New GDK Series Oil Lubricated Screw Air Compressor

90-160kW

National Toll-free Service Hotline

400-820-9290

Gardner Denver

Gardner Denver

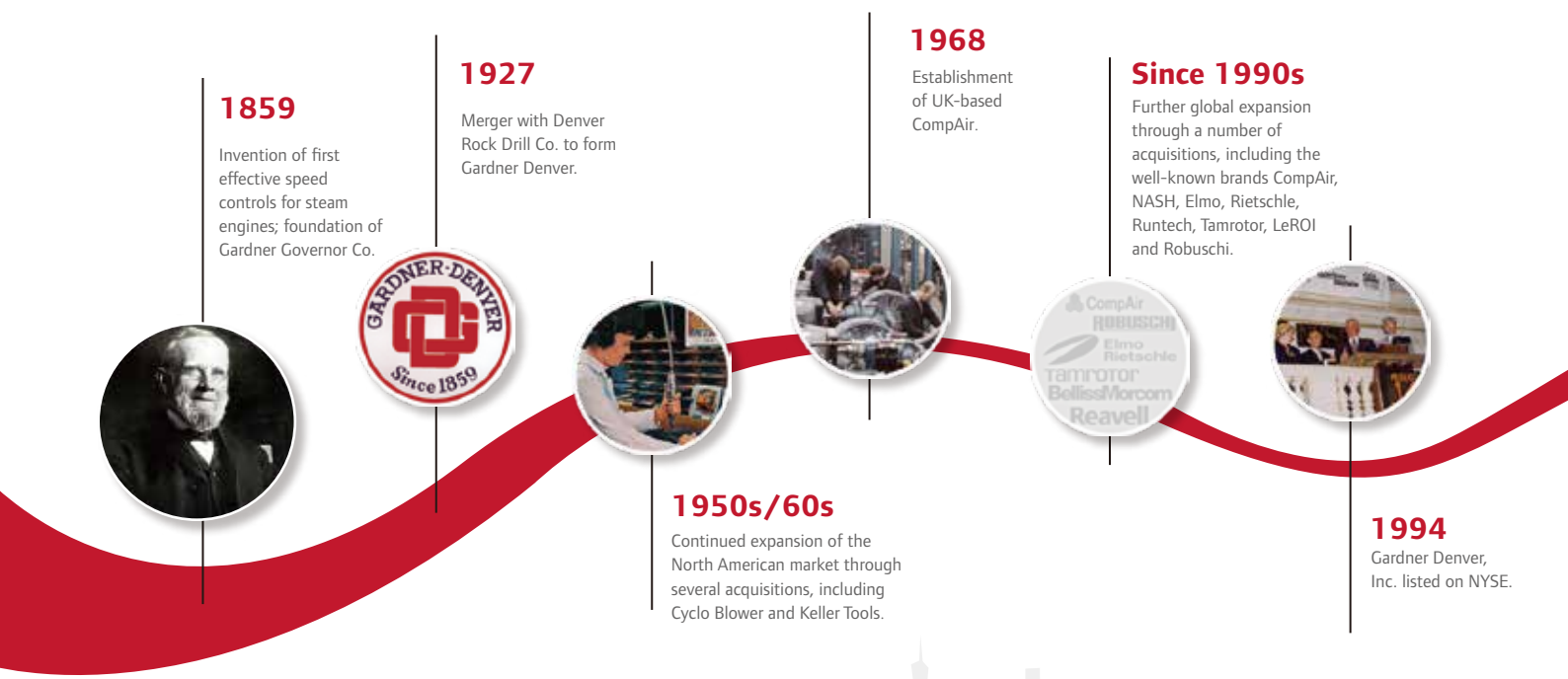
Founded in 1859, Ingersoll Rand, Inc. Gardner Denver focuses on developing innovative products and engineering solutions that solve operational challenges for our customers. With global collaboration, strong customer service and in-depth expertise, we offer reliable, energy-efficient equipment for a wide range of manufacturing and process applications. As of March 1, 2020, The Ingersoll Rand Industrial segment was formally merged with Gardner Denver to form the new Ingersoll Rand.

Now, as a larger and stronger company, we can further provide you with more comprehensive solutions and a broader portfolio of products and services. The new Ingersoll Rand is driven by an entrepreneurial spirit and an ownership mindset to make life better for our employees, customers and those around us.

GDK series product line is the first product line designed by integrating the advantages of the product lines of Ingersoll Rand Industrial Group and Gardner Denver Industrial Group in Asia-Pacific after their merger. It is completely tailored for the fundamental manufacturing industry in Asia-Pacific. In addition to stringent engineering design and quality control, the comprehensive solution of the complete and after sales service has excellent performance to price competitiveness among brands of the same class.

