# F-Zero X FAQ/Strategy Guide

by WMJ

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This guide is writting in accordance with the Driving Mechanics and Moves video tutorial that's in the video section on this site.

**Table of Contents**



## About me:

I am WMJ, a big fan of the game F-Zero X and long time member of F-Zero Central, the online community for F-Zero games. I have been involved in the online time attack competition for this game since around 2001 all the way up until now, 2017. I was the champion for F-Zero X back in 2010 and I still hold several world records. In this guide, I hope to share all the knowledge I have gathered over the years to help you get familiar with everything this game has to offer. Be sure to check out the video demonstration that will help clarify all the advanced moves that are discussed below.

F-Zero X is a very challenging game and many very detailed and advanced moves are discussed below. For those of you, who are new to this game, don't forget the basics. That is what the first part of this guide focuses on. All the advanced moves are only the icing on the cake but first you need to have cake! Take it step by step and take your time and before you know it, you will be an F-Zero X master!

## General intro

Welcome to this guide for the game F-Zero X.

F-Zero X is a futuristic racing game that was first released on the Nintendo 64 during July 1998 in Japan, and later that year in the rest of the world. It was developed by staff of the Nintendo Entertainment Analysis & Development (or EAD) section at the headquarters of Nintendo in Kyoto. Some of the key staff members include: director Tadashi Sugiyama, chief artist Takaya Imamura, lead programmer Keizo Ohta and sound composer Taro Bando. In 2000 an Expansion Kit was released for the Nintendo 64 Disk Drive that included the track design tool the staff had used for the creation of the tracks in the game, a ship design tool, 2 new cups and an extended soundtrack in full stereo.

F-Zero X is very challenging racing game with some very deep gameplay. Many guidebooks have been released which include 9 dedicated books in Japan alone [picture]. Considering this is a racing game and not some long RPG, this fact is quite illustrative for the challenge this game provides and how the deep the driving mechanics are.

In this tutorial I will first fully cover the driving mechanics of F-Zero X. Once those are out of the way, I will provide detailed and in depth explanations of all the moves and advanced driving techniques this game has to offer.

## Driving mechanics

### *Efficient Driving*

Efficient driving is a key technique to master in F-Zero X. With efficient driving, you aim to drive the shortest lines possible and try to minimize your steering as much as you can in the process. When turning in F-Zero X you always want to be as gentle as possible with your movements. Every steering move you make when driving, will decelerate the ship to some extent. Therefore, it is critical to drive in as many straight lines as possible, to maintain your speed. When you do have to steer, do it gently to keep your grip and avoid over steering. Great tracks to practice this on are Mute City (1) and Silence, with a grip oriented driving style.

Along long turns, try to steer gently but do take into account it is often better to really take the inside of a corner and go right along its apex than it is to minimize your steering in these situations. Make sure to align the ship on a good angle after a sharp turn, to start accelerating away from it as soon as you can.

It is good to keep in mind that F-Zero X was released on the Nintendo 64, and optimized for use with the Nintendo 64 controller, with that control stick range and sensitivity in mind. It is my experience that if you play F-Zero X on other platforms with other types of controllers, that you will seriously handicap yourself. Often, the control stick range and sensitivity of control sticks on other platforms is way off, which makes it more difficult than it should be to keep good efficient driving lines.

### *Machine Settings: Driving Styles Grip versus Drift*

Before every race you are faced with the choice of what ship settings you will use. This is a very important choice to consider and one that will have a major impact on what driving styles will be effective. Let's take a look at the settings gauge. The settings gauge is divided into 15 sections, from – 7 of neutral up to +7 of neutral. The more your settings are towards -7, the faster your acceleration will be and the more effective drifting will become. On the other end of the spectrum, the more the settings are towards +7, the slower your acceleration will be and the higher your unboosted top speed (also called base speed). At high top speed settings, the more important grip will become as breaking grip on those settings will lead to rapid deceleration.

It is important to consider that the 2 settings directly affected by the settings gauge are the unboosted top speed (base speed) and the rate of acceleration.

### What is unboosted topspeed:

Unboosted top speed (or base speed) could be defined as the top speed your ship will eventually reach when driving uninterrupted on a flat surface and where the accelerating and decelerating forces on the ship are in equilibrium.

To put it in other words: If you are at a lower speed than your base speed, the ship will be in an accelerating state when you hold gas and drive in a straight line. When driving above the base speed, the ship will be in a decelerating state when you hold gas and drive in a straight line.

From this definition it can easily be understood that the ships decelerating rate is directly connected to the ships unboosted top speed. In other words: settings more tuned towards top speed will result in better speed maintenance (or slower deceleration) at high velocities.

A great way to get a quick approximation of your ships unboosted top speed at any specific setting is to drive in a completely straight line on Silence. Halfway through the dash plates section your speed will start to approach it.

To get a good idea of what settings are useful in most situations, take a look at this overview of all staff ghost times, on every track, with the matching settings. Most of the settings shown in this overview are not the absolute best you could choose; but all of them are quite close. This should give you a good idea of what you should be aiming for when you start your journey of beating them all.

A hidden mechanic heavily affected by the settings gauge is the ships floating ability. This has a huge impact on many strategies in the game where dives can be an integral part. The faster your acceleration is, the better the ships floating ability becomes. Your floating ability could be defined as the ship's ability to maintain height when airborne. The higher your acceleration settings are, the slower your deceleration rate will be when flying upwards. As more complicated strategies are often highly dependent on gaining height for setting up big dives or Â flying through the air for longer periods of time, a good floating ability and thus matching acceleration settings can be essential. More on floating will be covered later in the moves section of this tutorial.

