



C.S.F. Inox S.p.A. reserves all rights concerning this manual and the object presented herein. The receiving party shall recognize these rights and undertakes, in the absence of our explicit written authorization, not to use this manual for any purpose other than that for which it was created. Any violations will be dealt with in accordance with the law. All rights reserved. © Copyright by C.S.F. Inox S.p.A. Strada per Bibbiano, 7 42027 Montecchio E. (RE) - ITALY EU Self-printed Version: 00 Date: 29/04/2019 CSFinoxGroup — 3 ——•



• 4 -

CSFinox Group

.



Translation of the original instructions	
INDEX	
FOREWORD	6
SYMBOLS	6
SAFETY WARNINGS	6
SAFETY PROTECTIONS	7
WARRANTY	7
PERMITTED USES	7
NON-PERMITTED USES	7
GOODS TRANSPORTATION, RECEIVING, STORAGE AND TRANSFERRING	8
TRANSPORTATION	8
RECEIVING	8
STORAGE	8
INSTALLATION SITE PREPARATION	8
TRANSFERRING	8
RETURN	9
PUMP DESCRIPTION	9
TECHNICAL DATA	10
PNEUMATIC SYSTEM FOR EMPTYING DRUMS	10
VARIOUS EXECUTIONS	10
INSTALLATION	11
HYDRAULIC CONNECTION	11
ELECTRICAL CONNECTION	11
CONNECTION TO THE COMPRESSED AIR SUPPLY	
PNEUMATIC PANEL	12
OPERATIONS	14
LIMIT SWITCH ACENT/DESCENT	
LOADING AND POSITIONING DRUM	
PNEUMATIC CYLINDER REGULATION	15
EMPYING THE DRUM	
VERTICAL RUNNING SYSTEM	
	10
	20
	20
PUMPASSEMBLY	23
WASHING CYCLE FOR PUMPS USED TO HANDLE FOODSTUFF PRODUCTS	
SECTIONAL DRAWINGS WITH PART LISTS	26
DECLARATION OF CONFORMITY FOR PUMP WITH MACHINE	
DECLARATION OF CONFORMITY FOR MACHINE	38

_____ 5 ____



FOREWORD

Read the instructions carefully and keep them for future consultation.

C.S.F. Inox S.p.A. reserves the right to make any changes to the documentation it deems necessary without being obliged to update publications that have already been issued.

When requesting information, spare parts or assistance, always specify the installation type (2) and serial number (3) in order to ensure fast and efficient service: the complete code is given on the plate and in the purchase documents.

CSF plate example

System itam provided by the client Manufacturing series, size and execution Serial number Year of construction



SYMBOLS



SAFETY WARNINGS

When the pump is working the following occurs:

- Electric parts are in tension.
- Mechanical parts are moving.
- Pump body, pipelines and articulations are under internal pressure. Therefore do not remove any protection or locking, do not loosen screws or clampings, as this can cause serious damages to persons or objects.
 - Non-observance of inspection and maintenance can cause damages to persons and objects, especially when dangerous or toxic liquids are pumped.
- When pumping liquids at a temperature over 60° C, adequate protection and warning signals are required.
- When you buy a pump with bare shaft, motor coupling operations have to be carried out according to technical directions and law, providing adequate protections for joints, gear belts, etc.



6

- Operations on the electric parts have to be carried out by skilled personnel, according to
- technical directions and law, on authorisation of the responsible installer.
- Installation must ensure an adequate ventilation, in order to cool the engine, as well as enough space for maintenance operations.
- Before carrying out any operation which requires to disassemble the pump (inspection, cleaning, seal replacement, etc.), the following preliminary operations have to be carried out:
- · switch off engine tension and disinsert electric connection;



- close valves on suction and outlet pipelines, in order to avoid the risk of inundation;
 - consider if the liquid which flows out of the pump when disassembling is dangerous and arrange for adequate safety measures.







The running guide on the arm is designed to hold a pump fitted with a pipe. In case the pipe length is longer enough to compromise the stability of the hoist, install suitable holders to support the pipe (see paragraph 9.6).

SAFETY PROTECTIONS

Use adequate protections for hands and face, if the pump contains liquids which are injurious to health (for example acids, solvents, etc.).

GUARANTEE

All products manufactured by C.S.F. Inox are guaranteed to the purchaser, for one year from the date of purchase, against hidden defects in materials or manufacture, providing that they are installed and used according to instructions and recommendations of the manufacturer. Excluded from the guarantee other than distinctive wear and tear are repaires to damage caused by improper use, abrasion, corrosion, negligence, defect of installation, non-observance of inspection and maintenance, use of non-genuine spare parts, cause of accident or fortuity and from any action carried out by the purchaser not according to the normal instructions of the manufacturer.



