

GENERAL INFORMATION & REFERENCE:

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TABLE OF CONTENTS (BY PUMPING PRINCIPLE)

Some sections group models by the design or pumping principle rather than the external material of construction. To assist identification in those sections, the models which correspond to the listed external material have been highlighted.

INTERNAL GEAR PUMPS

CAST IRON	
Universal Product Line	1401 — SERIES 124A, 124AE, 4124A, 4214AE, 4124B, 324A, 4324A (Non-Jacketed)
	1402 — SERIES 224A, 224AE, 4224A, 4224AE, 4224B, 324A, 4324A (Jacketed)
	1403 — SERIES 8124A
	845 — SERIES 825, 823, 827
Motor Speed Product Line	1441 — SERIES 495, 4195
	1442 — SERIES 456
	1443 — SERIES 895
	310 — SERIES 32, 432
	320 — SERIES 75, 475
	685 — SERIES 855

DUCTILE IRON	
Universal Product Line	1601 — SERIES 126A, 4126A (Non-Jacketed)
	1602 — SERIES 226A, 4226A (Jacketed)

STEEL	
Universal Product Line	1301 — SERIES 123A, 4123A, 323A, 4323A (Non-Jacketed)
	1302 — SERIES 223A, 4223A, 323A, 4323A (Jacketed)
	1303 — SERIES 8126A
	1304 — SERIES 4223AA, 4323AA
	1305 — SERIES 4223AX, 4323AX
	845 — SERIES 823, 825, 827
Motor Speed Product Line	1341 — SERIES 493, 4193
	1343 — SERIES 893

STAINLESS STEEL	
Universal Product Line	1701 — SERIES 127A, 4127A, 327A, 4327A (Non-Jacketed)
	1702 — SERIES 227A, 4227A, 327A, 4327A (Jacketed)
	1703 — SERIES 8127A
	1706 — SERIES 724, 4724
	845 — SERIES 827, 825, 823
Motor Speed Product Line	1741 — SERIES 4197
	1743 — SERIES 897

LIQUID-SPECIFIC PRODUCT LINE	
	410 — SERIES 4624B (Abrasive Liquid)
	420 — SERIES 4924A (Refrigeration Ammonia)
	430 — SERIES 34, 32E, 224A, 224AE, 324A, 4324A, 124E, 324E (Asphalt)
	230 — SERIES 157B, 4157B, 257B, 4257B (Hygienic)

EXTERNAL GEAR PUMPS

1451 — SERIES SG-04, SG-05, SG-07, SG-10, SG-14 (Single Pumps)
1453 — SERIES SG-805, SG-807, SG-810, SG-814 (Mag Drive)
341.2 — SERIES SG-05, SG-07 (Double Pumps)
341.4 — SERIES GP-04, GP-05, GP-07 (High Pressure Spur Gear)
341.5 — SERIES SG-05, 75, 475 (Power Transfer Units)
341.6 — SERIES GD-05, GD-07 (Flow Dividers)
344 — SERIES CMD-E-02, -05, -12, -25, -75, -125 (Composite Mag Drive)

VANE PUMPS

Vane	445 — SERIES LVP Vane Pump (Stainless Steel)
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ACCESSORIES

Guards	605 — Orange Peel Rotating Shaft Guards
Reducers	610 — A, B & C Reducers
	616 — 60 Hz Nord Reducers
	617 — 50 Hz Nord Reducers
Strainers	640 — Lid-Ease Simplex Basket Strainers
	641 — Eaton 53BTX & 50 Duplex Basket Strainers
	642 — Bolted-Lid Simplex Basket Strainers

GENERAL INFORMATION

010 — How To Use This Catalog
030 — Sales Policy & Warranty
030 — US Distributor Return Policy
040 — Model Number System & Index
060 — Displacement - (Internal & External Gear Pump)
510 — Engineering Data
520 — Liquid List

