Wiring Instructions for setting up a Flashrom (512k) to enable flashing AND dual Bios

This tutorial will explain how to give your XBox the capability of 2 BIOS' and allow the switching between either BIOS, and capable of enabling/disabling flashing of either 256K bank.

Requirements

- An Xbox that has been wired as a homebrew
- AM29F040B 512k Flashrom chip (this will allow an upper and a lower BIOS). This chip MUST already have at least one non retail bios in either the upper or lower bank). You can use either an EPROM programmer or PC to program
- An optional Boot CD to allow the flash options only on CD (prevents kids from wrecking all your hard work by accident - Little Darlings!!)

Background info.

Because of the checks that M$ do for online gaming, a homebrew XBox needs to appear as a retail unit. We can beat this check by giving the XBox multiBIOS capability with one BIOS being the official retail version. In order to be capable of multiBIOS the new BIOS FLASHROM must be 512k (each BIOS image is 256k). The FLASHROM of choice is the AM29F040B. We will wire the XBox to allow "Bank switching" to allow us to choose whether our Xbox behaves like a retail unit or a modded xbox with whatever Dash we want to install. I am assuming a bigger HD with a F: partition is installed or to be used.

Obviously when we run the XBox in retail mode the F: partition will be invisible to the XBox and we need to ensure that the C: drive contains only the retail files, (assuming we have a bigger HD which is highly recommended). Therefore when we create the non retail BIOS we need to choose a BIOS that will allow us to boot up from the F: drive. If you don't want to run the retail BIOS then you can run any 2 BIOS' of your choice and once the FLASHROM has been initially programmed, and wired up as follows you will now be able to flash any one bank of the FLASHROM via the Dash without having to open up your XBox again.

This will require 2 switches to be bought and a little bit of drilling in the case to install them. One switch controls which BIOS to boot from and the other enables and disables flash writing.

***** When flashing, you only flash one bank at a time... i.e., a 256k BIOS image. When you want to run the flash utility you need to remember the following which is extremely important if you are running a retail BIOS on one bank. ;**

***** Flipping the BIOS bank switch just prior to flashing the EPROM flashes the "not in current use" 256k bank**

***** NOT Flipping the BIOS bank switch flashes the "In use" 256k bank**

This is important to understand because if you are not careful you may flash retail BIOS into both banks. Then next time you reboot, the xbox will result in the Xbox booting up as a retail unit. The only recourse left to you then is to remove the FlashROM and reprogram it outside the XBox.

Below is an explanation of the slight differences in each wiring configurations that we need to address in order to rewire for our needs. In order to achieve the new wiring configuration we will need 2 switches – A DPDT switch and a SPST switch. The DPDT switch will allow us to switch between flash write enable/disable. The SPDT switch will allow us to specify which BIOS we load by toggling either the upper or lower bank. With the help of already published articles on flashing and multibios we can set up our Xbox so we can have multiple options without the hassle of opening our box. AM29F040B flashroms are cheap and once initially programmed you should never have to take it out of the XBox again. They can be reprogrammed thousands of times. You can find them for sale at http://www.specialchips-service.nl/. You can also find EPROM/FLASH/TSOP programmers there too that you can either build yourself or buy pre-built

Remember – Flashroms can be electrically reprogrammed in situ. EPROMS normally have to be erased by ultra violet light and reprogrammed. Example of a EPROM in use for the Xbox is a 27C020 or 27C040

This procedure is not for newbs, and requires the capability to initially program the flashrom out of the Xbox with Evox, executer or other non-retail bios. First things first, we need to change the wiring slightly, this will vary dependant on whether you were using an EPROM or flashrom to start off with. The best starting point is to look at the wiring for each configuration and then see what we have to change in order to get the full meal deal. Take your time with this part in verifying the wiring; there are no points for getting it done in record time. If starting from scratch you can use all included pics to complete all wiring.

