

surfaces, the feed rate shall be equal to or less than 50 mm per minute;

2. Measurements shall be made in an incremental manner from one limit of the axis travel to the other without returning to the starting position for each move to the target position;
3. Axes not being measured shall be retained at mid-travel during test of an axis.

c. Presentation of test results (paragraph 2):

The results of the measurements must include:

1. "positioning accuracy" (A) and
2. The mean reversal error (B).

"production" -- means all production phases such as:

- construction
- production engineering
- manufacture
- integration
- assembly (mounting)
- inspection
- testing
- quality assurance

"program" -- A sequence of instructions to carry out a process in, or convertible into, a form executable by an electronic computer.

"real-time processing" -- Processing of data by an electronic computer in response to an external event according to time requirements imposed by the external event.

"resolution"

The least increment of a measuring device; on digital instruments, the least significant bit (Reference: ANSI B-89.1.12).

"robot" -- A manipulation mechanism, which may be of the continuous path or of the point-to-point variety, may use "sensors" and has all the following characteristics:

- a. Is multifunctional;
- b. Is capable of positioning or orienting material, parts, tools or special devices through variable movements in three-dimensional space;
- c. Incorporates three or more closed or open loop servo-devices which may include stepping motors; and
- d. Has "user-accessible programmability" by means of teach/playback method or by means of an electronic computer which may be a programmable logic controlled, i.e., without mechanical intervention.

N.B.: The above definition does not include the following devices:

- a. Manipulation mechanisms which are only manually/teleoperator controllable;
- b. Fixed sequence manipulation mechanisms which are automated moving devices, operating according to mechanically fixed programmed motions. The program is mechanically limited by fixed stops, such as pins or cams. The sequence of motions and the selection of paths or angles are not variable or changeable by mechanical, electronic or electrical means;
- c. Mechanically controlled variable sequence manipulation mechanisms which are automated moving devices, operating according to mechanically fixed programmed motions. The program is mechanically limited by fixed, but adjustable, stops, such as pins or cams. The sequence of motions and the selection of paths or angles are variable within the fixed

program patters. Variations or modifications of the program pattern (e.g., changes of pins or exchanges of cams) in one or more motion axes are accomplished only through mechanical operations;

- d. Non-servo-controlled variable sequence manipulation mechanisms which are automated moving devices, operating according to mechanically fixed programmed motions. The program is variable, but the sequence proceeds only by the binary signal from mechanically fixed electrical binary devices or adjustable stops;

- e. Stacker cranes defined as Cartesian coordinate manipulator systems manufactured as an integral part of a vertical array of storage bins and designed to access the contents of those bins for storage or retrieval.

"run-out"(out-of-true running) -- Radial displacement in one revolution of the main spindle measured in a plane perpendicular to the spindle axis at a point on the external or internal revolving surface to be tested (Ref. ISO 230 Part 1-19986, paragraph 5.61).

"sensors" -- Detectors of a physical phenomenon, the output of which (after conversion into a signal that can be interpreted by a controller) is able to generate "programs" or modify programmed instructions or numerical program data. This includes "sensors" with machine vision, infrared imaging, acoustical imaging, tactile feel, inertial position measuring optical or acoustic ranging or force or torque measuring capabilities.

"software" -- A collection of one or more "programs" or "microprograms" fixed in any tangible medium of expression.

"Specially designed software"

The minimum "operating systems", "diagnostic systems", "maintenance systems", and "application software" necessary to be executed on particular equipment to perform the function for which it was designed. To make other, incompatible equipment perform the same function requires:

- a. modification of this "software" or
- b. addition of "programs."

"Technical assistance"* -- May take forms, such as: instruction, skills, training, working knowledge, consulting services.

N.B.:

"Technical assistance" may involve transfer of "technical data".

"Technical data" -- May take forms such as blueprints, plans, diagrams, models, formulae, tables, engineering designs and specifications, manuals and instructions written or recorded on other media or devices such as disk, tape, read-only memories.

"Technology" -- Specific information require for the "development", "production" or "use" of any item contained in the List. The information takes the form of "technical data" or "technical assistance".

"tilting spindle" -- A tool-holding spindle that, during the machining process, alters the angular position of its centre line with respect to any other axis.

"use" -- Operation, installation (including on-site installation), maintenance (checking), repair, overhaul, and refurbishing.

"user-accessible programmability"

The facility allowing a user to insert, modify or replace "programs" by means other than:

- a. A physical change in wiring or interconnections; or
- b. The setting of function controls including entry of parameters.

* The Export and Import Permits Act applies only to technical assistance in the form of technical data.