

Shaker SO-300



USER MANUAL

FAST & FLUID MANAGEMENT Srl

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	ENGLISH	
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1. INTRODUCTION

SO300 by FAST & FLUID MANAGEMENT is the result of the most recent technology in high speed paint mixing. Your SO300 by FAST & FLUID MANAGEMENT is a sturdy and effective shaker; its way of operating and its design show all quality of a careful engineering work on the product.

To appreciate fully and protect your investment, we suggest that you take some time to read this manual. As usual, FAST & FLUID MANAGEMENT will support you post sales assistance service.

The few maintenance operations, which will be mentioned further on, shall be carried out regularly.

	FAST & FLUID MANAGEMENT will not be held responsible for any damage or accident which might happen because of failure to respect the regulations set, or because of wrong use or of maintenance carried out without the standard safety rules being followed, as explained further on.	
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	SO300 shaker must not be switched on if it has not been earthed through one or both the earthing connection points (socket and/or earthing bolt).	
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2. INTELLECTUAL PROPERTY RIGHTS

Statement on Intellectual Property Rights.
The information contained in this manual is based on data which belong to FAST & FLUID MANAGEMENT. This manual has been drawn up expressly for assistance in the use and general maintenance of SO300 shaker. The publication of this info does not give any allowance for reproducing or using this manual for other than installation, use or maintenance.
No part of this manual can be reproduced, translated or filed (neither on computer) in any form or by any means without written authorization by a FAST & FLUID MANAGEMENT officer.

3. TECNICAL SPECIFICATIONS

<p>EN 292 Part 1 and 2: 1991 EN 418: 1992 EN 60204 Part 1: 1997 EN 954 – 1: 1996 EN 1088: 1995 EN 294: 1992</p> <p>EN 953: 1997</p> <p>PrEN 12757-1</p> <p>EN 61000-6-3 Parte 6-3 2001 EN 61000-6-1 2001 EN 61000-3-2 2000 EN 61000-3-3 1995+A1 2001 Electromagnetic Compatitiv Directiv (EMC) – Part 3: Limits – Section 2:</p> <p>Maximum noise level : Shaking speed (motor revolutions): Machine dimensions: Maximum can weight: Maximum can dimensions: Minimum cans height: Timer: Power supply:</p>	<p>Safety of machinery - Fundamentals, general principles for design Safety of machinery – Emergency stop equipment, functional aspects Safety of machinery – Electrical equipment of machines - specifications on general aspects . Safety of machinery – Safety of parts of the control system – Part 1: general principles for design Safety of machinery Safety of machinery – Safety distance to avoid damages in areas of the machines that are reachable by upper limbs. Safety of machinery - Protections – Requirements on design and construction of mobile and/or fixed protections. Mixing/shaking machines for coating products;</p> <p>< 70 dB = 685 rpm 72cm (Width), 116cm (Height), 69cm (Depth), 210Kg (Weight) 35 kg HxWxD 440x350x350 mm. Within the limits, also squared and oval cans can be shaken. 65 mm Electronic, programmable 0.75 kiwi 230V 50Hz 0.75 kiwi 115V 60Hz</p>
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4. WARRANTY TERMS AND CONDITIONS

WARRANTY

FAST & FLUID MANAGEMENT THE NETHERLANDS guarantees every machine to be free from material and assembly defects.

Please refer to terms and conditions of sale in force when the machine was bought.

The damaged parts must be sent to FAST & FLUID MANAGEMENT THE NETHERLANDS with forwarding costs prepaid by the user.

If the defect is caused by improper or abnormal use, the repairs will be billed at normal cost. In this case an estimate may be submitted before starting repairs, if required.

ALWAYS STATE THE SERIAL NUMBER OF THE MACHINE IN ANY CORRESPONDENCE CONCERNING SPARE PARTS. The serial number is located on the left side of the machine body.

These agreements must be interpreted according to the laws of the Netherlands and for any dispute the court of Sassenheim shall have competent jurisdiction.

