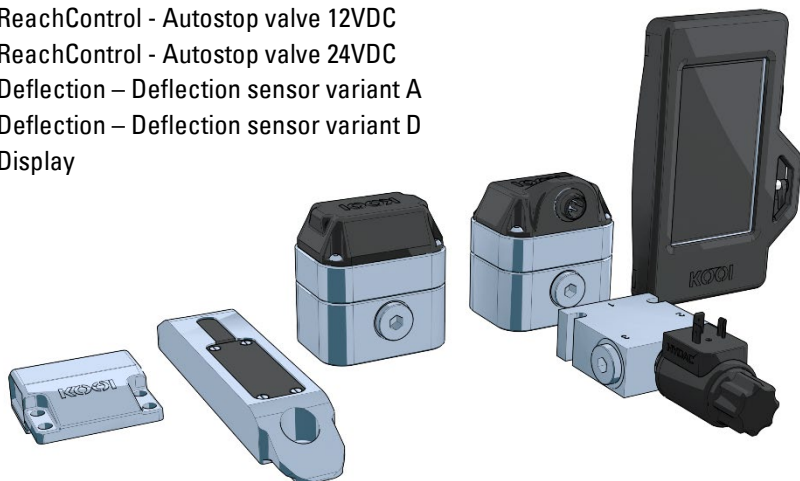


INSTRUCTIONS AND PARTS MANUAL



KOOI®ReachControl - Flow meter BA
KOOI®ReachControl - Flow meter CA
KOOI®ReachControl - Autostop valve 12VDC
KOOI®ReachControl - Autostop valve 24VDC
KOOI®Deflection – Deflection sensor variant A
KOOI®Deflection – Deflection sensor variant D
KOOI®Display



MA15032019-08ENG
Original instructions

11/22/2022

English

MEIJER
HANDLING SOLUTIONS

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Note

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Declaration of Conformity

Product : K00I® ReachControl system
Date : 03/18/2019
Manufacturer : Meijer Handling Solutions B.V. **Address** : Oudebildtdijk 894
ZIP code : 9079 NG **City** : Sint Jacobiparochie
Country : The Netherlands

Herewith declares that the above named machinery conforms to the provisions as stipulated by the following directives and national statutory legislation implemented in line with these directives:

- Low Voltage Directive 2006/95/EC
- Electromagnetic compatibility Directive 2004/108/EC

The following (parts of) harmonized norms are applied:

- NEN-EN-ISO 12100:2010 Safety of machinery - General principles for design - Risk assessment and risk reduction

Done at : Sint Jacobiparochie
By : H. Meijer **Function** : CEO

Signature :



Icons



Warning. Failure to comply with safety warnings can result in serious injury or death



Caution: Failure to comply with safety cautions can cause injury or property damage.



Note: note, tips or additional information



Tools: required tools for described procedure.

Safety information

Please read the following safety information before using the KOOI® NEXT systems.



KOOI® NEXT is a product family of containing, among others, the KOOI® ReachControl, KOOI® Deflection and KOOI®Display products.



The product name 'KOOI®Display' refers to the touchscreen unit which can optionally be supplied with your KOOI® ReachControl and/or KOOI® Deflection system.



The term 'device' refers to either the KOOI®Display or an Android / iOS device obtained from a party other than the manufacturer of the KOOI® NEXT systems.



The term 'module' refers to all separately sold articles in the KOOI® NEXT product family, including the KOOI®Display and the available app for Android and iOS devices.



Do not use damaged power cords and plugs, or loose electrical sockets. Unsecured connection can cause electrical shock or fire.



Do not touch electrical devices, power cords, plugs or electrical sockets with wet hands or other wet body parts. Doing so may cause electric shock.



Do not pull the power cord excessively when disconnecting it. Doing so may cause electric shock or fire.



Do not bend or damage the power cord. Doing so may cause electric shock or fire.



Do not drop or cause excessive impact to the KOOI®Display.

- This may damage your KOOI®Display or battery, cause the KOOI®Display to malfunction, or shorten its lifespan.
- This may also cause overheating, combustion, fire, or other hazards.



Handle and dispose of the KOOI®Display with care.

- Never dispose of the battery or KOOI®Display in a fire. Never place the battery or KOOI®Display on or in heating devices. The KOOI®Display may explode when overheated. Follow all local regulations when disposing of used battery or device.
- Never crush or puncture the KOOI®Display.
- Avoid exposing the KOOI®Display to high external pressure, which can lead to an internal short circuit and overheating.



Protect the KOOI®Display, battery and charger from damage

- Avoid exposing your KOOI®Display and battery to very cold or very hot temperatures.
- Extreme temperatures can damage the KOOI®Display.
- Do not directly connect together the battery's positive and negative terminals and prevent them from coming into contact with metal objects. Doing so may cause the battery to malfunction.
- Never use a damaged battery.



Do not store the KOOI®Display in areas with high concentrations of dust or airborne materials.

- The battery may leak.
- Your device may overheat and cause a fire.



Do not handle a damaged or leaking battery.
For safe disposal of your batteries, please follow local law and regulations.



Do not operate a device while driving. Not being focused on driving might lead to collisions and injuries. Always make sure the lift truck is stationary when using the KOOI®Display.



Do not operate a device while operating other controls in the lift truck. Not being focused on lift truck controls while using them might lead to collisions and injuries.



When using your own device (e.g. smartphone, tablet) to control the KOOI® ReachControl system, always follow the safety instructions available for you device.



When installing the KOOI®Display make sure the operators sight to his/her surroundings is not reduced to the extent that it may result in dangerous situations.
Be aware of a reduced field of vision when using equipment with a KOOI®Display installed.

Caution



Avoid using the KOOI®Display within a 15 cm range of a pacemaker, if possible, as the KOOI®Display can interfere with the pacemaker.



Electronic devices in your lift truck may malfunction, due to radio interference from your KOOI®Display. Contact your supplier for more information.



Do not expose the KOOI®Display to heavy smoke or fumes. Doing so may damage the outside of the KOOI®Display or cause it to malfunction.



Do not use the KOOI®Display near devices or apparatuses that emit radio frequencies, such as sound systems or radio towers. Radio frequencies may cause the KOOI®Display to malfunction.



Turn off the KOOI®Display in potentially explosive environments

- Always comply with regulations, instructions and signs in potentially explosive environments.
- Do not use your device at refueling points (petrol stations), near fuels or chemicals, or in blasting areas.
- Do not store or carry flammable liquids, gases, or explosive materials in the same compartment as the device, its parts, or accessories.



If any part of the KOOI®Display is broken, smokes, or emits a burning odor, stop using the device immediately. Use the device again only after it has been repaired at a certified dealer.

- Broken glass or acrylic could cause injury to your hands and face.
- When the device smokes or emits a burning odor, it may result in battery explosion or fire.



Do not remove any parts from the KOOI®Display, including the back cover. Removing parts will lead to parts getting damaged.



Do not paint or put stickers on the KOOI®Display. It may result in damage to the KOOI®Display.



Install mobile devices and equipment with caution.

- Ensure that any mobile devices or related equipment installed in your vehicle are securely mounted.



Do not disassemble, modify, or repair KOOI® ReachControl modules.

- Any changes or modifications made without prior written consent from the manufacturer will void warranty. If any KOOI® ReachControl devices or sensors need servicing, contact your local dealer.
- Exception to the above are part replacement as mentioned in this manual. Follow the instructions in this manual to avoid voiding warranty.



When cleaning the KOOI®Display, mind the following:

- Wipe the KOOI®Display using a clean towel or microfiber cloth.
- Do not use chemicals or detergents. Doing so may result in discolor or corrosion to the outside of the KOOI®Display, or may result in electric shock or fire.



Do not use KOOI® ReachControl devices or sensors for anything other than its intended purpose.



Only qualified personnel, arranged through your local dealer or the manufacturer are allowed to service KOOI® NEXT devices.

The KOOI®Display devices contains Wi-Fi functionality. It is only to be used by installed software to connect to the internet or local Wi-Fi network for software updates, license/module activation, or sending log data. Do not use the KOOI®Display to access the internet in any other way to prevent malfunction of the ReachControl software, malware or virus infections or data loss.



Do not install 3rd party software on the KOOI®Display. It may lead to malfunction of the ReachControl software, malware or virus infections or data loss. It may void warranty.



Do not change settings on the Android OS running on the KOOI®Display. It may lead to malfunction of the ReachControl software and may void warranty.

