



MEMORANDUM FOR PERSONS RESPONSIBLE FOR CONTIMAB BUTTERMAKER

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MEMORANDUM FOR PERSONS RESPONSIBLE FOR CONTIMAB BUTTERMAKER

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MEMORANDUM FOR PERSONS RESPONSIBLE FOR CONTIMAB BUTTERMAKER

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P R E F A C E

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THIS MEMORANDUM DOES NOT CONSTITUTE AN "INSTRUCTIONS FOR USE" FOR OUR CONTIMAB MACHINES. IT IS ONLY INTENDED AS A REMINDER FOR THE TECHNICAL STAFF AND PEOPLE RESPONSIBLE FOR THESE MACHINES AND PROVIDES THE ESSENTIAL RULES AND PRINCIPLES FOR THEIR INSTALLATION, OPERATION AND ADJUSTMENT.

IT IS IN THE INTEREST OF SUCH PERSONNEL TO ALSO CAREFULLY STUDY THE VARIOUS MANUALS DEALING WITH INSTALLATION, OPERATION AND SERVICING WHICH ARE SUPPLIED WITH EACH CONTIMAB.

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CHAPTER I

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RECOMMENDATIONS CONCERNING CREAM STORAGE AND CREAM PREPARATION INSTALLATIONS

10 - GENERAL

The experience gained with the hundreds of CONTIMABs in service has shown that the conditions under which the cream is received, stored and prepared prior to churning largely determines the results obtained in terms of butter quality and yield.

Absolutely identical machines fed by different installations with physically similar cream, but prepared differently, can produce very different and sometimes quite opposite results.

The quality of the butter obtained, the precision of its composition, and the butter yield depend for a very large part on the cream preparation installations and cream treatment methods employed.

11 - EQUIPMENT and INSTALLATION

A) - GENERAL PRINCIPLE

Cream, which is a living raw material, has to be treated delicately and should at no time be subjected to brutal agitation, too rapid changes in temperature or excessive back pressures which can damage the fat globules resulting in the creation of free-fat. This is the reason for the following VERY IMPORTANT recommendations on installations for the reception, storage and preparation of cream.

The aim of the following is to obtain the best possible results with continuous churns. However, numerous existing installations do not fully respect these principles leading to technical results which, on certain points, are not as good as they could be.

B) - TRANSFER PUMPS

The fewer pumps there are on the cream circuit, the better the buttermaking results.

The presence of rotary pumps should be formally forbidden and only positive pumps are advised for the whole of the cream circuit.

.../...

Nevertheless, for good results, the PHEs must respect all the following characteristics :

- . cause only a very slight back pressure (maximum 0,5 bars) so as not to alter the fat structure.
- . warm the cream using only luke-warm water (24°C maximum never above).
- . be equipped with an extremely precise temperature regulation device which will guarantee a maximum temperature variation of :
+ or - 1/4°C (IMPERATIVE).
- . be doted with a by-pass between the PHE and the CONTIMAB (ESSENTIAL). This by-pass will allow the cream to be returned to the balance tank :
 - either on starting up, until the temperature is stabilised,
 - or in the event of the CONTIMAB being stopped to prevent an increase in temperature of the cream remaining in the PHE which would cause problems when starting up again.

F) - CREAM FEED PUMP AND BALANCE TANK

The pump should :

- be a positive type, which does not cause any emulsion,
- be equipped with a vari-speed drive so that the full range of speeds necessary for the regulation of the CONTIMAB can be obtained, whatever the nature of the cream being processed,
- be designed with respect to the capacity of the CONTIMAB being fed, to run normally at around 50 % of its maximum throughput and at a maximum speed of 500 rpm. A pump working close to its maximum capacity or running excessively fast will result in emulsion of the cream and not allow a correct, perfect churning,

In order to ensure that the cream pump throughput remains perfectly constant, whatever the height of the cream remaining in the silo-tank, it should be fed by a balance tank.

We recommend for this task a quite large tank (holding capacity in the order of 400 to 500 litres for machines with a capacity of more than 2 tons/hour).

G) - PIPEWORK

The diameter of the pipework should be designed to allow a perfect feeding of the pump, without restricting its throughput and without any emulsion of the cream.

This is particularly important when very sour cream is being processed as it is not very fluid and has a tendency to coagulate. If the cream infeed piping is of too small diameter the pump will be underfed with a lot of emulsion of the cream by the pump leading to poor churning, high fat losses and butter grains in the buttermilk.

We recommend the following minimum diameters :

	sweet cream	acid cream
CONTIMAB - 600 to 2 000 kg/hour	60 mm	70 mm
CONTIMAB - 2 000 to 6 000 kg/hour	70 mm	80 mm

We also advise using the shortest possible length of cream piping, with a minimum of bends, cocks or valves between the cream tank and the CONTIMAB so as to reduce the warming up of the cream in the piping and the emulsion effect.

22 - PERFORATED PLATES & IMPELLERS

The CONTIMAB machines are supplied with additional perforated plates and impellers allowing the final working section to be equipped so that the exact texture of butter required by each customer can be obtained.

The principles are as follows :

- . The finer the holes of the perforated plate and the more perforated plates fitted, the greater the working effect.
- . The wider the angle of the impeller blades, the quicker the butter is pushed through the perforated plates and the lower the working effect.

Consequently :

- . straight (0°) impellers have a maximum working effect ,
- . 30° impellers an average working effect,
- . 45° impellers the least working effect,

Nevertheless, it should be noted that for the correct operation of the CONTIMAB, it is essential :

- . that the first plate of the final working section immediately after the vacuum section, should be an open bearing plate,
- . that the first set of impellers should have 45° blades, this in order to overcome the braking effect of the vacuum by an effective pushing of the butter,
- . that the final set of impellers before the outlet nozzle have 45° blades so as to assure a good discharge of the butter.

Consequently, only the impellers of the intermediary compartments can have 30° and 0° blades.

23 - VACUUM WORKING

The vacuum working operates perfectly, without any risk of obstruction, as long as the progress of the butter is balanced to compensate the action of the vacuum which has a tendency :

- . to draw the incoming butter towards the interior of the vacuum compartment,
- . to brake the discharge of the butter going out towards the discharge nozzle,

Consequently, it is necessary :

- . to slow the butter down before it enters the vacuum compartment by using perforated plates with small holes and by not mounting a set of impellers between the last two plates before the vacuum,
- . to obtain a good pushing of the butter after the vacuum by using immediately after the vacuum section an open bearing plate and a set of 45° impellers.

The correct adjustment of churning is controlled in particular by observing the aspect of the falling butter grains. The operator should endeavour to obtain a good grain formation and a good separation with buttermilk dripping down completely separated from the butter grain.

If there is too much buttermilk flowing in a wide stream either the cream pump speed needs to be increased or the beater speed needs to be reduced.

Furthermore, it should be remembered that when large grains are formed the butter contains slightly more water and is easier to discharge in the separation section resulting in lower auger screw speeds.

If, on the other hand, the grains are very fine, the butter will normally be drier but it will be necessary to increase the working speed in order to facilitate discharge in the separation section.

33 - ADJUSTMENT OF THE BUTTERMILK SEPARATION SECTION

Always try to obtain the lowest possible auger speed, keeping the tunnel continuously full of butter but without causing too big a roll of butter to be formed at its entrance. Partially empty tunnels will allow the passage of excessive amounts of buttermilk into the second section. Too big a roll will lead to trituration of the butter with incorporation of the buttermilk thus increasing the initial moisture content of the butter. Set the siphons so as to obtain a good "splashing about" of the butter grains but without the level being allowed to rise too high which could lead to reincorporation in the tunnels and thereby an increased butter moisture content.

Remember that the butter moisture content is reduced when the siphons are raised.

It sometimes happens that the self-clarifier screens become clogged. The reasons for this are as follows :

- . badly formed butter grain leading to poor separation of the grain from the buttermilk (adjust the cream temperature and the churning speed),
- . siphons suddenly lowered during separation which can lead to butter grains adhering to the screen and its subsequent obstruction,
- . badly regulated reinjection of the buttermilk producing a current carrying the butter grains onto the screen,
- . the clearance between the screens and the spirals of the augers is incorrect and the butter grains are either squashed or not carried away by the augers (re-adjust so as to obtain a clearance between the screens and the augers of around 2,5 mm),
- . the machine has been started up without the rotary sprinklers operating which clean the self-clarifier screens to prevent obstruction during the period of starting up. With a good butter grain formation, the screen sprinklers can be stopped as soon as the starting up period is completed.