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310: SERIES 32, 432	1303: SERIES 8126A (Sealless Mag Drive)
320: SERIES 75, 475	1304: SERIES 4223AA, 4323AA
341.2: SERIES SG-05, SG-07 (Double Pumps)	1305: SERIES 4223AX, 4323AX
341.4: SERIES GP-04, GP-05, GP-07 (Double Pumps)	1341: SERIES 493, 4193
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410: SERIES 4624B (Abrasive Liquid Pumps)	1403: SERIES 8124A (Sealless Mag Drive)
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617: 50 Hz Nord Reducers	1702: SERIES 227A, 4227A, 327A, 4327A (Jacketed)
640: Lid-Ease Simplex Basket Strainers	1703: SERIES 8127A (Sealless Mag Drive)
641: Eaton 53BTX & 50 Duplex Basket Strainers	1706: SERIES 724, 4724
642: Bolted-Lid Simplex Basket Strainers	1741: SERIES 4197
685: SERIES 855 (Sealless Mag Drive)	1743: SERIES 897 (Sealless Mag Drive)
845: SERIES 825, 823, 827 (Sealless Mag Drive)	

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HOW TO USE THIS CATALOG

This Viking indexed catalog is organized in a convenient manner for quick referral. The table of contents on the first tab divider (Section 000) lists the organization of the catalog by section number and pump series.

In this section is:

- The Viking Sales Policy with warranty
- Viking U.S. Distributor Return Policies
- An explanation of the model numbering system
- An index of model numbers to indicate the catalog section in which they are found
- An Internal Gear Pump Displacement and Element Size Chart
- An External Gear Pump Displacement and Element Size Chart

Each section includes features, construction and mounting arrangements, specifications and dimensions.

Section 500 includes Engineering Data, including rotary pump fundamentals, a guide to selecting the proper Viking pump, and useful engineering information that applies to pumping applications. Following the Engineering Section is a list of liquids that are readily handled by Viking pumps, along with recommended pump construction, type of seal, and miscellaneous data.

* Consult www.vikingpump.com for the most current list of Viking offices and distributors.

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VIKING SALES POLICY

VIKING PUMP

WARRANTY

Viking pumps, strainers and reducers are warranted to be free of defects in material and workmanship under normal conditions of use and service. The warranty period varies by type of product. A Viking product that fails during its warranty period under normal conditions of use and service due to a defect in material or workmanship will be repaired or replaced by Viking. At Viking's sole option, Viking may refund (in cash or by credit) the purchase price paid to it for a Viking product (less a reasonable allowance for the period of use) in lieu of repair or replacement of such Viking product. Viking's warranty is subject to certain restrictions, limitations, exclusions and exceptions. A complete copy of Viking's warranty, including warranty periods and applicable restrictions, limitations, exclusions and exceptions, is posted on Viking's website (www.vikingpump.com/warranty/warranty-info). A complete copy of the warranty may also be obtained by contacting Viking through regular mail at Viking Pump, Inc., 406 State Street, Cedar Falls, Iowa 50613, USA.

THIS WARRANTY IS AND SHALL BE VIKING'S SOLE AND EXCLUSIVE WARRANTY AND IS IN LIEU OF ALL OTHER WARRANTIES, EXPRESS OR IMPLIED, INCLUDING, BUT NOT LIMITED TO, ALL WARRANTIES OF MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE AND NON-INFRINGEMENT, ALL OF WHICH OTHER WARRANTIES ARE EXPRESSLY EXCLUDED.

THE RIGHTS AND REMEDIES UNDER THIS WARRANTY ARE AND SHALL BE THE SOLE AND EXCLUSIVE RIGHTS AND REMEDIES AGAINST VIKING. EXCEPT FOR THE SPECIFIC LIABILITIES AND OBLIGATIONS PROVIDED UNDER THIS WARRANTY, VIKING SHALL HAVE NO LIABILITY OR OBLIGATION WITH RESPECT TO ANY PRODUCT CLAIMED TO BE DEFECTIVE IN ANY MANNER.

UNDER NO CIRCUMSTANCES SHALL VIKING BE LIABLE UNDER THIS WARRANTY OR OTHERWISE FOR SPECIAL, INCIDENTAL, INDIRECT, CONSEQUENTIAL OR PUNITIVE DAMAGES OF ANY KIND, INCLUDING, BUT NOT LIMITED TO, LOST OR UNREALIZED SALES, REVENUES, PROFITS, INCOME, COST SAVINGS OR BUSINESS, LOST OR UNREALIZED CONTRACTS, LOSS OF GOODWILL, DAMAGE TO REPUTATION, LOSS OF PROPERTY, LOSS OF INFORMATION OR DATA, LOSS OF PRODUCTION, DOWNTIME, OR INCREASED COSTS, IN CONNECTION WITH ANY PRODUCT, EVEN IF VIKING HAS BEEN ADVISED OR PLACED ON NOTICE OF THE POSSIBILITY OF SUCH DAMAGES AND NOTWITHSTANDING THE FAILURE OF ANY ESSENTIAL PURPOSE OF ANY PRODUCT.

