User Manual

Drinking systems

Code No. 99-97-0013

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Invalid!

Replaced by 99-97-0707

Overview of changes / updates in the manual

Chapter name	Type of change / update	Product information / *Editor's initials*	Issue date	Page
3.1 "Recommended number of birds per nipple"	Flow rate diagrams inserted	SSa	05/2017	20
complete revision	Structure adapted, general information, safety information, product information and check list added	SSa 1258 1262 1321 1362 1430 1480 1526 1576 01-0072	03/2017	misc.

1 Basic instructions

!	**Important:** Please take care of these documents and keep them close to the system **at all times for quick reference**. All persons operating, maintaining and cleaning this system have to be familiar with the contents of these instructions. Observe these security instructions whenever any work is carried out on this system! Manuals can be reordered from **Big Dutchman** when necessary.

One of the following information is required to reorder a manual:

- the 8-digit code number of your language version [99-97-xxxx] as stated on your manual's cover;
- the complete title of the manual including information on the type of instruction;
- if stated, the 8-digit universal code number [99-94-xxxx] including information on the required language version.

1.1 Purpose of the BD manuals

Depending on the intended use, **Big Dutchman** provides the following documentation:

1. Assembly manual
2. User manual
3. Operation manual (assembly and use of the system)
4. Spare parts lists
5. "Local add-on manuals": (for products which differ from those of the original manual in specific countries).

The type of instruction of your manual can be found on the cover above the title.

1.2 Basics

The **Big Dutchman** system has been built with state-of-the-art technology and fulfils the recognized technical safety requirements. It is safe to operate. However, danger to the life and limb of third parties or impairments to the system or other property can occur if it is used in an incorrect manner.

The system may only be installed, used, serviced and repaired under the following conditions:

- in accordance with its designated use
- in an excellent state from the safety and technical point of view
- by trained, safety-conscious personnel familiar with the hazards associated with the machine's use.

In the event of special problems which are not described in detail in this manual, we recommend to contact us for your own safety.

1.3 Explanation of the symbols and structure of these instructions

1.3.1 Structure of the safety instructions in this manual

Basic structure:

Pictograph	Type of danger
	Possible consequence(s) of non-compliance
Signal word	• Measure(s) against the danger

Meaning of the signal words:

Pictograph	Signal word	Meaning	Consequences of non-compliance
Possible personal injuries:			
possible safety symbols: see chapter 1.3.3	**DANGER**	**directly** dangerous situation	**Will** lead to death or severe injuries.
	WARNING	**possibly** dangerous situation	**May** lead to death or severe injuries.
	CAUTION	**possibly** dangerous situation	**May** lead to minor injuries.
Possible damage to property:			
	**CAUTION**		**May** lead to damage to property

1.3.2 Structure of the general instructions in the manual

IMPORTANT!

This symbol indicates important information. There is no risk of personal injuries or damage to property.

1.3.3 Special safety symbols in the manual and on the system

These safety symbols (pictographs) illustrate remaining dangers when handling the system. They are used in the safety instructions of this manual (also refer to chapter 1.3.1) and on the system.

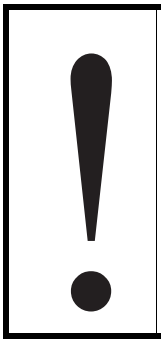
	Warning: general danger

	Warning: dangerous electric tension

 **CAUTION**	**Safety symbols and instructions on the system must always be easily visible and undamaged.** • If they are soiled by dust, manure, feed remains, oil or grease, clean them with a water-detergent mixture. • Damaged, lost, or unreadable safety symbols have to be replaced immediately. • If a safety symbol or instruction is fixed to a part to be replaced, ensure that it will be fixed to the new part as well.

1.4 Necessary qualifications of the persons working with the system

1.4.1 Employing external personnel



IMPORTANT:

The supervisor is responsible for the safety of external personnel.

Mounting works are frequently carried out by external personnel not familiar with the circumstances specific for the system and the inherent dangers.

You as operator are to survey the personnel and to define responsibilities and powers. Inform these people in detail on the dangers of their area of work. Check their method of working and intervene as soon as possible.

1.4.2 Assembly

Assembly of the system can be carried out by the farmer himself or by a person authorized by him. We assume that the operator or the authorized person either have received technical training or have the necessary knowledge or practical experience that are necessary for a proper assembly of the system.

1.4.3 Electrical installation

Work on the electric components may only be carried out by technically skilled personnel and according to German Industry Standards, VDE regulations, safety instructions and electro-technical regulations of the power supply industry (EVU) and the applicable national regulations.

1.5 Obligations

Closely adhere to the instructions in this manual.

A basic condition for safe operation and trouble-free handling of this system is the knowledge of the basic safety instructions and regulations.

This manual, particularly the safety instructions, must be observed by all persons working on this system. Moreover, the regulations and instructions for the prevention of accidents valid at the respective place of use have to be observed.

The manufacturer is not responsible for any damage to the system resulting from changes not authorized by **Big Dutchman**.

1.6 Warranty and liability

Warranty and liability claims regarding personal injury or property damage are excluded if they result from one or several of the following causes:

- inappropriate assembling of the system;
- non-compliance with the instructions in this manual regarding transport, storage and assembly;
- unauthorized modifications to the system;
- disasters caused by foreign matter or force majeure.

1.7 First aid

In the case of an accident, a first-aid kit must always be available at the place of work, unless otherwise specified. Material taken out and used is to be replaced immediately.

If you need help, describe the accident as follows:

- where it happened
- what happened
- the number of persons injured
- what type of injury
- who is reporting the accident.

1.8 Transport

Due to the high number of possible building units and parts, we can only supply general information in this manual. This information should be sufficient for experienced technicians and transport experts. If you have questions, please contact **Big Dutchman**.

The system is supplied in pre-assembled building units and packaging units. They have to be secured adequately against shifting and tilting during transport. The transport has to be carried out by experts.

The building and packaging units are transported to the construction site with appropriate means of transport. To avoid any possible damage, make sure that the units are loaded and unloaded carefully. If the goods are transported by hand, please keep in mind the reasonable human lifting and carrying abilities.

See that the transport is carried out safely. Avoid bumps and impacts and see to a secure standing at every stage of the transport.

The scope of the delivery is listed in the shipping documents. Please check for completeness upon receipt. Possible transport damage and / or missing parts have to be reported immediately in writing.

1.9 Storage

 **CAUTION**	**Thermal expansion causes by temperature changes**
	• Store the building parts where they will be needed so that their temperature can adjust to the environment.

The storage area should be dry and roofed. If this is not possible, the parts should be covered with PE-foil and stored with enough ground clearance. Make sure that, when stored, the parts are protected against dust and moisture.

 **CAUTION**	**Storage of electrical parts**
	• Store all electrical parts in a dry and closed space.

Open-air storage is acceptable only for a short time. If stored outside for a longer time, the parts have to be protected against harmful environmental influences. They also have to be protected against mechanical damage.

1.10 Pollution abatement regulations

All works on and with the installation have to be carried out in compliance with the legal requirements concerning waste prevention and proper recycling / disposal of waste.

Water pollutants like lubricating grease and oils as well as solvent-containing cleaning solutions may not pollute the soil or reach the canalisation! These materials have to be kept, transported, collected and disposed of in appropriate containers!

1.11 Waste disposal

After completing the assembly, dispose of the packing material and all remains which cannot be used further according to the legal provisions for recycling.

1.12 Notes for use

In the interest of further development, we reserve the right to modify design and technical data of this installation.

No claims can therefore be derived from any information, illustration or drawing and description contained herein. Errors and omissions excepted!

Inform yourself about adjusting, operating and maintenance requirements before putting the system into operation.

Apart from the safety information in this manual and the obligatory accident prevention regulations applicable in the user's country, please heed the accepted technical rules (safe and expert working in accordance with UVV, VBG, VDE etc.).

1.13 Copyright

This manual is copyrighted. The information and drawings included in this manual shall not be copied without the manufacturer's consent, nor shall they be misused or be disclosed to third parties.

The contents of this manual can be altered without prior notice.

If you find mistakes or unclear information in this manual, please do not hesitate to let us know.

All trademarks mentioned or shown in the text are trademarks of their respective owners and deemed patented.

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2 Safety instructions

2.1 Instructions on accident prevention

Before operating, cleaning, maintaining or disassembling this system, the operator or person authorized by him is obliged to instruct any person carrying out any of these works on

- the remaining dangers when carrying out these tasks
- the applicable rules and regulations regarding accident prevention and to ensure they are complied with!

The basis for these are:

- the installation's technical documentation, specifically the included safety instructions,
- the applicable safety and health regulations applicable at the place of work.

2.2 General safety instructions

	**Risk of injury**
	Children in the area of the system are at risk of injury as they can often not be supervised sufficiently and are not able to recognize hazards.
WARNING	• Ensure that children do not use the system as a playground and are not left unsupervised in the vicinity of the system. Explain remaining dangers fully to the children.

The respective safety precautions and other generally accepted regulations regarding safety and operational health have to be observed.
Please check safety and function control devices to ensure safe and accurate operation

- before putting the system into operation again
- in adequate intervals (confer maintenance intervals)
- after modifications or repairs.

Check the proper functioning of the system after any kind of repair works. You may only put the device into operation when all protective system have been put into place again.

Also observe the regulations of local water distribution and power supply companies.

2.3 Personal safety instructions

These safety instructions are intended to make you familiar with important information on the handling of the system. They are important for your safety and for the safety of the system.

The farm staff has to familiarize itself with the function and arrangement of the safety devices, in particular of the emergency stop button.

The farm staff has to regularly participate in health and safety briefings (according to the provisions e.g. by trade associations).

Maintenance works may only be carried out by specially trained personnel.

 **WARNING**	**Risk of injury**
	Lack of knowledge about the structural design of the system can lead to injury. • Make yourself familiar with the design and construction of the system under sufficient lighting! • Inform yourself as responsible person for the system and your employees about the remaining dangers in connection with this system!

2.4 Personal protective equipment and measures

 **WARNING**	**Risk of injury** **The following instructions apply to all works carried out on the system.** • Wear **close-fitting protective clothing** and **protective footwear**. • Use **protective gloves** where there is a risk of hand injuries and **safety goggles** where there is a risk of eye injuries. • Do not wear **any rings, necklaces, watches, scarves, ties or other items** which could get caught in parts of the system. • Make sure that **long hair is always tied back**. Hair can get caught in powered or rotating working units or parts of the installation, resulting in severe injuries. • When working underneath the installation **always** wear a **hard hat**!

2.5 Use of electrical appliances

You as the person responsible for the system or his agent have to ensure that the system with its electrical appliances is operated and maintained according to the local electro-technical regulations.

 **WARNING**	**Risk of injury and danger to life** **Dangerous electric tension may be bare in the case of open control units and may cause severe injuries or lead to death!** • Be aware of the danger and keep workers of other professions away from the danger zone. • Installations and works on electric components/building units may only be carried out by qualified persons according to electro-technical regulations (e.g. EN 60204, DIN VDE 0100/0113/0160).

- Immediately switch off the system in the event of malfunctions of the power supply units. Check that the electrical equipment is not alive.
- Check the electrical wiring and cables for recognisable damage before putting the system into operation again. Replace damaged wiring and cables before taking the system into operation.

 **WARNING**	**Danger of short circuits**
	Never repair or shut defective fuses. • Defective fuses should be replaced by new ones immediately.

- Never cover an electrical motor. This can cause high temperatures resulting in fires and the destruction of the equipment.
- Always keep the switch cabinet and all terminal and connection boxes closed.
- Damaged or broken plugs should be immediately replaced by an electrician.
- Do not pull the plug from the socket at the flexible cable.
- For the respective connections please see the enclosed connecting plan of the system parts delivered.

2.6 Special safety instructions

2.6.1 Danger zone

The individual zones of the **Big Dutchman**system are constructed differently.There are several ejecting, rotating or sliding parts that might be a risk if you are not familiar with their type of construction.

 **WARNING**	**Risk of injury**
	Lack of knowledge regarding the system's type of construction increases the risk of injury. • Never reach into the running system. First stop the system and secure it against an inadvertent restart. • Assure yourself **before reaching into the system** that the main switch is in the OFF position and cannot be put in the ON position without your knowledge.

The system has been equipped with all mechanisms that guarantee a safe operation. In places where the danger zone could not be safeguarded totally, in consideration of the operational reliability, safety signs have been placed. They indicate remaining technical dangers when handling the system and give information on how to avoid these dangers.

 **CAUTION**	**Safety symbols and instructions on the system must always be easily visible and undamaged.**
	• If they are soiled by dust, manure, feed remains, oil or grease, clean them with a water-detergent mixture. • Damaged, lost, or unreadable safety symbols have to be replaced immediately. • If a safety symbol or instruction is fixed to a part to be replaced, ensure that it will be fixed to the new part as well.

2.6.2 Entire system

Only use suitable tools and observe the local accident prevention regulations.

Ensure that the system is switched off before performing any repair or maintenance work or cleaning, or rectifying any functional defects. Disconnect the system from the power supply and secure it against being switched back on.

Secure the system by placing a “Do not use” sign on the master switch and include a notice about maintenance being performed, if required.

 **WARNING**	**Risk of injury** **Parts lying about on the system and in its vicinity can cause persons to stumble and/or fall and thus risk injuring themselves by contact with system components.** **Lack of knowledge about the structural design of the system can lead to injury.** **Party lying about in or on the components can lead to serious damage of the system.** • Never deposit objects (e.g. spare parts, replaced parts, tools, cleaning tools etc.) in the accessible areas of the system or in the surrounding areas have having carried out works on the system! • Make yourself familiar with the design and construction of the system under sufficient lighting! If this is not possible, inform yourself about any remaining dangers in connection with this system! • **Before** restarting the system, assure yourself that all loose or replaced parts have been removed from the system components! • The device may only be put into operation after all protective systems have been put into place again and are functioning.

2.7 Individual parts

2.7.1 Electrical components

 **WARNING**	**Risk of electric shocks and short circuits** **Live parts may be bare while different kinds of work are carried out. Touching live parts might lead to injuries caused by electric shock and short circuits.** • Before performing any repair or maintenance work, turn the main switch to "OFF" and display a sign warning that repair or maintenance work is in progress! • Never touch bare electrical components. Equipment with bare electrical components must not be used by the farm staff.

2.8 Protective-equipotential bonding (earthing) of the system

The system must be earthed professionally at suitable points and according to the valid local guidelines and standards (e.g. IEC 60364-7-705 mod. 2006 / DIN VDE 0100-705 Low-voltage electrical installations - part 7-705: Requirements for special installations or locations - Agricultural and horticultural premises) for protective-equipotential bonding.

The earthing points must be connected with the foundation earth electrode.

The material required for earthing is not included in the delivery from Big Dutchman.

Recommended connection points:

1 x per system row near to the foundation earth electrode.

2.9 Positioning of electrical drives and protected cable guiding

The following item is decisive for a smooth and long-term safe operation:

- the correct positioning within the system according to the assembly instructions.
- preferred assembly outside the direct bird area if no clear specification was made or cannot be made.
- a correctly installed and protected electrical cabling.

If carried out carefully, the above mentioned items contribute significantly to the work safety and animal welfare as well as to the preventive fire protection.

Notes regarding the assembly positions for the drives can also be found in the planning documents. The assembly positions described there must be observed.

	**Consequences:**
	Bare live cables can cause electric shocks to humans and animals or short circuits in the electrical installation. Bent cables can lead to cable breaks. These can cause a fire due to a possible overheating of the cable.

The following points must be observed for the drive units and their cable guiding in the animal area:

1. **Protected cable guiding:**

   Lay the cables with protection so that the animals cannot reach the cables or their live wires!

2. **Minimum permissible bending radius of the cables and wires:**

   Observe the minimum permissible bending radius depending on the mechanical structure of the cable/wire!

	**Consequences:**
	Cable breaks can occur. Cable breaks can cause short circuits or overheating of the cable and can therefore lead to fire.

3. **Tension-protected cable laying:**

   Fasten the cables/wires by means of clamps, straps, strain relief, etc. so that the electrical properties of the cables and wires are maintained for the loads to be expected during operation.

