
# GNX Series

## SLIDING VANE PUMPS | PRODUCT BROCHURE

PSG a DOVER company

Blackmer®

Where Innovation Flows

The Blackmer® GNX Series sliding vane pumps are the market's only alignment-free, reduced-speed positive displacement pumps, suited for both portable and stationary applications. By eliminating couplings and by providing a true ZERO-alignment design, Blackmer, with the GNX Series, has combined all the benefits of an "alignment-free" pump like delivering maximum reliability and uptime, with the numerous advantages of sliding vane technology such as self-priming, line-stripping, product recovery, dry-run capability, solids handling, thin/thick viscosity flexibility and 70% to 90% pump efficiencies.

# ALIGNMENT-FREE SOLUTIONS

## Blackmer® GNX Series

### Alignment-Free Reduced-Speed Heavy Duty Sliding Vane Pumps

Part of the Iron Line of sliding vane pumps, GNX Series pumps include the proven features of Blackmer legacy GX Series pumps but take them to the next level with the incorporation of a commercial-grade, single-stage gearbox, motor, and baseplate. This innovative new gearbox fits between the motor and pump and is permanently held in alignment by machined dowelled interfaces. The set forms a single structural unit, completely linked between the high-speed and low-speed sides. The result is unmatched ease of installation and maintenance and improved peace of mind for plant operators. It eliminates the possibility of unexpected coupling failure and simplifies every planned maintenance activity.

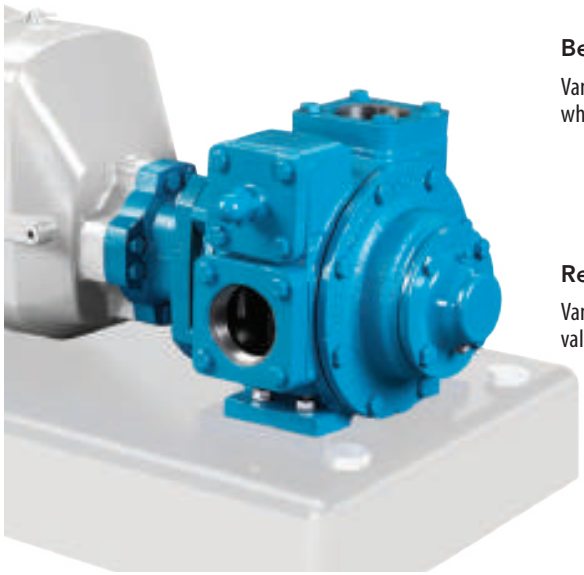
The GNX Series pumps are available in 2-, 2.5-, 3-, and 4-in sizes and are designed to handle a wide range of non-corrosive industrial liquids and petroleum products. The GNX Series pumps are highly configurable by providing two different porting options (traditional 90-degree ported option on the GNX and the 180-degree porting option for the GNXH), by offering a wide range of motor options, and two different baseplate options (steel and a composite polymer concrete base). These options enable operators to find the best pumping solution for their application.

# Components of the GNX Series Assembly

## PUMP

### Sliding Vane Action

- Unique sliding vane pump design self-adjusts for wear to maintain flow rates
- Sliding vane design provides sustained performance and trouble-free operation
- Excellent self-priming and dry-run capabilities
- High suction lift and line-stripping capabilities
- Viscosity flexibility: 0.2 cP to 4,250 cP using same pump
- Pressure flexibility: 0 psi – 125 psi (0 ft TDH to 290 ft TDH) without sensitivity to BEP operation
- Easy maintenance: vanes can be easily replaced without removing the pump from the piping system
- Low maintenance and low life-cycle costs



### Between Bearing Design

Vane pumps use symmetrical bearing support, which supports shaft loading on both sides:

- Results in negligible shaft deflection
- Extends seal, bearing, and shaft reliability and increases pump life

### Relief Valve Design

Vane pumps offer a full port, quick opening trim valve design.

- Cracking pressure equals full recirculation pressure
- Optimizes motor sizing
- Prevents derate of pump pressure (i.e., usable range is same as pump's capacity)

## MOTOR

### Full Range of NEMA C-face Motors in Inventory

- Rating: 1 HP – 50 HP (0.7 kW – 40 kW)
- Power Supply: 1-phase or 3-phase, 190/240/380/460/575 volt, 60 Hz or 50 Hz
- Inverter duty (VFD rated) for 2:1 to 10:1 constant torque turndown
- Ratings: TEFC or Hazardous Explosion Proof Division 1

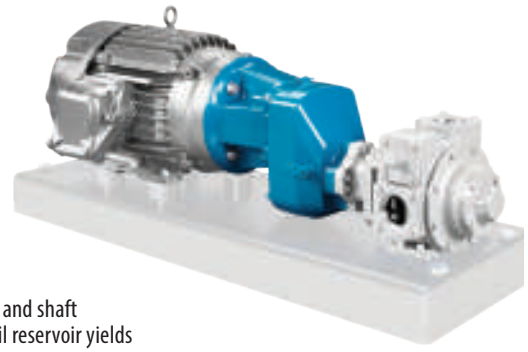
### Full Range of IEC B5 Motors Available

- Local sourcing recommended, however if purchasing from Blackmer:
  – 3-phase, 380 volt, 50 Hz
  – Ratings: ATEX Ex d or Ex nA

## GEARBOX

### Motor Flange

- C-face or D-flange interface between gearbox and motor holds position and eliminates need for shaft alignment



### Gearbox Housing

- Heavy duty bearings and shaft and oversized lube oil reservoir yields >4.0 service factor on full rated torque
- Single-stage speed reduction is ideal for desired speed ranges (200-815 rpm output speeds)
- Numerous ratio options yield speed flexibility to peg desired flow rate

