HITACHI
Inspire the Next

SULLAIR TWO-STAGE

Rotary Screw Air Compressors

Constant Speed and Variable Speed Drives (VSD)

149–450 kW | 200–600 hp

SULLAIR

Hitachi Global Air Power

Legendary Sullair Products

Sullair compressed air solutions have been at the leading edge of rotary screw technology since 1965. The legacy continues as Hitachi Global Air Power—featuring the legendary Sullair product line.

COMPRESSED AIR SOLUTIONS DESIGNED FOR RELIABILITY & DURABILITY

RELIABILITY

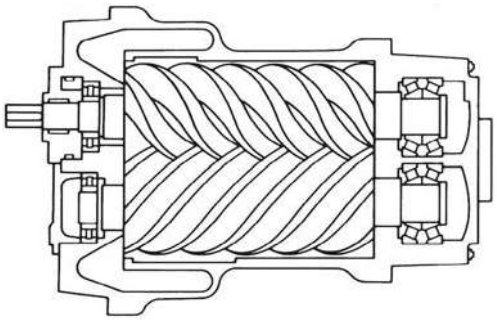
Customers who work with Sullair compressors have found intangibles make all the difference—things like trust, confidence and peace of mind. They go to work every day having full faith in their equipment, as well as the knowledge they have access to true compressor experts ready to support them every step of the way.

DURABILITY

Bulletproof. Built to last. However you spin it, Sullair compressors are in it for the long haul, driven by the design of the legendary air end. All over the world, you'll find Sullair compressors that have stood the test of time, running consistently today as they did on day one.

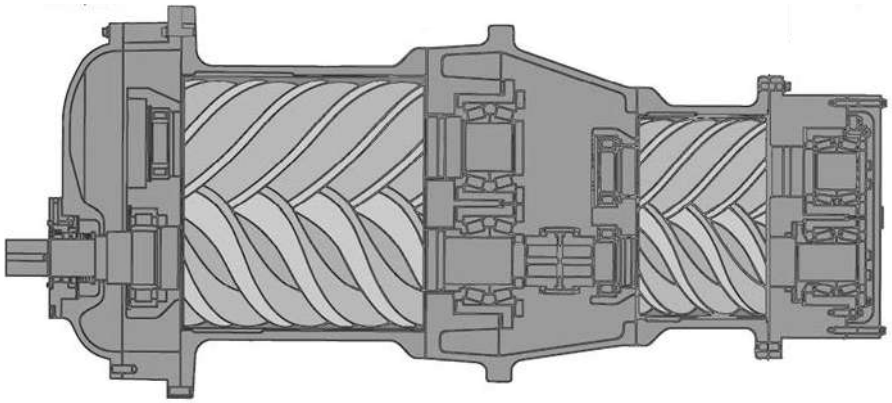
The Hitachi Global Air Power network of engineering and quality experts continues to build next-generation, environment-forward compressed air solutions to meet the demands of today's hard-working customers.

TWO-STAGE COMPRESSION ADVANTAGES AT FULL-LOAD



Intake	Compression Ratio	Discharge
14.5 psi	7.9 to 1	114.5 psi

SINGLE-STAGE



Intake	Compression Ratio	Interstage	Compression Ratio	Discharge
14.5 psi	2.8 to 1	41 psi	2.8 to 1	114.5 psi

TWO-STAGE

Rotary Screw Reliability

Two-Stage Series tandem compressors use a two-stage rotary screw air end, featuring the Sullair rugged bearing design:

- Tapered roller bearings on the discharge end
- Cylindrical roller bearings on the inlet for high load carrying capacity

Dividing compression across two stages also extends bearing life.

Broad Operating Range

Power: 400–600 hp (300-450 kW)
Delivery: 1681–3000 cfm (47.6–84.9 m3/min)
Pressure: 100–175 psi (7–12 bar)

Two-Stage Extreme Pressure models available

Power: 200–500 hp (149–373 kW)
Delivery: 500–1350 cfm (14.2–37.8 m³/min)
Pressure: 225–500 psi (15.5–34.5 bar)

Setting the industry standard since 1984 with a superior end-to-end design

- Unique rotor arrangement engineered for maximum efficiency compared to other two-stage configurations
  - Unmatched full-load efficiency—energy savings investment payback in as quickly as two years compared to single-stage compressors

Capacity Control Options

Match compressed air supply with demand.

