

LOWEST COST PER TON

BY USING ARTICULATED HAULERS

**VOLVO BM**



HIGHWAYS, RAILROADS, AIRPORTS,  
DAMS AND POWER STATIONS, INDUSTRIAL AND HOUSING DEVELOPMENTS, HARBORS, CANALS...







## All kinds of jobs.

To keep production going smoothly, the construction industry demands a high standard of machine versatility and flexibility. One reason for choosing articulated haulers is that they can handle any kind of job.

Articulated haulers are not dependant on good roads. They work just as easily under tough off-road conditions. They are ideal for rough loading and dumping sites. There is no need to build and maintain haul roads – *an articulated hauler always takes the shortest path between two points.*

## High productivity.

It's also important to choose equipment with high productivity and availability. Volvo BM's articulated haulers meet the toughest demands construction companies can make on haulage equipment. Made of high-quality materials and components, they will work hard for long periods of time *with little downtime.* They have a short tipping time, are nimble at both loading and dumping sites and provide the traction needed to handle steep grades easily.

## Money-saving.

Articulated haulers are virtually *independent of weather conditions.* They are easy to load, they can move large volumes of material without access to roads, they can maintain high average speeds on haul roads, and they can dump the load in the right place *without the help of crawler dozers.* They also feature high utilisation and low fuel consumption, and they *don't need expensive road maintenance.*

All together, this gives you the lowest cost per ton – and a guarantee of a continous, high rate of production.





SAND AND GRAVEL PITS, ROCK QUARRIES, LIMESTONE QUARRIES, SLATE QUARRIES, OPEN CAST MINING...







## **An all-round machine.**

The articulated hauler is the ideal all-round machine for a variety of tasks in all forms of quarrying. It can transport both overburden and rock – which no other machine can. It also transports bulk material from the crusher to stockpile. Steep inclines and muddy haul roads are no problem for this type of machine. And thanks to its small turning radius and general agility, it also gives top performance in cramped and confined spaces.

## **Profitable.**

With unsurpassed off-road performance and high average speeds on poor roads, the articulated hauler is a profitable high-production machine. Its low fuel consumption also contributes to profitability. Moreover, this machine can build its own stockpiles without the help of dozers or graders, thanks to its ability to dump over the edge. It also needs very little time at the dumping site and can stand stress loading.

## **High availability.**

Manufactured with high-quality materials and components, Volvo BM's articulated haulers have very low maintenance costs and excellent availability. They're the ideal machine for haulage in all kinds of quarrying work.





CERAMIC CLAY EXTRACTION, COAL TRANSPORTATION,  
STEELMILLS, PELLET HANDLING, WASTE HANDLING, SALINES, CONCRETE PRODUCTION...







## **Versatile and productive.**

In many industrial applications Volvo BM's articulated haulers have proven to be a versatile and economical answer to a variety of haulage problems.

Slippery, soft surfaces in the extraction of ceramic clay, or a harsh, salty, hot environment when harvesting salines under desert conditions present no problem to these rugged, reliable machines. The well-insulated, spacious cab not only provides the operator with an inviting workstation, but also has a positive effect on productivity.

## **Super haulers.**

There are special versions available for virtually any conceivable application. They all feature the same excellent off-road performance, easy manoeuvring, unbeatable traction and gradability, fuel economy and operator comfort as the well-known standard haulers from Volvo BM.

These are all "super haulers". No job is too tough, no environment too harsh for these machines. They just keep on going, with a minimum of down-time. Manufactured from high-quality materials and components, they guarantee a high rate of production at all times - no matter what the working conditions are.



MINES, OIL STORAGE, GAS STORAGE, ROAD TUNNELS, IRRIGATION TUNNELS, WASTE DEPOSIT...





## Modified versions.

Underground work often makes very tough demands on haulage equipment. Articulated haulers with special underground options are used on a number of applications, from gold mines in Australia to tunnels through the Alps.

The often wet and slippery conditions pose no problem to these 4x4 or 6x6 machines. Nor do confined spaces, which can make turning and reversing for loading very time-consuming. Volvo BM dump trucks can be equipped with a special turning attachment which allows the machine to turn in its own length. This is a major time-saving feature.