### Pump Adapter

- Oversized adapter attaches the gearbox to the pump head
- Proprietary hollow bore gearbox accepts standard pump shaft without a coupling
- Position held by doweled connection between pump and gearbox, eliminating need for shaft alignment. Pump will not lose alignment during operation, during maintenance, or during unit install/relocation

## BASEPLATE

### Steel Baseplate

- Upgraded bent steel with full length welded motor pads
- Built-in anchor holes
- Flatness tolerance ensures level anchoring point

### Composite Polymer Concrete Baseplate

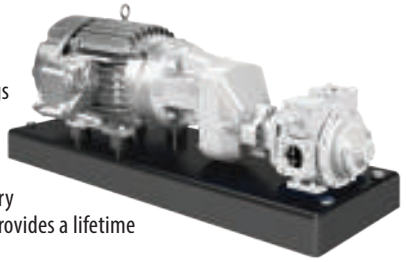
Pre-grouted to reduce installation costs

#### Corrosion Resistant:

- Will not rust or corrode
- Eliminates need for paint or expensive protective coatings

#### Maximum Reliability:

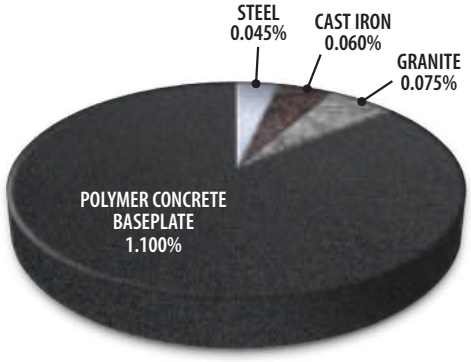
- 0.002" per foot flatness eliminates need for secondary machining operations and provides a lifetime level mounting surface
- 24x better vibration damping provides reduced fatigue on rotating elements (motor, gearbox, and pump)



# ALIGNMENT-FREE SOLUTIONS

## Features & Benefits:

- Alignment-free, reduced-speed pumps
- Robust commercial-grade gearbox with expanded ratio options
- Eliminates traditional couplings
- Retained rotor between bearing design extends mechanical seal life
- Compact footprint utilizing close coupled, inline design
- Alignment-free design reduces downtime and simplifies maintenance:
  - Eliminates premature mechanical-seal failures, frequent downtime and increased costs
  - Increases uptime, reliability, productivity, and longer life for seals, shafts and bearings
  - Simplifies startup/installation and maintenance tasks due to the a drop-in replacement design
- Flexible 90° and 180° porting options, for use whenever horizontal discharge piping or vertical pump mounts are desired
- GNX Series pumps conform with ATEX directives, as outlined in Form 559. ATEX conformance is also available for GNX gearboxes and motors.
- Available corrosion-resistant composite polymer concrete baseplate with pre-grouted build, flatness of 0.002" per foot, and 24 times increased vibration damping of steel.

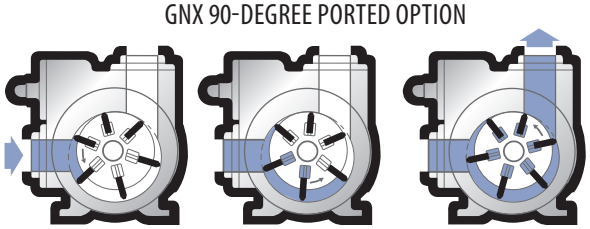



BASEPLATE DAMPING RATIO

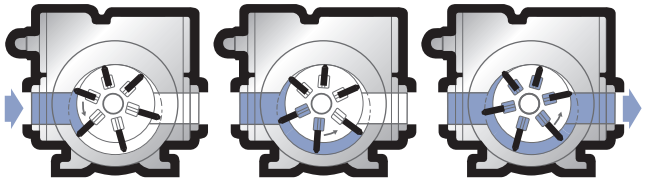
### ADVANTAGES OF SLIDING VANE TECHNOLOGY:

- Unique sliding vane pump design self-adjusts for wear to maintain flow rates
- Excellent self-priming and dry-run capabilities
- Sliding vane design provides sustained performance and trouble-free operation
- Easy maintenance: vanes can be easily replaced without removing the pump from the piping system
- High suction lift and line-stripping capabilities
- Low maintenance and low life-cycle costs

GNX 90-DEGREE PORTED OPTION



GNXH 180-DEGREE PORTED OPTION



# Applications

**NON-CORROSIVE, INDUSTRIAL LIQUIDS:**

- Fuel Oils
- Lube Oils
- Jet Fuels
- Gasoline
- Edible Oils

**SOLVENTS & THINNERS:**

- Esters
- Ketones
- Naphthas
- Ethers
- Amines
- Aromatics
- Alcohols
- Terpenes
- Glycols

