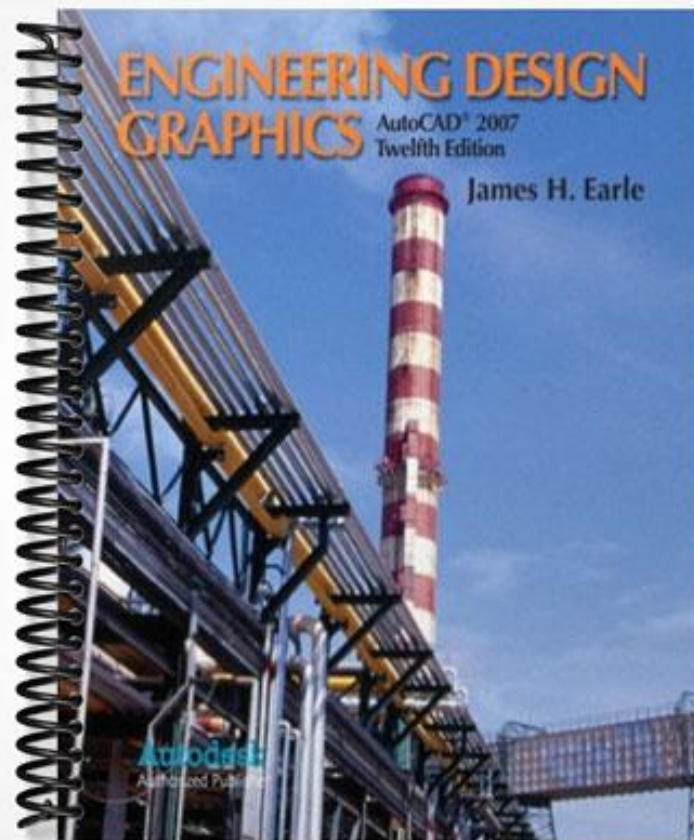



SOLUTIONS MANUAL



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Solutions Manual
to accompany

Engineering Design Graphics

AutoCAD 2007

Twelfth Edition

James H. Earle



Upper Saddle River, New Jersey
Columbus, Ohio



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To the Instructor

This solutions manual was prepared as a teaching aid for the instructors using *Graphics for Engineers (12th Edition)* by James H. Earle. Solutions to essentially all the problems in this textbook are given in this manual.

Problems are organized by chapter in their numerical order throughout this manual. Solutions are designated by their figure numbers and/or problem numbers in both their legends and in the title blocks of their solution sheets. We think that you will find it relatively easy to locate the problem solution in question by scanning the pages of solutions by eye.

In addition to these problems given at the ends of the chapters in *Engineering Design Graphics*, nineteen problem books are available with their own respective solutions manuals that support this textbook. These manuals include tests, keys to tests, problem solutions, course outlines, and organizational guidelines for courses in graphics. Inspection copies of these problem books can be obtained from:

Creative Publishing
Box 9292
800-245-5841
College Station, TX 77842

These problem books are compatible with this and other textbooks authored by James H. Earle. For information call or write:

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Box 9292
College Station, Texas 77842
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Graphics for Engineers 1, 2, & 3

Three college-level manuals that include design projects and graphics for solution by sketching, instruments, computer, or in combination. 100 pages.



Geometry for Engineers 1, 2, & 3

Three college-level manuals that include design projects, spatial analysis, and descriptive geometry for solution by sketching or instruments. 90 pages.



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A comprehensive college-level manual that include design, graphics, and descriptive geometry for solution by sketching, instruments, computer, or in combination. 130 pages.



Basic Drafting

A high-school manual/text for beginners in an introductory graphics course. Solution by sketching, instruments, or by computer. 58 pages.



Creative Drafting

Beginning graphics manual/text with introductory design and coverage of fundamental principles. Solution by sketching, instruments, computer, or in combination. 102 pages.



Drafting & Design

Beginning text/manual for graphics, introductory design, fundamentals, and architectural drawing. Solution by instruments or by computer. 130 pages



Technical Illustration

A text/problem manual for a one-semester course in 3D pictorial drawing, perspectives, shades, shadows, and rendering, and shortcut techniques. 70 pages.



Architectural Drafting

A text/manual for a course in architectural drawing. Covers house plans, elevations, details, landscaping, and planning. 71 pages.



Drafting Fundamentals 1 & 2

Two manuals, each of which is adequate for a two-semester high school course for beginning graphics. Solution by sketching and/or instruments. 98 pages.

All problem books are accompanied by teachers' guides with problem solutions, tests, test solutions, and suggested course outlines.

A: INSCRIBED SQUARE

B: INSCRIBED HEXAGON

C: INSCRIBED TRIANGLE

D: INSCRIBED OCTAGON

INSCRIBED POLYGONS	NAME NO.	SECT	DATE	TIME	1
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Chapter 12: Sheet 1
Chapter 12: Sheet 3

A: HEXAGON

B: HEXAGON

C: OCTAGON

D: PENTAGON

REGULAR POLYGONS	NAME NO.	SECT	DATE	TIME	2
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Chapter 12: Sheet 2
Chapter 12: Sheet 4

A: BISECT

B: BISECT

C: BISECT ANGLES

BISECT LINES AND ANGLES	NAME NO.	SECT	DATE	TIME	3
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A: DIVIDE LINES

B: DIVIDE LINES

C: ARC CONSTRUCTION

D: ARC CONSTRUCTION

R

TANGENCIES LINE DIVISION	NAME NO.	SECT	DATE	TIME	4
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Ch. 12: Sheet 5

TANGENCIES	NAME NO.	SECT	DATE	TIME	5
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Chapter 12: Sheet 5
Chapter 12: Sheet 7