General

The KOOI® ReachControl product family contains modules which can consist of sensors, display and control units used to measure and display various types of information from (forklift) attachments of hydraulic cylinders. The modules are primarily used on lift trucks.

Training

When using the KOOI® ReachControl system on a forklift truck or other heavy equipment, the operator should have sufficient training in accordance with local laws and regulations. No further specific training is required.

Modules

Below is a list with the possible modules which are available in the KOOI® ReachControl product family. You may have purchased one or more of them. Please follow the cross references to the page containing the specific information and instructions for your module(s):

- Flow meter with integrated angle sensor, see page 12.
- Deflection sensor, see page 22.
- KOOI®Display, see page 29.
- ReachControl app, see page 32.

Flow meter with integrated angle sensor



The term 'forklift' will be used for any forklift truck, lifter or similar vehicle used for lifting and transporting loads.



The term 'left' and 'right' when used in combination with 'forklift' refer to the left or right as seen from the driver's seat.



The 'KOOI® REACHFORKS' are hydraulically extendable forklift forks that are sold under this trademark. From here on they are referred to as 'forks'.



The flow meter can be used with virtual any set of hydraulically extendable forks regardless of the manufacturer / brand.



Keep the hose length between flow meter and KOOI® REACHFORKS / hydraulic cylinder as short as possible to reduce deviation in the measurement system due to expansion of the hoses.

Application

The flow meter with integrated angle sensor (from hereon the 'flow meter') can be used to measure the length of a cylinder or cylinder controlled system like the KOOI® REACHFORKS. Furthermore, the angle at which the flow meter is located can also be measured with respect to the ground. A possible application for the angle measurement is as a 'tilt indicator' for a forklift mast or carriage.

Identification

See serial number on flow meter body.

Specifications

Hydraulic data

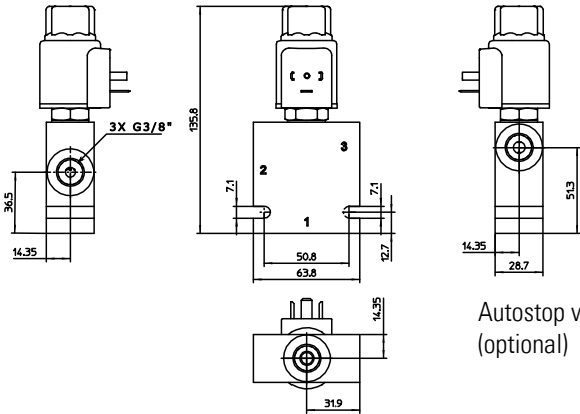
Operating pressure:	max. 250 bar	/	max. 3626 psi
Nominal flow:	max. 25 L/min	/	max. 6.6 gal/min
Filtration:	Class 21/19/16 according to ISO 4406 or cleaner		
Weight:	0.98 kg	/	2.2 lb
Media operating temperature range:	min. 0 °C to max. +100 °C		
Ambient operating temperature range:	min. 0 °C to max. + 60 °C		
Medium	Hydraulic oil (ISO HH, ISO HL, ISO HM or ISO HV)		

Electrical data

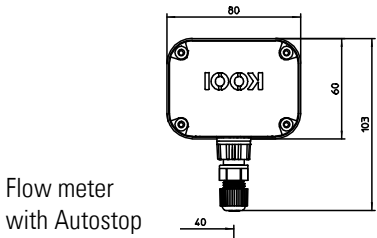
Power supply:	without Autostop	Battery, size A, 3.6V (3.60 Ah)
	with Autostop	Wired 12 or 24 VDC
Current drawn at 20° C (Autostop):	2 A at 12 VDC	
	1.3 A at 24 VDC	
Data connection	Low power Bluetooth®	

Table 1: hydraulic and electrical specifications

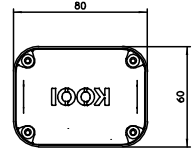
Dimensions



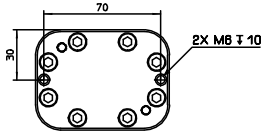
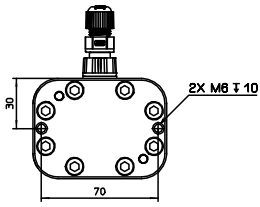
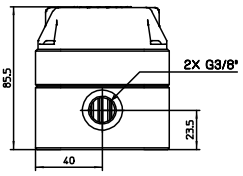
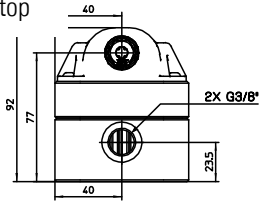
Autostop valve (optional)



Flow meter with Autostop



Wireless flow meter



Hydraulic installation on KOOI® REACHFORKS



The flow meter has no dedicated pressure or return ports.

All flow meters and valves are delivered with plugs in the hydraulic ports. Remove these before starting assembly.



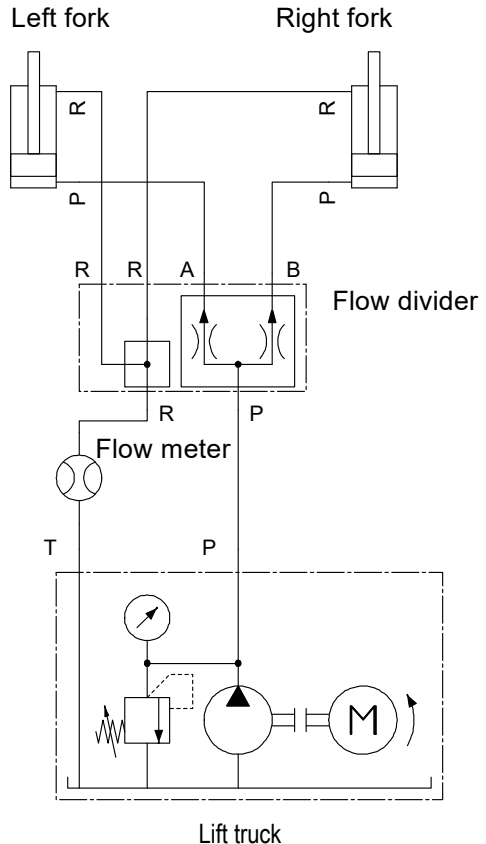
All hydraulic equipment need to be installed by an authorized technician.

Forks with flow divider – flow meter without Autostop

The flow meter needs to be connected to the return flow of the flow divider. Remove the plugs from the flow meter. Connect one port of the flow meter to the 'R' port on the flow divider.

Connect the other port of the flow meter to the return hose of the lift truck.

Check all connections for leakage before operation. Fully extend and retract the forks five times to remove any air from the hydraulic system.



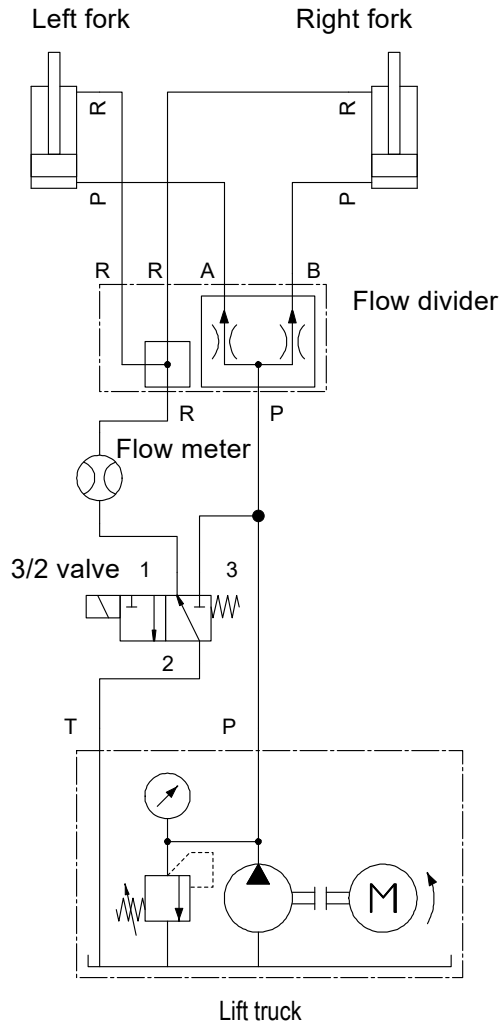
Keep the hose length between flow meter and KOOI® REACHFORKS / hydraulic cylinder as short as possible to reduce deviation in the measurement system due to expansion of the hoses.