**SERVICES:**

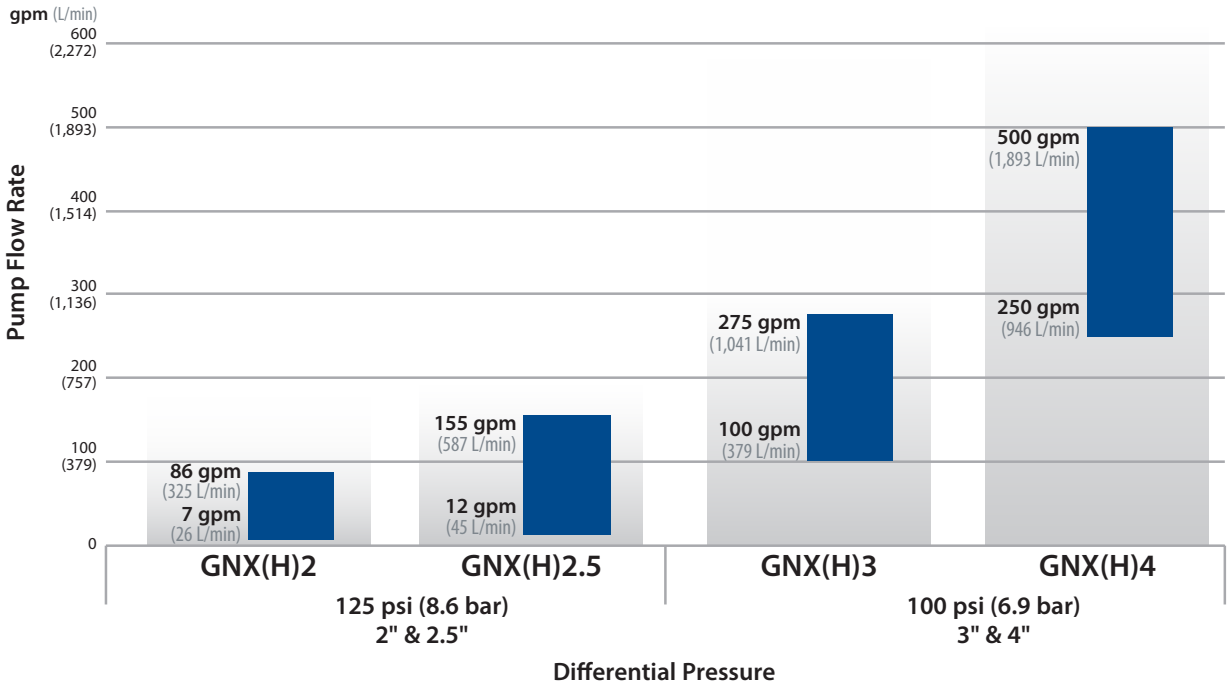
- Batch Blending
- Loading & Unloading
- Pressure Boosting Stations
- Priming Systems
- Aviation Fuel Skids
- Portable Transfer Skids

# GNX Series PERFORMANCE & SPECIFICATIONS

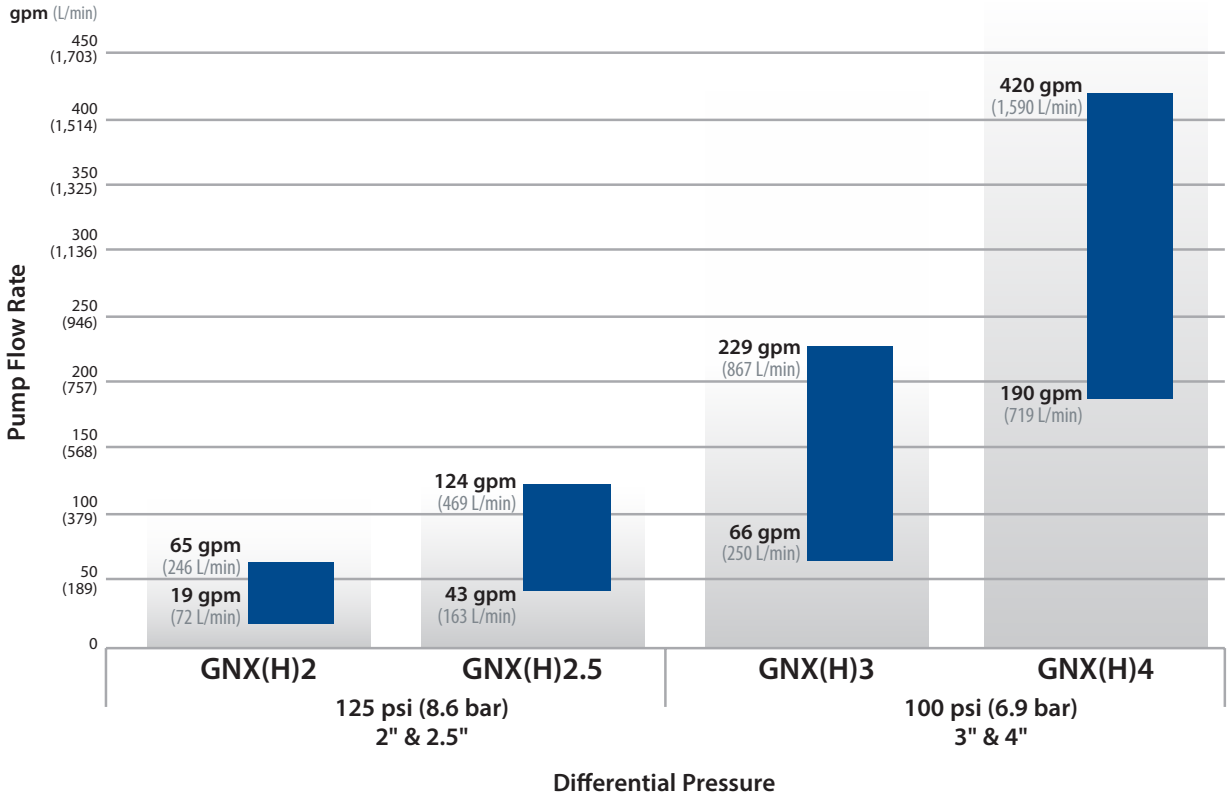
Maximum Operating Limits

| Pump Model | Nominal Flow Rate Range | Viscosity | Maximum Operating Temperature | Min./Max. Speed | Maximum Working Pressure | Maximum Differential Pressure |
|---|---|---|---|---|---|---|
| **GNX2, GNXH2** | 7 - 86 gpm (26 - 325 L/min) | 0.2 - 4,250 cP | -25°F to 300°F (-32°C to 149°C) | 200 - 814 rpm | 175 psi (12.1 bar) | 125 psi (8.6 bar) |
| **GNX2.5, GNXH2.5** | 12 - 155 gpm (45 - 587 L/min) | 0.2 - 4,250 cP | -25°F to 300°F (-32°C to 149°C) | 200 - 814 rpm | 175 psi (12.1 bar) | 125 psi (8.6 bar) |
| **GNX3, GNXH3** | 100 - 275 gpm (379 - 1,041 L/min) | 0.2 - 4,250 cP | -25°F to 300°F (-32°C to 149°C) | 200 - 700 rpm | 175 psi (12.1 bar) | 100 psi (6.9 bar) |
| **GNX4, GNXH4** | 250 - 500 gpm (946 - 1,893 L/min) | 0.2 - 4,250 cP | -25°F to 300°F (-32°C to 149°C) | 200 - 563 rpm | 175 psi (12.1 bar) | 100 psi (6.9 bar) |