37 - RECOMMENDATIONS IN THE EVENT OF A STOPPAGE DURING MANUFACTURE

In order to avoid any difficulties on re-starting, certain precautions should be taken in the following order :

- . Carefully note all the settings so that these can be easily found on re-starting,
- . Stop in the following order :
 - cooling of the separation section,
 - reinjection of buttermilk,
 - the dosing pump,
 - the working augers,
 - the cream pump,
 - churning,
 - all the other pumps in service.

By operating in this way, a large quantity of butter grains will remain in the buttermilk separation section, which will facilitate starting up afterwards.

When re-starting, the cream standing in the pipes having had time to warm up, normal churning with a correct formation of the butter grain and dripping buttermilk will only be obtained once the warmer cream, which remained in the piping, has been absorbed.

Restarting is carried out by starting in the following order :

- . the beater,
- . the cream pump,
- . working,
- . the dosing pump,
- . cooling of the separation section (after a few minutes work),
- . reinjection of chilled buttermilk,
- . all the other pumps.

CHAPT

=====LINE, STARTERS, CONCENTRATES, ETC...
INJE

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40) INJECTION DOSING

The moisture content of the butter can be adjusted in two differentMETHOD

Machines without injection dosing pumps, the moisture content is adjusted by modifying the size of the butter grain by an appropriate speed of the cream pump and churning speed, also by varying the working level and the level of buttermilk in the separation section. The advantage of this method is that the output of the machine varies with the churning results with each change of adjustment. This method is incompatible with the use of automation or moisture control and moisture dosing units.

SECOND METHOD

When using machines equipped with injection dosing, the cream pump, churning speed and working speed are adjusted so as to obtain a butter which is initially slightly drier than the final desired moisture content. The exact percentage of water desired is obtained by the injection of water using the dosing pump. In the event of variation in the final moisture content, it is sufficient to modify the adjustment of the dosing pump without making any other alterations to the machine settings. The output and quality of butter thus remain absolutely constant.

This is particularly important :

- a) When brine is added to obtain salted butter or starters to increase butter acidity, as when the output and speeds do not change the percentages of the injected products remain constant.
- b) When using a DKT moisture control unit or SIMON automation unit, as by only altering during production the quantity of water injected, the calibration of the control unit is not changed as it is by any variation in output or butter composition, except moisture.

SPECIAL RECOMMENDATIONS FOR THE INJECTION OF WATER

- A) - Use a perfectly sterile water,
- B) - Ensure that the water tank and the injection lines are thoroughly cleaned,
- C) - Adjust the temperature of the injected water by means of the heater thermostat so that it is around 20 to 24°C at the injector outlets, the best temperature for perfect incorporation in the butter,
- D) - When an injection dosing pump has two heads, only one injection head can be used at a time and the second head should always be set on ZERO, otherwise irregularities will be encountered with the injection and possibly lead to damage to the dosing pump.

CHAPTER VI

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CLEANING IN PLACE (CIP)

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Three different cleaning operations are necessary for the perfect upkeep of a CONTIMAB.

Cleaning at the end of production, rinsing before beginning manufacture, periodical cleaning with an acid solution.

60 - CLEANING AT THE END OF PRODUCTION

The CIP operations at the end of production are in three successive phases :

A) - MELTING OF BUTTER REMAINING IN THE MACHINE

This is carried out with very hot water, between 80 and 90°C, the syphons raised to circulate the water, in order to melt the butter remaining in the cannon, augers running at minimum speed.

Duration : 5 to 10 minutes.

Once all the butter has been melted, the syphons are lowered and the melted butter is sent to a separator for recovery of the butter fat.

B) - DEGREASING

Also carried out with very hot water : 80 to 90°C.

With the syphons in their upper position, send in the hot water and allow to circulate until the water leaving the machine is absolutely clear indicating that degreasing is completed.

With the augers stopped, lower the syphons for draining.

C) - STERILISATION

This demands water between 60 to 70°C with a product added which is both a detergent and a non-stick (obligatory) compound. We recommend the product P3Z or SULTRIBUTY. Set up the CIP circuit, raise the syphons, circulate the solution for around 15 minutes with the augers running at maximum speed, then drain.

SPECIAL RECOMMENDATIONS CONCERNING THE CLEANING OF THE BEATER

In order to obtain a perfect cleaning of the inside of the beater, the following procedure should be followed :

- . Close the shut-off plate of the down-chute,
- . Feed the cleaning solution into the cylinder until it flows over the shut-off plate,
- . Only then start up the beater, stopping it after a few seconds,
- . Repeat this operation three or four times during cleaning.

It is important to stop the beater and partially fill the cylinder so as to obtain a good cleaning of the central part. If the solution is fed in while the beater is running its rotation leads to the formation of a liquid ring which cleans the inside of the cylinder without reaching the hub of the beater.

MANUFACTURING INCIDENTS

TROUBLE	CAUSES	REMEDIES
Butter grains in the buttermilk	1) Torn self-clarifier screen 2) Clearance between augers and screen is too small, squashing butter grain. 3) Buttermilk syphon cock close. 4) Cream damaged in preparation (rotary pumps, excess pressure in the exchangers, heating with too hot water, tank agitators running too fast, cream piping diameter too small or too many bends).	1) Replace the screen 2) Adjust the clearance to 2,5 mm. 3) During manufacture it is necessary to open this cock in order to create an air inlet. 4) Remedy anomalies with cream preparation installation.
Butter moisture content increases during manufacture	Alteration of the cream in the tank with increase in acidity temperature or fat content.	. Check and adjust the dripping of buttermilk and reset the dosing pump. . With automation for moisture content regulation the adjustment is carried out continuously and automatically. . Check the efficiency of the agitation in the tank.
Irregular butter moisture content	Cream is not homogeneous Several cream tanks being dropped with cream of different fat content, acidity and temperature.	. Provide a silo tank so as to obtain a homogeneous cream.

MANUFACTURING INCIDENTS

TROUBLE	CAUSES	REMEDIES
Fat losses too high	1) Defective cream preparation installation (see above) 2) Insufficient crystallisation 3) Cream pump unsuitable or badly regulated. 4) Cream feed insufficient, cream pump started.	1) Suppress the anomalies of the cream treatment installation. 2) Crystallize the cream at 6°C for 3 hours. The temperature of the water used to warm the cream afterwards should not exceed 25°C. 3) The cream pump should not normally be used at more than 50 % of its maximum capacity and the speed of rotation should always be less than 500 rpm. 4) Use piping with large cross section (see cream feed).
Irregular salting	1) Incorrect preparation of the brine which is not homogeneous or the temperature of which is too low. 2) Irregular operation of the brine injection pumps. 3) Alterations in the speed settings of the cream pump, beater and augers leading to variations in butter output.	1) Respect the rules for preparation of the brine (see § 4). 2) Check the condition of the pump valves. Clean or replace them RIGOROUSLY respect the cleaning precautions immediately production is stopped (see § 4). 3) Endeavour to operate the machine without altering speed settings, simply adjusting moisture content by means of the dosing pump.
The DKT moisture control unit gives figures which do not agree with analysis results.	1) Incorrect calibration of the unit each time a new cream tank is started. 2) The operator alters the cream pump beater or auger speed while churning cream from the same tank.	1) Recalibrate correctly (see § 5) 2) Operate the machine without altering these speeds, regulating moisture content by means of the dosing pump.
The recorder does not trace a continuous line but a serie of dots.	Poor distribution of water in the butter	Increase working speed. Possibly modify perforated plate/impeller equipment (see principle § II).

5 - VACUUM WORKING

Start the vacuum prematurely before the butter has reached the required consistency or open suddenly and not progressively the vacuum.

6 - FINAL WORKING

60) Use an unsuitable arrangement of perforated plates and impellers.

61) Add pipes, channels or other to the outlet nozzle supplied by SIMON FRERES as these could slow the movement of the butter leading to overworking and problems with moisture content.

7 - INJECTION

70) Water injection : use water which is not bacteriologically pure.

71) Not proceed with a daily cleaning of the injection lines.

72) Brine injection : . mix the water and salt directly in the CONTISAUMUR tank during production.
 . Use brine which has not be agitated at least two hour prior to use.
 . forget to disconnect immediately the injectors before stopping salting and the brine pump.
 . not thoroughly rinse with water the brine injection pump before it is stopped.
 . use one dosing pump head without making sure the other head is on zero.
 . allow the brine tank to become almost empty before refilling.

