The Dosco type MK2A Roadheader

Informational Spec Sheet

MATERIALS HANDLING & PROCESSING

MINERAL MINING

SPECIAL ENGINEERING PROJECTS

CIVIL TUNNELLING

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1. Introduction to Dosco

With almost 50 years experience in producing machinery to work in a wide and diverse range of minerals, Dosco manufacture a world class product backed up by experience and technical expertise. With around 3000 machines sold worldwide then project management anywhere in the world is part of the everyday routine. The company’s extensive product portfolio falls into four main categories:

- Civil tunnelling
- Minerals mining
- Materials handling
- Special engineering projects

Civil Tunnelling – The rock cutting capability of Dosco equipment was quickly recognised by the construction industry as an alternative to drilling and blasting in tunnelling operations, and a range of machines has been developed for this purpose. Dosco design, manufacture & refurbish a complete range of tunnelling machines – Boom in shield, Pipe jacks, Percussive drills, TBM’s, Station shields, Tracked machines, Roadheaders.

Minerals Mining – The Company’s early successes were linked to the mechanisation of the coal industry. Ongoing product developments by Dosco have brought about massive improvements in volume capabilities within the coal industry. However the equipment is not just restricted to coal mining, other applications include salt, potash, gypsum, iron ore, bauxite and phosphates.

Materials Handling & Processing – The product range within the materials handling division includes a range of slow speed, high torque Twin Roll Crushers (Sizers) and Feeder Breakers for use in the mining, quarrying and other mineral processing sectors, waste shredders and a unique pipe conveyor. The pipe conveyor has been designed to follow the natural contours of the land. It can negotiate bends and climb steep gradients thus separating it from more conventional systems. It eliminates spillage and creates a shield for diverse weather and environmental conditions.

Special Engineering Projects – The specification of work that can be done seems endless. Just some of projects to date range from special purpose military vehicles through to a tuyere cutter for cleaning out smelting furnaces. Projects of all sizes are carried out. Dosco offers a range of services from feasibility studies, design, installation and commissioning right through to full turnkey supply.
2. Dosco Roadheading machines

Dosco Roadheaders have successfully operated in over 50 countries worldwide, including the major coal producing regions.

In addition to coal mining, Dosco Roadheaders have been utilised in many other minerals including salt, potash, gypsum, iron ore, bauxite, and phosphates. More recent applications have included wine cave developments in the USA.

Equipment quality is paramount with Dosco registered to ISO9001 (2000) quality standard and also ISO14001 environmental standard.
3. Machine Description

**Dosco type MK2A Roadheader**

A total of 963 type MK2A Roadheaders have been built.

Weighing in at under 24 tons this lightweight machine packs in a heavyweight performance.

The MK2A will efficiently excavate strata up to a compressive strength of 15,000 psi (103 MPa).

The 58 kW axial cutting boom consists of an electric motor, epicyclic gearbox, drive shaft and cutting head. The cutting head is an axial type boom with point attack picks.

The loading arrangement of the cut material is achieved by a single strand flight conveyor, which encircles the machine. The cut debris leaves the conveyor at the mid point of the rear of the machine.

The gathering apron can be lifted or lowered for negotiating change of gradients or when tramming the machine.
The machine operator sits in an elevated position at the rear of the machine, which gives a clear view of the area being excavated.

The machine is electro/hydraulically operated. Electric power is fed via a trailing cable to an electrical control panel. The panel houses isolators for the power pack motor (water cooled) and cutting head motor (water cooled), together with all machine control, test and protection circuits.

The electrical system also incorporates a number of emergency stop switches positioned around the machine.

All other control systems on the machine are hydraulically operated.

The machine tracks are hydraulically driven and can be independently or bi-directionally operated to obtain maximum machine manoeuvrability.

Low ground contact pressure on the tracks of 1.44kg/cm² (20.48 psi) makes machine operation possible in soft and wet working conditions.
4. Technical Specification

**Machine Overall Sizes**

Height over body .................................................................................... 1640 mm  
Width ...................................................................................................... 2910 mm maximum  
Length ..................................................................................................... 7160 mm  
Estimated weight .................................................................................... 23.4 tonnes

**Cutting Data**

Maximum cutting height ........................................................................ 4040 mm  
Maximum cutting width ......................................................................... 5560 mm  
Maximum cutting depth below floor ...................................................... 180 mm  
Cutter power @ 60 Hz ............................................................................ 58.2 kW cont.  
Output speed @ 60 Hz ........................................................................... 81.6 RPM

**Boom Forces**

Maximum lifting force ............................................................................ 3.3 tonnes  
Maximum lowering force ...................................................................... 4.4 tonnes  
Maximum Arcing force .......................................................................... 3.5 tonnes

**Tracks**

Nominal flit speed .................................................................................. 8.64 MPM  
Nominal sump speed ............................................................................. 0 – 8.64 MPM  
Average ground contact pressure. ......................................................... 1.44kg/cm²  
Working gradient - longitudinal ............................................................. 14 deg maximum  
Working gradient - transverse ............................................................... 8 deg maximum  
Track type ............................................................................................. Mk3 traction  
Drive motor ............................................................................................. Hydraulic 21.6 kW  
Length of track in contact with ground .................................................. 2438 mm  
Track pad width ...................................................................................... 356 mm
**Powerpack Arrangement**

Powerpack motor, water cooled @ 60 Hz ............................................. 67.2 kW
Number of pumps .................................................................................. 3
Nominal pumping capacity .................................................................... 6.6 l/s
Nominal working pressure ................................................................. 140 bar
Oil tank capacity - approximate ..................................................... 590 litres

**Water Machine Requirements**

Flow ............................................................................................................................ 0.53 l/sec

**Scraper Conveyor**

Type of conveyor ......................................................................................... Single strand scraper
Nominal speed of conveyor chain ......................................................... 0.77 m/s
Cross section areas ....................................................................................... 0.116 msq
Conveyor drive ............................................................................................ Hyd. 27.6 kW

**Electrical**

Non FLP
Supply ............................................................................................................... 460V  60 Hz  3 phase
Power pack motor ...................................................................................... 67.2 kW cont.
Cutter motor, axial boom ........................................................................ 58.2 kW cont.
Total power ................................................................................................. 125.4 kW cont.