

AMERICAN NATIONAL STANDARD

***Accredited Standards
Committee B3***

Needle Roller bearings Radial Inch Design ANSI/ABMA 18.2:1982

Secretariat

**American Bearing
Manufacturers Association**

ANSI/ABMA 18.2:1982

Stabilized Maintenance 2013



ABMA
2025 M Street, NW
Suite 800
Washington, DC 20036
Ph: 202-367-1155
Fax: 202-367-2155
E-mail: info@americanbearings.org
www.americanbearings.org

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Needle Roller Bearings

Radial, Inch Design

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*This standard contains only Inch Design Products. Metric Design Products will be found in Standard 18.1 (ABMA Standard 18.1)

Needle Roller Bearings

Radial, Inch Design

1. SCOPE

This standard for Inch Design Industrial Radial Needle Roller Bearings and components includes:

Identification Code

Boundary Dimensions

Bearing Tolerances

Fitting and Mounting Practice

Airframe Needle Roller Bearings, Needle Roller Thrust Bearings, and bearings of other types are covered in separate ABMA-ANSI Standards.

2. IDENTIFICATION CODE

2.1 General. This code identifies and, as far as possible, describes each needle roller bearing or component on the basis of complete dimensional and functional interchangeability. This code establishes a universal language for describing and identifying bearings and components in order to facilitate communications between the user and the manufacturer. The code is also intended to simplify the handling by user personnel of identical bearings made by different manufacturers, whose identification numbers may be different and difficult to interpret.

This code applies only to those radial needle roller bearings or components whose boundary dimensions and tolerances conform to this standard.

2.2 Structure of Code. As shown in the following table, Schematic Arrangement of a Complete Code Number, the code consists of three sections.

Section 1, called the Basic Number, includes a diameter symbol made up of a group of numerals, followed by a type symbol made up of a group of letters and finally by a dimension series symbol made up of a group of numerals. This Basic Number must always be used.

Sections 2 and 3 delineate modification of design and lubricants and, if required to complete the identification, consist of additional letters.

In the Schematic Arrangement Tables, "O" represents any code numeral and "A" represents any code letter.

SCHEMATIC ARRANGEMENT OF A COMPLETE CODE NUMBER

Section 1, Basic Number			Section 2	Section 3
Diameter	Type	Dimension Series	Cage Material or Integral Seals or Crowned Outside Surface	Lubricant or Preservative
000	AAAA	00	AAA	A

2.2.1 Section, Basic Number

SCHEMATIC ARRANGEMENT OF SECTION 1

Section 1: Basic Number		
Diameter	Type	Dimension Series
000	AAAA	00


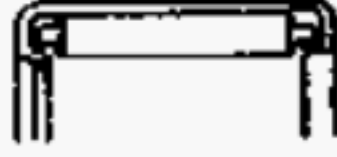
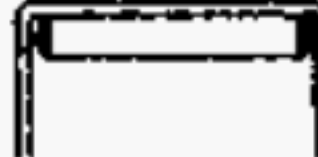
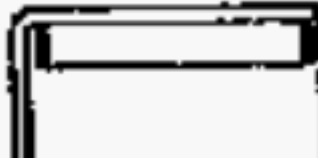
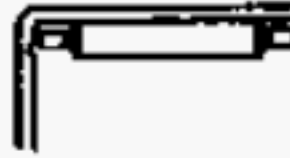
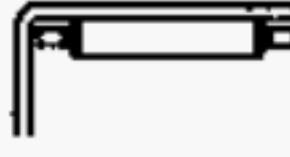
The ***Diameter*** is indicated by two or three numerals comprising the diameter symbol as shown in Boundary Dimension Tables 3.1-3.6.

The ***Type*** is indicated by two, three or four letters comprising the type symbol shown in 2.2.2.

The ***Dimension Series*** is indicated by two numerals. The first numeral indicates the width series and the second, the diameter series. Both are shown in Boundary Dimension Tables 3.1-3.6.


2.2.2 Bearing and Component Type Symbols

A. NEEDLE ROLLER BEARINGS, DRAWN CUP*

Symbol	Description	
NIB	Needle roller bearing, full complement, drawn cup, without inner ring.	
NIBM	Needle roller bearing, full complement, drawn cup, closed end, without inner ring.	
NIY	Needle roller bearing, full complement, rollers retained by lubricant, drawn cup, without inner ring.	
NIYM	Needle roller bearing, full complement, rollers retained by lubricant, drawn cup, closed end, without inner ring.	
NIH	Needle roller bearing, with cage, drawn cup, without inner ring.	
NIHM	Needle roller bearing, with cage, drawn cup, closed end, without inner ring.	

Boundary Dimensions shown in Table 3.1

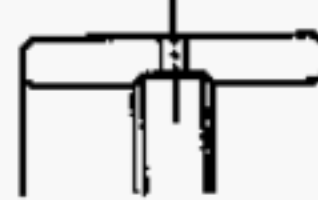
B. NEEDLE ROLLER BEARINGS, MACHINED RING

Symbol	Description	
NIA	Needle roller bearing, with cage, machined ring, lubrication hole and groove in OD, without inner ring.	

Boundary Dimensions shows in Table 3.2.

Inner Rings, Type Symbol NIR, may be used with machined ring bearings, Type NIA.

C. NEEDLE ROLLER BEARING INNER RINGS*

Symbol	Description	
NIR	Needle roller bearing inner ring, lubrication hole and groove in bore.	

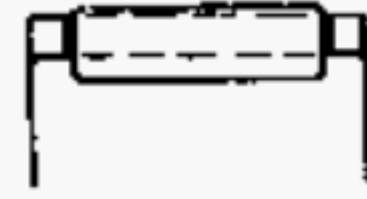
Boundary Dimensions shows in Table 3.3.

Machined Ring Needle Roller Bearings, Type Symbol NIA, may be used with inner rings, Type NIR.

*This standard contains only inch design products. Metric design products will be found in Standard 18.1 (ABMA Standard 18.1)

D. NEEDLE ROLLER AND CAGE ASSEMBLIES*

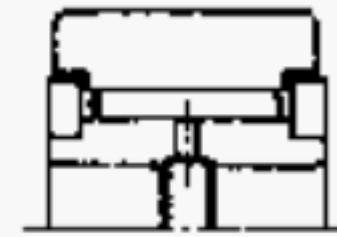
Symbol	Description
NIM	Needle roller and cage assembly.



Boundary Dimensions shows in Table 3.4.

E. NEEDLE ROLLER BEARING TRACK ROLLERS *

Symbol	Description
NIS	Needle roller bearing track roller, full-complement, non-separable threaded stud, lubrication hole in stud.
NIU	Needle roller bearing track roller, full complement, non-separable inner ring, lubrication hole and groove in bore.



Boundary Dimensions shown in Table 3.5 and 3.6.

*This standard contains only inch design products. Metric design products will be found in Standard 18.1 (ABMA Standard 18.1)

2.2.3 Section 2, Modification of Design

SCHEMATIC ARRANGEMENT OF SECTION 2

Section 2
Cage Material or Integral Seals or Crowned Outside Surface
AAA

The cage material or integral seal information or whether the outer ring has a crowned outside surface is indicated by one or two or three letters, used in the order shown in the following table of symbols.

If the bearing has a full complement of rollers, or if a cage of any construction is acceptable, and if the bearing is not sealed and if bearing does not have a crowned outside surface, Section 2 is omitted.

If Section 2 has been omitted and Section 3 is required, space Section 3 from Section 2 by using the symbol "X".

CAGE AND SEAL SYMBOLS *

Symbol	Description
X	Spacer when Section 3 required
J	Steel Cage
H	Non-ferrous metal cage
N	Non-metallic cage
R	Double seals (Applies only to Types NIH, NIA, NIS, NIU)
W	Single seal (applies only to Types NIA, NIH, NIHM)
S	Crowned outside surface (applies only to Types NIS, NIU)

2.2.4 Section 3, Lubricants and Preservatives

SCHEMATIC ARRANGEMENT OF SECTION 3

Section 3
Lubricants and Preservatives
A

A final letter symbol is added to the bearing code if required to indicate the preservative or lubricant as shown below. The quality of lubricant used is not subject to coding.

*This standard contains only inch design products. Metric design products will be found in Standard 18.1 (ABMA Standard 18.1)

LUBRICANT AND PRESERVATIVE SYMBOLS

Symbol	Description
No Symbol Used	Manufacturer's regular preservative or lubricant for the particular bearing involved
A	Special preservative or lubricant to satisfy particular conditions; for details refer to the Bearing Manufacturer.

2.2.5 Coding Examples. The following examples illustrate the application and meaning of typical bearing and component codes.

16NIB95XA From 2.2.2, NIB is found to be the type symbol for an inch design, needle roller bearing, full complement, drawn cup, without inner ring. Also 2.2.2 states that Table 3.1 lists the boundary dimensions for Type NIB. Referring to Table 3.1-Part 2, the diameter symbol 16 indicates a bore diameter of 1.0000 inch and the dimension series symbol 95 indicates an outside diameter of 1.2500 inch and a width of 1.0000 inch. Referring to 2.2.3, X is found to be a coding spacer, since this full complement bearing has no cage and is not sealed. From 2.2.4, A is found to indicate that some special preservation or lubricant is required.

40NIA25 From 2.2.2, NIA is found to be the type symbol for inch design, needle roller bearing, with cage, machined ring, without inner ring. Also 2.2.2 states that Table 3.2 lists the boundary dimensions for Type NIA. Referring to Table 3.2-Part 2, the diameter symbol 40 indicates a bore diameter of 2.5000 inch and the dimension series symbol 25 indicates an outside diameter of 3.2500 inch and a width of 1.500 inch. Referring to 2.2.3, the absence of letters after the dimension series symbol indicates that the cage construction is not specified and that the bearing is not sealed. From 2.2.4, the absence of a letter indicates the bearing is packed with the manufacturer's standard preservative or lubricant.

26NIM36 From 2.2.2, NIM is found to be the type symbol for an inch design, needle roller and cage assembly. Also 2.2.2 states that Table 3.4 lists the boundary dimensions for type NIM. Referring to Table 3.4-Part 2, the diameter symbol 26 indicates a bore diameter of 1.6250 inch and the dimension series symbol 36 indicates an outside diameter of 2.0000 inch and a width of 1.250 inch. Referring to 2.2.3, the absence of letters after the dimension series symbol indicates that the cage construction is not specified. From 2.2.4 the absence of a letter indicates the assembly is packed with the manufacturer's standard preservative or lubricant.

56NIU15R From 2.2.2, NIU is found to be the type symbol for inch design, needle roller bearing track roller, full complement, machined ring, nonseparable inner ring. Also 2.2.2 states that Table 3.6 lists the boundary dimensions for Type NIU. Referring to Table 3.6-Part 2, the diameter symbol 56 indicates an outside diameter of 3.5000 inch and the dimension series symbol 15 indicates a bore diameter of 1.1250 inch and a width of 2.062 inch. Referring to 2.2.3, R is found to indicate that the bearing has double seals. Referring to 2.2.4 the absence of a letter indicates the bearing is packed with the manufacturer's standard preservative or lubricant.

3. BOUNDARY DIMENSIONS*

3.1 Purpose of Plans. The boundary plans shown in the Boundary Dimensions Tables 3.1-3.6 are designed to reduce the number of bearing and component sizes, as much as possible, to promote economic production and yet provide a sufficient number of sizes and proportions to satisfy present and future needs of bearing users.

4. BEARING AND COMPONENTS TOLERANCES

4.1 General

The tolerance limits for inch design bearings and components are based upon long-established practice.

4.2 Tolerance Definitions and Gaging Practice.

Definitions of most terms used in the tolerance limit tables as well as gaging practices are covered in ANSI Standard B3.4—ABMA Standard 4. Terms not defined in ANSI Standard B3.4—ABMA Standard 4 are explained in the tolerance limit tables.

5. FITTING AND MOUNTING PRACTICE*

5.1 General. This section covers needle roller bearing and component fitting and mounting practice for normal operating conditions. Tables 5.1 - 5.8 list the tolerance limits required for shaft and housing seat diameters for bearings with inner and outer rings as well as limits for raceway diameters where inner and/or outer rings are omitted and the rollers operate directly upon these surfaces. Unusual design and operating conditions may require a departure from these practices. In such cases, bearing manufacturers should be consulted.

5.2 Needle Roller Bearings, Drawn Cup, without inner ring, Types NIB, NIBM, NIY, NIYM, NIH, NIHM.

5.2.1 Housings. Drawn cup needle roller bearings depend on the housings into which they are pressed for their sizes and shapes. Therefore, the housings must not only have the proper bore dimensions but also must have sufficient strength. Tables 5.1-5.2 show the bore tolerance limits for rigid housings such as those made from good quality cast iron or steel of adequate radial section equal to or greater than the ring gauge section given in ANSI Standard B3.4—ABMA Standard 4. Consult the bearing manufacturers for recommendations if the housings must be of lower strength materials such as aluminum or even of steel of thin radial section. The dimensions of the housing bores shall be such that when the mean bore diameter of a housing is measured in each of several radial planes, the maximum difference between these mean diameters shall not exceed 0.013 mm (0.0005 inch) or one-half the housing bore tolerance limit, if smaller. Also, the radial deviation from circular form shall not exceed 0.006 mm (0.00025 inch). The arithmetic mean surface roughness (Ra) shall not exceed 3.2 micrometres (125 micro-inches).

5.2.2 Shafts. Most drawn cup needle roller bearings do not use inner rings; they operate directly on the surfaces of shafts. When shafts are used as inner raceways, they shall be made of bearing quality steel hardened to 58 HRC (655 HV) minimum. Tables 5.1-5.2 show the shaft raceway tolerance limits. The mean outside diameter of a shaft surface shall be determined in each of several radial planes. The difference between these mean diameters shall not exceed 0.008 mm (0.0003 inch) or one-half the diameter tolerance limit, if smaller. The radial deviation from circular form shall not exceed 0.0025 mm (0.0001 inch) for diameters up to and including 25 mm (one inch). Above 25 mm (one inch) the allowable deviation is 0.0001 times the shaft diameter. The arithmetic mean surface roughness (Ra) shall not exceed 0.4 micrometres (16 micro-inches).

5.2.3 Rotational Conditions. The housing bore and shaft diameter tolerance limits depend upon whether the load rotates relative to the shaft or the housing. The proper tables for housing bore and shaft diameter tolerance limits for these rotational conditions must be used.

5.3 Needle Roller Bearings, with cage, machined ring, without inner ring, Type NIA, and Inner Rings, Type NIR.

5.3.1 Housings. Machined ring needle roller bearings depend on the housings for support: therefore the housings must have the proper bore dimensions. Tables 5.3-5.4 show the housing bore tolerance limits. The dimensions of the housing bores shall be such that when the mean bore diameter of a housing is measured in each of several radial planes, the maximum difference between these mean diameters shall not exceed 0.013 mm (0.0005 inch) or one-half the housing bore tolerance limit, if smaller. Also the radial deviation from circular form shall not exceed 0.006 mm (0.00025 inch). The arithmetic mean surface, roughness (Ra) shall not exceed 3.2 micrometres (125 micro-inches).

5.3.2 Shafts. Most machined ring needle roller bearings do not use inner rings, they operate directly on the surfaces of the shafts. When shafts are used as inner raceways, they shall be made of bearing quality steel hardened to 58 HRC (655 HV) minimum. Tables 5.3-5.4 show the shaft raceway tolerance limits and Table 5.5 shows the shaft seat tolerance limits when inner rings are used. However, whether the shaft surfaces are used as inner raceways, or as seats for inner rings, the mean outside diameter of a shaft surface shall be determined in each of several radial planes. The difference between these mean diameters shall not exceed 0.008 mm (0.0003 inch) or one-half the diameter tolerance limit, if smaller. The radial deviation from circular form shall not exceed 0.0025 mm (0.0001 inch) for diameters up to and including 25 mm (one inch). Above 25 mm (one inch) the allowable deviation is 0.0001 times the shaft diameter. The arithmetic mean surface roughness deviation (Ra) shall not exceed 0.4 micrometres (16 micro-inches).

5.3.3 Rotational Conditions. The housing bore and shaft diameter tolerance limits depend upon whether the load rotates relative to the shaft or the housing. The proper tables for housing bore and shaft diameter tolerance limits for these rotational conditions must be used.

5.4 Needle Roller and Cage Assemblies, Type NIM.

5.4.1 Outer Raceways. Proper function of needle roller and cage assemblies depends on outer raceways supplied by the user. The elements whose bores provide these raceways shall be made of bearing quality steel hardened to 58 HRC (655 HV) minimum and shall also have the proper bore dimensions. Table 5.6 shows the outer raceway bore tolerance limits. The dimensions of the outer raceways shall be such that when the mean bore diameter of an outer raceway is measured in each of several radial planes, the maximum difference between these mean diameters shall not exceed 0.008 mm (0.0003 inch) or one-half the raceway tolerance limit, if smaller. Also the radial deviation from circular form shall not exceed 0.0038 mm (0.00015 inch) for diameters up to and including 25 mm (one inch). Above 25 mm (one inch) the allowable deviation is 0.00015 times the outer raceway bore diameter. The arithmetic mean surface roughness (Ra) shall not exceed 0.8 micrometres (32 micro-inches).

