HIAB METHOD

No. 3

HIAB 174

A STEP AHEAD

In the middle of the 1940s, when the long isolation of the war years was lifted, Sweden was suffering from a shortage of almost everything, including trucks. But there were plenty of transport jobs. So the pressure was on to make the utmost possible use of the trucks that *were* available. That was when HIAB's wire-rope crane came out.

Right from the start it took its place as an important aid in roundwood transport, a field in which the huge consumption of fuel wood during the war years had led to the use of trucks on an ever-growing scale. But the loading of the larger sizes was a heavy, laborious and time-consuming job. The wire-rope crane took over the heaviest work, effecting really worthwhile savings in time and labour.

The successes of the HIAB cranes in roundwood haulage paved the way for a steady expansion of the firm's production resources, and the extensive storm damage in the forests at the beginning of 1953 created a demand for HIAB loaders which by 1956 enabled HIAB to bring out the HIAB Speedloader 170, followed soon after by the revolutionary grab-loading idea. Since then the HIAB Speedloader, in the standard and forestry versions, has been the pioneer in the field of efficient loading of both roundwood and piece-goods, and the HIAB Method has come into use in ever wider circles both in Sweden and abroad.

The basic idea behind the HIAB approach is to utilize the truck as efficiently as possible, reducing the time taken for loading and unloading by the use of effective and fast-working aids and thus increasing the percentage of profitable transportation time.

The new loader model that is now being introduced, the Speedloader 174, represents another major step towards this goal. It is a high-speed, all-hydraulic appliance with a big reach, and is a real time-saver to work with. In all the jobs that have already been put on a rational basis by the HIAB 172 and 173, the 174 is going to bring further substantial time economies.

Technically, the 174 is a further development of the HIAB Speedloader line. In design, reliability and durability, and in respect of service and spare-part supplies, it is based on the lessons learnt from the world's most-sold type of loader by a firm possessing unrivalled experience in its field.

A big load, a little lady, an impressive loader. Birgitta Berglund is full of admiration for the Speedloader's refinements.

Up to now, all the voices that have found expression in the columns of Method have been male. So we thought it would make a pleasant change to hear what a woman has to say. We called on trucker Birgitta Berglund at her home in the south of Stockholm one day when she had no runs of her own on her working programme.

A LITTLE LADY IN A MAN-SIZE JOB

Birgitta Berglund, a slightly built blonde with the lithe grace of a mannequin in her walk, receives us with an inviting smile. She is wearing a house ensemble made of something black and clinging below and something pink and fluffy above, apparently picked straight out of one of our more expensive fashion magazines. Photographer's model? Not exactly! Birgitta Berglund is a haulage contractor with four trucks, and since 1961 she's been driving trucks herself for a wide range of customers. She was, for example, in on the job when the Östermalm underground railway in Stockholm was completed, and she collected a circle of spectators around her on one of the main squares of Stockholm as she plunked down load after load of building gear with the help of her HIAB loader.

"It was just as if people didn't believe their eyes," says Birgitta Berglund. "I was working away with a fair-sized crowd of people round my truck, and I couldn't help feeling a bit silly. The 'audience' thought I was some sort of modern edition of the Strong Lady, even though the job didn't call for any physical exertion to speak of. Working levers isn't particularly laborious and doesn't take very big muscles."

By now, Birgitta Berglund has got used to the fact that a girl truck-driver attracts a certain amount of attention, particularly if she sometimes doubles as a crane-operator as well. On the other hand she's become quite a well-known figure on various building sites during the five years she's been "on the road" in and around Stockholm. The lads fall over themselves to give her a helping hand.

Birgitta Berglund says herself that she has trucks and trucking in her blood. Both her father and her grandfather were haulers and she practically grew up in trucks. So it was no more than natural that in the long run she couldn't reconcile herself to doing the office chores for the family's haulage firm alongside the job of bringing up two children and—believe it or not!—running a flower shop. In 1961, she got her trucker's driving licence, though only after some back-and-forth business with the authorities, who'd never had such an application from a woman before.

Birgitta Berglund is very happy about her HIAB loaders and would very much like to have a forest Speedloader—if her firm were to go into the timber haulage business. She found it an interesting and impressive experience to get acquainted with the Speedloader shown in our pictures. The photographer who took them was impressed, too. Particularly with Birgitta Berglund!