- Spiral Valve
- Variable Speed Drive (VSD)

Two-Stage Models from 250 - 350 hp (190 - 260 kW) are now available as part of the Sullair TS Series.

- Over/under air end design for increased efficiency
- Updated package design for easy serviceability
- Enhanced Sullair Touch Screen (STS) controller for unmatched ease of use.

Learn more at:
HitachiGlobalAirPower.com/Industrial

Up to 15% power savings

Compared to equally sized single-stage compressors, two-stage compressors offer a 12–15%* power advantage.

Why?

- Compression is divided between two stages resulting in power savings
- Reduced differential pressure across each stage minimizes internal leakage losses

Example: A single-stage compressor located at sea level and operating at 100 psi has a 7.9 to 1 compression ratio (in absolute terms).

A two-stage compressor operating at the same altitude and pressure has a 2.1 to 1 compression ratio per stage.

Sullair TS Series Model

* *Compressed Air and Gas Handbook [Sixth Edition]*

POWER SAVINGS
PER 1000 CFM ON TS-32

Two-Stage Tandem vs Single-Stage Rotary Screw

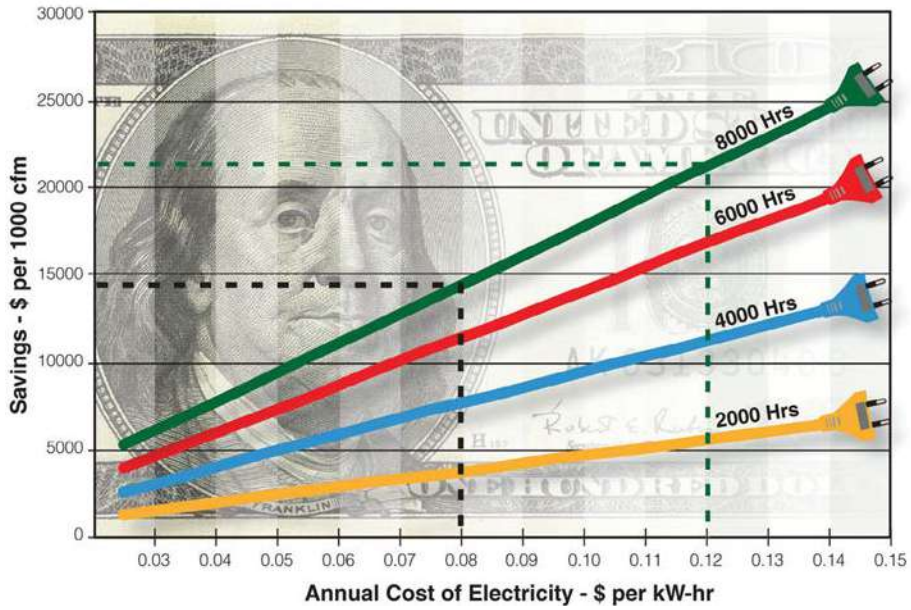
At Full-Load

At a power cost of $.08/kW/hr, the black dotted line illustrates a tandem two-stage compressor will save $14,373 per 1000 cfm over a typical single-stage compressor operating for 8000 hours at 100 psi.

At a power cost of $.12/kW/hr, the green dotted line shows a $21,560 savings per 1000 cfm over a typical single-stage compressor operating for 8000 hours at 100 psi.

Potential savings may be significantly higher for larger capacity compressors.

Energy Savings Two-Stage over Single-Stage, Full-Load



LEGENDARY SULLAIR AIR END

Decades of proven reliability are a testament to the quality of the Sullair air end. Although the principle of rotary screw compression remains the same, we continually improve materials, engineering and design of our air ends and compressor packages.

Longer Air End Life

Sullair air ends have only two moving parts: the asymmetrical profile rotors. Contact occurs only on a lubricated pitchline, so wear is virtually eliminated. As a result, Sullair compressors effectively maintain capacity and efficiency.

No Loss of Capacity or Efficiency

Controlled pressure lubrication and Bearing Fluid Reservoirs (BFR) ensure a reliable supply of fluid to rotating elements.

Lower Operating Costs

Discharge port matches ratios of volume and operating pressure for maximum efficiency. Axial air inlet avoids preheating inlet air for further savings.

