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EasyAir™ Turbo

Plug and play air solutions
for industrial and wastewater applications

Revolving Around You™

Fully integrated compact plug and play turbo blower designed to deliver high efficiency with low maintenance

Howden is a world leading turbomachinery manufacturer with over 160 years of experience across our current and legacy brands such as Donkin™, Roots™, KK&K™, HV-TURBO™ and Turblex™.

Why Howden?

Howden products are designed to achieve maximum efficiency and long reliable operational life through our focus on engineering excellence. This has been established and enhanced across the largest base of single stage turbo compressors in the world.

Our manufacturing facilities maintain the highest levels of excellence with modern equipment and strict quality controls accredited to international standards. A full test capability across our entire range ensures confidence in the performance quality of each unit.

With over 50 operational sites globally we have the largest coverage for sales and service. This means we can respond swiftly to our customers' needs in the project stages as well as through the operational lifetime of equipment.

EasyAir Rotary	**EasyAir Turbo**	KA Series	SFG Series

Rotary and turbo blowers serving a wide range of plant and process capacities

Key benefits:

- ✓ High efficiency operation with unique dual point control
- ✓ Multi blower control removing the need for a master control panel
- ✓ Proven motor technology using active magnetic bearings
- ✓ Proven and reliable aerodynamic performance
- ✓ Simple handling and installation with a compact package
- ✓ Simplified maintenance for low lifetime costs
- ✓ Protection against power failure

EasyAir™ Turbo is a fully plug and play product, equipped with the following components **as standard:**

Turbo blower with unique dual point control system	HMI and PLC
Plug and play enclosure	Integrated control and monitoring instrumentation
Suction air filter	Power failure mode (no need for external UPS)
Blow off valve	EMC filter
Flexible inlet / discharge connections	Input choke
Non return valve (loose supply)	Variable Frequency Drive (VFD)
Integrated motor cooling	Sine filter for system and motor protection ensuring longlife
Integrated silencing	Permanent magnet motor with active magnetic bearing system
Multi blower operation	Testing to ISO5389

Field of application:

The EasyAir Turbo is part of the broader Howden turbo technology product range and uses well established aerodynamics that have been proven in an installed base of more than 20,000 turbo compressors.

