed. But the car also only takes 20 points of damage.

For each collision, determine the collision type – Head-On or Sideswipe – and apply damage, speed change, concussions, and hazards accordingly. Of course, in a Head-On, if the obstacle is not destroyed or breached, the vehicle stops. If the obstacle is destroyed, the vehicle's "Temporary Speed" becomes its new speed. If a Sideswipe does not destroy it, the vehicle finishes the phase by sliding along the obstacle.

Note: A building breach is generally 1/4" wide (see *Buildings*, p. 36). A vehicle ramming a building or wall must create *two* breaches in order to break through. Thus, when ramming a 6 DP building, a vehicle must do 12 points of damage to create a double breach and continue through. In addition, each 1/4" section of wall will return damage, up to its full DP value.

Debris and Obstacles

A "road debris" counter may represent any sort of junk on the road. Debris can be part of a scenario (appearing already drawn onto the road) or it can appear as a result of combat.

A debris counter is 1/2'' × 1/4". It may show debris in two squares or in only one. Place it on the board so its squares align with those on the road, showing exactly which map squares contain debris.

Hitting Debris

A vehicle hits debris the first time any part of the vehicle counter touches a debris square. Debris can be hit only once per phase, regardless of how many debris squares are entered. If a vehicle starts the phase on top of debris, that debris does not affect it; it has already been hit.

Debris affects all of a vehicle's tires. Roll 1 die for each tire, and subtract 3 from the result, to find the damage to that tire. Thus, on a roll of 1 to 3, the tire is undamaged. Hitting debris is a D1 hazard.
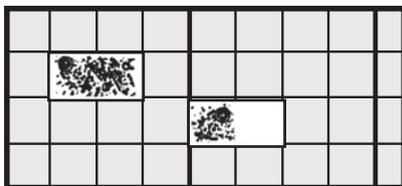

Producing Debris

When a car takes 10 or more points of damage during one phase, pick one debris counter randomly. Place it next to the car, at the point hit. (A car is not affected by its own debris unless it drives back through it.) Debris for top/bottom damage goes behind the vehicle. If a car explodes, choose five random debris counters, and drop them onto the board from a height of one foot over the explosion site. (If one misses the board, or hits any other counter, drop it again.) Align counters with the road grid as closely as possible at the point where they fall. Debris and other obstacles (below) remain until the game ends.

Hitting Obstacles

An obstacle counter represents a pothole, loose wheel, or other larger item. Striking an obstacle is a D3 hazard. Determining whether or not an obstacle is struck is done in the same way as for debris. An obstacle does the same damage to each tire as debris does. A vehicle may hit more than one obstacle in a phase, and must roll for each.
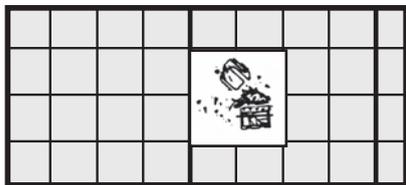
Producing and Moving Obstacles

If a car loses a wheel (not just a tire) or takes 20 or more hits during one phase, or loses one or more points of metal armor, an obstacle is placed as described above for debris. In some scenarios, debris or obstacles may be thrown from buildings, vehicles, etc. Note that an obstacle is bulky, equivalent to one space in size, and no vehicle will be able to carry very many.

A pedestrian may move any obstacle that can be moved; potholes, for example, can't be moved. It takes one turn to pick an obstacle up and a pedestrian may move one square per turn while carrying it. A pedestrian cannot use a weapon while carrying an obstacle. It takes one turn to drop an obstacle. A typical obstacle will weigh between 50 and 100 lbs.

Off-Road Duelling

Many of the most demanding combat situations take place away from roads and arenas. A beach battle, with cycles and buggies flying over the dunes . . . a cat-and-mouse hunt in a Louisiana swamp . . . a Badlands raid, with pickups swooping down from the hills to intercept a convoy . . . all of these are possible in off-road duelling.

All maneuvers (but not hazards) off-road are at an additional D1 difficulty. All Crash Table rolls are at a –3, due to the vehicles' tendency to slide and skid while off-road.

Off-Road Hazards

Off-road suspension (see p. 49) is available for 4- and 6-wheeled vehicles, to lift the underbody off the ground and cushion it from shocks.

Any vehicle can go off-road without modifications – but the handling class of an unmodified vehicle is reduced:

Motorcycle (with or without sidecar): –2 HC
Trike: –1 HC
Car (4 or 6 wheels): –3 HC

The handling bonus for radial tires does not apply while off-road. Special off-road (OR) tires are available (see p. 50).

In addition, most vehicles are subject to damage when going off-road. At the beginning of every turn a standard car, pickup, or van is off-road and traveling faster than 10 mph, roll 2 dice. On a 2 or 3, the underbody takes 1 point of damage. On a 4 or 5, one tire (roll randomly to see which one) takes 1 point of damage. If the vehicle is going over 30 mph, roll twice per turn; over 50 mph, roll 3 times; and so on. Once the underbody is gone, the internal components take no damage.

Exceptions: solid and off-road tires take no damage.

Vehicles with Off-Road suspensions, as well as all cycles and trikes, are built higher off the ground and do not take underbody damage.

Off-Road Terrain

Off-road should not be taken to mean the dirt on the edge of the road; the shoulder is usually no great hazard. "Off-road" means open country – fields, desert, or park.

Grass and open fields: This is the standard off-road terrain. No extra penalties apply – just the normal + D1 difficulty for off-road travel.

Trees: Small ones are a D2 or D3 hazard. Larger ones would be fixed barriers and could have 8 to 20 DP, or even more.

Boulders: Small ones (about a foot across) should be treated as obstacles. Those 1 to 2 feet across are fixed barriers with up

to 25 DP. Boulders are usually knocked out of the way (rather than destroyed) if they take more than their DP value from a collision. Larger boulders would have even greater DP values – a four-foot boulder would be worth at least 50 DP.

Ditches and Gullies

Small ditches (less than 2 feet across) are a D3 hazard at 20 mph or less, but only a D1 hazard at greater speeds – vehicles fly right over them. Ditches between 2 and 4 feet across are impassable at less than 20 mph – if a vehicle tries to cross one, it will fall in and collide with the far wall at full speed, taking full damage for its speed. At 25 to 40 mph, such a ditch is a D3 hazard. At 45 mph or greater, it is a D1 hazard again; you fly right over. Wider ditches should not be jumped without a ramp (see above). Very wide gullies, unless they are full of water, can be crossed by driving down one side and up the other.

Water

Vehicles without off-road (OR) suspension cannot cross water deeper than 1 1/2 feet. Vehicles with OR suspension can take on water up to 3 feet deep. Vehicles in deeper water drown out and stop working – the effect is the same as if the power plant had been destroyed. The plant takes no actual damage, though – once the vehicle is out of the water (how you get it out is your problem), it will dry out and be usable again in 1d hours.

Hitting standing water deeper than 1/2 foot is a D2 hazard. Traveling in water decelerates a vehicle by 5 mph per turn per 1/2 foot of water – you must accelerate by 5 mph just to stay at the same speed. Vehicles with OR suspensions decelerate 5 mph per turn per 1/2 foot of water *over* 1 1/2 feet deep.

Radical maneuvers are impossible in water – no maneuver with an original, unmodified difficulty over D3 can be performed. There is no additional penalty for those maneuvers which *can* be performed.

Dropped weapons may be used in water, to mixed effect. Oil will not be effective; flaming oil will ignite, but it will also disperse and be ineffective; spikes and mines will be hidden under the water. Every time a dropped weapon is used in water, roll 1 die. On a 1 or 2, water backs up into the system while the port is open, and the weapon takes 1d–3 points of damage.

Tires cannot be targeted in over a foot of water; they are at an additional –2 to hit when in over 6" of water.

Jumping Out of Vehicles

Anyone jumping out of a vehicle, or off a cycle, when off-road will take reduced damage. Figure the damage as though the driver has been hit by a sideswipe from a car traveling 30 mph slower than the speed at which he actually hit the ground.

Rolling

When a vehicle rolls in an off-road situation, each side that hits the ground takes 1d–2 damage, instead of 1d of damage. Tires, likewise, take 1d–2 damage in an off-road roll. It is quite possible to roll a vehicle on soft ground and drive it away afterward – if you can get it upright.

Pedestrian Movement

Pedestrians move at 1 square per phase; they can move every phase. Pedestrian movement is covered on p. 43.

3. Combat

Combat may occur during any phase, after movement. To attack, a player simply announces that he is firing, and names the weapon being fired and its target.

Results of all attacks during a phase are applied simultaneously. The referee may wish to have players declare fire secretly, by writing their fire/no fire order down on a slip of paper and handing it to him, or by some other method.

A given weapon may never fire more than once per turn. A given character may never fire more than once per turn, unless he does so by triggering linked weapons.

Rate of Fire

Usually, the above restrictions mean that each vehicle will only fire once per turn. Exceptions occur when (a) a weapon is on "automatic," (b) a vehicle has additional occupants, such as gunners, who may also fire, or (c) linked weapons are used.

General Combat Procedure

Briefly, the procedure for resolving a normal weapon attack is (a) make sure that there is a line-of-fire from the weapon to the target; (b) roll 2 dice to see if the weapon hits (see *Determining Hits*, below); (c) if the weapon hits, determine damage location and amount (see *Damage*, p. 28); (d) alter the vehicle's handling status and/or place debris or obstacle counters if required. Dropped weapons are an exception to the above and are discussed on pp. 32-34. All damage for the phase is resolved simultaneously at the end of the phase.

Line of Fire

To fire at a given target, there must be a line of fire (LOF) from the firing counter's center (for a turret weapon) or middle of the side where the weapon is located (for other weapons) to some part of the counter representing the target. Buildings, vehicles, pedestrians, etc., block LOF; debris and obstacles do not. Smoke and paint reduce

chances of hitting but do not block LOF except for lasers.

Furthermore, the LOF must be traced within the *arc of fire* for that weapon position. Arcs of fire for vehicle weapons are shown in the diagram below. Pedestrians and turret weapons have a 360-degree arc of fire. Hand weapons fired from a car, truck, or sidecar have a right or left arc of fire, depending on which side they're fired from; hand weapons fired by a cycle driver have a 360-degree arc of fire.
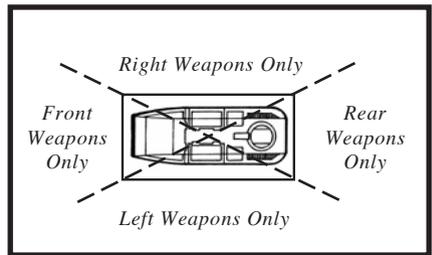
Car Targeting

Targeting is choosing what you're going to shoot at – whether it's the side of a vehicle or a specific part, like a tire.

A car has front, back, right, left, top, and underbody "sides." When you fire at a vehicle, you can only hit a side that is facing you. Unless the target car is lined up exactly perpendicular to you, you will be able to choose between two sides. However, only if you are in a particular side's arc of fire may you attack that side with no penalty. If the firing vehicle is on the dividing line between two of a target vehicle's arcs of fire, it may target either side without penalty. If you target a side on which you have line of fire without being in the target side's arc of fire, you suffer a penalty of −2 to your to-hit roll. You may choose which side you wish to target. If you score a hit, any damage you do will be taken by that part of the vehicle (see *Damage Location*, p. 28).

You can never target a vehicle's underbody with normal weapons (note: underbody is a relative term – if a car has rolled

and is sitting on its left side, that side is now the "underbody"). The underbody is automatically the target of a mine.

A vehicle's tires may be targeted. Each tire is a separate target; subtract 3 from the to-hit roll when shooting at tires.

A vehicle's turret may be targeted. All top armor protects weapons in the turret. If a vehicle has no turret, the top can only be hit if something is dropped (or fired) from above or if the vehicle rolls. Targeting a turret is at a –2.

Cycle Targeting

Compared to a car, a cycle is a small target, but every part is exposed. Therefore, after firing on and hitting a cycle, roll on the table below. Only one component of a cycle can be hit in each attack – the rest of the damage passes through the cycle and has no effect, unless it has a sidecar on the opposite side. In this case, roll 1 die. If the number rolled is equal to, or less than the number of spaces the sidecar has, it is hit. Otherwise the damage passes out harmlessly.

Attacking from front or rear – Roll 2 dice. On 2 to 10, you hit armor (if the armor is gone, roll again on the "side" table below for remaining damage). On an 11 or 12, you hit the exposed wheel.

Attacking from the side – Roll 2 dice. On 2 to 5, you hit the driver; 6 or 7, the power plant; 8 to 10, a weapon. Roll randomly if the cycle has more than one weapon; roll again if there are none. On 11 or 12, you hit a tire – roll randomly to see which one.

Sidecar targeting – A sidecar can only be hit from the side on which it is mounted. Imagine a line running lengthwise down the center of the cycle counter – if you're on the same side of the line the sidecar is on (or on the line), you can shoot at it. If you're not, you can't. Targeting a sidecar carries a –2 penalty to your to-hit roll. If you're just shooting at the cycle as a whole and you are on the sidecar side, roll 1 die. On a 1 to 4, the cycle was hit; use the tables above. On a 5 or 6, the sidecar was hit. Treat a sidecar as a tiny automobile, with armor in front, back, underbody, and both sides. It has one wheel (plus some small coaster-type wheels for stability if it ever rolls free), maybe one or two weapons, and possibly a rider. Once armor on part of the sidecar is lost, any fire

hitting the exposed area has an equal chance of hitting each of the interior components.

Trike Targeting

Because trikes are low to the ground, their tops can be fired upon. Any attacker can choose to fire at the top of a trike if he has a line of sight on the front or either side. (A trike's top cannot be hit from behind, but its turret can be targeted.) Because the top is steeply sloped, any attack at the top is at an additional –2 to hit. Thus, for example, a shot at the top of a light trike (see table, p. 27) from the front would be at a –5, plus or minus any other modifiers that may be in effect. However, if a trike has a turret, any successful hit on the top armor strikes the turret automatically with no further penalty.

When a trike is struck in the front by weapon fire, roll 2 dice. On an 11 or 12, the front wheel is hit. Any remaining damage is lost. On a 2-10, the front armor is hit. Any remaining damage after the armor is destroyed will affect internal components in the same way as cars are affected (see *Damage Location*, p. 28).

For reversed trikes, all the above holds true – just reverse "front" and "back." The only exception is that an attacker still cannot hit the top of a reversed trike from behind, as the back is still the highest part of the trike.

Rolling to Hit

When a normal weapon (anything but a dropped or gas weapon) is fired, the attacking player rolls 2 dice to see if he hit his target. He must make the to-hit roll, or better, for that weapon (see Chapter 6, or the Weapon Table on the insert sheet). Thus, to hit with a machine gun, a player must roll a 7 or better on 2 dice. The lower a weapon's to-hit roll, the more accurate it is.

Targeting Modifiers

Accuracy is affected by a number of factors, including the skill of the firer, range, weather, and size and speed of the target. Consult the following list, and add all the factors that apply to the to-hit roll. All modifiers are cumulative.

For example, a machine gun has a base to-hit roll of 7. If the firer was using a targeting computer (+1) at point-blank range (+4) and was trying to hit the tire (-3) of a cycle (-2) at night (-3), there would be a total modifier of −3; the firer now has to roll a 10 or higher. No matter what the roll needed, a roll of 2 on the dice is an automatic miss. A roll of 12 is not an automatic hit. If, after all modifiers, a player needs a 13 or higher to hit, he cannot hit the target, but may still fire for sustained fire bonuses.

If a driver has made a maneuver or suffered a hazard in the phase he fires a weapon, the difficulty of the maneuver or hazard is subtracted from his to-hit roll.

When trying to hit a vehicle with a weapon's burst effect, or trying to place a burst of fire in front of a vehicle, the attacker gets the bonus for targeting the ground, plus all applicable speed modifiers for both vehicles. Use common sense; the referee has the final say. If the to-hit roll is missed while attempting a shot at the ground or wall near an enemy, use the grenade scatter rules (p. 34) to determine where the shot actually hit.

Targeting Modifiers

Range
Point Blank (less than 1" away): +4
Long Range: −1 for every full 4":
    4" to 7.99" is −1
    8" to 11.99" is −2
    12" to 15.99" is −3, and so on

Movement

Firer is in Target's	Target is in Firer's		
	Front arc	Back arc	Side arc
Front arc	1/2 Target Speed	1/2 (T Speed − F Speed)	−1/2 Target Speed
Back arc	1/2 (T Speed − F Speed)	1/2 Target Speed	1/2 Target Speed
Side arc	Target Speed	Target Speed	T Speed − F Speed*

* If cars are moving toward each other, the modifier is the target speed. If a vehicle is in more than one arc, rule in the defenders' favor.

