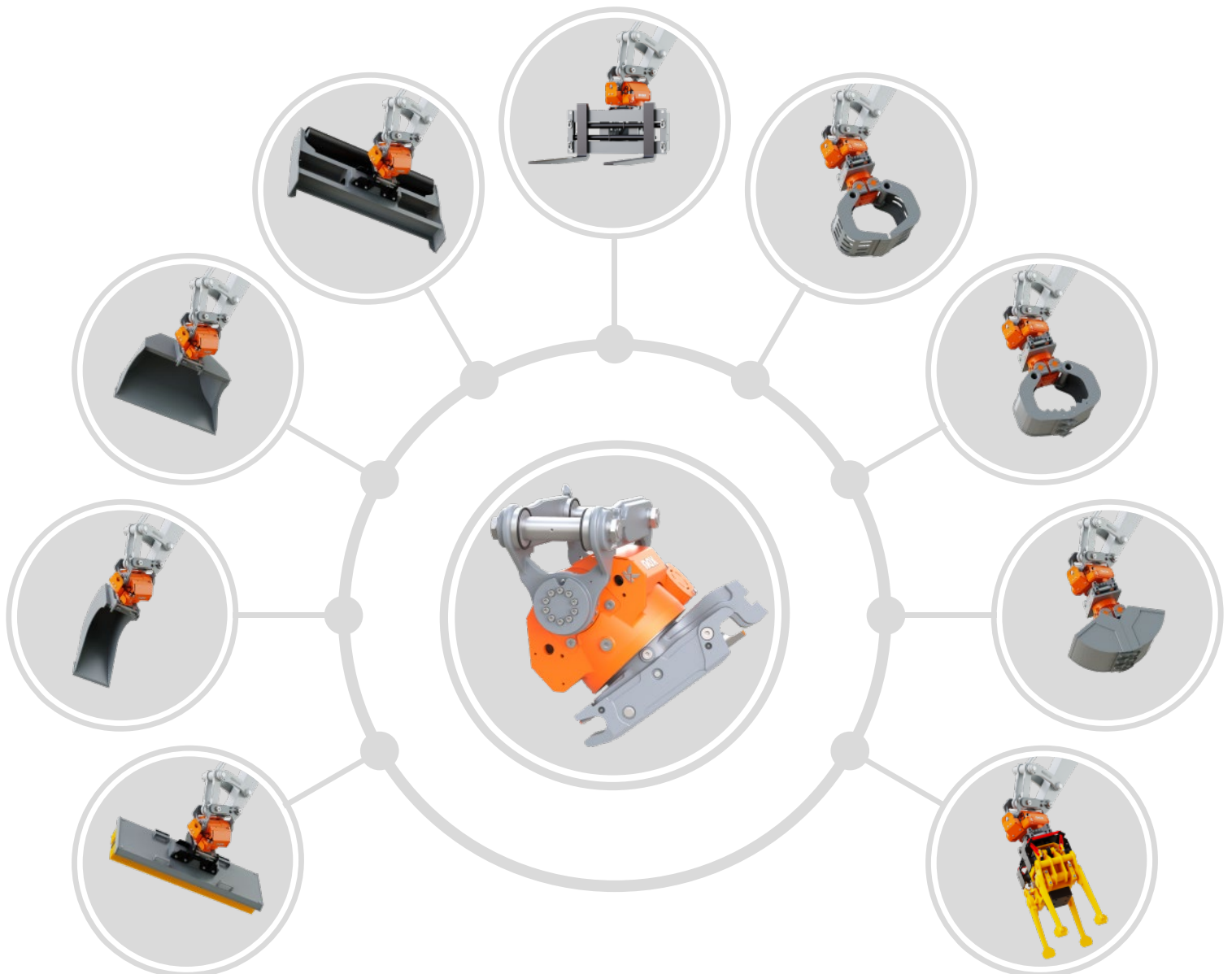




KINSHOFER
crane and excavator attachments

noX Tiltrotators and Accessories



noX TILTROTATORS

With our 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.

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.

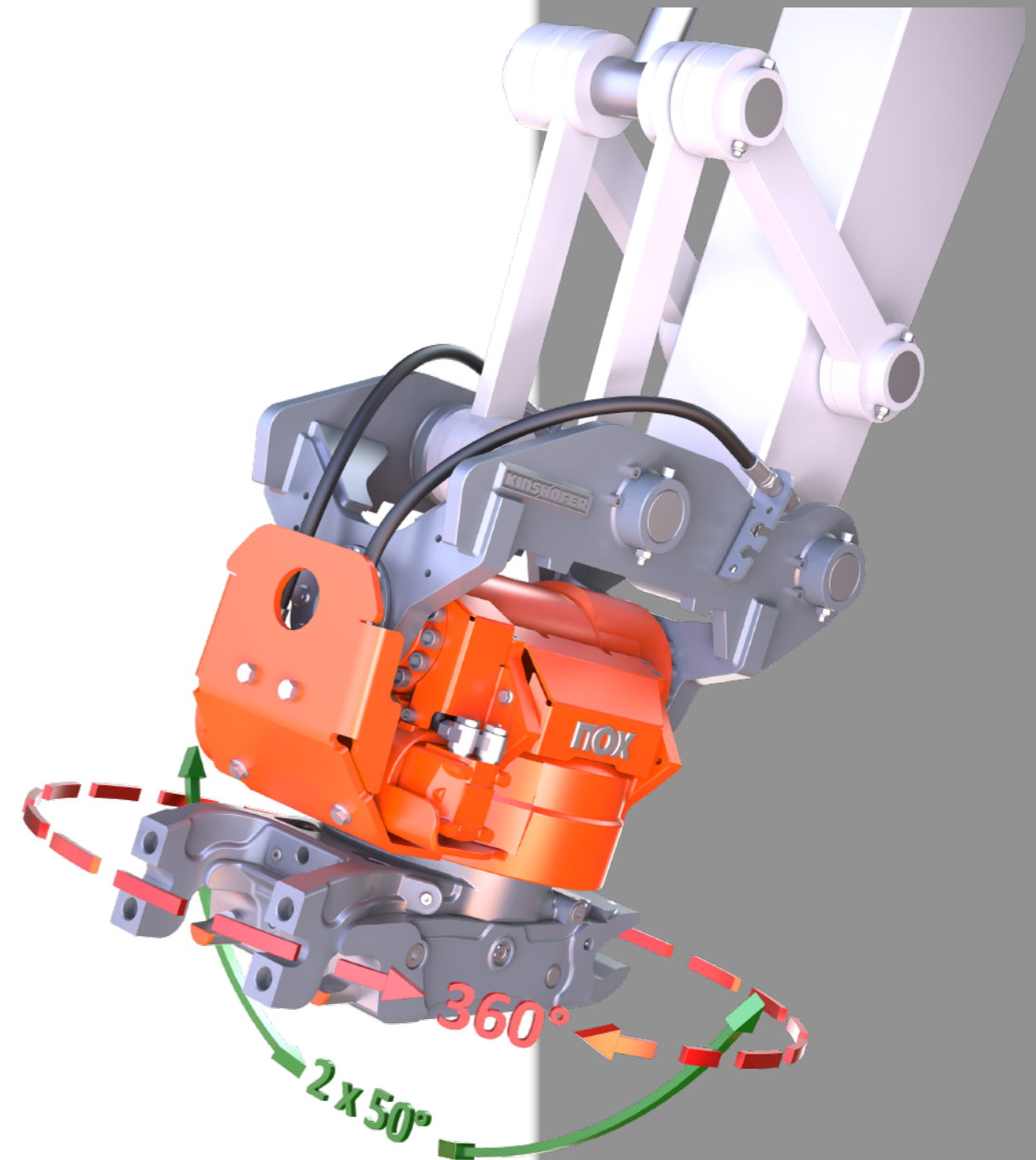
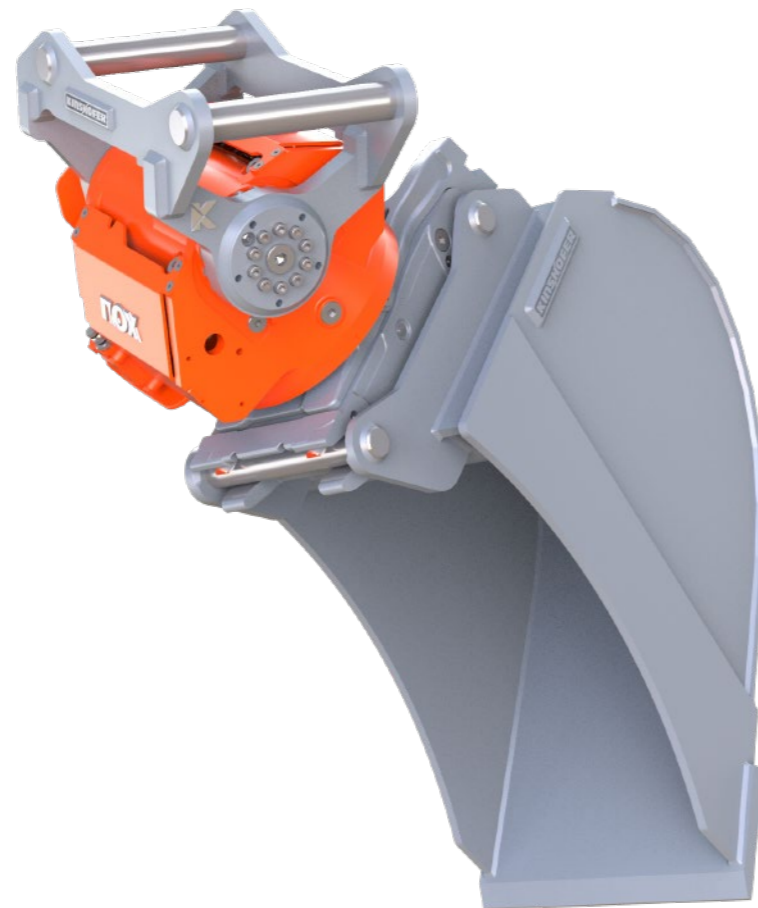


