

INOXMIMGRUP, SL
Approval declaration CE

The manufacturer: **INOXMIMGRUP, SL**

C/ Rubió i Ors, Sector Industrial del Terri
 17834 Porqueres (Girona)-Spain

By this, we declare that the centrifugal pumps:


Name	Type	Building year
CENTRIFUGAL PUMP	FL501CS	2012
CENTRIFUGAL PUMP	FL502CS	2012
CENTRIFUGAL PUMP	FL503CS	2012
CENTRIFUGAL PUMP	FL504CS	2012

Fulfil the essential requirements of the machine guidelines 2006-042, and it keeps the regulated legislation:

UNE-ENISO 12100-1
 UNE-ENISO 12100-2
 UNE-EN 809: 1999
 EN 60034/5

By royal decree 56/1995

Porqueres, February del 2012

Jordi Bosch

Technical head

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1. **DESCRIPTON AND KIND OF PUMPS**

a. **Equipment description**

The sanitary centrifugal pumps from the "500" serial are mainly used in processes of the food, pharmaceutical and cosmetic industry.

They are manufactured with a section, impeller, shaft and conductions in stainless steel Aisi 316 and the lantern, coating and tripod in stainless steel Aisi 304. The material of the mechanical seal is chosen according to every application, and the same for the joint material. If the customer does not specify the opposite in the purchase, the motor is three-phase with a protection level IP55.

SANITARY LINE		SANITARY LINE	
3000 rpm	1500 rpm	3000 rpm	1500 rpm
FL501CS 0,37 kw	FL501CS 0,25 kw	FL502CS 1,5 kw	FL502CS 1,1 kw
FL501CS 0,55 kw	FL501CS 0,37 kw	FL502CS 2,2 kw	FL502CS 1,5 kw
FL501CS 0,75 kw	FL501CS 0,55 kw	FL502CS 3 kw	FL502CS 2,2 kw
FL501CS 1,1 kw	FL501CS 0,75 kw	FL502CS 4 kw	FL502CS 3 kw
FL501CS 1,5 kw	FL501CS 1,1 kw	FL502CS 5,5 kw	FL502CS 4 kw
FL501CS 2,2 kw	FL501CS 1,5 kw		

SANITARY LINE		SANITARY LINE	
3000 rpm	1500 rpm	3000 rpm	1500 rpm
FL503CS 4 kw	FL503CS 2,2 kw	FL504CS 11 kw	FL504CS 11 kw
FL503CS 5,5 kw	FL503CS 4 kw	FL504CS 15 kw	FL504CS 15 kw
FL503CS 7,5 kw	FL503CS 5,5 kw	FL504CS 18,5 kw	FL504CS 18,5 kw
FL503CS 9 kw	FL503CS 7,5 kw	FL504CS 22 kw	FL504CS 22 kw
FL503CS 11 kw	FL503CS 9 kw	FL504CS 30 kw	FL504CS 30 kw
FL503CS 15 kw	FL503CS 11 kw	FL504CS 37 kw	
FL503CS 18,5 kw	FL503CS 15 kw	FL504CS 45 kw	

INOXMIMGRUP, SL

Manufacturer declaration

**In accordance with the CE machine guidelines
2006-042**

The manufacturer: **INOXMIMGRUP, SL**

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Name	Type	Building year
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CENTRIFUGAL PUMP	FL503CS	2012
CENTRIFUGAL PUMP	FL504CS	2012

Satisfy the appropriate regulations, concerning supply procedures for INOXMIMGRUP, SL for the insertion in an installation or for adapting to other machines of higher rank.

The centrifugal pumps supplied by INOXMIMGRUP, SL fulfil all the CE machine rules and guidelines. Regulations UNE-EN ISO 12100-1, UNE-ENISO 1200-2, UNE-EN908:1999: 1998 and their corresponding present issues are specially and mainly kept.

