

HeliFlow® Industrial Series

Positive Displacement Blowers
& Vacuum Pumps



GD
GARDNER DENVER™

Experience Proven Results™

GD HeliFlow®

Built By the Industry Leaders

Gardner Denver

- Tradition
- Quality
- Innovation
- Results

GD HeliFlow

HeliFlow integrates proven experience with blower design and manufacturing techniques to create an innovative helical tri-lobe blower. Gardner Denver has created a low noise solution for positive displacement blower and vacuum pump applications.

Quality + Tradition = Trust

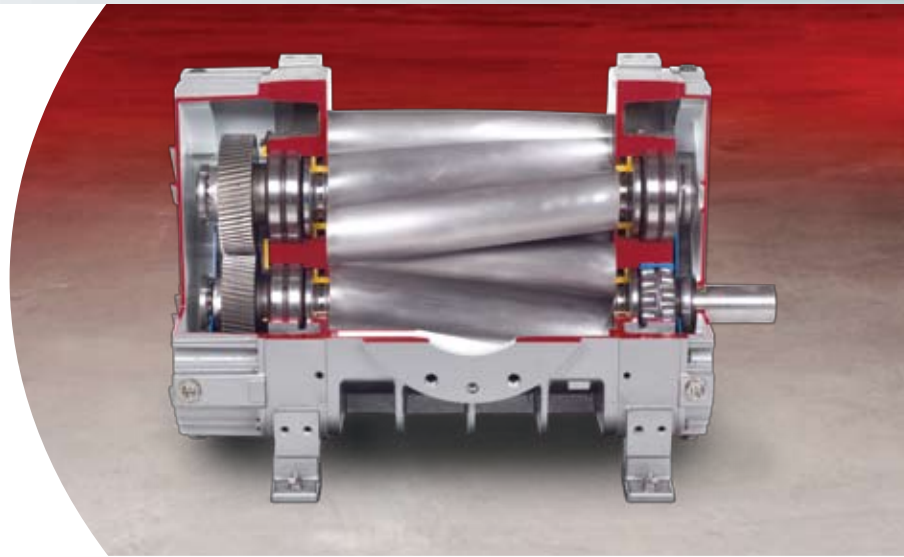
- Tradition: more than 145 years of quality manufacturing with proven results
- Every HeliFlow is machined, assembled and packaged in our state-of-the-art 330,000 sq. ft. ISO 9001 Certified facility in Sedalia, Missouri
- Each HeliFlow is individually tested to meet rigorous performance specifications
- Superior and consistent quality can be found in each HeliFlow as a result of:
 - Continual investment in the training of world-class manufacturing personnel
 - Advanced Flexible Machining Systems (FMS)
 - Quality inspections throughout the entire manufacturing process
- The HeliFlow Warranty
 - 30 months from the date of shipment or
 - 24 months from the date of installation, whichever occurs first