Finally, a hidden mechanic only subtly affected by the settings gauge is the machine's grip. On average, +1 tick (for instance from 0 to 1) increases grip byÂ ~1/27Â of a gripÂ point. Thus, the difference of the full settings gauge between -7 and +7 settings is about 1/2 of aÂ grip point. This means that settings at high acceleration cause the machine to have slightly less grip and vice versa. This stacks with the effects the weight of a ship has on its grip and with the ships grip rating.

One last effect worth mentioning is that higher grip makes you get knocked around less in collisions with other machines, but the difference it makes, while somewhat tangible, is tiny.

## *Machine Weight*

Machine weight is something that has many subtle effects on driving as well as some very obvious ones.

The first effect weight has, is on the ship's acceleration and base speed. Heavier ships will have a higher base speed and a slower acceleration at identical settings to lower weight ships. You could of course just adjust the settings gauge to compensate for the effects of ship weight. Well, it's not quite as simple as that. It turns out that from -7 all the way up to about +5 on the settings gauge, the ship with the lowest weight, the Twin Noritta, will always have the fastest acceleration in the game as demonstrated in the acceleration test that is playing now. Above +5 on the settings gauge however, things become a different story. The settings gauge will start to have a disproportionately large effect on acceleration compared to weight at this point. Red Gazelle, Death Anchor or even Black Bull will have a faster acceleration with the same base speed as Twin Noritta at settings close to +7.

It is important to note that the only factor that determines the deceleration rate of the ship on the ground, is the ship's base speed. With settings leading to equivalent base speeds, heavy weight and low weight ships will decelerate exactly equally as fast. This is also true when traveling up slopes. Because of this, weight does not have a direct impact on the deceleration rate, only the base speed does. That said, base speed is closely connected to the weight of the ship. That means that at full -7 acceleration settings that you would use for drifting heavyweight ships will have a slightly higher base speed and thus slower deceleration. The higher the speed you are travelling at is above the ship's base speed, the faster the deceleration rate becomes. Only at speeds just above the base speed, do the different deceleration rates really have any sort of noticeable impact.

Another effect weight has, is on the ship's turning ability and grip. To put it simply, heavier ships will turn slower and have more grip. The effects of weight on grip are additive to the effects the settings gauge and grip rating already have. In other words, the highest possible grip is with the heaviest ship, Black Bull, at +7 settings. Heavy ships have a wider turning circle for both regular turns as well as for side attack turns which will be discussed in more detail later. Consequently, it is also harder to break grip with heavy ships. To be more precise, every 300 kg will be equivalent to an additional grip point for the ship, so that really adds up. The Crazy Bear, with its heavy weight and E grip rating actually has a better grip than the low weight Space Angler, with A grip rating!

To avoid confusion, I will mention here that these effects on grip have no effect on drifting ability. In fact, heavyweight ships are able to pick up slightly more speed when drifting than lower weight ships, completely independent of base speed. Drifting will be discussed later in more detail.

By far the largest effect weight has on ship performance, is on the ships floating ability. As you may have guessed, low weight ships will be much better at floating and air maneuvers than heavyweight ships. While the most important factor that affects floating may be the settings gauge, weight has a very large impact too. Low weight ships will decelerate in the air much slower than heavy weight ships and will be able to maintain height far longer, especially at full -7 acceleration settings.
Â Heavyweight ships will quickly sink like a brick. More complicated strategies and diving maneuvers often involve gaining height rapidly to prepare for a dive, or floating through the air to take a shortcut for long periods of time. For racing strategies like this, low weight ships will perform much better. This is one of the main reasons why the Hell Hawk, more so than the very similar Night Thunder, and the Twin Noritta, more so than the very similar Red Gazelle, are very popular ship choices for many tracks.

The increased turning ability low weight ships have has a large consequence for the advanced technique, Double-Tap Dives, that uses Side Attacks to accelerate rapidly through the air during dives. Low weight ships can pick up speed slightly faster during this move which makes them even more desirable for any strategy with advanced diving techniques. More on Double-Tap Dives later in this tutorial.

Weight does not have any significant impact on the body or boost stats of the ship. That said, heavyweight ships do get knocked around less when in collisions with other ships and have to ability to knock around lower weight ships more. This is of course very useful in Death Race or Multiplayer.

## *Refill Zone*

The refill zone, sometimes called the 'refiller' or "the pink stuff" is the pink strip on the road that recharges your energy meter. This is pretty straightforward and it goes without saying you will always want to drive through this, as much as possible, without losing time. A misconception that some players may have is that boosting in the refill zone doesn't take away energy. Indeed, when driving at full energy and boosting through the refill zone, the energy refilling rate is faster than the rate the boost takes to deplete your energy so you will virtually stay at full energy as long as you are in the refill zone. However, if you do not have full energy, boosting in the refill zone will slow down the rate your energy refills, accordingly.

## *Dash Plates and Manual Boosting*

Boost Power is the tradeoff of energy for a boost that increases your speed. Boost power becomes available from lap 2 onwards. Dash plates form the yellow arrows on the tracks that give you a boost when driving over them without any energy cost to them. Of course, that's a great thing and you'll naturally want to catch as many of these as possible. However, there are some things to take into consideration. For starters, dash plates will only give a C class boost, regardless of the machine's boost rating. In some circumstances, when you drive a ship with a B or A class boost and you have the energy to spare, it may actually be better to avoid the dash plates and boost manually instead. Moreover, not all dash plates are equal. Some dash plates are much larger than others in size. An example of very large dash plates is on the first track, Mute City. Large dash plates often take more than 1 frame to pass from one end of their hitbox to the other. On Mute City, it is therefore actually faster to take a slightly wider driving line and pass over the full length of the dash plate to benefit from as many frames of boost as you can. This will allow you to build significantly more speed than if you take the absolute inside of a turn and only briefly touch the dash plate for 1 frame.

