-- The Firmware Mod --

Ver 0.3 by JungleJim

Preface

The ambition of this document is to clearly but briefly outline the steps necessary to play legally held backups on your XBOX 360 console. Your DVD drive is partnered to you 360 Console without this key your 360 will never play games.

*** You must have the DVD Key from your drive before you erase your drive ***

Intro

The firmware mod uses modified DVD drive firmware to allow users to play legally held backups of their precious and expensive Xbox360 games. To use this mod you need to be able to perform the following task.

1. Flash/write modified firmware to the xbox360's DVD drive.

2. Create Backups of your legally held XBOX 360 game discs.

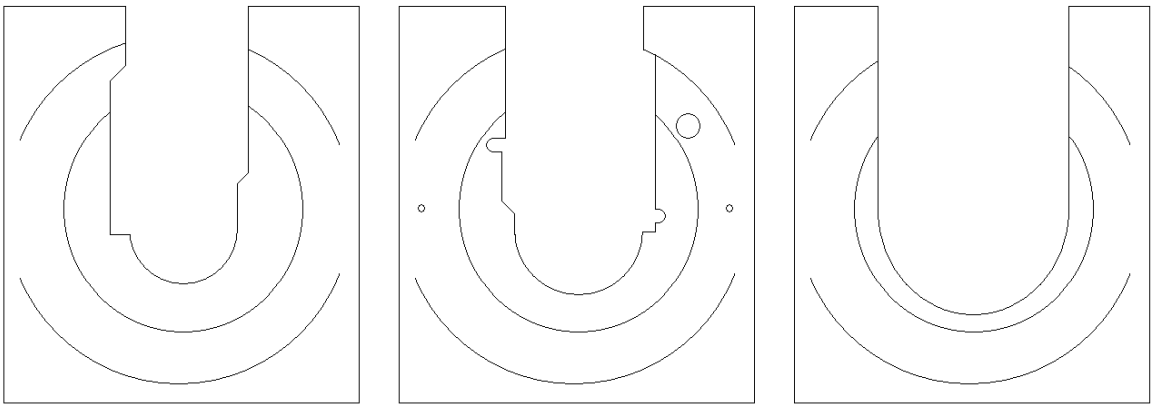
--Flashing the DVD drive--

Identify the Model of DVD Drive

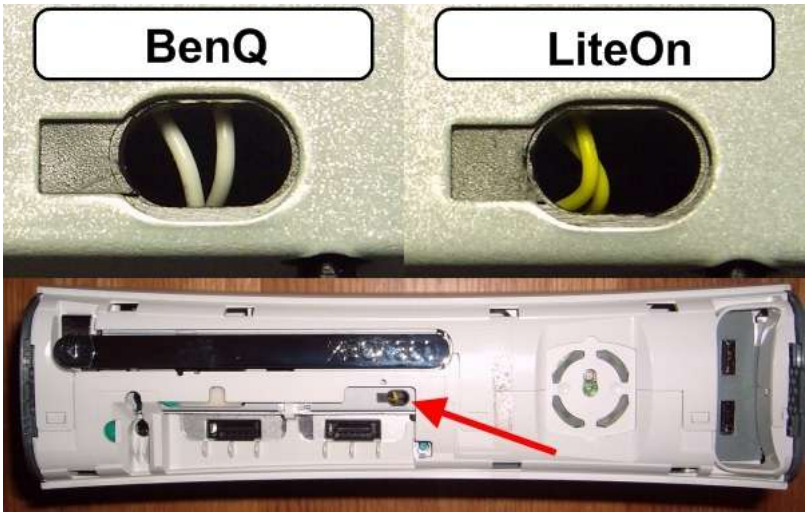
There are currently 4 vendors of DVD Drive.

- Hitachi
- Samsung
- Benq
- Lite-On

You can make quick ID from the drives Tray.



To differentiate between Benq and Lite-On you will need to remove the front bezel from the console but often the date of manufacture is a good guide. Lite-on drives first appeared in April 2008, so before this it's a Benq for sure.



