

BIOENGINEERING

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Bioengineering –
Experience only
specialists can have

BioEquipment

Fermentation and Periphery

Airlift fermenters
Anaerobic fermenters
Autoclavable laboratory fermenters
Autoclavable fluidized bed reactors
Cell fermenters
Feed vessels
Fermenter configurations
Fermenters for plant cell cultivation
Fermenter downstream equipment
Fluidized bed reactors
Foam separators
HTE fermenters
High pressure fermenters
Illumination units
Laboratory fermenters L1523
Laboratory fermenters NLF22
Laboratory pilot fermenters LP351
Lamella clarifier units
Medium storage vessels 50–5000 l
Membrane reactors
NMR reactor
Pathogenous units
Photoreactors
Pilot plant fermenters
Rotaschon fermenters
Rotor filters
Small laboratory fermenters KLF
Solid state fermenters
Surface cultivation
Visual safety fermenters VSF

Probes/Measuring systems

Admittance level probes
Anti foam level probes
Circulation thermostats
Control valves
Dipsticks
Float switches
Dosage systems
Flow meters
Gas analyzers
IFM - Intelligent Front Modules
Load cells
Level indication 'Biowatch'
Level measurement probes
Media optimization
Pervaporation probes
pH/Redox probes
Plate spring pressure gauges
Platform scales
pO2 probes
Pressure gauges
Pressure transmitters
Sterile pressure gauges
PT100 temperature probes
Thermometers
Thermostats
Turbidimetry
Weighing probes
etc.

Accessories

Air filters
Autosterile filters
Rupture disks
Ceramic air filters
CIP spray balls
CIP valves
Condensate containers
Contained sampling systems
Dialysis probes
Dosing valves
Gas mixing stations
Glycerin containers
Harvesting valves
Incinerators
Injector valves
Lid opening devices
Mechanical seals
Media preparation filling methods
Pressure holding valves
Pressure overlay
Pressure reducing valves
Reflux coolers
Safety valves
Sampling valves
Sterile cases
Sterile traps, electric
Viewing ports
etc.

Components

Ball valves
Bottle cap screws GL45
Cold sterilization
Compressors
Coolers
Diaphragm valves
Dirt traps
Dispersing mixers
Electric steam generators
Enzyme membrane reactors EMR
Filters for liquids
Heat exchangers
Manual mini-Inversina tumbler mixer
Inversina tumbler mixer
Kobio pumps
Laboratory bottles
Magnetic circulation pumps
Non-return valves
Peristaltic pumps
Solenoid valves
Spiral filters
Steam traps
Sterile connections
Stirrer systems with direct drive
Stirrer systems with magnetic drive
Tri-Clamp connections
etc.

BioEngineering

Design and manufacture of plants for the production of:

Amino acids	Biopolymers/lipids
Antibiotics	Enzymes
Biomass/yeast	Ethanol
Biopesticides	Flavors

Fruit juices
Monoclonal antibodies
Organic acids
Peptides/proteins

Sugar derivates
Vaccines
Vitamins
etc.

BioControl

Back up	Process optimization
Data processing	Process supervision
Process analysis	Logging
Process management	Process data recording
Process control system PCS	

PCS installations using:		
AEG Modicon A250	FERM Software	Paragon
Analog Device Macsym	Mitsubishi	Selectron
Eurotherm T3000	Mod 300	Simatic S5
		etc.



