



S90 and the Modular Synthesis Plug-in System

PLG150-PF Professional Piano Plug-in Board

A Getting Started Guide

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PLG150-Pf Piano Plug-in Board

The PLG150-PF is a sample playback based single part plug-in board. It is based on the same AWM2 technology that is used in the S90 wave ROM. It features 16MB of sounds exclusively in the piano category (acoustic grand pianos, electric pianos: Rhodes, Wurlitzer and DX7 type, Clavinet, Harpsicord, electro-acoustic (CP80-type). These sounds are painstakingly sampled and meticulously voiced by our experts. Classic sounds of the '60's and '70's are of particular interest. A large gathering of antique classics were assembled for the sampling sessions. Inspiration for voicing the classic sounds found here include Richard Tee, Donny Hathaway, Bob James, David Foster, Joe Sample, Josef Zawinul, Emuir Deodato and others. Sounds were programmed to mimic the classic recordings where these sounds were immortalized. Much detail was paid so that these sounds work in context of music. The acoustic grand pianos (many of them) are stretched tuned adding animation to the sound when used in the context of a group.

The PF board differs from the other PLG150 series boards in two ways. First, it is based on samples (the AN, DX and VL are all non-sample based technologies). Second, it does not have an "Expert" editor or a USER RAM bank for "from scratch" waves. It sounds funny to have to explain this but for a sample playback board to have its own "from scratch" bank would require too much RAM. The 'pure' synth boards like the AN, DX and VL in comparison use very little RAM to store entire banks of Voice data. The DX, for example, has a bank of 32 sounds equal to about 4KB (that kilobytes!) of data. Four kilobytes of sample data is really nothing at all. Samples require mucho megabytes of data! Therefore the sounds on the PLG150-PF are largely presets that you can tweak via OFFSETS. Part of what you are paying for, however, is the excellent VOICE programming. Although the PF board has a similar architecture to the S90, 4-element AWM2 sample playback, you do not have the same degree of editing that you would with a S90 VOICE. Rather than being able to program "from scratch", you recall a mostly finished AWM2 Voice that has certain parameters available for real time

tweaks. For example, if the original programmer applied a Control Delay or an LFO based effect, then you will be able to control how it works. But you will not be able to change the pre-assigned Board effect. As we will see in this article, this is not a problem because you can assign S90 effects to any Board sound and store it as one of your own PLG USER Voices.

Checking Installation

For installation instructions please follow the Owner's Manual pages 282-283. Check to make sure your board or boards are properly installed. The Orange connector is slot 1, the yellow connector is slot 2 and the Green connector is slot 3. A PLG150-series board can occupy any slot.¹ The boards should always be installed with the S90 off – the boot up routine will check the plug in slots and automatically, if it detects a board it will load 64 Preset sounds for that board. (The VL board is the exception. It has actually 3 PRESET banks of 64 that it will load when a VL board is detected – one for Aftertouch play, one for Velocity play and one for Breath Control). Here's how to verify your board:

On the S90: Press [UTILITY]/[F6] PLG to check the status screen which will identify all the PLG boards found and their slot location:

The "Expand" parameter will be active only when you have 2 or more PLG150 series boards of the *same* type installed and polyphony expansion is possible. A second PLG150-PF can give you a maximum of 128 notes of piano board polyphony in Expand poly mode. A third PLG150 can give you 192 notes total for piano board. Because the System is **modular**, this polyphony **does not** take away from the polyphony of the mothership host (S90 / S30 / S80 / CS6x / CS6R / Motif 6-7-8)- Nor does it contribute to a pool of notes – they are completely separate. You, of course, can use multiple boards as individuals, thus increasing how many Parts for which you will have PLG150-PF Voices available.

¹ **HINT:** Find a consistent slot layout for your boards and stick with it. When making bulk files that reload your custom sounds (AN, DR, DX, PC and VL only), it matters which slot the board is found in.