EasyAir Turbo

Filters/silencer

Primary suction filter (grade EU4 or equivalent) installed on enclosure wall

Second coarse grid filter on the suction silencer

Impeller

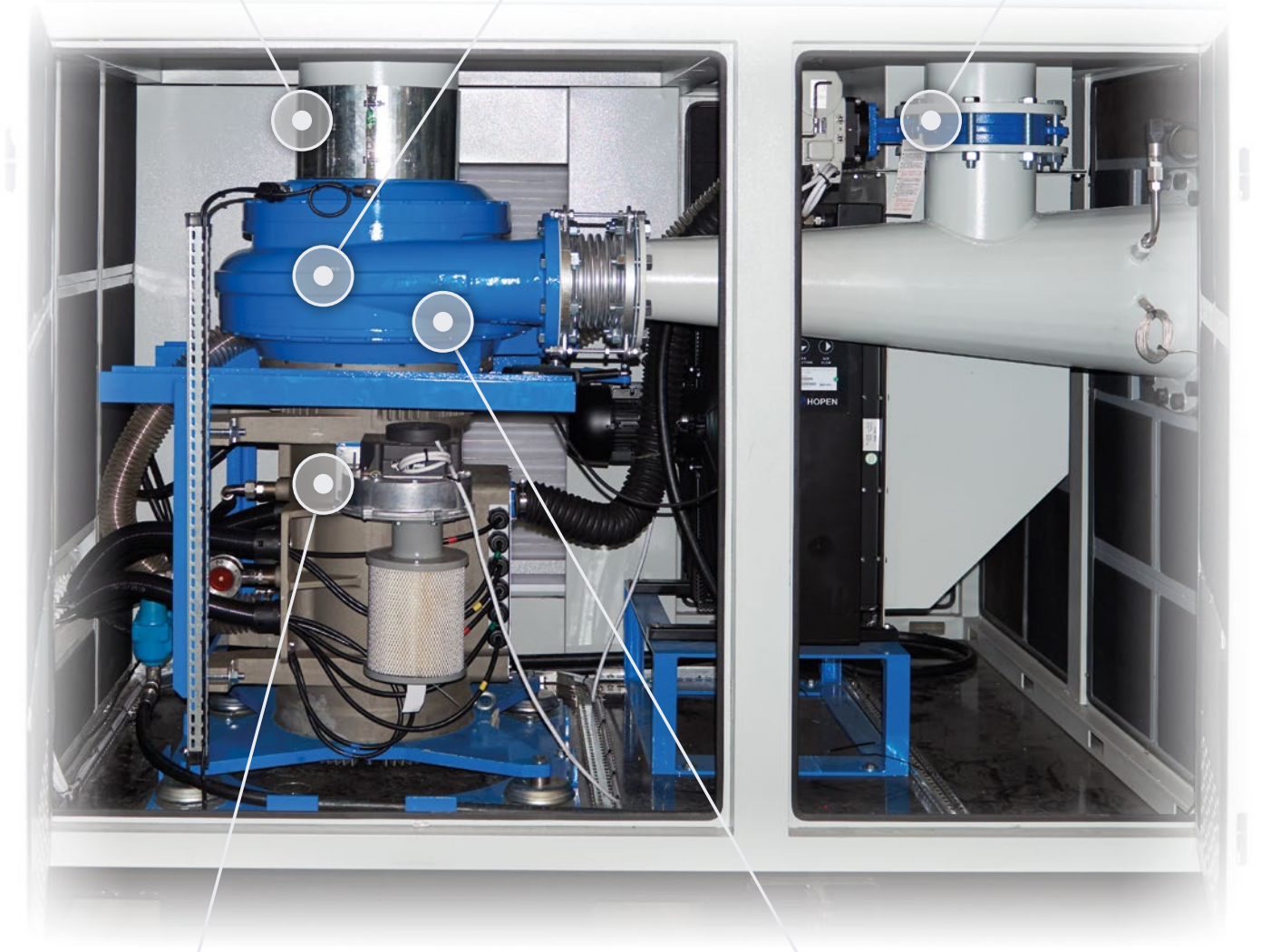
Single high efficiency impeller mounted directly onto motor shaft

Fully integrated blow off valve

Integrated in each package for both start up and blower surge protection

Valve – cast iron butterfly type

Actuator – quarter turn electrically operated



Motor

Active magnetic bearing technology

Oil free and zero friction

Integrated ceramic ball catcher bearing

Diffuser vanes

Volume and pressure control

Controlled by a linear actuator

Provides Dual Point Control in conjunction with integrated variable speed

Cooling (for larger units)

Three low noise draft cooling fans installed on the top of the electrical cabinet providing large cooling capacity

Motor and VFD Cooling is either by air or cooling water dependant on the motor and VFD combination and size

Motor cooling by size

Sinus filter

Cleans up the harmonic distortions between the VFD and Motor which if not cleaned will be burnt as heat in motor windings causing motor stress and efficiency loss

Active magnetic bearing controller

Controls the position of the motor bearings and monitors the bearing position up to 15000 times per second

Variable frequency drive

High frequency drive to control the speed of the blower

AC choke

Necessary to reduce harmonic distortion

Integrated PLC and HMI

Blower control and monitoring

EMC filter

Prevents electromagnetic interference to international standards

Integrated UPS function

Ensures that the motor safely comes to rest without damage in the event of a supply power failure

Pioneering technology to deliver high efficiency operation

Maximum efficiency – widest operating range

Applying advanced technology from much larger machines, Howden EasyAir Turbo packages incorporate Dual Point Capacity Control to provide optimised performance and minimal running costs throughout annual climatic and daily duty variations typically encountered.

