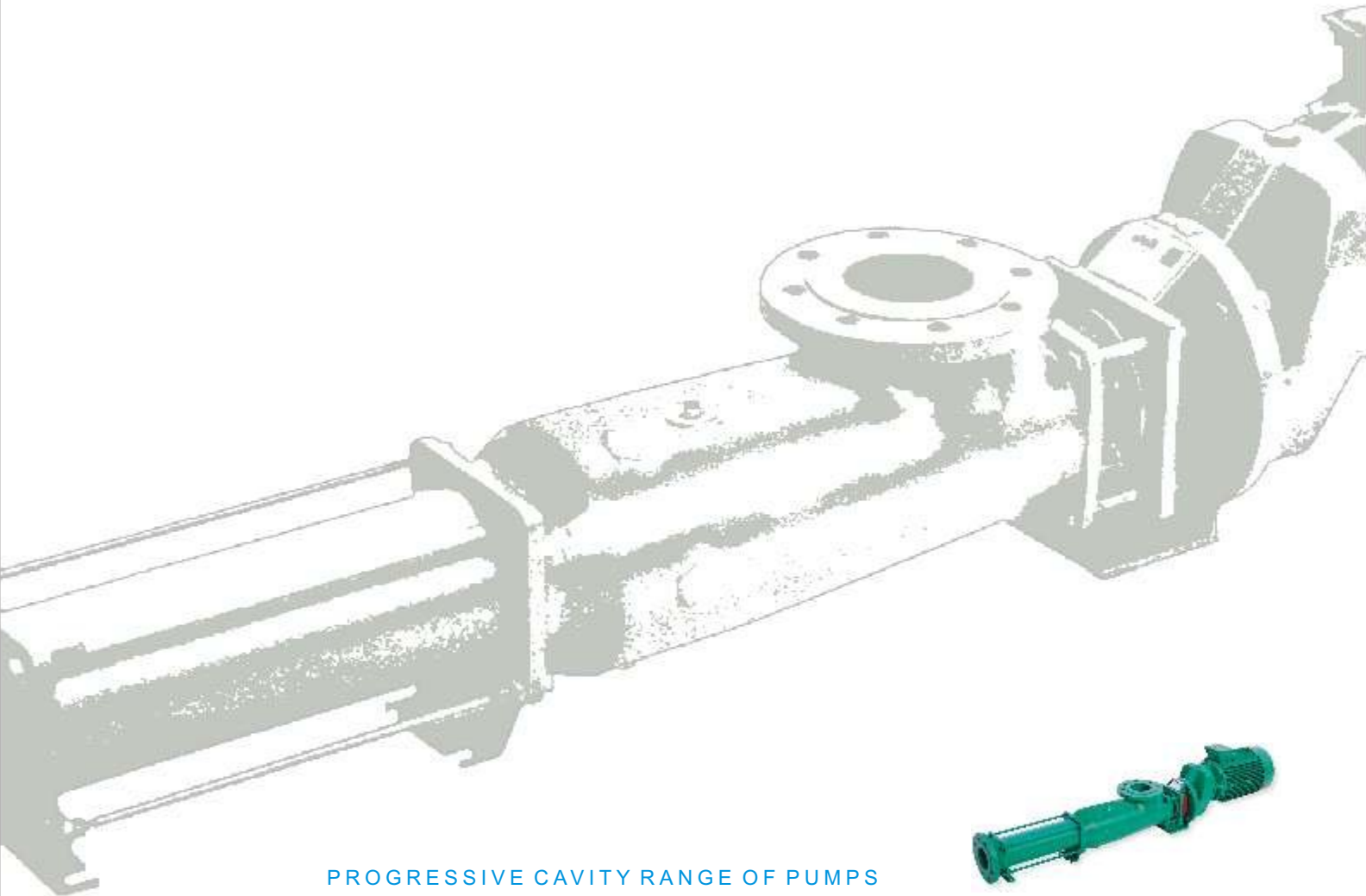




# PROGRESSIVE CAVITY PUMP

Issue No: 18 April 2019

# POSITIVE DISPLACEMENT



## PROGRESSIVE CAVITY RANGE OF PUMPS

ROBUST & COMPACT DESIGN | PROVEN TWO PIN CARDAN JOINT | LOWER MAINTENANCE COST



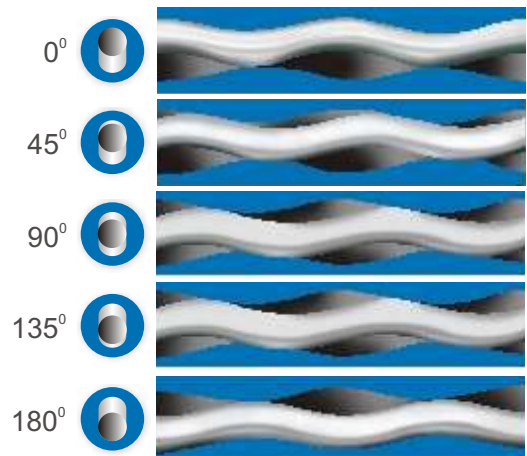
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## Progressive Cavity Pumping Principle

The pumping element comprises of a precision machined single external helix metallic rotor, and a double internal helix elastomer stator. Due to the special profile of the rotor and stator set, a sealing line is formed along the axis of the rotor which is maintained at both static and dynamic conditions.

As the rotor turns within the stator, these cavities progress from the suction to the discharge end of the pump carrying the fluid.



Cavity movement through 180° of Rotor rotation

## Distinctive design features & benefits

- POSITIVE DISPLACEMENT : Because of the single rotating element, progressing cavities are generated which deliver a uniform, metered & non-pulsating flow. The head developed is independent of the rotational speed, whereas the capacity is proportionate to the speed.
- SELF-PRIMING : Inherently self-priming, the pumps can work on snore & do not require a foot valve.
- NON-CLOGGING : Can handle solids in suspension or medias containing a high percentage of solids.
- LOW NPSH REQUIREMENT : Suction lift capabilities of up to 9.5 mwc & effective even in high vacuum conditions.
- LOW INTERNAL VELOCITY : Minimum degradation of shear-sensitive media, and can also handle highly viscous materials having pseudo-plastic characteristics.
- REVERSIBLE : Due to the reversible rotation capabilities, progressive cavity pumps can perform with equal efficiency in either direction.
- SILENT RUNNING : Rotors turn inside a resilient stator & thus generate little noise.
- SEPARATE BEARING HOUSING : Fluids can be pumped with no contamination.

## International Quality



Continuous investment in precision measuring instruments, state-of-the-art testing facilities, and a dedicated team of engineers are testimony to Roto's commitment to maintain and constantly upgrade the quality of its products. The manufacturing units are certified for conformance to the ISO 9001-2000 quality surveillance systems.