Turn efficiency in your direction!

With using the NOX Tiltrotator, you are not only reducing the need for repositioning your excavator and thus sparing the ground from damage (especially when it comes to landscaping tasks), but you will also speed up your work. The attachments can be positioned within the complete reach of the boom to work around obstacles. Fast and easy levelling works with a levelling bar can be realized without repositioning the excavator. Precise setting of curbstones, dosed and accurate filling of trenches with a bucket turned by 90° as well as the handling of different kinds of materials in narrow areas are no problem with the NOX Tiltrotator.



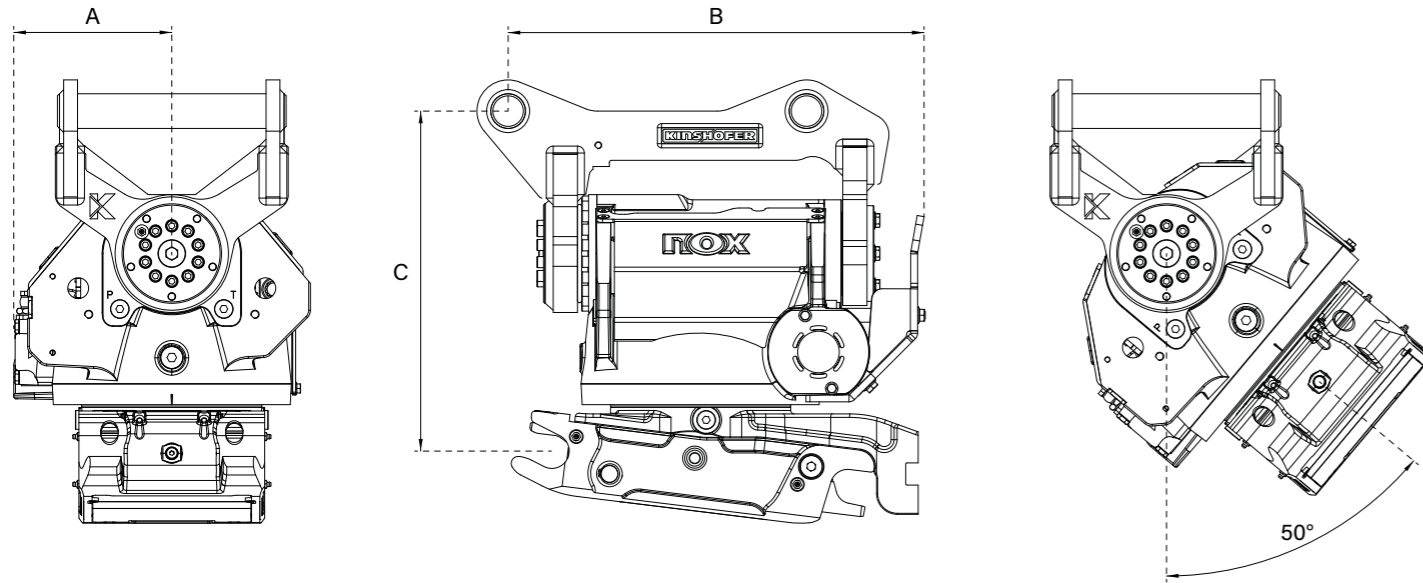
2 YEARS WARRANTY
NOX TILTROTATORS



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.

NOX Tiltrotators

Experience and innovation have led to one of the most advanced tools for excavators: the NOX Tiltrotator. 360° continuous rotation and a tilt angle of up to 2 x 50° make it a universal joint, allowing for a whole new range of applications. Combined with a quick change system and various attachments this means highest efficiency at any construction site.



