ROTOPLEX® GRANULATORS
SERIES 63, 80, 90, 100, 125

HOSOKAWA ALPINE Aktiengesellschaft

Rotoplex® Large-Scale Granulators
Clear Design Concept * Convincing Technology * Top Quality

Powerful machine sizes with up to 500 kW drive performance

Rotoplex® large-scale granulators are characterised by their extraordinary performance capacity, economy, and operating reliability. They differ fundamentally from conventional granulators in many points. To your advantage.
Rotoplex® large-scale granulators: machines which can stand the pace. Day for day. Year for year. Even when the going gets tough.

Patented cross-scissor-cut rotor

The process-technological superiority of the Rotoplex® granulators is not least a result of the newly developed rotor geometry.
The cross-scissor-cut rotor with segmented rotor knives succeeds in virtually eradicating the well-known weaknesses of conventional rotors. The specific energy consumption or, for example, the size reduction process when granulating film, and the quality of the film flakes themselves are all decisively improved.

Strong market position in film recycling

Alpine's film granulators are becoming more and more popular in the plastics industry. Which is no surprise - with high throughputs of up to 9 t/h, wide cutting widths of up to 2500 mm and narrow cutting gaps of only 0.2 - 0.3 mm, they optimally fulfill today's requirements.

Large parts and lumps are traditional feed materials

Rotoplex® granulators grind all kinds of waste material, making light work of tough plastic bales of up to 150 kg piece weight and entire acrylic bath tubs

Figure: Rotoplex® large-scale granulator, model 125/125 Ro, incorporated into an Alpine scrap cable recycling system.

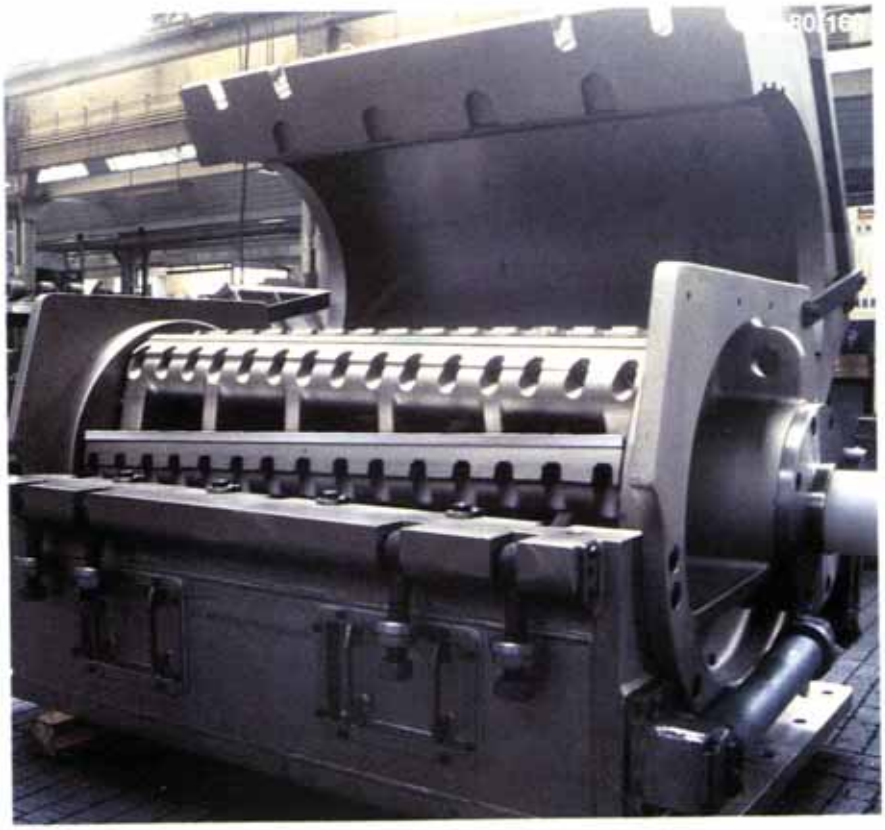


Figure: Rotoplex® large-scale granulator, model 80/160 Ro, with cross-scissor-cut rotor.

Cover photo: Rotoplex® film granulator, model 80/160 Ro, with soundproofed film feed chute and air intake filters.

Rotoplex®
Large-Scale Granulators

❑The table provides an overview of the Alpine Rotoplex® large-scale granulators. The overview on the back cover shows the entire Rotoplex® model range.

❑Should the market demand further Rotoplex® machine sizes for special duties, Alpine's engineers are on hand to come up with new Rotoplex® models or special "process granulators".

