

# FRONT-END TIPPING SOLUTIONS



## FRONT-END TIPPING SOLUTIONS

Reliability and performance exactly where needed

# HYVA

## ABOUT HYVA

Founded in 1979, HYVA now operates in more than 110 countries with over 3,500 employees around the world. The HYVA Group, encompasses 30 subsidiaries globally, with an extraordinary sales and service coverage and 14 production facilities in Brazil, China, Germany, India, and Italy, with more than 20,000 customers.

In 2023 we reached a production landmark with the production of our three millionth hydraulic telescopic cylinder. Today HYVA cylinders work around the world to satisfy our customer demands in new applications, existing and new geographical territories under various weather conditions, confirming HYVA as the world leader in the production of telescopic cylinders.





## FRONT END TIPPING SOLUTIONS

HYVA's design philosophy is a testimony to our ability to listen to the ideas of our customers and partners worldwide. The total system today represents a complete revolution in the way in which tipping equipment is made. Our obsession remains to continuously simplify and improve our products with our revolutionary new Alpha cylinder, brackets and wet kit design. Our engineering achievements offer to maximize productivity for our customers with higher efficiency and safer operation at lower cost. Brackets have been re-engineered to be stronger and lighter. Wet kits have now improved knock-off and super precise tip air control options; the cylinders for rigid truck can be mounted with tipping valves directly offering critical safety benefits, a new designed reinforced tank, with high flow filtration options, with gear pumps that operate at pressures up to 250 bar. The range includes precisely engineered parts for our telescopic cylinder with Heavy Duty (HD) cylinders.

# RELIABLE

Cost effective applications with increased payloads and bespoke solutions that reduce the impact on the environment.

## MINING



Maximum performance and more payload in a stronger package

## TRANSPORTATION



Maximum payload for long-haul transportation

## CONSTRUCTION



Maximum efficiency with high-speed tipping and extreme reliability

## FRONT-END CYLINDERS

HYVA's front end telescopic cylinders are designed for rear-end tipper and tipper trailers and have earned their reputation for reliability and value for money. Our innovative balanced design with lower oil volume allows faster tipping and results in the lightest cylinder in the industry, which simplifies operation, reduce maintenance and boost fuel efficiency.

### INCREASE YOUR PRODUCTIVITY

The Alpha series cylinder is designed for:

- Reducing turnaround times with faster tipping speed
- Increasing operating time with longer service intervals
- Reducing downtime with the delivery of a safer and more reliable solution

### ALPHA – NOT JUST A CYLINDER BUT A COMPLETE SOLUTION

At HYVA we believe in delivering a solution that can rapidly and successfully meet your requirements, beyond simply delivering a cylinder.

- Solutions specific to market segments
- Optimal balanced ratio between weight, performance and cost for your product
- Widest range of cylinder from 5 to 100 tons with bespoke solutions
- Very high tipping speed with our heavy duty (HD) Series wide overlaps, dual rod seals
- Easy to service
- Working pressures up to 250 Bar
- High quality, wear-resistant guide rings and hydraulic sealing properties
- Maintenance-free high performance spherical plain bearings
- Extensive field testing precedes all new product releases to ensure we meet our customers' expectations
- Complete system is re-engineered from the ground up
- Best performance with the installation of a complete end to end solution



