

MARKING OF MICROPHONE PAIRS



Upon request, matched-pair microphones have optional laser marking for identifying members of a pair or with symbols indicating the relative low frequency phase of the two units.

SERIAL NUMBERING

Paired microphones will be marked with identical two-digit serial numbers. The serial numbers will uniquely identify paired microphones within a single bubble pack, and will aid in reestablishing pairs in the event of spillage or mixing. Microphones with identical serial numbers from different bubble packs will not match.

In circumstances where a pair is rejected at outgoing quality control, the pair will be replaced by another pair with a different lot number. The remaining microphones will be processed in separate batches as described in Warranty Returns below. There may be occasions when incomplete bubble packs in finished goods inventory need to be combined, but this will be avoided whenever possible.

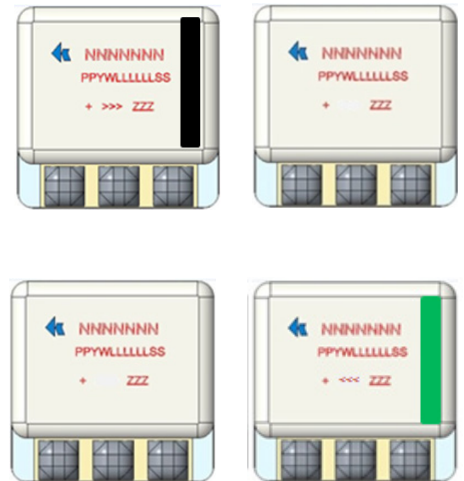
PHASE MARKING

Microphones that are phase matched at a low frequency (typically 200 Hz) may also be marked to indicate which microphone has the greater phase value. Knowles research has shown that, when the phase difference between the microphones is more than 0.5°, low frequency directivity is improved by placing the phase-leading microphone in the front of the array. Knowles recommends the phase-lead convention of marking the microphone with the greater phase value with a sequence of greater-than symbols (>>>) and (or) marked with black stripe leaving the other microphone unmarked.

Phase-lag marking, where the microphone of lesser phase value is marked with less-than symbols (<<<) and (or) mark with green stripes leaving the other microphone unmarked, is also available. However, Knowles recommends that customers do not mix these conventions within one manufacturing location. The >>> and <<< markings are surprisingly difficult to differentiate in small sizes, and operator confusion could lead to reversal of the microphone pairs and lowered directivity. Phase-lead and phase-lag marking microphone are as shown in Figure 1.

In a large lot of microphones, it is likely that some pairs will be found with 200 Hz phase values that are almost equal, differing less than 0.5°. In these cases, a test system may have difficulty consistently determining which microphone has the greater phase value, and may result in marking one microphone as the phase lead, where subsequent tests may show that it slightly lags the other microphone. Fortunately, this situation represents the ideal case for microphone matching, and will result in optimum directivity regardless of which microphone is placed in front.

Figure 1: Phase-lead marking (recommended) and phase-lag marking of microphone pairs.



P	PART NUMBER
N	PRODUCTION WEEK
Y	PRODUCTION YEAR (0-9)
W	WARRANTY PERIOD (1,2 OR 3)
L	LAST 6/5 CHARACTERS OF ORACLE LOT NUMBER
S	SUB-LOT NUMBER (01-99)
+	POSITIVE TERMINAL
>>>	LEADING/ LAGGING SYMBOL
ZZZ	SERIAL NUMBER



WARRANTY RETURNS

Pairs or individual microphones that are returned under warranty and tested to be within specifications will be re-matched to the same specification as new microphones and returned. Since laser marking is indelible, all laser marking on warranty returns, with the exception of the model number and suffix, will be invalid

- Black ink markings will be used which will supersede all invalid laser markings.
- Black dots on top of the serial numbers will indicate that the pair has been reprocessed.
- Laser-marked serial numbers will not match.
- In the phase-lead marking, the microphone with the greater phase value is marked with a black stripe, and the other microphone has no stripe.
- In the phase-lag marking, the microphone with the lesser phase value is marked with a green stripe and the other microphone has no stripe.