

Two-Stage Rotary Screw Air Compressors

Constant Speed and Variable Speed Drives (VSD)
75-450 kW ■ 100-600 Horsepower



- Unparalleled energy efficiency and durability
- Energy savings up to 13% on full-load
- Energy savings up to 30% on part-load

Sullair Capabilities

Sullair Leadership

Since 1965, Sullair has been recognized around the world as an innovator and a leader in rotary screw compression and vacuum technology. For more than 40 years, Sullair has designed and manufactured its own rotors and air end assemblies at the corporate headquarters in Michigan City, Indiana.

The award-winning rotary screw design sets the industry standards and delivers the quality and reliability one expects from a leader.

Sullair Technology

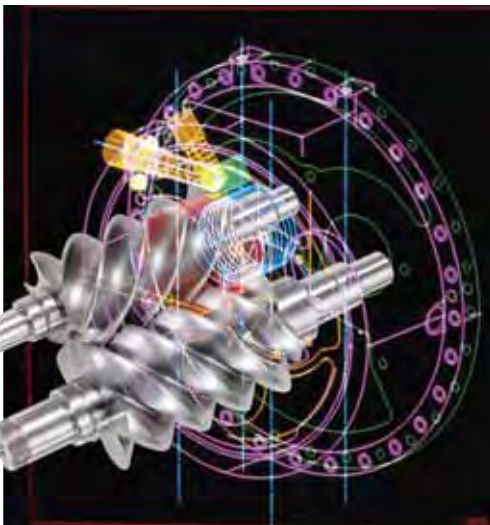
Utilizing the most modern technologies, equipment and advanced manufacturing techniques, Sullair designs, manufactures, assembles, and tests the most innovative compressed air and vacuum products in the industry. Sullair products are known around the world for their universally applicable design, outstanding craftsmanship and superior quality.

Sullair's Statistical Process Control

Sullair's Statistical Process Control (SPC) system monitors rotor quality standards to assure consistent compressor and vacuum performance.

Sullair's Commitment to Innovation

Underlying Sullair's leadership is a dedication to excellence and a commitment to innovation. Sullair is constantly exploring new ideas and seeking new ways to meet industry's need for increasingly energy efficient compressed air and vacuum solutions.



Sullair Stationary Air Power Systems

Sullair offers total compressed air systems to help compressed air users reduce energy costs and improve productivity by analyzing, managing and controlling their compressed air systems.

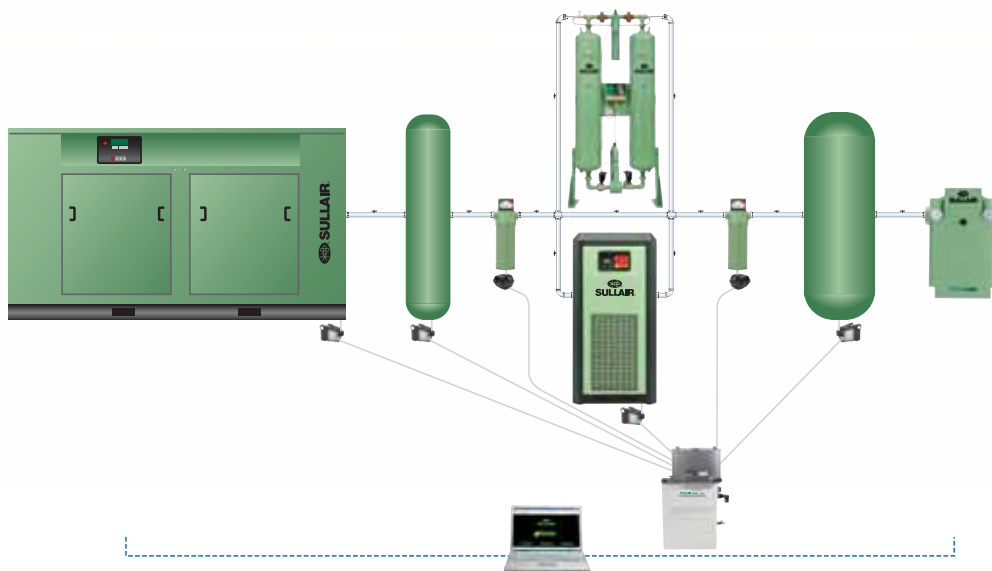
Sullair's air systems include: plant air audits, energy efficient products, compressed air system controls, equipment to monitor and manage systems, air distribution products, and after-purchase support.

