

HST™ 40 Turbocompressor

SULZER

A highly efficient and reliable single-stage centrifugal compressor for the provision of oil-free, low-pressure air.

Construction

High-speed electric motor

A horizontally mounted high-frequency electric motor for variable speed operation. The motor is air-cooled by an integrated shaft mounted fan and the windings are protected by Pt100-sensors monitored by the local control system.

Air end

The impeller has been designed to optimize performance and is machined from a solid piece of high-strength aluminum alloy. The volute and other main components are made from cast aluminum. A non-contact seal between air-end and motor minimizes losses to maintain high efficiency.

Variable frequency drive

Flow control is provided by a built-in variable frequency drive which also accommodates variations in outlet pressure and ambient inlet conditions. The variable frequency drive's soft-start facility eliminates peak starting currents.

Active magnetic bearings

Two radial bearings and two axial bearings support the rotor. The magnetic bearing controller uses data provided by multiple sensors to continuously manage the position of the rotor.

Blow-off valve

The blow-off valve is mounted within the acoustic enclosure with further attenuation provided by an integrated silencer.

Acoustic enclosure

The enclosure provides protection for the electrical and mechanical components and provides efficient noise attenuation for the machine. The enclosure is constructed from zinc-plated steel. It is suitable for indoor use (IP33D / NEMA 2).



Integrated components

The filters for cooling air and the motor cooling air silencers are all integrated into the main assembly.

Compressor Control

Local control

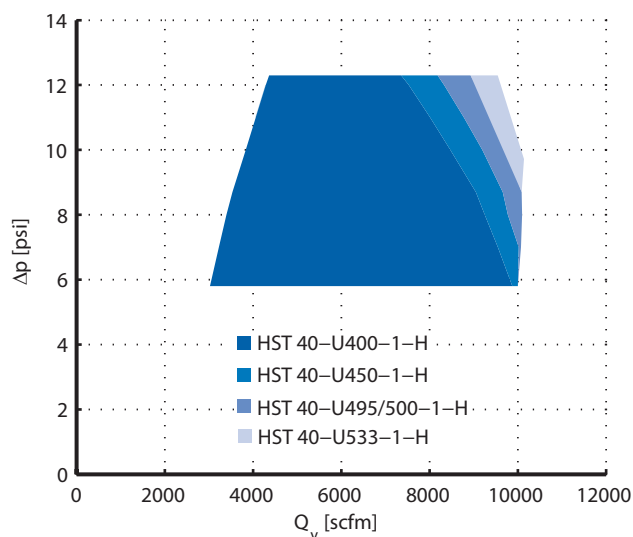
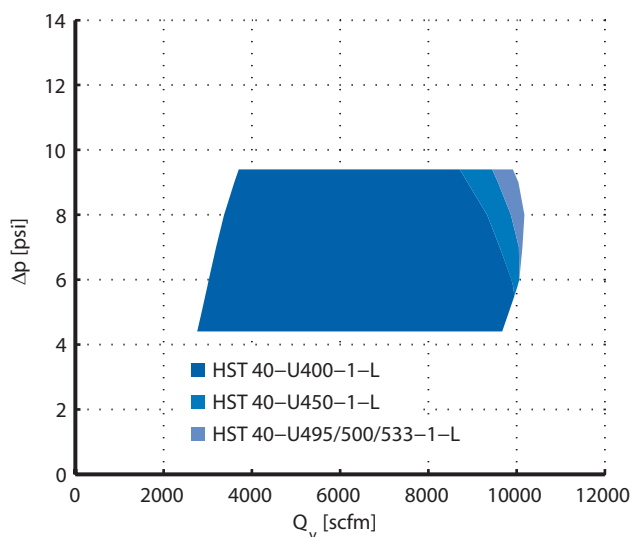
The built-in local Human-Machine-Interface (HMI) provides control and monitoring for the safe and efficient operation of the machine. Flow may be controlled directly by the operator, or alternatively, the turbocompressor can follow a given reference value. The local HMI uses a keypad and text display to provide access to the operator.

Connections

Analog and digital control and monitoring connections are built in. Fieldbus connections such as Profibus, Profinet, Modbus RTU, Modbus TCP, and EtherNet/IP are available as options.

Remote connections

A secure connection facilitating service and monitoring can be ordered as an option.



Options

Various options for handling special requirements regarding e.g., temperature, dusty environments and locations with high moisture can be selected.

Accessories

Required accessories for installation such as flexible joints, valves, silencers, and air filters are available from Sulzer.

Performance Testing

Compressor performance tests are performed on every machine manufactured and certificates issued to confirm compliance. The tests are carried out at the Sulzer factory test facility. Performance is guaranteed with a manufacturing tolerance of $\pm 2\%$ and a measurement tolerance according to ISO 5389. Optionally tests can be performed according to ISO 5389 or ASME PTC 10. The test can be witnessed by the customer or a third party inspector.

