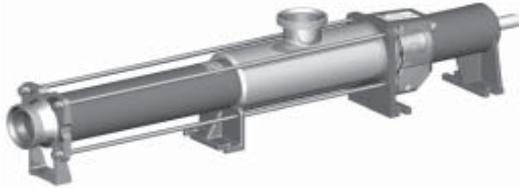


MA

Cod. CED: KMA



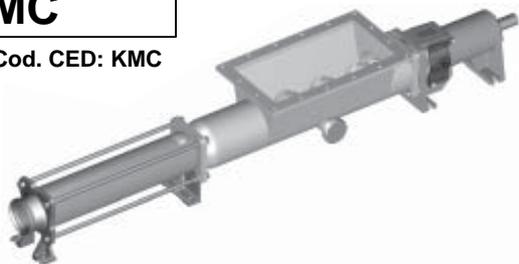
MI

Cod. CED: KMI



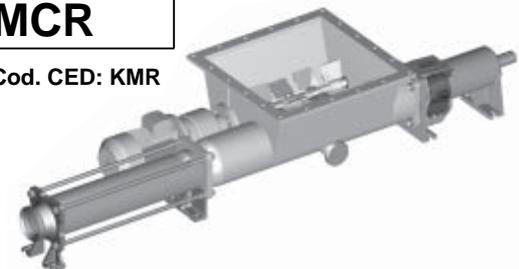
MC

Cod. CED: KMC



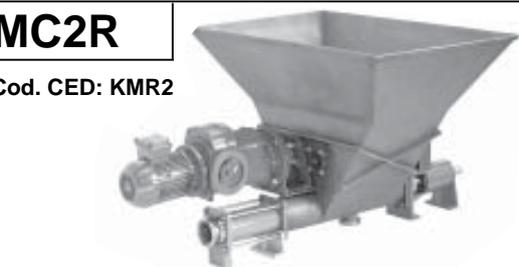
MCR

Cod. CED: KMR



MC2R

Cod. CED: KMR2



TECHNICAL SERVICE
01903 730900

**PROGRESSIVE CAVITY
PUMPS
MIE SERIES EXEC.
WITH MECHANICAL
CARTRIDGE SEAL
"C2D"**

**INSTRUCTIONS FOR INSTALLATION,
OPERATION AND MAINTENANCE**



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SYMBOLS

	Warning: pay great attention to the text parts indicated by this symbol.
	Danger: the non-observance of instructions can cause serious damages to persons and/or objects.
	Danger: only skilled personnel is allowed to carry out operations concerning the electric parts.



FOREWORD

- Read the instructions carefully and keep them for future consultation.
- CSF 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 and serial number in order to ensure fast and efficient service: the complete code is given on the plate and in the purchase documents.

1 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 are available in different executions and sizes, with direct motor coupling and independent support (version N) or with flanged support (version E); the special telescopic assembly allows to disassemble the whole pump very easily, making inspection, cleaning and maintenance of its components extremely simple.

2 APPLICATIONS

With this kind of pump (provided that the elastometer used for the stator is chemically and mechanically resisting) it is possible to pump every kind of paste and liquid. 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 the product does conserve its features and characteristics. The pumps are principally used in the following fields: food processing and beverage industry, cosmetic and pharmaceutical industry, ceramic, building and related industries, chemical and textile industry, water treatment plants.

2.1 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.
- 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;
- 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 dangerous and arrange for adequate safety measures.

3 NON PERMITTED USES

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



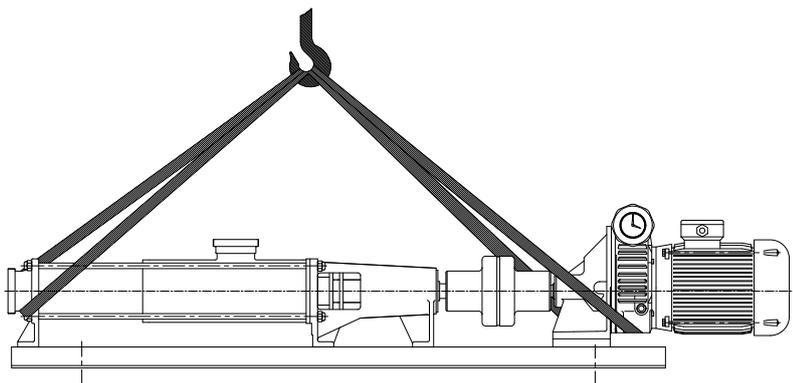
THEREFORE IT IS FORBIDDEN TO USE THE PUMP IN ENVIRONMENTS REQUIRING A HIGHER SAFETY LEVEL OF THE MOTOR AND OF THE ELECTRIC COMPONENTS.

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

4 INSTALLATION

4.1 HANDLING AND FOUNDATION

Use lifting belts of adequate dimensions to lift and move the pump-motor unit (Pict. 1). The pump-motor unit is fixed to a base plate made from welded profile iron; an adequate concrete foundation with steel reinforcements and embedded studs is necessary to fix the pump- motor unit on the ground. If you want to place the pump- motor unit on a floor which is elevated in relation to the ground floor, provide an adequate structure to fix the unit correctly.

