



VDL CONTAINER  
SYSTEMS

VDL  
SPREADERS

STRENGTH THROUGH COOPERATION



# STRENGTH OF A MULTINATIONAL, CULTURE OF A FAMILY BUSINESS

**VDL Container Systems has approached design and innovation of container spreader development with simplicity and reliability in mind. Container spreaders are subjected to heavy impacts and snag loads. Therefore all the critical components and assemblies on a VDL container spreader are designed in such a way that they require fewer electronics and fewer mechanical rotary components. VDL spreaders are also equipped with a smart hydraulic design which allows for redundancy backup in case of pump or motor failure.**

VDL has complete engineering and production in-house in the Netherlands, therefore we are able to quickly provide special requirements on the spreaders. The modular design combined with customer specific requirements and strict production & quality assurance standards results in a spreader that is superior in quality and reliability and is also exactly according to the customers' requirements.

- VDL does not use sensitive components or exotic in-house developed electronics or PLCs on its spreaders. Instead VDL relies on a **robust industry proven PLC** of IFM which is used in countless other heavy duty applications in industries such as road transport, mining, oil & gas exploration and excavation. This PLC is readily available and serviceable in any country worldwide.
- We use fully configurable software based on the modularity of our spreaders. The spreader/crane interface can be hard wired or according to industry standard bus protocols but can also be adapted to any other communication system that might be present
- VDL spreaders are standard internally hardwired which significantly reduces the need for sensitive electronic components such as CAN slave nodes which reduces the chance of electronic component failure.
- Where sensors are needed, VDL uses only heavy duty inductive proximity switches that are vibration/shock resistance up to 100 g and can operate in temperatures from -40C to +70C.
- The electrical and electronic systems on the VDL spreader are protected from voltage spikes that might occasionally occur in the crane power supply.
- Only 1<sup>st</sup> class, worldwide available standard industrial brands as Vickers, Parker, IFM, Eaton, Schneider, SEW, IGUS are selected on our spreaders.

Besides the standard available spreaders used in container terminals we also provide customer specific spreaders such as fixed 20 ft and fixed 40 ft spreaders but also telescopic spreaders from 10 to 20 ft. Such spreaders are mainly used in warehouses, either fully automatic or manually operated.

