



POWER USER

AW1600
Music Production

The **PITCH FIX** Function

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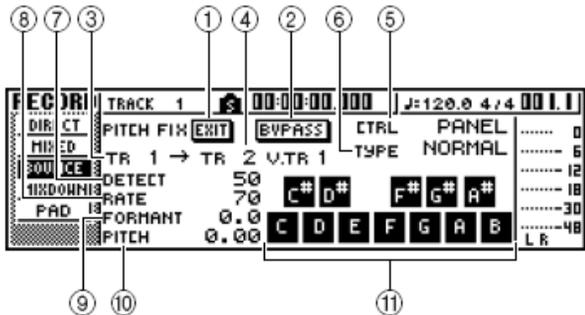
Pitch Fix is an effect that lets you change the pitch of a vocal part. You can use it to change the pitch of a vocal and create accurate harmonies of the main vocal. You can also change the vocal quality or character. Pitch Fix can only be used on solo vocals and mono audio files.

Pitch Fix can only be used on mono audio. If you use it on a stereo signal, only the left channel is processed. First, use an audio editor to convert the stereo file you intend to use into mono; then apply Pitch Fix to the file.

Pitch Fix automatically corrects slight pitch and intonation inconsistencies of vocal and instrument tracks to make them sound smoother and more professional. Using advanced algorithms, Pitch Fix faithfully preserves the formants of the original sound, delivering natural sounding pitch correction without unwanted artifacts. Pitch Fix can also be used to create the perfect backing vocal parts for your tracks by simply modifying the lead vocal track.

Pitch correction doesn't sound right.

- Specify a shorter section to be pitch-corrected.
- In some cases, pitch correction may sound unnatural—*especially for parts sung with vibrato*. To make the pitch-corrected vocal sound more natural and subtle, set Detect to a relatively short value and set Rate to a relatively slow value.



Learning about the Pitch Fix function using the factory demo:

There are several basic skills that are necessary before you can demonstrate this rather advanced feature. Key to making it work is to identify exactly what is to be fixed and then work out a way to accomplish this.

It may be worth the time to understand that the Pitch Fix function is not a “talent button” – it will not turn the less than average singer into a Caruso – but it will allow you to do fix minor imperfections in vocals and create convincing harmony parts (one at a time). With this type of

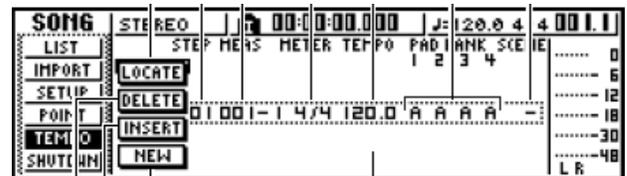
description out-front you will still be able to amaze and thrill your friends and neighbors with just how much the function can do.

Preparing the DEMO SONG COPY:

It is a good idea to make a copy of the demonstration song and remove the automated SCENE changes. [This will allow you to make your own changes to the mix and leave the demo song in tact – so you can feel free to experiment].

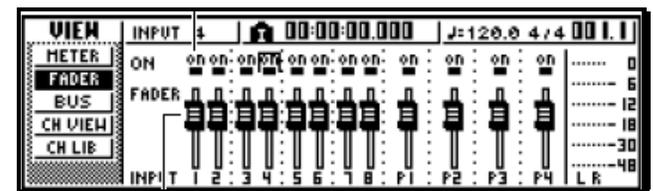
- Load the Demo Song, “The_Only_One”, into the AW1600, if it is not already loaded.
- Press [SONG] to select the LIST screen
- Move the cursor to COPY and press [ENTER]
- Since you just loaded it, there is no need to SAVE, so answer NO, and proceed to the NAME function.
- Name the COPY something appropriate so you know it is the one to experiment on. “The_Copy” is a good enough name.
- Press OK and the AW1600 will save the new version.
- Move the cursor to LOAD; use the Data Wheel to select the new version, “The_Copy”, and load it into memory. Press [LOAD], then [ENTER]

Now, let's get rid of the SCENE changes. Press the [SONG] button repeatedly to select the TEMPO screen. Move the cursor to DELETE and delete all but the first item on the list (which cannot be removed). The reason we are doing this, again, is so that we can create our own changes to the song and experiment freely without the pre-recorded changes messing with our settings.



