

# Screw Compressors

**ESN 160-250 Fixed Speed &  
VS 250 Variable Speed**



**Rely on GD to provide the perfect fit**

**GD**  
GARDNER DENVER™

# Built for 24/7 use in demanding applications

Gardner Denver designed the ESN 160-250 and VS250 series compressors for continuous operation and for applications that require absolute reliability and performance efficiency.

These compressors are being used in a wide range of industries:

- In North and Central Europe and other regions, leading papermakers use Gardner Denver compressors to supply compressed air for their critical processes, enabling them to produce millions of tons of paper and board annually.
- Many ski resorts from Europe to Australia have chosen our compressors due to their proven reliability in harsh conditions.
- Gardner Denver ESN and VS compressors are also used by the glass and steel industries, assembly plants and for other demanding applications.



**“FOR USE IN APPLICATIONS THAT REQUIRE ABSOLUTE  
RELIABILITY AND PERFORMANCE EFFICIENCY.”**



# The preferred choice for optimum performance

The 160-250 kW compressor series combines Gardner Denver's design philosophy, advanced DigiPilot controller and innovative package layout with efficient and reliable compressor performance.

As with all Gardner Denver's compressors, the series has rapidly become a popular choice for a wide range of demanding industrial applications. The compressor carries all Gardner Denver features and benefits associated with reliable and easy use and operation and high efficiency. The compressors are specifically built to meet the demands of continuous 24/7 operating and absolute uptime. The 160-250 kW range covers capacities ranging from 29.0 to 43.4 m<sup>3</sup>/min at normal operating pressures from 7 to 13 bar and offers low pressure models down to 3 bar.

## Low energy consumption

Gardner Denver strives to maintain high performance levels in the series while minimising energy usage through:

- A new generation ENDURO® air end with high efficiency and maximum endurance
- Premium efficiency electric motors
- An accurate, sophisticated and versatile DigiPilot control system
- Versatile heat recovery options

## Low noise construction

Sophisticated package layout and large and slow turning air end reduce the compressor noise level compared to conventional designs. The unit's standard enclosure provides a max noise level of only 79 dB(A), in the 160 kW's model and even in extreme conditions.

## Fast maintenance

The ESN 160-250 compressors are the easiest to service in the industry. The unit's revolutionary air end design enables an all-new package layout. This together with large access doors with no special tool requirement, makes service fast, minimising downtime.

## Easy installation

GD Compressors save you money from the very beginning – starting with transportation to your site. The unit is transportable on normal trucks and also fits inside a container – no need for special freight arrangements or expensive crating. The unit's compact size allows you to move it through standard industrial double doors. Its small footprint minimises the floor plan usage allowing you to maximise the production space. The compressors require no special foundation and ducting is easy to arrange.



## Genuine GD Parts – The perfect fit for maximum performance and best efficiency.

The vast experience and knowledge of GD's highly qualified air specialists, coupled with the use of genuine GD parts and quality consumables that are guaranteed to perform, ensures the best possible efficiency from your GD air system.

The long term reliability and efficiency of your compressed air system depends upon using only genuine GD parts and consumables. With GD service partners providing a fast and reliable service, optimum efficiency of your compressed air system is ensured for years to come.



# Designed for maximum efficiency and reliability

## Heavy-duty construction

The ESN 160-250 and VS250 compressors are designed using advanced technology to meet the highest quality standards that customers are accustomed to expect from Gardner Denver. An efficient and versatile solution even for the most demanding industrial applications.

- Each compressor is rigorously tested in simulated real life conditions

## Efficient oil separation – clean air

For years Gardner Denver has set the standards in oil separation efficiency for clean air. The innovative oil separation system of the ESN 160-250 and VS250, developed by Gardner Denver, is based on a multi-stage process of highly efficient cyclone separation followed by oil separator elements. The system offers superior separation efficiency with residual oil content as low as 2 mg/m<sup>3</sup> in aerosol.

- In-to-out-flow results in lower air flow velocity for final separation
- It offers higher surface area for better separation
- Compact size single elements are easy to handle and service

## ENDURO® screw compressor element

Featuring a new and revolutionary screw element: an ENDURO® air end that improves efficiency, maximises reliability, saves energy and reduces wear and tear by operating at ideal RPMs with minimum losses. The unit's all-new air end layout with suction and discharge ports on the top side makes the compressor package easy to service with open access interior. The new ENDURO® air end is available as a direct or gear driven version, depending on the pressure and power required. In addition to generally improved performance, an extra 0.5-3 % benefit in performance is gained by placing the gear in the discharge end of the air end.

