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NASA TECH BRIEF

NASA Pasadena Office

Pocket Gauge for Checking Insert Clocking of Multipin Circular Connectors

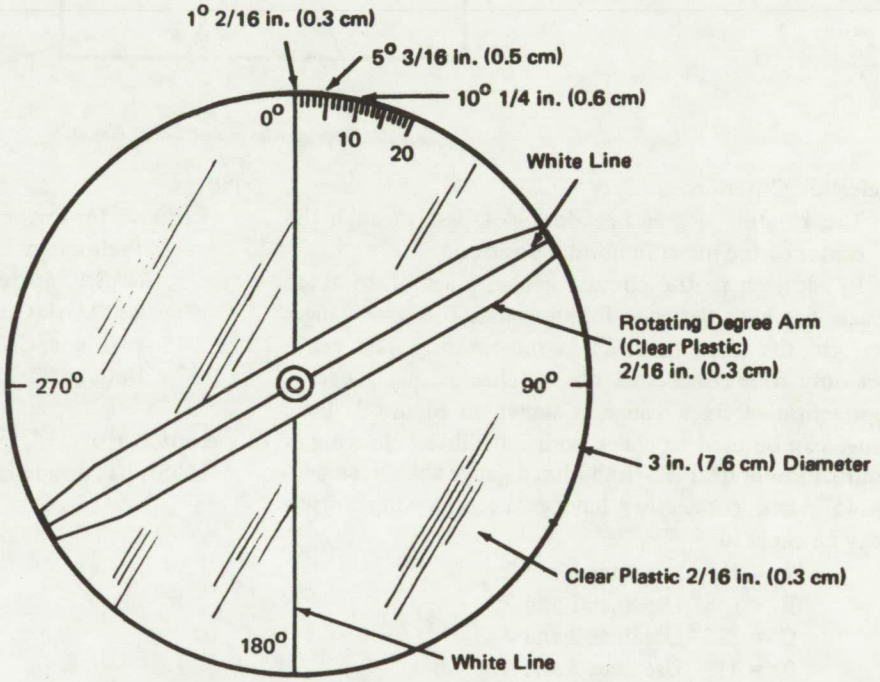

Figure 1. Rotating-Arm Pocket Gauge

A new pocket-sized circular protractor gauge can be used by field technicians for checking circular multipin connectors quickly for proper insert clocking (rotation) (the orientation of pin or socket inserts with respect to the master keyway). The prototype gauge has been constructed of heavy clear plastic with engraved degree lines, numerals, and alignment lines. With suitable modification, the gauge can be mass produced. It could be marketed directly to users or to manufacturers of circular multipin connectors.

The gauge is shown in Figure 1. The lines and numbers are engraved in white on the back of a clear plastic disk, 3 inches (7.5 centimeters) across and 2/16 inch (0.3 centimeter) thick. The rotating degree line arm is made of clear plastic, the same thickness as the gauge plastic, and is fastened to the disk with a hollow unit.

To use the gauge, the rotating insert-degree arm is set to the desired degree (per manufacturer's specifications) for the connector being checked. The gauge is placed flat on the face of the connector so that the center of the gauge matches the center of the connector. The gauge, 0°-to-180° fixed-reference line, is to be through the center of the master keyway on the connector. After insuring that the gauge is still properly centered, the insert clocking can be checked as follows:

Acceptance Criteria:

1. The fixed-reference line will be through the center of the insert and the master keyway.
2. The rotating degree line will be through the center of the insert in normal position.

(continued overleaf)

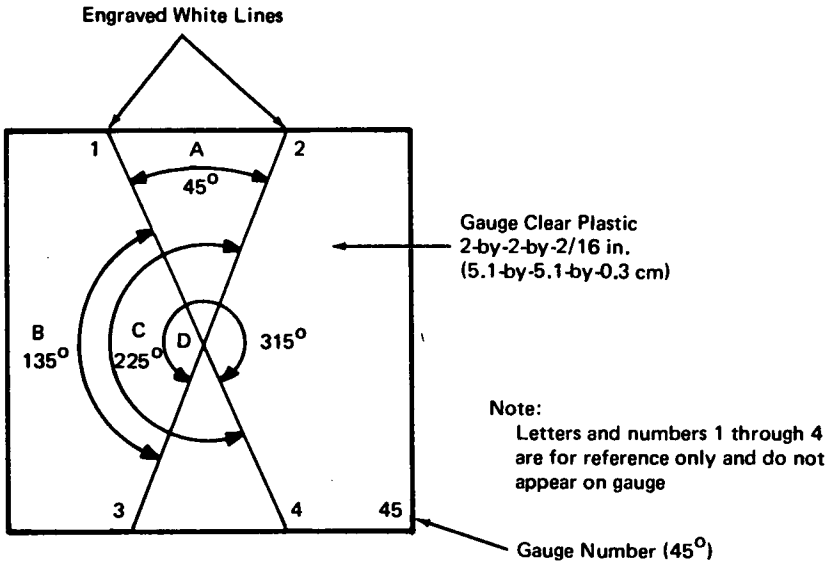

Figure 2. Representation of Fixed Gauge

Rejection Criterion:

The rotating degree line does not pass through the center of the insert in normal position.

In addition to the circular gauge, a set of 15 fixed gauges has been designed for shop use. The fixed gauges perform the same function as the rotating field gauge but only four connectors can be checked per gauge. A representative fixed gauge is shown in Figure 2. Each gauge can be used to check connector insert clocking of four different degrees. In the fixed gauge shown, angle A is 45°, and connectors having the following degrees may be checked:

A = 45° Use lines 1 and 2.
B = 135° Use lines 1 and 3.
C = 225° Use lines 2 and 4.
0 = 315° Use lines 3 and 4.

The fixed gauge is used in essentially the same manner as the rotating gauge, but a particular gauge must be selected for each connector. Either line can be centered on the master keyway, and acceptance or rejection is determined as with the rotating gauge.

Note:

Requests for further information may be directed to:
Technology Utilization Officer
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4800 Oak Grove Drive
Pasadena, California 91103
Reference: TSP74-10160

Patent status:

NASA has decided not to apply for a patent.

Source: Edward Billmeyer of
Caltech/JPL
under contract to
NASA Pasadena Office
(NPO-11924)