# Roto Extra Value Advantage

## Optimised Rotor Stator Geometry

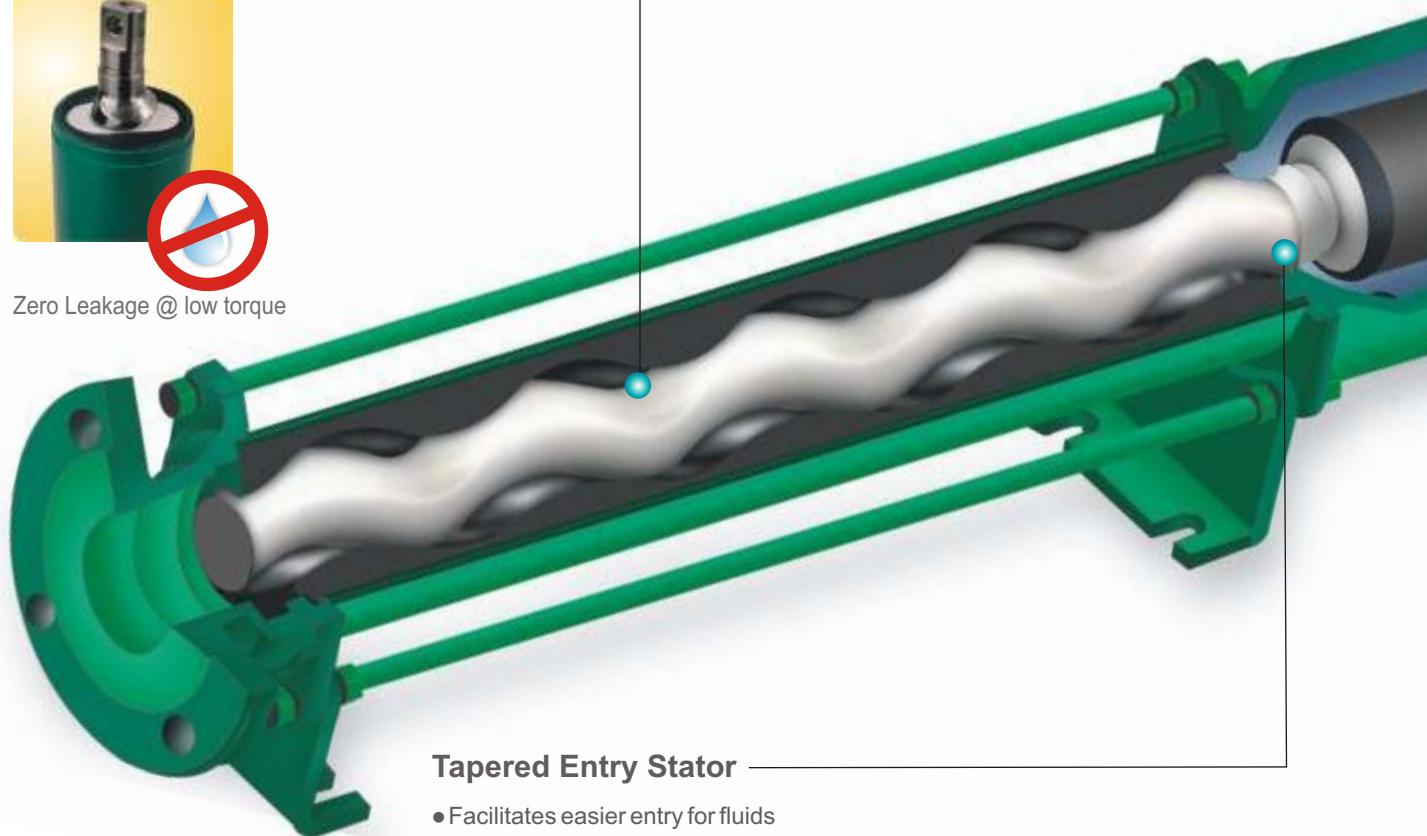
- Improved Rotor - Stator geometry minimises wear due to lower rubbing velocities as compared to conventional geometry, particularly useful in abrasive applications
- Lower starting torque and effective sealing line (Zero Leakage) improves volumetric efficiency
- Resulting in reduced power consumption and extended service life



Zero Leakage @ low torque

## Improved Pump Housing

- A sloped housing design reduces entry losses
- Facilitates easy drainage
- Its flexible housing orientation allows the suction port to be rotated in steps of 90° to suit any installation