An important aspect to consider for the more advanced players, is that boost will have no effect whatsoever, when travelling at speeds over 2000 km/h. This is actually pretty significant, because the higher the speed is above the base unboosted top speed, the faster the deceleration on the ground will be. Obviously, speeds above 2000 km/h will be well above any ships base speed. Boosting will slow down the deceleration quite significantly. In many of the fastest strategies that are being used during time attacks, there will be plenty of times when you will travel at these kinds of speeds. It is therefore often useful to boost immediately when the ship's speeds falls below 2000 km/h to maintain these high speeds for as long as possible. In fact, many times you will want to chain boosts to avoid the rapid deceleration when traveling above the ship's base speed without boost. This is almost always faster than spreading out your boosting spots all over the track.

As a small footnote, the 2000 km/h boosting limit is equal on the NTSC and PAL versions of this game, despite the PAL version running at lower speeds. The PAL version is the game that was released in Europe and Oceania. In fact, 2000 km/h on the PAL version is equal to 2400 km/h on the NTSC version. This means that comparatively, the players of the PAL version have more effective boosting powers at high speeds and therefore are advantaged on tracks where you can reach these kinds of speeds.

## *Checkpoints*

You may have noticed when playing F-Zero X, that you can't just take a big shortcut and land on another part of the track from a jump. Chances are you passed right through the track or the game made you crash even before reaching there. The reason for this, is that F-Zero X tracks are made of checkpoints with pieces of track between that connect them. When you are racing, you have to pass all the checkpoints in order to complete a lap. In this way, you can't just skip a large portion of the track or even fly around the starting line.

There is some liberty to take with checkpoints, however. You could say that each checkpoint has a certain sphere around it, that you have to pass through to make it count. This sphere can vary considerably for each checkpoint, but there will always be some room to fly over, under or next to it. On most checkpoints, you can actually fly quite far off to the side of them and still make them count. It is especially the checkpoints at the apex of corners that will limit your ability to just take huge shortcuts. Additionally, there are some checkpoints with a rather limited height tolerance. So, there may be times when you are flying straight over a checkpoint, following the track, but the game makes you crash anyway. A notable example is the checkpoint on top of the big jump on White Land. If you jump too high over it from the last jump plate, the game just makes you crash which really limits your ability to set up a big dive.

## *Jump Plates*

Jump plates (sometimes called jump bars) are red plates that are present on the tracks Mute City 2, White Land and Mute City 3, that launch the ship into the air when you drive over them. They provide a great opportunity for a nice speed boost, shortcut or even very advanced air acrobatics.

In the simplest form, you just drive over them for a nice jump and small speed boost. There is actually a trick to this to get more speed out of them than you usually would. If you hit the jump plate while fully holding up on the control stick (like you were diving down quickly in the air) and then let go of the control stick to set it to its neutral position, right after hitting the jump plate while you are being launched upwards, you will get the most speed out of them. By keeping the control stick in neutral position, you will get a lot of distance from the jump. Pretty much like what would happen if you had held the control stick in neutral position for the entire duration of the jump. The trick is that, by initially holding up on the control stick, you also get the fast acceleration through the air you would get, if you would dive down quickly from the jump. Combined with the added distance and longer jumping time, this is a winning combination. Try it out on Mute City 2 and see what difference it makes!

Jump plates do come with a glitch that can have some devastating consequences to your race. The hitbox of a jump plate is not very big. Consequently, if you go fast enough it is possible to completely pass through it between 2 frames. If you go fast enough to be in front of the hitbox on one frame and already past it on the next one, this will prevent the game from registering that you ever even hit it. It goes without saying that the faster you are going, the more likely it is that this will occur. For this reason, new players to the game will most likely never or very rarely experience this at all. On the other hand, more veteran players that have mastered some of the advanced diving mechanics of this game, are often pulling their hairs out in frustration on tracks like Mute City 3 where you will want to hit some jump plates at near the max speed of the game, 3000 km/h.

Indeed, in many advanced strategies jump plates can be used for some impressive air acrobatics that lead to some of the fastest diving maneuvers you will see in this game. In fact, the best players will chain the diving maneuvers from several jump plates together, by taking the high landing speed from the first jump plate to take off much higher from the next one. This is at the core of what many of the best players often try to accomplish with the fastest strategies, make long chain reactions of complicated moves that would impossible in isolation. That leads to the next topic:

## *Chain Reactions*

In the more advanced strategies used during F-Zero X races, it is very common to chain 2 or 3 moves together. A chain reaction like this is only possible by taking along the speed from the first move to allow for the possibility of the second move and so on. For instance, you would use a drift to get enough speed to lift off from the track so you could do a subsequent dive that would have otherwise been impossible. In the most extreme cases, the entire race can be seen as one big chain reaction like on Fire Field. This is only the case for the most advanced strategies that you could use on this track and for this reason I believe it is the hardest strategy in the game to perform. Do not worry about doing any of the moves shown in the demo here. After the next section which will explain all the moves in detail, you will be able to name and understand every move shown in this clip.

## Moves

### *Side Attack Cornering (Double-Tap Turning) [DT turning]*

Although side attacks are fundamentally used for attacking your enemies, they do have many other useful applications. Among the various usages, one of the most useful is using the side attack for cornering, a technique that is useful in many ways. For this application, you use a rapid succession of side attacks to aid the ship around a corner and keep grip in the process for a minimal speed loss. In circumstances where you can't get around a corner using just your machine's baseline grip, you can side attack and create a better angle for you to squeeze around it.