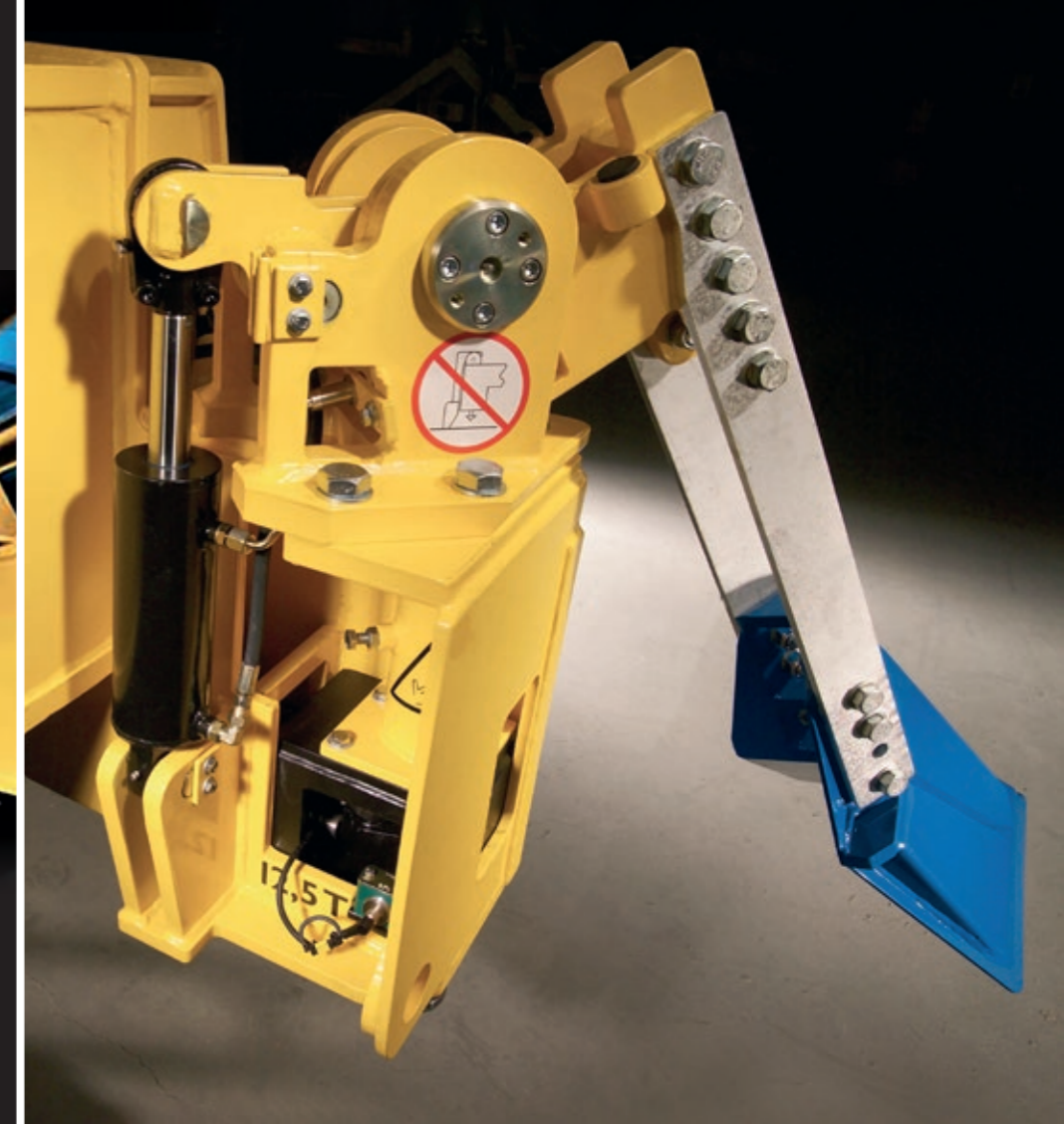
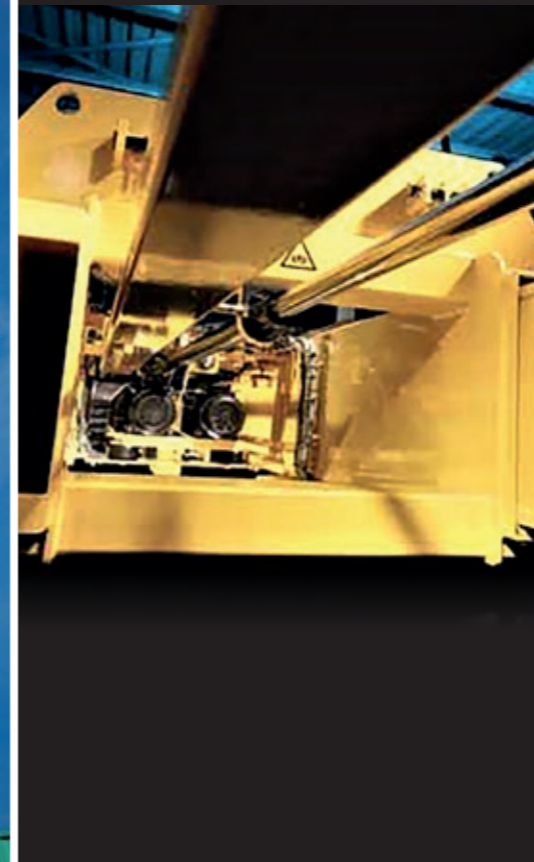
All VDL spreaders can be shipped inside of high cube containers to ensure most cost efficient transportation costs worldwide.

VDL spreaders are standard protected with a unique powder surface coating. This environment-friendly process provides maximum corrosion protection (C5M according to EN ISO 12944) and an outstanding long lasting appearance!

All of our spreaders are designed according to the spreader directive EN 15056 and the crane directive EN 13001. Of course the Machine directive 2006/42 EU is also taken into account.

