1.0 INTRODUCTION

1.1 SCOPE

1.1.1 This document establishes the method for determining expansion (20 to 75% RH) and contraction (75 to 20% RH).

1.2 REFERENCES

1.2.1 Specifications

IBM 894502 - Data Processing Card Stock 7 Point
IBM 894507 - Data Processing Card Stock 9 Point

1.3 AUTHORIZATION

1.3.1 This document is authorized by the Manager of Quality Assurance - Consumables.

1.4 TEST EQUIPMENT/MATERIAL

1.4.1 IBM Data Processing Master Card Gauge Part No. 459076 (see Figure 1).

2.0 PROCEDURE

2.1 SAMPLE PREPARATION

2.1.1 Specimen for test shall consist of three standard IBM cards 3 1/4 inches wide by 7 3/8 inches long which are free from wrinkles and folds.

3.0 TEST INSTRUCTIONS

NOTE: Refer to applicable specification (Reference 1.2.1) for actual value(s) to be tested.

3.1 Condition the test specimen for a minimum of two hours at 20 ± 2% RH and 73± 3.5°F.

3.2 Prior to card dimension measurement, determine the actual relative humidity in the test area, using a sling psychrometer or a properly ventilated wet-and-dry bulb thermometer set.

3.3 Using the Master Card Gauge, measure the specimen length (machine direction) and width (cross direction) while in equilibrium with the nominal 20% RH condition.

3.4 Condition the same specimen for a minimum of two hours at 75 ± 2% RH and 73 ± 3.5°F.

3.5 Prior to card dimension measurement, determine the actual relative humidity as specified in 3.2.

3.6 Using the Master Card Gauge, measure the specimen as in 3.3 while in equilibrium with the nominal 75% RH condition.

3.7 Condition the same specimen again for a minimum of two hours at 20 ± 2% RH and 73 ± 3.5°F.

3.8 Prior to card dimension measurement, determine the actual relative humidity as specified in 3.2.

3.9 Using the Master Card Gauge, measure the specimen as specified in 3.3 while in equilibrium with the nominal 20% RH condition.

4.0 REPORTING

4.1 Using average dimension change between the nominal 20% RH and 75% RH conditions, sections 3.1 through 3.6, compute the percent expansion based on nominal card dimensions (3.250 by 7.375 inch) for both the machine and cross directions. Report as PER CENT EXPANSION to two significant figures.

4.2 If the range of relative humidity over which the dimension change was measured was not exactly 55% (75% minus 20% RH), a correction factor is applied to the average dimension change. This is calculated by assuming a linear relationship between dimension change and relative humidity change, dividing the average dimension change as measured by the actual relative humidity change encountered in the test. This factor of "inches per 1% RH" is then multiplied by 55, giving the dimension change for the standard 55% RH range. This is reported to two significant figures.

4.3 Using average dimension change between the nominal 75% RH and 20% conditions, section 3.4 through 3.9, compute the percent contraction based on nominal card dimensions (3.250 by 7.375 inches) for both machine and cross directions. Report as PERCENT CONTRACTION to two significant figures.

4.4 If necessary, apply a correction factor as outlined in 4.2.

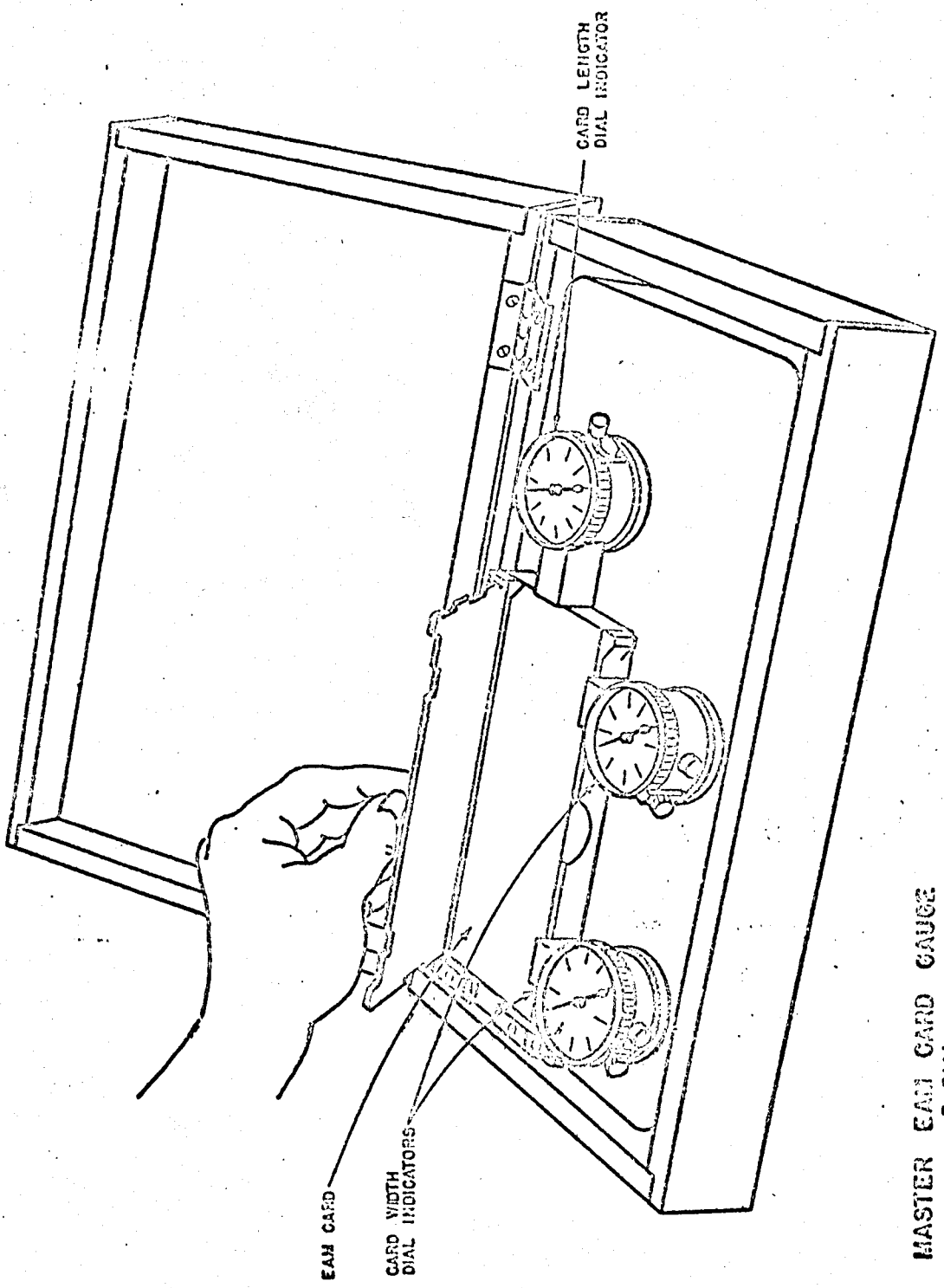
CARD LENGTH DIAL INDICATOR
EAM CARD
CARD WIDTH DIAL INDICATORS
MASTER EAM CARD GAUGE
3 DIAL
463076

Figure 1