Model 408

HeliFlow Provides

- Pressure to 15 psig
- Vacuum to 16" Hg
- Airflow to 3200 cfm
- 24/30 Warranty



Model 616

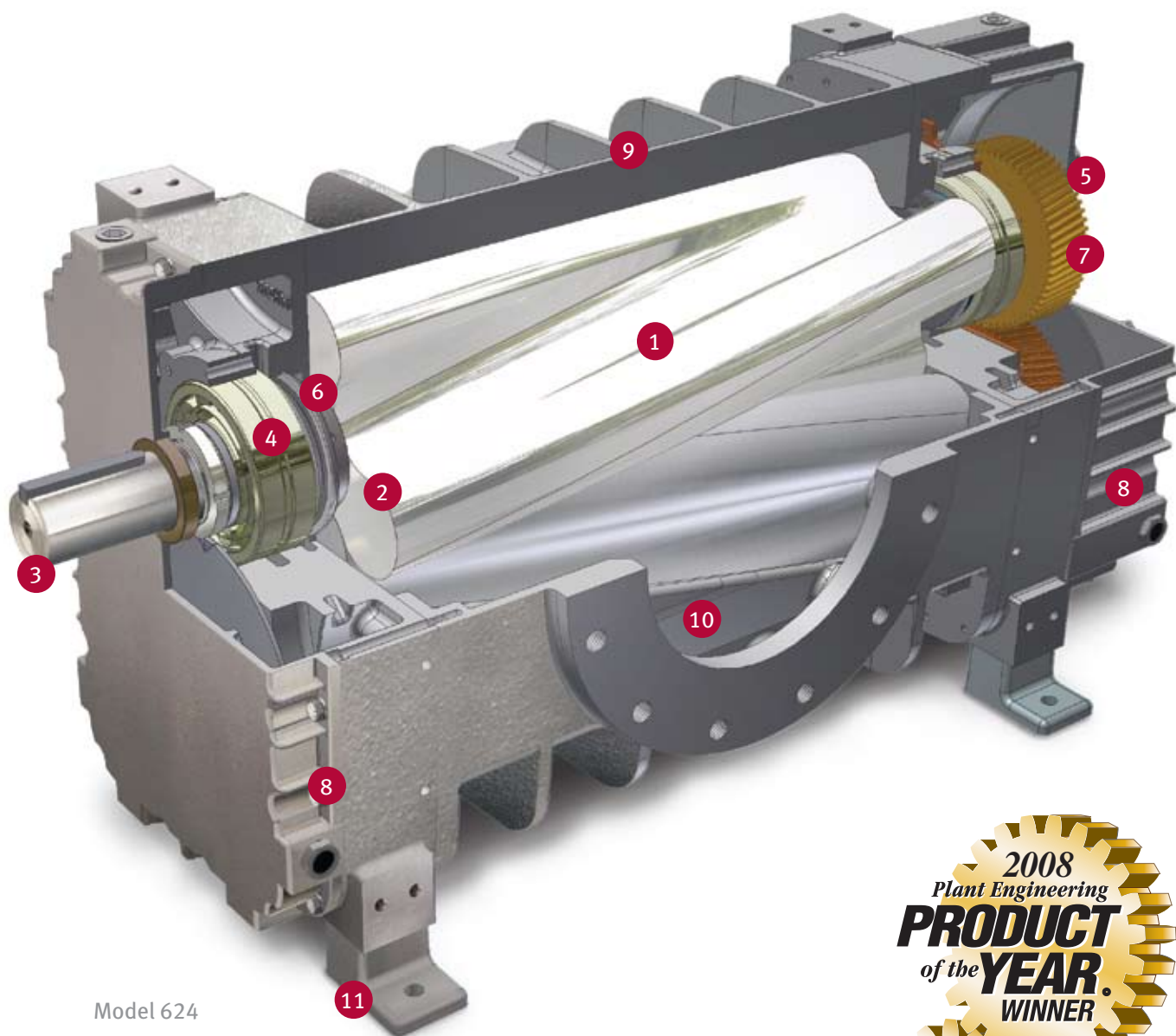
Innovation

- Solid, helical tri-lobe rotors
 - Eliminate the potential for unbalanced rotors caused by build-up of ingested material inside the impellers
- Greater durability with an increased capacity for overhung load
- Refined timing and locking device incorporates a frictional keyless shaft gear locking ring
 - Improves blower life
 - Provides an easily adjustable and releasable mechanical shrink fit on timing gears
 - Allows for easier maintenance
- Advanced piston ring air and oil seals for a dependable supply of oil-free air
- Spherical roller bearings
 - better for misalignment and longevity

Results

- Overhung load limit of 13,500 in-lbs vs. competition of less than 7,999 in-lbs
- Reduced noise levels by 4–7 dba over similar sized, straight-lobe blowers
- Lower pulsations to protect downstream instrumentation and extend blower life
- HeliFlow 624 vs. competitive units
 - Greater temperature rise limits across the blower—250° F v. 230° F
 - Increased pressure capability—12 psig vs. 10 psig
- Single-piece case with integral fins
 - Results in superior structural integrity and minimal torsional twist
 - Provides better heat dissipation to help maintain clearances
- Helical gears for quieter operation (616 and 624)
- Supported by a worldwide network of experienced and trusted sales and service professionals

Raising the Bar Through Innovation



616 & 624 Design Advantages

1 Innovative, proprietary, smooth-running, helical rotor profile significantly reduces pulsations and discharge noise levels for quieter operation

