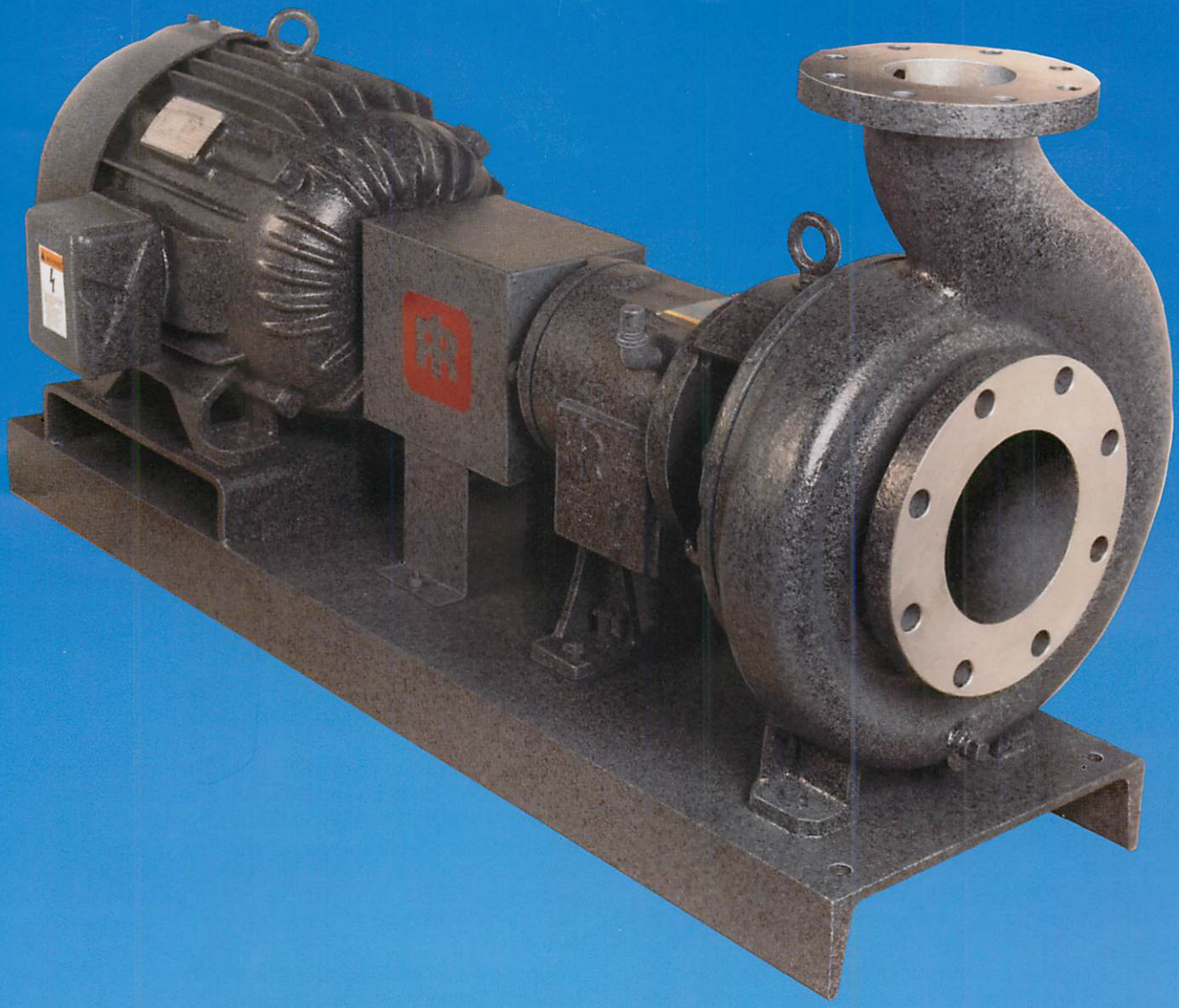
HOC2 Horizontal ANSI Process Pumps



INGERSOLL-RAND®

PUMPS

General Information

The HOC2 pump is a single stage, end suction, horizontal Centrifugal Pump, designed to ANSI/ASME B73.1M-1984 Standards for Chemical Process Pumps. The pumps are designed with vertical centerline discharge and back pullout construction. These pumps are available in ANSI Group 1, 2 and 3 sizes.

Construction

Casing is high grade ductile iron or 316 stainless steel of the back pull-out design with a fully confined gasket, centerline discharge, and foot mounted. Higher alloy materials are available as standard options depending on the particular application.

Stuffing Box is rabbet fitted to the casing with in and out flush connections. Optional internal drilling is available for internal flushing.

Impellers are precision cast in high grade carbon steel or 316 stainless steel of the semi-open design. They are statically and hydraulically balanced, externally adjustable, threaded to the shaft against rotation and "O" ring sealed. Higher alloy precision cast impellers are available as standard options depending on the application.

