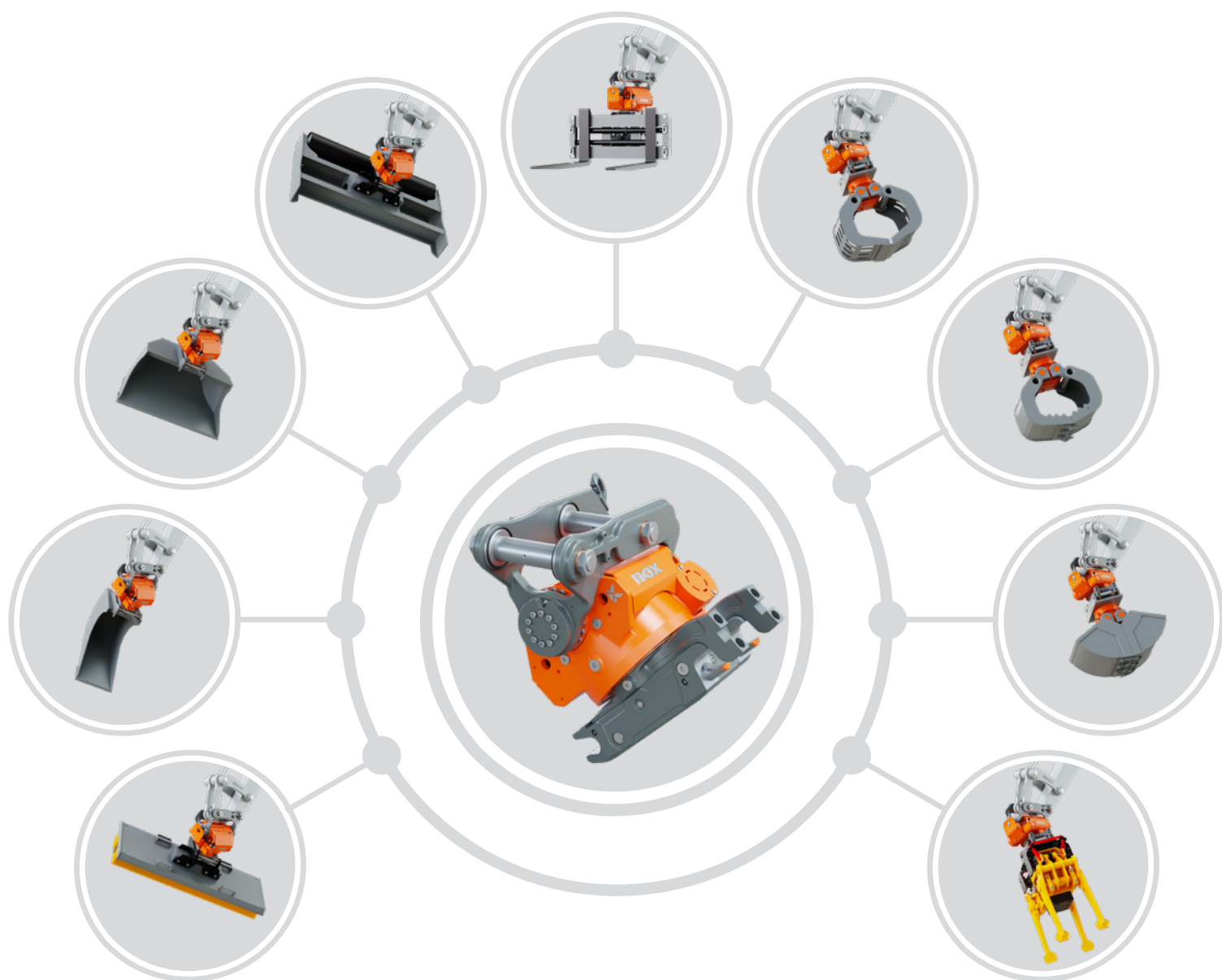




KINSHOFER
crane and excavator attachments

noX Tiltrotators and Accessories



nox Tiltrotators



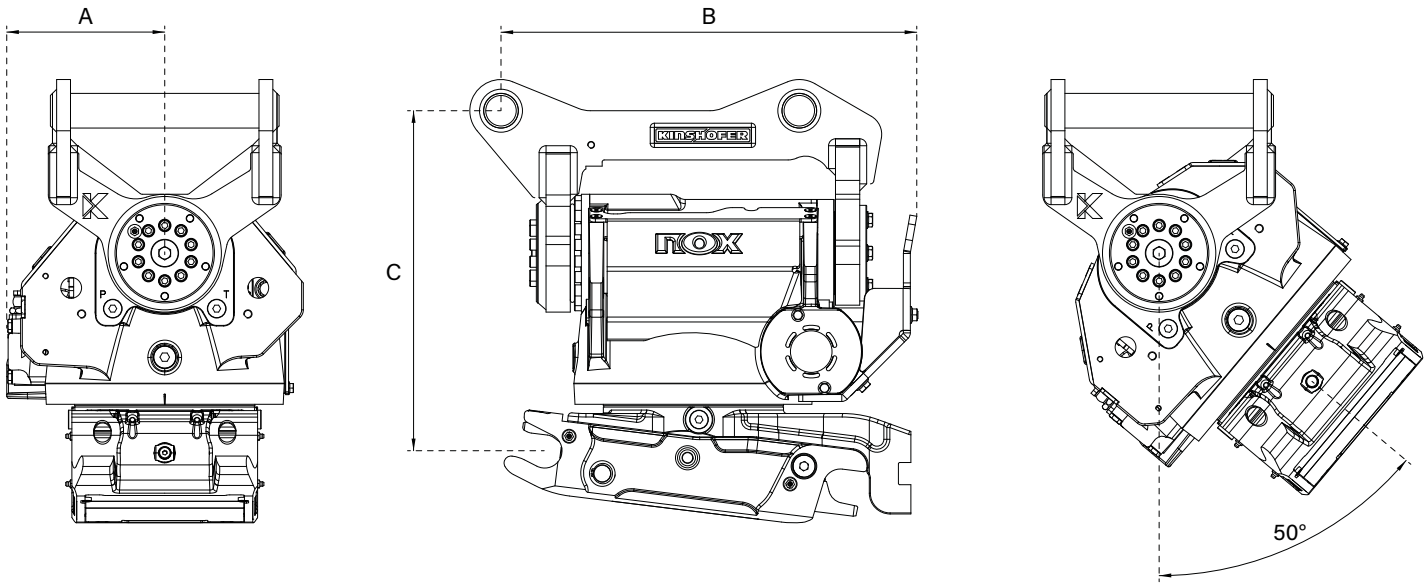
Four Facts about the use of Tiltrotators:

PRODUCTIVITY AND PROFITABILITY: Manage the same amount of work in less time.

SAFETY: The NOX Tiltrotator complies with all current safety regulations and helps the operator and surrounding workforce to achieve an accident-free environment.

VERSATILITY AND FLEXIBILITY: Increase the use of your machine dramatically and accept more jobs. Especially in conjunction with the NOX.

READY FOR THE FUTURE: The NOX tiltrotator comes GPS-ready with its very modern NOXProp+ Control System. The most common 3D Machine Control Systems can be implemented. Even retroactively.



With our NOX Tiltrotator, your attachments can be rotated by 360° continuously and tilted by up to 50° to both sides. Therefore, the efficiency of your machine will be increased dramatically as time and resources will be saved.



TR045NOX



TR07NOX



TR11NOX



TR14NOX



TR19NOX



TR25NOX

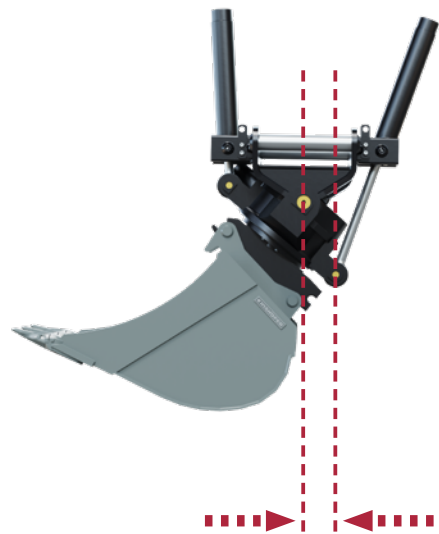
	TR045NOX	TR07NOX	TR11NOX	TR14NOX	TR19NOX	TR25NOX
Operating weight	2.5 - 4.5t	4 - 7t	6 - 11t	10 - 14t	14 - 19t	19 - 25t
Weight* (from)	150 kg	200 kg	320 kg	485 kg	580 kg	860 kg
Width A* (from)	190 mm	205 mm	215 mm	240 mm	230 mm	260 mm
Length B* (from)	435 mm	460 mm	580 mm	610 mm	645 mm	845 mm
Height C* (from)	380 mm	420 mm	475 mm	565 mm	580 mm	650 mm
Recomm. bucket width max.	1,100 mm	1,200 mm	1,300 mm	1,600 mm	1,700 mm	2,000 mm
Breakout force max. (ISO)	40 kN	50 kN	75 kN	110 kN	150 kN	170 kN
Breakout torque max.	29 kNm	40 kNm	79 kNm	145 kNm	200 kNm	250 kNm
Tilt angle	2 x 45°	2 x 50°	2 x 50°	2 x 50°	2 x 50°	2 x 50°
Tilt torque (constant)	6.5 kNm	11 kNm	16 kNm	31 kNm	40.5 kNm	51.7 kNm
Rotation speed	8.5 per min	8.5 per min	8.5 per min	8.5 per min	8.5 per min	8.5 per min
Rotation torque	3,800 Nm	4,700 Nm	7,500 Nm	11,000 Nm	12,000 Nm	15,000 Nm
Hydraulic pressure max.	21 MPa	25 MPa	27 MPa	30 MPa	30 MPa	30 MPa
Recomm. pump capacity CSP	30-80 l/min	30-80 l/min	40-100 l/min	80-160 l/min	100-180 l/min	120-200 l/min
Recomm. pump capacity DF04/06/10	15 / 32 l/min	15 / 32 l/min	21 / 40 l/min	40 / 45 l/min	60 / 50 l/min	70 / 70 l/min
Electric swivel	-	optional	optional	optional	optional	optional