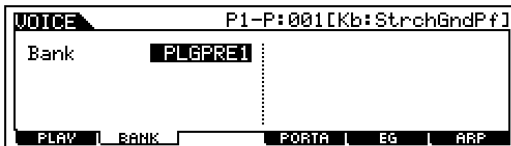
The sounds

When you boot up your S90, one of the queries it does is to the PLG slots, "Now checking Plug-in boards...". If it finds a PLG150-PF board in one of the slots it will load from ROM a bank of 64 Voices that will address the PLG150-PF. This bank is referred to as the PLG PRE1 bank (PLUG-IN PRESET1). The Presets will find the PLG150-PF board. The bank will always be PLG PRE1 no matter which slot you place the board.



In the main Voice screen above, the P1-P prefix denotes that the PF board is in PLUG-IN SLOT 1 (P1)² and this is a Preset bank (P). These are 64 sounds are programmed integrating them with S90 parameters, controllers and effects. They are made with great care to play well and give you a remarkable set of piano category sounds. In addition to the PLG PRE1 bank of 64 S90 provides a PLG USR bank with 64 blank locations for you to create your own variations. These remain a part of the S90 memory after power down. They are made from the 128 Board Voices (raw data) provided on the PLG150-PF board.

The PLG150-PF sounds are divided into two categories: Finished "PLUG-IN" VOICES (like the PLG PRE1 and the PLG USR Voices you will make). These sounds are S90 level Voices – meaning they are sounds that have the source waveforms on the PLG150-PF but they have been integrated with S90 parameters, controllers, and effects. This is opposed to the "BOARD" Voices bank 032/000, which are like the "raw material" that you use to build finished S90 Plug-in Voices.

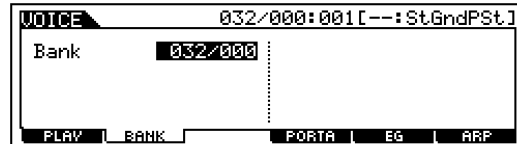


To select banks: From the main Voice screen press the F2 BANK button, then use

² If your PLG150-PF is in slot 2 your screen will read P2-P, slot 3 will read P3-P.

the wheel or the INC/YES, DEC/NO buttons to change to the various banks. When ready to try the Voices in that bank Press F1 PLAY. There are three banks you should concern yourself with when you have the PLG150-PF board in a Modular Synthesis Plug-in System host (like the S90). They are the PLG PRE1, PLG'1'USR*, and 032/000. * number refers to slot

The aforementioned 128 "BOARD" Voices will be found in a bank called 032/000.



- Press F2 Bank from the main Voice Screen and select the 032/000 bank
- Board Voices have yet to be integrated with S90 parameters, controllers or effects. It may be a bit much to call them "raw" data because they are already tweaked to a "ready-to-play" state – but they do not have S90 Effects applied yet. There are 128 sounds resident here. Select bank 032/000 then press F1 PLAY. Obviously, 64 of these have already been programmed for the PLG PRE 1 bank. But there are 64 more sounds waiting for you to tweak and store as PLG USR sounds.

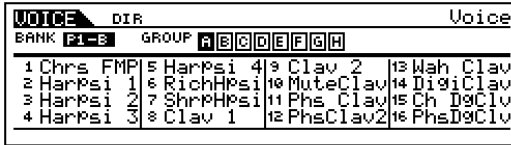
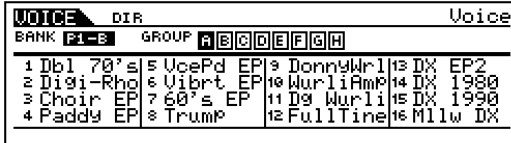
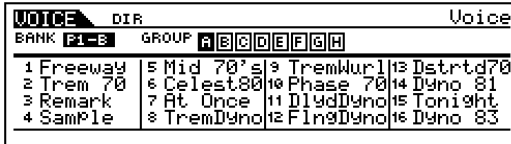
Listed below are the 128 Voices.

