



Ten advantages of Åkerman in words and pictures



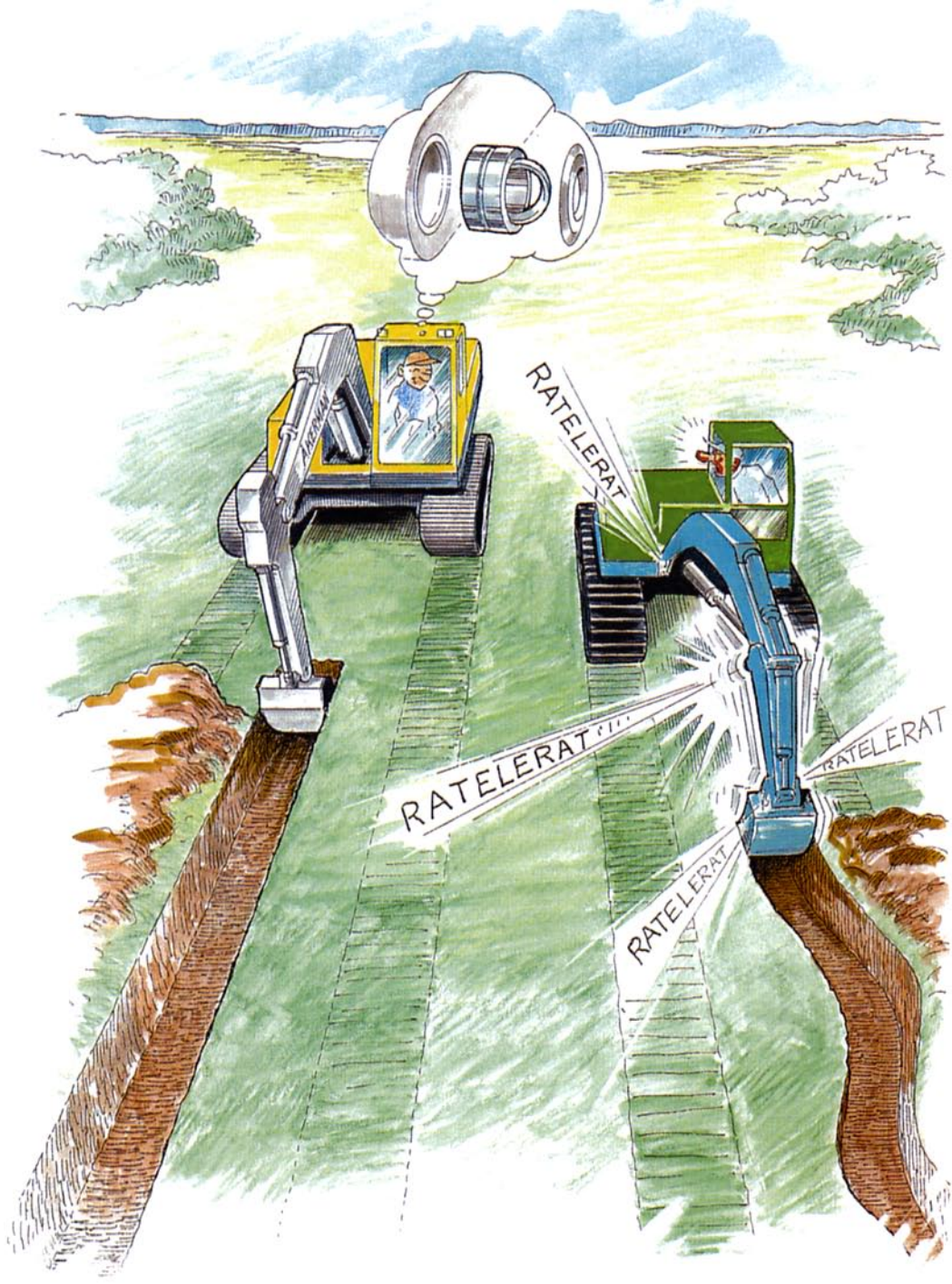
It is easier to describe something which is unique than something which anyone can offer.

