



SPEW

POSITIVE DISPLACEMENT PUMPS

INTERNAL GEAR PUMPS

**TECHNICAL KNOWLEDGE BASE
& PRODUCT CATALOG**

MANUFACTURED BY SPEW PUMPS

INTERNAL GEAR PUMPS

TECHNICAL KNOWLEDGE BASE & PRODUCT CATALOG

1. INTRODUCTION

SPEW Internal gear pumps are robust, positive-displacement rotary pumps engineered to deliver smooth, pulse-free flow across a wide viscosity range. SPEW internal gear pumps are designed for heavy-duty industrial applications requiring reliability, accuracy, chemical compatibility, and continuous operation.

With simple construction, high efficiency, and exceptional versatility, SPEW Internal Gear Pumps are widely used in:

- Lubricant blending plants
- Chemical processing units
- Hydrocarbon storage terminals
- Fuel oil circulation systems
- Adhesives, resins, and polymer processing
- Food-grade viscous products (syrops, chocolate, molasses)
- Bitumen, waxes, asphalt handling

2. KEY FEATURES

- Self-priming capability
- Excellent handling of high viscosity
- Quiet and vibration-free operation
- Minimal shear—ideal for sensitive fluids
- Capable of bi-directional flow
- Very low NPSH requirement
- Can run at low speeds for thick products
- Handles liquids with moderate solids or abrasives

3. WORKING PRINCIPLE

The Internal Gear Pump uses **two rotating elements**:

2.1 ROTOR (Inner Gear)

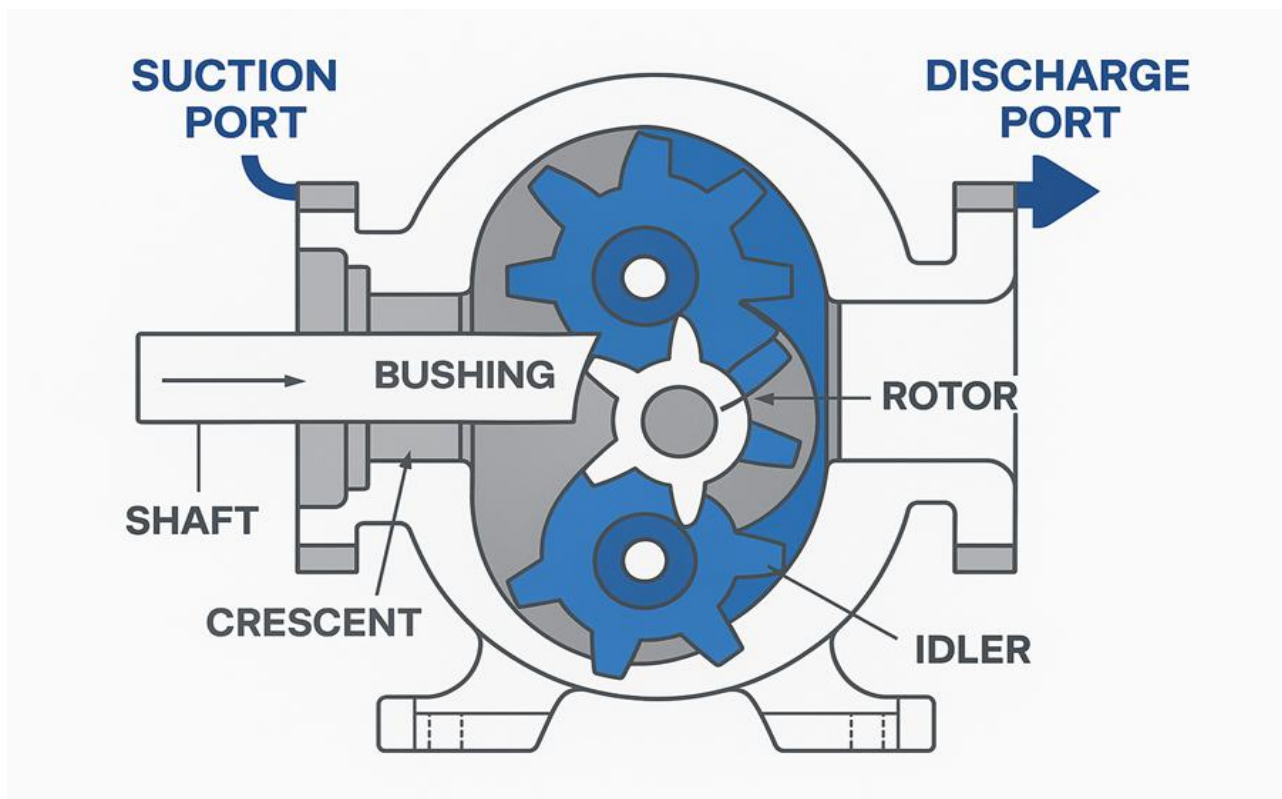
- Drives the pump
- Has external teeth
- Mounted on the shaft