Each component of the system is carefully matched for capacity and pressure to provide maximum performance and energy efficiency. A total Sullair system provides the user with an air quality guarantee.

The Sullair Stationary Air Power System

This 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
- ethernet-based eConnect™ to monitor and control the entire system



Sullair Reduces Your Life Cycle Costs



- Equipment
- Maintenance
- Electricity

Air Compressor Life Cycle Costs

According to *Best Practices for Compressed Air Systems*, Compressed Air Challenge, Second Edition, 2007, energy costs now

represent 82% of the total operating expenses. Energy savings from Sullair's Two-Stage Compressors can significantly reduce life cycle costs.

Sullair's two-stage compressors significantly reduce operating and energy costs over the entire compressor life cycle. Contributing to the energy savings are:

- Sullair's proven air end with the low restriction inlet valve
- High efficiency fan
- Low pressure drop air-fluid separation system to prevent energy loss

Sullair designs deliver cost savings for the life of the product. Improved air filtration translates into:

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

To reduce fluid disposal costs, we offer our biodegradable Sullube™ 8000-hour fluid, or 24KT™, a long-life fluid that never needs changing.

Advantage of Two-Stage Compression at Full-Load

Two-stage compressors* have a power advantage of 11 percent to 13 percent over equivalent sized single-stage compressors for two key reasons:

Compression is Divided Between the Two Stages

In a single-stage compressor operating at 100 psig at sea level, the compression ratio is 7.9 to 1 (in absolute terms). A two-stage compressor operating at the same pressure will have a compression ratio of 2.8 to 1 in each stage (2.8 is the square root of 7.9) achieving the compressor's power savings.

Internal Leakage Losses are Reduced

Reduced pressure difference across each stage facilitates reduction in leakage losses.

Sullair's Superior End-to-End Design

Sullair's TS two-stage tandem compressors use two sets of rotors arranged in a unique end-to-end design that achieve higher efficiencies than other two-stage rotor arrangements. This design is based on Sullair's proven technology used in its single-stage units, which has set the standards for efficiency and reliability in single-stage compressors for more than four decades.

The industry standard since its introduction in 1984, the TS Series tandem compressors offer unmatched full-load efficiency; often providing a two-year payback in energy savings compared with single-stage compressors. With the tandem's variable capacity control,

featuring spiral valve technology, further operating efficiencies can be achieved during part-load operation.