Forks with flow divider – flow meter with Autostop

The flow meter needs to be connected to the return flow of the left fork. Remove the plugs from the flow meter. Connect one port of the flow meter to the 'R' port on the flow divider.

Connect the other port of the flow meter to port '1' of the 3/2 valve for the Autostop function. Connect port '3' of the 3/2 valve with a T-coupling to the 'P' port on the flow divider. Finally connect port '2' of the 3/2 valve to the return hose of the lift truck.

Check all connections for leakage before operation. Fully extend and retract the forks five times to remove any air from the hydraulic system.



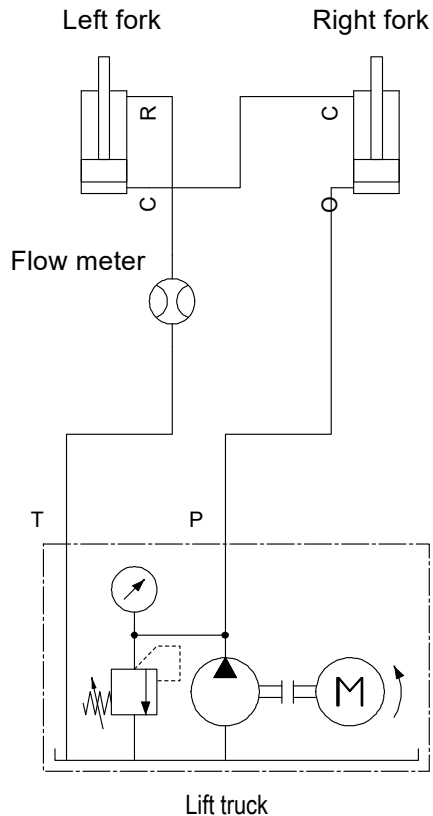
Keep the hose length between flow meter and KOOI® REACHFORKS / hydraulic cylinder as short as possible to reduce deviation in the measurement system due to expansion of the hoses.

Forks with leader-follower function – flow meter without Autostop

The flow meter needs to be connected to the return flow of the left fork. Remove the plugs from the flow meter. Connect one port of the flow meter to the 'R' port on the left fork.

Connect the other port of the flow meter to the return hose of the lift truck.

Check all connections for leakage before operation. Fully extend and retract the forks five times to remove any air from the hydraulic system.



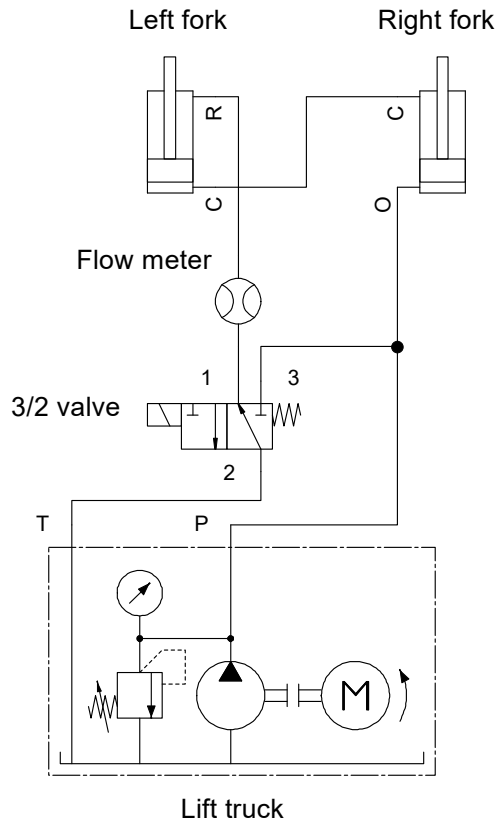
Keep the hose length between flow meter and KOOI® REACHFORKS / hydraulic cylinder as short as possible to reduce deviation in the measurement system due to expansion of the hoses.

Forks with leader-follower function – flow meter with Autostop

The flow meter needs to be connected to the return flow of the left fork. Remove the plugs from the flow meter. Connect one port of the flow meter to the 'R' port on the left fork.

Connect the other port of the flow meter to port '1' of the 3/2 valve for the Autostop function. Connect port '3' of the 3/2 valve with a T-coupling to the 'O' port on the right fork. Finally connect port '2' of the 3/2 valve to the return hose of the lift truck.

Check all connections for leakage before operation. Fully extend and retract the forks five times to remove any air from the hydraulic system.



Keep the hose length between flow meter and KOOI® REACHFORKS / hydraulic cylinder as short as possible to reduce deviation in the measurement system due to expansion of the hoses.

Electrical installation

Without Autostop – battery (re)placement



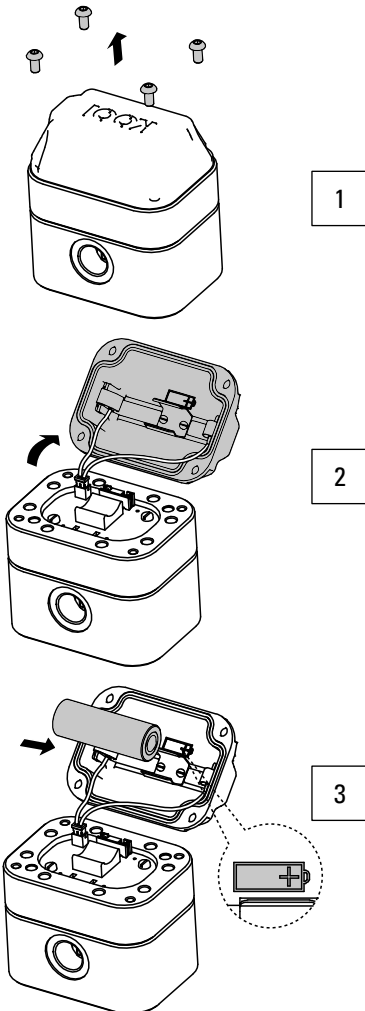
Remove battery insulator tab before first use, using instructions below.



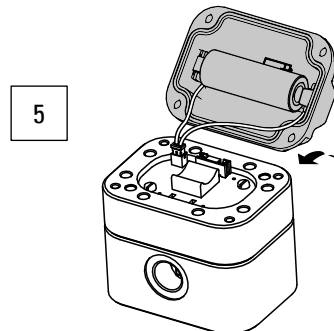
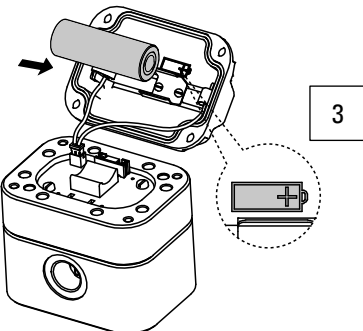
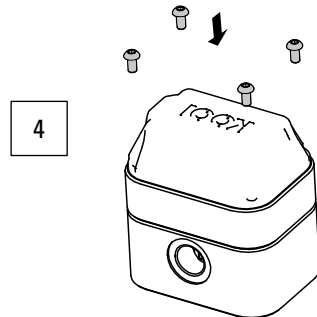
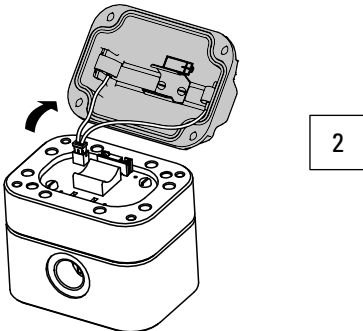
Be careful when removing the cap to prevent damage to wiring. The cap is connected to the flow meter by wiring.



Allen key 2.5 mm



See the Replacement parts lists at page 41 for battery information.



With Autostop



The solenoid connector is not part of the KOOI® ReachControl package. Connector specs. DIN connector to EN 175301-803 (type 40-1836).

