custom-made global shredder solutions

ACTOM UNIBOX Shredder Motor Standard Features:

- Air or water cooled
- 4160 V to 13200 V
- 450 RPM to 600 RPM
- 2500 HP to 10 000 HP
UNIBOX SHREDDER MOTORS

have been manufacturing Medium Voltage Electric Motors to international standards since 1948 for all applications and duties. Such key applications include Mining, Industrial, Power Generation, Crushing, Milling, Pumping and Shredding.

The UNIBOX series of motors is the backbone of ACTOM’s large fabricated frame heavy duty Medium Voltage product range. The UNIBOX design covers design ratings from as low as 450hp to over 20,000hp for certain applications, at all international voltages. Design are available from 2 pole right up to 18 pole speeds where applications demand unusual solutions.

All ACTOM UNIBOX Medium Voltage motors are designed, built and tested at the company’s Johannesburg works in South Africa. The UNIBOX series of motors can easily be adapted and designed to suit exact site and duty requirements, including having new motors manufactured to be both mechanically and electrically interchangeable to precisely match existing machine or plant layout dimensions.

SHREDDER MOTORS

ACTOM has developed the UNIBOX Shredder Medium Voltage Motor Series after extensive research, development and analysis of operating Shredder plants. This has enabled ACTOM designers to optimize the design to be truly duty specific.

UNIBOX Shredder Motors are generally of the slip ring design. This allows for high starting torque at start up, as well as providing control of the UNIBOX motor during the operation cycle. Control of the motor torque though a liquid resistance controller reduces the likelihood of a stall condition occurring when heavy loads are fed into the shredder. The liquid resistance controller, which adds a variable resistance to the motor rotor, controls the motor’s developed torque to that required by the load. This facilitates continuous shredder operation and longer motor and plant life.

The advantages of this outboard design philosophy are:
- Carbon dust is prevented from contaminating the stator and rotor windings.
- The external slip ring housing facilitates easier maintenance and quicker brush changes.
- The slip ring housing is behind the opposite drive end bearing, thus limiting the distance between the main shaft bearing centres, allowing for greater shaft stability and stiffness.

Construction

The UNIBOX Shredder Motor has a robust, stress relieved, box type fabricated frame. This design utilizes heavy section mild steel plate to maximize the motor’s rigidity. The motor lifting points are integrated into the stator end plates, to which the end shield flange mounted bearings are mounted. End shields are reinforced with gussets. This ensures maximum rigidity during handling and operation. The heavy duty UNIBOX Motor frame with integral foot fixings and jacking bolts effectively reduce motor noise levels, flexing and vibration levels, whilst also ensuring optimal support for the integral VPI wound stator core pack.

Installed Base

ACTOM supplies and supports Shredder motors for the Global market with over 120 large frame Medium Voltage motors currently installed in the United States of America alone. These range from the typically standard 4,000hp 12 pole machines to monster sized 9,000hp 16 pole machines.

Water Cooled
- CACW, IP55, IC8A1W7

Bearings

The ACTOM UNIBOX Medium Voltage Shredder Motor utilizes a Heavy duty spherical roller antifriction bearing at the motor drive end (DE). This is mounted on a tapered shaft landing, to not only carry the load of the motor’s rotor but also to cope with the shock and axial loads imposed by the shredder. DE bearings are designed for a life in excess of 1 million hours (L10h).

Shaft Design

The ACTOM UNIBOX Medium Voltage Shredder Motor shaft is again a heavy duty fabrication. The shaft ribs, which carry the rotor’s core, are welded to the shaft billet using a double V preparation method. This gives the completed shaft the properties of a forging, adding strength to the final shaft assembly. All welding is thoroughly inspected using the latest technology to ensure that all welds are sound. The shaft is then stress relieved and rib ends are checked to ensure that the shaft assembly is as robust and dimensionally steady as modern manufacturing processes allow.

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Ventilation and Degrees of protection

UNIBOX Series Medium Voltage Shredder Motors can accommodate a variety of air or water cooling options and can be constructed with IP ratings to suit the site or client’s degree of enclosure protection requirements.

Air Cooled
- CACA, IP55, IC611
- Drip Proof, IP22/23, IC01
- Air Ducted In / Out, IP44, IC21
- NEMA WPII, IP55, IC01

Slip Ring Design

The UNIBOX Shredder Motors slip rings are external to the main UNIBOX motor housing and have an opposite drive end (ODE) separate slip ring enclosure. The slip rings are manufactured from stainless steel which is harder wearing in a tougher shredder duty application where load conditions are continually changing.