Åkerman excavators have more than fifty years of development behind them. They have been developed for tough conditions and have been tested by demanding contractors, who need them for all types of excavating, handling and demolition.

This is why they work as well as they do – and why they incorporate many unique features. Here are ten of them:

Feel free to test them in practice!

ÅKERMAN



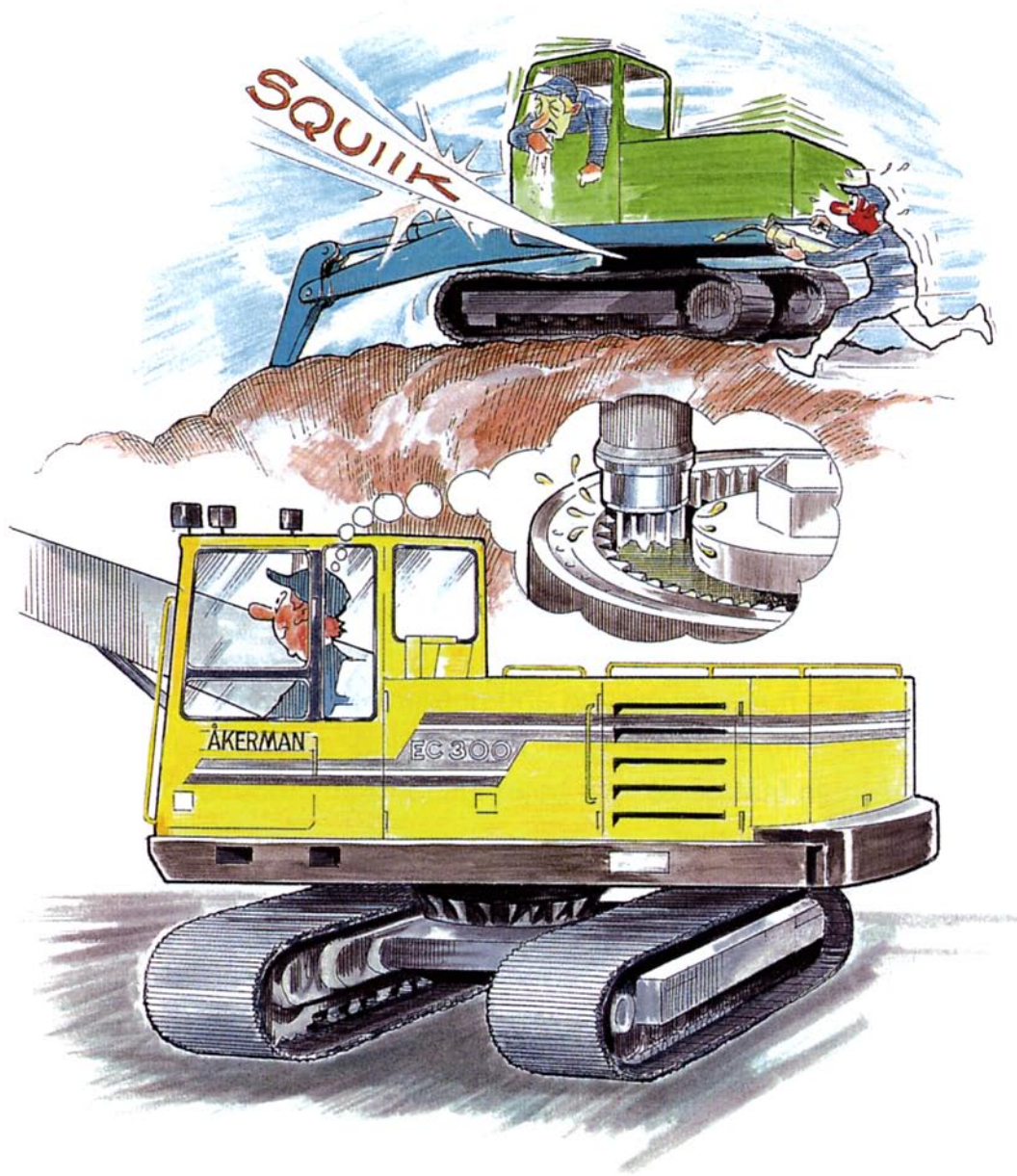
Robust

Robust link bearings in digging equipment

A digging equipment of an excavator is not only exposed to linear forces. For this reason, we have chosen to use a type of bearing which is also able to absorb lateral forces.