*Specifications depend on the machine configuration (upper bracket and lower quick coupler)

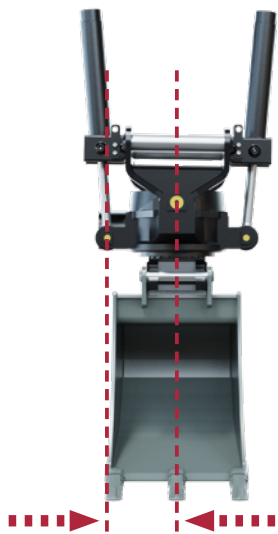


2 YEARS WARRANTY
NOX TILTROTATORS

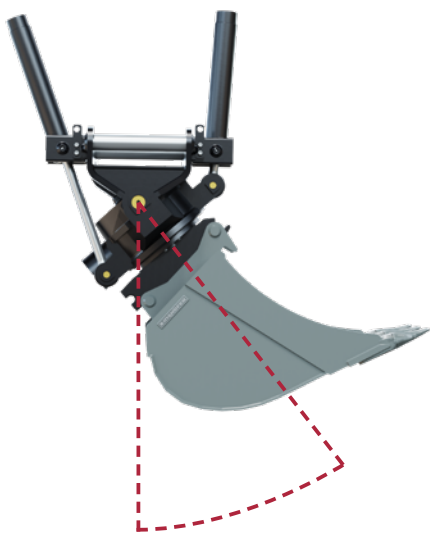
It is our goal that you can always rely on your attachment and make you feel confident of its quality and longevity. KINSHOFER stands for attachments of highest quality. All our employees and our quality management are committed to this quality every day. We are confident of the quality level we provide and therefore grant a 2-year-standard-warranty. Enjoy working with them and experience and create quality.



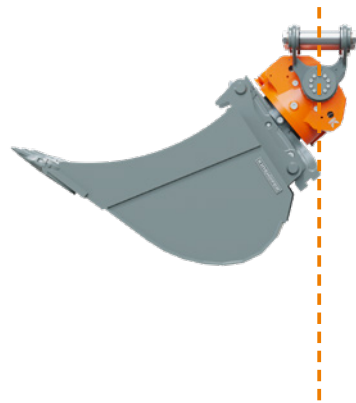
TILTROTATOR WITH CYLINDERS
Minimum pivot point distance



TILTROTATOR WITH CYLINDERS
Maximum pivot point distance



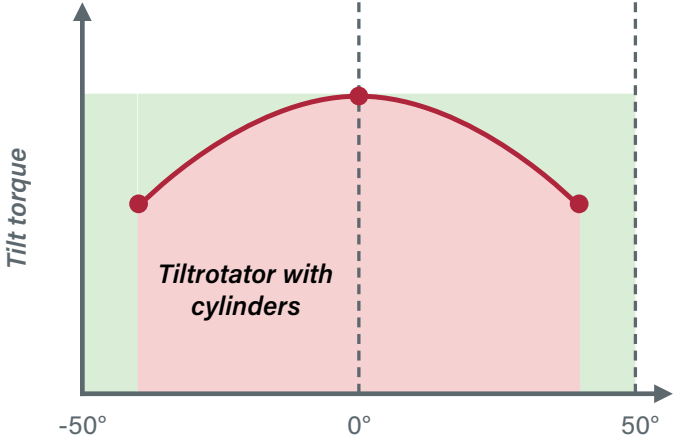
TILTROTATOR WITH CYLINDERS
Narrow tilt angle



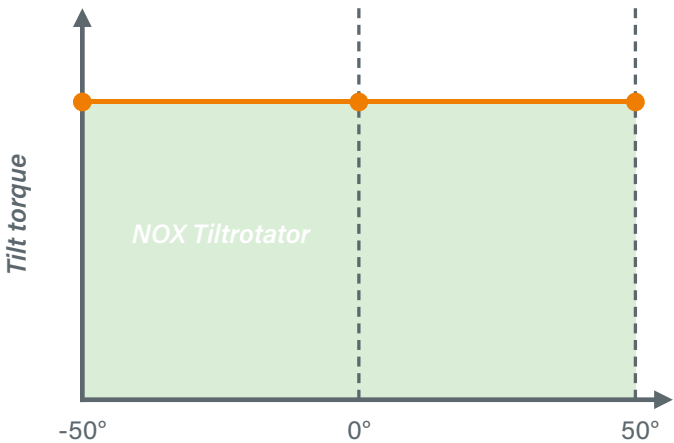
NOX TILTROTATOR
No pivot point, therefore high and constant tilt torque



NOX TILTROTATOR
Maximum tilt angle (max. 2 x 50°)



Elliptic piston

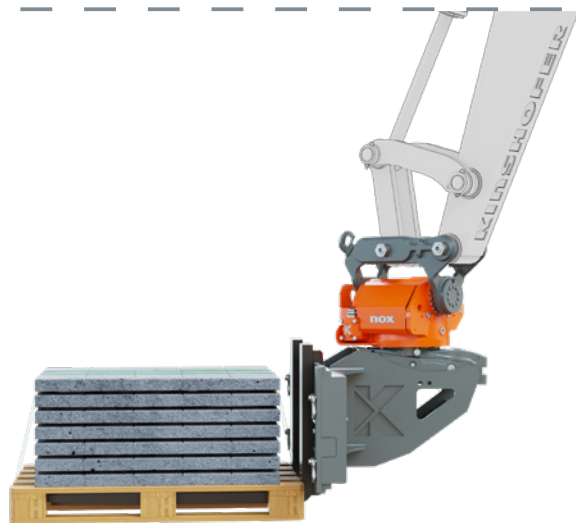


nox Tilt torque

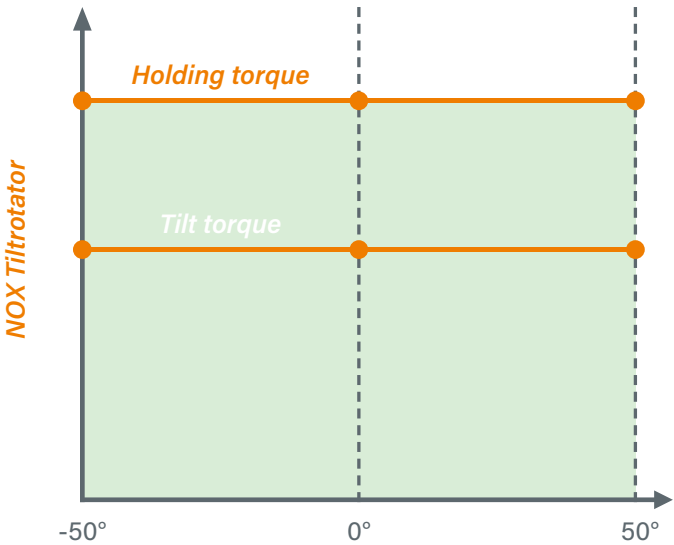
The cylinderless, extremely flat drive provides for a very low height as well as a narrow width. An elliptic piston generates a high and constant tilt torque thanks to its single gearing. The robust cast housing features a high stability due to a special material alloy, guaranteeing a long life even under the toughest conditions. The extremely rugged and strong drive for difficult tasks has a proper greasing and is thus low-maintenance.

nox Tilt angle

360° continuous rotation and up to 2 x 50° tilt angle turn your machine into a multifunctional allrounder, increasing the flexibility and efficiency of all your attachments.



NOX TILTROTATOR
Pilot check valve ensures a high holding torque



nox Holding torque

The NOX Tiltrotators are equipped with counter-balance valves, providing firm load holding in the desired position.

nox Tiltrotator

SYSTEM:
UPPER BRACKET & LOWER QUICK COUPLER

The Tiltrotator can be mounted directly to the excavator arm (direct mount) or it can be "Sandwich" mounted to the excavator by a quick coupler. Preferably, the excavator coupler is the same as the lower quick coupler on the NOX Tiltrotator, but it is not necessarily required. The Tiltrotator can thus be uncoupled and coupled again in no time. The lower quick coupler allows for a safe and fast exchange between attachments.



DESIGN:
SELF-CONTAINED UNIT

The compact design with its fully integrated tilt and rotation unit provides highest safety against damage. There are no protruding cylinders or piston rods that can be damaged, increasing the reliability of the NOX. In addition, the low design maintains higher breakout forces of the machine.

SET-UP:
COMPACT DESIGN

The cylinderless, extremely low and narrow built drive unit allows for very narrow bucket width, that are usually not wider than the excavator boom. Therefore, digging down in deep trenches becomes possible and very easy.