The manufacturer's warranty expires:

- in case of improper use
- in case of use of non-original spare parts
- in case of repairs/adjustments to the machine without written approval and/or by unauthorized staff
- in case of incomplete maintenance, or failure to observe the instructions contained in this manual

The above conditions are applicable if there are not other conditions expressly agreed on.

5. GENERAL DESCRIPTION

FAST & FLUID MANAGEMENT high speed shaker SO300 has been designed to work in both in paint shops and for semi-industrial applications.

FAST & FLUID MANAGEMENT high speed shaker SO300 has been designed to fulfil the needs both of the retail business with limits in products capacity/quantity and the professional and semi-industrial business with the possibility of handling big cans with a height up to 440 mm and weight of up to 35 kg.

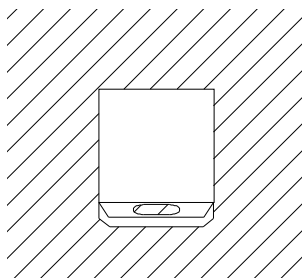
The machine requires a very little maintenance and paint can be produced at a low cost.

The system works with an automatic blocking and shaking device, for a time set by the customer.

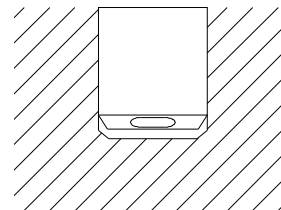
For further explanation, please see chapter 10.

6. SAFETY RULES

WORKING AREAS



MAINTENANCE AREA



OPERATOR AREA

Compliance with security requirements

The machine must be used and serviced by qualified personnel only, since the bad/wrong use might cause damages or accidents.

Area

The areas of risk are:

- working area
- maintenance area

Power supply

- à 230-240 VOLTAGE: power supply with a magneto-thermal protection device that intervenes when current absorbed exceeds 16 Amps or for leakage current of 30 mAmps, according to local regulations.
- à 115 VOLTAGE: power supply with a magneto-thermal protection device that intervenes when current absorbed exceeds 25 Amps or for leakage current of 30 mAmps, according to local regulations.



Safe use of the machine

The producer shall take the all possible care in planning, designing, the checking the installation and the start up of the machine to guarantee the maximum operational level during a rational use of the system supplied.

All components must be in accordance with the current safety regulations. Up to date safety systems are installed in the machine to ensure the best protection available at the moment.

While using SO300 you must keep to the following safety rules:

The "end-user" must keep to the safety regulations of the country where the machine is installed. If there is a conflict between European regulation and local regulation, the most severe rule will apply on the specific issue.

Installation and maintenance of SO300 shaker must be carried out by a qualified technician.

Safety rules when the machine is operating

1. To avoid injuries, all panels of the body of the machine must be assembled and correctly fixed to the frame.
2. Do not tamper the protective control system and the door locking device.
3. Before any inspection and maintenance operation on SO300, disconnect it from the mains outlet to avoid unexpected starts.
4. Do not leave inside the SO300 tools after servicing
5. Make sure the environment in which the machine is installed complies with the laws in force (you need to have an authorization issued by the Fire Brigade or by the competent authority) and avoid a dangerous massing of paint cans. It is forbidden to store flammable materials or other materials inside the machine. Using naked flames, white – hot objects or any device that might generate sparks in the room where the machine is placed.
6. It is advisable to install a ventilation system, to guarantee that close to the machine the vapor dilution is lower than 30%
7. When work is finished, do not leave the can(s) inside the machine and do not leave the machine switched on.
8. In the premises where the SO300 is installed, within a 5 meter range from the machine, there must be a plate with the writing "Smocking is strictly forbidden".



WARNING!

Avoid operating the SO300 if it is not loaded with a can.

Never use a load with a weight over 35 Kg.

Remove all cans inside the machine before switching it off.

Do not place any **damaged can** inside the SO300. Consequent rupture during mixing may cause damage to the shaker. Running the SO300 with damaged packaging is at User's risk.

Already damaged cans may cause damage to the your machine.

During the maintenance follow the security rules and the procedure described in this paragraph.

