

SYSTEM ONE® PARTS

IPP Frame A, IPP LD17, IPP Vortex

Keep with Instructions 1301-C00 for Installation, Operation and Maintenance

PN: 967107 PARTS LIST

1301-C06

Section	1301
Effective	Nov 2012
Replaces	New

	Page
X-Section Drawings	
Frame A	2
LD17	3
Vortex Frame A	4
Vortex LD17	5
Wet Ends	6
Power Ends	7
B5 (D) Flange Motor Adapters	7
Casings & Impellers (Ref #1 & 2)	
Frame A and LD17	8
Vortex	9
Shafts / Rotating Elements (Ref #6)	10
Suction Covers, Vortex (ref #9)	10
Back Covers (Ref #11)	
Frame A and Vortex Frame A	11
LD17 and Vortex LD17	12
Other Parts (Ref #16 - 72)	13
Gaskets (Ref #73)	14
Other Parts (Ref #80 - 460)	15

Recommended Spare parts (Ref # is shaded)

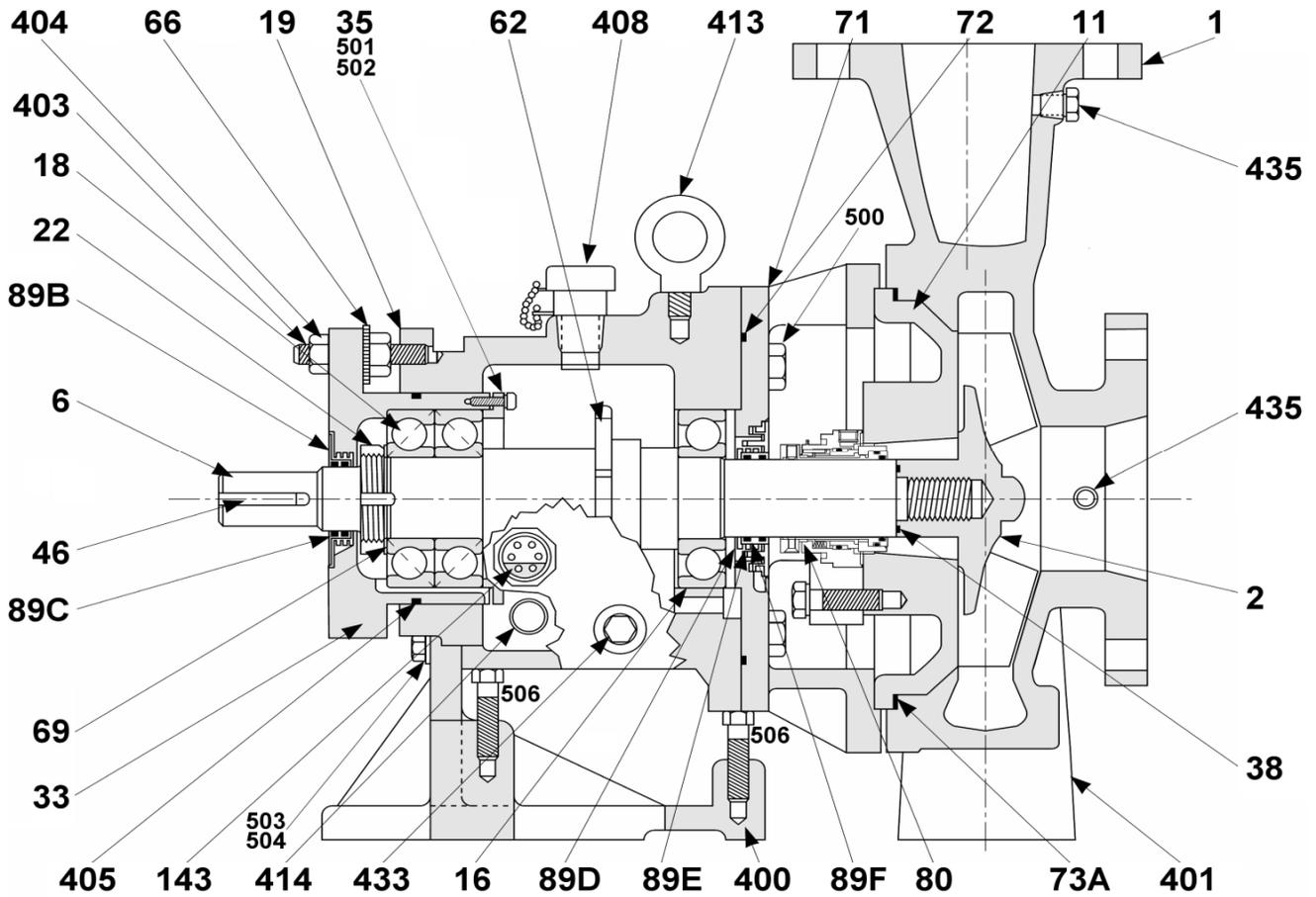
Ref #	Description
2	Impeller
6-RE	Rotating Element
72	Frame Adapter O-ring
73A	Casing Gasket
80	Mechanical Seal
89B	Lab Seal Rotor (w/ O-ring), Thrust Bearing
89D	Lab Seal Stator (w/ O-ring), Radial Bearing
89E	Lab Seal Rotor (w/ O-ring), Radial Bearing
405	Cartridge O-ring



