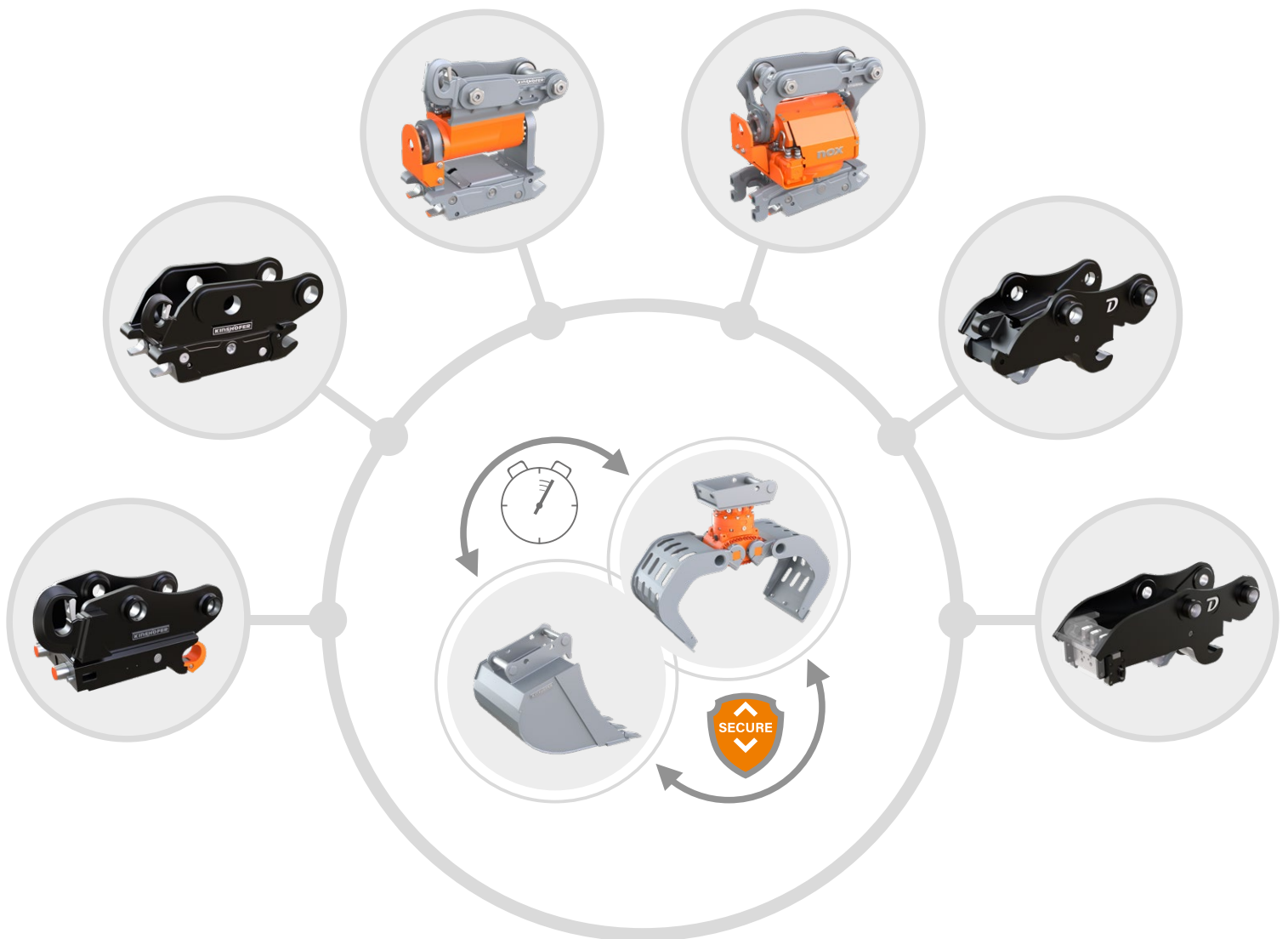




KINSHOFER
crane and excavator attachments

Quick Couplers

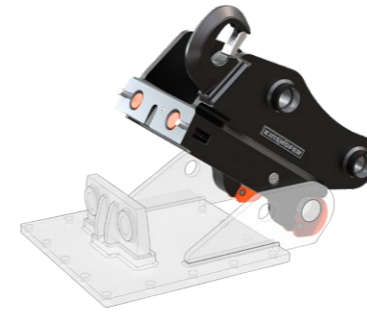


SPECIFIC QUICK COUPLERS

L-LOCK SYSTEM

The L-Lock System was designed to be fully compatible with the known and in nationally adopted Lehnhoff adapters. For maximum reliability, all contact surfaces of the L-Lock quick couplers are machined and therefore lock safely and without unwanted play or movement. The drop stop claws increase the work safety of the hydraulic L-Lock quick couplers during the coupling process.