Setting Track Playback Levels

Because the AW1600 does not have motorized faders the actual position of the physical faders can disagree with the audio level of the associated track. To view the actual audio level of a track press [VIEW] and select the “FADER” screen.



You can view the Track Faders by pressing any one of the TRACK buttons or the STEREO button to change the view from INPUTS (and PADS) to TRACKS.

Clearly identify the problem spot

In any recording you must decide between 'feel' and pitch accuracy. Fixing the pitch of something is not always a cure all. Sometimes the feel or attitude with which the vocal was sung and sometimes even the inflection will prevent the corrected data from sounding right. Sometimes if there is too much vibrato you may find you need to tweak a bit more than with other data. The idea is to determine if the data can be fixed.

Isolate the lead vocal on track 1 and play it through measure 24. The refrain that begins at about measure 20: (it is important to isolate it so you can ensure that you can identify the problem).

"You're the only one who can feel my emotion...
...give me love, deeper than any ocean
You're the only one who can make my dreams come true".

The word "true" is a bit sharp. Let's say we want to fix this word. Our first task will be to place a punch IN marker after the word "come" but before the word "true"; and then a punch OUT marker after the word "true".

The punch IN and OUT markers will allow us to easily replace the suspect note with a pitch corrected new note. This will require two tracks. Here is how it works. Think of Pitch Fix as a special Insertion Effect that can be placed between the SOURCE track (track 1) and the target track (which we will designate). The AUTO PUNCH IN/OUT will write the new data to the target track. We are recommending that you make a copy of the Lead Vocal track. COPY Track 1 to Track 2 (virtual track 2)... this way we are not destroying any data; Track 2, Virtual Track 2 is empty. By making a copy of the original Vocal track to a empty virtual we can experiment and get all the punches and fixes done, then we can simply replace the original track with our edited version that will have all the punches.

COPY the Lead Vocal to [Track 2, Virtual 2]