# ADVANTAGES OF OUR CYLINDERS



Lower dead weight  
= Higher payload



Faster tipping and lowering  
= Shorter cycle time



Safer and more reliable  
= Reduced downtime



Most efficient  
= Productive & profitable



Cost effective  
= Can reduce operating costs



Longer service intervals  
= Increased operating time



Lower oil & fuel consumption  
= Environmental friendly

## STANDARD VS HEAVY DUTY

### New top eye design

### Improved dust cap design

- Better protection
- Longer lifetime

### Improved cylinder overlap and guide system

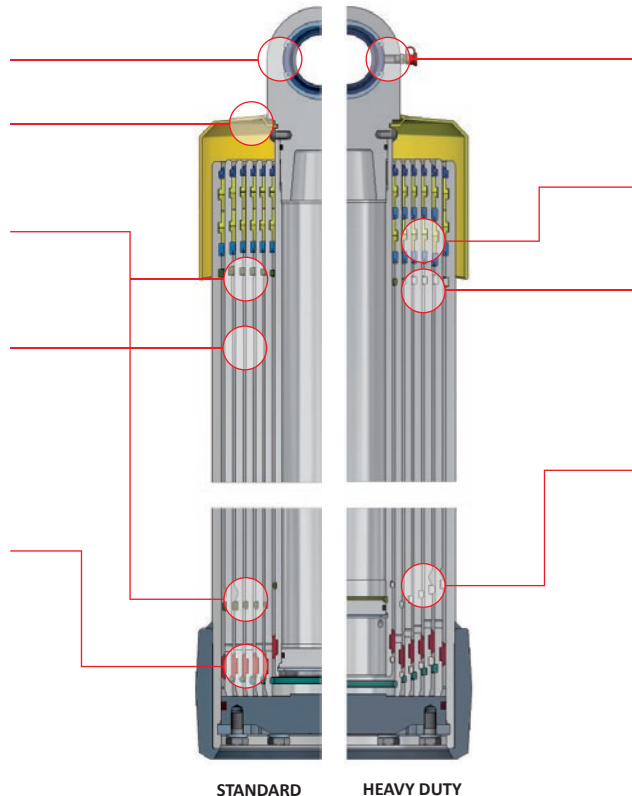
- Longer cylinder stroke

### Upgraded materials

- Supports the pressure increase to 250 bar
- Overall kit weight reduction of up to 10%
- 5 new cylinder diameters

### Improved slider design

- longer lifetime
- Improved stability



### Greased bearings

- Improved tipping speeds with heavier loads

### Double rod seal

- Improved reliability in extreme conditions

### Increased cylinder overlap

- Better side-load resistance for heavy duty off road applications

### Improved stop rings

- Faster retraction speeds with heavier loads

STANDARD

HEAVY DUTY

## CYLINDER CHASSIS BRACKETS

- Improved design resulting in 60% more robust brackets
- Up to 10% weight reduction
- Easy mounting with bracket lips
- Same hole pattern as previous generation (interchangeable in HYVA cradle)
- Available in non-greased and greased (HD) version
- Improved greased bearing bush





## WETKITS

HYVA Alpha Series is a complete kit – cylinder and wetkit.

Delivering maximum performance at minimum weight and with the shortest possible tipping cycle.

HYVA hydraulic systems are a collection of high-quality, durable components that will work with every type of truck and are able to meet the toughest applications. All our systems go through extensive lab testing on both, the component and complete solution levels before they leave the factory.

## BENEFITS

- Higher payload capacity
- Increased productivity
- Light weight, heavy duty and faster performance kits options
- Bespoke kits to fulfil the individual requirements for several markets and application
- Reducing downtime with the delivery of a safer and more reliable solution
- Increasing operating time with longer service intervals
- Optimized oil volumes to use less oil for lower weight, cost and carbon footprint to the environment
- All components are very carefully designed and selected to assure perfect match and easy assembly in short time

### SIDE MOUNTED TRACTOR WETKIT



### MOVING FLOOR TRACTOR WETKIT



### REAR MOUNTED TRACTOR WETKIT



## TIPPER TRUCK CRADLE WETKIT



Each of the hydraulic systems for tipping consists of a number of vital components, selected and assembled according to the requirements of each specific application:

- Operating pressure (cylinder, valve, pump)
- Flow (pump, valve, hoses, adapters)
- Cylinder capacity (oil tank volume)
- Type of vehicle
- Type of gear box
- Type of PTO
- Torque of PTO
- Direction of PTO rotation
- Tipping time
- The position on the vehicle for individual elements, the system efficiency
- Control system and other extra functions

## EXPLANATION OF RIGID WETKIT PARTS

### CYLINDER

Higher operating pressure  
Standard and heavy duty "HD" versions  
> **faster, shorter cycle time**

### TIPPING VALVE

Cylinder mounted optimised control  
> **safer**

### COVER & LIFTING BRACKET

Forged steel and cast iron  
Different bearing options available  
> **lower weight**

