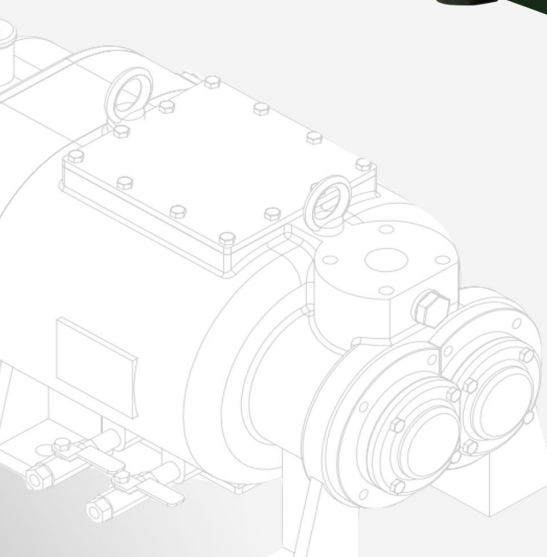
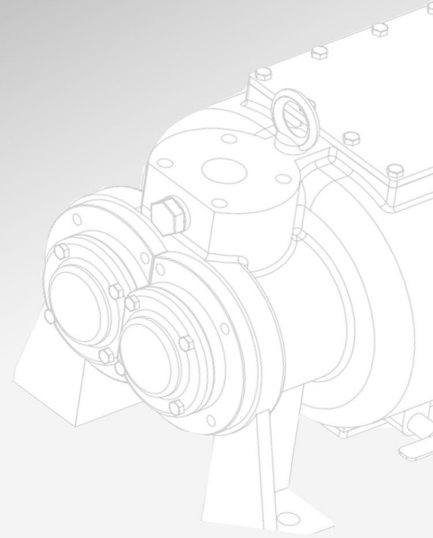




**WOOSUNG**  
vacuum pump

# MDP-B Series

variable pitch vacuum pump



**Variable Pitch  
Screw Dry Vacuum Pump**

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**MDP-S screw vacuum pumps  
are designed for difficult applications  
in the pharmaceutical and chemical industries.**

**SCREW DRY  
VACUUM PUMP &  
SYSTEM  
TECHNOLOGY**

## Benefits

- No Contamination of Process Stream
- Deeper Vacuum and More Flexible Operation
- No Effluent, No Pollution, No Waste Disposal Costs
- Lower Maintenance Costs
- Immediate Solvent Recovery at Pump Exhaust
- Lower Total Cost of Ownership - Lower Utility Costs
- No variation in vacuum resulting from the changing of seasons and Utility

## Advantages

### • Ultimate Vacuum

- ✓ Optimized clearance and continuous compression ensures 0.0075torr vacuum degree with a single pump

### • Corrosion Resistance

- ✓ Coating material provides excellent corrosion resistance
- ✓ Process specific coatings or platings available
- ✓ Enhanced Corrosion Resistance by the gas ballast

### • Cooling Effect

- ✓ Hydrodynamic spiral jacket design ensures Excellent heat exchange efficiency
- ✓ Maintains optimum pump-inside temperature

### • Utility Saving

- ✓ 30% power saving by the variable pitch screw design
- ✓ No extra cooling gas required

## Characteristics

- **Excellent discharge performance**

- ✓ Quick exhaust structure
- ✓ **Superior liquid handling ability**
- ✓ **Excellent dust handling**
- ✓ **Self draining mechanism (100% liquid drain)**
- ✓ Pulsation reduction of gas emission



- **Reliable seal structure**

- ✓ Triple Sealing System with Lip seal + Gas Purge + Mechanical Seal(or Lip Seal)
- ✓ High performance mechanical seal specifically designed for dry vacuum pump
- ✓ Optimum gas purge operation enhanced leak tightness

- **Gas ballast nozzle installation**

- ✓ Prevent condensation of corrosive vapor
- ✓ Reducing explosive atmosphere

- **Oil Lubrication**

- ✓ Applied oil lubrication type of Rear End Plate(REP)

## Hydrodynamic Spiral Jacket Cooling Mechanism

- Cooling alongside screws through Jacket : Integral heat Exchanger Philosophy for better heat exchange
- No extra cooling gas required in order to get reduced exhaust temperature and to prevented pump seizure
- Direct cooling as standard(External heat Exchanger as an Option)