Wiring requirements for normal Flashrom

- 31 is tied to 32
- 16, 22, and 24 are tied together
The wiring schematic can be found at

http://www.xbox-scene.com/articles/homemademod.php

Wiring Requirement for flashing

- 24 now connected to motherboard, (not tied to 16 and 22)
- 31 now connected to motherboard, (not tied to 32)
- Pins 16 and 22 only pins tied together now

http://www.xbox-scene.com/articles/flashhomebrew.php

Wiring Requirement for dual Bios (512k allows 2 bios)

Lower Bios – pin 1 tied to 16
Upper Bios – pin 1 tied to 32
(May be backwards, but switch is an on/on type)

http://www.xbox-scene.com/articles/homemademod2.php

Now that we've seen the variations we need to implement some changes

The new wiring and switches we need is as follows –
(Both available at Radio Shack)

SPST
(Bank select)

16	**Enable Lower Bank**
1	
32	**Enable upper bank**

DPDT
Flash enable/disable

16	**32**	**Disable Write**
24	**31**	
X	**Y**	**Enable Write**

X = connect to the motherboard according to the flashing wiring mod for pin 24
Y = connect to the motherboard according to the flashing wiring mod for pin 31

Make sure you are using at least V1.8.3285 Evox; using Evox V.1.8.2594 gave me mega grief in the flashing department.

Switching between banks is simple. Just turn off the Xbox, flip the bank select switch and reboot.

Flashing example

Let's assume that you want to be able to go on Xbox Live by switching to the retail BIOS and also be able to switch to a non retail BIOS when not on Xbox Live with a bigger than original HD. You will need the original 256k retail bios. And a non retail BIOS☺.

You wire your Xbox up for flashing and dual BIOS capability. Your AM29F040B FlashRom has at least one bank already programmed with a non retail BIOS (TIP: program the Flashrom with 2 non retail BIOS prior to putting in the Xbox, that way your Xbox should boot up regardless of switch position).
Once your Xbox boots up, you can copy the retail and other desired 256k BIOS bin files to the BIOS Dir of your boot up drive.
Setup the Evox.ini file so that it sees the flashrom when trying to flash. Ensure the write enable switch is set to write enable, flip the BIOS select switch and then select the retail bin file to write. This will now flash the other (not in current use) bank with the retail bios. The XBox will then shut down. When you reboot the Xbox it will now be in original retail conditions. To switch back to non retail mode, shut down the Xbox, flip BIOS select switch and boot the Xbox,. The Xbox will now boot the non retail BIOS. (It's STRONGLY recommended to place the BIOS write enable switch to disable at all times when not flashing)

You can use a utility called Xbtool that will allow you to modify a non-retail bios to boot from the F:\ drive. You must copy all the evox files and Dirs to the root of the F:\ drive in order for this to work. This is handy so that there are only original files in the C: drive keeping your Xbox appearing as a non-modded unit.

In order to use the flashing tool in Evox dash you must ensure the following lines exists in your Evox.ini