Rotary Screw Reliability

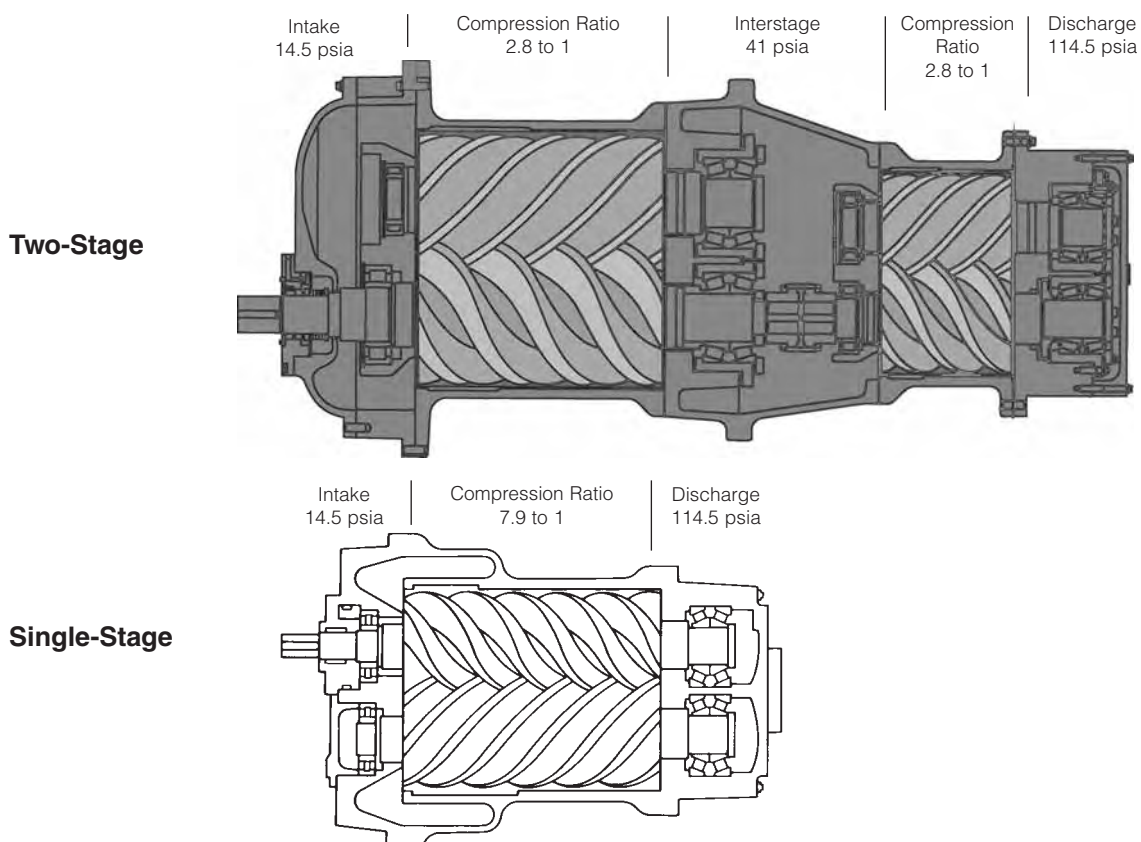
These TS models use a two-stage rotary screw air end, featuring Sullair's rugged bearing design: tapered roller bearings on the discharge end and cylindrical roller bearings on the inlet for high load carrying capacity.

Extended Bearing Life

By dividing the compression ratio across two stages, the two-stage tandem will significantly exceed the life of the average single-stage compressor.

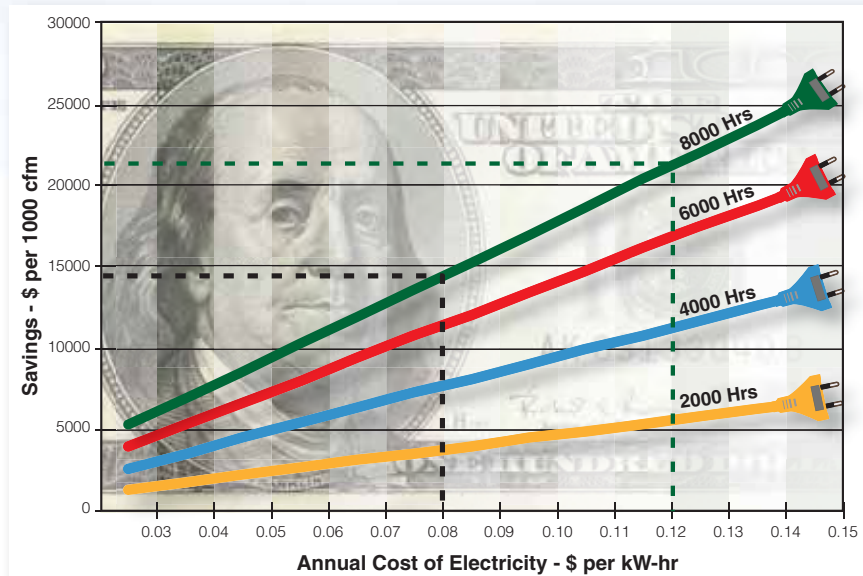


*Compressed Air and Gas Handbook, Sixth Edition.



