### **DuroFlow® Industrial Series**

Positive Displacement Blowers & Vacuum Pumps









### The Gardner Denver DuroFlow® Family of Products

For nearly fifty years, Gardner Denver DuroFlow positive displacement blowers/vacuum pumps have combined leading-edge technology and on-the-job experience to continuously deliver enhanced designs and improved performance.

#### **At-A-Glance Features**

- Each model delivers clean, oil-free air to a wide range of industrial applications
- World-class engineering and design
- Manufactured under rigid ISO 9001 standards by quality craftspersons
- Exhaustively tested to meet strict performance criteria to ensure unequaled service life under the most severe operating conditions
- Available in the 30, 45 & 70 Series with various configurations and rotor lengths
- Horizontal or vertical mounting configuration available for each blower
- Supported by a worldwide network of trained professionals and backed by a manufacturer's warranty
  - 18 months from the date of shipment or
  - 12 months from the date of installation, whichever occurs first



#### **Durable**

- Oversized bearings for added support and greater durability
  - Gear-end bearings support rotor shafts, while drive-end double-row angular contact ball bearings fix the rotor position
  - Prevents destructive axial rotor movement commonly caused by misaligned V-belt drives
- Durable single-piece cast iron cylinder with integral ribs<sup>1</sup>
  - Provides greater strength and rigidity
  - Ribs improve heat dissipation and prevent distortion that can affect internal clearances and reduce performance
- Innovative rotor/shaft design machined from a single, high-strength ductile iron casting and dynamically balanced
  - Assures extra strength and rigidity to handle maximum loads on a continuous basis without fatigue, deflection or vibration
- Solid rotors
   (30 & 45 Series only)
  - Eliminates potential for vibration caused when hollow rotors become unbalanced due to build-up of ingested material inside the rotor cavities

### DuroFlow = Durable, Reliable & Efficient

### The DuroFlow Product Line Delivers

- Pressure to 15 psig
- Vacuum to 16" Hg
- Airflow to 4282 cfm

Experience Proven Results with Gardner Denver — the Leader in Durability, Reliability and Efficiency

#### Reliable

- Dual Splash Lubrication
  - Provides superior gear and bearing lubrication for longer life at all operating conditions
  - Reduces maintenance
- Advanced oil and air seal designs<sup>2</sup>
  - Piston rings and flinger maximize seal life in continuous, severe duty applications
  - Provides leak-free operation
  - O-rings placed under the drive shaft wear sleeve creates better sealing and prolongs life of rotors
- Timing gears are mounted on precision machined shaft splines
  - Assures secure non-slip rotor timing even under surge conditions or high torque start-up



#### **Efficient**

- Helical timing gears, precision machined from alloy steel forgings
  - Guarantees quiet and smooth mechanical operation at all speeds
- Innovative rotor profile with serrated tips 2
  - Increases blower efficiency and air sealing
  - Reduces power consumption and cooler operating temperature
- Noise Reduction
  - Extra cylinder mass and progressive porting aid in reducing noise
- Vertical or horizontal mounting configuration with each blower
  - Provides greater flexibility for installing into any new or existing system

### **Applications to Meet 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 DuroFlow Industrial Series to deliver clean, oil-free air to a wide range of global applications.



### Reach Higher with the DuroFlow 45 Series

Product Design	DuroFlow 45 Series	Competitor A	Competitor B	DuroFlow Advantages
Models	5 sizes	4 sizes	4 sizes	Greater flow capacity
Cylinder Design <sup>1</sup>	One piece cylinder	Two piece cylinder	One piece cylinder	<ul> <li>More rigid and durable</li> <li>Noise &amp; pulsation dampening</li> <li>Ensures better tip clearance accuracy</li> <li>Easier assembly / disassembly</li> </ul>
Cylinder Rib Design <sup>1, 2</sup>	Integral cylinder ribs	Minimal cylinder ribs	Minimal cylinder ribs	<ul><li>Improves heat dissipation</li><li>Reduces torsion on cylinder</li></ul>
Drive End Bearings <sup>1</sup>	Oversized double row ball angular contact (drive & non-drive shafts)	Single row ball (non-drive shaft)	Cylindrical roller	<ul> <li>Increases bearing life</li> <li>Better equipped to handle radial &amp; axial loads commonly caused by misaligned V-belt drives</li> </ul>
Dual Splash Lubrication <sup>1</sup>	Common oil sump	Separate oil reservoirs	Separate oil reservoirs	• Simpler maintenance
Gear End Bearings	Roller bearing	Single row ball	Double row ball	• Increases bearing life
Gear Type <sup>1</sup>	Helical	Straight spur	Helical	<ul><li> Quiet &amp; smooth mechanical operation</li><li> Reduces backlash</li></ul>
Gear Attachments <sup>1</sup>	Spline gear fit	Taper gear fit	Keyed interference fit	Eliminates timing loss and improves reliability
Impeller Tips	Serrated	Radius	Radius	<ul><li>Improves performance</li><li>Reduces power consumption</li><li>Cooler operating temperatures</li></ul>
Main Air Seal	Piston ring	Piston ring	Piston ring	<ul><li>Longer seal life</li><li>Less wear</li></ul>
Main Oil Seal	Two piston ring seals with slinger and groove	Lip seal	Lip seal	• Superior oil sealing
Shaft Seal <sup>1</sup> & Seal Surface	Viton lip seal with o-rings wear sleeve	Viton lip seal on shaft	Lip seal on shaft	<ul><li>Improves sealing method</li><li>Extended shaft life</li></ul>

