CLUSTER-FLUSH

Milking Cluster Disinfection System
DOUBLE-UP LOW LEVEL PARLOUR

Installation Manual

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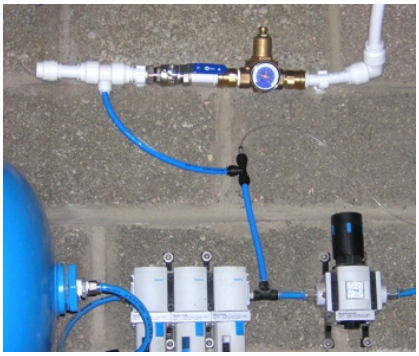


AIR SUPPLY

CHEMICAL ENTRAINMENT

(option)

FLEXIBLE PIPE RUN

WATER INLET SYSTEM

HEADER TANK

(Note: Level With Cylinders)

CONNECTION TO MILK LINE (Y Piece)

COTSWOLD CLUSTER FLUSH

Milking Cluster Disinfection System

FOR SWING OVER PARLOURS
Model 220

PRODUCT MANUFACTURING, SERVICING & MAINTENANCE OVERVIEW

The Cotswold Cluster Flush is a system for the effective removal of infectious material left in the milking cluster after a cow has been milked, so that the cluster is disinfected before it is used to milk another cow.

The system mixes a small amount of recommended disinfectant with a pre-determined amount of water, and automatically "flushes" each milking cluster with this mixture. This process is repeated after every cow is milked.

Using the Cluster Flush System leads to a substantial reduction in the risk of cross-infection between cows in the dairy.

SERVICES
The system is mains-powered (230v 50/60hz 1amp). At the point of use the operating voltage is reduced to 24v dc.

The system requires a ready supply of fresh clean water and a clean compressed-air supply (at 2 bar).

WIRING:
Connect the Power Supply Unit (PSU) to the mains via a double-pole isolation switch, which should be visible and within easy reach of system operators.

Wiring from the power supply to each control box should be SELV, using a suitable type of wire like H03VVF with a CSA of at least 0.75mm2.

All controllers and the power supply unit must be suitably earthed.

All connector tags and terminals will be zinc plated.

This equipment is rated for OV (over-voltage) Category 2 supplies.

PRESSURE VESSEL SPECIFICATION AND USAGE
The pressure cylinder is SEP-rated category-1 at its 2 bar mandatory operating pressure. Its maximum safe pressure rating is 6 bar.

ENVIRONMENTAL CONDITIONS:
The system can be installed in milking parlours anywhere on the planet. Do not use in the open, in direct sunlight or where pipework could be subject to freezing.

The protection offered by this product may be impaired or lost if installation and maintenance is not carried out in line with the instructions in this manual.

LABELING
All labels used in this product comply with the CE Water and Hexane Rub Test.

COTSWOLD CLUSTER FLUSH

Milking Cluster Disinfection System

CLUSTER FLUSH – PRODUCTION, SERVICING & MAINTENANCE SAFETY INSTRUCTIONS –

(COMPLETE SYSTEM INCLUDING PRESSURE COMPONENTS)

(The Cotswold Cluster Flush – an SEP category 1 product)

These instructions relate primarily to factory manufacturing procedures, but since the Cluster Flush needs regular onsite service and maintenance, we include them here too.

Component Preparation

All forming, bending drilling chamfering or any other working of components must not cause changes in the mechanical characteristics of those components and in no way reduce their efficiency.

Permanent joints in pressurised segments

For Cluster Flush pressure equipment (pressure cylinders), permanent joining of components which contribute to their pressure resistance - and components which are directly attached to them - must be carried out by suitably trained personnel.

Permanent Joints and their adjacent zones must be free of any surface or internal defects that could be detrimental to the safety of the equipment. Permanent joints must always meet the minimum properties specified for the materials to be joined.

Traceability

Inner pressure cylinders must be permanently labelled to show operating pressure and year of manufacture.

Use label: (*Pressure-Vessel (Sep-Category-1)* , also label: *(S Ayling materials and date of moulding).*

Final Testing

Pressure equipment must be subjected to final testing and inspection. A test and inspection of the completed power supply unit and every control panel/pressure cylinder assembly is essential.

IF IN DOUBT – ASK!