TR045NOX

TR07NOX

TR11NOX

TR14NOX

TR19NOX

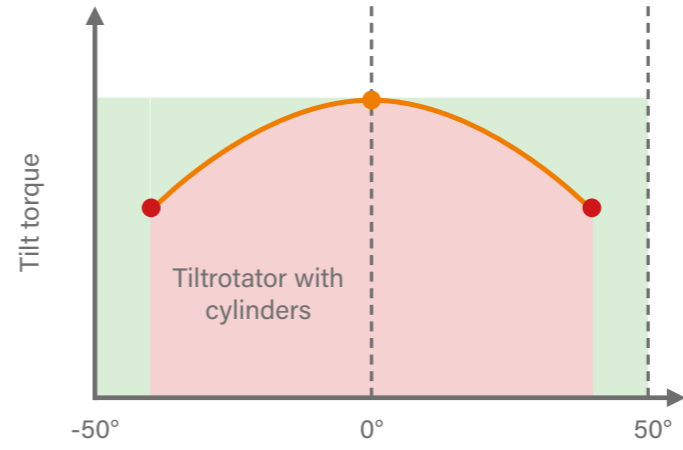
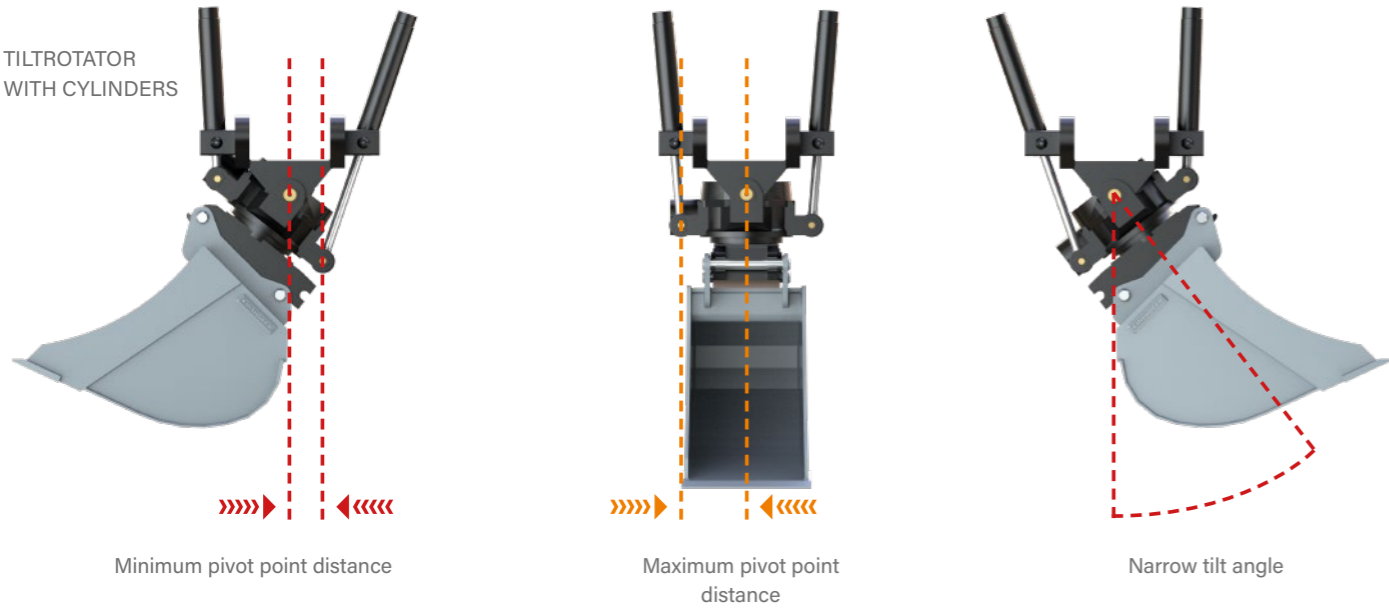
TR25NOX

Operating weight	2 - 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.	1100 mm	1100 mm	1300 mm	1600 mm	1700 mm	2000 mm
Breakout force max. (ISO)	40 kN	50 kN	75 kN	110 kN	150 kN	170 kN
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	3800 Nm	4700 Nm	7500 Nm	11000 Nm	12000 Nm	15000 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)

NOX Powerful

TILTROTATOR WITH CYLINDERS



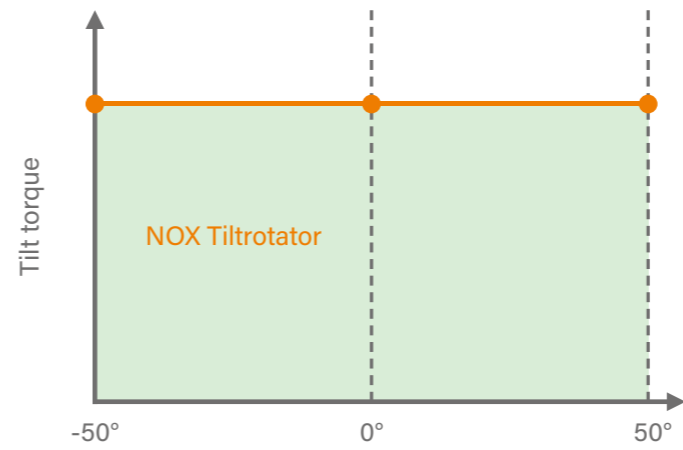
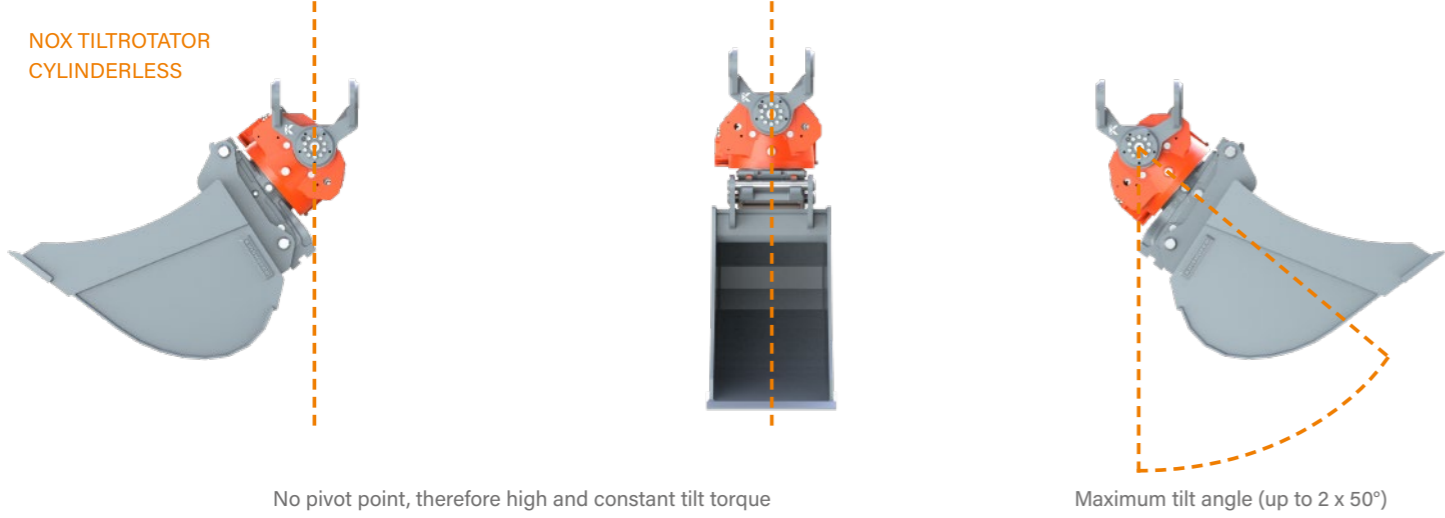
NOX Tilt torque

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.



Elliptic piston

NOX TILTROTATOR CYLINDERLESS

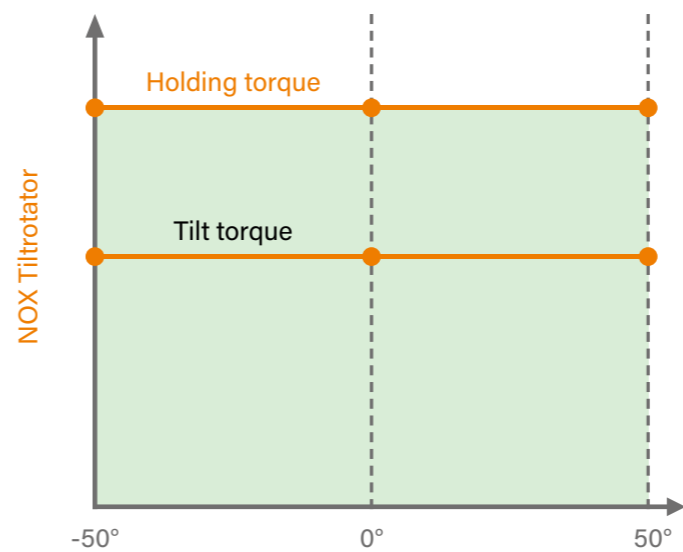


NOX Tilt angle

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.



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.