<sup>&</sup>lt;sup>1</sup> Also standard features on the 30 and 70 Series

<sup>&</sup>lt;sup>2</sup> Model sizes 4509, 4512 & 4518

### **45 Series Design Advantages**



### Dual Splash Lubrication

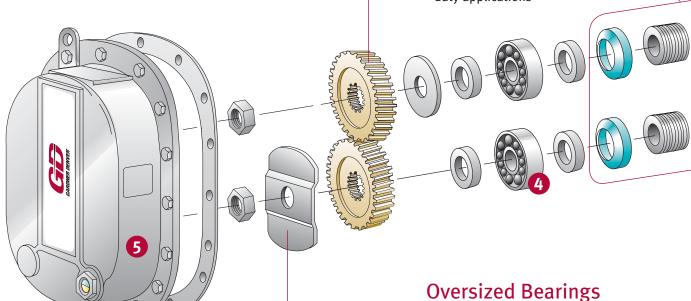
 Reliable splash lubrication at both gear and drive ends for longer product life (5)

### Shaft Splines Assure Non-Slip Rotor Timing

- Helical timing gears are mounted on shaft splines (6)
- Provides quiet and smooth mechanical operation at all speeds

### Improved Design Provides Leak-Free Operation

- Advanced Oil and Air Seals
- Piston rings and flinger maximize seal life in continuous, severe duty applications



### **Efficient Lubrication**

 Slinger ensures lubricant is distributed to gears and bearings

# Oversized Bearings for Added Support and Greater Durability

- Drive-end double-row angular contact ball bearings fix the rotor position (3)
- Gear-end roller bearings support each shaft (4)

### **Striving for More**

### Solid Rotors Eliminate Potential for Vibration

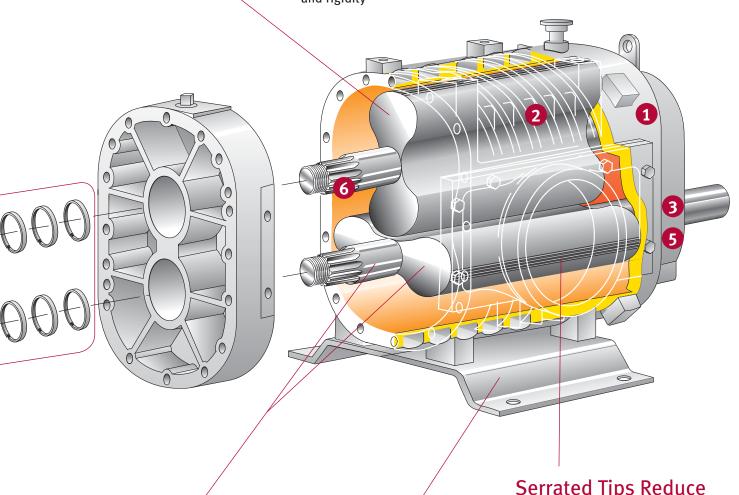
 Hollow rotors can become unbalanced due to build-up of ingested material inside the rotor

### Single Piece Cylinder Prevents Distortion (1)

- Heavy-duty reinforced cast iron cylinder retains internal clearances
- Provides greater strength and rigidity

## Cooler Operating Temperatures

 Integral ribs improve heat dissipation and improve performance (2)



## **Durable Rotors & Shafts**

- Machined from a single, highstrength ductile iron casting
- Dynamically balanced

