INSTRUCTION BOOK

LEES FILTER MODEL ALFA MAGIC

MECCANICA SPADONI S.R.L.

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Gentlemen,

Thank you for selecting one of our products, please read this booklet with due care and attention. In it you will find instructions and advice on how to get the utmost from your new machine.

Meccanica SPADONI S.r.l.

INDEX

1) DECLARATION "CE" OF CONFORMITY

Builder :
MECCANICA SPADONI S.r.l.

Social seat :
Via dei Vinari 7 - Z. Ind.le Bardano
05019 ORVIETO (TR)
ITALY

Machine type : **Filter**

Series : **ALFA MAGIC**

Model : **ALFA MAGIC 40X40**

Serial Number :

Manufacturing year: **2001**

The undersigned hereby, under full responsability, that machine is in compliancewith what is foreseen by the **ECM 89/392**, **91/368**, **93/44**, **93/68** and **72/23/CE** norms and subsequent modifications, and it is manufactured in accordance with follows norms :

EN 60204 - 1	Safety of machinery.
EN 292 - 1	Safety of machinery.
EN 292 - 2	Safety of machinery.
EN 294	Safety of machinery.
EN 349	Safety of machinery.

The validity of CE marking is subordinated to the equipment integrity.
Any modification, if not authorized, will cancel the use of the CE marking.
This will occur in case the relevant risks have not been previously analyzed by our company, and a new Declaration of Conformity has not been issued.

Signed :

SPADONI SERGIO
PRESIDENT

2. HOW TO USE AND RESERVE THE INSTRUCTION MANUAL

In this chapter, you will find instructions on how to use the I.M..

2.1 For whom is the I.M.:

This manual is addressed to those responsible for:
- transporting the unit
- loading and unloading of the unit
- operating the unit
- maintenance

2.2 Aim of the informations contained in the I.M.

The purpose of the I.M. is to detail the; use of the machine, technical characteristics, moving instructions, installation, regulation and use, maintenance and the ordering of spare parts.

2.3 Limitations of the I.M.

We remind you that this manual can never substitute the experience of the operator and therefore the I.M. represents only a memorandum of the main operations.
We underline, that this manual reflects the machine at the time of purchase and that the manufacturer may upgrade the machine without bringing the I.M. up to date.

2.4 How to reserve the I.M.

We remind the operator that this manual is to be stored with care for continual and future reference.
Sections regarding; “moving of the machine”, “use”, “verifying” and “starting” have been provided in double copy.
In case of loss or destruction of the I.M., please refer to your sales agent or contact the manufacturer directly.

WARNING
Do not effectuate any operation if you are not absolutely sure of the proper procedures. If this is the case we encourage you to contact either the sales agent or the manufacturer.

2.5 Advertising

The manufacturer relieves themselves from any responsibility for damages incurred to the machine, operating personnel or to the product itself in the case of :
- misuse of the machine
- operation of the machine by unexperienced personnel
- incorrect installation
- improper feeding or operating of the machine
- lack of maintenance
- forced interventions or modifications
- use of non-original spare parts
- lack of total observation of operating instructions.

3. MOVING OF THE MACHINE

In this chapter you will find instructions pertaining to the physical handling of the machine.

3.1 Transport packaging:

The machine is transported in a wooden crate, unless other means have been discussed with the purchaser of the unit prior to shipping.

3.2 Handling operator:

We strongly suggest the use of experienced personnel in order to move the unit.

3.3 Means necessary to move the machine:

The machine can be moved with either a fork lift or a overhead crane.
In table **A. 1** of this chapter, you will find specifications regarding the machines weight and dimensions.

3.4 Lifting instructions:

New machines are packaged in a wooden crate. The total weight of the unit is clearly marked on the frame of the crate.
The pallet is prepared for handling by an overhead crane or a fork lift.

IMPORTANT.
We suggest that you verify the balance

3.5 Lifting of non-crated units with a fork lift:

If you have received a unit uncrated and intend to use a fork lift to move the unit, be sure that the fork lift is positioned to avoid any damages to the machine.

IMPORTANT
Be sure that the metal parts of the forks do not touch the filter's frame directly!

3.6 Lifting of non crated units with an overhead crane:

Means : textil bands
Minimal capacity : Kgs
Width : mm
The lifting scheme is indicated in table **D. 2**.

IMPORTANT
Do not sling the machine with a metal cable or with metal chains !

3.7 Moving instruction of uncrated machine

The machine is on 4 wheels and can be moved manually on a flat surface.

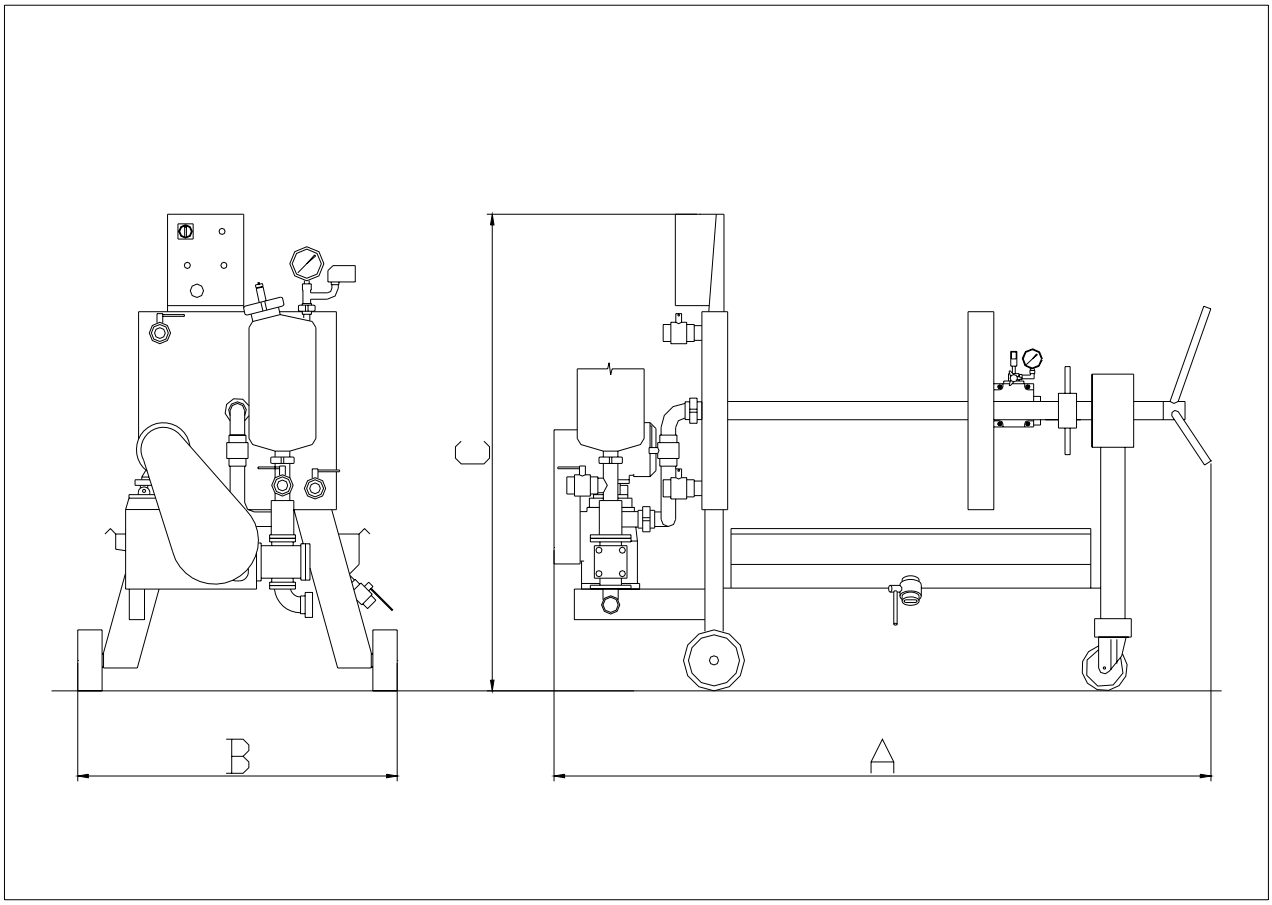
IMPORTANT
Do not move the machine by hand on a non-uniformed or uneven surface. In such a case, position the machine on its frame and move it by means of a fork lift or an overhead crane taking special care not to damage the unit.
If the unit experiences any type of shock, immediately control if any damage has been incurred and if necessary immediately contact either the manufacturer or sales agent.

3.8 Stationary percautions

The machine is manufactured to work on a flat surface.
If operated on a flat surface no other means are necessary to keep the unit stationary.
For your convenience, two free wheels are equipped with brakes, it is a good habit to utilize these brakes even when working on a flat surface.

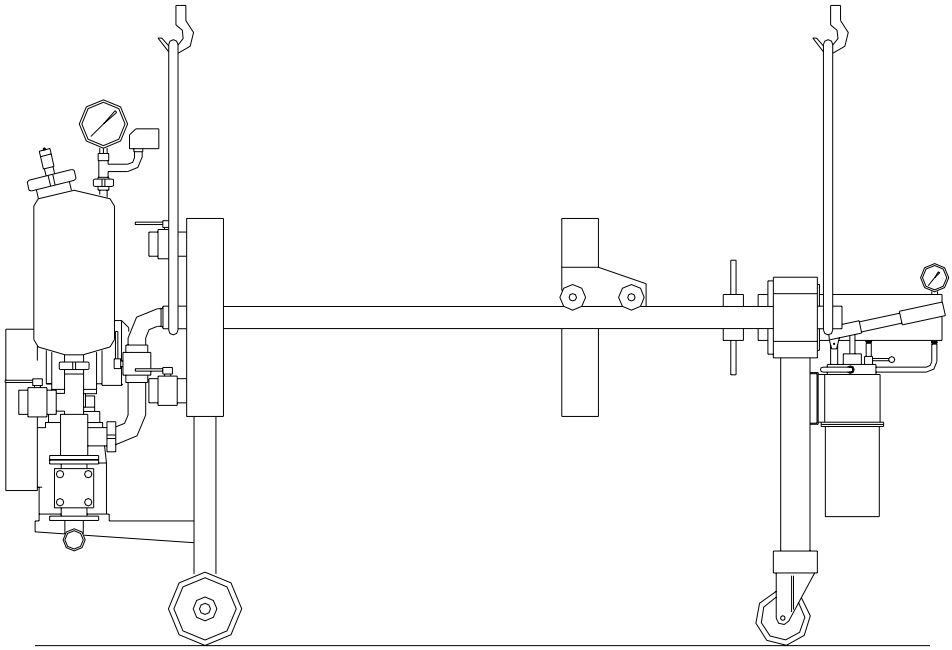
IMPORTANT
If the machine has to work on an uneven surface, secure the fixed wheels with the provided stops and position the brakes on the two free wheels.
It is not suggested to keep the machine on a slope greater than 2% .