SULLAIR
TWO-STAGE COMPRESSORS
TS-32S

Multi-Stage Air-Fluid Separation
- Dual nested Optimizer™ separator elements reduce fluid carryover to a maximum of 1 ppm
- Reduced carryover lowers make-up fluid costs
- Pleated Optimizer elements lower initial pressure drop for greater efficiency and extends element life
- Easy to change with built-in lid lifting device

Fiberglass Fluid Filter
- Aircraft-quality media provides better filtration
- Up to 20% more efficient than conventional paper elements
- Lengthens life of the compressor

Optimalair® Heavy-Duty Air Intake Filter
- Includes remote air intake connection
- Provides finest inlet filtration in the industry (99.95%+ overall efficiency/0.4 micron)
- Keeps fluid clean and extends life of other internal components
- Reduces pressure drop throughout the operating life, resulting in energy savings

Two-Stage Air End
- Delivers more air
- Reduces power consumption
- Extends air end bearing life

Enhanced Serviceability for Air-Cooled Oil Cooler and Aftercoolers
- Easy-to-remove panels provide access for cleaning coolers

Motor Coupled to Air End Through Non-Lubricated, Flexible Coupling
- Allows use of standard NEMA frame motor
- Simplifies installation and start-up

Variable Capacity Control System Featuring Spiral Valve Technology
- Lowers part-load operating costs
- Reduces cycling duty on package
- Maintains consistent plant pressure
- Simple control
- Reduces bearing load

Sullair Supervisor Controller

- Computer-compatible microprocessor controller has simple graphic illustration of monitored functions and an easy-to-read keypad
- Constant readout of pressure and temperature
- On-demand readout of all operating and maintenance conditions
- Monitors key functions and safety shutdowns
- Power failure auto restart
- Dual control, provides automatic start-stop operation
- Lead-lag and sequencing with multiple compressors
- Service and preventive maintenance schedule
- Hours are recorded for “Run,” “Loaded” and “Consumable Parts”
- Fault history with sensor readings
- “Help” key provides built-in troubleshooting

Easy Maintenance

- Access to all critical components even with a sound enclosure installed

Time Proven End-to-End Design

- Reduces pressure drop through stages
- Easy serviceability

NEMA 4

- Wye-Delta starter for softer start

Bearing Fluid Reservoirs

- Ensure that fluid is available at start-up
- Extend air end life

Genuine Sullube® Factory Fill

- Extended-life synthetic fluid used in more than 50,000 compressors worldwide

Optional PristineFG™

- Food Grade fluid designed specifically for compressors used in food, beverage and pharmaceutical applications and meets FDA and USDA H-1 requirements

Sullair 10-Year Diamond Warranty

The Sullair 10-Year Diamond Warranty provides comprehensive protection for Sullair lubricated rotary screw air compressors. This program distinguishes itself by covering all major components for new air compressors (with discharge pressures up to 150 psi):

- 10 years on the air end
- 5 years on the main motor, fan motor, aftercooler, oil cooler, separator vessel and variable speed drive (if equipped)

Maintaining the Sullair 10-Year Diamond Warranty requires using Genuine Sullair parts, Sullube and participation in the oil sampling program. Restrictions apply.

PART-LOAD SAVINGS WITH SULLAIR SPIRAL VALVE

Fact: When running an air compressor continuously for one year, the cost of electric power is often two to three times greater than the initial compressor price.

Sullair Two-Stage with Spiral Valve

By combining two-stage compression and a spiral valve, the TS performs with unmatched full-load and part-load efficiency — often providing a two-year energy savings payback compared to a single-stage compressor.

Spiral Valve Saves You Power

Compressor displacement is matched to the output need. Spiral Valve technology assures precise operation for virtually any part load point. Thus providing significant power savings at part load conditions compared to compressors using suction throttling or load/no load control.

Part-load capacity and efficiency can produce energy savings up to 17%.