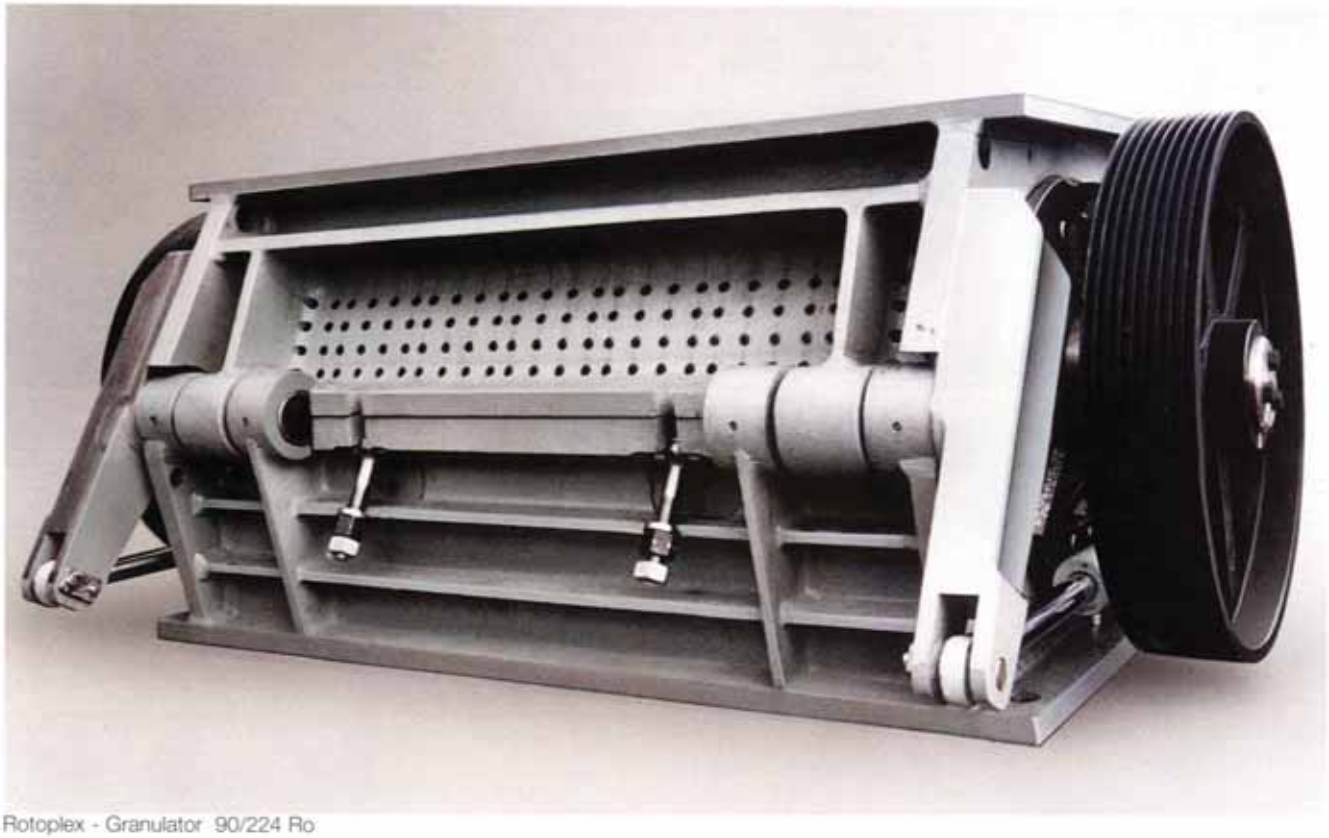
			Throughput Guide Values		Technical Specifications										
			Plastics (screen 6 Ø) [1]	PP film 20-40 µm; screen 12-15 Ø [1]	Scale-up factor [2]	Drive drive power	motor speed	drive, one sided	drive, double-sided	Cross-scissor-cut rotor diameter	cutting width	speed [3]	knife rows	Fixed knife rows
Rotoplex® Large-Scale Granulators			**kg/h**	**kg/h**	**F**	**kW**	**rpm**			**mm**	**mm**	**rpm**	**no.**	**no.**
	Series 63	**Model 63/80**	1300	1500	5	55-75	1500	●		630	800	525	6	4
		Model 63/100	1550	1800	6	75-90	1500	●		630	1000	465	6	5
		Model 63/125	1800	2100	7	90	1500	●		630	1250	355	6	5
			2000	2400	8	110		●						
	Series 80	**Model 80/100**	2000	2400	8	90-110	1500	●		800	1000	350	8	6
							1000	●						
		Model 80/125	2350	2700	9	110-132	1000	●		800	1250	350	8	6
		Model 80/160	2850	3300	11-12	132-160	1000	●		800	1600	350	8	6
		Model 80/190	4050	4650	16	200	1000	●		800	1900	350	8	6
		Model 80/224	4700	5400	18	315	1000	●		800	2240	350	8	6
			5200	6000	20	2 x 200	1000		●					
	Series 90	**Model 90/224**	6000	6900	23	2 x 200	1000		●	900	2240	400	10	8
	Series 100	**Model 100/224**	5700	6600	22	315	1000	●		1000	2240	290	10	8
			6500	7500	25	2 x 200	1000		●					
		Model 100/250	7800	9000	30	2 x 250	1000		●	1000	2500	290	10	8
	Series 125	**Model 125/125**	3900	4500	15	160	1000	●		1250	1250	250	12	9
			4400	5100	17	200	1000	●						

Legend:

1) Throughput: The quoted values are non-binding guide values. Guaranteed values quoted by Alpine only after trials or project discussion.

