OILQUICK®

USER MANUAL

OQ 40-OQ 120
OQ-LockSupport®
2.0

We reserve the right to make technical changes

Read the manual carefully before using the quick coupler.

CE

Esteemed OilQuick user

We congratulate you on the purchase of your new OilQuick quick coupler and OilQuick LockSupport® systems.

OilQuick is a quick coupler system for excavators between 1 and 120 tonnes.

OilQuick products are CE marked and fulfil all the applicable safety regulations and comply with the Machinery directive 2006/42/EG, the EMC directive (2004/108/EC) and the applicable parts of European standards EN 474-1, EN 474-4, EN 474-5, EN ISO 13849-1 and ISO 13031. It is important that all safety requirements are observed during installation, use and repair of OilQuick products. This applies to the safety regulations in this manual, the safety regulations in the excavator manual and the local safety regulations that apply for the area where the machine is used.

OilQuick LockSupport 2.0 (OQLS 2.0) is a command-and-control system specially developed for use with excavators equipped with the OilQuick quick coupler system. Like the quick couplers, the OQLS 2.0 system is made up of modules and can therefore be adapted and expanded as required. This manual provides information about the basic functionality for OQLS 2.0. Read the manual carefully before the OQLS 2.0 is mounted and used.

Machine operator is a job with great responsibility, both in the handling of the machine itself, but not least your personal safety and that of those people near the machine. It places great personal responsibility on you and that you are familiar with the machine and its functions.

We have developed OQLS 2.0 to increase the safety when changing attachments. Bear in mind that OQLS 2.0 is a monitoring system that gives information and guidance, but can never relieve you of your responsibilities.

We hope and believe that OQLS 2.0 will contribute great benefits to your work as a machine operator. Changes may only be made to OilQuick products with the permission of OilQuick AB. In other cases neither the CE marking nor warranty conditions apply.

Fill in and send your warranty card to us as soon as possible.

We hope that you enjoy and benefit from using OilQuick equipment.

Important information

Text in boxes as below must be read with extra care because it is important information about certain procedures. If the information is not followed accidents or injury/damage to persons or property may occur.

Warning box example

Text in boxes as below must be read with extra care because it is important information about important matters.

Information box example

We retain the right to make technical changes and reservations for any errors.

Translation of user manual in original (7412359).

Preface

This manual applies to model(s): OQ 40 - OQ 120.

Certain parts of the manual can refer to equipment and details that are options and not installed in your system. We request that you ignore these sections if that is the case. A safety conscious user that follows all safety instructions and care for the equipment, minimises the risk of any injuries and accidents.

Read this manual carefully and check that the installation details with applicable options for installation of the quick coupler system are correctly filled in and signed by the installer before the quick coupler system is taken into operation.

The quick coupler and OQLS 2.0 may only be used by people who have read this manual and follow the instructions given in the manual.

Transport and lifting of persons using the quick coupler or connected attachments is strictly prohibited!

When shunting, loading and moving attachments, they must be connected and disconnected according to the applicable instructions in this manual. Attachments may not under circumstances be moved when hanging from the front pin only, regardless of whether the quick coupler is open or closed.

WARNING! Installation: The main task of the OQLS 2.0 is to control and monitor the open and close functions of the quick coupler because it is of the greatest importance that is installed by trained personnel. Installation and service may only be carried out by authorised service personnel. Failure to follow this principle can lead to failures in function, damage to property and personal injury.

WARNING! Components: Bear in mind that OQLS 2.0 is an electronic application. The electronics in the OQLS 2.0 are very robust and can tolerate large stresses during operation in the most demanding situations such as chiselling and demolition. Damage occurs almost exclusively due to mechanical or external violence and care must therefore be taken when changing attachments and in other situations where electronic components are exposed.

Intended use

OilQuick quick couplers have been developed for excavators and are intended for quick and safe attachment and disconnection of different tools and hydraulic couplings.

The quick coupler must be adapted to the relevant machine size, attachment dimensions on the excavator, intended use and the local conditions for use.

Those attachments that are connected to the quick coupler must be approved for use with the excavator and fitted with the appropriate attachment frame/-adapter from OilQuick.

Short term use of the quick coupler under water is permitted provided the coupler is not equipped with an electrical connection.

An excavator with connected quick coupler must only be used at a work place that is protected or restricted.

For more information about requirements for the excavator, see ”Technical data”.

The attachment coupler must not be used for work without a connected attachment.

Use of the quick coupler is only permitted if the excavator that is used corresponds with the Machinery directive 2006/42/EG and meets the harmonised standard EN 474-5.

All other use must be considered incorrect and therefore prohibited.

The user bears all responsibility for damage that occurs through inappropriate use and the manufacturer accepts no liability.

Use of the quick coupler for purposes that it was not intended, entails a risk of accidents resulting in severe personal injury or fatality.

- **Only use the quick coupler on an excavator approved for the coupler (see type plate and the ”Technical data” section) at a workplace that is protected or cordoned off.**
- **Do not use the quick coupler to hammer, tear, smash or stamp using the attachment or for other purposes it is not intended for.**
- **Do not use the quick coupler to lift people.**
- **Only use the quick coupler if it is in fault-free condition.**

Unauthorised implemented constructional modifications or additions to the quick coupler entail a risk of accidents resulting in severe personal injury or fatality.

- **Do not carry out any constructional modifications or additions to the quick coupler. In the event that constructional modifications or additions to the quick coupler become necessary, the machine supplier must always be contacted first.**

Hoisting hook (optional)

The quick coupler can be equipped with a hoisting hook as an option. This hoisting hook may only be used to lift weights using appropriate and approved lifting items (chains or lifting straps).

The lifting aid is hooked onto the hoisting hook.

Information about the maximum lifting capacity is on the quick coupler’s type plate and the hoisting hook.

Use of the hoisting hook on the quick coupler for purposes that it was not intended, entails a risk of accidents resulting in severe personal injury or fatality.

- **Use the hoisting hook together with a suitable and approved lifting aid.**
- **Do not exceed the maximum load of the hoisting hook.**
- **Only use the hoisting hook if it is in fault-free condition.**

Registration card for Product warranty

The product warranty for this OilQuick product is dependent on the correct installation on machine and attachment. By filling in and sending the registration card to OilQuick AB immediately you are registered as warranty holder for this product.

Unless otherwise agreed, the warranty conditions apply as stated in this product manual. The requested information regarding product type and serial number is stated on the product identification plate. Information regarding other questions in conjunction with this can be referred to machine dealers or installer.

Send the filled in registration card to:
OilQuick USA
155 Main Street
Superior, WI 54880

Tel: 262-607-8425
Fax: 705-395-3703
E-mail: info@oilquickUSA.com

Purchased from machine dealer:

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Name and address of the end customer:

.....

Tel:

.....

Fax:

.....

E-mail:

.....

Type of OilQuick quick coupler:

.....

Serial number:

.....

Machine type:

.....

Machine weight:

.....

Installation date:

.....

Type of hydraulic accessories:

.....

Arrival date at OilQuick AB (Filled in by OilQuick AB):

.....

Cut here!

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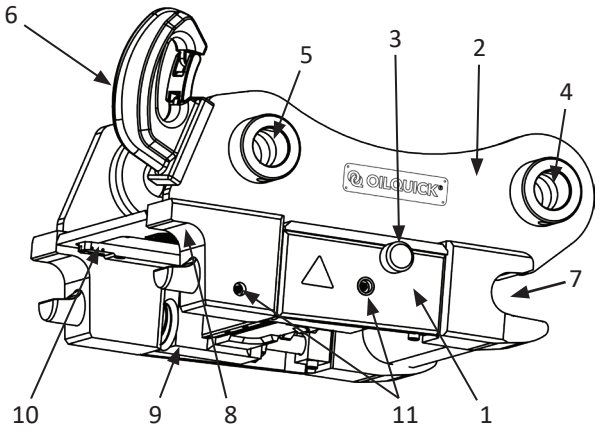
1 Description of components in OilQuick quick coupler system

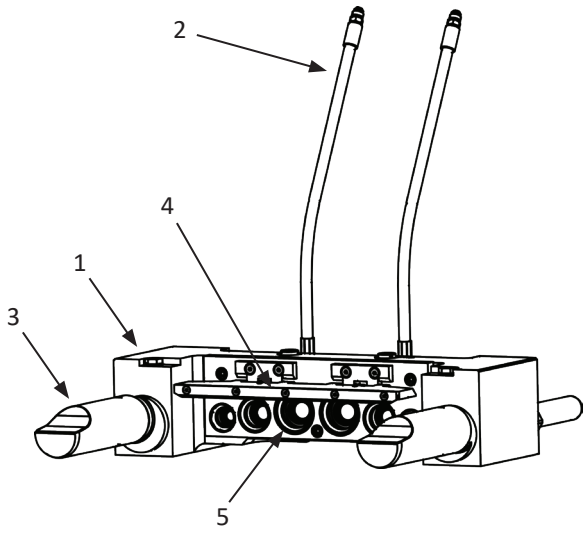
1.1 Quick coupler

1. Coupler body
2. Side plate
3. Guide pin
4. Securing to dipper stick
5. Securing to link
6. Hoisting hook (optional)
7. Front pin holder
8. Support surface for rear pin of attachment frame/adapter
9. H-cylinder
10. Sensor unit
11. Lubrication nipple



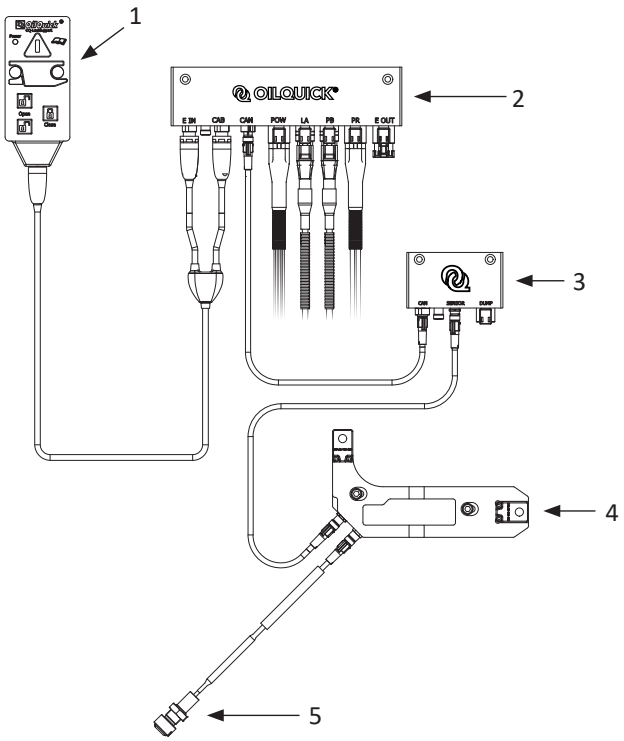
1.2 H-cylinder for locking and opening

1. H-cylinder
2. Hydraulic hoses for locking and opening
3. Locking bolts
4. Dirt guard
5. Quick couplings (female)



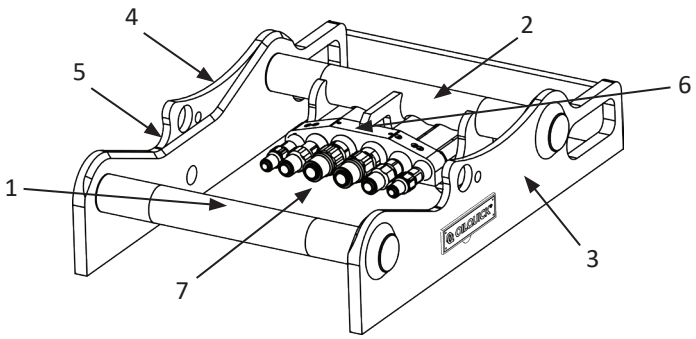
1.3 OQLS 2.0

1. Control panel
2. Master unit
3. Stick unit
4. Sensor for front attachment pin
5. Sensors for rear attachment pin and locking bolts



1.4 Attachment frames/adapters

1. Front pin
2. Rear pin
3. Side plate
4. Collision protection
5. Cut-outs for guide pins
6. Coupling ramp
7. Quick couplings (male)



Several different versions of attachment frame/adapter are available for special purposes and applications.

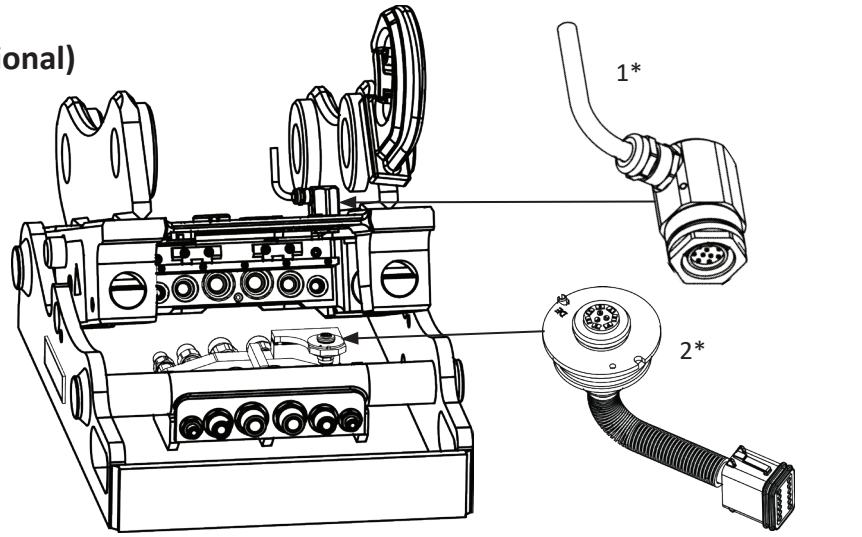
1.5 Electrical connection V-90 (optional)

NOTE! Not available on OQ 40/24E and OQ 40/27.

1. Female connection (quick coupler)
2. Male connection (attachment)

Electrical connector is 10 pin.

* Connection device version and its contact can vary.



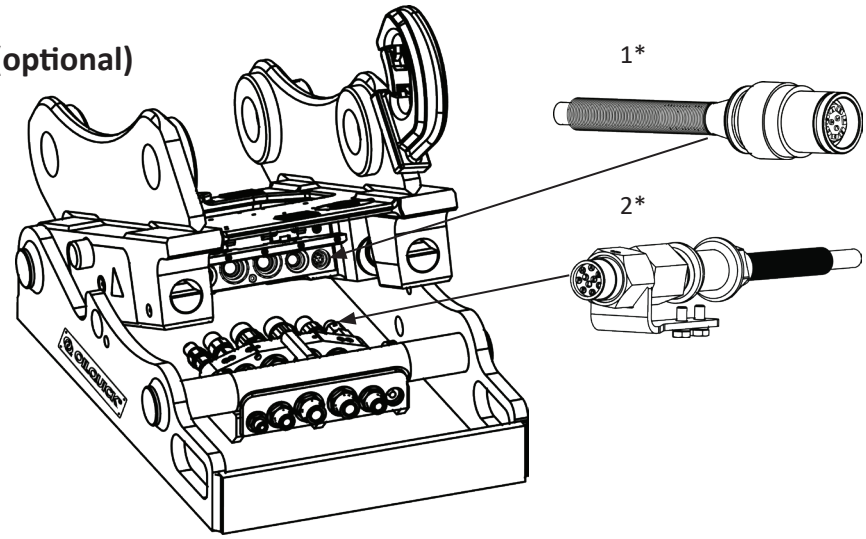
Installation of V-90, vertical electric connection does not affect the possible number of hydraulic quick couplings in the quick coupler and hydraulic attachment frame/-adapter.

1.6 Electrical connection, straight (optional)

1. Female connection (quick coupler)
2. Male connection (attachment)

1/4” electrical connector is 6 pin.
1/2” & 3/4/ “ electrical connector is 10 pin.

* Connection device version and its contact can vary.



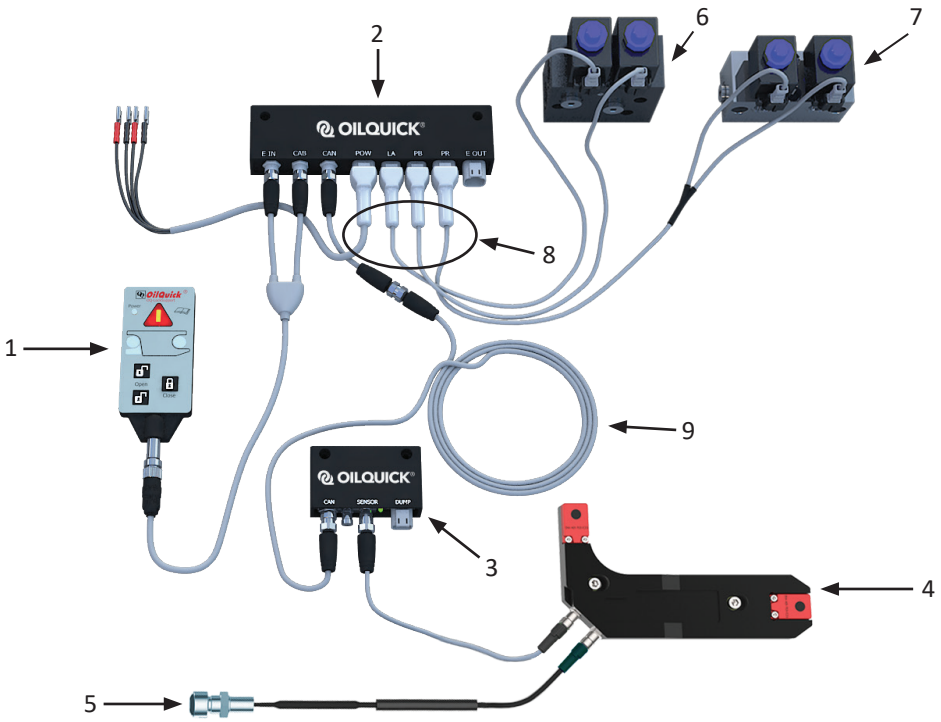
Installation of straight electric connection affects the number of hydraulic quick couplings possible in the quick coupler and hydraulic attachment frame/-adapter because it takes one their positions.

2 Description of OilQuick LockSupport® 2.0 (OQLS 2.0)

OQLS 2.0 contains:

1. Control panel, installed in the cab.
2. Master unit, normally installed in the area of the machine for electrical systems or hydraulic pumps.
3. Stick unit, normally installed on the stick.
4. Sensors for rear attachment pin and locking plungers, mounted on the body of the quick coupler.
5. Sensor for front attachment pin, mounted on the body of the quick coupler.
6. Locking valve with LS function
7. Pressure relief valves (option)
8. Cable kit for valves and connections.
9. Connection cable between master unit and stick unit.

On installation this must be supplemented with hoses and nipples for connection to pump and tank and hoses for connection to the quick coupler.

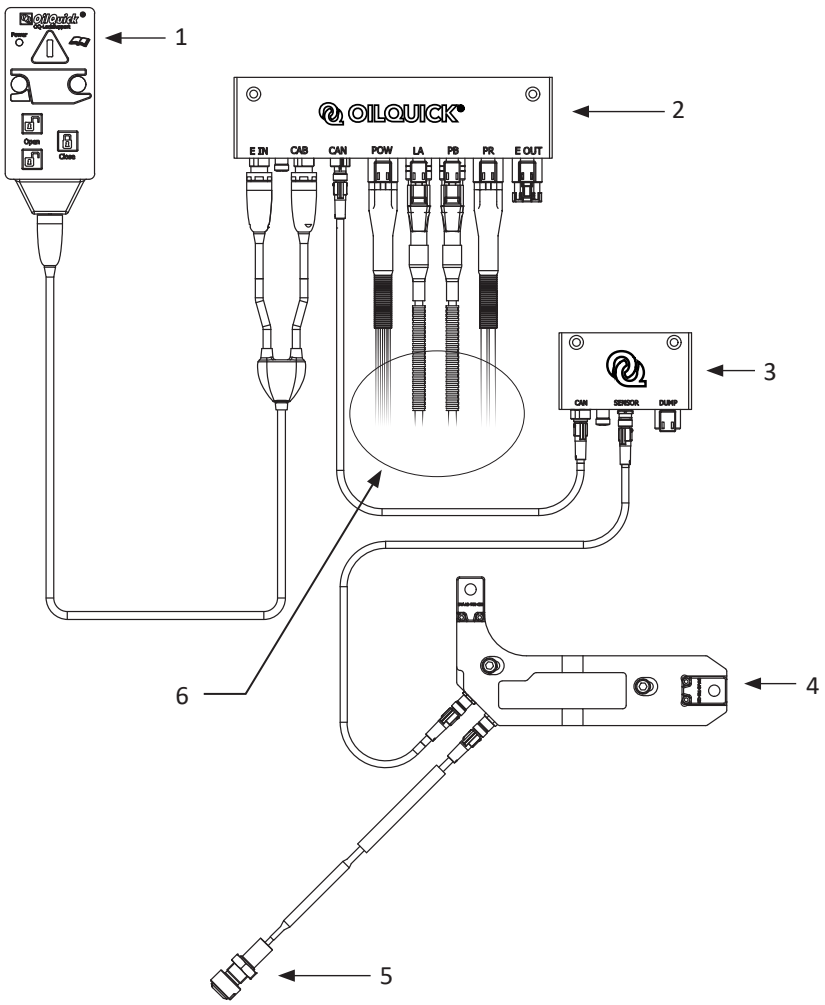


3 OQ-LockSupport 2.0 basic system and options

OQLS 2.0 is a control and monitoring system for quick couplers on an excavator. The system consists of a basic system and a number of options depending how the excavator is equipped.

3.1 Basic system

1. Control panel, installed in the cab.
2. Master unit, normally installed in the area of the machine for electrical systems or hydraulic pumps.
3. Stick unit, normally mounted on the stick.
4. Sensors for rear attachment pin and locking bolts, mounted on the body of the quick coupler.
5. Sensor for front attachment pin, mounted on the body of the quick coupler.
6. Cable kit for connections between the relevant system components.



3.2 Options that are not machine dependent

- Connection to the machine safety gate, strongly recommended option.
- Pressure relief valve with accessory for relieving operating hydraulics.

3.3 Options that are machine dependent

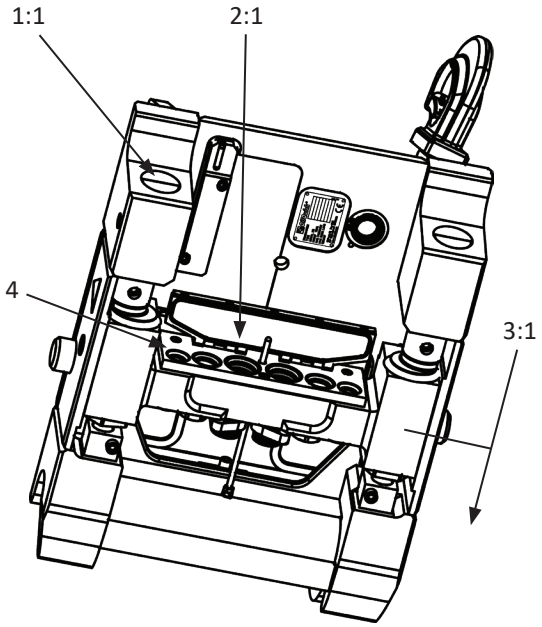
- Cable kit for connection to the electrical system on machines that have approved locking hydraulics and control of pressure booster.
- Lock valve for operating the quick coupler on machines that do not have factory installed approved locking hydraulics.
- Valve for controlling the machine's pressure booster for machines with LS-system.
- Combined lock and pressure booster valve for machines with LS-system but without approved locking hydraulics.
- Separate hydraulic package with own pump for total autonomous control of the quick coupler.

4 Mechanical and hydraulic operating principle

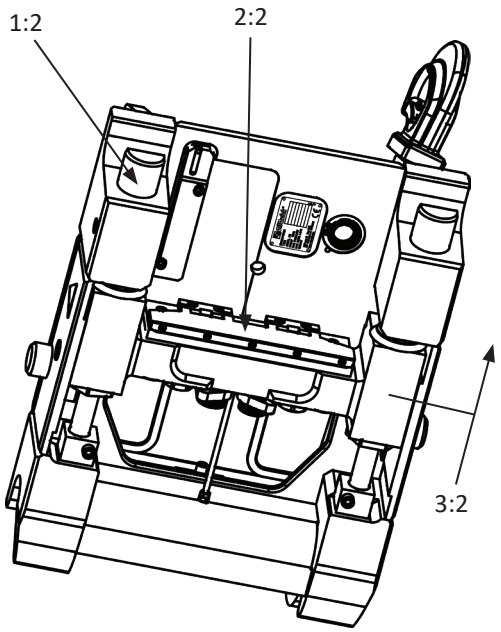
The quick coupler consists of a coupler body in which the H-cylinder with accessories is mounted. The quick coupler is mounted on the excavator stick and link. The H-cylinder (3) and locking bolts move forwards and backwards when oil is supplied to the H-cylinder. When the H-cylinder is in the front position (3:1) the locking bolts are retracted (1:1) in the coupler body and an attachment can be connected/disconnected. When the H-cylinder is in the rear position (3:2) the locking bolts are extended (1:2) and, if in place, an attachment frame/adapter is connected to the quick coupler.

The quick couplings (4) are located in the H-cylinder´s intermediate section between the locking bolts. The quick couplings are protected by a dirt guard (2) when they are not in use. This dirt guard is opened automatically when the H-cylinder is in the front position (2:1) and closes automatically in the rear position (does not apply if a hydraulic attachment is connected (2:2).

Oil is supplied to the H-cylinder via the excavator's system for the hydraulic quick coupler. When connecting hydraulic attachments, the hydraulic quick couplings and any electrical couplings are connected at the same time as the tool is locked mechanically.



Open coupler



Closed coupler

5 Operating principle OQ-LockSupport 2.0

The control panel in the cab is the driver's interface with the quick coupler system. The upper section of the panel displays the quick coupler system operating status and gives alarms when dangerous situations occur. The lower section of the panel allows the driver to open and close the quick coupler, in a controlled and monitored way.

The master unit monitors the status of the quick coupler, the status of the safety gate, displays the status on the control panel and controls the locking valve, pressure booster and pressure relief. The control panel has two types of alarm: normal warning when connecting the attachment and critical alarm. When critical faults have occurred the master unit gives a continuous alarm with a buzzer and lit warning symbol. The driver is then aware that the system is in a condition that is abnormal and can take action. When the driver connects an attachment the system warns with an intermittent buzzer and flashing warning symbol.

In order for the quick coupler to be operated the safety gate must be in active mode, if this option is installed, which is strongly recommended. When the driver wishes to open the quick coupler both Open buttons must be pressed for 3 seconds. After 3 seconds the lock valve is activated, pressure booster and pressure relief are activated (option). At the same time the warning symbol starts to flash and the buzzer sounds intermittently. When the locking bolts leave their lock position the symbol for the locking bolts on the control panel goes out. The coupler is now open, pressure booster and pressure relief (option) are switched off. When the driver maneuvers the quick coupler out of the frame the symbols for the rear pin and front pin will go out when the pins leave the quick coupler.

In this position, without any attachment pins in position the driver can close the coupler for hook hoisting, transport or service. The driver presses the Close button. The lock valve is switched off and pressure booster (option) is activated. The quick coupler is closed and when the locking bolts reach their locked position the pressure booster is switched off, the symbol for the locking bolts is lit, the warning symbol goes out and the buzzer stops. The coupler is now in safe mode.

To connect an attachment the driver must operate the quick coupler into the frame. Because the front and rear pins are in the correct position to lock the quick coupler both pin symbols light in the control panel. When both the pin symbols light it is permitted to close the coupler. Press the Close button. The lock valve is closed, pressure boost and pressure relief (option) are activated. The quick coupler is closed and when the locking bolts reach their locked position the pressure booster is switched off, the symbol for the locking bolts is lit, the warning symbol goes out and the buzzer stops. The coupler is now in safe mode and the attachment is correctly connected.

A self-test of all components and the system status is performed on each startup. If an error is found during this diagnosis, an alarm is triggered to inform the driver that a dangerous situation has occurred. Measures to be taken during an error is described in a separate section of this manual.

All events in the system are logged in the master unit: the 32 most recent events in chronological order and all events in overall logs. A PC, a USB-CAN-converter and special software that authorised OilQuick service providers have access to is used to read these logs. The software also has the functionality to troubleshoot the system when a fault has occurred.

On those systems that do not have any form of pressure booster installed the driver must increase the pressure in the machine in the traditional way, run the bucket cylinder to the limit position, raising the dozer blade or similar.

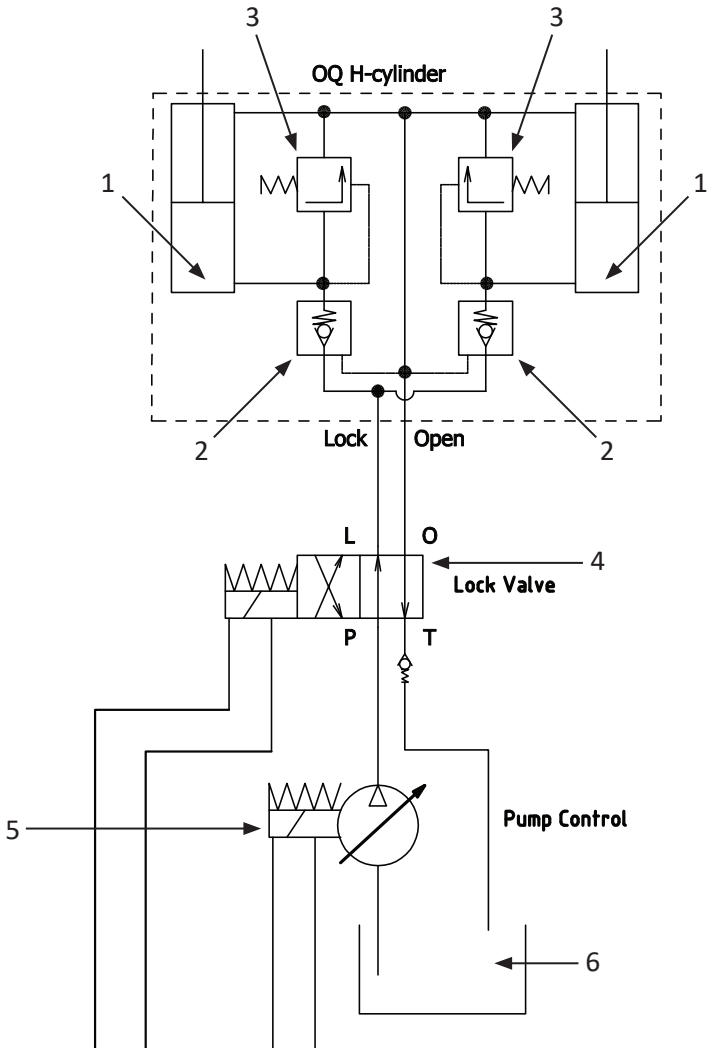
6 Principal hydraulic and wiring diagram

OilQuick quick coupler system H-cylinder must:
- **Have direct connection to pump.**
- **Have direct tank return.**
- **Lock with the machine's maximum pressure in the operating hydraulics.**

NOTE!
Before OilQuick quick coupler is installed on the excavator the machine supplier must be contacted for instructions regarding suitable connection points for hydraulics and electronics.

The main component of the quick coupler is the H-cylinder. Together with the locking bolts, the H-cylinder holds the connected attachment and the hydraulic quick couplings in the correct position. The H-cylinder hydraulic diagram is shown below.