Ingersoll Rand

Ingersoll Rand (NYSE: IR), driven by an entrepreneurial spirit and an ownership mindset, is committed to helping make life better for our employees, customers and those around us. Our customers rely on our technology-driven excellent performance in building critical business processes and industrial solutions. Even in the most complex and demanding conditions, our highly acclaimed portfolio of more than 40 brands of products and services stands out for its superior performance. Our product portfolio covers a wide range of sectors, including air compressors, pumps, blowers, fluid management, loading, power tools and material handling systems, as well as the well-known utility vehicle brand, Club Car. Our more than 16,000 employees worldwide will consistently provide our customers with reliable expertise, helping them to increase productivity and efficiency, and building lifelong connections with them. For more information, please visit www.IRCO.com.cn.



Early 2000s

Gardner Denver established itself as a global provider of compressed air and vacuum technology.

2009

Gardner Denver celebrates 150 years of industrial innovations.

2013

Acquired by American multinational private equity firm KKR & Co.

2017

Gardner Denver rejoins NYSE on May 12, 2017 as a public company once again.

2020

Completion of the merger with the Ingersoll Rand Industrial segment.

Permanent Magnetic (PM) Variable Speed Drive (VSD) Motor

Gardner Denver PM VSD series air compressors are driven by PM synchronous motor. Compared to conventional electrically-excited motor, PM motor, especially rare earth PM motor, is featured by such significant advantages as simple structure, reliable operation, small size, light weight, low loss, high efficiency and a great variety of shapes and sizes, and thus has an extremely wide scope of application in aerospace & defense, industrial & agricultural production and almost all fields of daily life.

- IE5 superior energy efficiency and high reliability
- IP66 protection level
- Large-sized bearings ensure the service life

The air compressor driven by PM synchronous motor is superior to that driven by ordinary fixed speed motor mainly in the following aspects:

Superior Motor Performance

The hybrid permanent magnet (HPM) motor is mainly featured by its stator winds, which are detachable and field-replaceable, and can drive by directly connecting with the male rotor of the airend due to the small size and high power (with 33% smaller volume to deliver magnetic flux up to 3 times of the conventional VSD motor). Besides, the unique motor layout eliminates any wear parts and bearings, and achieves no rotor excitation loss and 5-10% higher efficiency.

Wide Range of Frequency Conversion

The motor can achieve VSD range of 25%-150% (vs 50%-100% of asynchronous VSD motor) due to its superior low speed performance without electrically excited rotor and adoption of advanced self-sensing vector control technique. Therefore, it can operate with no load at lower rotational speed to save energy.

Unlimited Start / Stop

Due to its unlimited start / stop capability, HPM motor can meet the air capacity requirement without causing any damages as a conventional motor does. When the air capacity of the unit drops to the lowest point, it will stop to prevent a waste of energy for unloading of conventional air compressor.

Low Noise

Rational slot-pole combination and magnetic field design ensures wider operating frequency and lower operating noise.

Enlarged Motor Air Gap

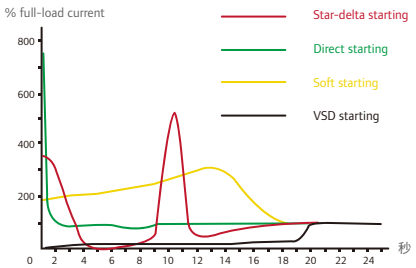
The enlarged air gap enables HPM motor to run normally in a more stringent environment with minimum downtime.

Compact Structure, Small Size & Light Weight

PM rotor has a small size and high power density.

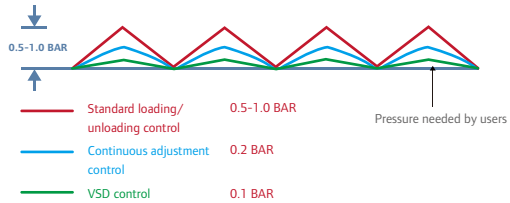
Smooth Start

- No starting peak current
- Completely eliminate the energy consumption during unloading
- Reduced the burden on electrical components
- VSD starting current is only about 1.5 times of rated current to have no shock on the power grid



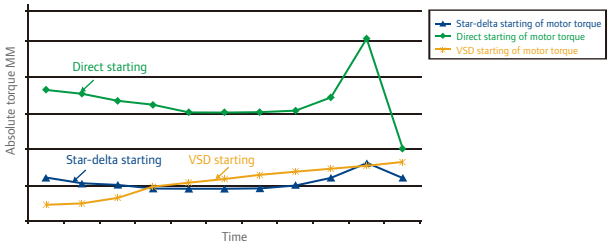
Stable Output Pressure

- VSD control can keep the pressure band within 0.1 bar
- Stable compressed air pressure - no need of a large air tank
- The pressure will not exceed the required value, resulting in no energy waste



Shock-free Start

- The starting torque of the motor is low, resulting in shock-free mechanical parts (e.g. bearings) with a longer service life
- Transfer torque as required, resulting in no energy waste



High Efficiency Fixed Speed Motor

Gardner Denver fixed speed series air compressors are driven by three-phase asynchronous motor, which is directly coupled with the gear and has IE3 superior energy efficiency as per IEC60034-30.

