



Pump Division



***Terra-Titan™***

***TKL™***

***Vertical  
Cantilever Shaft  
Sump Pump***



Bulletin PS-10-7 (E)

## Pump Supplier To The World

*Flowserve is the driving force in the global industrial pump marketplace. No other pump company in the world has the depth or breadth of expertise in the successful application of pre-engineered, engineered and special purpose pumps and systems.*

### Pumping Solutions

Flowserve is providing pumping solutions which permit customers to continuously improve productivity, profitability and pumping system reliability.

### Market Focused Customer Support

Product and industry specialists develop effective proposals and solutions directed toward market and customer preferences. They offer technical advice and assistance throughout each stage of the product life cycle, beginning with the inquiry.



### Dynamic Technologies

Flowserve is without peer in the development and application of pump technology, including:

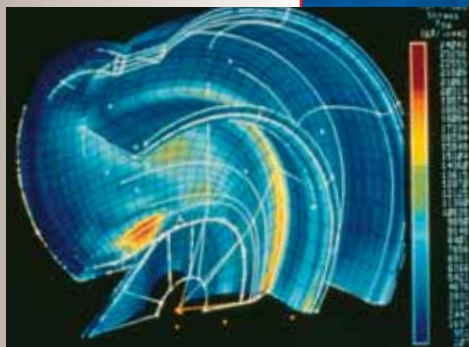
- Hydraulic engineering
- Mechanical design
- Materials science
- Intelligent pumping
- Manufacturing technology

### Broad Product Lines

Flowserve offers a wide range of complementary pump types, from pre-engineered process pumps, to highly engineered and special purpose pumps and systems. Pumps are built to recognized global standards and customer specifications.

Pump designs include:

- Single stage process
- Between bearing single stage
- Between bearing multistage
- Vertical
- Submersible motor
- Rotary
- Reciprocating
- Nuclear
- Specialty





**Terra-Titan**  
**Vertical**  
**Cantilever Shaft**  
**Sump Pump**

**Power, Performance and Reliability**

The Flowserve TKL Terra-Titan vertical, cantilever shaft sump pump is ruggedly built to provide the economical reliability demanded by the mining, process and general industries.

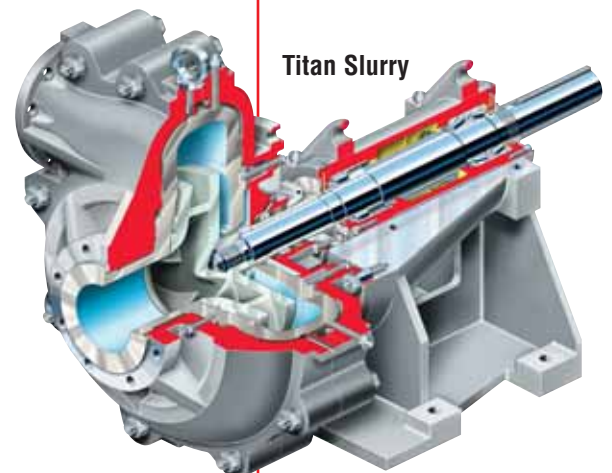
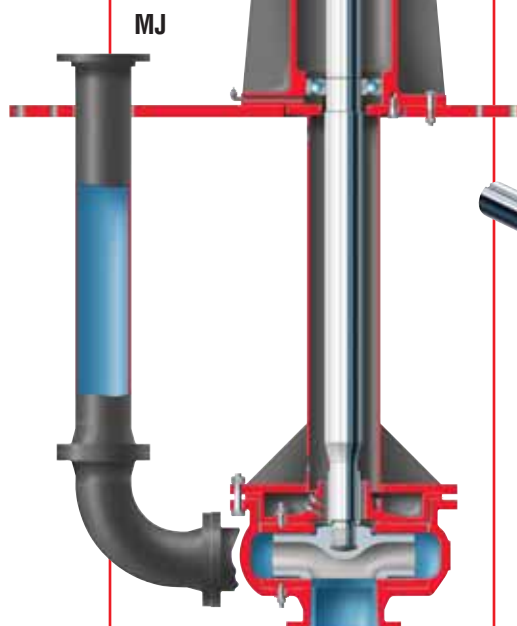
A hardy workhorse, the Terra-Titan has a proven record of handling the most severe applications. Whether fine or coarse solids, neutral or acidic mixtures, high-flow or dry-running conditions, the Terra-Titan performs tough jobs reliably.

