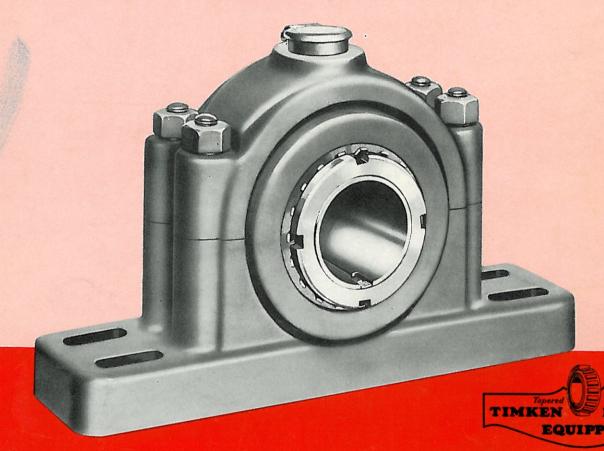
BULLETIN J-16

# Jones



PILLOW BLOCKS

(III)

**HEWITT-ROBINS** 

# **Jones Heavy-Duty Pillow Blocks**

# TIMKEN BEARING EQUIPPED

Every Heavy Industry has important power transmission jobs on production, handling and processing equipment where the operating conditions are so severe that no ordinary anti-friction bearing pillow block can deliver satisfactory service.

It is for these industries, never satisfied with "second-best" equipment, that the Jones Roller Bearing Pillow Block was engineered and designed.

Jones Pillow Blocks are not to be compared with pillow blocks of ordinary design or of ordinary construction. Their superiority is particularly apparent where operating conditions are unusually severe—where shock loads, dust, dirt, abrasives and moisture are encountered. Many of the most successful Jones Pillow Block installations were made as replacements for bearings which, under these adverse conditions, required prohibitively high maintenance expense or were the cause of costly shut-down delays.

Jones Roller Bearing Pillow Blocks are not the lowest in price, yet they are economical enough to insure over-all savings in a pillow block which gives more for the difficult jobs and will hold maintenance and operating costs to a minimum.

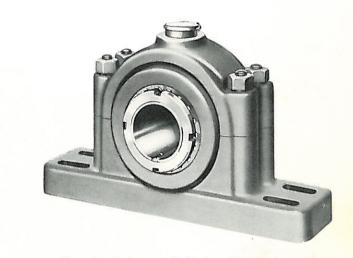


Illustration 2—Jones Self-Aligning Pillow Block, Timken Roller Bearing Equipped, with Tapered Adaptor Sleeve.

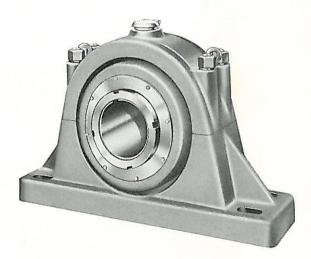


Illustration 3—Jones Self-Aligning Pillow Block, Timken Roller Bearing Equipped, for 9" in Diameter Shaft.



# IMPORTANT FEATURES ... WHICH MEAN



Illustration 4—Cut-away of Jones Pillow Block, Timken Roller Bearing Equipped.





# Better Performance Longer Trouble-Free Operation

# Lower Operating and Maintenance Costs

# 1

#### **SELF-ALIGNING**

Self-alignment is outside of the roller bearing and occurs between the bearing housing and the cap and base of the pillow block. This design insures the gaps or labyrinth between the seals and housing being maintained constant under all conditions of operation permitting them to be definitely sealed with grease.

# 2

### TIMKEN TAPERED ROLLER BEARINGS

Double row Timken Tapered Roller Bearings with one piece inner race and more widely spaced roll tracks provide improved stability and better load distribution over a greater length of shaft which results in longer service life.

# 3

#### LABYRINTH GREASE SEALS

A sling at each end of the bearing, recessed in the bearing housing, forms a metallic labyrinth of constant proportions which cannot be altered by any amount of misalignment. It is the simplest and most effective bearing protection known and presents up to 10 times more actual sealing area than any other arrangement.

This greater sealing area more effectively resists the breathing action of the grease chamber caused by internal temperature changes. Grease is retained and there is no chance for the grease chamber to draw in damaging dirt or grit.

Seals are self-relieving and being all steel will not blow out or be damaged by over-lubrication or high pressure greasing systems.

# 4

#### SYMMETRICAL GREASE CHAMBERS

Grease chambers of equal size and shape insure the proper lubrication of each bearing. Each time fresh lubricant is applied the symmetrical arrangement permits the lubricant to enter each of the chambers in equal volume. Travelling outward, the fresh lubricant completely flushes both bearings and the labyrinth seal passages.

# 5

#### SPLIT ADAPTOR SLEEVE

Steel adaptor sleeve is tapered on the outside to fit the bore of the bearing. The inside is ground to fit the shaft diameter. Sleeve is split and when drawn into the tapered bearing bore grips the shaft throughout its entire length with the equivalent of a press or shrink fit. No shoulders or threaded shaft portions are required. There is no danger of loosening up during service and no set screws to mar or cut the shaft. Split in sleeve is completely covered by close fitting collars which prevent grease from escaping along the shaft or damaging dirt or grit to enter the bearing.

# 6

## HOUSING

Sturdy, well proportioned, two piece outer housing is made of High Test cast iron. Cap and base are machined to close tolerances as a matched unit assuring a snug fit for the spherical bearing unit. Housing is designed for heavy-duty service being cast solid with no cored sections to weaken the bearing support. Two piece construction permits easy removal of bearing and shaft without disturbing or changing of alignment position.

# 7

#### **MOUNTING**

Mounting feet are designed for heavy loads with additional strength where strain is greatest to provide a rigid foundation that will resist vibration and shock. The bases are solid on the ends under the mounting bolts for rigid support. Being solid and well proportioned, a dowel pin could be used if necessary. Slotted cored base bolt holes simplify mounting and permit maximum lateral adjustment.

# 8

#### GREASE FITTING AND DUST CAP

Hydraulic type grease fitting mounted in a bushing is fully protected from dust, dirt and possible damage by a snap type dust cap. Bushing projects into cap recess to keep the bearing unit from revolving and as the bushing is in direct shear there is no bending or pressure against the grease fitting. Tight fit of the dust cap prevents even the smallest amount of dirt or abrasive material from entering the bearing through the opening in the grease fitting.

# TYPES

# OF JONES HEAVY-DUTY PILLOW BLOCKS

Jones Roller Bearing Pillow Blocks are available in two types, designated as EXPANSION and NON-EXPANSION.

When two or more pillow blocks are used on a shaft, one bearing should ordinarily be of the non-expansion type to prevent the shaft from moving end-wise. The balance of the bearings should be of the expansion type. Any difference in the expansion from heat over the length of the shaft in comparison to the supporting structure is then taken in the expansion bearing.

## **EXPANSION TYPE**

In the Jones expansion type of pillow block, the amount of space provided for expansion is easily observed. This prevents the possibility of jamming such as may occur in a design where expansion takes place within the bearing and cannot be checked without taking the bearings apart.

The pillow block housing consists of a high test cast iron cap and base held firmly together by means of four through bolts located in drilled holes. In this cap and base is fitted the spherical unit. The cap and base are precision machined as a matched unit and are not interchangeable.

The bore in the cap and base is machined straight for the expansion type as shown in illustration 6. The bearing housing is made with a finished spherical portion on the outside which fits in the straight bore of the cap and base. Thus, self-alignment is accomplished between the spherical bearing housing and the bore of the pillow block housing without disturbing the setting of the roller bearings or grease seals.

