

RAIL COACH FACTORY
KAPURTHALA

MDTS 068.

Dated. 21.9.2000.

Sub: Issue of RCF Specification No. MDTS 068.

Please find enclosed herewith a copy of the RCF Specification No. MDTS 068 for 'Rubber Pad for Secondary Suspension of MG-EUROFIMA Bogie' for necessary action & records.

DA: As Above.

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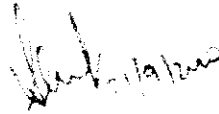
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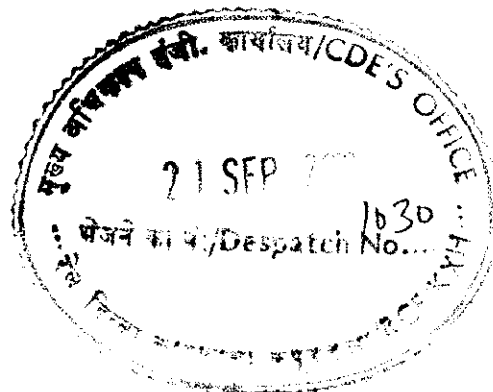
SSE/Lib.

JE-1/ RCF/TKJ.

Copy for kind information to:

SME/BD
Dy. CME/D.
Dy. CME/Dev.
CDE


Santosh Sinha
Dy. CME/TOT.



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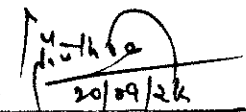
**SPECIFICATION FOR RUBBER PAD FOR SECONDARY SUSPENSION
OF MG-EUROFIMA BOGIE**

MDTS-068

DATED -20-09-2000

Name	Designation	Signature	Date	Level
Mr. Rajiv kumar	App. J.E. II	<i>Rajiv kumar</i>		Prepare
Mr. Ramnik Singh	SME/BD	<i>Ramnik Singh</i>	<i>20/09/2000</i>	Agree
Mr. Sanjiv Sharma	Dy. CME/Dev.	<i>Sanjiv Sharma</i>	<i>20/09/2000</i>	Review
Mr. Arvind Khare	CDE	<i>Arvind Khare</i>		Approved

Issue	Details of change	Date
0.0	First issue	20-09-2000

Rajiv kumar

 20/09/2000

PREPARED BY


 AGREED BY



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0.0 FOREWARD

- 0.1 This specification is issued under the Mechanical Design Technical Specification-068.
- 0.2 These rubber pads are to be used in secondary suspension of MG-EUROFIMA bogie below and above secondary springs for better shock and noise isolation .
- 0.3 This specification is framed to cover the requirements of all types of such rubber pad required for coaches provided with the MG-EUROFIMA bogie to facilitate procurement and manufacture. In formulating this specification, due consideration has been given to the indigenous availability of raw materials, the latest development in the field of polymers and compounding techniques.
- 0.4 This specification intends to cover the technical provisions relating to supply of the materials and does not include all commercial provisions of a contract.

1. SCOPE

- 1.1 This specification covers the technical requirements, methods of sampling and tests for rubber pad used in secondary suspension of the MG-EUROFIMA bogies.

2. MATERIAL

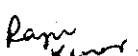
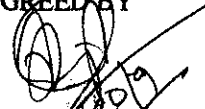
- 2.1 The rubber compound used for the manufacture of rubber pads shall be of oil resistant quality.

Accordingly, the rubber compound shall be a suitable Acrylonitrile, Butadiene Co-polymer or a blend with other synthetic rubber of oil resistant type, so as to conform the provisions of this specification.

3. CONDITION OF USE

Following are the conditions for use.

Fluctuation of temperature from -25°C to $+70^{\circ}\text{C}$ with a relative humidity from 30% to 100 % (maximum temperature in the shade of $+45^{\circ}\text{C}$),

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 Ravi Kumar	 M. S. Srinivasan 20/09/00



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In winter times snow and ice will be removed with warm water under pressure (max. 5 bar/+55°C)

Before inspection ,the bogies are cleaned with high-pressure water (up to 40 bar/approx. +20°C)

Exposure to an environment of :

- Rain, snow, ice, ozone direct insolation and salty air (coastal areas)
- Sand, brake and ferric oxide dust (abrasion of wheels and tracks) as well as industrial atmosphere
- Vestiges of oil and grease, urinem feces, and kitchen waste
- Stoning from the under layer of ballast
- whirled up pieces of ice
- Both acidic and basic cleaning products. etc.

