CSF

MULTISTAGE CENTRIFUGAL PUMPS CV SERIES

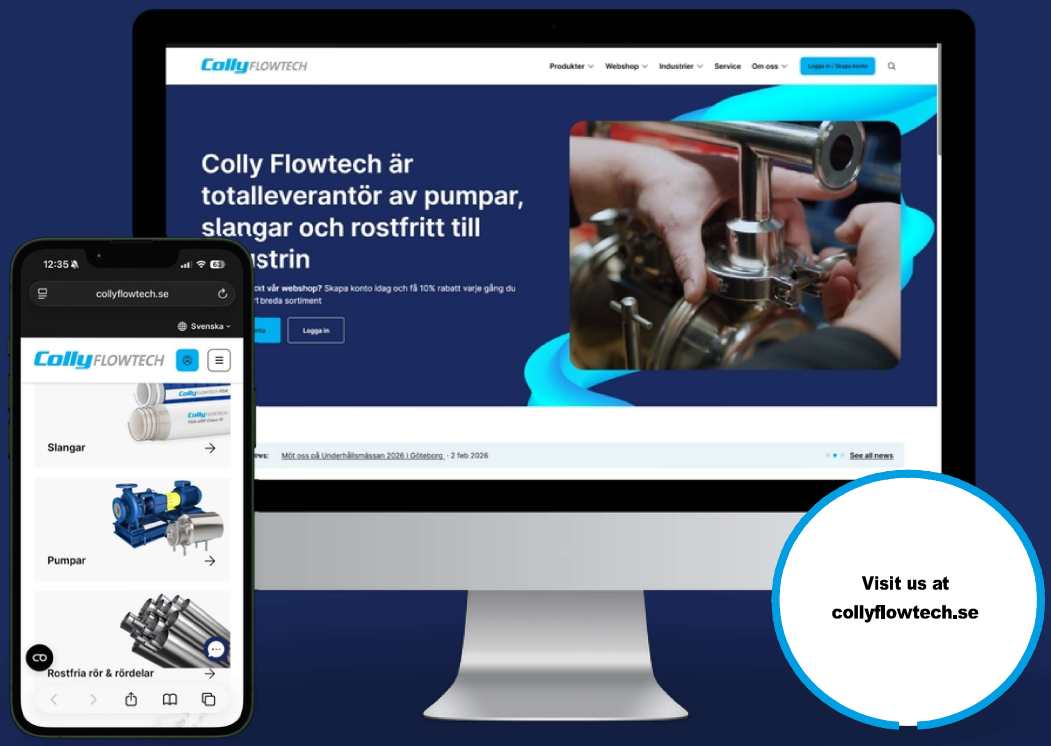
CSF MULTISTAGE CENTRIFUGALPUMP CV

Instructions for assembly, installation, operation and maintenance

Colly FLOWTECH

Översättning av bruksanvisning original

Rev_1-2026



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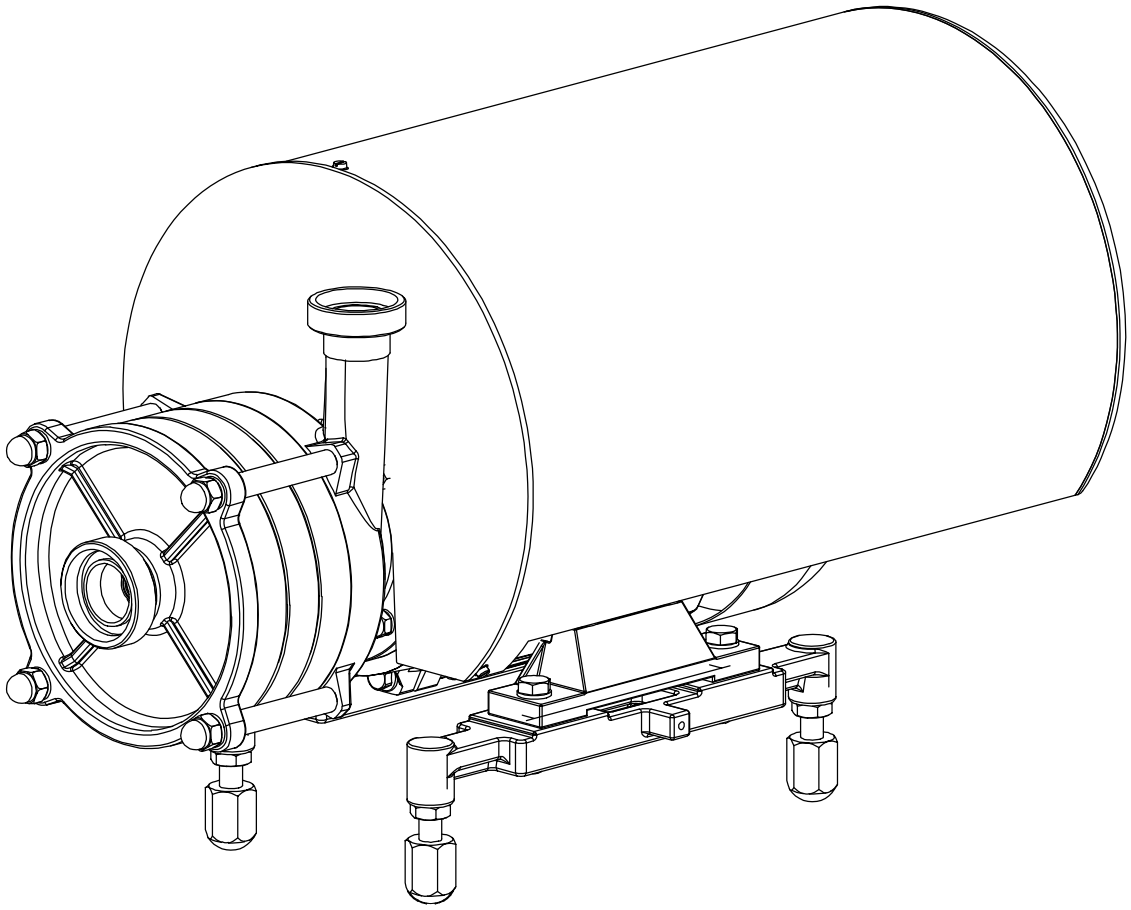
MULTISTAGE CENTRIFUGAL PUMPS
CV Series



INSTRUCTIONS FOR ASSEMBLY, INSTALLATION,
OPERATION AND MAINTENANCE

CSF

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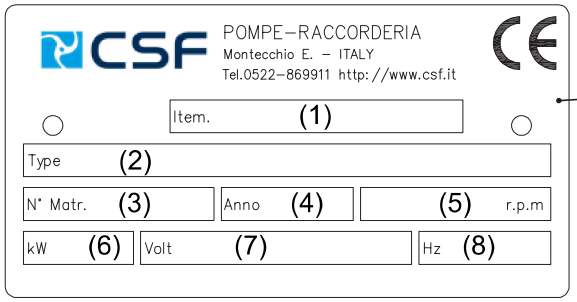
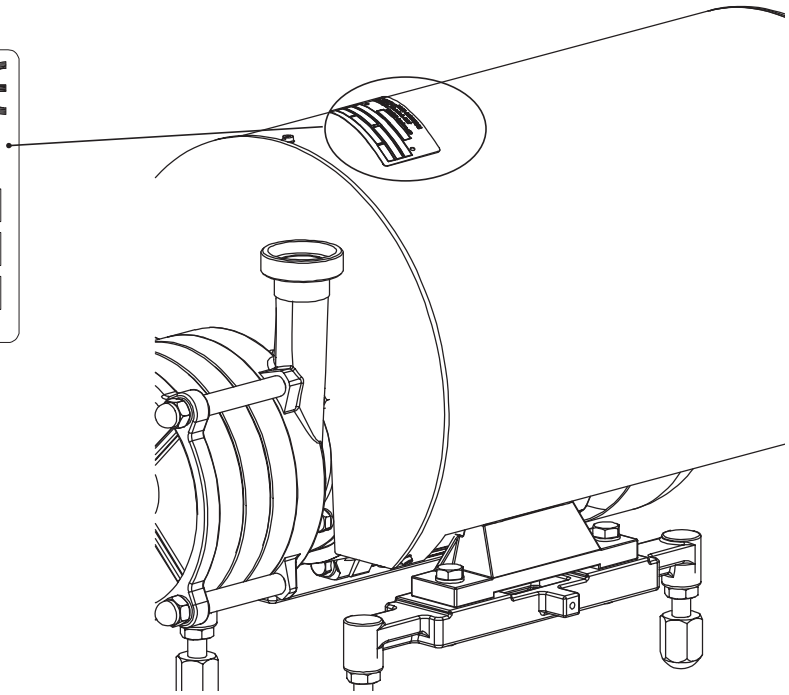
FOREWORD