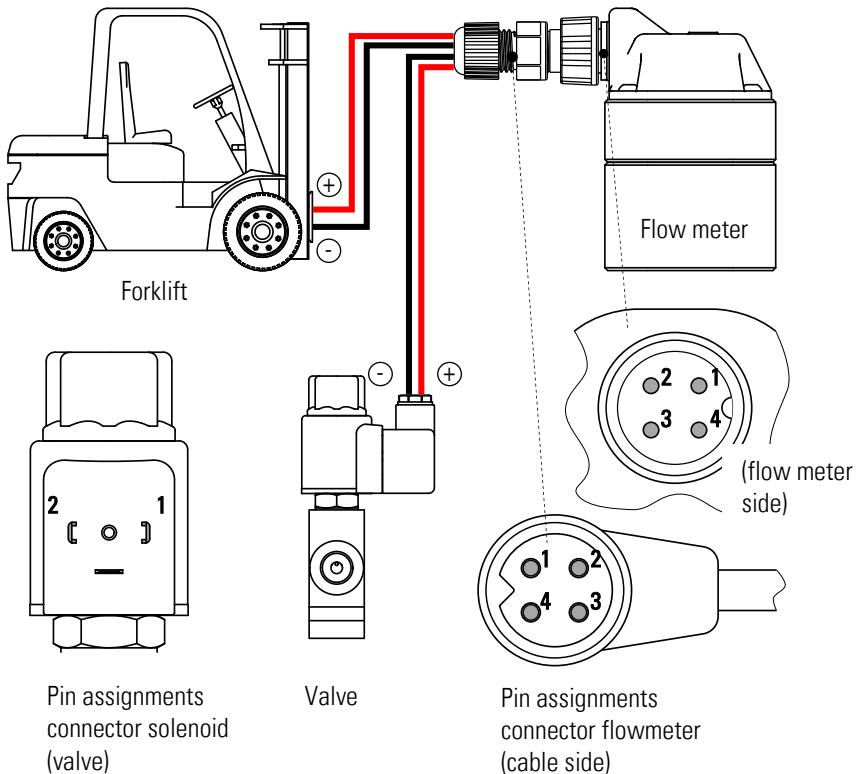


Cables are not part of the KOOI® ReachControl package. Cable should support the required power supply (see chapter Specifications at page 13).



All cables and connectors need to be assembled by a certified electrician.

Required power supply from the forklift (at 20° C): 2A at 12 VDC or 1.3 A at 24 VDC, depending on the supplied solenoid spool on the Autostop valve. Connect the power supply from the forklift to the flow meter and solenoid connector. See the next image and the pin assignments in Table 2.



Connector solenoid (valve)

Pin no.	Assignment
1	- (flow meter)
2	+12/24VDC (flow meter)

Connector flow meter

Pin no.	Assignment
1	- (solenoid)
2	+12/24VDC (solenoid)
3	- (forklift)
4	+12/24VDC (forklift)

Table 2: Pin assignments

Working with the flow meter

When the flow meter and optionally the Autostop valve are installed they are ready for use with either the KOOI®Display (continue at chapter KOOI®Display, page 29) or the app (continue at chapter ReachControl app, page 32).

Maintenance

The battery of the flow meter without Autostop requires periodic replacement. The KOOI®Display or app will give a 'low battery warning' when replacement is needed. Replace the battery as soon as the 'low battery warning' appears. See chapter Without Autostop – battery (re)placement at page 19 for instructions.

No further maintenance on the flow meter or Autostop valve are required. For attached hoses, cables and equipment please follow maintenance instructions as provided by their suppliers.

Deflection sensor

Application

The deflection sensor can be used to measure the deflection of lifttruck forks while lifting a load. The sensor measures the angle with respect to the ground. The deflection sensor exists in two variations:

- Variant **A**: Assembled from supplier in the tip of the sleeve of the KOOI REACHFORKS®.
- Variant **D**: As separate unit which can be screwed onto equipment. Standard assembly is on the side of a standard lifttruck fork.

Another possible application of the deflections sensor is as a 'tilt indicator' for the forklift mast or fork carrier.

Identification

For the sleeve version use part number of the sleeve. For separate unit, see serial number on outside of sensor housing.

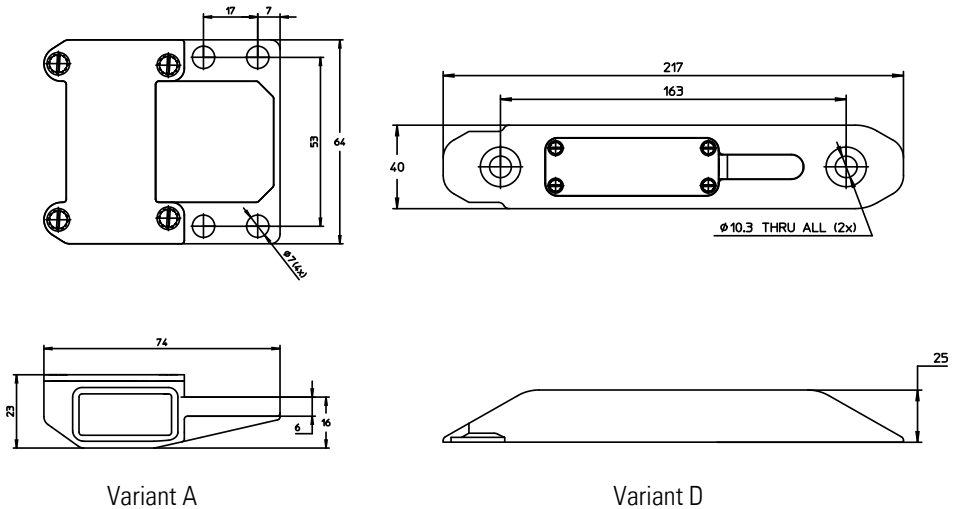
Specification

Electrical data

Power supply:	Battery, size A, 3.6V (3.60 Ah)
Data connection	Low power Bluetooth®

Table 3: electrical specifications

Dimensions



Variant A

Variant D

Mechanical installation

Variant A

This sensor is standard assembled in the tip of the sleeve of the fork. No additional installation is required.

Variant D

This sensor can be used with, among others, standard liftrucks forks. The mounting requires 2 threaded M10 holes, 13 mm deep with an effective thread length of 10 mm, to be made in the side of the fork blade (see next figure). The sensor can be assembled using 2x Locking washer art. no. 37967 M10 and 2x screws M10 (art. no. M00022058). Use 48Nm torque when tightening the screws. The sensor can be mounted either on the right or left side of the fork blade.



The sensor can only be installed on forks with a blade thickness of 40 mm or more.



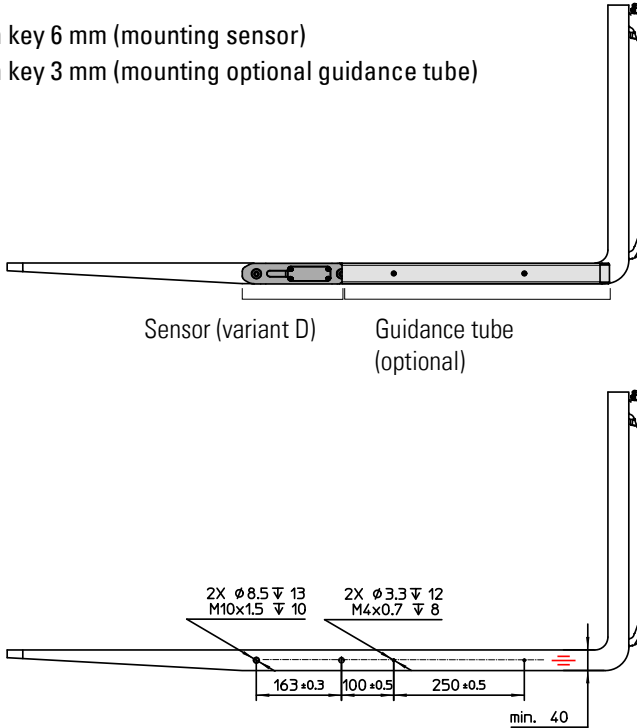
Installation should be done by a skilled mechanic.



The sensor should be mounted as far forward, toward the tip of the fork, as the taper of the fork allows. See next figure for dimension and positioning.



Allen key 6 mm (mounting sensor)
Allen key 3 mm (mounting optional guidance tube)



In addition to the sensor a guidance tube can be assembled on the side of the fork blade at the back of the sensor. This reduces the chance of catching the pallet with the sensor when retracting the forks out of a pallet.

The installation requires 2 threaded M4 holes, 12 mm deep with an effective thread length of 8 mm, to be made in the side of the fork blade (see previous figure). The guidance tube is hooked behind the sensor and assembled with 2x locking rings (art. no. *M00030012*) and 2x M4 screws (art. no. *M00015403*). Use 3 Nm torque when tightening the screws.