5.4.2 Inner Raceways. Needle roller and cage assemblies operate directly on the surfaces of shafts. The shafts shall be made of bearing quality steel hardened to 58 HRC (655 HV) minimum. Table 5.6 shows the shaft raceway diameter tolerance limits. The dimensions of the inner raceways shall be such that when the mean outside diameter is measured in each of several radial planes, the maximum difference between these mean diameters shall not exceed 0.008 mm (0.0003 inch) or one-half the inner raceway diameter tolerance limit, if smaller. The radial deviation from circular form shall not exceed 0.0025 mm (0.0001 inch) for diameters up to and including 25 mm (one inch). Above 25 mm (one inch) the allowable deviation is 0.0001 times the shaft diameter. The arithmetic mean surface roughness (Ra) shall not exceed 0.4 micrometres (16 micro-inches).

5.4.3 Raceway Width. The minimum raceway width between cage locating end surfaces must be 0.20 mm (0.008 inch) greater than the maximum width of the needle roller and cage assembly.

5.5 Needle Roller Bearing Track Rollers, Types NIS and NIU.

To select the proper mounting dimensions, it is necessary to consider the magnitude of the load. These mounting dimensions are indicated in Tables 5.7-5.8. The terms "Light", "Normal" and "Heavy" loads refer to radial loads that are generally within the following limits (C being the Basic Load Rating computed in accordance with ABMA-ANSI Standards).

Light up to 0.08C

Normal from 0.08C to 0.18C

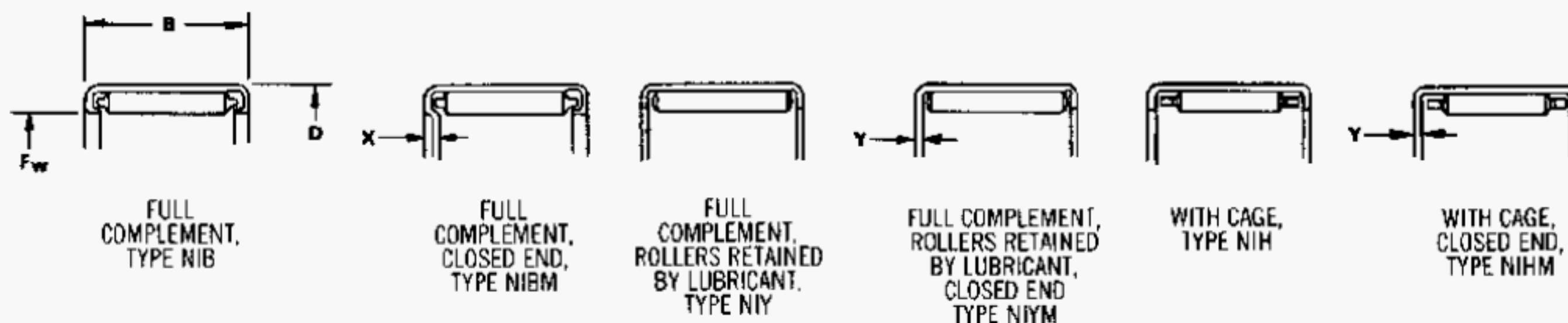
Heavy over 0.18C

Type NIU normally requires heat treated shafts when loads are classified as heavy.

When mounting an NIU track roller the use of a clamping sleeve, clearance fitted through one yoke arm, eliminates undesirable yoke deflection.

TABLE 3.1 — Part 1
BOUNDARY DIMENSIONS
NEEDLE ROLLER BEARINGS, DRAWN CUP, WITHOUT INNER RING
INCH DESIGN
TYPES NIB, NIBM, NIY, NIYM, NIH, NIHM

Sheet 1 of 2 — Diameter Series 5



Dimensions in mm

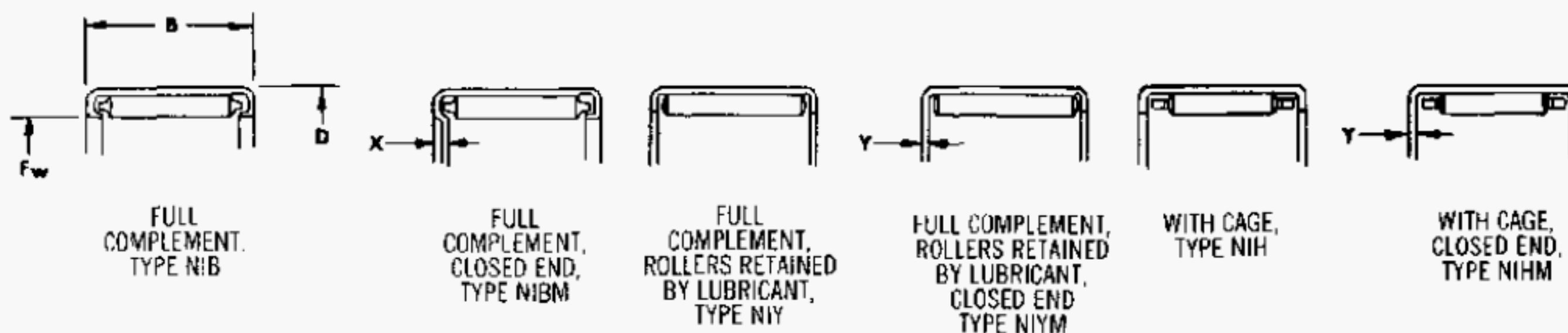
DIAMETER SYMBOL	BORE DIAMETER UNDER NEEDLE ROLLERS, Fw	DIAMETER SERIES 5							X MAX	Y MAX
		OUTSIDE DIAMETER, D	WIDTH SERIES							
			1	3	5	7	9			
			DIMENSION SERIES							
			15	35	55	75	95			
			WIDTH B							
04	6.3500	11.1125	7.92	9.52	11.13	—	—	2.0	1.0	
05	7.9375	12.7000	7.92	9.52	11.13	—	—	2.0	1.0	
06	9.5250	14.2875	7.92	9.52	12.70	—	—	2.0	1.0	
07	11.1125	15.8750	7.92	9.52	12.70	15.88	—	2.0	1.0	
08	12.7000	17.4625	7.92	9.52	12.70	15.88	—	2.0	1.0	
09	14.2875	19.0500	7.92	9.52	12.70	15.88	19.05	2.0	1.0	
10	15.8750	20.6375	7.92	9.52	12.70	15.88	19.05	2.0	1.0	
11	17.4625	22.2250	7.92	9.52	12.70	15.88	19.05	2.0	1.0	
12	19.0500	25.4000	9.52	12.70	15.88	19.05	25.40	2.3	1.0	
13	20.6375	26.9875	9.52	12.70	15.88	19.05	25.40	2.3	1.0	
14	22.2250	28.5750	9.52	12.70	15.88	19.05	25.40	2.3	1.0	
15	23.8125	30.1625	9.52	12.70	15.88	19.05	25.40	2.3	1.0	
16	25.4000	31.7500	9.52	12.70	15.88	19.05	25.40	2.3	1.0	
17	26.9875	33.3375	9.52	12.70	15.88	19.05	25.40	2.3	1.0	
18	28.5750	34.9250	9.52	12.70	15.88	19.05	25.40	2.3	1.0	
20	31.7500	41.2750	12.70	19.05	25.40	31.75	38.10	3.0	1.3	
22	34.9250	44.4500	12.70	19.05	25.40	31.75	38.10	3.0	1.3	
24	38.1000	47.6250	12.70	19.05	25.40	31.75	38.10	3.0	1.3	
26	41.2750	50.8000	12.70	19.05	25.40	31.75	38.10	3.0	1.3	
28	44.4500	53.9750	15.88	19.05	25.40	31.75	38.10	3.0	1.3	
30	47.6250	57.1500	15.88	19.05	25.40	31.75	38.10	3.0	1.3	
32	50.8000	60.3250	15.88	19.05	25.40	31.75	38.10	3.0	1.3	
34	53.9750	63.5000	15.88	19.05	25.40	31.75	38.10	3.3	1.3	
36	57.1500	66.6750	15.88	19.05	25.40	31.75	38.10	3.3	1.3	
40	63.5000	73.0250	15.88	19.05	25.40	31.75	38.10	3.3	1.3	
44	69.8500	79.3750	15.88	19.05	25.40	31.75	38.10	3.3	1.3	
48	76.2000	88.9000	19.05	25.40	31.75	38.10	50.80	3.6	1.3	
52	82.5500	95.2500	19.05	25.40	31.75	38.10	50.80	3.8	1.3	
56	88.9000	101.6000	19.05	25.40	31.75	38.10	50.80	3.8	1.3	

For Tolerance see Table 4.1—Part 1.

For Fitting and Mounting Practice see Table 5.1—Part 1 and Table 5.2—Part 1.

TABLE 3.1— Part 1 (continued)
BOUNDARY DIMENSIONS
NEEDLE ROLLER BEARINGS, DRAWN CUP, WITHOUT INNER RING
INCH DESIGN
TYPES NIB, NIBM, NIY, NIYM, NIH, NIHM

Sheet 2 of 2 — Diameter Series 6



Dimension in mm

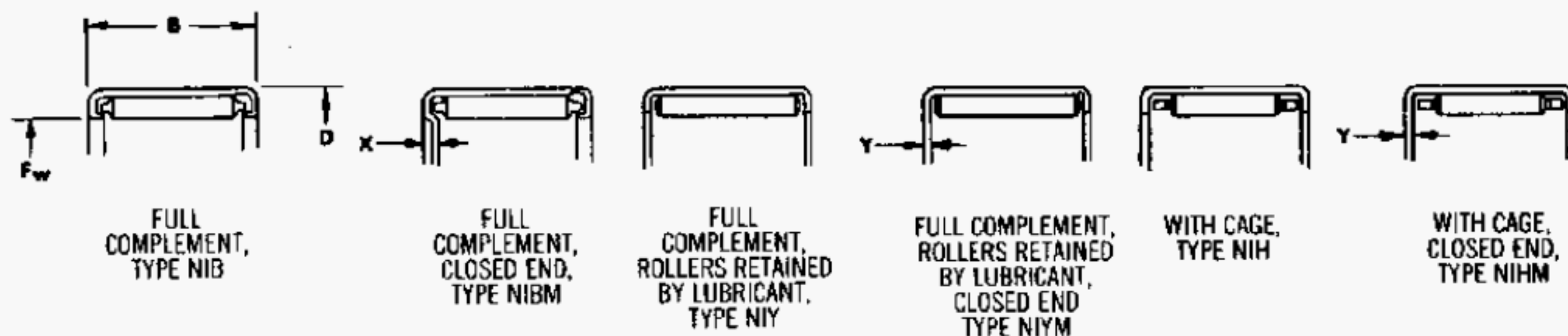
DIAMETER SYMBOL	BORE DIAMETER UNDER NEEDLE ROLLERS, Fw	DIAMETER SERIES 6					
		OUTSIDE DIAMETER D	WIDTH SERIES			X MAX	Y MAX
			2	4	6		
			DIMENSION SERIES				
			26	46	66		
			WIDTH, B				
04	6.3500	—	—	—	—	—	—
05	7.9375	14.2875	11.13	—	—	2.3	1.0
06	9.5250	15.8750	12.70	—	—	2.3	1.0
07	11.1125	17.4625	12.70	—	—	2.3	1.0
08	12.7000	19.0500	12.70	15.88	19.05	2.3	1.0
09	14.2875	20.6375	12.70	15.88	19.05	2.3	1.0
10	15.8750	22.2250	12.70	15.88	19.05	2.3	1.0
11	17.4625	23.8125	12.70	15.88	19.05	2.3	1.0
12	19.0500	—	—	—	—	—	—
13	20.6375	28.5750	15.88	19.05	25.40	2.8	1.3
14	22.2250	30.1625	15.88	19.05	25.40	2.8	1.3
15	23.8125	—	—	—	—	—	—
16	25.4000	33.3375	15.88	19.05	25.40	2.8	1.3
17	26.9875	—	—	—	—	—	—
18	28.5750	38.1000	19.05	25.40	31.75	3.0	1.3
20	31.7500	—	—	—	—	—	—
22	34.9250	—	—	—	—	—	—
24	38.1000	—	—	—	—	—	—
26	41.2750	—	—	—	—	—	—
28	44.4500	—	—	—	—	—	—
30	47.6250	—	—	—	—	—	—
32	50.8000	—	—	—	—	—	—
34	53.9750	—	—	—	—	—	—
36	57.1500	—	—	—	—	—	—
40	63.5000	—	—	—	—	—	—
44	69.8500	—	—	—	—	—	—
48	76.2000	—	—	—	—	—	—
52	82.5500	—	—	—	—	—	—
56	88.9000	—	—	—	—	—	—

For Tolerance see Table 4.1—Part 1.

For Fitting and Mounting Practice see Table 5.1—Part 1 and Table 5.2—Part 1.

**TABLE 3.1—Part 2
BOUNDARY DIMENSIONS
NEEDLE ROLLER BEARINGS, DRAWN CUP, WITHOUT INNER RING
INCH DESIGN
TYPES NIB, NIBM, NIY, NIYM, NIH, NIHM**

Sheet 1 of 2 — Diameter Series 5



Dimensions in Inches

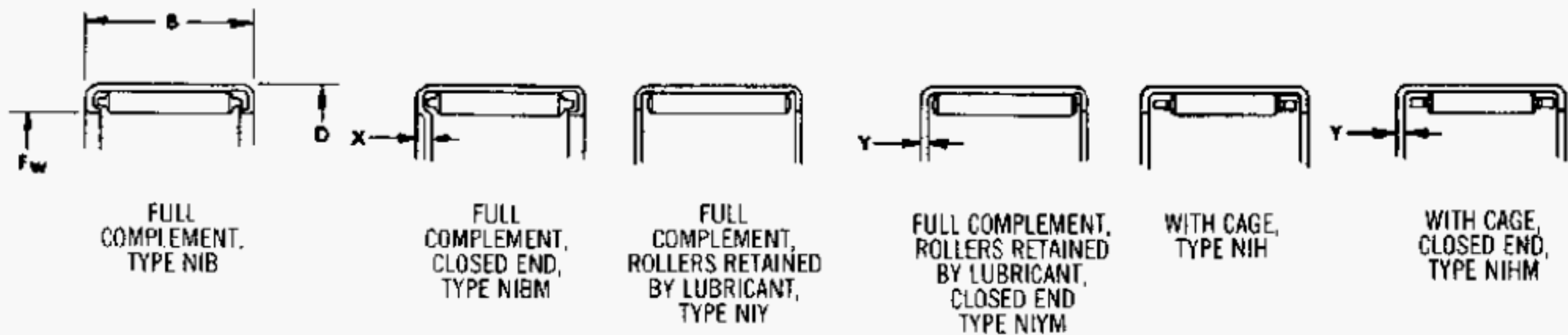
DIAMETER SYMBOL	BORE DIAMETER UNDER NEEDLE ROLLERS, Fw	DIAMETER SERIES 5							
		OUTSIDE DIAMETER, D	WIDTH SERIES					X MAX	Y MAX
			1	3	5	7	9		
			DIMENSION SERIES						
			15	35	55	75	95		
			WIDTH, B						
04	0.2500	0.4375	0.312	0.375	0.438	—	—	0.08	0.04
05	0.3125	0.5000	0.312	0.375	0.438	—	—	0.08	0.04
06	0.3750	0.5625	0.312	0.375	0.500	—	—	0.08	0.04
07	0.4375	0.6250	0.312	0.375	0.500	0.625	—	0.08	0.04
08	0.5000	0.6875	0.312	0.375	0.500	0.625	—	0.08	0.04
09	0.5625	0.7500	0.312	0.375	0.500	0.625	0.750	0.08	0.04
10	0.6250	0.8125	0.312	0.375	0.500	0.625	0.750	0.08	0.04
11	0.6875	0.8750	0.312	0.375	0.500	0.625	0.750	0.08	0.04
12	0.7500	1.0000	0.375	0.500	0.625	0.750	1.000	0.09	0.04
13	0.8125	1.0625	0.375	0.500	0.625	0.750	1.000	0.09	0.04
14	0.8750	1.1250	0.375	0.500	0.625	0.750	1.000	0.09	0.04
15	0.9375	1.1875	0.375	0.500	0.625	0.750	1.000	0.09	0.04
16	1.0000	1.2500	0.375	0.500	0.625	0.750	1.000	0.09	0.04
17	1.0625	1.3125	0.375	0.500	0.625	0.750	1.000	0.09	0.04
18	1.1250	1.3750	0.375	0.500	0.625	0.750	1.000	0.09	0.04
20	1.2500	1.6250	0.500	0.750	1.000	1.250	1.500	0.12	0.05
22	1.3750	1.7500	0.500	0.750	1.000	1.250	1.500	0.12	0.05
24	1.5000	1.8750	0.500	0.750	1.000	1.250	1.500	0.12	0.05
26	1.6250	2.0000	0.500	0.750	1.000	1.250	1.500	0.12	0.05
28	1.7500	2.1250	0.625	0.750	1.000	1.250	1.500	0.12	0.05
30	1.8750	2.2500	0.625	0.750	1.000	1.250	1.500	0.12	0.05
32	2.0000	2.3750	0.625	0.750	1.000	1.250	1.500	0.12	0.05
34	2.1250	2.5000	0.625	0.750	1.000	1.250	1.500	0.13	0.05
36	2.2500	2.6250	0.625	0.750	1.000	1.250	1.500	0.13	0.05
40	2.5000	2.8750	0.625	0.750	1.000	1.250	1.500	0.13	0.05
44	2.7500	3.1250	0.625	0.750	1.000	1.250	1.500	0.13	0.05
48	3.0000	3.5000	0.750	1.000	1.250	1.500	2.000	0.14	0.05
52	3.2500	3.7500	0.750	1.000	1.250	1.500	2.000	0.15	0.05
56	3.5000	4.0000	0.750	1.000	1.250	1.500	2.000	0.15	0.05

For Tolerance see Table 4.1—Part 2.

