

نقشه کشی صنعتی ۲

زمستان ۱۳۹۱

بهزاد احمدی

دانشگاه آزاد شهر ری

فصل ۵

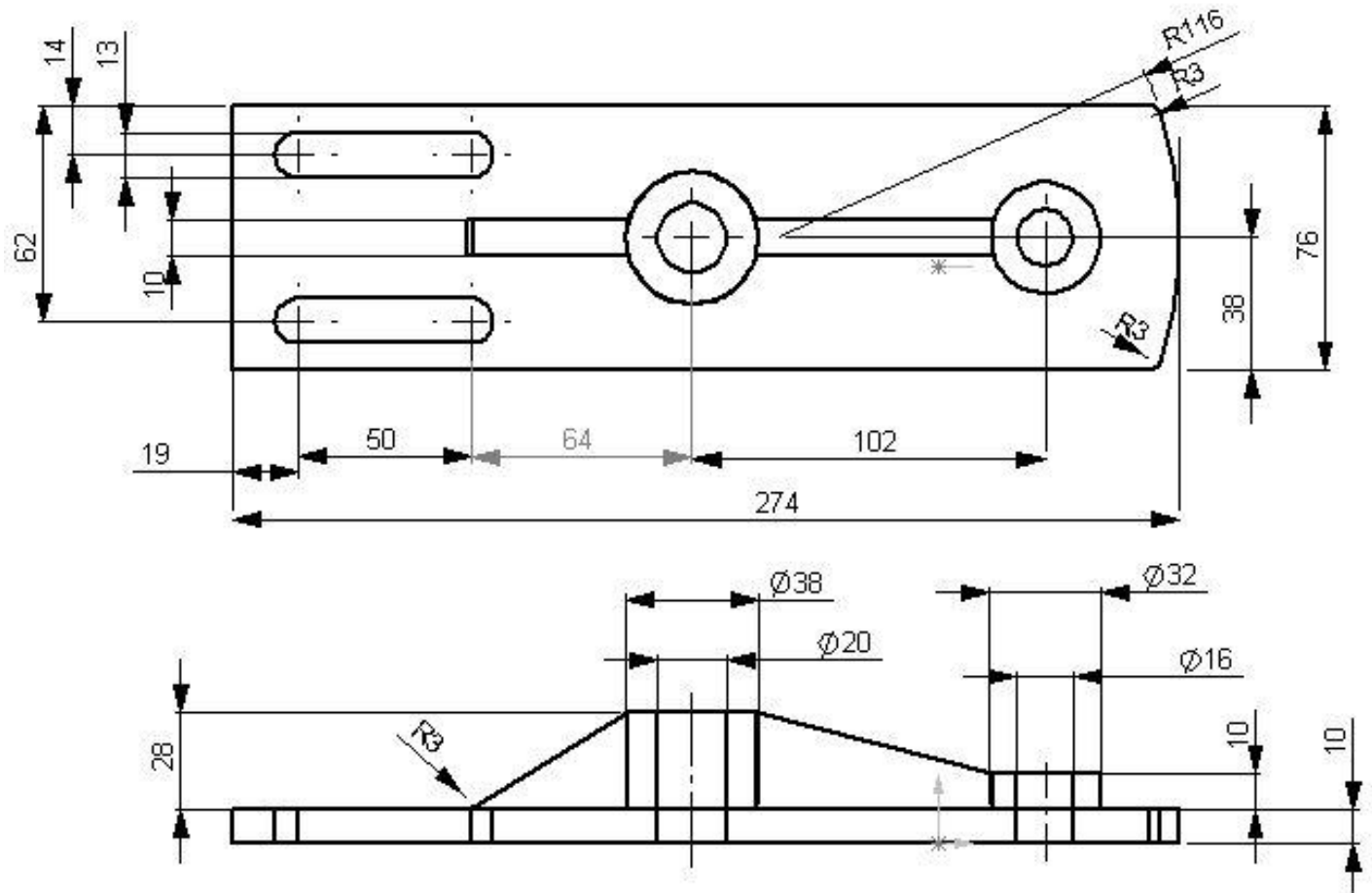
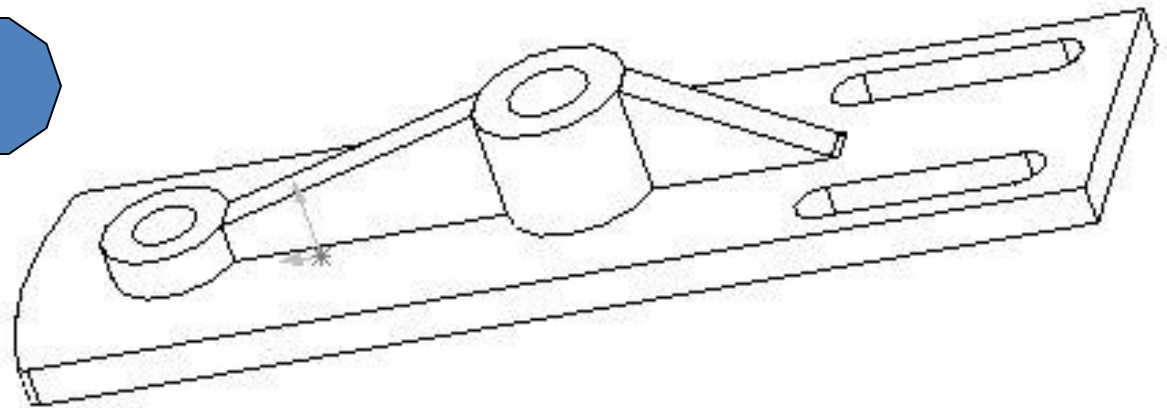
تمرین ها

EXERCISES

=

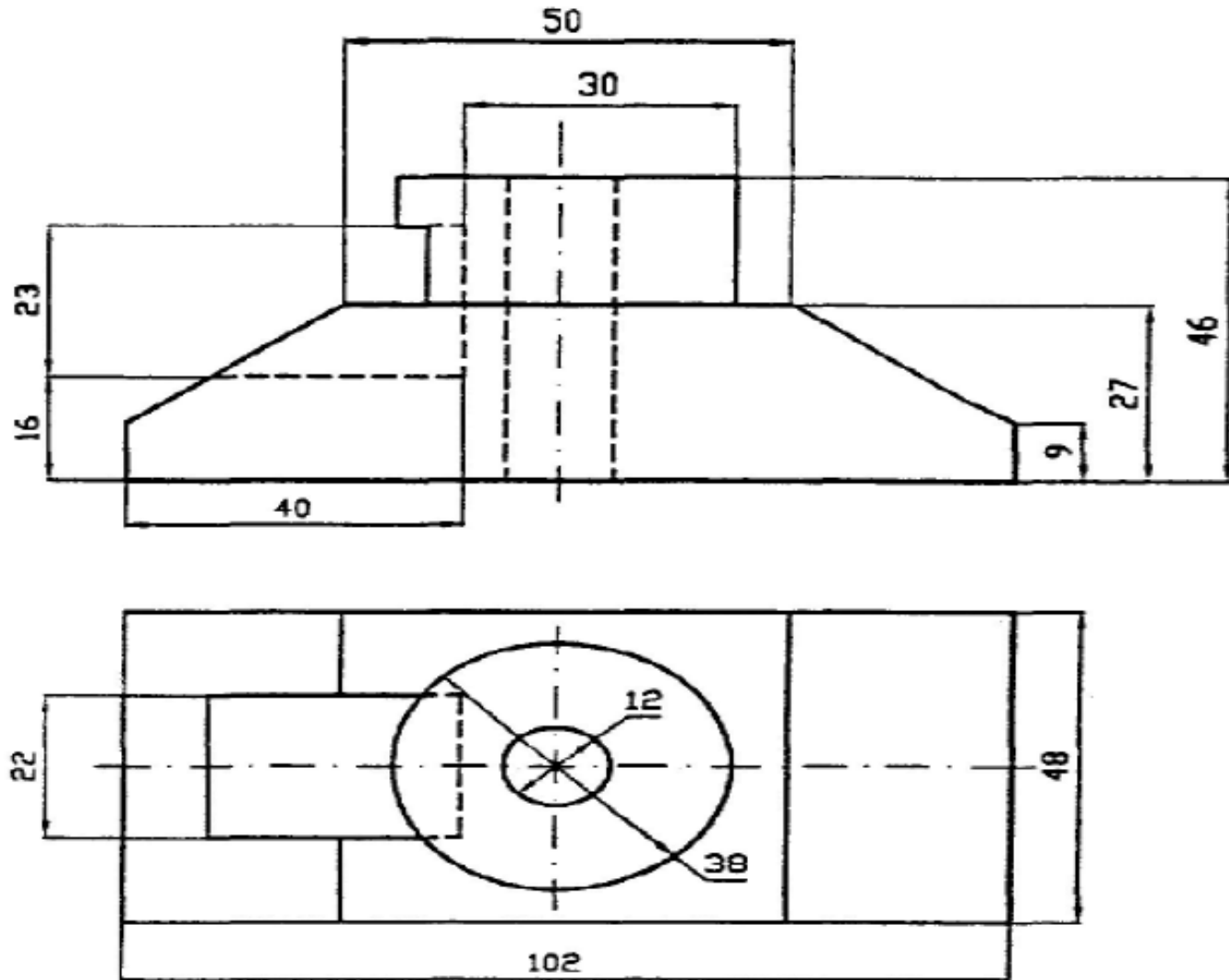
Example

2



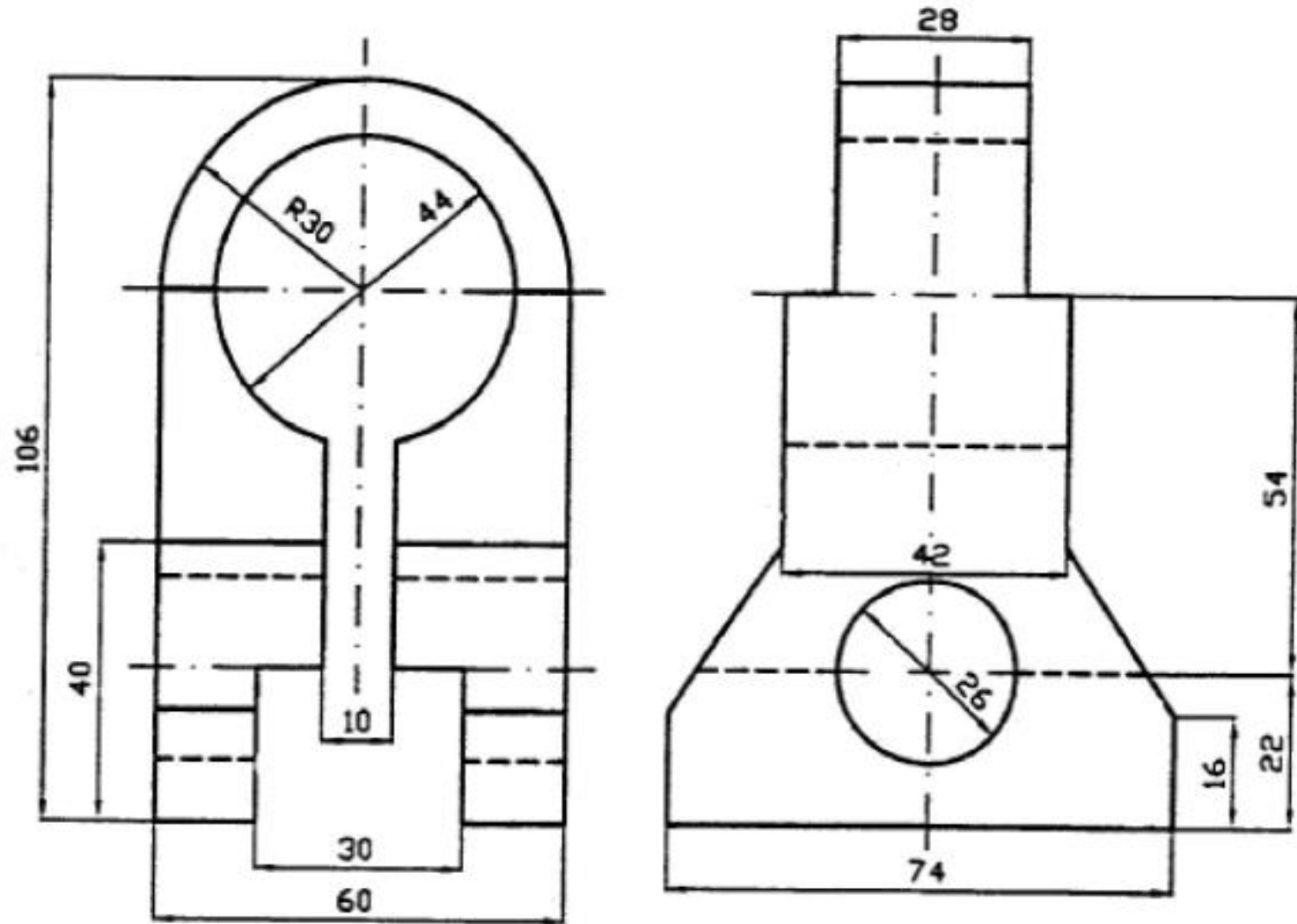
Example

1



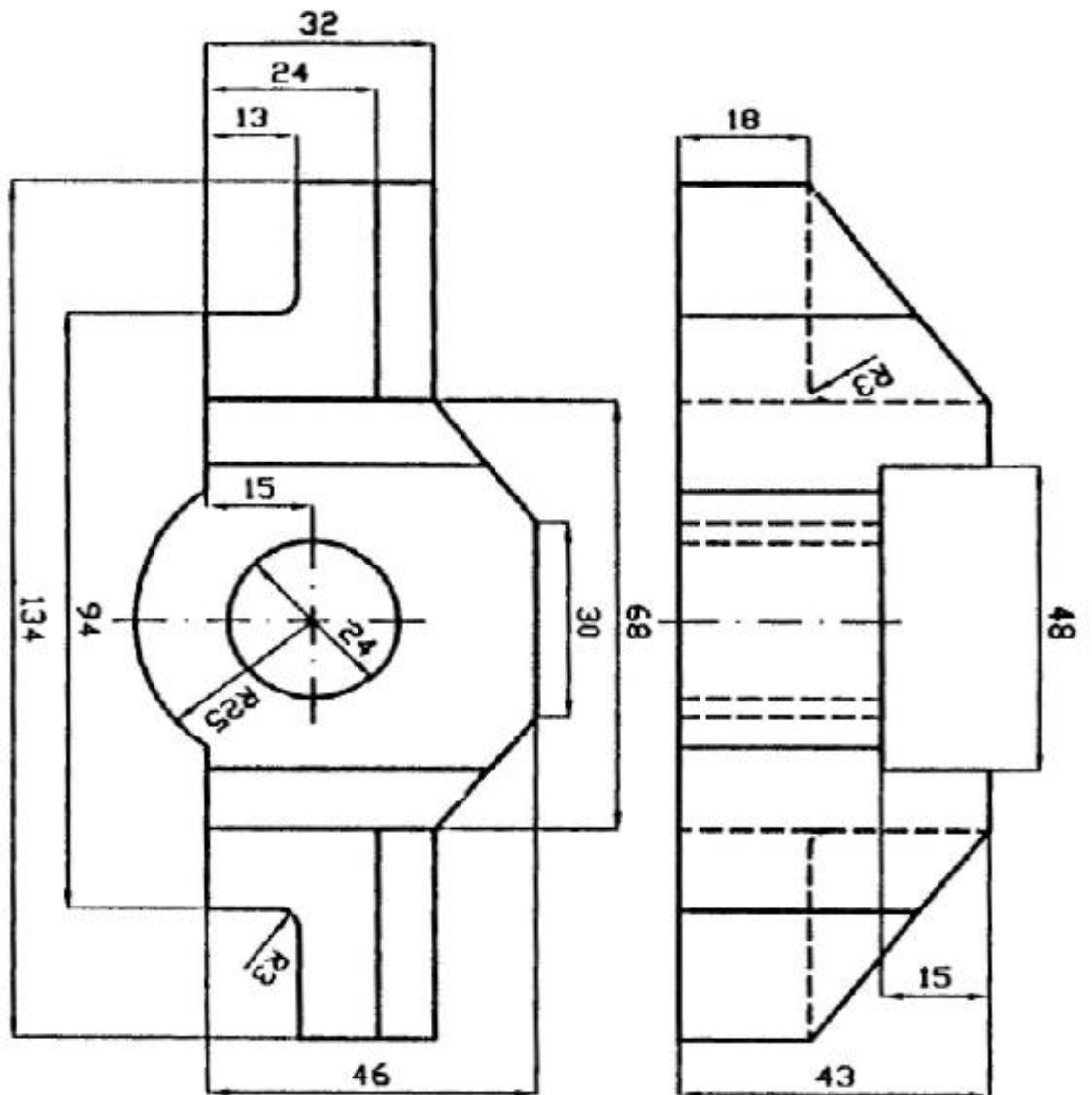
Example

3

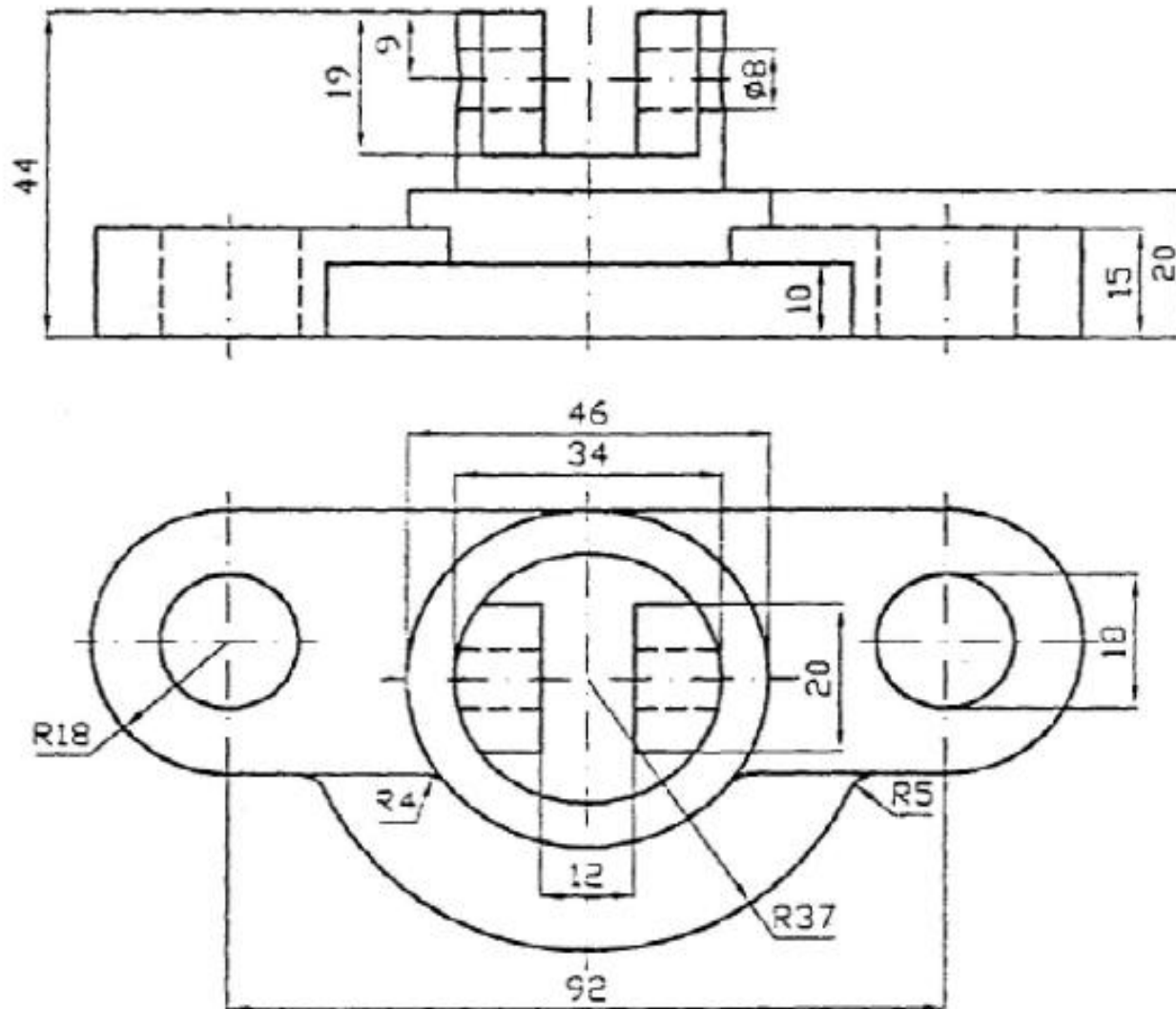


Example

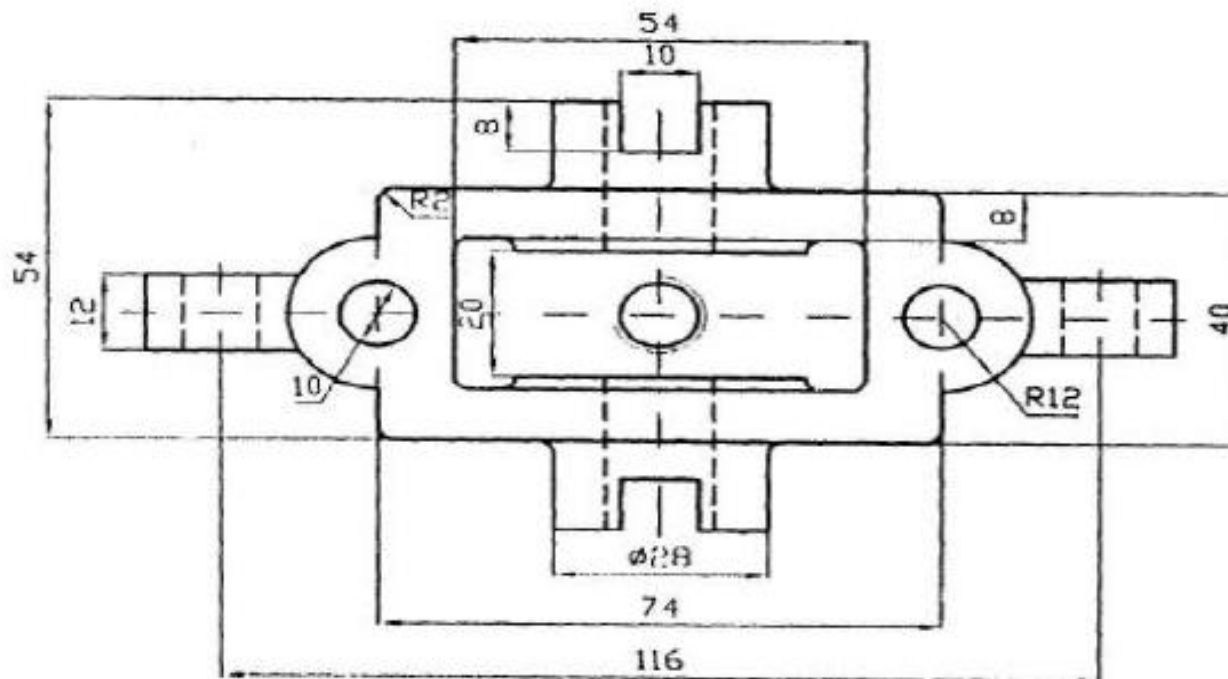
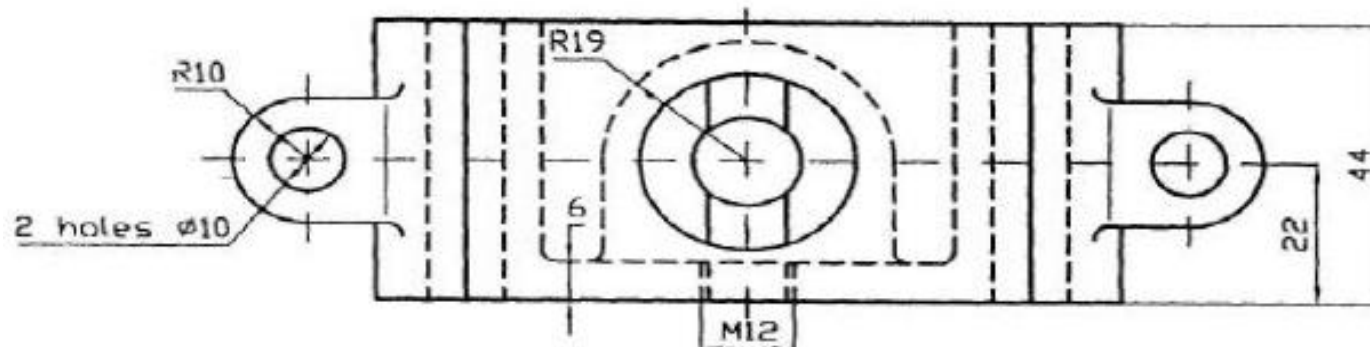
4



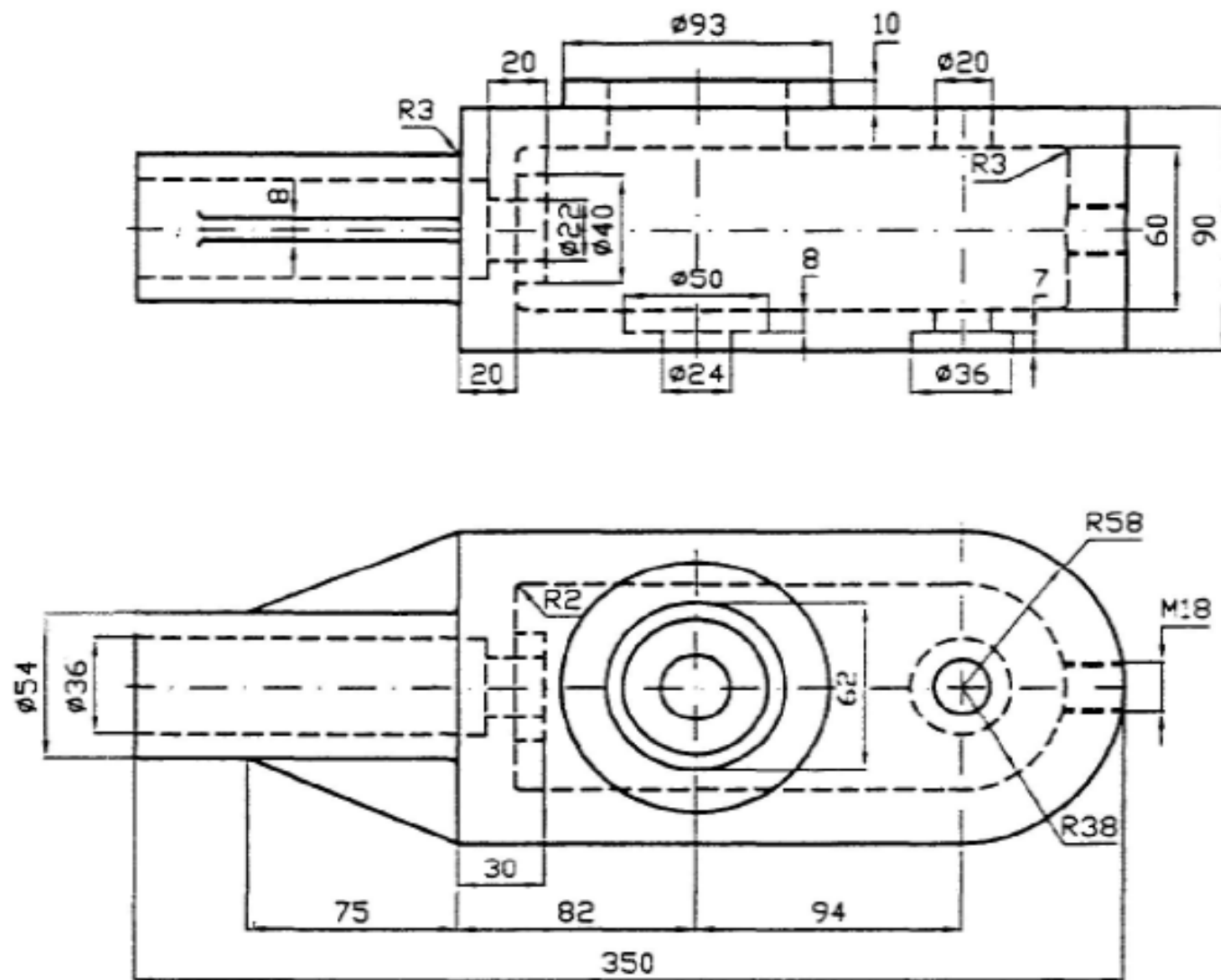
Example 6



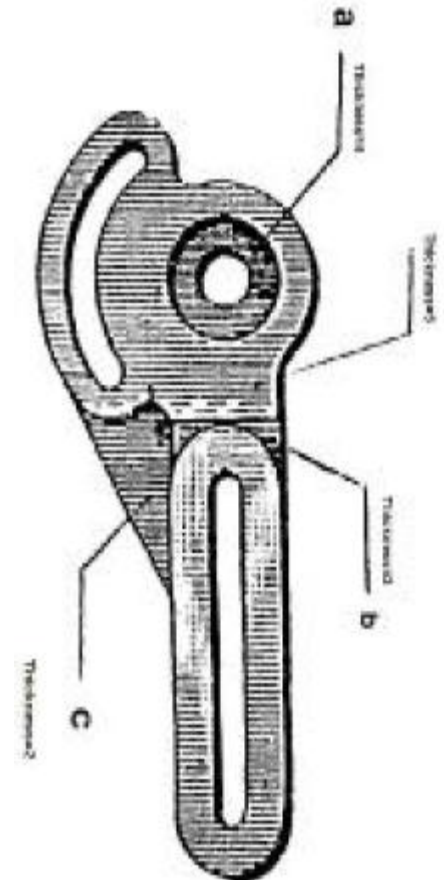
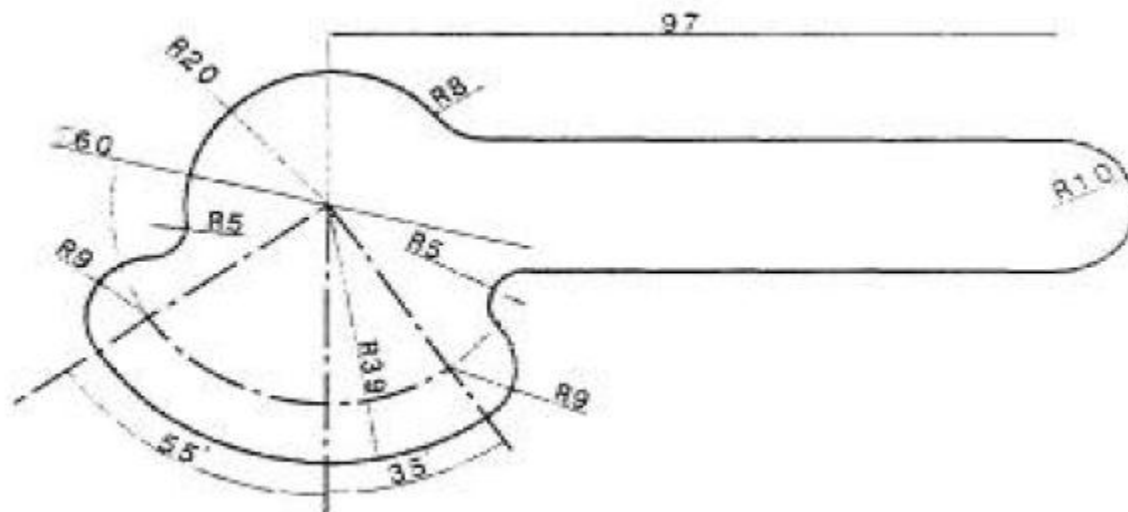
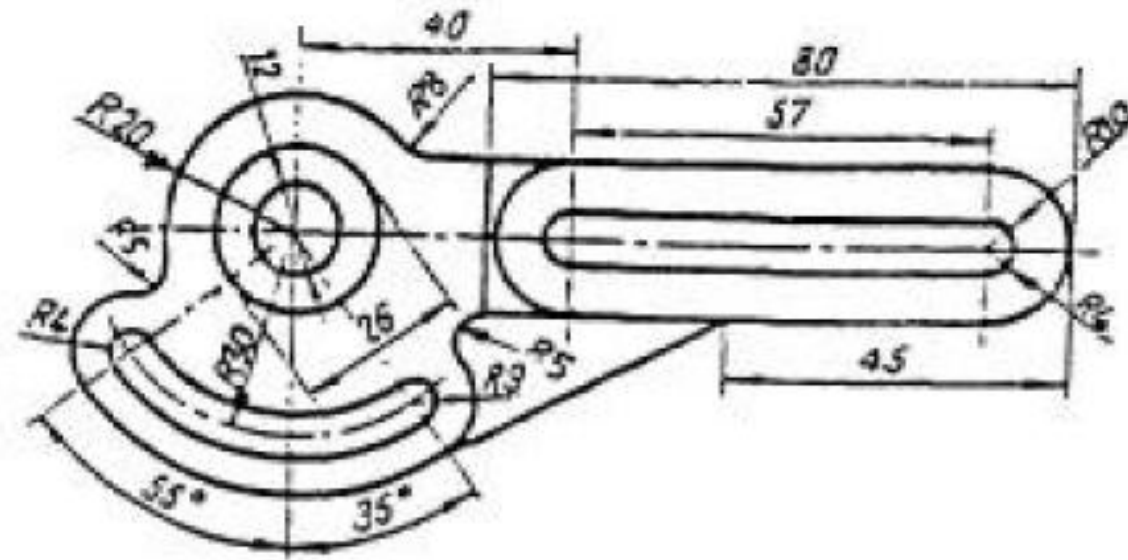
Example 7