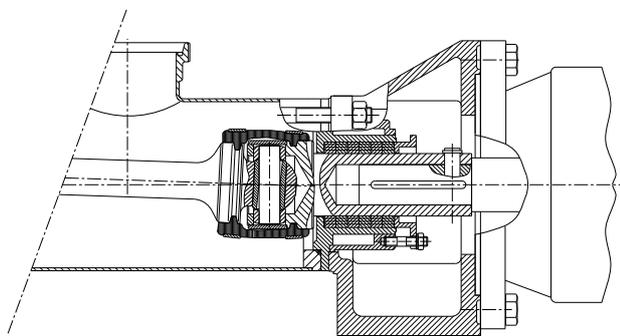
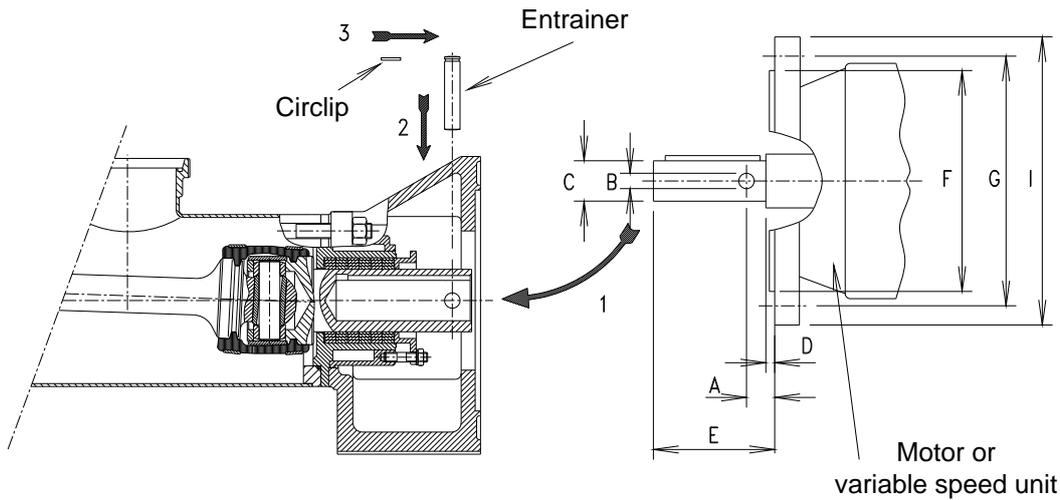


Pict. 1

4.2 MOTOR INSTALLATION

- VERSION "E" (monoblock)

To be coupled to the pump, the motorization shaft must protude as shown on table 1. While coupling, lubricate motor shaft, then assemble it on the pump, tallying the pin holes. Fix the motor to the flange by means of the bolts, then assemble pin and circlip. Make sure that the entrainment pin is correctly positioned, so as to avoid any shifting of the pump's internal axis or any contact with the structure, which could damage or compromise the pump working order.



Flange dimension			
TYPE	F	G	I
M 25	70	85	105
M 40	110	130	160
M 50	130	165	200
M 55	130	165	200
M 60	130	165	200
M 65	180	215	250
M 70	180	215	250
M 80	180	215	250
M 90	180	215	250
M 100	230	265	300
M 110	230	265	300
M 115	230	265	300
M 125	230	265	300
M 130	230	265	300
M 150	230	265	300
M 160	230	265	300
Mot. IEC 132-160			
M 125	250	300	350
M 130	250	300	350
M 150	250	300	350
M 160	250	300	350
Mot. IEC 180-200			

Shaft projection																				
	M25	M40	M50	M55	M60	M63	M65	M70	M80	M83	M90	M100	M103	M110	M115	M125	M130	M150	M160	
A	15	20	25	25	25	25	25	25	26	26	26	30	30	30	30	32	32	32	32	
B (H7)	15	8	10	10	10	14	14	14	16	16	16	16	16	16	16	18	18	18	18	
C (j6)	14	19	24	24	24	32	32	32	35	35	35	42	42	42	42	55	55	55	55	
D	0	0	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	
E	30	50	80	80	80	100	100	100	100	100	100	120	120	120	120	120	120	120	120	

- VERSION "N" (with coupling joint)

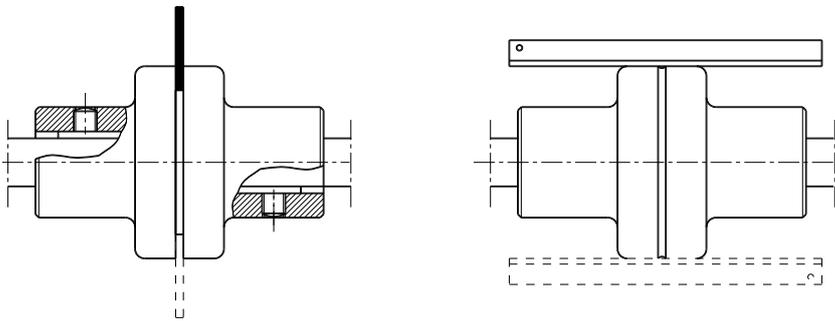
Insert joints or pulleys on shaft end, without using hammers or other tools, so as not to damage the bearing races on the support. The correct pump-motor alignment is essential to a good working order. The pumps supplied complete with motor and base have already been aligned in our factory during assembling. Nevertheless a distorsion of the base plate is possible when it is fixed on an irregular surface. After having fixed the pump, it is therefore necessary to disassemble the joint cover and check the alignment again by means of a ruler (Pict. 2).

Max. admissible deviation in our standard joints:



Radial deviation: 1% of the max. outer \varnothing .
Distance between the two half-joints: 3÷4 mm.

Angular deviation: 1°.



Pict. 2

4.3 PIPING

In order to avoid harmful strains, connect the suction and outlet pipelines to the pump orifices without forcing them into their position; the pipelines must be hold up independently without loading on the pump.

The internal diameter must fit the pump connections; in any case the internal diameter must not be smaller in order to avoid losses of charge and/or low performances. Always use tube bends with a wide radius and in case of diameter variations along the pipeline use adequate reduction pipes, in order to avoid the formation of air pockets (Pict. 3).

