

# *TopGear*

## *Gear Pumps*



**JOHNSON PUMP**



# TopGear -

## When reliability is the priority

*Johnson Pump has more than 50 years of experience in developing and manufacturing gear pumps and is one of the leading suppliers in the market. The Johnson Pump range of Internal Gear Pumps are self-priming, heavy duty, positive displacement pumps. The design is compact and robust, based on well-known and proven techniques, with just two moving parts - the rotor and the idler. The flow is smooth without pulsations and it can be reversed.*

*The Johnson Pump TopGear pumps offer a combination of strong design with small or large clearances, unique gear tooth profile and options such as electrical heating and built-on safety relief valves.*

*These pumps are used in a variety of industrial applications and thanks to the ingenious design a wide range of high or low viscosity products can be handled.*







*The wide Johnson Pump TopGear programme is divided into three ranges :*

*L-range : Low viscosity - high efficiency*

*G-range : General purpose*

*H-range : High demanding applications*

### The advantages

-  The TG series is designed to reduce downtime and cut the maintenance cost i.e. a pump design which offers a low Life Cycle Cost (LCC).
-  Due to the front and back pull-out design, there is access to all interior pump components without disconnecting the pump casing from the pipe system. This minimizes expensive downtime and increases accessibility.
-  The rotor is axially locked for correct positioning and possible wear compensation.
-  The axial clearance can be adjusted with respect to the wear on rotor and gear. For viscous liquids, the clearance can be increased to minimise the friction losses.
-  From size 50 mm onwards, pumps have a pressure balanced seal area, which minimizes leakage from packed glands and increases the service life for the mechanical seal.
-  All pumps can be fitted with safety relief valves, flushed seals, heating/cooling jackets. Pressure and vacuum gauges can easily be fitted.



### Applications

- **Petrochemicals**  
*Pure or filled bitumen, pitch, diesel oil, crude oil, lube oil etc.*
- **Chemicals**  
*Sodium silicate, acids, plastics, mixed chemicals, isocyanates etc.*
- **Paint and Ink**
- **Resins and Adhesives**
- **Pulp & Paper**  
*Acid, soap, lye, black liquor, kaolin, lime, latex, sludge etc.*
- **Food**  
*Chocolate, cacao butter, fillers, sugar, vegetable fats and oils, molasses, animal food etc.*

# Options

## Shaft seal options

Shaft seal options include packed gland, single and double mechanical seals (to DIN 24960), lip seals and cartridge seals.



Jackets for pump cover and around the shaft seal

## Jacket options

Heating and cooling jackets guarantee the performance of the pump in a start-up or a shut-down procedure. They also provide the pump with the best condition for the seals during operation. Different options are: thermal oil, steam or electrical heating.



Single safety relief valve

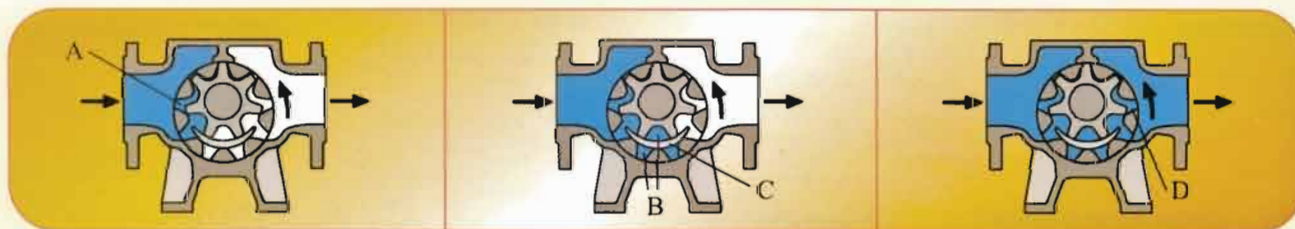
## Safety relief valve options

Built-on safety relief valves protect the pump, as well as other equipment in the system, from over pressure. When the pump is used bi-directionally, a double safety relief valve is provided.



Double safety relief valve

# Operating principle



As the rotor and idler gear unmesh (A), a certain vacuum is created and liquid enters the suction port.

Liquid is transported in sealed pockets (B) to the discharge side. The crescent (C) acts as a seal between suction and discharge ports.

