

# IK1M-TE SOOTBLOWER



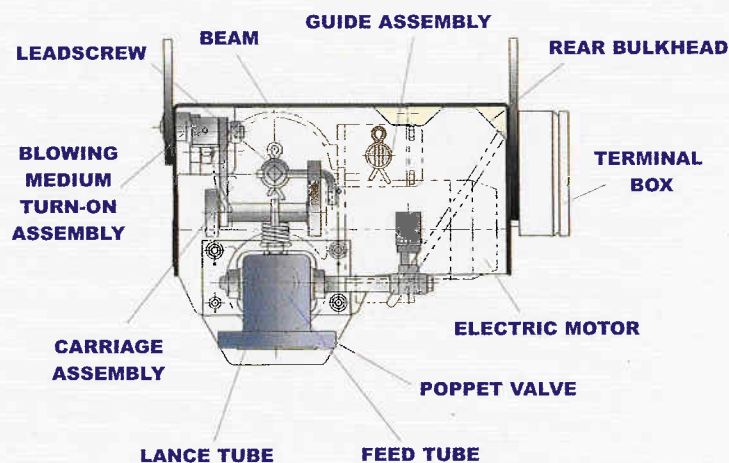
**DIAMOND POWER**



## SOOTBLOWER DESCRIPTION

The IKIM is a one metre travel part retractable sootblower incorporating a travelling motor drive, which, through reduction gearing and a lead screw, translates a carriage along a supporting guide tube. A lance tube, attached to the carriage, propels an element across the boiler. Blowing medium, controlled by an integral poppet valve, is transmitted to the nozzles on the element through a feed tube to provide the required cleaning energy. The complete mechanism is supported and protected by a rigid enclosure.

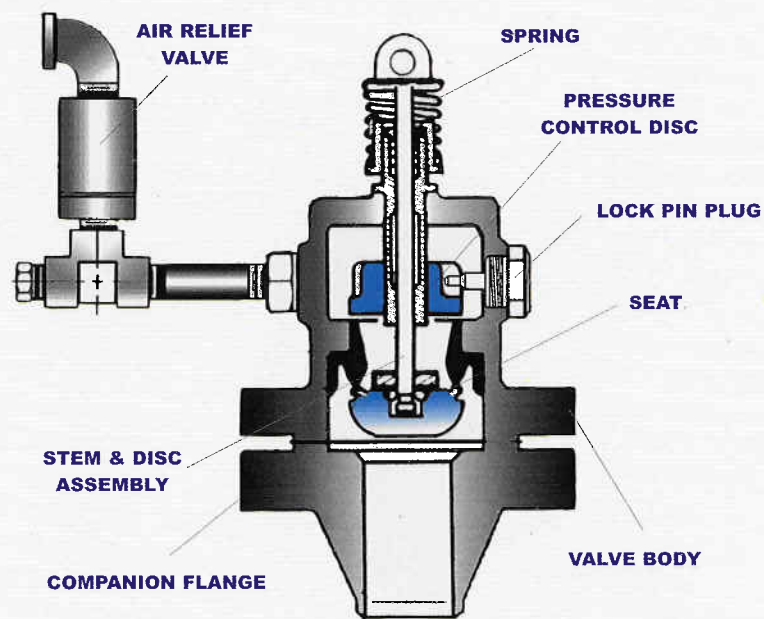
Applications include back end section of coal or oil fired boilers, economisers, airheaters, fluidised bed, waste heat, HRSG, Co-Gen and Biomass boilers etc.



## FLEXIBLE POPPET VALVE

The poppet valve, mounted at the rear of the sootblower, is supplied in either Series 40, 60, or 120 Bar assemblies, depending upon the blowing medium pressure. Valve bodies are either chrome molybdenm alloy or carbon steel, depending upon the blowing medium temperature.

