



GRAAL LINE

Universal No-Stress Line for
Dough Processing





Gravi-Line

Gravi-Line is the result of the decades of experience and study Turri has put on dough dividing, rounding and moulding processes.

Thanks to the No-Stress technology of all its components Gravi-Line can produce a wide range of products as if they were handmade, such as round breads, long loaves, ciabatta and more.

The end result is a very natural and high-quality product, soft and with ample air-pockets, without the need of additional chemical products. Thanks to its modular structure it can be easily configured to suit the specific production needs of the customer.

GRAAL LINE



Main Features



No-Stress Technology

With Gravi-Line “No-stress” technology the dough is gently handled and never compressed in any step of the process, resulting in a final product of the highest quality, exactly like handmade.



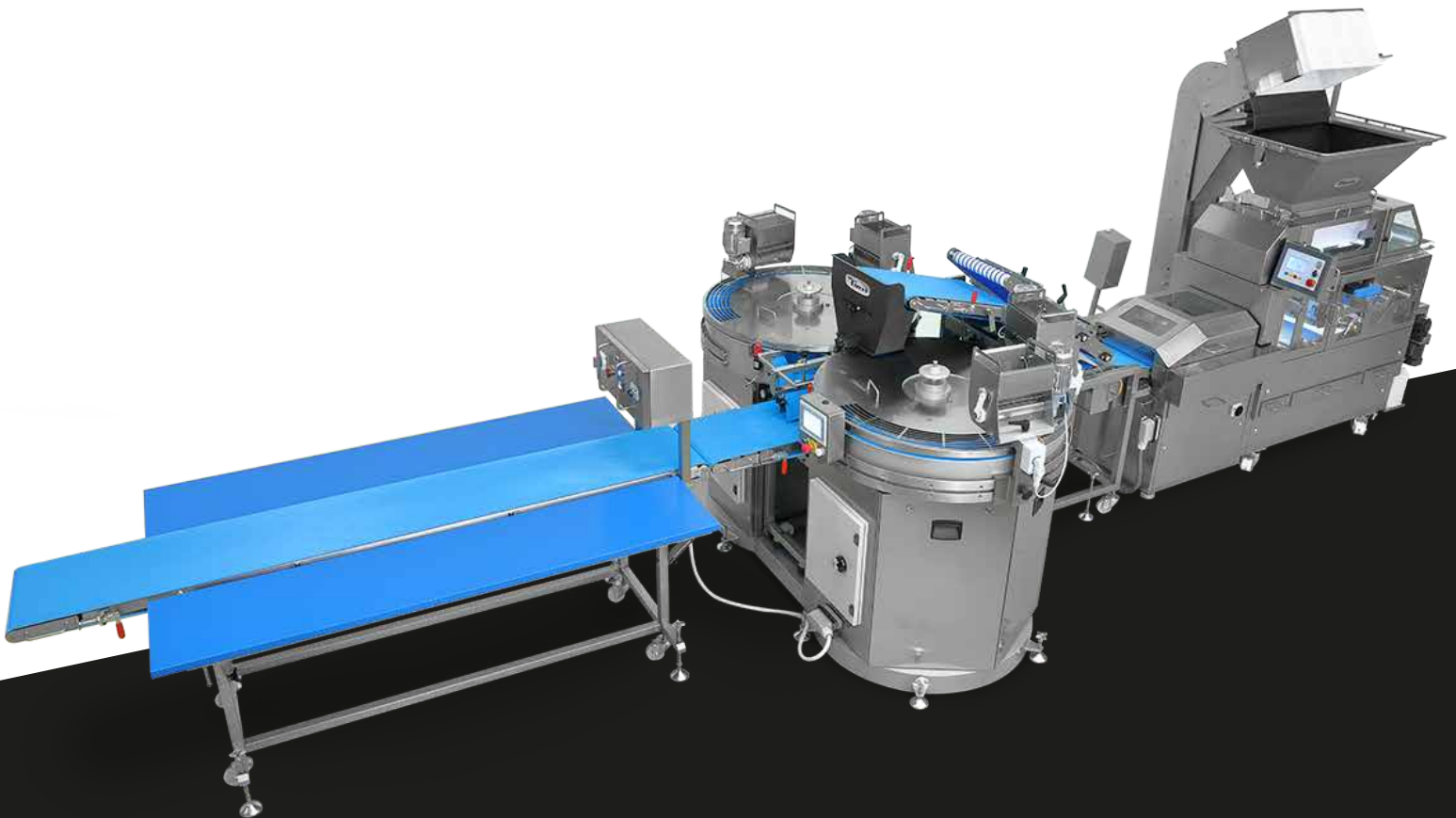
Weight Precision

Patented cutting system with high-precision weighting conveyor belts, to ensure the highest weight accuracy with all kinds of doughs.



High Hydration Dough Processing

Gravi-Line can process without problems the most sticky doughs with up to 90% water and 4 hours of proofing, doughs that are usually processed by hand with lot of time-consuming manual activities.





High Automation

Gravi-Line can be operated by a single operator, thanks to the high degree of automation and interconnection of all its part, thus ensuring a reduction in the required labour. The finished product is always delivered at the end of the line, for an efficient bakery organization.



Modular Structure

Gravi-Line modular design, with its separate rounding, moulding and panning stations, ensures the maximum flexibility in configuring every single line, to design the best solution for the specific customer production process.



Multi-product

The line can process any kind of dough and produce a wide variety of shapes and finished products, making it the ideal solution to automate every production, even for small production lots.



Minimum Cleaning and Set-up Time

All the parts that come into contact with the dough are easily accessible for a faster cleaning. Thanks to simple by-pass systems and levers, the line can be quickly configured for the next product in just 1 minute.

Many products, just one line!

Thanks to its flexibility and modularity, Gravi-Line can be configured to produce any kind of product, with different shapes, sizes and dough types. The line is the ideal solution to process soft and hydrated dough (up to 90% water/flour ratio), ensuring an artisan-like finished product with the typical air-holes. It also processes without problems regular and harder doughs (down to 48% water/flour ratio), and different flour types from regular dough with 100% white flour to doughs with 100% rye flour.