The main motor is elaborately selected for specific applications of the air compressor. The torque and load of the motor conforms to the special design standard for an optimization of efficiency and power coefficient under load by approximately 5% over other motors.

Motor Frame

The motor frame and end cover made of cast iron and cast aluminum can support the bearings more firmly, maintain a uniform gap between rotor and stator and make its flange coupled components permanently parallel.

Electrical Design

The rotational speed, torque and other operating parameters are designed to meet the load requirements of the compressor. The air capacity requirement of GDK series compressors can be met by the already optimal efficiency and power coefficient of the motor.

Bearing

As a powerful guarantee for smooth operation, the air compressors are fitted with vacuum exhaust bearings at the drive end and roller bearings at the discharge end, which can be lubricated by the coolant flowing through the bearing grooves. These oversized bearings have an average service life of 135,000 hours, 8 times longer than NEMA standard.

Insulation Materials

The high efficiency motor of GDK series with Class F insulation and Class B temperature rise is rated for 155℃ ambient temperature under continuous load, which delivers high reliability, longer service life and better adaptability to severe environment of the motor, as temperature is so critical to the service life of an engine.

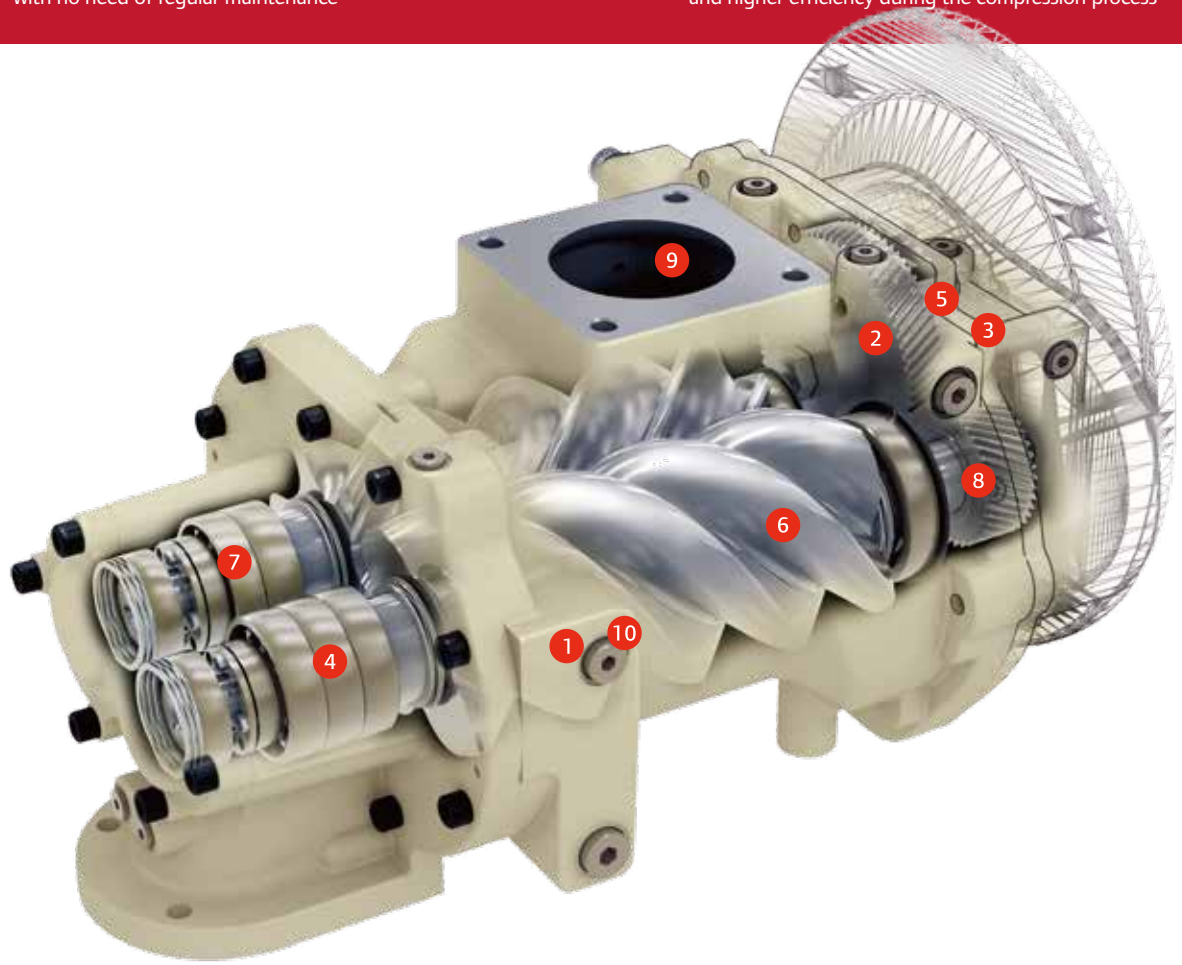
Protection Rating

The highly efficient GDK series motors are of closed type with a protection rating at IP 55, which effectively protects it against dust and moisture and guarantees the smooth operation even in a harsh environment.

Airend

As the core part of screw air compressor, the airend is designed to minimize manufacture deviation and enable accurate installation with its reliable quality, stable performance and high operating efficiency. Besides, some other components in the air compressor provide critical support and control for reliable operation of the airend. The newly designed airend with over 10% higher average energy efficiency is used in GDK90-160 series for long-term reliable operation.

1. The lubricating points are deliberately arranged to precisely deliver the lubricant to the required position effectively for higher reliability and lower energy consumption.
2. Advanced gear design enables more efficient and reliable transfer of drive energy
3. Integrated gearbox reduces windage loss and drive system length for higher efficiency & performance and easier maintenance
4. Enhanced bearing arrangement helps reduce the resistance and improve energy management for higher reliability and performance
5. The drive system is sealed to protect it against dust and moisture with no need of regular maintenance
6. The optimized screw rotor profile significantly improves energy efficiency and air capacity, and reduces energy cost
7. Low friction bearing arrangement improves the energy efficiency
8. Gear lubrication is optimized to cleverly inject the lubricant into the gear engaged position for higher operating reliability and lower energy consumption
9. Streamlined inlet and outlet passage reduces pressure drop
10. The oil spraying process is optimized for lower temperature and higher efficiency during the compression process



Type of Drive

The motor and airend of GDK PM VSD series products uses a coaxial direct-coupled drive system to be more efficient, reliable and robust, where coaxial drive reduces mechanical loss of belt gear and other devices, and coaxial connection delivers higher driving efficiency. It also maintains permanent concentricity and air-tight seal of the base to prevent intrusion of foreign materials in the air and ensure smooth power transmission.

High-efficiency Cold Air Intake System

Inlet Filter

The inlet filter, which is 99.5% efficient at 3μm and above, is directly connected to an inlet valve for simpler replacement; the inlet valve integrated with a solenoid valve reduces pipe connections & leak points and lowers inlet air resistance for higher intake & compression efficiency.

High-efficiency nano membrane air filter element has a 0.3μm particle filtration performance over three times higher than ordinary filter.

