



DESIGN Of MACHINE ELEMENTS

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PREFACE

This book *Design of Machine Elements* has been written for courses on mechanical design, a compulsory course for students majoring in mechanical engineering. Since safety has become an increasing concern nowadays, the book presents the subject in an up-to-date manner with a strong emphasis on failure analysis and prevention-based machine element design. It aims to provide students with basic concepts, principles and philosophy in analysing, selecting and designing safe, efficient and workable machine elements, and to expose them to the detailed design methods, skills and tools necessary to convert concepts into practical devices.

Each chapter is written in a straightforward and logical manner, explaining the theoretical considerations in machine element design. A large number of solved problems are provided to clarify and expand on the theoretical principles.

This text book has been thoroughly revised with the syllabus of all Indian Technical Universities in mind. Machine Design-I and Machine Design -II The book covers all of the topics covered in both of these courses.

Dedicated

to

Dearest father Sri. Kallappa S Hudgikar.

Dearest Mother Late Smt. Paramma Hudgikar.

&

My wife Dr Sumangala Patil,

My Son Krishi Reddy & Sujan Reddy.

Who are my source of encouragement & inspiration.

Dedicated

to

Dearest father Late Sri. Mallikarjun R Patil.

Dearest Mother Smt. Annapurna M Patil.

&

My wife Smt. Geetlaxmi Patil,

My Son Rudransh Patil

Who are my source of encouragement & inspiration.

Dedicated

To

Dearest father Late Sri. Gurunath R Kamble.

Dearest Mother Smt. Ranjana

&

My wife Akshata,

Doughter Soumya,

Son Aniket.

Who are my source of encouragement & inspiration.

Abbreviations

American Gear Manufacturers Association (AGMA)

American Welding Society (AWS)

Centre Distance (CD)

Circular Pitch (CP)

Diametral Pitch (DP)

Extreme Pressure (EP)

Factor of Safety (FOS)

Japanese Gear Manufacturers Association (JGMA)

Journal Of Engineering Research & Technology (IJERT)

Maximum Transmitted Torque (Tmax)

Module (M)

Quality Control Step (QC)

Safe Factor (SF)

Teeth In Mesh (T.I.M)

Tension (Te)

Work Load Limit (WLL)

INDEX

Chapter 1: Fundamental of Machine Design 1

1.1 Introduction:.....	1
1.2 General Procedure in Machine Design:.....	1
1.3 The Significance of Design:.....	2
1.4 Mechanical Properties of Materials:.....	3
1.5 Types of Loads:.....	4
1.6 Factor of Safety- Its Selection and Significance:.....	5
1.6.1 Importance of Factor of Safety:.....	6
1.6.2 Factors Affecting on Factor of Safety:.....	7
1.7 Review of Theories of Elastic Failure and Their Applications:.....	8
1.7.1 Maximum Principal Stress Theory:.....	10
1.7.2 Maximum Shear Stress Theory:.....	10
1.7.3 Maximum Principal Strain Theory:.....	11
1.7.4 Distortion Energy Theory:.....	12
1.8 Basic Procedure of Design Pf Machine Elements:.....	12
1.8.1 Review and Selections of Various Engineering Material:.....	14
1.8.2 Properties and I.S. Coding for Various Materials:.....	16
1.8.3 Factors Governing Selection Pf Engineering Materials:.....	17

Chapter 2: Design of Machine Elements Under Static Loading..... 22

2.1 Introduction:.....	22
2.2 Design Knuckle Joint:.....	24
2.2.1 Steps to Design Knuckle Joint:.....	27
2.2.2 Knuckle Joint Failure:.....	33
2.2.3 Future Scope:.....	38
2.3 Riveted Joints:.....	39
2.3.1 Rivet Material:.....	41
2.3.2 Manufacturing of Rivets:.....	41
2.4 Shaft:.....	50
2.4.1 Shaft-Design:.....	51
2.4.2 Types of Shafts: Mechanical shafts are broadly categorized into the following four types.....	51
2.4.3 Failure Modes for Shaft Design:.....	51
2.4.4 Key Principles of Shaft Design:.....	51
2.4.5 Shaft Design Consideration:.....	52
2.4.6 Shaft Design Process:.....	52
2.5 Springs:.....	60
2.5.1 Types of Springs:.....	61
2.5.2 Sizes of Springs:.....	61
2.6 Turn Buckle:.....	65
2.6.1 Parts of a Turnbuckle:.....	67