VOICE		DIR	Voice
BANK	PL-B	GROUP	A B C D E F G H
1	StGndPSt	5	StRichSt
2	GndPnoSt	6	RchGndSt
3	BrghtGnd	7	60'sJazz
4	60'sGrnd	8	StT9htSt
9	T9htGdSt	13	ChorusMn
10	PowerGnd	14	Doom
11	MildGrnd	15	Phono
12	Timeworn	16	Room

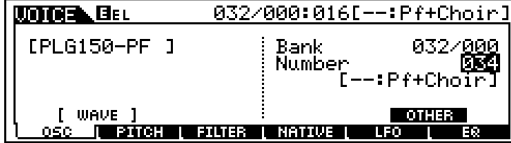
VOICE		DIR	Voice
BANK	PL-B	GROUP	A B C D E F G H
1	AmbiGrnd	5	Montuno
2	FlngGrnd	6	GrndDyNo
3	CelesGrnd	7	David
4	Db1 Pno	8	RhodyGnd
9	Perc Pno	13	PianoStr
10	GrandDX	14	PnoStPad
11	GrandDX2	15	SynStrPf
12	Bob	16	PianoPad

VOICE		DIR	Voice
BANK	PL-B	GROUP	A B C D E F G H
1	OctPf+Pd	5	SitaryPf
2	Pf+Choir	6	BrghtPno
3	ModPd Pf	7	Digital
4	Pia-Tron	8	ChorDigi
9	Grnd+EP	13	GlassPno
10	DigiGrnd	14	DigiLine
11	Grnd/wDX	15	CP
12	ChoDigiP	16	CP-Symph

VOICE		DIR	Voice
BANK	PL-B	GROUP	A B C D E F G H
1	Trem CP	5	Jino
2	BrightCP	6	Petit CP
3	Digi CP1	7	HnkYtnk1
4	Digi CP2	8	HnkYtnk2
9	HnkYtnk3	13	70's EP
10	FMHnkYtnk	14	80's EP
11	Tea	15	Crisp EP
12	Deodar	16	Sweetnes



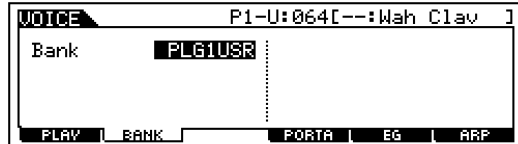
Notice that the Bank is called P1-B. The P1 is the slot, PLUG-IN slot 1. The "B" denotes Board Voice. When you press EDIT, like most edit areas of S90, there are *two* levels the COMMON level (reached via the dedicated button) and the Element level (reached via the Track 1 button).



- Press EDIT
- Touch the Track 1 button to select Element level programming
- Press F1 OSC/ SF1 Wave

This is the screen where the S90 Voice targets the PLG-PF Board Voice waveform. The PLG150-PF sound is recalled here but you cannot "get at" the individual elements. In the above screen shot, the Piano+Choir sound (which is listed as a 3-element sound) is recalled here as a combined waveform. You **cannot** get at the individual Elements (piano and 2 choir) to select new ones – the way you would with an internal AWM2 Voice. You will be able to adjust the relative volumes of the 3 elements through OFFSET parameters that are provided. Additionally, you can go to the COMMON level and add S90 controller sets and Effects. When you are ready to store your work it will be saved to one of 64 PLG_USR bank locations. The S90

reserves 64 USER locations for each PLG150 series board.



The PLG_USR bank (PLG1USR in our example slot 1) will allow you to create and store 64 sounds based on the data on the PLG150-PF board. This Voice data will remain in memory after power down. And will be available as long as the PLG150-PF board has been detected and is in the slot.

What is a Plug-in Voice and what is a Board Voice?

The PLG_USR bank is initially a blank S90 bank. It awaits your variations (64) of the PLG150-PF data. The voice data on the PLG-PF board are called the **Board Voices (032/000)**. Instead of using ROM samples from the host, the PLG-PF Voices point to sample data that is resident on the PLG-PF board. The Voice data contained on the PLG150-PF is based on specially sampled data – same AWM2 technology as the internal voices.