The special underground options also include low-emission engines, water-exhaust cooling and FOPS cab protection. The underground models are based on the standard Volvo BM articulated haulers. This contributes to a low purchase price, good spare parts availability and low operating costs – in contrast to other expensive machines specially designed for underground work.

Building a short, steep service tunnel and using Volvo BM articulated haulers is often the most economical choice.

## An economical solution.

Underground work is often performed in shifts. Sometimes haulage goes on 24 hours a day, seven days a week. This calls for sturdy, rugged equipment needing only simple daily maintenance and causing very little downtime.

The Volvo BM articulated hauler has proven itself on some of the world's largest and toughest underground projects. It also offers very low fuel consumption and needs little in the way of spare parts. Other features – such as short loading and tipping times, high average speeds on poor roads and the ability to dump over the edge – make it an economical solution for underground haulage.





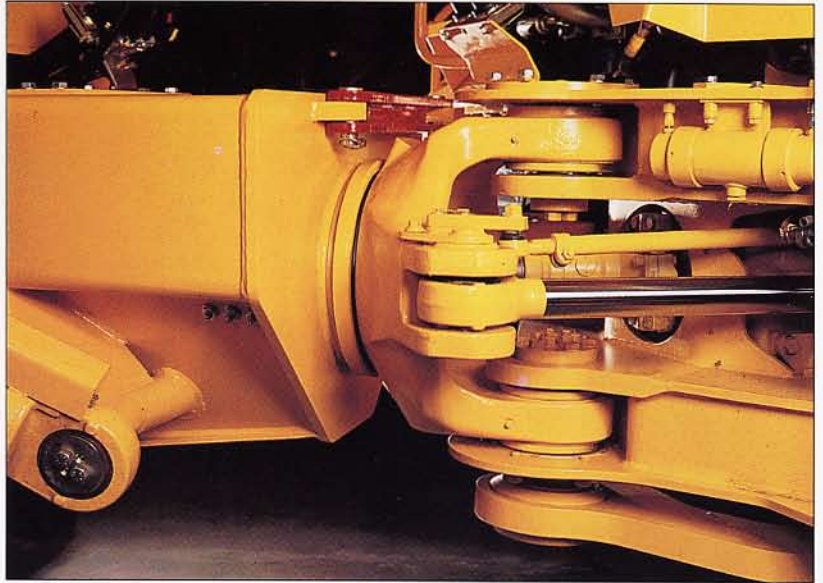
SOME OF THE FEATURES THAT MAKE THE VOLVO BM ARTICULATED HAULER THE OUTSTANDING MACHINE OF ITS KIND.

### **Frame joint.**

The frame joint is fundamental to the unbeatable off-road performance of Volvo BM's articulated haulers. It allows 360° rotation between the trailer and tractor units, providing the extreme flexibility that is essential in difficult terrain. As it effectively reduces stresses, very rigid frame parts can be used.

The frame joint is also the heart of the unique Volvo BM steering system. Articulated steering is hydro-mechanical, characterised by good manoeuvrability and a narrow turning radius. With this system, the hauler is easy to steer at low engine speeds and under very difficult driving conditions. It is fast and precise, with few turns of the steering wheel and very low steering forces. It also permits "duckwalking" which allows you to climb out of deep ruts and keep out of trouble.

Hydraulic damping minimises impact and jolting, and does not transmit these problems to the steering wheel. Volvo BM haulers are also fitted with supplementary steering as standard.





## Drive train.

Volvo BM drive trains for articulated haulers are designed to handle both the toughest off-road conditions and high-speed haulage work. Volvo BM haulers are fast, with a drive train that features maximum utilisation of engine power, exceptional reliability, good fuel economy and a long service life.

The direct-injected, turbocharged diesel engines in Volvo BM articulated haulers are reliable, tried and tested Volvo engines, modified to meet the specific demands made on this kind of equipment.

The fully-automatic power shift transmission with torque converter and direct coupling guarantees excellent acceleration, less power loss, lower fuel consumption, reduced heat generation and less operator fatigue. It also incorporates an efficient hydraulic retarder as standard (not the A20).

An important factor for off-road haulers is six-wheel drive with diff-locks and the way they are used. Volvo BM articulated haulers feature diff-locks with 100% lock-up on all driving axles. This gives superior mobility under the toughest conditions. The longitudinal diff-lock distributes power evenly to all drive axles, which considerably improves traction and off-road performance.