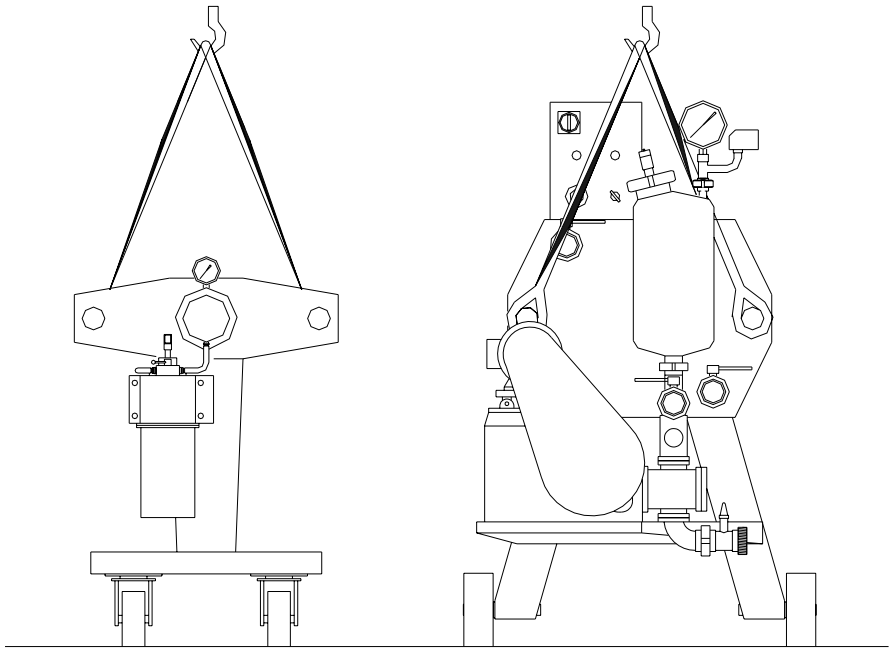
TAB.A.0
MACHINE DIMENSIONS



ALFA 40	A (mm)	B (mm)	C (mm)
CHASSIS 30	2.650	1.100	1.550
CHASSIS 40	3.200	1.100	1.550

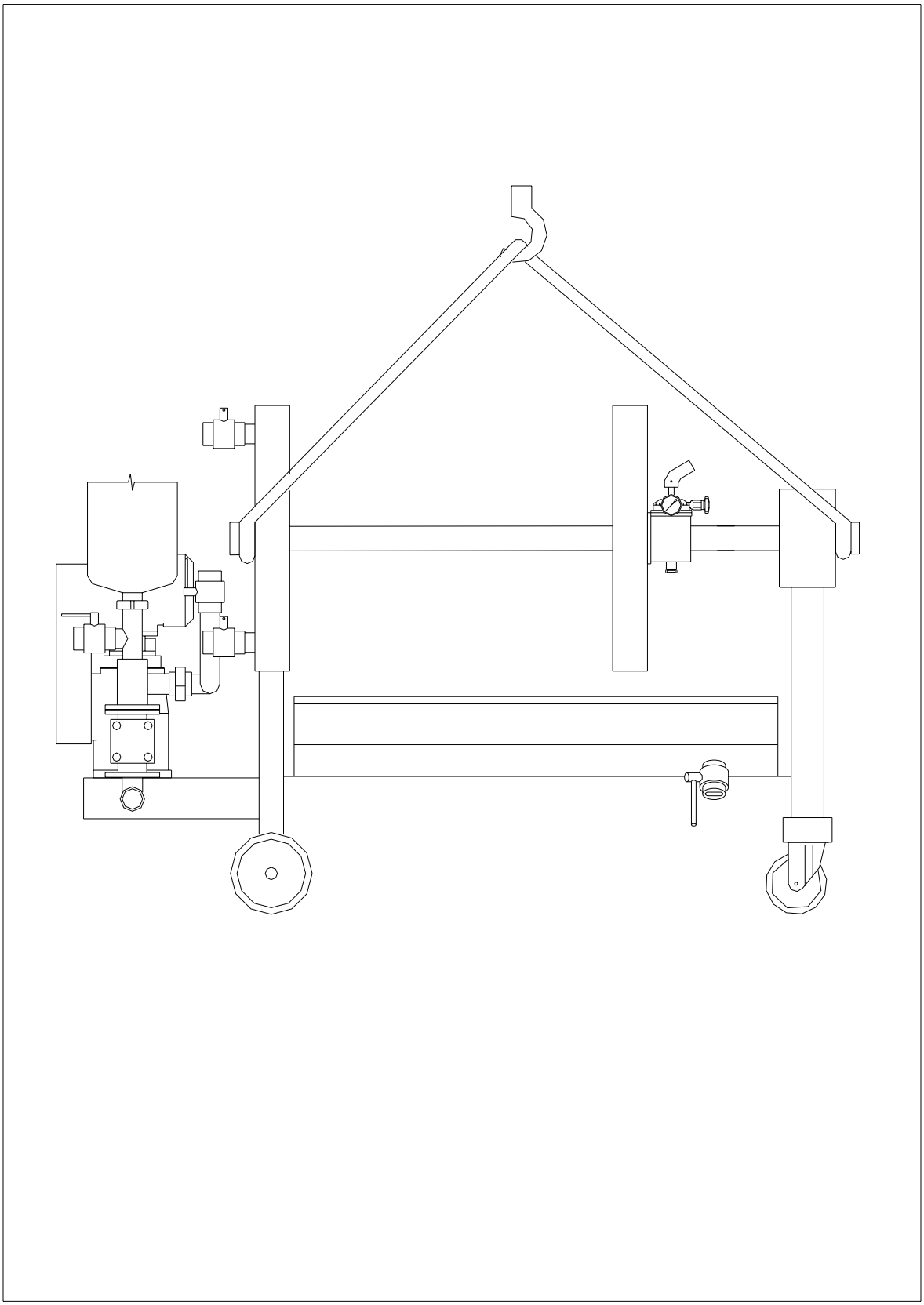
TAB.A.1





ATTENTION
LIFTING SYSTEM – DO NOT USE A FORK LIFT ON THIS SIDE

TAB.A.1



ATTENTION
LIFTING SYSTEM – DO NOT USE A FORK LIFT ON THIS SIDE

4. OPERATIONS, MEANS AND MATERIALS NECESSARY FOR INSTALLATION

In this chapter you will find those informations pertaining to the set up and installation of the unit.

4.1 Electrical outlet

The plug must have the following characteristics:
Industrial plug 3P + T, IP 44, 380/415 V., following En 6030/1/2.

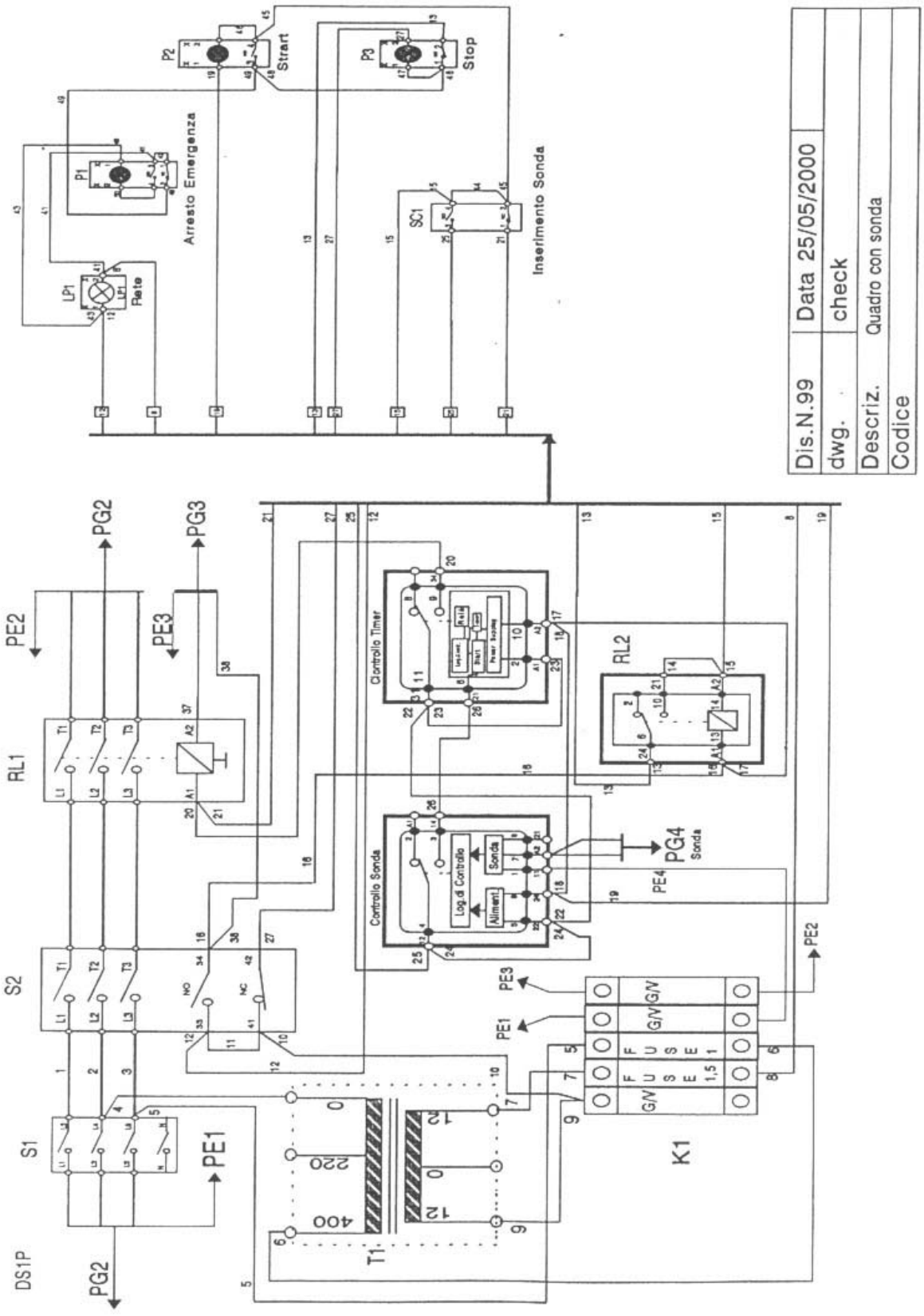
4.2 Control panel.

To feed the machine you have a control panel with the following characteristics
- An industrial plug with blocking switch 3P + T, 16 A,
- 380/415 V., IP 44, with fuses table E 16 and fuses 16 A, following EN 6030/1/2.

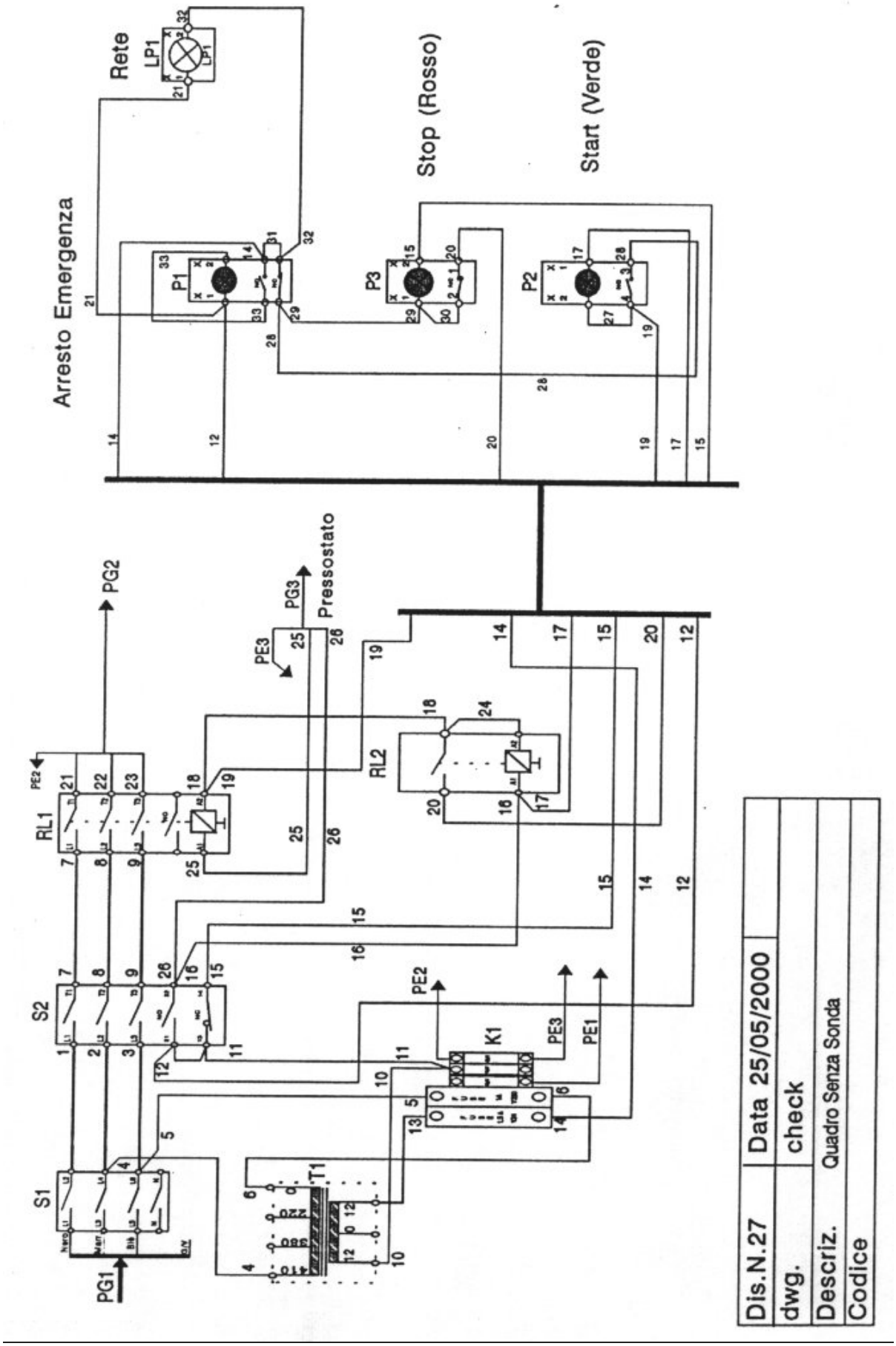
4.3 General plant characteristics.