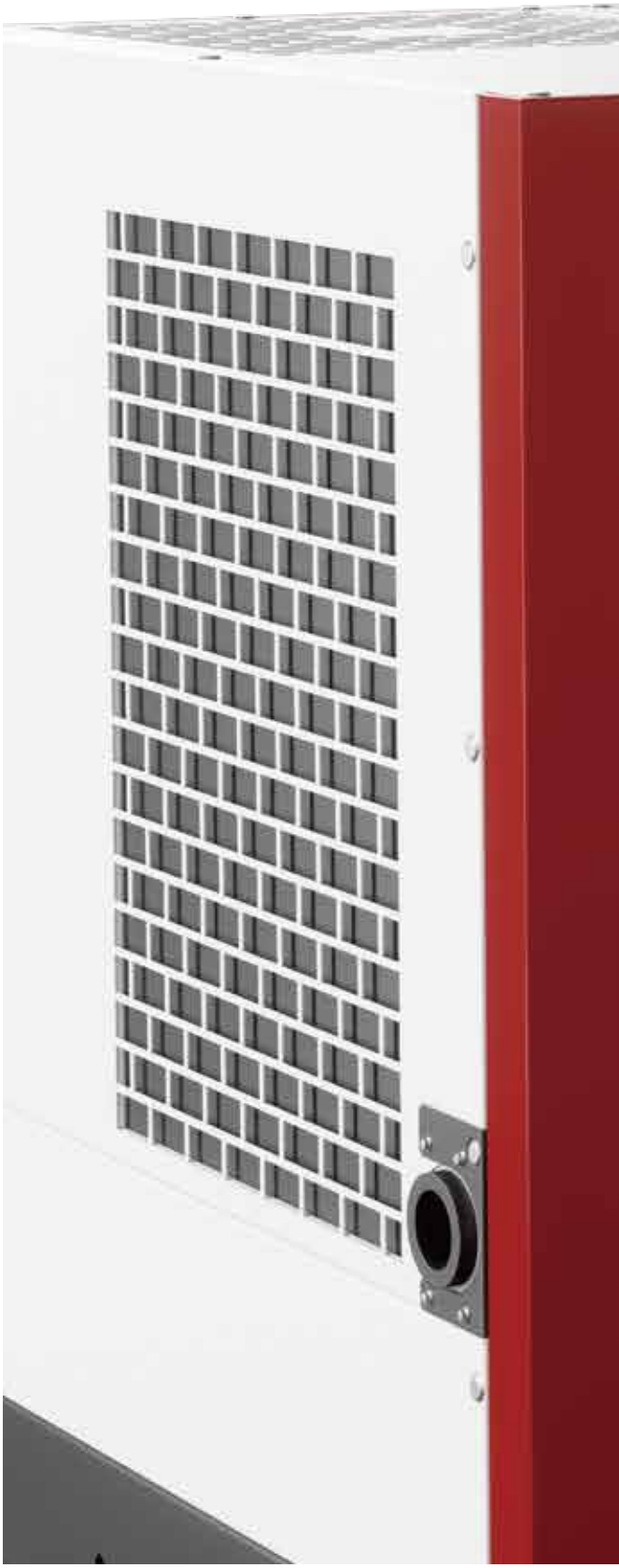
Independent Cold Air Intake Channel

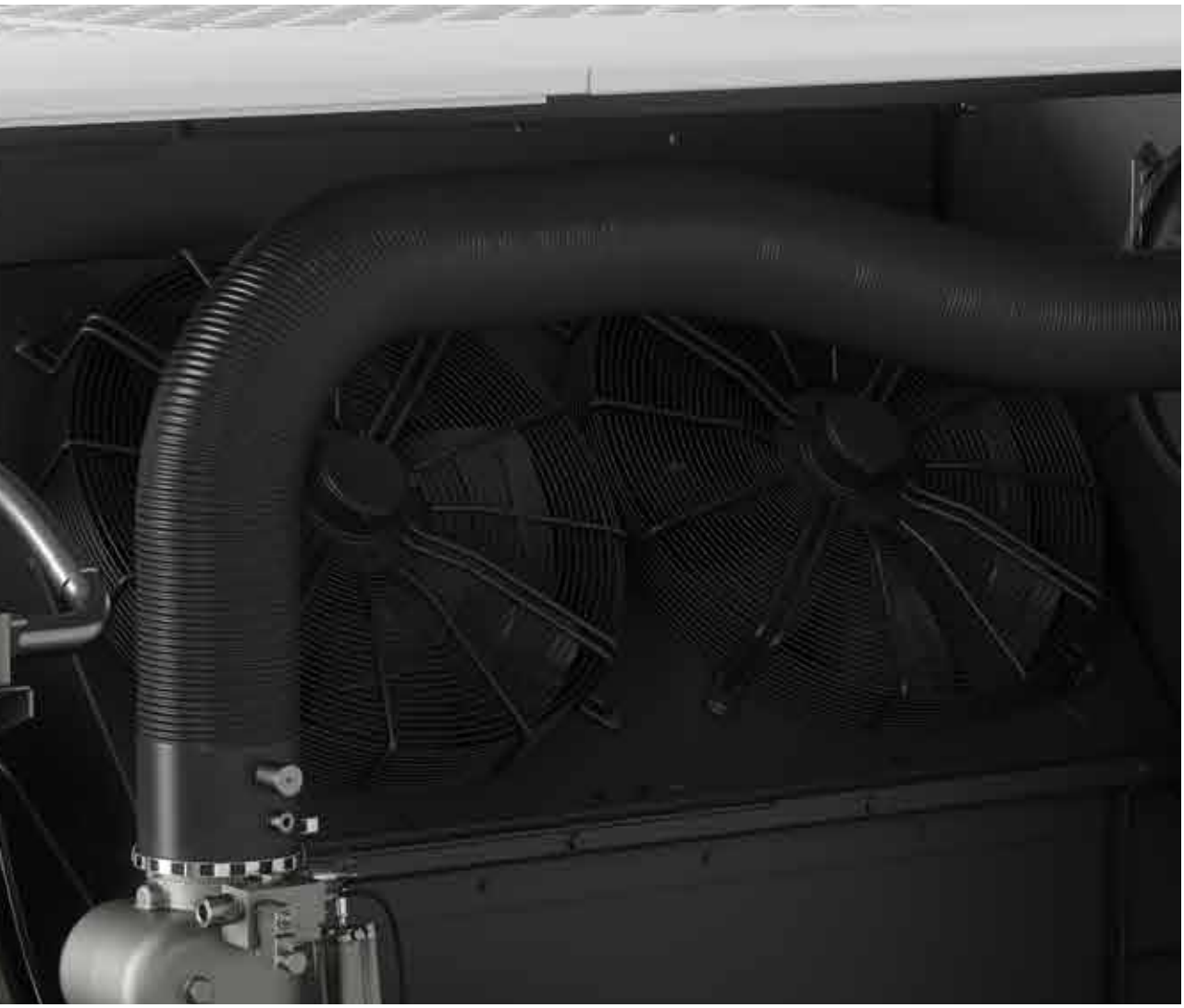
The new independent cold air intake channel design of GDK with low intake temperature, greater air capacity and less pressure drop significantly improves the airend efficiency. It reduces exhaust temperature of the entire system, extends service life of pipelines, and greatly improves the cooler performance.