### KNOCK OFF

Precise actuation  
Robust design  
Easy installation  
> **safer**

### CHASSIS BRACKET

Cast iron  
Different bearing options available  
> **lower weight**

### CRADLE

Standardised kits  
Improved hose management  
> **easy installation & mounting**

### PUMP

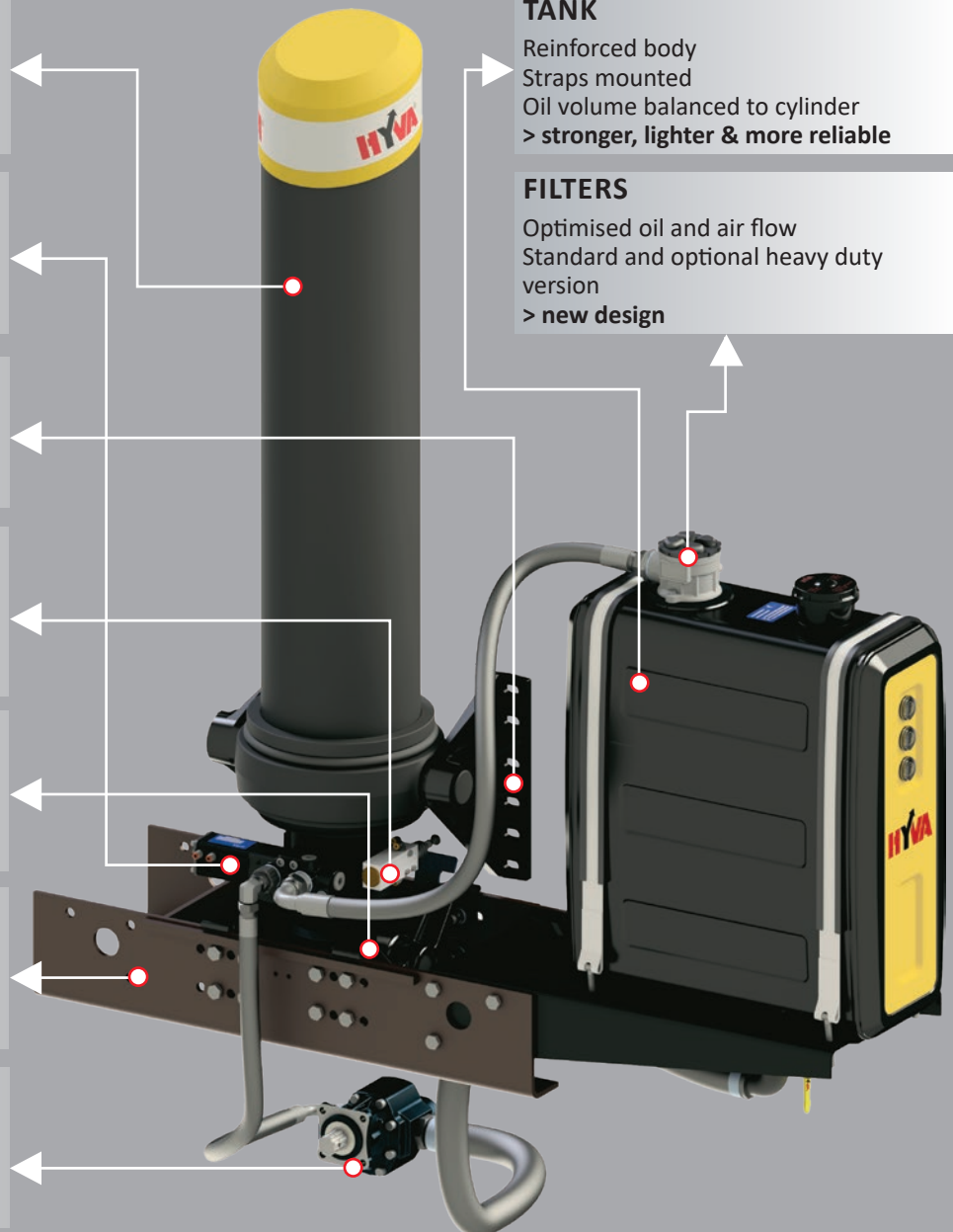
High pressure  
Durability  
> **faster**