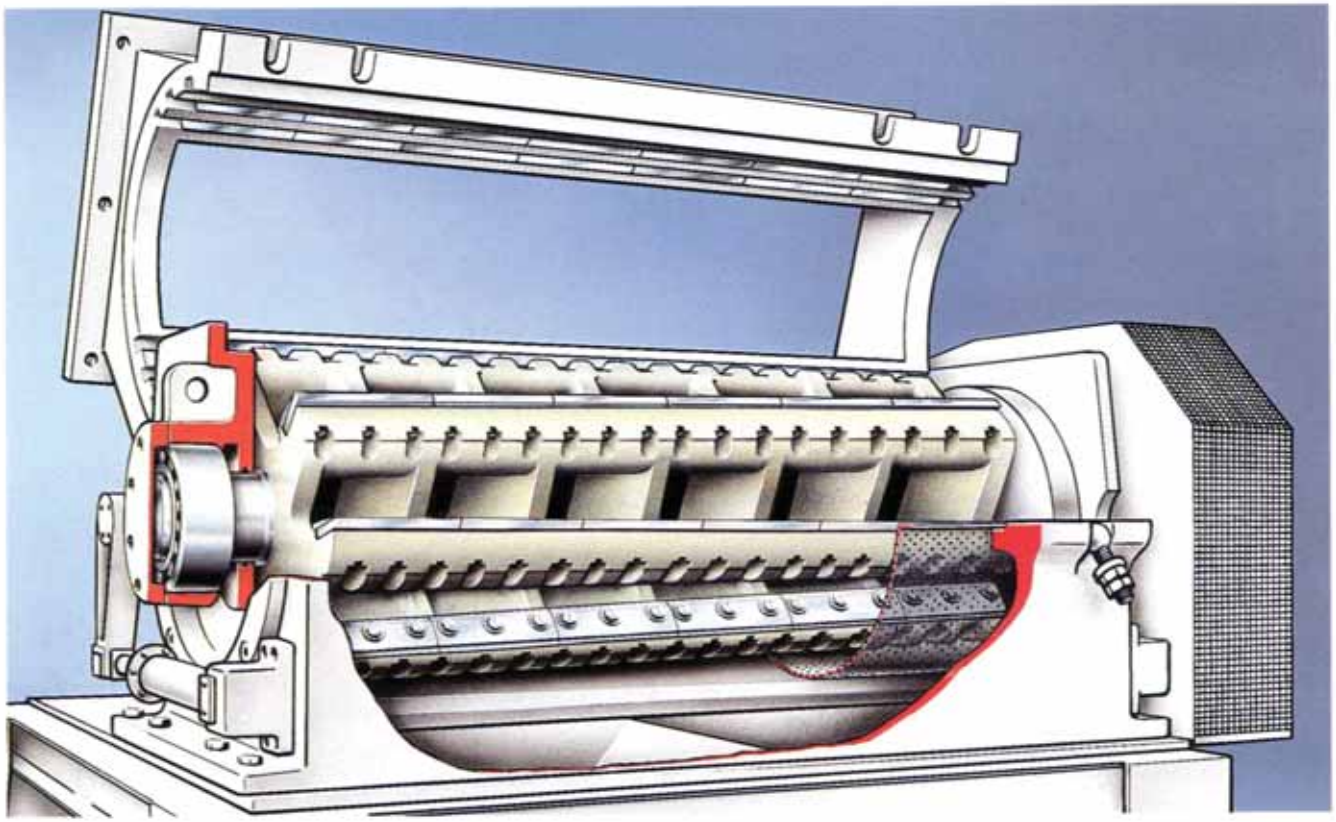
2) Scale-up factor: Refers to the base model Ro 28/40. See back cover for relation to the entire Rotoplex range.

3) Rotor speed: Quoted is the standard speed. When cutting plastic film, Alpine can increase the speed by approx. 30%.



Rotoplex - Granulator 90/224 Ro

Specific Rotoplex® Features
Cross-Scissor-Cut Rotor ✶ Open Cage Rotor



Patented cross-scissor-cut rotor

Design:
The knife rows are not just one-sided, but are also inclined - at the same angle - alternately in opposite directions.

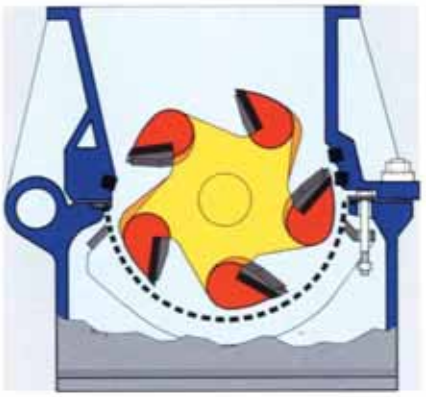
This unique arrangement makes it the only rotor where the stress is distributed evenly across the entire cutting width.

Special features: see page 5.

The newly developed, Alpine-patented cross-scissor-cut rotor outstrips conventional standards.

It represents a powerful cutting tool from Alpine, and is simultaneously proof positive that top technology need not conflict with a reasonable price. In practical operation, the process-technological superiority becomes immediately apparent.

The cross-scissor-cut rotor is the standard rotor employed for every Rotoplex® large-scale granulator.



Open cage rotor

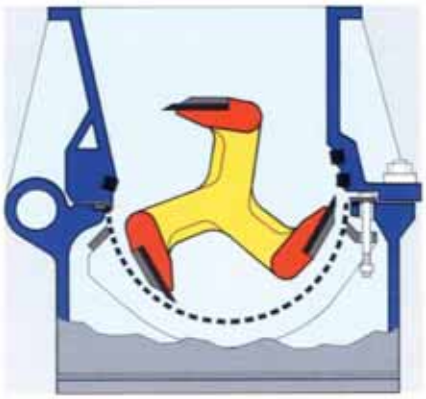
Design:
Special rotor with parallel cut.

Equipped with three or four knife rows, dependent on the machine size.

The rotor speed and drive power are determined by Alpine dependent on the project.

The open cage rotor is equipped with sharp, one-piece slicing knives. The large clearance between the knife rows permits optimum material intake when processing bulky, thin-walled hollow items. Erratic skipping of the items on the rotor is prevented, thus bringing a higher throughput.

Typical applications:
❑Large hollow items, e.g. 200-l drums, barrels, tanks, television sets.
❑Preliminary size reduction of synthetic or natural caoutchouc blocks.



Specific Rotoplex® Features and Practical Advantages

1

Rotoplex® Features
Cross-scissor-cut rotor

- Offers process-technological superiority.
- Saves energy.
- Increases the machine service life.
- Improves the material feeding characteristics.
- Grinds cooler.

Practical advantages

❑Saves up to 20% energy.
❑Delivers cleanly cut, low-dust granules.
❑The smooth and low-vibration operation makes the granulator quieter.
❑Uniform, controlled intake: when granulating film, the film web is drawn in smoothly, preventing any lateral deflection.
❑Longer service life: because a one-sided material distribution in the grinding chamber is avoided, the rotor bearings and side walls of the chamber are spared undue stress. This extends the service life of the machine and reduces costly repairs.

2

Segmented rotor knives

- Save costs.
- Reduce power consumption.
- Permit more exact cutting gap adjustment.

❑If the knives become damaged by tramp material, only the affected segment has to be exchanged, and not a long, one-piece knife.
❑The cutting gap can be set with a great deal more precision compared to simple scissor-cut granulators with long, one-piece knives.