Flash = 0x01a4,"AMD - Am29F040B",0x80000

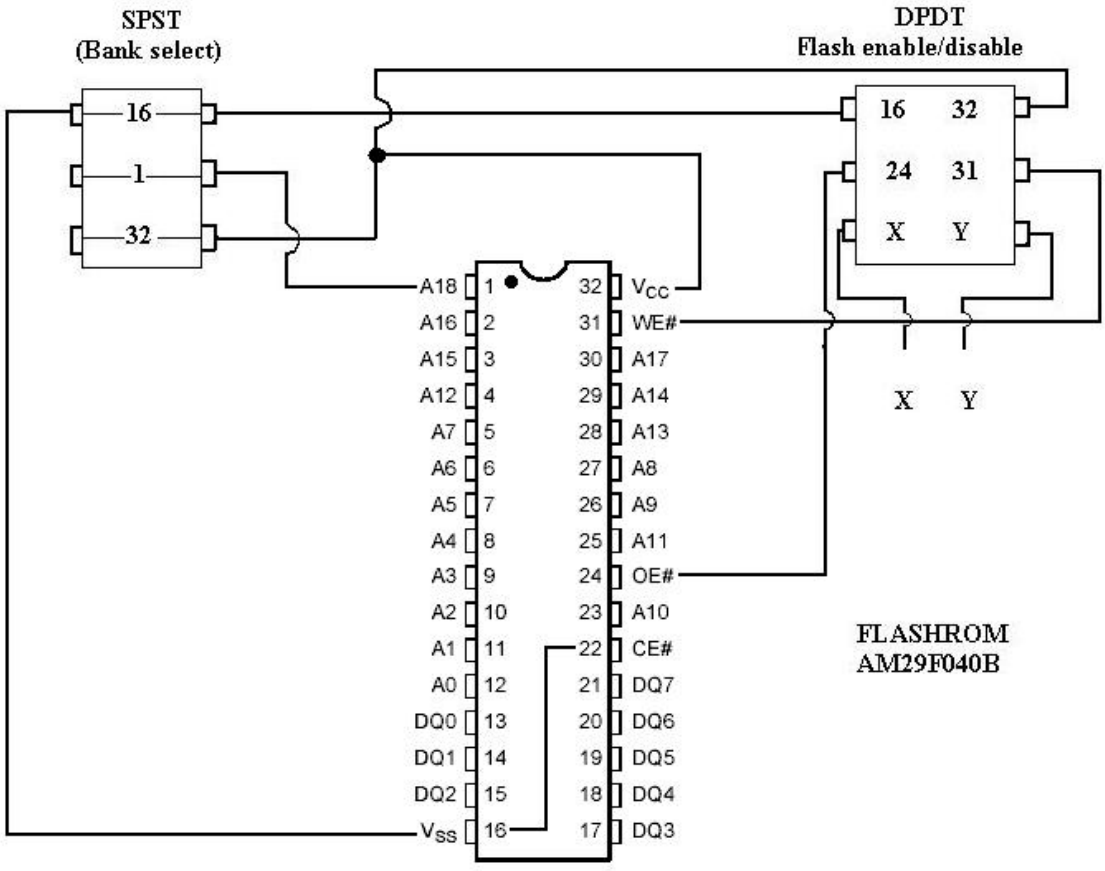
Item "Flash BIOS",@1

Check there is no # in front of those two lines, if there is, remove them.
Place all your desired 256k bin files in the BIOS directory on your boot up drive. If Evox cannot find the Flashrom type when you try to flash it is probably due to one of the following,

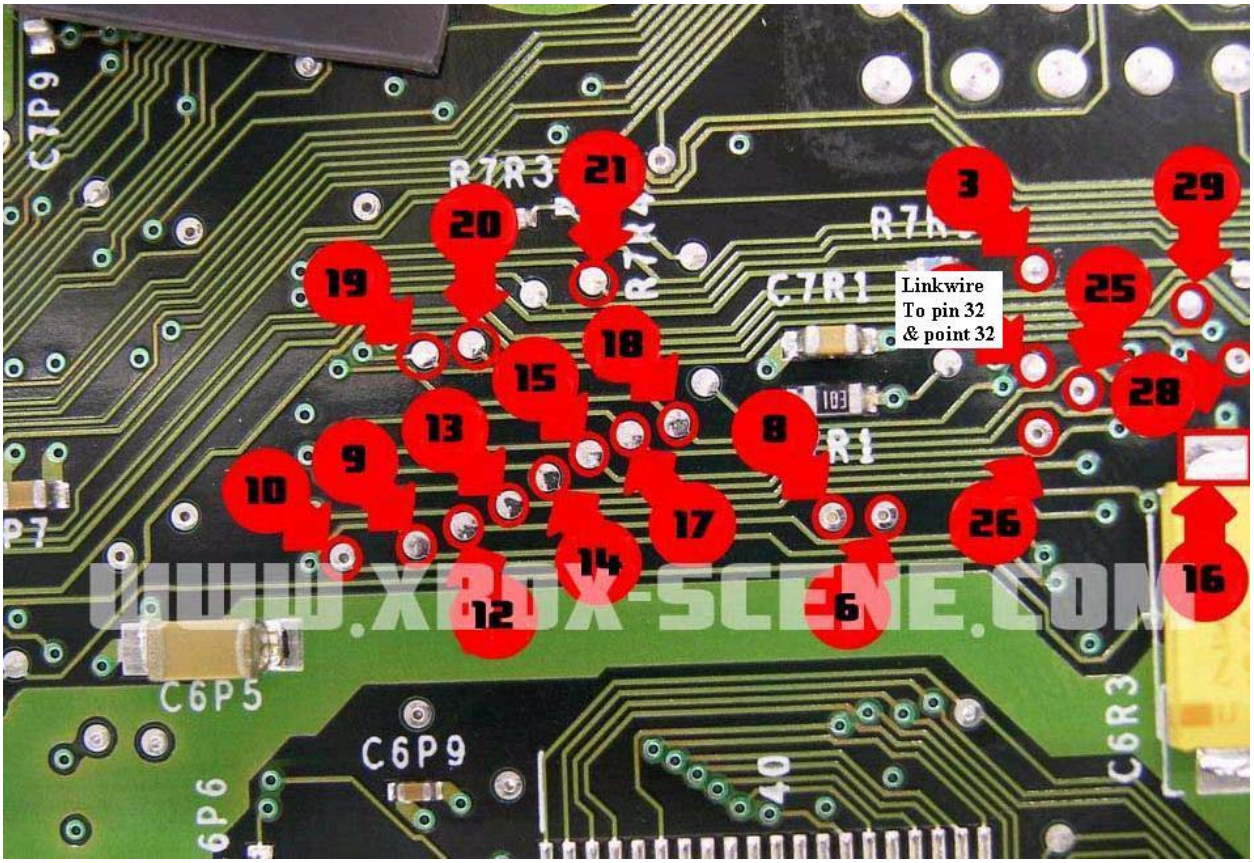
-Write enable switch off
-Missing line in evox.ini
-Incorrect wiring