By royal decree 56/1995

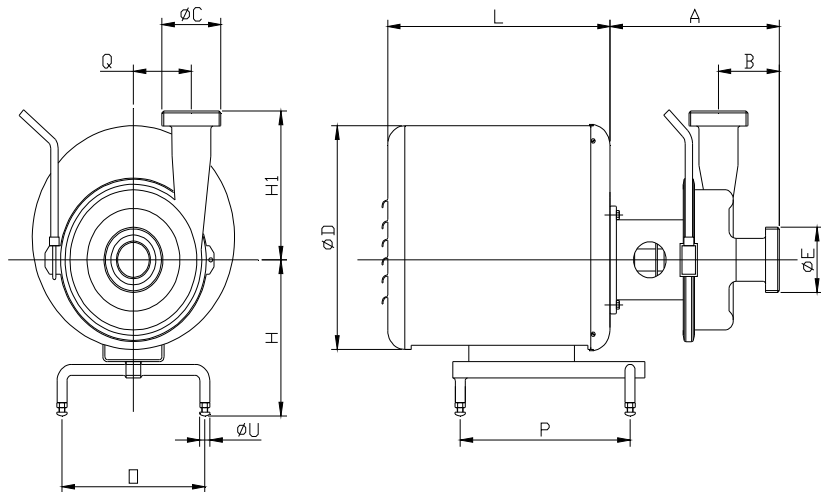
Porqueres, February del 2012

Jordi Bosch



Technical head

c. Measures



MODEL	MOTOR		MEASURES													
	CV	kW	A	B	C	D	E	H	H1	L	O	P	Q	U		
FL501CS	0.5	0.37	115	55	NW 32	250	NW 40	199	130	250	190	295	65	16		
	0.75	0.55					208									
	1	0.75														
	1.5	1.1	130	55	NW 40	250	NW 40		130	250	190	295	65	16		
	2	1.5														
	3	2.2					218									
4	3															
3	2.2															
FL502CS	2.2	1.5	195	60	NW 40	325	NW 50	218	145	300	190	295	100	16		
	3	2.2					250	350								
	4	3						290							345	
	5.5	4	195	60	NW 50	325	NW 65	252	155	390	290	345	100	16		
7.5	5.5															
FL503CS	5.5	4	235	65	NW 65	375	NW 80	252	250	500	290	345	100	16		
	7.5	5.5														
	9	7.5														
	11	9	245	75	NW 65	475	NW 100	300	250	550	370	475	100	16		
	15	11														
	20	15													320	600
	25	18.5														
30	22															
FL504CS	15	11	297	100	NW 80	475	NW 100	300	250	550	370	475	160	16		
	20	15														
	25	18.5														
	30	22	297	100	NW 100	625	NW 125	340	250	700	450	600	160	20		
	40	30														
	50	37														
60	45															

(We deserve the right to make any modification without previous notice)

b. Scope

The scope is limited for every kind of pump. The pump was selected for specified conditions when the customer made the purchase.



INOXMIMGRUP will no take any responsibility of possible damages if the information given for the customer is uncompleted (nature of the liquid, viscosity, density, temperature ...)

FL501CS

- 3000rpm
Flow max: 35 m³/h
Height max: 24 mca
- 1500rpm
Flow max: 20 m³/h
Height max: 5 mca

FL502CS

- 3000rpm
Flow max: 45 m³/h
Height max: 42 mca
- 1500rpm
Flow max: 30 m³/h
Height max: 11,5 mca

FL503CS

- 3000rpm
Flow max: 100 m³/h
Height max: 72 mca
- 1500rpm
Flow max: 90 m³/h
Height max: 18 mca

FL504CS

- 3000rpm
Flow max: m³/h
Height max: mca
- 1500rpm
Flow max: m³/h
Height max: mca

c. Fair use

The Fluidmim pumping systems:

- Are addressed for the use in machines and other industrial plants.
- Only must be used for the purpose described and confirmed in the purchase.
- Only must be used for the indicated work.
- Only must be used between their corresponding powder limits.
- Only must be used in temperature and pressures of working described.