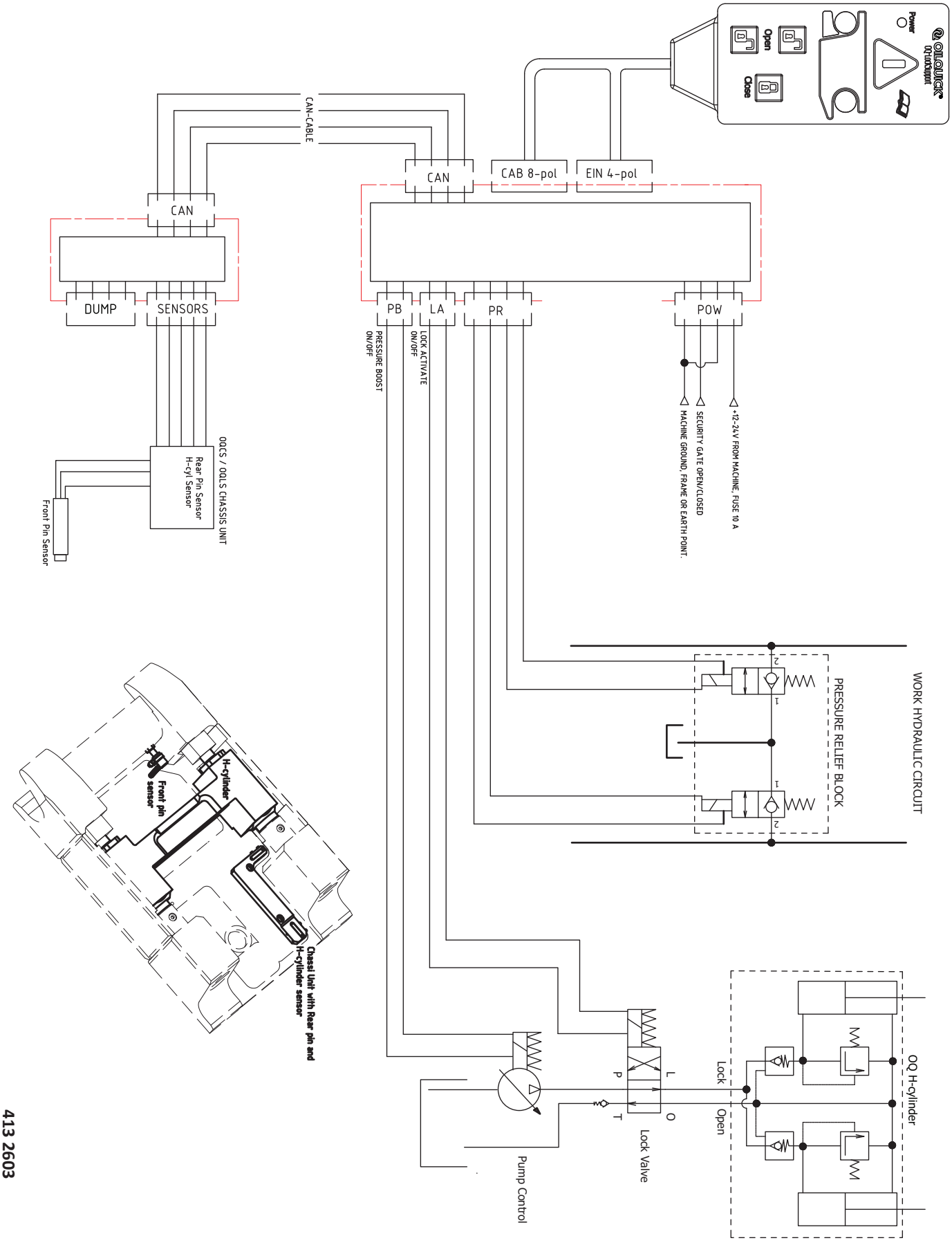
1. H-cylinder integrated lock cylinders
2. Pilot operated check valves
3. Pressure limiter
4. Lock valve for the machine's quick coupler system
5. Pressure boosting
6. Hydraulic tank



In modern machines, both pressure and flow from the machine's pressure booster (5) vary depending on the machine load. Unlike many others, OilQuick quick coupler systems work with the machine's maximum operating pressure. It is necessary to have a play-free and precise lock between the quick coupler and the attachment frame/-adapter. The H-cylinder must also hold the quick couplings together in the correct way. When the attachment is connected the pressure in the positive side of the cylinders (1) builds up to the machine's max pressure.

The two pilot operated check valves (2) maintain the pressure in the cylinders (1) when the machine pressure varies. Each time the pump pressure increases the cylinders are refilled (1). If the pressure in the cylinder (1) exceeds 45 MPa the pressure relief valves (3) start to open to the tank (6) and reduce the pressure. To open the quick coupler and disconnect the attachment, the lock valve (4) is activated. The minus side of the H-cylinder is then pressurised, the pilot operated check valves (2) open and the H-cylinder opens. If the oil supply to the H-cylinder ceases (for example a hose ruptures) it is prevented from opening, because the pilot operated check valves (2) ensure that the oil cannot leave the H-cylinder unless the minus side is pressurised.

7 Wiring diagram, OQLS 2.0



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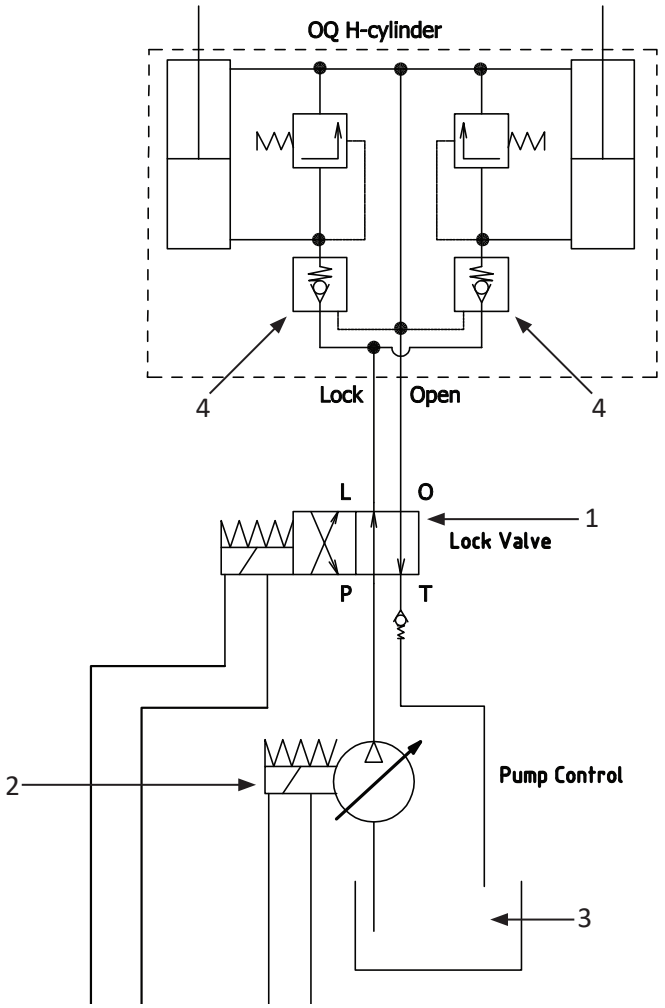
8 Installation requirements for lock hydraulics

OilQuick quick coupler system H-cylinder must:
- **Have direct connection to pump.**
- **Have direct tank return.**
- **Lock with the machine's maximum pressure in the operating hydraulics.**

1. The lock valve (1) pressure line P must be directly connected to the machine pump (2) for operating hydraulics. This is to ensure that the H-cylinder is always pressurised.

2. The lock valve (1) return line T must be directly connected to the machine's hydraulic tank (3) to ensure a pressure free return line.



Comments regarding hydraulic and wiring diagram:
The two pilot operated check valves mounted inside the H-cylinder (4) have two functions.

1. To maintain sufficient pressure in the H-cylinder, which ensures OilQuick-function to connected attachments when working with the machine. During work with the machine the H-cylinder will be continuously post-tensioned because of the direct connection to the machine´s hydraulic pump.

2. To function as a hose rupture valve in the event of a malfunction in the hoses going to and from the quick coupler's H-cylinder. It prevents the quick coupler from opening and the risk of the tool coming loose.

9 Locking hydraulics on excavators

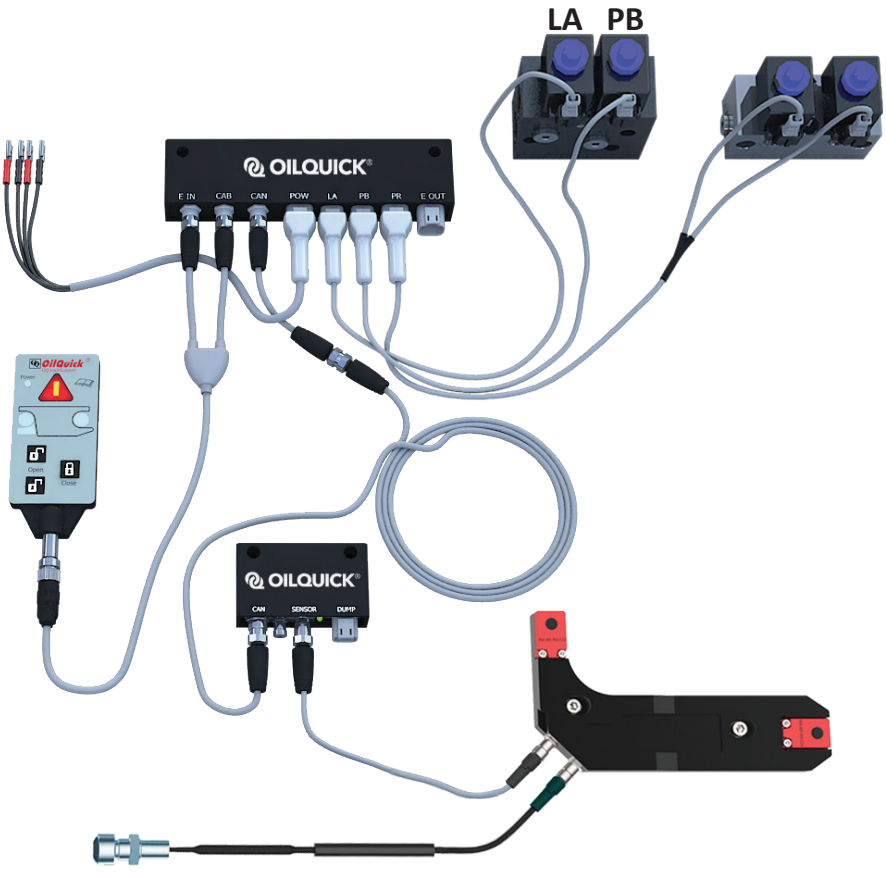
The OilQuick quick coupler system requires that the locking hydraulics are controlled with the same pressure as the operating hydraulics. OQ-LockSupport 2.0 which controls and monitors the attachment changes assumes that there is access to the locking valve for opening and closing the coupler and a function for pressure boosting of the machine when the attachment lock is operated. The conditions to obtain these functions are different from machine to machine and therefore require different solutions at installation. The following gives four installation methods depending on the machine's equipment level and technology.

1. Machines with locking hydraulics that meet OilQuick's requirements but are not controlled electrically and do not control pressure boost electrically when opening/closing the quick coupler.
   Solution: Pressure boosting by activating a hydraulic function, e.g. breaking up of bucket.

2. Machines with locking hydraulics that meet OilQuick's requirements and are controlled electrically and can control pressure boost electrically when opening/closing the quick coupler.
   Solution: OQLS 2.0 switches for Lock Activate (LA) and Pressure Boost (PB) are connected directly to the machine's electric switches for locking function and pressure boost.

3. Machines with locking hydraulics that meet OilQuick's requirements and are controlled electrically and can control pressure boost hydraulically when opening/closing the quick coupler (conventional LS-signal).
   Solution: OQLS 2.0 switches for Lock Activate (LA) are connected directly to the machine's electric switches for locking function. The switch for Pressure Boost (PB) is connected via a post-installed valve block to the machine's pump control and thereby the pressure booster.

4. Machines with locking hydraulics that meet OilQuick's requirements but can control pressure boost hydraulically when opening/closing the quick coupler (conventional LS-signal).
   Solution: post-installation of OilQuick's combined locking valve with LS-control is used and controls both quick coupler and pump control via the functions: Lock Activate (LA) and Pressure Boost (PB).



For complete installation requirements for hydraulics for OilQuick quick coupler system, see chapter 8.

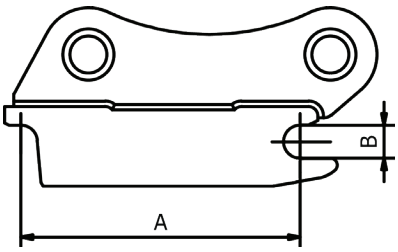
10 Technical data

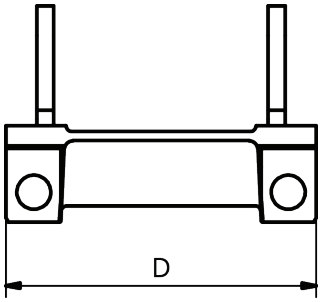
10.1 Dimensions and forces

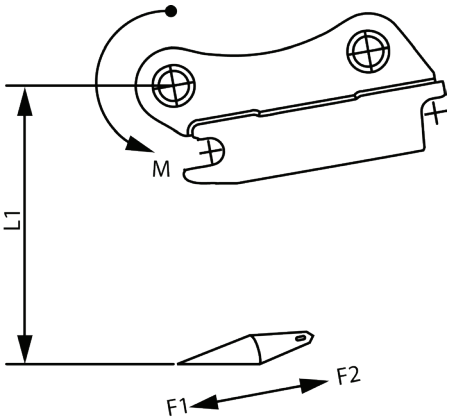
Quick coupler design follows Nordic S-standard for non-hydraulic attachments.

Dimensions

Model	Machine weight class (tonnes)	C-C measurement pin holders (mm) (A)	Measurement pin diameter (mm) (B)	Width (mm) (D)	Weight (kg)
OQ 40/24E	1-5	300	40	240	Se typskylt
OQ 40/27	1-5	300	40	270	Se typskylt
OQ 45-4 / OQ 45-5	5-12	430	45	290	Se typskylt
OQ 60-4 / OQ 60-5	12-18	480	60	340	Se typskylt
OQ 65	14-22	530	65	440	Se typskylt
OQ Rail	14-22	530	65	440	Se typskylt
OQ 70	15-28	600	70	450	Se typskylt
OQ 70/55	18-30	600	70	550	Se typskylt
OQ 80	25-40	670	80	590	Se typskylt
OQ 90	40-70	750	90	750	Se typskylt
OQ 120	70-120	925	120	870	Se typskylt







Forces

Model	Max breaking torque(kNm) (M)	Bucket radius (mm) (L1)	Force in bucket cut (kN) (F)
OQ 40/24E	40	550	40
OQ 40/27	40	550	40
OQ 45-4 / OQ 45-5	70	800	87
OQ 60-4 / OQ 60-5	150	1050	145
OQ 65	240	1050	230
OQ Rail	240	1050	230
OQ 70	320	1250	255
OQ 70/55	450	1500	300
OQ 80	700	1700	410
OQ 90	900	1850	485
OQ 120	1250	2600	480

10.2 Electrical components

Electrical couplings

Electrical coupling model	1/4”	1/2”	3/4”	V90
Number of contact pins in electrical connector	6	10	10	10
Max current strength per contact pin in electrical coupling (continuous)	3A	5A	5A	5A
Max current strength per contact pin in electrical coupling (intermittent, 5 secs)	5A	8A	8A	8A
Max current total across all contact pins (continuous)	10A	15A	15A	15A
Max current total across all contact pins (intermittent, 5 secs)	12A	20A	20A	20A
Max current per contact pin in electric connection when attachment is disconnected	300 mA	500 mA	500 mA	500 mA

OQLS 2.0

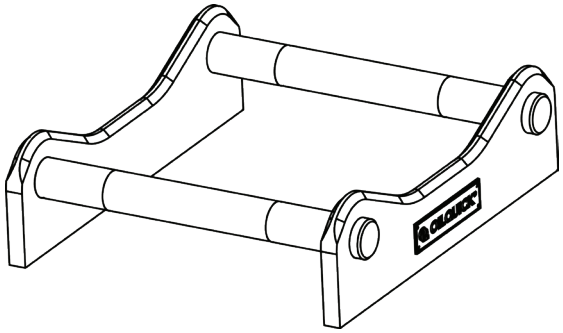
Inputs	
Supply voltage, V_{in}	9 - 30V
Fuse	10A
Outputs	
Lock Activate	V_{in} - Max 2,8 A
Pressure Boost	V_{in} - Max 2,8 A
Pressure relief	V_{in} - Max 2,8 A (2x)

10.3 Attachment frames/adapters

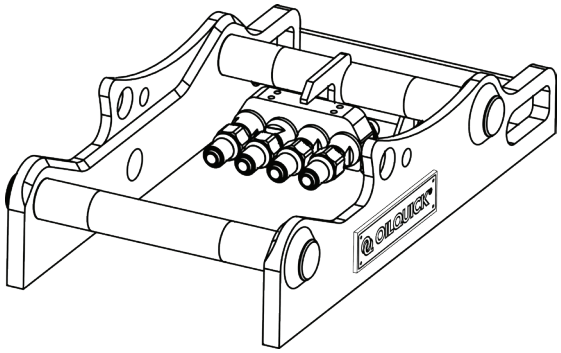
The table below shows technical data for the most common types of attachment adapters. For more information, contact nearest OilQuick representative.

Attachment frame for mechanical attachments (rotatable)

Model	Internal width (mm)	Pin distance (mm)	Pin diameter (mm)	Approx. weight (kg)
OQ 40/24E	240	300	40	14
OQ 40/27	270	300	40	15
OQ 45-4 / OQ 45-5	290	430	45	25
OQ 60-4 / OQ 60-5	340	480	60	50
OQ 65	440	530	65	65
OQ Rail	440	530	65	65
OQ 70	450	600	70	85
OQ 70/55	550	600	70	90
OQ 80	590	670	80	150
OQ 90	750	749	90	250
OQ 120	870	925	120	600



OQ 90 mechanical frame.



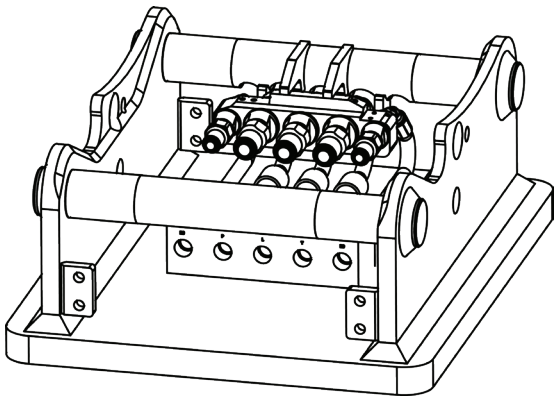
OQ 45-4 hydraulic frame.

Attachment frame for hydraulic attachments

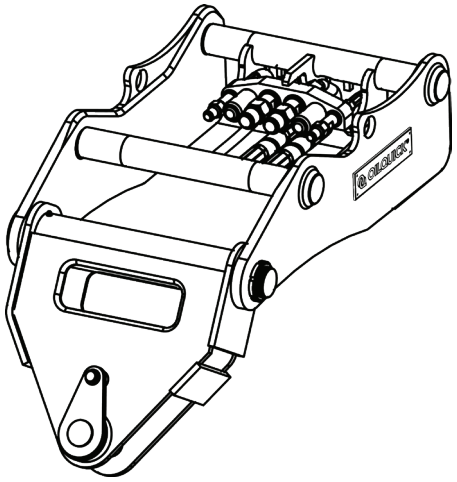
Model	Internal width (mm)	Pin distance (mm)	Pin diameter (mm)	Approx. weight (kg)
OQ 40/24E	240	300	40	17
OQ 40/27	270	300	40	19
OQ 45-4 / OQ 45-5	290	430	45	35
OQ 60-4 / OQ 60-6	340	480	60	55
OQ 65	440	530	65	75
OQ Rail	440	530	65	75
OQ 70	450	600	70	95
OQ 70/55	550	600	70	120
OQ 80	590	670	80	170
OQ 90	750	749	90	270
OQ 120	870	925	120	620

Adapter plate

Model	Internal width (mm)	Pin distance (mm)	Pin diameter (mm)	Approx. weight (kg)
OQ 40/24E	240	300	40	68
OQ 40/27	270	300	40	90
OQ 45-4 / OQ 45-5	290	430	45	100
OQ 60-4 / OQ 60-5	340	430	60	200
OQ 65	440	530	65	240
OQ Rail	440	530	65	240
OQ 70	450	600	70	315
OQ 70/55	550	600	70	340
OQ 80	590	670	80	420
OQ 90	750	749	90	670
OQ 120	870	925	120	1350



OQ 65 adapter plate.



OQ 70/55 pendulum adapter.

Pendulum adapter

Model	Internal width (mm)	Pin distance (mm)	Pin diameter (mm)	Approx. weight (kg)
OQ 40/24E	-	-	-	-
OQ 40/27	-	-	-	-
OQ 45-4 / OQ 45-5	290	430	45	See identificaton plate
OQ 60-4 / OQ 60-5	340	480	60	See identificaton plate
OQ 65	440	530	65	See identificaton plate
OQ Rail	440	530	65	See identificaton plate
OQ 70	450	600	70	See identificaton plate
OQ 70/55	550	600	70	See identificaton plate
OQ 80	590	670	80	See identificaton plate
OQ 90	750	749	90	See identificaton plate
OQ 120	-	-	-	-

10.4 Hydraulic components in the quick coupler

Hydraulic oil	
Viscosity classes	ISO VG 32,46 & 68
Mineral oil	ISO 6743-4, HM and HV ; SS 155434, AV and BV ; DIN 51524 HVLP
Environmentally friendly oil	DIN 51524 part 3 ; SS 155434, AV and BV
Oil temperature	-25°C to +80°C.
Ambient temperature	-25°C to +55°C.

The quick coupler has two parallel hydraulic cylinders, the following technical data applies:

Model	Max operating pressure (MPa)	Load holding/hose rupture valves	Pressure relief valves	Piston/piston rod, diameter (mm)	Stroke length (mm)	Combined lock force at 10 MPa (kN)
OQ 40/24E	35	Yes	No	24/14	60	6,3
OQ 40/27	35	Yes	Yes	32/16	60	16,1
OQ 45-4 / OQ 45-5	35	Yes	Yes	32/16	59	16,1
OQ 60-4 / OQ 60-5	35	Yes	Yes	35/16	60	19,2
OQ 65	35	Yes	Yes	40/20	65	25,1
OQ Rail	35	Yes	Yes	40/20	65	25,1
OQ 70	35	Yes	Yes	50/30	70	39,3
OQ 70/55	35	Yes	Yes	55/30	75	47,5
OQ 80	35	Yes	Yes	55/30	75	47,5
OQ 90	35	Yes	Yes	60/35	100	56
OQ 120	35	Yes	Yes	80/45	129	100

Following technical data applies to quick couplings:						
Coupling dimensions	1/4”	3/8”	1/2”	3/4”	1”	1½”
Oil flow at 0.3 MPa pressure drop (l/min) Stated value only applies to quick couplings.	18	35	70	140	250	800 *
Max continuous operating pressure (MPa)	35	35	35	35	35	35

* Theoretical value.

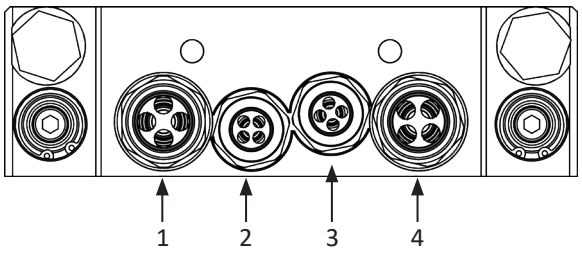
10.5 Dimensions and positioning of quick couplings

The actual appearance of the couplings varies. This is determined by the machine ´s attachment hydraulics and which attachments are to be used in the system solution. Questions regarding this should be directed to your nearest OilQuick dealer.

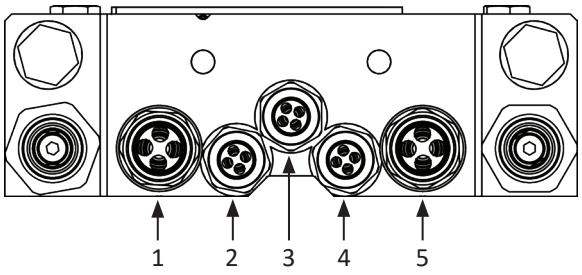
NOTE! 1/4” and 3/8” quick couplings cannot be combined in the system solution. Only one size can be used. In instances where one wishes to convert from one of these sizes to the other, in addition to the quick couplings, the entire guide plate must be replaced in the quick coupler. In addition to this, the quick couplings on the attachments to be used with the quick coupler must be changed to the same size.

The location of the couplings is viewed from the cab.

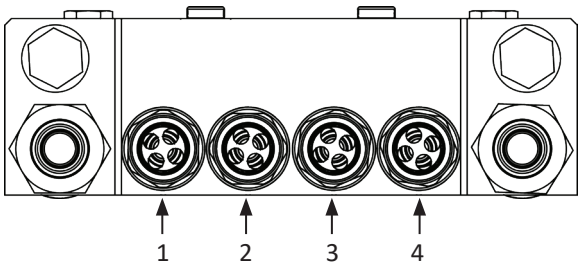
OQ 40/24E	
Coupling 1 and 4:	1/2”
Coupling 2 and 3:	1/4” or 3/8”
Coupling 1 can be replaced with electric coupling 1/2”	
Coupling 2 can be replaced with electric coupling 1/4”	



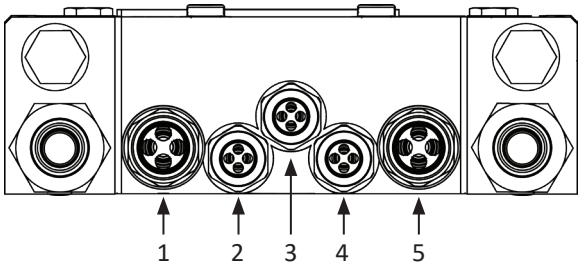
OQ 40/27	
Coupling 1 and 5:	1/2”
Coupling 2-4:	1/4” or 3/8 ”
Coupling 1 can be replaced with electric coupling 1/2”	
Coupling 3 can be replaced with electric coupling 1/4”	



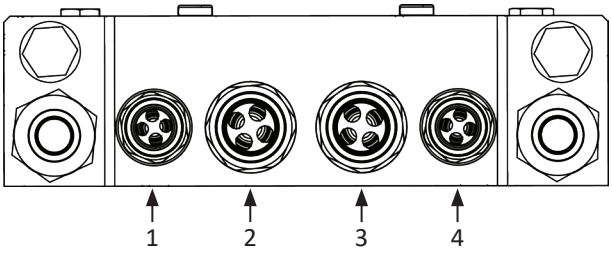
OQ 45-4	
Coupling 1-4:	1/2”
Coupling 1 can be replaced with electric coupling 1/2”	



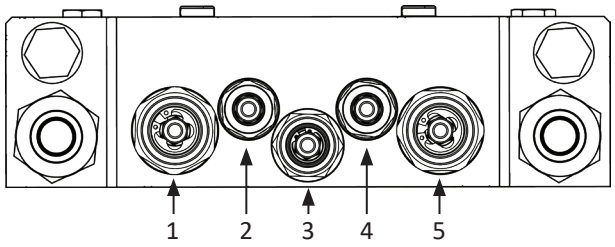
OQ 45-5	
Coupling 1 and 5:	1/2”
Coupling 2-4:	1/4” or 3/8”
Coupling 1 can be replaced with electric coupling 1/2”	



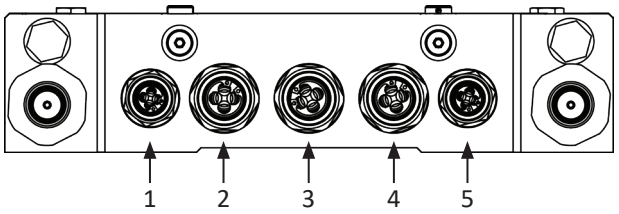
OQ 60-4	
Coupling 1 and 4:	1/2”
Coupling 2 and 3:	3/4”
Coupling 1 can be replaced with electric coupling 1/2”	
Coupling 2 can be replaced with electric coupling 3/4”	



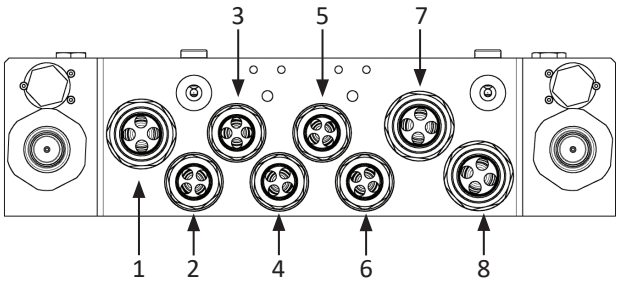
OQ 60-5	
Coupling 1 and 5:	3/4”
Coupling 3:	1/2”
Coupling 2 and 4:	1/4” or 3/8”
Coupling 3 can be replaced with electric coupling 1/2”	



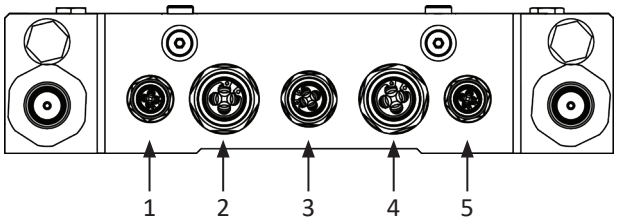
OQ 65	
Coupling 1 and 5:	1/2”
Coupling 2-4:	3/4”
Coupling 1 can be replaced with electric coupling 1/2”	
Coupling 3 can be replaced with electric coupling 3/4”	



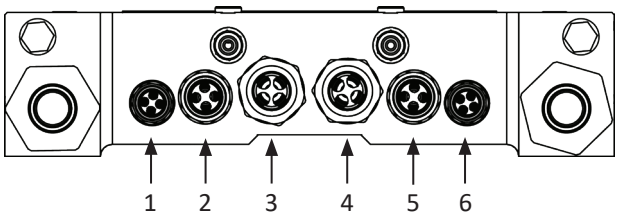
OQ Rail	
Coupling 1, 7 and 8:	3/4”
Coupling 2-6:	1/2”



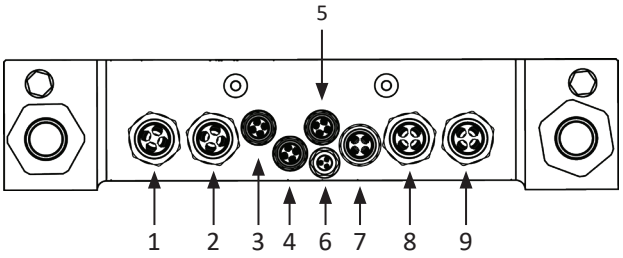
OQ 70	
Coupling 1 and 5:	1/2”
Coupling 3:	3/4”
Coupling 2 and 4:	1”
Coupling 1 can be replaced with electric coupling 1/2”	
Coupling 3 can be replaced with electric coupling 3/4”	



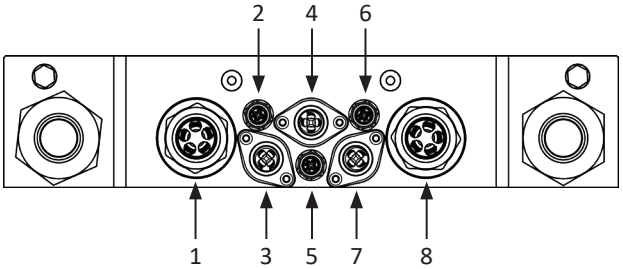
OQ 70/55 & OQ 80	
Coupling 1 och 6:	1/2”
Coupling 2 och 5:	3/4”
Coupling 3 och 4:	1”
Coupling 1 can be replaced with electric coupling 1/2”	
Coupling 2 can be replaced with electric coupling 3/4”	



OQ 90	
Coupling 1, 2, 8 and 9:	1”
Coupling 7:	3/4”
Coupling 3-5:	1/2”
Coupling 6:	1/4” or 3/8”
Coupling 4 can be replaced with electric coupling 1/2”	
Coupling 6 can be replaced with electric coupling 1/4”	
Coupling 7 can be replaced with electric coupling 3/4”	



OQ 120	
Coupling 1 and 8:	1 ½”
Coupling 3, 4 and 7:	1”
Coupling 2, 5 and 6:	1/2”



11 Installation of quick coupler

WARNING!
There is a risk of physical harm when installing the quick coupler.

For further information regarding the installation of the quick coupler, see separate installation manual.

