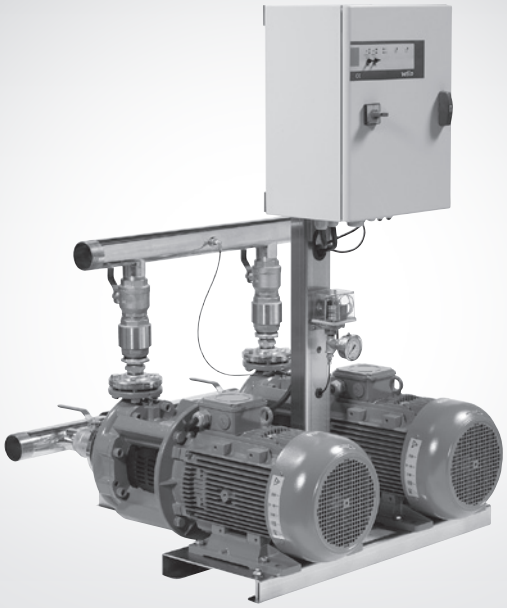
Pioneering for You

WILO-COF



fr Notice de montage et de mise en service
en Installation and operating instructions

4 101 674-Ed.5/ 2014-08-Wilo

Fig. 1

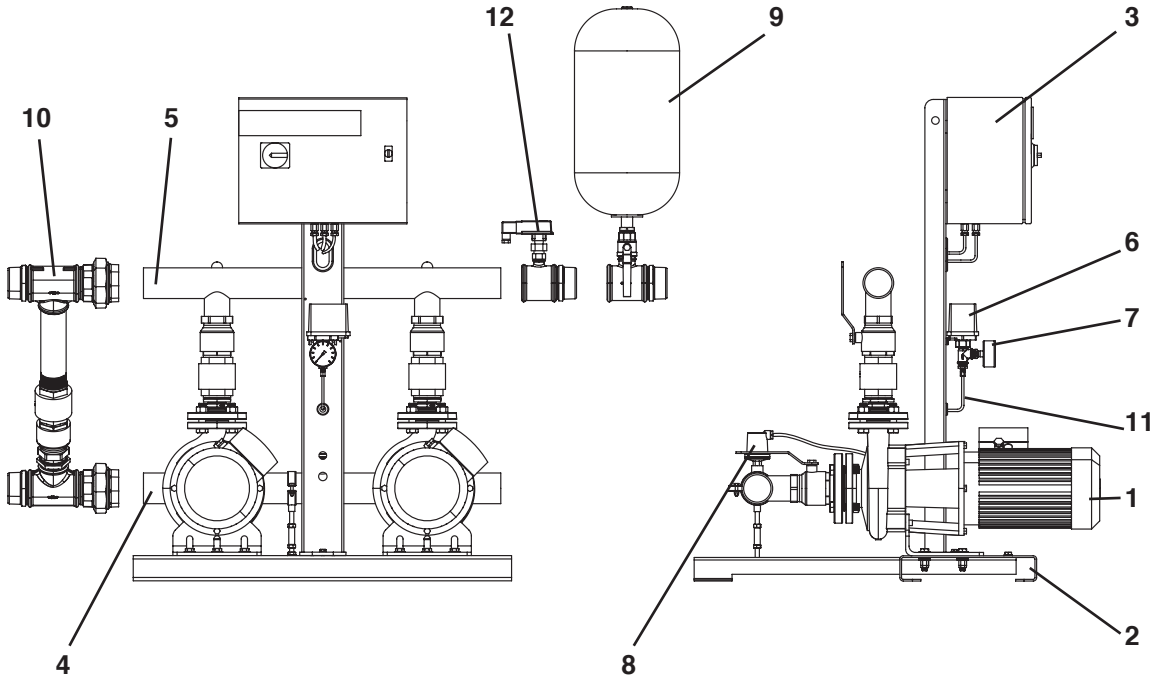


Fig. 2

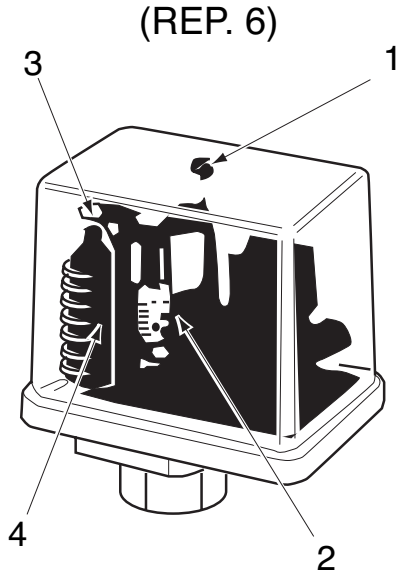


Fig. 3

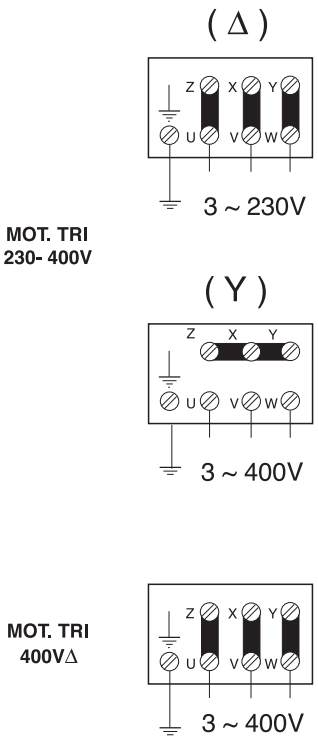
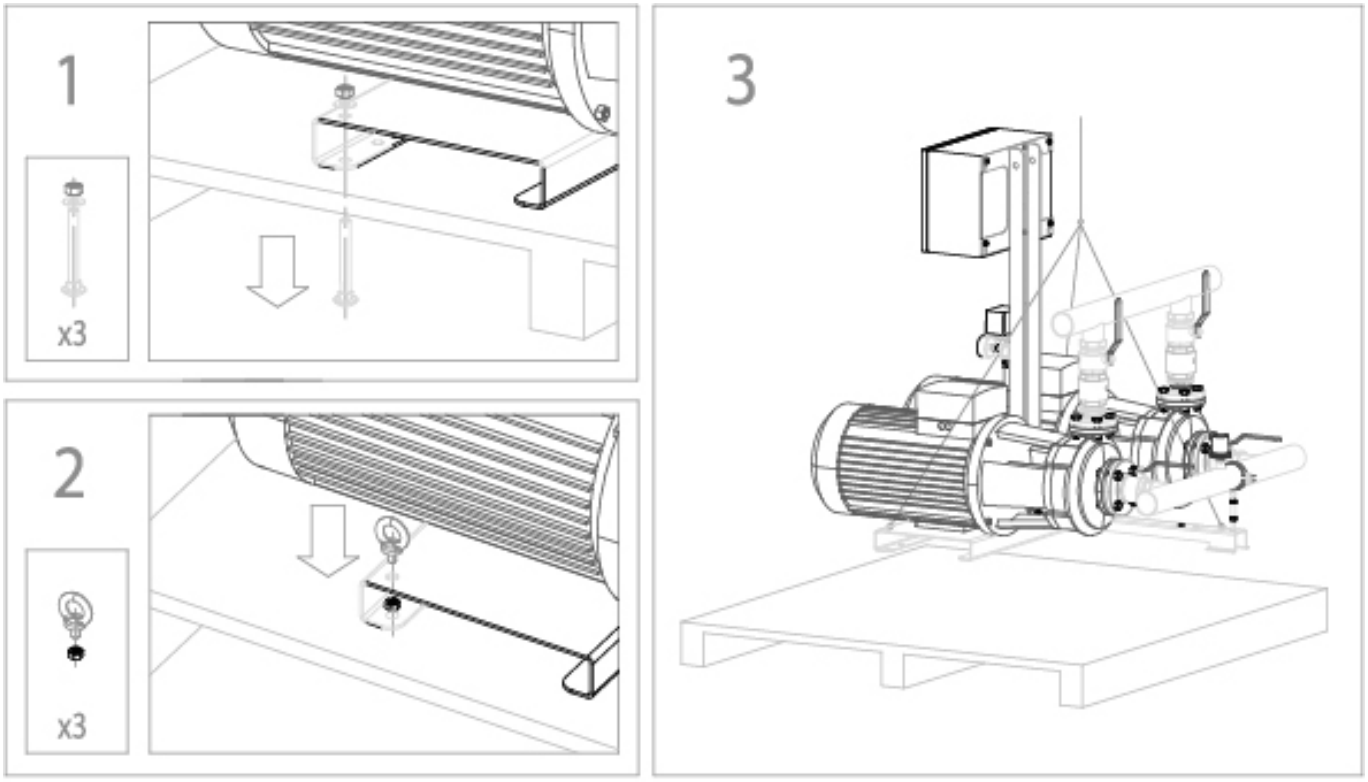