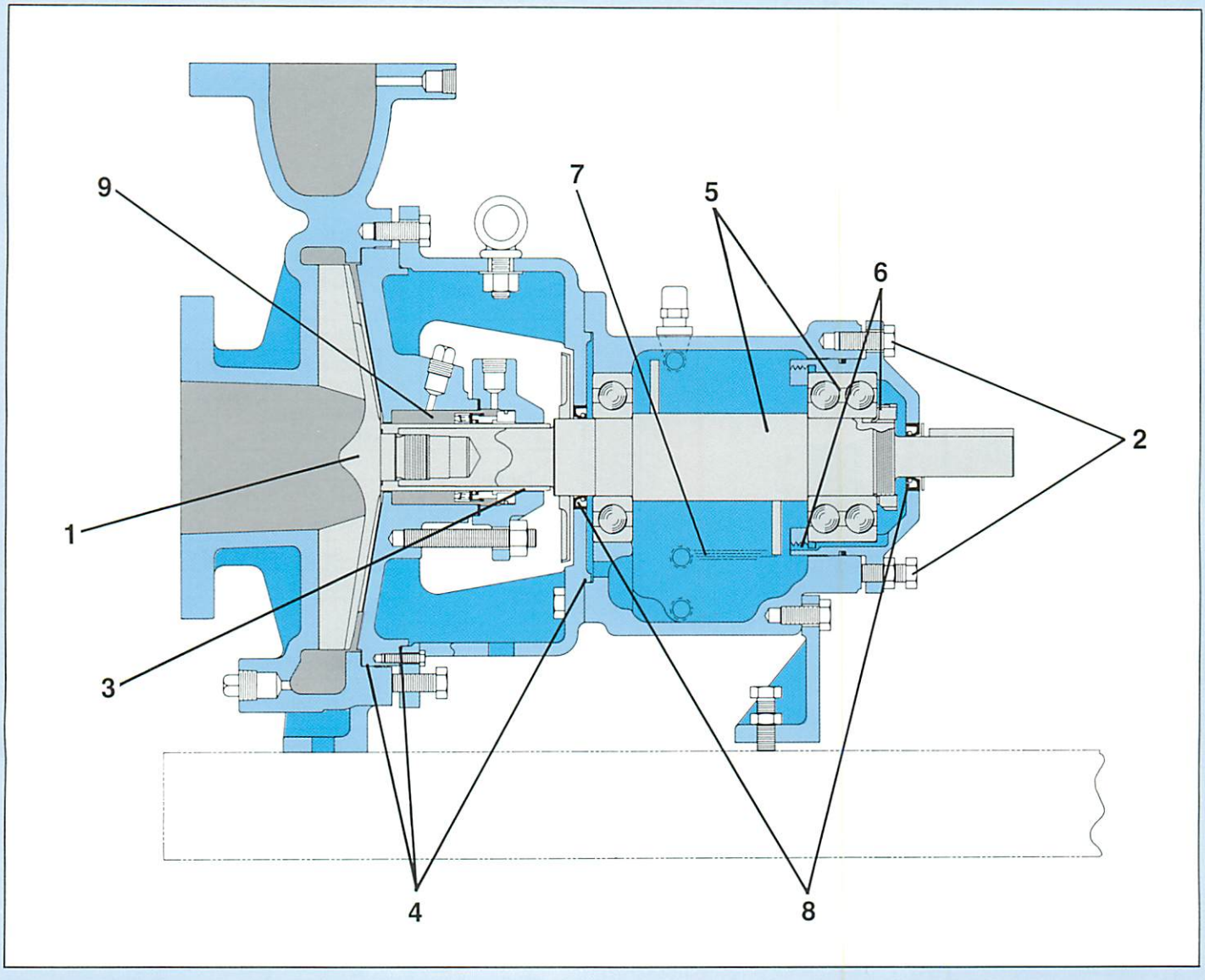
Shaft is high quality rigid AISI 4140 steel with a replaceable hook type sleeve and is also available in a sleeveless design. The shaft is ground to a high finish and designed for .002" maximum deflection at the stuffing box.

Bearings are oil lubricated with an external oiler, designed for minimum L-10 life of 2 years. The outboard (coupling end) bearing is double row, capable of carrying high thrust loads.

Baseplates are fabricated steel (standard) or optional reinforced fiberglass and are structurally designed to maintain alignment and provide a sound operating foundation. Drip rims, stilt mounting and ungrouted configurations are optionally available.

Couplings are flexible spacer type to permit disassembly and inspection without disturbing the pump piping or driver. Coupling guards are designed to meet OSHA requirements.

Interchangeability is maximized between pump sizes reducing spares inventory requirements.



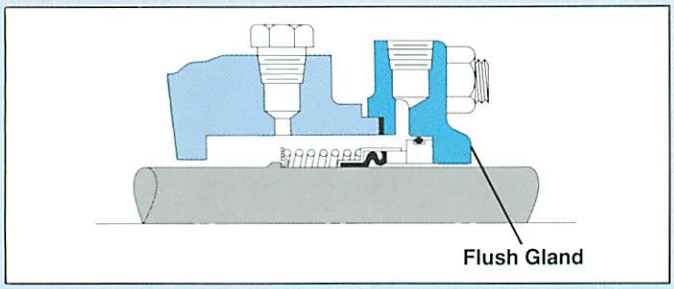
Design Features

1. **Semi-open Precision Cast Impellers** can handle clear liquids, particles, and light slurries with maximum efficiency.
2. **Externally Adjustable Impeller** clearance provides ease of maintenance and maximum efficiency.
3. **Replaceable Hook-Type Sleeve with O-ring** protects shaft and impeller threads from the pumped liquid. This results in lower replacement costs.
4. **Dry Rabbet Fit Construction** provides accurate positive alignment and less down time.
5. **Heavy Duty Shaft System** with a thick shaft, short overhang, and double row bearings, reduces the shaft deflection, thereby extending the bearing life.
6. **Thrust Bearing** is positively locked to the shaft and end cover. No snap rings are used.
7. **Large Capacity Oil Reservoir** with adjustable oiler is standard.
8. **Precision Lip Seals** isolate the oil reservoir from environmental dust and dirt.
9. **Versatile Stuffing Box** accommodates all types of seals, packing, and gland arrangements.
10. **Demanding ANSI/ASME B-73.1M—1984** criteria are met by the complete line of HOC2 pumps.