The hardened steel spherical link bearings are also surrounded by stable rubber seals, so that the lubricant is held in place and dust/dirt is kept out.

The machine ground and hardened axles are manufactured from special steel, and together, offer this unique Åkerman feature of tight bearings for many thousands of hours of operation.



Robust

Swing ring in oil bath

The ball-bearing swing ring is one of the most expensive components in an excavator. For this reason, all Åkerman excavators over 20 tonnes have a lubricating oil bath around the swing ring.

The first hydraulic excavator, built in 1965, already had this maintenance free feature, which has proven to be reliable and economic.

Statistics show that only 4 out of every 1000 Åkerman excavators require a new swing ring during their entire service life, and several of these cases are due to transport damage, and not due to wear.



Strong

Engine output best in class

If a large engine (large installed engine output) is built into an excavator, the end result is greater excavating capacity.

A small engine has to work harder. This shortens service life.

A small engine does not necessarily mean lower fuel consumption, as it seldom works at speeds and loads where kilowatts are cheaper to produce.

A small engine in an excavator, with an unsophisticated hydraulic system, can never produce greater hydraulic output than the installed engine output. If this were the case, excavator manufacturers would already be billionaires from selling the patent for perpetual motion.

In other words, the installed engine output is a good measure of excavator performance.



Comfortable

Comfort and Safety

The Åkerman cab is among the most spacious there is. We have placed great emphasis on ventilation. Fresh and filtered air is distributed via 14 different vents, so that windows and shoes can be kept dry and your head can be kept cool.

A powerful heating unit is fitted as standard and space is prepared for air-conditioning.

The sprung operator's seat is electrically heated and has a head-rest and armrests. Seat, control lever consoles and armrests are individually fully adjustable. The control levers are short and require very little force to operate.