Fig. 4



CONSIGNE DE MANUTENTION

FR

- LA MANUTENTION DU SYSTEME DOIT S'EFFECTUER AVEC UN MATERIAL ADAPTE.
- SECURISER LE SYSTEME AFIN D'EVITER TOUT RENVERSEMENT.
- LES COLLECTEURS NE SONT PAS ADAPTES A LA MANUTENTION DU SYSTEME.

TRANSPORT ADVICE

GB

- LIFTING OF THE BOOSTER MUST BE DONE WITH SUITABLE HANDLING EQUIPMENT.
- SECURISE THE SYSTEME AGAINST OVERTURNING.
- MANIFOLD MUSN'T BE USED TO LIFT THE BOOSTER.

1. General

These installation and operating instructions are an integral part of the product. They must be kept readily available at the place where the product is installed. Strict adherence to these instructions is a precondition for the proper use and correct operation of the product.
These installation and operating instructions conform to the relevant version of the product and the underlying safety standards valid at the time of going to press.

1.1 Applications

The main function of the booster pump is to maintain the pressurization of and supply to a fire hose network for the protection of miscellaneous buildings (hospitals, blocks of flats, schools, industrial facilities, trade centres,...).

1.2 Technical characteristics

- Max. service pressure : 10 bar
- Max. water temperature : + 45°C
- Max. ambient temperature : + 40°C
- Voltage : 3-phase 230/400V

Make sure that the overall installation complies with standard NFC 15100.

2. Safety

These instructions contain important information which must be followed when installing and operating the pump. It is therefore imperative that they be read by both the installer and the operator before the pump is installed or operated. Both the general safety instructions in this section and the more specific safety points in the following sections should be observed.

2.1 Instruction symbols used in this operating manual

Symbols

General danger symbol.

Hazards from electrical causes.

NOTE: ....

Signal words:

DANGER! Imminently hazardous situation. Will result in death or serious injury if not avoided.

WARNING! Risk of (serious) injury. 'Warning' implies that failure to comply with the safety instructions is likely to result in (severe) personal injury.

CAUTION! Risk of damage to the pump/installation. 'Caution' alerts to user to potential product damage due to non-compliance with the safety instructions.

NOTE! Useful information on the handling of the product.
It alerts the user to potential difficulties.

2.2 Personnel qualification

The personnel installing the pump must have the appropriate qualification for this work.

2.3 Risks incurred by failure to comply with the safety instructions

Failure to comply with the safety precautions could result in personal injury or damage to the pump or installation. Failure to comply with the safety precautions could also invalidate any claim for damages.
In particular, failure to comply with these safety instructions could give rise, for example, to the following risks:

- Failure of important pump or system functions,
- Failure of specified maintenance and repair methods.
- Personal injury due to electrical, mechanical and bacteriological causes.
- Damage to property.

2.4 Safety instructions for the operator

The relevant accident precaution regulations must be observed.
Potential dangers caused by electrical energy must be excluded. Local or general regulations [e.g. IEC, VDE, etc.] and directives from local energy supply companies are to be followed.

