

RT LONG RETRACTABLE BLOWER DESCRIPTION

The RT Sootblower is a long retractable sootblower designed for the cleaning SCR catalyst. The model RT sootblower uses the potential energy in the blowing medium (steam or air) and transforms it almost completely into kinetic energy by means of venturii nozzles. The extra large cross flow sections in the lance and feed tube avoids high-pressure drop inside the sootblower and minimizes noise emissions.

All components of the RT Sootblower are built for trouble free operation and are designed to meet extra heavy duty applications found in some utility boiler or similar applications.

The rake assembly of the model RT sootblower is composed of two different types of components, the preheat tube assembly and the crossarms. The preheat tube assembly is the supporting frame which the rake assembly is supported from. This preheat tube also creates a longer path for the cleaning medium to travel before it reaches the nozzles contained in the crossarms, thereby heating the cleaning medium even further to help in eliminating any condensate from being blown onto the catalyst. The crossarms are attached to the preheat tube assembly at perpendicular angles and contain the venturii that actually used to clean the catalyst. The rake assembly inserted and retracted to the rest position by means of the gear-motor driven carriage. The blowing medium is fed to the lance tube via the poppet valve and the fixed feed tube. The poppet valve is mechanically opened almost immediately upon the sootblower beginning insertion. All the support rollers, shafts and brackets come standard.

The blowing pressure of the RT Sootblower has to be carefully monitored to prevent insufficient cleaning (blowing pressure probably too low!) and to avoid excessive erosions on the reactor catalyst (blowing pressure probably too high!). With steam being used, it is very important to properly design and operate the steam supply to avoid condensate blowing, which could cause severe damage to reactor catalyst and the sootblower.

It is important that all safety precautions be strictly enforced, as advised later in this manual, to avoid injuries and damages. The steam supply and the electrical supply must be shut down before any maintenance or repair work is performed on any sootblower components.

The housing is a 1/4" heavy-duty formed steel canopy that provides rigid support and protection for the blower components. The design of the RT sootblower intentionally gives easy access to all parts that require regular maintenance or repair work. Square rails and angles with bolt-on style gear racks are attached to both sides of the canopy to provide support to the blower carriage, and a means for the carriage to travel the length of the canopy. A removable top cover at the rest position allows replacement of the gearbox or motor through the top of the canopy while leaving the spindle housing, lance and feed tube, and poppet valve, in place.

The blower carriage consists of two separate components: the lower housing and the upper gearbox/motor. Thus, excessive heat transfer from the hot lower housing to the blower gearbox is avoided and lubricant leakage is minimized.

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The electric motor is mounted directly to the front of the gearbox using a standard C frame adapter. The rear of the gearbox has two output drive shafts; one for lance rotation and one for an emergency retract tool. Each side of the gearbox has guide rollers on a vertical and horizontal plain, which guide the blower carriage down the length of the canopy on rails. There are support rollers and drive pinion mounted on either side of the gearbox on the main output shaft resulting in a dual rack and pinion drive system.

The RT Sootblower rake assembly is designed to meet the specific requirements of SCR duty. The preheat tube assembly is manufactured from 3 ½" O.D. carbon steel pipe and the crossarms are manufactured from 2 3/8" O.D. carbon steel pipe.

The fixed feed tube ensures proper packing sealing while the rake assembly is inserting or retracting. The feed tube is connected to the poppet valve via an easily removable split ring and a clamp plate. The standard feed tube is 304 stainless steel, 2.75" O.D.

The blowing medium is delivered to the feed and lance tube through a poppet valve, which has a standard ANSI 600# R.F. flange. The flange on the poppet valve is connected to the blowing medium supply piping. The valve stem is sealed off by means of pure graphite valve stem packing. A matching set of cone, stem, seat and packing is available for replacement and readily assembled for installation.

When the blower carriage starts inserting, the poppet valve is opened via the valve latch and arm assembly, and closed again on the return travel. The opening forces are well centered due to the dual linkage support

system. The switching travel is adjustable to suit the actual requirements by relocating the trip pin in the trip bar. The valve control location is easily accessible for adjustments and maintenance work.

The pressure from the supply line can be independently adjusted with respect to the valve opening via the pressure control disc. The model RT comes standard with the externally adjustable poppet valve.