4. USED CLEANING PRODUCTS

The bogies and the superstructure are washed following varying periods, at the most every 2-5 days. As a result, all products may come into contact with the following cleaning products:

WALO- PLUS, Merisa company, concentration up to 1:1 (concentrate: 5% sulfuric acid)

SU 75, A. Sutter company, concentration up to 1:1

A solution of 2-6% oxalic acid in water

Washing material in a solution of 20% at 20°C with 25% sodium hydroxide


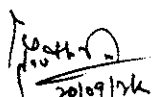
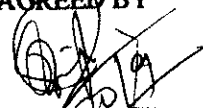
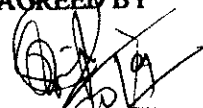
Following substances in a 1% solution at 70°C

- Sodium metasilicate 55%
- Sodium hydroxide 25%
- sodium carbonate 16%

Aclean 01.11, CM Oberflaechentechnik company concentration 1:5 up to 1:10 (concentrate: 5% citric acid, 2.5% formic acid, 3.4% ammonia)

5. CONSTRUCTION

The rubber pads shall be moulded with smooth finish as per the dimensions and tolerances stipulated in the relevant drawings supplied by the purchaser.

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6. WORKMANSHIP AND FINISH

The rubber pads shall be free from manufacturing defects like laminations, blow holes, cracks etc.

7. SAMPLING AND CRITERIA FOR CONFORMITY

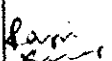
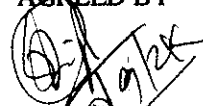
- 7.1 The prototype samples to be get approved from consignee before bulk supply/manufacturing.
- 7.2 The pads shall be offered for inspection within three months of their manufacture.
- 7.3 For carrying out the tests as indicated in clause 8, five samples shall be drawn per lot by Simple Random Sampling method as per IS: 4905. Should the test samples fail to meet the requirements, additional ten samples from the same lot shall be drawn for re-testing. Should any of the retest samples fail to meet the requirements, the entire lot shall be rejected and made unusable in the presence of the Inspecting Officer/purchaser.
- 7.4 The selection of a test sample, for a particular test shall be at the discretion of the Inspecting Officer/purchaser.
- 7.5 For the purpose of deciding whether a particular requirement of this schedule is complied with, the final value observed or calculated, expressing the result of a test or analysis, shall be rounded off in accordance with IS:2. The number of significant places retained in the rounded off value in this schedule.

8. TESTS

- 8.1 All the test procedures shall be as per IS: 3400, Methods of test for Vulcanised Rubbers.

- 8.1.1. The test specimens shall be taken from finished product.

The samples after or during the compression test shall not show the presence of any crack.

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8.2 Properties of the rubber compound of rubber pads used in secondary suspension of MG-EUROFIMA bogies

<u>Properties</u>	<u>Values</u>
8.2.1 Indicative Torsional Stiffness (KNm/degrees) (Referred to Annexure - II)	3.1 + 10 % (KNm/degree)
8.2.2 Ash content (%) max.	5%
8.2.3 Accelerated Ageing at 100 + 1 deg.C for 72 + 0 hrs. - 2	
8.2.4 Swelling /Oil Absorption Test :- Immersion in reference oil 'B' to IS: 3400 Pt.VI at 27 + 2 deg.C. for 24 hours . Percent change in volume	35

8.2.5 Compressive Load Deflection Test for FIAT type MG bogie

Test Procedures (22 deg.C. , 25 mm/minute) as per drg:-

- 1 Press Spring from installed height 38.5 to 37 mm . No dwell, Return to 48 mm. (1st closure)
- 2 Dwell one minute.
- 3 Repeat step 1 and 2 for Two more closures. (record the 3rd closure.)
- 4 Fixture for Torsional stiffness test should confirm to **Annexure- I** and The required results should confirm to **Annexure-II**.

9 INSPECTION AND TESTING FACILITIES

9.1 The manufacturer shall arrange for the preparation of requisite test pieces and supply free of charge all equipment, labour and apparatus for all the tests at his premises. Should the manufacturer fail to provide facilities at his own works for carrying out these tests by an approved testing agency as agreed to by the Inspecting Authority.

9.2 The Manufacturers shall furnish to the purchasing/Inspecting Authorities, at all reasonable times the details of tests and other information and records in

<p>PREPARED BY</p> <p style="text-align: right;"><i>[Signature]</i> 20/09/00</p>	<p>AGREED BY</p> <p style="text-align: right;"><i>[Signature]</i></p>
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respect of Quality Assurance Plan (Q A P) in force at their works for the material and processes used for the manufacture of rubber pads.

