



A “Designated Driver” for your Rotating Equipment

Skinner Single-Stage Steam Turbines for Petrochemical, Power Generation and Industrial Service



**SKINNER
POWER SYSTEMS LLC**

Skinner Experience

In turbine applications where rugged and dependable performance with low capital investment is critical to your operation, the wise choice is a Skinner Single-Stage Steam Turbine.

With a heritage in steam-driven equipment dating back to 1868, Skinner has earned a solid reputation in building single-stage steam turbines for clients around the world. Our steam turbine technology has continually advanced from the first Delaval-based designs and the Dean Hill turbines acquired in the early 1960s to a position of state-of-the-art leadership.

Over the years thousands of customers have designated Skinner as the driver of choice for their rotating equipment. As a result, they obtained power solutions for their unique operations within an affordable budget and with prompt delivery schedules. More importantly, we gave them reliability to help them enhance productivity and boost earnings. We can do the same for you.

We work closely with you throughout the whole specification process and then our skilled craftsmen and professionals build the right turbine for your particular

application. Because of our experience in steam turbine performance, you obtain the best steam turbine that will provide reliable and cost-effective operation throughout its life-span. Maximum system output with optimum use of energy will make you proud of your eco-friendly production achievements. Your profit margins will please you, too.



Skinner team project review

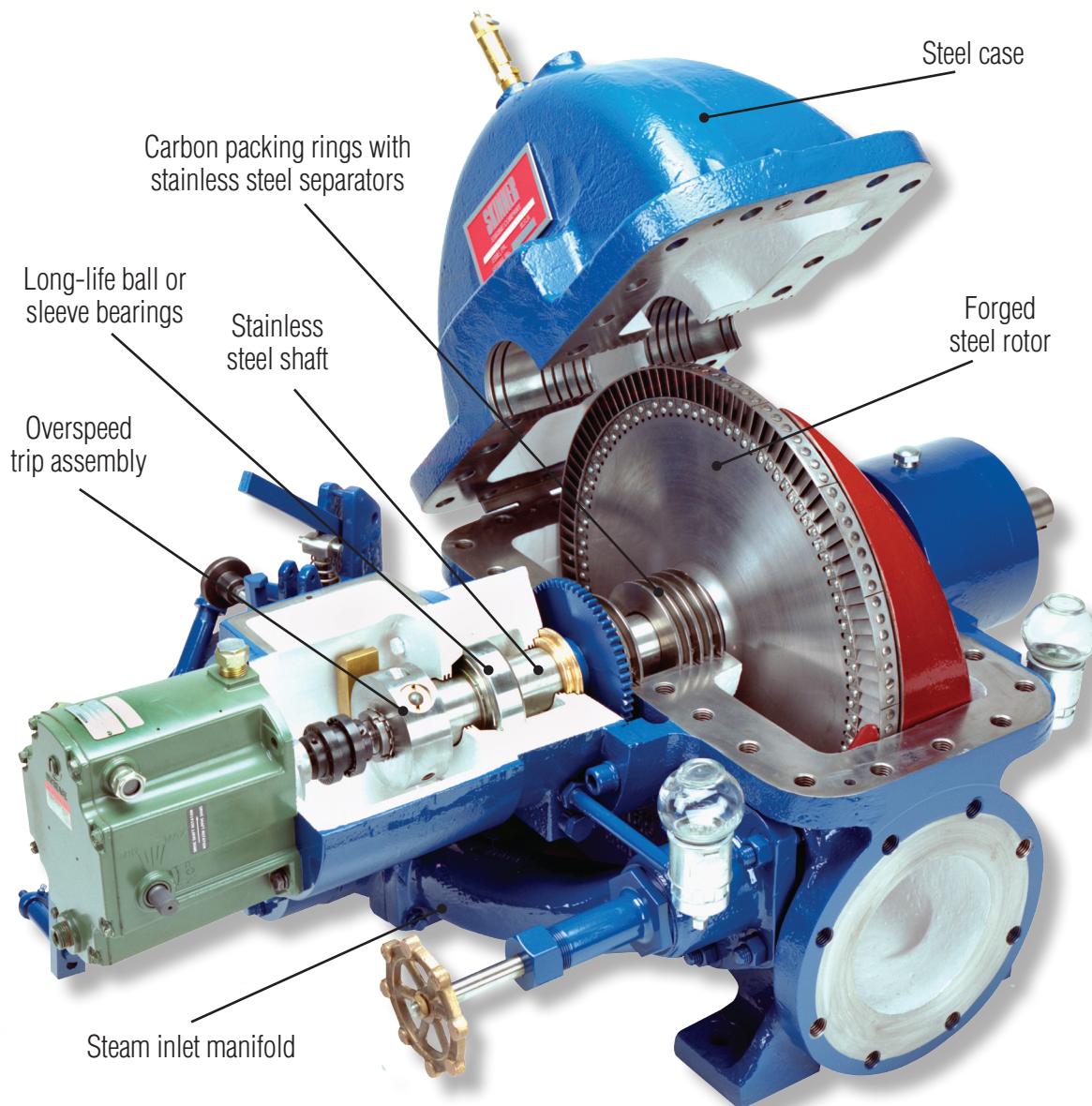
Typical Applications

To date more than 20,000 of our turbines have been built and installed throughout the world providing customers with many years of outstanding operating performance driving pumps, fans, blowers, compressors, mills and electric generators. These turbines have served faithfully day and night under the most demanding conditions--from steaming tropical heat to frigid wintry gales.



A partial list of the many global applications where Skinner steam turbines (either condensing or non-condensing) are bringing operational benefits to our customers includes:

- Refineries
- Petrochemical Plants
- Pulp & Paper Mills
- Sugar Mills
- Steel Mills
- Palm Oil Processing
- Food Processing Plants
- Educational Facilities
- Hospitals
- Biomass Operations
- Waste-to-Energy Plants
- Combined Cycle Plants