4. **Cable entry in devices, junction boxes, drives etc. from below:**

   Always guide the cables and wires from below into the devices, junction boxes, drives, etc., if possible!

   However, if this type of cable guidance is not possible, lay the cable with a water drip bow front of the cable entry of a components. The water can drip off from this bow before entering the component.

5. **Observe protection class (splash protection):**

   The splash protection must be ensured when entering the cables in a housing.

6. **Cable guidance through sharp-edged components:**

   Protect cables and wires which are guided through sharp-edged drill holes at these positions of passing!

	**Consequences:**
	Bare cables can cause an electric shock when touching and can result in a short circuit.

For all works, the following points regarding assembly and cabling must be observed, among other things for work protection and animal welfare as well as preventive fire protection:

- The installation, connection and put into operation of electrical components may only be carried out by skilled electricians.

Definition skilled electrician: (according to DIN VDE 1000-10)	A skilled electrician is a person who can evaluate the works assigned to him and recognise possible dangers due to his technical training, knowledge and experiences as well as knowledge of the relevant regulations.

- Notes and specifications of the connection diagrams and documentations belonging to the system.
- Following international regulations:
  - **IEC 60364-4-41 / VDE 0100-410**
  - **IEC 60364-5-51 / VDE 0100-510**
  - **IEC 60364-5-52 / VDE 0100-520**
  - **IEC 60364-7-705 / VDE 0100-705**
- The rules, regulations and norms valid in the respective country, which relate to a professional construction of an electrical system.

2.10 Safety contrivances

  **WARNING**	**Risk of injury and danger to life** **Defective or disassembled safety contrivances can lead to severe injuries or to death!** • It is strictly forbidden to remove or put out of operation any safety contrivance. • Should the safety contrivances be damaged, the system has to be put out of operation immediately. The main switch has to be locked in zero position and damages have to be eliminated. • Make sure that all safety contrivances are properly mounted and functioning after all works on the system and before putting the system into operation again

2.11 Dangers resulting from non-compliance with the safety instructions

Non-observance of these instructions can cause severe danger for life and health of people or can lead to material or environmental damages and to the forfeiture of any claim for damages. To be precise, the non-observance of these instructions can lead to:

- Failure of vital functions of the installation
- Failure of prescribed maintenance methods
- Dangers for people owing to electrical and mechanical influences.

3 System description

Besides an adequate feed supply, the provision of fresh, clean drinking water is extremely important for birds. To achieve this, a reliable water supply must be available. It has to be free from contamination and within easy reach of the animals.

Big Dutchman fulfils these requirements by different drinking systems with modern nipple- and round drinkers.

The nipple drinkers installed suspended or standing can easily be raised up to the house ceiling by means of cable winches. This also significantly facilitates cleaning and moving birds in and out of the house.

Nipple drinker lines:

- Pressure control unit or ball tank with flushing system
- Nipple pipe with different nipple designs (depending on the production target)
- Swivelling aeration or automatic rinsing aeration with water level indicator
- Suspension system
- Anti-roost wire

Drinker accessories with:

- Water connection unit with water meter (mechanical or electronic)
- Medicator
- Medicine mixing tank

Round drinkers

In addition to the nipple drinkers, Big Dutchman also offers the round drinker Jumbo-B (broiler), Jumbo-T (turkey), Jumbo-J (junior) and Jumbo 98.

These round drinkers can be installed in standing or suspended position. Therefore, they are equally suited for small and large birds.

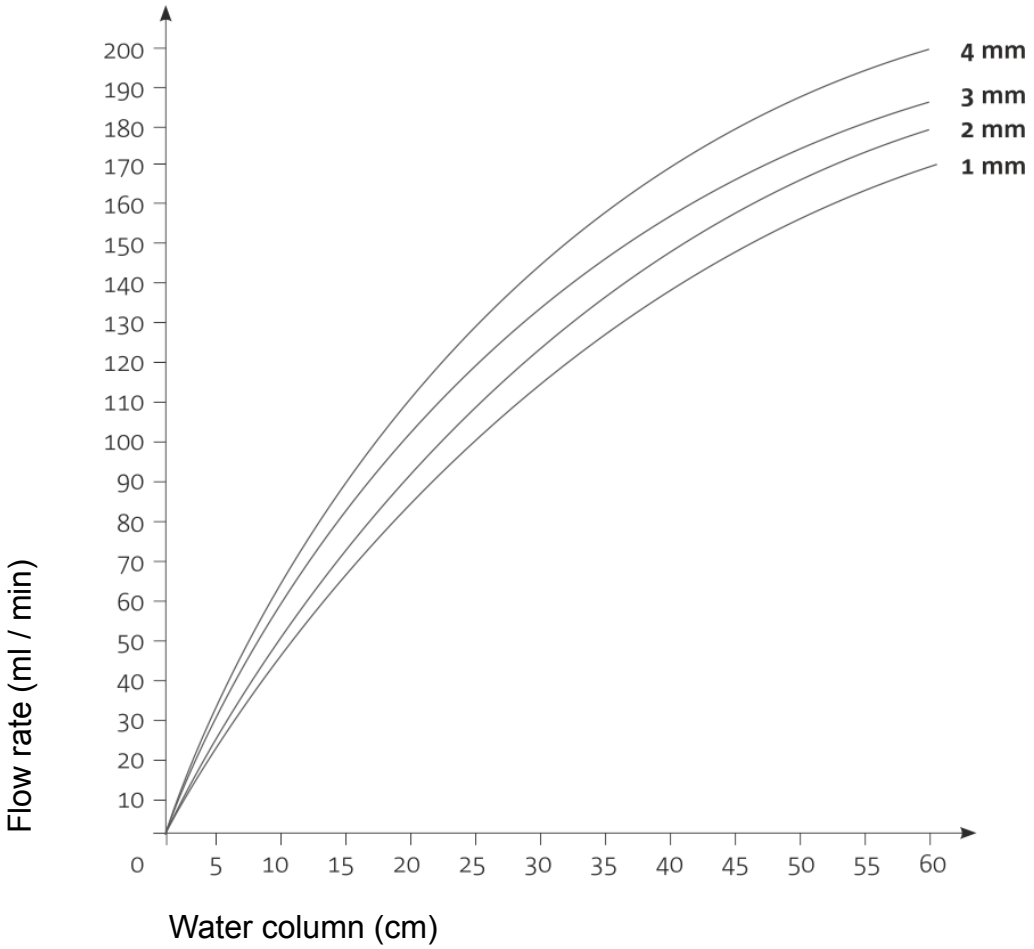
Thanks to the narrow water jet running along its side, the bell remains substantially clear. The water does not splash over the rim.

Moreover, chick drinkers (chick founts) and the poultry drinker Minimaster can be used with or without connection material.

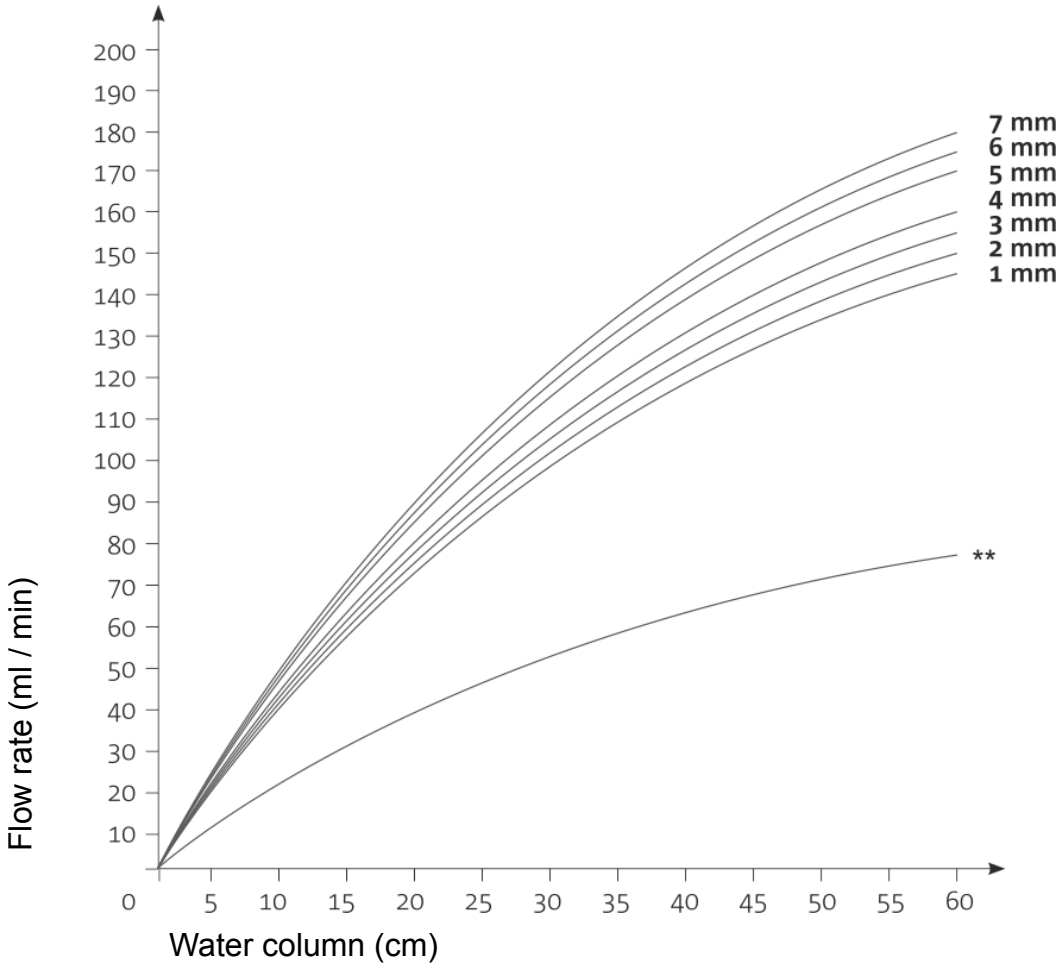
3.1 Recommended number of birds per nipple

Meanings: LW= week of age / LG= live weight

Nipple Top- 45/30-360 L4077 screwable (Code No.: 30-00-3207)				
Flow rate [ml / min]		**Use**	**Number of birds per nipple**	
vertical	**horizontal**		**Central Europe**	**Hot regions**
45	**30**	broilers (<2.3kg LG)	12-15	8-10
		broilers (2.3kg LG)	8-12	6-8
		broiler parents (0-18. LW)	10	8
		layer breeders (0-18. LW)	12-16	9-12
		pullets	12-16	9-12
		duck rearing (<3. LW)	25-30	19-23
		finishing ducks (<3 kg LG	8-12	6-9

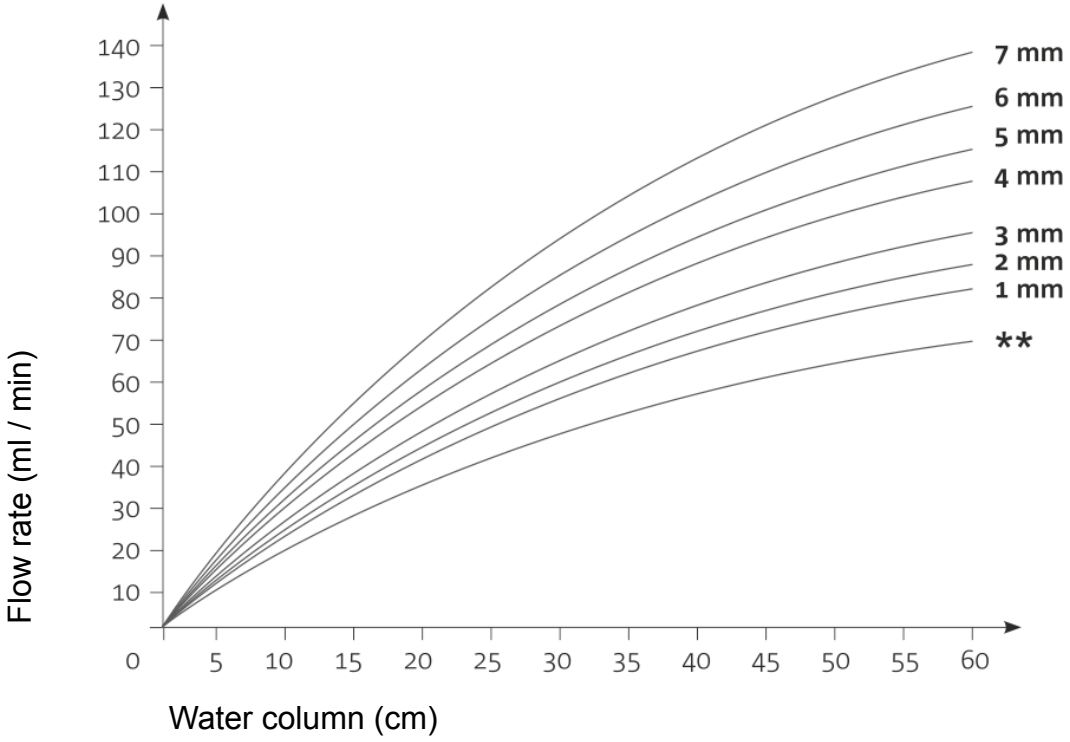


Nipple Top- 80/40-360 L4022 screwable (Code No.: 30-00-3419)				
Flow rate [ml / min]		Use	Number of birds per nipple	
vertical	horizontal		Central Europe	Hot regions
80	40	broilers (<2.3kg LG)	20-25	15-19
		broilers (2.3kg LG)	15-18	11-14
		broiler parents (0-18. LW)	10	8
		broiler parents (0-64. LW)	8-10	6-8
		layer breeders (0-18. LW)	12-16	9-12
		pullets	12-16	9-12
		duck rearing (<3. LW)	25-30	19-23
		finishing ducks (<3 kg LG	8-12	6-9



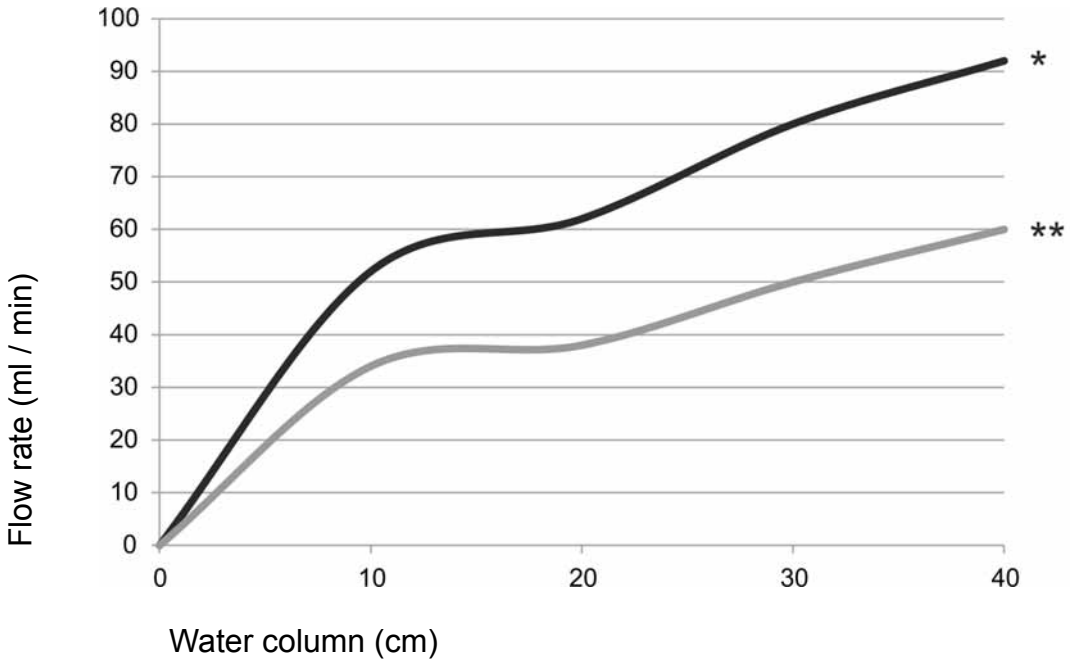
** actuation from the side

Nipple Top- 45/30-360 orange L4078 screwable (Code No.: 30-00-3208)				
Flow rate [ml / min]		**Use**	**Number of birds per nipple**	
vertical	**horizontal**		**Central Europe**	**Hot regions**
45	**30**	broilers (<2.3kg LG)	12-15	8-10
		broilers (2.3kg LG)	8-12	6-8
		broiler parents (0-18. LW)	(10)[1]	(8)[1]
		layer breeders (0-18. LW)	(12-16)[1]	(9-12)[1]
( )[1] = better 30-00-3207		pullets	12-16	9-12



