EPIC SCREW PUMPS
**PREFACTICATED SCREW PUMP**

**ARCHIMEDEAN SCREW PUMPS**

Certified ISO 9001

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**MAXIMUM DESIGN PUMPING CAPACITY**

This table is for reference only. Please contact our engineers for specific design selection. These capacities are for three flight screw pumps with maximum pitch, flight radius, and RPM.

<table>
<thead>
<tr>
<th>DIAMETER</th>
<th>GPM @ 30 °</th>
<th>GPM @ 38 °</th>
</tr>
</thead>
<tbody>
<tr>
<td>16&quot;</td>
<td>460</td>
<td>330</td>
</tr>
<tr>
<td>20&quot;</td>
<td>780</td>
<td>570</td>
</tr>
<tr>
<td>24&quot;</td>
<td>1,300</td>
<td>940</td>
</tr>
<tr>
<td>30&quot;</td>
<td>2,220</td>
<td>1,570</td>
</tr>
<tr>
<td>38&quot;</td>
<td>3,390</td>
<td>2,450</td>
</tr>
<tr>
<td>42&quot;</td>
<td>4,750</td>
<td>3,450</td>
</tr>
<tr>
<td>48&quot;</td>
<td>6,600</td>
<td>4,750</td>
</tr>
<tr>
<td>54&quot;</td>
<td>8,800</td>
<td>6,300</td>
</tr>
<tr>
<td>60&quot;</td>
<td>11,000</td>
<td>8,700</td>
</tr>
<tr>
<td>66&quot;</td>
<td>14,000</td>
<td>10,000</td>
</tr>
<tr>
<td>72&quot;</td>
<td>17,200</td>
<td>12,600</td>
</tr>
<tr>
<td>78&quot;</td>
<td>21,700</td>
<td>15,300</td>
</tr>
<tr>
<td>80&quot;</td>
<td>22,200</td>
<td>15,700</td>
</tr>
<tr>
<td>84&quot;</td>
<td>25,400</td>
<td>18,250</td>
</tr>
<tr>
<td>90&quot;</td>
<td>30,000</td>
<td>21,600</td>
</tr>
<tr>
<td>96&quot;</td>
<td>35,000</td>
<td>25,200</td>
</tr>
<tr>
<td>102&quot;</td>
<td>39,800</td>
<td>28,700</td>
</tr>
<tr>
<td>108&quot;</td>
<td>45,400</td>
<td>32,700</td>
</tr>
<tr>
<td>114&quot;</td>
<td>51,300</td>
<td>37,000</td>
</tr>
<tr>
<td>120&quot;</td>
<td>55,500</td>
<td>40,000</td>
</tr>
<tr>
<td>158&quot;</td>
<td>108,600</td>
<td>78,400</td>
</tr>
<tr>
<td>196&quot; (max)</td>
<td>182,800</td>
<td>131,900</td>
</tr>
</tbody>
</table>

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**DRIVE UNITS - FIVE MOST COMMON ARRANGEMENTS**

1. **Top bearing type: floor-mounted**
   - Gear speed reducer type: partially mounted solid shafts
   - Flexible coupling between gearbox and screw shaft
   - Motor mounted on top of the gearbox
   - V-belts between motor and gearbox
   - Application: all outputs

2. **Top bearing type: wall-mounted**
   - Gear speed reducer type: shaft-mounted
   - Motor mounted on top of the gearbox
   - Application: limited outputs

3. **Top bearing type: floor-mounted**
   - Gear speed reducer type: shaft-mounted
   - Motor installed on top of gearbox
   - Application: 100 HP maximum
A first class product with state-of-the-art screw pump technology

LANDY SCREW PUMPS

In addition to the general characteristics and advantages of screw pumps, the Landy screw pumps are distinguished by:

- Efficient design
  - Usually 2 flights
  - Limited deflection
  - Limited occurring tension
  - High efficiency
  - Alternate flight pitch available to maximize efficiency

- Ongoing R&D
  - Finite Element Analysis standard on all new designs

- Full in-house integrated manufacturing
  - Totally reliable manufacturing schedules and delivery times

- Manufactured with permanent lifting eyes and balancing weights

- Fully qualified welders
  - X-ray or ultrasonic testing available
  - Welding shop approval
  - AWS/DIN standards

- Flanged shafts are monolithically cast nodular cast iron
  - Use of fully self-aligning bearings

