TURBOMOLECULAR PUMPS
HIGH PERFORMANCE & RELIABILITY

INNOVATIVE PRODUCTS       GLOBAL STRENGTH       LOCAL SUPPORT       VACUUM EXPERTISE

WWW.EDWARDSVACUUM.COM/TURBO
Edwards is the world-leader in design, technical innovation, manufacture and supply of vacuum pumps. As the proud pioneer and market leader in dry vacuum pump technologies, Edwards offers a wide range of proven and innovative technologies to provide the clean and robust vacuum solutions required: from microbiology laboratory through industrial coating to semiconductor production.

VACUUM SOLUTIONS YOU CAN RELY ON, FROM A COMPANY YOU CAN TRUST

Range
- 70 l s\(^{-1}\) to 4500 l s\(^{-1}\), throughputs to 6 slm
- Continuous investment in new product development

Performance
- Corrosion resistance
- Low maintenance
- UHV and high throughput versions
- On-board controllers
- Lowest vibration and noise

Manufacturing excellence
- Advanced machining
- Total quality oriented manufacturing
- Computer-aided design

Support
- Over 200,000 units installed worldwide
- Global services and support network
- Specialist applications support available for system optimization
**EXT RANGE**

**HYBRID BEARING TECHNOLOGY**

**Upper Bearing**
- Passive bearing that uses forces of repulsion between permanent magnets to control the position of the rotor.
- Non-contacting and hydrocarbon-free performance.

**Holweck Stage**
- Improved compression ratio with tolerance to high backing pressures.
- Interstage pumping ports available for system rationalisation.

**Drive**
- Brushless dc motor with intelligent drive monitoring.

**Lower Bearing**
- Hardwearing silicon nitride ceramic bearings lubricated for life.
- Low vibration performance field-proven in scientific instrument applications.

**Technology choice**

The **EXT range** offers cost effective, reliable and low vibration performance. For further convenience we also provide a range of pumping stations that combine the EXT turbomolecular pump with suitable backing pump for a simple plug-and-play solution.

**STP RANGE**

**MAGLEV BEARING TECHNOLOGY**

**Upper Bearing**
- Active electromagnetic bearing providing multi-axis control to the rotor.
- No maintenance and completely oil free.

**Holweck Stage**
- Designed for maximum throughput.
- Heating jacket option prevents by-product deposition.

**Drive**
- Brushless dc motor.
- Comprehensive health check diagnostics option.

**Lower Bearing**
- Active electromagnetic bearing to provide multi-axis control to the rotor.
- Ultra low vibration.

**Technology choice**

For more demanding applications requiring corrosion resistance, completely dry vacuum or ultra-low vibration, the **STP range** offers outstanding performance with field-proven reliability.
EXT TURBOMOLECULAR PUMPS

The rotor is supported by a hybrid permanent magnet upper bearing and lubricated SiN ceramic lower bearing arrangement.

- High critical backing pressures
- High compression ratios
- Unique range of configurations: Split-flow to UHV
- Multiple communication modes
- CSA/UL approved, CE marked

**EXTDX Technology**

Based on the proven EXT hybrid technology and applies the benefits of integrated on-board control. Functionality includes digital operation with parallel and serial modes, also including Profibus® options.

- **EXT75DX and EXT255DX pumps**
- **Available in flange sizes from NW40 to ISO100**
- **Pumping speed from 60 to 220 ls⁻¹**
- **Multifunctional control features**
  - Programmable power limit settings
  - Automatic vent
  - Electronic braking
  - Multiple communications modes
  - Configurable analog output

**EXTPX Technology**

Combines traditional turbomolecular and drag stages with a unique fluid dynamic stage for superior performance with inlet gas load at higher backing pressures.

- **Available in ISO100 & 160, CF100 & 160**
- **Pumping speeds from 310 ls⁻¹ to 400 ls⁻¹**
- **High backing pressure tolerance (up to 17 mbar)**
- **Optional ‘booster’ port provides additional pumping speeds of up to 24 m³h⁻¹ at up to 4 mbar pressure**

The rotor is supported by a hybrid permanent magnet upper bearing and lubricated SiN ceramic lower bearing arrangement.
EXT556
Based on Edwards highly reliable hybrid bearing arrangement with compound turbomolecular pump technologies.

- Superior pumping speeds of up to 540 ls⁻¹
- Excellent compression ratios, particularly for light gases (H₂ and He)
- High backing pressure tolerance
- Martensitic envelopes available for high resistance to external magnetic fields

EXT Splitflow
Rationalizes your vacuum system requirements eliminating the need for multiple turbomolecular pumps.