2.2 IDLER (Outer Gear)

- Larger gear with internal teeth
- Free moving, driven hydraulically

2.3 CRESENT

- Separates rotor-idler interface
- Prevents backflow
- Creates sealed cavities for fluid displacement



2.4 OPERATING CYCLE

Step 1 – Suction

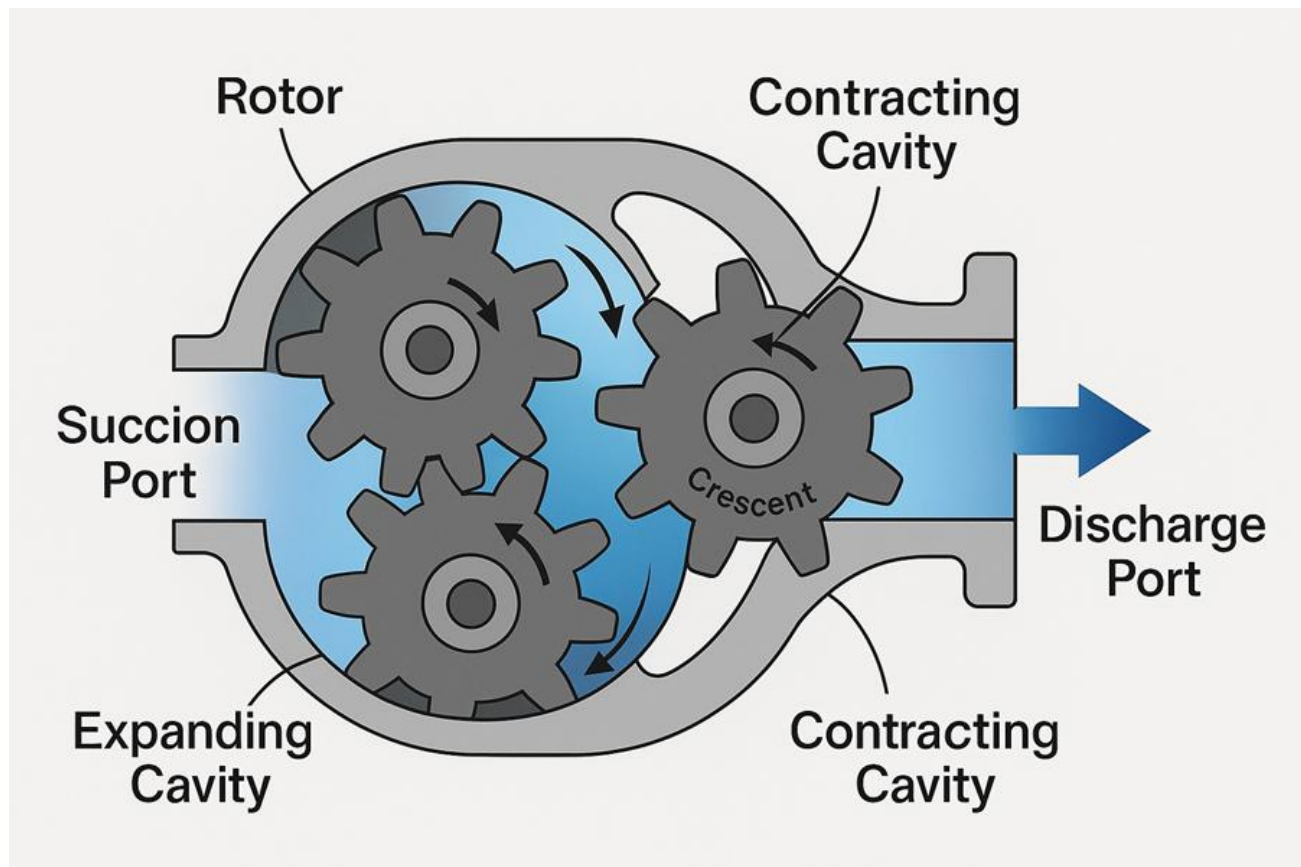
As the rotor turns eccentrically inside the idler, cavities expand, creating a vacuum at the suction port.