Plug-In Voices are Board Voices that have been integrated with S90 parameters, controllers and effects. (64 PLG PRE and 64 PLG USR)

The PF board has several banks of sounds as follows: The numbers represent MSB/LSB for bank select – (MSB and LSB Bank Select numbers are used to facilitate remote changes from a device like a sequencer and are used in the S90's MIX setup. More on that later).

PLG_USR = 64 blank locations (Saved in ALL, ALL VOICE and VOICE EDITOR type Files). When used in a MIX look for the MSB/LSB numbers, and Pu1, Pu2, or Pu3 according to which slot, as follows:

- If PLG150-PF is in slot 1: 63/24 Pu1
- If PLG150-PF is in slot 2: 63/25 Pu2
- If PLG150-PF is in slot 3: 63/26 Pu3

What this means is: if your PLG150-PF board is in slot number 1, then the PLG1USR bank will be addressed by bank numbers 63/24. PLG1USR = the 64 empty locations reserved for the PLG150-PF detected in slot 1. PLG1USR is Pu1. If your PLG150-PF is in slot 2, then the PLG2USR

bank will be addressed by bank numbers 63/25, etc.

PLGPRE1 bank = the 64 Preset PLUG-IN VOICES loaded on detection of the PLG150-PF; (These are loaded automatically on power up). When used in a MIX, look for MSB/LSB numbers, and "Pp1" below the Part, as follows:

If PLG150-PF is in slot 1: 63/70 Pp1
If PLG150-PF is in slot 2: 63/73 Pp1
If PLG150-PF is in slot 3: 63/76 Pp1

What this means is that if your PLG150-PF board is in slot 1, then the PLG PRE1 bank will be bank 63/70. If you select that MSB/LSB in your MIXER you will be in touch with the Plug-in Preset1 bank (Pp1). The Preset Bank for the PLG150-PF will always be PLG PRE1 no matter which slot.

032/000 = 128 preset **Board Voices**. These are the resident sounds of the PLG150-PF. Use these waveforms to build finished S90 Plug-in Voices. You can either build S90 level Voices and store them to one of 64 PLG USR locations or you can access these sounds directly through a MIX. If you call these up directly through a MIX, they will still use the effect (if any) that is pre-programmed on the PLG150-PF Board Voice, but they will not have any S90 Voice level effects assignments. You can apply the System Effects (Rev, Chorus) and Variation effect of the MIX. You can apply controller and other parameters via the PART parameters of the MIX – this lets you customize any Board Voice for each "local" Mix. If you use them directly in a MIX you will see the MSB/LSB 032/000 and PB below the Part.

If PLG150-PF is in slot 1: 032/000 PB
If PLG150-PF is in slot 2: 032/000 PB
If PLG150-PF is in slot 3: 032/000 PB

When addressing Plug-in Board Voices directly in a MIX you must be careful when you have multiple boards of different technologies. Voice parameters must match the technology of the board in the slot. If you point PLG150-PF parameters to a PLG150-AN you will get a "TYPE MISMATCH" message and you will get no sound.

XG Banks: *Other banks are for **XG extension**. These begin with MSB/LSB

080/xxx and **096/xxx**. These are PF-XG extensions for use in XG/GM systems. These are basically the preset board Voices rearranged into various banks for use in **XG** products that can also access sounds on the PLG150 series boards. They are the same 128 sounds found in 32/00 just rearranged for GM/XG category use. You can ignore these when using the board in the S90.

How the PLG150-PF Works

Let's go through the steps of tweaking a PLG150-PF sound. You cannot build a sound "from scratch", you must start with the programming provided by the original programmer of this data. The samples have been looped and meticulously mapped and the elements have been built. Effects and/or EQ has already been applied to make these sounds "ready-to-play".³ The chip set on the PLG150-PF allows limited access to specific effects. In other words, if a sound is routed through an effect that effect is available for you to tweak – but its assignment is fixed. You cannot reprogram the effect assignment on the board. That assignment is fixed – you can control it but you cannot re-assign it. You **can** add the S90 effects Reverb, Chorus, and Dual Insertion Effects in addition to those that may be provided on with the PLG150-PF programming. Consult the documentation that accompanies the PLG150-PF for the type of Insertion Effect that is active (if any) on each of the provided sounds. For example, Voice #17: AmbiGrand is a 2 element Voice with a "Cross Delay" Insertion Effect assigned. Or check out #90: WurliAmp, a classic Wurliizer sound in an "Amp Simulator". #68: Sample is an electric piano in a Rotary Speaker. These are effects that are on the PLG150-PF board itself and will be active in a MIX when you select the PLG150-PF for a PART. This is not a S90 effect – it refers to the effect processing available on the PLG150-PF board itself.