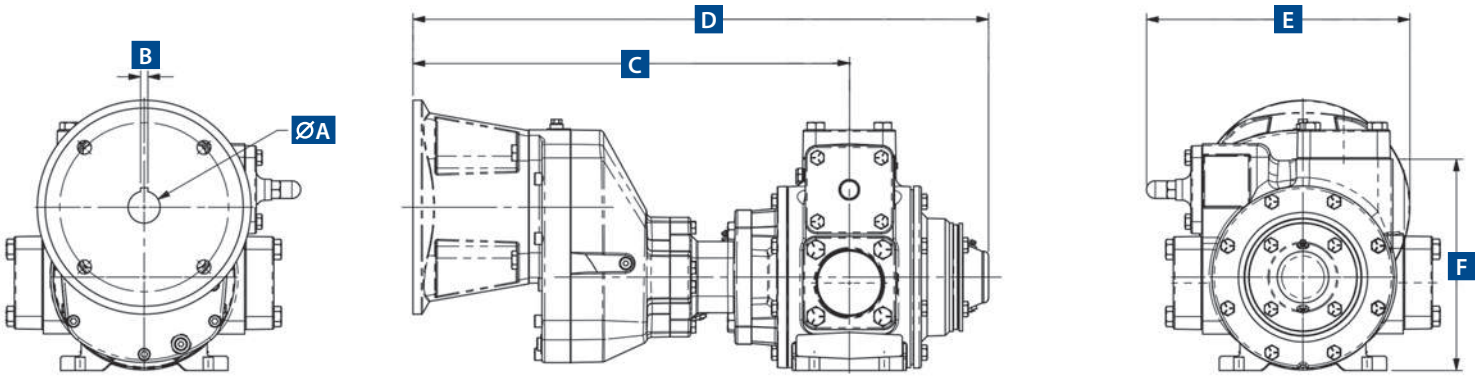
## Nominal Flow Rate Range @ 60 Hz




## Nominal Flow Rate Range @ 50 Hz



# GNX Series DIMENSIONS[1]




| Pump Model | Length (D) | Width (E) | Height (F) | Max. Weight Pump System (Pump, gearbox, motor, & baseplate) |
|---|---|---|---|---|
| GNX2 | 22 1/5" (563.9 mm) | 10 7/16" (265.1 mm) | 8 4/5" (223.5 mm) | 556 lb (252 kg) |
| GNX2.5 | 24" (609.6 mm) | 11 3/8" (288.9 mm) | 9 5/8" (244.5 mm) | 768 lb (348 kg) |
| GNX3 | 28" (711.2 mm) | 13 5/8" (346.1 mm) | 12 3/8" (314.3 mm) | 1,345 lb (610 kg) |
| GNX4 | 34 3/8" (873.1 mm) | 15 5/8" (396.9 mm) | 15 4/7" (395.3 mm) | 1,852 lb (840 kg) |
| GNXH2 | 22 1/5" (563.9 mm) | 10 7/16" (265.1 mm) | 8 7/8" (225.4 mm) | 556 lb (252 kg) |
| GNXH2.5 | 24" (609.6 mm) | 11 3/8" (288.9 mm) | 9 4/5" (249.2 mm) | 768 lb (348 kg) |
| GNXH3 | 28" (711.2 mm) | 13 1/2" (342.9 mm) | 12 3/8" (314.3 mm) | 1,345 lb (610 kg) |
| GNXH4 | 34 3/8" (873.1 mm) | 15 5/8" (396.9 mm) | 15 4/7" (395.3 mm) | 1,852 lb (840 kg) |

[1] All dimensions and weights approximate. Please refer to Parts Lists for precise dimensions.

| Motor Size | Ø A | B | C | | | |
|---|---|---|---|---|---|---|
| | | | GNX(H)2 | GNX(H)2.5 | GNX(H)3 | GNX(H)4 |
| NEMA 140TC | 7/8" | 3/16" | 16 15/16" | — | — | — |
| NEMA 180TC | 1 1/8" | 1/4" | 17 1/4" | 18" | 21 5/8" | — |
| NEMA 210TC | 1 3/8" | 5/16" | 18" | 18 3/4" | 23 7/8" | 26 15/16" |
| NEMA 250TC | 1 5/8" | 3/8" | — | 20 1/2" | 23 7/8" | 26 5/16" |
| NEMA 280TC | 1 7/8" | 1/2" | — | — | 24 1/2" | 26 15/16" |
| NEMA 320TC | 2 1/8" | 1/2" | — | — | 27 | 29 3/8" |
| IEC 100/112 | 28 mm | 8 mm | 17 7/8" | 18 5/8" | — | — |