2.5 Safety instructions for inspection and assembly

The operator must ensure that all inspection and assembly work is carried out by authorised and qualified specialists who have carefully studied these instructions.
Work on a pump or installation should only be carried out once the latter has been brought to a standstill.

2.6 Unauthorised modification and manufacture of spare parts

Changes to the pump/machinery may only be made in agreement with the manufacturer.
The use of original spare parts and accessories authorised by the manufacturer will ensure safety. The use of any other parts may invalidate claims invoking the liability of the manufacturer for any consequences.

2.7 Improper use

The operating safety of the pump or installation can only be guaranteed if it is used in accordance with paragraph 4 of the operating instructions.
All values must neither exceed nor fall below the limit values given in the catalogue or data sheet.

3. Transport and interim storage

When receiving the material, check that there has been no damage during the transport. If any defect has been stated, take the required steps with the carrier within the allowed time. If the delivered material is to be installed later on, store it in a dry place and protect it from impacts and any outside influences (humidity, frost etc...).

CAUTION! The handling should be done by a skilled staff and with an authorized equipment. A sticker on plastic bag reminds the transport advice (Fig. 4). Caution! Handling the system by the manifold can induce leaks.

CAUTION! Handle the pump carefully so as not to alter the geometry and the alignment of the hydraulic unit.

4. Products and accessories

4.1 Description of module (Fig. 1) :

1 – Monobloc horizontal BL pump.
2 – Attachment frame.
3 – Control and automation cabinet.
4 – Suction manifold.
5 – Discharge manifold.
6 – Pump control pressure switch automatic.
7 – Pressure gauge.
8 – Dry running pressure switch (town version).
9 – Bladder tank on collector, or delivered separately, depending on the capacity.
10 – Bypass option: for direct water supply without the pumps when the town water pressure is adequate.
11 – Capillary.
12 – Flow switch to place depending on flow orientation.

NOTE: Each pump is equiped of isolate suction valve, check valve and discharge valve.

4.2 Dry-running protection

The booster is delivered with dry-running protection that depends on the order:
Version "V" with pressure switch connected to module.
Version "B" with float switch to be installed on tank.

4.3 Control cabinet

- Fully automates the booster.
- Sealed, IP 54 protection.
- Thermal protection of motors adjusted in plant to nominal current marked on motor data plate.
- External module safety and power disconnecting switch.
- Closed by key.

On front

Five indicator lights display booster operation:
- 1 Power indicator
- 1 Dry-running indicator
- 1 Pump fault indicator
- 1 On indicator per pump
- 1 three-position switch per pump MANUAL – OFF – AUTO

4.4 Automatic control pressure switch (Fig. 2)

This pressure switch starts and stops the pumps automatically;
it has a single range.
1 – PF setting screw.
2 – Pressure indication needle.
3 – Pf setting screw.
4 – Pressure value indication needle.

Note :
PF : Gap of pressure for flow detection.
Pf : Pf + difference (PF-Pf).
PF = Pf + difference (PF-Pf).
Pf must be set up at -0.5 b of pressure of pump at Q=0

4.5 Accessories (optional)

• Isolating valves • Anti-vibration sleeves • Pressure reducing valve • Bladder tank • Foot-valve strainer • float switch • permanent control device of insulation (compulsory for Public Assembly Building)...

5. INSTALLATION

5.1 Room

Ensure the premise door allows free access to to the booster pump.
The booster should be installed in a room that easy to reach, normally ventiled and protected from frost.

5.2 Assembly (Fig. 1)

Install on a smooth, level floor on a concrete foundation block with attachment by anchor bolts.
- Place an insulating material (reinforced rubber or corck) underthe foundation block to prevent the transmission of flowing-water noise.

5.3 Hydraulic connections

Water can be supplied to the module from a town network (version «V») or from a storage tank (version «B»).