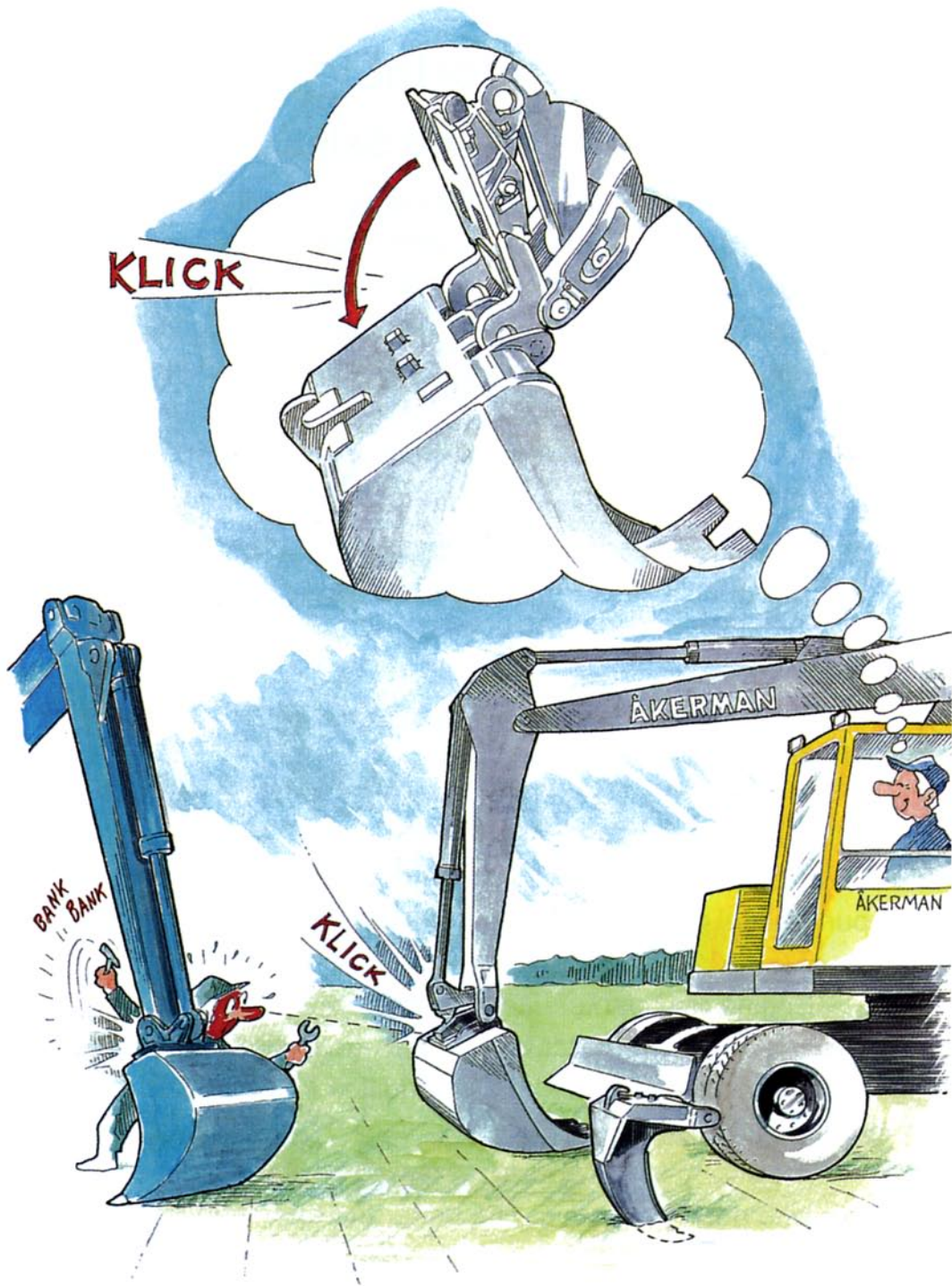
The levers incorporate press-buttons for operating the mode selector, floating position, slope hydraulics, horn and hammer functions. The operator does not have to move his or her hand – only one finger.

The front window has no annoying seam and can easily be lifted up under the roof.

The fully-equipped instrument panel includes digital rev counter, fuel gauge and a computer-controlled monitoring system.

Engine rev counters are not only limited to sports cars. Even in an Åkerman excavator, it provides valuable information when checking settings and the condition of the engine and hydraulic system.

The strong frame construction of the cab provides the operator with good protection. The better the operating environment, the better the safety and the higher the productivity.



Flexible

Large quickfit system of our own robust design

It shouldn't be necessary to hammer for 15 minutes every time you change the bucket. For this reason, the Åkerman hydraulic quickfit is standard on all our excavators, even the 30 tonne EC300.

Åkerman hydraulic quickfits are safe and must be operated with two hands. Function is indicated on the display in the cab (open/closed).

There is no play as hydraulic pressure is always "on".

As the quickfits have a safety lifting hook, lifting capacity can be improved by detaching the bucket.

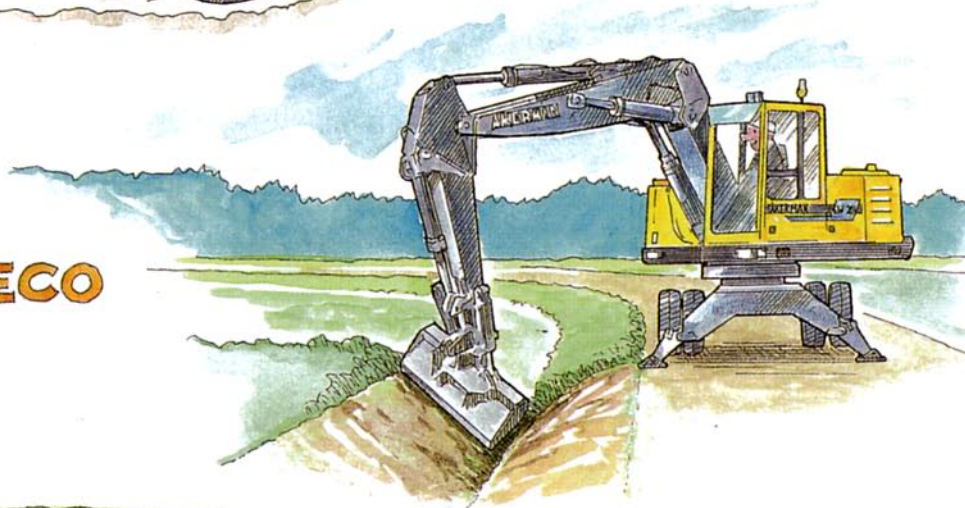
The quickfits last well, even in hammer applications. This is supported by 18 years of experience of work in tough conditions.