Power Savings per 1000 cfm on TS-32

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



Power Savings per 1000 cfm

Two-stage tandem vs. single-stage rotary screw at full-load. At a power cost of \$.08/kW/hr, the black dotted line shows that a tandem two-stage

compressor will save \$14,373 per 1,000 cfm over a single-stage compressor operating for 8,000 hours at 100 psig. At a power cost of \$.12/kW/hr, the green dotted line shows

a saving of \$21,560 per 1,000 cfm over a single-stage compressor operating for 8,000 hours at 100 psig. The savings will be significantly greater for higher capacity compressors.

The Reliable Sullair Air End

Decades of Proven Reliability are Testimony to the Quality of the Sullair Air End

Although the principle of rotary screw compression remains the same, Sullair is continually improving materials, engineering and design of its air ends and compressor packages.

No Loss of Capacity or Efficiency

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 do not lose capacity or efficiency.

Longer Air End Life

Controlled pressure lubrication and Bearing Fluid Reservoirs (BFR) assure 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.



The Sullair TS-20, TS-32 and 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 on models TS-32 and TS-32S



Easy Maintenance

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

Time Proven End-to-End Design

- Reduces pressure drop through stages
- Easier serviceability

Optimalair™ Heavy-Duty Air Intake Filter

- Includes remote air intake connection
- Provides finest inlet filtration in the industry (0.4 microns using Fine Fiber Technology)
- Keeps fluid clean and extends life of other internal components
- Reduces pressure drop throughout the operating life, resulting in energy savings

Fiberglass Fluid Filter

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

Two-Stage Compressor Air End

- Delivers more air
- Reduces power consumption
- Extends air end bearing life

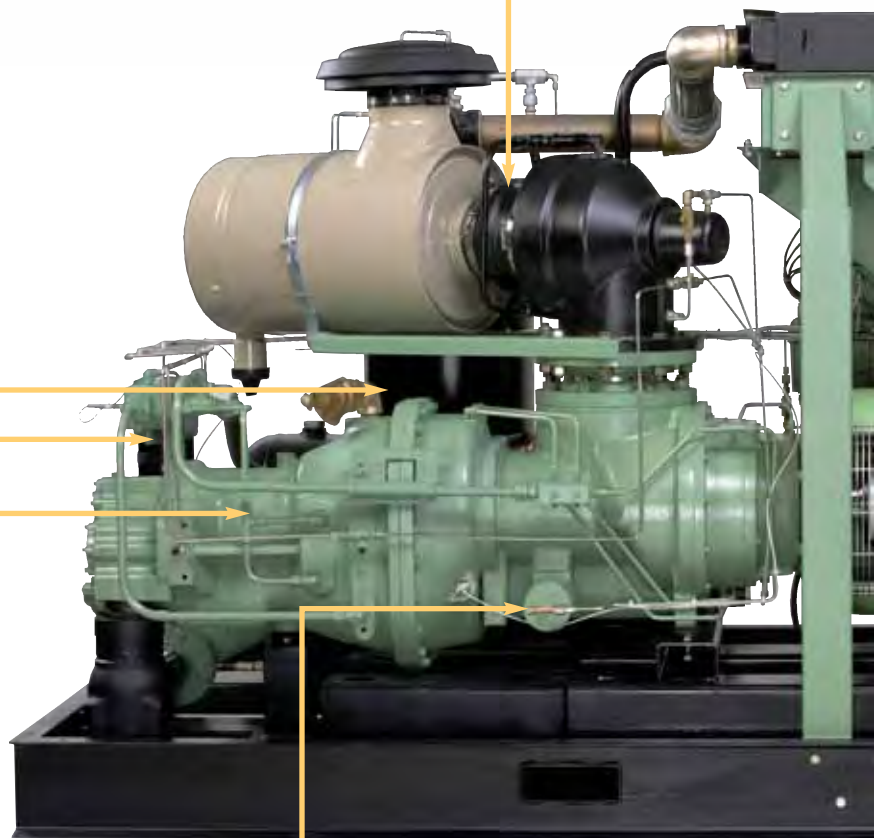
Bearing Fluid Reservoirs

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



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



NEMA 4

- Wye Delta starter for softer start
- Standard on TS-20, 250 hp and TS-32
- Optional on TS-20, 100 to 200 hp