For Fitting and Mounting Practice see Table 5.1—Part 2 and Table 5.2—Part 2.

TABLE 3.1—Part 2 (continued)
BOUNDARY DIMENSIONS
NEEDLE ROLLER BEARINGS, DRAWN CUP, WITHOUT INNER RING
INCH DESIGN
TYPES NIB, NIBM, NIY, NIYM, NIH, NIHM

Sheet 2 of 2—Diameter Series 6



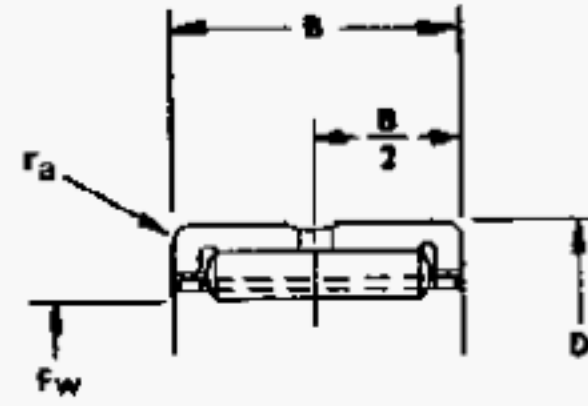
Dimension in Inches

DIAMETER SYMBOL	BORE DIAMETER UNDER NEEDLE ROLLERS, Fw	DIAMETER SERIES 6					
		OUTSIDE DIAMETER, D	WIDTH SERIES			X MAX	Y MAX
			2	4	6		
			DIMENSION SERIES				
			26	46	66		
			WIDTH, B				
04	0.2500	—	—	—	—	—	—
05	0.3125	0.5625	0.438	—	—	0.09	0.04
06	0.3750	0.6250	0.500	—	—	0.09	0.04
07	0.4375	0.6875	0.500	—	—	0.09	0.04
08	0.5000	0.7500	0.500	0.625	0.750	0.09	0.04
09	0.5625	0.8125	0.500	0.625	0.750	0.09	0.04
10	0.6250	0.8750	0.500	0.625	0.750	0.09	0.04
11	0.6875	0.9375	0.500	0.625	0.750	0.09	0.04
12	0.7500	—	—	—	—	—	—
13	0.8125	1.1250	0.625	0.750	1.000	0.11	0.05
14	0.8750	1.1875	0.625	0.750	1.000	0.11	0.05
15	0.9375	—	—	—	—	—	—
16	1.0000	1.3125	0.625	0.750	1.000	0.11	0.05
17	1.0625	—	—	—	—	—	—
18	1.1250	1.5000	0.750	1.000	1.250	0.12	0.05
20	1.2500	—	—	—	—	—	—
22	1.3750	—	—	—	—	—	—
24	1.5000	—	—	—	—	—	—
26	1.6250	—	—	—	—	—	—
28	1.7500	—	—	—	—	—	—
30	1.8750	—	—	—	—	—	—
32	2.0000	—	—	—	—	—	—
34	2.1250	—	—	—	—	—	—
36	2.2500	—	—	—	—	—	—
40	2.5000	—	—	—	—	—	—
44	2.7500	—	—	—	—	—	—
48	3.0000	—	—	—	—	—	—
52	3.2500	—	—	—	—	—	—
56	3.5000	—	—	—	—	—	—

For Tolerance see Table 4.1—Part 2.

For Fitting and Mounting Practice see Table 5.1—Part 2 and Table 5.2—Part 2.

TABLE 3.2—Part 1
BOUNDARY DIMENSIONS, NEEDLE ROLLER BEARINGS, WITH CAGE,
MACHINED RING, WITHOUT INNER RING
INCH DESIGN
TYPE NIA



Dimensions in mm

DIAMETER SYMBOL	BORE DIAMETER UNDER NEEDLE ROLLERS, Fw	DIAMETER SERIES 5				MAX FILLET (1) ra
		OUTSIDE DIAMETER D	WIDTH SERIES			
			0	2	4	
			DIMENSION SERIES			
			05 (2)	25	45	
08	12.700	25.400	19.05	—	—	0.6
10	15.875	28.575	19.05	25.40	—	0.6
12	19.050	31.750	19.05	25.40	—	1.0
14	22.225	34.925	19.05	25.40	—	1.0
16	25.400	38.100	19.05	25.40	—	1.0
18	28.575	41.275	19.05	25.40	31.75	1.0
20	31.750	44.450	19.05	25.40	31.75	1.0
22	34.925	47.625	19.05	25.40	31.75	1.0
24	38.100	52.388	25.40	31.75	38.10	1.5
26	41.275	55.562	25.40	31.75	38.10	1.5
28	44.450	58.738	25.40	31.75	38.10	1.5
30	47.625	61.912	25.40	31.75	38.10	1.5
32	50.800	65.088	25.40	31.75	38.10	1.5
36	57.150	76.200	31.75	38.10	44.45	1.5
40	63.500	82.550	31.75	38.10	44.45	2.0
44	69.850	88.900	31.75	38.10	44.45	2.0
48	76.200	95.250	31.75	38.10	44.45	2.0
52	82.550	107.950	44.45	50.80	—	2.0
56	88.900	114.300	44.45	50.80	—	2.0
60	95.250	120.650	44.45	50.80	—	2.5
64	101.600	127.000	44.45	50.80	—	2.5
68	107.950	133.350	44.45	50.80	—	2.5
72	114.300	152.400	63.50	76.20	—	2.5
80	127.000	165.100	63.50	76.20	—	2.5
88	139.700	177.800	63.50	76.20	—	2.5
96	152.400	190.500	63.50	76.20	—	3.0
104	165.100	203.200	63.50	76.20	—	3.0
116	184.150	231.775	76.20	—	—	3.0
124	196.850	244.475	76.20	—	—	3.0
132	209.550	257.175	76.20	—	—	3.0
140	222.250	269.875	76.20	—	—	4.0
148	234.950	282.575	76.20	—	—	4.0

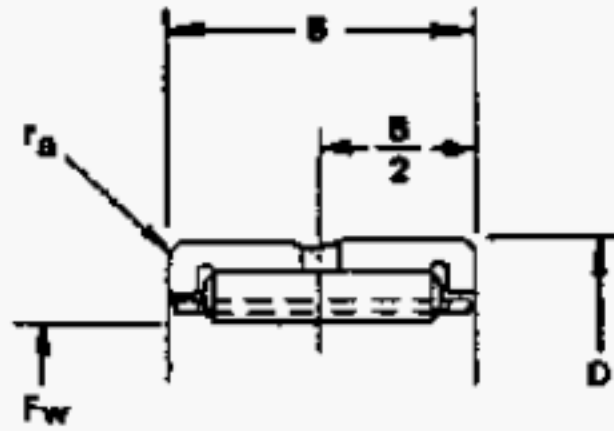
For Tolerances see Table 4.2 — Part 1.

For Fitting and Mounting Practice see Table 5.3 — Part 1 and Table 5.4 — Part 1.

For inner rings to be used with these bearings, see Table 3.3 — Part 1.

- (1) The chamfer on outer rings must clear the maximum fillet radius shown in the table. This specification does not control outer ring corner contours. Only the unstamped side of the outer ring is required to have sufficient chamfer to clear the housing fillet listed. The stamped ends will have a 0.8 mm minimum chamfer.
- (2) Dimension Series 05 not applicable to sealed bearings.

**TABLE 3.2—Part 2
BOUNDARY DIMENSIONS
NEEDLE ROLLER BEARINGS, WITH CAGE,
MACHINED RING, WITHOUT INNER RING
INCH DESIGN
TYPE NIA**



Dimensions in mm

DIAMETER SYMBOL	BORE DIAMETER UNDER NEEDLE ROLLERS, Fw	DIAMETER SERIES 5				MAX FILLET ⁽¹⁾ ra
		OUTSIDE DIAMETER D	WIDTH SERIES			
			0	2	4	
			DIMENSION SERIES			
			05 ⁽²⁾	25	45	
08	0.5000	1.0000	0.750	—	—	0.025
10	0.6250	1.1250	0.750	1.000	—	0.025
12	0.7500	1.2500	0.750	1.000	—	0.04
14	0.8750	1.3750	0.750	1.000	—	0.04
16	1.0000	1.5000	0.750	1.000	—	0.04
18	1.1250	1.6250	0.750	1.000	1.250	0.04
20	1.2500	1.7500	0.750	1.000	1.250	0.04
22	1.3750	1.8750	0.750	1.000	1.250	0.04
24	1.5000	2.0625	1.000	1.250	1.500	0.06
26	1.6250	2.1875	1.000	1.250	1.500	0.06
28	1.7500	2.3125	1.000	1.250	1.500	0.06
30	1.8750	2.4375	1.000	1.250	1.500	0.06
32	2.0000	2.5625	1.000	1.250	1.500	0.06
36	2.2500	3.0000	1.250	1.500	1.750	0.06
40	2.5000	3.2500	1.250	1.500	1.750	0.08
44	2.7500	3.5000	1.250	1.500	1.750	0.08
48	3.0000	3.7500	1.250	1.500	1.750	0.08
52	3.2500	4.2500	1.750	2.000	—	0.08
56	3.5000	4.5000	1.750	2.000	—	0.08
60	3.7500	4.7500	1.750	2.000	—	0.10
64	4.0000	5.0000	1.750	2.000	—	0.10
68	4.2500	5.2500	1.750	2.000	—	0.10
72	4.5000	6.0000	2.500	3.000	—	0.10
80	5.0000	6.5000	2.500	3.000	—	0.10
88	5.5000	7.0000	2.500	3.000	—	0.10
96	6.0000	7.5000	2.500	3.000	—	0.12
104	6.5000	8.0000	2.500	3.000	—	0.12
116	7.2500	9.1250	3.000	—	—	0.12
124	7.7500	9.6250	3.000	—	—	0.12
132	8.2500	10.1250	3.000	—	—	0.12
140	8.7500	10.6250	3.000	—	—	0.16
148	9.2500	11.1250	3.000	—	—	0.16

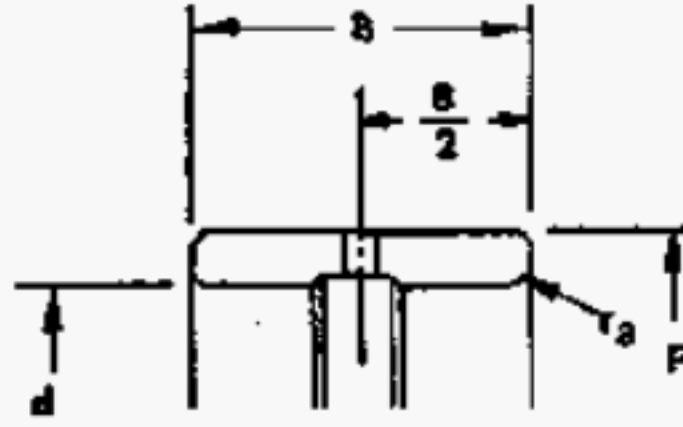
For Tolerances see Table 4.2 — Part 2.

For Fitting and Mounting Practice see Table 5.3 — Part 2 and Table 5.4 — Part 2.

For inner rings to be used with these bearings, see Table 3.3 — Part 2.

- (1) The chamfer on outer rings must clear the maximum fillet radius shown in the table. This specification does not control outer ring corner contours. Only the unstamped side of the outer ring is required to have sufficient chamfer to clear the housing fillet listed. The stamped ends will have a 1/32" minimum chamfer.
- (2) Dimension Series 05 not applicable to sealed bearing.

TABLE 3.3 — Part 1
BOUNDARY DIMENSIONS
NEEDLE ROLLER BEARING INNER RINGS (USED WITH BEARINGS TYPE NIB, NIY, NIH, NIA)
INCH DESIGN
TYPE NIR



Dimensions in mm

DIAMETER SYMBOL	BORE DIAMETER, d	DIAMETER SERIES 5							MAX FILLET (1) ra
		OUTSIDE DIAMETER, F	WIDTH SERIES						
			0	1	3	5	7	9	
			DIMENSION SERIES						
			05	15	35	55	75	95	
			WIDTH, B						
06	9.525	15.875	7.95	9.52	12.70	15.88	19.05	25.40	0.6
07	11.112	17.462	7.92	9.52	12.70	15.88	19.05	—	1.0
08	12.700	19.050	9.52	12.70	15.88	19.05	25.40	—	1.0
09	14.288	20.638	9.52	12.70	15.88	19.05	25.40	—	1.0
10	15.875	22.225	9.52	12.70	15.88	19.05	25.40	—	1.0
11	17.462	23.812	9.52	12.70	15.88	19.05	25.40	—	1.0
12	19.050	25.400	9.52	12.70	15.88	19.05	25.40	—	1.0
13	20.638	26.988	9.52	12.70	15.88	19.05	25.40	—	1.0
14	22.225	28.575	9.52	12.70	15.88	19.05	25.40	31.75	1.0
16	25.400	31.750	12.70	19.05	25.40	31.75	38.10	—	1.0
18	28.575	34.925	12.70	19.05	25.40	31.75	38.10	—	1.0
20	31.750	38.100	12.70	19.05	25.40	31.75	38.10	—	1.5
22	34.925	41.275	12.70	19.05	25.40	31.75	38.10	—	1.5
23	36.512	44.450	15.88	19.05	25.40	31.75	38.10	—	1.5
25	39.688	47.625	15.88	19.05	25.40	31.75	38.10	—	1.5
26	41.275	50.800	15.88	19.05	25.40	31.75	38.10	—	1.5
27	42.862	53.975	15.88	19.05	25.40	31.75	38.10	—	1.5
28	44.450	57.150	15.88	19.05	25.40	31.75	38.10	44.45	2.0
32	50.800	63.500	15.88	19.05	25.40	31.75	38.10	44.45	2.0
36	57.150	69.850	15.88	19.05	25.40	31.75	38.10	44.45	2.0
40	63.500	76.200	19.05	25.40	31.75	38.10	44.45	50.80	2.0
44	69.850	82.550	19.05	25.40	31.75	38.10	44.45	50.80	2.0
48	76.200	88.900	19.05	25.40	31.75	38.10	44.45	50.80	2.0
52	82.550	95.250	—	—	—	—	44.45	50.80	2.5
56	88.900	101.600	—	—	—	—	44.45	50.80	2.5
60	95.250	107.950	—	—	—	—	44.45	50.80	2.5
64	101.600	114.300	—	—	—	—	63.50	76.20	2.5
68	107.950	127.000	—	—	—	—	63.50	76.20	2.5
72	114.300	139.700	—	—	—	—	63.50	76.20	2.5
80	127.000	152.400	—	—	—	—	63.50	76.20	3.0
88	139.700	165.100	—	—	—	—	63.50	76.20	3.0
96	152.400	184.150	—	—	—	—	76.20	—	3.0
104	165.100	196.850	—	—	—	—	76.20	—	3.0
112	177.800	209.550	—	—	—	—	76.20	—	3.0
120	190.500	222.250	—	—	—	—	76.20	—	4.0
128	203.200	234.950	—	—	—	—	76.20	—	4.0

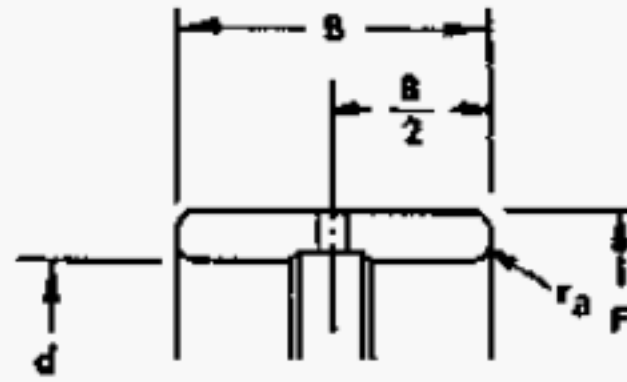
For Tolerances see Table 4.3 — Part 1.

For Fitting and Mounting Practice see Table 5.5 — Part 1.

For bearings to be used with these inner rings, see Table 3.2 — Part 1.

- (1) The chamfer on rings must clear the maximum fillet radius given in the table. This specification does not control ring chamfer contours. Only the unstamped side of ring is required to have sufficient chamfer to clear the shoulder fillet listed. The stamped ends will have a 0.8mm minimum chamfer.