3

Knife adjusting fixture for rotor knives (Fig. 3)

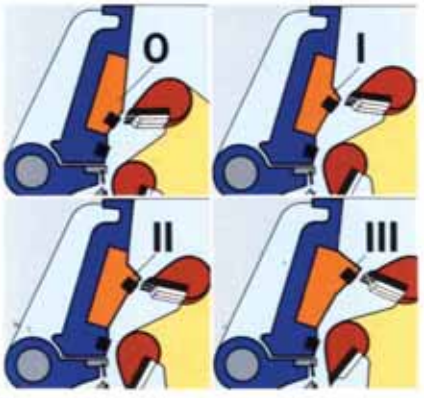
Makes the knife-change process for the cross-scissor-cut rotor knives quicker and easier.

❑With the aid of this device, new or re-sharpened knives can be adjusted and pre-set outside the machine. The otherwise elaborate adjustment process within the machine and subsequent cutting gap control is eliminated with this Alpine device.

Stator knives

The large number of fixed knife rows in the housing is a particular advantage of the Rotoplex® Granulators. Effect: more output, less wear; cutting gap remains constant for longer.

❑By simply turning the knives, they can be used on 4 sides without re-sharpening.
❑The 90° cutting angle extends the service life of the knives.
❑High degree of cutting power per rotor rotation brought about by the large number of stator knife rows.



4

Special bearings with double sealing

Technically sophisticated bearings. No external pedestal bearing; instead high-precision bearings integrated into the side panel.

❑High-precision bearings permit extremely narrow cutting gap adjustment. These days, a cutting gap between 0.2 and 0.3 mm is demanded for processing plastic film.
❑Lubricant cannot penetrate the chamber and material cannot penetrate the bearings.
❑Low thermal stress on the bearings; no additional water cooling necessary.
❑Possibility of non-contact, shaft channel rinsing with compressed air.

Patented feed control bar (Fig. 4)

The intake zone can be adapted to any material by selecting the appropriate feed control bar (0 - III). To order for: Models 63/80 - 80/100 Ro

❑Optimises the material intake.
❑Increases the throughput.
❑Prevents lumps of material from becoming jammed in the intake zone thus causing the machine to block or stall.

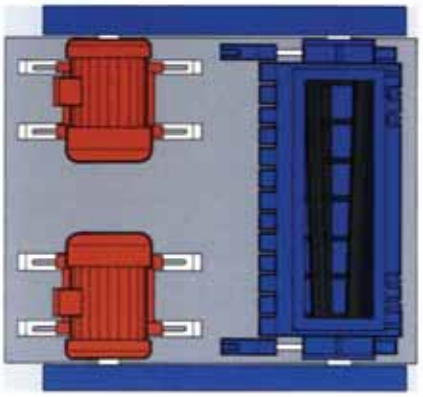
The Alpine retaining wedge (to order)

❑Prevents material pulsation in the chamber thus increasing the capacity.
❑Prevents film from becoming jammed between the rotor front surface and the chamber walls.

Rotor end guard

Double-sided drive (Fig. 5)

❑For model: 80/224, 90/224, 100/224, 100/250.



5

Size Reduction of Film

- ❑ Plastic Film
- ❑ Copper Film
- ❑ Aluminium Film

Soundproofed film intake device with chute and additional feed chute for manual feeding.
Application: Direct reduction of film webs. Safety feature: Feed chute surrounded by a contact-activated safety limit switch bar.

On the road to success: Rotoplex® Film Granulators

High-tech systems strengthen the market position

Rotoplex® film granulators are reliable and economical when it comes to size reduction of any kind of film. From thin film right up to thick film, Alpine has a wealth of practical experience at its fingertips. Regardless of whether cast film, film cuttings, or scrap reels, or whether the film waste exiting a processing machine is to be automatically granulated in-line, our product range includes systems for the size reduction of film edge trims right up to film webs with lay-flat widths of 9000 mm. The possibilities are limitless.

Alpine knows what matters most when it comes to engineering film processing systems, because Alpine supplies not only the granulator to granulate the film, but also - on request - the complete system. From the film feeding system to the film flake silo - everything from the one source!

The engineering examples show several typical application solutions for employing large-scale granulators in the field of film size reduction.

Guide values: Size reduction of film

Rotoplex® granulators: increasingly popular in the plastics industry. Machines which make short work of problems.

- ❑ Special feed chutes permit film webs up to approx. 9000 mm in width to be bunched up.
- ❑ Machines with large working widths and drive power values of up to 500 kW transfer film rejects directly from the exit point to the production machine.

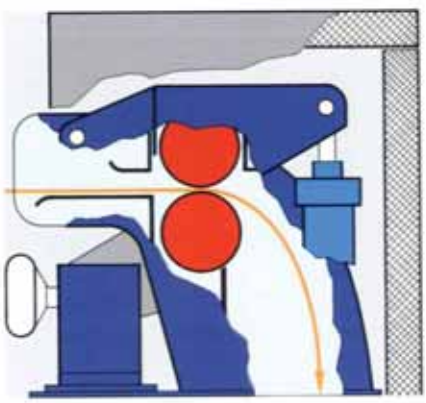
Raw Materials		PP-Film		Polyester-Film		PE-Film	PVC-Film
Film type		200 µm	20-40 µm	50-500 µm	15-40 µm	20-200 µm	50-700 µm
castfilm		●			● (140-500 µm)		
- edge trims		●			● (50-150 µm)		●
- film cuttings		●	●	●	●	●	●
- rejects (reels)		●	●	●	●	●	●
- finished film		●	●		●	●	●
Screen perforation Ø	approx	6 mm	12-15 mm	6 mm	6 mm	3,5 mm	6 mm
Bulk density	approx	≥ 120 g/dm³	≥ 120 g/dm³	≥ 120 g/dm³	≥ 120 g/dm³	200-250 g/dm³	200-300 g/dm³
Throughput guide	approx	kg/h	kg/h	kg/h	kg/h	kg/h	kg/h
Rotoplex®							
Series 63	Model 63/80	800	1500	1150	1000	350	1000
	Model 63/100	950	1800	1400	1200	420	1200
	Model 63/125	1250	2400	1800	1600	550	1600
Series 80	Model 80/100	1250	2400	1800	1600	550	1600
	Model 80/125	1450	2700	2050	1800	630	1800
	Model 80/160	1750	3300	2530	2200	770	2200
	Model 80/190	2500	4650	3550	3100	1100	3100
	Model 80/224	3200	6000	4600	4000	1400	4000
Series 90	Model 90/224	3700	6900	5300	4600	1600	4600
Series 100	Model 100/224	4000	7500	5750	5000	1750	5000
	Model 100/250	4800	9000	6900	6000	2100	6000
Series 125	Model 125/125	2650	5000	3800	3300	1150	3300