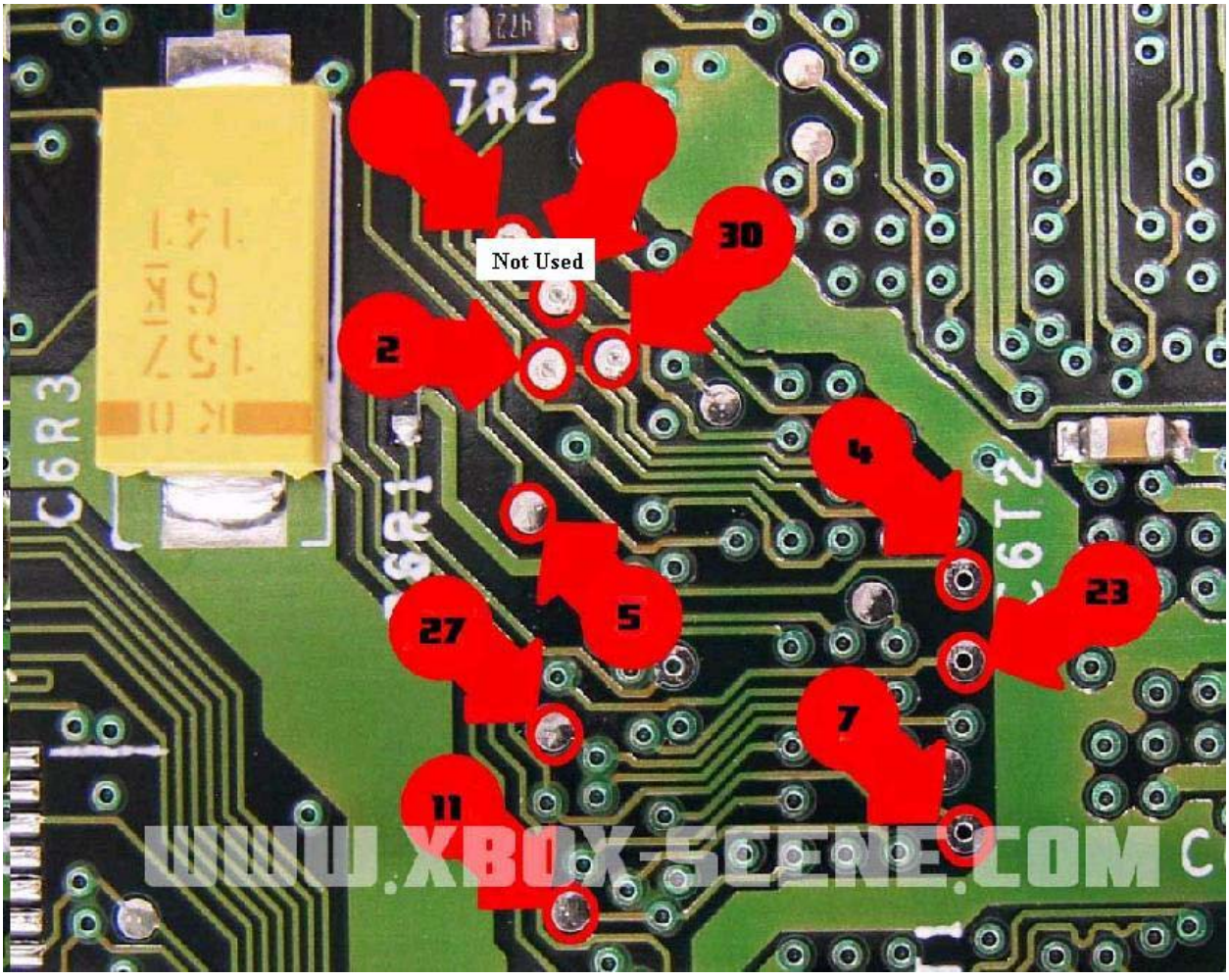
Hope this is of some help, enjoy.
Kipper

