

ABS turbocompressor HST 20

Single-stage centrifugal compressor for absolutely oil-free supply of air. The turbocompressor featuring variable speed control for continuously variable power optimization according to the changes in inlet conditions and differential pressure.

Construction

- Integrated high speed electric motor
- Frequency converter
- Total oil-free magnetic bearings
- Blow-off valve with silencer
- Local control
- All safety control required for monitoring
- Sound isolation enclosure
- All mounted on a common base plate
- Accessories for inlet/outlet (as options)

High speed electric motor

Air cooled variable speed high frequency electric motor. The impeller and the motor cooling fan are mounted directly to the motor shaft. Vertically mounted motor with magnetic bearings and variable rotation speed.

Frequency converter

In-built frequency converter for variable motor speed control and optimal efficiency at all operation points. Start-up with soft start function. Includes Rfi-filter that attenuates the radio frequency interference.

Impeller

Impeller shaped from a solid piece of high-strength aluminium alloy on a numerical machining center in CAM technology. Impeller design with 3 dimensional shaped blades, individually optimized to the design range of the compressor.

Magnetic bearings

Two radial bearings with 8 pole magnets each and two axial magnetic bearing with 2 pole magnets each and continuous rotor position measurement controlled by active magnetic bearing controller. Including Rfi-filter.

Features:

- No mechanical contact between surfaces
- No mechanical friction
- No wearing
- No oil lubrication
- Vibration free operation
- Continuous rotor balance monitoring and unbalance compensation



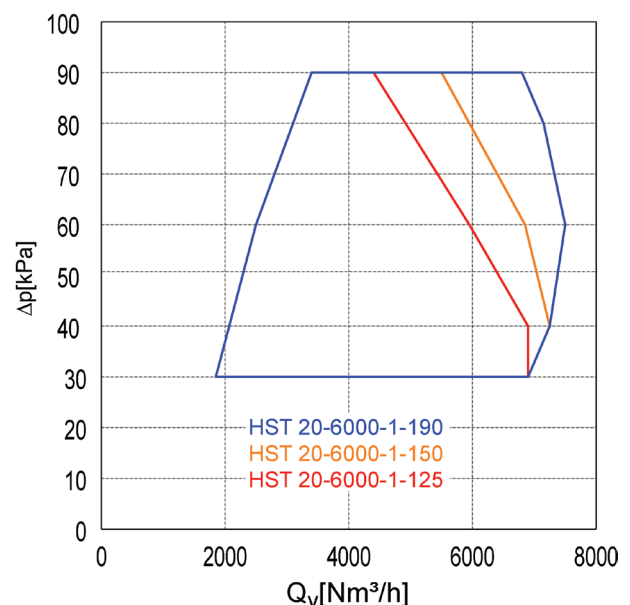
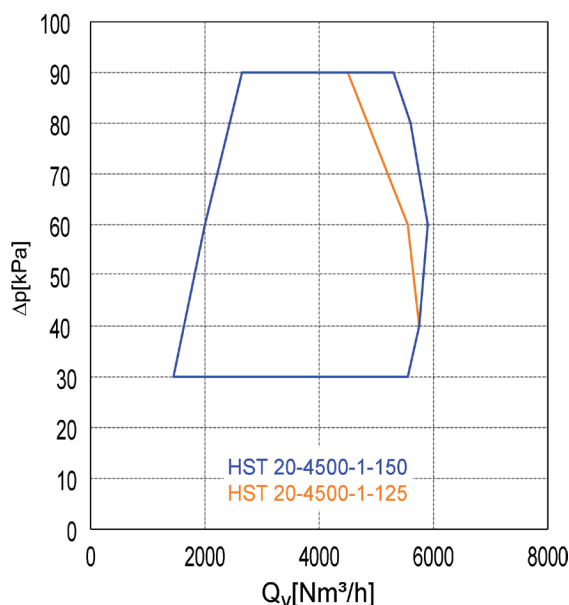
Directives

- Machinery Directive (MD), 2006/42/EC, 2009/127/EC
- Low Voltage Directive (LVD), 2006/95/EC
- Electromagnetic Compatibility (EMCD), 2004/108/EC
- Available as CE or UL certified

The product is designed and manufactured to be connected to industrial network in accordance with EN 61800-3 standard. (EMC product standard for adjustable speed electrical power drive system.)