SAFETY:
SAFE WORKING AREA

The increased working radius reduces the need for repositioning your excavator to a minimum. Manual works such as manual digging in the danger zone by a co-worker are not necessary, as these works can be managed from the excavator cabin with the NOX Tiltrotator. The S-Lock quick coupler with front-lock prevents the attachments from falling down unintendedly.

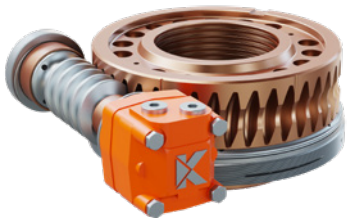
nox Benefits

FLEXIBLE OPERATION
Fast and uncomplicated response to requirements to be more competitive.

HIGHER SAFETY
Manual works within the danger area are reduced to a minimum.

LESS WEAR
The compact and extremely robust design without hydraulic cylinders lowers the risk of damages.

HIGHER EFFICIENCY
Working more efficiently saves consumables and labor costs and reduces the required working times. The tasks can thus be finished faster and the wear is kept to a minimum.



WORM DRIVE
The oversized worm gear absorbs shock loads with ease. The compact diameter and yet high torque ensures a very slim design, hence keeps the overall width of the NOX extremely small.



HOUSING
The robust cast housing features a high stability due to a special material alloy, guaranteeing a long life even under the toughest conditions. The integrated motor cover protects the hydraulic motor of the worm drive from damage from below. The quality of our precision components is ensured by 3D coordinate measuring machines with tactile and optical measuring sensors.



INTEGRATED GRIPPER TRG
With the integrated gripper you get an additional attachment for handling poles, tubes and curb stones. The gripper is integrated at the lower quick coupler and does not affect the height or the attachment cross-movement.

Gripper module also available as attachment version F-H with different adapter systems.



RAILROAD GRIPPER RR-TRG
The RR-TRG gripper has been designed especially for heavy duty tasks, such as gripping railroad sleepers or rails. The extremely strong gripper module has been constructed for efficient gripping at a 40° angle. The gripper unit can be removed quickly and easily.



Optional accessories



TRG gripper



RR-TRG gripper



Type	Opening	Closing time	Closing force	Capacity
TRG07	424 mm	1.5 sec.	7.5 kN	300 kg
TRG11	644 mm	1.5 sec.	10 kN	500 kg
TRG19	825 mm	3.0 sec.	18.5 kN	900 kg
TRG25	1,050 mm	2.0 sec.	19.5 kN	1,400 kg
RR-TRG	822 mm	3.9 sec.	30.1 kN	5,000 kg

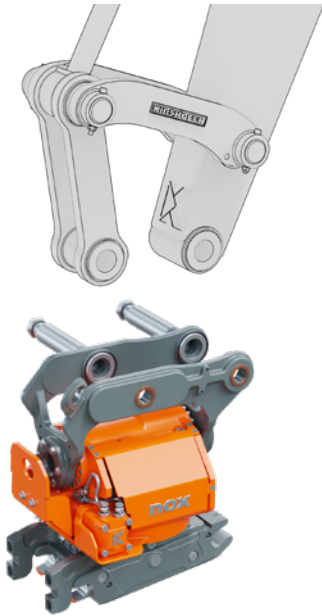
The RR-TRG gripper is only available for TR19NOX and TR25NOX.

MOUNTING TO EXCAVATOR ARM

When mounting the NOX Tiltrotator directly to the excavator dipper, the tiltrotator can use its maximum force. The "Sandwich" mounted Tiltrotator features a quick coupling adapter at the top to accept pick up by the machine coupler.

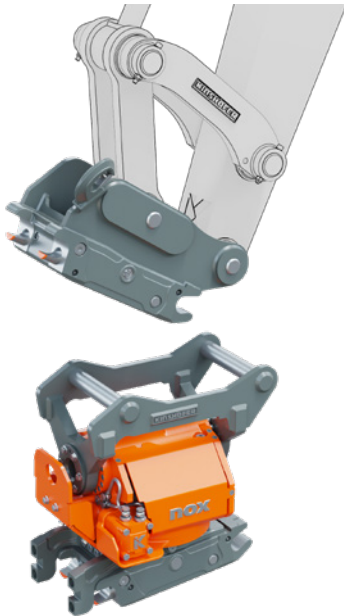
DIRECT MOUNT

- > Lower height
- > Higher force transmission



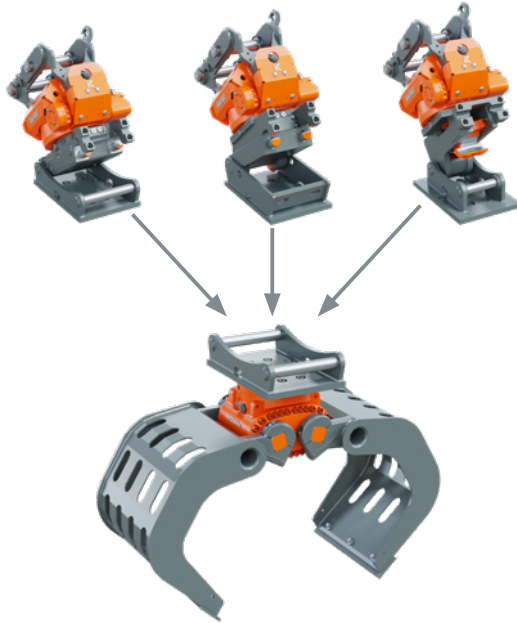
"SANDWICH"-STYLE MOUNT

- > Can be used with different excavators of the same class
- > Can be uncoupled to use attachments that do not require a Tiltrotator



QUICK CHANGE ADAPTATIONS:

COMPATIBLE ADAPTATIONS FOR YOUR REQUIREMENTS
All attachments can be supplied with the compatible L-Lock, S-Lock or D-Lock adaptors. To ensure compatibility with your existing systems, Kinshofer also offers adaptations for all common quick change systems.

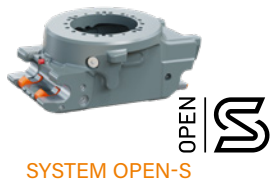


**Functional exchange,
depending on demands!**

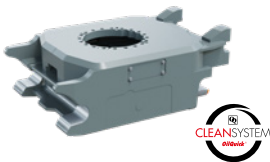
As a global company we know that customers of different regions become familiar with certain styles and characteristics of products, including quick couplers.

We constantly improve our designs for higher productivity and greater safety and we also understand that customers may already own existing products which require a compatible coupler solution to keep on using them. We are generally differentiating between three different quick coupler systems:

**FULLY HYDRAULIC
QUICK COUPLER SYSTEM**



SYSTEM OPEN-S



SYSTEM OILQUICK



SYSTEM LIEBHERR &
SYSTEM LIEBHERR + LIKUFIX

**HYDRAULIC
QUICK COUPLER SYSTEM**



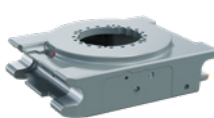
SYSTEM S-LOCK



SYSTEM L-LOCK



SYSTEM D-LOCK



SYSTEM OILQUICK



SYSTEM VERACHTERT



SYSTEM LIEBHERR

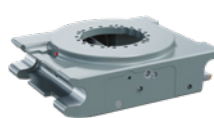
**MECHANIC
QUICK COUPLER SYSTEM**



SYSTEM S-LOCK



SYSTEM L-LOCK



SYSTEM OILQUICK



SYSTEM LIEBHERR

FULLY HYDRAULIC QUICK COUPLERS

Fully hydraulic quick couplers connect the worktool mechanically as well as hydraulically without leaving the cabin. No need to connect hoses anymore.

HYDRAULIC QUICK COUPLERS

The hydraulic quick coupler allows for an efficient and safe mounting of the attachment without leaving the cabin. The spring-pretensioned locking pins provide for a force-fit connection without play. Besides the special spring-locking system, the carrier pin (system S-Lock) is also secured mechanically. The attachment cannot get loose.

MECHANIC QUICK COUPLERS

An automatic spring-locking system facilitates the coupling of the tool. By simply turning a socket, the coupler is opened or closed for the tool exchange. This provides a high functional safety; the spring loaded system is over-center locking. Besides the special spring-locking system, the carrier pin is also secured mechanically.

NOXProp+ & NOXProp
CSP - CONTROL SYSTEM

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.

KEY FEATURES NOXProp+

- Optimal NOX performance thanks to perfectly adjusted control
- Bright and high-definition touchscreen
- Autocalibration
- Position indicator at the display
- 4 different user profiles with up to 10 tool profiles (more flexibility)
- CAN Bus system
- All main settings can be adjusted directly on the touchscreen, no laptop/ smartphone necessary
- Direct mode: When the NOX is disconnected, it is possible to control the original AUX lines in both directions
- Connectivity (WiFi, LTE, GPS, Bluetooth)
- Easy installation
- Integration with 2D/3D excavation system - NOXGeo
- BIM-ready



NOXProp+
TOUCHSCREEN

MACHINE REQUIREMENTS
CSP - NOXProp+ & NOXProp

- Single-acting hydraulic circuit (hammer line)
- Pressure line
- Tank line (free return directly to tank)



NOXProp
CONTROL UNIT

KEY FEATURES NOXProp

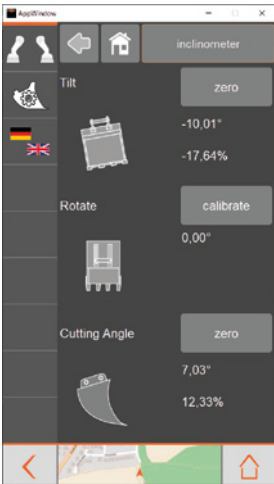
- All functions can be controlled proportionally
- All parameters can be adjusted individually with laptop
- 4 different user profiles with up to 10 tool profiles (more flexibility)
- Direct mode: When the NOX is disconnected, it is possible to control the original AUX lines in both directions.