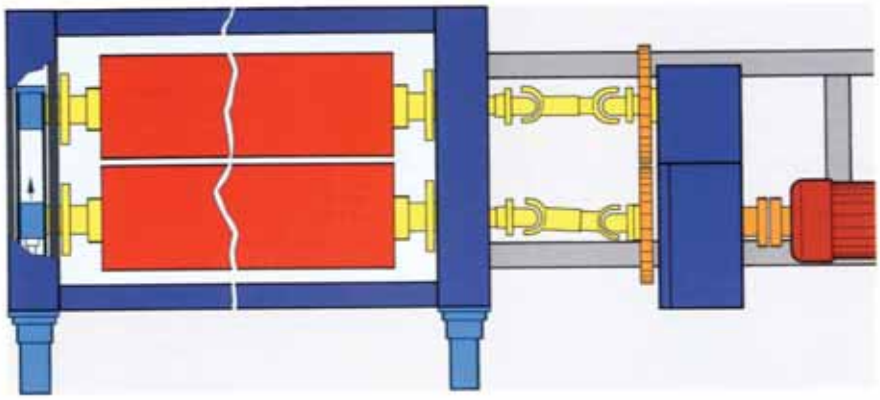
Guide Values:
All values are guide values. The quoted film thickness, bulk density, and screen perforation size values correspond to frequently realised practice requirements. Guaranteed values only quoted by Alpine after trials or project discussion.

Film intake devices

Design features:
- ❑ Steplessly adjustable up to 400 m/min.
- ❑ Drive with Brema motor (option)
- ❑ Variable-speed geared motor with manual adjustment
- ❑ AC motor with frequency convertor
- ❑ DC motor with tacho generator; speed control by means of voltage regulation.

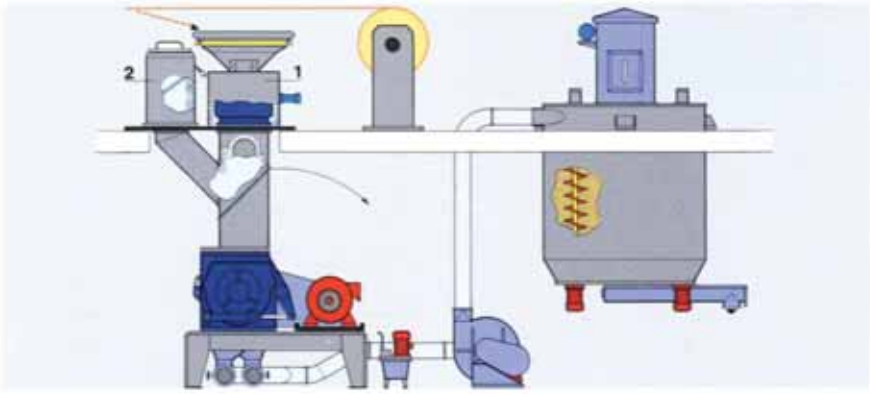
Intake device		kW	Rotoplex®
ID	15/80	3	63/80
ID	15/100	5.5	63/100; 80/100
ID	18/120	5.5	63/125; 80/125
ID	20/150	7.5	80/160
ID	25/200	15	80/190
ID	25/225	18.5	80/224; 90/224; 100/224
ID	30/250	22	100/250





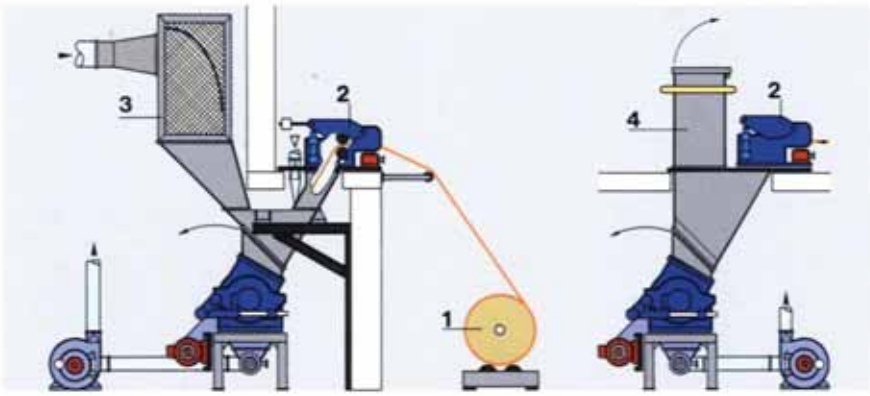
Engineering Examples for Film Size Reduction

Film webs - in-line recycling
With this process, rejects from start-up and change-over operations are processed directly at the exit point by merely flicking a switch.
The film web is fed to the Rotoplex by means of an Alpine film intake device (1) equipped with automatic speed synchronisation.
Gathering rings make it possible to feed film webs up to 9000 mm in width. Silos to order.
The additional chute (2) permits film heaps to be manually fed.