A hydraulic type grease fitting is located in the spherical bearing unit with a bushing that projects into the cap recess. This bushing will bear against the cap and keep the unit from revolving. There is no bending or presure against the grease fitting as the bushing is in direct shear.

A snap type dust cap covers the hole over the grease fitting to protect it against damage.

#### NON-EXPANSION TYPE

The spherical center or bearing housing is the same for both the expansion and non-expansion

type pillow blocks. This feature makes it simple to order and carry replacement parts. The shaft size is the determining factor for all other standardized parts.

The bore in the cap and base is machined spherical as shown in illustration 7. Here, too, as in the case of the expansion type, self-alignment is between the spherical bearing housing and the spherical bore of the pillow block housing without disturbing the setting of the roller bearings or grease seals.

Grease fitting, bushing and snap type dust cap are the same as used on expansion type pillow blocks.

# STANDARD HOUSINGS AND MODIFICATION

Foundation bolt holes in the standard pillow block are slotted for adjustment and cored straight through the depth of the foot with no weakening relief cores. The foot is of substantial thickness to provide bearing area for adjusting screws. The feet are also proportioned to permit the use of a dowel pin if necessary.

Pillow blocks can be furnished to order with drilled holes for the foundation bolts. Thus fitted bolts placed in direct shear can hold the pillow block, that is subject to shifting loads, in the correct position.

Bolts securing the cap and base are located in drilled holes. If space becomes a limiting factor, the feet of the pillow block could be milled off and with longer cap bolts the block could be secured directly to the foundation.

#### NAMEPLATE IDENTIFICATION

Each pillow block carries an attached nameplate on which is stamped the shaft size and a notation whether of the non-expnsion or expansion type. The red background plates designate the non-expansion (NXP) type and the blue background plates the expansion (EXP) type. A note about the type of grease to be used is also shown.

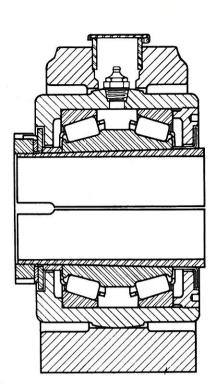


Illustration 6—Section through expansion type pillow block with straight bore in cap and base. This design of adaptor used for bearings with shaft diameters of 1-15/16" to 3-7/16" inclusive.

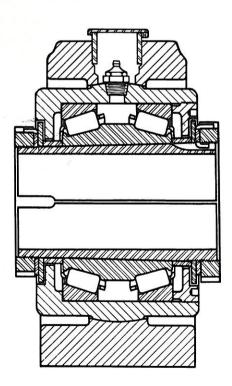


Illustration 7—Section through non-expansion type pillow block with spherical bore in cap and base. This design of adaptor with backing-off nut used for bearings with shaft diameters of 3-15/16" to 9" inclusive.

#### **BEARING UNITS**

The spherical bearing unit, being complete and self-contained, can be used by machinery builders to incorporate directly into their design.

Illustrations and dimensions of the Spherical and Cylindrical Bearing Units are shown on pages 12 and 13.

Selection procedure and bearing capacities are the same as for standard Pillow Blocks as outlined on pages 6 and 7.

#### BASE PLATES

High Test Cast Iron Base Plates are available for mounting Jones Pillow Blocks up to and including the 6" size. Jones base plates are rugged in construction to provide a substantial support for the pillow block. Base Plate adjusting screws permit more accurate shaft alignment during the initial installation and also provide a simple and easy method for re-alignment when necessary.

Base Plates are regularly furnished with the bottoms cast smooth. When base plates are to be assembled on structural steel work a machined bottom surface is required. Orders should specify whether or not base plates are to be finished on the bottom.

#### PLAIN BASE PLATES

Base Plates of this type are suitable for horizontal adjustment only. See page 10 for illustration and dimensional data.

#### WEDGE ADJUSTING BASE PLATES

Base Plates of this type provide for vertical adjustment up to approximately ½" depending on the shaft size. A second set of adjusting screws in the side flanges provide for horizontal movement. See page 11 for illustration and dimensional data.

## PROTECTED SCREW TYPE TAKE-UPS

Jones Protected Screw Take-Ups, Timken Roller Bearing Equipped, are available in non-expansion or expansion type for shaft sizes up to and including 5".

Illustrations and dimensions of the Protected Screw Take-Ups are shown on pages 14 and 15.

Selection procedure and bearing capacities are the same as for standard pillow blocks and is outlined on pages 6 and 7.

# **HOW TO SELECT**

- PILLOW BLOCKS
- CYLINDRICAL UNITS
- SPHERICAL UNITS
- PROTECTED SCREW
   TAKE-UPS

The allowable load carrying capacity of all anti-friction bearings varies with the operating conditions. The length of life to be expected from bearings is dependent on the duty they are required to perform as well as the conditions under which they are installed and operate.

The chief function of pillow blocks and bearing units of the description shown in this catalog is to carry radial loads although there is some thrust carrying capacity for the roller bearing. Where thrust loads are encountered the complete conditions should be sent to the home office to check not only the bearing capacity but the complete unit for stability against overturning or endwise movement.

ln the table on page 7 are tabulated the radial load capacities for the bearings based on 30,000 hours minimum length of operation. This is the rating at which 90 per cent or more of a large number of identically loaded bearings will still be operating at the end of the specified time. The average life is generally much longer. The allowable load will vary with the length of life desired and modifying LIFE FACTORS are shown for several lengths of time. The tabulated loads are for the roller bearings only and do not take in account the shaft capacities.

SERVICE FACTORS

The allowable capacities given represent safe loads at various speeds for the roller bearings when properly installed and lubricated. These capacities are also based on ordinary conditions of service where the loads are fairly smooth, even and uniform in character. Where the conditions of service are considered somewhat more severe, modifications should be made in the tabulated ratings. SERVICE FACTORS in the table on page 7 are suggested for several conditions.

Each installation should be analyzed to place it in a definite service class. If the conditions are more severe or special they should be referred to the manufacturer.



# BEARING CAPACITIES

# TABLE OF RADIAL LOAD CAPACITIES BASED ON 30,000 HOURS MINIMUM LENGTH OF OPERATION

		200		27.7.									
. , ,			*	SHAFT	SPEE	D—RE	.VOLU7	TONS	PER N	IINUTI	£		
Standard Shaft Size, Inches	50	100	200	300	400	500	750	1000	1250	1500	1750	2000	2500
filches				ALLC	)WABL	E RAD	DIAL L	OADS	IN POU	JNDS			
115/16	5580	4534	3684	3260	2990	2795	2475	2270	2125	2010	1920	1845	1725
23/16	6280	5100	4146	3670	3365	3148	2785	2555	2393	2263	2160	2075	1940
<b>2</b> ½	9600	7800	6338	5610	5145	4810	4260	3907	3660	3460	3305	3175	
<b>2</b> 15/16	14500	11780	9573	8475	7770	7270	6430	5900	5525	5225	4995		
<b>3</b> 7/ <sub>16</sub>	19000	15438	12544	11100	10180	9525	8430	7730	7240	6848			
<b>3</b> 15/16	28400	23075	18750	16600	15215	14240	12600	11560	10820				
47/16	29200	23725	19278	17070	15645	14640	12950	11885					
415/16	39400	32010	26010	23030	21110	19750	17480	16035					
b 7	53400	43388	35255	31210	28610	26770	23690	• • • • • •	• • • • • • •			• • • • • • • •	
1	56800	46150	37500	33200	30430	28470	25195						
8 9	62000 69800	50375 56710	40930 46080	36240 40800	33220 37400	31080 34990	• • • • • • •				• • • • • • •		• • • • • • •
J	00000	30/10	40000	40000	3/400	<b>34550</b>		• • • • • • •					• • • • • • •

Note: The Load ratings in the above table are those of the Timken Roller Bearings and do not take into account the shaft capacities.

