



MODELS T20E & MT20 *LONG RETRACTABLE SOOTBLOWERS*



General Description

The Clyde Bergemann Model T20E electric drive Long Retractable sootblower is designed for travels up to twenty feet. The MT20 (manual) version is designed for travels up to ten feet. These low cost, easily maintainable sootblowers are constructed for dependable operation indoors or outdoors in all climates. They can use air, saturated or superheated steam as a cleaning medium and their compact design makes it possible to fit these units in tight spaces. The T20E is, in fact, the worldwide standard for industrial and petrochemical applications.

Construction / Design

The construction of the T20 starts with a 3/16" thick heavy gauge box design steel housing to protect all working parts. The model T20E has a single electric motor drive that traverses the lance in and out of the boiler while rotating it, all through the use of one drive chain. Depending upon the application and cleaning requirements, lance speeds can be 6.5 fpm x 6.5 fpm or 4 fpm x 8 fpm. Speeds are matched to increase range and penetration of cleaning as well as eliminating whip and decreasing tube wear. The traveling carriage is an uncomplicated component, which provides smooth, reliable movement without any high-speed gearing or special drive motor. The stationary power pack is located at the outboard end of the blower away from heat and boiler gases. Blowing pressure can be adjusted any time during blower operation by way of an external adjustment device. This device positions an internal pressure disc down stream from the valve seat to make pressure adjustments which allows the valve plug/seat to open 100% all the



time. This feature provides true external adjustability while limiting seat damage resulting from cleaning medium pressure. The lance is supported by a solid SS hourglass roller positioned on the canopy front plate providing durability and long life. All electrical components are to NEMA 4 standards with NEMA 7 available to meet hazardous gas environments.

Operation / Maintainability

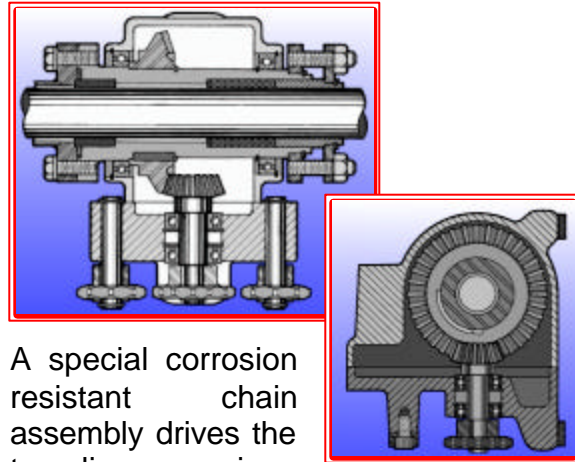
The Clyde Bergemann model T20E sootblower is designed to provide the optimum cleaning for rated boiler output, to provide dependable operation and to allow for ease in maintainability. The traveling carriage is pre-lubricated so it requires no oiling. The connection between the lance and carriage is flanged for ease in removal. The stainless steel feed tube is ground and polished to prevent binding and wear. There are no inaccessible parts located around the lance or feed tube that might clog, corrode, or inhibit smooth operation and/or cleaning medium flow. The Clyde Bergemann low-friction chain is prelubricated, self-cleaning and corrosion resistant. The chain assembly can be easily inspected and maintained. The motor used for the T20E is built especially for Clyde Bergemann. This motor is a totally enclosed, non-ventilated, 3-phase moisture resistant type with high constant torque and class F insulation. The motor is located away from the boiler to protect it from heat and contamination.

T20 Design Variations

The standard T20E and MT20 rotate 360° while traversing in and out of the boiler. The TEH variation is used for air preheaters and is non-rotating. The TEH can be used for regenerative or tubular type air preheaters. Another

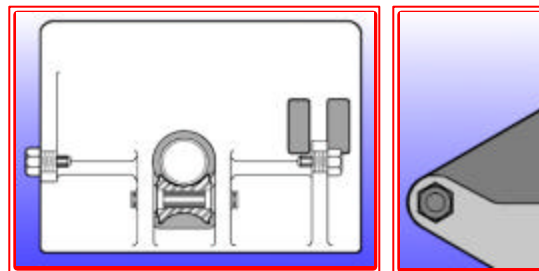
variation of the standard T20E is the half-track. These units rotate and traverse; however, have multiple nozzle sets to clean more boiler surface area at reduced travel lengths.