Any other use will be considered as **UNFAIR**.

2. MANUAL CONTENT

This manual gives information about the centrifugal pumps, types and models are described in the following pages. It always must be available for the staff that works with this type of pumps.

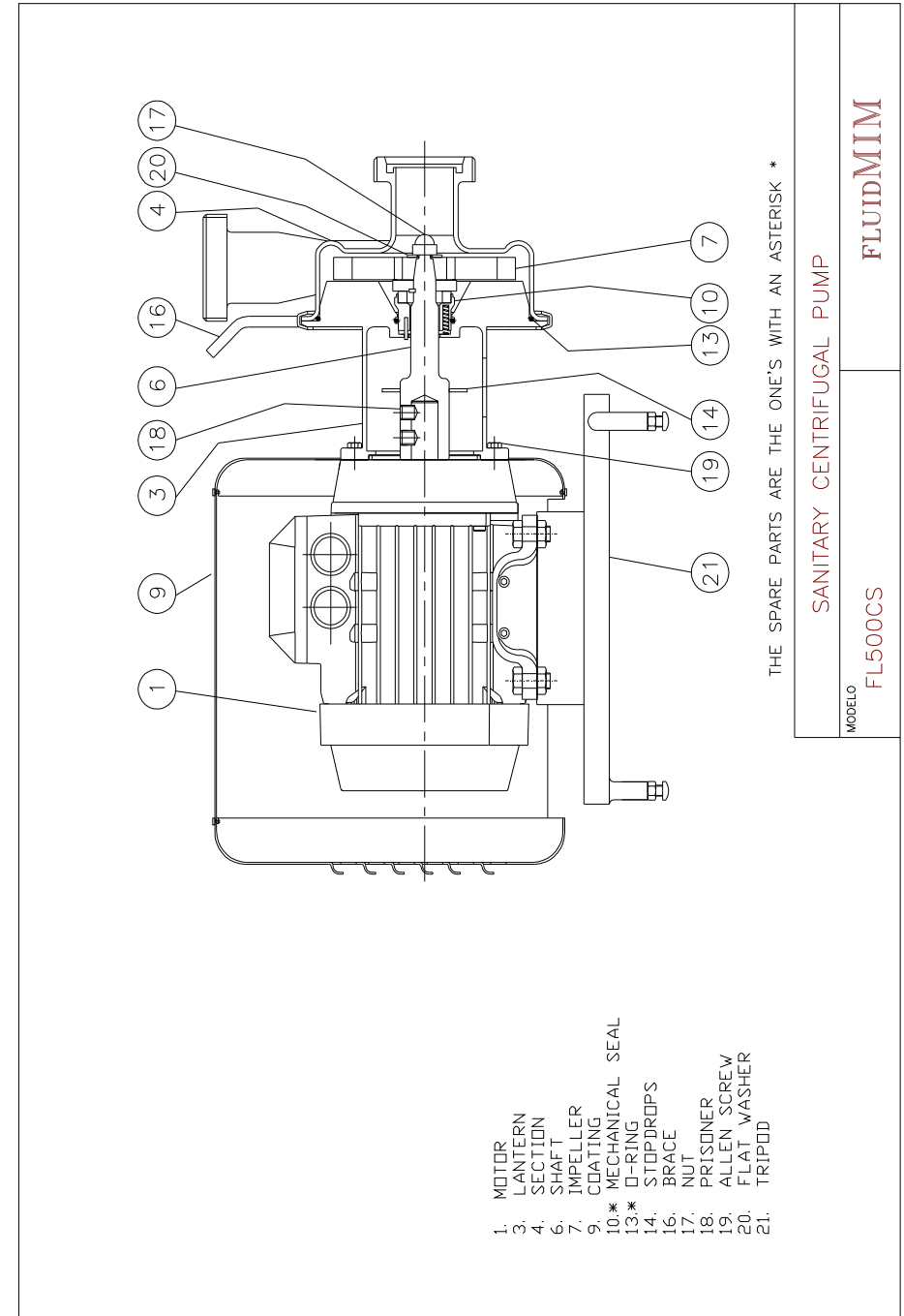
In case you want more information of the equipment of have got any doubt, please contact us.

