

NAVISTAR, INC.		
Material, Parts, and Process Specifications (MPAPS)		NUMBER: MPAPS S-C-90.101-GS/PL
		Former Designation: ESP-C-90.101-GS
TITLE: Penetration Gages and Gaging for Cross Recess Machine Screws - English Series (Noun Code – 7450)		CURRENT REV No.: 1506
		DATE: June 2015
WRITTEN/EDITED BY: Materials Engineering	APPROVED BY: Materials Engineering	SUPERSEDES: ESP-C-90.101-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.

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. Gage points approach as nearly as possible perfect driver form. Also specified are gage heads and bushings, which adapt gage points to standard dial gages.

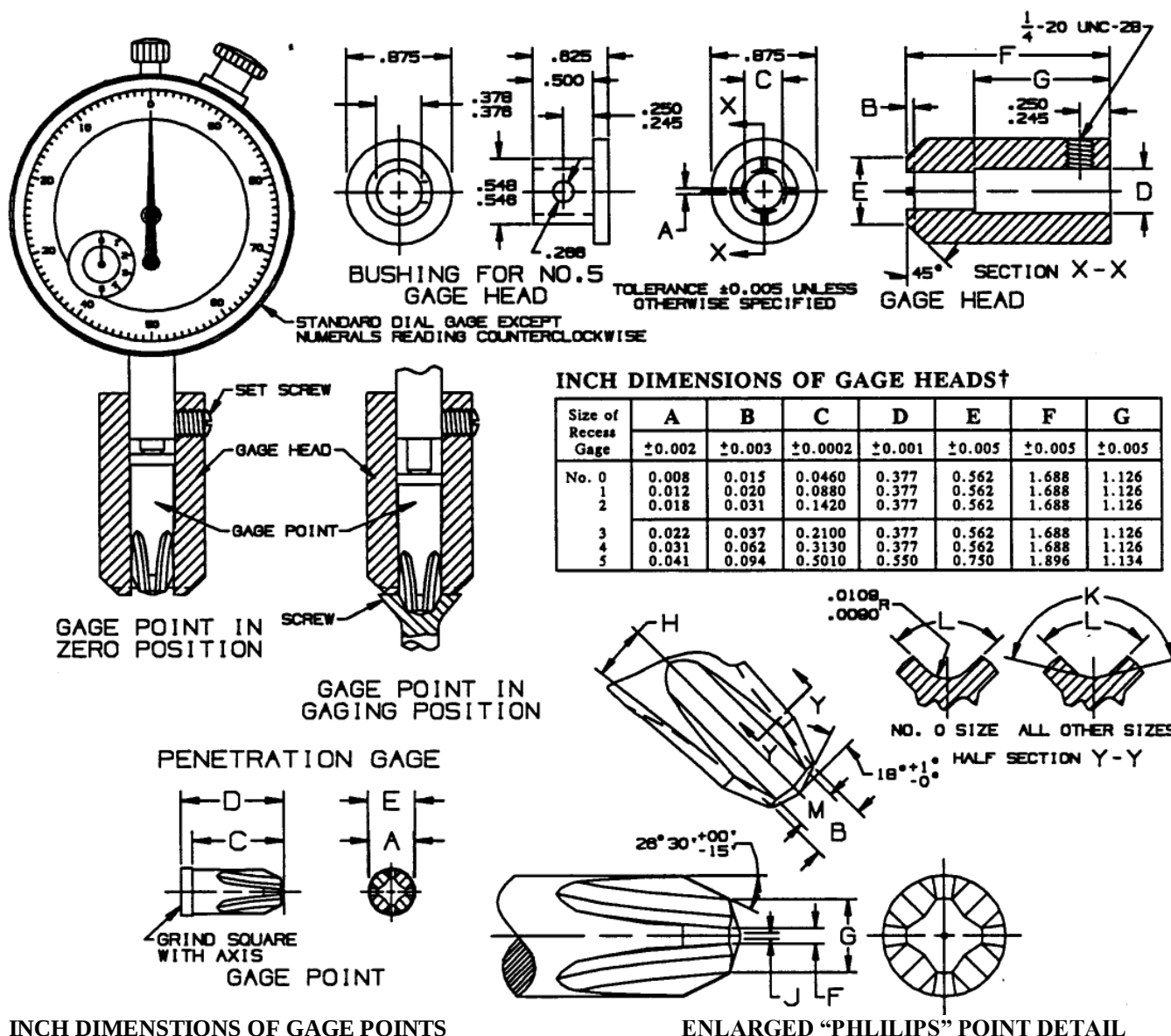
Illustrations and inch dimensional data are shown on the following pages.

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2.0 DIMENSIONS:



	A	B	C	D	E	F	G	H	J	K	L	M
Size of Recess Gage	Point Dia	Point Width	Length	Length	Dia	Wing Thickness	Point Width	Milling Angle	Flat on End	Base Flute Angle	Side Flute Angle	Flute Width at otto
	+0.0002	+0.0000 -0.0010	±0.005	±0.005	±0.005	Max Min	+0.0010 -0.0000	+0° -15°	Max Min	+15° -00°	+15° -00°	+0.0000 -0.0010
No. 0	0.0450	0.0240	0.656	0.781	0.094	0.012 0.010	0.0320	7° 00'	0.015 0.010	**	92°00'	0.0151 *
1	0.0870	0.0394	0.688	0.812	0.156	0.020 0.018	0.0500	7° 00'	0.020 0.015	138°00'	92°00'	0.0202
2	0.1410	0.0606	0.750	0.875	0.219	0.025 0.013	0.0900	5° 45'	0.020 0.015	140°00'	92°00'	0.0434
3	0.2090	0.0983	0.781	0.906	0.250	0.031 0.029	0.1500	5° 45'	0.020 0.015	146°00'	92°00'	0.0826
4	0.3120	0.1407	0.844	0.969	0.359	0.044 0.042	0.2000	7° 00'	0.020 0.015	153°00'	92°00'	0.1078
5	0.5000	0.2310	1.031	1.156	0.531	0.063 0.061	0.3110	7° 00'	0.025 0.020	162°46'	92°00'	0.1730

NOTES: * 1. Tolerances on size No. 0 is plus 0.0000 and minus 0.0026 in.

**2. Base of flute on size No. 0 is 0.0090 to 0.0109 in. radius

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