Instruction Manual, Operation and Maintenance
original instructions

Combifast®

InterPuls

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Summary

1 GENERAL INFORMATION

1.1 General information and safety warnings

1.1.1 Important warnings

To safeguard the operator and prevent any damage to the equipment, before carrying out any kind of operation it is important to have read and fully understood the instruction manual.

1.1.2 Symbol used in this manual

The following symbols are used in this manual to highlight indications and warnings which are of particular importance:

WARNING

This symbol indicates health and safety regulations designed to protect operators and/or any exposed persons.

CAUTION

This symbol indicates that there is a risk of causing damage to the equipment and/or its components.

NOTE

This symbol is used to highlight useful information.

1.1.3 Rules and regulations for the user

WARNING

Any failure to observe the warnings provided in this manual may lead to equipment malfunctions or damage to the system.

1.1.4 Limitation of liability

InterPuls S.p.A. declines all liability for damage to persons, animals and/or things caused by incorrect use of the equipment.

1.2 Prior using the product

1.2.1 Requirements and rules for personnel and Safety Rules

WARNING

Before using the device, the operator must carefully read the manual.
The person using the device must be of legal age and be trained and physically and mentally fit. He or she must also have been provided with adequate information on how to operate the device.
During the assembly and activation of the device, follow the instructions in the manual and rules and regulations applying to health and safety at the workplace.
As the Portable ACR-SMART is an operator hand-held device, the operator must wear non-slip safety shoes during use to prevent damage from accidental falls of the device

1.3 Disposal

1.3.1 General regulation

The appliances must be disposed of only and exclusively by specially authorized waste disposal companies in accordance with all relative legislation and prescriptions.
The packaging must be consigned to the relative authorized companies to be recycled.

1.4 Fire prevention

1.4.1 Fire prevention

NOTE

The device is not equipped with fire extinguishers.

The operator must make sure that the place in which the appliance is installed is equipped with an adequate number of suitable fire extinguishers. The extinguishers must be positioned where they are clearly visible and protected from damage and improper use.

1.4.2 Safety regulations

WARNING

It is strictly prohibited to extinguish fires involving electrical equipment with water!

1.4.3 Characteristic of extinguishers

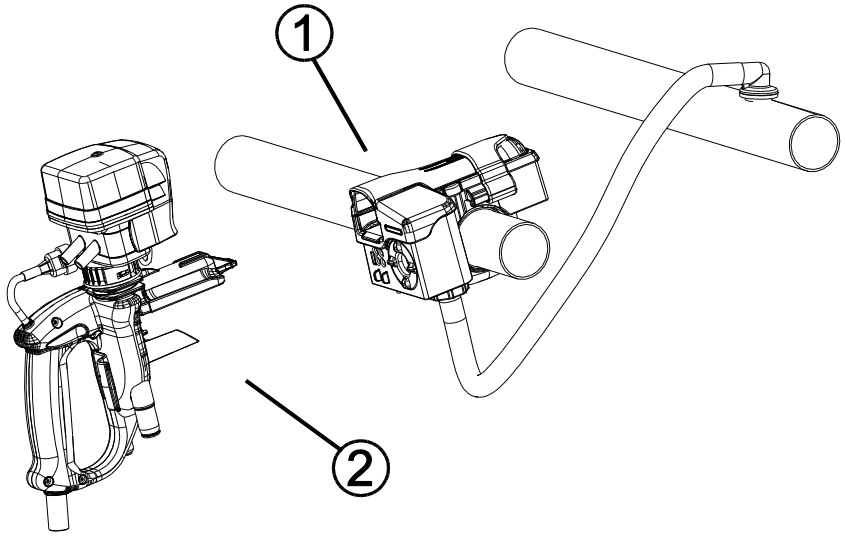
Use powder, foam or halogen extinguishers which must be positioned next to the device.
Operating personnel must receive adequate instruction on how to use the extinguishers.

2 DESCRIPTION OF THE DEVICE

2.1 General characteristics

CombiFast® is a connecting system designed to simultaneously connect milk, vacuum, electrical power supply and data transfer lines.
It is made of light, shock absorbent thermoplastic and features a practical handle which makes it easy to transport and use.

Combifast® consists of a fixed part (rif. 1), assembled on the milk line, and a mobile one (rif. 2).