Ciabatta



Artisan Baguette



Rustic Loaf



Long Fermentation Dough



Hard Dough Bread
(48% water/flour ratio)



Pinsa Romana (90% water/flour ratio)



Round Bread



Classic Rolls



Square Bread with Fruits

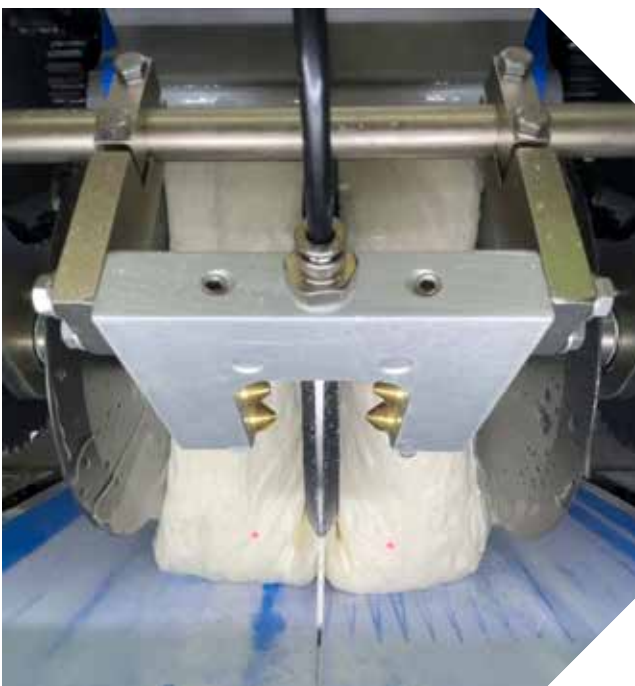
Gravi-Flux

Patented No-Stress Divider with Weight Control

The Gravi-Flux divider is the first and most important part of every Gravi-Line. It can divide the softest and stickiest dough, with water content up to 90%. It can however divide without problems also regular dough and even hard dough (down to 48% water). The patented cutting system with weighing conveyor belts ensures that the pieces are cut with the highest weight accuracy.



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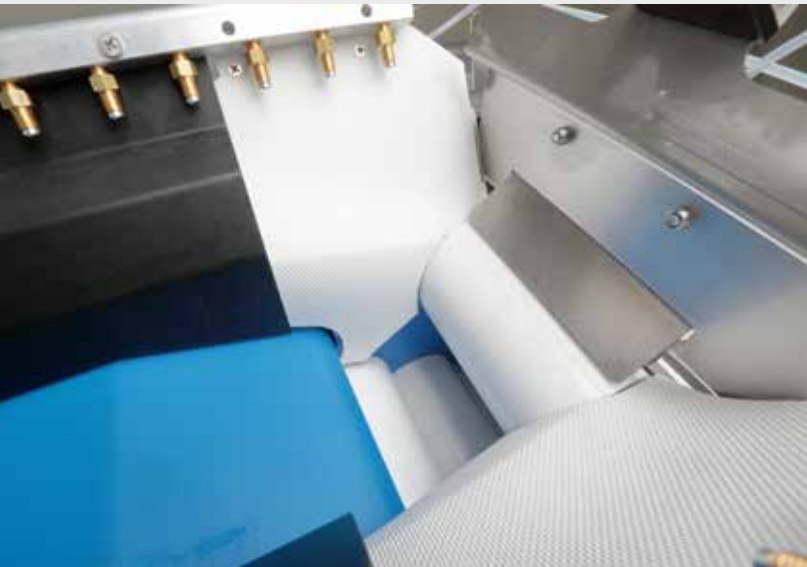
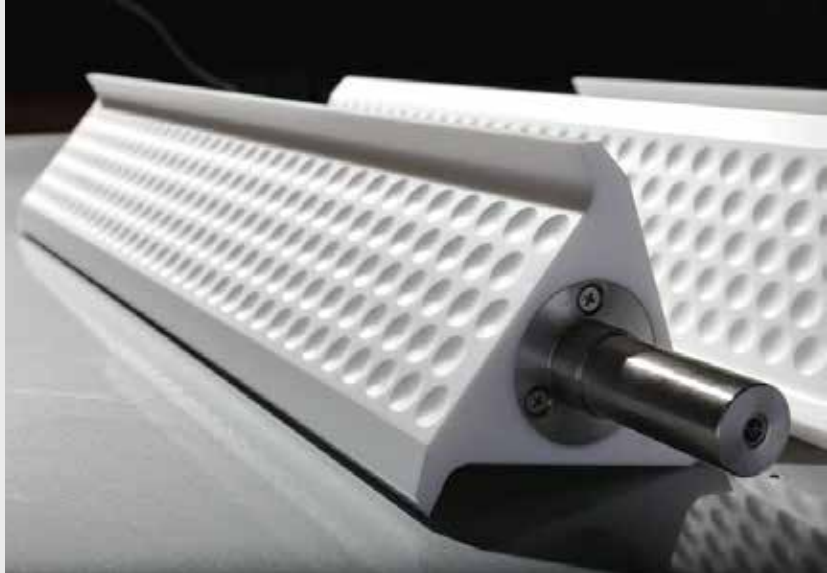


No-Stress

Gravi-Flux can easily work with both white flour or rye flour, and can process without any problem even dough with up to 4 hours of fermentation. The laminating rollers and the guillotine cutting do not compress the dough in any way, and ensure the production of light and soft bread, as if handmade with knife and rolling pin.

Cutting Stars

Two lubricated cutting stars placed underneath the hopper cut the dough slices and send them to the lamination system. The star is made in plastic for alimentary use, or in Teflon upon request to handle also the softest and stickiest dough.

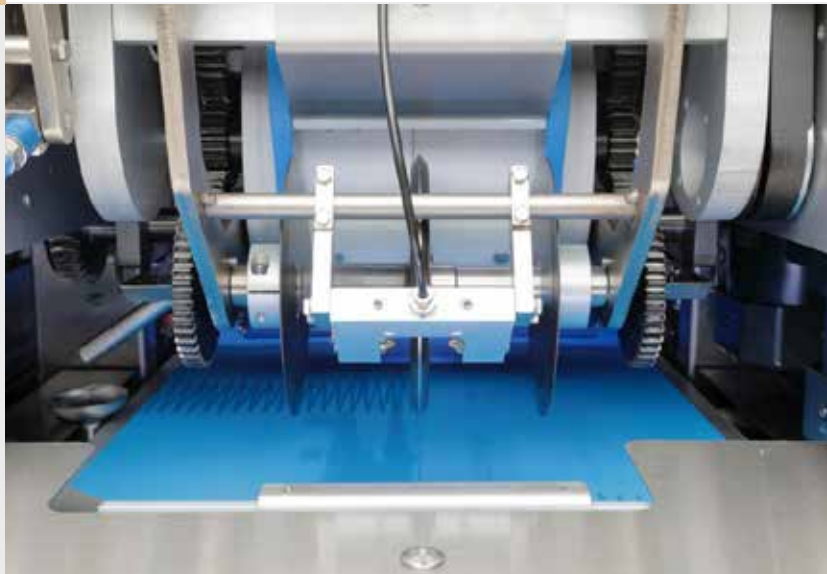


Lamination System with Beating Rollers

The lamination system with beating rollers and their patented alternative movement ensures an even dough lamination. The thickness and beating frequency can be adjusted, to gently obtain a continuous dough band, as baker with a rolling pin would do.