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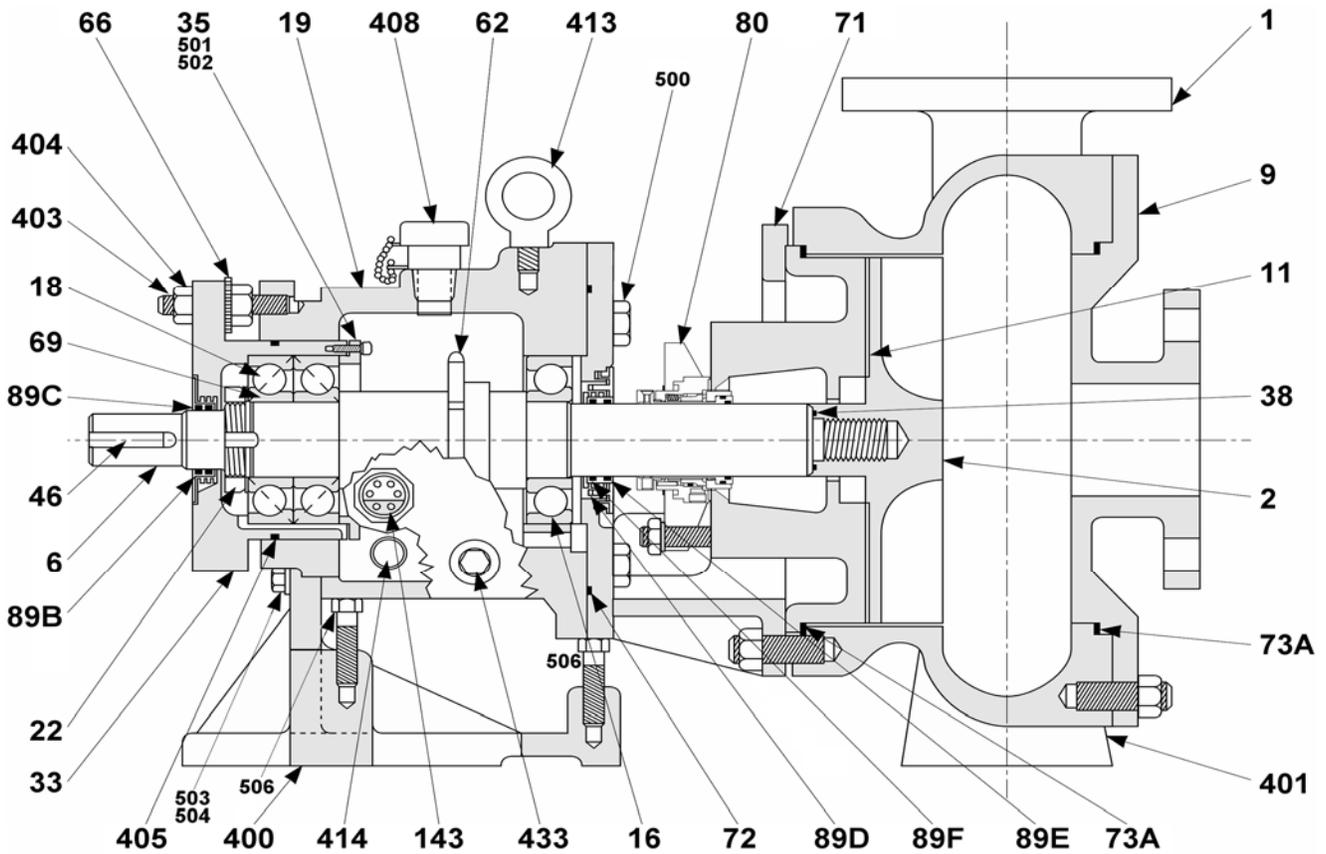
IPP LD17 Cross Section