Target is not moving: +1
Firer is not moving: +1
Firing pedestrian is braced against solid object: +1

Target is moving 30 to 37.5 mph: −1
Target is moving 40 to 47.5 mph: −2
Target is moving 50 to 57.5 mph: −3
Target is moving 60 to 67.5 mph: −4
Target is moving 70 to 77.5 mph: −5
Target is moving 80 mph or faster: −6

Vehicle Targets
Compact or Subcompact: −1
Car: −1 from front or rear
Motorcycle or Sidecar: −2 from side, −3 from front or rear
Trike (any size): −2 from top
Light Trike: −3 from front/back, −2 from side
Medium Trike: −2 from front/back, −1 from side
Heavy Trike: −1 from front/back, −1 from side
X-Heavy Trike: −1 from front/back, no penalty from side

Specific Target
Pedestrian: −3, or −4 if prone.
    A pedestrian cannot be hit if he is prone and fully behind solid cover. If he is fully behind solid cover but has his head up to fire, the penalty is −6. If he is firing out a door or window, see p. 37.
Vehicle Tire: −3
Turret: −2
Motorcycle Rider(from side only): −3
Lamppost: −6
Building: +10
Searchlight: −3
Ground: +4

Visibility
Firing through smoke or paint: -1 per 1/2" of smoke or paint, rounded up.
Rain: −2
Heavy rain, fog or night: −3
Target in rubble area (see p. 37): −4
Firer blinded by searchlight: −10

Miscellaneous
Targeting Computer used: +1
Hi-Res Computer used: +2

Cyberlink used: +3

Gunner Skill: equal to skill level bonus

Handgunner Skill: equal to skill level bonus

Firing while on Oil, Gravel or Bad Road: –1

Sustained Fire: second consecutive shot in as many turns at same target with same weapon: +1; third and subsequent shots: +2

Attacking vehicle does a Trivial Skid or Minor Fishtail: –3 for the remainder of the turn

Attacking vehicle does a Minor or Moderate Skid or Major Fishtail: –6 for the remainder of the turn

Attacker not in arc of fire of target side: –2

Hazard or maneuver in same phase: penalty equal to D rating

Damage

When a weapon hits, calculate the amount of damage by rolling the number of dice shown on the *Weapon List* (insert sheet). The result is the number of hits taken by the target.

Burst Effect

Weapons that do additional burst-effect damage are identified on the Weapon List. Any weapon with a "radius" shown in the Effects column is a burst effect weapon.

In addition to the listed damage to whatever is hit, burst-effect weapons do 1d damage to any pedestrian in the weapon's burst radius. Pedestrians under cover (behind an intact wall or vehicle) are not affected.

A grenade does full damage to any pedestrian within its 2" burst radius, and half damage to vehicle components (armor, tires, etc.) in a 1/2" radius. No other burst-effect weapon will affect walls or vehicles (including tires) with its burst effect. Reason: The other burst-effect weapons are shaped charges, exploding upward (in the case of a mine) or into the target (in the case of other weapons), and the burst effect is merely a bonus, not strong enough to harm armored vehicles or vehicular components.

Area Effect

Weapons which may be used against pedestrians in an area effect are identified on the Weapon List. These are weapons that can sweep an area. When using such a weapon against several pedestrians within 1" of one another, the firer may attempt to hit several at once. He must make as many to-hit rolls as there are intended victims. This determines *how many* he hits, but not *who* – that is determined by the defender, who must pick pedestrians who are standing next to each other. If the potential victims belong to more than one player, they must agree which ones are hit. If they cannot agree, the attacker chooses the victims!

Those who are hit take half the damage rolled for the weapon (round up). *Exception:* Flamethrowers do full damage against all targets!

Example: Four pedestrians are standing in a line 1" long; as people this dim should be removed from the gene pool, an intrepid duellist decides to deep-fry them with his laser. He fires, and rolls two hits and two misses. The player controlling the pedestrians designates the two on the right. The duellist rolls a 13 on 3 dice, so each victim receives 7 points of damage (half of 13, rounded up) and is torched.

Recording Damage

Each vehicle component can take a certain amount of damage, shown as "DP" (damage points) on the Weapon List, Accessories List, and vehicle design charts. Armor is lost a point at a time; if you start with 12 points of armor on the front of your car, and it takes 7 hits, you have 5 points left. Other components work at full efficiency until they take their full amount of DP – then they're gone. A machine gun (3DP) can take 2 hits and still work, but the hits are recorded in the boxes on the Vehicle Record. When that gun takes a third hit, it is destroyed. You can repair damage yourself, using the Mechanic skill (see pp. 41-42), or you can pay for repairs (see p. 52).

Damage Location

The location of weapon damage is controlled by the part of the vehicle that was hit. Damage is taken by the components in that part of the target, outermost first. Armor is destroyed first. When all armor is gone, the next component inward is hit,

and so on. Components in each area of a car or truck, in the order they are hit by an attack from that side, are:

Front: Front armor; (front-firing weapons); front motor; (driver or gunner); cargo; back motor; (back-firing weapons); back armor.

Back: As above, but in reverse order: Back armor first, etc.

Right: Right armor; (right-firing weapons); (gunner, driver, cargo, or motor); (left-firing weapons); left armor.

Left: As above, but in reverse order: Left armor, etc.

Underbody: Underbody armor; (motor, driver, gunner, or cargo); turret weapons; top armor. Tires may also take damage.

Top: As above, but in reverse order.

Turret: Top armor, then turret weapons. If the turret was targeted from the side, "leftover" damage will pass above the car, hitting nothing else.

Tires: Targeted tire/wheel only. "Leftover" hits have no effect.

Many vehicles will not have every component listed. If a component is not present, just skip it! Few cars will have both front and rear power plants (motors); many will have no gunner, turret, or cargo. Passengers count as cargo. For a more complete guide, refer to the Vehicle Record Sheet example on p. 6, which has components in most of the possible locations. In case of a dispute, the referee's decision is final.

After going through armor and weapons mounted to the appropriate side, there are three (and only three) possible internal locations. These are crew compartment, power plant, and cargo. Power plant is your primary power plant. Crew compartment is any driver, gunner, or passenger – any human being in the car. Cargo is everything else. These three locations may be placed in any order from front to back (not side by side). The locations of drivers, gunners, and passengers must still be stated for determining their firing arcs.

When a weapon penetrates from the front or back, the damage goes to each internal location in order. Only one actual item in each location can be damaged by a single shot. When a weapon penetrates from the side, roll randomly to see which of the three locations is hit. Re-roll for any

nonexistent location. A location that is destroyed (such as a destroyed PP) is still a location which damage can hit and pass through. A car with unused space *does* have a cargo location, even if it doesn't have any actual cargo.

Note that some weapons cannot be hit by certain attacks. There is no way, for example, to damage a front-firing weapon by an attack from the right – though you can hit it from behind by shooting through the car.

Where two or three components are listed in parentheses, only one will be hit by each attack. Roll randomly for each separate attack to see which one is hit.

Example: A mine explosion that penetrated the underbody armor would affect either the motor, driver, gunner, or cargo – but only one. If that component took enough hits to destroy it completely, further damage from that explosion would go directly to the turret weapon or, if there was no turret, the top armor. A subsequent mine explosion might get a previously-unhit target, or hit in the same place, bypassing the other internal targets, and hit the turret or top again.

Similarly, if a vehicle takes "front-weapon" damage and has two or more front weapons, roll randomly for each attack to see which of the weapons is hit. If there are two or more front weapons, each attack will hit only one. Leftover damage from that attack goes "inward," not "sideways" to other front weapons.

Collision Damage

Damage from a collision is handled differently. It is divided evenly among all exposed (i.e., "outside") components on the affected side. For instance, if a car with two front MGs had no front armor left, and took 3 points of damage from enemy fire, you would roll randomly to see which MG took the 3 hits. However, if that same car took 3 points of collision damage to the front, it would be divided evenly between the exposed systems (the weapons) – 2 hits on one and 1 on the other. Thus, collision damage cannot penetrate to the interior of a vehicle until all armor on that side, and all components "outside" the one to be affected, have been completely destroyed.

Metal armor is 3 times more effective than its listed value against collision damage; 1 point of armor is lost for every 3 points of damage absorbed (rounded up), and the most points the armor can lose on that side is half the total on the side involved in the wreck (rounded up).

Example: A vehicle with 8 points of front metal armor hits a brick wall at a pretty good clip, and 7d of damage are rolled, yielding 29. The front armor will stop up to 3 times its value, which is 24 (3 × 8). The remaining 5 points of damage go to the interior of the vehicle and are distributed in the normal way for collisions. If the car survives, it will still have 4 points (half the original value) of armor on the front.

In a collision from the front or the back, all damage is divided by the number of individual items in that internal location (power plant, crew, or cargo) and applied separately. Any remaining damage goes on to the next location. In a side collision, the damage is first divided by the number of internal locations and then is divided equally among the items in each location. Empty cargo space (or a previously destroyed location) still counts as a location – all of its damage just passes through to the opposite side.

Combat Results

Injury to Drivers

Humans have 3 DP; they are wounded by the first hit, knocked unconscious by the second, and killed by the third. Standard body armor, when worn, also has 3 DP. Body armor takes damage first, effectively doubling a character's hit points. Hits taken by a driver's body armor are no hazard, but if a vehicle's driver is wounded or killed, it is a D2 hazard. A wounded crew member's skills are at −2. When a vehicle's driver is unconscious, dead, or stunned, all Driver skill and reflex bonuses are lost until the driver recovers (if possible).

Uncontrolled Vehicles

If a motorcycle's driver is killed or knocked unconscious, the cycle goes to Crash Table 1 immediately, adding 4 to its roll. Any passengers must jump or suffer the consequences of the roll. Any other ground vehicle (including a cycle with a sidecar) will continue in a straight line if the driver is incapacitated. It decelerates 5 mph each turn, moving in a straight line until it stops or hits something.

Substitute Drivers

If a cycle's driver is incapacitated, a sidecar passenger can steer the cycle, but cannot use the brakes or accelerator. He can fire any weapon, but not on any turn that he steers the cycle.

If a larger vehicle's driver is incapacitated, a front-seat gunner or passenger may attempt to take control. (Note: No vehicle may have more than two seats in front.) He may operate all vehicle controls, or the weapons, but not both in the same turn. Each maneuver he makes has an extra D2 of difficulty.

If a driverless vehicle can be stopped, it will take 5 turns (5 seconds) to push the late driver out or off and move any other occupant of the vehicle in as a new driver. On the 6th turn, the new driver may start to accelerate and/or fire.

Fire and Explosion

A vehicle which crashes may catch fire (see *Crash Tables*, Chapter 2). A vehicle hit in combat may also catch fire from certain weapons (see below), or on a 2 in 6 chance on any turn that the vehicle's power plant, flamethrowers, or flaming oil jets are hit by enemy fire; a 4 in 6 chance if those items take damage from laser, flamethrower, or flaming oil jet fire.

If a vehicle has a fire extinguisher, there is a 3 in 6 chance the fire will go out at the end of each turn (4 in 6 if the vehicle has an improved fire extinguisher). If the fire is not put out at the end of the turn, the fire does one hit of damage to each occupant (body armor will take damage first), each vehicle component (including tires), and the armor on each part of the car.

A burning vehicle may explode if it contains any type of flamethrower, flaming oil jet, any type of rocket or missile weapon, or AT gun. If the fire is not

extinguished, roll 1 die at the end of each turn. On a roll of 1 the vehicle explodes, scattering debris. All occupants are killed. Pedestrians or vehicles within 2" take 1d damage to the exposed side (if there are two exposed sides, the owner picks which side takes the damage).

If a vehicle's tire catches on fire, but the vehicle has FP armor, the car will *not* catch on fire. The tire will continue to burn, however, and fire extinguishers (except a PFE) have the normal chance of putting it out.

The sequence of rolls is as follows. If the vehicle has taken damage that could cause a fire, roll at the end of the turn to see if fire breaks out. If fire breaks out, and the vehicle has a fire extinguisher, then roll to see if the fire extinguisher puts out the fire. If the fire extinguisher succeeds at this point, no damage is taken from fire. If it fails (or the target didn't have one), each vehicle component takes one hit of damage as outlined above. If the fire is still burning after the roll, then make one more roll for possible explosion as outlined above.

Starting Fires

Every weapon that has a chance to set a vehicle on fire is rated on the *Vehicular Fire Table* (above) for two factors: "Fire Modifier" and "Burn Duration." Fire Modifier is the number the attacker must roll (or roll under) to set the target vehicle on fire. Burn Duration is the number of turns after the initial hit the Fire Modifier is in effect. All Fire Modifiers are cumulative.

Example: On turn 1, our intrepid duellist gets hit by a single flamethrower shot. The FT has a fire modifier of 4, so the attacker needs a 4 or less on 2 dice to set the target vehicle on fire. He rolls an 11, which isn't even close. The next turn, the flamethrower misses, but our hero gets hit by a laser. The laser has a fire modifier of 1, but this is also the first turn of the flamethrower's 3-turn burn duration – that's 4 more for a total of 5. The attacker, needing a 5 or less to start a fire, rolls a 6 – tough luck.

On the third turn, the flamethrower misses again, but the laser hits for the second time, and our hero drives through some flaming oil. The fire modifiers are 1 (for the laser) plus 3 (for the flaming oil) plus 4 (for the second turn of the FT's burn duration),

Vehicular Fire Table

Weapon	Fire Modifier	Burn Duration
Flamethrower	4	3
Flaming Oil Jet	3	2
Light Laser	0	0
Medium Laser	1	0
Laser	1	0
Heavy Laser	2	0
Thermite Grenade	2	1
White Phosphorus Grenade	2	1

for a total of 8. The attacker, needing only to roll an 8 or less, comes up with a 7. Our hero's on fire – let's hope he has a fire extinguisher.

Fireproof armor remains just that – fireproof – under these rules. If fireproof armor is breached and damage is taken by a power plant, flaming oil jet, or flamethrower, determine the chance of fire as above.

Odds & Ends

Automatic Fire

If a weapon is placed on "automatic," it will fire each turn until it runs out of ammo or is taken off automatic. Putting a weapon on automatic is a firing action, as is taking it off automatic. Letting it fire during the intervening turns is not a firing action. If you have a weapon on automatic, you may fire an additional weapon that turn.

This advantage, however, is offset by the inaccuracy of automatic fire. A weapon on automatic is not being aimed by the driver or anything else. It fires straight ahead (or behind, or to the side, depending on where it's mounted). A weapon in a turret cannot be put on automatic. A weapon on automatic cannot target an opposing vehicle's tire, turret, or any other specific target, nor does it benefit from targeting computers. Putting a weapon on automatic breaks sustained fire, and subsequent automatic-fire shots do not get a sustained fire bonus.

When a vehicle lays down automatic fire, calculate the attack from that weapon at the end of all movement for that turn. Draw an imaginary line straight out from the middle of the side the automatic weapon is on. If a target (vehicle, pedestrian, building) crosses that line, figure all the standard modifiers and roll the dice. Putting a weapon on automatic is very effective for doing property damage and dealing with large groups of opponents; if you're duelling with just one or two other vehicles, automatic fire is probably a waste of ammo. Dropped and gas weapons are very useful as automatic fire (see below).

Dropped Weapons

Minedroppers, Spikedroppers, Oil Jets, and Flaming Oil Jets are dropped weapons. Dropped weapons do not require to-hit rolls. If a car is moving and fires a dropped weapon, the counter is aligned with the car. Where the front of the counter is placed depends on where the weapon is mounted.

Front: Centered, aligned with the front of the car.
Underbody: Centered, with the counter front in the center of the car.
Top: Same as underbody.
Side: As underbody, but 1/2" off to the side.
Back: Centered, aligned with the rear of car.

If the car is moving in reverse, reverse the "front" and "back" designations above.

If the car is stationary, rear-mounted weapons remain the same, side-mounted weapons are placed straight out from the side of the car, front weapons are placed straight out from the front of the car, and top/underbody weapons are centered on the car.

If the weapon is in a turret, the counter may be placed as if it were mounted in any of the above locations.

The smoke cloud from the flamethrower is always aligned along the line of fire.

If a dropped weapon is put on automatic, a counter of the appropriate type is placed behind the vehicle every *phase* the vehicle moves. It will continue to do this until it runs out of ammo or is taken off automatic. If a vehicle is not moving, a dropped weapon on automatic will fire once per turn.

The counters for mines and spikes show *approximately* where they are. If a vehicle crosses a tire-spike counter, roll 1 die. On a roll of 1 to 4, each tire takes 1d damage. If a vehicle crosses any square adjacent to the counter (see diagram below), roll 1 die; on a 1 or 2, the tire takes 1d damage. Spikes will stay on the road indefinitely. Solid and plasticore tires take half damage from spikes.

Mine counters work the same way, except that if any wheel of a vehicle crosses the counter, the mines will go off on a roll of 1 to 4. If the vehicle only crosses an adjacent square, the mines explode on a 1 or 2. Each tire within 1" of any edge of the mine counter takes 1d damage, and the underbody of the vehicle that set the mines off takes 2d damage. The Spear 1000 mine works the same way, except that tires only take 1d–3 points of damage, while the underbody takes 2d+3! After a particular set of mines has been set off, the counter is removed.

Mines may also be remote controlled, either by radio or by cable. Setting off mines in this way counts as a firing action, but the mines go off when you want them to. If you want mines that will go off either by remote control or when they're run over, double the cost.

An oil slick is defined by the edge of the counter. When any part of a vehicle crosses an oil slick counter, it adds D2 to the difficulty of any maneuver attempted; it also adds D2 to the severity of any hazard encountered (such as enemy fire). It is not a hazard in itself. Flaming oil slicks are a D1 when driven over and add a D2 to any maneuver or hazard *and* also cause damage to the underbody and tires, as described in the individual weapon descriptions. Oil slicks last indefinitely, but flaming oil disappears after five turns.

Each vehicle checks only once for each counter – on the phase it first runs over the counter, or (if it's just going to touch the adjacent square area) the first phase it enters
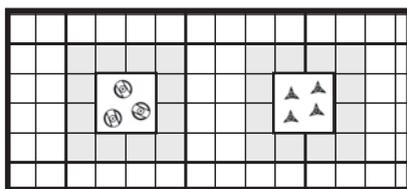
an adjacent square. Of course, if the vehicle returns to the counter's location, it will have to roll again.