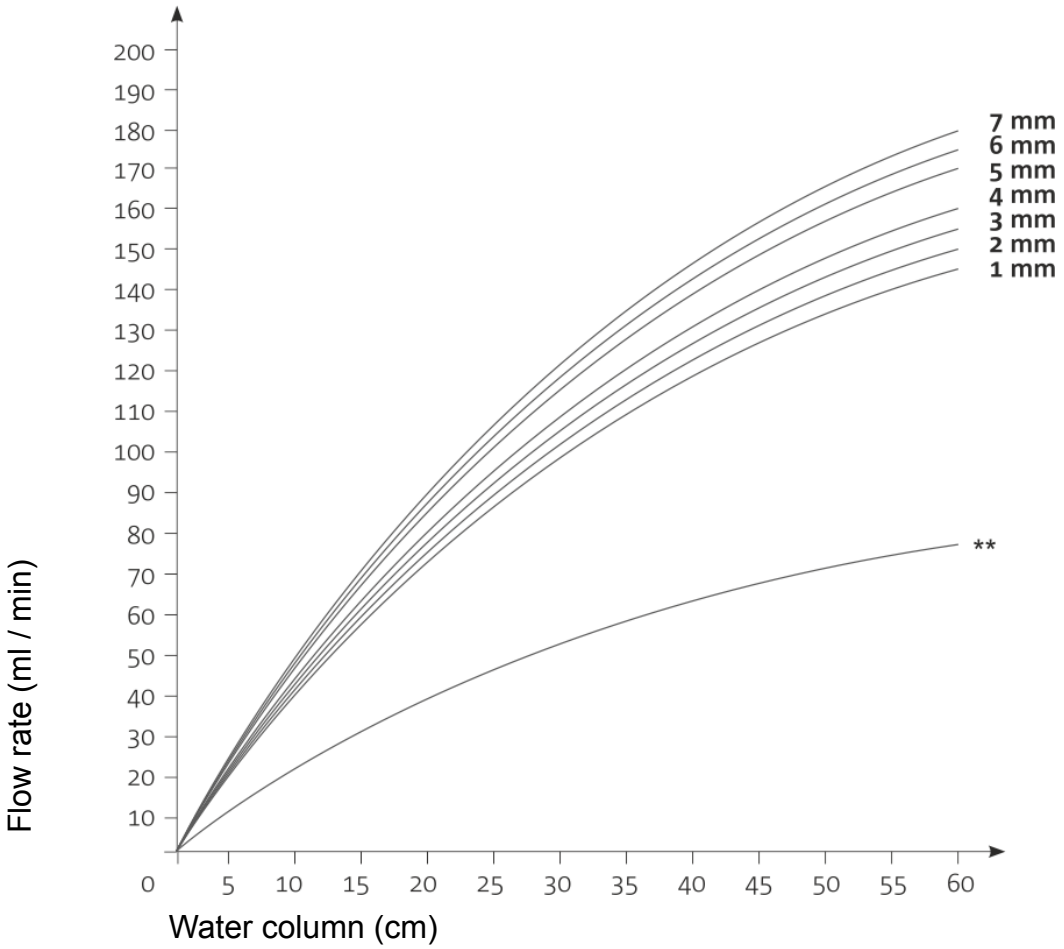
** actuation from the side

Nipple 10-4610-40/30-360° orange (Code No.: 30-00-3250)				
Flow rate [ml / min.]		**Use**	**No. of birds per nipple**	
vertical	**horizontal**		**Central Europe**	**Hot regions**
45	**30**	Broilers (<2.3kg live weight)	12-15	8-10
		Broilers (2.3kg live weight)	8-12	6-8
		Pullets	12-16	9-12



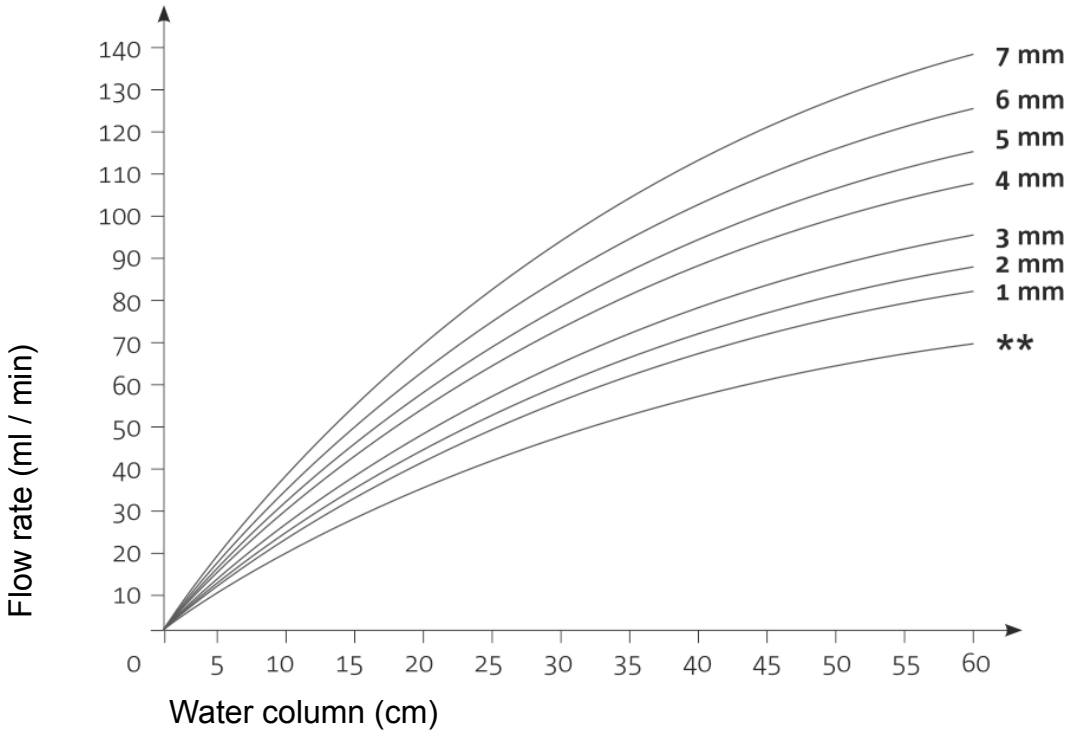
* lifted ** tilted

Nipple Top- 80/40-360 orange L4024 screwable (Code No.: 30-00-3414)				
Flow rate [ml / min]		**Use**	**Number of birds per nipple**	
vertical	**horizontal**		**Central Europe**	**Hot regions**
80	**40**	broilers (<2.3kg LG)	20-25	15-19
		broilers (2.3kg LG)	15-18	11-14
		broiler parents (0-18. LW)	$(10)^2$	$(8)^2$
		layer breeders (0-18. LW)	$(12\text{-}16)^2$	$(9\text{-}12)^2$
$(\ )^2$ = better 30-00-3419		pullets	12-16	9-12



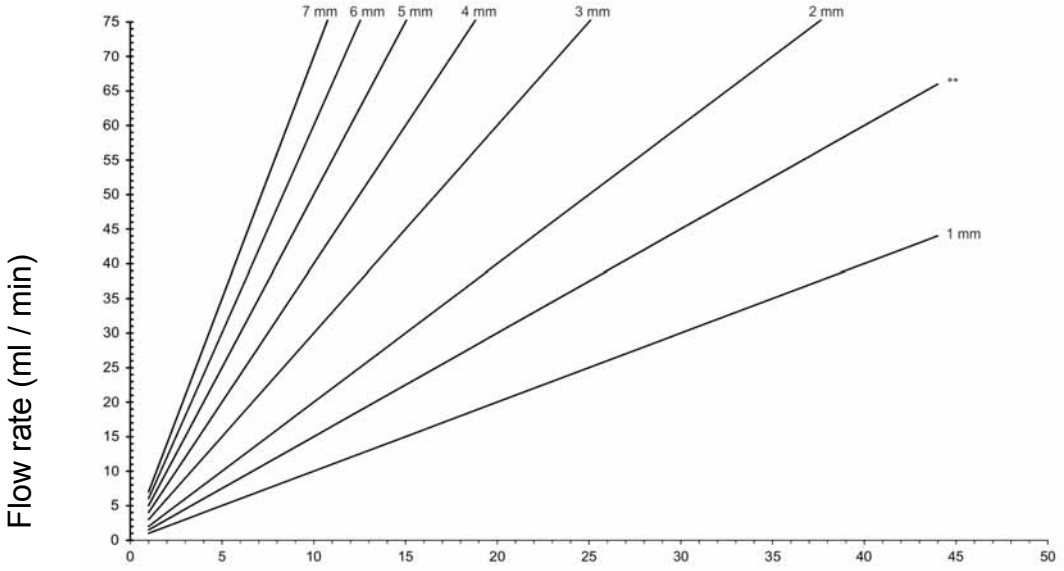
** actuation from the side

Nipple Combi Master- 45/35-360 orange L4050 screwable (Code no.: 30-00-3570)				
Flow rate [ml / min]		Use	No. of birds per nipple	
vertical	horizontal		Central Europe	Hot regions
45	35	Broilers (<2.3kg live weight)	20-25	15-19
		Broilers (2.3kg live weight)	15-18	11-14
		Broiler breeders (0-18 weeks)	8-10	6-8
		Layer breeders (0-18 weeks)	10-12	8-10
		Pullets	10-12	8-10



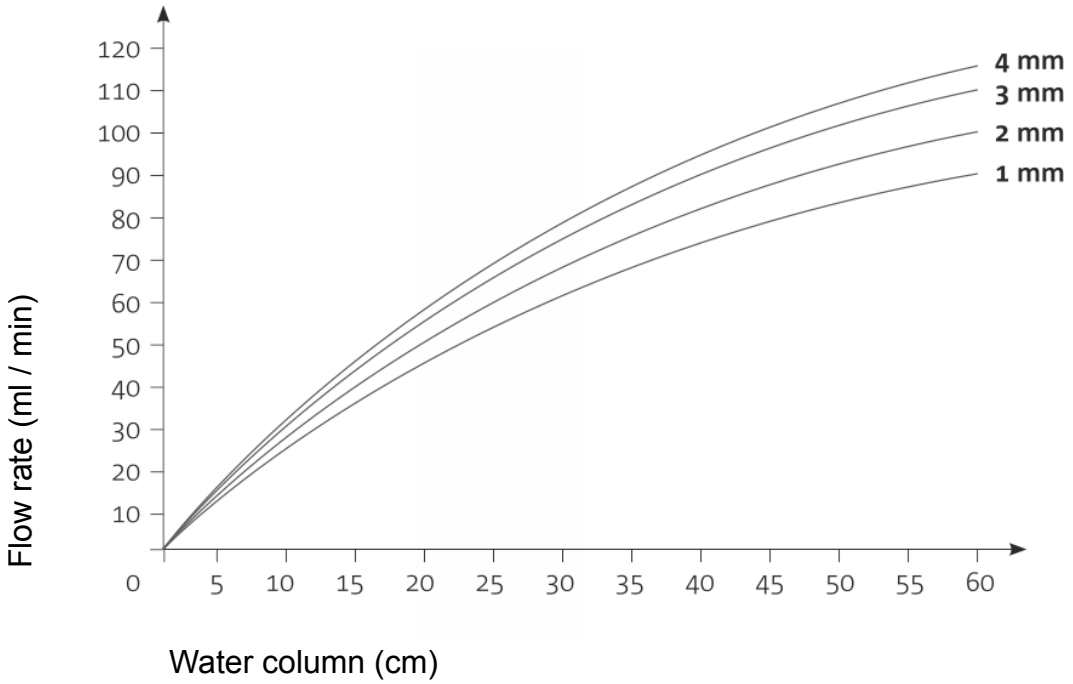
** actuation from the side

Nipple SaniStar 4,5-45/30-360 orange L4015-02 pluggable/arch (Code no.: 30-61-5000)				
Flow rate [ml / min]		**Use**	**No. of birds per nipple**	
vertical	**horizontal**		**Central Europe**	**Hot regions**
45	**30**	Broilers (<2.3kg live weight)	12-15	8-10
		Broiler breeders (0-18 weeks)	10	8

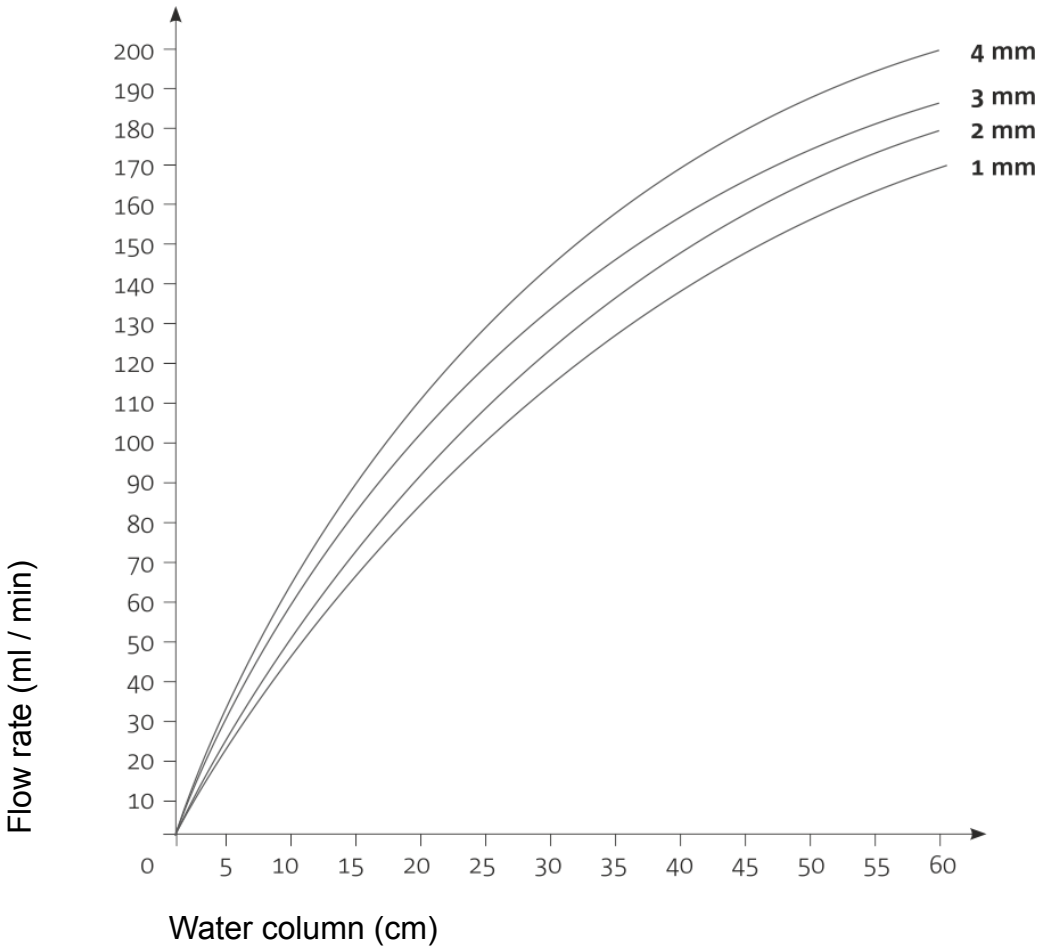


** actuation from the side

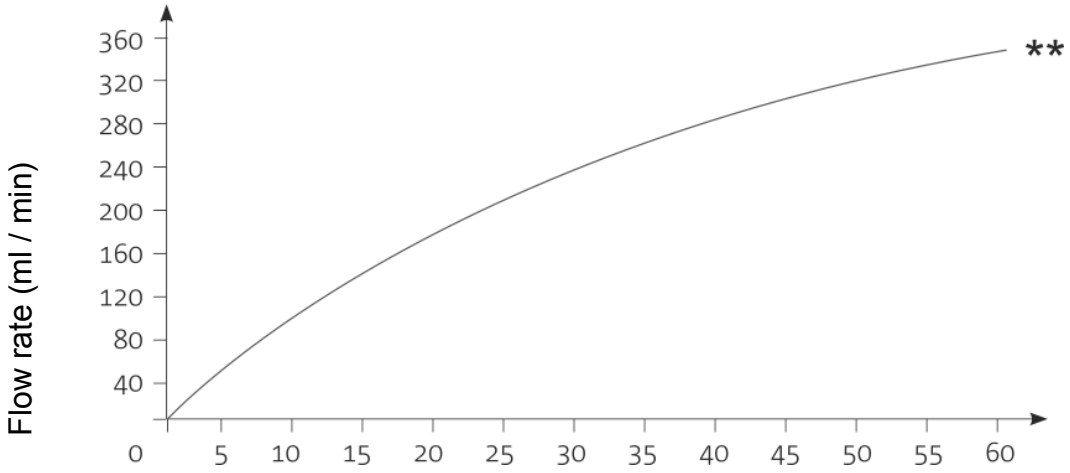
Nipple screw- 50/- #4071 screwable (Code No.: 30-00-3107)			
Flow rate [ml / min]	**Use**	**Number of birds per nipple**	
		Central Europe	**Hot regions**
50	laying hen	8-10	6-8
	layer breeders (18.-72. LW)	8-10	6-8