Traveling Carriage



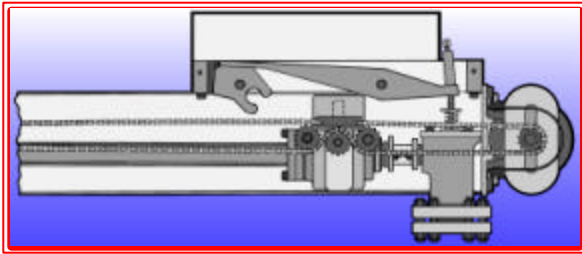
A special corrosion resistant chain assembly drives the traveling carriage rotation function. A simple trouble free bevel gear drive rotates the lance. The lance hub is sealed in the front and rear by a high temp graphoil packing arrangement. The high-speed gear train is located away from the boiler and out of the blowing medium path.

Lance Support



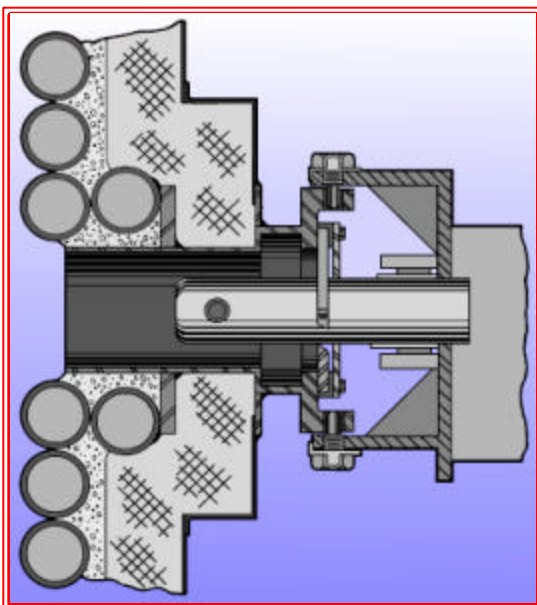
An hourglass roller is used for maximum guidance and is hardened to support the overhanging load as the lance extends from rest position. This roller is supported on the roller shaft by two oilite bronze bushings. A standard swivel mount is the only support needed at the boiler end of the Clyde Bergemann model T20E sootblowers.

General Operation Arrangement

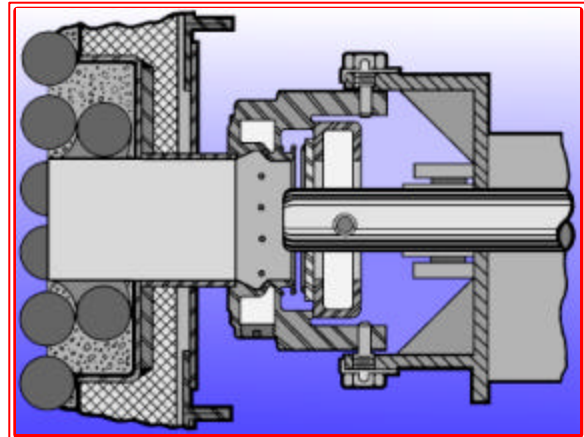


The poppet valve trim is made of stainless steel with stellite contact surfaces. It has a flexible lip to compensate for thermal changes while maintaining a tight shutoff. The hardened stainless steel cartridge packing gland is easy to maintain. The cam and lever, which operates the valve, requires no lubrication. Nozzle pressure can be precisely adjusted, while the sootblower is in operation, by means of an adjustment nut on top of the valve stem spring assembly. The poppet valve is opened mechanically by a lever, which is actuated as the traveling carriage moves forward. The rib, which actuates the cam, is located on the top of the traveling carriage.

Wall Box Variations

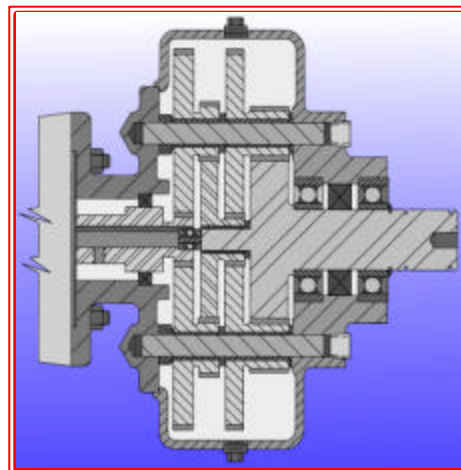


The negative or balanced draft wallbox is designed to provide proper sealing while the lance travels through its normal operating cycle. As the lance travels through this wallbox, all particles of soot and slag are stripped off its surface by a hardened steel scraper plate adjacent to the boiler wall. This two piece plate is easily replaced by removing its retainer.



