

Natural Pitch Tendencies of the Saxophone

Like all chromatic wind instruments the saxophone is a compromise of in-tune and slightly out-of-tune notes. While the low end of the saxophone tends to be too low, the high end tends to be too high. Understanding these natural pitch tendencies is essential to playing the saxophone in-tune.

There are many variables along side these natural tendencies that playing a role in the intonation of the saxophone, lip pressure, reed strength, phase of the moon; but the two most influential are temperature and the dynamic at which a given pitch is played. Throughout the range of the saxophone as a note is played softer the pitch will tend to rise, and as a note is played louder the pitch will fall. Given the saxophone's pitch tendencies this can work for or against you. For example if the music calls for a sharp note to be played loudly the dynamic alone may be enough to bring the pitch in-tune. On the other hand when playing a note that tends to be flat loudly the pitch will fall further and bring it up will be made more difficult.

The influence of temperature on pitch complicates the matter of intonation even further. When playing in a space with a higher room temperature, the overall pitch of the saxophone will rise, when the room temperature is lower the pitch will fall. It is not so much the temperature of the air which affects pitch but more precisely the temperature of the saxophone itself. As the metal of the saxophone warms, the wall thickness of the body and neck increases. This decreases the inside diameter of the bore thus making the overall instrument smaller and the pitch rises. The opposite is true when the saxophone is cold. As the metal cools it contracts making the bore of the instrument larger and thus the pitch falls. At first thought it might seem that these two things, air temperature and saxophone temperature, are a direct correlation, however the saxophone's temperature is raised by the warm air passing through it, eventually finding an equilibrium between the warm air from the player and the cooler air in the room. This is why it is important to tune the saxophone after it is completely warmed up rather than on the first note. When playing in spaces that are relatively high or relatively low in temperature the natural pitch tendencies of the saxophone are exaggerated (when tuning to F#). Each saxophone has a "Goldilocks zone" of temperature at which all the natural pitch tendencies are at a minimum.

It is essential to understand the pitch tendencies of ones own saxophone in order to play in-tune, as these tendencies vary between instruments. On the following page is a pitch tendency test. This test is set up to control for dynamic or temperature but can be used to test any variable. It is recommended that one perform the tests in spaces where they commonly perform and practice noting the temperature of each space. This will show the difference in pitch tendencies between the two spaces.