**Applications**

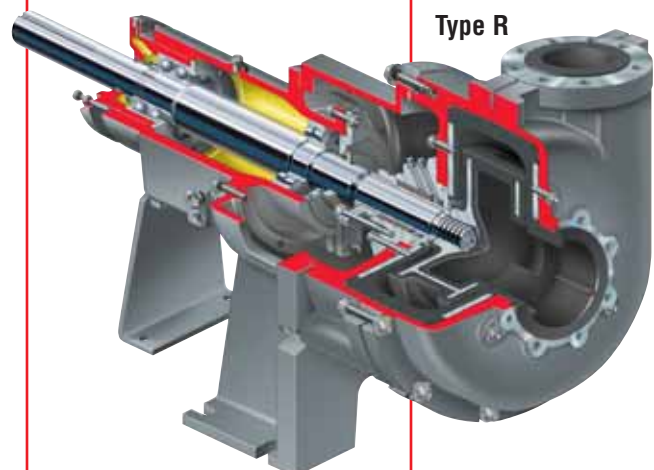
- Mining and mineral processing
- Steel and primary metals processing
- Carbon pulp transfer
- Fly ash
- Mill scale
- Pulp production and processing
- Liquid effluent
- Waste water
- Sugar mill waste
- Food processing

**Complementary Pump Designs**

- Titan Slurry heavy-duty, lined slurry pump
- Type R rubber lined slurry pump
- Type M hard metal slurry pump
- LC chemical slurry pump
- Types MJ and MJC vertical hard metal slurry pumps
- Types RJ and RJC vertical rubber lined slurry pumps
- FRBHJ vertical lineshaft paperstock and process pump
- ESP2 vertical immersion sump pump
- VGRP vertical engineered composite sump pump