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101-007 07/20

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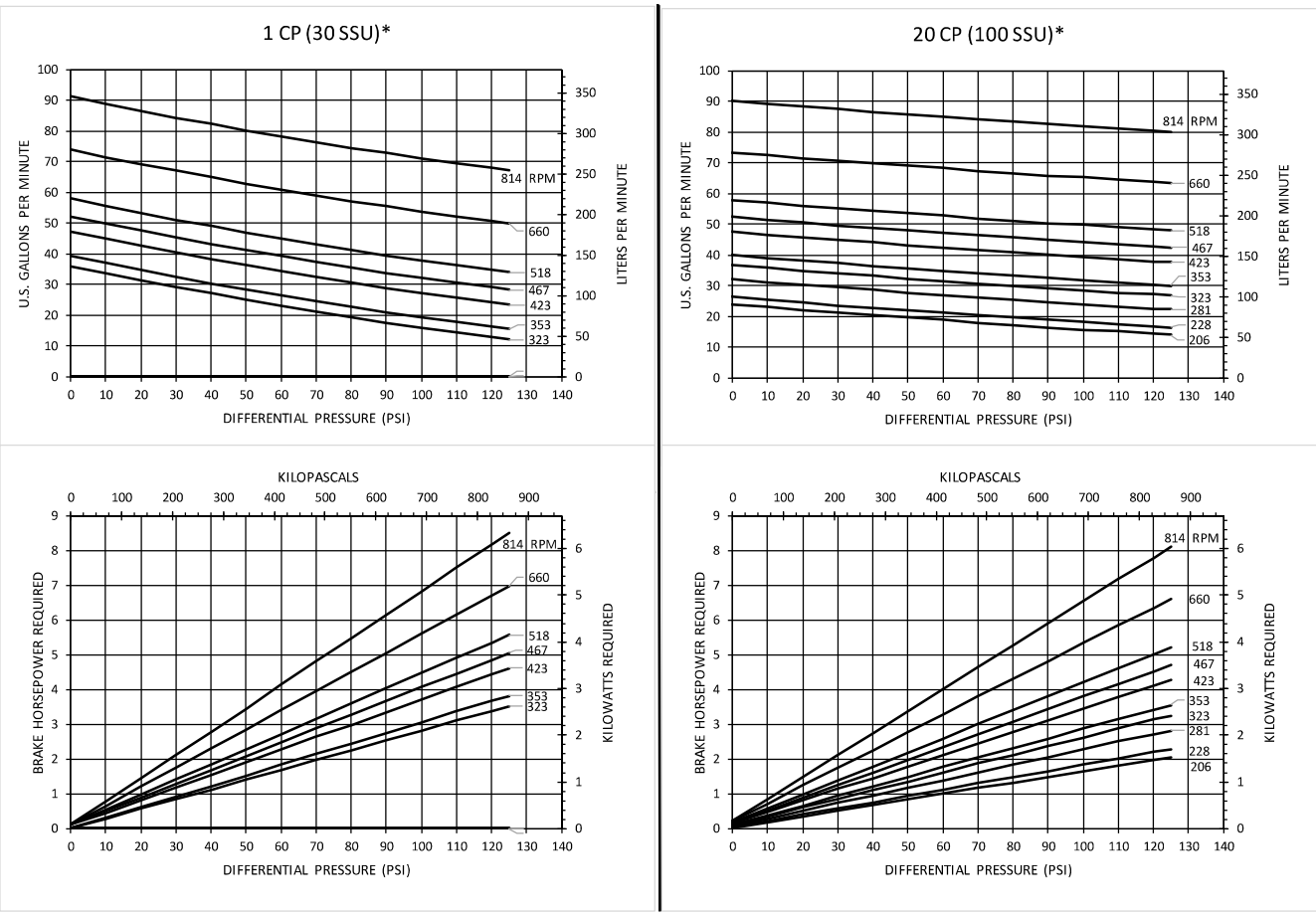
# CHARACTERISTIC CURVES
## Models: GNX2 , GNXH2

| | |
|---|---|
| Page Number | 101-035 |
| Effective | Feb 2017 |
| Replaces | NEW |
| Section | 101 |




**Note:** Non-metallic vanes Only.

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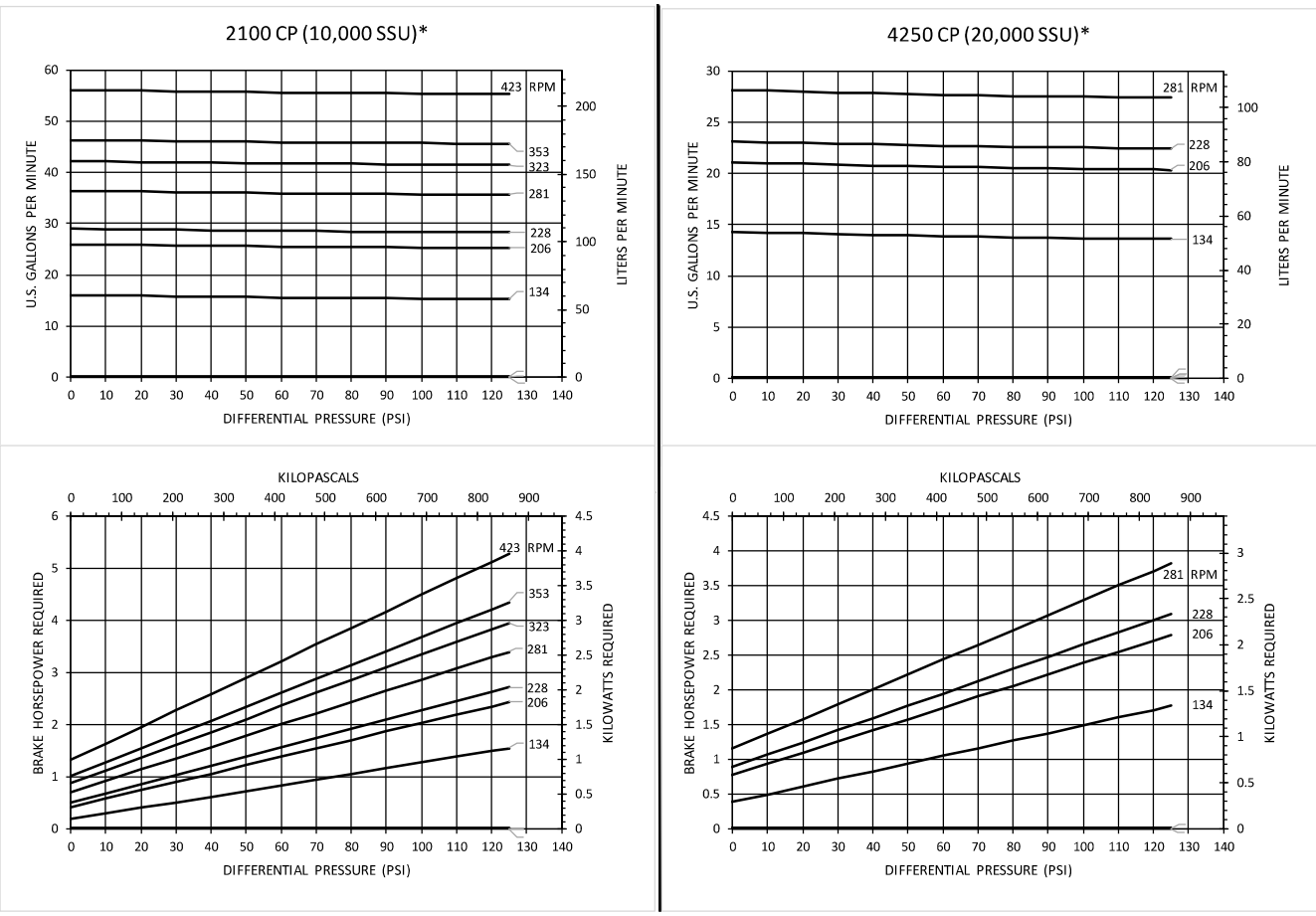
Blackmer Characteristic Curves are based on Brake Horsepower (BHp). To determine Motor Horsepower, drive train inefficiencies must be added to the BHp.

