



Dave McGuinness, International Business and Product Manager, Schoenbeck, Germany, presents more than just a standard lifting solution.

RAISED UP RESULTS

With more than 36 years of experience, Schoenbeck manufactures pipe handling equipment for many industries around the world. Serving the oil, water and gas pipeline industries, the company's vacuum pipe lifters are commonly known under the ELITE brand name and are at home all over the world on numerous pipeline construction sites. All standard vacuum pipe lifters are manufactured and supplied for both excavator and crane applications. All lifting equipment reaches and excels European, ASME and Australian standards for below the hook lifting devices. Diesel-powered units are available with either a one cylinder Yanmar power pack or a two cylinder water-cooled Kubota diesel. Vacuum pumps are dry type rotary vanes that are supplied in various sizes pending the size of lifter required.

ELITE 5TD/CD2 vacuum pipe lifter (diesel) SWL 5000 kg (with AoD safe lifting systems)

Applications: Excavator, single crane hook, double crane hook

Enhancing the lower ELITE range of vacuum pipe lifters is the 5TD/CD2 series which can be equipped with either a two cylinder water-cooled Kubota or standard single cylinder Yanmar diesel. Vacuum is produced by a service friendly 80 m³/hr vacuum vane pump, which provides a suitably sized vacuum reservoir with sufficient volume to initiate a lift within 1.5 secs. All standard safety features apply. The 5TD/CD2 is also equipped with a -40 °C solenoid and Schoenbeck's latest highlight, the AoD. The AoD automatically activates as soon as the load is taken, at this second, all functions such as suction and release are deactivated and only reactivated when the load is at ground level. This prevents an operator from accidentally releasing a pipe during a lifting manoeuvre.



Figure 1. ELiTE 5TD/CD2 – excavator application.



Figure 2. ELiTE 5TD/CD2 – crane double hook application.



Figure 3. ELiTE 16TD – pipeline construction.



Figure 4. ELiTE 12TE (electrical).

ELITE 8TD vacuum pipe lifter (diesel) SWL 8000 kg

Applications: Excavator, single crane hook

This unit, as with most models, remains slim line engineered equal to the width of a 24 in. OD pipe. Equipped with flash lights, sirens, high quality none return valves, and a heavy duty solenoid that operates in ambient temperatures as low as -40 °C. Apart from standard features, such as radio or cable remote controls for activating or releasing vacuum negative pressure, the lifter has a suspension between the main body and the suction pad, vacuum pressure gauges on both pads and on the main body. The ELiTE 8TD can operate up to 8 hrs with a substantial diesel capacity and has an additional emergency fuel reserve 5 l. Customer feedback and FATs have provided a suction hold to pipe without vacuum power of 12 hrs and more.

ELITE LiTE 8TD vacuum pipe lifter (diesel)

Applications: Excavator, fork lifter, reach stackers

A new concept design introduced to the ELiTE range was manufactured in 2009. This design provides customers using smaller sized excavators (23 t and lower) the opportunity of deploying pipes with the main power pack weight sat at the rear (or other) of the excavator. This can be classed as a type of additional counter weight, however, hydraulic block adjustment is required at excavator level. The power pack is equally equipped with all the high quality safety features as with its predecessors. All check valve (none return) and solenoids are naturally sat at the main body positions giving maximum vacuum sealing security. The power pack consisting of a diesel engine, vacuum pump and diesel fuel reservoir can be supplied with either a single cylinder or the more silent two cylinder water cooled diesel version.

ELITE 12TD vacuum pipe lifter (diesel) SWL 12 000 kg

Applications: Excavator, single crane hook

Climbing the SWL towards the heavier models, there is the standard and most popular model, the ELiTE 12TD unit. With similar features to the 8TD model, the ELiTE 12TD can operate up to 12 hrs with a substantial diesel capacity and has an additional emergency fuel reserve of 5 l. Vacuum is produced via an oil-free rotary vane vacuum pump (80 m³/hr). Rotary vane pumps require carbon vanes and a lifespan of 2000 hrs plus can be expected. If replacement is required, it is a simple swap slide-in principal. Customer feedback and FATs have proven a suction hold to pipe without vacuum power of 12 hrs and more is possible.

