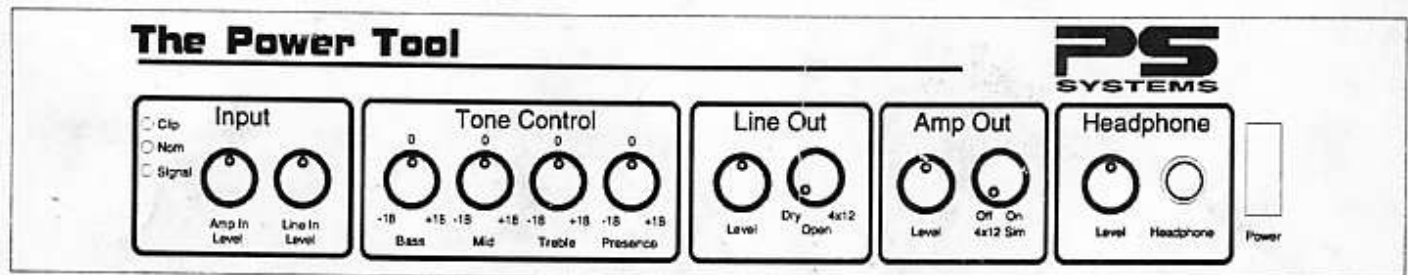


# The Power Tool Owner's Guide



**PS**  
**SYSTEMS**  
music technology products

# Introduction

## **What is the Power Tool?**

The Power Tool is a multi-function device intended to connect to the speaker output of a tube amplifier. Its features include:

### **Reactive Load**

Unlike power soaks or 'dummy loads', the Power Tool provides a reactive load identical to a speaker cabinet. A reactive load supplies different impedances at different frequencies just as speakers do, as opposed to power soaks which provide a fixed impedance. Further, a reactive load stores energy and returns it to the amplifier a split second later causing the amp to 'pump' or compress and expand. This interaction is responsible for the life in the sound of a tube amp.

### **Post Amp Distortion Tone Control**

The Power Tool includes a 4-band tone control section which differs from normal amp tone controls. The tone controls are active allowing 18db cut or boost of the signal, as opposed to just attenuation. In addition, they are placed after the amplifier's output tubes allowing tone control of the distorted sound not just the clean guitar sound. The net effect is much greater control over the final sound than possible with just a guitar amp.

### **Full Control of Volume**

The Power Tool accepts, as input, the full output volume of your amp and converts it to a more manageable line level, variable amp level and headphone level without any loss of sound quality. In addition the Power Tool can simulate the response of open-back or 4x12 speaker cabinets to any of these sources.

