



REVISIONS

REVISIONS	DATE	DESCRIPTION	APP. BY
-	5/4/01	Released per ERN 105-99	GS



1. Application

- 1.1 This process covers the minimum requirements for the treatment of hardenable martensitic stainless steels for the purpose of obtaining dimensional stabilization of parts for use in precision assemblies.

2. Reference Specifications

- 2.1 The following specifications are used except as noted within this document:

AMS-2759	Heat Treatment of Steel Parts
AMS-2759/5	Heat Treatment Martensitic Corrosion Resistant Steel Parts

3. Equipment

- 3.1 All equipment used for processing parts shall meet the requirements of AMS-2759.

4. General Requirements

- 4.1 All parts shall be cleaned to remove protective oils, dirt etc... prior to the heat treat process.
- 4.2 Part handling and racking is critical to protect parts from damage and distortion during the heat treat process.
- 4.3 All parts shall be protected from damage & corrosion during shipping and storage. Original or better packaging shall be used.

5. Detail Requirements

- 5.1 The following procedure is used to obtain structural and dimensional stability for mated slide fits and parts whose functional requirements depend on a high degree of dimensional stability. All heat treating of 400 series stainless shall be by bright hardening (quench in protective atmosphere per AMS2759/5, Class A).
- 5.2 Austenitize steel at temperatures indicated.

410 and 416	1750°F - 1850°F
440C	1850°F - 1950°F
All other 400 series material per AMS 2759/5	



- 5.3 Quench in protective atmosphere. The .25 inch cross sectional requirement and microhard/decarburization testing (Ref. AMS-2759/5) is not required.
- 5.4 Continue cooling from quench to cold stabilizing temperature of -100°F (minimum) for 20 minutes per inch of thickness.
- 5.5 Remove parts from cold chamber and bring to room temperature, then stress relieve at 300°F ± 25°F for one hour. Repeat cold stabilizing cycle as specified in Para. 5.4. Remove parts from cold chamber and bring to room temperature, then temper to required hardness as specified on drawing.

6. Detail Requirements- Stress Relieve

- 6.1 Parts that require the major portion of machining done after heat treating must be cold and hot stress relieved, prior to final grinding. After the complete treatment only light grinding and honing is permitted for final sizing. Place part in cold chamber and cool to -100°F (minimum) for 20 minutes per inch of thickness. Remove from cold chamber and bring to room temperature, then stress relieve at 300°F ± 25°F for one hour.
- 6.2 Design Engineering shall specify if additional cold and hot stress relieving is required to stabilize for extreme tight fits of mating parts.

7. Inspection

- 7.1 Parts treated per para. 5. and or 6. shall be given magnetic particle examination as noted on detail drawing prior to final sizing.

After magnetic particle examination parts must be completely demagnetized.

- 7.2 It shall be the responsibility of the Young & Franklin Quality Control Department to assure that proper certification covers the requirements of the drawing.

NOTES:

- 1. All temperatures mentioned herein are metal temperatures.
- 2. Treatment in accordance with this process shall not alter physical properties specified on the drawing.

8. Deviations

- 8.1 Deviations to any portions of the outlined process must be approved by Young & Franklin Engineering.