# MDP-B Screw Dry Vacuum Pump

## Gas ballast nozzle installation

- Prevent condensation of corrosive vapor
- Reducing explosive atmosphere

## Vent nozzle installation

- Ensures smooth drain of the coolant jacket

## Reliable seal structure

- Mechanical seal and lip seal + gas purge applied
- Mounted with a dry vacuum pump dedicated mechanical seal
- Helps to maintain gear oil, process materials and gas tight by applying gas purge with appropriate pressure

## IEC Flange Installation

- Easy installation and replacement
- Rib enhancement for deformation and vibration prevention

## Smooth emission structure

- Quick exhaust structure
- **Superior liquid handling ability**
- **Excellent dust handling**
- **Self draining mechanism (100% liquid drain)**
- Pulsation reduction of gas emission

## Spiral coolant jacket

- Hydrodynamic spiral jacket design ensures Excellent heat exchange efficiency
- Maintains optimum pump-inside temperature

## Vacuum degree improvement

- Reaches the maximum vacuum degree 0.0075torr
- Increase pumping volume from high vacuum

## Oil Lubrication

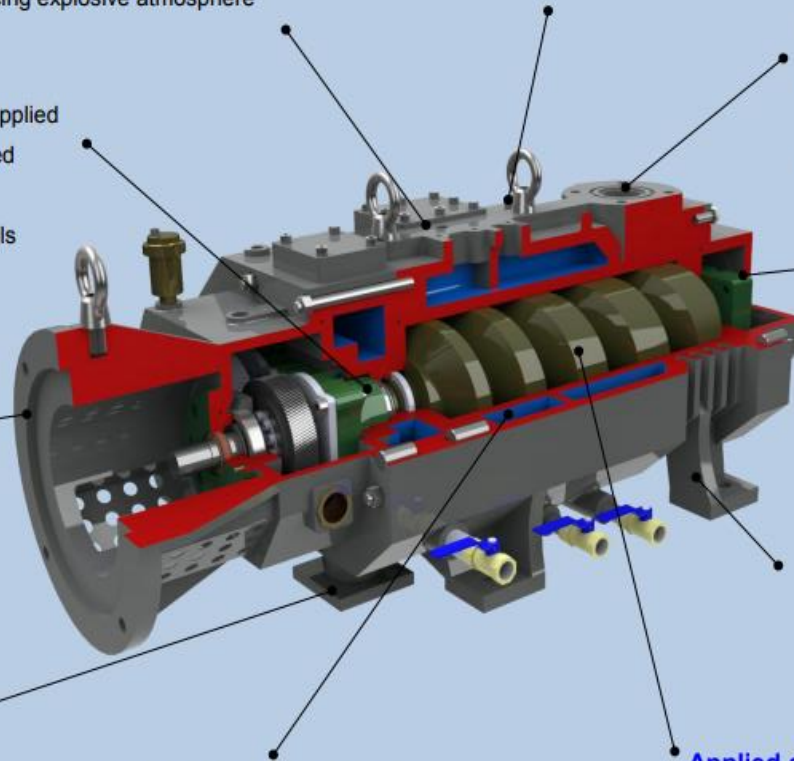
- Can maintain pump by checking of Lubrication.
- Lubricating and cooling efficiency are better than Greasing type.
- Oil exchanging is very easy job