The SO300 is to be operated only by trained personnel. FAST & FLUID MANAGEMENT THE NETHERLANDS shall not be liable for any damage or injury caused by non-compliance with the "user" and "safety" regulations presented in this manual, or by not taking the usual and accepted precautions in handling, operating or repairing, even if not expressly stated in this manual.

This is also valid for damage and/or accidents as a result of changes made to the machine that are implemented without prior notice to and approval by FAST & FLUID MANAGEMENT THE NETHERLANDS.

7. RESIDUAL RISKS

7.1. Table of residual risks for the operator

Despite of the measures taken in the designing of the machine to guarantee a safe use of it, there might happen reasonably predictable occurrences, whose risk was possible to reduce, but not to eliminate completely.

<u>RISK</u>	<u>DIRECT. 392</u>	<u>PRECAUTION</u>
Injuries or crushing during loading and unloading operations 1.6.4 4.1.1	1.6.4 4.1.1	Use security protective gloves and shoes during loading and unloading operations
Abrasions and injuries caused by sharp edges and parts of the cans to use	1.6.4 4.1.1	Use protective gloves during loading and unloading operations
Liquid leakages from the cans		Clean carefully the area where the operator works

7.2. Residual risks for technicians

<u>RISK</u>	<u>DIRECT. 392</u>	<u>PRECAUTION</u>
Danger of electrocution during maintenance caused by electric charges of motor capacitors 115-230V	1.5.1 1.5.2	Use security shoes and gloves.

7.3. Personal protection for user

If the equipment is used in a correct way, the machine, as produced in the factory, does not cause risks or dangers for the user, who in any case have to wear individual protection (protective glasses, protective shoes, protective gloves) especially during the loading and unloading of the cans.

7.4. General danger situations

There is not any particular hazardous situation (e.g. fire risk, loss/emission of dangerous substances) but in any case it is necessary to have at hand a powder extinguisher for possible fire (electrical equipments).

Security components and devices

The machine is equipped with the following security devices:

- An emergency push button
- A door-locking device (solenoid)

Emergency push button

For safety reasons, all users should know the position and the way to use the red emergency push button.

The emergency **RED** push button is assembled on the operator panel on the front part of the machine. Pressing this button causes the immediate stop of the shaking cycle and the disconnection of the power supply stopping the shaking motor. The normal functionalities of the equipment are restored by turning the emergency push button clockwise. In case of emergency stop during the shaking cycle, the machine functionalities will be restored after the reset procedure (just press Stop/Up).

Door lock (solenoid) and door-open micro-switch

These components are part of the same safety device (solenoid + micro-switch), which prevents shaking cycle from starting if the door is open. During shaking cycle, the solenoid keep the door safely locked.

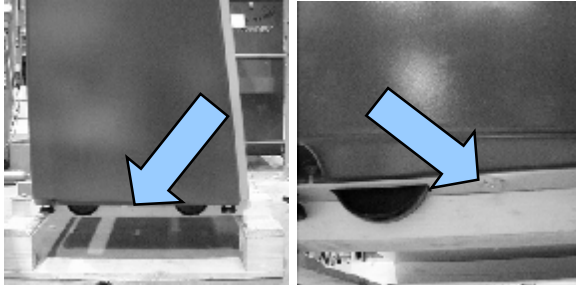
8. INSTALLATION REQUIREMENTS

SO300 has to be placed on a level and stable ground. Please install the machine by proceeding as follows:
à 230-240 VOLTAGE: power supply with a magneto-thermal protection device that intervenes when current absorbed exceeds 16 Amps or for leakage current of 30 mAmps, according to local regulations.
à 115 VOLTAGE: power supply with a magneto-thermal protection device that intervenes when current absorbed exceeds 25 Amps or for leakage current of 30 mAmps, according to local regulations.

Environmental conditions must be within the following limits:

Air temperature 10 to 40 °C
Relative humidity 30 to 90 %

During the installation it is advisable to use protective gloves to avoid injuries.