Cancellation Charges

If the customer has a legitimate reason for requesting cancellation of an order after it has been accepted and acknowledged, the Company's written approval of cancellation must be obtained 30 days prior to scheduled shipping date. The Company's policy will be to assess a minimum cancellation charge of \$100.00 when no work has been started, purchased materials have not been ordered, or if a stock pump or part is cancelled.* On non stock items, the cancellation charge will be based on work completed and material purchased.

Company Inspection, Tests, Etc.

According to company policy, each product will pass standard factory inspection and tests prior to shipment. Hydrostatic test pressures listed in the catalog apply to standard catalogued construction. Testing is done with a fluid compatible with the materials of construction. Weepage at seals is not considered failure. Special factory inspection, tests or reports are subject to a charge which will be quoted by the Company upon request.

Return of Products

Written authorization must be obtained from the Company before any Company products or other equipment used with the Company product can be returned for credit, repair, warranty consideration or any other reason.

When the Company products have been authorized for return and credit, they are subject to inspection and if found by the factory to be in first class condition, they may be subject to a restocking charge which will not be less than 20% of the original net price, with a \$100.00 minimum restocking charge whichever is greater, per Viking return policies catalog sections 030.2 and 030.3.

Deliveries

Deliveries of the equipment will be made f.o.b. point of shipment, unless otherwise stated on the order, and therefore risk of loss will be upon the purchaser.

Shipping dates given in advance of actual shipment are estimated and deliveries will be made subject to prior order on file with us.

We will not be liable for delays resulting from fire, or other causalities, labor or transportation difficulties, delays at our usual sources of supply, or without limitation by the foregoing, any other causes beyond our control.

Transportation Company's receipt constitutes delivery after which our responsibility ceases. Claims for shortage must be made within five days after receipt of goods.

Risk of Loss

Delivery of product to a carrier (common carrier, UPS Etc.) at the Viking facility from which the product is shipped will constitute delivery to a customer. Upon delivery of product to the carrier all risk of loss or damage to such product will pass to and be borne by customer. Viking will not have any liability for any product after delivery to a carrier, including any liability for delays in transit to customer. No loss, damage or delay in transit of product after delivery to a carrier will affect Customer's obligation to pay the purchase price and other applicable charges.

* The fee may be waived for orders entered by distribution through VikingConnect within 3 days of entry.

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VIKING U.S. DISTRIBUTOR RETURN POLICIES

All returns must be submitted using the Return Authorization forms (based on type of return) available on VikingConnect.

If you are not familiar with the use of this electronic return form you can locate it on VikingConnect by clicking on Resources, then Return Authorization. There are six return types to choose from. Please choose, fill out the form to completion and submit.

Important Information: All returns involving equipment that has been in service must submit a Material Safety Data Sheet (MSDS) for the liquid involved. The MSDS information should be emailed to the return coordinator at dreuther@idexcorp.com or faxed to 803-216-7730.

Returned pumps that have been in use must be flushed clean of product before returning. Any equipment received and found to be containing residual amounts of hazardous material will be returned COLLECT. All parts must be clearly marked with Viking part numbers.

**Returns under any of the following five categories must be sent in as a separate return.
Do not combine two or more return categories into a single shipment.**

Category 1: Returns for Warranty Consideration

Any items may be returned at any time for Warranty evaluation using the electronic Return Authorization process.

Category 2: Returns for Repair Work

Any items may be returned at any time for repair estimate using the electronic Return Authorization process.

Category 3: Stock Exchanges

Each Distributor is allowed two stock exchanges per year, but no more often than once during each six-month period. Distributors will be allowed to return standard manufactured product for exchange without a restocking charge. The Distributor should submit a list of items for approval to the return coordinator. The list should be emailed to the return coordinator by using the Return form on VikingConnect. The list will be reviewed and emailed back with the items on it approved or not approved for return as noted, and a Return Authorization (RA) number assigned to use on the return. Please note the exchange policies below.

