Pedestal Mounted
Thrust & Journal Bearing

FOR THE HYDRO ELECTRIC INDUSTRY

Kingsbury, Inc.®

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 maintenence 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.

GENERAL DESCRIPTION

The Kingsbury hydro bearing package is predesigned 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.

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.

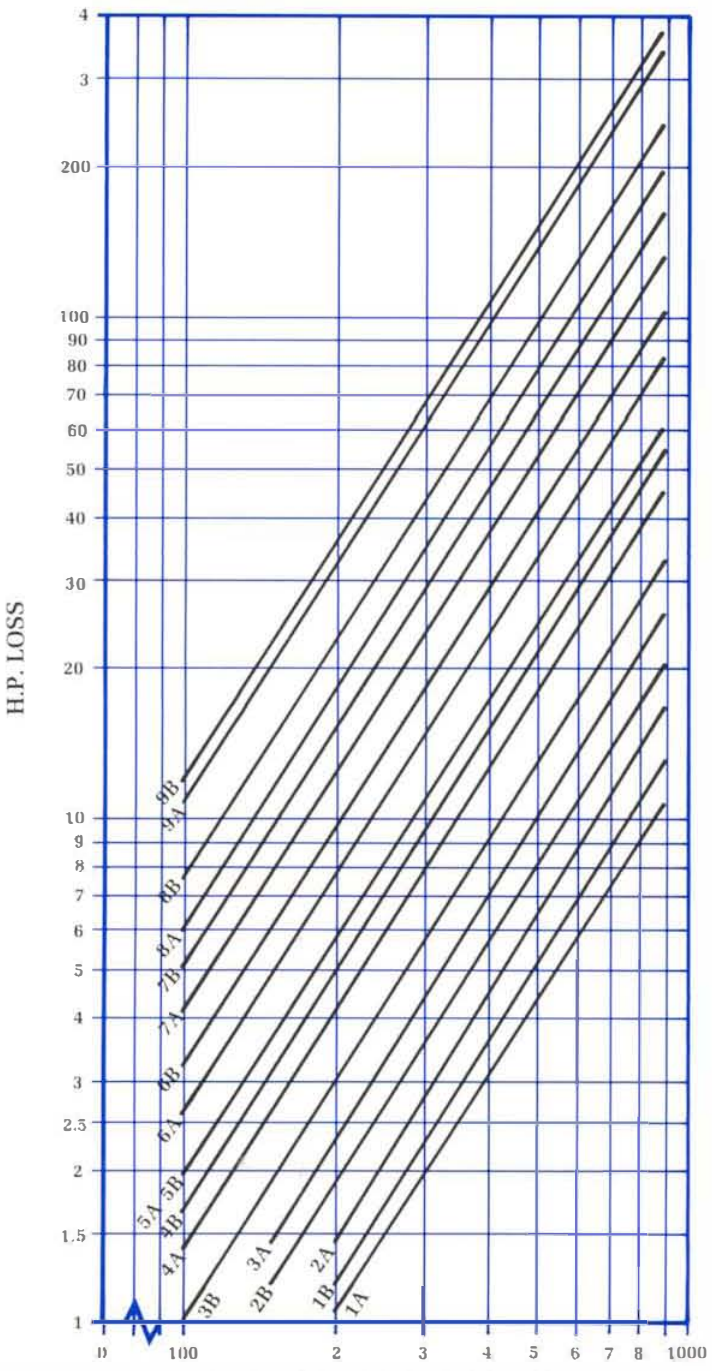
Preliminary bearing selection and required bolt dimensions can be confirmed by contacting our Engineering Department.

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.

