GEA Engineering for a better world.

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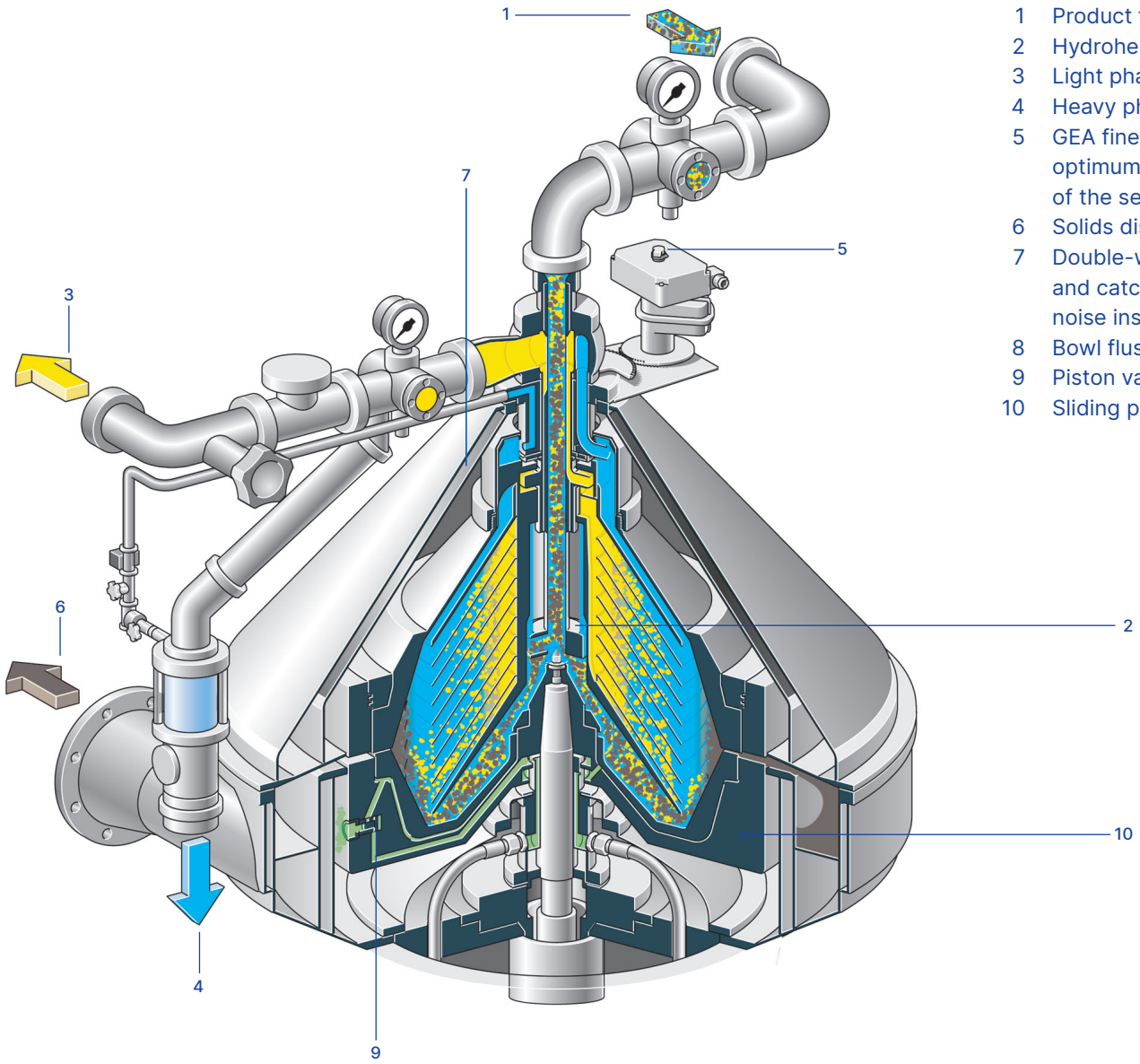
GEA CENTRIFUGES FOR THE EDIBLE OIL INDUSTRY

Perfect solutions for different processes

Self-cleaning separators with double centripetal pump

The product is fed into the bowl through a closed-line system with hydrohermetic feed. Separation of the phases takes place in the disk stack. The light liquid phase (clean oil) is discharged foam-free under pressure by a centripetal pump. The heavy liquid phase (soapstock or gums) is discharged by the GEA finetuner. The separated solids are collected in the solids holding space and ejected at preset intervals.