Collectors diameter

COF	Number of pumps	Ø collectors
COF-2BL40-120	2	3"
COF-2BL40-130	2	3"
COF-2BL40-140	2	3"
COF-2BL40-160	2	3"
COF-2BL40-170	2	3"
COF-2BL40-180	2	3"
COF-2BL40-210	2	3"
COF-2BL40-220	2	3"
COF-2BL32-140	2	2"1/2
COF-2BL32-150	2	2"1/2
COF-2BL32-160	2	2"1/2
COF-2BL32-170	2	2"1/2
COF-2BL32-210	2	2"1/2
COF-2BL32-220	2	2"1/2

- The connections to the suction and discharge ports may be made on either the right or the left side; the plugs supplied will be used to blanck the unused ports.
- Provide valves on the pipes to be able to isolate the module if work must be done it.
- The flow switch must be mounted with his head upwards and on a horizontal pipe.

CAUTION! If the booster is connected to a network at town water pressure, make sure that the installation can withstand the maximum no-flow pressure of the pump plus the town water pressure.

If not, connect a pressure reducer on the booster outlet.

CAUTION! We strongly recommend to install a pressure reducer-regulator on the water supply pipe to avoid all variations in the module inlet pressure.

- If the module is suction-connected to a tank, the losses of head must not exceed the suction capacity of the pumps.
- The use of a check-valve strainer, with a pipe as large as or larger than the nominal suction diameter, is recommended.
- The installaton must always have a bladder tank.

5.4 Electrical connections

The electrical connections and tests must be made by a licensed electrician and comply with applicable local standards.

CAUTION! The control box of the booster cannot be connected to a voltage other than the one for which it was ordered.

All booster electrical control units are connected to the control box.

- Use a cable with 4 conductors (3 phases + earth) to connect three-phase 230 V or three-phase 400 V line power to the terminals (RST) of the disconnecting switch (diagrams inside control box).

DO NOT FORGET TO CONNECT THE EARTH.

Float switch (Version "B")

The float switch, delivered separately, must be installed on the tank and connected to terminals 1 and 2 of the control box by a two conductor cable.
Remove the covers from the terminal blocks to check the electrical connections of the motors (Fig. 3).

6. Starting up

6.1 Pressurising the tanks

Pressurising of tanks to a pressure 0.3 bar less than the pump starting pressure (Pf).

Maximum pressurisation

Tank :
24L 16 bar = 3 bar

* Safety valve mandatory.

6.2 Filling, degassing

- Check the water supply (tank full enough or town supply working).
- Open the bleed of the pumps and wait for water to flow out steadily before closing.

CAUTION! Never operate the pump dry, even brefly.

6.3 Adjustments

Check of direction of rotation

- Set the pump switches to «OF».
- Close the disconnecting switch. The power indicator should light.
- Open the door of the control box and set the dry-running timer (RME) to zero (0). You should hear a click.
- Set the switch of pump 1 to «Manual»; the pump should start (indicator on control box lit); check that the motor turns the right way.
- Repeat this step for pump 2.
- If a motor turns the wrong way, interchange two phase wires on its terminal block.
- After this operation, set the switches of the pumps back to «Off».

Adjustment of automatic operation pressure switch (Fig. 2)

With the front cover removed :

- Unscrew screw 1, and then screw in screw 3 in order to set pointers 2 and 4 to the highest value on the graduated scale to adjust the pressure switch differential to its minimum.
- Set the reference pressure corresponding to the pump engagement pressure, i.e.:
  • Geometrical building height.
  • Safety guard (0.3 bar).
  • Module differential (0.6/0.8 bar).
  • Difference (PF-Pf).
- Warning Pf must be lower than max pressure of pump (Q=0).
- Screw in screw (item 1) with graduation (Item 2).
- For the pump engagement setting, unscrew screw (item 3) with graduation (Item 4).