TANGENCY PROBLEMS

TANGENCY PROBLEMS	NAME NO.	SECT	DATE	TIME	6
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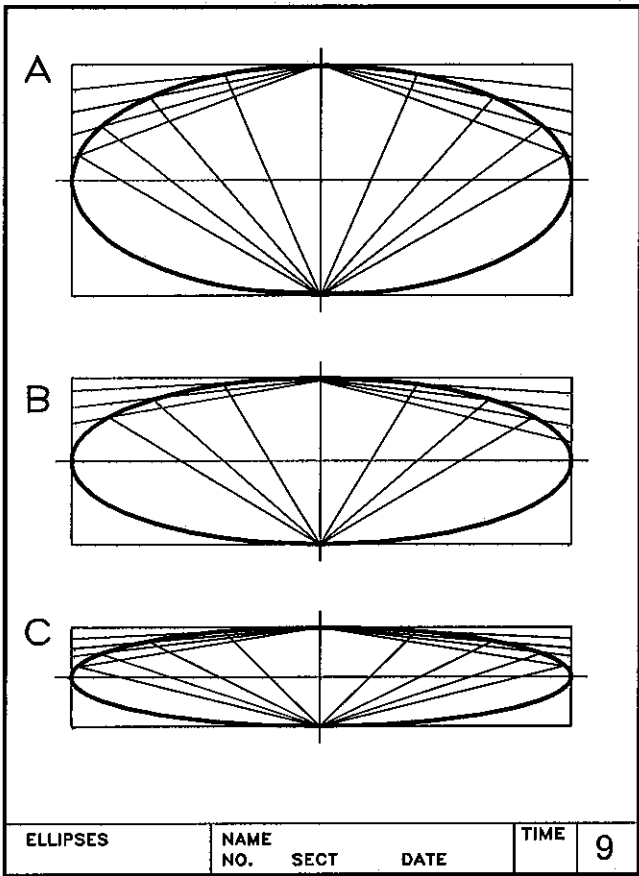
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Chapter 12: Sheet 8