The electric table's point 4.2 is to be connected to the cable with a differential switch with a ground following IEC 364/4 art. 413.1 or :
Vc = Rt * Is < 50 V.
Vc = Contact tension
Rt = Separator resistence
Is = Sensibility line of the differential
When required by law smaller Rt values must be respected.

TAB.S.E
CIRCUIT DIAGRAM (WITH FEELER)



TAB.S.E
CIRCUIT DIAGRAM (WITHOUT FEELER)



5. INSTRUCTIONS FOR THE POSITIONING OF THE MACHINE

5.1 Receiving of the machine.

The machine is delivered already mounted and ready to start.

IMPORTANT
Before unloading the machine from its packaging be sure to carefully inspect that it has not been damaged during transport.

In the case of damages be sure to :
- contact the sales agent
- make a written report
- send a copy of written report to the:
  - insurance company
  - transport company
  - sales agent or manufacturer

5.2 Electric feed connection and grounding.

The operations of connection must be done by specialized people with electrician qualifications.
The machine is equipped with a cable connected to the panel.
It is sufficient to connect the plug (written in point 4.1) on to the other side of the cable.

IMPORTANT
The connections must be done with plug/tap following EN 6030/1/2.

You have to verify the tension following the formula :
$AV = K * L * I < 4\ \%$
V = Voltage
K = Characteristic coefficient of the cable
L = Length of the cable

The machine does not need any other grounding.

6. OPERATING THE MACHINE

In this chapter you will be given informations describing the units main operations and limitation of use.

6.1 Use of the machine

This machine is manufactured for the sole purpose of filtration. See below for list of products approved for filtration with this unit.
It is not to be used in any other way, nor does the manufacturer suggest usage of the unit other for those indicated in point 1.1.2 letter C law 89/392 CEE.

6.2 Type of use

This machine is intended for industrial use only.

6.3 The operator

You do not need particular technical knowledge in order to operate.
It is sufficient to read the I.M. remembering that experience and product knowledge are an important factor.

6.4 Products that can be filtered with this unit

The machine is idoneous to treat any non-corrosive industrial or feeding product.

6.5 Limited uses

The machine is not idoneous to treat flamable products**.**

6.6 Working place

This machine can operate anywhere outside of areas subjected to heavy humidity, dust, temperature changes and where corrosives are present.

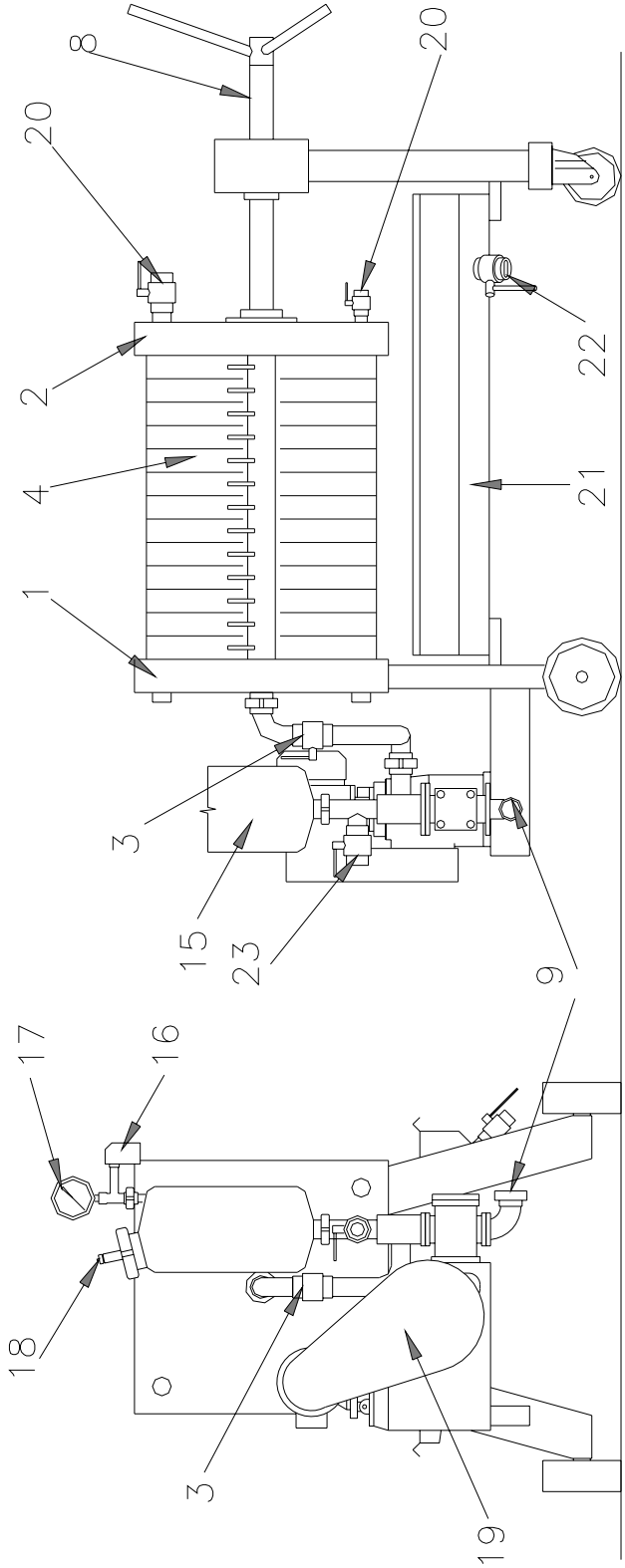
6.7 Working outdoors

The machine is not idoneous to work outside.

If it is absolutely necessary to work outside prepare a waterproof cover in which to operate and store the unit under.

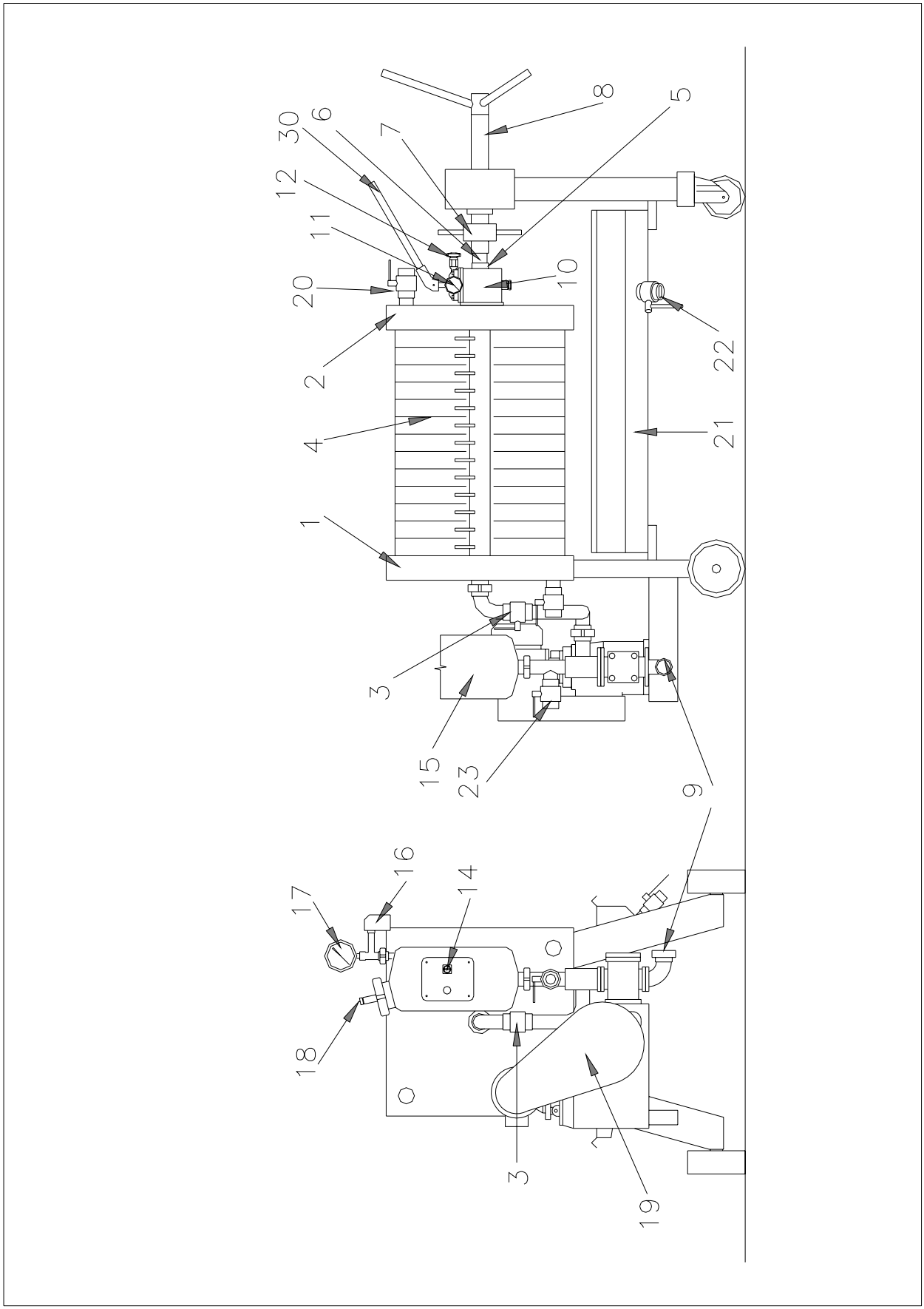
TAV.1

ALFA MAGIC 40X40 PRESS FILTER WITH MANUAL CLOSURE



TAV.1

ALFA MAGIC 40X40 PRESS FILTER WITH HYDRAULIC CLOSURE



TAV.1

1. Fixed head
2. Movable head plates clamping
3. Intermediate valve
4. Filtering plates
5. Hydraulic closure cylinder (hydraulic closure version)
6. Clamping piston for hydraulic closure (hydraulic closure version)
7. Blocking ring piston for hydraulic closure (hydraulic closure version)
8. Rapid approach screw
9. Filtering liquid suck
10. Hydraulic pump for hydraulic closure (hydraulic closure version)
11. Oil pressure gauge hydraulic closure (hydraulic closure version)
12. Oil discharge regulator hydraulic closure (hydraulic closure version)
14. Electric board
15. Compensating lung
16. Pressure switch
17. Pressure gauge
18. Safety valve
19. Residual or less pump
20. Valves
21. Dripping basin
22. Dripping basin discharge
23. Pressure discharge valve
24. General switch
25. Tension spy
26. Gear push-button
27. Stop push-button
28. Emergency
30. Hydraulic closure lever

7. TECHNICAL DESCRIPTION OF THE MACHINE.

In this chapter you will find described information pertaining to the operations of the machine which maybe considered useful for the operator. This chapter, will hopefully provide a better understanding of the machine for easier detection of defaults and misfunctions.
A lot of the arguments treated in this chapter are provided in schemes or cards to make for easier reading.

7.1 Working of the machine

As mentioned in the previous chapter, the aim of this machine is to filter out impurities from those products being filtered.
This is achieved by passing the product (utilizing pressure) through a set of filtering plates.
Specific operations will be described in chapter 8.

7.2 Description and location of the task command

7.2.1 Starting and stopping of the pump -

The switch to start and stop the pump is found at pos. **14** in Table **1, 2**.

7.2.2 Manoeuvre valves -

The manoeuvre valves are clearly indicated in table **1, 2,** indicated the position “open” and “close”, are in **ds** table **M.5.**
The valve is closed when the handle is horizontal (90°) to the pipe.
The valve is open when the handle is parallel to the pipe.
Middle positions provoke an obstruction of the pipe.

7.2.3 Pump handle for closing hydraulic cylinder.

Pos. **12** table **2**.

7.3 Safety controls

7.3.1 Max. pressure valve

Pos. **18** Table **1** and **2**.

7.3.2 Pressure switch -

Pos. **16** Tabel **1** and **2**.

7.4 Control means

7.4.1 Pressure gauge

Pos. **17** Table **1** and **2**.