Cutting Disks

In the two-rows working mode a lubricated disk cuts the dough in two. The subsequent disk separates the two dough foils, and the dividing belts further separates them.



Weighing Conveyor Belts

The dough advances on the weighing conveyors to be weighted and cut with very high accuracy. The patented system adapts the conveyor speed in order to reach the desired weight at the moment when the knife cuts. After the cut, the piece weight is checked again, allowing dynamic feedback on the following piece to constantly ensure the highest precision.

Easy Cleaning

Gravi-Flux is equipped with a pre-set cleaning program, which allows the machine to clean itself at the end of the shift thanks to the scrapers under the belts and the star lubrication system. All its components are designed to be easily disassembled for deeper cleaning operations.



Models

The standard Gravi-Flux divider covers a very wide range of weights and sizes, and is often the perfect choice for a wide variety of productions and customers. To satisfy all customers however Turri developed 3 other models, to cover an even wider range of weights.

Model	Weight Range [g]		Dough Pieces Width [cm]		Dough Pieces Thickness [cm]
	Min	Max	1 row	2 row	Min-Max
Gravi-Flux S	50	1400	12	6	1.75 - 2.75
Gravi-Flux	75	2000	16	8	2.25 - 3.25
Gravi-Flux G	100	2400	19	9,5	2.25 - 3.25
Gravi-Flux G-Plus	225	3450	19	9.5	3.75 - 4.75

Hoppers

Model	Hopper type	Hopper capacity		Cutting star	Machine height (H)
		[kg]	[lt]	[mm]	[cm]
Gravi-Flux S	Standard	95	110	700	185
	Optional	145	170	700	198
Gravi-Flux	Standard	80	95	550	185
	Optional	115	135	550	195
	Optional	180	210	550	201
	Optional	105	120	700	185
	Optional	155	180	700	198
Gravi-Flux G	Standard	120	140	700	190
	Optional	165	195	700	200
	Optional	190	220	700	202
	Optional	190	220	700	205
Gravi-Flux G-Plus	Standard	190	220	700	202



Technical Features

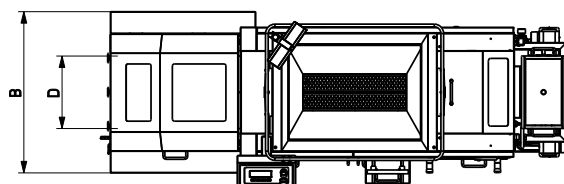
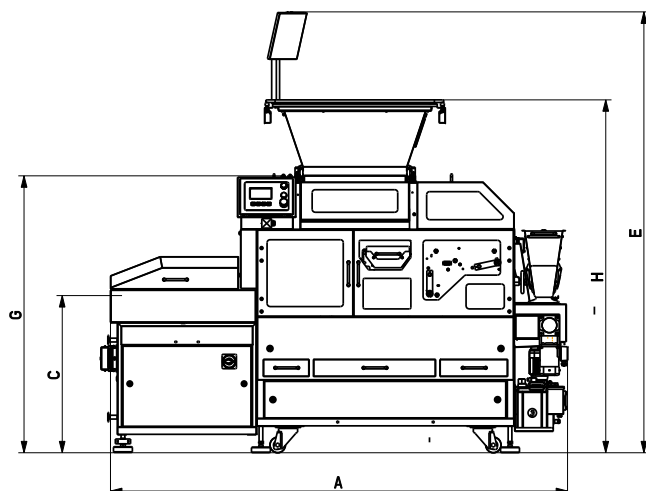
- Automatic hopper for dough feeding
- Laminating system with beating rollers adjustable in frequency and opening
- PEPT polyethylene cutting star
- N.4 high-precision weighting cells ensure a high precision in the weight
- Pneumatic cutting guillotine
- N.2 flour dusters regulated by inverter for a perfect flour dosage
- Oil lubrication system with pump
- Programmable control panel with 50 programs storing:
 - Weight of dough pieces to produce;
 - Production;
 - Number of pieces to produce;
 - Beating roller frequency;
 - Speed of flour dusters;
 - Independent lubrication for hopper, cutting star and laminating rollers

Optional

- Teflon cutting star, required for sticky dough
- Hopper with increased capacity
- Specular machine

Technical Data

Model	Overall dimensions							Installed power		Weight
	cm							kW	hp	kg
	A	B	C	D	E	G	H			
Gravi-Flux S	240	85	82	38	231	145	185	2.8	3.8	735
Gravi-Flux	240	85	82	38	231	145	185	2.8	3.8	765
Gravi-Flux G	240	85	82	38	236	141	190	3.1	4.2	885
Gravi-Flux G Plus	240	85	82	38	248	141	202	3.1	4.2	895