Ref.	Description	Ref.	Description	Ref.	Description
1	Casing	69	Lockwasher, Thrust Bearing	403	Stud, Cartridge
2	Impeller	71	Frame Adapter	404	Locknut, Cartridge
6	Shaft	72	O-Ring, Frame Adapter	405	O-Ring, Cartridge
11	Back Cover	73A	Gasket, Casing	408	Oil Filler Assembly
16	Bearing, Radial	80	Mechanical Seal	413	Bolt, Eye
18	Bearing, Thrust	89A	Seal, Labryinth Stator, Thrust *	414	Plug, Magnetic
19	Bearing Frame	89B	Seal, Labryinth Rotor, Thrust	433	Plug, Bearing Frame
22	Locknut, Thrust Bearing	89C	Seal, Labryinth O-Ring, Thrust	435	Plug, Casing
33	Bearing Cartridge	89D	Seal, Labryinth Stator, Radial	500	Cap Screw, Frame Adapter
35	Retainer Cover	89E	Seal, Labryinth Rotor, Radial	501	Screw, Retainer Cover
38	O-Ring, Impeller Hub	89F	Seal, Labryinth O-Ring, Radial	502	Washer for 501
46	Key, Coupling	143	Oil Sight Glass	503	Screw, Bearing Frame Foot
62	Flinger	400	Foot, Bearing Frame	504	Washer for 503
66	Micrometer Nut	401	Foot, Casing	506	Bolt, Bearing Frame Support

* 89A Incorporated as part of the cartridge in 2000 (not shown)

IPP Vortex Frame-A Cross Section



Ref.	Description	Ref.	Description	Ref.	Description
1	Casing	69	Lockwasher, Thrust Bearing	403	Stud, Cartridge
2	Impeller	71	Frame Adapter	404	Locknut, Cartridge
6	Shaft	72	O-Ring, Frame Adapter	405	O-Ring, Cartridge
9	Suction Cover	73A	Gasket, Casing	408	Oil Filler Assembly
11	Back Cover	80	Mechanical Seal	413	Bolt, Eye
16	Bearing, Radial	89A	Seal, Labryinth Stator, Thrust *	414	Plug, Magnetic
18	Bearing, Thrust	89B	Seal, Labryinth Rotor, Thrust	433	Plug, Bearing Frame
19	Bearing Frame	89C	Seal, Labryinth O-Ring, Thrust	500	Cap Screw, Frame Adapter
22	Locknut, Thrust Bearing	89D	Seal, Labryinth Stator, Radial	501	Screw, Retainer Cover
33	Bearing Cartridge	89E	Seal, Labryinth Rotor, Radial	502	Washer for 501
35	Retainer Cover	89F	Seal, Labryinth O-Ring, Radial	503	Screw, Bearing Frame Foot
38	O-Ring, Impeller Hub	143	Oil Sight Glass	504	Washer for 503
46	Key, Coupling	400	Foot, Bearing Frame	505	Jackscrew
62	Flinger	401	Foot, Casing	506	Bolt, Bearing Frame Support
66	Micrometer Nut				

