

# Exhaust Flap Valves

- Exhaust gas flow control for high performance vehicles.

## Concept:

Fitted to the exhaust pipe, they open and close to alter the gas flow, optimising engine efficiency, acceleration and sound.

## Design:

Robust assembly with optional additional features.

Actuator technology from one of the market leaders. Valve design responsive to the customers' requirements.

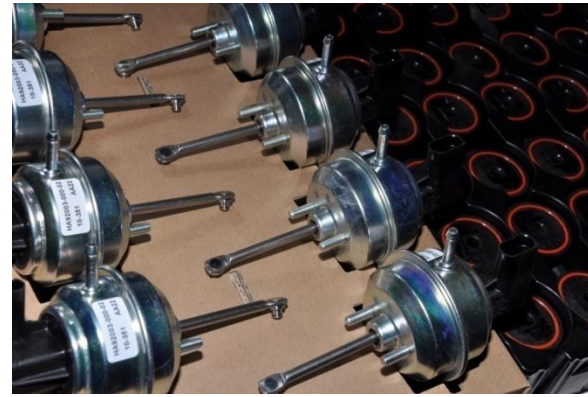
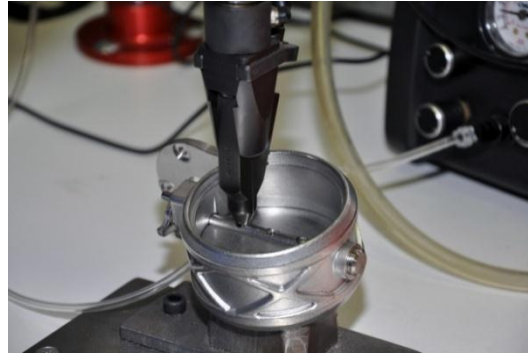
Additional technologies, including electrical actuation, are in preparation.

## Reliability:

Validation tests include gas-stand endurance, hot & cold ambient temperature endurance, vibration and salt-spray



# Design and production in the UK



# Exhaust Flap Valves

Robust pneumatic actuator design (circa 3,500,000 produced by Helical each year)

High temperature bearings at both ends of butterfly spindle



Low cost riveted design

Low cost cast bracket

Cast stainless steel valve body with stiffening ribs

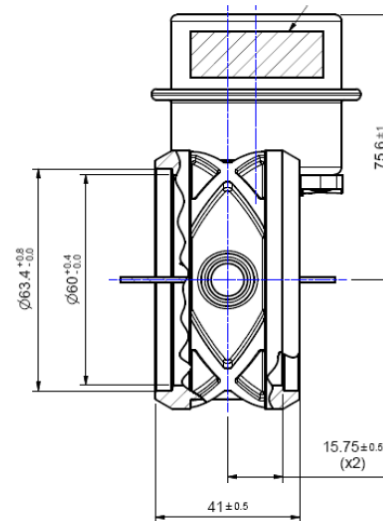
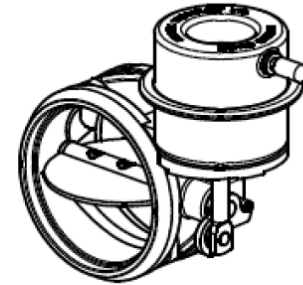
Flat sealing faces

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## 'Standard' 60mm Exhaust Flap Valve Data Sheet