The diff-lock on the front axle gives sure steering and makes it easy to climb out of deep ruts. All diff-locks can naturally be locked on the move.





### **Suspension.**

To manage high-speed haulage over uneven terrain or on poor roads, Volvo BM articulated haulers feature unique three-point front axle suspension. This gives a springing and oscillating action that leaves the machine virtually unaffected even by relatively large irregularities in the ground. Maintenance-free hollow rubber springs, shock absorbers and anti-roll elements further enhances the excellent off-road traction and operator comfort provided by three-point suspension.

### **Bogie.**

Volvo BM offers a unique bogie system with independent axle suspension. All moving parts need only a minimum of maintenance. This gives Volvo BM articulated haulers their unmatched off-road performance and the ability to overcome high obstacles without the body movement that would cause spillage. The bogie allows each pair of wheels freedom of movement to retain good ground contact at all times. This, together with high ground clearance, lets the load float over uneven terrain while the wheels hug the ground for constant traction.





## Cab.

In Volvo BM's articulated haulers the operator is in the centre of attention – both literally and figuratively.

Literally because he is positioned right over the middle of the front axle, where there is the least movement. And figuratively because the cab offers a truly operator-oriented environment. It is spacious and well ventilated, with a very low noise level. It features high external and internal safety. All levers and controls are logically arranged within easy reach.

This, together with the comfortable driver's seat, fully automatic transmission, tight and precise steering and a dual-circuit brake system with disc brakes on all wheels, gives the operator a stimulating and safe workstation.

It's no secret that a satisfied operator also means a continuous, high rate of production.





# Characteristics of various types of haulers.

## Conventional trucks.

- Are fast and have a high power output per tonne when loaded
- Have a high legal payload on public roads
- Have small wheels and one-piece frames, giving poor off-road mobility and instability when driving in deep ruts
- Slow down on poor-quality haul roads due to small wheels and main road-type suspension
- High repair and tyre costs and low availability
- When loaded, have relatively low load capacities and total weights yet very high ground pressure.

## Rigid dump trucks.

- Have high braking performance
- Are basically designed for handling rock
- Are rugged and uncomplicated
- Have high power to weight ratio
- Have only 4x2 drive with large wheels mounted in pairs without abogie – giving poor traction on soft and slippery surfaces
- Require good, hard roads to perform adequately
- Problems on the dumping site due to rear axle pressure.

## Scrapers.

- Require good ground conditions, to be really effective
- Are dependant upon dry weather, thus giving low utilisation over a whole year
- Often need the assistance of additional crawler dozers to get the job done – which is very costly.

All the above haulage vehicles need good roads to perform adequately. This means that haul roads have to be built and/or maintained at great cost in order to keep up a continuous, high rate of production.





# Which type of hauler should you choose?

## Articulated haulers.

- Have big wheels with low ground pressure, thus avoiding damage to the core of the road
- Are designed for outstanding off-road mobility, so that special haul roads do not need to be built or maintained
- Have articulated steering, a 360° rotational frame joint, all-terrain bogie, high flotation tyres, front axle suspension, all-wheel drive and 100% diff-locks on all drive axles.

This means that Volvo BM articulated haulers are:

- profitable for both on- and off-road haulage
- more or less independent of weather conditions
- capable of operating under extremely rough conditions on loading and dumping sites
- able to stand rough loading

It also means that Volvo BM articulated haulers are an economical choice for all kinds of haulage. Their benefits include: very low cost per cubic meter moved, high availability, high utilisation, low fuel consumption, a short cycle time and less road maintenance.

Look at the factors that will influence your choice.

- Total volume to be moved
- Type of material, size and density
- Loading capacity – size and type of loader
- Receiving capacity – size of crusher
- Duration of job
- Transport distance
- Weather conditions
- Characteristics of haul road and loading and dumping sites:
  - Public road or off-road haulage.
  - Rolling resistance.
  - Grades.
  - Surface structure.
  - Coefficient of traction.
  - Bearing capacity.
  - Curves.
  - Road widths.
  - Bridge limitations







## **VME Articulated Haulers AB**

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