## ADVANCED COMPRESSOR CONTROL – The advantages of DigiPilot control

DigiPilot compressor control ensures accurate and reliable control. DigiPilot's sophisticated microprocessor facilitates efficient operation and pressure control through its simple user-interface and interactive instrument panel.

- Remote control option
- Easy to adapt into a multi-compressor system
- Multi-lingual user interface



Gardner Denver's advanced DigiPilot user interface

# Versatile heat recovery – the green advantage

## Versatile heat recovery

Gardner Denver utilises heat recovery systems to maximise efficiency by recovering energy generated during compressed air production.

- More than 90% of all energy used can be recovered and utilised
- Thermostatic control maintains desired temperature in the compressor
- Heat exchangers are available in different materials for harsh conditions
- Cooling water circuit can be designed to meet specific customer needs

Gardner Denver offers a wide range of heat recovery systems for your applications:

### EANA

Standard air-cooled compressor with a combined air/after/oil cooler

- All ducts required for efficient heat recovery and utilisation are easy to arrange
- Cooling air outlet directed upwards

### EWNA

Gardner Denver's standard water-cooling system

- After cooler and oil cooler connected in series as standard
- Coolers: indissoluble plate heat exchangers, acid proof steel with copper seams. Good self-cleaning ability.

### The PRE system

- Designed for water-cooled compressors
- Cooling water is initially directed through the aftercooler and then absorbs thermal energy from a large oil/water heat exchanger
- Typical water inlet temperature: 15-35°C
- Typical water outlet temperature: 65-75°C

### The DIR system

- Ideal for closed systems with inlet water temperatures up to +50°C
- Separate water-cooling supply is required for the after cooler

**“MAXIMISE EFFICIENCY BY RECOVERING ENERGY GENERATED DURING COMPRESSED AIR PRODUCTION.”**

### The +W system

- Heat recovery system for air-cooled compressors
- Transforms the heat produced during compression into water
- Maximum outlet temperature: +75°C (std. 70°C)
- Also ideal for future installation



# Your business is unique, so is your compressed air system

Typically, air demand in a plant varies widely throughout the day. In addition, fluctuations can occur from shift-to-shift, weekday-to-weekend, and season-to-season. Pressure requirements can also change from machine-to-machine or from one application to another. You need someone to evaluate your unique, often complex requirements and recommend a tailored solution.

## The VS250 variable speed compressor — one smart solution

Variable speed compressors can efficiently and reliably handle the varying air demand found in most plant air systems. These compressors speed up and slow down to match air supply to air demand as it fluctuates.

The right variable speed compressor for the application delivers significant energy savings and a stable consistent air supply.

**“THE VS SERIES SAVES TIME, SAVES MONEY, MAXIMIZES PLANT PRODUCTIVITY — IT’S LIKE HAVING SEVERAL EFFICIENT COMPRESSORS IN ONE. SMART!”**

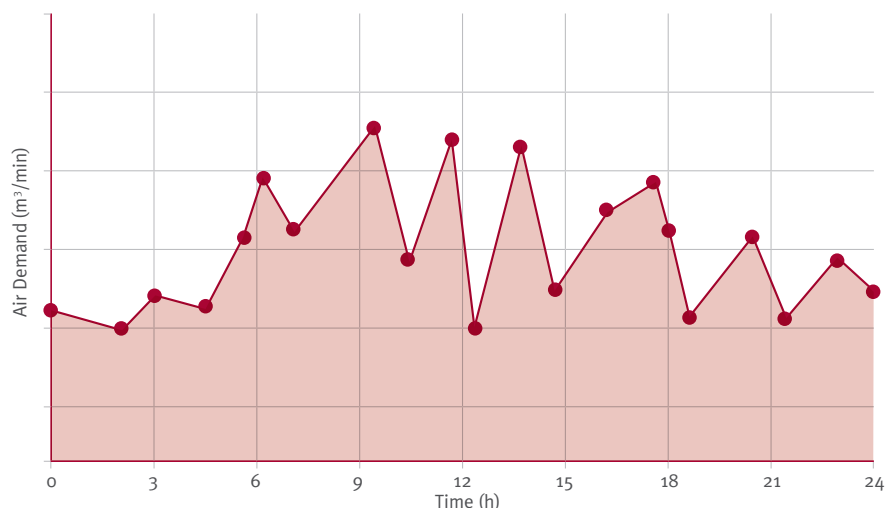
The VS 250 compressor is an efficient and versatile solution even for the most demanding industrial applications and carries all of the Gardner Denver features and benefits associated with reliable, easy to use operations and high efficiency.



