VETTE!

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Copy Protection for Vette!

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Chapter 1: Introduction

Since the invention of the car, people have enjoyed using it to compete in terms of speed, skill and endurance. For people who aren't wealthy enthusiasts or professional race car drivers, this natural desire to compete can only be satisfied by racing on the streets. The program you have in your hands is the computerized extension of this desire.

The car you will be driving in this simulation has been known as the quintessential street racer ever since its introduction in 1953. You will be racing against the most impressive crop of high-performance cars ever produced; however, you will have one decisive advantage over them. You have complete control over your vehicle, and you can decide the exact course you will take. Your skills will allow you to drive the mighty Vette and defeat the best the rest of the world has to offer.

Corvette never enjoyed the factory racing sponsorship that Ferrari, Jaguar, Porsche and others had, yet it became the dream car of many a red-blooded American youth since its inception. The car's tremendous potential but lack of official sponsorship has resulted in two generations of drivers using its inherent strengths for racing on the streets.

From drag racing to the ultimate thrill of racing through city streets and freeways, the Vette has continually enjoyed the enviable reputation as king of the street racers. With VETTE!, the computer simulation, you can carry on its enduring legacy for years to come.

CHAPTER 2: FIVE MINUTES TO PLAY

This section is intended to get you playing VETTE! as quickly as possible. The next chapter gives detailed instructions about loading and playing VETTE!

Loading VETTE!

Always run VETTE! from the backups of your original disks.

1. Before playing VETTE! for the first time, please back up your VETTE! disks and run the program from your backups.
2. Read page 8 of this manual for detailed instructions on how to install VETTE! to your hard drive. If you do not own a hard drive, insert your backup Disk 1 into the internal drive. You need a hard drive to run the color version of VETTE!
3. After installing VETTE!, double-click on either the Start VETTE! icon (if you have a Mac Plus, SE, Classic, Portable, or PowerBook 100) or the VETTE! icon (for all other machines) for the black-and-white version, or on COLOR VETTE! to play the color version.
4. The program will take about a minute to load. You will then see the intro screen.

Race setup

Choose the Sledgehammer and Trainee level for the fastest and easiest driving.

1. You can either watch the introduction or press the mouse button to continue. This will bring you to the car selection screen.
2. On the car selection screen, use the mouse to select which car you want to race in. The cars are shown in order from the slowest (STOCK) to the fastest (SLEDGEHAMMER). Select the SLEDGEHAMMER for this race. Click on the TEST button to preview the car's performance on the dynamometer. When you are finished, click on the ACCEPT button to choose a difficulty level.
3. Now you can choose which skill level you would like to race in. Click on TRAINEE for this race — you will be protected from police tickets and damage to your car. The next screen allows you to choose your opponent.
4. Use the mouse to select the car you wish to race against and then click on the ACCEPT button. For your first race, you should choose the easiest opponent, the Porsche 928S4. This will give you the best chance of winning this particular race.
5. There are four courses in VETTE! Here, you can click on any of the four course buttons to choose one of them. Select COURSE 1 for this race. This race begins at the San Francisco Zoo, goes through the Sunset district to the Cliff House, through the Presidio, across the Golden Gate Bridge and finishes at Vista Point. Click on the ACCEPT button to play this course. This will bring you to the trivia question screen.

Select the Porsche 928S4 and Course 1 for your best chance to win the race.

CHAPTER 2: FIVE MINUTES TO PLAY

6. You will now be asked a VETTE! trivia question before beginning the race. Go to the page number in the manual and locate the answer. When you have found the answer, simply type it in and press RETURN. Do not use any punctuation in your response. You will get two tries to get the right answer. If you answer incorrectly on the second try, you will be arrested for driving a stolen Vette.

The Race

1. When the race begins, you will be at the corner of Wawona and the Great Highway near the Pacific Ocean beach. The race begins when the bottom light on the stoplight illuminates.
2. For those of you who wish to race from outside the car, press ⌘ 4 or F4 to switch to helicopter view. Press ⌘ 5 or F5 to turn the dashboard on. You can return to the standard, in-car front view by pressing ⌘ or F2. Pressing ⌘ 1 or F1 changes you to the left view, and ⌘ 3 or F3 changes you to the right view. While in the car, you can toggle the rear view mirror with ⌘ 6 or F6. On machines with a 68000 microprocessor (the Plus, SE, Classic, Portable, and PowerBook 100), we recommend leaving the rear view mirror off until you need it.

NOTE

Press ⌘ 2 or F2 to get to the inside front car view.

3. Press A to put the car in automatic transmission, and then put the car in first gear by pressing 1 on the top row of your keyboard. You can steer your Vette with either the keyboard, joystick or mouse by selecting it from the OPTIONS menu.
   - To turn left, press J or 4 on the numeric keypad, move the joystick left, or move the mouse left.
   - To turn right, press L or 6 on the numeric keypad, move the joystick right, or move the mouse right.
   - To accelerate, press I or 8 on the numeric keypad, push the joystick forward, or push the mouse button.
   - To brake, press M, SPACEBAR or 2 on the numeric keypad, or pull the joystick back.
   - If you need to come to an emergency stop, press F; this will stop your car and shift it into neutral. If your car starts to skid because you're taking a corner too fast, you can press K or 5 on the numeric keypad to recover from the skid. For a complete list of controls, see page 47.
4. You may press P in order to pause the game. ESC or Q will bring up the

menu bar to let you select menu options such as sound and preferences.

5. Once your Vette begins to move forward, make a right turn onto the Great Highway. After you're comfortable with your car's position, step on the gas. By now, the Porsche will probably be ahead of you, but don't worry. It only has a top speed of 165 mph, while yours is a whopping 254 mph. When driving, try to avoid traffic, pedestrians and buildings. At Trainee level, you won't get any tickets or damage if you hit anything, but it will slow you down and cost you valuable time. You do need to avoid driving your car into the water as getting dunked is the only thing that can end the race for you at this skill level.
6. As you continue down the Great Highway, you'll pass the windmills in Golden Gate Park and the Cliff House before driving under the freeway entrance sign.
7. Just as on an actual freeway, the traffic is slowest in the right lane and fastest in the left lane. If you are driving slower than 75 mph, check your rear view mirror for traffic coming up behind you. Yes, Californians drive fast.

Finishing

1. The finish line is just after the end of the bridge so watch for it on your right-hand side. It is best to slow down since it will require a hard right turn. You must cross between the two poles and under the checkerboard to finish the race. If you happen to pass the finish line, brake and turn around.
2. If you win, you will be given a victory party at Lombard Street. If you lose, you will suffer a bit of friendly abuse from your opponent.
3. Afterwards, you will see the top ten screen for that course. If your time is faster than one of the ones currently on the course, you will be asked to enter your name. Congratulations on your first race in VETTE!

CHAPTER 3: SETUP AND LOADING

We assume you are familiar with the basic terms and operations of the Macintosh, including using the mouse and pull-down menus. If this is the first program you have run on your Macintosh, refer to your Macintosh Owner's Manual to become familiar with your Mac.

Hardware/software requirements

VETTE! will run on all Macintosh models with at least 1MB of RAM and an 800K disk drive. To play the color version of the program, you must have a Mac II series computer or an LC with at least 2MB RAM, a 4-bit (16-color) video card and a hard drive. Both versions of VETTE! also require System version 6.0.2 or later. You may obtain the latest version of the Macintosh system software at your local Apple dealer.

Function keys and command keys

Throughout the manual, the effects of function keys and command key operations will be the same (i.e. ⌘5 is the same as F5). This has been done so as not to inconvenience users of older keyboards and also to provide a convenience for those with extended keyboards. During description of keyboard commands in the manual, we will only mention command key operations in order to save space. Just remember that each command key operation can be duplicated by a corresponding function key.

Making a backup copy of the VETTE! disks

Before backing up your original disks, be sure to write protect each disk by sliding the tab so that the window on each disk is open.

Before running VETTE! for the first time, be sure to make a copy of the VETTE! disks and store the originals in a safe place. You should always run the program from the backup floppy disks so as not to accidentally damage the originals.

Installing VETTE! on a hard drive

Create a folder called "VETTE!" on your hard drive. For the black-and-white version, copy the files **Start VETTE!** and **VETTE!** from Disk 1 to the "VETTE!" folder. For the color version, insert Disk 3, then double-click on the file **Color VETTE! Install** and follow the onscreen instructions. Then, for both versions, copy the file **VETTE! Data** from Disk 2 into the "VETTE!" folder.

CHAPTER 3: SETUP AND LOADING

Loading the program

Always run the game from the backup copy of your original disks.

To run the black-and-white version of VETTE! from your hard drive, double-click on the **Start VETTE!** icon (for a 68000-based Mac such as the Mac Plus, SE, or Classic) or on the **VETTE!** icon (for all other models). The black-and-white version must be run under System 6.0.2 or later. If you run black-and-white on a color system, you must change the Monitors setting in the Control Panel to "Black & White." If you wish to run the monochrome version of VETTE! from your backup floppy disk, insert your backup Disk 1 into the internal drive and double-click on the appropriate icon. For the color version, double-click on **COLOR VETTE!** The color version must be run under System 6.0.5 or later and with 32-bit QuickDraw installed in the System Folder. The Monitors setting in the Control Panel must be changed to "16 colors." You can only run the color version of VETTE! from a hard drive.

MultiFinder and System 7

On a 68000-based Mac (Plus, SE, Classic, Portable, or PowerBook 100), the program will not normally run under MultiFinder or System 7. Before starting the game in regular Finder, you must turn off the RAM cache, reboot your computer, and then run the game.

To run VETTE! under MultiFinder or System 7 on a 68000-based Mac, you must have a copy of MacsBug, an Apple programming utility available online and through user groups. Install MacsBug in your System Folder, reboot your computer, and double-click **VETTE!** instead of **Start VETTE!** for black-and-white. You'll need 900K to run the black-and-white version under MultiFinder or System 7.