Birgitta Berglund was soon sitting pretty as she made friends with the Speedloader. It's the kind of friendship that grows on you.

The extensions at HIAB-Service i Stockholm AB in Västerhaninge have given it twice the workshop floor-space and twelve entry doors.

of different specialist workshops to be fitted with tipping gear, deck, crane and so on before it was ready for delivery. Now it's often possible to do the whole job at the same place. This cuts out the waste of time entailed in moving from one workshop to another. Getting through the whole fitting-out job in one go also simplifies the work, while at the same time eliminating a lot of waiting about.

The extension has also given a big boost to resources on the spare-part side. Västerhaninge now has a complete spare-part store which besides supplying the needs of operations in the Stockholm area also provides backing for the smaller stocks that are kept at other workshops forming part of HIAB's service and sales network.

The headroom in the workshop (above) can accommodate even very high mountings.

Last autumn the shop began fitting tippers and decks from AB Tranåsverken as well (below left).

Pedestal (mast top) control stations for the HIAB forest Speedloaders and other detachable HIAB loaders are built and mounted at the Västerhaninge workshop (below).

The big tank behind Olle Edvardsson is used when the wells in the Roslagen region begin to run dry. At such times, water haulage becomes a valuable second string to roundwood movements.

ROUNDWOOD ROUND THE CLOCK

The great tracts of timber in Northern Sweden are not the only places where you can find examples of highly rationalized roundwood haulage. Trucking brothers Olle and Lennart Edvardsson live in the district of Söderby-Karl in Roslagen, which hardly counts for much among Swedish forestry areas. But they spend most of the year on roundwood movements, chiefly for Holmens Bruk of Hallstavik. And not only most of the year but most of the day and night as well. Their truck is on the go with hardly a break, moving pulpwood to Holmens Bruk three shifts a day.

You could hardly work a truck more efficiently than that. And thanks to the HIAB Method the brothers have also succeeded in rationalizing the labour input. One-man crewing is the invariable rule. Olle and Lennart do one shift each and employ another driver to take the third.

When Method visited the brothers' little firm, Lennart did the honours while Olle lay asleep. After chatting for a while we did the 20-mile run to Hallstavik and met the driver coming along with the second load of the day. Once it was off the truck Lennart Edvardsson took over the wheel. He was in just nice time to get down to Åkersberga on the nothern outskirts of Stockholm, load his truck and trailer up with the help of his HIAB Speedloader and cover the 65 miles or so back to Hallstavik to deliver the load before the acceptance bay at the mill closed for the day. After that the truck actually had a few idle hours before Olle set off in the middle of the night with the first load of the next day, timed to arrive just when the acceptance bay opened in the morning.

Lennart Edvardsson meets his driver at the acceptance bay in Hallstavik. Waiting at the input bench can on occasion take longer than loading the outfit!

HIAB 174

HYDRAULICALLY FOLDABLE

During the summer, deliveries of HIAB's new 16-ton-foot model, the Speedloader 174, will get going in earnest. The new loader which has been designed chiefly with an eye to piece-goods movements and other hauls involving frequent loading and unloading, is not only the market's lightest in its class—it's also without any serious rival for ease of operation. The change from the stowed position—with the crane tucked in between the front wall of the body and the back of the cab—and the loading position is effected entirely by the hydraulics. The whole operation takes 20-25 seconds.

Another advantage of the 174 is its great reach. With full use of the hydraulic extension—which is operated by a double-acting hydraulic cylinder—the reach without any extra jib section is 16½ feet (5 m) from the centre of the column or 26 feet (8 m) above ground level.

Thanks to the parallel movement of the end section of the jib the hydraulic extension of no less than 5 ft. 3 in. (1.6 m) is well and away the longest on the market.

