



**evoqua**  
WATER TECHNOLOGIES



## **INTERNALIFT® PUMPS - A BETTER SLANT ON WATER AND WASTEWATER PUMPING**



**INTERNALIFT® PUMPS**



# INTERNALIFT® SCREW PUMPS

The Internalift® pump is an elegant solution to the problem of lifting water, wastewater and other liquids in a variety of municipal and industrial applications. The Internalift pump's features and advantages have been widely embraced. There are over 1,000 installations.

The Internalift® pump embodies a variety of efficiency-enhancing benefits:

- 85% pumping efficiency
- Virtually 100% volumetric efficiency
- Internally welded flights eliminate loss from backflow
- Proprietary lip seal prevents leakage down the outer surface of the pump
- No moving parts in pump body eliminate jamming and friction.
- Pump operates at variable flows without losing efficiency
- No complicated and expensive speed controls

Customers can benefit from the Internalift® pump in many other ways.

## TYPICAL APPLICATIONS

- Pumping wastewater and other aqueous solutions
- Pumping raw sewage and return-activated sewage
- Lifting slurries, sludges and other liquids containing suspended solids or debris
- Pumping oils and other viscous liquids or wastes
- Pumping caustic and abrasive slurries
- Pumping storm water and providing equalization
- Pumping rivers with spawning fish past dams or other obstructions
- Pumping irrigation and drainage water





### Main Components

- Pump Body
  - Cylinder and flights form a single fabricated-steel structure
- Upper Bearing
  - Spherical roller bearing takes up the entire operating thrust of the pump and a proportionate share of the operating load
  - Sized to L-10 life of 100,000 hours under full pumping loads
- Lower Bearing
  - Tri-axial roller support mounted on a self-aligning supporting structure
  - Forged steel ring with 321-369 Brinell hardness
- Drive unit
  - Designed to AGMA standards with a 1.5 Service Factor

### Installation

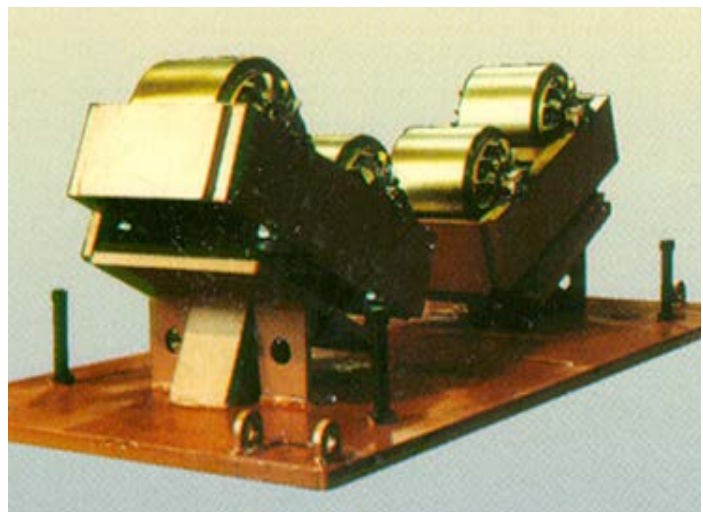
- Requires minimal concrete work for installation preparation
- Easy and quick electrical connections and final alignment

### Maintenance

- Lubrication for the upper and lower bearings only is required

### Safety, Appearance and Odor Control

- Enclosed design is safe and attractive
- Effectively confines liquid and odors



The pump's lower bearing is completely self-aligning.