The color version requires 1500K RAM under MultiFinder or System 7.

Gravis MouseStick

To install the VETTE! preferences for the Gravis MouseStick, double-click on the **Set Mover** program that comes on your MouseStick Utilities disk. Click the Open button and double-click on the **MouseStick Prefs** file in your System Folder. Insert VETTE! Disk 1, click the Open button, and then double-click on **VETTE! MouseStick Prefs.** Highlight the four VETTE! MouseStick Prefs and press the Copy button. This will copy the VETTE! MouseStick preferences to your **MouseStick Prefs** file.

CHAPTER 3: SETUP AND LOADING

When you use the MouseStick with VETTE!, go to the Control Panel and select the appropriate settings for your screen size: "VETTE! 512*342 Screen" for the standard 9" screen of the Mac Plus, SE, and Classic; "VETTE! 512*384 Screen" for the 12" screen; "VETTE! 640*400 Screen" for the Mac Portable; and "VETTE! 640*480 Screen" for the Mac 13" RGB monitor.
To drive with the MouseStick, first choose Joystick under the Steering options. You will also probably want to adjust your preferences, since they are set for keyboard control. We suggest setting the "Minimum turn" all the way to the left and setting the "Maximum turn" near the center position. You may also find it easier to accelerate with the keyboard rather than pushing the joystick forward.

Title screen

After the program has finished loading (about a minute or so), the title screen and intro music will start. You can bypass the intro scene by clicking the mouse button.

Performance test garage

You will now enter the performance test garage for your new Vette. There are three different things you can do at this screen:

NOTE

When you click on one of the cars, the chart to the right of the car selection buttons will show some statistics about your Vette's performance specifications.

Click on TEST if you want to run a performance test on your selected car. The chart will then display an acceleration graph illustrating the car's acceleration in each of its gears.

1. Car selection

Select the car you wish to drive by clicking on one of the four cars in the middle of the screen. Complete characteristics of the four Corvette models are located on pages 52–55. You can now either go to the dynamometer test or click on the ACCEPT button to choose your difficulty level.

2. Dynamometer test (optional)

After you have chosen a Corvette to drive, you can click on the TEST button in the lower right-hand side of the screen to display the car's performance on the dynamometer. This is only an option and is not required in order to proceed with the game.

CHAPTER 3: SETUP AND LOADING

3. Difficulty level selection

After selecting your car, click on either TRAINEE, ROOKIE or PRO to choose your driving skill level. The chart below shows the differences in the three difficulty levels:

Level	Damage	Traction	Police	Cruise Control
TRAINEE	None	High	Inactive	Constant
ROOKIE	Reduced	Moderate	Active	Constant
PRO	Realistic	Realistic	Active	Realistic

Damage

At TRAINEE level, you can never damage your car. *Reduced* damage means your car is very resistant to damage, and realistic damage means that you can totally demolish your car.

Traction

High traction means that it will be difficult to make your Vette oversteer or spin out. With *realistic* traction, your car will slip and slide around the road like an actual car. *Moderate* traction lies somewhere between the two.

Police

If police are *active*, they will attempt to pursue you if you commit a traffic violation.

Cruise control

Constant cruise control will set a new speed for your Vette after you brake or accelerate. *Realistic* cruise control will turn off if you hit your brakes or if your speed falls below 25 mph. You will then have to press C again to re-engage the cruise control.

Opponent Selection

After selecting your difficulty level, you can check out your opponent cars at the next screen and pick which one you wish to race against. When you click on the plaque below a particular car, the opponent's acceleration and top speed performance will be displayed. While previewing the opponent car in 3-D, use the ⌘7 and ⌘8 keys to zoom in and out, ⌘9 and ⌘0 (or ,F10) to change the viewing angle, and + and – to change the speed of rotation. Hit the ACCEPT button to continue to the Course Selection.

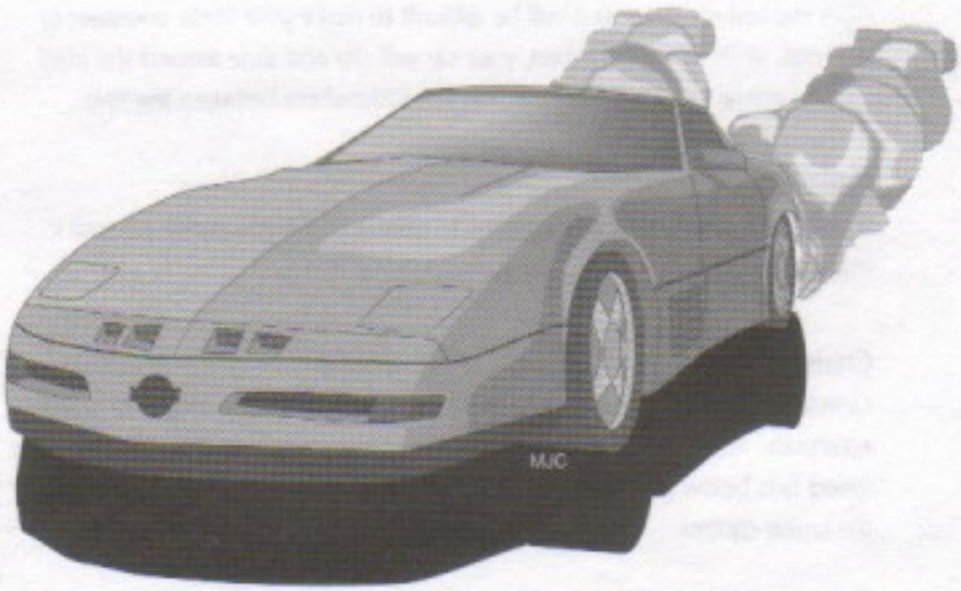
CHAPTER 3: SETUP AND LOADING

Course Selection

After choosing an opponent, you will be shown a map of San Francisco and asked to choose one of the four courses available. Click on one of the four buttons to select the route your race will take. When you have made your selection, click on the ACCEPT button. Specific information about each course is located on pages 31–35.

VETTE! trivia question

Before you can start the race, you must answer a question based on information found in the VETTE! documentation. You don't need to worry about units of measurement, capitalization or commas between numbers. Type in the correct answer and press (RETURN). You will have two chances to answer the question correctly. If you answer the question wrong on the second attempt, we will allow you to play for a short time before a police officer arrests you and the game automatically quits.



CHAPTER 4: DRIVING INFORMATION

During the first few races we recommend that you limit your speed to 55 mph, although you shouldn't drive for long periods of time at any one constant speed.

Try to drive at a moderate speed the first few times through all four courses so you can become more familiar with them. You should also drive at a lower skill level (TRAINEE or ROOKIE) and use the stock Corvette until you're more familiar with the game.

Beginning race characteristics

After typing in the password, press (RETURN) to begin the race. Now you are ready to race your Vette against your opponents. The race is started by a stoplight. When the bottom light turns on, it signals the beginning of the race.

NOTE

You cannot begin the race until the bottom light of the stoplight turns on.

You will start out side by side with your opponent. Your Corvette will be in neutral gear when the start light illuminates. The program will ignore any driving input until the bottom light turns on.
Once the starting light has turned on, put your Vette in first gear by pressing 1 on the top row of the keyboard. Shifting into first gear is required whether you are driving in manual or automatic. (The default transmission setting is manual for some of the Corvette models.)

Shifting gears in manual transmission

Vettes can have from four to six gears plus a reverse gear. In manual shifting mode, gears are changed by pressing the corresponding number on the top row of the keyboard. You can also hit + to upshift and – to downshift on the keyboard's top row. In addition, you can press the fire button on a joystick to upshift. (The +, – and number keys on the numeric keypad are used for other functions.)

NOTE

To aid you in shifting, an upshift light will appear on the dashboard just above the tachometer.

Automatic transmission

If you want to drive your car in automatic, you will not have to shift gears. (Hit A to toggle automatic transmission for any Vette model.) The disadvantage of an automatic is that you cannot accelerate as fast as you can in manual transmission. This is because the car is attempting to figure out the best speed to shift gears rather than letting you play with it yourself.

CHAPTER 4: DRIVING INFORMATION

NOTE

On the numeric keypad, the ↑ and ↓ keys allow you to accelerate and turn simultaneously. Similarly, the ← and → keys will allow you to brake and turn at the same time.

Steering controls

If you're using your keyboard to steer your Corvette, use the J and L keys, or the 4 and 6 on the numeric keypad. (The game will default to the numeric keypad if one is available. You can press ⌘N to switch to the numeric keypad or press ⌘K for the keyboard.) Slide the mouse left or right or push the joystick left or right if you've chosen one of those options. When using the keyboard, the steering wheel is self-centering (just as in the real Corvette).

You can press K or 5 on the numeric keypad to recover from a skid. Pressing either key will straighten out your car once it begins to skid.
Acceleration of your Vette is determined by the gear you are in, the current speed, the degree of turn and the terrain, just as if you were driving in the real world. By using the I key (or the 8 key on the numeric keypad), clicking the mouse or pushing forward on the joystick, you can increase the throttle. Be careful not to carry too much speed into turns because it can cause spinouts, slides or accidents when trying to take sharp corners.

You can brake your vehicle by pressing SPACEBAR, M or 2 on the numeric keypad or by pulling back on the joystick.

Cruise control

To drive at a constant speed without having to constantly accelerate, you can put your Corvette into cruise control by pressing the C key. If you change speed (accelerate or brake) when in cruise control in the TRAINEE and ROOKIE difficulty levels, the cruise control will adjust and keep your new speed. In the PRO difficulty level, you will need to re-engage the cruise control after braking or if your speed drops below 25 mph.

Navigation map and gear shift

The navigation map can be brought up by pressing H. This will show a miniature map of San Francisco with the positions of you and your opponent highlighted. Hit the H key to make the map disappear.

The gear shift is shown briefly when you change gears, or you can toggle it on with the G key.