Remove the bolts that fix the machine to the pallet



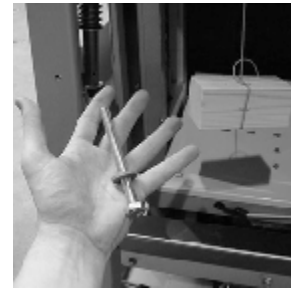
Remove the screws at the inside of the side panels



Connect the power cable to the SO300 so that you can open the door



Pull the cords fixed to the wooden blocks



Before trying to start the machine, make sure the screws and the wooden blocks have been removed from the machine itself



Set the machine level by using an appropriate tool



Undo the feet of the machine, till the machine wheels no longer touch the ground

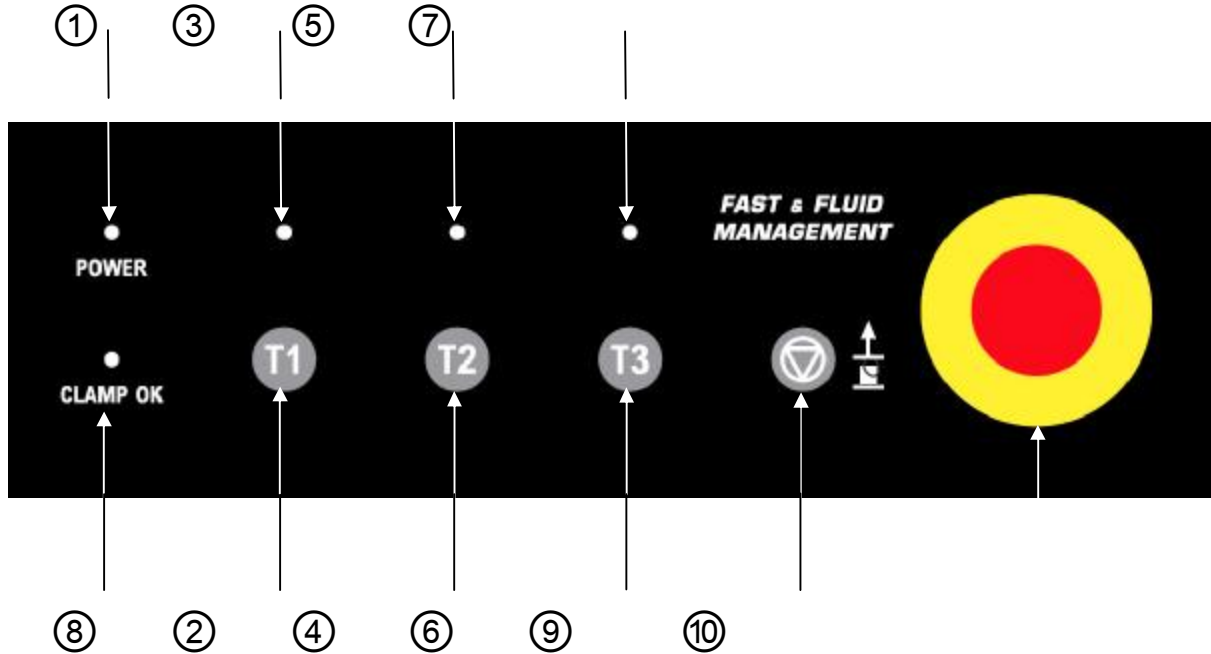
Block the feet by doing their respective lock nuts



SO300 shaker must not be installed in an working area classified as EX



9. KEYBOARD



- ① = "LINE" Green Led = ON = Presence of power supply (230V; 115V; 100V)
- ② = T1 Button = Press it to start shaking cycle T1 (1 minute by default)
- ③ = T1 Red Led = ON = T1 shaking cycle activated
- ④ = T2 Button = Press it to start shaking cycle T2 (2 minutes by default)
- ⑤ = T2 Red Led = ON = T2 shaking cycle activated
- ⑥ = T3 Button = Press it to start shaking cycle T3 (3 minutes by default)
- ⑦ = T3 Red Led = ON = T3 shaking cycle activated
- ⑧ = "CLAMP OK" Green Led = ON = Machine is clamping the can
- ⑨ = Button Stop/Up = Stop shaking / open plate (Reset after emergency stop)
- ⑩ = Emergency button

10. HOW TO OPERATE

10.1. SWITCHING SO300 ON

When the machine is off, the door is locked.