All the information, technical specifications and notes in this manual were correct when it was printed. However, we cannot accept, from this information, planes and descriptions, any complaint of Fluidmim systems supplied before.

a. Legal implications

INOXMIMGRUP will no take any responsibility of damages and breakdowns caused for:

- Unfair use.
- Non-authorized system modification by the manufacturer.
- Unfair work with the pumping system.
- Non-correct operation.
- Non-observation of the technical documentation.



d. Motor

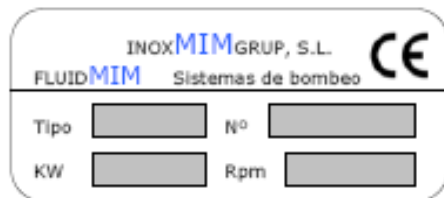
Disassembly: first of all you must take the lantern and the shaft, with these parts out we can take the motor of the mounting support.

Assembly: fix the motor in the mounting support for sliding the equipment shaft on the motor shaft and finally put the lantern on its assembly position.

7. **TECHNICAL DETAILS**

a. Equipment identification

For any reference or spare parts request, you must always indicate the fabrication number and the type of equipment. This information are detailed in a nameplate that all the equipments carry.



b. Planes and spare parts

Inoxmimgrup reserves the right to modify, in case that the firm considers it appropriate, the information given in this manual without any previous notice.

b. Guarantee

Equipments are guaranteed against fault manufacture during 1 year since the supplied date.

The maintenance operations described are not considered interventions in guarantee.

The guarantee will be cancelled and with full right, and INOXMIMGRUP will moreover be compensated for any claim of civil responsibility of the products showed for third parts if:

- The service and maintenance works are not made following the service instructions;
- Reparations are not made by our staff or they have been made without our written authorization;
- There are modifications on our material without our written authorization;
- The parts or lubricants used are not original parts of INOXMIMGRUP;
- The material has been used in a wrong way or with negligence.

c. Security



Qualified staff must do the electric works.



The drive system can be dangerous for the staff life and their environment when:

- The staff, working with the drive system, is not qualified.
- The drive system is not being used in the right way.

It is advisable taking suitable measures so that, in case of a drive system fault there are not material damages.

Do never turn on the drive design system when a breakdown has been detected.

The pump has never been turn on without a previous revision to verify that all the components and connections are properly installed.

During the pump operation, the parts should not be touched and the pump cannot work without any part because everyone has got their function.

For the pump maintenance you must pay special attention to the liquid that is deposited in the pump section, because it can be dangerous to health or it can be at high temperature. Before you begin to disassemble it you must disconnect it completely from electricity.

3. **LOGISTIC**

a. Transport

At the reception of the equipment you must verify that everything is correct and the pump has not been damaged, the material is detailed in the shipping documents. If there is any damage, please, notify it immediately to the transport agency, and if it is necessary, prepare photographic documentation to prove the damage caused by it.

The pump must be transported using the appropriate transport and elevation systems, ensuring the setting of the equipments.

b. Storing

If you do not install the pump immediately, some appropriate storage conditions should been taken. For periods of one year it is not necessary to take special measures in dry environments, free from dust and protected from light.

- It is necessary to give a complete revolution to the turbine every 30 days.

Pumps with ventilation screw should be stored with such a screw made up.

- ↗ Disconnect the pump from the electric current to avoid that the motor can work during the disassembly or that the cycle wash can begin.
- ↗ In case that the equipment has been pumping liquid at high temperature you should cool the equipment until it will be at room temperature.
- ↗ Close the valves of suction and impulsion of fluids and then empty the pump and the pipe of the pumped fluid, taking the relevant precautions to each pumped liquid.
- ↗ Clean the pump from the fluids that can be left on the outside of the pump.