Actual capacities are dependent upon the vapor pressure of the liquid and the inlet conditions of the system.

*Centipoise (cP) to SSU conversion is based on a fluid specific gravity of 1.0.
Centipoise = centistokes at 1.0 specific gravity.

# *CHARACTERISTIC CURVES*

## *Models: GNX2*




**Note**: Non-metallic or metallic vanes. Metallic vanes recommended above 2100 cP (10,000 SSU).

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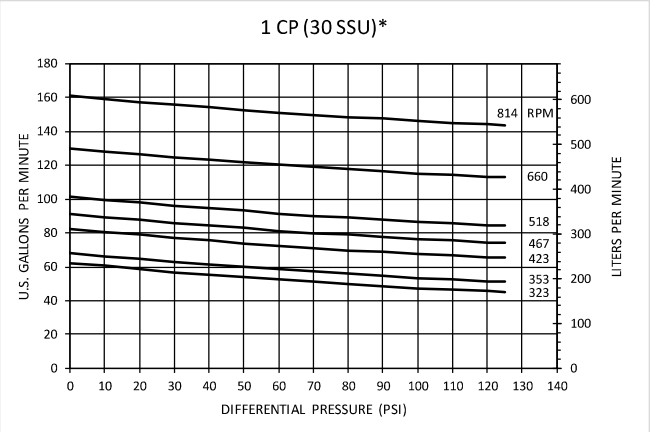