Before returning to C.S.F. Inox S.p.A. any item to be substituted or repaired under guarantee, inform about the problem the Customer Assistance Office and follow instructions of the manufacturer.

Any item must be properly packed in order to avoid damages during the transfering and a technical report explaining the fault occured, must accompany the returned item/s.

Any item with a presumed fault should be returned to C.S.F. Inox S.p.A. with Declaration of Decontamination and shipment costs at purchaser's charge, unless different agreements are given.

C.S.F. Inox S.p.A. will examine, repair and/or replace the returned piece and then send it back to the purchaser on ex-works basis. Should the piece be found under warranty, no further costs will be debit the purchaser.

If, on the contrary, the fault is not found under warranty, all necessary reparations and replacements will be charged at normal cost to the purchaser. Commercial parts incorporated in C.S.F. products are guaranteed by their corresponding manufacturers.

PERMITTED USES

The system is intended for the task of emptying various sized drums or basins.

NON-PERMITTED USES

The pump must not be moved during operation.

The pump has to be installed in an environment adequate to the engine safety level; you can check the safety lavel on the engine plate before installation.



Therefore it is forbidden to use the pump in environments requiring a higher safety level of the motor and of the electric components.

In this case use only components which conform to safety measures according to the environment.

At regular intervals, check for wear and tear, replacing all items that show any sign of wear in order to prevent and avoid endangering persons and equipment.

Never stand below or near the pump when it is raised.

Never use the hoist/column to move and/or lift other devices, equipment or machines; the hoist/column has only been designed for use with the C.S.F. INOX MAV series pumps for the function described in the previous chapter.

C.S.F. Inox declines any liability for damages deriving from misuse and/or tampering.







GOODS TRANSPORTATION, RECEIVING, STORING AND TRANSFERRING

TRANSPORTATION

The packings of all goods manufactured by C.S.F. Inox - S.p.A. are defined when placing the order. Unless prior arrangements are given, goods will be packed only for transit conditions and not for long-term storage; in case it should be necessary to store the pumps outside, you are requested to cover the pumps appropriately in order to protect the pneumatic motor parts from rain, dust, humidity etc.

RECEIVING

By goods receiving, the wholeness of packing must be verified, in order to identify possible damages to the content occured during transferring and to claim them immediately to the carrier.

Should any damage be ascertained, the following procedure must be observed:

- collect the goods with reservation;
- take the necessary pictures showing the damages;
- notify the suffered damages, by registered airmail, to the carrier by sending at the same time the pictures taken to show the damaged pieces.

STORING

When the machine have to be stored during periods of inactivity, it is recommended to store it in a covered environment, which allows protection from the weather, and with a suitable temperature (-5° C to 40 ° C). All sliding parts (guides, cylinders, ..) must be protected against dust and oxidation.

INSTALLATION SITE PREPARATION

It is the user's responsibility to:

- Prepare the installation sites as prescribed by local legislation governing health and safety in the workplace.
- Make sure the electrical power supply is compliant with the legislation in force and possesses an efficient earthing system.

WORK POSITION

While utilising the equipment, the operator must stand in front of the control panel and there must be no operators in the system working and perimeter area.

LIGHTING

The machine installation site must have adequate natural and/or artificial lighting in compliance with the legislation in force in the country of installation.

Lighting must be uniform, guarantee good visibility in every part of the machine and must not create hazardous reflections. It must also be such that commands on the control panels and emergency stop buttons (for pumps with electric panel) can be clearly seen.

FLOOR

The floor must be industrial type, smooth and planar.

TRANSFERRING



- 8

Carry the installation as close as possible to the place of installation by means of appropriate lifting devices and unpack them. During this operation take care, as unsteady parts could fall down.

The material used for packing should be properly got rid, according to the corresponding rules in force in receiver's country (see chap. 16, page 23).

After unpacking the installation, use special lifting belts for lifting and transferring the pumpmotor group to the place of installation.





N.B.: verify the weight of the machine in the data sheet attached to the instructions. Observe the health & safty regulations in force locally.



RETURN

/!`

- · Empty the pump correctly.
- Wash and thoroughly clean the pump, especially in the case of harmful or explosive liquids.
- Thoroughly dry the pump.
- A duly compiled Declaration of Decontamination must accompany the pump.

PUMP DESCRIPTION

The screw pump is a rotating progressive cavity pump. It is composed of a rotating steel part called rotor and of a fix part called stator. The rotor has the shape of a screw pump with a very wide thread; the stator is built of vulcanised rubber inside a chamber having the shape of a female screw with double thread compared to the thread of the rotor. During the rotation of the rotor there is the formation of cavities between the rotor and the stator; these cavities turn continuously pumping the product from the inlet to the outlet.