Dough Thickness cm	Rows n	Weight gr	Dough Width cm	Dough Length cm	Maximum Production pcs/hour	Maximum Production kg/hour	Precision ± (*)		
							gr	%	
1,75	1	100	12	5,3	1800	180	7,2	7,2%	
		200	12	10,6	1400	280	7,7	3,8%	
		300	12	15,9	1010	303	8,1	2,7%	
		400	12	21,2	790	316	8,5	2,1%	
		500	12	26,5	640	320	9,0	1,8%	
		600	12	31,7	550	330	9,4	1,6%	
		700	12	37,0	470	329	9,8	1,4%	
		800	12	42,3	420	336	10,3	1,3%	
		900	12	47,6	370	333	10,7	1,2%	
		1000	-	-	-	-	-	-	-
		1100	-	-	-	-	-	-	-
		1200	-	-	-	-	-	-	-
1,75	2	50	6	5,3	3600	180	4,8	9,6%	
		100	6	10,6	2810	281	5,1	5,1%	
		150	6	15,9	2010	302	5,4	3,6%	
		200	6	21,2	1570	314	5,7	2,8%	
		250	6	26,5	1290	323	6,0	2,4%	
		300	6	31,7	1090	327	6,3	2,1%	
		350	6	37,0	950	333	6,6	1,9%	
		400	6	42,3	840	336	6,9	1,7%	
		450	6	47,6	750	338	7,1	1,6%	
		500	-	-	-	-	-	-	-
		550	-	-	-	-	-	-	-
		600	-	-	-	-	-	-	-
2,50	1	100	-	-	-	-	-	-	
		200	12	7,4	1800	360	10,9	5,5%	
		300	12	11,1	1350	405	11,6	3,9%	
		400	12	14,8	1070	428	12,2	3,0%	
		500	12	18,5	880	440	12,8	2,6%	
		600	12	22,2	750	450	13,4	2,2%	
		700	12	25,9	660	462	14,1	2,0%	
		800	12	29,6	580	464	14,7	1,8%	
		900	12	33,3	520	468	15,3	1,7%	
		1000	12	37,0	470	470	15,9	1,6%	
		1100	12	40,7	430	473	16,6	1,5%	
		1200	12	44,4	400	480	17,2	1,4%	
2,50	2	50	-	-	-	-	-	-	
		100	6	7,4	3600	360	7,3	7,3%	
		150	6	11,1	2700	405	7,7	5,1%	
		200	6	14,8	2140	428	8,1	4,1%	
		250	6	18,5	1770	443	8,5	3,4%	
		300	6	22,2	1510	453	9,0	3,0%	
		350	6	25,9	1310	459	9,4	2,7%	
		400	6	29,6	1160	464	9,8	2,4%	
		450	6	33,3	1040	468	10,2	2,3%	
		500	6	37,0	950	475	10,6	2,1%	
		550	6	40,7	870	479	11,0	2,0%	
		600	6	44,4	800	480	11,5	1,9%	
2,75	1	200	12	6,7	1800	360	12,0	6,0%	
		300	12	10,1	1460	438	12,7	4,2%	
		400	12	13,5	1160	464	13,4	3,4%	
		500	12	16,8	960	480	14,1	2,8%	
		600	12	20,2	820	492	14,8	2,5%	
		700	12	23,6	710	497	15,5	2,2%	
		800	12	26,9	630	504	16,2	2,0%	
		900	12	30,3	570	513	16,8	1,9%	
		1000	12	33,7	520	520	17,5	1,8%	
		1100	12	37,0	470	517	18,2	1,7%	
		1200	12	40,4	440	528	18,9	1,6%	
		1400	12	47,1	380	532	20,3	1,4%	
2,75	2	100	6	6,7	3600	360	8,0	8,0%	
		150	6	10,1	2910	437	8,5	5,7%	
		200	6	13,5	2310	462	8,9	4,5%	
		250	6	16,8	1920	480	9,4	3,8%	
		300	6	20,2	1640	492	9,9	3,3%	
		350	6	23,6	1430	501	10,3	2,9%	
		400	6	26,9	1270	508	10,8	2,7%	
		450	6	30,3	1140	513	11,2	2,5%	
		500	6	33,7	1030	515	11,7	2,3%	
		550	6	37,0	950	523	12,1	2,2%	
		600	6	40,4	870	522	12,6	2,1%	
		700	6	47,1	760	532	13,5	1,9%	

(*) Under good lamination conditions, values may slightly differ depending on the dough type

Dough Thickness cm	Rows n	Weight gr	Dough Width cm	Dough Length cm	Maximum Production pcs/hour	Maximum Production kg/hour	Precision ± (*)		
							gr	%	
2,25	1	150	16	4,6	1800	270	8,3	5,5%	
		250	16	7,7	1780	445	8,6	3,4%	
		350	16	10,8	1380	483	8,9	2,6%	
		450	16	13,9	1130	509	9,3	2,1%	
		550	16	17,0	950	523	9,6	1,8%	
		650	16	20,1	820	533	10,0	1,5%	
		750	16	23,1	730	548	10,3	1,4%	
		850	16	26,2	650	553	10,7	1,3%	
		950	16	29,3	590	561	11,0	1,2%	
		1050	16	32,4	540	567	11,4	1,1%	
		1250	16	38,6	460	575	12,1	1,0%	
		1450	16	44,8	400	580	12,8	0,9%	
	2	2	75	8	4,6	3600	270	5,5	7,3%
			125	8	7,7	3560	445	5,7	4,6%
			175	8	10,8	2760	483	6,0	3,4%
			225	8	13,9	2250	506	6,2	2,8%
			275	8	17,0	1900	523	6,4	2,3%
			325	8	20,1	1650	536	6,7	2,0%
375			8	23,1	1450	544	6,9	1,8%	
425			8	26,2	1300	553	7,1	1,7%	
475			8	29,3	1170	556	7,3	1,5%	
525			8	32,4	1070	562	7,6	1,4%	
625			8	38,6	910	569	8,0	1,3%	
725			8	44,8	790	573	8,5	1,2%	
3,00	1	250	16	5,8	1800	450	11,5	4,6%	
		350	16	8,1	1720	602	11,9	3,4%	
		450	16	10,4	1420	639	12,4	2,8%	
		550	16	12,7	1210	666	12,8	2,3%	
		650	16	15,0	1050	683	13,3	2,0%	
		750	16	17,4	930	698	13,8	1,8%	
		850	16	19,7	840	714	14,2	1,7%	
		1050	16	24,3	700	735	15,2	1,4%	
		1250	16	28,9	590	738	16,1	1,3%	
		1450	16	33,6	520	754	17,0	1,2%	
		1650	16	38,2	460	759	17,9	1,1%	
		1850	16	42,8	410	759	18,8	1,0%	
	2	2	125	8	5,8	3600	450	7,6	6,1%
			175	8	8,1	3440	602	7,9	4,5%
			225	8	10,4	2840	639	8,3	3,7%
			275	8	12,7	2420	666	8,6	3,1%
			325	8	15,0	2110	686	8,9	2,7%
			375	8	17,4	1870	701	9,2	2,4%
425			8	19,7	1680	714	9,5	2,2%	
525			8	24,3	1390	730	10,1	1,9%	
625			8	28,9	1190	744	10,7	1,7%	
725			8	33,6	1040	754	11,3	1,6%	
825			8	38,2	920	759	11,9	1,4%	
925			8	42,8	830	768	12,6	1,4%	
3,25	1	350	16	7,5	1800	630	12,9	3,7%	
		450	16	9,6	1510	680	13,4	3,0%	
		550	16	11,8	1290	710	13,9	2,5%	
		650	16	13,9	1130	735	14,4	2,2%	
		750	16	16,0	1000	750	14,9	2,0%	
		850	16	18,2	900	765	15,4	1,8%	
		1050	16	22,4	750	788	16,4	1,6%	
		1250	16	26,7	640	800	17,4	1,4%	
		1450	16	31,0	560	812	18,4	1,3%	
		1650	16	35,3	500	825	19,4	1,2%	
		1850	16	39,5	450	833	20,4	1,1%	
		2050	16	43,8	400	820	21,4	1,0%	
	2	2	175	8	7,5	3600	630	8,6	4,9%
			225	8	9,6	3020	680	8,9	4,0%
			275	8	11,8	2580	710	9,3	3,4%
			325	8	13,9	2250	731	9,6	3,0%
			375	8	16,0	2000	750	9,9	2,7%
			425	8	18,2	1800	765	10,3	2,4%
525			8	22,4	1490	782	10,9	2,1%	
625			8	26,7	1280	800	11,6	1,9%	
725			8	31,0	1120	812	12,3	1,7%	
825			8	35,3	990	817	12,9	1,6%	
925			8	39,5	890	823	13,6	1,5%	
1025			8	43,8	810	830	14,3	1,4%	