## Tapered Entry Stator

- Facilitates easier entry for fluids
- Improves suction capability

### Applications

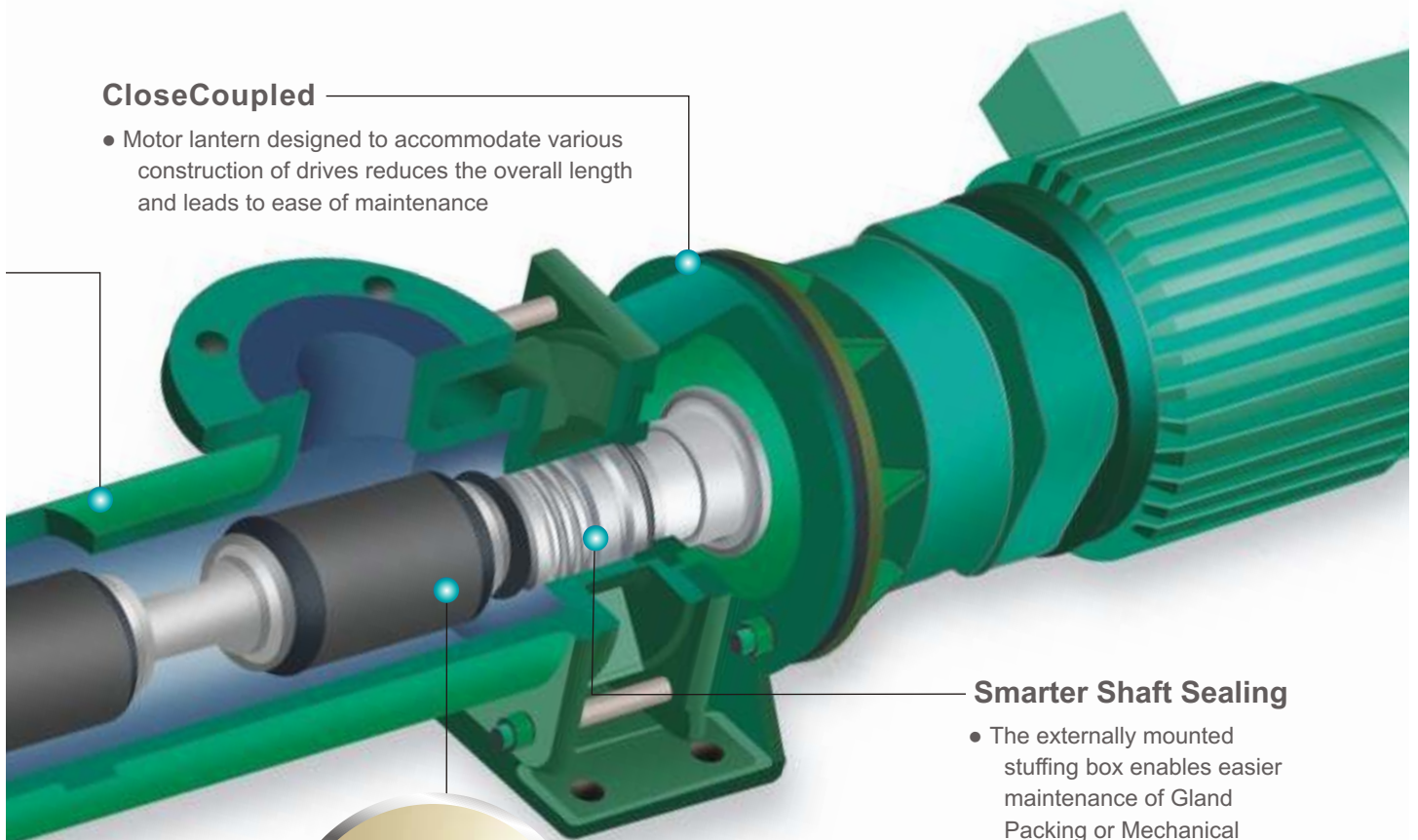
Sewage Effluent & Water Treatment Sugar  
 Paper Pulp & Cellulose Ceramics & Refractories  
 Explosives Chemicals & Fertilizers Soap & Detergents  
 Cosmetics & Toiletries Paint & Varnish Petrochemicals &  
 Refineries Vegetable Oils Fertilizers Mining Steel Rubber  
 Starch  
 Construction Man Made Fibres Fisheries Oil Exploration  
 and Production Pharmaceuticals  
 Cattle Feed Electronics Brewery and Distillery Agriculture  
 Distribution Depot Power  
 Dairies Winery Food And Beverages Abattoir and Meat  
 Processing Plantations Fruit Processing Dye Stuff Textiles

### Fluids handled

Digested Sewage Sludge De-Watered Effluent Sludge Industrial Effluents Poly  
 Electrolytes Flocculants Sulphited Sugar Juice  
 Maseccuite Magma Molasses Spent Wash Paper pulp having 12-21% consistency  
 Sodium Silicate Alum Latex Coating Slurry  
 Glue Black Liquor Ceramic Slurry Casein Slurry Oils Maize Slurry Viscose  
 Paints Varnish Vegetable Oil Ammonium Nitrate Solution Resins Acidic And  
 Alkaline Slurry Soap Stock Gum Sludges Bentonite Slurry Cake Mix Grease  
 Waste Asbestos Slurry  
 Explosive Slurry Emulsion Matrix Battery Paste Printers Ink Paste Petroleum Jelly  
 Grout Mix Lumpy sticky substances such as Dirty Grease China Clay Filter Cakes  
 Soya Cake Wine  
 Fruit Pulp Fruit Juice Condensed Milk Butter Oil Glucose Cream Curd Yeast  
 Syrup Malt Extract Wine Water Domestic Water Supply Water for Cattle Feed  
 Animal Effluent Liquid Manure Sandy & Silty Water.

## Close Coupled

- Motor lantern designed to accommodate various construction of drives reduces the overall length and leads to ease of maintenance



## Smarter Shaft Sealing

- The externally mounted stuffing box enables easier maintenance of Gland Packing or Mechanical seals, without the need to dismantle the bearing housing

**24 MONTHS WARRANTY**

## Cardan Universal Joint

- The Cardan type universal joint used in this pump is acknowledged to be far superior to the conventional gear joint, or single pin & bush joint which is subjected to extreme concentrated loads, resulting in high wear rates
- The Cardan type of UJ joint employs two sets of perpendicular pins, each providing freedom of angular movement, which facilitates smoother transmission of angular loads
- The Cardan type UJ joint is also designed to withstand high axial forces which are dominant in Progressive Cavity Pumps