- Distilleries



Skinner Turbines — Time-tested for any application

The S-Series models feature sleeve bearings and are generally in compliance with applicable API standards. The SB-Series models feature ball bearings and are a more economical choice for most applications.

The S-18 and SB-18 models are the bread and butter drivers for a majority of pump applications up to 400 horsepower. Available in foot-mounted or centerline-mounted configurations, these machines are ideally suited for smaller pump, fan or compressor drives and for small electric generator sets. The simplicity of the SB-18 usually makes it the preferred driver in this power range.

The S-23 and SB-23 models are mid-range machines for applications requiring up to 900 horsepower. These machines produce substantial power for low steam pressure applications and are less expensive than our larger machines. They are also available in foot-mounted or centerline-mounted configurations.

The work-horse of our line is the S-28 model, which can produce up to 2000 horsepower. Its larger size also allows for better efficiency. Aside from driving pumps, fans and compressors, it is widely used for electric generator sets.

While all the above-mentioned models are in regular production at our factory, Skinner also makes several other single-stage turbine models. These include the S-11 and SB-11, the SBV-18 and the SK-25. The S-11 and SB-11 are usually replacement drivers for small lubrication pumps requiring 50 horsepower or less. The SBV-18 is the vertical configuration of our SB-18, and it uses an innovative greased lubrication system. The SK-25 is our largest machine and it is rated at up to 3000 horsepower. It is most likely to be considered for special purpose applications or large electric generator sets.

Standard Features on all Turbines

- Woodward TG-17 series oil relay governor.
- Positive overspeed trip.
- Sleeve type journal bearings on S-Series. Antifriction bearings on SB-Series.
- Ball thrust bearing with minimum 50,000 L10 rating.
- Horizontally split case for ease of maintenance.
- Multiple carbon ring gland seals with stainless steel spacers.
- Foot-mount or center-line support available.
- Large bearing housings with constant level oilers and integral cooling water jackets.
- Stainless steel blades on turbine wheel.
- Large efficient alloy nozzles with steel reversing nozzles.
- Balanced cage-guided throttle valve.
- 17-4 stainless steel turbine shaft.
- Stainless steel strainer.
- Separate trip and throttle valves.