(*) Under good lamination conditions, values may slightly differ depending on the dough type

Production Data

Gravi-Flux G 100-2.400 gr

Dough Thickness cm	Rows n	Weight gr	Dough Width cm	Dough Length cm	Maximum Production pcs/hour	Maximum Production kg/hour	Precision ± (%)	
							gr	%
2,25	1	200	19	5,2	1800	360	9,3	4,6%
		300	19	7,8	1790	537	9,6	3,2%
		400	19	10,4	1440	576	10,0	2,5%
		500	19	13,0	1210	605	10,3	2,1%
		600	19	15,6	1040	624	10,7	1,8%
		700	19	18,2	910	637	11,0	1,6%
		800	19	20,8	810	648	11,4	1,4%
		900	19	23,4	730	657	11,7	1,3%
		1000	19	26,0	670	670	12,0	1,2%
		1100	19	28,6	610	671	12,4	1,1%
		1200	19	31,2	560	672	12,7	1,1%
		1300	19	33,8	520	676	13,1	1,0%
		1500	19	39,0	460	690	13,8	0,9%
		1700	19	44,2	410	697	14,5	0,9%
2,25	2	100	9,5	5,2	3600	360	6,2	6,2%
		150	9,5	7,8	3590	539	6,4	4,3%
		200	9,5	10,4	2890	578	6,6	3,3%
		250	9,5	13,0	2420	605	6,9	2,8%
		300	9,5	15,6	2080	624	7,1	2,4%
		350	9,5	18,2	1820	637	7,3	2,1%
		400	9,5	20,8	1620	648	7,6	1,9%
		450	9,5	23,4	1460	657	7,8	1,7%
		500	9,5	26,0	1330	665	8,0	1,6%
		550	9,5	28,6	1220	671	8,3	1,5%
		600	9,5	31,2	1130	678	8,5	1,4%
		650	9,5	33,8	1050	683	8,7	1,3%
		750	9,5	39,0	920	690	9,2	1,2%
		850	9,5	44,2	820	697	9,6	1,1%
3,00	1	300	19	5,8	1800	540	12,8	4,3%
		400	19	7,8	1790	716	13,3	3,3%
		500	19	9,7	1520	760	13,8	2,8%
		600	19	11,7	1320	792	14,2	2,4%
		700	19	13,6	1160	812	14,7	2,1%
		800	19	15,6	1040	832	15,1	1,9%
		1000	19	19,5	860	860	16,1	1,6%
		1200	19	23,4	730	876	17,0	1,4%
		1400	19	27,3	640	896	17,9	1,3%
		1600	19	31,2	560	896	18,8	1,2%
		1800	19	35,1	510	918	19,7	1,1%
		2000	19	39,0	460	920	20,7	1,0%
		2200	19	42,9	420	924	21,6	1,0%
		2300	19	44,8	400	920	22,0	1,0%
3,00	2	150	9,5	5,8	3600	540	8,6	5,7%
		200	9,5	7,8	3590	718	8,9	4,4%
		250	9,5	9,7	3040	760	9,2	3,7%
		300	9,5	11,7	2630	789	9,5	3,2%
		350	9,5	13,6	2320	812	9,8	2,8%
		400	9,5	15,6	2080	832	10,1	2,5%
		500	9,5	19,5	1720	860	10,7	2,1%
		600	9,5	23,4	1460	876	11,3	1,9%
		700	9,5	27,3	1270	889	11,9	1,7%
		800	9,5	31,2	1130	904	12,5	1,6%
		900	9,5	35,1	1010	909	13,2	1,5%
		1000	9,5	39,0	920	920	13,8	1,4%
		1100	9,5	42,9	840	924	14,4	1,3%
		1150	9,5	44,8	810	932	14,7	1,3%
3,25	1	400	19	7,2	1800	720	14,4	3,6%
		500	19	9,0	1610	805	14,9	3,0%
		600	19	10,8	1400	840	15,4	2,6%
		700	19	12,6	1240	868	15,9	2,3%
		800	19	14,4	1110	888	16,4	2,0%
		900	19	16,2	1010	909	16,9	1,9%
		1000	19	18,0	920	920	17,4	1,7%
		1200	19	21,6	790	948	18,4	1,5%
		1400	19	25,2	680	952	19,4	1,4%
		1600	19	28,8	610	976	20,4	1,3%
		1800	19	32,4	550	990	21,4	1,2%
		2000	19	36,0	490	980	22,4	1,1%
		2200	19	39,6	450	990	23,4	1,1%
		2400	19	43,2	420	1008	24,4	1,0%
3,25	2	200	9,5	7,2	3600	720	9,6	4,8%
		250	9,5	9,0	3230	808	9,9	4,0%
		300	9,5	10,8	2800	840	10,3	3,4%
		350	9,5	12,6	2480	868	10,6	3,0%
		400	9,5	14,4	2220	888	10,9	2,7%
		450	9,5	16,2	2010	905	11,3	2,5%
		500	9,5	18,0	1840	920	11,6	2,3%
		600	9,5	21,6	1570	942	12,3	2,0%
		700	9,5	25,2	1370	959	12,9	1,8%
		800	9,5	28,8	1210	968	13,6	1,7%
		900	9,5	32,4	1090	981	14,3	1,6%
		1000	9,5	36,0	990	990	14,9	1,5%
		1100	9,5	39,6	910	1001	15,6	1,4%
		1200	9,5	43,2	840	1008	16,3	1,4%

(*) Under good lamination conditions, values may slightly differ depending on the dough type