## Vertical or Horizontal Mounting Configuration

- Flex-Mount<sup>™</sup> design standard with each blower
- Flexibility for installing into any new or existing system

### Serrated Tips Reduce Power Consumption

- Innovative rotor profile provides tighter clearances
- More air flow with less horsepower
- Precision machined with advanced CNC milling technology

### **Dimensional Data**

### 30 Series

Model	WT.	Port Size Conn.	Shaft Diam.	А	В	С	D	E	F	G	н	J	К	L	M	N	Р	Q	R	S	Т
3004	90	2.5" NPT	1.00	17.20	11.62	8.91	2.06	8.82	12.50	4.00	9.00	4.00	8.06	4.50	6.56	8.36	1.50	4.41	6.25	2.00	4.50
3006	110	3" NPT	1.00	19.20	11.62	8.81	2.06	8.82	12.50	5.50	9.00	5.50	8.06	4.50	6.56	9.36	1.50	4.31	6.25	2.75	4.50

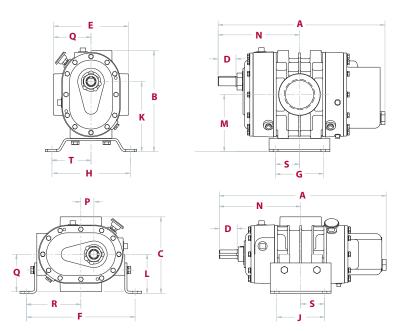
Weights are in pounds and include shipping cartons or pallets.

All dimensions shown in inches.

30 Series Mounting Bolt Hole Diameter = .56 inches.



30 Series Model 3004



### 70 Series

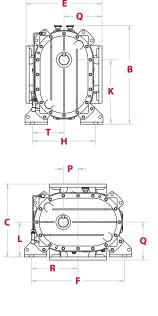
Model	WT.	Port Size Conn.	Shaft Diam.	А	В	С	D	E	F	G	Н	J	К	L	M	N	Р	Q	R	S	Т
7009	740	6" NPT	2.50	32.42	23.62	17.25	5.68	18.00	22.00	12.50	15.00	2.75	15.25	8.25	11.75	17.49	3.50	9.00	11.00	6.25	7.50
7012	850	8" Flange	2.50	35.43	23.62	17.25	5.68	18.00	22.00	15.50	15.00	2.75	15.25	8.25	11.75	18.99	3.50	9.00	11.00	7.75	7.50
7015	940	8" Flange	2.50	38.44	23.62	17.25	5.64	18.00	22.00	18.50	15.00	2.75	15.25	8.25	11.75	20.47	3.50	9.00	11.00	9.25	7.50
7018	990	10" Flange	2.50	41.44	23.62	17.25	5.64	18.00	22.00	21.50	15.00	2.75	15.25	8.25	11.75	21.97	3.50	9.00	11.00	10.75	7.50
7023	1100	12" Flange	2.50	46.44	23.62	17.25	5.62	18.00	22.00	26.50	15.00	2.75	15.25	8.25	11.75	24.47	3.50	9.00	11.00	13.25	7.50
7028	1200	12" Flange	2.50	51.44	23.62	17.25	5.62	18.00	22.00	31.50	15.00	2.75	15.25	8.25	11.75	26.97	3.50	9.00	11.00	15.75	7.50

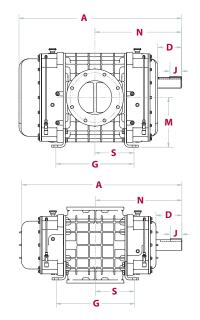
Weights are in pounds and include shipping cartons or pallets.

