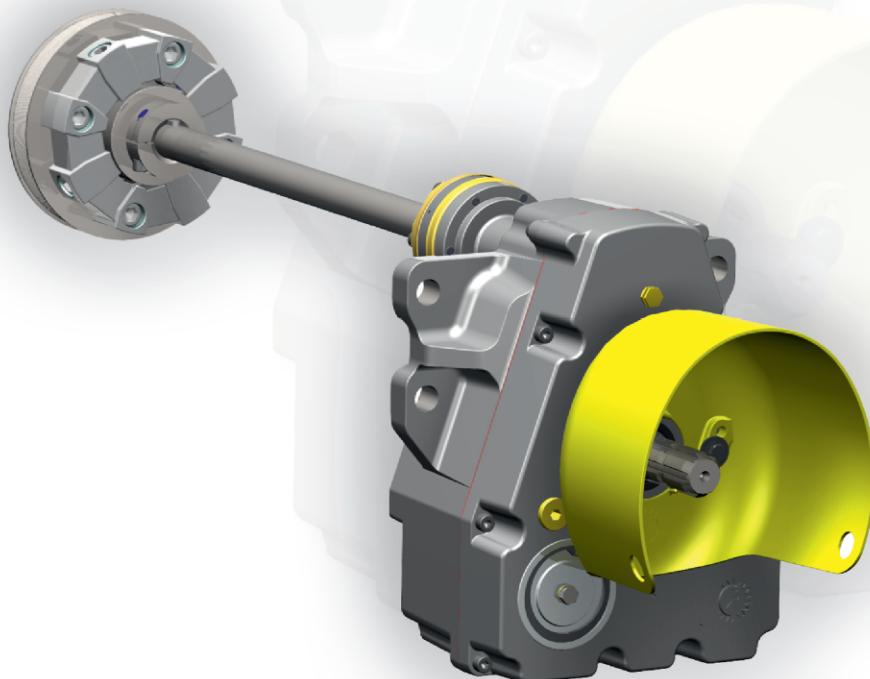




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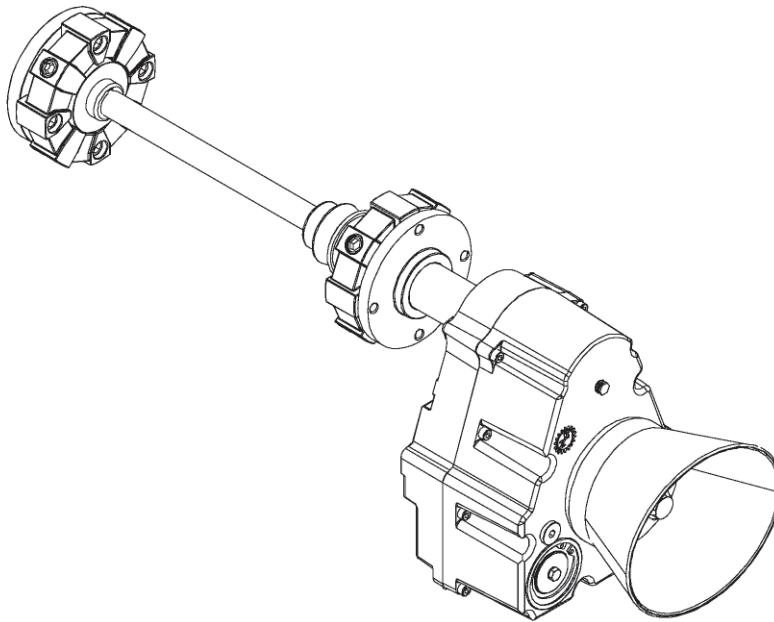


Before using the front PTO system, read the installation, assembly and maintenance information in this user manual carefully.

UK

## USER MANUAL

### Front power take-off (PTO) system



Serial number:

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Zuidberg Frontline Systems B.V. reserves the right to change components at any given moment without prior or direct notice to the purchaser. The contents of this manual may also be changed without prior notice.

For information on maintenance activities or repairs not included in this manual, please contact your supplier.

This manual has been compiled with the utmost care, but Zuidberg Frontline Systems B.V. can take no responsibility for any mistakes in this document or consequences thereof.

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## 1 General

### 1.1 Preface

This document is intended as a reference book for authorized users only, who can use and maintain the product mentioned on the cover of this document in a safe manner. Keep the manual in a fixed place, for instance with the other papers of your tractor. Should you lose the manual, order another copy at your supplier.