This instruction manual is designed to provide the user with all the information needed to perform all use and maintenance activities concerning the pump throughout its entire service life.
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 pump 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.
This manual refers exclusively to the pump supplied.

CSF Plate example





1. *System item provided by the client*
2. *Manufacturing series, size and execution*
3. *Serial number*
4. *Year of construction*
5. *Pump rotation speed*
6. *Installed power in kW*
7. *Motor voltage*
8. *Motor frequency*

1.0 - SYMBOLS

	Pay great attention to the text parts indicated by this symbol.		Compulsory foot and hand protection PPE: gloves and safety shoes
	Danger: the non-observance of instructions can cause serious damages to persons and/ or objects.		Compulsory respiratory tract PPE: mask
	Danger: only skilled personnel is allowed to carry out operations concerning the electric parts.		Danger: hot surfaces

2.0 - SAFETY WARNINGS

The pumps supplied are designed for professional use and are not intended to come into contact with the general public and minors.
Operators and maintenance personnel must read and comprehend the instruction manual.
Maintenance personnel must have adequate training and qualifications to carry out maintenance operations in compliance with safety standards.
Trainees may only carry out activities under the supervision of qualified, expert personnel.

When the pump is working the following occurs::

- Mechanical parts are moving
- Pump casing, pipelines and articulations are under internal pressure. Therefore do not remove any safeguard or locking, do not loosen screws or clamps, as this can cause serious damage to persons or objects.

- Electric parts are in tension
- Non-observance of inspection and maintenance operations 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.

- 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.
- Installation must ensure adequate ventilation to cool the motor, as well as enough space for maintenance operations.
- Before carrying out any operations involving disassembly of the pump (inspection, cleaning, seal replacement, etc.), the following preliminary operations must be carried out:

- Switch off the motor and disconnect the power supply
- Close the gate valves on the suction and outlet pipelines, in order to avoid the risk of flooding;

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

- Consider if the liquid which flows out of the pump when disassembling is hazardous and take the necessary precautions.

2.1 - SAFEGUARDS

Inspect the condition of the guards and relative fasteners on a regular basis (at least every 12 months). If the guards are damaged, worn or have been removed or if the fastening devices have been removed or come loose, the user must immediately restore the condition of the guards and relative fastenings.

3.0 - GUARANTEE

All products manufactured by C.S.F. Inox S.p.A. 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.
The guarantee does not cover wear parts or repairs for damage caused by improper use, abrasion, corrosion, negligence, defective installation, non-observance of inspection and maintenance operations, use of non-genuine spare parts, accidents or any work carried out by the purchaser designed to alter the machine's performance as indicated by 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. Returned items must be properly packed in order to avoid damages during transport and a technical report describing the defect and how it manifested itself must accompany the returned item/s.

Any item with a presumed fault should be returned to C.S.F. Inox S.p.A. at the customer's expense, accompanied by a Declaration of Decontamination (attached to page 28), unless otherwise agreed.
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 owed by 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.
C.S.F. Commercial parts incorporated in C.S.F. Inox products are guaranteed by their corresponding manufacturers.

4.0 - GOODS TRANSPORTATION, RECEIVING AND TRANSFERRING

4.1 - TRANSPORT

The packings of all pumps manufactured by C.S.F. Inox S.p.A. are defined when placing the order. Unless prior arrangements are made, goods will be packed for transit only and not for long-term storage; should it be necessary to store the pumps outside, waterproof covering must be provided to protect the electrical parts (motor) from rain, dust, humidity etc..

4.2 - DELIVERY

On delivery of the supply it is essential to make sure that the packaging has not been damaged during transport so that any claims can be made immediately to the carrier.

Should any damage be ascertained, the following procedure must be observed:
- Accept the goods with reserve
- Take photographic evidence of the damage
- Notify the carrier of the damage sustained via registered mail with the photographic evidence attached.

4.3 - 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.

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 can be clearly seen.

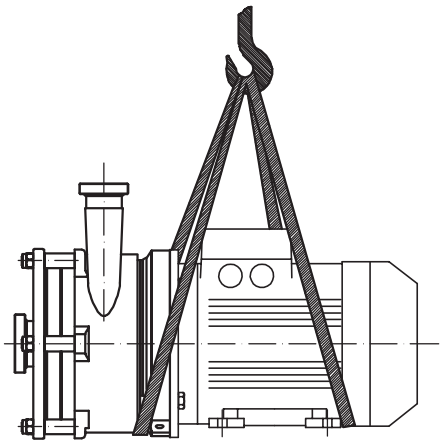
4.4 - TRANSFERRING

The personnel involved must have adequate qualifications and experience in handling and lifting operations.
Use suitable and certified equipment for lifting and handling the machine supplied.

Take the packed pumps as close as possible to the installation site using suitable lifting equipment and unpack them. During this operation take care, as unsteady parts could fall down.
Packing materials must be disposed of in accordance with the relative regulations in force in the country of installation (see Chapter 17.0, page 29).
After unpacking the pump, use special lifting belts and move the pump-motor-set to the place of installation; never use the eyebolts on the motor to move the pump, as the eyebolts are for moving the motor only.

In versions complete with shroud, take the shroud off before moving the pump-motor-set, in order to avoid damages.

Observe the health & safety regulations in force locally.



5.0 - RETURNS

- 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 (see page 28).

6.0 - DESCRIPTION

Multistage centrifugal pumps with closed impeller design, for medium and high heads. Close-coupled execution with closed vane impellers, installed directly on the electric motor shaft. The standard ports are threaded for food-safe fittings in accordance with standard DIN 11851 and can be made in a shrouded version.
Suitable for food and industrial sectors without particular washing or sterilization requirements. They offer considerable sturdiness with costs that are particularly attractive in those applications where sanitary aspects do not generate excessive concerns. Due to the characteristics of the closed impellers, they are not suitable for products containing solids or for viscous liquids. The temperature range of the product must be between -30°C and +140°C.

6.1 - TECHNICAL DATA

- Maximum operating pressure (in outlet): 40 bar depending on the type of connections.
- Temperature range: 0°C – 100°C (up to 140°C for sterilization needs on request).

The operating temperature range is determined by the type of mechanical seal and the material of the elastomers used. Seal execution depends on the operating pressure.
If there is any need to use the pump with different performance data and product characteristics to those indicated at the time of ordering, contact C.S.F. Inox S.p.A. to make sure the pump is suitable for your requirements.

