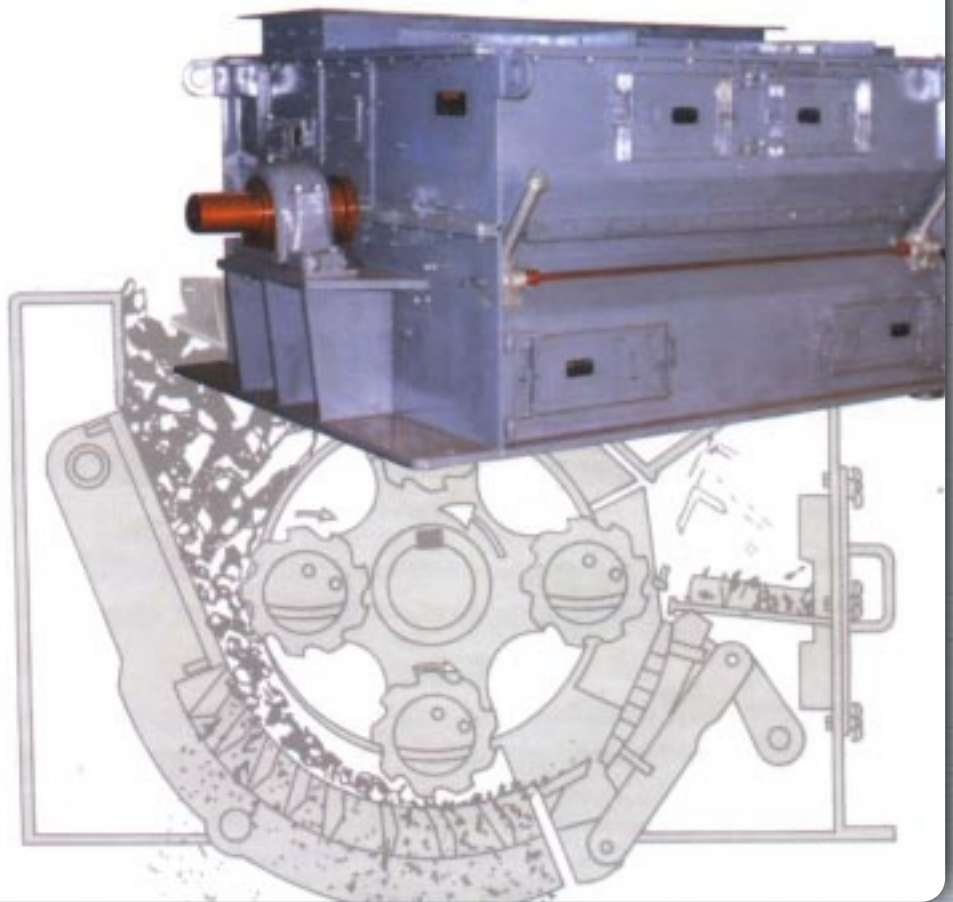


RING GRANULATORS



RING GRANULATORS

The Elecon ring-type granulators are job engineered for crushing material like R.O.M. bituminous coal as well as rock salt, lignite, gypsum, chemicals, medium-hard minerals and such other friable material. They are designed to give long service with negligible maintenance.

Basically there are four ways to reduce material size: impact, attrition, shearing and compression. Most of the crushers employ a combination of these crushing methods. Elecon ring-type granulators crush by compression accompanied by impact and shearing. Tramp iron and other uncrushable debris are simply swept across the cage bars screen plate into a trap. A heavy deflector plate above the trap prevents tramp iron from continuing around and returning back into crushing cycle. This arrangement increases the life of crushing rings. An access door in the rear of the crusher permits periodic removal of accumulated debris.

The unique feature of this type of granulator is the minimum power required per ton for the material to be crushed compared to that of other types of crushers.

The granulators are rugged, dependable units using a slow positive rolling action to produce a granular product with minimum fines. These are specially developed to crush R.O.M. medium-hard, bituminous, sub-bituminous coal, etc.

The performance of these units is found to be highly efficient, handling maximum reduction ratios at high capacities, combining impact and rolling compression, requiring low horsepower and minimum maintenance. The granulators are available with operating capacities up to 2000 TPH, and feed size up to approx. 1000 mm. Positive adjustment of clearance between the cage and path of the rings is provided to compensate for wear and to adjust and maintain product size. Liners, breaker plates, cage bars/screen plates, crushing rings and other components are made of rugged, abrasion and shock-resisting steel. Operational speeds depend on application. The design of the crushing elements permits controlled variation in operating performance.

