

<b>Laboratory</b>	<b>Testing Laboratory, Lakshmi Precision Screws Limited, Hissar Road, Rohtak, Haryana</b>		
<b>Accreditation Standard</b>	<b>ISO/IEC 17025: 2005</b>		
<b>Discipline</b>	<b>Mechanical Testing</b>	<b>Issue Date</b>	<b>20.09.2014</b>
<b>Certificate Number</b>	<b>T-0038</b>	<b>Valid Until</b>	<b>19.09.2016</b>
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<b>S.No.</b>	<b>Product / Material of Test</b>	<b>Specific Test Performed</b>	<b>Test Method Specification against which tests are performed</b>	<b>Range of Testing / Limits of Detection</b>
<b>I. MECHANICAL PROPERTIES OF MATERIALS</b>				
<b>1.</b>	<b>Raw Material (Direct and Machined sample)</b>	Tensile Strength	IS 1608 : 2005	(270 to 1200) Mpa
		Yield Strength/ Proof Strength	IS 1608 : 2005	(240 to 1200) Mpa
		% Elongation	IS 1608 : 2005	1% to 50%
		% Reduction in Area	IS 1608 : 2005	1% to 80%
		Hardness Test (HRB)	ASTM E 18 : 2014	(65 to 100) HRB
<b>2.</b>	<b>Products (Full Size bolts/ Screws/ Studs)</b>	Axial Tensile Strength	ISO 898 (Part 1) : 2013	(270 to 1500) Mpa
		Yield Strength/ Proof Strength	ISO 898 (Part 1) : 2013	(240 to 1500) Mpa
		% Elongation	ISO 898 (Part 1) : 2013	1% to 50%
		% Reduction in Area	ISO 898 (Part 1) : 2013	1% to 80%
		TS under Wedge Load	ISO 898 (Part 1) : 2013	(270 to 1500) Mpa
		Proof Load	ISO 898 (Part 1) : 2013	(1 to 100) Micron
		Torque Test	ISO 898 (Part 7) : 1992	(5 to 350) Nm (1 to 70) Nm
		Rockwell Hardness Test	ASTM E 18 : 2014	(20 to 70) HRC (65 to 100) HRB (65 to 85) HRA
		Micro-Vicker Hardness	ASTM E 384 : 2011	(50 to 1000) HV <sub>0.3</sub> (50 to 1000) HV <sub>0.5</sub>
		Vicker Hardness	IS 1501 : 2002	(50 to 1000) HV <sub>5</sub> (50 to 1000) HV <sub>30</sub>
		Salt Spray Test	ASTM B 117 : 2011	Qualitative

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<b>S.No.</b>	<b>Product / Material of Test</b>	<b>Specific Test Performed</b>	<b>Test Method Specification against which tests are performed</b>	<b>Range of Testing / Limits of Detection</b>
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## **II. METALLOGRAPHY TEST**

<b>1.</b>	<b>Raw Material/ Products (Full size Bolts/ Screws/ Studs)</b>	Macro Examination (Acid etching method)	ASTM E 340 : 2013 ISO 6157 (Part I) : 1988 ISO 6157 (Part III) : 1988	Qualitative
		Coating Thickness Measurement (Magnetic method)	IS 3203 (Clause 3 & 4) : 1982	(1 to 125) Microns
		Coating Thickness Measurement (X-Ray method)	ASTM B 568 : 1998 (RA 2009)	(1 to 50) Microns
		Microstructure	ASM Hand Book Volume 9; Edition 9 <sup>th</sup> : 2000	Qualitative 50X, 100X, 200X, 500X & 1000X Magnification
		Decarburization by Microscopic Method	ASTM E 1077 : 2014	0.01 mm to 1.5 mm
		Decarburization by Hardness Method	ISO 898 (Part 1) : 2013	0.01 mm to 1.5 mm
		Estimation of Grain Size	ASTM E 112 : 2012	ASTM No. 3 - 8
		Inclusion Rating	ASTM E 45 : 2013	Type A : 0.5 to 2.5 Type B: 0.5 to 2.5 Type C: 0.5 to 2.5 Type D: 0.5 to 2.5