6.2 - SOUND PRESSURE LEVEL

The sound pressure level of sanitary centrifugal pumps is the following (see table):

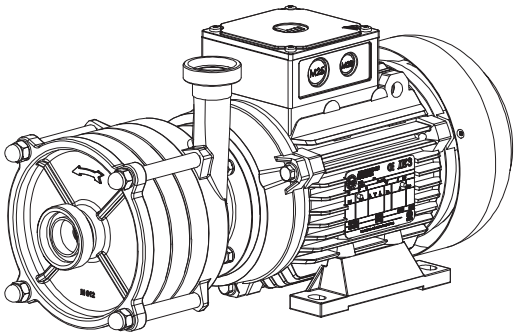
		Pump type
Noise index dB(A)	< 70	CV 11 2-pole CV 22 2-pole
	71÷75	CV 23 2-pole CV 24 2-pole CV 25 2-pole CV 26 2-pole
	76÷80	CV 27 2-pole CV 28 2-pole

The measurement has been made by means of a phon-meter placed at 1 m distance from the pump and at a height of 1.6 m from the ground.
Preliminary condition is that the pump is fixed correctly; the above mentioned values do not take into account external noise sources (e.g. valves, abrupt hydraulic deflections).

6.3 - WEIGHTS

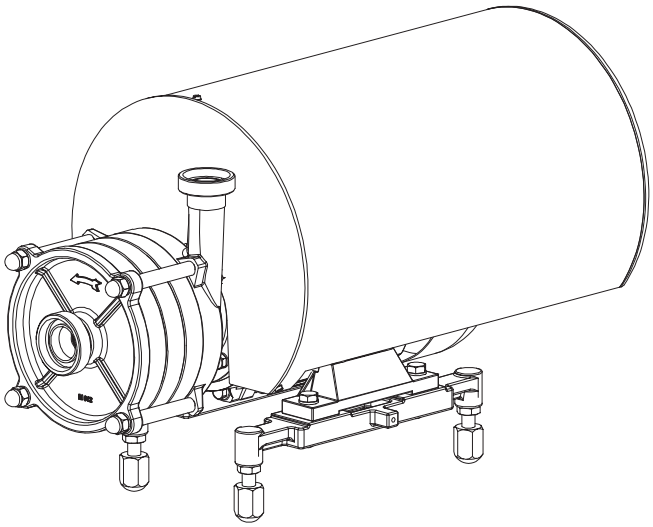
The weight may vary depending on the execution, make and/or model of the motor installed.
For information on the weight of the pump, see the data sheet provided as an appendix to the instructions.

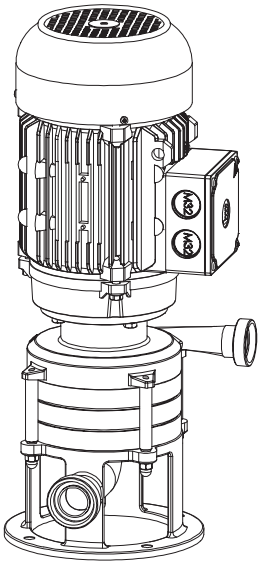
7.0 - SET-UPS



CV shroudless exec. with fixed feet

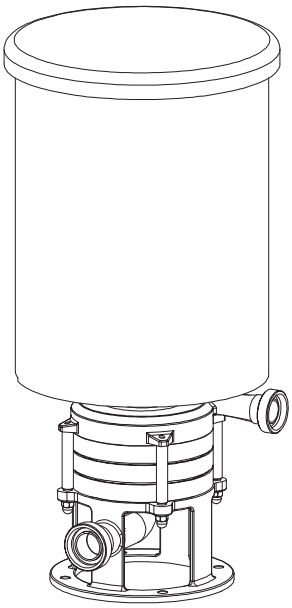
CV shrouded exec. with adjustable feet





CV vertical exec. without shroud

CV vertical exec. with shroud



8.0 - NON-PERMITTED USES

Do NOT use the pump in the following cases:
- Without guards and/or with disabled, faulty or missing safety devices.
- If it has not been installed correctly.
- If there are power supply faults.
- In the event of serious maintenance shortcomings.
- Following unauthorized modifications.
- For improper use of the machine.
- Without following the instructions provided.

The pump must always be used in an environment appropriate to the level of protection of the motor. Always check this on the motor plate before installation.

THE PUMP MAY NOT BE USED IN ENVIRONMENTS WHICH REQUIRE A HIGHER LEVEL OF PROTECTION OR A HIGHER SPECIFICATION MOTOR OR ELECTRICAL PARTS.

Components complying with the safety standards for the environment in question must be used.

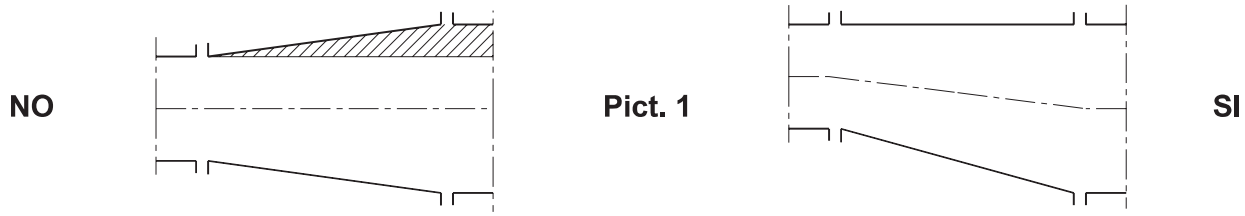
9.0 - INSTALLATION

9.1 - SUCTION AND INFLOW CONDITIONS

(NPSH = Net Positive Suction Head)
NPSHa (NPSH available)
In order to ensure that pump operation is free from cavitation, it is essential to observe the maxi- mum permitted suction lift **ha geo max** or the minimum allowable head **hc geo min.**
NPSH of pump (required NPSH)
The centrifugal pumps can operate correctly only if vapour has not formed inside. For this reason the static head at the reference point for the NPSH is the centre of the impeller, that is the point of intersection of the pump shaft axis with the vertical plane that passes through the external points of the blade inlet corners.
NPSHr (required NPSH) is the value required by the pump, expressed in metres, obtained from the performance curve. In practice 0.5 m should be added to this value as a safety margin.

9.2 - PIPING

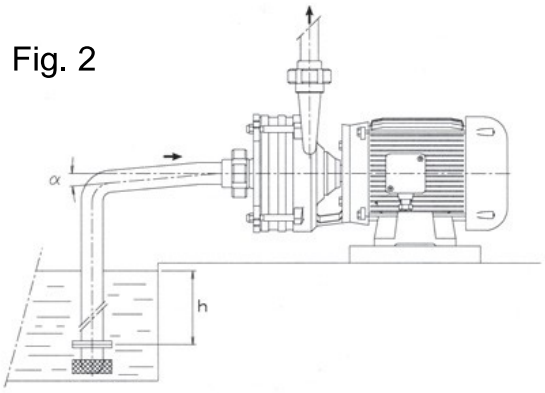
In order to prevent the creation of harmful stresses, the suction and discharge pipes must be connected to the pump ports without the use of force. These pipes must also be supported independently avoiding causing stresses on the pump. The internal diameter must be the same size as the pump connections. It must in any case not be smaller to avoid head loss and/or poor performances. Always use elbows with large radius. If the pipe diameter changes along the line, use reduction cones, choosing the ones that are most suitable to avoid any formation of air pockets (Pict.1).



Pict. 1

The suction pipe must be as short as possible and rise as it moves towards the pump if it is sucking from a tank (Pict.2). If on the other hand the pump is below the level of the liquid, the pipe should descend slightly (Pict.3). If the pump is used for transporting hot liquids, fit expansion joints to compensate any expansion of the piping. The maximum velocity of the liquid in the suction pipe must not be greater than 3 m/s. Velocities between 1 and 2 m/s are recommended. The suction pipe must be designed in such a way as to prevent air from entering the pump.
For this reason, when sucking from a tank located at a lower level, the pipe must reach below the free surface of the liquid.