- 9.3 The purchaser or the Inspecting Officer shall have access at all reasonable times to the works where the material or the fittings are being manufactured/stored.

10 MARKING

The letters IRS, the month/year of manufacture, the drawing No. and the manufacturer's name or initial or trade mark shall be clearly moulded on each pad as per size and location indicated in the relevant drawing.

11. PACKING

The pad shall be dusted with French Chalk to IS :380 and suitably protected against damage during transit and storage.

12. STORAGE

The pad shall be stored in a covered shed protected from direct sunlight in the original packing. During storage ,they shall not be allowed to come in contact with liquids or semi solid materials, solvents oils and greases.

13. GUARANTEE

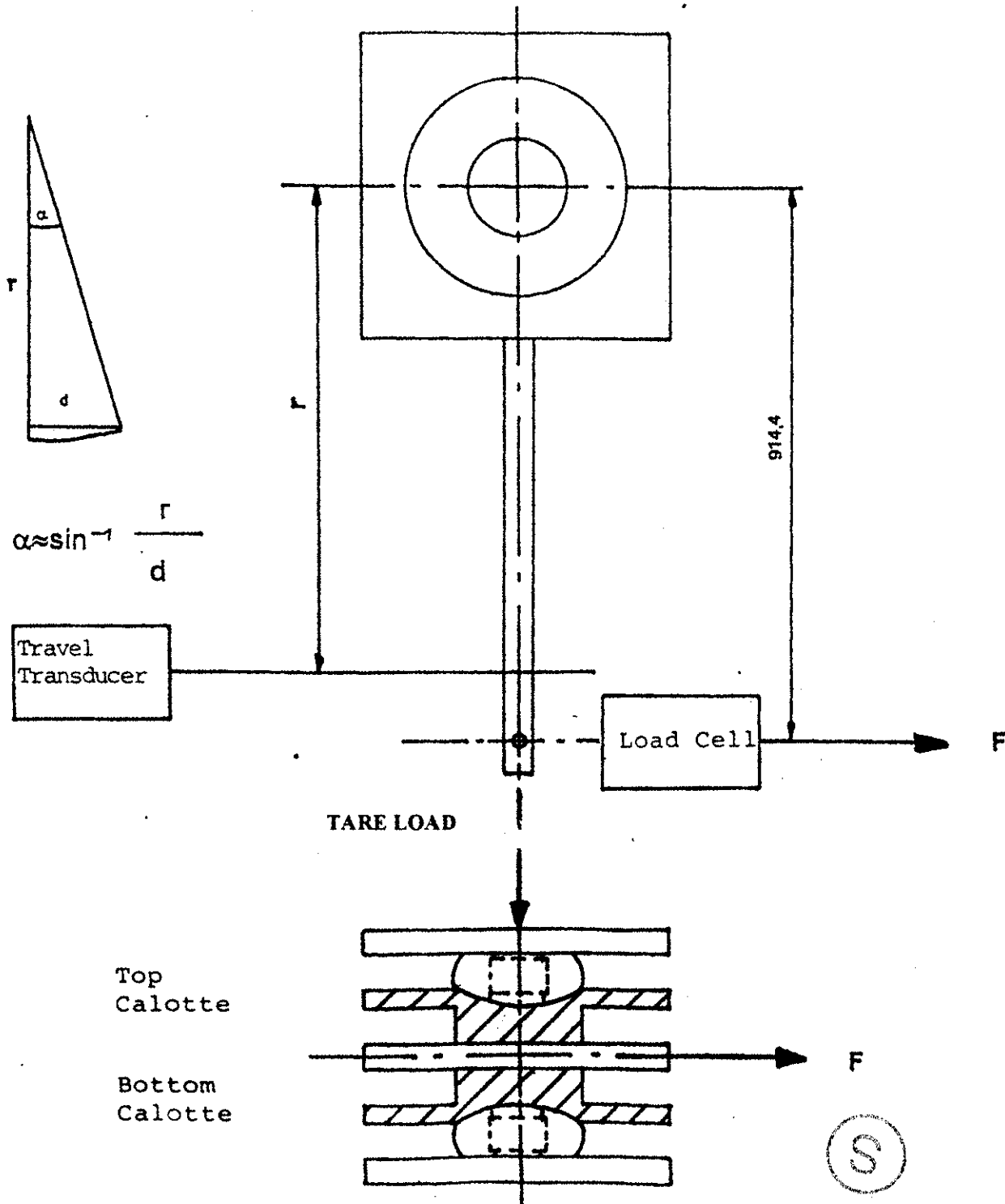
The tenderer shall give guarantee against failing or providing unsatisfactory in service due to defective design, material or workmanship within 36 months from the date of supply or 24 months from the date of issue.