Enhanced Serviceability for Air-Cooled Oil Cooler and Aftercoolers

- Easy to remove panels provide access for cleaning coolers

Sullair Supervisor™ Controller

- Computer-compatible micro-processor 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 re-start
- 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

Select a Long-Life Fluid...

Sullube™ is Standard Factory Fill

- Five-year air end warranty
- Biodegradable
- One-year or 8000-hour service life
- Reduces fluid disposal costs

24KT™ is Optional

- Exclusive ten-year air end warranty
- Eliminates annual fluid changes
- Eliminates fluid disposal costs

Free fluid sampling and analysis program with either fluid.

Best Warranties in the Industry



Sullair's Emerald Five-Year Warranty

This unmatched warranty includes: the air end, motor, air-fluid receiver and cooler(s).



Sullair's 24KT™ Ten-Year Warranty

This unprecedented warranty includes: ten years on the air end, five years on the motor, air-fluid receiver and cooler(s).

Motor Coupled to Air End Through Non-Lubricated, Flexible Coupling

- Allows use of standard NEMA frame motor
- Simplifies installation and start-up

Interstage Cooling Process

- Absorbs heat of compression
- Dramatically reduces power costs



The Sullair Two-Stage Tandem Compressor

Part-Load Savings

It's a fact: the electric power cost to run an air compressor continuously for one year is often two to three times greater than the purchase price of the compressor itself.

That's why Sullair developed the two-stage tandem compressor. By combining two-stage compression and a spiral valve, the TS performs with unmatched full-load and part-load efficiency and often provides a two-year payback in energy savings compared to a single-stage compressor.

Energy Savings Built In

Sullair two-stage tandem compressors have been proven to be 13% more efficient than single-stage screw compressors at full-load operation. At 60% load, the Sullair two-stage tandems provide up to 30% savings over single-stage compressors.

How It Works

The 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.

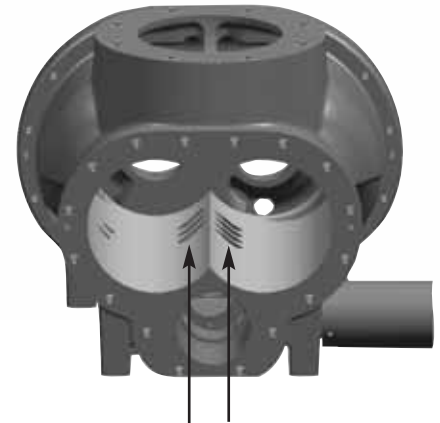
Part-load capacity and efficiency can produce energy savings up to 17%.

Variable Capacity Control Saves You Power

The compressor displacement is matched to the output need. The VCC technology assures precision operation for virtually any part load point. It provides significant power savings at part load conditions, compared to compressors using suction throttling, or load/no load control.

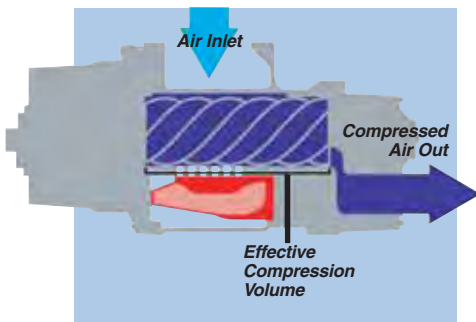
Increases Capacity Control Efficiency

By activating automatically when the unit is operating under partial load, and allowing the compression of only the required quantity of air, the spiral valve increases the efficiency of the compression process. The ultimate result is greater compression efficiency and reduced power consumption.