Press [EDIT] repeatedly to select the COPY function.

```

TR: 1  V: 1  00:00:00.000  001.1
          00:04:05.000  082.3
EXEC
TR: 2  V: 2  00:00:00.000  001.1

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This will copy [Track 1, Virtual 1] from the start to the end to [Track 2, Virtual 2] from the start. So we will have exactly the same data on each track. This will allow us to send data from track 1 – through the Pitch Fix and print the pitch corrected data (between our IN and OUT timing points) onto [track 2, Virtual 2]. This will also allow us to monitor (hear) the data prior to the AUTO PUNCH IN point and after the PUNCH OUT point – which will allow us to determine if we have matched levels.

Select Virtual Track 2 for track 2.

- Press [TRACK] repeatedly to select the "V.TRK" screen
- Move the cursor to Track 2 and use the down cursor to select Virtual 2
- Press [ENTER]

Setting the AUTO PUNCH IN/OUT markers

The setting of markers can be done in real time as the music is playing. We only need to be close – we can fine-tune the positioning of them using the visual Wave edit function built into the AW1600.

- Press [TRACK] to select the "View" screen.
- Start playback and while the vocal is playing hold down the [SET] button with the ring finger of your right hand.
- Touch the [IN] button between the words "come / true"
- While continuing to hold [SET] tap the [OUT] button after the word "true".
- Press [STOP] to end playback

With practice you will be able to do this with ease. However, if you need to tweak the punch in point take these steps:

After you have marked the general area of the IN point:

- Press the [IN] button to locate that spot
- On the [TRACK] View screen move the cursor down to the "WAVE" box and press [ENTER]
- Your IN point should be approximately a value between:

00:01:06.450 and 00:01:06.465

While this seems like a very small amount of time you can zoom in with the WAVE edit tool so that it seems like you could drive a truck between those two words. That is the beauty of the WAVE EDIT screen (the resolution goes down to a single sample – but as mentioned this needs to be in the open space between the two words). Position your centerline so that you are in between those two words. You start to realize that you can

sometimes easily define the space between two syllables within a single word.

I will not belabor this document with how to find an edit point – page 72 of the manual has a short but very thorough 7-step tutorial on this subject:

“Finding a location while you view the waveform”.

- Once you have placed the centerline between the words in question, move the cursor down and select EXIT. Press [ENTER] to leave the Wave Edit screen.
- Immediately, update your IN point by holding [SET] + [IN] this will move the IN point to the position of your wave centerline position.
- You can in a similar fashion check your OUT point as well – you simply need to be out before the next word begins. It is not necessary to cue the points as accurately as when you are cutting audio – your want to be in the ‘spaces’ between words.

Once you have defined your REC IN and OUT points, the AUTO PUNCH IN/OUT function will use these locations for our Pitch Fix. These locations are documented as the LAST IN and LAST OUT points on the list found on the [SONG] “POINT” screen. The SOURCE track (Track 1) will be processed and become audible between the IN and OUT point so we will hear the result of the Pitch Fix.

AUTO PUNCH IN/OUT is perfect for this function because we can audition or “rehearse” before we actually record the data. Rehearse mode will do everything but record the data – you will see the RECORD light flash red at the point it *would be* recording and you will hear exactly what you will record. This is perfect.

Setting up the Pitch Fix algorithm

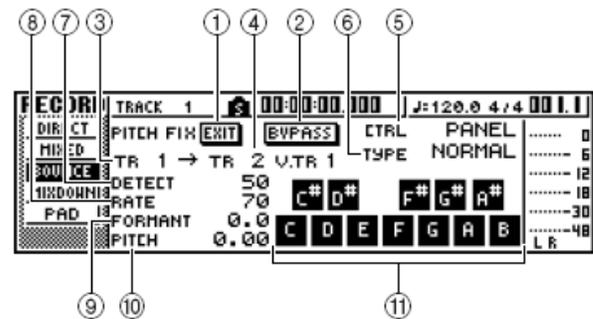
- Raise track faders 1 and 2 so that you can hear.

What you will hear in our setup is [track 2, virtual 2] playing back the vocal – when the transport reaches the AUTO IN point you will hear [track 1, virtual 1] being processed by the Pitch Fix function. At the OUT point you will hear [track 2, virtual 2] again as normal. So only between the IN and OUT point will you hear track 1. You only hear it as it is being processed by the Pitch Fix function.

The position of Track 1’s fader will determine the level that is recorded (bounced) to track 2 – so its position is **critical**. What you want is that there is no perceptible change in volume; that is, the

punch-in area should match the overall volume of the vocal track. This is why the AUTO PUNCH function is perfect for working with pitch correction when we need to replace a wrong or unfortunately pitched note.

- To select the PITCH FIX function, press the [RECORD] button repeatedly in the Quick Navigate section and select the “BOUNCE” screen. Technically we are bouncing data from one place to another.
- On the BOUNCE screen you will see the PITCH FIX – highlight it and press [ENTER]
- Set the first dialog box to indicate our SOURCE: Track 1, Virtual 1. Move to OK. [ENTER]
- Set the second dialog box to indicate our target: Track 2, Virtual 2. Move to OK. [ENTER]



Set this screen as follows:

- CTRL = PANEL
- TYPE = NORMAL
- DETECT = 0 (Fast pitch detection)
- RATE = 80 (large amount of change)
- FORMANT = 0.0 (unchanged)
- PITCH = -0.70 (lowering the pitch of the word “True”).

- Rehearse: Press the [AUTO PUNCH] button. This will automatically locate the transport 4 seconds prior to our IN point (this is the default PRE-ROLL; the POST-ROLL is also 4 seconds)
- Simply press the PLAY button to test our Pitch Fix settings.
- The transport will automatically stop 4 seconds after the OUT point and will relocate to the pre-roll position.

The pitch will be corrected and you will hear the vocal note for “true” is now changed.

Now that you have this setup – demonstrate how you can use this to harmonize. For example, in this particular situation the note for the word “true” was almost a half step sharp. We have

lowered it (-0.70) using the PITCH correction. Try PITCH = -5.70 this will lower the note a musical 4th from the -0.70 setting.

Note: (The original recording has a note close to "C#", we are, by setting it to -0.70 "correcting" it to "C". And by lowering it to -5.70 we are lowering it to a musical "G".

You could use the keyboard icon on the screen, called CTRL = PANEL) to limit the note's pitch but since this particular note has a lot of vibrato, the results using the straight PITCH parameter seem to work better than the PANEL keyboard.

Experiment to find what settings work best. In this article we are dealing with a specific note of a specific recording, when working on your own audio your mileage will naturally vary. Each situation will have its own determining factors. This example is just one constructed for learning purposes.

Playing the melody from a MIDI keyboard

You can use the Pitch Fix function in a totally different manner. This first example was using it to tweak a wrong (or unfortunately pitched) note in a track using the AUTO PUNCH function.

You can also setup the AW1600 so you can control the melody notes of the vocal from an external MIDI keyboard or from a pre-recorded track of your MIDI sequencer. This can be a lot of fun and can be used as a serious tool and as a way to easily make unusual vocal effects.

In order to pull off this type of utilization of the PITCH FIX effectively, it will help tremendously if you know the melody and timing of the song in question. Get a microphone and sing a simple melody on to track 1 of a blank SONG or on to an empty virtual track. Set the AW1600 so that it is set to receive MIDI data from your keyboard (you do not need to hear the audio of the keyboard – you simply going to use it to control pitch).

- Press [UTILITY] select MIDI 1 page
- Set the AW1600's MIDI IN to MIDI
- Connect the MIDI OUT of the keyboard to MIDI IN of the AW1600 (ensuring that the it is set to send MIDI OUT
- On the PITCH FIX screen set the CTRL = NOTE

As an example, say you record "Row, Row, Row Your Boat" (easy enough) to Track 1. The IN and OUT Points will be set automatically. How? When you record to the AW1600 the Last Record IN point is memorized and when you stop recording the Last Record OUT point is memorized and the

[SONG] POINT screen is updated to reflect those positions.

- Press [RECORD] in the Quick Navigate area to select the BOUNCE function
- Cursor down and select PITCH FIX
- Set the first dialog box to indicate our SOURCE: Track 1, Virtual 1. Move to OK. [ENTER]
- Set the second dialog box to indicate our target: Track 2, Virtual 1. Move to OK. [ENTER]
- Press and light the [AUTO PUNCH] button
- Start playback and rehearse playing along with the vocal

Remember the settings for CTRL = NOTE DETECT is how fast the pitch will be recognized (set this to a fairly low number) RATE will need to a fairly high number but not so high as to make the Voice sound too unnatural. FORMANT = 0.0 unless you want to change the quality of the voice PITCH = 0.00 theoretically you sang the melody properly, in this recording. It will not matter we are going to play the notes.

As playback begins the pitch will be determined by how you play – so your timing will be critical and try and play in a range that matches the vocal (initially)

Playing the melody from a MIDI Sequence

As you can see the only difference between actually playing the melody on a MIDI keyboard and having a Track of a sequencer do it is how you set up the MIDI source. Remember that Pitch Fix works on mono audio and therefore, your notes feed in to control a melody or create a harmony should be single line data (not chords).

Chords can be used to outline a SCALE when the CTRL mode = SCALE. The SCALE Control type is used when you know the notes that are supposed to be used. If you are attempting to pitch correct an entire phrase you can darken just the keys of the notes that should have been sung and the Pitch Fix will force the vocal to the nearest pitch. For example, if you had a phrase that occurs over a 10 second area of a song, and you know that the phrase should be within the key "G Major" you can outline just the notes C, D, E, F#, G, A and B. Any note sung near one of these pitches will be corrected to the closest pitch according to the DETECT, RATE and FORMANT parameters you set.

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