Quick response times on after sales, sales engineering as well as sales of the machine makes it possible to quickly support you on all questions and requirements you have. We value the long lasting relations with our customers and believe it is our highest priority to keep our customers satisfied.





## KEEP IT SIMPLE

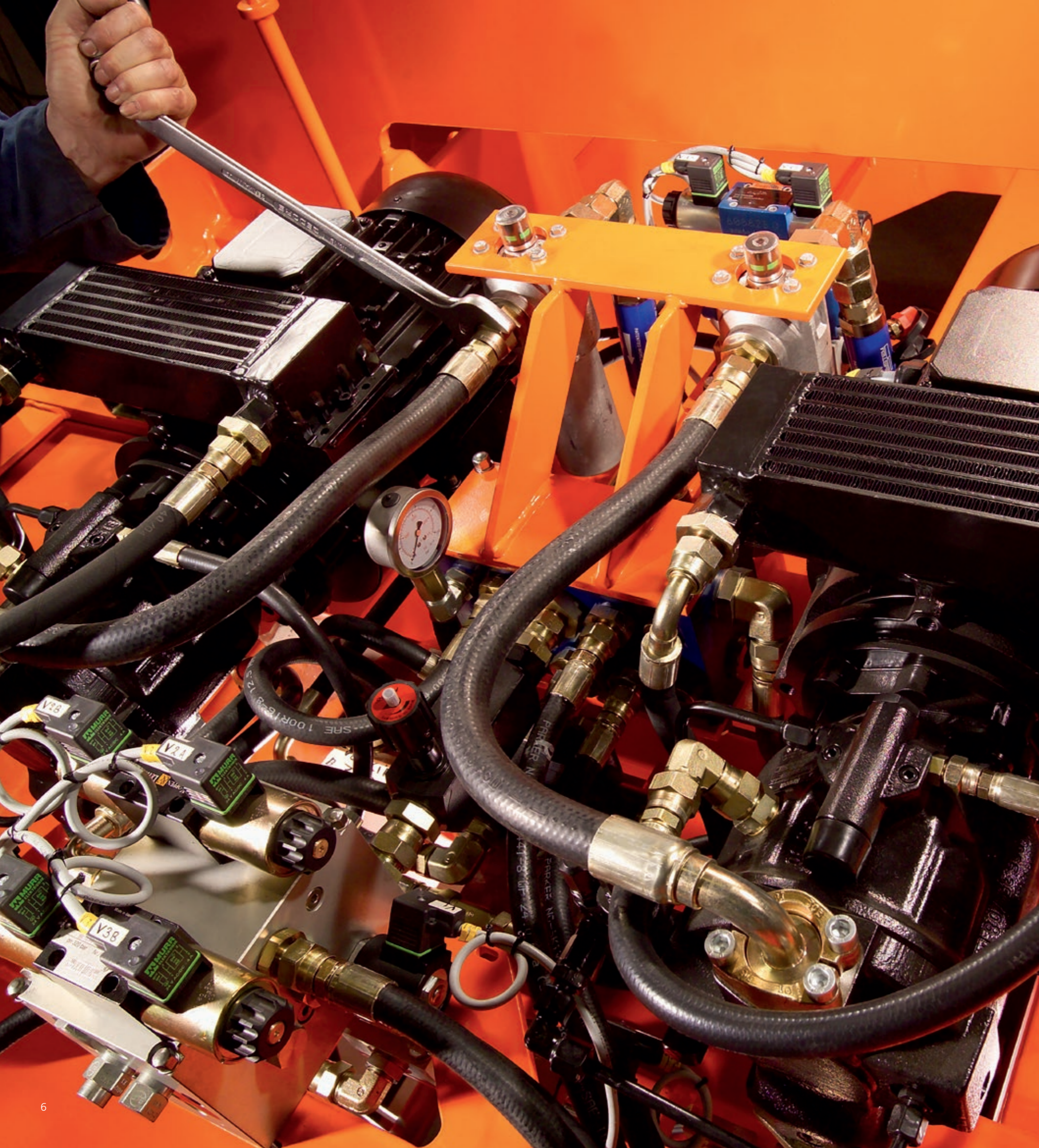
**It is a well-known engineering and design principle that rotary components such as motors are more prone to failure, require more maintenance and are in general more expensive to maintain, repair and replace compared to linear moving components such as cylinders. With this principle in mind, VDL has designed two critical components of the spreader, the flipper and telescoping system, using cylinders instead of motors.**