The following requirements must be met when installing the OilQuick quick coupler system:

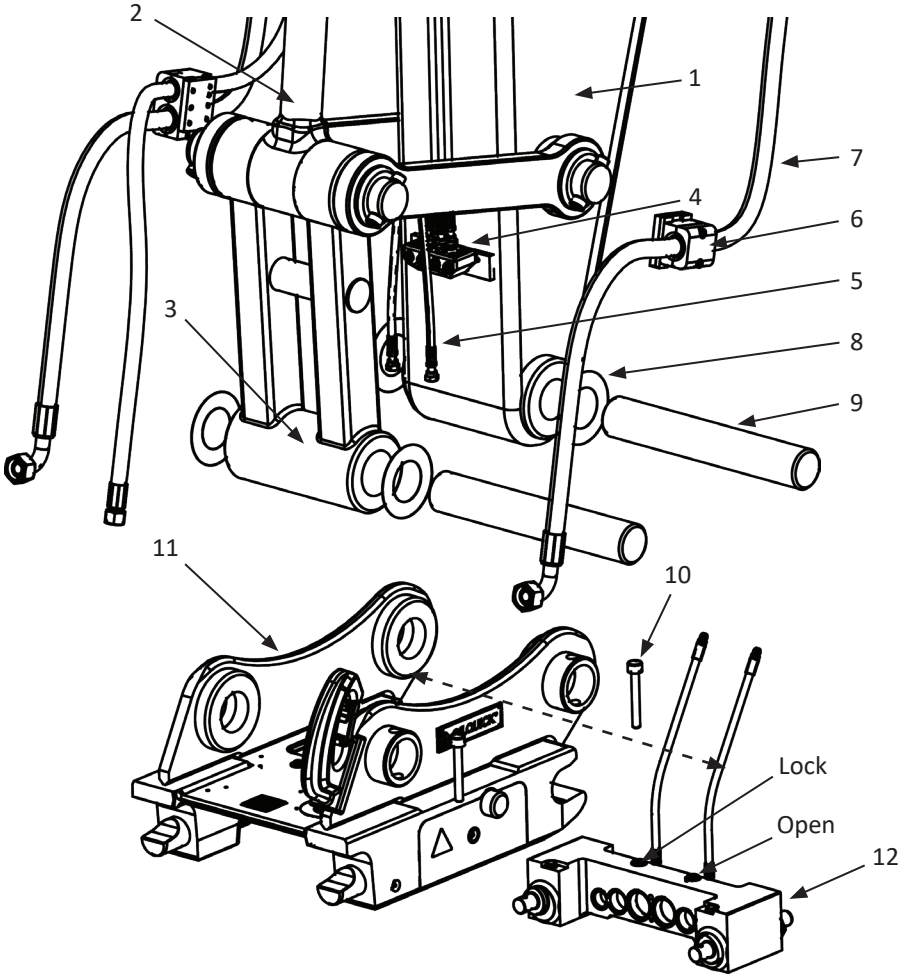
- The pins for the stick and link must fit and lock in a secure way.
- The lock hydraulics pressure side (LOCK) must have a direct connection to the pump and the machine´s full operating pressure.
- The lock hydraulics return side (OPEN) must have a free return to the tank.
- Hydraulic components that are used for the installation must be of the same or higher pressure classification than the machine's operating pressure.
- The machine manufacturer's instructions for installing the quick coupler must otherwise be followed.

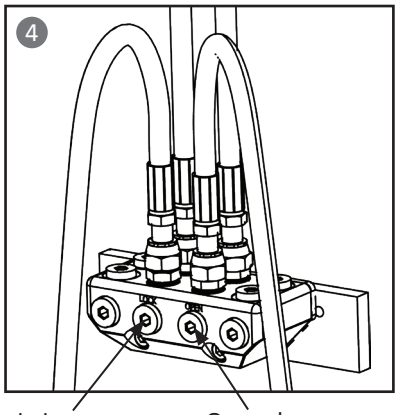
The quick coupler is supplied to the location for installation in transport packaging. This packaging should not be removed until the quick coupler is to be installed. The packaging also simplifies moving the quick coupler.

Great care must be taken when installing the quick coupler on the machine. There are large and heavy parts and failure to proceed in the correct way could result in severe injury.

When working with the hydraulic system the following points must be observed:

- Depressurise hydraulic accumulators and the hydraulic system on the machine.
- Preserve the environment, clean up every oil spillage.
- Protective gloves must be used, long term exposure to hydraulic oil can cause allergic reaction.
- Protective eyewear should be used to prevent oil splashes to the eyes.
- Cleanliness must be observed when working on hydraulic systems. There is a risk of malfunction if contaminants enter the system.





Lock, here measurement instrument can be connected (G1/4" or M12x1.5).

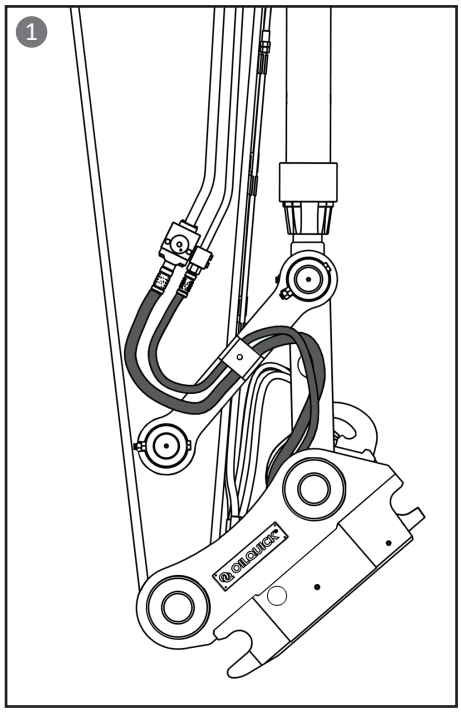
Open, here measurement instrument can be connected (G1/4" or M12x1.5).

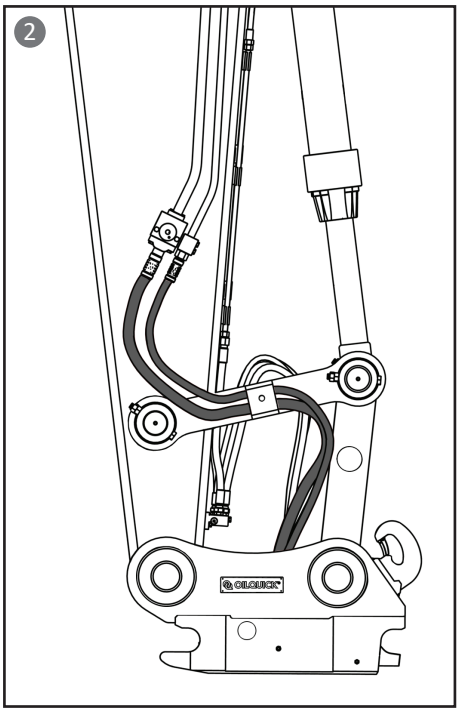
1. Dipper stick
2. Bucket cylinder
3. Link
4. Guide block
5. Connection for lock hoses
6. Hose clamps
7. Hydraulic hose
8. Shim washer
9. Pin
10. Locking screw
11. Quick coupler
12. H-cylinder

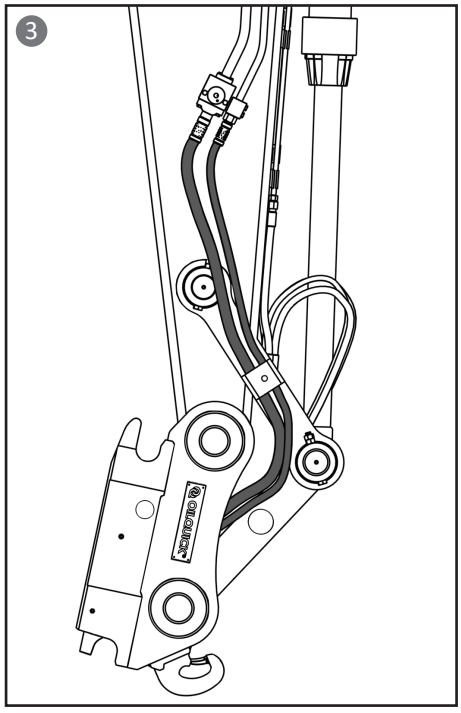
Hose routing should be in accordance with the images below. Hose routing is individual to each machine type and installation. Hoses must be routed in such a way that a sufficient bend radius is maintained and that abrasion and twisting are avoided. Hose clamp positions and hose lengths are tested on site. It is important to check what the hose routing looks like at the respective limits of the excavator link movement, see images below. Different models of hose clamps are available to suit different types of installations. The nearest OilQuick representative can assist with selection and procurement of the correct model. A guide block is ideal for use with the lock hydraulics, to connect the hoses from the excavator to those that run down to the H-cylinder. This guide block provides a practical installation of the lock hydraulics hoses which are routed inside the machine´s excavator linkage. The guide block also has measurement sockets for measuring the H-cylinder locking pressure.

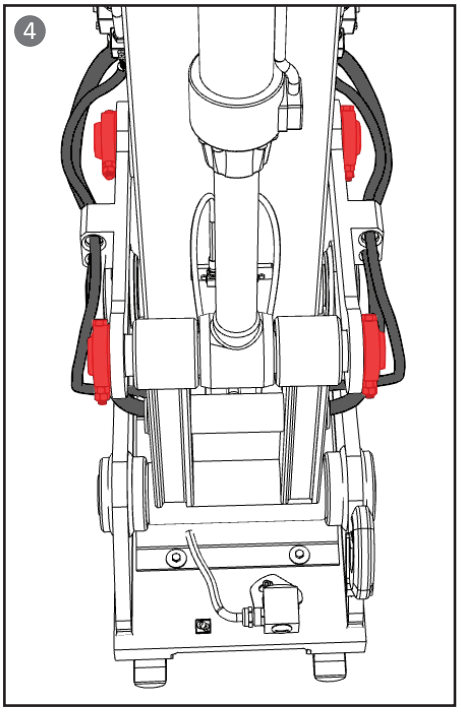
Examples of correctly executed hose routing:

1. The hose routing with the bucket cylinder in the shortest position.
2. The hose routing with the bucket cylinder in the intermediate position.
3. The hose routing with the bucket cylinder in the longest position.
4. Hose routing seen diagonally from above around adjacent components on the dipper stick (red marked).









When installation is complete the following must be done:

- Control measurement of the hydraulic pressure in the H-cylinder lock port (LOCK) when locking (must follow the machine´s operating pressure).
- Control measurement of the hydraulic pressure in the H-cylinder open port (OPEN) when locking (must be near zero).
- Daily inspection (see chapter 24.1).
- Enter which functions of the excavator are connected to quick couplings on H-cylinder in the quick coupler and applicable configuration and options for OQ-LockSupport 2.0 in the tables below.
- Signature below of the installer responsible for installation of the OilQuick quick coupler system.

Quick coupler:	
H-Cylinder #:	

- See chapter 10.5 for details of electric couplings and quick couplings on different models of H-cylinders.

Quick coupling on H-cylinder	Function on excavator
1	
2	
3	
4	
5	
6	
7	
8	
9	

OQLS 2.0 basic system

Locking valve		PressureBoost	
Originally installed by the machine manufacturer		No	
OilQuick locking valve		Originally installed by the machine manufacturer	
OQCS/OQLS 2.0 combi valve (lock– and LoadSense-valve)		OilQuick LoadSense valve	
OQCS/OQLS 2.0 pump and locking valve unit			
Other			

OQLS 2.0-options

Installed options for OilQuick-LockSupport® 2.0				
Safety gate	Yes		No	
Active signal level	High		Low	
Pressure relief	Yes		No	
OilQuick pressure relief block	Yes		No	

Responsible installer: .....

Signature: .....

Place and date: .....

12 Description of control panel for OQLS 2.0

If the start procedure given below does not occur troubleshooting for OQLS 2.0 must be carried out and any faults corrected!

Lock test must always be carried out after connecting an attachment!

At system start:

- Warning symbol and buzzer must flash and sound for 3 seconds.
- Pin symbols and locking bolt symbol must flash alternately for 3 seconds.

Description of control panel symbols and functions:

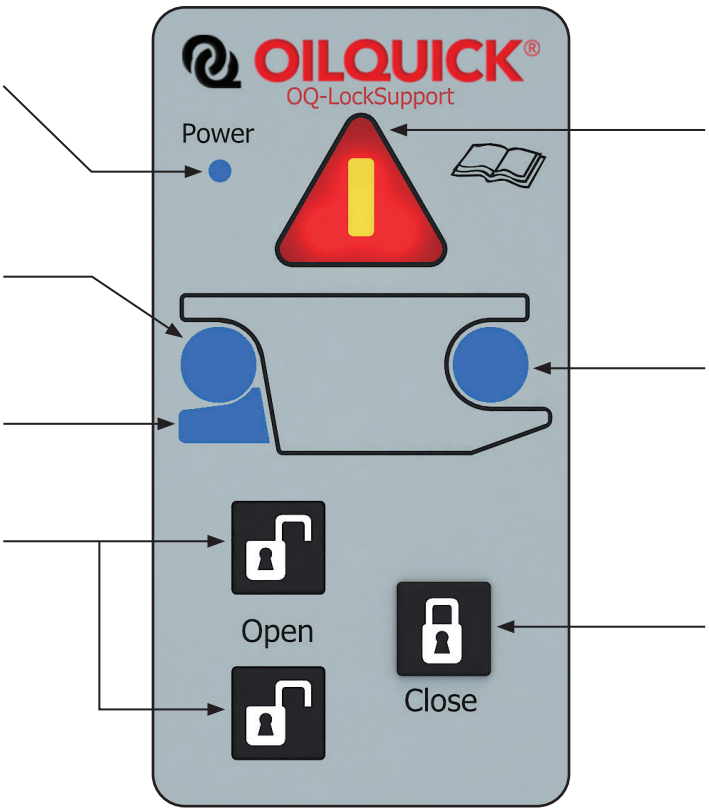
Power is lit blue and indicates that the system is running.

The rear pin symbol is lit blue when the rear pin on the attachment is in the correct position against the quick coupler.

Locking bolt symbol that is lit blue when the locking bolts are in closed mode.

Push buttons for opening the quick coupler. Both buttons must be held down at the same time for three seconds to open the quick coupler.

See chapter 18, disconnection of attachments, for a detailed description of the function.



Warning symbol that flashes at the same time as the buzzer sounds when the system is in non-closed mode.

The front pin symbol is lit blue when the front pin on the attachment is in the correct position against the quick coupler.

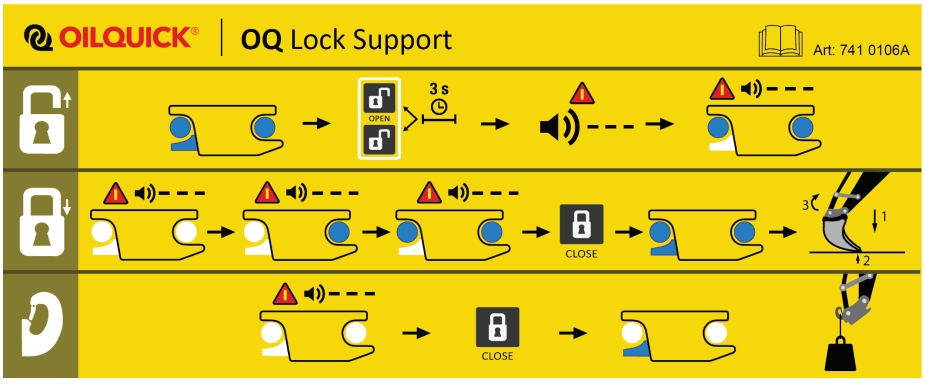
Push button that activates closing the quick coupler.

*

A star at the illustrations of the control panel symbol lamps means that they flash.

The symbol means that the buzzer sounds with a beeping signal.

The symbol means that the buzzer sounds with a constant signal.

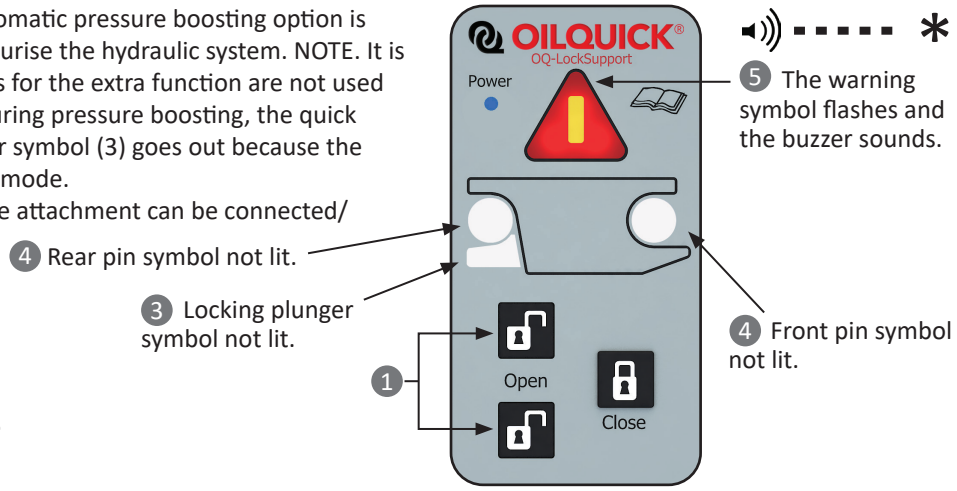


12.1 Opening/Closing of quick coupler

12.1.1 Opening of quick coupler

Open:

- Open the quick coupler by depressing both buttons (1, OPEN) for three seconds until the warning symbol (5) starts flashing and the buzzer sounds.
- Release the buttons.
- If the automatic pressure boosting option is installed, the operator need not take any further action. If the automatic pressure boosting option is not installed, the operator must pressurise the hydraulic system. NOTE. It is important that the hydraulic functions for the extra function are not used to pressurise the hydraulic system. During pressure boosting, the quick coupler opens and the locking plunger symbol (3) goes out because the locking plungers are no longer in lock mode.
- The quick coupler is now open and the attachment can be connected/ disconnected.



12.1.2 Closing of quick coupler

Close:

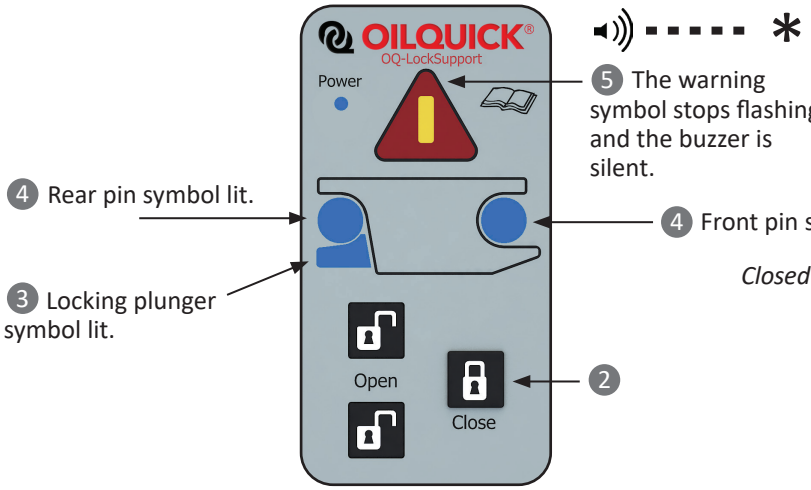
Note that to meet the conditions to close the quick coupler, one of the following two criteria must be met.

- **Attachment connected in quick coupler:** Front and rear pins must be in the correct position in the frame, which is indicated by the pin symbols (4) illuminating blue.
- **No attachment connected in quick coupler:** None of the pin symbols may indicate contact with pin.

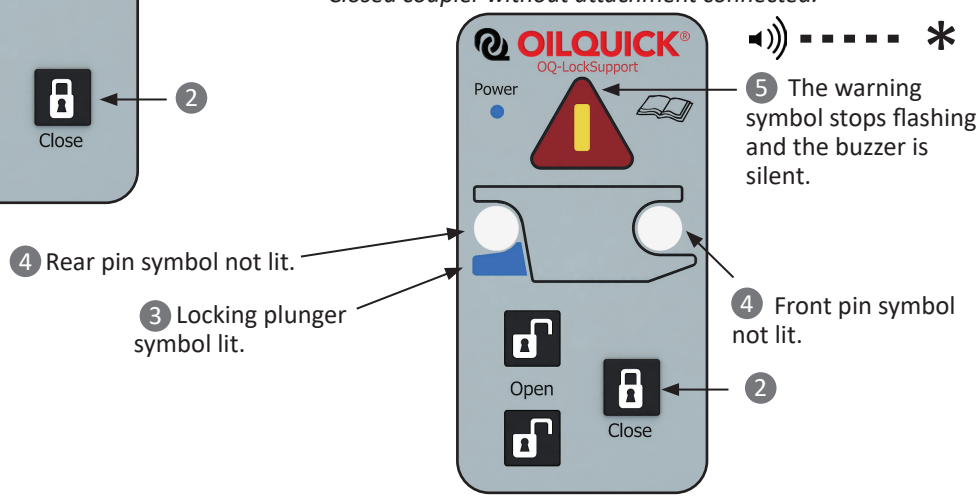
Procedure:

- Press the Close button (2) for closing. If the automatic pressure boosting option is installed, the operator need not take any further action in order for the quick coupler to close. If the automatic pressure boosting option is not installed, the operator must pressurise the hydraulic system in order for the quick coupler to close. NOTE. It is important that the hydraulic functions for the extra function are not used to pressurise the system. During pressure boosting, the quick coupler closes and the locking plunger symbol (3) illuminates.
- The locking plunger symbol (3) illuminates and verifies that the locking plungers are out and in the locked position.
- The warning symbol goes out and the buzzer is silent.

Closed coupler with attachment connected.

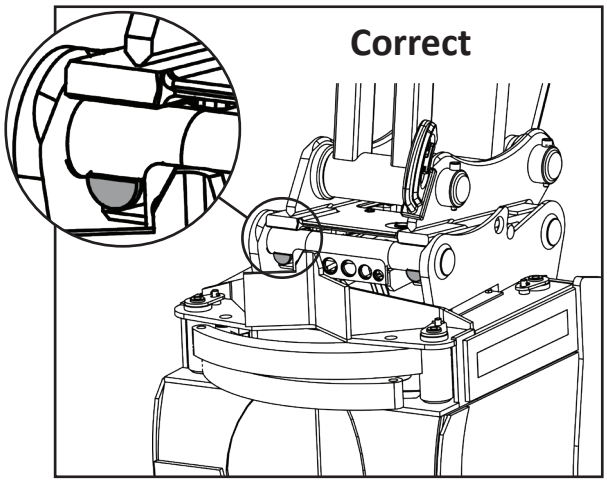


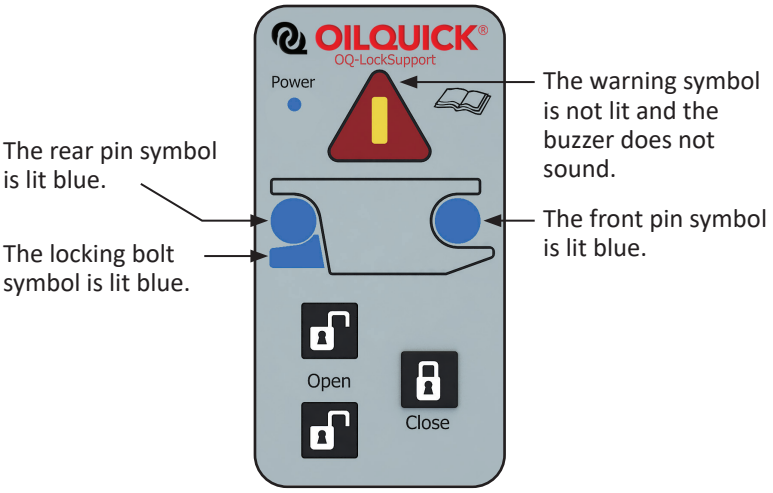
Closed coupler without attachment connected.



13 Correctly connected attachment

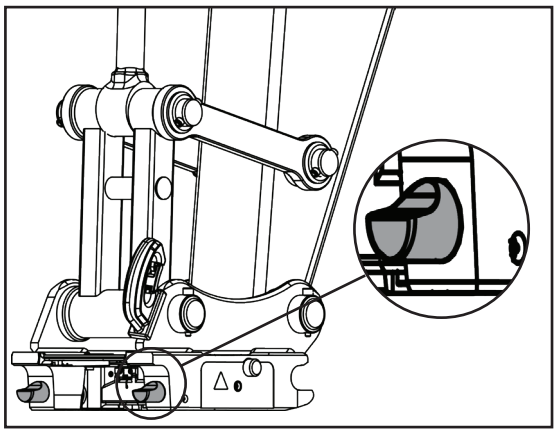
The quick coupler has locked the attachment in both the pins. This is indicated by the warning symbol going out, the buzzer does not sound, the locking bolt symbol and the pin symbols light with a steady light.

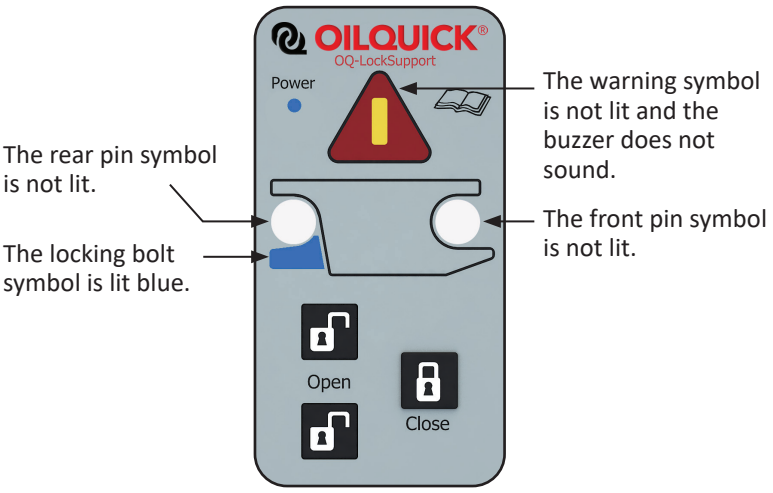




14 Closed without attachment, for hook hoist, transport etc.

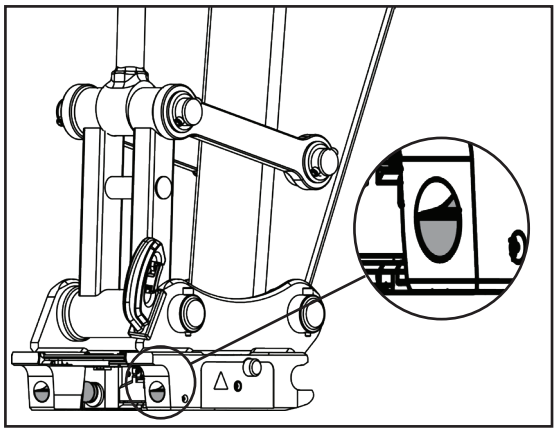
In this mode the quick coupler is closed but has an attachment connected. For example when work is completed, work with hoisting hook, maintenance and transport. This is indicated by the warning symbol going out, the buzzer does not sound, the pin symbols are not lit and the locking bolt symbol is lit.

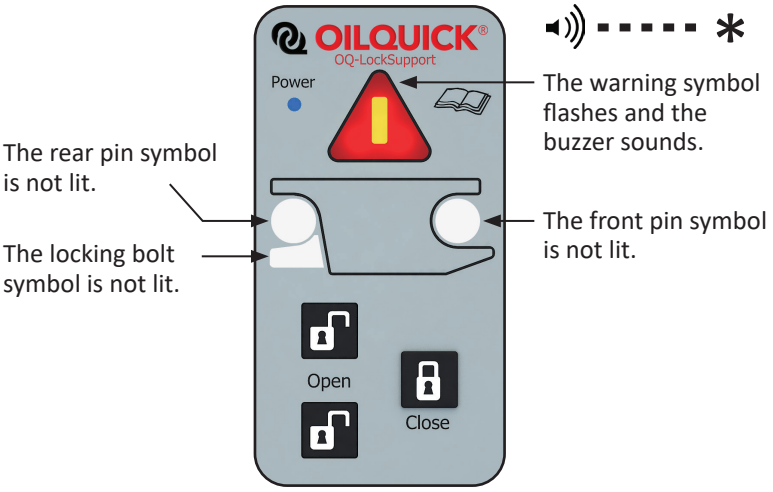




15 Open quick coupler

When the quick coupler is open and the locking bolts are withdrawn into the coupler body.





16 Connection of attachments

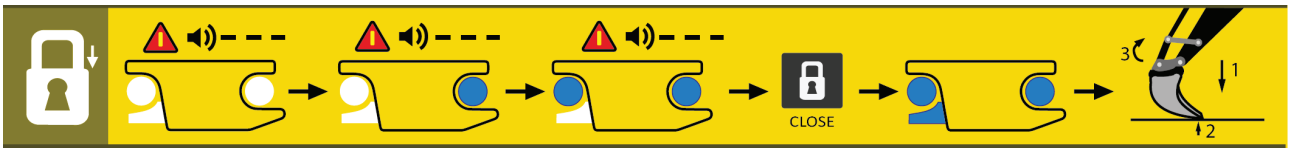
16.1 Connection of vertically connected attachments

IMPORTANT TO REMEMBER

- **Only attachments with suitable OilQuick attachment frame/ adapter or mechanical attachment frame/ adapter of the same size /model may be connected.**
- **There is always an element of risk associated with changing attachments.**
- **No personnel may be within the machine operating area when the attachment is connected to or disconnected from the machine. The attachment can tip and/or fall away during the process.**
- **The attachment must always be positioned on a horizontal surface that is both hard and stable.**
- **When opening and locking the quick coupler the machine must be stationary.**
- **Lock test must always be carried out when connecting and changing an attachment.**

NOTE!
Special connection procedures may apply for individual attachments. Refer to the attachment documentation regarding this!

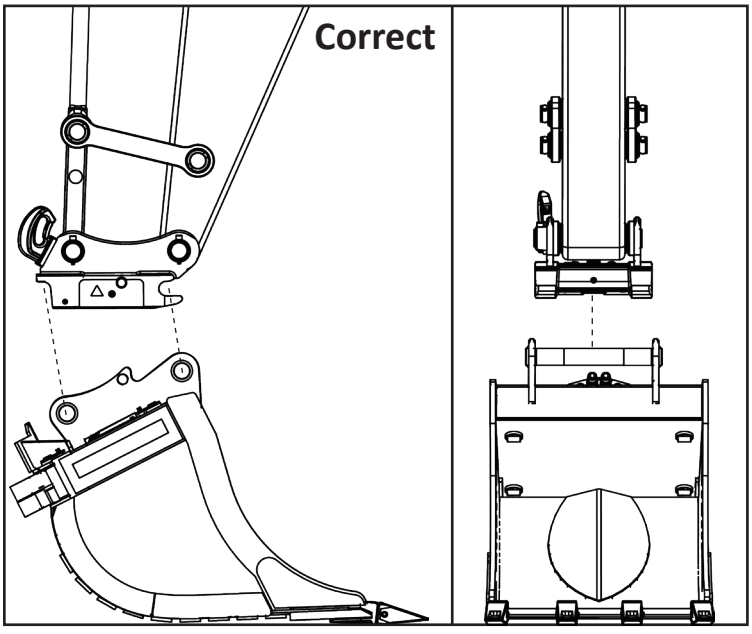
When closing the quick coupler the PressureBoost function automatically boosts the pressure of the locking hydraulics. The driver does not need to perform any additional actions. NOTE! Where the PressureBoost option is not installed on the machine the driver must increase the pressure in the locking hydraulics by running the bucket cylinder to the limit position, raising the dozer blade or using another similar function.

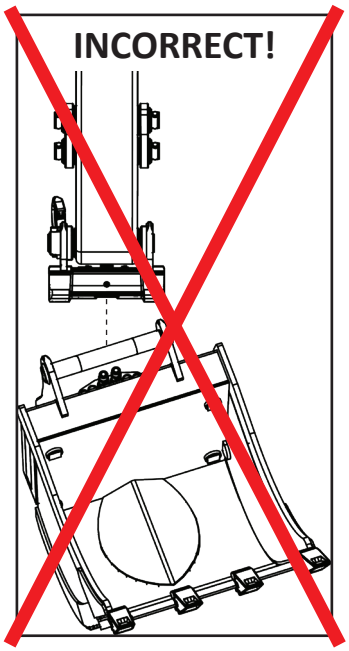


This section covers connection procedures of attachments that should be connected to the attachment frame/ adapter pins in the horizontal position. Examples of attachments are: Pallet forks, digging bucket, compactor plate, magnet, tiltrotator and grapple.