TABLE 3.3 — Part 2
BOUNDARY DIMENSIONS
NEEDLE ROLLER BEARING INNER RINGS (USED WITH BEARINGS TYPE NIB, NIY, NIH, NIA)
INCH DESIGN
TYPE NIR



Dimensions in Inches

DIAMETER SYMBOL	BORE DIAMETER, d	DIAMETER SERIES 5							MAX FILLET ⁽¹⁾ ra
		OUTSIDE DIAMETER, F	WIDTH SERIES						
			0	1	3	5	7	9	
			DIMENSION SERIES						
			05	15	35	55	75	95	
			WIDTH, B						
06	0.3750	0.6250	0.312	0.375	0.500	0.625	0.750	1.000	0.025
07	0.4375	0.6875	0.312	0.375	0.500	0.625	0.750	—	0.04
08	0.5000	0.7500	0.375	0.500	0.625	0.750	1.000	—	0.04
09	0.5625	0.8125	0.375	0.500	0.625	0.750	1.000	—	0.04
10	0.6250	0.8750	0.375	0.500	0.625	0.750	1.000	—	0.04
11	0.6875	0.9375	0.375	0.500	0.625	0.750	1.000	—	0.04
12	0.7500	1.0000	0.375	0.500	0.625	0.750	1.000	—	0.04
13	0.8125	1.0625	0.375	0.500	0.625	0.750	1.000	—	0.04
14	0.8750	1.1250	0.375	0.500	0.625	0.750	1.000	1.250	0.04
16	1.0000	1.2500	0.500	0.750	1.000	1.250	1.500	—	0.04
18	1.1250	1.3750	0.500	0.750	1.000	1.250	1.500	—	0.04
20	1.2500	1.5000	0.500	0.750	1.000	1.250	1.500	—	0.06
22	1.3750	1.6250	0.500	0.750	1.000	1.250	1.500	—	0.06
23	1.4375	1.7500	0.625	0.750	1.000	1.250	1.500	—	0.06
25	1.5625	1.8750	0.625	0.750	1.000	1.250	1.500	—	0.06
26	1.6250	2.0000	0.625	0.750	1.000	1.250	1.500	—	0.06
27	1.6875	2.1250	0.625	0.750	1.000	1.250	1.500	—	0.06
28	1.7500	2.2500	0.625	0.750	1.000	1.250	1.500	1.750	0.06
32	2.0000	2.5000	0.625	0.750	1.000	1.250	1.500	1.750	0.08
36	2.2500	2.7500	0.625	0.750	1.000	1.250	1.500	1.750	0.08
40	2.5000	3.0000	0.750	1.000	1.250	1.500	1.750	2.000	0.08
44	2.7500	3.2500	0.750	1.000	1.250	1.500	1.750	2.000	0.08
48	3.0000	3.5000	0.750	1.000	1.250	1.500	1.750	2.000	0.08
52	3.2500	3.7500	—	—	—	—	1.750	2.000	0.10
56	3.5000	4.0000	—	—	—	—	1.750	2.000	0.10
60	3.7500	4.2500	—	—	—	—	1.750	2.000	0.10
64	4.0000	4.5000	—	—	—	—	2.500	3.000	0.10
68	4.2500	5.0000	—	—	—	—	2.500	3.000	0.10
72	4.5000	5.5000	—	—	—	—	2.500	3.000	0.10
80	5.0000	6.0000	—	—	—	—	2.500	3.000	0.12
88	5.5000	6.5000	—	—	—	—	2.500	3.000	0.12
96	6.0000	7.2500	—	—	—	—	3.000	—	0.12
104	6.5000	7.7500	—	—	—	—	3.000	—	0.12
112	7.0000	8.2500	—	—	—	—	3.000	—	0.12
120	7.5000	8.7500	—	—	—	—	3.000	—	0.16
128	8.0000	9.2500	—	—	—	—	3.000	—	0.16

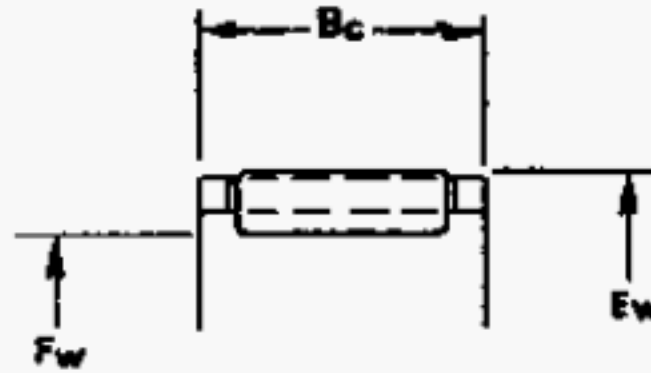
For Tolerances see Table 4.3 — Part 2.

For Fitting and Mounting Practice see Table 5.5 — Part 2.

For bearings to be used with these inner rings, see Table 3.2 — Part 2.

- (1) The chamfer on rings must clear the maximum fillet radius given in the table. This specification does not control ring chamfer contours. Only the unstamped side of ring is required to have sufficient chamfer to clear the shoulder fillet listed. The stamped end will have a 1/32" minimum chamfer.

TABLE 3.4 — Part 1
BOUNDARY DIMENSIONS
NEEDLE ROLLER AND CAGE ASSEMBLIES
INCH DESIGN
TYPE NIM



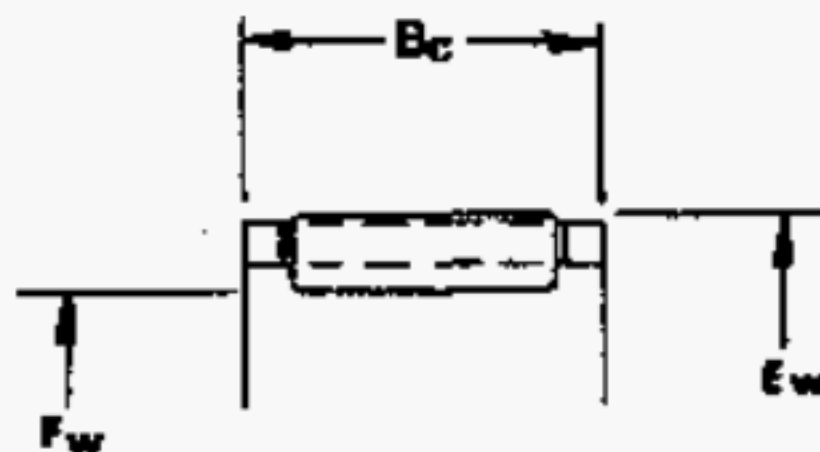
Dimension in mm

DIAMETER SYMBOL	BORE DIAMETER UNDER NEEDLE ROLLERS, Fw	DIAMETER SERIES 5				DIAMETER SERIES 6			
		OUTSIDE DIAMETER OVER NEEDLE ROLLERS, Ew	WIDTH SERIES			OUTSIDE DIAMETER OVER NEEDLE ROLLERS, Ew	WIDTH SERIES		
			1	3	5		1	3	5
			DIMENSION SERIES				DIMENSION SERIES		
			15	35	55		16	36	56
			WIDTH. Bc				WIDTH, Bc		
06	9.525	12.700	9.52	12.70	15.88	—	—	—	—
07	11.112	14.288	9.52	12.70	15.88	—	—	—	—
08	12.700	15.875	9.52	12.70	15.88	—	—	—	—
09	14.288	17.462	9.52	12.70	15.88	20.638	15.88	—	—
10	15.875	19.050	9.52	12.70	15.88	22.225	15.88	—	—
11	17.462	20.638	9.52	12.70	15.88	23.812	15.88	—	—
12	19.050	23.812	12.70	15.88	19.05	25.400	15.88	19.05	25.40
13	20.638	25.400	12.70	15.88	19.05	26.988	15.88	19.05	25.40
14	22.225	26.988	12.70	15.88	19.05	28.575	15.88	19.05	25.40
15	23.812	28.575	12.70	15.88	19.05	31.750	19.05	25.40	31.75
16	25.400	30.162	12.70	15.88	19.05	33.338	19.05	25.40	31.75
18	28.575	34.925	—	19.05	—	38.100	25.40	31.75	38.10
20	31.750	38.100	—	19.05	—	41.275	25.40	31.75	38.10
22	34.925	41.275	—	19.05	—	44.450	25.40	31.75	38.10
24	38.100	44.450	—	19.05	—	47.625	25.40	31.75	38.10
26	41.275	47.625	—	19.05	—	50.800	25.40	31.75	38.10
28	44.450	50.800	—	19.05	—	53.975	25.40	31.75	38.10
30	47.625	53.975	—	19.05	—	57.150	25.40	31.75	38.10
32	50.800	57.150	—	19.05	—	60.325	25.40	31.75	38.10
36	57.150	63.500	—	19.05	—	66.675	25.40	31.75	38.10
40	63.500	69.850	—	19.05	—	73.025	25.40	31.75	38.10
44	69.850	76.200	—	19.05	—	79.375	25.40	31.75	38.10
48	76.200	82.550	—	19.05	—	85.725	25.40	31.75	38.10
52	82.550	92.075	—	—	—	95.250	—	38.10	—
56	88.900	98.425	—	—	—	101.600	—	38.10	—
60	92.250	104.775	—	—	—	107.950	—	38.10	—
64	101.600	111.125	—	—	—	114.300	—	38.10	—

For Tolerances see Table 4.4 — Part 1.

For Raceway Diameters see Table 5.6 — Part 1.

TABLE 3.4 — Part 2
BOUNDARY DIMENSIONS
NEEDLE ROLLER AND CAGE ASSEMBLIES
INCH DESIGN
TYPE NIM



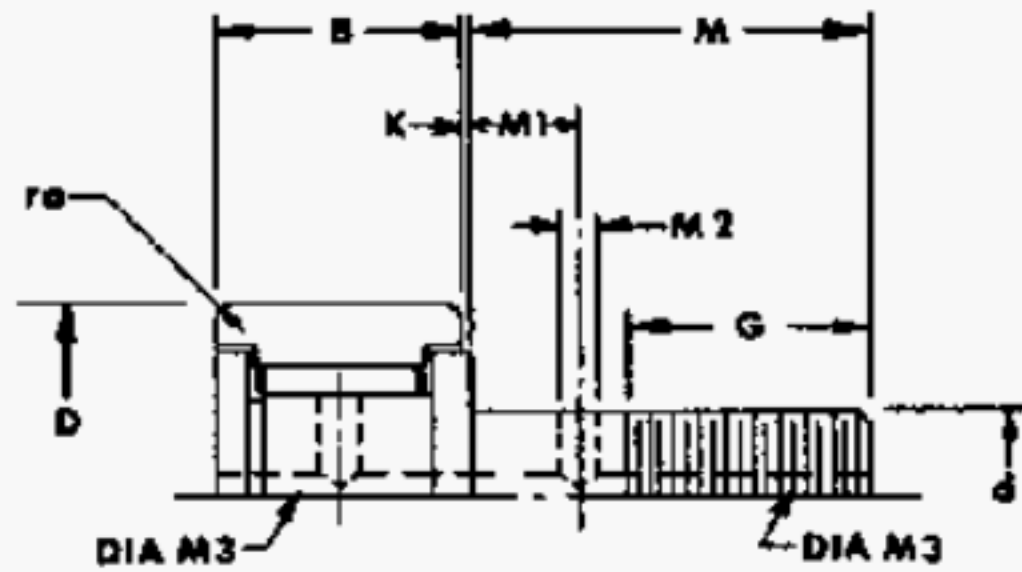
Dimension in Inches

DIAMETER SYMBOL	BORE DIAMETER UNDER NEEDLE ROLLERS, Fw	DIAMETER SERIES 5				DIAMETER SERIES 6			
		OUTSIDE DIAMETER OVER NEEDLE ROLLERS, Ew	WIDTH SERIES			OUTSIDE DIAMETER OVER NEEDLE ROLLERS, Ew	WIDTH SERIES		
			1	3	5		1	3	5
			DIMENSION SERIES				DIMENSION SERIES		
			15	35	55		16	36	56
			WIDTH. Bc			WIDTH, Bc			
06	0.3750	0.5000	0.375	0.500	0.625	—	—	—	—
07	0.4375	0.5625	0.375	0.500	0.625	—	—	—	—
08	0.5000	0.6250	0.375	0.500	0.625	—	—	—	—
09	0.5625	0.6875	0.375	0.500	0.625	0.8125	0.625	—	—
10	0.6250	0.7500	0.375	0.500	0.625	0.8750	0.625	—	—
11	0.6875	0.8125	0.375	0.500	0.625	0.9375	0.625	—	—
12	0.7500	0.9375	0.500	0.625	0.750	1.0000	0.625	07.50	1.000
13	0.8125	1.0000	0.500	0.625	0.750	1.0625	0.625	0.750	1.000
14	0.8750	1.0625	0.500	0.625	0.750	1.1250	0.625	0.750	1.000
15	0.9375	1.1250	0.500	0.625	0.750	1.2500	0.750	1.000	1.250
16	1.0000	1.1875	0.500	0.625	0.750	1.3125	0.750	1.000	1.250
18	1.1250	1.3750	—	0.750	—	1.5000	1.000	1.250	1.500
20	1.2500	1.5000	—	0.750	—	1.6250	1.000	1.250	1.500
22	1.3750	1.6250	—	0.750	—	1.7500	1.000	1.250	1.500
24	1.5000	1.7500	—	0.750	—	1.8750	1.000	1.250	1.500
26	1.6250	1.8750	—	0.750	—	2.0000	1.000	1.250	1.500
28	1.7500	2.0000	—	0.750	—	2.1250	1.000	1.250	1.500
30	1.8750	2.1250	—	0.750	—	2.2500	1.000	1.250	1.500
32	2.0000	2.2500	—	0.750	—	2.3750	1.000	1.250	1.500
36	2.2500	2.5000	—	0.750	—	2.6250	1.000	1.250	1.500
40	2.5000	2.7500	—	0.750	—	2.8750	1.000	1.250	1.500
44	2.7500	3.0000	—	0.750	—	3.1250	1.000	1.250	1.500
48	3.0000	3.2500	—	0.750	—	3.3750	1.000	1.250	1.500
52	3.2500	3.6250	—	—	—	3.7500	—	1.500	—
56	3.5000	3.8750	—	—	—	4.0000	—	1.500	—
60	3.7500	4.1250	—	—	—	4.2500	—	1.500	—
64	4.0000	4.3750	—	—	—	4.5000	—	1.500	—

For Tolerances see Table 4.4 — Part 2.

For Raceway Diameters see Table 5.6 — Part 2.

**TABLE 3.5 — Part 1
BOUNDARY DIMENSIONS
NEEDLE ROLLER BEARING TRACK ROLLERS,
FULL COMPLEMENT, MACHINED RING,
NON-SEPARABLE THREADED STUD
INCH DESIGN
TYPE NIS**



Dimensions in mm

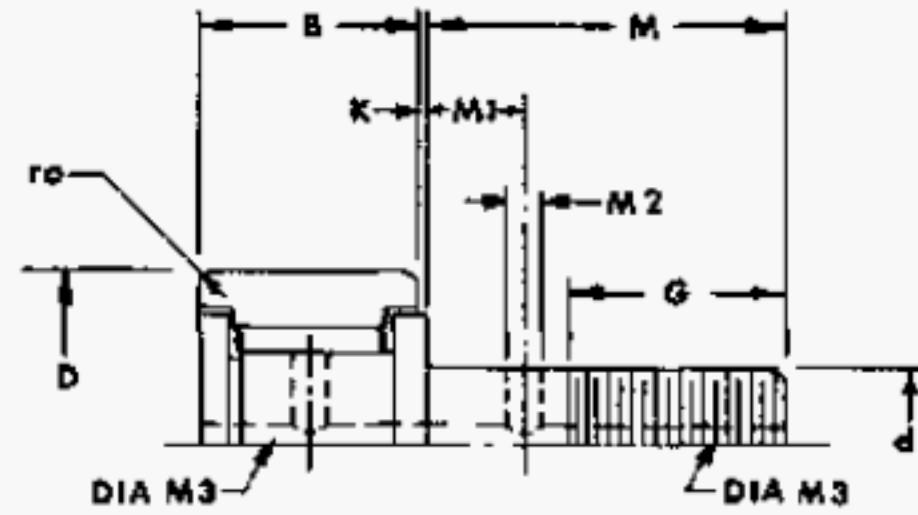
DIAMETER SYMBOL	OUTSIDE DIAMETER, D	WIDTH OUTER RING, B	STUD LENGTH ,M	DIAMETER SERIES 5				MINIMUM PERFECT THREAD LENGTH. G	LOCATION CROSS HOLE. M1	DIAM- ETER CROS S HOLE. M2	GREASE FITTING HOLE DIAMET ER. M3	END WASHER EXTENSION · K	MAX FILLET ⁽¹⁾ r8
				STUD SERIES									
				1		2							
				DIMENSION SERIES									
				15		25							
				STUD DIAMETER, d	UNIFIED SCREW (3) THREADS	STUD DIAMETER, d	UNIFIED SCREW(3) THREADS						
08	12.700	9.52	15.7	4.826	#10-32	6.350	1/4-28	6.4	—	—	3.2 ⁽²⁾	0.8	0.25
09	14.288	9.52	15.7	4.826	#10-32	6.350	1/4-28	6.4	—	—	3.2 ⁽²⁾	0.8	0.25
10	15.875	11.13	19.0	6.350	1/4-28	7.938	5/16-24	7.9	—	—	3.2 ⁽²⁾	0.8	0.4
11	17.462	11.13	19.0	6.350	1/4-28	7.938	5/16-24	7.9	—	—	3.2 ⁽²⁾	0.8	0.4
12	19.050	12.70	22.4	9.525	3/8-24	11.112	7/16-20	9.7	6.4	2.3	4.8	0.8	0.4
14	22.225	12.70	22.4	9.525	3/8-24	11.112	7/16-20	9.7	6.4	2.3	4.8	0.8	0.4
16	25.400	15.88	25.4	11.112	7/16-20	15.875	5/8-18	12.7	6.4	2.3	4.8	0.8	0.8
18	28.575	15.88	25.4	11.112	7/16-20	15.875	5/8-18	12.7	6.4	2.3	4.8	0.8	0.8
20	31.750	19.05	31.8	12.700	1/2-20	19.050	3/4-16	15.7	7.9	2.3	4.8	0.8	0.8
22	34.925	19.05	31.8	12.700	1/2-20	19.050	3/4-16	15.7	7.9	2.3	4.8	0.8	0.8
24	38.100	22.22	38.1	15.875	5/8-18	22.220	7/8-14	19.0	9.7	2.3	4.8	0.8	0.8
26	41.275	22.22	38.1	15.875	5/8-18	22.220	7/8-14	19.0	9.7	2.3	4.8	0.8	0.8
28	44.450	25.40	44.4	19.050	3/4-16	25.400	1-14	22.4	11.2	2.3	4.8	0.8	1.0
30	47.625	25.40	44.4	19.050	3/4-16	25.400	1-14	22.4	11.2	2.3	4.8	0.8	1.0
32	50.800	31.75	50.8	22.220	7/8-14	28.575	1 1/8-12	25.4	12.7	3.0	4.8	0.8	1.3
36	57.150	31.75	50.8	22.220	7/8-14	28.575	1 1/8-12	25.4	12.7	3.0	4.8	0.8	1.3
40	63.500	38.10	57.2	25.400	1-14	31.750	1 1/4-12	28.4	14.2	3.0	4.8	0.8	2.3
44	69.850	38.10	57.2	25.400	1-14	31.750	1 1/4-12	28.4	14.2	3.0	4.8	0.8	2.3
48	76.200	44.45	63.5	31.750	1 1/4-12	34.925	1 1/2-12	31.8	14.2	3.0	6.4	0.8	2.3
52	82.550	44.45	63.5	31.750	1 1/4-12	34.925	1 1/2-12	31.8	15.7	3.0	6.4	0.8	2.3
56	88.900	50.80	69.8	34.925	1 3/8-12	44.450	1 3/4-12	35.1	17.5	3.0	6.4	0.8	2.3
64	101.600	57.15	88.9	38.100	1 1/2-12	50.800	2-12	38.1	19.0	3.0	6.4	0.8	2.3
80	127.000	69.85	128.5	50.800	2-12	63.500	2 1/2-12	65.0	—	—	6.4	1.5	4.0
96	152.400	82.55	152.4	63.500	3 1/2-12	76.200	3-12	76.2	—	—	6.4	1.5	4.0
112	177.800	95.25	195.3	76.200	3-12	88.900	3 1/2-12	104.6	—	—	6.4	1.5	4.0

For Tolerances see Table 4.5 — Part 1.

