

1. GENERAL

- 1.1 This standard conforms essentially with ANSI B18.8.2 for machine dowel pins. All dimensions in this standard are in inches. For dimensions not shown in this specification, refer to ANSI B18.8.2.
- 1.2 Hardened ground machine dowel pins are intended for use only when precise alignment is required.
- 1.3 Unhardened dowel pins are used where design factors do not warrant use of hardened pins. Slotted or coiled spring pins should be considered and specified whenever possible.

2. RELATED DOCUMENTS

2.1 REFERENCE STANDARDS

ANSI B18.8.2—Taper Pins, Dowel Pins, Straight Pins, Grooved Pins, and Spring Pins (Inch Series)
STPA020—Fastener Finishes and Material Specifications

2.2 REPLACED STANDARDS

Case J-020—Dowel Pins, Hardened Ground (General Specifications)
Case J-021—Dowel Pins, Hardened Ground – Preferred
Case J-022—Dowel Pins, Hardened Ground – Non-Preferred
Case J-023—Dowel Pins, Unhardened Ground (General Specifications)
Case J-024—Dowel Pins – Unhardened Ground – Non-Preferred
NH FNHA-1-B-680.00—Pins, Dowel, Hardened, Black Oxide

3. PREFERRED PARTS POLICY

All standard parts measured in inches are considered non-preferred. See STPJ510 for preferred parts (metric).

4. CROSS REFERENCE

For cross reference listing of company part numbers, go to [CNH Catalogue](#).

5. MATERIAL AND HEAT TREAT

Material and finish shall conform to STPA020. Ground dowel pins shall be made from carbon or alloy steel. Hardened dowel pins shall be supplied case hardened or thru hardened as specified by the manufacturer.

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6. FINISH

Pins shall be furnished plain (PLN) with rust-preventative oil or black oxide coating at the option of the manufacturer.

7. REAMERS

Machine reamers of nominal size may be used to produce the holes into which these pins tap or press fit.

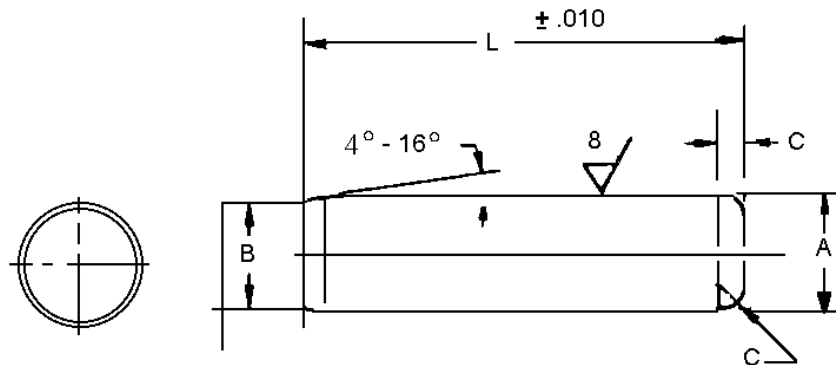


FIGURE 1: Hardened Machine Dowel Pin Diagram

TABLE 1: Basic Dimensions in Inches

Nominal Size or Nominal Pin Diameter		Pin Diameter			Point Diameter		Crown Height or Radius		Double Shear Load (lbs)**
		Standard Series Pins							
		A			B		C		
		Nominal	Max	Min	Max	Min	Max	Min	
1/8	0.125	0.1252	0.1253	0.1251	0.120	0.110	0.041	0.016	3,200
3/16	0.188	0.1877	0.1878	0.1876	0.180	0.170	0.062	0.023	7,200
1/4	0.250	0.2502	0.2503	0.2501	0.240	0.230	0.083	0.031	12,800
5/16	0.312	0.3127	0.3128	0.3126	0.302	0.290	0.104	0.039	20,000
3/8	0.375	0.3752	0.3753	0.3751	0.365	0.350	0.125	0.047	28,700
7/16	0.438	0.4377	0.4378	0.4376	0.424	0.409	0.146	0.055	39,100
1/2	0.500	0.5002	0.5003	0.5001	0.486	0.471	0.167	0.063	51,000
5/8	0.625	0.6252	0.6253	0.6251	0.611	0.595	0.208	0.078	79,800
3/4	0.750	0.7502	0.7503	0.7501	0.735	0.715	0.250	0.094	114,000
7/8	0.875	0.8752	0.8753	0.8751	0.860	0.840	0.293	0.109	156,000
1	1.000	1.0002	1.0003	1.0001	0.980	0.960	0.333	0.125	204,000

TABLE 2: Recommended Hole Sizes for Hardened Dowel Pins[†]

Nominal Size or Nominal Pin Diameter		Press Fit *		Loose Fit Single Pin		Loose Fit Multiple Pin **	
		Max	Min	Max	Min	Max	Min
1/8	0.125	0.1250	0.1232	0.1273	0.1255	0.1308	0.1286
3/16	0.188	0.1874	0.1856	0.1898	0.1880	0.1933	0.1911
1/4	0.250	0.2498	0.2480	0.2523	0.2505	0.2558	0.2536
5/16	0.312	0.3122	0.3104	0.3148	0.3130	0.3183	0.3161
3/8	0.375	0.3747	0.3729	0.3773	0.3755	0.3808	0.3786
7/16	0.438	0.4371	0.4353	0.4398	0.4380	0.4433	0.4411
1/2	0.500	0.4996	0.4978	0.5023	0.5005	0.5058	0.5036
5/8	0.625	0.6245	0.6227	0.6273	0.6255	0.6308	0.6286
3/4	0.750	0.7494	0.7476	0.7523	0.7505	0.7558	0.7536
7/8	0.875	0.8743	0.8725	0.8773	0.8755	0.8808	0.8786
1	1.000	0.9992	0.9974	1.0023	1.0005	1.0058	1.0036

[†] The following data is engineering information only, and is not to be considered part of this standard for procurement or inspection purposes.

