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Overload

When dealing with problems of overload, it is useful to think of your recording equipment as a series of circuit stages. The goal is to find the first stage that is being overloaded, and to attenuate the signal at the input to that stage. Reducing the gain at any earlier stage would add unnecessary noise, while reducing it at a later stage would not solve the problem.

A condenser microphone represents two circuit stages: the capsule and the amplifier. In practice, capsules are rarely overloaded except by explosions or very strong wind; the only sound pressure levels that could overload a SCHOEPS capsule are so extreme – ca. 150 dB SPL – that they would quickly damage human hearing. Properly powered SCHOEPS CMC amplifiers can normally handle 130+ dB sound pressure levels, depending on the capsule type. Such levels rarely occur in unamplified sound, though their equivalents can be caused by wind when directional capsules are used. In addition, *proper powering should not be taken for granted; insufficient or incorrect microphone powering has proved to be the cause of many otherwise mysterious "overload" problems*.

If wind and powering can be excluded as possible issues, however, overload is far more likely to occur in the input circuitry of mixers, preamps or recorders than in SCHOEPS CMC- series microphones. This is true particularly with consumer audio equipment, though even today some professional equipment is still designed primarily for use with dynamic microphones or with earlier, less sensitive condenser microphones. If an input sensitivity control is available, it should be set low enough to avoid input overload, but not so low as to cause excess noise – though a few dB of extra hiss is preferable to the risk of hard clipping. Level meters and overload indicators don't generally detect input overload even in fully professional equipment; they operate only at later stages of the circuitry.

If overload occurs where powering, high sound pressure levels and wind are not the problem and an input sensitivity control can- not be turned down, the next logical step is to plug in a balanced resistive "pad" (attenuator) such as the SCHOEPS MDZ 10 or MDZ 20 at the preamp input. If the sound quality improves, leave the pad in place; as long as a microphone isn't being overloaded, it is always better to pad the preamp input than the microphone. Only if there are extreme sound pressure levels should a capacitive attenuator (SCHOEPS DZC 10 or DZC 20) be used.

Low-frequency disturbances such as wind and solid-borne vibration may not be directly audible as such, but infrasonic noise can still cause overload in some stage of the signal chain. A windscreen then becomes the first line of defense. But low-frequency noise can also be effectively suppressed in SCHOEPS Colette microphones with the Active Filters CUT 1 or CUT 2, inserted between the capsule and amplifier. These filters have the side effect of raising a CMC amplifier's gain to that of the +5 dB option (see pages 4 and 5), but given the enormous levels of noise that can be generated by wind, they are helpful far more often than not. Alternatively, the simpler low-cut filters LC 60 or LC 120 can be placed at the input of a phantom-powered preamp.

Overload that does not otherwise seem to make sense may actually be a symptom of incorrect or inadequate microphone powering. Please read the document "The Feeble Phantom" also found in Technical Section.