2 Solid rotor design eliminates the potential for vibration caused when hollow rotors become unbalanced due to build-up of ingested material inside the rotor cavities

- Rotors and shafts are machined from high-strength ductile iron and are dynamically balanced to ISO Grade 6.3 as standard

3 Large diameter shafts provide superior overhung load capacity compared to competitive models

4 Oversized spherical roller bearings for superior reliability

- Precision fit bearings mounted on large diameter shafts provide longer blower service life



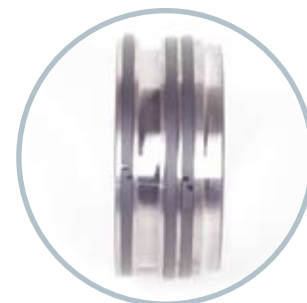
5 Refined timing and gear locking device



- Grip rings expand against the bore of the gear and compress on the shaft for a secure, mechanical shrink fit

6 Advanced piston ring oil and air seals provide leak-free operation

- 1 air and 2 oil seals



7 Helical alloy steel timing gears provide quiet and smooth mechanical operation at all speeds



8 Dual splash lubrication for reduced maintenance intervals and superior durability

9 The single piece cylinder incorporates large external fins for heat dissipation and structural integrity

10 The unique triangular tuned ports and extra cylinder mass provides greater strength and noise attenuation

11 Flexible design allows mounting feet to be attached inward or outward based on installation requirements

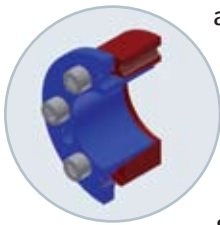
- Offers the ability to connect units in a variety of configurations

406 & 408 Design Advantages

- 1 Reliable dual-splash lubrication

- 2 Refined timing and gear locking device

– Grip rings expand against the bore of the gear and compress on the shaft for a secure, mechanical shrink fit.

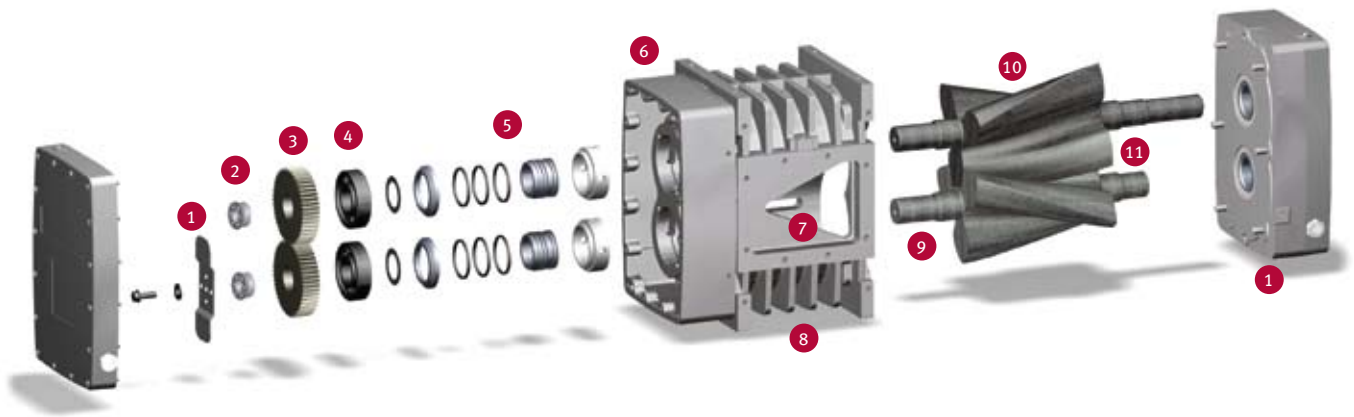


- 3 Alloy steel timing gears

- 4 Oversized, precision fit bearings mounted on large diameter shafts provide longer blower service life and added overhung load capacity

- 5 Advanced piston ring oil and air seals

- 6 The integral cylinder and gear-side head plate incorporate large external fins for greater strength and heat dissipation



- 7 The unique triangular tuned ports and extra cylinder mass aid in reducing noise levels (bolt on adapters are standard and shown below)

