



NATIONAL AEROSPACE STANDARD

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FED. SUPPLY CLASS

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REVISION DATE:

ISSUE DATE: MARCH 1956 REVISION DATE: JUNE 29, 2012

THIRD ANGLE PROJECTION		CUSTODIAN ENGINEERING MANAGEMENT COMMITTEE	REVISION 3
		TITLE PERFORMANCE REQUIREMENT - WORK HOLDER AIRFRAME SPAR MILLING MACHINE	CLASSIFICATION SPECIFICATION NAS929 SHEET 1 OF 16
PROCUREMENT SPECIFICATION NONE			



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1.0 SCOPE

1.1 Purpose

This specification provides a standard for the manufacture, performance, inspection and procurement of a series of work holders for use on airframe spar milling machines. This standard lists minimum requirements.

1.2 Classification

The work holders shall be of the following type and sizes.

1.2.1 Type

Hydraulic

1.2.2 Size

Size 24 - for 24" wide spar milling machines
Size 36 - for 36" wide spar milling machines
Size 48 - for 48" wide spar milling machines

1.3 Intended Use

The work holders covered by this requirement are intended for use on airframe spar milling machines, specified in NAS 912, as a standard tooling base for the milling of airframe spars, cap strips and other parts of similar shape, of both ferrous and nonferrous alloys, from extrusions, forgings or bar stock. The purpose is to effect interchangeability, from one machine to another, of tooling that would affix to the work holders.

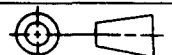
LIST OF CURRENT SHEETS

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1	2	9	2
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CUSTODIAN MANUFACTURING COMMITTEE

THIRD
ANGLE
PROJECTION



PROCUREMENT
SPECIFICATION

TITLE

CLASSIFICATION

NONE

PERFORMANCE REQUIREMENT - WORK HOLDER
AIRFRAME SPAR MILLING MACHINE


Documents
NAS 929
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SHEET 1 OF 15

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APPROVAL DATE March 1956 REVISION ① 15 May 1958 ② 15 Aug. 1970

(Reaffirmed October 31, 1986)

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2.0 APPLICABLE SPECIFICATIONS, CODES AND STANDARDS

The latest revision of the following specifications, codes and standards are included as a portion of this specification. Detail requirements listed in this specification shall override any contradictory portions of the following specifications, codes and standards.

- 2.1 The Joint Industrial Council (JIC) Electrical Standards for General Purpose Machine Tools, EGP-1-1967.
- 2.2 The Joint Industrial Council (JIC) Hydraulic and Pneumatic Standards for Industrial Equipment.
- 2.3 The American Society of Mechanical Engineers' (ASME) Boiler and Pressure Vessel Code, Section VIII.
- 2.4 National Aerospace Standard (NAS) 938, Machine Axis and Motion Nomenclature.
- 2.5 National Aerospace Standard (NAS) 972, Glossary of Manufacturing Equipment Terms.
- 2.6 The United States of America Standards Institute (USASI) B46.1 Surface Texture and B5.1 T-slots.
- 2.7 State and local safety and electrical codes.
- 2.8 National Electrical Code.

3.0 REQUIREMENTS

The manufacturer's contractual obligations for the design and function of the work holders are specified in this section.

3.1 Design

The dimensions and capacities for the respective sizes shall be as shown in Table I and figures 1 through 5, including spacing for cylinder mounting, location and size of base mounting holes, location and minimum size of cylinder slots or openings through top surface, location and size of keyways, index key slots and hole patterns or T-slots on top surface, etc. Other details not defined in this requirement shall be at the option of the procuring agency. This requirement shall not be construed as being binding upon further progress and development in design details.

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3.2 Size

TABLE I

	24	36	48
1 Height - overall	16" $\pm$ 1/32	16" $\pm$ 1/32	16" $\pm$ 1/32
Width - overall	23" $\pm$ 1/16	35" $\pm$ 1/16	47" $\pm$ 1/16
Length - to be extensible:			
3' nominal segment	35-7/8" $\pm$ 1/32	35-7/8" $\pm$ 1/32	35-7/8" $\pm$ 1/32
6' nominal segment	71-7/8" $\pm$ 1/32	71-7/8" $\pm$ 1/32	71-7/8" $\pm$ 1/32
2 Base Mounting Holes: See figure 3			
Spacing -			
longitudinally	18" nominal	18" nominal	18" nominal
3 transversely	10" nominal	10" nominal	20" nominal
Keyways and index slots	3/4" Std	3/4" Std	3/4" Std
All tolerances for each segment to be non- accumulative for index slots and hole spacing on flat top	$\pm$ 1/64"	$\pm$ 1/64"	$\pm$ 1/64"
4 T-slots for -	5/8" Std T-Nut	5/8" Std T-Nut	5/8" Std T-Nut
1 Top surface shall be flat and parallel with base within	.002" TIR	.002" TIR	.002" TIR

- 1 Uniform height of each spar mill set of work holder segments shall be established at time of installation unless otherwise specified in procurement documents.
- 2 Location to be established at installation to coincide with holes in machine bed, unless otherwise specified in procurement documents.
- 3 Transverse spacing is each side of centerline.
- 4 If used in lieu of tapped hole pattern in top plate.

General Note: Each segment shall be independent except for interconnecting hydraulic lines.

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 SHEET 3

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3.3 Work Holder Assemblies

3.3.1 Work holder base - The work holder base shall be of such material and design to provide the required strength and stability and will be at the option of the procuring agency. It shall have individual transverse bays or openings for hydraulic cylinders to be mounted every 6" along length (see figure 2). It shall be provided with a 3/4" standard keyway on the bottom, centrally located and running longitudinally. Clearance holes for 3/4" diameter hold-down bolts shall be provided, spaced every 18" along length starting 8-15/16" from either end and 10" (for 24" and 36" size) or 20" (for 48") nominal each side of longitudinal center line. Actual location may be established at installation to mate with holes in machine bed (see figure 3). Sufficient opening shall be provided for the mounting of hydraulic manifolds, as outlined under hydraulic equipment, reference 3.6.

3.3.1.1 Top Plate (or Flat Top) - The work holder top plate material shall be optional, except that if other than a nonferrous material is used provision shall be made for a nonferrous insert 1/2" deep by 1-1/4" wide in the area of the longitudinal keyway, to permit machining of the 3/4" standard keyway directly on the spar milling machine.

3.3.1.1.1 The top surface shall include cut-outs or openings every 6" for cylinder rods to operate through and connected by transverse 3/4" key slots for index spaced every 18" (see figure 2). The top surface shall also include transverse rows of 5/8"-18 NF tapped holes spaced 3" $\pm$ 1/64" each side of index key slot center line (6" between each row) and spaced every 2" $\pm$ 1/64" apart transversely from longitudinal center line out (see figure 2).

3.3.1.1.2 Chip covers for slotted holes to prevent accumulation around hydraulic hoses and cylinders, to be an option of the procuring agency.

3.3.1.1.3 Threaded inserts or T-slots for 5/8 T-nuts shall be optional in lieu of holes tapped directly into the top surface. The flat pattern of the flat top shall meet requirements as outlined and as shown in figure 2 only, but may vary in surface area within overall dimensions shown. Lengthwise locations of index slots and 5/8"-18 NF tapped holes or T-slots shall have a non-accumulative tolerance $\pm$ 1/64".

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Documents
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