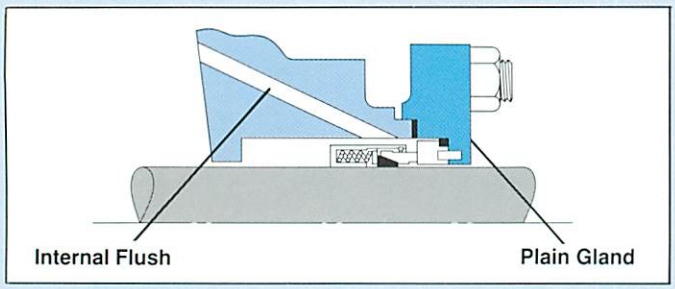
Mechanical Seals

HOC2 accepts a wide range of standard mechanical seals in a variety of stuffing boxes, glands and flush arrangements. This allows the optimum seal and seal environment to be selected to maximize seal life.

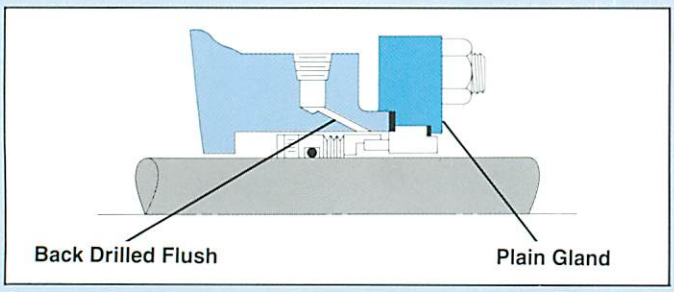
Typical Seal Arrangements:



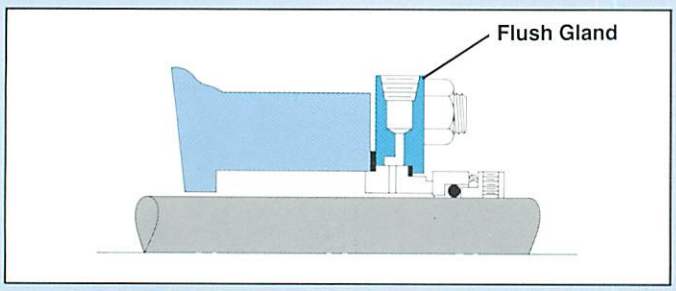
Single Inside—Elastomeric Bellows, Unbalanced with a Flexible Seat



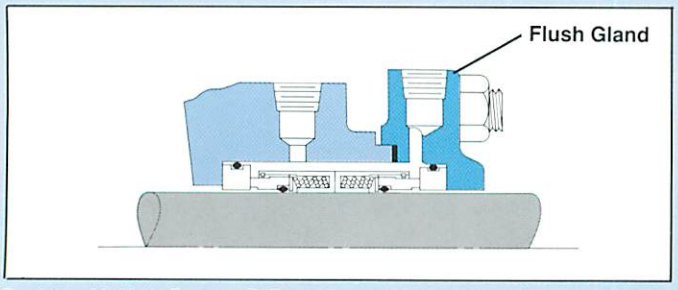
Single Inside—Multiple Spring, Teflon Mounted, Unbalanced with a Flexible Seat



Single Inside—Metal Bellows, O-Ring Mounted with a Clamped Seat

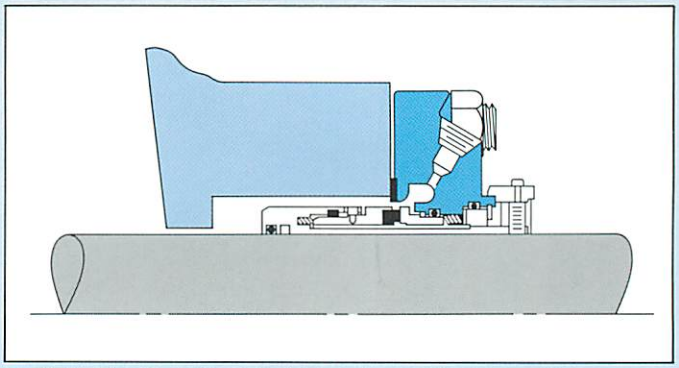


Single Outside—Multiple Spring, O-Ring Mounted with a Clamped Seat

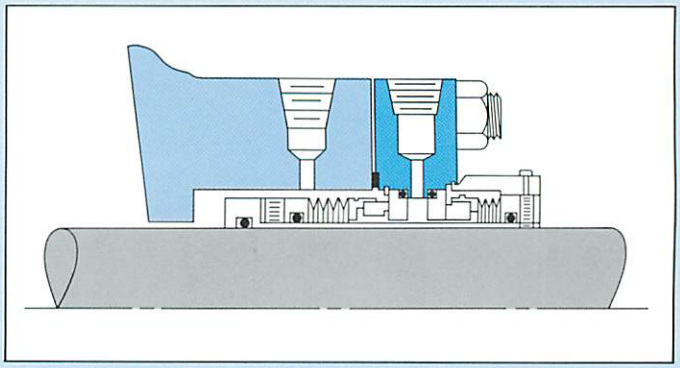


Double—Multiple Spring, O-Ring Mounted

Seal Types	Unbalanced	Balanced
Single Inside with Flexible Seats or Clamped Seats	Single Spring, Elastomeric Bellows	
	Single Spring, O-Ring Mounted	
	Multiple Spring, O-Ring Mounted	
	Multiple Spring, Teflon Mounted	
		Metal Bellows, O-Ring Mounted
		Metal Bellows, Graphite Mounted
Single Outside with Clamped Seats	Multiple Spring, O-Ring Mounted	
	Bellows, O-Ring Mounted	
Double	Friction Drive	
	Multiple Spring, O-Ring Mounted	
	Multiple Spring, Teflon Mounted	
Tandem	Multiple Spring, O-Ring Mounted	
	Multiple Spring, Teflon Mounted	
Single Inside, Cartridge	Single Spring, Elastomeric Bellows	
	Single Spring, O-Ring Mounted	
	Multiple Spring, O-Ring Mounted	
		Metal Bellows, O-Ring Mounted
Double/Tandem, Cartridge	Multiple Spring, O-Ring Mounted	
		Metal Bellows, O-Ring Mounted