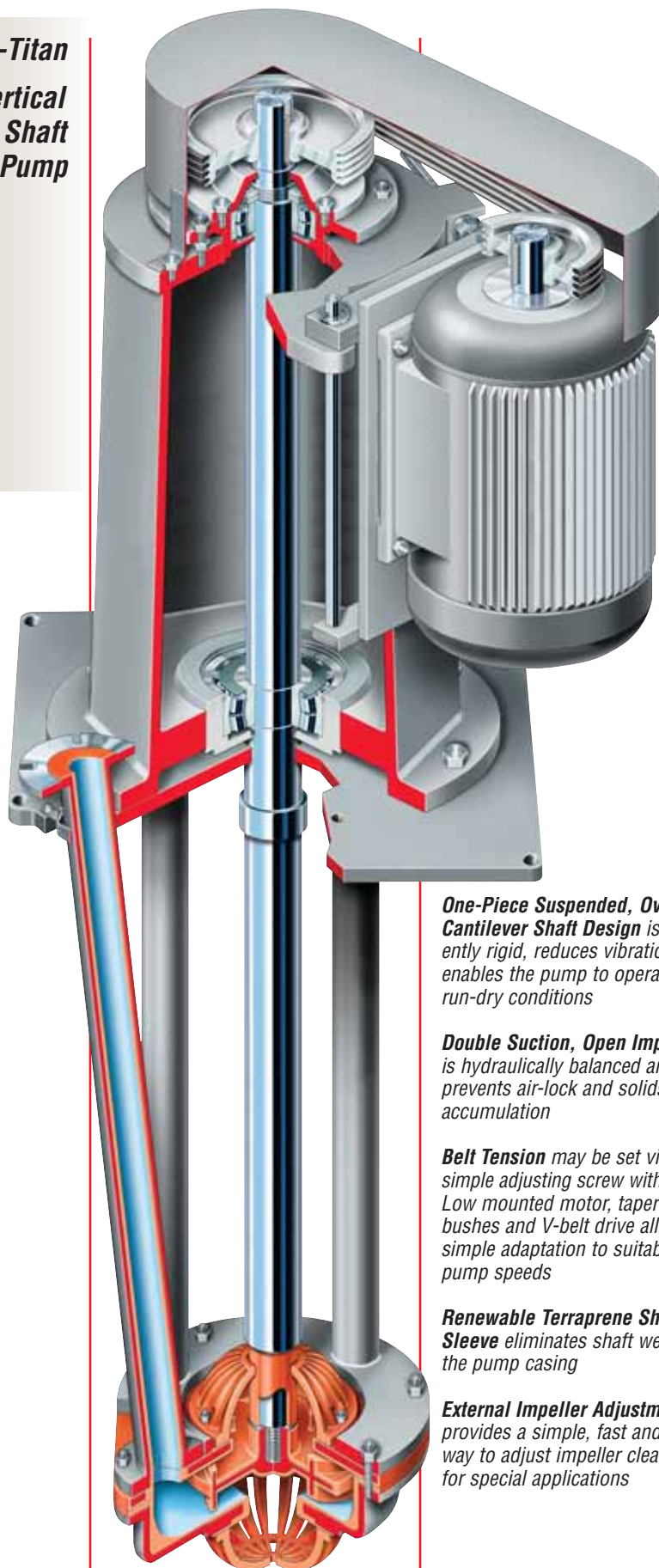


**Titan Slurry**



**Type R**

**Terra-Titan**  
**Vertical**  
**Cantilever Shaft**  
**Sump Pump**



The Terra-Titan is a vertical, cantilever slurry pump, offered in five sizes with a choice of column lengths. Its rugged construction provides outstanding reliability.

**Operating Parameters**

- Flows to 900 m<sup>3</sup>/h (4000 US gpm)
- Heads to 45 m (150 ft)
- Temperatures to 100°C (212°F)
- Pressures to 5 bar (70 psi)
- Sizes 40 to 200 mm (1.5 to 8 in)
- Sump depths from 700 mm (28 in) to 1800 mm (72 in)
- Power range 0.5 to 150 kW (0.75 to 200 hp)
- Available to ISO or ANSI dimensional standards

**One-Piece Suspended, Oversized Cantilever Shaft Design** is inherently rigid, reduces vibration and enables the pump to operate under run-dry conditions

**Double Suction, Open Impeller** is hydraulically balanced and prevents air-lock and solids accumulation

**Belt Tension** may be set via a simple adjusting screw with locknut. Low mounted motor, taper lock bushes and V-belt drive allow for simple adaptation to suitable pump speeds

**Renewable Terraprene Shaft Sleeve** eliminates shaft wear within the pump casing

**External Impeller Adjustment** provides a simple, fast and easy way to adjust impeller clearances for special applications

**Heavy-Duty Self-Aligning Roller Bearings** are greased for life and fitted in a common bearing housing. Greasing point available if required

**Upper and Lower Strainers** prevent entry of solids and foreign matter larger than the impeller passage

**Optional Bottom Suction Pipe**, up to 2 m (6 ft), can be fitted to extend the working depth of the pump in difficult conditions

**Direct Drive Models** available

**Additional Features**

- Lifting lugs
- Rigid motor mount pivot bar
- Stiff support base
- Nominal length limitation of 1800 mm (72 in) depending on duty



### Multiple Materials

The Terra-Titan is available in two standard materials of construction to meet service requirements. Both are dimensionally interchangeable, offering increased flexibility in service.

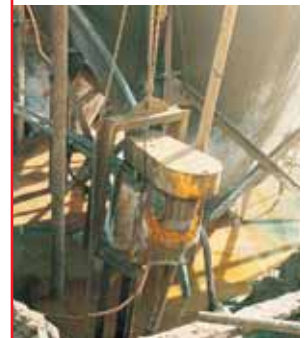
- Terraprene, a specially formulated urethane material, is suitable for slurries containing fine solids in suspension. Suitable to 80°C (180°F)
- Hard iron is preferred for applications containing coarse solids, as well as those at higher temperatures

### Abrasion Resistant

**Fluoropolymer Coating** is available for highly corrosive slurries. It is suitable for services up to 100°C (212°F). Optional frame materials available.