Progressive cavity pumps MAV series are made in vertical execution with direct motor coupling; the special telescopic assembly allows to disassemble the whole pump very easily, making inspection, cleaning and maintenance of its components extremely simple.

PUMP APPLICATIONS

With this kind of pump (provided that the elastomer used for the stator is chemically and mechanically resisting) it is possible to pump every kind of liquid, even if they are viscous. The max. admissible temperature of the product to be pumped depends on the type of elastometer used for the stator. The product moves in a constant quantity, evenly and without any pulsations, so as not to centrifuge or damage the product; in this way its features and characteristics are preserved. The pumps are principally used in the following fields: food processing, beverage, cosmetic and pharmaceutic industry.

CSFinoxGroup

- 9 ------



TECHNICAL DATA

Pneumatic system power supply: 3-8 bar Electric supply: 400V Usable pumps: MAV 50-60L-65-70L-80-90L Weight: (see datasheet or parts list enclosed)

PNEUMATIC SYSTEM FOR EMPTYING DRUMS

This consists of a progressive cavity pump supported by an arm (Pict. 3) which is secured to one (or two) 4-bearing mobile hoists (2 adjustable bearings).

The pump can be with fixed speed gear motor or with motor with integrated frequency converter with switch or inverter.

Vertical sliding is by means of linear guides and with a pneumatic piston controlled by a control panel.

VARIOUS EXECUTIONS

EXECUTION WITH MOBILE HOIST composed of:

1) Mobile hoist on 4 wheels, 2 fixed and 2 swivel + 2 adjustable feet.

- 2) Fixed pneumatic column.
- 3) Pneumatic column with rotating table for emptying 4 drums.



CSFinoxGroup



– 11 –––•

EXECUTION WITH COLUMN



INSTALLATION

HYDRAULIC CONNECTION

Connect the delivery pipe with a seal suitable for the type of connector and type of product to be pumped. Check perfect seal of the connectors operating the pump for a short while.



Caution: the pipes must be suitable for the operating pressure and must be suspended as less as possible to the outlet of the pump.

ELECTRICAL CONNECTION



Operations on the electric parts have to be carried out by skilled personnel, according to technical directions and law, on authorization of the responsible installer.





Make the electrical connection only after the hydraulic connection has been completed. Check that the main frequency and voltage are suitable for the panel installed. All the material used for the electrical connection (cables, cable clamps, switches and shielding) must have a suitable level of protection for the environment in which it is installed. Be sure to use cables of sufficient cross-section for the current requested so as to prevent them from overheating.

CONNECTING TO THE COMPRESSED AIR SUPPLY

Connect the air network to the inlet (Pict. 4).

Open and close the air immission by means of the shut-off valve that opens and closes the air to the entire system (Pict. 4).

The supply pressure must be between 3 and 8 bar. Regulate the pressure in relation to the pump weight.

PNEUMATIC PANEL



Pneumatic panel

IMPORTANT The air inlet pipe dimension must be equal or higher than inlet "g" of the pneumatic panel.

CSFinoxGroup

— 12 -





Part list

	Denomination	Q.ty
а	Valve 5/3 - pneumatic piston control	1
f	"OR" function	1
g	Slide valve 3/2	1
h	Valve 3/2 - piston limit switch	1
m	Pneumatic cylinder	1
n	Panel box	1
0	Flow adjuster for pneumatic piston	2
q	Block valve	2
S	Silencer	1
i2	Air traitment group	1
d3	Valve 3/2 - limit switch control	1

CSFinoxGroup

– 13 –––•



OPERATION

LIMIT SWITCH - ASCENT / DESCENT

The pump must be immersed at the bottom of the drum for its emptying. A limit switch blocks the air supply to the pneumatic piston to secure the stop during descent.

ADJUSTING LIMIT SWITCH

The limit switch blocks the forward movement of the pneumatic cylinder and therefore of the pump once it reaches the bottom of the drum.

The limit switch is adjusted so that it blocks the pump at the corresponding height from earth, acting as follows:

- slide the limit switch along the slot, moving it all the way down, to temporarily exclude its function
- power the pneumatic panel by acting on the shut-off valve and operate the piston (A) in "DESCENT" (Pict. 4) until it stops when the pump has reached the bottom of the drum. Disconnect power once again.
- Act on the limit switch by sliding it upwards until its spy rises.



LOADING AND POSITIONING DRUM

Power the pneumatic panel by acting on the valve. Operate the piston (A) in "ASCENT" until it comes to the limit switch. Place the drum under the pump.