* Because of the wide variety of materials in which dowel pins are used, and of the many design requirements which must be considered, it is not possible to provide hole sizes suitable for all applications. The suggested hole sizes are for press fitting pins into materials such as mild steels and cast iron. Softer materials may require decreased hole size limits to ensure a press fit.

** Loose fit holes, in gray iron, have been calculated based on a deliberate interference of .005 inches between two or more holes. This is a position tolerance of .0025 inches per side. If a greater position tolerance is desired, the hole size should be increased by the same amount. The position tolerance may be adjusted when another material such as aluminum or steel is used.

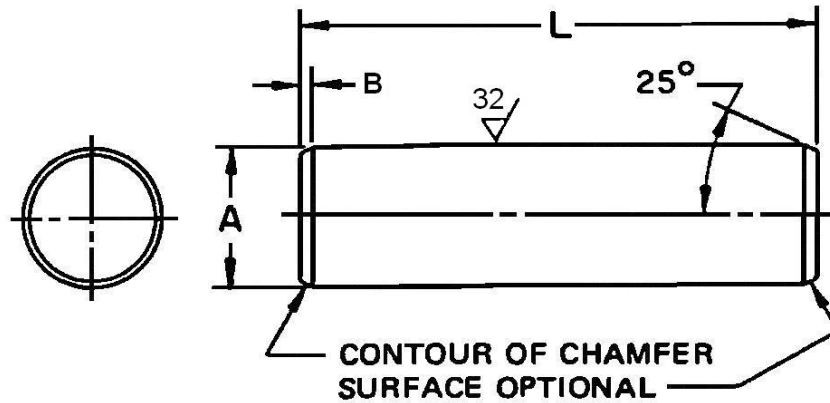


FIGURE 2: Unhardened Machine Dowel Pin Diagram

TABLE 3: Basic Dimensions in Inches

Nominal Size or Nominal Pin Diameter		Pin Diameter		Chamfer Length		Suggested Hole Diameter*		Double Shear Load (lbs)**
		A		B				
		Max	Min	Max	Min	Max	Min	Min
3/32	0.094	0.0912	0.0907	0.025	0.005	0.0907	0.0892	820
1/8	0.125	0.1223	0.1218	0.025	0.005	0.1217	0.1202	1,490
5/32	0.156	0.1535	0.1530	0.025	0.005	0.1528	0.1513	2,350
3/16	0.188	0.1847	0.1842	0.025	0.005	0.1840	0.1825	3,410
7/32	0.219	0.2159	0.2154	0.025	0.005	0.2151	0.2139	4,660
1/4	0.250	0.2470	0.2465	0.025	0.005	0.2462	0.2447	6,120
5/16	0.312	0.3094	0.3089	0.040	0.020	0.3085	0.3070	9,590
3/8	0.375	0.3717	0.3712	0.040	0.020	0.3708	0.3693	13,850
7/16	0.438	0.4341	0.4336	0.040	0.020	0.4331	0.4316	18,900
1/2	0.500	0.4964	0.4959	0.040	0.020	0.4954	0.4939	24,720
5/8	0.625	0.6211	0.6206	0.055	0.035	0.6200	0.6185	38,710
3/4	0.750	0.7458	0.7453	0.055	0.035	0.7446	0.7431	55,840
7/8	0.875	0.8705	0.8700	0.070	0.050	0.8692	0.8677	76,090
1	1.000	0.9952	0.9947	0.070	0.050	0.9938	0.9923	99,460

* Suggested hole size shown in Table 3 is for press fitting Unhardened Carbon Steel Pins into mild steels and cast or malleable irons. In soft materials such as aluminum alloys or zinc die castings, hole size limits are usually decreased by 0.0005 inch to increase the press fit.

** Pins shall be capable of withstanding minimum double shear loads when tested in accordance to ANSI B18.8.2.

Standard Part

Dowel Pins - Inch - Non-Preferred

TABLE 4: Inch Hardened Ground Dowel Pins, PLN

Length (L)	Nominal Diameter										
	1/8	3/16	1/4	5/16	3/8	7/16	1/2	5/8	3/4	7/8	1
0.375									Do not use these sizes in new designs		
0.5		88251					87016628				
0.625				280651							
0.75				87238			87752083				
0.875											
1					81842		86505157				
1.25					81843		81848				
1.5					81844		81849				
1.75							87016627				
2							86637801		87016626		
2.25									87530626		
2.5							81852				
3							81853				
3.5							81854				
4							81855				
4.5											
5											
5.5	Do not use these sizes in new designs										
6											

TABLE 5: Inch Unhardened Ground Dowel Pins

Nominal Diameter	Length (L)	Finish	Part Number
1/2	1.25	PLN	87302292
1	2	PLN	9428659