The rotor and idler gear mesh (D) and liquid is being discharged into the discharge line.



# Features and Benefits

## *Improved priming, low NPSHr*

- Ports above centerline
- Maximised ports



## *Flange connections options*

- DIN
- ANSI

## *Improved design for low and high viscous media*

- Optimised teeth profile
- Smooth flow



## *Optimised efficiency*

- Axial rotor locking
- Adjustable clearances
- Hydraulic design



## *Eliminates leakage during thermal expansion*

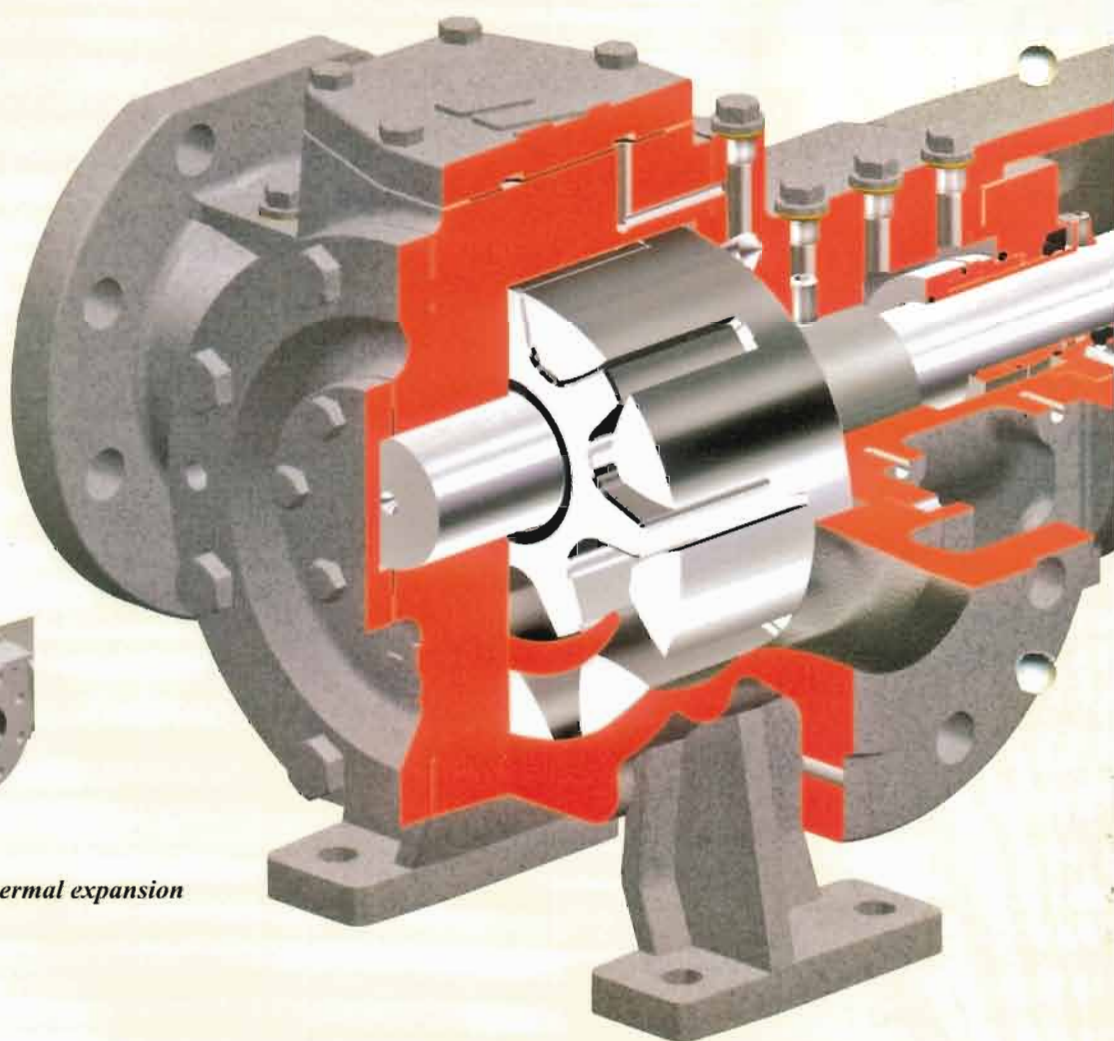
- Pin cover
- Safety sealed

## *Less down time*

- Front and back pull-out



## *H-range/G-range*



## *Prolonged service life*

- Double ball bearing design
- Adjustable axial clearance
- Allows V-belt drive
- Accepts higher axial forces