Nipple screw-100/- #4001 screwable (Code No.: 30-00-1026)			
Flow rate [ml / min]	**Use**	**Number of birds per nipple**	
		Central Europe	**Hot regions**
90-100	laying hens	8-10	6-8
	broiler parents (18.-64. LW)	8-10	6-8



Turkey nipples L4070 (Code No.: 30-61-5350)			
Flow rate [ml / min]	**Use**	**Number of birds per nipple**	
		Central Europe	**Hot regions**
180-200	turkey rearing	30-40	
	hen finishing	25-30	
	male finishing	20	



** actuation from the side

3.2 Designated use

The **Big Dutchman** nipple drinkers and round drinkers are only intended for the normal use in the poultry management to provide the chicks, pullets, laying hens and turkeys with fresh clean water.

The **Big Dutchman** system may only be used according to its designated use.

Every other use is considered non-designated. The manufacturer does not accept liability for damages resulting from other uses, the user alone has to bear the risk. The designated use also includes the exact following of the operation, maintenance and repair conditions as prescribed by the manufacturer.

3.3 Avoidance of foreseeable misuse

The following uses of the **Big Dutchman** drinking systems are not permitted and are considered as improper use:

- The watering of other animal species than poultry.
- Watering of animals with other liquids than drinking water.

  Exception: feed additives and medicines which are usually administered via the drinking system.
- The use outdoor, especially in areas that are susceptible to frost.
- In case of suspended drinker lines: Raising or moving other loads than the actual drinker line.

A non-designated use will lead to a liability exclusion by **Big Dutchman**.

The operator of the system exclusively bears the risk resulting from misuse!

4 Water quality and water consumption

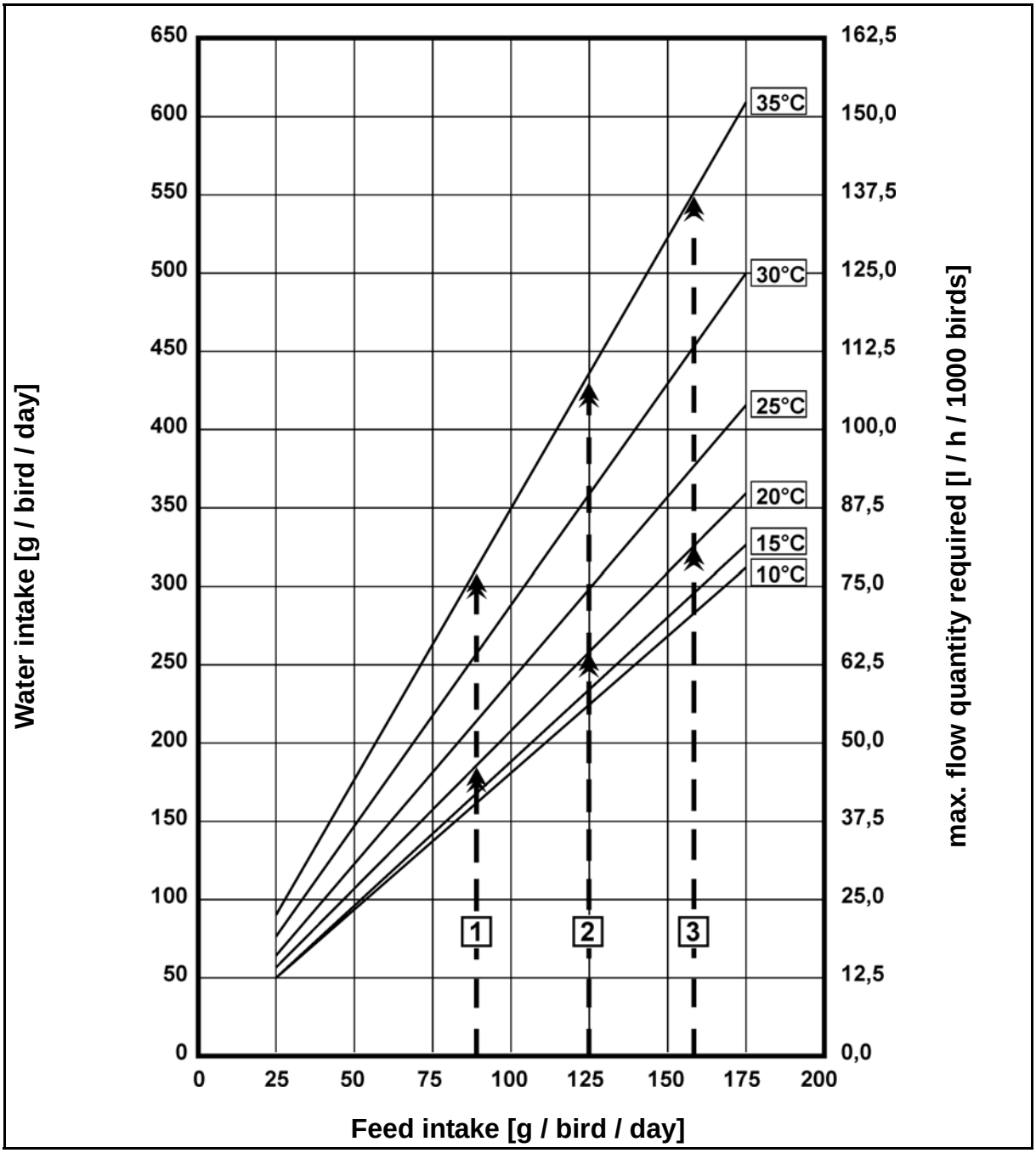
4.1 Parameters and limit values for water quality

Parameter	Unit	Recommended limit value	Remarks
Germs total	Quantity/ml	100	
Coliform bacteria	Quantity/ml	0	
Nitrate	mg/l	25	Values between 3 and 20 mgl/l can already stunt the development.
Nitrite	mg/l	5	-
Chloride	mg/l	250	Values of approximately 14mg/l can already be harmful if the sodium value is higher than 50 mg/l.
Copper	mg/l	0.6	Higher values cause a bitter taste.
Lead	mg/l	0.02	Higher values are toxic.
Sodium	mg/l	50	Values higher than 50 mg/l stunt the development when chloride and sulphate values are also high.
Sulphate	mg/l	240	Higher values cause diarrhoea. If chloride or magnesium values are high, development is stunted at more than 50 mg sulphate per litre.
Zinc	mg/l	1.5	Higher values are toxic.

4.2 Parameters and limit values for the connection unit and drinking system

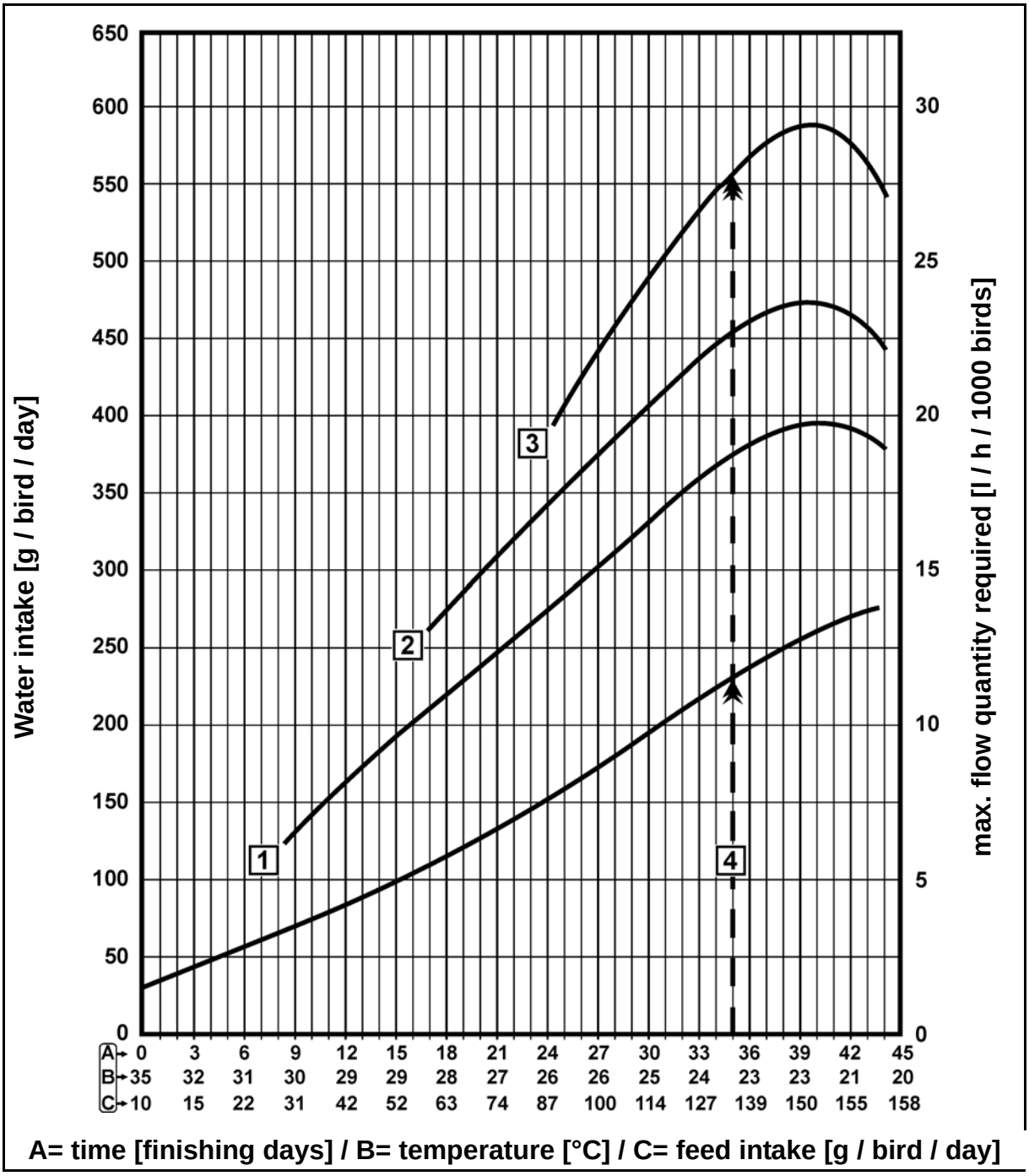
Parameter	Unit	Recommended limit value	Remarks
Grain size for insoluble particles and suspended matter	µm	<60	In addition, a filter is necessary
pH value		6.5-8.5	
Total hardness	mmol/l	<20	
Calcium	mg/l	<100	
Magnesium	mg/l	<50	
Iron	mg/l	<0.2	
Manganese	mg/l	<0.05	

4.3 Water intake of birds and necessary flow quantity in connection with feed intake and housing temperature



1	= e.g. pullet 18th week; 1.5kg live weight
2	= e.g. layer; 2.0kg live weight (LG); 90% laying performance (LL)
3	= e.g. broiler breeder; 3.4kg live weight (LG); 84% laying performance (LL)

4.4 Water intake of birds and necessary flow quantity in connection with feed intake and increasing housing temperature in the case of broilers



A= time [finishing days] / B= temperature [°C] / C= feed intake [g / bird / day]

1	= Temperature increase 5°C
2	= Temperature increase 10?
3	= Temperature increase 15?
4	= e.g. broiler; 1.5kg live weight (LG); 35th day

5 Broiler Management Procedure

The birds' size, temperature and other factors can influence the ideal adjustment of the drinker height and water pressure.

During winter, it is recommended to adjust the pressure lower since sprayed water does not rapidly dry.

- **Wet litter can have following causes:**
  - Nipple or round drinkers are suspended too deep or too high
    - adjust height
  - Water pressure too high
    - adjust pressure

5.1 Before moving the chicks in (water supply with nipple drinker)

The correct distance from the ground to the nipple stem is based on the birds' natural upright drinking behaviour.

- Make sure that the water lines have been installed correctly, approx. at a distance of 60-90 cm from the feed lines.
- Ensure that the nipple density is correct. See planning instructions.
- Check the filter insert. Flush or replace it, if necessary.
- Adjust the water lines correspondingly to the house floor.
- Level the shavings under the drinker lines, remove high / deep places.
- Adjust the drinker line to the correct height for day-old chicks.
- Make sure that water flows of each drinker and thus air escapes from the drinker.
- Actuate the nipples manually some minutes before the birds are moved in (e.g. with a clean broom) so that the nipples form a drop at the nipple tappets.
- Adjust the light intensity in accordance with the breeding company's recommendations.

5.2 Putting chicks into housing

- Place the birds below the water lines and not below the heating systems.
- Ensure that the nipple tappets are at the birds' eye level.
- Check twice that there is water in the entire system.
- After 48 hours, raise the drinker line so that the nipple tappets are at birds’ head level.

5.3 Grow out

- Check the filter system, replace the filter insert, if necessary.
- Adjust the water line pressure and the drinker height according to the age and size of the birds.
- The water pressure should be as high as possible without litter getting wet. Adjust a lower pressure during the winter months to keep the floor dry.
- Raise the drinker line at least twice a week so that the birds drink from the lower border of the tappet (nipple pin).
- Only add medicines and chlorine at highest water consumption of the broiler house.
- In case of an unequal flock, make sure that also the smaller birds can drink.

5.4 After the grow through

- Flush the water lines with high pressure to remove possible remains.
- Empty the water lines if frost is possible.

6 Operation

6.1 Preparations

- The primary pressure (normal pressure) has to be between 1.5 and 6 bar on site.
- The standard equipment of a connecting unit should contain water filter, water meter, pressure reducer and bracket.
- The water filter must be connected ahead of all other assembly units to protect them from dirt.
- The water for preparing the medicine solution must be filtered. The device for water withdrawal (outlet tap) should therefore be placed behind the water filter.
- If **poorly soluble medicines** are used, it is recommended to install an additional filter **behind** the medicator to protect the nipple drinker. A pressure reducer/filter combination can be used for this. For retrofitting, a filter can also be installed between bypass and pressure reducer.
- The pressure reducer must be positioned in front of the pressure regulators of the drinker line as last assembly unit of the water connection unit to realise a constant primary pressure independent of the flow rate.
- In case of float tanks and ball tanks which function completely independent of the primary pressure, the pressure reducer has the task to limit the water pressure to maximally 3 bar.

	Overflowed water mixed with dust and feed remains can cause a potentially slippery floor. Eliminate any leaks.