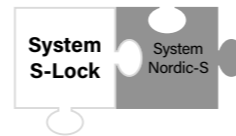
- ▶ KMS-L with mechanical locking system
- ▶ KHS-L with hydraulic locking system and drop stop claws
- ▶ KHS-L+ with hydraulic locking system, drop stop claws and lock indicator / sensors



S-LOCK SYSTEM

The S-Lock System was designed to be fully compatible with the internationally adopted S-Standard adapters. In addition to a specially engineered, centrally located locking mechanism, the S-Lock coupler features a second locking mechanism at the front pin, providing a twin lock system for maximum safety.

- ▶ KMS-S with mechanical locking system
- ▶ KHS-S with hydraulic locking system
- ▶ KES-S with electric locking system

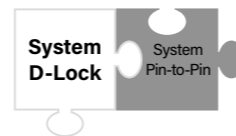


MULTI-FUNCTIONAL QUICK COUPLERS

D-LOCK SYSTEM

The D-Lock System is designed to be compatible with most of the pin-to-pin adapters or the original machine specifics. For maximum security the system not only has a hydraulic main locking system but also an additional mechanic locking for rear and front pin. Therefore the D-Lock System is one of the world's safest quick coupling systems.

- ▶ KHM-D with hydraulic locking system



SYSTEM D-LOCK SMARTFLOW

The SmartFlow System was designed to create a fully hydraulic version of the D-Lock quick coupler. The SmartFlow valve block at the coupler is equipped with oilflow optimized hydraulic valves and a special locking system that absorbs the resulting expansion forces between the valves without transferring them to the D-Lock quick coupler system.

- ▶ KHM-D-SF with fully hydraulic locking system



Functional exchange, depending on the task!

As a global company we know that customers of different regions become familiar with certain styles and characteristics of products, including quick couplers.

We constantly improve our designs for higher productivity and and greater safety and we also understand that customers may already own existing products which require a compatible coupler solution, allowing for their continued use.

We also understand the importance regional differences can make, so we offer a range of product options to suit, derived from two main coupler categories:

SPECIFIC QUICK COUPLERS

With the excavator specific suspension and its compatibel adapter a universal interface is created that converts the excavator into a versatile tool carrier. The L-Lock and S-Lock Systems can be defined by the following features:

- ▶ Fully compatible with the original quick coupler systems or standards.
- ▶ Safe mechanic or hydraulic locking options available.
- ▶ Use of robust and durable cast housings.
- ▶ Fully complies with all applicable national and international standards and regulations including machine guideline 2006/42/EG, DIN EN 474-1, ISO13031 und SUVA.

MULTI-FUNCTIONAL QUICK COUPLERS

With the multi-functional locking system you create a universal connection that is able to pick up and securely lock different excavator specific suspensions and therefore converts every carrier into a multi-functional machine. Our D-Lock and D-Lock SmartFlow System:

- ▶ Dual pin lock, front and rear pin are secured
- ▶ Picks up attachments with different pin distances and diameters.
- ▶ Safety system does not rely on gravity.
- ▶ Fully complies with all applicable national and international standards and regulations including machine guideline 2006/42/EG, DIN EN 474-1, ISO13031 und SUVA.

System L-Lock

FUNCTION:
HYDRAULIC LOCKING SYSTEM

The hydraulic quick coupler enables efficient and safe attachment mounting without the need to manually adjust the coupler itself. The conical locking pins provide a tight, accurate fit without any unwanted movement or play.

LOCKING:
SAFE LOCKING MECHANISM

KHS01L bis KHS03L / KHS01L+ bis KHS03L+ :
Mechanical locking via spring force; hydraulic unlocking via single-acting hydraulic cylinder.

KHS03L-HD bis KHS25L / KHS03L HD+ bis KHS25L+ :
Hydraulic locking / unlocking via double-acting hydraulic cylinder with check valve.



STRUCTURE:
ROBUST CAST IRON BODY

The excavator specific suspension is welded onto the robust cast iron body. Afterwards all contact surfaces are mechanically machined. A load hook is optionally available.



SAFETY:
DROP STOP

The drop stop (extended quick coupler claws) prevents the attachment from falling down if the quick coupler is accidentally not locking properly. The KHS-Control shows the respective state and manages the locking and unlocking.

LOCK INDICATORS KHS+

To increase safety even further, the KHS+ versions are additionally equipped with a special indicator system that reliably shows proper locking (lock indicator or sensors, depending on size).



KHS01L+ to KHS08L+



KHS10L+ to KHS25L+

Hydraulic quick coupler KHS-L

Type	Tonnage
KHS01L & KHS01L+	0,5 - 2t
KHS03L & KHS03L+	1,5 - 5,5t
KHS03L HD & KHS03L HD+	4,8 - 6,5t
KHS08L & KHS08L+	6 - 12t
KHS10L & KHS10L+	10 - 19t
KHS21L & KHS21L+	19 - 28t
KHS25L & KHS25L+	26 - 34t



The suitable KHS-Control provides more safety and precision

FUNCTION:
MECHANICAL LOCKING SYSTEM

An automatic spring-locking system makes picking up attachments much easier. A simple socket wrench is used to lock and unlock as necessary. The conical locking pins take care of a force-fit and playfree connection.