This manual gives you information on safety, technical specifications, operation and maintenance. Take your time to read this document carefully before using the front PTO system.

All front PTO systems of Zuidberg Frontline Systems b.v. have been carefully designed and comply with the current European Directives and CE marking. Partly for this reason no alterations to the front PTO system are allowed.

The front PTO system has been carefully inspected before delivery to you.

Write down the serial number of the front PTO system on the intended space on the cover of this document to have it at hand should a failure occur and you want to contact your supplier.

Zuidberg Frontline Systems B.V. is not responsible or liable for any damage or injury caused by not following the instructions mentioned in this manual.

### 1.2 Introduction

The front PTO system is intended for connecting suitable equipment. Any other use is regarded as improper use and is therefore not allowed, nor is the manufacturer responsible for it.

The front PTO system you purchased is designed solely for:

*Driving machines and components, designed to be driven by means of a front PTO system and a suitable PTO intermediate shaft. But only and exclusively after the front PTO system has been assembled on a tractor for which it was designed and with a load smaller than the maximum load allowed.*

In the user manual of the equipment concerned you will find more information on whether these implements are suited for use with a front PTO system. Follow the user manual of the equipment concerned meticulously.

The front PTO system is delivered completely, with all necessary assembly material and hydraulic and electrical components, if any.

### 1.3 Icons and symbols

The document contains the following icons and symbols:



### 1.3.1.1 Tip

Suggestions and advices to simplify the procedures concerned.



### 1.3.1.2 Caution!

Procedures that may cause personal injury and/or damage to the front PTO system, the surroundings or the environment if not carried out with caution.



### 1.3.1.3 Environmental instruction

## 1.4 CE Marking

The front PTO system has been constructed according to the essential demands in the Machine Directive 98/37/EEG and EMC Directive 89/336/EEG, and has therefore been CE marked. The CE marking means that the front PTO system complies with the essential demands of the applicable European Directives. The responsibility for the CE marking becomes void for Zuidberg Frontline Systems B.V. and is transferred to the purchaser if the following conditions are not met:

- The front PTO system may only be used in accordance with the contents of this user manual.
- The original state of the front PTO system may not be altered without written consent by Zuidberg Frontline Systems B.V.
- The CE marking only applies to the front PTO system in combination with the tractor for which it was designed.
- Assembly instructions have to be followed meticulously.

## 1.5 Identification of the front PTO system

The identification plate of the front PTO system (fig. 1.1) is attached to the front of the gear box.

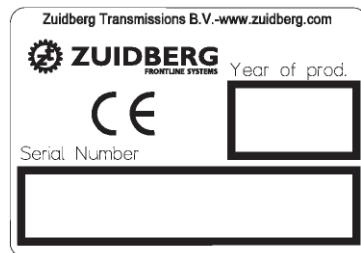


Fig. 1.1: Identification plate of the front PTO system

## 1.6 Service and technical support

For information on parts, and maintenance or repair activities that fall outside the scope of this document, please contact your supplier. Keep the information as stated on the identification plate at hand.

## 2 Safety regulations

### 2.1 General

Zuidberg Frontline Systems B.V. assumes no responsibility or liability whatsoever for damage or injury caused by not (strictly) following the safety regulations and instructions in this document, or by negligence when using and maintaining the delivered front PTO system and the accompanying accessories, if any. Depending on the specific work conditions and the accessories used, additional safety instructions may be necessary. Contact your supplier immediately if you see a potential danger when using the front PTO system. The user of the front PTO system is always fully responsible for following the local safety instructions and rules.

### 2.2 User instruction

Everybody who is working on or with the front PTO system, has to be knowledgeable about the contents of this user instruction and follow the instructions therein meticulously. Never change the order of the required activities. This manual has to be kept at a fixed place near the tractor and be available to the users during the entire life span of the frontal PTO shaft.

### 2.3 Users

In order to operate the front PTO system the user has to have a valid driver's licence for the vehicle concerned, if so prescribed by national law. In all cases the user needs to have reached the minimum age of 16, unless local law prescribes a higher minimum age. The highest age is always decisive.