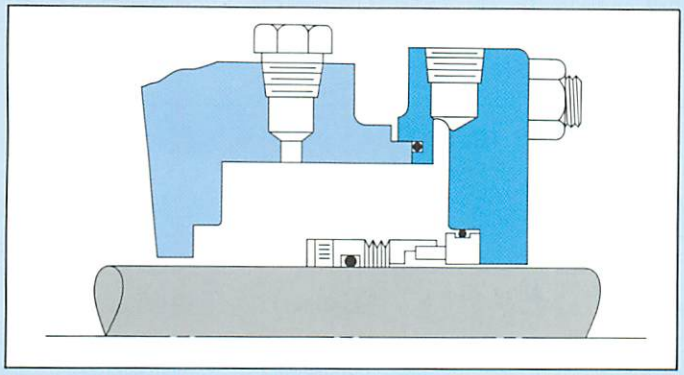
Single Inside—Cartridge, Multiple Spring, O-Ring Mounted



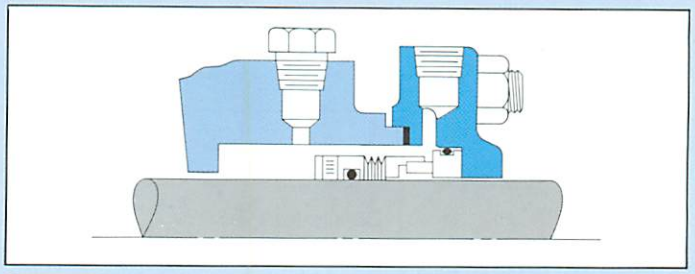
Double / Tandem—Cartridge, Metal Bellows, O-Ring Mounted

Stuffing Boxes

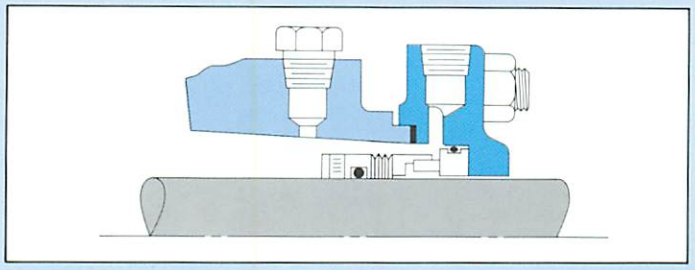
HOC2 is available with three different stuffing boxes to maximize seal life on each application. The Standard Stuffing Box accepts packing and all types of mechanical seals. The Tapered Self Draining Box reduces particle build-up in the box in dirty applications. The Oversized Sealing Chamber Box accepts standard seals while improving seal cooling and lubrication in critical applications.



Oversized Sealing Chamber Box



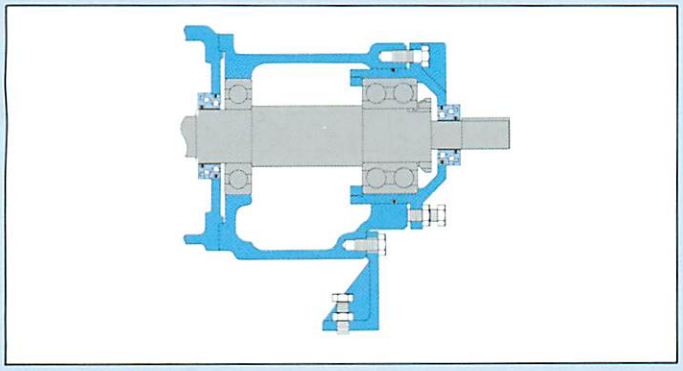
Standard Stuffing Box



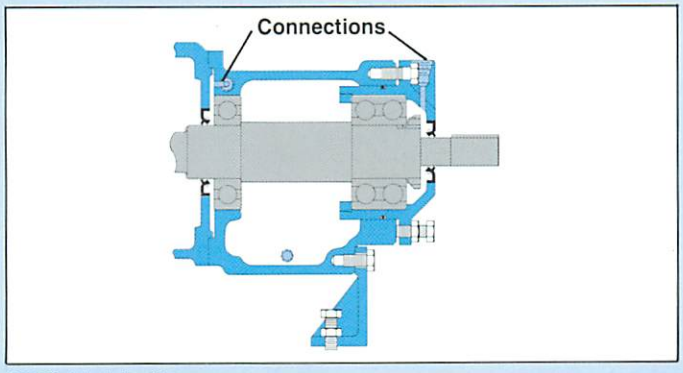
Tapered Self Draining Box

Frame End Options

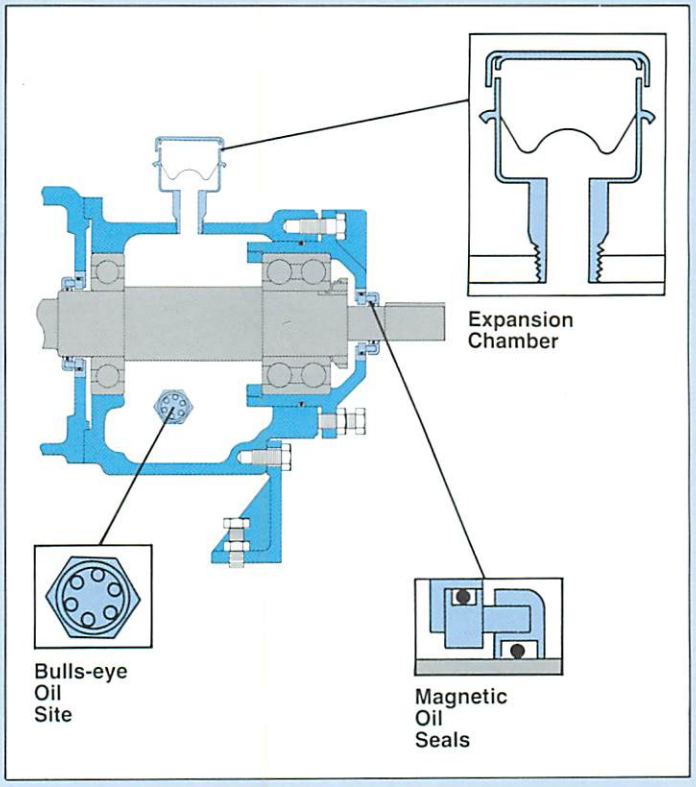
HOC2 offers several options to maximize bearing life in critical applications and contaminating environments.