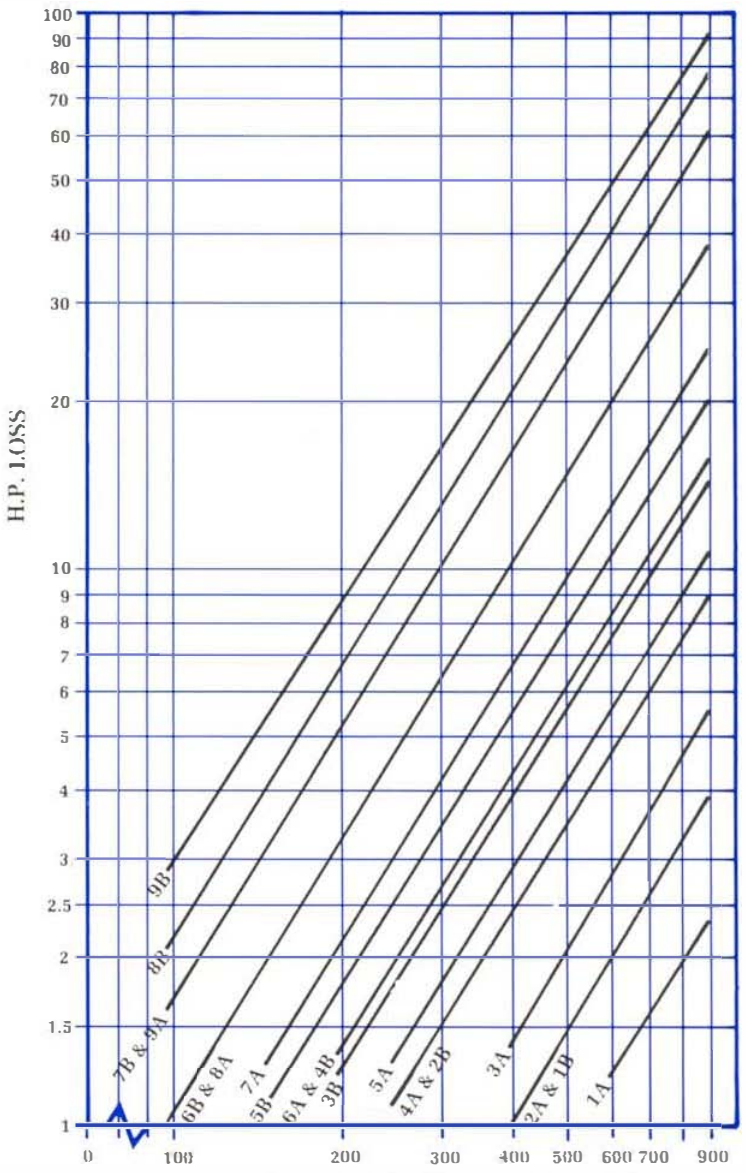
Thrust & Journal Bearing H.P. Losses

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



Journal Bearing H.P. Losses

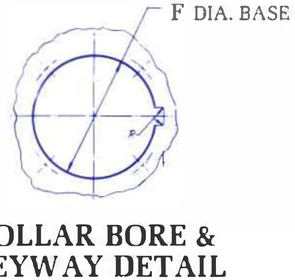
Item No.		Shaft Dia. Nom	Item No.		Shaft Dia. Nom
1	A	6.00	6	A	11.50
	B	7.50		B	16.00
2	A	7.00	7	A	13.50
	B	10.00		B	18.50
3	A	8.00	8	A	15.50
	B	11.50		B	21.00
4	A	9.00	9	A	18.50
	B	12.00		B	22.50
5	A	10.00			
	B	13.00			



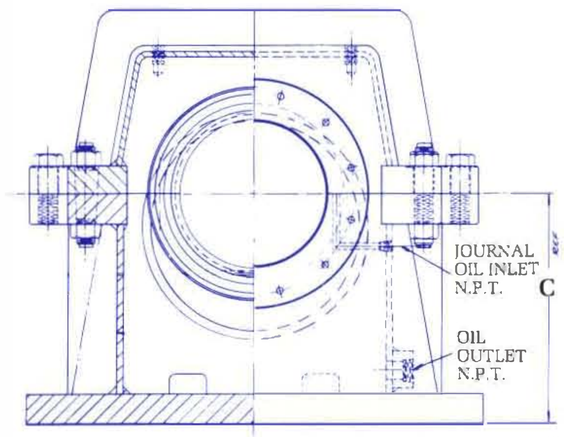
Based on 300 SSU @ 100°F, 120°F Inlet Temp.