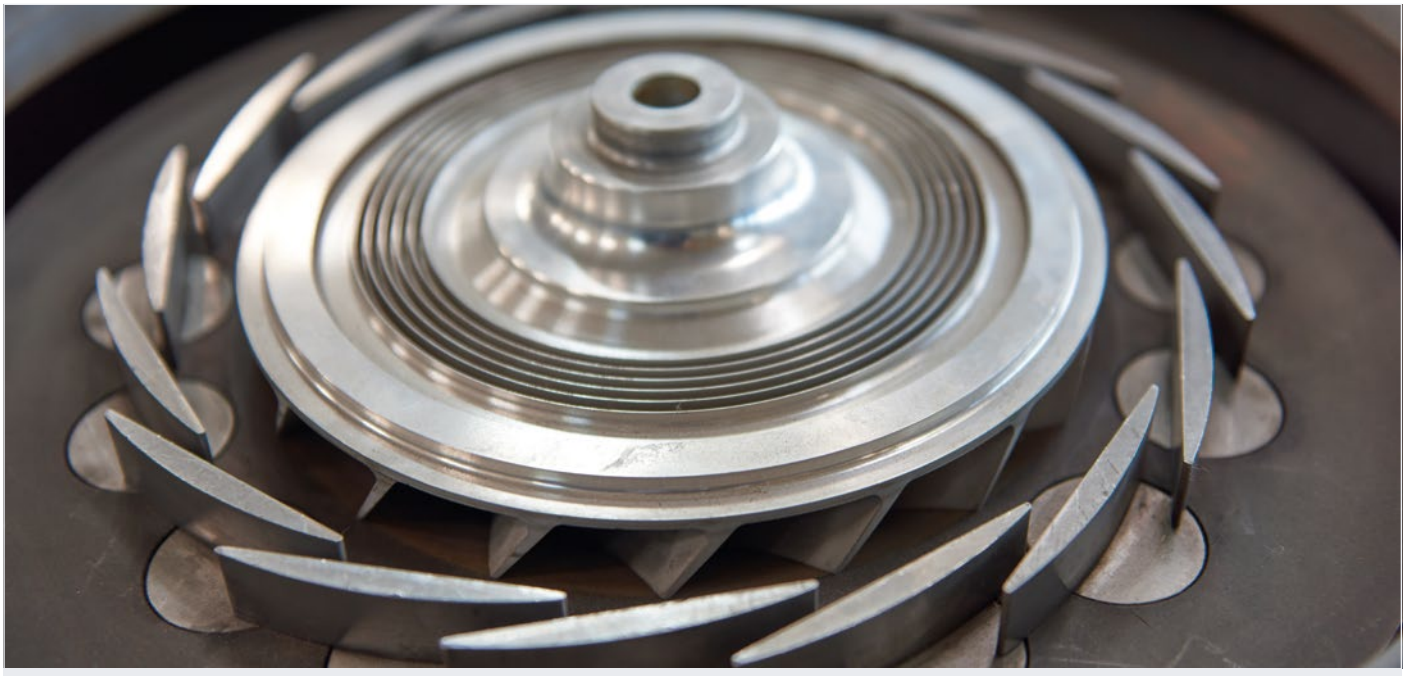
Basic principles of centrifugal compressor aerodynamics determine that speed variation primarily impacts pressure rise, whilst diffuser vanes primarily impacts volumetric flow. The High Speed Drive provides inherent speed variation, Variable Diffuser Vanes introduce a secondary element, and Howden Dual Point Capacity Control Algorithm logic combines to deliver a new advanced dimension for both efficiency and operating range.

Facilitates design for maximum flow and maximum ambient – plant extremes

Peak efficiencies retained for normal operation – reduced energy costs

Large operating envelope – reduced stop/start

Continuous smooth operation – increased reliability, reduced maintenance



Howden's unique dual point control – an industry first for maximum efficiency across all operating conditions.

Multi blower operation

EasyAir Turbo has a fully integrated 'multi blower control system' removing the need for an additional control system and master control panel. The system enables up to eight blowers on a network to be controlled.

This enables the plant to be operated at the maximum efficiency at all times through the use of our unique control algorithm by determining the optimal number of blowers required to match plant demand.

Enhanced plant reliability and availability

Reduced energy costs due to optimisation of the blower system in line with plant capacity demand

Cost saving from no additional control systems

Proven motor technology

The blower uses active magnetic bearing technology to provide zero friction oil free bearings which are well proven for highly reliable performance within multiple industrial applications.