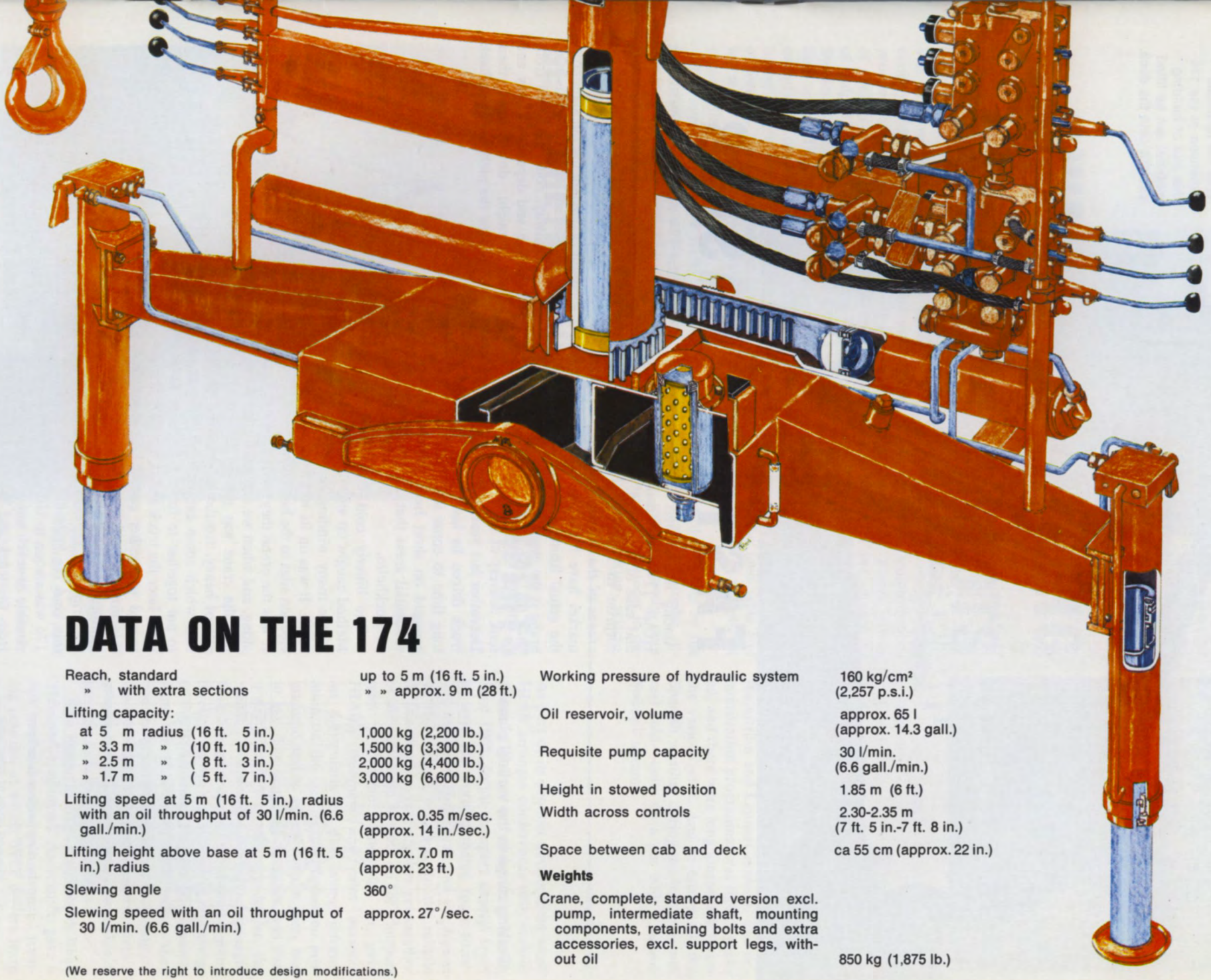
The jib likewise has a double-acting hydraulic cylinder which enables it to lift even when it is folded in towards the column. The load can therefore be put down further forward on the deck than ever before—right up against the column if you like.

Still greater reach up to 28 ft. (9 m) can be obtained by using extra jib sections that will fit into the tip of the hydraulic extension.

The improved valve controls, with symbol-marked knobs, call for 30% less lever pressure from the operator. With this fingertip control, the 174 is an easier loader to operate gently and with the maximum of precision.

On the HIAB 174 Speedloader the change from the loading position to the stowed position and back is entirely hydraulic. The whole operation takes about 30 seconds and can be done just as easily from either side of the vehicle.
Other notable innovations on the HIAB 174 are:

- Hydraulic extension 5 ft. 3 in. long (1.6 m).
- 16 1/2 ft. standard jib (5 m).
- Extra sections to give a total length of anything up to about 28 ft. (9 m).
- Two extra valve functions to allow for later additions, such as a grab, a rotator or a hydraulic winch.