## Reliable structure

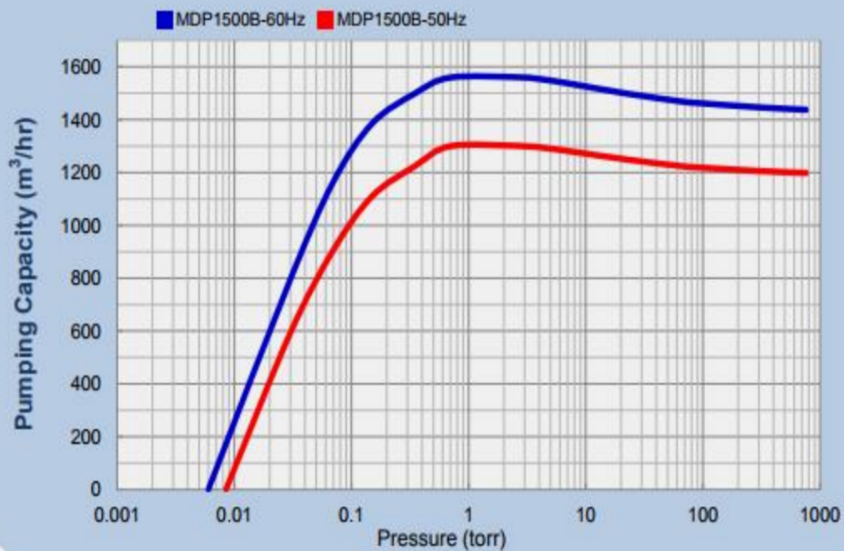
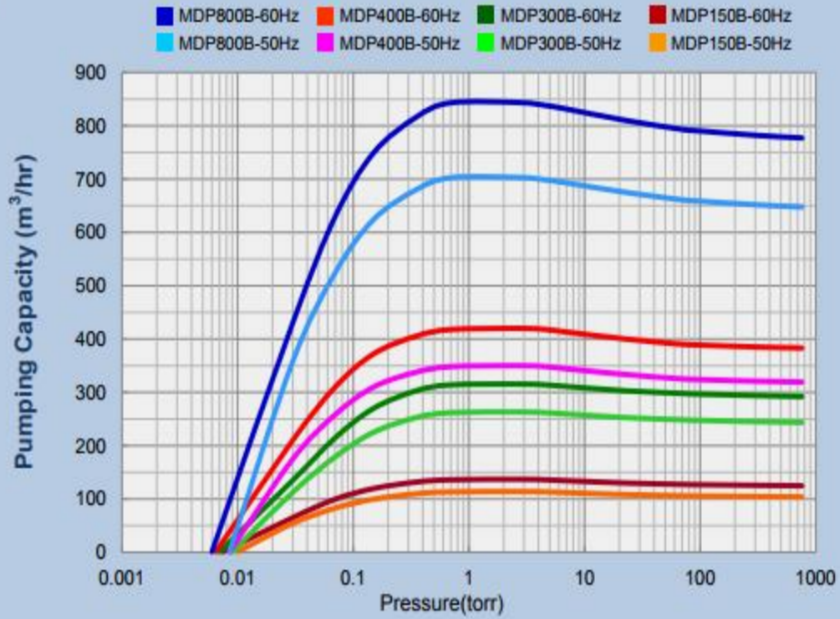
- Sturdy structure design life for 20 years
- Ensures low vibration with wide space

## Applied step-by-step compression screw rotor

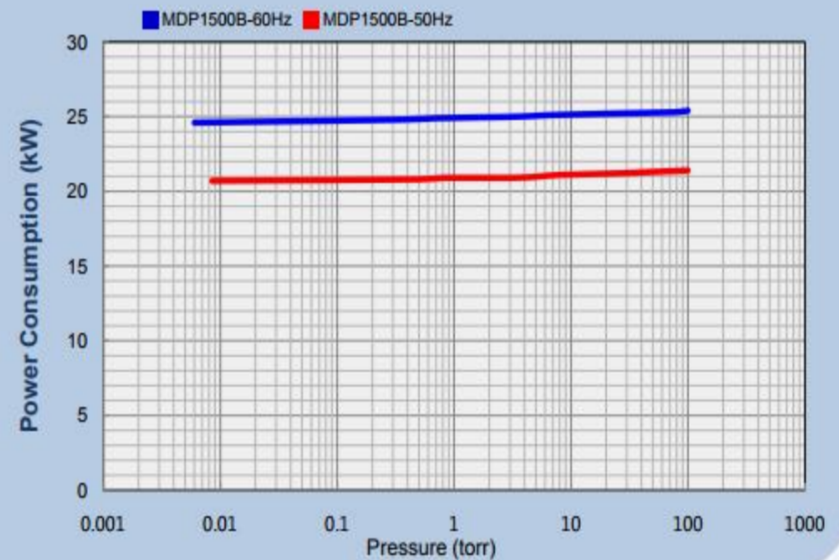
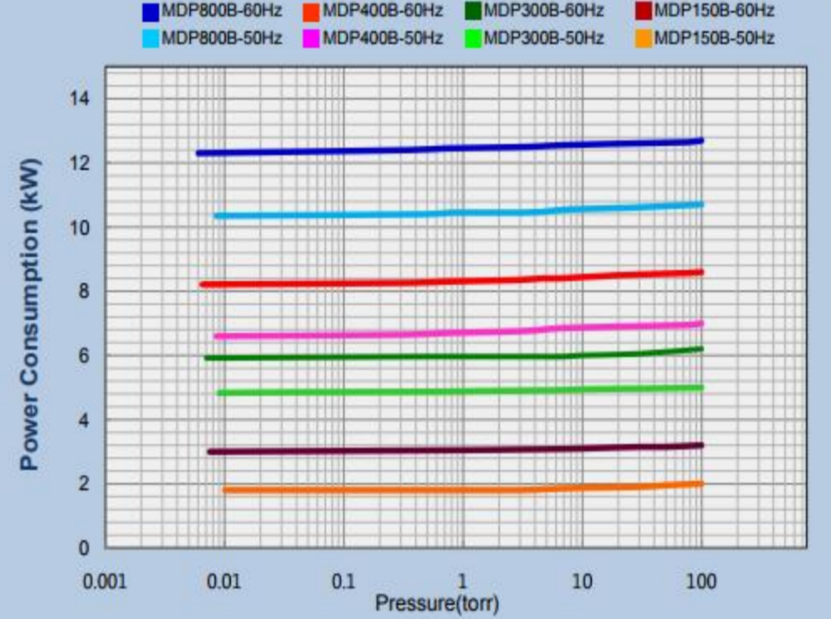
- Maintains stable temperature inside the pump by step-by-step compression
- 30% power saving by the variable pitch screw design
- No extra cooling gas required