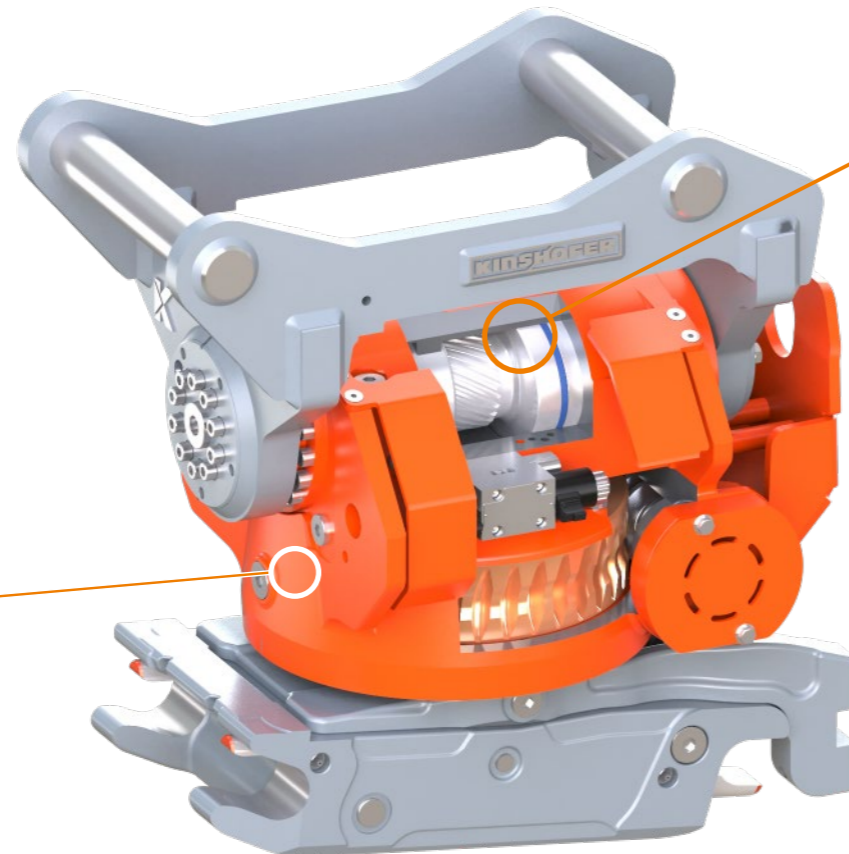
NOX Tiltrotator

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. Switching fully hydraulically between hydraulic attachments is no problem with the SmartFlow coupler system.

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

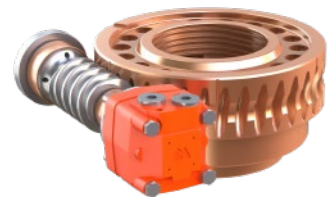
Manual works within the danger area are reduced to a minimum.

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.



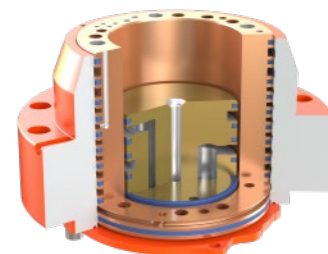
WORM DRIVE

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.



HIGH-FLOW SWIVEL

The optional high-flow swivel provides industry leading flows for attachments that require more flow to operate properly. As an option, an electric rotary unit for quick coupler sensors and attachments with switch valve (mainly in railway construction) can be used.

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	1050 mm	2,0 sec.	19,5 kN	1400 kg
RR-TRG	822 mm	3,9 sec.	30,1 kN	5000 kg

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

MOUNTING TO EXCAVATOR ARM EXCAVATOR BOOM

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



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:

KINSHOFER QUICK COUPLER SYSTEMS:

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. KINSHOFER provides its NOX Tiltrotators either with its own fully hydraulic system SmartFlow for pin-to-pin couplers, or with the well-known dedicated OilQuick system as well as with the Steelwrist Open-S systems.

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.



FULLY HYDRAULIC QUICK COUPLER SYSTEM



HYDRAULIC QUICK COUPLER SYSTEM



MECHANIC QUICK COUPLER SYSTEM



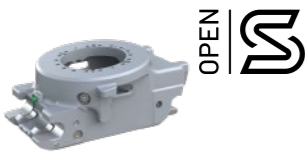
KINSHOFER SMARTFLOW
D-LOCK

KINSHOFER SMARTFLOW
T620



SYSTEM L-LOCK

SYSTEM S-LOCK



SYSTEM STEELWRIST



SYSTEM LIEBHERR



SYSTEM D-LOCK



SYSTEM OILQUICK



SYSTEM L-LOCK



SYSTEM S-LOCK



SYSTEM OILQUICK



SYSTEM LIEBHERR



SYSTEM OILQUICK



SYSTEM VERACHTTERT



SYSTEM LIEBHERR

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.

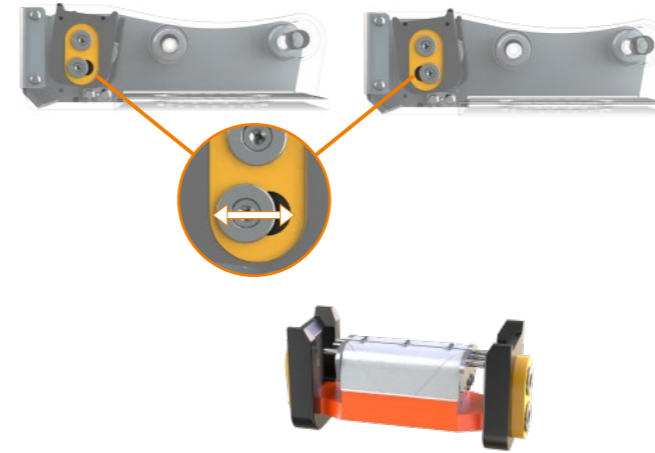
LOCKING:
SAFE LOCKING MECHANISM

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.



SAFETY:
OPTIONAL DIRT PROTECTION ATTACHMENT SIDE

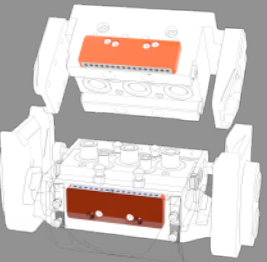
The hydraulic valves and the valve block on the attachment side are protected from dirt and damage by cover doors. They are opened automatically during the coupling process and close by spring force during disconnection.

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.