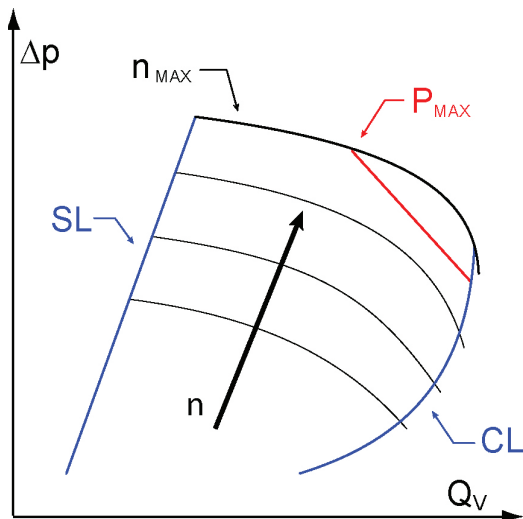
Test run

Performance test and acceptance according to ISO 5389 will be performed on Sulzer test stand and attested. The design values of the performance are guaranteed within a manufacturing tolerance of $\pm 2\%$. The measurement uncertainty is evaluated according to ISO 5389.



Flow control

The variable speed drive automatically adjust to the changing requirements giving optimal energy consumption.



The operation area of the compressor is presented as a performance map where:

- Volume flow rate [Q_v]
- Pressure rise [Δp]
- Rotational speed [n]

The limits are programmed in the application software:

- Surge limit [SL]
- Choke limit [CL]
- Power limit [P_{max}]
- Speed limit [n_{max}]

Compressor control

Connections
Analog and Digital I/O as standard
Ethernet
Profibus, Modbus or DeviceNet (as an option)
Local control and monitoring
Color touch screen
Widely customizable monitoring content to suit individual requirements
Visualized efficiency monitoring for optimal energy usage
Extensive diagnostics, trends and log files
Remote control and monitoring
Available via internet, local network or modem (as an option)

Cooling air quality

Chemical vapours according to IEC 60721-3-3 class 3C3	Ave. / Max [mg/m ³]
Sulphur dioxide (SO ₂)	5,0 / 10
Hydrogen sulphur (H ₂ S)	3,0 / 10
Chlorine (Cl)	0,3 / 1,0
Hydrogen chloride (HCl)	1,0 / 5,0
Hydrogen fluoride (HF)	0,1 / 2,0
Ammonia (NH ₃)	10 / 35
Ozone (O ₃)	0,1 / 0,3
Nitrogen oxides (NO _x)	3,0 / 9,0

Compressor data

	HST 20-				
	4500-1-125	4500-1-150	6000-1-125	6000-1-150	6000-1-190
Air flow range [Nm ³ /h]	2000-5500	2000-5800	2000-6500	2000-6750	2000-7000
Pressure rise [kPa]	30-90	30-90	30-90	30-90	30-90
Max noise level [dB]	70	70	70	70	70
Input power [kW]	125	150	125	150	190
Max. current (400V) [A]	198	238	198	238	301
Max. current (500V) [A]	159	190	159	190	241
Max. current (690V) [A]	115	138	115	138	175
Power supply [V]	380-690	380-690	380-690	380-690	380-690
Input power frequency [Hz]	50/60	50/60	50/60	50/60	50/60
Protection class	IP 33D	IP 33D	IP 33D	IP 33D	IP 33D
Thermal protection	Pt100	Pt100	Pt100	Pt100	Pt100

SULZER

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