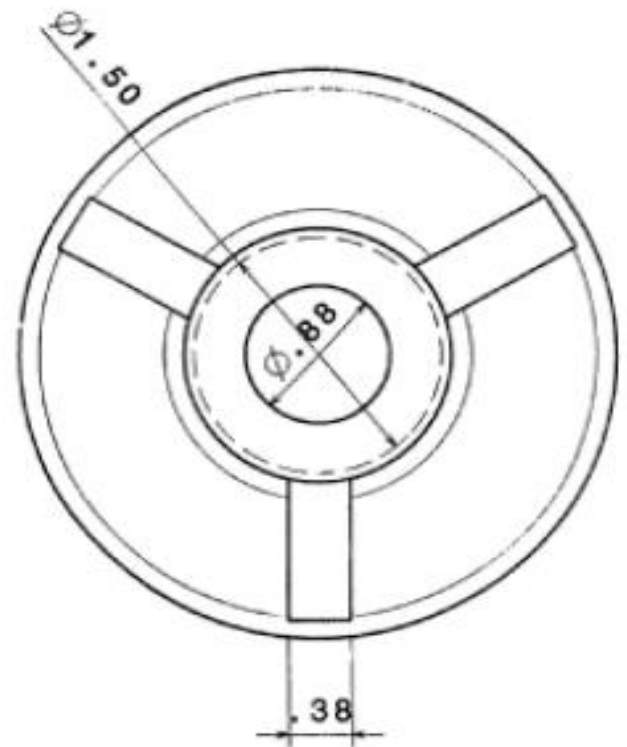
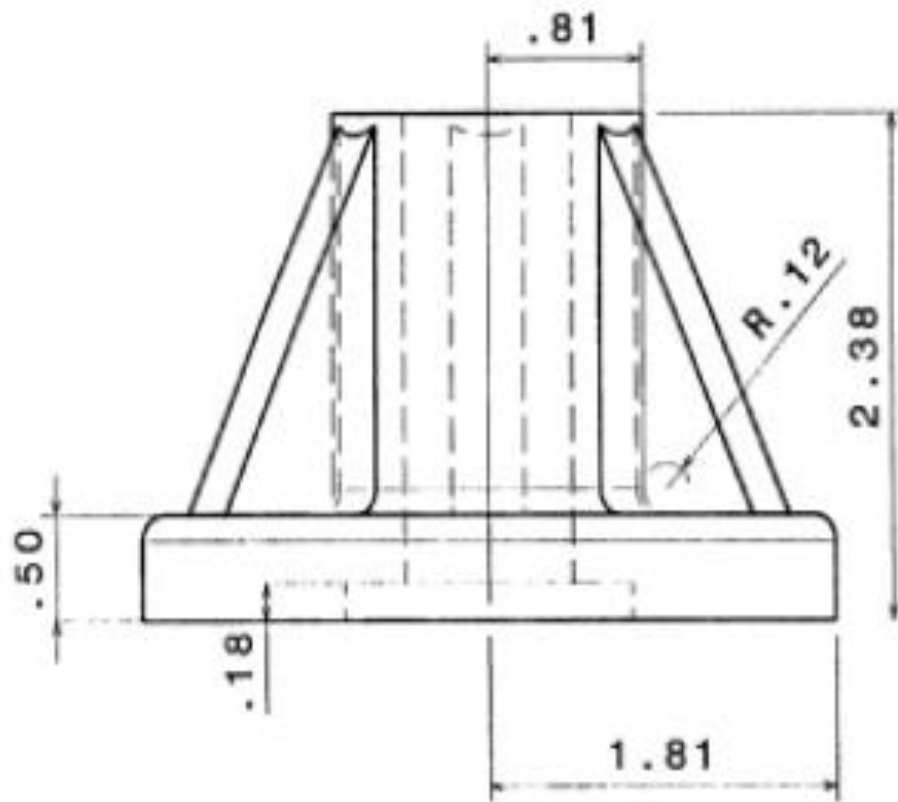
Example 8



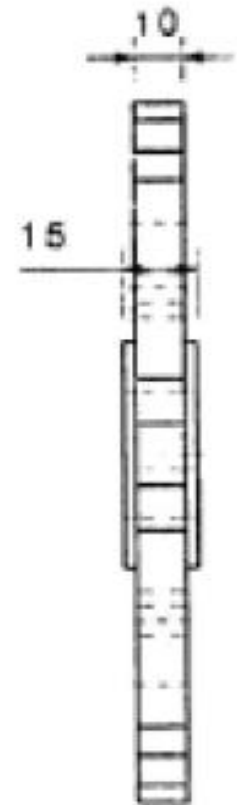
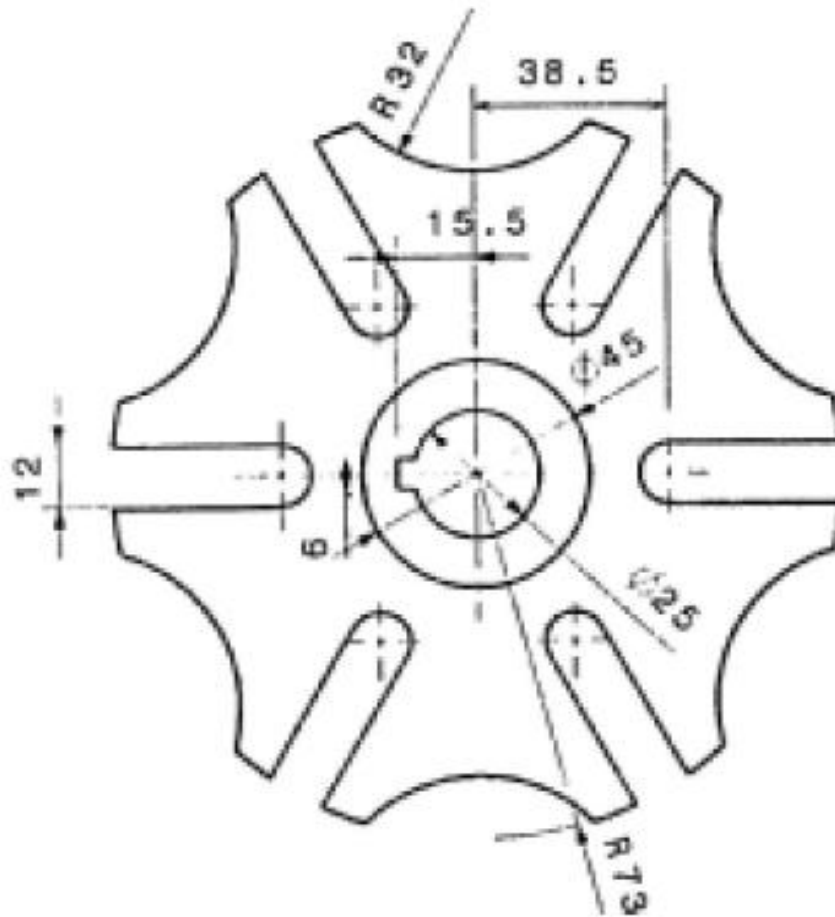
Example 9



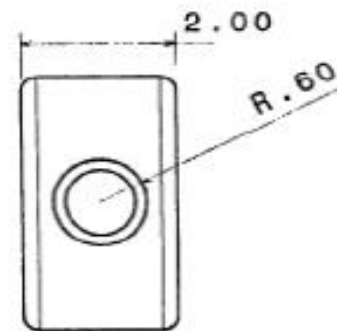
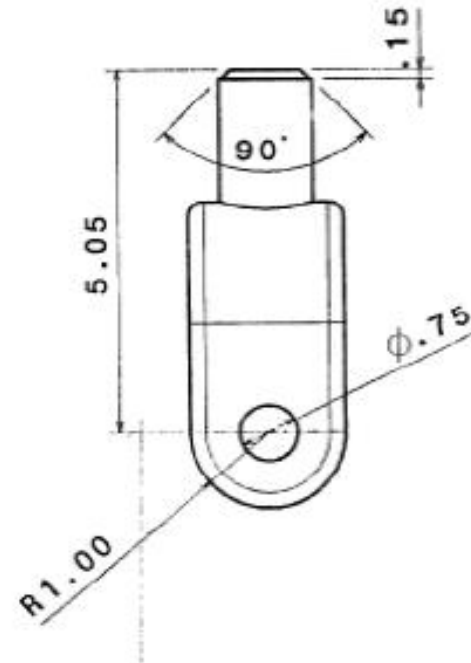
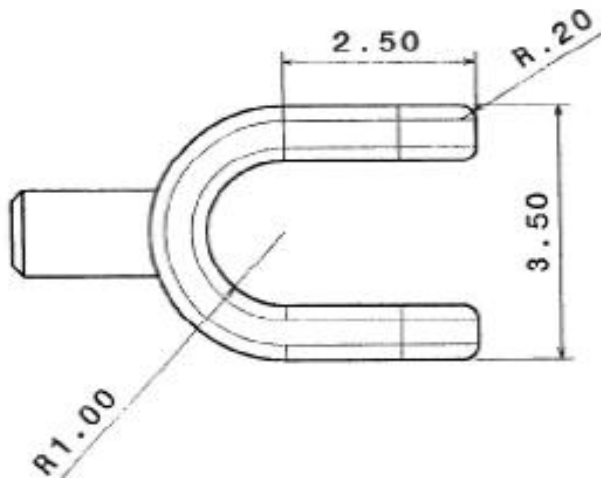
Example 10



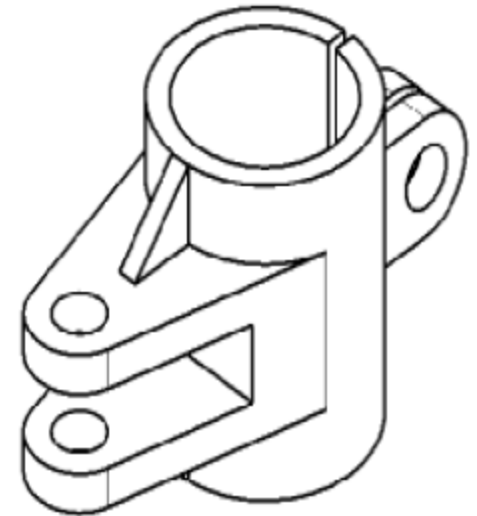
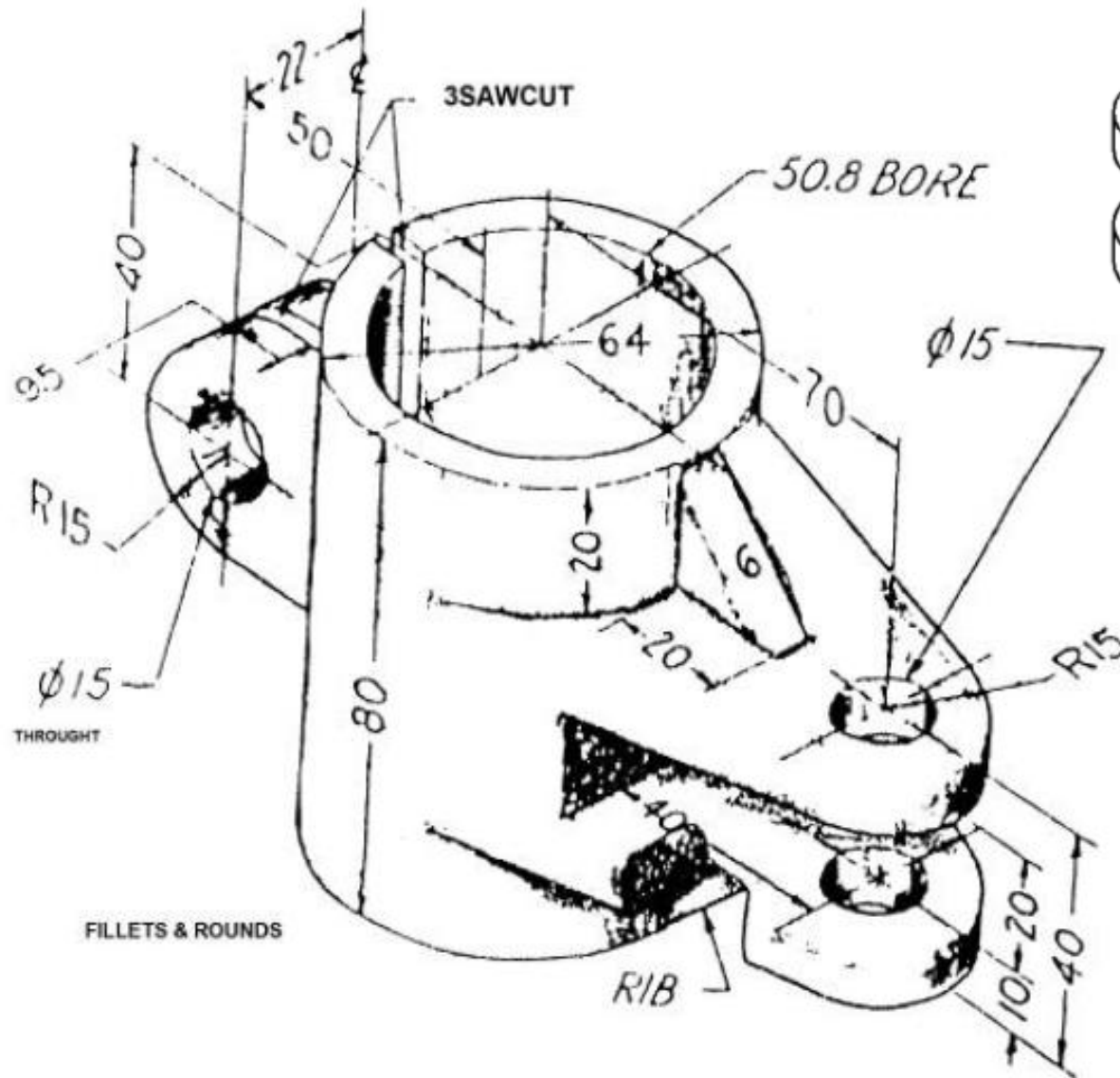
Example 11



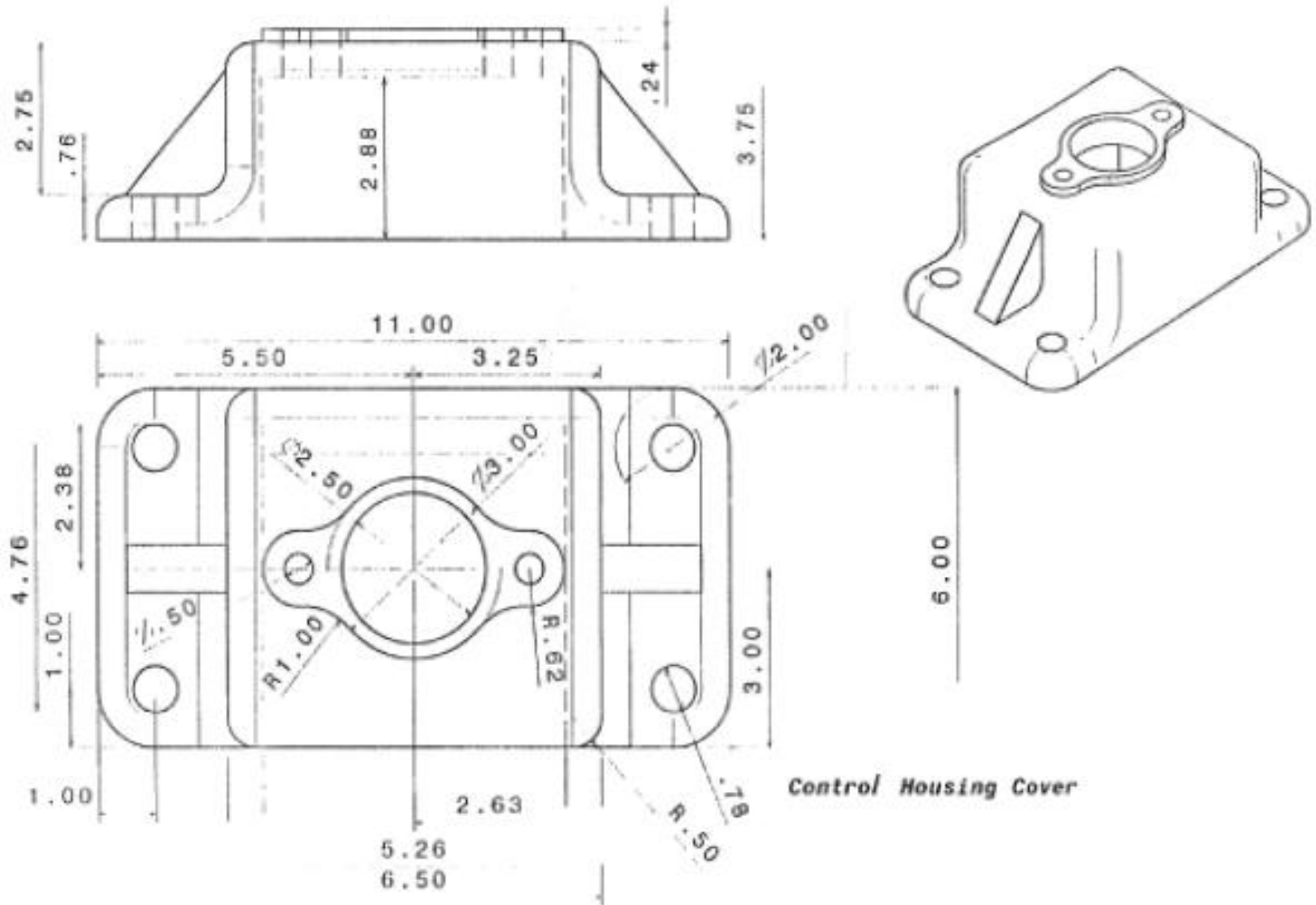
Example 12



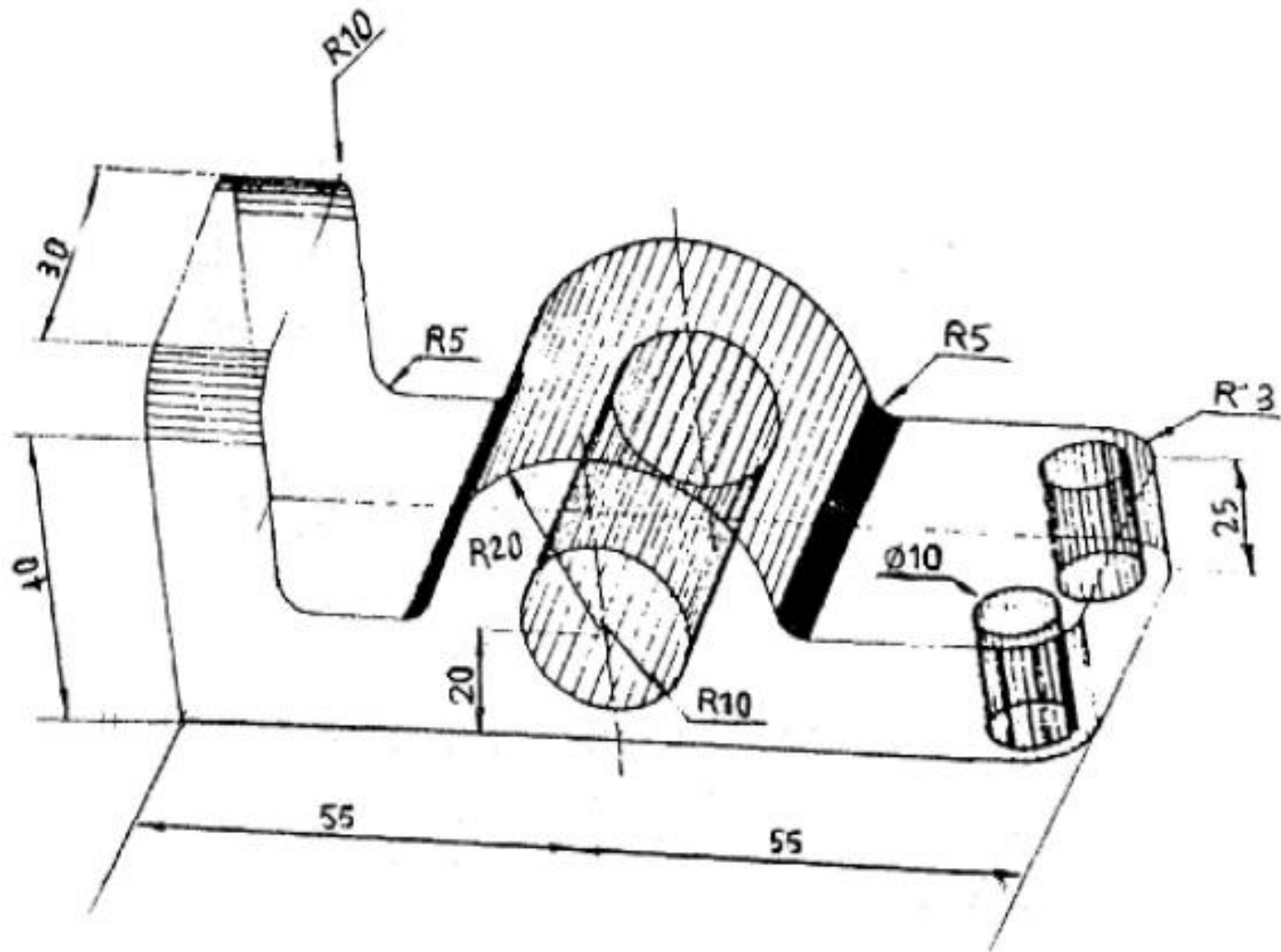
Example 13



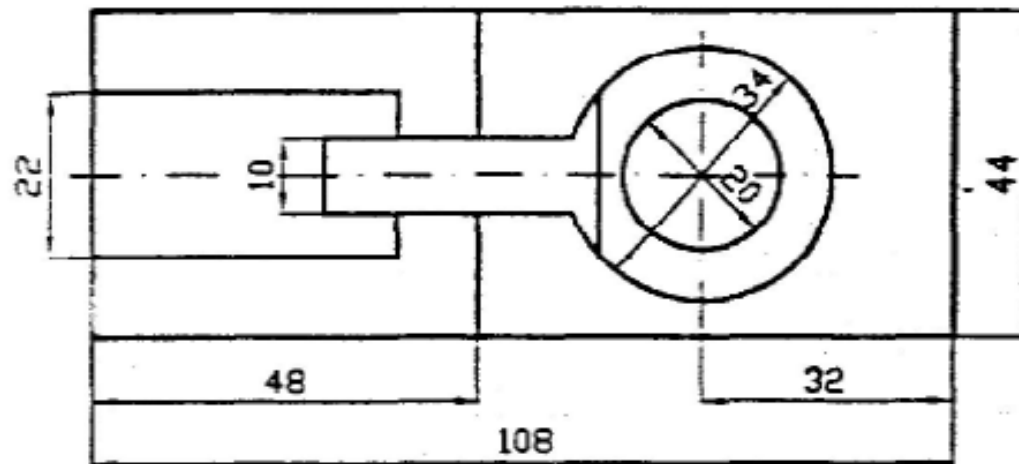
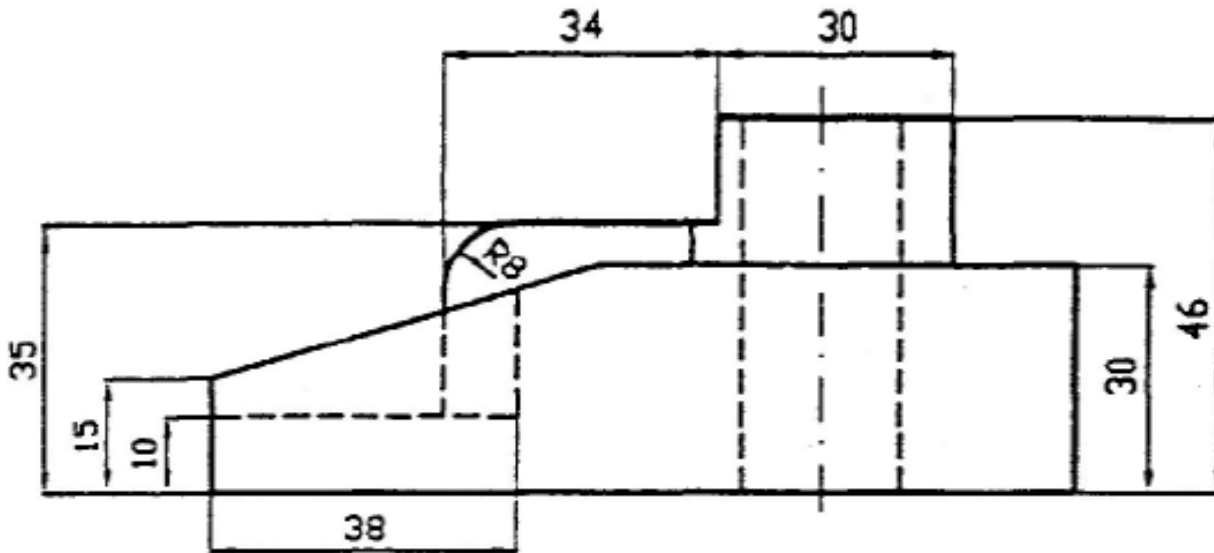
Example 14



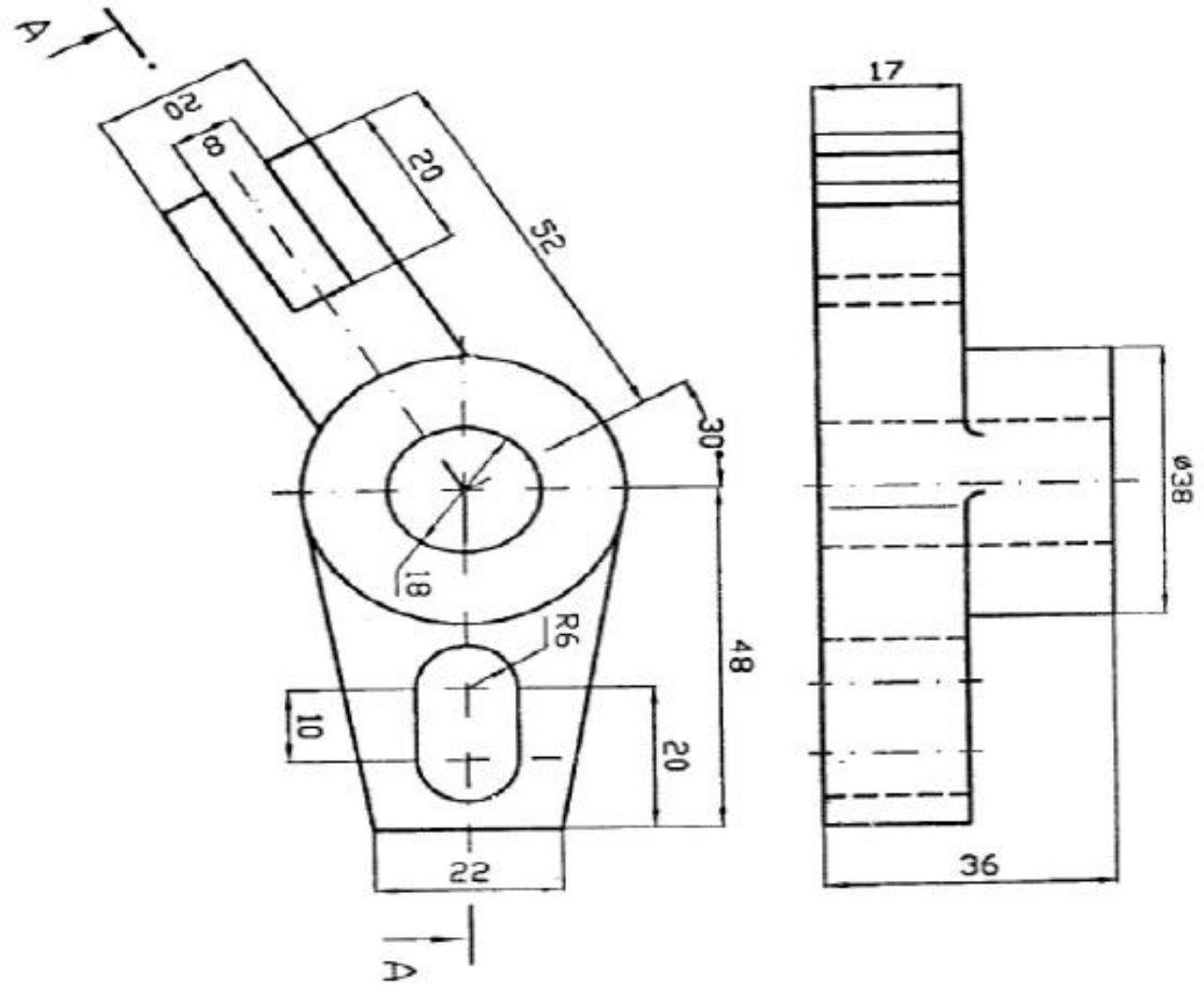
Example 15



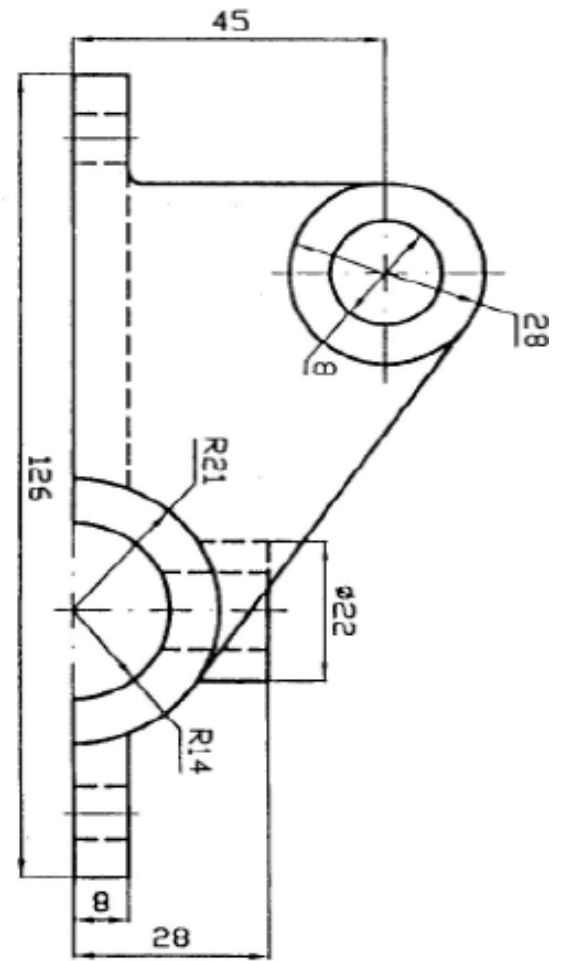
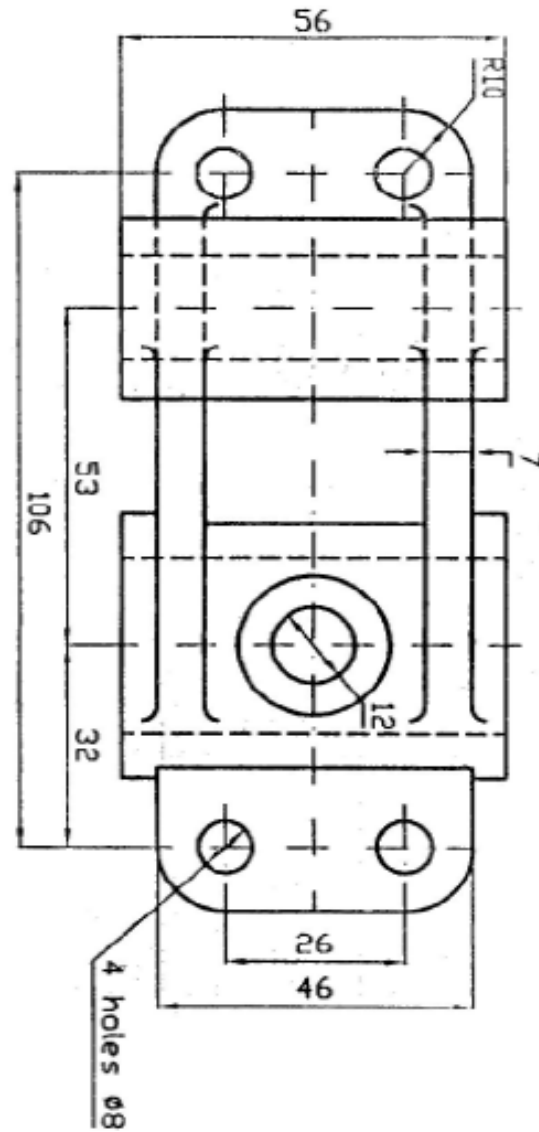
Example 16