1 Product feed
2 Hydrohermetic feed
3 Light phase discharge
4 Heavy phase discharge
5 GEA finetuner for optimum adjustment of the separating zone
6 Solids discharge
7 Double-waited hood and catcher for noise insulation
8 Bowl flush
9 Piston valve
10 Sliding piston

Special features of the separator

Separator GEA finetuner
The fine**tuner**, which has been developed by GEA, is a combination between a centripetal pump and a paring tube. It is characterized by a substantially improved efficiency factor compared to conventional centripetal pumps. This is the ratio of the conversion of rotational energy into pressure. The efficiency factor with the fine**tuner** can be rated at almost 0.9. The effect is viscous media such as gums from super degumming installations can be discharged without difficulty. The adjustment of the GEA fine**tuner** diameter can be done by a manual hand wheel or by a pneumatic actuator from the control unit.

Hydrohermetic feed
The hydrohermetic feed system developed by GEA protects the product from exposure to high shearing forces.

Hydrohermetic vapor seal
The hydrohermetic vapour seal (sealing by liquid) prevents vapours from rising out of the feeding chamber into the lower centripetal pump chamber. This has a positve effect in case of higher separating temperatures (>90°).

Bowl flush
Liquid can be fed into the separator through a separate bowl flush water channel.

Advantages of the special features

GEA finetuner
- For optimum adjustment to achieve best oil quality and lowest oil loss.
- Flexibility of the separators: A single machine can be used for many refining processes without major conversion of the machine.
- Improved operating reliability.

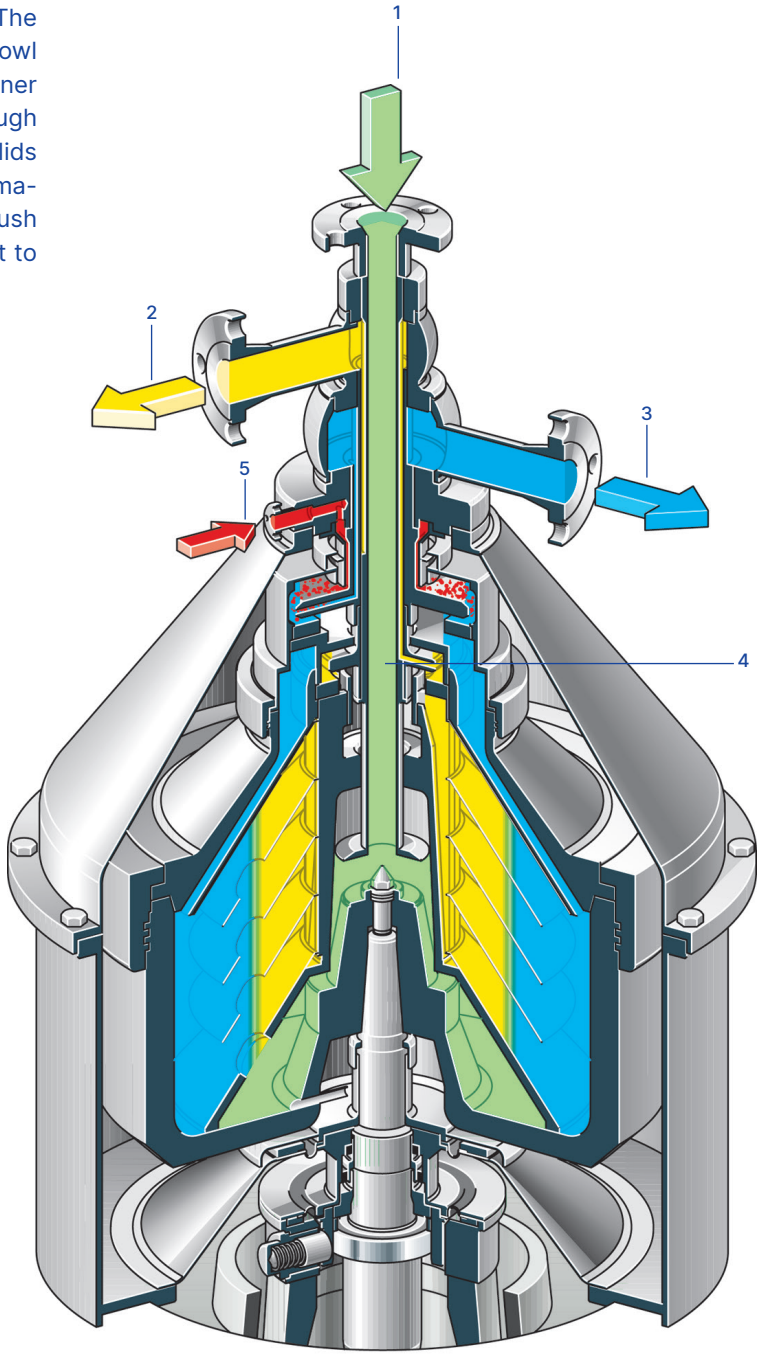
- Hydrohermetic feed: protects product from exposure to high shearing forces through gentle product feed.
- No mechanical seal and therefore no additional cooling water consumption and lower maintenance costs.
- No oxygen pick-up.