See also Replacement parts lists, page 41.

Electrical installation – battery (re)placement

See also Replacement parts lists, page 41.

Variant A

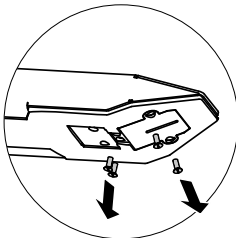


Flat head screw driver 5.5 mm

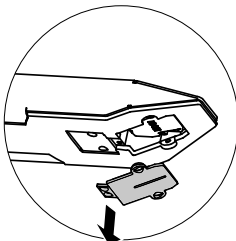
Flat head screw driver 3.5 mm

Allen key 5 mm

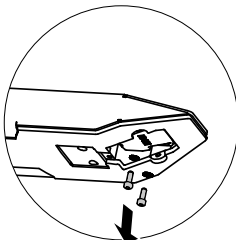
Loctite 243 glue



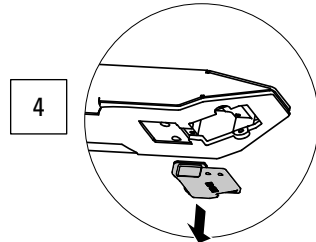
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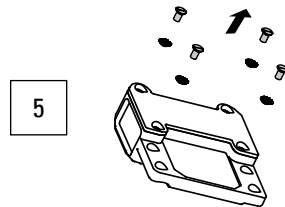
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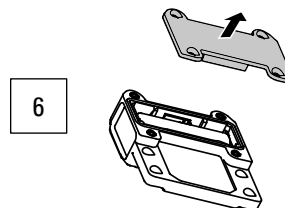
3



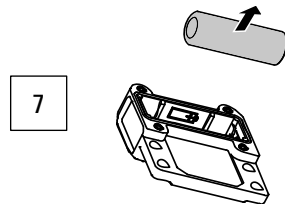
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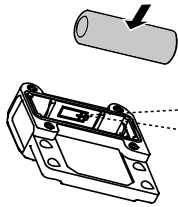
5



6

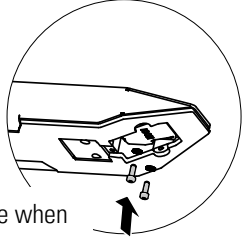


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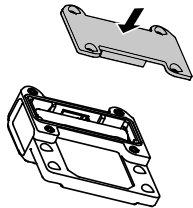


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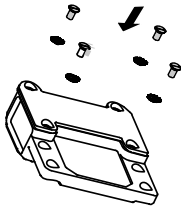
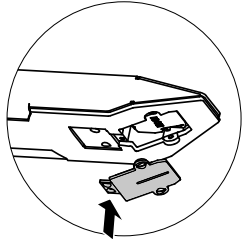


Use 10 Nm torque when tightening the screws.



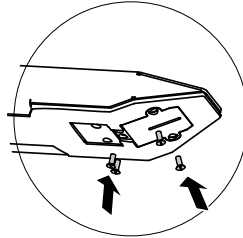
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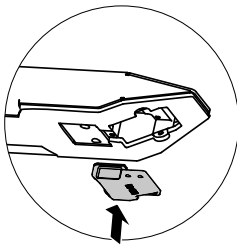


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14



Apply Loctite 243 (4x)

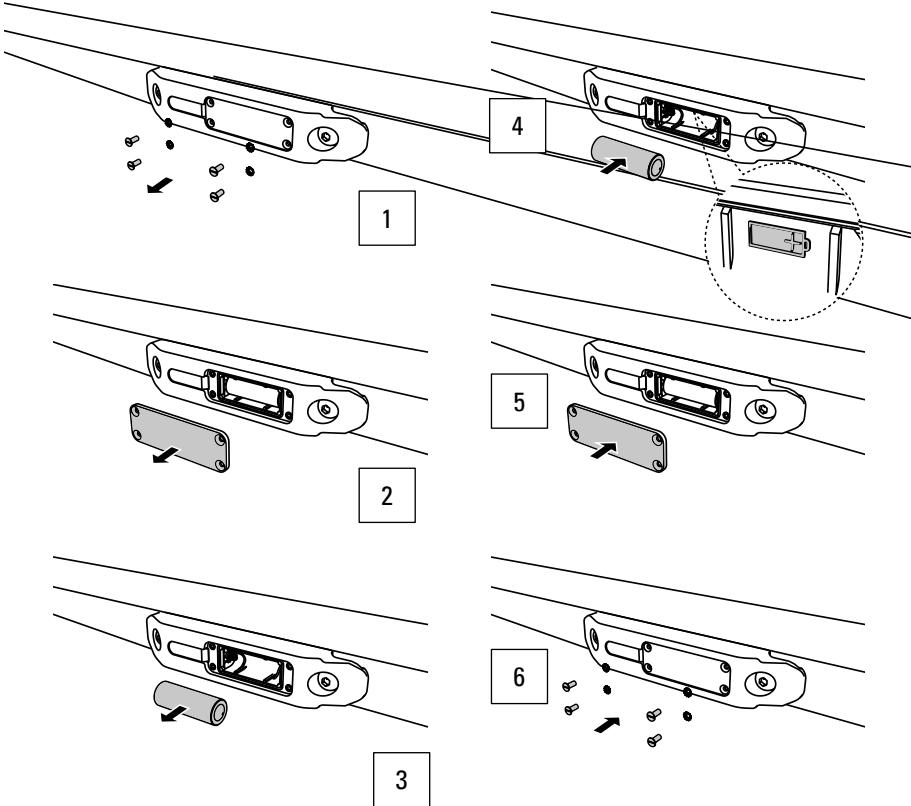


11

Variant B



Flat head screwdriver 3.5 mm



Working with the deflection sensor

When the sensor is available / installed it can be used with either the KOOI®Display (continue at chapter KOOI®Display, page 29) or the app (continue at chapter ReachControl app, page 32).

Maintenance

The battery of the sensor requires periodic replacement. See chapter Electrical installation – battery (re)placement at page 25 for instructions.

No further maintenance of the sensor is required.

KOOI®Display

Application

The KOOI®Display can be used to display received sensor data and set presets for the flowmeter stop position.

Identification

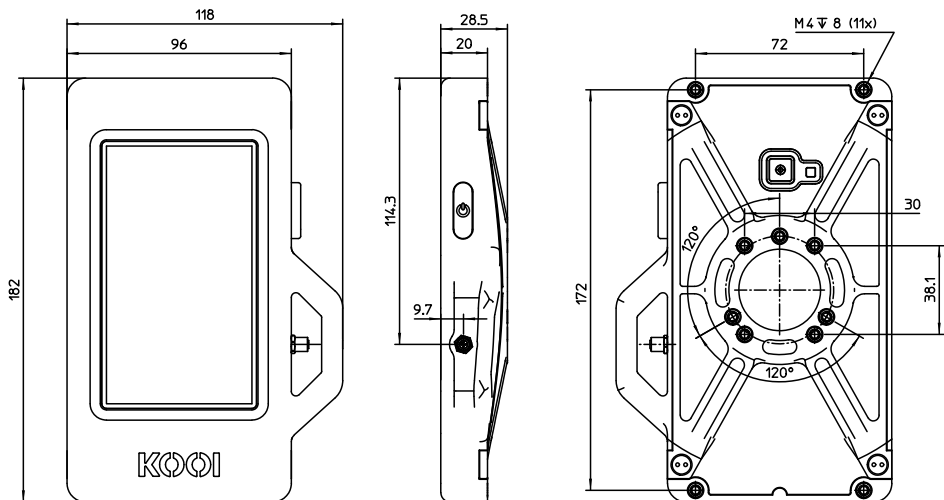
See serial number on outside of KOOI®Display housing.

Specifications

Electrical data

Power supply:	without Autostop	Wired 12 or 24 VDC
Current drawn at 20°C:		2A
Data connection		Bluetooth®
		Wi-Fi (disabled by default)

Dimensions



Center hole pattern is compatible with AMPS 4 and RAM® Mounts 3-hole 120° (small) hole patterns.