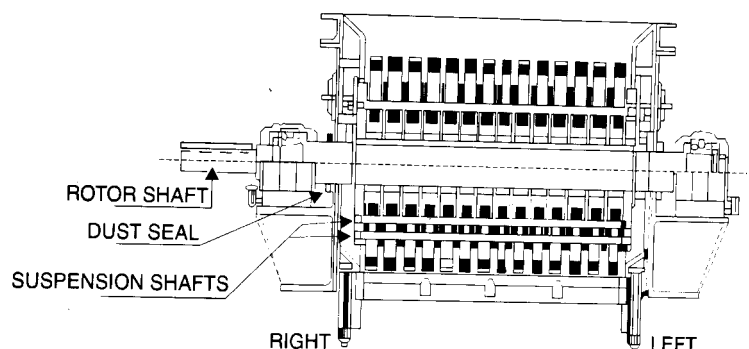
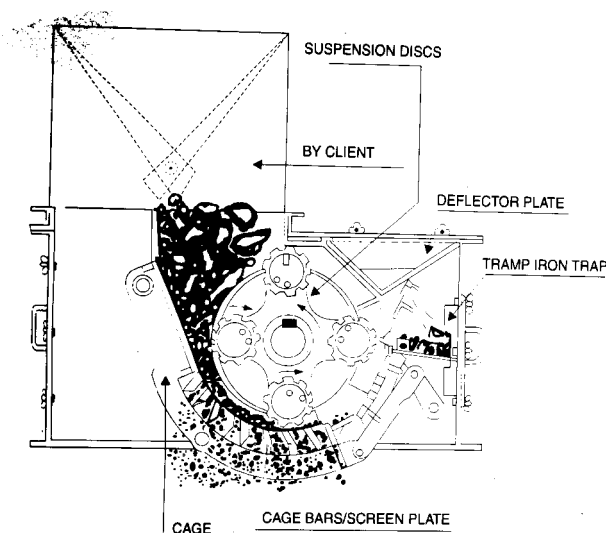
Multiple sets of crushing rings are hung from pairs of suspension shafts across the width of the rotor. The suspension shafts are mounted on and carried around by suspension discs, separated by spacing discs to allow free action of the rings. Plain and toothed rings are alternated to provide the best crushing action.

In the old design of conventional ring mills, there was a tendency for rings to bounce as they pass over the feed. But in the generation ring granulators, a second shaft or pusher rod through the rings concentrates rolling pressure, thereby reducing fines, improving product size and economic power requirements.

In conventional ring mills, rings have a tendency to bounce as they pass over the feed. But, this is avoided in these granulators by providing a second shaft or pusher rod which concentrates the pressure uniformly through the rings and thereby, reduces fines, improves efficiency and lessens power demand.

Referring to the figure at the 12 o'clock position, the crushing rings are in a normal, running empty position, centrifugally balanced on shaft N. As the rings approach the 9 o'clock position and engage the feed, they no longer hang from shaft N unless speed and power are greatly increased. However at this point, shaft M takes over and presses the ring against the feed to create a concentrated, rolling compressive force. The massive adjustable cage assembly holds the feed for crushing and allows the properly sized fragments to drop below through the non-clogging tapered opening between the cage bars/screen plates.