2.6.2 Common Uses for Turnbuckles:.....	69
2.6.3 Installation of Turnbuckles:.....	69
2.6.4 Material: Galvanized vs. Stainless Steel Turnbuckles:	70
2.6.5 Advantages and Disadvantages of Aluminum Buckle:.....	70
2.7 Cotter Joint:.....	71
2.7.1 Design Procedure for Cotter Joint:	73
2.8 Welded Joints:.....	74
2.8.1 Types of Welded Joints:	75
2.9 Bell Crank Lever:	84
2.9.1 Design of Lever:	86
2.9.2 Determination of Forces:.....	86
2.9.3 Design of Lever Arms:.....	87
2.9.4 Design of Fulcrum:	88
2.9.5 Bearing Failure:	89
2.9.6 Shear Failure:.....	89
2.9.7 Bending Failure:	89
2.9.8 Lever Material & Factor of Safety:.....	90
2.9.9 Problems on Bell Crank Lever Design:.....	90
2.10 Couplings:	91
2.10.1 The Role of a Coupling (Shaft Fitting):	92
2.10.2 Types of Couplings:	97
2.10.3 Design of Muff Coupling:	102
2.10.4 Shaft Coupling:	102
2.10.4 Rigid Coupling:.....	108
2.10.5 Design of Flange Coupling:.....	112
2.10.6 Flexible Bushed Pin Type Flanged Coupling:.....	114

Chapter 3: Design of Pulley and Selection of Belts Design of Pulley124

3.1 Introduction:.....	124
3.2 Pulley Material:	126
3.2.1 Crowning of Pulleys:.....	128
3.2.2 Power Transmission:	128
3.3 Types of V Belt:	129
3.3.1 Flat Pulley:.....	129
3.4 Flat Belt Selection:	131
3.4.1 Selection of Flat Belt:.....	131
3.4.2 Specifications:.....	135
3.4.3 Applications:.....	136
3.4.4 Standards:	137
3.5 V Belt Pulley:.....	137
3.5.1 V-Belts Selection Guide for Power Transmission:.....	138
3.5.2 Selection of V- Belt:	138
3.5.3 Types of V-Belt Pulleys:	143
3.5.4 V-Belt Pulley Components:.....	146
3.5.5 V-Belt Pulley Specifications:	147

3.5.6 V-Belt Pulley Standards:	148
3.5.7 Selection of V Belts and Pulleys:.....	148
3.5.8 V Belt as Per the Standard Manufacturer’s Catalogue:.....	149
3.6 Timing Belts:.....	153
3.6.1 Design of Timing Belts:	154
3.6.2 Timing Belt Teeth:	155
3.6.3 Timing Belt Tooth Profiles:.....	156
3.6.4 Trapezoidal Belts:	157
3.6.5 Curvilinear Belts:	157
3.6.6 Modified Curvilinear Belts:	158
3.6.7 Stages in Designing a Timing Belt:	158
3.6.8 Belt Length Calculations:	160
3.6.9 Applications of Timing Belts:.....	160
3.6.10 Applications in Treadmills:	161
3.6.11 Sewing Machines:	161
3.6.12 Advantages of Timing Belts:	161