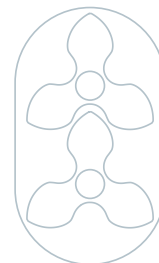


- 8 Flexible design for easy installation

- 9 Rotors and shafts are machined from a single, high-strength ductile iron casting and are dynamically balanced

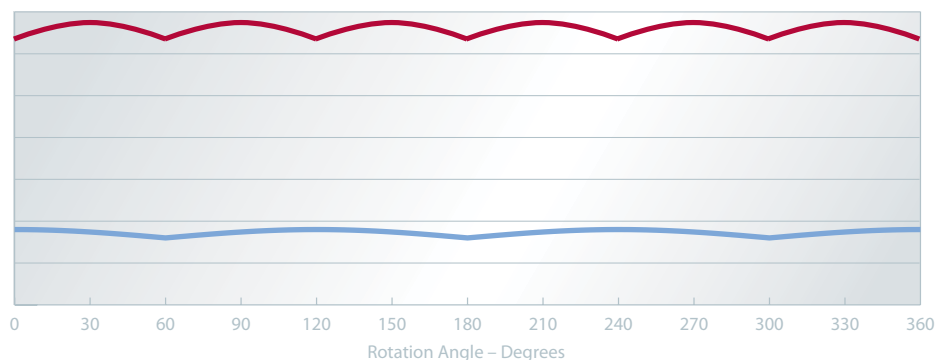
- 10 Innovative, proprietary, smooth-running, helical rotor profile significantly reduces pulsations and discharge noise levels for quieter operation

- 11 Solid rotor design eliminates the potential for vibration caused when hollow rotors become unbalanced due to build-up of ingested material inside the rotor cavities

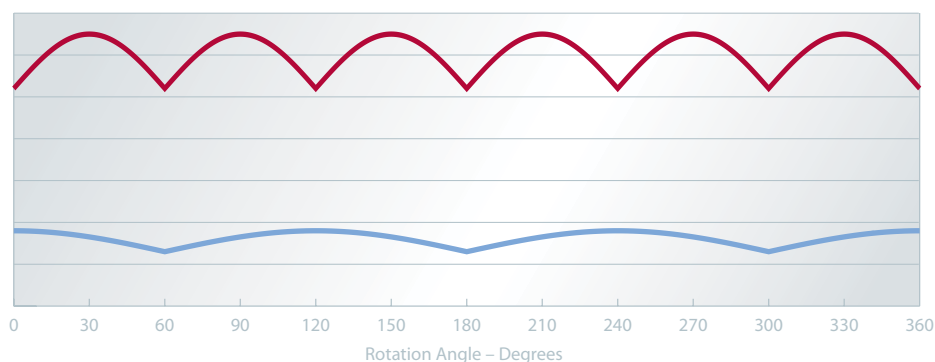


HeliFlow: Lower Pulsation & Noise Levels

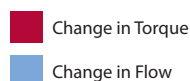
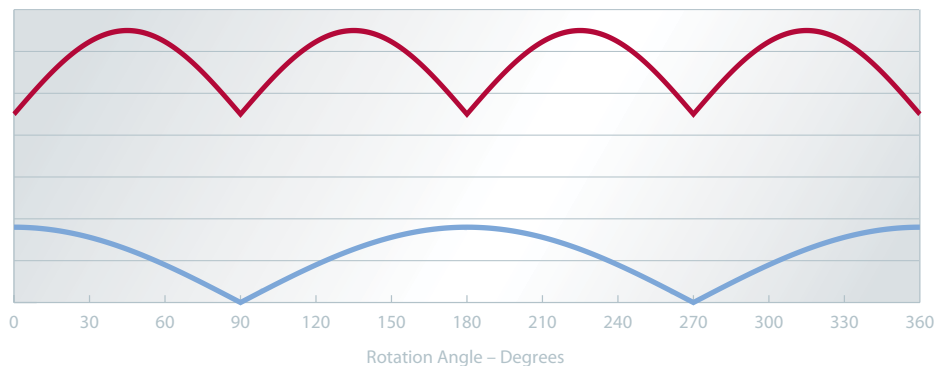
HeliFlow Low Pulse, Helical Tri-Lobe Blower



Typical Tri-Lobe Blower



Typical Dual-Lobe Blower



Lower Noise

Discharge pulsation is the chief contributor to high noise levels. HeliFlow provides the lowest pressure pulse which reduces noise levels by 4–7 dba over similar sized, straight-lobe blowers.