# LIFE FACTORS

For hours of operation other than 30,000 multiply the ratings in the above table by the following factors:

Hours	Factor	Hours	Factor
3,000	2.00	30,000	1.00
5,000	1.71	40,000	.92
7,000	1.55	50,000	.86
10,000	1.39	75,000	.76
20,000	1.13	100,000	.70

## SERVICE FACTORS

	MODIFYING
APPLICATION	<b>FACTOR</b>
General Machinery Applications	1.00
Smooth, Even Loads.	
Heavy Machinery Applications	.75
Up to 1000 R.P.M., Varying Unev	en
Loads, Slight Shocks or Peaks.	
Machinery Subjected to Heavy	.60
Shocks or Peaks, High Speed	
Applications 1000 R.P.M. and Ab	ove.

# **EXAMPLE**

To check two bearings on a shaft having a load equidistant between them. Subject to slight shocks.

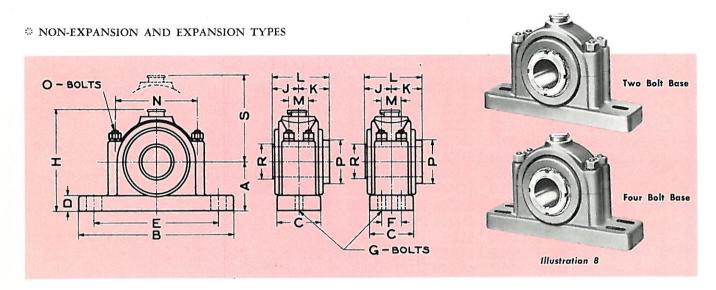
Desired Life — 20,000 Hours Speed — 300 R.P.M. Shaft Size — 2-7/16" Radial Load on Each Bearing — 3500 Lbs. Life Factor — 1.13 Service Factor — .75 Bearing Rating from Table — 5610 Lbs.

Permissible load =  $5610 \times 1.13 \times .75 = 4755$  Lbs.

The standard 2-7/16" pillow block having a permissible load capacity of 4755 lbs. is satisfactory for the 3500 lb. imposed load.

<sup>\*</sup> Capacities for intermediate speeds can be ascertained by interpolation.

# JONES SELF-ALIGNING PILLOW BLOCKS TIMKEN ROLLER BEARING EQUIPPED



#### STANDARD DIMENSIONS IN INCHES

Std. Shaft Size	† Other Shaft Sizes	A	В	С	D	Slot Cor Ho	red	Drill-	F	Two Bolt	Four Bolt	Н	J	К	L	М	N	0	P	R	S	Approx. Net Weight
						-	Max.	Holes			Base											Lbs.
115/16	17/8—2	<b>2</b> 7/8	1134	314	11/8	87/8	97/8	93 8		3/4		65/8	115/16	23/16	41/8	134	6	1/2	3	25/16	<b>5</b> ½	27
23/16	215-214	31/8	121/2	31/2	134	91/2	101/2	10		3.4		71/8	21/16	<b>2</b> <sup>3</sup> / <sub>8</sub>	47/16	15/8	61/2	$\frac{1}{2}$	33/8	25/8	63/8	35
§ 27/16	23 8-21 2	4	1414	37/8	13.6	1034	12	1136	214		5/8	85/16	25/16	25/8	415/16	13/4	71/4	5/8	35/8	27/8	73/16	53
§ 2 <sup>15</sup> 16	2 <sup>5</sup> / <sub>8</sub> -2 <sup>11</sup> / <sub>16</sub> 2 <sup>3</sup> / <sub>4</sub> -2 <sup>7</sup> / <sub>8</sub>	43/4	1512	43%	11/2	1134	1314	121/2	234		5 %	95/8	25/8	31/16	511/16	2	81/4	5/8	41.8	37/16	715/16	79
§ 37/16	3-33/6 33/8-3/2	<b>5</b> ½	17	<b>5</b> <sup>1</sup> 4	15/8	13	1414	13¾	314		34	115/16	215/16	37/16	<b>6</b> 3 ś	<b>2</b> <sup>3</sup> ś	91.2	34	5	4	911/16	124

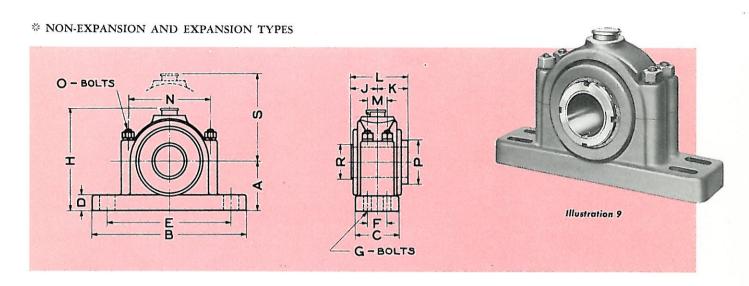
For reference only. Certified Prints furnished for construction purposes.

- \* All orders for Pillow Blocks must specify non-expansion or expansion type as may be required.
- ‡ Pillow Blocks are always supplied with slotted cored base bolt holes unless specifically ordered with standard drilled holes.
- ▲ When Pillow Blocks are ordered with drilled base bolt holes the bolt holes will be located on the E and F dimensions and will be for the same size of bolts as those shown unless specified otherwise for location and size. For drilled base bolt holes the following amounts should be added to the list price of each pillow block:
  - 20 per cent for shaft sizes 115" to 215" inclusive.
  - 15 per cent for shaft size 316".
- † For special shaft sizes not listed consult JONES.
- § Base for 216" size and larger made with 4 base bolt holes.

Bearing capacities shown in rating table on page 7.

Jones

# JONES SELF-ALIGNING PILLOW BLOCKS TIMKEN ROLLER BEARING EQUIPPED



#### STANDARD DIMENSIONS IN INCHES

Std. Shaft Size	Other Shaft Sizes	A	В	С	D	Co	‡ E tted ored oles	Drill-		G Four	н	J	K	L	М	N	0	P	R	S	Approx. Net Weight
						Min.	Max.	Holes		Bolt Base											Lbs.
315/16	737/8—4	63/8	20	61/4	17/8	151/2	171/4	163/8	31/4	7,8	135/16	43%	43/8	83/4	21/8	11½	3/4	6	63/4	113/16	220
47/16	43/8-41/2	71/4	22	6½	21/8	16½	181/2	17½	3½	1	1411/16	411/16	411/16	93 8	3	123 ś	7/8	63/4	7	121/16	290
415/16	47/8—5	7½	241/2	7	21/4	18¾	203⁄4	19¾	33/4	11/8	15¾	5	5	10	3½í	14	7/8	7	73/4	133 s	365
6	53/4-515/16	10	35	81/4	23/4	27¾	301/4	29	41/2	11/4	203/8	6	6	12	37/8	17½	11/8	85/8	9	171/4	690
7	63/4615/16	11½	39	93/4	31/4	30½	33½	32	5½	11/2	231/16	6¾	6¾	13½	45/8	19½	11/4	93/4	1012	197/16	1125
8	73/4—715/16	13	44	111/4	35/8	341/4	373/4	36	61/2	13/4	26	79/16	79/16	151/8	51/4	22	1½	11	1134	223 ś	1600
9	834-815/16	15	49	13	4	38	42	40	8	2	30	89/16	89/16	171/8	6	25	134	1214	13	265/s	2100

For reference only. Certified Prints furnished for construction purposes.