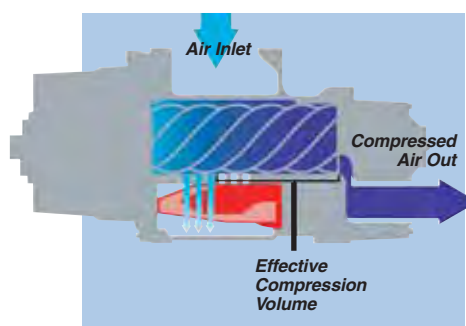


Rotors withdrawn to show bypass ports in stator.

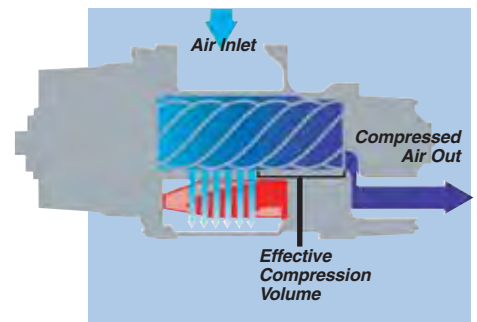
Closed Bypass Ports



Partially Open Bypass Ports



Open Bypass Ports



Sullair VSD Compressors with Smart Technology

Sullair Smart Technology Gives You

- Simplicity
- Reliability
- Flexibility
- System protection



Variable Speed Drive Avoids Potential Peak Demand Charges

The Sullair Two-Stage Series compressors provide the highest power factor over the entire frequency range, often avoiding utility company penalties.

Reliability

- Designed from the frame up as a complete package — not built with a variety of off-the-shelf components
- Serial communication between the Supervisor™ Controller and VSD eliminates the need for hard wired relays

Soft Start is Standard

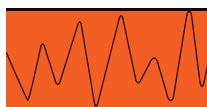
- Eliminate the need for Wye Delta and other soft starter
- Avoid high electrical current at start-up

Compressors with Sullair Smart Technology Provide:

- Excellent energy savings
- Relief from potential peak demand charges
- Alleviation from electrical harmonics
- Stable system pressure
- Consistent product quality
- Reduced storage requirements
- Flexibility for future growth
- Lowest five-year life cycle cost
- Potential utility company rebate

Variable Speed Drive is the superior alternative to other compressor control systems.

Stable system pressure improves the consistency of your process reducing product rejects. Maximizing energy savings means increased profits.



Conventional System Pressure



Sullair Smart Technology System Pressure

Energy Efficient

This compressor series is more energy efficient than similar compressors, thanks to:

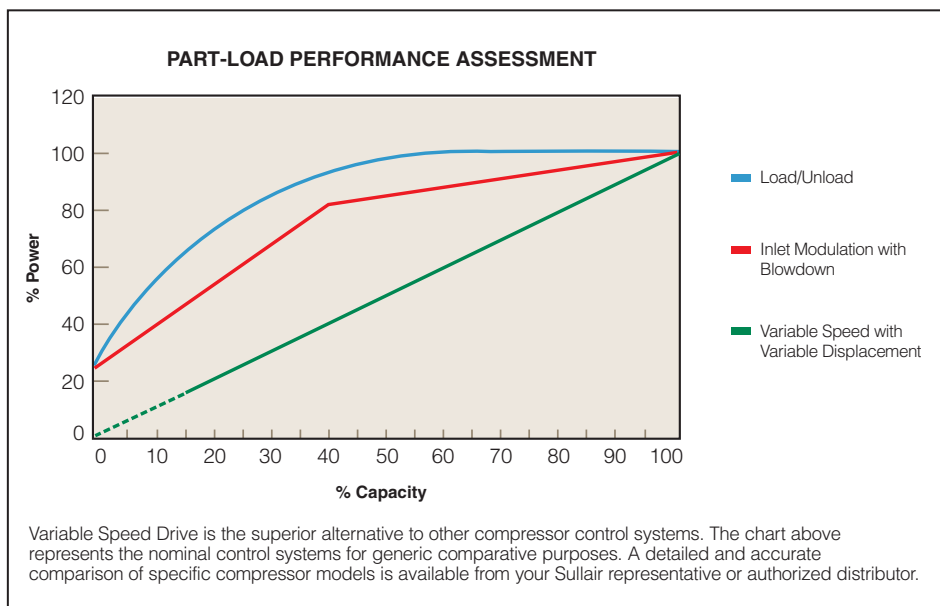
- Sullair's proven air end with low restriction inlet valve
- Optimized fluid system that reduces fluid temperatures
- Premium efficient motors
- Low pressure drop air-fluid separation system
- High efficiency fan