In case of the rotating table for 4 drums it is binding to put the pallet (120 x 120) inside the external perimeter of the rotating table.





PNEUMATIC CYLINDER REGULATION

The flow regulators, that are assembled at the lower and upper side of the cylinder (part. O), adjust the air discharge and so the piston speed respectively moving down and up. By screwing clockwise the flow regulator screw, the air discharge is closed and the speed is reduced and viceversa.

The pump must be handled slowly in order to make START and STOP easier.



EMPTYING THE DRUM

Start the "DOWN" piston (A) (Pict. 4) control until the suction port of the pump has reached the bottom of the drum.

Only in case of high viscosity product it is recommended to start the pump at minimum speed in order to make pump downward movement easier. During operation the pump must always rest on the bottom of the container. Suspended operation can compromise the sliding system. Insert the electrical supply plug into the socket on the pump.

VERSION WITH SWITCH

Press the start button on the switch.

After completely emptying the container of product, press the emergency button to stop the pump.



VERSION WITH SWITCH - INVERTER

Turn the selector into POS. 1.

- Start the pump by turning the selector on AVV.
- (For reversing turn the selector into POS. 2 and then on AVV, just in case).
- After completely emptying the container of product, turn the selector into 0.









VERSION WITH SWITCH - FREQUENCY INVERTER

2. Press the start button on the switch.

- Button STOP: Pump stopped. N.B.: If the start button is pressed the motor is under voltage. Button 1: Right rotation for emptying the barrel.
- Button 2: Left rotation for reversing the running direction for any reason.
- Button 3: Increase pump rotation speed.
- Button 4: Decrease pump rotation speed.
- Button MENU: To access the inverter programming menu (refer to the Motovario instructions).



Pict. 7: SMART KEYPAD (on the motor terminal box)

Carefully adjust the rotational speed of the pump using buttons 3-4 (pict. 7).

After completely emptying the container of product, press button STOP on the inverter-motor.



If the pump is not moved, it is not necessary to disable the start button by pressing the emergency button.



The MAV series vertical eccentric screw pump is a volumetric pump so it must never run with a valve closed on the outlet port and must never operate empty; just a few seconds of dry running is enough to severely damage the stator.

REPLACING THE DRUM

Before lifting the pump in order to replace an empty container press the emergency button to turn off the motor.

Operate the piston (A) in "ASCENT" to remove the pump from the drum.

Replace the empty container/ drum or pallet with a full one,

Carry out the operation again, following the instructions of the previous chapter (9.4).

When the emptying operation is completed and the pump is stopped, set the selector into POS. 0 (or press STOP button). Before unplugging the socket, press the emergency button.

CSFinoxGroup



VERTICAL RUNNING SYSTEM

GUIDES AND CARRIAGES

The system comprises 2 guide rails and 2 carriages (except for MAV 50-60L which have only one carriage).

The rails are made of extruded anodized aluminium with two precision stainless steel track bars (tolerance h7).

Rolling procedure is used to secure the shafts into the guide rail.

The carriage is an anodized aluminium plate, to which four V-shaped stainless steel rollers are fixed, two eccentric and two concentric. The table shows the reference codes and dimensions.



_	Compo	onents code	Dimensions							
Pumps	Guide	Carriage + rollers	А	A1	В	B1	С	Н	dH7	h
MAV 50-60L	THDLA1170	THDLA1168N	200	142	325	200	25	61.5	20	30
MAV 65-70L-80-90L	THDLA1170	THDLA1169N (n°2)	200	142	325	200	25	61.5	20	30

The linear system guide with carriage can withstand reversing loads Fr and Fa and moments on each axis X, Y, Z (pict. 9).





The maximum allowable values of single carriage moments are shown in the following table. In case of overcoming of these values, the rollers could yield or release.



The lifting pump system is suitable for supporting the pump weight including the product and a part of outlet connection with a maximum lenght of 2 metres; further connections will have to be supported by other systems.

	Compo	nents code	Single	carriage mo	ments
Pumps	Guide	Carriage + rollers	Mx (Nm)	My (Nm)	Mz (Nm)
MAV 50-60L	THDLA1170	THDLA1168N	454	640	454
MAV 65-70L-80-90L	THDLA1170	THDLA1169N (n°2)	454	640	454



The hoist is suitable only to work with the provided pump. It must not be used as a general lifting system. The maximum allowable moments are valid only for standard arm holders provided by C.S.F. Inox. C.S.F. Inox declines any responsibility for damages due to an improper use and/or tamperings.