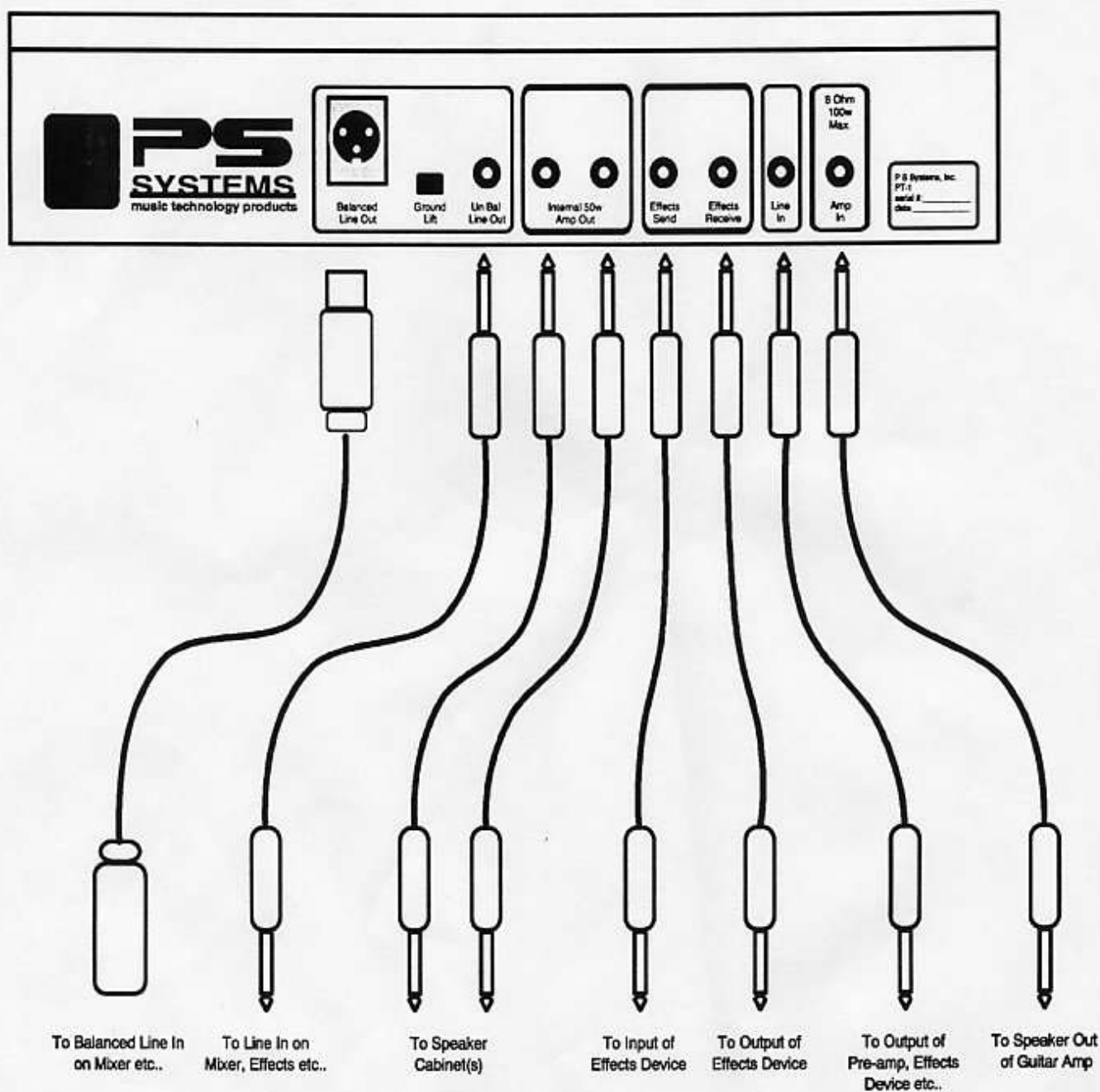
### **The Instigator Circuit**

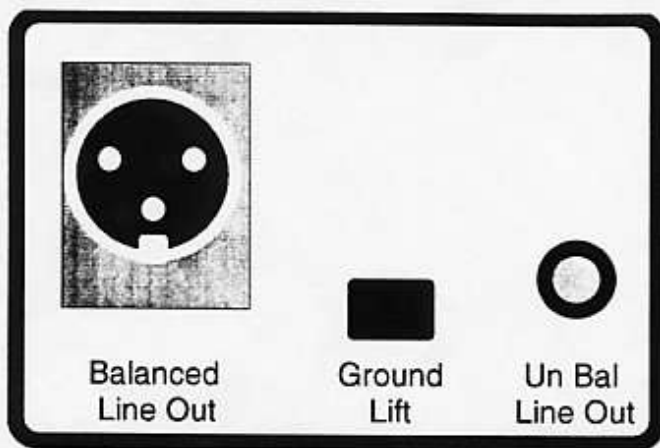
Exclusive to the Power Tool is the Instigator circuit which provides frequency response canceling and shaping allowing an open-back cabinet to sound like a 4x12 sealed cabinet. This circuit, combined with an internal 50 watt solid-state power amp, gives unprecedented control over sound within your guitar rig.

### **Connections**

The Power Tool accepts input not only from your amp's speaker out but also line level input from pre-amps and effects devices as well. An effects loop is available to feed post-distortion signal to effects devices and back in to the Power Tool. The Power Tool also provides a balanced, low-impedance output, eliminating the need for direct boxes, and an unbalanced line out for connection to mixers, tape decks, power amps, effects etc... Two outputs from the internal 50 watt solid-state amp can feed speaker cabinets. A front panel headphone jack is also provided.

# Connections





## Line Out

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The male XLR connector is a balanced line level output. Use this connector in lieu of a direct box for connections to a mixing console, pro tape deck etc...

The 1/4" jack is an un-balanced line output suitable for connecting to mixers, portastudios, effects etc...

A ground lift switch has been provided allowing you to isolate audio ground from earth ground. Normally this switch should be in the out position. However, if you hear 60 Hz. hum push the button.

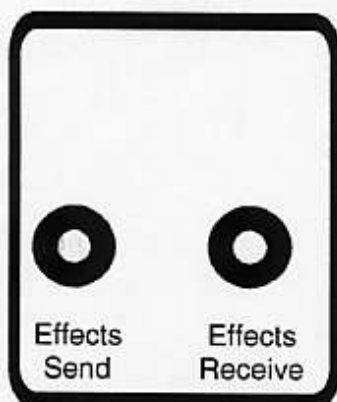


## Speaker Out

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Two 1/4" jacks have been provided to drive external speaker cabinets from the Power Tool's internal 50 watt solid-state amp. Speaker loads down to 2 Ohms are acceptable.