Labyrinth Oil Seals



Oil Mist Lubrication



Sealed Bearing Housing Package

Additional Frame End Options

- Group 2A Frame—Oversized Seal and Coupling Shaft Diameters
- Sealed Grease Bearings
- Regreaseable Bearings
- Duplex Thrust Bearings

Bedplate Options

Standard Bedplates	Optional Bedplate Features
Fabricated Steel	316SS Drip Pan Drip Lip Stilts
Fiberglass Bedplate with built-in Drip Pan	Stilts

Materials of Construction

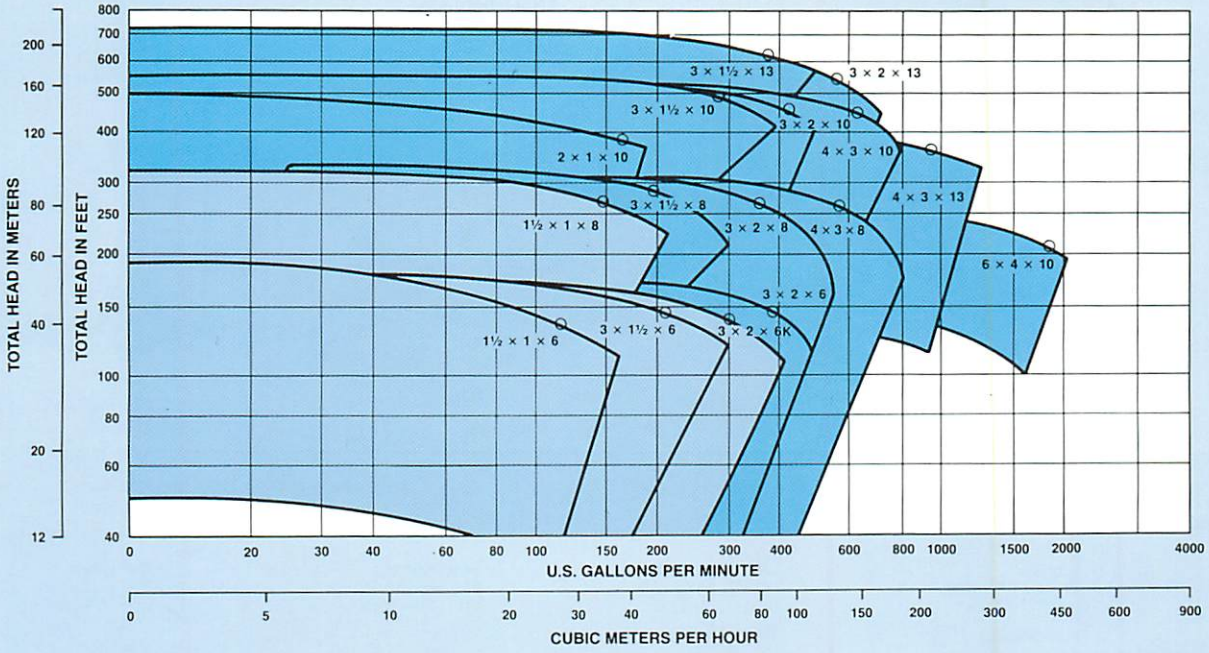
Material Column	DI	S	CD4	R	Hast. C	Hast. B
General Description	Ductile Iron	316 S.S.	CD4MCu	Alloy 20	Hastelloy C	Hastelloy B
Casing	Ductile Iron	316 S.S. (Cast)	CD4MCu	Alloy 20 (Cast)	Hastelloy C	Hastelloy B
Casing foot (when used)	Cast Iron					
Casing & Gland Gaskets	Non Asbestos					
Casing Bolting	Carbon Steel (Bolting)	304 S.S. (Bolting)				
Impeller	Carbon Steel (Cast) (1)	316 S.S. (Cast)	CD4MCu	Alloy 20 (Cast)	Hastelloy C	Hastelloy B
"O" Ring, Impeller	Teflon					
Casing Cover (Non-cooled)	Ductile Iron	316 S.S (Cast)	CD4MCu	Alloy 20 (Cast)	Hastelloy C	Hastelloy B
Casing Cover (Cooled)	316 S.S. (Cast)			Alloy 20 (Cast)	Hastelloy C	Hastelloy B
Gland	Ductile Iron	316 S.S.		Alloy 20	Hastelloy C	Hastelloy B
Gland Studs & Nuts	304 S.S. (Bolting)					
Shaft (With Sleeve)	Carbon Steel (Hot rolled)					
Shaft (Less Sleeve)	316 S.S. (Wrought)			Alloy 20 (Wrought)	Hastelloy C	Hastelloy B
Sleeve (Mechanical Seal)	316 S.S. (Wrought)			Alloy 20 (Wrought)	Hastelloy C	Hastelloy B
Sleeve (Packing)	Hardened 416 S.S. (Wrought) or Colmonoy Coated 316 S.S. (Wrought)			As Required		
Coupling Key	Carbon Steel (Key)					
Seal Cage (Lantern Ring)	Teflon					
Stuffing Box Packing	Non Asbestos					
Flinger (except 6 × 4 × 13)	Glass Filled Polypropylene					
Flinger (6 × 4 × 13)	Buna N Rubber					
Support Head or Adapter	Cast Iron					
Bearing Housing	Cast Iron					
Bearing End Cover	Cast Iron					
Bearing Housing Foot	Cast Iron					

Footnote: (1) Ductile Iron in Group 3 pumps.