Dashboard indicators

Your turn signal indicators will flash automatically when you turn the steering wheel, and the upshift indicator will flash when it is time for you to shift into the next gear.

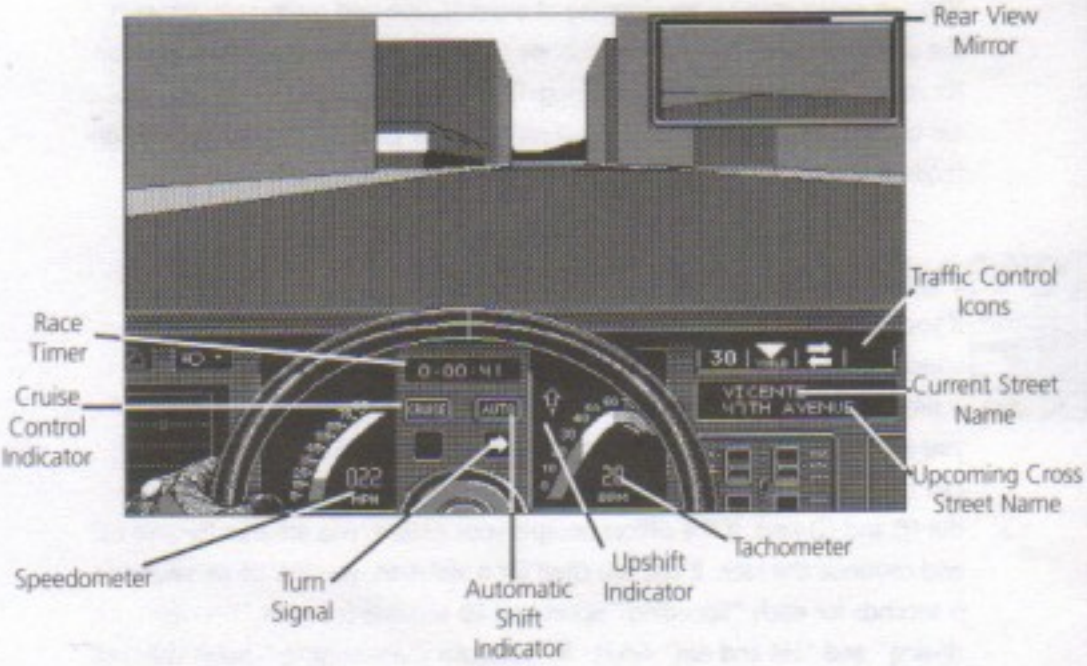
CHAPTER 4: DRIVING INFORMATION

In addition, there will be a number of icons on the right hand side of the front dash that indicate road features. These will include stop signs, no U-turn signs, traffic signals, stop lights, speed limits, etc. Obeying these will help you to avoid tickets from the local police.

Driving views

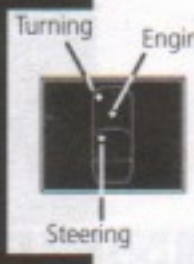
You can view your Vette from a number of different ways, both inside and outside the car. To look out the left side of the Corvette, press ⌘1. To look out the right side, press ⌘3. Pressing ⌘2 returns you to the front view.

The picture below shows the location of the different features and indicators in the Corvette.



If you want to drive your car from an outside angle, press ⌘4 or F4 (or + on the numeric keypad) to go into helicopter view. From here, you can raise and lower your viewpoint by pressing the ⌘7 and ⌘8 keys respectively. You can also change your viewing angle by pressing the ⌘9 and ⌘0 (F10) keys. If you want to reset the default camera angles, press the OPTION key as you switch to helicopter view.

CHAPTER 4: DRIVING INFORMATION



Collision damage

Damage is determined by the speed and angle of impact, what object was hit, and the skill level you are driving at. If you get into an accident, the car's performance and handling will suffer due to structural and mechanical damage. When you hit another vehicle or building, you will receive added time delays because you and your car will have to recover.

To determine how much your Vette is damaged, press D to bring up the damage control display. Any damage to the car will be displayed according to the severity of the damage incurred: a circle for minor damage, a diamond for moderate damage, and a square for severe damage. The indicator for transmission damage is just beneath the indicator for engine damage.

You can repair your car by stopping at a gas station and pulling up between the pumps and the building. To indicate that your car is in the proper position for repair, the gas station bell will ring. If you have managed to mangle your car beyond repair, a tow truck will come and tow your car back to the garage (ending your race).

Police and traffic violations

If you are driving at ROOKIE or PRO level, SFPD's finest will be active and watching for any traffic violations. If you commit a violation, you will hear a siren, a police car will signal for you to pull over, and the officer will issue you a ticket. If you are cited for anything but "Vehicular manslaughter," you can try to weasel your way out of it by choosing from a list of excuses with the ↑ and ↓ keys. If the officer accepts your excuse, you are free to drive off and continue the race. If you are cited for a violation, you will be penalized 5 seconds for each "Speeding" ticket and 10 seconds for each "Reckless driving" and "Hit and run" ticket. A "Vehicular manslaughter" ticket will cost you 30 seconds of penalty time. The penalty time will automatically be added to your race clock as soon as you receive your ticket. Your opponent will be subject to the same rules and penalties.

You will receive a "Hit and run" ticket if you collide with a moving object (such as another car). "Reckless driving" is given for colliding with a stationary object. "Speeding" is given for exceeding the speed limit on a given street. The most serious violation, "Vehicular manslaughter," is given when you kill a pedestrian.

CHAPTER 4: DRIVING INFORMATION

Scoring

If your time is one of the ten best for that course, you will be asked to enter your name in the Top Ten screen. Type in your name and then press (RETURN). The Top Ten screen also lists the skill level, the number of traffic violations (if any) and the total penalty time incurred. If you want to show the Top Ten screen without having to first finish a race, go to the **Options** menu and pull down the hierarchical menu **High Score** and choose the course. To clear the top ten scores for all courses, go to the **Options** menu and pull down the **High Score** and choose *Clear High Scores*.

Hints and tips

1. You can accelerate faster in manual than you can in automatic.
2. If your car receives any damage, you should stop at a gas station for repairs. It's a good idea to know the locations of gas stations in the area.
3. If your Corvette is badly damaged and you have trouble getting it moving, try starting the car in a higher gear.
4. You must come to a full stop before you shift into reverse gear.

Driver's checklist

1. Select the correct car for the course and opponent.
2. Practice driving the course before the race.
3. Know the course objective (and the alternate routes).
4. Know the landmarks along the way and study the map.
5. Understand how the selected Vette handles.
6. Know how to avoid unexpected driving hazards, such as obstacles, police, pedestrians, etc.

Maximizing game speed

Follow these tips, which are listed in the order we suggest you try them, to increase the program's animation speed:

1. Turn off the rear view mirror by pressing ⌘6 or (F6).
2. Press S to turn the sound off.
3. Drive from inside the car (⌘2 or (F2)) instead of the helicopter view (⌘4 or (F4)).
4. For the black-and-white version only, press V to turn off the horizon and remove the hand from the steering wheel.
5. Turn down traffic density by adjusting your Preferences from the **Options** menu.
6. For the black-and-white version only, press W to change the 3-D objects from solid to wireframes.

7. Turn off the buildings by pressing B.
8. Play the black-and-white version of VETTE! instead of the color version. Just double-click on **Start VETTE!** or **VETTE!** instead of **Color VETTE!**
9. If you've changed the default settings in the Preferences dialog box, you should make sure "Outline" is set to "Off" and "Block Size" to "3 X 2."

CHAPTER 5: THE MENU BAR

You can access the available menu bar at any time in the game by pressing the (ESC) or Q keys. The menu bar has a number of options which are listed on the following pages:

MENU

About Vette... – This brings up the credits screen for Macintosh VETTE! Click the mouse button to exit this screen.

File menu

Open and *Close* – These are greyed out because they are not used in VETTE! They are still on the menu because some desk accessories need them for their operations.

Restart Race – This option lets you run the same race as before, with the same car, the same opponent, and the same course.

Return to Game – Choose this option if you want to return to the game. You will be placed in the exact position you were when you accessed the menu bar.

Quit to Garage – This option aborts your current game and returns you to the performance garage screen.

Quit – Use this option to exit VETTE!

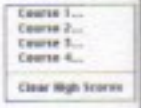
Edit menu

This menu is disabled during the VETTE! game, but it is left on the menu bar because some desk accessories might need to access it.

Options menu

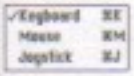
Tour Mode – This will start your Vette on a tour of the major landmarks of San Francisco. An important point to remember is that you will forfeit your current race if you select this option. Once you select Tour Mode, the menu item will be checked and the **Tour Menu** to the right will be undimmed. You can then either press the T key to teleport you to the next landmark or select the landmark from the list under **Tour Menu**.

Communications – If you pull down this hierarchical menu you have the option of choosing either Single Player (the default) or Mac to Mac. If you select Mac to Mac, you then have three different connection choices: Direct Connect, Modem Connect and AppleTalk Connect. A complete explanation can be found in Chapter 7 on pages 36–41.



High Scores – This hierarchical submenu branches into four sections, one for each of the four courses. Here you can view the top ten for any of the four courses without having to complete a race. Once at the high score screen, click the mouse button to close the window. In addition, you can also erase the high scores for all four courses.

CHAPTER 5: THE MENU BAR



Steering – On this hierarchical submenu you have four options: Numeric keypad, Keyboard, Mouse or Joystick. The Joystick option allows you to use joysticks (such as the Gravis MouseStick and the MAXX Yoke) for controlling your Corvette. Make sure that your selected input device is connected to the ADB (mouse) port on your Mac before playing.

Preferences – This hierarchical menu lets you change different variables to customize the game to your liking. All variables are set by sliding the bar. You can change the following options:

Brake rate affects how well your brakes slow down your Vette. Your brakes take longer to work if this is set to the minimum.