| | | |
|------------------|-----------|----|
| EW/EC130 | Tool size | S6 |
| EW/EC150 | | S6 |
| EW/EC200 | | S1 |
| EW/EC230B | | S1 |
| EC300 | | S2 |
| EC450 | Optional | S3 |

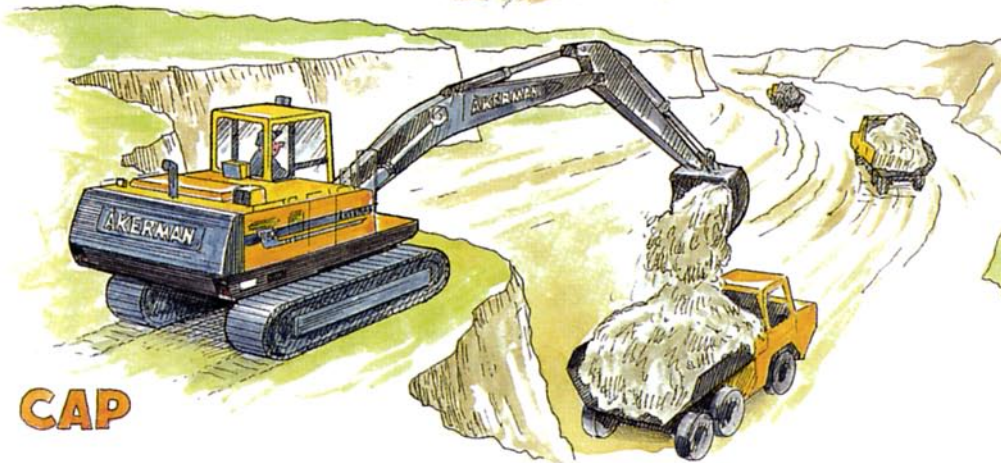
HLD



ECO



CAP



Flexible

Three circuit hydraulics with the possibility of using all three circuits for the digging equipment

Åkerman have built three circuit hydraulics into all excavators since 1968.

The reason for this is to make it possible to carry out three **independent, simultaneous** movements.

One of the pumps always gives priority to swing movement, but can also be used

- a) to increase speed of excavating movements by up to 20%, when the mode selector is set to the CAP position. The flow from all three working pumps is then simultaneously directed to the digging equipment, which is unique to Åkerman.
- b) in order to manoeuvre the slope bucket or to rotate a grab – movements which are then completely independent of the other digging movements.
- c) in order to increase flow to the hydraulic hammer (2 pump installation). This means that the hydraulic hammer can be run with a reduced engine speed, saving fuel and reducing noise.
- d) during magnet operation, when handling scrap, with the fourth pump connected (pump gear and tank are already installed).

In addition, there are many tested special features which are easily installed, as the system is pre-prepared for most functions.



