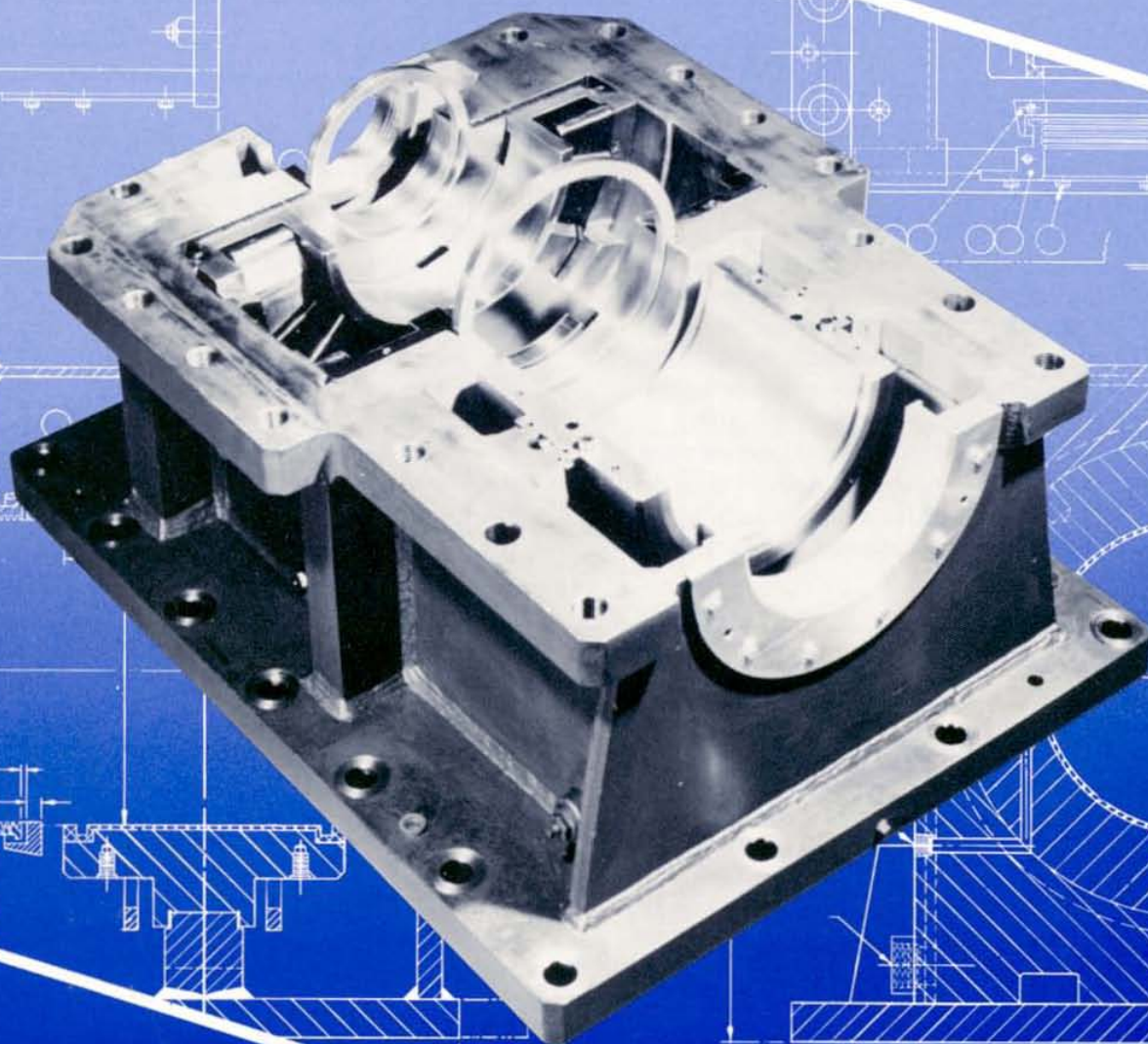


# Pedestal Mounted Thrust & Journal Bearings for the Hydro Electric Industry



 **Kingsbury, Inc.**

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Catalog PMH

## INTRODUCTION

Kingsbury Inc. has been attentive to the needs of the hydro power industry for over 70 years. From the first bearing introduced in 1912 to the present, Kingsbury has kept pace with the design demands of the market place. In preserving this tradition, Kingsbury has developed a standard line of thrust and journal bearings complete with pedestal mounted housings. These units have been specifically designed for horizontal turbine

generator applications. The long-life, low maintenance characteristics of the Kingsbury bearing makes it an excellent choice for use at remote hydro-generating sites.

As with all Kingsbury products, an experienced engineering staff stands ready to assist you in fulfilling your specific bearing requirements.