Dough Thickness cm	Rows n	Weight gr	Dough Width cm	Dough Length cm	Maximum Production pcs/hour	Maximum Production kg/hour	Precision ± (*)	
							gr	%
3,75	1	450	19	7,0	1800	810	15,3	3,4%
		650	19	10,1	1470	956	15,6	2,4%
		850	19	13,3	1190	1012	15,9	1,9%
		1050	19	16,4	1000	1050	16,2	1,5%
		1250	19	19,5	860	1075	16,5	1,3%
		1450	19	22,6	750	1088	16,8	1,2%
		1650	19	25,7	670	1106	17,1	1,0%
		1850	19	28,8	610	1129	17,3	0,9%
		2050	19	32,0	550	1128	17,6	0,9%
		2250	19	35,1	510	1148	17,9	0,8%
	2450	19	38,2	470	1152	18,2	0,7%	
	2650	19	41,3	440	1166	18,5	0,7%	
	2850	19	44,4	410	1169	18,8	0,7%	
	3050	-	-	-	-	-	-	-
	2	225	9,5	7,0	3600	810	10,2	4,5%
		325	9,5	10,1	2950	959	10,4	3,2%
		425	9,5	13,3	2380	1012	10,6	2,5%
		525	9,5	16,4	1990	1045	10,8	2,1%
		625	9,5	19,5	1720	1075	11,0	1,8%
		725	9,5	22,6	1510	1095	11,2	1,5%
825		9,5	25,7	1340	1106	11,4	1,4%	
925		9,5	28,8	1210	1119	11,6	1,3%	
1025		9,5	32,0	1100	1128	11,8	1,1%	
1125		9,5	35,1	1010	1136	11,9	1,1%	
4,00	1	450	-	-	-	-	-	-
		650	19	9,5	1550	1008	16,7	2,6%
		850	19	12,4	1250	1063	17,0	2,0%
		1050	19	15,4	1050	1103	17,3	1,6%
		1250	19	18,3	910	1138	17,6	1,4%
		1450	19	21,2	800	1160	17,9	1,2%
		1650	19	24,1	710	1172	18,2	1,1%
		1850	19	27,0	640	1184	18,5	1,0%
		2050	19	30,0	590	1210	18,8	0,9%
		2250	19	32,9	540	1215	19,1	0,8%
	2450	19	35,8	500	1225	19,4	0,8%	
	2650	19	38,7	460	1219	19,7	0,7%	
	2850	19	41,7	430	1226	20,0	0,7%	
	3050	19	44,6	410	1251	20,3	0,7%	
	2	225	-	-	-	-	-	-
		325	9,5	9,5	3100	1008	11,1	3,4%
		425	9,5	12,4	2510	1067	11,3	2,7%
		525	9,5	15,4	2110	1108	11,5	2,2%
		625	9,5	18,3	1820	1138	11,7	1,9%
		725	9,5	21,2	1600	1160	11,9	1,6%
825		9,5	24,1	1420	1172	12,1	1,5%	
925		9,5	27,0	1280	1184	12,3	1,3%	
1025		9,5	30,0	1170	1199	12,5	1,2%	
1125		9,5	32,9	1070	1204	12,7	1,1%	
4,75	1	850	19	10,5	1440	1224	20,2	2,4%
		1050	19	12,9	1210	1271	20,5	2,0%
		1250	19	15,4	1050	1313	20,9	1,7%
		1450	19	17,9	930	1349	21,2	1,5%
		1650	19	20,3	830	1370	21,6	1,3%
		1850	19	22,8	750	1388	22,0	1,2%
		2050	19	25,2	680	1394	22,3	1,1%
		2250	19	27,7	630	1418	22,7	1,0%
		2450	19	30,2	580	1421	23,1	0,9%
		2650	19	32,6	540	1431	23,4	0,9%
	2850	19	35,1	510	1454	23,8	0,8%	
	3050	19	37,6	480	1464	24,1	0,8%	
	3250	19	40,0	450	1463	24,5	0,8%	
	3450	19	42,5	420	1449	24,9	0,7%	
	2	425	9,5	10,5	2870	1220	13,4	3,2%
		525	9,5	12,9	2430	1276	13,7	2,6%
		625	9,5	15,4	2100	1313	13,9	2,2%
		725	9,5	17,9	1850	1341	14,2	2,0%
		825	9,5	20,3	1660	1370	14,4	1,7%
		925	9,5	22,8	1500	1388	14,7	1,6%
1025		9,5	25,2	1370	1404	14,9	1,5%	
1125		9,5	27,7	1260	1418	15,1	1,3%	
1225		9,5	30,2	1160	1421	15,4	1,3%	
1325		9,5	32,6	1080	1431	15,6	1,2%	
1425	9,5	35,1	1010	1439	15,9	1,1%		
1525	9,5	37,6	950	1449	16,1	1,1%		
1625	9,5	40,0	900	1463	16,3	1,0%		
1725	9,5	42,5	850	1466	16,6	1,0%		

(*) Under good lamination conditions, values may slightly differ depending on the dough type

Gravi-Sol

Tilter Lifter for Plastic Boxes

Lifter for plastic boxes size 60x40x26(h) cm (62 liters of volume), to load the Gravi-Flux divider.

The operator places the plastic box with dough inside the dedicated stainless-steel slot. Thanks to its chain lifting mechanism, Gravi-Sol unloads the dough inside the Gravi-Flux. The Teflon-coated slide guides the dough fall by gravity inside the hopper, preventing the dough from sticking on the lifter parts. Gravi-Sol is installed on a floor rail to easily move it alongside Gravi-Flux, thus facilitating cleaning and maintenance operations.



Technical Features

- Designed for standard plastic boxes 60x40x26(h) cm
- Chain lifting mechanism
- Stainless steel slot for plastic boxes loading
- Teflon coated slide

Optional

- Laser sensor to detect the dough level inside the Gravi-Flux hopper, and automatically start the loading when the dough level goes below the set value
- Custom slot dimensions for specific plastic boxes size

Gravi-Sol Aut

Automatic Tilter Lifter for Plastic Boxes

Automatic tilter lifter for plastic boxes for trolleys with at maximum n.5 boxes. It automatically takes the full boxes from the trolley, empties them into the divider hopper and puts the empty boxes back in the trolley. A dough level sensor reading the divider hopper level controls the automatic discharge of dough, activating it when the dough level goes below the set value.