An important subtlety for the use of side attacks during cornering is the timing of the side attacks. If side attacks are started before cornering, you will be able to preserve a lot more speed than when you use them halfway through a corner. The more you steer into the corner before side attacks, the more speed you will lose but also the sharper you will be able to take it. In some extreme examples, when you approach sharp corners at high speed, it may be necessary to break grip and steer into the corner sharply before side attacking to go around it. This is something preferably only used in specific situations, when no other option is viable. In most cases, you will want to keep grip and only start steering at the start of the first side attack. During side attacks, feel free to steer as sharply as possible through the corner.

While double tapping R for right side attacks or Z for left side attacks is sufficient to perform a side attack, additional R or Z presses do allow you to take the corner even sharper. This works all the way up to 30 presses per second (every other frame as this game is 60 fps). If you press faster than that, the game will count it as holding down the button which doesn't work as effectively (but still better than no additional R or Z presses).

Another aspect to take into consideration is that machines with low grip, DT turn sharper than machines with high grip. Consequently, machines with lower weight will DT turn sharper than heavier machines with identical grip ratings.

A note on side attack cornering is that this technique is sometimes referred to as 'jumping'. I will not use that term myself in this tutorial because I think it can be confusing. The term 'jumping' was first coined by a guide of the British N64 magazine back in their January 1999 issue, where they referred to using side attacks as 'jump the corner'. Later, players adopted this term to refer to the grip driving style as driving a 'jumper'; because you always want to stay in grip and frequently use side attacks to take turns. I personally think this is confusing because no matter what driving style you have or what settings you have chosen, using side attacks to turn is something that is always very frequently used.

### *Spin Attack [SA]*

A spin attack is a move purely used for confrontations that functions as a great offence as well as a great defense, to impacts from other ships. It works by holding down R and double tapping Z or holding down Z and double tapping R. This move can also get you around some sharp corners quite well, but you will lose some significant speed so there are always better options. As far as time attack is concerned, this move has no real purpose. In GP however, you can try doing a spin attack as you dive down to take some ships out in the air for some cool effects. In multiplayer, when the race is already lost, you can try parking at some narrow section of road and continually spin attack to take out your opponents as they pass.

### *Slide Cornering [SC]*

Slide cornering is a largely useless move that may only come in useful for beginner players. During Slide cornering you hold the R button down for a right corner and the Z button for a left corner. This will allow taking turns sharply without breaking grip. This move is mostly obsoleted by side attack cornering as you will lose less speed via side attacks and side attacks also allow you to take corners sharper. Slide cornering is not to be confused with drifting, which is one of the most powerful and useful moves in the game as will be discussed later.

### *Blast Turning [BT]*

Blast Turning is done by quickly tapping the accelerator during a turn. This is another way to prevent the ship from losing grip at minimal speed loss. While this is one of the main techniques of cornering on the Super Nintendo version of F-Zero, in F-Zero X this is something you only do for some minor adjustments. Generally, the only cases you will want to use this technique is if regular steering almost, but not quite, cuts it to take a corner while keeping your grip. Doing a side attack in this case will decelerate the ship more than a quick tap on the accelerator. It is also a good technique to use when you do accidently lose your grip, for a quick recovery.

This technique is a lot more useful when used in combination with the Air Ground Glitch, which is an advanced technique that will be discussed later.

### *Drifting [Sliding]*

Drifting truly is one of the most powerful and useful moves in the game. On top of that, it is a lot of fun to do. It will most likely take some serious practice to master drifting, so do come prepared. If you do however, you will really blow the computer away on any difficulty in GP and most staff ghosts will become a total piece of cake. In addition, good drifting will open up huge box of tricks of additional moves. It is truly worth the effort to get this one under your belt.

Breaking grip at high acceleration settings will let you accelerate quickly with drifting. More specifically, this is effective in the speed range of up 1000 km/h with unboosted drifting and up to about 1600 km/h with boosted drifting. At any speeds higher than that, it is better to keep grip to maintain your speed.

A drifting turn is done by holding the R shoulder button on a turn to the left or the Z trigger on a turn to the right. It is thus opposite of slide cornering. By doing this, the ship will break grip and will start to turn into the corner. This is what could be called, the preparing phase, in which the ship will first decelerate while the nose the ship is turning toward the direction of the corner you are approaching. In the next stage, the ship will begin to drift into the corner while simultaneously accelerating. The last phase is the exit of the drifting motion after the corner. You do this by counter steering to the opposite direction of your drift to move the nose of the ship into a

straight position again and regain grip. Alternatively, side attacks are often used at the end of drifts, in combination with counter steering to regain grip. The reason why a side attack may be preferable is that you can extent the drifting motion all the way to the very edge of the track, which allows you to gain the most benefit from the acceleration during the drifting motion. The side attack is then necessary to pull the ship back towards the middle of the track and to straighten out.

When setting up the drift it is often optimal to start out wide, on the opposite part of the road to the corner. Start the preparing phase before the corner and then drift into it sharply. Ideally, you will get close to almost touching the apex of the corner. After the apex, drift out wide again and aim to both, extend the drift for as long as possible, and take a nice wide angle to end up close to the edge of the road again when you exit the drift. The best track to really practice this movement to optimize drifting well is on Big Hand.

Ideal corners for drifting are long, sharp and wide enough for the ship to complete the drifting motion. My recommendation is to practice this move initially on the tracks: Silence 2, Rainbow Road and Devil's Forest 3 as they have many long corners, ideal for drifting. It will definitely take you some practice to get a good feeling for it, but trust me, it will be worth it.

Another method for starting drifts, involves using a side attack extended into a drift. This may seem like a bit of a useless move but it is surprisingly useful. You do the Side Attack by double tapping the same button you would use for the drift and then just hold it down on the second press. By doing a side attack first, you get more control over the starting position of the drift as you can use it as an opportunity to quickly move the ship to the opposite side of the road, which makes is possible to take the corner optimally. Additionally, the side attack makes the preparing phase of the drift a bit shorter. In many cases, you only have limited time to prepare the ship for the drifting position and shortening the preparing phase can help take on difficult corners as well as shorten the decelerating phase of the drifting move. It's really pretty easy to do, so it's good to get this into your toolbox as soon as you start to learn drifting.