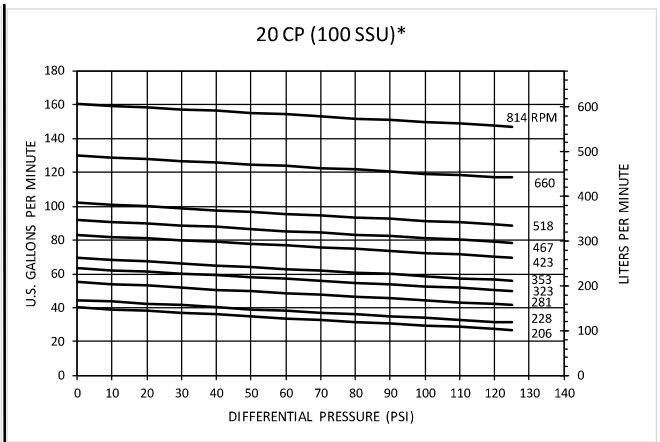


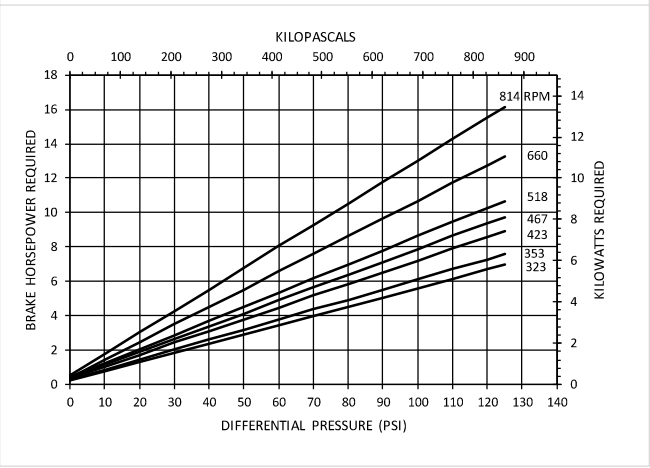


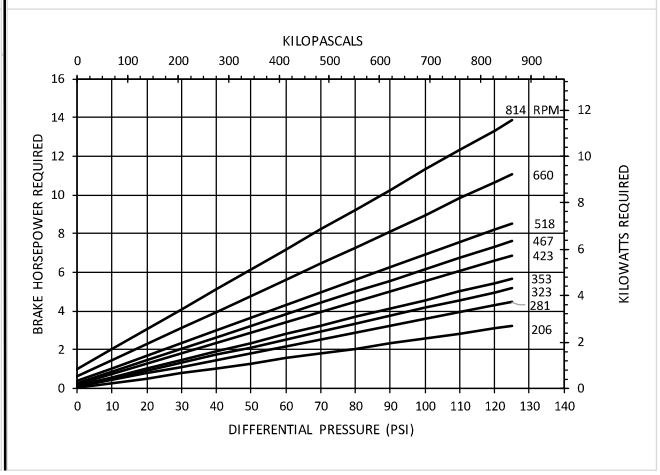


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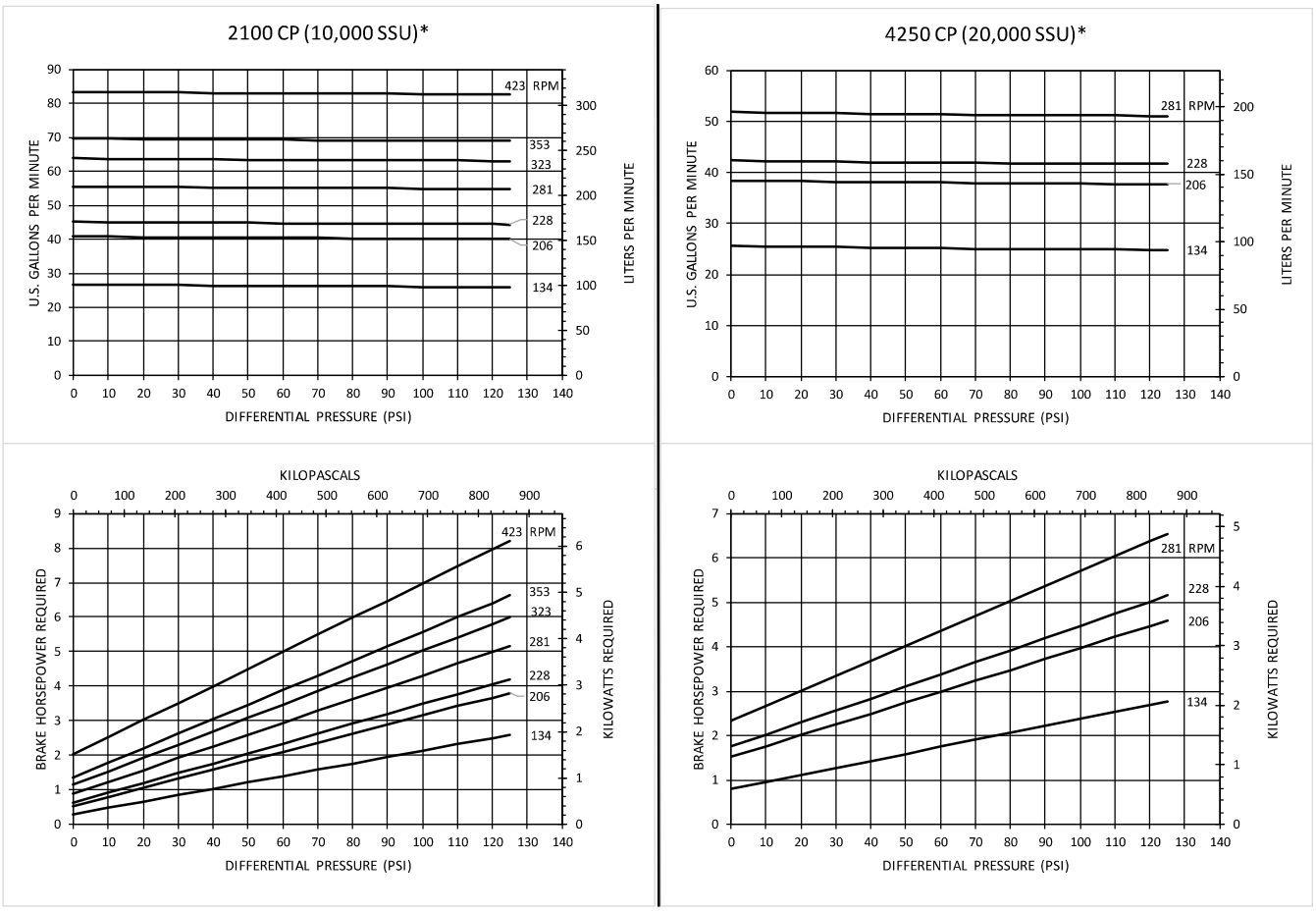
## *CHARACTERISTIC CURVES*
## *Models: GNX2.5*




**Note**: Non-metallic or metallic vanes. Metallic vanes recommended above 2100 cP (10,000 SSU).

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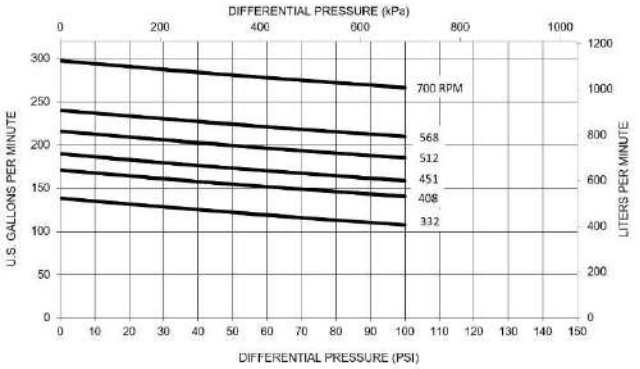
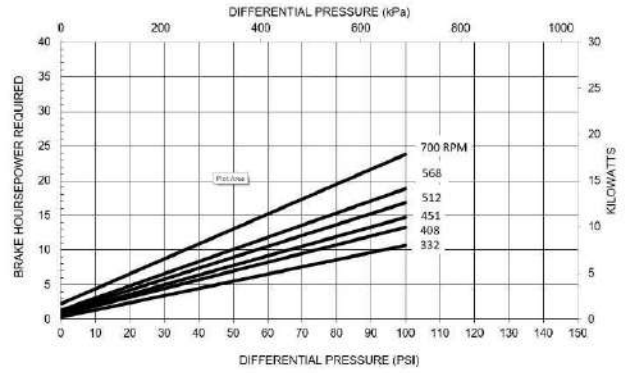
### 1 CP (30 SSU)*