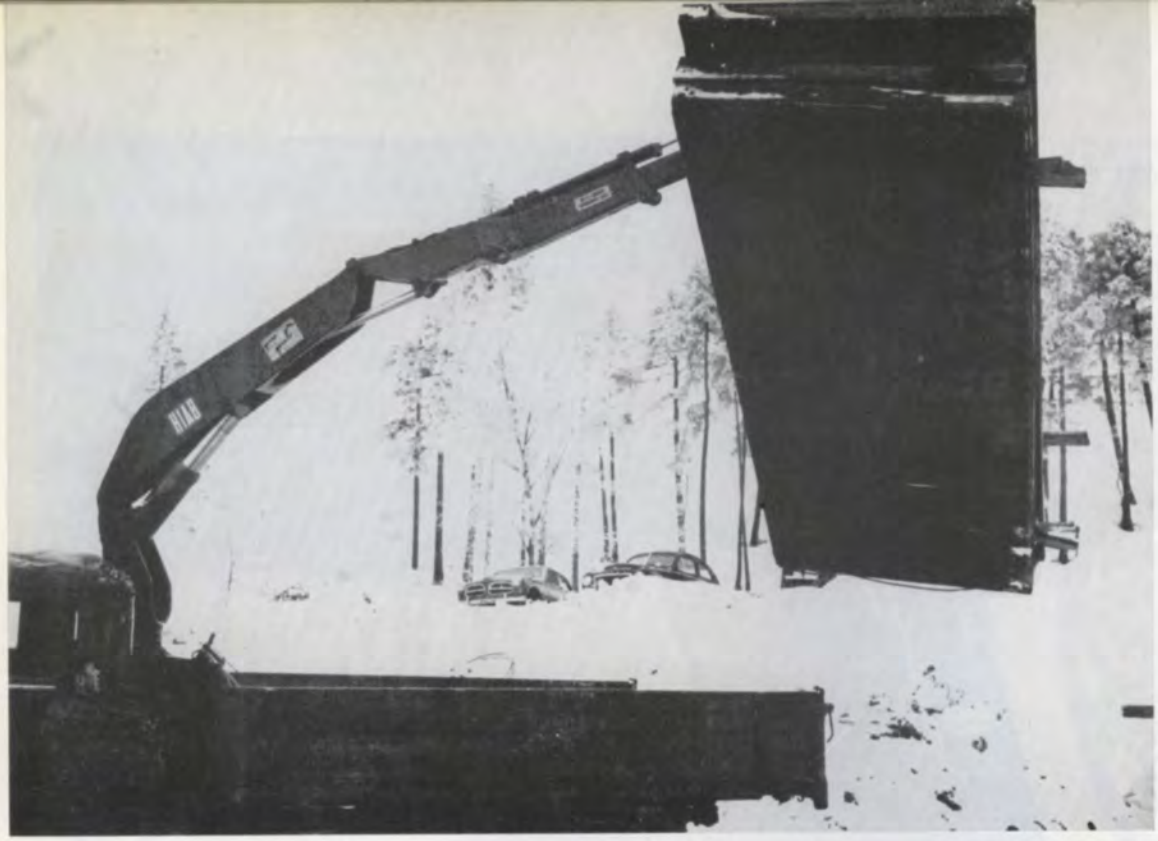


DATA ON THE 174

Reach, standard	up to 5 m (16 ft. 5 in.)
» with extra sections	» » approx. 9 m (28 ft.)
Lifting capacity:	
at 5 m radius (16 ft. 5 in.)	1,000 kg (2,200 lb.)
» 3.3 m » (10 ft. 10 in.)	1,500 kg (3,300 lb.)
» 2.5 m » (8 ft. 3 in.)	2,000 kg (4,400 lb.)
» 1.7 m » (5 ft. 7 in.)	3,000 kg (6,600 lb.)
Lifting speed at 5 m (16 ft. 5 in.) radius with an oil throughput of 30 l/min. (6.6 gall./min.)	approx. 0.35 m/sec. (approx. 14 in./sec.)
Lifting height above base at 5 m (16 ft. 5 in.) radius	approx. 7.0 m (approx. 23 ft.)
Slewing angle	360°
Slewing speed with an oil throughput of 30 l/min. (6.6 gall./min.)	approx. 27°/sec.