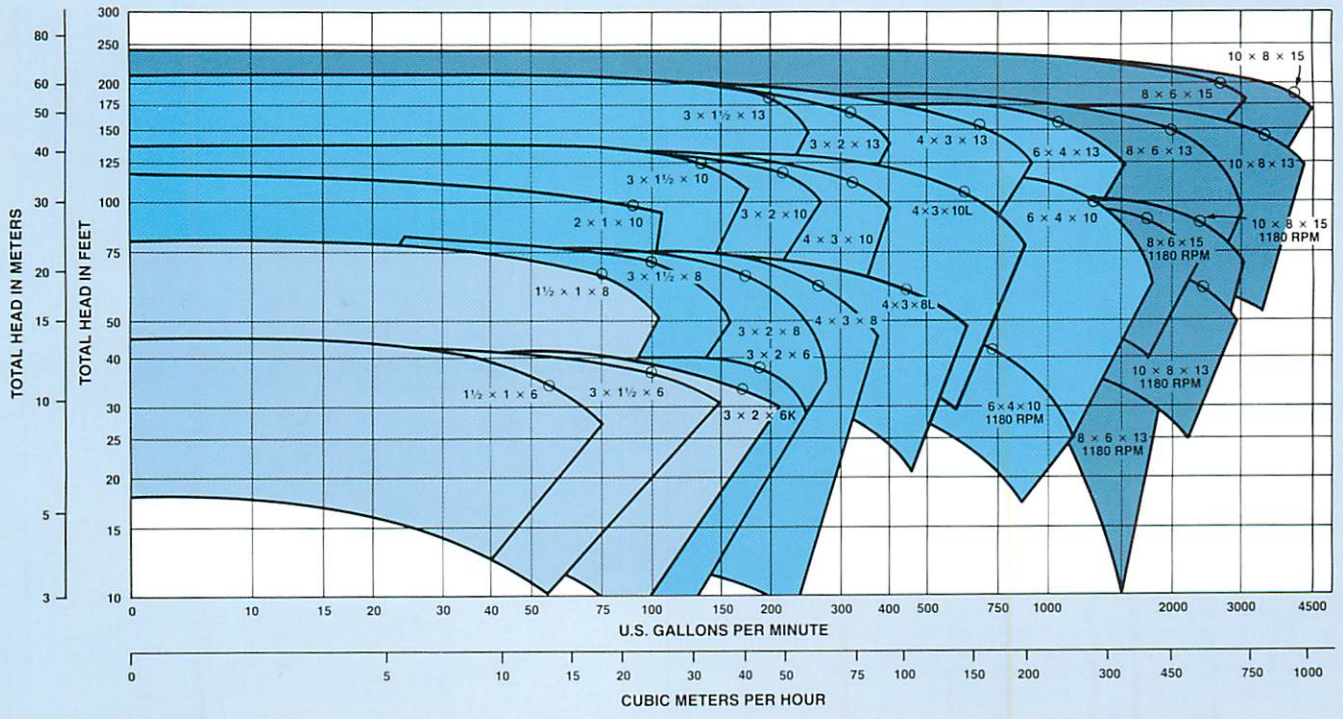
Material Specifications

General Description	Specification	General Description	Specification
Ductile Iron	ASTM A395	304S.S. (Bolting)	ASTM A276 Type 304
316S.S. (Cast)	ASTM A744 CF8M	316S.S. (Wrought)	ASTM A276 Type 316
CD4MCu	ASTM A744 CD4MCu	416S.S. (Wrought)	ASTM A276 Type 416
Alloy 20 (Cast)	ASTM A744 CN7M	Alloy 20 (Wrought)	ASTM B473
Hastalloy C	ASTM A494 CW12MW	Carbon Steel (Bolting)	ASTM A193B7
Hastalloy B	ASTM A494 N12MV	Carbon Steel (Hot rolled)	AISI 4140
Carbon Steel (Cast)	ASTM A216 WCB	Carbon Steel (Key)	AISI C1018
Cast Iron	ASTM A48 Class 30		

3600 RPM



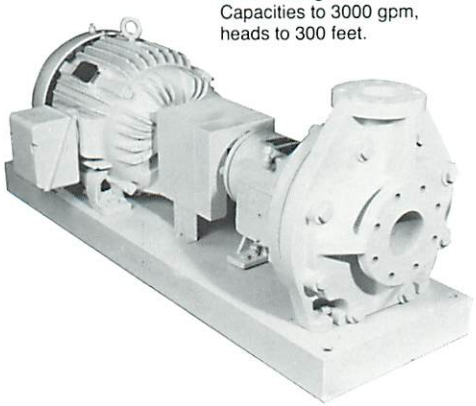
1800 RPM



There's an Ingersoll-Rand process pump that's just right for your needs.

Vertical Fiberglass:
Capacities to 1200 gpm, heads to 300 feet.

ANSI Inline:
Capacities to 2000 gpm, heads to 500 feet.



ANSI Fiberglass:
Capacities to 3000 gpm, heads to 300 feet.

Vertical Sump:
Capacities to 1400 gpm, heads to 350 feet.