Qualified staff must do the disassembly and assembly works, as an incorrect procedure can break the pump.



To make easy the mounting of rings and shaft seals they must be lubricated before their assembly.

b. Mechanical seal

Disassembly: dismantle the rotating part of the mechanical seal in turning clockwise, pulling at the same time until the end of the shaft. We take the fix part of the mechanical seal.

Assembly: adjust the shaft respect to the pump cover, then the fix part of the mechanical seal is assembled, insert the rotating part of the mechanical seal on the shaft and slide until it made cap with the stationary part.



You must take special attention to the friction faces of the mechanical seal as well as o-rings.

c. Section and impeller

Disassembly: take the screws and dismantling the section from the equipment, loosen the nut impeller in the opposite direction to clockwise and remove the impeller.

Assembly: place the impeller on the shaft and slide until it made cap with the rotating part of the mechanical seal, put the o-ring in the nut impeller and push. Fix the section to the lantern.

- 36) There have been cavitations, avoid increasing the suction pressure.
- 37) Check the pump and/or the pipes are well fixed.
- 38) Lack of lubrication of the bearings or lubrication with an incorrect oil, they should be replaced and lubricate properly.
- 39) There has been an infiltration of water due to wear of the oil seal rings, in this case the worn parts must be replaced.
- 40) The impulsion pressure is too high, if it is necessary, reduce the load loses.
- 41) The impulsion pressure is too low, the pressure should increase by increasing the diameter of the impeller or increasing the pump speed.
- 42) The o-rings are not right for the fluid it is pumping, ask the supplier which are correct.
- 43) The tension in the mechanical seal is too low, you must adjust the tension as it is shown in this manual.
- 44) Check that the suction pipe and filters are not obstructed.
- 45) The pump has not been purged, the solutions is purging and fill again.

d. Material recycling



Please help to protect the environment and return all the recyclable materials according to local regulations in force in each zone.

Procedure to follow:

- a) Disconnection of the wiring and hydraulic respecting the technical standards.
- b) Remove all the pump components to allow a separate scrapping.

6. ASSEMBLY AND DISASSEMBLY

a. Aspects to take into account

Before starting the disassembly of the pump, a number of very important factors must be taken into account:

The shaft and the surfaces are protected with a layer of anticorrosive primer.

If you use the pump and after using you store it for a long period of time, it is necessary empty all the liquids that can be in the pump due the using, and you must clean so that avoids formations of deposits or inlays.

4. INSTALLATION

a. Location

The equipment must be placed as close to the suction tank and a lower level of the liquid. Allow access to equipment maintenance and assemble the pump on a flat surface and levelled.

Clean the setting bases of the pump before its installation.

To which refers to the assembly of pipes, they need to be connected independently, without relying on the pump to the respective mouths of the equipment, always avoiding use bends, diversions, reductions, etc., if it is necessary their use the radio should be wider to avoid as much as possible the losses, and in the case of use reductions they must be the appropriate to prevent formation of air pockets.

b. Electric connections

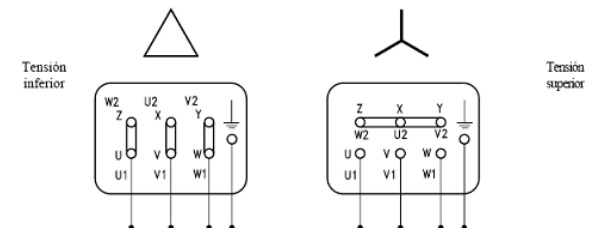


The electrical works must be done for qualified staff

Connection scheme:

	Conexión U=...	
	3x220	3x380
motor		
220/380		
380	-	

Electrical connection:



The electrical installation must always be done after the hydraulic connection, and according to the technical rules in force.

It must also install a manual device for the electrical disconnection, as well as a protection for overloads and, in case to consider necessary a device to prevent that the equipment put into operation spontaneously.