Let's take a closer look so that this is clear. We are going to do a step-by-step tweak of the "Wah Clay" **Board Voice** and turn it into a finished S90 **Plug-in Voice**.

- Start in VOICE mode

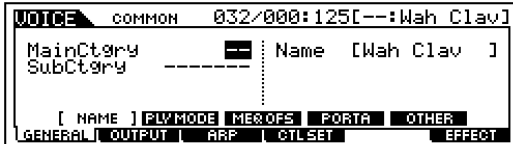
³ Of course, you wouldn't want to buy a PLG board and have to do all that work yourself.

- Select the PLG Slot with your PLG150-PF (our example will refer to slot 1)
- Press F2 Bank and select bank 032/000
- Place F1 PLAY
- Select Voice H13: --:Wah Clav

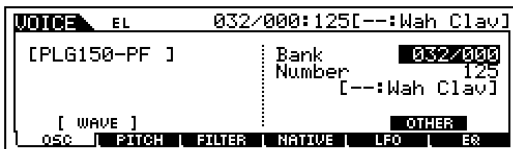


This is a Board Voice (P1-B)⁴. Play it and you will see that a wah-wah effect is already active (Auto-Wah). I selected this Voice to show a specific point: Certain of the Board Voices on the PLG150-PF already have effects programmed on the board – the assignment is fixed. You can tweak them via controller offsets (as we will see).

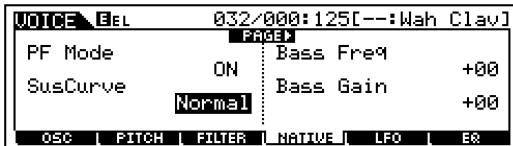
- Press EDIT
- Press COMMON – this selects the upper level of editing (see below).



- Press the TRACK 1 button – in this case it selects the ELEMENT level of edit mode (see below).



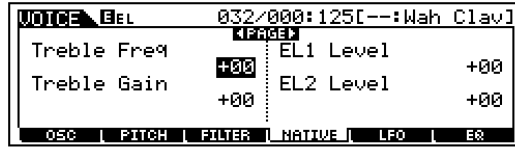
- F1 OSC/ SF1 Wave – this screen is where the Board Voice is assigned. The S90 parameters that will be stored in a USER VOICE will be applied to this waveform.
- F4 opens the door to the NATIVE parameters: those “native” to the board.



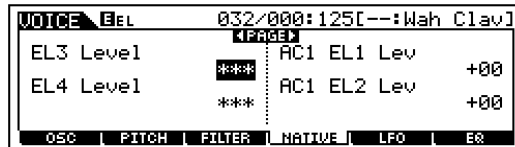
“PF Mode” deals with the PLG150-PF board’s ability to respond to SUSTAIN as a continuous controller (for half-pedaling effects etc.) if you have a pedal capable of sending Sustain as a continuous stream of

⁴ The 1 in P1 refers to the SLOT number. If your board is in slot 2 it will be P2-B.

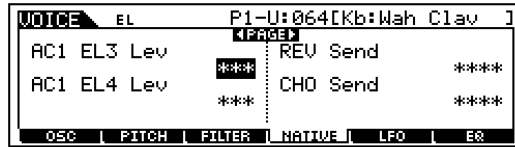
data. The Board also has its own two-band tuneable EQ. PAGE right with the cursor arrow.