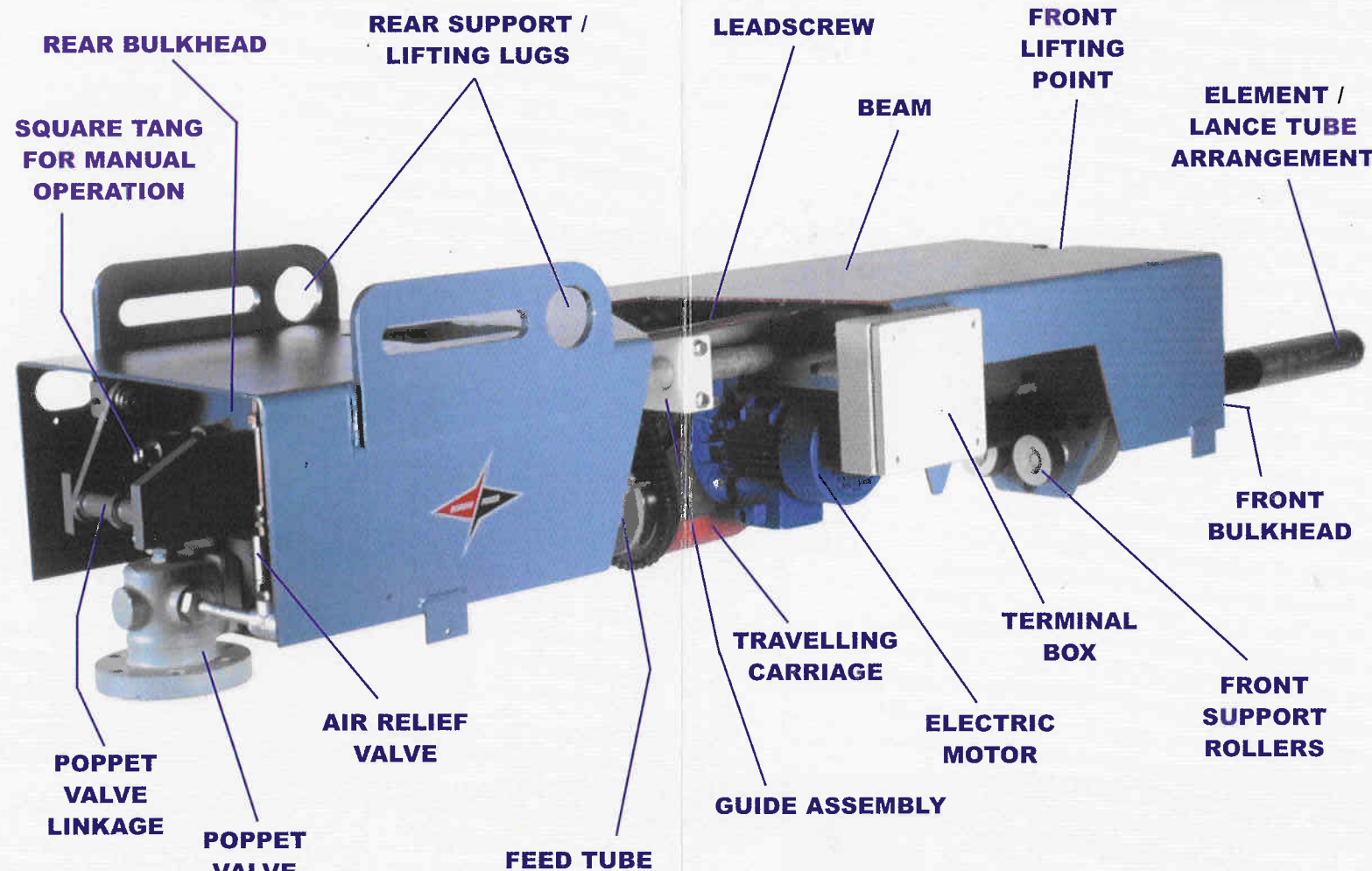
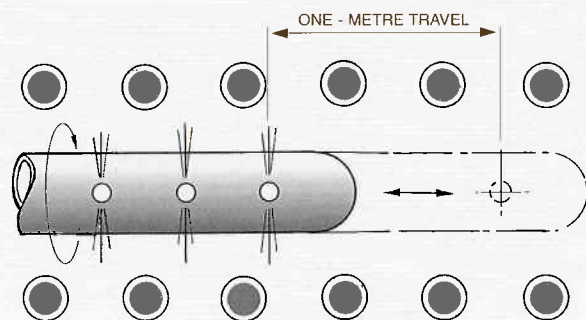
The action of a mechanical cam and arm arrangement depresses a trigger to open the valve. The valve opening is controlled by the movement of the carriage and closes automatically when the carriage returns to the rest position.



The valve seat is welded into the valve body and its flexible design compensates for distortion caused by thermal expansion. The sealing surface of the seat is stellite to minimise wear and reduce maintenance to the valve.

## CLEANING PRINCIPLES

The IKIM cleans the heating surfaces with jets of high pressure air or steam. A series of nozzles, positioned on a travelling element, traverses the cleaning area before returning to the rest position ready for the next cycle. The element is permanently located inside the boiler and is designed on an individual basis to provide maximum cleaning result. The element materials are selected based upon flue gas composition and temperature.



## ADJUSTABLE BLOWING PRESSURE

The initial blowing pressure, depending on individual application is recommended by Diamond Power. However the blowing pressure should be re-adjusted based on operating experience. The poppet valve is designed with a feature for quick and simple adjustment of the blowing pressure.