## Pumping Capacity



## Power Consumption





## Technical Data

Model		MDP150B	MDP300B	MDP400B	MDP800B	MDP1500B
<b>Displacement(50/60Hz)</b>	m3/hr	110/130	250/300	330/400	660/800	1250/1500
<b>Ultimate pressure</b>						
without Gas Ballast	torr	7.5 X 10 <sup>-3</sup>	7.5 X 10 <sup>-3</sup>	7.5 X 10 <sup>-3</sup>	7.5 X 10 <sup>-3</sup>	7.5 X 10 <sup>-3</sup>
with Gas Ballast	torr	0.01	0.01	0.01	0.01	0.01
<b>Motor power(50/60Hz)</b>						
Power Requirement	kW	3.7	7.5	11	15	30
Power Consumption	kW	1.8/3.0	5.0/6.0	7.0/8.6	10.2/12.8	22.5/25.5
<b>Rotation(50Hz/60Hz)</b>	rpm	2,900/3,500	2,900/3,500	2,900/3,500	2,900/3,500	2,900/3,500
<b>Process Connection</b>						
Inlet Connection	JIS(ASME)	40A(1 ½")	50A(2")	65A(2 ½")	100A(4")	125A(5")
Outlet Connection	JIS(ASME)	40A(1 ½")	40A(1 ½")	50A(2")	65A(2 ½")	80A(3")
<b>Cooling water</b>						
Max. Supply Pressure	Barg	7	7	7	7	7
Pressure Drop	Bar	1.0	1.0	1.0	1.0	1.0
Flow Rate	Liter/min	5~10	10~15	10~15	15~20	36~40
Temperature	℃	5~35	5~35	5~35	5~35	5~35
Connection	PT(JIS)	½"(15A)	½"(15A)	½"(15A)	½"(15A)	1"(25A)
<b>Lubricant</b>						
Gear Oil Type		Shell T-68	Shell T-68	Shell T-68	Shell T-68	Shell T-68
Bearing Oil Type		Shell T-68	Shell T-68	Shell T-68	Shell T-68	Shell T-68
<b>Seal Type</b>						
High Vacuum(HV) Seal		<b>Lip Seals(Double Lip Seal x 2ea) or Mechanical Seal</b>				
Low Vacuum(LV) Seal		Lip Seal & Mechanical Seal(or Lip Seal) + Gas Purge Seal				
<b>Noise Level(50/60Hz)</b>	dB	79/85	79/85	79/85	79/85	79/85
<b>Vibration (max.)</b>	mm/s	1.8 (4.5)	1.8 (4.5)	1.8 (4.5)	2.8 (4.5)	2.8 (4.5)
<b>Weight(Bare Shaft)</b>	kg	200	300	380	600	920

## Material

### Materials of House

- **Casing, Front End Plate: Ductile Iron(FCD 400)**
  - ✓ Internal : Coating
  - ✓ External : Painting
- **Screws : Ductile Iron(FCD 400)**
  - ✓ External : Coating
- **Coatings :**
  - ✓ PTFE Coating : 15µm Thickness
  - ✓ PFA Coating : 40µm Thickness
  - ✓ NIFA (Nickel Plated + Teflon Coating)
  - ✓ **Niflor (autocatalytic composite coating nickel-PTFE)**
- **Front End Cover :** Ductile Iron(FCD 400) + External Painting
- **Rear End Plate :** Ductile Iron(FCD 400) + External Painting
- **Check Valve :** Stainless steel body + Teflon Seat

