

NAVISTAR, INC.		
CEMS (CORPORATE ENGINEERING MATERIAL SPECIFICATION)		NUMBER: CEMS DT-17
TITLE: Torque To Seal Test For Hydraulic Brake Lines		CURRENT ISSUE DATE: JUNE 2013
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1.0 SCOPE

Test method to determine the torque value to seal a hydraulic brake line connection under 2500 psi. This test is valid at 23°C ± 5°C.

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 CEMS B-50 specification.

3.0 REFERENCE DOCUMENTS

Unless otherwise specified the latest issue of all reference standards shall apply. The following specifications and standards are referenced in this specification.

- Navistar CEMS B-50

4.0 APPARATUS AND MATERIALS

4.1 A test fixture shall be set up that will have the capability to attach to a blunt end of a brake tube and impart pressures of 2500 psi (High tolerance of working pressure of hydraulic brake system).

4.2 The opposite end of the brake tube where pressure is imparted shall include a brake tube assembly complete with the subject tube nuts and standard flare which will be the design being evaluated.

4.3 A "thread Saver" nut or other suitable interfacing part will be provided for the interface with the design being evaluated (tube nut and section of flared tube).

4.4 A sealing mechanism shall be provided with the tread saver as part of the test fixture.

4.5 Water or Brake Oil shall be used in the test.

4.6 A minimum of 6 samples shall be tested.

***Note: Parts undergo yielding when torqued together therefore new mating parts are needed after completion of torque test. In addition, torque should always be increasing on a given test. The tube nut should not be loosened from a given torque level and re-torqued because of the yielding of the flared ends.**

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5.0 PROCEDURE

5.1 Hand tighten the flared end (sealing point), then record hand tight torque value.

5.2 Increase pressure slowly until leak observed, if leaking occurs before 2500psi, record leaking pressure.*

5.3 Release pressure in the tube and re-torque the flared end by an increment of 1Nm (increment can be reduced or increased after agreed on by engineering).

5.4 Increase pressure slowly and record at what pressure it leaks if it does before 2500psi.

5.5 Repeat steps 5.3 and 5.4 until torque value reached results in no leak at 2500psi.

5.6 Hold pressure at 2500psi for 10 minutes and observe for any leaks.

5.7 If no leaks observed after 10minutes at 2500psi, sample is considered as a PASS and the torque value is the "Sealing Torque" for the sample.

5.8 Take a cross-section for one sample of each size tested after test is complete and flared end is still tight to observe any defects in the threads or flared end.

Note: *The 2 mating parts (Flare and port cone) that engage to create the seal need to be replaced if, in the course of testing, the nut is loosened. Torque must be always increasing to allow continued data to take place. Once the tube nut is loosened, the test with the mating parts is completed and new mating halves must be tested for any additional useful data to be included in the statistical analysis.*

***Note:** *Wrap joint with filter paper to observe for any leaks, change filter paper after each leak occurs.*

6.0 REPORT

6.1 Torque values starting with hand tight and then adding the 1Nm increments.

6.2 Pressure when sample leaks at each torque value.

6.3 Sealing torque value.

7.0 TECHNICAL INFORMATION

For further information related to the technical content of this specification, contact:	Suppliers may purchase controlled copies of this specification by contacting:
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