The effectiveness of drifting is greatly impacted by the ships grip rating. The lower grip rating it has, the more effective drifting becomes. In other words, the only ships that really qualify as good drifters have an E grip rating with some rare exceptions for D and C grip ratings. Great ships for drifting include the Hell Hawk, Night Thunder and Crazy Bear. In some exceptional cases when there is a lot of floating and other airborne moves going on and comparatively little drifting, you will want to consider the Wonder Wasp with its D grip grating or even the Twin Noritta with its C grip rating.

Acceleration also has a big impact on drifting as far as the settings are concerned. So much so, that I would always recommend full -7 settings to take full advantage of the drifting power. This outweighs any negative effects it has on a lower unboosted top speed than, let's say, -5 settings.

The ship's weight also has a small impact on drifting power. Perhaps counter intuitively, heavy ships accelerate faster during drifting, despite having slightly more grip. It is important to note that these effects are really quite marginal, so this will not have a very significant impact on the time you could get from a race. Noteworthy is that heavy ships have a higher unboosted top speed but a slower acceleration at the comparable full -7 setting.

When comparing the Night Thunder and Hell Hawk, the difference in acceleration at the start of the race really amounts to just about 2 hundredths of a second in favor of the Hell Hawk. The Night Thunder is able to pick up just a few km/h more on comparable drifts. This is something to take into consideration when picking your ship as the very marginally higher unboosted top speed of the Night Thunder can mean that, on some flat tracks such as Big Hand and Devil's Forest 3, it is the theoretical fastest ship for a drifting strategy.

That said, it becomes a whole different story when picking a ship for drifting when diving and floating is a part of the race plan. In that case, always pick the lightest ship as the added floating ability outweighs any marginal drifting difference there may be. Moreover, lighter ships can pick up speed slightly faster during Double-Tap Dives, so that makes them even more desirable.

At the end of the day, on the vast majority of tracks, the Hell Hawk is your best drifting choice. When no airborne moves are involved, go with Night Thunder and when a lot of airborne moves are involved and comparatively little drifting; go with the Wonder Wasp or Twin Noritta.

## *Switch Drift [SD]*

A switch drift can be defined as a drift where the direction of the drift is changed to the opposite direction while staying in drifting mode. This can be achieved by holding both the R and Z buttons down, and just turning in the opposite direction. Holding down R + Z will prevent the ship from regaining grip during the time they are held down. There are a few places where switch slides are really useful, namely the start of Big Blue 2 and Big Hand or halfway during Port Town.

## *Rail Drift [RD]*

Rail drifting is an extension of regular drifting. In F-Zero X the rails on the side of the track don't really stop you when drifting. Actually, they facilitate drifting! This provides tremendous opportunities to allow for drifting on long pieces of road without adequate corners. The angle you will want to aim for, is the ship about 50 degrees turned towards the rail. You can do raildrifting in corners as well, but keep in mind that you have to continually adjust the ships drifting angle to match a good angle with the rail. It does work a bit better on some rails than others. It's great on rails that are smooth and straight but on other you will find the ship bouncing back and forth into the rail. An example of a rail like this is the right rail at the start of Mute City. Don't worry about this; as long as you can keep a good drifting angle you will build speed anyway.

Of course, rail drifting presents a tradeoff. You will lose significant energy when drifting like this, especially in combination with boosting. So, it is something you will want to use only in the right circumstances. Especially on opener laps, this will be useful to compensate for the low base speed on straights that drifting settings present. Moreover, rail drifting allows for many additional moves you can do on opener laps that would have otherwise been impossible because of the higher speeds it allows. For instance, on the very beginning of Fire Field and Space Plant, you can get airborne and get into a high speed dive right in the beginning of the opener. You can see this is extremely useful and will allow you to crush your best times, set without it.

Great places to practice this on, are right at the start of Mute City, Sector Alpha, Fire Field (try to get the lift off onto the ramp, Mute City 3 and Space Plant. As you get better at drifting, you will find that rail drifting eventually becomes second nature. It's good practice to just blow away your energy in a last rail drift right before the finish line. It still counts when you finish with the ship blowing up!

## *Air Drift [AD]*

Air drifting is very similar as normal drifting, only in the air. It does come with one major complication. It is best to keep the ship as horizontal in the air as possible during the drift, to avoid height loss. As your direction from left to right changes, the direction of up to down will change equally as much. That means that if your nose is pointing upwards, it will point proportionally downwards after the airdrift. This is something that may require some practice to get a feeling for. Generally speaking, if you use it just as a means of transportation, keep the ship horizontal. In other situations, you may want the nose of the ship to point downwards after the air drift, as preparation for a dive.

## *Half Pipe Side Attacks [HPSA]*

Half Pipe roads provide a special case for one of the coolest tricks in the game. Once you get the hang of this, you will really blow the White Land 2 staff ghost out of the water! It works as follows: if you are driving in a half pipe and you position the ship close and parallel to the edge of the half pipe and you side attack, you will accelerate very rapidly. You can even reach the game's speed limit of 3000 km/h if the half pipe road is long enough. Now, this will only work on certain straight pieces of half pipe track, that are off the right width as to not make the edge too low or too steep. If you are on the right side of the half pipe you use right side attacks by mashing the R button. If you are on the left side of the half pipe you use left side attacks by mashing the Z button.