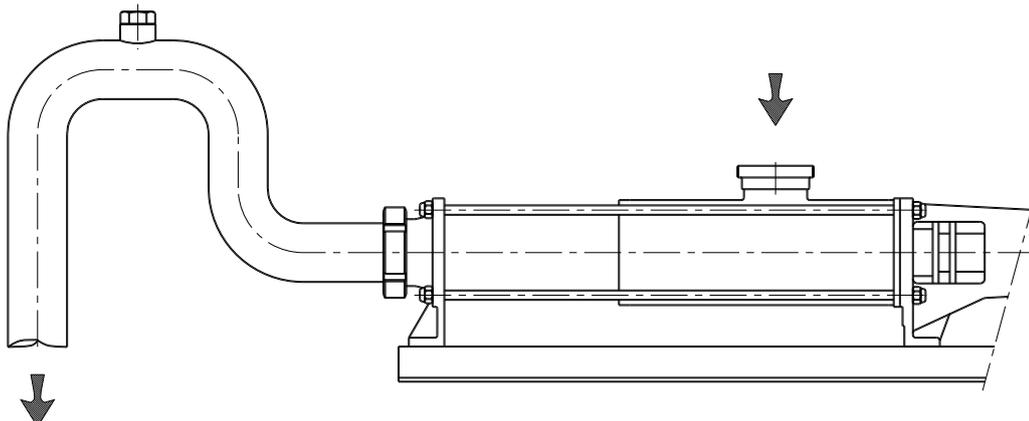


Pict. 3

When pumping hot liquids arrange for expansion joints to absorb pipeline extensions.

The suction pipeline must absolutely be free from air inlets.

To avoid dry working, if the pump is not installed under the product level, create a siphon with the pipeline, by placing a part of it upwards. This, to have product enough to lubricate the stator,

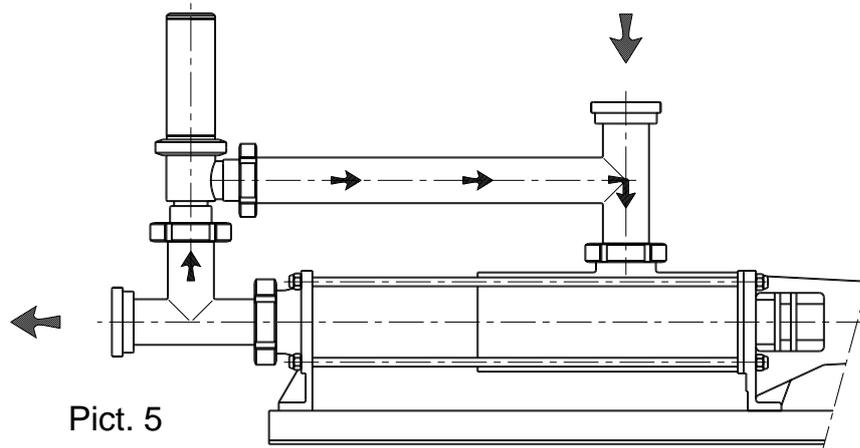


Pict. 4

when setting it at work again (Pict. 4).

At the highest point you must provide for a tap to carry out the siphon filling before the first setting at work, and every time you empty the pump. If it is possible that the suction pipeline gets empty, the part of pipeline placed upwards and connected to the suction inlet must contain at every start a product volume equal at least to the air volume to be bled from the suction pipeline; this volume has to be increased of a 10% in case you suck from the end connection.

Arrange for an automatic pump stopping device, in case of product lack when feeding the pump. Install a small by-pass between suction inlet and outlet to allow the circulation of a certain quantity of liquid, adequate for the lubrication (Pict. 5).



Pict. 5

4.4 ELECTRICAL CONNECTION



The connection to the electric system has to be carried out after the hydraulic connection; the motor drive system must be carried out according to technical directions and law. In particular a manual power supply disconnecting device with an adequate current breaking power must be installed; further install an overload and overcurrent protection (for example cut-outs, automatic switches, etc.) and in case provide for a proper device to avoid spontaneous restarting.



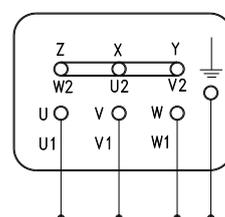
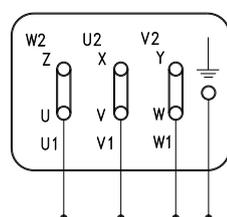
Check that voltage, network frequency and number of phases conform to the technical features shown on the electric motor. The safety level of all components used for electric connection (cables, cable presses, switches and protections) must conform to the environment where the unit is installed; further it is important to use electric cables of suitable section corresponding to the current values indicated on the motor plate, in order to avoid the overheating of the electrical conductors.

First carry out the motor grounding, using the clamp on the motor and an electric conductor of suitable section.



The cable connection to the terminal box can both be star or delta connection, according to the values indicated on the motor plate and to the network voltage shown below in Pict. 6; the clamps must be clean and carefully tightened; do not force the clamps.

Lower voltage



Higher voltage

Pict. 6



When starting the motor, current absorption raises (5-6 times the nominal value) for a very short period; if the network can not bear this absorption increase, we advise to use star or delta starters or other systems (for example auto-transformer).

CSF Inox S.p.A. is not liable for damages to persons and/or objects in case of non-observance of technical directions and laws.

5 OPERATION

Do not use the pump with a pressure which is higher than indicated on the table (Pict. 7).