<p style="text-align: center;">PREPARED BY</p> <p><i>Rosin</i></p>	<p style="text-align: center;">AGREED BY</p> <p><i>[Signature]</i></p>
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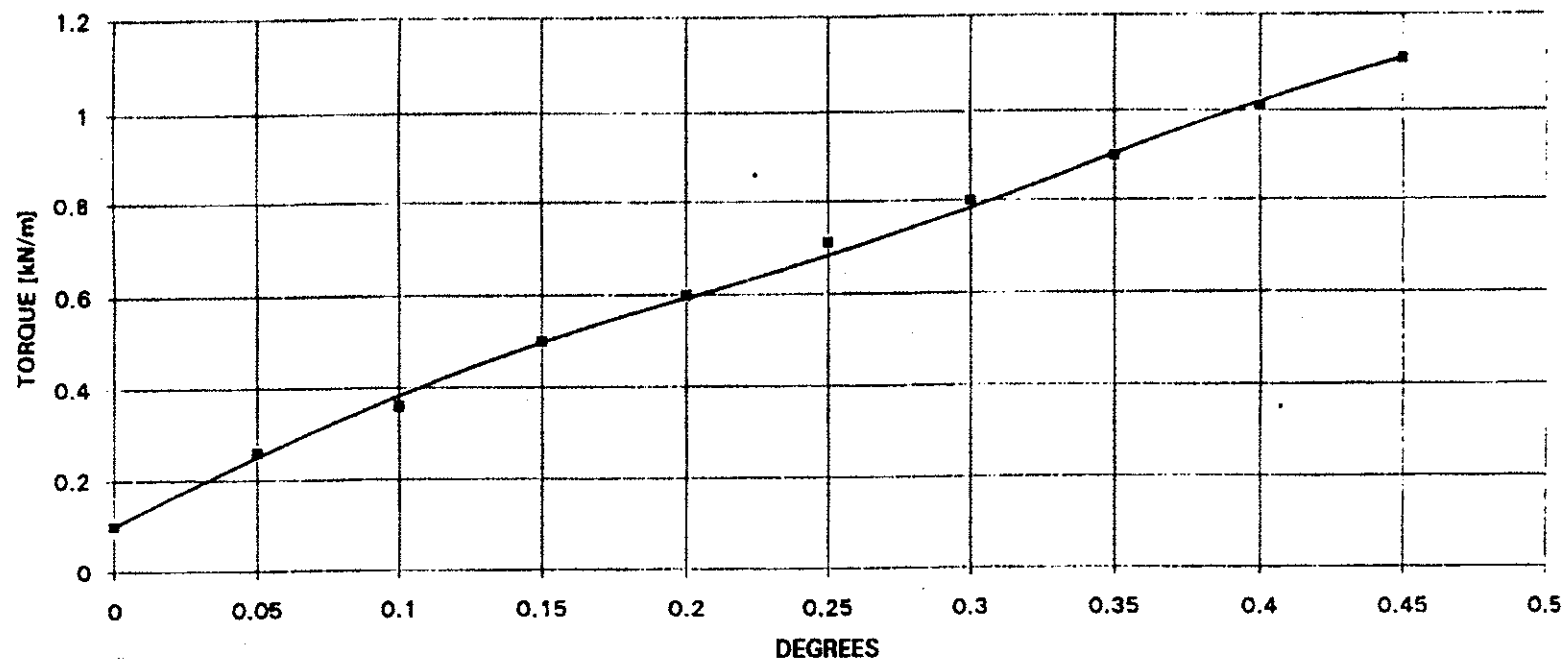
SECONDARY SUSPENSION PAD

The moment about the center of the calotte vs. the degree of twist under
Tare Loads were graphical.



In essence, the steel coil springs were replaced with a plate that had a rigid arm.