Assembly of small turbine generator



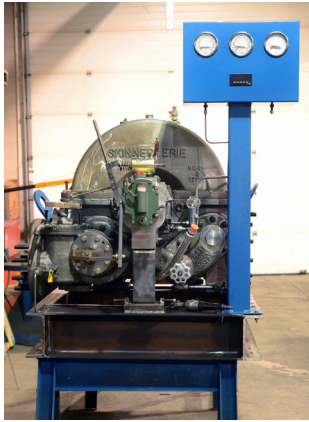
Skinner main assembly bay

Optional Accessories

- **SPECIAL PURPOSE GOVERNORS**
To maintain precise control at various speeds.
- **AUTOMATIC REMOTE START-UP AND SHUT-DOWN SYSTEMS**
Pneumatically or electrically actuated for remote operation.
- **FORCED FEED LUBRICATION SYSTEM**
Complete with oil reservoir, relief valves, heat exchanger, filter, etc.
- **SAFETY SHUT-DOWN SYSTEMS**
Low lubrication oil pressure, high lubrication oil temperature, high back pressure and driven equipment safety systems available. Pneumatically or electrically actuated safety devices.
- **HAND VALVES**
For partial load economy.
- **STEAM SEAL PIPING**
For condensing operation, to admit sealing steam supply to the glands.
- **SPECIAL SHAFT EXTENSIONS**
- **BLANKET INSULATION**
- **BASEPLATE OR SOLE-PLATE**
With or without drip rim.
- **SPEED REDUCING OR INCREASING GEARS**
Where speed of driven equipment is outside the range of efficient turbine speeds.
- **STEAM GAUGES AND THERMOMETERS**
Indicating and/or recording types.
- **TACHOMETERS**
Vibrating reed, electric and electronic types available. Indicating and/or recording.
- **SPECIAL MATERIALS**
To specifications.
- **TILTING PAD (KINGSBURY Type)**
Thrust bearings.
- **ELECTRONIC CONTROLS**
For various applications.
- **SWITCH-GEAR**
For generator sets.
- **COMPLETE PACKAGE SYSTEMS**
Turbines, pump packages, compressor packages, fan packages and generator sets are available.



Assembly of S28 turbine



Design

In designing your steam turbine, Skinner applies state-of-the-art control and monitoring components (governors/monitors/relays) to proven hardware designs. We create a machine that does the job you want it to do, performs reliably, and is user friendly to operate.



Manufacturing

The Skinner factory is located at our headquarters facility in Erie, Pennsylvania, U.S.A., where we have access to an international airport and rail, highway and water transportation. Your steam turbine is built here by skilled workers using modern equipment and tooling for machining, heat treating, assembly and inspections.



Product Quality

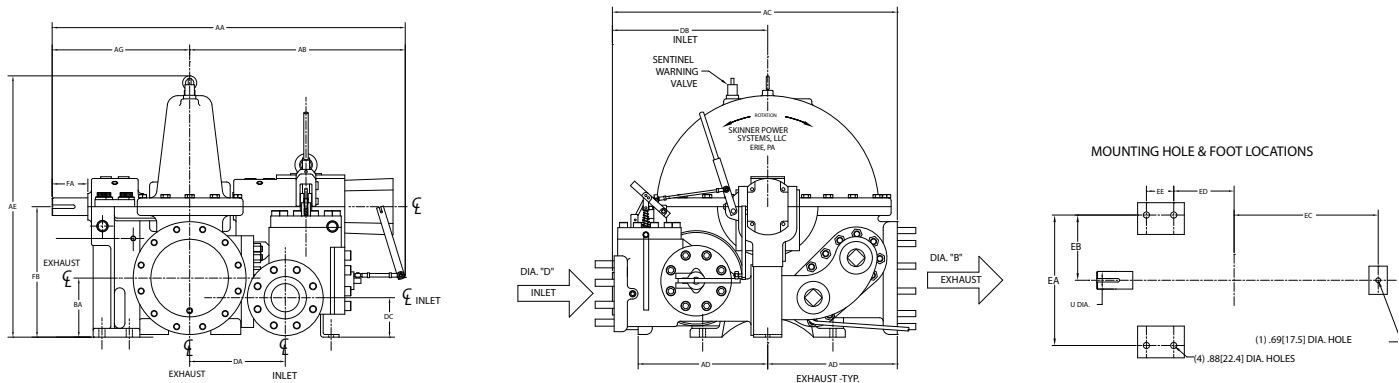
Skinner personnel take pride in their skills and craftsmanship. They established the highest standards beginning in 1868 and, since then, have maintained their traditions for building quality equipment to satisfy the most demanding customer expectations for operating reliability and cost-effective performance. Today, we back our commitment to quality with a one-year limited warranty on each of our turbines.