Laboratory Fermenter NLF

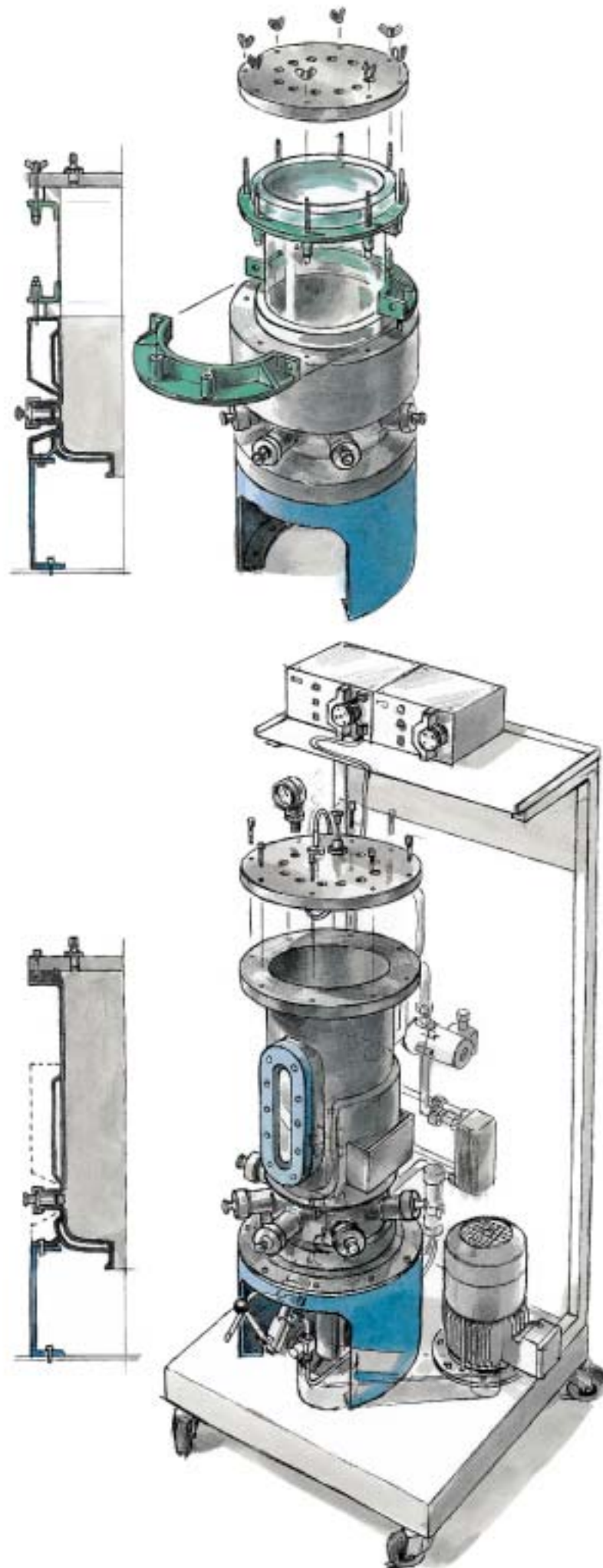
NLF: the mobile and flexibility laboratory fermenter that makes your work easier

The uncompromising quality and reliability of the NLF, based on the technology from the L1523, are evidenced by its wide range of applications. For volumes from 16 to 30 l. The fermenter and the drives are not separating from the vessel to autoclavable.

This model has long been a proven performer in the cultivation of prokaryotic organisms and animal cells. Its reliability is no coincidence but stems from a consistent design philosophy.

Flexibility

The system readily adapts to a wide variety of needs built on the 200 mm and 250 mm diameter-line. The future will bring changes, new methods, new projects – with the NLF, you are equipped for whatever may come. The NLF lab fermenter is available in steel/glass (dished steel head, glass cylinder, steel lid) or steel/steel (with the cylinder of steel as well). Steel and glass cylinders of all sizes can be interchanged as necessary. A range of stirring and aeration units can also be installed in just a few steps to meet the exact needs of your culture. The fermenter can be retrofitted to operate in continuous, fed-batch and perfusion-culture modes (with a rotary filter, for instance). Mechanical froth removal is another option for the system.



Instrumentation and control
Highly reliable I&C is integrated according to your order and can easily be upgraded. Modular design makes it easy to replace digital local controllers and instrument amplifiers. A control computer system, SPC or DDC (without local controller) opens up countless options in terms of control strategy, process engineering and data management.

NLF: proven in the field
The NLF features a good design, long life cycle, and the possibility of upgrading at any time. Introduced in 1980, all NLFs can still be used, retrofitted and returned to service – even though the safety regulations have changed. Inquire further for details about why this design is so often emulated.

Design

- This classic lab fermenter
- features a modular system design
- can be sterilized in situ
- meets the highest safety standard with both glass and steel cylinders
- permits visual observation
- allows both temperature control and heat exchange through the vessel head or the doublewall
- adapts to changes in electrical as well as I&C technologies
- has optimized lid and port designs (which have become the industry standard)
- can be thoroughly cleaned
- facilitates proper maintenance (it can be taken apart with a pocketknife and a wrench)
- is affordable
- works with the customer's utility systems
- offers universal applicability

The mobile NLF can be easily integrated in a laboratory. There are 2 different diameters, 200 and 250 mm. For each diameter, interchangeable glass or steel cylinders in various heights are available. Due to this concept, the fermentation volume is variable from 16 – 30 l with the same basic unit. A double walled dished bottom is used for temperature control. The NLF is supplied with a directly coupled bottom drive with single or double mechanical seals. Also available with encapsulated indirect magnetic drive and top drive.

	Vtot.	Vwork	DN	H
glass/steel	16 l	10,6 l	200	540
	19 l	12,6 l	200	640
	22 l	14,6 l	200	740
steel	16 l	10,6 l	200	540
	19 l	12,6 l	200	640
	30 l	20 l	250	712

Vtot. total volume
Vwork working volume

Technical data	
operating temperature	max. 150° C
operating pressure (glass cylinder)	-1...+1,5 barü/g
operating pressure (steel cylinder)	-1...+2,5 barü/g
operating pressure heating jacket	...4 barü/g
material of parts which are in contact with the product	1,4435/316 L (Duran®) "glass"
motor power	1,5 kW
agitator speed	max. 3000 Upm/rpm