Pump	Max. pressure	Pump	Max. pressure	Pump	Max. pressure
M 25 - 1	6 bar	M 70 - L	6 bar	M 115 - 1	6 bar
M 25 - 2	12 bar	M 80 - 1	6 bar	M 115 - 2	12 bar
M 40 - 1	6 bar	M 80 - 2	12 bar	M 125 - 1	6 bar
M 40 - 2	12 bar	M 80 - 2S	22 bar	M 125 - 2	12 bar
M 50 - 1	6 bar	M 80 - 4	24 bar	M 125 - 2S	20 bar
M 50 - 2	12 bar	M 90 - L	6 bar	M 125 - 4	24 bar
M 55 - 4	24 bar	M 83	6 bar	M 130 - L	6 bar
M 60 - L	6 bar	M 100 - 1	6 bar	M 150 - 1	6 bar
M 63	4 bar	M 100 - 2	12 bar	M 150 - 1S	10 bar
M 65 - 1	6 bar	M 100 - 2S	22 bar	M 150 - 2	12 bar
M 65 - 2	12 bar	M 100 - 4	24 bar	M 160 - L	6 bar
M 65 - 2S	20 bar	M 103	4 bar		
M 65 - 4	24 bar	M 110 - L	6 bar		

Pict. 7

5.1 PRELIMINARY OPERATIONS AND STARTING

- Check the direction of rotation indicated on the pump.
- Suction pipeline and pump must be filled with liquid; it is possible to distinguish two cases:
 - a) When the pump must work with a negative suction height, fill the pump by filling liquid in its pipelines.
 - b) When the pump must work with a positive charge, open suction and outlet valves until the manometer on the outlet side of the pump indicates a pressure corresponding to the positive suction charge.



The pump must never run dry; only few seconds of dry working are enough to damage the stator.

- If the seal box is externally cooled, open the cooling water feeder and adjust the water circulation.

- Check that suction and outlet valves are completely opened.



The screw pump is a progressive cavity pump; consequently it must never work with a closed gate on the outlet side.

- Start the pump and check the direction of rotation again.

5.2 WORKING IRREGULARITIES

We are herewith listing some of the possible working irregularities which may occur using the pumps, with a table allowing to find out the possible causes and the way to remove the trouble.

Trouble:

-pump not turning because:

- A) it does not start
- B) it gets locked
- C) the magneto-thermic switch releases



		TROUBLE										
		A	B	C	D	E	F	G	H	I	L	M
POSSIBLE CAUSES AND NECESSARY OPERATIONS TO REMOVE THEM	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				●	●	●					●



- pump turning but:

- D) it does not self prime
- E) delivery is inadequate
- F) flow is not uniform
- G) pump is noisy
- H) stator gets worn out too quickly
- I) rotor gets worn out too quickly
- L) shaft seal leaks
- M) outlet pressure is poor.

Possible causes and necessary operations to remove them:

- 1) The pump being new, there is too much friction or the rotor gets stuck on the stator.
 - Fill the pump, if necessary with lubricating liquid, and make it turn manually by means of a suitable tool.
- 2) Outlet pressure is too high.
 - Check pressure by means of a manometer and compare it with the features mentioned in your order.
 - Check that there are no obstructions along outlet pipelines.
- 3) The stator got swollen and it does not withstand the product to be pumped.
 - Check if the pumped product corresponds to the one mentioned in your order. Change stator material.
- 4) The product to be pumped contains too big solid particles.
 - Increase liquid percentage. Reduce dimension of solid particles. Install a bigger pump.
- 5) Inlet pipeline is obstructed.
 - Remove the obstruction and take measures to avoid the formation of other obstructions.
- 6) O-rings of mechanical seal are damaged.
 - Change O-rings. Check compatibility of O-rings material with the product to be pumped. In case, change O-rings material.
- 7) Mechanical seal rings have seized.
 - Change rings. Check technical features mentioned in your order. In case, use rings made of a material, which is more suitable to the product to be pumped.
- 8) Direction of rotation is wrong.
 - Change electric connection.
- 9) Gland seal does not fit to the product to be pumped.
 - Change packing gland seal with a different type.
- 10) Packing gland seal compression is badly adjusted.
 - Adjust compression: in case change packing gland seal.
- 11) Pump is turning too fast.
 - Reduce revolution number. In case you want to get the same delivery, use a bigger pump.
- 12) Product to be pumped is too viscous.
 - Increase temperature, avoiding inlet cavitation.
- 13) Product to be pumped is too heavy.
 - Dilute it by means of a lighter fluid or use a more powerful motor.
- 14) Articulated joints are worn out.
 - Change worn out parts and grease the joints by means of adequate grease.
- 15) Pump and motor are not aligned.
 - Reset alignment.
- 16) Coupling joint is damaged.
 - Change damaged parts, taking care not to alter the pump-motor alignment.



- 17) Rolling bearings are damaged.
- Change and lubricate bearings. If the product temperature is very high, increase bearing slack and use a lubricator suitable for high temperatures.
- 18) Stator is damaged.
- Change stator. Check compatibility of stator material with product to be pumped. In case, change stator material.
- 19) Rotor is worn out.
- Change rotor. In case, change rotor material or coating.
- 20) Motor works in two phases.
- Electric features of motor do not correspond to network features. Check electric system and electric features of motor.
- 21) The product is too hot and there are dilatations of the stator.
- If it is not possible to decrease the product temperature, install a rotor with a smaller diameter.
- 22) A foreign body got into the pump.
- Take the foreign body off and check if rotor and stator got damaged.
- 23) With pump stopped the product to be pumped gets hard or settles.
- Clean pump and repeat cleaning after every working cycle.
- 24) Inlet suction is too high (available NPSH is lower than requested NPSH).
- Reduce the inlet losses of charge, install the pump in lower level (increase available NPSH).
- 25) Pump is working dry.
- Fill the pump and install a dry running protection device.
- 26) Air is getting into the suction pipeline.
- Increase product level in the inlet, remove incoming vortexes. Check that there are no air infiltrations from the connections and check connection sealing.
- 27) Pump is turning too slowly.
- Install an adjustment device and increase revolution number.
- 28) By using reduced diameter rotors, working temperature is not reached.
- Heat stator and set it to working temperature.