Chapter 4: Introductions to Gears Gear terminology 163

4.1 Introduction:.....	163
4.2 Gear Terminology:	163
4.3 Selection of Gear Material:	164
4.4 Factors of Material Selection:	164
4.5 Common Gear Materials:.....	164
4.6 Gear Engineering Services:.....	165
4.7 Gear Design:.....	165
4.7.1 Objective Function for the Spur Gear Design:	166
4.7.2 Constraint:	166
4.8 Application of Ashby Charts:.....	169
4.9 Material Selection:.....	172
4.10 Gears & Types of Gears:.....	174
4.10.1 Types of Gears:	174
4.10.2 Types of Gear Failure:.....	175
4.10.3 Types of Gear Failures:	178
4.11 Gear teeth Failure Causes and Remedies:	178
4.12 Helical Gear:	179
4.12.1 Specifications of Helical Gears:.....	180
4.12.2 Types of Helical Gears:	180
4.12.3 Advantages of Helical Gears:	181
4.12.4 Disadvantages of Helical Gears:	181
4.13 Spur Gear:	184
4.14 Wear Strength of Gear Tooth:	187
4.14.1 Design Procedure for Spur Gear:	188
4.14.2 Gear Tooth Loads:.....	189
4.14.3 No. of Teeth Face Width:	190
4.14.4 Metallic Spur Gears:.....	192

4.14.5 Design for Wear:.....	194
4.14.6 Gear Tooth Failures:	194
4.15 Strength of Gear Teeth:.....	198
4.15.1 How to Encourage Bending Strength:.....	199
4.15.2 How to Increase Surface Durability?	201
4.15.3 The Strength Calculator on KHK Web Site:	201
4.15.4 Estimation of Modules Based on Beam Strength and Wear Strength:	201
4.16 Gear Design for Maximum Power Transmission Capacity:	202
4.16.1 Geometry and General Gear Design:	203
4.16.2 General Speed Reducers, Shaft-Mount Sets & Worm Drives:.....	204
4.16.3 A Few Words on Gearheads:.....	206
4.16.4 Gearboxes, Specialty Gearheads & Servo Gearsets ... Including Planetary Sets	206
4.16.5 Strain-Wave Gearing:.....	209
4.16.6 Number of Flex Spline Teeth ÷ (Number of Flex Spline Teeth – Number of Circular Spline Teeth):	211

Chapter 5: Bevel Gear & Worm Gear215

5.1 Introduction:.....	215
5.2 Straight Bevel Gears:.....	217
5.3 Terminology of Bevel Gears:.....	218
5.4 Geometrical Relations:	219
5.5 Guidelines for Selection of Dimensions:.....	221
5.5.1 Criteria:.....	222
5.5.2 Pinion Teeth Number:	222
5.6 Force Analysis:.....	222
5.7 Beam Strength of Spur Gear Tooth:	226
5.8 Dynamic Load on Gear:.....	227
5.9 Wear Strength:	228
5.10 Dynamic Tooth Load:.....	229
5.11 Design of Straight Tooth Bevel Gears:.....	230
5.12 Worm Gear Terminology:.....	231
5.12.1 Types of Worms and Worm Gears:	231
5.13. Dimension Specifications:	233
5.13.1 Mounting Specifications:.....	234
5.14 Worm Gear Uses:	234
5.15 Geometrical Relations:	234
5.16 Standard Dimensions and Recommendations of Worm Gearing:	236
5.16.1 Effect of Diameter of Cutting on Profile and Pressure Angle of Worms:.....	238
5.17 Effect of Production Method on Worm Profile and Pressure Angle:.....	239
5.18 Materials for Worm Gearing:.....	239
5.18.1 Single-thread Worm Gears:	239
5.18.2 Multi-thread Worm Gears:	240

5.18.3 Worm-Gear Cutting:.....	240
5.19 Force Analysis of Warm gear:.....	240
5.19.1 Worm Gear Force Notation:	241
5.19.2 Mesh Forces:.....	241
5.20 Efficiency of Worm Gear Drive:.....	243
5.20.1 Worm Gear Efficiency Equation:.....	244
5.21 Design of Worm Gear:.....	247
5.21.1 Self-Locking of Worm Gear Drive:	248
5.22 Thermal Consideration in Worm Drive:	254
5.23 Example Bevel Gears:	254
5.24 Warm Gear:	258
6. Reference	262

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