For dropped liquids and dropped gases that do damage to a vehicle, roll for damage to the vehicle every five phases that the vehicle remains in contact with the damaging substance.
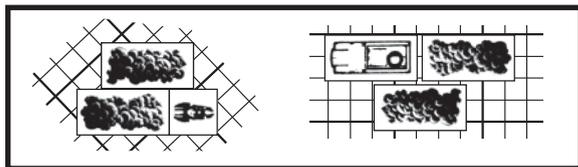
Paint and Smoke

Paint and smoke may be produced by rear-mounted or side-mounted weapons (see diagrams above). Do not try to line up a cloud with the grid lines. Orient it according to the vehicle's position. Smokescreens and paint clouds remain stationary. The life of a smoke cloud is one minute (longer than most battles will take). The life of a paint spray is one second. Remove it at the end of the turn after the one in which it is fired.

Any vehicle trying to trace a line of fire through paint or smoke must subtract 1 from its to-hit roll for each 1/2" of cloud in the way, rounded up. Lasers cannot fire through smoke or paint at all.

When a smokescreen or paint spray is placed on automatic, it fires once every *phase* the vehicle moves. This produces a continuous line of paint or smoke counters. It will continue to do so until it runs out of ammo or is taken off automatic. If the vehicle is not moving, a smokescreen or paint spray on automatic fires once per turn.

Tear gas can be loaded in a smokescreen (CPS 50, WPS 1). Tear gas affects targeting the same way regular smoke does, as well as having serious effects on any unprotected pedestrians (for a full description of tear gas, see the grenade rules on p. 36).

Any vehicle which comes into contact with a paint cloud gets paint on its windows. The vehicle will make all to-hit rolls at a –2 for the rest of that turn and the next three turns; after that, the windshield washers will have cleaned it off. Both paint and smoke are available in just about any color.

Linked Weapons

Another way to get more firepower per turn out of your vehicle is to link weapons. A weapons link costs $50, and has no space or weight requirements. Two or more identical weapons firing from the same side (or in a turret) may be linked, aimed, and fired together. It is not necessary for linked weapons to be fired together – a link is essentially a third button, in addition to the first two, that fires both weapons simultaneously. You can still press one of the first two buttons to fire a single weapon, if you want.

When linked weapons are fired, make a separate to-hit roll for each linked weapon. All modifiers – negative or positive – that affect one linked weapon affect them all, including targeting computers, gunner skill, and range.

Links can themselves be linked, provided all the weapons are identical. Four heavy rockets, linked in pairs that are also linked, gives the firer a number of options – fire any one, fire either of two pairs, or fire them all – at any time. Only identical weapons may be linked and aimed together.

Weapons that are not identical can be linked, but only one can be aimed. The other weapon(s) are treated as if they are on automatic (except they fire when the button is pushed, and not at the end of the turn). The firer can pick which weapon he wishes to aim, and which one will be treated as automatic (see above for rules on automatic fire). If two identical weapons are linked with a third, different, weapon, then the two identical weapons may be aimed together and the third is treated as if it were on automatic. Weapons with a turret cannot be linked and aimed with weapons in the main body of the vehicle, or in another turret, unless the weapons are *smart-linked* ($500). Any type of dropped weapon or paint/smoke weapon can be linked with anything with no penalty, since they do not require to-hit rolls. A common tactic is to link a number of minedroppers and smokescreens together and fire them together to discourage pursuit.

Any number of weapons can be linked together with one link. For example, a pair of rear-mounted minedroppers can be linked to a pair of spikedroppers mounted on the sides, all to fire at the same time as the turreted machine gun. This is one link; when it is triggered, all five weapons must fire. If you just want the two spikedroppers to fire, that requires another link. The same is true for the two minedroppers.

Hand Weapons

Any character (driver, gunner, passenger, or pedestrian) may use a hand weapon any turn he or she does not fire a vehicle weapon. For game purposes, hand weapons take up no weight or space. However, no character may carry more than six grenades or grenade-equivalents of equipment. A pistol counts as a grenade-equivalent; a rifle, shotgun, or SMG counts as two. As cargo, a box of 12 grenades weighs 50 pounds and takes up one space (it takes 1 turn to get a grenade from cargo space). For complete stats on hand weapons, see p. 47.

Hand weapons do not get bonuses for computer aiming, but all other modifications for vehicular weapons apply. Handgunner skill is used with hand weapons, instead of the Gunner skill.

Hand weapons have full effect on tires. Most will not affect other vehicle components except at point-blank range (see *Hand-to-Hand Combat* on p. 45). A few hand weapons will work (either half effect or full effect) against vehicles; see p. 47.

Range

A grenade may be thrown up to 5" (see below for more on grenades). Other hand weapons have a maximum range of 20" for game purposes.

Firing Penalties and Bonuses

The driver of a moving vehicle must subtract 3 from his to-hit roll with any hand weapon. Gunners or passengers subtract 1. Pedestrians or stationary characters fire at the listed values. In certain situations, pedestrians may get bonuses for firing from a non-moving position. Firing from inside a moving vehicle is not considered stationary, but firing from a stopped vehicle is.

Grenades

Grenades come in a number of types, but all share some similarities. They have a simple time-delay switch (1 to 5 seconds), and an activation switch. Setting the time-delay takes 1 second, but they can be set ahead of time. Changing the time delay also takes 1 second. The timer may be replaced with an *impact fuse*, which sets the grenade off the instant it lands.

To throw a grenade, simply start the timer by pressing the activation switch, and throw it. The grenade will go off at the end of the turn in which the timer stops. If you set the timer at 1, it will go off at the end of the turn *after* the turn in which you press the switch. Grenades fired from launchers are automatically activated upon firing.

Thrown and launched grenades take exactly 1 second to reach or impact their target; if you fire a grenade launcher in turn 1 on phase 3, it will hit the ground on phase 3 of turn 2. The to-hit roll is not made until the grenade touches down.

The to-hit roll for a thrown grenade is 9 or better on 2 dice. But that's misleading, because even a successful roll will not put the grenade in the exact square you were aiming for, unless you roll a natural 12. On a 12, the grenade lands in the exact 1/4" square you were aiming for. Any other die roll is a miss of one degree or another.

Any grenade toss that is less than the best possible (a 12), will deviate from the intended target. This deviation has two components – Direction and Distance. Or, to put it another way, which way did it go, and how badly did you miss?

Grenade Direction Table

Roll 1 die, and consult the following:

1 – Off to the right.
2 – Off to the left.
3 – On line, but short.
4 – On line, but long.
5 – Off to the right, *and* long or short (roll randomly).
6 – Off to the left *and* long or short (roll randomly).

Grenade Distance Table

How far the grenade lands from the intended spot depends on how badly you missed your to-hit roll. If your grenade was both off line and long/ short, roll separately for each distance.

Made your roll or higher but rolled less than 12 – 1d–3 1/4" squares in each direction called for by the direction roll.

Missed by 1 – 1d–1 (treat a 0 result as 1) squares in each direction called for.

Missed by 2 – 1d+1 squares in each direction called for.

Missed by 3 – 2d–2 (treat a 0 result as 1) squares in each direction called for.

Missed by 4 or 5 – 2d+3 squares in each direction called for.

Missed by 6 or more – 3d squares (8 squares minimum) in each direction called for.

If the line of flight for the grenade is diagonal to the grid lines, just remember that each square is 1/4", and use a ruler to determine the final location of the grenade.

Example: George thinks an enemy vehicle is about to slip out a side alley, so he wants to toss a grenade into the open area where the alley intersects the street. George picks a target square and rolls the dice. He needs a 9 or better to hit, but rolls an 8. Not bad, but a miss. Next George rolls on the Direction Table, and gets a 5 – off to the right, and either short or long. He assigns "evens" to long, and rolls another 5 – indicating the grenade came up short, too.

Next, George consults the Grenade Distance Table – "missed by 1" means the grenade is off by 1d–1 squares in each direction called for by the first set of rolls, rolled separately. George's grenade is both to the right and short of his intended spot. George rolls a 2, then a 3 – so the grenade ends up one square (2–1) to the right, and two squares (3–1) short of the intended target.

If a grenade hits a large solid object – like a building or a car – while in flight, it will bounce 1d–1 squares and stop. The direction it bounces is determined by the angle at which the grenade hits the solid object. If the grenade hits the object squarely, it bounces straight back toward the thrower. If it strikes at an angle, it will bounce off at the same angle, away from the thrower. Grenades with impact fuses will not bounce; they will blow up at the point of impact.

The maximum range for a thrown grenade is 5", and standard range penalties apply – that is, if your intended spot is 4" to 5" away, there is a –1 penalty to hit, and if your intended spot is less than 1" away, there is a +4 bonus. If your intended spot is less than 1" away, you cannot miss by more than two squares in any direction. In no case can a grenade end up behind the thrower – if the distance "short" is greater than the distance first attempted, place the grenade at the thrower's feet. A thrower may place a grenade in his own or any adjacent square without having to roll at all.

A grenade may be thrown from a moving vehicle at –2. There is no "automatic hit" for adjacent squares, but the +4 point-blank bonus would apply. A grenade dropped or thrown from a vehicle could go in any direction. A roll of 2 or 3 indicates disaster – the grenade is dropped inside the vehicle and rolls under the seat – or something equally nasty.

Grenade Types

A wide variety of grenades are available for the discriminating duellist. When carried, they are all 1 GE each.

Concussion Grenade – $40. Does 1 point of damage to all pedestrians and exposed cyclists in a 1" burst effect radius, but has an additional effect on people within a 2" radius. Roll 1 die:

1, 2 – Victim unconscious for 10 minutes.

3 – Victim unconscious for 1 minute and stunned (unable to operate vehicle or weapon controls) for 2 more minutes.

4 – Victim unconscious for 10 seconds and stunned for 2 more minutes.

5 – Victim stunned for 30 seconds.

6 – Victim stunned for 10 seconds.

7 or more – No effect.

Characters inside a vehicle with intact armor between them and the blast are safe from the effects. Characters with a building, wall, or other solid object between them and the blast add 5. Characters in a doorway or window, or in a vehicle which has breached armor between them and the blast, add 3 to their roll.

Combat 35

Explosive Grenade – $25. Does 1d damage to all vehicles within a 1/2" burst radius. Does 1d damage to pedestrians in a 2" burst radius.

Fake Grenade – $5. Looks real, but is only plastic.

Flaming Oil Grenade – $75. Creates a 1/2" × 1/2" slick of oil which ignites after 1 phase, just like a standard FOJ slick.

Flash Grenade – $150. Any person within 2" of a flash grenade when it detonates (night only) is blinded for 1 second. Effects are doubled if the victim is wearing LI goggles. Naturally, if a character cannot trace line-of-sight to the grenade, he is immune to its effects. For this purpose, smoke and paint block line of sight.

Flechette Grenade – $20. Does 1d damage to all pedestrians and exposed cyclists in a 2" burst radius. No damage to tires or vehicular components.

Foam Grenade – $30. If this grenade is thrown within 1/2" of a fire, it puts out all fire in a 1" square area on a roll of 1 on 1 die. If it goes off successfully when inside a car, it puts out all fire in that car, but only in that car. The foam grenade can also be used offensively, because it blocks visibility like paint when used on a target vehicle.

Impact Fuse – $50 per grenade. This replaces the timer and causes the grenade to explode on impact.

Paint Grenade – $20. Creates a 1" × 1" paint cloud that is standard in every other way. Also available in colors.

Smoke Grenade – $20. Creates a 1" × 1" smoke cloud that is standard in every other way. Available in a variety of colors.

Tear Gas Grenade – $30. Creates a 1" × 1" cloud that lasts one minute. Effects on weapon and laser fire are the same as for smoke. Unprotected pedestrians and cyclists must roll once each turn they are in a cloud. Multiple rolls don't produce cumulative results – just apply the worst result rolled so far:

1– Victim is unconscious for 5 minutes.

2-4 – For 1 minute, victim is −6 to hit with any weapon, and can only crawl at 3 squares per turn.

5-6 – Victim is −2 to hit with any weapon for this turn and 3 more turns.

Thermite Grenade – $100. Does 1d damage to all targets (including vehicles) within a 1/2" radius; has a burn modifier of 2/1.

White Phosphorus Grenade – $75. Does 1d damage to pedestrians, half damage to vehicles, within 1/2" of the blast. It creates a 1" × 1" smoke cloud on detonation; fire modifier 2; burn duration 1.

Buildings

Breaches and Collapsing Buildings

A building is targeted at +10 to hit. It's big and doesn't move (so the +10 takes the "stationary" bonus into account). Each building has a DP value indicating the strength of its walls. Any weapon doing at least this much damage will produce a "breach." Lesser damage has no effect.

Example: A building has 10 DP. A weapon result of 10 points of damage or more will produce a breach at the affected spot. However, any number of smaller hits may accumulate without causing harm – there is no need to keep track of building damage that does not create a breach. A breach, once created, is identical to a door or window for game purposes.

When a building accumulates breaches equal to its DP value, it will collapse. (A DP 4 building falls after four breaches. The DP 10 building mentioned above will take ten breaches before it collapses.) It does not matter where the breaches are. When a building falls, it creates rubble (see below). The fall of a building does not affect nearby buildings – even those with which it shares a wall. However, a breach in a common wall will affect both buildings.

Everyone and everything inside a falling building suffers as many dice of damage as the building has DP. For example, a 6 DP building will do 6d damage to anyone and anything inside.

Cars will take this damage to their top armor. If any top armor is left after the collapse, people inside the car will be safe – trapped, but safe. They won't be able to get out for as many turns as the building had DP. They'll still have to deal with the rubble as pedestrians after they escape from the car.

Some buildings will have two different DP numbers, with the second one in parentheses. The first number will be the

number of damage points required to create a breach, and the second will be the number of breaches needed to collapse the building. For many buildings, this will be the same number – and only one number will be used. But for some buildings, it's not logical. An example is a barn – only a few damage points will create a single breach, but it will take lots of breaches to collapse it. A barn like this will be described as having 4(15) DP – it only takes 4 damage points to create a breach, but the barn won't collapse until 15 breaches are made. When a building with two DP numbers collapses, use the first to determine the amount of damage it does, etc. (see above).

When a building collapses, it becomes rubble. No vehicles may enter rubble. Pedestrians may move through rubble at one square per second – moving only on Phase 1 of a turn. Rubble takes up the same squares that the building did.

Rubble continues to block line-of-sight between roads, just as if the building were still there. If the firer or the target is in an elevated position, rubble can be sighted over, however. A pedestrian in rubble can fire as though the rubble was not there; he is considered "braced" and gets the +1 bonus to hit. A pedestrian in rubble may be fired on, but the attack is at −4.

Collapse of a building will also scatter debris. When something collapses, take a dozen debris counters and drop them over the disaster site from a height of one foot, redropping any that fail to land on the street.

Cover

A line of sight may be traced through any door, window, or breach. Therefore, a pedestrian may stand inside a building and fire out. He must, however, be adjacent to the door or window for this LOS to be traced.

A pedestrian leaning around an edge of a door or window presents a very small target. Therefore, although he may be fired at, he has the protection of the wall. He is not likely to be hit unless the wall is breached.

Example: A pedestrian is leaning out a window, looking for a good shot, when a duellist with a laser tries to take him out. The duellist needs an 8 to hit, and gets it. The wall has 6 DP. The duellist rolls 10 points of damage with his laser. The wall takes 6 points (breaching it); the other 4 go to the pedestrian. If the wall had not been breached (if it had 12 DP, for example), the pedestrian would have been unhurt.

However, a very good shot can go right through a door or window. If the roll to hit is at least 2 better than needed (in the above example, if the duellist had rolled a 10), then both the pedestrian and the wall take full damage.

Height Modifications

Situations may arise where duellists in cars want to shoot at pedestrians on rooftops; or a pedestrian gun battle may involve exchanging shots across a street into buildings. Firing at any target that is on a higher level than you is at a −1 for every ten feet of height difference. Firing downward is at no penalty, but throwing things (like grenades) is at −1 for every ten feet of height difference. Each level of a multi-story building is assumed to be ten feet high. Some heights – a third-story rooftop, and fourth floor or higher – cannot be hit by regular vehicular weapons on street level, unless the firing vehicle is farther away from the target than the target is high. Universal turrets and hand weapons are the only way to fire on them.

Missed Shots

In most cases, a missed shot rockets off into the stratosphere, never to be seen again. In a scenario involving buildings, this is clearly inappropriate. A missed shot fired horizontally goes in a straight line until it leaves the map or hits an obstacle, like a building. If another vehicle or pedestrian is in the exact line of fire, you can roll to hit, taking into account any additional range penalties and another −2 because you weren't aiming at him. When a "miss" does hit something, it does standard damage.

For shots fired upward, roll 1 die. On a 1 or 2, the shot hits one story higher than intended; on a 3 or 4, it hits two stories higher; on a 5 or 6, it misses the building entirely.

For shots fired downward, a miss will overshoot the target by 1 to 6 inches.

If you try to put a grenade through a window and miss, the grenade lands at the base of the building below the window you were aiming at.

Combat   37

4. Characters

Car Wars characters are identical in many ways. They all take up 2 spaces as vehicle crew members, and they all have 3 damage points and weigh 150 pounds. Characters can be differentiated in three categories: skills, prestige, and wealth.

Skills

Many different skills are available for characters. Some of these skills (Driver, Gunner, Cyclist, and so on) are useful in any **Car Wars** game. Others (Fast-Talk, Street-wise, etc.) will be important only in campaigns with a heavy roleplaying element.

When a player wants to try something that isn't covered by any of the skills in use in that campaign, the GM should fall back on "roll 2 dice and pray." In other words: Require the player to roll 2 dice. The higher the roll, the better the result.

A character with a skill at the *base level* can use it with no penalties or bonuses. Most skills can be attempted, at a penalty, even by those with no training; see below.

With extra training and experience, a character with a skill at base level (for example, "Driver") can improve it to "Driver +1," and eventually "Driver +2," "Driver +3," and so on. In the course of adventures, a character will gain "skill points." Some skill points can only be spent on particular skills, while others can be spent on any skill.

