

# PROCESS SPECIFICATION

## DELPHI SAGINAW STEERING SYSTEMS

TITLE Tool Material Heat Treatment - H13 NUMBER E-2633  
ISSUED BY C. R. Martin DATE 4/30/96 APPROVED BY \_\_\_\_\_  
REVISION D REV. DATE 30AP2004 SHEET 1 OF 1

- A. Material to be heat treated: **H13**
- B. Heat treatment for neutral salt bath.
- C. Heat treat as specified:
1. Preheat at 1350 to 1550°F. in neutral salt.
  2. High heat at 1800 to 1850°F.
  3. Salt quench at 1050°F.
  4. Air quench to 120°F. or below
  5. Triple temper immediately, 4 hours minimum at 950° to 1200°F for each temper.
  6. Air cool to room temperature between tempers.
  7. No carburization or decarburization allowed.
- D. Stress relieve after final machining at 800°F if specified.
- E. Using heat treatment shown above will give a hardness range of 38 to 54 Rockwell C. Required hardness will be noted on print. Heat treat accordingly.
- F. Any tooling heat treated in salt, which contains holes, must have holes cleaned of all salt.
- G. Heat treatment certification, when requested, shall include:
1. Heat treat shop number
  2. P.O. number accompanying job
  3. Type of material heat treated
  4. Size and quantity of tooling batch heat treated
  5. Resulting hardness
  6. Xerox copy of material tracking chart containing furnace times and temperatures.
  7. Date when hardness tester last calibrated.
- H. Heat treatment per this specification is to be carried out only by approved sources as listed in specification E-2600.
- I. All printed copies of this specification are FOR REFERENCE ONLY. The latest revision can be viewed on-line at: [http://www.delphisuppliers.com/vendor\\_documents/delphi-s/index.html](http://www.delphisuppliers.com/vendor_documents/delphi-s/index.html)

Revision	Revision Description	By	Date
A	Distribution list updated.	CRM	5/16/96
B	Distribution list revised. Format updated.	DN	1/24/01
C	Note H revised. Note I added.	DN	08JL2003
D	Note C.5. revised from 1000 to 950	JB	30AP04

Note: The above specifications were developed without considering whether patents may or may not be involved.  
In all cases, therefore, the supplier shall be required to assume patent liability.