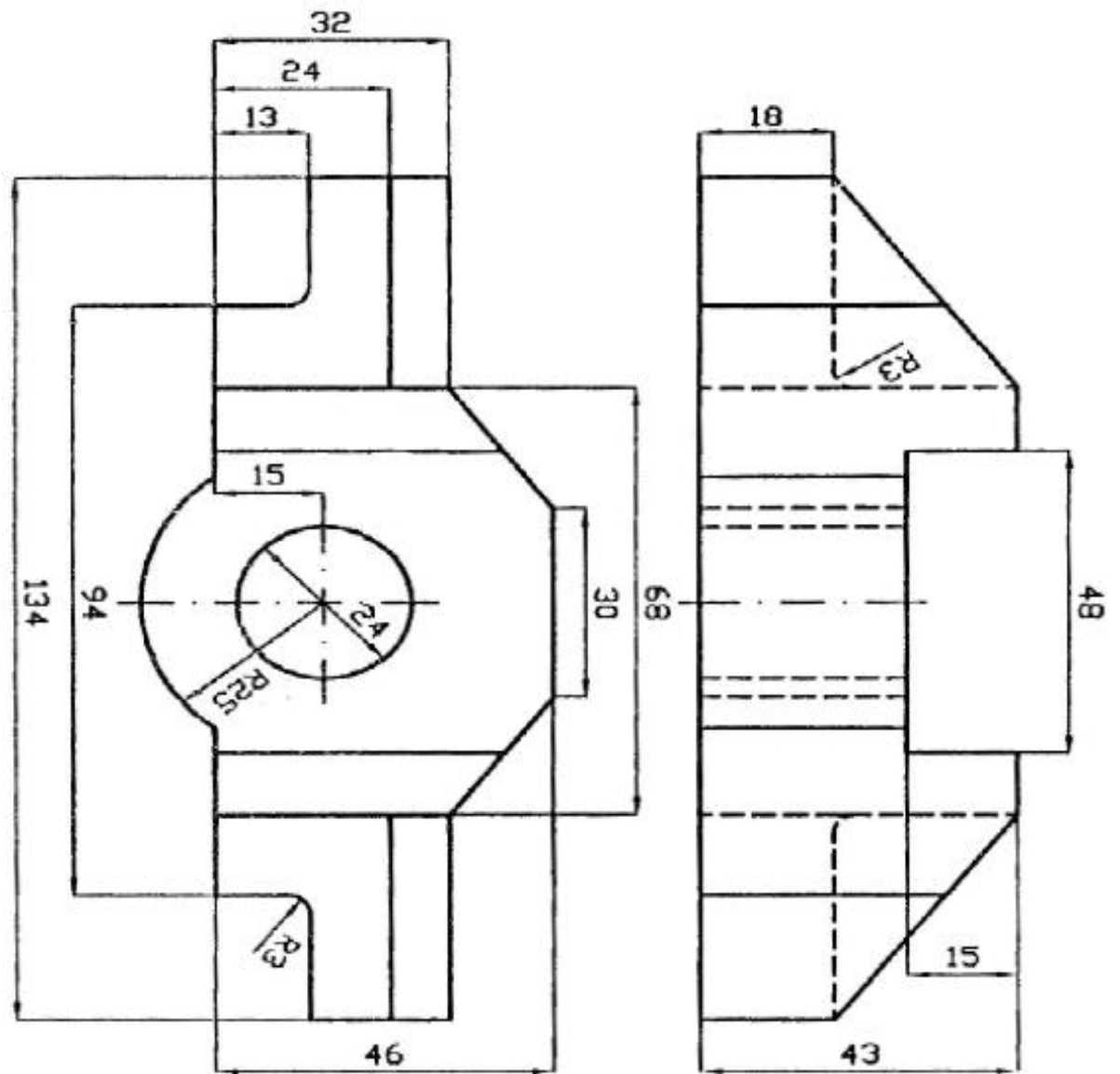
Example 17



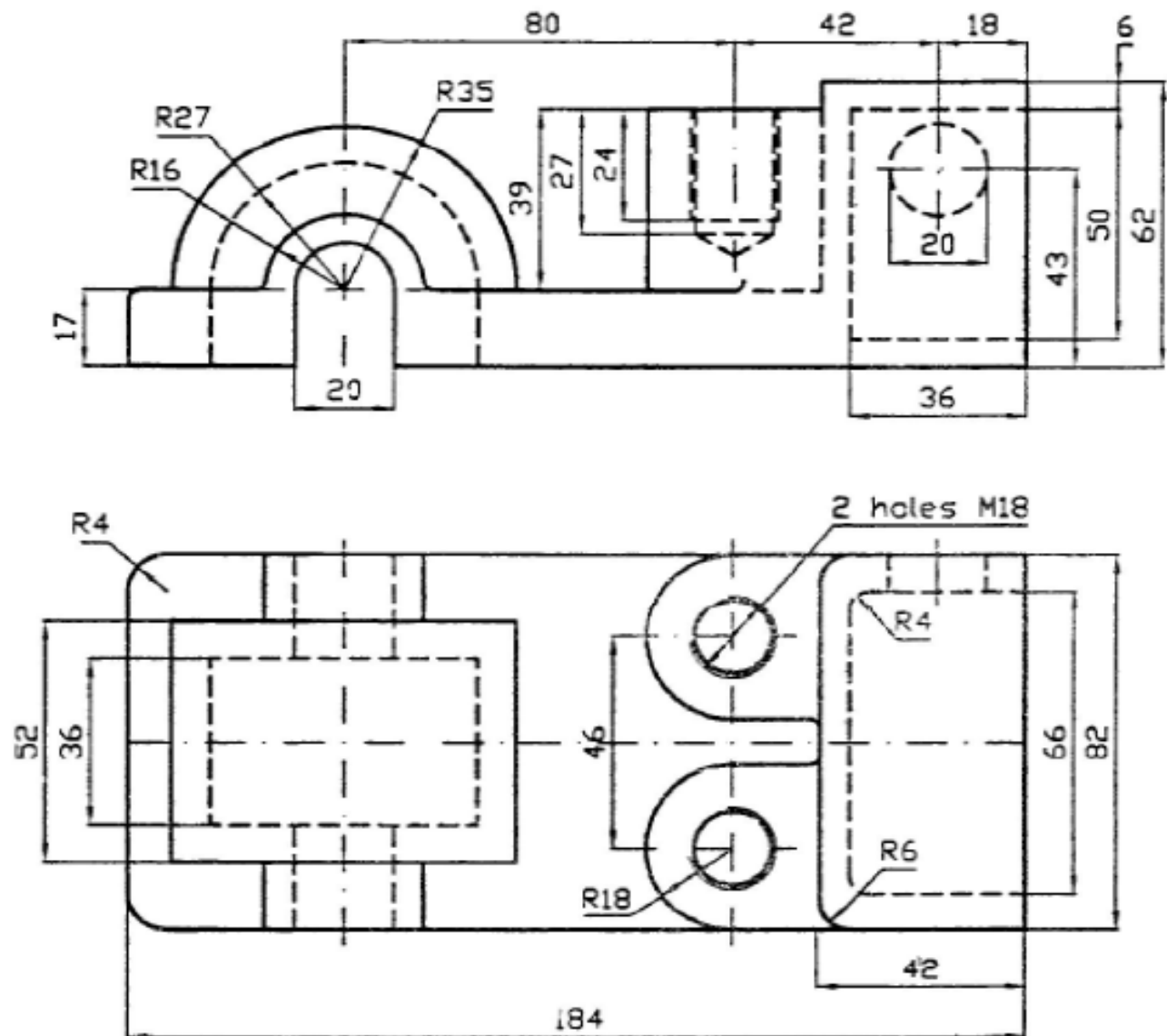
Example 18



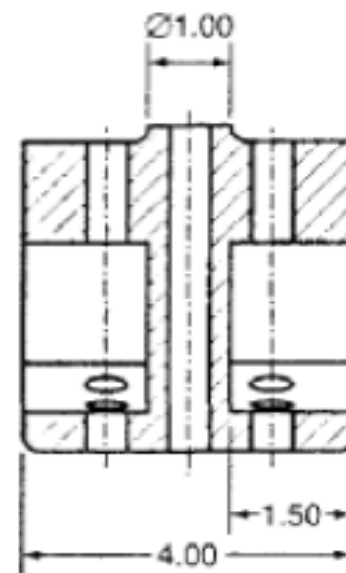
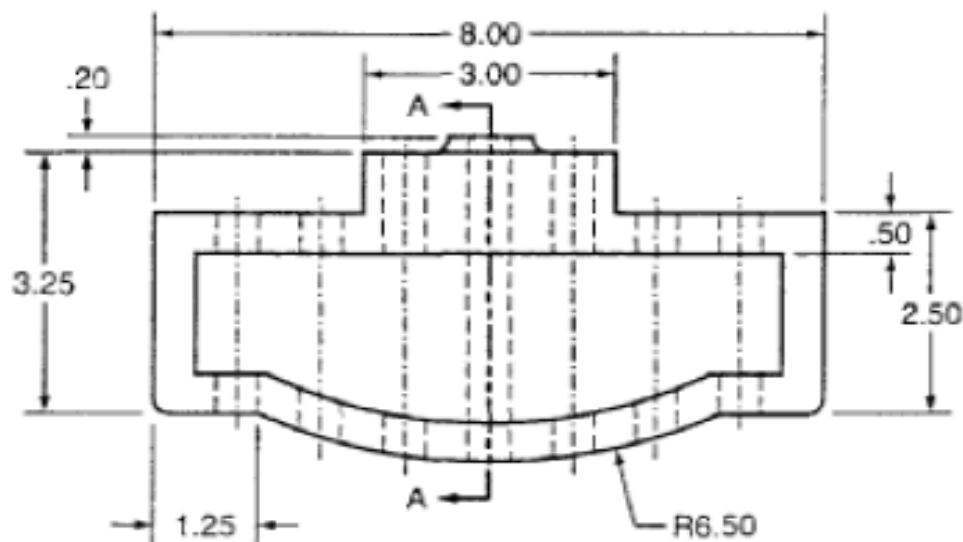
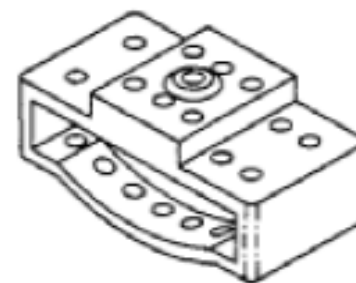
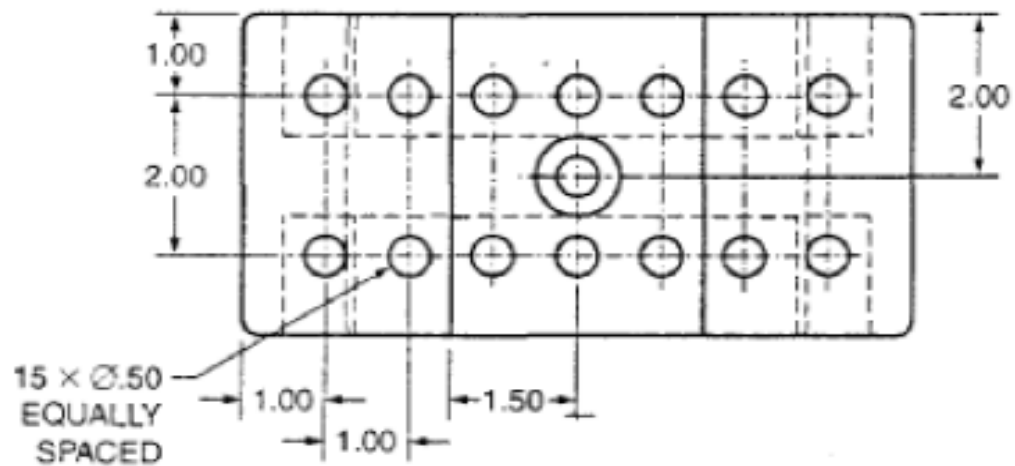
Example 19