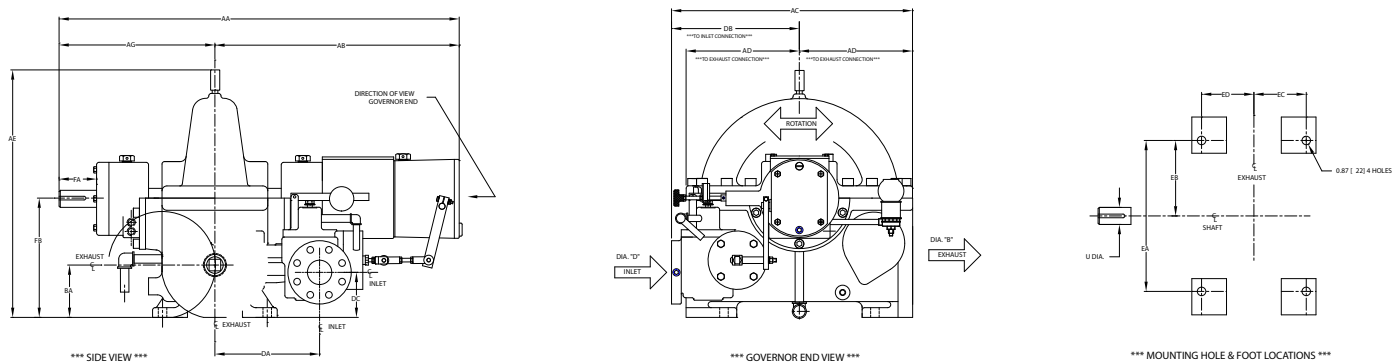
Customer Service and Support

Purchasing quality original equipment from Skinner is just the beginning of a customer's rewarding long-term relationship with our company. We know that our success depends on the success of our customers in meeting their objectives. We are committed to providing prompt service and support for our turbines. In addition, our experienced and dedicated professionals are available to assist customers with turbine trouble shooting, maintenance and, if necessary, repair.

Model	S-18	SB-18	S-23	SB-23	S-28
Maximum Inlet Gauge Pressure (PSI/Bar)	900/60	900/60	900/60	900/60	900/60
Maximum Inlet Temperature (°F/°C)	900/480	900/480	900/480	900/480	900/480
Maximum Exhaust Gauge Pressure (PSI/Bar)	150/10	250/16	150/10	150/10	150/10
Speed Range (RPM)	800/5000	800/5000	800/5000	800/5000	800/5500
Bearing Type	Sleeve	Ball	Sleeve	Ball	Sleeve
Wheel Pitch Diameter (IN/mm)	18/457	18/457	23/584	23/584	28/711
Approx. Maximum Rating (HP/kW)	400/300	400/300	900/666	900/666	1800/1350
Approx. Shipping Weight (LB/kg)	1100/500	1100/500	1800/816	1800/816	2800/1270



FRAME SIZE		S-SERIES APPROXIMATE DIMENSIONS — INCHES/MILLIMETERS																			
		OVERALL									FOOTPRINT					SHAFT			CONNECTIONS		
		AA	AB	AC	AD	AE	AG	BA	DA	DB	DC	EA	EB	EC	ED	EE	DIA U	FA	FB	ASA	
																				B	D
18		42.14 1070	26.14 664	29.32 745	11.38 289	26.00 660	16.00 406	5.75 146	10.78 274	15.06 383	4.50 114	12.75 324	6.38 162	18.00 457	6.88 175	3.19 81	1.75 44	4.38 111	12.63 321	6"	3"
		42.09 1069	26.09 663	33.69 856	13.38 340	32.12 816	16.00 406	5.75 146	12.63 321	19.69 500	4.75 121	7.00 178	2.25 57	6.56 167	8.19 208	5.00 127	1.75 44	4.63 118	14.63 371	6"	4"
23		51.25 1302	31.75 806	40.20 1021	18.38 467	37.06 941	19.50 495	8.38 213	13.56 344	21.82 554	5.72 145	18.50 470	9.25 235	20.44 519	8.69 221	3.88 98	2.50 64	5.06 129	18.50 470	10"	4"
		51.25 1302	31.75 806	42.16 1071	18.38 467	37.06 941	19.50 495	8.38 213	14.18 360	22.65 575	6.00 152	18.50 470	9.25 235	20.44 519	8.69 221	3.88 98	2.50 64	5.06 129	18.50 470	10"	6"