Flexible and service-friendly

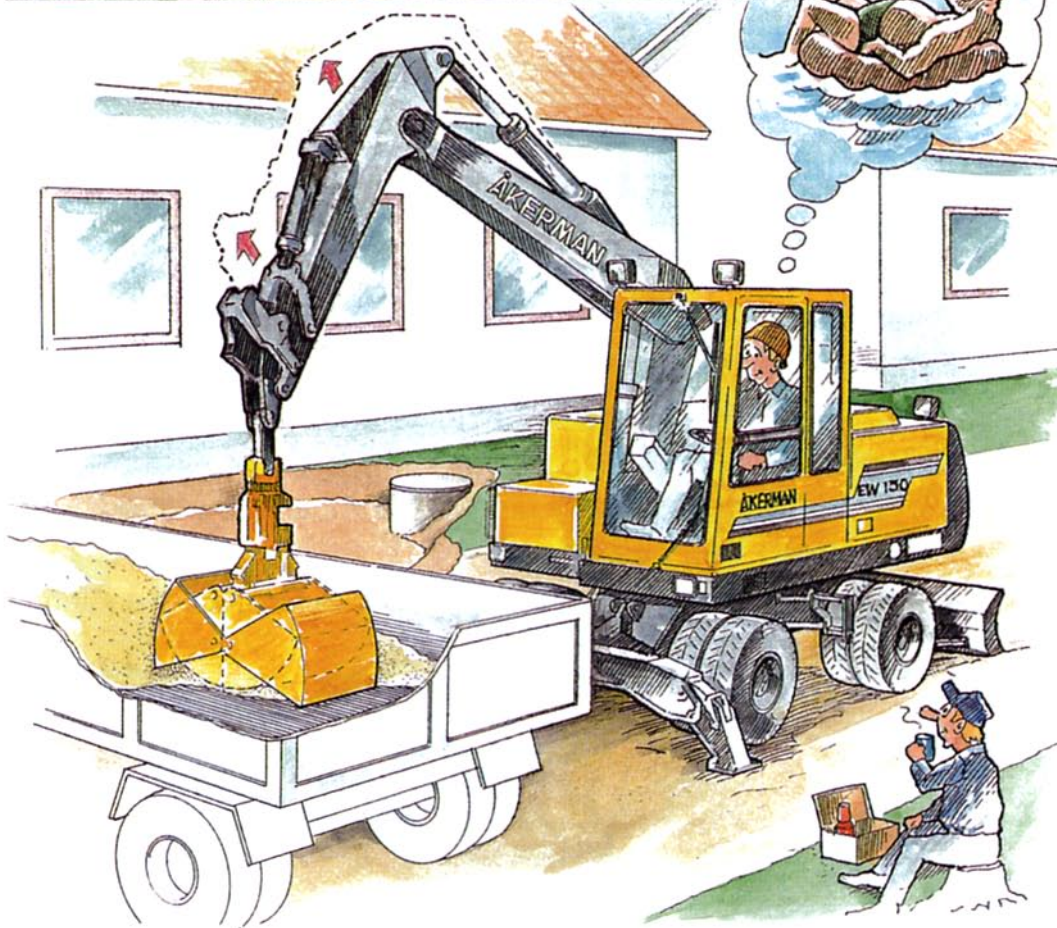
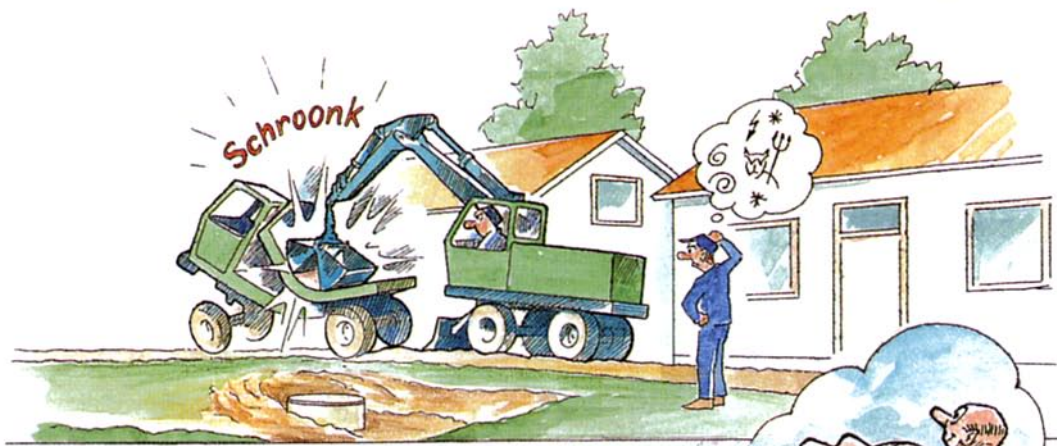
Partial flow hydraulic oil cooler

Only one third of the hydraulic oil flow needs to pass through the radiator in order to achieve full cooling effect. This means that the flow from one working pump is sufficient.