TOUCHSCREEN:
ERGONOMIC CONTROL UNIT

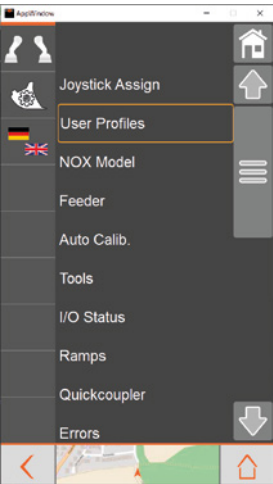
- Highly bright display - legible even at direct sunlight
- Easy switch between different profiles
- Locking/unlocking of quick coupler
- Sensor control of the quick coupler
- Tool profile settings
- Adjustment of single function speed
- Reliable ram mount



Home display
attachment & quick coupler



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



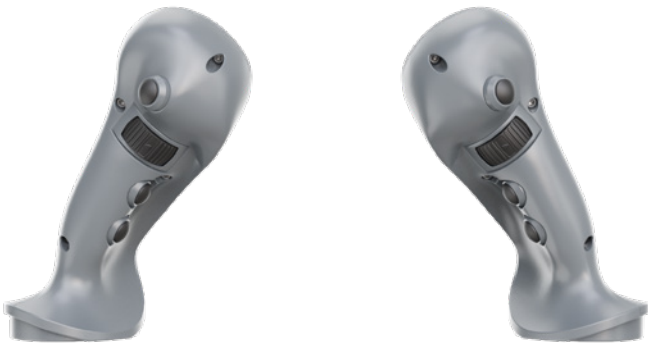
Easy and logical menu
navigation



Individual function
configuration of joystick
buttons



STANDARD-JOYSTICK
FRONT



STANDARD-JOYSTICK
BACK

Joysticks

The L8 is the multifunctional ergonomic joystick grip that has set a new standard with its innovative, functional design. You can control two roller functions simultaneously with your thumb and index finger. Up to three rollers can be installed, two for the thumb and one for the index finger. On the grip there is room for up to nine buttons, meaning that most functions can be gathered in a small area. (Joysticks must be replaced when CSP - NOXProp+ or NOXProp is installed.)

OPTIONALLY EXTENDABLE:



F-N-R
JOYSTICK OPTION



ADDITIONAL PROP
JOYSTICK OPTION



ADDITIONAL PROP &
F-N-R
JOYSTICK OPTION

DF04

CONTROL SYSTEM

The DF04 control system requires 2 double-acting hydraulic circuits. Only two functions, e.g. rotation and tilting, can be realized simultaneously. In order to control the attachment or the quick coupler, one of the two hydraulic circuits is separated by a switch valve, installed on the NOX Tiltrotator. Therefore, up to two extra functions, e.g. quick coupler, can be realized.

MACHINE REQUIREMENTS FOR DF04

- Hydraulic rotation circuit to control the NOX rotation
- Hydraulic circuit with high flow controls tilt, additional functions and quick coupler
- Control system for switch between tilt, additional functions and quick coupler
- One free ON/OFF button at existing joysticks to control the switch between the different functions



DF04 CONTROL UNIT

DF06

CONTROL SYSTEM

The DF06 control system requires 2 double-acting hydraulic circuits for the rotation and tilt movement of the NOX Tiltrotator. For the use of a hydraulic quick coupler, an additional circuit is required. The tilt function can be switched by pressing a button on the joystick to the extra function controlling e.g. the opening and closing of a grab.

MACHINE REQUIREMENTS FOR DF06

- Hydraulic rotation circuit to control the NOX rotation
- Hydraulic circuit with high flow controls tilt and extra function, e.g. grab
- Control system to switch between tilt and extra function
- One free ON/OFF button at existing joysticks to control the switch between tilt and extra function
- Original joysticks remain
- No additional control required - all hydraulic circuits on the excavator
- Each function needs a double-acting hydraulic circuit

DF10

DIRECT FEED SYSTEM

The DF10 control system requires at least 2 double-acting hydraulic circuits for the rotation and tilt movement of the NOX Tiltrotator. Including the lines of the quick coupler function, two other hydraulic circuits, e.g. open/close grab and open/close intergrated gripper, can be connected to the NOX Tiltrotator. Furthermore, an additional drain line can be installed.

MACHINE REQUIREMENTS FOR DF10

- For complete control of the NOX, 4 double-acting hydraulic circuits are required: rotation, tilt, extra function 1 and extra function 2 (gripper), one quick coupler circuit
- Special solution: division of one hydraulic circuit with a switch valve, so two different functions can be controlled by one control circuit. The switch valve has to be installed at an adequate place at the carrier machine or the NOX
- No additional control required - all hydraulic circuits on the excavator
- Original joysticks remain
- No valves or cables on the NOX required
- Each function needs a double-acting hydraulic circuit
- Minimal configuration: 2 hydraulic circuits (tilt and rotation) when mechanical quick coupler and no hydraulic attachment

	NOXProp+	DF04	DF06	DF10
NOXGeo (GPS-ready)	✓	●	●	●
Autocalibration	✓	⊖	⊖	⊖
Angle position indication	✓	⊖	⊖	⊖
Individual operator settings	✓	⊖	⊖	⊖
Individual speed setting	✓	⊖	⊖	⊖
Touchscreen in cabin	✓	⊖	⊖	⊖
Trouble shooting on display	✓	⊖	⊖	⊖
Connectivity tools (Bluetooth, LTE, WiFi)	✓	⊖	⊖	⊖
Fully proportional control	✓	depending on machine	depending on machine	depending on machine
Changing roller position	✓	⊖	⊖	⊖
Individual tool settings	✓	⊖	⊖	⊖
Tilt, rotation & extra in same movement	✓	⊖	⊖	depending on machine
High flow attachment	●	⊖	⊖	●
Quick coupler safety sensors	●	⊖	⊖	⊖
Quick coupler control	✓	⊖	⊖	⊖
Driving/steering function	●	⊖	⊖	⊖
Fleet management	●	●	●	●
Machine assistance systems	●	⊖	⊖	⊖



Standard



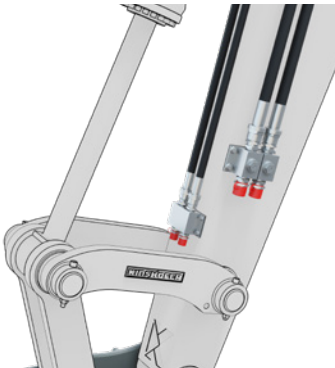
Optional



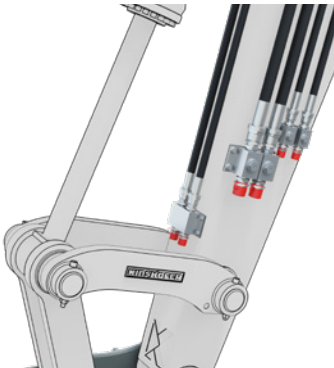
CSP-NOXProp+
HYDRAULIC LINES



DF04
HYDRAULIC LINES



DF06
HYDRAULIC LINES



DF10
HYDRAULIC LINES

DF04, DF06 & DF10
Control systems

Always the right control system depending on the machine’s hydraulic configuration

The table provides a quick overview on the different functions and for which control system they are available. Short summary on machine requirements:

CSP: NOXProp+ Hammer/shear circuit

DF04
2 x proportional double-acting circuits

DF06
2 x proportional double-acting circuits (tilt and rotation)
1 x hydraulic quick coupler circuit

DF10
2 x proportional double-acting circuits (tilt and rotation)
1 x hydraulic quick coupler circuit
1 x double-acting high pressure circuit (compactor)
1 x double-acting low pressure circuit (gripper)

NOXGeo
SENSOR TECHNOLOGY

With the NOXGeo, sensors send position data to the digital control at the NOXprop+ touchscreen in the driver's cabin. Thereby, the attachments are connected to the digital technology of the excavator/ machine control. The NOXGeo system also allows the functionality to interface with 2D/3D systems of all common manufacturers thanks to the open system.

GPS
INTEGRATION OF 2D/3D SYSTEMS

It is possible to integrate various makes of GPS into the NOX control system. Thanks to the GPS you can use the excavator to collect and define points. Connect the computer of the machine via the integrated GSM-modem to get fast support and transfer data. With our 3D-system you can take the last step towards machine control.



TILT SENSOR
TILT MOVEMENT

The exact position of the tiltrotator's tilt movement and the attachment is transferred directly to the control display in the driver's cabin by means of the tilt sensor.



ROTATION SENSOR
ROTATION MOVEMENT

The KINSHOFER rotation sensor shows the exact position of the tiltrotator and the attachment during rotation. The determined data is transferred directly to the control display in the driver's cabin.