Modifiable Drives

At present all drives are modifiable, but they vary in complexity.

Vendor	Model	Status
Samsung	MS25	unlocked - trivial
Samsung	MS28	soft unlock - trivial
Hitachi	46/58	unlocked - trivial - can be flashed in windows and over USB 2 SATA
Hitachi	47/59	soft unlock - trivial - can be flashed in windows and over USB 2 SATA
Hitachi	78	unlocked - trivial - can be flashed in windows and over USB 2 SATA
Hitachi	79	locked - trivial - can be unlocked with an audio CD, then same as 78
Benq	62430C	soft unlock - trivial
Benq	64930C	soft unlock - trivial
Lite-On	74850	locked - moderate, key can be extracted via a serial debug port on the drive
Lite-On	83850	locked - trivial, key can be extracted over SATA and decrypted
Lite-On	83850 v2	locked - complex, key can be extracted by a full dump and requires rework.
Lite-On	93450 v2	locked - complex, key can be extracted by a full dump and requires rework.

Items you will need

- 360 console :)
- 360 Console opening tool and a T10 screwdriver.
- SATA Cable
- Compatible SATA Ports on a PC, preferably VIA 6421 PCI card
- for Hitachi only and USB 2 SATA adapter may be used, 3in1 type is not recommended

Necessary for Lite-On drives

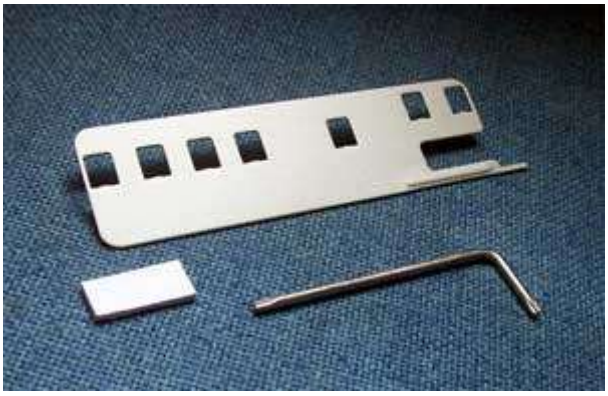
- Philips head screwdriver, to open DVD drive
- Soldering Iron & other paraphernalia, solder, flux, braid etc.
- Xacto-Knife - to cut traces

Opening the 360 console

First step is to gain access to the DVD drive itself. Opening the console is relatively simple and can be done without any permanent damage being done, if you are careful it is possible to do it w/o there being any tell-tale signs. Llama have done an excellent tutorial on opening the case:

http://www.llamma.com/xbox360/repair/Xbox-360-Disassembly.htm

Here is an abridged offline copy for offline readers. Also, an opening tool can be very helpful.



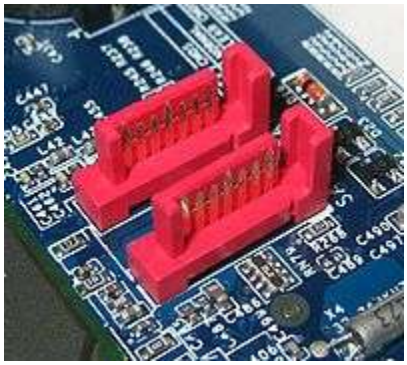
	First things first remove the faceplate. If you skip this step and go on to removing the top and bottom plates you will find they can be removed but you greatly increase the difficulty and chances of breaking the little tabs off the top and bottom plates. The easiest way to remove the face is to use the finger hole at the bottom of the console and simply pull forward. (In this photo the Xbox is upside down)
	Give her a good tug and pop!
	Starting with the gray bottom vent plate, six tabs that hold it into place. You will find that all of them are accessible from the sides through the vent holes. Gently pull up on the plate and simultaneously release the clips by pushing in with the opening tool or other tool that fits through the hole.
	Start at the front of the case and work your way back alternating sides so each pair of tabs are released.