* 89A Incorporated as part of the cartridge in 2000 (not shown)

IPP Wet End Assembly (CD4 Impellers)

Size	316 Stainless Steel Item Number	Ductile Iron Item Number
50x80-200	089948	363800
80x100-200	059001	363803
25x50-250	089944	363797
40x80-250	089946	363798
50x80-250	089949	363801
80x100-250	059002	363804
100x150-250	982899	090944
40x80-330	089947	363799
50x80-330	059000	363802
80x100-330	059003	363805
100x150x330 (1 pc)	636926	090946
50x50-200 Vortex	cf	099560
80x80-250 Vortex	cf	099561
100x100-300 Vortex	cf	099562

IPP Wet Ends include: Casing, Impeller, appropriate Back Cover/Seal Chamber Assembly, Suction Cover (Vortex), PN16 Flanges and all necessary Fasteners, Gaskets and Feet.

Notes:

153 Seals require Seal Chamber bore opened up to 73mm diameter.

442 Seals require 12mmx50mm long gland bolts.

Options

	Item Number
Gray Iron Jacket for Back Cover/Seal Chamber Back covers require machining modifications to accept the jackets. Includes: O-Rings (2 ea., 2-257), Hardware	090873
Carbon Throat Bushing for Back Cover/Seal Chamber (Frame A) Carbon Throat Bushing for Back Cover/Seal Chamber (LD17) (Both Include: O-Ring (2-234), Retaining Ring)	090838 cf981859



IPP Power End Assembly (316SS Shaft, Angular Contact Thrust Bearings)

Size	Item Number
200mm Height 50x50-200VX / 50x80-200 / 80x100-200 25x50-250 / 40x80-250 / 50x80-250 80x100-250 / 80-x100-250	098614
250mm Height 80x80-250VX / 100x100-300VX 100x150-250 / 40x80-330 / 50x80-330 80x100-330 / 100x150-330	098615
Cooling Coil	098490

Power End Assembly includes: Bearing Frame, Bearing Cartridge, Frame Adapter, Foot, Hardware, Oil Filler Cap, Rotating Element and Labyrinth Seals.

17-4ph Shaft - Consult Factory

B5 (D) Flange Motor Adapters (with feet)

Size	Motor Size	8.25"/200mm Height	10"/ 250mm Height
		Item Number	Item Number
IPP	90 & 132	098618	098646
	100 & 112	098506	cf098647
	160 & 180 *	098618	098646
	Adapter Plate	098504	098504
	200 *	098618	098646
Frame A	Adapter Plate	981876	981876
	90 & 132	098505	098737
	100 & 112	098501	098738
	160 & 180	098505	098737
	Adapter Plate	098616	098616

*160, 180, and 200 motors require an adapter plate

Coupling Guards

	200 mm Height	250 mm Height
B5 (D) Flange Adapter	090828	090829



Ref #1 Casing Assembly IPP with PN16 Flanges							
Casings assemblies do not include gaskets (see item 73A) or feet (see item 401).							
Options		Material - Part Number for Casing Assembly					
Size	Option	DI	CF8M	CD4	CN7M	HB	HC
50x80-200	-	363791	098602				
	Drain		801488				
80x100-200	-	363794	098603				
	Drain		981235				
25x50-250	-	363788	098604	644360			
	Drain			644023			
40x80-250	-	363789	098605				
	Drain		981232				
50x80-250	-	363792	098606				
	Drain		808522				
80x100-250	-	363795	098607				
	Drain	981103					
100x150-250	-	090945		808394			
	Drain						
40x80-330	-	363790	098609				699574
	Drain						
50x80-330	-	363793	098610				
	Drain						
80x100-330	-	363796	098611	685134	685310		
	Drain						
100x150-330	-	090947	636925				
	Drain						
Hardware included in STANDARD casing assemblies (material may differ from casing)							
Ref.	Description	pts/pump	Stls Steel	CN7M	HB	HC	
435	Plug for gage tap	2	098395	350664	628482	628343	
*	Stud for adaptor	8 or 12		099984			
*	Nut for stud	8 or 12		350543			
*	Bolt for casing foot	4		350618			
	Bolt for casing foot**			350689			
*	Washer for bolt	4		098318			
	Washer for bolt**			360668			
*	Drain Plug (optional)	1	098280	098008		981101	

* Not depicted in drawing.