Stock is exchangeable only under the following conditions:

- A restocking order greater than 1.15 times the return must be entered before the return will be processed.
- **No** stock exchange will be allowed if the distributor is below its minimum inventory requirement as stated on Annex H on your Distributor Agreement, unless the restocking order is larger than the return and will result in an inventory total that meets or exceeds the minimum requirement. The restocking order must be reviewed and approved by the Region Manager.
- All items must be current catalog items and in saleable condition.
- Only Viking manufactured items can be returned for credit.
- Purchased items such as mechanical seals, lip seals, gaskets, packing, o-rings, cap screws, etc. cannot be returned regardless of quantity.
- Note: new parts removed from an existing pump will not be accepted as a part return.
- Returned pumps **must have a serial number**, and cannot be more than three years old.
- Credit for pumps is determined by the original sales price for the pump, as determined by the serial number on the pump. Pumps constructed with non-standard seals will have the seal price deducted from the credit amount.
- Credit for returned parts - contact Viking for the most current formula.
- Parts or pumps received at Viking Pump damaged, corroded, or in otherwise un-saleable condition will be returned at the Distributor's expense, or disposed of at Viking Pump if so instructed by the Distributor.
- Each Distributor will be assigned two quarters per year to execute the stock exchange. The exchange must occur in the first month of the assigned quarter. If a Distributor misses its assigned time period, it will be required to wait for its next authorized time period. If the Distributor returns inventory only once per year the dollar return limit remains as specified below. The Director of U.S. Distribution Sales or the Vice President Marketing & Sales must approve any exceptions.
- Stock exchanges are limited to 20K per return.
- Any exceptions higher than those above can only be approved by the Director of U.S. Distribution Sales or the Vice President Marketing & Sales.

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VIKING U.S. DISTRIBUTOR RETURN POLICIES

Category 4: Stock Return Due to Distributor or Customer Error

Stock returns due to an ordering error by the Distributor, the customer, or for any reason not caused by Viking Pump will be accepted. All freight charges for these returned items are the responsibility of the Distributor or the customer.

- All returned goods must be current product in standard material and in saleable condition when received at Viking Pump. Pumps with special non-standard seals or other special components may be returnable, however the special component pricing may be deducted from the credit amount.
- A 20% restock charge will be assessed on the net value of the return with a \$100 minimum charge for the return.

Category 5: Stock Return Due to Viking Pump Error

Stock returns due to an error by Viking Pump will be accepted. Notify your customer service representative at Viking Pump immediately upon verifying the error so that no finance charges will accrue on that invoice.

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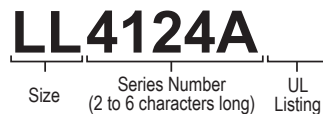
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VIKING MODEL NUMBER SYSTEMS

The model numbering systems for different pumping principles are explained below.

INTERNAL GEAR PUMPS

Viking model numbers for internal gear pumps begin with the pump size (capacity), followed by the pump series and any UL listing. An example is shown below. A detailed listing of options for each section of the model number follows.



Pump Size (Capacity): The first one or two alpha characters in the model number indicate the pump size (capacity). Note that the nominal capacities and maximum speed (RPM) are different for Universal and Motor Speed Product Lines. Sizes are listed in order of increasing displacement per revolution.

PUMP SIZE	NOMINAL CAPACITY					
	Universal Product Line			Motor Speed Product Line		
	GPM	m ³ /h	RPM	GPM	m ³ /h	RPM
C	—	—	—	0.5	0.11	1750
F	—	—	—	1.5	0.34	1750
FH	—	—	—	3	0.68	1750
GS	5	1.1	1750	—	—	—
G	8	1.82	1750	8	1.8	1750
GG	10	2.27	1750	10	2.3	1750
H	15	3.4	1750	15	3.4	1750
HJ	20	4.5	1750	20	4.5	1750
HL/HLE	30	6.8	1750	30	6.8	1750
A	25	5.7	1150	—	—	—
AS	52	11.8	1750	55	12	1750
AT/ATE	53	12.1	1450	—	—	—
AK	75	17	1750	85	20	1750
AL	112	25	1750	115	26	1750
ALE	94	21.4	1450	—	—	—
KS	30	6.8	520	—	—	—
KE	—	—	—	150	34	1750
K	75	17	780	—	—	—
KKE	—	—	—	205	47	1750
KK	100	23	780	—	—	—
LQE	—	—	—	235	53	1150
L/LQ	135	31	640	—	—	—
LL	140	32	520	—	—	—
LSE	—	—	—	350	80	1150
LS	200	45	640	—	—	—
Q	390	88	640	460	104	750
QS	580	132	640	580	132	640
M	420	95	420	—	—	—
N	600	136	350	—	—	—
R	1100	250	280	—	—	—
RS	1600	363	250	—	—	—
P	1500	340	230	—	—	—

UL Listing

Certain series may be UL Listed for specific fluids, with a letter designation, as follows:

UL LETTER	UL CLASSIFICATION	APPLICABLE SERIES
-X	Fuel Oil	432-X, 456-X, 474-X

EXTERNAL (SPUR) GEAR PUMPS

External gear pumps are found in three catalog sections, where detailed model numbering systems for each series are provided.