Combifast is available in different versions:

- With milk and vacuum connectors.
- With milk, vacuum and electrical power supply connectors.
- With milk, vacuum, electrical power supply and data transfer connectors.
- Suitable for use with air pulsator.
- Suitable for use with electronic pulsator.

3 TECHNICAL FEATURES

Technical specifications	
MOVABLE component	
Milk Line (IDxOD)	16x18 mm (0.63x0.7 in)
Vacuum Line (IDxOD)	14x19 mm (0.55x0.74 in)
Dimensions (LxWxH)	240x240x89 mm (9.44x9.44x3.5 in)
Weight	0.146 Kg (0.32 lb)
FIXED component	
Milk Line	OD 40 – 50,8 – 52 – 63
Diameter stainless steel milk tube opening	22 mm (0.86 in)
Diameter vacuum tube opening	22 mm (0.86 in)
Vacuum Connector (IDxOD)	14x19 mm (0.55x0.74 in)
Dimensions (LxWxH)	173 x 148 x 102 mm (6.81x5.82x4.01 in)
Weight	0.506 kg (1.11 lb)
Operation specifications	
Operating vacuum	between 36 and 60kPa (typically 50kPa) between 10.63 and 17.71 “Hg (typically 14.76 “Hg)
Operating temperatures (environment)	-5ºC ÷ +40ºC (23°F ÷ 104°F)
Transport/storage temperatures	-20ºC ÷ +50ºC (-4°F ÷ 122°F)
Temperature of the washing mixture	Min 60°C - Max 90°C (Min 140°F – Max 194°F)

4 FORESEEN AND UNFORESEEN USE

4.1 Foreseen use

CombiFast® is a connecting system designed to simultaneously connect milk, vacuum, electrical power supply and data transfer lines.
Suitable for any round-the-shed milking system, CombiFast® can be used in conjunction with Portable iMilk401, iMilk401 Lite and Acr Smart. They allow pulsation control, measurement of milk extracted (only with Portable iMilk401 and iMilk401 Lite) and automatic cluster removal

NOTE
For further information see chapter 6 - COMBIFAST WITH PORTABLE.

4.2 Unforeseen use

The machinery, as outlined in this manual, must not be used for purposes other than those foreseen and indicated in the 4.1 - Foreseen Use section.

WARNING
Any use other than the one covered in this manual is considered improper use and is therefore forbidden. InterPuls S.p.A. declines any liability associated with any use of the device other than the one covered in this manual.

WARNING
Application of loads is forbidden.

5 INSTALLATION

<table>
<tr><th>Step</th><th>Description</th></tr>
<tr><td rowspan="2">1</td><td>Foresee the installation of one fixed component for every 2 animals.

Pierce the milk (ref. 3) and vacuum (ref. 4) lines with a 22 mm (0.86 in) diameter drill bit.

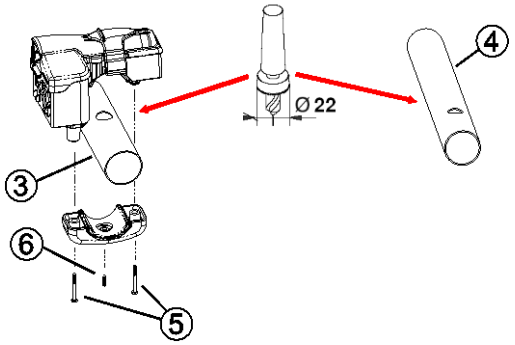
CAUTION
Carefully sand the holes to avoid damaging the gaskets.</td><td> 