Reduced Pulsations

HeliFlow provides more consistent flow variation, reducing the potential for damage to downstream valves and instrumentation.

Higher Reliability

Discharge pressure pulsation causes axial thrust and higher variations in torque resulting in reduced bearing life. The HeliFlow smooth pulse operation extends the life of the blower.



HeliFlow is Innovation

| Product Design | HeliFlow 616 & 624 | Competitor A | Competitor B | HeliFlow Advantages |
|------------------------------|---|--|------------------------|---|
| Cylinder & Rib Design | One piece with integral ribs | One piece without ribs | One piece without ribs | <ul style="list-style-type: none"> Noise & pulsation dampening Improves heat dissipation Reduces stress on cylinder Ensures better tip clearance accuracy |
| Drive/Gear End Bearings | Spherical roller | Cylindrical roller (drive) Double row ball (gear) | Cylindrical roller | <ul style="list-style-type: none"> Increases bearing life Better equipped to handle radial & axial loads commonly caused by misaligned V-belt drives |
| Gear Type | Helical | Helical | Spur | <ul style="list-style-type: none"> Quiet & smooth mechanical operation Reduces backlash Allows tighter clearances |
| Gear Attachments | Grip rings | Keyed interference fit | Taper gear fit | <ul style="list-style-type: none"> Improves reliability and eliminates timing loss Easier to rebuild Easily adjustable and release-able mechanical shrink fit |
| Rotor Profile | Solid, Helical Tri-Lobe | Hollow, Dual-Lobe | Hollow, Dual-Lobe | <ul style="list-style-type: none"> Reduces noise and pulsations Improves blower life Eliminates the potential for unbalanced rotors due to product contamination |
| Oil Seals | Two piston ring seals with slinger and groove | Lip seal | Lip seal | <ul style="list-style-type: none"> Superior oil sealing Dependable supply of oil-free air Extends maintenance intervals |
| Max. Overhung Limit (in-lbs) | 13500 | Less than 7999 | Less than 7999 | <ul style="list-style-type: none"> More resistant to overhung loads Will not require a jack shaft at higher HP |
| Pressure Capability | 624 = 12 psig | 10 | 10 | <ul style="list-style-type: none"> Increased pressure capability |
| Temperature Rise Limits | 624 = 250 F | 230 | 230 | <ul style="list-style-type: none"> Improved ability to withstand extreme operating conditions |
| Approximate Weight | 616 = 865 lbs 624 = 1145 lbs | 650 775 | 650 775 | <ul style="list-style-type: none"> Extra cylinder mass for reduced noise and pulsations More robust design |

The Perfect Fit

For Your Industry Needs

| Industry | Application |
|------------------------|---|
| Aquaculture | Aeration |
| Cement & Lime | Fluidization & Conveying |
| Chemical | Vacuum Processing & Conveying |
| Dairy | Automated Milking |
| Dry Bulk Hauling | Trailer Unloading & Aeration |
| Environmental Services | Sewer Cleaning & Portable Restroom Services |
| Industrial | Material Vacuuming |
| Milling & Baking | Blending & Conveying |
| Power Generation | Fly Ash Conveying & Aeration |
| Pulp & Paper | Chip Conveying & Process Vacuum |
| Resin & Plastic | Processing & Conveying |
| Vacuum Excavation | Potholing & Slurry Recovery |
| Wastewater | Aeration & Backwashing |

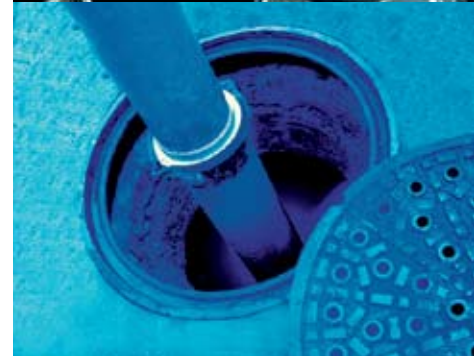
The table above illustrates industries which depend upon the HeliFlow Industrial Series to deliver clean, oil-free air to a wide range of global applications.