Certification and Standards

The compressor is certified according to the relevant UL and CSA standards:

- UL 1450
- CSA C22.2 No. 68

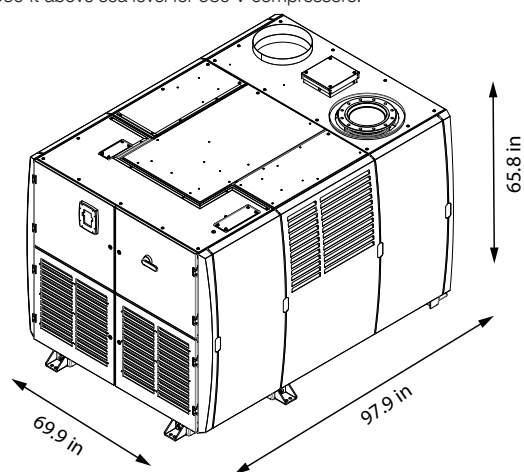
The product is designed and manufactured in accordance with EN 61800-3 standard and intended for use in second environment locations, e.g., in industrial areas.

Installation Conditions ⁽¹⁾

Altitude	
Maximum altitude	8200 ft above sea level ⁽²⁾
Air quality	
Permitted chemical vapors	IEC 60721-3-3 class 3C3
Ambient conditions	
Ambient temperature range	Min. 14 °F, max. +113 °F
Ambient relative humidity	< 95 %, non-condensing, non-corrosive, no dripping water
Inlet conditions	
Air temperature range for ducted process air inlet	Min. -22 °F, max. +122 °F

⁽¹⁾ Sulzer may approve applications outside these criteria.

⁽²⁾ 6560 ft above sea level for 580 V compressors.



Compressor Data

HST 40-	U400-1-L-48	U450-1-L-48	U500-1-L-48	U533-1-L-48	U400-1-H-48	U450-1-H-48	U500-1-H-48	U533-1-H-48
Air flow range [scfm]	2800-9900	2800-10000	2800-10100	2800-10300	3100-9900	3100-10000	3100-10100	3100-10300
Pressure rise [psi]	4.4-9.4	4.4-9.4	4.4-9.4	4.4-9.4	5.8-12.3	5.8-12.3	5.8-12.3	5.8-12.3
Noise level [dB]	67	70	70	70	65	66	69	69
Input power [hp]	400	450	500	533	400	450	500	533
Main supply voltage [V]	460-500	460-500	460-500	460-500	460-500	460-500	460-500	460-500
Input power frequency [Hz]	50/60	50/60	50/60	50/60	50/60	50/60	50/60	50/60
Max. input current [A] ⁽³⁾	389	438	486	518	389	438	486	518
Cable size [AWG or MCM]	2x(3x500+2/0)	2x(3x750+1/0)	2x(3x750+1/0)	2x(3x750+1/0)	2x(3x500+2/0)	2x(3x750+1/0)	2x(3x750+1/0)	2x(3x750+1/0)
Fuse size [A]	400	500	500	630	400	500	500	630
Auxiliary current [A]	10	10	10	10	10	10	10	10
Auxiliary supply [V]	360-550	360-550	360-550	360-550	360-550	360-550	360-550	360-550
Weight [lb]	4130	4200	4200	4200	4130	4200	4200	4200

HST 40-	U400-1-L-58	U450-1-L-58	U495-1-L-58	U400-1-H-58	U450-1-H-58	U495-1-H-58
Air flow range [scfm]	2800-9900	2800-10000	2800-10100	3100-9900	3100-10000	3100-10100
Pressure rise [psi]	4.4-9.4	4.4-9.4	4.4-9.4	5.8-12.3	5.8-12.3	5.8-12.3
Noise level [dB]	67	70	70	65	66	69
Input power [hp]	400	450	495	400	450	495
Main supply voltage [V]	560-600	560-600	560-600	560-600	560-600	560-600
Input power frequency [Hz]	50/60	50/60	50/60	50/60	50/60	50/60
Max. input current [A] ⁽³⁾	322	362	398	322	362	398
Cable size [AWG or MCM]	2x(3x350+3/0)	2x(3x400+2/0)	2x(3x500+2/0)	2x(3x350+3/0)	2x(3x400+2/0)	2x(3x500+2/0)
Fuse size [A]	400	400	400	400	400	400
Auxiliary current [A]	10	10	10	10	10	10
Auxiliary supply [V]	360-550	360-550	360-550	360-550	360-550	360-550
Weight [lb]	4130	4130	4130	4130	4130	4130

⁽³⁾ The maximum input current is calculated using the nominal voltage. The cable and fuse sizes are recommendations and based on the supply current and cables rated to 158 °F.

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