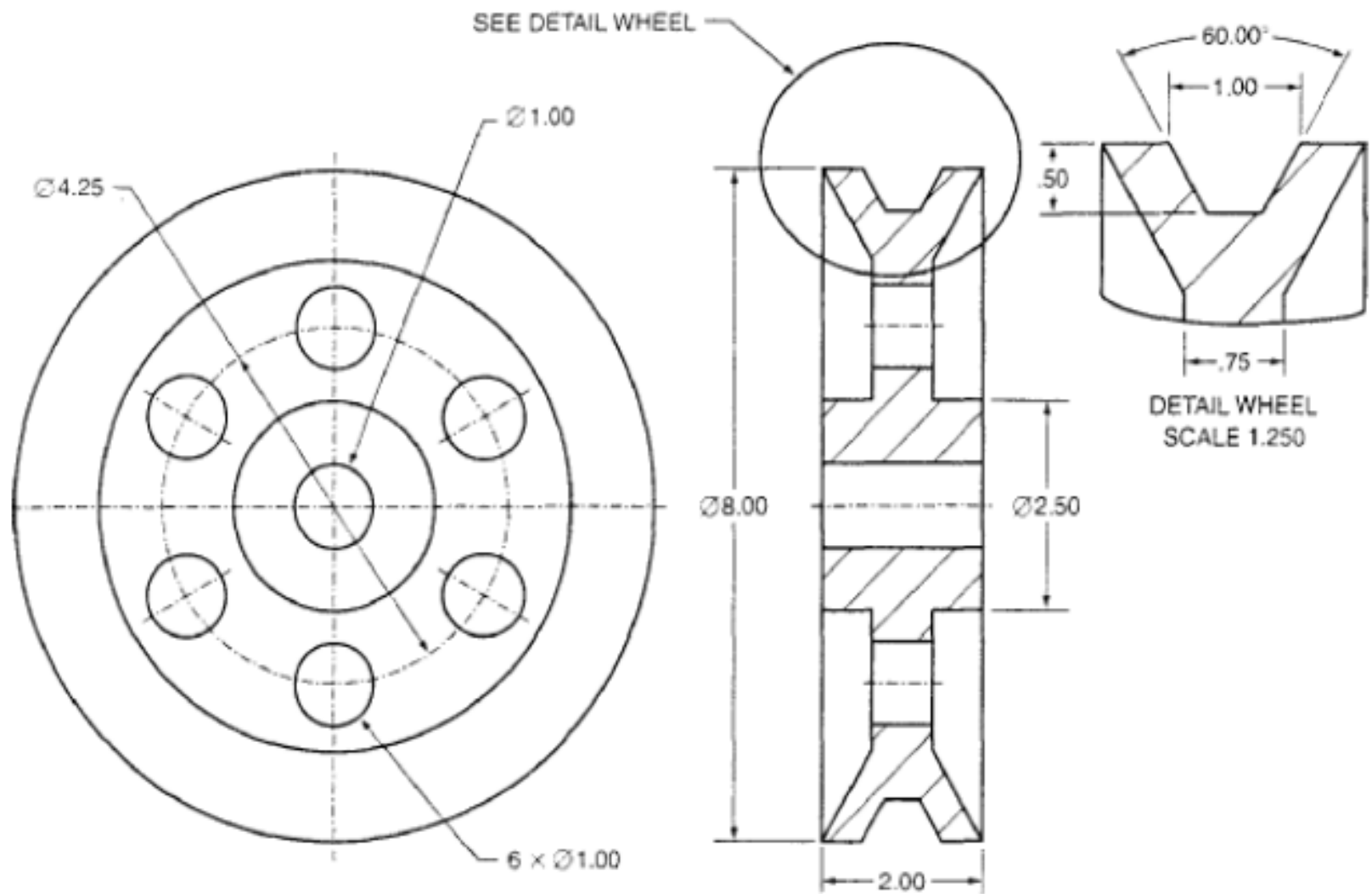
Example 20



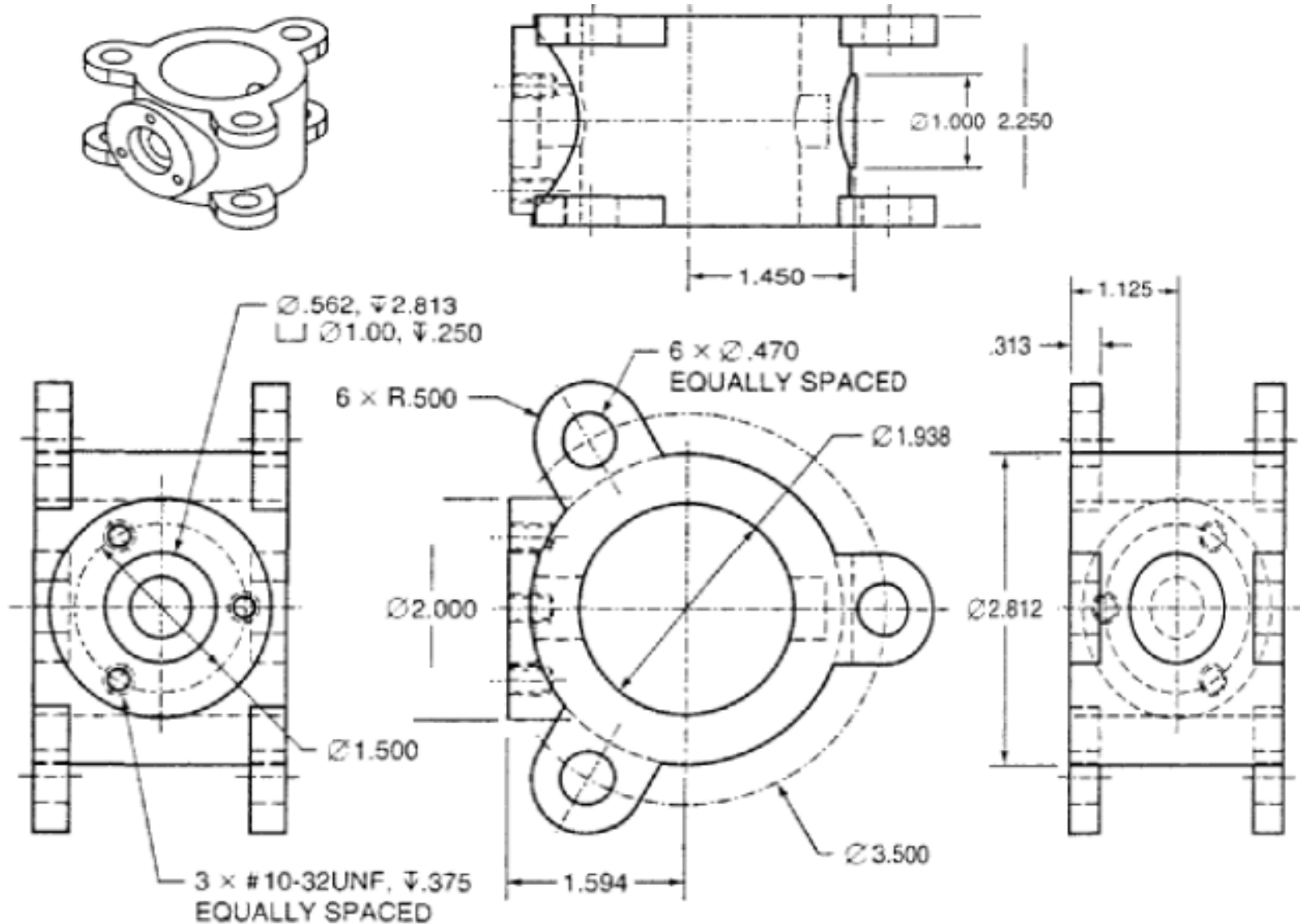
Example 21



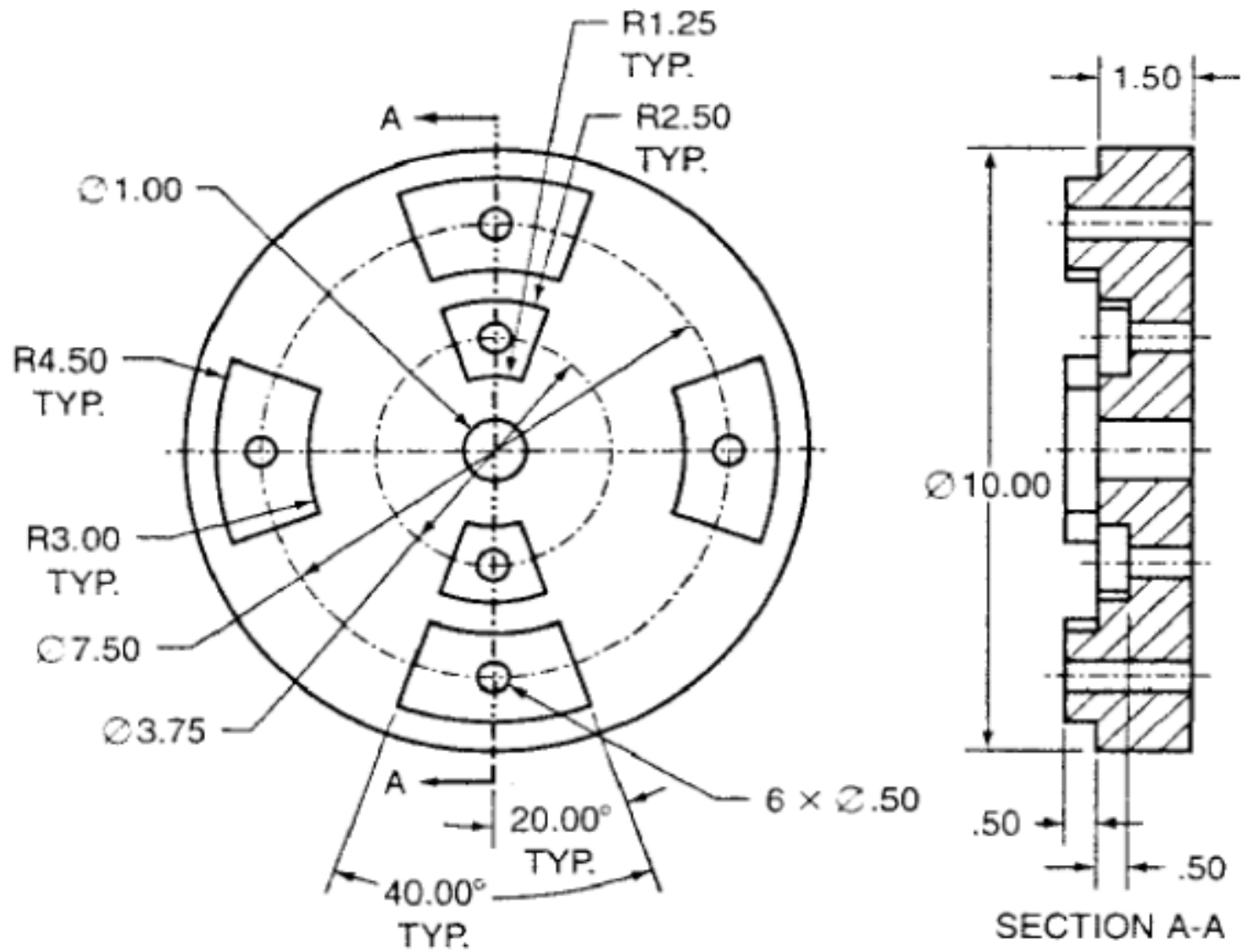
Example 22



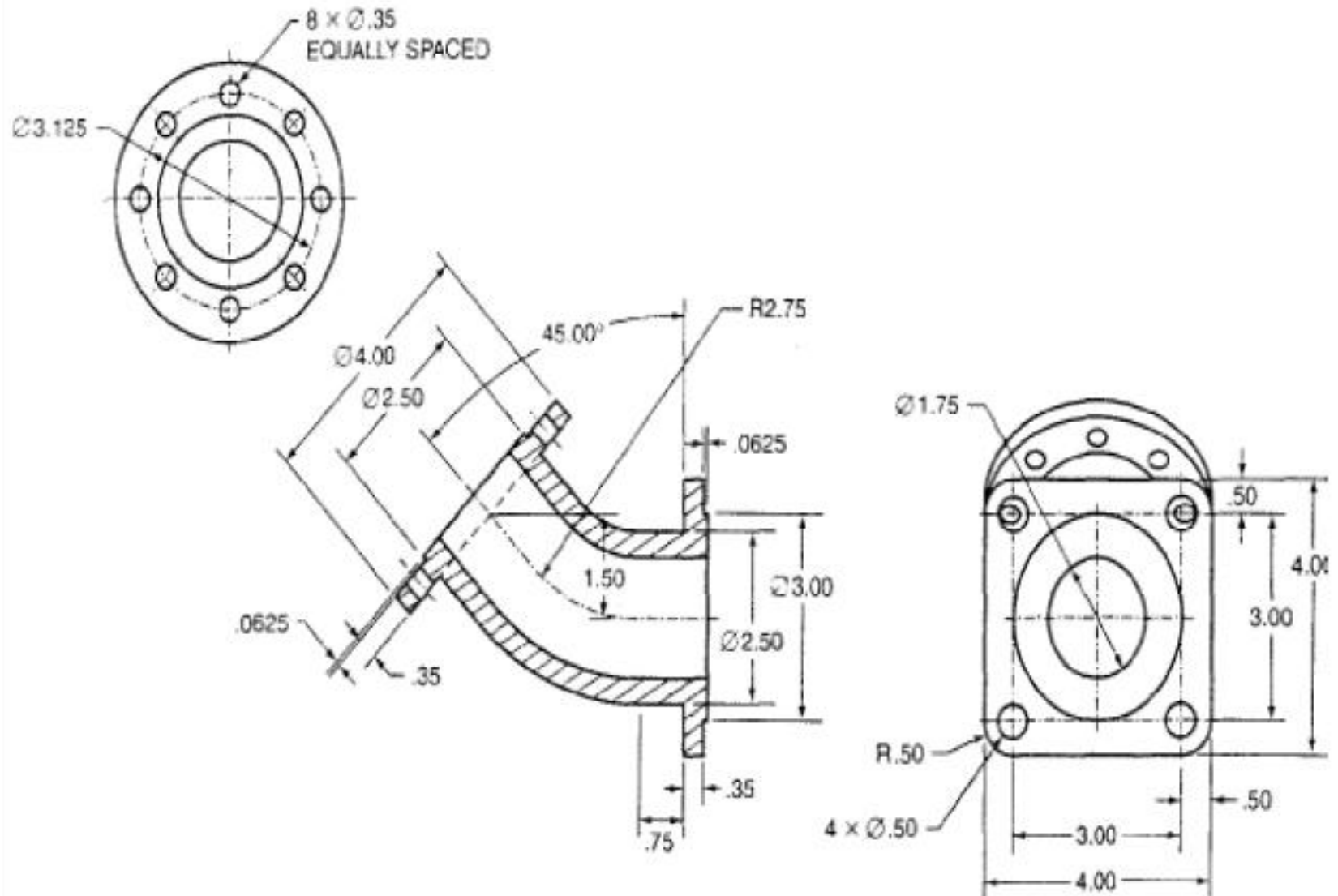
Example 23



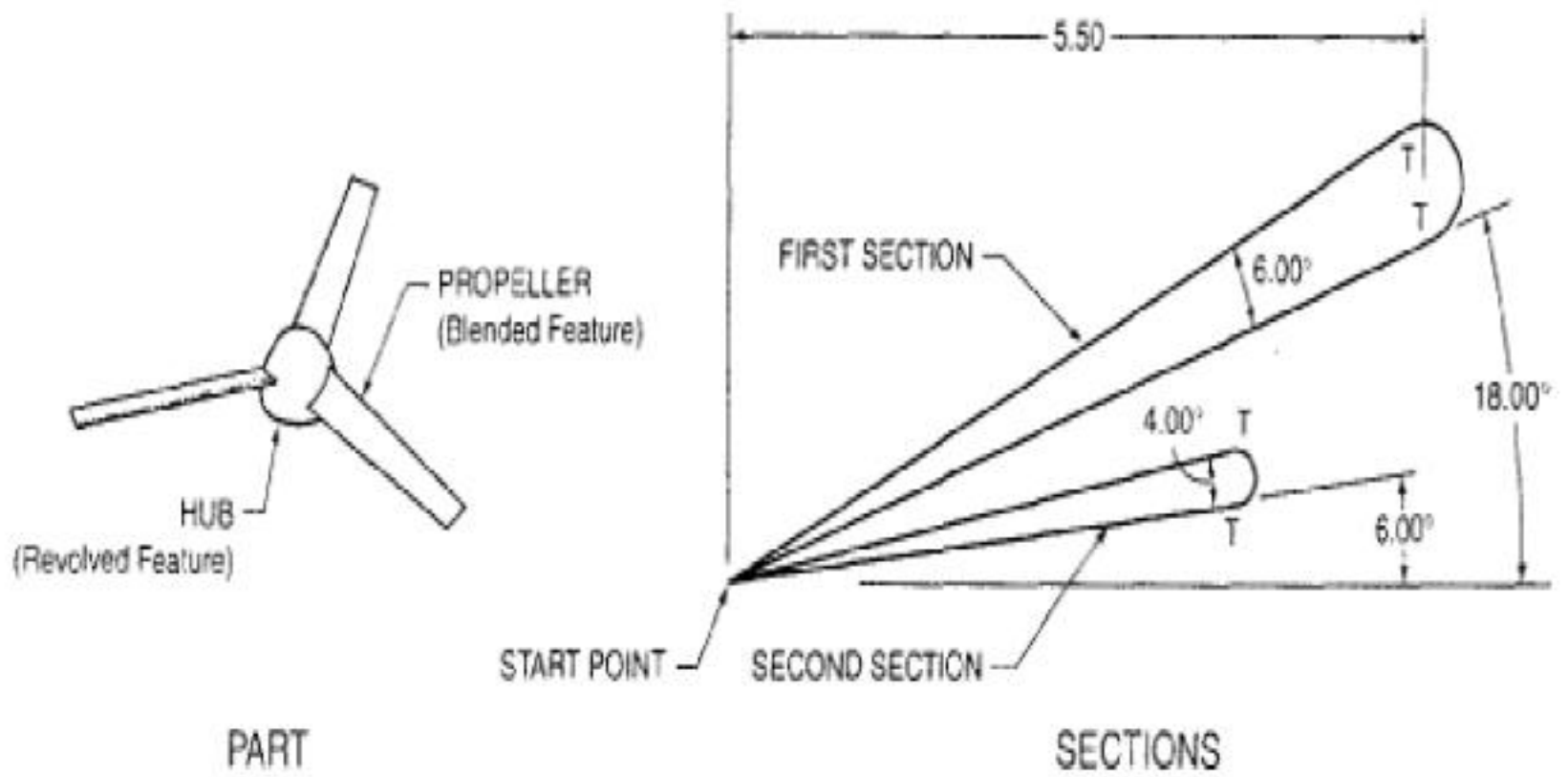
Example 24



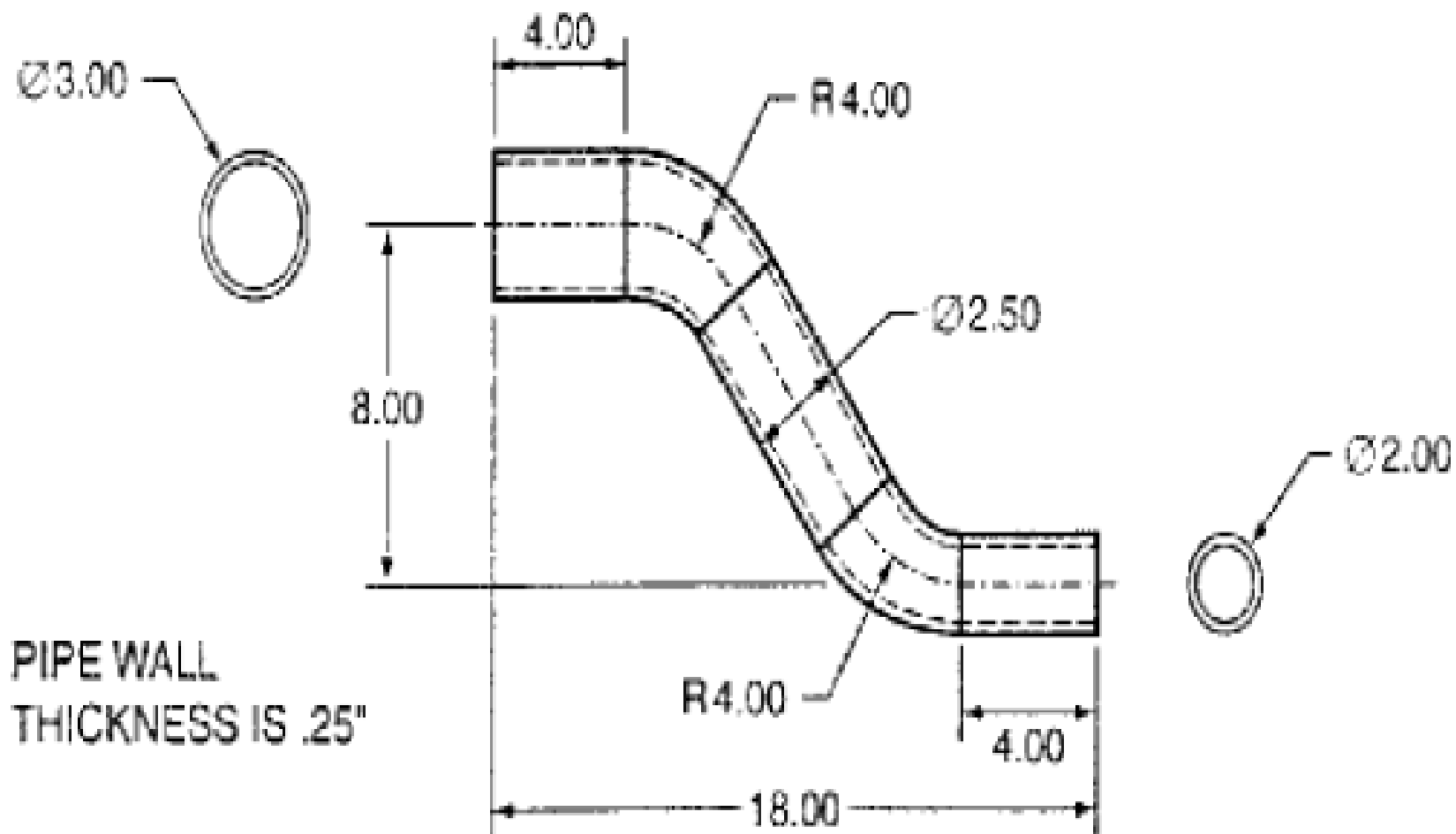
Example 25



Example 26



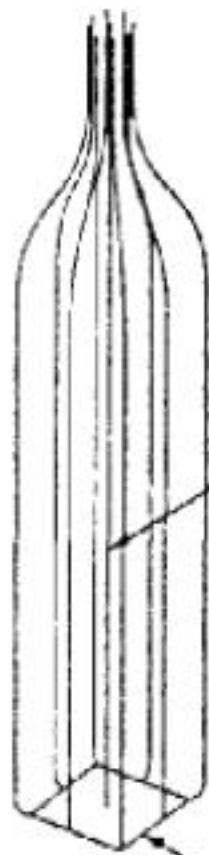
Example 27



Example 28



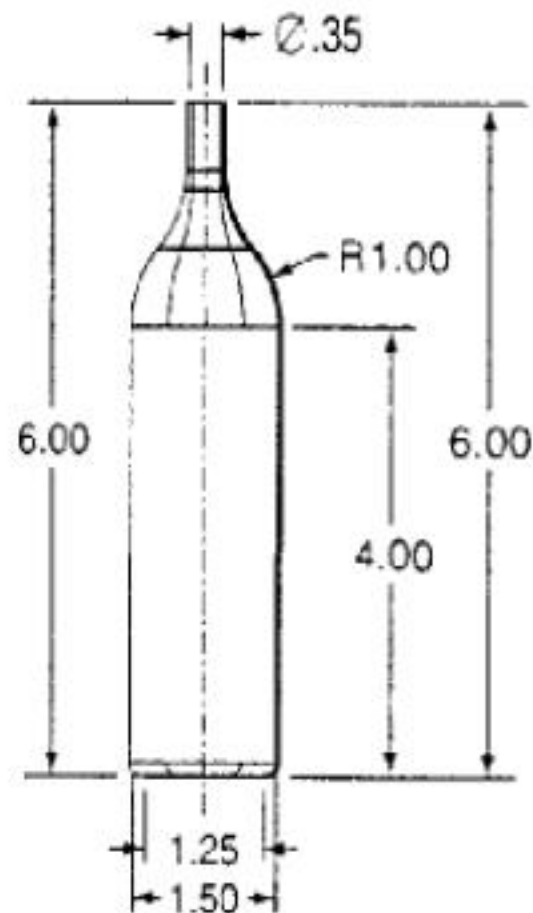
FINISHED PART



ORIGIN
TRAJECTORY

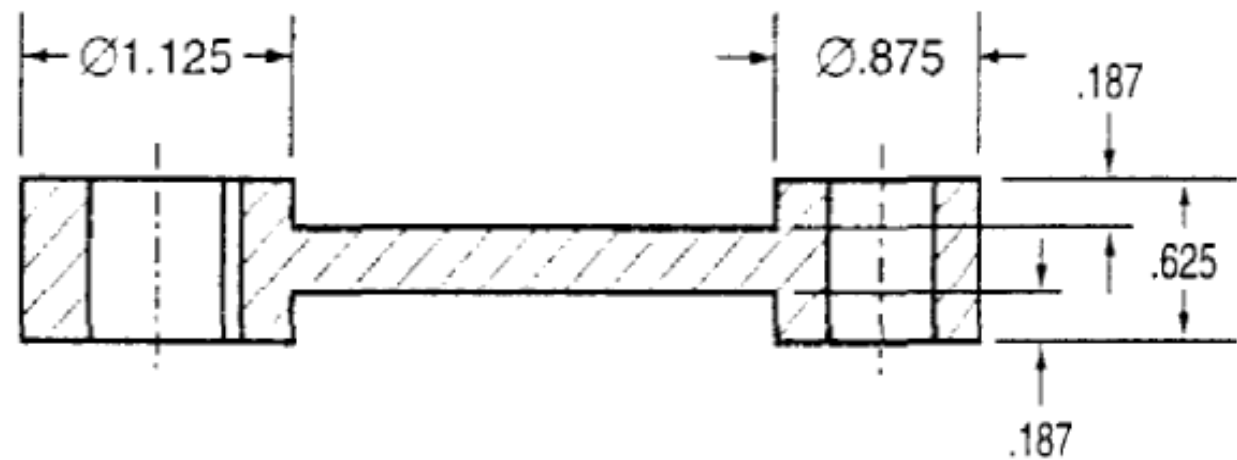
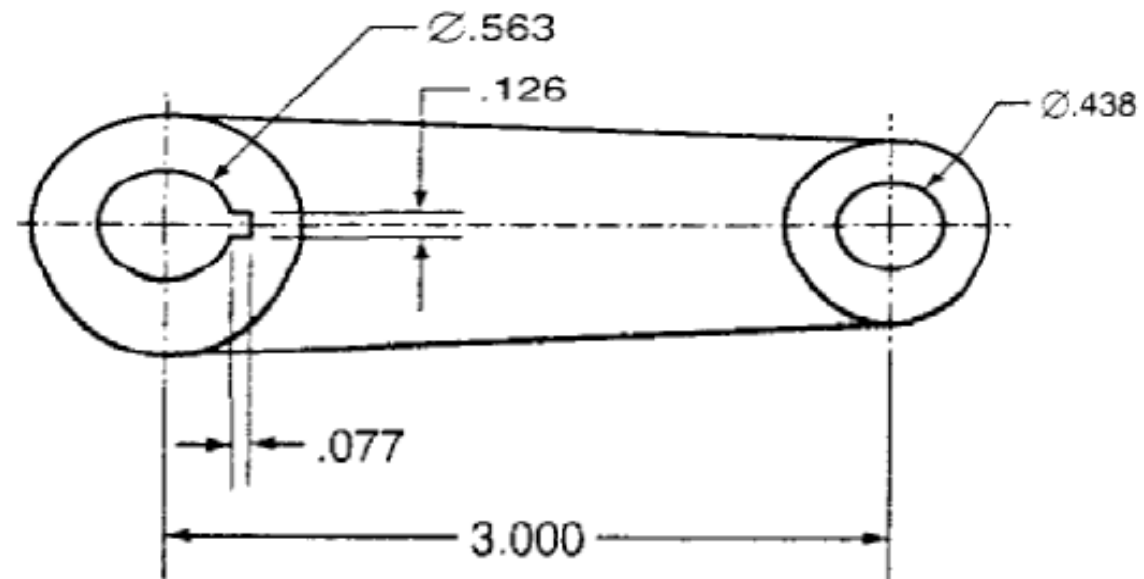
SECTION

TRAJECTORIES

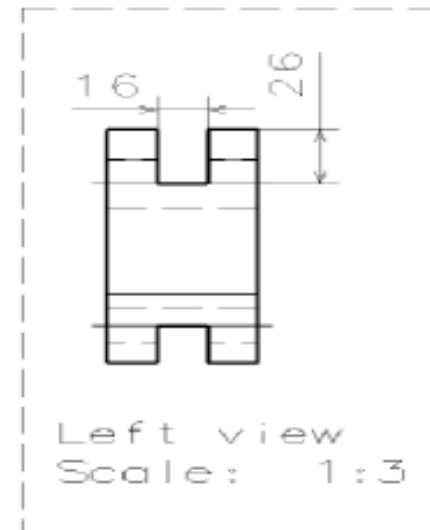
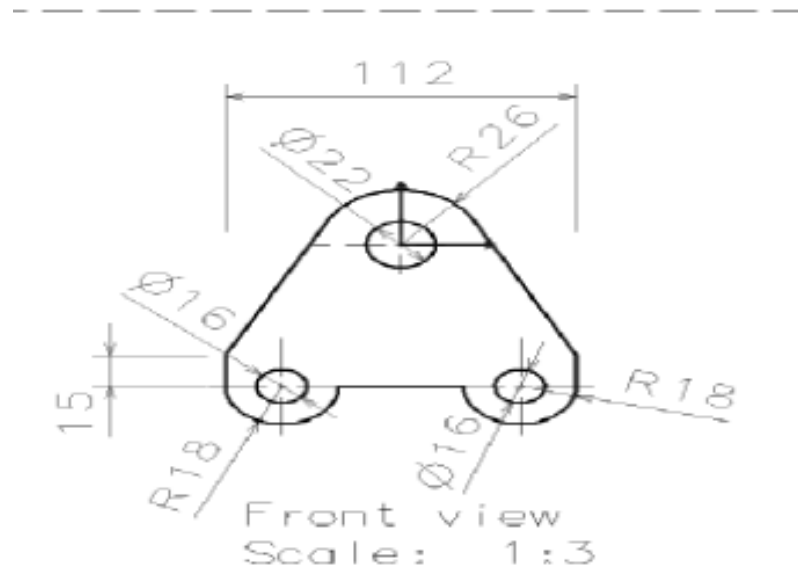
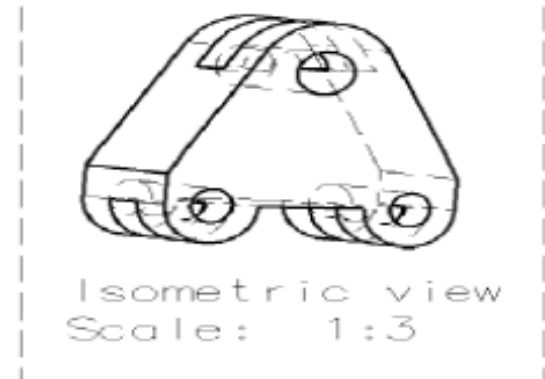
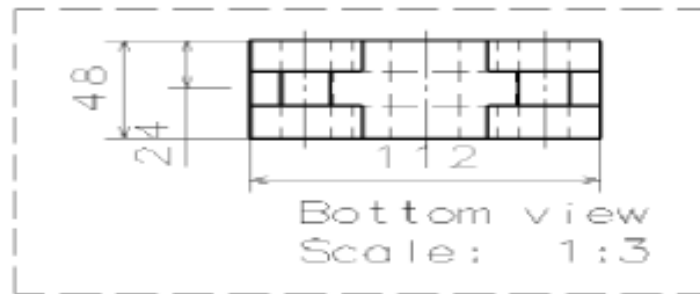


DIMENSIONS

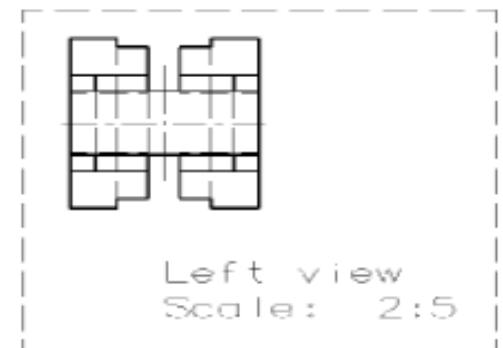
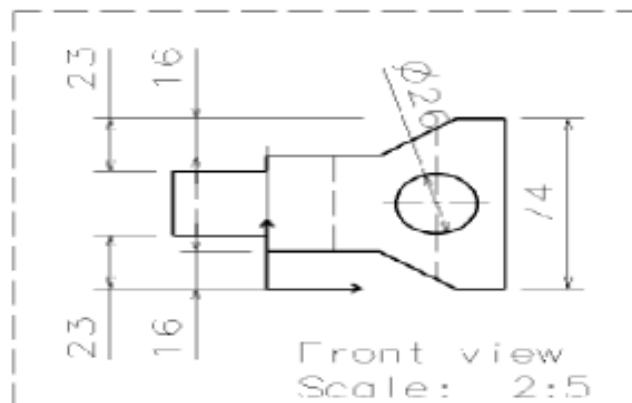
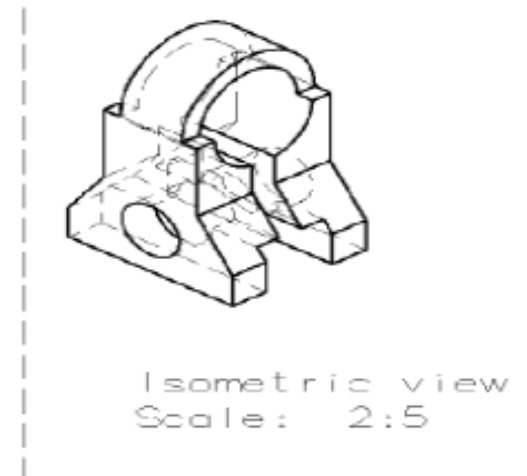
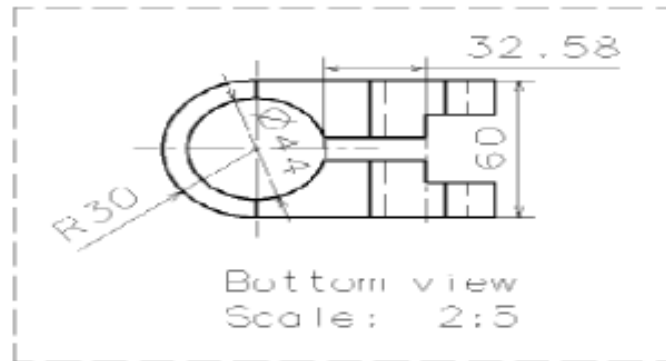
Example 29



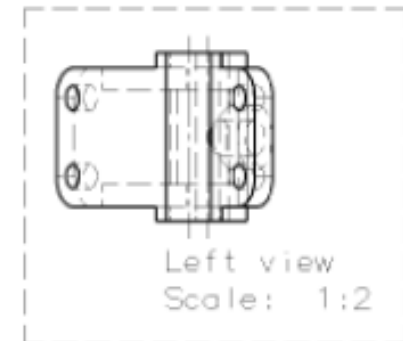
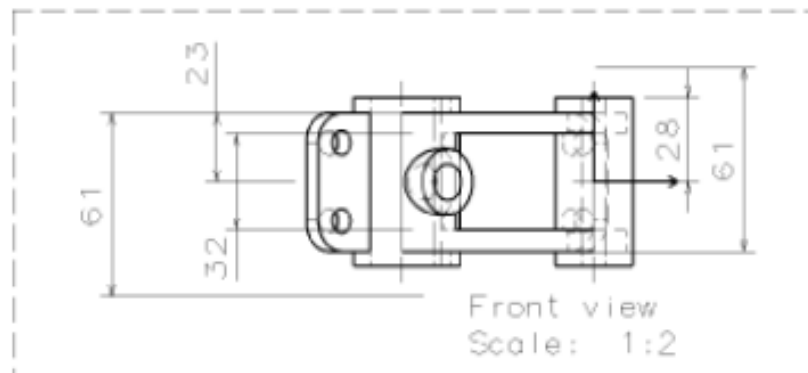
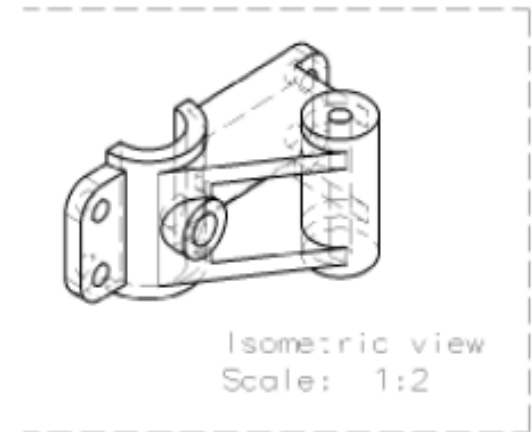
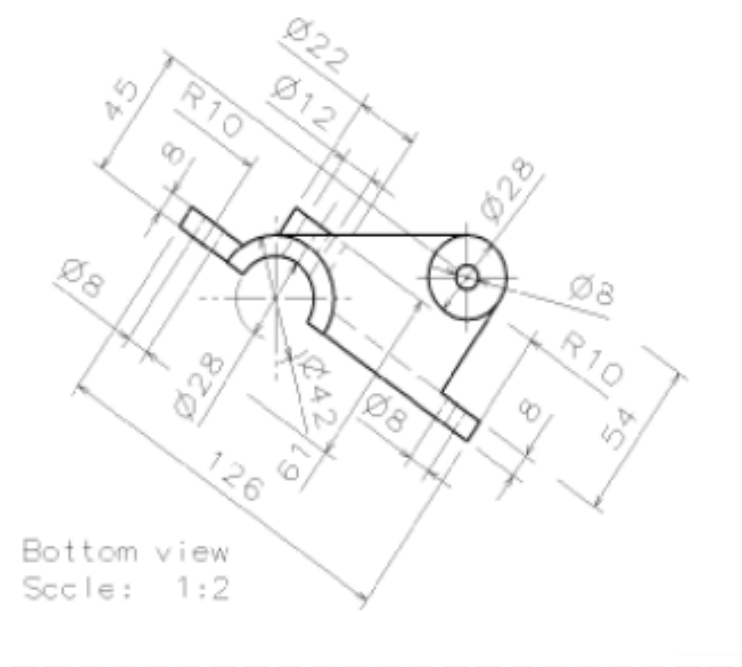
Example 30



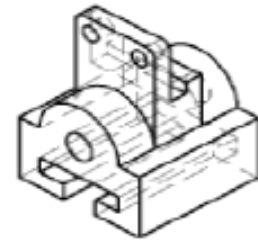
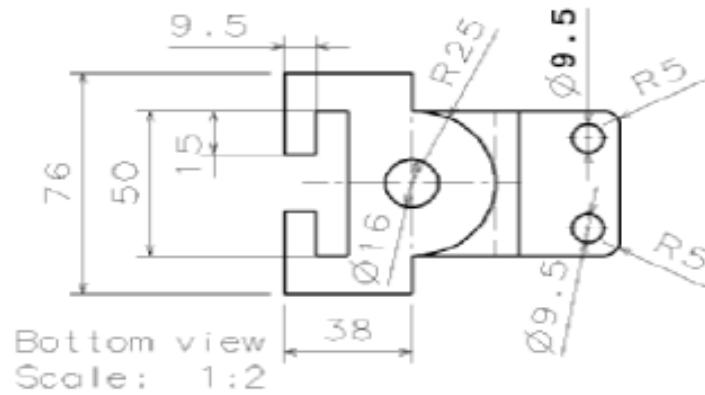
Example 31



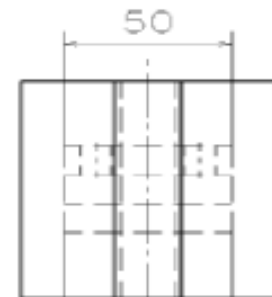
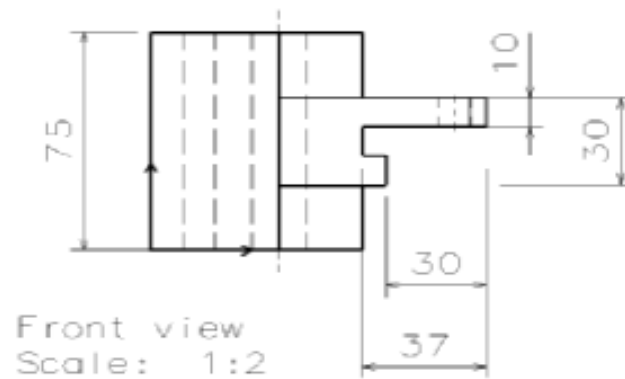
Example 32



Example 33

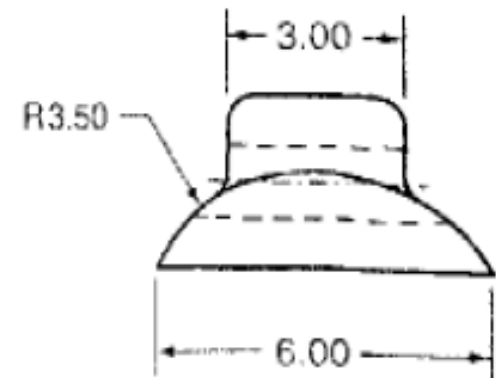
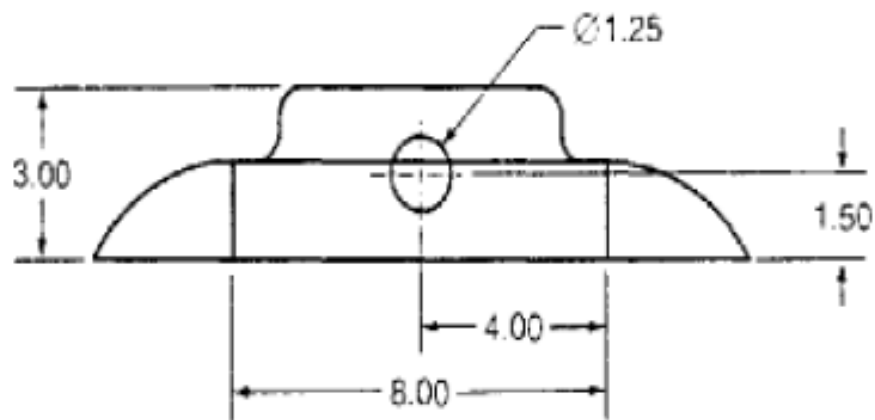
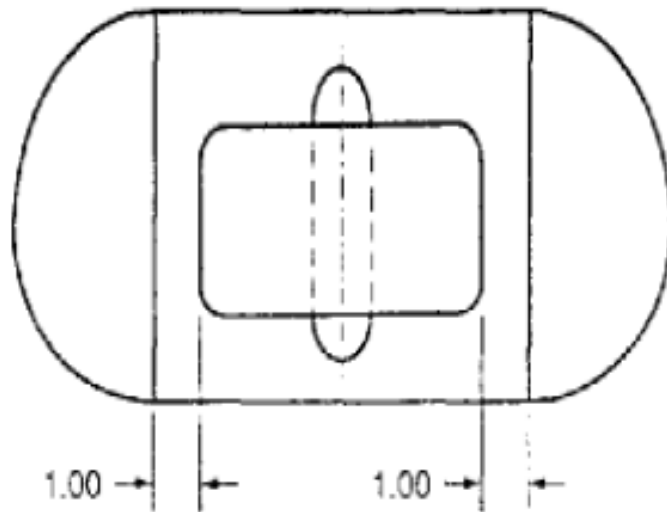


Isometric view
Scale: 1:3



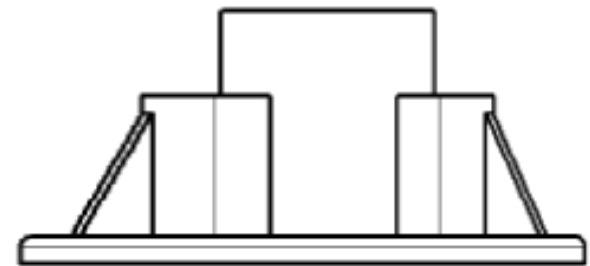
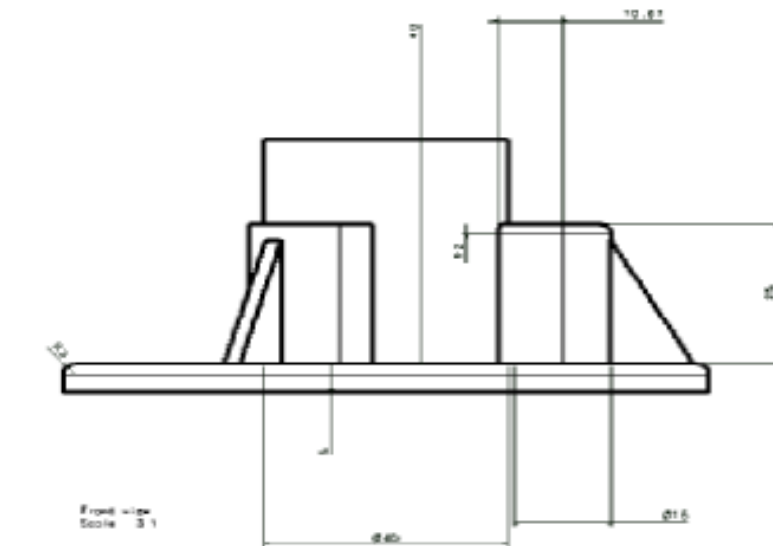
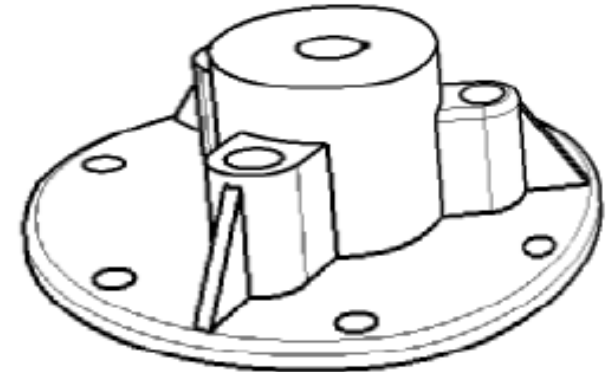
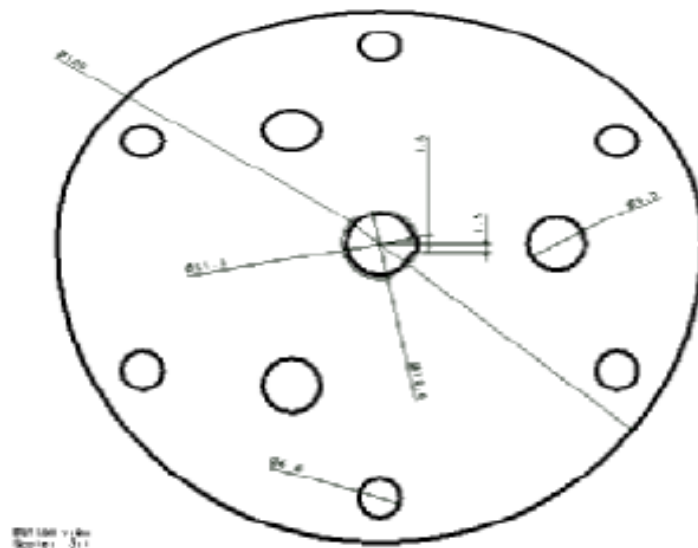
Left view
Scale: 1:2

Example 34

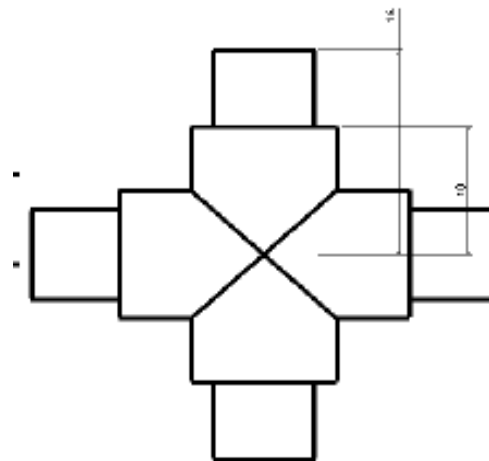


ALL FILLETS AND ROUNDS R.50"

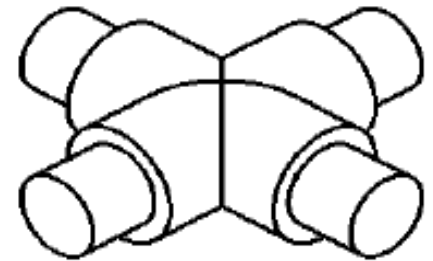
Example 35



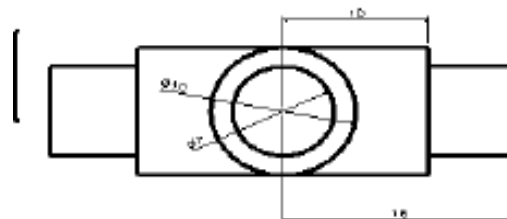
Example 36



Top view
Scale: 1:1



Isometric view
Scale: 1:1

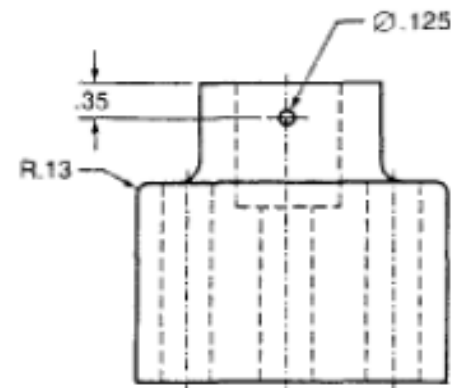
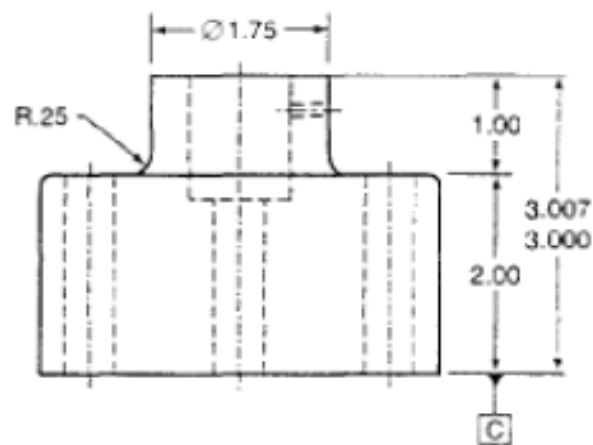
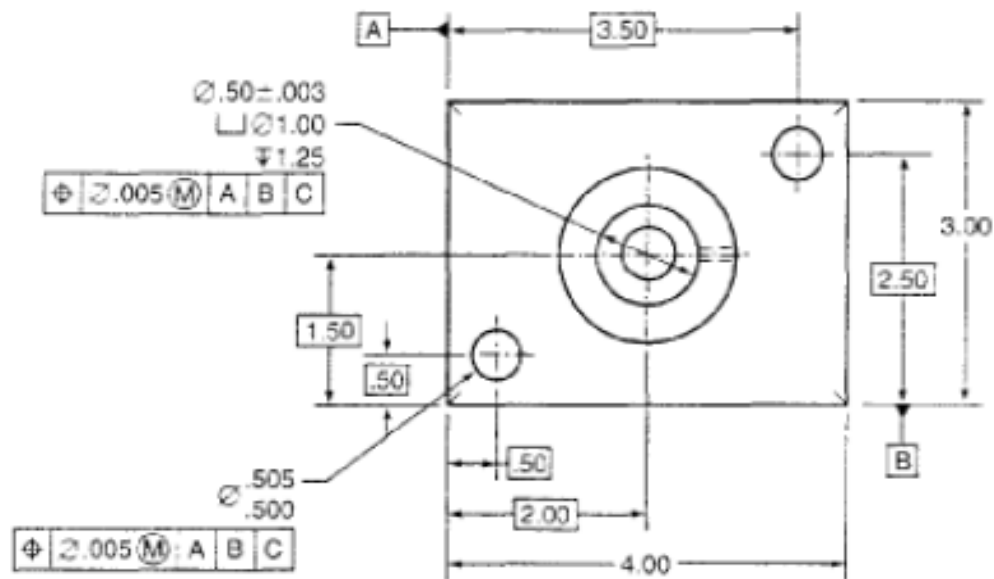


Front view
Scale: 1:1



Left view
Scale: 1:1

Example 37

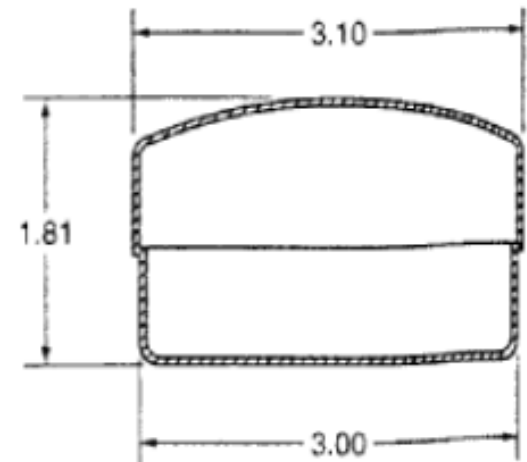
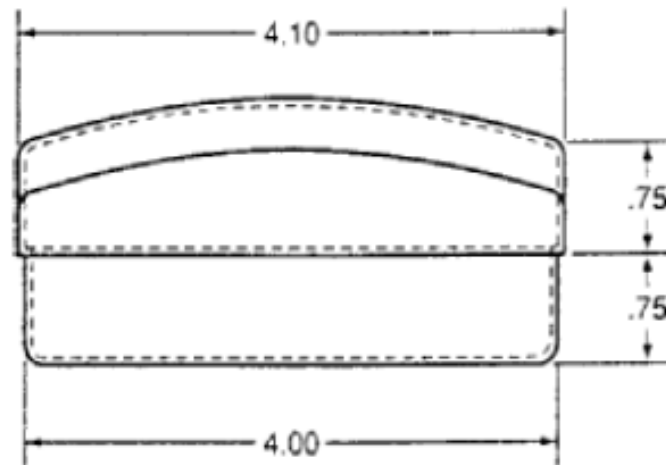
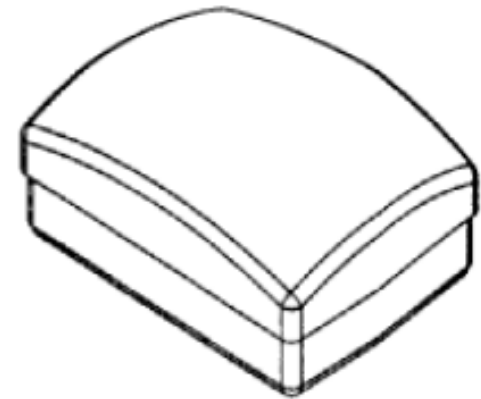