8 - MOISTURE CONTROL UNITS

- . Forget to calibrate at the beginning of each production run or whenever a new cream tank is started.
- . Start up the automation without having first of all exactly adjusted the moisture content to that desired by means of the manual adjustment knob.
- . Clean the probe with water above 60°C (very important as the plastic coating will be severely damaged by cleaning with water which is too hot).

A N N E X E S

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N°1 - MODEL OF DAILY PRODUCTION CONTROL SHEET

N°2 - TABLE OF CHURNING TEMPERATURES

N°3 - DRAWING : ADJUSTMENT OF BUTTER GRAINS

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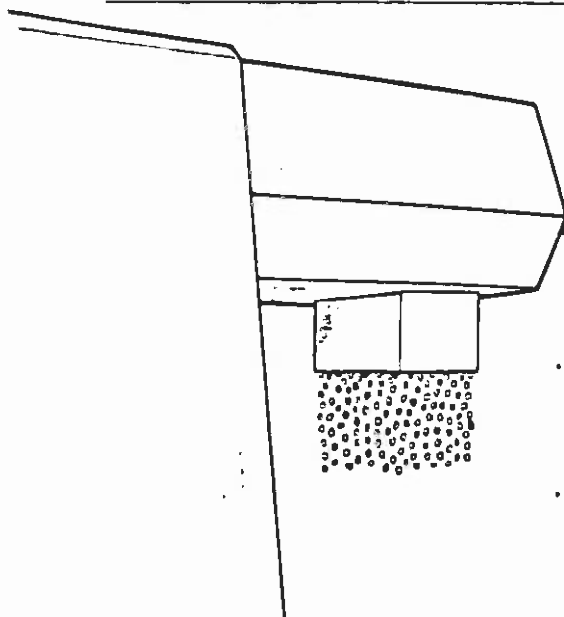
TABLE OF TEMPERATURE

% FAT CONTENT of CREAM	ACIDITY OF THE CREAM		CHURNING TEMPERATURE in °C	
	° DORNIC	° SH	SUMMER	WINTER
30 to 32	40 to 60	17, 7 to 26, 6	11-12	13-14
33 to 35	40 to 50	17, 7 to 22, 6	9-10	11-12
	50 to 60	22, 2 to 26, 6	8-9	9-10
36 to 39	10 to 30	4, 44 to 13, 3	10-11	12-13
	35 to 50	15, 5 to 22, 2	8-9	10-11
	55 to 65	24, 4 to 28, 8	7-8	8-9
40 to 45	10 to 30	4, 44 to 13, 3	8-9	10-11
	35 to 50	15, 5 to 22, 2	7-8	9-10
	55 to 65	24, 4 to 28, 8	5-6	7-8

TO BE CONSIDERED ONLY BY WAY OF AN EXAMPLE

R E G L A G E d e s G R A I N S d e B E U R R E

A D J U S T M E N T o f B U T T E R G R A I N S

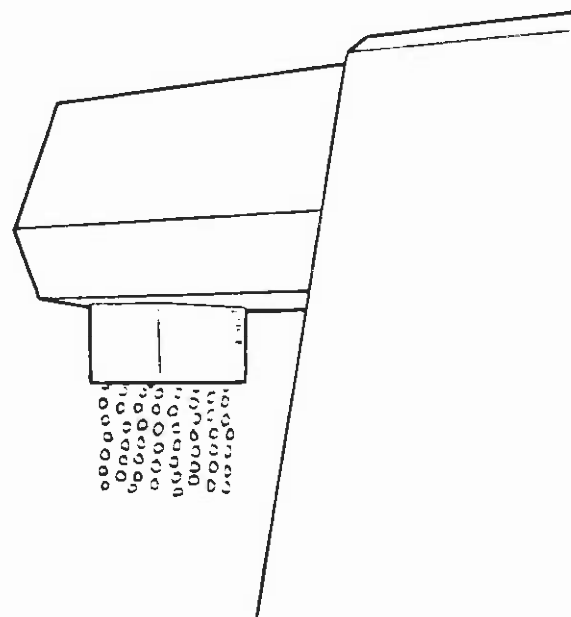


CONTIMAB SENIOR - CONTIMAB MAJOR

Grains trop fins : excès d'humidité
Mauvaise séparation du babeurre
Mauvaise conservation du beurre

- . Grains too fine : too high moisture content
Poor buttermilk séparation
Poor keeping quality of the butter
- . Zu feine Butterkorn : zu hoher Feuchtigkeitsgehalt
Schlechte Buttermilch-Trennung
Schlechte Haltbarkeit der Butter

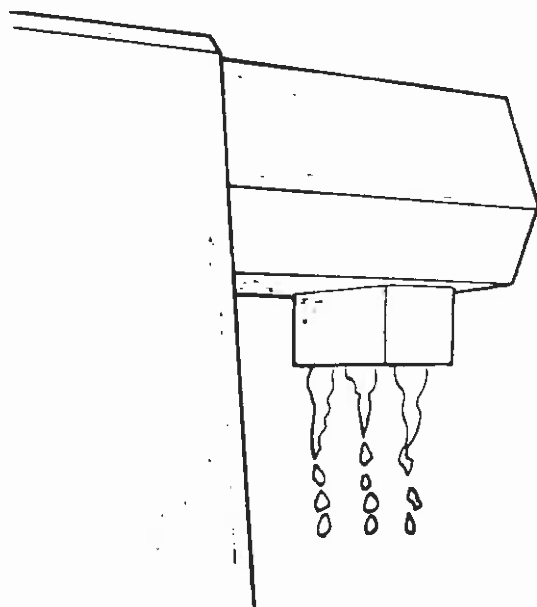
CONTIMAB SENIOR - CONTIMAB MAJOR



. Grains normaux : humidité correcte
Bonne séparation du babeurre
Bonne conservation du beurre

. Normal grains : correct moisture content
Good buttermilk separation
High keeping quality of butter

. Normales Butterkorn : richtiger Feuchtigkeitsgehalt
Gute Buttermilch-Trennung
Gute Haltbarkeit der Butter



CONTIMAB SENIOR - CONTIMAB MAJOR

. Grains trop gros : excès d'humidité
Bonne séparation du babeurre
Bonne conservation du beurre

. Grains too big : moisture content too high
Good buttermilk separation
High keeping quality of butter

. Zu grosses Butterkorn : zu hoher Feuchtigkeitsgehalt
Gute Buttermilch-Trennung
Gute Haltbarkeit der Butter

the 'information' and 'communication' fields. The 'information' field is defined as:

...the study of the nature, uses and functions of information, and the ways in which it is created, communicated, evaluated and used. (p. 1)

The 'communication' field is defined as:

...the study of the nature, uses and functions of communication, and the ways in which it is created, communicated, evaluated and used. (p. 1)

These definitions are very broad and cover a wide range of topics. They are also very similar to each other, which may be a reflection of the fact that the two fields are closely related.

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the 1990s, the number of people in the world who are under 15 years of age is expected to increase from 1.1 billion to 1.5 billion.

As a result of the rapid growth of the world's population, the world's population is expected to reach 6 billion by the year 2000.

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PREPARATIONS FOR INSTALLATION OF A CONTIMAB

TOME I

N° 5 572 ANG.

INSTRUCTIONS FOR PREPARATION OF THE **CONTIMAB** INSTALLATION

YOU KINDLY ENTRUSTED US WITH AN ORDER FOR A CONTIMAB WHICH WILL BE DELIVERED WITHIN THE DELAY AGREED ON ORDER.

IF YOU WANT TO PROCEED WITH COMMISSIONING OF THE MACHINE SOON AFTER ITS ARRIVAL AND THUS BE ABLE TO USE IT WITHOUT DELAY, YOU WILL HAVE TO CARRY OUT SOME PRELIMINARY WORK.

THE OBJECT OF THESE INSTRUCTIONS IS TO FACILITATE THE WORK OF YOUR INSTALLATION DEPARTMENTS BY REMINDING YOU OF ALL NECESSARY ARRANGEMENTS TO BE MADE BEFORE ARRIVAL OF THE MACHINE. THESE INSTRUCTIONS WERE WORKED OUT ACCORDING TO THE ORDER YOU PLACED WITH US.