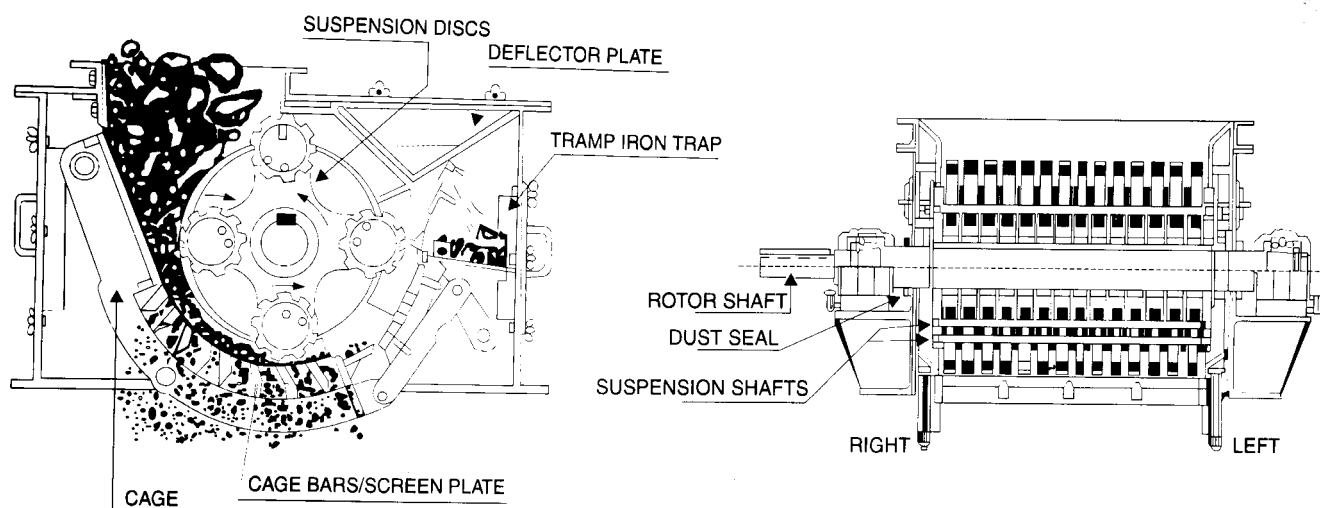
RING TYPE GRANULATOR WITH BYPASS



MAIN FEATURES AND CONSTRUCTION

Part	Specifications		
Frame accessibility	Fabricated from heavy steel plates, large guarded opening of inspection doors, front and rear, are fitted with dusttight seals. A large hatch on top provides further access for maintenance. Doors on the sides above the rotor shaft permit removal of the rotor without completely dismantling the machine.	Rotor shaft	Forged carbon steel.
Frame liners	Renewable, abrasion-resistant steel.	Suspension discs	Abrasion resistant steel, keyed to rotor shaft and clamped with lock nut. Clover leaf type discs are provided for crushers up to models TK-4.
Cage frame	Fabricated from rugged steel plates and supported from a heavy hinge shaft at the top with adjusting mechanism at the bottom.	Suspension bars	Duplex suspension bars allow rings positioned in tandem resulting in smooth positive rolling action.
Crushing chamber	This consists of either screen bars or screen plates. Selection of screen plates/screen bars depends on specific application and crusher size. The selection is at the discretion of Elecon.	Crushing rings	Cast manganese steel. Alternating plain and toothed rings.
Screen bars	Renewable abrasion-resistant steel bars. Openings are tapered and practically vertical for free-flowing discharge even with wet coal.	Bearings	Spherical roller bearings with taper bore to facilitate assembly and dismantling. Mounted in cast steel housing. Fitted with labyrinth and shoulder seals. Bearings are grease lubricated.
Screen plates	Renewable, abrasion-resistant steel plates.	Tramp iron trap	Heavy deflector plate prevents tramp iron from continuing around and back into the crushing cycle. Access door at the rear of the crusher permits periodic removal of uncrushable debris.
Breaker plate	Renewable, abrasion-resistant steel plates.	Bypass	Extended frames are also available to accommodate built-in bypass and thereby eliminate the need for external hopper and chutes when feed does not require reduction by the granulator. The granulators with these features are designated as TKB models. Other specifications remain unaltered except the overall length and the weight of the unit.
Product size adjustment	Up to TKk11 - 38B model, adjustment of cage is through a link and lever mechanism activated by adjusting worm gear. In the larger-size models, the adjustment is provided through synchronised worm adjusting jacks. The adjustability is essential to compensate for wear and to maintain product size.	Drive	This may be directly driven by : 1) Fluid/Flexible coupler or 2) Fluid coupling, gearbox and flexible coupling 3) Flat belt/ v belt 4) Fluid coupling and flat belt / V belt
Rotor assembly	Balanced without rings to minimise vibrations, weight concentrated within rotor eliminates the need for external fly wheels. Design allows the rings to be taken out from either side.	Hydraulic door opener	Mounted cylinders, including a hydraulic power pack with motor/manual operation, is available on request for certain models.

RING TYPE GRANULATOR WITHOUT BYPASS



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