HAWKSWELL

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"NOVA NS 427 AL

UNIT - TYPE - N° 2481

DATE OF OPERATION START UP : 26 AVRIL 1995

GUARANTEE :

All the equipment supplied is guaranteed for 12 months against all manufacturing defects. This guarantee covers only the faulty parts which are to be shipped back to the manufacturer.

- All shipment and labour expenses, are to be paid by the client.

- Guarantee for all accessories, which are not manufactured by the company, is that of the manufacturer.

- The guarantee does not cover normal wear and tear or damage resulting from unsufficient maintenance or misuse.

ARE NOT INCLUDED IN THIS GUARANTEE :

- Normal wear and tear, breakdown resulting from lack of maintenance, misuse and lack of a 100 micron filter (largest mesh dimension) upstream of the filling unit.

- All damages resulting from the use of products which are not those for which the equipment is made.

In this case it is advisable to ask for the assistance of the technical department of "NOVA SOCIMEC".

P. Cobert

NOVA "NS 427 AL - NS 112 AL and NS 554 AL"

CONTENTS

OPERATION MAINTENANCE AND FALT RESEACH INSTRUCTION BOOK "NOVA NS"

AND SPARE PARTS SCHEMATICS FOR :

NS 427 AL - NS 112 .AL - NS 554 AL

CLIENT :

SERIAL NUMBER :

This handbook will help you in operating efficiently your volumetric filler. Following these instructions will help you in operating satisfactorily the filling machine.

Please get in touch with NOVA SOCIMEC on the local agent if you need further assistance.

The "NOVA" fillers should only be used for the purposes which have been originally indicated to "NOVA SOCIMEC" as being those normaly fulfilled and in agreement with the instructions of our sales technical Department, and with the technical documentation cards, catalogues and operation mode.

Do not operate the equipment without the safety devices. Should there be any malfunctionning, depress the emergency push button. Only qualified staff should be authorized to restart the equipment, after the movement has stopped and not before.

NOVA "NS AL"

MODEL "NS 427 AL - NS 112 AL - NS 554 AL"

1. GENERAL DESCRIPTION AND SAFETY NOTE

The "NS AL" is a skilfully made precise volume filler, powered and controlled by intrinsically safe compressed air. Please follow these operating instructions carefully so that you can get the best performance from your NS filler. Refer to the General Arrangement Drawings supplied. See Safety at Work note at front of manual.

2. SETTING UP PROCEDURE

2.1. Set the "NS AL" on a level surface where it is to be used. Make sure any wooden packing battens or travelling straps have been removed.

2.2. Fill the air lubricator to the indicated level with oil from can provided, to specification as specified hereafter. For humid conditions Kilfrost antifreeze oil may be provided.

2.3. Connect the 3 metres air line between your drained air supply (see general arrangment drawing) and the "NS AL" air inlet.

2.4. Before leaving the factory the air lubricator has been set to deliver one drip for every 4 - 6 cycles of the "NS AL". Check that this frequency of drip is maintained and not exceeded.

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2.5. Set pressure regulator to the required pressure (usually 4 - 5 bar (60-80 p.s.i.).

ANTAR	BP	MOBIL	SHELL	TOTAL
Special continu 3 A	BP ENERGOL HL 50	Velocite nº 6	TELLUS 21	AZOLLA 10

2.6. Check that all piping supplying liquid to the "NOVA NS" and that all feeding funnels for liquids or suction blocks have been properly rinced and do not enclose any foreign material.

2.7. Connect the liquid supply to the input connector located on the valve block. Fill up the funnel or the liquid. Supply tank, when there is one or set the suction block in the supply tank according to the case. Check that all gaskets do not leak.

2.8. Set the counter (if there is one) on the required number of fillings. Do not set the counter on zero, even if the machine is stopped.

2.9 Actuate several times the "NOVA NS" (see below) until the liquid cylinder and the valve block are completely primed with the liquid, this means that there should be no air bubbles in the liquid which is supplied : A large container should be set below the filling nozzle so as to facilitate this operation.

2.10 Regulate the volume and the speeds as described below.

2.11 Set the filling nozzle exactly to the horizontal, eitherwise even the best filling nozzle would drip.

3. PEDAL OPERATION

3.1. SEMI-AUTOMATIC

On the semi automatic NOVA machines a light and short pressure on the pedal initiates a complete filling cycle including automatic supply, without keeping the foot permanently on the pedal.

4. FILLING SPEED OPERATION

The filling speed is limited by the product itself by means of a liquid drwing plate located in the ball valve.

To increase filling speed use a liquid drawing plate with a larger hole.

To reduce filling speed use a liquid drawing plate with a smaller hole.

Filling speed depends on the product. Example : overfoaming liquid requires a slow filling speed.

5. FILLING TOP NOZZLE

Your nozzle is specially designed for milk and cream. The stainless strainers located in the nozzle must prevent from dripping.

When using a long outlet hose an extra liquid drawing plate must be set on nozzle top part.

Filling operation is subject to number of strainers used. Generally strainers prevent milk and cream from froth.

The best results are achieved by combining the correct drawing plate and number of strainers selected.

5. SUPPLY SPEED CONTROL

This supply is controlled by the supply regulator located on the air cylinder.

To increase the supply speed : Untighten the locknut and turn the knurled button anticlockwise.