Dry-running pressure switch (version»V»)

Pre-set to 1 bar at the plant.
Adjustment if necessary:

- Remove the cover.
- Screw the yellow difference screw all the way in, without locking, then back off a quarter-turn.
- Remove the locking pin from the red disc.
- Fully unscrew the red disc.
- Set the dry-running pressure to the desired value.
  Generaly: 0.3 bar for pump stopping 1.2 bar for restarting.
- Slowly screw the red disc back in untill a click is heard, the red dryrunning light on the control box goes on.
- Refit the locking pin and the cover.

Float switch (Version “B“)
Adjust the float so as always to have at least 40 cm reserve water abobe the inlet and outlet ports of the module, to overcome the resistance of the check-valve strainer.
To check the connection, operate the float switch by hand to light the dry-running indicator on the control panel.

Recommanded timer settings

1 RMET timer (relay associated with dry-running pressure switch).
This timer provides a safety delay before the pumps are restarted.
– Set the timer to 180 seconds.

2 RT1 timer (changeover relay)
This timer stages the starting of the pumps.
– Set in the plant to 1 second (do not change).

3 RM timer (hold relay).
This timer is used to extend the operating time of the pump.
– Set the timer to 180 seconds.
This setting serves to limit the number of times the pumps are started.

4 RPT timer (Flow switch relay).
This timer is used to fileter flow switch durinfg start of pumpoperating time of the pump.
– Set the timer to 10 seconds.
This setting serves to start the pumps with no flow when low pressure.

Timer settings:

- RMET 10 to 300s
- RT1 0,1 to 3s
- RM 10 to 300s
- RPT 10 to 300s

6.4 Commissioning

NOTE: The maximum service pressure of the installation is equal to the no-flow pressure of the pumps, possibly plus the town water pressure at the booster inlet.

Set the pump switches on the control box to «Auto».
Booster operation is then controlled automatically by the pressure switches and the timers.

7. Maintenance

- The booster needs no special servicing in operation.
- For pumps, refer to the specific handbook supplied together with the module.
- Periodically check the tank inflation.

8. Problems, causes and remedies

Problems	Causes	Remedies
One or both pump not primed	Suction air leak	Check the tightness of all unions of the suction pipe. Check that the suction strainer (version «B') is in fact under water
	Check-valve strainer (version «B») not tight, or obstructed	Check the tightness of the valve; replace if necessary
	Large losses of head at suction	Calculate the losses of head and make sure that they are compatible with NPSH of the pumps
	Town water pressure too low or non existent	If this recurs, a tank will be needed
	Suction head too great (version "B")	Make sure that the minimum level in the tank is compatible with NPSH of the pumps
	Suction pipe obstructed or valve on suction port closed	Check that the valve is open; clean the pipe if necessary
	The pumps turn the wrong way	Interchange two wires on the motor terminal block
One pump fails to operate	The pump «Fault» light on the control box should be lit	Check the adjustment of the thermal relay and reset it by pressing the red pushbutton
	Fuses faulty or blown	Replace them (check the rating). If the trouble persists, check the current draw of the motor concerned. If it is much higher than the current rating marked on the motor data plate, the motr is faulty an must be replaced
	Pump shaft jammed	Cut off power on the control box, then check that the shaft turns freely. If it is jammed, remove the pump
	Winding fault	Disconnect the terminal block of the motor concerned and check line power on the terminals and the insulation of the stator; if necessary, replace the motor
	Contactor coll burned out	Replace it
Inadequate discharge pressure	Loss of priming of one or both pumps	Check that the suction strainer (version «B') is not taking in air, and that the level in the tank is not too close to the strainer
	Town water pressure less than anticipated minimum pressure	Get in touch with your water board or replace the module (get in touch with us)
	The pumps turn the wrong way	Interchange two wires on the motor terminal block
	One pump is obstructed by foreign bodies	Have the pump dismantled and cleaned
	Supply voltage to motors too low	Measure the voltage on the terminals of the motors
Frequent actuation of relays, frequent starting of pumps	Pump control pressure switch out of adjustment	Check the adjustment; the difference betwen the high and low pressures must be greater than 0.1 bar
	Capacity of installation to small	Add a tank
	No air in tank	Pressurise the tank or replace the bladder
	Tank bladder pierced	Replace the tank bladder
Frequent actuation of dry-running safety	Dry-running pressure switch setting too high	Correct the pressure switch setting
	Town water pressure drops when pumps start	Adjust the dry-running to the mini. If this recurs, the town's water network is insufficient. Check the pressure during starting of pump. (or consult the water supplier)
Failure of automatic operation	Fuses blown	Change them
	Pressure switches faulty	Check the contacts; if necessary, replace the pressure switch concerned
	Wires disconnected	Check all the connections to the terminal blocks of the control box
	Flow Switch faulty	Check the flow switch trigering on and off, replace it if necessary
Discarge check valve no tight	Valve diaphragm damaged	Replace the valves
No stop of pump	Flow switch in wrong way	Check that arrow on flow switch is in accordance with flow