ROLLERS

The rollers are made of hardened 'roller bearing' stainless steel, with a 120° V-shaped profile. This allows the rollers to contact the precision track-bars at two points, for smooth running and even distribution of the radial load. The V-shaped rollers help to extend the operating life as the internal arrangement is similar to double-row angular contact ball bearings. The rollers can handle axial loads in both positions. THE ROLLERS HAVE EITHER CONCENTRIC OR ECCENTRIC SHAFTS. During assembly the technician must first block the concentric rollers on the same side of the hoist in order to set the parallelism between the carriage and the rail. The eccentric rollers are then adjusted to remove the clearance and preload the system as necessary. In order to avoid the unscrewing of the nut the system is provided of a spring stop-nut. The following table shows the dimensions, the maximum working loads and the suggested locking torque of the nut.



Wheels code					Dir	nen	sion	s					Axial	Locking	
	Α	в	s	N	Ρ	L	М	н	D	Е	е	d1	Fa (N) Fi	Fr (N)	(Nm)
3R.ROT.58/C.INOX concent.	4	12,5	6	11	13	59	16	35	58	-	6	20	1600	3500	80
3R.ROT.58/E.INOX eccent.	4	12,5	6	11	13	59	16	35	58	2,5	6	20	1600	3500	80





MOTOR INSTALLATION

VERSION 'E' (monoblock)

The motorization shaft must protude as shown on following tables. When coupling the motor to the pump, spread anti-seize grease over the projecting portion of the motor shaft, then insert the motor shaft into the pump drive shaft (7), correctly aligning the hole of the pin (14).

Fasten the gear motor (406) to the lantern (1) flange with the bolts, then fit the pin (14) and the retainer circlip (28).

Failing to align the hole in the drive pin correctly will offset the internal pump shaft assembly and may cause it come into contact with the structure, causing damage to the pump or compromising pump function. Fasten the guards (51), tightening the screws (52) onto the lantern (1).



variable speed unit



F	Flange dimension									
TIPO	F	G	I							
M 50	130	165	200							
M 60L	130	165	200							
M 65	180	215	250							
M 70L	180	215	250							
M 80	180	215	250							
M 90L	180	215	250							

Shaft projection										
	M50	M60L	M63	M65	M70L	M80	M83	M90L		
A	25	25	25	25	25	26	26	26		
B (H7)	10	10	14	14	14	16	16	16		
C (j6)	24	24	32	32	32	35	35	35		
D	10	10	10	10	10	10	10	10		
E	80	80	100	100	100	100	100	100		

CSFinoxGroup



PUMP DISASSEMBLY



Work in a clean area away from sources of dust, swarf etc. Ensure that the pump cannot move during disassembly.

Only for some versions of the pump, separate the support bracket (405) and eyebolt (403-404), by unscrewing the screws (402) and the nuts (401) to separate the kit from reducer (406).



REMOVING THE MOTOR

Undo the screws (52) and washers (53), then remove the guards (50 - 51).

Use suitable needle-nosed pliers to remove the retainer circlips (28) and use a pin punch to remove the drive pin (27) (undo the bolts (401) and the screws (402) on the lantern flanges (1) in case the supporting kit is not present) then ease out the motor (406 - 407).



Do not tilt the motor: the motor must be removed in a perfectly horizontal motion to prevent damaging the mechanical seal on the drive shaft (7).

N.B. When separating the motor from the pump, the pump must be supported with hoisting straps to prevent damage.



CSFinoxGroup



REMOVING THE MECHANICAL SEAL

Loosen the dowels (5) and remove the retaining ring (4) from the shaft (7). Loosen the dowels (25.1) on the rotary part of the seal (25.2) and remove it always from the shaft (7). Using 2 screwdrivers remove also the stationary part of the seal (25.3) from its seat.



REMOVING THE SUCTION PORT AND STATOR



Before removing the suction port unscrew the dowels (34).

Unscew the screws (33), remove the suction port (11) and the l'O-ring (23) from the seat in the chambre (6). Using a chain wrench, remove the stator (10) by turning it anticlockwise.



REMOVING CHAMBER AND LANTERN

Remove the screws (30) and separate the suction chamber (6) from lantern (1). Remove from the lantern the mechanical seal cover (3).





REMOVING THE COMPLETE SHAFT

Remove the articulated joints covered with the rubber sleeves (19) (not applicable on 25, 40 and 50 models):

Remove the ring clamps (20), clean around the sleeves and spray detergent into the slots if necessary. Insert two screwdrivers under the sleeves (19) and push forcefully to detach the sleeves from the recesses retaining it.

Remove the steel sleeves (15) then use a pin punch to push the pins (14) out of the hole of the bushes, releasing the rotor (9) and the shaft (7) from the connecting rod (8).



ARTICULATED JOINTS

In sturdy stainless steel with NBR (EPDM-FPM) safety sleeves. Execution for M 55 to M 60L pump sizes.