It must be controlled that all the parameter are the appropriates with the motor installed, and with the information contained in the nameplate of the same.



Before any maintenance or review operation, you must be sure that the pump is completely disconnected from the electricity. If it is not in this way the staff security is in danger or you can damage the property.

Check always that the direction of rotation is the same that the corresponding label shows.

5. **STARTING UP AND MAINTENANCE**

a. Starting up

Before its starting up you must verify that:

- ✓ The direction of rotation of the fan motor is clockwise, always looking the pump from behind.
- ✓ The pump turns freely by hand.
- ✓ The aspiration valve must be completely open while the impulsion valve must be partially open.
- ✓ The fixations and electrical connections are correct.
- ✓ The pipe and the pump are full of liquid to be pumped, if not, must be fill because THE EQUIPMENT CAN NEVER TURN DRY.
- ✓ There is enough ventilation in the drive design.

- 19) There has been dragging between rotating and fix parts and they have caused internal friction, in this case the normal conditions of assembly must be restored.
- 20) Verify the alignment pump-motor or that the shaft is bent, restore the alignment or change the shaft.
- 21) Check that the bearings of the pump are in perfect condition, otherwise replace them.
- 22) Verify that the electrical connection respect all the information specified in the plate of the motor.
- 23) The tension is not the suitable for the installed motor, in this case the motor must be replaced for another with the suitable tension.
- 24) Check that the mechanical seal is not very worn in such case it should be replaced.
- 25) Verify that the mechanical seal we had chosen is the right for the fluid we are pumping and its temperature.
- 26) The wash cycle has not been increased or pumped fluid has been left a long time in the equipment in case of easy crystallization fluid.
- 27) The mechanical seal assembly is not well done, repeat the assembly process carefully.
- 28) The direction of rotation for mechanical seals not reversible is not right, in this case restore the direction of right rotation.
- 29) Verify that the flow it is not insufficient in case of mechanical seal cooled, if not, you must increase the amount of washing and cooling liquid.
- 30) It is possible that the pump has been working dry, if it is possible this, you must prevent its recurrence by installing protections for blocking the equipment.
- 31) Check that, because of excessive slack assembly has not oscillations in the shaft, or that there are worn bearings..., if it is in this way restore the normal assembly conditions changing the worn parts.
- 32) Verify that the choice of the mechanical seal was correct if there are solids in suspension in fluid, or put a filter in the suction pipe.
- 33) If we are pumping liquid at high temperature, it is advisable to increase gradually the fluid temperature to avoid thermal shock, or reduce the temperature of the liquid.
- 34) Make sure there is not an imbalance in the impeller, if there is imbalance you must replace it.
- 35) Verify the pump is not working at a flow rate too low, in this case you can regulate the work of the pump on a point higher. Or on the contrary, that the flow is excessive and regulate the pump at a point lower.

POSSIBLE CAUSES OF BREAKDOWNS AND SOLUTIONS

- 1) The priming has not been done well, repeat the priming process.
- 2) Check that the suction fittings are well tight since there can be an entrance of air through the fittings.
- 3) It is possible that an entrance of air exists by the mechanical seal, it must be replaced or it is operating with vacuum suction, contemplate a solution with spring to empty.
- 4) Check that the suction valves are not closed and there is no obstacle along the pipelines.
- 5) The net positive height in the suction that the circuit has got can be less at the pump required, you should try to reduce the load losses or regulate the pump at a lower flow point.
- 6) Replace the check valve since it is possible it is not working well.
- 7) Reduce the load losses since these can be superior to the pump characteristics, the solution is try to reduce these losses or change the pump for another more suitable.
- 8) Verify that the rotation direction and the motor speed are correct.
- 9) Verify that the impeller is not blocked by any element, or that is not worn, in this last case you must replace it by a new one.
- 10) Check there is not worn components in the mechanical seal, if there is any one they have to be replaced.
- 11) Check if there is friction in the impeller, in this case the temperature, the suction pressure can be reduced or adjust the set impeller/lid.
- 12) Verify the characteristics of the pump because it can be calculated for a lower viscosity of the fluid that has really.
- 13) Consider the need to install a snub by excessive gas dissolved in the pumped liquid.
- 14) There is the possibility to be some load losses lower than anticipated, the solution would be to increase these losses or make the pump work at a higher point.
- 15) The specific gravity of the fluid is greater than anticipated, in this case the power of the motor can be increased.
- 16) Tension in pipes. Connect the pipes without tension to the pump.
- 17) Flow higher than anticipated because there is a drop lower than anticipated. In this case the pump has to be regulated to a lower point or increase the losses.
- 18) Verify that there is no excessive speed of rotation, in this case decrease.