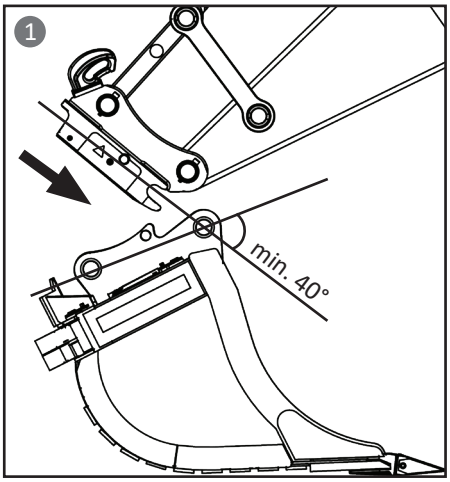
Procedure:
It is assumed in this section that no attachment is connected and that the quick coupler is open. (See chapter 12.1.1)

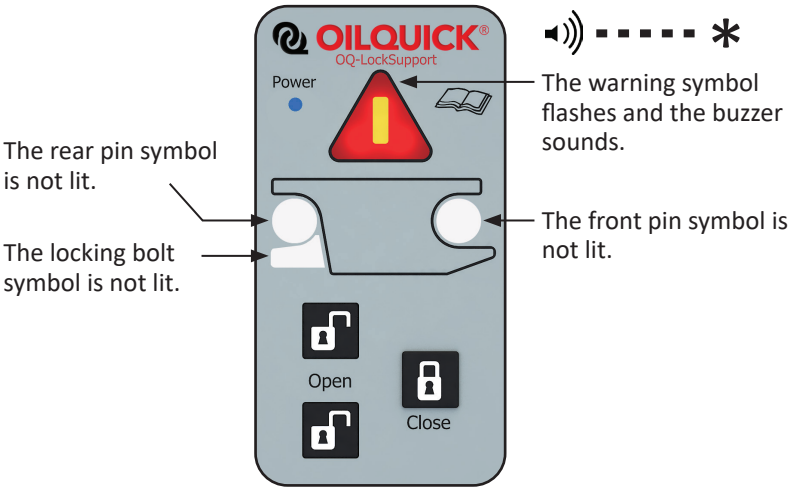
- Check that no-one is within the machine's operating area.
- Check that the quick coupler and attachment frame/adapter of the attachment to be connected are parallel to each other and that the front pin holder of the quick coupler is turned towards the front pin of the attachment frame/-adapter (see images below).
- Check that shafts and sensors are free of mud and dirt.



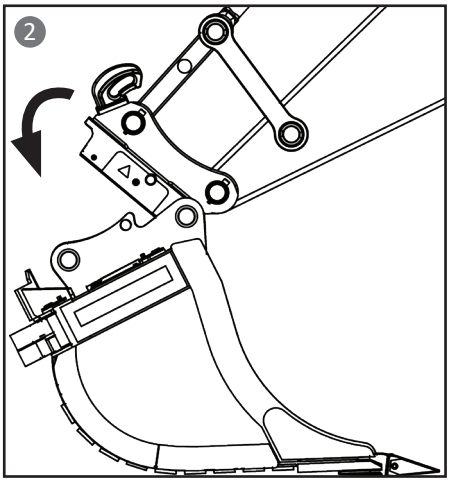


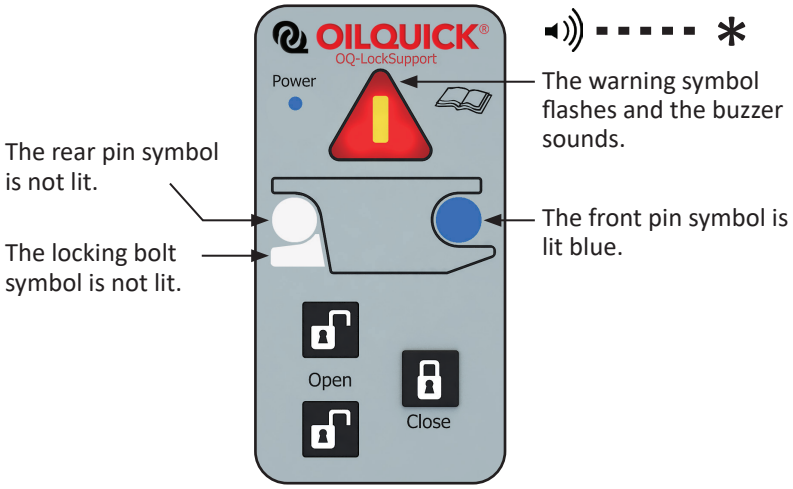
- The quick coupler is open. The warning symbol flashes and the buzzer sounds.
- Run out the bucket cylinder to a position where the quick coupler is angled a minimum of 40° to the attachment frame/ adapter pins (1).



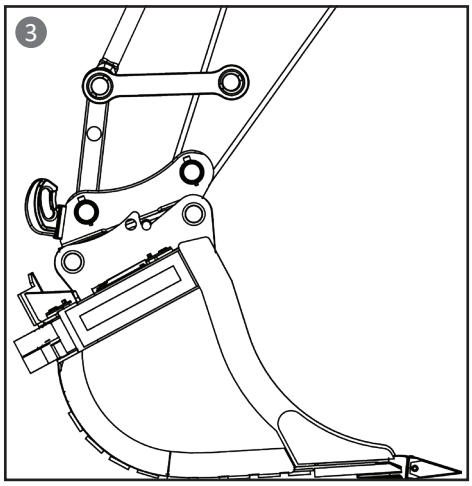


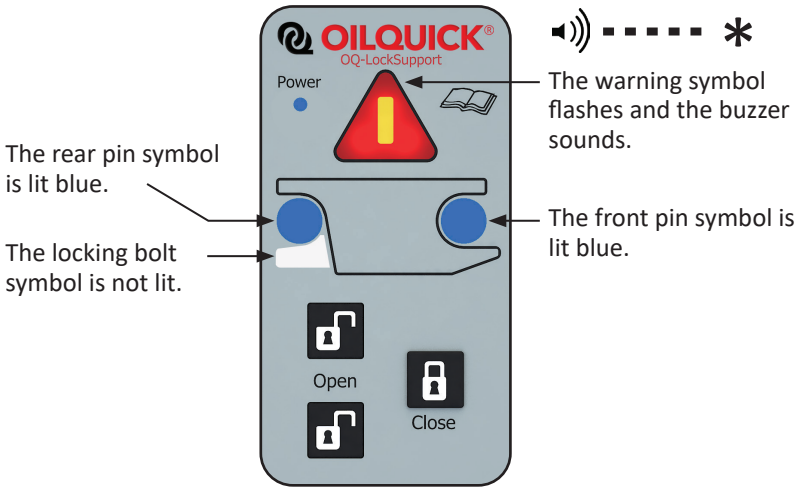
- Hook the front pin holder of the quick coupler around the front pin of the attachment frame/adapter (2).
- The front pin symbol is lit blue when the front pin is in the correct position against the front pin holder on the quick coupler.



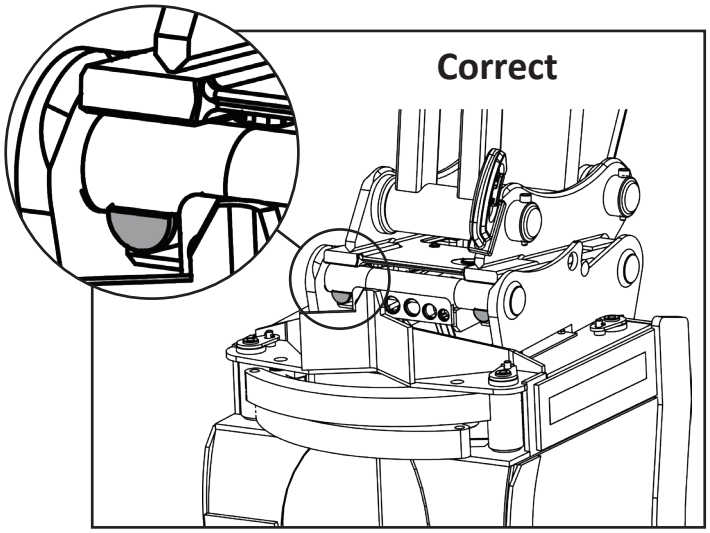


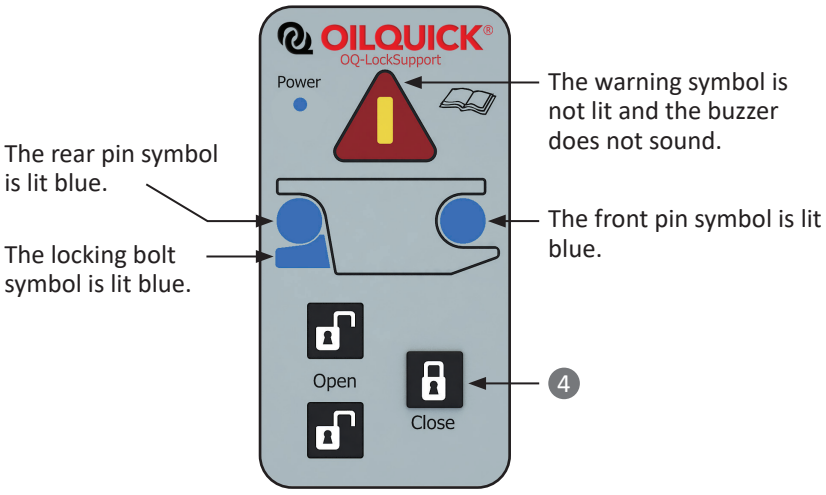
- Run the bucket cylinder out so that the support surface for the rear pin of the quick coupler lies against the rear pin of the attachment frame/adapter (3). NOTE! The guide pins on the quick coupler must be guided into the cut-outs correctly on the attachment frame/ adapter's collision protection.
- When the support surfaces for the rear pin on the quick coupler are in the correct position against the rear attachment pin the pin symbol for the rear pin is lit blue.





- It is now possible to close the quick coupler to connect the attachment.
- NOTE! In this mode only the control panel for OQLS 2.0 can be operated.
- Press the Close button (4) for closing. The quick coupler closes and the attachment is connected.
- The locking bolt symbol and the pin symbols light and verify that the attachment is connected.
- The warning lamp goes out and the buzzer is silent.
- The machine's controls must be used to carry out the lock test before work with the attachment is started.





- Carry out a lock test according to chapter 17.

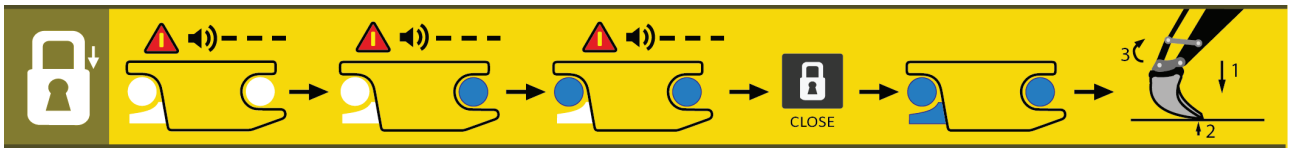
16.2 Connection of horizontally connected attachments

IMPORTANT TO REMEMBER

- **Only attachments with suitable OilQuick attachment frame/ adapter or mechanical attachment frame/ adapter of the same size /model may be connected.**
- **There is always an element of risk associated with changing attachments.**
- **No personnel may be within the machine operating area when the attachment is connected to or disconnected from the machine. The attachment can tip and/or fall away during the process.**
- **The attachment must always be positioned on a horizontal surface that is both hard and stable.**
- **When opening and locking the quick coupler the machine must be stationary.**
- **Lock test must always be carried out when connecting and changing an attachment.**

NOTE!
Special connection procedures may apply for individual attachments. Refer to the attachment documentation regarding this!

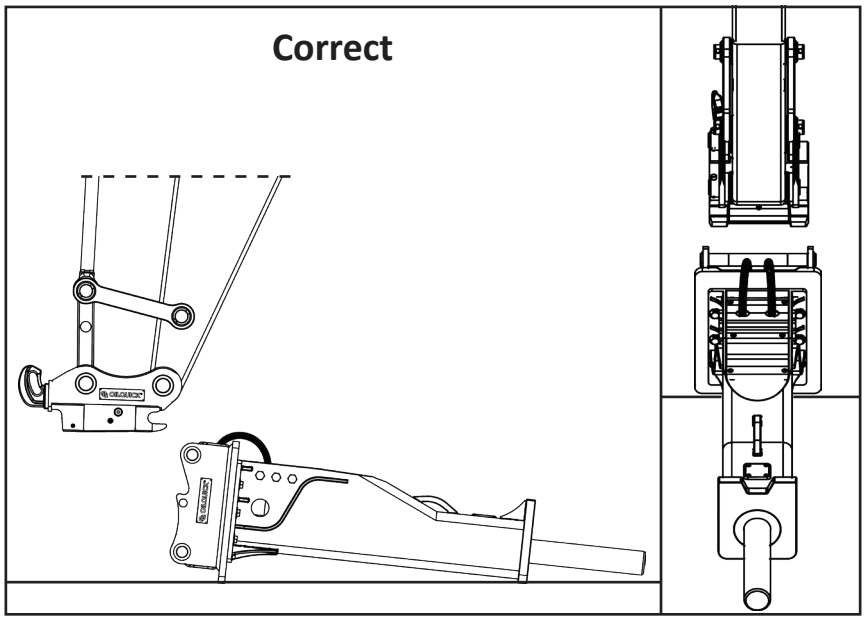
When closing the quick coupler the PressureBoost function automatically boosts the pressure of the locking hydraulics. The driver does not need to perform any additional actions. NOTE! Where the PressureBoost option is not installed on the machine the driver must increase the pressure in the locking hydraulics by running the bucket cylinder to the limit position, raising the dozer blade or using another similar function.

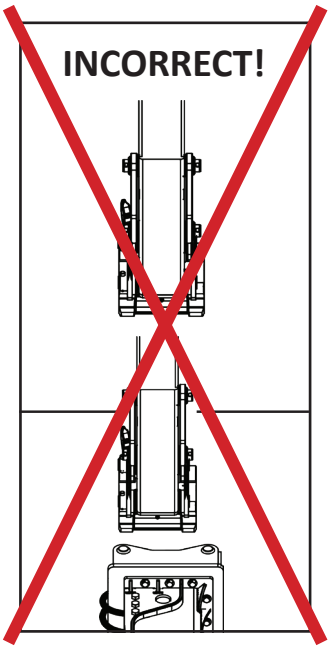


This section covers connection procedures of attachments that should be connected to the attachment frame/ adapter pins in the vertical position. Examples of attachments are: Hydraulic breaker, crusher, grapple and brushes.

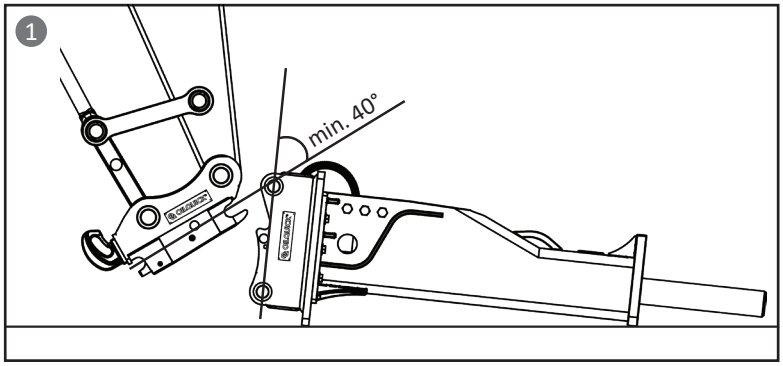
Procedure:
It is assumed in this section that no attachment is connected and that the quick coupler is open. (See chapter 12.1.1)

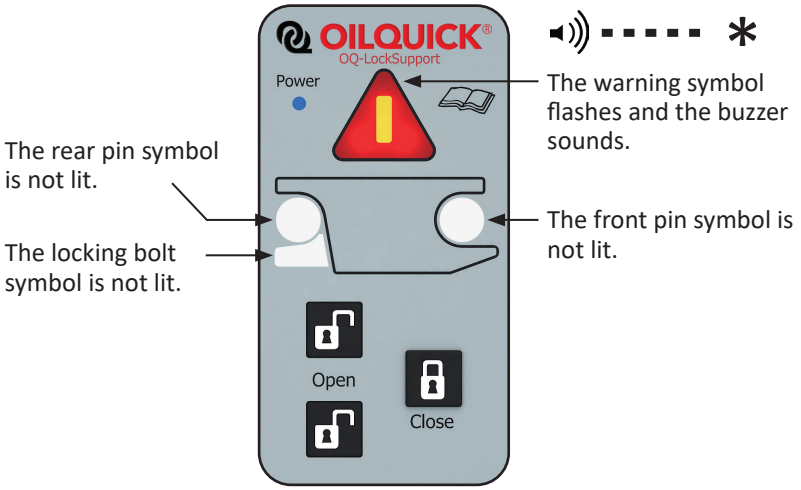
- Check that no-one is within the machine's operating area.
- Check that the tool is correctly oriented. Front pin of the attachment frame/adapter must be turned upwards. The quick coupler and the attachment frame/ adapter of the tool to be attached must lie parallel with each other and the front pin holder of the quick coupler must be turned towards the front pin of the attachment frame/ adapter (see images below).
- Check that shafts and sensors are free of mud and dirt.



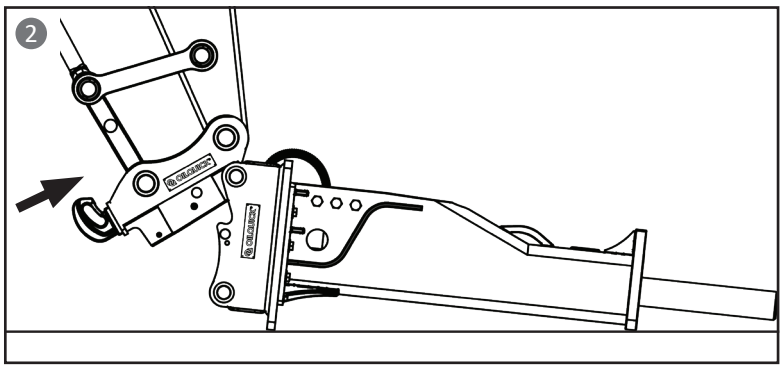


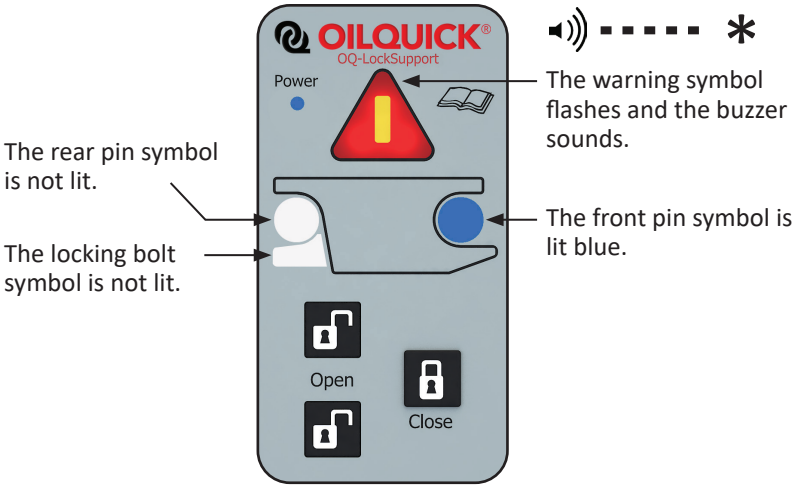
- The quick coupler is open. The warning symbol flashes and the buzzer sounds.
- Run out the bucket cylinder to a position where the quick coupler is angled a minimum of 40° to the attachment frame/adapter pins (1).



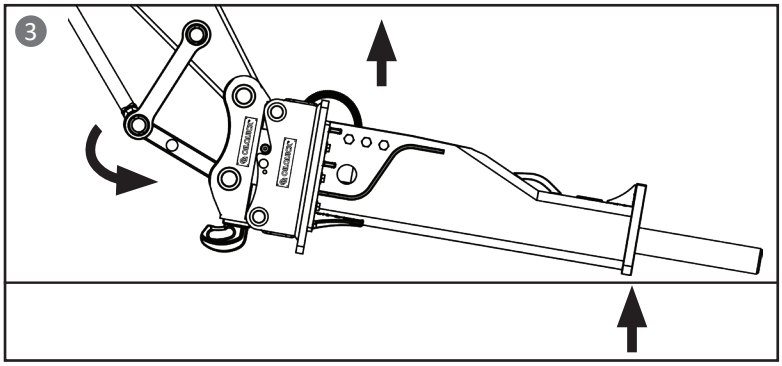


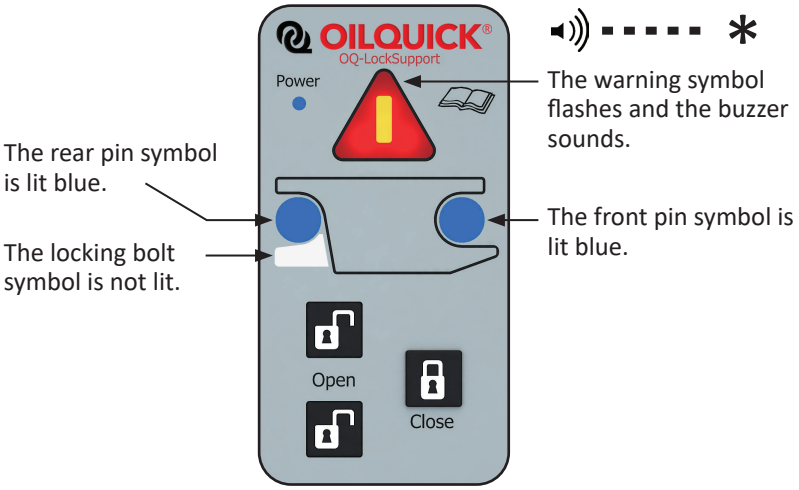
- Hook the front pin holder of the quick coupler around the front pin of the attachment frame/adapter (2).
- The front pin symbol is lit blue when the front pin is in the correct position against the front pin holder on the quick coupler.



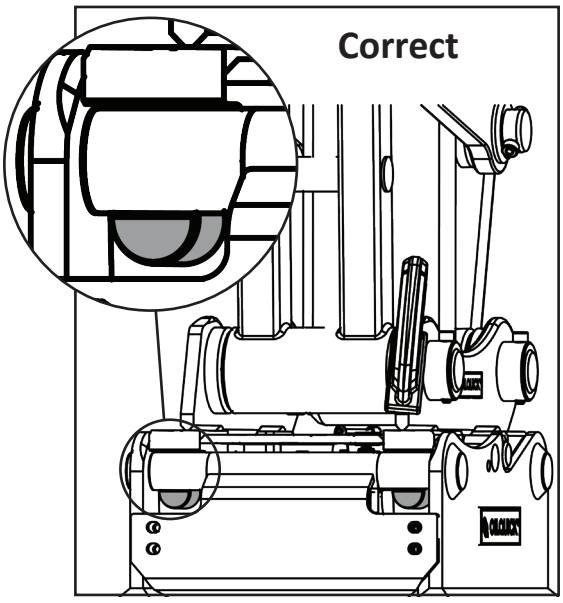


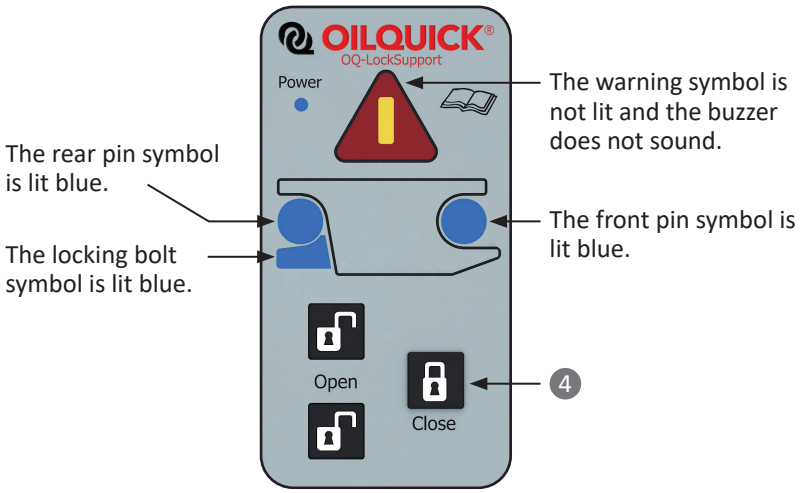
- Lift the attachment so that the outermost part at the attachment frame/adapter just hangs free and run the bucket cylinder out so that the support surface for the rear pin of the quick coupler lies against the rear pin of the attachment frame/adapter (3). NOTE! The guide pins on the quick coupler must be guided into the cut-outs correctly on the attachment frame/adapter's collision protection.
- When the support surfaces for the rear pin on the quick coupler are in the correct position against the rear attachment pin the pin symbol for the rear pin is lit blue.





- It is now possible to close the quick coupler to connect the attachment.
- NOTE! In this mode only the control panel for OQLS 2.0 can be operated.
- Press the Close button (4) for closing. The quick coupler closes and the attachment is connected.
- The locking bolt symbol and the pin symbols light and verify that the attachment is connected.
- The warning lamp goes out and the buzzer is silent.
- The machine's controls must be used to carry out the lock test before work with the attachment is started.





- Carry out a lock test according to chapter 17.
- Horizontally connected attachments with a hydraulic function must always be lock tested according to section 17.2.

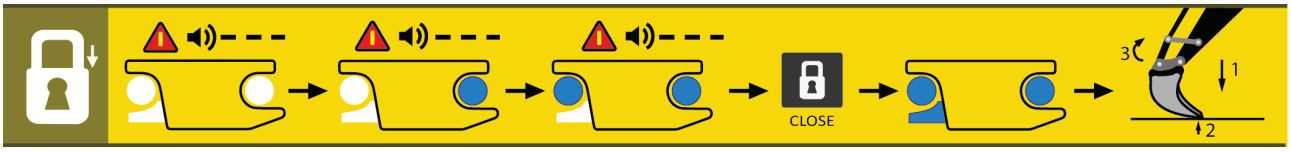
16.3 Connection of vertically connected attachments with pendulum adapter

IMPORTANT TO REMEMBER

- **Only attachments with suitable OilQuick attachment frame/ adapter or mechanical attachment frame/ adapter of the same size /model may be connected.**
- **There is always an element of risk associated with changing attachments.**
- **No personnel may be within the machine operating area when the attachment is connected to or disconnected from the machine. The attachment can tip and/or fall away during the process.**
- **The attachment must always be positioned on a horizontal surface that is both hard and stable.**
- **When opening and locking the quick coupler the machine must be stationary.**
- **Lock test must always be carried out when connecting and changing an attachment.**

NOTE!
Special connection procedures may apply for individual attachments. Refer to the attachment documentation regarding this!

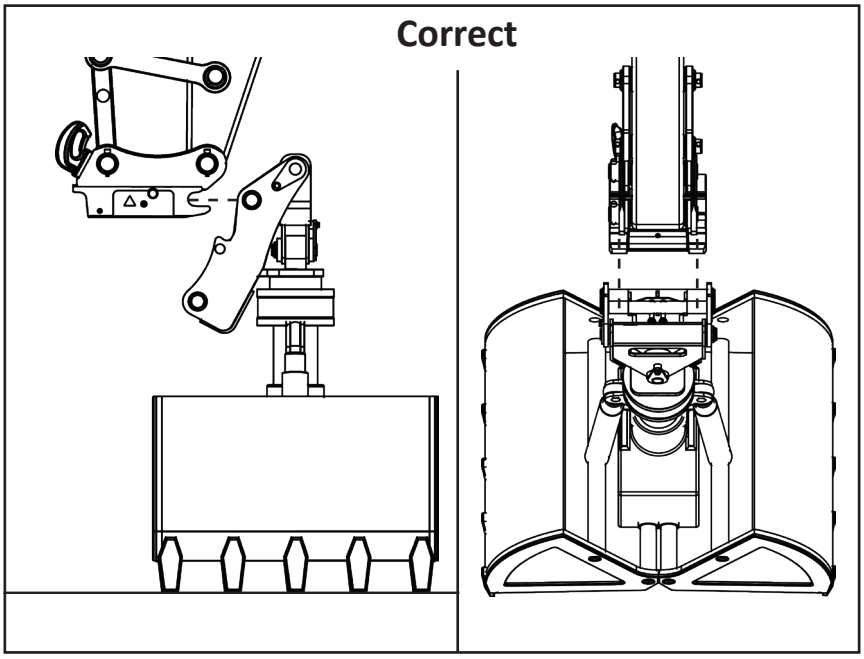
When closing the quick coupler the PressureBoost function automatically boosts the pressure of the locking hydraulics. The driver does not need to perform any additional actions. NOTE! Where the PressureBoost option is not installed on the machine the driver must increase the pressure in the locking hydraulics by running the bucket cylinder to the limit position, raising the dozer blade or using another similar function.

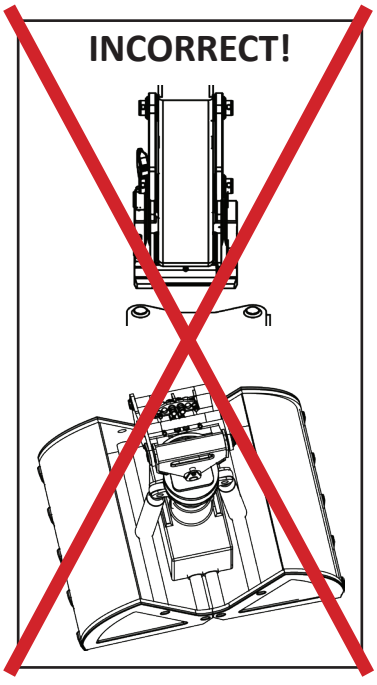


This section covers connection procedures of attachments with pendulum adapters where the attachment adapter pins are in vertical position. Examples of attachments with pendulum adapters are: magnet, harvester head and grapple.

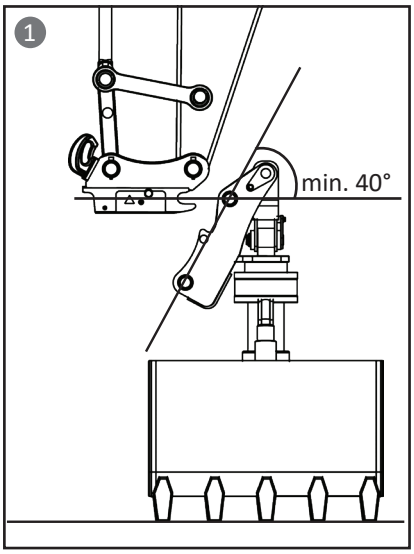
Procedure:
It is assumed in this section that no attachment is connected and that the quick coupler is open. (See chapter 12.1.1)

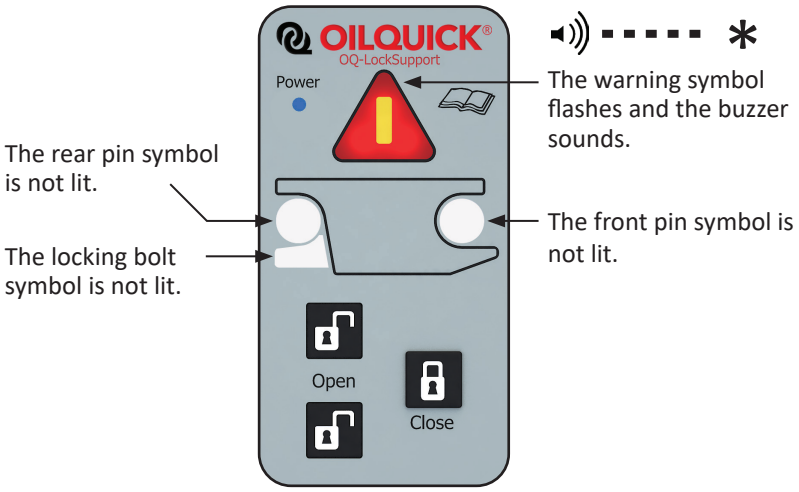
- Check that no-one is within the machine's operating area.
- Check that the quick coupler and adapter of the attachment to be connected are parallel to each other and that the front pin holder of the quick coupler is turned towards the front pin of the attachment adapter (see images below).
- Check that shafts and sensors are free of mud and dirt.