### Material Options

HOUSING COMPONENTS : Cast Iron, Cast Steel, Cast Stainless Steel, Fabricated Steel and Stainless Steel

STATOR : Natural, Nitrile, High Nitrile, EPDM, Chloro- Sulphonated Rubber, Fluoroelastomer

ROTOR : Case Hardened Steel, Alloy Steel HCP, Stainless Steel UP/HCP

COUPLING ROD : Alloy Steel, Stainless Steel

SHAFT : Alloy Steel HCP, Stainless Steel UP/HCP. Shaft Sleeve Optional

SPECIAL MATERIAL : Other Exotic options including

Alloy 20, Hastelloy also available

Legend

HCP: Hard Chrome Plated      UP: Unplated

### Sealing Options

SOFT GLAND PACKINGS : Aramid packing -impregnated with PTFE High Temperature Resisting Lubricants •Lubricated PTFE Yarn Packing •Graphited Impregnated Glass Yarn Packing Lubricated with Mineral Oil •Lantern ring optional.

MECHANICAL SEAL Single coil Elastomer bellow Seal Single coil Unbalanced Unidirectional/Bidirectional •Lug Driver Balanced Seals Double Seal Flushing / quenching as per API Plan optional.

### Drive Arrangements

DIRECT DRIVE : Electric Motor •Geared Motor •Gear Box Mechanical Speed Variator Petrol/Diesel Engine Turbines Hydraulic Pneumatic

V' BELT DRIVE: Over Head and 'L' Type

# Roto extra value

## Pump series to suit all applications



Size	D41	D43	D45	D47	D49	D51	D53	D55
Capacity								
m3/hr	0.11	0.3	0.6	1.6	3.5	6.5	9.5	16.5
GPM	0.4	1.3	2.6	7	15.4	28.6	42	73
Pressure								
Bar	24	48	24	24	24	12	12	6
PSI	341	682	341	341	341	171	171	85

### Small Capacity 'RD' Series Pumps

Viscosities: Upto 30,000 cst  
Temp.: Upto 150° C / 302° F Solid Handling Capability: Upto 7%

These small capacity Heavy duty pumps are designed for continuous or intermittent dosing or transfer duties. These pumps are available in Close-Coupled & Bare shaft Configuration. 6 & 8 stage pumps are also available in select sizes.



Size	M50	M52	M54	M56	M58	M60	M62	M64	M66	M68	M70	M72
Capacity												
m3/hr	4	8	12	20	26	38	58	78	95	120	150	200
GPM	17.6	35.2	53	88	114	168	256	344	420	530	660	880
Pressure												
Bar	48	48	36	24	24	24	24	18	12	6	12	6
PSI	682	682	511	341	341	341	341	256	171	85	171	85

### Medium to Large Capacity 'RM' Series Pumps

Viscosities: Upto 30,000 cst  
Temp.: Upto 150° C / 302° F Solid Handling Capability: Upto 7%

These Heavy Duty pumps are designed for continuous duties and are suitable to perform efficiently even for the most difficult fluid handling applications. These Pumps are available in Close Coupled & Bareshaft Configuration.



Size	L54	L57	L59	L61	L63	L67	L71	L75
Capacity								
m3/hr	14.2	24.5	42	56	70	116	195	345
GPM	63	107	185	246	308	511	860	1520
Pressure								
Bar	6	6	6	6	6	6	6	6
PSI	85	85	85	85	85	85	85	85

### Extra Large Capacity 'RL' Series Pumps

Viscosities: Upto 15,000 cst  
Temp.: Upto 150° C / 302° F Solid Handling Capability: Upto 7%

These Heavy Duty cost effective pumps use the extended Rotor Stator Geometry and are ideal for the Sewage & Effluent treatment applications. These Pumps are available in Close Coupled & Bareshaft Configuration.



Size	W54	W56	W58	W60	W62	W64	W66	W68	W70
Capacity									
m3/hr	5	8	11	19	33	42	48	72	85
GPM	22	34	48.8	83.7	144.5	183.5	211.2	315.5	373.6
Pressure									
Bar	36	24	24	24	24	18	12	6	12
PSI	511	341	341	341	341	256	171	85	171

### Widethroat 'WM' Series Pumps

Viscosities: Upto 125,000 cst  
Temp.: Upto 150° C / 302° F Solid Handling Capability: Upto 12%

Widethroat type inlet allows gravity flow of highly viscous (Plastico-viscous) material on to Augur-on-Coupling Rod which pushes the substance to the pumping element. Available in Close Coupled & Bareshaft Configuration.