Example Assembly **38**

Example Assembly **39**

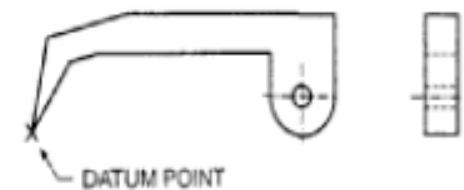
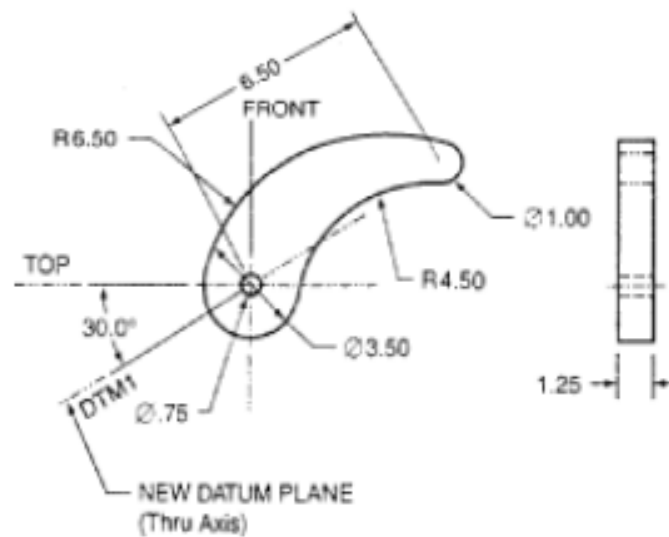
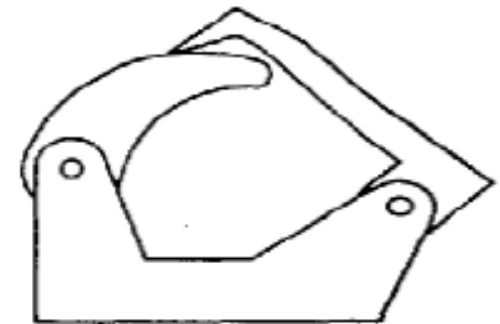
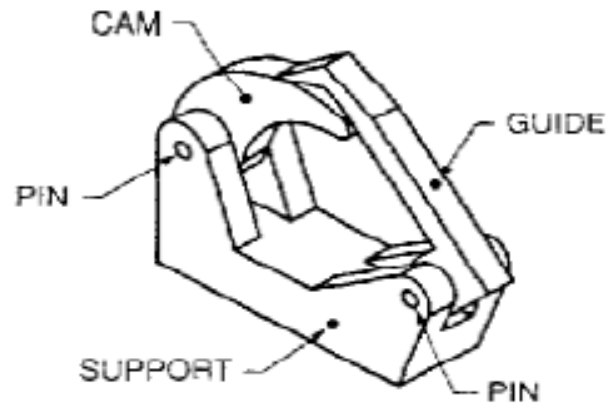
**Example
Assembly**

40

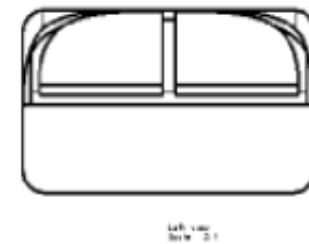
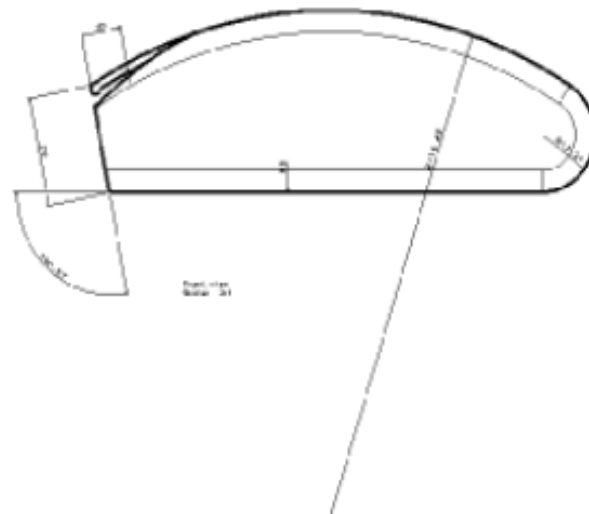
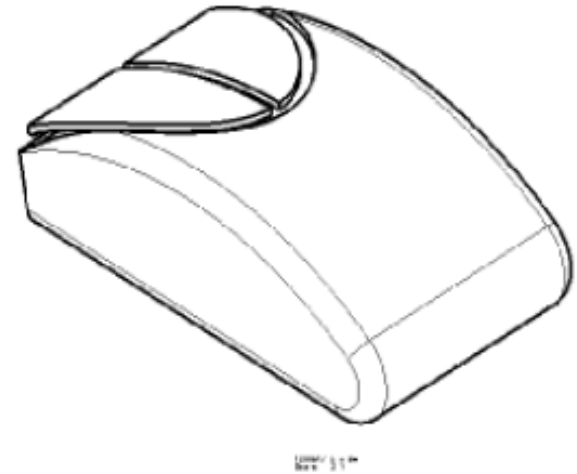
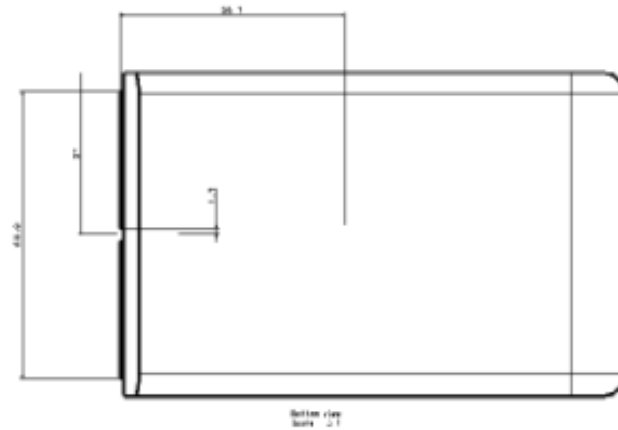


ALL FILLETS AND ROUNDS R.15"
PART WALL THICKNESS = .05"

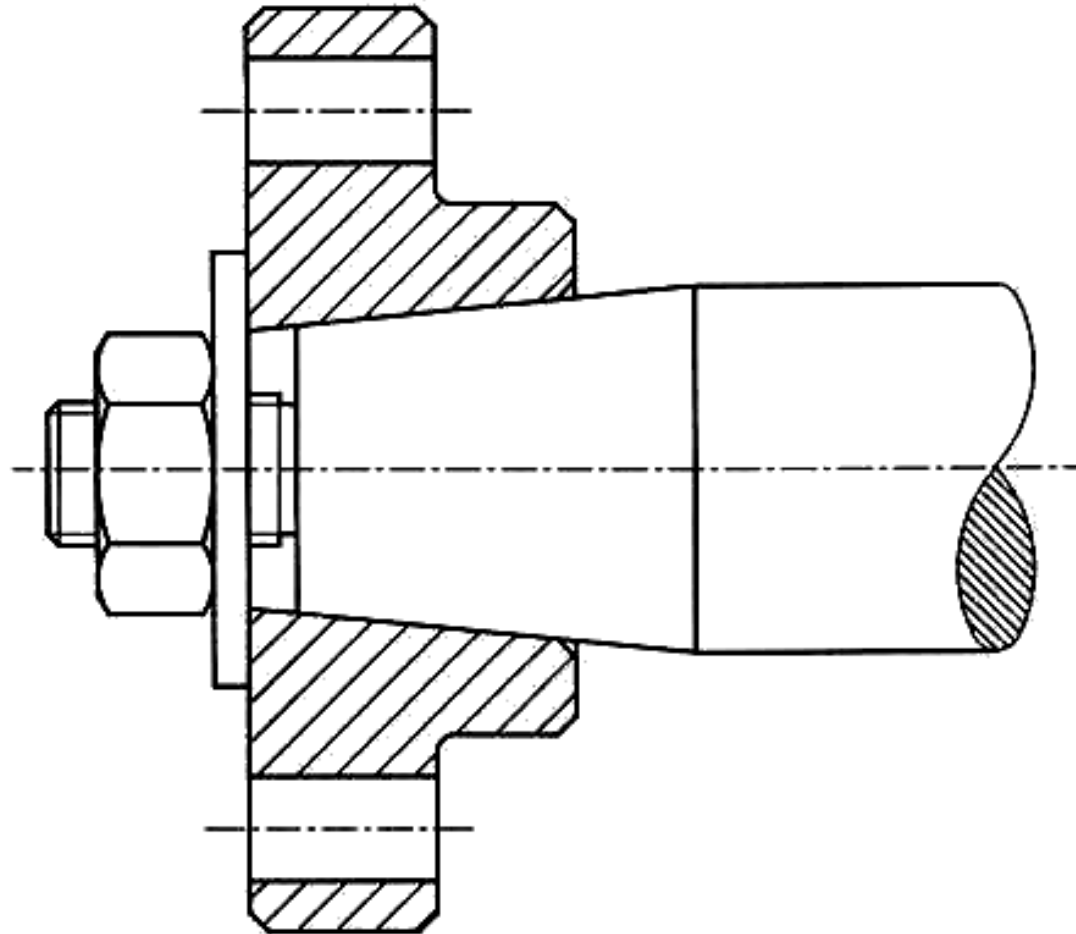
Example Assembly 41



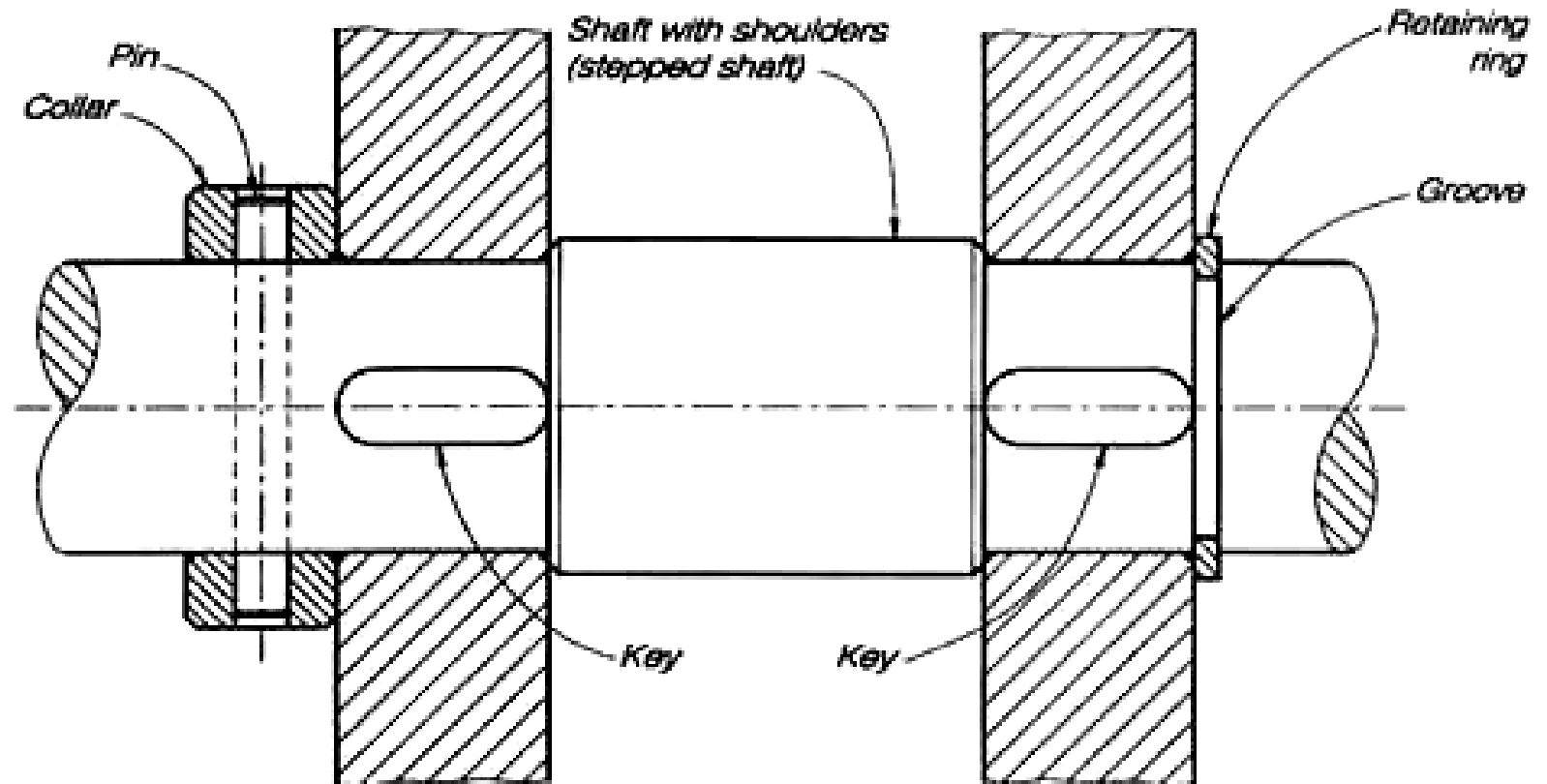
Example Assembly 42



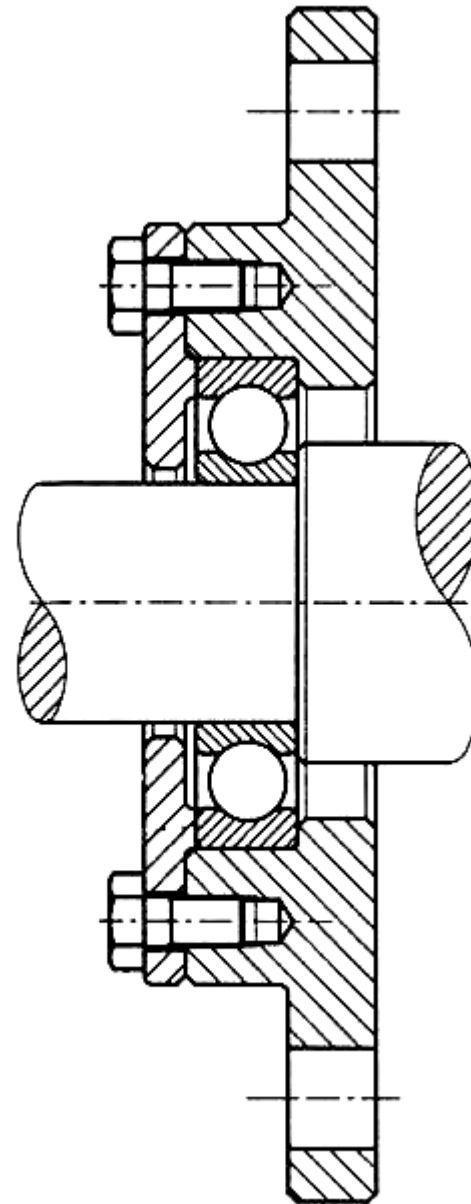
Example **43**
Assembly



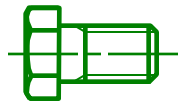
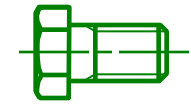
Example Assembly 44



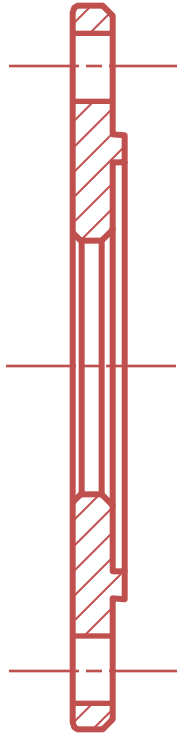
***Example
Assembly*** **45**



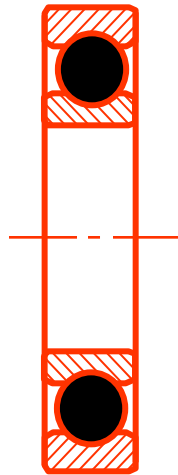
EXAMPLE



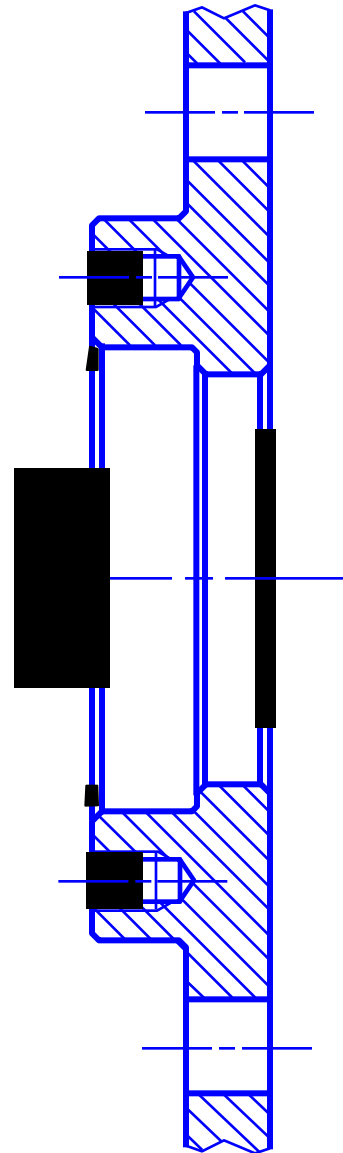
Cap
screw



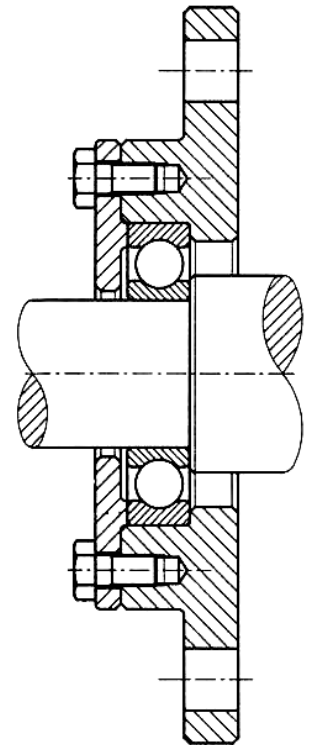
Cover
plate



Bearing

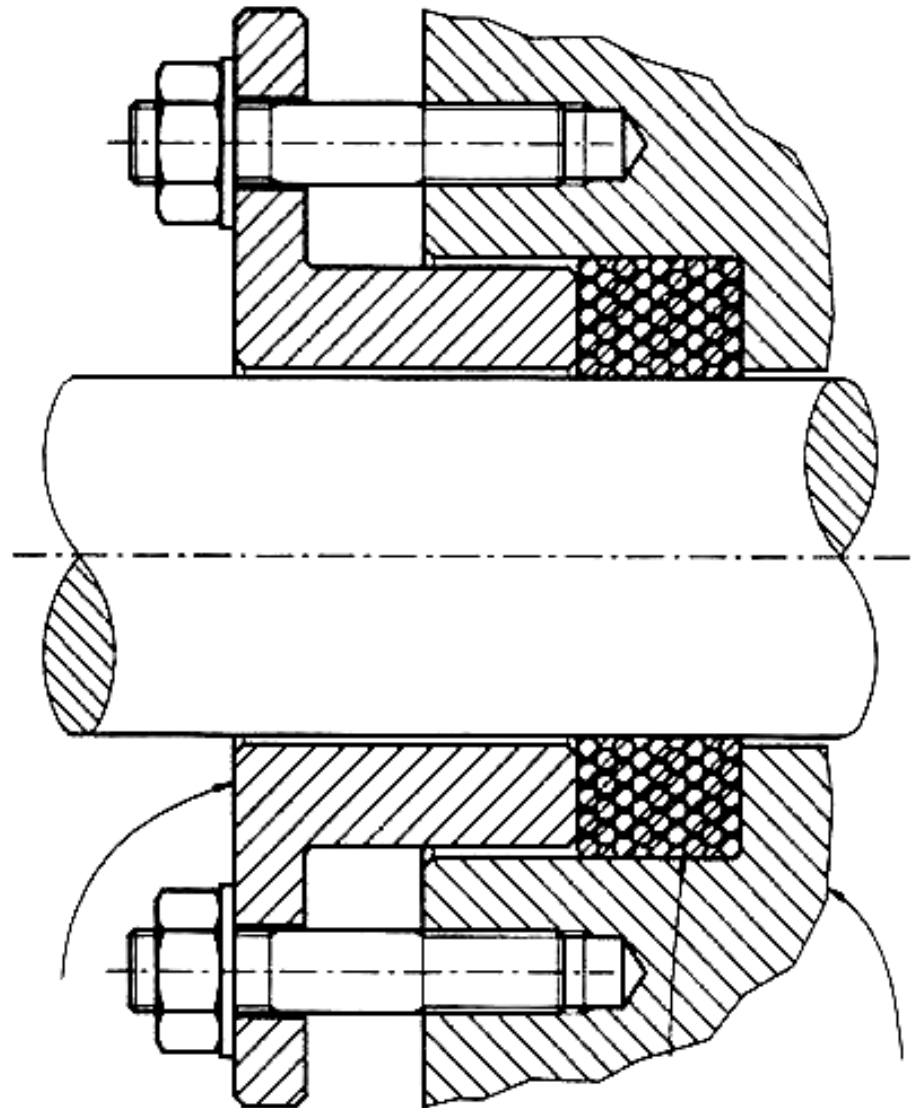


Housing



Shaft

Example **46**
Assembly



Example Assembly 47

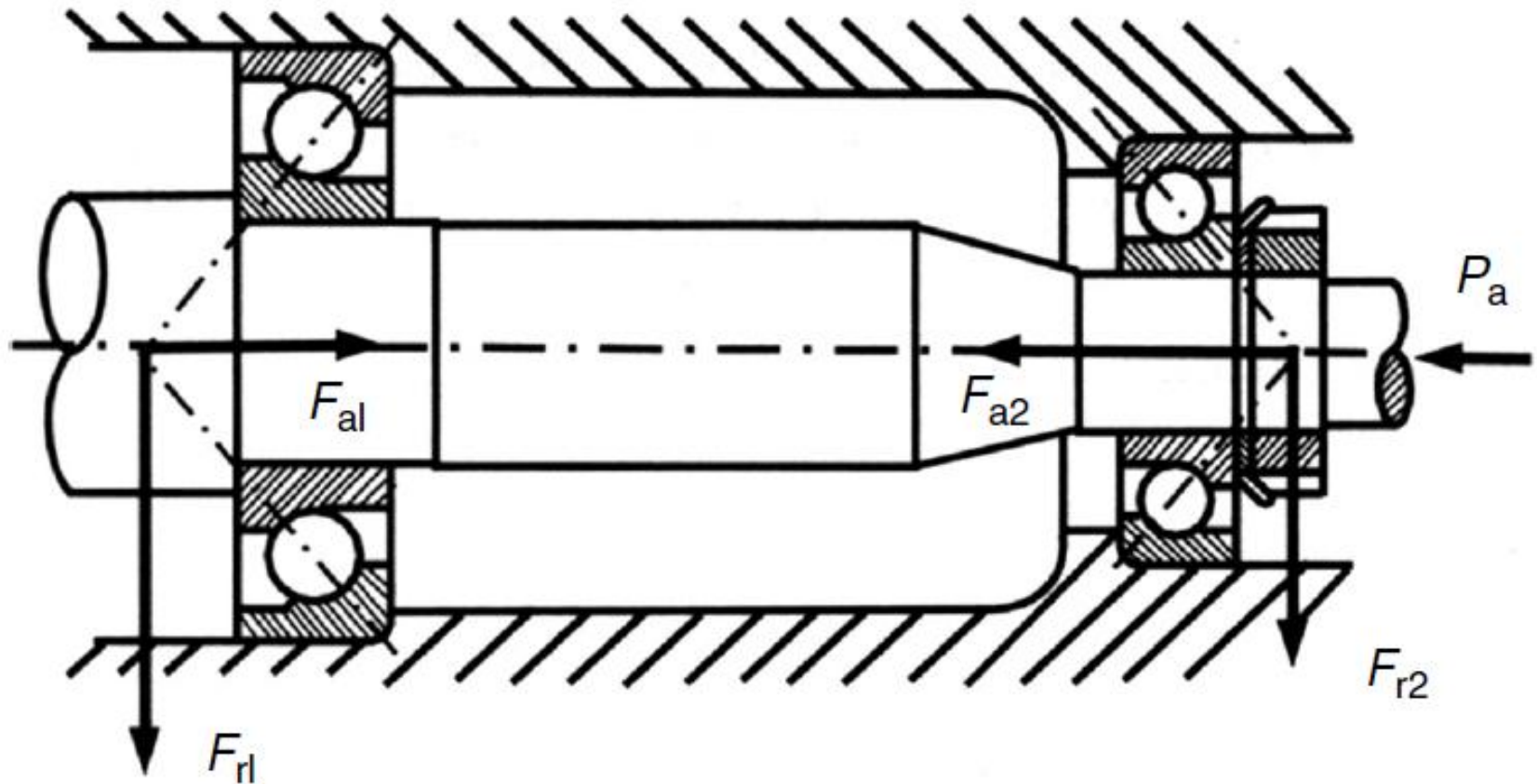


FIGURE 9.1 Rigid shaft mounted in back-to-back angular-contact ball bearings subjected to combined radial and thrust loadings.

Example Assembly 48

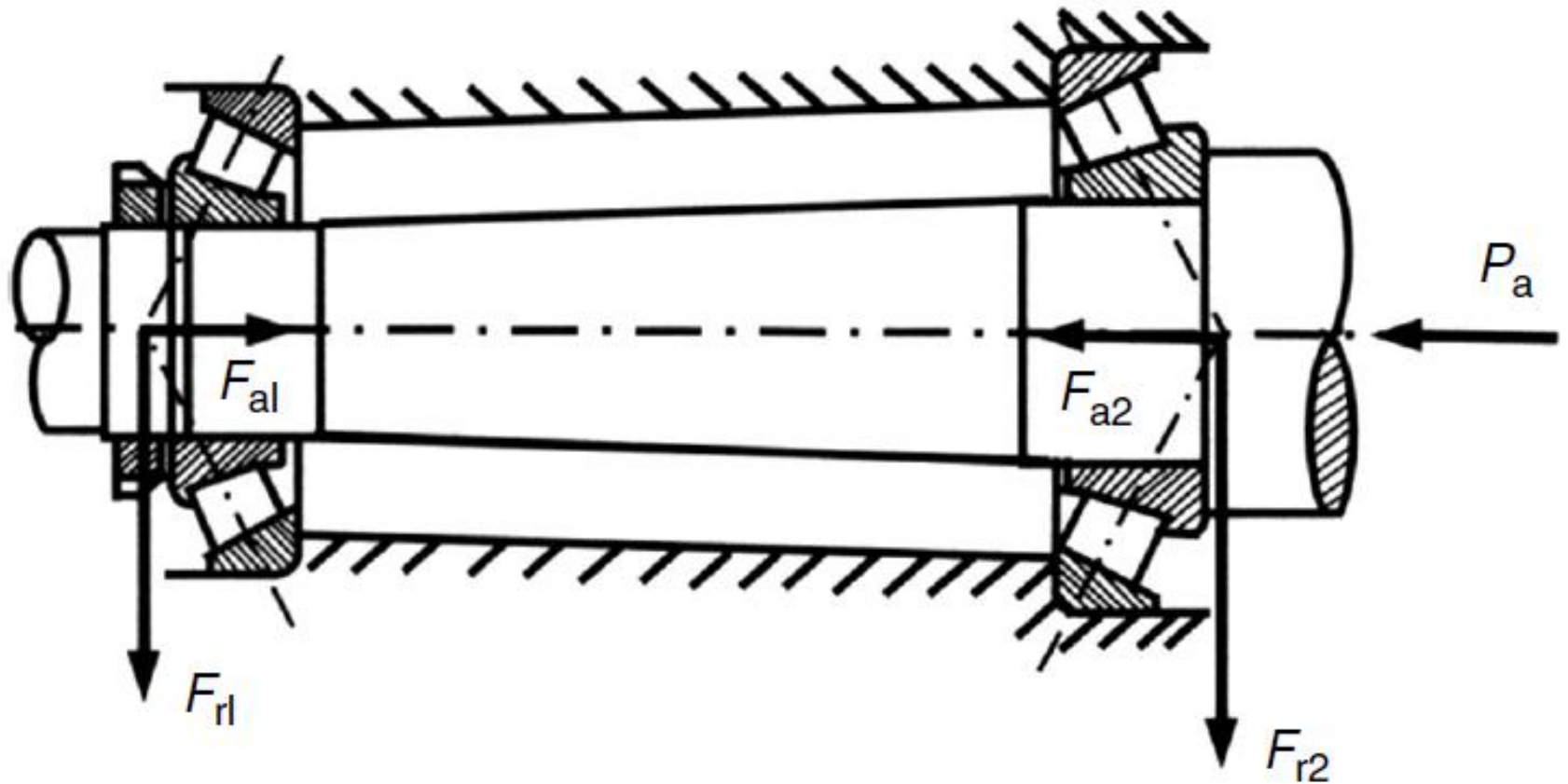


FIGURE 9.2 Rigid shaft mounted in back-to-back tapered roller bearings subjected to combined radial and thrust loadings.

Example Assembly 49

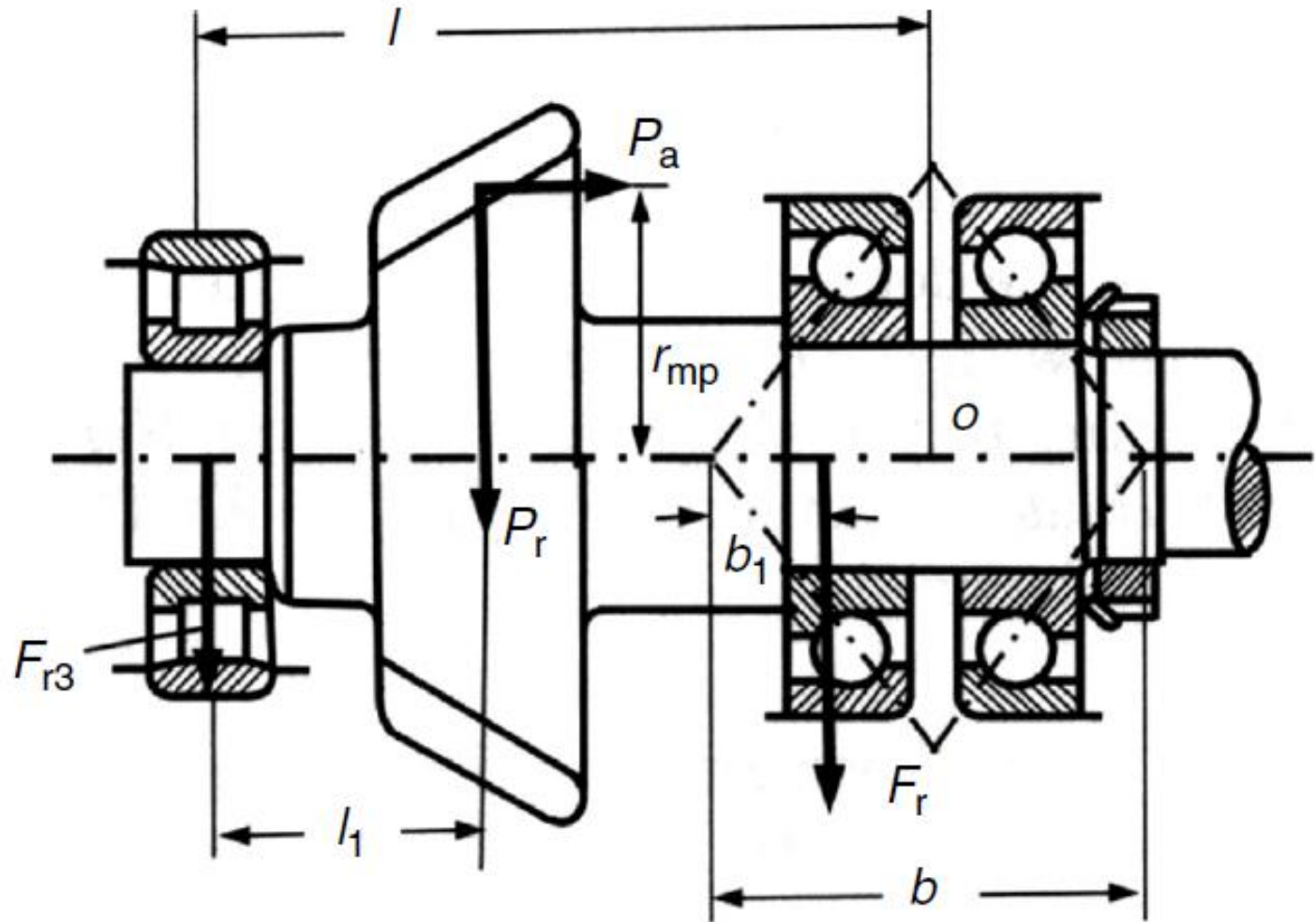


FIGURE 9.6 Example of three-bearing shaft system with a rigid shaft.

Example Assembly 50

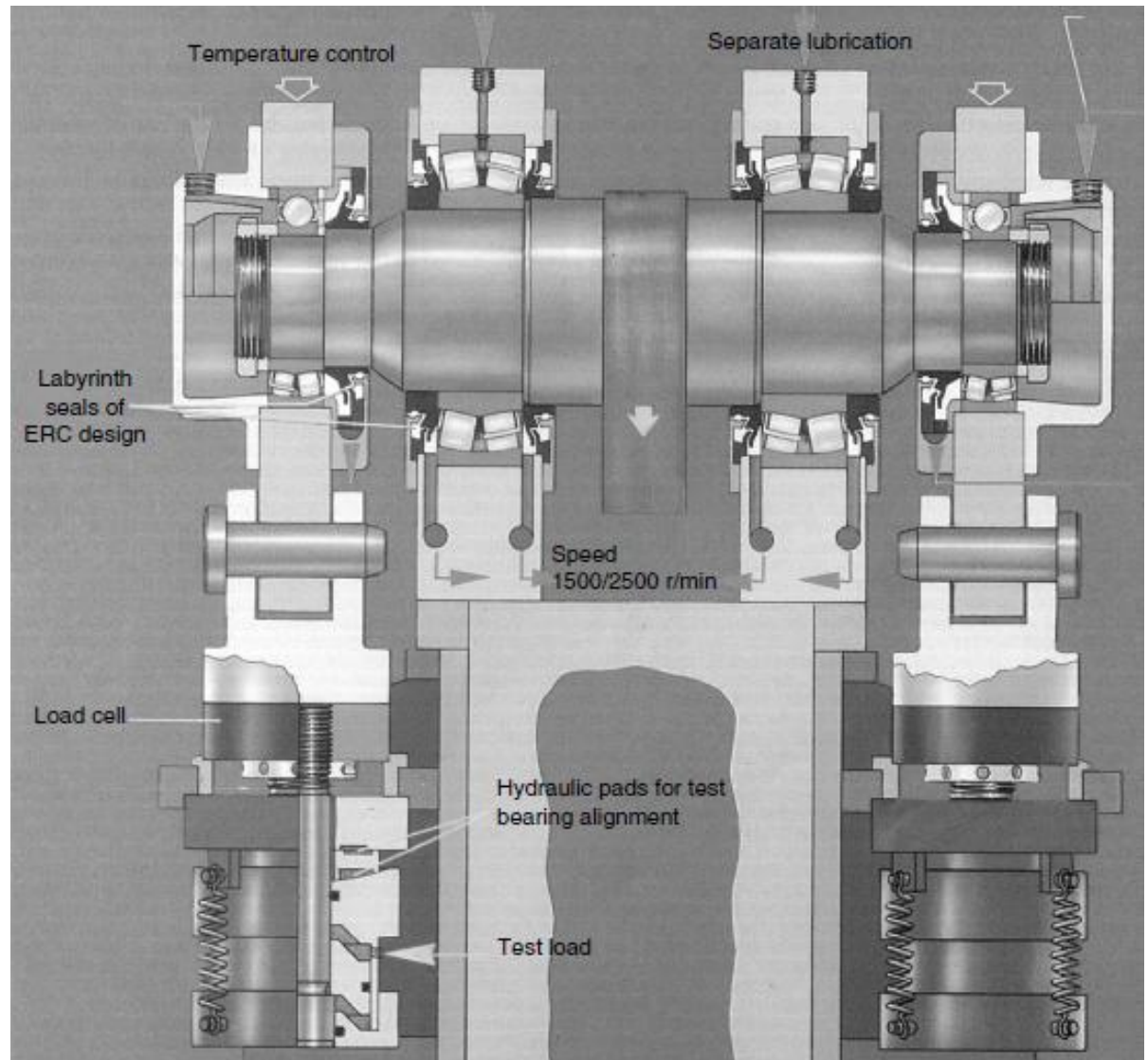


FIGURE 11.6 Schematic diagram of an SKF R3 endurance test rig. (Courtesy of SKF.)

