evoqua
WATER TECHNOLOGIES

INTERNALIFT® AND EXTERNALIFT™ SCREW 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 with many installations around the world.

THE INTERNALIFT® PUMP EMBODIES A VARIETY OF EFFICIENCY-ENHANCING BENEFITS:

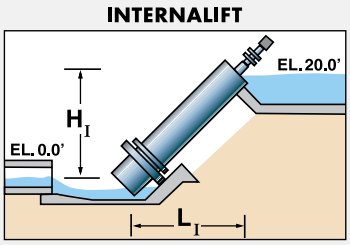
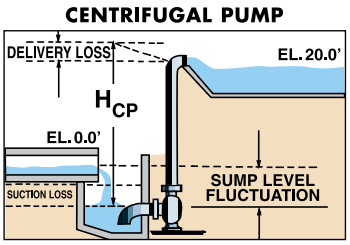
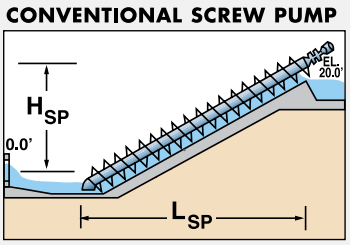
- 85% pumping efficiency
- Virtually 100% volumetric efficiency
- Internally welded flights that eliminate loss from backflow
- Proprietary lip seal prevents leakage down the outer surface of the pump
- No moving parts in pump body eliminate jamming and friction
- Pump operates at variable flows without losing efficiency
- No complicated and expensive speed controls
- 45 Degree incline results in small footprint and lower civil cost
- Lower roller bearings are not in liquid waste stream for ease of maintenance
- Easy installation with minimal concrete work

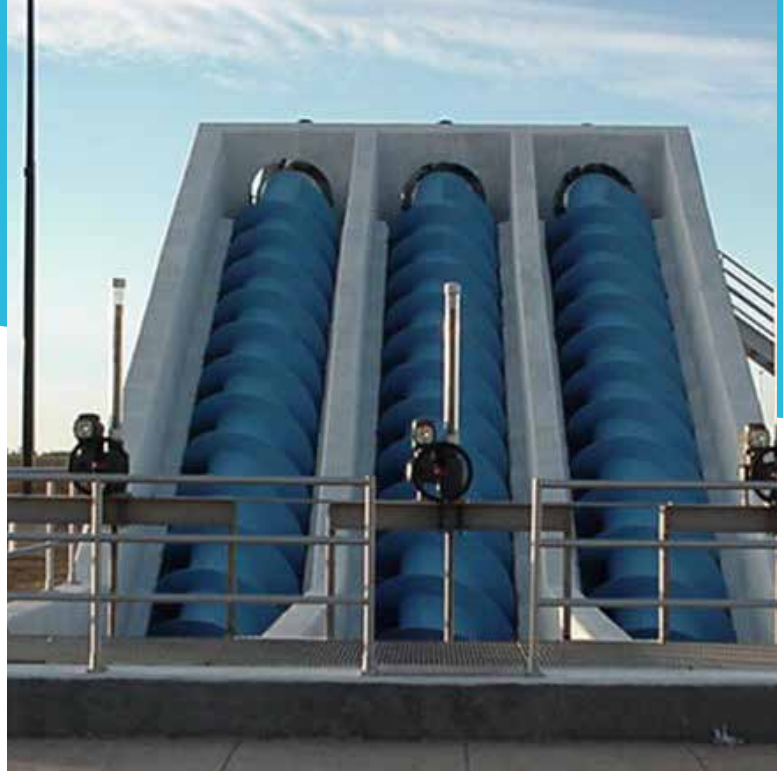
INTERNALIFT™ SCREW PUMPS - CAPACITY TABLE

Capacity Table

Pump Size		Pump Flow			
		38˚ Incline		45˚ Incline	
in	cm	GPM	m^3/hr	GPM	m^3/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

General guidelines only – please see your Internalift® pump representative for more information.

	Internalift® Pump	Centrifugal Pump	Conventional Screw Pump
			
Efficiency	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.
Output	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.
Lift Capability	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˚.
Controls	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.
Ease of Installation	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.
Durability	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.
Reliability	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.
Maintenance	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.
Safety	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.
Environmental Compatibility	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.