This is also the case when working with a hammer. When two of the working pumps are powering the hammer, return oil goes directly to the tank so that return line pressure does not become too great. The third pump circulates its oil through the radiator.

This efficient cooling is unique – compare us with our competitors!

The radiator is also **hinged** in order to facilitate cleaning and reduce downtime.



Effective

Floating position in boom movement

All Åkerman machines have a floating position feature as standard. This has a number of advantages:

Stripping soil from rock

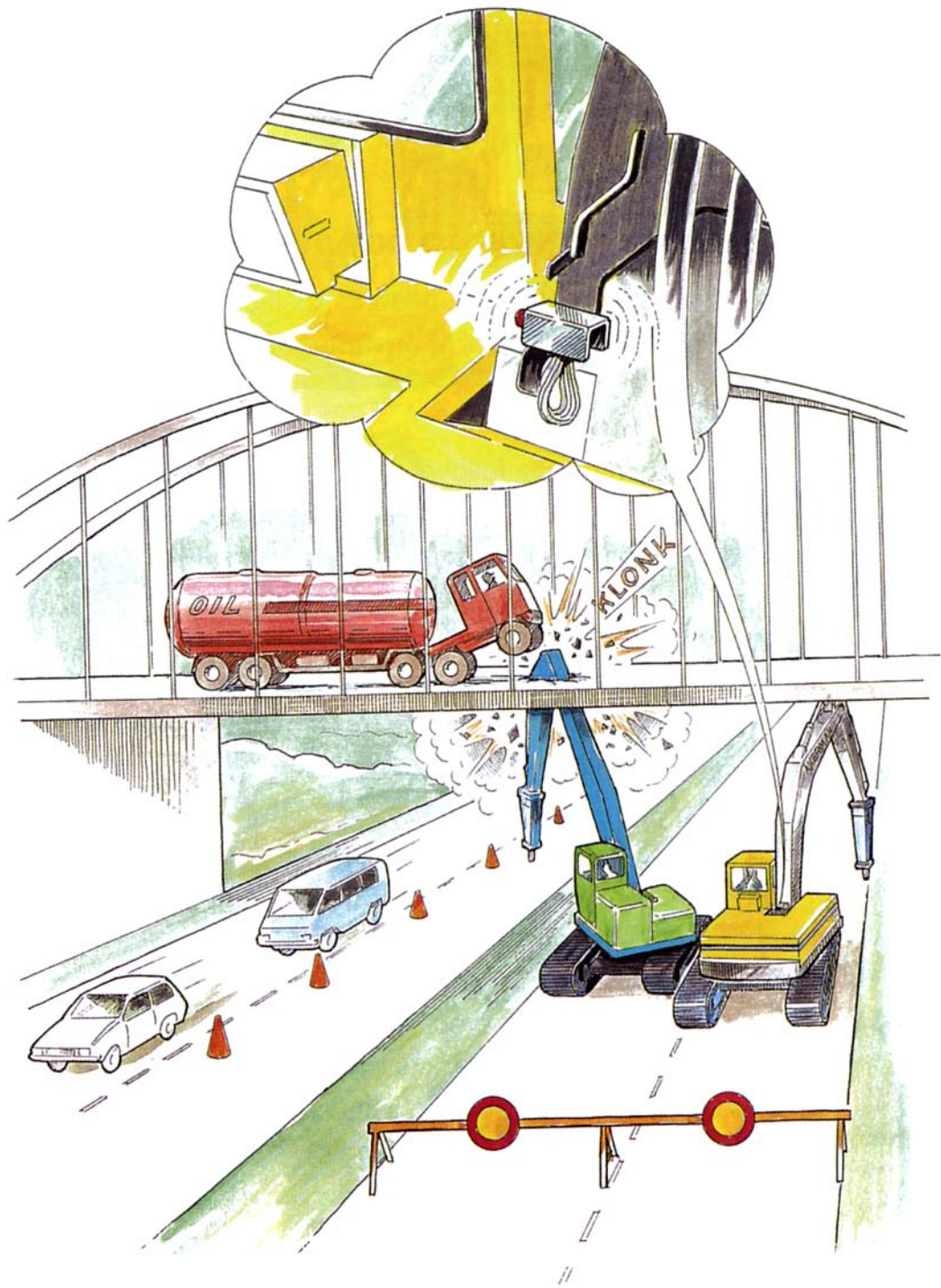
The bucket automatically follows the contours of the rock as you pull in the dipper arm. Stripping is easier, bucket wear is reduced and comfort is improved – the cab does not judder.