**Yours faithfully,
SIMON FRERES**



ETS SIMON FRERES
50104 CHERBOURG CEDEX - FRANCE

WARNINGS and GENERAL INDICATIONS on INSTALLATION of the MACHINE

- A - SHIPMENT AND RECEIPT
- B - SAFETY PRECAUTIONS
- C - PRELIMINARY WORK
- D - CONNECTIONS
- E - DIRECTION OF ROTATION OF MOTORS
- F - CREAM FEEDING
- G - CHILLED WATER INLET
- H - C I P
- I - BUTTERMILK RECYCLING



ETS SIMON FRERES
50104 CHERBOURG CEDEX .FRANCE

A/ - SHIPMENT AND RECEIPT

The number and type of packages will vary according to the exact type of machine you have chosen. You will find all relevant details on the PACKING LIST corresponding to our dispatch note.

- GOODS INWARDS INSPECTION

Before accepting delivery and paying any carriage which might be due, you should check that the number of packages received corresponds exactly to the number indicated on the delivery note and that the inside and outside of the packages show no signs of damage.

In the case of damaged or missing articles, you should suspend acceptance of delivery until you have received the carriers recognition of the damaged or missing articles.

Should you encounter any difficulties with the carrier, the relevant sections of the commercial and civil codes outline the various procedures to follow.

- UNCRATING

Our cases are bolted assemblies. Simply remove the bolts to completely dismantle the case.

You may now commence the installation and starting up of your machine, carefully respecting the following instructions.

B/ - VERY IMPORTANT SAFETY PRECAUTIONS

WE EXPRESSLY RECOMMEND OUR CUSTOMERS TO OBSERVE THE FOLLOWING PRECAUTIONS, AT ALL TIMES, AND TO ENSURE THAT ALL PERSONS RESPONSIBLE FOR THE OPERATION AND MAINTENANCE OF THE MACHINE ARE AWARE OF THEM, IN ORDER TO AVOID ANY DANGER OF INJURY OR MATERIAL DAMAGE.

THE FOLLOWING ARE THE PRINCIPAL PRECAUTIONS TO BE OBSERVED.

- Before proceeding with the lifting and setting in place of the CONTIMAB MAJOR, all the lifting gear should be thoroughly checked to ensure that it can handle the load, taking into account the necessary safety margin.
- In the case of lifting, ensure that the sling or other lifting gear, is firmly in place, that there is no risk of slipping and that there are no sharp edges in contact with the lifting cords.

Proceed with a progressive tightening of the lifting cord or chain and avoid jerking.

- Ensure that the floor area where the machine is to be placed is completely clear of any tools or equipment as these could cause damage to the underside of the machine or cause it to over balance.

DURING ALL MANOEUVERING OPERATIONS, THE BALANCE OF THE MACHINE SHOULD BE WATCHED CAREFULLY.

- The cleaning and sterilisation recommendations, as presented in the instructions, under the heading "CLEANING AND STERILISATION AFTER PRODUCTION" should be carefully respected.
- Finally, we would insist on the necessity of replacing all worn or broken parts with original SIMON spares or those approved by us.

We do so in order to prevent the customer encountering the serious trouble which can occur through the fitting of non-recommended spare parts.



ETS SIMON FRERES
50104 CHERBOURG CEDEX . FRANCE

C/ - PRELIMINARY WORK

All the following work should be carried out by your people before you call for the visit of our commissioning engineer.

- Any additional time spent on site by our engineer, due to incorrect or inadequate preparation, will be charged in addition to any fixed commissioning fee written into the sales contract.
- On receipt of this instruction manual, and on receipt of the CONTIMAB, proceed as follows :

INSTALLATION

Examine this in relation to the lay-out drawing supplied and the drawing concerning your CONTIMAB attached to this instruction.

- n° 117 266 for CONTIMAB SENIOR MC
- n° 117 246 for CONTIMAB MAJOR MC
- n° 117 245 for CONTIMAB MAJOR MD

Use the sling supplied with the machine for lifting.

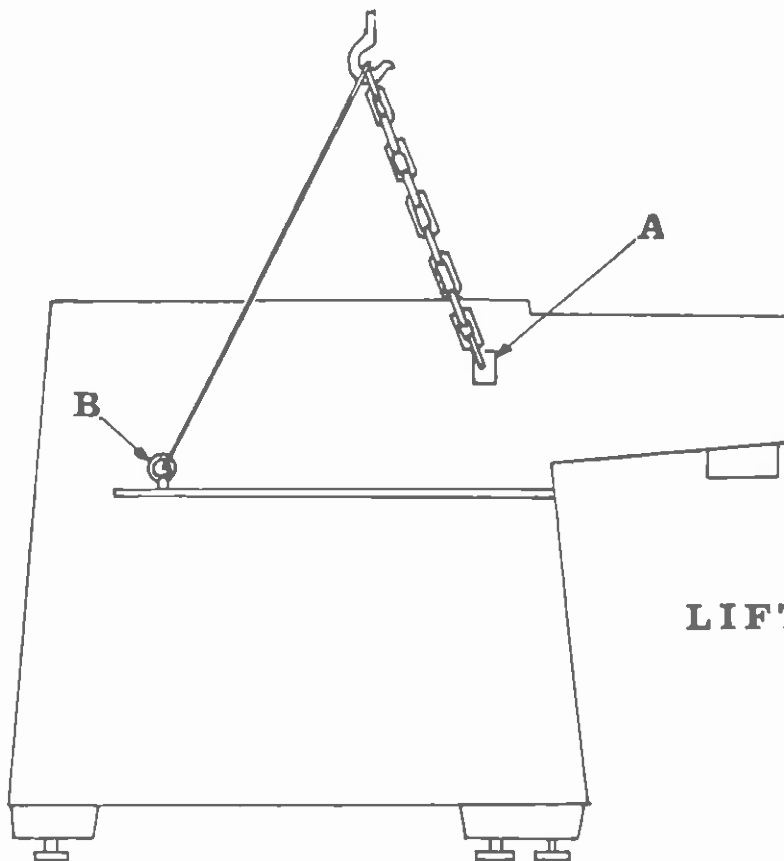
See the following page diagram n° 77 537 for CONTIMAB SENIOR
n° 77 537 A for CONTIMAB MAJOR.

Once the machine has been lifted clear of the floor, fit the screw jack feet as shown on diagram n° 77 681.

- The machine can be set in place without any special foundation work. For your CONTIMAB, the floor should be able to support a load of around :
 - 7,5 kg/cm² for CONTIMAB SENIOR MC 12 - 15 - 17
 - 8 kg/cm² for CONTIMAB SENIOR MC 19
 - 12,5 kg/cm² for CONTIMAB MAJOR

Once the machine is in position, check that it is level by :

- Placing a spirit level on the upper members of the frame
- Adjusting the nuts on the screw jack legs.



LIFTING OF A CONTIMAB

- 1) - Remove the upper dome of the main housing,
- 2) - Fit the chains as shown above (A),
- 3) - Pass the sling cable through B,
- 4) - Carefully lift the machine. Avoid jerking,
- 5) - Before lowering the machine into place, ensure that the area is free from any obstacles,
- 6) - Remove the chains and the shackle B. Replace the dome.

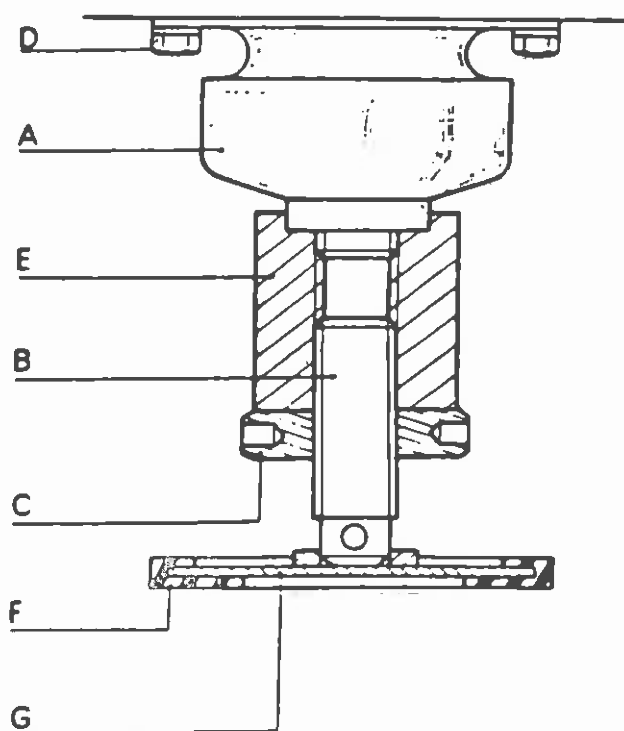
IN THE CASE OF A CONTIMAB MD - Lifting the working II drive housing.