70 Series Mounting Bolt Hole Diameter = .88 inches.



70 Series Model 7015

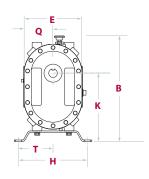


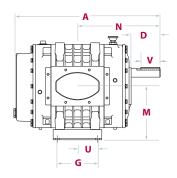


#### **45 Series**

Model	WT.	Port Size Conn.	Shaft Diam.	А	В	С	D	Ε	F	G	н	J	К	L	M	N	Р	Q	R	S	Т	U	٧
4504	190	4" NPT	1.44	18.01	17.54	11.88	3.43	9.75	17.50	4.87	11.50	5.00	11.35	5.62	9.10	10.05	2.25	4.87	8.75	3.50	5.75	2.44	3.00
4506	220	4" NPT	1.44	21.51	17.54	11.88	4.93	9.75	17.50	6.87	11.50	7.00	11.35	5.62	9.10	12.55	2.25	4.87	8.75	3.50	5.75	3.44	3.50
4509	260	4" or 5" NPT	1.44	24.45	17.54	11.88	4.93	9.75	17.50	6.87	11.50	7.00	11.35	5.62	9.10	14.03	2.25	4.87	8.75	3.50	5.75	3.44	3.50
4512	300	6" NPT	1.44	27.51	17.54	11.88	4.93	9.75	17.50	9.87	11.50	10.00	11.35	5.62	9.10	15.55	2.25	4.87	8.75	5.00	5.75	4.94	3.50
4518	460	8" Flange	1.44	33.51	17.54	11.88	4.93	13.00	17.50	15.87	11.50	16.00	11.35	5.62	9.10	18.53	2.25	6.50	8.75	8.00	5.75	7.94	3.50

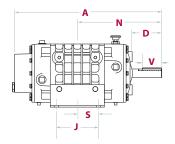
Weights are in pounds and include shipping cartons or pallets. All dimensions shown in inches. 45 Series Mounting Bolt Hole Diameter = .69 inches. 4518 dimensional variations available upon request.







45 Series Model 4509





Model 4518

### Flex-Mount<sup>™</sup> Design Provides **Maximum Installation Versatility**

- Flex-Mount<sup>™</sup> Design and available porting connectors provide installation flexibility
- Assures interchangeability of existing installed DuroFlow models or compatibility as replacement for most competitive models
- Reduces inventory requirements due to machine flexibility



### **Pressure Performance Data**

### 30 Series

MODEL	RPM	4 P	SIG	6 P	SIG	8 P	SIG	10	PSIG	12 F	PSIG	15	PSIG
MODEL	RPINI	CFM	ВНР	CFM	ВНР	CFM	ВНР	CFM	ВНР	CFM	ВНР	CFM	ВНР
3004	2,950 3,550 4,000	94 121 141	2.5 3.1 3.6	85 112 133	3.7 4.5 5.2	78 105 125	4.8 5.9 6.8	72 99 119	6.0 7.3 8.3	66 93 113	7.1 8.7 9.9	85 105	10.8 12.3
3006	2,950 3,550 4,000	146 186 217	3.7 4.6 5.2	133 174 205	5.4 6.7 7.6	123 164 194	7.2 8.8 10.0	114 154 185	8.9 10.9 12.4	105 146 177	10.7 13.0 14.7	135 165	16.1 18.3

### **45 Series**

MODEL	DDM	4 P	SIG	6 P	SIG	8 P	SIG	10 F	PSIG	12 F	PSIG	15 F	PSIG
MODEL	RPM	CFM	ВНР	CFM	ВНР	CFM	ВНР	CFM	ВНР	CFM	ВНР	CFM	ВНР
4504	1,750 2,950 4,000	137 271 389	3.7 7.3 11.6	123 258 375	5.4 10.2 15.5	112 247 364	7.2 13.0 19.4	102 237 354	8.9 15.9 23.3	93 228 345	10.6 18.8 27.2	216 333	23.1 33.1
4506	1,750 2,950 4,000	214 415 592	5.5 10.5 16.3	196 397 574	8.1 14.8 22.2	181 382 559	10.6 19.1 28.0	167 369 545	13.2 23.5 33.9	155 357 533	15.8 27.8 39.8	340 517	34.3 48.5
4509	1,750 2,950 4,000	324 626 891	8.4 16.3 25.8	297 600 864	12.2 22.7 34.6	275 577 842	16.1 29.2 43.4	255 558 822	19.9 35.7 52.1	238 540 805	23.8 42.2 60.9	516 781	51.9 74.1
4512	1,750 2,950 4,000	454 858 1,210	11.0 21.0 32.6	424 828 1,180	16.2 29.6 44.4	399 802 1,155	21.3 38.3 56.1	377 780 1,133	26.4 46.9 67.8	357 760 1,113	31.5 55.5 79.5	329 732 1,085	39.2 68.5 97.1
4518	1,750 2,950 4,000	696 1,300 1,830	16.3 30.2 45.8	654 1,259 1,788	24.0 43.1 63.3	618 1,223 1,752	31.7 56.1 80.9	587 1,192 1,721	39.3 69.1 98.5				