Cooling System

Compared to conventional welded cooler, the independent oil cooler / after-cooler arrangement of GDK series eliminates damages and failure of the coolers caused by thermal stress concentration at the weld seam due to different expansion coefficient of cooling oil and compressed air, extend the service life, and makes replacement more convenient to reduce operation & maintenance cost for customers.

- The independent oil cooler / after-cooler air duct design subverts the conventional parallel design to mount the oil cooler and after-cooler at each side, which fundamentally eliminate the influence of thermal stress & thermal expansion.
- Side mounting shows higher after-sales maintenance efficiency than top mounting.
- Completely independent air duct guarantees the ideal cooling effect for core components while reducing power consumption of the fan.
- After-cooler, as the only inlet channel of the entire system, cools and also reduces the noise of the system.
- Large margin after-cooler, <10 °C CTD (air-cooled & water-cooled) adapts to relatively harsh environment, and guarantee normal operation of the entire system at an ambient temperature of 46°C.





Cooling Fan

- **Ariable Speed Control**
  Star-delta logical control of the fan reduces VSD power, enables linkage control over three fans for higher energy efficiency of the unit, and guarantees the cooling performance.
- **Tilt Mounting**
  The oil-cooled fan is tilted above the cooler to guarantee cooling air capacity and save great space for the unit; the tilt angle achieves better cooling effect through strict FEA simulation.
- **Pull-out for Maintenance**
  The cooling fan can be slid out along the lower rail for maintenance, which can be easily done by a single person and greatly improves the after-sales service efficiency of the fan.
- **Induced Draft Cooling Fan**
  It reduces the induced draft temperature and evenly distributes air on the cooler surface to improve cooling heat transfer efficiency; compared to blazer cooling, induced draft cooling has better cooling effect with no dead corner.

Piping System

- Fluorine rubber O-ring face seal is used for all connections of key parts
- Almost no possibility of leakage
- Re-connections can be made indefinitely
- Axial clearance required for typical seal connections is eliminated
- Resistance to chemical corrosion

Using the advanced O-ring seal, as a seal structure which can prevent oil leakage more effectively in conformity with the American Automobile Manufacturers Association (AAMA) standard, to replace the typical threaded connection seal eliminates axial clearance, simplifies the installation, and requires no tightening which may cause the connector to deform, thus fundamentally improving the anti-leakage effect.

The same flange design is adopted for the entire system to reduce wearables and make maintenance convenient.

Heat-resistant components of the unit, including inlet solenoid valve, pipelines, electronic components, etc., can all withstand high temperature above 100 ºC.

Oil / Air Separation System

The custom-made folded + wound oil separator element is made of multi-layer two-stage reinforced special fiber material, and is featured by large area of separation, low flow rate, excellent separation effect, long service life and precision up to 0.5μm, which ensures that the discharge oil content of the unit is lower than 3 ppm.

The innovative oil separator element design integrated with the scavenge line to airend inlet eliminates the need for individual maintenance of the scavenge line, lowers the height of the unit, and delivers higher after-sales service efficiency.