### TANK

Reinforced body  
Straps mounted  
Oil volume balanced to cylinder  
> **stronger, lighter & more reliable**

### FILTERS

Optimised oil and air flow  
Standard and optional heavy duty version  
> **new design**



# COMPONENTS

## BENEFITS

- Size ranges from 20 to 124 cm<sup>3</sup>/rev
- Working pressure up to 250 Bar
- Maintenance free due to self-priming and minimal number of components.
- Trouble-free start-up at low temperatures (temperature of the oil -40°C to +80°C)
- Strong, cast iron pump housing, reinforced bearings and forced lubrication
- The high pressure at low speed
- The ability to change the direction of rotation (Bi rotational)
- High power to weight ratio

## GEAR PUMPS

HYVA pumps are manufactured and available in several options, i.e. mounted on three or four holes power take off configuration. There is also the possibility to offer tandem pump configurations for bespoke applications. Our pumps are subjected to rigorous endurance tests during the product development phase in our laboratory to simulate 100,000 tipping cycles to ensure they meet the superior performance and endurance our customers demand. Bearings are able to withstand peak radial and thrust loads ensuring your product has a minimum downtime.

CVP 035-050-065 SERIES



CVP 085-105 SERIES



CVP 095-115-125 HD SERIES



CVP DOUBLE PUMP



- Gears are produced with the highest attention to create perfect match to reduce internal leakage and noise level to minimum
- Special sleeve bearings provide optimum alignment of gears, so that the clearance between the teeth is held in a fixed position to guarantee high performance and efficiency
- Side sealing plates designed to ensure maximum efficiency with pressure up to 250bar
- Special bearings - withstand radial and thrust loads at heavy duty applications
- Design and material used, provide high structural strength to match high pressure standards



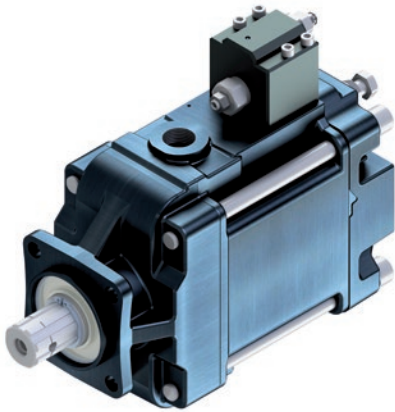
# PISTON PUMPS

For high pressure and long continuous operation HYVA strongly recommends using a HYVA piston pump characterized by high performance and efficiency. Bent axis design assures slim external dimensions and low noise level operation. These pumps are typically used for heavy and demanding applications where long operation at high pressure is required such as cranes, hook and skip loaders, moving floors, high pressure tippers and many others. The pumps are equipped with safety drainage system, the rotation direction can be easily changed without any special additional tooling. HYVA pumps are known for robust design and highest quality proven in several demanding applications.

## BENEFITS

- All-purpose high pressure pump
- High power to weight ration (kW/kg) up to 4,5
- Very high total efficiency
- Robust pump with long lifetime
- Long-life bearings for the nominal sizes
- Pumps capacity from 25 to 130 cm<sup>3</sup>/rev
- Slim design optimized for small installation space and to fit with bigger propeller shafts
- Continuous pressure up to 350 bar (400 bar peak pressure), suitable for the most demanding applications for moving floor, cranes, hook- and skiploaders and high pressure tippers
- Hardened spline output shaft with resistant to higher starting torque
- Optimized pistons for smoother flow and oil delivery
- Improved suction port to achieve lower noise level
- Twin flow versions available for crane and hook loader combinations (or other specials)
- By-pass valve option, mainly used for applications with permanently driven operations