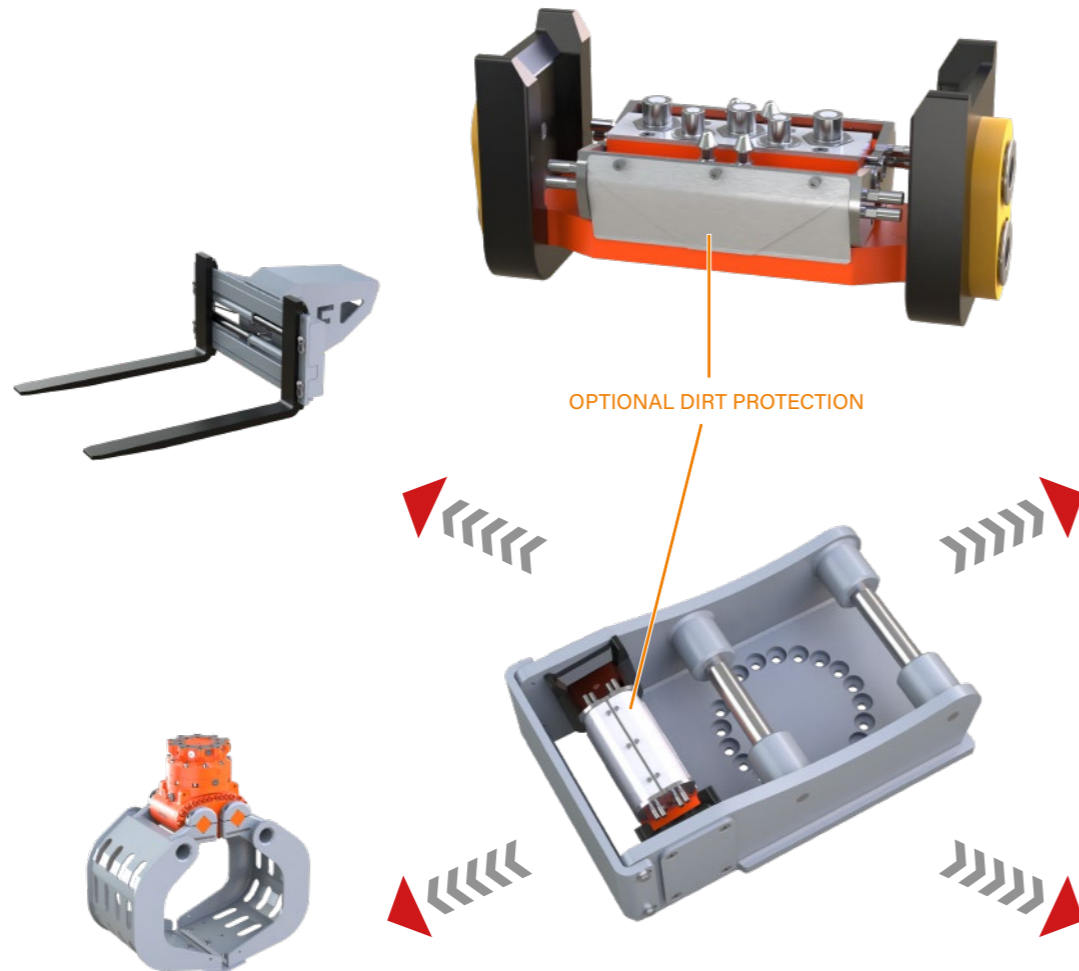
HYDRAULIC BLOCK WITH 2 VALVES

A hydraulic pallet fork for example needs 2 valves for the main functions.



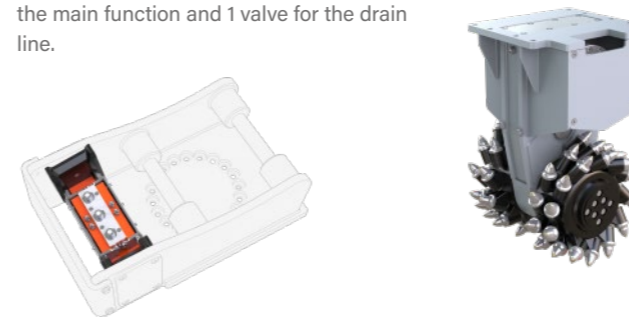
HYDRAULIC BLOCK WITH 4 VALVES

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



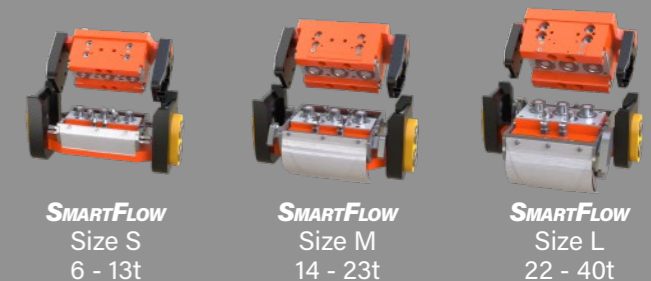
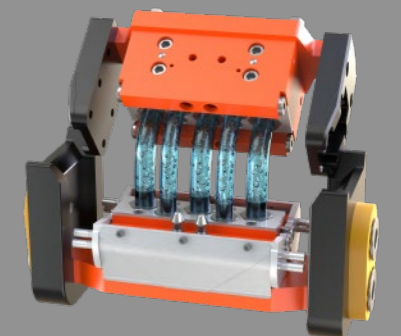
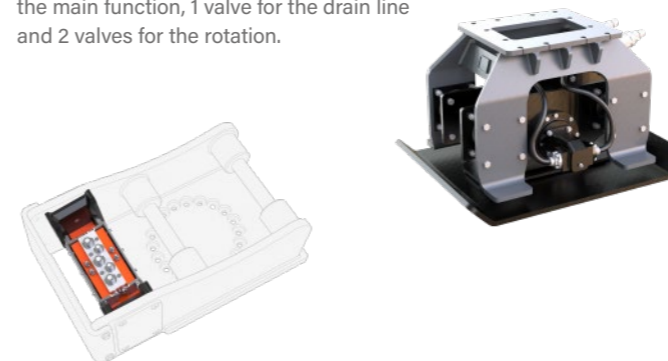
HYDRAULIC BLOCK WITH 3 VALVES

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.



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 FOR 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.



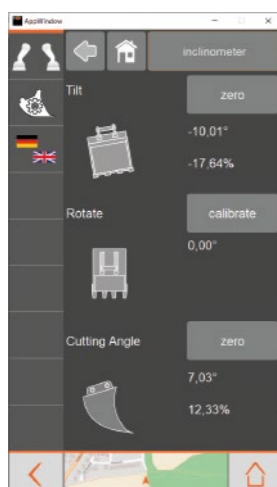
BG-MODULE CONNECTOR

TOUCHSCREEN: ERGONOMIC CONTROL UNIT

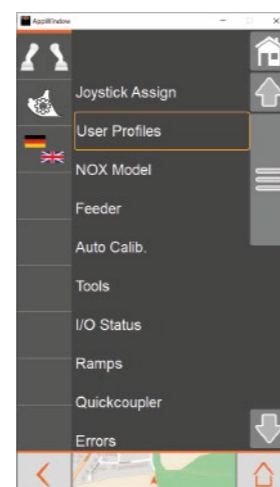
- ▶ Highly bright display - legible even at direct sunlight
- ▶ Easy switch between different profiles
- ▶ Locking/unlocking of quick coupler
- ▶ Sensor control of the quick coupler
- ▶ Tool profile settings
- ▶ Adjustment of single function speed
- ▶ Reliable ram mount



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 integrated 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

DF04, DF06 & DF10 Control systems

	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 - LINES



DF04 - LINES



DF06 - LINES



DF10 - LINES

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.

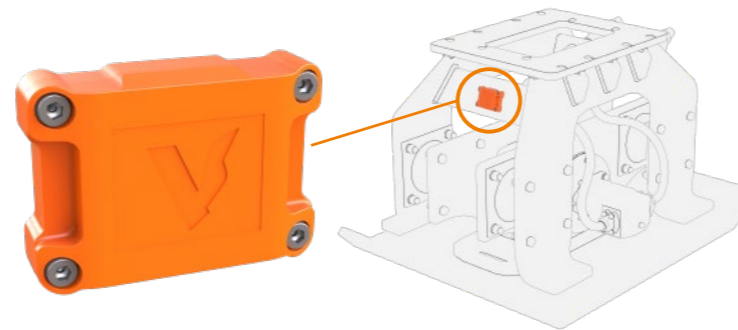
NOXGeo Sensor technology

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.

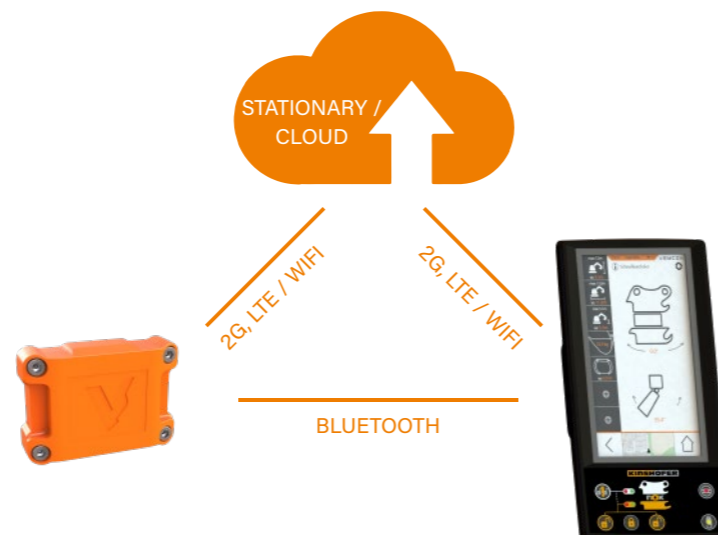
SYSTEM: SMARTTAG

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 Tool tracker

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.