FRAME SIZE	SB-SERIES APPROXIMATE DIMENSIONS — INCHES/MILLIMETERS																		
	OVERALL										FOOTPRINT				SHAFT			CONNECTIONS	
	AA	AB	AC	AD	AE	AG	BA	DA	DB	DC	EA	EB	EC	ED	DIA U	FA	FB	ASA	
																		B	D
18	45.88	29.88	26.69	11.63	26.00	16.00	5.75	10.78	15.06	4.50	15.50	7.75	5.38	5.38	1.75	4.38	12.63	6"	3"
	1165	759	678	295	660	406	146	274	383	114	394	197	137	137	44	111	311		
23	40.06	24.06	33.69	13.38	32.12	16.00	5.87	12.63	19.69	4.75	20.75	10.38	5.50	5.50	1.75	4.63	14.63	6"	4"
	1017	611	856	340	816	406	149	321	500	121	527	264	140	140	44	118	371		

*Customers prefer Skinner because we are a low-cost supplier with fast delivery.
Simply put, "We save you time and money!"*



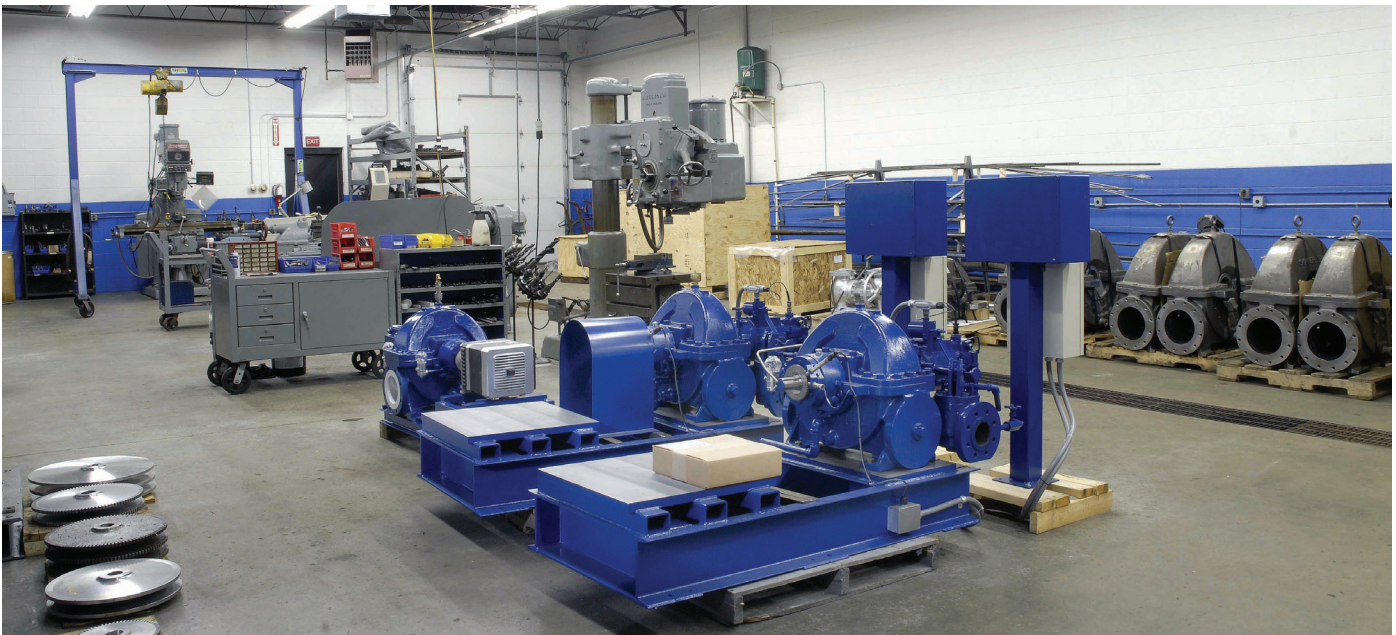
*Skinner Power Systems
Headquarters & Plant*



*SB18 turbine case being prepared
for final assembly*



Machining operation on small components



Turbine drives ready for shipment

Contact Skinner for single-stage steam turbines to 3000 horsepower and generator packages to 2 MW.



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