ROUSSELET ROBATEL®
ROUSSELET CENTRIFUGATION **GROUP**

metal working

chemistry - pharmaceuticals

food industry

# MULTISTAGE CENTRIFUGAL EXTRACTORS TYPE LX

*LX 576 on skid with peripheral components*

**PHARMACY**
*Purification of active principles (example: antibiotics).*

**CHEMICALS**
*Washing of polymers or extraction (example: acetic acid).*

**FOOD INDUSTRY**
*Purification of good components (Lactic and Citric acids).*

**HYDROMETALLURGY**
*Separation or purification (precious metals).*

**PARACHEMISTRY**
*Perfumes, aromas, essential oils,...*

## COMMON FEATURES AND ADVANTAGES

- All parts in contact with the product are manufactured from alloys such as stainless AISI 316L, AISI 904L, Hastelloy C, Titanium and seals from PTFE.

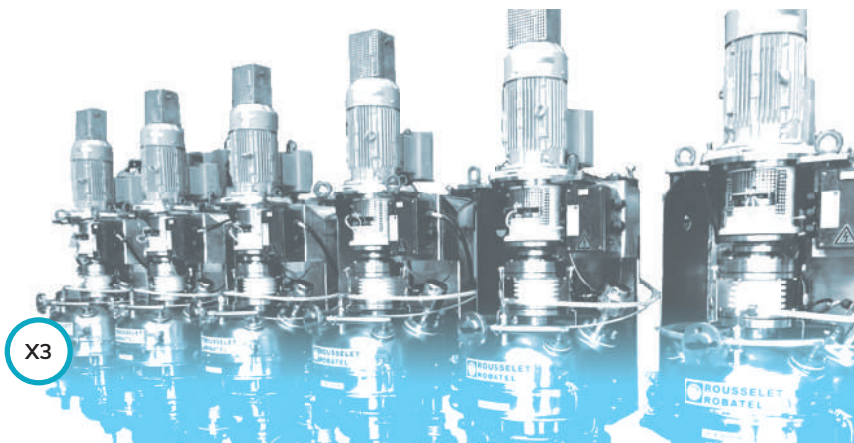
- Casing installed on a supporting frame (manufactured from carbon steel or cast steel with stainless steel cladding on its inner side), equipped with all piping (inlet and outler pipes, drain pipe for emptying the bowl when stopped, nitrogen inlet, vent pipe,...).

- Transmission consisting in one watertight or explosion proof electrical motor linked to a frequency inverter with elastic coupling for motor/sub assembly link (LX 120/200) or pulleys and anti static V belts transmission (LX 320/360/520/570).

- Frame mounted on antivibration supports.

- Bearing housing with ball bearings (LX 120/200) or grease lubricated roller bearings, and nitrogen sweep.

- Centrifuges compilant with European directive and standards (and ATEX for relevant countries.



## OPERATING PRINCIPLE

**The feed solution** *(heavy phase on cross section sketches)*, containing one or more solutes, and a immiscible solvent having a different density *(light phase on cross section sketches)*, flow counter-currently through the extractor's rotor, designed with a stack of mechanical subasemblies representing the required number of separate stages.

Teh successive mixing and separation operations performed in each mechanical stage permit the mass transfer of the solutes from the feed solution to the solvent.

**Each stage consist of:**

- **A mixing chamber** where the two phases ate mixed and where the transfer of solutes to be extracted is achieved. A fixed disk allows the two phases to be mixed and to create an emulsion. It operates as a pump to draw the two phases from the preceding stage.
- **A decantation chamber** where the two previously mixed liquids are thoroughly separated by centrifugal force. Over-flow weirs stabilize the separation area independently of flow rates.