Beginning Skills

When first creating a character, you get a few base skills automatically. Each character starts with base-level skills in Running, Climbing, and Area Knowledge for his home town.

Each character also gets a total of 30 skill points to spend as you wish. Each base level skill acquired during character creation costs 10 skill points. Each additional skill level costs 10 points up to Skill +3. Higher levels aren't possible with the beginning 30 points.

You can spend the 30 beginning skill points to acquire three base level skills, or you can get one skill at base level and a second at +1. You could even sink all 30 points into buying one skill at +2, but your character would be pretty one-dimensional. You can also use some of your initial skill points to improve your Running skill.

Earning Skill Points

Every time a character drives a vehicle into combat and survives, one skill point is earned toward increasing the ability for that vehicle – Driver, Cyclist, etc. (Combat is defined as an incident in which a vehicle exchanges fire with foes.) The driver of a vehicle that scores a "kill" in combat gets an additional point toward that vehicle skill.

A "kill" is scored when an enemy vehicle can no longer move or fire, either because of a direct attack, a crash during combat, surrender of the occupants, or other circumstance. The occupants do not have to die. Killing a pedestrian does not count as a kill. (A bully hiding behind armor should get no credit for zapping a relatively harmless pedestrian with a laser!) If a vehicle can no longer move, but still has operable weapons, it is not a kill unless and until it is forced to surrender.

If the crew abandons a vehicle or surrenders, that counts as a kill. If a damaged vehicle escapes to safety, that does not.

Entering combat as a pedestrian is worth a *general* skill point (see below). If a pedestrian kills another pedestrian (or knocks him out), he earns a point for the skill used in the combat; scoring a kill against a vehicle is worth 5 points! If you are firing hand weapons from a vehicle, no skill points are awarded except, possibly, as a referee award for heroic or miraculous shots!

Use of other skills, as per the skill descriptions, can earn points toward improving those skills. If no specific rules are given for a skill, the referee should simply award a point whenever it is used successfully in a combat or stress situation.

General Skill Points

In addition to the specific points awarded for skill use, the referee should award general skill points at the end of an adventure. These points may be applied for any skill, or saved to acquire a new skill at base level. Some suggestions for general skill point awards:

Winning an arena event: +3
Surviving an arena event: +1
Conspicuous bravery: +2
Risking your life to save a teammate or
    friend: +2
Using an unusual tactic: +1
Escaping an ambush alive: +1
Successfully knocking out a vehicle so it
    can be salvaged: +1
Winning a highway duel: +1
Winning a highway duel when you're
    outnumbered: +2
Completing a mission or adventure: Depends on the length and complexity of the task, but anywhere from +5 to +15 would be appropriate.

This list is far from complete. Spectacular escapes against overwhelming odds, brilliant tactics, or just plain lucky breaks could be situations worth extra skill points. While the players and even spectators are welcome to offer suggestions on how many points should be awarded, the referee's decision is final.

Spending Points to Improve Skills

To increase an existing skill up to Skill +3, spend 10 points; this improves the skill by one level. Higher skill levels cost 20 points each up to Skill +6, 30 points each up to Skill +9, etc.

To acquire a *brand-new* skill at base level, you must spend 10 points *and* pay $1,000 – and take 3 months off (in game time) for training. The only exception is the Mechanic skill (see below).

Using Skills

From time to time, the referee may call for a *skill roll* to see if a character can succeed at some feat. If you have a skill at base level, you succeed on a roll of 7 or more; otherwise, you fail. The effect of success or failure will depend on the situation.

The higher your skill, the easier it is to make a skill roll. Add your skill bonus to your die roll. Thus, if you have Mechanic +1, you would succeed on a natural roll of 6, because 6 + 1 = 7. However, a natural 2 always fails.

A character who does not even have a skill at base level (that is, did not spend at least 10 points on it) gets a −4 on any skill roll. He will not succeed except on an 11 or 12.

Depending on the relative ease or difficulty of a task, the referee may require some rolls to be made at a penalty or a bonus.

Vehicle skills (Driver, Cyclist, etc.) are handled differently. In most cases, your vehicle skill simply affects any control rolls you must make. Occasionally, when a control roll does not seem appropriate (especially in a roleplaying situation), the referee may require you to roll against a vehicle skill. In this case, your vehicle's handling class affects your skill. If you have a HC 2 (average) vehicle, roll normally. If its HC is lower than 2, subtract the difference from your skill. If it is above 2, add the difference to your skill.

So a HC 3 vehicle, for instance, gives you a +1 to your skill. A HC 2 vehicle gives no bonus or penalty; a HC 1 vehicle gives you a −1 to skill, and so on.

Contests of Skill

When two characters compete in some way, the referee may call for a *Contest of Skills*. Each character makes a skill roll as above, adding any modifiers the referee feels are appropriate. If both players make or fail their rolls, then the contest is inconclusive and may continue if the situation or common sense warrants. If both players make their rolls, but one makes it by 5 more than the other, he wins. Obviously, if one player makes the roll and the other doesn't, the player who made his roll wins.

Some situations may call for a *quick contest of skills*. In a quick contest, each player only rolls once, adding all appropriate modifiers. The player with the higher score wins. If they tie, the contest is inconclusive.

Example: Two duellists, after a long and protracted road combat, sail into the pro-

Characters 39

tection of a ghost town. Larry (Driver +2), unwilling to give up the fight, spins through town attempting to find Curly's (Driver + 1) car. Rather than play it out in a complicated double-blind fashion, the referee calls for a Contest of Driver Skills. Curly has been through this town before (Area Knowledge +1), so the referee gives him a +1 on his roll. Both players roll two dice. Larry gets a 9 (7, +2 for his Driver skill bonus), poor Curly gets a 5 (3, +1 for his Driver skill bonus, +1 for his Area Knowledge). Thus, Larry wins the contest, and gets the drop on Curly. The referee sets Curly's vehicle out in the open, travelling at a reasonable urban speed, and Larry is free to place his car anywhere nearby, moving at any speed.

General skill points may be used to improve these skills; so can any points earned by particularly successful or imaginative uses of the skill itself.

Skill Descriptions

Area Knowledge – Used to get around in a particular city, state, duel circuit, or patch of untamed wilderness. A successful Area Knowledge roll means the character can answer detailed questions about the area known; where to find someone or something, where to best set an ambush, etc. The amount of detail will decrease as the size of the area increases. Better rolls allow better use of the information.

All characters are assumed to have this at base level for their hometown. Improvements to the skill add other areas or more detail about a known area, at the referee's option.

Climbing – Like Running, everyone gets this skill at base level. Climbing skill is used to climb trees (at −1 to skill), fences (-2), some buildings (-3 to −5), etc.

Computer Tech – Most computer systems in the **Car Wars** world are very easy to use, and no roll is required. Computer Tech is the computer equivalent of Mechanic, and is used to program a system, break through a computer's defenses (a Contest of Skill between the hacker and the computer's defensive programming), etc.

Cyclist – This is the ability to drive any size motorcycle or trike. Anyone without this skill is at −3 on the handling class of any cycle he tries to ride. The skill is otherwise like Driver (below).

Driver – This is the ability to drive a standard car, pickup, van, etc. – anything with four or six wheels – or a reversed trike. Someone without this skill may attempt to drive such a vehicle, but always subtracts 2 from his handling class. At the base level, the character is an average driver. Each additional plus adds to his reflex roll. At the beginning of each combat, every driver makes a reflex roll: On a 5, the HC of the vehicle is raised by one for the duration of the combat; on a 6, the HC goes up by 2. A Driver +2, for example, would get to add 2 to the die roll. Each additional plus is also added to the base HC of a vehicle to determine how many points are recovered on the Vehicle Record Sheet at the beginning of each turn.

A good driver is better at keeping his vehicle under control. Whenever a vehicle is forced to roll on a Crash Table, subtract the driver's Driver skill bonus from the roll.

Fast-Talk – The skill of weaseling one's way out of a situation by getting someone else to make a snap decision in one's favor. To fast-talk a potential sucker, a character rolls against his Fast-Talk skill, adding any modifiers the referee feels appropriate (an enemy in a firefight will be more resistant to a pitch). Fast-Talk may also be used to *resist* someone else's attempt to Fast-Talk, in which case a quick contest of skills is required.

Gunner – This is the ability to use the targeting system common to all vehicles, and to fire any vehicular or tripod weapon. A character without this skill has a −3 to hit with any vehicular weapon, −2 with a tripod weapon. Each plus adds 1 to the gunner's to-hit roll: a character with Gunner +3 adds 3 to any to-hit rolls he makes. Entering a combat while in control of a weapon is worth a Gunner skill point; each kill scored is also worth 1. Note that if the driver of a vehicle also pulls the trigger of the weapon that scores a kill, he gets two skill points – one in Gunner and one in Driver – for the kill.

Handgunner – The ability to use hand weapons and grenades. Anyone without

Characters

this ability has –2 to hit with all aimed hand weapons, but may throw grenades without penalty. Each plus gives a +1 to hit with all hand weapons and grenades.

Luck – Each level of Luck adds 1 in favor of the catch-all "roll 2 dice and pray" method for handling odd situations. Luck will *not* help if there is another skill that can do the job.

Martial Arts – This is the ability to fight more effectively in hand-to-hand combat (see p. 45). Characters with the base skill may attack twice per turn hand-to-hand. At +1, they get +1 to their to-hit roll; at +2, they get an additional point of damage. The cycle repeats beyond that: at +3, the character gets an additional attack per turn; at +4, he gets an additional +1 on the to-hit roll; at +5, he gets an additional damage point; and so on.

Mechanic – This is the ability to repair vehicles and components. The time it takes to repair something (if it can be repaired at all) is a function of the character's Mechanic skill, as well as the difficulty of the job and the tools that are available.

Repair Chart

Level	Trivial	Easy	Medium	Hard	Very Hard
No skill	2	11	x	x	x
Mechanic	1	9	11	12	x
Mech. +1	1	7	9	11	14
Mech. +2	1	5	7	9	11
Mech. +3	1	3	5	7	11

To perform a given repair job, a Mechanic must roll 2 dice, and get the number shown on the chart (or higher). He may try once per hour (every 30 minutes for a Mechanic +3). An "x" means the job is impossible at that skill level. These numbers assume the mechanic has a basic tool kit. If he is working with improvised tools (pocket knife, chewing gum, baling wire), subtract 2 from all rolls. If he has only a mini-mechanic (p. 46), subtract 1. If he has a portable shop (see p. 59), *add* 1. If he is working in a regular garage, add 2. A successful roll repairs 1 point of damage on the item in question (3 points if armor is being repaired), or successfully installs/dismounts/salvages the item in question.

Any number of mechanics can work on the same vehicle, but no more than three can work on the same item at once. Each one rolls separately for success.

Difficulty of Repair Jobs

Impossible (cannot be attempted): Repair damaged tires, repair computer.

Very Hard: Jury-rig rocket or laser.

Hard: Jury-rig other components; repair laser, rocket, radio, or power plant.

Medium: Repair any weapon other than laser or rocket; reweld or patch armor; salvage radio, power plant, or computer from a wreck.

Easy: Replace weapon link; salvage other items from a wreck.

Trivial (even someone with no Mechanic skill can do this): Reload ammunition; replace or salvage tire; salvage spare magazines and unused ammunition from a wreck.

Repair is the process of fixing a damaged part. Each time a successful roll is made, one DP is restored to the item (or 3 points in the case of armor). If a component is totally destroyed, it cannot be repaired – only jury-rigged.

Jury-Rigging is a temporary repair job. If the proper roll is made, the jury-rigged component regains 1 DP, putting it back in service. A jury-rigged component can never be properly repaired, and if it is damaged again, it cannot be jury-rigged a second time. Some items will be destroyed so totally that they cannot even be jury-rigged – like what's left of a cycle after a head-on collision with an 18-wheeler.

Salvage is the removal of a part from a wreck. A mechanic must make the appropriate repair roll to salvage any given part.

Installation is the opposite of salvage – putting a new part in to replace a destroyed one. The old part must first be "salvaged" (that is, removed), even if it is totally destroyed. The roll to install any part is the same as the roll to repair it – see the chart above. When the roll is successfully made, the part is installed.

Learning the Mechanic Skill

The only way to learn or improve this skill is to spend game time as a full-time mechanic at a duel arena, truck stop, or

Characters   41

garage. Since this is not especially thrilling, most high-level mechanics will be the referee's characters, or player characters that started by taking Mechanic +1 or +2.

If a character decides to drop out of duelling to become a mechanic, it takes a year (during which he also earns $6,000 above living expenses) to get the basic skill. It takes 2 more years (clearing $8,000 a year) to get to +1, 3 more years (clearing $10,000 a year) to get to +2, and 5 more years (clearing $15,000 a year) to get to +3. A Mechanic +3 has a fairly safe life and earns $20,000 a year above living expenses. Mechanics may rise no higher than +3.

Paramedic – This skill helps save injured victims.

If a character is at 0 DP but not below, and the medic can get to him within 20 turns of the fatal injury, a successful roll will save the character's life. He will remain at 0 DP, but will be alive. DP are healed at the rate of one every 2 weeks of game time. If a victim is below 0 DP, or the medic doesn't get there in time, or fails his roll (only one chance), the victim is dead. Every successful use of the Paramedic skill is worth 2 skill points toward improvement of that skill.

If a victim has 1 DP left (that is, he's unconscious), a successful Paramedic roll will revive him for a few minutes (long enough to get some important information, for example).

Running – Everyone starts with this skill at its base level. Each plus adds 2.5 mph to a character's speed – with Running +3, you move at 20 mph and Sprint at 25 mph! No character may move faster than 25 mph (even while Sprinting). There is no way to earn points specifically in Running, but *general* skill points may be spent to improve the skill.

Security – The knowledge of security systems – techniques and methods of construction, and ways to disarm or fool them.

Streetwise – This skill allows a character to get around in the underworld, get a piece of the action, and make the contacts he needs. Successful use of Streetwise lets you find out where any sort of illegal activity is going on, who can (or must) be bribed, and so on.

Prestige

This is a character's status among other autoduellists and the millions of TV autoduel fans. Prestige increases a character's possible arena winnings and decreases his expenditures for new cars, parts, repairs, etc.

Each character starts with 0 prestige. Arena combat always counts for prestige; road combat sometimes affects prestige. There is a 2 in 6 chance that any road combat will have been witnessed or filmed by helicopter TV crews, in which case it scores normal prestige. Otherwise, you're an unsung hero for that fight – no prestige. In some situations (inside a city, in an area with competing TV stations that devote more time to autoduelling, etc.), the chance of a witnessing TV crew may be higher. That decision is up to the referee.

An ace is a character who has participated in five *confirmed* kills – that is, arena kills or road kills that were witnessed. A double ace is a character with ten confirmed kills.

Scoring

Prestige is scored as follows:
For entering combat: +1
Winning an event: +2
For each kill your vehicle scores: +2
Your vehicle "killed" but you survive unhurt: −1
Your vehicle "killed" but you survive with injury: −2
You leave your vehicle while it can both move and fire: −1
You leave the arena in a vehicle that can both move and fire: −1
You attack with hand weapons while outside a vehicle: +1
You kill a vehicle occupied by a character with prestige of 15-20: +1
You kill a vehicle occupied by a character with prestige over 20: +2
You become an ace: +5
You become a double ace: +10

A character may earn up to 3 extra prestige points per game for excellent play, lucky shots, or survival against bad odds. These points are awarded by majority vote of the players and onlookers during that game. The referee breaks ties.

Being killed lowers prestige: −1 for a heroic death, −2 for an ordinary combat death, −3 for a mundane death, −5 for a cowardly death.

Advantages of Prestige

In any arena combat where cash prizes are offered, a character with prestige of 10 or better earns a percentage bonus equal to his prestige; that is, a prestige of 17 earns a 17% bonus. In addition, a character with prestige of 15 or better gets a 25% discount on all new car purchases and repairs (for his own use only); prestige of 25 or better earns a 50% discount. This is in return for the champion's sponsorship of various brands of ammunition, autos, weapons, etc.

Wealth

Each character begins with 0 wealth. He can get started in a number of ways. He could enter an "Amateur Night" arena scenario (p. 62) in which the network supplies vehicles for aspiring drivers, or he could be hired as a mercenary for a highway convoy. However a character gets started, there are several ways he can earn money:

Selling cars: A car may be sold for salvage after it has been used. Most arena contests give a survivor the right to salvage his kills, too.

Arena prizes: This is the big money. The referee for a continuing arena campaign may set cash prizes. A typical purse would be from 1/2 to 1 1/2 times the total value of the vehicles competing.

Road salvage: You can earn money the way the cycle gangs do: pick a fight on the road, and strip your kill for salvage.

Perform missions: Many adventures involve doing something hazardous (deliver an item or person to another city, protect a person, steal an item) for pay. These can be very profitable, but the risk is high and the characters should be well-equipped and experienced. This is not for beginners.

Transactions with other players: Car sales, used equipment, side bets, and whatever else you think of.

Other than repairs and ammo purchases, the only expense a continuing character has is $150 per week for food, a place to stay and power plant recharges. A character with no money must sell something or starve. A character with no money and no car is obviously afraid to enter the arena, so his prestige drops to zero and he's out of the game.

Pedestrians

Not everyone has a car. Vehicles may face challenges from enemies on foot – or a driver may leave a wrecked vehicle and sprint for safety. A pedestrian is represented by a counter that is 1/2" × 1/4". The pedestrian is considered to be in just the front half of the counter – a single 1/4" square. The larger counter is provided for ease of handling. Anyone firing on a pedestrian must trace a line of fire to the particular square the pedestrian is in, not just any part of the entire *counter*. Pedestrian counters should always be lined up with the map grid.