6.2 Drinking water temperatures

	Water temperature:	**Birds' reaction:**
	10°C - 15°C	- optimal water consumption
	> 30°C	- decreased water consumption
	> 44°C	- refusal to consume water

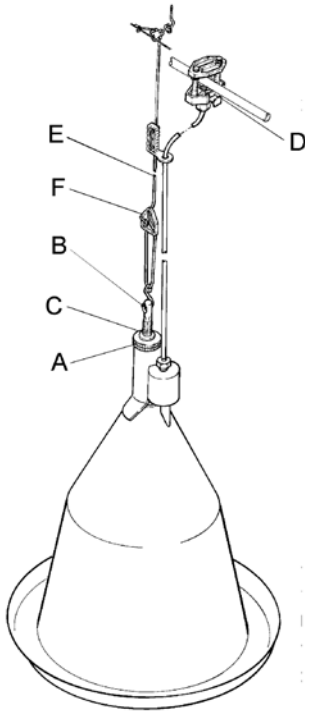
6.3 Before moving the birds in - in case of water supply with round drinkers

	In order to obtain an optimal water supply, it is necessary to keep the water level at the birds' back level. The drinker line must be readjusted at the beginning of the growing period since the suspension rope of the round drinkers expands a little. It also expands when the house is heated.

- Check the water level in the ballast tank before the growing period starts. If necessary, refill water up to the plug in the ballast tank.
- Adjust height of water level by means of the hand wheel of the valve housing **(A)** at the suspension rod **(B)** and readjust counter nut **(C)**.

	Ensure that the gate valve **(D)** is open.

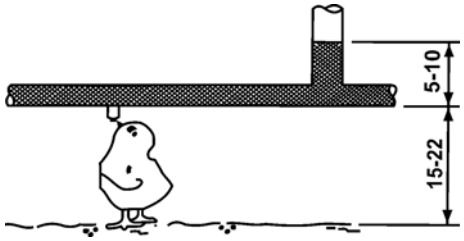
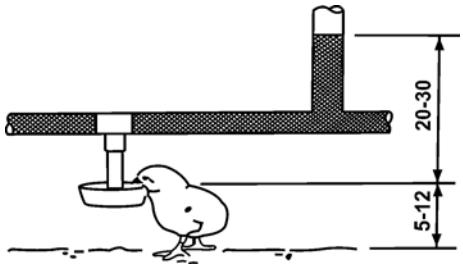
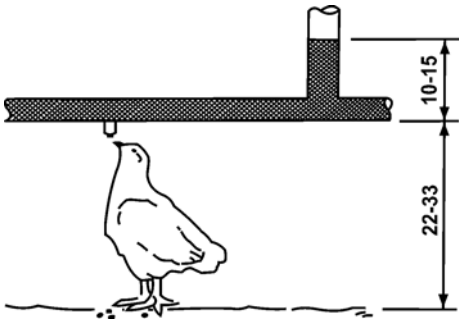
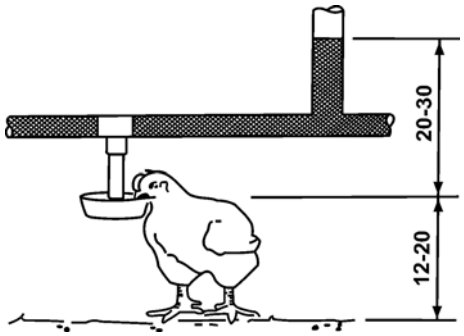
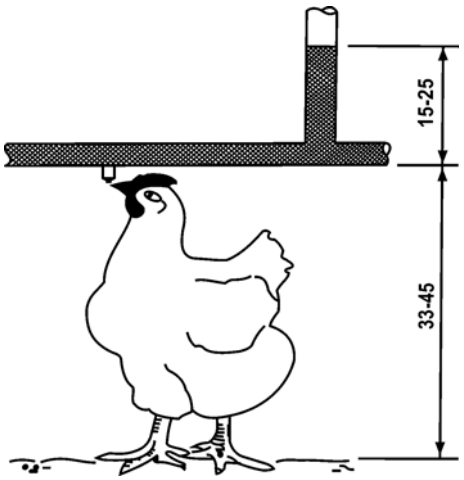
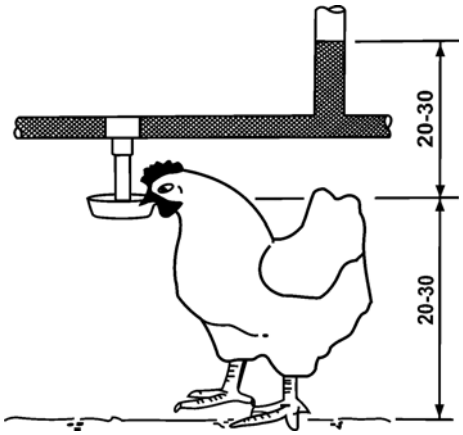
- The height adjustment of the round drinking systems takes place on the suspension rope **(E)** with the tightening device for the suspension rope **(F)**.
- If required an additional Jumbo-B chicken ring can be put into the Jumbo-B round drinking systems during the breeding phase.



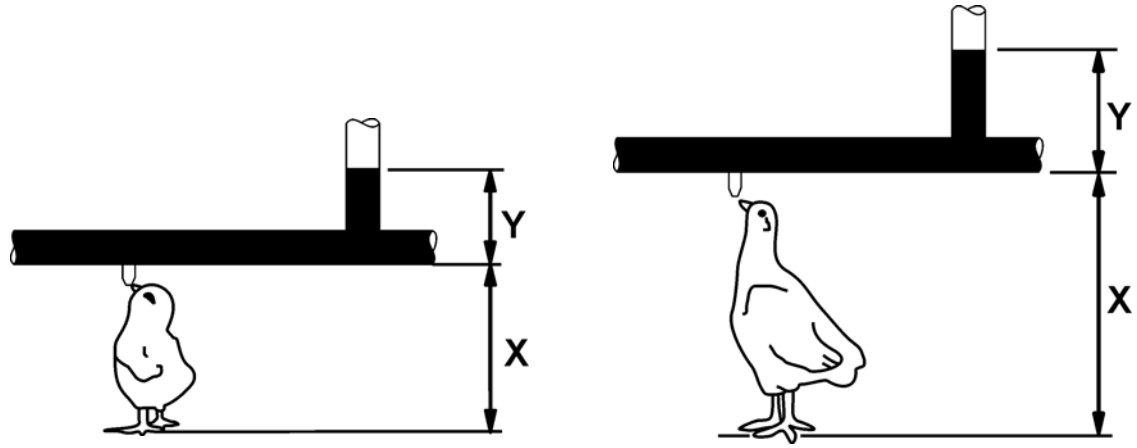
6.4 Height adjustment of the nipple drinker

Important:

Make sure that the drinker is adjusted according to the birds' age and size.

Nipple drinkers		
without drip cup		**with drip cup**
	**1st week** **[Size in cm]**	
	**2nd-3rd week** **[Size in cm]**	
	**3rd-6th week and older** **[Size in cm]**	

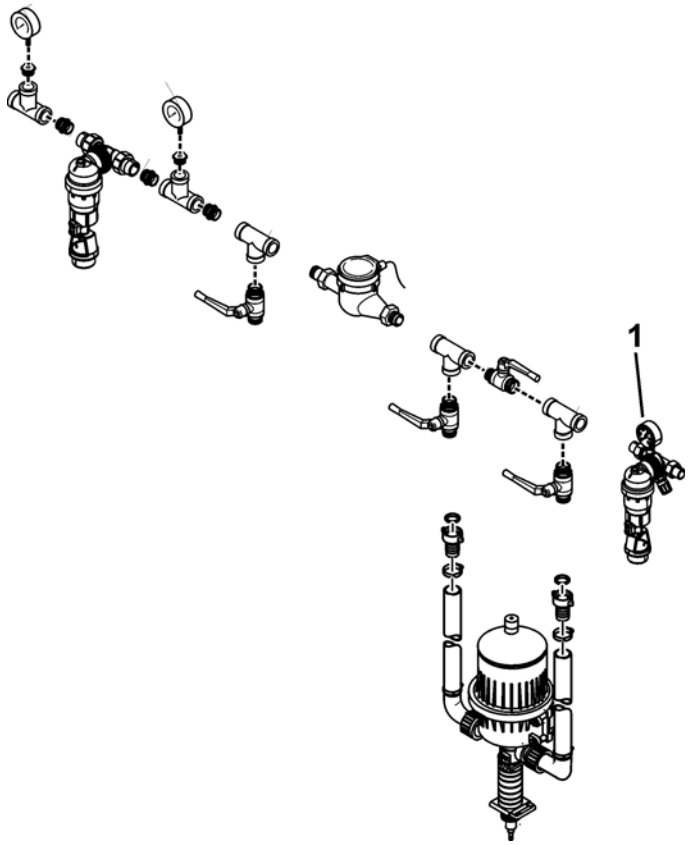
Adjustment of nipple drinklers for broilers:



Important:

Avoid slopes and uneven surfaces!

6.5 Nipple drinker line complete



Warning:

Protect connection unit against frost!

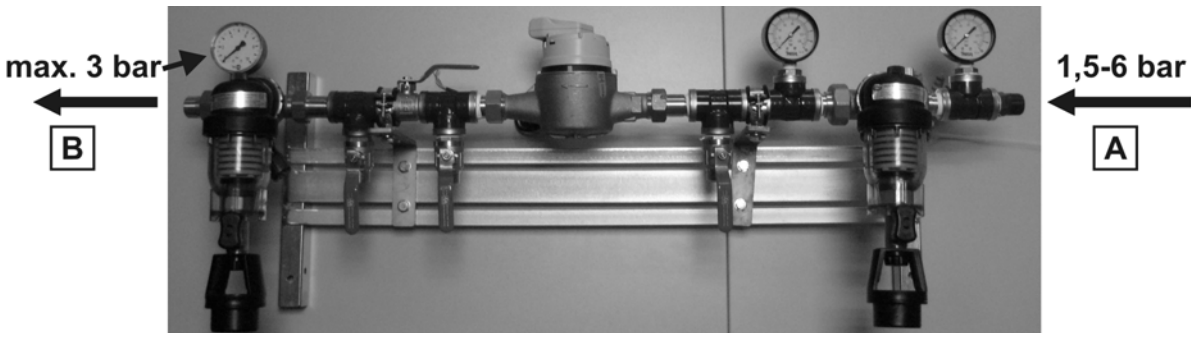
1. Adjust pressure reducer (1) on the manometer of the water connection unit to 1.5 to 3 bar.
2. Adjust pressure regulator on water column required 6.8(according to tab in chapter)
3. Suspend nipple tube along entire length of housing and test all nipples. Eliminate any leaks.
4. Ensure any unevenness in litter at nipple tube is avoided.
5. There should be no slope in nipple tube otherwise pressure will increase.
6. Constantly adjust pressure regulator and nipple tube height during rearing.
7. Following assembly, distributing medicine and cleaning the housing, always rince nipple tubes with appropriate substances. Always leave nipple tubes filled with water in order to avoid the nipples drying out and becoming sticky.
8. **When there is a danger of frost:** Drain off water completely.
9. Observe instructions concerning use of medicator.

6.6 Water connection units

6.6.1 Entry pressure / exit pressure (outlet pressure)

A= The **supply pressure** on site has to be **between 1.5 and 6 bar**.

B= The **output pressure** (pressure displayed on the manometer of the pressure reducer/filter combination) should **not exceed 3 bar**.



6.6.2 Nominal widths / Flow quantities

The conection units can be supplied with nominal widths of ¾", 1" and 1½".

All connecting elements (T-pieces, double nipples) consist of PVC and are thus optimally protected against corrosion.

The flow quantities are between 12/20 l/h and 2000l/h to 8000l/h

The maximum flow quantities depend on the relevant nominal width of the connecting unit:

Nominal width (")	Min. flow quantity (l/h)	Max. flow quantity (l/h)
¾"	12/20	2000
1"	500	6500
1½"	500	8000

6.6.3 Euipment options

The water connection units can be adjusted individually in order to suit local circumstances by means of:

- washable cartridge filters (standard version, only ¾")
- flushable water filters (special version)
- mechanical water metres (mechanical version)

- Water metres with contact for connection to management computer (electronic version).

6.6.4 Reversible flow filter

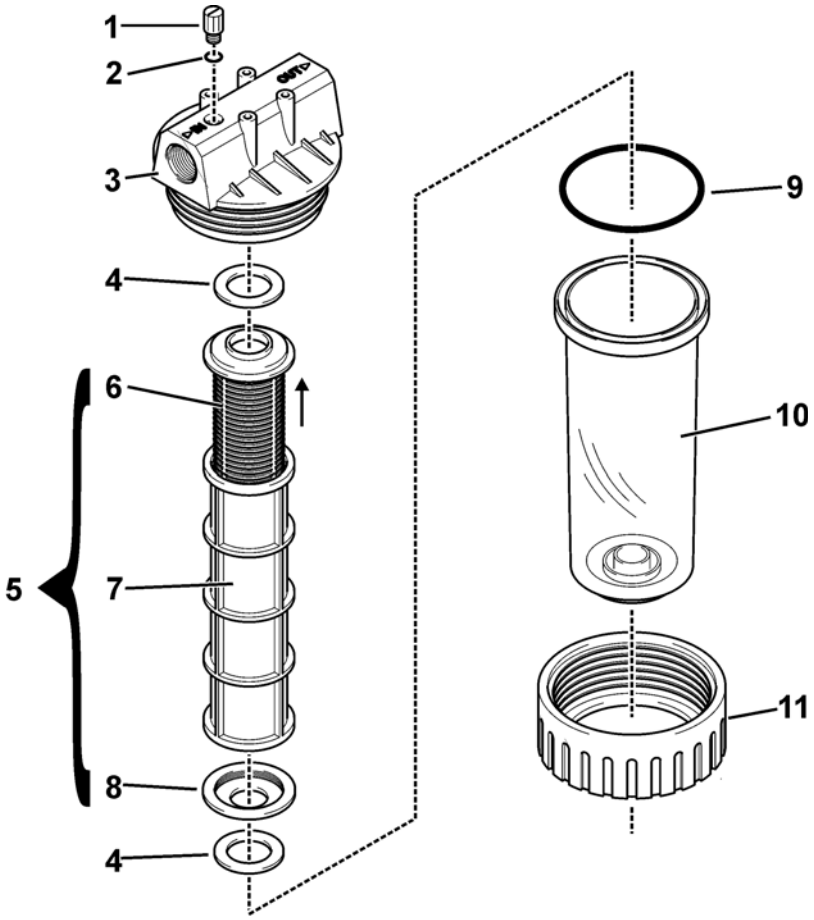
	Clean water has a decisive influence not only on the performance result of the birds but also on the function of the drinking system. The water / reversible flow filter is an important component for this.

	**Important:** Eliminate faults at the reversible flow filter immediately. The reversible flow filter is only intended for the water supply of the birds. Every other use is considered improper use. Do not use solvent-based agents for cleaning the plastic parts. The reversible flow filter cannot be used in areas with UV radiation or solvent vapours.

6.6.4.1 Water filter ¾" 3.5 cbm/h mU for manual cleaning

When there is a pressure difference of more than 1 bar the filter section has to be cleaned by hand. Use clean water only for this purpose.

Technical specifications and connection measurements:	
Connection thread [inch]:	¾"
Max. water temperature [°C]:	45
Working pressure [bar]:	1,5-7
Nominal flow [l / h] (delta p=0.2 bar):	2500



Pos.	Qty.	Code no.	Description
		30-00-3871	Water filter 3/4” 3.5 m³/h mE
			consisting of:
1		30-00-3887	Vent screw with gasket for water filter 3/4" up to 1 1/2"
2			Gasket for vent screw
3		30-00-3888	Cover for water filter 3/4" fm (30-00-3871)
5		30-00-3872	Gasket for filter insert 30-00-3684
5		30-00-3684	Filter insert 60 micron for 3/4" + 1" water filter 30-00-3871/ 30-00-3877/30-62-4005
			consisting of positions 6-8:
6		30-00-3876	Outer part for filter insert (30-00-3684)
7		30-00-3685	Filter net for filter insert (30-00-3684)
8			Screw union for filter insert (30-00-3684)
9		30-00-3686	O-ring for water filter 3/4" (30-00-3871)
10		30-00-3874	Inspection window for water filter 30-00-3871 & 30-62-3601
11		30-00-3875	Swivel nut for inspection window (30-00-3874)

6.6.4.2 Reversible flow filter for manual cleaning

	Filtered water can also be taken out during the flushing process.