### 2.4 Stickers on the front PTO system

The stickers on the front PTO system and the PTO shaft (table 2.1 and fig. 2.1) are part of the applied safety measures. They may not be covered or removed and have to be present and legible during the entire life span of the front PTO system. Replace or restore illegible or damaged stickers immediately. These stickers are available at your supplier.

Number	Description	Item number
1	Identification plate	2001865
2.1	Rpm and direction of rotation	2001632
2.2		2004448
2.2		2004700
3	Oil level	2003115

Table 2.1 Explanation of position numbers

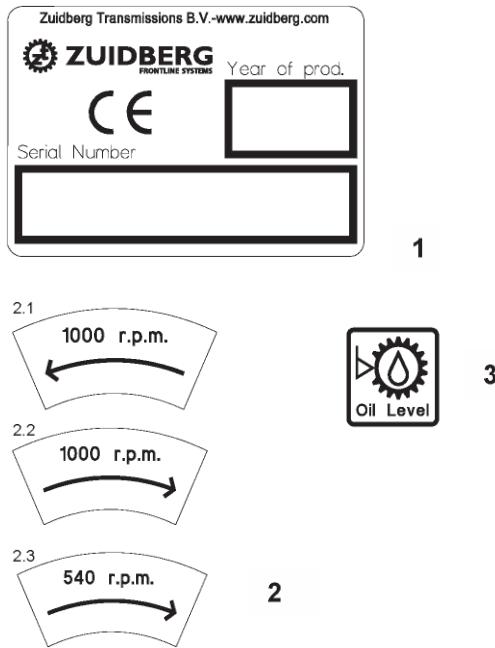


Fig. 2.1: stickers

## 2.5 Safety rules

- The maximum load of the front axle, as indicated by the tractor manufacturer, may not be exceeded when using the front lift/front PTO system.
- The maximum load of the tires, as indicated by the tire manufacturer, may not be exceeded by the use of the front lift/front PTO system.
- It is forbidden to be near the installation when the engine of the tractor is running.

## 2.6 Safety regulations

- Never start a tractor in a closed space. Because of the risk of inhaling exhaust gasses (art. 69 of the Dutch agricultural safety directive).
- Always obey local safety regulations for the prevention of accidents.
- Read this user manual carefully before starting to work with or on the front PTO system. Also read the user manual of the front lift system, if it used or applied together with the front PTO system.
- Switch off the engine of the tractor before connecting the equipment to the front PTO system.
- Before connecting an implement to the PTO system, check whether the equipment is suited for the revs indicated. Equipment designed for other revs than indicated on the front PTO system, may not be connected to the system.
- Before connecting an implement to the PTO system, check whether the equipment is suited for the direction of rotation indicated on the front PTO system. Equipment designed for another direction of rotation than indicated on the front PTO system, may not be connected.
- All lock pins have to be fitted and the locking mechanisms have to be locked when attaching tools.
- Before starting working on the installation, the engine of the tractor needs to be switched off and all systems have to be without any pressure.
- If somebody is working on the installation, it is forbidden to switch on the front PTO system.
- It is forbidden to work with the installation if it shows any deficiencies.
- It is forbidden to immobilize levers and/or switches by any means whatsoever.
- ALWAYS switch off the front PTO system when leaving the tractor.
- Before you leave the tractor or start working on a connected implement to the front lift system, always switch off the front PTO system and wait until the equipment stops turning, then lower the front lift system to its lowest position and switch off the engine of the tractor.
- Only sufficiently trained personnel may perform maintenance and repair tasks.
- Never try to find or close a possible leak in the hydraulic systems with your fingers. Oil under high pressure can easily penetrate clothing or skin and lead to serious injuries.
- Maintenance and repair jobs on the hydraulic system of the front PTO system may only take place if the entire hydraulic system of the front PTO system is without pressure.

## 3 Technical data

### 3.1 Front PTO system

Rpm:	<i>See the sticker with the rpm and direction of rotation at the front of the PTO.</i>
<i>CCW direction of rotation:</i>	<u>Counter-Clockwise:</u> <i>(When looking at the PTO from the front, to the left. In the driving direction of the tractor (forward), to the right)</i>
<i>CW direction of rotation:</i>	<u>Clockwise:</u> <i>(When looking at the PTO from the front, to the right. In the driving direction of the tractor (forward), to the left)</i>

## 4 Transportation

Transporting the front PTO system can be divided into transporting the assembled system on the tractor and transporting the system yet to be assembled.