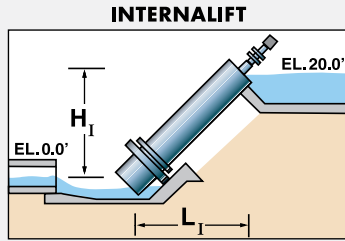


## INTERNALIFT® SCREW PUMPS CAPACITY TABLE

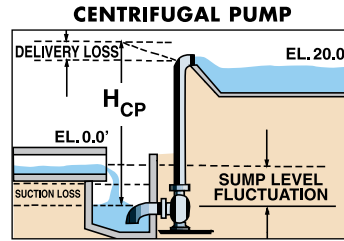
**Capacity Table**

Pump Size		Pump Flow			
		38° Incline		45° Incline	
in	cm	GPM	m <sup>3</sup> /hr	GPM	m <sup>3</sup> /hr
24	61	890.00	201.85	720	163.30
30	76	1,400.00	317.52	1,150	260.82
36	91	2,100.00	476.28	1,700	385.56
42	107	3,150.00	714.42	2,550	578.34
48	122	4,400.00	997.92	3,550	805.14
54	137	5,700.00	1,292.76	4,600	1,043.28
60	152	7,000.00	1,587.60	5,650	1,281.42
66	168	8,800.00	1,995.84	7,125	1,615.95
72	183	11,700.00	2,653.56	9,500	2,154.60
84	213	16,600.00	3,764.88	14,250	3,231.90
96	244	21,850.00	4,955.58	19,000	4,309.20
108	274	27,550.00	6,248.34	23,750	5,386.50
120	305	35,700.00	8,096.76	31,000	7,030.80

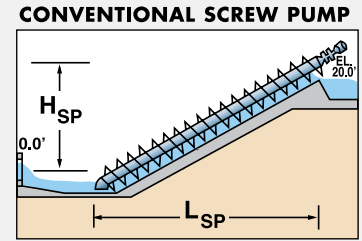
### Internalift® Pump



### Centrifugal Pump

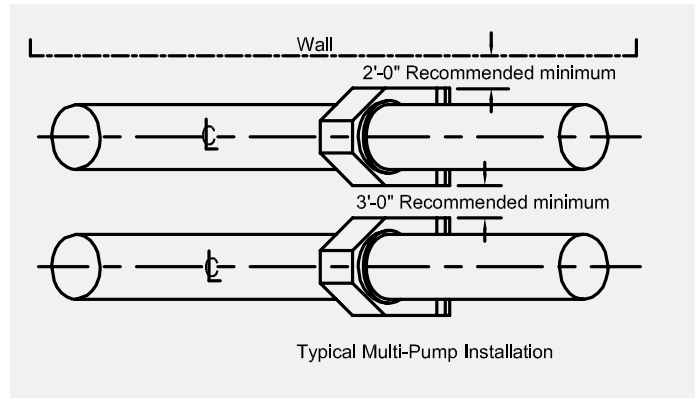
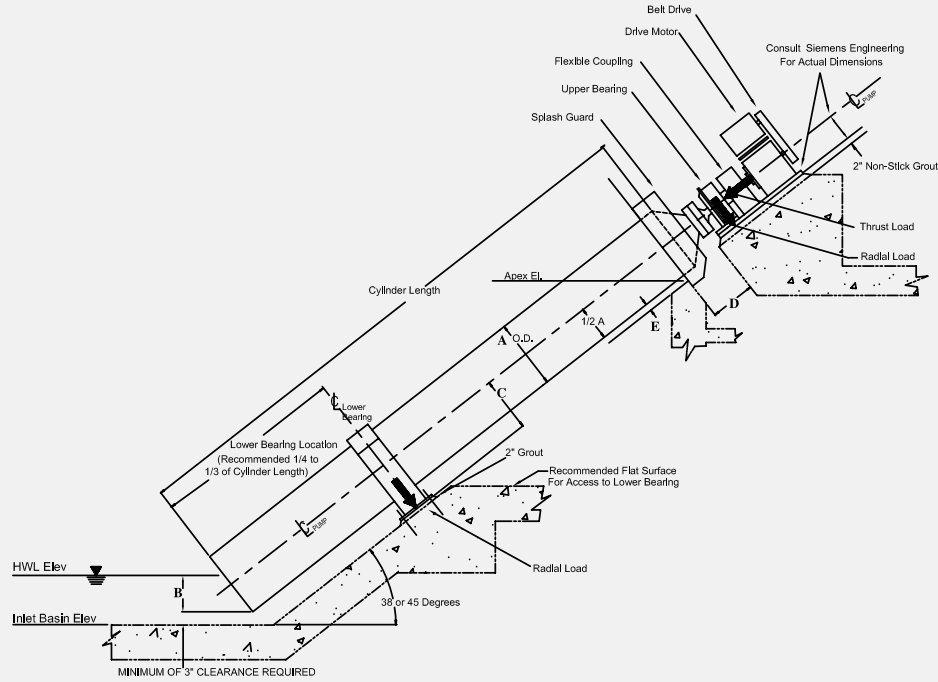