- Reinforced leading edges of flights

- Surface Preparations – Shot blasting to SP-10 standards
  - Coating – All required coatings are professionally applied, and can be formulated for extreme environments. Please contact us for severe abrasion, chloride, pH or H₂S applications

- Stainless Steel Screw Pumps are available

- Endplates
  - Fully watertight with internal caps over threads of connection bolts
  - Precisely parallel and centric manufacture using special lathes

- Over 100 years experience
  - World-wide service with local support
  - Superb after-sales service
  - We can offer full supervision of installation
Landustrie Screw Pumps are available with four different Lower Bearing designs. The newest and most exciting of which is the permanently lubricated, completely self-contained, and fully self-aligning in all 3 axes, Landy Eco-Friendly system as detailed below.

All our Lower Bearing types carry the radial thrust forces while also accommodating longitudinal expansion and contraction brought by temperature changes. The special merits of all four Landustrie Lower Bearing designs are conveniently outlined in the table on the opposite page. Landustrie bearings can be retrofitted to existing screw pumps by other manufacturers.

- High-performance seal
- Eco-friendly lubricated for lifetime of the bearing
- No grease pump and grease lines required
- Easier to install
- Exchangable with existing bearings
- Corrosion-free cast iron housing
- Lower investment
- No maintenance and no grease costs
- 3-dimensional self-aligning
- No spare parts required
- Completely enclosed unit

ECO-FRIENDLY LOWER BEARING
### LOWER BEARING SELECTION TABLE

<table>
<thead>
<tr>
<th>Feature</th>
<th>Eco-Friendly</th>
<th>Conventional</th>
<th>Trunnion Type</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lubrication</td>
<td>Oil Lubricated</td>
<td>Grease</td>
<td>Grease</td>
</tr>
<tr>
<td>Grease filling</td>
<td>NA</td>
<td>Yes</td>
<td>•</td>
</tr>
<tr>
<td>Grease return line</td>
<td>NA</td>
<td>On request</td>
<td>•</td>
</tr>
<tr>
<td>Maintenance required</td>
<td>5 years</td>
<td>Grease lubrication</td>
<td>Grease</td>
</tr>
<tr>
<td>3D self-aligning</td>
<td>•</td>
<td>•</td>
<td>•</td>
</tr>
<tr>
<td>Water quality</td>
<td>Low</td>
<td>Low</td>
<td>Low</td>
</tr>
<tr>
<td>Installation time</td>
<td>Low</td>
<td>Average</td>
<td>Low</td>
</tr>
<tr>
<td>Heavy duty</td>
<td>•</td>
<td>•</td>
<td>•</td>
</tr>
<tr>
<td>Exchangeability with existing bearings</td>
<td>•</td>
<td>•</td>
<td>•</td>
</tr>
<tr>
<td>Investment</td>
<td>Low</td>
<td>Medium</td>
<td>High</td>
</tr>
<tr>
<td>Operational costs</td>
<td>Low</td>
<td>Medium</td>
<td>Medium</td>
</tr>
<tr>
<td>Lifetime</td>
<td>Long</td>
<td>Long</td>
<td>Longest</td>
</tr>
</tbody>
</table>

### UPPER BEARINGS

For the upper bearing EPIC can offer the choice between two different versions; a wall-mounted or a foot-mounted upper bearing. The benefits of the wall-mounted upper bearing are that the forces on the civil construction will be better absorbed, and also that an odor-tight separation...
EPIC “FLIGHT DEK” COVERS
On request we can cover the installation with modular, light weight, maintenance free, pultruded FRP covers. Advantages are:
- Protection of the screw pump against thermal expansion
- Creates a safe working environment
- Reduced the levels of noise production

TROUGHS
There are several choices of Screw Pump troughs.
- Conventional, classic concrete, custom grouted by the Screw Pump
- Conventional, classic concrete with removable steel grout casting molds
- Permanently Cast-in steel or stainless steel trough liners
- Pre-fabricated, fully self-supporting ‘U’ steel trough
- Pre-fabricated Screw Pump in an enclosed 360° tube

RESEARCH AND DEVELOPMENT
For many generations, Landustrie has been actively conducting research to continuously improve Screw Pump performance, efficiency, and longevity.