For transporting the already assembled front PTO system, see 6.4.

Always use a pallet or a similar suitable means of transportation to transport a separate front PTO system or parts of it. The parts that have to be transported and the pallet should be connected in such a way that there is no danger that the parts will move, tumble over or fall when the pallet is moved.

## 5 Installation and assembly

The front PTO system has to be installed according to the installation manual delivered to the dealer. The assembly has to be carried out by sufficiently trained dealer personnel. During the assembly all security measures have to be taken required for a safe working environment. Furthermore, persons working on the installation and assembly have to be equipped with the necessary personal protection. Among others, personal protection exist of:

- *Safety shoes;*
- *Gloves;*
- *Hearing protection (for grinding, among others)*
- *Safety glasses;*
- *Work clothing;*
- *Fire resistant clothing for welding and grinding*

When moving, hoisting or lifting the front PTO system or part of it, all parts have to be fastened or immobilized in such a way that no danger exists that these parts will drop or move accidentally.

If grinding or welding is required during assembly, this has to be done in a room screened off in such a way that there is no danger of fire. All parts have to be screened off in such a way, that no damage may occur to other components.

During welding, the battery has to be disconnected. An installation to remove hazardous gasses is also required.

The floor of the workspace must be even and there must be enough room to work safely.

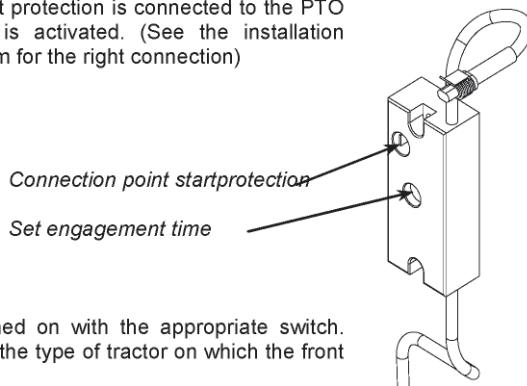
The tools used have to be suited for the required application.

## 6 Operating elements, operation and use

### 6.1 Start protection



The front PTO system is equipped with start protection. Check whether the cable of the start protection is connected to the PTO controller before the PTO is activated. (See the installation manual for the front lift system for the right connection)



The front PTO system can be switched on with the appropriate switch. Position and type of switch depend on the type of tractor on which the front PTO system is installed.

Figure 6.1



If the startprotection of the front PTO system is connected, the front PTO system will not start by itself when the engine of the tractor is started while at the same time the switch of the front PTO system is still switched on. To activate the front PTO system, the PTO-switch needs to be switched off and on.

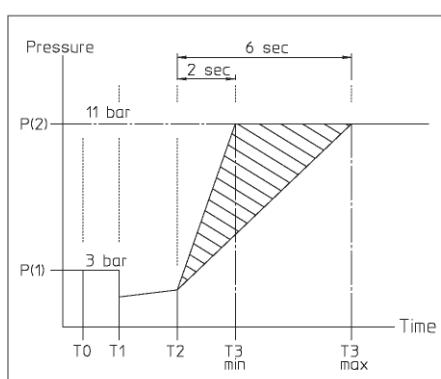
## 6.2 Switching the front PTO system on and off



**NEVER** switch on the front PTO system before the front lift system is in the right position, in order to prevent damage to the PTO intermediate shaft, among others. Consult the instructions of the implements and the PTO intermediate shaft for the operating position of the equipment and how to control the front PTO system.

When switching the front PTO system on and off, the following directives have to be obeyed.

- Switch on the front PTO system when the tractor engine has reached 1000 rpm.
- Do **NOT** switch on the front PTO system when the tractor engine runs at more than 1200 rpm.
- Do **NOT** increase the rpm of the tractor when switching on the front PTO system.
- NEVER try to loosen a stuck implement by switching the front PTO system on and off.
- *Always switch off the front lift system (and let the implement spin to a halt) before the front lift system is operated, to prevent possible damage to the PTO intermediate shaft, among others (see also specific instructions for the PTO intermediate shaft used and/or the instructions for the equipment used.)*



T0 = 'ON'  
 T0 – T1 = Filling pulse  
 T1 – T2 = Filling coupling  
 T2 – T3 = Engagement time coupling

Figure 6.2. Engagement time PTO

The engagement time of the front PTO system can be set on the controller. If the front PTO system has to power a very light implement, the engagement time should be long, so the system switches on less abruptly. In case of a heavy load the switch-on time has to be set as short as possible because of the wear on the coupling.