Half-Pipe Side Attacks are an intended move in the game. Lead programmer Keizo Ohta even described this trick in an interview prior to the game's release. He was able to beat the White Land 2 staff ghost by over 10 seconds during the game's testing. He left the trick in because it was exciting and provided a fun challenge. This trick works because the ship will be tilted on its side. If you do right side attacks with the ship tilted to the left side, you will accelerate very fast. Similarly, when the ship is tilted to the right side you use left side attacks. This is the basic principle behind perhaps the most powerful move in the game, the Double-Tap Dive.

## *Double-Tap Dive [DTD]*

Using side attacks to guide a dive back down to the track, is one of the most powerful and widely used diving techniques in the game. It is not uncommon for Double-Tap Dives to reach the maximum speed of the game, 3000 km/h. Needless to say, if you get this one under your belt as part of your regular moves set, you will be able to improve your best times dramatically.

The basic principle of the Double-Tap Dive (DTD) is to fly off the side of the track at some high point, angle the ship down, and use side attacks to guide the ship back to the track. In the process of side attacking and diving down to the track, you accelerate very rapidly in the air if your ships angle was right. At the most ideal angle, you can even let the control stick sit in neutral position while the side attacks do the work. Because you are double tapping R for right side attacks (and a dive to the right) and Z for left side attacks (and a dive to the left), this type of dive is referred to as a Double-Tap Dive, or DTD for short. Contrary to DT turning, additional R and Z presses during DTDs have no additive effect. However, for the most efficient DTDs you will want to have the side attacks follow each other in immediate succession, so in practice it does come down to mashing the R or Z buttons.

DTDs are tricky to learn and even harder to master. In fact, most of the competition between the best players of this game comes down to how well they are able to execute DTDs. It truly separates the men from the boys, so to speak. It may be a serious challenge, but trust me, this is totally worth it. This is where this game really begins to shine and all of its potential will be unlocked.

DTDs to the right or to the left are mirrored dives that are otherwise equal. As you probably have guessed, you can't just start a DTD with your ship's nose pointing straight up into the air. For a DTD to the right you will want to nose of the ship to be pointing in a down + left position for a great diving angle. Once the ship is in position, use right side attacks by mashing R while holding up on the control stick to dive down. With the help of side attacks you will be able to dive more or less diagonally down to the track, depending on your starting angle. A DTD to the left is the mirror of the DTD to the right.

While this explains the basic principle of DTDs, there is a lot of subtlety involved into getting the best dives. The majority of the difficulty is really in the setup phase of the dive. It's all about getting the right angle for your ship. If you can manage that, the dive itself will be pretty straightforward. So, what makes a good angle and how do you know what angle to really aim for?

It is important to understand the following concept. The more sideways tilted the ship is, the faster the acceleration in the air will be, but, the less flexibility you will have in adjusting the diving path. Vice versa, there may be situations when you need to make quite a turn while diving. In these situations, you may want the ship to be more or less straight before diving down and then subtly adjust the angle along the way. When you are diving down, you can play around with DTD angles by holding the control stick anywhere between the up+left - up - up+right positions.

As you can imagine, there's not 1 secret to mastering DTDs, as each dive may be different depending on your approach. It takes a lot of practice to really get a good feeling for it, even to the point you can save doomed DTDs and really nail great ones. Generally speaking, the more extreme your angles and diving path are, the more speed you can get from them, but of course, the more risk it brings along. For this reason, I would really recommend to keep it very simple in the beginning when you start learning this. Keep it small, really. Start out with adding just 1 side attack to your dive path, and see what effect it has. Once that is going well do 2 side attacks… Next, try flying out the side just a little bit more and so on. As you are slowly building this up, make it a priority to actually land back on the track every time. There is no shame in not doing the optimal craziest DTD. Actually, almost nobody ever does.

Tracks to start out with to practice are: Port Town 1 at the big jump, White Land the jump before the refill zone, the end of Sector Beta, Jump Plates in Mute City 3 and right at the beginning of Rainbow Road. Again, start small and slowly build it up to get a feeling for it.

## *Air Control Into Double-Tap Dive (ACIDTD)*

Why do I emphasize to get a feeling for DTDs? Well, generally you are going very fast and you only have the spur of the moment to set up your angle correctly. When you do this, you are applying a form of Air Control [AC]. AC can be defined as all the movements you do in the air to set up your diving angle. This will generally either be a form of Air Drifting , Side Attacks or just floating up first for more height. Air Drifting can be very useful to travel some distance through the air while you are setting up the angle to dive from a favorable spot. Side Attacks are especially useful to flip the ship on its side, to get a strong diving angle. Either form is very commonly used and what may be preferable is situational. Floating up in combination with Side Attacks can be especially useful for getting a good angle for your dives.

As an example, you can get a very good diving angle from floating up into the air by holding down + right + right side attacks and then gradually move the control stick from a down + right position, while the ship is slowly moving, to an up + right position to point the nose of the ship down for a dive to the left. This is a typical series of inputs that is very commonly used to set up DTDs.

## *Air Control Into DTD Low Dive Form [ACIDTD-LDF]*

The more sideways the ship is, the faster you can accelerate but also the less flexible your turning ability becomes. This principle is used when doing what is called the Low Dive Form of DTDs. Â While the name may imply this is used only for dives that happen from low height, the principle refers to the ship's angle when doing the dive and is thus not necessarily limited to low height dives. Low Dive Form is thus not a move in itself but a modification of a DTD. It is especially useful for some DTDs, for which you have very little height to work with. In the Low Dive Form, you want to force the ship as much sideways as possible. This does mean that your turning flexibility is greatly limited, but, as it is generally only used for low height dives, this doesn't necessarily mean that is a problem.

A great example is the small DTD you can do to exit the tunnel at the end of Sector Alpha. You use side attacks to very quickly flip the ship's angle to about 90 degrees! This allows for a very fast dive into the refill zone from minimal height. If you would do an air drift in this situation, your angle will never be as tilted and the amount of speed you could get from a low dive like this is very limited.