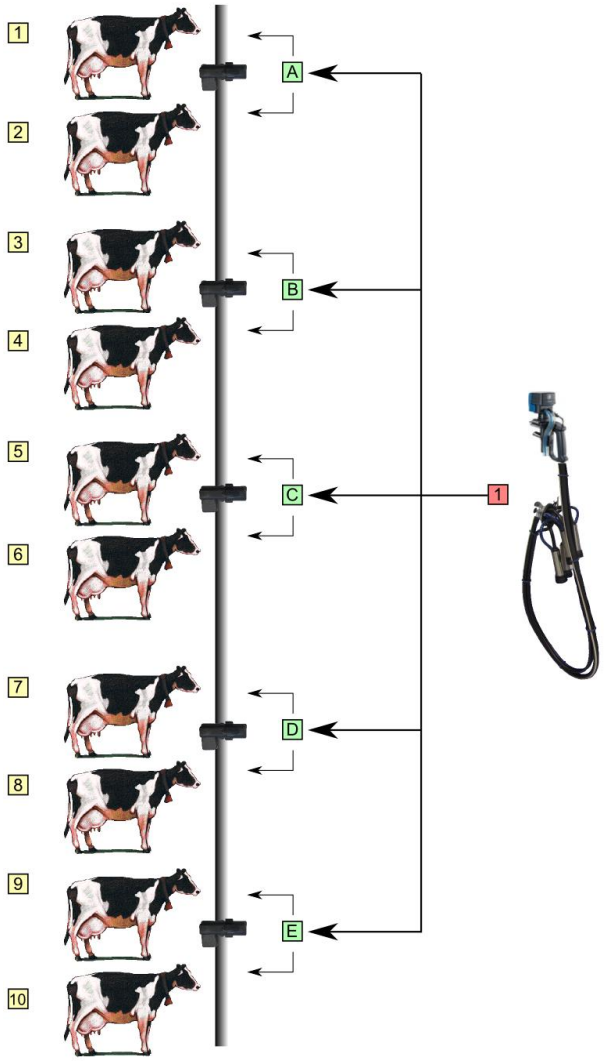
Fig. 1 – Piercing and installation of lines</td></tr>
<tr><td>NOTE
Foresee one movable component for every 5 fixed components.</td><td> 

Fig. 2 – Layout example</td></tr>
</table>

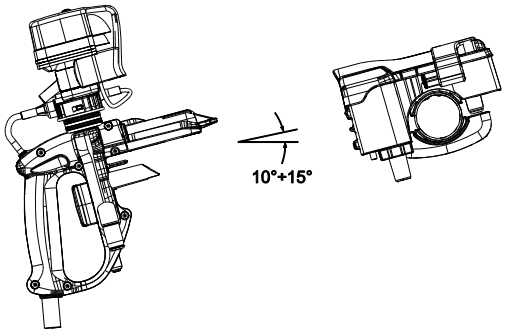
<table>
<tr><th>Step</th><th colspan="2">Description</th></tr>
<tr><td>2</td><td>Install the fixed component on the milk line by twisting the pair of screws (ref. 5) to the end; carefully tighten the nut (ref. 6) located on the lower half-shell to fully fasten.
CAUTION
To not over tighten the nut (ref. 6).
For optimal fastening, fully twist the nut once after contact with the milk tube.
NOTE
In order to facilitate the installation, it is suggested that the movable component be put at an angle of 10 ~ 15° to the horizontal surface.</td><td> 

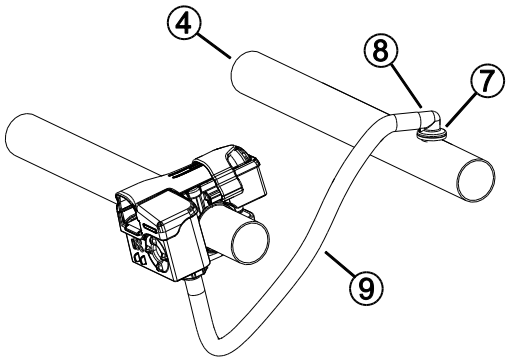
Fig. 3 – Suggested angle for fixed components</td></tr>
<tr><td>3</td><td colspan="2">Install the gasket (ref. 7) onto the vacuum line (ref. 4) and therefore, subsequently, the vacuum withdrawal nipple (ref. 8) at a 90° angle.</td></tr>
<tr><td>4</td><td>Connect the fixed component to the vacuum nipple (ref. 8) with the piece of tube (ref. 9). The length of this piece must be adapted, in order to avoid harsh curves or the partial twisting of the tube on itself.
Connect the claw’s milk tube to the Combifast’s movable component ID 14 milk tube using a suitable piece of milk tube (2.5m – 8.2 ft suggested).
Connect the pulsator to the claw with an equivalent pulsator tube.
WARNING
The tube (ref. 9) must be positioned at a distance from the animals.</td><td> 