** For 100x150-250 and 100x150-330 ONLY.

Ref #2 - Impeller Assembly IPP						
Impeller assembly includes trim, ISO G 6.3 balance and PTFE O-ring (38).						
Specify trim at time of order. There is a charge for retrim after shipment (981631).						
Ref #	Size	CD4	CF8M	Alloy 20	HB	HC
2	50x80-200	098222	362792	098697	098636	097749
	80x100-200	098225		097715	801507	628743
	25x50-250	098216	628118	098693	CF801882	628875
	40x80-250	098219	362795	098696		
	50x80-250	098223		098699		
	80x100-250	098226		363667		685151
	100x150-250	098419		059440		
	40x80-330	098220	636995	098458	644177	697793
	w/ BH*	801929				
	50x80-330	098224		981125		
	w/ BH*					
	80x100-330	098227	982910	090932		982430
	w/ BH*	982598				
	100x150-330	098461		090951		
	w/BH*					
	* Specify balance holes for 330mm impellers running over 1800 rpm.					



Ref #1 - Casing Assembly IPP PN16 Flanges		Vortex					
Casings assemblies do not include gaskets (see item 73A) or feet (see item 401).							
Options		Material - Part Number for Casing Assembly					
Size	Other	DI	CF8M	CD4	CN7M	HB	HC
50x50-200	- DR	099563					
80x80-250	- DR	099564		628386			
100x100-300	- DR	099565					
Hardware included in STANDARD casing assemblies (material may differ from casing)							
Stud for adaptor*	8	099984					
Nut for stud*	8	350543					
Bolt for Scn Cov*	8	350615					
Washer for bolt*	8	350396					
Bolt for cg foot*	4	350618					
Washer for bolt*	4	098318					
Hardware for Optional Casing Assemblies							
Plug for drain*	1	098280		098008			981101
435 Plug for tap	2	098395		350664	628482		628343

* Not depicted in drawing.

Ref #2 - Impeller Assembly FRA and LD17		Vortex		
Impeller assembly includes trim, ISO G 6.3 balance and PTFE O-ring (38).				
Specify trim at time of order. There is a charge for retrim after shipment (981631).				
Ref #	Size	CD4	DI*	
2	50x50-200	099799	099115	
	80x80-250	090725	099116	
	100x100-300	090032	099117	
* DI impellers are discontinued. Availability is limited to stock on hand.				



Ref.#	Description	Parts/pump	Part #	Comment/Note
6	Shaft Assemblies and Rotating Elements. 17-4Ph shaft material is required for 100x150-250 and all 330 mm pumps operated over 1800rpm. Ref# 6-SA: Shaft Assembly Includes shaft (6), locknut (22), locknut washer (69), and key (46). Ref# 6-RE: Rotating Element Includes shaft assembly (6-SA), bearings (16&18), bearing cover (35), flinger filter (62).			
6-SA FRA	Shaft Assembly FRA CS/316 Shaft Assembly FRA CS/17-4 Shaft Assembly FRA CS/A20 Shaft Assembly FRA CS/HC Shaft Assembly FRA CS/HB Shaft Assembly FRA CS/316 Lock Bolt Shaft Assembly FRA CS/17-4 Lock Bolt	1	098077 983270 099707	
6-SA LD17	Shaft Assembly LD17 CS/316 Shaft Assembly LD17 CS/17-4 Shaft Assembly LD17 CS/A20 Shaft Assembly LD17 CS/HC Shaft Assembly LD17 CS/HB Shaft Assembly LD17 CS/316 Lock Bolt Shaft Assembly LD17 CS/17-4 Lock Bolt Shaft Assembly LD17 CS/17-4 1.25" Thread		099940 685388	
6-RE FRA	Rotating Element FRA CS/316 Rotating Element FRA CS/316 Vertical Rotating Element FRA CS/17-4 Rotating Element FRA CS/17-4 Vertical Rotating Element FRA CS/A20 Rotating Element FRA CS/HC Rotating Element FRA CS/HB Rotating Element FRA CS/316 Lock Bolt Rotating Element FRA CS/17-4 Lock Bolt	1	099137 089921 098633	
6-RE LD17	Rotating Element LD17 CS/316 Rotating Element LD17 CS/316 Vertical Rotating Element LD17 CS/17-4 Rotating Element LD17 CS/17-4 Vertical Rotating Element LD17 CS/A20 Rotating Element LD17 CS/HC Rotating Element LD17 CS/HB Rotating Element LD17 CS/316 Lock Bolt Rotating Element LD17 CS/17-4 Lock Bolt Rotating Element LD17 CS/17-4 1.25" Thread		099941 685387	