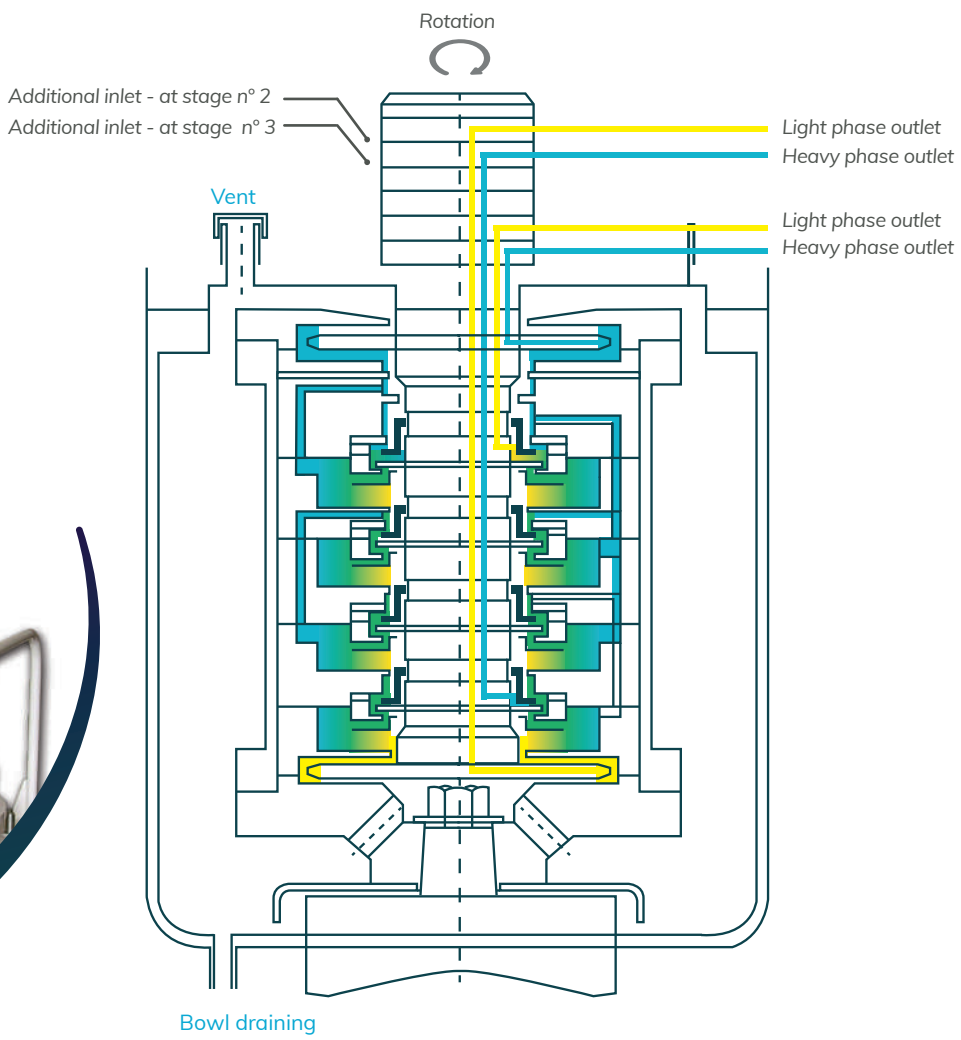
The interphase position depends on the diameter of the heavy phase overflow weir, which is interchangeable and to be selected according to the phase density ratio.

The two phases are fed into the extractor through feeding pipes set on the top part of the shell, on LX 320/360/520/570, and vice versa on models LX 120/200, to acheive counter current extraction.

**The separated pases are discharged either by gravity or by means of inward-flow turbines** *(depending on the model)*.

## EXTRACTORS LX120 AND LX200

LX 204 on skid

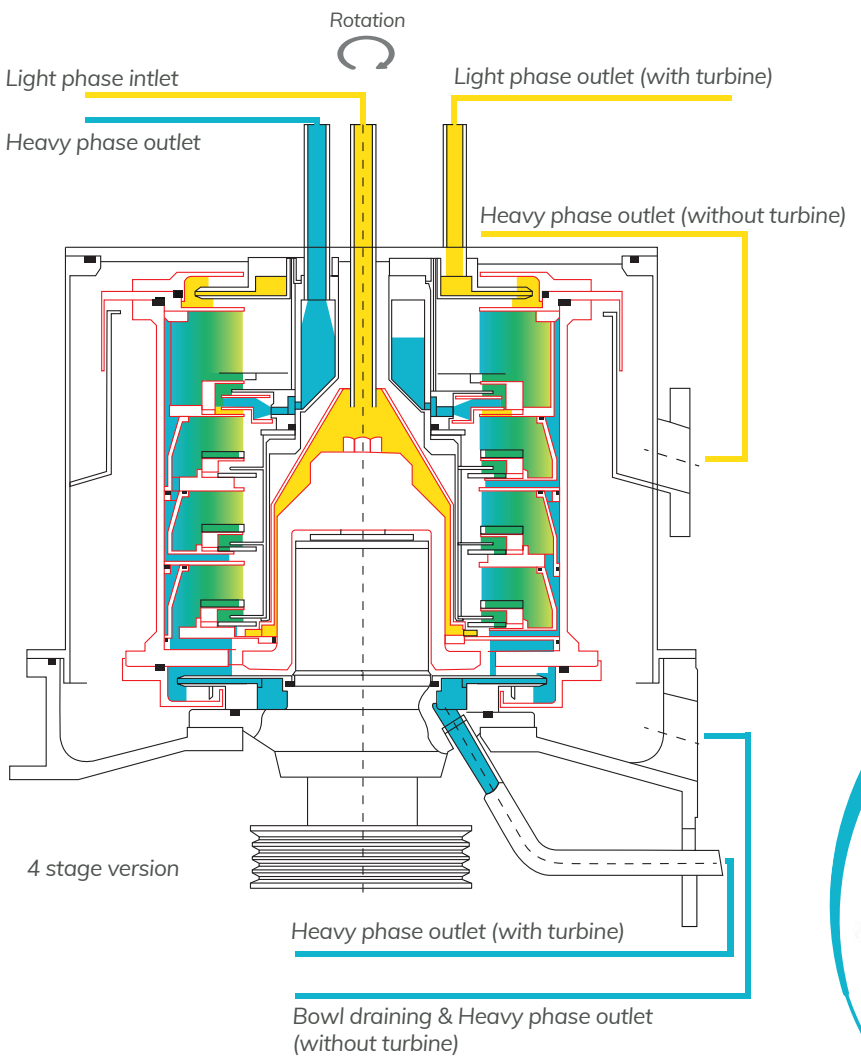



4 stage version

## SPECIFC ADAVANTAGES OF MULTISTAGE VERSIONS

- Up to 7 stages installed on a single machine allowing unrivalled extraction efficiency.
- Each mechanical stage nearly corresponds to a theoretical extraction stage.
- Compact installation with small footprint.
- Possibility to set the extractor up on a mobile trolley to be moved very easily.
- Low operating and maintenance costs (1 single rotor / 1 single motor).
- Inward-flow turbines for pressurized discharge of the two separated phases toward colelcitng tanks or downstream equipment (or to the inlet of a second extractor if many extraction stages are required).