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.



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.



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.



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.

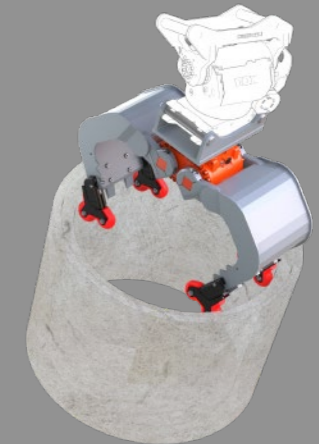


DEMOLITION

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

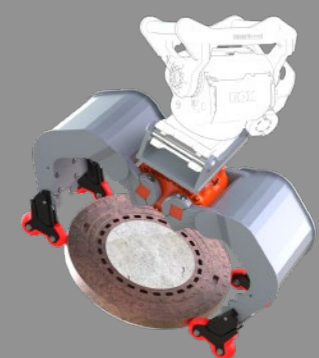


4-Grip

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 750 kg**



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 - 4,5



Gripper module

Type	Opening (mm)	Closing force (kN)	Load capacity (kg)	Weight (kg)
F07H-OQ30	424	7,5	300	66

Package consists of: gripper module, adapter system OilQuick

Other adapter systems on request.

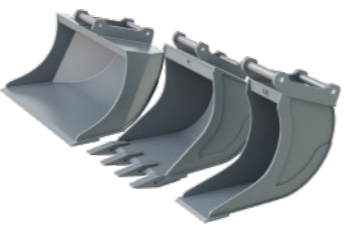


Profil buckets

Type	Bucket types	Width (mm)	Volume (liter)	Weight (kg)
SKP4-130	grading bucket	1100	130	90
SKK4-60	cable bucket	300	60	50
SKD4-120	digging bucket	620	120	80

Package consists of: grading bucket / cable bucket / digging bucket incl. teeth, adapter system S-Lock

Other bucket types, widths or volumes on request.



Fork tines

Type	Tine adjustment	Load capacity max. (mm)	Width (mm)	Weight (kg)	Operating weight (t)
GAF6	mechanical	1900	1000	140	3 - 6
GAH6	hydraulically	1900	1000	160	3 - 6

Package consists of: fork tines, frame with adapter for system S-Lock



Demolition and sorting grabs with HPXdrive or hydraulic cylinder

Type	Width (mm)	Opening (mm)	Volume (liter)	Weight (kg)	Operating weight (t)	Load capacity form locking (kg)	Closing force (kN)
D05TR-40 HPX	420	1045	75	240	3 - 6	1500	18
D05TR-40	420	1212	60	160	3 - 6	1500	21,5

Package consists of: demolition and sorting grab (hydraulic block incl. hosing for HPX)

Available as an option: 4-Grip

Multi purpose grabs with HPXdrive or hydraulic cylinder

Type	Width (mm)	Opening (mm)	Volume (liter)	Weight (kg)	Operating weight (t)	Load capacity form locking (kg)	Closing force (kN)
A05TR-40 HPX	386	1043	70	225	3 - 6	1500	18
A05TR-40	386	1233	70	165	3 - 6	1500	21

Package consists of: multi purpose grab (hydraulic block incl. hosing for HPX)

Available as an option: 4-Grip

4-Grip

Type	For grab types	Load capacity (kg)	Weight (kg)	Operating weight (t)
KM 685-05-D04-A04	D05TR / A05TR	750	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

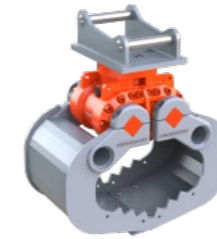


Gripper module

Type	Opening (mm)	Closing force (kN)	Load capacity (kg)	Weight (kg)
F07H-OQ40-5	424	7,5	300	77

Package consists of: gripper module, adapter system OilQuick

Other adapter systems on request.

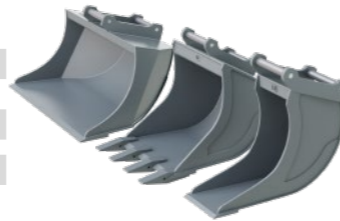


Profil buckets

Type	Bucket types	Width (mm)	Volume (liter)	Weight (kg)
SKP4-160	grading bucket	1100	160	110
SKK6-160	cable bucket	300	160	75
SKD4-160	digging bucket	620	160	100

Package consists of: grading bucket / cable bucket / digging bucket incl. teeth, adapter system S-Lock

Other bucket types, widths or volumes on request.



Levelling bars with roller

Type	Width (mm)	Weight (kg)	Operating weight (t)
AVB 8-1800	1800	200	<8
AVB 8-2100	2100	300	<8
AVB 8-2200	2200	420	<8

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



Fork tines

Type	Tine adjustment	Load capacity max. (mm)	Width (mm)	Weight (kg)	Operating weight (t)
GAF6	mechanical	1900	1000	140	3 - 6
GAH6	hydraulically	1900	1000	160	3 - 6
GAF8	mechanical	1900	1200	190	6 - 8
GAH8	hydraulically	1900	1200	210	6 - 8

Package consists of: fork tines, frame with adapter for system S-Lock



Note: other attachments and adapters on request

Demolition and sorting grabs with HPXdrive 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	1350	150	310	5 - 8	2000	18
D07TR-45	470	1345	90	180	5 - 8	2000	21

Package consists of: demolition and sorting grab (hydraulic block incl. hosing for HPX)

Available as an option: 4-Grip

Multi purpose grabs with HPXdrive 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	1344	145	305	5 - 8	2000	18
A07TR-45	450	1340	100	225	5 - 8	2000	21

Package consists of: multi purpose grab (hydraulic block incl. hosing for HPX)

Available as an option: 4-Grip

Clamshell buckets with HPXdrive

Type	Width (mm)	Opening (mm)	Volume (liter)	Weight (kg)	Operating weight (t)	Load capacity (kg)	Closing force (kN)
C07TR-40 HPX	400	1110	115	295	3 - 7	3000	22
C07TR-50 HPX	500	1110	140	310	3 - 7	3000	22
C07TR-60 HPX	600	1110	170	325	3 - 7	3000	22

Package consists of: clamshell bucket, (hydraulic block incl. hosing for HPX)

4-Grip

Type	For grab types	Load capacity (kg)	Weight (kg)	Operating weight (t)
KM 685-05-D06/09-A06/09	D07TR, D11TR, A07TR and A11TR	750	24	<11

Note: other attachments and adapters 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



Gripper module

Type	Opening (mm)	Closing force (kN)	Load capacity (kg)	Weight (kg)
F11H-OQ45	644	10	500	131

Package consists of: gripper module, adapter system OilQuick

Other adapter systems on request.