### TELESCOPING SYSTEM

- The telescopic system on VDL spreaders is standard equipped with heavy-duty hydraulic telescoping cylinders instead of a rotary chain drive system that uses motors and gearboxes, decreasing the overall chance of downtime.
- Hydraulic cylinders require very little to no maintenance whilst rotary chain driven systems have to be greased and re-adjusted on a regular basis because of elongation of the chain. In case of a serious accident the parts costs and replacement time for cylinders are far below that of a chain drive systems.
- The cylinders in a VDL spreader are mounted with a 3-point suspension and have a two-step shock-absorbing system. Step one is an impact protection using a spring washer package, and step two is trough fast acting hydraulic relief valves. Should a side impact occur, the spreader will automatically set itself back to its original position.

### FLIPPER SYSTEM

- VDL's unique slim line flipper drive system activates each flipper for 180 degrees rotation using one plain hydraulic cylinder. This flipper system can act up to 4500 Nm and can hold up to 7000 Nm of torque.
- In case of overload/impact a fast acting pressure relief valve prevents mechanical damage to the flipper construction.
- The cylinder in the flipper system requires only minimum maintenance and in case of wear or damage it is very easy to repair by local port maintenance staff in a terminal workshop at a very low cost.
- Replacement cost of a complete cylinder is only a fraction (approx. 15%-20%) versus the replacement cost of a rotary actuator, which reduces overall spares inventory cost.



## REDUNDANCY BACKUP TO ENSURE AVAILABILITY

In any heavy duty 24/7 operations there is always a chance of a component failure. To reduce the exposure of an operator to an all-out hydraulic failure on a spreader, VDL has designed their spreaders to include a twin motor and pump system. The chance that both motor/pumps fail simultaneously is extremely small and thus spreader uptime and availability is increased.

Should one drive-system fail an operator can automatically carry on albeit with reduced telescoping and flipper speeds using the remaining parallel drive-system. This allows for the port maintenance staff to prepare corrective action whilst the ship handling job continues, reducing overall downtime.



## STS SPREADERS

**VDL's double beam spreader design is historically based on the most heavy duty usage; in fast STS cranes which are being used around the clock. Especially for STS crane operation the spreader has to be able to withstand impacts that are as heavy as it can get.**

The standard use of heavy duty hydraulic cylinders for all movements suits STS operation perfectly and is a big advantage for terminals that are really depending on the availability of their equipment. Standard our STS spreaders are equipped with either 4 corner flippers or 6 side flippers and a 45 ft position stop.

### ▶ MODULAR AVAILABLE OPTIONS ARE:

- Twin lift or separating twin lift (able to separate 2 containers of 20 ft with 5 ft)
- Memory Positioning for the separating twin gap
- Height Detection and Twin Twenty Detection Systems
- Capacity increase or decrease according to the requirements of the customer
- Automatic greasing system
- Damping system / noise absorption
- Available as fully electric spreader (only for single lift spreader)



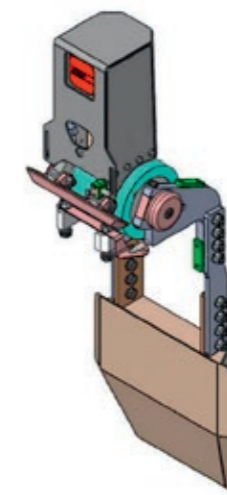
## YARD CRANE SPREADERS

**Our spreaders for RMG and RTG cranes are designed to work extremely efficient. This is particularly important for smaller terminals with no backup equipment available. The majority of our spreaders are in operation in such terminals. Nowadays most of the yard crane spreaders we deliver are fully electric which makes the spreaders easier to maintain, significantly less energy consumption, quieter and also better for the environment due to the lack of oil. Of course we can still supply our yard crane spreaders as hydraulic machines in case our customers require us to do so.**

We have designed a flipper specifically for fully electrical spreaders. This flipper is a "Hybrid" version which combines the advantages of hydraulics with the advantages of electrics. In order to absorb shocks we have designed a closed loop hydraulic system on this flipper.