(We reserve the right to introduce design modifications.)

Working pressure of hydraulic system	160 kg/cm² (2,257 p.s.i.)
Oil reservoir, volume	approx. 65 l (approx. 14.3 gall.)
Requisite pump capacity	30 l/min. (6.6 gall./min.)
Height in stowed position	1.85 m (6 ft.)
Width across controls	2.30-2.35 m (7 ft. 5 in.-7 ft. 8 in.)
Space between cab and deck	ca 55 cm (approx. 22 in.)
Weights	
Crane, complete, standard version excl. pump, intermediate shaft, mounting components, retaining bolts and extra accessories, excl. support legs, without oil	850 kg (1,875 lb.)



With the hydraulic extension of the 174 this pile of building material can be lifted straight onto the deck.

FASTER – EASIER

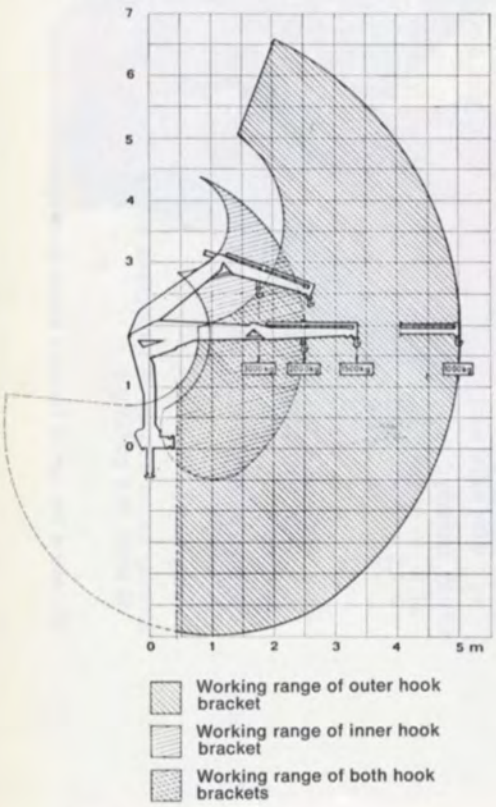
Among the greatest advantages of the HIAB 174 Speedloader are versatility and ease of operation. It's therefore no surprise to find that two of the first cranes of the new model released to the market have been put onto jobs where the actual lifting and handling with the crane is the essential point.

Trucker Vilhmer Nilsson of Vällingby took delivery of his 174 in the middle of December last year. It was mounted on a truck driven by his son Ulf, and for a long time to come it will be exclusively engaged on short hauls around the big residential areas that are going up south of Stockholm.

One bitterly cold day last January, Method caught up with the outfit on one of the many winding roads of the huge estate. It was on its way from one of the erection sites to the head office—unladen! It was the crane they wanted. We tagged along, and when we arrived it turned out that the crane was needed to unstick a pile of heavy, frostbound building elements which some carpenters were going to put together to form a forge. A little while later the truck and crane were summoned to another corner of the estate, this time to haul out some bundles of reinforcing bars that were frozen fast in the grip of a snowdrift. On all jobs of this kind the hydraulic extension of the 174 was a boon to Ulf Nilsson, making it possible to reach out for items well away from the truck and lift them in straight onto the short deck.

The extension likewise proved invaluable on the 174 that was delivered last December to Sven Olsson of Huddinge. When Method came calling, his truck was transporting lamp-standards for the Huddinge electricity works. Thanks to the hydraulic extension the tall standards, which will provide light for the new Huddinge highway, could be lifted from the truck deck and deposited neatly and accurately straight down into their foundations. (See the picture on the back cover.)

Working range in the vertical plane



The extension lengthens the reach of the loader so as to pick up items lying well back from the road, like these reinforcing bars.

Random-size broadleaf wood of the kind shown here featured prominently during the tour arranged by HIAB's Spanish general agent, Incomer of Barcelona.

SWEDISH BARKING IN SPANISH FORESTS

We don't usually think of Spain as a country of forests, but the fact is that she produces annually nearly 2 million cu. ft. of sawlogs and close on 0.3 million tons of pulp. (The corresponding figures for Sweden are 8.2 million cu. ft. and 6 million tons.) The northern parts of the country, in particular, have forests and timber dimensions very much like those of Sweden. So roundwood handling is a job that's on the cards for HIAB's sales organization in Spain, too.