**TopGear 'H' range  
with relief valve**



**TopGear 'G' range  
with relief valve**



**TopGear 'H' range  
without relief valve**



**TopGear 'L' range**

**Several material options**

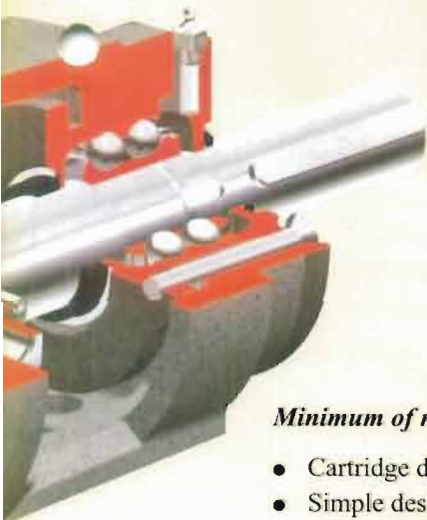
- Shaft seal materials
- Bearing material
- Hydraulic parts

**High volumetric efficiency**

- Small radial and axial clearances  
- reduced slip
- Optimised rotor/gear shape

**Long service life**

- Large bearing diameters
- Rotors machined in one piece  
from steel bar
- Hardened interior parts

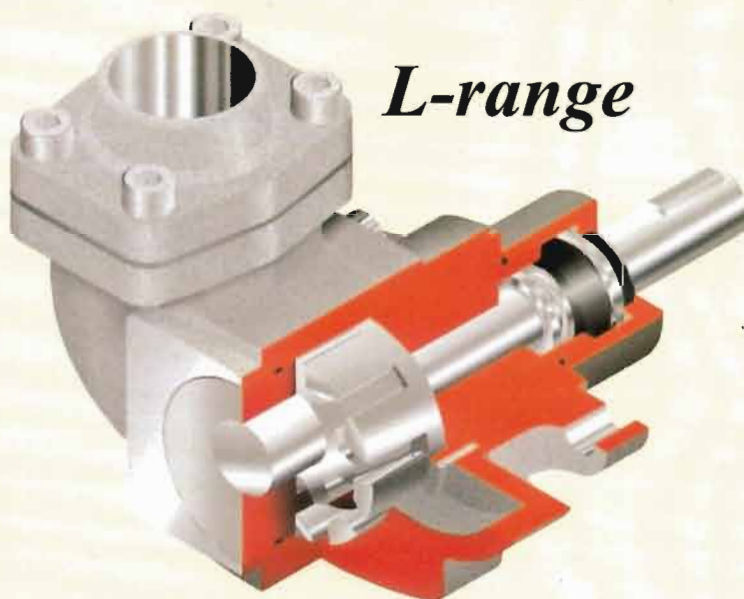
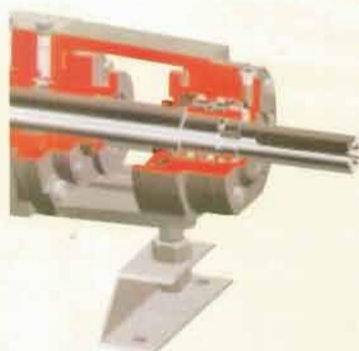


**Minimum of maintenance**

- Cartridge design
- Simple design

**Maximises lifetime**

- Compact rotor
- Strong shafts
- Maximised bearing design
- Possibility for selection of hard-metal bearings
- On seals thanks to seal relief channel



***L-range***

**Less down time**

- Pumps and motors flanged to pedestals  
- correct alignment between pump and drive shaft
- Compact units easy to assemble