If you are experienced with DTDs, there is not really anything stopping you from applying this principle, even to dives from great height. Especially in these situations, landing at 3000 km/h shouldn't be any problem. As an example, I show here how to apply it at the end of White Land. You can use an ACIDTD to land right before the second to last jump plate and take the speed along to set up a big dive into the refill zone below. Additionally, here is a neat trick to forcing the ship into a LDF angle.

When you land a DTD, the ship will initially be at your diving angle while you land on the ground, and it takes a little bit of time for the ship to roll back to a position parallel to the road. You can use this principle for a chain reaction of dives. If you hit a jump plate (or leave the road in another way for that matter) when the roll is still resetting, the ship will leave the road at the angle you were. In this case, you can tilt the ship sideways for an ACIDTDLDF with just one well timed side attack and dive from way high up for a massive dive, easily gaining 3000 km/h. For those of you who love acronyms (as if there aren't enough in this guide already): I have heard players refer to this kind of dive as an ACIDTDIQACIDTDLDF. Now that gets a bit silly so I prefer to just call it a chain reaction of dives.

## *Floating*

Floating is a really useful technique that works hand in hand with setting up dives. While in most cases, you will be floating very briefly to gain some height for a dive, there are also situations when floating for an extended period of time, may be very useful.

While the basics of floating are simple enough, the nuances of floating are quite complex.Â Always use a ship on full -7 drifting settings for floating; never attempt floating with anything less than settings all the way to the left. If you're trying to float with "grip" settings, you will decelerate very quickly and you will most likely sink like a brick.

For the best results while learning, the ship ought to be kept rather straight and steady while floating upwards. If each boost does not add to the ship's height, then the ship's vertical angle is incorrect and needs adjusting. Additionally, if you start drifting to one side or another, you'll probably begin to lose height.

In any case, when floating, one gains more and more height by boosting in the air, preparing for an otherwise impossible dive. From the floating nose-up position in the air, the next step is to do a big dive. For learning purposes, I recommend practicing the floating technique on DF2 first, just straight up out of the tunnel.

The floating technique does take some practice before you can consistently get good vertical angles for gaining height optimally. Â At first, it may seem difficult to point the ship up enough without pointing it up too much. After lifting off, holding "down" on the stick for too short or too long a period of time will cause the ship to sink. Once you've found the correct angle, just leave it there and boost without ceasing.

One key to floating is finding the correct vertical angle - not pointed upwards too little or too much - quickly after leaving the track. Once you can get this upward angle, floating starts to become a pretty intuitive move.

The "takeoff" refers to where the ship leaves the ground and begins to float - whether by driving off the edge of the course, over a hill, or by lifting off of a virtually flat area with enough speed. Here are the principles that you need to know for the takeoff:

(1) The greater the speed of the ship before taking off, the higher the ship will lift off the ground. (2) The more the ship is angled or turning while lifting off, the less height will be gained. (3) The lower the weight of the ship, the greater the height of the takeoff.

Also remember that finding the correct vertical angle as quickly as possible after takeoff, is important to floating well.

As far as the floating path is concerned, a straight path gains the most amount of height per boost. However, advanced players will occasionally want to drift to the right or left while floating, for a few reasons:

(1) To aim for a particular portion of the track. (2) To cut off a section of the course for a shortcut. (3) At least some drifting is required in order to perform a good DD. (4) To change the angle of a dive. (5) To change the timing of a dive, so that a boost can be added at an ideal time.

## *Air Diagonal Dive [ADD]*

Hold on, you may be wondering: what is a Diagonal Dive? Diagonal Dives form a distinct diving technique from DTDs. Contrary to DTDs, during a DD, side attacks play no part in accelerating through the air. There are 2 types of diagonal dives that can be distinguished: Air Diagonal Dives that are done from a floating position and True Diagonal Dives that are done straight from the track. All types of Diagonal Dives have a speed limit of 2000 km/h, contrary to the 3000 km/h speed limit of Double-Tap Dives. Boosting during the entire DD is required to gain speed and to keep the ship in a diagonal diving position.

You may be wondering, if DTDs can get such higher speeds, then why would you want to do a Diagonal Dive at all… Well, as a rule, DDs are therefore only used in situations where one cannot get enough height for a 2000+ DTD. During a DD you are able to dive back down to the track at a less steep diving angle and therefore gain some significant speed from only minimal height. Height that would be insufficient for a DTD to come anywhere close to comparable speeds, even in the LDF.

Air Diagonal Dives are always done from a floating position. The process works as follows:

In case of an ADD to the right, after gaining an adequate amount of height from floating, begin to drift to the right gently during subsequent boosts in your floating path. Then, begin to drift to the right as much as possible, without beginning to sink, on the last height-gaining boost. Then, just before the ship eventually begins to sink, quickly move the analog stick to the right to give the last push so the ship will start to sink. Immediately, move the control stick to the down position and boost in between these control stick positions. Boosting is required for a Diagonal Dive to work. Additionally, holding down the R button while holding down on the control stick will make it easier for the ship to lock into the correct diagonal diving position to the right. When done correctly, the ship will diagonally dive down with the nose of the ship pointing diagonally upwards into the air. After landing, immediately counter steer to straighten the ship and keep the highest cruising speed you can.

For a DD to the left, it works exactly the same but of course move to the left instead of right and hold down the Z button during the dive.

What is a good example of when you would actually use this? Well, by far the best example that combines all the techniques discussed during the floating section and that uses the ADD is a special strategy for lap records on Mute City. Watch the following clip and see how many of the principles just discussed, you can recognize.

## *True Diagonal Dive [TDD]*

True Diagonal Dives [TDD] are almost the same thing as Air Diagonal Dives. The main difference is in the setup before the dive. In a True Diagonal Dive, you do a DD straight from the track. So, how does that work?