	Keep gentle pressure to pull it up and away as you go
	The top plate offers a bit more of a challenge 3 of the six tabs are not in plain sight, begin with the front two, they can be accessed from the two corresponding holes where the drive tray connects. The opening tool has a cut out so it fits just right to reach the two clips.
	The next two are visible through the vent holes and easily accessible.
	The final tab can be released by removing one of the Xbox feet at the rear to reveal a hole
	With the top and bottom vent covers removed we now lay the xbox down upside down. This makes the process much easier as the chassis is screwed to the top. With the bottom shell, (the one with the feet) pointing toward the sky we see these innocent looking 7 little holes.
	This is where the opening tool really comes into play. When releasing the clips I find it helpful to spread the case with my thumb and forefinger, then position the tool so the tool lines up with the two holes by the power cord.
	Press in on the tool, you should hear crisp clicks as the clips release and the case should pop open a bit.
	Continue to spread the case apart and push in on the vent area, there are a couple more spots where the case connects but these are not clips and do not require the tool. When you press in nothing too impressive will happen but you may notice that the case spreads slightly further apart.
	Then flip the tool around and line up the 5 tabs with the corresponding holes. Continue spreading the case apart from the right side and press the tool in.
	You should hear a series of more click clicks and the case is free. Spread the back apart a couple inches it should be able to rest open while you spin it arround to work on the front

	Begining with the front clip nearest the DVD drive a fingernail will suffice as an opening tool. A little pressure spreading the lid apart and it should pop right open
	same with the next clips
	and the last
	Lift the lid and ta-da a steel chassis presents itself, in this photo the six screws that need to be removed are circled. You should be very proud at this point shout to anyone that will listen "I got the thing open!" Okay now settle down and remove those six screws with a torx 10 driver.
	Flip it back right side up but before yanking the other half of the case off remove the eject button. Just jamb a fingernail under the right hand side and give a yank it will pop out. You can wiggle the case around and get it off without removing this but the chance of damage drops to zero if you already took it off.
	Lift the lid and there we go! This is another good time for shouting to anyone in the room... use your best judgment.
	You should now have a plie of parts that looks something like this.

SATA Ports

Locating your SATA ports and type can be a relatively easy process. You can use Jungle-flasher to logically identify the IO ports in your PC, once located in software you need to locate them physically....



It is recommended for this process that you use an old PC with XP 32 bit SP2, from experience this appears to be the most reliable setup. If your PC has no Native SATA ports a PCI plug-in card or PCMCIA card can be used.

USB to ESATA connection may also be used for Hitachi drives.

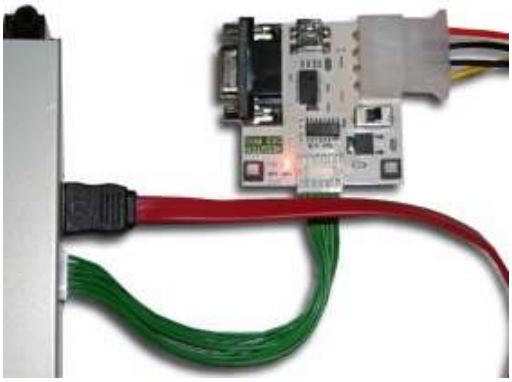
Some newer laptops have an ESATA port right out the back, making modding with a laptop possible

Please refer the Jungle-flasher Tutorial at this point.

Powering the DVD Drive

The 360 DVD drive uses a non-standard power interface.

You can use the console itself to power the DVD drive, but this is not recommended, power the 360 with no DVD drive attached is logged in the OS. It is recommended that you use a Connection Kit. There are several offering available...



If you are powering with the console be sure to short the chassis of the 360 to the PC you are using. Also, be sure to have a legacy video cable plugged in or the console will power down with in 15 seconds. On newer consoles with HDMI you can use a HDMI cable but must be connected to a TV or the console will power down in 5 minutes.