OGEE CURVES

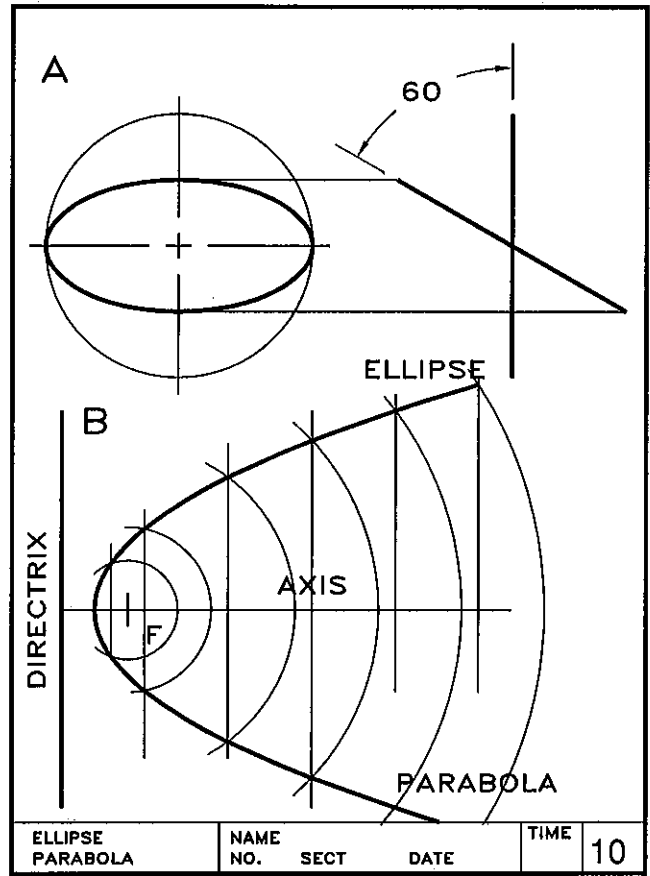
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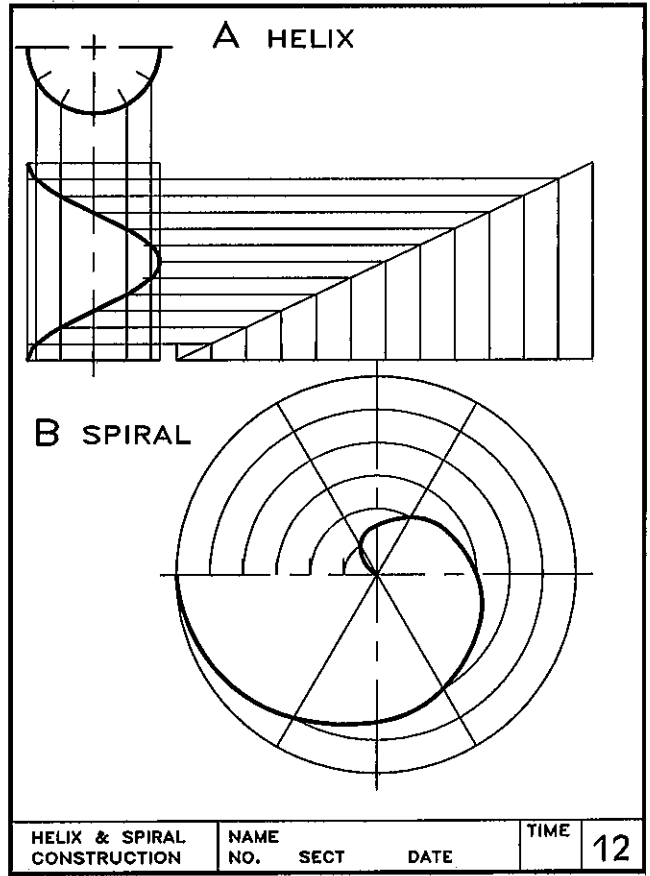
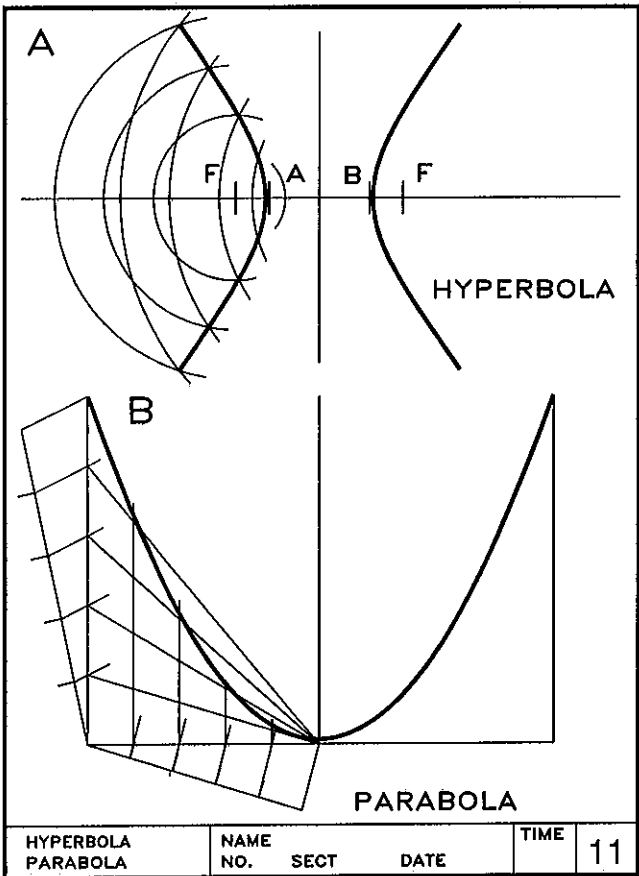
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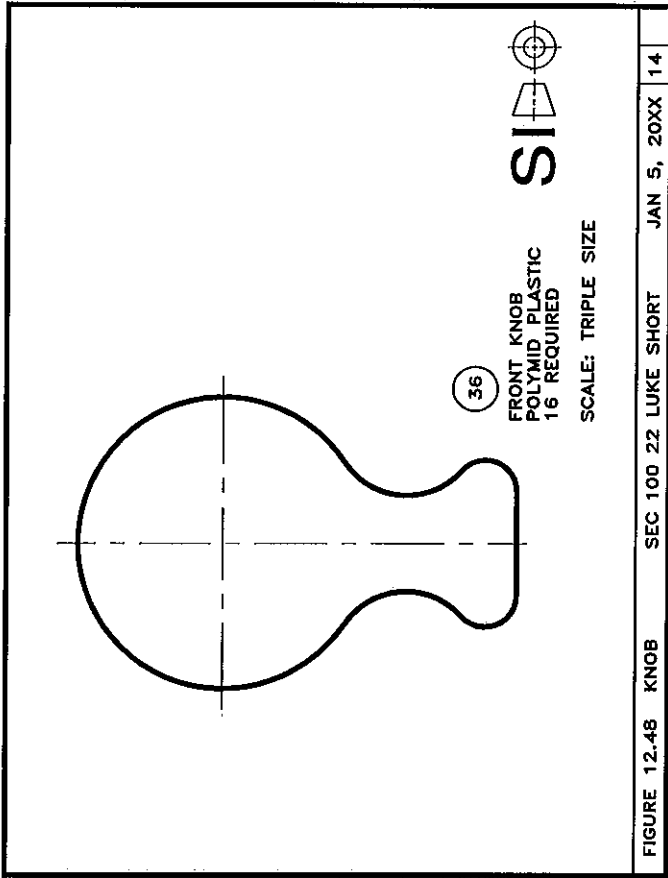