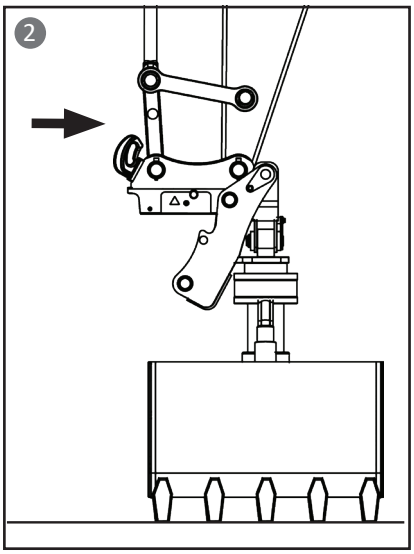


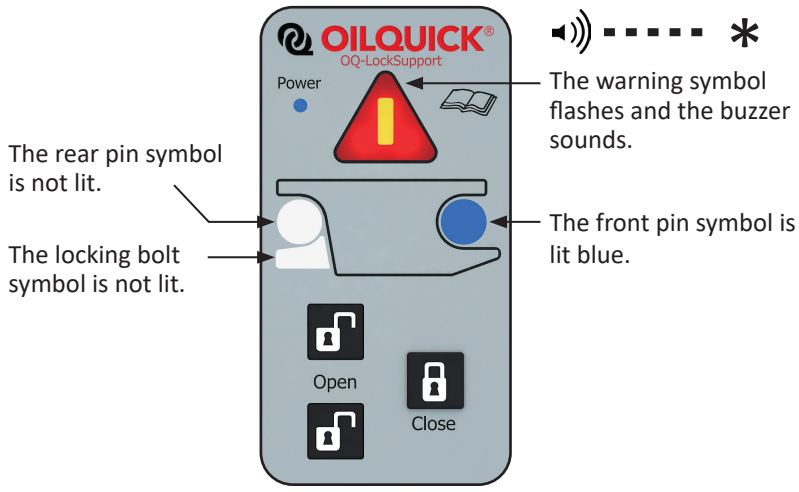
- The quick coupler is open. The warning symbol flashes and the buzzer sounds.
- Run out the bucket cylinder to a position where the quick coupler is angled a minimum of 40° to the attachment adapter pins (1).



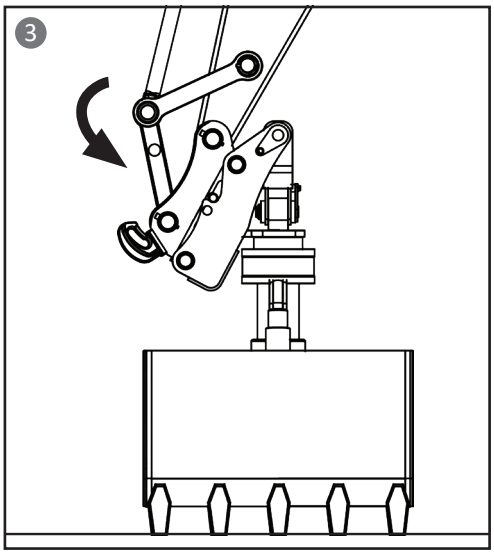


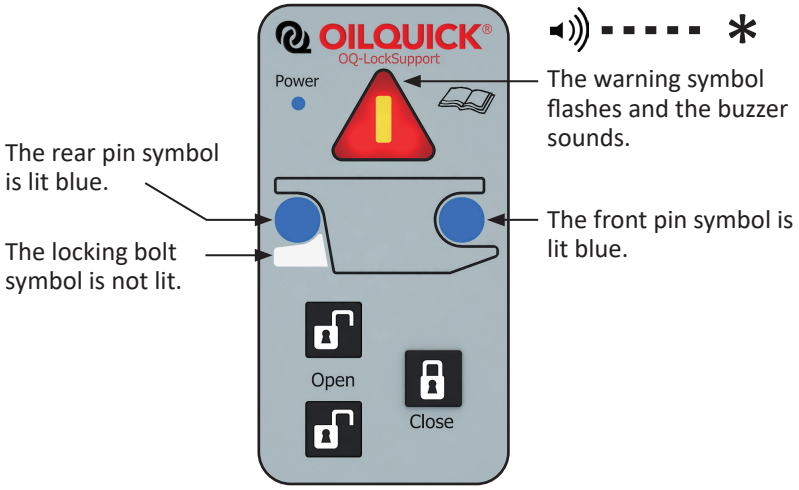
- Hook the front pin holder of the quick coupler around the front pin of the attachment adapter (2).
- The front pin symbol is lit blue when the front pin is in the correct position against the front pin holder on the quick coupler.



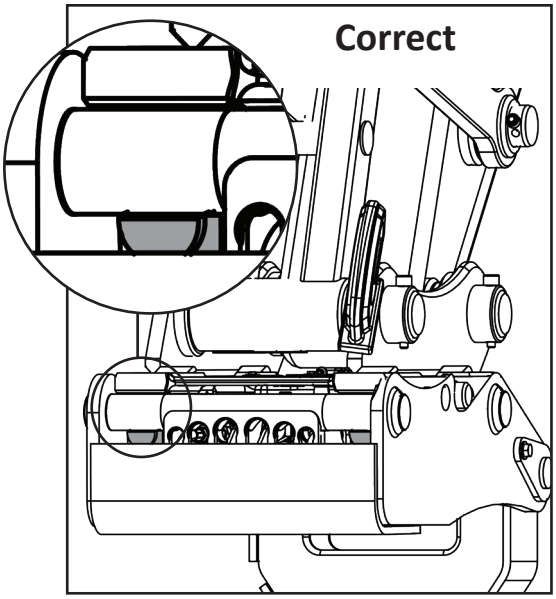


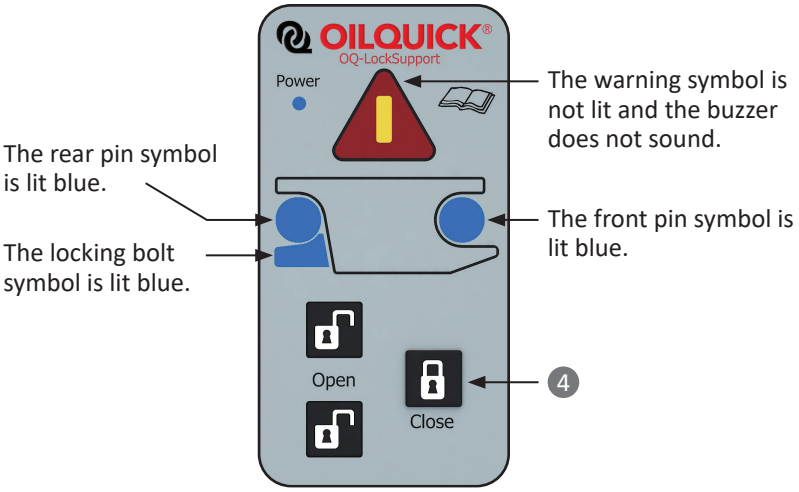
- Run out the bucket cylinder so that the support surface for the rear pin of the quick coupler lies against the rear pin of the attachment adapter (3). NOTE! The guide pins on the quick coupler must be guided into the cut-outs correctly on the attachment adapter's collision protection.
- When the support surfaces for the rear pin on the quick coupler are in the correct position against the rear attachment pin the pin symbol for the rear pin is lit blue.





- It is now possible to close the quick coupler to connect the attachment.
- NOTE! In this mode only the control panel for OQLS 2.0 can be operated.
- Press the Close button (4) for closing. The quick coupler closes and the attachment is connected.
- The locking bolt symbol and the pin symbols light and verify that the attachment is connected.
- The warning lamp goes out and the buzzer is silent.
- The machine's controls must be used to carry out the lock test before work with the attachment is started.





- Carry out a lock test according to chapter 17.

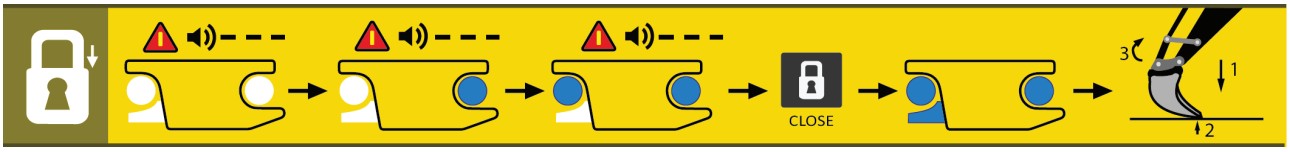
16.4 Connection of horizontally connected attachments with pendulum adapter

IMPORTANT TO REMEMBER

- **Only attachments with suitable OilQuick attachment frame/ adapter or mechanical attachment frame/ adapter of the same size /model may be connected.**
- **There is always an element of risk associated with changing attachments.**
- **No personnel may be within the machine operating area when the attachment is connected to or disconnected from the machine. The attachment can tip and/or fall away during the process.**
- **The attachment must always be positioned on a horizontal surface that is both hard and stable.**
- **When opening and locking the quick coupler the machine must be stationary.**
- **Lock test must always be carried out when connecting and changing an attachment.**

NOTE!
Special connection procedures may apply for individual attachments. Refer to the attachment documentation regarding this!

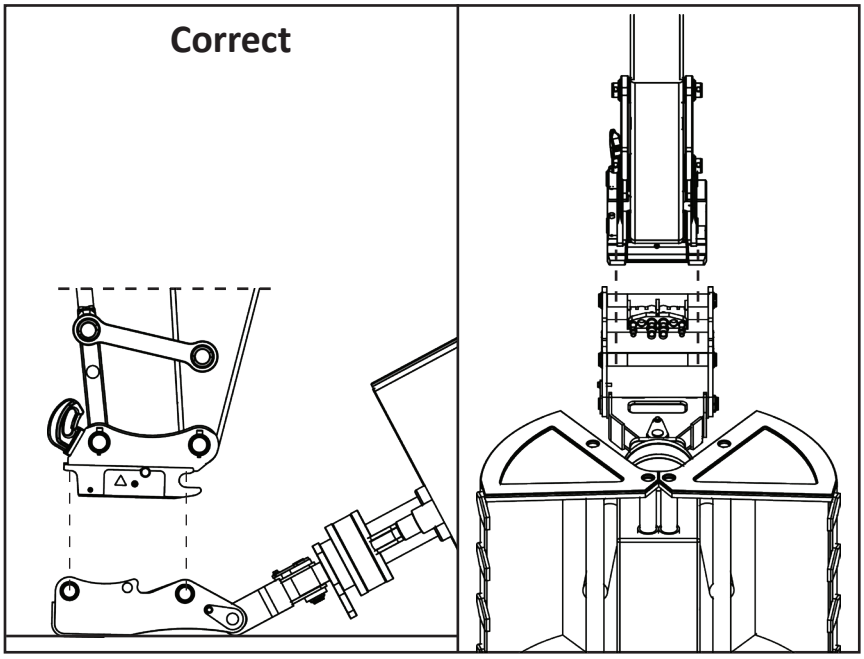
When closing the quick coupler the PressureBoost function automatically boosts the pressure of the locking hydraulics. The driver does not need to perform any additional actions. NOTE! Where the PressureBoost option is not installed on the machine the driver must increase the pressure in the locking hydraulics by running the bucket cylinder to the limit position, raising the dozer blade or using another similar function.

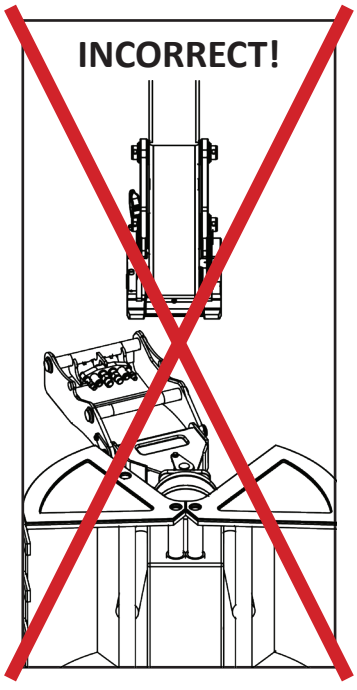


This section covers connection procedures of attachments with pendulum adapters where the attachment adapter pins are in horizontal position. Examples of attachments with pendulum adapters are: magnet, harvester head and grapple.

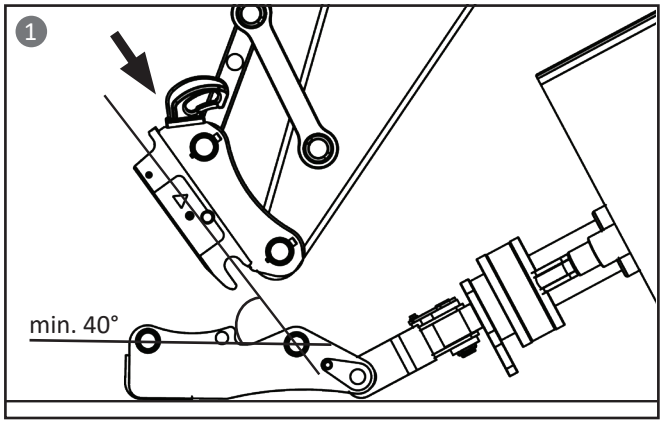
Procedure:
It is assumed in this section that no attachment is connected and that the quick coupler is open. (See chapter 12.1.1)

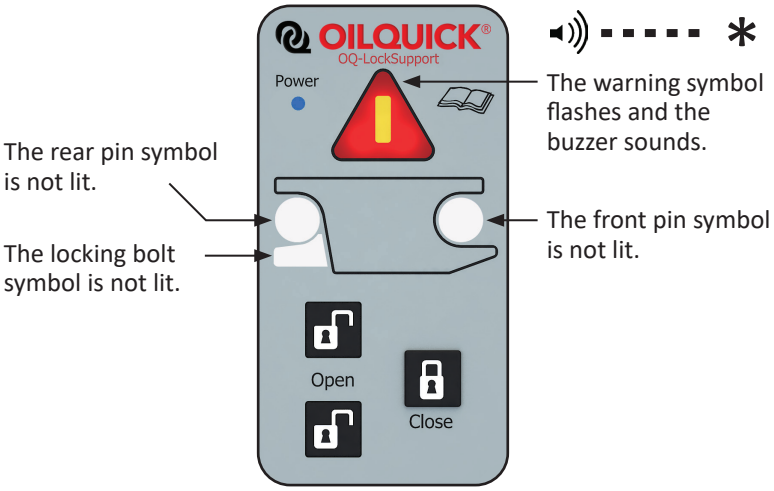
- Check that no-one is within the machine's operating area.
- Check that the quick coupler and adapter of the attachment to be connected are parallel to each other and that the front pin holder of the quick coupler is turned towards the front pin of the attachment adapter (see images below).
- Check that shafts and sensors are free of mud and dirt.



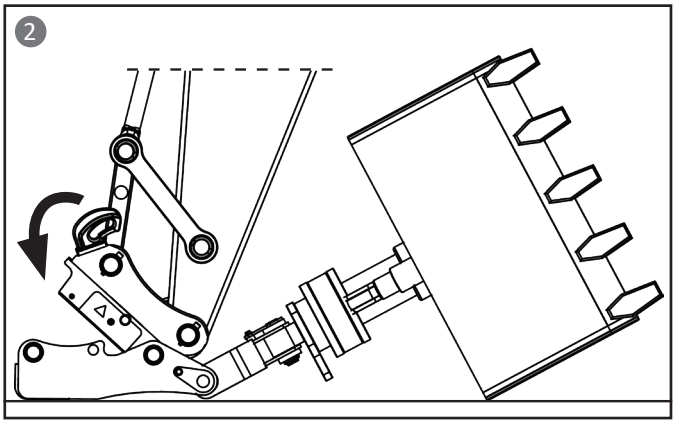


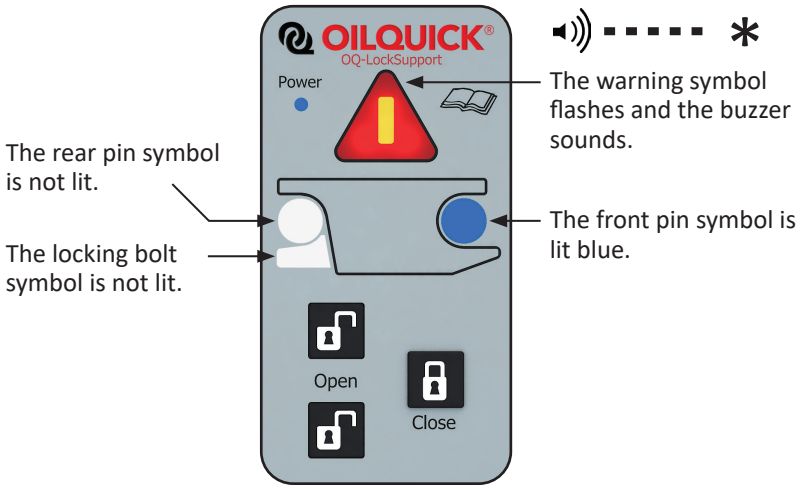
- The quick coupler is open. The warning symbol flashes and the buzzer sounds.
- Run out the bucket cylinder to a position where the quick coupler is angled a minimum of 40° to the attachment adapter pins (1).



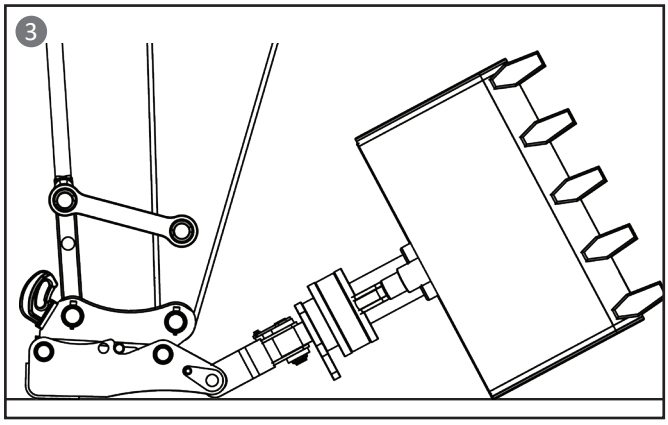


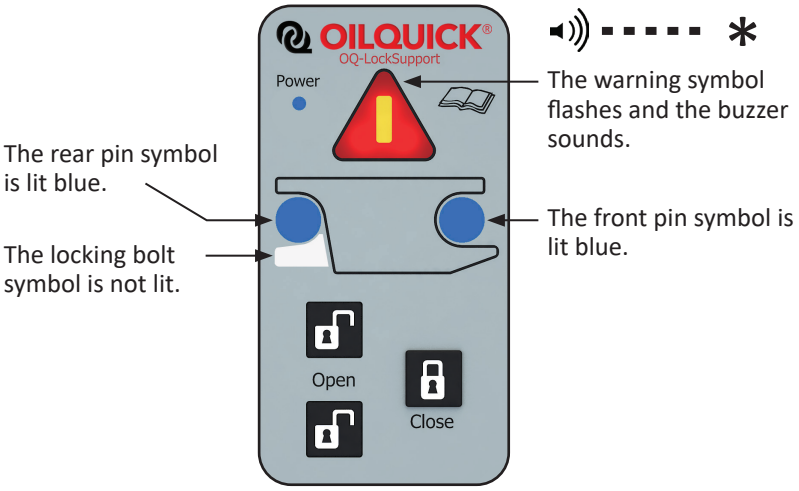
- Hook the front pin holder of the quick coupler around the front pin of the attachment adapter (2).
- The front pin symbol is lit blue when the front pin is in the correct position against the front pin holder on the quick coupler.



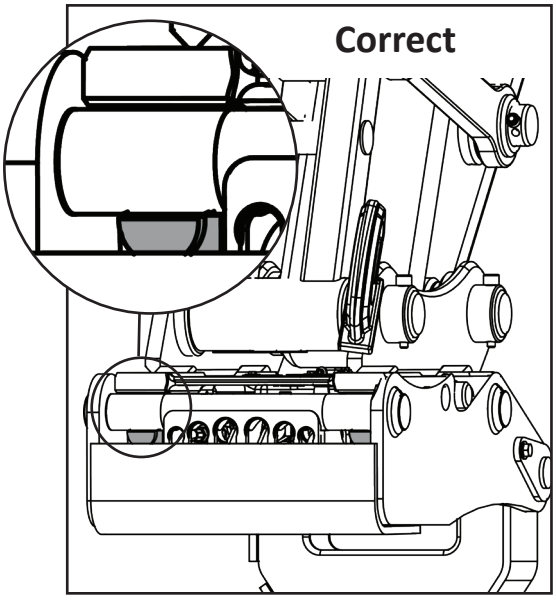


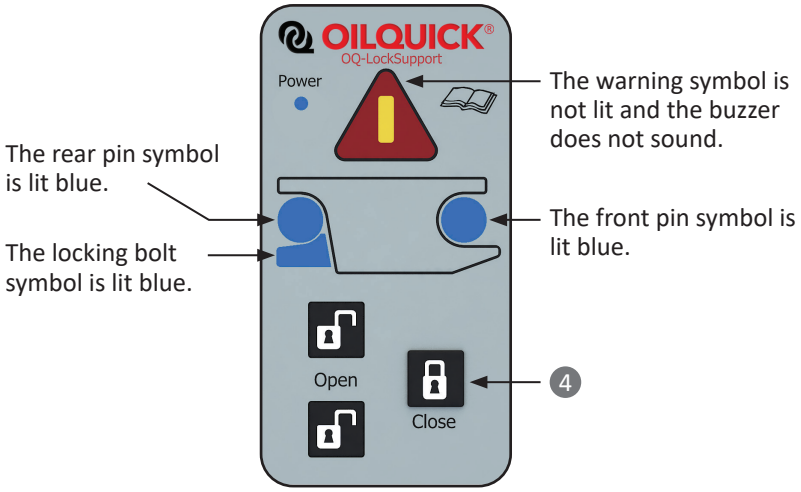
- Run out the bucket cylinder so that the support surface for the rear pin of the quick coupler lies against the rear pin of the attachment adapter (3). NOTE! The guide pins on the quick coupler must be guided into the cut-outs correctly on the attachment adapter's collision protection.
- When the support surfaces for the rear pin on the quick coupler are in the correct position against the rear attachment pin the pin symbol for the rear pin is lit blue.





- It is now possible to close the quick coupler and to connect the attachment.
- NOTE! In this mode only the control panel for OQLS 2.0 can be operated.
- Press the Close button (4) for closing. The quick coupler closes and the attachment is connected.
- The locking bolt symbol and the pin symbols light and verify that the attachment is connected.
- The warning lamp goes out and the buzzer is silent.
- The machine's controls must be used to carry out the lock test before work with the attachment is started.





- Carry out a lock test according to chapter 17.
- Horizontally connected attachments with a hydraulic function must always be lock tested according to section 17.2.

17 Lock test of attachments

THE LOCK TEST MUST ALWAYS BE CARRIED OUT WHEN ATTACHMENTS ARE CHANGED.

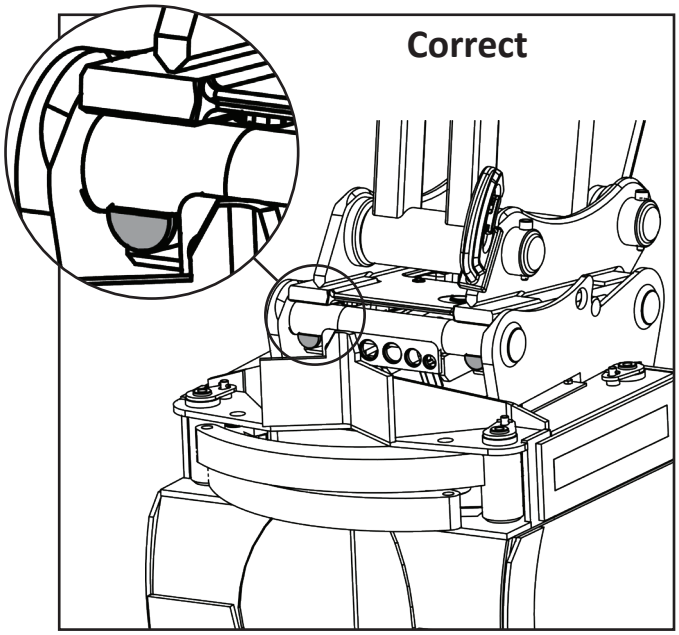
- **If connection of the attachment is unsuccessful the reason for this must be made checked and corrected before the attachment is reconnected.**
- **Take great care within the risk area because the attachment may be incorrectly connected and thereby at risk of coming loose.**

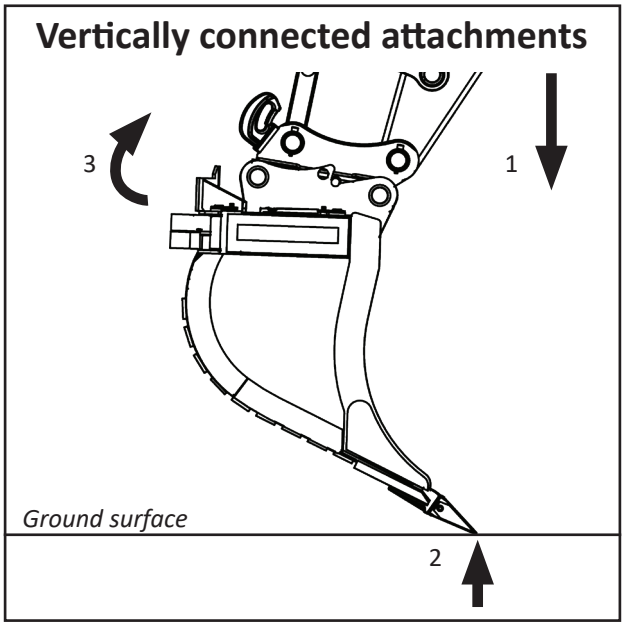
17.1 Attachments without hydraulic function

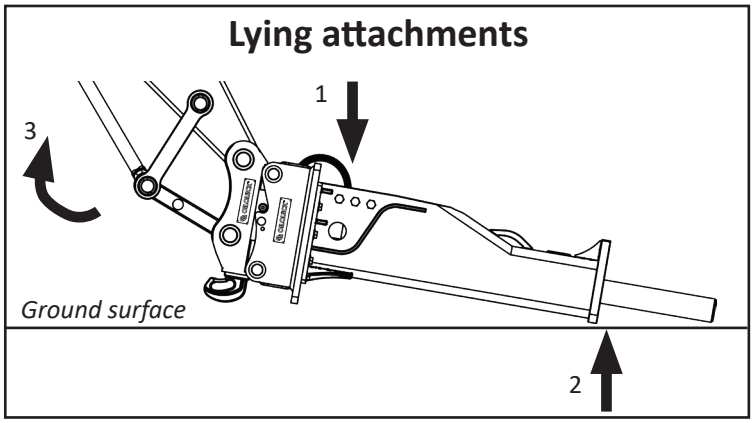
After connecting attachments without a hydraulic function a mechanical lock must be carried out.

Procedure:

- Lift the tool 20-30 cm from the ground.
- Press the tool against the ground by breaking against the ground using the machine´s bucket cylinder. The force of this should clearly show that the tool is under load and cannot come loose.
- Ready.





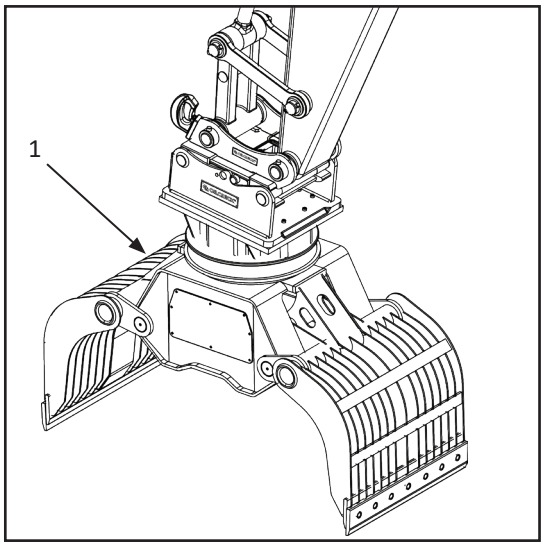


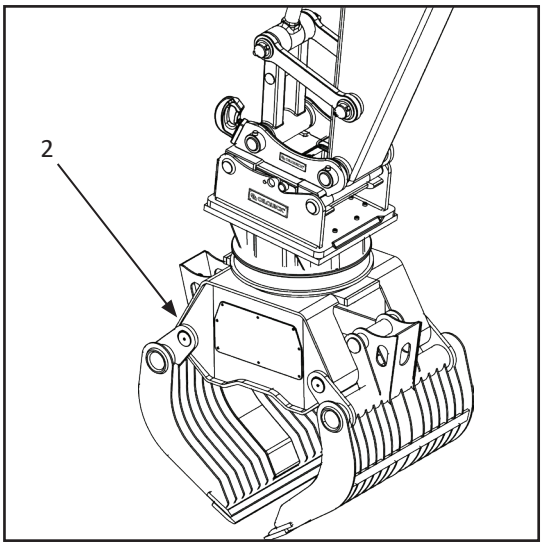
17.2 Attachments with hydraulic function

After connecting attachments with a hydraulic function a hydraulic lock must be carried out.

Procedure:

- Lift the attachment 20-30 cm off the ground.
- Test run a hydraulic function on the tool (1).
- The function must work (2).
- Ready.





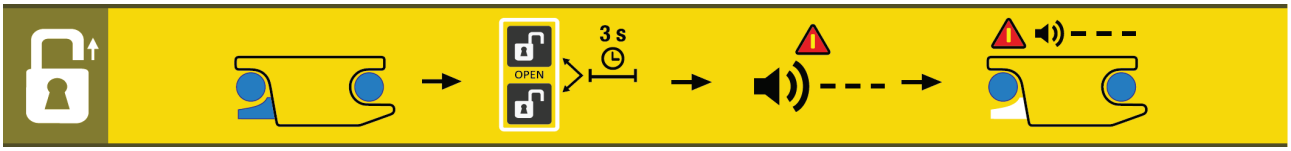
18 Disconnection of attachments

18.1 Disconnection of vertically connected attachments

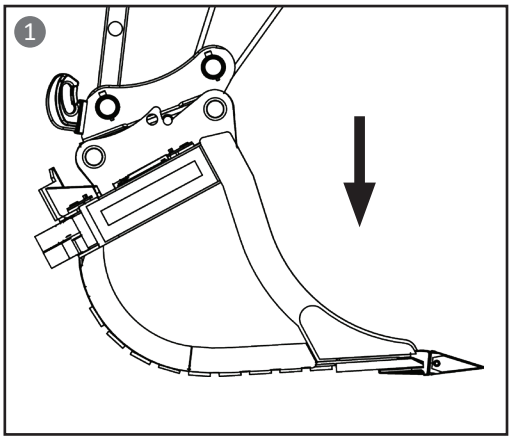
IMPORTANT TO REMEMBER
- **There is always an element of risk associated with changing attachments.**
- **No personnel may be within the machine operating area when the attachment is connected to or disconnected from the machine. The attachment can tip and/or fall away during the process.**
- **The attachment must always be positioned on a horizontal surface that is both hard and stable.**
- **When opening and locking the quick coupler the machine must be stationary.**

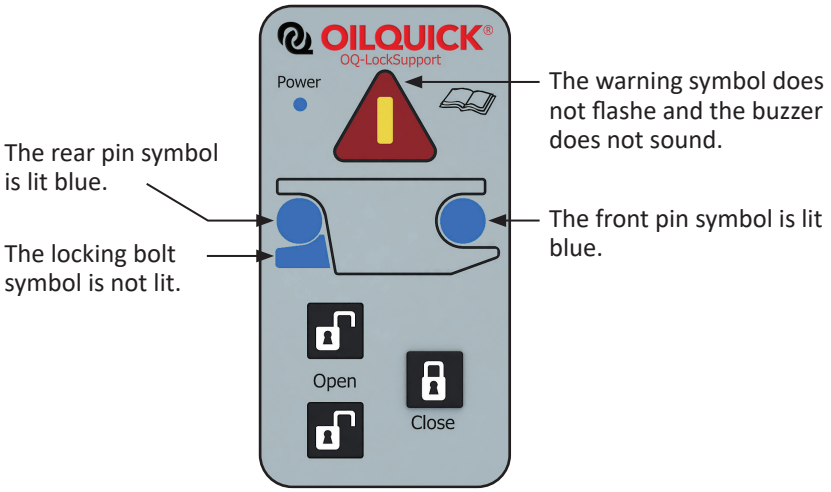
NOTE!
Special requirements for disconnection may apply for individual attachments. Refer to the attachment documentation regarding this!