6 LUBRICATION

CSF Inox progressive cavity pumps are already equipped with the necessary lubricants to ensure correct working conditions for 3000-4000 hours (2 years). You do not need to refill the lubricant in the articulated joints, but you will replace it while servicing or changing worn-out parts for maintenance. For the bearings assembled on the support (Version E excepted) there are two lubricators to refill the grease every 4 or 5 months; pay attention not to overdo it. Otherwise replace grease while servicing; before reassembling clean seats and bearings carefully.

Recommended lubricants for articulated joints:

Grease "Mobil" TEMP S.H.C. 100 or equivalent.

Vaseline grease or similar for pumps for food industry.

Recommended lubricants for rolling bearings:

see table:

pos.	Make	Type	N.L.G.I.
1	DANKELL	BEARING 3	3
2	ROL	MERCURY 3	3
3	AGIP	GR MU 3	3
4	IP	ATHESIA 3	3
5	ESSO	BEACON 3	3
6	MOBIL	MOBILUX 3	3
7	BP	LT 3	3



7 MAINTENANCE M 50-55-60 exec. E

7.1 MECHANICAL SEAL

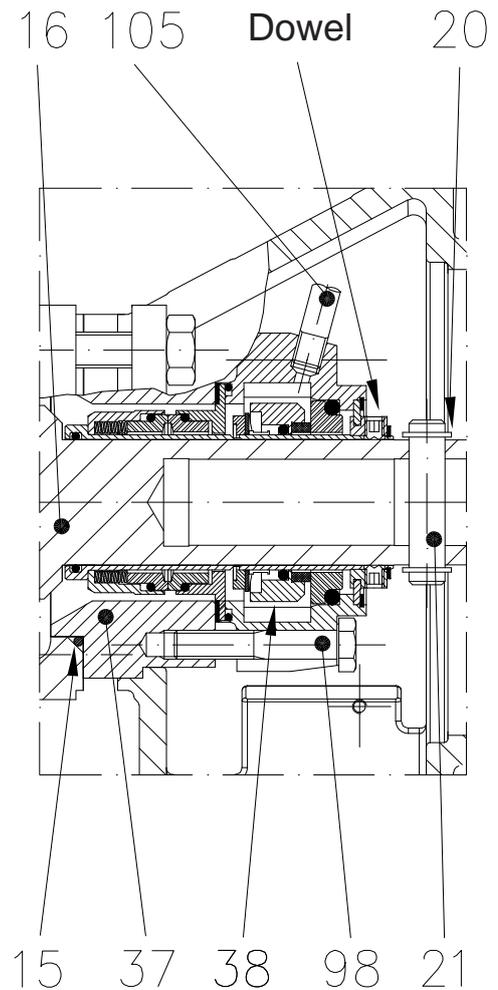
The mechanical seal ensures the absence of leakages of the product pumped, consequently if the seal leaks it means that it is not efficient. The mechanical cartridge seal type C2D is reversible with circulation of the washing and cooling liquid. It consists of a seal built onto a shaft lining and a flange. The system guarantees the perfect positioning of the mechanical seal without having to perform assembly measurements.

It is used with products tending to form crystals, to glue, to harden, to be abrasive, to reach high temperatures and whenever the seal life is limited. The function of the flushing is to clean, lubricate and cool the seal; the circulating liquid must be clean.

In case of leakage of the seal, the flushing liquid highlights its presence.

To ensure the regular operation of the pump, the flushing liquid must start circulating inside the casing before the pump itself starts and must stop circulating only after the pump has been stopped.

The flushing liquid must be under pressure (1 ÷ 1,5 bar) by continuous flow.



Code	Pos.	Denomination	Q.ty	Recommended spare parts	Material
RDCAA.E10	20	Seeger E10	2		AISI 304
TGCAA0010	16	Shaft, driving	1		AISI 304
TGANI0301	21	Pin, drag	1		BOHLER N360
RAAGM177	15	OR 177	1	•	NBR
TCHBB0008F	37	Housing, seal	1		AISI 316
1F35RC2D.KKV.ZUV	38	Mechanical seal	1	•	-
TBEAA1260	105	Flushing pipe	2		AISI 304
RBAAA03X40	98	Screw, hex-head	4		AISI 304

7.2 DISASSEMBLY

PRELIMINARY PROCEDURES BEFORE DISASSEMBLY:

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;
- 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 dangerous and arrange for adequate safety measures.

7.3 DISASSEMBLY OF THE MECHANICAL SEAL

- Work in a clean area away from sources of dust, shavings etc.

Make sure the pump cannot move while disassembling the parts.