Chapter 12: Sheet 9
Chapter 12: Sheet 11

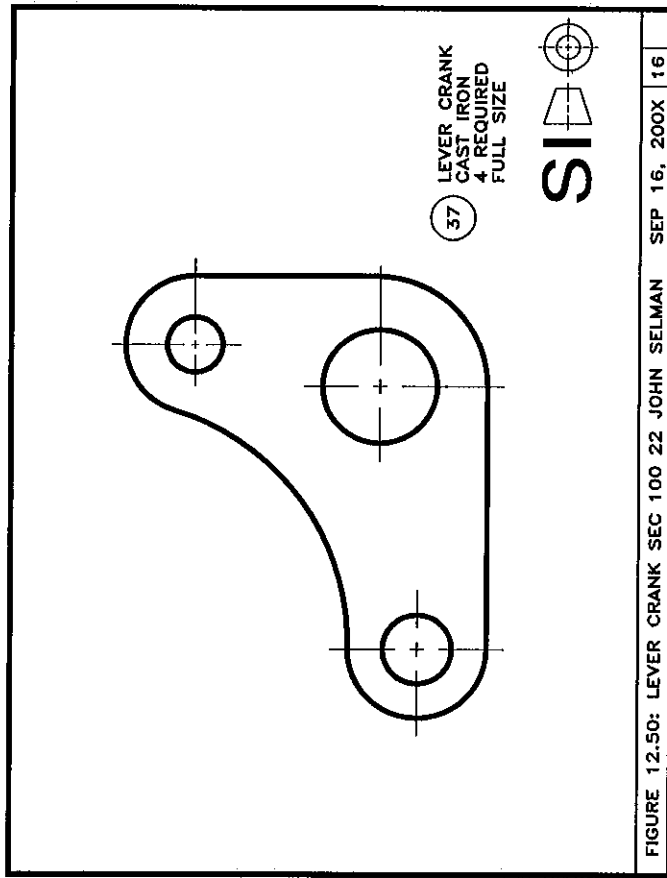
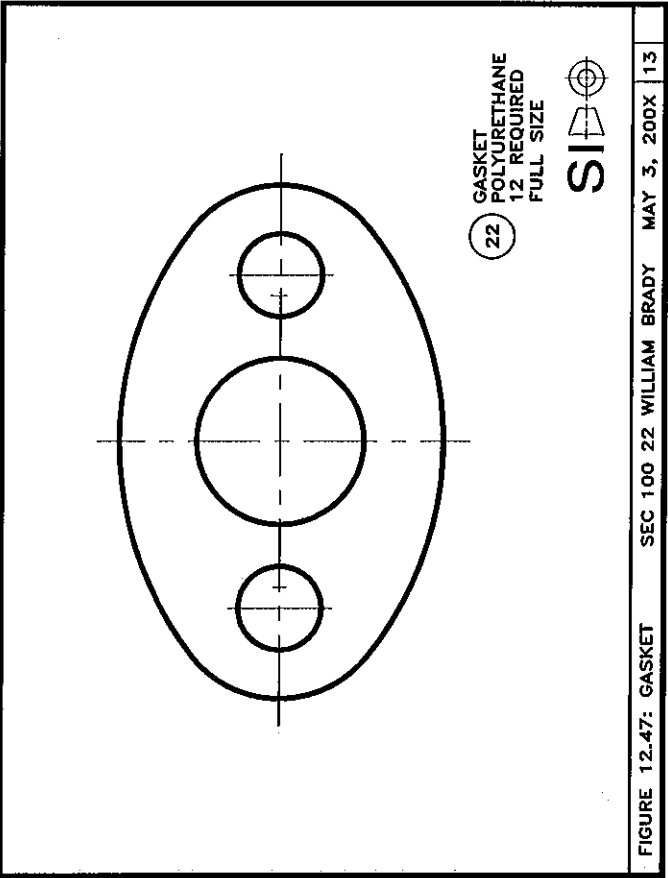