The active bearing system operates with a control system that tracks and controls rotor position up to 15,000 times per second to eliminate vibration ensuring extended life. The shaft is levitated prior to start-up which provides extended life to system components.

System protection

In the event of power failure, machine protection is provided through the VFD and DC/DC Convertor meaning there is no requirement for an external UPS.

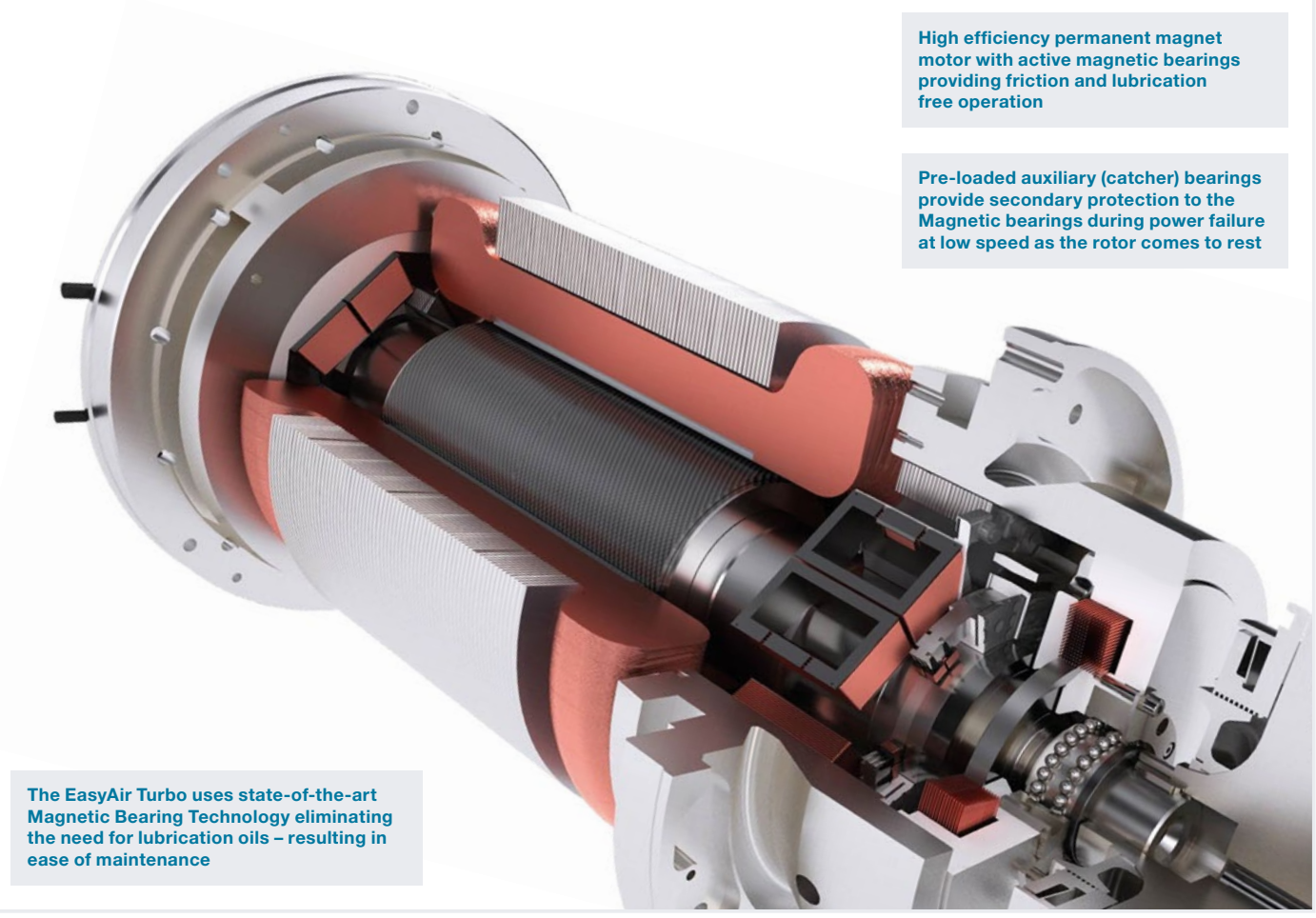
Motor 'catcher' bearings provide a secondary level of protection for the magnetic bearings.