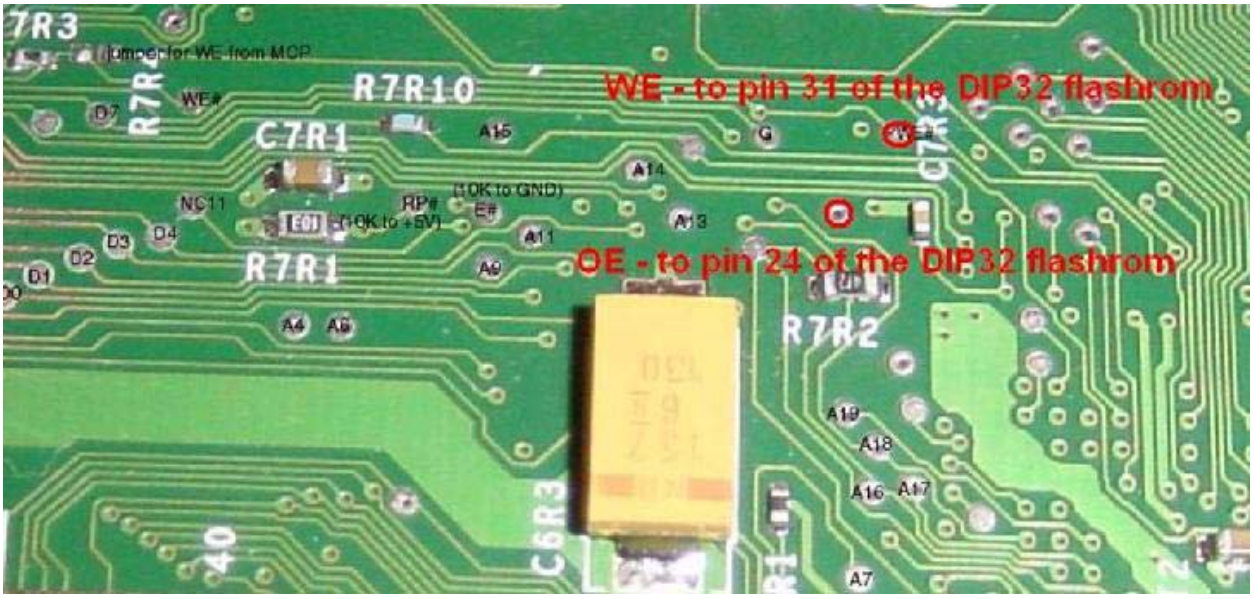
Here are all the necessary wiring diagrams to do the job from scratch.
******* Some pins have multiple connections, make sure you do them all *******