Chapter 12: Sheet 10
Chapter 12: Sheet 12

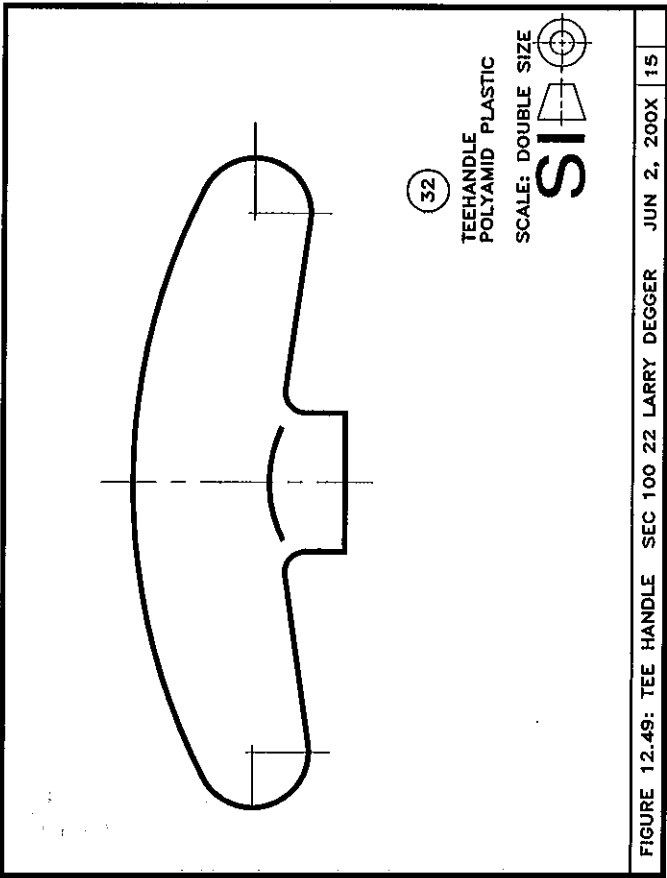


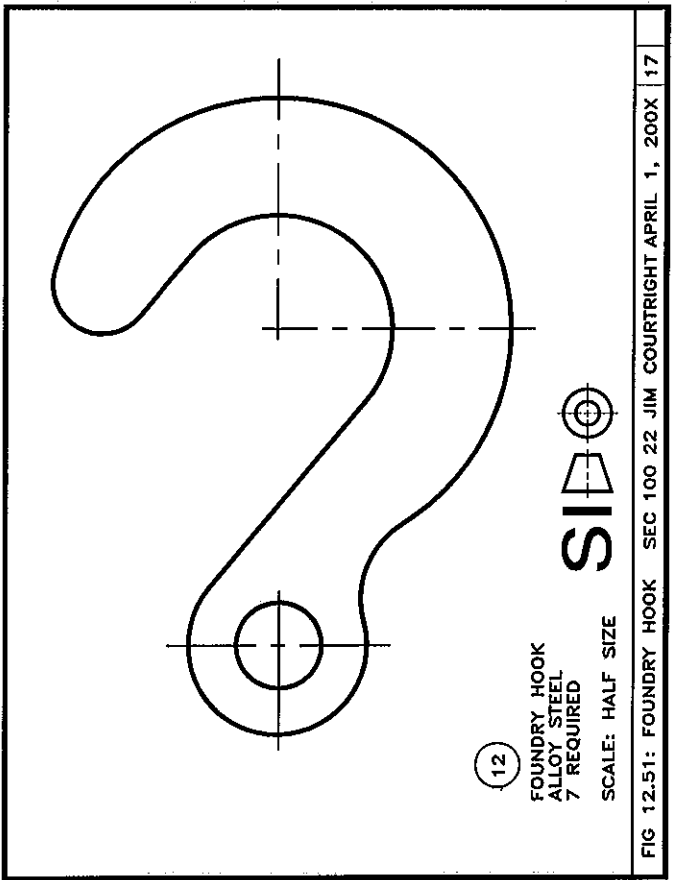


Chapter 12: Problem 14
Chapter 12: Problem 13

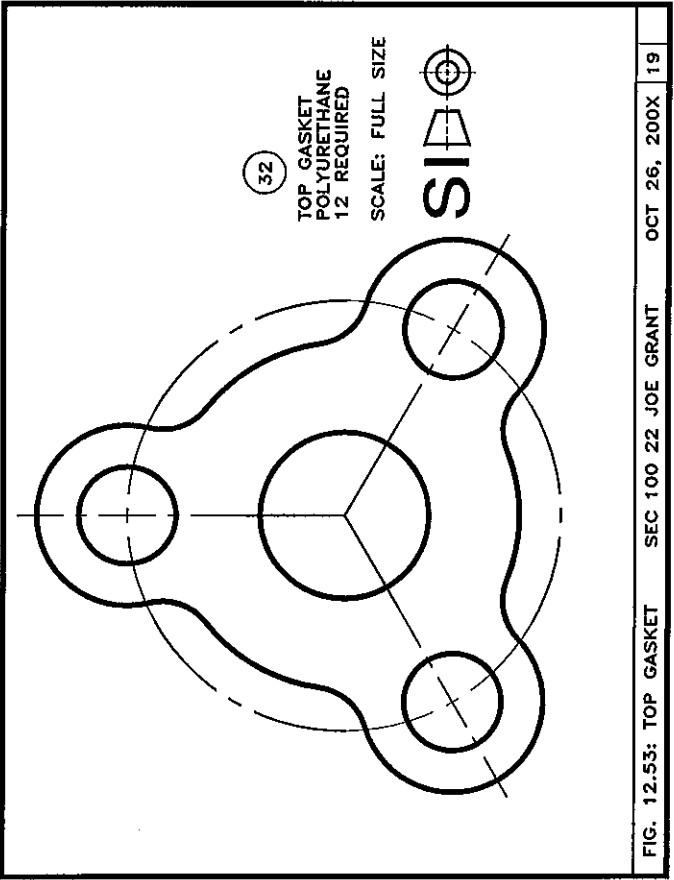
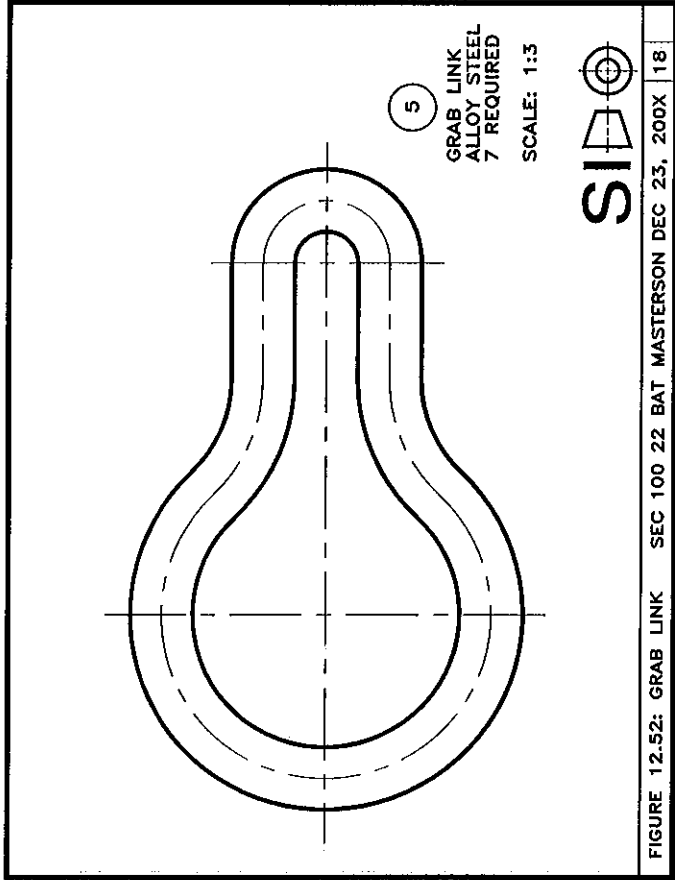