To reduce the supply speed untighten the locknut and turn the knurled button clockwise.

Retighten the locknut.

The supply speed will be limited in order to avoid the cavitation of the liquid. More the product is thick, more the maximum supply speed is slow.

The cavitation may be noticed if a bubble appears in the filling product : It will spoil the filling precision.

6. VOLUME REGULATION

6.1. Semi automatic model : switch off the volume regulation switch and actuate the pedal. NOVA NS will stop at the end of the filling run.

Then disconnect air supply.

6.2 Untighten the locknut located on the volume regulation stops located inside the "NOVA NS" basis.

To decrease the volume : Screw upwards
To increase the volume : Screw downwards
Check that the regulation bar is level and square with the piston rod. Retighten the locknut.

6.3. Semi automatic machine : On semi automatic models, connect the air supply. Open the volume alteration switch. NOVA NS will be supplied and will be ready to operate.

6.4. Check if the required volume is met by using a graduated cylinder. Another regulation may be required. Repeat steps 6.1, 6.2, and 6.3 above.

6.5. To find, with little delay, the same regulation position note the height of the top of the volume bar in reference to the basis : Eitherwise one can prepare a volume rod which should be set between the bar and the basis.

Normally the NS filler is supplied with premade volume rods adjusted on volumes required by the user.

OPTION COUNTER

This item is used when larger volumes are required. It can repeat as many cycles as necessary, from one shot pedal.

Set the counter interruptor on position "COUNTER ON" and choose on the counter the number of cycles required.

The preselection operates as follows :

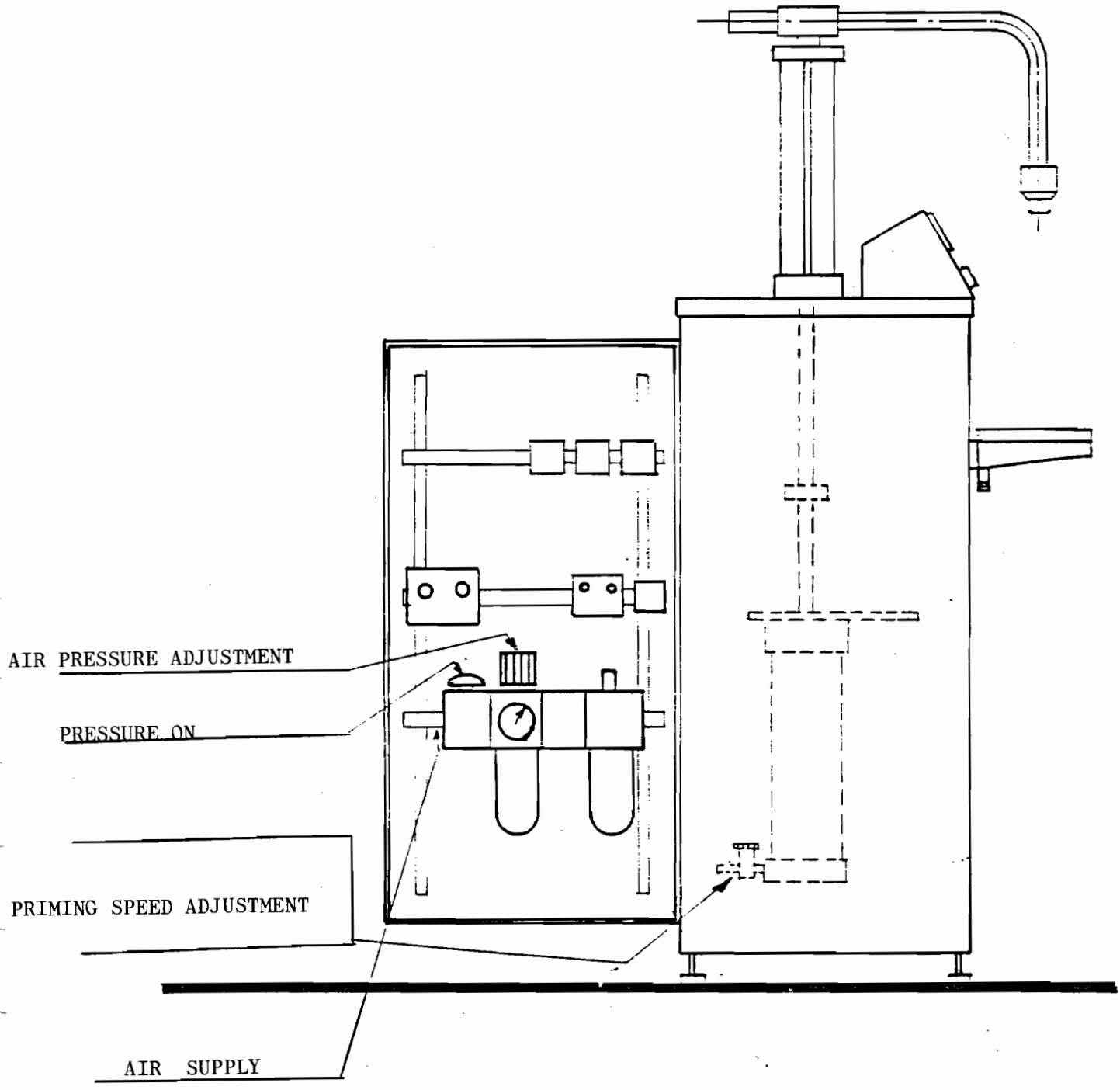
1) If the machine is not connected to air supply :

Push on the red button and bear downwards the black button (arrow designed) located just under the red one.