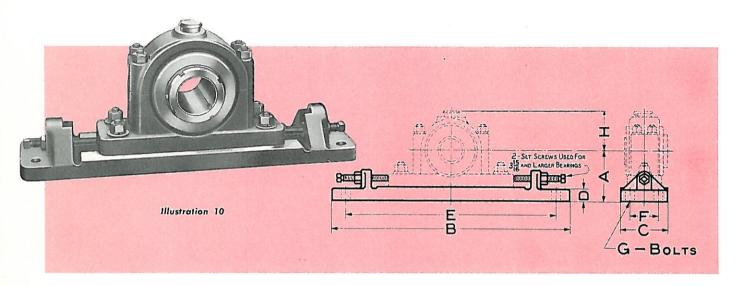
- \* All orders for Pillow Blocks must specify non-expansion or expansion type as may be required.
- ‡ Pillow Blocks are always supplied with slotted cored base bolt holes unless specifically ordered with standard drilled holes.
- ▲ When Pillow Blocks are ordered with drilled base bolt holes the bolt holes will be located on the E and F dimensions and will be for the same size of bolts as those shown unless specified otherwise for location and size. For drilled base bolt holes the following amounts should be added to the list price of each pillow block:
  - 15 per cent for shaft sizes 315" to 415" inclusive.
  - 3 per cent for shaft sizes 6" to 9" inclusive.
- † For special shaft sizes not listed consult JONES.

Bearing capacities shown in rating table on page 7.

Jones

# **JONES PLAIN BASE PLATES**

FOR JONES PILLOW BLOCKS HAVING HORIZONTAL ADJUSTMENT ONLY



#### STANDARD DIMENSIONS IN INCHES

C. 1	*,	A			I	)					Approx
Std. Shaft Size	Without Finish on Bottom	Finished on Bottom	В	С	Without Finish on Bottom	Finished on Bottom	Е	F	G	н	Net Weight Lbs.
115/16	47/16	41/4	2134	434	13 ś	13/16	193/4	23/4	34	334	38
<b>2</b> 3/ <sub>16</sub>	411/16	41/2	23	5	13 8	13/16	21	3	3/4	4	46
<b>2</b> 7/13	55/8	57/16	<b>25</b> <sup>1</sup> 4	<b>5</b> ½	17/16	114	23	314	7%	45/16	55
215/16	6916	<b>6</b> <sup>3</sup> ≰	271/2	534	19/16	13%	251/4	31/2	7/8	47/8	65
37/16	73 %	71%	31	634	15%	13 8	2814	4	1	513/16	75
<b>3</b> 15/16	835	81 ś	3434	81/2	134	11/2	3134	51/2	1	615/16	110
47/16	93 %	91 8	38	10	17/8	15%	341/2	6½	11/8	77/16	170
415/16	934	916	4112	11	2	134	38	71/2	1.18	814	300
6		1284	57	13		214	52	8	11.2	103 %	415

For reference only. Certified Prints furnished for construction purposes.



<sup>\*</sup>All Base Plates are furnished without finish on bottom when they are intended for grouting in on concrete work. When they are intended for assembly on structural steel work, they are supplied finished on the bottom.

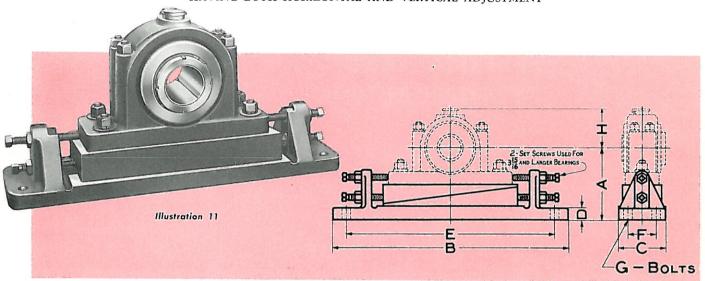
\*The "A" dimension, in the above table, for bases without finish is approximate.

\*Orders for Base Plates should state whether or not they are to be finished on the bottom.

# JONES WEDGE-ADJUSTING BASE PLATES

FOR JONES PILLOW BLOCKS

HAVING BOTH HORIZONTAL AND VERTICAL ADJUSTMENT



#### STANDARD DIMENSIONS IN INCHES

		*	A				I	)					
Std. Shaft Size		ıt Finish ottom		ned on ttom	В	С	Without Finish on	Finished on	E	F	G	Н	Approx. Net Weight
Size	Max.	Min.	Max.	Min.			Bottom	Bottom					Lbs.
115/16	67/s	616	611/16	65/16	213/4	43/4	13 %	13/16	1934	23/4	34	334	61
<b>2</b> 3/16	73/16	613/6	7	<b>6</b> 5 %	23	5	136	18/16	21	3	34	4	74
<b>2</b> 7/ <sub>16</sub>	83/16	713/16	8	<b>7</b> 5%	251/4	51/2	17/16	11/4	23	3!4	78	45/16	89
215/16	93/16	813/16	9	85/8	271/2	534	19/16	13 8	2514	31.2	3/8	47/8	105
37/16	103/16	913/16	915/16	9916	31	634	15%	13 6	2814	4	1	513/16	121
315/16	117/16	111/16	113/16	1013/16	343/4	81.2	134	112	3134	<b>5</b> ½	1	615/16	185
47/16	123/4	1214	1212	12	38	10	17/8	15%	341 2	612	11 ś	77/16	274
415/16	13¾	1314	1312	13	4132	11	2	134	38	71 2	11 8	814	475
6			1714	1634	57	13		21 á	52	8	112	103 %	750

For reference only. Certified Prints furnished for construction purposes.

Jones

<sup>\*</sup>All Base Plates are furnished without finish on bottom when they are intended for grouting in on concrete work. When they are intended for assembly on structural steel work, they are supplied finished on the bottom.

\*The "A" dimension, in the above table, for bases without finish is approximate.

\*Orders for Base Plates should state whether or not they are to be finished on the bottom.





# TIMKEN BEARING EQUIPPED

Manufacturers and machine builders sometimes desire to incorporate anti-friction bearing units into the design of their product using their frame for the bearing support.

The internal unit as used in the Jones Pillow Block is self-contained and can be used in this manner. Two types are made, one with the standard spherical ring on the housing and the other with the outside of the housing machined cylindrical over its entire length.

Both the Spherical Units and the Cylindrical Units are fitted with the same standard grease fitting and bushing as used in the pillow block. The bushing when installed in a recess can be a means of keeping the unit from revolving or the unit can in some cases be pinned in place.

The grease fitting can be used by making it accessible for a grease gun or attaching a pipe to the tapped hole for some other type of greasing system.

# SPHERICAL UNITS

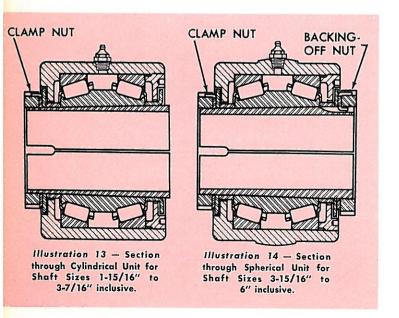
The bearing housings with the roller bearings, adaptor sleeves and all the internal parts assembled into a unit exactly as used in the pillow blocks are available as separate items. Standard dimensions are given on the next page.

The split bore in the machine frame is machined to match the spherical ring on the bearing housing. This provides for self-alignment and holds the unit in a fixed endwise position. A spherical unit can also be used in a straight housing bore the same as in a standard expansion type pillow block.