LOCKING:
SAFE LOCKING MECHANISM

KMS01L to KMS03L: Easy and safe locking via socket wrench.

KMS08L to KMS25L: Fast, easy and safe locking via socket wrench. Long life cycle because of permanent engagement force by spring.



STRUCTURE:
ROBUST CAST IRON BODY

The excavator specific suspension is welded onto the robust cast iron body. Afterwards all contact surfaces are mechanically machined. A load hook is optionally available.



SAFETY:
OVER CENTER LOCKING

KMS01L to KMS03L: Self-locking mechanism inside a sealed body.

KMS03L to KMS25L: High functional reliability, spring-force system locks over center.



KMS01L to KMS03L



KMS08L to KMS25L

Mechanical quick coupler KMS-L

Type	Tonnage
KMS01L	0,5 - 2t
KMS03L	1,5 - 6,5t
KMS08L	6 - 12t
KMS10L	10 - 19t
KMS21L	19 - 28t
KMS25L	26 - 34t

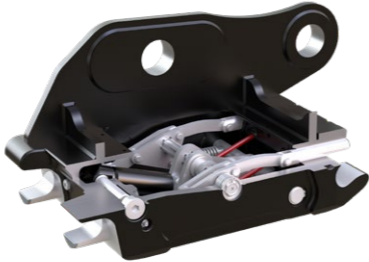
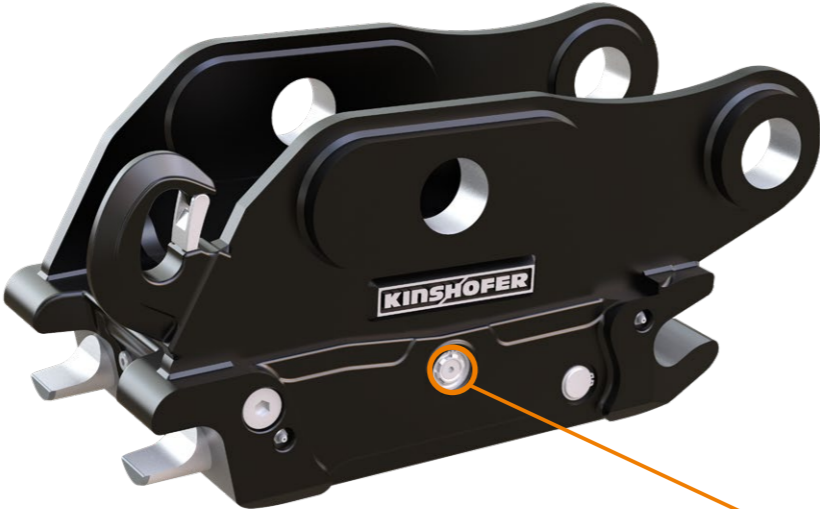
System S-Lock

FUNCTION:
HYDRAULIC LOCKING SYSTEM

The hydraulic quick coupler enables efficient and safe attachment mounting without the need to manually adjust the coupler itself. The spring loaded locking pins provide a tight, accurate fit without any unwanted movement or play.

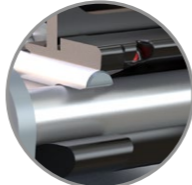
LOCKING:
SAFE LOCKING MECHANISM

Hydraulic locking and unlocking via double-acting hydraulic cylinder that locks with a special locking system over dead center. Permanent mechanical locking caused by spring force.



STRUCTURE:
ROBUST CAST IRON HOUSING

The excavator specific suspension is welded onto the robust cast iron body. Afterwards all contact surfaces are mechanically machined. A load hook is optionally available.



SAFETY:
ADDITIONAL LOCKING AT FRONT PIN

Besides the special locking system, the additional front pin is secured mechanically, preventing accidental release of the attachment.

Hydraulic quick coupler KHS-S

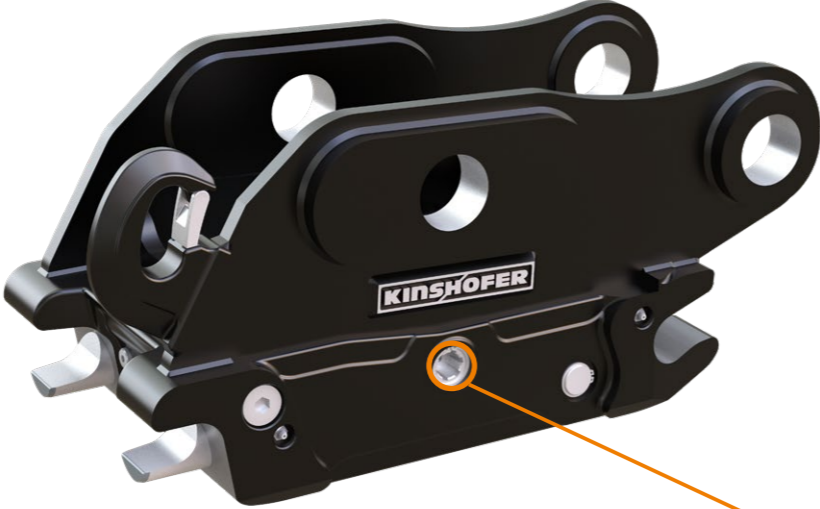
Type	Tonnage
KHS30S-150	0,5 - 2t
KHS30S-180	0,5 - 2t
KHS40S	2 - 6t
KHS45S	6 - 11t
KHS50S	6 - 11t
KHS60S	10 - 18t
KHS70S	18 - 30t

FUNCTION:
MECHANIC LOCKING SYSTEM

An automatic spring-locking system makes the picking up of the attachment easier. A simple socket wrench is used to lock and unlock as necessary. The conical locking pins take care of a force-fit and playfree connection.