Installation

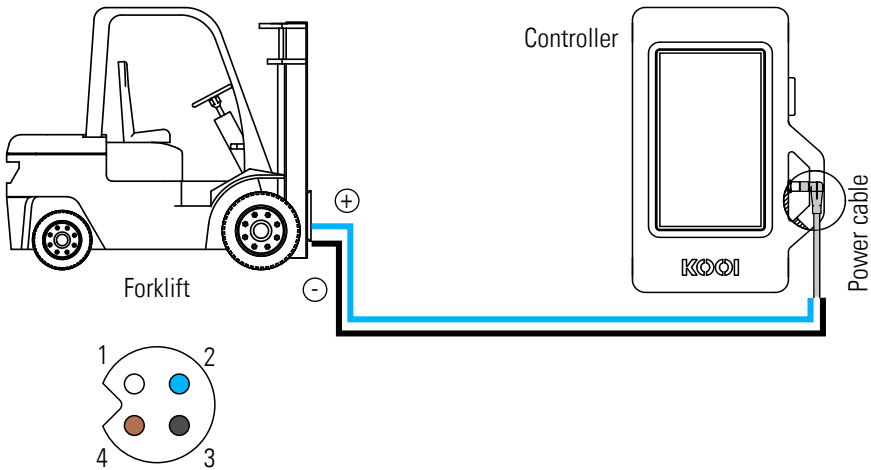


A power cable with attached connector is delivered with the KOOI®Display.



All cables and connectors need to be assembled by a certified electrician.

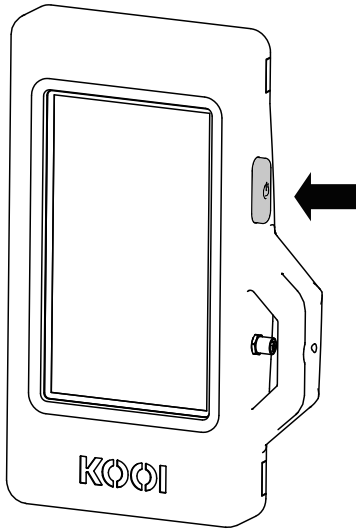
Required power supply from the forklift: 2A at 12 VDC or 24 VDC. Connect the power supply from the forklift to the power cable delivered with the KOOI®Display. The power cable may be shortened if required. Then connect the connector of the power cable to the connector of the KOOI®Display. See the next image and the pin assignments in Table.



Pin no.	Assignment	Strand color power cable
1	- GND	White
2	+12/24VDC	Blue
3	n/a	Black
4	n/a	Brown

Table 3: Pin assignments

Working with the KOOI®Display



The KOOI®Display contains a hardware on/off button and touch screen for user interaction.

To start up the KOOI®Display press the on/off button for 4 seconds. Starting up may take up to 1 minute.

To shut down or restart the KOOI®Display press the on/off button for 2-3 seconds until the screen displays three on screen buttons: 'Power off', 'Restart' and 'Emergency mode'. Touch 'Power off' to shut down or 'Restart' to restart the KOOI®Display.

Leave 'Emergency mode' off. This is an Android feature not required for the operation of KOOI® ReachControl and may result in slowdown of the KOOI®Display functions and communication with sensors.

A short press of the on/off button while the KOOI®Display is on will put the KOOI®Display in standby mode. Press again to bring the KOOI®Display out of standby mode.



To avoid complete battery drain, put the system in standby when the lift truck is turned off for more than 15 minutes and turn off the system when the lift truck is turned off for more than 1 hour. Fully draining the battery will prevent the KOOI®Display from starting up until battery has regained some charge.

All further user interaction will be done through the touch screen, continue in chapter Working with the app at page 33.

Maintenance

Whenever required remove dirt and grime from the touch screen/KOOI®Display using a clean towel or microfiber cloth.

ReachControl app

Installation

The installation files for the ReachControl app can be acquired through the Google Play store (Android) or Apple App store (iOS). The app can run offline, but requires a Bluetooth® connection for sensor communication.

Android devices

Visit the Android Play store on your Android device and search for “kooi reachcontrol” or find the app via the QR code or link below. Then install the KOOI® ReachControl app.



<https://play.google.com/store/apps/details?id=nl.kooi.reach>

iOS devices

Visit the Apple Play store on your iOS device and search for “kooi reachcontrol” or find the app via the QR code or link below. Then install the KOOI® ReachControl app.



<https://apps.apple.com/nl/app/kooi-reachcontrol/id1514110569>

Working with the app

Before starting the app make sure all the sensors are physically installed according to the instruction in this manual.

Start the ReachControl app. When a KOOI®Display is used (see chapter KOOI®Display, page 29), depending on the version, the app may start automatically.



The app only supports portrait mode.

Getting started

1. Start the ReachControl app ...
2. Select you preferred language ...
3. Read (optional) the information on the various information screens, tap '>' to continue to the next screen or tap 'skip' to skip the information screens ...
4. Follow the instructions in the 'Action required' popup and tap 'Settings' ...
5. Enable 'Allow modifying system settings', tap the 'back' button or ' ' ...
6. Check 'I agree with the terms and conditions' and tap '>' ...
7. Select you hydraulic measurement application ...
 - a. Choose 'Cylinder' for a generic, double acting hydraulic cylinder;
 - b. Choose KOOI® REACHFORKS for any hydraulic telescopic lifttruck forks;
 - c. Choose 'Fork positioner' for a hydraulic fork positioner attachment;
 - d. Choose 'Mast height extension' for mast height extensions (MHEH / LFC) attachment.
8. Tap '>' ...
9. Tap 'ALLOW ONLY WHILE USING THE APP' in the 'Allow ReachControl to access this device's location' pop-up. This permission is required for the app to use the Android Bluetooth signal strength feature ...
10. Tap 'Ok' in the next pop-up ...
11. If Bluetooth is not yet enabled the 'Bluetooth disabled' pop-up will show. If so, tap 'Enable', else continue to step 12 ...
12. If a 'Connection failed' notice is shown tap 'Try again' until connection is made (make sure Bluetooth on you device is enabled)

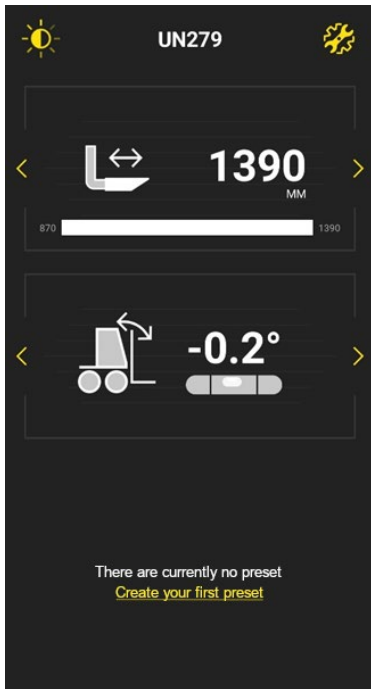
13. The 'Select your devices and configure you lift truck' shows a list of detected ReachControl sensors. Check the boxes for the sensors installed on the current equipment. To the right of every device the signal strength of the Bluetooth connection is shown. If multiple sensors are within reach, check the signal strength on the right side to find determine the correct sensor based on proximity. Lower negative numbers means closer sensor (example -85 = strong signal, -35 = weak signal). After selection tap '>' ...
14. Provide a name for the set of sensors (for instance a lift truck number) and tap '>' ...



Multiple sets of sensors can be stored under different names on the same Android or iOS device allowing for use the same device on multiple lift trucks.

15. Tap each sensor in the list in turn to start their calibration wizard. Follow the on screen instructions for calibrating the different sensors. Tap 'Next' after each instruction is completed and input values whenever the wizard asks for it. Each wizard contains fail saves to prevent wrong input from the user and sensor. If an error is give, please restart the calibration wizard. Tap 'Finish' at the end of each wizard to store the calibration data. Make sure all sensors is the list are checked before continuing. Tap 'Start the app'.

