

NAVISTAR, INC.		
Material, Parts, and Process Specifications (MPAPS)		NUMBER: MPAPS S-D-200.101-GS/PL
		Former Designation: ESP-D-200.101-GS
TITLE: Penetration Gages and Gaging for Type 1 Cross Recess Tapping and Wood Screws - English Series (Noun Code 7450)		CURRENT REV No.: 1506
		DATE: June 2015
WRITTEN/EDITED BY: Materials Engineering	APPROVED BY: Materials Engineering	SUPERSEDES: ESP-D-200.101-GS - March 2002
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<i>This specification may involve hazardous materials, equipment, and procedures. This specification does not purport to address all of the safety issues associated with its use. The user is responsible to consult appropriate safety and health practices and to determine the applicability of regulatory limits prior to use.</i>		
Change Notice: Changed to New MPAPS format.		

1.0 GENERAL: Penetration gaging is a test to determine suitability of recesses in the heads of screws and may be used to indicate deficiencies in the dimensions of the recesses specified in the dimensional tables. Penetrations which are too deep indicate the possibility of a thin section between the head and shank of screw, a weakness which might result in twisting-off screw heads during tightening of the screws. Use of screws having shallow penetrations might result in production problems such as reaming of recesses or excessive wear on driver bits.

Penetration gaging depth values for the various styles of cross recess heads are included in the dimensional tables for the respective heads. See MPAPS S-D-0.0 for applicable sections. These values were predicated originally on the gaging of plain finish (uncoated or unplated) screws. However, subsequent experience has shown these values to be suitable for the gaging of screws having coating thickness up to and including .0003 inch on significant surfaces. Screws having heavier coatings, which fail to meet the penetration gaging requirements, will be stripped of finish and gaged for acceptance or rejection in plain condition.

Penetration is gaged relative to a reference plane defined by the intersection of the edge of the recess wings with the top surface of the screw head. This plane is the same as the top surface of a flat head screw but is somewhat below the topmost portion of heads which have rounded top surfaces. Knife edges or tapered ridges on the gage head are used to establish the reference plane. A reverse reading dial gage is used to indicate the penetration of the gage point into the recess. The gage may be zeroed on any flat surface.

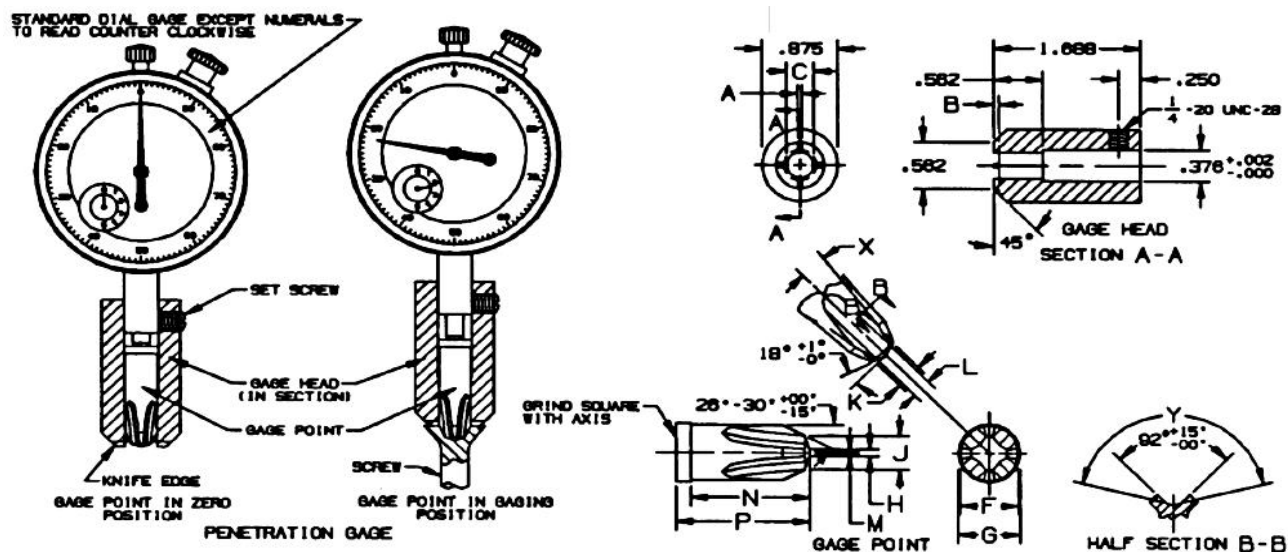
Specified above are dimensions of gage points to be used for penetration gaging. The gage points approach as nearly as possible the perfect driver form. Also specified are gage heads which adapt gage points to standard dial gages.

2.0 RESTRICTED CHEMICAL SUBSTANCES: Effective January 1, 2007, all product supplied to the requirements of this specification must comply with the requirements of the MPAPS B-50 specification.

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3.0 DIMENSIONS:



Dimensions in inches:

Dimensions in inches.

Recess Gage Size Number	A	B	C	F	G	H		J	K	L	M		N	P	X	Y
	Knife Width	Knife Height	Hole Dia	Point Dia	Collar Dia	Wing Thickness		Point Width		Flute Width at Bottom	Flat On End		End to Collar	Length	Milling Angle	Base Flute Angle
								+.0010	+.0000	+.0000					+00'	+00'
	±.002	±.003	±.0002	±.0002	±.005	Max	Min	-.0000	-.0010	-.0010	Max	Min	±.005	±.005	-15'	-15'
0	.008	.015	.0460	.0450	.094	.012	.010	.0320	.0240	.0151*	.015	.010	.656	.781	7°	**
1	.012	.020	.0880	.0870	.156	.020	.018	.0500	.0394	.0202	.020	.015	.688	.812	7°	138°
2	.018	.031	.1420	.1410	.219	.025	.023	.0900	.0606	.0434	.020	.015	.750	.875	5° 45'	140°
3	.022	.037	.2100	.2090	.250	.031	.029	.1500	.0983	.0826	.020	.015	.781	.906	5° 45'	146°
4	.031	.062	.3130	.3120	.359	.044	.042	.2000	.1407	.1078	.020	.015	.844	.969	7°	153°

* Tolerance on this size is: +.0000, -.0026 inch.

** Base of flute on No. 0 size is .0090 to .0109 inch radius.

Tolerance on dimensions not otherwise limited will be $\pm .005$ inch.

See MPAPS S-C- 90.101-GS/PL for metric dimensions of gage heads and Type 1A recess gage points.

4.0 TECHNICAL INFORMATION:

<p>For further information related to the technical content of this specification, contact:</p> <p>Materials Engineering and Technology Dept. 10400 W. North Avenue Melrose Park, IL 60160 E-mail: MaterialsEngineering@Navistar.com</p>	<p>Suppliers may purchase controlled copies of this specification by contacting:</p> <p>IHS Global Inc. 15 Inverness Way East Englewood CO 80112-5776 Phone: 1-800-854-7179 E-mail: Automotive@IHS.com Website: http://global.ihs.com</p>
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