Check that the emergency button (10) is not pressed in; if it is, turn it 90° clockwise. Switch SO300 on simply plugging it in the mains socket. The green led "LINE" (1) will turn on. If the upper (moving) plate is not in the 'completely open' position, it will automatically unclamp.

10.2. PLACING THE CAN

Open the door and place the can in the centre of the lower plate; then close the door.

10.3. CAN CLAMPING

The 'Can clamping' function keeps the can blocked while the machine is shaking. A motor guarantees the continuous clamping on the can, which is controlled by a dedicated sensor. The clamping force is set in the factory during the final test on each shaker; in any case, the force can be modified by a technician (through the Operator Panel) according to the needs/requirement of the customer.

Default values are:

- Bigger cans (up to 35Kg) = 350 Kg clamping force
- Smaller cans (up to 10Kg) = 250 Kg clamping force

SO300 shaker has another sensor, which recognizes the size of the can in the inner shaking frame (bigger or smaller can); according to that, the correct clamping pressure (1 or 2) is automatically chosen by the machine itself.

If, while the machine is shaking, the above-mentioned sensor cannot detect the can anymore, the shaking cycle is stopped and a warning noise is uttered.

10.4. CAN SHAKING

The shaking cycle starts by pressing one of the three buttons T1, T2, T3, which have 3 pre-set values with different shaking times (1, 2 or 3 minutes, by default).

Also these 3 parameters have been pre-set in the testing phase (in the factory); in any case they can be modified by a technician (through the Operator Panel) according to the needs/requirement of the customer, previous consent of Fast & Fluid Management.

Shaking: after pressing button T1 (or T2 or T3) the upper plate lowers till it touches the can. After the sensor has ascertained that the can is well clamped, the shaking starts.




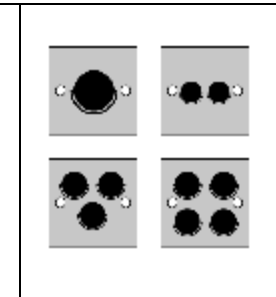
At the end of the shaking, the upper plate goes up for about 4 second, and then stops.

Shaking can be stopped any time by pressing button Stop/Up, or the emergency button.

In this moment door can be opened and the can may be removed.

When shaking cycle is finished, please remember not to leave the can inside the machine.

11. LOADING THE CAN INTO THE MACHINE

			
<p>Place the rubber disk onto the can lid</p>	<p>Fix the can handle with the rubber band provided</p>	<p>Make sure that the can is centered onto the lower plate</p>	<p>It is possible to shake several cans with the same height by using an adaptor</p>

12. ACOUSTIC WARNINGS

All operations are monitored by the resident program of the machine and in case of malfunctioning or at the end of the shaking cycle, the machine gives out a warning sound. In case of malfunctioning the machine immediately stops.

Here follow some examples of malfunctioning/warnings:



Malfunctioning

- When buttons T1, T2 or T3 are pressed if the door is open
- The clamping sensor can no more detect the can while shaking is on
- Time out. When the time between the start and the clamp ok signal (keyboard position 8) sensor is too long.
- Safety violated. If the door is forced; if the emergency button is pressed.

13. SAFETY

All operations are monitored by the resident program of the machine to guarantee the user working in safe conditions. If safety system is violated, all machine movements (clamping, unclamping, shaking) immediately stop. The following tables display signal/controls monitored by the machine.

Machine status	Function Signal	Function control
Off	No precaution	No functional check
Clamping (with or without can)	Closed door	Door closed
Unclamping	Closed door	Door closed
Shaking	Door closed; clamping pressure sensor activated	Door closed; clamping pressure sensor activated
Stand by	No precaution	Door closed

14. MAINTENANCE AND CLEANING

During maintenance and check operations, please wear protection gloves and unplug the machine.

These operations must be carried out by qualified and trained technicians and with the machine unplugged (apart safety device check).