iConn - the Air Compressor IoT Platform

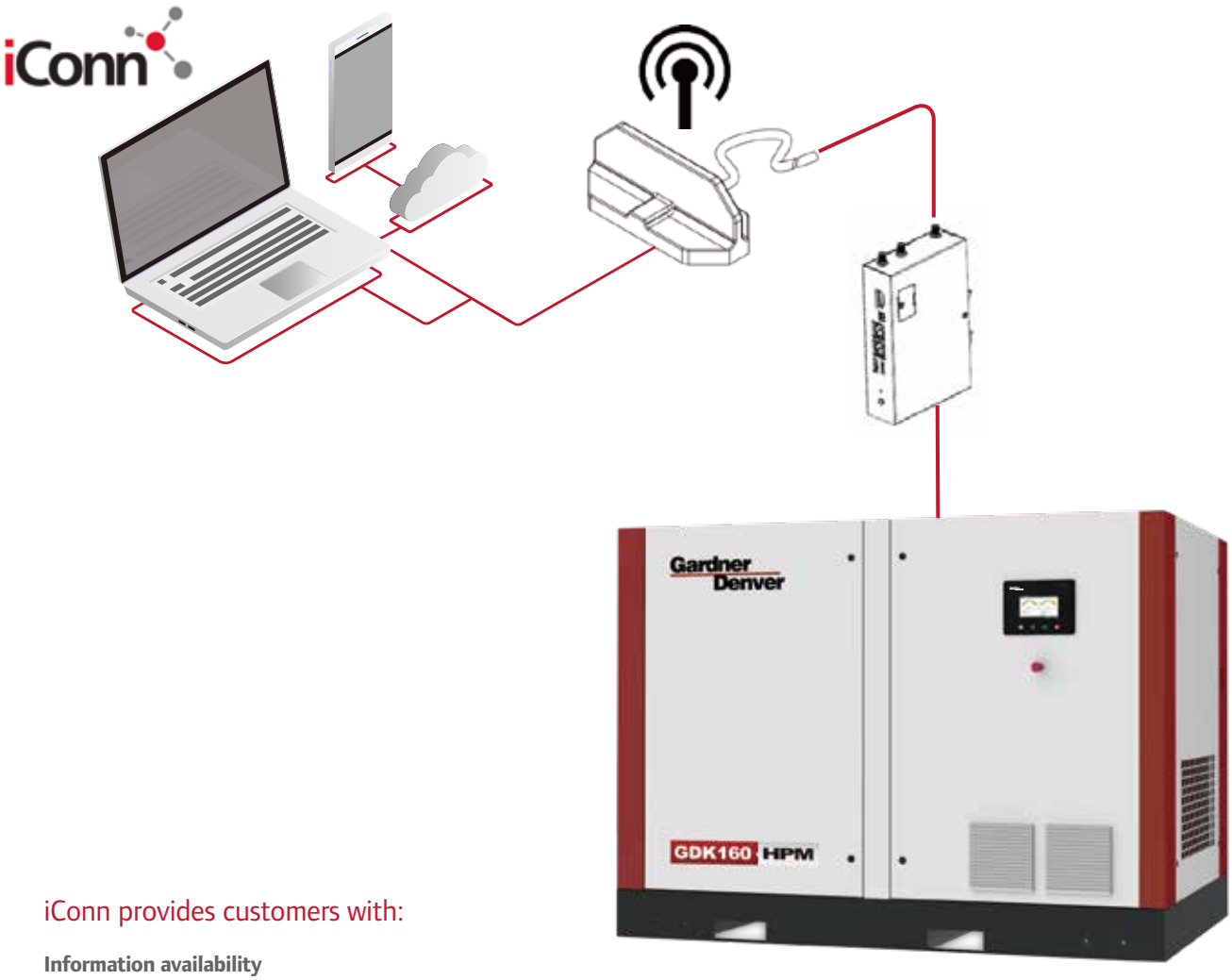
iConn, the air compressor IoT platform of Gardner Denver, aims to maximize the unit stability of our customers by enabling real-time data management on their compressed air system. The platform also helps Gardner Denver and customers to continually optimize the services and improve production efficiency through big data insight and analysis.

This IoT platform consists of:

- Hardware - a controller with embedded data cartridge can be equipped as standard for a new machine before leaving the factory; for a stock unit from the aftermarket, an edge device can be installed to connect to the controller of the unit and read information from it.
- Communication – to transmit data from the controller and edge device to the cloud through 4G network
- Software – including internal management platform of Gardner Denver and client platform used by end users, in both web and APP version
- Technical support team

Features of iConn

- List and report of operating parameters of the unit
- Condition monitoring of the unit based on real-time data
- Fault alarm and event notification
- Problem diagnosis based on predictive analysis
- Energy consumption and reliability diagnostics and analysis



iConn provides customers with:

Information availability

- Real-time operation data management and event notification of the unit
- Service schedule based on accurate run-time

Reliability for maximum uptime of the unit

- Operating state trend monitoring and fault alarm for each air compressor
- Early fault warning capability based on preset condition monitoring and predictive analysis
- Increase the first time fix rate

High efficiency

- Highly efficient business model - the customers can procure spare parts and services from the IoT platform
- Productivity enhancement - the cost of field equipment management personnel is reduced
- Peace of mind - real-time equipment operating state and notification can be obtained through APP and SMS
- Improve the reliability and efficiency of the entire compressed air system