NOXGeo
Sensor technology

By means of the sensors, the manual staking out of the work area by a person is reduced, as the precise dimensioning is shown on the display in the driver's cabin. The controlled and exact excavation of the required amount results in large time savings and reduced fuel consumption. Furthermore, the attachments and the carrier wear less.

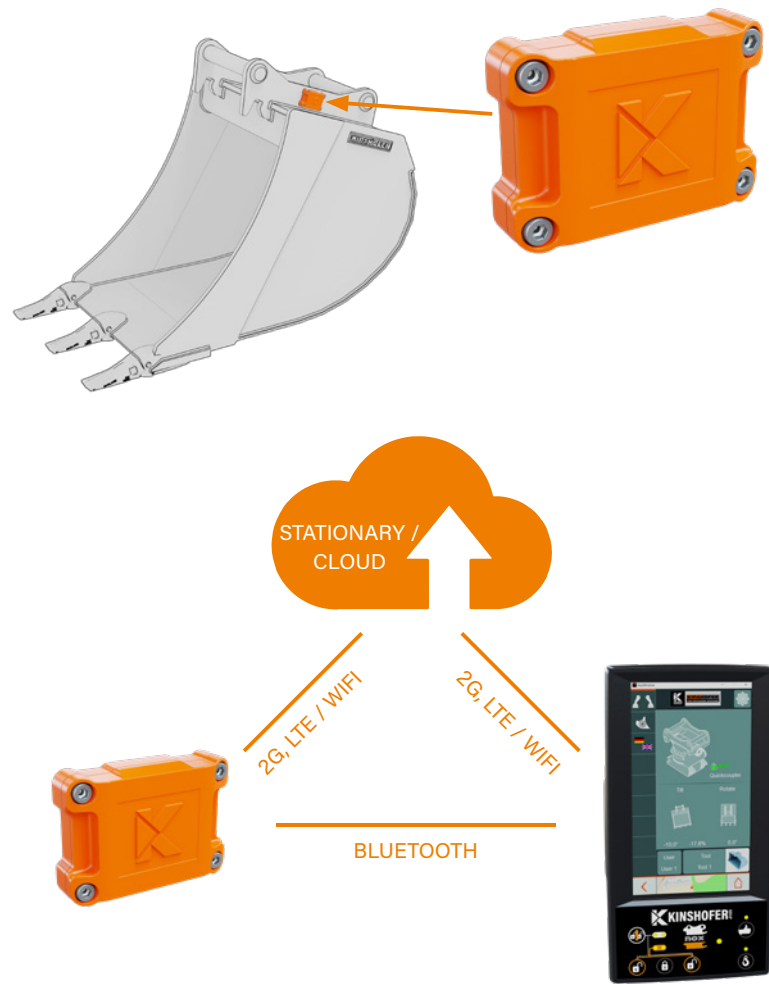
KINSHOFER equips the NOX Tiltrotator with the rotation sensor, the tilt sensor comes from the 2D/3D system provider. In combination with certain excavator systems and makes, the NOXGeo system allows for an auto-turning function.

SYSTEM:
SMARTTAG

The SmartTag is a microcontrol-based tool with a communication functionality via mobile radio and an internal storage to locally back up operating information, error information, etc. The unit only measures 15 cm, it is waterproof, shock resistant, thermo-stable from -25 up to 80 °C, shockproof and has an internal energy supply for approx. 2 years.

NETWORKING:
DATA EXCHANGE

The tool management system consists of a SmartTag at the attachment as well as its interconnection with the terminal and/ or cloud. The SmartTag measures vibrations and positions of the attachment. This information is directly transferred to the cloud via LTE and is thus independent from the machine. From there, the data can be read with every terminal device. The way, frequency and send release of the data exchange can be set individually.



SMARTTAG
FUNCTIONS

GPS-TRACKING
The function GPS-tracking is used to detect the location of an attachment by entitled persons.

DIGITAL TYPE PLATE
The digital type plate provides the identical data as does the mechanical type plate like serial number, name and weight, as well as operating pressure.

PREVENTIVE MAINTENANCE
This function is used for issuing a service recommendation in which a preventive service for the respective attachment will be recommended in order to prevent downtimes.

FLEET MANAGEMENT CONNECTION

ACCELERATION MEASUREMENT
This function of the three-axe acceleration sensors is the detection of the attachment's position as well as of shock values.

BLUETOOTH-CONNECTIVITY
for tool recognition.

THEFT PROTECTION
This function shall be used to find an attachment by locating.

WORKING HOURS
Especially important for rental companies - working hours can be recorded and reported.

SmartTag
Tooltracker

The SmartTag and the cloud-based tool management support the driver and operator with the efficient choice and detection of suitable tools for each special task. Operators have their complete fleet under control and thus avoid downtimes and maximize their tool workload.

The SmartTag combines two up to now separated functions in one sensor: tool detection and tracking. As digital type plate, the tool tracker files information on geometries, name, manufacturer, year, ID and operation (e.g. required operating pressure of attachment). At the same time, it gathers, analyzes and detects operating hours, cycles and work processes. Thank to GPS position and timestamp, you receive data like when and where an attachment had been put down and how it had been used.

LANDSCAPING

The NOX Tiltrotator provides a third dimension, resulting in a reduced need to reposition your carrier machine. Ground damages and subsequent recultivation works are minimized. When laying out a garden or protecting slopes from erosion, the functionality of the NOX strongly shortens the construction time.



ROAD CONSTRUCTION

When constructing roads, time is a crucial factor, but also precision and safety when e.g. levelling grounds, working at embankments or excavating soil. Thanks to the tilt and turn function of the NOX Tiltrotator, all works can be managed safely from the driver's cabin and less manpower is required in the danger area.



CABLE DUCT WORKS

The NOX Tiltrotator enables precise working under, in between or close to already existing cables. By tilting and turning the attachment in the required position, you can reduce manual cable duct works. When maintaining existing cable ducts or installing new ones, works can be realized much more effectively and after all more safely.



GENERAL CONSTRUCTION

Excavation or filling works can be realized precisely thanks to the NOX Tiltrotator with its tilt and turn function. The work can be done within the reach of the excavator arm without repositioning the carrier machine in a faster and more profitable way. The working safety on site is also increased when handling construction material.



RAIL CONSTRUCTION

Thanks to the NOX Tiltrotator, a lot of works that are difficult or impossible in rail construction due to the limited lateral mobility of the carrier machine can be realized. Works under already existing rails or at slopes as well as the exact positioning of sleepers are possible without repositioning the excavator thanks to the tilt and turn function.



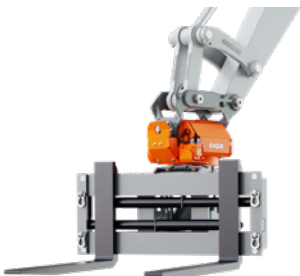
SEWAGE WORKS

Working in sewer systems is characterized by little space and narrow areas. With a NOX Tiltrotator you can easily dig around gully wells or excavate from the required angle without repositioning the excavator. The endless rotation and the tilt angle to both sides allows for the exact positioning of the attachment.



MATERIAL HANDLING

Precise handling of e.g. palletized curbstones is no problem with the NOX Tiltrotator. The high and constant holding torque allows for a safe holding of loads. When operating in narrow areas, loads can be held e.g. around scaffolding or lifted over a fence.

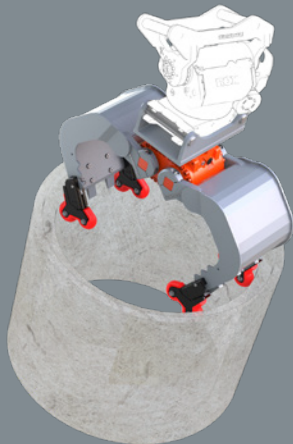


DEMOLITION

The immediate separation of debris at the demolition site saves a lot of time and recycling costs. Some building materials have to be disposed separately and with the NOX Tiltrotator you can separate those precisely from the other materials. After loading the material, the construction site can be cleared with e.g. a brush mounted to the NOX.



nox
*Large variety of
KINSHOFER attachments*

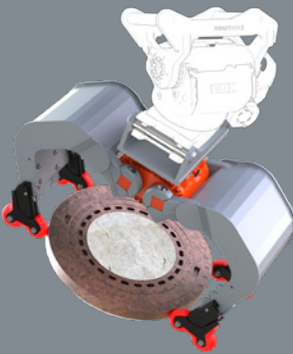


4-Grip

Easy mounting - easy handling of your tasks: that is our new 4-Grip for our demolition and sorting grabs of the D-series up to 9t operating weight as well as our multi purpose grabs of the A-series up to 9t. The device is easily bolt onto the shells and you can grab concrete units, curbstones etc. smoothly.

Thanks to its special kinematics you can grab items not only when closing the shells but also when opening. Shaft rings can be loaded and unloaded fast and easy without damaging them!

- **Economic solution**, as it is only an accessory that increases the flexibility of your attachment
- **Robust design**
- **Plastic compression rolls** avoid damage of the material to be gripped
- **Fast and easy mounting and removal** on site
- **Low additional weight:** only 28 kg in total
- **High load capacity of max. 900 kg (depending on model)**



Tiltrotator TR045NOX						
Type	Breakout force max. (ISO) (kN)	Tilt angle (°)	Tilt torque (kNm)	Rotation torque (kNm)	Weight (from kg)	Operating weight (t)
TR045NOX	40	2 x 45°	6.5 constant	3.8	150	2.5 - 4.5
Standardpackage: TR045NOX, upper bracket direct mount, quick coupler system S-Lock, NOX-Control DF10						
Other adapter, quick coupler & control systems on request.						