Then select the number of shots required with the pump while pushing on the black buttons.

2) If machine connected to air supply

Keep waiting to cycle's end, then bear downwards the black button located on counter (arrow design) and select number of shots required.


AIR PRESSURE ADJUSTMENT
PRESSURE ON
PRIMING SPEED ADJUSTMENT
AIR SUPPLY

MAINTENANCE OF THE FILLING PUMP

4. DAILY MAINTENANCE

AUTOMATIC CLEANING

4.1. Plunge the suction hose and the hose connected to bottom part of the pump, in a container alongside the machine filled with warm water and appropriate detergent.

Remove the nozzle and the strainers, replace it by the washing nozzle (supplied with the machine) and connect it with a flexible pipe to same container.

Set cleaning button position "ON".

Set interrupter "VOLUME RANGE" in order to block the piston up.

4.2. Remove the volume rods and replace them by the washing rods (supplied with the machine).

Reset the interrupter "VOLUME CHANGE" to its initial position in order to let the piston down again.

Actuate the interrupter "CLEANING" so that the piston operates automatically down to the washing room as many times as necessary in order to get a complete washing.

4.3. After that operation, block the piston up, then reset the initial volume rods.

4.4. Let the piston down again.

4.5. MAINTENANCE EVERY 3 DAYS

Remove and clean completely all the parts located on the top of the pump.

4.6. MAINTENANCE EVERY WEEK

Disassemble and clean all the parts.

Piston and its rod must be greased with alimentary grease.

Reassembly the whole pump.

MAINTENANCE OF THE "NS 427 AL - NS 112 AL and NS 554 AL"

1. CLEANING (ON THE PREMISES)

Stop the liquid supply. Operate the NOVA NS until all the liquid located in the supply piping and in the NOVA NS, has been pumped and set in an appropriate container. Set a large container under the filling nozzle during the time required for pumping out the liquid from the NOVA NS, because air pockets trapped in the liquid could generate spaterring at the level of the nozzle. Connect an appropriate cleansing liquid to the supply connection of the NOVA NS and pump it through the NOVA NS for approximately 3 to 4 minutes. When there are liquid supply funnels or suction blocks, one may connect the delivery aperture of the nozzle to the supply pipe and circulate the cleansing liquid. Change the cleansing liquid, then repeat the rincing sequence for 3 to 4 minutes. This cleaning procedure is normaly sufficient to change of liquid.

CAUTION : Never use solvents which may spoil the gaskets of the NOVA NS. In doubt, apply to NOVA.

2. CLEANING (REMOVAL OF BALL VALVE)

In order to make this cleaning procedure an easy one, it is of ten advisable to rince the NOVA NS it is send above before starting any disassembling. When the NOVA NS is rinced, actuate the dosing modification switch to stop it, the valve being in the upper position which will allow brushing it or wiping it later. Disconnect the air supply, the following procedure cover the disassembly more than required in order to meet the cleaning standards. Disassemble with great cure, and especially to remove the valve block, gaskets, valve caps and balls, for if these parts are spoilt this may spoil the NOVA NS performances.

2.1. Untighten the screw retaining the supply connector, turn it around (it should always be fixed to the supply pipe) and disconnect.

2.2. Remove the ball valve, the ball and the ball valve spring. Never let the ball fall, because it has been surface treated with a precision rectifying and polishing, which are essential for the operation of the NOVA NS.

2.3. Untighten the screw maintaining the output connector, make it turn and remove it, along with the nozzle or the supply pipe to the nozzle, then remove the ball cage, the ball and the ball valve spring, operating cautiously as said above in 2.2. Note the assembly order of the parts.

2.4. Remove the valve block by unscrewing the two stop nuts.

REMARK : This procedure is sufficient for all current cleaning.

3. CLEANING (TOTAL DISASSEMBLY) Refer to 6 below if there is a rotary valve.

3.1. Operate as in 2.1. to 2.4. above.

3.2. When there is an auxiliary liquid tank, drain it by using the valve or the stopper provided to this effect and located at the botton.

3.3. Dry up the liquid or the cleansing fluid set on the piston. Remove cautiously the liquid cylinder, taking care not to spoil the piston lips.

3.4. Lift the liquid cylinder off

See that it remains at right angles, then use the plug wrench to unscrew the piston.

3.5. When each part is removed, put it in a detergent solution or in an appriopriate cleasing liquid and wash it throughly. Check the piston, the O rings for falts, before starting reassembly. The damaged items are to be replaced and if not so the NOVA NS would not operate correctly.

4. REASSEMBLY

4.1. The reassembly should be carried according to "B.SERIES"

4.2. When there is an auxiliary liquid tank, see that the drain valve or stoppes a reset in place and that the tank has been properly filled, before reoperating the filler.

5. BALL SEATS

One must know that ball seats will require care when nozzle dripping or checking inaccurate filling ball seats must be inspected.

TROUBLE SHOOTING — Ascertain that all normal daily and weekly maintenance have been carried out.