The holding torque is 7.000 Nm. The drive torque is 3.600 Nm. This is comparable with a hydraulic flipper. Our yard crane spreaders can be supplied with 4 or 6 flippers, (fixed) guides, or without flippers, all depending on customers' preferences. Furthermore these spreaders can be equipped with an integrated

rotation and gravity point adjustment. For noise and shock absorption we can install a damping system which enables all 4 twistlock corners to move up and down 10 cm individually. This system is mainly used for noise reduction and shock absorption but also enables handling damaged containers through the height covering. Capacity, mechanical/electrical interface and position stops (up to 45 ft) are all flexible and can be agreed upon together with the customer during the sales engineering phase. This also applies to the implementation of camera and weighing systems, or any other options you may need for your operation.



Hybrid flipper



## PIGGYBACK SPREADERS

**As the shift towards railfreight continues, more intermodal rail terminals are developed and to serve the specific needs of these terminals we have developed dedicated spreaders (suitable for handling both containers and trailers).**

Intermodal terminals which have a rather even mix of containers and trailers must be able to switch easily between container and trailer handling. For this purpose we have developed a spreader equipped with four piggyback arms which are retractable inside the spreader dimensions. This allows for blockstacking of containers and even operating in a ship cell on a trimodal terminal.

For rail terminals that have mainly piggyback operation we can also offer a spreader available with piggyback arms that are mechanically connected with each other. This makes the spreader technically easier and more durable and rigid for piggyback operation but eliminates the possibility for blockstacking (and therewith container stacking).

Our piggyback spreaders can also be supplied as "Hybrid version" which means only piggyback operation will be performed by hydraulic power. Therefore the powerpack is only activated in case of piggyback operation, all other functions are fully electric.

This reduces power consumption significantly, but also reduces maintenance intervals and noise emissions. This is particularly interesting for terminals that mainly have container operation.

For terminals that only have piggyback operation very seldom we can supply a piggyback attachment which can be operated by any standard spreader. This frame is connected to a spreader at 20 ft and the "Mother" spreader is powering the attachment and forwarding the locking/unlocking command as a clamping/unclamping command. The arms are not foldable which keeps this frame very simple. The frame can be stored easily on its arms at any place suitable on the terminal.

As on all VDL spreaders modularity is of big importance. Therefore different options such as damping, additional position stops, rotation/gravity adjustment, increased capacity, camera systems, weighing systems, height detection and flippers are all available.



## MHC SPREADERS

**Often MHC's handling containers with a spreader are used in remote areas or on smaller, mixed terminals. These terminals are relying heavily on their equipment. Therefore the redundant, heavy duty and simple design of the VDL spreader is of high importance for such terminals.**

VDL MHC spreaders are designed to handle containers in Mobile Harbour Crane applications. The proven double girder design is made of high grade steel in order to reduce weight. The spreader is standard equipped with 6 flippers.

Modular design allows for twinlift operation, double pin connection, personnel platforms for safe pin removal/insertion, damping system,

transversal adjustment (efficiency advantage when handling listed ships) and of course all position stops up to 45 ft.

The robust and reliable telescoping system consists of 3 point mounted hydraulic cylinders, impact protected with a spring washer package and a hydraulic pressure relief valve. All hydraulic systems are driven by our unique redundant hydraulic powerpack.

The spreader can be fitted with all known options such as a Cold Weather Package, Twin Twenty Detection, Height Detection, and 30 degree position stop for the flippers (this combination with a height detection system eases aligning the spreader on the container).

The mechanical interface with the crane hook will be designed according to the specification of the crane. Although the electrical interface is mostly hardwired with an ODU plug, any other interface is possible in compliance with the customer specification.



## MAKE A DIFFERENCE TO THE WORLD OF TOMORROW

Want to know more about the possibilities  
we offer at VDL Container Systems?

Or do you have specific questions about  
applications within your company?

Visit our website or contact us using the  
details below.

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