Example **51** *Assembly*

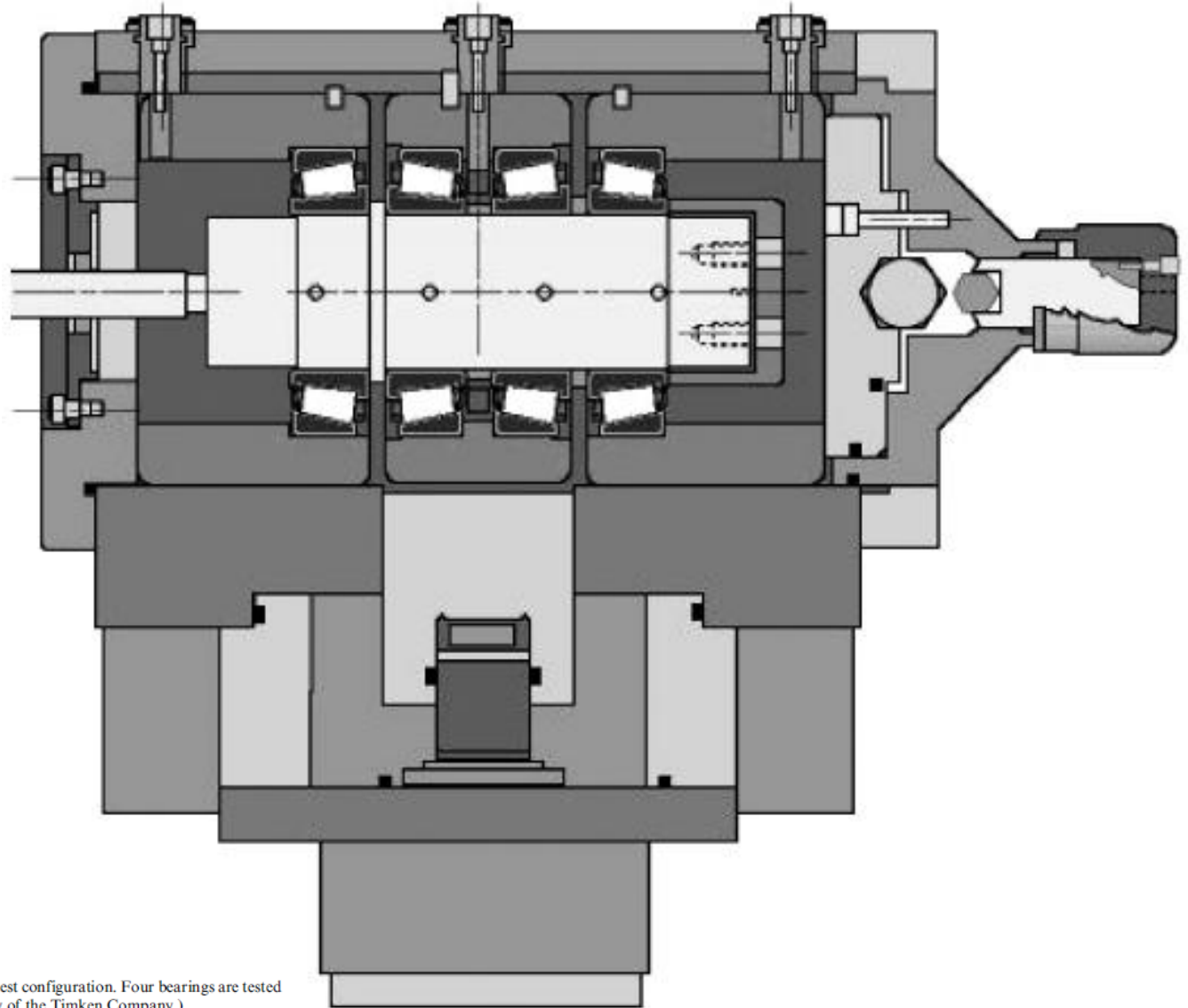


FIGURE 11.7 Schematic diagram of a tapered roller bearing test configuration. Four bearings are tested simultaneously under a sudden death test strategy. (Courtesy of the Timken Company.)

Example **51-2** ***Assembly***

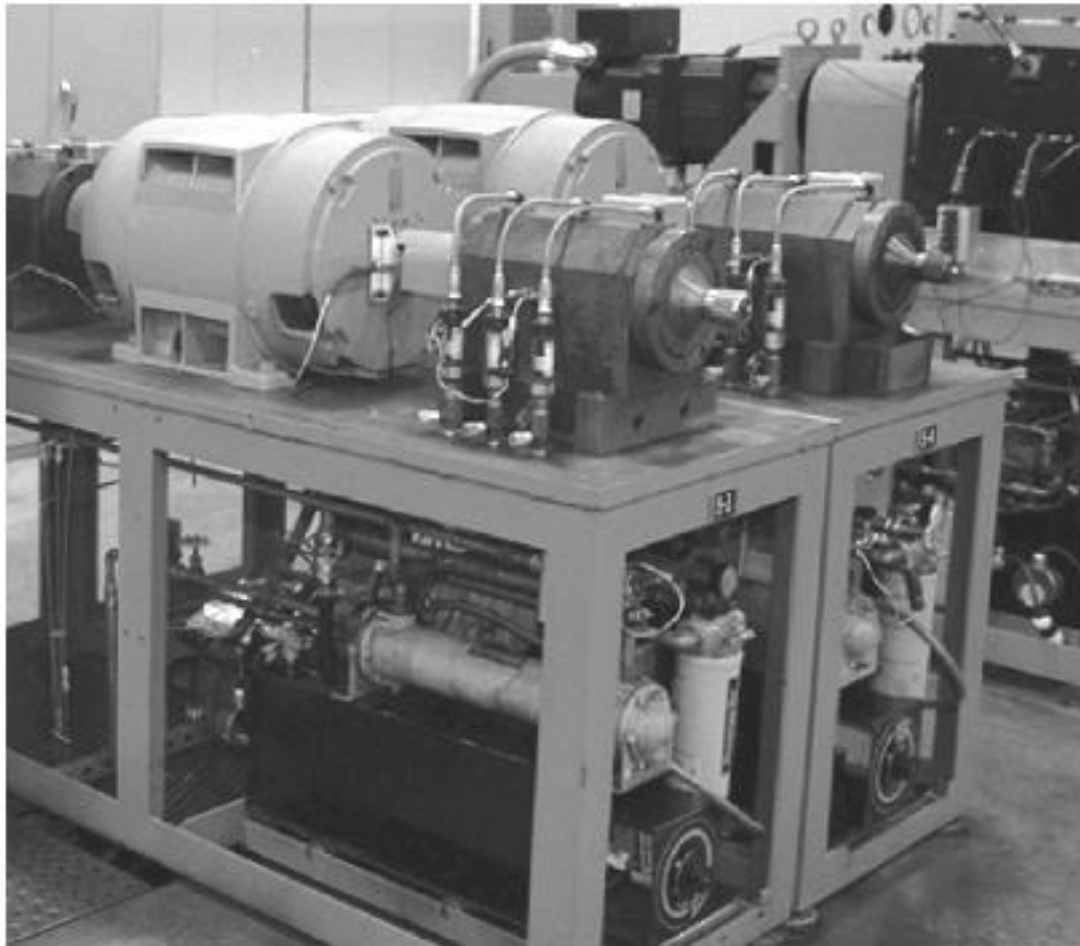


FIGURE 11.8 Photograph of a four-bearing test rig. The test housing can be used to test spherical roller and cylinder roller bearings as well as tapered roller bearings. (Courtesy of the Timken Company.)

Example Assembly **52**

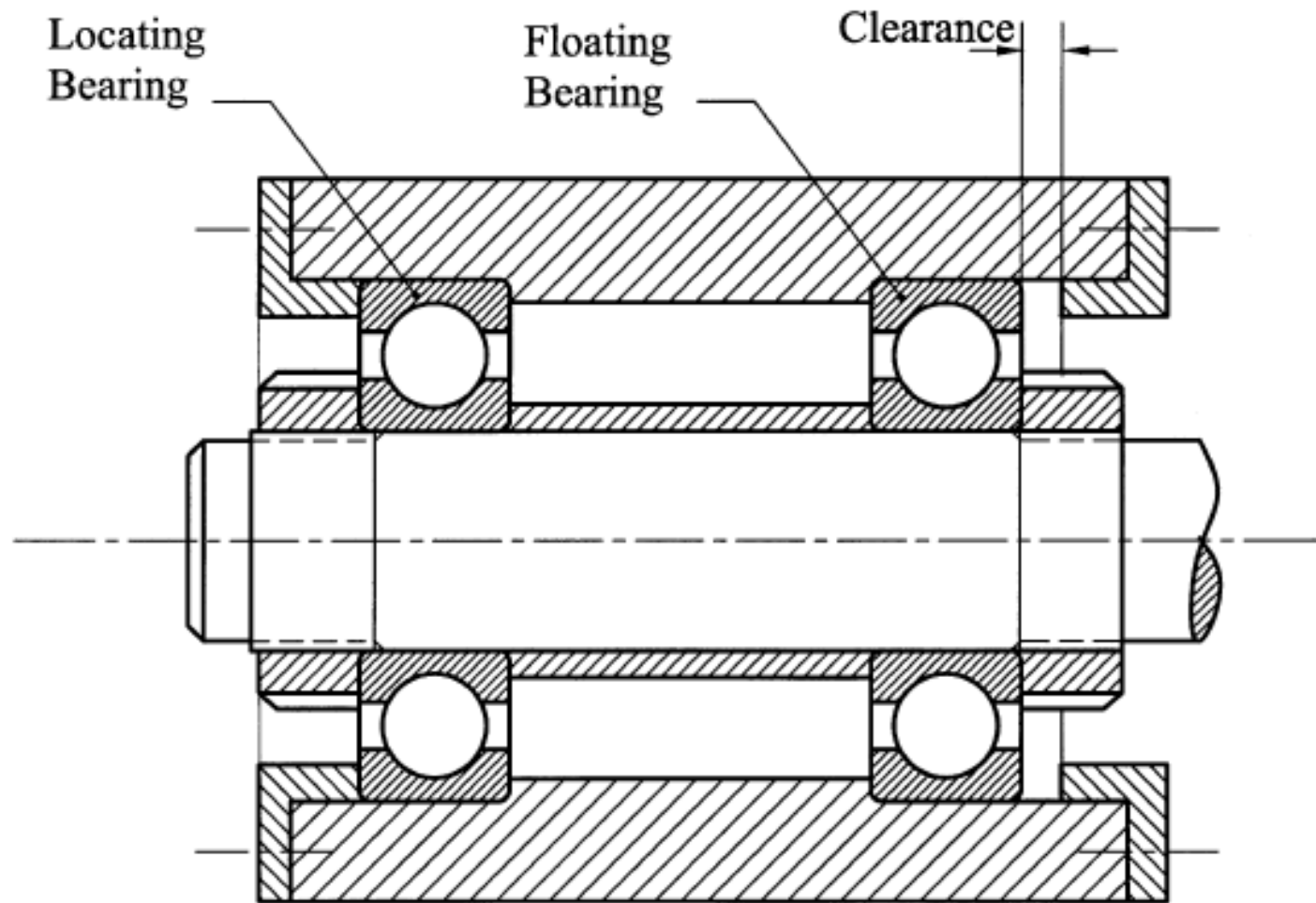


FIG. 13-7 Locating/floating bearing arrangement.

Example Assembly 53-a

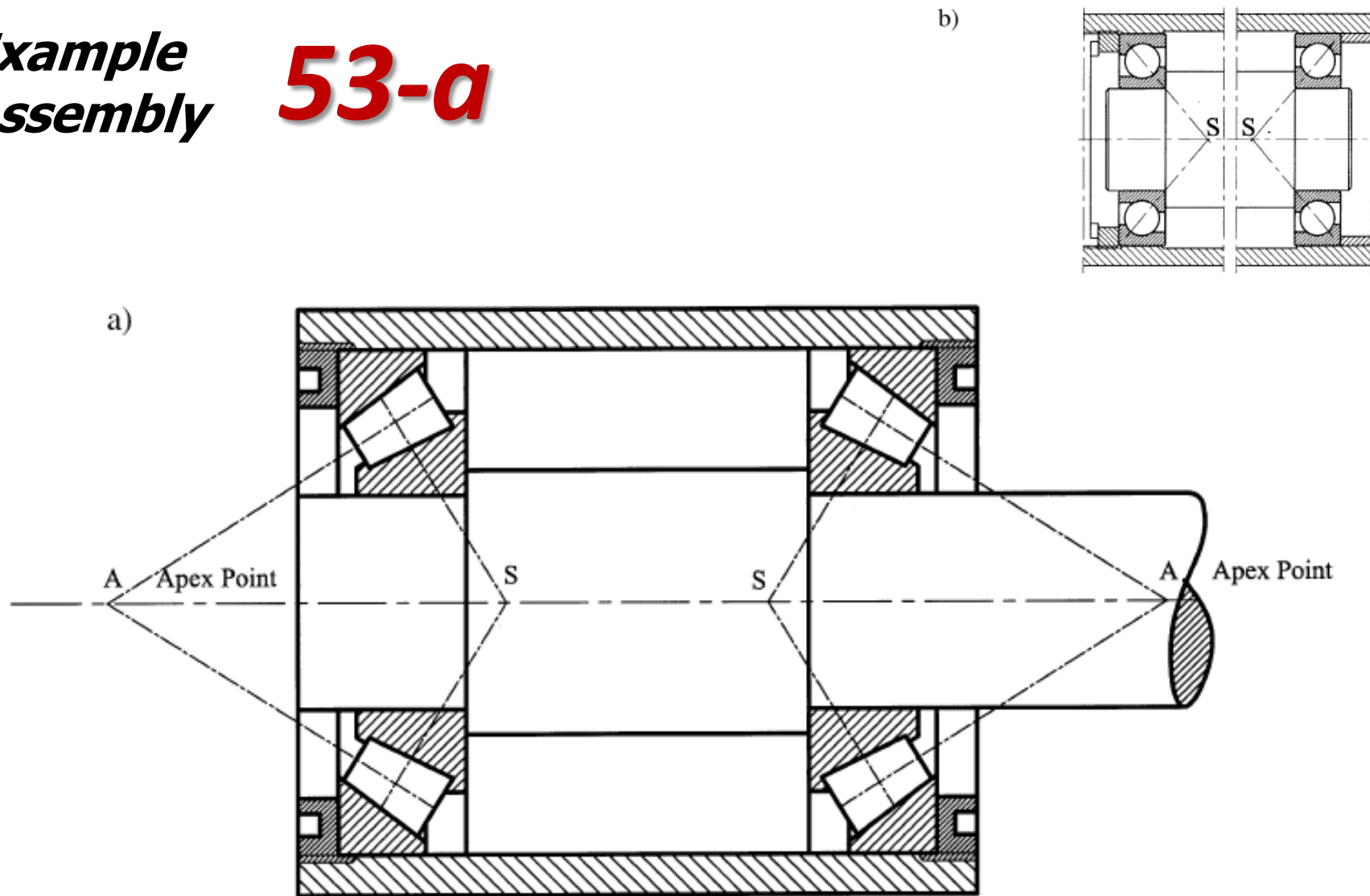


FIG. 13-8 (a) Adjustable arrangement, apex points outside the two bearings. (b) Similar adjustable arrangement for angular contact bearings.

Example ***53-b*** ***Assembly***

b)

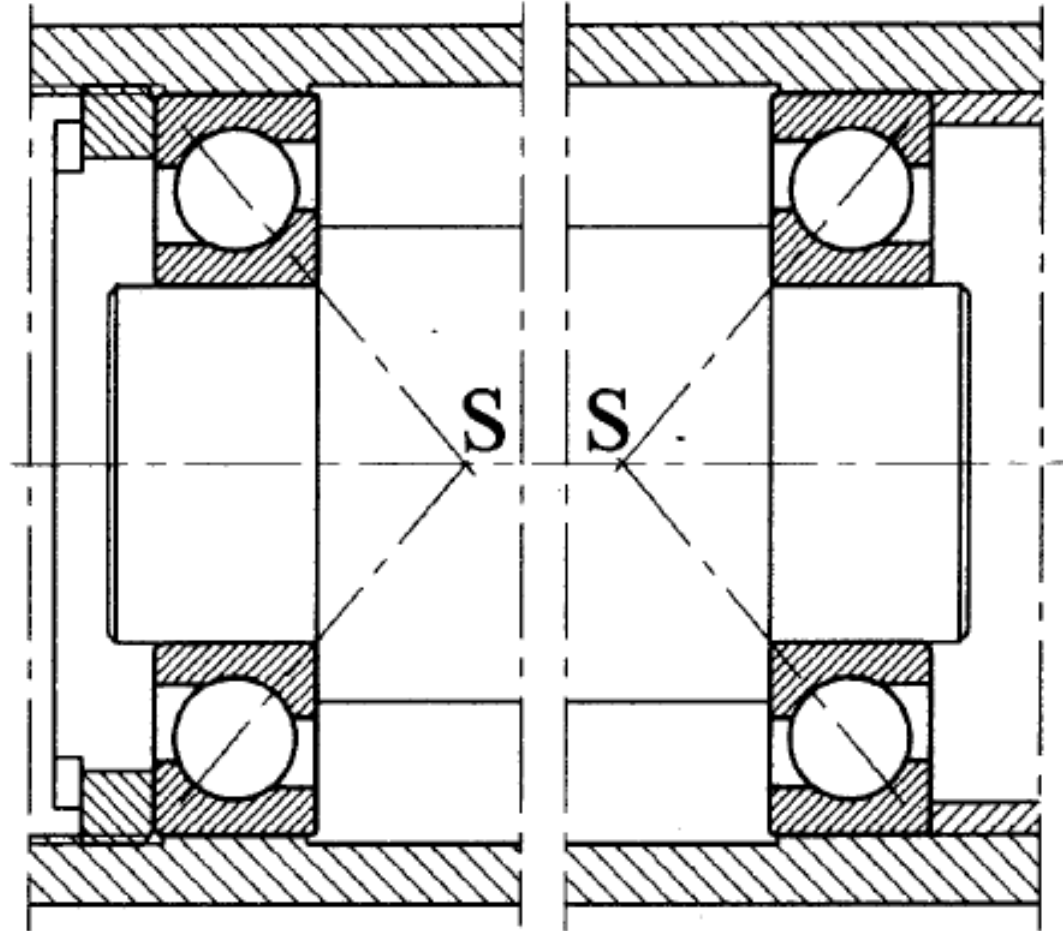


FIG. 13-8 (a) Adjustable arrangement, apex points outside the two bearings. (b) Similar adjustable arrangement for angular contact bearings.

Example **54-d** **Assembly**

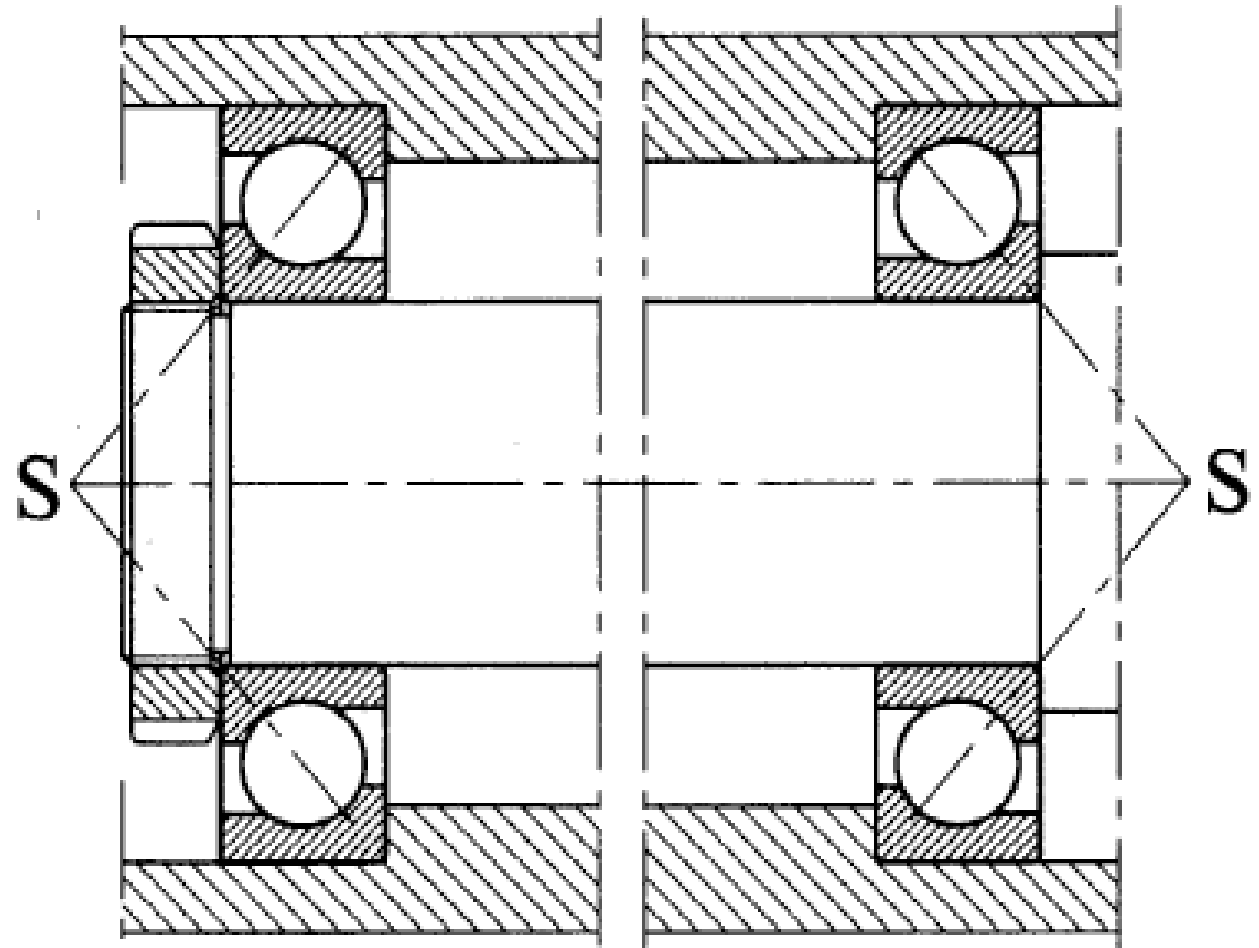
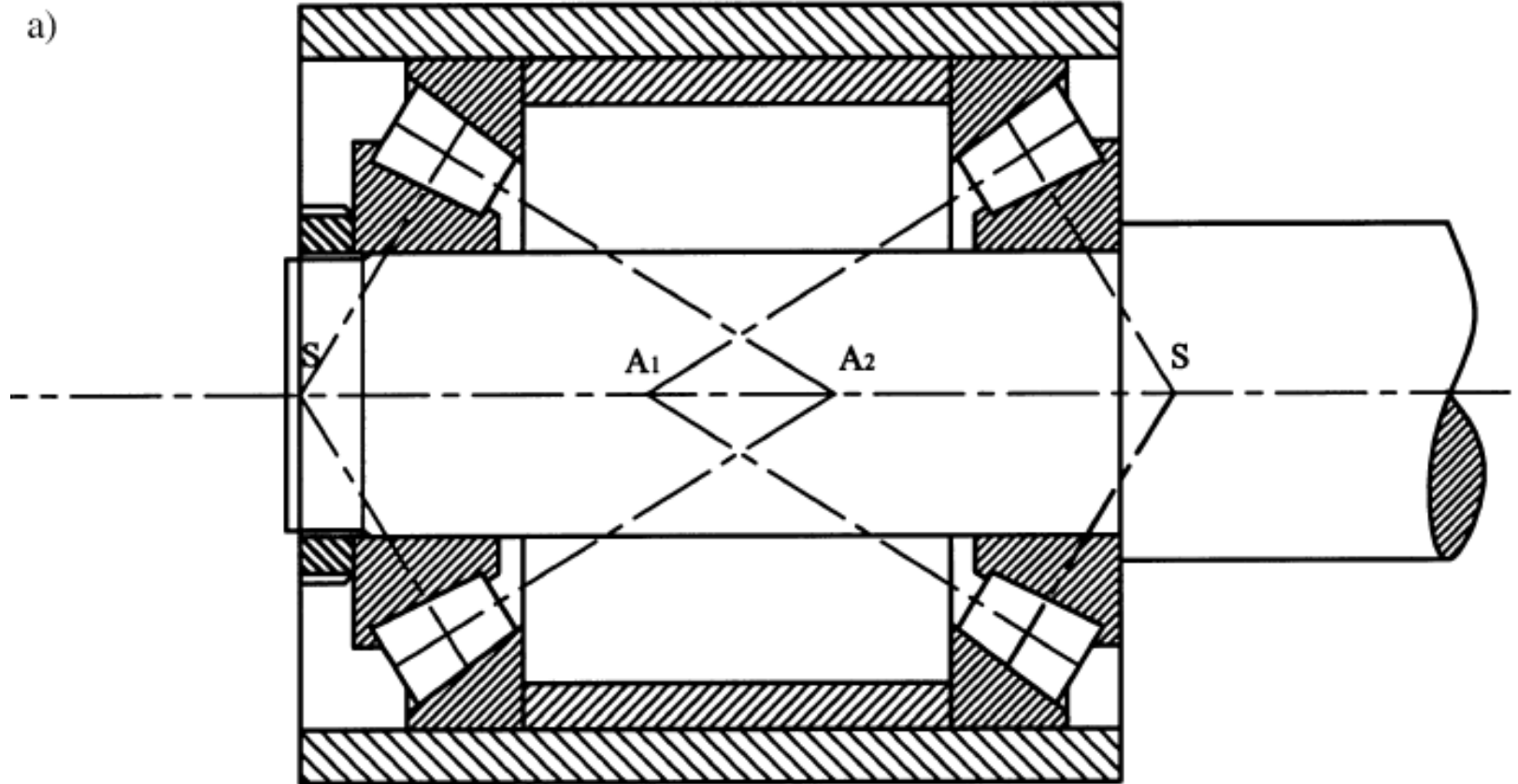


FIG. 13-9 (a) Adjustable arrangement, apex points between the bearings overlap. (b) Adjustable arrangement, apex points coincide between the two bearings. (c) Adjustable arrangement, apex points apart between the bearings. (d) Similar adjustable arrangements for angular contact bearings.

Example **54-a**
Assembly



Example Assembly **54-a,b,c,d**

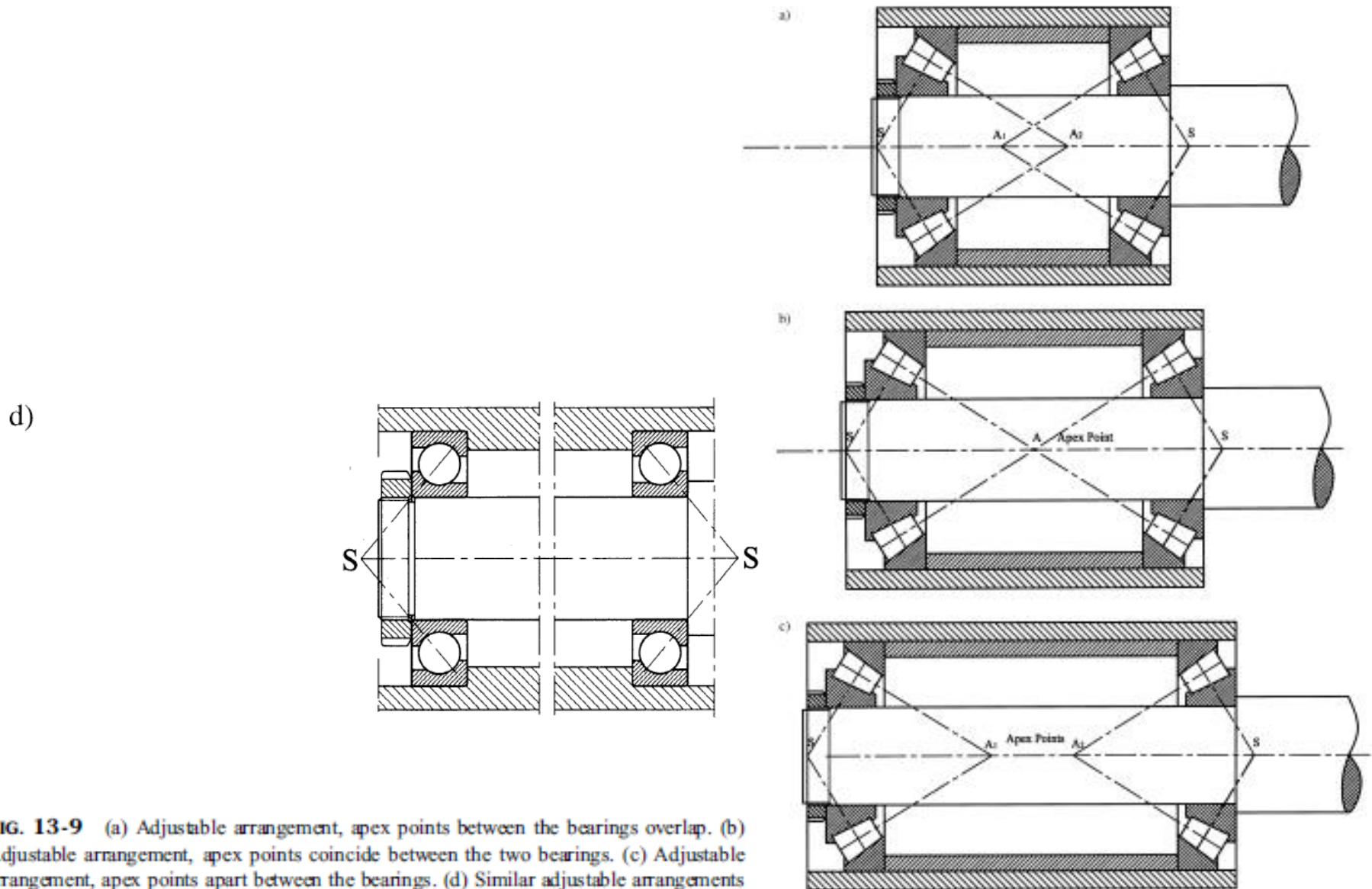


FIG. 13-9 (a) Adjustable arrangement, apex points between the bearings overlap. (b) Adjustable arrangement, apex points coincide between the two bearings. (c) Adjustable arrangement, apex points apart between the bearings. (d) Similar adjustable arrangements for angular contact bearings.

Project **54** ***Assembly***

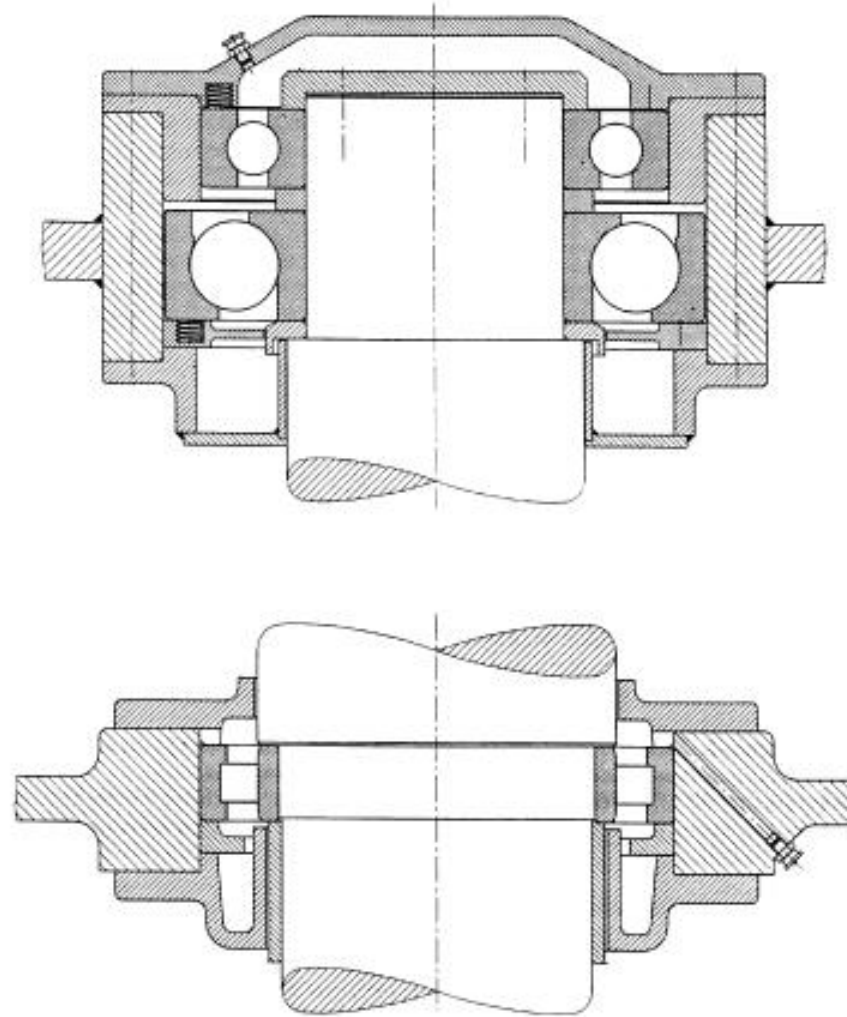


FIG. 13-10a Vertical pump motor. (From FAG, 1998, with permission of FAG and Handel AG.)