7.4.2 Closing cylinder pressure gauge (hydraulic closure)

Pos. **11** Table **1** and **2**.

7.5 Technical schemes and cards

7.5.1 Electric scheme
Table **E 6**.

7.5.2 Pump's technical cards
Chapter **13**.

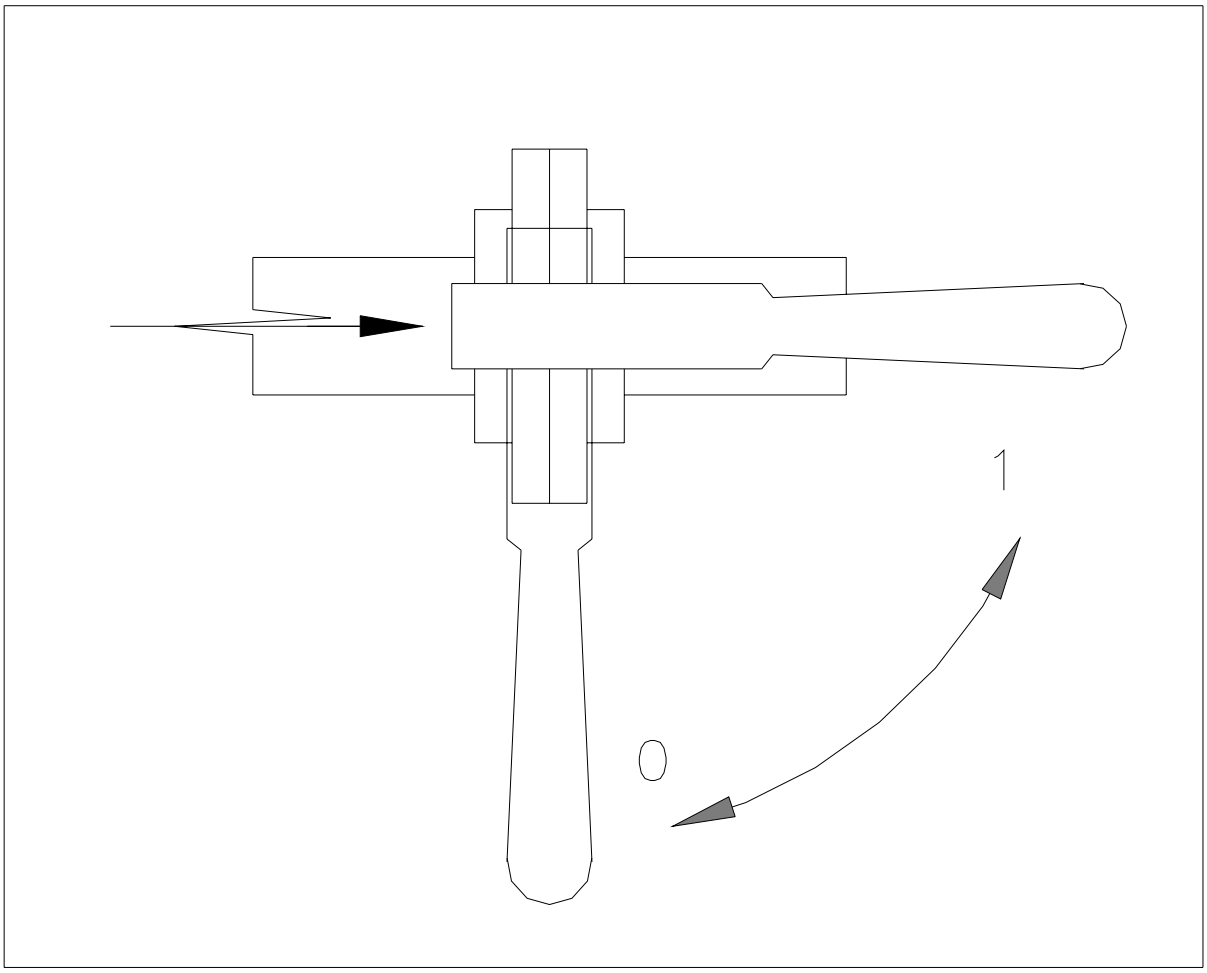
7.6 Phonometrical testing

7.6.1 Working conditions of the machine
- Feeding pump turned on.
- Recycling valves all open (max. capacity).
- Product used : water.
- Working conditions : continous in closed circuit.

7.6.2 Acoustic conditions
It was not possible to measure the acoustic levels while in its working environment, hence a safe measurement of the acoustic level has been made at a 1 mt. distance from the machine, and a 1.60 mt. distance from the ground at its 4 median axes, following the Machines Directives CEE 89/392 (point 1.7.4, comma "f").

7.6.3 Leq (A) middle
Leq = 68 db (A).

TAV.M.5
VALVE SCHEME



0 = CLOSED
1 = OPEN

8. INSTRUCTIONS FOR STARTING AND USING THE MACHINE

In this chapter you will be given instructions for preliminary operations and starting of the machine.

8.1 Instructions for the proper use of the commands

The command controls described in chap. 7 are easy to use and are designed for simplicity so to avoid confusement.

8.2 Starting of the machine

The machine, once connected to the feeding line, is ready to start.

8.3 Use of the machine

We are now going to explain the main stages of filtration breifly described in the previous chapter.

8.3.1 Preliminary operations

8.3.1.1 Mounting of the cloths

The machine is furnished with the cloths correctly mounted, therefore it is not necessary to perform the following operation at first use.
Instructions for every model :
a) Take out the plates from the filter and stand them vertically.
b) Take a cloth and roll it up one side.
c) Pass the rolled side in the middle hole of the plate and spread the cloth so that it covers both sides of the plate.
d) Affix it with the plastic fastners.

IMPORTANT
Be sure that the outlet of the product on the cloths corresponds to that of the plates to ensure a proper filtration.
Be sure that the cloths are evenly covering the plates and that there are no folds or creases present.
Be sure that the lacets, where existing, do not go between the plates.

8.3.1.2 Oil level control in the hydraulic closure system

Instructions for this model :
a) Close completely the closing cylinder.
b) Verify that the level of oil in the vessel reaches 3/4 of its capacity.
Note : In the case of leakage add vaselin oil.

8.3.1.3 Oil level control of the feeding pump

Instructions for this model :
Control that oil contained in the pump reaches the plug.
Note : In the case of leakage add oil type SAE 90.

8.3.2 Filtration

a) Set all the filtering plates evenly and against the head plate **(1)** taking care that folded cloths or strings do not enter between plates in order to avoid leakage and damage to the cloths.

b) Closing the unit:

Model with manual closing (40 x 40)
Approach the mobil head **(2)** by means of the threaded rod (**8**) (table **1** and **2**) and tightly close the filtering assembly.
Model with hydraulic closure (40 x 40 and 50 x 50)
Approach the mobil head plate **(2)** by means of the threaded rod (**8)**. By means of the hydraulic pump **(12),** with the piston, reach a blocking pressure of 250 ATE (verify on pressure gauge **(11)**. Block the plates by means of ring **(7),** this will position the piston for closing. Once the plates are blocked and the ring **(7)** is set, you must release the pressure by opening the plug on the pump. (ref. table **2**).
Model (63 x 63)
Set handle **(11)** (ref. table **3)** to position "piston outlet" and acting on handle **(12)** of the pump take pressure to 160 ATE.

c) Connect the inlet hose to fittings placed right under the pump and make sure that the inlet hose is as short as possiblie (especially when working with very thick liquids).

IMPORTANT
The feeding pipe must have the same length as the connector applied on the pump.
The connection pipe must be as short as possible.

d) Connect the outlet pipe to the chosen discharge of the filtered liquid.

e) Turn on the feeding pump (**19**) by means of switch (**14)**.

f) Filtration is started.
Once the machine is on, it is advised to attend to unit until maximum filtering pressure is reached, making sure the pressure switch is working properly, which intervens by stopping the pump at the chosen pressure, appr. 10 ATE, and re-starting when the pressure drops.
Should the filter become completely obstructed, unit will stop at maximum pressure and will not restart. At this point, you must interrupt the filtration cycle and flush out the filter.
Should you need to stop the filtration process for a long period (overnight), before starting the unit again, you must check the closure by means of the hydraulic pump (**10**), before restarting the feeding pump.
Should you experience an heavy loss of fluid from the plates, you will need to re-build the cake. This is achieved by intermittently turning the pump on and off for a few times until the loss of liquid is diminished.

8.3.3 <u>At filtration end</u>
At the end of filtration, stop the pump and proceed as follows :
a) Discharge the pressure in the filter by opening valve (**23)**.

b) Open the plates in the following way :
Model with manual closing (40 x 40)
Unscrew rod (**8)** releasing the mobile head plate (**2)** away from remaining
plates and proceed to remove the panels (cake) which have formed between the plates.
Model with hydraulic closure (40 x 40 and 50 x 50)
1) Act on the hydraulic pump until pressure is of 250 ATE again.
2) Open ring (**7**), which must be unscrewed until it can be removed from the cylinder of the hydraulic closure (**5**).
3) Open the regulator (**12**) and unscrew rod (**8**)

4) Release the mobile head plate away from middle plates.
5) Proceed to clean cake between plates
Model (63 x 63) Position handle (**11) (**table **3)** on "piston back" acting on handle (**12)** releasing the plates.
2) Remove cake build up that has formed between the plates.
3) Wash the cloths

The machine is ready to start another filtration.

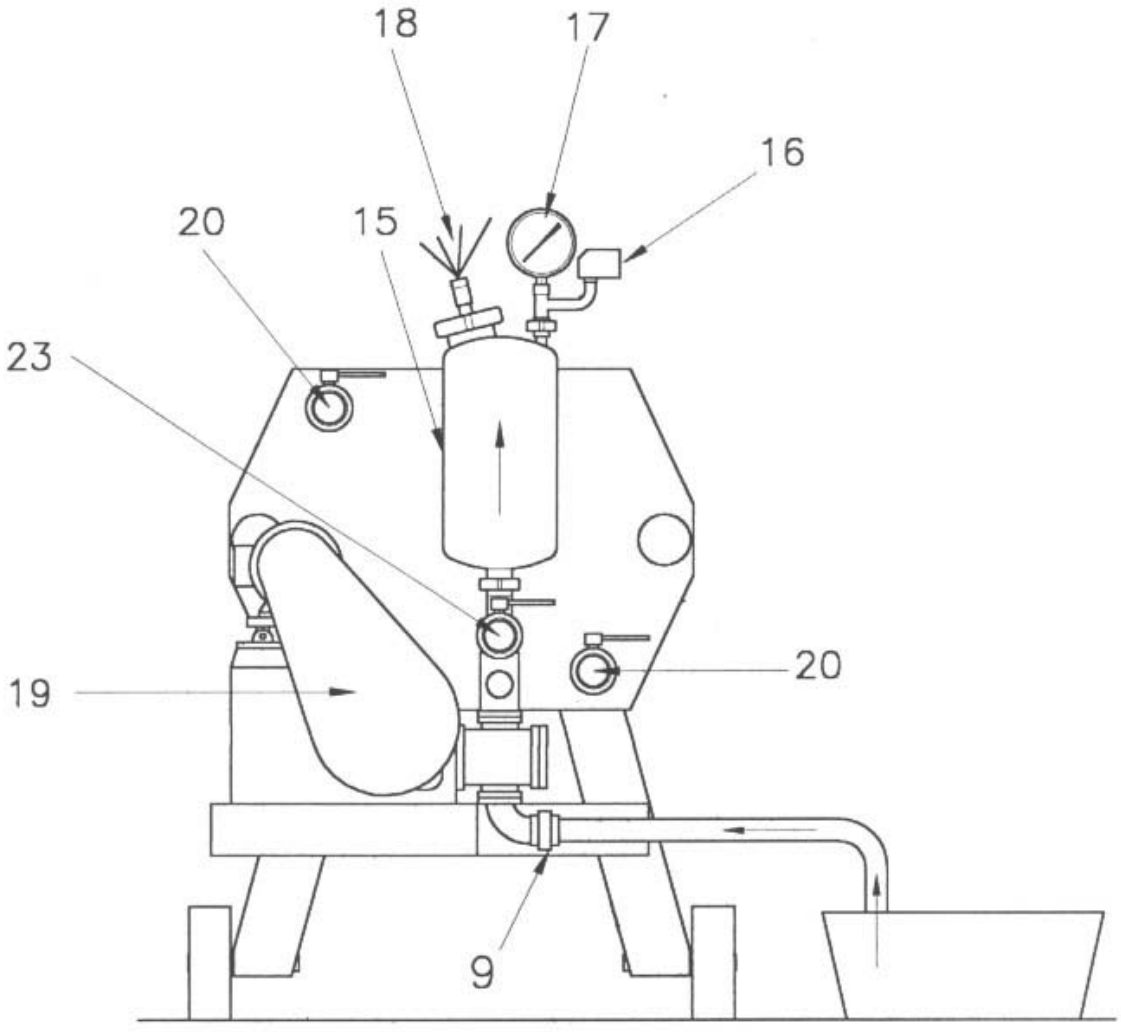
8.3.4 Short term interruptions or stopping:

If for any reason you have to interrupt filtration, before starting again check closure of filter assembly.