Ref #9 Suction Cover Assemblies for Vortex Pumps

Includes jacking screw (363421).
Does not include gasket (see item 73B).

Options		Material - Part Number for Casing Assembly		
Ref #	Size	DI	CF8M	CD4
9	50x50-200	099567		
	80x80-250	099566		
	100x100-300	099568		



REF #11 Back Cover Assemblies IPP Frame-A, IPP Vortex Frame-A

Cover includes integral seal chamber and is backwards compatible with old two piece design.
 Cover assembly does not include gasket. (See item 73A gaskets)
 Cover assembly machined for bushing does not include bushing.
 Cover assembly machined for jacket does not include the jacket.

Bush/Other options	DI	CF8M	CD4MCu	CN7M	HB	HC
200mm Part Number for Back Cover Assembly						
Standard for carbon bush For jacket With tap For jacket/with tap	363767	364194				
Optional for Enviroseal For jacket With tap For jacket/with tap						
250mm Part Number for Back Cover Assembly						
Standard for carbon bush For jacket With tap For jacket/with tap	363768 644113	364195 697866 983040	364192			
Optional for Enviroseal For jacket With tap For jacket/with tap	643225	982773				
330mm (300mm Vortex) Part Number for Back Cover Assembly						
Standard for carbon bush For jacket With tap For jacket/with tap	363769 628654	364172 696892	364193	808037		699571
Optional for Enviroseal For jacket With tap For jacket/with tap	981734 982921	801863				

Hardware included with standard Frame-A Back Cover Assemblies

Ref.	Description	Part Number	Parts per Pump		
			200mm	250mm	330mm
*	Gland Stud	097693	4	4	4
*	Nut for Gland Stud	350544	4	4	4
*	Mounting Stud	350536	2	2	NA
*	Nut for Mounting Stud	350549	2	2	NA
*	Adaptor Stud	099984	NA	NA	8
*	Nut for Adaptor Stud	350543	NA	NA	8

Optional Seal Chamber Jacket for Frame-A (NA for LD17, requires Back Cover for Jacket)

Ref.	Description	Part Nbr	Parts /pump	Comment/Note
*	Jacket Assembly for Seal Chamber	090873	1	
*	Jacket for Seal Chamber FRA only	363015	1	Included in #12 assy
*	O-Ring for Seal Chamber Jacket FRA	360976	2	Included in #12 assy
*	Screw for Seal Chamber Jacket FRA	360362	1	Included in #12 assy

* Not depicted in drawing.



REF #11 Back Cover Assemblies - IPP LD17 and IPP Vortex LD17

Cover includes integral seal chamber and is backwards compatible with old two piece design.
 Cover assembly does not include gasket. (See item 73A gaskets)
 Cover assembly machined for bushing does not include bushing.
 Seal chamber jacket not available on LD17.

