PORTABLE HYDRAULIC BANDING MACHINE

(AS PER DGMS TECHNICAL CIRCULAR / 04) Dated 28.09.2010

'NMC' Hydraulic Cappel Banding Machine has been developed to replace the traditional method of Sledge Hammering during Banding and Disbanding of FWRC. It should be used at the time of re-capping of FWRC.

ADVANTAGES

- No sledge hammering action is needed. Accident due to flying off sledge hammer or slippage of drifts is avoided. Accident has taken place when the sledge hammer has slipped off the handle.
- No guessing game. A consistent pressure is ensured on every band.

SPECIFICATION

Comprising of

- 1 no. Main frame of length 2000mm (approx.) fitted with one pc adaptor, slider, 2 nos. securing pin, banding adaptor
- Single lower cross headed plate
- RAM cross head assembly
- 2 no. high pressure hoses with quick release couplings 2 meter length.
- 1 no Two Speed light weight Hydraulic hand pump, 1st stage 13 BAR and 2nd stage 700 BAR. Weight 4.1 Kg approx.
- Two RAM cylinder of 10 tonne each
- One no. manifold 1 x 4 way.
- Two nos. pressure gauges calibrated in tones based upon combined ram area
- Machine should be capable of banding and disbanding both up to 32mm rope /10 Tonne.

DGMS (Tech. Circular) 04 Dated 28-09-2010. It meets the specification and requirement of above circular. (Copy enclosed)

DGMS Circular 04 has advised "in interest of the safety the portable hydraulic banding machines shall be used for safe banding and disbanding operations and discontinue sledge hammering to avoid damages to the cappel and rope. It is requested to ensure that the above recommendation is strictly implemented."

Directorate General of Mines Safety

No.DGMS (Technical circular)/OM- Dhanbad, dated 29th September, 2010

Sub: Usage of portable hydraulic banding machine for recapping of Wedge type rope cappeL

The wedge type cappel is one of the cage suspension gear components more commonly used in Mines. It is characterized by a pair of wedges, interlocked to ensure complementary movement and grooved to suit the particular rope diameter. A clearance between each half wedge allows progressive movement to retain the grip on the rope as the load increases. A number of bands, driven over the uniformly diverging exterior surfaces of the cappel limbs provide the initial compressive force to ensure that the wedges grip the rope. The limb internal surfaces and the wedge backs are machined to provide a matching taper diverging from the cappel mouth. A safety block is white metalled on to the end of the rope protruding beyond the bottom of the wedges.

The operation of this type of cappel depends upon the friction (i) between the rope and the wedges, and (ii) between the wedges and cappel limbs.

The frictional forces developed at these surfaces of contact depend upon (i) the tightness of the bands on the limbs, (ii) the resistance of the rope to compression, and (iii) the angle of taper of the wedges.

For many years traditional method of banding and disbanding a wedge type cappel has been carried out by experienced strikers using sledge hammers. Numbers of skilled strikers are required to facilitate tightening of bands, *Some times the sides of bands adjacent to the wedges shall never-be struck. Burrs can also be caused during sledging* of bands which may foul the. Wedges and retard their movement. Many a time bands get deformed and damaged due to sledge hammering. Experience have shown when the band-are driven on using the specified weight of hammers, the friction between wedges and cappel will vary and under extreme conditions the rope may tend to pull through the wedges.

M/s. Becker (from United Kingdom) the originator of Wedge type of cappels had developed portable hydraulic banding machine for assembly / disbanding operation instead of striking by hammers. The advantage of portable hydraulic banding machine is that sledge hammering on bands is avoided and ensures consistent pressure on every band for tightening. Further burring, deformation and damages to bands due to sledge hammering are avoided and hence longer life of the Cappel and rope. Accident due to flying off sledge hammer or slippage of drifts is also avoided. Banding & disbanding is much swifter compared & to sledge hammering operation. The same machine can be used for various sizes of ropes.

A schematic drawing of the hydraulic banding machine is being enclosed which may be altered or improvised as needed.

In view of the above, in interest of the safety the Portable hydraulic banding machines shall be used for safe banding and disbanding operations and discontinue sledge hammering to avoid damages to the cappel and rope.

It is requested to ensure that the above recommendation is strictly implemented.

Director General of Mines Safety