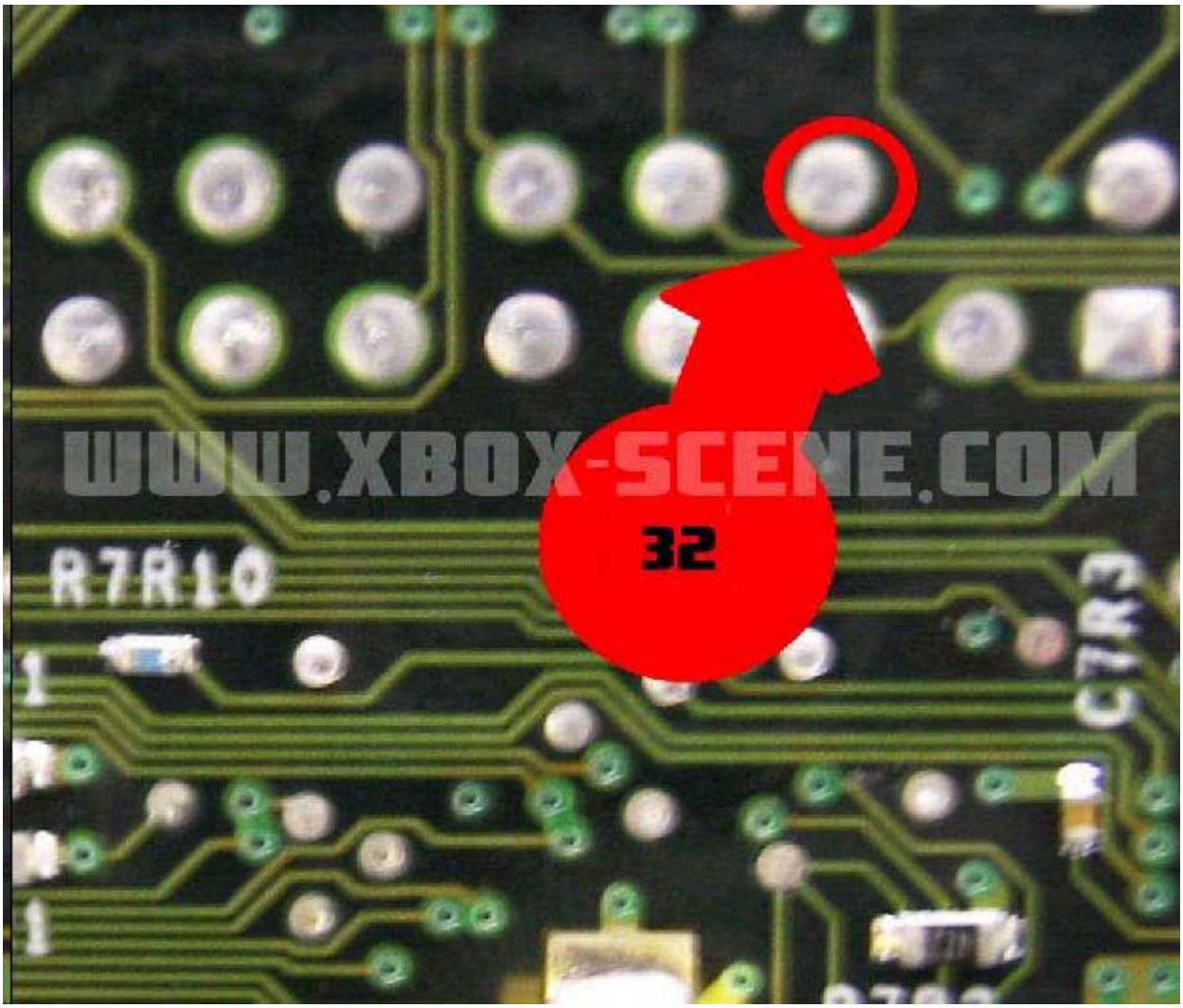


X = connect to the motherboard according to the flashing wiring mod for pin 24
Y = connect to the motherboard according to the flashing wiring mod for pin 31


Linkwire
To pin 32
& point 32
C6P5
C6P9
C6R3
WWW.XBOX-SCENE.COM


7R2
Not Used
C6R3
WWW.XBOX-SCENE.COM


7R3
Jumper for WE from MOD
R7R10
WE#
C7R1
R7R1
R7R2
C6R3
C7R3
WE - to pin 31 of the DIP32 flashrom
OE - to pin 24 of the DIP32 flashrom
NC11
RP#
E#
(10K to GND)
(10K to +5V)
D1
D2
D3
D4
D7
A4
A5
A7
A9
A11
A13
A14
A15
A16
A17
A18
A19
40


WWW.XBOX-SCENE.COM
32
R7R10
C7R3