Series	CATALOG SECTION
SG-05, -07 GP-04, -05, -07 GM-05, -07 GD-05, -07	341
SG-04, -05, -07, -10, -14	1451
SG-805, -807, -810, -814	1453
CMD-E-02, -05, -12, -25, -75, -125	344

SG-05 pumps may be UL Listed for Fuel Oil, in which case the model number is followed by -X.

VANE PUMPS

Vane pumps are found in one catalog section, where detailed model numbering systems for the series is provided.

Series	CATALOG SECTION
LVP	445

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GENERAL INFORMATION & REFERENCE: VIKING INTERNAL GEAR PUMP DISPLACEMENT & ELEMENT SIZE TABLE

For metering applications, it can be useful to know the displacement per revolution to calculate capacity at different operating speeds. That information is provided in the table below. For critical metering, actual displacement should be determined through calibration under normal operating conditions.

To aid in determining the pump size for unlabeled spare rotors or idlers, or to determine the size of a pump whose nameplate is missing, the approximate dimensions of the rotor and idler are also provided in the table below.

Pump Size	Theoretical* Displacement per Revolution		Theoretical* Displacement per 100 Revolutions		Approximate Size of Elements					
	Gal.	Liters	Gal.	Liters	Rotor O.D.		Idler O.D.		Tooth Length	
					Inches	mm	Inches	mm	Inches	mm
C	.00036	.001398	.0369	.1398936	1	25.4	3/4	19	1/4	6.3
F	.00115	.004352	.1150	.4352750	1-1/2	38.1	1-1/16	27	5/16	7.9
FH	.00209	.007918	.2092	.7918220	1-1/2	38.1	1-1/16	27	9/16	14.3
GS	.00430	.0161	.430	1.61	2-1/2	63.5	1-13/16	46	.40	10.0
G	.00538	.020359	.5379	2.035951	2-1/2	63.5	1-13/16	46	1/2	12.7
GG	.00672	.025446	.6723	2.544655	2-1/2	63.5	1-13/16	46	5/8	15.9
H	.00948	.035900	.9485	3.590072	3-3/8	85.7	2-5/8	66.7	5/8	15.9
HJ	.01328	.050264	1.328	5.026480	3-3/8	85.7	2-5/8	66.7	7/8	22.2
HL/HLE	.01898	.071839	1.898	7.183930	3-3/8	85.7	2-5/8	66.7	1-1/4	31.7
A	.02113	.08	2.1134	8.0000	4-5/8	117.5	3-3/8	85.7	3/4	19.1
AS	.03426	.129674	3.426	12.96741	4-5/8	117.5	3-3/8	85.7	1	25.4
AT/ATE	.0385	.144	3.85	14.4	4-5/8	117.5	3-3/8	85.7	1-1/8	28.6
AK	.05138	.194473	5.138	19.44733	4-5/8	117.5	3-3/8	85.7	1-1/2	38.1
AL/ALE	.06866	.259878	6.866	25.98781	4-5/8	117.5	3-3/8	85.7	2	50.8
J	.05271	.199507	5.271	19.95073	6-3/16	157	4-1/2	114.3	3/4	19
KS	.08792	.332813	8.792	33.2813	6-3/16	157	4-1/2	114.3	1-1/4	31.8
KE	.0917	.344	9.17	34.4	6-3/16	157	4-1/2	114.3	1-1/2	38.1
K	.10550	.399317	10.55	39.93175	6-3/16	157	4-1/2	114.3	1-1/2	38.1
KKE	.122	.458	12.2	45.8	6-3/16	157	4-1/2	114.3	2	50.8
KK	.14070	.532549	14.07	53.25495	6-3/16	157	4-1/2	114.3	2	50.8
LQE	.217	.815	2.17	81.5	8-1/4	209.5	6	152.4	2	50.8
L / LQ	.23730	.898180	23.73	89.81805	8-1/4	209.5	6	152.4	2	50.8
LL	.29660	1.122631	29.66	112.2631	8-1/4	209.5	6	152.4	2-1/2	63.5
LSE	0.323	1.22269	32.3	122.269	8-1/4	209.5	6	152.4	3	76.2
LS	.35595	1.347271	35.60	134.7271	8-1/4	209.5	6	152.4	3	76.2
Q	.65890	2.493936	65.89	249.3936	11	279.4	8	203.2	3	76.2
QS	.98835	3.740904	98.83	374.0904	11	279.4	8	203.2	4-1/2	114.3
M	1.09600	4.148360	109.6	414.8360	13-3/4	349.2	10	254	3	76.2
N	1.82700	6.915190	182.7	691.5190	13-3/4	349.2	10	254	5	127
R	4.27300	16.17330	427.3	1617.330	19-15/16	506.4	14-1/2	368.3	6	152.4
RS	6.0534	22.912	605.3	2291.2	19-15/16	506.4	14-1/2	368.3	8-1/2	215.9
P	7.58200	28.7010	758.2	2870.10	24	609.6	17-3/8	441.3	7	177.8