For Mounting Dimensions, Tolerances, and Space Requirements see Table 5.7 — Part 1.

- (1) The chamfer on bearings must clear the maximum fillet radius given in the table. This specification does not control bearing chamfer contours.
- (2) Provisions for grease fitting in bearing end only.
- (3) Screw threads are inch standard sizes.

**TABLE 3.5 — Part 2
BOUNDARY DIMENSIONS
NEEDLE ROLLER BEARING TRACK ROLLERS,
FULL COMPLEMENT, MACHINED RING,
NON-SEPARABLE THREADED STUD
INCH DESIGN
TYPE NIS**



Dimensions in Inches

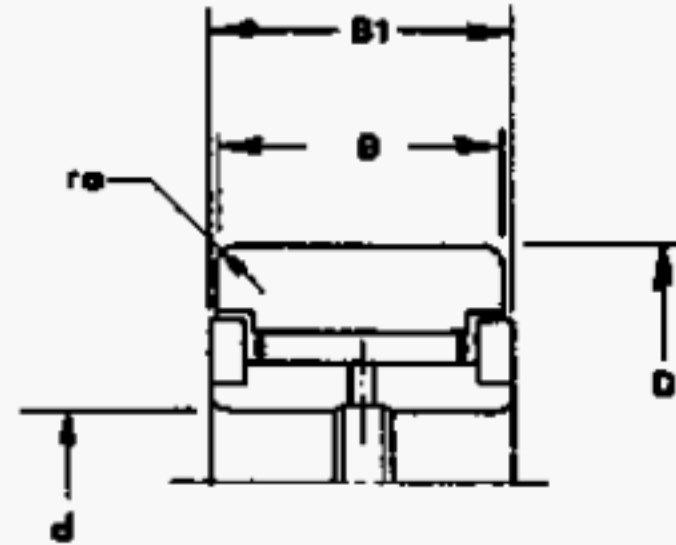
DIAMETER SYMBOL	OUTSIDE DIAMETER, D	WIDTH OUTER RING, B	STUD LENGTH, M	DIAMETER SERIES 5				MINIMUM PERFECT THREAD LENGTH, G	LOCATION CROSS HOLE, M1	DIAM- ETER CROSS HOLE, M2	GREASE FITTING HOLE DIAMETER, M3	END WASHER EXTENSION, K	MAX FILLET (1) r8
				STUD SERIES									
				1		2							
				DIMENSION SERIES									
				15		25							
				STUD DIAMETER, d	UNIFIED SCREW (3) THREADS	STUD DIAMETER, d	UNIFIED SCREW(3) THREADS						
08	0.5000	0.375	0.62	0.1900	#10-32	0.2500	1/4-28	0.25	—	—	1/8 ⁽²⁾	0.03	0.01
09	0.5625	0.375	0.62	0.1900	#10-32	0.2500	1/4-28	0.25	—	—	1/8 ⁽²⁾	0.03	0.01
10	0.6250	0.438	0.75	0.2500	1/4-28	0.3125	5/16-24	0.31	—	—	1/8 ⁽²⁾	0.03	0.015
11	0.6875	0.438	0.75	0.2500	1/4-28	0.3125	5/16-24	0.31	—	—	1/8 ⁽²⁾	0.03	0.015
12	0.7500	0.500	0.88	0.3750	3/8-24	0.4375	7/16-20	0.38	0.25	3/32	3/16	0.03	0.015
14	0.8750	0.500	0.88	0.3750	3/8-24	0.4375	7/16-20	0.38	0.25	3/32	3/16	0.03	0.015
16	1.0000	0.625	1.00	0.4375	7/16-20	0.6250	5/8-18	0.50	0.25	3/32	3/16	0.03	0.03
18	1.1250	0.625	1.00	0.4375	7/16-20	0.6250	5/8-18	0.50	0.25	3/32	3/16	0.03	0.03
20	1.2500	0.750	1.25	0.5000	1/2-20	0.7500	3/4-16	0.62	0.31	3/32	3/16	0.03	0.03
22	1.3750	0.750	1.25	0.5000	1/2-20	0.7500	3/4-16	0.62	0.31	3/32	3/16	0.03	0.03
24	1.5000	0.875	1.50	0.6250	5/8-18	0.8750	7/8-14	0.75	0.38	3/32	3/16	0.03	0.03
26	1.6250	0.875	1.50	0.6250	5/8-18	0.8750	7/8-14	0.75	0.38	3/32	3/16	0.03	0.03
28	1.7500	1.000	1.75	0.7500	3/4-16	1.0000	1-14	0.88	0.44	3/32	3/16	0.03	0.04
30	1.8750	1.000	1.75	0.7500	3/4-16	1.0000	1-14	0.88	0.44	3/32	3/16	0.03	0.04
32	2.0000	1.250	2.00	0.8750	7/8-14	1.1250	1 1/8-12	1.00	0.50	1/8	3/16	0.03	0.05
36	2.2500	1.250	2.00	0.8750	7/8-14	1.1250	1 1/8-12	1.00	0.50	1/8	3/16	0.03	0.05
40	2.5000	1.500	2.25	1.0000	1-14	1.2500	1 1/4-12	1.12	0.56	1/8	3/16	0.03	0.09
44	2.7500	1.500	2.25	1.0000	1-14	1.2500	1 1/4-12	1.12	0.56	1/8	3/16	0.03	0.09
48	3.0000	1.750	2.50	1.2500	1 1/4-12	1.5000	1 1/2-12	1.25	0.62	1/8	1/4	0.03	0.09
52	3.2500	1.750	2.50	1.2500	1 1/4-12	1.5000	1 1/2-12	1.25	0.62	1/8	1/4	0.03	0.09
56	3.5000	2.000	2.75	1.3750	1 3/8-12	1.7500	1 3/4-12	1.38	0.69	1/8	1/4	0.03	0.09
64	4.0000	2.250	3.50	1.5000	1 1/2-12	2.0000	2-12	1.50	0.75	1/8	1/4	0.03	0.09
80	5.0000	2.750	5.06	2.0000	2-12	2.5000	2 1/2-12	2.56	—	—	1/4	0.06	0.16
96	6.0000	3.250	6.00	2.5000	2 1/2-12	3.0000	3-12	3.00	—	—	1/4	0.06	0.16
112	7.0000	3.750	7.69	3.0000	3-12	3.5000	3 1/2-4	4.12	—	—	1/4	0.06	0.16

For Tolerances see Table 4.5 — Part 2.

For Mounting Dimensions, Tolerances, and Space Requirements see Table 5.7 — Part 2.

- (1) The chamfer on bearings must clear the maximum fillet radius given in the table. This specification does not control bearing chamfer contours.
- (2) Provisions for grease fitting in bearing end only.

TABLE 3.6 — Part 1
BOUNDARY DIMENSIONS
NEEDLE ROLLER BEARING TRACK ROLLERS,
FULL COMPLEMENT, MACHINED RING,
NON-SEPARABLE INNER RING
INCH DESIGN
TYPE NIU



Dimension in mm

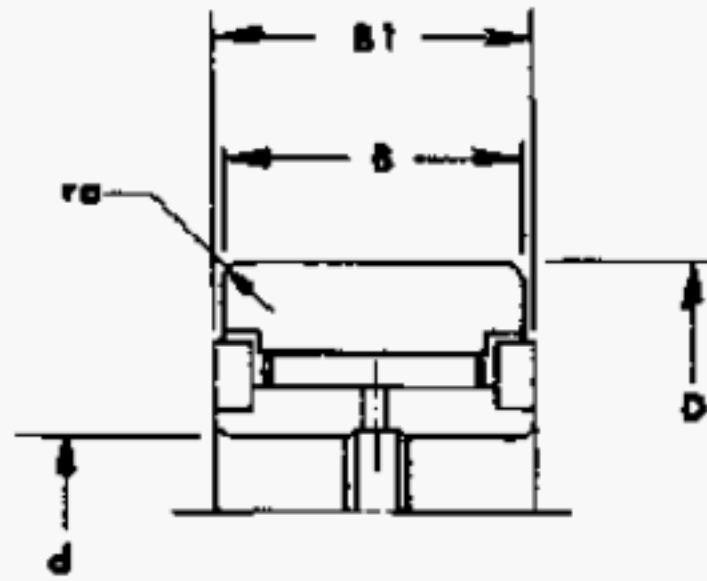
DIAMETER SYMBOL	OUTSIDE DIAMETER, D	DIAMETER SERIES 5			MAX FILLET ra (1)
		BORE DIAMETER, d	WIDTH SERIES		
			1		
			DIMENSION SERIES		
			15		
			Outer Ring Width B	Bearing Width, B1	
12	19.050	6.350	12.70	14.27	0.4
14	22.225	6.350	12.70	14.27	0.4
16	25.400	7.938	15.88	17.48	0.8
18	28.575	7.938	15.88	17.48	0.8
20	31.750	9.525	19.05	20.62	0.8
22	34.925	9.525	19.05	20.62	0.8
24	38.100	11.112	22.22	23.83	0.8
26	41.275	11.112	22.22	23.83	0.8
28	44.450	12.700	25.40	26.97	1.0
30	47.625	12.700	25.40	26.97	1.0
32	50.800	15.875	31.75	33.32	1.3
36	57.150	15.875	31.75	33.32	1.3
40	63.500	19.050	38.10	39.67	2.3
44	69.800	19.050	38.10	39.67	2.3
48	76.200	25.400	44.45	46.05	2.3
52	82.550	25.400	44.45	46.05	2.3
56	88.900	28.575	50.80	52.37	2.3
64	101.600	31.750	57.15	58.72	2.3
80	127.000	44.450	69.85	73.02	4.0
96	152.400	57.150	82.55	85.72	4.0
112	177.800	69.850	95.25	98.42	4.0

For Bearing Tolerances see Table 4.6 — Part 1.

For Mounting Dimensions and Tolerances see Table 5.8 — Part 1.

- (1) The chamfer on bearings must clear the maximum fillet radius given in the table. This specification does not control bearing chamfer contours.

TABLE 3.6 — Part 2
BOUNDARY DIMENSIONS
NEEDLE ROLLER BEARING TRACK ROLLERS,
FULL COMPLEMENT, MACHINED RING,
NON-SEPARABLE INNER RING
INCH DESIGN
TYPE NIU



Dimension in Inches

DIAMETER SYMBOL	OUTSIDE DIAMETER, D	DIAMETER SERIES 5			MAX FILLET (1) ra
		BORE DIAMETER, d	WIDTH SERIES		
			1		
			DIMENSION SERIES		
			15		
			Outer Ring Width, B	Bearing Width, B1	
12	0.7500	0.2500	0.500	0.562	0.015
14	0.8750	0.2500	0.500	0.562	0.015
16	1.0000	0.31 25	0.625	0.688	0.03
18	1.1250	0.3125	0.625	0.688	0.03
20	1.2500	0.3750	0.750	0.812	0.03
22	1.3750	0.3750	0.750	0.812	0.03
24	1.5000	0.4375	0.875	0.938	0.03
26	1.6250	0.4375	0.875	0.938	0.03
28	1.7500	0.5000	1.000	1.062	0.04
30	1.8750	0.5000	1.000	1.062	0.04
32	2.0000	0.6250	1.250	1.312	0.05
36	2.2500	0.6250	1.250	1.312	0.05
40	2.5000	0.7500	1.500	1.562	0.09
44	2.7500	0.7500	1.500	1.562	0.09
48	3.0000	1.0000	1.750	1.813	0.09
52	3.2500	1.0000	1.750	1.813	0.09
56	3.5000	1.1250	2.000	2.062	0.09
64	4.0000	1.2500	2.250	2.312	0.09
80	5.0000	1.7500	2.750	2.875	0.16
96	6.0000	2.2500	3.250	3.375	0.16
112	7.0000	2.7500	3.750	3.875	0.16

For Bearing Tolerances see Table 4.6 — Part 2.

For Mounting Dimensions and Tolerances see Table 5.8 — Part 2.

- (1) The chamfer on bearings must clear the maximum fillet radius given in the table. This specification does not control bearing chamfer contours.

TABLE 4.1 — Part 1
TOLERANCE LIMITS
NEEDLE ROLLER BEARINGS, DRAWN CUP, WITHOUT INNER RING
INCH DESIGN
TYPES NIB, NIBM, NIY, NIYM, NIH, NIHM

Dimensions in mm, Deviations in micrometres

RING GAGE BORE DIAMETER (1)		BASIC BORE DIAMETER UNDER NEEDLE ROLLERS, Fw	ALLOWABLE DEVIATION FROM Fw ⁽¹⁾		ALLOWABLE DEVIATION FROM WIDTH, B			
Basic Outside Diameter, d								
							mm	
mm		Deviation from D	Over	Incl.	Low	High	High	Low
Over	Incl.							
4.762	23.812	+12.7	4.762	17.462	+38.1	+61.0	0	-250
23.812	101.000	-12.7	17.462	31.750	+12.7	+35.6	0	-250
For Boundary Dimensions see Table 3.1 — Part 1. For Fitting and Mounting Practice see Table 5.1 — Part 1 and Table 5.2 — Part 1. (1) The bore diameter under needle rollers can be measured only when bearing is pressed into a ring gage which rounds and sizes the bearing.		31.750	34.925	+12.7	+38.1	0	-250	
		34.925	41.275	+12.7	+40.6	0	-250	
		41.275	47.625	+12.7	+43.2	0	-250	
		47.625	50.800	+15.2	+45.7	0	-250	
		50.800	63.500	+15.2	+50.8	0	-250	
		63.500	88.900	+25.4	+61.0	0	-250	

TABLE 4.1 — Part 2
TOLERANCE LIMITS
NEEDLE ROLLER BEARINGS, DRAWN CUP, WITHOUT INNER RING
INCH DESIGN
TYPES NIB, NIBM, NIY, NIYM, NIH, NIHM

Dimensions in Inches, Deviations in 0.0001 Inch

RING GAGE BORE DIAMETER (1)		BASIC BORE DIAMETER UNDER NEEDLE ROLLERS, Fw	ALLOWABLE DEVIATION FROM Fw (1)		ALLOWABLE DEVIATION FROM WIDTH, B			
Basic Outside Diameter, d								
							Inch	
Inch		Deviation from D	Over	Incl.	Low	High	High	Low
Over	Incl.							
0.1875	0.9375	+5	0.1875	0.687	+15	+24	0	-100
0.9375	4.0000	-5	0.6875	1.2500	+5	+14	0	-100
For Boundary Dimensions see Table 3.1 — Part 2. For Fitting and Mounting Practice see Table 5.1 — Part 2 and Table 5.2 — Part 2. (1) The bore diameter under needle rollers can be measured only when bearing is pressed into a ring gage which rounds and sizes the bearing.			1.2500	1.3750	+5	+15	0	-100
			1.3750	1.6250	+5	+16	0	-100
			1.6250	1.8750	+5	+17	0	-100
			1.8750	2.0000	+6	+18	0	-100
			2.0000	2.5000	+6	+20	0	-100
			2.5000	3.5000	+10	+24	0	-100

**TABLE 4.2 — Part 1
TOLERANCE LIMITS
NEEDLE ROLLER BEARINGS, WITH CAGE,
MACHINED RING, WITHOUT INNER RING
INCH DESIGN
TYPE NIA**

Dimensions in mm, Deviations in micrometres

BASIC OUTSIDE DIAMETER, D		ALLOWABLE DEVIATION FROM D OF SINGLE MEAN DIAMETER, Dmp	
mm			
Over	Incl.	High	Low.
19.050	50.800	0	-13
50.800	82.550	0	-15
82.550	120.650	0	-20
120.650	184.150	0	-25
184.150	260.350	0	-30
260.350	282.575	0	-36

For Boundary Dimensions see Table 3.2 — Part 1.
For Fitting and Mounting Practice see Table 5.3 —
Part 1 and Table 5.4 — Part 1.