Technical Features

- Automatic mechanical system for hooking the boxes trolley placed on the side of the lifter
- Control panel with automatic working mode, to execute the following steps for each of n.5 levels:
 - Phase 1: the hook is positioned at the required level and takes out the box from the trolley
 - Phase 2: the full box is lifted up and the dough is discharged into the divider hopper
 - Phase 3: the empty box descends and is put back into the trolley
- Mounted on wheels for cleaning and maintenance
- Designed for standard boxes dimensions cm 60x40x26(h)



Gravi-Rondo

Rounder with Adjustable Eccentric Movement with By-pass

Rounder with adjustable eccentric rotatory movement, designed to be perfectly integrated in Gravi-Line. The eccentric rotation movement of the bell gently rounds the dough piece, just like a baker would do with his own hands. The adjustable eccentricity allows to cover a wide weight range from 50 grams up to 2400 grams. Equipped with by-pass system for productions that do not need rounding. Available in the single-head version for one row production, or double-head version for two rows production.



Double-Head Version

Weight Range
50 -2400 grams

Max Production
Double Head: 3600 pcs/hour
Single Head: 1800 pcs/hour



Single-Head Version



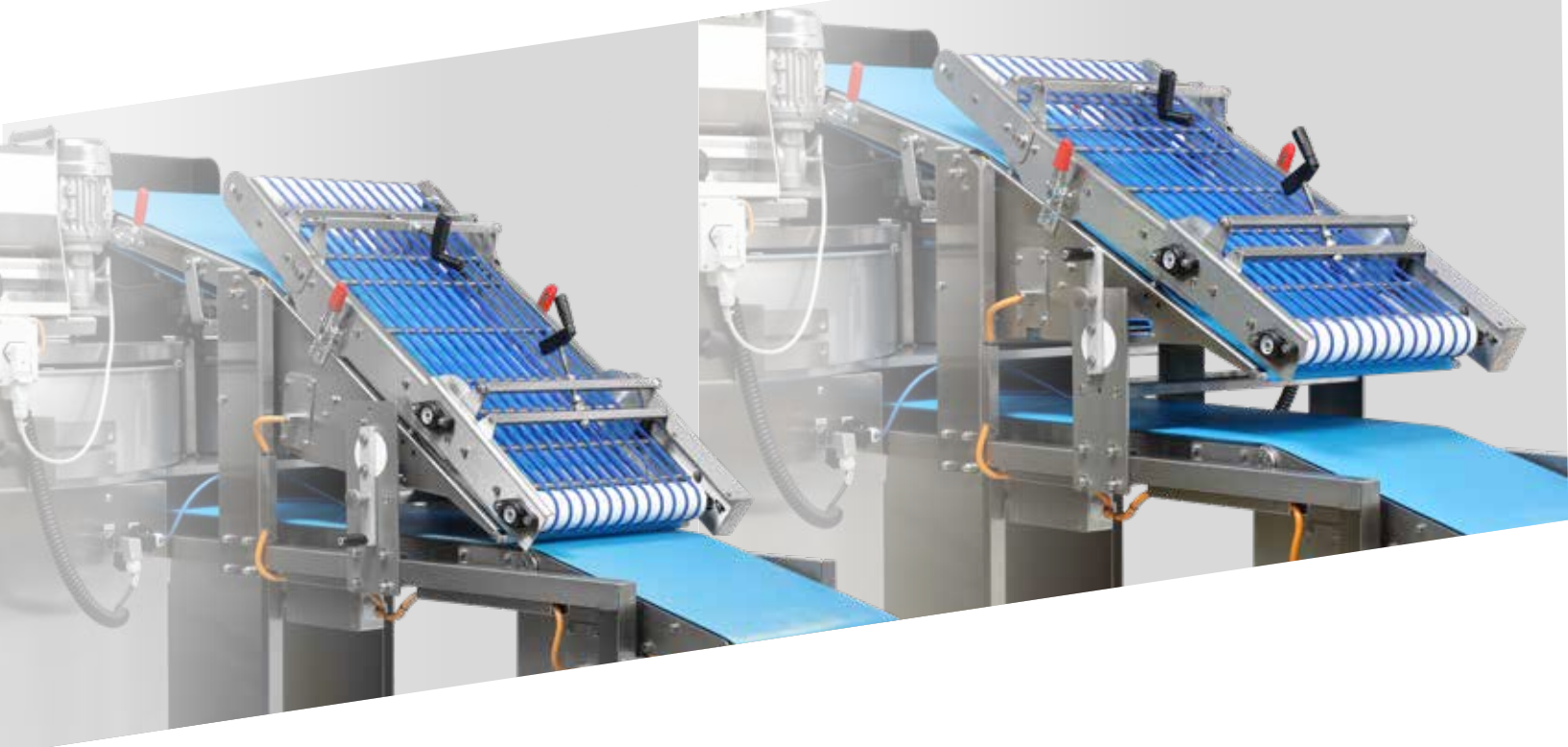
Bypass System

Lowered conveyor

The dough pieces are lifted by the upper conveyor with separate elastic belts to fall inside the rounder

Lifted conveyor

The dough pieces that do not need rounding pass underneath the rounder



Technical Features

- Planetary-rotating bell with adjustable eccentricity
- Bell and ring coated in blue plastic for alimentary use
- Inverter for rotation speed control
- Conveyor belts adjustable speed through inverter
- By-pass system to exclude the machine for productions that do not need rounding
- Upper conveyor with separate elastic belts to guide the pieces inside the rounder
- Painted steel structure and stainless-steel covers
- Transmission with gears and belts
- Bell-movement gears in grease bath

Optional

- Adjustable flour dusters equipped with photocell and controlled by the touch screen panel
- Closed upper conveyor belt, recommended for very soft and sticky dough



Gravi-Forma

Moulder for Baguettes and Long Loaves with By-Pass

No-stress moulder equipped with motorized loafing belt, gently lengthens the dough without damaging its inner structure. It can process pieces from 100 grams up to 2400 grams, and obtain long-loaves and baguettes up to 60 cm long. The dough pieces are laminated by the cylinders, rolled up by the curling net, moulded by the motorized loafing table and further elongated by the final fixed loafing table. All these steps can be easily bypassed for pieces that do not need moulding.