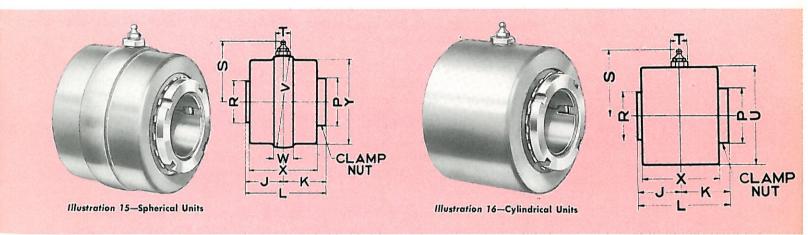
Illustration 14 shows the section thru this type of unit with the details of construction for locking to the shaft. Installation as well as the load capacity and lubrication recommendations, are the same as for the pillow block.

# CYLINDRICAL UNITS

Units of the same general design excepting with the bearing housing machined straight on the outside diameter are also available. Standard dimensions for these units are also shown on the next page. These cylindrical units are suitable for mounting in a straight bored hole, and may be pinned in place if desired. They can be incorporated in the design of many machines.



# **JONES** SPHERICAL AND CYLINDRICAL UNITS TIMKEN ROLLER BEARING EQUIPPED



#### STANDARD DIMENSIONS IN INCHES

Std. Shaft Size	†Other Shaft Sizes	J	K	L	P	R	S	T	‡U	*V	w	X	Y	Approx. Net Weight Lbs.
115/16	11/8—2	115/16	23/16	41/8	3	<b>2</b> 5⁄16	33/16	7/8	45%	411/16	1	31/2	47/16	10
$2\frac{3}{16}$	21/8-21/4	21/16	23/8	47/16	33/8	25/8	33/8	7/8	5	5½	11/16	$3\frac{3}{4}$	41/8	13
<b>2</b> 7/16	23 s—2½	25/16	25/8	415/16	35/8	<b>2</b> ½	35/8	7/8	51/2	511/16	13/16	41/4	53/8	18
215/16	2 <sup>5</sup> / <sub>8</sub> -2 <sup>11</sup> / <sub>16</sub> 2 <sup>3</sup> / <sub>4</sub> -2 <sup>7</sup> / <sub>8</sub>	25/8	31/16	5 <sup>11</sup> / <sub>16</sub>	41/8	37/16	41.8	7/8	61/2	69/16	13/8	47/8	63/16	28
37/16	3-3 <sup>3</sup> / <sub>16</sub> 3 <sup>3</sup> / <sub>8</sub> -3 <sup>1</sup> / <sub>2</sub>	215/16	37/16	63/8	5	4	5	11.8	734	8	13/4	$5\frac{1}{2}$	75/8	48
$3^{15}/6$	37/8—4	43/8	43/8	834	6	6¾	6	118	93,4	10	2	63⁄4	95/8	92
47/16	43/8-41/2	411/16	411/16	93/8	63/4	7	63.8	11/8	101/2	10¾	21/4	71/4	101/4	130
415/16	41/8-5	5	5	10	7	73/4	7	11/8	111/2	12	21/2	73/4	113/8	170
6	53/4-515/16	6	6	12	85/8	9	85/8	138	141/2	15	31/2	91/4	14	340

For reference only. Certified Prints furnished for construction purposes.

<sup>\*</sup> Spherical diameters V finished to dimensions shown plus nothing minus two thousandths. Furnished in shaft sizes from 115" to

<sup>6&</sup>quot; inclusive.

† Cylindrical diameters U finished to dimensions shown plus nothing minus two thousandths. Furnished in shaft sizes from 1½" to 6" inclusive.

<sup>+</sup> For special shaft sizes not listed consult the manufacturer.

Bearing capacities shown in rating table on page 7. When Spherical Units or Cylindrical Units are installed they should be supplied with housings and supports substantial enough to carry the full load imposed on the bearings.

# JONES PROTECTED SCREW TYPE TAKE-UPS TIMKEN ROLLER BEARING EQUIPPED

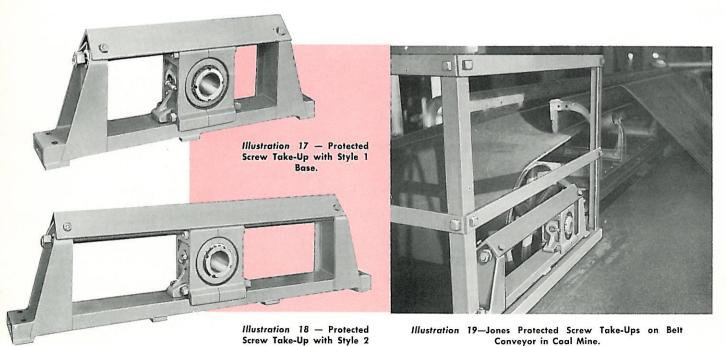
The Jones Take-Up has an adjusting screw that is protected against the accumulation on it of dust and dirt. It is rugged in construction and suitable for use on conveyors and elevators. The frame is made of welded steel which makes it rigid and strong without having excessive weight. Jones high test cast iron is used in the split bearing block that houses the bearing unit.

The bearing block is moved by two adjusting nuts that travel back and forth on the threaded screw. The screw itself does not change its position laterally or protrude beyond the frame. Because of this, only the amount of space required by the take-up assembly need be provided for.

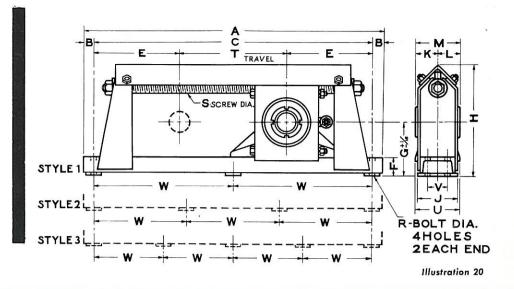
For each shaft size, there are several lengths of travel available. The standard dimensions are shown on the opposite page. When an assembly is ordered, certified prints for constructions purposes can be furnished, if requested.

The roller bearing assembly used in this take-up is a standard spherical unit with capacities as shown on page 7, dimensions and design on pages 12 and 13. This unit is assembled in the bearing block that has a matching spherical seat for the non-expansion type and a straight bore for the expansion type. The method of assembly of the clamp sleeve to the shaft, lubrication of the roller bearing and design for the ability to carry a radial load is the same as for the standard Jones pillow block.

It is recommended that on a shaft, one of the take-ups be of the nonexpansion type which is used to hold the shaft in position and the other of the expansion type which will allow for linear expansion and compensate for a change in shaft length in variance with the supporting frame work.