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

Total Compressor Flexibility

Sullair's Variable Speed Drive provides the flexibility to vary both capacity and pressure. This flexibility makes it possible to "grow" your air system without adding another compressor.

It's the compressor for today, tomorrow, and the future.



Sullair Air Quality Guarantee



Two Levels of Air Quality

Sullair recognizes that the requirements for air quality vary according to each compressed air application. For this reason, Sullair provides compressed air systems that achieve two distinct levels of air quality and a guarantee for each.

Sullair Stationary Air Power System

The Sullair Stationary Air Power System matches a Sullair compressor, a Sullair dryer and Sullair filters. Sullair assures that its System will meet specific performance levels throughout its operational life. We offer a one-year test/review period, backed by a purchase refund guarantee, to verify the performance of the Sullair System.

Select the System

Select the air quality level to meet your plant air or process requirements. You can be assured that the quality of air from the Sullair System you specify will remain consistent for the life of the equipment. Sullair guarantees it... and that's as good as gold.

The Sullair Oil-Free Air Quality Guarantee

The System consists of a Sullair compressor, Sullair dryer, and Sullair filters. The compressed air from this system contains particulates no larger than .01 micron, including coalesced liquid water and lubricants.

Maximum remaining oil aerosol content is 0.01 parts per million by weight (ppm/w) @ 70°F, including oil vapor. The air from this Sullair System meets the most stringent ISO standard (ISO 8573.1, Class 1 for oil vapor and Class 1 for particulate) for air quality.

The Sullair Critical Air Quality Guarantee

The compressed air from this Sullair System exceeds the ISO standard (ISO 8573.1, Class 1 for oil vapor and Class 1 for particulate). The System includes a Sullair compressor, Sullair dryer, and Sullair filters. The odor-free compressed air from this system contains particulates no larger than 0.01 micron, including water and oil aerosol content of 0.01 parts per million by weight (ppm/w) @ 70°F. The remaining oil vapor content is less than 0.003 ppm/w.

To get more information on Sullair's Air Quality Guarantee, please contact your Sullair distributor.

These Systems are not intended to remove carbon monoxide, methyl isocyanate or other noxious, corrosive or toxic gases, vapors or fumes. The System does not provide breathing air.

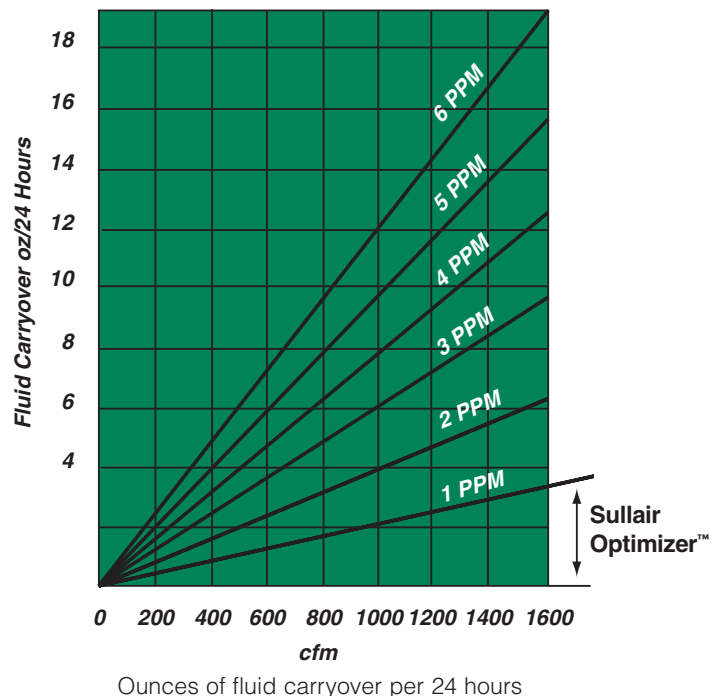
Air Quality is One of the Best in the Industry

