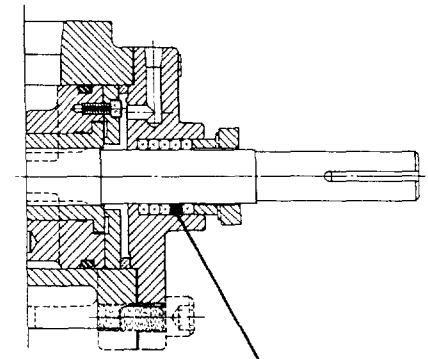
DE LAVAL IMO® PUMP

SERIES A3D
ROTOR SIZE
UP TO 187

PLAINTIFF'S EXHIBIT

IMO-151

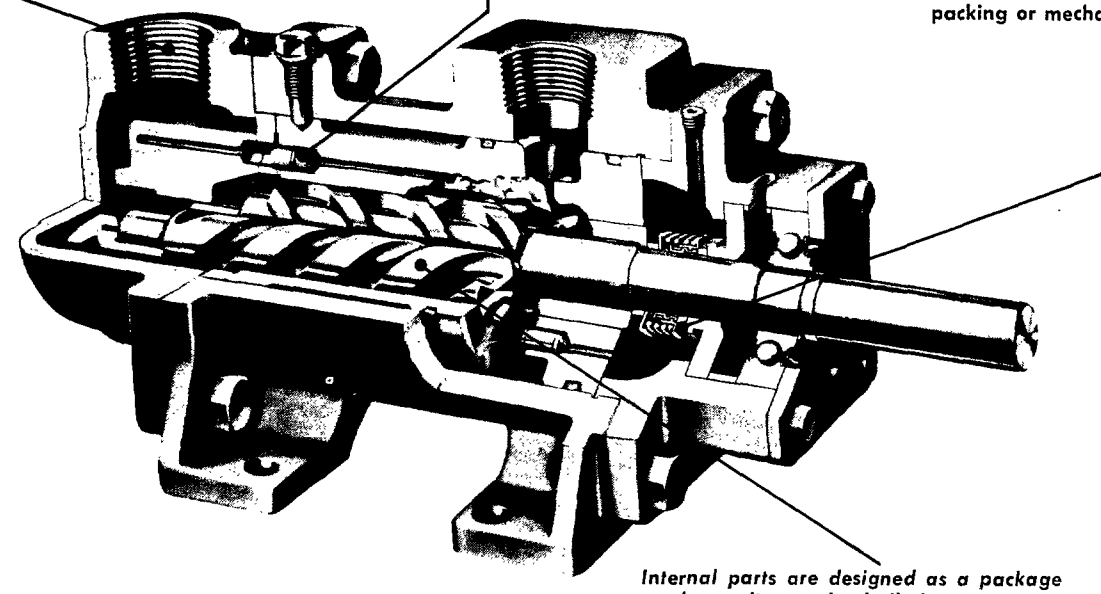
The De Laval IMO pump is a constant-displacement, rotary, screw-type pump. Fluid is propelled axially in a constant, uniform flow through the action of just three moving parts—a power rotor and two idler rotors. The smooth intermeshing of these rotors propels the fluid axially without churning, pocketing or pulsation. There are no timing gears, cams, valves, sliding vanes, or reciprocating parts to wear or become noisy. Quiet, compact IMO pumps are excellent for direct-connected, high-speed operation; they mount in any position without factory modification.



Inlet can be rotated to suit installation arrangement.

Fluid at pump discharge pressure, bled through oil balance tubes to the inlet end of the idler rotors, acts on pistons which keep the idlers in constant hydraulic balance.

IMO Pumps can accommodate either conventional packing or mechanical seals.



Internal parts are designed as a package so that units can be built into your machines.

DE LAVAL TURBINE INC.

POWER AUXILIARIES DIVISION

TRENTON, NEW JERSEY 08602 ▪ TELEPHONE 609-587-5000

CABLE ADDRESS: TURBINCO - TRENTON

DE LAVAL IMO® PUMP SERIES A3D

STANDARD SPECIFICATIONS

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HEAVY-DUTY CASING

Casing is high-tensile, close-grained Meehanite; every case is hydrostatically tested.

INLET AND OUTLET OPENINGS

Standard pipe tap.

ADJUSTABLE INLET OPENING

May be rotated to suit customer's piping arrangement.

ACCURATELY MANUFACTURED ROTOR HOUSINGS

Rotor housing or sleeve is Meehanite. Special fixtures used during manufacture insure concentricity of rotor bores with respect to the casing and also insure interchangeability.

ROTORS

Power rotor is heat-treated chromium-molybdenum steel, nitrided and ground during manufacture.

Idler rotors are Meehanite, induction hardened and ground.

COMPLETE HYDRAULIC BALANCE

Fluid at pump discharge pressure, bled through oil balance tubes to the inlet end of the idler rotors, acts on pistons which keep the idlers in constant hydraulic balance.

MOUNTING VERSATILITY

IMO Pumps require no special modifications for mounting in any position—horizontally, vertically or inclined.

BEDPLATE

IMO Pump bedplates are constructed of fabricated or channel steel.