### Rev 3.0

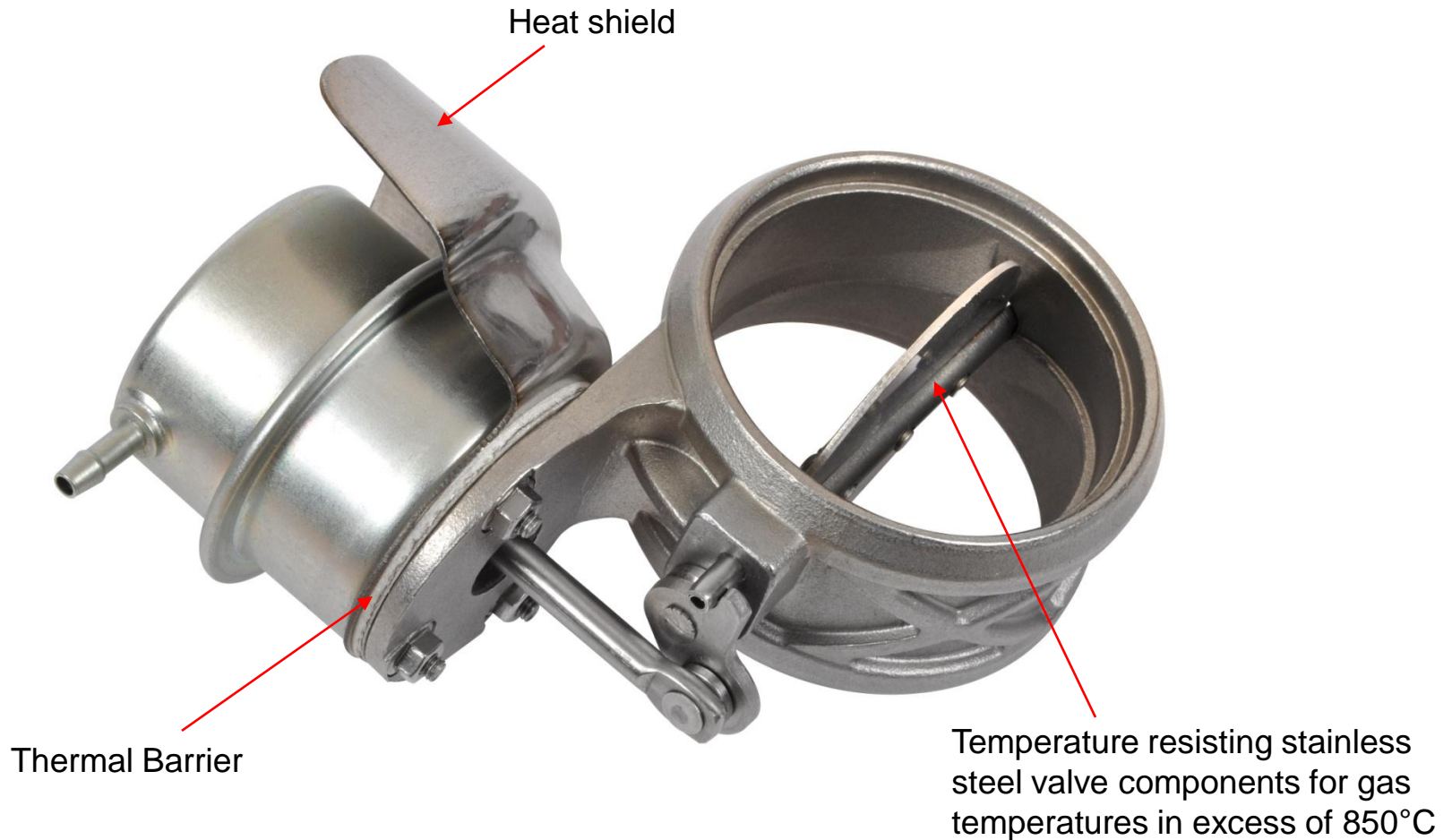
Helical Technology Part Number	HA46002-000-03
Default flap position	Normally open
Operational Vacuum	-300 to -950 mbar
Vacuum Hose Fitting	To suit 4mm bore flexible hose
Internal Leakage	60 l/min maximum at 0.02 bar
External leakage	Circa 10 l/min at 300 mbar ( <i>&lt;1 l/min option available</i> )
Actuator leakage	10 cc/min max at -850 mbar
Operational Ambient Temperature Limits	-40 to +200°C
Maximum Exhaust Gas Temperature	850°C
Response Speed	<200ms at -450mbar
Valve Assembly Material	1.4301 Stainless Steel
Actuator Assembly Material	Mild Steel with trivalent zinc plate plus sealer
Weight	628g
Connection method between Actuator and Valve Ass'y	3 X Stainless Steel Rivets



\*valve open to valve closed = 160ms + ECU processing time + control system delay