JONES PROTECTED SCREW
TYPE TAKE-UP TIMKEN
BEARING EQUIPPED



## STANDARD DIMENSIONS IN INCHES

Std. Shaft Size	†Other Shaft Sizes	T Travel	Style	A	В	Ċ	E	F	G	Н	J	К	L	М	‡R Bolt	S Screw Dia.	U	v	w	Approx. Net Weight Lbs.
115/16	11/8—2	12 18 24	1 1 1	32 38 44	11/8	29¾ 35¾ 41¾	87/8	2	55/8	11¾	4½	23/16	115/16	41/8	5/8	1	5	21/4	147/8 177/8 207/8	90 95 105
23/16	21/8—21/4	12 18 24	1 1 1	33½ 39½ 45½	11/8	31¼ 37¼ 43¼	95/8	21/16	515/16	123/8	41/2	23/8	21/16	47/16	5/8	11/8	5	21/4	155/s 185/s 215/s	105 115 125
27/16	23/8—21/2	12 18 24 30	1 1 1	36 42 48 54	11/4	33½ 39½ 45½ 51½	10¾	25/16	69/16	13¾	55/8	25/8	25/16	415/16	3/4	11/4	6	3	1634 1934 2234 2534	155 165 175 185
215/16	25/8—211/16 23/4—27/8	12 18 24 30	1 1 2 2	39 45 507/8 567/8	11/4	36½ 42½ 48¾ 54¾	12½ 12½ 12¾ 12¾ 12¾ 12¾	27/16	71/8	141/8	55/8	31/16	25/8	511/16	3/4	1½	6	3	18½ 21¼ 16⅓ 18⅓	205 220 235 245
37/16	3—3¾ <sub>6</sub> 3¾—3½	12 18 24 30	1 2 2 2	43 487/8 547/8 607/8	13/8	40½ 46½ 52½ 58½	14½ 14½ 14½ 14½ 14½ 14½	213/16	8½	175/8	63/4	37/16	215/16	63/8	7∕8	15/8	71/8	3½	20½ 15¾ 17¾ 17¾ 19¾	315 330 345 360
315/16	37⁄8—4	12 18 24 30	2 2 3 3	475/8 535/8 591/2 651/2	1½	JU%	165/ <sub>16</sub> 165/ <sub>16</sub> 161/ <sub>4</sub> 161/ <sub>4</sub>	215/16	93/4	201/4	8	43/8	43/8	83/4	1	11/8	81/8	4	147/8 167/8 141/8 155/8	490 510 535 555
47/16	43/8—41/2	18 24 30 36	2 3 3 3	56½ 62¼ 68¼ 74	15/8 15/8	65	177/16 171/2 171/2 171/4	33/16	109/16	21¾	8	411/16	411/16	93/8	11/8	2	81/4	4	175/8 143/4 161/4 175/8	635 660 680 720
415/16	<b>4</b> ½-5	18 24 30 36	3 3 3	59½ 65½ 71½ 77	13/4	68	19 19 19 18½	31/4	115/16	23½	9	5	5	10	1¼	21/4	93/8		14 15½ 17 18¼	800 820 850 890

For reference only. Certified prints furnished for construction purposes.

- † For special shaft sizes not listed consult the manufacturer.
- \* The style of take-up refers to the number and position of pads on bottom of base.
- ‡ Foundation bolt holes are drilled in the two end pads only.

  Bearing capacities are shown in rating table.

# INSTALLATION INSTRUCTIONS

The Timken bearing is in a self-contained unit that has been adjusted at the factory for the proper running clearance and the cover plate has been locked in place. This adjustment does not have to be disturbed when the unit is mounted on the shaft.

Smaller units can be lifted into place by hand and the heavier ones lifted by a crane using a rope sling or round bar through the bore. Be sure that there is no damage to the sleeve as burrs will keep the sleeve from seating properly on the shaft. The heavier pillow blocks are provided with lifting rings.

The cap and base may be disassembled for ease in installing but the cap should be remounted on the same base as they are not interchangeable. The cap and base are machined as a matched unit.

Be sure that the shaft is free of nicks, burrs and dirt. It should be round and smooth and of the correct diameter.

Loosen the clamp nut at 2 (Illustration 21) and lightly tap the adaptor sleeve to loosen it. The pillow blocks for shafts of 3-15/16" and larger diameters have backing-off nuts on the opposite end of the adaptor sleeve that can be used. Backing-off nuts should be backed away sufficiently during installation so the sleeve will be free to move endwise and not jam before becoming tight on the shaft.

Locate the unit at the proper position on the shaft. If it does not slide freely into place, examine the shaft as well as the sleeve bore for burrs, irregular spots or other inaccuracies.

An initial clamping effect can be put into the sleeve by bumping the adaptor sleeve lightly at 1 (Illustration 21).

Using a spanner wrench on nut (2) tighten by hand. Then rap the handle of the wrench with a hammer lightly to revolve the nut approximately one-eighth of a revolution and until one of the prongs of the lock washer is opposite a slot in the clamp nut. Bending the prong into the slot will keep the nut from working loose.

The backing-off nut on the larger size bearings should be brought into place and locked with a prong of the washer. Do not tighten this nut so excessively that it loosens the sleeve on the shaft.

# REMOVING THE BEARING

To remove the bearing from the shaft, the prong on the lock washer should be freed from the slot and the clamp nut loosened. The sleeve can then be tapped lightly to slide it along the shaft and loosen it in the taper bore of the bearing. On the larger sizes, the backing-off nut can be used for this.

### SPHERICAL AND CYLINDRICAL UNITS

The steps for installing the Spherical and Cylindrical Units are the same as for the complete pillow block.

### LUBRICATION

The bearings leave the factory with a protective coating of grease on the internal parts. Before they are put in operation the cases should be filled with grease. Further information will be found on page 17.

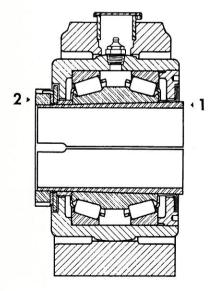


Illustration 21—Cross Section of Expansion Type Pillow Block.

# **LUBRICATION INFORMATION**

The internal parts of all Jones Roller Bearing equipped items are covered with a coating of grease before they leave the factory. Bearings should in all cases be filled with grease before they are put in operation.

Lubricant should be applied with a gun thru the hydraulic type fitting located in the unit. In the pillow block the fitting is recessed in the cap and protected by a snap top cover. The amount of lubricant used and the frequency of application should be governed by the conditions under which the bearing is installed and the speed at which it is operated.

There are several functions of the lubricant:

- 1. To reduce the friction of the parts and protect them against excessive wear.
- 2. To protect the highly polished bearing surfaces from corrosion.
- 3. To aid in carrying away heat.
- 4. To help the seals in keeping foreign matter out of the bearings.

For most installations standard lime soap or sodium soap greases are satisfactory. Unusual operating conditions require special attention, however.

When the extremes of temperature, load and speed are encountered, special lubricant recommendations should be obtained from your source of supply.

Frequency of lubricating depends on all the operating conditions. Bearings may require attention as often as once a week or only at six months to a year intervals if surrounding conditions are clean and operating temperatures normal up to 120° F. Too much grease tends to cause heating and this is particularly true when bearings operate at high speeds. Occasionally a bearing unit will become overloaded with grease and the excess will be discharged thru the seals. This should not be replaced.

Suggested Frequency for Greasing - Speeds up to 1750 RPM

Surrounding Conditions	Surrounding Conditions of Temperature	Greasing Intervals
	Up to 120 degrees F.	6-12 Months
Clean	Over 120 degrees F. to 250 degrees F.	1-4 Weeks
Moderate &	Up to 120 degrees F.	1-4 Weeks
Heavy Dust and Dirt	Over 120 degrees F. to 250 degrees F.	One or more times a week
Water Splash or Heavy Moisture		One or more times a week

It is considered desirable to lubricate new bearings several times at short intervals after they have been installed. Under normal conditions of service they should then only require lubrication at fairly long intervals. No definite rules can be given to cover all cases but with the above suggestions the operator can establish regular intervals depending on the specific operating conditions.

# LUBRICANT MANUFACTURERS RECOMMENDATIONS FOR SPECIFIC OPERATING CONDITIONS OF TEMPERATURE. NOMINAL SPEEDS, LOADS AND HOURS PER DAY.