The application of the HIAB Method in connection with machine processing was recently the subject of a major demonstration tour that covered the whole of Spain, beginning in the middle of November at Gerona in the north-eastern corner of the country. Demonstrations were put on at some 15 places, giving Spanish forestry experts the chance to see a Swedish truck-mounted barking unit at work. The unit consisted of a Söderhamn Cambio machine with input table and discharge pocket. A HIAB forest Speedloader moved the timber from the unbarked pile to the feed table and from the discharge pocket to the pile of barked timber.

The barking unit had been lent by the Swedish Forest Service's Malingsbo district, which has worked closely with HIAB and Söderhamns Verkstäder in developing this machine-barking system, now in general use in mechanized Swedish forestry.

The three-man crew of the unit—one at the crane, one at the feed table and one on the ground to tidy up the piles—also came along from Malingsbo. But the trip to sunny Spain wasn't much of a holiday for repairman Simon Andersson and barking-machine operators Folke Backström and Lennart Jansson. The demonstration programme was tightly packed, and there were long journeys between the various sites. And to crown all, the Spanish weather during the tour was wet and cold—quite on a par with a dismal Swedish autumn.

GET-TOGETHER FOR TRANSPORT EXPERTS

The new HIAB 174 Speedloader naturally stole most of the show. A 174 with a winch is here being demonstrated for a gathering of experts.

As part of its product development work HIAB arranges conferences with various specialist groups at regular intervals. In June 1965, forest-transport experts from all over the world gathered for a three-day outing in Hudiksvall and the forests of Hälsingland province. In the middle of October last year another get-together of the same kind was put on for transport men of various categories. It gave HIAB's designers and sales personel an opportunity to pass along information on the company's production programme and to hear what the users had to say. The centre of the stage was naturally occupied by the new loader, the HIAB 174 Speedloader. Product manager Erik Forsgren opened the show by going through the various alternative mountings of the HIAB crane. He gave one example from the U.S. and Canada where they had the crane on a movable mounting on the truck deck. This arrangement gives a greater field of action and also makes it possible to have bigger outfits.

Sten Bergqvist from the Swedish Road Transport Employers' Association gave a talk on the Association's advanced training courses, at which truck drivers learn such subjects as precision loading using the HIAB loader, with experts from Hudiksvall taking part as instructors.

SERVICE MANAGER BERTIL CHRISTOPHERSSON TAKES THE STAND:

One of the HIAB service stations, situated at Borlänge in the middle of Sweden.

TODAY'S SAFETY IS BUILT ON FINDINGS FROM THE WHOLE WORLD

Up to the moment, more than 50,000 HIAB loaders have been put into service the world over. Step by step, the lessons learnt in their manufacture and operation have been built into the new cranes leaving the factory. In this way, by the appearance of new loader models and modifications to those already existing, the HIAB Method is constantly kept abreast of changes in transport tasks and the new demands which they entail. Development of the HIAB Method in this respect goes hand in hand with constant efforts to increase its efficiency. The work is conducted along two different lines in parallel. The results from HIAB's own intensive test activities, in combination with the lessons derived from the practical operation of HIAB products in the hands of customers all over the world, are taken as the foundation for design improvements aimed at diminishing the risk of trouble. The effect of the snags that still manage to crop up is at the same time reduced by a widely ramified service network consisting of dealers and HIAB's own workshops. The efficiency of the service network is constantly being raised by the special training of service personnel and the modernization and extension of workshops and spare-part sales.

3,000 HIAB Fitters

The training of workshop personnel goes on continuously at HIAB's service school in Hudiksvall. It takes the form of one-week live-in courses which aim at training fitters in general truck hydraulics, the mounting of HIAB loaders and tippers, and trouble-shooting and repair. A trainee who has gone through the course and satisfied his instructors receives authorization as a HIAB service fitter. More than 2,000 fitters employed in dealer workshops and about 1,000 people working in other positions in various organizations, trucking companies and so on have received special training in the repair and maintenance of HIAB products.