COUPLING

Selections are conservatively made in accordance with coupling manufacturer's published horsepower ratings.

TWO SEALING METHODS AVAILABLE

MODEL A3DB

Model A3DB is fitted with a mechanical seal and a ball bearing for overhung load.

MECHANICAL SEAL

A bellows-type seal has been adopted after extensive testing to prove its serviceability. The bellows is Buna-N synthetic rubber; the carbon- and cast-iron mating faces are lapped to insure perfect sealing and long, trouble-free service.

BALL BEARING

A cartridge-type, pre-packed, dust-resistant ball bearing maintains perfect seal alignment under any normal overhung load from V-belt or chain drive.

MODEL A3DF

Model A3DF is equipped with a conventional packing box.

SHAFT PACKING

Conventional packing consists of alternate rings of die-formed hard and soft packing. Soft rings are square plaited asbestos; hard rings are square flexible metallic.

PACKING-BOX PRESSURE CONTROL

The mechanical seal or shaft packing is subject to low fluid pressure through a pressure breakdown labyrinth from pump discharge.

The fluid is relieved from the seal chamber through an internal relief line connected to the suction chamber of the unit.

The fluid is relieved from the packing chamber through an external line containing a valve which sets the packing chamber pressure to lubricate the packing and prevent air from being drawn in around the shaft on suction lift applications.

LA3D-3 — 2M — 1-68

Printed in U. S. A.

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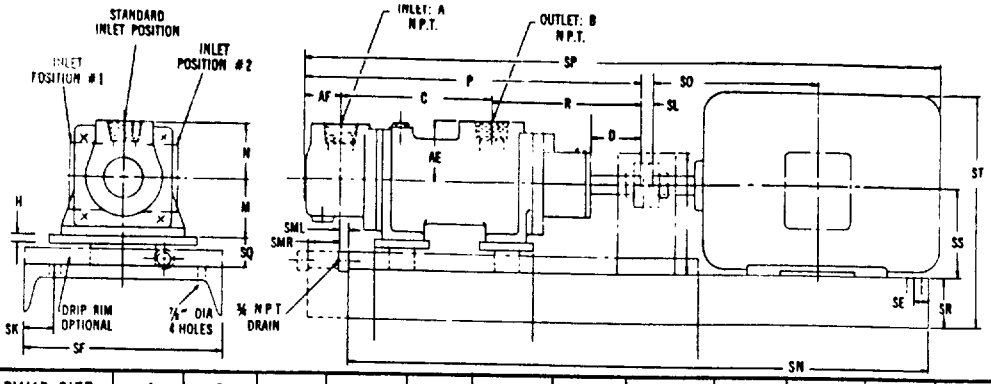

PUMP SIZE	A	B	C	D	H	M	N	P	R	AE	AF	EST. WT. Pump
A3D106	1	1	5 15/16	1 7/8	1/2	2 3/4	2 7/8	14 7/16	6 3/4	2 7/8	1 3/4	40
A3D118	1 1/2	1	6 3/8	2 1/16	1/2	2 7/8	3	15 1/4	7	2 7/8	1 7/8	50
A3D137	1 1/2	1	7 1/16	2 7/16	1/2	3	3 1/8	16 11/16	7 3/4	2 7/8	1 7/8	65
A3D156	2	1 1/2	7 7/8	3 1/4	1/2	3 1/4	3 1/4	18 5/8	8 1/2	3 3/8	2 1/4	75
A3D187	2	1 1/2	8 1/16	3 3/8	1/2	3 1/2	3 1/4	20 1/16	9	3 5/8	2 1/8	80