BASIC BORE DIAMETER UNDER NEEDLE ROLLERS, Fw		ALLOWABLE DEVIATION FROM Fw		ALLOWABLE DEVIATION FROM WIDTH, B	
mm					
Over	Incl.	Low	High	High	Low
8	18	+ 20	+ 43	0	- 130
18	30	+ 23	+ 46	0	- 130
30	42	+ 25	+ 48	0	- 130
42	50	+ 25	+ 51	0	- 130
50	70	+ 28	+ 53	0	- 130
70	80	+ 28	+ 58	0	- 130
80	102	+ 30	+ 61	0	- 130
102	120	+ 30	+ 66	0	- 130
120	160	+ 33	+ 69	0	- 130
160	180	+ 33	+ 74	0	- 130
180	200	+ 36	+ 76	0	- 130
200	235	+ 36	+ 81	0	- 130

**TABLE 4.2 — Part 2
TOLERANCE LIMITS
NEEDLE ROLLER BEARINGS, WITH CAGE,
MACHINED RING, WITHOUT INNER RING
INCH DESIGN
TYPE NIA**

Dimensions in Inches, Deviations in 0.0001 Inch

BASIC OUTSIDE DIAMETER, D		ALLOWABLE DEVIATION FROM D OF SINGLE MEAN DIAMETER, Dmp	
Inch			
Over	Incl.	High	Low.
0.7500	2.0000	0	-5
2.0000	3.2500	0	-6
3.2500	4.7500	0	-8
4.7500	7.2500	0	-10
7.2500	10.2500	0	-12
10.2500	11.1250	0	-14

For Boundary Dimensions see Table 3.2 — Part 2.
For Fitting and Mounting Practice see Table 5.3 —
Part 2 and Table 5.4 — Part 2.

BASIC BORE DIAMETER UNDER NEEDLE ROLLERS, Fw		ALLOWABLE DEVIATION FROM Fw		ALLOWABLE DEVIATION FROM WIDTH, B	
Inch					
Over	Incl.	Low	High	High	Low
0.3150	0.7087	+ 8	+ 17	0	- 50
0.7087	1.1811	+ 9	+ 18	0	- 50
1.1811	1.6535	+ 10	+ 19	0	- 50
1.6535	1.9685	+ 10	+ 20	0	- 50
1.9685	2.7559	+ 11	+ 21	0	- 50
2.7559	3.1496	+ 11	+ 23	0	- 50
3.1496	4.0157	+ 12	+ 24	0	- 50
4.0157	4.7244	+ 12	+ 26	0	- 50
4.7244	6.2992	+ 13	+ 27	0	- 50
6.2992	7.0866	+ 13	+ 29	0	- 50
7.0866	7.8740	+ 14	+ 30	0	- 50
7.8740	9.2520	+ 14	+ 32	0	- 50

**TABLE 4.3 — Part 1
TOLERANCE LIMITS
NEEDLE ROLLER BEARING INNER RINGS
INCH DESIGN
TYPE NIR**

Dimensions in mm, Deviations in micrometres

BASIC OUTSIDE DIAMETER, F		ALLOWABLE DEVIATION FROM F OF SINGLE MEAN DIAMETER, Fmp	
mm			
Over	Incl.	High	Low
10	18	- 13	- 23
18	26	- 18	- 30
26	30	- 23	- 36
30	35	- 23	- 38
35	50	- 25	- 41
50	80	- 28	- 46
80	100	- 33	- 56
100	120	- 38	- 61
120	140	- 38	- 64
140	180	- 43	- 69
180	210	- 48	- 79
210	235	- 51	- 81

BASIC BORE DIAMETER, d		ALLOWABLE DEVIATION FROM d OF SINGLE MEAN DIAMETER, dmp		ALLOWABLE DEVIATION FROM WIDTH, B	
mm					
Over	Incl.	High	Low	High	Low
7.938	19.050	0	- 10	+ 250	+ 130
19.050	50.800	0	- 13	+ 250	+ 130
50.800	82.550	0	- 15	+ 250	+ 130
82.550	107.950	0	- 20	+ 250	+ 130
107.950	120.650	0	- 20	+ 380	+ 250
120.650	177.800	0	- 25	+ 380	+ 250
177.800	203.200	0	- 30	+ 380	+ 250

For Boundary Dimensions see Table 3.3 — Part 1.
For Fitting and Mounting Practice see Table 5.5 — Part 1.

**TABLE 4.3 — Part 2
TOLERANCE LIMITS
NEEDLE ROLLER BEARING INNER RINGS
INCH DESIGN
TYPE NIR**

Dimensions in Inches, Deviations in 0.0001 Inch

BASIC OUTSIDE DIAMETER, F		ALLOWABLE DEVIATION FROM F OF SINGLE MEAN DIAMETER, Fmp	
Inch			
Over	Incl.	High	Low
0.3937	0.7087	- 5	- 9
0.7087	1.0236	- 7	- 12
1.0236	1.1811	- 9	- 14
1.1811	1.3780	- 9	- 15
1.3780	1.9685	- 10	- 16
1.9685	3.1496	- 11	- 18
3.1496	3.9370	- 13	- 22
3.9370	4.7244	- 15	- 24
4.7244	5.5118	- 15	- 25
5.5118	7.0866	- 17	- 27
7.0866	8.2677	- 19	- 31
8.2677	9.2520	- 20	- 32

BASIC BORE DIAMETER, d		ALLOWABLE DEVIATION FROM d OF SINGLE MEAN DIAMETER, dmp		ALLOWABLE DEVIATION FROM WIDTH, B	
Inch					
Over	Incl.	High	Low	High	Low
0.3125	0.7500	0	- 4	+ 100	+ 50
0.7500	2.0000	0	- 5	+ 100	+ 50
2.0000	3.2500	0	- 6	+ 100	+ 50
3.2500	4.2500	0	- 8	+ 100	+ 50
4.2500	4.7500	0	- 8	+ 150	+ 100
4.7500	7.0000	0	- 10	+ 150	+ 100
7.0000	8.0000	0	- 12	+ 150	+ 100

For Boundary Dimensions see Table 3.3 — Part 2.
For Fitting and Mounting Practice see Table 5.5 — Part 2.

TABLE 4.4 — Part 1
TOLERANCE LIMITS
NEEDLE ROLLER AND CAGE ASSEMBLIES
INCH DESIGN
TYPE NIM

Dimensions in mm, Deviations in micrometres

BASIC OUTSIDE DIAMETER OVER NEEDLE ROLLERS, Ew		RING GAGE BORE DIAMETER ⁽¹⁾ DEVIATION FROM Ew	PLUG GAGE DIAMETER ⁽¹⁾ DEVIATION FROM BASIC BORE, Fw	ALLOWABLE DEVIATION FROM WIDTH, Bc	
mm				High	Low
Over	Incl.	G6 LOW LIMIT			
6	10	+ 5	0	0	-380
10	18	+ 6	0	0	-380
18	30	+ 7	0	0	-380
30	50	+ 9	0	0	-380
50	80	+ 10	0	0	-380
80	120	+ 12	0	0	-380

For Boundary Dimensions see Table 3.4 — Part 1.

For Raceway Diameters see Table 5.6 — Part 1.

(1) Assembly shall rotate freely when mounted on plug gage and in ring gage.

TABLE 4.4 — Part 2
TOLERANCE LIMITS
NEEDLE ROLLER AND CAGE ASSEMBLIES
INCH DESIGN
TYPE NIM

Dimensions in Inches, Deviations in 0.0001 Inch

BASIC OUTSIDE DIAMETER OVER NEEDLE ROLLERS, Ew		RING GAGE BORE DIAMETER ⁽¹⁾ DEVIATION FROM Ew	PLUG GAGE DIAMETER ⁽¹⁾ DEVIATION FROM BASIC BORE, Fw	ALLOWABLE DEVIATION FROM WIDTH, Bc	
Inch				High	Low
Over	Incl.	G6 LOW LIMIT			
0.2362	0.3137	+ 2	0	0	-150
0.3937	0.7087	+ 2	0	0	-150
0.7087	1.1811	+ 3	0	0	-150
1.1811	1.9685	+ 4	0	0	-150
1.9685	3.1496	+ 4	0	0	-150
3.1496	4.7244	+ 5	0	0	-150

For Boundary Dimensions see Table 3.4 — Part 2.

For Raceway Diameters see Table 5.6 — Part 2.

(1) Assembly shall rotate freely when mounted on plug gage and in ring gage.

**TABLE 4.5 — Part 1
TOLERANCE LIMITS
NEEDLE ROLLER BEARING TRACK ROLLERS,
FULL COMPLEMENT, MACHINED RING,
NON-SEPARABLE STUD
INCH DESIGN
TYPE NIS**

Dimensions in mm, Deviations in micrometres

BASIC OUTSIDE DIAMETER, D	ALLOWABLE DEVIATION FROM D of SINGLE MEAN DIAMETER, Dmp*		ALLOWABLE DEVIATION FROM OUTER RING WIDTH, B		BASIC STUD OUTSIDE DIAMETER, d	ALLOWABLE DEVIATION FROM d of SINGLE MEAN DIAMETER, dmp	
	High	Low	High	Low		High	Low
mm					mm		
All Sizes	0	-25	0	-130	All Sizes	+25	0

For Boundary Dimensions see Table 3.5 — Part 1.

For Mounting Dimensions, Tolerances and Space Requirements see Table 5.7 — Part 1.

*Allowable Deviation from D of Dmp for all Crowned Outer Rings: 0 High, -50 Low.

**TABLE 4.5 — Part 2
TOLERANCE LIMITS
NEEDLE ROLLER BEARING TRACK ROLLERS,
FULL COMPLEMENT, MACHINED RING,
NON-SEPARABLE STUD
INCH DESIGN
TYPE NIS**

Dimensions in Inches, Deviations in 0.0001 Inch

BASIC OUTSIDE DIAMETER, D	ALLOWABLE DEVIATION FROM D of SINGLE MEAN DIAMETER, Dmp*		ALLOWABLE DEVIATION FROM OUTER RING WIDTH, B		BASIC STUD OUTSIDE DIAMETER, d	ALLOWABLE DEVIATION FROM d of SINGLE MEAN DIAMETER, dmp	
	High	Low	High	Low		High	Low
mm					mm		
All Sizes	0	-10	0	-50	All Sizes	+10	0

For Boundary Dimensions see Table 3.5 — Part 2.

For Mounting Dimensions, Tolerances and Space Requirements see Table 5.7 — Part 2.

*Allowable Deviation from D of Dmp for all Crowned Outer Rings: 0 High, -20 Low.

**TABLE 4.6 — Part 1
TOLERANCE LIMITS
NEEDLE ROLLER BEARING TRACK ROLLERS,
FULL COMPLEMENT, MACHINED RING,
NON-SEPARABLE INNER RING
INCH DESIGN
TYPE NIU**

Dimensions in mm, Deviations in micrometres

BASIC OUTSIDE DIAMETER, D	ALLOWABLE DEVIATION FROM D OF SINGLE MEAN DIAMETER, Dmp*		ALLOWABLE DEVIATION FROM OUTER RING WIDTH, B	
	mm	High	Low	High
All Sizes	0	- 25	0	- 130

BASIC BORE DIAMETER, d		ALLOWABLE DEVIATION FROM d OF SINGLE MEAN DIAMETER, dmp		ALLOWABLE DEVIATION FROM ASSEMBLY WIDTH, B1	
mm					
Over	Incl.	High	Low	High	Low
4.762	19.050	+5	-10	+130	-250
19.050	69.850	+3	-13	+130	-250

For Boundary Dimensions see Table 3.6 — Part 1.

For Mounting Dimensions and Tolerances see Table 5.8 — Part 1.

*Allowable Deviation from D of Dmp for all Crowned Outer Rings: 0 High, -50 Low.

**TABLE 4.6 — Part 2
NEEDLE ROLLER BEARING TRACK ROLLERS,
FULL COMPLEMENT, MACHINED RING,
NON-SEPARABLE INNER RING
INCH DESIGN
TYPE NIU**

Dimensions in Inches, Deviations in 0.0001 Inch

BASIC OUTSIDE DIAMETER, D	ALLOWABLE DEVIATION FROM D OF SINGLE MEAN DIAMETER, Dmp*		ALLOWABLE DEVIATION FROM OUTER RING WIDTH, B		BASIC BORE DIAMETER, d		ALLOWABLE DEVIATION FROM d OF SINGLE MEAN DIAMETER, dmp		ALLOWABLE DEVIATION FROM ASSEMBLY WIDTH, B1	
					INCH					
INCH	High	Low	High	Low	Over	Incl.	High	Low	High	Low
All Sizes	0	- 10	0	- 50	0.1875 0.7500	0.7500 2.7500	+2 +1	-4 -5	+50 +50	-100 -100

For Boundary Dimensions see Table 3.6 — Part 2.

For Mounting Dimensions and Tolerances see Table 5.8 — Part 2.

*Allowable Deviation from D of Dmp for all Crowned Outer Rings: 0 High, -20 Low.

TABLE 5.1 — Part 1
TOLERANCE LIMITS FOR SHAFT RACEWAY AND HOUSING BORE DIAMETERS
NEEDLE ROLLER BEARINGS, DRAWN CUP, WITHOUT INNER RING
OUTER RING STATIONARY RELATIVE TO LOAD
INCH DESIGN
TYPES NIB, NIBM, NIY, NIYM, NIH, NIHM

Dimensions in mm, Deviations in micrometres

BASIC BORE DIAMETER UNDER NEEDLE ROLLERS, Fw		SHAFT RACEWAY DIAMETER ALLOWABLE DEVIATION FROM Fw ⁽¹⁾		BASIC OUTSIDE DIAMETER, D		HOUSING BORE DIAMETER ALLOWABLE DEVIATION FROM D ⁽¹⁾	
mm				mm			
Over	Incl.	High	Low	Over	Incl.	Low	High
4.762	47.625	0	- 13	9.525	101.600	- 13	+ 13
47.625	88.900	0	- 15				

For Boundary Dimensions see Table 3.1 — Part 1.

For Bearing Tolerances see Table 4.1 — Part 1.

(1) See Paragraph 5.2 for additional requirements.

TABLE 5.1 — Part 2
TOLERANCE LIMITS FOR SHAFT RACEWAY AND HOUSING BORE DIAMETERS
NEEDLE ROLLER BEARINGS, DRAWN CUP, WITHOUT INNER RING
OUTER RING STATIONARY RELATIVE TO LOAD
INCH DESIGN
TYPES NIB, NIBM, NIY, NIYM, NIH, NIHM

Dimensions in Inches, Deviations in 0.0001 Inch

BASIC BORE DIAMETER UNDER NEEDLE ROLLERS, Fw		SHAFT RACEWAY DIAMETER ALLOWABLE DEVIATION FROM Fw ⁽¹⁾		BASIC OUTSIDE DIAMETER, D		HOUSING BORE DIAMETER ALLOWABLE DEVIATION FROM D ⁽¹⁾	
Inch				Inch			
Over	Incl.	High	Low	Over	Incl.	Low	High
0.1875	1.8750	0	- 5	0.3750	4.0000	- 5	+ 5
1.8750	3.5000	0	- 6				

For Boundary Dimensions see Table 3.1 — Part 2.

For Bearing Tolerances see Table 4.1 — Part 2.

(1) See Paragraph 5.2 for additional requirements.

TABLE 5.2 — Part 1
TOLERANCE LIMITS FOR SHAFT RACEWAY AND HOUSING BORE DIAMETERS
NEEDLE ROLLER BEARINGS, DRAWN CUP, WITHOUT INNER RING
OUTER RING ROTATING RELATIVE TO LOAD
INCH DESIGN
TYPES NIB, NIBM, NIY, NIYM, NIH, NIHM

Dimensions in mm, Deviations in micrometres

BASIC BORE DIAMETER UNDER NEEDLE ROLLERS, Fw		SHAFT RACEWAY DIAMETER ALLOWABLE DEVIATION FROM Fw ⁽¹⁾		BASIC OUTSIDE DIAMETER, D		HOUSING BORE DIAMETER ALLOWABLE DEVIATION FROM D ⁽¹⁾	
mm				mm			
Over	Incl.	High	Low	Over	Incl.	Low	High
4.762	47.625	- 13	- 25	9.525	101.600	- 25	0
47.625	88.900	- 13	- 28				

For Boundary Dimensions see Table 3.1 — Part 1.
For Bearing Tolerances see Table 4.1 — Part 1.

(1) See Paragraph 5.2 for additional requirements.

TABLE 5.2 — Part 2
TOLERANCE LIMITS FOR SHAFT RACEWAY AND HOUSING BORE DIAMETERS
NEEDLE ROLLER BEARINGS, DRAWN CUP, WITHOUT INNER RING
OUTER RING ROTATING RELATIVE TO LOAD
INCH DESIGN
TYPES NIB, NIBM, NIY, NIYM, NIH, NIHM

Dimensions in Inches, Deviations in 0.0001 Inch

BASIC BORE DIAMETER UNDER NEEDLE ROLLERS, Fw		SHAFT RACEWAY DIAMETER ALLOWABLE DEVIATION FROM Fw ⁽¹⁾		BASIC OUTSIDE DIAMETER, D		HOUSING BORE DIAMETER ALLOWABLE DEVIATION FROM D ⁽¹⁾	
Inch				Inch			
Over	Incl.	High	Low	Over	Incl.	Low	High
0.1875	1.8750	- 5	- 10	0.3750	4.0000	- 10	0
1.8750	3.5000	- 5	- 11				

For Boundary Dimensions see Table 3.1 — Part 2.
For Bearing Tolerances see Table 4.1 — Part 2.

