

ENGINEERING MATERIAL SPECIFICATION

Material Name

Specification Number

STEEL FASTENERS - HEAT TREATED

**ESB-M1A93-A
ESB-M1A94-A
ESB-M1A95-A**

1. SCOPE

The materials defined by these specifications are heat treated spring steel fasteners.

ESB-M1A93-A Highly Stressed Push on Type
Highly Stressed Screw Receiving Type

ESB-M1A94-A Highly Stressed Screw Receiving Type

ESB-M1A95-A Stressed Screw Receiving Type
Stressed Self Threading Type

2. APPLICATION

These specifications were released originally for spring steel fasteners used in assembly operations.

3. REQUIREMENTS

3.1 STANDARD REQUIREMENTS FOR PRODUCTION MATERIALS

Material suppliers and part producers must conform to the Company's Standard Requirements For Production Materials (WSS-M99P1111-A).

3.2 CHEMICAL COMPOSITION

	ESB-M1A93-A	ESB-M1A94-A	ESB-M1A95-A
Carbon	0.55 - 0.75		0.45 - 0.61
Manganese	0.60 - 0.90		0.30 - 0.94
Sulfur	0.05 max		0.05 max
Phosphorus	0.04 max		0.04 max
Silicon	0.15 - 0.30		0.15 - 0.30

Date	Action	Revisions
2002 09 19	Revised	Updated and renumbered
1978 04 28		Metricated and Retyped CAH1-RD572066-21
1963 06 05		Released AS1 #915

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3.3 ROCKWELL HARDNESS

	<u>"C"</u>	<u>"A"</u>	<u>"15N"</u>	<u>"30N"</u>
ESB-M1A93-A	45 – 50	73 – 76	83 - 85.5	64-68.5
ESB-M1A94-A	39 – 45	70 - 73	80 – 83	58.5 - 64
ESB-M1A95-A	-	-	-	50 - 70

Hardness may be tested by using any of the above Rockwell scales. However, in cases of dispute between the suppliers and the Ford Motor Company, the following shall be used:

0.017 in (0.43 mm) and above:
Below 0.017 in (0.43 mm):

Rockwell "30N"
Rockwell "15N"

Hardness is to be checked on a smooth surface after all the finishing coat and skin have been removed.

3.4 HEAT TREATMENT

All fasteners are to be heat treated by heating to a minimum temperature of 790 °C, quenching in oil and drawing at a minimum temperature of 345 °C. The resulting microstructure shall show a fully quenched and tempered structure with proper solution of carbides.

3.5 TOLERANCES

Thickness tolerances not shown on the Engineering Drawing are to conform to AISI tolerances on spring steel strip.