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Chapter 12: Problem 15

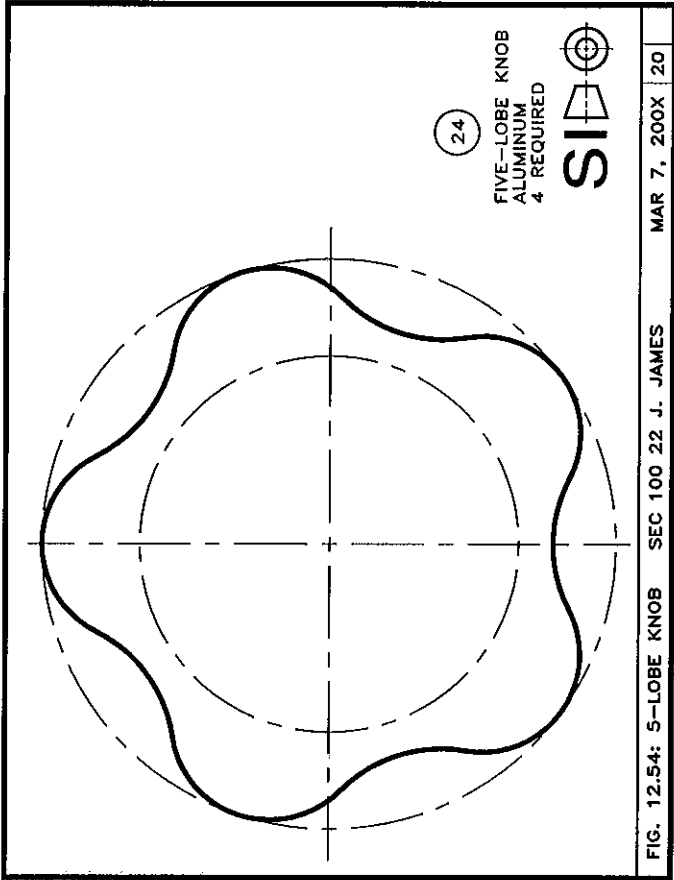


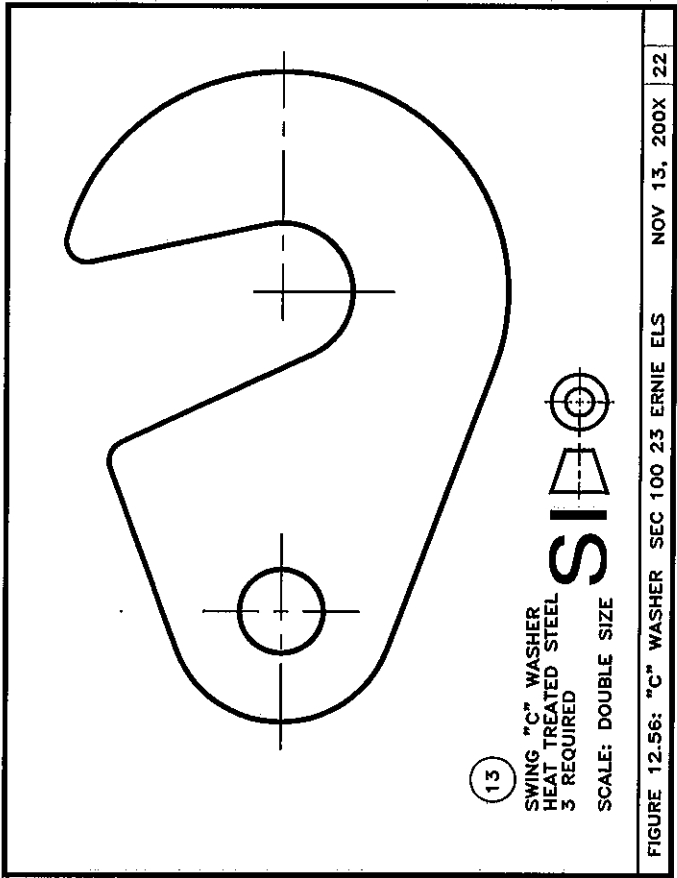


Chapter 12: Problem 18
Chapter 12: Problem 17

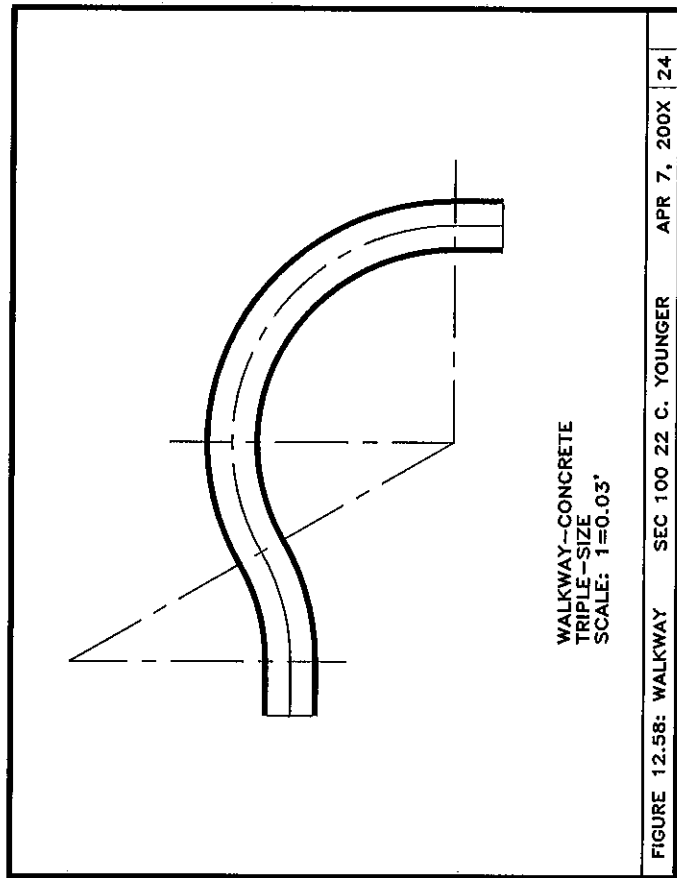
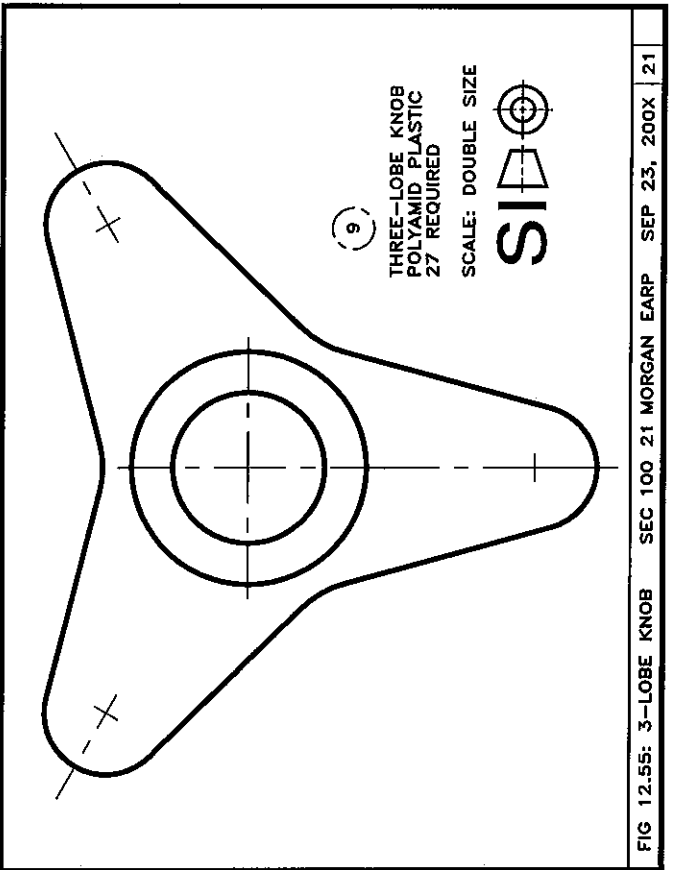