LOCKING:
SAFE LOCKING MECHANISM

Fast, easy and safe locking via socket wrench. Long life cycle thanks to a spring generated force providing a permanent engagement.



STRUCTURE:
ROBUST CAST IRON HOUSING

The excavator specific suspension is welded onto the robust cast iron body. Afterwards all contact surfaces are mechanically machined. A load hook is optionally available.



SAFETY:
OVER CENTER LOCKING

High functional reliability, spring-force system locks over center. Besides the special locking system the front pin is additionally secured mechanically. The attachment cannot fall down.

Mechanical quick coupler KMS-S

Type	Tonnage
KMS30S-150	0,5 - 2t
KMS30S-180	0,5 - 2t
KMS40S	2 - 6t
KMS45S	6 - 11t
KMS50S	6 - 11t
KMS60S	10 - 18t
KMS70S	18 - 30t

System D-Lock

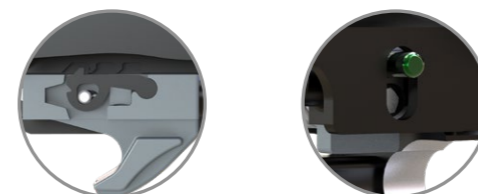
FUNCTION:
HYDRAULIC LOCKING SYSTEM

The hydraulic quick coupler enables an efficient and safe mounting of the attachments without manual work at the coupler itself - allowing attachments with variable pin distances and diameters to be picked up.



STRUCTURE:
ROBUST CAST IRON HOUSING

The excavator specific suspension is welded onto the robust cast iron body. Afterwards all contact surfaces are mechanically machined. Load hook or lifting eye are optionally available.



LOCKING:
SAFE LOCKING MECHANISM

Hydraulic locking and unlocking via double-acting hydraulic cylinder that moves a sliding jaw. Because of the long stroke of the cylinder, different pin distances can be locked in a safe and force-locked way.



SAFETY:
ADDITIONAL LOCKING AT FRONT PIN

The front pin is automatically locked by the moving cylinder. If the cylinder fails for any reason, the locking paws click into the slots on either side of the sliding jaw. Multi-slots cater for wide pin center range.

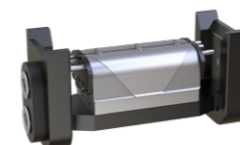
FUNCTION:
HYDRAULIC LOCKING SYSTEM

A hydraulic valve bank with special hydraulic valves at the quick coupler and the respective attachment enables an efficient and safe assembly of the attachments without manual work at the coupler itself. The excavator turns into a multifunctional tool carrier.



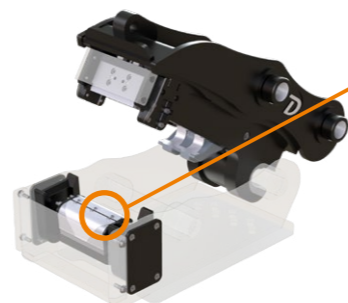
STRUCTURE:
FLEXIBLE BEARING

All parts are unified to guarantee a simple service. The valve block on the attachment side is flexibly mounted, providing for an arched coupling.



LOCKING:
SAFE LOCKING MECHANISM

The valve banks at coupler and attachment side are locked by a special locking system that absorbs the resulting expansion forces between the valves without transferring them to the quick coupler.



SAFETY:
OPTIONAL DIRT PROTECTION ATTACHMENT SIDE

The hydraulic valves and the valve block at the attachment side are protected from dirt and damage by a cover plate. The solid hydraulic valves can be coupled under pressure without being damaged.

Hydraulic quick coupler KHM-D

Type	Tonnage
KHM10-D	1 - 1,6t
KHM20-D	1,7 - 2,5t
KHM30-D	2,6 - 3,5t
KHM50-D	4,0 - 5,5t
KHM80-D	5,6 - 8,0t
KHM140-D	12 - 14t
KHM190-D	15 - 19t
KHM230-D	19 - 24t
KHM280-D	25 - 29t
KHM350-D	30 - 35t
KHM450-D	36 - 45t

Hydraulic locking system SmartFlow

Type	Tonnage
KHM100-D-SF	6 - 10t
KHM140-D-SF	10 - 14t
KHM190-D-SF	14 - 19t
KHM230-D-SF	18 - 23t
KHM280-D-SF	22 - 28t
KHM350-D-SF	28 - 35t