Built-in Energy Savings

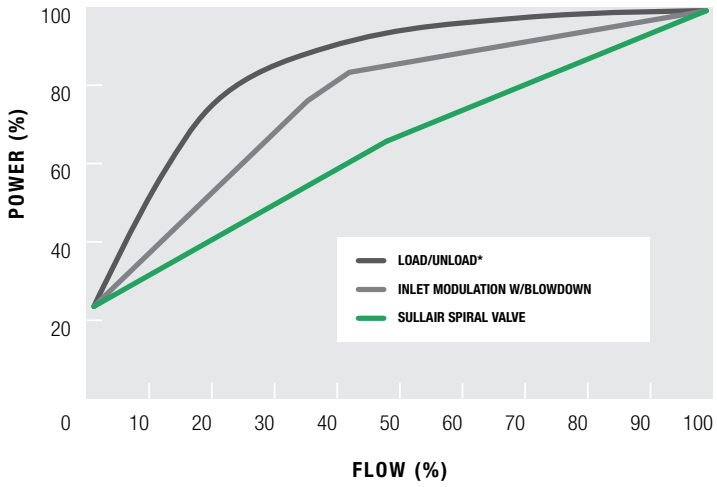
- 13% more efficient at full-load operation compared to single-stage screw compressors
- 30% savings at 60% load compared to single-stage screw compressors

How It Works

Compression volume varies to suit the air demand by progressively opening or closing internal bypass ports on the air end.

Capacity is matched to system demand — reducing cycling time and extending component life.

COMPRESSOR PERFORMANCE COMPARISON

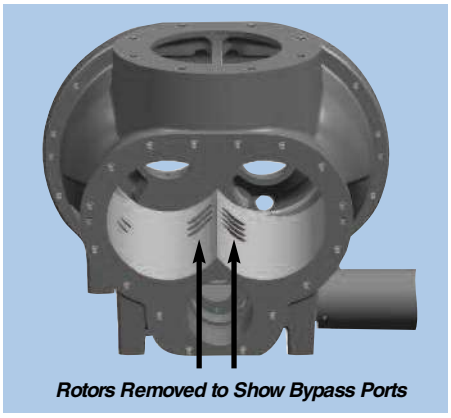


The chart above is a representation of nominal control systems for generic comparative purposes. A detailed and accurate comparison of specific compressor models is available from your authorized distributor.

Reference: Compressed Air and Gas Handbook, 6th Edition, pages 221-224

Match Supply with Demand

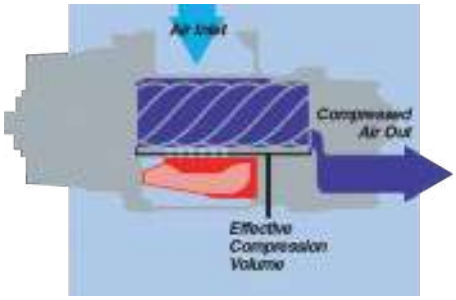
By activating automatically when the unit is operating under partial load. This allows compression of only the required quantity of air — allowing greater compression efficiency and reduced power consumption.