- Hydrohermetic vapor seal: the seal prevents vapors in the inlet space from causing turbidity in the oil.

- Bowl flush: a highly viscous heavy phase can be diluted to improve flow characteristics.

Take-down separators

Take down separators are equipped with a solid-wall bowl. The product flows through the feed into the bowl and is separated into a light and heavy phase in the disc stack with simultaneous removal of the solids. The light product phase (clean oil) flows towards the centre of the bowl and is discharged foam-free and under pressure by a centripetal pump. The heavy product phase flows towards the periphery of the bowl over the separating disc, is branched off by the GEA finetuner or a centripetal pump and discharges under gravity through a discharge pipe. The separated solids collect in the solids holding space and must be manually removed after the machine has come to a standstill. With the optional bowl flush liquid can be added into the bowl through a separate duct to improve the separation in neutralization.



1 Product feed
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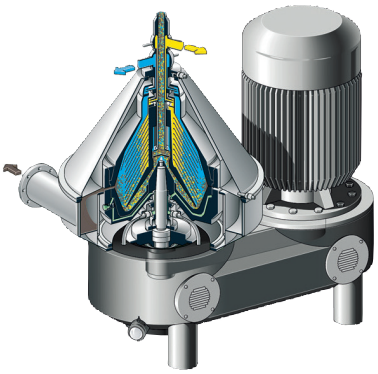
3 Heavy phase discharge
4 Hydrohermetic feed
5 Bowl flush

Available drives for edible oil separators

RSE 220 with flat belt drive



Flat belt drive
Flat belt drives can be used for small and larger machines. For smaller machines a standard motor and intermediate clutch is used to drive the bowl via a single flat belt. For larger machines the power transmission from the torque-controlled motor to the bowl spindle is via a single flat belt without an intermediary clutch. The design is very simple and maintenance friendly. The spindle can be removed together with the complete bearing assembly and can be serviced outside.

Advantages of the flat belt drive
- Longer oil change interval
- Longer maintenance intervals
- Lower maintenance cost
- Reduced noise level

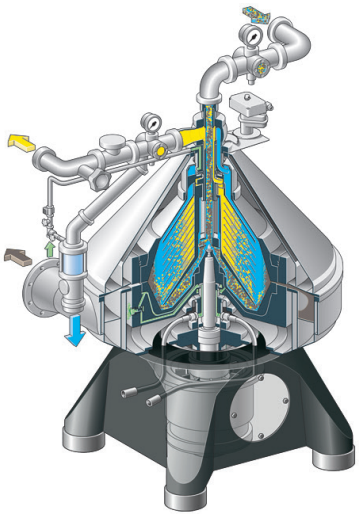
RSF separators with exchangeable direct drives

Exchangeable direct drives

They save energy, are smaller, even quieter, are exchanged in literally no time so that your edible oil separator does what you want it to do: rotate and make money – exchangeable direct drives have a direct impact on your results, sustainability goals and production environment. For the first time, direct drives are now also available for separators of smaller capacities so that you can profit from all the benefits of this design principle regardless of capacity.