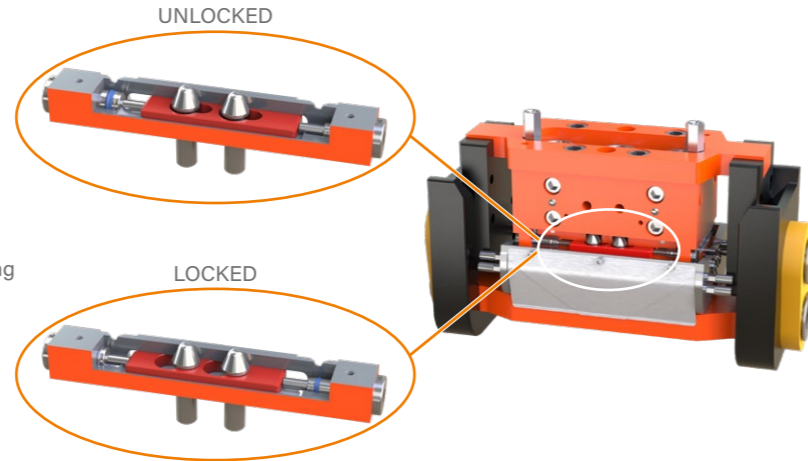
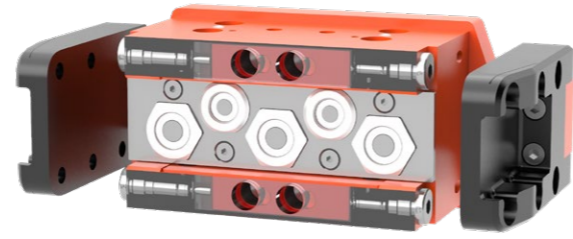
SMARTFLOW Overview

FUNCTION:
MULTIFUNCTIONAL COUPLING SYSTEM

The hydraulic coupling block enables a safe and efficient connection of the hydraulic circuits without manual intervention. The excavator thus becomes a multifunctional carrier machine.

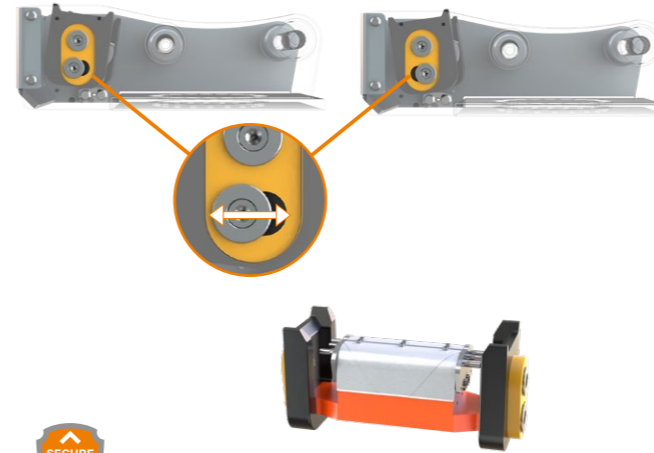
LOCKING:
SAFE LOCKING MECHANISM

The coupling blocks on the quick coupler and on the attachment are securely locked together by an internal and independent locking system. The locking plate is hydraulically moved into the corresponding locking position and held securely at this point.



STRUCTURE:
FLEXIBLE BEARING

The flexible mount of the hydraulic block compensates tolerances and eliminates wear. The robust guide blocks enable curved coupling even under the smallest radii.



SECURE
SAFETY:
OPTIONAL DIRT PROTECTION ATTACHMENT SIDE

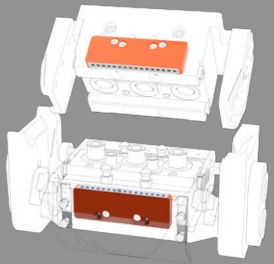
The hydraulic valves and the valve block on the attachment side are protected from dirt and damage by cover doors. They are opened automatically during the coupling process and close by spring force during disconnection.

Fully hydraulic coupling system SMARTFLOW

The fully hydraulic quick coupling system SmartFlow makes changing all attachments easy, safe and fast. The operator conveniently changes all tools including their hydraulic connection at the push of a button from the cab. The separate locking of the valve blocks means that no forces are transferred to the quick-change system, which ensures a long service life. Automatic hydraulic connections with up to 5 hydraulic couplings enable high flow rates (up to 380l/min).

ELECTRIC COUPLING

With the optionally retrofittable electric coupling, the attachment is automatically supplied with power in addition to the hydraulics. The electric coupling is equipped with 16x10AMP connections and divided into 4x4 segments. For example, sensors, CAN bus systems or the tiltrotator control can be operated.



SMARTFLOW Adaptions

HYDRAULIC BLOCK WITH 2 VALVES

A hydraulic hammer for example needs 2 valves for the main functions.



HYDRAULIC BLOCK WITH 4 VALVES

A grab for example needs 2 valves for the main function and 2 valves for the rotation.