**Prolonged seal life**

- Pressure relief channel from the seal  
area back to the suction side

**Large vertical ports**

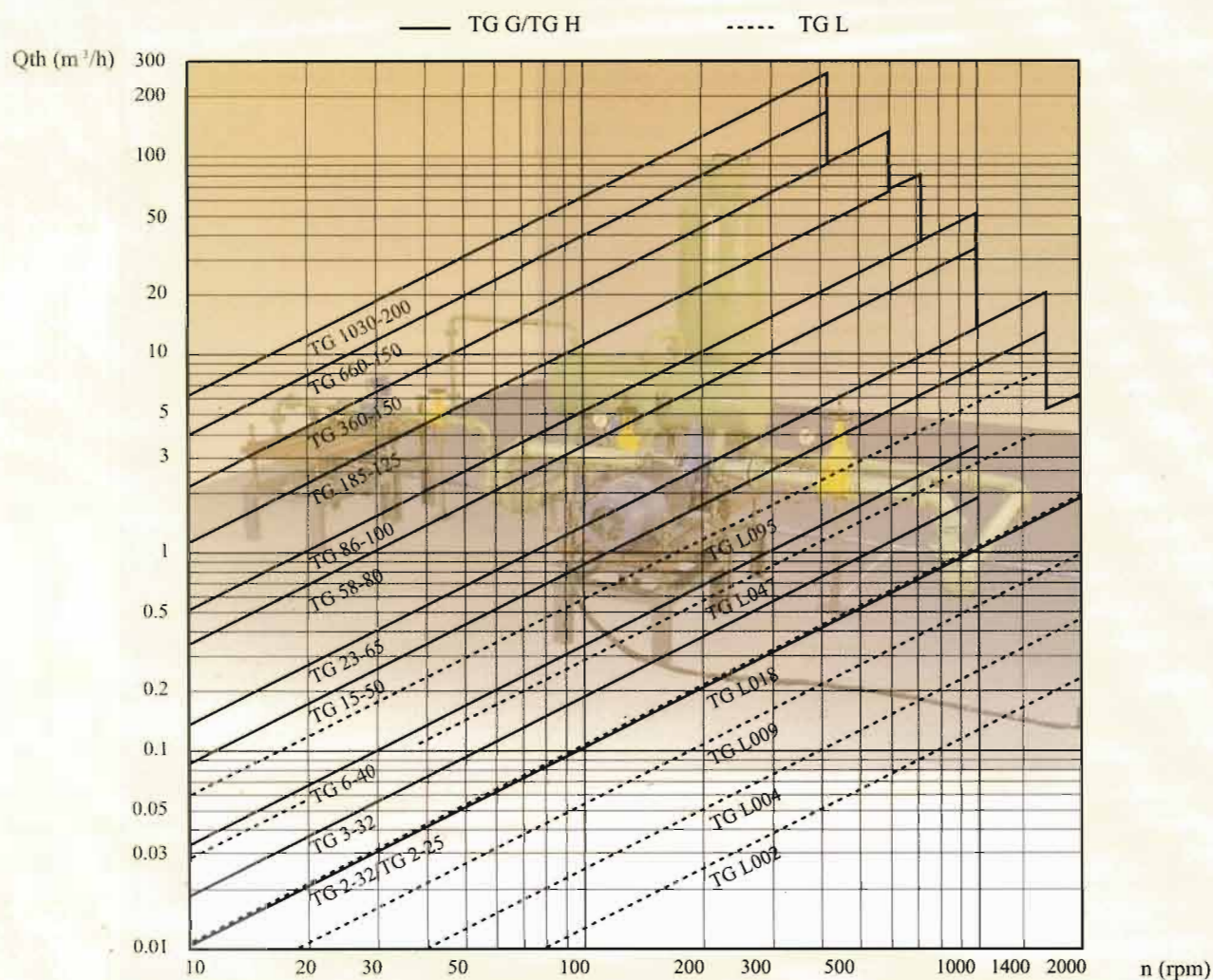
- Improved priming capability
- Reduced risk of cavitation



# Technical data

	TGL	TGG			TGH
		TGGS	TG GP	TG GM	
Casing	Cast iron	Cast iron			Stainless steel Cast steel Ductile iron
Idler & rotor	Steel	Iron Stainless steel			Nodular iron Stainless steel
Max. Capacity (m <sup>3</sup> /h)	9.5	250	250	125	125
Max. differential pressure (bar)	20	10	16		20
Max. temperature (°C)	250	200	300		300
Max. viscosity (m.Pas)	80000	5000	80000		80000