The blowing pressure is adjusted by varying the position of a fluted pressure control disc within the poppet valve body. The pressure control disc is locked in position by a lock pin plug screwed through the valve body.

## OPERATING CYCLE

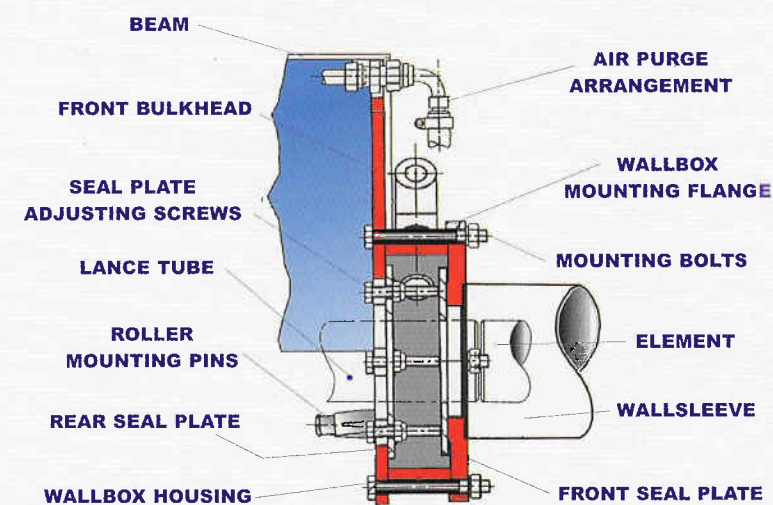
The operating cycle begins with the IKIM in the fully-retracted position. When power is applied to the drive motor, the carriage moves forward. A trip pin on the carriage operates the poppet valve linkage to open the poppet valve, thus admitting blowing medium to the cleaning element. The carriage continues its forward movement until a trip bracket within the integral guide assembly operates the front limit switch. This action reverses the drive motor rotation and the carriage movement. As the carriage reaches its retracted position, the trip pin again operates the valve linkage this time to close the valve. The trip bracket operates the rear limit switch to stop the sootblower at the rest position. The operating cycle takes approximately 3.25 minutes.

## REAR SUPPORT

The IKIM is supported at the rear (poppet valve end) from lugs welded to the beam. A suitable attachment to the boiler structural steelwork is normally supplied by the customer.

## FRONT SUPPORT

The IKIM is supported at the front end (boiler end) at the mounting flange and welded, on site, to a wallsleeve (normally supplied by the customer) on the boiler wall. The mounting flange is supplied as part of the sootblower assembly and is bolted to the sootblower front bulkhead.



## WALLBOX

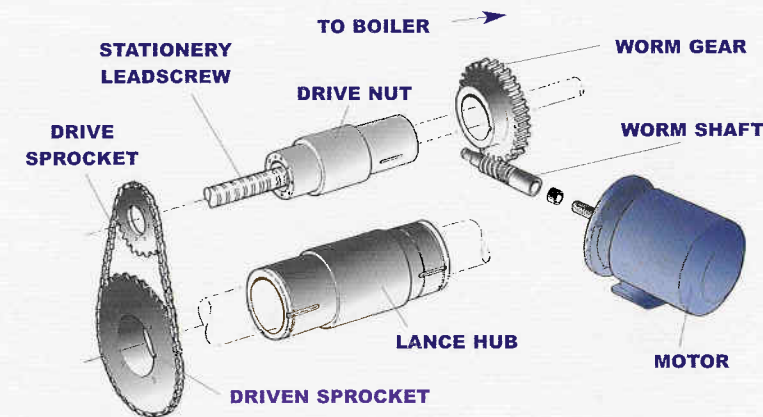
On positive pressure applications, the wallbox, in addition to providing a front mounting point for the sootblower, forms a seal around the lance tube. Rear and front seal plates contained within the wallbox along with pressurised air in the chamber prevent leakage of boiler gasses into the atmosphere. Various design options are available depending upon requirements.

On negative pressure applications a seal plate is bolted to the front bulkhead to prevent ingress of excessive atmospheric air into the boiler.

## CARRIAGE AND DRIVE MECHANISM

The IKIM is driven by a totally-enclosed 0.55 kW electric motor, and uses a motor power cable as the power supply. The motor is flange-mounted on the carriage housing and drives the carriage through a worm reduction gear unit and drive nut arrangement integral within the carriage.

The drive nut traverses a stationary lead screw as it rotates and thus propels the carriage. Direction and extent of travel are controlled by limit switches. The lance hub forms part of the carriage assembly. The lance tube and element is flange-mounted to the hub and travels with it. The element is normally welded at site to the lance tube.