## 6.3 Tools

### 6.3.1 Connecting an implement



- Switch off the engine of the tractor and engage the parking brake.
- Only connect equipment that are suited for the rpm and direction of rotation indicated on the front PTO system.
- Connect the equipment to the front lift system according to the manual of the front lift system.



*Clean the quick release couplings before connecting.*



- Attach the intermediate shaft between the equipment and the tractor (take care that the intermediate shaft is locked to the outgoing shaft of the front PTO system).
- Watch the length of the intermediate shaft. In general the intermediate shaft will contract when the tool is lifted. A too long intermediate shaft may cause severe damage. It is advised to use an intermediate shaft with a torque limiter.
- Use a damped intermediate shaft for tools that cause vibrations or shock (for instance a flail mower).

### 6.3.2 Disconnect an implement



Use a stable surface, so the equipment that is disconnected stands firmly and stable. Use stands and such, if necessary (see also the user manual of the front lift system for disconnecting implements)

- Lower the front lift system until the equipment is on the ground.
- Switch off the engine of the tractor and engage the parking brake.
- Disconnect the intermediate shaft.
- Remount the guard plate on the cover of the frontal PTO shaft system!

## 6.4 Driving on the public road



*When driving on the public road, the front PTO system always has to be SWITCHED OFF.*

*If an implement is used that is meant to be used on the public road (see the user instructions delivered with the equipment) above instruction does not apply. However, all other instructions on switching the front PTO system on and off still need be followed.*

## 6.5 Uses

### 6.5.1 Proper use

The front PTO system you purchased is designed solely for:

*Driving machines and components designed to be driven by means of a front PTO system and a suitable PTO intermediate shaft. But only and exclusively after the front PTO system has been assembled on a tractor for which it was designed and with a load smaller than the maximum load allowed.*

### 6.5.2 Improper use

All uses, other than described under 6.5.1, has to be regarded as improper use and are therefore strictly forbidden.

*This improper use also includes:*

- *Driving the implement by other means than the prescribed intermediate shaft.*
- *Using the front PTO system where the system is applied other than installed according to the regulations on the tractor which the system was designed for.*

## 7 Maintenance

- Check every 5 to 10 tractor-operation hours of a new or repaired front PTO system whether all bolts are still tight with the right torques and whether all hydraulic lines are free of leaks.
- Check every 450 operation hours whether all bolts and nuts are still tightened with the right torques and whether all hydraulic lines are free of leaks. Also grease the grease nipples on the universal joints of the intermediate shaft during every inspection (if present, depends on the system) with a good quality multi-purpose lubricant. Check the rubber coupling (if present) for any wear and/or tears.



See the assembly instruction delivered to your dealer for the right torques.

If the V-belt of the tractor has to be replaced, this has to be done by the dealer.

### 7.1 Gear box of front PTO with dry conical coupling

- Check the gear box every 100 tractor-operation hours for possible leaks in the hydraulic system. Contact your supplier on any leaks.
- Check the oil level every half year the see if it reaches the opening of the filling plug. Place the tractor fully horizontal, and add oil if necessary. See the next item for the oil to be used.
- Change the oil from the gear box every year. Use gear box oil with the S4 WE 220 specification, to be used, among others, for:

*Changing the oil:*

- Drain the oil through the draining plug from the box.
- Put back the draining plug and fill the gear box up to the filling plug, with one of the following types of oil, or a type of oil with similar specifications.

**Shell:** OMALA S4 WE 220  
**Total:** Carter SY 220

## 7.2 Gear box of front PTO with integrated coupling (wetplate)

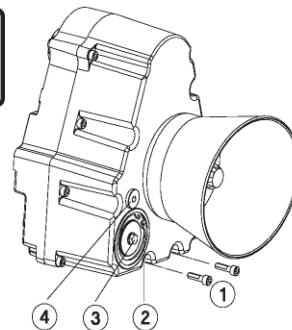
- Check the gear box every 100 tractor-operation hours for possible leaks in the hydraulic system. Contact your supplier on any leaks
- Change the oil in the gear box every half year, or after 450 operation hours of the tractor. Also clean the oil filter in the pump unit.

