



Ingersoll Rand Industrial Technologies provides products, services and solutions that enhance our customers' energy efficiency, productivity and operations. Our diverse and innovative products range from complete compressed air systems, tools and pumps to material and fluid handling systems and environmentally friendly microturbines. We also enhance productivity through solutions created by Club Car®, the global leader in golf and utility vehicles for businesses and individuals.

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Low Pressure Business Unit / Air Solutions

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HCS Series

*Single stage oil-free screw
compressor technologies*



HCS Series

Single stage oil-free screw compressor technologies

General

For any gas compression application in where it is essential to avoid oil contamination of the gas or the system in which it is being used, Ingersoll Rand have a range of rotary screw compressors designed to produce "Oil free" air. This product is particularly used in pneumatic conveying systems where product contamination can be expensive. These single-stage

screw compressor sets are produced as standard units and suitably customised with an extensive range of accessories and optional configurations which can provide customised solutions. To meet the majority of requirements, pressures are available to 4,6 bar abs (52.7 Psig) or vacuums down to 190 mbar abs (5.6 "Hg abs).



Applications

Screw compressors are an optimum solution for all applications requiring oil-free gases:

- Pneumatic conveying of bulk materials in the petrochemical, chemical, pharmaceutical and foodstuffs industries, cement works...
- Sewage treatment (aeration) and drinking water treatment (ozonation)...
- Vacuum handling systems in the paper industry, printing shops, glassworks...
- Filter cleaning in the mining, iron, and steel industries
- Homogenisation, fluidisation, desulphurisation of combustion gases
- Vacuum units
- Pressurisation of ballasts
- Aeronautical applications (jet engines starters).



Range

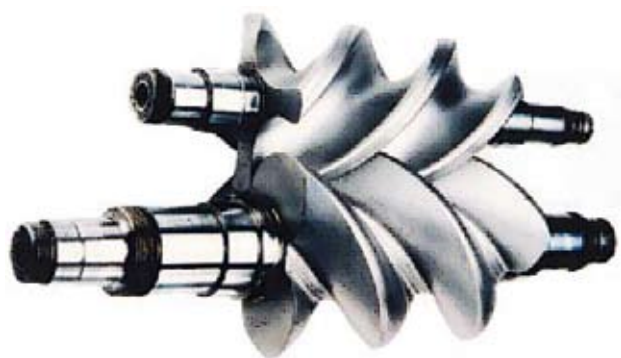
HCS dry screw-type compressors are perfectly suitable for all applications requiring flow from 500 m³/h (290 cfm) to 8000 m³/h (4700 cfm) at a maximum positive pressure of 3.5 bar g (50.8 Psig) and 190 mbar abs (5.6 “Hg abs) of vacuum.

HCS Dry Screw Compressor Package	HCS 9	HCS 14	HCS 26	HCS 42	HCS 72
Max Flow m ³ /h / cfm	1150	1600	2900	5000	8000
	675	940	1705	2940	4700
Pressure max in bar eff / in psig	3,5	3,5	3,5	3,5	3,5
	50	50	50	50	50
Air End	CD 9 S	CD 14 S	CD 26 S	CD 42 S	CD 72 S

Principle of operation

The HCS series are air-cooled, twin-shafted positive displacement compression machines. Each shaft contains two synchronised gears (male and female) which rotate in opposite directions these gears which are located outside of the compression chamber and so the compressed gas can be

said to be completely “Oil-free”. After compression the gas is discharged through the outlet into the delivery pipe. Our asymmetrical 4+3 screw section is especially well adapted to low-pressure operation.



1 - Suction side

The gas enters the compression chamber when the rotors come in line with the suction inlet.



2 - Compression

The gas pressure increased as the available volume within the rotors reduces.



3 - Delivery

The internal compression ratio is attained and the gas is discharged through the outlet into the delivery pipe.

Construction

The screw compressor is manufactured by our sister company GHH-RAND and is the best of its type in the Market today.

- With the highest level of technical proficiency and many years of experience. We are able to produce a product with high performance and long life expectancy.

- Technical excellence is not only an optimised calculation of the clearances between body and rotor itself but also the use of very special coating obtained through a gradual development and improvement process to reach precision and stability against corrosion, temperature and time.

Best practice is also achieved by the high quality anti-friction bearings.

The air-end body is manufactured from high grade cast iron and is directly connected to an integral gearbox.

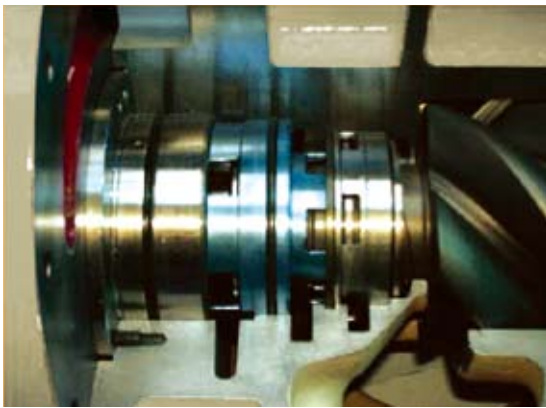
The pump is driven mechanically from main shaft off the gearbox.

- The lubrication system consists of an integral oil tank and external air heat exchanger which guarantees an optimum temperature.

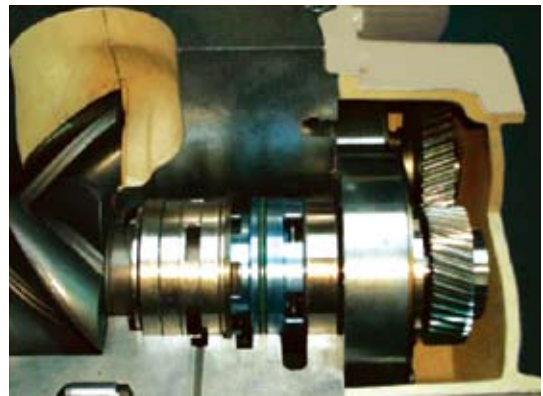
- The entire unit is designed to be compact and simple to operate.

