

AMERICAN NATIONAL STANDARD

# Milling Machine Arbor Assemblies

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ANSI B5.47 - 1972

*Reaffirmed 1991*

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**REAFFIRMED 1991**

FOR CURRENT COMMITTEE PERSONNEL  
PLEASE SEE ASME MANUAL AS-11

SOCIETY OF AUTOMOTIVE ENGINEERS  
SOCIETY OF MANUFACTURING ENGINEERS  
NATIONAL MACHINE TOOL BUILDERS' ASSOCIATION  
THE AMERICAN SOCIETY OF MECHANICAL ENGINEERS

*PUBLISHED BY*

THE AMERICAN SOCIETY OF MECHANICAL ENGINEERS

United Engineering Center      345 East 47th Street      New York, N. Y. 10017

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Printed in USA

## FOREWORD

The American National Standard on "Spindle Noses and Arbors for Milling Machines", ANSI B5.18-1960, has served the requirements of industry well in the past. This standard has also found wide international acceptance with only minor modifications. Countries outside the United States became aware of the need to develop standards for milling machine accessories with shanks which fit into the spindle noses of milling machine and other equipment having spindles made according to ANSI B5.18-1960. The American National Standard as published, in spite of its title "Spindle Noses and Arbors for Milling Machines", covers only the relation between the spindle nose and arbor shank but does not deal with complete milling machine accessories. In 1962, The Society of Manufacturing Engineers suggested to The American Society of Mechanical Engineers and to Standards Committee B5, in particular, the need for standardization of at least one complete milling machine accessory, namely the so-called "Milling Machine Arbor". It was suggested that this matter be made a subject of investigation by a technical committee to arrive at a standard. Considerable preliminary work was done by members of the Standards Committee of the Chicago Chapter of SME. This study covered a review of existing American manufacturers' standards and also made comparisons with proposed and/or adopted ISO, British, and German DIN standards.

The taper shank of the majority of milling machine arbors currently used is made according to ANSI B5.18-1960. The use of the standard as it relates to the standardization of the shaft, the spacing collars, bearing sleeve, nut, etc. is recommended in all cases where shanks other than ANSI B5.18-1960 are contemplated to be used.

This standard was approved as the American National Standard on September 15, 1972.

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**AMERICAN NATIONAL STANDARD**

**MILLING MACHINE ARBOR ASSEMBLIES**

**1. Scope**

1.1 The standard is confined to milling machine arbors. The reason for confining this standard to this specified milling machine accessory is that through many years of development and general usage, there already exists good agreement on the structure and dimensions of milling machine arbors between competent manufacturers of such equipment here in the United States and abroad. This agreement is much better than for many other milling machine accessories and equipment. Already considerable interchangeability exists between the products of various suppliers of milling machine arbors.

The standard tries to avoid being too specific in nonessential details to avoid undue hardship on the manufacturer. The choice of material, heat treatment, surface finish any deviations from nonessential dimensions is left to the discretion of the manufacturer as long as it is compatible with the expected functional requirements of the arbor assembly. The many overlapping and intermediate sizes of the various components of an arbor assembly are minimized for the sake of economy. Some sizes of arbors and components still listed by some manufacturers have been omitted with the knowledge that some other listed sizes would do the required operations without undue hardship.

True position tolerances and symbols are in accordance with ANSI Y14.5-1966.

**2. Definitions**

**2.1 Arbor Diameter**

The arbor diameter is the nominal diameter of the milling machine arbor. It defines the size of the "hole" cutter which can be mounted and driven by the arbor. The arbor diameter size and

its tolerance is intended to provide the proper fit and locating accuracy in the bore of the "hole" cutter.

**2.2 "Shoulder to Nut" Length**

The "Shoulder to Nut" length is the length of the arbor available between the shoulder and the face of the arbor nut. This length is considered the nominal length of the milling machine arbor.

**2.3 Pilot**

The pilot at the end of a style "A" milling machine arbor is provided to give usually smaller milling machine arbors added support and rigidity.

**2.4 Shoulder Collar**

The shoulder collar is a collar with a larger chamfer on the inner diameter than the spacing collars. This large chamfer is intended to prevent interference with a stress reducing fillet radius at the shoulder.

**2.5 Spacing Collar**

A spacing collar is a bushing type collar furnished in various lengths. It has an inner diameter to fit with a specified clearance on the arbor diameter, it has a keyway to clear the key in the arbor. The end faces of the spacing collar are required to be parallel within specified limits to avoid distortion and inaccuracies of the arbor when assembled on the arbor.

**2.6 Bearing Sleeve**

Bearing sleeves act as bearing journals in the bearing supports to give increased rigidity and support to the arbor. The bearing sleeve fits closely on the arbor diameter and in the support bushing.