### Reliability Enhancing Features

- Double suction, open impeller prevents air-lock and solids accumulation
- Concentric casing minimizes wear
- One-piece suspended, oversized cantilever shaft design enables the pump to withstand run-dry conditions
- Heavy-duty self-aligning roller bearings
- Upper and lower strainers prevent entry of damaging solids and foreign matter
- No water flush or lubrication is necessary
- No submerged bearings or seals to break



### Low Cost Solution

The Terra-Titan offers significant cost savings

- Low initial cost
- Low energy costs
- Reduced parts consumption
- Reduced inventory costs
- Reduced maintenance costs



## Options and Technical Data

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### Turbo-Flush

Turbo-Flush is a turnkey packaged unit. It incorporates a Terra-Titan sump pump built into its own rubber-lined conical sump with pulsating water jets to *self clean* the sump.



Compared to manually cleaned sumps, this concept uses less water (i.e., higher density output). It provides longer continuous operation compared with a concrete sump that requires regular manual cleaning.

### Drain-Titan™

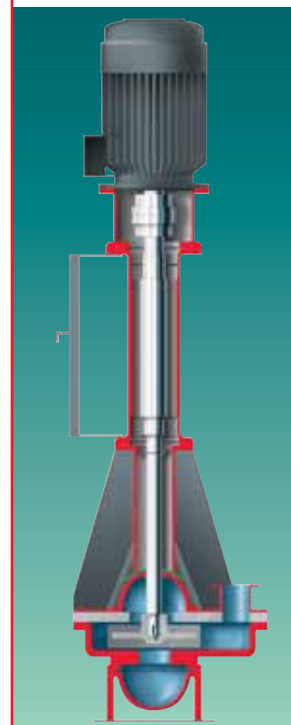
A direct drive, short-shaft version of the Terra-Titan, the Drain-Titan, features interchangeable wet-end components. It is particularly useful for seepage water sumps alongside underground roadways.

The Drain-Titan is a double suction, urethane lined sump pump designed to provide efficient and dependable service in tough wet-pit applications. With thousands of pumps installed, the Drain-Titan is delivering reliable performance in a number of tough applications:

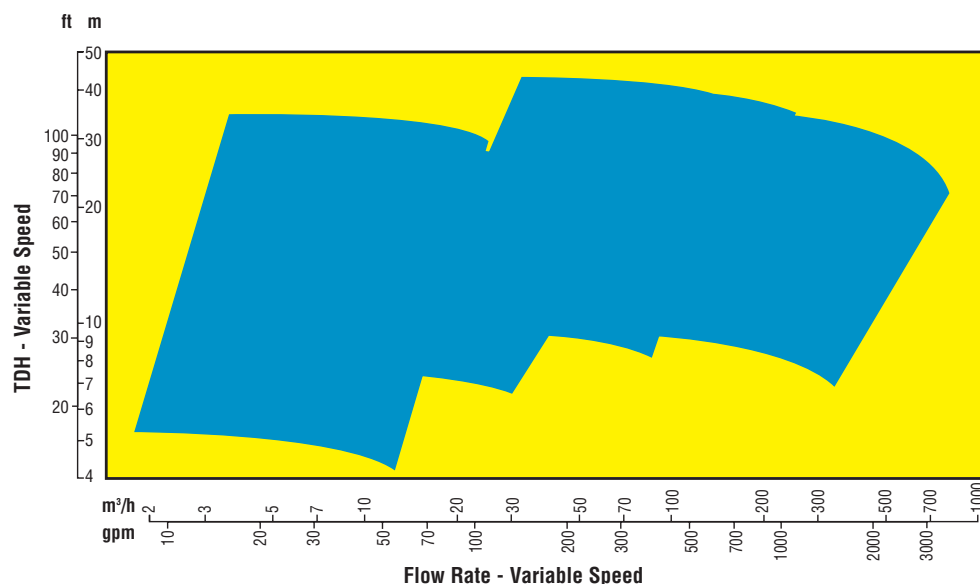
- Mine dewatering
- Steel mill operations
- Light slurries
- Drainage
- Seepage water
- Industrial services