Performance *

Model	Nominal Pressure barg-50HZ	Rated Power kW	Nominal Capacity m^3/min	Dimensions L x W x H (mm)	Weight (air-cooled / water-cooled) kg
Standard GDK Fixed Speed Unit					
GDK90FS-7A/W	7.0	90	17.0	2300 x 1500 x 1700	2220 / 2080
GDK90FS-8A/W	8.0	90	16.5	2300 x 1500 x 1700	2220 / 2080
GDK90FS-10A/W	10.0	90	15.0	2300 x 1500 x 1700	2220 / 2080
GDK90FS-12.5A/W	12.5	90	13.0	2300 x 1500 x 1700	2220 / 2080
GDK110FS-7A/W	7.0	110	20.6	2300 x 1500 x 1700	2250 / 2110
GDK110FS-8A/W	8.0	110	20.0	2300 x 1500 x 1700	2250 / 2110
GDK110FS-10A/W	10.0	110	17.6	2300 x 1500 x 1700	2250 / 2110
GDK110FS-12.5A/W	12.5	110	15.0	2300 x 1500 x 1700	2250 / 2110
GDK132FS-7A/W	7.0	132	25.5	2300 x 1500 x 1700	2880 / 2835
GDK132FS-8A/W	8.0	132	24.5	2300 x 1500 x 1700	2880 / 2835
GDK132FS-10A/W	10.0	132	21.8	2300 x 1500 x 1700	2880 / 2835
GDK132FS-12.5A/W	12.5	132	17.5	2300 x 1500 x 1700	2880 / 2835
GDK160FS-7A/W	7.0	160	30.6	2300 x 1500 x 1700	2980 / 2935
GDK160FS-8A/W	8.0	160	30.0	2300 x 1500 x 1700	2980 / 2935
GDK160FS-10A/W	10.0	160	26.2	2300 x 1500 x 1700	2980 / 2935
GDK160FS-12.5A/W	12.5	160	22.0	2300 x 1500 x 1700	2980 / 2935
Standard GDK PM VSD Unit					
GDK90HPM-A/W	7-10	90	18.0	2300 x 1500 x 1700	1720 / 1580
GDK110HPM-A/W	7-10	110	21.5	2300 x 1500 x 1700	1730 / 1600
GDK132HPM-A/W	7-10	132	25.0	2300 x 1500 x 1700	1850 / 1805
GDK160HPM-A/W	7-10	160	31.0	2450 x 1500 x 1700	2175 / 2058

* Subject to finally published engineering parameters

Summary of Product Features

The new Gardner Denver GDK series PM VSD screw air compressor design is time-tested and integrates multiple new technologies, such as high-efficiency cooling system and well-proven airend system, etc., which altogether ensure high reliability, efficiency and productivity for us. Our new high efficiency and energy saving products can fully meet customers' needs for product performance and value.

High Efficiency

- Well-proven high-efficiency ARES series airend
- High efficiency oil-cooled PM (VSD) motor
- Industry leading efficiency of the entire system

Reliability

- Oil-cooled PM (VSD) motor with high protection grade
- Premium Luminance controller
- Independently mounted oil cooler & after-cooler (air-cooled)
- Integrated stainless steel cooler (water-cooled)
- 100% O-ring face seal

Innovative Design

- Exquisite appearance design
- High-efficiency cold air intake system
- Independent cooler air duct
- Innovative cooling fan
- Integrated oil separation system
- IP protection for wearables

Gardner Denver

Gardner Denver has been a premium manufacturer of air compressors, blowers, vacuum pumps and other accessories for over 160 years. We are committed to helping customers achieve greater success through continuous product iteration & innovation as well as constant quality improvement of our offerings and services.

Gardner Denver offers efficient, stable and energy saving compressed air system solutions for customers.

Oil Lubricated Fixed Speed Air Compressor

Single-stage air compressor
0.81-53.2m³/min/7～14barg

Two-stage air compressor
29.6-70.1m³/min/7～14barg

Oil Lubricated PM VSC Air Compressor

0.15-31.0m³/min/7～10barg

Oil-Free Air Compressor

Oil-free scroll compressor
0.21-3.78m³/min/8～10barg

Oil-free water-lubricated PM VSD air compressor
0.3-27m³/min/7～10barg

Compressed Air Purification System

- In-line filter
- Refrigerated dryer
- Desiccant dryer

Care-free After-sales Service

- 24-hour toll-free service hotline
- Genuine spare parts
- Customized services

System Solutions

- Heat recovery system
- iConn smart interconnection platform

Gardner Denver

Gardner Denver Machinery (Shanghai) Co., Ltd.

F11, L'Avenue, No. 99, Xianxia Road, Shanghai
Tel.: 400-820-9290
www.gardnerdenver.com.cn

Gardner Denver Air Compressor WeChat Account

Gardner Denver Air Compressor Video Account

Gardner Denver Air Compressor DouYin Account

 SN：GDC-27-2211-CN