

# Scientific

## Laboratory High Speed Fluid Mixers

Computerized and manual laboratory 5 and 10-liter High-Speed fluid mixers and matching cooling mixer.



All mixing components in high polished stainless steel.

Discharge valve is attached with quick locks and can be easily removed for thorough cleaning.



Mixer bowl lid with adjustable deflector, filter for evacuation of over pressure, as well as small lid in the center for pouring in additives even when mixer is running.

EXIT	SET SPEED	TEXT WHITE	SET CONTROL PROGRAM 1	SAVE	
STEP1	CLR	TEMP	AMP%	TIME	COOL OFF
STEP2	CLR	TEMP	AMP%	TIME	COOL OFF
STEP3	CLR	TEMP	AMP%	TIME	COOL OFF
STEP4	CLR	TEMP	AMP%	TIME	COOL OFF
STEP5	CLR	TEMP	AMP%	TIME	COOL OFF
STEP6	CLR	TEMP	AMP%	TIME	COOL OFF
STEP7	CLR	TEMP	AMP%	TIME	COOL OFF

The computerized versions enable fully automatic running and programming of all mixer parameters.

Impeller blade in three levels where the two top wings are bent upward in an angle for optimum mixing efficiency.







The left picture shows the control panel with the LCD touch screen control and to the right the manual version.

A swing open lid with a large Plexiglas window protects the instrument on the control panel. The operating buttons are placed outside the area covered by this lid so that they can be easily reached without opening the lid.



Both the computerized and manual operated mixers are equipped with large infinite variable speed AC motor drives, regulated by programmable controllers with high starting torque. The mixers are also equipped with thermocouples inserted in the deflector where the tip is protruding from the deflector to enable an accurate sensing of the batch temperature.

The extremely user-friendly software developed by us makes an easy task of both programming and running of the mixer. Simply pressing keys on the touch screen will enable moving in between the many screens to perform the programming.

### Manual High Speed Mixers

The manual versions are equipped with the following controls:

Three digital timers which together with three potentiometers enables setting and running of three automatic steps at any impeller preset speed. With this, it is possible to run the mixers in an automatic mode with three time cycles and with three impeller speeds.

The control panel is also equipped with digital temperature, RPM and motor load meter in percent of full load. This enables a precise monitoring of the mixer while running through all the automatic cycles.

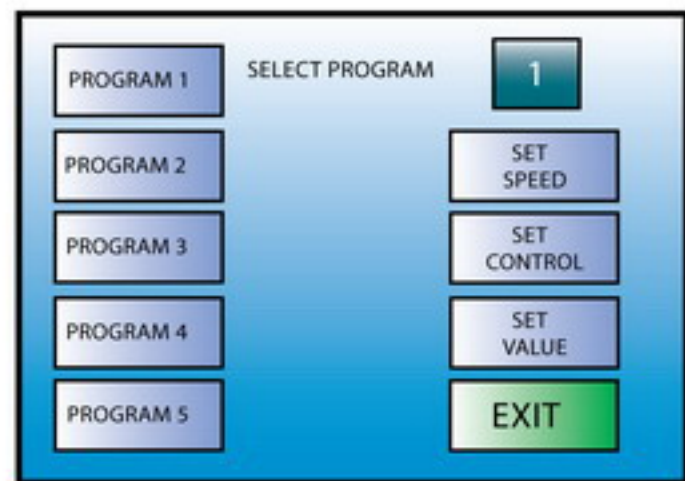
The pneumatic discharge is done manually, by pressing the external button. The button has to be held down during the entire discharge and when released the discharge valve will close again.

Water cooling of the mixer bowl is also done manually by turning a selector switch on the external control panel.

The start and stop buttons are also situated on the external control panel, outside the Plexiglas cover.

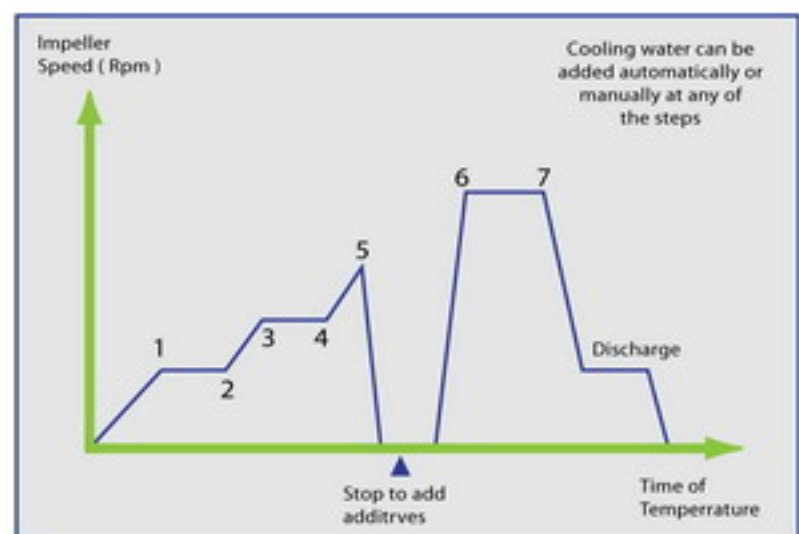
### Computerized High Speed Mixers

The computerized high-speed mixer have all control functions embedded in a LCD colour touch screen.