When opening the quick coupler the PressureBoost function automatically boosts the pressure of the locking hydraulics. The driver does not need to perform any additional actions. NOTE! Where the PressureBoost option is not installed on the machine the driver must increase the pressure in the locking hydraulics by running the bucket cylinder to the limit position, raising the dozer blade or using another similar function.

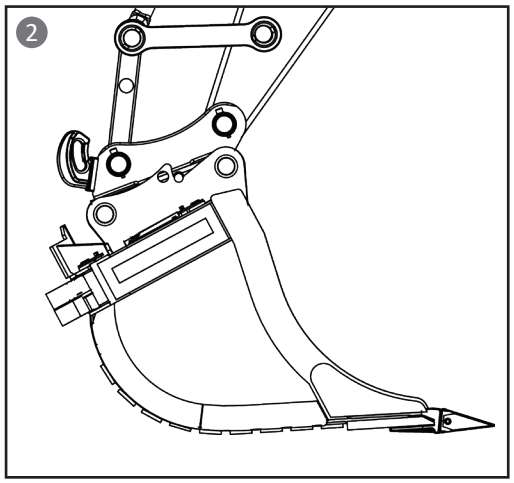


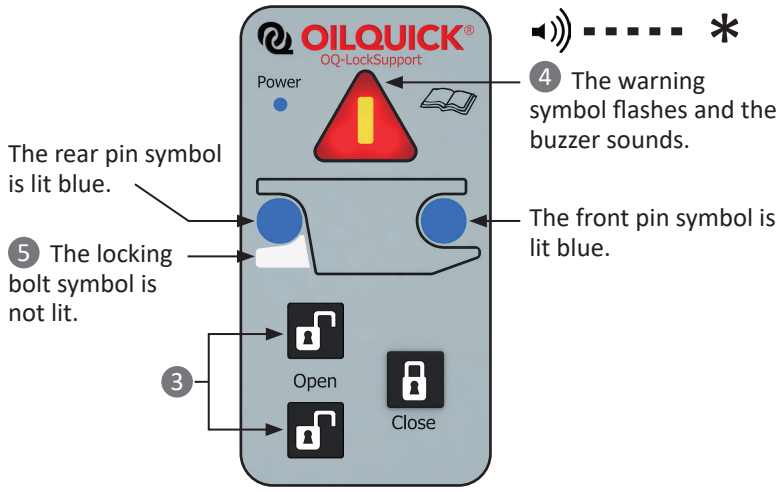
Procedure:
- Check that no-one is within the machine's operating area.
- Position the attachment to be disconnected a little above the ground (1).



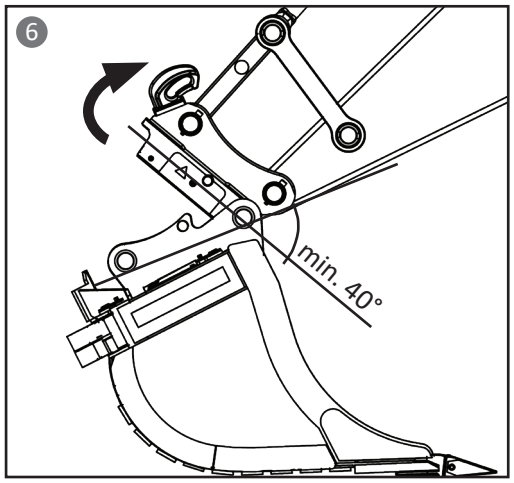


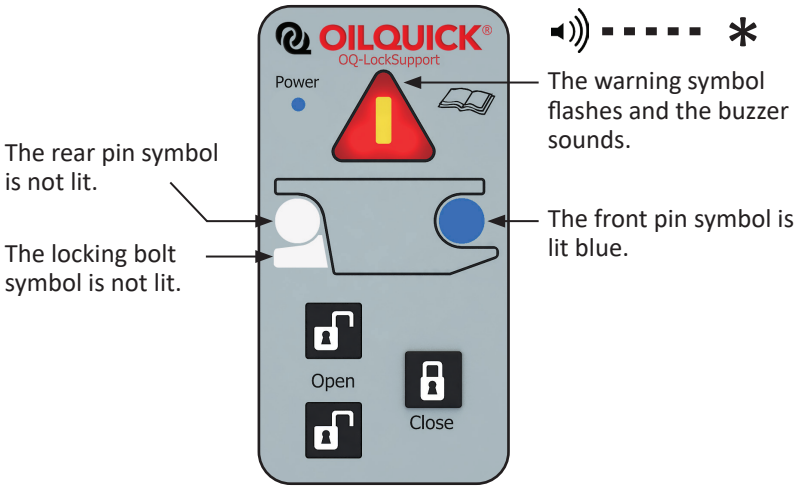
- Lower the attachment to the ground so that it just supports itself. The surface must be hard and even (2).
- Open the coupler by pressing both buttons (3, OPEN) for three seconds until the warning symbol (4) starts blinking and the buzzer starts beeping.
- Let go of the buttons.
- The quick coupler now opens and the locking bolt symbol (5) goes out when the locking bolts no longer are in locked position.
- The coupler is now open.



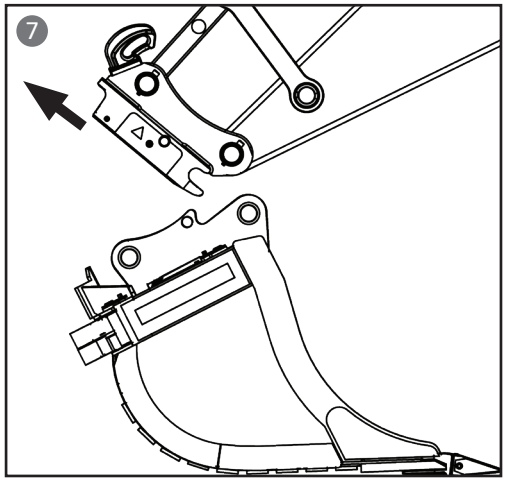


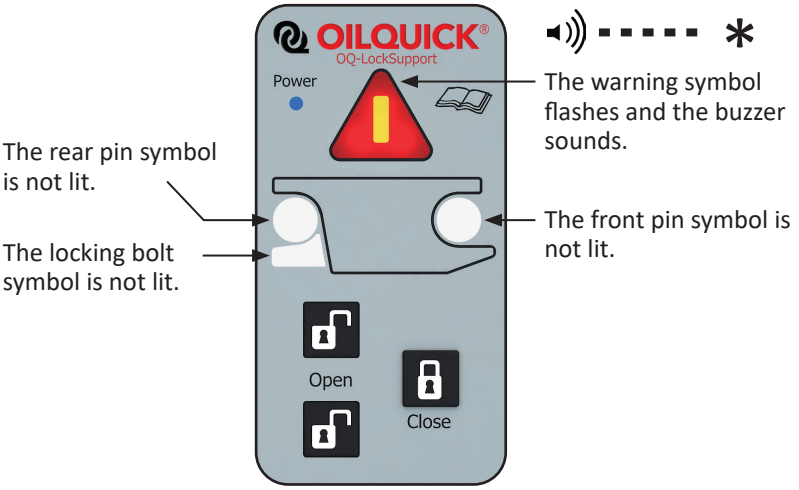
- Run the bucket cylinder in carefully so that the quick coupler leaves the rear pin of the attachment frame/adapter but still holds the front pin (6). The angle must be a minimum of 40° between the frame/adapter and quick coupler.
- The rear pin symbol goes out when the quick coupler leaves the rear attachment pin.





- Operate the quick coupler so that it moves free of the attachment (7).
- The front pin symbol goes out when the quick coupler leaves the front attachment pin.





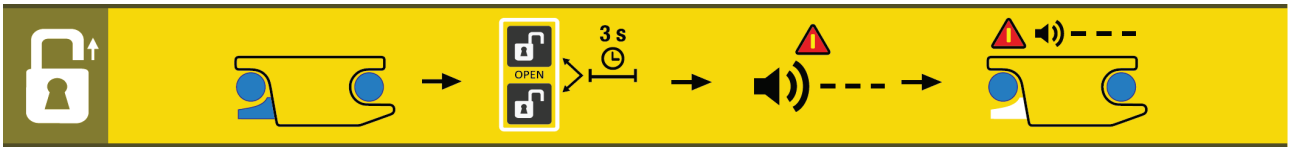
- If a new attachment is to be connected, see the instructions under section 16-17.
- For closing without attachment, for hook hoisting, transport etc., see instructions under section 19.

18.2 Disconnection of horizontally connected attachments

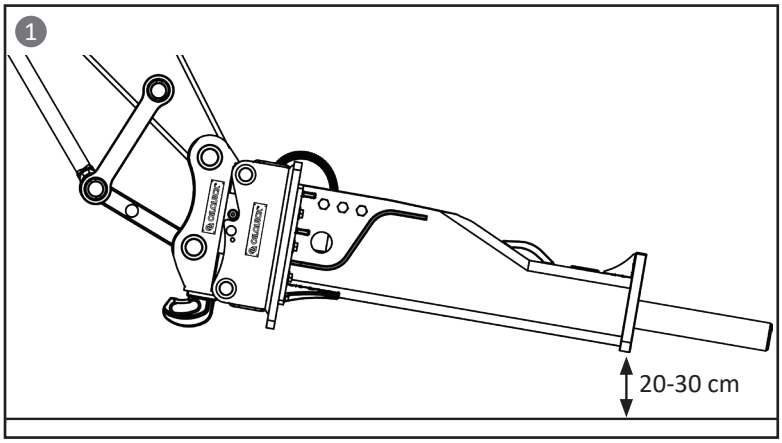
IMPORTANT TO REMEMBER
- **There is always an element of risk associated with changing attachments.**
- **No personnel may be within the machine operating area when the attachment is connected to or disconnected from the machine. The attachment can tip and/or fall away during the process.**
- **The attachment must always be positioned on a horizontal surface that is both hard and stable.**
- **When opening and locking the quick coupler the machine must be stationary.**

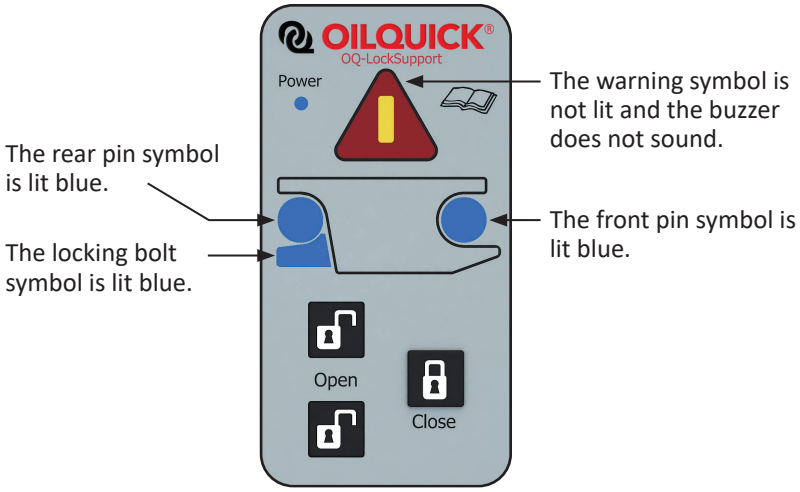
NOTE!
Special requirements for disconnection may apply for individual attachments. Refer to the attachment documentation regarding this!

When opening the quick coupler the PressureBoost function automatically boosts the pressure of the locking hydraulics. The driver does not need to perform any additional actions. NOTE! Where the PressureBoost option is not installed on the machine the driver must increase the pressure in the locking hydraulics by running the bucket cylinder to the limit position, raising the dozer blade or using another similar function.

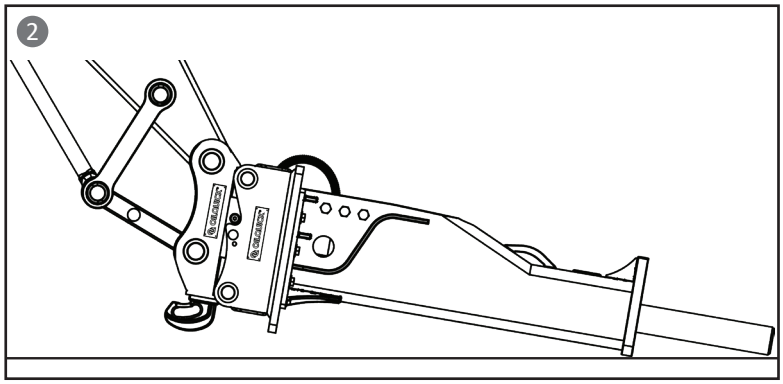


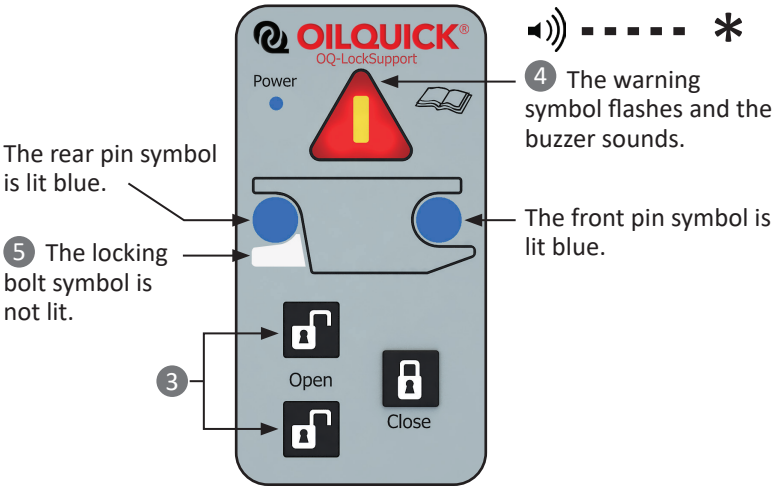
Procedure:
- Check that no-one is within the machine's operating area.
- Run the bucket cylinder out on the excavator until the rear pin of the tool attachment bracket/ adapter is directed towards the ground.
- Position the attachment to be disconnected 20-30 cm above the ground (1).



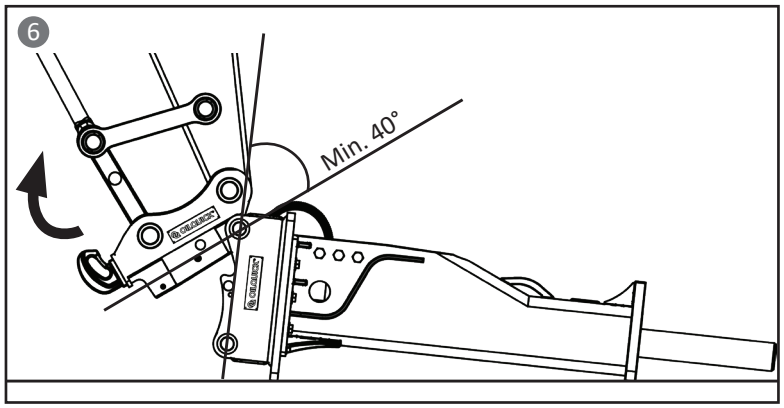


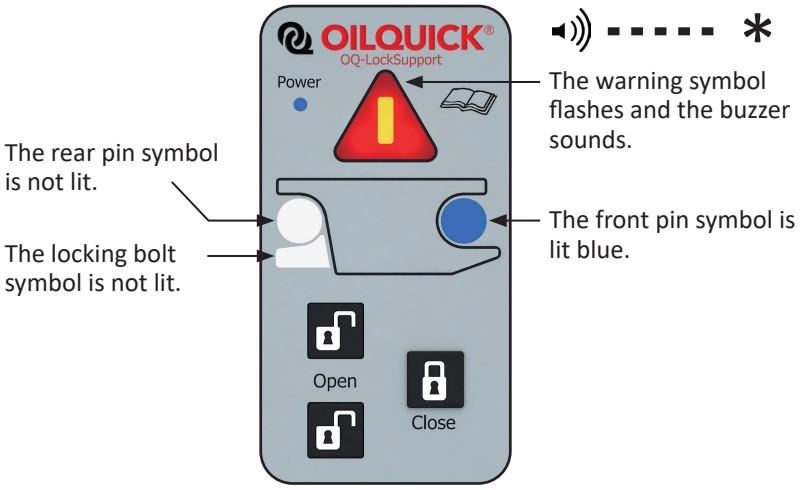
- Lower the attachment to the ground so that it just supports itself on the outermost part where full stability is achieved (2).
- Open the coupler by pressing both buttons (3, OPEN) for three seconds until the warning symbol (4) starts blinking and the buzzer starts beeping.
- Let go of the buttons.
- The quick coupler now opens and the locking bolt symbol (5) goes out when the locking bolts no longer are in locked position.
- The coupler is now open.



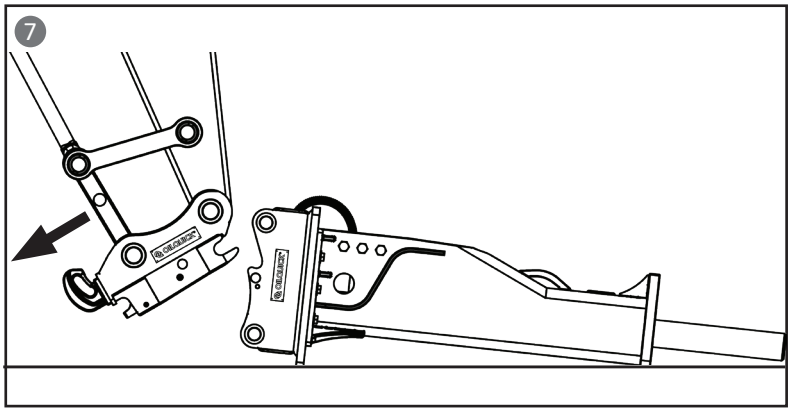


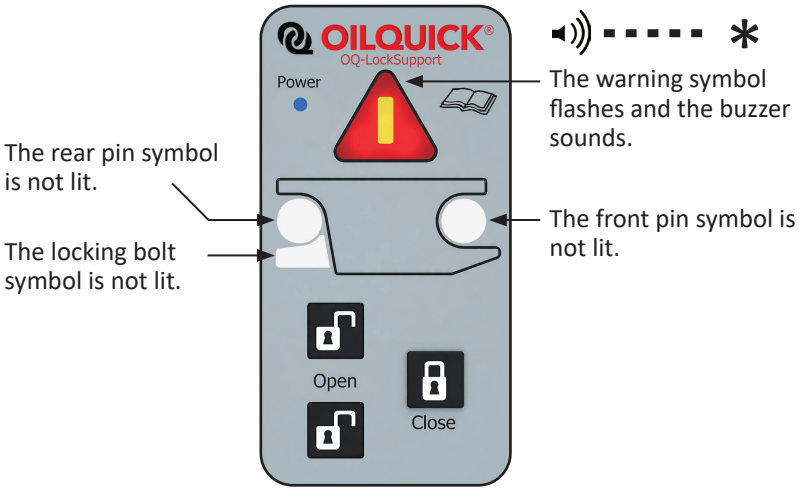
- Lower the attachment so that it rests on the ground completely at the same time as carefully running in the bucket cylinder so that the quick coupler leaves the rear pin of the attachment frame/adapter, but still holds the front pin. The angle must be a minimum of 40° between the frame/adapter and quick coupler (6).
- The rear pin symbol goes out when the quick coupler leaves the rear attachment pin.





- Carefully operate the quick coupler´s front pin holder loose from the attachment frame/adapter front pin (7).
- The front pin symbol goes out when the quick coupler leaves the front attachment pin.





- If a new attachment is to be connected, see the instructions under section 16-17.
- For closing without attachment, for hook hoisting, transport etc., see instructions under section 19.

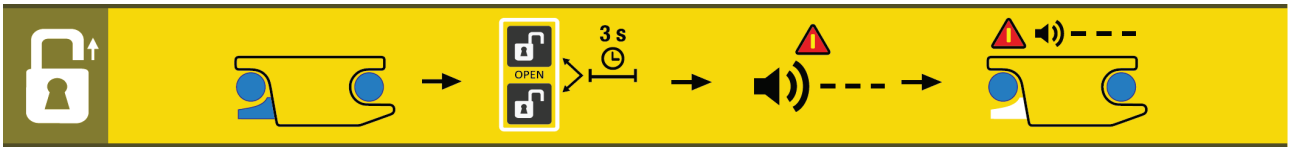
18.3 Disconnection of vertically connected attachments with pendulum adapter

IMPORTANT TO REMEMBER

- **There is always an element of risk associated with changing attachments.**
- **No personnel may be within the machine operating area when the attachment is connected to or disconnected from the machine. The attachment can tip and/or fall away during the process.**
- **The attachment must always be positioned on a horizontal surface that is both hard and stable.**
- **When opening and locking the quick coupler the machine must be stationary.**

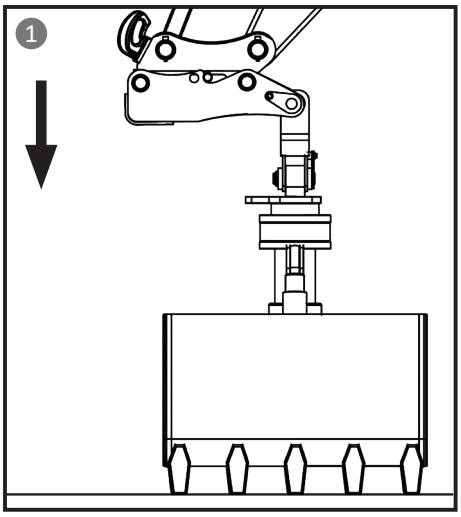
NOTE!
Special requirements for disconnection may apply for individual attachments. Refer to the attachment documentation regarding this!

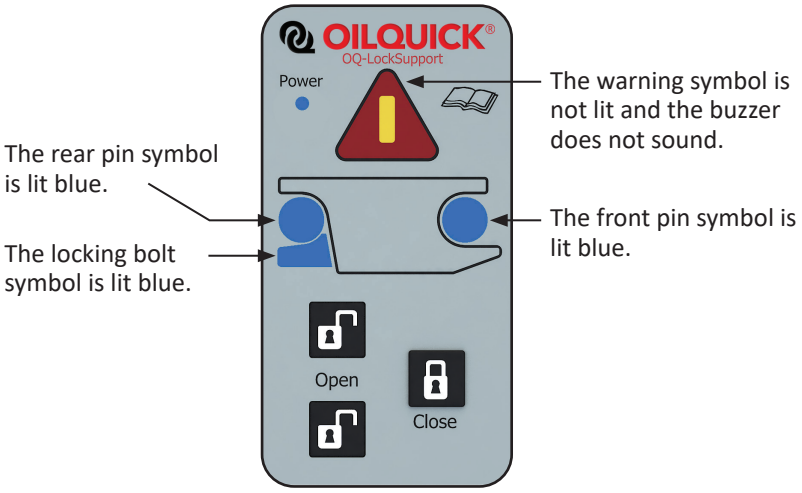
When opening the quick coupler the PressureBoost function automatically boosts the pressure of the locking hydraulics. The driver does not need to perform any additional actions. NOTE! Where the PressureBoost option is not installed on the machine the driver must increase the pressure in the locking hydraulics by running the bucket cylinder to the limit position, raising the dozer blade or using another similar function.



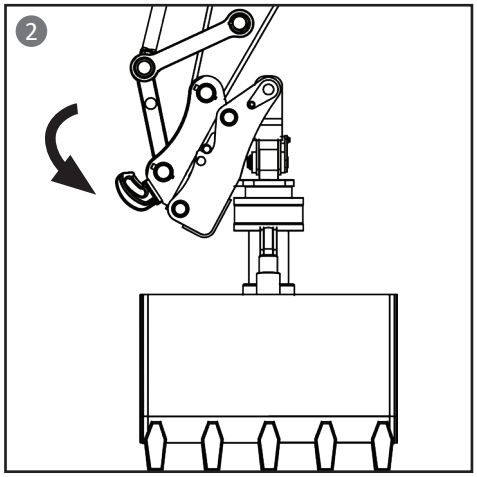
Procedure:
Check that no-one is within the machine's operating area.

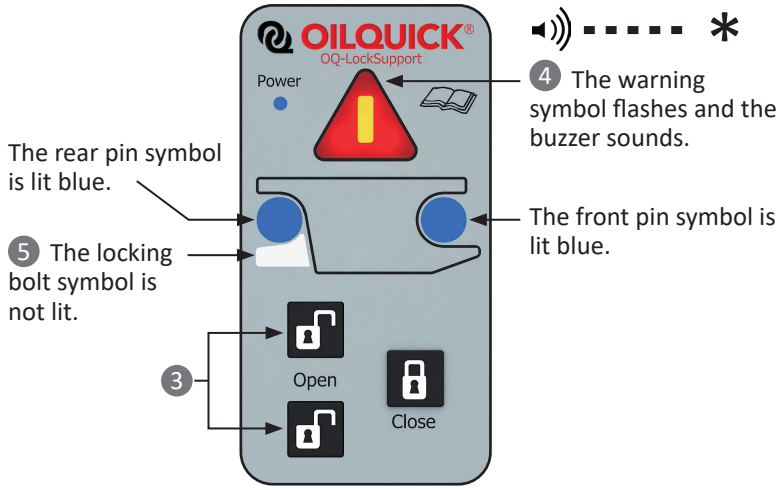
- Lower the attachment to the ground so that it just supports itself. The surface must be hard and even (1).



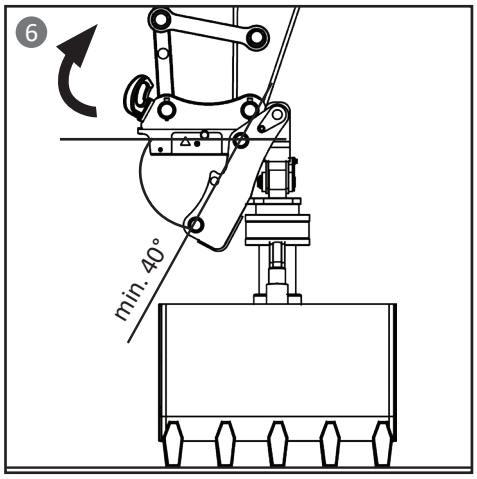


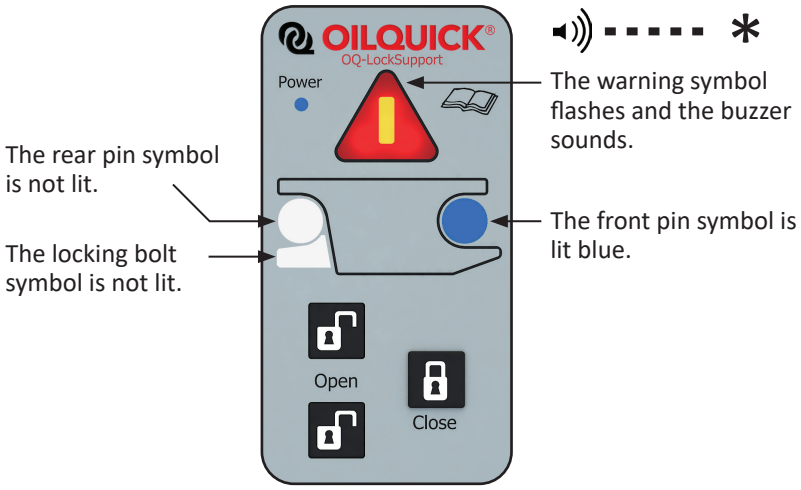
- Run out the bucket cylinder so that the quick coupler and attachment adapter angle downwards and rest against the attachment (2).
- Open the coupler by pressing both buttons (3, OPEN) for three seconds until the warning symbol (4) starts blinking and the buzzer starts beeping.
- Let go of the buttons.
- The quick coupler now opens and the locking bolt symbol (5) goes out when the locking bolts no longer are in locked position.
- The coupler is now open.



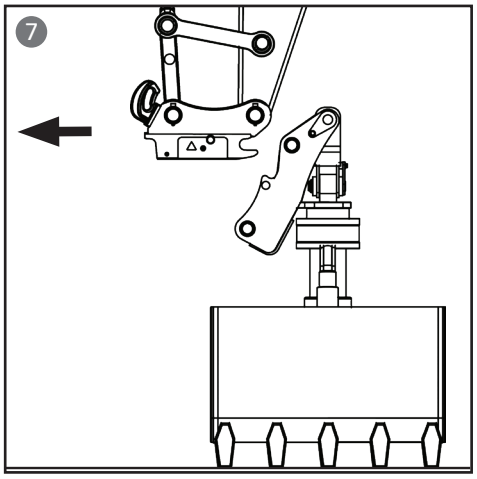


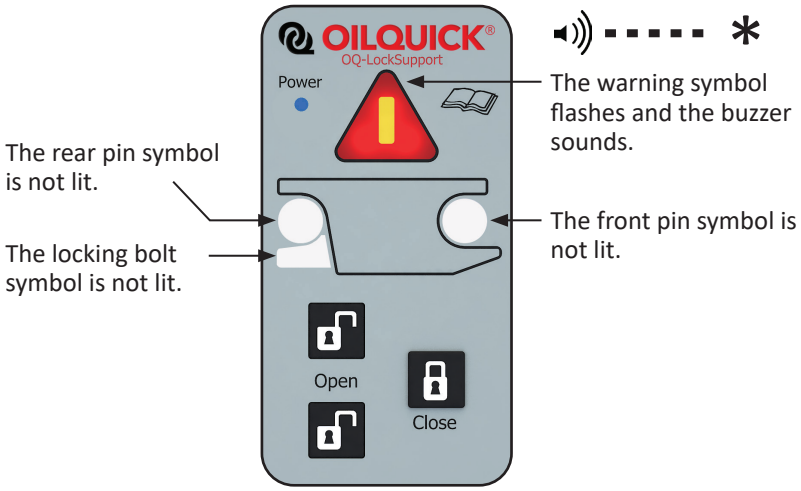
- Run the bucket cylinder in so that the quick coupler leaves the rear pin of the attachment adapter but still holds the front pin. The angle between quick coupler and adapter pins must be 40° minimum (6).
- The rear pin symbol goes out when the quick coupler leaves the rear attachment pin.





- Carefully operate the quick coupler´s front pin holder loose from the attachment adapter front pin (7).
- The front pin symbol goes out when the quick coupler leaves the front attachment pin.





- If a new attachment is to be connected, see the instructions under section 16-17.
- For closing without attachment, for hook hoisting, transport etc., see instructions under section 19.

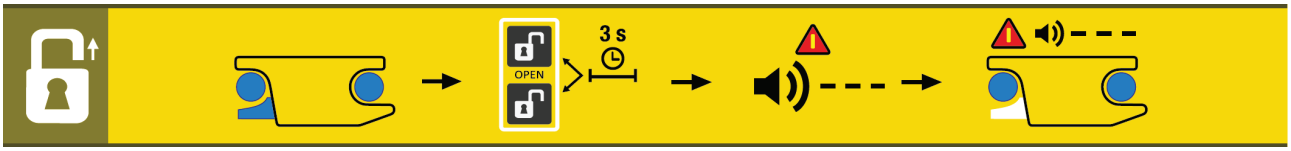
18.4 Disconnection of horizontally connected attachments with pendulum adapter

IMPORTANT TO REMEMBER

- **There is always an element of risk associated with changing attachments.**
- **No personnel may be within the machine operating area when the attachment is connected to or disconnected from the machine. The attachment can tip and/or fall away during the process.**
- **The attachment must always be positioned on a horizontal surface that is both hard and stable.**
- **When opening and locking the quick coupler the machine must be stationary.**

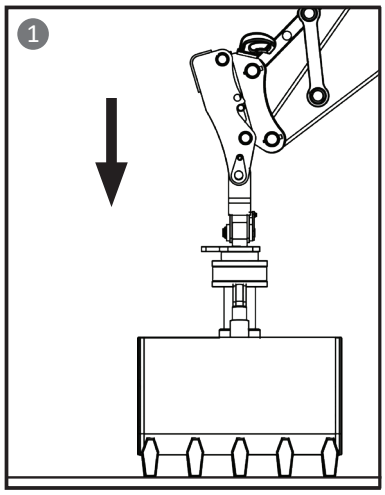
NOTE!
Special requirements for disconnection may apply for individual attachments. Refer to the attachment documentation regarding this!