### Conventional Screw Pump



<b>Efficiency</b>	Pump efficiencies run as high as 86%; volumetric efficiency is virtually 100%. Zero leakage within the pump. Efficiency remains high over wide range of operating capacities.	Relatively high pumping efficiency can be achieved, but only within a limited range of flow conditions.	Efficiency is reduced by slippage of liquid between the flights and the trough.
<b>Output</b>	Pump can run dry indefinitely without risk of damage.	Requires an appropriate quantity of liquid and relatively constant flow. Subject to burnout or damage when run dry or partially empty. Heavy wear when abrasive solids are present.	Pump output varies directly with the liquid level at the inlet. There is no risk of damage from running dry.
<b>Lift Capability</b>	The Internalift® pump can be installed at an incline angle of 38° or 45° and can be used for vertical lift heights up to 60 feet. Pump length is virtually unlimited.	Lifts of unlimited height can be achieved, but frictional losses in piping and fittings lower pump efficiency.	Lift height is normally limited to 25-30 feet. Incline angle is limited to 38°.
<b>Controls</b>	No variable speed drives or controls are required. Two speed motors can be used to allow higher pumping efficiencies at very low flows.	Expensive variable speed controls are necessary to handle changes in flow.	Speeds normally should be no less than 70% of maximum because of leakage and loss of efficiency.
<b>Ease of Installation</b>	Concrete work, other than the inlet basin, involves only upper and lower bearing foundations.	Installation requires extensive piping, fittings, and valves, in addition to excavation and construction of a sizable wet well.	Installation requires considerable concrete work and related grouting and screen work.
<b>Durability</b>	Hard debris is flushed through and jamming is impossible because the flights are welded to the cylinder wall. Abrasive wear is minimized.	Grit chambers or screens must be installed to protect the pump from abrasion or possible failure caused by solid matter in the intake.	Solids caught in the space between the flights and the trough can cause serious abrasion or can jam and damage the pump.
<b>Reliability</b>	Pump performance is unaffected by climactic conditions.	Pump wells to be sheltered, usually by a small weather-proof enclosure.	When not in operation, the pump is subject to freeze-up in extreme cold or to heat bending and binding in hot weather.
<b>Maintenance</b>	Both upper and lower bearings are isolated from contact with the liquid so maintenance is easy. Simple lubrication can be done without shutting down.	The pump must be stopped and raised for inspection or maintenance.	The lower bearing is submerged in the liquid to be pumped.
<b>Safety</b>	The Internalift® pump is a simple, totally enclosed cylinder, greatly improving safety.	Hearing protection may be required for personnel working near the pump.	Open screw requires handrails or grating for personal safety.
<b>Environmental Compatibility</b>	Enclosed design is environmentally more attractive and clean, with odors and splashing confined.	Odors and liquids are contained	There is no containment of odors or liquids.





### Internallift® Pump Layout - Key Dimensions

PUMP SIZE		A		B		C		D		E	
in	cm	in	cm	in	cm	in	cm	in	cm	in	cm
24	61.0	24.50	62.2	14.40	36.6	23.13	58.7	20.00	50.8	2.00	5.1
30	76.2	30.50	77.5	18.00	45.7	25.75	65.4	20.00	50.8	2.00	5.1
36	91.4	36.50	92.7	21.60	54.9	29.25	74.3	21.56	54.8	2.00	5.1
42	106.7	42.5	108.0	25.20	64.0	34.00	86.4	24.00	61.0	2.00	5.1
48	121.9	48.50	123.2	28.80	73.2	37.63	95.6	27.88	70.8	2.00	5.1
54	137.2	54.63	138.7	32.40	82.3	45.31	115.1	27.88	70.8	2.00	5.1
60	152.4	60.63	154.0	36.00	91.4	48.50	123.2	28.50	72.4	2.00	5.1
66	167.6	66.63	169.2	96.60	100.6	52.50	133.4	30.50	77.5	2.00	5.1
72	182.9	72.75	184.5	43.20	109.7	55.25	140.3	31.69	80.5	3.00	7.6
84	213.4	85.00	215.9	50.40	128.0	65.50	166.4	36.88	93.7	3.00	7.6
96	243.8	97.00	246.4	57.60	146.3	75.38	191.5	38.00	96.5	3.00	7.6
108	274.3	109.00	276.9	64.80	164.6	86.00	218.4	41.00	104.1	3.00	7.6
120	304.8	121.00	307.3	72.00	182.9	102.00	259.1	45.00	114.3	3.00	7.6



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to connect with an Internalift expert.



181 Thorn Hill Road, Warrendale, PA 15086

+1 (866) 926-8420 (toll-free) +1 (978) 614-7233 (toll) [www.evoqua.com](http://www.evoqua.com)

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