## Variable speed — A matched motor, direct drive and air end

The ENDURO air end ensures that maximum reliability and the highest efficiency level are incorporated into these packages. The variable speed drive/motor/compressor combination and the controller are designed to meet the varying demands of your system at the lowest possible specific power, which benefits you in the form of energy cost savings.

## AIR DEMAND CAN VARY DRAMATICALLY DURING A 24HR PERIOD



# Technical Data

## Screw Compressors - Fixed Speed

Gardner Denver model	Maximum pressure	Capacity at nominal pressure*	Nominal power	Net weight	Noise level **
	bar	m <sup>3</sup> /min	kW	kg	
ESN 160	7.5	28.50	160	3800	79
	8.5	26.43			
	10	24.38			
	13	20.72			
ESN 200	7.5	35.67	200	3950	83
	8.5	31.80			
	10	30.58			
	13	26.03			
ESN 250	7.5	43.20	250	4450	86
	8.5	38.50			
	10	38.46			
	13	32.78			

## Screw Compressors - Variable Speed

Gardner Denver model	Maximum pressure	Capacity at nominal pressure*	Nominal power	Net weight	Noise level **
	bar	m <sup>3</sup> /min	kW	kg	
VS250	7.5	7.75 - 42.3	250	4480	83
	10	9.33 - 37.70			
	13	10.8 - 31.50			

\* Data measured and stated in accordance with ISO1217, Ed. 4, Annex C & Annex E at the following conditions and the following working pressures are used: 7.5 bar models at 7 bar, 8.5 bar models at 8 bar, 10 bar models at 9 bar and 13 bar models at 12 bar.

Air Intake Pressure 1 bar a  
Air Intake Temperature 20°C  
Humidity 0% (Dry)

\*\* Measured in free field conditions in accordance with ISO 2151, tolerance +/-3dB



### Standard Equipment

- Air inlet filters
- Fully automatic capacity control: full load, unload, start/stop
- DigiPilot microprocessor controller: interactive instrument panel with multi-language information system
- Y/D starter
- Main switch
- TEFC electric motors: IP55, F-class insulation, thermistor protection
- Multi-stage oil separation vessel
- Air-cooled, radiator type, combined air after and oil coolers
- Emergency stop
- Safety devices for:
  - Main motor overload
  - Fan motors overload
  - High compressor temperature
  - High compressor pressure
  - High network air temperature
  - High network pressure
- Alarms for:
  - Oil change
  - Inlet filters
  - Oil separator elements
- Hour meter:
  - Loaded hours
  - Unload hours
- Week clock
- Real time faulty log
- Availability for pressure schedule
- Remote control
- RS-485 communication line

- Readiness for external controllers
- Automatic re-start after power failure
- Running condition indicators:
  - Pressure
  - Temperature
  - Load/unload/standby/off
- Pressure relief valve
- Sound absorbing enclosure
- Water separator
- Automatic water drain
- ENDURO® air end

### Optional Extras

- Water-cooled units
- Heat recovery systems
- Low pressure models (down to 3 bar)
- Special voltages
- Inlet valve modulating control

### Auxiliary Equipment

- GD Connect 12 multi-compressor controller for several compressors
- Air dryers
- Compressed air after treatment line

# Whatever Your Request – GD Has The Smart Solution !

The **GD rotary screw compressor** range from 2.2 – 500 kW, are designed to meet the highest requirements which the modern work environment and machine operators place on them. As a result, the GD compressors are extremely energy efficient, quiet and reliable. These compressors continue to further strengthen Gardner Denver's success story – variable and fixed speed compressor technologies available.

The **OIL FREE GD EnviroAire** range from 15 – 110 kW provides high quality and energy efficient compressed air for use in a wide range of applications. The totally oil-free design eliminates the issue of contaminated air, reducing the risk and associated cost of product spoilage and rework, particularly for those customers operating in sterile environments – variable and fixed speed compressor technologies available.

A modern production system and process demand increasing levels of air quality. Our complete **Air Treatment Range** ensures the highest product quality and efficient operation.

#### Our Product range's consisting of:

- Refrigerant Dryers.
- Desiccant Dryers.
- Condensate Management.
- Oil / Water Separation Systems.

Compressors systems are typically comprised of multiple compressors delivering air to a common header. The combined capacity of these machines is generally greater than the maximum site demand. To ensure the system is operated to the highest levels of efficiency, the **GD Connect air management system** is essential.

- The modern **GD Connect 12** air management system can intelligently control up to 12 fixed speed or variable speed compressors.
- The simple **GD Connect 4** air system is the ideal control solution for smaller compressed air stations, and will intelligently control up to 4 fixed speed compressors.

For additional information please contact Gardner Denver or your local representative.

## **Gardner Denver**

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