14.1. Table of periodic servicing.

<u>Servicing every...</u> →	7 days	1 Month	1 Years
↓			
Safety devices check	Cap.14.2		
Body cleaning		Cap.14.3	
Inner parts cleaning		Cap.14.3	
Threaded bars and springs lubrication		Cap.14.4	
Eccentric shaft supports lubrication			Cap.14.5

14.2. Check of safety devices

DOOR LOCK (solenoid + micro-switch) when the machine is off and the door is locked

If you pull the handle, the door shall remain locked.

DOOR machine is on –plugged into the mains but not working

When the machine is switched on (plugged in) the upper plate unclamps till uppermost position.



If the upper plate is already in the uppermost position, the machine is ready to be loaded.

Open the door.

If you press T1, T2 or T3, the machine shall not start but emit a warning noise.

If you press Stop/Up, the machine shall not start but emit a warning noise.

EMERGENCY BUTTON (when the machine is shaking)

<ul style="list-style-type: none"> • Switch SO300 on (just plug it in) • Open the door, load a can and close the door. • Press one of the start buttons (T1, T2, T3) to start the shaking cycle. 	 <ul style="list-style-type: none"> • Before the end of the shaking cycle, press the emergency button • Shaking shall stop and a warning noise shall be heard. 	 <ul style="list-style-type: none"> • The shaking cradle shall stop and the upper plate shall not unclamp. • The can shall be trapped in the cradle and no button shall work. 	<ul style="list-style-type: none"> • De-activate emergency button by turning it clockwise. • Press all buttons (Stop/Up excluded). None of them shall work • Press Stop/up button. Make sure the upper plate unclamps • Check the door: it shall be unlocked.
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14.3. Cleaning

**All cleaning operations must be operated with the machine unplugged.
For inner parts cleaning, before unplugging the machine, open the door.**

Body (panels) and door

Use any non abrasive cleaning product for domestic use on washable surfaces.

Control panel (keyboard)


Use a wet cloth. The use of neutral soap is allowed. Then wipe (no rinse) with a dry cloth or a paper towel.

Inner parts of the body

In case of paint loss, clean immediately!

Dried paint can be removed with a broad knife. Then Use any non abrasive cleaning product for domestic use on washable surfaces.

Inner parts (shaking cradle)

	<p>In case of paint loss, clean immediately!</p> <p>Dried paint can be removed with a broad knife.</p> <p>To clean lubricated parts, just use a cloth, which will remove the paint together with the lubricant.</p> <p>Immediately restore the lubrication as per further instructions</p>
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Accidental paint leakages/losses inside and/or outside the SO300

Immediately clean the machine and the floor of the 'user area' to avoid slipping risks.

Do not use water jets or high pressure cleaners to clean SO300.

Do not use solvents to clean SO300

In case solvents are absolutely necessary, after using them keep the machine disconnected from the mains and its door completely open for at least 1 hour.

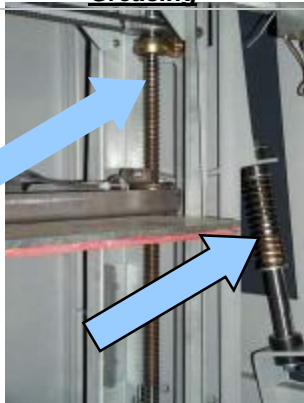
14.4. Threaded shafts and springs lubrication

Recommended lubricants

Use a generic adhesive yellow grease for open gears, grade N.G.L.I. 2.