8.3.5 Long term interruptions:

When filtration is interrupted for long periods of time, you must be sure to avoid that the cloths do not grow mouldy. Wash them according to the following instructions.
a) Remove the cloths from the machine.
b) Soak them for 24 hours in a solution of hot water (70/80 °C), and caustic soda at 10 %.
**** DO NOT WASH CLOTHS IN A WASHING MACHINE ****
c) Brush them with a hard brush and rinse in cold water.
d) Dry clothes in a dry and aired room, avoiding to set them directly under the sun.
e) Store cloths in a dry aired room.

TAV.5
VERIFY AND MEASURING OF THE MAXIMAL PRESSARE VALVE



ONCE A YEAR IT IS USEFUL TO VERIFY THE GOOD FUNCTIONING OF THE VALVE 18 FOLLOWING THE SCHEME IN THIS TABLE.
INSPIRE WATER FROM THE VESSEL CLOSING THE VALVES UNTIL VALVE 18 OPENS ITSELF AT THE PRESSURE OF 11 BAR.
IF THE PRESSURE OF OPENING IS DIFFERENT CONTACT THE SELL AGENT OR THE MANUFACTURING COMPANY

9. SAFETY MEASURES : VERIFICATION AND CALIBRATION

9.1 Max. pressure valve

Verify twice p/year that the max. pressure valve (pos. **18** table **1** and **2)** is operating properly.
The valve is calibrated up to 11 bars.

WARNING
If pressure is different from the indicated values, please contact your service distributor or the manufacturer directly.

9.2 Pressure switch

Verify during regular operation that the pressure switch is at the right pressure. (pos. **16** table **1** and **2**).

9.3 Pressure gauges

Be sure to calibrate the pressure gauges annually.

10. DISCONNECTING INSTRUCTIONS

In order to disconnect unit it is sufficient to disconnect the plug from the electrical outlet prior to moving unit.

11. SERVICING INSTRUCTIONS

The machine has been studied and designed to operate with minimal servicing.

This chapter details instructions for programmed servicing.

IMPORTANT
Before beginning any servicing operations :
- eliminate tension by means of the control panel
- disconnect the plug from the electric panel
If necessary empty the machine.

11.1 Programmed servicing

11.1.1 Lubrication of the Pump:

It is necessary to lubricate the pump every 80 working hours or every 2 weeks.
This is done through the two plugs found on the pump. (pos. **28** table **1** and **2**).
Add oil type SAE 90.

For filters 63 x 63 it is necessary to change the oil every 12 months.

11.2 Storage or shelter of the machine:

The unit does not require specific storage instructions.
All metallic parts are in stainless steel and the motors and electrical parts are resistant to foreign agents.
It is a good habit to cover the machine and to store the unit free from the risk of shocks.

12. DISMOUNTING OF THE MACHINE.

The only two issues to be concerned with prior to dismounting the unit is that all electrical wiring has been unattached and that all lubricating oil has been removed.

Before removing any electrical wiring it is suggested that you advise an electrician.

Before dismounting the unit be sure to eliminate the lubricating oil in the reducer of the dosing pump.

IMPORTANT
Before disposing of the oil, you must address the proper local authority for instructions on disposal of hazardous waste.
DO NOT FLUSH OIL.

13. SPARE PARTS MANUAL.

13.1 General:
The spare parts manual is composed of a series of drawings that refer to a set of general tables.

13.2 How to order spare parts:
To order spare parts follow the schemes found in the following chapter, paying attention to follow the instructions detailed.

IMPORTANT
We suggest, to avoid error in ordering spare parts that you copy and complete the order module provided. Be sure to complete the order module using references of the schemes provided.

Meccanica Spadoni
Via dei Vinari (Zona ind. Bardano)
ORVIETO – TERNI – ITALY
Tel. 0763/316181 – Telefax.0763/316384
e-mail:sspado@tin.it – internet: http://www.spadoni.it

SPARE PARTS ORDER

Customer's address _____

_____

_____

Machine type _____
Machine number _____
Construction year _____

Please send at my address the under listed spare parts:
Shipping means: _____

Tav. Nr	Ref. Nr	Requested Quantity	DESCRIPTION	Parts Received

Date _____

_____
Signature

PISTON PUMP MC-08

USE AND MAINTENANCE

We remind you that the pimp operates at a nominal pressure of 12-15 atm. with a maximum of 20 atm. for a pumping capacity of 800 1/h.
The power required to exercise a pressure of 12 atm. is 0.75 KW.
We recommend you check and always top up the oil lubricant in the pump gearbox, in order to avoid consequential damage of the mechanical components.
The grade of oil lubricant recommended is SAE 90, with a quantity of 0.8 litres.
In summary, following the maintenance operations is very important to the power output of the pumps, remembering that when correctly used the types of maintenance operations are limited mainly to points N° 1 and 2.

1) REPLACEMENT OF THE VALVE SEATS (5/A).
2) REPLACEMENT OF THE GASKETS (11/5).
3) REPLACEMENT OF THE SLEEVE (33/B).
4) REPLACEMENT OF THE BEARINGS (29/B).
5) REPLACEMENT OF THE PISTON SEALING RING (27/B).

1) REPLACEMENT OR INSPECTION OF THE VALVE SEATS (5/A)

Remove the bolts that fix the delivery block (2/A) and remove this piece to expose the delivery valve (4/A) ande relative valve seat (5/A); after having checked the condition of the valve (4/A) remove the seat encased in the pump body (10/A).
For the installation of the a new seat, reverse the procedure; insert the seat (5/A) manually in position in the pump body, next insert the valve (4/A) and relative gasket seal (3/A) and finally apply the delivery block (2/A), fixing with the relative bolts.
For the replacement of the suction valve seat, carry out the following procedure: remove the bolts that fix the suction curve (12/A) to the pump body, then remove the valve (4/A), checking it's condition and extract the valve seat (5/A) with relative gasket (3/A) from it's housing.
For the succesive replacement, reverse the procedure; insert the valve seat in position in the suction curve, mount the valve and relative gasket seal after having previously checked their condition and this section onto the pump body with the correct bolts.

2) REPLACEMENT OF THE SEALING GASKETS (11/A)

Remove the four nuts whitch fix the pump body (10/A) to the gearbox casing (28/B) and extract the complete pump assembly.
In the bottom of the pump body there is inserted the sealing gaskets (11/A).
With a screwdriver, extract the gaskets, for replacement and after having carefully cleaned the gaskets seat, insert in position the new gaskets, remembering that the lip must always be facing the interior of the pump body.
Now follow the operation in reverse and after having inserted the pump assembly in the gearbox casing, replace and tighten the relative nuts.

3) REPLACEMENT OF THE SLEEVE (33/B)

Remove the four nuts whitch fix the pump body (10/A) to the gearbox casing (28/B) and extract the complete pump assembly to expose the inox sleeve (33/B) that covers the piston.
Unscrew now the sleeve locking bolt (12/B), whitch you find in the head of the sleeve and slip off the sleeve whilst rotating on it's axis.
After extracting the sleeve, remove the fixing bung (13/B) and check the condition of the gasket (10/B); mount now the fixing bung in the new sleeve and proceed in reverse.
Remount the sleeve (18/B) on the piston and fix in position with the relative bolt, after having checked the condition of the sealing gasket (9/B).
Finally mount the pump assembly and fix with the relative nuts.

4) REPLACEMENT OF THE BEARING (29/B)

With a suitable container in place for collection of the gearbox oil, remove the casing cover (24/B), after having unscrewed the relative fixing bolts.
Unscrew now the three small bolts that fix the support of driven gear pin (14/B) located on the opposite side to the gearbox pulley (2/B); after giving a light blow of a hammer on the support to assist with removal, slip it off by rotating on it's axis, whilst supporting the driven gear (20/B).
Connected to support you find the driven gear shaft (32/B), which yyou need to inspect the condition of, and replace if necessary.
Extract now from the gearbox casing (28/B), the driven gear assembly (20/B), consisting of the connecting rod (19/B) and the piston (18/B) complete with sleeve (33/B).
Unscrew the nut (1/B) whitch fixes the gearbox pulley (2/B) to the drive shaft (31/B) and remove the pulley with a suitable puller.
Remove now the small bolts in the bearing support (30/B) on the opposite side to the gearbox pulley and with a teflon hammer, strike the protruding piece of the drive shaft (31/B) and remove completely from the gearbox casing.
After having freed the bearing support from the drive shaft, remove the bearing (29/B) with a suitable puller.
Now follow the operations in reverse and after having inserted the new bearings in position, check the condition of the sealing ring (11/B) inserted in the bearig support (8/B) still attached to the gearbox casing and if necessary, replace.
Insert now the drive shaft into the bearing support (8/B) using the teflon hammer, and attach the other bearing support (30/B), fixing in place with the relative bolts.
Replace the gearbox pulley and fix with the relative nut, then proceed to introduce the driven gear assemble, connecting rod and piston with relative sleeve, into the gearbox casing.
Insertr now the driven gear pin and support, fixing to the gearbox casing with the correct bolts.
Finally close the gearbox casing with the relative cover, remembering also to re-fill, to the correct level, the gearbox oil lubricant (0.8 litre).

5) REPLACEMENTOF THE PISTON SEALING RING (27/B)

With a suitable container in palce for collection of the gearbox oil, remove the casing cover (24/B) after having unscrewed the relative fixing bolts.
Unscrew now the small bolts that fix the support of the driven gear pin (14/B) located on the opposite side to the gearbox pulley.
After giving a light blow of hammer on the support to assist with removal, slip it off by rotating on it's axis, whilst supporting the driven gear.
Connected to the support (14/B) will be the driven gear shaft (32/B).
Remove from the gearbox casing, the assembly of, driven gear, connecting rod, piston and sleeve, therefore having the space needed to unscrew the fixing bolts the piston guide (25/B).
Remove the piston guide and extract from it's seat the sealing ring (27/B) for replacement.
Insert now the new sealing ring in it's seat and mount the piston guide in the gearbox casing, fixing with the relative bolts.
Replace in the gearbox casing the assembly of, driven gear, connecting rod, piston and sleeve, then insert the driven gear support shaft and fix the bearing support with the relative bolts.
Finally close the gearbox casing with the relative cover, remembering also to re-fill, to the correct level, the gearbox oil lubricant (0.8 litre).