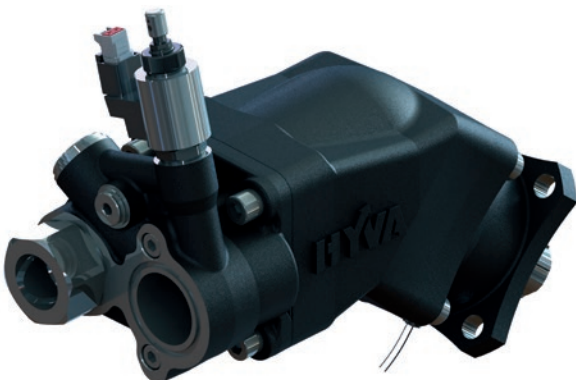
### VARIABLE DISPLACEMENT PUMPS



### SLIM SERIES



### PUMPS WITH BYPASS VALVES



### DUAL FLOW PUMPS



# COMPONENTS

## BENEFITS

- Size ranges from 20 to 124 cm<sup>3</sup>/rev
- Working pressure up to 250 Bar
- Maintenance free due to self-priming and minimal number of components.
- Trouble-free start-up at low temperatures (temperature of the oil -40°C to +80°C)
- Strong, cast iron pump housing, reinforced bearings and forced lubrication
- The high pressure at low speed
- The ability to change the direction of rotation (Bi rotational)
- High power to weight ratio

## OIL TANKS

HYVA offers a complete range of oil tanks manufactured from the highest quality materials – steel, aluminium. We offer several mounting possibilities - behind the cabin, on the side of vehicle, in the cylinder cradle and others. This allows to compose a variety of hydraulic systems to match all truck and application types.

HYVA oil tanks are of highest quality in terms of design and production standards confirmed in several lab and field tests. The design ensures optimized shape, volumes and weight to follow the latest trends on modern vehicles.

The outer parts are secured by highest quality painting methods to withstand the most demanding weather and operation conditions.

### SIDE MOUNTED TANKS (SM)



### CRADLE MOUNTED TANKS (CM)



### TOP FLANGE MOUNTED TANKS (TM)



### REAR MOUNTED TANKS (RM)



# AIR BREATHER

HYVA delivers air breather with every type of oil tank, this part is obligatory for every installation and its role is extremely important. It secures the hydraulic system from contamination from the surrounding environment with dust or humidity which can lead to serious and costly damage of the system. This is why HYVA developed a high quality and reliable air breather to meet the most demanding applications including heavy duty mining, its efficiency has been proved around the world.



## BENEFITS

- Easy to access and inspect
- Anti-splash protection feature
- High air flow rate of 1350 l/min
- Filtering capability of 10 microns
- Robust, durable design to withstands vibration
- Protection against airborne moisture and particulate contamination
- Easy to inspect and replace

# RETURN FILTERS

HYVA offers return oil filters for the hydraulic kits for several applications, the filters can be mounted on all oil tank configurations.

Filters recommended by our company are characterized by high efficiency and specially designed for truck applications where vibration resistance should be considered. Filters are capable for nominal flow of 150 l/min and 250 l/min for heavy duty applications. Oil filters used in the systems allow for safe and long-term operation, extending the lifetime of all components and hydraulic oil, reducing significantly risk of unexpected and costly repairs.

## BENEFITS

- Plate type designed to mount the valve directly on the filter plate
- House type designed to connect the return hose directly to the filter housing
- Glass reinforced PA return line filter inner housing
- Extension tubes applicable to avoid oil foaming
- Available in standard and high flow versions
- High quality materials to meet the most demanding applications

### HOUSE VERSION



### PLATE VERSION



# COMPONENTS

## TIP CONTROLS

### PROPORTIONAL 1 & 2 SECTIONS TIP CONTROL



Single and dual section pneumatic controls that are small, lightweight with compact casted body that can easily be mounted. This design offers multiple mounting options for flexibility in operation.

- Tipping only option control
- Tipping + PTO option controls
- Ergonomic designed hand lever
- Proportional lowering

### MULTI SECTION TIP CONTROLS



Multi-sectional controls are used to control the tipping cylinder and a number of additional functions, such as opening of the rear door, sheeting systems, side boards and others. HYVA can offer sets of controllers that can be composed to the needs of given application for the required number of control sections.