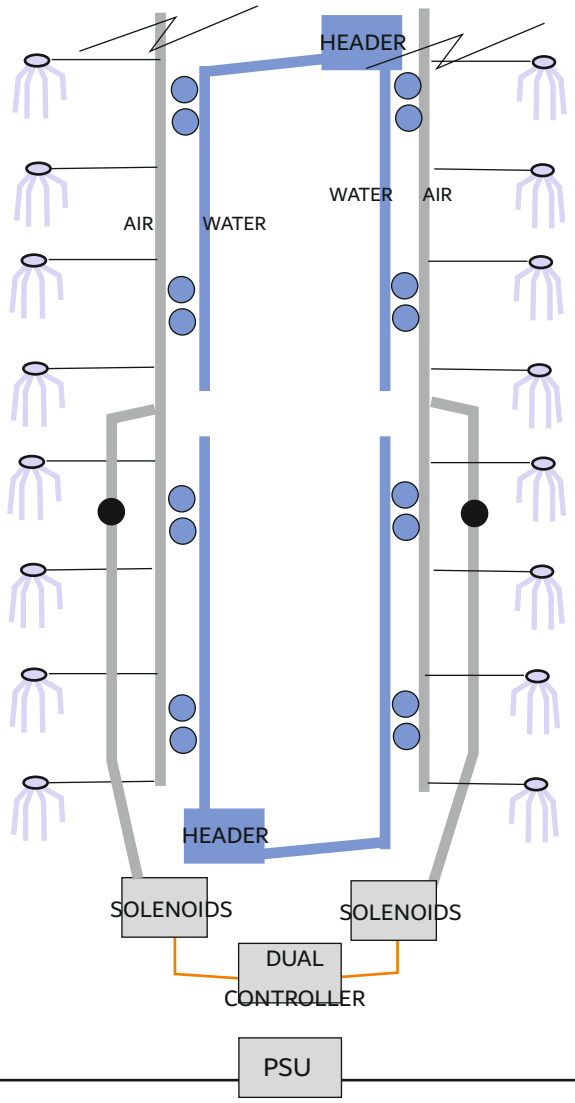
IEC 60417-5018)

COTSWOLD CLUSTER-FLUSH

Milking Cluster Disinfection System

FOR LOW-LEVEL DOUBLE-UP PARLOURS:

OVERHEAD SCHEMATIC
up to 20 x 20 (2 x 10)
(use in conjunction with attached schematic side views)



● = Anti Syphon Valve

● = Water Pressure Cylinder

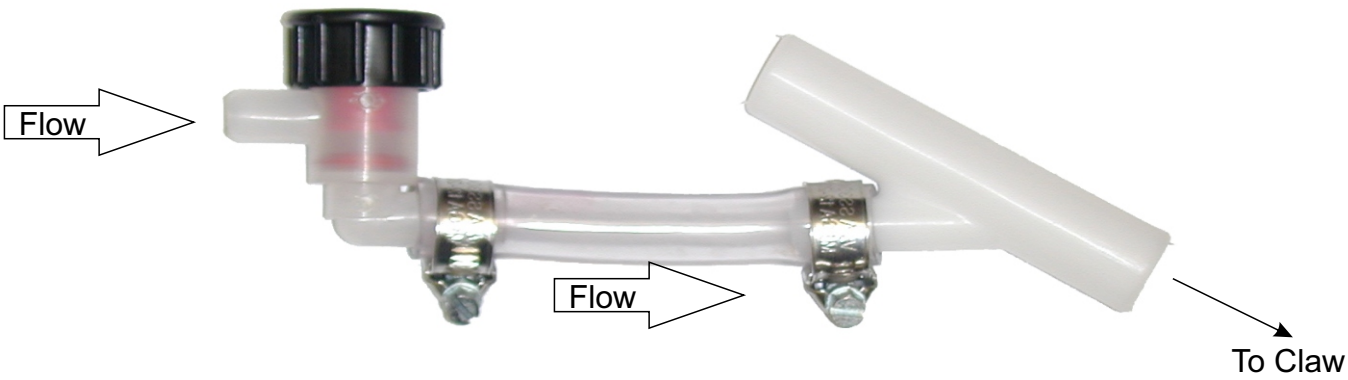
PERACETIC ACID CONCENTRATION
Set dosing at 0.5%
Usage @ Twice-A-Day Milking:-
0.7 Litres / 100 Cows / Day

IMPORTANT

BEFORE installation of your new Cotswold Cluster Flush system:
ensure that all EXISTING milk shut-off valves are working satisfactorily, (sealing fully and without leaks)

SHUT-OFF VALVE
(for CLUSTER FLUSH)

Controls maxi,um of two (2) cluster points on either side of valve (see schematic on previous page).