Step 2 – Transfer

Fluid travels around the casing in uniform chambers.

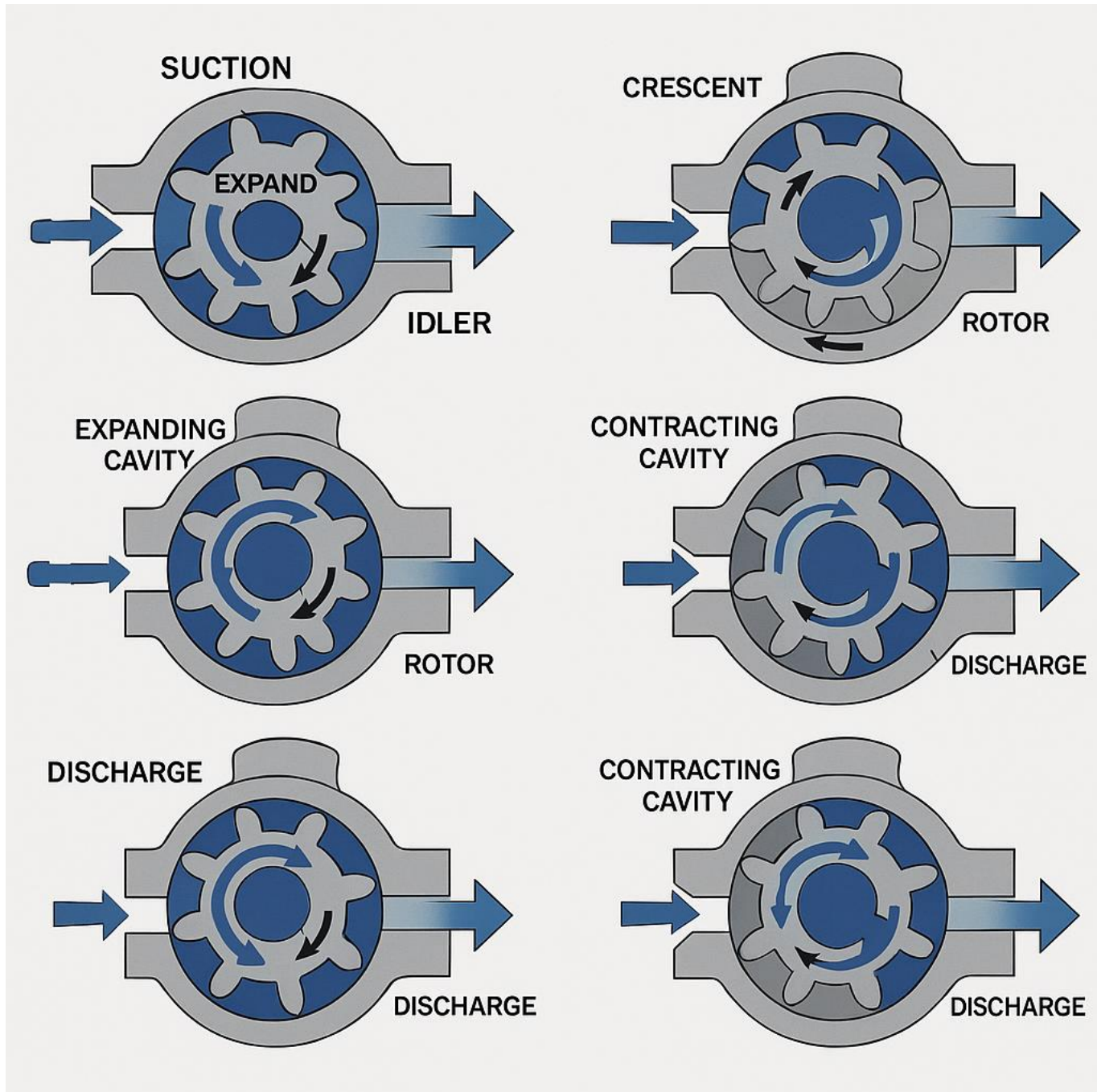
Step 3 – Discharge