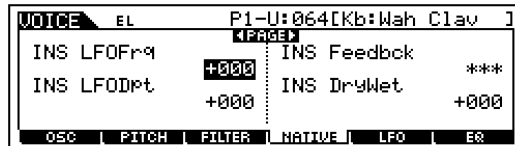
Like the S90 itself, the PLG150-PF board can have up to 4 Elements to a Voice (see the PLG150PF Owner’s Manual for listings of Voices). Although this is fixed (preset) you do have an *offset* for each Element so that you can change the relative volumes between elements.



As you can see from the asterisks (***) (means parameter is not available) the Wah-Clav is a 2-element Voice. AC1 or “Assignable Control 1” is set to do Element Level on EL1 and EL2.



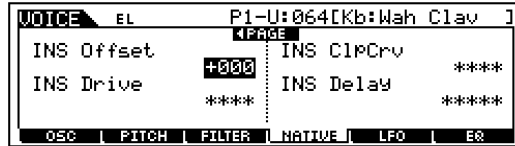
The REV and CHORUS processor can only be used if it is activated already. For most Voices you will use the S90’s REVERB and CHORUS processors.



“INS LFO FRQ” translates to INSERT EFFECT Low Frequency Oscillator Frequency. This will offset the SPEED of the wah-wah, in this example.

“INS LFO DPT” translates to INSERT EFFECT LFO Depth. This will offset the AMOUNT of wah-wah Filter sweep depth.

“INS DRY/WET”. This will offset the balance between dry signal and the effect. This will effectively allow you to turn the wah-wah effect on and off by offsetting the pre-programmed value toward DRY.

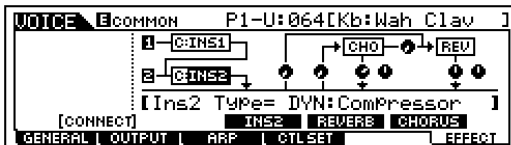


“INSERT OFFSET”: In each Board Voice the programmer activated a specific parameter that could be offset. In this one it will set the initial level of the filter controlling the wah-wah. Those parameters that are grayed out (***) are unavailable in this particular Voice, but you may see them active in other preset Board Voices that have effects active that can use them as OFFSETS.

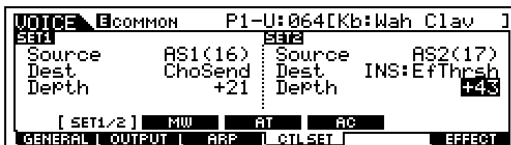
It is in this manner that you have access to the effect processor that the original programmer selected for this Board Voice. Check the Owner’s Manual (page 24-25) for information on which Board Voices have Insertion Effects active and for which Insertion Effect Parameters are available for that algorithm (30-32). If, for example, you want to defeat the built-in wah-wah (AUTO-WAH), you could (using the WET/DRY OFFSET). Then you could program your own using the S90’s powerful, fully editable, DUAL INSERTION EFFECTS – which are, of course, also available to be applied to the PLG150-PF data.

The other OFFSETs you see listed refer to other specific effects, for example the CLIP CURVE is a function of the Guitar Amp Simulator, available on the “WurliAmp” sound.

To add S90 level Effects:



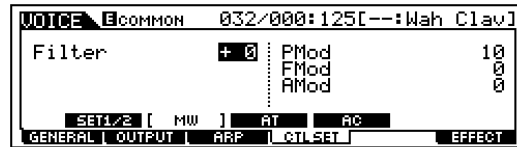
- Press the COMMON button
- Press F6 Effects/ SF1 Connect to apply S90 effects. The Dual Insertion effect is available (in series or parallel), as is the S90 Reverb and Chorus. Above a Dynamic Compressor was selected for INSERT 2.



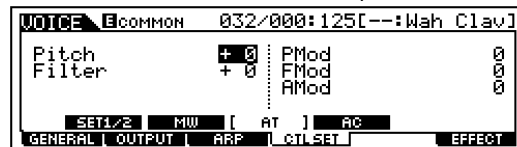
In the above two “before-and-after” screens the AS1(16) and AS2(17) are the

per Voice programmable Assignable knobs. AS1 is assigned to control the Send amount to the S90 Chorus, while the AS2 is assigned to control the DYN: COMPRESSOR we selected for INS EFF 2. AS2 is setting the Compressors Threshold level.