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## GENERAL DESCRIPTION

The Kingsbury hydro bearing package is pre-designed for ease of selection and application. The bearings are encased in rugged, fabricated housings. Standardized housing designs permit quick reference to critical weights and dimensions required for power house lay-out. The loaded thrust bearing is self-equalizing to insure even distribution of the principle hydraulic thrust load over the bearing shoes. Momentary reverse thrust loads are accommodated by a non-equalizing bumper bearing. Self-aligning journal bearings are used to protect against conditions of shaft misalignment. ASTM standard B23GR2 babbitt is used on all thrust shoes and journal shells. These

components are manufactured to meet Kingsbury's ultrasonic and edge-bond specifications. Oil leakage from the thrust bearing area is controlled by bronze seal rings fitted closely to the shaft. Oil throwers and labyrinth end seals virtually eliminate oil leaking from the housing cavity. Filler plates and shims are provided for setting thrust bearing clearance. The housings, as well as all internal components, excluding the collar, are split at the horizontal center line for ease of assembly and access. An oiling ring option is available for journal bearings which further insures the safety of the generator and shaft.

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## BEARING SELECTION

Preliminary bearing selection is determined by thrust load and shaft size. Shaft diameters range from 6 inches to 22.5 inches. Nine separate items encompassing the various shaft sizes are found in the tabulation. Maximum and minimum thrust loads and maximum and minimum journal loads are calculated for each item. Any shaft size between those indicated and proportionate thrust and journal loads in between the shaft sizes can be accommodated by the specified item.

**IMPORTANT:** calculated loads are based on 300 SSU oil at 120 degrees fahrenheit inlet temperature and are only valid for speeds above 100 RPM. Bearing selection is identical for both the thrust and journal bearing combination and the companion journal bearing.

Preliminary bearing selection and required bolt dimensions can be confirmed by contacting our Engineering Department.

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## LUBRICATION

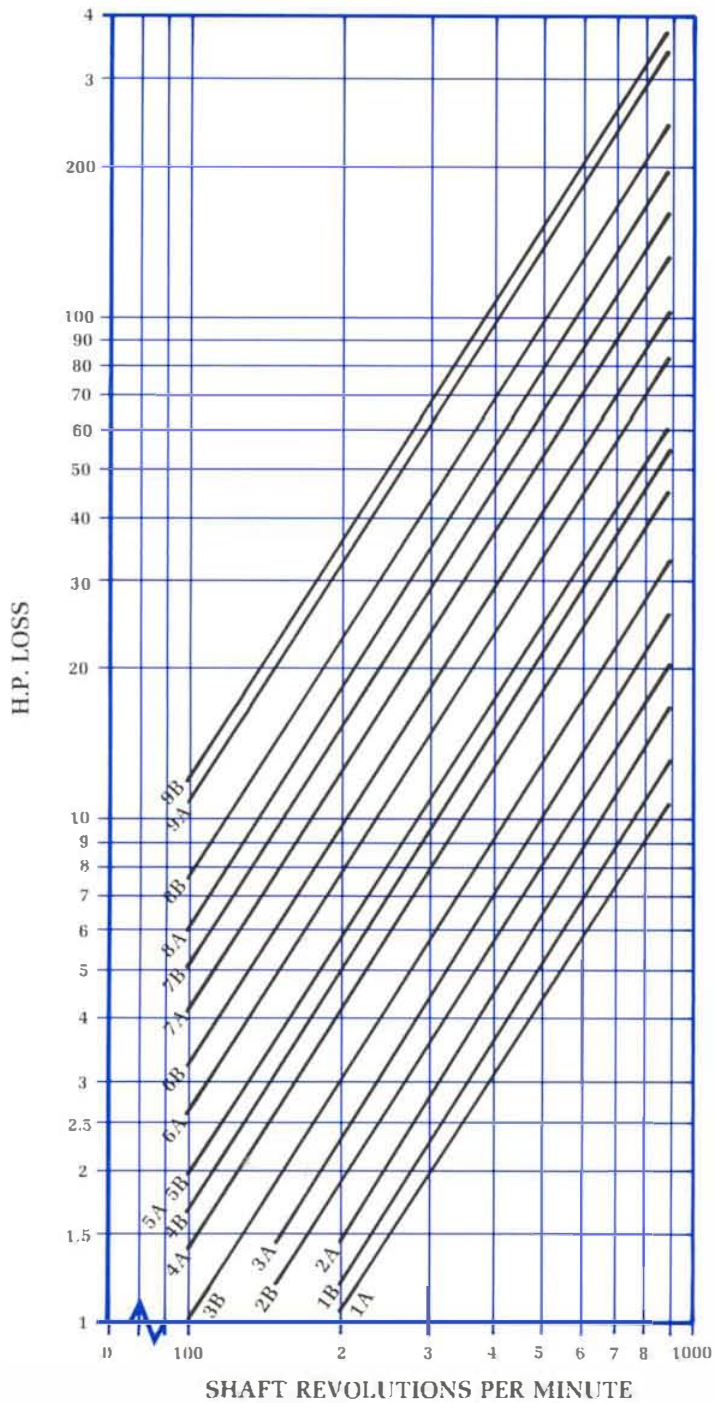
The Kingsbury hydro bearing package requires a pressurized lubrication system. Associated power losses are found in the curves provided. Kingsbury recommends a lubricant supply of 1 GPM

per horsepower loss. When oiling rings are required recommended oil levels will be provided by our Engineers. A self contained lubrication system is also available upon request.