### 70 Series

MODEL	DDM	4 P	SIG	6 P	SIG	8 P	SIG	10 F	PSIG	12 F	PSIG	15 F	PSIG
MODEL	RPM	CFM	ВНР	CFM	ВНР	CFM	ВНР	CFM	ВНР	CFM	ВНР	CFM	ВНР
7009	1,500 1,800 2,650	622 799 1,300	15.8 19.1 29.3	563 740 1,241	23.5 28.4 42.9	513 690 1,191	31.2 37.7 56.5	469 646 1,147	38.9 46.9 70.2	429 606 1,108	46.7 56.2 83.8	552 1,054	70.1 104.3
7012	1,500 1,800 2,650	853 1,090 1,762	21.0 25.4 38.5	779 1,016 1,687	31.4 37.8 56.8	716 953 1,624	41.7 50.2 75.0	660 897 1,569	52.0 62.6 93.3	610 847 1,519	62.4 75.0 111.5	779 1,451	93.6 138.9
7015	1,500 1,800 2,650	1,088 1,382 2,215	26.0 31.4 47.3	1,002 1,296 2,129	38.8 46.8 69.9	929 1,223 2,056	51.6 62.2 92.6	866 1,160 1,993	64.5 77.5 115.2	808 1,102 1,935	77.3 92.9 137.9	1,024 1,857	116.0 171.8
7018	1,500 1,800 2,650	1,322 1,676 2,679	31.2 37.7 56.5	1,221 1,575 2,578	46.7 56.2 83.8	1,136 1,490 2,493	62.1 74.7 111.1	1,061 1,415 2,418	77.5 93.2 138.3	993 1,308 2,310	93.0 111.8 165.6	1,211 2,214	139.5 206.5
7023	1,500 1,800 2,650	1,709 2,162 3,370	41.9 51.5 80.8	1,578 2,037 3,245	61.6 75.2 115.0	1,479 1,932 3,140	81.4 98.9 149.2	1.386 1,839 3,047	101.1 122.6 183.5	1,303 1,756 2,964	120.9 146.3 217.7		
7028	1,500 1,800 2,600	2,094 2,646 4,118	51.4 63.4 100.3	1,944 2,496 3,968	75.4 92.2 142.0	1,818 2,370 3,842	99.5 121.1 183.8	1,707 2,259 3,731	123.6 150.0 225.5				

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.

### **Vacuum Performance Data**

### 30 Series

MODEL	RPM	4"	Hg	6"	Hg	8"	Hg	10"	Hg	12'	'Hg	14"	' Hg	15"	' Hg
MODEL	KPIVI	CFM	ВНР	CFM	ВНР										
3004	2,950 3,550 4,000	104 131 151	1.3 1.7 2.0	96 123 143	1.9 2.4 2.8	88 115 135	2.5 3.1 3.6	80 107 127	3.0 3.8 4.4	72 99 119	3.6 4.5 5.1	90 110	5.1 5.9	106	6.3
3006	2,950 3,550 4,000	159 200 231	1.9 2.4 2.8	148 189 219	2.8 3.5 4.0	137 178 208	3.6 4.5 5.2	126 167 197	4.5 5.5 6.3	114 155 186	5.4 6.6 7.5	102 142 173	6.2 7.6 8.7	136 166	8.1 9.2

### **45 Series**

MODEL	DDM	4"	Hg	6"	Hg	8"	Hg	10"	Hg	12"	Hg	14"	Hg	15"	Hg	16"	'Hg
MODEL	RPM	CFM	ВНР	CFM	ВНР	CFM	ВНР	CFM	ВНР	CFM	ВНР	CFM	ВНР	CFM	ВНР	CFM	ВНР
4504	1,750 2,950 4,000	151 286 403	2.0 4.2 7.1	139 273 391	2.8 5.5 8.8	127 262 379	3.6 6.8 10.5	115 250 367	4.4 8.1 12.1	103 237 355	5.2 9.4 13.8	224 341	10.7 15.5	334	16.3	326	17.1
4506	1,750 2,950 4,000	233 435 611	2.9 5.8 9.7	217 418 595	4.1 7.8 12.3	201 402 579	5.3 9.8 14.9	185 386 563	6.6 11.8 17.5	168 369 546	7.8 13.8 20.0	351 527	15.8 22.6	341 517	16.8 23.9	330 507	17.8 25.2
4509	1,750 2,950 4,000	352 655 919	4.4 9.2 15.7	328 631 895	6.2 12.2 19.5	305 607 872	8.1 15.1 23.3	281 584 848	9.9 18.1 27.0	257 559 824	11.7 21.1 30.8	532 797	24.0 34.6	517 782	25.5 36.5	502 766	27.0 38.4
4512	1,750 2,950 4,000	487 890 1,243	5.7 11.7 19.5	459 863 1,215	8.2 15.7 24.6	433 836 1,189	10.6 19.7 29.8	406 809 1,162	13.1 23.7 34.9	378 781 1,134	15.6 27.7 40.0	347 750 1,103	18.0 31.7 45.2	734 1,087	33.7 47.8	716 1,069	35.7 50.3
4518	1,750 2,950 4,000	741 1,346 1,875	8.3 16.4 26.5	703 1,308 1,837	12.0 22.5 34.4	666 1,271 1,800	15.8 28.6 42.3	628 1,233 1,762	19.5 34.7 50.2	589 1,194 1,723	23.2 40.8 58.2	546 1,151 1,680	26.9 46.8 66.1	1,128 1,657	49.9 70.0	1,103 1,632	52.9 74.0