OPTIONAL DIRT PROTECTION

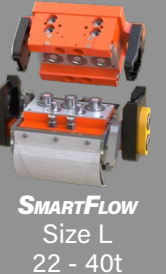
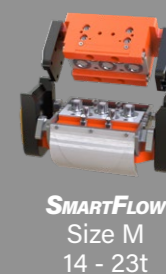
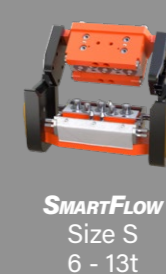
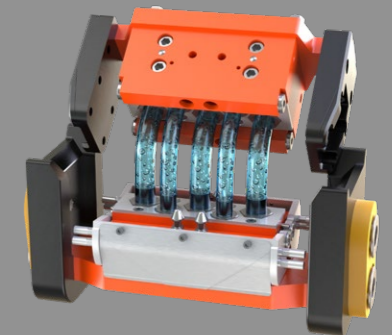
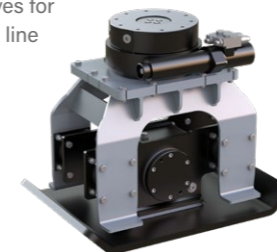
HYDRAULIC BLOCK WITH 3 VALVES

A drum cutter for example needs 2 valves for the main function and 1 valve for the drain line.



HYDRAULIC BLOCK WITH 5 VALVES

A compactor for example needs 2 valves for the main function, 1 valve for the drain line and 2 valves for the rotation.



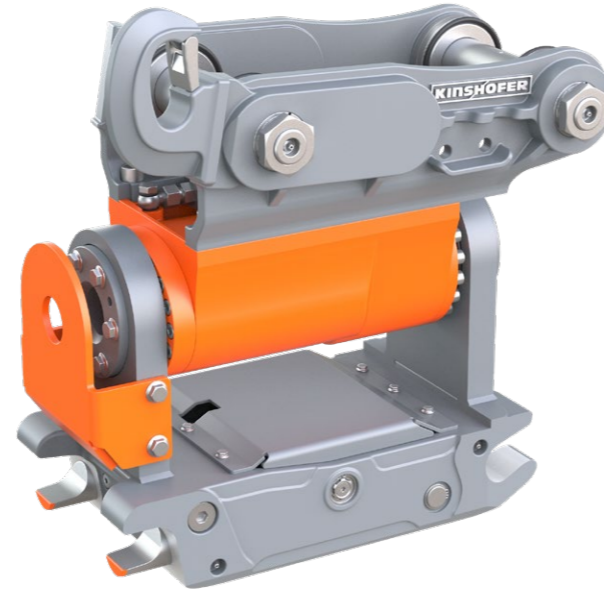
Tilt Couplers

FUNCTION:
PATENTED ROTARY ACTUATOR

The Kinshofer TC Tilt Couplers provide a tilting angle of up to 180°, increasing the flexibility and efficiency of all attachments to a maximum.

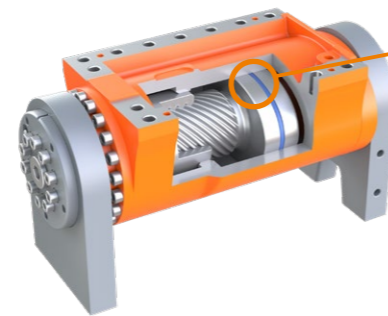
LOCKING:
MAXIMUM FLEXIBILITY

A respective RSV-Kit (non-return valve set) is optionally available. A counter-balance valve mounted to the motor retains a secure position for the tilt coupler across the angle.



STRUCTURE:
COMPACT DESIGN

The tilt couplers provide a highly compact design, featuring minimal height and low weight. An elliptic piston creates a high and constant tilting torque in both directions. The upper suspension is bolted onto the rotary actuator and therefore provides maximum flexibility.

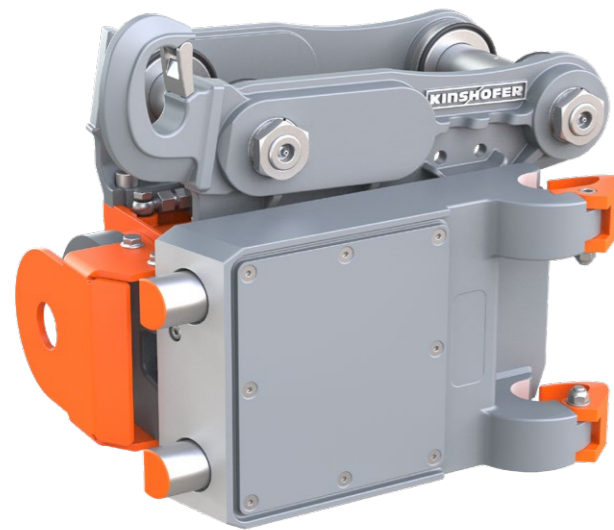


SAFETY:
SERVICE FRIENDLY

The rotary actuator is completely sealed. All components run in a permanent oil bath, providing for low maintenance operation. The robust housing guarantees a long service life.