Minimum turn determines the minimum amount of steering input to turn the wheel. If set to minimum, then turning the the wheel will only change the heading a small degree per second.

Maximum turn affects how far you can crank your steering wheel.

Turn correction lets you choose how fast you can correct your car from skidding by turning into the skid. If this is set to the maximum, then it will be easier for you to recover from skids.

Skid traction determines at which point your car begins to skid and how much. If this value is set to the maximum, then you will be able to take corners at much faster speeds.

Skid rate affects how much your car spins once it begins to spin.

Skid scrub rate determines how much speed is subtracted (or "scrubbed") from your car when it skids. If this is set to the minimum value, then your car will not lose as much speed from skidding.

Traffic density lets you adjust the amount of traffic in the city.

Gravity affects how much "air" your car can get. If set to the minimum, your car may sail for blocks if it hits a hill at 100 mph or more.

Block size lets you determine how much of the city you can see from your Vette. The game defaults to "3 x 2" blocks for faster game speed, but you can change it to "3 x 3" or "4 x 3" if you wish to have more buildings and other 3-D objects in San Francisco displayed at a time.

Outline lets you change how the 3-D objects are drawn. If you click the box, then buildings and vehicles will be outlined when drawn. We recommend, however, that you leave the box unchecked for 68000-based Macs (such as the Mac Plus, SE and Classic).

In addition to all the above, you can reset all the preferences to the default by clicking on the DEFAULTS button. You can also save your preferences by clicking on the SAVE button.

CHAPTER 6: COURSE DESCRIPTIONS

There are four different race courses in VETTE! Each of the first three takes you through different sections of San Francisco while the fourth course combines the three. Below are the areas where you can travel on the four routes:

1. San Francisco Zoo to Vista Point (Golden Gate Bridge)
2. Golden Gate Bridge to Bay Bridge
3. Bay Bridge to San Francisco Zoo
4. San Francisco Zoo to Golden Gate Bridge to Bay Bridge and back to the San Francisco Zoo

Navigation

A printed map is included with VETTE! to help you navigate the streets of San Francisco. It shows you the city streets and their names, but it does not show predefined race routes. It is up to you to determine the best route for each race.

To help you find your way in the city, we have included an on-board navigational map. Press H for "Help," and a map will appear displaying the location of both your car and your opponent. (Your Vette is the square that flashes twice.) The map also shows your heading in the bottom right-hand corner so you can tell which way car is facing.

Traffic control icons, the race timer and passing street names are displayed on your front dash. The top street name is the street you are on and the bottom name is the upcoming cross street. From left to right, the icons are: the current street's speed limit; stoplight status and Stop/Yield signs for the upcoming
intersection; No Left Turn, No Right Turn, No U-Turn and Do Not Enter icons for the upcoming intersection; and One or Two-Way Street or Curve Ahead indicators for the cross street.

Freeways

To get onto a freeway, you must find and drive under the large overhanging freeway signs. The map on the next page will show you which freeways are accessible as well as the available on-ramps and off-ramps. Overhead signs on the freeways will direct you to the correct highway or off-ramps.

Chapter 6: Course descriptions

City boundaries

In addition, the map on page 30 will show you which parts of the city streets are accessible to your Vette. Unfortunately, some of the roads have been blocked off due to construction after earthquake damage. (In reality, some parts of San Francisco are inaccessible because of the vast amounts of information needed to accurately recreate the entire city.)

Course 1: San Francisco Zoo to Golden Gate Bridge

Your first course starts at the San Francisco Zoo just northwest of Lake Merced. The city zoo houses over 1,000 mammals and birds and includes a koala bear breeding facility. The zoo's showcase is the two million dollar Gorilla World, a nature-like enclosure for large primates.

If you drive north on the Great Highway, you'll be paralleling the Pacific Coast with its spectacular surf and beaches. You'll pass by the Golden Gate Park, which has been called the "Central Park of the West." Spanning nearly half the width of the city, San Francisco's favorite park is over 1,000 acres of gardens, lawns and forests. The transformation of sand dunes to park grounds was begun in 1887 by John McLaren. Golden Gate Park is also the home of the California Academy of Sciences, the DeYoung Memorial Museum and other cultural sites. Farther on, you can view California sea lions from the Cliff House overlooking Ocean Beach.

If you turn right on Geary Boulevard, you'll pass by Lincoln Park on the left with Monterey cypresses guarding its golf course. Lincoln Park is also the home of the California Legion of Honor with its fine collection of French paintings. As Lincoln Boulevard turns left, you'll be bordering the Presidio,

the oldest active military base in the nation. Established by the Spanish in 1776, the Presidio is now composed of 1,500 acres of beautiful wooded hills and has been declared a National Historic Landmark. Finally, you approach the Golden Gate Bridge, the most photographed landmark of San Francisco. Built in 1936, the Golden Gate Bridge connects the city to Marin County with 8,981 feet of orange painted steel. Once across the bridge, your race ends at Vista Point, where you can admire the entire San Francisco Bay.

Course 2: Golden Gate Bridge to Bay Bridge

Your route may take you by the famous Coit Tower on Telegraph Hill. Rising above its neighbors, the tower was designed roughly in the shape of a fire-hose nozzle. It was built in 1933 as a monument to the city's volunteer firemen,
and its rotunda is decorated with 15 frescoes done by WPA (Work Projects Administration) artists. Lillie Hitchcock Coit, who had an overwhelming fondness for fire engines, provided this memorial.

A drive through Chinatown is another possibility on this bridge to bridge course. Chinatown is only 16 square blocks, but more Chinese live here than anywhere outside of Asia. The main entrance to Chinatown on Grant Avenue is guarded by stone lions on either side of an oriental arch. Grant Avenue is lined with tea rooms, shops, temples, restaurants and street performers, while the sidewalks of Stockton Avenue are overflowing with fresh produce and other groceries. You can eat the best of Chinese cuisine here in Chinatown. The crowd-pleasing Chinese New Year's parade always brings out plenty of firecrackers and the famous gold dragon.

Near Chinatown is the Financial District, also known as the "Wall Street of the West." Immortalized in ads, the Transamerica Building is the best-known of San Francisco's skyscrapers and seems to have been inspired by the pyramids of Egypt. Close by is the shopping mecca of Union Square, lined with fabulous shops and boutiques.

Just before you drive onto the Bay Bridge, you'll see the Ferry Building. Lit at night, this clock tower by the bay used to tell time for those commuting to San Francisco via ferry boats. Now the Bay Bridge links San Francisco to the East Bay. Over eight miles long, this bridge runs through Treasure Island, a man-made island created for the 1939 Golden Gate International Exposition. At one time, railroad trains once ran on the bottom deck of this bridge. The second course ends on the other side of the Bay Bridge.

Chapter 6: Course Descriptions

Course 3: Bay Bridge to San Francisco Zoo

Your third course starts on the Oakland side of the Bay Bridge. Driving across the upper deck of the bridge, you can see the waters of the bay beneath. Once across, you'll be driving mostly on freeways to reach your final destination, the San Francisco Zoo.

Going southwest on Interstate 80, you will travel above the South of Market area. This neighborhood is also known as "SoMa" in homage to the SoHo area in New York City. The entire area is undergoing a renaissance in the arts with new galleries and clubs opening almost overnight. Also below Interstate 80 is the Moscone Center, a dramatic building built in 1981. Occupying 11 acres, this mostly underground hall is distinguished by a glass-and-girder lobby at street level and a landscaped lawn over the roof.

You'll next drive south on Highway 101, which is also known as the Bayshore Freeway. The road curves around the San Francisco General Hospital. Your route will take you through the residential neighborhoods of the Mission District, Potrero Hill and Bernal Heights.

Turning west on Interstate 280, you'll parallel BART. "BART" stands for Bay Area Rapid Transit, a commuter train which carries hundreds of thousands of commuters into San Francisco daily. Reminiscent of Disneyland's monorail, BART operates streamlined cars that zip beneath, above and beside city streets. Balboa Park and the City College of San Francisco are across the highway from each other.

As you approach the coast, you'll turn onto John Daly Boulevard which will take you past the Olympic Country Club, one of the world's most beautiful golf courses. To the north is Fort Funston, a well-known spot for hang-gliding. Across the highway lies Lake Merced, a U-shaped reservoir used by joggers, rowers and picnickers. Your third course ends at last at the San Francisco Zoo.

Course 4: San Francisco Zoo to Golden Gate Bridge to Bay Bridge and back to the Zoo

The fourth and final course is a loop of the first three courses in order. You will start at the San Francisco Zoo, drive to both bridges and finish back at the zoo. Good luck!

CHAPTER 7: HEAD-TO-HEAD PLAY

The ultimate challenge in racing is pitting your driving skills against another human being. This is where head-to-head play comes in. With VETTE!, two people can race against each other on separate machines. Although each player must have his or her own registered copy of the program, the only additional equipment needed is a cable to connect the two computers or two modems to connect the computers over the phone lines.

NOTE *We highly recommend you become familiar with how to operate VETTE! in single-player mode first before attempting the two-player option.*

What you need:

Two Macintoshes that meet the previously mentioned hardware/software requirements (page 7), two registered copies of VETTE! and the following items:

- If connecting directly, you need a circular 8-pin to circular 8-pin cable

to connect each of the two Macintoshes' modem ports.

- If connecting over a phone line, you will need two Hayes-compatible modems (at least 1200 baud each).
- If connecting over an AppleTalk network, you need another Macintosh connected on the network. You will also need the appropriate networking hardware and software.