Fig. 2



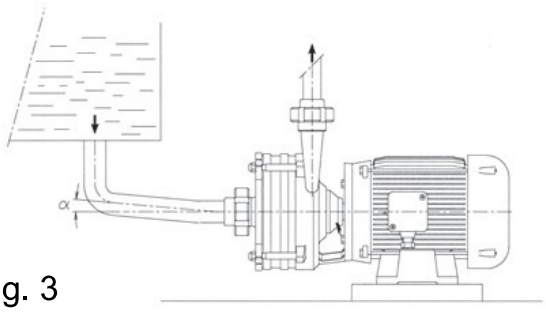


Fig. 3

In order to prevent the formation of vortices and avoid the risk of sucking in air, always keep a minimum head at the pipe inlet (h. min.) equal to at least the dynamic head plus a safety margin of 0.1 m (Pict.2).

$$h\ min. = \frac{Va^2}{2g} + 0,1$$

h_{min} = m

V = m/s

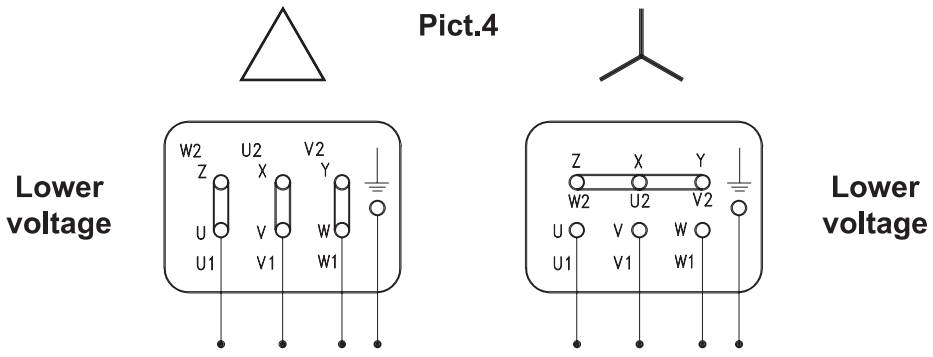
In order to prevent the formation of vortices when it is not possible to observe the values of minimum available head, it is possible to fit crosses in the piping. This system is suitable even for tanks with a positive head.

- Avoid creating obstacles which could increase suction losses disrupting smooth fluid flow. Make sure that there are no restrictions, sharp turns or tight elbows on the discharge line, since these increase disturbance.

9.3 - ELECTRICAL CONNECTION

Make the electrical connection only after plumbing in has been completed; set up the motor control system in conformity with the technical standards and regulations in force (EN 60204-1): in particular a manual electric power switch must be installed with adequate breaking capacity.
In addition, devices for overcurrent and overload protection (e.g. fuses, circuit breakers, etc.) must also be fitted, plus, if necessary, a device to prevent accidental restarting.
Check that the main frequency and voltage and the available power are suitable for the motor 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 shown on the motor plate so as to prevent them from overheating.
Before doing anything else, make the motor's earth connection, using the terminal on the motor and a cable of sufficient cross-section. The cables may be connected to the terminal board using either a delta or star arrangement. Follow the data given on the motor plate for the main voltage, as shown in the diagram in pict.4; when starting, the motor's current absorption increases briefly to 5-6 times the nominal value. If the mains supply is unable to substain this increase in absorption, use a star-delta starter or other kind of device (e.g. an autotransformer).

Pict.4



C.S.F. Inox S.p.A. will accept no responsibility for damage to property and/or injury to persons caused by failure to comply with the technical standards and regulations in force.

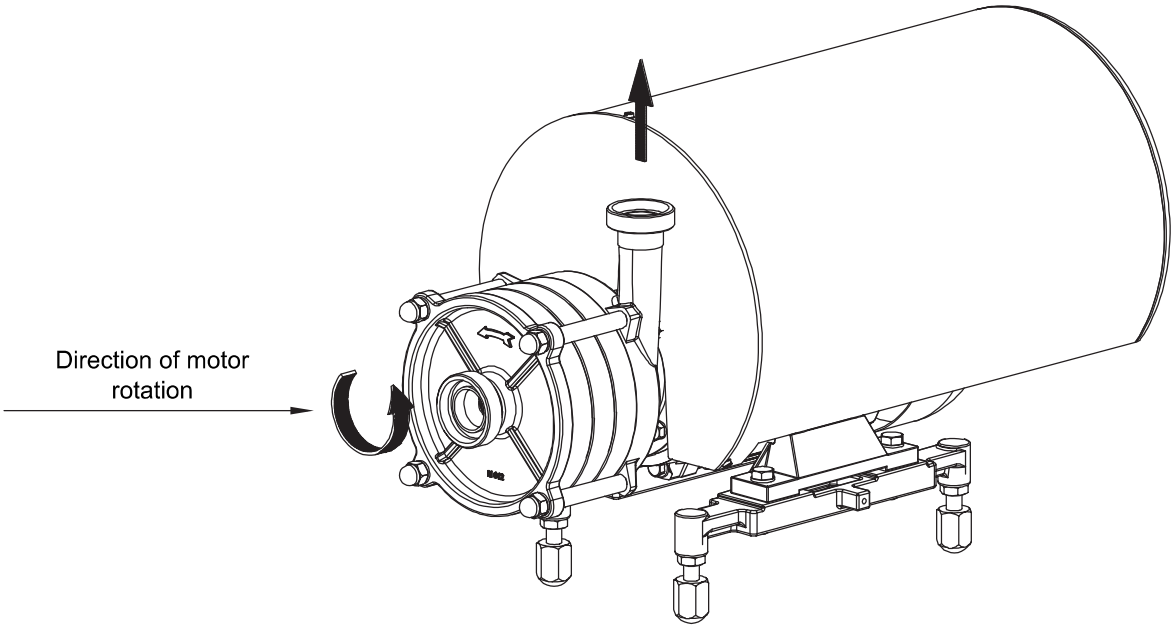
10.0 - OPERATION

10.1 - PRELIMINARY OPERATIONS BEFORE START-UP

- Check that the pump turns freely under hand pressure
- The clamp joining the pump casing and the lantern bracket must be well tightened and it should not be easily unscrewed by hand.

The clamp must be tightened using a wrench and NOT simply by hand.

- Check the that the pump turns in the marked direction as shown in figure ((**counterclockwise** as seen from the pump side):



The suction pipe and the pump must be filled with liquid. There are two possible cases:

a) When the pump is to operate with a negative suction head, it must be primed by introducing liquid into the pump casing.

b) When the pump is to operate below the level of the suction liquid, i.e. with a positive head, the suction and discharge gate valves must be opened until the pressure gauge on the pump discharge shows a pressure corresponding to the positive suction head.

c) If the sealing chamber is to be cooled, open the cooling fluid supply and adjust the flow.

- After carrying out the preliminary operations, then close the discharge valve completely and make sure that the suction valve is completely open.
- Start the pump and check once again that it rotates in the right direction.

OPERATING CHECKS

- If the pump does not generate the required discharge head rapidly, stop and repeat the priming operations.
- If the delivery gate valve is opened more than necessary, i.e. further than the specified working point, and the pump is operating with a lower discharge head than that required, there will be an increase in delivered capacity and absorbed power. If this occurs, throttle the discharge until the required head and capacity values are obtained.
- If the discharge head generated by the pump is greater than that required, the diameter of the impellers can be reduced. If, on the other hand, the head is lower than required, with equal flow rate, impellers with a larger diameter can be installed (provided that those installed are not already the largest) and a more powerful motor is probably needed.
- The pump must operate smoothly and without vibrations
- Do not operate without liquid and in any case avoid prolonged operation with the discharge gate valve closed.
- Check that the suction liquid level is always sufficient to grant an adequate energy load for normal operation of the pump.
- Mechanical seal: check that there is no leakage along the shaft.