Model 624

New Product Development

With a commitment to research and development, Gardner Denver provides our customers with products which uphold our tradition of quality and proven results. As part of the new product development process, the HeliFlow Industrial Series has passed extensive design reviews as well as performance, endurance and sound testing requirements.



406 & 408

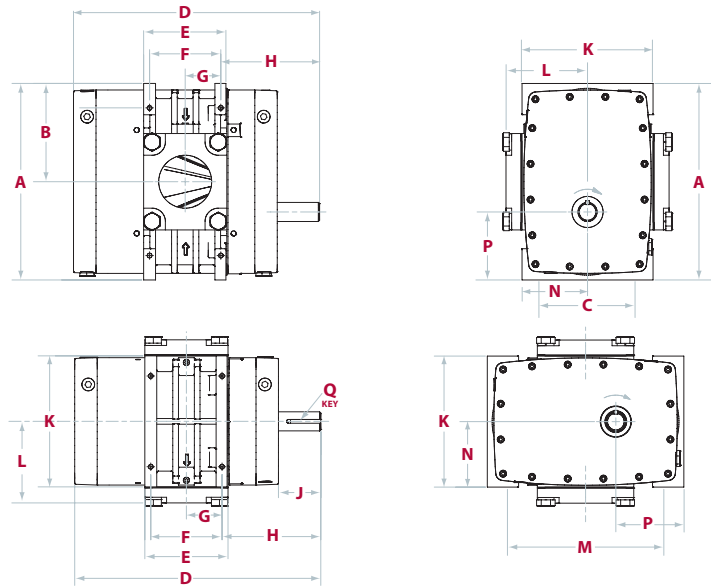
Dimensional & Performance Data

| MODEL | WT. | SHAFT DIAM. | A | B | C | D | E | F | G | H | J | K | L | M | N | P | Q |
|--------|-----|----------------|------|-----|-----|-------|------|------|------|------|-----|------|------|------|------|-----|-------------------|
| HF 406 | 173 | 1.25 | 13.0 | 6.5 | 6.0 | 16.27 | 5.5 | 4.71 | 2.36 | 6.53 | 2.8 | 8.66 | 5.39 | 9.76 | 4.33 | 4.5 | 0.25 x 0.25 x 2.0 |
| HF 408 | 201 | 1.25 | 13.0 | 6.5 | 6.0 | 18.77 | 7.94 | 7.21 | 3.61 | 6.53 | 2.8 | 8.66 | 6.36 | 9.76 | 4.33 | 4.5 | 0.25 x 0.25 x 2.0 |

Dimensions shown in inches. Weights are in pounds and approximate (packaging materials included). Dimensions for installation purposes provided upon request.
 406 = 3" NPT & 408 = 4" NPT
 Mounting holes 3/8-16 UNC



Models 406, 408



| PRESSURE | MODEL | RPM | 5 PSIG | | 7 PSIG | | 10 PSIG | | 12 PSIG | | 15 PSIG | |
|----------|--------|--------------------------------------|---------------------------------|------------------------------------|---------------------------------|-------------------------------------|---------------------------------|--------------------------------------|---------------------------------|--------------------------------------|-------------------|----------------------|
| | | | CFM | BHP | CFM | BHP | CFM | BHP | CFM | BHP | CFM | BHP |
| | HF 406 | 1760 2190 2620 3600 4000 | 147 198 248 357 399 | 4.7 6.0 7.6 12.0 14.2 | 136 187 236 345 387 | 6.4 8.2 10.3 15.7 18.3 | 120 171 220 328 370 | 9.0 11.5 14.3 21.3 24.5 | 111 161 211 318 360 | 10.8 13.8 17.0 25.1 28.7 | 198 305 346 | 21.0 30.7 35.0 |
| VACUUM | HF 408 | 1760 2190 2620 3600 4000 | 223 297 369 529 592 | 7.1 9.2 11.5 16.8 19.2 | 211 284 356 515 577 | 9.7 12.5 15.4 22.3 25.3 | 193 265 336 493 555 | 13.4 17.2 21.1 30.3 34.2 | 182 253 324 479 541 | 15.7 20.2 24.8 35.5 40.0 | | |