How to operate:

Direct-connect:

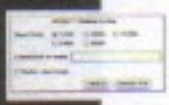
1. Connect one end of a circular 8-pin to circular 8-pin cable to the modem port on the back of your Macintosh and the other end to the modem port on the second Macintosh.
2. Each player should load VETTE!, select the Corvette they want to race in and click on the ACCEPT button.
3. If one player is not as skilled as the other, the two players can choose different difficulty levels to allow the less experienced player more of a chance to win.
4. Next, pull down the **Communications** hierarchical submenu from the **Options** menu and select the options Mac to Mac.
5. You will then be prompted to enter your name in the dialog box. The game will default to Direct Connect.
6. The opponent car you choose at the opponent selection screen will be what you see in the game for your head-to-head opponent. The other player's car, however, will perform like the Vette model he or she chose earlier.
7. After each player has selected a course to race and answered the VETTE! trivia question, you will be placed in your cars at the starting line. If the two players have selected different courses,the computer will decide the course at random between the two.

CHAPTER 7: HEAD-TO-HEAD

Connection over the phone lines:

1. Both players should hook up and turn on their respective modems before loading VETTE!
2. Each player should load VETTE!, select the Corvette they want to race in and click on the ACCEPT button.
3. If one player is not as skilled as the other, the two players can choose different difficulty levels to make the match race more even.
4. Next, pull down the **Communications** hierarchical submenu from the **Options** menu and select the option Mac to Mac. You will then be prompted to enter your name in the dialog box.
5. Next, both players should select the menu option Modem Connect.
6. The opponent car you choose at the opponent selection screen will be what you see in the game for your head-to-head opponent. The other player's car, however, will perform like the Vette model he or she chose.
7. Each player then selects one course and clicks on the ACCEPT button. The caller determines which course both players will race.

8. After answering the VETTE! trivia question, a dialog box will appear. One player should click on CALL and the other on ANSWER. The players will then get a dialog box with the following options:



Number to Dial – If you are initiating the call, you must type in your opponent's phone number here. The person who selected ANSWER should leave this option blank.

Audio Checksum – If you are having a problem with the communication setup, the computer will alert you with a beep sound if this box is checked.

Auto Answer – The person receiving the call should select the option "Auto Answer."

Manual Setup – This allows you to use the Hayes AT command set. If you choose "Manual Setup" and click OK, a new dialog box with options for baud rate, command line entry, and audio checksum will appear. You can use the "Command to send:" box to enter in Hayes AT commands. For example, you can type ATA and press (ENTER) to set your modem to auto-answer. Once both modems have connected, click the CONNECTED button.

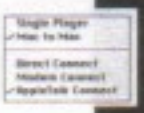
Tone/Pulse – Select which type of dialing system you are using, touch-tone or pulse (rotary) dialing.

Baud Rate – Click on the baud rate for your particular modem. The baud rate must set to be the same for both computers.

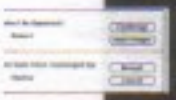
SAVE SETUP – This option allows you to save these settings for future head-to-head play.

CHAPTER 7: HEAD-TO-HEAD PLAY

Connection over a network (AppleTalk):



1. Connect the Macintoshes with the appropriate networking hardware and software, and install the registered copies of VETTE! on the machines you will be using.
2. Each player should load VETTE!, select the Corvette they want to race in and click on the ACCEPT button.
3. If one player is not as skilled as the other, the two players can choose different difficulty levels to allow the less experienced player more of a chance to win.
4. Next, pull down the ***Communications*** hierarchical submenu from the ***Options*** menu and select the option *Mac to Mac*.
5. You will then be prompted to enter your name in the dialog box.
6. Next, choose the menu option *AppleTalk Connect*.
7. The opponent car you choose at the opponent selection screen will be what you see in the game for your head-to-head opponent. The other player's car, however, will perform like the Vette model he or she chose.
8. Both players should select a course to race on and then answer the VETTE! trivia question.
9. A dialog box will then appear instructing you to choose your opponent. Find the player on the network which you wish to race against and click the CHALLENGE button to initiate the race. Click NEXT PLAYER if you wish to see other VETTE! opponents on the network. If the two players have selected different courses, the computer will decide the course at random between the two.



Talking to your opponent

If you are connected via modems or AppleTalk, you can send a message to your opponent at any time during the race. To send a message press the * key. The message will appear in a window over the game screen. The game will pause for both players while you type in your message. Once your opponent has read the message, the game will return to the same point in the race.

Post-race options

After the race is over, the winner will be honored with a celebration at the bottom of Lombard Street. The defeated player will receive the appropriate losing screen. To return to the performance garage, click the mouse button once. If neither player has altered their selections from the ***Options*** menu, you may race each other again by going through the same procedures above.

CHAPTER 7: HEAD-TO-HEAD PLAY

If you wish to return to single-player mode, go to the ***Communications*** hierarchical menu from the ***Options*** menu and select *Single Player*. Please note that selecting *Single Player* will hang up the modem if you were connected over a phone line.

Chapter 8: History of the Corvette

1953 *The first prototype of the Corvette was exhibited. The first Corvette rolled off the assembly line on June 30th.*

In February 1953, the New York Motorama displayed the first prototype of the all new Corvette. It was a white convertible powered by the 235 cubic-inch, truck-based, straight six-cylinder engine mated to the two-speed, Power Glide, automatic transmission. In order to meet the show deadline for the prototype, the designers, led by Harley Earl, decided to use a new material for the body panels. This material, Glass Reinforced Plastic (GRP), was also used in the initial production run of 300 units as an interim measure until the new metal Kirksite was available. As fate would have it, the new metal and its tooling were not to be, and the Corvette body remained GRP for the next year's run of 3,265 (of the planned 12,000 units). It is still made of fiberglass today.

The interest in the 1953 prototype was so great that Chevrolet went into production immediately, and on June 30th of that year the first unit rolled off the assembly line. Production continued with the six-cylinder engine and automatic transmission until the 1955 model year production, which saw the introduction of the 256 cubic-inch, small block V-8 engine with a three-speed, manual transmission. The 1955 production run was only 700 units, and the car was on the verge of being cancelled by Chevrolet.

1956 *The Corvette and the Ford Thunderbird challenged one another for the first time at Daytona.*

The Ford Thunderbird was introduced in 1954 for the 1955 model year. That introduction brought a new awareness to the American people of the benefits of a two-seat "personal car" and with it a new hope for the Vette. The 1956 Corvette had a restyled body shape. (Quick body panel changes were possible up to the last minute because of the GRP material being used.) This was the year that the Corvette and Thunderbird faced each other at Daytona for the NASCAR Speed week. With the help of the engine designer/driver Zora Arkus Dontov, who took over for Ed Cole, the new Corvette production car managed to reach a top speed of 150.583 mph. This impressive feat was not enough to beat the Thunderbird in the quarter-mile runs but established the car as one to be reckoned with in the racing circuit.

1957 *An added fuel injection system was designed, boosting the bhp of the Corvette. This set a new standard in automotive technology.*

In the 1957 model year, the designers added a fuel injection system to the Corvette and bored out the 265 to 283 cubic inches. The injection boosted the power of the 256 up to 283 brake horsepower (bhp), achieving the automotive milestone of one bhp per cubic inch. This was the year that Corvette raced at Daytona and Sebring with full factory support. The Sebring race was the most impressive for Chevrolet, with the win there putting the name "Corvette" on the lips of everyone in motor car racing.

CHAPTER 8: HISTORY OF THE CORVETTE

1958–62 *Drivetrain and external trim pieces were added to the Corvette.*

The 1958 through 1962 model years saw the addition of a myriad of options, both in the drivetrain and in external trim pieces. These changes caused a weight gain to over the magical 3,000 pound marker. In 1960 sales increased to 10,000 units and continued to rise to 14,531 units in 1962. These sales figures were aided by Ford's withdrawal of the Thunderbird from the market.

1962 *The engine displacement of the Corvette was increased to 327 cubic inches.*

In 1962 the engine displacement also increased to 327 cubic inches. Corvette's evolution over the first 10 years of production had emphasized the performance of the engine and transmission, without much development of the suspension. This was to be dramatically changed with the next model year.

1963 *The Sting Ray split rear window coupe was introduced.*

The Sting Ray Corvette was introduced in 1963 with a totally revised body derived from Bill Mitchell's racing efforts. It was the first year to utilize revolutionary suspension design components such as the independent rear suspension and ladder frame. This was also the first coupe available as a Corvette and the only year that Mitchell's split rear windshield was produced.

1964 *The Corvette joined the horsepower race.*

1964 marked the beginning of the horsepower race for all of Detroit's car makers. The Corvette was no exception. Matched with the new 4-speed, manual transmission, the 327 cubic-inch engine produced 375 bhp at 6200 rpm and 350 lbs/ft of torque at 4600 rpm. In the 1965 edition, a 396 ci produced 425 bhp, and the 1966 model introduced a massive 427 cubic-inch engine. This and the next year saw small styling changes and minor mechanical changes. Aside from engine output, the only major change was the introduction of four-wheel, disc brakes in 1965.

1965–66 *A 427 cubic-inch engine was introduced.*

1967 *A top speed of 192 mph was recorded at Bonneville.*

The year 1967 more or less settled the horsepower race. Corvette was declared the winner with the introduction of the L88 with its 12.5:1 compression ratio, alloy manifold and aluminum heads. The model was snatched up from dealers for a total of 20,000 sold. This monster produced 560 bhp at 6400 rpm. A privately sponsored, fuel-injected race car recorded a top speed of 192 miles per hour at the Bonneville Salt Flats in Utah.

Aerodynamic and structural improvements were the order of the day for the next several years. The sales figures and performance statistics steadily increased. John Z. DeLorean returned in 1968 to actively manage the production runs, to the record sales year of 1969 of 38,000 units. Power train and suspension improvements along with luxury amenities raised both the price and weight of the car. The biggest engine ever put in front of the

Chapter 8: History of the Corvette

firewall was introduced for 1970: the 454 ci option that delivered 390 bhp at 4800 rpm was actually 45 horsepower less than the 427 engine. The decline in horsepower per bhp was caused by the advent of emissions legislation.