10.2 - EXTENDED STOP

When stopping the pump for a longer time, empty the pump completely and wash it accurately in order to avoid the formation of scales and/or encrustations. When starting the pump again, please follow the above-mentioned instructions.

10.3 - CLEANING THE PUMP

The pump does not require any special washing procedures. The washing cycles normally used for the plant in which it is installed are quite satisfactory. When using the pump for liquids that tend to harden or crystallize, always make sure it is washed before taking the machine out of operation. This will ensure durability of the seal and of the pump itself. It is the user's responsibility to ensure that the washing liquids are compatible with the process liquid and the pump.
For correct cleaning of the pump, please see the washing procedures described in heading 16 on page 26.

11.0 - SPARE PARTS

11.1 - MAIN PARTS SUBJECT TO REPLACEMENT

Detail \ PUMP TYPE CV		11 – 28
*Mechanical seal EN2756-ISO3069		D. 24
Casing O-ring		OR 4625
Bearings rotation		Control side
	IEC 80	6204 - ZZ
	IEC 90	6205 - ZZ
	IEC 100	6206 - ZZ
	IEC 112	6207 - ZZ
	IEC 132 S-H	6208 - ZZ

11.2 - RECOMMENDED SUPPLY

RECOMMENDED SPARE PARTS FOR TWO YEARS OF OPERATION FOR THE QUANTITY OF PUMPS INSTALLED IN ACCORDANCE WITH VDMA STANDARD					
Denomination	**NUMBER OF PUMPS (including reserve)**				
MECHANICAL SEAL	**1**	**2**	**3**	**4**	**5**
O-ring (quantity for single-stage)	**1**	**2**	**3**	**4**	**5**

C.S.F. Inox declines all responsibility for damage or injury resulting from the use of non-original spare parts

12.0 - OPERATING MALFUNCTIONS

We are herewith listing some of the possible working irregularities which may occur using the pumps, with a table helping to find out the possible causes and how to solve the problem.

Problem encountered:

A) The pump does not run
B) Insufficient flow rate
C) The pressure is not sufficient
D) The pump stops priming
E) Power absorption too high
F) Leaks from mechanical seal
G) Short life of the mechanical seal
H) Failure of the mechanical seal
I) Anomalous vibrations and/or noise
J) Short life of bearings

Possible causes and necessary operations to solve them:

1) The pump is not properly primed: Repeat the priming.
2) Air entering from suction connections: Check the tightness
3) Air entering from the mechanical seal: Replace the mechanical seal or arrange a solution with a vacuum spring in case of vacuum suction operation.
4) Obstructions present along suction pipes or valves closed along pipes: Verify and remove all foreign matter from pipes and finally verify valve status (if closed, open them).
5) NPSH available in the plant is lower than NPSH needed by the pump: Reduce the friction loss or adjust the pump at a lower delivery point.
6) Defective operation of the standing valve (not flooded pumps): Restore the proper operation of the valve or replace it with one in good condition.
7) Plant friction losses higher than pump performances: Reduce friction losses or replace the pump with a more suitable one for requested performances.
8) Opposite direction of rotation or too low velocity (in case of a pump operated by an inverter): Restore the correct direction of rotation; increase the motor speed.
9) The impeller is clogged by foreign matter (in case of pump with closed impeller): Remove the foreign matter.
10) Worn mechanical seals: Replace worn parts.
11) Worn or partially clogged impeller: Replace the impeller or remove foreign matter.
12) Product viscosity higher than foreseen: Verify the pump size.
13) Presence of too much gas in the fluid: Fit an air relief valve.
14) Plant friction losses lower than foreseen: Increase friction losses or adjust the pump at a higher working point.
15) Fluid specific gravity higher than foreseen: Increase the installed motor power.
16) Pumped fluid too viscous: Verify the pump size.
17) Pump operating at a higher flow rate than envisaged due to plant friction losses lower than expected: Set the pump at a lower working point or increase plant friction losses.
18) Rotation speed too high (when pump is controlled by an inverter). Decrease speed.
19) Internal frictions caused by rubbing between rotating and fixed parts. Restore normal assembly conditions.
20) Misalignment of pump-motor unit or deformed shaft: Restore the correct alignment between pump and motor; replace the shaft with a new one.
21) Damaged pump or motor bearings. Replace the bearings.
22) Incorrect electrical connection. Modify the electric connection observing the data provided on the motor data plate based on the available voltage.
23) Voltage not suitable for the motor installed. Replace the motor with one that has the right voltage.
24) Excessive seal wear. Replace the mechanical seal.
25) Pumped fluid and/or temperature not suitable for the type of seal or the materials from which it is made. Check the choice of seal.

26) Lack of cleaning when using fluids which tend to crystallize. Increase the number of washing cycles and never leave product in the pump for a long period of time.
27) Incorrect seal assembly. Reassemble the seal with care.
28) Incorrect direction of rotation for non-reversible mechanical seals. Restore the correct direction of rotation.
29) Flushing non sufficient for external flushed seals. Increase the amount of flushing fluid.
30) Dry pump operation. To prevent further occurrences of dry operation, install protective devices (e.g. flow switch) to block pump operation when necessary.
31) Oscillations on the shaft due to a excessive assembly allowance, worn bearings, etc. Restore normal assembly conditions by replacing the worn parts.
32) Suspended solids in the fluid. Check the choice of seal.
33) Excessively high temperature or thermal shock. Gradually increase the temperature of the fluid to avoid instantaneous thermal amplitudes; prevent the pump from dry-running.
34) Out-of-balance impeller: Replace the impeller.
35) Pump running at a low flow rate: Adjust the pump at a higher working point.
36) Pump running at excessive flow rate: Adjust the pump at a lower working point.
37) Pump and/or pipes not properly anchored. Verify and adjust anchorage of the parts involved.
38) Bearings not lubricated (where lubrication is envisaged). Replace bearings and restore proper lubrication, which must be topped up from time to time depending on working conditions.
39) Water seepage due to worn radial shaft seals. Replace the worn parts.

POSSIBLE CAUSES AND NECESSARY OPERATIONS TO SOLVE THEM	PROBLEM ENCOUNTERED									
	A	B	C	D	E	F	G	H	I	L
1	●	●								
2	●	●		●						
3	●	●		●						
4	●	●		●						
5	●	●		●						
6	●	●								
7	●	●	●							
8	●	●	●							
9	●	●	●		●					
10		●	●							
11		●	●						●	
12		●	●							
13			●	●						
14				●						
15					●					
16					●					
17					●					
18					●					
19					●				●	●
20					●	●	●		●	●
21					●				●	
22		●	●		●					
23		●	●		●					
24						●				
25						●	●	●		
26						●	●	●		
27						●	●			
28						●				
29						●	●			
30						●	●			
31						●	●			
32							●			
33								●		
34									●	●
35									●	
36									●	
37									●	
38										●
39										●

13.0 - SEALS

All C.S.F. pumps in the CV series are fitted with unified mechanical seals according to EN 12756 - ISO 3069 standards, in order to guarantee interchangeability (subject to verification of axial space). The type of mechanical seal and the component materials are chosen based on the liquid to be pumped.
The mechanical seal is a device designed to retain the fluid so that it does not leak out of the pump. It consists of two sliding surfaces, one rotating in relation to the other, kept in axial contact by the pressure generated by the fluid (hydraulic force) and by the presence of components, such as springs or bellows (mechanical force).
The mechanical seal is usually cooled by the retaining fluid. The materials used are selected according to the properties of the fluid used, under the conditions of use at which the seal is installed and for the required performance. The seals installed on the CV pumps only allow one direction of rotation or can be reversible: the direction of rotation is always indicated on the pumps by special arrows.