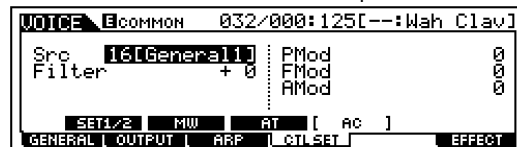
Other S90 level parameters you can assign to the Board Voice: You can assign the Modulation Wheel MW to control Filter Cutoff, Pitch Modulation, Filter Modulation and Amplitude Modulation:



Aftertouch AT can be assigned to control Pitch Bend and Filter Cutoff, as well as Pitch Mod, Filter Mod and Amplitude Mod:



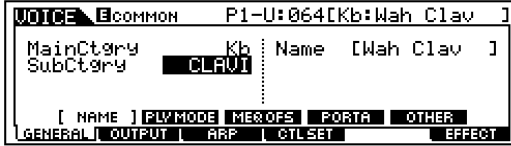
You can select an Assignable Controller AC Source and have it effect Filter Cutoff, Pitch Mod, Filter Mod and Amplitude Mod:



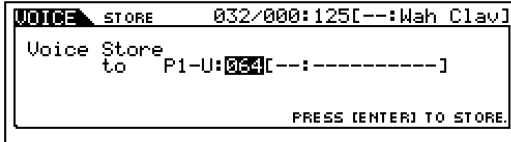
Of course, the S90 Arpeggiator can be applied to the PLG Voice like any other S90 Voice. Be sure to explore the Arpeggiator Note Limit and Velocity Limit parameters and the Play Effects. The Play FX can give the arpeggio some swing or multiply (double/half) the time):



You can assign a prefix so that you can use Category Search properly. Our example is in the Keyboard category, KB, and is a CLAVI:



Once you have edited to your satisfaction press STORE. The S90 will automatically point you toward an appropriate location in the PLG_USR (Px-U) bank: P1 because our board is in slot 1 and "U" USER.



Note the AS1 and AS2 assignments – they reflect our assignments: the Chorus Send and the Threshold for our selected Dynamic Compressor.

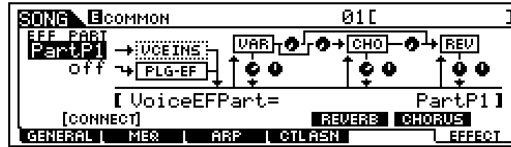


Summary: The Board Voice: --Wah Clav already had a wah-wah built in (so to speak) that effect will be active if you use this sound in a Mix. The AUTO-WAH is an effect actually on the PLG150-PF board. The Chorus and Compressor (are S90 level effects). The Compressor, being an INSERTION effect, will only be active in a Mix if you activate the INSERT Effect for the PARTP1 (Plug-In slot).⁵ The S90 Chorus is available in a MIX as a System effect – all Parts, including the PLG Parts, have a send to the System effects.

[To actually place a PLG150 Voice in a MIX you need to select it in the MIXER, then EDIT the Part to assign it a MIDI channel. PLG Parts default to being unassigned in a MIX. This is covered in depth in the Power User on ASSIGNING YOUR PLG150 PLUG-IN BOARD IN A MIX.]



In the MIX our finished "Wah Clav" Voice will be found in the 63/24 (Pu1) PLUG-IN 1 USER Bank.



When you set the EFF PART to PARTP1 the S90 level INSERTION EFFECTS for the Plug-in slot Voice will be recalled (The DYN: Compressor) from Voice mode. Remember the wah-wah (AUTO-WAH) effect will always be there – it is on the PLG-PF board. It is the S90 INSERTION effect that is activated here.

Housekeeping

When you save as an ALL data file, an ALL VOICE type file or as a VOICE EDITOR type, your PLG_USR Voice data will be saved.

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⁵ Be careful to note the difference between PartP1, the PLUG-IN PART, and Part01, the Internal Part.