- ✓ All rotating parts and the surfaces that can reach high temperatures must be protected against the contact.

b. Maintenance



For the maintenance works is absolutely necessary that the equipment is completely disconnect from the electricity supply.

During the pump operation should be verified from time to time that:

- ➔ There are no leaks through the mechanical seal, if it is the case the mechanical seal should be replaced.
- ➔ The pump works regularly and without vibrations.
- ➔ If the pump does not give the necessary flow in a short time, we must stop and prime the pump again.
- ➔ If we are pumping liquids that tend to harden or crystallize, it is necessary when we finish pumping, a washing to promote the duration of the mechanical seal and the rest of the equipment.
- ➔ The impulsion pipe will be strangulated in case that, the impulsion valve is more open to what is required or, that the equipment is working at a less height than is required by the system, obtaining in this way the required values of flow and load.

c. Fault detection and its solution

In case of a breakdown, please check the possible causes listed below. If it is impossible to solve the failure by the solutions, please contact the technical service of INOXMIMGRUP.

POSSIBLE SOLUTIONS	POSSIBLE PROBLEMS	The equipment is not pumping	The equipment is blocked	The equipment is overheated	The equipment does not give the enough flow	The equipment does not give the enough pressure	The equipment loses the prime	Unusual worn of the equipment	Impulsion place without pressure
		1	X			X			
2	X			X	X	X	X		
3	X			X		X			
4	X			X		X		X	
5	X			X		X		X	
6	X			X					
7	X			X	X				
8	X			X	X				
9	X			X	X				
10				X	X				
11		X	X						
12		X	X	X	X				
13					X	X			
14						X			
15									
16		X	X				X		
17									
18									
19									
20			X						
21		X	X				X		
22				X	X				
23				X	X				
24									
25									
26									
27									
28									
29									
30									
31									
32		X	X				X		
33		X	X	X	X		X		
34									
35			X						
36				X	X		X		
37		X	X				X		
38		X	X						
39									
40				X	X				
41				X	X				
42									
43									
44								X	
45								X	

Irregular flow or pressure of impulsion	Excessive electric consume	Motor overload	Leak for the mechanical seal	Short life of the mechanical seal	Break of the mechanical seal	Unusual vibrations and / or noise	Short life of the bearings	
								1
X						X		2
								3
								4
X						X		5
								6
								7
X								8
	X					X		9
								10
		X				X		11
X	X	X				X		12
								13
								14
	X							15
		X				X		16
	X							17
	X							18
	X					X	X	19
	X	X	X	X		X	X	20
	X	X				X		21
	X							22
	X							23
			X					24
			X	X	X			25
			X	X	X			26
			X	X				27
			X					28
			X	X				29
			X	X				30
			X	X				31
				X				32
					X	X		33
						X	X	34
		X				X		35
X						X		36
		X				X		37
		X				X	X	38
							X	39
						X		40
								41
								42
								43
X						X		44
								45

INOXMIMGRUP

INSTALLATION, COMPONENTS AND
MANTEINANCE INSTRUCTIONS

FLUIDMIM

PUMPING SYSTEMS



CENTRIFUGAL PUMP:
FL501CS – FL502CS – FL503CS – FL504CS

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