Pedestrian Movement

Most pedestrians move at 12.5 mph; that is, they move 1/4" on every phase. Pedestrians may move into any adjacent square, including those which are diagonally adjacent, in their move. They can change direction any time without bothering with control rolls or handling class (though things like oil and spikes can hamper movement).

You may elect to go slower, and there are ways of going faster (see below). To determine the phases in which you move, multiply your speed by 4 and read the appropriate line on the Movement Chart, p. 7. Move 1/4" in each phase the chart indicates. For example, someone moving 17.5 mph would move 1/4" in each phase indicated on the chart for 70 mph. Pedestrians go before cars moving at the same speed.

Going Faster

Spending points to increase your Running ability will increase your base speed. For short periods of time, you may also opt to Sprint. A Sprinting character increases his speed by 5 mph for up to 10 seconds. After the 10 seconds, he can continue to run, but only at his base speed, and only for a maximum of 10 more seconds. Then he must stop and rest. After Sprinting, a character must stop and rest for 1 second

for every 2 seconds spent Sprinting; if he Sprinted for 6 seconds, he must rest for 3, for example. A character who is resting can do nothing except catch his breath. You cannot Sprint up a flight of stairs, and you cannot fire a weapon while Sprinting – but if you need to get under cover fast, the extra speed could save your life.

There is no limit to the number of direction changes a pedestrian can make – don't bother with handling classes, control rolls, or Crash Table rolls.

Stairs

Stairways are marked on **Car Wars** maps as a series of squares, with every other square marked with a floor number. When a pedestrian reaches the numbered square corresponding to the floor he is on, he must stop. On phase 1 of the next turn, he may move one square up or down. On phase 1 of the turn after that, he may move again. This continues until he reaches the floor he wants. On the turn after reaching the numbered square for any floor, the pedestrian may move on that floor normally. The uppermost box of many staircases is marked "R," and represents a hatch to the roof of the building. It takes one turn to move from the "R" square to any adjacent square – then movement continues normally.

The Running skill helps a pedestrian when climbing stairs. For each level of Running the character has above base level he can climb one additional square per turn, up to a maximum of 5. If a Runner +2 was climbing a set of stairs, he would climb one square on phase 1 of the turn, then another on phase 2, one on phase 3, and then again on phase 1 of the next turn.

Dropping Prone, Crawling, and Hiding

A pedestrian can drop prone instantly – this takes no time. A prone pedestrian can be in the open (an extra –1 to hit), completely safe (behind a wall, for instance), or covered but not completely safe (if he is prone in rubble, he is at a –5 to be hit). A pedestrian can fire from prone position. Being immobile gives him a +1 to hit. A pedestrian who is in safe cover (such as behind a wall) but sticks his head out to fire is at a –2 for cover.

A prone pedestrian can crawl, moving in phases 2 and 4 only. He cannot fire while crawling.

It requires a full second to stand up from a prone or crawling position.

Spikes, Oil, and Mines

Pedestrians can run afoul of the nasty surprises dropped on city streets and intended for vehicles. When a pedestrian enters a square covered by a spike counter (not the adjacent area, but the counter itself), he must roll 2 dice. On a 2 or 3, the pedestrian takes 1d–4 points of damage.

A pedestrian on oil is more likely to resemble a Keystone Kop than Clint Eastwood. When a pedestrian enters a square with oil on it, he rolls 2 dice. He must roll a 5 or better to stay on his feet. If he moves immediately to another square with oil, he must roll a 7; then a 9, and then an 11 for each subsequent square. If a pedestrian falls, he can either spend an entire second to stand up – which also requires a roll of 7 or better on 2 dice to accomplish – or crawl, moving only during Phases 2 and 4.

Flaming oil has the same effect as regular oil, and pedestrians also take 1 point of damage at the end of every turn they're in it. Body armor does protect against damage from flaming oil.

The weight of a pedestrian will not set off vehicle-type mines.

Equipment and Encumbrance

Pedestrians may carry up to six grenades, or six *grenade-equivalents* (GEs) worth of equipment; see the list on pp. 45-47. This does not affect their movement. Carrying a heavier load, except with a pack or similar item, is prohibited.

Combat

Pedestrians can use hand weapons only (see list, p. 47). A pedestrian can only fire once a turn. Once a pedestrian fires, he cannot move for the rest of the turn. A sprinting or crawling pedestrian cannot fire.

Pedestrians have 3 Damage Points – the first hit wounds, the second knocks unconscious, and the third kills. They *can* wear body armor, which adds DP.

Characters

If a vehicle collides with a pedestrian, use the collision system in Chapter 2. Remember, pedestrians have a damage modifier of 1/5. The collision system can also be used if pedestrians run into each other.

Hand-to-Hand Combat

For one pedestrian to strike another, he must be in a square adjacent to his intended victim. He must roll a 2 or higher to hit, but all targeting modifiers (except for the point-blank range bonus) are in effect, including the –3 for targeting a pedestrian, so the net effect is that – most of the time – he will need a 5 or better on 2 dice. A human fist does 1d–5 damage. If the attacker has something heavy in his hand – a pistol, an unused grenade, or a rock (any debris marker will yield something appropriate), the damage roll is 1d–4.

If a pedestrian has moved more than half his movement allowance in a given turn, he cannot attack hand-to-hand this turn.

A pedestrian may also make a "hand-to-hand" attack against an adjacent vehicle. He must have something to hit it with – a bare-handed attack against vehicle armor is pointless. A pedestrian with a rock or other object may strike a vehicle once per turn (no to-hit roll is needed). He does 1d–5 damage . . . that is, on a roll of 6, he does 1 hit. A hand weapon used in this fashion will no longer be useful as anything but a club.

A hand weapon may also do damage to a vehicle in a more conventional way. Any hand weapon fired from point-blank range at a stationary vehicle hits automatically, doing 1 point of damage. Any hand weapon that would ordinarily do more than 1 point of damage against a vehicle (such as the SMG), gets the higher damage.

Hand weapons take one turn to reload; this replaces one magazine. Nothing else can be done while reloading a weapon. When a pedestrian is hit by a weapon, he will always take a minimum of 1 point of damage from that weapon.

Pedestrians and Vehicles

A pedestrian must stand beside a cycle for one full turn (one second) to get on. The next turn, he is astride it. He must remain motionless for 3 seconds, this being about the time necessary to get a cycle running.

After the 3 seconds, he can move normally. A driver getting off a cycle (or out of a vehicle) must spend a full turn beside it after coming to a complete stop (time to dismount) and then may run normally.

A driver or passenger may jump from a moving vehicle. Roll for damage as if the jumper were hit by a vehicle (with a damage modifier of 1) going 10 mph slower than the vehicle was going. The jumper lands in any adjacent square, and may move and/or fire beginning the next turn.

It would take about 30 seconds to pick up and restart a fallen cycle of any size. Most combats won't last that long.

To enter a larger vehicle, a pedestrian must stand beside it for one turn (opening the door). On the next turn, he may enter. The next turn he may close the door; if the side of the vehicle is hit while the door is open, half of all damage from area effect weapons is taken to the armor, and the rest is applied internally. For other weapons, there is a 3 in 6 chance that all damage will bypass the armor and be applied internally.

It takes 3 seconds to start a vehicle. It cannot move until the fourth turn – but it may begin firing weapons immediately.

Pedestrian Equipment

Ammo Clips – $50 + cost of a full load of ammo for that weapon, 1/2 GE each for most weapons, 1 GE for SMGs and GLs. *Extended Ammo Clips* are available for pistols, SMGs, and rifles. $80 + cost of amino, holds twice as much ammunition as a standard clip. Extended ammo clips take up 1 GE for most weapons and 2 GEs for SMGs and GLs.

Backpack – $40, no GEs. The pack carries 5 GEs' worth of hand weapons that do not count toward the 6 GE limit. It takes a firing action to remove or don a backpack, and items may be added to or removed only from a laid-down pack. It takes 1d seconds to add something to or remove something from the pack. If the pack is carried rather than worn, it counts as 5 GEs.

Battle Vest – $75, 3 GEs. Holds one pistol, two grenades of any type, two hand-weapon magazines of any type, and one Bowie knife. Fits over body armor, but must be worn to gain benefits; if carried, counts as 6 GEs. Putting on or removing

a vest counts as a firing action, but adding something to or retrieving it from the vest does not. An *armored* version is available for $225, which gives the wearer an additional 3 DP, but only works on a 1 to 4 on 1 die. The armored battle vest cannot be worn over IBA or impact armor.

Body Armor – $250. Gives the wearer 3 extra damage points, but does not protect from falling or collision damage.

Improved Body Armor – $1,500. Works like regular body armor, except that it has 6 DP instead of 3. If the wearer is in a burning vehicle, roll 1 die each turn. On a 1 to 3, the wearer takes no damage. On a 4 to 6 the wearer takes the normal point of damage. Anyone wearing improved body armor must subtract 1 from his reflex roll because of the bulk, and pedestrians in IBA have their speed reduced by 5 mph (2 squares/turn). The IBA also includes a built-in gas mask, and reduces the amount a person can carry to 5 GEs.

Impact Armor – $2,000. Impact armor gives the wearer 6 additional DP and is fully effective against falls and collisions. Furthermore, any fall or collision damage is halved before applying it to the armor's DP. Naturally, once the armor is destroyed (by collision or weapons fire), these benefits are lost. Impact armor has the same effects on carrying capacity, reflex rolls, and running speed as IBA, but it doesn't give protection from fire or gas. This item cannot be combined with any other form of body armor except for a fireproof suit.

Blended Body Armor – $750 and up. Gives the wearer 3 extra DP, just like regular body armor, but is indistinguishable from street clothes. Custom tailoring may cost more. Regular body armor of any type cannot be worn with this item, and a fireproof suit will be obvious if worn. Improved Body Armor is also available in a blended version for $5,000 and up, but it does not offer protection from fire or gas (though its penalties still apply). Impact armor is not available in a blended version.

Spiked Body Armor – adds $100 to cost of any kind of body armor. Spiked armor inflicts an extra point of damage in hand-to-hand combat, through the use of spiked knuckles, knees, etc.

Fireproof Suit – $500, no weight or space. Worn under body armor, the suit will protect the wearer completely from vehicular fires for 30 turns – after that, the wearer takes 1 point of damage for every ten more seconds exposed. The suit protects the same way against flaming oil and building fires. If the wearer is hit by any type of flamethrower fire, damage is halved (round down). The suit offers no protection from other weapons.

Gas Mask – $30, 1 GE. Gas masks protect against tear gas and other irritants. If exposed to paint, wearer has –2 to his to-hit rolls until the mask is removed.

Light Intensifier Goggles – $300, 1 GE. Reduces the penalty "to hit" for night combat from –3 to –1. A LIG/Gas mask combination costs $400, but is still only 1 GE. Paint not only adds a –2 penalty, but also negates the goggles' bonus at night.

Medikit – $1,000. Counts as a pedestrian's full load when carried. As cargo, it takes up 2 spaces and 50 lbs., and has 3 DP. Gives a +2 bonus to all Paramedic rolls.

Portable Medikit – $750, 3 GEs. Worn like a backpack (5 GEs if carried by hand), takes 2 seconds to put on or take off. Gives a +1 to Paramedic rolls; this cannot be combined with the bonus for a Medikit. If the wearer is hit, roll 1 die: on a 1, the Medikit is hit first, taking damage to its 2 DP.

Mini-Mechanic – $50, 1 GE. When using this item for any repair job, the penalty for using improvised tools is at –1 instead of –2. Will fit like a grenade in a battle vest.

Portable Fire Extinguisher – $150, 20 lbs., 1/2 space carried as cargo, 3 GEs when carried. Puts out a vehicular fire on 1 to 2 on 1 die (or a 1 for a gas burner). Can be "fired" 20 times before it must be refilled – which costs $20 and can be done at many truck stops, armories, and hardware stores.

Tool Kit – $600, 6 GEs. Includes enough tools and spare parts to allow a mechanic to work in the field at no penalty. Has 2 DP; the first point of damage hurts the case, and the second point breaks the case and destroys or scatters the contents.

Tripod Weapons – Adds 10% to the weapon's cost, 5 GEs. May mount up to 2 spaces' worth of any vehicular weapon (or linked weapons). Extra magazines may be purchased, and do not count toward the

tripod's "spaces" – they are placed on the ground next to the weapon. Each extra magazine is 2 GEs. Weapons that require power (e.g., lasers) will require a battery.

A *tripod gunshield* can be added, adding 1 GE to the weapon, at $10 and 4 lbs. per point of armor (max. weight 40 lbs.). The shield acts like a wheelguard: On a 1 to 4, the gunshield takes damage before the target. Gunshield armor is considered to be a vehicular component, and thus takes half or no damage from many hand weapons.

Tripod weapons cannot be used by a normal passenger in a vehicle. A passenger who wishes to use a tripod weapon takes up an additional space (i.e., a gunner would take up 3 spaces). Tripod weapons take up 2 spaces as cargo.

Walkie-Talkie – $250, 1 GE. It works like a vehicular CB and has a 3-mile range.

Hand Weapon List

Weapon	Abbrev.	GE	Damage	To-Hit	Cost	Shots	CPS	L $	Notes
Submachine Gun	SMG	2	1d	6	$250	10	12	$370	a
Rifle	–	2	3 hits	7	$120	20	1	$140	
Anti-Vehicular Rifle	AVR	3	1d	8	$600	10	5	$650	d
Heavy AV Rifle	HAVR	4	1d+3	8	$800	10	10	$900	d
Assault Rifle	AR	3	1d+1	7	$400	10	15	$550	a
Laser Rifle	LR	2	1d	6	$4,500	2	–	$4,500	b, d
Gauss Rifle	GR	2	1d	6	$1,500	20	15	$1,800	a, b
Shotgun	StG	2	2 hits	6	$120	10	1	$130	
Double-Barreled Shotgun	DStG	3	2/4 hits	6	$200	10/5	1	$210	g
Heavy Pistol	HP	1	2 hits	7	$100	8	1	$108	
Light Pistol	LP	1	1 hit	8	$75	8	1	$83	
Machine Pistol	MP	1	1d–2	7	$250	6	12	$322	a
Gauss Pistol	GP	1	1d–2	6	$500	20	5	$600	b
Grenade Launcher	GL	2	–	7	$300	5	–	–	c
Light Anti-Tank Weapon	LAW	2	2d	8	$500	1	–	$500	d
Very Light Anti-Tank Weapon	VLAW	1	1d	8	$200	1	–	$200	d
Bazooka	–	4	3d	8	$1,500	1	50	$1,550	d, e
Bowie Knife/Bayonet	–	1	1d–2	8	$50	–	–	–	f
Grenades	G	1	var.	9	var.	1	var.	–	c

Abbreviations: *GE* – Grenade Equivalent, a measure of bulk and weight that determines a pedestrian's carrying capacity. Pedestrians can normally carry 6 GEs of equipment. *CPS* – cost per shot. *L $* – loaded cost.

Notes

a. Does half damage to vehicles.
b. This weapon requires a power pack ($1,000, 3 GEs) to function effectively. The laser rifle only gets two shots without it, but will get 20 more with the pack. The Gauss rifle gets 60 shots' worth of power from the power pack, and the Gauss pistol gets 100 shots' worth of power from it. Note that the Gauss weapons still require ammunition.
c. See pp. 34-36 for grenades.
d. Does full damage to vehicles.
e. Spare bazooka shells are 1 GE each, and take 2 seconds to reload (1 second for two people). Characters reloading a bazooka cannot perform *any* other actions while reloading.
f. Only usable in hand-to-hand combat. When attached to the end of a rifle, it adds no GEs.
g. A double-barreled shotgun holds ten shells. One or two barrels can be fired each turn. It uses normal shotgun ammo.

5. Vehicle Design

Cars

Building a new car is complicated – just ask Detroit. When you first design a new vehicle, don't be surprised if it takes a little while. You must work within several constraints: *Space* available in the body size you pick, *weight* that chassis can carry, and *money* available. You have to make sure the car has enough power for decent acceleration. Within all these limits, you want enough armor and weapons to give you a chance to survive. And remember to allow money and weight for ammunition! When you come up with a good vehicle design, save it for later reference, or add it to the stock car list for your local arena.

Body Types

There are nine types of cars available to duellists, from tiny subcompacts to vans.

Type	Price	Weight	Max. Load	Spaces	Armor Cost/Wt.
Subcompact	$300	1,000	2,300	7	11/5
Compact	$400	1,300	3,700	10	13/6
Mid-sized	$600	1,600	4,800	13	16/8
Sedan	$700	1,700	5,100	16	18/9
Luxury	$800	1,800	5,500	19	20/10
Station wagon	$800	1,800	5,500	14(+7)	20/10
Pickup	$900	2,100	6,500	13(+11)	22/11
Camper	$1,400	2,300	6,500	17(+7)	30/14
Van	$1,000	2,000	6,000	24(+6)	30/14

Price is the dollar cost of the body without armor, but with headlights, trim, seats, doors, instruments, basic targeting system, head-up windshield visual display, etc. *Weight* is the weight of the body and frame – it counts toward the *total* weight of the vehicle. *Maximum load* is the total weight (including the body and frame) the vehicle is allowed. Maximum load *can* be altered – see *Chassis*, p. 49. *Spaces* are the number of spaces available in the vehicle for equipment, weapons, and people. Those vehicles with additional spaces listed in parentheses have cargo areas that can carry that number of spaces. Cargo areas cannot be used for vehicle components.

Armor Types

Armor cost/weight is the cost and weight of a single point of ablative plastic armor. Cars carry armor in six positions: front, back, left, right, top, and underbody. You can put different amounts of armor in different locations, but the cost per point is the same, no matter the location. The cost and weight per point of armor does vary according to the size of the vehicle, however. There are also a few special types of armor available to duellists.