* Actual capacity may be less due to internal clearances in the pump. Variations in fluid viscosity and discharge pressure may also affect capacity.

GENERAL INFORMATION & REFERENCE: VIKING EXTERNAL GEAR PUMP DISPLACEMENT & ELEMENT SIZE TABLE

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For metering applications, it can be useful to know the displacement per revolution to calculate capacity at different operating speeds. That information is provided in the table below. For critical metering, actual displacement should be determined through calibration under normal operating conditions.

To aid in determining the pump size for unlabeled spares, or to determine the size of a pump whose nameplate is missing, the approximate dimensions of the gears are also provided in the table below.

Pump Size	Theoretical Displacement		Theoretical Displacement (per 100 rev)		Approximate Size of Elements			
					Gear O.D.		Gear Length	
	in ³ /rev	cm ³ /rev	Gal.	Liters	Inches	mm	Inches	mm
0417	0.008	0.13	0.0035	0.0131	1.03	26	0.18	4.6
0418	0.017	0.28	0.0074	0.0279			0.18	4.6
0425	0.024	0.39	0.0104	0.0393			0.25	6.4
0435	0.033	0.54	0.0143	0.0541			0.35	8.9
0450	0.048	0.79	0.0208	0.0787			0.50	13
0470	0.067	1.10	0.0290	0.1098			0.70	18
0518	0.097	1.59	0.0420	0.1588	1.17	30	0.18	4.6
0525	0.137	2.24	0.0591	0.2237			0.25	6.4
0535	0.191	3.13	0.0827	0.3132			0.35	8.9
0550	0.273	4.47	0.1182	0.4474			0.50	13
0570	0.382	6.26	0.1655	0.6265			0.70	18
0510	0.547	8.96	0.2366	0.8956			1.0	25
0514	0.765	12.53	0.3310	1.2530			1.4	36
0519	1.038	17.00	0.4492	1.7004			1.9 ①	48
0528	1.529	25.06	0.6620	2.5059	2.8 ②	71		
0729	0.410	6.72	0.1776	0.6723	1.71	43	0.29	7.4
0741	0.577	9.45	0.2497	0.9452			0.41	10
0758	0.808	13.23	0.3496	1.3234			0.58	15
0782	1.154	18.90	0.4994	1.8904			0.82	21
0711	1.615	26.47	0.6992	2.6468			1.1	28
0716	2.307	37.80	0.9987	3.7805			1.6	41
0722	3.230	52.94	1.3984	5.2935			2.2 ③	56
0732	4.614	75.61	1.9974	7.5610			3.2 ③	81
1009	2.11	34.58	0.9134	3.4577	2.40	61	0.85	22
1013	3.30	54.08	1.4286	5.4077			1.3	33
1024	6.145	100.69	2.659	10.069				
1026	6.60	108.2	2.8571	10.815			2.6	66
1027	6.838	112.05	2.960	11.205				
1420	9.24	151.4	4.0000	15.142	3.50	89	2.0	51
1436	16.5	270.4	7.1429	27.039			3.6	91
1456	25.0	409.7	10.8225	40.968			5.6	142

① 0519 size has 2 gears each shaft

② 0528 size has 2 gears on driver shaft and 3 gears on driven shaft

③ 0722 and 0732 sizes are double pumps