App functions



Screen brightness & light-dark theme (1 – left side)
Settings (2 – right side)

Upper display area (3)

Lower display area (4)

Preset area (5)

1. Tap the 'sun' icon to open the display settings screen for adjusting brightness of the app and choosing the dark or light theme.
2. Tap the 'gear' icon to open the settings screen with the following items:
 - a. Bluetooth: manage sensor sets and re-calibrate sensors;
 - b. Unit: choose between millimeters or inch measurements;
 - c. Presets: manage presets for the flow meter length measurement system;
 - d. Stop time: stop time for Autostop function, choose between 1, 2, 3, 4 or 5 seconds. Only functional in combination with Autostop option.
 - e. Battery Saver (Android only): Enable or disable battery saver function. A time in minutes can be set before the device enters battery saver mode (disable screen and measurement functions). To get the device out of battery saver mode press the standby (own device) or yellow button (K001@Display).
 - f. Language selection: change the language of the app interface;

- g. Advanced settings: settings area for problem solving of the system. Only accessible by system manufacturer.
3. Upper display area: area where sensor data is displayed. Tap the yellow '<' and '>' icons to switch between different representations of the sensor data and different sensors.
 4. Lower display area: area where sensor data is displayed. Tap the yellow '<' and '>' icons to switch between different representations of the sensor data and different sensors. In combination with the Upper display area data of two different sensors can be displayed simultaneously.
 5. Preset area: contains buttons for each preset for the flow meter sensors system. Presets are length dimensions for use with the flow meter sensor. They can for example be used as pallet dimension in combination with telescopic forks to set the forks to the correct length. The app will display the preset length when the flow meter sensor data is shown in the upper or lower display area. When extending the forks beyond the preset the bar indicating the fork length will turn red. Also if a Autostop system is installed, the Autostop will stop the oil flow to the forks for 3 seconds on reaching the preset length value.

Presets can be added by tapping the 'Create your first preset' if none are present or by opening the settings screen and tapping the 'Preset' item. Presets are activated and deactivated by tapping them. Only a single preset can be selected. If another preset is selected the previous preset will be deactivated automatically. Presets can be removed from the settings screen under the 'Preset' item.



It is advised to set you preset dimensions for telescopic fork, 10 mm / 0.4 inch shorter than the pallet size to avoid too long forks due to tolerances in the forks' construction.



To return to the main screen from any other screen in the app, tap the '<' icon in top left corner of the screen or the systems 'back' button.

Troubleshooting

Symptom	Possible cause	Possible solution
Oil leak near one of couplings	Loose coupling	Tighten coupling.
Both angle and length measurements do not change when using the flow meter	Battery sensor empty (without Autostop only)	Replace battery of sensor following instructions in chapter Without Autostop – battery (re)placement, page 19 .
Angle measurements do not change when using the deflection sensor	Battery sensor empty	Replace battery of sensor following instructions in chapter Electrical installation – battery (re)placement, page 25.
Both angle and/or length measurements on display do not change when using the flow meter / deflection sensor	Connected to wrong sensor	Connect to correct sensor following instructions in chapter Getting started, page 33.
	Flow direction of flow meter not properly calibrated	Recalibrated flow meter. Goto Settings > Bluetooth and select the sensor set for calibration.
	Sensor does not receive power (Autostop only)	Check connection power cable to sensor.
The physical length of the forks is not equal (max. 5 mm) to the distance on the display / preset stop distance (with flow divider)	The flow divider has a tolerance which results in somewhat unequal movement of the forks, resulting in length difference	Reduce the length of the preset by the required margin. See chapter App functions, page 35. The difference on the display will remain.
	Tolerances in the forks construction result in differences in length	
The physical length of the forks is not equal (max. 5 mm) to the distance on the display / preset stop distance	Tolerances in the forks construction result in differences in length	Reduce the length of the preset by the required margin. See chapter App functions, page 35. The difference on the display will remain.

Symptom	Possible cause	Possible solution
(without flow divider)		
Cylinder/fork length does not correspond to displayed value	Leakage in hydraulic system	Tighten all hydraulic couplings and check all seals for leakage ¹ .
	Air in hydraulic system	Bleed the air out of the hydraulic system ¹ .
	App/KOOI®Display not properly calibrated	Recalibrated flow meter. Goto Settings > Bluetooth and select the sensor set for calibration.
	Cylinder/fork has not reached its retracted position for some time	Retract the cylinder/fork completely, the app/KOOI®Display will correct the length in the retracted position.
Cylinder/fork does not stop at the selected distance (Autostop only)	Distance of the preset does not correspond with Name of the preset	Check preset Name and Distance in settings menu.
	App/KOOI®Display not properly calibrated	Recalibrated flow meter. Go to Settings > Bluetooth and select the sensor set for calibration.
	Autostop valve not properly connected	Connect the valve following instruction in Hydraulic installation on KOOI® REACHFORKS at page 15.
KOOI®Display suddenly shuts down	KOOI®Display battery empty and no power connection is available	Connect the KOOI®Display to the power cable following instructions in chapter Installation at page 30.
KOOI®Display does not start		
	KOOI®Display battery empty and battery not containing enough power to start	Wait 10 minutes with the truck/power supply to KOOI®Display on to let the display regain charge and then start display.
KOOI®Display does not respond	Software malfunction	Restart the KOOI®Display following instructions in chapter Working with the KOOI®Display at page 31 (KOOI®Display only).
Touch screen does not respond (KOOI®Display only)		

Symptom	Possible cause	Possible solution
KOOI®Display screen is black (KOOI®Display only)	KOOI®Display is on standby	Press the power button on the KOOI®Display.
	The brightness setting is set to low	Shield the KOOI®Display from direct light and when the interface becomes visible tap the 'sun' icon on the top of the screen once or multiple times to change the brightness settings.
ReachControl software crashes with "ReachControl has stopped" notification	Software malfunction	Restart the KOOI®Display following instructions in chapter Working with the KOOI®Display at page 31 (KOOI®Display only).
	"Cannot start scan, Bluetooth is not available" notification in lower side screen	Restart your device (app only)
	Bluetooth cannot be accessed by ReachControl app due to OS or software malfunction	Restart the KOOI®Display following instructions in chapter Working with the KOOI®Display at page 31 (KOOI®Display only).
	Bluetooth disabled on KOOI®Display or other device	Restart your device (app only).
		Enable Bluetooth. Swipe down twice from the top of the screen and tap the Bluetooth® icon once. Proceed once it is lit up (KOOI®Display only)
		Enable Bluetooth.
	Previous solutions do not work	Follow the instruction in chapter Clear data and cache for the ReachControl app (Android only), page 40.
Device screen is black (3 rd party device only)	Device is on standby	Get the device out of standby mode.
	The brightness setting is set to low	Shield your device from direct light and when the interface becomes visible tap the 'sun' icon on the top of the screen once or multiple times to change the brightness settings.
Device screen is black (3 rd party device only) continued ...		

The app cannot be found in app store or be installed (3rd party device only)

Your device is not supported
Install the app on another device or purchase the KOOI®Display.

¹ See the manual of your hydraulic equipment

If the above solutions do not solve your problem or the problem is not mentioned, contact your supplier of the KOOI® NEXT system.

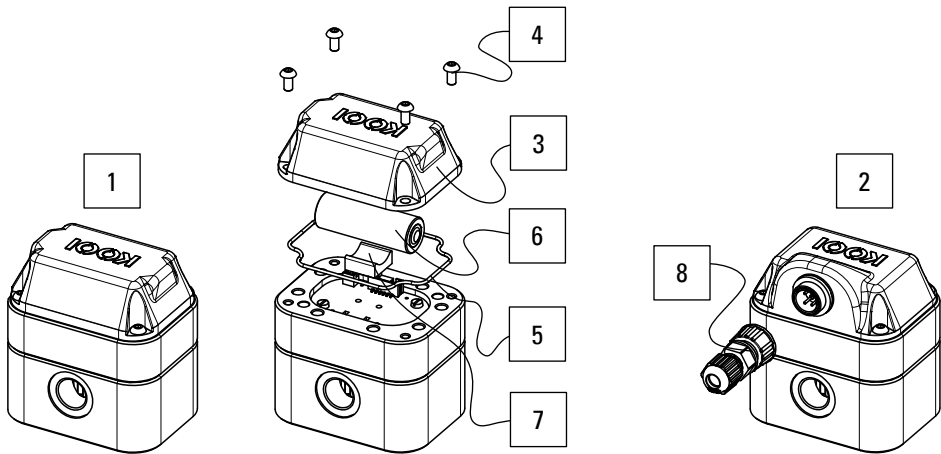
Clear data and cache for the ReachControl app (Android only)

In rare cases an Android app may no longer function properly because of corruption in its stored data and cache. Below are the instruction for clearing both the data and cache for the ReachControl app:

1. Swipe down at the top of the screen (wide side when in landscape mode, narrow side when in portrait mode) ...
2. Swipe down at the top of the screen a second time (when the KOOI® ReachControl app is running) ...
3. Tap the gear icon in the upper right corner to enter Android Settings ...
4. Scroll downward and tap 'Apps' ...
5. Scroll downward and tap the 'ReachControl' app ...
6. Tap 'FORCE STOP' ...
7. Tap 'FORCE STOP' in the notification screen ...
8. Tap 'Storage' ...
9. Tap 'CLEAR DATA' ...
10. Tap 'DELETE' in the notification screen ...
11. If not grayed out, tap 'CLEAR CACHE' ...
12. Restart the KOOI®Display following instructions in chapter Working with the KOOI®Display at page 31 (KOOI®Display only) or restart your device (3rd party device) ...
13. Restart the ReachControl app (3rd party device, the KOOI®Display will restart the ReachControl app automatically).