Unit MUST be installed vertically (as above)

INSTALLATION NOTES

!(DOUBLE-UP PARLOUR LOW LEVEL)
ORDER OF INSTALLATION

!For ease of installation, we recommend the following installation sequence

! 1/ HEADER TANKS
2/ WATER / PLUMBING
3/ SET UP WATER CYLINDERS
4/ INSTALL AIRLINES
5/ CONTROLLERS and ELECTRICAL

WATER / CHEMICAL

Site the Header Tank at the same level as the cylinders. Ensure that the water level in the cylinders is set 50mm (2 inches) below the top of the stainless tube, (see schematic drawings attached).

Run 2" (50mm) water tube from each header tank along each side of the parlour, connecting to each cylinder using tees, taps and 10mm x16mm tube. At lowest point fit a reversed (upside-down) tee/tap so that it can be used as a drain point if required.

Chemical Dosing

We can supply Dosatron high accuracy dosing units if required. When dealing with chemicals, do take all recommended precautions. Before commissioning the system, ensure all unions are tight and the clusters hang correctly

AIR 2 - 3 bar, (pressure reducer may be required)

Connect the airline to the centre of the line of milking points, and Tee out to either side. Use 22mm Flexible Tubing between the compressor (clean air filters should be fitted) and the middle 22x22x10mm tee, (see schematics).

Anti Syphon Valves, fit one valve either side of Tee connection of air line, at the mid point of each half (see schematics)

Pressure Reducer

We can supply suitable pressure reducing valves if required.

ELECTRICAL

Position the Power Supply Unit (PSU) in a safe dry location, run 24v supply to the dual-solenoid control box. If your system is Manually Triggered (by green Thumb-Switches in a grey boxes) locate convenient positions for these and install them.

Arrange a convenient switch to turn off the system when it is not in use.
Always switch off system when washing parlour.

CONNECTION TO MILK LINE

Cut into the milk line and and fit the "Y" piece moulding using 13mm pvc tubing connecting to upper horizontal outlet of stainless steel cylinder.

SEE OVERLEAF FOR PHOTOS OF RECENT INSTALLATIONS

SCHEMATIC
Double-Up Parlour Cluster Flush
Typical Layout for Cotswold Cluster Flush for Double-Up Parlour, Hi/Lo

EURO / MCL DOUBLE UP

GATE SWITCH (OPTION)
GATE VAC CONTROLLER
TO GATE SWITCH (A) VACUUM
ELECTRICAL GATE SWITCHING SIGNAL (option)

COMPUTERISED CONTROL PANEL (controls sides A and B)
I1 (LEFT)
IB (RIGHT)
A B ESC - + OK

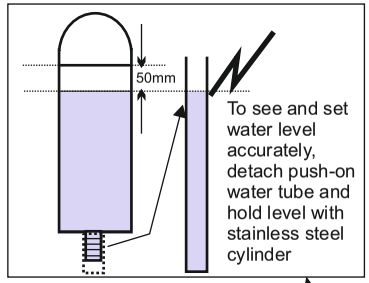
GATE SWITCH (OPTION)
GATE VAC CONTROLLER
GATE SWITCH (B) VACUUM
ELECTRICAL GATE SWITCHING SIGNAL (option)

MASTER SWITCH
POWER IN 230/240v
POWER SUPPLY UNIT
24v
ON - OFF

FOR ELECTRICAL WIRING SEE ELECTRICAL SCHEMATIC

(ALWAYS SWITCH OFF EITHER THE POWER SUPPLY OR THE CONTROLLER(s) WHEN NOT IN USE)

IMPORTANT
Set Cylinder Levels To Header Tank. Level Should Be 50mm Below Top of Stainless Steel Cylinder



AIR-SOLENOID BOX
INPUT

DOSATRON Chemical Induction Unit (option)
WATER SUPPLY
STOP TAP
CHEMICAL STORE (DOSATRON WILL DRAW CHEMICAL UP TO 7 METRES HORIZONTALLY)

AIR TO CENTRE POINT OF RUN
ANTI-SYPHON VALVE
AIR
HEADER TANK
WATER LEVEL
MILK LINE

Pressure Reducing Valve 2 - 3 Bar and food grade air filters
CF21
Compressor 7 - 8 Bar > 100 litres