Depending on the furnace pressure conditions, two types of wallboxes are available:

- a. A negative pressure wallbox is supplied for furnaces with a reliable negative gas pressure condition. A spring loaded floating plate seals the boiler opening sufficiently and still provides proper lance tube clearance.
- b. For positive flue gas conditions a positive pressure wallbox with sealing air connection is recommended to avoid gas leaks from the sootblower wall openings. This wallbox also has a connection for steam purge to clean the wall sleeve and scavenging air to pressurize the lance and feed tube when not in operation.

The rear of the sootblower has a slotted plate that is used to support the back of the sootblower. A pin is inserted through two hanger rods and the slotted plates to support the rear of the sootblower. With the pivot pins at the front of the sootblower and the solid support point at the back, the sootblower effectively accounts for boiler movement that may occur due to thermal expansion.

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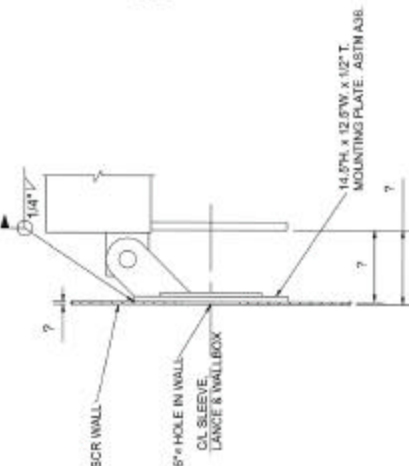
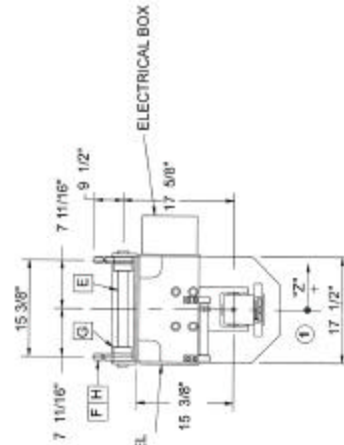
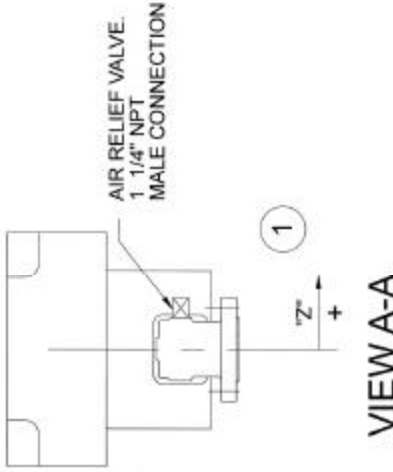
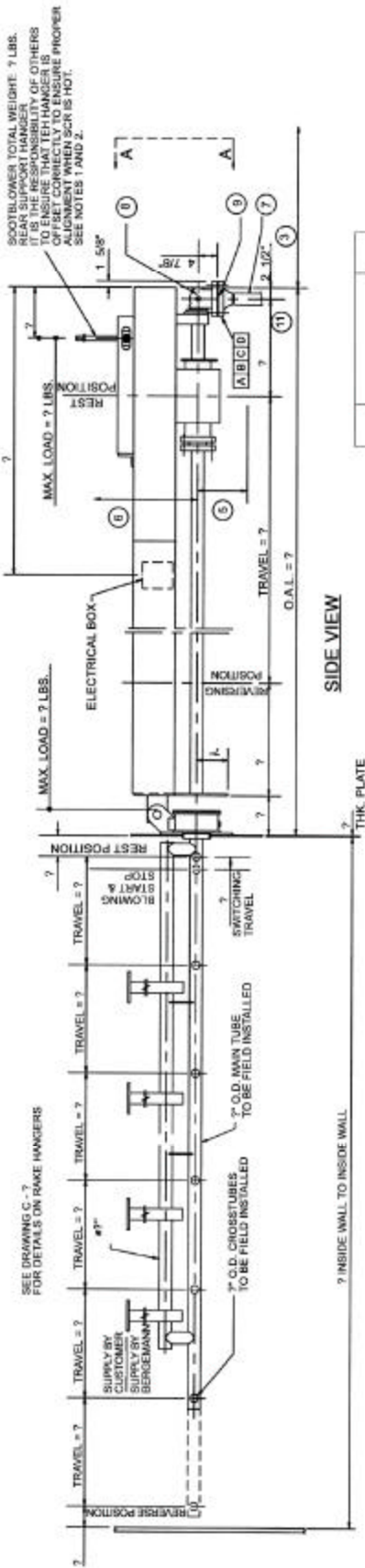
The RT Sootblowers travel is constrained by two limit switches, one at the rest and one at the reverse position. These limit switches are activated by an adjustable trip lever bolted on the spindle housing.