Thrust & Journal Bearing with Housing Assembly

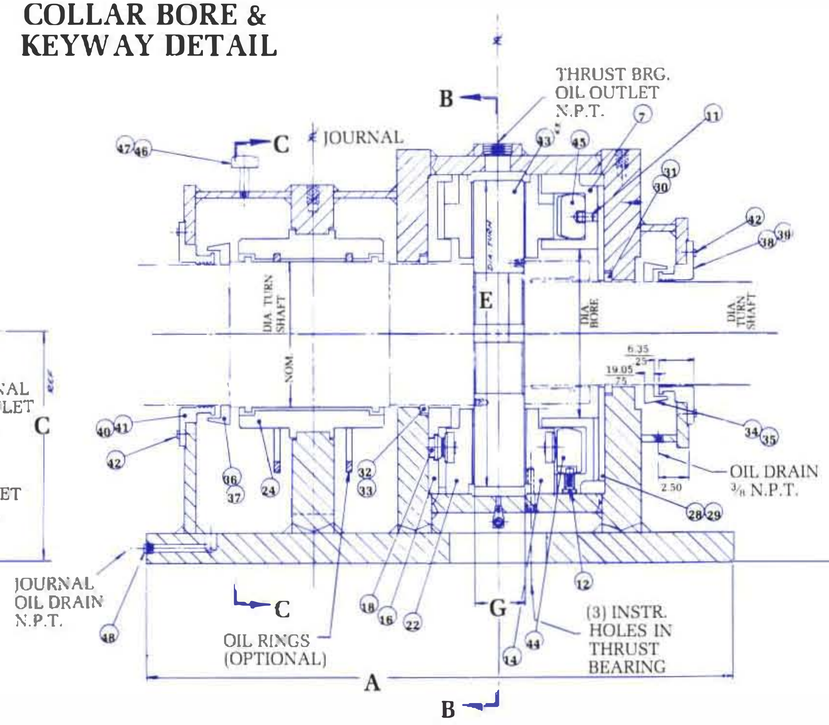
Item No.	Shaft Dia. Nom.	Thrust Load (lbs)	Journal Load (lbs)	Housing Dim's A	B	C	D	Thrust Collar E Dia.	F Dia.	G	Est. Wt. W/Collar#
1	6.00 7.50	36,000 28,000	11,000 15,000	36.38	22.00	11.00	8.12	13.69 13.69	5.38 6.75	2.25 2.25	1.650
2	7.00 10.00	48,000 28,000	15,000 25,000	39.25	25.50	11.75	8.88	15.19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