Gripper module				
Type	Opening	Closing force	Load capacity	Weight
	(mm)	(kN)	(kg)	(from kg)
F07H	424	7.5	300	77
Package consists of: gripper with integrated adapter				
Other adapter systems on request.				

Profile buckets					
Type	Bucket types	Adapter	Width (mm)	Volume (liter)	Weight (kg)
PBK04-110-S40	grading bucket	S40	1,100	160	131
SKK4-60	cable bucket	S40	300	60	50
Package consists of: grading bucket / cable bucket, adapter system S-Lock					
Other bucket types, widths, volumes or adapters on request.					

Fork tines					
Type	Tine adjustment	Load capacity max. (mm)	Width (mm)	Weight (kg)	Operating weight (t)
GAF6	mechanical	1,900	1,000	140	3 - 6
GAH6	hydraulically	1,900	1,000	160	3 - 6
Package consists of: fork tines, frame with adapter system S-Lock (S40)					
Other adapter systems on request.					

Demolition and sorting grabs with <i>HPXdrive</i> or hydraulic cylinder							
Type	Width	Opening	Volume	Weight	Operating weight	Load capacity form locking	Closing force
	(mm)	(mm)	(liter)	(kg)	(t)	(kg)	(kN)
D05TR-40 HPX	420	1,045	75	240	3 - 6	1,500	18
D05TR-40	420	1,212	60	160	3 - 6	1,500	21.5
Package consists of: demolition and sorting grab, hydraulic block for HPX, adapter system S-Lock (S40)							
Available as an option: 4-Grip							
Other adapter systems on request.							

Multi purpose grabs with <i>HPXdrive</i> or hydraulic cylinder							
Type	Width	Opening	Volume	Weight	Operating weight	Load capacity form locking	Closing force
	(mm)	(mm)	(liter)	(kg)	(t)	(kg)	(kN)
A05TR-40 HPX	386	1,043	70	225	3 - 6	1,500	18
A05TR-40	386	1,233	70	165	3 - 6	1,500	21
Package consists of: multi purpose grab, hydraulic block for HPX, adapter system S-Lock (S40)							
Available as an option: 4-Grip							
Other adapter systems on request.							

4-Grip				
Type	For grab types	Load capacity	Weight	Operating weight
		(kg)	(kg)	(t)
KM 685-05-D04-A04	D05TR / A05TR	600	24	<6

Tiltrotator TR07NOX						
Type	Breakout force max. (ISO) (kN)	Tilt angle (°)	Tilt torque (kNm)	Rotation torque (kNm)	Weight (from kg)	Operating weight (t)
TR07NOX	50	2 x 50°	11 constant	4.7	200	4 - 7

Standardpackage: TR07NOX, upper bracket direct mount, quick coupler system S-Lock, NOX-Control DF10

Other adapter, quick coupler & control systems on request.

Gripper module				
Type	Opening	Closing force	Load capacity	Weight
	(mm)	(kN)	(kg)	(from kg)
TRG07	424	7.5	300	40
F07H	424	7.5	300	77

Package consists of: gripper / gripper with integrated adapter

Other adapter systems on request.

Profile buckets					
Type	Bucket types	Adapter	Width (mm)	Volume (liter)	Weight (kg)
PBK05-120-S40	grading bucket	S40	1,200	250	174
PBK06-120-S45	grading bucket	S45	1,200	300	199
SKK6-160	cable bucket	S45	300	160	75

Package consists of: grading bucket / cable bucket, adapter system S-Lock

Other bucket types, widths, volumes or adapters on request.

Levelling bars with roller			
Type	Width (mm)	Weight (kg)	Operating weight (t)
AVB 8-1800	1,800	200	<8
AVB 8-2100	2,100	300	<8
AVB 8-2200	2,200	420	<8

Package consists of: levelling bar with roller, adapter system S-Lock (S45)

Other adapter systems on request.

Fork tines					
Type	Tine adjustment	Load capacity max. (mm)	Width (mm)	Weight (kg)	Operating weight (t)
GAF6	mechanical	1,900	1,000	140	3 - 6
GAH6	hydraulically	1,900	1,000	160	3 - 6
GAF8	mechanical	1,900	1,200	190	6 - 8
GAH8	hydraulically	1,900	1,200	210	6 - 8

Package consists of: fork tines, frame with adapter system S-Lock (S45)

Other adapter systems on request.

Demolition and sorting grabs with <i>HPXdrive</i> or hydraulic cylinder							
Type	Width (mm)	Opening (mm)	Volume (liter)	Weight (kg)	Operating weight (t)	Load capacity form locking (kg)	Closing force (kN)
D07TR-45 HPX	470	1,350	150	310	5 - 8	2,000	18
D07TR-45	470	1,345	90	180	5 - 8	2,000	21

Package consists of: demolition and sorting grab, hydraulic block for HPX, adapter system S-Lock (S45)

Available as an option: 4-Grip

Other adapter systems on request.

Multi purpose grabs with <i>HPXdrive</i> or hydraulic cylinder							
Type	Width (mm)	Opening (mm)	Volume (liter)	Weight (kg)	Operating weight (t)	Load capacity form locking (kg)	Closing force (kN)
A07TR-45 HPX	450	1,344	145	305	5 - 8	2,000	18
A07TR-45	450	1,340	100	225	5 - 8	2,000	21

Package consists of: multi purpose grab, hydraulic block for HPX, adapter system S-Lock (S45)

Available as an option: 4-Grip

Other adapter systems on request.

Clamshell buckets with <i>HPXdrive</i>							
Type	Width (mm)	Opening (mm)	Volume (liter)	Weight (kg)	Operating weight (t)	Load capacity (kg)	Closing force (kN)
C07TR-40 HPX	400	1,110	115	295	3 - 7	3,000	22
C07TR-50 HPX	500	1,110	140	310	3 - 7	3,000	22
C07TR-60 HPX	600	1,110	170	325	3 - 7	3,000	22

Package consists of: clamshell bucket, hydraulic block for HPX, adapter system S-Lock (S45)

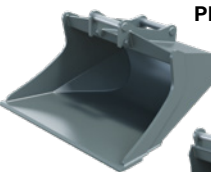
Other adapter systems on request.

4-Grip				
Type	For grab types	Load capacity (kg)	Weight (kg)	Operating weight (t)
KM 685-05-D06/09-A06/09	D07TR & A07TR	600	28	<11

Cone crusher bucket						
Type	Rotation torque (Nm)	Speed range (rpm)	Drum diameter (mm)	Length (mm)	Weight (kg)	Operating weight (t)
Cone Crusher	6,320 - 10,112	36 - 100	600	1,300	376	3 - 10

Package consists of: cone crusher bucket

Optional adapter systems on request.



Tiltrotator TR11NOX						
Type	Breakout force max. (ISO) (kN)	Tilt angle (°)	Tilt torque (kNm)	Rotation torque (kNm)	Weight (from kg)	Operating weight (t)
TR11NOX	75	2 x 50°	16 constant	7.5	320	6 - 11

Standardpackage: TR11NOX, upper bracket direct mount, quick coupler system S-Lock, NOX-Control DF10

Other adapter, quick coupler & control systems on request.

Gripper module				
Type	Opening	Closing force	Load capacity	Weight
	(mm)	(kN)	(kg)	(from kg)
TRG11	644	10	500	77
F11H	644	10	500	131

Package consists of: gripper / gripper with integrated adapter

Other adapter systems on request.

Profile buckets					
Type	Bucket types	Adapter	Width (mm)	Volume (liter)	Weight (kg)
PBK08-130-S45	grading bucket	S45	1,300	360	262
SKK10-160	cable bucket	S50	300	160	75

Package consists of: grading bucket / cable bucket, adapter system S-Lock

Other bucket types, widths, volumes or adapters on request.

Levelling bars with roller			
Type	Width (mm)	Weight (kg)	Operating weight (t)
AVB 8-1800	1,800	200	<8
AVB 8-2100	2,100	300	<8
AVB 8-2200	2,200	420	<8

Package consists of: levelling bar with roller, adapter system S-Lock (S50)

Other adapter systems on request.

Fork tines					
Type	Tine adjustment	Load capacity max. (mm)	Width (mm)	Weight (kg)	Operating weight (t)
GAF8	mechanical	1,900	1,200	190	6 - 8
GAH8	hydraulically	1,900	1,200	210	6 - 8
GAF12	mechanical	2,500	1,200	200	9 - 12
GAH12	hydraulically	2,500	1,200	220	9 - 12

Package consists of: fork tines, frame with adapter system S-Lock (S50)

Other adapter systems on request.

Demolition and sorting grabs with <i>HPXdrive</i> or hydraulic cylinder							
Type	Width	Opening	Volume	Weight	Operating weight	Load capacity form locking	Closing force
	(mm)	(mm)	(liter)	(kg)	(t)	(kg)	(kN)
D11TR-50 HPX	520	1545	220	360	7 - 12	2,500	15.3
D11TR-50	520	1665	165	305	7 - 12	2,500	24

Package consists of: demolition and sorting grab, hydraulic block for HPX, adapter system S-Lock (S50)

Available as an option: 4-Grip

Other adapter systems on request.