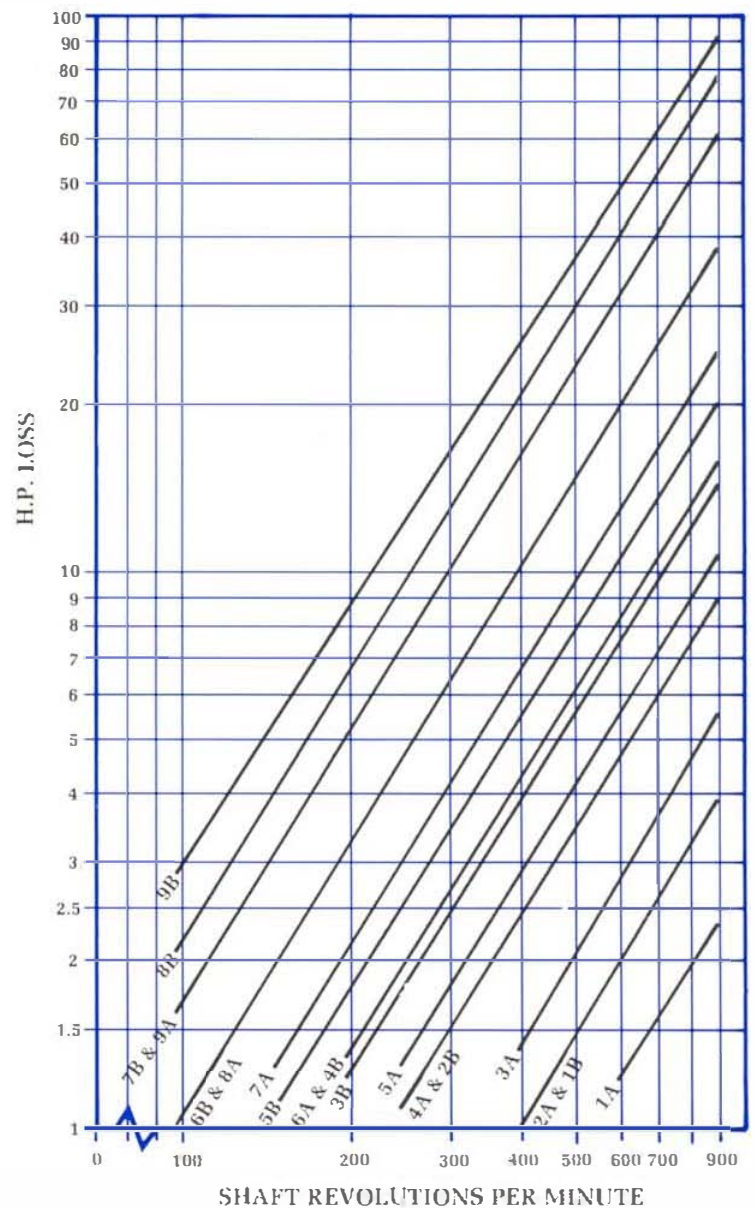
## Thrust & Journal Bearing H.P. Losses

Item No.	Shaft Dia. Nom.	Item No.	Shaft Dia. Nom.
1	A 6.00 B 7.50	6	A 11.50 B 16.00
2	A 7.00 B 10.00	7	A 13.50 B 18.50
3	A 8.00 B 11.50	8	A 15.50 B 21.00
4	A 9.00 B 12.00	9	A 18.50 B 22.50
5	A 10.00 B 13.00		