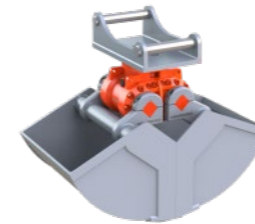
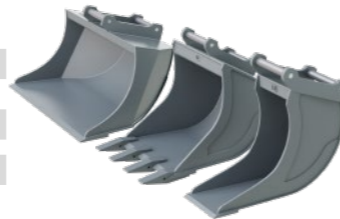


Profil buckets

Type	Bucket types	Width (mm)	Volume (liter)	Weight (kg)
SKP6-300	grading bucket	1300	300	200
SKK10-160	cable bucket	300	160	75
SKD10-350	digging bucket	800	350	190

Package consists of: grading bucket / cable bucket / digging bucket incl. teeth, adapter system S-Lock

Other bucket types, widths or volumes on request.



Levelling bars with roller

Type	Width (mm)	Weight (kg)	Operating weight (t)
AVB 8-1800	1800	200	<8
AVB 8-2100	2100	300	<8
AVB 8-2200	2200	420	<8

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



Fork tines

Type	Tine adjustment	Load capacity max. (mm)	Width (mm)	Weight (kg)	Operating weight (t)
GAF8	mechanical	1900	1200	190	6 - 8
GAH8	hydraulically	1900	1200	210	6 - 8
GAF12	mechanical	2500	1200	200	9 - 12
GAH12	hydraulically	2500	1200	220	9 - 12

Package consists of: fork tines, frame with adapter for system S-Lock



Demolition and sorting grabs with HPXdrive or hydraulic cylinder

Type	Width (mm)	Opening (mm)	Volume (liter)	Weight (kg)	Operating weight (t)	Load capacity form locking (kg)	Closing force (kN)
D11TR-50 HPX	520	1545	220	360	7 - 12	2500	15,3
D11TR-50	520	1665	165	305	7 - 12	2500	24

Package consists of: demolition and sorting grab (hydraulic block incl. hosing for HPX)

Available as an option: 4-Grip

Multi purpose grabs with HPXdrive or hydraulic cylinder

Type	Width (mm)	Opening (mm)	Volume (liter)	Weight (kg)	Operating weight (t)	Load capacity form locking (kg)	Closing force (kN)
A11TR-50 HPX	500	1545	210	365	7 - 12	2500	15,3
A11TR-50	500	1650	175	310	7 - 12	2500	25

Package consists of: multi purpose grab (hydraulic block incl. hosing for HPX)

Available as an option: 4-Grip

Clamshell buckets with HPXdrive

Type	Width (mm)	Opening (mm)	Volume (liter)	Weight (kg)	Operating weight (t)	Load capacity (kg)	Closing force (kN)
C11TR-40 HPX	400	1250	145	265	5 - 11	3000	22
C11TR-50 HPX	500	1250	180	295	5 - 11	3000	22
C11TR-60 HPX	600	1250	220	315	5 - 11	3000	22

Package consists of: clamshell bucket, (hydraulic block incl. hosing for HPX)

4-Grip

Type	For grab types	Load capacity (kg)	Weight (kg)	Operating weight (t)
KM 685-05-D06/09-A06/09	D07TR, D11TR, A07TR and A11TR	750	24	<11

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



Gripper module

Type	Opening (mm)	Closing force (kN)	Load capacity (kg)	Weight (kg)
F19H-OQ65	825	18,5	900	265

Package consists of: gripper module, adapter system OilQuick

Other adapter systems on request.

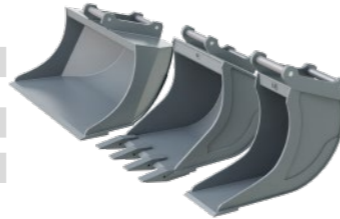


Profil buckets

Type	Bucket types	Width (mm)	Volume (liter)	Weight (kg)
SKP14-600	grading bucket	1600	600	390
SKK14-250	cable bucket	300	250	110
SKD14-500	digging bucket	800	500	255

Package consists of: grading bucket / cable bucket / digging bucket incl. teeth, adapter system S-Lock

Other bucket types, widths or volumes on request.



Levelling bars with roller

Type	Width (mm)	Weight (kg)	Operating weight (t)
AVB 24-2500	2500	420	<24
AVB 24-2700	2700	470	<24

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



Fork tines

Type	Tine adjustment	Load capacity max. (mm)	Width (mm)	Weight (kg)	Operating weight (t)
GAF18	mechanical	4000	1200	340	13 - 18
GAH18	hydraulically	4000	1200	340	13 - 18

Package consists of: fork tines, frame with adapter for system S-Lock



Note: other attachments and adapters on request

Demolition and sorting grabs

Type	Width (mm)	Opening (mm)	Volume (liter)	Weight (kg)	Operating weight (t)	Load capacity (kg)	Closing force (kN)
D14TR-60	600	1555	260	400	11 - 14	3000	30

Package consists of: demolition and sorting grab



Multi purpose grabs

Type	Width (mm)	Opening (mm)	Volume (liter)	Weight (kg)	Operating weight (t)	Load capacity (kg)	Closing force (kN)
A14TR-60	600	1890	260	510	11 - 14	3000	30

Package consists of: multi purpose grab



Clamshell bucket

Type	Width (mm)	Opening (mm)	Volume (liter)	Weight (kg)	Operating weight (t)	Load capacity (kg)	Closing force (kN)
C14TR-60	600	1645	245	510	11 - 14	4500	39

Package consists of: clamshell bucket



Multi-Grip

Type	Width (mm)	Opening (mm)	Volume (m²)	Weight (kg)	Operating weight (t)	Load capacity (kg)	Closing force (kN)
MG16	531	1822	0,36	474	12 - 18	8000	27

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



Note: other attachments and adapters 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



Gripper module

Type	Opening (mm)	Closing force (kN)	Load capacity (kg)	Weight (kg)
F19H-OQ65	825	18,5	900	265
F19H-OQ70/55	825	18,5	900	346

Package consists of: gripper module, adapter system OilQuick

Other adapter systems on request.

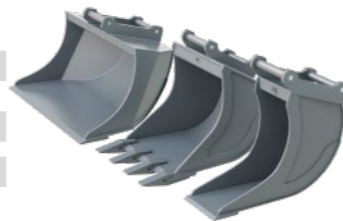


Profil buckets

Type	Bucket types	Width (mm)	Volume (liter)	Weight (kg)
SKP18-750	grading bucket	1700	750	520
SKK22-300	cable bucket	300	300	260
SKD16-650	digging bucket	900	650	400

Package consists of: grading bucket / cable bucket / digging bucket incl. teeth, adapter system S-Lock

Other bucket types, widths or volumes on request.



Levelling bars with roller

Type	Width (mm)	Weight (kg)	Operating weight (t)
AVB 24-2500	2500	420	<24
AVB 24-2700	2700	470	<24

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



Fork tines

Type	Tine adjustment	Load capacity max. (mm)	Width (mm)	Weight (kg)	Operating weight (t)
GAF18	mechanical	4000	1200	340	13 - 18
GAH18	hydraulically	4000	1200	340	13 - 18
GAF20	mechanical	4000	1200	420	19 - 20
GAH20	hydraulically	4000	1200	420	19 - 20

Package consists of: fork tines, frame with adapter for system S-Lock



Note: other attachments and adapters on request

Demolition and sorting grabs

Type	Width (mm)	Opening (mm)	Volume (liter)	Weight (kg)	Operating weight (t)	Load capacity (kg)	Closing force (kN)
D19TR-60	600	1550	225	450	14 - 19	4000	32
D19TR-80	800	1550	300	500	14 - 19	4000	27
D19TR-100	1000	1870	500	595	14 - 19	4000	25

Package consists of: demolition and sorting grab

Multi purpose grabs

Type	Width (mm)	Opening (mm)	Volume (liter)	Weight (kg)	Operating weight (t)	Load capacity (kg)	Closing force (kN)
A19TR-60	600	1900	300	570	14 - 19	4000	27

Package consists of: multi purpose grab

Clamshell bucket

Type	Width (mm)	Opening (mm)	Volume (liter)	Weight (kg)	Operating weight (t)	Load capacity (kg)	Closing force (kN)
C19TR-60	600	1655	245	575	14 - 19	4500	42

Package consists of: clamshell bucket

Multi-Grip

Type	Width (mm)	Opening (mm)	Volume (m²)	Weight (kg)	Operating weight (t)	Load capacity (kg)	Closing force (kN)
MG16	531	1822	0,36	474	12 - 18	8000	27
MG20	531	2279	0,52	560	16 - 22	10000	33

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

Note: other attachments and adapters 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



Gripper module

Type	Opening (mm)	Closing force (kN)	Load capacity (kg)	Weight (kg)
F25H-OQ70/55	1050	19,5	1400	470

Package consists of: gripper module, adapter system OilQuick

Other adapter systems on request.