The newest development in the most recent 10 years of our testing program is the permanently lubricated, fully 3-dimensionally self-aligning, and completely self-contained Eco-Friendly Lower Bearing. In addition, Landustrie now conducts Finite Element Analysis on all our new Screw Pump Designs.
BASIC TECHNICAL DATA

The capacity flowing through the screw pump is a function of the physical parameters of the screw, the speed at which it turns, and the inclination of the screw to the horizontal.

\[ Q = 1.15NqD^3 \]

Where:
- \( Q \) = capacity in \( m^3/sec \)
- \( q \) = specific capacity (constant)
- \( N \) = RPM
- \( D \) = outside diameter of screw in meters

where \( d \) = torque tube diameter in meters

The relationship between \( Q \), \( N \), and \( D \) will be obvious and the constant \( q \) takes into account the relationship of \( d/D \), the number of flights on the screws and the angle of inclination.

The difference in the design-head requirements between the screw and the centrifugal pump is clearly shown in the above diagram for identical outfall and lift conditions. This difference is a major factor when considering operational costs.

EFFICIENCY/CAPACITY CURVE

The curve shows

1. that the screw efficiency stays very high even with flows as low as 20–30% of full capacity.
2. the importance of clearly specifying the maximum value to be pumped as the screw cannot deliver a greater volume than that delivered when the water inlet is up to the fill point.

ADVANTAGES OF SCREW PUMPS

- Low wear/low speed
- High efficiency
- Capable of pumping highly polluted liquids
- Automatic priming
- Easily accessible
- Long service life
- Low maintenance
- High reliability
- May rotate in dry condition
- Self regulating
- Simple construction
- Low noise
- Non-clogging
- May rotate in dry condition
- Self regulating
- Simple construction
- Low noise
- Non-clogging

Top bearing type: floor-mounted
Gear speed reducer type: parallel mounted solid shafts
Motor directly coupled to the gearbox
Flexible coupling between reducer and screw shaft
Application: all outputs

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SPECIAL FEATURES OF EPIC SCREW PUMPS

- ISO 9001 certified
- Full penetration welding according to AWS, DIN, ASTM, or API standards
- Internal Bulkheads provide additional watertight fail safe sealing of the Torque Tube
- Endplates are watertight welded with threaded holes for the shaft connections
- Fully self-aligning Upper and Lower Bearing Assemblies
- Monolithic Cast Shafts
- Minimum of two (2) Seals in Lower Bearings
- Separate radial thrust and axial thrust Upper Bearing Assemblies
- Counterbalanced Lifiting Eyes built in
- Screed Bar tack welded to top of flights for screeding
- Shot blasting to SA 2.5 (SSPC-SP10) standards
- Prime coating is standard for all parts above and below water level
- Full factory coating under environmentally controlled conditions is recommended
- Reinforced leading edges of the Flights

ADDITIONAL SERVICES & OPTIONAL TESTING

- Ultrasonic Liquid Level Sequential Control System
- Full Submerged Arc Welding
- Left Hand or Right Hand Flights
- Double Lift
- X-Ray Weld Testing
- Ultrasonic Weld Testing
- Torque Tube Air Pressure Testing
- Finite Element Analysis

PARTIAL INSTALLATION LIST (USA)

Mobridge, SD  Coachella, CA  York, PA  St. George, UT  Elkhart, IN
Appomattox, VA  US. Army, Ft. Carson CO  Gloucester, MA  Pittsburgh, KS  CA Dept. of Corrections
Chelsea, MI  Mineral Wells, TX  Teterboro, NJ  Monett, MO  Van Buren, AR
Springfield, OH  Fallbrook, CA  Meridian, ID  American Fork, UT  Dallas Center, IA
Englewood, TN  Emporia, VA  Perryville, MD  Henrico County, VA  Newman, GA
Hope Mills, NC  Des Plains, IL  N. Charleston, SC  HRSD-Newport News, VA  Mesquite, NV
Santa Rosa, CA  Barceloneta, PR  Henderson, NV  Caldwell, ID  Carthage, MO
Oyster Bay, NY  Salt Lake City, UT  Lubbock, TX  Gilbert, AZ  Logan, UT
LeRoy, NY  Williamson, MI  Mt. Washington, KY  Sauget, IL  Ocean County Utilities, NJ
Indianapolis, IN  Wauseon, OH  Passaic Valley, NJ  USAF, Shaw AFB, SC  Mountain Home, ID
Secaucus, NJ

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