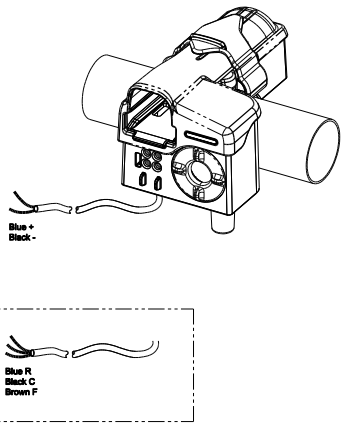
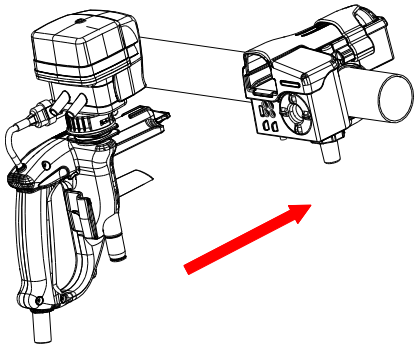
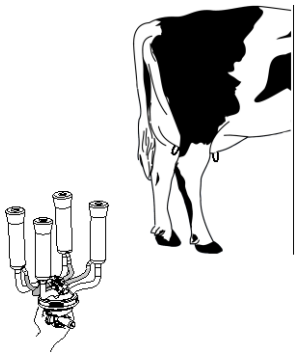
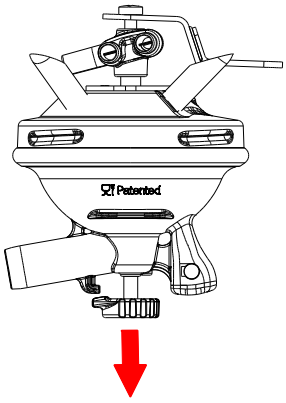
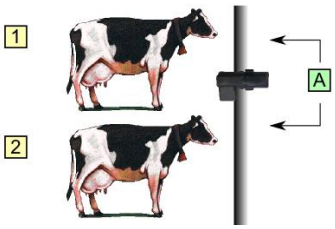
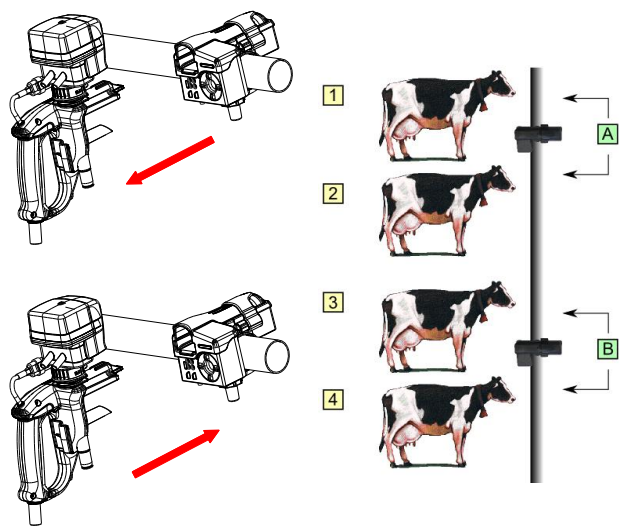
Fig. 4 – Connection of fixed component to the vacuum nipple</td></tr>
<tr><td>5</td><td>For systems which foresee milking with LP20 / LP30 electronic pulsators, the fixed component’s power supply must be connected to the IT transformer.</td><td> 

Fig. 5 – Connection of pulsator’s power supply / data transfer lines to the IT junction box</td></tr>
<tr><td>6</td><td colspan="2">WARNING
For the electrical version, verify that the connection of the cable to the main line is perfectly isolated from the surrounding environment.</td></tr>
</table>

5.1 Operations for milking

Milking with Combifast is carried out as follows:

Step	Description	
1	Insert the movable component in the fixed component angled horizontally to facilitate insertion.	 **Fig. 1 –** Insertion movable component
2	Attach the milking cluster to the animal (1) and begin milking.	 **Fig. 2 –** Application of milking cluster
3	Upon termination of milking, close the milking claw valve and remove the cluster from the animal (1).	 **Fig. 3 –** Valve closure
4	Open the claw valve and attach the cluster to the next animal (2). Milk the animal (2). Upon termination of milking, close the milking claw valve and remove the cluster from the animal.	 **Fig. 4** – Milking 1 and 2