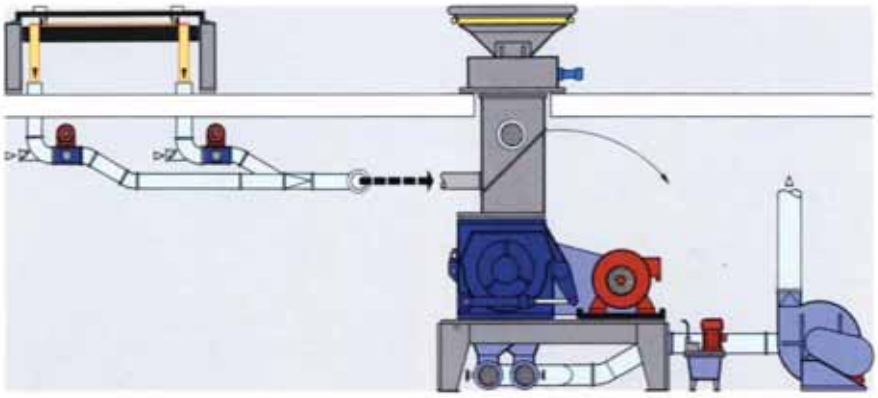
Film reel recycling
Film reels (scrap batches) are continuously fed from an unwind station (1) via the film intake device (2).

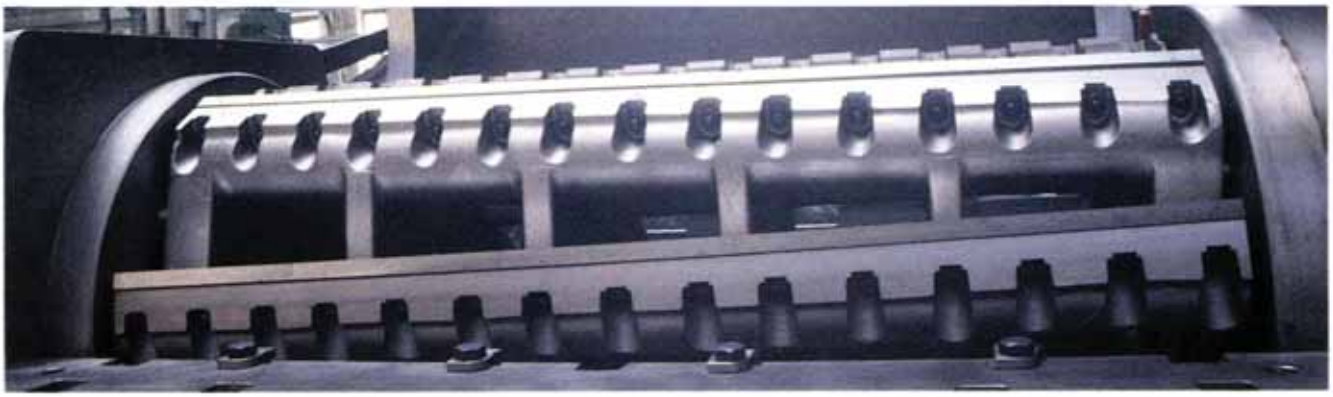
The following can also be processed:
❑Pneumatically fed film edge trims. To this end, the additional chute (3) is equipped with an air relief box.
❑Film heaps and bales, etc. The additional chute (4) is employed for material feed.



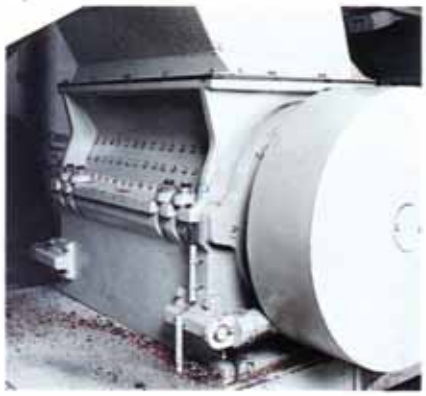
Film edge trims
In practical operation, large-scale granulators used for the size reduction of film webs or reels are often also used to process film edge trims.

Schematic
The edge trims are cut to size with an Alpine film cutter (A), and then fed to the large-scale granulator pneumatically. The granulator simultaneously granulates film webs.





Size Reduction: Lumps * Large Moulded Items * Hollow Items * Natural and Synthetic Caoutchouc Blocks



Rotoplex® Large-Scale Granulators:
Deliver low-dust granules.
In large quantities.
And at low costs.

Rotoplex® advantage: If required, the Rotoplex can process the largest lumps to final granule size in one pass - without risk!

The open cross-scissor-cut rotor is in a sturdy cage design and has an exceptionally high flywheel inertia. Thanks to the heavy-duty rotor design, the enormous inertial power can be fully converted to cutting power - and used to the full!

The open cage rotor is particularly effective when it comes to large, thin-walled hollow items and caoutchouc blocks, etc.

Application Areas:
❑Compact purges or lumps from extrusion lines.
❑Bulky shaped parts such as:
- Round and square drums * wide-necked and covered drums * tanks and large-volume bins * multi-purpose boxes * baskets * buckets * round and square tanks.
- Television, refrigerator, vacuum cleaner, and computer housings, etc.
- Bath tubs (acrylic); shower cabins; window profiles.
- Automotive industry: bumpers, door linings, fuel tanks, etc.

Supply example: size reduction of television housings
Rotoplex: Model 63/100 Ro
Capacity: approx. 1000 kg/h
Screen perf.: 6-8 mm Ø
System features:
❑Special, soundproofed feed chute for conveyor belt feeding.
❑Granulator installed in basement as a further soundproofing measure. The feed chute is removable for cleaning and knife exchange.
❑Granule dedusting system with adjustable dust collection efficiency.

