

# PROCESS SPECIFICATION

## DELPHI SAGINAW STEERING SYSTEMS

TITLE Tool Material Heat Treatment NUMBER E-2642  
ISSUED BY C. R. Martin DATE 4/30/96 APPROVED BY \_\_\_\_\_  
REVISION C REV. DATE 08JL2003 SHEET 1 OF 1

- A. Material to be heat treated: **AISI 4340 Steel**
- B. Heat treat as specified: (heat slowly)
1. Preheat at 1000 to 1200°F.
  2. High heat at 1500 to 1550°F.
  3. Oil quench
  4. Double temper immediately at 400 to 1150°F.
- C. Stress relieve, if specified, after final machining at a temperature which is 50 to 100 degrees lower than the tempering temperature used. The stress relieving temperature should not, in any way, affect the hardness of the material.
- D. Using heat treatment shown above will give a hardness range of 34 to 53 Rockwell C. Required hardness will be noted on print. Heat treat accordingly.
- E. No carburization or decarburization allowed.
- F. Tooling 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.

Revision	Revision Description	By	Date
A	Distribution list updated.	CRM	5/16/96
B	Distribution list revised. Format updated.	DN	1/24/01
C	Distribution note removed. Approved source note added.	DN	08JL2003

[http://www.delphisuppliers.com/vendor\\_documents/delphi-s/index.html](http://www.delphisuppliers.com/vendor_documents/delphi-s/index.html)

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.