The large capacity PLC can hold 5 individual mixer programs, which each can be programmed in up to 7 steps with the following parameters:

**1. Only on Speed and Time.** Here the mixer can run at up to 7 different speeds set at individual times for each step. It is also possible to stop the mixer intermittent at any stage by pressing the external INTERMITTENT STOP button to fill in additives etc. Pressing this button again will start the mixer at the same step it was when stopped and continue through the remaining steps. The below graph gives an example of this.





2. **On Ampere and Speed.** The program can be set so the mixer will run through the steps at pre-selected speeds for each step, as well as pre-selected ampere.

EXIT	SET SPEED	TEXT WHITE	SET CONTROL PROGRAM 1	SAVE	
STEP1	CLR	TEMP	AMP%	TIME	COOL OFF
STEP2	CLR	TEMP	AMP%	TIME	COOL OFF
STEP3	CLR	TEMP	AMP%	TIME	COOL OFF
STEP4	CLR	TEMP	AMP%	TIME	COOL OFF
STEP5	CLR	TEMP	AMP%	TIME	COOL OFF
STEP6	CLR	TEMP	AMP%	TIME	COOL OFF
STEP7	CLR	TEMP	AMP%	TIME	COOL OFF

The above screen is for programming of Temperature, Ampere, Time, as well as for on/off of Cooling. The screen below is for setting the impeller speed at any or all of the required seven steps. The parameters are keyed in on the numerical keypad.

EXIT	SET CONT	SET VALUE	SET CONTROL PROGRAM 1	SAVE
STEP1	1234 RPM	DISCHARGE	3000 RPM	
STEP2	1234 RPM	7	8	9 DEL
STEP3	1234 RPM	4	5	6 -
STEP4	1234 RPM	1	2	3 ENT
STEP5	1234 RPM	0	.	CLR
STEP6	1234 RPM			
STEP7	1234 RPM			

3. **On speed and time as well as temperature.** The below table shows an example of the possible programming setups in this mode.

Step 1	500 RPM	60 sec.	Cooling OFF
Step 2	900 RPM	20 sec	Cooling OFF
Step 3	2500 RPM	60 sec	Cooling OFF
Step 4	4000 RPM	120 °C	Cooling ON
Step 5	1500 RPM	70 °C	Discharge at 3000 RPM
Steps 6 + 7 Set CLR to skip these steps			

4. **On speed and temperature.** Here the mixer can be set to run at various speeds through all the seven steps where the speeds are switched over when the temperature is reached for each step. The cooling can also be enabled at any step or temperature. In addition, here, as in all other programming modes, the mixer can be made to stop at any stage to add in additives. This can be done through the small opening on the mixer lid or by opening the whole lid. Additives can also be poured in during running of the mixer through the small lid in the center of the large mixer lid.

5. **On speed and ampere.** The programming is similar to above example, except for different parameters.

STATUS DISPLAY		EXIT
PROGRAM 1	STEP 1	2.5
1500	60	TOTAL TIME min
2.5	55	TEMPERATURE C
TIME min	AMP MOTOR (%)	

A status display screen is used when the mixer is running in order to show all the stages, as well as the individual parameters of the program.

All the data, which you have programmed, as well as the actual running of the mixer can be transferred to your PC and the only software needed for this is Window Excel. With this you can record all mixer parameters, as well as produce clear end precise graphic curves on any of the parameters you select.



The above Alarm screen enables easy and fast trouble shooting.

