

Mach 1 Horizontal Pumping System



Move your operations forward at the speed of sound with our re-engineered solution.

Our Mach 1™ Horizontal Pumping System (HPS) pushes performance boundaries with unmatched simplicity, interchangeable components, and integrated remote capabilities.

Our modular design serves a wide range of pressures and flows to cover many applications. The base skid can be quickly modified onsite to match your operational parameters. To keep you connected to your assets at all times, the equipment may be pre-wired for instrumentation and Guardian™ automation and control for HPS.

The Mach 1 provides site flexibility and reduced lead times. Our HPS thrust chamber is assembled with top-brand, angular contact bearings. The skid system features a rigid steel frame and modular components, which were designed using the latest 3D modeling software and Finite Element Analysis. This helps to resist motor torsion and limits vibration to extend pump life.

The new Mach 1 HPS product line complements the already vast pump portfolio that NOV offers to ensure you get the right pump for the right application, every time.

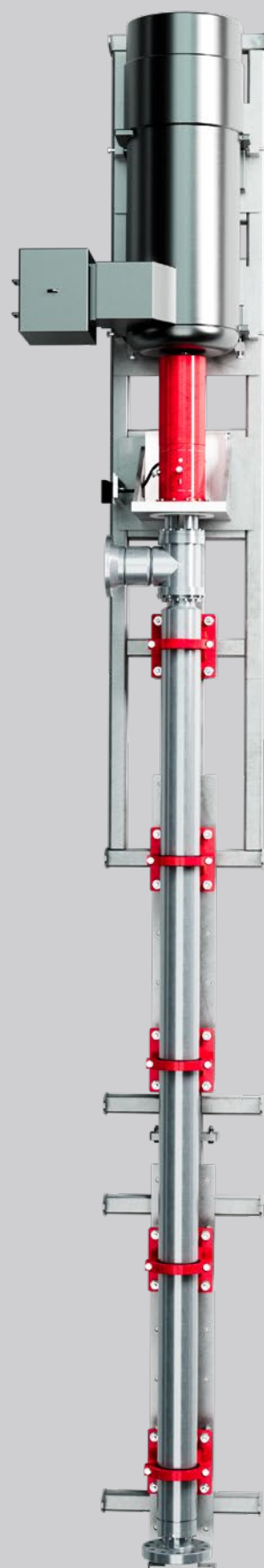
Powered by GUARDIAN - Work **smarter** not harder

The Mach 1 HPS features advanced digital solutions that give you the ability to capture, visualize, and analyze data in real time, monitor conditions, and automate flow to enhance site safety and optimize production.

Our Guardian™ HPS Variable Frequency Drive (VFD) with intuitive automation and control systems enables you to greatly reduce maintenance and running costs. The VFD's custom software capabilities, including a live pump curve and best efficiency point (BEP) control, adjust to parameters so that the equipment operates within the designated range for optimal efficiency.

It includes our GoConnect™ remote equipment monitoring application, powered by the Max™ Platform, that reduces maintenance costs, extends the life of your assets, and avoids unplanned downtime. GoConnect provides data-driven insights into the condition, health, and performance of your equipment.

These applications work together to monitor conditions in real time, 24 hours a day. Customizable monitoring and alerts give you peace of mind and the assurance that the HPS is operating at maximum energy efficiency and flow rate.



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Benefits

- Lower maintenance and initial operating costs than other pump options
- Modular design
- Short lead times for new and replacement equipment
- Flexible designs
- Back pull-out thrust chamber for short down times and ease of maintenance
- Minimal noise and vibration
- Health, safety, and environment friendly

Applications

- Produced salt water disposal (SWD) and injection
- Crude oil transfer/boosting
- Liquid CO₂ boosting/injection
- NGL/light hydrocarbon, crude oil pipeline booster
- Mine Dewatering
- Jet pump – power fluid pumps
- Lease automatic custody transfer (LACT) booster
- Cavern storage/salt dome leaching
- Lean amine pumping
- High-pressure wash for refineries
- Boiler feed pump
- Industrial high-pressure facilities

Performance

Capacity.....	26 gpm – 2479 gpm
Discharge pressure.....	Up to 6,000 psi
Suction pressure.....	Up to 1,000 psi
Temperature range.....	-20 to 280F°
Power.....	Up to 1,600 hp

Materials

Impellers and diffusers.....	Ni-Resist, duplex stainless steel
Shafts.....	Monel®, Inconel®, Nitronic 50
Suction and discharge.....	316 stainless steel
Sleeve bearings.....	Ni-Resist, tungsten carbide
Barrel housing.....	Carbon steel, stainless steel