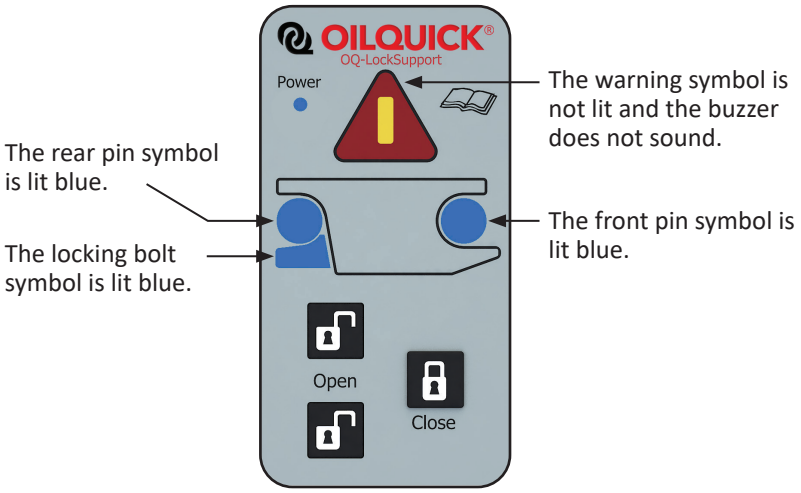
When opening the quick coupler the PressureBoost function automatically boosts the pressure of the locking hydraulics. The driver does not need to perform any additional actions. NOTE! Where the PressureBoost option is not installed on the machine the driver must increase the pressure in the locking hydraulics by running the bucket cylinder to the limit position, raising the dozer blade or using another similar function.



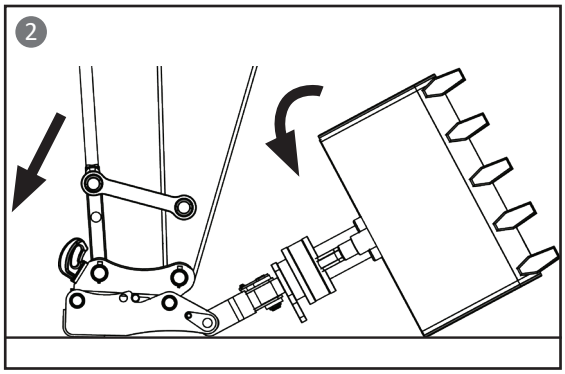
Procedure:

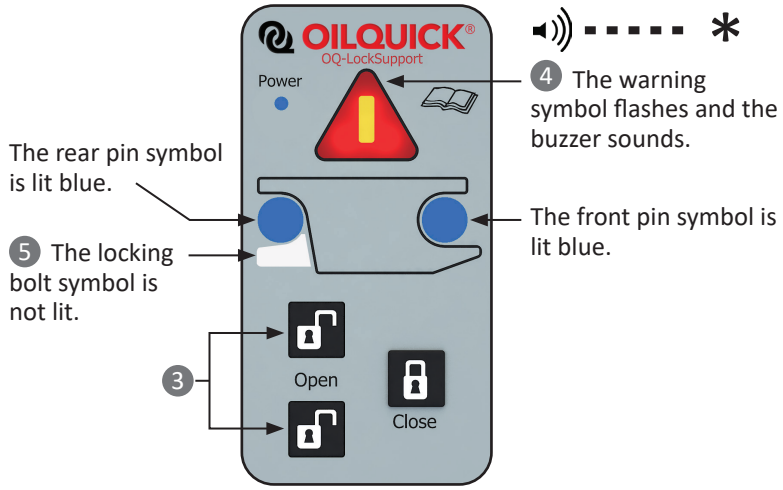
- Check that no-one is within the machine's operating area.
- Lower the attachment to the ground so that it just supports itself. The surface must be hard and even (1).



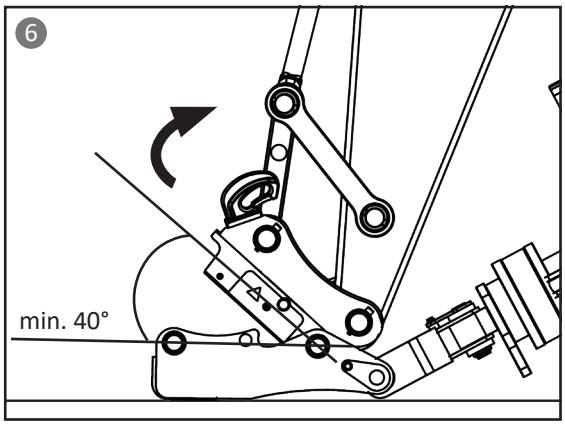


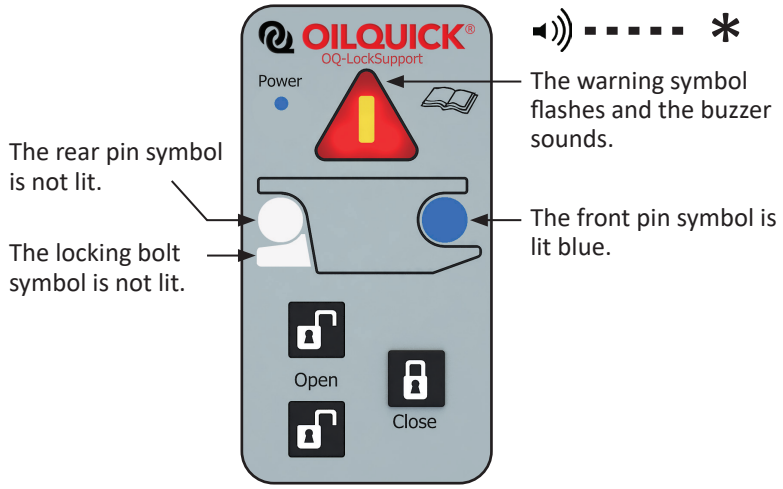
- Run the dipper stick away from the machine and lower it slowly so that the quick coupler, attachment adapter and attachment lie against the ground (2).
- Open the coupler by pressing both buttons (3, OPEN) for three seconds until the warning symbol (4) starts blinking and the buzzer starts beeping.
- Let go of the buttons.
- The quick coupler now opens and the locking bolt symbol (5) goes out when the locking bolts no longer are in locked position.
- The coupler is now open.



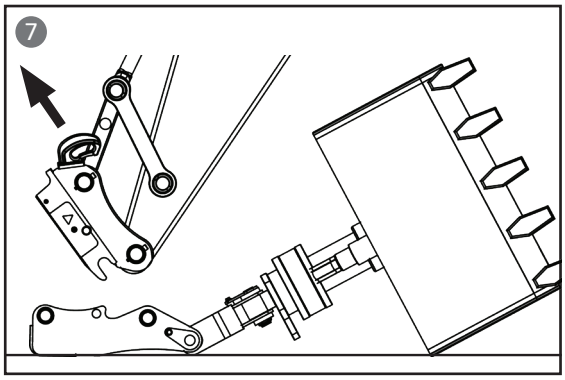


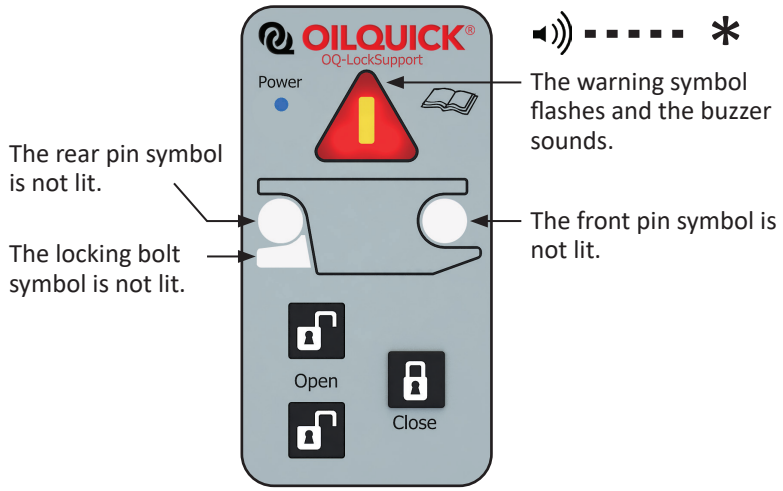
- Run the bucket cylinder in so that the quick coupler leaves the rear pin of the attachment adapter but still holds the front pin. The angle between quick coupler and adapter pins must be 40° minimum (6).
- The rear pin symbol goes out when the quick coupler leaves the rear attachment pin.





- Carefully operate the quick coupler´s front pin holder loose from the attachment adapter front pin (7).
- The front pin symbol goes out when the quick coupler leaves the front attachment pin.



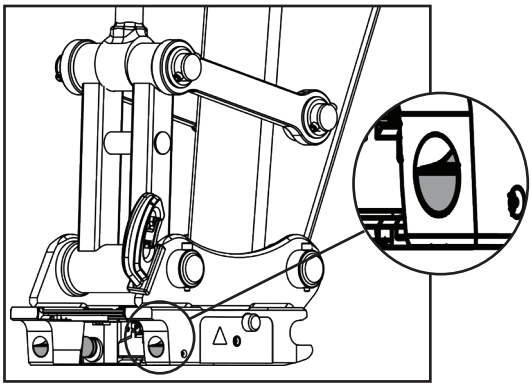


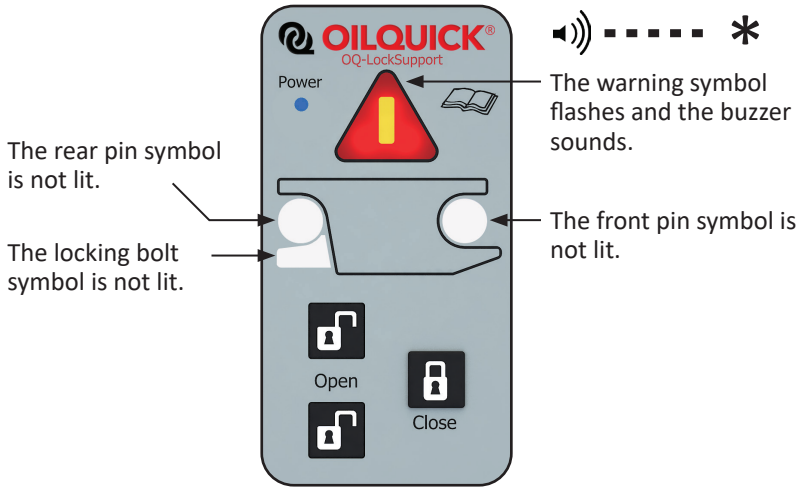
- If a new attachment is to be connected, see the instructions under section 16-17.
- For closing without attachment, for hook hoisting, transport etc., see instructions under section 19.

19 Close quick coupler without attachment

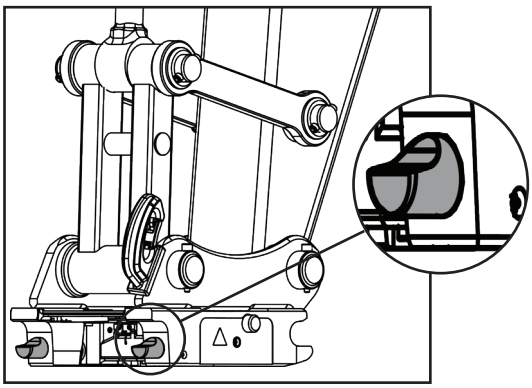
During hook lift, transport and maintenance, etc., it may be necessary to close the mount without attachment. It is assumed in this section that no attachment is connected and that the quick coupler is open. (See chapter 12.1.1)

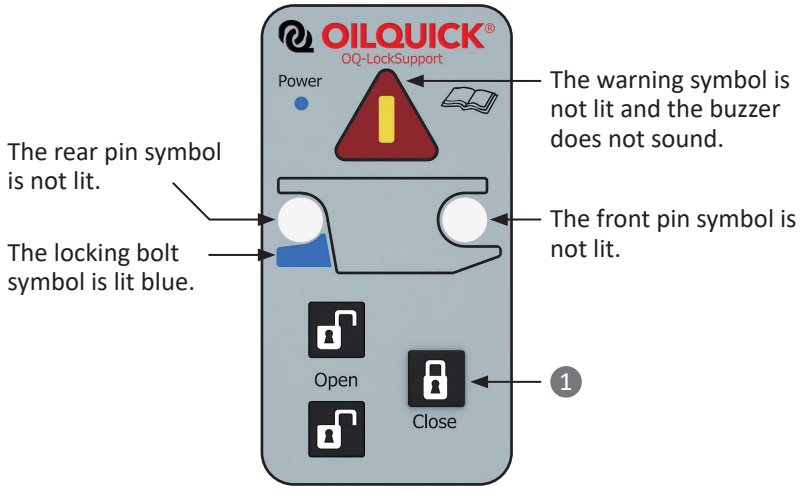
- The coupler is open. The warning symbol flashes and the buzzer sounds.
- No attachment is connected to the quick coupler.
- The pin symbols are not lit, no pin is in position against the quick coupler.



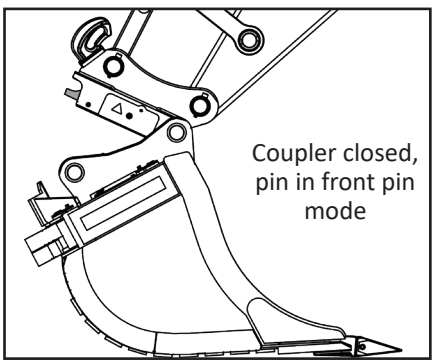


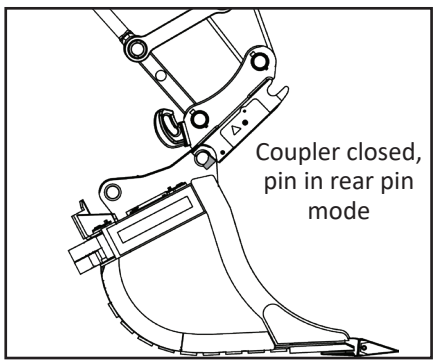
- Press the Close button (1).
- The quick coupler closes and the locking bolts assume the locked position.
- The lock bolt symbol is lit.
- The warning symbol goes out and the buzzer stops.

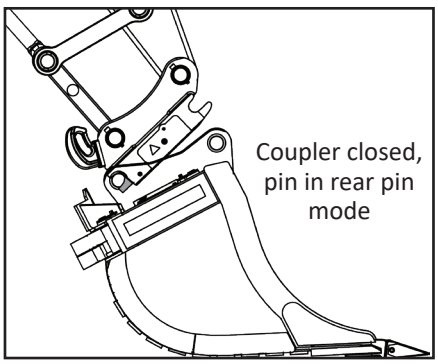




Note that the system in this mode will fault indicate that one of the quick coupler pin holders is moved to position against one of the attachment pins (see images below).

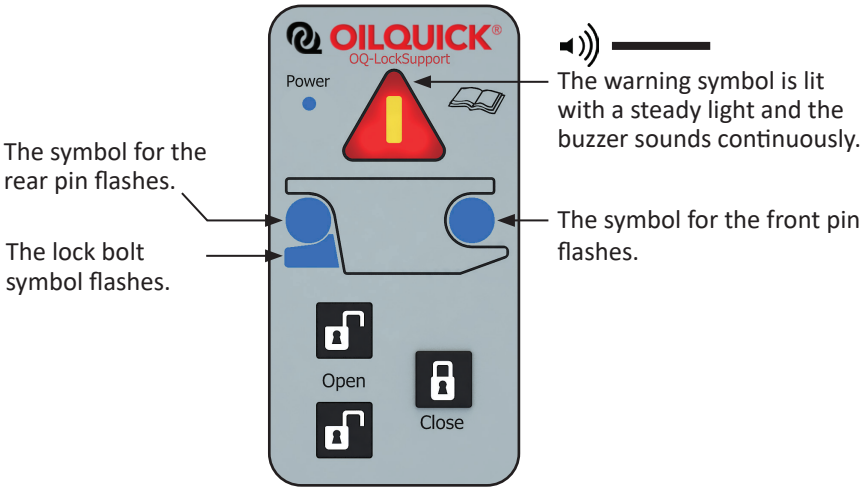






20 Explanation of possible error conditions

If a fault occurs when opening and closing the quick coupler the OQLS 2.0 system will warn the driver that a fault has occurred. This occurs by the warning symbol lighting and the buzzer sounding continuously. The pin symbols and the symbol for the locking bolts displays the status that the OQLS 2.0 system detects.



20.1 Faults when disconnecting attachments

If the locking bolts do not move because the H-cylinder stops in the closed position, the OQLS 2.0 system will alarm after a given time, which is set during system configuration on the relevant machine. The time varies between 3-10 seconds. The driver must press Close for one second, wait at least 5 seconds and then switch off the machine and investigate why the coupler does not open as it should.

20.2 Faults when connecting attachments

When connecting attachments both the pins must be indicated for the Close button to have any function. If one of the pins is not in position the Close button will not have any function. This is not indicated in any way by the system, however the status is shown correctly on the panel's pin symbols.

If the locking bolts do not move because the H-cylinder stops in the open position or does not reach the closed position, the OQLS 2.0 system will alarm after a given time, which is set during system configuration on the relevant machine. The time varies between 3-10 seconds. In this case the driver must wait at least 5 seconds and then switch off the machine and investigate why the coupler does not close as it should.

If the OQLS 2.0 system indicates that a pin is missing after the locking bolts have reached their locked positions the system will immediately raise an alarm for incorrect mounting of attachment. In event of this the driver must open the quick coupler according to the applicable instructions and reconnect the attachment according to applicable instructions. If the fault remains the quick coupler must be opened according to the applicable instructions, the attachment parked and the cause investigated.

20.3 Fault when closing for hook hoisting, transport, maintenance etc.

If the alarm signal for the pin in position in a coupler closed for a hook hoist sounds for more than 15 seconds the system will log a lift of the attachment in unlocked mode, for example when shunting or loading the attachment on a transport vehicle. Lifting the attachment in this way is absolutely prohibited!

Note: If the driver forgets to open the quick coupler when the intention is to connect an attachment, the system will raise the alarm in the same way as follows. The driver then only needs to press the Open buttons for 3 seconds to open the quick coupler and the signal is then changed to the warning signal for open coupler. Connection of the attachment can occur according to the applicable instructions.

When closing without an attachment no pin may be indicated for the Close button to have any function. If one of the pins is indicated and is in position the Close button will not have any function. This is not indicated in any way by the system, however the status is shown correctly on the panel's pin symbols.

If the locking bolts do not move because the H-cylinder stops in the open position or does not reach closed position, the OQLS 2.0 system will alarm after a given time, which is set during system configuration on the relevant machine. The time varies between 3-10 seconds. In this case the driver must wait at least 5 seconds and then switch off the machine and investigate why the coupler does not close as it should.

If the OQLS 2.0 system indicates that a pin is in position after the locking bolts have reached their locked positions the system will immediately raise an alarm for fault when closing without attachment. In event of this the driver must open the quick coupler according to the applicable instructions, operate the quick coupler so that it leaves the attachment frame and close the quick coupler according to applicable instructions. If the fault remains the quick coupler must be opened according to the applicable instructions and the cause investigated.

20.4 Sensor monitoring

If the coupler is opened and closed more than three times without the axis sensors changing status, the system will trigger a sensor error alarm.

If the coupler is opened and closed more than three times without the axis sensors changing status, the system will trigger a sensor error alarm. To reset the system the machine must be restarted, a self-test of the system is then made and the error condition is reset.

20.5 Reset during component failure

If an error is detected in the system, an alarm is triggered to warn the driver that a dangerous situation has occurred. To reset the system the machine must be restarted, a self-test of the system is then made and the error condition is reset. If the error persists further trouble shooting needs to be done. Measures to be taken during an error is described in a separate section of this manual.

21 Emergency operation

NOTE! The emergency operation mode must only be used in emergency cases when it is confirmed that one of the system components is defective.

NOTE! Emergency operation mode is not intended for continuous use. Troubleshoot the system as soon as possible and replace the defective parts.

NOTE! The warning symbol, the locking bolt symbol and the pin symbols flash and indicate emergency operation mode.

When opening the quick coupler the PressureBoost function automatically boosts the pressure of the locking hydraulics. The driver does not need to perform any additional actions. NOTE! Where the PressureBoost option is not installed on the machine the driver must increase the pressure in the locking hydraulics by running the bucket cylinder to the limit position, raising the dozer blade or using another similar function.

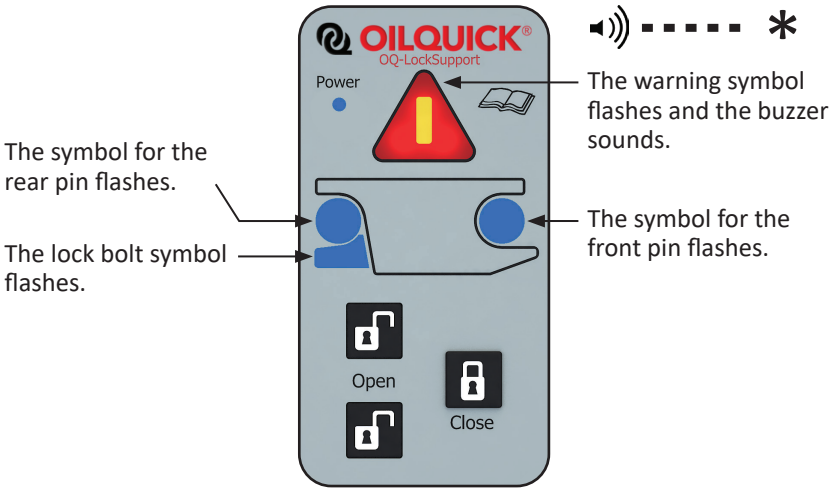
When closing the quick coupler the PressureBoost function automatically boosts the pressure of the locking hydraulics. The driver does not need to perform any additional actions. NOTE! Where the PressureBoost option is not installed on the machine the driver must increase the pressure in the locking hydraulics by running the bucket cylinder to the limit position, raising the dozer blade or using another similar function.

If the unit that indicates the pins and locking bolts stops functioning this will be indicated by the pin symbols and locking bolts symbol going out if the attachment is connected. If the unit should stop functioning when the quick coupler is closed without an attachment, for hook hoisting, transport etc. just the locking bolt symbol goes out.

At next attempt to open the quick coupler the warning symbol will light and buzzer will sound continuously. At the same time the locking bolt symbol and the pin symbols flash alternately. The system can now only be operated in emergency operation mode. In emergency operation mode the opening/closing sequences can be carried out without monitoring the system.

21.1 Activate emergency operation

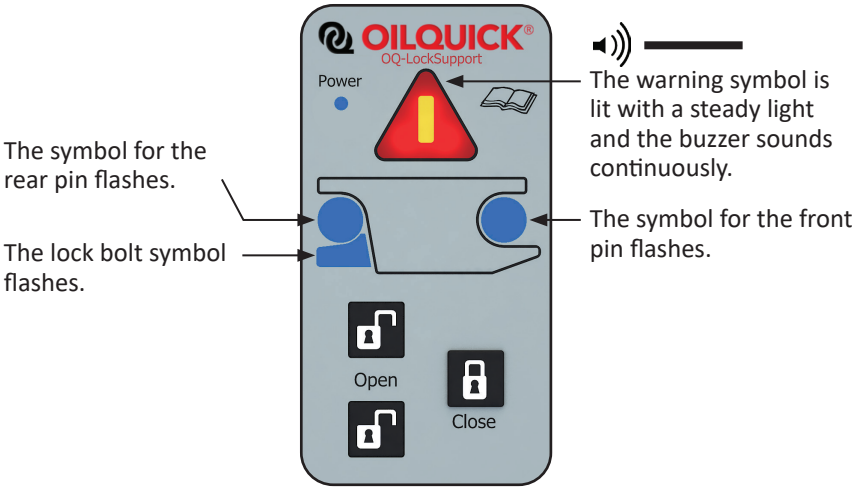
- Press all 3 buttons for 8 seconds.
- The warning symbol starts to flash and the buzzer sounds.
- The pin symbols and the locking bolt symbol start to flash.



- Press the Close button. This will cause a forced closure of the quick coupler. This takes 5 seconds. The warning symbol goes out and the buzzer stops.
- The pin symbols and the locking bolt symbol flash.
- The system is now in emergency operation mode.

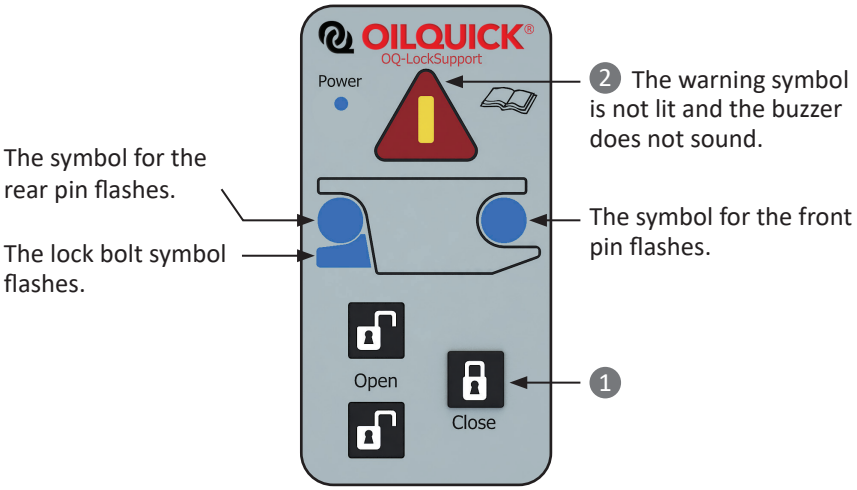
21.2 Emergency operation - Disconnect attachment

- Open the quick coupler by pressing both the Open buttons for 3 seconds.
- Buzzer sounds continuously.
- The warning symbol is lit with a steady light.
- The pin symbols and the locking bolt symbol flash.
- Pressure boost occurs and the quick coupler opens. Where the PressureBoost option is not installed, or does not work, the driver must increase the pressure by running the bucket cylinder to the limit position, raising the dozer blade or using another similar function.



21.3 Emergency operation - Connect an attachment

- Press the Close button (1). This starts the closing sequence. The warning symbol (2) goes out and the buzzer stops after approx. 5 seconds. The pin symbols and the locking bolt symbol flash.
- Pressure boost occurs and the quick coupler closes. Where the PressureBoost option is not installed, or does not work, the driver must increase the pressure by running the bucket cylinder to the limit position, raising the dozer blade or using another similar function.



- Carry out a lock test according to chapter 17.

21.4 Exit emergency operation mode

To exit emergency operation mode, the machine must be switched off and restarted. A self-test of all components and the system status is performed on each startup and if no errors are detected normal operating mode is resumed. If the fault remains the emergency operation mode must be reactivated.

22 Use of hoisting hook

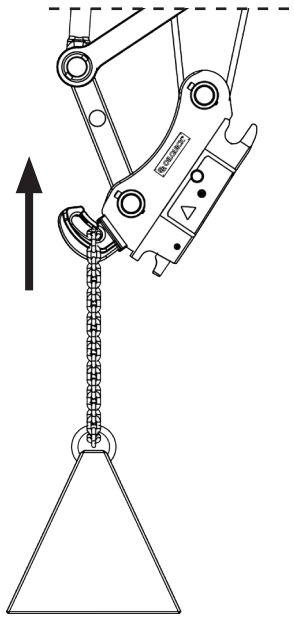
The load on the hoisting hook must never exceed the max load of the hook or the machine's lifting capacity. The load must never be greater than the lower of these values.
No attachment or bucket may be attached to the quick coupler during lifting.

Never walk under a suspended load!

The quick coupler can be equipped with a hoisting hook for service lifting at the work place.

Max lifting capacity is limited by two factors:
1. The hoisting hook max load, this is based on the marking of the hook.
2. Machine lifting capacity. This information is provided by the machine's lifting diagram which should be in the cab.

To remember when working on the hoisting hook:
- No tool or bucket may be attached to the quick coupler when working with the hook.
- Max lifting capacity must not be exceeded.
- Approved lifting chains or straps of the correct classification must be used.
- Do not walk under a suspended load.
- The coupler body must be positioned so that the lifting aids do not touch the coupler body. See image.
- Lifting may not occur in a direction that puts a load on the hoisting hook interlock.
- Towing using the hoisting hook is prohibited.
- The hoisting hook must not be subjected to lateral load.



23 Start and stop of machine at service and maintenance

No-one may be near or touching the quick coupler when the machine engine is started or stopped. Risk of uncontrolled movement of the H-cylinder because of residual pressure in the hydraulic system and changed valve positions.

When working with hydraulic oil, protective gloves must be worn to avoid direct skin contact with the hydraulic oil. There is a risk of skin irritation and allergies.
Be aware of and protect the environment. Collect all waste oil and clean up any spillage.

Cleanliness must be observed when working on hydraulic systems. There is a risk of malfunction if contaminants enter the system.

This section primarily applies to the coming chapters, but also generally.

The hydraulic pressure and electrical system will be affected by the starting and stopping of the machine.
This can lead to uncontrolled movements in the locking bolts when the machine engine is started or stopped. Therefore, no-one may be near the machine when it is started or stopped.

24 Inspection and maintenance

Any faults must be corrected immediately.
These faults are related to workplace safety.

Regular inspection and maintenance of the OilQuick quick coupler system is essential to retain good function and reliability.

24.1 Daily inspection

At start of day

- Carry out maintenance procedures according to chapter 25.
- Before work with the machine is concluded connection and disconnection of the attachment must be tested in a location where no persons are present.
- Ensure that the hydraulic hoses and hose clamps between the coupling and the dipper stick are not damaged or can be damaged during use. See section 11 for examples of correct hose routing.
- Open the quick coupler.
- All acoustic and visual indications via the control panel must function in the intended way.
- The locking bolts must be retracted.
- Close the quick coupler.
- All acoustic and visual indications via the control panel must function in the intended way.
- The locking bolts must be extended.
- Check that shafts and sensors are free of mud and dirt.
- In event of snow and ice, the quick coupler and attachment frame / adapter must be cleaned of ice and snow.
- If necessary, rinse or wipe off mud, slush or anything else that does not belong on the quick coupler or attachment frame / adapter (high pressure washer is not recommended). This is especially important during the winter because it can freeze together and cause damage to piston rods, couplings and other things in the quick coupler.

At end of day

- Before work with the machine is concluded the attachment must be disconnected and the attachment closed in a location where no persons are present.
- All acoustic and visual indications via the control panel must function in the intended way.
- Check that the quick coupler is free of contaminants such as snow, ice and mud etc. and clean if necessary.
- Checks according to 24.1.
- Check all screwed joints.
- Check shaft locks.
- Check that the dirt guard functions as intended.
- Check that there is no leakage.
- In event of snow and ice, the quick coupler and attachment frame and adapter must be cleaned of ice and snow.
- If necessary, rinse or wipe off mud, slush or anything else that does not belong on the quick coupler (high pressure washer is not recommended). This is especially important during the winter because it can freeze together and cause damage to piston rods, couplings and other things in the quick coupler.
- Clean the female couplings in the quick coupler.
- Lubricate the locking bolts. There are 4 x grease nipples (2 on OQ 40 and OQ 45) for this purpose (section 1.1).
- Side planes on models OQ 40 and OQ 45 are lubricated from the inside with lubricating grease when the H-cylinder is at both its limits positions. A brush that does not lose its bristles can be used as an applicator for this.
  NOTE! Grease may only be applied to the inside of the side planes where the H-cylinder runs when the excavator is shut off and the pressure on the operating hydraulics has been relieved!
- Wipe off the tool's quick couplings.

24.2 Monthly inspection

A more extensive check should be carried out every month.

- Checks according to section 24.1.
- Check that there is no play in the locking bolts.
- Check that there are no cracks in the quick coupler or attachment frame/-adapter.

Faults detected during inspections must be corrected immediately in order not to impact on the reliability and function of the quick coupler system. Replacement parts can be obtained from the nearest OilQuick representative that also offers servicing.

25 Maintenance - OQLS 2.0 system components

NOTE! Never use chemicals or abrasives when cleaning the instrument and components.

All units in the system are either cast or sealed so that the necessary IP classification is maintained. The maintenance by the user is therefore limited to the following periodic checks:

- Wipe the control panel using a damp cloth. It is very important that the symbols light brightly and clearly so that all information reaches the user. If the control panel's silicone coating becomes worn or is damaged so that the symbols and LEDs are difficult to see, it is essential that the control panel be replaced even if the function is otherwise good.
- Regularly check the cables and pins at the control panel mountings for damage such as wear, open-circuits or trapped cables. Any damaged parts must be replaced immediately, even if the function remains good.
- Regularly check the control panel mountings so that the adhesive does not release from the base. A badly mounted control panel is a safety risk.
- Check that the master unit, other enclosed units and their cable connections are undamaged.
- Ensure that the cable routing does not cause abrasion and wear on cables.