How to proceed

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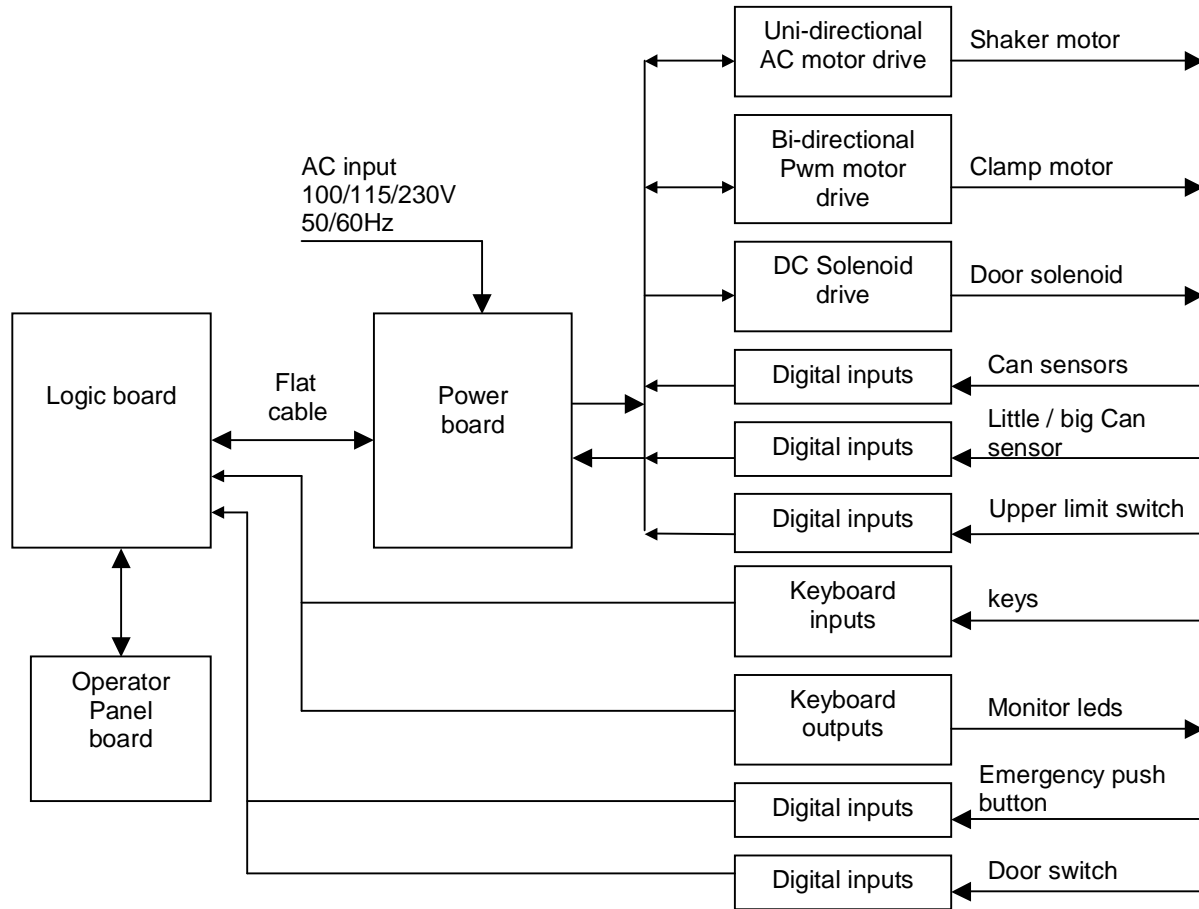
<u>Greasing</u>		
<ul style="list-style-type: none">• Switch the machine on (plug it into the mains); door shall be closed.• Lower completely the upper plate by pressing any of the start buttons (T1, T2, T3). Before the shaking starts, press Stop/Up.• Open the door.• Unplug the machine from the mains.• Remove the grease and possible dried paint (see paragraph 12.3).		<ul style="list-style-type: none">• Then put some grease with a brush on the springs between innermost cradle and middle cradle.• Plug in the machine.• Close the door.• Press any of the start buttons (T1, T2, T3), then Stop/Up buttons to slide the upper plate on the shafts.• Repeat the operation several times.