Step	Description	
5	Remove the movable component from the first fixed component (A) and insert it into the subsequent fixed component (B). Continue with the milking of animals 3 and 4.	 **Fig. 5 –** Milking 3 and 4

6 COMBIFAST WITH PORTABLE

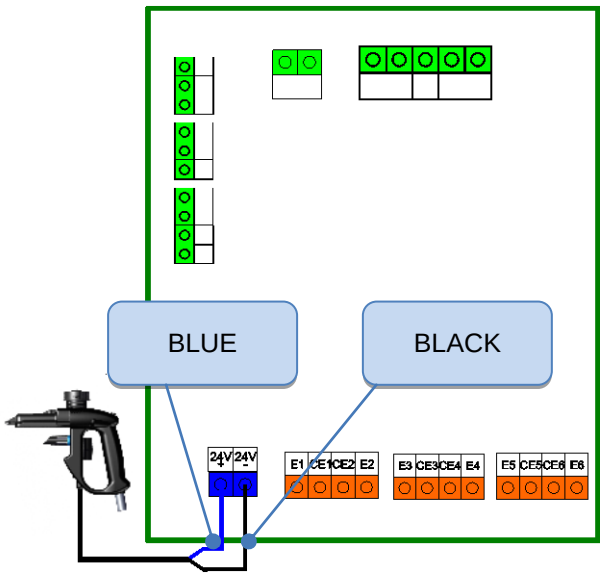
As shown in the following diagrams, CombiFast® can be connected to Portable iMilk401, oMilk401 Lite and Acr Smart.

NOTE
For further details of use relating to Portable iMilk401, iMilk401 Lite and Acr Smart refer to the relevant manuals.

6.1 Combifast with Portable iMilk401 and Portable iMilk401 Lite

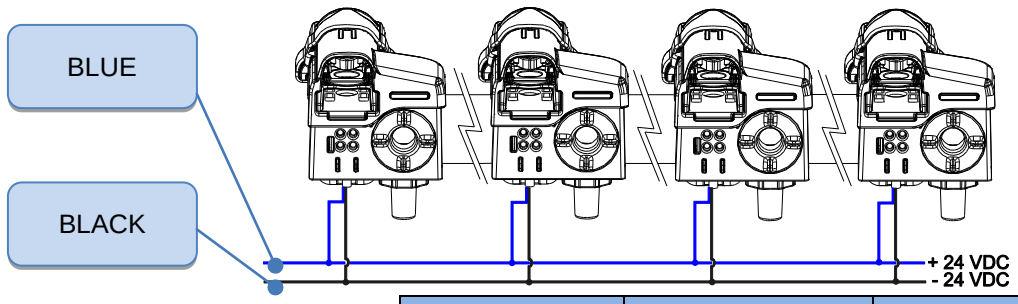
6.1.1 Connection without data download

6.1.1.1 Movable part



	Terminal	Description	Cable Colour
POWER SUPPLY	SUPP.	24V +	BLUE
	SUPP.	24V -	BLACK