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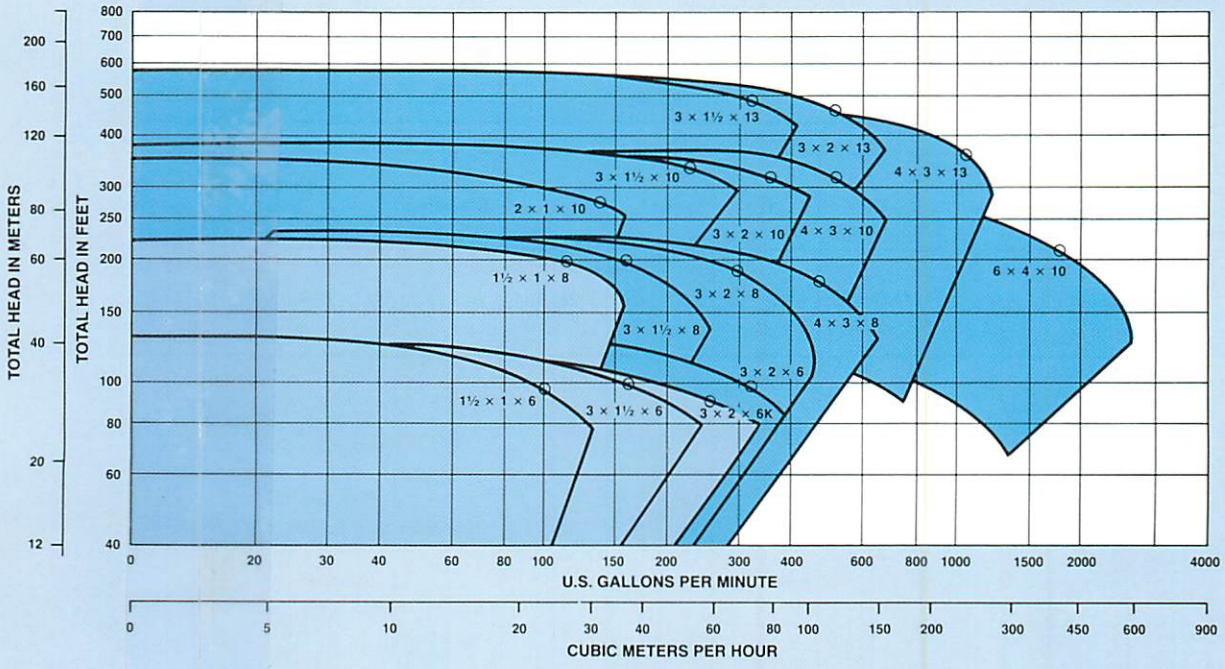
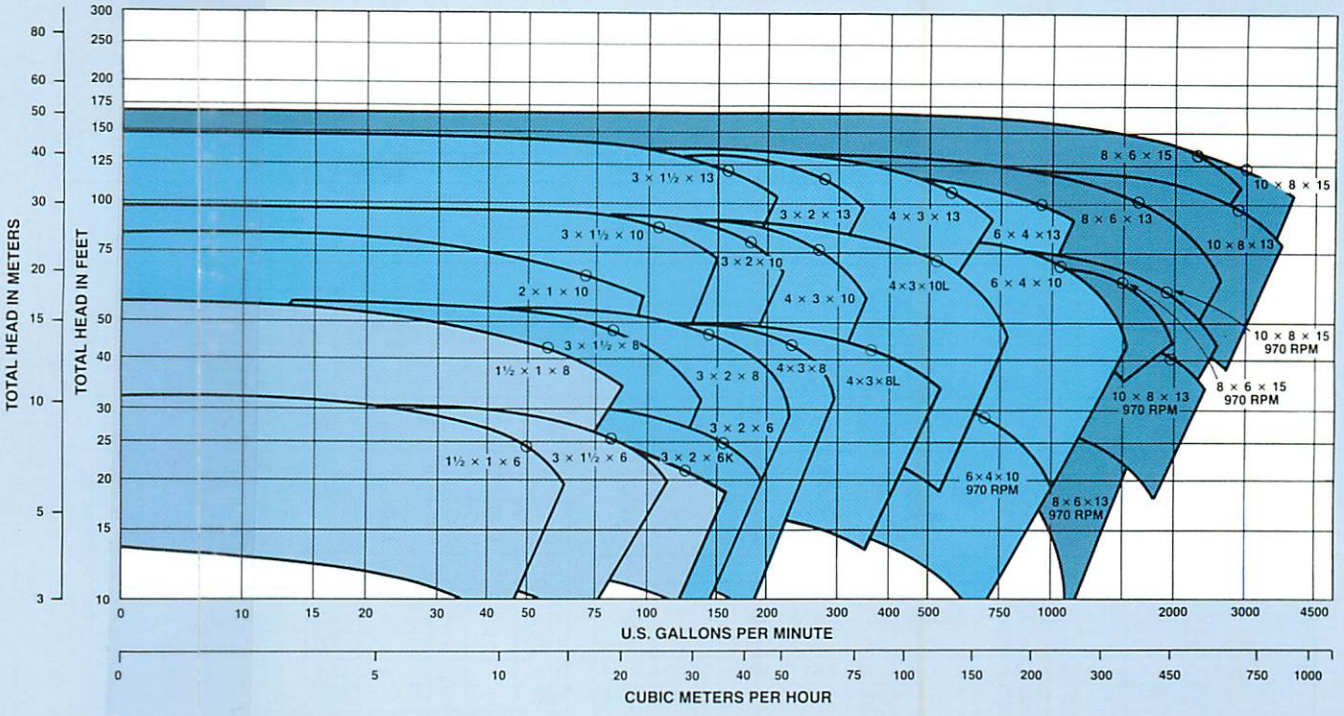
INGERSOLL-RAND
PUMPS

Form 70739-F Printed in USA

3000 RPM



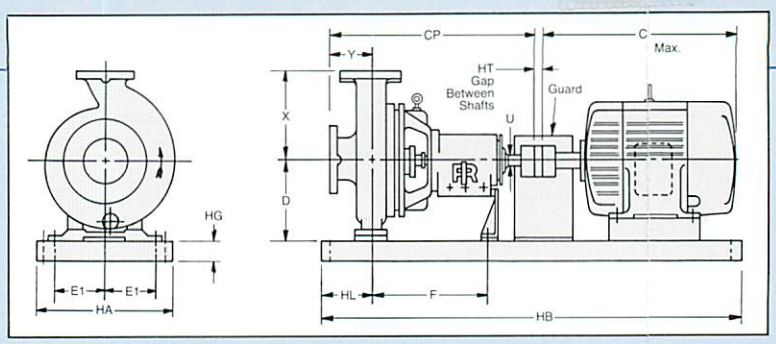
1500 RPM



HOC2

Dimensions And Weights

Approximate—Do not use for construction.