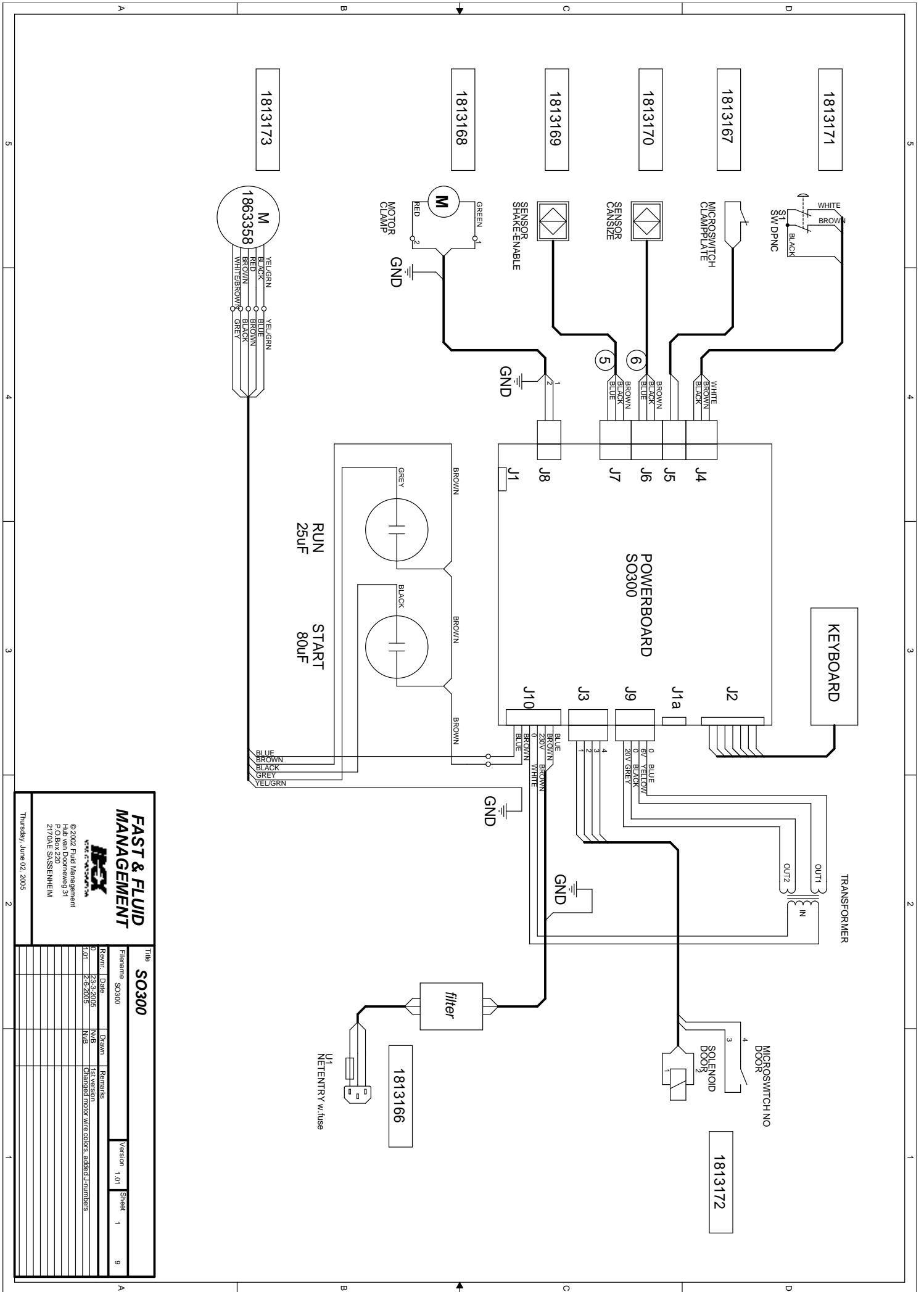
14.5. Lubrication of the eccentric shaft supports

Lubricate the eccentric shaft support through the lubrication nipples.



15. FUNCTIONAL DIAGRAM 100 – 115 - 230V





FAST & FLUID MANAGEMENT
RFM
THE CHAMPION™

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Rev. #	Date	Drawn	Remarks
1.01	25-2-2005	NAB	REVISION
1.02	25-2-2005	NAB	CHANGE MONITOR WIRE COLORS, added J numbers

Filename: SO300
Version: 1.01
Sheet: 1
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Thursday, June 02, 2005