The electric motor power for the blower carriage drive is supplied through a four wire S.O. cable that is guided by the E-chain trailing device.

The limit switches and motor power supply can be accessed in an electrical box that is mounted to the side of the sootblower housing. These boxes have insert and retract local push buttons and can also have power/control voltage disconnects. The motor starters are sometimes mounted in these boxes also.

RT LONG RETRACTABLE BLOWER SPECIFICATIONS

Housing	-	1/4" Thick Cold Rolled Steel
Motor	-	0.75 H.P. (230/460V, 3 phase, 60 Hz, 1800 RPM), TEFC
Lance	-	3.5" O.D. Main Lance - Carbon or Alloy as Standard 2 3/8" O.D. Crossarms – Material to Match
Feed Tube	-	Type 304 Stainless Steel
Valve		
Body	-	Carbon Steel, ASTM A216 Grade WCB or Alloy, ASTM A217 Grade WC6
Plug	-	Type 440 Stainless Steel
Seat	-	Type 416 Stainless Steel
Limit Switches	-	Heavy Duty, NEMA 4 – Other Options Available
Electrical Box	-	NEMA 4 Standard – Other Options Available
Components	-	Terminal Strips and Insert/Retract Pushbuttons
Options Include	-	Integrally Mounted Motor Starter Cabinets
Wiring – Box		
Conductor	-	16 AWG for Power 16 or 18 AWG for Control
Insulation	-	(THHN) or (MTW) 90°C Rated
Sheath	-	Stranded Copper
Wiring – Cable		
Cable Sheath	-	Stranded Copper
Wiring	-	3 & 5 Conductor NEC type MC, 14 AWG Stranded (Class B) annealed copper, 90°C, 600V, flame-retardant.
Lubrication	-	Gearbox – CBI Oil Rack – CBI Spray
Coating	-	Galvanized as Standard Primer Base with Acrylic or Enamel Paint as Option Color: Standard Blue (Any Color Available as Option)



WALLBOX CONFIGURATION ④

NOTES:

1. BLOWER C/L IS TO BE PERPENDICULAR TO SCR WALL AS TAKEN FROM A PLAN VIEW AFTER SCR IS HOT.
2. BLOWER AND RAKE ASSEMBLY IS TO BE LEVEL AT BOILER WALL AFTER SCR IS HOT.
3. 12" MIN. CLEARANCE REQUIRED BEHIND SOOTBLOWER FOR INSTALLATION WITH WALLBOX IN PLACE.
4. WALLBOX MUST BE INSTALLED AND WELDED IN PLACE BEFORE INSTALLATION OF SOOTBLOWER.
5. SPACE OF 18" MINIMUM IS NEEDED THROUGH THE BOTTOM A CLEAR CANOPY (31 1/2" FROM C/L LANCE TUBE).
6. FOR REMOVAL AND MAINTENANCE OF THE GEARBOX THROUGH THE TOP OPENING ONLY A MIN OF 16" IS REQUIRED ABOVE THE TOP OF THE CANOPY (31 1/2" FROM C/L LANCE TUBE).
7. POPPET VALVE MOVES IN OPPOSITE DIRECTION OF SCR EXPANSION. FORCES NEED TO BE TAKEN UP BY BRANCH LINE PIPING. BRANCH LINES NEED TO BE DRAINED TOWARD VERTICAL HEADER WITH A MIN OF 1/2" PER 12" WHEN SCR IS HOT.
8. POPPET VALVE: 3" 600# R.F. ANSI VALVE FLANGE, WCG6 MATERIAL, 1" NPT FEMALE CONNECTION ON BOTH SIDES. FOR MALE CONNECTION ON PURGE VALVE.
9. COMPANION FLANGE: 3" 600# R.F. WELDNCK FLANGE FOR CONNECTION TO 3" SCH. 40 PIPE SIZE.

LOOSE PARTS BOM

A	3" WELDNCK FLANGE	BE-1109	1
B	FLANGE GASKET	BE-1017	1
C	FLANGE STUD	BE-243	8
D	FLANGE NUT	BP863057-3200	16
E	SHAFT	BE-692	1
F	EYEBOLT	BE-690	2
G	SHAFT COLLAR	BE-688	2
H	EYEBOLT NUT	BE-1168	4

**MODEL RT
SOOTBLOWER
SYSTEM
INSTALLATION
LAYOUT**