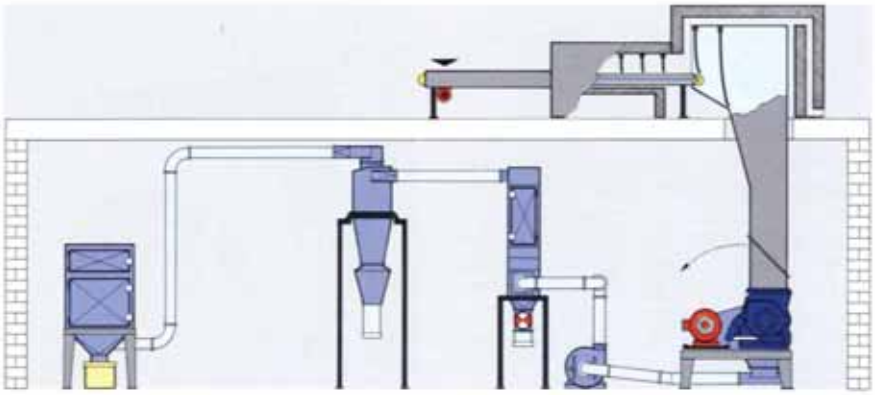
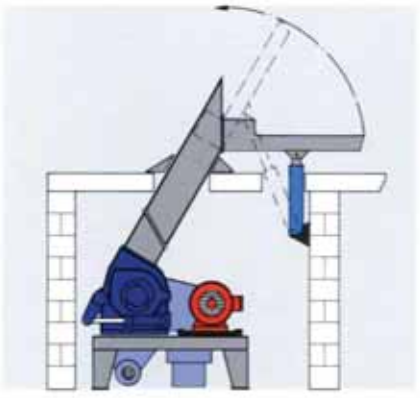


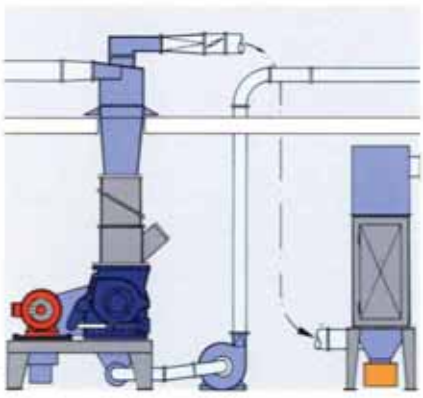
Fig. 1: Feed chute with lifting cylinder mounted to the material storage bin. Advantageous in the case of central systems used for granulating sprues and rejects.

Fig. 2: Feed chute with cyclone for pneumatically conveyed millings and chips which result from processing plastic panels.

Chutes also available for aluminium, brass, and magnesium turnings, etc.



1



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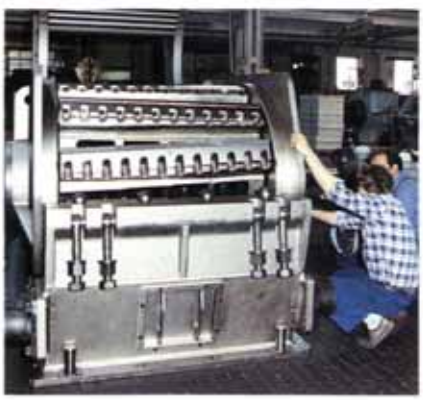


Wear Protection To Order

Rotoplex® large-scale granulators for any type of cuttable material. Even if wear is a problem.

Besides the classic field of plastics size reduction, Rotoplex® large-scale granulators are employed for all types of cuttable material - even those which cause a high degree of wear.

Product examples:

- ❑Thin-walled, non-ferrous scrap, e.g. aluminium sections, zinc plates and containers, etc.
- ❑Glass-fibre scrap; glass wool
- ❑Glass-fibre-reinforced plastics
- ❑Thermosetting moulding compounds
- ❑Gypsum-cardboard panels
- ❑Insulated copper and aluminium cable, either as rejects or old cables
- ❑Electronic scrap
- ❑Mineral wool insulating material
- ❑Cotton-bitumen-mix insulating material
- ❑Roofing fabric containing sand, limestone, talcum, or mica
- ❑Old newspapers
- ❑Bark; peat; slurry
- ❑Old batteries
- ❑Any type of leather waste

Measures against wear

When processing highly abrasive materials, it soon becomes apparent whether your granulator has a good pedigree or not.
But with Alpine's Rotoplex® granulators at your side, you can be assured of lasting reliability and economical operation.

Each wear problem calls for an individual solution. Dependent on the feed material, the following concepts - alone or in combination - are employed:

- ❑Hardfacing in the housing top section in the stator knife zone.
- ❑Exchangeable feed control bar in housing top section.
- ❑Side panels with screw-on wear-protection plates made of highly wear-resistant steel.

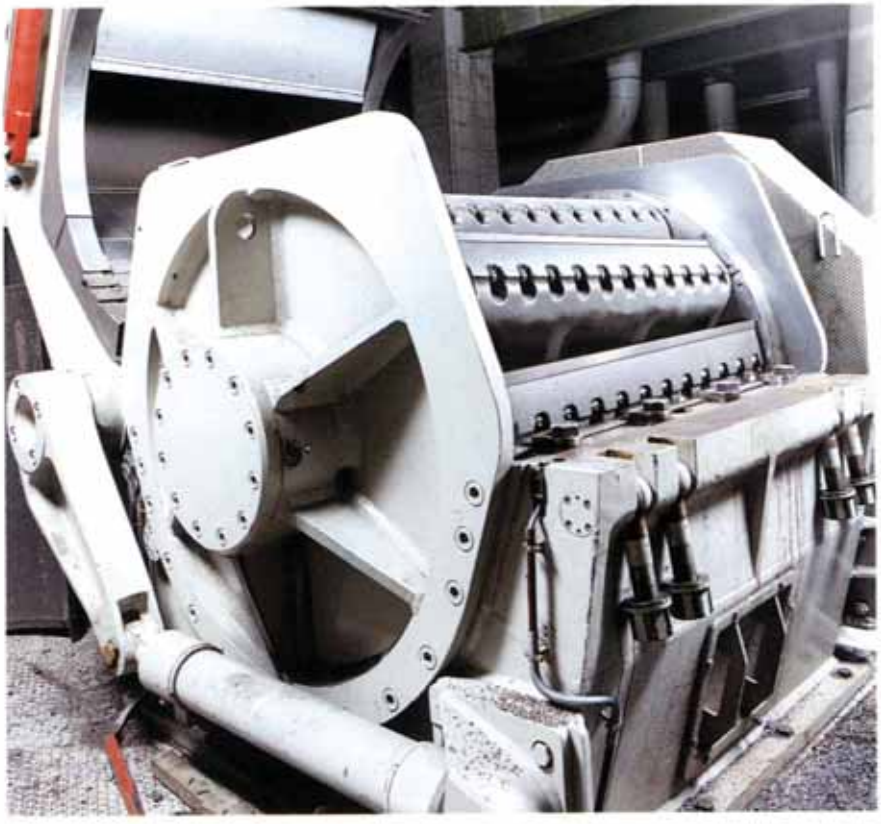
The wear-protection plates are exchangeable.