Remove the upper cover of the kart. You will see the four lifting points on the framework. Provide four slings capable of supporting a load of 1200 kg.

CONTIMAB

INSTALLATION OF ELASTIC SCREW JACK FEET

4 green support feet in front - 2 red support feet at the rear



THE CONTIMAB BEING LIFTED UP :

- 1) Screw on to each elastic support A a complete ram nut E
- 2) Fix the supports under the frame-work with $\varnothing$ 10 mm screws and washers D (4 per support)
- 3) Screw slightly the counter-nut C onto the ram B
- 4) Screw the ram B into the ram nut E (approximately to half the threading height)
- 5) Place the anti-slippering base plate onto the centering plate of the ram F
- 6) Center this plate under the ram and lower the CONTIMAB slowly
- 7) By means of the rams level the machine and block the counter-nuts

DURING THE LIFTING AND INSTALLATION OF SUPPORT FEET PLACE WEDGES UNDER THE CONTIMAB

D/ - CONNECTIONS

a) Electrical power supply

Have your electrician :

- Connect up the various motors to the power supply as per the drawings provided.
- Connect up the control panel remote control terminal strip.
- Connect up the electrical panel if this was supplied by us.

NOTE

If the electrical panel was not ordered from us, you will have to :

- . provide the electrical panel (your electrician will have to determine the necessary characteristics of the contactors, isolating switches, relays, etc...)

Drawings can be supplied on request.

See technical sheet n° 5536 for CONTIMAB SENIOR - n° 5534 for CONTIMAB MAJOR MD - n° 5535 for CONTIMAB MAJOR MC, for the total installed power of the electric motors.

Statoric starters

These are usually supplied with the electrical panel.
If you have not ordered such a panel, we recommend you to mount these starters on the churning and working motors.

b) Various services on the CONTIMAB

- Cream feed - see paragraph F.
- Vacuum
- Buttermilk
- Injection dosing
- Drains

See the diagram mentioned in paragraph (a) which concerns your type of CONTIMAB as well as TOME II for additional information.

Required flow rates for chilled water recycling, buttermilk pump, cooling, etc... are indicated on the technical sheets mentioned in (a).

NOTE

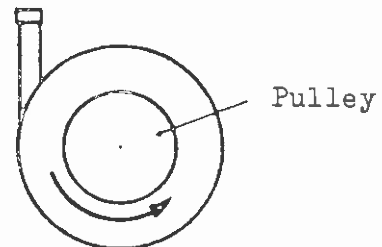
For the connection of the various service lines to the CONTIMAB, refer to the labels placed on each circuit inside the CONTIMAB before it leaves our factory.



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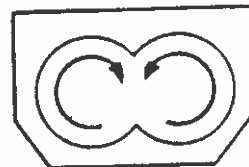
E/ - CORRECT DIRECTION OF ROTATION OF MOTORS

CHURNING MOTOR : Seen from the rear of CONTIMAB.
The motor pulley must turn counter clock
wise.



WORKING MOTOR

Seen from the front of
CONTIMAB, the augers must
converge towards each
other at the top.



VACUUM PUMP

Clock wise as seen from the coupling side.

DOSING PUMP

Counter clock wise (arrow engraved on the pump body).

CHILLED WATER PUMP

Clock wise.

VENTILATOR FAN

Pushing air out of the CONTIMAB.

CREAM PUMP

Direction of the arrow engraved on the pump body.

F/ - CREAM FEED

The cream balance tank should be placed as close as possible to the cream tanks.

The infeed pipe for the tank is 700 mm + 50 mm from the floor (can be adjusted by means of the screw jack legs)

The tank/cream pump connection is usually :

- $\emptyset$ 72/76 for an SF 61 S type pump
- $\emptyset$ 100/104 for an SF 101 S or SF 121 S.

The diameter of the cream infeed inlet on the top of the CONTIMAB

- MC 12 : $\emptyset$ 48,5/51
- MC 15 : $\emptyset$ 60,5/63,5
- MC 17 : $\emptyset$ 60,5/63,5
- MC 19 : $\emptyset$ 72/76

- CONTIMAB MAJOR MC and MD : $\emptyset$ 72/76

G/ - CHILLED WATER FEED

Chilled cooling water for the 1st working section and the churning cylinder.

Temperature of the water : 1 to 3° C

This water is drawn from the chilled water tank. In certain cases it is necessary to provide a pump to bring this water to the machine.

The chilled water connections for the 1st working section and cylinder are incorporated in the CONTIMAB

Recovery of fluids

After use, this chilled water can be returned to the chilled water tank. However, to avoid excessive pressure in the cylinder, this water should flow freely from the working section. Cooling is obtained by streaming the water through the cooling jacket.

A small recovery tank and centrifugal recovery pump (3000 to 6000 l/hour depending on the type of CONTIMAB) should be provided.

The small section plastic pipes for the return of the cooling water can be connected to the return piping BEFORE the recovery pump.



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Chilled potable water for butter washing (optional)

Bacteriologically pure water. Constant temperature : 3°/5° C.

A pump can be incorporated in the CONTIMAB to provide the necessary pressure for butter washing. Such a pump is only supplied if specifically requested.

The inlet for the butter washing water on the CONTIMAB is position O on the lay-out drawing. The flow rate will depend on the type of CONTIMAB.

This washing water leaves the CONTIMAB by the second syphon and is collected in the buttermilk/washing water recovery tank.

This water leaves the tank through a pipe running to a drain.

H/ - CLEANING IN PLACE (CIP)

If you have not ordered the multi-purpose nozzle, a special CIP nozzle will be supplied with the machine. Refer to drawing n° 93131

We also supply the connecting pipework between the CIP nozzle and the buttermilk tank.

The assembly of the CIP nozzle is shown on drawing n° 108.426

The circuit shown on diagram n° 108.426 is a theoretical circuit which can be adapted to suit the particular situation in your plant.

On the buttermilk discharge, provide a 3-way cock to connect up the supplied piping to the outlet nozzle (optional).

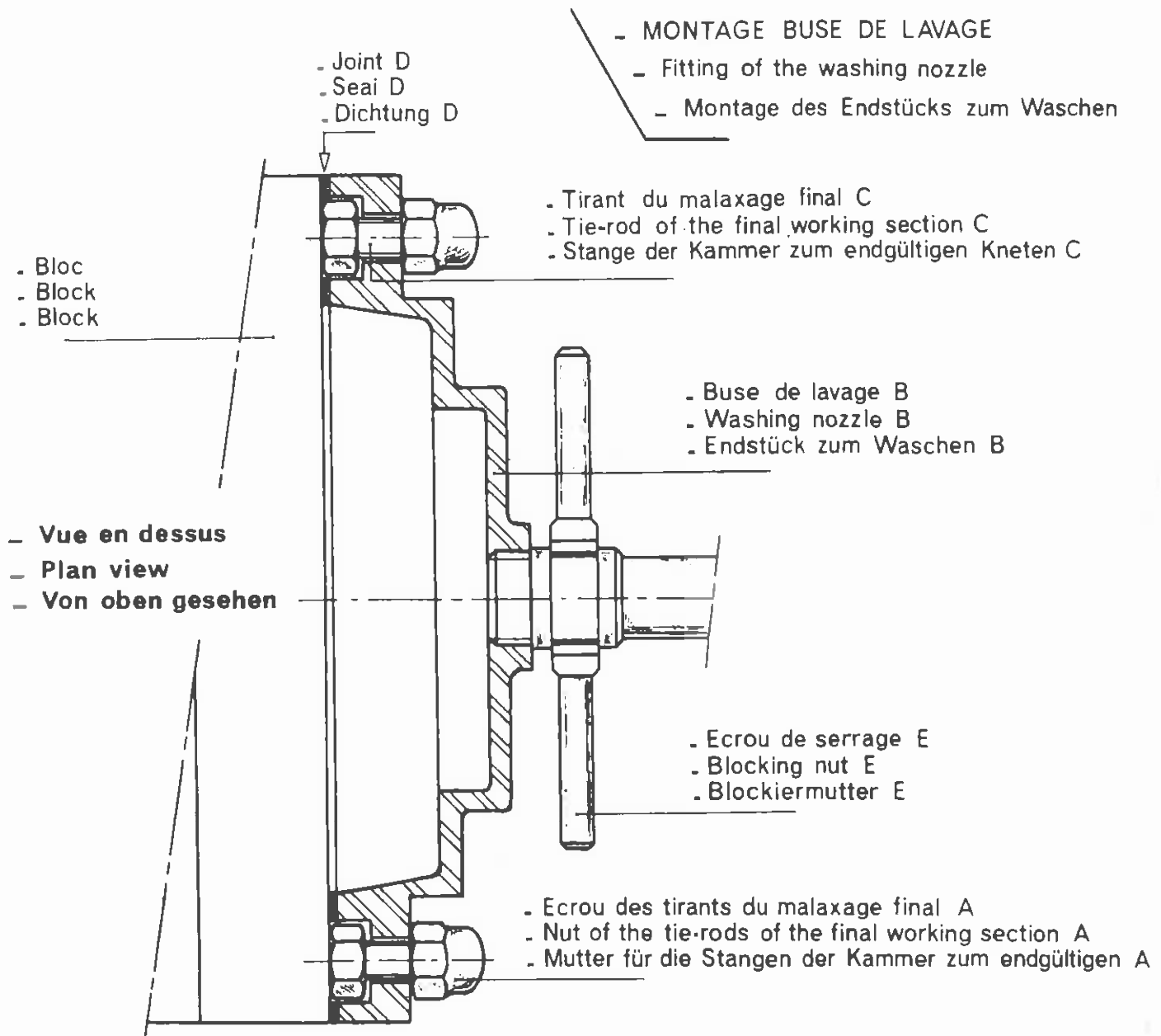
Also on this piping, mount a 3-way cock to permit return of the cleaning water to the CONTIMAB balance tank. You will also have to provide the piping connecting this 3-way cock to the balance tank.