Project Assembly **55**

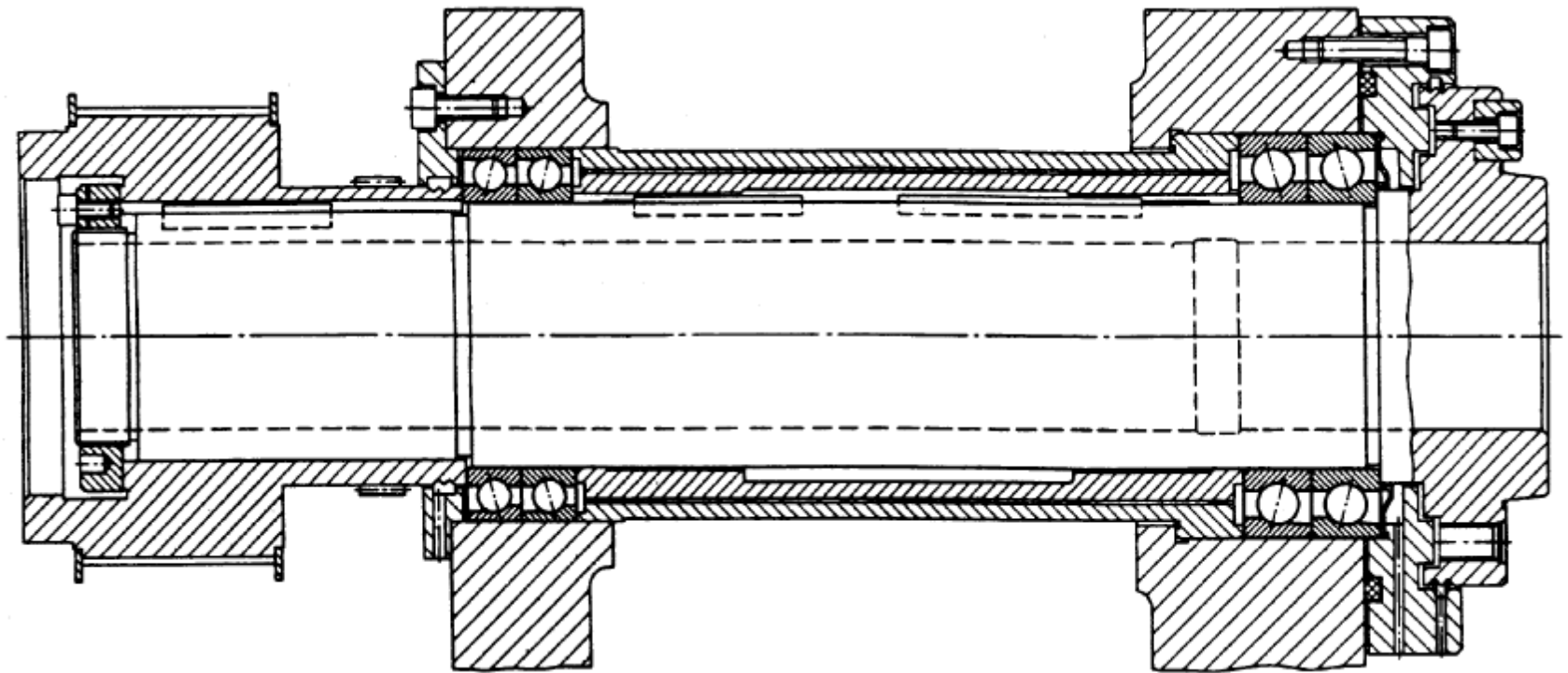


FIG. 13-10b NC-lathe main spindle. (From FAG, 1998, with permission of FAG OEM and Handel AG).

Project Assembly **56**

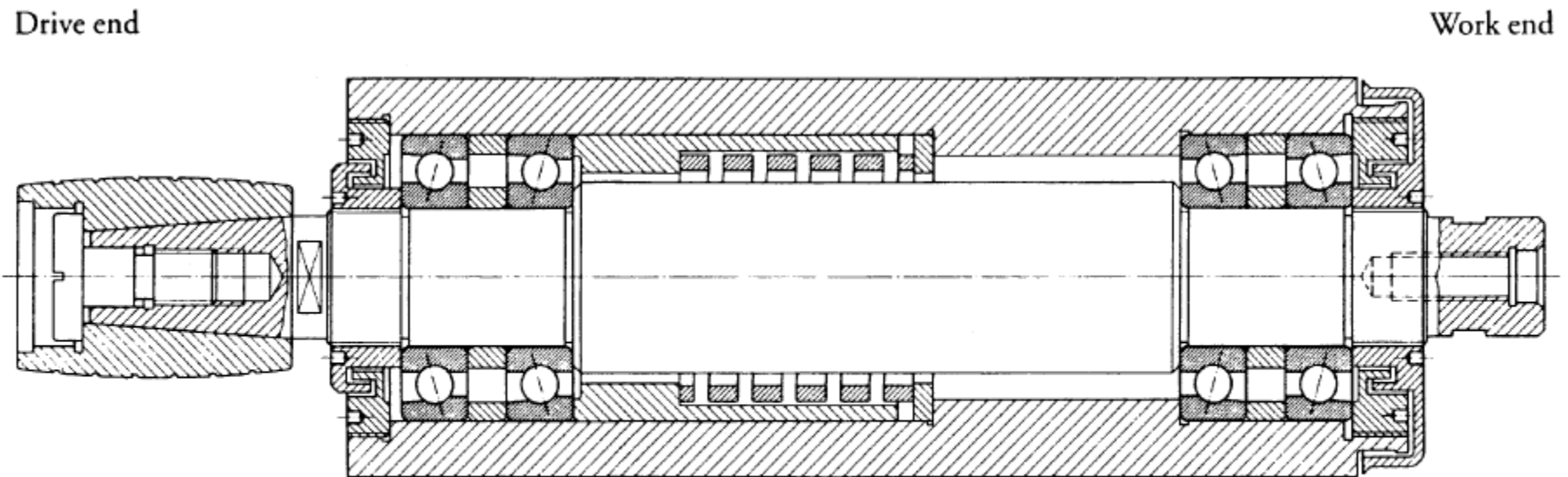


FIG. 13-10c Bore-grinding spindle. (From FAG, 1998, with permission of FAG and Handel AG).

Project Assembly **57**

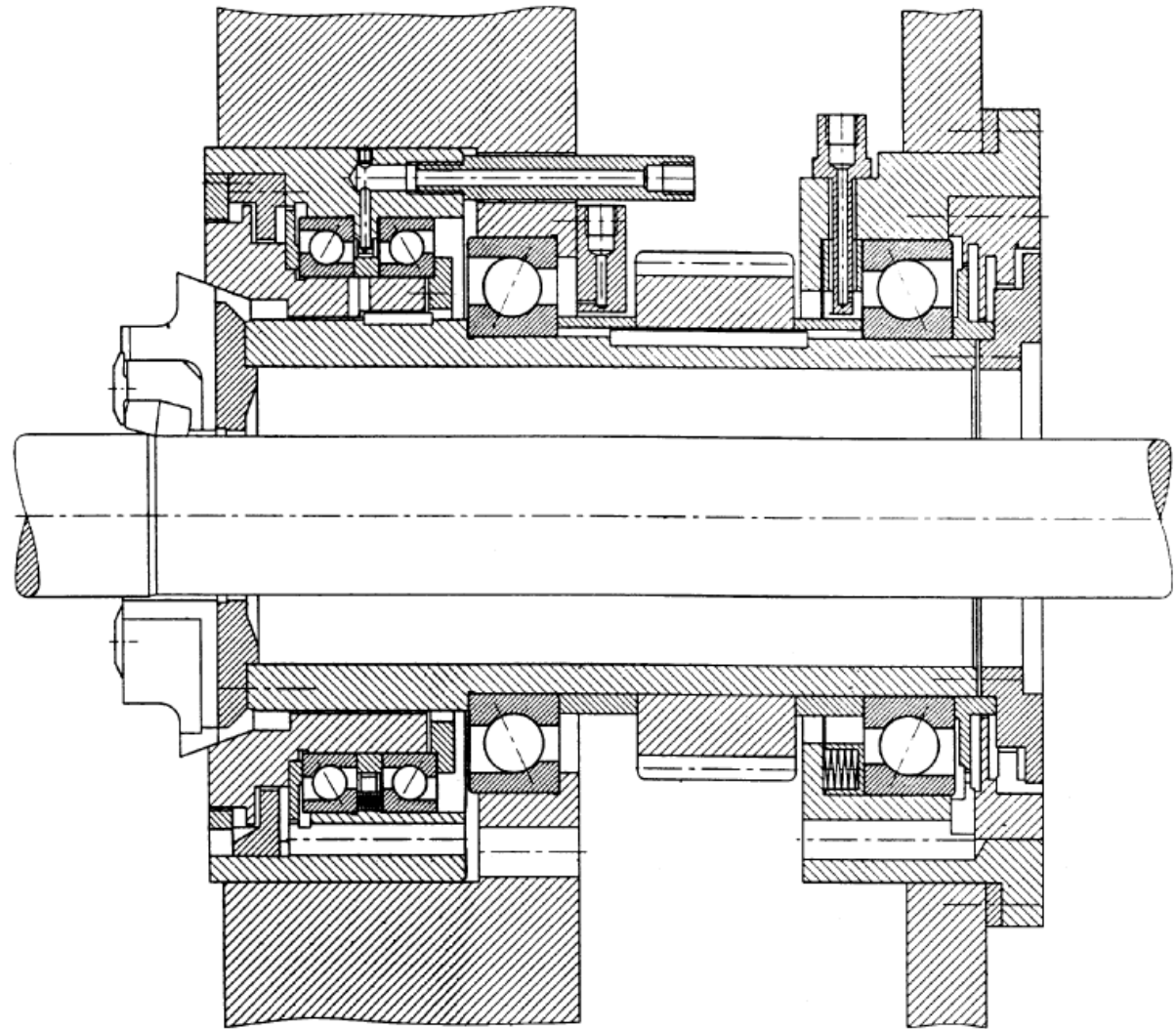


FIG. 13-10d Rough-turning lathe (from FAG, 1998, with permission of Handel AG).

Project Assembly **58**

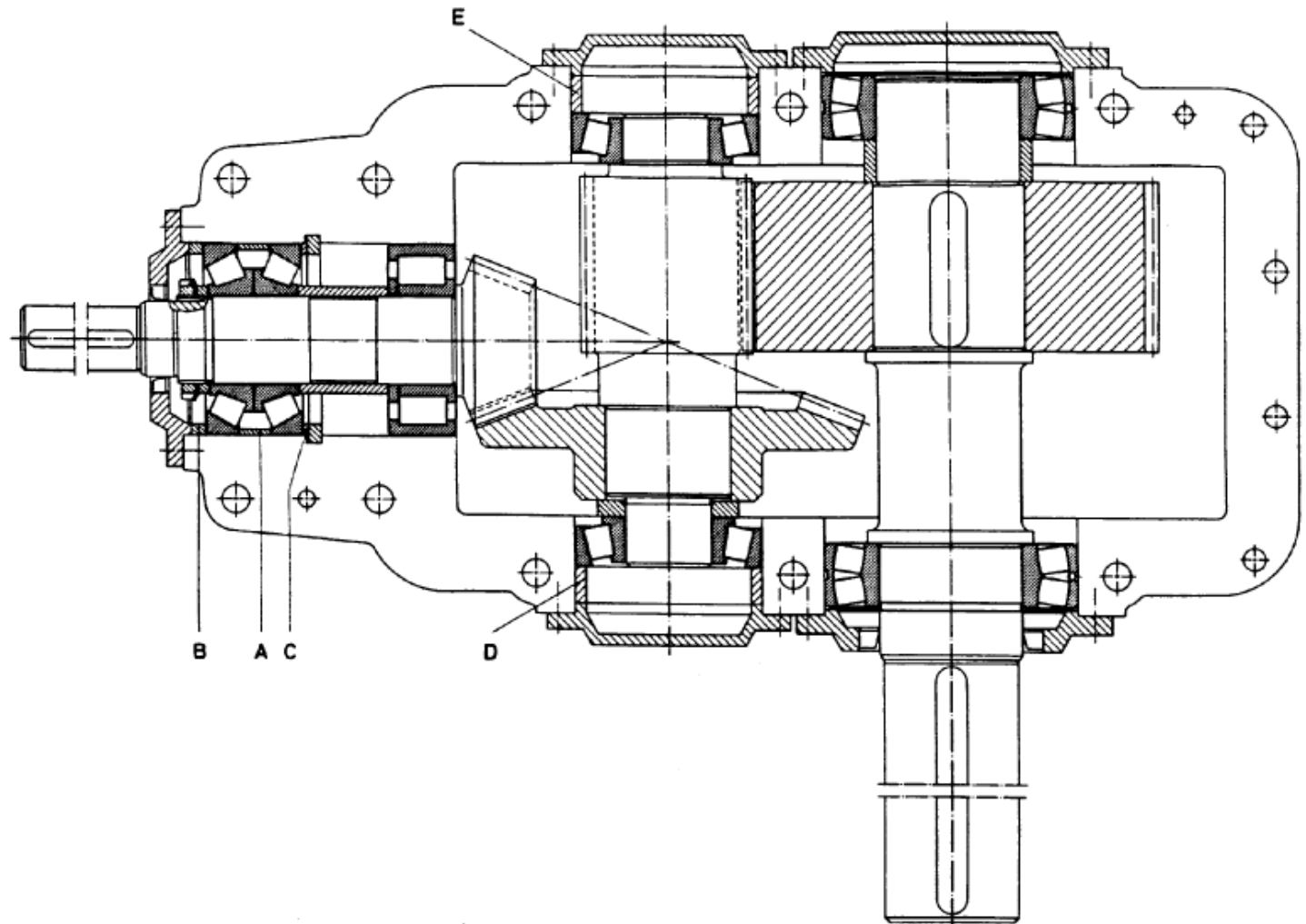


FIG. 13-10e Gearbox (from FAG, 1998, with permission of FAG)

Project Assembly **59**

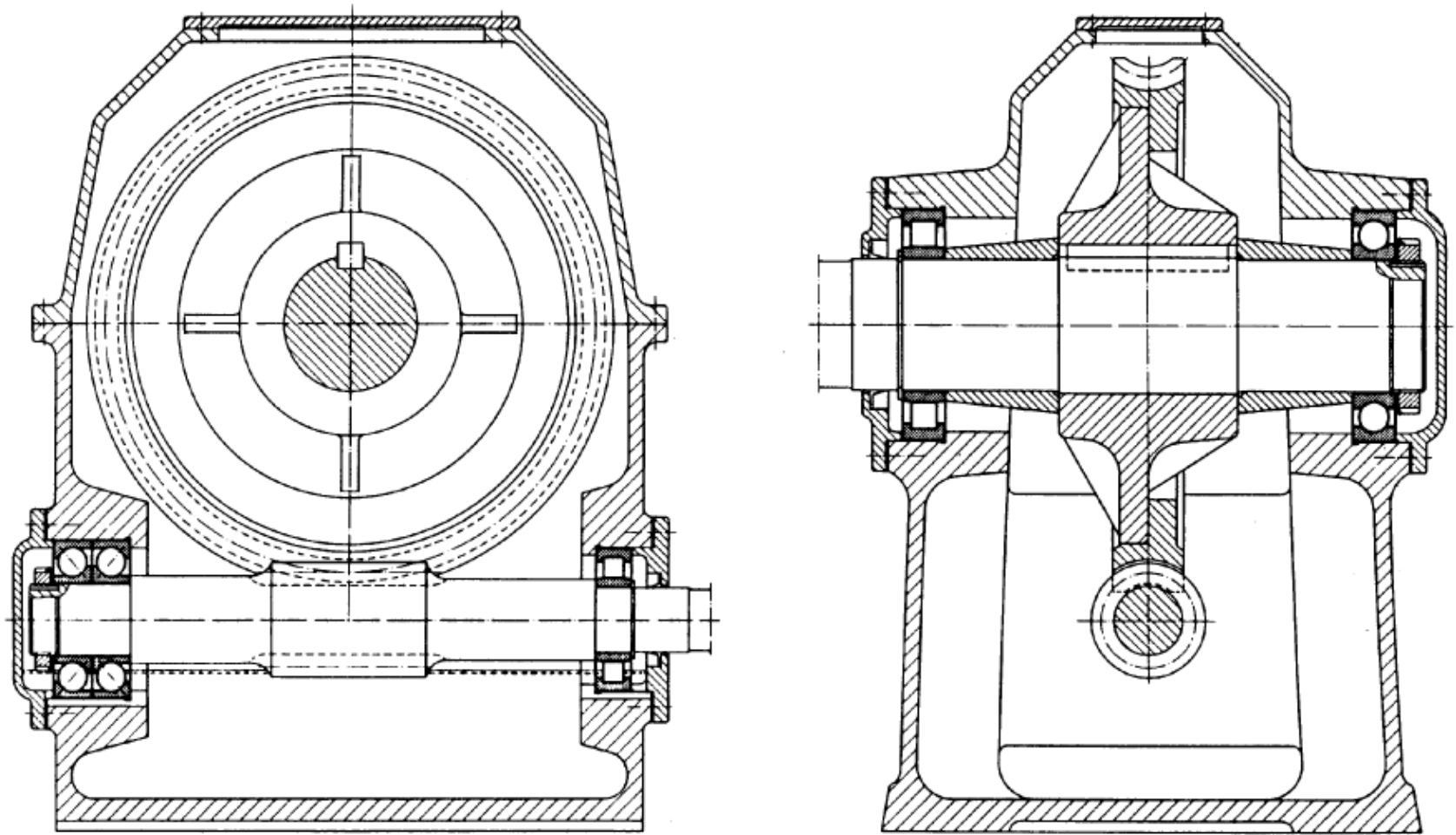


FIG. 13-10f Worm gear (From FAG 1998, with permission of FAG OEM at

***Project
Assembly*** **60**

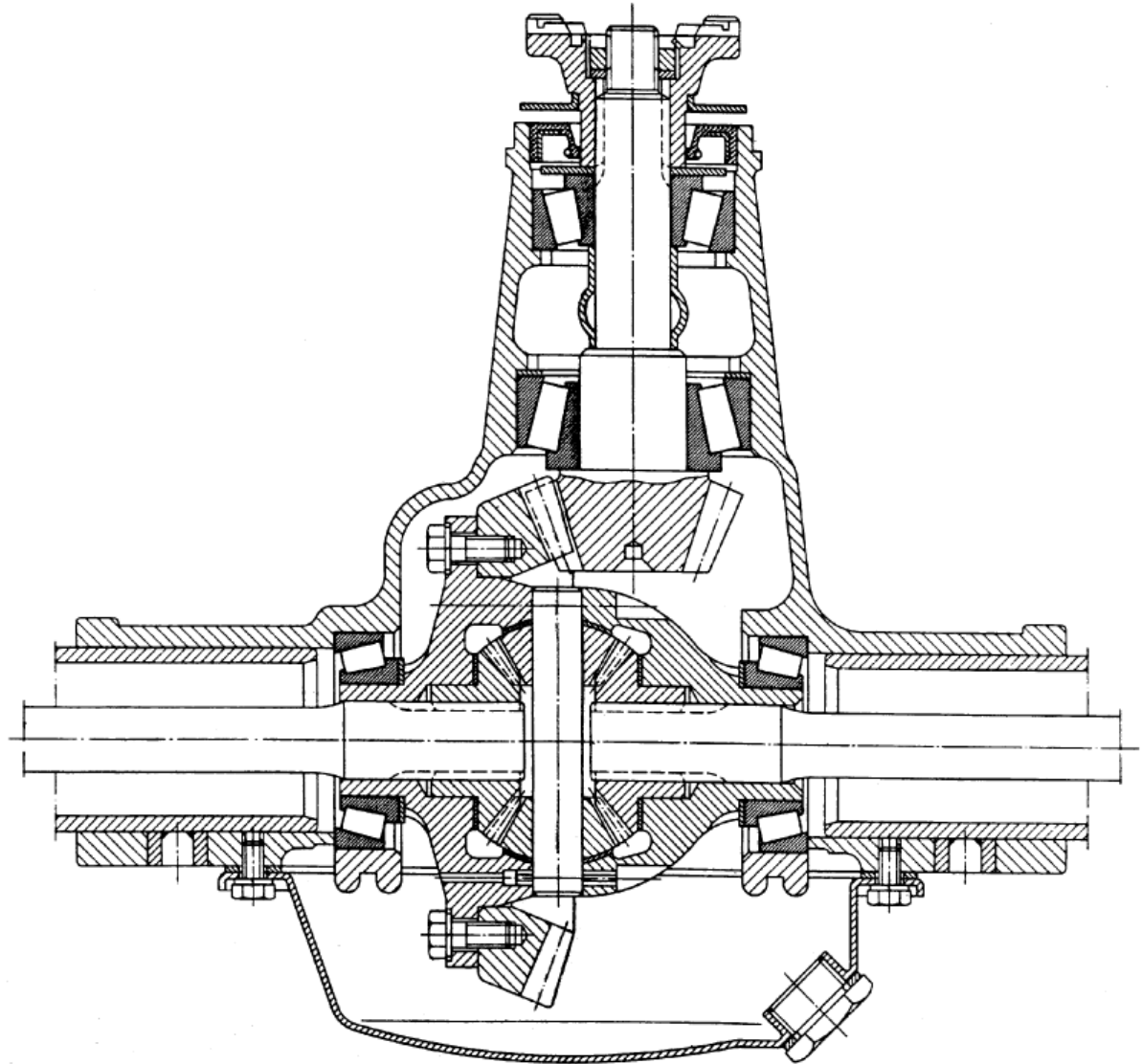


FIG. 13-10g Passenger car differential gear (with permission of FA

Project Assembly **61**

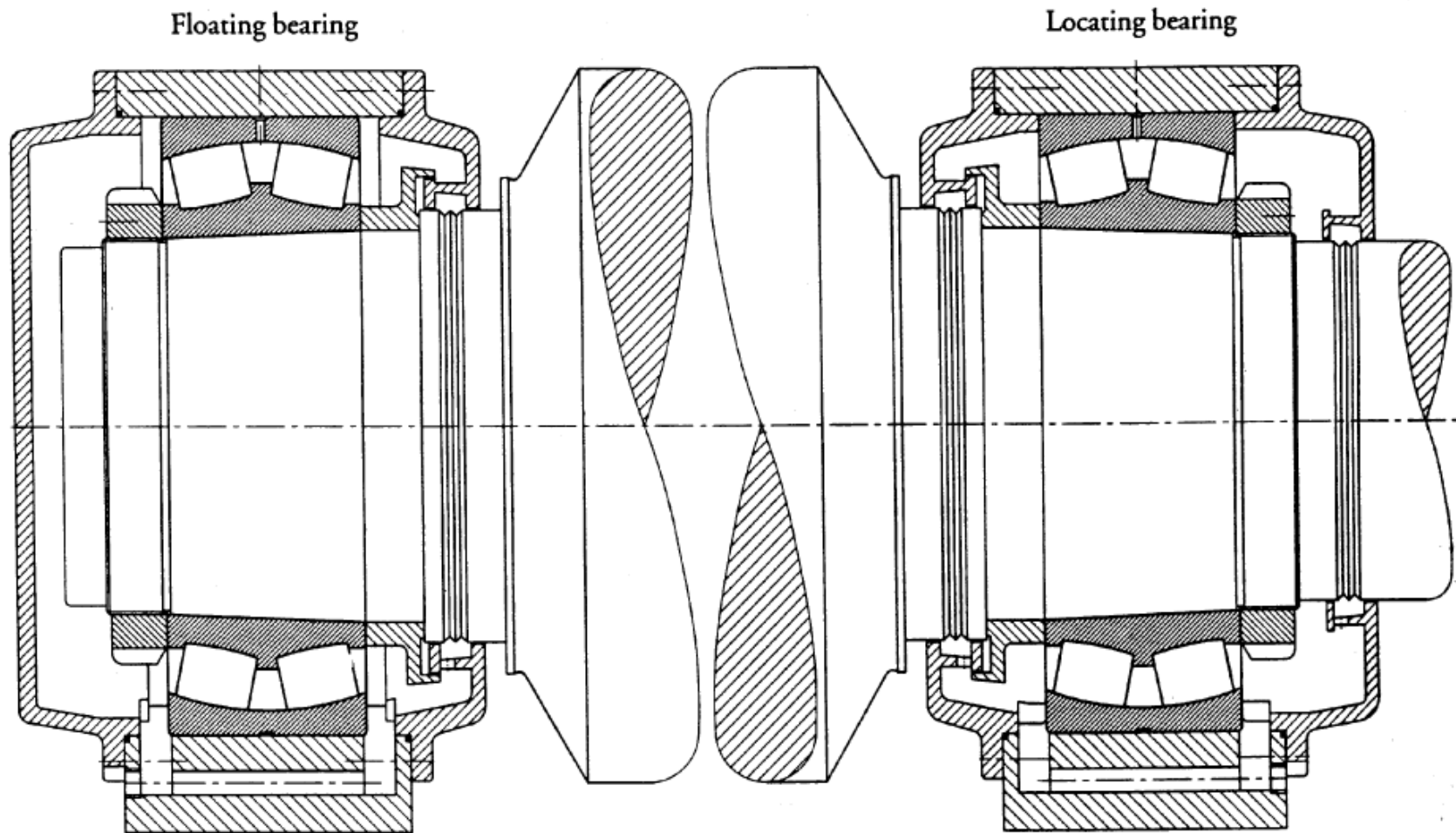


FIG. 13-10h Guide roll for paper mill (from FAG, 1998, with permission of FAG OEM and Handel AG).

Project Assembly **62**

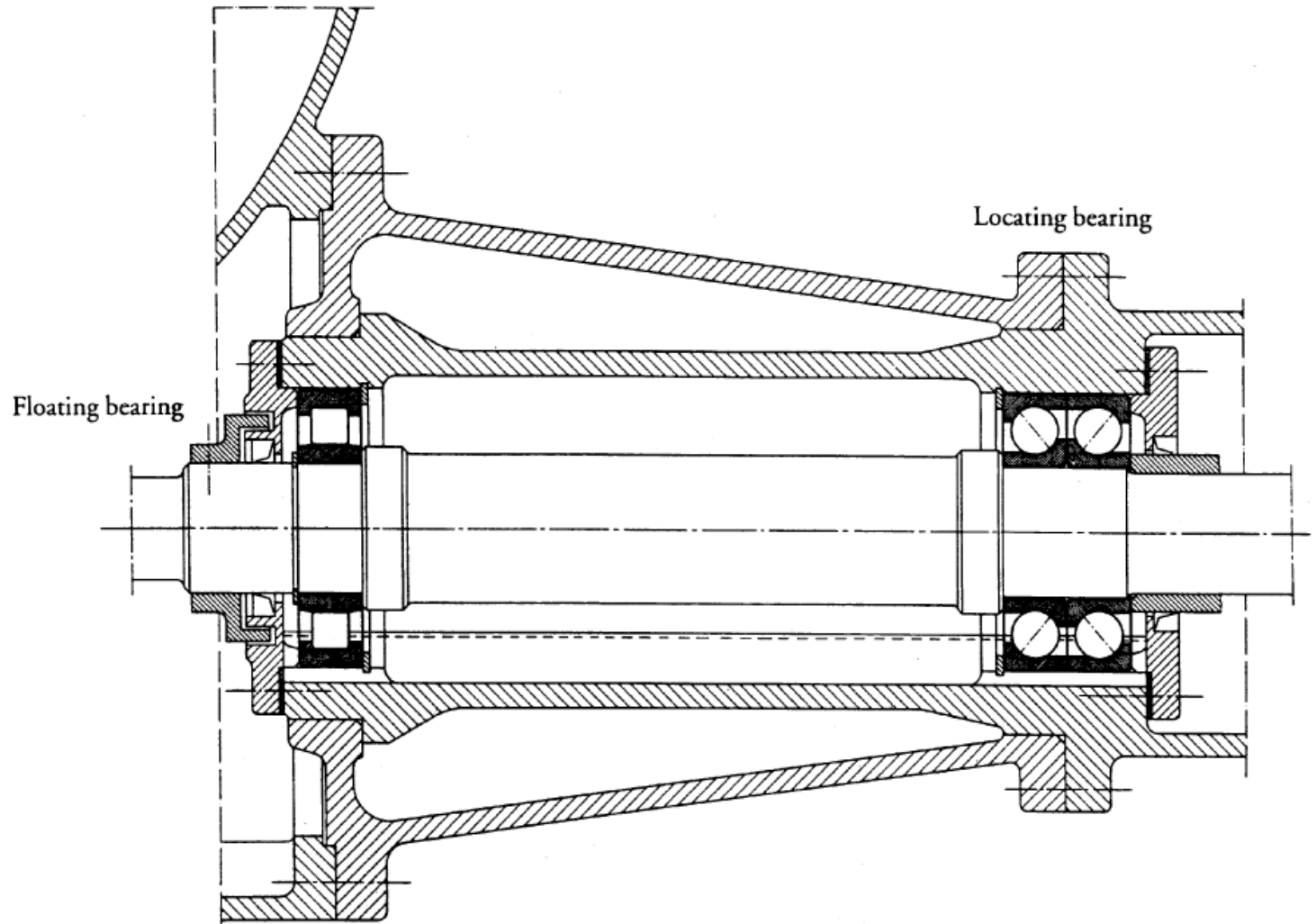


FIG. 13-10i Centrifugal pump (from FAG, 1998, with permission of FAG O. H. 1.1 AG)

Project Assembly **63**

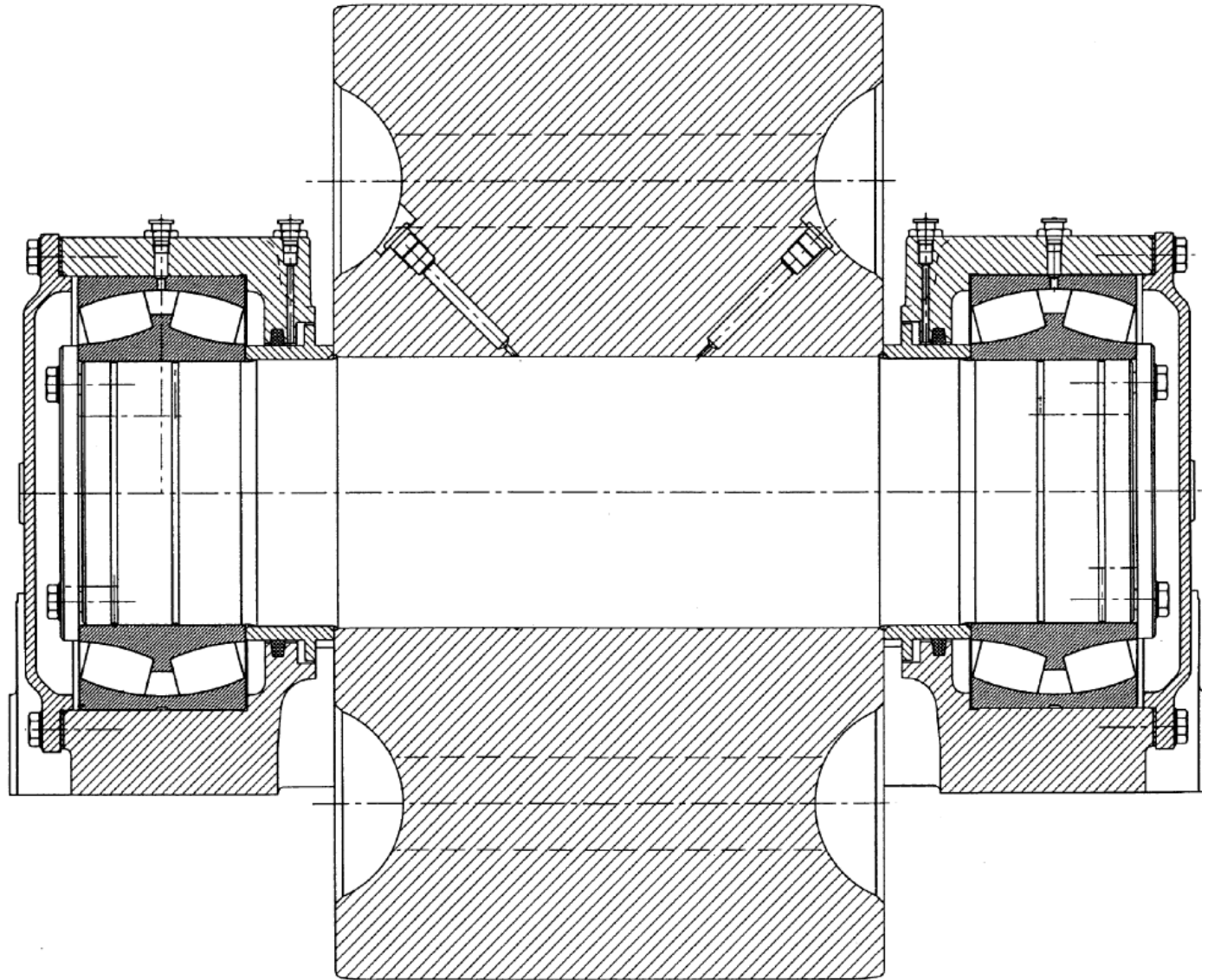


FIG. 13-10j Support roller of a rotary kiln (from FAG, 1998, with permission).