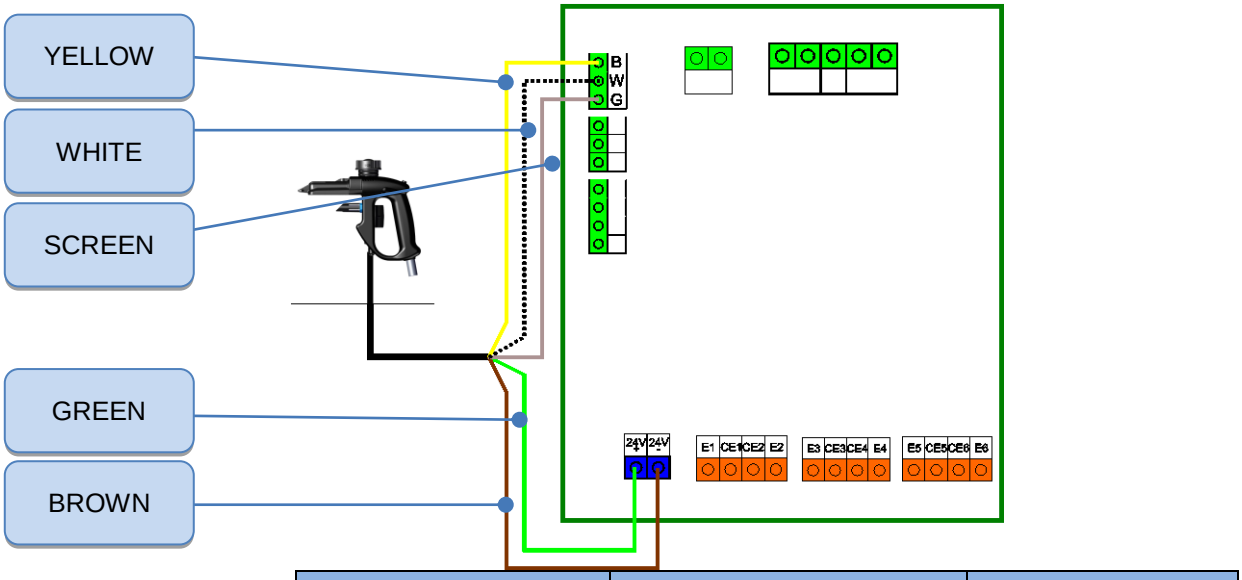
6.1.1.2 Fixed Part



	Terminal	Description	Cable Colour
POWER SUPPLY	SUPP.	24V +	BLUE
	SUPP.	24V -	BLACK