Fireproof Armor (FP) costs twice as much as normal armor, but weighs the same. As the name indicates, fireproof armor cannot be set on fire. It takes damage normally from all weapons, including flamethrowers and lasers, but if the armor is all that is damaged, you do not roll for the possibility of fire – it can't happen. If the armor is breached and internal components are damaged, regular fire rules apply to the inside. Repairing FP armor is at double normal cost (see *Repair and Salvage*, p. 52).

Laser-Reflective Armor (LR) takes damage normally from all weapons except lasers. All types of lasers do half damage (round down) to reflective armor. Furthermore, laser-reflective armor will not take fire modifiers from lasers (though it will take them from flamethrowers and other fire weapons). Once the armor has been breached, internal components are vulnerable to normal chances of fire. Reflective armor costs and weighs 10% more than regular armor, and costs twice as much to repair as regular armor.

Laser-Reflective Fireproof Armor (LRFP) combines the features of both types. It takes half damage from lasers (rounded down), and cannot be set on fire. It is 2 1/2 times normal armor cost, weighs 10% more than normal armor, and costs four times as much to repair.

All armor sections and accessories must be the same armor type. Exception: Vehicles may use one type of metal armor layered over one type of non-metal armor, but the two types must be themselves consistent throughout the vehicle.

Metal Armor costs 2 1/2 times as much as normal plastic armor, and weighs 5 times as much. Normal armor is *ablative* – that is, it loses strength as it takes damage. Metal armor is only slightly ablative – any damage in excess of the armor value passes through to the interior of a vehicle, and the armor remains (more or less) intact.

If the damage rolled is greater than the value of metal armor at the location hit, damage in excess of the armor value penetrates the armor to affect internal components. In addition, every 6 rolled on a damage die reduces the value of the armor by 1 point. Burst-effect weapons reduce the DP by 1 point for every 5 *or* 6 rolled on a damage die. The loss of metal armor is taken *after* any damage has penetrated the armor. Metal armor is fireproof. Metal armor can be polished and treated for a laser-reflective finish; this adds an extra 10% to the cost of the armor, but adds no weight.

Chassis

The chassis can be strengthened (or weakened) to allow a vehicle to carry more (or less) weight.

Strength	Weight Modifier	Price
Light	−10%	−20%
Standard	none	none
Heavy	+10%	+50%
Extra Heavy	+20%	+100%

The price modifier is a percentage of the original body price. For example, putting a Heavy chassis on a mid-sized car would increase the maximum load 10% – from 4,800 to 5,280 (that's 4,800 + 480) – but would cost 50% of the original body price – another $300. Chassis strength is not a factor in vehicle weight or interior space.

Any car larger than a compact may have a six-wheeled chassis. It costs an extra $100, plus the cost of the extra tires. Pickups and vans with Extra-Heavy chassis *must* have six wheels.

Suspension

Suspension determines a vehicle's beginning Handling Class (see *Handling Class*, p. 9).

Suspension	Price	HC	Van HC	Sub HC
Light	no extra	1	0	2
Improved	100% of body cost	2	1	3
Heavy	150% of body cost	3	2	4
Off-road	500% of body cost	2	1	3

Light suspension is standard. Better suspensions cost in relation to the original body cost of the vehicle – a Heavy suspension for a Luxury car would cost $1,200 (150% of $800). Suspension adds no weight and takes no interior space. The HC of a van (or of a pickup over 5,500 lbs.) is 1 less than that of a lighter vehicle with the same suspension. On the other hand, the HC of a subcompact is 1 higher than that of a larger vehicle with the same suspension. Off-road suspensions negate the handling-class penalty for driving off-road.

Power Plants

There are two kinds of engine available in 2040: gas and electric. With gasoline unavailable in many areas of the world, multiple-fuel-cell electric power plants are far more common than the old-style internal-combustion engines. These electrical "power plants" are the only type discussed in this book. Power plants take up space and weight inside a vehicle.

DP are "damage points," the number of hits required to destroy the power plant. When the power plant is lost, a vehicle can no longer fire lasers or accelerate, but all other systems still work. The vehicle decelerates 5 mph per turn (more if you put on the brakes). Power Factors are used to compute acceleration and top speed, which are more fully detailed later in this section. Cost, Weight, and Spaces should be self-explanatory.

Plant	Cost	Weight	Spaces	DP	Power Factors
Small	$500	500	3	5	800
Medium	$1,000	700	4	8	1,400
Large	$2,000	900	5	10	2,000
Super	$3,000	1,100	6	12	2,600
Sport	$6,000	1,000	6	12	3,000
Thundercat	$12,000	2,000	8	15	6,700

Vehicle Design

Range with Electric Power Plants

The subject of vehicle range has very little importance in the city or in the arena. But on the long stretches of highway between oases of civilization, running out of power is like signing your own death warrant.

Car and truck power plants have a power capacity equal to their spaces times 50; cycle power plants have a power capacity equal to their DP times 25. These "power units" will last longer at lower speeds, and get eaten up quickly at higher ones. Power units (PU) are consumed at varying rates per mile, given by the formula (PU × Current speed)/(Maximum speed × 100).

On average, a vehicle will have enough power to travel 200 miles at its "cruising speed," which will be 60% of its top speed. At its top speed, it will have enough charge to travel 100 miles.

Speeds beyond the derived maximum for a given plant drain power even faster. Every turn spent over the maximum costs one power unit per full 10 mph over the limit. If a plant has a maximum speed of 90 mph, there is no additional penalty at 95, but it costs one power unit for each turn at 100 or 105, two power units for each turn at 110 or 115, and so on.

Laser fire also drains power plants. Every time you fire a light laser, it costs you one power unit. A shot from a medium or regular laser costs two power units, and a shot from a heavy laser costs three power units.

Power plant recharges are readily available in towns, but on the highways they are usually available only at truck stops. A power plant recharge takes around ten minutes (most facilities can take two vehicles at a time) and costs $1 per five PUs.

Tires

To keep the bookkeeping as simple as possible, the weight of tires *does* count against the maximum load of the vehicle. A car's front tires must both be the same type, and the rear tires must be the same type (but tires needn't match front to rear). Handling class drops by 1 if this rule is broken.

Tire	Price	Weight	DP
Standard	$50	30	4
Heavy-Duty	$100	40	6
Puncture-Resistant	$200	50	9
Solid	$500	75	12

Spare tires carried as cargo take up one space. Though they all have the same cost and weight, a luxury's tire (for example) will not fit on a subcompact. In most cases, you cannot mix tires from different size vehicles. There are two exceptions. Luxury cars and station wagons use the same tires, as do vans, campers, and pickups.

Tires may be modified:

Steelbelting increases the cost and weight of any tire by 50%, and adds 25% to its DP (round down).

Radial Tires – Any car, cycle, or trike with radial tires on all its wheels has its HC raised by 1. Adds 150% to cost, 20% to weight, and subtracts 1 DP. Radial modifications are applied *after* steelbelting.

Off-Road (OR) Tires – Any car, cycle, or trike with off-road tires on all its wheels has its HC raised by 1 when off-road, and will not take damage from normal off-road terrain. OR tires confer no benefits on the highway. This modification adds 20% to cost and 5 lbs. to weight. Off-road benefits are applied *after* steelbelting. No tire may be both off-road *and* radial.

Fireproofing doubles the cost of any tire (after any other modifications), with no extra weight.

Weapons

Weapons are usually mounted on the front, back, right, or left. Technically, they can also be mounted on the top or bottom, but they're not nearly as useful in those positions. Weapons may also go in turrets.

No more than 1/3 of the spaces in a vehicle may be devoted to weapons pointing in any one direction. For complete information on weapons, see Chapter 3.

The Human Element

For game purposes, all humans are assumed to weigh 150 pounds. A human takes up one space. However, vehicle and weapon

controls (and the freedom of movement to use them) also take one space. Therefore, two spaces must be allotted for each driver or gunner. For more on people, see Chapter 4, *Characters.*

Each vehicle can have only one driver, who sits on either the right or left side (the player specifies at the time the car is built). The driver can fire any of the vehicle's weapons; he can also use hand weapons. A gunner can also fire any of the vehicle's weapons, or hand weapons. There can be more than one gunner. The driver and gunner cannot share a targeting computer; each must have his own if both are to get an aiming bonus.

A vehicle can carry passengers either in cargo space or regular space. A passenger seat (with or without passenger) takes no space and adds no weight – the passenger, of course, weighs 150 lbs. and takes up one space. Passengers can use hand weapons but cannot fire vehicle weapons. A single passenger can ride behind a cycle's driver; he takes up no extra space but adds weight, and uses hand weapons only. Unless otherwise stated, a passenger is located in cargo space.

Cargo

Likely cargo includes spare tires and ammunition (for yourself, or salvaged from a kill). In a campaign game, consult your referee about other "cargo" you want to pick up. Note that any vehicle can carry cargo if it has unused space, but pickups, vans, and station wagons have a specific "cargo area" that can be used for nothing else. This means that *no* vehicular component can be placed in it except as cargo or salvage!

Acceleration & Top Speed

Once you have determined what will go into your vehicle, you must compute its acceleration. This will be 5, 10, or 15 mph.

If the number of power factors in a vehicle's power plant is less than 1/3 the vehicle's weight, it is underpowered and will not move. Throw something out, or get a bigger power plant.

If the power factors are 1/3 the weight but less than 1/2, the acceleration is 5 mph.

If the power factors are 1/2 the weight but less than the weight itself, the acceleration is 10 mph.

If the power factors are equal to or greater than the weight, then the acceleration is 15 mph.

Example: A luxury car weighing 5,500 pounds has a Medium power plant (which has 1,400 power factors). Since 1,400 is less than 1/3 of 5,500, the car won't move! So we decide to get a bigger power plant, a Large (with 2,000 power factors). Of course, the larger power plant took up more space, weight, and money than the old one, so some other things had to go to keep the cost the same – but that's the way things go when you're building a car. Because 2,000 is between 1/3 and 1/2 of 5,500, the car can now move with an acceleration of 5 mph per turn. If we could find some way to cut the weight down to 4,000 pounds (or get a plant with at least 2,750 power factors), the acceleration would go up to 10 mph per turn (since 2,000 is 1/2 of 4,000), but a luxury car that weighed only 4,000 pounds would be so stripped down it would be nearly useless. So it goes . . .

Every car will also have a top speed, based on the following formula: 360 × power factors / (power factors + weight) for electric power plants, rounded down to a multiple of 2.5 mph. In the example above, the 5,500 lb. luxury car with a Large power plant (2,000 power factors) would have a top speed of 360 × 2,000 / (2,000 + 5,500) = 96, which rounds down to 95 mph.

Vehicle Diagram

Now that you've chosen all your components and determined that your car has enough power to accelerate satisfactorily, you can fill out the vehicle diagram. Refer back to the example on p. 6. This diagram shows (a) what weapons the car has and where they are located; (b) how much ammo is in each weapon; (c) how much armor the car has in each location; and (d) what other components the car has, and

where they are. Note that the power plant can be either in front or in back.

Weapon location restriction: No more than 1/3 of the total spaces in a vehicle can be devoted to weapons that fire from any one side (round down). Motorcycles and sidecars are exempt from this restriction.

The vehicle diagram is used to keep track of ammunition expenditure and damage. Also located on the vehicle diagram is a chart to keep track of vehicle speed and handling status each turn.

Blank Vehicle Record Sheets are provided on a separate sheet. You may photocopy them for personal use.

Repair and Salvage

In a continuing campaign, damaged vehicles will need repair. Damage to armor can be repaired at $50 per hit (multiplied by the armor's cost modifier – e.g., fireproof armor costs twice as much) – or the vehicle's entire armor can be replaced for its original cost (as per the vehicle building rules in this chapter) plus 10%. A component that has taken only 1 hit can be repaired for 10% of its original price; 2 hits: 30%; 3 hits: 50%; and so on. It's cheaper to replace a badly damaged power plant (for instance) than to fix it.

Body armor cannot be repaired. Medical care for injured characters is free. (You're insured.)

The prices above are for parts and labor. If you do the work yourself, cut 1/3 off the repair costs. Many repair shops will let you do your own work in their bays – for $50 an hour.

A vehicle or component may be sold for salvage. Salvage value is (*original cost minus repair cost*). Damaged parts may be bought for this value, or sold for half this value. If you stop on the road to strip a wreck, you can easily get tires, extra magazines, unfired ammunition, hand weapons, and cargo. Other components can be salvaged, but it takes time and requires the Mechanic skill (see pp. 41-42). A burned wreck is worthless.

Modifying Vehicles

New weapons and accessories can be added to an existing vehicle between duels, as long as weight and space limits are observed. Old components may be saved or sold. Add 10% to the cost of any parts that vary from a car's original design – retrofitting is expensive.

Exceptions: New tires can be added at their regular cost, and chassis and suspension cannot be changed from their original design.

If any cost or weight calculations using the above instructions result in fractions of dollars or pounds, round to the nearest whole number.

Cycles

Building a motorcycle is very similar to building a car. A cycle can use almost any weapon or accessory a car does. A medium or heavy cycle can also pull a sidecar – for one passenger, for cargo hauling, or just to get some extra firepower.

Frame	Price	Weight	Max. Load	Spaces	Armor Cost/Wt.
Light Cycle	$200	250	800	4	10/4
Med. Cycle	$300	300	1,100	5	11/5
Hvy. Cycle	$400	350	1,300	7	12/6
Lt. Sidecar	$300	200	400	2	5/5
Hvy. Sidecar	$450	350	750	3	5/6

The weight of the sidecar and contents does not count against the load on the cycle frame. Instead, both the sidecar and the cycle must meet their maximum weight requirements separately. The weight is added together, however, when computing acceleration and top speed (which is done the same way as for cars). A cycle can only pull one sidecar. Cycle and sidecar chassis cannot be modified to increase weight capacity.

Cycle armor can be placed front and rear only. A sidecar is treated like a little car with no top. Sidecars carry armor in all six normal locations. Cycle and sidecar armor can be made fireproof or metal. All the armor on a sidecar or a cycle must be made of the same type, but an attached sidecar can carry a different type of armor from a cycle.

Suspension

Suspension can be upgraded to improve the handling class of the cycle or sidecar. To determine the HC of a cycle/sidecar combination, add the HCs of the two separate items together.

Suspension	Cost	HC
Light	no extra	0
Improved	100% of frame cost	1
Heavy	200% of frame cost	2
OR	300% of frame cost	2

Power Plants

Like car power plants, cycles use electric fuel cell systems. Like today's engines, they are more powerful for their size and weight than auto engines, but cannot be used in larger vehicles – they would burn up.

Plant	Cost	Weight	Spaces	DP	Power
Small Cycle	$500	100	1	2	400
Med. Cycle	$1,000	150	1	3	600
Large Cycle	$1,500	175	2	4	800
Super Cycle	$2,000	200	2	5	1,000
Super Trike	$3,000	250	3	6	1,200

Cycle acceleration and top speed is determined just as for cars (see p. 51).

Tires

Cycles need two tires; sidecars need one. The front and rear tires on a cycle must match, and if a sidecar is attached, its tire must match, too. Cycle tires come in the same varieties available for cars. Cycle tires cost the same and have the same number of DP as car tires, but they weigh only half as much.

Weapon Placement

Weapons can only be placed on a cycle's front or rear. They can be mounted to the front, rear, or side of a sidecar. A weapon on a cycle cannot be linked to a weapon on a sidecar, unless both are dropped weapons. If the sidecar becomes detached, the link is broken and must be replaced.

Cycle Accessories

Cycle Wheelguards – $10/2 lbs. per point of plastic armor, maximum 20 lbs. each. Only one wheelguard is required per tire. If the tire is targeted and hit, roll 1 die. On a 1 to 5, the wheelguard takes the damage. Cycle wheelguards do not lower HC.

Jettison Joining – $300, no weight or space. The joining's explosive bolts allow a desperate cyclist to ditch a damaged sidecar on the run. Triggering the joining is a firing action, but once they are fired, the sidecar becomes a separate vehicle traveling parallel to the cycle (place a 1/2" × 1/2" counter next to the cycle to represent the sidecar). If struck, treat the loose sidecar as an obstacle. The sidecar will decelerate 5 mph per turn, but must roll once per turn on Crash Table 1 with the appropriate speed modifiers. Vehicular weapons on a detached sidecar cannot be fired, although hand-weapon fire is still permitted. Firing the joining is a D2 hazard for the cycle, and the cycle's HC may be permanently reduced as well, but the cycle's acceleration and top speed may improve.

Cycle Blades – $50, 20 lbs., no space. These jagged blades add 2 points to the damage any pedestrian takes when hit by a cycle. If the cycle just passes adjacent to a pedestrian, there is a 50% chance the blades will hit, doing 1 point of damage per 20 mph of speed. Doing this successfully is a D2 hazard for the cycle. Cycle blades are destroyed if the vehicle rolls. *Fake* blades are available, at $20 for the set, no weight or space. They do no damage, but they're great for scaring pedestrians.

Trikes

Tricycles are designed like any other vehicles. A trike counter is 1" long, like that of a car. A trike's arcs of fire are different from those of other vehicles (see p. 54); this should be taken into account when placing weapons and armor.

Construction

Trikes most closely resemble motorcycles in construction. They use the same tires and power plants as cycles, and use the same acceleration, top speed, and power consumption formulae as cars.

A trike can have a Light, Standard, Heavy, or Extra-Heavy chassis, at the same costs as for cars. Suspension works the same

way as cycles – Light suspension is free and results in HC 0; Improved suspension costs 100% of the frame cost and results in HC 1; Heavy suspension costs 200% of the frame cost and gives a trike HC 2. Handling class for all trikes is based on suspension.