## General performance





# Other PD range

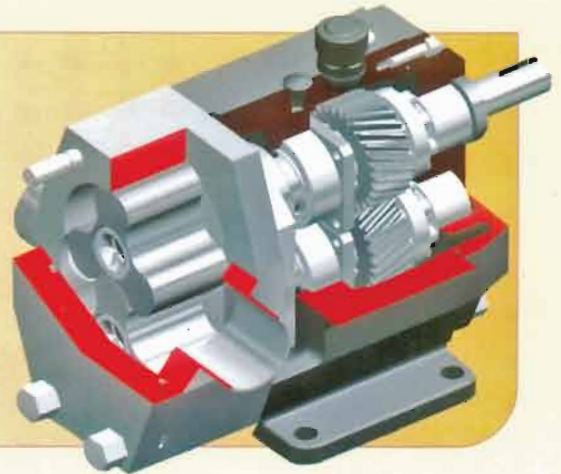
## TopLobe



### Rotary Lobe Pump 'TL'

**Applications:** Pharmaceutical, Food, Fine Chemicals, Pulp and Paper

This is a Rotary Lobe pump with radical design improvements for faster maintenance and easier, more effective cleaning, leading to less process downtime. TopLobe is designed to handle the most demanding applications in today's processing industries.



**Capacity :** upto 112 m<sup>3</sup>/h  
**Speed :** upto 1450 rpm

**Pressure :** upto 22 bar  
**Material :** Stainless steel

**Temperature :** upto 200 °C

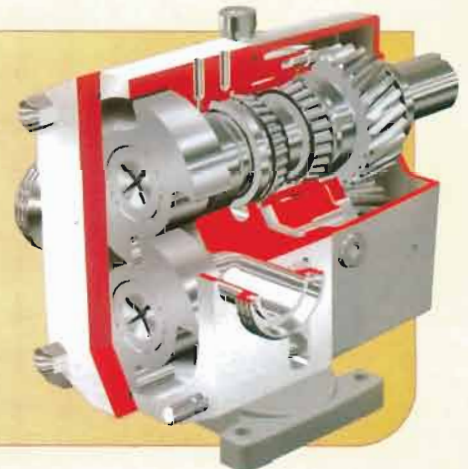
## TopWing



### Bi-Wing Rotary Lobe Pump 'TW'

**Applications:** Pharmaceutical, Food, Fine Chemicals, Pulp and Paper

This pump has high availability and efficiency, simple maintenance, hygienic design, low sound level and gentle pumping action. With the Bi-Wing concept Johnson Pump strives towards increasing the flexibility of the rotary lobe pump by meeting the demands from new markets regarding cleanability, simplicity, new materials, better performance, more safety etc.



**Capacity :** upto 156 m<sup>3</sup>/h  
**Speed :** upto 1400 rpm

**Pressure :** upto 15 bar  
**Material :** Stainless steel

**Temperature :** upto 200 °C

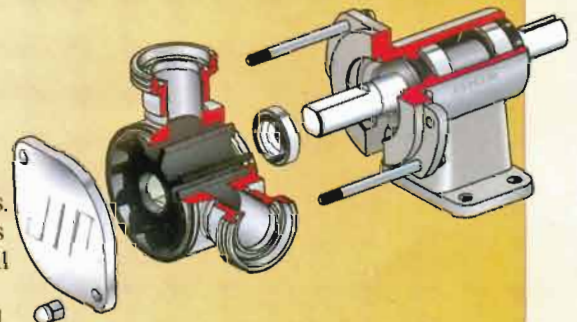
## FIP



### Flexible Impeller Pump 'FIP'

**Applications:** Food, Dairy, Beverages, Toiletries, Surface Treatment, Paper and Chemicals

This Flexible Impeller Pump is an easy to handle, excellent self-priming characteristics. The compact FIP can pump viscous products almost as efficiently as water and is thus well suited for a wide range of applications. The FIP is fully reversible and has been designed for fast, simple and inexpensive maintenance.



**Capacity :** upto 28 m<sup>3</sup>/h  
**Speed :** upto 1400 rpm

**Pressure :** upto 4 bar  
**Material :** Bronze, Epoxy, Stainless steel

**Temperature :** upto 90 °C





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An SPX Process Equipment Operation

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