Pump Data																					
Group	Size-Suct. × Discharge × Max. Imp. Dia. (inch)	ANSI Size	X		Y		CP		D		E1		F		U Shaft Diameter		U Keyway Size		Pump Weight	
			in.	mm	in.	mm	in.	mm	in.	mm	in.	mm	in.	mm	in.	mm	in.	mm	lb.	kg
1	1.5×1×6	AA	6.50	165	4.0	102	17.50	445	5.25	133	3.00	76	7.25	184	.875	22.23	.187×.094	4.76×2.38	85	39
	3×1.5×6	AB																	90	41
	3×2×6K																		95	43
	1.5×1×8	AA																	105	48
2	3×2×6	A10	8.25	210	4.0	102	23.50	597	8.25	210	4.88	124	12.50	318	1.125	28.58	Standard .250×.125	6.35×3.18	195	88
	3×1.5×8	A50	8.50	216															210	95
	3×2×8	A60	9.50	242															215	98
	4×3×8	A70	11.00	280															230	104
	4×3×8L	A70	11.00	280															245	111
	2×1×10	A05	8.50	216															215	98
	3×1.5×10	A20	10.50	266					10.00	254									230	104
	3×2×10	A60	9.50	242					8.25	210							Optional .375×.187	9.53×4.76	235	107
	4×3×10	A70	11.00	280															250	113
	4×3×10L	A70	11.00	280											1.625	41.28			265	120
	6×4×10	A80	13.50	343					10.00	254									310	141
	3×1.5×13	A20	10.50	266															275	125
	3×2×13	A30	11.50	292															280	127
	4×3×13	A40	12.50	318															305	138
	6×4×13	A80	13.50	343							7.25	184							405	184
3	8×6×13	A90	16.00	406	6.0	152	33.88	860	14.50	368	8.00	203	18.75	476	2.375	60.33	.625×.312	15.88×7.94	615	279
	10×8×13	A100	18.00	457															660	299
	8×6×15	A110																	670	304
	10×8×15	A120	19.00	483															740	336

Bedplate Data																		
Group	ANSI Bed Size	NEMA Motor Frame Sizes	HA		HB		HG		HL		HT		C		Bedplate Weight Steel		Bedplate Weight Fiberglass	
			in.	mm	in.	mm	in.	mm	in.	mm	in.	mm	in.	mm	lb.	kg	lb.	kg
1	1T	56-182	10	254	35	890	2.62	66	4.50	114	3.5	89	14.50	368	45	21	17	8
	2T	184-215	12	305	39	990	3.00	76					19.50	495	68	31	20	9
	2	254-286	15	391	52	1320	3.38	86					27.00	686	147	67	37	17
2	1	143-215	12	305	45	1140	3.00	76	4.50	114	3.5	89	19.50	495	80	36	26	12
	2	254-286	15	391	52	1320	3.38	86					27.00	686	147	67	37	17
	3	324-365	18	467	58	1475	4.00	102					34.00	864	205	93	48	22
	4	404-405	18	467	60	1520	4.00	102					38.50	998	215	97	—	—
	5	444-445	22	559	68	1730	3.00	76					44.50	1130	190	86	90	41
3	5	284-365	22	559	68	1730	3.00	76	6.50	165	5.0	127	34.00	864	185	84	85	39
	6	404-447	22	559	80	2032	3.00	76					46.50	1181	210	95	—	—

Frame End Data								
	Group 1		Group 2		Group 2A		Group 3	
	in.	mm	in.	mm	in.	mm	in.	mm
Sleeve Outside Diameter	1.125	28.6	1.875	47.6	2.125	54.0	2.375	60.3
Standard Stuffing Box —Bore	1.750	44.4	2.625	66.7	2.875	73.0	3.250	82.5
—Radial Gap	.312	7.9	.375	9.5	.375	9.5	.437	11.1
—Depth (Std.)	2.06	52.3	2.44	62.0	2.44	62.0	3.56	90.4
—1st Obstruc. (Std.)	1.91	48.5	2.16	54.9	2.16	54.9	3.69	93.7
—1st Obstruc. (Max.)	2.16	54.9	2.44	62.0	2.44	62.0	4.13	104.9
Packing Size—Square	.312	7.9	.375	9.5	.375	9.5	.437	11.1
Sealing Chamber Box —Bore	2.625	66.7	3.625	92.1	3.625	92.1	4.375	111.1
—Radial Gap	.750	19.0	.875	22.2	.750	19.1	1.000	25.4
—Depth	1.81	46.0	2.16	54.9	2.16	54.9	3.12	79.2
—1st Obstruction	2.16	54.9	2.44	62.0	2.44	62.0	4.13	104.9
Flexible Seal Seat Outer Dia.	1.750	44.4	2.625	66.7	2.875	73.0	3.250	82.5
Bearing—Radial (inboard) Number—Thrust (outboard)	206 5305		311 5311		311 5311		313 5313	

Power Limits								
	Group 1		Group 2		Group 2A		Group 3	
RPM	HP	kw	HP	kw	HP	kw	HP	kw
3550	20	14.9	130	97.0	150	111.9	—	—
2950	16.5	12.3	110	82.1	122	91.0	—	—
1750	10	7.5	65	48.5	75	56.0	220	164.1
1450	8	6.0	53	39.5	61	45.5	179	133.5
1180	7	5.2	43	32.1	50	37.3	146	108.9
880	5	3.7	32	23.9	37	27.6	109	81.3