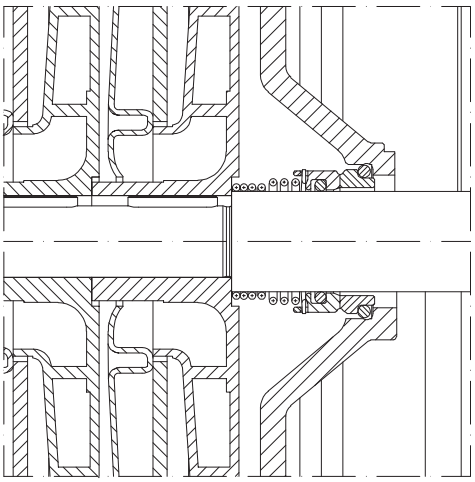
Before using the pump for any liquids other than those specified when selecting and ordering, ensure that mechanical seals and gaskets are suitable for the new product.

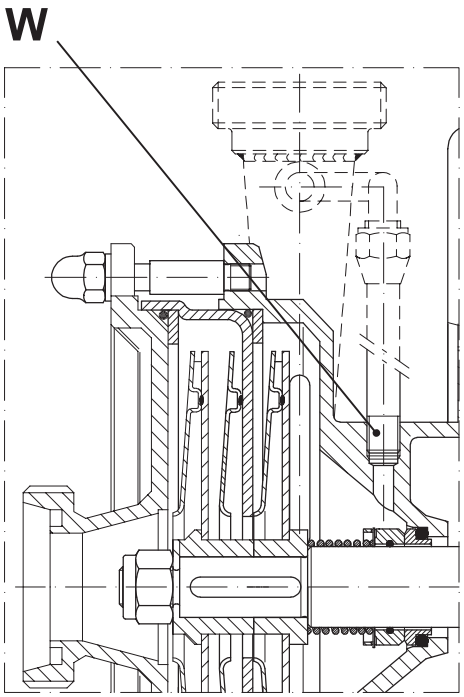
The following types of seal are available for the CV series of centrifugal pumps:

STANDARD MECHANICAL SEAL - “T” EXECUTION

The seal is applied inside the pump casing immersed in the product to allow better cooling and therefore a longer service life of the seal itself.

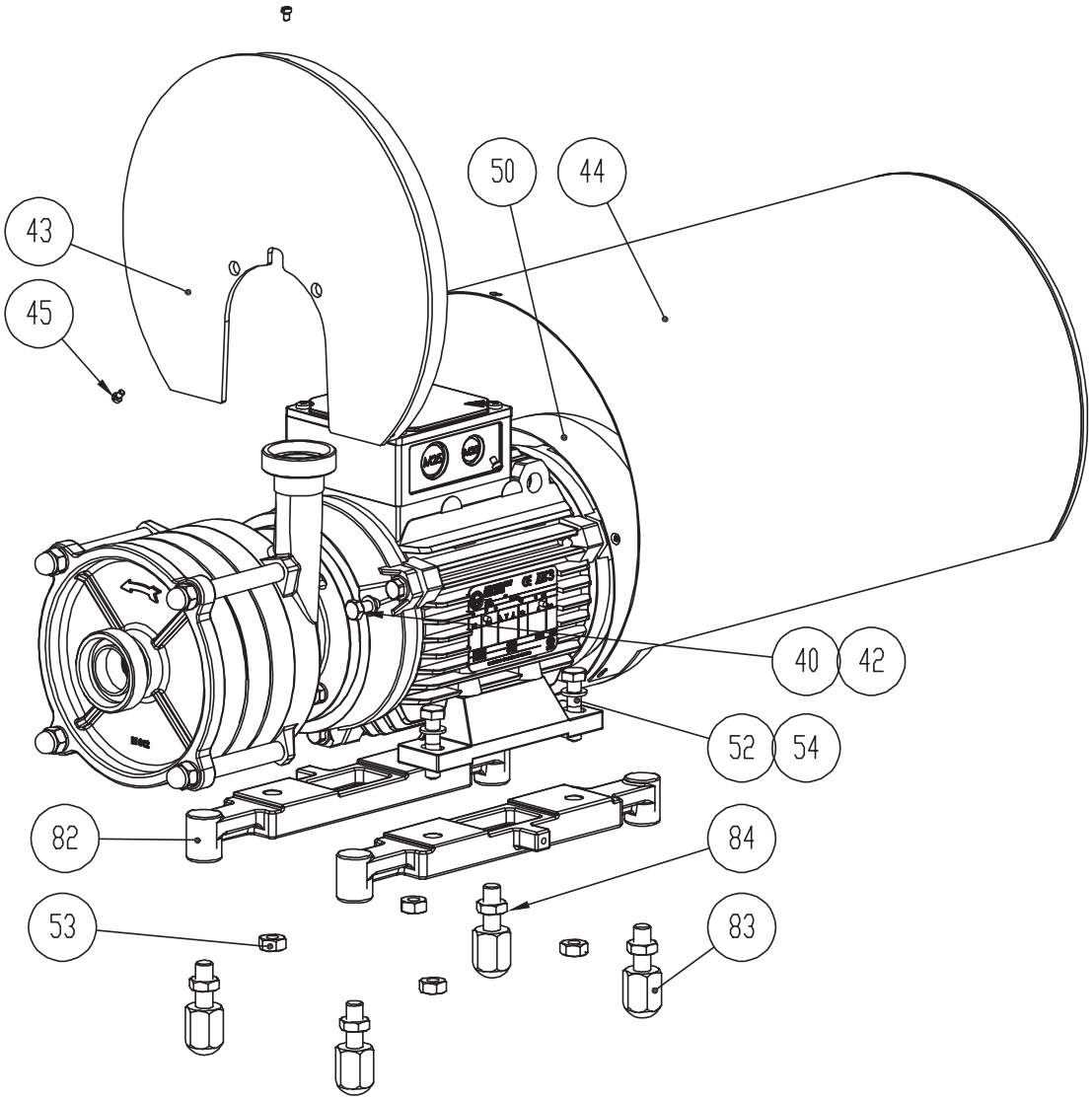
Also available in the **"W"** version with internal mechanical seal with forced circulation of the pumped liquid to restrict the working temperature, eliminate air and steam bubbles, improve lubrication and avoid residues or deposits on the seal.