Five Specialist Workshops

To assist dealers in their service work and to help out with ideas for special mountings, etc., HIAB has set up five specialist workshops around the country: in Stockholm, Malmö, Borlänge, Alingsås and Hudiksvall. The workshops also serve as depots for loaders and spare parts, which does a lot to help dealers get hold of the parts they need.

Since this magazine, Method, to the greatest possible extent goes straight to crane-owners, we shall in the future give hints on service measures that the owner can carry out himself. Under the heading "Safety First" we're launching the idea in this number by describing the functioning of two of the crane's most important safety devices.

Inside the service school.

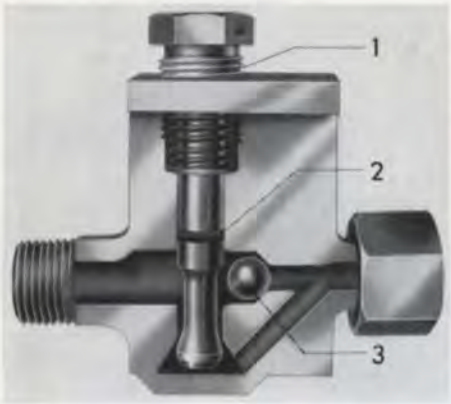
SERVICE HINTS

SAFETY FIRST

THE CONSTANT-SPEED VALVE

The operation of a HIAB loader involves very heavy stresses. When a 173 or 177 is working at its full capacity of 16 ton-feet the thrust in the jib cylinder is no less than 13 tons. The thrust in the lifting cylinder is not far off 20 tons.

On top of this, the loader and cylinders come under dynamic stresses every time there is a change of motion. The heaviest dynamic stress occurs when lowering is suddenly checked. This makes it necessary to fit the crane with protective devices designed to prevent the dynamic stresses from rising too high. This is done by fitting a "constant-speed valve" in the line between the control valve and the cylinder to keep the lowering speed within bounds. The constant-speed valve is fitted with a setting screw (1 in the figure) by means of which the lowering speed of the load can be controlled. The valve is so designed that the lowering speed of the jib is constant, irrespective of the size of the load. In practice it actually has the effect of keeping the lowering speed of a heavy load slightly less than that of a light one.



Function

When a load is being lifted, oil flows from right to left (in the picture) through the constant-speed valve past the ball (3) and up to the cylinder. The oil flow encounters no resistance to speak of.

When the load comes to be lowered, the oil flows through the valve in the opposite direction. The ball now acts as a check valve and prevents the oil from going straight ahead. It is diverted downwards past the valve spool and through the diagonal hole back to the control valve.

When the load is heavy the pressure in the return line will be high. Under these circumstances the oil pressure acting on the bottom face of the valve spool presses it upwards. The higher the pressure (i.e. the heavier the load), the more the spool is forced upwards. Since the spool is conical at the bottom this will have the effect of reducing the flow area by an amount just sufficient to maintain the desired rate of throughput.

But if the loader is carrying no load at all the pressure in the return line will be low, and the spring beneath the setting screw will be able to hold the spool down so as to provide a flow area corresponding to the low pressure.

The balance spring of the spool can be adjusted by means of the setting screw. If the screw is screwed inwards the spring thrust increases. This makes the flow area larger and increases the lowering speed. But if the screw is screwed out there will be a corresponding reduction in area and the lowering speed is reduced.

Effect of Temperature

Since the hydraulic oil undergoes a change of viscosity with temperature, becoming thinner when the temperature rises and thicker when it drops, the functioning of the constant-speed valve will likewise be dependent on temperature. The throughput in the valve falls off when the oil thickens, and the valve will therefore need adjusting to allow for any substantial changes in temperature. The valve can be adjusted so that the lowering time of the jib, at maximum radius, varies between 7 and 12 seconds. The loader will be happiest if the lowering speed is kept as low as possible.

If the Spool Sticks

If the loader has been out of use for some time it may happen that the spool tends to stick in its bottom position. The reason is the drying-out of the oil film which the O-ring (2) in the normal way leaves behind it in the cylinder bore. If the loader is to stand idle for some time a little hydraulic oil should therefore be dropped into the valve through the drain hole of the setting screw, the hole being then plugged with grease so as to keep the air out.

THE HOSE-FAILURE VALVE

To prevent the jib system of the crane, together with the load if any, from collapsing onto the ground if a hose should fail, a "hose-failure valve" which locks the jib system is fitted between the hose and the jib cylinder and between the hose and the lifting cylinder.