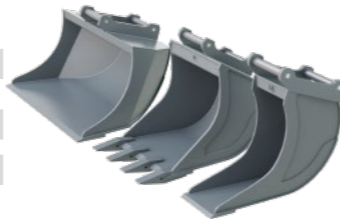


Profil buckets

Type	Bucket types	Width (mm)	Volume (liter)	Weight (kg)
SKP24-1200	grading bucket	1800	1200	780
SKK22-300	cable bucket	300	300	260
SKD22-1100	digging bucket	1000	1100	850

Package consists of: grading bucket / cable bucket / digging bucket incl. teeth, adapter system S-Lock

Other bucket types, widths or volumes on request.



Levelling bars with roller

Type	Width (mm)	Weight (kg)	Operating weight (t)
AVB 24-2500	2500	420	<24
AVB 24-2700	2700	470	<24

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



Fork tines

Type	Tine adjustment	Load capacity max. (mm)	Width (mm)	Weight (kg)	Operating weight (t)
GAF20	mechanical	4000	1200	420	19 - 20
GAH20	hydraulically	4000	1200	420	19 - 20
GAF24	mechanical	5000	1200	440	21 - 24
GAH24	hydraulically	5000	1200	440	21 - 24

Package consists of: fork tines, frame with adapter for system S-Lock



Note: other attachments and adapters on request

Demolition and sorting grabs

Type	Width (mm)	Opening (mm)	Volume (liter)	Weight (kg)	Operating weight (t)	Load capacity (kg)	Closing force (kN)
D25TR-84	840	1890	380	725	18 - 25	5000	42
D25TR-100	1000	1890	450	770	18 - 25	5000	42

Package consists of: demolition and sorting grab



Multi purpose grabs

Type	Width (mm)	Opening (mm)	Volume (liter)	Weight (kg)	Operating weight (t)	Load capacity (kg)	Closing force (kN)
A25TR-70	700	2038	400	815	18 - 25	5000	38

Package consists of: multi purpose grab



Multi-Grip

Type	Width (mm)	Opening (mm)	Volume (m²)	Weight (kg)	Operating weight (t)	Load capacity (kg)	Closing force (kN)
MG20	531	2279	0,52	560	16 - 22	10000	33

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



Note: other attachments and adapters on request

KINSHOFER Branches

Hauptsitz Deutschland:
KINSHOFER GmbH
 Raiffeisenstrasse 12
 83607 Holzkirchen
 Tel.: +49 (0) 8021 88 99 0
 Email: info@kinshofer.com
 www.kinshofer.com

United Kingdom:
KINSHOFER UK Ltd.
 Shipton Downs Farm
 Hazleton
 Cheltenham, Gloucestershire, GL54 4DX
 Tel.: +44 (0) 161 406 7046
 Fax: +44 (0) 161 406 7014
 Email: sales-uk@kinshofer.com
 www.kinshofer.com

France:
KINSHOFER France S.A.R.L.
 8 Bis, rue Gabriel Voisin, CS 40003
 F-51688 Reims Cedex 2
 Tel.: +33 (0) 3 88 39 55 00
 Fax: +33 (0) 3 88 79 06 75
 Email: sales-france@kinshofer.com
 www.kinshofer.com

Canada:
KINSHOFER North America
 5040 Mainway Drive, Unit #11
 Burlington, ON L7L 7G5
 Tel.: +1 (905) 335-2856
 Fax: +1 (905) 335-4529
 Toll Free (North America): 1-800-268-9525
 Email: sales-northamerica@kinshofer.com
 www.kinshofer.com

United States of America:
KINSHOFER USA
 6420 Inducon Drive
 Suite G
 Sanborn, NY, 14132
 Tel.: +1 (716) 731-4333
 Toll Free (North America): 1-800-268-9525
 Email: sales-usa@kinshofer.com
 www.kinshofer.com



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KINSHOFER Subsidiaries

Nederland:
DEMAREC B.V.
 De Hork 32
 NL-5431 NS Cuijk
 Tel.: +31 (0) 485 442300
 Fax: +31 (0) 485 442120
 info@demarec.com
 www.demarec.com

Sverige:
RF System AB
 Furutorpsgatan 6
 SE-288 34 Vinslöv
 Tel.: +46 (0) 44 817 07
 Fax: +46 (0) 44 859 63
 Email: info@rf-system.se
 www.rf-system.se

United Kingdom:
Auger Torque Europe Limited
 Hazleton
 Cheltenham, GL54 4DX
 Tel.: +44 (0) 1451 861 652
 Fax: +44 (0) 1451 861 660
 Email: sales@augertorque.com
 www.augertorque.com

Australia:
Auger Torque Australia Pty Ltd.
 481 Boundary Road, Darra
 Queensland 4076
 Tel.: +61 (0) 7 3274 2077
 Fax: +61 (0) 7 3274 5077
 Email: sales@augertorque.com.au
 www.augertorque.com.au

Australia:
Doherty Couplers & Attachments Ltd.
 PO Box 701,
 Annerley (Brisbane) QLD, 4103
 Tel.: +61 1 800 057 021
 Email: sales@dohertydirect.net
 www.dohertydirect.net

New Zealand:
Doherty Engineered Attachments Ltd.
 PO Box 9339, Greerton
 Tauranga 3142
 Tel.: +64 7 574 3000
 Fax: +64 7 574 8030
 Email: sales@dohertydirect.net
 www.dohertydirect.net

United States of America:
Solesbee's LLC
 2640 Jason Industrial Parkway
 Winston, GA 30187
 Toll Free (North America): 1-800-419-8090
 Email: sales@solesbees.com
 www.solesbees.com

中国:
Auger Torque China CO., Ltd.
 Baozhan Rd, Tongyi Industry Zone
 Dongwu, Yinzhou, Ningbo
 China 315114
 Tel.: + 86 (0) 574 8848 8181
 Fax: + 86 (0) 574 8848 8687
 Email: john.hu@attachmenttorque.com
 www.augertorque.com

Italia:
Hammer S.r.l.
 Via Oleifici dell' Italia Meridionale,
 lotto G1
 IT-70056 Molfetta BA
 Tel.: +39 080 337 5317
 Email: info@hammerurope.com
 www.hammereurope.com

Italia:
Cangini Benne S.r.l.
 Via Savio, 29/31 47027
 IT-70056 Sarsina FC
 Tel.: +39 0547 698020
 Fax: +39 0547 698021
 Email: cangini@canginibenne.com
 www.canginibenne.com

Italia:
Trevi Benne S.p.A.
 Via Bergoncino, 18
 IT-36025 Noventa Vicentina VI
 Tel.: +39 0444 760773
 Fax: +39 0444 861182
 Email: info@trevibenne.it
 www.trevibenne.it

United Kingdom:
Prolec
 25 Benson Road,
 Nuffield Industrial Estate
 Poole, BH17 0GB
 Tel.: +44 1202 441 000
 Email: enquiries@prolec.co.uk
 safe.prolec.co.uk



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GROUP