Bush/Other options	DI	CF8M	CD4MCu	CN7M	HB	HC
200mm Part Number for Back Cover Assembly						
No bushing with tap	363996	625217				
Carbon/14K with tap						
EnviroSeal with tap						
250mm Part Number for Back Cover Assembly						
No bushing with tap	363975	625218				
Carbon/14K with tap						
EnviroSeal with tap						
330mm (300mm Vortex) Part Number for Back Cover Assembly						
No bushing with tap	363974	625216				
Carbon/14K with tap						
EnviroSeal with tap		808460				
Hardware included with standard LD17 Back Cover Assemblies						
Ref.	Description	Part Number	Parts per Pump			
			8"	10"	13"	
*	Gland Stud	099985	4	4	4	
*	Nut for Gland Stud	350544	4	4	4	
*	Mounting Stud	350536	2	2	NA	
*	Nut for Mounting Stud	350549	2	2	NA	
*	Adaptor Stud	099984	NA	NA	8	
*	Nut for Adaptor Stud	350543	NA	NA	8	

* Not depicted in drawing.



Ref.#	Description	Parts/pump	Part #	Note
16	Radial Bearing 6310 C3	1	098381	Included in #6-RE
18	Thrust Bearing 7310 BEGAY (2 required)	2	098054	Included in #6-RE
19	Bearing Frame Assembly Includes: bearing frame (19), sight glass (143), stud (403), oil cap (408), eyebolt (413), plugs (414 and 433).	1	098068	
22	Bearing Locknut N10	1	098383	Included in #6-SA
33	Cartridge Thrust Bearing Assembly Includes: cartridge (33), screw (501), washers (502), O-ring (405).	1	801143	
35	Retainer cover	1	098371	Included in #6-RE
38	O-ring Impeller PTFE 2-027	1	098296	Included in #2 assy
46	Key	1	350621	Included in #6-SA
62	Flinger Filter	1	098385	Included in #6-RE
66	Micrometer Nut M12 SS	3	098109	
69	Bearing Lockwasher W10	1	098384	Included in #6-SA
71	Frame Adapter FRA	1	098297	
	Frame Adapter LD17		099605	
72	Frame Adapter O-ring (2-265 Buna)	1	098396	Included in #71 assy
Casing Gaskets for FRA and LD17 - 200mm and 250mm				
73A	Casing Gasket FRA/LD17 6/8/10 CFN .06	1	363409	Also Vortex 8/10
	Casing Gasket FRA/LD17 6/8/10 CFN .09		363410	
	Casing Gasket FRA/LD17 6/8/10 RGO .12		059209	Also Vortex 8/10
	Casing Gasket FRA/LD17 6/8/10 RPE .06		808314	Also Vortex 8/10
	Casing Gasket FRA/LD17 6/8/10 RPE .09		Special	
	Casing Gasket FRA/LD17 6/8/10 PTFE .06		099543	Also Vortex 8/10
	Casing Gasket FRA/LD17 6/8/10 PTFE .09		Special	
	Casing Gaskets for FRA and LD17 - 330mm			
	Casing Gasket FRA/LD17 13 CFN .06	1	363411	Also Vortex 8/10
	Casing Gasket FRA/LD17 13 CFN .09		363412	
	Casing Gasket FRA/LD17 13 RGO .12		059208	Also Vortex 8/10
	Casing Gasket FRA/LD17 13 RPE .06		981932	
	Casing Gasket FRA/LD17 13 RPE .09		Special	
	Casing Gasket FRA/LD17 13 PTFE .06		099583	Also Vortex 8/10
Casing Gasket FRA/LD17 13 PTFE .09	Special			
Suction Cover Gaskets - Vortex Pumps				
73B	Gasket Suction Cover Vortex 50x50 CFN	1	363409	
	Gasket Suction Cover Vortex 50x50 RGO		059209	
	Gasket Suction Cover Vortex 50x50 RPE		808314	
	Gasket Suction Cover Vortex 50x50 PTFE		099543	
	Gasket Suction Cover Vortex 80x80 CFN		363421	
	Gasket Suction Cover Vortex 80x80 RGO			
	Gasket Suction Cover Vortex 80x80 RPE			
	Gasket Suction Cover Vortex 80x80 PTFE		644005	
	Gasket Suction Cover Vortex 100x100 CFN		363411	
	Gasket Suction Cover Vortex 100x100 RGO		059208	
	Gasket Suction Cover Vortex 100x100 RPE			
	Gasket Suction Cover Vortex 100x100 PTFE		099583	