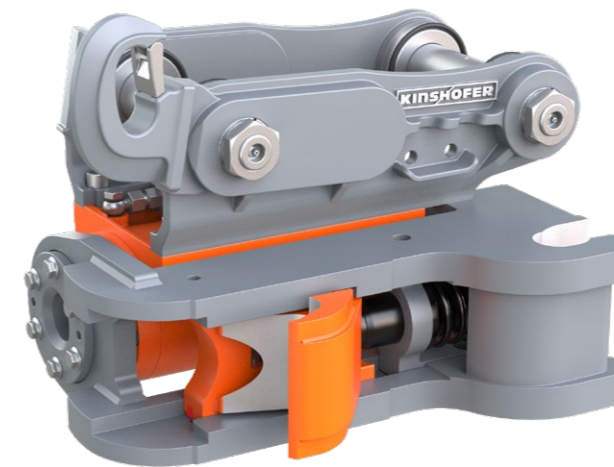
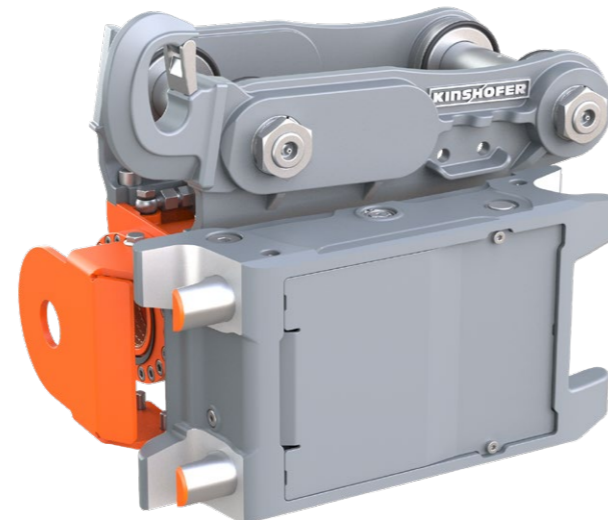
Tilt coupler TC

Type	Tonnage
TC02	1 - 2t
TC03	2 - 2,9t
TC05	2,4 - 5t
TC07	4,3 - 7t
TC10	6 - 10t
TC14	8,6 - 14t
TC19	12,1 - 19t
TC23	16,7 - 23t



TC10-L 90° TILTED:
TILT COUPLER WITH SYSTEM L-LOCK

TC10-S 90° TILTED:
TILT COUPLER WITH SYSTEM S-LOCK



TC10-D 90° TILTED:
TILT COUPLER WITH SYSTEM D-LOCK

Up to 90°-flexibility TC

The Kinshofer quick coupling systems L-Lock, S-Lock and D-Lock are also available as tiltable versions.

Additional quick coupler systems are also available.

The upper suspension is bolted onto the rotary actuator and therefore provides maximum flexibility.

Tiltrotators

FUNCTION:
MULTIFUNCTIONAL ALLROUNDER

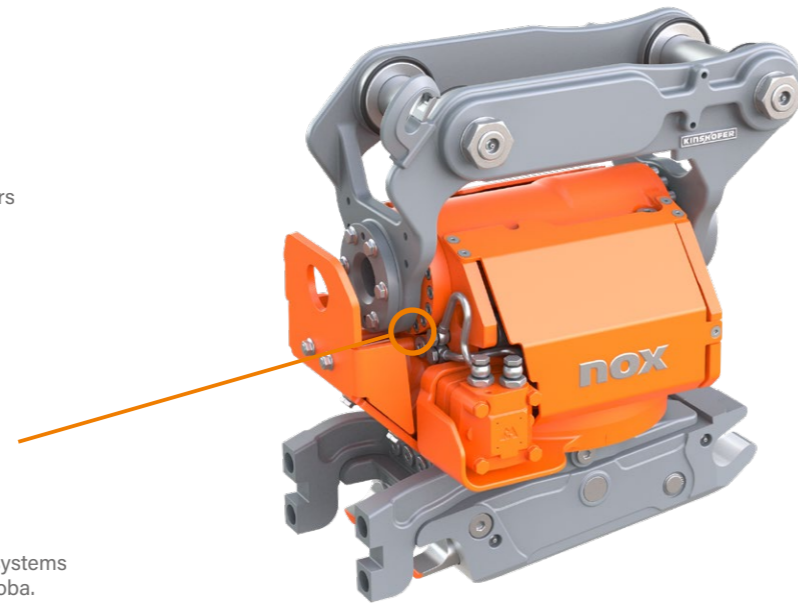
The NOX Tiltrotator is one of the most advanced tools for excavators from 3t to 25t operating weight.

A 360° continuous rotation and tilting angles of 2 x 50° make it a universal joint.