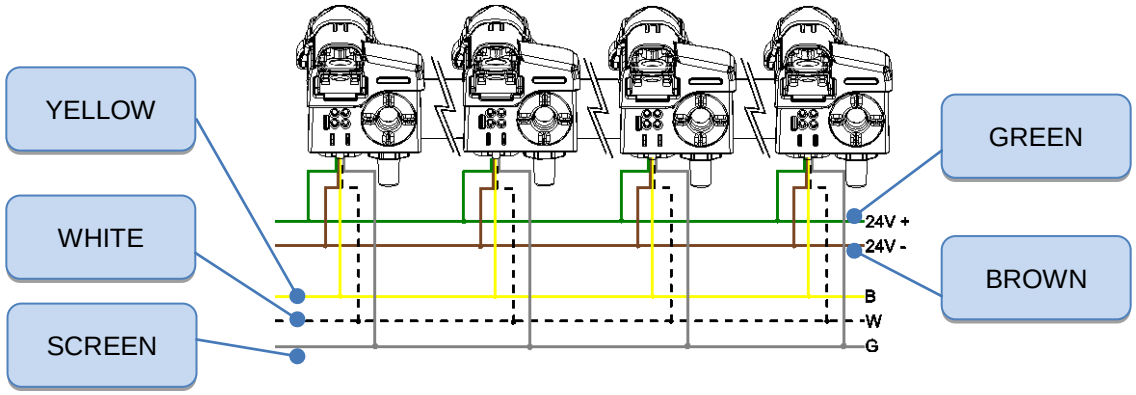
6.1.2 Connection with data download

6.1.2.1 Movable Part



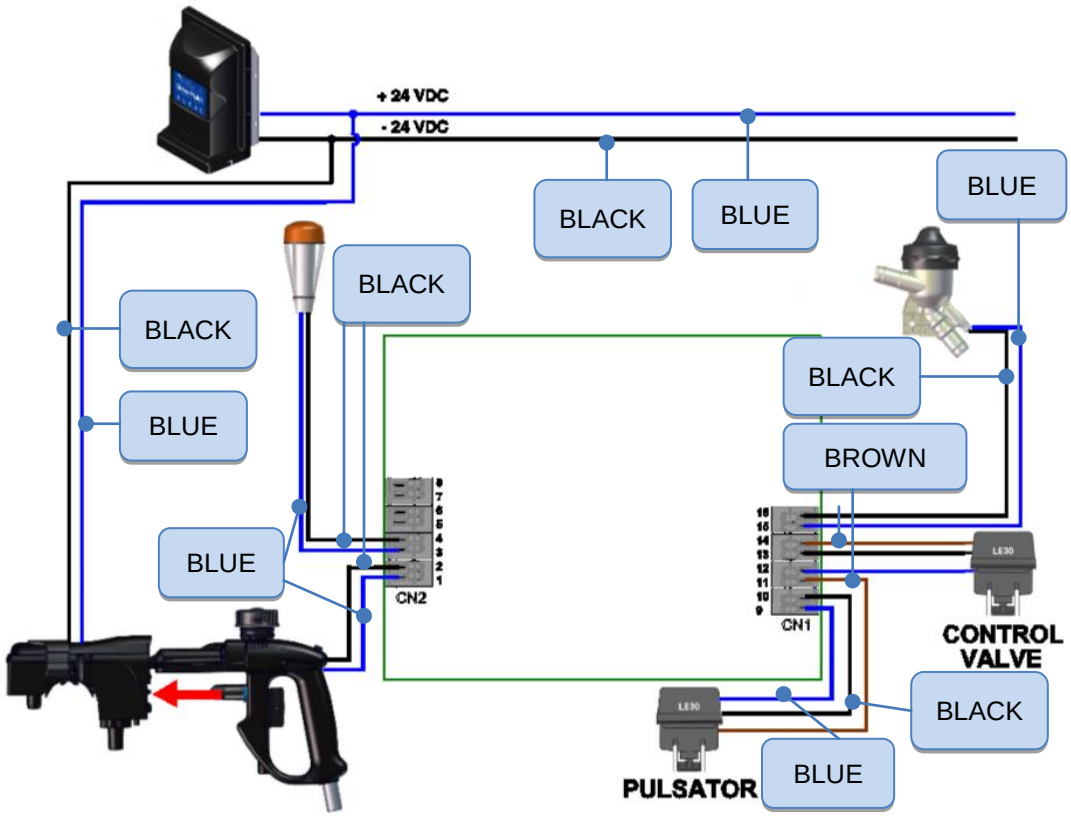
	Terminal	Description	Cable Color
POWER SUPPLY	+24VDC	24VDC POWER SUPPLY	GREEN
	-24VDC	CAN BUS	BROWN
CAN BUS	B	DATA DOWNLOAD	YELLOW
	W	DATA DOWNLOAD	WHITE
	G	DATA DOWNLOAD	SCREEN

6.1.2.2 Fixed Part



	Terminal	Description	Cable Colour
POWER SUPPLY	+24VDC	SUPP.	GREEN
	-24VDC	SUPP.	BROWN
SUPPLY	B	DATA DOWNLOAD	YELLOW
	W	DATA DOWNLOAD	WHITE
	G	DATA DOWNLOAD	SCREEN

6.2 Combifast with Portable Acr Smart



	CN2 Terminal	Description	Cable Colour
POWER SUPPLY	1	24VDC (+)	BLUE
	2	24VDC (-)	BLACK
GLOBE	3	GLOBE	BLUE
	4		BLACK
	CN1 Terminal	**Description**	**Cable Colour**
LE30 PULSATOR	9	Rear Pulsations	BLUE
	10	Common	BLACK
	11	Front Pulsations	BROWN
LE30 CONTROL VALVE	12	Shut-off Valve	BLUE
	13	CV20 Common	BLACK
	14	DVC 1000	BROWN
SENSOR	15	HFS SENSOR	BLUE
	16		BLACK

7 MAINTENANCE

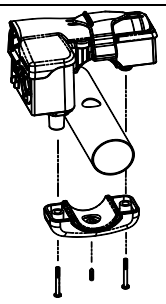
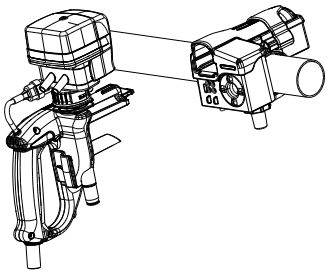
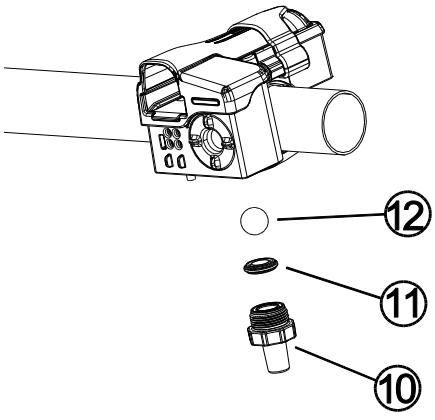
7.1 Daily maintenance