*Changing the oil:*

- Drain the oil from the gear box. The draining plugs (1) are on the underside of the gear box.
- Remove the snap ring (2) from the pump unit and loosen the M8 bolt (3) to remove the cover.
- Take the oil filter from the pump unit and clean it with for instance a compressor.
- Replace the oil filter, the lid and the snap ring and fill the gear box up to the filling plug to the filling plug (4), with one of the following types of oil, or a type of oil with similar specifications.

*Applicable types of oil:*

BP:	Autran DX III
	Fluid 9
Shell:	Spirax S4 ATF HDX
Esso:	ATF E 25131
Castrol:	Transmax S
Elf:	Elfomatic G2 Syn
	Elfomatic G3
FINA:	Finamatic HP
	Finamatic S6726
Mobil:	Mobil ATF
Texaco:	Texamatic 7045
Valvoline:	ATF Dextron II-E
Beverol:	Dextron II-E
	(Finamatic HP
JD:	Hygard JDMJ 20C
Total:	Fluide AT42
	Fluidematic Syn



Remove and process any superfluous grease and oil in an eco friendly way.

## 7.3 Oil level

The oil level in the gear box of the front PTO system has to reach the underside of the filling plug when the gear box is horizontal and switched off.

If the system is equipped with an oil cooler, more oil has to be added to the system. The procedure if an oil cooler is present in the system:

- *Fill the gear box until the oil level has reached the underside of the filling plug.*
- *Close the gear box with the filling plug.*
- *Let the system run for a while without any load, so the oil is pumped through the cooler.*
- *Switch the system and the tractor off.*
- *Remove the filling plug from the gear box after 10 minutes.*
- *Add oil (if necessary) until the oil level reaches the underside of the filling plug.*

## 7.4 Cleaning the implements

Wait until the machine has come to a **FULL** stand-still before cleaning the equipment driven by the front PTO.

Take care when cleaning the equipment not to aim the water jet directly at the seals of the front PTO system.

## 7.5 Failures and repairs

In case of a failure or a repair, always contact your dealer. Repairs may only be carried out by sufficiently trained personnel.

## 8 Ordering parts

Contact your dealer to order parts. Your orders for parts have to contain the following data:

- 1 Type of tractor
- 2 Serial number of the front PTO system and/or frontal PTO shaft (as indicated on the Zuidberg identification plate)
- 3 Part number according to the parts list delivered to your dealer.

## 9 Environment and disposal



Remove and process any superfluous grease in an eco friendly way. Dispose of oil in an eco friendly way.

If the system has to be disassembled from a tractor all safety regulations and instructions have to be observed that apply to use and assembly. During disassembly all has to be collected and processed in an eco friendly way.

If after disassembly the system has to be assembled again at a later time, all hydraulic lines and hoses have to be plugged to prevent dirt from entering the system. If the system is no longer used after disassembly, the hydraulic oil and grease of all hydraulic parts has to be disposed off in an eco friendly way. All parts have to be removed and disposed off in an eco friendly way.

## 10 Declaration of conformity

**ZUIDBERG**  
MACHINING

### EC Declaration of Conformity

#### "Original EC Declaration"

This declaration relates exclusively to the machine in the condition in which it is brought onto the market, to the exclusion of any components subsequently fitted and/or work subsequently performed by the end user.

**Manufacturer**

Company : Zuidberg Machining BV  
Visitors' address : Middelveld 1  
Postcode and town : 8307 DT ENS  
Country : Netherlands  
Representative : J.E. Zuidberg

**Product description**

Product name : Front PTO  
Description of front PTO : The front PTO is intended to be mounted on a tractor.  
The front PTO is designed in order to drive suitable machines and components using a connecting shaft.  
Types : ZFK-, P- and Q front PTOs.

We, the manufacturer of the front PTO, declare entirely on our own responsibility that the machine to which this declaration relates is compliant with all applicable provisions of the **Machinery Directive 2006/42/EG** and the following standards:

- NEN-EN-ISO 14121-1.
- NEN-EN-ISO 14121-2.
- NEN-EN-ISO 12100-1 (12 / 2003).
- NEN-EN-ISO 12100-2 (12 / 2003).
- NEN-ISO 8759-1 (03 / 1998).

Date : 18-04-2011  
Place : Ens  
On behalf of the manufacturer : J.E. Zuidberg  
Managing Director

Signature:



**Zuidberg Frontline Systems B.V.**



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