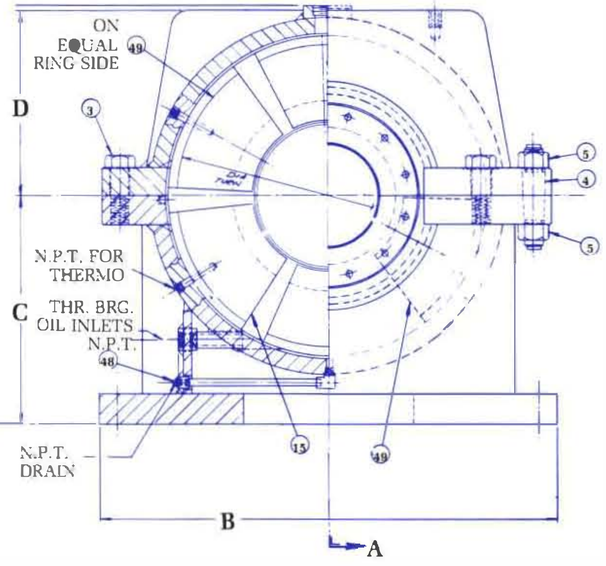
COLLAR BORE & KEYWAY DETAIL



HALF SECTION C-C
HALF END VIEW



SECTION A-A



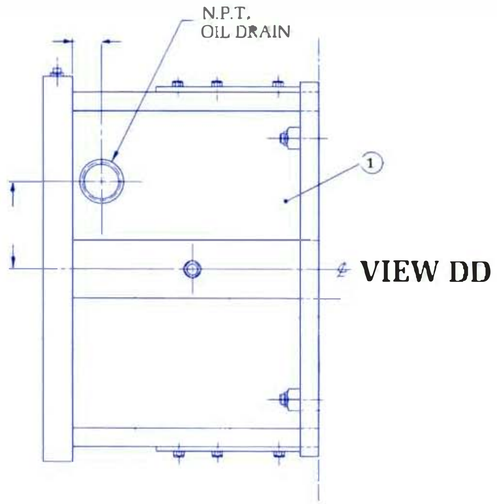
HALF SECTION B-B
HALF END VIEW

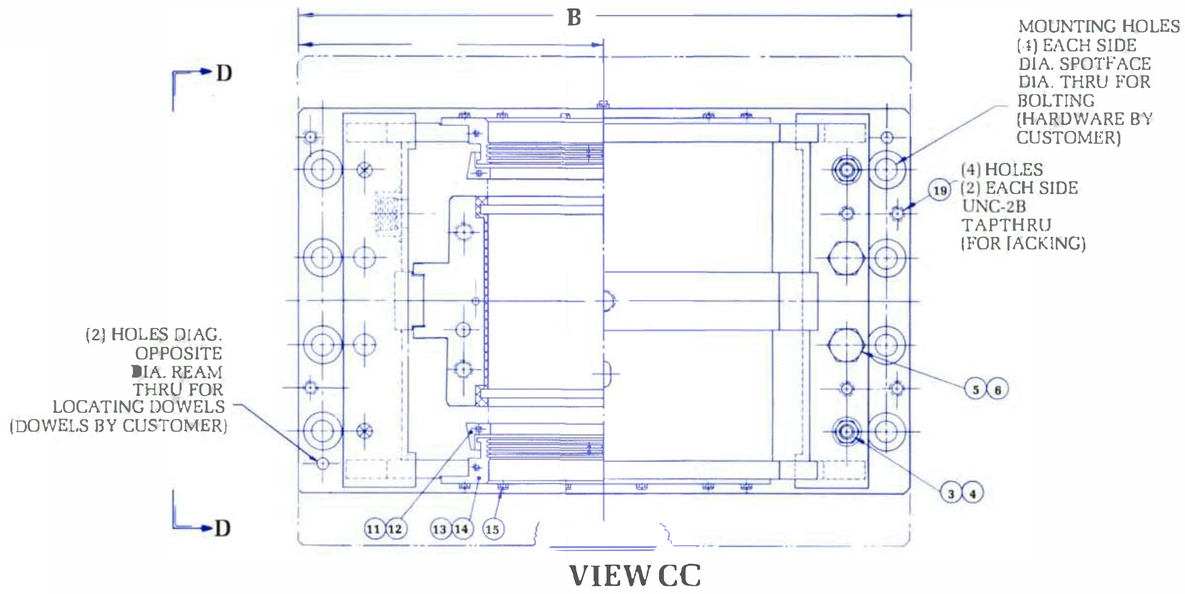
EQUALIZING BEARING MAY BE LOCATED ON EITHER SIDE OF COLLAR

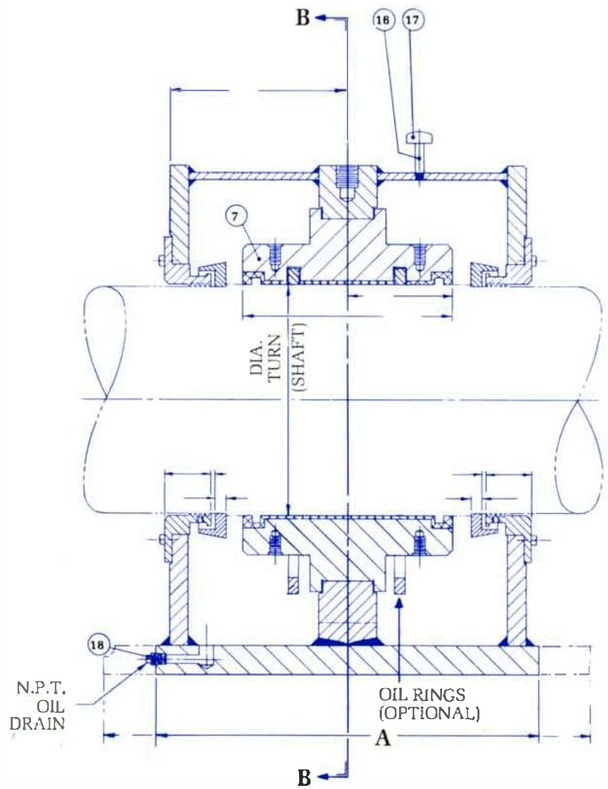
List of Material

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

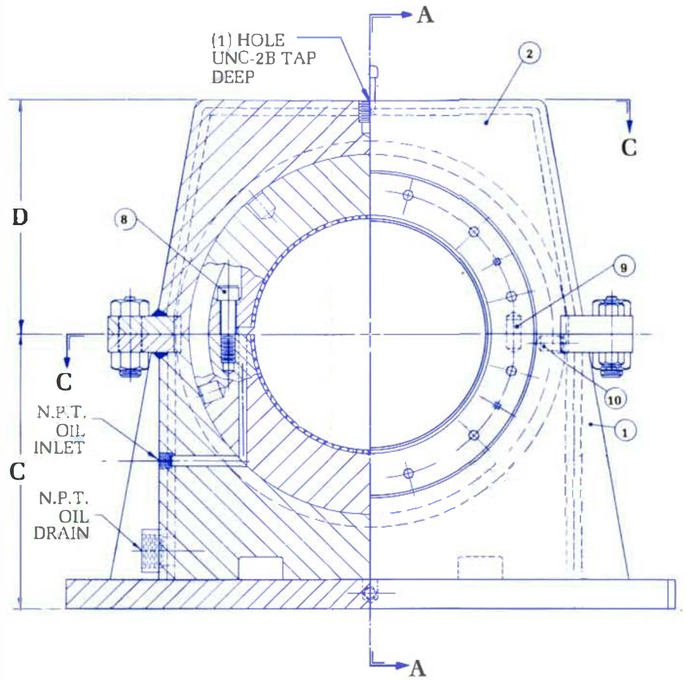
Journal Bearing with Housing Assembly







SECTION AA



HALF SECTION B-B

HALF END VIEW

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