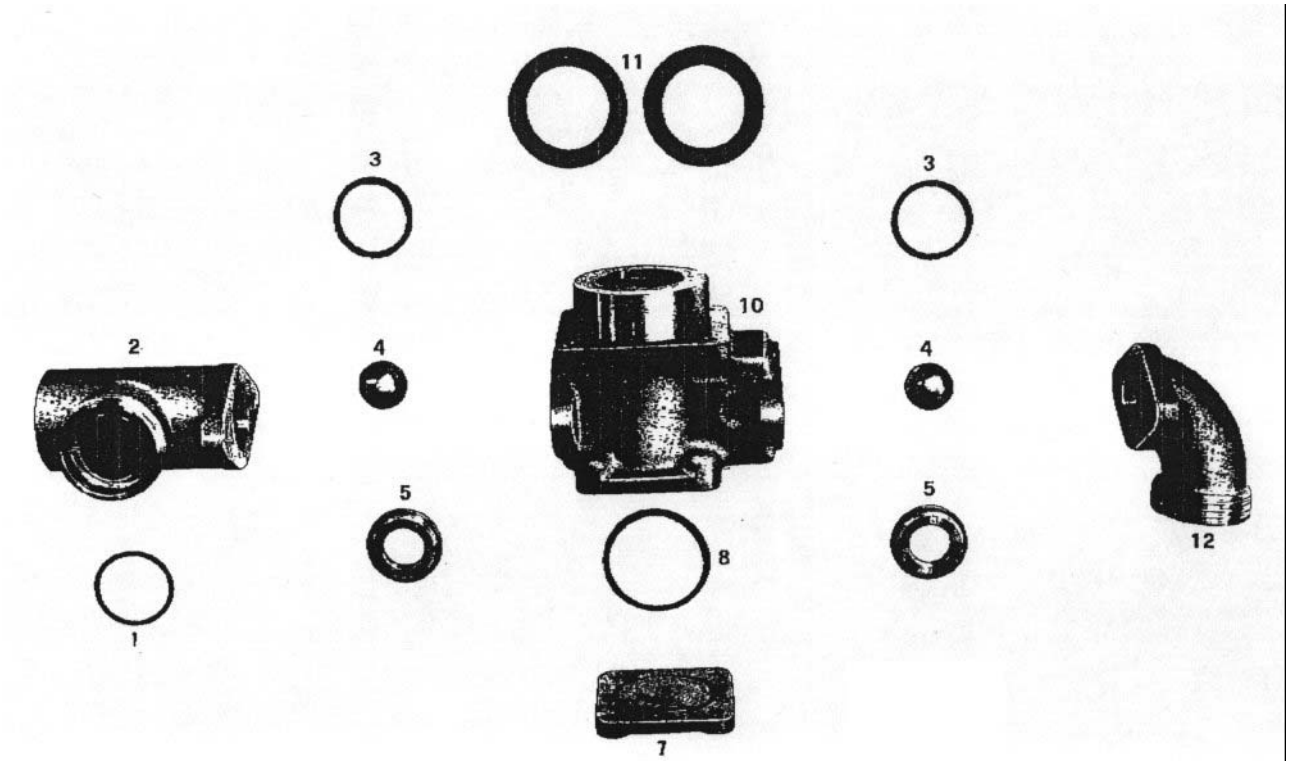
IT IS EXTREMELY IMPORTANT TO ENSURE A LONG LIFE OF THE PUMP GEARBOX COMPONENTS, THAT YOU REGULARY CARRY OUT THE FOLLOWING:

1) CHECK FREQUENTLY THE OIL LEVEL IN THE GEARBOX AND ALSO IT'S LUBRICATING QUALITY.

2) IF YOU NOTICE THAT THE OIL CONTAINS ANY WATER OR OTHER LIQUID, OR IF IT IS PARTICULARLY DAMAGED OR DIRTY, REPLACE IMMEDIATELY AFTER YOU HAVE CLEANED WITH CARE, THE GEARBOX INTERIOR.

3) REPLACE IN ANY CASE THE GEARBOX OIL AT LEAST ONCE A YEAR.

TAV.A

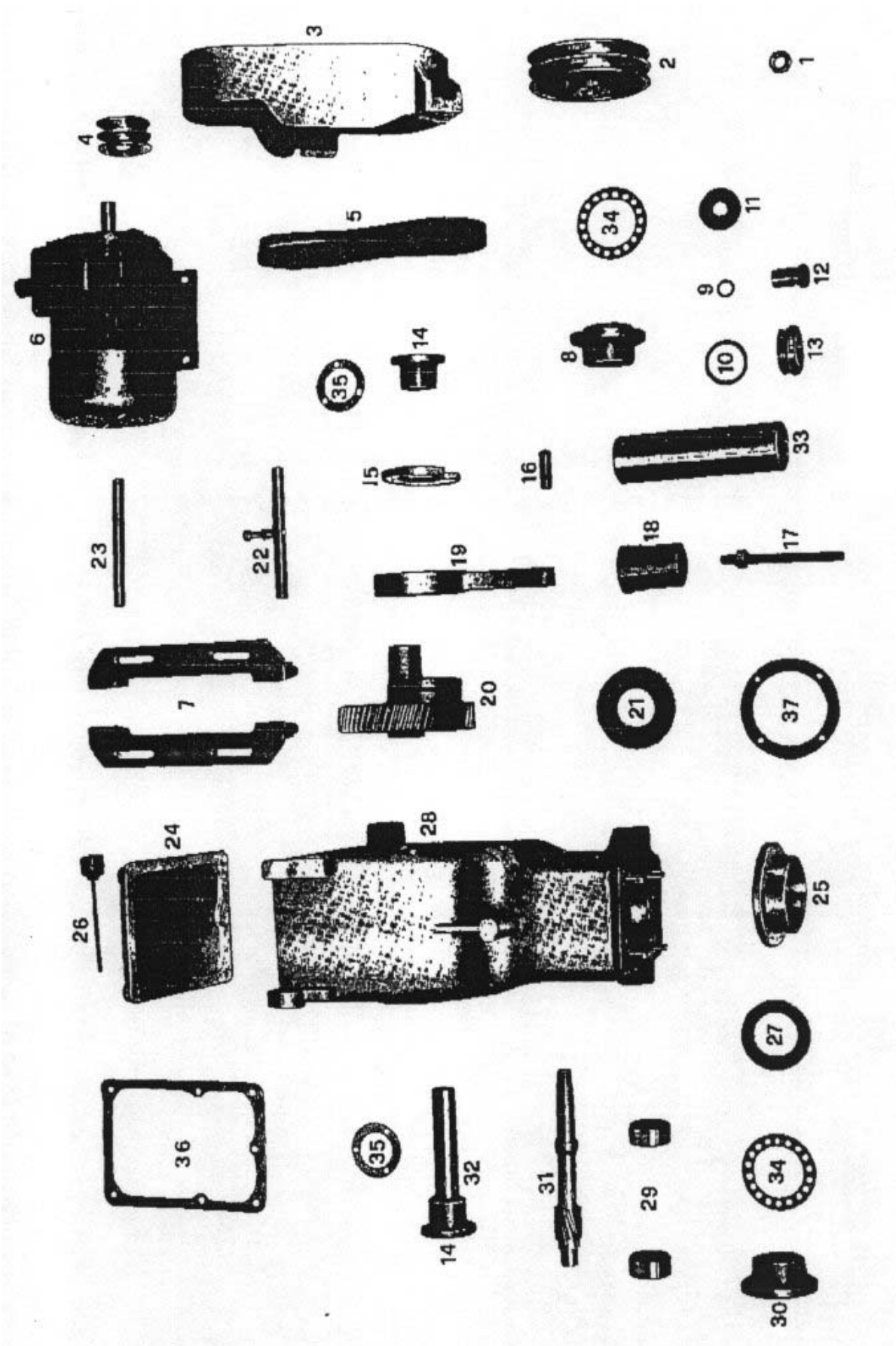


PISTON PUMP MC-08

COMPONENT DESCRIPTION

Table A
01 – Gasket OR 153
02 – Delivery block
03 – Gasket OR 147
04 – Ball valve diam. 1” 1/4
05 – Valve seat
06 – Fixing bolts for part 07
07 – Pump body cover
08 – Gasket OR 167
09 – Fixing bolts for part 02-12
10 – Pump body
11 – Gasket U 293212
12 – Suction curve

TAV.B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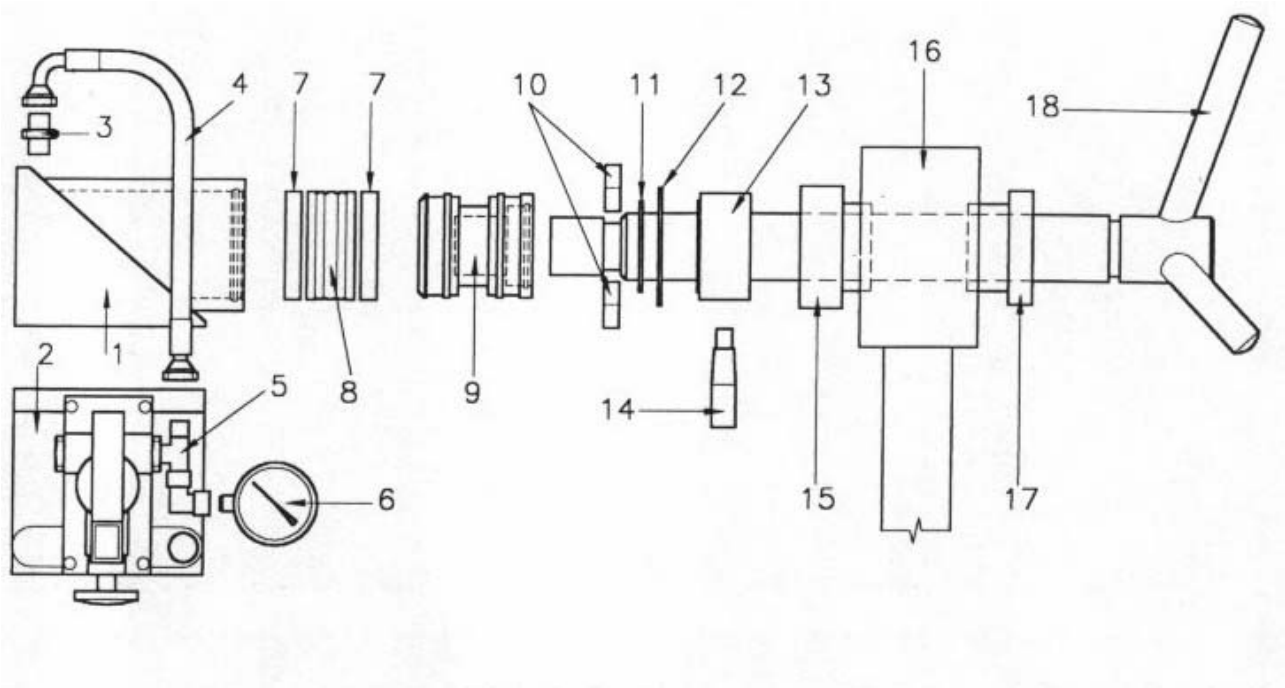
PISTON PUMP MC-08

COMPONENT DESCRIPTION

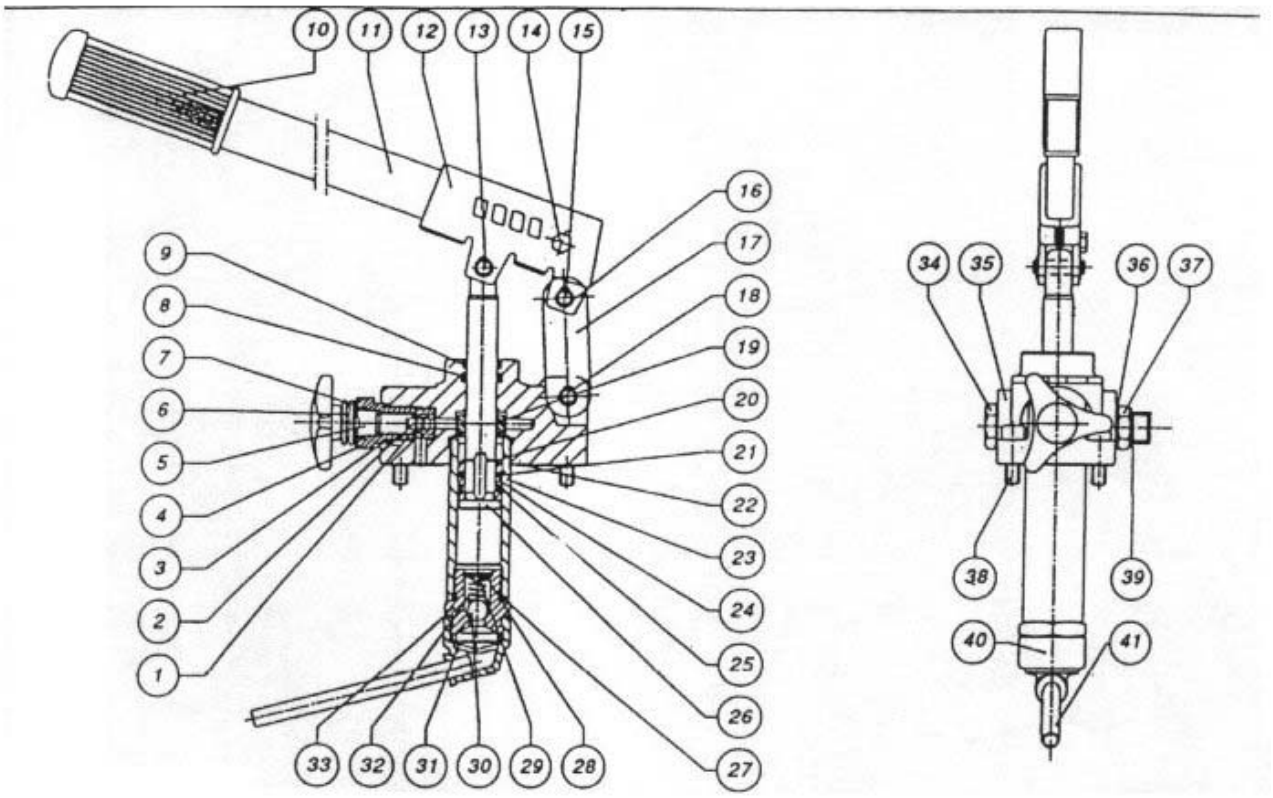
Table B
01 – Pulley fixing nut
02 – Gearbox pulley
03 – Belt protection guard
04 – Electric motor pulley
05 – Trapezoidal belt A.25
06 – Electric motor 1 HP
07 – Electric motor support
08 – Bearing support on the pulley side
09 – Gasket OR 119
10 – Gasket OR 147
11 – Sealing ring 47x20x10
12 – Sleeve locking bolt
13 – Sleeve fixing bung
14 – Driven gear pin support
15 – Connecting rod retaining sector
16 – Gudgeon pin
17 – Sleeve-piston fixing stud
18 – Piston
19 – Connecting rod
20 – Driven gear
21 – Protection washer
22 – Electric motor support pin (threaded)
23 – Electric motor support pin
24 – Gearbox casing cover
25 – Piston guide
26 – Oil level bung
27 – Sealing ring 76.2x54x12.6
28 – Gearbox casing
29 – Bearing type 3204
30 – Bearing support
31 – Drive gear
32 – Drive gear shaft
33 – Chrome inox sleeve
34 – Guarnital gasket for part 08-30
35 – Guarnital gasket for part 14
36 – Guarnital gasket for part 24
37 – Guarnital gasket for part 25