PUMP SIZE	NEMA FRAME	SE	SF	SK	SL	SML	SMR	SN	SO	SP	SQ	SR	SS	ST	EST. WT. Pump, Base & Coupling
A3D106	143	1 1/4	12	1 3/8	1/2	—	3	30	6 1/4	26 7/16	3/4	3 3/16	3 1/2	10 5/16	120
	145	1 1/4	12	1 3/8	1/2	—	3	30	6 3/4	27 7/16	3/4	3 3/16	3 1/2	10 5/16	120
	182	1 1/4	12	1 3/8	1/2	—	1 3/4	30	7 1/4	28 3/4	1 3/4	3 3/16	4 1/2	12 1/2	120
	184	1 1/4	12	1 3/8	1/2	—	1 3/4	30	7 3/4	29 3/4	1 3/4	3 3/16	4 1/2	12 1/2	[illegible]
	213	1 1/4	12	1 3/8	3/4	1/2	—	30	9 1/4	32 7/16	2 1/2	3 3/16	5 1/4	14	[illegible]
	215	1 1/4	12	1 3/8	3/4	1/2	—	30	10	33 1/16	2 1/2	3 3/16	5 1/4	14	120
A3D118	143	1 1/4	12	1 3/8	1/2	—	2 1/2	30	6 1/4	27 3/16	5/8	3 3/16	3 1/2	10 5/16	123
	145	1 1/4	12	1 3/8	1/2	—	2 1/2	30	6 3/4	28 3/8	5/8	3 3/16	3 1/2	10 5/16	123
	182	1 1/4	12	1 3/8	1/2	0	0	30	7 1/4	29 5/16	1 5/8	3 3/16	4 1/2	12 1/2	123
	184	1 1/4	12	1 3/8	1/2	0	0	30	7 3/4	30 5/16	1 5/8	3 3/16	4 1/2	12 1/2	123
	213	1 1/4	12	1 3/8	3/4	0	0	30	9 1/4	33 1/4	2 1/8	3 3/16	5 1/4	14	123
	215	1 1/4	12	1 3/8	3/4	—	1 7/8	36	10	34 3/4	2 3/8	3 3/16	5 1/4	14	138
	254-U	1 1/4	15	1 3/8	3/4	0	0	36	12 1/8	38 5/16	3 3/8	3 1/2	6 1/8	16 1/16	168
A3D137	143	1 1/4	12	1 3/8	1/2	—	1 7/8	30	6 1/4	28 13/16	1/2	3 3/16	3 1/2	10 5/16	129
	145	1 1/4	12	1 3/8	1/2	—	1 7/8	30	6 3/4	29 13/16	1/2	3 3/16	3 1/2	10 5/16	129
	182	1 1/4	12	1 3/8	1/2	1/16	—	30	7 1/4	31	1 1/2	3 3/16	4 1/2	12 1/2	129
	184	1 1/4	12	1 3/8	1/2	1/16	—	30	7 3/4	32	1 1/2	3 3/16	4 1/2	12 1/2	129
	213	1 1/4	12	1 3/8	3/4	—	1 7/8	36	9 1/4	34 11/16	2 1/4	3 3/16	5 1/4	14	144
	215	1 1/4	12	1 3/8	3/4	—	1 7/8	36	10	36 3/16	2 1/4	3 3/16	5 1/4	14	144
	254-U	1 1/4	15	1 3/8	3/4	1/16	—	36	12 1/8	40	3 1/4	3 1/2	6 1/4	16 1/16	174
A3D156	143	1 1/4	12	1 3/8	1/2	1/8	—	30	6 1/4	30 3/4	1/4	3 3/16	3 1/2	10 5/16	139
	145	1 1/4	12	1 3/8	1/2	1/8	—	30	6 3/4	31 3/4	1/4	3 3/16	3 1/2	10 5/16	139
	182	1 1/4	12	1 3/8	1/2	—	2 1/8	36	7 1/4	32 15/16	1 1/4	3 3/16	4 1/2	12 1/2	160
	184	1 1/4	12	1 3/8	1/2	—	2 1/8	36	7 3/4	33 15/16	1 1/4	3 3/16	4 1/2	12 1/2	160
	213	1 1/4	12	1 3/8	3/4	—	1 5/8	36	9 1/4	36 3/8	2	3 3/16	5 1/4	14	160
	215	1 1/4	12	1 3/8	3/4	—	1 5/8	36	10	38 1/8	2	3 3/16	5 1/4	14	160
	254-U	1 1/4	15	1 3/8	3/4	—	1 5/8	42	12 1/8	41 15/16	3	3 1/2	6 1/4	16 1/16	210
	256-U	1 1/4	15	1 3/8	3/4	—	1 5/8	42	13	43 11/16	3	3 1/2	6 1/4	16 1/16	210
	284-U	1 1/4	15	1 3/8	3/4	—	3/8	42	14 3/8	45 11/16	3 3/4	3 1/2	7	17 3/4	210
A3D187	182	1 1/4	12	1 3/8	3/4	—	2 1/8	36	7 1/4	34 5/8	1	3 3/16	4 1/2	12 1/2	186
	184	1 1/4	12	1 3/8	3/4	—	2 1/8	36	7 3/4	35 3/8	1	3 3/16	4 1/2	12 1/2	186
	213	1 1/4	12	1 3/8	3/4	—	7/16	36	9 1/4	38 1/16	1 3/4	3 3/16	5 1/4	14	185
	215	1 1/4	12	1 3/8	3/4	—	1/4	36	10	39 1/16	1 3/4	3 3/16	5 1/4	14	185
	254-U	1 1/4	15	1 3/8	3/4	—	7/16	42	12 1/8	43 3/8	2 3/4	3 1/2	6 1/4	16 1/16	236
	256-U	1 1/4	15	1 3/8	1	—	7/16	42	13	45 3/8	2 3/4	3 1/2	6 1/4	16 1/16	236
	284-U	1 1/4	15	1 3/8	1	5/16	—	42	14 3/8	47 1/8	3 1/2	3 1/2	7	17 3/4	237
	286-U	1 1/4	15	1 3/8	1	—	2 1/8	48	15 1/8	48 5/8	3 1/2	3 1/2	7	17 3/4	237

PEERLESS BOILER & ENGINEERING CO.

2015 E PARK PLACE OKLAHOMA CITY, OKLA

Fuel Oil Pump

For: Ingenio El Angel

DRAWN	DATE April 1971	SHEET 1 OF 1
CHECKED	SCALE NONE	DWG. NO. S-10001-1
APPROVED	JOB NO Standard	