- Slim 3 way modular design
- Multiple controller actuation options (Double acting 4 way, Single acting 2 way, PTO on-off)
- Modular design for easier custom configuration

## HT VALVES

HYVA HT tipping valves series is a specially designed range of valves dedicated to tipper applications. This group of HYVA products is the most critical point of the hydraulic system directly responsible for the safety and significantly contributes to the overall performance of the wet kit. For this reason HYVA developed this product using the global experience with all possible tipping applications to proudly present the renewed range of HT valves. The valves feature the same design concept, which has been proven to be the safest solution for tipping applications. Within the HT family one can notice division in terms oil flow capacity at 150 and 220 l/min and in terms of mounting option either on the tank (TNK version) or on the cylinder directly (SAE version), the valves are also offered in single or double working pressure options, pressures can be switched mechanically (MS) or by air control (AS). With the HT range HYVA is proud to assure that it covers all application options on global markets.

### BENEFITS

- Safer operation due to unique design
- Fixed working pressure concept with replaceable cartridges
- Better precise control of tipping operation
- Proportional operation of lowering for precision and safety,
- Longer lifetime with hardened spool
- Possibility to mount directly on the cylinder or oil tank
- Acting as hose burst valve if mounted on the cylinder directly
- Adjustable lowering speed

### HT1150-P3/4"-TNK/SAE - HT1150-P1"-TNK/SAE



### HT1220-P1"-TNK - HT1220-P1"-SAE

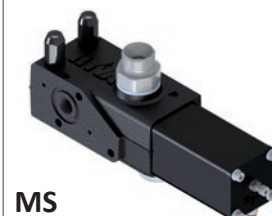
TNK

SAE



### HT2220-P1"-TNK-MS (MECHANICAL SWITCH)

### HT2220-P1"-TNK-AS (AIR SWITCH)



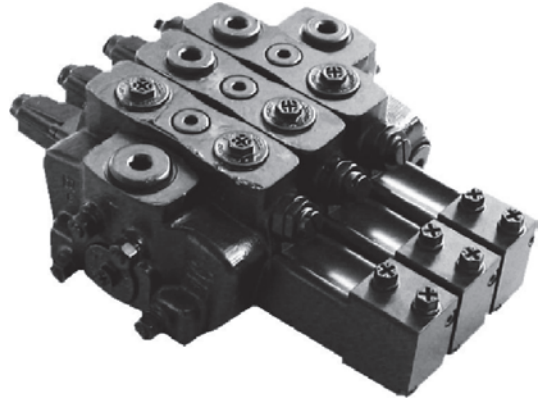
MS



AS

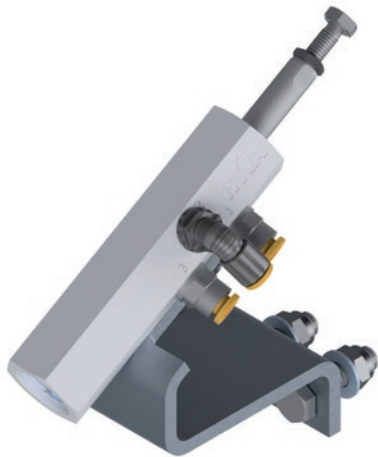
# MULTI SECTION TIPPING VALVES

For the tipping applications with additional hydraulic option HYVA offers suitable multi section valves, such valves can be equipped with up to 4 sections. The sections can be chosen to cover single or double acting applications, they are air controlled with adjustable working pressure. The sections are capable to work with oil flows in range of 80-160 l/min.