TAB. 111



REF:	DESCRIPTION
1	CYLINDER WITH PUMP POSITIONING
2	PUMP MNO.PM 25 S / 01 + LEVER
3	NIPPLE ¼ GAS X HYDRAULIC CIRC.
4	TUBE R2T ¼ X 250 FD-F90
5	CONNECTOR
6	MANOMETER
7	GUIDE RING E/DWR 80/3
8	GASKET DBM 314236 EXTERNAL DIAMETER 80
9	HYDRAULIC CLOSURE PISTON
10	LOCK WASHER
11	SEEGER INTERNAL 60
12	SEEGER INTERNAL 80
13	METAL RING HYDRAULIC PISTON STOPPING
14	HANDLE 1280/100 P – M 12 X 30
15	MOTHERSCREW DIAM 50 TP 4
16	BLOCK
17	PVC BUSHING DREG BRIDGE
18	SCREW WITH HANDLLE ALFA 40

TAB.100
SCHEMA PER RICAMBI GRUPPO POMPANTE PMSS



TAB.100
SPARE PARTS SCHEME FOR HAND WITHOUT TANK PMSS

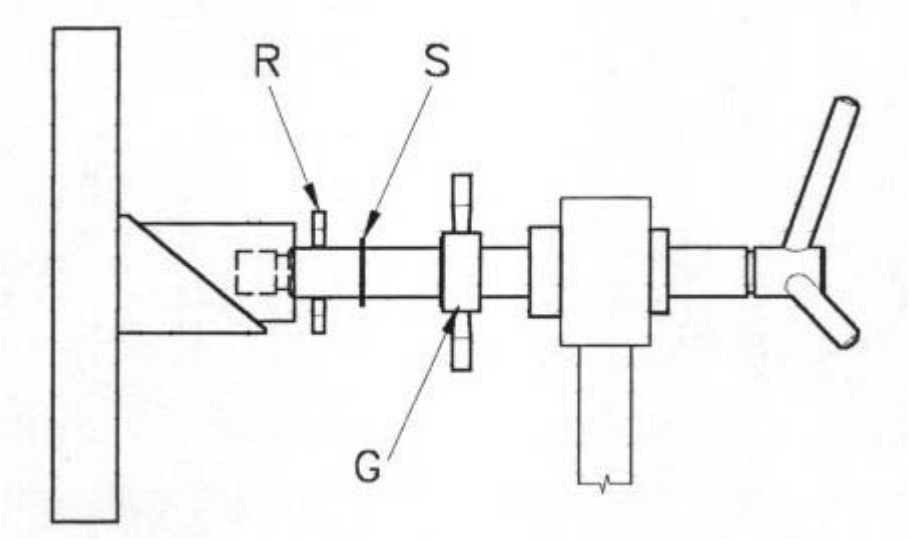
POS.	CODE	N°	DENOMINATION
1	506.0.589	1	"O" RING 4X1
2	543.4.32	1	TIGHT TAPERED PISTON
3	506.2.130	1	"O" RING 123
4	540.5.162	1	CUP FOR WHEEL
5	500.1.99	1	DRAIN COCK
6	506.0.595	1	BELLOWS GASKET
7	506.2.87	1	"O" RING 3056 (118)
8	506.0.507	1	ROD SEAL FOR PMSS 12
	506.0.276	1	ROD SEAL FOR PMSS 25
	506.0.285	1	ROD SEAL PMSS 45
9	506.0.874	1	Ø14 SPECIAL SEAL FOR PMSS 12
	506.0.614	1	Ø17 SPECIAL SEAL FOR PMSS 25
	506.0.730	1	Ø 22 SPECIAL SEAL FOR PMSS 45
10	509.2.72	1	LEVER GRIP HANDLE
11	539.4.77	1	LEVER 600-LONG
12	539.1.212	1	HAND PUMP LEVER
13	526.1.86	1	GUDGEON PIN Ø8X30 LONG
14	502.2.12	1	SCREW HITENSILE HEX HD M6X10
15	526.1.95	1	GUDGEON PIN Ø8X26 LONG
16	501.15.28	6	CIRCLIP RS6
17	538.1.18	2	25X81X5 INT=57 CONNECTING LINK 5
18	526.1.13	1	GUDGEON PIN Ø6X41 LONG
19	530.5.65	1	H=13 14,5X22 SPACER FOR PMSS 12
	530.5.10	1	H=12 22,5X31 SPACER FOR PMSS 25
	530.5.29	1	H=12 22,5X30 SPACER FOR PMSS 45
20	501.11.86	1	CIRCLIP EXTERNAL AV-14 E FOR PMSS 12
	501.11.111	1	CIRCLIP EXTERNAL AV-17 E FOR PMSS 25
	501.11.148	1	CIRCLIP EXTERNAL AV-22 E FOR PMSS 45
21	550.4.46	2	ANTI-EXTRUSION RING FOR PMSS 12
	506.2.158	1	"O" RING 127 FOR PMSS 25
	506.2.229	1	"O" RING 3106 FOR PMSS 45
22	507.3.208	1	GASKET-TANKPUMP
23	537.2.37	1	BARREL FOR PMSS 12
	537.2.19	1	BARREL FOR PMSS 25
	537.2.28	1	BARREL FOR PMSS 45
24	506.0.516	2	SPECIAL PISTON SEAL PM 12
	506.0.258	1	SPECIAL PISTON SEAL PM 25
	506.0.267	1	SPECIAL PISTON SEAL PM 45

POS.	CODE	N°	DENOMINATION
25	532.2.82	1	PM 12 PISTON HEAD
	532.2.28	1	PM 25 PISTON HEAD
	532.2.37	1	PM 45 PISTON HEAD
26	535.1.121	1	PISTON ROD 14Ø FOR PM 12
	535.1.69	1	PISTON ROD 17Ø FOR PM 25
	535.1.78	1	PISTON ROD 22Ø FOR PM 45
27	506.2.201	1	"O" RING 132 FOR PMSS 12/25
	506.3.95	1	"O" RING 137 FOR PMSS45
28	501.1.113	1	CIRCLPIP INTERNAL 161
29	550.1.101	1	SPRING LOCATOR
30	510.9.116	1	BALL 7/16 Ø
31	550.1.12	1	GAUZER FILTER
32	512.5.689	1	SUCTION VALVE SPRING
33	540.5.19	1	SUCTION VALVE BODY FOR PMSS 12
	540.5.19	1	SUCTION VALVE BODY FOR PMSS 25
	540.3.37	1	SUCTION VALVE BODY FOR PMSS 45
34	540.6.45	1	SCREW PLUG FOR RELIEF VALVE
35	517.1.325	1	PM 12 + VS HAND PUMP BODY
	517.1.343	1	PM 25 + VS HAND PUMP BODY
	517.1.361	1	PM 45 + VS HAND PUMP BODY
36	116.9.309	2	17X23X1,5 (3/8") WASHER
37	116.6.80	1	3/8" 3/8" MALE/MALE ADAPTOR
38	502.3.566	4	SCREW SKT CAP M8X25
39	509.6.201	1	PROTECTION CAP
40	506.0.392	1	SUCTION CAP
41	541.4.36	1	SUCTION CAP

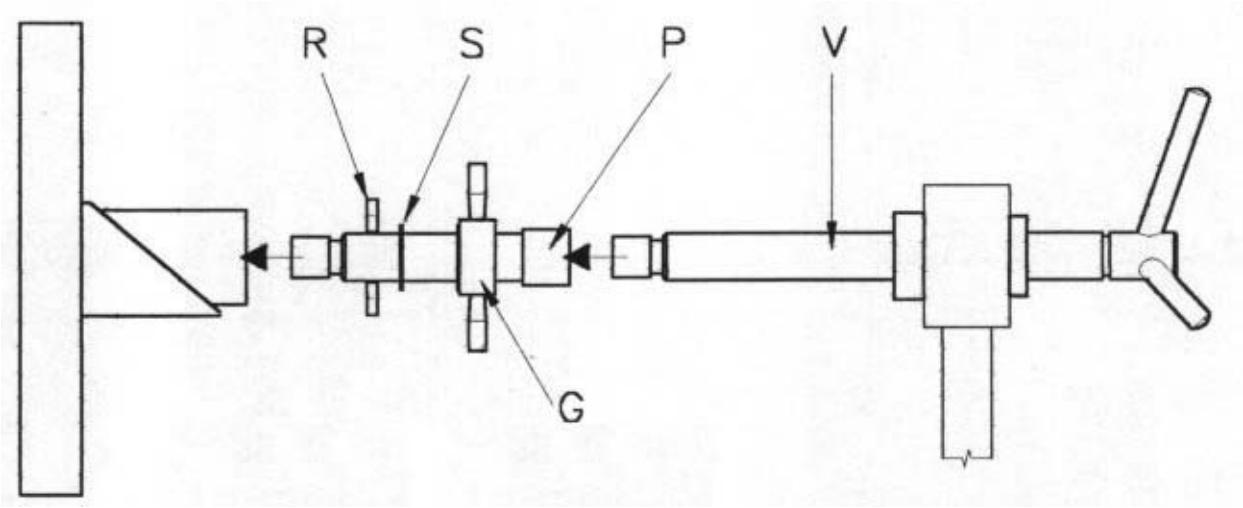
PMSS 12-25-45 SPARE PARTS KIT	
500.3.33	CUP FOR COCK KIT
500.7.11	COCK KIT
500.9.55	STEEL LEVERKIT
500.14.49	PM 12 HAND PUMP KIT
500.14.21	PM 25 HAND PUMP KIT
500.14.30	PM 45 HAND PUMP KIT
106.0.78	L=610mm LEVER

APPENDIX A

ALFA MAGIC 40X40 WITH HYDRAULIC CLOSURE
(System to insert the extension)



1. REMOVE THE LITTLE SEEGER “S”
2. EXTRACT THE BRASS WASHER “R” (YELLOW)
3. REMOVE THE LOCKING RING “G”



SCREW THE METAL RING “G” ON THE EXTENSION
INSERT THE SEEGER “S” AND THE WASHER “R” ON THE EXTENSION “P”
MOVE AWAY THE SCREW “V”
INSERT THE EXTENSION “P”
RE-INSERT THE WASHER “R” AND BLOCK WITH THE SEEGER “S”
APPROACH THE SCREW “V”

APPENDIX B

D.E. FILTRATION IN THE MODELS WITH DOSING TANK.