Material Key for Wet End Gaskets (73A and &3B)

Abrv	Description	Application	Old Type
CFN	Carbon Fiber with nitrile binder (Standard)	General	197
RGO	Reinforced Graphite no binder	High Temp.	199
RPE	Reinforced PTFE	Hi Temp/Press	196
PTFE	PTFE Style 2000 (Std A20-HB-HC)	Chemical Resistant	2000



Frame-A and LD17 IPP SPARE PARTS

Current Design

Ref.#	Description	Parts/pump	Part #	Note
80	Mechanical Seal - See mechanical seal pages	1		
89A	Thrust Lab seal Stationary 32mm NPS	1	089922	
	Thrust Lab seal Stationary 32mm Bronze		098843	
Note: Thrust lab seal stationaries have been omitted on all FRA and LD17 pumps built after May 2000				
89B	Thrust Lab Seal Rotary 32mm 316SS	1	098849	
89C	Thrust lab seal rotary O-ring (2-124)	2	098796	Included in #89B assy
89D	Radial Lab Seal Stationary 48mm NPS	1	364240	
	Radial Lab Seal Stationary 48mm Bronze		098372	
89E	Radial Lab seal Rotary 48mm 316SS	1	098478	
	Radial Lab seal Rotary 48mm Bronze		098373	
89F	Radial lab seal rotary O-ring (2-134)	2	098374	Included in #89E assy
143	Oil sight glass 1.00-11.5 NPT	1	098306	2nd SG optional
400	Bearing Frame Foot 180mm (25x40-150 thru 50x80-250)	1	098588	
	Bearing Frame Foot 200mm (25x40-150 thru 50x80-250)		098591	
	Bearing Frame Foot 250mm (100x150-250 thru 100x150-330)		098590	
401	Casing Foot for Centerline Mount			
	50x80-200	2	098292	
	80x100-200		098292	
	25x50-250		098292	
	40x80-250		098292	
	50x80-250		098292	
	80x100-250		098292	
	100x150-250		098114	
	40x80-330		098114	
	50x80-330		098114	
	80x100-330		098114	
	100x150-330		098114	
vortex 50x50-200	098292			
vortex 80x80-250	098114			
vortex 100x100-300	098114			
401	Casing Foot for Side Discharge	1	CF	
403	Micrometer stud M12 SS	3	801145	
404	Cartridge Locknut M12	3	099580	
405	Cartridge O-Ring (2-248 Buna)	1	098375	Included in #33 assy
408	Oil Filler & Cap Assembly	1	098364	
413	Lifting Eyebolt M12	1	099574	
414	Magnetic Plugs .50-14 NPT (2 req'd)	2	098363	
433	Drain plug .25-18 NPT	1	099792	
500	Hex Head Cap Screw, .62-11x1.25 (4 req.)	4	098331	
501	Retainer Cover Socket Head Cap Screws M5	8	350617	Included in #33 assy
502	Washer for 501	8	098389	Included in #33 assy
503	Hex Head Cap Screw, .50-13x1.5 CS (2 req.)	2	098277	
504	Flat Washer, .50 type A CS (2 req.)	2	098294	
505	Hex head Cap Screw	2	098278	Included in #71 assy
*	Temperature Monitor (optional)	1	685361	
*	Bearing Housing Cooling Coil Assy (optional)	1	098308	
* Throat Bushings - See Components and accessories (page 5).				
*	Motor Adapter Foot Assembly 200mm CLH - pump side		cf098594	
	Motor Adapter Foot Assembly 200mm CLH - motor side		098502	
	Motor Adapter Foot Assembly 250mm CLH -pump side		098591	
	Motor Adapter Foot Assembly 250mm CLH -motor side		098503	