Multi purpose grabs with <i>HPXdrive</i> or hydraulic cylinder							
Type	Width	Opening	Volume	Weight	Operating weight	Load capacity form locking	Closing force
	(mm)	(mm)	(liter)	(kg)	(t)	(kg)	(kN)
A11TR-50 HPX	500	1,545	210	365	7 - 12	2,500	15.3
A11TR-50	500	1,650	175	310	7 - 12	2,500	25

Package consists of: multi purpose grab, hydraulic block for HPX, adapter system S-Lock (S50)

Available as an option: 4-Grip

Other adapter systems on request.

Clamshell buckets with <i>HPXdrive</i>							
Type	Width	Opening	Volume	Weight	Operating weight	Load capacity form locking	Closing force
	(mm)	(mm)	(liter)	(kg)	(t)	(kg)	(kN)
C11TR-40 HPX	400	1,250	145	265	5 - 11	3,000	22
C11TR-50 HPX	500	1,250	180	295	5 - 11	3,000	22
C11TR-60 HPX	600	1,250	220	315	5 - 11	3,000	22

Package consists of: clamshell bucket, hydraulic block for HPX, adapter system S-Lock (S50)

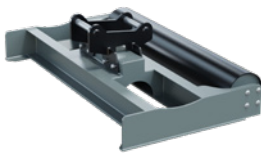
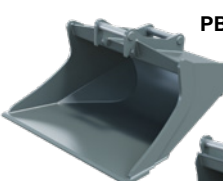
Other adapter systems on request.

4-Grip				
Type	For grab types	Load capacity	Weight	Operating weight
		(kg)	(kg)	(t)
KM 685-05-D06/09-A06/09	D11TR & A11TR	900	28	<11

Cone crusher bucket						
Type	Rotation torque (Nm)	Speed range (rpm)	Drum diameter (mm)	Length (mm)	Weight (kg)	Operating weight (t)
Cone Crusher	6,320 - 10,112	26 - 57	600	1,300	376	3 - 10

Package consists of: cone crusher bucket

Optional adapter systems on request.



Tiltrotator TR14NOX						
Type	Breakout force max. (ISO) (kN)	Tilt angle (°)	Tilt torque (kNm)	Rotation torque (kNm)	Weight (from kg)	Operating weight (t)
TR14NOX	110	2 x 50°	31 constant	11	485	10 - 14

Standardpackage: TR14NOX, upper bracket direct mount, quick coupler system S-Lock, NOX-Control DF10

Other adapter, quick coupler & control systems on request.

Gripper module				
Type	Opening	Closing force	Load capacity	Weight
	(mm)	(kN)	(kg)	(from kg)
TRG19	734	18.5	900	127
F19H	734	18.5	900	265

Package consists of: gripper / gripper with integrated adapter

Other adapter systems on request.

Profile buckets					
Type	Bucket types	Adapter	Width (mm)	Volume (liter)	Weight (kg)
PBK12-150-S45	grading bucket	S45	1,500	500	356
PBK15-160-S60	grading bucket	S60	1,600	700	490
SKK14-250	cable bucket	S60	300	250	110

Package consists of: grading bucket / cable bucket, adapter system S-Lock

Other bucket types, widths, volumes or adapters on request.

Levelling bars with roller			
Type	Width (mm)	Weight (kg)	Operating weight (t)
AVB 24-2500	2,500	420	<24
AVB 24-2700	2,700	470	<24

Package consists of: levelling bar with roller, adapter system S-Lock (S60)

Other adapter systems on request.

Fork tines					
Type	Tine adjustment	Load capacity max. (mm)	Width (mm)	Weight (kg)	Operating weight (t)
GAF18	mechanical	4,000	1,200	340	13 - 18
GAH18	hydraulically	4,000	1,200	340	13 - 18

Package consists of: fork tines, frame with adapter system S-Lock (S60)

Other adapter systems on request.

Demolition and sorting grabs							
Type	Width	Opening	Volume	Weight	Operating weight	Load capacity	Closing force
	(mm)	(mm)	(liter)	(kg)	(t)	(kg)	(kN)
D14TR-60	600	1,555	260	400	11 - 14	3,000	30

Package consists of: demolition and sorting grab, adapter system S-Lock (S60)

Other adapter systems on request.

Multi purpose grabs							
Type	Width	Opening	Volume	Weight	Operating weight	Load capacity	Closing force
	(mm)	(mm)	(liter)	(kg)	(t)	(kg)	(kN)
A14TR-60	600	1,890	260	510	11 - 14	3,000	30

Package consists of: multi purpose grab, adapter system S-Lock (S60)

Other adapter systems on request.

Clamshell bucket							
Type	Width	Opening	Volume	Weight	Operating weight	Load capacity	Closing force
	(mm)	(mm)	(liter)	(kg)	(t)	(kg)	(kN)
C14TR-60	600	1,645	245	510	11 - 14	4,500	39

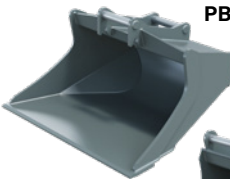
Package consists of: clamshell bucket, adapter system S-Lock (S60)

Other adapter systems on request.

Multi-Grip							
Type	Width	Opening	Volume	Weight	Operating weight	Load capacity	Closing force
	(mm)	(mm)	(m²)	(kg)	(t)	(kg)	(kN)
MG16	531	1,822	0.36	474	12 - 18	8,000	27

Package consists of: Multi-Grip, adapter system S-Lock (S60)

Other adapter systems on request.



Tiltrotator TR19NOX						
Type	Breakout force max. (ISO) (kN)	Tilt angle (°)	Tilt torque (kNm)	Rotation torque (kNm)	Weight (from kg)	Operating weight (t)
TR19NOX	150	2 x 50°	40.5 constant	12	580	14 - 19
Standardpackage: TR19NOX, upper bracket direct mount, quick coupler system S-Lock, NOX-Control DF10						
Other adapter, quick coupler & control systems on request.						

Gripper module				
Type	Opening	Closing force	Load capacity	Weight
	(mm)	(kN)	(kg)	(from kg)
TRG19	734	18.5	900	127
F19H	734	18.5	900	165
RR-TRG19	822	30.1	5,000	170
Package consists of: gripper / gripper with integrated adapter				
Other adapter systems on request.				

Profile buckets					
Type	Bucket types	Adapter	Width (mm)	Volume (liter)	Weight (kg)
PBK19-170-S60	grading bucket	S60	1,700	900	685
SKK22-300	cable bucket	S60	300	300	260
Package consists of: grading bucket / cable bucket, adapter system S-Lock					
Other bucket types, widths, volumes or adapters on request.					

Levelling bars with roller			
Type	Width (mm)	Weight (kg)	Operating weight (t)
AVB 24-2500	2,500	420	<24
AVB 24-2700	2,700	470	<24
Package consists of: levelling bar with roller, adapter system S-Lock (S60)			
Other adapter systems on request.			

Fork tines					
Type	Tine adjustment	Load capacity max. (mm)	Width (mm)	Weight (kg)	Operating weight (t)
GAF18	mechanical	4,000	1,200	340	13 - 18
GAH18	hydraulically	4,000	1,200	340	13 - 18
GAF20	mechanical	4,000	1,200	420	19 - 20
GAH20	hydraulically	4,000	1,200	420	19 - 20
Package consists of: fork tines, frame with adapter system S-Lock (S60)					
Other adapter systems on request.					

Demolition and sorting grabs							
Type	Width	Opening	Volume	Weight	Operating weight	Load capacity	Closing force
	(mm)	(mm)	(liter)	(kg)	(t)	(kg)	(kN)
D19TR-60	600	1,550	225	450	14 - 19	4,000	32
D19TR-80	800	1,550	300	500	14 - 19	4,000	27
D19TR-100	1,000	1,870	500	595	14 - 19	4,000	25
Package consists of: demolition and sorting grab, adapter system S-Lock (S60)							
Other adapter systems on request.							

Multi purpose grabs							
Type	Width	Opening	Volume	Weight	Operating weight	Load capacity	Closing force
	(mm)	(mm)	(liter)	(kg)	(t)	(kg)	(kN)
A19TR-60	600	1,900	300	570	14 - 19	4,000	27
Package consists of: multi purpose grab, adapter system S-Lock (S60)							
Other adapter systems on request.							

Clamshell bucket							
Type	Width	Opening	Volume	Weight	Operating weight	Load capacity	Closing force
	(mm)	(mm)	(liter)	(kg)	(t)	(kg)	(kN)
C19TR-60	600	1,655	245	575	14 - 19	4,500	42
Package consists of: clamshell bucket, adapter system S-Lock (S60)							
Other adapter systems on request.							

Multi-Grip							
Type	Width	Opening	Volume	Weight	Operating weight	Load capacity	Closing force
	(mm)	(mm)	(m²)	(kg)	(t)	(kg)	(kN)
MG16	531	1,822	0.36	474	12 - 18	8,000	27
MG20	531	2,279	0.52	560	16 - 22	10,000	33
Package consists of: Multi-Grip, adapter system S-Lock (S60)							
Other adapter systems on request.							

Tiltrotator TR25NOX						
Type	Breakout force max. (ISO) (kN)	Tilt angle (°)	Tilt torque (kNm)	Rotation torque (kNm)	Weight (from kg)	Operating weight (t)
TR25NOX	170	2 x 50°	51.7 constant	15	860	19 - 25

Standardpackage: TR25NOX, upper bracket direct mount, quick coupler system S-Lock, NOX-Control DF10

Other adapter, quick coupler & control systems on request.