ELITE 12TE vacuum pipe lifter (electrical)

Applications: Single crane hook, double crane hook

Remaining at the same lifting capacity of 12 000 kg/12 t, the ELiTE is also available as an electrically powered version for factory utilisation. E-type units are common in coating or



Figure 5. Lift signal active.



Figure 6. Lift signal inactive.

steel pipe plants. These units can be supplied with a central lifting point or optionally with two outer lifting points. Most twin hook portal/gantry cranes have a distance (hook to hook) of 4000 mm, however the ELiTE 12TE can be supplied as required. The electrical version, as with all Schoenbeck models, is designed for an all-round safe working environment.

Power is taken from the onsite crane/carrier and transferred via an onboard spring-loaded cable drum (15 m in length) to the lifter. Regardless of the local power available, all units can be supplied to equal the client's needs. Warning signals remain active even when electrical tripping/power sputtering occurs; this is possible due to the powerful onboard accumulator battery.

ELiTE 16TD vacuum pipe lifter (diesel) SWL 16 000 kg

Applications: Excavator, single crane hook

Reaching the maximum SWL of 16 000 kg/16 t and the heaviest model, the ELiTE 16TD unit is again slim line engineered and equals the width of a 28 in. OD pipe. Similar to the 8TD and 12TD models, the ELiTE 16TD can operate up to 16 hrs with a substantial diesel capacity and has an additional emergency fuel reserve of 5 l. Vacuum is produced via an oil-free rotary vane vacuum pump (100 m³/hr).

Rental packages

For the excavator application, a link between the vacuum pipe lifter, rotator and excavator is required. This link is commonly known as the yoke. Yokes are traditionally manufactured to fit the excavator stick width. Additionally, a pin will be provided that fits the stick of the excavator. The yoke and hydraulic

rotator are then supplied as a package. Schoenbeck offers the standard yoke and a new specially designed multi-universal yoke. This optional yoke fits 99% of any excavator regardless of make, size or model, eliminating the requirement to purchase a new yoke for a substitute excavator. It is also supplied with numerous pins, shims and spacers.

Suction pads

The slim line pad design is evident in the figures. Engineering permits an extremely long lifespan for suction pad sealing. Apart from excelling four to six months' seal life and a safe/secure seal required between pipe outer and pad inner area, the commercial benefit for end users is obvious when considering less downtime for seal changing and procurement of parts.

Equally of interest is that this design assists hugely when manoeuvring the lifter to the pipe surface. Traditionally, wider suction pads cover and contact a larger area of a pipe's surface, this requires a delicate hand in order that the sealing is not damaged during this manoeuvre. In high stress situations this can be very difficult.

The slim line design only requires pipe contact at the 11 and 13 o'clock positions. Guide rollers, which assist the operator during final adjustments, are flexible in their vertical movements and double up as stand up prop legs and are equipped with poly wheels that prevent any damage to pipe coating or general steel surfaces.

ELiTE HYD-SB-14 hydraulic spreader bar

Applications: Excavator, single crane hook, double crane hook

Following customer demand, early in 2010 the Schoenbeck team went about investigating and engineering a technical solution to deploy pipes with porous concrete coating. This coating prevents utilisation of vacuum lifting technology. The ELiTE HYD-SB-14 hydraulic spreader bars (three in total) were supplied and utilised in excavator applications for Wasco in Kuantan, Malaysia.

The requirement was to lift pipe lengths of 9000 mm up to 12 000 mm. Pipe OD was irrelevant due to the design and its flexibility. The unit was equipped with two twin telescope arms (four singles in total) plus a main frame.

Care was taken to ensure that both hydraulic cylinders could not be forced to open during an off centre lift, this feature was deemed crucial for later lifters in crane applications. In order that operators are confident that the lifter is secured inside the pipes outer ends, mechanical signals have been incorporated that automatically appear and inform the surrounding environment that a pipe lift is now in progress. The operator controls the opening and closing of the cylinders and hydraulic rotation.

Conclusion

Whilst observing the expanding variable scope of Schoenbeck handling equipment, its engineering team are also actively engaged with additional projects for extreme heavy lifts. It is becoming evident that ELiTE lifting equipment continue to stamp a positive footprint into the global market of materials handling. 