Pos.	Qty.	Code no.	Description
1		30-61-3679	Reversible flow filter DUO FRII 3/4" without manometer
2		30-61-3678	Reversible flow filter DUO FRII 1" without manometer

- Cleaning of the filter takes place automatically when the outlet tap is on. Entry pressure of at least 1.5 bar is required to flush.
- The flushing interval depends on how dirty the water is. In compliance with DIN 1988, Part 8, the system has to be flushed through at least every 2 months.

	**Eduction of flushing water:** The flushing water has to be drained off in such a way as to avoid any backwater. (free flowing away into a ground drain or suitable container has to be guaranteed)

Information on the assembly and operation can be found in the documentation enclosed with the device.

Flushing process:

- Turn the ball valve of the filter cup to the right.
- After finishing of the flushing process, turn the ball valve to the left.

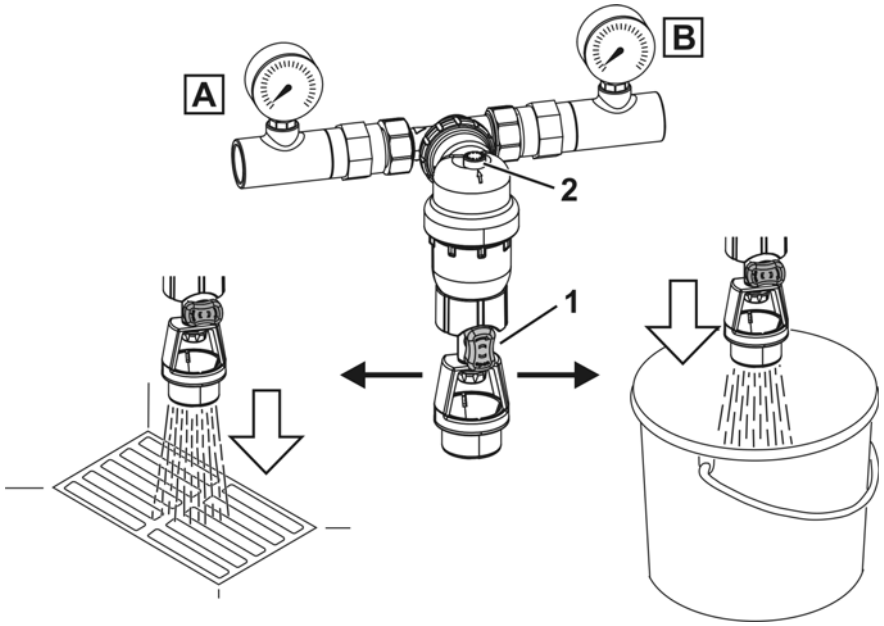
6.6.4.3 Flushing filter for automatic cleaing

	Filtered water can also be taken out during the flushing process.

Pos.	Qty.	Code no.	Description
1		30-62-4025	Flush filter DUO FR 3/4" cplt with manometer & connection mat. PVC
2		30-62-4125	Flush filter DUO FR 1" cplt with manometer & connection mat. PVC
3		30-62-4225	Flush filter DUO FR 1 1/2" cplt with manometer & connection mat. PVC

- Cleaning of the filter takes place automatically when the outlet tap is on. Entry pressure of at least 1.5 bar is required to flush.
- The flushing interval depends on how dirty the water is. In compliance with DIN 1988, Part 8, the system has to be flushed through at least every 2 months.

Technical specifications and connection measurements:			
Connection thread [inch]:	¾"	1"	1 1/2"
Max. water temperature [°C]:	40		
Working pressure [bar]:	1,5-16		
Nominal flow [l / h] (delta p=0.2 bar):	2700	3600	10000



	**Eduction of flushing water:** The flushing water has to be drained off in such a way as to avoid any backwater. (free flowing away into a ground drain or suitable container has to be guaranteed)

Flushing:

	**Flushing is necessary,** - according to the relevant provisions of the user country (normal: at the latest every 2 months) - when the pressure difference between manometers **A** and **B** is more than 0.5 bar.

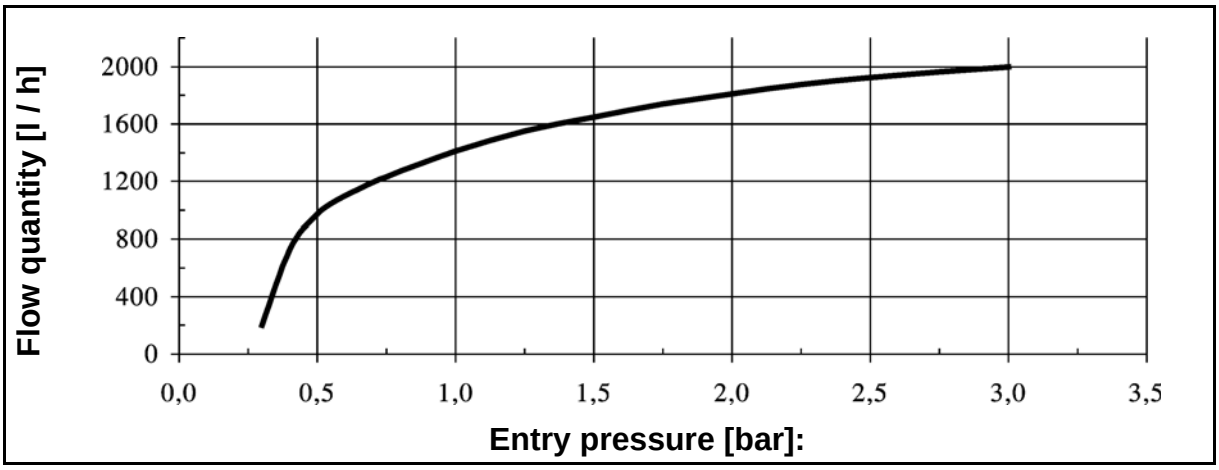
1. open ball valve by turning the flush head (1). This starts off the flush process.
2. Turn the lower part of the filter 2x by 360° (from ring above flush head).
3. Close ball valve again after approx. 15 seconds. In the case of very dirty filters it may be necessary to flush for a longer period.
4. The memory head (2) can be set as a reminder for the next date for the manual flushing (months can be set from 1-12).

6.7 FlushControl - computer-controlled flushing system

Information on the operation and connection of the computer-controlled flushing system “FlushControl” can be found in the enclosed operation manual.

6.8 Pressure control unit

- Flexible **entry pressure** from **0.3 bar to a maximum of 3 bar**.



- A wide range of the adjustable **output pressure** to adapt the water pressure to the nipple drinker depending on the age and weight of the birds. Steplessly adjustable from **0-100 cm water column (= 0 - 0.1 bar)**.
- The set output pressure of the pressure regulator does not depend on the supply pressure. If, for example, the supply pressure rises or falls because the consumed water quantities change between day and night, this will not affect the water column (pressure) of the nipple drinker line.
- **Flow rates of 200-2000 l/h** depending on the supply pressure ensure a quick water supply, particularly after a restriction phase.
- The outlet pressure can be accurately set via a hand wheel. This also involves a simultaneous control of the water pressure via a float ball in the flexible bleeder pipe.
- Integrated rinse system. After a half turn of the rinse valve the entire entry pressure is used to rinse the nipple pipe. A high flow quantity guarantees that all residue from the nipple pipe can be rinsed away.

6.8.1 Technical specifications

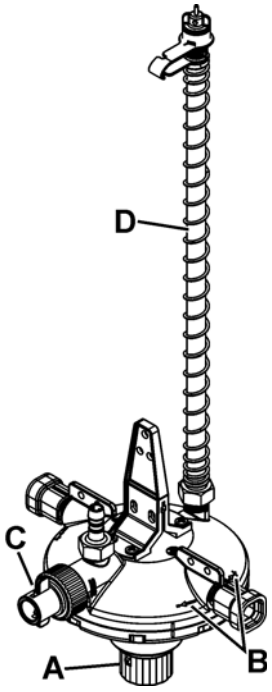
Entry pressure:	0.3 to maximum 3 bar
Adjustable water column:	0 to 100 cm
Flow quantity:	200 to 2,000 l/h

	Maximum entry pressure on pressure regulator should **not** be exceeded. A higher entry pressure can cause damage to the pressure regulator, particularly after a water restriction when empty water pipes are filled suddenly.

Please observe the following points in order to ensure smooth functioning of the pressure regulator:

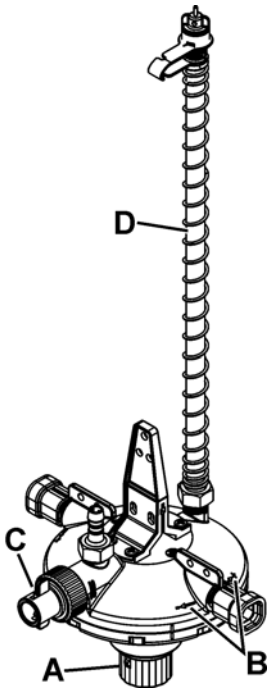
- Constant control of the water quality, especially relating to iron and calcium content.
- Use water filters with sufficient mesh width and flow quantity.
- Entry pressure between 0.3 and 3 bar. In the case of a high tank this corresponds to a minimum height of 3 m above the pressure regulator.
- Do not use any aggressive cleaning products / acids etc.

6.8.2 Setting of the water column

	1. Set the desired water column height with the red hand wheel **(A)** underneath the pressure regulator. 2. The turning direction for increasing or decreasing water column is marked on the pressure regulator's casing with + and - **(B)**.

6.8.3 Flushing process manual

Before activating the flushing process, adjust the breather units at the end of the drinker line to “flushing” (see chapter 9.3)!



1. The manual flushing process is activated by the red pivoted lever **(C)** at the side of the pressure regulator.
2. Turn the lever **(C)** by 180°. The ball in the breather tube **(D)** seals the venting cap during flushing.

   Duration: 5min or more per line
3. To finish the flushing process, bring the pivoted lever **(C)** back to its original position.
4. Re-set the breather unit at the end of the drinker line to normal operation.

6.8.4 Flushing process automatic

The operation of the automatic rinsing aeration unit can be found in the manual “Automatic rinsing” Code no. 99-94-0658.

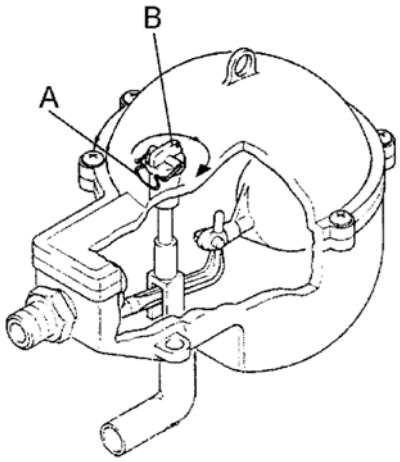
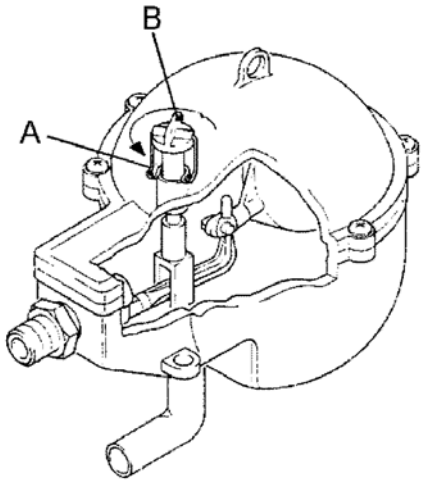
6.9 Ball tank

1. Check the water supply and cleanliness of the water. It may be necessary to clean the central water filter.
2. Check the water pressure of the supply pipe. **Max. permissible entry pressure for the ball tank is 3 bar**.

6.9.1 Rinsing process

Before activating the flushing process, adjust the breather units at the end of the drinker line to “flushing” (see chapter 9.3)!

It is easy and fast to set the ball tank up for rinsing without having to interupt the water supply.

	1. Unlatch the safety retainer (A) at the ball tank. 2. Press red sealing part (B) down and turn it clockwise by 90° up to the limit stop. **The flushing process is activated.**
	1. Turn the red sealing part (B) counter-clockwise by 90° up to the stop and pull it upward. 2. The flushing process is finished. The sealing part is in “parking position”. The pressure in the ball tank decreases. (approx. 30 seconds) 3. Turn the sealing part (B) clockwise by 30° up to the stop and pull it upward. 4. Lock the safety retainer (A). **The ball tank is in normal operation.**

6.10 Administering medication via the water in the nipple tubes

Greasy and sticky medication should not be put into the water in the nipple pipes.

All medicines used must dissolve completely in the water.

The dosage and preparation of the medicines has to take place outside the housing in a container, and the mixture agitated thoroughly.

Attention must be paid to ensure that the medicines are completely dissolved in the water. This can then be put into the floater container as dosed and mixed drinking water in compliance with prescription.

An automatic dosage of medicine can be executed by using a **BigDutchman** medicine dosage device.

Greasy medicines must be administered with the feed. Administration and distribution of medicines via the feed is, generally speaking, more beneficial. This dosage is more accurate and the allocation for each bird more reliable.

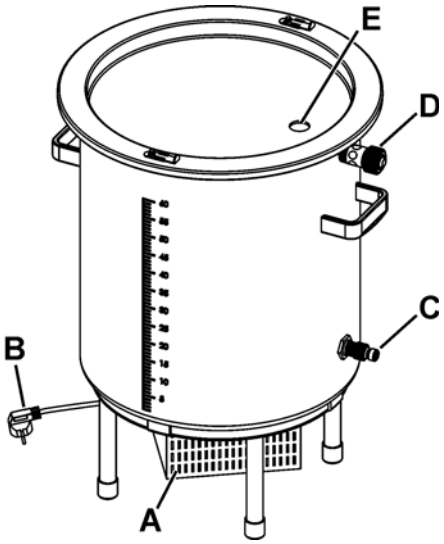
6.10.1 Medicine mixing container

The medicines can be mixed by means of:

- mixing by hand in an appropriate medicine mixing container
- the **Big Dutchman** medicine mixing container 60 l with a drain pump,

.