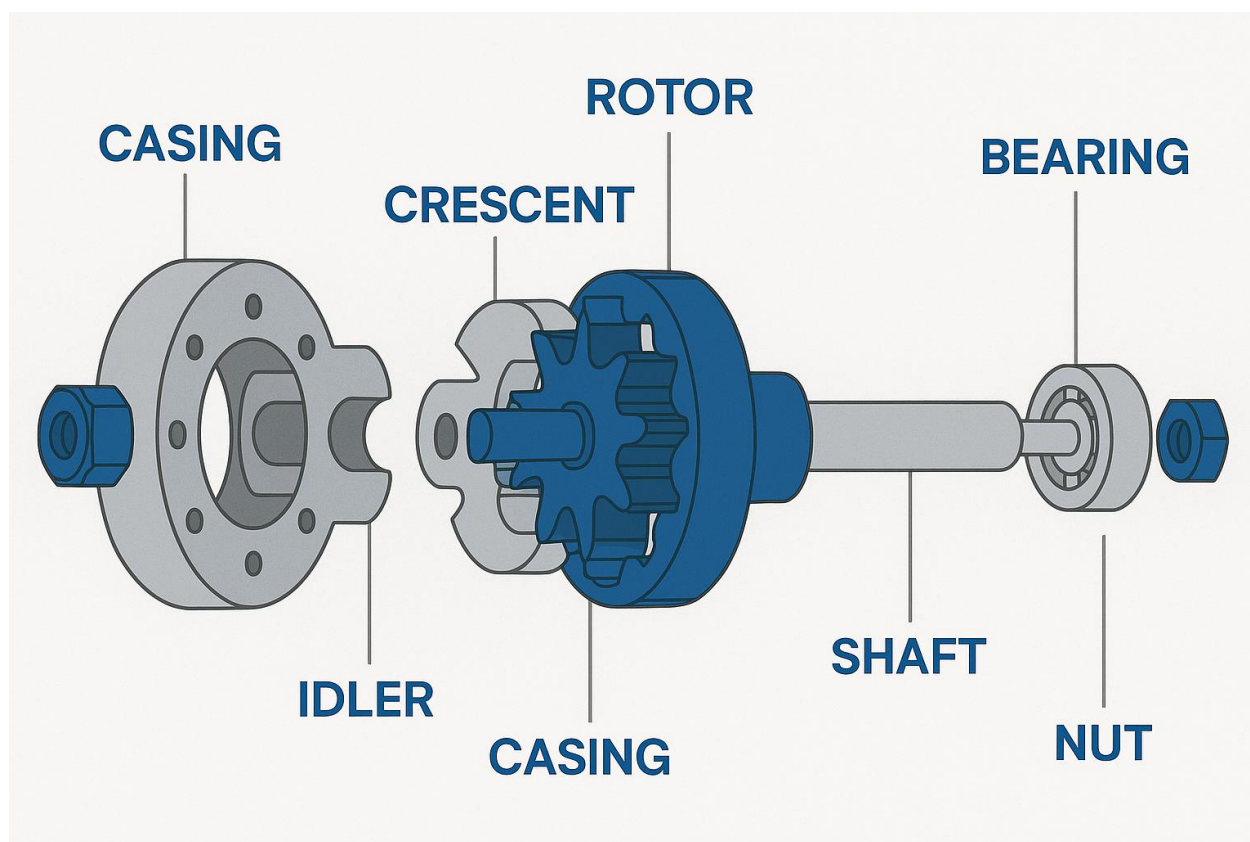
Cavities shrink at the discharge zone, forcing fluid out under pressure.