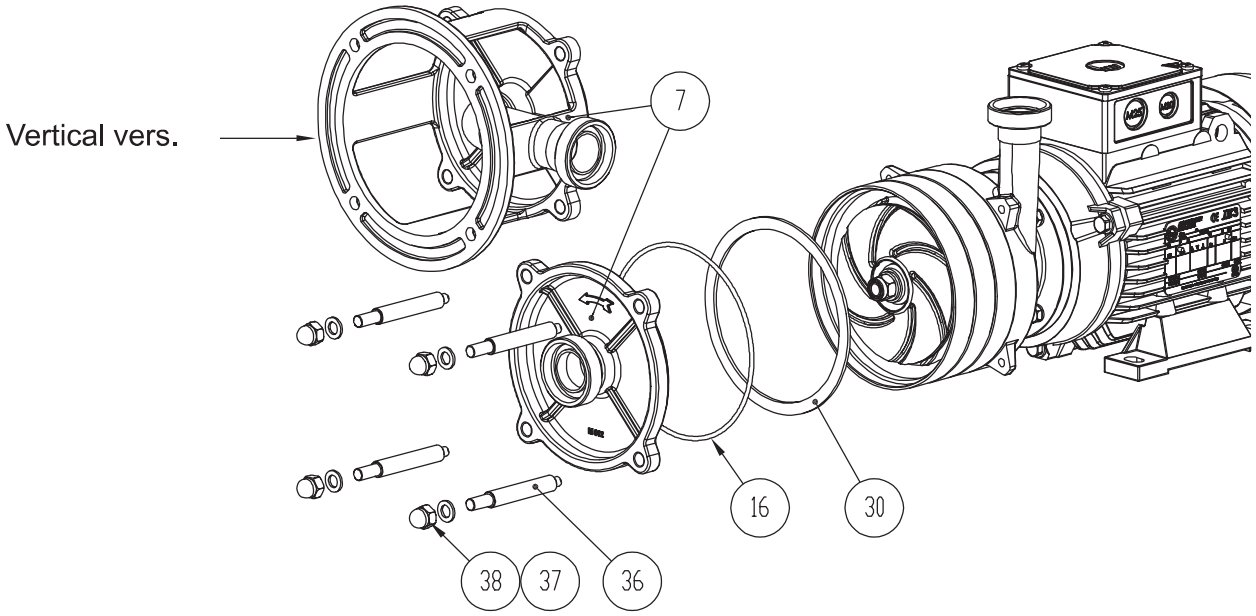


14.0 - PUMP DISASSEMBLY

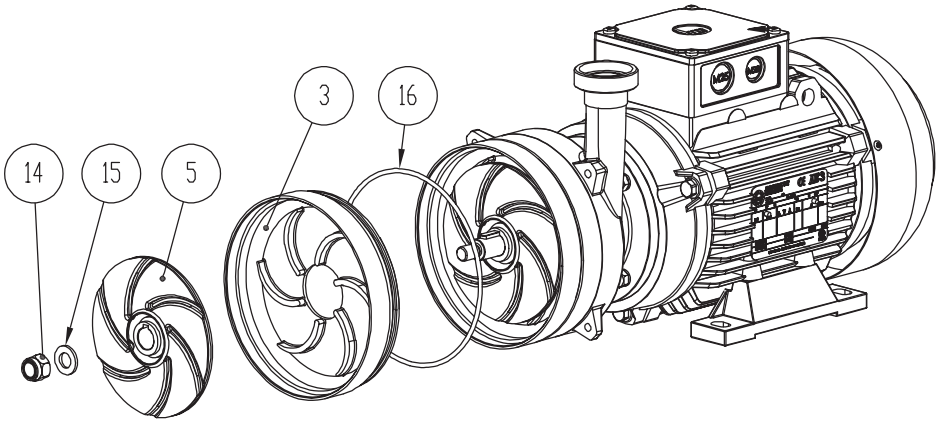
1. Proceed with disassembly by unscrewing the screws (45) in order to separate the shroud (44) from the eccentric closure casing (43) and remove it from the motor (50). Then unscrew the screws (40) and the relative washers (42) to remove the eccentric closure casing (43). To disassemble the motor support unit (82-83-84) unscrew the nuts (53), the bolts (52) and relative washers (54), and separate it from the motor feet (50). Unscrew the adjusters (83) and nuts (84) from the brackets (82).



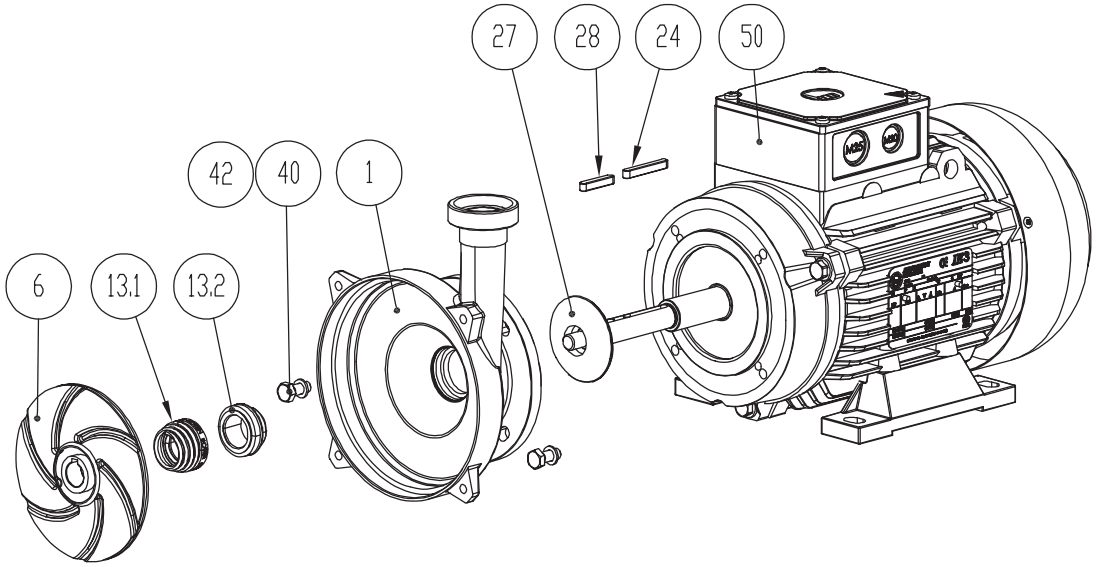
2. To access the internal parts, unscrew the nuts (38) and remove the washers (37) and tie rods (36). Disassemble the suction cover (7), the O-ring (16) and the O-ring stop washer (30).



3. Unscrew and extract the impeller cap nut (14) and the washer (15) to release the first impeller (5), which can then be removed from the shaft, followed by element (3) and the O-ring (16) . Proceed with the next stages, if present.



4. Disassembling the last impeller (6) reveals the mechanical seal (13). To remove the rotating part (13.1) from the shaft, first remove the keys (24 - 28) (up to CV 15 there is only one key). Proceed by unscrewing the screws (40) and the relative washers (42) which hold the casing (1) to the motor (50), so that they can be disassembled. Separate the internal fixed part of the seal (13.2) from the casing (1). Remove the splash guard ring (27) and inspect the O-rings (16) to see if they need replacing.



15.0 - PUMP ASSEMBLY

To reassemble the pump, carry out the operations described in the previous heading 14.0 in reverse order.

16.0 - CLEANING PROCEDURE

Use suitable personal protective equipment during cleaning operations.

16.1 - EXTERNAL CLEANING

Periodically clean the external parts of the pump and motor to prevent dust and deposits building up which could reduce heat dissipation and/or damage the external surfaces.

16.2 - CLEANING OF INTERNAL PARTS

Before performing any maintenance work which requires disassembly of the pumping parts, carry out internal cleaning by running the pump with washing fluids compatible with the pumped fluid and the pump itself.
If the pump needs to be sent back to C.S.F. Inox for maintenance/repair work, fill in the Declaration of Decontamination (page 28).

16.3 - CLEANING OF FOOD-CONTACT PUMPS

When a pump is intended to handle food products, it must be perfectly clean before it is put into operation.

This can be achieved by performing a CIP (cleaning in place) washing procedure or by disassembling the pumping part for manual cleaning.

It is up to the user to choose the most suitable cleaning method based on the type of food product being handled and the processing stage in which the pump is used.
In the case of CIP, the user is responsible for selecting the necessary detergents, operating temperatures and detergent product concentrations based on the type of food product being pumped.

The duration of each step in the CIP washing cycle depends on the type of dirt/residue that needs removing.
It is important to check the compatibility of the chemical products and operating temperatures used in the washing cycle with the pump components specified in the data sheet (elastomers, mechanical seal).