## Journal Bearing H.P. Losses

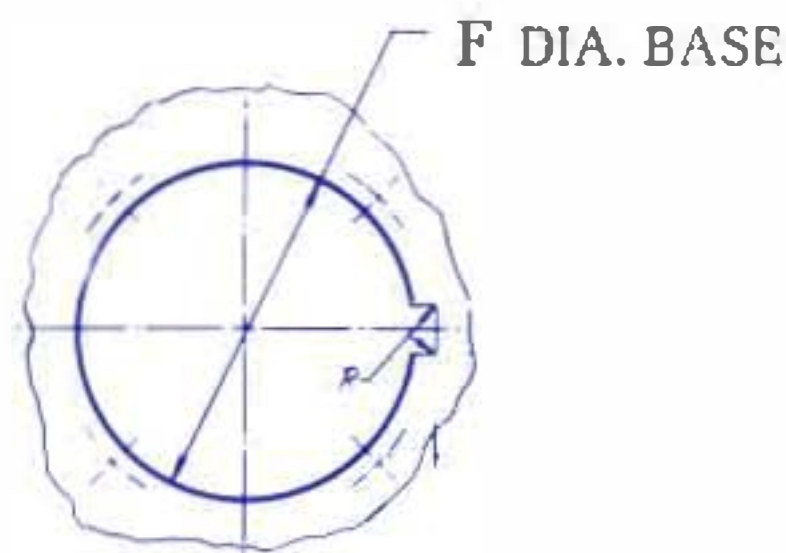
Item No.	Shaft Dia. Nom.	Item No.	Shaft Dia. Nom.
1	A 6.00 B 7.50	6	A 11.50 B 16.00
2	A 7.00 B 10.00	7	A 13.50 B 18.50
3	A 8.00 B 11.50	8	A 15.50 B 21.00
4	A 9.00 B 12.00	9	A 18.50 B 22.50
5	A 10.00 B 13.00		



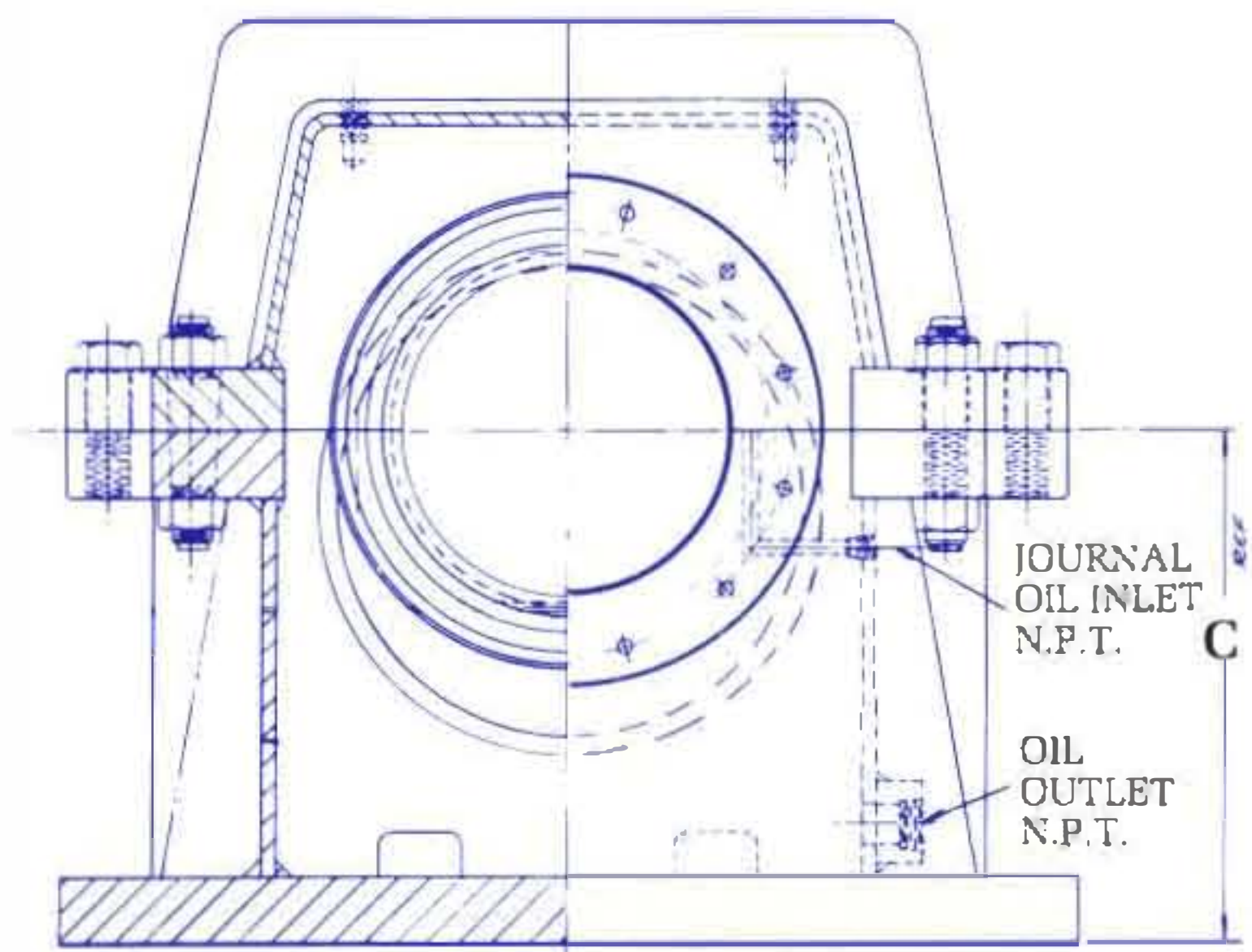
Based on 300 SSU @ 100°F, 120°F Inlet Temp.