C	Bulf Refining Company
١	lew York & New Jersey Lubricant Co.
T	he Pure Oil Company
S	hell Oil Company
S	inclair Refining Company
S	ocony-Vacuum Oil Company
S	tandard Oil of Indiana
S	tandard Oil of New Jersey
S	tandard Oil of Ohio
S	un Oil Company
т	he Texas Company

**MANUFACTURER** 

FOR NORMAL TEMPERATURE CONDITIONS,  $32^{\circ}$  to  $120^{\circ}$  Fahrenheit, use grease as indicated below or equal.

FOR HIGH TEMPERATURE CONDITIONS, 125° to 250° Fahrenheit, use grease as indicated below or equal.

Gulf Precision Grease No. 2
Non Fluid Oil F-No. 924
Poco Fibre Grease No. 2
Alvania Grease 2
Bearing Grease AF-No. 2
Gargoyle Grease BRB No. 3
Stanobar Grease No. 2
Andok Lubricant B
Sohio 78 Grease
844 Roller Bearing Grease, Light
Texaco Regal Starfak No. 2

Gulf Precision Grease No. 2
Non-Fluid Oil F-No. 924
Poco Fibre Grease No. 3
Alvania Grease 2
Bearing Grease AF-No. 2
Gargoyle Grease BRB-Hi-Temp
Stanobar Grease No. 2
Andok Lubricant B
Sohio 78 Grease
844X Roller Bearing Grease
Texaco Marfak No. 2 Heavy Duty

# **PARTS** LIST

# for JONES PILLOW BLOCKS, TIMKEN ROLLER BEARING EQUIPPED

(For Pillow Blocks Up to and Including 3-7/16" Shaft Size)

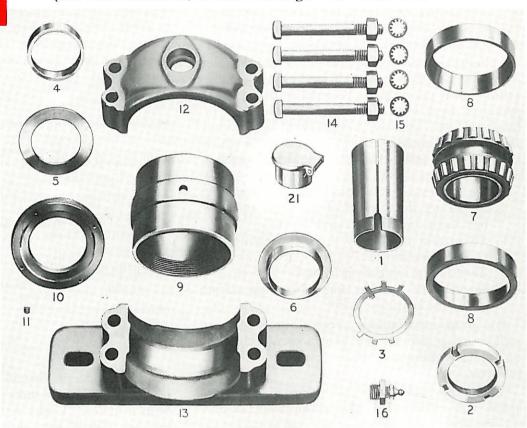


Illustration 22

#### PARTS LIST

Number Of Part	Quantity Per Pillow Block	Description	Number Of Part	Quantity Per Pillow Block	Description
1	1	Adaptor sleeve.	9	1	Bearing housing.
2	1	Clamp nut for securing	10	1	Bearing adjusting cover.
		adaptor sleeve to shaft.	11	1	Lock screw for bearing adjust-
3	1	Lock washer for clamp nut.			ing cover.
4	1	Spacer collar.	†12	1	Cap.
5	1	Seal ring.	†13	1	Base
6	1	Clamp seal.	14	4	Cap bolts.
7	1	Timken inner race and roller	15	4	Cap bolt lock washers.
		assembly.	16	1	Grease fitting and bushing.
8	2	Timken outer races.	21	1	Grease fitting cover.

<sup>\*</sup> When ordering a part, always specify the shaft size. This dimension is stamped on the metal tag attached to the bearing cap.
† The cap and base are machined as a unit, thus assuring the proper fit with the spherical unit. If a cap or base require replacement, both will be furnished with the bolts and lock washers. Be sure to specify whether non-expansion or expansion type, as marked on the name plate.

† Bases for 1½" and 2¾" Pillow Blocks will be furnished with 2 slotted cored base bolt holes unless otherwise specified.

<sup>†</sup> Bases for 2 16", 216" and 316" Pillow Blocks will be furnished with 4 slotted cored base bolt holes unless otherwise specified.



# PARTS LIST

# for JONES PILLOW BLOCKS, TIMKEN ROLLER BEARING EQUIPPED

(For Pillow Blocks 3-15/16" to 9" Shaft Size Inclusive)

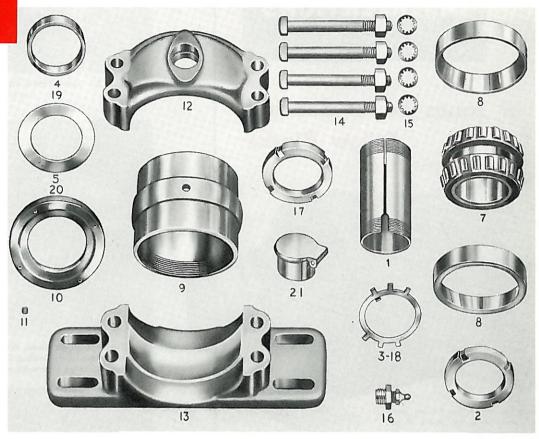


Illustration 23

## PARTS LIST

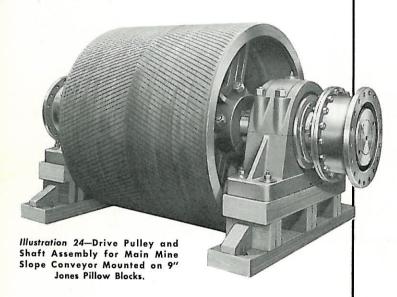
Number Of Part	Quantity Per Pillow Block	Description	Number Of Part	Quantity Per Pillow Block	Description
1	1	Adaptor Sleeve.	†12	1	Cap.
2	1	Clamp nut for securing	†13	1	Base.
	-	adaptor sleeve to shaft.	14	4	Cap bolts.
3	1	Lock washer for clamp nut.	15	4	Cap bolt lock washers.
4	1	Spacer collar adjacent to clamp	16	1	Grease fitting and bushing.
-		nut.	17	1	Backing-off nut.
5	1	Seal ring adjacent to clamp nut.	18	1	Lock washer for backing-off nut.
,	1	Timken inner race and roller assembly.	19	1	Spacer collar adjacent to backing off nut.
8	2	Timken outer races.	20		
9	1	Bearing housing.	20	1	Seal ring adjacent to backing
10	1	Bearing adjusting cover.			off nut.
11	1	Lock screw for bearing adjust- ing cover.	21	1	Grease fitting cover.

<sup>\*</sup> When ordering a part, always specify the shaft size. This dimension is stamped on the metal tag attached to the bearing cap.
† The cap and base are machined as a unit, thus assuring the proper fit with the spherical unit. If a cap or base require replacement, both will be furnished with the bolts and lock washers. Be sure to specify whether non-expansion or expansion type, as marked on the nameplate.

† Bases for Pillow Blocks 318" to 9" shaft sizes inclusive, will be furnished with 4 slotted cored base bolt holes unless otherwise specified.

# **INSTALLATIONS**

# of Jones Roller Bearing Pillow Blocks



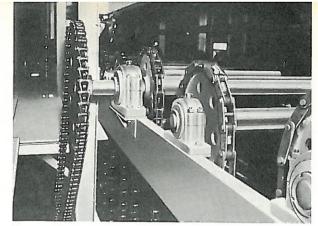


Illustration 27—Jones Pillow Blocks on Conveyor Roll Shafts in Pottery Plant.

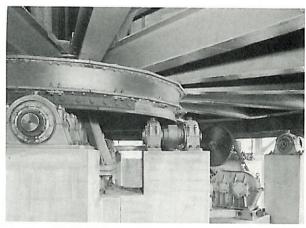


Illustration 28—6" Jones Pillow Blocks on Roll Shafts Supporting Cooling Table. Table Driven by a Jones Triple Reduction Herringbone Gear Speed Reducer.