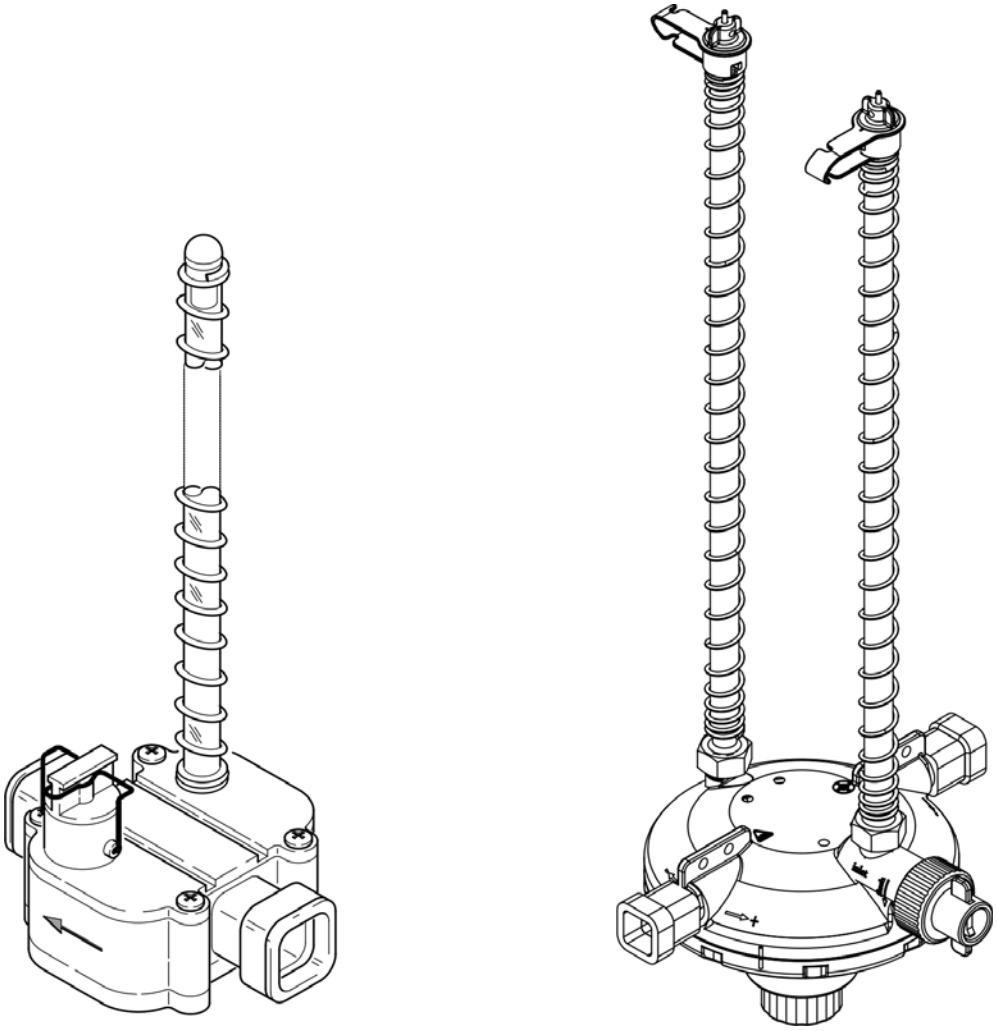
Features of the medicine mixing container 60 l with drain pump (A):



- Avoids separation of the stirred medicines.
- Guarantees thorough intermittent mixing without destroying the preparations, vaccines and vitamins by heating them up.
- The integrated floating valve ensures complete consumption of the medicine and automatic rinsing of the medicator after the medication has been administered.
- The water quantity is added via the filling connection **(D)**. As soon as the desired quantity has been added, the tube is attached to the connection with the floating valve **(C)** .
- The medicated liquid is suctioned on a percentage basis via the available medicine dosing device into the pressure water pipe. In the lid of the medicine mixing container there is an opening intended for the suction hose **(E)** of the medicine dosing device.
- As soon as the medicine has been suctioned off, fresh water automatically flows in via the connection with the floating valve **(C)** and cleans the medicine mixing container and the medicine dosing device.

Pos.	Qty.	Code no.	Description
		30-61-3105	medicine mixing container 60 l with a drain pump
A			drain pump 220V-50Hz
B			electrical connection with intermittent control circuit
C			connection with floating valve
D			filling connection

6.11 Gradient regulator for nipple drinker systems



- The red float ball in the breather tube indicates the reduced water pressure. The ball should be situated between 10 cm and 15 cm (measured from the bottom surface of the nipple pipe).
- The valve can be reached via an easily accessible service unit.
- Unlatch the safety loop to pull the maintenance kit out of the gradient regulator.
- This way all parts can easily be accessed for a possible cleaning.
- When the drinker line is rinsed, the red float ball seals the breather tube. Thereby, the increased water pressure for cleaning is conducted through the gradient regulator without any additional efforts.
- The maximum rinsing pressure of 2 bar should not be exceeded.
- If necessary, the valve can be accessed for cleaning purposes by means of slight twisting of the maintenance unit.

7 Maintenance of the drinker components

7.1 Water connection unit

- Check the system pressure of the water connection unit every day.
- Check the water filter daily. Clean the water filter at a pressure difference of ≤ 0.5 bar.
- Check the pressure regulator and filter combination every day. Clean the pressure regulator, if necessary. The output pressure should be max. 3 bar.

7.2 Medicator

- Check the functioning of the medicator daily. Observe the operation manual which is enclosed with the medicator.
- Check the functioning of the medicator after each use.
- Do not allow the motor to dry out. Store it filled with water.

7.3 Ball tank and pressure regulator

- Check and document the daily water consumption of the birds.
- Check the water column height in the transparent hose at the beginning and end of each drinker line daily.
- Check the tightness of the entire drinking system daily.
- Check the optimally low water column height setting of all drinker lines daily. Correct the setting, if necessary.
- If you operate the system in hot climates, clean and flush the complete drinker lines every month. Otherwise, it is sufficient to clean and flush the system after each batch.

7.4 Nipple pipes

- Check the drinking nipples and tube couplings for leakages daily.
- Check the function of the drinking nipples of each drinker line daily on a random basis.
- Check the horizontal alignment of the nipple pipes weekly.
- Check the height setting of the drinker line twice a week. Adjust the height according to the birds' growth.
- Flush the nipple pipes after each batch. Clean the drip cups as well, if used.

7.5 Suspension system

- Check the main traction rope after each batch. Pay special attention to the area of the cable pulleys and winding tubes.
- Check whether all pulleys rotate correctly after each batch.
- Check whether the main traction rope and the other traction ropes of the trough suspension run in their rolls after each batch.

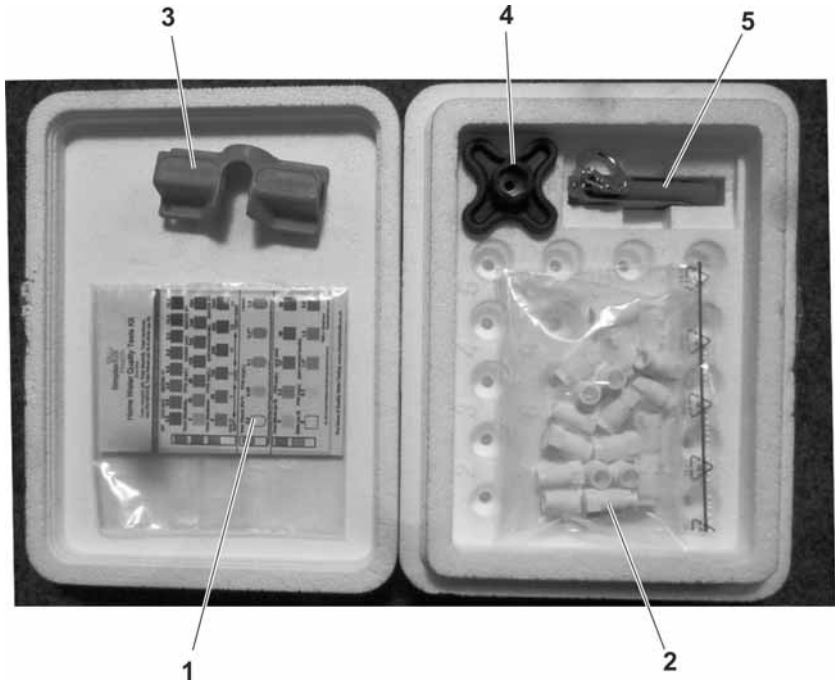
7.6 Summary maintenance instructions

A practical overview of all maintenance can be found in chapter "1 checklist key points summary".

8 Disturbances and how to eliminate them

Fault		Remedy
Water flow is not sufficient:	• Water pressure is too low	• Increase water pressure
	• Float valve clogged	• Remove foreign matter
	• Failure of water supply	• Pump, etc. defective
	• Cross section of the main line is too small	• Increase cross section
	• Main water supply narrowed due to water deposits	• Replace supply lines and insert filter
Nipple pipes are clogged:	• Fatty medicines or water deposits narrow the cross section.	• Flush nipple pipes thoroughly, disassemble and clean drinking nipple
	• Coupling of the pipes has displaced	• Replace coupling
	• Foreign matters (adhesive residues, feed, dirt, etc.) in the nipple pipe	• Flush nipple pipes
	• Air bubbles in the supply	• Install the plastic pipes without forming a pouch.
	• Air bubbles in the nipple pipe	• Flush nipple pipes, vent drinking nipples
The valves of the round drinkers are clogged:	• Fatty medicines or water deposits narrow the cross section.	• Flush water pipes and water hoses.
	• Foreign matters (adhesive residues, feed, dirt, etc.) in the nipple pipe	• Flush water pipes and water hoses.
	• Air bubbles in the supply	• Install the plastic pipes without forming a pouch.

8.1 Complaint box for damage analysis (code no. 99-98-3843)



Pos.	Quantity	Description
1	1	Water test kit
2	20	Blind plug
3	1	Tool for levering SaniStar nipple
4	1	Wrench for drinking nipple
5	1	USB flash drive

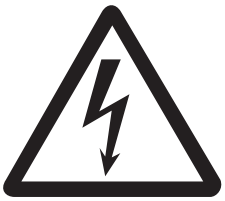
- Only use the complaint box in connection with the “request form damage analysis drinking nipple”.
- Remove 20 defective drinking nipples at different places in the house and replace them by replacement nipples or blind plugs.
- Sketch the position of the removed drinking nipples in section 3 (house sketch) in the “request form damage analysis drinking nipple”. The form is included in the box.
- Lay the defective nipples in the provided slots in the box. Determine the pH-value as well as the iron and calcium oxide content in the water by means of the water test kit. The test kit contains a detailed user manual. The taken pictures are copied onto the USB flash drive that is included in the box.

8.2 Measuring cup for flow measurement (no. 30-61-3031)

Use the measuring cup illustrated on the right to determine the flow rate of a drinking nipple in the house. The measuring cup has a specially designed top to enable an easy measuring.

To measure the flow rate, the lower pin of the drinking nipple is lifted by the measure inlet and the water is collected for one minute. The entire process is repeated 3 times at the same drinking nipple. The mean value of these three measurements is the flow rate of the drinking nipple.

9 Cleaning and disinfection

	**Danger of electric shocks:** Switch off electricity when cleaning electrical connection parts

	**Danger of slipping:** Water mixed with dust and feed remains can cause a potentially slippery floor.

	**Danger of poisoning:** It is essential to follow directions carefully when dealing with disinfectants and solvents.

	**Risk of frost:** If house systems with nipple drinker remain empty for a certain time and temperatures below 0° C can be expected during this period, there is a risk that the nipple pipes burst when they freeze. **Remove water from the nipple pipes.**

9.1 Information regarding silicon dioxide for the mite control

Important!

Silicon dioxide must not be applied in drive areas (on bearings, chain drives and gear wheels). Therefore, you should cover the corresponding areas of the drives when spraying with silicon dioxide.

We would like to explain this topic briefly in order to avoid damages to the drive units in the future due to incorrect application of silicon dioxide. Amorphous silicon dioxide is a biocide for control of harmful insects, as e.g. red mites, in the poultry production. It is also marketed under the trade name M-Ex Profi 80. Effectiveness: Silicon dioxide destroys the wax layer which surrounds the mites. Through this the mites dry out. The white agent in powder form is mixed 1:6 with water to a suspension and can easily be sprayed on the house area and the equipment by means of conventional spray technique. This agent is easy to apply, very effective and relatively inexpensive. However, practice has shown that the rough surface of the applied suspension causes extreme wear on the moving parts from plastic and metal. Lubricants as oils and fats are destroyed by silicon dioxide.

9.2 Clean and disinfect the entire system

- **Drinkers:**

  Clean water tank, remove drain screw for this.

- **Wet cleaning:**

  Turn off the power supply when cleaning live parts.

- **Soak the entire system with a high-pressure cleaner** with approx. 100 bar. After a soaking time of at least 10 hours, flush the systems with a high-pressure cleaner with approx. 140 to 160 bar.

- **Clean the house floor with a rubber broom.**

  Pump the cleaning water out of the discharge of sloppy water.

- After completion of the cleaning, **switch on the ventilation** to dry the house.

- **Disinfection:** first disinfect - then fumigate.

  Example:

  Disinfect floor and walls with a disinfectant which kills coccidia and worm eggs (e.g. Lomasept).

  Disinfect the entire house, all equipments and the silo system (also inside) with a Lorasol V-solution 1.5% or a 2% formalin solution. After the application of the formalin solution, heat the closed house for 24 hours to at least 25° c, if possible.

- Fill the **water lines and drinking facilities** with the Des L 14 solution in the empty house to kill algae, bacteria and fungi.

- Spray house and equipment against mites, poultry parasites, lice, fleas and other ectoparasites (e.g. CBM 8 [available only in pharmacies] or Gesektin K).

- Let the disinfecting solution **soak for at least one day**, then ventilate the house.

- Before the birds are moved in, flush the water tank for drinker and the drinker so that the disinfectant residues are removed. Make sure that no dirt gets into the drinker.

9.3 Clean nipple pipes with automatic rinsing aeration unit

This flushing system mainly consists of:

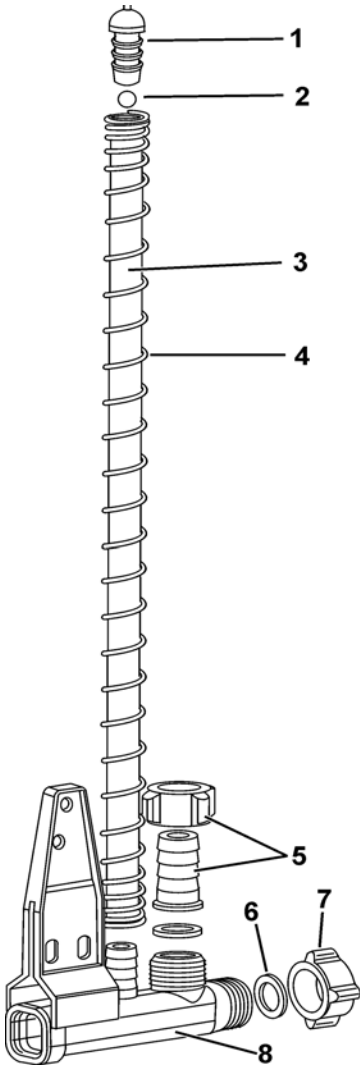
a) flush breather and

b) waste water cross drainage

The automatic flushing system is mounted at the end of the nipple drinker line. At the end of the automatic flushing system, there are two 3/4” connection units, one of them is closed with a sealing nut (7).

This is screwed off for cleaning.

The other joint union is provided with a hose nozzle (5) at which a wastewater hose can be connected.



Pos.	Qty.	Code no.	Description
		30-61-3431	**Flush breather unit automatic cpl. L4255**
1		30-63-3551	Breather connector orange cpl for breather tube
2		30-61-3097	Ball Ø 8mm red
3		30-63-3462	Hose 12x2; 450lg
4		30-63-3463	Pressure spring 030 220 09 00 for breather tube
5		30-00-3070	Hose nozzle with swivel nut ¾"
6		30-61-3801	Sealing ring 26.7 inside
7		30-61-3802	Cap 3/4" red PVC for rinsing aeration unit
8			Breather unit complete

9.4 Automatic rinsing aeration unit

Please consult the manual “Automatic rinsing” code no. 99-94-0658 for the operation of the automatic rinsing aeration unit.

10 Chemical resistance of the drinker components

The information in this chapter are based on our current knowledge and experiences. Because of the abundance of possible influences when using our products, these specifications do not release the user from the obligation to make his own examinations and trials. A legally binding assurance of certain properties or suitability for a specific application cannot be derived from this information. Possible property rights as well as existing laws and legislation must be observed by the user on his own responsibility.

Never use chemicals of the category 1 and 2 in or at the drinker line!

The following categories apply to the chemical resistance:

1 = poorly resistant, **2 =** less resistant, **3 =** often resistant, **4 =** resistant

10.1 Overview of materials and chemicals

Material	ABS	POM	PVC	PP
Last updated 11/2016	**Breather unit** **Pressure reducer** **Water tank**	**Nipple housing** **Plug + nut suspension clip**	**Nipple pipe** **Expansion coupler** **Breather unit**	**Pan for turkey growing** **Pan for turkey rearing** **Tip holder**
Alcohols	2	3	4	4
Aldehyde	2	3	3	4
Amines / aliphatic	1	3	2	2
Amines / aromatic	1	2	1	1
Alkalis	3	3	4	4
Petrol	2	4	2	2
Ester	1	3	1	1
Glycols	3	3	4	4
Ketones	1	3	1	4
Boiling water	2	3	2	2
Hydrocarbon / aliphatic	3	3	4	2
Hydrocarbon / aromatic	1	3	1	2
Hydrocarbon / chlorinated	1	2	1	2
Solvents	2	3	3	
Mineral acids / concentrated	1	2	4	3
Mineral acids / diluted	3	3	4	4
Motor oil	3	4	4	4
Organic acids concentrated	1	2	4	3
Organic acids diluted	3	3	4	4
Oxidizing mineral acids / concentrated	3	1	3	4

This list does not claim to be complete. Please pay attention to the resistance lists of the chemicals used.