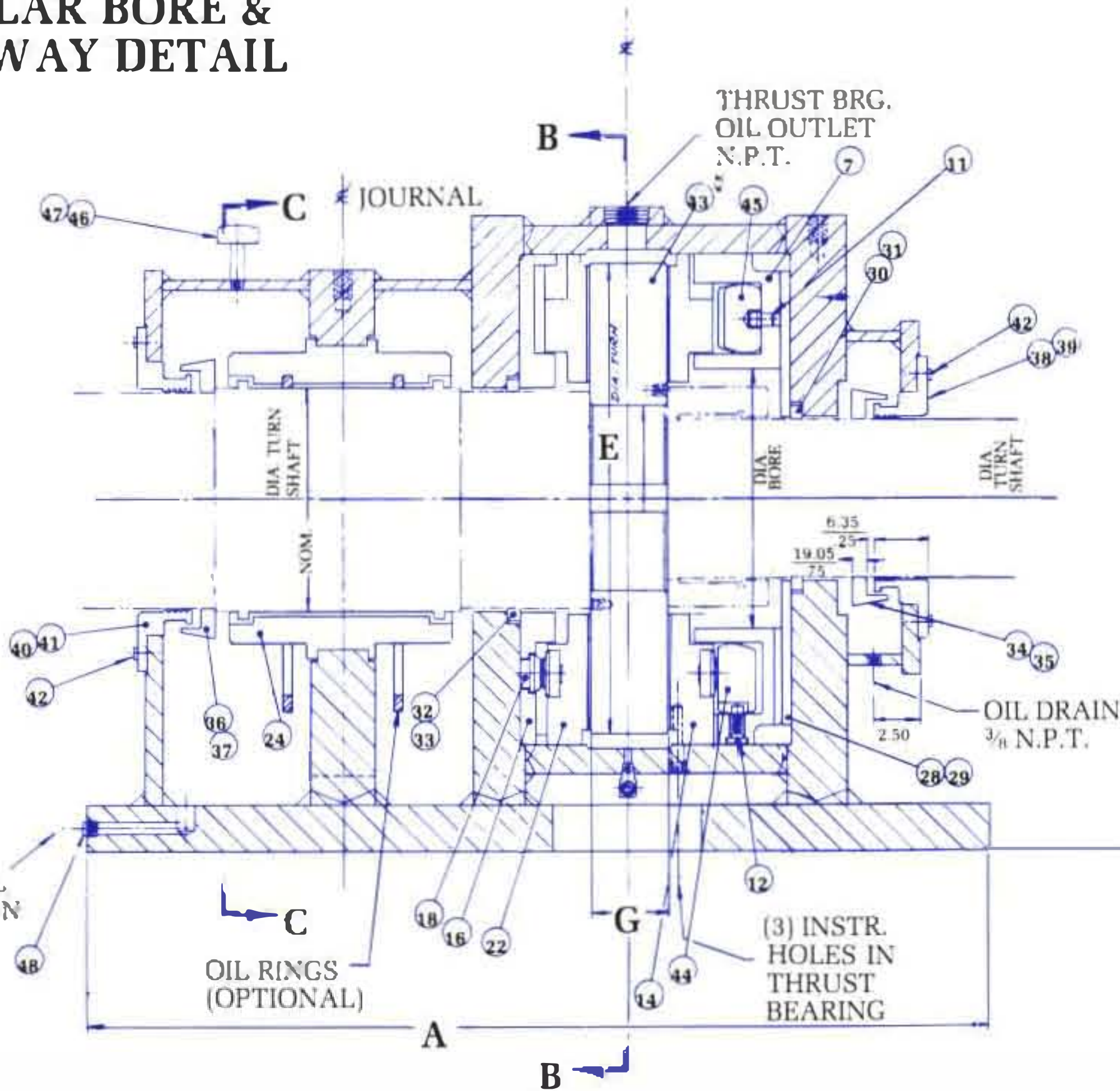
# Thrust & Journal Bearing with Housing Assembly