Body	Cost	Weight	Max. Load	Spaces	Armor Cost/Wt.
Light Trike	$250	300	1,600	8	11/5
Medium Trike	$300	500	2,100	10	12/6
Heavy Trike	$400	700	2,800	12	14/7
X-Hvy. Trike	$550	950	3,500	14	16/8

Trikes carry armor like cars – that is, they have six armor positions: Front, back, left, right, top, and underbody.

Trikes can use any weapon or accessory a car or cycle can, with a few exceptions. Trikes cannot have ramplates, and they cannot pull sidecars. Light trikes cannot carry turrets; medium trikes can only use one-space turrets. Larger trikes can carry up to two-space turrets.

Trikes can use wheelguards – car wheelguards on the back two wheels, and a cycle wheelguard on the front. Wheelguards do not reduce HC on a trike, but will reduce HC by 1 on a reversed trike. Retractable wheelguards can be used on the back of a normal trike, or on the front tires of a reversed trike. A normal trike can use a spoiler, but not an airdam.

Reversed Trikes

The reversed trike design puts two wheels in front and one in the center of the back. This configuration provides greater stability than the traditional trike, but is not as efficient from a space standpoint. Reversed trikes come in the same body styles as regular trikes, but have one less space and cost an extra 50% for the chassis. HC for a reversed trike is one higher than for a regular trike (maximum HC is still 3). Reversed trikes can carry a ramplate, but in all other respects, they are the same as regular trikes. A reverse trike can use either a spoiler or an airdam, or both.

Trike Combat

A tricycle is not just a fat motorcycle or a three-wheeled car. The successful trike duellist (or designer) must keep the dif-

ferences in mind if he intends to survive. Trikes have some significant advantages, but they have disadvantages as well. The advantages include very wide arcs of fire and an off-road ability as good as that of any cycle. The disadvantages include their small size and the vulnerability of the turret.

Arcs of Fire

Trike weapons can be located front, back, or to either side; they can also be turreted. Front and back weapons have the same arc of fire a car's weapons do (see diagram below); turreted weapons, of course, have a 360° arc of fire.
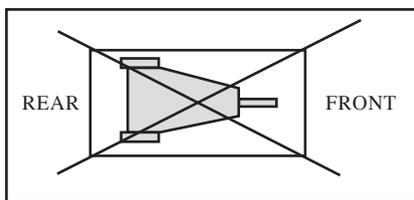
Side-mounted trike weapons have a greater arc of fire than a car's side weapons do, because of the wedge shape of the trike body. A trike's side weapons can fire into the "normal" side arc, plus the front arc of fire of a standard vehicle (see below).
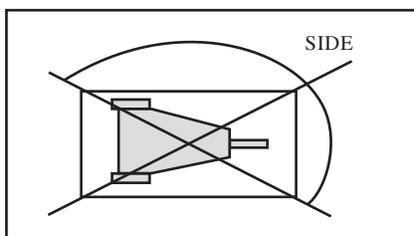
Any target in the front arc of fire can be hit by weapons mounted on both sides as well as the front! Right-side and left-side weapons can be linked together, or linked with front weapons, and aimed together for fire at targets in this front arc. The linked weapons must be of the same type, or only one can be aimed, and the rest are treated as if they were on automatic.

Vehicle Design

6. Weapons

Weapons in this chapter are arranged according to the following categories: small-bore projectile, large-bore projectile, rocket, laser, flamethrower, dropped solid, dropped liquid, dropped gas.

When describing your vehicle to other players, only the nature and location of the weapon's firing port must be revealed – the exact weapon remains unknown until fired. Thus, a front-mounted machine gun would be declared as a "small-bore projectile front," while a back-mounted smokescreen (SS) would be a "dropped gas back." The multi-fire rocket pod (MFR) is considered a single rocket for declaration.

For more weapons – *many* more – see the ***Car Wars Compendium*** or any of ***Uncle Albert's Catalogs***.

Small-Bore Projectile Weapons

Autocannon (AC) – To hit 6, 3d damage, 4 DP, $6,500, 500 lbs., 3 spaces; 10 shots ($75 and 10 lbs. each); loaded cost $7,250, loaded weight 600 lbs.; loaded magazine costs $800 and weighs 115 lbs. Burst effect.

Machine Gun (MG) – To hit 7, 1d damage, 3 DP, $1,000, 150 lbs., 1 space; 20 shots ($25 and 2 1/2 lbs. each); loaded cost $1,500, loaded weight 200 lbs.; loaded magazine costs $550 and weighs 65 lbs. Area effect.

Recoilless Rifle (RR) – To hit 7, 2d damage, 4 DP, $1,500, 300 lbs., 2 spaces; 10 shots ($35 and 5 lbs. each); loaded cost $1,850, loaded weight 350 lbs.; loaded magazine costs $400 and weighs 65 lbs. Burst effect.

Vulcan Machine Gun (VMG) – To hit 6, 2d damage, 3 DP, $2,000, 350 lbs., 2 spaces; 20 shots ($35 and 5 lbs. each); loaded cost $2,700, loaded weight 450 lbs.; loaded magazine costs $750 and weighs 115 lbs. Area effect.

Large-Bore Projectile Weapons

Anti-Tank Gun (ATG) – To hit 8, 3d damage, 5 DP, $2,000, 600 lbs., 3 spaces; 10 shots ($50 and 10 lbs. each); loaded cost $2,500, loaded weight 700 lbs.; loaded magazine costs $550 and weighs 115 lbs. Burst effect.

Grenade Launcher (GL) – To hit 7, damage by grenade type (see p. 35), 2 DP, $1,000, 200 lbs., 2 spaces; holds 10 grenades (cost by grenade type, 4 lbs. each); loaded weight 240 lbs.; loaded magazine costs $50 plus the cost of grenades and weighs 55 lbs. Different grenade types can be mixed in the magazine, but the player or referee must keep strict track of the order in which they are loaded.

Spike Gun (SG) – To hit 7, 1d damage (see below), 2 DP, $750, 150 lbs., 2 spaces; 10 shots ($40 and 10 lbs. each); loaded cost $1,150, loaded weight 250 lbs.; loaded magazine costs $450 and weighs 115 lbs. Area effect. The spike gun can be fired to hit a specific square, leaving a 1/2" × 1/2" square of spikes that acts like a single normal spike counter. The spike gun can also be fired directly at a target (at a –4 penalty), doing 1d damage to tires and pedestrians only.

Rockets

Heavy Rocket (HR) – To hit 9, 3d damage, 2 DP, $200, 100 lbs., 1 space; 1 shot. Burst effect.

Light Rocket (LtR) – To hit 9, 1d damage, 1 DP, $75, 25 lbs., 1/2 space; 1 shot. Burst effect.

Medium Rocket (MR) – To hit 9, 2d damage, 2 DP, $140, 50 lbs., 1 space; 1 shot. Burst effect.

Micromissile Launcher (MML) – To hit 8, 1d damage, 2 DP, $750, 100 lbs., 1 space; 10 shots ($20 and 2 1/2 lbs. each); loaded cost $950, loaded weight 125 lbs.; loaded magazine costs $250 and weighs 40 lbs. Burst effect.

Mini Rocket (MNR) – To hit 9, 1d–1 damage, 1 DP, $50, 20 lbs., 1/3 space; 1 shot. Burst effect.

Multi-Fire Rocket Pod (MFR) – To hit 9, 1d damage per rocket, 3 DP (each point of damage destroys two active rockets),

$450, 150 lbs., 2 spaces. This must be replaced after firing, just like a heavy rocket. It releases six rockets simultaneously – thus its nickname, "Six-Shooter." Roll separately to hit with each rocket. Treat each shot as a separate attack for building breaches and debris purposes, but treat it as one big attack for making a vehicle's control roll.

Rocket Launcher (RL) – To hit 8, 2d damage, 2 DP, $1,000, 200 lbs., 2 spaces; 10 shots ($35 and 5 lbs. each); loaded cost $1,350, loaded weight 250 lbs.; loaded magazine costs $400 and weighs 65 lbs. Burst effect.

Lasers

Heavy Laser (HL) – To hit 6, 4d damage, 2 DP, $12,000, 1,000 lbs., 3 spaces. Area effect. Drains 3 power units per shot.

Laser (L) – To hit 6, 3d damage, 2 DP, $8,000, 500 lbs., 2 spaces. Area effect. Drains 2 power units per shot.

Infrared (IR) Lasers – Double the cost of any size of normal laser. IR lasers can fire through smoke and paint, but suffer a −1 per die of damage for every 1/2" of smoke or paint between the firer and the target.

Light Laser (LL) – To hit 6, 1d damage, 2 DP, $3,000, 200 lbs., 1 space. Area effect. Drains 1 power unit per shot.

Medium Laser (ML) – To hit 6, 2d damage, 2 DP, $5,500, 350 lbs., 2 spaces. Area effect. Drains 2 power units per shot.

Flamethrowers

Flamethrower (FT) – To hit 6, 1d damage, 2 DP, $500, 450 lbs., 2 spaces; 10 shots ($25 and 5 lbs. each); loaded cost $750, loaded weight 500 lbs.; loaded magazine costs $300 and weighs 65 lbs. Area effect. Maximum range 10". When fired, any flamethrower creates a standard 1" × 1/2" smoke cloud, aligned along the line of fire.

Dropped Gases

Paint Spray (PS) – 2 DP, $400, 25 lbs., 1 space; 25 shots ($10 and 2 lbs. each); loaded cost $650, loaded weight 75 lbs.; loaded magazine costs $300 and weighs 65 lbs. Creates a 1" × 1/2" cloud when fired.

Smokescreen (SS) – 4 DP, $250, 25 lbs., 1 space; 10 shots ($10 and 5 lbs. each);

loaded cost $350, loaded weight 75 lbs.; loaded magazine costs $150 and weighs 65 lbs. Produces a 1" × 1/2" smoke cloud when fired.

Dropped Liquids

Flaming Oil Jet (FOJ) – 3 DP, $300, 30 lbs., 2 spaces; 25 shots ($35 and 2 lbs. each); loaded cost $1,175, loaded weight 80 lbs.; loaded magazine costs $925 and weighs 65 lbs. It drops a regular oil slick which bursts into flame 1 phase later. The burning slick is treated like a regular oil slick *and* does 1d−2 damage to the tires and underbody of vehicles that pass through the burning slick. It burns for 5 turns. Flaming oil acts as a smoke cloud while on fire. Once the FOJ slick has consumed itself, the counter is replaced by a standard smoke cloud of the same size.

Oil Jet (OJ) – 3 DP, $250, 25 lbs., 2 spaces; 25 shots ($10 and 2 lbs. each); loaded cost $500, loaded weight 75 lbs.; loaded magazine costs $300 and weighs 65 lbs. It creates a 1" × 1/2" slick when fired.
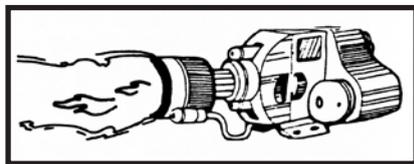
Dropped Solids

Minedropper (MD) – 2 DP, $500, 150 lbs., 2 spaces; 10 shots ($50 and 5 lbs. each); loaded cost $1,000, loaded weight 200 lbs.; loaded magazine costs $550 and weighs 65 lbs. Burst effect. Does 2d damage to the underbody, and 1d damage to each tire within 1".

Spear 1000 Minedropper (SMD) – 2 DP, $750, 150 lbs., 2 spaces; 5 shots ($100 and 10 lbs. each); loaded cost $1,250, loaded weight 200 lbs.; loaded magazine costs $550 and weighs 65 lbs. Does 2d+3 damage to the underbody, and 1d−3 damage to each tire within 1".

Spikedropper (SD) – 4 DP, $100, 25 lbs., 1 space; 10 shots ($20 and 5 lbs. each); loaded weapon costs $300 and weighs 75 lbs.; loaded magazine costs $250 and weighs 65 lbs. See p. 32.

Weapons

7. Accessories

Many accessories are available to customize duel vehicles. Some are defensive in nature; some are decidedly offensive; others are just convenient. Restrictions apply to the use of many of these accessories, so read each description carefully.

Offense

Body Blades – These are like cycle blades (p. 53), but the cost and weight is the same as 3 points of plastic armor for that vehicle. They need not match armor type. Fake blades are available for $20 (no weight or space).

Brushcutter – $100, 20 lbs., no space. A front-mounted blade, this can be mounted with regular armor, but not with bumper spikes. It is destroyed when the front armor is destroyed, and adds 2 hits to damage done to any pedestrian hit by the front of the car. It allows the vehicle to mow down small trees (normally D2 or D3 hazard) with no ill effects, but has no effect on rocks, other vehicles, etc.

Bumper Spikes – Cost and weight equal to 5 points of armor for that vehicle, and must match that vehicle's armor. They can be mounted on the front or back only. Bumper spikes add 1d to all damage given in a collision, modified by the vehicle's DM (double damage to pedestrians). They cannot be mounted in conjunction with a ramplate or brushcutter. They are destroyed when all armor on that side is destroyed.

Cyberlink – $16,000, 100 lbs., 1 space. This computerized helmet links the wearer to one particular weapon, and gives the wearer +3 to hit, with that weapon only.

Extra Magazines – $50, 15 lbs., 1 space, plus the cost and weight of ammunition. An extra magazine for a weapon can hold the same number of shots the weapon itself can. More than one extra magazine can be attached to a weapon. Each extra magazine adds 1 DP to the weapon. Extra magazines do not count against the space limitations of a weapon in a turret, but do count against a vehicle's space and weight limit.

Link – $50, no weight or space. It links any two or more pieces of equipment, so that they can both be activated by a single firing action. It is normally used on weapons, but can be hooked to other equipment. For a more complete discussion of links, see *Linked Weapons*, p. 33.

Magazine Switch – $250, no weight or space. A magazine switch allows the firer to select the source magazine for the shot being fired; this takes no time and does not count as a firing action. Shots in the selected magazine are still used top to bottom, so if a magazine has a mixed load, you must still keep track of the order of shots fired. It is destroyed when the weapon is destroyed.

Weapons on automatic will fire all shots from one magazine until it's empty, then switch to another of the player's choice (assumed to be programmed before combat).
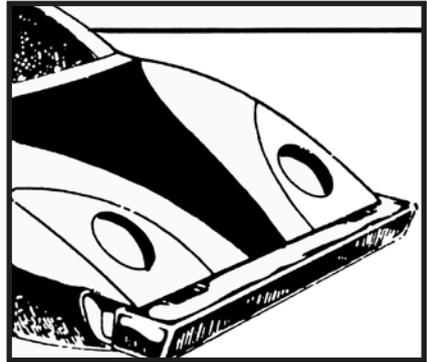
Ramplate – Cost and weight are in addition to the front armor of a car, truck, boat, or reversed trike. Cost is 1 1/2 times the cost of the front armor, and weight is half the weight of *all* the front armor of a vehicle. A ramplate can only be mounted on the front of a vehicle. When in a collision involving the ramplate, first determine damage the normal way. Then the other vehicle takes *twice* that amount, and the vehicle with the ramplate takes *half* that amount. A *fake* ramplate costs and weighs as much as 5 points of the vehicle's front armor, including modifiers for special armor types.

The fake ramplate cannot be distinguished from the real thing without a close inspection. Ramplates, real and fake, are destroyed when the vehicle's front armor is destroyed.

Smart Link – $500, no weight or space. It acts as a regular link between two or more weapons. In addition, it allows weapons in one location to be aimed and fired with weapons in a different location (for example, forward weapons smart-linked to a weapon in a turret). All weapons must be aimed at the same target – and naturally all must be able to aim at that target. Non-identical weapons still cannot be aimed together. The smart link itself can be linked.

Targeting Computer – $1,000, no space or weight. It adds +1 to all to-hit rolls for any single vehicular position (driver or gunner, but not both). It is destroyed when the power plant is destroyed. A *hi-res* (HR) version is available for $4,000; this model works the same way, but gives a +2 to-hit bonus.

A *single-weapon computer (SWC)* must also be set on installation to aid a single weapon type in a single position (VMG front, RR in turret, for example). Like a regular computer, it can only aid one crew member, and which crew member benefits is also set at installation. The standard SWC costs $500, and adds +1 to the to-hit roll; the *hi-res* SWC costs $2,500 and gives a +2. Targeting computers cannot be combined with each other or with the cyberlink for higher bonuses.

Turrets – Turrets take up space in a vehicle, but in turn can hold a number of spaces' worth of weapons that do not count against the vehicle's space limit. A *pop-up* turret hides inside the vehicle, possibly lulling an opponent into thinking you're lightly armed. Raising or lowering a pop-up turret is a firing action and takes 1 turn.

Subcompacts and light trikes cannot carry turrets. Compacts and medium trikes can carry only one-space turrets. Mid-sizes, sedans, luxury cars, station wagons, and heavy and x-heavy trikes can carry up to a two-space turret. Only vans can carry a three-space turret.

One-space Turret: $1,000, 150 lbs., 1 space.

One-space Pop-up Turret: $2,000, 300 lbs., 3 spaces.

Two-space Turret: $1,500, 200 lbs., 2 spaces.

Two-space Pop-up Turret: $2,500, 350 lbs., 4 spaces.

Three-space Turret: $2,500, 300 lbs., 2 spaces.

Three-space Pop-up Turret: $3,500, 450 lbs., 5 spaces.

Universal Turrets – Adds an extra $1,000, no weight or space. Ordinary turrets, etc. cannot fire higher than a 45° angle. A universal turret can fire straight up.

Vehicular Computer – $4,000, no weight or space. It is installed in any one crew position, just like a targeting computer. It gives a +1 to hit with all weapons fired from that position. In addition, a wide array of non-combat programs are available, stored on holographic data-storage cubes. The details of these are left to the referee, but examples include bookkeeping, data communications, entertainment, and so forth.