Maintenance free giving low life costs

Oil free operation with proven reliability and maximum efficiency

Safe run down in the case of power failure avoiding bearing damage

No requirement for external batteries or UPS systems



High efficiency permanent magnet motor with active magnetic bearings providing friction and lubrication free operation

Pre-loaded auxiliary (catcher) bearings provide secondary protection to the Magnetic bearings during power failure at low speed as the rotor comes to rest

The EasyAir Turbo uses state-of-the-art Magnetic Bearing Technology eliminating the need for lubrication oils – resulting in ease of maintenance

Supplied fully integrated ready to install and operate

Simple handling and installation

EasyAir Turbo is a complete blower package in a single enclosure with plug and play concept.

It has a significantly smaller footprint than a traditional blower unit resulting in reduced plant space and foundation support requirements. As a result transportation and handling is simplified. Supplied complete with all ancillaries, there are no additional or hidden costs and all electrical filters are included reducing electrical disturbances.

Flexible to location environment

A fully flexible enclosure gives multiple placement options to fit site specific conditions.

The unit can be placed as a standalone unit in a new site or also be ducted into an existing filtration system. The flexible arrangement can also ensure warm air is removed through an external duct, when blower house temperatures need to be maintained. The low noise operation also ensures a better working environment for operators.

Reduced capital costs, civil and pipework

Reduced system losses providing increased energy saving

No additional motor starter or electronic components required

Reduced civil construction costs

Simplified installation resulting in time and cost savings at site

An aftercare service to maximise performance and longevity

We provide a multi-platform aftercare service built on three key requirements for maximising performance and longevity.

Our maintenance philosophy is that a combination of quality spare parts, ongoing maintenance by skilled engineers, and periodic improvements and upgrades will keep your equipment in the best condition. **Trust Howden to deliver on all three.**

Our aftercare service

The commissioning of one of our systems is the culmination of many months of design, testing, manufacturing and installation.

Partnering with Howden is the key to continuous, efficient plant performance with minimum downtime once it's up and running. Long Term Service Agreements are also available to ensure long term operation.

Simplified maintenance

As a direct drive machine with zero friction magnetic bearings there is no gearbox or lubrication system. Service requirement is minimized to filters.

Reduced maintenance costs

Less disruptive to operations

Quality assured parts

All Howden spare parts are manufactured to the highest quality and specifications.

Where we supply parts for Howden equipment, we refer to the original manufacturing drawings and specifications to ensure that new components are precision engineered to the original criteria.

Delivering performance optimisation with Howden Uptime

In Howden, we have combined our engineering expertise and product knowledge with our unique digital twin models and Augmented Reality (AR) driven services, to deliver Howden Uptime; the latest digital innovation offering a data driven advantage to our customers.

The EasyAir Turbo is fully equipped with Howden Uptime, and provides an invaluable insight into the performance of the equipment, offering blower and plant optimisation opportunities.

- Enabling predictive maintenance strategies
- Improving blower efficiency levels
- Providing a direct link to Howden experts
- Reducing total cost of ownership

The digital twin

Howden's unique digital twin model is a combination of a theoretical performance map created using our OEM expertise, and an operational data set which is fed through the model directly from the sensors that are deployed around the equipment.

When the theoretical performance map is superimposed on the real-life operational data, this enables the mapping of the current operation in respect to the equipment's best efficiency point, delivering performance optimisation and increasing the overall efficiency of your plant.