1970 *A 454 cubic-inch engine debuted this year.*

For most of the 1970s, horsepower continued to decline while sales went up. Horsepower fell from 330 in 1971 to 255 in 1976 to 165 in 1978. The big engines were phased out of production in the 1974 model year. Sales figures, which remained high, totalled 37,000 in 1974 (a new record) and increased slightly in 1975. The convertible was gone in 1976. In 1978, major style revision took place with a return to the fastback shape of the mid-60s and production of the Silver Jubilee edition. Horsepower was also back on the rise, with the biggest power plant, the L82, producing 220 bhp at 5200 rpm.

1971–74 *A decline in horsepower was seen in the Corvette.*

1978 *The fastback shape of the Corvette returned.*

Only small changes were made in the following years until major re-styling occurred for the 1984 edition. The Corvette was also put on a diet, given a more aerodynamic shape and a new electronic dash. All these changes have carried over to the current models. Other evolutionary changes of the past few years have brought increased horsepower and at the same time increased fuel efficiency.

1984 *A new edition was introduced with a more aerodynamic design and electronic dash.*

The present day Vettes you will be driving have four variants: two from Chevrolet and two from after-market whiz, Reeves Callaway. This is an exciting car — powerful, strong and fast. Take care of your new car, and enjoy the thrill of racing.

CHAPTER 9: REFERENCE

Keyboard commands

Car controls	Keys
Turn steering wheel left	J or 4 (numeric keypad)
Turn steering wheel right	L or 6 (numeric keypad)
Recover from skid	K or 5 (numeric keypad)
Full stop	F
Accelerate	I or 8 (numeric keypad)
Brake	M, SPACEBAR or 2 (numeric keypad)
Accelerate and turn left	U or 7 (numeric keypad)
Accelerate and turn right	O or 9 (numeric keypad)
Brake and turn left	N or 1 (numeric keypad)
Brake and turn right	, or 3 (numeric keypad)

Views	Keys
View left	F1 or ⌘1
View forward	F2 or ⌘2
View right	F3 or ⌘3
Helicopter view	F4, ⌘4 or + (numeric keypad)
Raise view	F7 or ⌘7
Lower view	F8 or ⌘8
Change view angle up	F9 or ⌘9
Change view angle down	F10 or ⌘0

Gear selection	Keys
Gear 1	1 (top row)
Gear 2	2 (top row)
Gear 3	3 (top row)
Gear 4	4 (top row)
Gear 5	5 (top row)
Gear 6	6 (top row)
Neutral	O (top row)
Reverse	R
Upshift one gear	+ (top row)
Downshift one gear	– (top row)

NOTE

If you wish to drive a Corvette with automatic transmission, you can press A. The 1989 Stock Corvette ships with a 4-speed automatic. If you press C for cruise control, the car will maintain a constant speed. The cruise control will disengage if you press C again.

Miscellaneous	Keys
Front dash toggle	5 or z«∞
Rear view mirror toggle	6 or z«§
Automatic shift toggle	A
Buildings toggle	B
Cruise control toggle	C
Damage display	D
Engine sound toggle	E

NOTE

Press E if you wish to turn off the engine sound but leave all other sounds on.

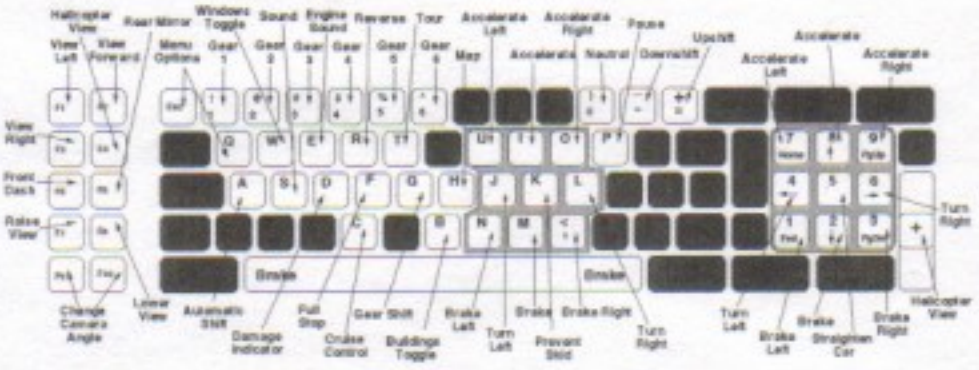
CHAPTER 9: REFERENCE

Gear shift toggle	G	
Navigation map	H	
Pause	P	
Sound toggle	S	
Tour mode	T	
Menu options	(ESC) or Q	
Quit	⌘Q	
Horizon toggle	V	(black & white version only)
Wireframe mode	W(	black & white version only)
Horn	Z	
Chat (in head-to-head mode)	9	

NOTE

You can increase your viewing area by toggling off the front dash, the rear view mirror, or both. (If the gear shift toggle is on, the game will always display the gear shift.)

VETTE! keyboard command chart



Appendix A: Car specifications

Player cars

1989 Stock Corvette
1989 ZR1 "King of the Hill" Corvette
Callaway "Twin Turbo" Corvette
Callaway "Sledgehammer" Corvette

Opponent cars

Porsche 928S4
Lamborghini Countach
Ferrari Testarossa
Ferrari F40

Appendix A: Car specifications

1989 Stock Corvette

Engine

Type	V-8, iron block and aluminum heads
Bore x stroke	4.00 x 3.48 in (101.6 x 88.4 mm)
Displacement	350 cu in (5733 cc)
Compression ratio	9.5:1
Engine-control system	GM electronic with port fuel injection
Power (SAE net)	245 bhp @ 4300 rpm
Torque (SAE net)	340 lb-ft @ 3200 rpm

Drivetrain

Transmission	4-speed automatic with lockup torque converter
Final-drive ratio	3.07, limited slip

Gear	Ratio	Mph/1000 rpm	Max. test speed
I	3.06	7.8	43 mph (5500 rpm)
II	1.63	14.7	81 mph (5500 rpm)
III	1.00	24.0	132 mph (5500 rpm)
IV	0.70	34.3	154 mph (4500 rpm)

Dimensions

Wheelbase	96.2 in
Track, F/R	59.6/60.4 in
Length	176.5 in
Width	71.0 in
Height	46.7 in
Curb weight	3313 lb
Weight distribution	51.0/49.0%
Fuel capacity	20.0 gal

Steering and brakes

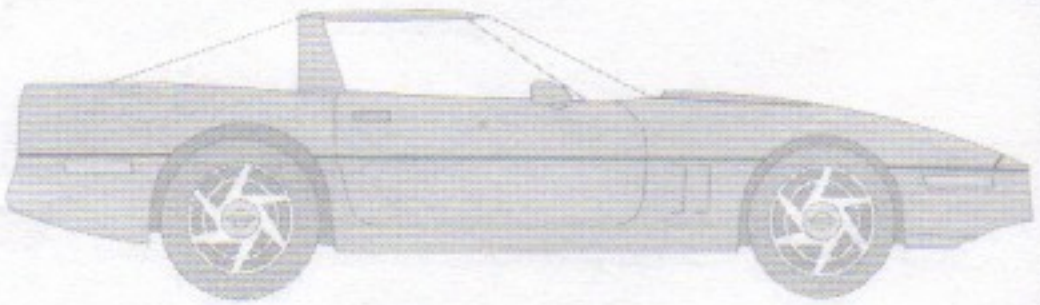
Type	rack-and-pinion, power-assisted
Turns lock-to-lock	2.0
Turning circle curb-to-curb	40.3 ft
Front brakes	12.0 x 0.8-in vented disc
Rear brakes	12.0 x 0.8-in vented disc
Power assist	vacuum with anti-lock control

Wheels and Tires

Wheel size	9.5 x 17 in
Tires	Goodyear Eagle ZR40, P275/40ZR-17

Performance

Zero to 60	5.6 seconds
Standing 1/4 mile	14.3 sec @ 95 mph
Top speed	154 mph
70.0 mph @ lockup	168 ft
Fade	none
Roadholding on skidpad	0.87g
Understeer	moderate
Suggested Retail Price	$32,000



Appendix A: Car specifications

1989 ZR1 "King of the Hill" Corvette

Engine

Type	V-8, aluminum block and heads
Bore x stroke	3.90 x 3.66 in (99.0 x 93.0 mm)
Displacement	349 cu in (5727 cc)
Compression ratio	11.3:1
Engine-control system	GM electronic with port fuel injection
Power (SAE net)	380 bhp @ 6000 rpm
Torque (SAE net)	370 lb-ft @ 4000 rpm
Redline	7200

Drivetrain

Transmission	6-speed
Final-drive ratio	3.54:1, limited slip

Gear	Ratio	Mph/1000 rpm	Max. test speed
I	2.68	7.8	56 mph (7200 rpm)
II	1.80	11.6	83 mph (7200 rpm)
III	1.31	15.6	114 mph (7200 rpm)
IV	1.00	20.8	150 mph (7200 rpm)
V	0.75	27.8	180 mph (6475 rpm)
VI	0.49	42.5	151 mph (3550 rpm)

Dimensions

Wheelbase	96.2 in
Track, F/R	59.6/60.4 in
Length	176.5 in
Width	73.0 in
Height	46.7 in
Curb weight	3500 lb
Fuel capacity	20.0 gal

Steering

Type	rack-and-pinion, power-assisted
Turns lock-to-lock	2.0
Turning circle curb-to-curb	40.3 ft

Brakes

Front	12.9 x 1.1-in vented disc
Rear	11.9 x 1.1-in vented disc
Power assist	vacuum with anti-lock control