Flashing the drive

There are 2 methods for flashing the DVD drive. For MTK based drives i.e. Samsung/Benq/Lite-On, the drive is forced into Vendor mode, a special mode that gives the system direct access to the flash over the SATA bus, the flash is erased and overwritten but can only be done using legacy portio. For Hitachi the drive is flashed or more correctly updated while alive, flash code is uploaded and executed and can be done over legacy portio or using windows and even over USB.

As a new comer, it may be preferable to flash your drive in a user friendly User interface in Windows, however there are other methods, but Jungle Flasher is by far the preferred method, please visit http://jungleflasher.net/ for software and tutorials, they also offer full chat support on IRC.

*** Firmware can be found in the usual places. ***

*** You must have the DVD Key from your drive before you erase your drive ***

Weak Laser

Often following a flash some drive will not play burned media. With Hitachi in particular this is due to a weak Laser or at least the Laser not being optimised to read burned media. There is a method for trimming/adjusting the Laser to increase the power and therefore improve the Lasers ability to focus.

http://jungleflasher.net/files/XBOX_360_POT_CALIBRATION_V1.0_by_Moda.pdf

--Making Backups of your Original--

To make backups up will need

1. The game you wish to backup
2. A drive that can unlock the game partition
3. Software to create backup - XBC is recommended
4. Software to check the image - ABGX360 is recommended
5. Some blank media and a burner - XBC will also burn the image

The Game Disc

It's pretty obvious that you need the actual game disc in order to back it up. But you also need to keep it. You can't legally have a backup of a genuine original you don't own.

The Drive

There are 2 currently accepted drive types for ripping originals.

Kreon flashed Drive

These are Samsung PC drives with modified firmware that allows the game partition to be unlocked. These fit nicely into you standard PC and come in IDE or SATA. They can also be used in an external USB drive chassis. However, Kreons do not do "Angle timer", this means that currently challenge 5/7 are emulated and not actually measured. From wave 3 onwards it is not recommended to use Kreon flashed drives.

0800 flashed 360 drive

These are Samsung/Benq/Lite-on 360 drives with modified f/w to allow the drive to show in windows and with extra commands to unlock the game partition. Being genuine 360 drives they possess all the faculties necessary to correctly rip a game disc. Of course you can flash your drive for the purpose of ripping and then flash back to regular f/w for playing. But often it is more convenient to acquire a second drive for the job, and if it's the same model as your primary it can double as a handy spare.

The ripping software

XBC is a nice app with a Noob friendly GUI http://jungleflasher.net/downloads.html . To rip a game involves one click and selecting a destination folder.

With the default settings, select your ripping drive, select complete Backup, click start.