26 Maintenance of quick couplings

When working with hydraulic oil, protective gloves must be worn to avoid direct skin contact with the hydraulic oil. There is a risk of skin irritation and allergies.
Be aware of and protect the environment. Collect all waste oil and clean up any spillage.

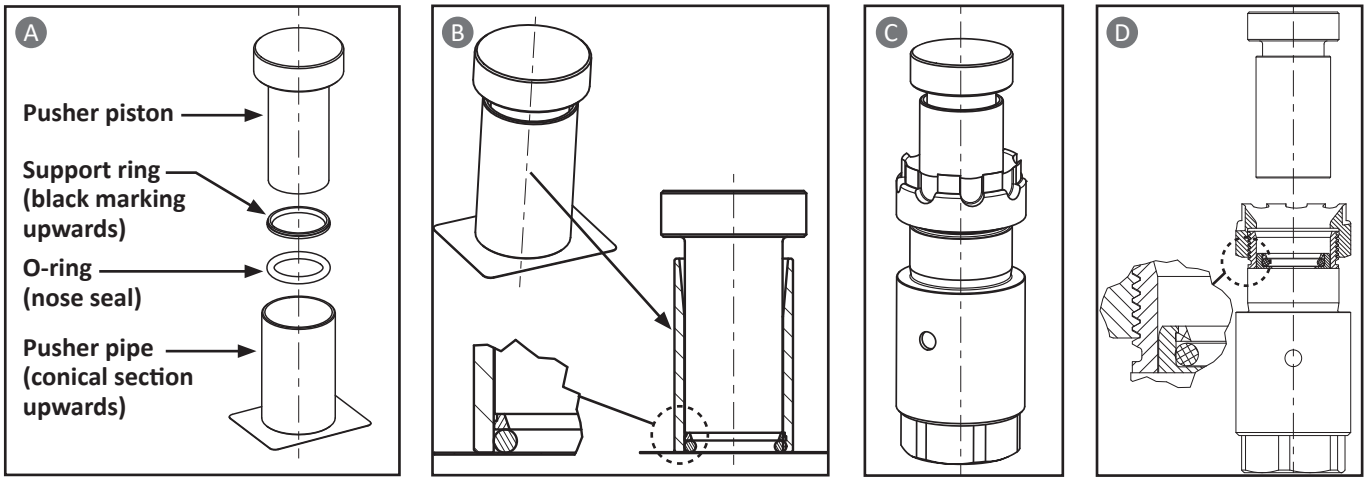
Cleanliness must be observed when working on hydraulic systems.
There is a risk of malfunction if contaminants enter the system.

Quick couplings that connects the attachment to the machine wear and age with use. If these start to leak they must be maintained or replaced. If there is leakage when the attachment is connected and used then the nose seal is probably damaged and must be replaced. For instructions, see section 26.1. If there is leakage regardless of whether the attachment is connected or not then the female coupling is probably damaged internally and must be replaced. For instructions, see section 26.2-26.3.

26.1 Replacement of nose seal in female coupling

1. Remove the damaged nose seal.
2. Clean the seat for the coupling thoroughly.
3. New nose seal is installed using the special installation tool called a “Pusher”.
4. Insert the O-ring, followed by the support ring (black marking upwards) in the pusher pipe, see image (A). NOTE! Pusher pipe conical section (upper section) must be turned upwards. For 1/4” and 3/8” female coupling, see point 6 below.

NOTE!
Insert the O-ring first and then the support ring (Does not apply to 1/4” or 3/8” female coupling). The support ring’s black marked side must be turned towards the pusher piston.

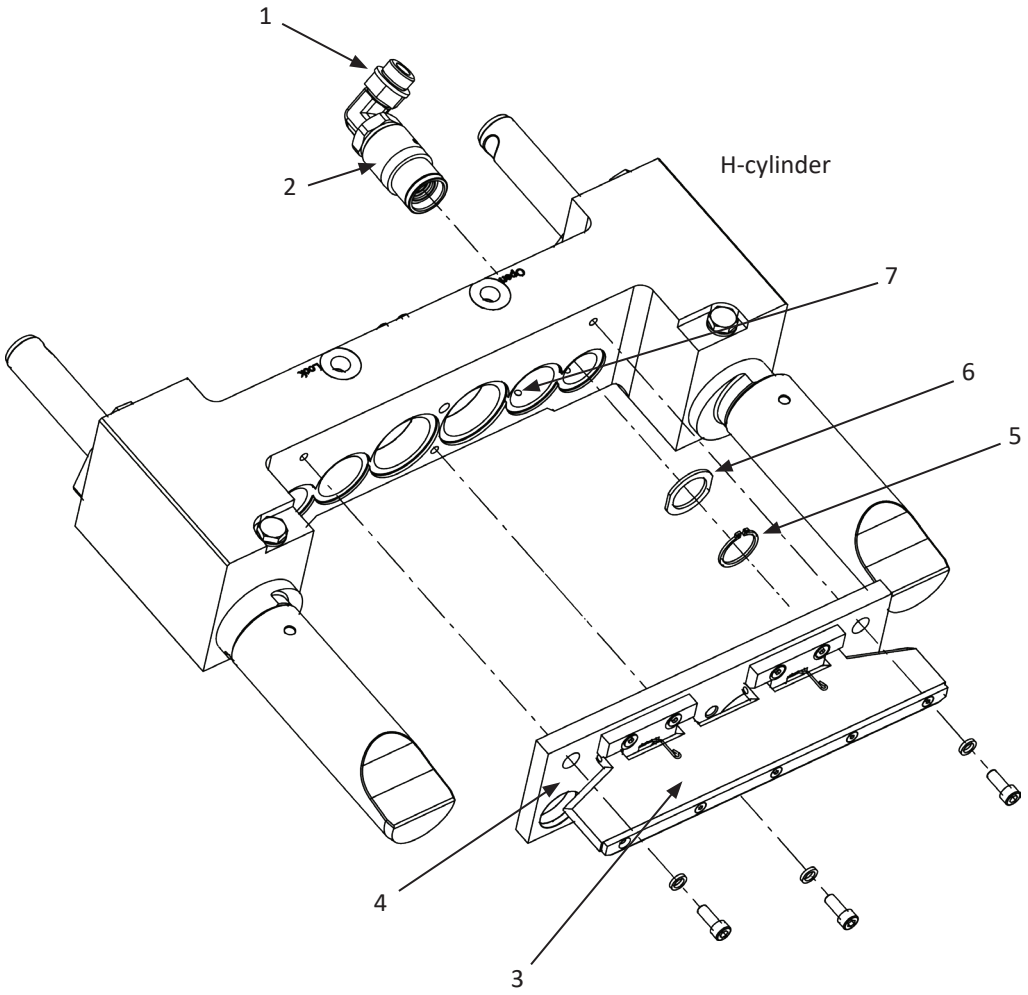


5. Female couplings sized: 1/2”, 3/4” and 1”: Feed the nose seal into the pusher pipe’s lower end by placing the pusher against a table or other flat surface and then pressing the seal down to the bottom position using the pusher piston. See image (B).
6. When loading the pusher when it applies to 1/4” and 3/8” female coupling the support ring and O-ring must be inserted from the other end of the pusher pipe (bottom end) compared with image (A). NOTE! The support ring must be inserted first, black marking upwards towards the pusher, followed by the O-ring. Place the pusher against a table or other flat surface and then press the seal down to the bottom position using the pusher piston. See image B).
7. Place the pusher against the female coupling and press the pusher piston firmly. See image (C).
8. Check that the nose seal is correctly installed. See image (D).

26.2 Replacement of lock ring secured quick couplings

Included parts:

1. Hydraulic connection
2. Quick coupling
3. Dirt guard
4. Guide plate
5. Lock ring
6. Steel washer
7. Seat for quick coupling



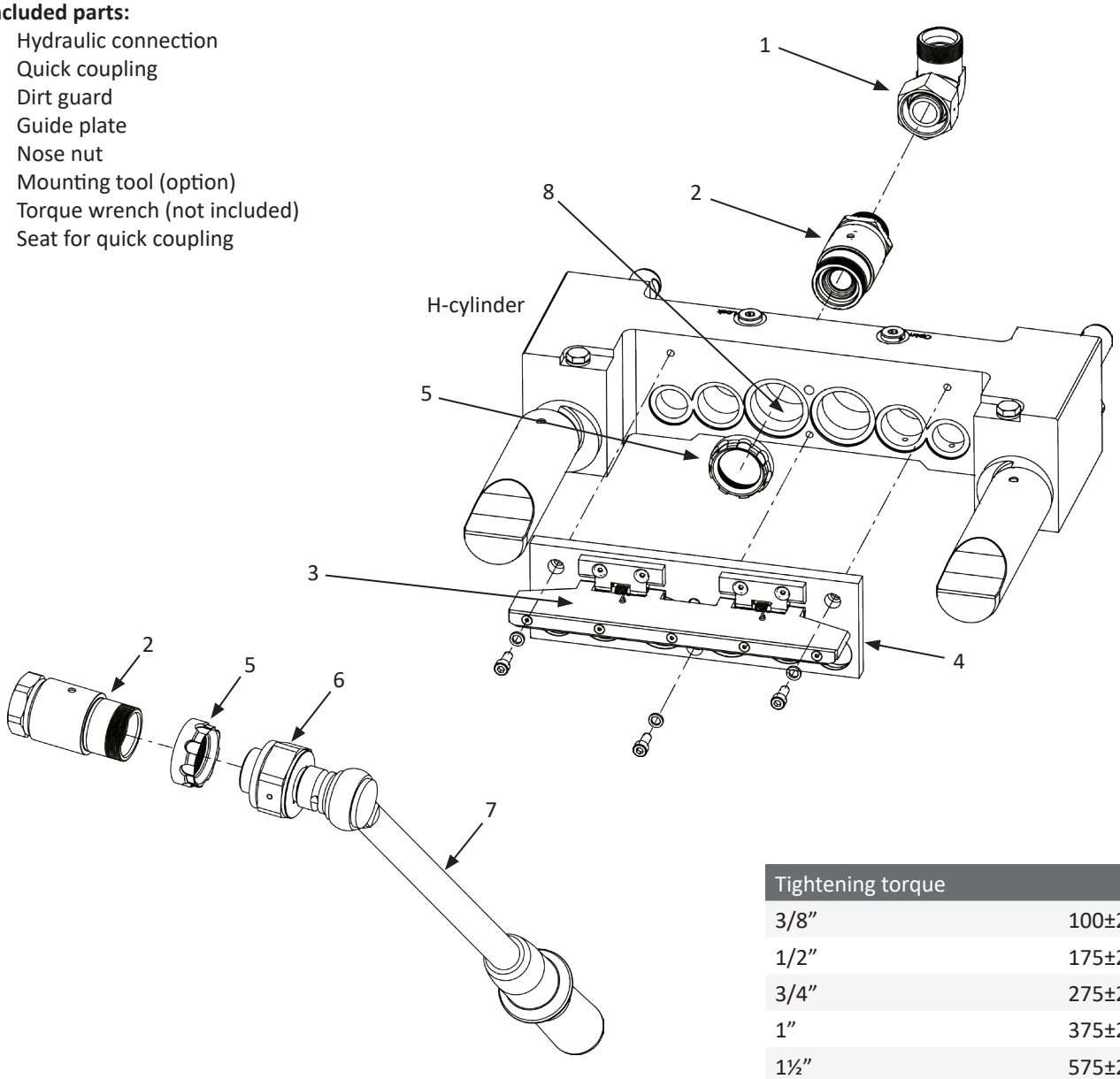
Procedure:

- Shut off the machine and depressurise the operating hydraulics.
- Open the dirt guard (3).
- Unscrew the guide plate (4).
- The lock ring (5) that holds the quick coupling is now accessible. That and the steel washer (6) behind it must be removed and discarded.
- Pull the quick coupling out of the H-cylinder.
- Disconnect the hydraulic connection (hydraulic hose/pipe/adapter) (1) from the relevant quick coupling (2).
- Discard the quick coupling.
- Reinstall the hydraulic connection on a new quick coupling.
- Before installing a new quick coupling the seat (7) in the H-cylinder must be cleaned and degreased.
- Install new parts and reinstall other relevant parts in reverse order.

26.3 Replacement of nose nut secured quick couplings

Included parts:

1. Hydraulic connection
2. Quick coupling
3. Dirt guard
4. Guide plate
5. Nose nut
6. Mounting tool (option)
7. Torque wrench (not included)
8. Seat for quick coupling



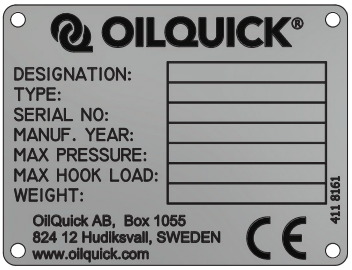
Tightening torque	
3/8”	100±25 Nm
1/2”	175±25 Nm
3/4”	275±25 Nm
1”	375±25 Nm
1½”	575±25 Nm

Procedure:

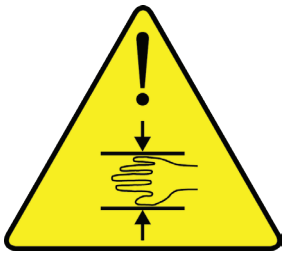
- Shut off the machine and depressurise the operating hydraulics.
- Open the dirt guard (3).
- Unscrew the guide plate (4).
- The nose nut (5) on the quick coupling (2) is now accessible.
- Remove the nose nut (5) using the mounting tool (6) and handle.
- Pull the quick coupling out of the H-cylinder.
- Disconnect the hydraulic connection (hydraulic hose/pipe/adapter) (1) from the relevant quick coupling (2).
- Discard the quick coupling.
- Before installing a new quick coupling the seat (8) in the H-cylinder must be cleaned and degreased.
- Reinstall the hydraulic connection on a new quick coupling.
- Insert a quick coupling (2) in the H-cylinder seat and hand tighten the nose nut (5).
- Then use the mounting tool (6) and torque wrench (7) to tighten the nose nut on the quick coupling to the stated tightening torque.
- Reinstall other parts in reverse order.

27 Plates and decals

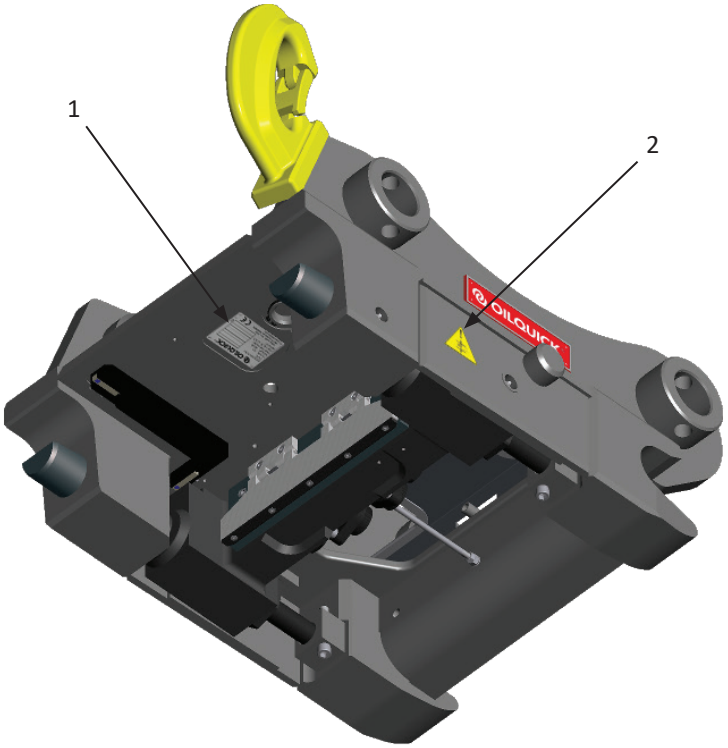
Plates and decals on quick coupler
Plates/decals below are positioned according to the following explanation. If these are unclear because of damage they must be replaced immediately!



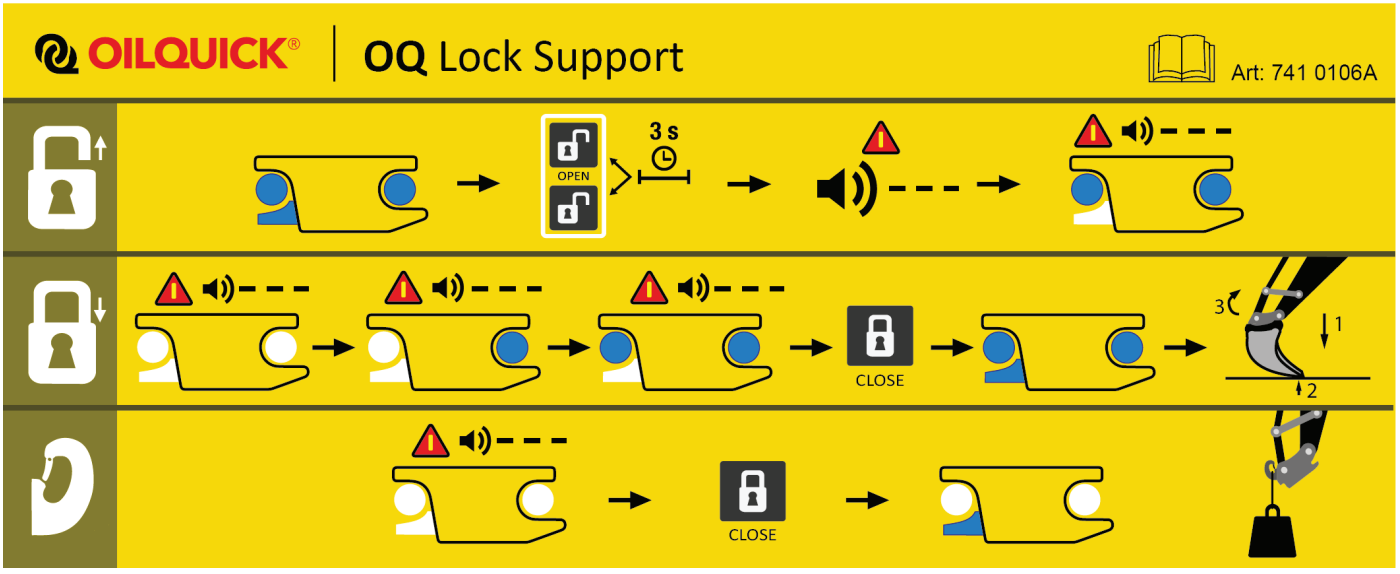
1. Identification plate



2. Warning decal, risk of crushing

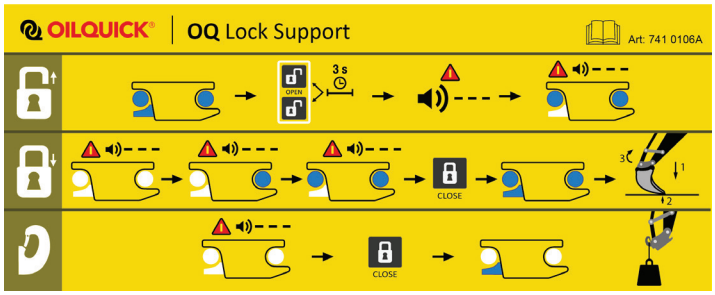


Lock decals in the cab
These information decals must be attached in an easily visible position in the cab. If these are unclear because of damage they must be replaced immediately!

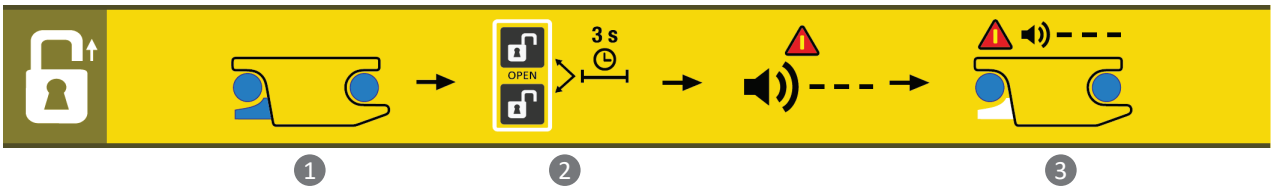


28 Explanation of lock decals

The lock decal supplied with OQLS 2.0 must be located visibly in the cab. This decal show illustrations that explain step by step what is indicated and what must be done next in the operating sequence.

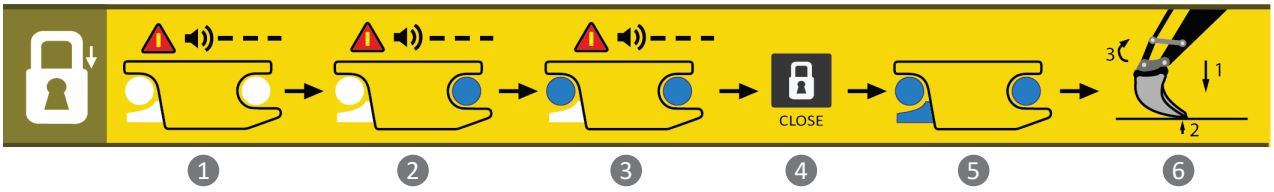


OPEN:



1. Attachment is connected. Both the pin symbols and the locking bolt symbol light up.
2. Open the coupler by pressing both buttons (OPEN) for three seconds until the warning symbol starts blinking and the buzzer starts beeping. Let go of the buttons.
3. The quick coupler now opens and the locking bolt symbol goes out when the locking bolts no longer are in locked position. The coupler is now open.

CLOSE:



1. The warning symbol flashes and the buzzer sounds. The quick coupler is open and not in position to be able to lock the attachment.
2. Hook the front pin holder of the quick coupler around the front pin of the attachment. The pin symbol for the front pin is lit.
3. With the quick coupler front pin holder around the front pin the quick coupler is twisted towards the rear pin of the attachment. The pin symbol for the rear pin is lit. The coupler is in position to lock.
4. Press the Close button to close the quick coupler.
5. The quick coupler is locked, the warning symbol goes out and the buzzer stops. The pin symbols and the locking bolt symbol light up.
6. Carry out a lock test according the instructions in the quick coupler manual.

Closing without attachment, for hoisting hook, transport etc:

1. The warning symbol flashes and the buzzer sounds. The quick coupler is open and not in position to be able to lock the attachment. The driver has decided to close without an attachment, for hook hoisting, transport etc.
2. The Close button must be pressed.
3. The H-cylinder is closed, the locking bolts move out. The lock bolt symbol is lit. The warning lamp goes out, the buzzer is silent. No attachment is connected (Closed without attachment, for hook hoist, transport etc.).

29 Troubleshooting - Quick coupler

Fault	Cause	Action
Quick coupler cannot be closed.	No function in OQLS 2.0.	Check according to section 30.
	The hydraulic pressure in the locking circuit is too low to close the quick coupler.	Check the pressure in the lock circuit. If this is too low, check the lock valve function. If the lock valve is correct the fault is in the machine.
	Dirt guard is not opened and presses against the male coupling. Dirt guard opening bar is missing.	Install new opening bar.
	One or several male couplings have moved out of position and do not fit the female couplings.	Contact OilQuick service.
Quick coupler cannot be opened.	The hydraulic pressure in the locking circuit is too low to open the quick coupler.	Check the pressure in the lock circuit. If this is too low, check the lock valve function. If the lock valve is correct the fault is in the machine.
	One of the two pilot operated check valves in the H-cylinder is defective and will not open.	Contact OilQuick service.
	Pressure relief valve defective.	
Oil leakage from quick coupling when attachment is connected.	Nose seal missing or damaged.	Replace nose seal according to section 26.1.
	Leakage due to uneven pressure in the shuttles or low pressure in the machine due to long inactivity.	Check that hydraulic components move at given pressure. Replace nose seal according to section 26.1.
Oil leakage from quick coupling when attachment is not connected (female connection)	The quick coupling is dirty or damaged.	Clean or install new quick coupling according to section 26.2-26.3.
Oil leakage from quick coupling on the attachment (male connection)	The quick coupling is dirty or damaged.	Clean or install new quick coupling.
Attachment hydraulics do not function.	No function in OQLS 2.0.	Check according to section 30.
	The machine does not give the attachment the pressure and/or flow that the attachment requires.	Check the manual for the machine or contact the supplier of the machine.
	Male couplings out of position.	Contact OilQuick service.
	Fault in the attachment's hydraulic and/or electrical systems.	Check the manual for the attachment or contact the supplier of the attachment.
	Correct machine pressure or full machine pressure has not been achieved.	Check that correct pressure has been reached in the machine and attachment.
Attachment's hydraulic and/or electrical systems do not function.	Defective electrical coupling between quick coupler and attachment.	Check the wiring and electrical couplings. Replace or repair defective parts. Refer to the manual for the electrical couplings.

30 Troubleshooting - OQLS 2.0

Fault	Cause	Action
When the machine is started the control panel is not lit and system check does not occur.	1: There is no power supply to the unit.	Check first whether the power LED on the main unit is lit and whether the LED for the CAN flashes green or red. If both LEDs are unlit the unit is not receiving voltage. Check the fuse and replace if necessary. If the fuse blows immediately again, the wiring or the main unit is short circuited. Check where the short circuit is and replace the relevant part.
	2: The main unit is defective.	The wiring is complete, the main unit is defective and must be replaced. It is impossible to repair, contact the nearest OilQuick service representative.
	3: Cable to the control panel or the control panel is defective.	The power LED on the main unit is lit green and the LED for CAN flashes green or red. The control panel power LED is not lit and the buttons' background lighting is not lit. The control panel or wiring is defective and the control panel must therefore be replaced, contact the nearest OilQuick service representative.
When working with connected attachments the control panel raises the alarm with continuous signal and the warning symbol is lit. A symbol for pin or locking bolts has gone out, despite the fact that the attachment is in the quick coupler.	A pin sensor or the sensor for the locking bolts has lost the signal. The stick unit does not have contact with one or several sensors.	Stop work immediately and investigate the cause. 1 : Check if any mechanical fault has occurred on the quick coupler or attachment causing the attachment to be incorrectly located in the quick coupler. The most frequent cause is contaminants such as mud, sand, snow and ice in the pin locations for attachment. The sensors cannot detect the attachment in these conditions. Correct any faults and ensure that the attachment is connected correctly. 2 : Disconnect the attachment. With the quick coupler open, check that the sensors in the coupler are undamaged and that the cables to the stick unit are intact and that there is no abrasion. By placing a piece of metal against a sensor the symbol that corresponds to the sensor should light in the control panel. This indicates that the sensor is intact, if this does not happen the sensor must be replaced, contact the nearest OilQuick service representative. 3 : If the alarm is intermittent and at irregular time intervals the cable between the sensor and the stick unit may be damaged internally and causes an open circuit when it bends across the linkage. The sensor must be replaced as soon as possible, contact the nearest OilQuick service representative.
All the symbols on the control panel go out or go out at irregular time intervals. When the quick coupler will be opened the warning symbol flashes quickly and the buzzer sounds with short signals. The symbols for pins and locking bolts flash at the same time	The CAN signals between the main unit and the stick unit have stopped or are intermittent.	Switch off and restart the system. After the system has been restarted the control panel will raise the alarm with a beeping buzzer and flashing warning symbol. 1 : If the power LED on the stick unit is lit green the power supply to the stick unit is correct. If it is not lit green the power supply is broken. Check the cable between the stick unit and the main unit, marked CAN. 2 : If the power LED on the stick unit is lit green and the CAN LED is lit red the CAN traffic is broken. Also check the main unit CAN LED, it should also flash red if the cable is damaged. Replace the damaged cable, contact the nearest OilQuick service representative.

Fault	Cause	Action
The quick coupler does not open when the Open buttons are pressed.	1: One of the buttons is defective or the wiring between the control panel and main unit is defective.	The buttons' function can be checked by continuing OQLS 2.0 in emergency operation mode. Press in all three buttons for at least 6 seconds. The warning buzzer must then start to sound continuously, the warning symbol is lit and the symbols for pins and locking bolts flash alternately. If this occurs the buttons are intact, otherwise the whole control panel must be replaced, contact the nearest OilQuick service representative.
	2: The signal from the safety gate is not active (if the option is installed).	Check the safety gate and signal.
The quick coupler does not close when the Close button is pressed.	1: The button is defective or the wiring between the control panel and main unit is defective.	The buttons' function can be checked by continuing OQLS 2.0 in emergency operation mode. Press in all three buttons for at least 6 seconds. The warning buzzer must then start to sound continuously, the warning symbol is lit and the symbols for pins and locking bolts flash alternately. If this occurs the buttons are intact, otherwise the whole control panel must be replaced, contact the nearest OilQuick service representative.
	2: The signal from the safety gate is not active (if the option is installed).	Check the safety gate and signal. The signal is connected to POW, pin 3 on the main unit.
The symbol on the panel is lit weakly or not at all.	Broken LED or defective wiring.	Start up the system, all symbols must flash a number of times during start up before the actual system status is displayed. If a symbol does not flash the LEDS are defective or the wiring in the control panel is damaged. The control panel must be replaced, contact the nearest OilQuick service representative.
The buzzer does not sound.	Broken buzzer or defective wiring.	Start up the system, the buzzer must sound a number of times during start up before the actual system status is displayed. If the buzzer does not sound it is defective or the wiring to the control panel is damaged. The control panel must be replaced, contact the nearest OilQuick service representative.
The quick coupler does not open when the Open buttons are pressed and after a moment the buzzer sounds continuously and the warning symbol is lit.	The locking valve (LA) does not function.	1: The cable between the main unit and the locking valve is damaged. Check and rectify.
		2: The solenoid in the locking valve is defective, replace it.
		3: The locking valve is defective, replace it.
		4: The main unit output LA is defective. The main unit must be replaced, contact the nearest OilQuick service representative.
The coupler does not open when Open is pressed and after a moment the buzzer sounds continuously and the warning symbol is lit.	Pressure boost (PB) does not function. (If the option is installed)	1: The cable between the main unit and the Pressure boost-system is damaged. Check and rectify.
		2: Pressure boost system defective, see separate troubleshooting schedule.
		3: The main unit output PB is defective. The main unit must be replaced, contact the nearest OilQuick service representative.
After 5-20 seconds while opening or closing the quick coupler, the control panel and buzzer warn for errors.	The timeout limit for opening / closing the locking bolts has been reached without it changing its position.	The default timeout setting is "open" 5 seconds, "close" 20 seconds. If the locking bolts does not open/close during this time, the control panel and buzzer will warn that a potential fault has occurred.

More advanced troubleshooting can be carried out by OilQuick service providers using a PC based troubleshooting system. Contact nearest service provider for advice and assistance.

31 Warranty conditions

The following warranty conditions apply to OilQuick products:

- OilQuick AB (OQAB) provides a warranty against technical faults regarding materials and construction.
- The warranty means that OQAB of its own volition will replace or repair parts of supplied products, that have become unusable due to a material or manufacturing fault.
- The warranty period is 24 months or 3000 machine hours, whichever comes sooner. The warranty applies from the date on which the product was supplied to the end customer.
- The warranty period applies from and including the date of delivery to the end customer. A condition of OQAB handling warranty claims is that the registration card has been properly sent in to OQAB.
- Replacement parts and repair time are paid by OQAB on the condition that the claim has been approved. However, reimbursement is not available for travel costs, journey times, consumable materials, hydraulic oil or down time.
- The warranty does not cover faults that have arisen due to natural wear, negligence, incorrect installation or other circumstances outside OQAB's control.
- The warranty becomes invalid if the OilQuick product has been rebuilt or modified without OQAB's written approval. Non OilQuick original replacement parts are not replaced. Replacement parts supplied after the end of the warranty period, have a 3 month guarantee, at which only the replacement part is replaced on the condition that the replacement part has been fitted by an OQAB approved workshop or representative and that it confirms that no play, contamination, wear or similar has adversely affected the part.
- Faults that occur during the warranty period are replaced by OQAB on the condition that the claim form is sent to OQAB within 30 days of the damage occurring and that the fault is eligible for a warranty claim.
- The warranty applies on the condition that the product is installed and controlled according to the requirements and installation instructions given in the applicable manual.
- The warranty only applies if original OilQuick parts are used together with our OilQuick quick coupler systems.

Notes

Notes

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