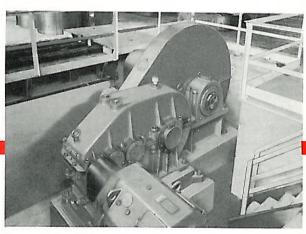
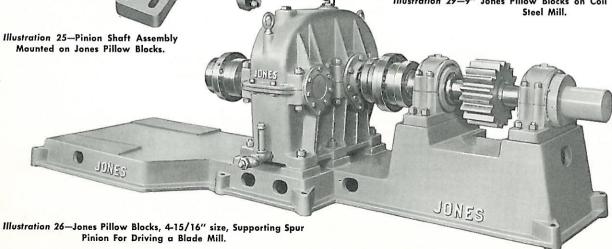


Illustration 29—9" Jones Pillow Blocks on Coil Conveyor Drive in Steel Mill.



# **OTHER JONES QUALITY ENGINEERED POWER TRANSMISSION PRODUCTS**

#### **CUT TOOTH GEARS**



Herringbone, helical, worm, spur, bevel, mitre, cut tooth gears made from high-test cast iron, steel, bronze or non-metallic materials. Special gears are manufactured exactly to your specifications.

# HIGH-TEST CAST IRON PULLEYS



We are specialists in flat belt conveyor pulleys and flywheels, with the engineering experience necessary to give you the design your job requires. Made from high tensile alloy iron, rubber lagged to your specifications in sizes to 120" dia. x 84" face. Jones Catalog No. 83 has complete information.

## SPEED REDUCERS

#### HERRINGBONE GEAR



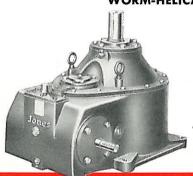
The most complete line of Herringbone Gear Drives available anywhere ranging from 1 to 1950 horsepower. Single, double and triple reduction. Ratios from 1.27 up to 355.8 to 1. Torque and overhung load styles. Antifriction bearings throughout. See Jones Catalog No. 100 for complete data.

#### WORM GEAR

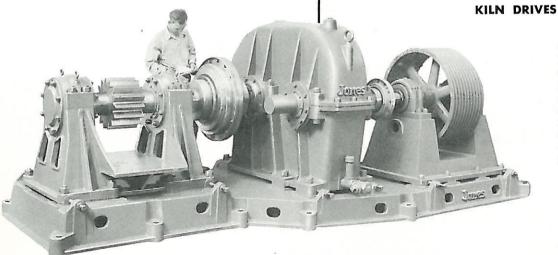


Right angle units for heavy duty service. Single or double extended output shaft. Worm above or below gear. Torque and overhung load styles. Standard ratios from 4 up to 90 to 1, capacities from 1/4 up to 100 H.P. Jones Catalog No. J-13 Provides complete application information.

## WORM-HELICAL GEAR



Ideal for agitators, mixers, bending rolls, or wherever heavy-duty vertical type drives are required. Output shaft extension up or down. Torque and overhung load styles. Standard ratios from 25.6 up to 357 to 1 in a wide range of horsepower ratings. Jones Bulletin No. J-14 gives complete information.



When it comes to KILN DRIVES there is no substitute for EXPERIENCED ENGI-NEERING. Each drive demands special study and careful consideration. Our design experience—35 years successfully engineering hundreds of rotary kiln drivesis yours for the asking.

#### RUBBER BELTING

Conveyor Elevator Transmission

#### MACHINERY PRODUCTS

**Belt Conveyor Systems** Belt and Bucket Elevators Car Pullers Car Shakeouts Car Thawing Equipment Chutes Conveyor Idlers Conveyor Pulleys Couplings Dewaterizers Digging Reclaimers **Door Hoists** Drives Feeders **Foundry Shakeouts** Gates Gear Reducers Hoists Holdbacks Mine Conveyors Pillow Blocks Power Transmission Equipment RoBINtronic Bin Level Indicators Screen Cloth Sectional Conveyors Self-Unloading Boat Mechanisms Shafts Skip Hoists Speed Reducers Stackers and Booms Storage and Reclaiming Systems **Takeups** Trippers Vibrating Conveyors Vibrating Feeders Vibrating Screens Winches Worm Gears Worms

Woven Wire Belts

#### HOSE PRODUCTS

Abrasive Suction and Discharge Acetylene Acid Agricultural Spray Air Air Drill Air Signal Ammonia

Barge Loading Blowout Preventer Brewers' Wine and Vinegar

Cement Placement Chemical-Booster Collapsible Aviation Refueling Creamery and Packers'

Dredge Sleeves Dust Suction

Fire
Flexible Vibrator
Flue Cleaning
Fuel Oil and Gasoline

Garden Gasoline Pump Hard Rubber Suction

Hydraulic, Jetting and Grout Industrial Vacuum Insulation Blowing

Molasses Suction and Discharge Mud Pump Suction

Oil and Gasoline Oil Suction and Discharge

Paint Spray
Pinch Valve
Pneumatic Tool
Propane Undersea Hose
Propane-Butane
Propane Tanker Loading and Unloading

Road Builders' Rotary Drilling Sand Blast
Sand Suction
Sea Loading
Servall, All-Service
Slim Hole Rotary
Solvent Handling
Steam
Street and Sewer Flushing
Suction

Tank Car Tank Truck Tank Wagon Truck Transport

Water Water Suction Welding, Twin-Weld Well Drilling

Molded Rubber Goods

Silicone Rubber Products

## INDUSTRIAL PRODUCTS DIVISIONS

#### PRODUCT MANUFACTURING PLANTS

ILLINOIS, Chicago 24, Jones Machinery Division, 4401 W. Roosevelt Road NEW JERSEY, Passaic, Robins Conveyors Division, 270 Passaic Avenue

NEW YORK, Buffalo 5, Hewitt Rubber Division, 240 Kensington Avenue

PENNSYLVANIA, King of Prussia, Wire Products Plant Henderson Road and Queens Drive

CANADA, Montreal, P.Q., Hewitt-Robins (Canada) Ltd., 2052 St. Catherine St., W.

FRANCE, Paris, Hewitt-Robins Internationale 9 Boulevard des Italiens

SOUTH AFRICA, Johannesburg, Robins Conveyors (S.A.) Ltd., 260 Market Street

ENGLAND, London W 1, Hewitt-Robins (Great Britain) Ltd., 8 Cavendish Place

HOLLAND, Amsterdam, (0), Hewitt-Robins (Holland) N.V. 6 Wibautstraat

#### **EXPORT DEPARTMENT**

NEW YORK, New York 17, 360 Lexington Avenue

#### REGIONAL OFFICES

CALIFORNIA, Los Angeles 22, 2604 South Malt Avenue ILLINOIS, Melrose Park, 17th & Bloomingdale (Chicago suburb)

**NEW YORK**, New York 17, 360 Lexington Avenue **TEXAS**, Houston 11, 5711 Navigation Blvd.

#### WAREHOUSES

ALABAMA, Birmingham, 3118 Third Avenue South CALIFORNIA, Los Angeles 22, 2604 South Malt Avenue

COLORADO, Denver 16, 5075 Colorado Blvd. ILLINOIS, Melrose Park, 17th & Bloomingdale

(Chicago suburb)

MASSACHUSETTS, Boston 22, 69 Tenean St., Dorchester

NORTH CAROLINA, Charlotte 6, 3601 Hutchinson Avenue
PENNSYLVANIA, Fort Washington

Fort Washington Industrial Park
TEXAS, Dallas 15, 2528 Oakland Avenue
Houston 11, 5711 Navigation Blvd.