I/ - BUTTERMILK RECYCLING

A plate heat exchanger (PHE) will need to be provided so as to obtain a cooling to 3° C of the buttermilk. The capacity of the PHE will depend on the type of machine.

The cooler is placed between the pump and the buttermilk storage tank on the buttermilk discharge line.

— CONTIMAB SENIOR —



— MODE OPERATOIRE POUR MONTAGE DE LA BUSE DE LAVAGE :

- 1 — Démonter la buse de sortie du beurre.
- 2 — Appliquer le joint D contre la buse de lavage B.
- 3 — Monter la buse B sur les tirants C.
- 4 — Visser les écrous A sur les tirants C du malaxage final.
Serrer les écrous sans exagération et monter la tuyauterie avec l'ecrou de serrage E.

— Instructions for fitting the washing nozzle :

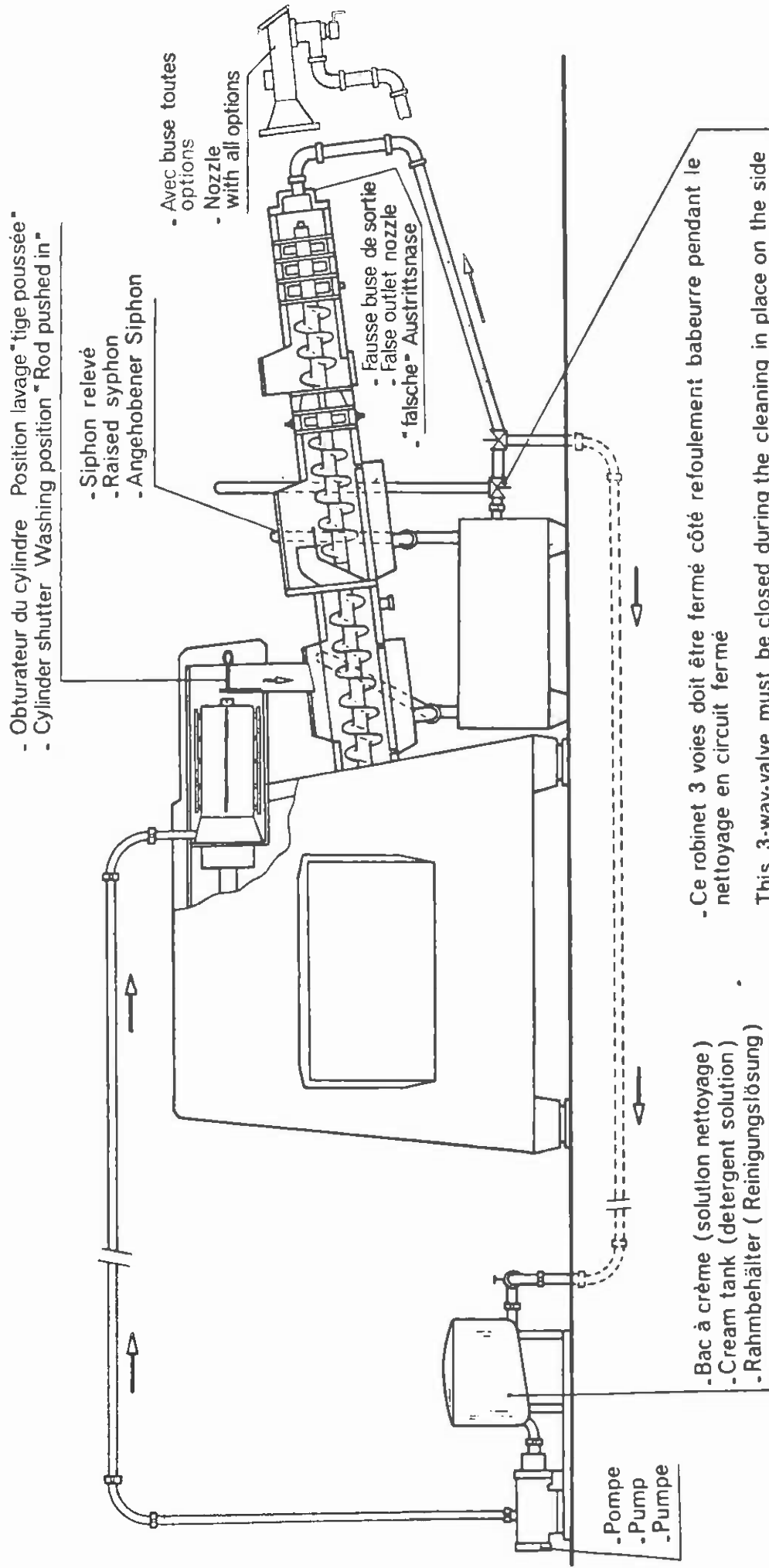
- 1 — Remove the butter outlet nozzle.
- 2 — Place the seal D against the washing nozzle B.
- 3 — Fit the nozzle B on the tie-rods C.
- 4 — Screw the nuts A on the tie-rods C of the final working section.
Block the nuts without exaggerating and fit the piping with blocking nut E.

— Anleitung zur Montage des Endstücks zum Waschen :

- 1 — Den Butteraustritt abmontieren.
- 2 — Die Dichtung D am Endstück zum Waschen B anbringen.
- 3 — Das Endstück zum Waschen B auf die Stangen C montieren.
- 4 — Die Muttern A auf die Stangen C der Kammer zum endgültigen Kneten schrauben ;
die Muttern nicht zu fest anziehen und die Leitung mit Blockiermutter E montieren.

CONTIMAB SENIOR M.C.
CONTIMAB MAJOR M.C.

- PRINCIPE DU LAVAGE EN CIRCUIT FERME
- OPERATION PRINCIPLE OF C.I.P. DEVICE
- FUNKTIONSPRINZIP DER VORRICHTUNG FÜR WASCHEN IN GESCHLOSSENEM UMLAUF



After all the buttermilk is cooled, part of it is sent to the storage tank and the rest recycled back to the CONTIMAB. The quantity of recirculated buttermilk will depend on the model of CONTIMAB. Two adjustment cocks are provided to allow regulation of the flow rate. The piping provided should be diameter 40/43.

NOW REFER TO TOME II FOR DIRECTIONS ON THE ASSEMBLY OF THE WORKING CANNON AND THE CHECKS TO BE CARRIED OUT ON THE MACHINES LUBRICATION PRIOR TO STARTING UP.

READ TOME II CAREFULLY. IT WILL GIVE YOU INFORMATION ON THE COMPONENT ELEMENTS OF YOUR CONTIMAB, THE RULES FOR ITS OPERATION AND HOW TO CONNECT UP AND RUN THE MACHINE IN YOUR BUTTERMAKING LINE.