In wear-resisting version with hardened bushes for heavy duty conditions and loads and NBR (EPDM-FPM) safety sleeves. Execution for M 65 to M 90L pump sizes

In sturdy stainless steel with OR seals and stainless steel safety sleeves.

Execution for pump's size M 50.





- 22 -



Remove the guide bushings (13) and the eccentric bush (12) from the rotor (9) and the shaft (7) (not present on 25, 40 and 50 models).



PUMP REASSEMBLY

After having carefully cleaned with detergent, check condition of the eccentric bushes (12) on the connecting rod (8). The eccentric bush has not to be damaged or worn out. Then assemble a new rotor (9) complete with two pilot bushes (13) and filled with proper grease. First assemble the entrainment pin (14), then cover it with the steel sleeve (15). To easily assemble the rubber sleeve (19), it is advisable to soften it with warm water. In this way you will be able to push it manually into the corresponding notches. Finally lock the two clamps (20) (it is advisable to use the proper tool), then cut the exceeding part.



While locking the clamps, remember to pull them gradually and alternately, before giving the final pull.

When replacing the eccentric bushes on the connecting rod, pay attention to the following operations:

As they are hot assembled, it is necessary to heat the end of the spherical part, in order to make the expulsion of the worn-out bush easier and to allow the introduction of the new one. The bushes must be positioned with the eccentric part in axis with the connection rod (see picture) and perfectly aligned with the spherical part.

The bushes must be positioned with the eccentric part in axis with the connection rod.



Proceed to reassemble the pump following the 1, 2, 3 and 4 steps from the previous chapter 11 inversely.



MAINTENANCE

Cut the supplies and remove all tubing in compliance with the technical regulations and laws in force.

Reduction unit

The reduction gearbox between the motor and pump is splash lubricated. Before use, make sure that the oil level reaches half-way up the level indicator, when the unit is stopped. At regular intervals, check the oil level, always with the unit stopped. Top up with suitable oil if necessary.

N.B.: When the reduction unit is stopped, the oil level must never disappear below the level indicator. Oil must always be visible in the window.

Pump

Before changing the use of the pump, check the compatibility of the new fluid to be pumped, with the pump component materials, mechanical seal, gaskets, stator, etc.

At the end of the production cycle, the pump must be washed, to avoid that, during prolonged stops, the pumping parts or seals are damaged in any way and prevent the rotating parts from sticking together. Replace the product with a suitable washing liquid.

Start the pump for the time necessary to achieve complete cleaning.

Pneumatic column and rotating table

At regular intervals, check for wear and tear, replacing all items that show any sign of wear in order to prevent and avoid endangering persons and equipment.

At regular intervals, lubricate the bearing of the rotating table (Pict. 8).





WASHING CYCLE FOR PUMPS USED TO HANDLE FOODSTUFF PRODUCTS



Pumps intended for handling foodstuff products must be thoroughly cleaned before commissioning. A CIP (cleaning in place) procedure is carried out to clean the pump.

CIP PROCEDURE

- 1) Wash with clean water to empty the pump of any product
- 2) Basic wash with 1 to 2% solution of caustic soda at 60 to 80°C for approximately 10 minutes
- 3) Intermediate wash with clean water for 5 to 10 minutes
- 4) Wash with 1 to 1.5% solution of nitric acid at 50 to 70°C for 5 minutes
- 5) Final wash with clean water for approximately 10 minutes

NB: The flow rate of the cleaning fluids used must not be less than 1.5 m/sec.

During the CIP cycle, the stator is subjected to significant chemical and thermal stress.

As a result, the pump should be run always and only in presence of fluid.

This will clean the interior of the pump while limiting mechanical stress.

To achieve a better result and to allow the fluid to evacuate completely from the pump it is necessary that the phases are carried out alternating the direction of rotation.

MAV pumps in standard execution are constructed with the suction port in a single casing, with the stator housing and a suction cone to make fluid inlet easier.

There is a version with suction port in two pieces. This is in order to achieve alternative solutions relating to various uses and the need to perform CIP washing at the end of the cycle.

- A = immersed port with bag protection for fluid products.
- B = immersed port with suction cone for dense products.
- C = port with plate and bag protection for very viscous products.
- D = 90° elbow for CIP washing.