Be sure to use non-shielded speaker cables only!



## Effects Loop

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The effects loop on the Power Tool allows you to send post-amp distortion signal to a line level effects unit. You will probably notice that the effects are more pronounced as they are not being washed-out by the power amp section of your guitar amp.

As with all systems, signal level in the effects loop needs to be carefully set at all stages. Here is how to set levels to and from the effects unit: While watching the input L.E.D.'s on the effects unit, increase the Amp In (or Line In) level control on the Power Tool. Increase the level until the effects unit is being comfortably driven. Now watch the Power Tool's input L.E.D.'s as you increase the output level of the effects device. Increase the output level until the Power Tool's red L.E.D. just starts to light. Both the Power Tool and the effects device are now set to optimum operating levels.

If the effects device has no level controls on it, set the Amp In (or Line In) level controls to meet the Power Tool's L.E.D. indicator needs. (See Signal L.E.D.'s)



## Line Input

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The Line Input is a 1/4" jack which can accept signal from any -10 to +4 dbv line out. Typical connections would be from a guitar pre-amp or effects device. Do not connect the speaker output of your guitar amp here!



## Amp Input

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The 1/4" Amp In jack connects to the speaker out jack of your guitar amp. The maximum output wattage the Power Tool can accept from your tube amp is 100 watts. If your guitar amp has an output ohm selector, set it to 8 ohms. Be sure to use an un-shielded cable for this connection.

Note: As far as your amp is concerned, the Power Tool is just a speaker cabinet. The Power Tool itself cannot damage your amp but your amp can be damaged by being run 'on 11'. Regular maintenance of your amp, especially the tubes, can go a long way towards avoiding problems.



- ☐ Clip
- ☐ Nom
- ☐ Signal

## Signal L.E.D.'s

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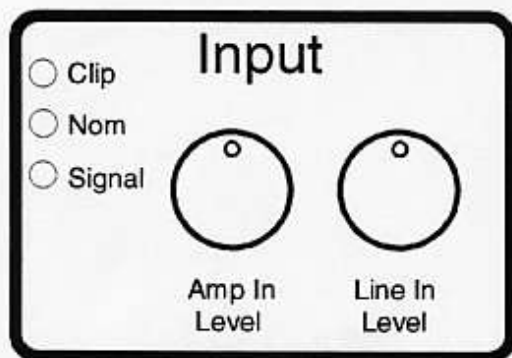
The three L.E.D.'s at the left side of the Input section are probably the most important feature of the Power Tool's front panel. The green L.E.D. indicates the presence of any signal, even the level of noise in your rig. The yellow L.E.D. shows the nominal or average level of signal passing through the Power Tool. During normal playing this L.E.D. should be on all of the time. The red L.E.D. is the most important. If lit, it indicates near clipping in the Power Tool with the possible result of unwanted distortion. These L.E.D.'s differ from the normal input level lights seen on other products so read the next section carefully.

The L.E.D.'s are the display part of a level detection circuit that monitors all stages of the Power Tool. Any changes you make to a front panel control will be reflected by the L.E.D.'s. The following example will illustrate how the controls interact.

Connect the speaker output of your guitar amp to the Amp In jack of the Power Tool and turn your amp up a lot. As you play, increase the Power Tool's Amp In Level control. Adjust the level control until the red L.E.D. is just lighting-up. Now turn the Power Tool's bass tone control all the way up. Note that the red L.E.D. is now on almost all of the time. Compensate for this by turning the Amp Input down until the red L.E.D. again just lights up.

Now switch the Power Tool's Line Out mode to 4x12. Again the red L.E.D. lights almost steadily reflecting the boost at several frequencies needed to simulate a 4x12 speaker cabinet. Again, compensate by turning the Amp In level down until the red L.E.D. is just lighting-up.

Your goal then is to keep the L.E.D.'s within normal operating limits at all times. Maximum signal to noise ratio with minimum distortion is achieved when the red L.E.D. is coming on only during the loud attack portion of the sound.