EXTERNALIFT™ SCREW PUMPS

BENEFITS OF THE EXTERNALIFT SCREW PUMP

- Pre-screening and grinding are not required
- All screens and grinders can be located at pump discharge level
- Inlet structures are not required
- Wet and dry pits are not required
- No wet well storage
- No inlet or discharge pipes
- No valves or elaborate electrical controls are needed
- Variable pumping at a constant speed
- Liquid will be pumped a the rate it will be received
- Optional VFDs and dual-speed motors are available for large flow variations
- Low-speed operation
- Speeds range between 20 RPM and 75 RPM, based on spiral diameter
- Low speed operation lengthens bearing life and permits gentle pumping action for return sludge or oily wastewater
- Backstop protection prevents reverse rotation when pump operation is stopped
- Maintenance free
- Requires only lubrication
- Automatic lubrication is provided to lower bearing
- Manual lubrication is required for upper bearing
- 75% Efficiency at design capacity with over 65% efficiency at 30% capacity
- High flows of up to 80,000 GPM (300 m3/min) for each pump and high lifts of up to 40 feet (12.2 m)
- Reduced pumping head
- No suction or discharge piping, gate or check valves
- No frictional resistance
- Lower static head since pump meets the incoming water at its own level

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

EXTERNALIFT™ SCREW PUMPS - CAPACITY TABLE

Not only can Evoqua supply you with new open and enclosed style screw pumps, but also turnkey solutions, rehab services, and inspection and maintenance services can be provided. Evoqua has specialty crews experienced in removing and replacing existing pumps, whether it is concrete re-work, or new stainless steel construction. For repairs, Evoqua can provide new positive displacement lubrication systems, and replacement of rollers or bearing assemblies for increased safety and reliability. Evoqua can also include in a maintenance program the change-out of outdated or worn components, such as PLC panels, motors, gear reducers, guards, and pump bodies.

STANDARD TORQUE TUBE			30° INCLINATION CAPACITY (GPM/LIFT FT)			38° INCLINATION CAPACITY (GPM/LIFT FT)		
Screw Diam.	Diam. & Wall Thick-ness	Design RPM	One Flight	Two Flight	Three Flight	One Flight	Two Flight	Three Flight
18″	8.625	84.3	377/9.9	532/9.7	638/9.5	187/12.2	362/11.9	425/11.7
21″	10.75	76.1	564/11.5	762/11.2	915/11.0	274/14.4	518/13.8	610/13.5
24″	12.75	69.6	770/12.7	1041/12.4	1249/12.3	375/15.6	708/15.3	833/15.0
27″	14.0	64.3	1014/13.0	1370/12.5	1644/12.2	493/15.9	932/15.4	1096/14.9
30″	16.0	60.0	1297/14.1	1752/13.5	2103/13.2	631/17.2	1192/16.6	1402/16.1
36″	18.0	53.1	1984/14.9	2682/13.9	3218/13.6	965/18.2	1824/17.1	2145/16.6
42″	20.0	47.9	2705/15.3	3843/14.5	4612/14.1	1337/19.1	2613/17.9	3074/17.3
48″	24.0	43.9	3884/16.9	5248/16.2	6298/15.5	1889/20.6	3569/19.9	4199/19.3
54″	30.0	40.5	—	6909/18.2	8291/17.9	2487/23.5	4698/22.5	5527/21.9
60″	30.0	37.8	6533/18.6	8835/17.9	10602/17.1	3181/23.1	6008/22.0	7068/21.4
66″	36.0	35.5	—	11036/19.1	13243/18.5	3973/25.0	7505/23.5	8829/22.9
72″	42.0	33.5	—	13521/20.9	16225/20.3	4868/27.2	9194/25.8	10817/25.1
78″	42.0	31.7	—	16229/20.5	19588/19.9	5867/26.4	11083/25.3	13039/24.6
84″	42.0	30.2	14338/21.2	19376/20.0	23251/19.6	6975/26.1	13176/24.9	15501/23.9
90″	48.0	28.9	16844/22.8	22762/21.7	27314/21.2	8194/28.2	15478/26.9	18209/26.0
96″	54.0	27.6	—	26462/23.2	31754/21.7	9526/29.9	17994/28.7	21170/28.0
102″	54.0	26.5	22558/24.0	304484/22.9	36581/21.4	10974/29.5	20729/28.3	24387/27.6
108″	60.0	25.6	—	34835/22.4	41802/21.8	12540/30.4	23688/28.5	27868/26.2
114″	60.0	24.6	29245/24.6	39500/22.1	47424/21.2	14227/30.1	26874/27.4	31616/25.3
120″	60.0	23.8	32964/23.3	44545/21.8	53455/20.4	16037/29.7	30291/26.8	35637/24.5

Visit www.evoqua.com/screw-pumps to connect with a Screw Pump expert.

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