### 70 Series

MODEL	DDM	4"	Hg	6"	Hg	8"	Hg	10"	' Hg	12"	'Hg	14"	Hg	15"	Hg	16"	Hg
MODEL	RPM	CFM	ВНР	CFM	ВНР	CFM	ВНР	CFM	ВНР	CFM	ВНР	CFM	ВНР	CFM	ВНР	CFM	ВНР
7009	1,500 1,800 2,650	687 864 1,365	7.9 9.7 15.4	632 809 1,311	11.7 14.3 22.1	580 757 1,259	15.5 18.8 28.8	528 705 1,206	19.3 23.4 35.5	472 649 1,151	23.1 27.9 42.2	412 589 1,090	26.9 32.5 48.9	1,058	52.2	1,023	55.6
7012	1,500 1,800 2,650	935 1,172 1,844	10.5 12.8 19.9	866 1,103 1,775	15.6 18.9 28.9	801 1,038 1,709	20.7 25.0 37.9	734 971 1,634	25.7 31.1 46.8	665 902 1,573	30.8 37.2 55.8	589 826 1,497	35.9 43.3 64.8	784 1,456	46.3 69.3	1,412	73.7
7015	1,500 1,800 2,650	1,182 1,476 2,309	13.0 15.7 24.2	1,103 1,397 2,230	19.3 23.3 35.4	1,027 1,321 2,154	25.5 30.8 46.5	951 1,245 2,078	31.8 38.4 57.6	870 1,164 1,997	38.1 46.0 68.7	783 1,077 1,910	44.4 53.5 79.9	1,029 1,862	57.3 85.4	1,812	91.0
7018	1,500 1,800 2,650	1,432 1,786 2,789	15.5 18.8 28.8	1,340 1,694 2,697	23.1 27.9 42.2	1,251 1,605 2,608	30.7 37.0 55.6	1,161 1,515 2,518	38.3 46.1 69.0	1,067 1,421 2,424	45.9 55.2 82.4	964 1,318 2,321	53.4 64.3 95.8	1,262 2,265	68.9 102.5	2,205	109.2
7023	1,500 1,800 2,600	1,847 2,300 3,508	21.8 27.4 45.9	1,732 2,185 3,393	31.5 39.0 62.7	1,622 2,075 3,283	41.2 50.6 79.6	1,510 1,963 3,171	50.9 62.3 96.4	1,393 1,846 3,054	60.6 73.9 113.2	1,266 1,719 2,927	70.3 85.6 130.0	1,650 2,858	91.4 138.4	2,784	146.8
7028	1,500 1,800 2,600	2,258 2,810 4,282	26.9 34.0 57.9	2,121 2,673 4,145	38.7 48.2 78.4	1,989 2,541 4,013	50.5 62.4 98.9	1,855 2,407 3,879	62.4 76.5 119.4	1,715 2,267 3,739	74.2 90.7 139.8	1,563 2,115 3,587	86.0 104.9 160.3	2,032 3,504	112.0 170.6	3,415	180.8

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

#### **Genuine Gardner Denver Parts and Lubricants**

- Maintain the Gardner Denver performance advantage and reliability with Genuine GD Replacement Parts
- 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)

#### **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

### Gardner Denver Redefines the Perception of Remanufactured

**Reman (rē man') n.** A Gardner Denver positive displacement blower expertly assembled from genuine remanufactured and new parts

- Must pass a slip test and a full-load, hot run test before shipment
- Standard new product warranty included
- The final word when repair or replacement is required