If no solution can be found, please contact your plumbing and heating specialist or your nearest Wilo Customer Service or representative.

9. Spare parts

Spare parts are ordered via a local specialist dealer and/or Wilo customer service.
In order to avoid queries and incorrect orders, make sure to mention all data indicated on the rating plate when placing your order.

Subject to technical alterations !

D **EG – Konformitätserklärung**

GB ***EC – Declaration of conformity***

F **Déclaration de conformité CE**

(gemäß 2006/42/EG Anhang II,1A und 2004/108/EG Anhang IV,2,
according 2006/42/EC annex II,1A and 2004/108/EC annex IV,2,
conforme 2006/42/CE appendice II,1A et 2004/108/CE l'annexe IV,2)

Hiermit erklären wir, dass die Druckerhöhungsanlagen der Baureihe:
Herewith, we declare that the booster sets of the series:
Par le présent, nous déclarons que les types de surpresseurs de la série : **COF**

(Die Seriennummer ist auf dem Typenschild des Produktes nach Punkten b) & c) von §1.7.4.2 und §1.7.3 des Anhang I angegeben. / *The serial number is marked on the product site plate according to points b) & c) of §1.7.4.2 and §1.7.3 of the ann I of the Machinery directive 2006/42/EC. / Le numéro de série est inscrit sur la plaque signalétique du produit en accord avec les poi b) & c) du §1.7.4.2 et du §1.7.3 de l'annexe I de la Directive Machines 2006/42/CE)*

in der gelieferten Ausführung folgenden einschlägigen Bestimmungen entsprechen:
in their delivered state comply with the following relevant provisions:
sont conformes aux dispositions suivantes dont ils relèvent:

EG-Maschinenrichtlinie **2006/42/EG**
EC-Machinery directive
Directive CE relative aux machines

Die Schutzziele der **Niederspannungsrichtlinie 2006/95/EG** werden gemäß Anhang I, Nr. 1.5.1 der 2006/42/EG Maschinenrichtlinie eingehalten. / *The protection objectives of the **low-voltage directive 2006/95/EC** are realized according annex I, No. 1.5.1 of the EC-Machinery directive 2006/42/EC. / Les objectifs de protection de sécurité de la **directive basse-tensio 2006/95/CE** sont respectés conformément à l'annexe I, no1.5.1 de la directive CE relatives aux machines 2006/42/CE.*

Elektromagnetische Verträglichkeit - Richtlinie **2004/108/EG**
Electromagnetic compatibility - directive
Directive compatibilité électromagnétique

und entsprechender nationaler Gesetzgebung,
and with the relevant national legislation
et aux législations nationales les transposant,

angewendete harmonisierte Normen, insbesondere:
as well as following relevant harmonized standards:
ainsi qu'aux normes européennes harmonisées suivantes :

EN ISO 12100
EN 60204-1
EN 61000-6-1:2007
EN 61000-6-2:2005
EN 61000-6-3+A1:2011
EN 61000-6-4+A1:2011

Bevollmächtigter für die Zusammenstellung der technischen Unterlagen ist:
Authorized representative for the completion of the technical documentation:
Personne autorisée à constituer le dossier technique est :

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Dortmund, 19. Juli 2013

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