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Chapter 12: Problem 19

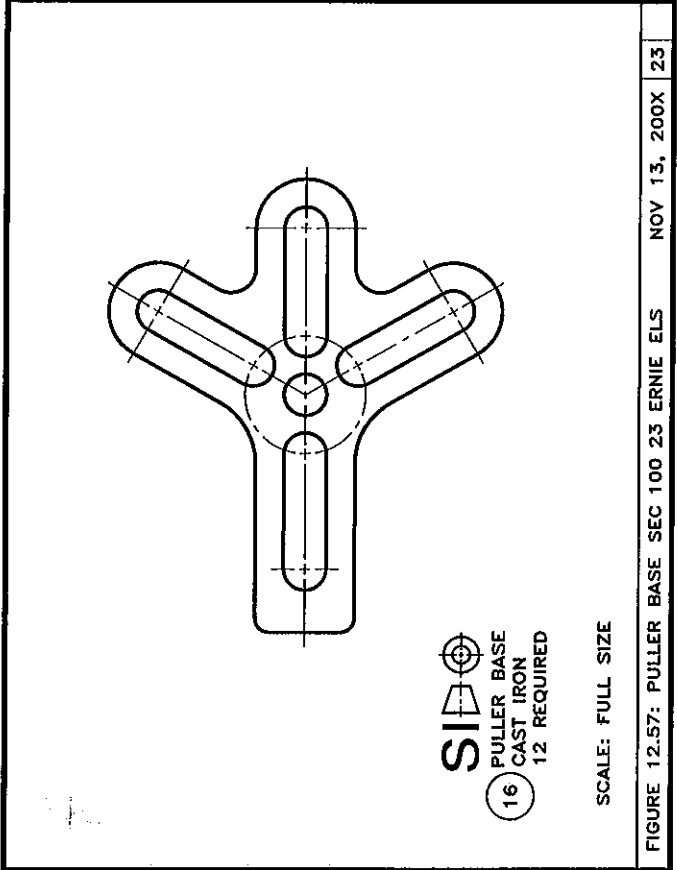




Chapter 12: Problem 22
Chapter 12: Problem 21



Chapter 12: Problem 24
Chapter 12: Problem 23



1

TOP VIEW

FRONT VIEW

R SIDE V

2

TOP VIEW

FRONT VIEW

R SIDE V

FREEHAND SKETCHING	NAME	SEC	DATE	GRADE	1
	FILE				

5

TOP VIEW

FRONT VIEW

R SIDE V

6

TOP VIEW

FRONT VIEW

R SIDE V

FREEHAND SKETCHING	NAME	SEC	DATE	GRADE	3
	FILE				

Chapter 13: Problems 1 and 2
Chapter 13: Problems 3 and 4

Chapter 13: Problems 5 and 6
Chapter 13: Problems 7 and 8

3

TOP VIEW

FRONT VIEW

R SIDE V

4

TOP VIEW

FRONT VIEW

R SIDE V

FREEHAND SKETCHING	NAME	SEC	DATE	GRADE	2
	FILE				

7

TOP VIEW

FRONT VIEW

R SIDE V

8

TOP VIEW

FRONT VIEW

R SIDE V

FREEHAND SKETCHING	NAME	SEC	DATE	GRADE	4
	FILE				

9

TOP VIEW

FRONT VIEW

R SIDE V

10

TOP VIEW

FRONT VIEW

R SIDE VIEW

FREEHAND SKETCHING	NAME FILE	SEC	DATE	GRADE	5
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13

TOP VIEW

FRONT VIEW

R SIDE V

14

TOP VIEW

FRONT VIEW

R SIDE V

FREEHAND SKETCHING	NAME FILE	SEC	DATE	GRADE	7
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Chapter 13: Problems 9 and 10
Chapter 13: Problems 11 and 12