(1) See Paragraph 5.2 for additional requirements.

TABLE 5.3 — Part 1
TOLERANCE LIMITS FOR SHAFT RACEWAY AND HOUSING BORE DIAMETERS
NEEDLE ROLLER BEARINGS, WITH CAGE, MACHINED RING, WITHOUT INNER RING
OUTER RING STATIONARY RELATIVE TO LOAD
INCH DESIGN
TYPE NIA

Dimension in mm, Deviations in micrometres

BASIC BORE DIAMETER UNDER NEEDLE ROLLERS, Fw		SHAFT RACEWAY DIAMETER ALLOWABLE DEVIATION FROM Fw ⁽¹⁾		BASIC OUTSIDE DIAMETER, D		HOUSING BORE DIAMETER ALLOWABLE DEVIATION FROM D ⁽¹⁾	
mm		h6		mm		H7	
Over	Incl.	High	Low	Over	Incl.	Low	High
6	10	0	- 9	10	18	0	+18
10	18	0	- 11	18	30	0	+21
18	30	0	- 13	30	50	0	+25
30	50	0	- 16	50	80	0	+30
50	80	0	- 19	80	120	0	+35
80	120	0	- 22	120	180	0	+40
120	180	0	- 25	180	250	0	+46
180	250	0	- 29	250	315	0	+52

For Boundary Dimensions see Table 3.2 — Part 1.

For Bearing Tolerances see Table 4.2 — Part 1.

(1) See Paragraph 5.3 for additional requirements.

TABLE 5.3 — Part 2
TOLERANCE LIMITS FOR SHAFT RACEWAY AND HOUSING BORE DIAMETERS
NEEDLE ROLLER BEARINGS, WITH CAGE, MACHINED RING, WITHOUT INNER RING
OUTER RING STATIONARY RELATIVE TO LOAD
INCH DESIGN
TYPE NIA

Dimensions in Inches, Deviations in 0.0001 Inch

BASIC BORE DIAMETER UNDER NEEDLE ROLLERS, Fw		SHAFT RACEWAY DIAMETER ALLOWABLE DEVIATION FROM Fw ⁽¹⁾		BASIC OUTSIDE DIAMETER, D		HOUSING BORE DIAMETER ALLOWABLE DEVIATION FROM D ⁽¹⁾	
Inch		h6		Inch		H7	
Over	Incl.	High	Low	Over	Incl.	Low	High
0.2362	0.3937	0	- 4	0.3937	0.7087	0	+ 7
0.3937	0.7087	0	- 4	0.7087	1.1811	0	+ 8
0.7087	1.1811	0	- 5	1.1811	1.9685	0	+ 10
1.1811	1.9685	0	- 6	1.9685	3.1496	0	+ 12
1.9685	3.1496	0	- 7	3.1496	4.7244	0	+ 14
3.1496	4.7244	0	- 9	4.7244	7.0866	0	+ 16
4.7244	7.0866	0	- 10	7.0866	9.8425	0	+ 18
7.0866	9.8425	0	- 11	9.8425	12.4016	0	+ 20

For Boundary Dimensions see Table 3.2 — Part 2.

For Bearing Tolerances see Table 4.2 — Part 2.

(1) See Paragraph 5.3 for additional requirements.

TABLE 5.4 — Part 1
TOLERANCE LIMITS FOR SHAFT RACEWAY AND HOUSING BORE DIAMETERS
NEEDLE ROLLER BEARINGS, WITH CAGE, MACHINED RING, WITHOUT INNER RING
OUTER RING ROTATING RELATIVE TO LOAD
INCH DESIGN
TYPE NIA

Dimension in mm, Deviations in micrometres

BASIC BORE DIAMETER UNDER NEEDLE ROLLERS, Fw		SHAFT RACEWAY DIAMETER ALLOWABLE DEVIATION FROM Fw ⁽¹⁾		BASIC OUTSIDE DIAMETER, D		HOUSING BORE DIAMETER ALLOWABLE DEVIATION FROM D ⁽¹⁾	
mm		f6		mm		N7	
Over	Incl.	High	Low	Over	Incl.	Low	High
6	10	- 13	- 22	10	18	- 23	- 5
10	18	- 16	- 27	18	30	- 28	- 7
18	30	- 20	- 33	30	50	- 33	- 8
30	50	- 25	- 41	50	80	- 39	- 9
				80	120	- 45	- 10
50	80	- 30	- 49				
80	120	- 36	- 58	120	180	- 52	- 12
120	180	- 43	- 68	180	250	- 60	- 14
180	250	- 50	- 79	250	315	- 66	- 14

For Boundary Dimensions see Table 3.2 — Part 1.

For Bearing Tolerances see Table 4.2 — Part 1.

(1) See Paragraph 5.3 for additional requirements.

TABLE 5.4 — Part 2
TOLERANCE LIMITS FOR SHAFT RACEWAY AND HOUSING BORE DIAMETERS
NEEDLE ROLLER BEARINGS, WITH CAGE, MACHINED RING, WITHOUT INNER RING
OUTER RING ROTATING RELATIVE TO LOAD
INCH DESIGN
TYPE NIA

Dimensions in Inches, Deviations in 0.0001 Inch

BASIC BORE DIAMETER UNDER NEEDLE ROLLERS, Fw		SHAFT RACEWAY DIAMETER ALLOWABLE DEVIATION FROM Fw ⁽¹⁾		BASIC OUTSIDE DIAMETER, D		HOUSING BORE DIAMETER ALLOWABLE DEVIATION FROM D ⁽¹⁾	
Inch		f6		Inch		N7	
Over	Incl.	High	Low	Over	Incl.	Low	High
0.2362	0.3937	- 5	- 9	0.3937	0.7087	- 9	- 2
0.3937	0.7087	- 6	- 11	0.7087	1.1811	- 11	- 3
0.7087	1.1811	- 8	- 13	1.1811	1.9685	- 13	- 3
1.1811	1.9685	- 10	- 16	1.9685	3.1496	- 15	- 4
				3.1496	4.7244	- 18	- 4
1.9685	3.1496	- 12	- 19				
3.1496	4.7244	- 14	- 23	4.7244	7.0866	- 20	- 5
4.7244	7.0866	- 17	- 27	7.0866	9.8425	- 24	- 6
7.0866	9.8425	- 20	- 31	9.8425	12.4016	- 26	- 6

For Boundary Dimensions see Table 3.2 — Part 2.

For Bearing Tolerances see Table 4.2 — Part 2.

(1) See Paragraph 5.3 for additional requirements.

TABLE 5.5 — Part 1
TOLERANCE LIMITS FOR SHAFT DIAMETERS
NEEDLE ROLLER BEARING INNER RINGS
(USED WITH BEARINGS TYPE NIA)
INCH DESIGN
TYPE NIR

Dimensions in mm, Deviations in micrometres

BASIC BORE, d		SHAFT DIAMETER (1)			
		Shaft Rotating Relative to Load, Outer Ring Stationary Relative to Load Allowable Deviation From d		Shaft Stationary Relative to Load, Outer Ring Rotating Relative to Load Allowable Deviation From d	
mm		m5		g6	
Over	Incl.	High	Low	High	Low
6	10	+12	+ 6	- 5	- 14
10	18	+15	+ 7	- 6	- 17
18	30	+17	+ 8	- 7	- 20
30	50	+20	+ 9	- 9	- 25
50	80	+24	+11	- 10	- 29
80	120	+28	+13	- 12	- 34
120	180	+33	+15	- 14	- 39
180	250	+37	+17	- 15	- 44

For Boundary Dimensions see Table 3.3 — Part 1.

For Inner Ring Tolerance Limits see Table 4.3 — Part 1.

(1) See Paragraph 5.2 for additional requirements.

TABLE 5.5 — Part 2
TOLERANCE LIMITS FOR SHAFT DIAMETERS
NEEDLE ROLLER BEARING INNER RINGS
(USED WITH BEARINGS TYPE NIA)
INCH DESIGN
TYPE NIR

Dimensions in Inches, Deviations in 0.0001 Inch

BASIC BORE, d		SHAFT DIAMETER (1)			
		Shaft Rotating Relative to Load, Outer Ring Stationary Relative to Load Allowable Deviation From d		Shaft Stationary Relative to Load, Outer Ring Rotating Relative to Load Allowable Deviation From d	
Inch		m5		g6	
Over	Incl.	High	Low	High	Low
0.2362	0.3937	+ 5	+ 2	- 2	- 6
0.3937	0.7087	+ 6	+ 3	- 2	- 7
0.7087	1.1811	+ 7	+ 3	- 3	- 8
1.1811	1.9685	+ 8	+ 4	- 4	- 10
1.9685	3.1496	+ 9	+ 4	- 4	- 11
3.1496	4.7244	+ 11	+ 5	- 5	- 13
4.7244	7.0866	+ 13	+ 6	- 6	- 15
7.0866	9.8425	+ 15	+ 7	- 6	- 17

For Boundary Dimensions see Table 3.3 — Part 2.

For Inner Ring Tolerance Limits see Table 4.3 — Part 2.

(1) See Paragraph 5.2 for additional requirements.

TABLE 5.6 — Part 1
TOLERANCE LIMITS FOR SHAFT RACEWAY AND OUTER RACEWAY DIAMETERS
NEEDLE ROLLER AND CAGE ASSEMBLIES
INCH DESIGN
TYPE NIM

Dimensions in mm, Deviations in micrometres

BASIC BORE DIAMETER UNDER NEEDLE ROLLERS, Fw		SHAFT RACEWAY DIAMETER ALLOWABLE DEVIATION FROM FW ⁽¹⁾	
mm		h5	
Over	Incl.	High	Low
6	10	0	- 6
10	18	0	- 8
18	30	0	- 9
30	50	0	- 11
50	80	0	- 13
80	120	0	- 15

BASIC OUTSIDE DIAMETER OVER NEEDLE ROLLERS, Ew		OUTER RACEWAY DIAMETER ALLOWABLE DEVIATION FROM Ew ⁽¹⁾	
mm		G6	
Over	Incl.	Low	High
6	10	+ 5	+14
10	18	+ 6	+17
18	30	+ 7	+20
30	50	+ 9	+25
50	80	+ 10	+29
80	120	+ 12	+34

For Boundary Dimensions see Table 3.4 — Part 1.

For Bearing Tolerances see Table 4.4 — Part 1.

(1) See Paragraph 5.4 for additional requirements.

TABLE 5.6 — Part 2
TOLERANCE LIMITS FOR SHAFT RACEWAY AND OUTER RACEWAY DIAMETERS
NEEDLE ROLLER AND CAGE ASSEMBLIES
INCH DESIGN
TYPE NIM

Dimensions in Inches, Deviations in 0.0001 Inch

BASIC BORE DIAMETER UNDER NEEDLE ROLLERS, Fw		SHAFT RACEWAY DIAMETER ALLOWABLE DEVIATION FROM FW ⁽¹⁾	
Inch		h5	
Over	Incl.	High	Low
0.2362	0.3937	0	- 2
0.3937	0.7087	0	- 3
0.7087	1.811	0	- 4
1.1811	1.9685	0	- 4
1.9685	3.1496	0	- 5
3.1496	4.7244	0	- 6

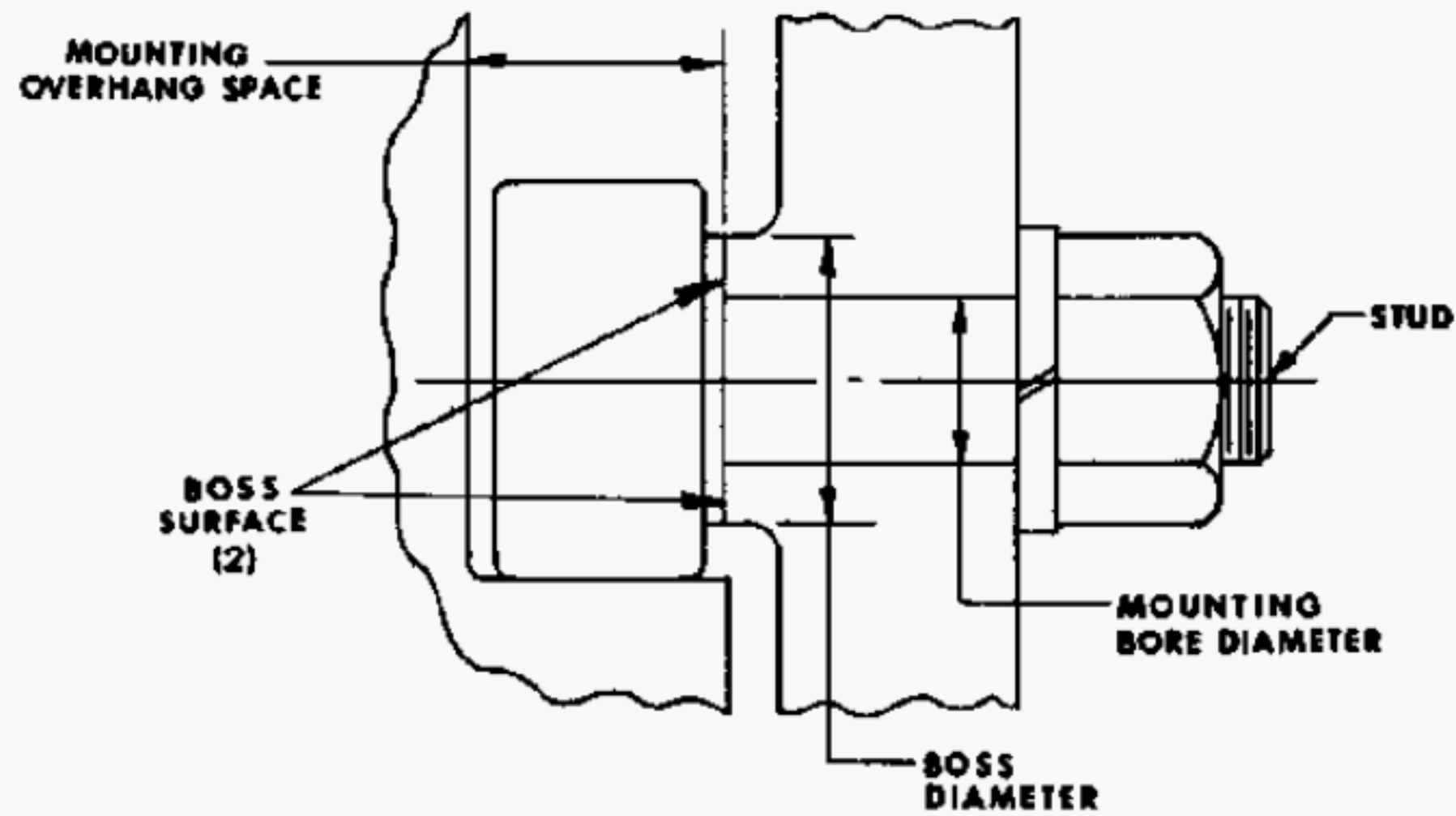
BASIC OUTSIDE DIAMETER OVER NEEDLE ROLLERS, Ew		OUTER RACEWAY DIAMETER ALLOWABLE DEVIATION FROM Ew ⁽¹⁾	
Inc		G6	
Over	Incl.	Low	High
0.2362	0.3937	+ 2	+ 6
0.3937	0.7087	+ 2	+ 7
0.7087	1.1811	+ 3	+ 8
1.1811	1.9685	+ 4	+ 10
1.9685	3.1496	+ 4	+ 11
3.1496	4.7244	+ 5	+ 13

For Boundary Dimensions see Table 3.4 — Part 2.

For Bearing Tolerances see Table 4.4 — Part 2.

(1) See Paragraph 5.4 for additional requirements.