Defense

Fire Extinguisher – $300, 150 lbs., 1 space. Roll 1 die at the end of each turn a vehicle equipped with this item is on fire. On a 1 to 3, the fire is put out. The fire extinguisher is destroyed when the power plant is destroyed.

Improved Fire Extinguisher – $500, 200 lbs., 1 space. It will put out a fire on a roll of 1 to 4 on 1 die. Otherwise, it is identical to the regular fire extinguisher.

Retractable Wheelguards – $250, 50 lbs., 1 space per pair, plus the cost and weight of the wheelguard itself (see p. 53). These perform like normal wheelguards, but do not affect HC when retracted. Raising or lowering is a firing action, and takes one second.

Roll Cage – $150 per armor facing, weighs as much as 1 point of vehicular metal armor times the number of armor facings the vehicle has; takes 1 space. Thus, for a cycle, a roll cage weighs the same as 2 points of metal armor and costs $300; a mid-sized car's would be 6 points of metal armor at $900. It prevents internal components from taking damage in a roll, and internal components (only) take half damage (round up) from rams. Roll cages must be original equipment.

Accessories

Safety Seat– $500, 25 lbs., no space. A safety seat can be installed in any vehicle except a motorcycle or a sidecar. It is a specially padded, contoured seat which, combined with special restraining belts and nets, cuts the damage taken in collisions and rolls in half. For example, after the front armor, weapons, and power plant have already been obliterated in a head-on collision, 12 points of damage remain to be divided between the driver and the gunner. The gunner has a regular seat, so he takes his full 6 points of damage. The driver, equipped with a safety seat, takes half damage – only 3 points (the other 3 are absorbed by the seat). The safety seat provides no protection from weapons fire. It takes 5 turns to get into a safety seat, and 3 turns to get out. If you don't engage the harnesses, it only takes one second to get in or out, but the protection is lost.

Wheelguards – $10 and 4 lbs. per point of armor. Wheelguards must be bought separately for each tire location, and have a maximum weight of 40 lbs. When a tire is targeted and hit, roll 1 die. On a 1 to 4, the wheelguard is hit instead. Wheelguards on the front wheels of a car or reversed trike reduce the HC of that vehicle by 1. They can be made fireproof, reflective, both, or metal at the standard increases in cost and weight. Wheelguard armor must be of the same type as that on the rest of the vehicle.

Miscellaneous

Active Suspension – $4,000, 100 lbs., no space. Adds 1 to the HC of any car, trike, or cycle. The bonus doesn't apply off-road. If a vehicle loses a wheel, it suffers a D6 hazard instead of going directly to HC −6, and its HC drops by 2 instead of 3.

Antilock Braking System (ABS) – $1,000, no weight or space. This system eliminates tire damage due to rapid deceleration and reduces hazards due to braking (rain, snow, ice, oil, gravel) by D1. It cannot be used on oversized vehicles.

Portable Shop – 4 separate cases, each 2 DP, $1,000, 75 lbs., 1 space. A mechanic working in the field with a portable shop adds 1 to effective skill. If some of the shop cases are destroyed or missing, the chance of the mechanic finding the part he needs

is equal to the percentage of cases left. For example, if three of the four cases are intact, there is a 75% chance that the needed part is still available – otherwise, the shop is useless for the particular repair attempted.

Searchlight – 1 DP, $200, 50 lbs., 1 space. A searchlight used on a moving object can track that object with a to-hit roll of 3 or more (plus all normal modifiers for range, target size, and speed, etc. but not counting darkness modifiers); a crewman is required to operate the light. Any object thus tracked can be attacked with no penalty for darkness.

A searchlight can also be used to blind the driver and crew of another vehicle. With a to-hit roll of 6 or better (counting modifiers as above), the gunner can blind his target, and the target's player must turn away from the board and describe subsequent actions based on what he remembers while he is blind. He is blinded only as long as the searchlight hits him. A blinded character can still fire, but with a −10 modifier; all maneuvers are at +D3. Searchlights can be targeted at −3. Searchlights have no effect in daylight, and cannot blind people through smoke.

Armored Searchlight – 5 DP, $500, 75 lbs., 1 space. This searchlight functions just as above.

Spoilers and Airdams – Each costs 25 × the cost of 1 point of armor for the vehicle it is being put on, and weighs 10 × the weight of 1 point of armor for the vehicle. A vehicle with a spoiler *or* an airdam adds 1 to its HC when traveling above 60 mph. If a vehicle has *both* a spoiler and an airdam, all maneuvers performed at 60 mph or faster have the difficulty reduced by 1. Spoilers/airdams do *not* have to match the armor type of the vehicle they are on. Spoilers/airdams have the same cost modifications as normal armor (i.e., a metal spoiler would cost 62 1/2 × normal armor cost and weigh 50 × normal armor weight of the vehicle). A vehicle that has metal armor and plastic spoilers or airdams has the spoiler/airdam destroyed after 30 cumulative points of damage have been done to the front/back of the vehicle; otherwise they are destroyed when the armor on that side is destroyed.

8. Sample Vehicles

For your first duels – or whenever you need a quick opponent – you can use these predesigned vehicles. Some have optional versions listed. Options will only list the changes in a vehicle. If an item is not listed, that means it did not change.

Some further variations take little or no calculation:

Rearrange armor. As long as the total number of *points* of armor remains the same, you can change the distribution any way you like and it won't change the cost or weight of the vehicle. However, if a vehicle has a ramplate, do not move any armor from or to the *front* location of the vehicle.

Change armor type. Making regular plastic armor fireproof is simple – just double the cost without changing the weight. Converting normal plastic to normal metal is nearly as easy. Five points of plastic convert to one point of metal, reducing the cost by 50% of the plastic's cost; for FP plastic to metal, reduce the cost by 75%. To convert from metal to plastic, multiply armor points by 5 and double the cost.

Move the weapons. Take those rear-mounted weapons and put them to the front – it won't affect the weight or cost at all. Just remember that you can't allot more than 1/3 of a vehicle's total spaces to weapons firing in one direction.

Add electronics. Since most electronic systems (computers, for example) have no weight and take no space, you can add one at any time for the price of the system. You can also remove them to save money.

Change weapons. Some weapons have identical weight and space requirements, so the only changes you'll need to make are the cost. For example, you can trade a flamethrower for a laser – it'll cost you $7,250. Or you can save that $7,250 by trading in a laser for a flamethrower. Other trades include replacing two HRs with a MD (costs $600 more), replacing a SD with a SS ($50 more), replacing a SD with a PS

($350 more) and replacing a SS with a PS ($300 more).

These descriptions use quite a few abbreviations, which can be found on p. 63. The armor descriptions list the armor position and how much armor is at each location – F5 means "five points of armor in the front position," R8/16 means "eight points of metal armor over 16 points of plastic armor in the right armor location," etc.

Cars

Killer Kart – Subcompact, std. chassis, hvy. suspension, medium power plant, 4 HD tires, driver, MG front, Armor: F5, R3, L3, B3, T2, U2. Accel. 10, top speed 135, HC 4; 2,300 lbs., $3,848.

Stinger – Subcompact, hvy. chassis, hvy. suspension, small power plant, 4 HD tires, driver, two linked MGs front. Armor: F10, R5, L5, B8, T5, U5. Accel. 5, top speed 90, HC 4; 2,400 lbs., $5,268.

Option I – Replace MGs with one RR, add 10 points of armor anywhere. $4,178.

Option II – Replace one MG and the link with one HR, add 20 points of armor anywhere. $4,138.

Option III – Replace MGs with one RL, add 30 points of armor anywhere. $3,898.

Option IV – Replace one MG with smokescreen or spikedropper, add 25 points of armor. $4,293 with spikedropper, $4,343 with smokescreen.

Yellow Jacket – Subcompact, hvy. chassis, hvy. suspension, small power plant, 4 HD tires, driver, laser front. Armor: F5, R4, L4, B5, T0, U0. Accel. 5, top speed 90, HC 4; 2,400 lbs., $9,998.

Mini-Sherman – Compact, std. chassis, hvy. suspension, large power plant, 4 HD tires, driver, two linked MGs front, SS rear. Armor: F35, R20, L20, B23, T10,

U10. Accel. 10, top speed 125, HC 3; 3,693 lbs., $8,334.

Option – Remove one MG and link and smokescreen, add one RL and 5 points of armor; $7,849.

Capricorn – Compact, x-hvy. chassis, hvy. suspension, large power plant, 4 PR radial tires, driver, RL front, SS back, targeting computer. Armor: F45, R35, L35, B40, T37, U35, 4 10-pt. wheelguards. Accel. 5, top speed 110, HC 3; 4,437 lbs., $11,451.

Capricorn Plus - Replace RL with RR, replace PR radials with regular solids, remove wheelguards. $11,551.

Spitfire – Compact, x-hvy. chassis, hvy. suspension, medium power plant, 4 PR tires, driver, VMG front, FT back, hi-res targeting computer. FP armor: F35, R25, L25, B35, T15, U15. Accel. 5, top speed 90, HC 3; 4,200 lbs., $14,550.

Joseph Special – Mid-sized, std. chassis, imp. suspension, large power plant, 4 HD tires, driver, ATG front, RL rear, PS right side. Armor: F30, R15, L15, B25, T15, U15. Accel. 5, top speed 105, HC 2; 4,795 lbs., $10,340.

Joseph Special "T" – Replace AT, RL, and PS with two linked MGs in turret, plus 4 HRs (two front, two back), add 3 points of armor; $11,238.

Mauler – Mid-sized, x-hvy. chassis, hvy. suspension, large power plant, 4 solid radial tires, driver, AC front, FOJ back, spoiler, airdam, 4 10-point wheelguards. Armor: F50, R40, L40, B40, T15, U15. Accel. 5, top speed 92.5, HC 3; 5,760 lbs., $22,250.

Superzapper option – Remove AC, add turreted laser, remove 13 points of armor. 5,756 lbs., $24,292.

Hotshot – Luxury. See p. 6.

Bodyguard – Luxury, hvy. chassis, hvy. suspension, large power plant, 4 solid tires, driver, 2 linked MDs (L and R), 3 linked OJs (L, R, and B), 2 linked PSs (L and R), "panic button" link for all weapons. Armor: F20, R45, L45, B50, T20, U20. Accel. 5, top speed 90, HC 3; 5,925 lbs., $15,400.

Bodyguard Shadrach – Convert to FP armor, replace OJs with FOJs. Top speed 95; 5,440 lbs., $21,425.

Intimidator – Station wagon, std. chassis, imp. suspension, super power plant, 4 PR tires, driver, laser in turret. Cargo capacity: 300 lbs., 11 spaces. Armor: F25, R15, L15, B25, T30, U15. Accel. 10, top speed 120 without cargo, Accel. 5 and top speed 115 with cargo, HC 2; 5,200 lbs., $17,400.

MG option – Remove turret and laser, add 3 pairs of linked MGs, upgrade chassis to x-hvy. Cargo capacity: 900 lbs., 7 spaces. Accel. 5, $17,850.

Ventura – Pickup, x-hvy. chassis, hvy. suspension, super power plant, 6 solid tires, driver, AC front, turreted VMG, spoiler, cargo capacity of 486 lbs. and 11 spaces. LRFP armor: F40, R30, L30, B33, T25, U20. Accel. 5, top speed 90, HC 2; 7,314 lbs., $31,740.

Cycles

Shogun 100 – Light cycle, hvy. suspension, small cycle power plant, 2 PR tires, cyclist, MG front. Armor: F6, B6. Accel. 10, top speed 120, HC 3; 798 lbs., $3,120.

Shogun 200 – Medium cycle, hvy. suspension, super cycle power plant, 2 PR tires, cyclist, MG front. Armor: F10, B10. Accel. 15, top speed 180, HC 3; 1,000 lbs., $5,020.

Trikes

Sandcrab – Medium trike, std. chassis, OR suspension, large cycle power plant, 3 OR solid tires, cyclist, VMG front, RL back. Armor: F12, RI2, L12, B15, T9, U15. Accel. 5, top speed 97.5, HC 2 (3 OR); 2,095 lbs., $9,450.

Blastmaster – X-hvy. trike, std. chassis, hvy. suspension, super trike power plant, 3 solid tires, cyclist, 2 RLs linked right, 2 RLs linked left, link connecting all RLs, fire extinguisher, targeting computer. Armor: F20, R20, L20, B20, T15, U6, 2 8-pt. wheelguards back, 1 7-pt. cycle wheelguard. Accel. 5, top speed 92.5, HC 3; 2,794 lbs., $17,430.

9. Scenarios

One reason **Car Wars** is so popular is that it allows an unlimited variety of games. Players can set up their own car-combat scenarios in any sort of background. A scenario can be a "one-shot," with drivers and vehicles created especially for the event – or part of a continuing campaign, where surviving characters increase their skills, returning to fight again and again.

To create a scenario, you should answer the following questions:

General type. Arena or racetrack combat, scoring points in front of the TV cameras? A highway chase, with a courier racing to stay ahead of a road-pirate gang? An off-road confrontation between cycle gangs?

Starting vehicles. Decide what cars or cycles each side will have, or how much money they'll get for custom-built vehicles.

Starting characters. How many characters does each side get? How many skill points are allowed to build each character?

Setup positions. Where does each player start, and at what speed?

Objectives. How can each side score points? How is the final victory determined?

Amateur Night

This arena scenario is good for learning the game or for starting new characters. Each player starts with a duel vehicle, provided free by the arena. Usually this is a Killer Kart (p. 60).

The cars all enter at once, at any speed up to 20 mph, from different gates. The last surviving car wins. A character may leave by any gate (driving or running) to save his skin, but can't re-enter. A car may be shot at until it is entirely out of the arena.

The winner gets to keep *all* the cars used in the duel, though most will be good only as salvage. After you win three Amateur Nights, you're a professional and can no longer compete as an amateur.

Other Arena Events

Most arena events are limited by value of the cars (e.g., "Division 20" puts a $20,000

ceiling on cost). In most events, it's "every car for itself." Team play is also possible.

The last survivor is usually the winner, but a scenario can also give points for kills, ramp jumps, and other feats. This encourages exciting play instead of "turtle" tactics.

Road Combat

Use the racetrack map, and the "highway" rules from p. 5.

Road Duel: Two players. Each gets a fixed budget to pick or build one car. Roll randomly to see which starts in front. Roll 2 dice to determine the number of inches between the cars. Both start out going the same direction at 60 mph. The survivor wins.

Pack Attack: Multi-player combat. One player gets $17,000 to build one car. The other players share $25,000 to buy or design at least 5 cycles. The lone car starts with a 12" lead; all vehicles start out at 80 mph. The cycles win if they destroy the car. The car wins if all the cycles are destroyed, if it can lose its pursuers at forks in the road, or if it increases its lead to more than 30".

Creating Your Own Game Maps

Many different **Car Wars** maps are available. For other fixed-area scenarios (like arenas, parking lots, or obstacle courses), draw the whole layout on 1/4" graph paper and tape it to the table. Such a layout should show:

Roads, parking lots, etc. Some roads will be littered with debris, others will be clean. If the road has a high curb (D1 hazard to hit), draw it as a heavy line. A city area will also have sidewalks, which are also good for driving, if you're well enough armed!

Buildings. Show the outside of each building as a heavy line; show interior partitions as lighter lines. Indicate stairs (see p. 44) where appropriate. Show the name and DP value for each building. Some buildings may have weapon turrets for defense!

Off-road terrain (shoulders, parks, lamp posts, trees, boulders, etc.). This will be important when cars leave the road (see *Off-Road Duelling*, p. 23).

Abbreviations

ABS – Antilock Braking-System
AC – Autocannon
Accel. – Acceleration
AR – Assault Rifle
ATG – Anti-Tank Gun
AVR – Anti-Vehicular Rifle
B – Back
BA – Body Armor
CPS – Cost per Shot
d – die (6-sided)
D – Difficulty Rating
DP – Damage Points
DStG – Double-Barreled Shotgun
F – Front
FE – Fire Extinguisher
FOJ – Flaming Oil Jet
FP – Fireproof
FT – Flamethrower
GE – Grenade Equivalent
GL – Grenade Launcher
GP – Gauss Pistol
GR – Gauss Rifle
HAVR – Heavy AV Rifle
HC – Handling Class
HD – Heavy-Duty
HL – Heavy Laser
HP – Heavy Pistol
HR – Heavy Rocket
HRSWC – Hi-Res Single-Weapon Computer
IBA – Improved Body Armor
IFE – Improved Fire Extinguisher
Imp. – Improved
IR – Infrared
L – Left or Laser
LAW – Light Anti-tank Weapon
L1G – Light Intensifier Goggles
LL – Light Laser
LP – Light Pistol
LR – Laser Rifle or Laser-Reflective
LRFP – Laser-Reflective Fireproof
LtR – Light Rocket
MD – Minedropper
MFR – Multi-Fire Rocket
MG – Machine Gun
ML – Medium Laser
MML – Micromissile Launcher
MNR – Mini Rocket
MP – Machine Pistol
MR – Medium Rocket
OJ – Oil Jet
OR – Off-Road
PFE – Portable Fire Ext.
PR – Puncture Resistant
PS – Paint Spray
PU – Power Units
R – Radial (tire) or Right
Rev. – Reversed
RL – Rocket Launcher
RP – Rocket Platform
RR – Recoilless Rifle
SB – Steelbelted
SD – Spikedropper
SG – Spike Gun
SMD – Spear 1000 Minedropper
SMG – Submachine Gun
SS – Smokescreen
StG – Shotgun
SWC – Single-Weapon Computer
T – Top
U – Underbody
VLAW – Very Light Anti-Tank Weapon
VMG – Vulcan MG
WPS – Weight per Shot

Index