TAPS MUST BE VERTICAL OR SLOPING UP, TO AVOID AIR-LOCKS
END VIEW
60°

PERACETIC ACID CONCENTRATION
Set dosing at 0.5%
Usage @ Twice-A-Day Milking:-
0.7 Litres / 100 Cows / Day

Typical Layout for Double-Up Parlour, Hi/Lo

EURO / MCL DOUBLE UP

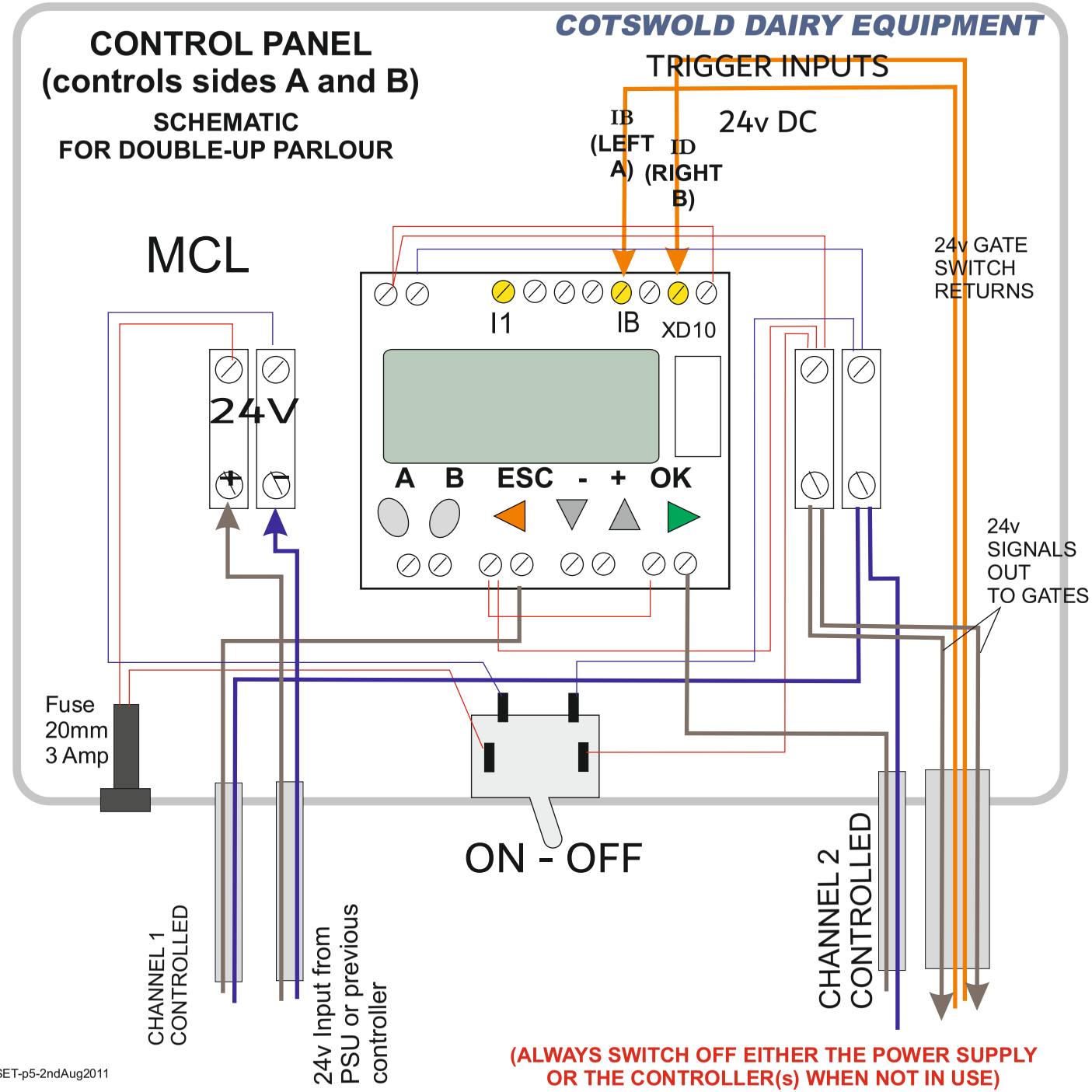
Standard

MCL
DOUBLE UP

COTSWOLD DAIRY EQUIPMENT

CONTROL PANEL (controls sides A and B)

SCHEMATIC FOR DOUBLE-UP PARLOUR



(ALWAYS SWITCH OFF EITHER THE POWER SUPPLY OR THE CONTROLLER(s) WHEN NOT IN USE)