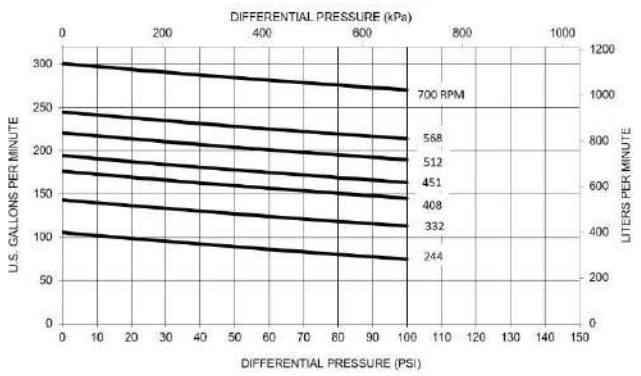



### 1 CP (30 SSU)*

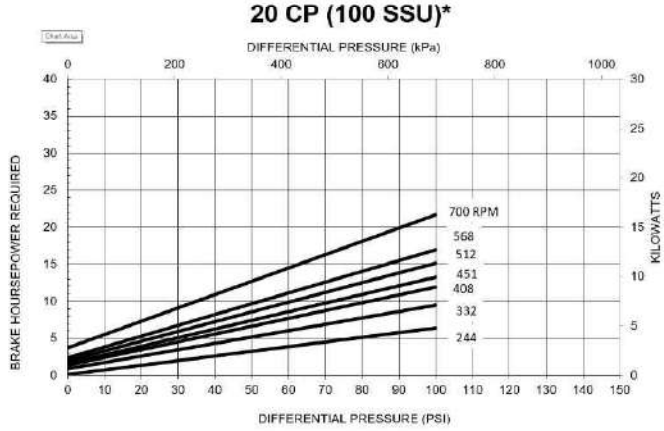



**Note:** Non-metallic vanes Only.

### 20 CP (100 SSU)*




### 20 CP (100 SSU)*

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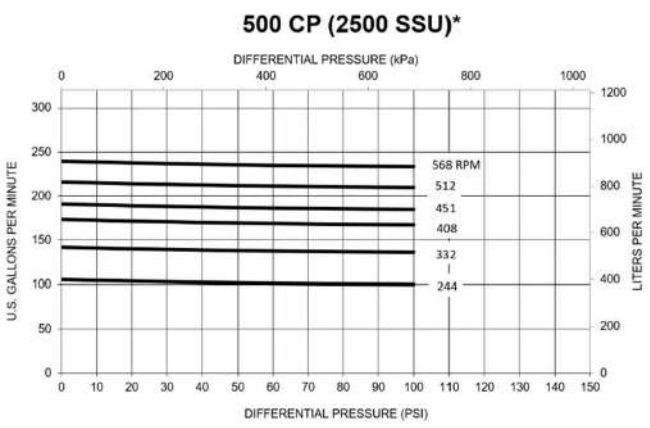
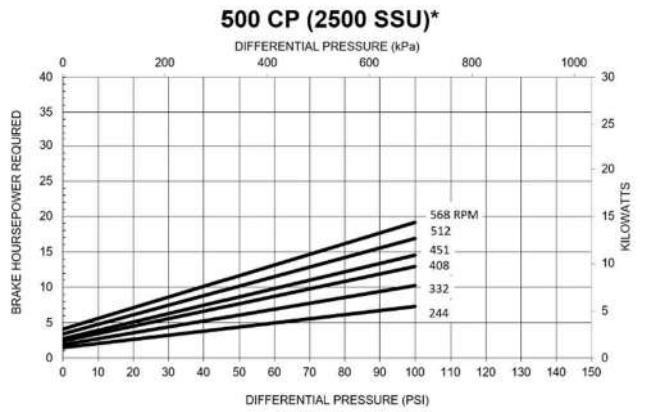
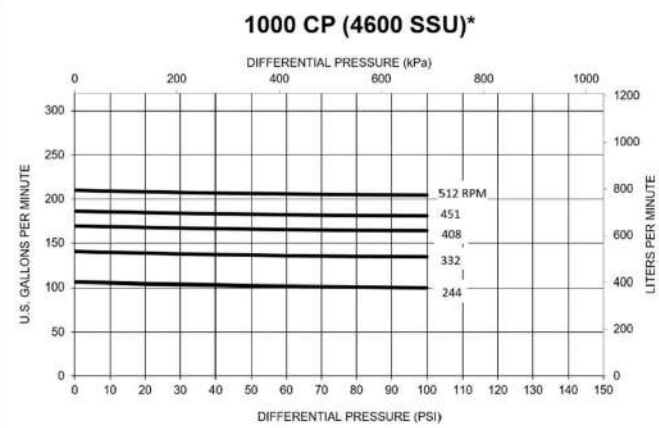
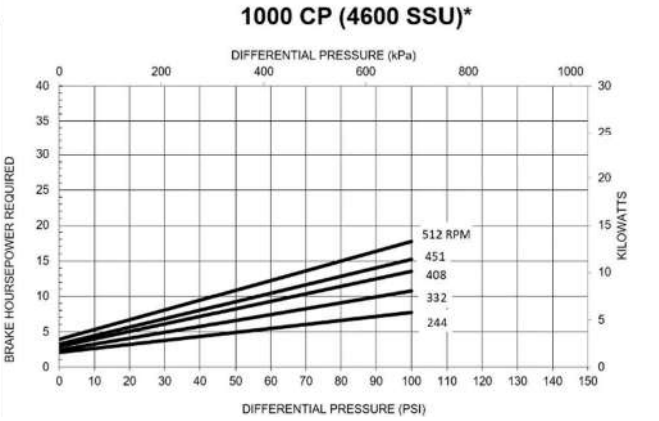
## *CHARACTERISTIC CURVES*
## *Models: GNX3, GNXH3*




**Note**: Non-metallic or metallic vanes.

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