The positive pressure wallbox is designed for pressurized furnaces. This wallbox allows an air seal to be created in the lance penetration area that is greater than that found in the boiler, which prevents the escape of boiler gases. An aspirator can be added to seal in the boiler gases, should it be necessary to remove the sootblower lance while the boiler is on line.

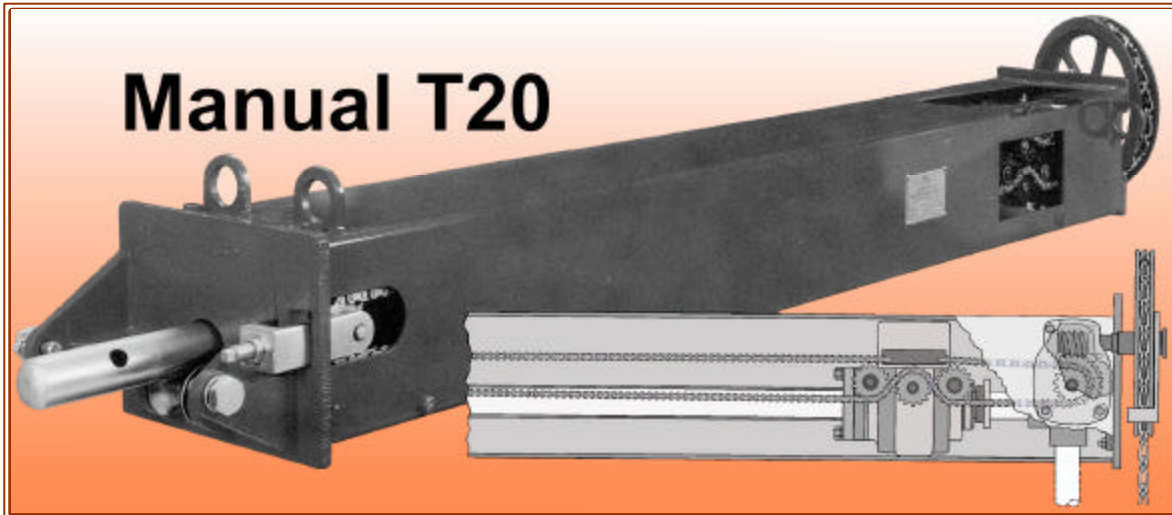
T20 DRIVE GEARBOX



The T20 power packs safely carries maximum torque and thrust forces to the traveling carriage for durable operation. This power pack is a proven design with housing arrangement and gear train

layout speced for many years of operation. The power pack cavity area has been approved by gear oil manufacturers for proper distribution of lubricants to all working parts, whether installed indoors or outdoors.

Model MT20



The Clyde Bergemann Model MT20 manual long retractable sootblower is designed for use in package boilers, small industrial boilers and oil fired heaters with travels of 10 feet or less. The MT20 uses a formed steel housing covering the top and sides, a 2 3/8" OD alloy steel lance, a 304 SS feed tube and wall sleeve mounted to the front support yoke. Operation may be by chain or hand crank. A manual medium admission valve must be supplied for installation in the inlet pipe.

The MT20 is operated by pulling the chain or turning the hand crank mounted on the gearbox located at the rear of the blower. Motion imparted through the gearbox moves the traveling carriage.

This same chain operates through a set of sprockets, which causes lance rotation. The hand operated shut-off valve is field mounted in the supply piping to the blower. A stop is provided on the blower to indicate to the operator when to open and when to close this shut-off valve.

STANDARD SPECIFICATIONS

Drive / Electrical (T20E only):	
Electric Motor:	480v / 3 phase / 60 Hz standard (other voltage available)
Limit Switch:	NEMA 4 standard (other options available)
Electrical Enclosure:	NEMA 4 standard (other options available)
Traveling Carriage Type:	Bi-directional, single reduction gear set
Power Pack Type:	Sealed housing, reduction type gear set
Travel Speed & Rotation:	6.5 FPM / 6.5 RPM (optional 4 FPM x 8 RPM)
Poppet Valve (T20E only):	DVT-FS, ANSI 600#,
Companion Flange:	2 1/2" ANSI Standard
Pressure Control:	Outside (on-line) adjustable
Vent Valve Connection:	3/8" NPT