FALT	DIAGNOSIS	WHAT TO DO
1. NOVA NS does not fill	1.1. Change volume adjustment on position "ADJUST"	1.1. Set the interrupter on postion "ON"
	1.2. Emergency stop button on position "STOP"	1.2. Check the buttom "EMERGENCY STOP"
	1.3. The air pressure control valve is set at too low a pressure	1.3. Set the air pressure control normaly 4/5 bars.
	1.4. On the semi automatic models the lower release valve does not work	1.4. Set the lower release valve
	1.5. Pneumatic operated valve remains shut	1.5. Check to see if the pneumatic control operates correctly. If not, check the pneumatic circuit by using the pneumatic circuit schematic. If it is all right dismantle the filling nozzle and clean it.
	1.6. Air pipes filled with water	1.6. Drain the air valves, the air pipes and the air filter tank.

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FALT	DIAGNOSIS	WHAT TO DO
1. The NOVA NS does not fill (cont.)	1.7. Counter (if there is one) set on zero	1.7. Reset it. NEVER set a meter on zero
	1.8. Air valves frozen	1.8. Put antifreezing oil "Kilfrost" in the lubricator or put an air dryer in the air supply pipe.
2. The NOVA NS does not prime	2.1. The supplying regulator is closed	2.1. Reset the supplying regulator
	2.2. As in 2 above	
	2.3. On the semi automatic models the upper valve does not operate.	2.3. Reset the upper valve.
	2.4. On semi automatic models the normal stop switch is closed	2.4. Open the normal stop switch
	2.5. The liquid supply duct is closed	2.5. Open the liquid supply duct.
	2.6. As in 1.9. above.	

FALT	DIAGNOSIS	WHAT TO DO
3. Splashes when filling	3.2. Wrong volume setting - container are filled too fast	3.2. Reset the NOVA NS so as to have the right volume - reduce filling speed
	3.3. The nozzle isnot appropriate for the container or for the liquid	3.3. Check with NOVA if a new nozzle is required.
4. Air in the filled liquid (therefore insuficient filling)	4.1. The connector between the NOVA NS and supply funnel or the suction block is antightened or another supply connection for the liquid or a pump gasket create an air supply by suction.	4.1. Check that all gaskets and fillings are correctly set and check that all liquid supply ducts are properly tightened and vacuum tight.
4. Air in the filled liquid (therefore insuficient filling (cont)	4.2. The seal at the top of the NOVA NS liquid cylinder is spoiled	4.2. Dismantle the NOVA NS and replace the seal.
	4.3. The NOVA NS piston is spoiled or worn out	4.3. Dismantle the NOVA NS and replace the piston (see § 3 of B. SERIES)
	4.4. The charge speed is too fast and there is a cavitation effect.	4.4. Slowdown the charge of the NOVA NS
	4.5. Solid material is stuck behind the seating of the outlet ball	4.5. Dismantle the outlet valve and clean see 5 (f) of B. SERIES.

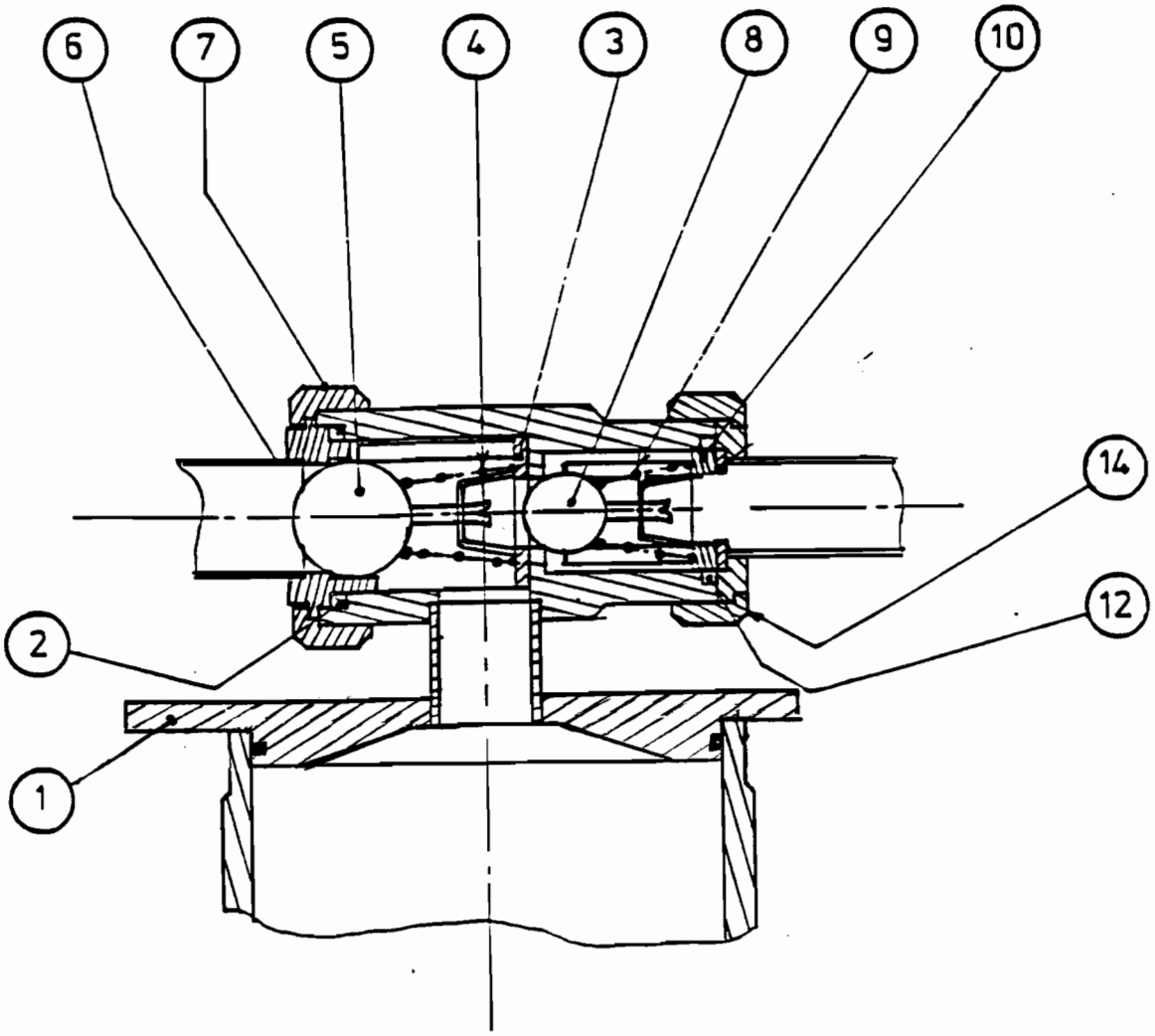
FALT	DIAGNOSIS	WHAT TO DO
5. The filling nozzle drips	5.1. The output ball is not correctly set on its seating	5.1. Check the output ball seating and ensure that it is cleaned and un damaged - see 5.2. (f) B. SERIES
	5.2. The inlet ball is not correctly set on its seating	5.2. Reset the ball on its seating or replace it if required see 5.1. (f) of B. SERIES.
	5.3. The height of the product in the supply tank is too high for the ball valves.	5.3. (i) Install a break tank for the liquid between the supply tank and the NOVA NS in order to bring the height down to 2.5 metres or order stronger springs.