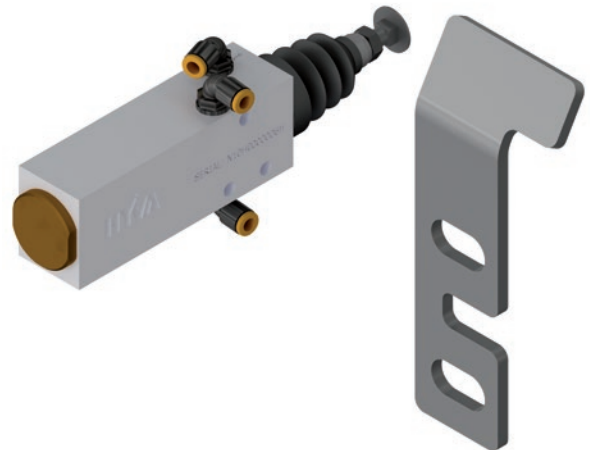
# KNOCK OFF VALVES

KNOCK OFF VALVE - STD



Knock off valve STD is mounted on the cylinder cradle, it is delivered with a special bracket to allow easy installation and precise setting of this limiter. It is pneumatically operated, the mechanical adjustment allows it to be used with full range of HYVA front cylinders. Usage of this valve assures precise operation and smooth limitation of the stroke which results in significant increase of the cylinder and hydraulic lit lifetime.

KNOCK OFF VALVE - HD



Knock off valve HD can be mounted directly on our Alpha HD cylinder with a specially prepared bracket. The HD version features a longer piston stroke offering a smooth and precise deceleration of the tipper cylinder. The reinforced HD version is dedicated to the most demanding applications in heavy working conditions.

## BENEFITS

- Increased the lifetime of the complete hydraulic system and the cylinder
- Easy installation and adjustment of the valve
- Increased tipping speed allowed with knock off installed
- Fine tune the exact tipping angle

# EASY INSTALLATION

# COMPONENTS

## HOSE GUIDE ARMS

Hose Guides are designed to work with HYVA tractor wetkits to prevent the wear and tear of hoses and optimize hose management of hydraulic hoses connecting tractor units and the semitrailer. The hose guides are typically fitted on the tractor wetkits for tippers, walking floor, silo trailers.

SWIVEL ARM



The swivel arm hose guide is a heavy duty design guide applicable for several possible tractor configurations. With several options of shapes and lengths can be applied in the most efficient way to keep the built height at minimum level. The arm rotates due to heavy duty swivel arm suitable for high pressure applications.

(HCB) HYDRAULIC CROSS BEAM



Simple plug and play version designed specifically for tractor wetkit configurations, where flexible hoses are used. This design assures that the hoses are safe from any accidental damage or wear while natural movements of the tractor and semitrailer configuration.

## HYFIX AND POLY GRIPPING DEVICE

Hyfix body clamp polyp gripping device are HYVA innovative solutions to block the tipper body in the lowered position while driving empty.

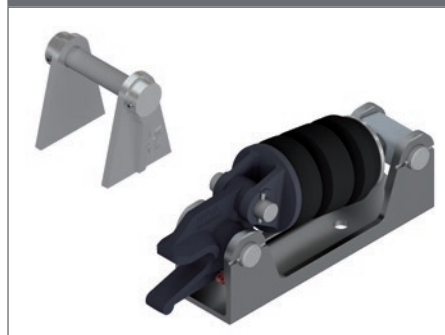
These clamping methods prevent from vibration, noise and unnecessary wear of the tipper parts coming from uncontrolled tipper body movements while driving empty.

This solution results in serious reduction of wear of all tipper parts. The Hyfix clamp can be applied to rear unloading tippers, the polyp clamp can be used for both rear and side unloading tippers. These parts can be delivered in steel and aluminium versions.