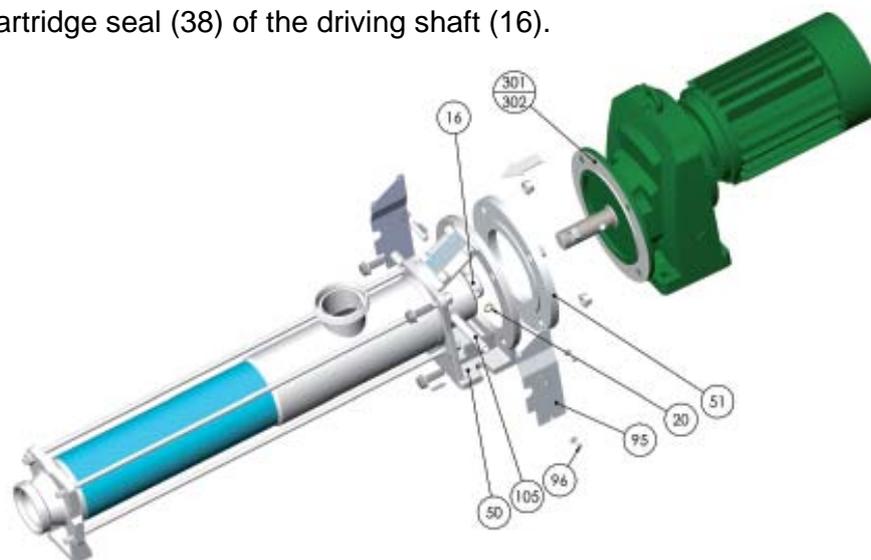
Unscrew the screws (96) and remove the protection guards (95). Take the flushing pipes off (105).

Release the mechanical seal (38) by loosening the drive grub screws situated on the bush and by unscrewing the screws (98). Using the special grippers, take the locking circlips off (20) and, with the aid of a pin extractor, extract the drag pin (21). Unscrew the nuts on the flanges of the lantern (50), remove flange (51) and slide the drive off (301-302).

Be very careful not to tilt the drive: it must be taken out perfectly horizontal to avoid damaging the mechanical seal (38) on the driving shaft (16).

NB: When separating the drive from the pump, it is important to support it with lifting belts to avoid damages.

Slide the cartridge seal (38) of the driving shaft (16).



7.4 DISASSEMBLY OF THE PUMP

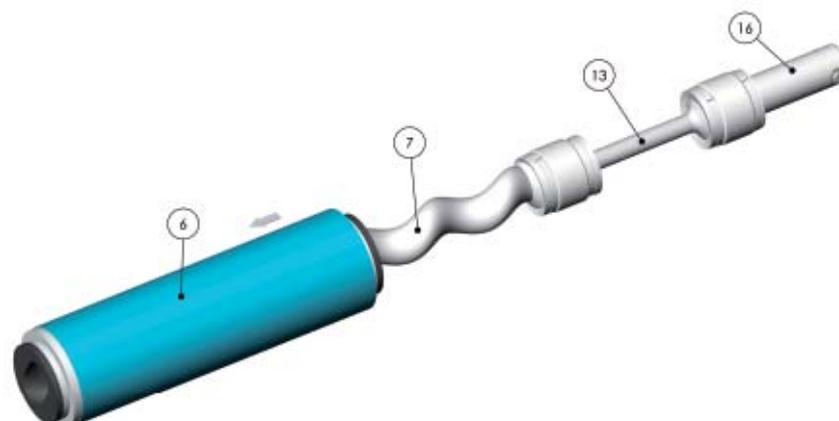
(Refer to the sectional drawing no. 3574)

Take the delivery outlet (1) and the tie-rods (3) off, by unscrewing the nuts (8). Slide the stator off (6) together with the complete axle [rotor (7) – connecting rod (13) – driving shaft (16)].

Unscrew the screws (12) and separate the suction casing (14) from the lantern (50) and from the seal housing (37) and slide the "O-Ring" off (15).

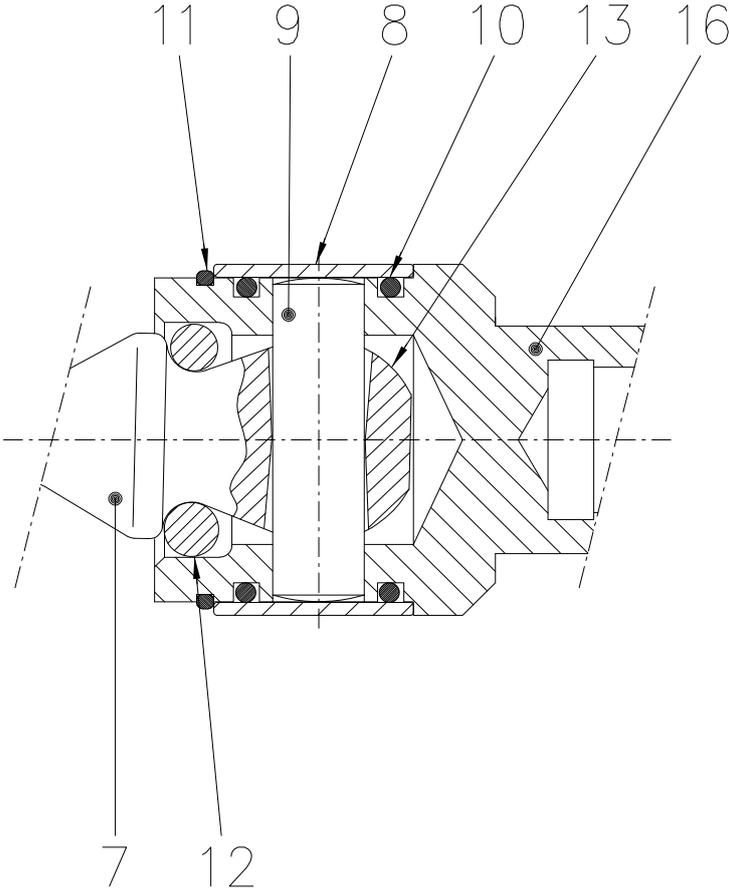
Clamp the complete axle of the pump with stator in a vice.

Slide the stator out (6), turning it anti-clockwise using a chain spanner.





Proceed as described to remove the stator (6) in order to expose the rotor (7) then continue with the rotor-connecting rod axle with the two knuckle joints covered with the metal sleeves. Clean around the sleeve and spray detergent in the slots if necessary. Remove the snap ring (11) and move the metal covering sleeve to the side (8). Remove the knuckle pin (9) using a pin extractor, thus releasing the rotor (7). Take the seal gaskets (10-12) out of their seats.