Seals

Shaft seals are designed to prevent any oil leakage towards the compression chamber, and successively combine ring seals, labyrinth seals, and non-retaining rings, thus making compression absolutely oil-free.



Discharge side



Suction side

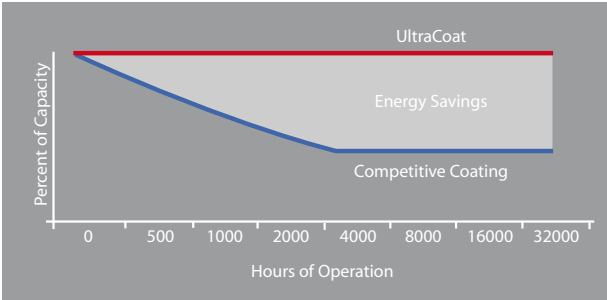
UltraCoat™ energy savings and longer life

Compressor rotors take a beating. Over time their surfaces can deteriorate, making rotors increasingly susceptible to compressed air impurities and temperature fluctuation, which lead to reduced efficiency, decreased air purity, and compressor failure.

Ingersoll Rand eliminates this problem with UltraCoat, an advanced rotor and housing protection process that ensures the most durable coating, with unmatched adhesion and temperature resistance.

Every Ingersoll Rand oil-free rotor and housing is specially prepared, creating a surface texture to which the UltraCoat micro-coating bonds with the tightest, longest-lasting grip possible.

Ultimately, UltraCoat delivers greater reliability in performance and air quality, rotor longevity, increased uptime, and reduced energy costs.



Packaging

The packaging of our compressors has been carefully considered to produce compact units but retaining a wide range of options. This allows a certain amount of «customising» to meet, more exactly, your requirements. This modular concept allows freedom of choice for all types of dry compression applications.

Options

While still allowing easy access for inspection and maintenance, the HCS oil-free screw compressor unit is fitted with a ventilated acoustic enclosure which limits noise to 85 dB(A).

Various other accessories are available :

- Silencer with integrated filtration
- Reinforced noise level attestation
- Refrigeration dryer/cooler
- Kit of starting relief valve
- Kit of electronic starting relief valve ducted
- Enhanced enclosure
- Variable speed
- Rain protection
- Conformity with ATEX Zone 22



Control systems :

We offer you a standard solution which best fits to your functional and price requirement, in the form of two individually designed control Systems

A : «Secure Module» allowing a guarantee of permanent checking of all operating parameters to secure the group and control start/stop.

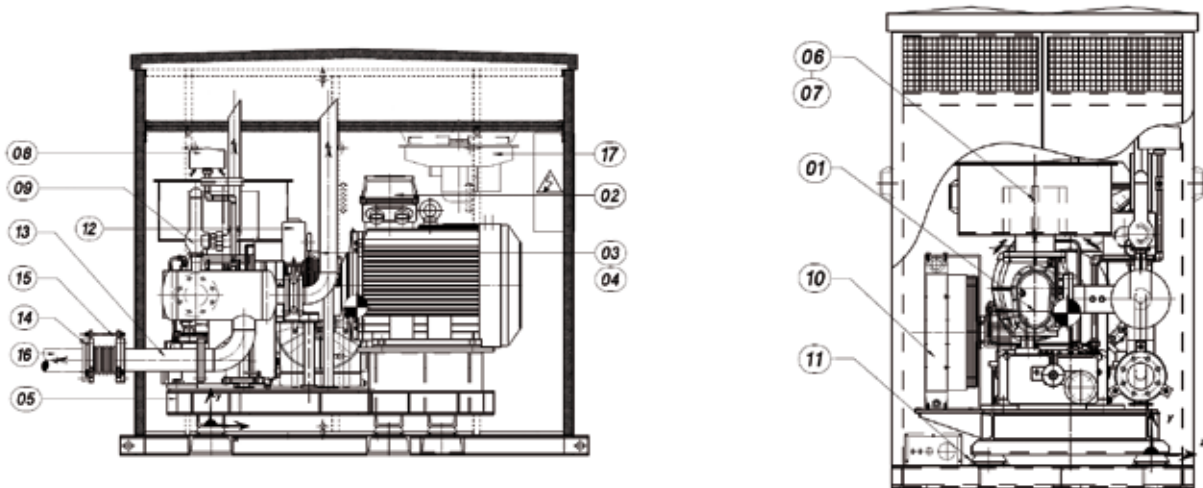
B : An «advanced module» remote-controlled by a processor allows to secure the group and also to control and analyse the parameters transmitted by analogical and digital transmitter signal. The user-friendly panel design ensures quick and easy diagnostic. Depending to your requirement, the module easily configured to communicate with your MCP or VFD.



Configuration example

- | | |
|------------------------|------------------------------------|
| 1. Compressor | 10. Heat exchanger for oil cooling |
| 2. Motor | 11. Elastic pads |
| 3. Coupling | 12. Actuated vent valve |
| 4. Coupling guard | 13. Connecting pipe |
| 5. Common base frame | 14. Check valve > (200°C) |
| 6. Suction silencer | 15. Flexible below |
| 7. Air filter | 16. Customer connecting pipe |
| 8. Oil pressure relief | 17. Air fan |
| 9. Air safety valve | |

> HCS 09, HCS 14



> HCS 26, HCS 42, HCS 72