FALT	DIAGNOSIS	WHAT TO DO
		5.3 (ii) Order from NOVA the alteration for rotation valves, other valve possibilities.
5. The filling nozzle drips (Cont.)	5.4. The supply pipe connectors to the following nozzle are unscrewed.	5.4 Retighten or replace the supply pipe connectors to the filling nozzle.
	5.5. The supply pipes for the liquid are unscrewed.	5.5 Retighten the input connectors and all gaskets of the liquid supply pipes.
	5.6. The valves of the ball valve block are not set correctly.	5.6 Reassemble correctly the ball valve block - See schematic design supplied.
	5.7. The filling nozzle is out of level.	5.7 Set the level of the nozzle.
	5.8. The piston is worn out or incorrectly set.	5.8 See 4.3. above.
	5.9. The filling nozzle is not theright one for the liquid.	5.9 Ask NOVA for a new type of nozzle.
	5.10. There is air in the liquid : This air expands after the end of the filling travel.	5.10 Check the liquid supply system to remove the air.

FALT	DIAGNOSIS	WHAT TO DO
6. The NOVA NS does not fill in exact quantities	6.1. There is liquid cavitations result from an excessive supply speed	6.1. Reduce the charge speed (see 5 A. SERIES)
	6.2. Inlet ball is not set correctly on it's seating	6.2. Inspect the inlet ball and seating, should it be dirty clean it. If required reset the ball on it's seating (see B. SERIES 5.2. (f).
	6.3. Outlet ball not set correctly on it's seating	6.3. Inspect the outlet ball and seating should it be dirty clean it. If required reset the ball on it's seating (see B. SERIES 5.2. (f).
	6.4. The pedal is released or depressed before the piston rod of the NOVA NS has completed one of the other stroke on the basic model.	6.4. Ascertain that the piston rod has completed it's travel before releasing or depressing the pedal.

FALT	DIAGNOSIS	WHAT DO DO
7. Jerky filling	7.1. The liquid does not have enough resistance against the filling stroke	7.1. Set the control valve for the liquid until maximum speed with no jerks.
	7.2. Lack of our pressure	7.2. Air pressure control valve to be properly set (4 - 5 atm.)
	7.4. The liquid sticks to the cylinder walls	7.4. Fix an auxiliary liquid tank to be purchased from NOVA.
	7.5. Lack of air (pressure gauge varies)	7.5. Stop all other equipment is reducing the air supply to the NOVA NS
8. Jerky resupplying	8.1. Lack of air pressure	8.1. Set the air pressure control valve
	8.2. Charge regulator is closed too much	8.2. Open the charge regulator
	8.3. Input pipe blocked	8.3. Control the whole input pipe assembly and clean if required.
	8.4. Charge stroke too fast	8.4. Set the charge regulator
	8.5. Lack of air (pressure gauge varies)	8.5. Stop the equipment reducing the air supply to NOVA NS/