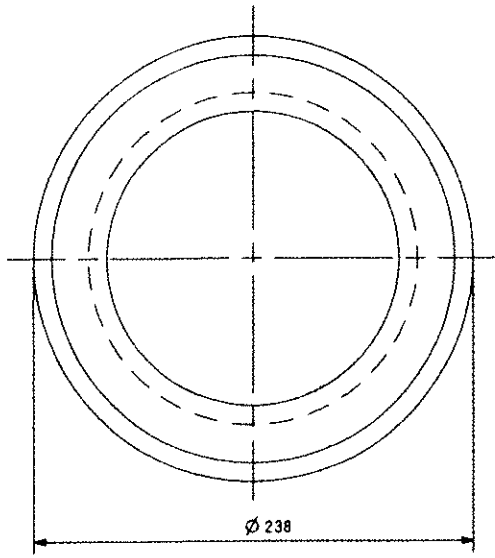
TARE NORMAL LOAD PAD FOR SECONDARY SUSPENSION



ANNEXURE-II

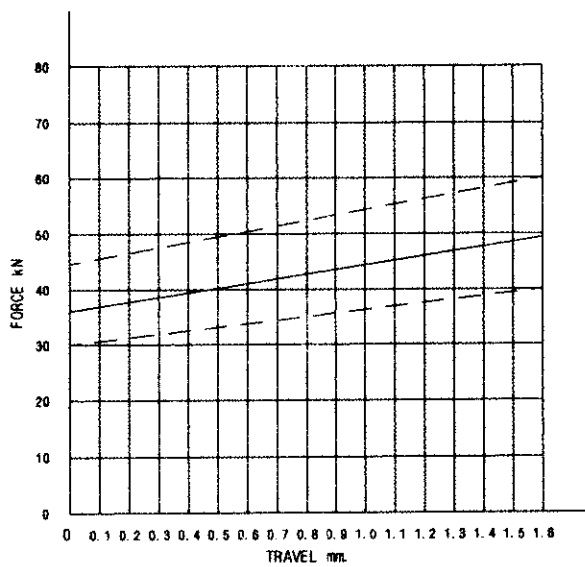
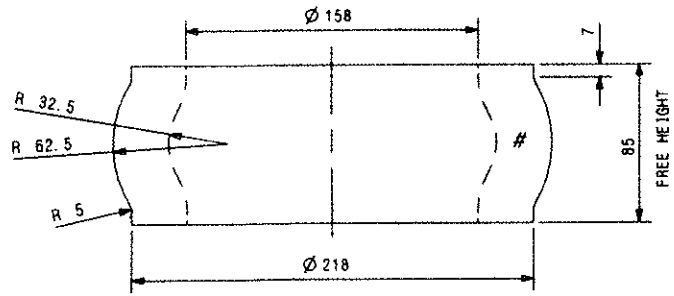
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ALT. NO.	ALT. DATE	ZONE	ALTERATIONS	AUTHORITY
NIL	NIL	NIL	NIL	NIL



TEST PROCEDURES (22 °C, 25 mm/minute)

- PRESS SPRING FROM INSTALLED HEIGHT 38.5 TO 37 mm. NO DWELL, RETURN TO 48 mm. (1ST CLOSURE)
- DWELL ONE MINUTE.
- REPEAT STEP 1 AND 2 FOR TWO MORE CLOSURES. (RECORD THE 3RD CLOSURE.)



NOTE:-

- MARKING-EMBOSSED IN 6mm HIGH LETTERS AT # MANUFACTURER'S INITIAL, MONTH & YEAR OF MANUFACTURING, RCF.
- THIS DRAWING IS TENTATIVE AND MINOR CHANGES MAY BE ADVISED LATER ON.

WELD LENGTH	ITEM	DESCRIPTION & DIMENSIONS	QTY/REQD	DETAIL DRG	MATL. & SPEC.	REMARKS
NIL	GROUP	SECONDARY SUSPENSION				SUPERSEDED: NIL
WEIGHT	FILE	/user s3/bogle/mg/ym05133.pr1				
NIL	SCALE	SSE/REC				
S. AREA	1: 2	DND				
NIL	INDIAN RAILWAYS STANDARD	RAIL COACH FACTORY, KAPURTHALA		RJV		
LENGTH / DIA	D. 238	M		NIL		
WIDTH / THICK	INDIAN RAILWAYS STANDARD		PL NO. 00802244		6	
NIL	INDIAN RAILWAYS STANDARD		DRG. NO. YM05133			
HEIGHT	0.085	M		N.R.		
FOR UNTOLERANCED DIMENSIONS REFER MDG0008		DATE OF FIRST ISSUE		05/09/2000		CPE
		ADE/OME		DY.CME		NIL

DETAIL DRGS STARTING WITH "LI" ARE INTERNAL REFERENCE LISTS ONLY AND ARE NOT FOR ISSUE
 ANY MANUAL ALTERATION SHALL AUTOMATICALLY RENDER THIS DRAWING INVALID.