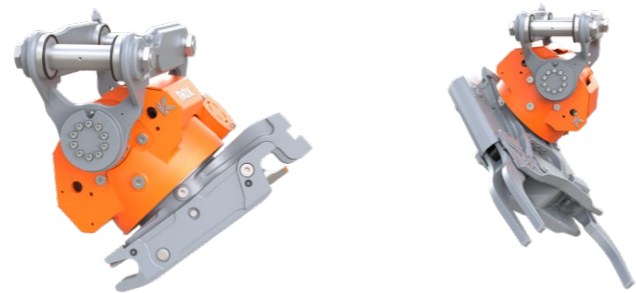
ROTATION & TILT SENSORS

- ▷ Geometry overview
- ▷ NOXPROP autocalibration
- ▷ Support for 2D/3D excavating systems e.g. Leica, Trimble, Topcon & Moba.



LOCKING:
MAXIMUM FLEXIBILITY

Of course all tiltrotators can be equipped with all other Kinshofer quick couplers: L-Lock, S-Lock and D-Lock. Other quick coupling systems are also available.



OPTIONAL: GRIPPER

STRUCTURE:
COMPACT DESIGN

This cylinderless solution features a very compact design with a narrow width and without any protruding parts. The patented tilting function is provided by the elliptic piston design with only one thread. Due to the closed system, the risks of damages are reduced and the tilting force is constant.



SAFETY:
SERVICE FRIENDLY

The flexible tool is extremely service friendly as there are only two greasing points, less wear parts, the hydraulics are integrated into the solid cast housing, and the entire installation can be realized easily. The extremely wear resistant worm gear has its own lubrication and is therefore lowering maintenance

Tiltrotators TR-NOX

Type	Tonnage
TR06NOX	3 - 6t
TR07NOX	4 - 7t
TR11NOX	6 - 11t
TR14NOX	10 - 14t
TR19NOX	14 - 19t
TR25NOX	19 - 25t



TOUCHSCREEN:
ERGONOMIC CONTROL UNIT

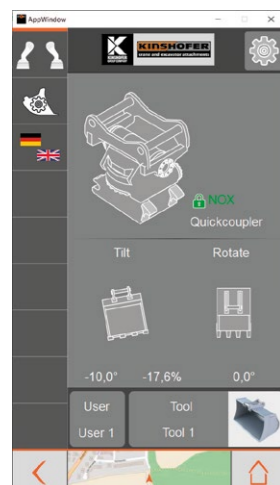
- ▷ Highly bright display - legible even at direct sunlight
- ▷ Easy switch between different profiles
- ▷ Locking/unlocking of quick coupler
- ▷ Sensor control of the quick coupler
- ▷ Tool profile settings
- ▷ Adjustment of single function speed
- ▷ Reliable ram mount



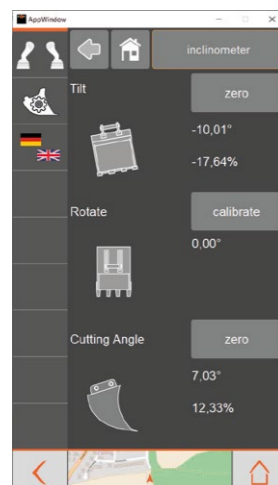
NOXProp+ Touchdisplay



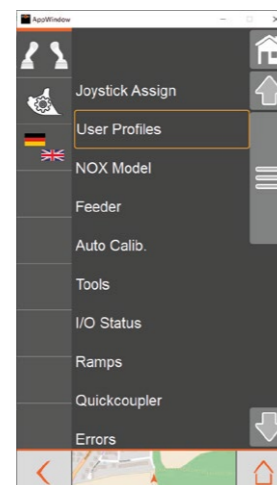
NOXProp Control unit



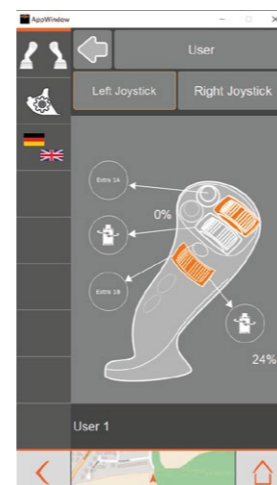
Home display attachment & quick coupler



Geometry overview of attachment and interface to 2D/3D systems



Easy and logical menu navigation



Individual function configuration of joystick buttons



STANDARD JOYSTICK FRONT



STANDARD JOYSTICK BACK

Control system NOXProp (CSP)

Although this control system only requires one hydraulic function from the excavator, all Tiltrotator functions can be used at the same time. Also functions like steering/driving control, boom swing and dozer blade etc. can be controlled optionally. All functions are controlled proportionally and a separate control system is installed at the excavator. The joysticks of the machine will be replaced by new joysticks provided by KINSHOFER.

The NOXProp+ control system provides more safety and precision. NOX Tiltrotator, quick coupler and attached tools are controlled effectively and conveniently with ergonomic joysticks by the smart NOXProp+. Easily retrofittable for each excavator.

Features are the individual function setting and the easy menu navigation thanks to the corresponding touchscreen. Integrated GPS, LTE, Bluetooth and WiFi link your machine with the digital workplace.

In combination with our SmartTag, the connection with the fleet management is realized for maximum integration and effectivity.

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