Lowest Fluid Carryover

While others claim a low carryover of 5 ppm or more, Sullair's single-stage compressors offer a carryover rate less than 1 ppm—the lowest in the industry. Sullair's MSS, Multi-Stage Separation, uses a sump design, which allows use of oversized dual nested separators.

Sullair Optimizer™ Air-Fluid Separator

A high efficiency separator that will pay for itself (during the life of the separator) in reduced compressor fluid carryover and electrical power consumption.



Technical Specifications: 60 Hz Horsepower Rated Two-Stage Compressors, 100 to 600 Horsepower

Constant Speed Drive Performance

Enclosed Dimensions and Weights

Model	Motor hp	Full-Load Capacity				Length in	Width in	Height in	Weight lbs
		acfm @ 100 psig	acfm @ 125 psig	acfm @ 150 psig	acfm @ 175 psig				
TS-20-100	100	575	500	—	—	120	72	68	7350
TS-20-125	125	680	615	575	500	120	72	68	7600
TS-20-150	150	826	763	680	616	120	72	68	7900
TS-20-200	200	1051	960	868	820	120	72	68	8100
TS-20-250	250	1200	1132	1035	960	120	72	68	8450
TS-32-200	200	1105	—	—	—	154	78	86	12480
TS-32-250	250	1335	1240	1100	—	154	78	86	12720
TS-32-300	300	1640	1440	1330	1240	154	78	86	13270
TS-32-350	350	1875	1733	1575	1440	154	78	86	13620
TS-32S-400	400	2220	1943	1681	—	175	84	92	15900
TS-32S-450	450	2350	2135	1943	—	175	84	92	15900
TS-32S-500	500	2530	2350	2220	—	175	84	92	16400
TS-32S-600	600	3000	2700	2530	—	175	84	92	16400

Variable Speed Drive Performance

Enclosed Dimensions and Weights

Model	Motor hp	Full-Load Capacity				Length in	Width in	Height in	Weight lbs
		acfm @ 100 psig	acfm @ 125 psig	acfm @ 150 psig	acfm @ 175 psig				
V-200TS-100	100	550	495	—	—	120	72	68	7675
V-200TS-125	125	680	606	550	515	120	72	68	7975
V-200TS-150	150	800	720	653	610	120	72	68	8375
V-200TS-200	200	1000	918	815	750	120	72	68	8550
V-320TS-200	200	1105	945	—	—	154	78	86	12480
V-320TS-250	250	1300	1180	1050	—	154	78	86	12720
V-320TS-300	300	1550	1400	1250	—	154	78	86	13270
V-320TS-350	350	1800	1645	1480	—	154	78	86	13620
V-320TS-400	400	2075	1870	1695	—	175	84	92	15900
V-320TS-450	450	2310	2100	1900	—	175	84	92	15900

24KT™ Models are available for 100 and 125 psig offerings.
Data subject to change without notice.

Sullair's Compressed Air Products

www.sullair.com



Fundamental to Sullair's leadership is a dedication to reduce not only the amount of natural resources consumed to create energy, but to minimize environmental impact, in both the manufacture and use of all our products. We are constantly exploring new ideas and seeking new technologies to meet the ever-increasing need for high quality, energy-efficient compressed air products and environmental sustainability.



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