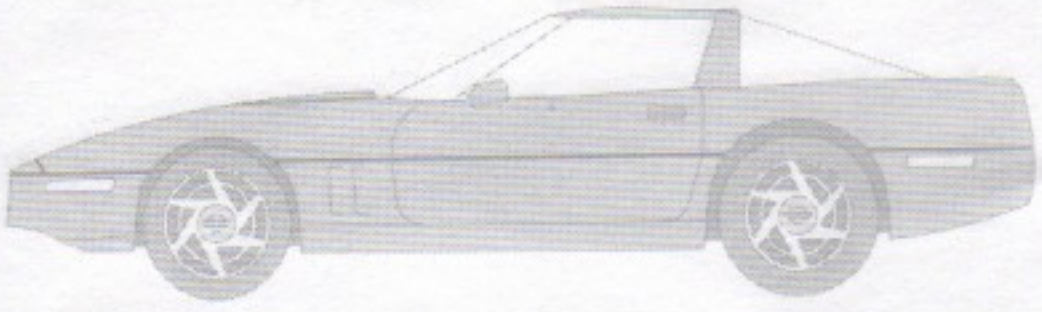
Wheels and Tires

Wheel size	Front: 9.5 x 17 in
	Rear: 11.0 x 17 in
	Goodyear Eagle
	Front: P275/40ZR-17
	Rear: P315/35ZR-17

Acceleration

Zero to 60	4.2 seconds
Top speed	180 mph

Suggested Retail Price	$50,000



Appendix A: Car specifications

1989 Callaway "Twin Turbo" Corvette

Engine

Type	twin turbocharged V-8
Bore x stroke	4.00 x 3.48 in (101.6 x 88.4 mm)
Displacement	350 cu in (5733 cc)
Compression ratio	7.5:1
Engine-control system	Callaway/Chevrolet electronic with port fuel injection
Power (SAE net)	382 bhp @ 4250 rpm
Torque (SAE net)	562 lb-ft @ 2500 rpm

Drivetrain

Transmission	6-speed
Final-drive ratio	3.54:1, limited slip

Gear	Ratio	Mph/1000 rpm	Max. test speed
I	2.68	7.8	43 mph (5500 rpm)
II	1.80	11.6	64 mph (5500 rpm)
III	1.31	15.9	87 mph (5500 rpm)
IV	1.00	20.8	115 mph (5500 rpm)
V	0.75	27.8	153 mph (5500 rpm)
VI	0.50	34.7	191 mph (5500 rpm)

Dimensions

Wheelbase	96.2 in
Track, F/R	59.6/60.4 in
Length	179.0 in
Width	71.0 in
Height	46.7 in
Curb weight	3500 lb
Weight distribution, F/R	51.0/49.0%
Fuel capacity	20.0 gal

Steering

Type	rack-and-pinion, power-assisted
Turns lock-to-lock	2.0
Turning circle curb-to-curb	40.0 ft

Brakes

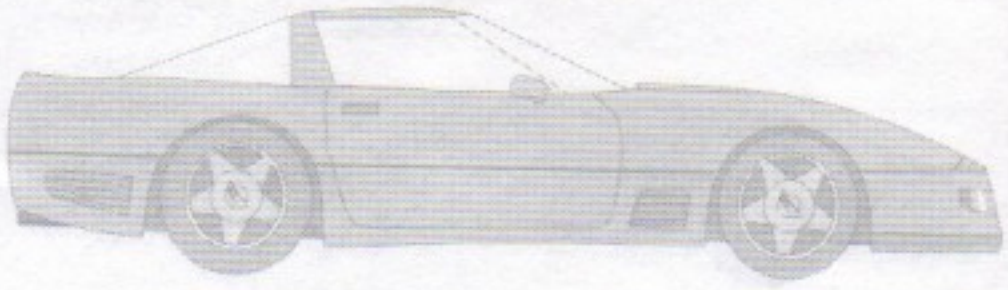
Front	12.9 x 1.1-in vented disc
Rear	11.9 x 0.8-in vented disc
Power assist	vacuum with anti-lock control

Wheels and Tires

Wheel size	9.5 x 17 in
Tires	Goodyear Eagle ZR40, P275/40ZR-17

Acceleration

Zero to 60	4.4 seconds
Standing 1/4 mile	12.9 sec @ 111 mph
Top speed	191 mph



Appendix A: Car specifications

1989 Callaway "Sledgehammer" Corvette

Engine

Type	twin turbocharged OHV V-8
Bore x stroke	4.00 x 3.48 in (101.6 x 88.4 mm)
Displacement	350 cu in (5733 cc)
Compression ratio	7.5:1
Engine-control system	Callaway/Chevrolet electronic with port fuel injection
Power (SAE net)	898 bhp @ 6200 rpm
Torque (SAE net)	772 lb-ft @ 5250 rpm

Drivetrain

Transmission	5-speed
Final-drive ratio	3.07:1, limited slip

Gear	Ratio	Mph/1000 rpm	Max. test speed
I	2.68	8.8	53 mph (6000 rpm)
II	1.80	13.7	82 mph (6000 rpm)
III	1.31	17.3	104 mph (6000 rpm)
IV	1.00	10.7	178 mph (6000 rpm)
V	0.75	43.8	254 mph (5800 rpm)

Dimensions

Wheelbase	96.2 in
Track, F/R	59.6/60.4 in
Length	176.5 in
Width	71.0 in
Height	46.7 in
Curb weight	3313 lb
Weight distribution, F/R	51.0/49.0%
Fuel capacity	20.0 gal

Steering

Type	rack-and-pinion, power-assisted
Turns lock-to-lock	2.0
Turning circle curb-to-curb	40.3 ft

Brakes

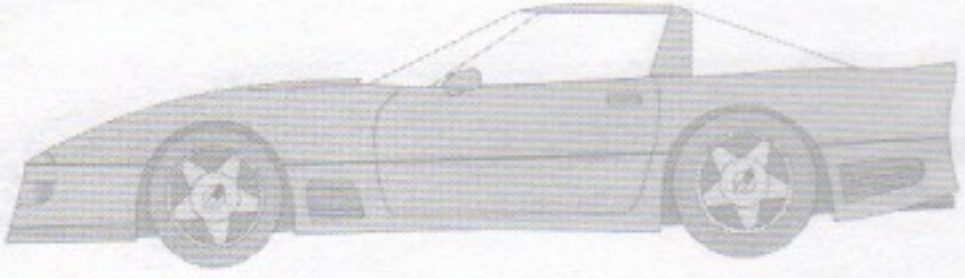
Front	13.0-in vented disc
Rear	11.5-in vented disc
Power assist	vacuum with anti-lock control

Wheels and Tires

Wheel size	9.5 x 17 in
Tires	Goodyear Eagle ZR40, P275/40ZR-17

Acceleration

Zero to 60	4.2 seconds
Top speed	254.76 mph



Appendix A: Car specifications

Porsche 928S4

Engine

Type	V-8, aluminum block and heads
Bore x stroke	3.94 x 3.11 in (100.0 x 78.9 mm)
Displacement	303 cu in (4957 cc)
Compression ratio	10.0:1
Power (SAE net)	316 bhp @ 6000 rpm
Torque (SAE net)	317 lb-ft @ 3000 rpm

Drivetrain

Transmission	5-speed
Final-drive ratio	2.20:1

Gear	Ratio	Mph/1000 rpm	Max. test speed
I	4.07	8.0	49 mph (6100 rpm)
II	2.71	12.0	73 mph (6100 rpm)
III	1.93	16.8	102 mph (6100 rpm)
IV	1.46	22.2	135 mph (6100 rpm)
V	1.00	32.5	162 mph (5000 rpm)

Dimensions

Wheelbase	98.4 in
Track, F/R	61.1/60.9 in
Length	178.1 in
Width	72.3 in
Height	50.5 in
Curb weight	3525 lb
Fuel capacity	22.7 gal

Steering

Type	rack-and-pinion, power-assisted
Turns lock-to-lock	3.0
Turning circle curb-to-curb	37.7 ft

Brakes

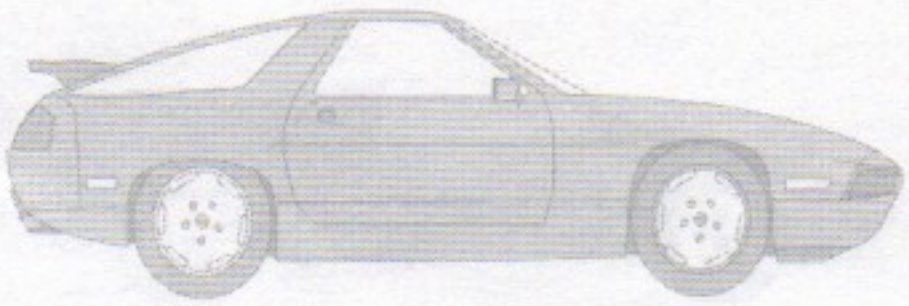
Front	12.0 x 1.3-in vented disc
Rear	11.8 x 0.9-in vented disc
Power assist	vacuum with anti-lock control

Wheels and Tires

Wheel size	Front: 7.0 x 16 in
Rear:	8.0 x 16 in
Tires	Dunlop SP Sport D40
Front:	225/50VR-16
Rear:	245/45V-16

Acceleration

Zero to 60	5.7 seconds
Standing 1/4 mile	14.1 @ 100.7 mph
Top speed	165 mph
Suggested Retail Price	$58,900



Appendix A: Car specifications

Lamborghini Countach

Engine

Type	DOHC 4-valve V-12
Bore x stroke	3.37 x 2.95 in (85.5 x 75.0 mm)
Displacement	315 cu in (5167 cc)
Compression ratio	9.5:1
Power (SAE net)	425 bhp @ 7000 rpm
Torque (SAE net)	368 lb-ft @ 5200 rpm
Redline	7200