## Input Controls

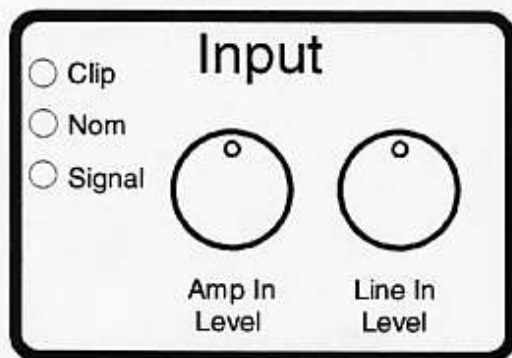
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The Input section of the Power Tool is used to set levels coming in to the unit. Although the signal L.E.D.'s are included in the Input section they reflect levels throughout the Power Tool. (See Signal L.E.D.'s.)

The Amp In level control sets the amount of signal coming in from the speaker out jack of your guitar amp. Start with this control set to minimum (fully counter-clockwise). Set the volume of your guitar amp to the desired amount and then increase the Amp In level control until the red L.E.D. just begins to light. Your guitar amp can be set to any volume from 1 to 11.

The Line Input is used to connect guitar pre-amps, effects devices etc... to the Power Tool. Set the output level of the device you are connecting to the desired amount and then adjust the Power Tool's Line In level until the red L.E.D. starts to light.

Hint: It is possible to connect both the output of your guitar amp and a line level signal from a pre-amp or effects device to the Power Tool at the same time and mix the two. Try it!



## Input Controls

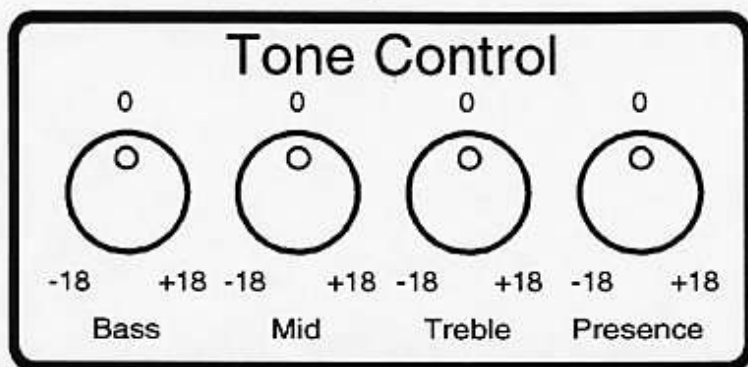
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## Tone Controls

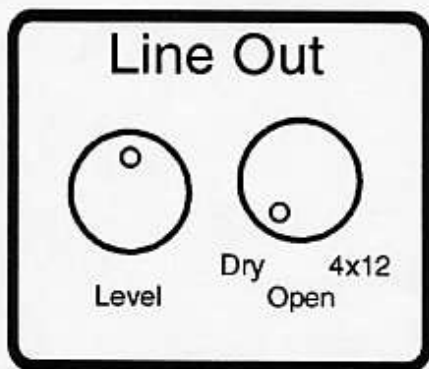
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The Tone Controls section of the Power Tool should look pretty familiar but there are differences between them and the tone controls on your amp. For starters, your amp's tone controls are, more than likely, passive tone controls; that is, they can only cut or attenuate signal. The Power Tool tone controls are active and can cut or boost signals up to 18 db from flat response.

An important thing to remember is that the Power Tool's tone controls occur after your amp and the distortion it's creating. If you turn your amp up to 11 and change its tone controls they don't respond very much. The Power Tool's tone controls, on the other hand, have your amp's overdriven sound to work with and, coupled with a full 18db of cut or boost, give you a lot of control over your sound.

The Tone Controls are active on the Line In signal as well so the output of a pre-amp or effects device running through the Power Tool can be altered .

Be sure to watch the Power Tool's signal L.E.D.'s as you adjust the tone controls. Boosting a particular E.Q. control may cause the overall level to get too high. You may need to go back and lower the Input level as you go.



## Line Out Controls

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This section controls the signal present at the line out jacks. The Power Tool has both balanced and un-balanced outs with the same signal sent to both.

Use the Line Out Level control to set the amount of signal sent to your mixer, tape deck, effects device, power amp etc... As you increase the line out level on the Power Tool, watch the clip lights on the device to which you are sending to determine the best setting.

One of the Power Tool's most important features is the ability to send your amp's output into a mixer or tape deck, at full volume with the sound of a driven speaker cabinet, all without the use of microphones or speakers. No longer do you need to worry about excessive volume levels, bleed-through into mics, bulky speaker cabinets etc...