1. Motor

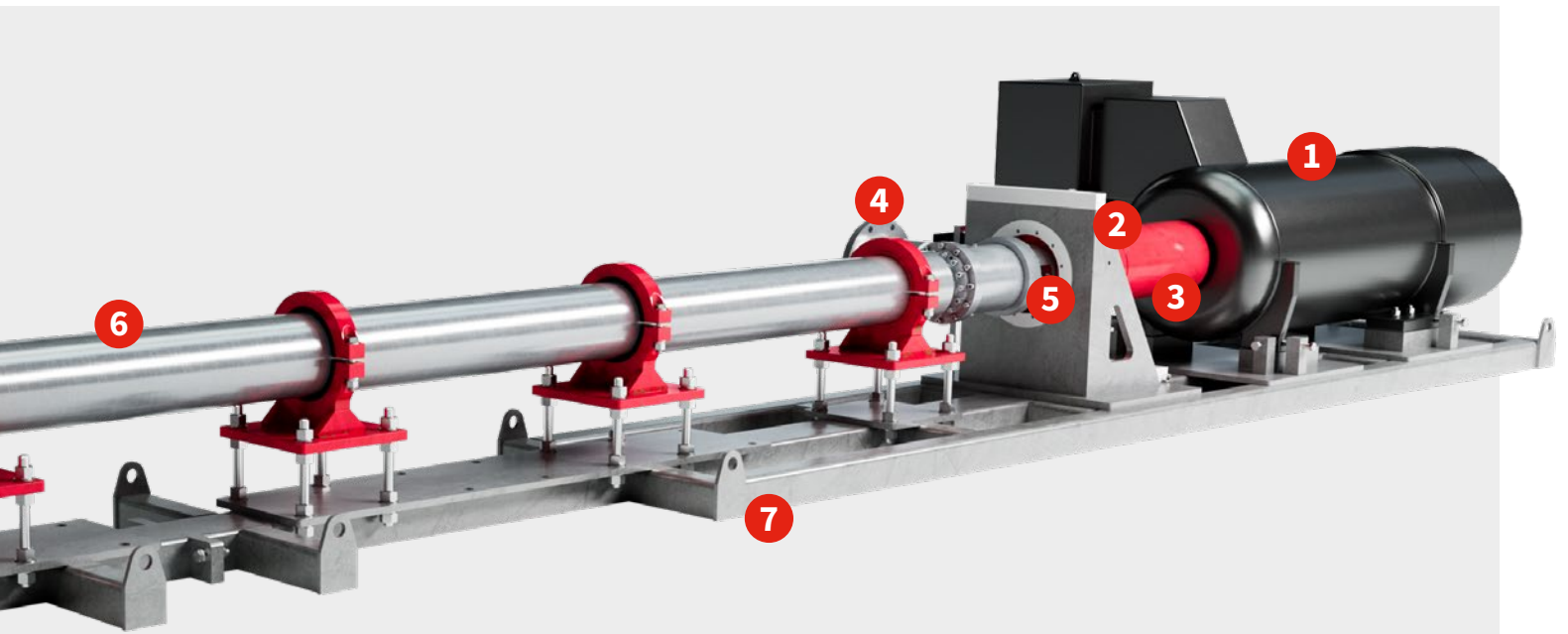
- Standard 50-1600 hp electric motors; engine driven units available upon request.
- Motor options and upgrades available for your desired application. This includes enclosure styles, area classification compliances, bearing systems, and various upgrades.

2. Thrust Chamber

- Load capacity up to 30,000 lbs
- Back pullout design made for short downtimes during seal replacement
- Oil Cooling package available for high-thrust/high-temperature applications
- 1-3 bearings available within single thrust chamber housing for variable thrust capacities

3. Spacer Coupling

- 7-in spacer coupling allows for fast seal replacement. By allowing enough room to not move the pump or flanges for seal replacement and thrust chamber work, this saves valuable time by maintaining pump alignment.



4. Discharge Flange and Suction Flange

- Available in multiple sizes, pressure ratings, and temperature ratings that are suitable for each HPS application

5. Mechanical Seal

- Single seal assembly exposed solely to intake pressure
- High- or low-pressure seal system options available
- Barrier systems available for emission control
- Seal and flush plans available that comply with API specifications and customer requirements

6. Pump

- Flow range of pumps allows for 900 BPD – 85000 BPD (26 gpm – 2479 gpm; 143 m³/d – 13514 m³/d)
- Discharge pressures up to 6,000 PSI (41,369 kPa and 414 bar)
- Ni-Resist material is standard for Mach1 stages. Other materials available when requested.
- Multiple bearing configurations available featuring abrasion-resistant materials for increased wear-resistance, or GRAPHALLOY® bearings for low-lubricity fluids

7. Heavy Duty Skid

- Modular skid accompanying various motor sizes and barrel lengths
- Hoist mounting points for simplified movement and installation
- Thrust Chamber bracket in fixed location for precision alignment

Interchangeable and Adjustable Components

- New to Mach1 is interchangeable motor plates, thrust chamber brackets, and adjustable pump clamps to allow for interchangeable pumps to accommodate different or evolving applications while retaining the original unit skid.

Instrumentation

- Standard options include intake and discharge pressure transmitters, vibration switch, and thrust chamber oil level switch gauge.
- Skid mounted junction box on all Mach1 units ordered with instrumentation to provide single point wiring
- Available in explosion-proof designs upon customer request

Worldwide expertise, local presence

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