Working with grab

When working with the attachment on a hard surface – e.g. when unloading railway trucks, the attachment is pressed upwards as the grab is closed. When using the floating position, the load on the bucket is reduced as the weight of the machine is never transferred to the bucket.

Capacity excavating

If the floating position is engaged during excavating, the weight of the digging equipment works as a fourth digging pump, meaning that no pump flow is required to lower the boom, as on all other excavators. This saves fuel and increases capacity by 4–8% (depending on swing angle, etc).



Safe

Electronic end position damper

In addition to hydraulic end position dampers in all hydraulic cylinders, you also get electronic travel limiters for boom and dipper arm movements.

This has several advantages. The hydraulic end position dampers can be adjusted by valves fitted behind the cab to give softer or harder end cushioning. When the machine is working under electrical cables or roofs, the boom travel limiter is easily set with one hand movement, so that boom movement is restricted and the excavator equipment does not hit the obstacles.

Robust from the bottom up

We have to build robust machines for a home market where people insist on digging in -25°C and in frozen moraine and granite with hard quartz.

- The Volvo engine which we have chosen for all except the small service machines is manufactured by the world's second largest truck manufacturer. When used in an excavator, it is operated at an ideal speed of 1700–2000 r/min. A robust and reliable power source, which we have in common with other VME machines.
- We use large hydraulic pumps, which operate at low speed. We have placed great emphasis on good oil supply, with short, wide suction lines and large hydraulic oil tanks, where over-pressure is of course not necessary.
- The frame members on the machine's superstructure cover the engine. This means that side impact protection is provided by 6–15 mm thick steel profile plate. The upper bodywork is also protected as the side of the frame protrudes a couple of centimetres.
- Load distribution on the swing ring bed is – both in superstructure and undercarriage – distributed so that damaging point load is avoided. Unfortunately, this is a quality which we are only able to show you in the factory.
- The centre passage, which transfers oil from the superstructure to the undercarriage, is large and is machined to extremely close tolerances. Tolerances are so close that the seals between the channels are not exposed to working pressure, but only need to protect against oil leakage.
- Track chains are exposed to wear, especially on sloping ground and rock. If a track frame is lifted when the machine becomes stuck, we have introduced as standard three derailing shields on each side, which prevent the track frame rollers from hitting the chain at an angle.
- Åkerman hydraulic cylinders have the following design features which increase service life:
 - The piston rods have a surface hardness of 850 Brinell; this is almost as hard as nature's hardest mineral (quartz).
 - In order to achieve this, the piston head must be attached to the rod with advanced friction welding – other welding methods are not suitable.
 - All equipment bearings are of spherical link type, meaning that they can absorb a certain amount of lateral force.
 - Double piston rod seals and end position dampers built into the pistons provide safety against leakage and internal damage.
- HARDOX 400 is a well-known Swedish wear steel, used to make most of the excavating and sloping buckets and grabs in the Åkerman attachments range. We have not left it at this, but also construct the underside of the dipper arm from Hardox 400, so that large rocks can be clamped against the bucket without deforming the dipper arm.

Customers that know what improved reliability and service life mean for the economy of their company stay with us. This has been shown by a recent survey and is why robustness is emphasized in this document.