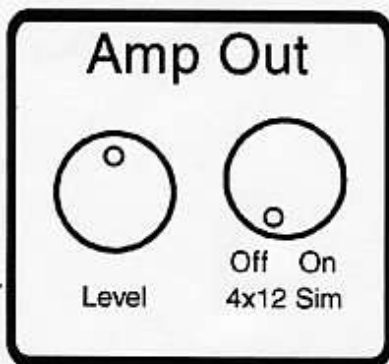
The frequency response envelope of a speaker cabinet is part of what gives you the sound and tonal quality of your favorite amps. The Power Tool uses circuitry to emulate the frequency envelope of guitar speaker cabinets and applies these envelopes to the signal from your amp. These envelopes are not just E.Q. curves, but tone shaping based on analysis of the signal strength and phase measured at many frequencies as the signal passes through a guitar speaker cabinet. Tone shaping of this nature is far too extreme to be accomplished with normal tone controls.

The 3 position switch next to the level control sets the line out mode of the Power Tool. Three settings are possible: Dry, Open or 4x12.

The Dry output setting is the sound of your amp alone. The Dry out does not emulate any kind of speaker cabinet design. If you are feeding the Power Tool's signal into a power amp and a set of speakers, this is the setting to use. (Don't be afraid to experiment, however!)

The Open setting recreates the smooth sound of an open-back speaker cabinet.

Set the Line Out mode to 4x12 to get that classic 'British speakers in a sealed cabinet' sound.



## Amplifier Out Controls

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The Power Tool is not only useful for recording and sound reinforcement, but can also let you have your full-blown, 'on 11' sound through your own speaker cabinet at any level. This is accomplished through the use of the Power Tool's on-board 50 watt solid state power amp. This internal power amp adds no coloration to your sound. Its sole purpose is to drive speakers with the signal derived from your tube amp and the Power Tool itself.

Connect the speaker out jack of your amp to the Amp In jack of the Power Tool with an un-shielded speaker cable. Next connect the Amp Out jack of the Power Tool to your speaker cabinet also with an un-shielded speaker cable. Use the Amp Out level control to adjust the final volume into your speakers. Don't confuse this volume control with the volume control on your amp; it can be all the way up. The Power Tool's internal amp is the one driving your speakers. Therefore, it is the level control to adjust for your overall volume.

One of the most innovative features of the Power Tool is the 'Instigator' circuit. Briefly, the 'Instigator' circuit allows an open-back cabinet to sound like a 4x12 cabinet by providing a frequency envelope exactly equal to and opposite the open-back cabinet's natural sound. This results in canceling the open-back cabinet's natural response. The Power Tool can now substitute the frequency envelope of a 4x12 cabinet.

The Amp Out mode switch turns the Instigator circuit on and off. While this circuit is intended to make an open-back cabinet sound like a 4x12, don't hesitate to try it with a 4x12 cabinet. The results are very impressive!





## Headphone Out

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The Headphone Out section provides a level control and stereo jack to drive headphones for private listening or monitoring. The headphone amp is powerful! Caution should be used when listening through headphones. Never plug a mono 1/4" plug into the headphone jack. It will short out the headphone amp causing damage.

Note that the headphone amp is independent of the internal 50 watt amp. It is driven from the line out and can therefore have a different frequency envelope assigned to it.

## Limited Warranty

PS Systems warrants the Power Tool against defects in materials and workmanship for 1 year.

In the event of failure, the product will be repaired or replaced, at the discretion of PS Systems, at no charge. The warranty does not apply if the product has been damaged by improper installation, accident, abuse, misuse or misapplication or has been modified in any way. This warranty does not extend to any other products used in conjunction with this product and is limited to the repair or replacement of the product.

To obtain warranty service, you must obtain an RMA (Return Merchandise Authorization) number from the PS Systems Service Department. Securely package the product along with the above number, customer phone number and mailing address, bill of sale for proof of original purchaser, as well as a detailed description of the problem. Packages will not be accepted without the RMA number clearly labeled on the outside of the package. Return the product postage prepaid and insured to:

**PS Systems Service Department**  
**8451-A Miralani Dr.**  
**San Diego, CA 92126**  
**(619) 578-1118**

Products will be returned to the customer via methods determined by PS Systems. Postage will be paid to any destination within the United States of America. If the customer requires some other form of shipment or is located outside the USA, the customer must bear the cost of return shipment.

This warranty gives the customer specific legal rights, and the customer may have other rights which vary from state to state.

PS Systems shall have no liability or responsibility with respect to the merchantability or fitness of the product for a particular purpose. PS Systems is not liable or responsible for any direct, indirect, incidental or consequential damages arising out of the use of this product. Some states do not allow the exclusion or limitation of incidental or consequential damages, so the above limitation or exclusion may not apply to you.