| VACUUM | MODEL | RPM | 10" Hg | | 12" Hg | | 14" Hg | | 16" Hg | |
|--------|--------|--------------------------------------|---------------------------------|------------------------------------|---------------------------------|------------------------------------|---------------------------------|-------------------------------------|--------------------------|------------------------------|
| | | | CFM | BHP | CFM | BHP | CFM | BHP | CFM | BHP |
| | HF 406 | 1760 2190 2620 3600 4000 | 135 187 236 345 387 | 4.2 5.5 7.0 11.0 13.0 | 125 176 226 333 375 | 5.0 6.5 8.2 12.7 14.8 | 113 164 214 321 362 | 5.8 7.5 9.4 14.4 16.7 | 152 201 308 349 | 8.5 10.6 16.1 18.6 |
| VACUUM | HF 408 | 1760 2190 2620 3600 4000 | 217 292 364 523 584 | 6.3 8.1 10.1 15.3 17.7 | 204 278 351 511 573 | 7.6 9.6 11.8 17.5 20.1 | 189 264 337 497 560 | 8.9 11.1 13.6 19.8 22.6 | 247 321 482 545 | 12.8 15.4 22.1 25.1 |

Performance based on inlet air at standard temperature of 68°F, an ambient pressure of 14.7 psia and 36% relative humidity.
 For performance at non-standard conditions, contact your authorized Gardner Denver representative.

616 & 624

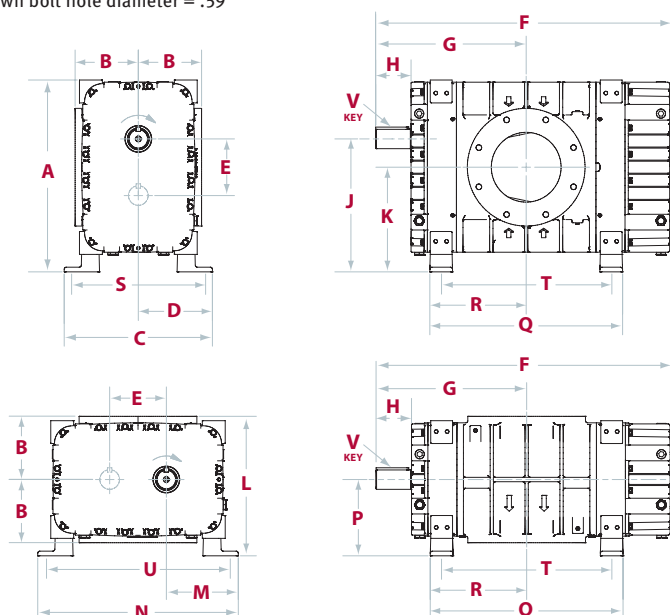
Dimensional & Performance Data

| MODEL | WT. | SHAFT DIAM. | A | B | C | D | E | F | G | H | J | K | L | M | N | P | Q | R | S | T | U | V |
|--------|------|-------------|------|------|------|-----|-----|------|-------|------|-------|------|------|------|------|------|-------|-------|------|------|------|------------------|
| HF 616 | 866 | 2.25 | 22.0 | 7.25 | 17.0 | 8.5 | 6.5 | 34.1 | 17.27 | 4.07 | 15.25 | 12.0 | 16.0 | 8.25 | 23.0 | 8.75 | 22.11 | 11.05 | 15.0 | 19.5 | 21.0 | 0.5 x 0.5 x 3.75 |
| HF 624 | 1144 | 2.25 | 22.0 | 7.25 | 17.0 | 8.5 | 6.5 | 42.1 | 21.27 | 4.07 | 15.25 | 12.0 | 16.0 | 8.25 | 23.0 | 8.75 | 30.11 | 15.05 | 15.0 | 27.5 | 21.0 | 0.5 x 0.5 x 3.75 |

Dimensions shown in inches. Weights are in pounds and approximate. Dimensions for installation purposes provided upon request.