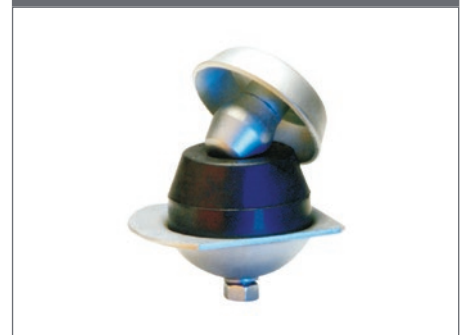
HYFIX STEEL



HYFIX ALUMINIUM



POLY GRIPPING DEVICE



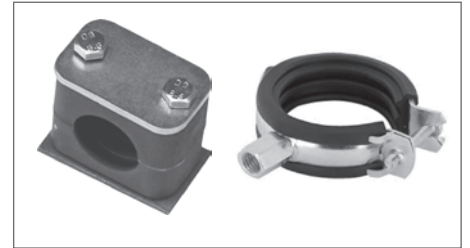
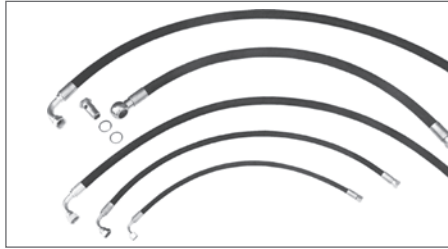
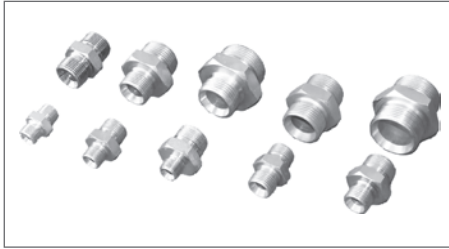
### BENEFITS

- Reduced vibrational stress and wear tipper body
- Increased lifetime of tipping cylinder
- Reduced wear of hydraulic seals, cylinder brackets / hinges
- Create a fixed connection between tipper body and chassis
- Reduced noise while driving empty

# INCREASED LIFETIME

# HOSES AND ADAPTORS

Every wetkit is completed with hoses and adaptors of various types. HYVA offers a wide range of high quality parts dedicated to various truck related applications. These components are also critical part from the quality point of view, they directly influence the safety, performance and lifetime of the system.



## MAINTENANCE AND REPAIR PARTS

### HOSE GUARDS

Spiral hose guards secure hydraulic hoses from several possible kinds of damaged such as wearing, tearing and pinching, this is additional safety measure to avoid damage caused from vibrations present on truck applications.

### BENEFITS

- Providing buffer between the hose and harsh environments against heat, abrasion, and punctures
- Keeps your equipment and machinery working in tough conditions
- Easy to apply on the majority hoses

### SEAL KITS

HYVA Seal kits developed and produced specially for HYVA products, these genuine parts are made to cope with the most demanding applications and harsh working conditions. To succeed HYVA has always used the best quality materials and the most advanced production technologies, this quality is delivered to the customers with the HYVA original parts.

### BENEFITS

- Seals are delivered in full repair sets, all necessary items come in one set
- The HYVA original parts guarantee the highest quality of the product
- Modular design of HYVA parts is repair friendly keeping the lifetime costs low

### PRESSURE TEST EQUIPMENT

HYVA hydraulic pressure test kits allow to test the pressure of hydraulic systems to diagnose the overall systems and its components. HYVA can offer accurate and reliable equipment which is an essential tool to diagnose and maintain the wetkits.

### BENEFITS

- Ready to use tool
- Basic equipment for diagnostics and maintenance of wetkits
- Safe and reliable tool

### HYVA OIL

HYVA high quality hydraulic oil guarantees an optimal high performance and long life of your hydraulic equipment. Wide ranges of operating oils for different conditions and applications are available to ensure the right oil extending the lifetime of your hydraulic system.

### BENEFITS

- Suitable for wide range of applications
- Prevents pump cavitation
- Additives prevent rust, oxidation and sludge
- High viscosity index
- Maximum film protective lubricity

### AIR AND OIL FILTER CARTRIDGES

To ensure the correct and long lifetime of hydraulic system it is necessary to monitor the quality of oil and its filtration. To achieve this it is very important to replace the filter cartridges periodically. With HYVA filters this replacement is very easy and intuitive, the cost of these parts and its replacement is relatively low compared to the cost of overall system or possible repairs in case of damage due to contaminated oil.

### BENEFITS

- HYVA genuine filters guarantee the highest filtration quality
- The filters are developed to cope with the most demanding work conditions
- High flow capacity
- Easy to replace during maintenance.



## ON- & OFF-HIGHWAY

**HYVA**

### PORTFOLIO

- Tipping Cylinders & Wetkits
- DTS - Digital Tipping Solutions
- Hydraulic Components
- Towing Devices
- Horizontal Loading and Unloading Systems
- Electric Solutions
- Container Handling Systems
- Waste Handling Solutions
- (Ro)loader & Marine Cranes

**HYVA**

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