CONTROL PANEL WIRING / CONNECTIONS (controls sides A and B)

MCL
DOUBLE UP
Standard

EURO / MCL DOUBLE UP

COTSWOLD DAIRY EQUIPMENT

CLUSTER FLUSH SCHEMATIC
FOR DOUBLE-UP PARLOUR

ELECTRICAL WIRING SCHEMATIC

(ALWAYS SWITCH OFF EITHER THE POWER SUPPLY OR THE CONTROLLER(s) WHEN NOT IN USE)

POWER SUPPLY UNIT 24v DC

GATE VACUUM CONNECTION

VACUUM SWITCH

CONTROL PANEL (controls sides A and B)

VACUUM SWITCH

TRIGGER INPUTS

For Connections to EURO or MCL controllers. see larger relavant wiring digrams

I1 IB

24V

A B ESC - + OK

For Connections to EURO or MCL controllers. see larger relavant wiring digrams

24v GATE SWITCH RETURNS

24v SIGNALS OUT TO GATES

GATE VACUUM CONNECTION

Fuse 20mm 1 Amp

ON - OFF **(ALWAYS SWITCH OFF WHEN NOT IN USE)**

CHANNEL 1 CONTROLLED

24v Input from PSU or previous controller

CHANNEL 2 CONTROLLED

GATE SWITCHING OPTIONS
Electrical or Vacuum Gate switching is available. Use either electrical gate switching or connect vacuum switches to gate vacuum and use this to trigger the system

PERACETIC ACID CONCENTRATION
Set dosing at 0.5%
Usage @ Twice-A-Day Milking:-

INPUT

GATE CONTROL SWITCH

GATE VACUUM CONTROLLER

TO TRIGGER INPUTS

MANUAL PRESS BUTTON

TO TRIGGER INPUTS

GATE VACUUM

INPUT

GATE CONTROL SWITCH

GATE VACUUM CONTROLLER

TO TRIGGER INPUTS

MANUAL PRESS BUTTON

TO TRIGGER INPUTS

GATE VACUUM

EURO / MCL DOUBLE UP ELECTRICAL WIRING

ACCESSING TIMING PARAMETERS

MCL CONTROLLER (XD10)

(If interrupted, this version will continue from where it was interrupted and complete the cycle. Inputs I2 and IC).

To open main screen, press the "- " (minus) button twice.

To access any sub-menu
Press OK
Then A
then either "+" or "-" to move between sub-menus

2. Select Milk Sweep Setup,

press press either "+" or "-" **to select**

2a. When finished, press esc

3 Timer Setup - Maintenance
(Change Timings)

(a) Initial Delay
Milk Sweep
Flush Delay
First Flush
Fill Time
Second Flush

3. Maintenance Help
Shows "A" Solenoid Function

4. Help - Version (call dealer)

5. Software Version
No. eg: R5-4-M5

MILK SWEEP SETUP using XD10 Controller

(supplement to the “Accessing Timing Parameters” sheets - prev page)

Use this sheet in conjunction with “Milk Sweep” wiring schematic (next page)

(Ensure the Milksweep solenoids are connected to main controller connectors 01 and 03 and the neutral return connects to right hand negative connector).

To access sub-menu “MILK SWEEP” menu:

Enter main menu, then:

1/ Press minus button

2/ Press OK

3/ Press “-“ or “+” to switch on Milk Sweep

4/ Press OK

5/ Press minus

6/ Press OK

7/ Press A

8/ Press minus twice

9/ This menu adjusts the time for the slug

10/ Press OK to store settings.

Cluster Flush Servicing page 1

Service interval: **22,000 actions**

At 1 year, the following service parts should be fitted

Dosatron Service Kit

Food Grade Alr Filter (Compressor)

Dosatron Service Kit DOS/KIT

InlineTap / Lever Valve 152-153

Bracket - Swingover Control Box CF100

Bracket - Pressure Vessel CF38A

Food Grade Air Filters - Service Kit CF21

Other parts you may find useful to have with you when servicing a cluster Flush system.

10 mm i/d x 16mm o/d hose (30m)…….. 151-102
10mm i/d x 20mm o/d hose (30m) 151-127
13mm i/d Hose (30m)…… 151-118
Herbi Clips 16mm…… 154-153B
Herbi Clips 20mm 154-154C
10 MM Jubilee clips…… 154-159A
Brackets for pressure vessels……CF 38A
Brackets for swing over control box……...CF 100
Taps……152-153

see overleaf for Major Service info...