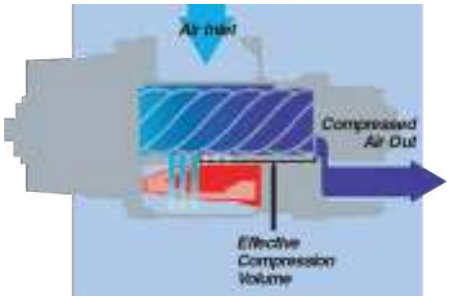
Rotors Removed to Show Bypass Ports

BYPASS PORTS IN STATOR

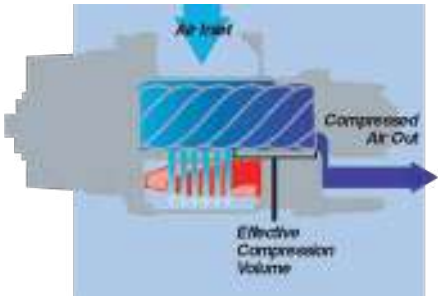
CLOSED BYPASS PORTS



PARTIALLY OPEN BYPASS PORTS

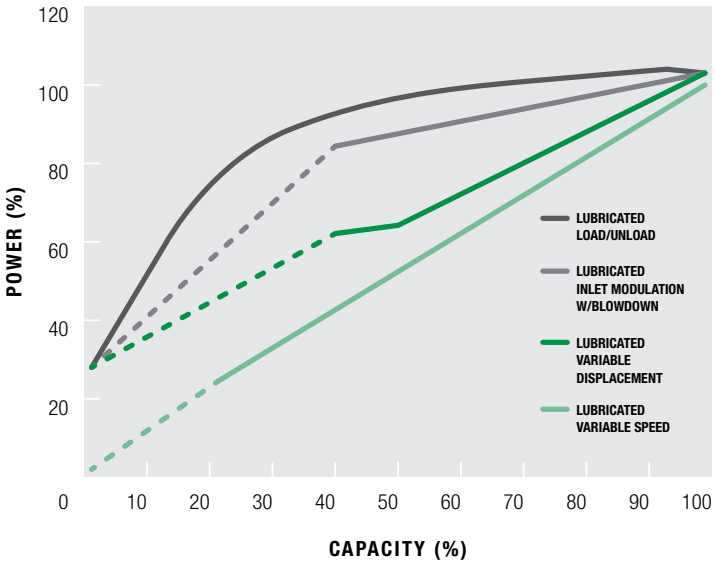


OPEN BYPASS PORTS



SULLAIR
VARIABLE SPEED DRIVE (VSD) COMPRESSORS WITH SMART TECHNOLOGY

PART LOAD PERFORMANCE ASSESSMENT



The chart above is a representation of nominal control systems for generic comparative purposes. A detailed and accurate comparison of specific compressor models is available from your authorized distributor.

Reference: Compressed Air and Gas Handbook, 6th Edition, pages 221-224

Simplicity. Reliability. System Protection.

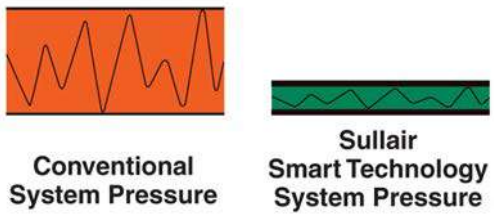
- Excellent energy savings
- Helps prevent potential peak demand charges
  - Sullair Two-Stage Series provides highest power factor over the frequency range — helping avoid utility company penalties
  - Potential utility company rebate
- DC link choke or 3% line reactor included (model/voltage specific)
- Stable system pressure
- Consistent product quality
- Reduced storage requirements
- Flexibility for future growth
- Lowest five-year life cycle cost

Reliability

- Serial communication between the Supervisor Controller and VSD eliminates need for hard wired relays

VSD — SUPERIOR CAPACITY CONTROL

- Stabilizes system pressure — improving process consistency and reducing product rejects
- Increased margins from energy savings



Maximum Energy Efficiency with Sullair Two-Stage Series

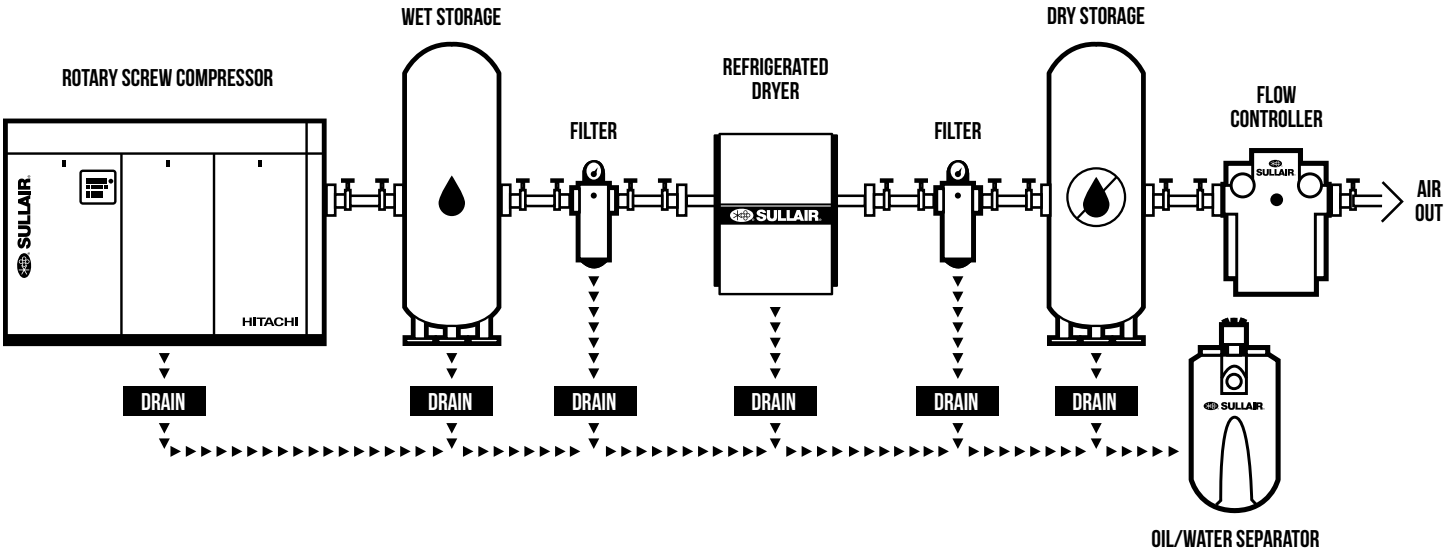
- Legendary air end with low restriction inlet valve
- Optimized fluid system — reducing fluid temperatures
- Premium efficiency motors
- Low pressure drop air-fluid separation system
- High-efficiency fan