Do the same for the second sleeve, releasing the driving shaft (16).

8 MAINTENANCE M 100-125 exec. E

8.1 MECHANICAL SEAL

The mechanical seal ensures the absence of leakages of the product pumped, consequently if the seal leaks it means that it is not efficient. The mechanical cartridge seal type C2D is reversible with circulation of the washing and cooling liquid. It consists of a seal built onto a shaft lining and a flange. The system guarantees the perfect positioning of the mechanical seal without having to perform assembly measurements.

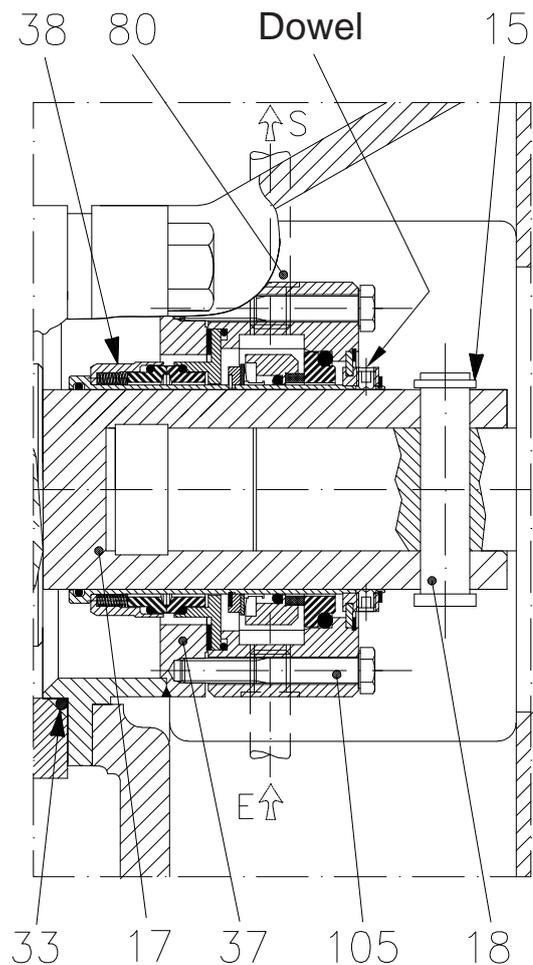
It is used with products tending to form crystals, to glue, to harden, to be abrasive, to reach high temperatures and whenever the seal life is limited.

The function of the flushing is to clean, lubricate and cool the seal; the circulating liquid must be clean.

In case of leakage of the seal, the flushing liquid highlights its presence.

To ensure the regular operation of the pump, the flushing liquid must start circulating inside the casing before the pump itself starts and must stop circulating only after the pump has been stopped.

The flushing liquid must be under pressure (1 ÷ 1,5 bar) by continuous flow.



Code	Pos.	Denomination	Q.ty	Recommended spare parts	Material
RDCAA.E18	15	Seeger E18	1		AISI 304
TGCAA0050	17	Shaft, driving	1		AISI 304
TGACA0305	18	Pin, drag	1		AISI 420
RAAGM4650	33	OR 4650	1	•	EPDM
TCHBB0028F	37	Housing, seal	1		AISI 316
1F80RC2D.KKV.ZUV	38	Mechanical seal	1	•	-
TBEAA1350	80	Flushing pipe	2		AISI 304
RBAAA10X40	105	Screw, hex-head	2		AISI 304

8.2 DISASSEMBLY

PRELIMINARY PROCEDURES BEFORE DISASSEMBLY:

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;
- 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 dangerous and arrange for adequate safety measures.



8.3 DISASSEMBLY OF THE MECHANICAL SEAL

- Work in a clean area away from sources of dust, shavings etc.

Make sure the pump cannot move while disassembling the parts.

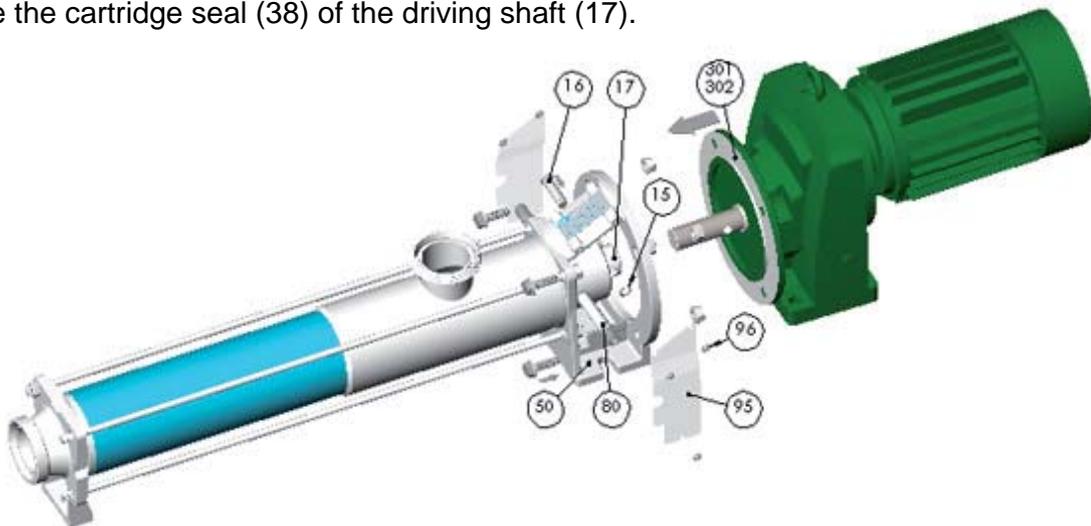
Unscrew the screws (96) and remove the protection guards (95). Take the flushing pipes off (80).