Chapter 13: Problems 13 and 14
Chapter 13: Problems 15 and 16

11

TOP VIEW

FRONT VIEW

R SIDE V

12

TOP VIEW

FRONT VIEW

R SIDE V

FREEHAND SKETCHING	NAME FILE	SEC	DATE	GRADE	6
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15

TOP VIEW

FRONT VIEW

R SIDE V

16

TOP VIEW

FRONT VIEW

R SIDE V

FREEHAND SKETCHING	NAME FILE	SEC	DATE	GRADE	8
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17

TOP VIEW

FRONT VIEW

R SIDE V

18

TOP VIEW

FRONT VIEW

R SIDE V

FREEHAND SKETCHING	NAME FILE	SEC	DATE	GRADE	9
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19

TOP VIEW

FRONT VIEW

R SIDE V

20

TOP VIEW

FRONT VIEW

R SIDE V

FREEHAND SKETCHING	NAME FILE	SEC	DATE	GRADE	10
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Chapter 13: Problems 17 and 18
Chapter 13: Problems 21 and 22

Chapter 13: Problems 19 and 20
Chapter 13: Problems 23 and 24

21

TOP VIEW

FRONT VIEW

R SIDE V

22

TOP VIEW

FRONT VIEW

R SIDE V

FREEHAND SKETCHING	NAME FILE	SEC	DATE	GRADE	11
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23

TOP VIEW

FRONT VIEW

R SIDE V

24

TOP VIEW

FRONT VIEW

R SIDE V

FREEHAND SKETCHING	NAME FILE	SEC	DATE	GRADE	12
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25

26

ORTHOGRAPHIC SKETCHING	NAME	SEC	DATE	GRADE	13
	FILE				

Chapter 13: Problems 25 and 26
Chapter 13: Problems 29 and 30

27

28

ORTHOGRAPHIC SKETCHING	NAME	SEC	DATE	GRADE	14
	FILE				

Chapter 13: Problems 27 and 28
Chapter 13: Problems 31 and 32

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30

ORTHOGRAPHIC SKETCHING	NAME	SEC	DATE	GRADE	15
	FILE				

31

32

ORTHOGRAPHIC SKETCHING	NAME	SEC	DATE	GRADE	16
	FILE				

33

34

ORTHOGRAPHIC SKETCHING	NAME	SEC	DATE	GRADE	17
	FILE				

Chapter 13: Problems 33 and 34
Chapter 13: Problems 37 and 38

35

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ORTHOGRAPHIC SKETCHING	NAME	SEC	DATE	GRADE	18
	FILE				

Chapter 13: Problems 35 and 36
Chapter 13: Problems 39 and 40

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ORTHOGRAPHIC SKETCHING	NAME	SEC	DATE	GRADE	19
	FILE				

39

40

ORTHOGRAPHIC SKETCHING	NAME	SEC	DATE	GRADE	20
	FILE				

41

42

ORTHOGRAPHIC SKETCHING	NAME	SEC	DATE	GRADE	21
	FILE				

Chapter 13: Problems 41 and 42
 Chapter 13: Problems 45 and 46

43

44

ORTHOGRAPHIC SKETCHING	NAME	SEC	DATE	GRADE	22
	FILE				

Chapter 13: Problems 43 and 44
 Chapter 13: Problems 47 and 48

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46

ORTHOGRAPHIC SKETCHING	NAME	SEC	DATE	GRADE	23
	FILE				

47

48

ORTHOGRAPHIC SKETCHING	NAME	SEC	DATE	GRADE	24
	FILE				

49

50

ORTHOGRAPHIC SKETCHING	NAME	SEC	DATE	GRADE	25
	FILE				

Chapter 13: Problems 49 and 50
Chapter 13: Problems 53 and 54

51

52

ORTHOGRAPHIC SKETCHING	NAME	SEC	DATE	GRADE	26
	FILE				

Chapter 13: Problems 51 and 52
Chapter 13: Problems 55 and 56

53

54

ORTHOGRAPHIC SKETCHING	NAME	SEC	DATE	GRADE	27
	FILE				

55

56

ORTHOGRAPHIC SKETCHING	NAME	SEC	DATE	GRADE	28
	FILE				

57

58

ORTHOGRAPHIC SKETCHING	NAME FILE	SEC	DATE	GRADE	29
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Chapter 13: Problems 57 and 58
Chapter 13: Problems 61 and 62

59

60

ORTHOGRAPHIC SKETCHING	NAME FILE	SEC	DATE	GRADE	30
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Chapter 13: Problems 59 and 60
Chapter 13: Problems 63 and 64

61

62

ORTHOGRAPHIC SKETCHING	NAME FILE	SEC	DATE	GRADE	31
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63

64

ORTHOGRAPHIC SKETCHING	NAME FILE	SEC	DATE	GRADE	32
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ROUND-END CLAMP
SCALE: DOUBLE SIZE

TOP VIEW

FRONT VIEW

R. SIDE VIEW

DESIGN 1: CHAPTER 13 SEC 100 22 CRANS BENET OCT 4, 200X D1

Chapter 13: Design 2
Chapter 13: Design 1

FRONT VIEW

RIGHT SIDE VIEW

SI

SOCKET
CAST IRON-FAO
6 REQUIRED

FULL SIZE

DESIGN 2: CHAPTER 13 SEC 100 22 FRANK GRAVES AUG 4, 200X D2

PLAIN CLAMP
STEEL
6 REQUIRED
SCALE: FULL SIZE

TOP VIEW

FRONT VIEW

L. SIDE VIEW

DESIGN 3: CHAPTER 13 SEC 100 22 JIM HENNIGAN DEC 4, 200X D3

Chapter 13: Design 4
Chapter 13: Design 3

11 PIN
4140 STEEL
8 REQUIRED

12 HINGE
4140 STEEL
8 REQUIRED
DOUBLE SIZE

DESIGN 4: CHAPTER 13 SEC 100 22 CRANS BENET OCT 4, 200X D4