Size	K54	K56	K58	K60	K62	K64	K66	K70
Capacity								
m3/hr	2.5	3	5	6	10	13	16	25
GPM	11	13	22	26	43	56	69	108
Pressure								
Bar	36	24	24	24	24	18	12	12
PSI	511	341	341	341	341	256	171	171

### Widethroat with Bridgebreaker 'KM' Series Pumps

Viscosities: Upto 3,000,000 cst  
Temp.: Upto 150° C / 302° F Solid Handling Capability: Upto 40%

Widethroat pumps with side paddle (bridgebreaker) arrangement are designed for handling extremely difficult media with very high solid content and non-flowing properties.



Size	DM51	DM53	DM54	DM55	DM56	DM57	DM58	DM59	DM60	DM61	DM63
Capacity											
m3/hr	6.5	9.5	14.2	16.5	20	24.5	26	42	38	56	70
GPM	28.6	42	63	73	88	107	114	183.5	168	246	308
Pressure											
Bar	6	6	12	6	12	6	24	6	24	6	6
PSI	85	85	171	85	171	85	341	85	341	85	85

### Wine & Beverage 'DM' Series Pumps

Viscosities: Upto 5,000 cst  
Temp.: Upto 150° C / 302° F Solid Handling Capability: Upto 7%

These Heavy Duty pumps are specifically designed for Wine transfer applications and can also be used for other Food & Beverages applications. Standard connections include IDF, SMS & RJT.



## Engineered fluid handling solutions

Backed by over 40 Years of experience and a strong Research & Development infrastructure in providing fluid engineering solutions to a wide spectrum of industries, Roto has the unique ability to offer high-end customised solutions. These include either custom designed pumps to suit a specific pumping application or complete systems.

Roto's vertical pumps are designed to operate with the pumping elements immersed in the product. These pumps are compact and space saving. They are custom designed and manufactured for varying column lengths to suite the sump depth.





Corporate Office & Export Warehouse at Duty Free Zone, Noida



Roto's Manufacturing Plant



U.K. Office



Australia Office



## ROTO PUMPS LTD.

### Marketing Head Office

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Noida - 201305, INDIA

### Branch Offices and Warehouses

United Kingdom

Unit 1 St Elizabeths Park, Grey Street, Denton,  
Manchester, M34 3RU

Australia

26, Deans Court, Dandenong South, Victoria 3175

### Infrastructure

Roto has strong roots in manufacturing engineering & has over the years been able to develop efficient manufacturing processes both in the field of metal cutting and rubber processing.

The present manufacturing infrastructure comprises of a facility spread over 20,000 sq.mt and deploys all modern machine tools. It has created multiple assembly sections in terms of pump sizes to meet the growing demand for its products.

The testing infrastructure comprises of both water and oil test bed facilities. The testing facility is equipped to comply with VDMA and API 676 standard. The facility can test pumps with capacity upto 1000 m<sup>3</sup>/hr and has power available upto 500KW.

### Marketing & Distribution Network

Roto has rich experience of 40 years of moving fluids positively; this caption has been realized by Roto not only in words but also in spirits. Customer Satisfaction has been one of the strongest ideologies at Roto.

While Roto enjoys a market leadership position in India, it has also been able to establish its overseas marketing offices and warehouses in Australia and United Kingdom to cater to the large European Market. It has also established prominent distributors all over Europe, Middle East, South East, Far East and North & South America too.

### Quality Certifications and Registrations

Roto is known for conducting its business with integrity; for delivering high-quality pumps on time and within budget; and for our unwavering commitment to safety, health, and the environment. Our identity is derived from our people, processes, and technology.

Roto's manufacturing units are certified for conformance to the ISO 9001-2008 quality surveillance systems. More recently, we have been accredited with ATEX Certifications. We are also in the process upgrading to ISO 14001 and OHSAS 18001 (Occupation Health and Safety Environment)

### Research and Development

Roto enjoys the legacy of being amongst the leading Progressive Cavity Pump manufacturers and processes deep & sound designing capabilities, which has been developed over the last 4 decades. R & D activity within Roto has led to the launch of numerous new products with some of the most distinguished features, high degree of reliability & immaculate product performance.

Roto has a battery of licenses of 3D designing software such as solid works and also deploys advances software for flow analysis, mechanical strength and cost optimisation.

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