Stealth checking

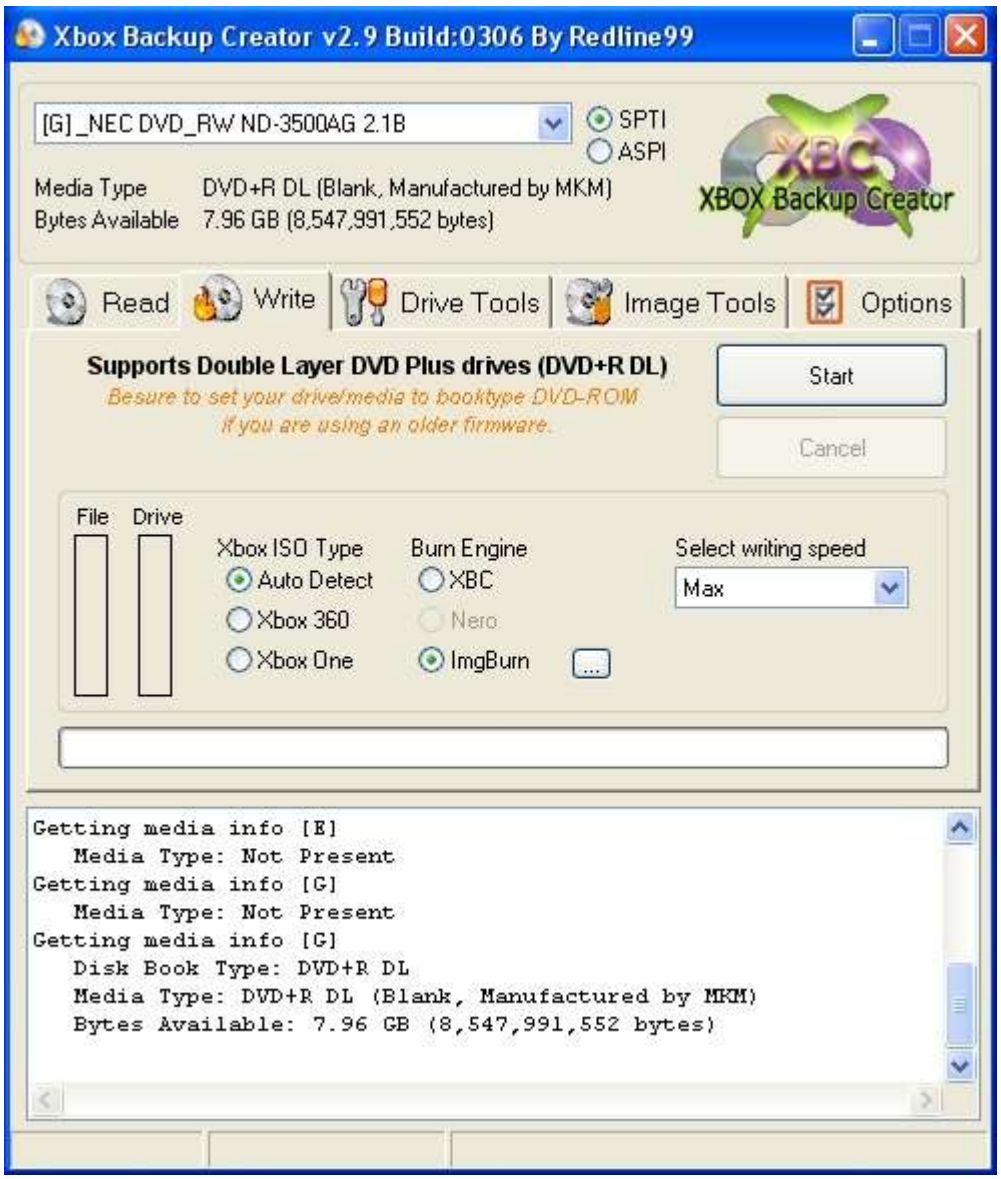
Many choose to use their modified drive on XBOX Live, however this is in breach of the T&C's of your XBOX Live account and may result in your console being banned. Several reasons are cited as causing bans but only M$ Live security knows the real answer.

First rule, check the rips you have with ABGX360 http://www.abgx360.net/. This is a beautifully written app with an on-line database, Uploaders supply data from their known good rips and this data can be used confirm that yours are good. Again, using this app is trivial, select the rip file and click GO, the report screen has varying levels of information but as long as all is green you are all set.

Burning Ripped Images

Although most blank media will play in most drives, it is highly recommended that you use Verbatim DL media from Singapore. Verbs have been proven time and time again to be of far higher quality than the rest, this will prolong the life of you drive and reduce the chances of Dirty Disk Errors.

XBC will burn the ripped images correctly with correct layer breaks etc. You can use a native burning engine or XBC can use API calls to burn via Imgburn or Nero. Select your DVD burner, your Burn engine of choice and click Start. You will be prompted for the Ripped image file.



Play - It's a Games Console after all

Finally, there certainly is more than one way to skin this particular Cat. This author just selected what he considers the most Noob friendly approach.

Just enjoy your backups, knowing your Genuine Discs are safely tucked away.