Considering energy costs represent 82% of the total cost of owning compressors, these savings significantly reduce total life cycle costs.

Total Compressor Flexibility

Sullair Variable Speed Drive compressors provide flexibility to vary both capacity and pressure — allowing you to grow your air system without adding another compressor.

SULLAIR STATIONARY
AIR POWER SYSTEMS



Hitachi Global Air Power offers total compressed air systems to help you reduce energy costs and improve productivity by analyzing, managing and controlling your compressed air systems.

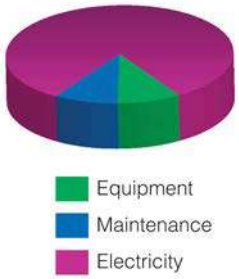
Sullair air systems include: plant air audits, energy-efficient products, compressed air system controls, equipment to monitor and manage systems, air distribution products, and after-purchase support.

Each component of the system is carefully matched for capacity and pressure to provide maximum performance and energy efficiency.

The system includes:

- Rotary screw compressor
- Wet storage
- Refrigerated dryer or desiccant dryer
- Filters to meet your requirement
- Dry storage
- Flow controller
- Drains
- Oil/water separator

Solutions to Help Reduce Life Cycle Costs



Air Compressor Life Cycle Costs

According to the US Department of Energy (DOE), electricity costs account for more than 75% of total cost of compressor ownership over a 10-year period. Energy savings from Sullair Two-Stage compressors can significantly reduce life cycle costs.

Sullair compressors help significantly reduce operating and energy costs over the entire compressor life cycle:

- Legendary Sullair air end with a low restriction inlet valve
- High-efficiency fan
- Low pressure drop air-fluid separation system to prevent energy loss

Extend component life with improved air filtration:

- Extended separator life
- Improved fluid filter life
- Less lubricant contamination

To reduce fluid disposal costs, Sullair Two-Stage compressors are factory-filled with biodegradable Genuine Sullube® fluid.

- Protects and cleans (no varnish)
- Controls operating temperatures
- Optimal viscosity
- Environmentally friendly
- Reduces fluid loss
- High flash point (505°F/263°C)

TWO-STAGE EXTREME PRESSURE

HIGH-PRESSURE PERFORMANCE. SULLAIR DURABILITY.

200–500 hp | 225–500 psi

Dependable, high-performance two-stage air end for maximum power savings

460v motor coupled to air end via non-lubricated, flexible coupling

- Allows use of Standard NEMA frame motor
- Flange-mounted for positive alignment

Sullair Supervisor Controller

- Easy pressure adjustment
- Capacity modulation range 100 to 40%

Heavy-duty inlet air filter

- Two-stage, dry type
  - Inside safety element
  - Differential pressure indicator

Air-fluid separation

- ASME psi rated tank
  - ASME pressure relief valve
- Pleated air-fluid separator element for lower initial pressure drop

Cooling

- Air-cooled units use mounted and piped aftercooler with quiet fan
- Water-cooled units feature an air-in-shell, water-in-tube aftercooler design
- LS-20TS are equipped with Remote Coolers

Options

- Magnetic starter
- Solid state starter
- Sound attenuating enclosure with removable panels
- 575v