Planche N°1 A



POMPE N.S

ball valve — Tête a bille

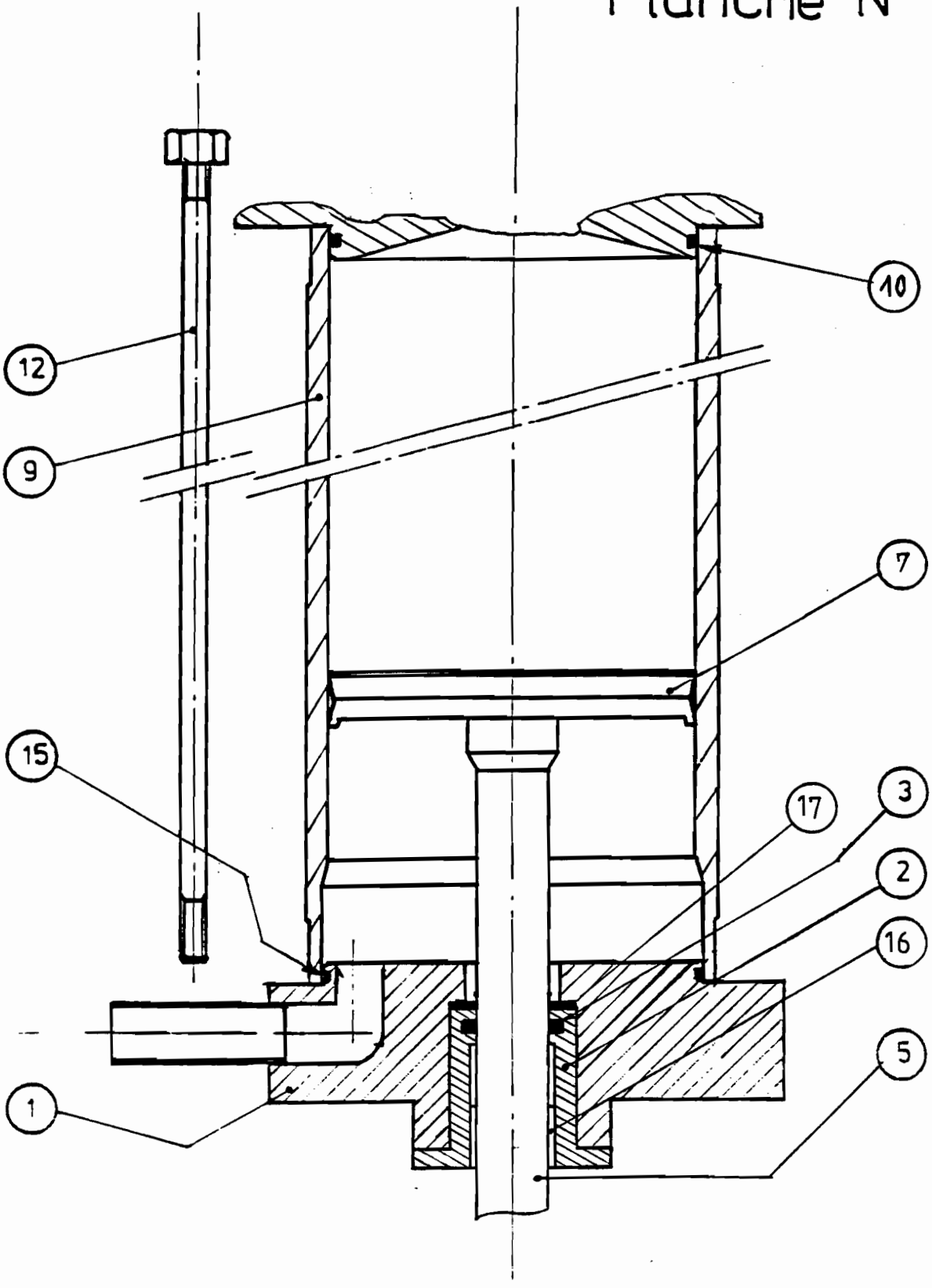
NOVA.SOCIMEC

NOMENCLATURE

NOVA NS 427	S/E BALL VALVE	PLATE N° 1 A

REP.	DESIGNATION	NBRE S/e	N° NOVA	OBSERVATION
1	TOP BASE	1	179 03 01 C	
2	DAIRY SEAL OF 51 MM ϕ	1	219 04 18	
3	PRIMING BALL RETAINER	1	134 03 07C	
4	PRIMING SPRING	1	212 00 67B	
5	PRIMING BALL	1	134 03 06B	
6	PRIMING HOSE	1	134-03-26A	
7	NUT ϕ 51	1	207 00 38	
8	DISCHARGE BALL	1	134 03 08A	
9	DISCHARGE SPRING	1	212 00 68B	
10	DISCHARGE BALL RETAINER	1	134 03 09A	
11				
12	DAIRY RING 38	1	219 04 17	
13				
14	NUT 38 MM	1	207 00 47	