616 = 8" flange & 624 = 10" flange (150# flange connections)

Hold down bolt hole diameter = .59"



Model 624

| PRESSURE | MODEL | RPM | 5 PSIG | | 7 PSIG | | 10 PSIG | | 12 PSIG | | 15 PSIG | |
|----------|-------|------|--------|------|--------|-------|---------|-------|---------|-------|---------|-------|
| | | | CFM | BHP | CFM | BHP | CFM | BHP | CFM | BHP | CFM | BHP |
| | | | | | | | | | | | | |
| HF 616 | | 1000 | 444 | 16.3 | 405 | 21.7 | 353 | 30.1 | 323 | 35.8 | | |
| | | 1600 | 880 | 25.4 | 840 | 34.7 | 788 | 48.7 | 757 | 58.3 | 718 | 72.9 |
| | | 2200 | 1305 | 36.3 | 1265 | 49.3 | 1212 | 69.1 | 1181 | 82.5 | 1141 | 102.7 |
| | | 2800 | 1720 | 48.9 | 1680 | 65.7 | 1626 | 91.2 | 1594 | 108.4 | 1553 | 134.3 |
| | | 3300 | 2058 | 60.8 | 2018 | 80.7 | 1963 | 111.0 | 1931 | 131.3 | 1889 | 162.0 |
| HF 624 | | 1000 | 673 | 23.2 | 620 | 31.5 | 547 | 44.5 | 502 | 53.6 | | |
| | | 1600 | 1310 | 37.7 | 1259 | 51.8 | 1187 | 73.5 | 1144 | 88.4 | | |
| | | 2200 | 1947 | 54.3 | 1896 | 74.1 | 1827 | 104.5 | 1785 | 125.1 | | |
| | | 2800 | 2581 | 72.7 | 2532 | 98.4 | 2464 | 137.4 | 2423 | 163.7 | | |
| | | 3300 | 3109 | 89.6 | 3060 | 120.0 | 2994 | 166.3 | 2955 | 197.4 | | |

| VACUUM | MODEL | RPM | 10" Hg | | 12" Hg | | 14" Hg | | 16" Hg | |
|--------|-------|------|--------|------|--------|------|--------|-------|--------|-------|
| | | | CFM | BHP | CFM | BHP | CFM | BHP | CFM | BHP |
| | | | | | | | | | | |
| HF 616 | | 1000 | 469 | 15.8 | 419 | 18.5 | 358 | 21.2 | 285 | 23.9 |
| | | 1600 | 904 | 25.8 | 863 | 30.1 | 811 | 34.4 | 746 | 38.8 |
| | | 2200 | 1335 | 36.7 | 1302 | 42.7 | 1258 | 48.8 | 1202 | 54.8 |
| | | 2800 | 1760 | 48.8 | 1737 | 56.4 | 1701 | 64.1 | 1653 | 71.9 |
| | | 3300 | 2111 | 59.6 | 2095 | 68.7 | 2066 | 77.7 | 2025 | 86.9 |
| HF 624 | | 1000 | 657 | 23.8 | 608 | 27.7 | 563 | 31.2 | 521 | 34.5 |
| | | 1600 | 1341 | 38.4 | 1300 | 45.0 | 1262 | 51.4 | 1227 | 57.5 |
| | | 2200 | 2014 | 53.8 | 1980 | 63.3 | 1949 | 72.4 | 1922 | 81.3 |
| | | 2800 | 2676 | 70.0 | 2649 | 82.4 | 2626 | 94.4 | 2605 | 106.1 |
| | | 3300 | 3218 | 84.3 | 3198 | 98.9 | 3181 | 113.3 | 3167 | 127.3 |

Performance based on inlet air at standard temperature of 68°F, an ambient pressure of 14.7 psia and 36% relative humidity.

For performance at non-standard conditions, contact your authorized Gardner Denver representative.



Quality Promise

- Gardner Denver industrial blowers are manufactured under rigid ISO 9001 quality standards
- All models are thoroughly tested to meet the highest performance standards for unequaled service life under the most severe operating conditions



Genuine Gardner Denver Parts and Lubricants

- Maintain the Gardner Denver performance advantage and reliability with Genuine GD Replacement Parts available through authorized sales and service representatives
- Protect your Gardner Denver investment with AEON® PD, the only lubricant specially formulated for all blowers in any environment

– Now available:

» AEON® PD-XD (extreme duty)

» Designed specifically for high ambient and high discharge temperature applications

– Also available:

» AEON® PD (standard applications)

» AEON® PD-FG (food grade)

Gardner Denver®

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Member



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