The cleaning process must also be carried out in the following situations:
- Before a long period of non-use
- Before any disassembly operations for maintenance work and after subsequent reassembly if worn parts have been replaced.
- Before restarting after a long period of non-use.
- At intervals established by the user based on the characteristics of the pumped products and the type of process in which the pump is used, in order to guarantee food product hygiene.

It is the user's responsibility to verify the effectiveness of the cleaning procedure adopted.

Alkaline detergents:

A sodium hydroxide/water solution may be used at concentration 1-3% at a temperature of 70-90°C; a surfactant could be added to increase the rinse cleaning.

Acid solution:

It is used to neutralize alkaline residual and for the passivation of the stainless steel surface; a solution of nitric acid at 1-2,5% could be used at ambient temperature up to 45°C.
Other acid solution could be: citric acid and water (0,5-3% at 70°C) and phosphoric acid at 0,5% with a temperature up to 45°C (with inhibitor of corrosion).

16.4 - CIP WASHING PROCEDURE

A typical example of a CIP washing procedure is described below:

a) Prerinse with cold water (15-25°C) for 10-15 minutes to remove any residue.
b) Warm prerinse with water at 45-60°C for 10 minutes.
c) Rinse with alkaline solution at 70-80°C for 20-30 minutes.
d) Intermediate rinse with water (warm or cold) up to 60°C for 5-10 minutes.
e) Rinse with acid solution like nitric acid for 10 – 15 minutes at ambient temperature.
f) Final rinse with cold water for 10-15 minutes or until any traces of cleaning agent have been removed.

Warnings:

a) During the CIP process there are thermal expansion: take care that there are not rapid temperature variations.
b) Chemical agents at high temperature can cause potential health risk: respect the safety regulation and use personal protective equipment.
c) Control the concentrations and temperature of chemical agents during the CIP.
d) Store the cleaning agents in compliance with the safety regulations.

Sterilization:

If requested, a sterilization can be carried out by means of hot water or steam; the pump must be stopped during the sterilization process with steam.
See the admissible temperature for sterilization depending on gasket compound.

Elastomers / temperature limits	Steam/hot water	Chemical bactericidal
EPDM	121°C	82°C
FPM/FKM	149°C	82°C

Impeller cap nut cleaning and sterilization:

1) The dismantled cap nut must be cleaned before assembly (internal thread).
2) Clean the cap nut with an ultrasonic cleaning system or detergent followed by rinsing with clean water.
3) Sterilize the cap nut using steam at 143°C for 30 minutes in an autoclave or using chemicals (for example glutaraldehyde-based solutions). Do not use chlorine solutions because stainless steel could be damaged by corrosion.

DECLARATION OF DECONTAMINATION

In observance of the legal provisions in force and to protect the health and safety of our personnel, you must fill in, sign and return this declaration to us before we can processyour order. Please make sure that the same declaration is attached to the outside of the packaging.

Shipping address: **C.S.F INOX S.p.a.** Strada per Bibbiano, 7 42027 Montecchio E. (RE), Italy	**For information contact:**

***Mandatory fields**

* Pump: ____________________ *Serial Number: __________________________
Commissioning date: ____

* Field of application: ____
Fluid handled: __________________ ______________________________________

Process data: Temperature: ____________ [°C] Pressure: ______________ [bar]

Flow rate:_____________ [m^3/h] Viscosity:______________ [mm^2/s]

*** Product and warnings:**

	Product/ concentration	Flammable	Toxic	Corrosive	Hazardous/ irritant	Other**	Harmless
Processing product		☐	☐	☐	☐	☐	☐
Cleaning product		☐	☐	☐	☐	☐	☐
Parts cleaned by		☐	☐	☐	☐	☐	☐

**** Explosive; oxidant; harmful for the environment; biological risk; radioactive.**
Please mark the appropriate warning, include the material safety data sheet and, if necessary, any further specific warnings.

*** Reason for returningitem/s:**

____
____

* ☐ Particular safety precautions for further handling are not required
* ☐ The following precautions are required in the case of cleaning liquids, fluid residues and disposal:

____
____

Company details:
Company: ______________________________ Phone no.: ________________
Contact: ______________________________ Fax: ____________________
Address: ______________________________ Email: ____________________
Your order number:________________________

‘ We hereby certify that this form has been filled in to the best of our knowledge and in accordance with the legal provisions in force. Furthermore, we certify that the parts have been carefully cleaned and to the best of our knowledge are free from residues in quantities which could be deemed harmful. ’

Place, date ……………………………………………………

Name, department ………………………………………………..

Signature

……………………………………………………

17.0 - WASTE DISPOSAL AND DECOMMISSIONING

The pump, complete with electrical drive system, is a plant component which must be disposed of in accordance with regulations governing the disposal of waste derived from professional electrical and electronic equipment.

Neither the pump nor any of its parts may be disposed of with household waste.

17.1 - PACKAGING MATERIALS

The packaging material consists of wooden or cardboard boxes, polyethylene shrink-wrap covers and polyurethane foam, galvanized steel screws, polyester belts.
Wooden or cardboard boxes and screws can be recycled or sent to authorized waste disposal facilities.
The remaining packaging materials must be sent to authorized waste disposal facilities.

17.2 - WASTE RESULTING FROM MAINTENANCE OPERATIONS

All materials replaced during maintenance operations must be disposed of in compliance with current regulations and sent to an authorized waste disposal facility.
Consult the pump's bill of materials, supplied with this manual, to identify the materials used to make the replacing components.
All replaced metal parts must be sent to metal recycling centres; plastic or elastomeric parts and spent lubricants must be disposed of at authorized waste disposal facilities.

17.3 - DISPOSAL OF THE PUMP

For disposing the pump please observe the following instructions:
- Disconnect electrical and hydraulic connections according to technical rules and laws in force.

Disassemble all components of the pump for separate dismantling; wash the components and clean the structure accurately.

The main components of the pump are made from the following materials:
- Pump casing, cover, impeller, shaft, impeller nut: AISI 316L stainless steel (for special alloy pumps, see the bill of materials)
- Elastomers/Polymers NBR-EPDM-FKM-FFKM-PTFE
- Support and external parts: AISI 304, cast iron with corrosion proof treatment
- Other components: composite mechanical seals, stainless steel and elastomers, ball and roller bearings.
- Motor: Aluminium - Cast Iron - Copper (consult the manual supplied by the manufacturer)
- Spend oils and greases

For further details, consult the pump's bill of materials, supplied with this manual, to identify the materials used to make the various components.

There are no components containing asbestos, cadmium or lead, PBB or PBDE.

The components of the pump should be properly got rid, according to the corresponding rules in force in receiver's country.

DECLARATION OF CONFORMITY

The company: **C.S.F. Inox S.p.A.**

based in: **Strada per Bibbiano, 7**
Montecchio Emilia (R.E.)
ITALIA

hereby declares, under its sole responsibility that the pump:

CENTRIFUGAL PUMP

Type XXX

Serial no. XXX Year XXX

CE Declaration of Conformity (Ann. II.A, 2006/42/EC)

to which this declaration refers, is in conformity with safety requirements according to Directive 2006/42/EC.

Name and address of the person authorized to compile the technical file:
C.S.F. Inox S.p.A. Strada per Bibbiano 7 - 42027
Montecchio Emilia (RE) ITALY

Applied Regulations:

EN 12100 2010
EN 809 2009

Food products-contact suitability declaration

is made with materials suitable to come in contact with food
according to the regulation (EC) no. 1935/2004.

2014/35/EU : electrical material intended for use within certain voltage limits

Montecchio Emilia, XX-XX-XX

The Chairman Mr. Rolando Paterlini

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