### Seal Material

- Lip Seal : PTFE & Graphite(or Polyamide)  
Mix in Stainless Steel
- Mechanical Seal :
  - Rotor : Stainless Steel Bellows with Carbon #5 Face
  - Stator : Stainless Steel with Tungsten Carbide Coating
  - O-ring : Viton or Kalrez
- Oil Seal : Viton

### Seal Arrangement

- HV(Suction) : Lip Seals(Double Lip Seal x 2ea) or Mechanical Seal
- LV(Discharge) : Lip Seal & Mechanical Seal + Gas Purge Seal
- Drive End : Oil Seal

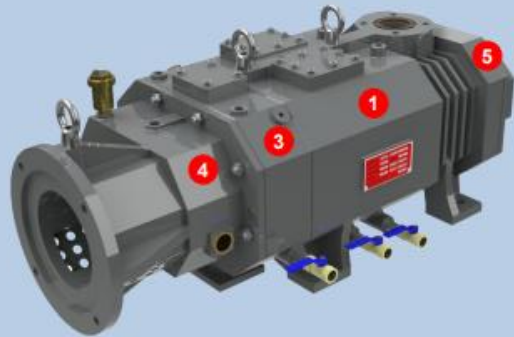
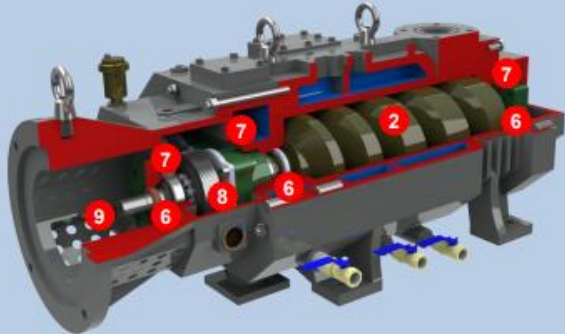
### Bearings

- HV(Suction) : Roller Bearing
- LV(Discharge) : Angular Double Ball Bearing
- Drive End : Single Ball Bearing

### Lubricant

- Protecting Seals, Bearings & Gears
  - ✓ Gear Box : Shell Turbo Oil T68
  - ✓ Rear end bearing : Shell Turbo Oil T68

## Structure Overview



- ① Casing    ② Screw    ③ Front End Plate    ④ Front End Cover
- ⑤ Rear End Plate    ⑥ Seals    ⑦ Bearings    ⑧ Timing Gears    ⑨ Shaft

## Process Application

	MDP-B Series Screw Dry Pump		Liquid Ring Pump (LRVP)		Steam Ejector	
Distillation	☐	●	☐	●	☐	●
Evaporation	☐	●	■	●	■	●
Reaction	☐	●	☐	●	■	●
Drying	☐	●	■	●	■	●
Pervaporation	☐	●	☐	●		
Degassing	■	●	☐	●	☐	●
Molecular distillation	☐	●	■	●	■	●
Concentration	☐	●	■	●	■	●
Crystallization	☐	●	☐	●	■	●
Filtration	■	●	☐	●		
Impregnation	☐	●	☐	●		
Adsorption	☐	●	☐	●		
Absorption	☐	●	☐	●		
Desorption	☐	●	☐	●		
Deodorization	☐	●	☐	●	☐	●
Dehydration	☐	●	☐	●	☐	●
Chemical Process	☐	●	☐	●	☐	●
Pharmaceutical Process	☐	●	☐	●	☐	●
Petrochemical Process	☐	●	☐	●	☐	●
Food Process	☐	●	☐	●		
Biofuels	☐	●	☐	●	☐	●
Solvent Recovery	☐	●	■	●		
Vapor Recovery Unit (VRU)	☐	●				
Coating	☐	●	■	●	■	●
Vacuum Casting	☐	●	■	●	■	●
Central Vacuum	☐	●	☐	●		

**Process application:** Highly applicable ☐    Applicable ■

**Energy consumption:** Excellent ●    Poor ●    Very poor ●





**우성진공펌프(주)**

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