Planche N° 2 c



POMPE N.S

Cylindre produit

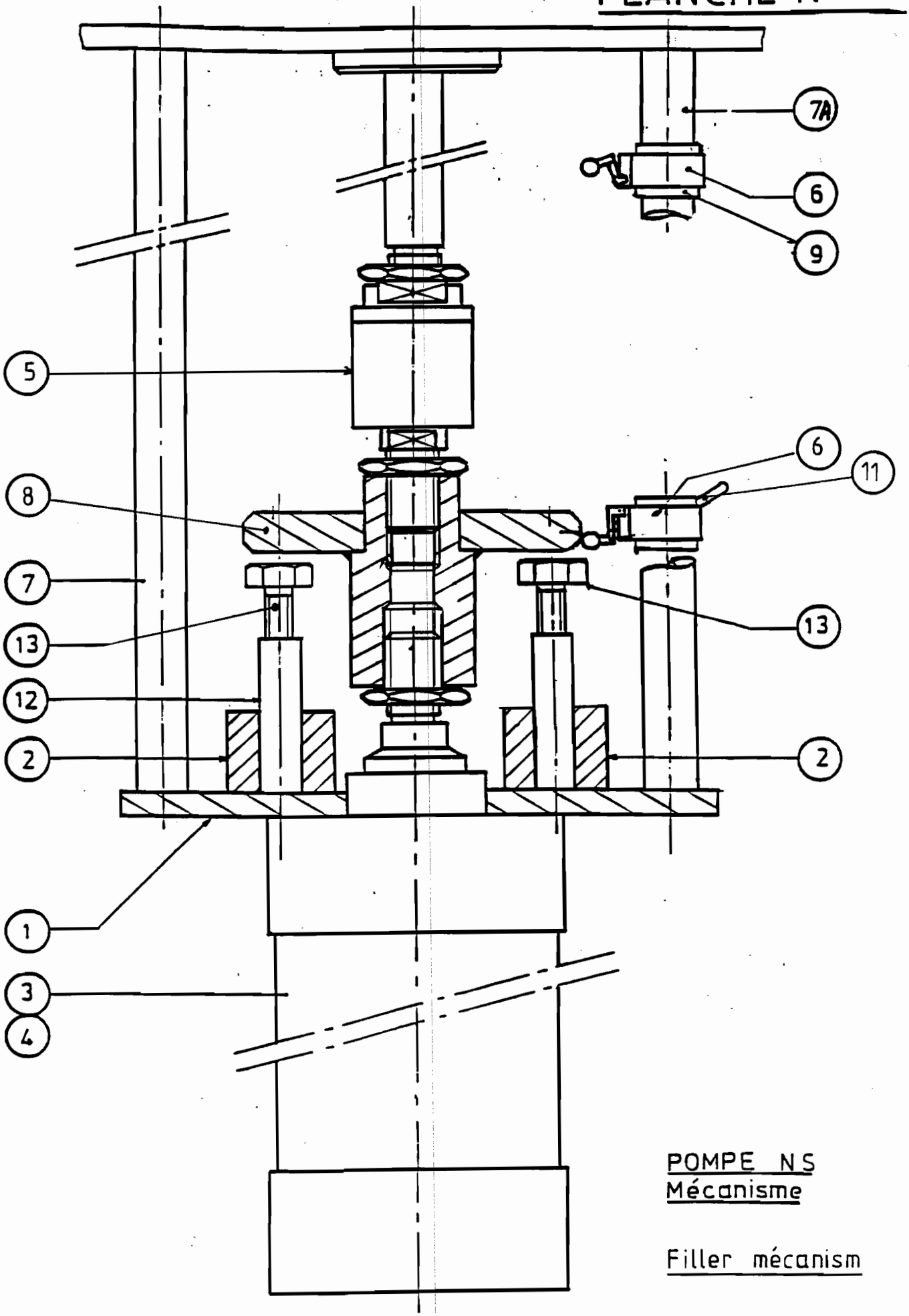
NOVA . SOCIMEC

NOMENCLATURE

NOVA NS 427	S/E PRODUCT CYLINDER	PLATE N° 2 C

REP.	DESIGNATION	NBRE S/e	N° NOVA	OBSERVATION
1	BOTTOM BASE	1	179 06 018	
2	GUIDE RING	1	179 06 02	
3	ROD RING	1	219 09 06	
5	PISTON ROD	1	179 08 30	
7	MOULDED PISTON	1	179 05 01	
9	DOSING CYLINDER	1	179 04 01	
10	VITON SEALING RING	1	BS 248 V	
12	TIRANT DE POMPE	4	179 04 02A	
15	VITON SEALING RING	1	BS 250 V	
16	RING DU 20	2	213 03 11	
17	JOINT FIBRE ϕ 23 x ϕ 29 x 1	1	219 01 39	