Gripper module				
Type	Opening	Closing force	Load capacity	Weight
	(mm)	(kN)	(kg)	(from kg)
TRG25	1,137	19.5	1,300	224
F25H	1,137	19.5	1,300	265
RR-TRG25	822	30.1	5,000	187

Package consists of: gripper / gripper with integrated adapter

Other adapter systems on request.

Profile buckets					
Type	Bucket types	Adapter	Width (mm)	Volume (liter)	Weight (kg)
PBK23-180-S70	grading bucket	S70	1,800	1,150	846
PBK28-200-S70	grading bucket	S70	2,000	1,500	1.192
SKK22-300	cable bucket	S70	300	300	260

Package consists of: grading bucket / cable bucket, adapter system S-Lock

Other bucket types, widths, volumes or adapters on request.

Levelling bars with roller			
Type	Width (mm)	Weight (kg)	Operating weight (t)
AVB 24-2500	2,500	420	<24
AVB 24-2700	2,700	470	<24

Package consists of: levelling bar with roller, adapter system S-Lock (S70)

Other adapter systems on request.

Fork tines					
Type	Tine adjustment	Load capacity max. (mm)	Width (mm)	Weight (kg)	Operating weight (t)
GAF20	mechanical	4,000	1,200	420	19 - 20
GAH20	hydraulically	4,000	1,200	420	19 - 20
GAF24	mechanical	5,000	1,200	440	21 - 24
GAH24	hydraulically	5,000	1,200	440	21 - 24

Package consists of: fork tines, frame with adapter system S-Lock (S70)

Other adapter systems on request.

Demolition and sorting grabs							
Type	Width	Opening	Volume	Weight	Operating weight	Load capacity	Closing force
	(mm)	(mm)	(liter)	(kg)	(t)	(kg)	(kN)
D25TR-84	840	1,890	380	725	18 - 25	5,000	42
D25TR-100	1,000	1,890	450	770	18 - 25	5,000	42

Package consists of: demolition and sorting grab, adapter system S-Lock (S70)

Other adapter systems on request.

Multi purpose grabs							
Type	Width	Opening	Volume	Weight	Operating weight	Load capacity	Closing force
	(mm)	(mm)	(liter)	(kg)	(t)	(kg)	(kN)
A25TR-70	700	2,038	400	815	18 - 25	5,000	38

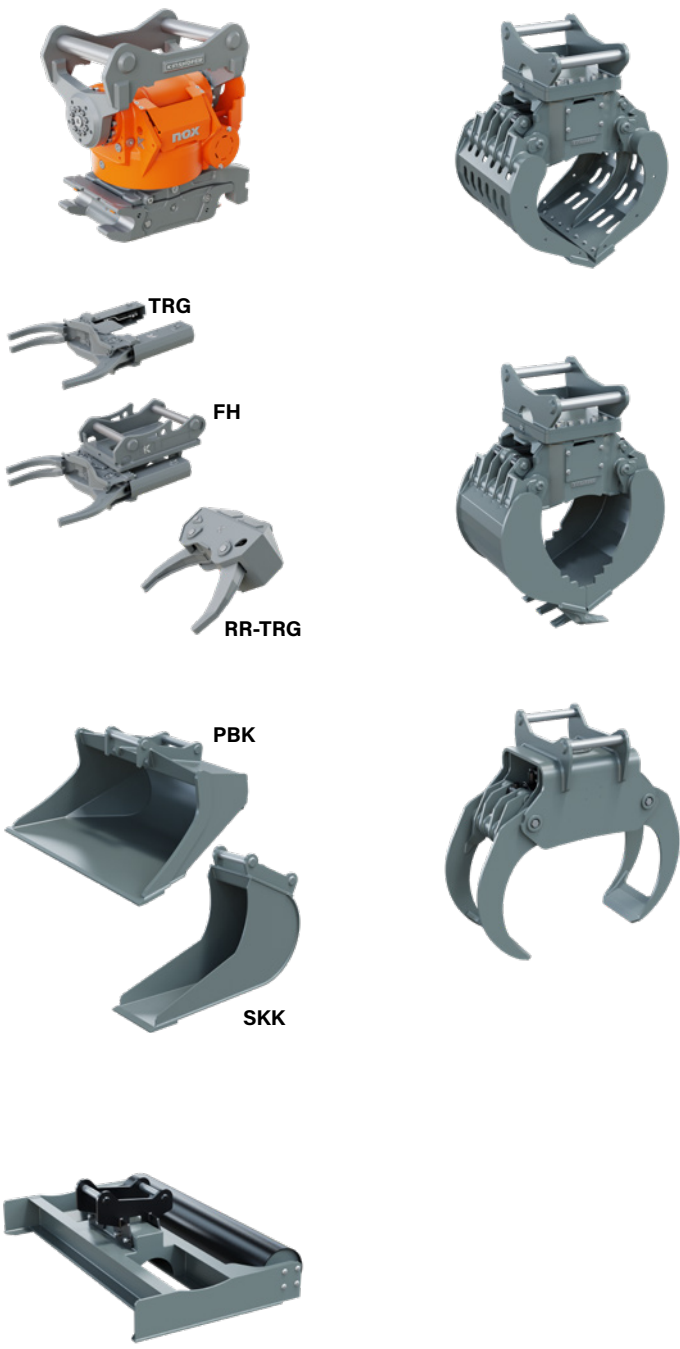
Package consists of: multi purpose grab, adapter system S-Lock (S70)

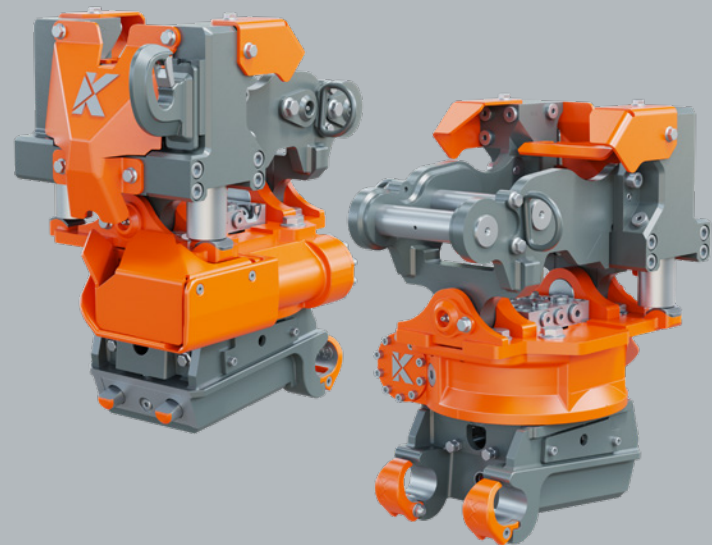
Other adapter systems on request.

Multi-Grip							
Type	Width	Opening	Volume	Weight	Operating weight	Load capacity	Closing force
	(mm)	(mm)	(m²)	(kg)	(t)	(kg)	(kN)
MG20	531	2,279	0.52	560	16 - 22	10,000	33

Package consists of: Multi-Grip, adapter system S-Lock (S60)

Other adapter systems on request.





TR025 TILTROTATOR



**360° ROTATION AND
2 x 30° TILT ANGLE**



**FOR EXCAVATORS FROM 0.9T
TO 2.6T OPERATING WEIGHT**



HIGH TILT TORQUE



HIGH HOLDING TORQUE



LOW MAINTENANCE



HIGHER EFFICIENCY

Working more efficiently saves consumables and labor costs and reduces the required working times.



HIGHER SAFETY

Manual works within the danger area are reduced to a minimum.



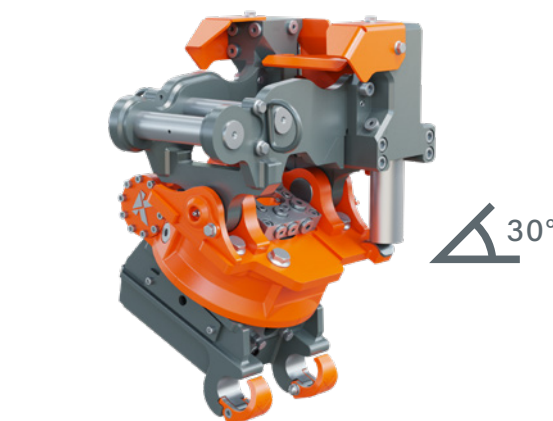
LESS WEAR

Low risk of damages.

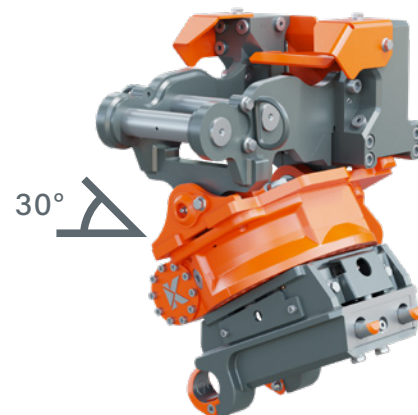


FLEXIBILITY

Fast and uncomplicated response to requirements to be more competitive.



Animation
TR025 Tiltrotator



**PERFECTLY ADJUSTED
CONTROL SYSTEM**



COMPACT DESIGN



HIGH-FLOW SWIVEL



WORM DRIVE



**SLIM DESIGN WITHOUT
SWINGING CYLINDERS**



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