Where the element has to be rotated as it travels, a chain and sprocket drive arrangement is used to rotate the lance hub. Where the element is of the non-rotating type, the hub drive arrangement is omitted.

## OPERATING CONTROLS

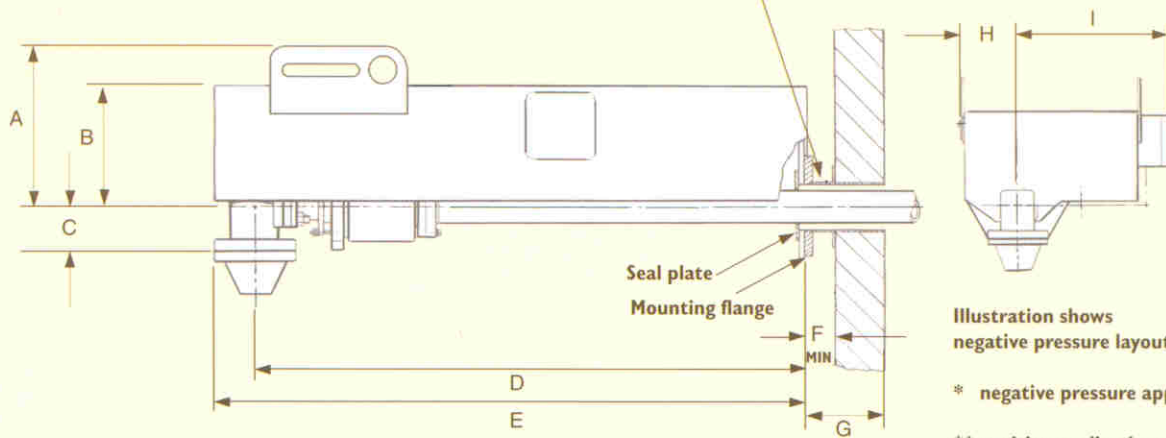
The basic IKIM sootblower is normally operated from a remote panel in the control room. Control options available include, local push-buttons on the terminal box and operation from an individual starter box adjacent to the sootblower.

It can also be arranged to operate automatically in a pre-determined sequence. Once started the IKIM goes through its cleaning cycle automatically. Limit switches control the extent of travel and are automatically reset at the end of the cleaning cycle.

The IKIM can also be operated manually in the event of power failure and for maintenance purposes.

## TECHNICAL DATA IK1M-TE

114.3 or 141.3 O/D wall sleeve to suit application.



### DIMENSIONS

| Dimensions (mm): | A   | B   | C     | D    | E    | F            | G             | H   | I   |
|------------------|-----|-----|-------|------|------|--------------|---------------|-----|-----|
| 40 or 60 bar:    | 389 | 286 | 108.5 | 1660 | 1755 | *70<br>**130 | *300<br>**360 | 185 | 472 |
| 120 bar:         | 389 | 286 | 123   | 1660 | 1766 | *70<br>**130 | *300<br>**360 | 185 | 472 |

### SPECIFICATIONS

|                                       |  |
|---------------------------------------|--|
| Travel:                               | Up to 1000mm   |
| Travel speed:                         | 10mm/sec   |
| Blowing Pattern:                      | 25mm helix   |
| Max element extension:                | 10000mm from boiler wall   |
| Standard element diameter:            | 73mm O/D   |
| Element material:                     | To suit applications up to gas temperatures of 980°C                               |
| Lance tube material:                  | 76.2 mm O/D Carbon Steel   |
| Feed tube material:                   | 60mm O/D 304 S.S / 1.4301 Polished Stainless Steel                                 |
| Blowing Medium:                       | Air or Steam Up to 131 bar at 500°C  |
| Drive:                                | TEFC 0.55kw electric motor   |
| Shipping details (Excluding element): | Crate size: 2300mm x 750mm x 720mm      Net weight: 270kg      Gross weight: 340kg |



### Diamond Power Specialty Ltd

Glasgow Rd Dumbarton Scotland G82 1ES  
Tel: 44 (0) 1389 744000 Fax: 44 (0) 1389 762669  
E-mail: sales@diamondpower.co.uk



### Diamond Superior AB

PO Box 20035 S - 161 02 Bromma Sweden  
Tel: 46 (0) 18 290440 Fax: 46 (0) 18 983558  
E-mail: kkarlsson@diamond-superior.se

### Diamond Power Finland OY

PO Box 33 Fin - 00701 Helsinki Finland  
Tel: 358 (0) 9 3508850 Fax: 358 (0) 9 35088550  
E-mail: juha.mustonen@diamondpower.fi