PLANCHE Nº4A



POMPE NS
Mécanisme

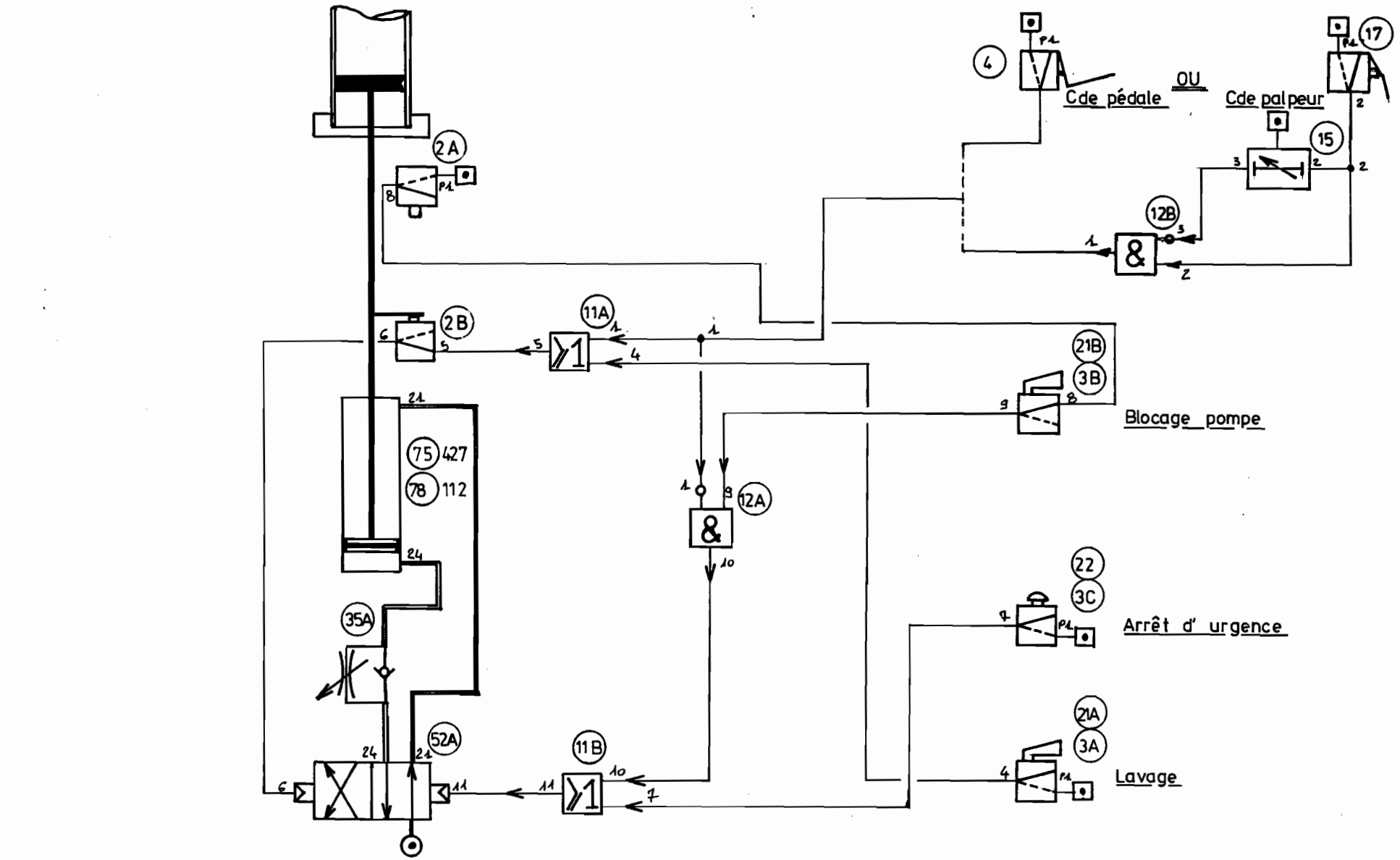
Filler mécanism

NOVA SOCIMEC

NOMENCLATURE

NOVA NS 427	S/E FILLER MECHANISM	PLATE N° 4 A

REP.	DESIGNATION	NBRE S/e	N° NOVA	OBSERVATION
1	AIR CYLINDER SUPPORT PLATE	1	179.308.04	
2	METERING ROD SUPPORT	2	134 08 08B	
3	AIR CYLINDER ϕ 80 STROKE 250 MM	1	205 09 99	
4	SET OF RINGS FOR REP.3 ϕ 80	1		
5	FESTO FREE COUPLING	1	205 11 11	
6	CONTACT	2	205.08.04	
7	MECHANISM GUIDE STUD BOLT	3	179 08 31	
7A	CONTACT SUPPORT STUD BOLT	1	179 08 32	
8	ROD STOP	1	134 08 31	
9	MICROVALVE SUPPORT	2	188 11 05F	
10	CONTACT RETRACTABLE HEAD	2	205 08 07	
11	MICROVALVE SUPPORT SQUEEZE HANDLE	1	214 01 79	
12	DOSING METERING ROD	2	179.08.33	ST VOLUME
13	METERING ROD TOP	2	192 10 12	



NOVA SOCIMEC COURVILLE		
	N S 112 - 427 Al. V.	Date le 11-02-86
	monotête semi auto	Dessinateur
	vanne a bille de pédale	Echelle
	ou palpeur lavage a.u.	N° 415-20-15

ITEM LIST		
PUMP NS	S/E : PNEUMATIC MATERIAL	DRAWING 1

ITEM	DESCRIPTION	NOVA NR	REMARK
2	POSITION PUSH SWITCH	205 08 04	PXC M601 A 110
3	VALVE WITH BASE A "ON CIRCUIT"	205 07 12	PXB B 1011
4	STEEL PEDAL	205 15 21	PXP EM 510
11	LOGIC CELL "OR"	205 06 71	PLK C 10
12	LOGIC CELL "NO"	205 06 73	PLN C 10
21	TURNING BUTTON 2 POSITION	205 07 20	ZB2 BD2
22	HOOK HIT BUTTON	205 07 19	ZB2 BT4
35	FLOW REGULATOR 1/4	205 10 86	1/4 ERU 4186
43	AIR TREATMENT ASSEMBLY V 4 SERIES	205 08 28 à 205 08 35	
52	DISTRIB. 4/2 P/P SIZE 1/4	205 08 48	PVD C 34 22 29
75	CNOMO CYL. Ø 80 STROKE 250	205 09 99	C12 PN 80 AP250
131	ROBINET 2 VOIES AVEC PURGE 3/8	205 10 14	0469 10 17