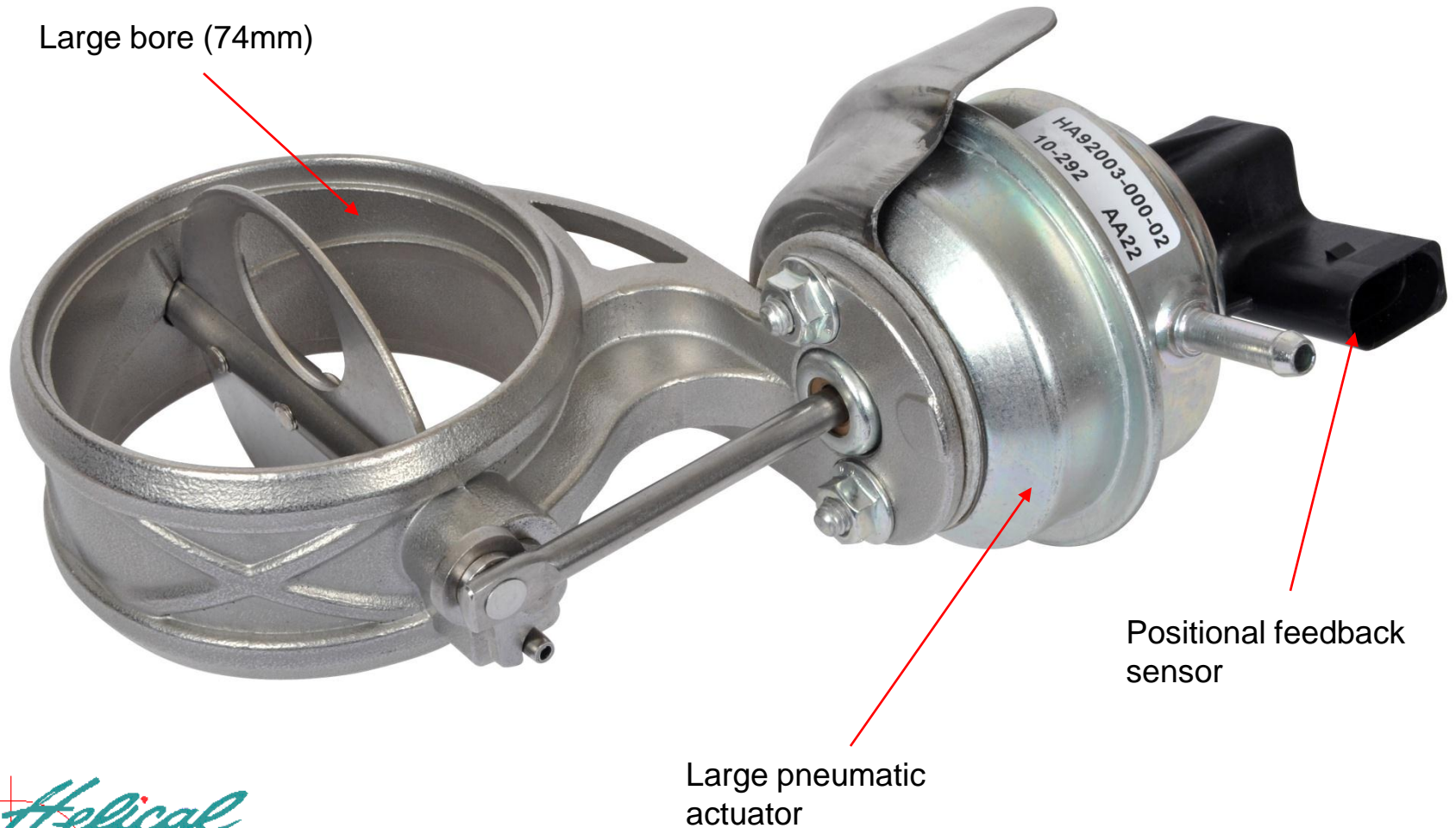
# Exhaust Flap Valves

Adaptive design to suit customer-specific applications



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Adaptive design to suit customer-specific applications



# Helical products

- Actuators for turbochargers



- Flap valve/actuator assemblies



- Valve rotators



# Customer oriented strengths

- Independent company
- Specialist project management
- Long-term product strategy and focus
- Full range of design and manufacturing skills – actuators, rotators, flap valves **and springs**
- In-house testing facilities
- Competitive products
- Worldwide presence with European HQ, Chinese subsidiary and JV, and Indian subsidiary
- Flexibility to expand production capacity
- A coherent team, focused on the customer