This cycle provides:

- Smooth output
- Constant flow
- Accurate metering
- Minimal pulsation





5. OPERATING RANGE

Parameter	Range
Flow Rate	1 – 500 m ³ /hr
Pressure	Up to 16 bar
Temperature	-30°C to 300°C
Viscosity	1 – 500,000 cSt
Speed	50 – 1750 RPM

NOTE: Above is introductory information, please follow Specification sheet for exact operating range.

6. PERFORMANCE CHARACTERISTICS

6.1 Constant Flow Output

Flow is directly proportional to RPM.

6.2 High Volumetric Efficiency

Typically, **88%–95%**, even at high viscosity.

6.3 Low Shear

Suitable for shear-sensitive materials like:

- Polymers
- Adhesives
- Chocolate
- Syrups

6.4 High-Temperature Capability

With heating jacket: up to **300°C**.

7. SELECTION GUIDELINES

To select the correct SPEW internal gear pump:

1. Required flow rate (m^3/hr , LPM)
2. Differential pressure
3. Fluid viscosity **at operating temperature**
4. Temperature range
5. Chemical compatibility (select MOC)
6. Type of sealing
7. Need for heating jacket (asphalt/wax/resin)
8. Suction lift and NPSH available
9. Type of drive (VFD / fixed RPM motor)

NOTE: Follow Specification documents of gear pumps for further selections.

8. INSTALLATION GUIDELINES

- Install pump close to fluid source
- Keep suction line short and oversized
- Use flexible coupling
- Provide a strainer on suction
- Use a relief valve on discharge
- For heated fluids, preheat before startup
- Ensure correct alignment
- Use baseplate with vibration damping

9. OPERATION & MAINTENANCE

Daily Checks

- Noise / vibration
- Shaft seal leakage
- Temperature rise

Monthly Checks

- Coupling alignment

- Bearing condition
- Lubrication

Annual Overhaul

- Inspect gears, bushings
- Replace seals
- Check crescent wear
- Inspect side plate tolerances

10. TROUBLESHOOTING

Low Flow

- Suction restrictions
- Air leaks
- Excessive clearance due to wear
- Incorrect rotation

Noisy Operation

- Cavitation
- Misalignment
- Worn bearings

Overheating

- Running dry
- Excessive pressure
- Seal failure

Leakage

- Worn mechanical seal
- Shaft scoring
- Incorrect seal material selection

11. APPLICATIONS

Hydrocarbon Industry

- Diesel, gasoline, kerosene, LPG condensates
- Heavy fuel oil (HFO)
- Bitumen / asphalt

Chemical Industry

- Acids (compatible materials)
- Solvents
- Resins & polymers

Lubricant Industry

- Lube oils
- Additives
- Blending operations

Food & Pharma

- Syrups
- Chocolate
- Molasses
- Glycerine

12. ORDERING CODE

NOTE: Follow Specification sheets for selection of gear pumps with exact ordering code.

13. ADVANTAGES OVER OTHER PD PUMPS

Feature	Internal Gear Pump	External Gear Pump	Screw Pump
Viscosity Range	★★★★★	★★★	★★★★★
Noise	★★★★★	★★	★★★★★
Abrasive Handling	★★★★	★★★	★★★
Pulsation	Very Low	Moderate	Very Low
Maintenance	Low	Medium	Medium

14. SAFETY GUIDELINES

- Do not run pump dry
- Ensure relief valve installation
- Use PPE for hot fluids
- Lock-out before maintenance
- Never operate with closed discharge

15. SPEW MANUFACTURING EXCELLENCE

SPEW pumps are manufactured under stringent quality systems with:

- Precision CNC-machined components
- High-grade alloys
- Pressure testing
- Performance testing
- Full documentation & traceability

SPEW ensures unmatched reliability

For

industrial pumping applications.

Contact Us

Business Hours

☎ Weekdays: 8.30AM to 5.30PM
Weekends: Closed

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