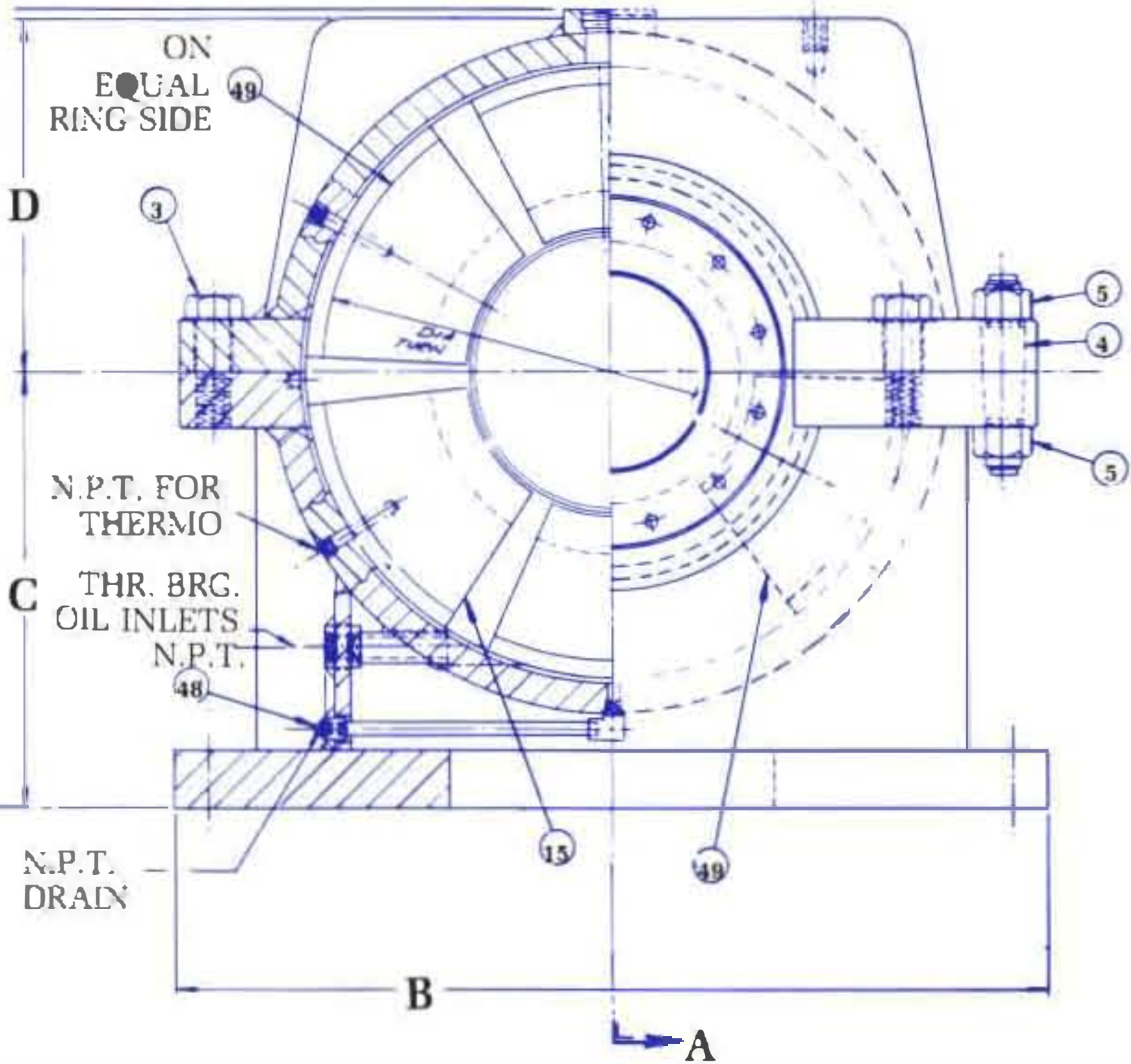
COLLAR BORE & KEYWAY DETAIL



HALF SECTION C-C  
HALF END VIEW



SECTION A-A  
EQUALIZING BEARING MAY BE LOCATED ON EITHER SIDE OF COLLAR



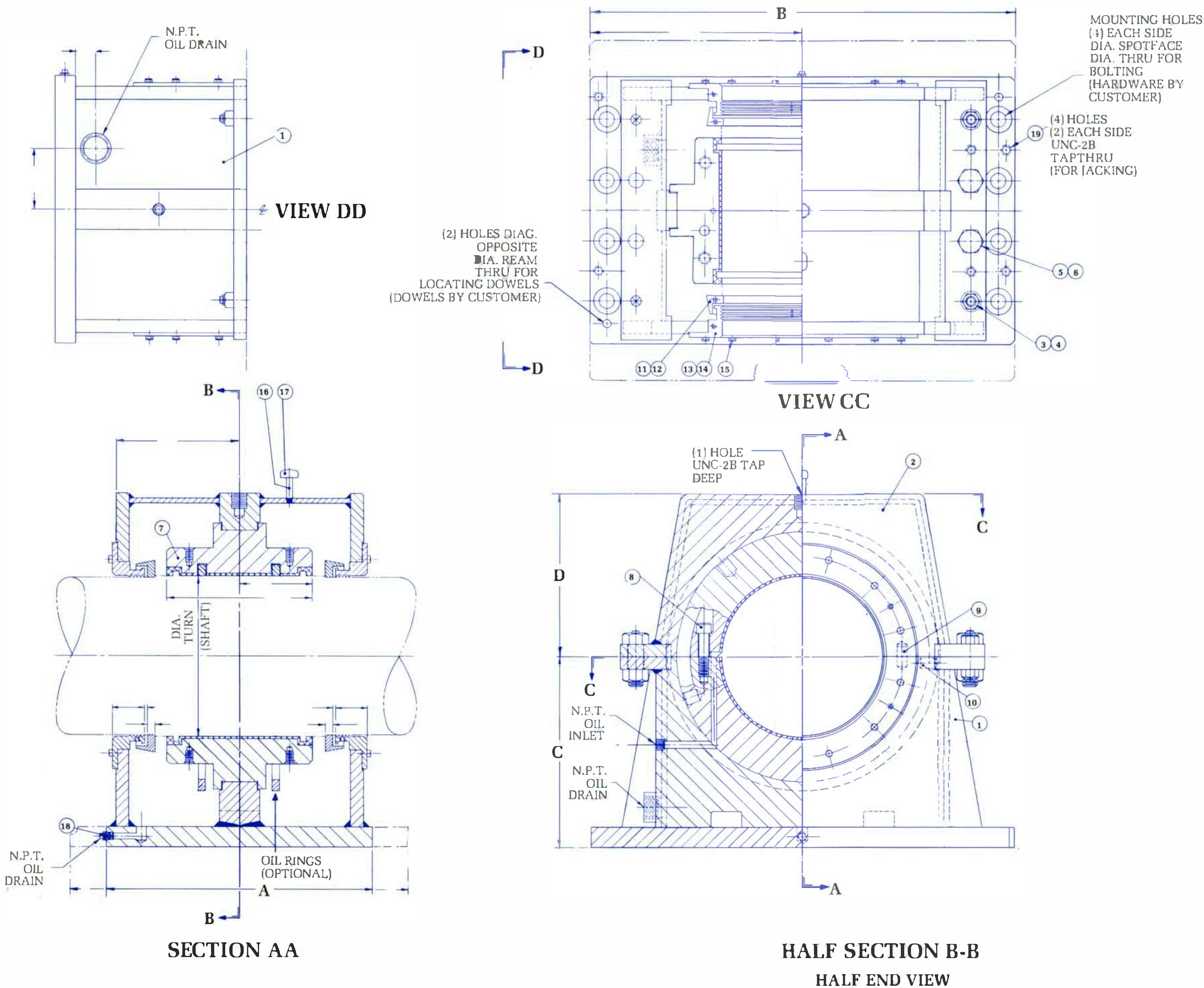
HALF SECTION B-B  
HALF END VIEW

Item No.	Shaft Dia. Nom.	Thrust Load (lbs)	Journal Load (lbs)	Housing Dim's				Thrust Collar			Est. Wt. W/Collar#
				A	B	C	D	E Dia.	F Dia.	G	
1	6.00 7.50	36,000 28,000	11,000 15,000	36.38	22.00	11.00	8.12	13.69	5.38	2.25	1.650
								13.69	6.75	2.25	
2	7.00 10.00	48,000 28,000	15,000 25,000	39.25	25.50	11.75	8.88	15.19	9.00	2.50	2.215
								15.19	6.00	2.50	
3	8.00 11.50	65,000 36,000	16,000 34,000	44.62	29.00	13.88	10.88	18.25	6.63	2.88	3.435
								18.25	10.50	3.00	
4	9.00 12.00	102,000 80,000	27,000 36,000	46.88	33.75	15.88	12.88	22.00	8.50	3.62	4.880
								22.00	8.50	3.62	
5	10.00 13.00	121,000 84,000	29,000 42,000	46.50	37.00	17.25	14.00	24.25	8.88	3.88	5.765
								22.75	12.25	3.25	
6	11.50 16.00	145,000 109,000	37,000 64,000	53.25	40.00	19.25	15.75	26.75	10.00	4.25	7.990
								26.75	14.75	4.00	
7	13.50 18.50	192,000 145,000	49,000 85,000	62.50	49.75	23.38	18.12	30.75	12.50	5.25	13.835
								30.75	17.00	5.12	
8	15.50 21.00	245,000 200,000	64,000 94,000	65.25	54.25	26.38	21.12	34.75	13.50	5.75	18.020
								34.75	19.00	6.00	
9	18.50 22.50	350,000 300,000	86,000 106,000	70.00	62.25	30.38	24.62	41.25	16.50	7.00	25.790
								41.25	20.50	7.00	