FOR ANY FURTHER INFORMATION, CONTACT YOUR LOCAL SIMON AGENT OR

SIMON FRERES

CHERBOURG

FRANCE

Phone : (33) 53.72.03

Telex : 170679 F

ETS SIMON FRERES

— CONTIMAB MB 2 - MB 5 - MB 7 —

— CARACTERISTIQUES DES MOTEURS

POUR COURANT D'ALIMENTATION TRIPHASE 220 OU 380 V - 50 Hz

— CHARACTERISTICS OF THE MOTORS

FOR THREEPHASE CURRENT 220 OR 380 V - 50 CYCLES

— TECHNISCHE MERKMALE DER MOTOREN

FÜR DREIPHASEN — WECHSELSTROM 220/380 V - 50 Hz

DESIGNATION DESIGNATION BEZEICHNUNG	PUISSANCE EN CV POWER IN HP STÄRKE IN PS			PUISSANCE EN KW POWER IN KW STÄRKE IN KW			AMPERAGE SOUS TENSION AMPERAGE UNDER TENSION AMPEREZAHl UNTER SPANNUNG					
	M B 2	M B 5	M B 7	M B 2	M B 5	M B 7	220 V			380 V		
							MB 2	MB 5	MB 7	MB 2	MB 5	MB 7
MOTEUR BARATTAGE CHURNING MOTOR SCHLAGWERKMOTOR	12,5	20	25	9,3	14,7	18,4	34	54	67	20	31	38
MOTEUR MALAXAGE WORKING MOTOR KNETWERKMOTOR	3	5,5	7,5	2,2	4	5,6	10	16	21	6	10	12
MOTEUR POMPE A CREME CREAM PUMP MOTOR MOTOR FÜR RAHMPUMPE	1,5	1,5	1,5	1,10	1,10	1,10	4,4	4,4	4,4	2,6	2,6	2,6
POMPE A EAU GLACEE CHILLED WATER PUMP EISWASSERPUMPE	2	2	2	1,5	1,5	1,5	7,3	7,3	7,3	4,2	4,2	4,2
POMPE DOSEUSE DOSING PUMP DOSIERPUMPE	0,25	0,25	0,25	0,18	0,18	0,18	1	1	1	0,55	0,55	0,55
POMPE A VIDE VACUUM PUMP VAKUUMPUMPE	1,5	1,5	1,5	1,10	1,10	1,10	4,4	4,4	4,4	2,6	2,6	2,6
MOTEUR POMPE A BABEURRE MOTOR OF THE BUTTERMILK PUMP MOTOR FÜR BUTTERMILCH- PUMPE	1	1	1	0,74	0,74	0,74	3,7	3,7	3,7	2,12	2,12	2,12
TOTAL TOTAL INSGESAMT	22	32	39	17	24	29	67	93	111	40	55	64

— NOTA : Pour simplification de lecture, les totaux sont arrondis au nombre supérieur.

— REMARK : For facilitating the reading, the totals are rounded off at the upper number.

— HINWELS : Der Einfachheit halber sind die Gesamtzahlenangaben nach oben hin abgerundet.

— CARACTERISTIQUES DES MOTEURS

POUR COURANT D'ALIMENTATION TRIPHASE 220 OU 380 V - 50 Hz

— CHARACTERISTICS OF THE MOTORS

FOR THREEPHASE CURRENT 220 OR 380 V - 50 CYCLES

— TECHNISCHE MERKMALE DER MOTOREN

FÜR DREIPHASEN — WECHSELSTROM 220/380 V - 50 Hz

DESIGNATION DESIGNATION BEZEICHNUNG	PUISSANCE EN CV POWER IN HP STARKE IN PS				PUISSANCE EN KW POWER IN KW STARKE IN KW				AMPERAGE SOUS TENSION AMPERAGE UNDER TENSION AMPEREZAHLE UNTER SPANNUNG							
	MC 12	MC 15	MC 17	MC 19	MC 12	MC 15	MC 17	MC 19	220 V				380 V			
									MC 12	MC 15	MC 17	MC 19	MC 12	MC 15	MC 17	MC 19
MOTEUR BARATTAGE CHURNING MOTOR SCHLAGWERKMOTOR	12,5	20	25	30	9,3	14,7	18,4	22	34	54	67	75	20	31	38	44
MOTEUR MALAXAGE WORKING MOTOR KNETWERKMOTOR	3	5,5	7,5	10	2,2	4	5,6	7,5	10	16	21	27	6	10	12	15,5
MOTEUR POMPE A CREME CREAM PUMP MOTOR MOTOR FÜR RAHPUMPE	1,5	1,5	1,5	1,5	1,10	1,10	1,10	1,10	4,4	4,4	4,4	4,4	2,6	2,6	2,6	2,6
POMPE A EAU GLACEE CHILLED WATER PUMP EISWASSERPUMPE	2	2	2	2	1,5	1,5	1,5	1,5	7,3	7,3	7,3	7,3	4,2	4,2	4,2	4,2
POMPE DOSEUSE DOSING PUMP DOSIERPUMPE	0,25	0,25	0,25	0,25	0,18	0,18	0,18	0,18	1	1	1	1	0,55	0,55	0,55	0,55
POMPE A VIDE VACUUM PUMP VAKUUMPUMPE	1,5	1,5	1,5	1,5	1,10	1,10	1,10	1,10	4,4	4,4	4,4	4,4	2,6	2,6	2,6	2,6
MOTEUR POMPE A BABEURRE MOTOR OF THE BUTTERMILK PUMP MOTOR FÜR BUTTERMILCH- PUMPE	1	1	1	1	0,74	0,74	0,74	0,74	3,7	3,7	3,7	3,7	2,12	2,12	2,12	2,12
TOTAL TOTAL INSGESAMT	22	32	39	47	17	24	29	35	67	93	111	125	40	55	64	74

- NOTA : Pour simplification de lecture, les totaux sont arrondis au nombre supérieur.
- REMARK : For facilitating the reading, the totals are rounded off at the upper number.
- HINWELS : Der Einfachheit halber sind die Gesamtzahlenangaben nach oben hin abgerundet.

- MACHINES ET MATERIELS PRINCIPAUX DE BEURRERIE
- BESOINS EN FLUIDES ET AIR COMPRI ME

UTILISATION 	Lavage du beurre	Réfrigération cylindre & corps	Dosage humidité	Eau auxiliaire pompe à vide	Nettoyage (par opération)	Air comprime	
DESIGNATION 	Eau stérile glacée + 1° C à + 5° C Pression de 5 à 7 kg non récupérée	Eau glacée 0 à + 2° C industrielle non potable récupération en eau libre	Eau potable normale + 11° C à + 15° C pour humidité à 16 %	Eau potable + 5° C Pression maxi à l'arrivée 0,400 kg/cm²	Eau stérile chaude à 90° C et eau froide potable	Pression maxi en kg/cm²	consommation maxi horaire
	Litres / heure	Litres / heure	Litres / heure	Litres / heure	Litres	kg/cm²	m³
<u>CONTIMAB</u> <u>Types MB, MC &</u> <u>MD</u>							
MB 0 - 2 MC 12	600 à 800	2000 à 3000	14	300	250 à 300		
MB 5 MC 15 MD 15	800 à 1000	3000 à 4000	17	300	250 à 500		
MB 7 MC 17 MD 17	1500 à 1800	4000 à 5000	31	300	250 à 500		
MC 19 MD 19	2000 à 2500	5000 à 6000	45	300	400 à 500		
MC 120 MD 120	3500 à 4000	6000 à 7000	60	300	1000 à 1200		
MC 130 MD 130	5000 à 6000	7000 à 8000	85	300	1000 à 1200		
<u>CONTIMALAX</u>		froide et chaude					
CM 5 MC 100	300 à 1200	300 à 1200			200		
<u>CONTIMALAX</u> <u>MAJOR</u>		froide et chaude					
CM 300	1000 à 3500	1000 à 3500	45 à 80	300	600		
<u>CONTISTOCK</u> <u>SUPER</u>						8	0,2
<u>CONTISTOCK</u> <u>KM 1000</u>						8	0,6
<u>ENCARTONNEUSE</u> <u>SF 705</u>						4,5	6
<u>CONTICUB</u>	-----	----- nous	consulter	-----	-----	-----	-----