AUTO	MAN	DISPLAY MANUAL MODE	EXIT
2.5	60	TEMPERATURE C	
1000	55	AMP MOTOR (%)	
SPEED	COOLING OFF		
▲	▼		

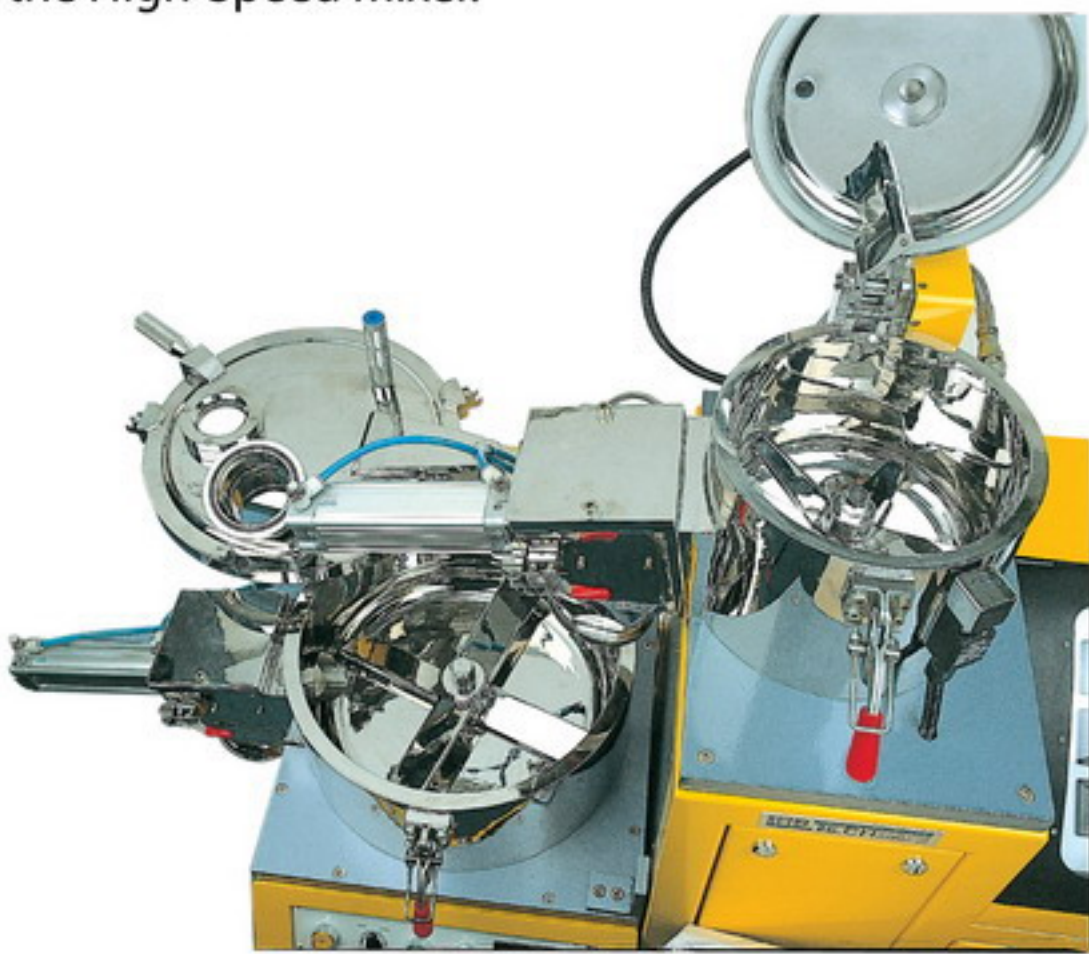
The computerized mixer can also be run in manual mode where then the impeller speed is regulated by pushing the UP or DOWN scroll buttons as shown above. The mixer is started and stopped on the external buttons and the cooling is also regulated manually. The above Manual Mode screen will show the Ampere Motor %, Batch Temperature, Impeller Speed and Total mixing time in minutes.



## Matching Cooler Mixers



The cooler mixer, which is a separate unit on casters, can easily be attached to the high-speed mixer. It is connected to the discharge valve of the high-speed mixer with quick locks and further there are two more connecting bolts, which will attach to the body of the high-speed mixer. The electrical connections between the cooler mixer and the high-speed mixer are made from supplied cables, which plugs into the receptacles on the High-Speed mixer.



The lid to the cooler mixer is opened and swung back wards by releasing the quick lock handles to the discharge, as well as to the bowl.

The cooler mixers have a large diameter cylindrical bowl, which is cooled all around as well as partly on the bottom. The two-winged impeller is shaped so that it slings the batch upward and against the sidewalls for optimum cooling efficiency.

The cooler mixer is designed so that it can run automatically together with the computerized high-speed mixer. It will then start as soon as the mixing batch is entering, and run until the cooling time elapse when it in turn can be made to automatically or manually discharge into a container.

Further the cooler mixer can be run semi-automatic together with the manual mixer, so that it always will start when the discharge button on the high-speed mixer is pressed in order to prevent that the hot batch will lump together. The digital timer on the cooler mixer will determine the full duration of the cooling cycle and also here the discharge can be made either automatically or manually after the cooling time has elapsed.

Technical Data High-Speed Mixers				Technical Data Cooler Mixers		
MIXER TYPE	COMPUTER	LMX5-S-VSFI	LMX10-S-VSFI	COOLER MIXER TYPE	LCM-12	LCM-24
	MANUAL	LMX5-S-VS	LMX10-S-VS			
NET MIXING VOLUME		7,8 LITER	11,0 LITER	NET MIXING VOLUME	12 LITER	24 LITER
NET MIXING VOLUME		5 LITER	7,3 LITER	NET MIXING VOLUME	6 LITER	12 LITER
IMPELLER RPM		500 TO 4000	500 TO 4000	IMPELLER RPM	400	400
MOTOR POWER		4 KW	4 KW	MOTOR POWER	0,37 KW	0,37 KW
PNEUMATIC DISCHARGER		YES	YES	PNEUMATIC DISCHARGER	YES	YES