Advantages of exchangeable direct drives
- Highest energy efficiency: up to 7% less energy consumption compared to belt, up to 10% less compared to gear
- Less Downtime: no additional stress on spindle makes for less wear and higher uptime (up to 99%)
- Pre-assembled drive-spindle unit: fast and easy exchange of drive system
- Reduced footprint: 360° accessibility, less weight, better and easier handling during service
- Reduced noise level: up to 7db less noise, perceived up to 50% less.
- No cooling ribs: hygienic design, better cleanability, cleaner production environment.

RSI 300 with integrated direct drive



Integrated GEA directdrive

No gear, no belt, no substructure – the integrated direct drive from GEA focuses on the essentials. It transfers the motor power directly to the bowl. This reduces friction losses and results in energy savings up to 1 percent compared to gear drives. With the integrated direct drive the centrifuge needs 30 - 35 percent less space and operates much more quietly. The entire technical concept has been simplifed and the number and variety of parts reduced. Bowl and motor can both be removed as single entities reducing the downtime for maintenance considerably.

Advantages of the integrated direct drive compared to flat belt and gear

- Easy installation
- Fast and easy maintenance
- Less parts for higher uptime
- Lower space requirement
- Lower maintenance requirement
- Lower energy costs
- Fewer wearing parts
- Further reduction of noise level
- The direct drive meets all explosion
- proof requirements

Edible oil refining separator series RSI

Resource efficient solution

As one of our most resource-efficient solutions, our Edible Oil Refining Separator Series RSI carries the Add Better label.*

The GEA Advanced Water Supply optimization concept is an example of how further savings potential can be unlocked at any point within the process chain. In this case, it is the smart reduction of the consumption of cooling and operating water without any negative impact on performance.

With optimized control matched to the technical conditions, it is possible to optimize the consumption of operating water for a self-cleaning centrifuge as well as the cooling water for the direct drive, the hood, and the solids catcher, resulting in water savings of minimum 48%.

*The Add Better label relates to the serial product Edible Oil Refining Separator RSI, released in November 2024. The comparison refers to its predecessor model, the RSI series without GEA Advanced Water Supply.

Capacity of edible oil separators in different processes

Type	Water Degumming[1] (t/24h)	Acid Degumming[2] (t/24h)	Neutralization[3] (t/24h)	Washing (t/24h)	Winterization[4 5] (t/24h)	Cold Refining[6 7] (t/24h)	Miscella Refining[8] (t/24h)
RSF 40 - 01	75	-	75	100	-	-	-
RSF 80 - 01	180	-	180	250	-	-	-
RSE 50 - 01	150	150	150	150	75	75	-
RSE 60 - 01	150	150	150	150	75	75	100
RSE 80 - 01	200	200	200	250	100	100	-
RSE 90 - 01	200	200	200	250	100	100	120
RSE/I 120 - 01	360	360	360	360	180	180	200
RSE/I 170 - 01	150	450	450	500	200	200	240
RSE/I 220 - 01	800	800	800	800	400	400	500
RSE/I 300 - 01	1200	1200	1200	1200	500	500	720
RSE/I 320 - 019[9]	1350	-	1350	1350	-	-	-
RSE 450 - 01	1800	1600	1600	1600	800	800	1000
RTC 40 - 01	-	-	-	100	-	-	-
RTC 80 - 01	-	-	-	250	-	-	-
RTI 150 - 01[10]	300	300	300	450	150	120	200

1 With maximum 800 ppmP
2 Only with special bowl material, bowl version 2
3 With water degummed oils, FFA content maximum 1.5%, P-content maximum 200 ppm
4 With maximum 1500 ppm wax
5 If the machine is designed for Winterization, the capacity in hot processes will be reduced
6 With maximum 2 % FFA, 300 ppmP, 1500 ppm wax
7 If the machine is designed for Cold refining, the capacity in hot processes will be reduced
8 Oil capacity with miscella of oil content between 60 % and 70 %
9 Only available for low content of low viscous heavy phase (i.e. nano neutralization, enzyme degumming)
10 Only with bottom flush (- 51 design) for processes other than washing

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