— CARACTERISTIQUES DES MOTEURS

POUR COURANT D'ALIMENTATION TRIPHASE 220 OU 380 V - 50 Hz

— CHARACTERISTICS OF THE MOTORS

FOR THREEPHASE CURRENT 220 OR 380 V - 50 CYCLES

— TECHNISCHE MERKMALE DER MOTOREN

FÜR DREIPHASEN — WECHSELSTROM 220/380 V - 50 Hz

DESIGNATION DESIGNATION BEZEICHNUNG	PUISSANCE EN CV POWER IN HP STARKE IN PS		PUISSANCE EN KW POWER IN KW STARKE IN KW		AMPERAGE SOUS TENSION AMPERAGE UNDER TENSION AMPEREZAHl UNTER SPANNUNG			
	MD 120	MD 130	MD 120	MD 130	220 V		380 V	
					MD 120	MD 130	MD 120	MD 130
MOTEUR BARATTAGE CHURNING MOTOR SCHLAGWERKMOTOR	40	60	30	45	103	147	60	85
MOTEUR MALAXAGE 1 WORKING MOTOR 1 KNETWERKMOTOR 1	4	4	3	3	11,5	11,5	6,6	6,6
MOTEUR MALAXAGE 2 WORKING MOTOR 2 KNETWERKMOTOR 2	15	15	11	11	39	39	22	22
MOTEUR POMPE A CREME CREAM PUMP MOTOR MOTOR FÜR RAHPUMPE	5,5	5,5	4	4	14,5	14,5	8,5	8,5
POMPE A EAU GLACEE CHILLED WATER PUMP EISWASSERPUMPE	2,5	2,5	1,8	1,8	7,3	7,3	4,2	4,2
POMPE DOSEUSE DOSING PUMP DOSIERPUMPE	0,33	0,33	0,25	0,25	1	1	0,7	0,7
POMPE A VIDE VACUUM PUMP VAKUUMPUMPE	3	3	2,2	2,2	8,7	8,7	5	5
MOTEUR POMPE A BABEURRE MOTOR OF THE BUTTERMILK PUMP MOTOR FÜR BUTTERMILCH- PUMPE	3	3	2,2	2,2	8,7	8,7	5	5
TOTAL TOTAL INSGESAMT	74	94	55	70	194	238	112	137

— NOTA : Pour simplification de lecture, les totaux sont arrondis au nombre supérieur.

— REMARK : For facilitating the reading, the totals are rounded off at the upper number.

— HINWELS : Der Einfachheit halber sind die Gesamtzahlenangaben nach oben hin abgerundet.

— CARACTERISTIQUES DES MOTEURS

POUR COURANT D'ALIMENTATION TRIPHASE 220 OU 380 V - 50 Hz

— CHARACTERISTICS OF THE MOTORS

FOR THREEPHASE CURRENT 220 OR 380 V - 50 CYCLES

— TECHNISCHE MERKMALE DER MOTOREN

FÜR DREIPHASEN — WECHSELSTROM 220/380 V - 50 Hz

DESIGNATION DESIGNATION BEZEICHNUNG	PUISSANCE EN CV POWER IN HP STÄRKE IN PS			PUISSANCE EN KW POWER IN KW STÄRKE IN KW			AMPERAGE SOUS TENSION AMPERAGE UNDER TENSION AMPEREZahl UNTER SPANNUNG					
	MD 15	MD 17	MD 19	MD 15	MD 17	MD 19	220 V			380 V		
							MD 15	MD 17	MD 19	MD 15	MD 17	MD 19
MOTEUR BARATTAGE CHURNING MOTOR SCHLAGWERKMOTOR	20	25	30	15	18,5	22	52	64	75	30	37	44
MOTEUR MALAXAGE 1 WORKING MOTOR 1 KNETWERKMOTOR 1	2	3	3	1,5	2,2	2,2	6	8,7	8,7	3,5	5	5
MOTEUR MALAXAGE 2 WORKING MOTOR 2 KNETWERKMOTOR 2	4	5,5	7,5	3	4	5,5	11,5	14,5	20	6,6	8,5	11
MOTEUR POMPE A CREME CREAM PUMP MOTOR MOTOR FÜR RAHPUMPE	1,5	1,5	4	1,1	1,1	3	4,4	4,4	11,5	2,6	2,6	6
POMPE A EAU GLACEE CHILLED WATER PUMP EISWASSERPUMPE	2	2	2	1,5	1,5	1,5	6	6	6	3,5	3,5	3
POMPE DOSEUSE DOSING PUMP DOSIERPUMPE	0,25	0,25	0,25	0,18	0,18	0,18	0,9	0,9	0,9	0,5	0,5	0
POMPE A VIDE VACUUM PUMP VAKUUMPUMPE	1,5	1,5	1,5	1,1	1,1	1,1	4,4	4,4	4,4	2,6	2,6	2,6
MOTEUR POMPE A BABEURRE MOTOR OF THE BUTTERMILK PUMP MOTOR FÜR BUTTERMILCH- PUMPE	1,5	1,5	1,5	1,1	1,1	1,1	4,4	4,4	4,4	2,6	2,6	2
TOTAL TOTAL INSGESAMT	33	41	50	25	30	37	90	108	131	52	63	7

— NOTA : Pour simplification de lecture, les totaux sont arrondis au nombre supérieur.

— REMARK : For facilitating the reading, the totals are rounded off at the upper number.

— HINWELS : Der Einfachheit halber sind die Gesamtzahlenangaben nach oben hin abgerundet.

- CONTIMAB MAJOR M.C.120.130 -

- CARACTERISTIQUES DES MOTEURS

POUR COURANT D'ALIMENTATION TRIPHASE 220.380.440 ou 550 V — 50 ou 60 Hz

- CHARACTERISTICS OF THE MOTORS

FOR THREEPHASE CURRENT 220.380.440 or 550 V — 50 or 60 CYCLES

- TECHNISCHE MERKMALE DES MOTORS

FÜR DREIPHASEN — WECHSELSTROM 220.380.440 oder 550 V — 50 oder 60 Hz

. CODE SCHEMA N° 88 310 . CODE ON SCHEMA N° 88310 . KODE AUF SCHEMA N° 88 310 . DESIGNATION . DESIGNATION . BEZEICHNUNG		PUISSANCE CV POWER IN HP STARKE IN PS		PUISSANCE KW POWER IN KW STARKE IN KW		AMPERAGE SOUS TENSION AMPERAGE UNDER TENSION AMPEREZahl UNTER SPANNUNG							
						220 V		380 V		440 V		550 V	
		MC 120	MC 130	MC 120	MC 130	MC 120	MC 130	MC 120	MC 130	MC 120	MC 130	MC 120	MC 130
BAR.	{ MOTEUR BARATTAGE CHURNING MOTOR SCHLAGWERKMOTOR	40	60	30	45	103	147	60	85	52	74	41,5	59
MAV.	{ MOTEUR MALAXAGE WORKING MOTOR KNETWERKMOTOR	15	20	11	15	39	52	22	30	19	26	15,5	21
P.C.	{ MOTEUR POMPE A CREME CREAM PUMP MOTOR MOTOR FÜR RAHPUMPE	4	4	3	3	11,5	11,5	6,6	6,6	5,7	5,7	4,6	4,6
P.D.	{ POMPE DOSEUSE DOSING PUMP DOSIERPUMPE	0,75	0,75	0,55	0,55	2,75	2,75	1,54	1,54	1,4	1,4	1,1	1,1
P.V.	{ POMPE A VIDE VACUUM PUMP VAKUUMPUMPE	3	3	2,2	2,2	8,7	8,7	5	5	4,4	4,4	3,5	3,5
P.B.	{ POMPE A BABEURRE BUTTERMILK PUMP BUTTERMILCHPUMPE	1	1	0,736	0,736	3,67	3,67	2,12	2,12	1,9	1,9	1,3	1,3
. OPTIONS . OPTIONALS . WAHLWEISES ZUBEHÖR													
PEG.	{ POMPE A EAU GLACEE CHILLED WATER PUMP KÜHLWASSERPUMPE	2,5	2,5	2	2	8	8	5,3	5,3	4	4	3,2	3,2
PREG.	{ POMPE DE REPRISE EAU DE REFRIGERATION 1 ^{er} CORPS PUMP TAKING BACK THE COOLING WATER OF THE FIRST WORKING COMPARTMENT RÜCKNAHMEPUMPE FÜR KÜHLWASSER DES ERSTEN KNETKÖRPER	3	3	2,2	2,2	8,7	8,7	5	5	4,4	4,4	3,5	3,5
. A REPORTER . TO BE CARRIED FORWARD . ZU ÜBERTRAGEN													
		70	94	53	73	186	244	109	142	94	123	75	98