Release the mechanical seal (38) by loosening the drive grub screws situated on the bush and by unscrewing the screws (105). Using the special grippers, take the locking circlips off (15) and, with the aid of a pin extractor, extract the drag pin (16). Unscrew the nuts on the flanges of the lantern (50) and slide the drive off (301-302).

Be very careful not to tilt the drive: it must be taken out perfectly horizontal to avoid damaging the mechanical seal (38) on the driving shaft (17).

NB: When separating the drive from the pump, it is important to support it with lifting belts to avoid damages.

Slide the cartridge seal (38) of the driving shaft (17).



8.4 DISASSEMBLY OF THE PUMP

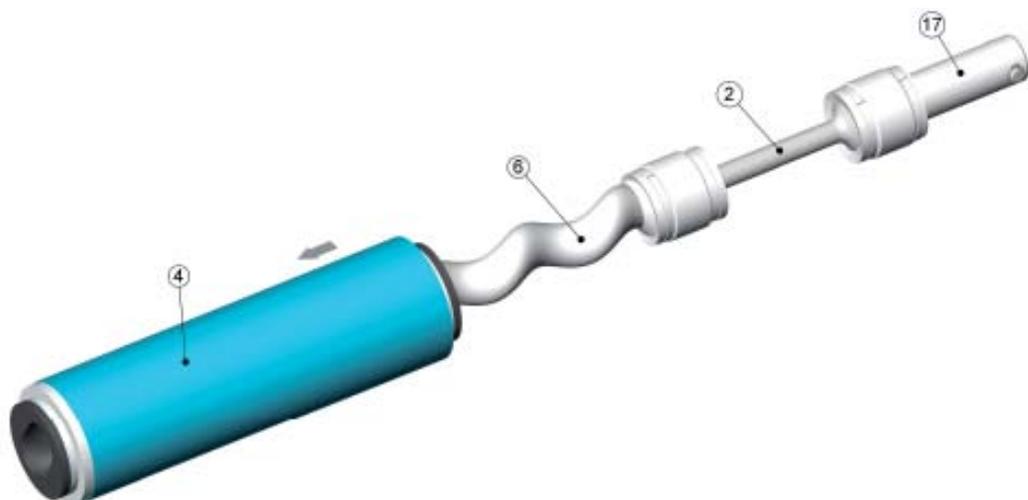
(Refer to the sectional drawing no. 3498)

Take the delivery outlet (1) and the tie-rods (3) off, by unscrewing the nuts (11). Slide the stator off (4) together with the complete axle [rotor (6) – connecting rod (2) – driving shaft (17)].

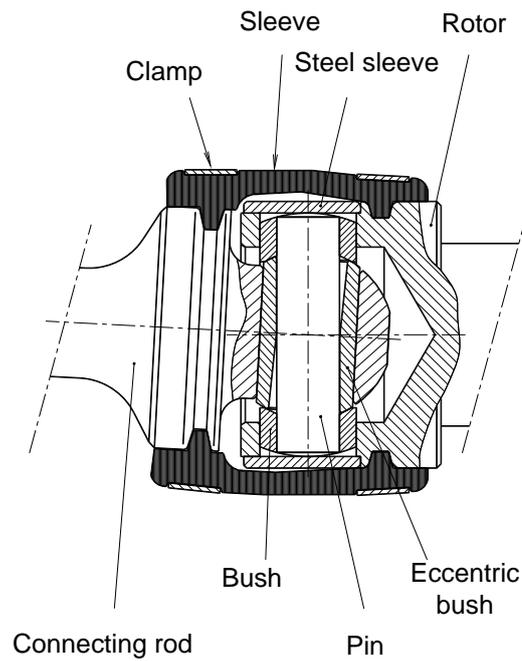
Unscrew the screws (12) and separate the suction casing (5) from the lantern (50) and from the seal housing (37) and slide the "O-Ring" off (33).

Clamp the complete axle of the pump with stator in a vice.

Slide the stator out (4), turning it anti-clockwise using a chain spanner.



Follow the same procedure as described to extract the stator, in order to uncover the rotor. Then proceed with the rotor-connecting rod axis with the two joints covered by the sleeves. Act only on the sleeve next to the rotor, by removing the two clamps. Clean the area around the sleeve and in case, spray a detergent into the fissures. Put two screwdrivers under the sleeve, then push strongly, until the sleeve gets out of the throats. Extract the steel sleeve and eject the pin from the bush hole by means of a pin extractor. The rotor is now free.



Proceed in the same manner for the second sleeve, freeing the driving shaft (17).

Declaration of conformity

The company: **CSF Inox S.p.A.**
based in: **Strada per Bibbiano, 7**
Montecchio Emilia (R.E.)
ITALY

declares under its own sole responsibility that the machine:

- **progressive cavity pump**
- **serial no.** _____ - **type** _____

CE declaration of conformity (Ann. II.A, 98/37/EEC)

to which this declaration refers, is conform to safety requirements according to 98/37/EEC norms and amendments.

Manufacturer declaration (Ann. II.B, 98/37/EEC)

cannot be operated before the machine in which is assembled, will be declared in conformity with safety requirements according to 98/37/EEC norms and amendments.

2006/95/EEC : electrical equipment designed for use within certain voltage limits

2004/108/EEC : 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.

According to the following standards:

EN 12100 1 - 2 : 2005

EN 809 : 2000

EN 13951 : 2004

Montecchio Emilia, 01.01.2008

The Chairman
Riccardo Paterlini

FAC-SIMILE





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