Replacement parts lists

Flow meter

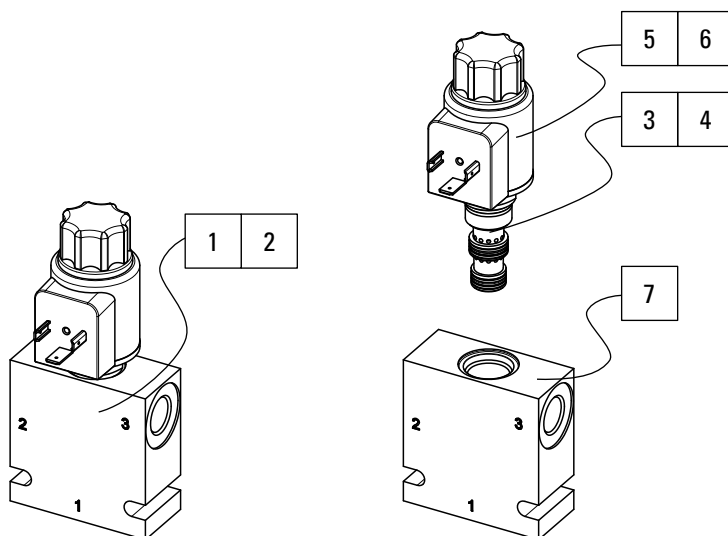


Pos. no.	Description	Used with Autostop	Article no.	No. of parts in product
1	Complete flow meter BA		10101209	1
2	Complete flow meter CA	✓	10094929	1
3	Cover BA		10101214	1
4	Button head screw M4		10092286	4
5	Cover seal		10104767	1
6	Battery, size A, 3.6V (3.60 Ah)		10099365	1
7	Battery support		10101257	1
8	Connector (without cable)	✓	10103838	1



Allen key 2.5 mm

Autostop valve



Pos. no.	Description	Article no.	No. of parts in product
1	Assembly body + 3-2 valve (12VDC)	10102920	1
2	Assembly body + 3-2 valve (24VDC)	10102922	1
3	3-2 Valve ¹ – including 12VDC coil (pos. no. 5)	10102921	1
4	3-2 Valve ¹ – including 24VDC coil (pos. no. 6)	10102923	1
5	12VDC coil	10110960	1
6	24VDC coil	10110958	1
7	Body	10102919	1

¹ Assemble with 25⁺⁵ Nm torque



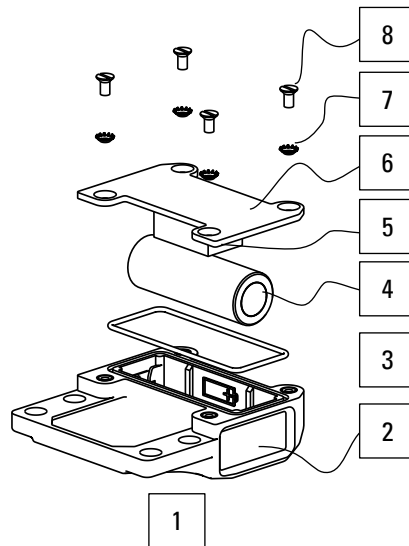
7/8" or adjustable wrench
vice

Deflection sensor

Variant A



- Flat head screw driver 5.5 mm
- Flat head screw driver 3.5 mm
- Allen key 5 mm
- Loctite 243 glue

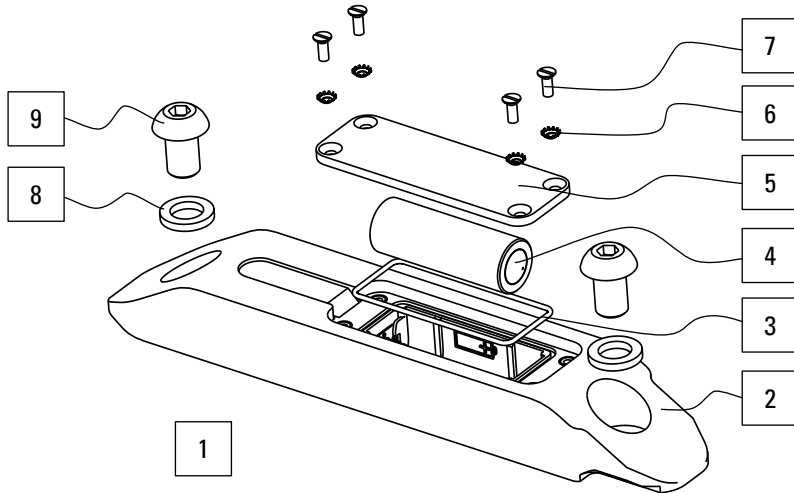


Pos. no.	Description	Article no.	No. of parts in product
1	Complete assembled deflection sensor – variant A (incl. all parts below)	10113945	1
2	Deflection sensor + housing	10113946	1
3	Cover seal	10113949	1
4	Battery, size A, 3.6V (3.60 Ah)	10099365	1
5	Foam tape	10127037	1
6	Cover	10113950	1
7	Toothed spring washer M3	10113979	4
8	Countersunk screw M3	10113980	4
	Screw M6 ¹	10114292	2
	Toothed spring washer M6 ¹	10095941	2

¹ For mounting sensor in sleeve. See chapter Variant A, page 25.

For all other parts related to mounting the sensor in the fork sleeve, please provide the forks serial number and the part type you require (screws, washers, cover, etc.) to your supplier.

Variant D



Pos. no.	Description	Article no.	No. of parts in product
1	Complete assembled deflection sensor – variant D (incl. all parts below)	10124035	1
2	Deflection sensor + housing	10124049	1
3	Cover seal	10113949	1
4	Battery, size A, 3.6V (3.60 Ah)	10099365	1
5	Cover	10125602	1
6	Toothed spring washer M3	10113979	4
7	Countersunk screw M3	10116158	4
8	Locking washer M10 ¹	37967 M10	2
9	Button head screw M10 ¹	M00022058	2
	Locking washer M4 ²	M00030012	2
	Screw M4 ²	M00015403	2
	Guidance tube ²		1

¹ Only required for mounting of sensor on (third party) equipment. See chapter Variant D, page 23.

² Only required for mounting of optional Guidance tube. For Guidance tube article number, please provide total length of the existing tube to your supplier. See chapter Variant D, page 23.

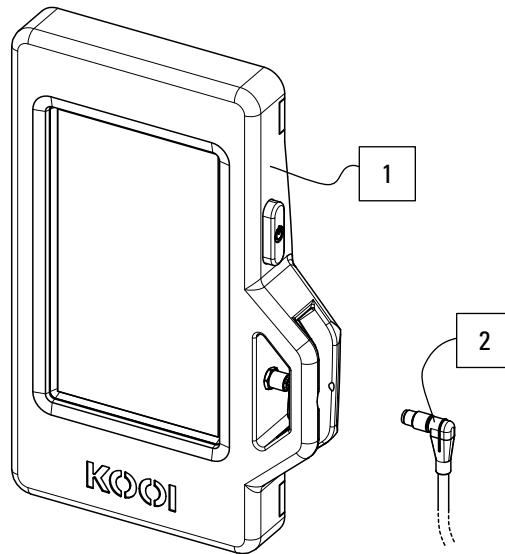


Allen key 6 mm (mounting sensor)

Allen key 3 mm (mounting optional guidance tube)

Flat head screwdriver 3.5 mm

KOOI®Display



Pos. no.	Description	Article no.	No. of parts in product
1	KOOI®Display	10101481	1
2	Power cable with connector - 5 meter (or longer)	10121357	1

The KOOI®Display comes pre-installed with the ReachControl app.

ReachControl app

For installation of the ReachControl app on iOS and Android devices see chapter ReachControl app at page 32.

