

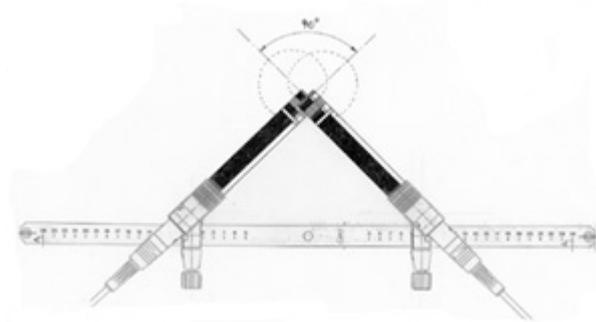
A guide to Stereo Mike Setups, part 1.

XY stereo

Two first order cardioid microphones in the same point and angled 90° creating the stereo image.

XY stereo set-up is a coincidence stereo technique using two cardioid microphones in the same

point and angled at 90° to produce a stereo image. Theoretically, the two microphone capsules need to be at exactly the same point to avoid any phase problems due to the distance between the capsules. As this is not possible, the best approximation to placing two microphones at the same point is to put one microphone on top of the other with the diaphragms vertically aligned. In this way, sound sources in the horizontal plane will be picked up as if the two microphones are placed at the same point.



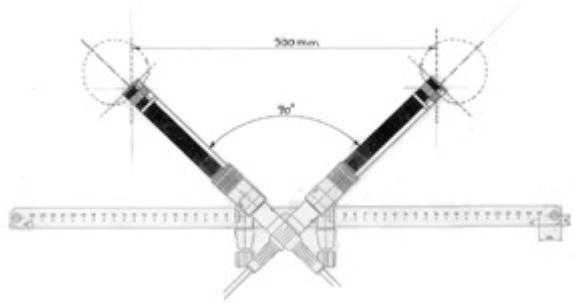
The stereo image is produced by the off-axis attenuation of the cardioid microphones. While A-B stereo is a difference-in-time-stereo, the XY stereo is a difference-in-level-stereo. But as the off-axis attenuation of a first-order cardioid microphone is only 6dB in 90°, the channel separation is limited, and wide stereo images are not possible with this recording method. Therefore, XY stereo is often used where high mono-compatibility is needed - for example, in broadcasting situations where many listeners still receive the audio on mono equipment.

Since the sound-sources are mainly picked up off-axis when using the XY stereo setup, high demands are placed on the off-axis response of the microphones used. And as described earlier, the use of directional microphones at large distances will reduce the amount of low frequency information in the recording, due to the proximity effect exhibited by the directional microphones.

NOS stereo

Two first order cardioid microphones spaced 30 cm and angled 90° creating the stereo image.

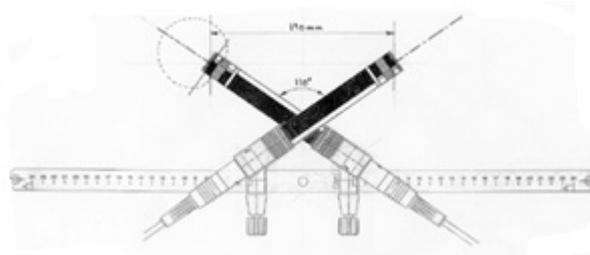
The NOS Stereo Technique uses two cardioid microphones spaced 30 cm apart and angled at 90° to create a stereo image, which means a combination of difference-in-level stereo and difference-in-time stereo. If used at larger distances to the sound source the NOS stereo technique will lose the low frequencies due to the use of pressure gradient microphones and the influence of the proximity on these type of microphones. The NOS stereo technique is more useful at shorter distances, for example on piano, small ensembles or used for creating stereo on an instrument section in a classical orchestra.



ORTF stereo

Two first order cardioid microphones spaced 17 cm and angled 110° creating the stereo image.

The ORTF stereo technique uses two first order cardioid microphones with a spacing of 17 cm between the microphone diaphragms, and with an 110° angle between the capsules. This technique is well suited for reproducing stereo cues that are similar to those that are used by the human ear to perceive directional information in the horizontal plane. The spacing of the microphones emulates the distance between the human ears, and the angle between the two directional microphones emulates the shadow effect of the human head.



The ORTF stereo technique provides the recording with a wider stereo image than XY stereo and still preserves a reasonable amount of mono-information. Care must be taken when using this technique at larger distances, as the directional microphones exhibit proximity effect and will result in low frequency loss. You could add low frequency with an Equaliser to desired taste.