List of Material		
No. Req.	Name	Pt. No.
SHOE EQUALIZING THRUST BEARING	Thrust Shoe Assy. Drilled For RTD	49
	Oil Drain Plug	48
	Air Vent Nipple	47
	Air Vent Cap	46
SHOE EQUALIZING THRUST BEARING	Leveling Plate—Lower	45
	Leveling Plate—Upper	44
	Thrust Collar	43
	End Closure Mtg. Screw	42
SHOE EQUALIZING THRUST BEARING	End Closure Jt. Screw	41
	End Closure In Halves	40
	End Closure Jt. Screw	39
	End Closure—In Halves	38
SHOE EQUALIZING THRUST BEARING	Oil Thrower Jt. Screw	37
	Oil Thrower—In Halves	36
	Oil Thrower Jt. Screw	35
	Oil Thrower—In Halves	34
SHOE EQUALIZING THRUST BEARING	Oil Seal Ring Jt. Screw	33
	Oil Seal Ring—In Halves	32
	Oil Seal Ring Jt. Screw	31
	Oil Seal Ring—In Halves	30
SHOE EQUALIZING THRUST BEARING	Filler Plate Screw	29
	Filler Plate—In Halves	28
	Journal Shell Dowel	27
	Journ. Shell Jt. Screw	26
SHOE EQUALIZING THRUST BEARING	Journal Shell Jt. Dowel	25
	Journal Shell—In Halves	24
		23
	Thrust Shoe Assy. Plain—Selected Height	22
SHOE EQUALIZING THRUST BEARING	Shoe Stop Pin	21
		20
	Shoe Cage Key Dowel	19
	Shoe Cage Plug	18
SHOE EQUALIZING THRUST BEARING	Shoe Cage Joint Dowel	17
	Shoe Cage—In Halves	16
	Thrust Shoe Ass'y. Drilled For Thermo	15
	Thrust Shoe Ass'y. Plain	14
SHOE EQUALIZING THRUST BEARING	Lev. Plate Retain. Screw	13
	Leveling Plate Set Screw	12
	Leveling Plate Dowel	11
	Base Ring Joint Screw	10
SHOE EQUALIZING THRUST BEARING	Base Ring Key Screw	9
	Base Ring Key	8
	Base Ring—In Halves	7
	Jacking Screw	6
SHOE EQUALIZING THRUST BEARING	Taper Dowel Nut	5
	Hsg. Joint Taper Dowel	4
	Housing Joint Screw	3
	Housing Weldment Upper	2
SHOE EQUALIZING THRUST BEARING	Housing Weldment Lower	1



# Journal Bearing with Housing Assembly



Item No.	Shaft Dia. Nom.	Journal Load (lbs)	Housing Dim's				Est. Wt. lbs.
			A	B	C	D	
1	6.00 7.50	11,000 15,000	21.50	33.50	11.00	9.00	1,253
2	7.00 10.00	15,000 25,000	23.50	36.00	11.75	10.00	1,602
3	8.00 11.50	16,000 34,000	32.00	37.50	13.88	12.00	2,700
4	9.00 12.00	27,000 36,000	32.00	38.00	15.88	13.50	3,105
5	10.00 13.00	29,000 42,000	33.00	39.00	17.25	15.00	3,608
6	11.50 16.00	37,000 64,000	38.00	42.00	19.25	17.00	5,030
7	13.50 18.50	49,000 85,000	40.50	46.50	23.38	18.00	6,774
8	15.50 21.00	64,000 94,000	41.00	49.00	26.38	20.00	8,100
9	18.50 22.50	86,000 106,000	41.00	50.50	30.38	26.00	10,149

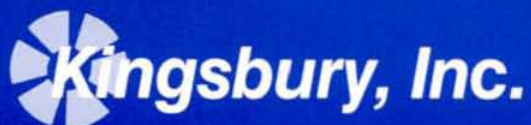
List of Material

No. Req.	Name	Pt. No.
4	Jacking Screws	19
1	Pipe Plug	18
1	Air Vent Cap	17
1	Air Vent Nipple	16
	End Closure Screw	15
4	End Closure Joint Screw	14
2	End Closure (In Halves)	13
4	Oil Thrower Joint Screw	12
2	Oil Thrower (In Halves)	11
1	Brg. Shell Dowel	10
2	Brg. Shell Joint Dowel	9
4	Brg. Shell Joint Screw	8
1	Journal Brg. Shell (In Halves)	7
	Housing Joint Nut	6
	Housing Joint Bolt	5
	Housing Taper Dowel Nut	4
	Housing Taper Dowel Bolt	3
1	Housing—Upper Half	2
1	Housing—Lower Half	1



# Kingsbury Products and Catalogs

Horizontal Equalizing Thrust Bearings	Catalog EQH
Vertical Equalizing Thrust Bearings	Catalog EQ
Pivoted Shoe Journal Bearings	Catalog PJ
Self-Contained Horizontal Bearing Systems	Catalog CP
Non-Equalizing Tilting Pad Thrust Bearings	Catalog NE
Thrust Measurement Systems	Catalog TMS
High Efficiency Thrust Bearings	Catalog KS/LEG
Bearing Repair and Service	Catalog SR



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