SECTIONAL DRAWINGS WITH PART LISTS



Sectional drawing OF PNEUMATIC VERTICAL HOIST MAV 65-70L



Pos.	Denomination	Q.ty	Pos.	Denomination	Q.ty
236	Air treatment group	1	357	Screw, socket head	2
301	Base, vertical hoist	1	362	Cylinder	1
302	Column, hoist	1	365	Foot "L"	1
303	Arm	1	366	Screw, hex-head	6
305	Hoist	2	367	Stop valve	2
306	Rail	2	368	Flow regulator	2
310	Wheel, swivel	2	369	Coupling	1
311	Handle	1	370	Coupling	1
316	Screw, hex-head	4	371	Screw, socket head	2
318	Screw, socket head	2	376	Pipe, air	1
321	Screw, socket head	2	377	Pipe, air	1
322	Screw, socket head	24	389	90° pipe, intermediate	2
323	Screw, hex-head	6	390	Union, extension	2
328	Wheel, swivel	2	404	Elbow	1
334	Foot	2	405	Fitting	1
336	Plug	1	440	Foot "C"	1
346	Screw, hex-head	16	470	Screw, socket head	4
348	Protective guard	2	500	Pneumatic panel	1
349	Screw, socket head	4	501	Bracket, limit switch	1
350	Magnetic breaker + plug	1	502	Sensor fixing kit	1
351	Cable	1	503	Valve, limit switch	1
352	Plate	1	507	Screw, socket head	2
353	Screw, hex-head	6	508	Screw, hex-head	2
354	Plate, arm support	1	509	90° fitting	2
356	Bracket, cable support	1	511	Nut	2

Part list OF PNEUMATIC VERTICAL HOIST MAV 65-70L

CSFICOX Group FLOW TECHNOLOGY COMPONENTS 27 •

.





Sectional drawing OF FIXED PNEUMATIC VERTICAL COLUMN MAV 65-70L-80-90L





Pos.	Denomination	Q.ty	Pos.	Denomination	Q.ty
236	Air treatment group	1	366	Screw, hex-head	6
301	Base, vertical hoist	1	367	Stop valve	2
302	Column, hoist	1	368	Flow regulator	2
303	Arm	1	369	Coupling	1
305	Hoist	2	370	Coupling	1
306	Rail	2	371	Screw, socket head	2
318	Screw, socket head	2	376	Pipe, air	1
322	Screw, socket head	24	377	Pipe, air	1
323	Screw, hex-head	6	389	90° pipe, intermediate	2
336	Plug	1	390	Union, extension	2
348	Protective guard	2	404	Elbow	1
349	Screw, socket head	4	405	Fitting	1
350	Magnetic breaker + plug	1	500	Pneumatic panel	1
351	Cable	1	501	Bracket, limit switch	1
352	Plate	1	502	Sensor fixing kit	1
353	Screw, hex-head	6	503	Valve, limit switch	1
354	Plate, arm support	1	507	Screw, socket head	2
356	Bracket, cable support	1	508	Screw, hex-head	2
357	Screw, socket head	2	509	90° fitting	2
362	Cylinder	1	511	Nut	2
365	Foot "L"	2			

Part list OF FIXED PNEUMATIC VERTICAL COLUMN MAV 65-70L-80-90L

.

_____ 29 ____•



Sectional drawing OF PNEUMATIC VERTICAL COLUMN MAV 65-70L-80-90L with ROTATING TABLE









Part list OF PNEUMATIC VERTICAL COLUMN MAV 65-70L-80-90L with ROTATING TABLE

362	Cylinder	1	514	Screw, socket head	4
361	Screw	16	513	Protection guard, cylinder	1
360	Table, turn. pneum. station	1	511	Nut	2
359	Screw, hex-head	16	509	90° fitting	2
358	Bearing	1	508	Screw, hex-head	2
357	Screw, socket head	2	507	Screw, socket head	2
356	Bracket	1	503	Valve, limit switch	1
354	Plate, arm support	1	502	Sensor fixing kit	1
353	Screw, hex-head	6	501	Bracket, limit switch	1
352	Plate	1	500	Pneumatic panel	1
351	Cable	1	405	Fitting	1
350	Magnetic breaker + plug	1	404	Elbow	1
349	Screw, socket head	4	390	Union, extension	2
348	Safety guard	2	389	90° pipe, intermediate	2
336	Plug	1	380	Greaser	1
334	Foot, anti-vibration	6	377	Pipe, air	1
323	Screw, hex-head	6	376	Pipe, air	1
322	Screw, socket head	24	375	Dowel	1
318	Screw, socket head	2	374	Screw, hex-head	8
316	Screw, hex-head	4	373	Protective guard	1
310	Column reinforcement	2	371	Screw, socket head	2
306	Rail	2	370	Coupling	1
305	Hoist	2	369	Coupling	1
303	Arm	1	368	Flow regulator	2
302	Column	1	367	Stop valve	2
301	Base, pneumatic rot. station	1	366	Screw, hex-head	6
236	Air treatment group	1	365	Foot "L"	2
Pos.	Denomination	Q.ty	Pos.	Denomination	Q.ty