- ❑Screens with a high resistance against distortion and wear.

In addition, the screens are chemically hardcoated, e.g. Duricoat, Kamisil, etc.

- ❑The rotor blade holder is hardfaced.
- ❑Reinforced knife fastening plates for rotor knives, whereby the screw heads can also be recessed into the fastening plates.
- ❑The obtuse angle of the rotor knives counters wear.
- ❑Outermost rotor knives are laterally shortened to reduce abrasive wear on the housing side panel.

Progress in every direction.
Alpine sets store by individual design solutions under application of high quality standards, for Rotoplex Granulators.



Rotoplex® Granulators
...a Complete Range for Any Application and Capacity

Rotoplex® Model Range
Alpine offers a complete granulator range for every performance requirement and application area.

The Rotoplex® large-scale granulators featured in this brochure represent only a small excerpt from the complete range. Further information and brochures available upon request. Put pen to paper - or simply give us a ring: you'll receive the requested brochures by return of post.

Application Testing Centre
Customer trials in the field of granulating technology - irrespective of the scale - are carried out with Rotoplex® granulators in Alpine's own application testing centre.

Rotoplex® granulators with drive capacities from 1.5 kW to 110 kW are available - completely set up and equipped with the most frequently required accessories such as pneumatic product discharge systems, granulate dedusting systems, and film intake devices, etc.

Auxiliary and Small Granulators

Design: horizontal	kW	F
Model 16/32 Ro	1.5-4	0.3-0.5
Model 20/12 Ro	4	0.35
Model 20/12 RoL	1.5	0.2
Design: vertical		
Model 20/10 Ro	4	0.4
Model 25/14 Ro	5.5	0.5
Model 32/21 Ro	7.5	0.7

In-Line Film Cutter for Edge Trims

Model 25/25 RoF	3; 4	0.4

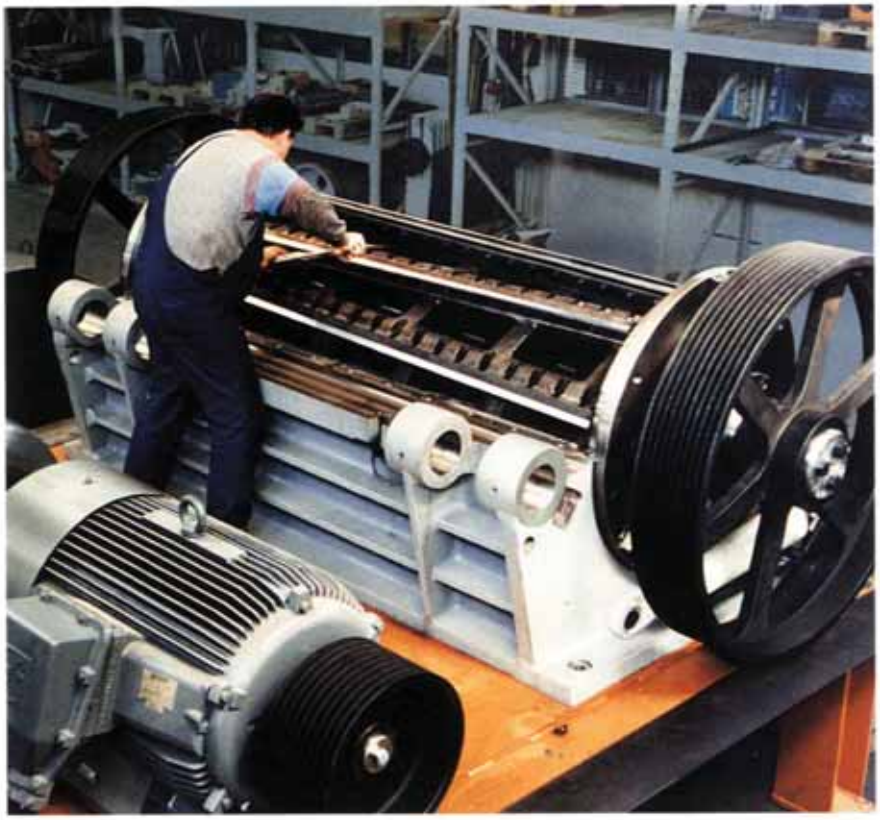
Horizontal Granulators

Model 28/28 Ro	7.5	0.7
Model 28/40 Ro	11	1.0
Model 28/60 Ro	18.5	1.6
Model 28/80 Ro	22	2
Model 36/60 Ro	22	1.8
Model 40/63 Ro	30-37	2.2
Model 50/63 Ro	37-45	3.2
Model 50/80 Ro	55-75	4.2

Large-Scale Granulators

Model 63/80 Ro	55-75	5
Model 63/100 Ro	75-90	6
Model 63/125 Ro	110	7-8
Model 80/100 Ro	90-110	8
Model 80/125 Ro	110-132	9
Model 80/160 Ro	132-160	11
Model 80/190 Ro	200	16
Model 80/224 Ro	400	20
Model 90/224 Ro	400	23
Model 100/224 Ro	315-400	22-25
Model 100/250 Ro	500	30
Model 125/125 Ro	160-200	15-16.5

F = Scale-up factor



Universal Shredders UZ
These versatile machines can be employed for even the most demanding size reduction tasks, e.g. pressed bales of film up to 800 x 800 x 1200 mm in size and 250 kg bale weight. Three machine sizes with up to 250 kW drive power.

HOSOKAWA
ALPINE Aktiengesellschaft