Drivetrain

Transmission	5-speed
Final-drive ratio	3.21:1

Gear	Ratio
I	2.32
II	1.62
III	1.09
IV	0.86
V	0.71

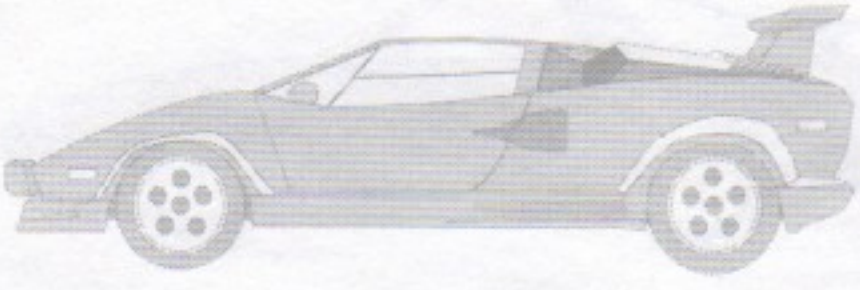
Dimensions

Wheelbase	98.4 in
Track, F/R	60.5/63.2 in
Length	165.4 in
Width	78.7 in
Height	42.1 in
Curb weight	3285 lb
Fuel capacity	31.7 gal

Acceleration

Zero to 60	4.7 seconds
Zero to 100	10.8 seconds
Standing 1/4 mile	12.9 @ 110.0 mph
Top speed	179 mph

Suggested Retail Price	$116,000



Appendix A: Car specifications

Ferrari Testarossa

Engine

Type	DOHC 4-valve flat-12
Bore x stroke	3.23 x 3.07 in (82.0 x 78.0 mm)
Displacement	302 cu in (4942 cc)
Compression ratio	8.7:1
Power (SAE net)	380 bph @ 5750 rpm
Torque (SAE net)	354 lb-ft @ 4500 rpm

Drivetrain

Transmission	5-speed manual
Final-drive ratio	3.21:1

Gear	Ratio	Max. test speed
I	3.14	50 mph (6800 rpm)
II	2.01	75 mph (6800 rpm)
III	1.53	103 mph (6800 rpm)
IV	1.17	134 mph (6800 rpm)
V	0.88	181 mph (6800 rpm)

Dimensions

Wheelbase	100.4 in
Track, F/R	59.8/65.4 in
Length	176.6 in
Width	77.6 in
Height	44.5 in
Curb weight	3660 lb

Steering

Type	rack-and-pinion
Turns lock-to-lock	3.4
Turning circle curb-to-curb	39.4 ft

Brakes

Front	12.2-in vented disc
Rear	12.2-in vented disc
Power assist	vacuum

Wheels and Tires

Wheel size	Front: 16 x 8 in Rear: 16 x 10 in
Tires	Goodyear Eagle VR50 Front: 225/50VR-16 Rear: 255/50VR-16

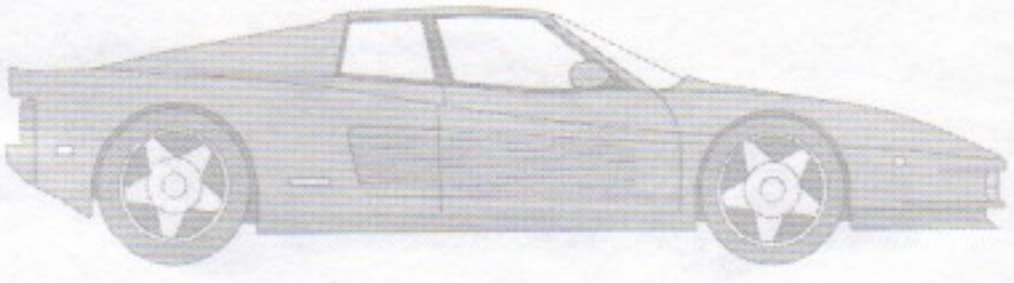
Acceleration and braking

Zero to 60	5.4 seconds
Standing 1/4 mile	13.3 @ 107.0 mph
Top speed	181 mph
80.0 mph @ lockup	242 ft
Fade	None

Handling

Roadholding on skidpad	0.87 g

Suggested Retail Price	$126,600



Appendix A: Car specifications

Ferrari F40

Engine

Type	Turbocharged and intercooled V-8 aluminum block and heads
Bore x stroke	3.23 x 2.74 in (82.0 x 69.5 mm)
Displacement	179 cu in (2936 cc)
Compression ratio	7.8:1
Engine-control system	Weber-Marelli IAW with port fuel injection
Power (SAE net)	471 bhp @ 7000 rpm
Torque (SAE net)	426 lb-ft @ 4000 rpm

Drivetrain

Transmission	5-speed
Final-drive ratio	2.73:1, limited slip

Gear	Ratio	Mph/1000 rpm	Max. test speed
I	3.70	7.8	60 mph (7750 rpm)
II	2.30	12.6	98 mph (7750 rpm)
III	1.64	17.7	137 mph (7750 rpm)
IV	1.28	22.6	175 mph (7750 rpm)
V	1.02	28.4	201 mph (7100 rpm)

Dimensions

Wheelbase	96.5 in
Track, F/R	62.8/63.4 in
Length	174.4 in
Width	78.0 in
Height	44.5 in
Frontal area	19.9 sq ft
Curb weight	2650 lb
Weight distribution, F/R	49.0/51.0%
Fuel capacity	31.7 gal

Steering

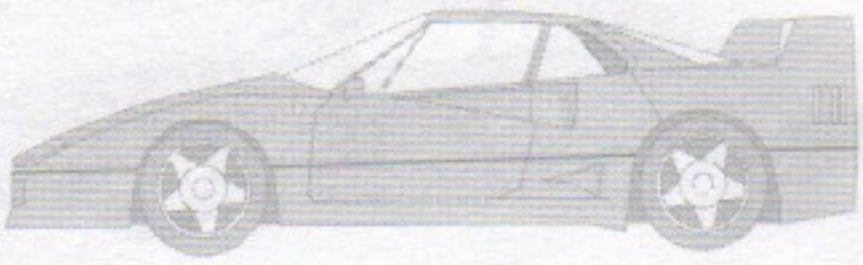
Type	rack-and-pinion
Turns lock-to-lock	2.9
Turning circle curb-to-curb	39.4 ft

Brakes

Front	13.0 x 1.2-in vented disc
Rear	13.0 x 1.2-in vented disc
Power assist	none

Wheels and Tires

Wheel size	Front: 8.0 x 17 in Rear: 13.0 x 17 in
Tires	Pirelli P Zero Front: 245/40ZR-17 Rear: 335/35ZR-17
Suggested Retail Price	$260,000



Appendix B: Glossary

Aspect ratio — generally the ratio between two dimensions of an object. In tire terminology, it applies to the unloaded sidewall height of the tire divided by its overall width. A lower aspect ratio implies a shorter, wider tire.

Bore — the diameter of a cylinder.

Brake torquing — a procedure generally used in performance tests to improve the off-the-line acceleration of a car equipped with an automatic transmission. It is executed by firmly depressing the brake with a left foot, applying the throttle with the car in gear to increase engine rpm, then releasing the brakes. Brake torquing is particularly effective with turbo-charged cars because it helps overcome turbo lag.

Chassis — a general term that refers to all of the mechanical parts of a car attached to a structural frame. In cars with unitized construction, the chassis comprises everything but the body.

Compression ratio — the ratio between the combined volume of a cylinder and a combustion chamber when the piston is at the bottom of its stroke and the volume when the piston is at the top of its stroke. The higher the compression ratio, the more mechanical energy an engine can squeeze from its air-fuel mixture. Higher compression ratios, however, also make detonation more likely.

Crankshaft — a shaft with one or more cranks, or "throws," that are coupled by connecting rods to the engine's pistons. Together, the crankshaft and the con rods transform the piston's reciprocating motion into rotary motion.

Cylinder — the round, straight-sided cavity in which the pistons move up and down. Typically the cylinder is made of cast iron and formed as part of the block.

Cylinder head — the aluminum or iron casting that houses the combustion chambers, the intake and exhaust ports, and much or all of the valvetrain. The head is always directly above the cylinders.

Cylinder liner — the circular housing that the piston moves in when the cylinder is not an integral part of the block. Also known as a "sleeve."

Differential — a special gearbox designed so that the torque fed into it is split and delivered to two outputs that can turn at different speeds. Differentials within axles are designed to split torque evenly; however, when used between the front and rear axles in four-wheel drive systems (a center differential), they can be designed to apportion torque unevenly.

Disc brakes — properly called caliper disc brakes, a type of brake that consists of a disc that rotates at wheel speed, straddled by a caliper that can squeeze the surfaces of the disc near its edge.

Appendix B: Glossary

Drivability — the general qualitative evaluation of a powertrain's operating qualities, including idle smoothness, cold and hot starting, throttle response, power delivery, and tolerance for altitude changes.

Fiberglass — a composite material that relies on small glass fibers for its strength.

Final-drive-ratio — the reduction ratio, found in the gearset of a drivetrain, that is furthest removed from the engine. Typically, this is the differential ratio.

Fuel injection — any system that meters fuel to an engine by measuring its needs and then regulating the fuel flow, by electronic or mechanical means, through a pump or injectors.

Gearset — a group of two or more gears used to transmit power.

Handling — a general term covering all the aspects of a car's behavior that are related to its directional control.

Horsepower — the common unit of measurement of an engine's power. One horsepower equals 550 foot-pounds per second, the power needed to lift 550 pounds one foot off the ground in one second or one pound 550 feet in the same time.

Instruments — the displays on the dashboard that communicate information about the mechanical operations of the car.

Lockup — the point at which a tire starts to skid during braking.

Neutral steer — a cornering condition in which the front and rear slip angles are roughly the same.

On-center feel — the responsiveness and feel of the steering when the wheel is approximately on center.

Power — the rate at which work is performed. The power is proportionate to torque and rpm and is measured in horsepower.

Roadholding — the ability of the car to grip the pavement.

Series (tire) — the numerical expression of a tire's aspect ratio.

Skidpad — a large area of smooth, flat pavement used for various handling tests.

Torque — the rotational equivalent of force, measured in pound-feet.

Turn-in — the moment of transition between driving straight ahead and cornering.

Understeer — a handling condition in which the slip angle of the front tires is greater than the slip angle of the rear's. Also referred to as "push."

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