10.2 ABS is not resistant to the following chemicals

ABS = Acrylnitril-Butadien-Styrol-Copolymerisate

Acetone	Acetic acid 100% (glacial acetic acid)	Phenylethyl alcohol
Acetophenone	Acetic acid amyl	Phthalamic acid
Allyl acohol	Butyle acetate	Propylene oxide
Amyl acetate	Isopropyl acetate	Pyridine
Amyl mercaptan	Ether	Methyl salicylate
Aniline	Ethylbenzene	Nitric acid conc.
Benzaldehyde	Ethyl chloride	Carbon disulphide
Benzene	Ethylenchloride	Sulphuric acid conc.
Benzyl alcohol	Freon 21	Dibutyl sebacate
Brake fluid ATE	Freon 22	Tetrachlorethan
Butyl acetate	Furfural	Carbon tetrachloride
Carbolic acid	Furfuryl alcohol	Thymol
Cetamoll 13	Methyl chloride	Titanium tetrachloride
Chlorine liquid	Methylene chloride bromide	Toluene
Chlorobenzene	Methylene chloride	Trichlorbenzene
Chloroacetic acid	Methyl ethyl ketone	Trichlorethane
Chlorosulphonic acid	Methyl isobutyl ketone	Trichlorethylene
Diacetone alcohol	Methyl propyl ketone	Trichlorphenol
Dichlorethane	Monochlorbenzene	Triglycolacetate
Dichlorobenzene	Nitrobenzene	Tricresyl phosphate
Diethyl ether	Phtalic acid di-ethylester	Verbenaol
Diethyl ketone	Petroleum	Xylene
1.4-dioxane	Phenol conc.	Tin IV chloride
Diphenylamine	Phenol 10%	
Diphenyl ether		

Plastic parts made of ABS: Ball tank, swivelling aeration unit, pressure reducer complete, elbow end piece, adhesive end cap, elbow glue coupling, adhesive T-piece, adhesive coupling

This list does not claim to be complete. Please pay attention to the resistance lists of the chemicals used.

10.3 POM is not resistant to the following chemicals

POM = Polyoxymethylene

Peracetic acid	Maleic acid
Acetyl chloride	Naphtalene sulfonic acid
Formic acid	Sodium bisulfite
Antimony trichloride	Sodium hypochlorite
Benzoic acid	Oleum
Bleaching lye aqueous 12.5% Cl	Oxalic acid
Boron trifluoride	Ozone
Brake fluid DIN 53521	Phenol
Butandiol	Phenol alkaline solution
Calcium hypochlorite	Phosphoric acid
Chloroacetic acid	Cleaning agent pH<3
Chlorosulphonic acid	Salicylic acid
Hydrogen chloride	Nitric acid
Disinfectant (altern. chlorine)	Hydrochlorid acid
Dichlorethylene	Sulphur dioxide
Acetic acid	Sulphuric acid
Fluorine	Sulphuric acid
Hydrogen fluoride	Nitrogen oxides
Hydrofluoric acid	Trichlorethylene
Glycerin	Trichloro acetic acid
Glycolic acid	Hydrogen peroxid
Iodine alkaline solution	WC cleaner pH<3
Hydrogen iodine	Citric acid
Soldering fluid	

Plastic parts made of POM: Clamp screw, support, ball tank, valve housing

This list does not claim to be complete. Please pay attention to the resistance lists of the chemicals used.

10.4 PVC is not resistant to the following chemicals

PVC = Polyvinyl chloride

Acetylacetone	Dibutyl oxalate
Acetaldehyde	Dibutyl phtalate
Acetone aqueous	Diethylamine
Acetophenone	Dioctyl phtalate
Allyl chloride	Glacial acetic acid
Formic acid 100%	Acetic anhydride
Amyl acetate	Ethyl acetate
Amyl acetate	Ethyl chloride
Aniline, aqueous	Formamide
Benzal chloride	Furfural
Benzene	Hexachlorethane
Benzophenone	Hydrazine
Benzotrichloride	Methyl bromide
Butyl acetate	Methyl chloride
Butyl chloride	Naphtaline
Capric acid 30%	Nitrobenzene
Chlorine, liquid 100%	Phenylhydrazine
Chloroacetaldehyde	Phosgene, liquid
Chlorobenzaldehyde	Phosphorous trichloride
Chlorocresol	Pyridine
Chloroform	Nitric acid, aqueous 95%
Chlorophenol	Nitrogen oxides, wet, dry
Chlorotoluenes	Tetrachloromethane
Chlorotrifluoroethylene	Toluene
Cyanoacetic acid	Trichlorethylene
Cyclohexanol	Phenyl acetate
Dibrommethylene	Xylene
Dibutyl ether	

Plastic parts made of PVC: Nipple pipe, expansion coupler

This list does not claim to be complete. Please pay attention to the resistance lists of the chemicals used.

10.5 PP is not resistant against following chemicals

PP = polypropylene

Acrylonitrile	Ester
Petrol	Ethyl ether
Benzene	Furfural
Benzyl alcohol	Aqua regia
Benzyl chloride	Carbon disulphide
Butanoic acid	Methyl ether
Butyl ether	Petroleum
Butyric acid	Nitric acid
Chlorine	Hydrochlorid acid
Chlorobenzene	Hydrogen sulphide
Chloroform	Nitrobenzene
Chlorine sulfuric acid	Tetrachlorethan
Chlorosulphonic acid	Trichlorobenzenes
Chlorosulphonic acid	Tuluol
Dibutyl ether	Carbon disulphide
Dichlorethane	Xylene
Diethyl ether	

Plastic parts made of PP: Pan for turkey production, pan for turkey rearing, pendulum bracket, drip cup small / big

This list does not claim to be complete. Please pay attention to the resistance lists of the chemicals used.

11 Spare parts list

11.1 Drinker with aluminium T-profile and drip cup

30-61-3749	Drinker cpl with Top nipple 3000-09 orange
30-61-3752	Drinker cpl with Top nipple 3000-12 orange
30-61-3755	Drinker cpl with Top nipple 3000-15 orange
30-61-3849	Drinker cpl with Top nipple 3000-09 SST
30-61-3852	Drinker cpl with Top nipple 3000-12 SST
30-61-3855	Drinker cpl with Top nipple 3000-15 SST
30-61-3839	Drinker cpl with screw nipple 50 3000-09
30-61-3842	Drinker cpl with screw nipple 50 3000-12
30-61-3845	Drinker cpl with screw nipple 50 3000-15
30-61-3939	Drinker cpl with screw nipple 100 3000-09
30-61-3942	Drinker cpl with screw nipple 100 3000-12
30-61-3945	Drinker cpl with screw nipple 100 3000-15

11.2 Drinker with supporting tube and anti-roost wire without drip cup

30-61-5209	Drinker cpl with SaniStar-4.5 3000-09 with supporting tube + anti-roost wire
30-61-5212	Drinker cpl with SaniStar-4.5 3000-12 with supporting tube + anti-roost wire
30-61-5215	Drinker cpl with SaniStar-4.5 3000-15 with supporting tube + anti-roost wire
30-61-5218	Drinker cpl with SaniStar-4.5 3000-18 with supporting tube + anti-roost wire
30-61-5220	Drinker cpl with SaniStar-4.5 3000-20 with supporting tube + anti-roost wire

11.3 Drinker with aluminium T-profile without drip cup

30-61-5109	Drinker cpl with SaniStar-4.5 3000-09
30-61-5112	Drinker cpl with SaniStar-4.5 3000-12
30-61-5115	Drinker cpl with SaniStar-4.5 3000-15
30-61-5118	Drinker cpl with SaniStar-4.5 3000-18
30-61-5120	Drinker cpl with SaniStar-4.5 3000-20

11.4 Drinker with aluminium T-profile, anti-roost wire and drip cup

30-61-4889	Drinker cpl with Top nipple 3000-09 SST with 2 x anti-roost-wire aluminium profile
30-61-4892	Drinker cpl with Top nipple 3000-12 SST with 2 x anti-roost-wire aluminium profile
30-61-4895	Drinker cpl with Top nipple 3000-15 SST with 2 x anti-roost-wire aluminium profile
30-61-4898	Drinker cpl with Top nipple 3000-18 SST with 2 x anti-roost-wire aluminium profile
30-61-4819	Drinker cpl with screw nipple 100 3000-09 SST with 2 x anti-roost-wire aluminium profile
30-61-4822	Drinker cpl with screw nipple 100 3000-12 SST with 2 x anti-roost-wire aluminium profile
30-61-4825	Drinker cpl with screw nipple 100 3000-15 SST with 2 x anti-roost-wire aluminium profile
30-61-4828	Drinker cpl with screw nipple 100 3000-18 SST with 2 x anti-roost-wire aluminium profile

11.5 Drinker with supporting tube, double anti-roost wire and drip cup

30-61-4879	Drinker cpl with Top nipple 3000-09 SST with supporting tube and 2 x anti-roost-wire
30-61-4882	Drinker cpl with Top nipple 3000-12 SST with supporting tube and 2 x anti-roost-wire
30-61-4885	Drinker cpl with Top nipple 3000-15 SST with supporting tube and 2 x anti-roost-wire
30-61-4888	Drinker cpl with Top nipple 3000-18 SST with supporting tube and 2 x anti-roost-wire
30-61-4809	Drinker cpl with screw nipple 100 3000-09 SST with supporting tube and anti-roost wire
30-61-4812	Drinker cpl with screw nipple 100 3000-12 SST with supporting tube and anti-roost wire
30-61-4815	Drinker cpl with screw nipple 100 3000-15 SST with supporting tube and anti-roost wire
30-61-4818	Drinker cpl with screw nipple 100 3000-18 SST with supporting tube and anti-roost wire

11.6 Drinker with supporting tube, anti-roost wire and drip cup

30-61-4849	Drinker cpl with Top nipple 3000-09 SST with supporting tube and anti-roost wire
30-61-4852	Drinker cpl with Top nipple 3000-12 SST with supporting tube and anti-roost wire
30-61-4855	Drinker cpl with Top nipple 3000-15 SST with supporting tube and anti-roost wire
30-61-4869	Drinker cpl with Top nipple 3000-09 with supporting tube and anti-roost wire
30-61-4872	Drinker cpl with Top nipple 3000-12 with supporting tube and anti-roost wire
30-61-4875	Drinker cpl with Top nipple 3000-15 with supporting tube and anti-roost wire
30-61-4859	Drinker cpl with screw nipple 50 3000-09 with supporting tube and anti-roost wire
30-61-4862	Drinker cpl with screw nipple 50 3000-12 with supporting tube and anti-roost wire
30-61-4865	Drinker cpl with screw nipple 50 3000-15 with supporting tube and anti-roost wire
30-61-4939	Drinker cpl with screw nipple 100 3000-09 with supporting tube and anti-roost wire
30-61-4942	Drinker cpl with screw nipple 100 3000-12 with supporting tube and anti-roost wire
30-61-4945	Drinker cpl with screw nipple 100 3000-15 with supporting tube and anti-roost wire

11.7 Drinking system DuoFlow

30-61-5722	Drinker 3000-10 CombiMaster 45/35 with drip cup large DuoFlow
30-61-5723	Drinker 3000-12 CombiMaster 45/35 with drip cup large DuoFlow
30-61-5724	Drinker 3000-15 CombiMaster 45/35 with drip cup large DuoFlow
30-61-5725	Drinker 3000-18 CombiMaster 45/35 with drip cup large DuoFlow

11.8 Drinker standing

30-61-3549	Drinker cpl with screw nipple 50 3000-09 standing
30-61-3555	Drinker cpl with screw nipple 50 3000-15 standing
30-61-3559	Drinker cpl with Top nipple 3000-09 SST standing
30-61-3562	Drinker cpl with Top nipple 3000-12 SST standing
30-61-3565	Drinker cpl with Top nipple 3000-15 SST standing

11.9 Drinker A-rack metal

15-22-5240	A-rack metal 5800 / 4 perches / 2 x 12 nipple drinkers
15-22-5250	A-rack metal 5800 / 5 perches / 2 x 12 nipple drinkers
15-22-5260	A-rack metal 5800 / 6 perches / 2 x 12 nipple drinkers
15-22-5461	A-rack metal 5800 / 6 perches /1 feed line / 24 nipple drinkers
15-22-5471	A-rack metal 5800 / 7 perches /1 feed line / 24 nipple drinkers
15-22-5472	A-rack metal 5800 / 7 perches / 2 feed lines / 24 nipple drinkers
15-22-5482	A-rack metal 5800 / 8 perches / 2 feed lines / 24 nipple drinkers

11.10 Drinker “Penduval” for turkeys

30-61-5303	Drinker cpl with turkey nipple 3000-03 turkey rearing / hen fattening
30-61-5304	Drinker cpl with turkey nipple 3000-04 turkey rearing / hen fattening
30-61-5305	Drinker cpl with turkey nipple 3000-05 turkey rearing / hen fattening
30-61-5403	Drinker cpl with turkey nipple 3000-03 for fattening of cocks
30-61-5404	Drinker cpl with turkey nipple 3000-04 for fattening of cocks
30-61-5405	Drinker cpl with turkey nipple 3000-05 for fattening of cocks

11.11 Drinker “Pekino” for ducks

30-61-5475	Drinker cpl with duck pan 3000-03 Pekino
30-61-5476	Drinker cpl with duck pan 3000-04 Pekino
30-61-5477	Drinker cpl with duck pan 3000-05 Pekino

11.12 Drinker for geese

30-61-5800	Drinker 3000-16 for geese (tube design)

11.13 Round drinkers

30-03-3300	Round drinker cpl Jumbo-J with cord and hose
30-03-3310	Round drinker cpl Jumbo-B with cord and hose
30-03-3320	Round drinker cpl Jumbo-98 with cord and hose
30-03-3330	Round drinker cpl Jumbo-T with cord and hose
30-68-1500	Chick-fount plastic 2.5 litres
30-68-1510	Chick-fount plastic 5.0 litres
30-05-1050	Round drinker Minimaster 2 without connection material
30-05-1060	Round drinker cpl Minimaster 2 without connection material

1 Checklist key points summary

Important! Please remember to cut this page and the following pages along the line from this manual and keep them save as ***blank*** master copies!

Date _____ Name _____

Key points – daily tasks		Comments
☐	Check the system pressure of the water connection unit.	
☐	Check the water filter. Clean the water filter at a pressure difference of ≤ 0.5 bar.	
☐	Check and clean the pressure regulator and filter combination, if necessary. The output pressure should be max. 3 bar.	
☐	Check the function of the medicator.	
☐	Check and document the water consumption of the birds.	
☐	Check the water column height in the transparent hose at the beginning and end of each drinker line.	
☐	Adjust the water column of all drinker lines at the same level.	
☐	Check the tightness of the drinking nipples and tube couplings.	
☐	Check the functioning of the drinking nipples on a random basis.	
☐	Check the tightness of the entire drinking system.	

Date

Name

Key points – weekly tasks		Comments
☐	Check the horizontal alignment of the nipple pipes.	
☐	Adjust the height of the drinker line according to the birds' growth.	

Date

Name

Key points – monthly tasks		Comments
☐	Clean and flush the complete drinker line if the system is operated in hot climate zones.	

Date

Name

Key points - after every batch		Comments
☐	Clean and flush the complete drinker line.	
☐	Flush the nipple pipes and drip cups.	
☐	Check the main traction rope. Pay special attention to the areas of the cable drums and winding tubes.	
☐	Check all pulleys for correct rotation.	
☐	Check whether the main traction rope and the other traction ropes run in their rolls.	