TECHNICAL SPECIFICATIONS

60Hz MOTOR TWO-STAGE	MOTOR		CONSTANT SPEED DRIVE FULL-LOAD CAPACITY*								LENGTH		WIDTH		HEIGHT		WEIGHT	
Model	hp	kW	100 psi cfm	7 bar m³/min	125 psi cfm	8.6 bar m³/min	150 psi cfm	10.3 bar m³/min	175 psi cfm	12.1 bar m³/min	in	mm	in	mm	in	mm	lbs	kg
TS-32S-400	400	298	2220	62.8	1943	55.0	1681	47.6	-	-	175	4445	84	2134	92	2337	15,900	7212
TS-32S-450	450	336	2350	66.5	2135	60.4	1943	55.0	-	-	175	4445	84	2134	92	2337	15,900	7212
TS-32S-500	500	373	2530	71.6	2350	66.5	2220	62.8	-	-	175	4445	84	2134	92	2337	15,900	7212
TS-32S-600	600	447	3000	84.9	2700	76.4	2530	71.6	-	-	175	4445	84	2134	92	2337	15,900	7212

60Hz MOTOR TWO-STAGE	MOTOR		VARIABLE SPEED DRIVE FULL-LOAD CAPACITY*								LENGTH		WIDTH		HEIGHT		WEIGHT	
Model	hp	kW	100 psi cfm	7 bar m³/min	125 psi cfm	8.6 bar m³/min	150 psi cfm	10.3 bar m³/min	175 psi cfm	12.1 bar m³/min	in	mm	in	mm	in	mm	lbs	kg
V-320TS-400	400	298	2075	58.7	1870	52.9	1695	48.0	-	-	175	4445	84	2134	92	2337	15,900	7212
V-320TS-450	450	336	2310	65.4	2100	59.4	1900	53.8	-	-	175	4445	84	2134	92	2337	15,900	7212

50Hz MOTOR TWO-STAGE	MOTOR		CONSTANT SPEED DRIVE FULL-LOAD CAPACITY*								LENGTH		WIDTH		HEIGHT		WEIGHT	
Model	hp	kW	100 psi cfm	7 bar m³/min	125 psi cfm	8.6 bar m³/min	150 psi cfm	10.3 bar m³/min	175 psi cfm	12.1 bar m³/min	in	mm	in	mm	in	mm	lbs	kg
TS-32S-400	400	298	2100	59.5	1942	55.0	-	-	-	-	175	4445	84	2134	92	2337	15,900	7212
TS-32S-450	450	336	2240	63.4	2100	59.5	1942	55.0	-	-	175	4445	84	2134	92	2337	15,900	7212
TS-32S-500	500	373	2480	70.2	2240	63.4	2100	59.5	-	-	175	4445	84	2134	92	2337	15,900	7212
TS-32S-600	600	447	2900	82.1	-	-	2480	70.2	-	-	175	4445	84	2134	92	2337	15,900	7212

** Capacity per CAGI / PNEUROP PN2CPTC2 (Annex C to ISO 1217)*

Information and data are subject to change without notice.

TECHNICAL SPECIFICATIONS
TWO- STAGE EXTREME PRESSURE

60Hz MOTOR TWO-STAGE	MOTOR	CAPACITY	FULL-LOAD PRESSURE	LENGTH	WIDTH	HEIGHT
Model	**hp**	**cfm**	**psi**	**in**	**in**	**in**
LS-20T-500/250	200	500	250	120	72	74
LS-20T-500/350	200	500	350	120	72	74
LS-20T-630/225	200	630	225	120	72	74
LS-20T-630/350	250	630	350	120	72	74
LS-20T-750/250	250	750	250	120	72	74
LS-20T-300-630/500	300	630	500	120	72	74
LS-20T-350-750/500	350	750	500	120	72	74
LS-20T-750/350	300	750	350	120	72	74
LS-20TS-800/225	300	800	225	157	72	78
LS-20TS-800/325	300	800	325	157	72	78
LS-20TS-800/350	350	800	350	157	72	78
LS-20TS-960/225	300	960	225	157	72	78
LS-20TS-960/350	400	960	350	157	72	78
LS-20TS-1250/300	450	1250	300	157	72	78
LS-20TS-1350/300	500	1350	300	157	72	78

Scan to view the full Sullair Industrial Compressor line.

For more information, contact your local authorized Sullair distributor.

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