TABLE 5.7 — Part 1
MOUNTING DIMENSIONS, TOLERANCES, AND SPACE REQUIREMENTS
NEEDLE ROLLER BEARING TRACK ROLLERS, FULL COMPLEMENT,
MACHINED RING, NON-SEPARABLE THREADED STUD
INCH DESIGN
TYPE NIS



Dimensions in mm

BASIC STUD DIAMETER, d	MOUNTING BORE DIAMETER			
	Light and Normal Loads ⁽¹⁾		Heavy Loads ⁽¹⁾	
	High	Low	High	Low
4.826	4.864	4.851	4.839	4.826
6.350	6.390	6.375	6.363	6.350
7.938	7.978	7.963	7.953	7.938
9.525	9.565	9.550	9.540	9.525
11.112	11.156	11.138	11.130	11.113
12.700	12.743	12.725	12.718	12.700
15.875	15.918	15.900	15.893	15.875
19.050	19.095	19.075	19.070	19.050
22.225	22.270	22.250	22.245	22.225
25.400	25.445	25.425	25.420	25.400
28.575	28.620	28.600	28.595	28.575
31.750	31.800	31.775	31.775	31.750
34.925	34.975	34.950	34.950	34.925
38.100	38.150	38.125	38.125	38.100
44.450	44.500	44.475	44.475	44.450
50.800	50.855	50.825	50.830	50.800
63.500	63.555	63.525	63.530	63.500
76.200	76.255	76.225	76.230	76.200
88.900	88.961	88.925	88.935	88.900

BASIC OUTSIDE DIAMETER, D	BOSS DIAMETER, MINIMUM ⁽²⁾		MOUNTING OVERHANG SPACE, MINIMUM
	Series 15	Series 25	
12.700	7.5	10.2	11.13
14.288	7.5	10.2	11.13
15.875	9.1	11.9	12.70
17.462	9.1	11.9	12.70
19.050	12.7	15.5	14.27
22.225	12.7	15.5	14.27
25.400	16.3	19.8	17.48
28.575	16.3	19.8	17.48
31.750	19.5	24.6	20.62
34.925	19.5	24.6	20.62
38.100	22.6	29.0	23.83
41.275	22.6	29.0	23.83
44.450	26.6	33.7	26.97
47.625	26.6	33.7	26.97
50.800	30.6	38.1	33.73
57.150	30.6	38.1	33.73
63.500	34.9	44.1	40.08
69.850	34.9	44.1	40.08
76.200	44.4	53.8	46.43
82.550	44.4	53.8	46.43
88.900	48.6	61.9	52.78
101.600	57.9	71.0	59.13
127.000	82.6	90.5	73.02
152.400	99.2	113.5	85.72
177.800	115.9	131.8	98.42

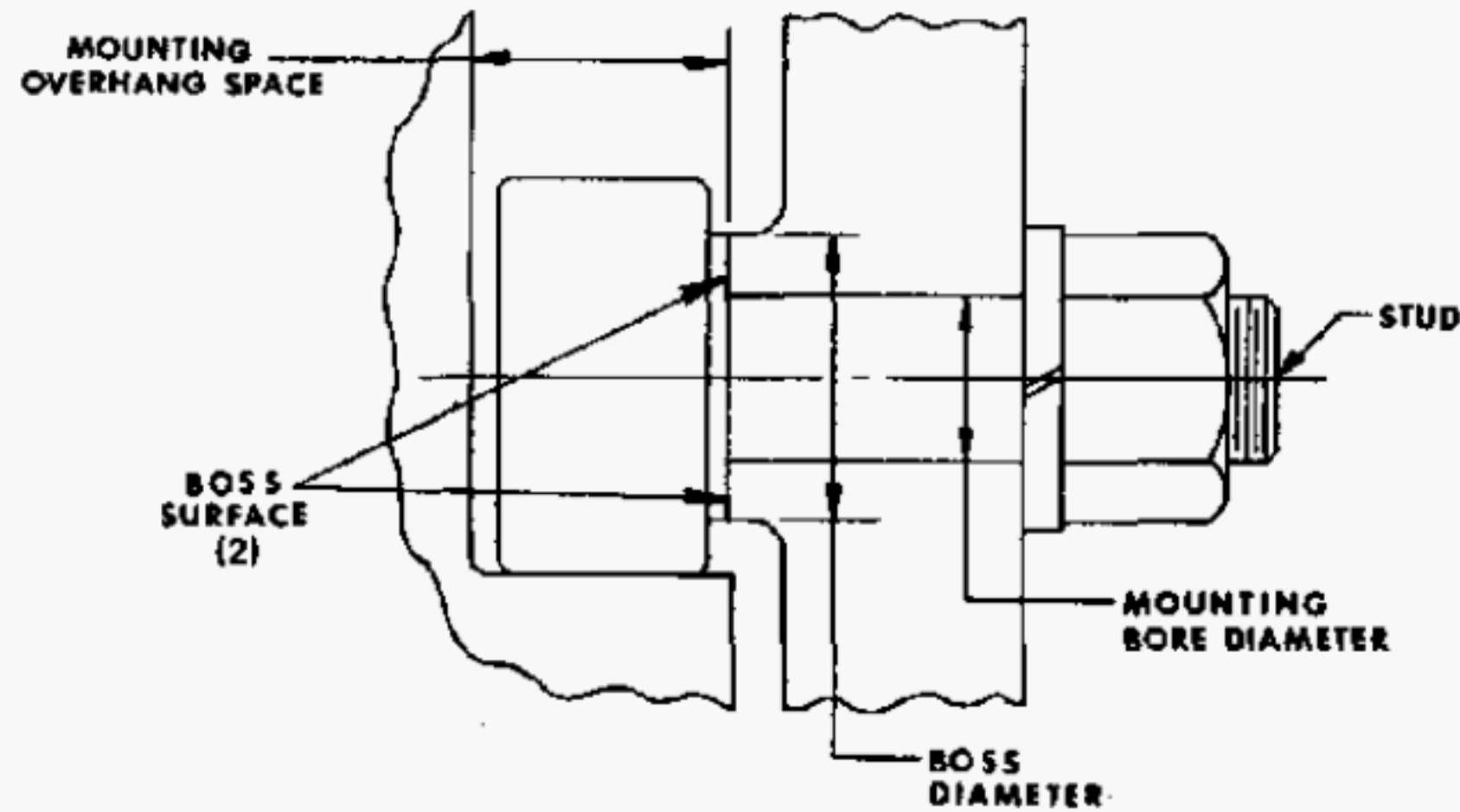
For Boundary Dimensions see Table 3.5 — Part 1.

For Bearing Tolerances see Table 4.5 — Part 1.

(1) See Paragraph 5.5 for Load Limits.

(2) Boss surfaces shall be flat and square with centerline of the mounting bores within a tolerance zone defined by two parallel planes separated by 0.002 mm/mm of boss diameter.

TABLE 5.7 — Part 2
MOUNTING DIMENSIONS, TOLERANCES, AND SPACE REQUIREMENTS
NEEDLE ROLLER BEARING TRACK ROLLERS, FULL COMPLEMENT,
MACHINED RING, NON-SEPARABLE THREADED STUD
INCH DESIGN
TYPE NIS



Dimensions in Inches

BASIC STUD DIAMETER, d	MOUNTING BORE DIAMETER			
	Light and Normal Loads ⁽¹⁾		Heavy Loads ⁽¹⁾	
	High	Low	High	Low
0.1900	0.1915	0.1910	0.1905	0.1900
0.2500	0.2516	0.2510	0.2505	0.2500
0.3125	0.3141	0.3135	0.5131	0.3125
0.3750	0.3766	0.3760	0.3756	0.3750
0.4375	0.4392	0.4385	0.4382	0.4375
0.5000	0.5017	0.5010	0.5007	0.5000
0.6250	0.6267	0.6260	0.6257	0.6250
0.7500	0.7518	0.7510	0.7508	0.7500
0.8750	0.8768	0.8760	0.8758	0.8750
1.0000	1.0018	1.0010	1.0008	1.0000
1.1250	1.1268	1.1260	1.1258	1.1250
1.2500	1.2520	1.2510	1.2510	1.2500
1.3750	1.3770	1.3760	1.3760	1.3750
1.5000	1.5020	1.5010	1.5010	1.5000
1.7500	1.7520	1.7510	1.7510	1.7500
2.0000	2.0022	2.0010	2.0012	2.0000
2.5000	2.5022	2.5010	2.5012	2.5000
3.0000	3.0022	3.0010	3.0012	3.0000
3.5000	3.5024	3.5010	3.5014	3.5000

BASIC OUTSIDE DIAMETER, D	BOSS DIAMETER, MINIMUM ⁽²⁾		MOUNTING OVERHANG SPACE, MINIMUM
	Series 15	Series 25	
0.5000	0.30	0.40	0.438
0.5625	0.30	0.40	0.438
0.6250	0.36	0.47	0.500
0.6875	0.36	0.47	0.500
0.7500	0.50	0.61	0.562
0.8750	0.50	0.61	0.562
1.0000	0.64	0.78	0.688
1.1250	0.64	0.78	0.688
1.2500	0.77	0.97	0.812
1.3750	0.77	0.97	0.812
1.5000	0.89	1.14	0.938
1.6250	0.89	1.14	0.938
1.7500	1.05	1.33	1.062
1.8750	1.05	1.33	1.062
2.0000	1.20	1.50	1.328
2.2500	1.20	1.50	1.328
2.5000	1.38	1.73	1.578
2.7500	1.38	1.73	1.578
3.0000	1.75	2.11	1.828
3.2500	1.75	2.11	1.828
3.5000	1.92	2.44	2.078
4.0000	2.28	2.80	2.328
5.0000	3.25	3.56	2.875
6.0000	3.91	4.47	3.375
7.0000	4.56	5.19	3.875

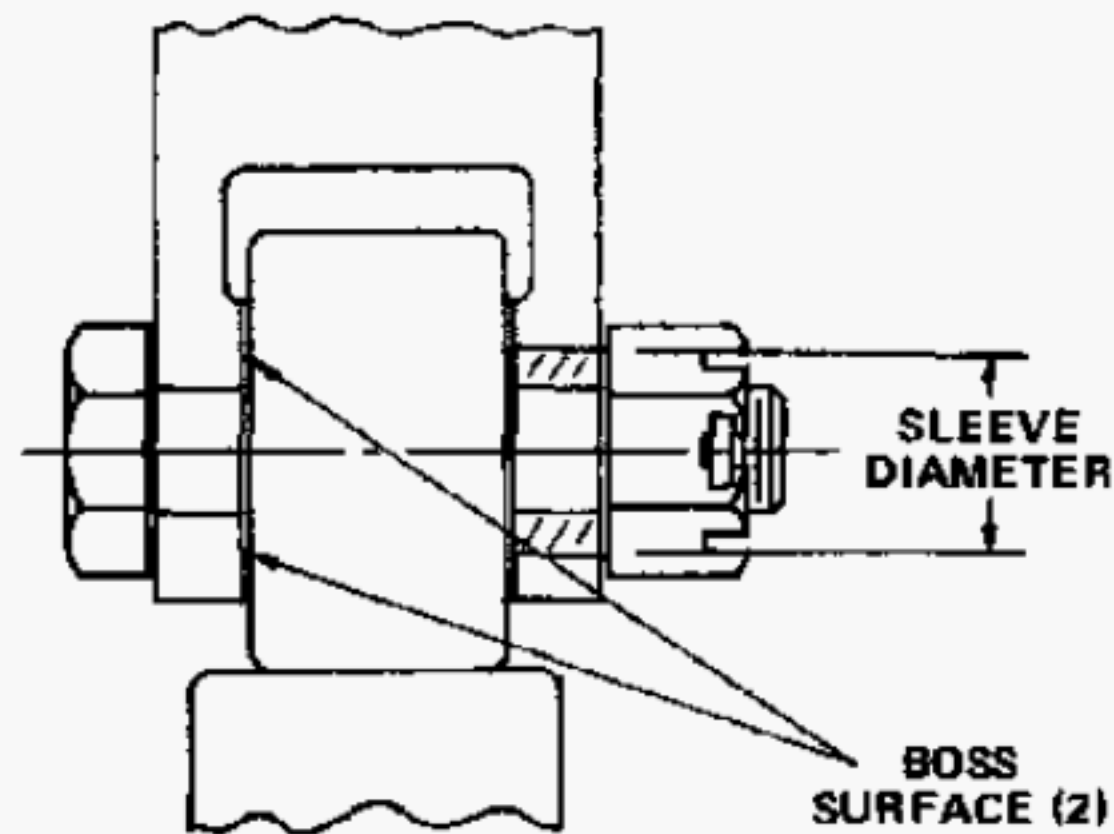
For Boundary Dimensions see Table 3.5 — Part 2.

For Bearing Tolerances see Table 4.5 — Part 2.

(1) See Paragraph 5.5 for Load Limits.

(2) Boss surfaces shall be flat and square with centerline of the mounting bores within a tolerance zone defined by two parallel planes separated by 0.002 in/in of boss diameter.

TABLE 5.8 — Part 1
MOUNTING DIMENSIONS AND TOLERANCES
NEEDLE ROLLER BEARING TRACK ROLLERS, FULL COMPLEMENT,
MACHINED RING, NON-SEPARABLE INNER RING
INCH DESIGN
TYPE NIU



Dimensions in mm

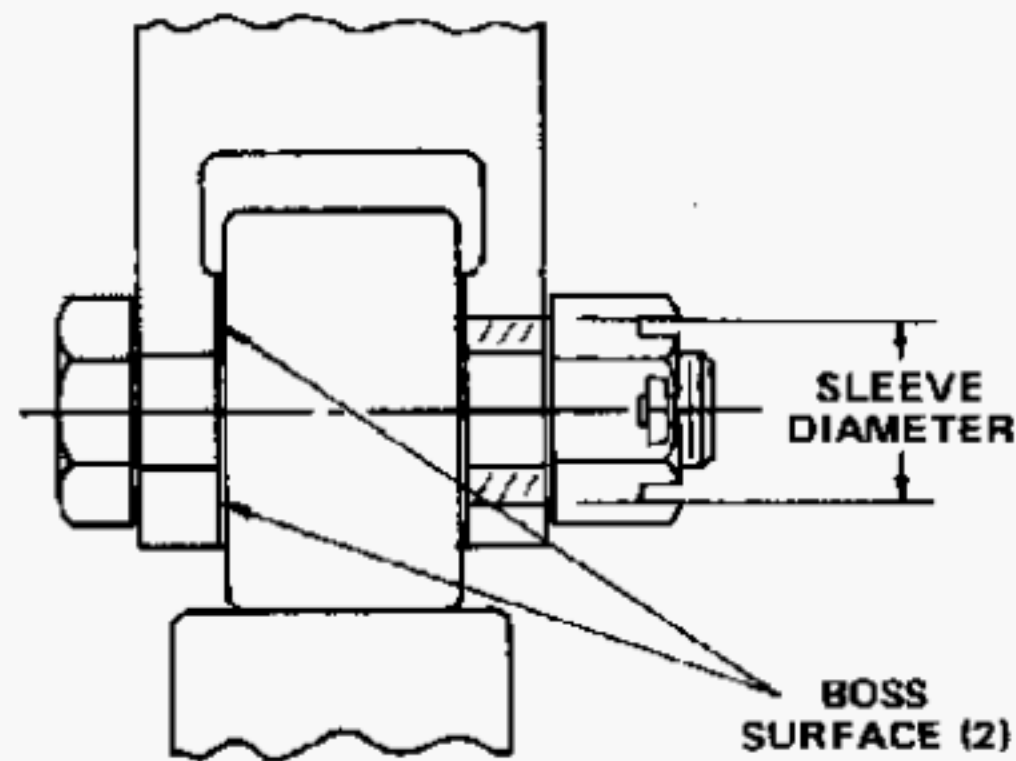
BASIC BORE DIAMETER, d	SHAFT DIAMETER ⁽¹⁾				BOSS OR SLEEVE DIAMETER, MINIMUM ⁽²⁾
	Light and Normal Loads		Heavy Loads		
	High	Low	High	Low	
6.350	6.342	6.332	6.363	6.353	12.7
7.938	7.930	7.920	7.950	7.940	16.3
9.525	9.517	9.507	9.538	9.528	19.6
11.112	11.105	11.095	11.125	11.115	22.6
12.700	12.692	12.682	12.718	12.708	26.7
15.875	15.867	15.857	15.893	15.883	30.6
19.050	19.042	19.032	19.068	19.058	34.9
25.400	25.390	25.377	25.420	25.407	44.4
28.575	28.565	28.552	28.595	28.582	48.8
31.750	31.740	31.727	31.770	31.757	57.9
44.450	44.440	44.427	44.470	44.457	82.6
57.150	57.140	57.127	57.170	57.157	99.2
69.850	69.840	69.827	69.870	69.857	115.9

For Boundary Dimensions see Table 3.6 — Part 1.

For Bearing Tolerances see Table 4.6 — Part 1.

- (1) Heat treated shaft normally required when loads are heavy. See paragraph 5.5 for load limits.
- (2) Boss surface and sleeve face shall be flat and square with centerline of the mounting bores within a tolerance zone defined by two parallel planes separated by 0.002 mm/mm of boss or sleeve diameter.

TABLE 5.8 — Part 2
MOUNTING DIMENSIONS AND TOLERANCES
NEEDLE ROLLER BEARING TRACK ROLLERS, FULL COMPLEMENT,
MACHINED RING, NON-SEPARABLE INNER RING
INCH DESIGN
TYPE NIU



Dimensions in Inches

BASIC BORE DIAMETER, d	SHAFT DIAMETER ⁽¹⁾				BOSS OR SLEEVE DIAMETER, MINIMUM (2)
	Light and Normal Loads		Heavy Loads		
	High	Low	High	Low	
0.2500	0.2497	0.2493	0.2505	0.2501	0.50
0.3125	0.3122	0.3118	0.3130	0.3126	0.64
0.3750	0.3747	0.3743	0.3755	0.3751	0.77
0.4375	0.4372	0.4368	0.4380	0.4376	0.89
0.5000	0.4997	0.4993	0.5007	0.5003	1.05
0.6250	0.6247	0.6243	0.6257	0.6253	1.20
0.7500	0.7497	0.7493	0.7507	0.7503	1.38
1.0000	0.9996	0.9991	1.0008	1.0003	1.75
1.1250	1.1246	1.1241	1.1258	1.1253	1.92
1.2500	1.2496	1.2491	1.2508	1.2503	2.28
1.7500	1.7496	1.7491	1.7508	1.7503	3.25
2.2500	2.2496	2.2491	2.2508	2.2503	3.91
2.7500	2.7496	2.7491	2.7508	2.7503	4.56

For Boundary Dimensions see Table 3.6 — Part 2.

For Bearing Tolerances see Table 4.6 — Part 2.

- (1) Heat treated shaft normally required when loads are heavy. See paragraph 5.5 for load limits.
- (2) Boss surface and sleeve face shall be flat and square with centerline of the mounting bores within a tolerance zone defined by two parallel planes separated by 0.002 in/in of boss or sleeve diameter.