## EXTRACTORS LX320, LX360, LX520, LX570




LX 524

LX 365

**Severals models** are designed with a feeding pipe on each intermediary stage **allowing fractionated extraction or to feed a third phase:**
pH adjustment, washing of one phase before its removaln introduction of a third liquid miscvible with either one of the two phases).

**In case the extraction process only requires one or two stages and according to the extractor model** it is possible to use the other stages to improve phase clarity and reduce the volume on one phase carried away by the other phase.

# TECHNICAL DATA

| TYPE | | Bowl | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | Number of stages | ø bowl **mm** | Bowl capacity l | Maximum speed **rpm** | | Maximum combined flow rate for both phases **l / h** | | Motor power **kW** | Net wight **kg** | Dimensions l x w x h **mm** |
| | | | | | 50 Hz | 60 Hz | 50 Hz | 60 Hz | | | |
| **LX 120** | LX 122 | 2 | 120 | 0.15 | 2900 | 3450 | 25 | 30 | 0.75 | 180 | 720 x 720 x 1130 |
| | LX 123 | 3 | | 0.21 | | | | | | 185 | 720 x 720 x 1170 |
| | LX 124 | 4 | | 0.27 | | | | | | 190 | 720 x 720 x 1200 |
| | LX 126 | 6 | | 0.39 | | | | | | 210 | 720 x 720 x 1280 |
| **LX 200** | LX 202 | 2 | 200 | 1 | 2900 | 3450 | 250 | 300 | 1.5 | 220 | 720 x 720 x 1250 |
| | LX 203 | 3 | | 1.4 | | | | | | 230 | 720 x 720 x 1290 |
| | LX 204 | 4 | | 1.8 | | | | | | 240 | 720 x 720 x 1330 |
| | LX 204P | 4 | | 1.6 | 1450 | 1750 | 125 | 150 | | 200 | 720 x 720 x 1510 |
| **LX 320** | LX 323 | 3 | 320 | 11 | 3200 | | 1800 | | 5.5 | 280 | 1050 x 590 x 760 |
| | LX 324 | 4 | | 10.2 | | | 1500 | | | 290 | |
| | LX 325 | 5 | | 9.3 | | | 1300 | | | 300 | |
| **LX 360** | LX 363 | 3 | 360 | 14.6 | 3000 | | 2100 | | 7.5 | 300 | 1050 x 590 x 760 |
| | LX 364 | 4 | | 13.6 | | | 1800 | | | 310 | |
| | LX 365 | 5 | | 12.6 | | | 1500 | | | 320 | |
| **LX 520** | LX 524 | 4 | 517 | 57 | 2000 | | 6000 | | 18.5 | 1020 | 1550 x 840 x 1100 |
| | LX 525 | 5 | | 54 | | | 5000 | | | 1040 | |
| | LX 526 | 6 | | 52 | | | 4500 | | | 1060 | |
| | LX 527 | 7 | | 49 | | | 3500 | | | 1080 | |
| **LX 570** | LX 574 | 4 | 570 | 74 | 2000 | | 8000 | | 18.5 | 1100 | 1550 x 840 x 1100 |
| | LX 575 | 5 | | 70 | | | 7000 | | | 1130 | |
| | LX 576 | 6 | | 67 | | | 6000 | | | 1160 | |

**The hourly flowrates** depend upon the viscosity, emulsification tendency, density ratio and the flow ration of the liquids being processed.


**HEADQUARTERS**
ROUSSELET ROBATEL
45 Avenue Rhin et Danube
Parc d'activité économique de Marenton
07104 ANNONAY - FRANCE
Tel.: +33 (0)4 75 69 22 11
E-mail: info@rousselet-robatel.com

**UNITED KINGDOM**
Rousselet UK Ltd
Parkside House, 17 East Parade
HARROGATE
NORTH YORKSHIRE HG1 5LF
Tel: + 44 (0)1 423 530 093
E-mail: info@rousselet-robatel.com

**USA**
Robatel Inc.
703 West Housatonic Street
PITTSFIELD
MA 01201
Tel: + 1 413 499 4818
E-mail: sales@rr-centrifuge.com

**DEUTSCHLAND**
ARRGOS GmbH
Max-Eyth-Str. 1
D-71691 Freiberg a.N.
Tel : +49(0)7141 97229 20
Fax : +49(0)173 757 6226
Email : nicolas.kiehl@arrgos.de