- Particularly suitable for Mass Spectrometry applications
- Multiple inlets operating over wide pressure regimes
- Based on proven EXT compound technology
- Also available with EXTPX technology for further system simplification and power consumption reduction
- Customized interfaces available

Turbo cart stations
Your vacuum solution at the push of a button.

- Vast number of configurable options available
  - choice of turbomolecular pump
  - choice of backing pump - wet or dry
  - choice of controller
  - choice of accessories
- Fully customized solutions also available
The rotor is entirely supported by magnetic bearings so there is no contact between the rotor and the pump body.

- **Extreme low vibration**
- **No bearings to wear**
- **Maintenance free - typical clean application MTBF 500,000 hours**
- **Hydrocarbon lubricant free**
- **Any orientation mounting**
- **UL listed, CE marked and SEMI® S2 compliant**

**Ultra High Vacuum (UHV) series**

- 300 to 1000 ls⁻¹, <10⁻¹⁰ mbar (CF flange)
- **Low vibration**
- **Highest reliability**
- **Maintenance free**
- **Harsh process compatible (C version)**

**UHV Low Vibration series**

- 300 to 400 ls⁻¹
- **Built-in vibration isolator gives ultra low vibration performance**
- **Increased pumping performance**
- **Compact design**
- **Easy installation - one simple pump component solution**
- **Low magnetic field variants available**
**Advanced High Throughput Maglev pumps**

- 300 to 4500 l/s⁻¹, 6 slm throughput class pump
- Advanced series rotor technology and 3D blade design
- The Holweck drag stage with reversed spiral for high gas throughput
- Digital 5-axis control
- Harsh duty compatible
- Class leading performance on ISO250
- Increased $H_2$, $N_2$ and Ar performances

**Integrated Controller**

- 300 to 2200 l/s⁻¹
- Compact design including a fully integrated controller
- Innovative, self-sensing magnetic bearing system
- Digital 5-axis control
- Can be configured to run corrosive processes
- Automatic Balancing System (ABS) standard
- Automatic Vibration Reduction (AVR) standard
- Reduces cabling requirement (no separate controller)
- Profibus® available
- IP54 rated
To complement the EXT product range, Edwards has a suite of pump controllers to meet the various requirements of both the end user and OEM market places. For the majority of EXT pumps the Turbo Instrument Controller (TIC) can act as a simple pump controller or can provide complete control of a vacuum system including backing pump, gauges and a computer interface. A selection of simple end user and OEM configurations are shown below as is a more complex system demonstrating the capability of the TIC.

A  TIC turbo/inst cont RS232
B  Mains cable
C  TIC relay box small backing
D  APGX-M
E  AIGX-S
F  WRG-S
G  RV pump
H  EXT75DX/255DX
J  Heater band 240 V, 60 W*
K  Vent valve
L  Air-cooler
M  TIC logic interface cable
N  TIC mains cable
P  TIC logic interface cable
Q  XDD/DX/EXDC extension cable
R  TIC RS232 interface cable
S  2 m active gauge cable
T  PC with RS232 interface (optional)
### Auto Tuning

Allows for the following tasks and improves maintainability:

- Only turbomolecular pump to be replaced
- Combination change in the same models
- Cable length change
- Reduced number of backup systems

### Diagnostics & Monitoring

Individual information about the pump error saved by the controller, for example:

- Pump/control unit serial number
- Pump/control unit operating time
- Number of starts
- Error record (error history)
- Bearing damage level
- Self diagnostic feature allows prevention of pump failure and saves process time and cost

### Adjustable Rotational Speed - 50 -100% running speed

Enables selection of optimum pumping characteristics for each process. Changeable from:

- Front panel
- Remote communications

### Serial Communication

- RS232/485 included as standard and enables remote operation and central monitoring of the STP pump

### Auto vibration reduction

- Minimizes vibration of the rotation system during acceleration
- Stabilizes acceleration when deposit produces imbalance on rotor

### ABS (Automatic balancing System)

- Rotates a pump by the internal force as in the way of current control
- Decreases vibration in the normal rotation range

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- **Standard**
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Contact Edwards for advice on choosing the most suitable pump for your application.

### Global Service Support

Edwards system of total customer support combines a wide choice of service options and a comprehensive range of original spare parts and ensures that we continue to support our products throughout their lifetime. Our uniquely global service support structure ensures that this support is provided around the globe.
Edwards has nearly 100 years of experience in supplying essential vacuum systems and related products. We serve the world’s most advanced industries including semiconductor, flat panel display, solar, chemical, pharmaceutical, metallurgical, analytical instrumentation and research & development.

Our 4,000+ skilled employees are dedicated to providing innovative technologies, applications expertise and the highest level of service. Whether we are supporting the most modern fabs or the latest university research laboratory, you will find that Edwards can be essential to your process.

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- Turbomolecular Pumps
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- Chillers
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