### Operating Parameters

- Flows to 160 m³/h (700 gpm)
- Heads to 40 m (130 ft)
- Sizes 40 to 100 mm (1.5 to 4 in)
- Pressures to 4 bar (55 psi)



**Terra-Titan Range Chart**



## Global Engineered Services and Support

*Total Cost Reduction*

*Asset Management*

*Product Life Cycle*

*Performance Re-rates*

*Site Diagnostics*

*Repair Services*

*Energy Management*

*Spare Parts*

*Maintenance Contracts*

*Materials Upgrades*

*Turnkey Services*

*Field Repairs*

*Installation*

*Project Supervision*

*Commissioning*

*Equipment Upgrades*

*Condition Monitoring*

*Systems Analysis*

*Field Machining*

### Service Dedication

Flowserve Engineered Services is focused on providing customers with uncompromising service and support, where and when needed. Dedicated to delivering the highest quality support, Engineered Services integrates its extensive pump and materials engineering knowledge with creative service solutions. Engineered Services fully understands the business challenges facing customers and is prepared to manage solutions to succeed as a team.

A worldwide network of service and repair centers staffed by highly skilled engineers and technicians is available around the clock, seven days a week to respond to customer queries, to evaluate and troubleshoot problems and to provide reliable solutions.



### Strength of Experience, Commitment to Excellence

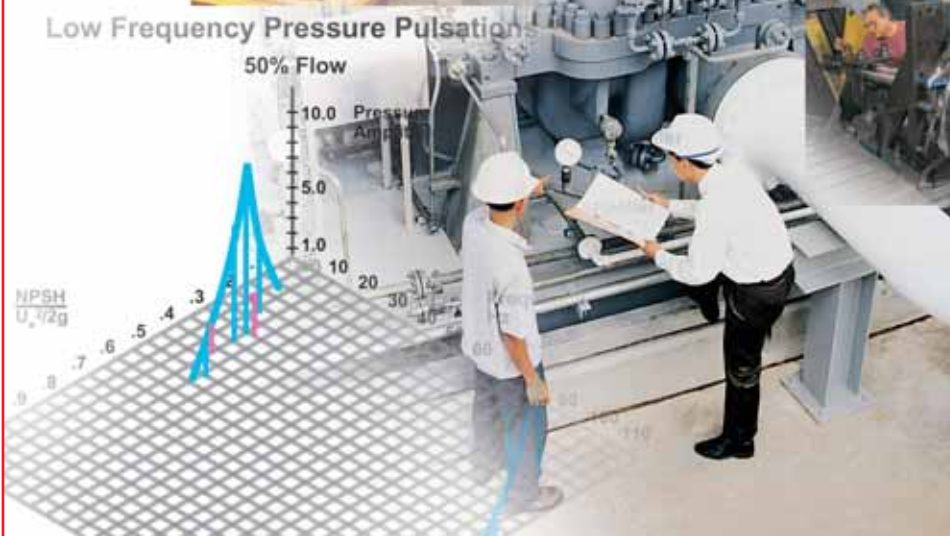
Flowserve has long served industries requiring superior equipment performance and service life.

- Oil and gas production
- Hydrocarbon processing
- Chemical processing
- Water resources
- Power generation
- Nuclear
- Mining and mineral processing
- Pulp and paper
- General industry

Engineered Services is dedicated to maximizing equipment performance and providing reliability-centered maintenance programs for pumps and related equipment, regardless of manufacturer. Using the FlowStar™ asset management software, Engineered Services tracks performance and supports improvement programs using a service life cycle cost business approach. The results are improved reliability and increased profitability.

### Business Partner

Flowserve partners with customers to respond to the dynamic business conditions that affect them. Flowserve will work with customers to drive efficiency, maximize throughput and control process quality. Whether user needs involve on-site technical assistance or broader project planning with full turnkey responsibility, Flowserve Engineered Services will deliver professional, reliable results.





**Flowserve... Supporting Our Customers  
With The World's Leading  
Pump Brands**

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