Project **64** ***Assembly***

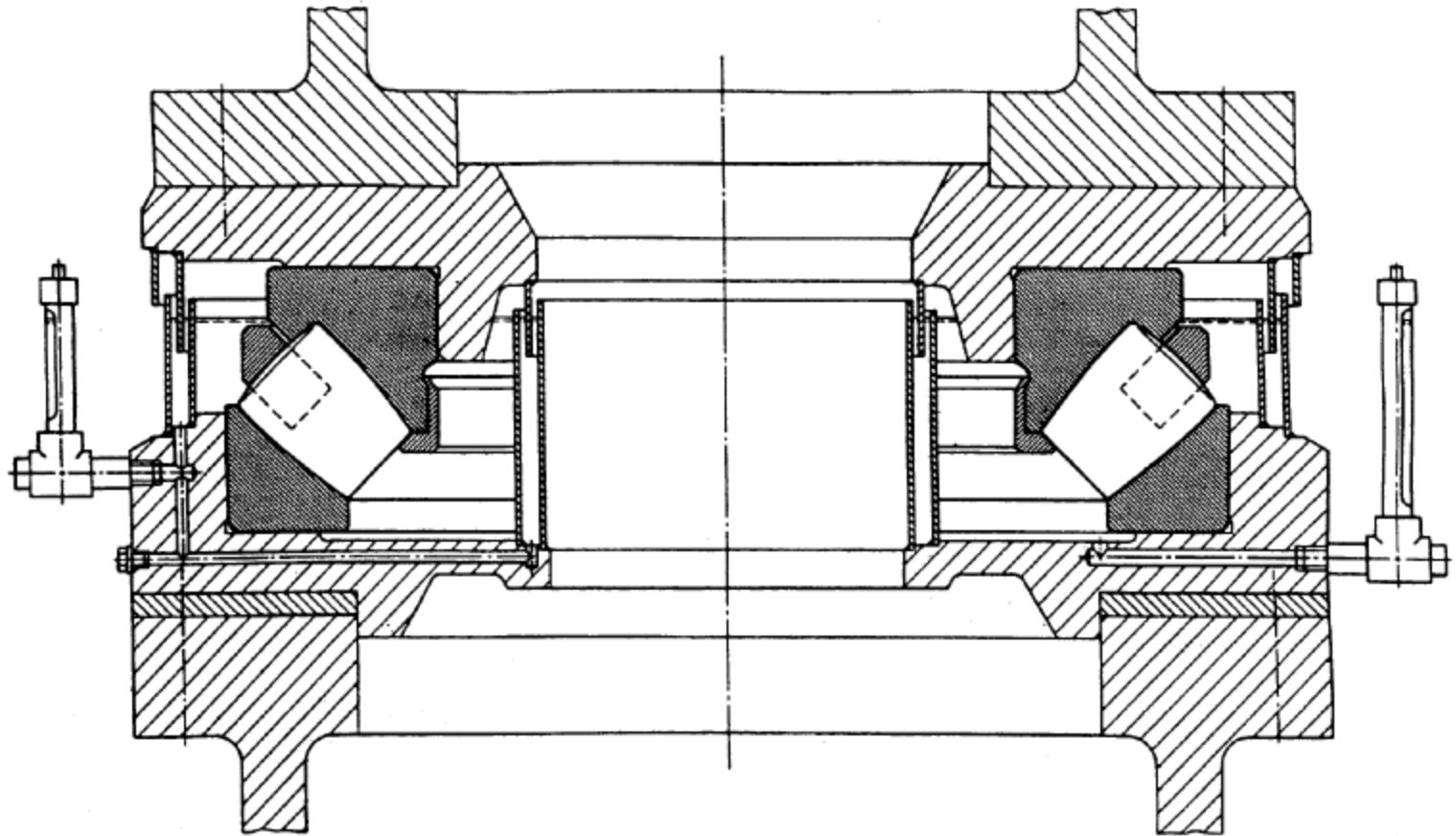


FIG. 13-10k Crane pillar mounting (from FAG, 1998, with perm

Project Assembly **65**

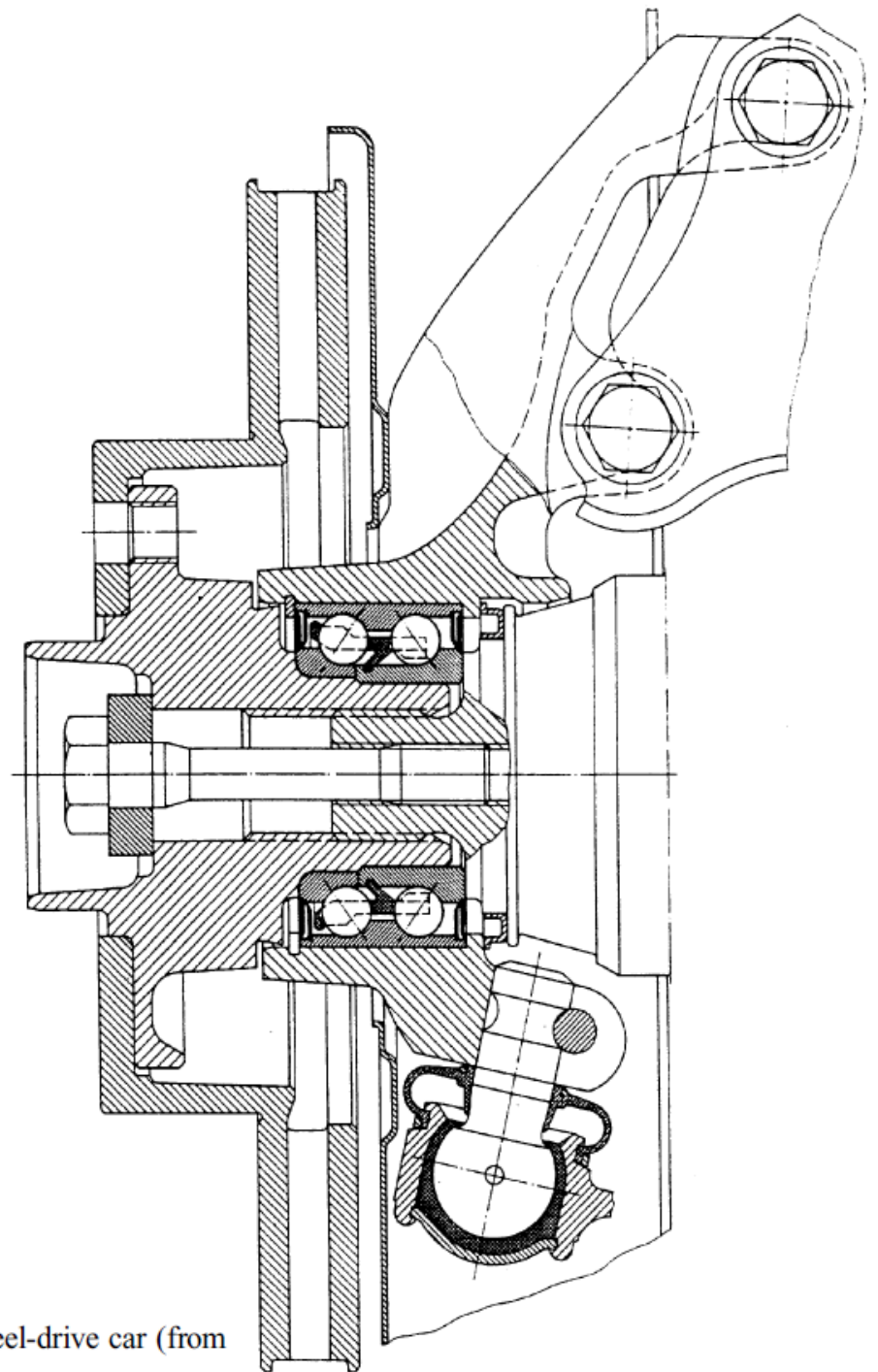


FIG. 13-11 Sealed-for-life bearing in the front wheel of a front-wheel-drive car (from FAG, 1988, with permission).

Project Assembly **66**

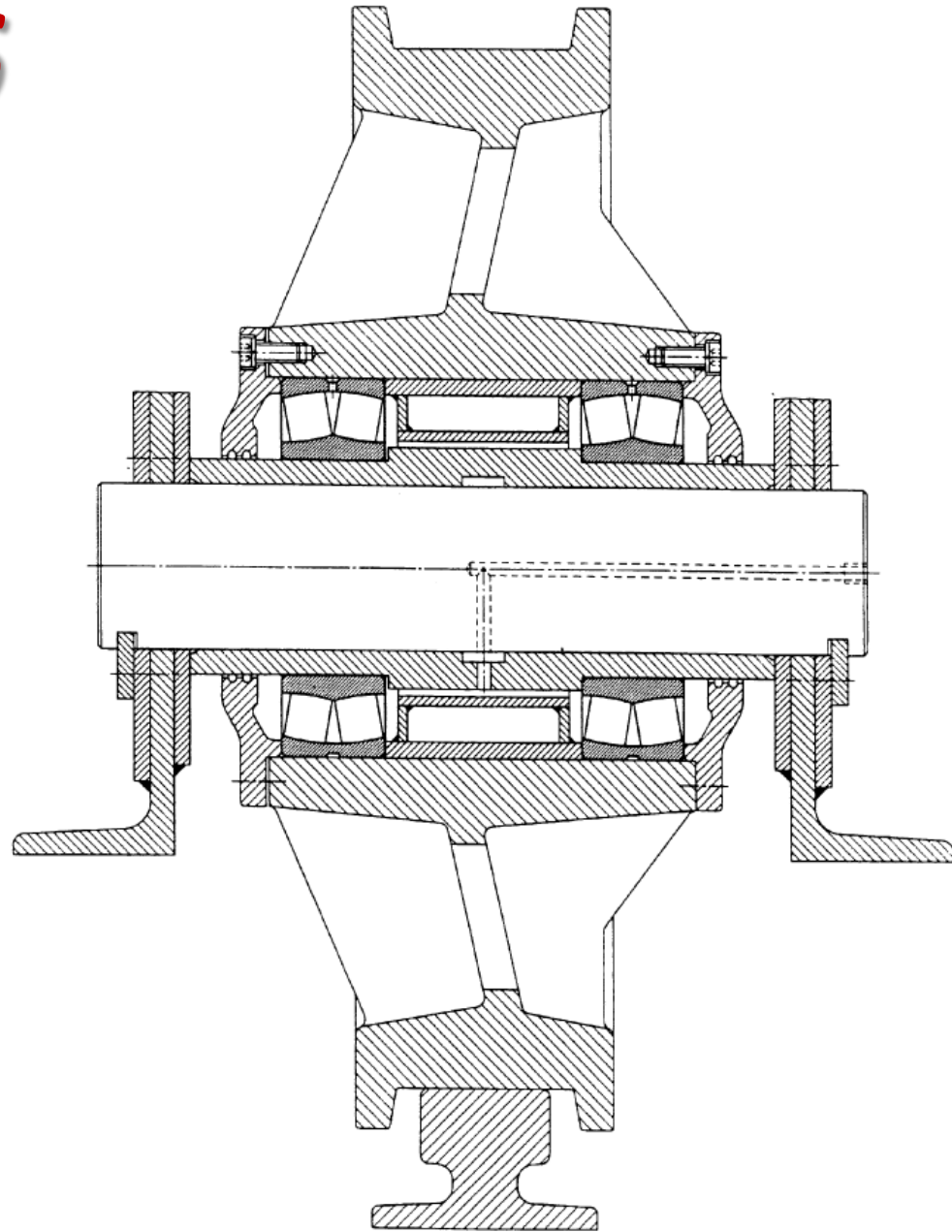


FIG. 13-12 Grease lubrication of crane wheel bearings (from FA

***Project
Assembly*** **67**

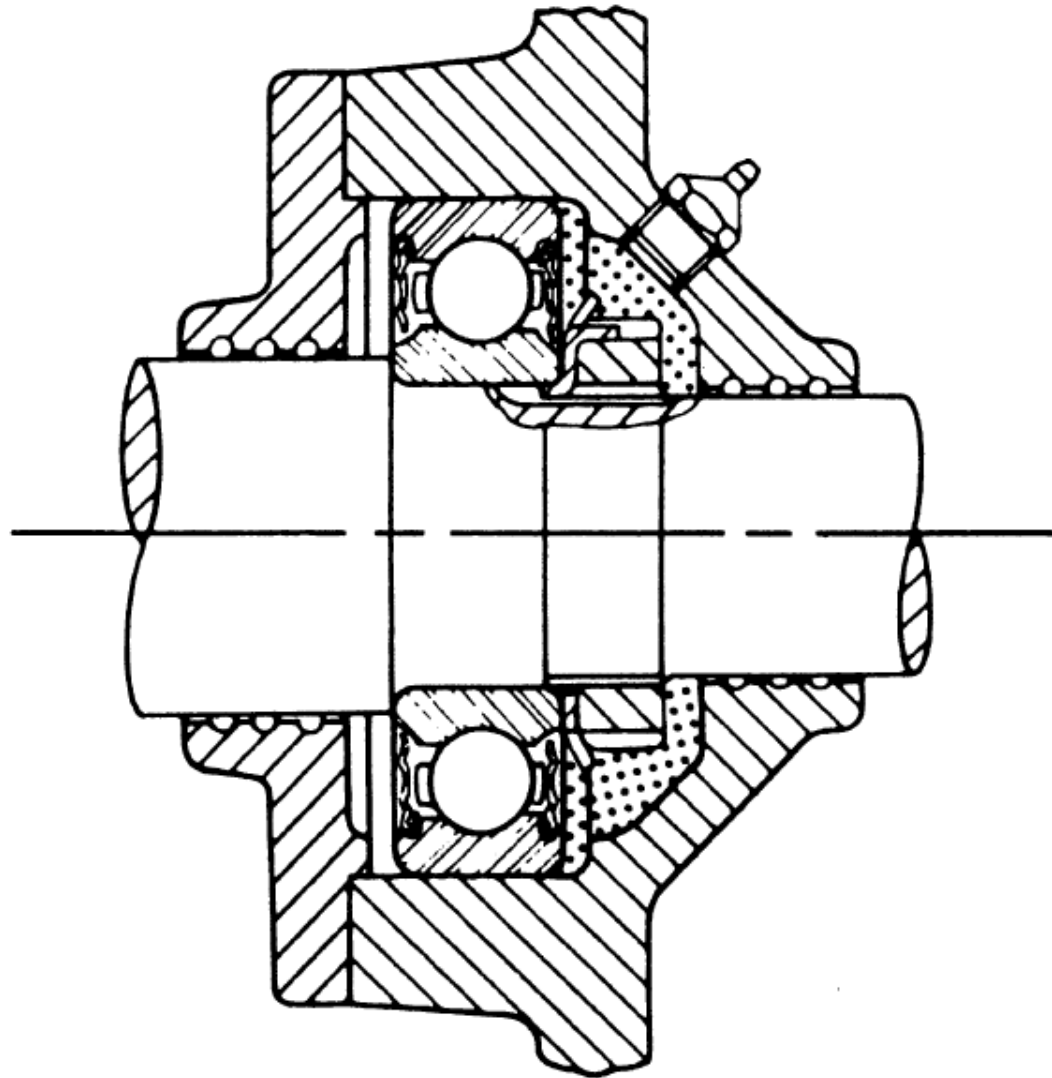


FIG. 13-14 Grease chamber for double-sealed bearings

Project Assembly **68**

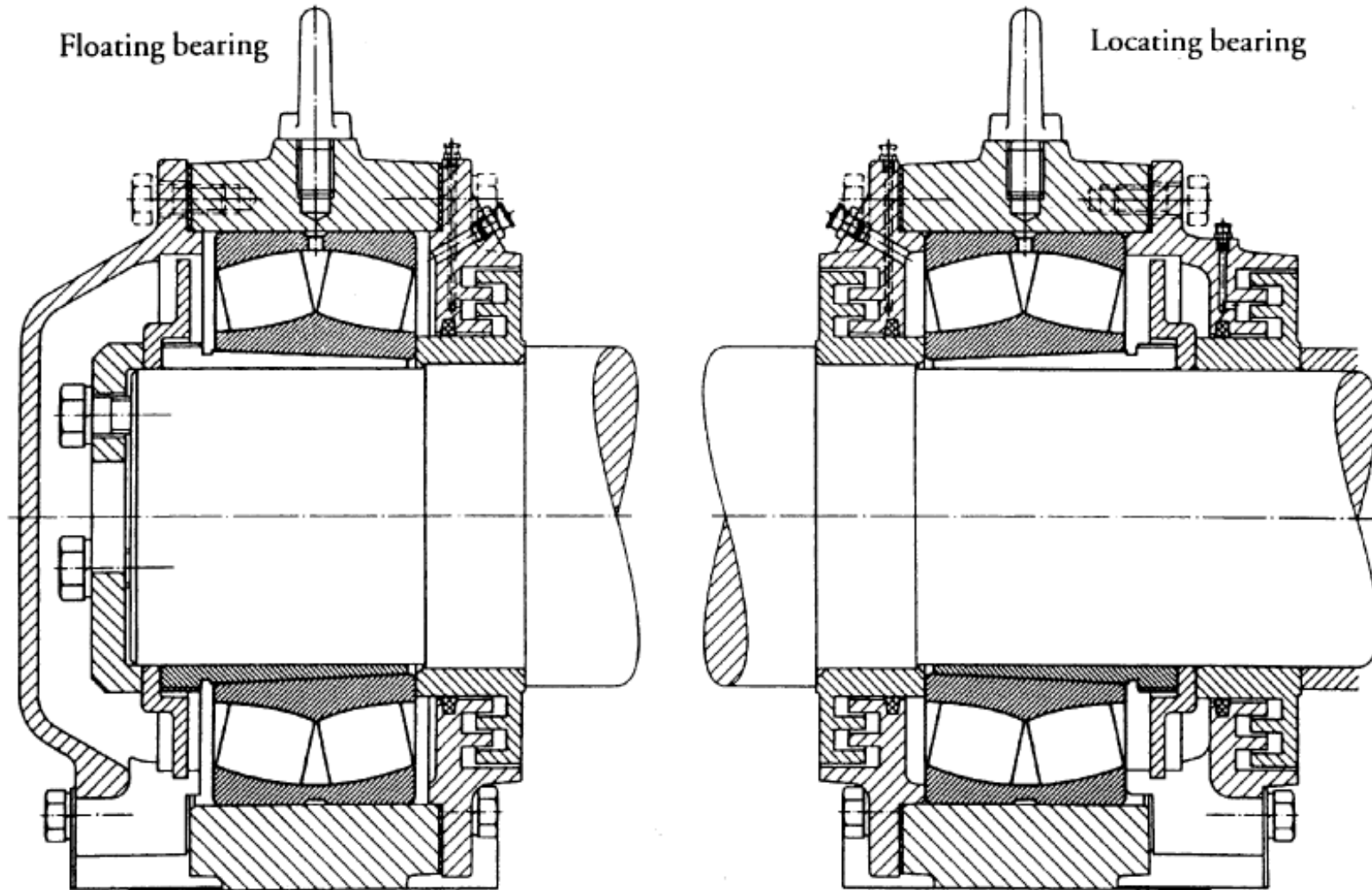


FIG. 13-15 Bearing housing of a double-shaft hammer mill (from FAG,

***Project
Assembly*** **69**

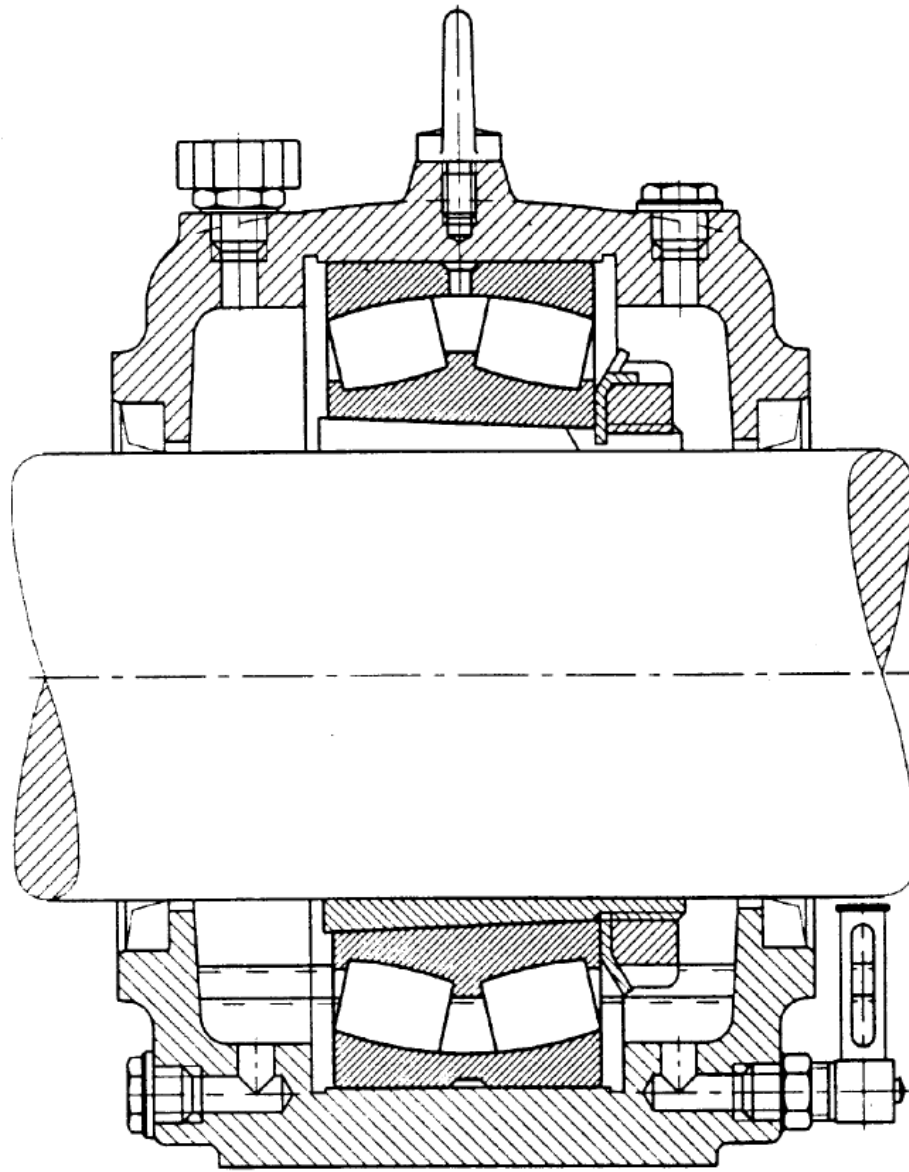


FIG. 13-17 Bearing housing of a ship shaft

Project ***70***
Assembly

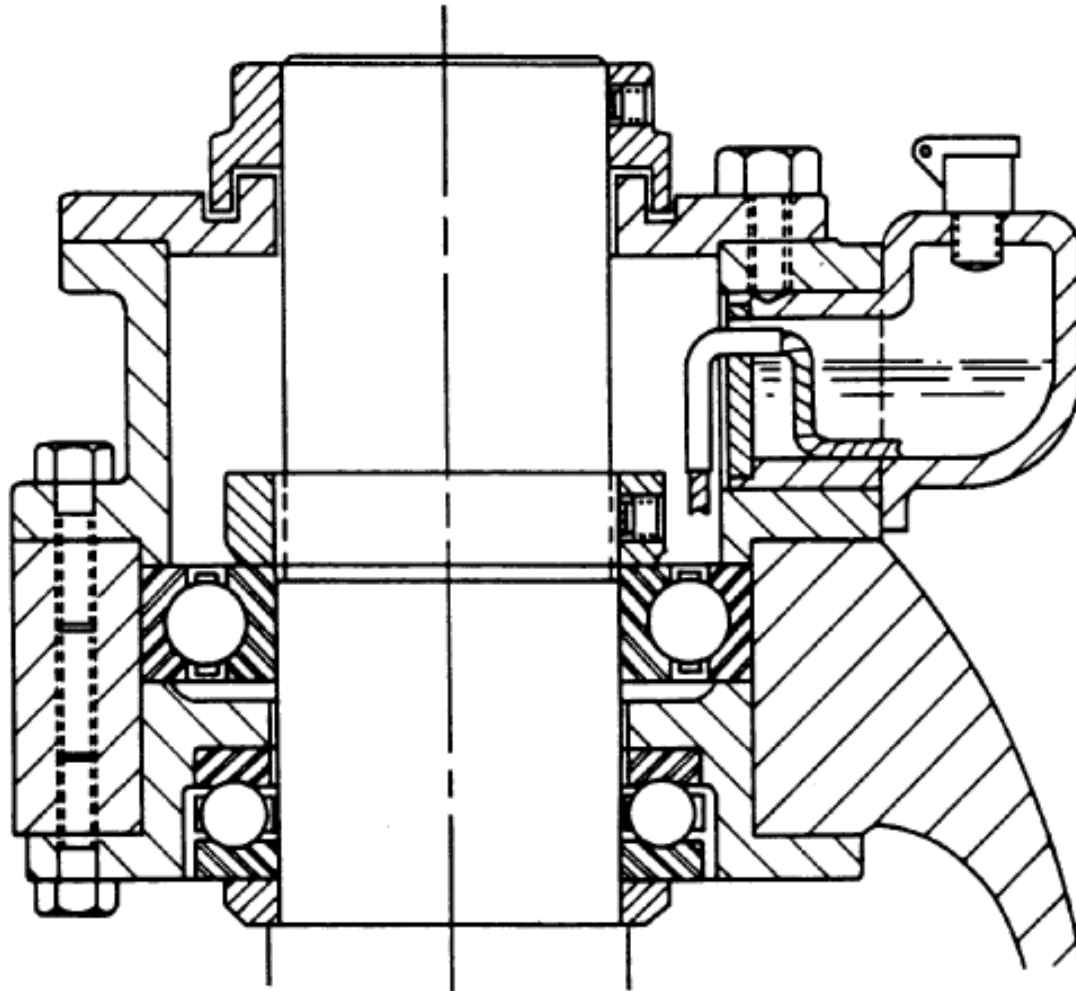


FIG. 13-18 Bearing housing with a wick for oil feeding

Project Assembly **71**

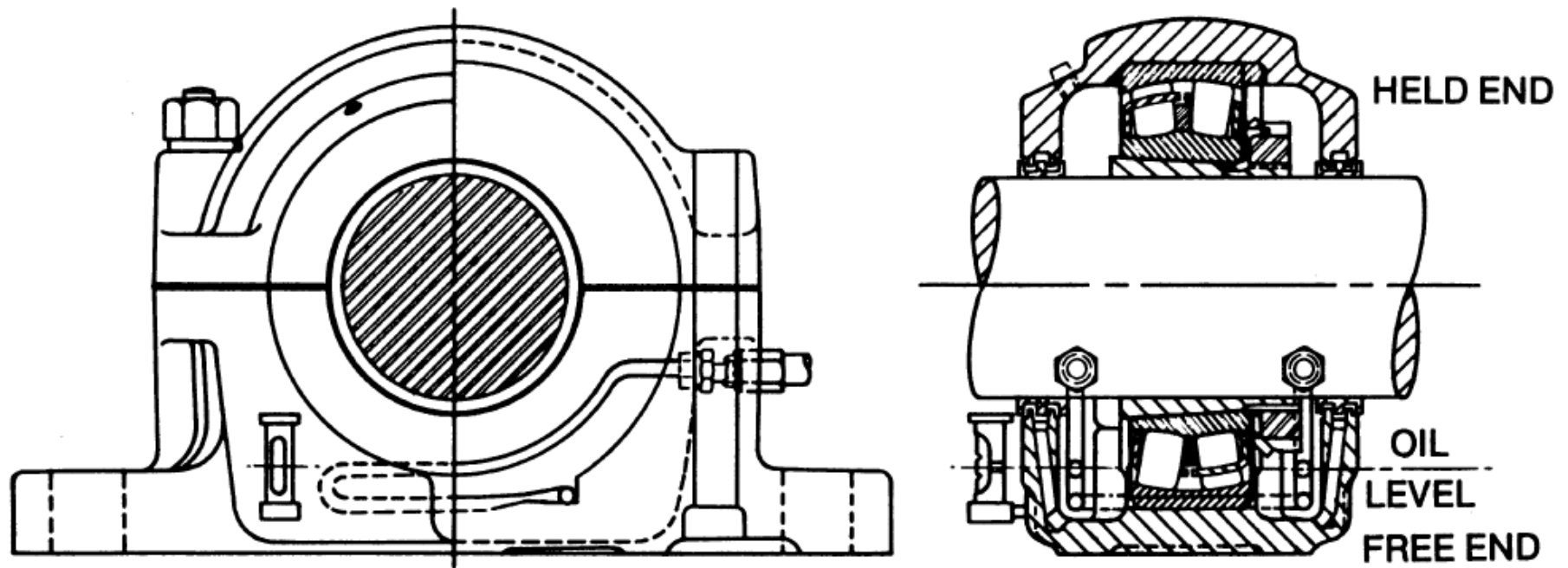
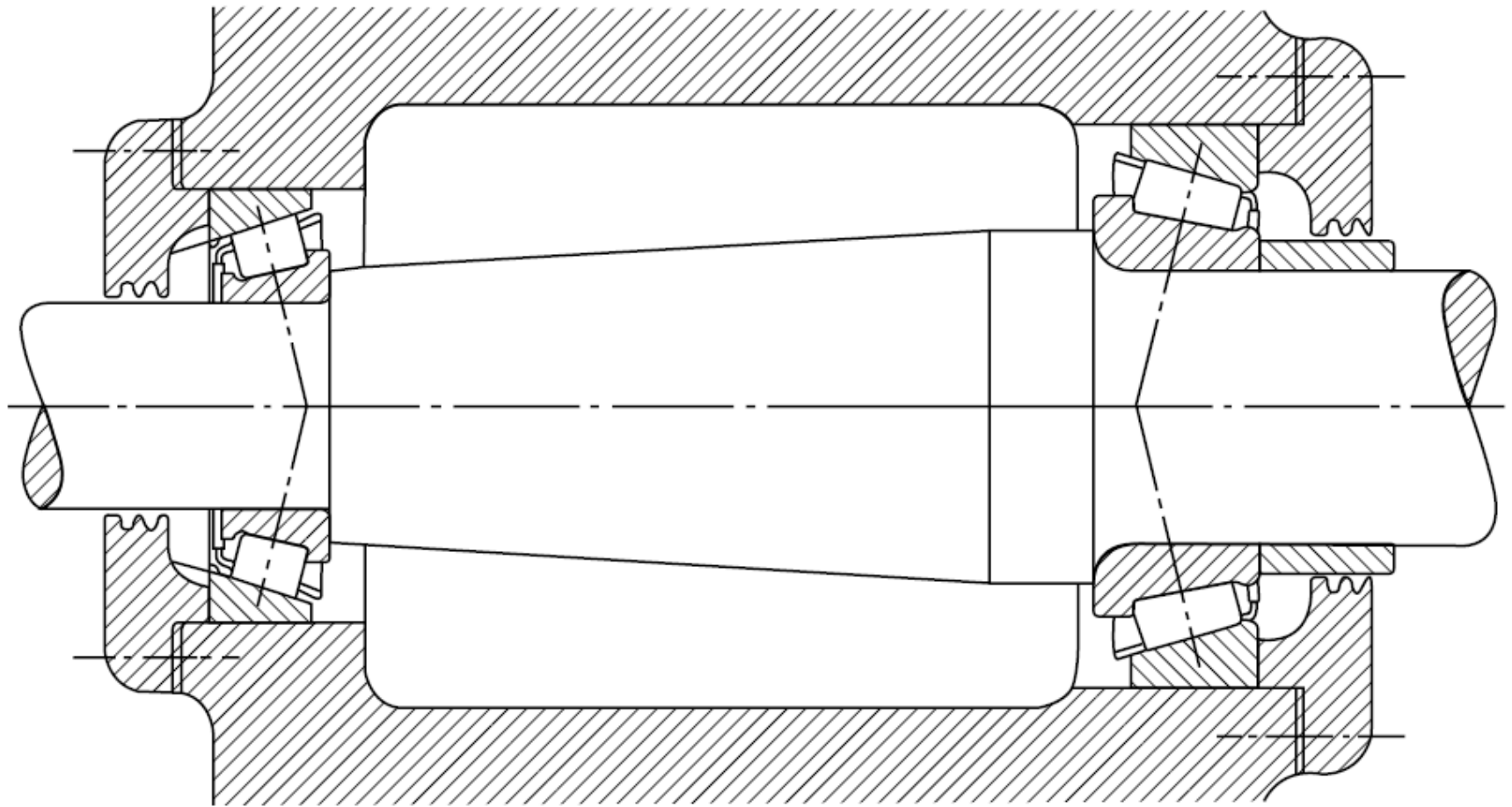


FIG. 13-25 Pillow block with water cooling (from SKF, 1992, with permission).

Project Assembly **72**



1.45 Typical mounting of tapered roller bearings.