CSFinoxGroup

-0

• 32 ------





Sectional drawing OF PNEUMATIC VERTICAL HOIST MAV 50-60L

CSFinoxGroup

- 33 ----•



Nut Cylinder 90° fitting Screw, socket head Bracket Screw, hex-head Plate Screw, socket head Cable Valve, limit switch Sensor fixing kit Magnetic breaker + plug Screw, socket head Bracket, limit switch Protective guard Pneumatic panel Screw, hex-head Screw, socket head Plug Flange Foot Fitting Wheel, swivel Elbow Screw, socket head Union, extension Screw, socket head 90° fitting, intermediate Screw, socket head Pipe, air Screw, socket head Pipe, air Screw, hex-head Screw, socket head Handle Coupling Wheel, swivel Coupling Rail Flow regulator Hoist Stop valve Arm Screw, hex-head Column, hoist Foot "L" Base, vertical hoist Bracket Air treatment group Screw, socket head Denomination Pos. Denomination Pos. Q.ty Q.ty

Part list OF PNEUMATIC VERTICAL HOIST MAV 50-60L

CSFinoxGroup

• 34 -





Sectional drawing OF FIXED PNEUMATIC VERTICAL COLUMN MAV 50-60L

CSFinoxGroup



365	Foot "L"	2	511	Nut	2
364	Bracket	2	509	90° fitting	2
363	Screw, socket head	4	508	Screw, hex-head	2
362	Cylinder	1	507	Screw, socket head	2
357	Screw, socket head	2	503	Valve, limit switch	1
356	Bracket	1	502	Sensor fixing kit	1
352	Plate	1	501	Bracket, limit switch	1
351	Cable	1	500	Pneumatic panel	1
350	Magnetic breaker + plug	1	405	Fitting	1
349	Screw, socket head	4	404	Elbow	1
348	Safety guard	2	390	Union, extension	2
336	Plug	1	389	90° fitting, intermediate	2
323	Screw, socket head	4	377	Pipe, air	1
322	Screw, socket head	12	376	Pipe, air	1
318	Screw, socket head	2	371	Screw, socket head	2
306	Rail	1	370	Coupling	1
305	Hoist	1	369	Coupling	1
303	Arm	1	368	Flow regulator	2
302	Column	1	367	Stop valve	2
236	Air treatment group	1	366	Screw, hex-head	6
Pos.	Denomination	Q.ty	Pos.	Denomination	Q.ty

-0

• 36 -





DECLARATION OF CONFORMITY

The company:

C.S.F. Inox S.p.A.

based in:

Strada per Bibbiano, 7 Montecchio Emilia (R.E.) ITALIA

declares under its own sole responsibility that the machine:

PROGRESSIVE CAVITY PUMP WITH PNEUMATIC VERTICAL SYSTEM

EC declaration of conformity (Ann. II.A, 2006/42/EC) to which this declaration refers, is in conformity with safety requirements according to 2006/42/EC directive.

2014/35/EC: electric equipment designed for use within certain voltage limits

2014/30/EC: electromagnetic compatibility

Food products-contact suitability declaration: is made with materials suitable to come in touch with food grade product according to the regulation (EC) no. 1935/2004.

The technical file is managed by C.S.F. Inox S.p.A. Strada per Bibbiano 7 – 42027 Montecchio Emilia (RE) ITALY

According to the following standards: EN 12100 : 2010 EN 809 : 2009

Montecchio Emilia, XXXXXXXXXX

C/nairm/an ando Paterlini

CSFinoxGroup

- 37 ——•





DECLARATION OF CONFORMITY

The company:

C.S.F. Inox S.p.A.

based in:

Strada per Bibbiano, 7 Montecchio Emilia (R.E.) ITALIA

declares under its own sole responsibility that the machine:

PNEUMATIC VERTICAL SYSTEM FOR PROGRESSIVE CAVITY PUMP

Year XXXXXXXXXXXXXXXX

Manufacturer declaration (Ann. II.B, 2006/42/EC)

cannot be operated before the machine in which is assembled, will be declared in conformity with safety requirements according to 2006/42/EC directive.

2014/35/EC: electric equipment designed for use within certain voltage limits

2014/30/EC: electromagnetic compatibility

The technical file is managed by C.S.F. Inox S.p.A. Strada per Bibbiano 7 – 42027 Montecchio Emilia (RE) ITALY

According to the following standards: EN 12100 : 2010 EN 809 : 2009

Montecchio Emilia, XXXXXXXX

e C/hairman dø Paterlini

CSFinoxGroup



cod. DOCICARMV3 English language