As you may imagine, TDDs only work on specific sections of tracks. Luckily, there are several of such sections in F-Zero X, so this is a dive that is really worth learning. As far as the diving section goes, it is extremely simple. If your angle is correct from the setup, all you have to do is hold straight down on the control stick and boost. That's it! You will automatically land back on the track while getting a lot of speed in the process.

So, how does the setup work? The setup is more complex and mostly consists of drifting. When you have a section of track that is banked sufficiently, you can drift off the track at the exact same angle you would use on a rail drift. For example, if you leave the track on the right side, make sure that the ship's angle is at the ideal 50 degrees turning position when you drift, at the precise moment you leave the track, just like you would drift into a rail. At the moment you leave the track, all you have to do is hold straight down and boost to do a TDD back to the track.

There are only a few sections of track in F-Zero X that have the right banking, to do a TDD and land it. These include: The end of the right Refill Zone on Silence, the beginning of the corkscrew on Big Blue 2, the end of the half pipe on White Land 2 and the tunnel on Devil's Forest 3. In fact, all pipes have the possibility to do a TDD out off, if you exit the lower portion of the pipe at the right drifting angle. Thus, you could do them on Sand Ocean 1 as well but there you are better off with DTDs.

Watch the following clips and pay special attention to the angle at which the ship leaves the track as that is really the key to make this work well.

## *Air Ground Glitch [AGG]*

The Air Ground Glitch is both a unique and powerful trick in the game. AGG is a glitch that allows you to basically fly around the whole track at will and rapidly gain height for otherwise impossible dives. It comes with a whole unique set of controls that form a hybrid between ground based driving and floating.

AGG is activated by landing in the rail of the track and then immediately leaving the track. This glitches the game into a hybrid playing style, that contains both part of ground based physics and air based physics. Even all the track elements such as Dash Plates, Jump Plates and the Refill Zone, still work while you are in the air above it!

As part of the Air Ground Glitch is floating based, it works best at full acceleration settings and with low weight ships. Contrary to normal floating, during the AGG, you can gain height rapidly by having the ship tilted on its side. This is usually done with some side attacks, just like you would in preparation for a dive, but with the nose of the ship pointing upwards. If you get a good angle like this, you can just float up into the air without even the need of any boost! For this reason, you can do AGG pretty much at any moment during a race, including right at the start of the opening lap.

A tricky part of the Air Ground Glitch is that, unlike regular floating, you can lose your grip in the air, which causes the ship to start sinking rapidly. This is where Accelerator Tapping really comes in useful. Just by tapping the A button, you can prevent the ship from losing grip, so you can float up very rapidly at extreme angles. Other moves, such as Air Drifting to turn, work similarly to regular floating.

Another tricky part of AGG floating is that you still have to hit the checkpoints of the road in order for them to count. So, while you can technically fly over the entire track just fine, you still have to follow the checkpoints, so flying around the start line is not going to work. If you accidentally cut too much and skip checkpoints, you will not be able to land back on the track again and if you fly off too far, the game just makes you crash.

The floating with the Air Ground Glitch is generally quite slow. This is the main factor that limits its usefulness during races. You not only have to find a good spot to trigger it, the dive resulting from the floating has to make up for the time you lose, by floating through the air slowly. Diving down from the AGG works pretty much the same as with regular floating.So, you want to position the ship in a good diving angle.

There are several tracks where the AGG can really win you some time without doing some excessively difficult moves. These include: Mute City, Sand Ocean, Devil's Forest 2, Rainbow Road and Port Town 2.

Especially on Mute City, you can win a lot of time by essentially AGG flying around both boostlaps. The trickiest part of this track is going around the checkpoints of the looping in the air, in the right order.

Huge chain reactions of AGG floating, diving into the rail to activate another AGG and so on are technically possible. On Mute City you can dive down into the rail with AGG floating from the second lap and immediately fly back up again taking the diving speed with you into the third lap. Â Needless to say, the diving precision to land into the rail is extremely difficult to acquire.

## *Double-Tap Ascend [DTA]*

The Double-Tap Ascend, as the name implies, is a move where you use Side Attacks to ascend into the air. Now, this is something you want to use to some extent, in preparation for DTDs but there is a reason why I mention this only as the last move in this tutorial. The full potential of the Double-Tap Ascend is really at the forefront of knowledge about F-Zero X. It is a move, you can do at all times but specifically in combination with the AGG, it is very powerful.

When ascending with Double Taps, you really only want to double-tap the R or Z button for immediately succeeding side attacks. Unlike all other scenarios, more R or Z presses will actually work against you in this case. At the perfect angle you can actually accelerate while ascending upwards like this. This is of course most easily achieved when in AGG state. If you flip the ship onto its side to some extent, hold down and use double-taps you can accelerate through the air for a very long period of time. Both the angle to make this work and the timing of the double taps is very difficult. It's fair to say no player has come anywhere close to utilizing the full potential of this move at all. As you can see in this demo you can fly around and keep accelerating throughout most of Mute City with this move. Mute City is no exception; you can do this around most tracks, in theory at least. Maybe you will be the next player to find a way to utilize this move well and take it to the next level to become the next F-Zero X champion with groundbreaking strategies.

## *Closing words*

This has been the driving mechanics and moves guide of F-Zero X. Thanks a lot for reading and watching this tutorial.

Have fun!

## *Acknowledgement*

I would like to sincerely thank Jagg2Zero for his very valuable and kind contribution of several of the clips shown in the demonstration video. He made most of the demonstration clips to illustrate the machine's weight on performance. Additionally, all clips from the tracks Space Plant, Sand Ocean 2, Port Town 2 and Big Hand are his work. He also made the clips showcasing the DTA technique in combination with AGG.