During a lifting movement the oil flows past the ball of the hose-failure valve up to the cylinder. During lowering, the constant-speed valve immediately comes into action and controls the oil flow out of the cylinder so that the oil is unable to overcome the thrust of the spring in the hose-failure valve and force the ball against the ball seat.

But if a hose or pipe failure should occur the rapidly escaping oil will be able to carry the ball with it, whereupon the valve traps the oil that is still in the cylinder. The defective item (hose or pipe) can now be changed. After this a small lifting movement is made with the blocked cylinder, whereupon the hose-failure valve reopens and allows the jib to be lowered in the ordinary way.

Occasionally the hose-failure valve may close during the lowering of a load even without a hose failure. The reason for this may be too high a lowering speed, with lowering taking less than 7 seconds, so that the oil current becomes strong enough to close the hose-failure valve. In this case the setting screw of the constant-speed valve will have to be screwed out until lowering proceeds normally.

Tailpiece . . .

The valves on your HIAB crane have been fitted by the factory to protect operator and crane from accidents. So see that they're all in good order and well looked after. Only if you watch this point can the crane give you all the willing and reliable assistance in your work of which it is capable.

METHOD SERVICE NO. 18

Turnrund Time in Aerial Spraying

THE OLD WAY

They used to tip eight sacks of spray powder straight into the aircraft. Given favourable conditions, 3-4 men, going all out, could load a plane up in 2-3 min.

20 SECONDS BY THE HIAB METHOD

In a few seconds the HIAB Speedloader swings the loaded funnel into position above the aircraft.

The valve in the funnel is opened and 1,100 lb. of spray chemical goes aboard in next to no time.

After 20 seconds or so—up she goes again for a new spraying run.

It's not only on the ground that turnround times and costs are of the utmost importance for transport economy. In air transport it's every bit as important to keep loading times to a minimum, and here, just as in truck haulage, correct application of the HIAB Method can mean big savings. One example is afforded by fertilizer spreading and weed control from the air. Since spraying has to be done in good weather it's very important to get through the job as quickly as possible while favourable conditions last. The main snag that used to upset things was the time taken to load the spraying powder into the aircraft. But with a HIAB 177 industrial Speedloader mounted on a tractor it's been found possible to cut loading time to a maximum of 1 minute and in many cases down to about 20 seconds.

The spray chemical is loaded in advance into a funnel with a short, wide filling sleeve. The funnel holds about 1,100 lb. When the plane lands to pick up a new supply the Speedloader lofts the funnel up to the loading hatch, the valve in the bottom of the funnel is opened and the chemical pours into the hold of the aircraft. After that it's all clear for take-off again. While the plane is airborne the funnel is refilled, either from sacks or, if the chemical is available in bulk, with the aid of a crane and a grab bucket. The crane and the funnel have enough capacity to reload a plane every three minutes, which can be an important point in big spraying jobs employing a number of aircraft. The costly aircraft time is thus used to the greatest possible extent for spraying, with waiting times on the ground cut to a minimum. And besides resulting in more efficient use of the planes the method renders the work easier and more convenient.

METHOD HOISTS

JOHANNESBURG

This daring fellow certainly has advanced lifting aids. He and his team-mates in a demonstration group now making a round-the-world tour can cover 65 feet or more at a bound with the help of a rocket belt powered by hydrogen peroxide. But before he takes off on his aerial trips he gets a helping hand from a HIAB Speedloader which hoists him onto and off the starting platform.

HUDIKSVALL

It's not only in roundwood loading that a grab-equipped HIAB Speedloader can be a valuable time-saver. This picture shows the combination being used very successfully to load scrap timber on a demolition site.

VIENNA

It used to take three men six hours to load or unload a freight car with pig-iron or iron plate at the marshalling yard in Vienna. Using the HIAB Method, the same job is now done by one man in two and a half hours.

METHOD HIAB NO. 3

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The cover pictures of this number show the new HIAB Speedloader 174 on the job. On the front cover a section of formwork is on the way up on one of the big housing sites in Skärholmen south of Stockholm. This page shows the new loader in use for loading and raising lamp-standards on the new Huddinge highway.

Colour photo: Roland Andersson