The product must be washed after every milking session:

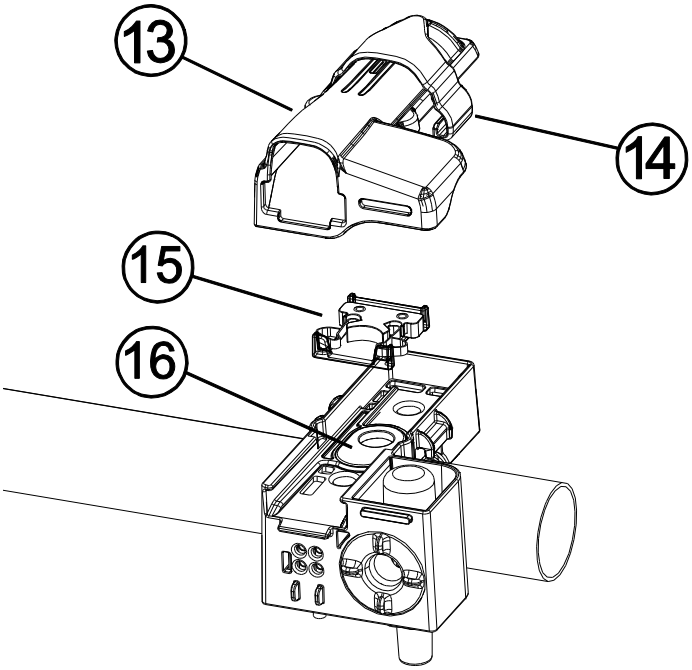
- **Fixed component:**
- The areas of milk flow within the fixed component are automatically washed after every milking session, when the system's washing program is activated.
- **Movable component:**
- Every movable component is placed in the washing room on special fixed ledges dedicated to the washing and stocking of the product until the following milking session.

7.2 Periodical maintenance

Combifast requires the following maintenance interventions on an annual basis:

Check the tightness of nut and screws: - Check that the fastening nut and screws are correctly tightened.	 **Fig. 1 –** Tightening of screws
External cleaning: - Insert the movable component in the fixed component. - Clean using a stream of room temperature water. - Upon completion of the washing program, remove the movable component from the fixed component.	 **Fig. 2 –** External cleaning
Periodic cleaning of compartment containing the vacuum float ball: - Disconnect the vacuum line from the straight nipple (ref. 10). - Unscrew the straight nipple (ref. 10) avoiding that the black gasket (ref. 11) and vacuum float ball (ref. 12) fall. - Clean the compartment containing the vacuum float ball and the edge of the gasket, where the ball sits, with warm water and a neutral detergent. - Carefully dry the components and insert the gasket (ref. 11) onto the apposite part of the straight nipple (ref. 10), until connected. - Rest the ball (ref. 12) on the nipple complete with gasket. - Tighten all components. - Reconnect the vacuum line.	 **Fig. 3 –** Cleaning of compartment containing vacuum float ball
Check the tightness of the nipple (ref. 10): Ensure the nipple (ref. 10) is screwed in. This verification is vital to avoid the breaking of the movable component's nipple.	

8 TROUBLE SHOOTING

PROBLEM DETECTED	POSSIBLE CAUSE	SOLUTION
Problems interesting the movable component	Incorrect positioning of the ball (ref 12, see figure previous page)) in the fixed component	Position the ball as indicated in the 7.2 - Periodical maintenance section of this manual.
Problems interesting / removing of fixed / movable component	Poor lubrication upper surface of milk gasket	Lubricate the sliding surface of the fixed component ‘s rectangular drawer with vaseline oil or silicone spray as detailed below: • Dismantle the hood (ref. 13) by sliding the attached slider (ref. 14). • Extract the rectangular drawer complete with steel spring (ref 15). • Lubricate the upper surface (ref. 16) of the milk gasket in contact with the drawer with a small quantity of vaseline oil or silicone spray. • Reposition the drawer (ref. 15). • Reposition the hood (ref. 13) blocking it with the slider (ref. 14). 

9 SPARE PARTS DIAGRAM