Cluster Flush Servicing page 2

Service interval: 22,000 actions

At 3 years maximum, the following service parts should be fitted (extra to Annual Service)

Service Part: Cylinder Service Kit: Part No CF 99 **(See picture below)**

CF 99 - Replaces all the internal parts of the pressure vessel.
Order one Service Part per Milking Point:
example: 10 x 20 order 10, or 20 x 20 order 20

Replacing the complete vessel assembly is:

Assured: Complete assembly factory-tested before dispatch.
Quick: Internal parts exchanged in-place without moving vessels.
Simple: No small parts to take apart. No leaky re-assembly.
Warranty: We will give 3 years warranty on serviced assembly.

**** See video of service procedure on our Website****

Additional Non-Return Valve: You will also need to replace the external non-return valve, which is included in the service kit.

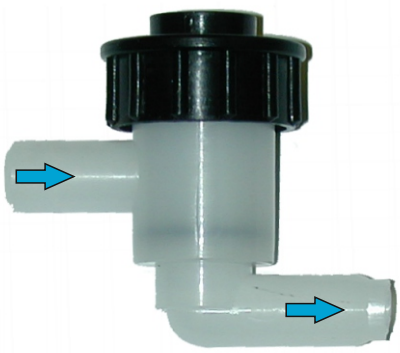
You may want to change flexible tubes during the service
30 Metres 10mm tube - 151-102B
30 Metres 13mm tube – 151-118
30 metres 20mm tube - 151-127

Thoroughly rinse out header tanks and pipe work with alkaline cleaner.

Check water levels: (See picture)
- Water level must be level with or just below top label on the vessels.
- **Important** - water levels above this level risk contamination of milk.

Best way to set water levels:
- Set the water in the header tanks level with the overflow
- Set the top label of the vessels level with the overflow
- This way if the water level rises it only overflows the header tank

Prevent dust and dirt getting into the header tank.



Non-Return Valve
CF91

NRV Kit comes
with 2 x Tube Clamps

Pressure Vessel
Service Kit
CF99

CLUSTER FLUSH
POWER SUPPLY
(Switched Mode)

Fuse
1.5 amp 20mm

outlets, 24v supply
to Cluster Flush
system

PRODUCT	Qty
Power Supply 200W	1
Box	1
Plate	1
Screws	4
Fuseholder	1
Fuse 1.5A 20mm	1
Boot - Fuseholder	1
Cable Gland	2
Nut - Cable Gland	2
Cable 3-core 0.75 (m)	2

COTSWOLD CLUSTER FLUSH - Major Parts

CF40
Header Tank Assembly

CF28
Power
Supply

CF35
Food Grade
Air Filter Set

CF37
½" Tap

CF91
Milk Valve

CF30
Swept Tee

CF21
Air Filter
Service Kit

CF29
Digital Controller
(programmed)

CF99
Cylinder
Service Kit

CF110
Eazy Clip Tool

CF112
20mm Eazy Clip

CF48
Cluster Hanger

CF27
Vac Switch

CF24
Solenoid

CF25
Solenoid

CF26
Solenoid

DECLARATION OF CONFORMITY

COTSWOLD
Dairy Equipment Co Ltd

EC – Declaration of Conformity according to;

Low Voltage Directive 2014 / 35 / EU
Electromagnetic Compatibility Directive 2014 / 30 / EU
Restriction of Hazardous Substances Directive 2011 / 65 / EU
Pressure Equipment Directive 2014 / 68 / EU

We, **Cotswold Dairy Equipment Co Ltd**, located at **Avenue 3, Station Lane, Witney, OX28 4BP, United Kingdom**, declare in exclusive responsibility that the **Cluster Flush** meets the essential health and safety requirements of the above mentioned directives.
To ensure presumption of conformity, the product has been assessed for compliance with the following directives and standards either in part or in full.

Directive	Requirements and / or Standards applied
LVD 2014/35/EU	BS EN 61010-1: 2010+A1: 2019 BS EN 61010-2-201: 2018
RoHS 2011/65/EU	EN 50581: 2012
EMC 2014/30/EU	BS EN 61000-6-4: 2007+ A1: 2011 BS EN 61000-6-2: 2005 AC: 2005 BS EN 61000-3-2: 2014 BS EN 61000-3-3: 2013
PED 2014/68/EU	Annex I

TCF reference no. : CE_TCF_Cluster_Flush

Name: Stephen Gibson
Title: Director

Date: 4th April 2023
Signature:

CE