Letters to the Editor

Re: Non-Standard Use of Four-Track Stereophonic System

Dear Sir:

I would draw your attention to the fact that malpractice has grown up over the past several years, principally in England, which entails the use of triple-striped standard perforated stock for magnetic sound reproduction.

I have recently been responsible for the development of a new sound system (Quintaphonic Sound) which has been used for *Tommy*. I had been advised that the above practice was perfectly acceptable and gave adequate reproduction. I started to do experiments and found that this information was absolutely incorrect. If SMPTE standards for four-track magnetic striping on Fox Hole-perforated stock are studied, it would be immediately appreciated that an attempt to achieve similar results on standard perforated stock will at best produce a mediocre compromise.

Without wishing to point any fingers at individuals or companies, it seems that this practice has evolved over several years simply because nobody could be bothered to take the extra trouble that is required in the procurement and printing of the Fox Hole-perforated stock. In addition to the misalignment of tracks and the lack of symmetry due to the fourth stripe being absent, it is evident that magnetic recording heads wear out in as little as one week which is, of course, quite unacceptable to the theaters. A number of projectionists have told me that after a week the reproduction of the magnetic tracks is so bad that they frequently go over to the protection optical track.

The reasons for this are twofold. The Management will not pay for replacement heads at such frequent intervals and the audience complains of poor sound quality. This, of course, defeats the entire object of stereophonic recording and also it is extremely wasteful monetarily.

I have determined that it is impossible to record my Quintaphonic tracks on other than Fox Hole-perforated stock. In addition to the above problems the system is both phase- and level-sensitive and gives intolerable reproduction under the circumstances outlined above.

May I ask you to look into this matter and verify my statements and to issue an engineering recommendation that this practice cease forthwith in the interest of all concerned.

31 March 1975

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Re: Wiring of Three-Pin Audio Connectors

Dear Sir:

Recently, a difference in practice between the recording industry, the sound-reinforcement industry and the broadcasting industry has attracted my attention.

It appears that the standard three-pin audio connector, made by various manufacturers under such names as "XLR" and "QG," is being wired in two different ways. All parties concerned agree that pin one is ground, however, broadcasters and some microphone manufacturers are using pin two as hot and pin three as common. The sound-reinforcement and recording industries use the opposite approach with pin three as hot and pin two as common.

The difference between the two practices is important not only from the standpoint of phasing, but from a far more critical standpoint. Unbalanced equipment will not function at all if the wiring is not correct. Many manufacturers of unbalanced audio equipment who use the "pin three hot" scheme leave pin two completely open. Although broadcasters try to completely eliminate unbalanced lines, we find that we are being offered more equipment from manufacturers who formerly supplied only the recording and sound-reinforcement industries. Certain equipment is available with unbalanced outputs only and often with pin three hot.

One would never question in a power wiring situation that the black wire is hot, but I think that it is just as important not to have to worry about whether pin two or pin three is the hot side of the signal in each piece of audio equipment.

The broadcasters adopted the "pin two hot" configuration after discussion among themselves. Perhaps SMPTE and/or AES should establish this as a standard. This decision was based on the old "lowest number is the most positive (highest voltage)" maxim. Pin one, on the original connector of this type was designed to engage first and therefore had to be designated as the ground.

It is interesting to note that most microphone manufacturers (AKG and EV are two definite examples that come to mind) specify that a positive pressure on the diaphragm will produce a positive output on pin two with respect to pin three.

With these two items in mind, I suggest that the entire audio industry consider the adoption of the standard that the broadcasters have previously adopted: pin two hot, and pin three common. This should be especially true for the small equipment manufacturer who is trying to open up the broadcast industry as a new market for his products. If he feels that he absolutely cannot provide balanced input and outputs, at least pin two should be hot.

Doug Rygalo[1] in his recently published paper on the subject of connector wiring has proposed a pin one low wiring scheme, called the Cascaded Potential System, which codifies the pin three hot wiring of the XLR type connector.

Mr. Rygalo works for a recording studio in Edmonton, Alberta, and probably doesn't have to worry about interchangeability with other studios, however, in the case of broadcast pool type coverage, one problem that should not have to concern us is connector wiring. It is precisely for this reason that the networks formulated their standard.

I would appreciate any comments from engineers with the same or differing viewpoints.

20 March 1975

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1. Doug Rygalo, "A systematic approach to wiring connectors," *db, The Sound Engineering Magazine*, 9: No. 5, 38-39, May, 1975.