A. CLOSE ALL THE VALVES
USE, TILL POSSIBLE, LIMPID LIQUID FOR THE CAKE

B. CONNECT THE VALVE 1 TAB. 1/A WITH THE TANK TO FILTER, THE CONNECTOR 6 (TAB. 1/A) WITH THE VALVE 23 TAB.1; THE VALVE 20/A WITH THE CONNECTOR 5 TAB.1/A AND THE VALVE 20 WITH THE TANK OF THE FILTERED PRODUCT C.

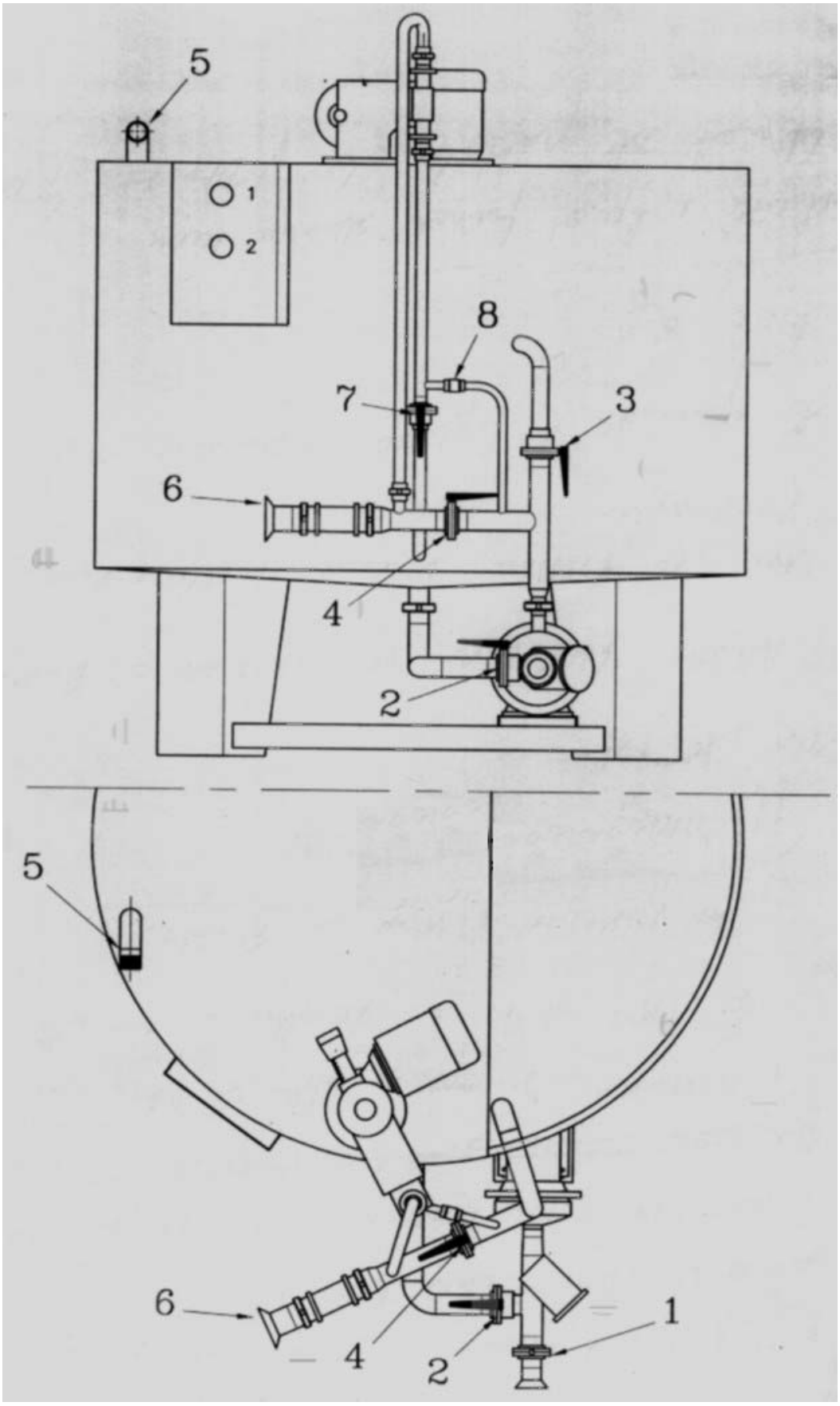
C. OPEN THE VALVE 1 AND THE VALVE 3 TAB. 1/A AND THE LIQUID FILLS THE DOSING TANK UP TO ABOUT ITS HALF. THEN, THE VALVE 3 CLOSES, THE DOSING PUMP TURNS ON AND YOU INSERT KG. 10 D.E. (ES. DIT R CLARCEL).

D. OPEN THE VALVE 4 TAB. 1/A, THE VALVE 23 AND 20/A TAB.1 AND TURN ON THE MOTOR PUMP OF THE DOSING TANK. WHEN THE LIQUID COMES OUT OF THE VALVE 20/A TAB.1, OPEN THE VALVE 2 TAB.1/A, WAIT 10 SECONDS AND THEN CLOSE THE VALVE 1 TAB.1/A, GO ON WITH THIS STEP TILL THAT THE PRODUCT IN THE DOSING TANK IS LIMPID. OPEN THE VALVE 20, CLOSE THE VALVE 20/A, CLOSE THE VALVE 4 TAB.1/A ABOUT FOR 2/3 IN ORDER TO REDUCE THE CAPACITY, CLOSE THE VALVE 2 TAB.1/A AND OPEN THE VALVE 1 TAB.1/A.

E. ADD KG.20 D.E. (ES. DIT R CLARACEL) IN THE DOSING TANK AND OPEN THE VALVE 7 TAB.1/A AND CHECK THAT THE DOSING PUMP PRODUCE D.E. WHEN THE CENTRIFUGAL PUMP IS ARRIVED AT ABOUT 3 BAR, STARTS THE PISTON PUMP (PREVIOUSLY CONNECTED TO THE TANK TO FILTER), CLOSE THE VALVE 23 AND TURN OFF THE DOSING PUMP, THE CENTRIFUGAL PUMP OF THE DOSING TANK AND CLOSE THE VALVE 1 TAB.1.

REPEAT THE OPERATION WHEN THE FILTER IS FILLED AND CLEANED

TAV.1/A



APPENDIX c

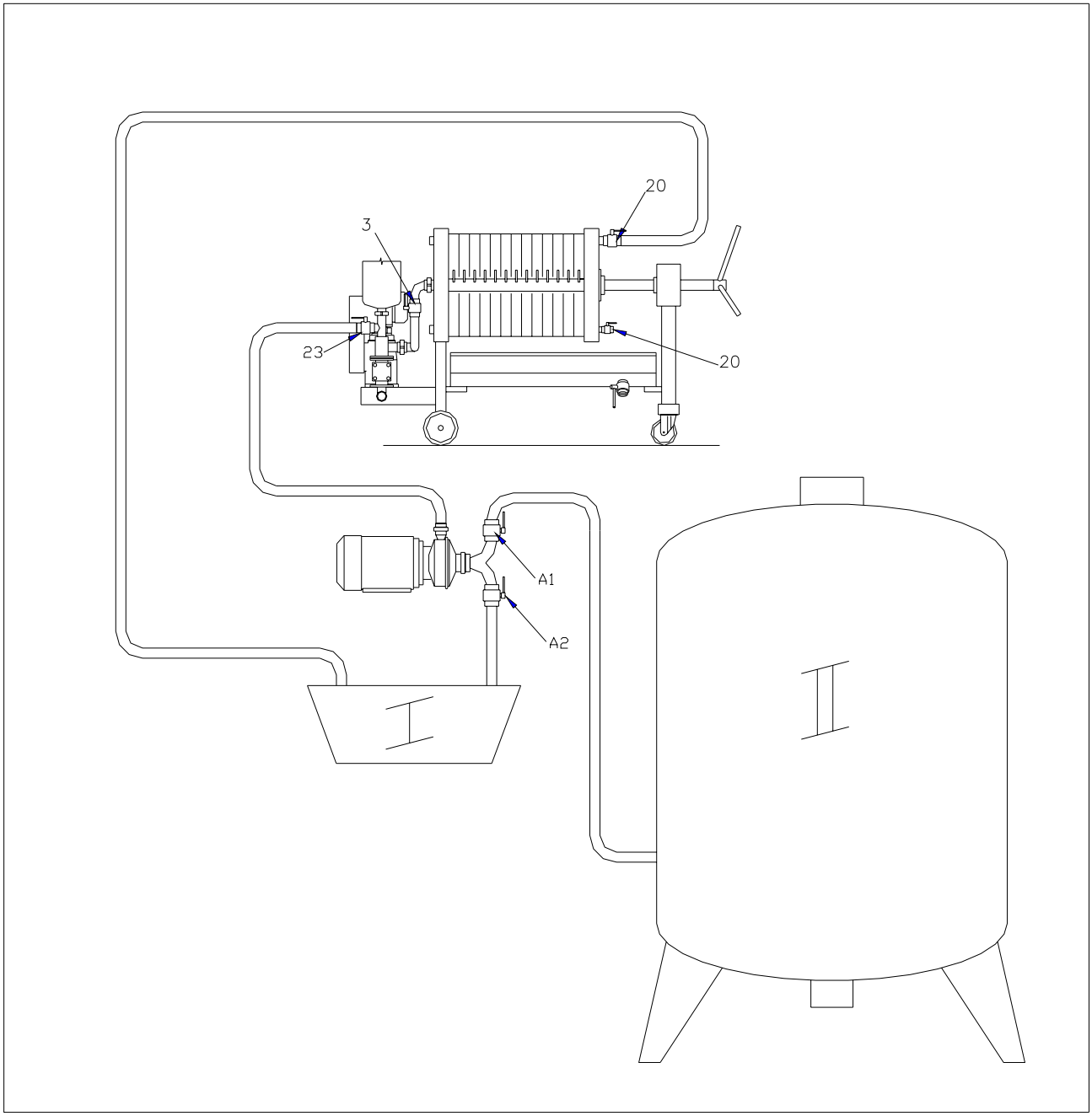
D.E. FILTRATION.

A. FILL WITH CLEAN WATER THE TANK I (TAV.2/A)
B. CONNECT THE CENTRIFUGAL PUMP DELIVERY LINE (THE TABLE AC SHOWS THE APPROPRIATE FLOW RATE) WITH THE VALVE 23 (TAV.2/A) AND THE SUCTION SIDE WITH THE TANK I (TAV.2/A) AND THE TANK II (TAV.2/A)
C. CONNECT THE VALVE 20 (TAV.2/A) WITH THE TANK I
D. TURN ON THE PUMP AND ADD D.E. (ES. DIT R CLARACEL) IN THE DOSING TANK I (TAV.2/A) WITH THE DOSING SHOWN IN THE TABLE AC
E. LET THE PRODUCT CIRCULATE UNITL PRODUCT IN THE TANK I (TAV.2/A) IS CLEAN.
F. CONNECT THE VALVE 20 (TAV.2/A) WITH THE FILTERED LIQUID TANK
G. CLOSE THE VALVE A2 (TAV.2/A) AND OPEN THE VALVE A1 (TAV.2/A)
H. THE FILTRATION IS STARTED
I. WHEN THE CENTRIFUGAL PUMP IS ARRIVED AT ABOUT 4 BAR, TURN ON THE PISTON PUMP UNTILL THE PRESSURE REACHES 10 BAR

TAB AC

ALFA 40	CENTRIFUGAL PUMP FLOW RATE	REQUIRED D.E. (Kg)
CHASSIS 30		
CHASSIS 40		

TAV.2/A



TAV. D. 9

TABLE OF FILTER AID EQUIVALENTS (D.E.)

TYPOLOGY OF WORK	PRODUCT	GRADE OF D.E.	CECA	SCHENCK	SEITZ	EAGLE PECHER	CELITE	DIACEL	DICALITE	PROMISIL	WINKELMAN	KENITE
Coarse filtration	Solid	Coarse	DIT R	SPEZ W	ULTRA	FW 80 FW 60	560 545	CF/VV CF/V	4200	1202	RANDALL/1 EXTRA	3000
Medium polishing filtration	Normal	Medium	DIF BO	N° 100	SUPER	FW 15	HYFLO SUPERCEL	CF7M	SPEED PLUS	511 611	RANDALL/3	700
Polishing filtration	Clean	Fine	CB	N° 1	EXSTRA	FP 1	STANDARD SUPERCELL	CF/S	SUPERAID	241	RANDALL/7	200

P.S. For the precoat in a coarse filtration we suggest ti mix ¾ of me

NOTE