Augmented Reality (AR) enablement

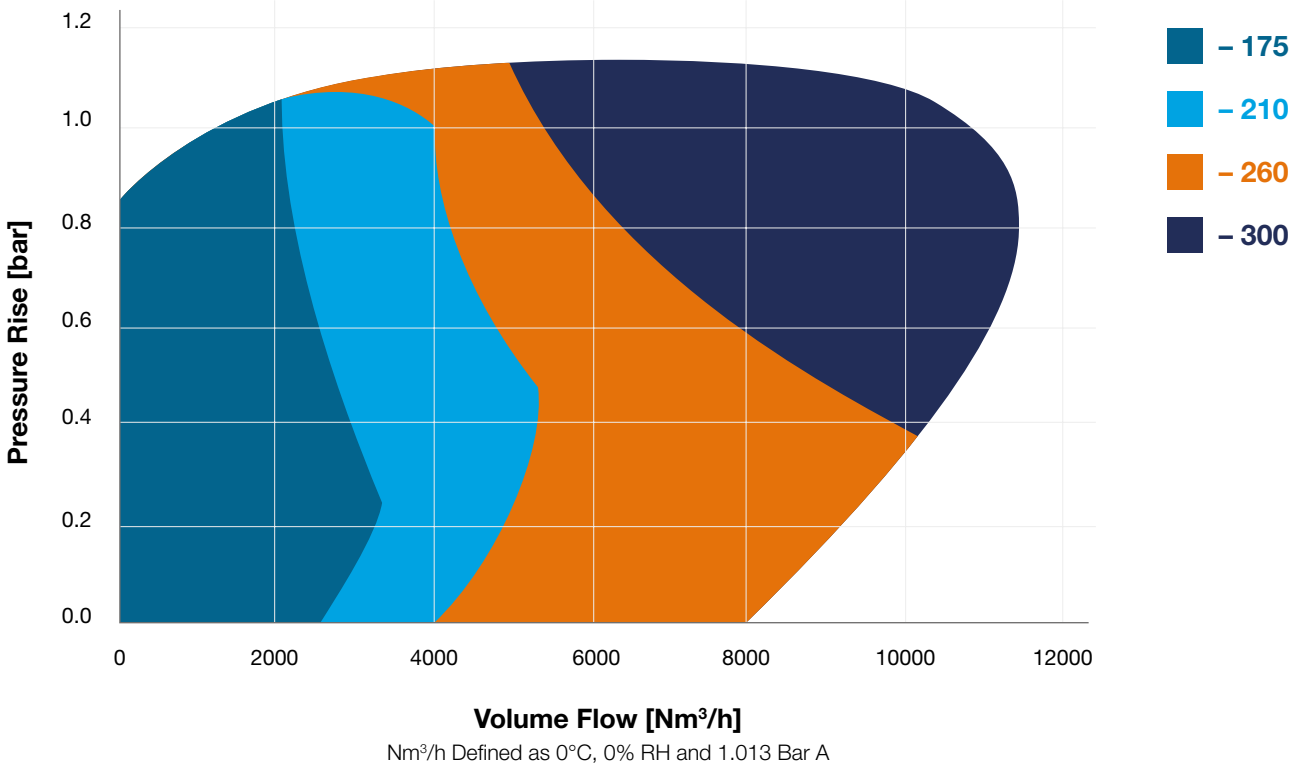
Howden's state-of–the-art AR service provides real-time sensor values which can be displayed on mobile and Microsoft HoloLens devices.

This allows the customer to witness a live performance of data while the machine is in operation. The AR service will display pressures, temperatures and vibration changes as they happen, and it will even pick up and alert the user of any anomalies.

Product range

EasyAir Turbo is available in 4 models.

Performance Envelope at 40°C, 1 Bar, 60% RH



Nm³/h Defined as 0°C, 0% RH and 1.013 Bar A

	EasyAir Turbo 175	EasyAir Turbo 210	EasyAir Turbo 260	EasyAir Turbo 300
Max available turndown	30%	30%	30%	30%
Max. operating speed (rpm)	35,000	30,000	21,000	21,000
Rated shaft power (kW)	90	150	200	300
Cooling medium	Air	Air	Air/Water	Air/Water
Discharge flange (ANSI CL.150)	DN200	DN250	DN350	DN350
Length (mm)	2,150	2,150	3,200	3,200
Width (mm)	1,650	2,140	2,200	2,200
Height (mm)	1,825	1,925	2,363	2,363

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At the heart of your operations

Howden people live to improve our products and services and for over 160 years our world has revolved around our customers. This dedication means our air and gas handling equipment adds maximum value to your operations. We have innovation in our hearts and every day we focus on providing you with the best solutions for your vital operations.

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