

NAVISTAR, INC.		
Material, Parts, and Process Specifications (MPAPS)	NUMBER: MPAPS HT-1	
	Former Designation: CEMS HT-1	
TITLE: Test Method - Mechanical Properties of P/M Parts	CURRENT REV No.: 1512	DATE: Dec. 2015
WRITTEN/EDITED BY: J. Goldschmidt	APPROVED BY: R. Goluch	SUPERSEDES: Rev. April 2002
PRINTED COPIES OF THIS DOCUMENT MUST BE VERIFIED FOR CURRENT REVISION		
<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: Update to MPAPS format.		

1.0 APPLICATION

This is a test method for determining the crush or fracture strength of a powder metal part.

2.0 SCOPE

2.1.1 No prior testing will be allowed on any specimen to be subjected to any of these tests.

2.1.2 Rate of load application for all tests will be 0.025 inch (0.64 mm) per minute.

3.0 METHOD A – RADIAL CRUSH TEST

This is a method for determining the resistance of a cylindrically shaped P/M part to a crushing force.

3.1 APPARATUS

3.1.1 Tensile testing machine.

3.1.2 Steel plates, SAE Type O1 tool steel per MPAPS A-0, Part I, or equivalent. Harden to RC 58-62, grind surfaces parallel with minimum thickness of 0.75 inch (19 mm).

3.2 PROCEDURE

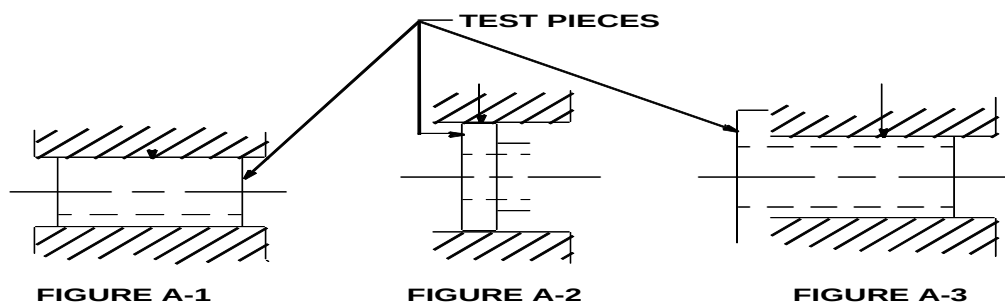
3.2.1 Place piece to be tested between two plates held perpendicular to the load line of application and apply a load perpendicular to axis of cylinder. (See Figures A-1, A-2 and A-3.)

3.2.2 Increase the force until fracture occurs.

3.3 REPORT

Crush

strength.



This document is restricted and may not be sent outside Navistar, Inc. or reproduced without permission from Corporate Technical Standards. Suppliers are required to assume all patent liability. ©2015 by Navistar, Inc.

DECEMBER 2015



Documents

Page 1 of 4
Document Sharing Hub

NUMBER: MPAPS HT-1	TITLE: <i>TITLE</i>	REVISION: 1512
------------------------------	-------------------------------	--------------------------

4.0 METHOD B – GEAR TOOTH FRACTURE TEST

This is a method for determining the tooth strength of a P/M gear.

4.1 APPARATUS

- 4.1.1** Tensile testing machine.
- 4.1.2** Steel plates, SAE Type O1 tool steel per MPAPS A-0, Part I, or equivalent. Harden to RC 58-62, grind surfaces parallel with minimum thickness of 0.75 inch (19 mm).
- 4.1.3** Steel fixture or dowel pins, SAE Type O1 tool steel per MPAPS A-0, Part I, or equivalent. Harden to RC 58-62, with the surfaces ground. Pin diameter should be specified on the drawing. The pin length must greater than the tooth width. Pin diameter should be such that it contacts the teeth between the pitch diameter and the O.D.

4.2 PROCEDURE

- 4.2.1** Support the gear with specified fixturing and apply a load by a plate perpendicular to the travel of the tensile testing machine. (See Figures B-1 and B-2).
- 4.2.2** Increase the force until fracture occurs.

4.3 REPORT

Fracture force.

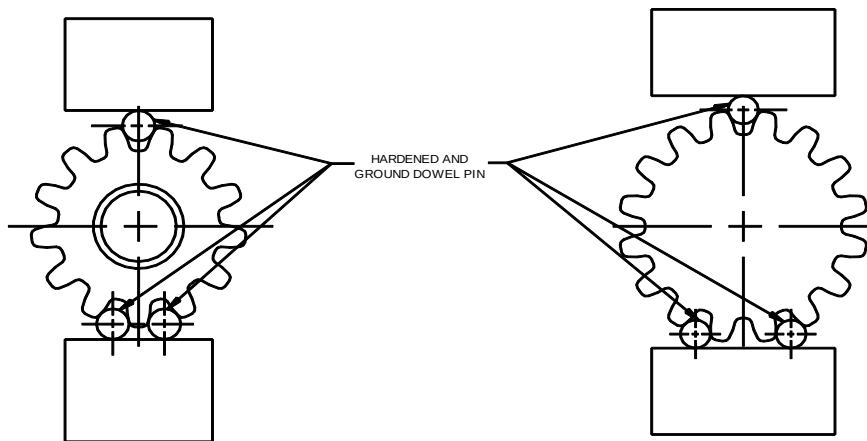


FIGURE B-1