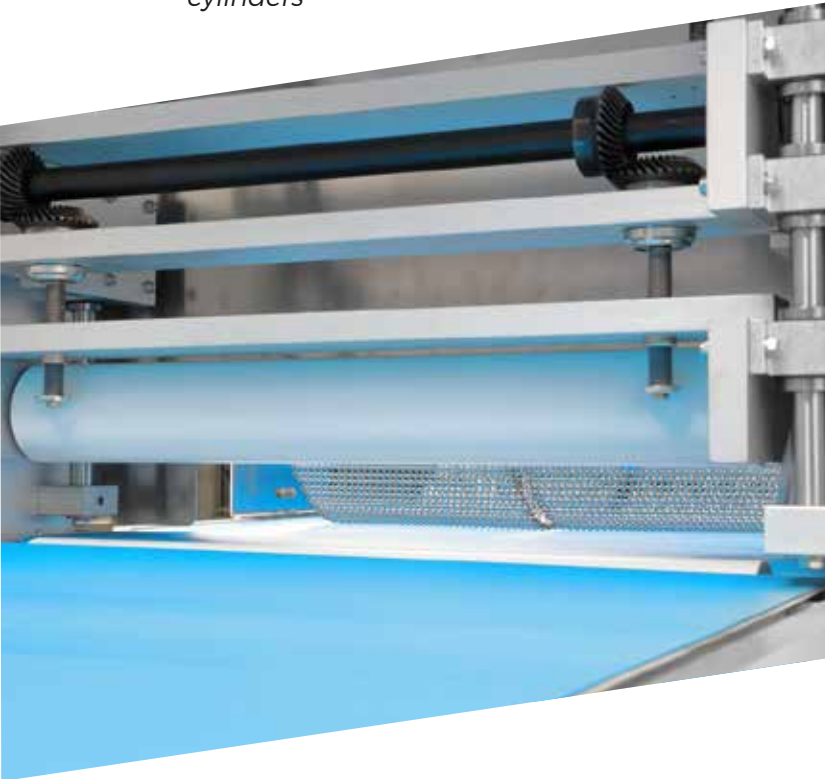
Weight Range
100 -2400 grams

Max Baguette Length
60 cm

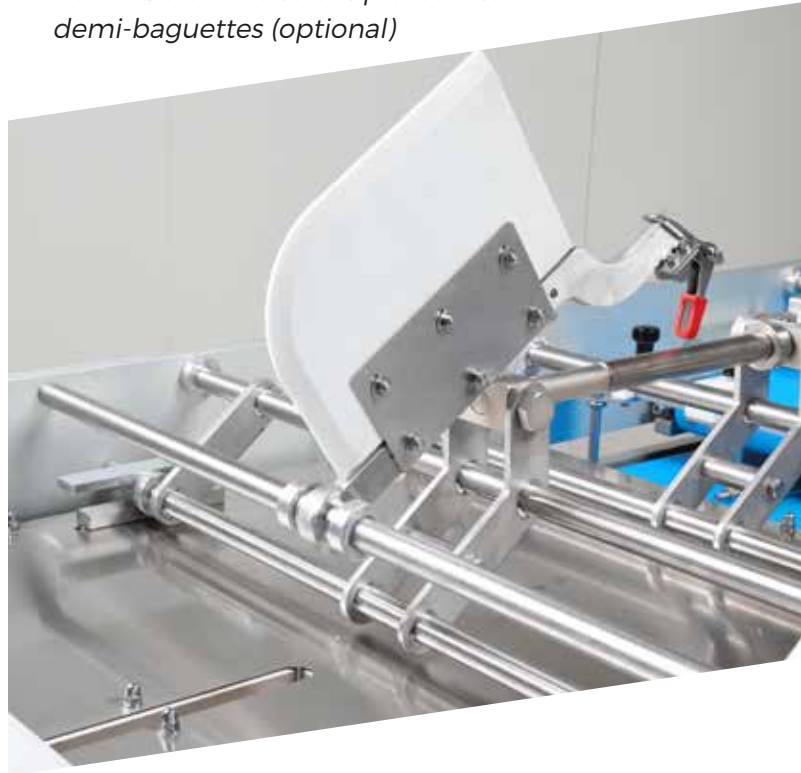
Bypass system: liftable loafing tables through compressed air piston, to allow the dough pieces that do not need moulding to pass through the machine



Adjustable laminating cylinders



Removable knife to cut pieces into 2 demi-baguettes (optional)



Technical Features

- Adjustable laminating cylinders 75mm diameter in alimentary plastic
- Stainless steel wire mesh to roll-up the dough pieces
- Motorized loafing belt with adjustable speed, 63cm wide and 95cm long
- Fixed loafing table, 50 cm wide and 67cm long
- Motorized belts and table in blue plastic for alimentary use
- Loafing belt and pre-loafing table with adjustable height and inclination, to obtain the desired finale shape
- Adjustable side guides to produce baguettes with squared ends

Optional

- Motorized flour duster with photocell for activation only in presence of dough
- Removable knife to cut pieces into 2 demi-baguettes
- Sponge table coating, to obtain pointy-end baguettes
- Gravi-split module, to distance the pieces when working in 2 rows before going into the moulder



Splitting conveyor belt Gravi Split

Gravi-Fil

Moulder with Adjustable Pressing Plate

Moulder equipped with adjustable pressing conveyor belt 53 cm wide. The upper belt can run in both ways in order to obtain loafing (with opposite movement) or a simple pressing (upper and lower belts moving in the same direction and speed) of the dough pieces.

The distance between upper and lower belt as well as the upper belt inclination can be adjusted, in order to always obtain the desired shape.



Technical Features

- Adjustable loafing table, width 53 cm, length = 110 cm
- Adjustable upper and lower belt speeds through 2 separate inverters
- Motorized belt with possibility of:
 - Opposite movement compared to the main conveyor belt, for loafing
 - Same direction movement and speed to make a simple pressing
- System with air piston to assist in lifting up the pressing table

Optional

- Adjustable side guides
- Giant flour duster with sensor and timer, to put flour on the dough piece only
- Curling net before loafing table



Gravi-Nas

Exit Conveyor Belt with Side Working Tables

Motorized conveyor belt for manual unloading of the dough pieces coming out of Gravi-Flux or a complete Gravi-Line. Height and speed of the belt can be adjusted, equipped with two lateral flat surfaces for manual dough handling.



Technical Features

- Start/stop control of the whole production line
- Motorized conveyor belt in blue plastic for alimentary use
- Belt speed adjustment with inverter
- Adjustable belt inclination for different unloading heights
- Two lateral foldable working surfaces in blue plastic for alimentary use
- On wheels with locking system

Optional

- Wooden lateral working surfaces
- Models with larger conveyor belt 657 cm wide, to be placed after moulder
- Central belt split into n. 2 independent parallel belts, to achieve different speeds and distance the pieces along the flow direction when working at 2 rows

Model	Central conveyor belt		Side tables	
	Width	Length	Width	Length
	mm	mm	mm	mm
SP 1/2 NAS 153	387	1.530	400	1.000
SP 1/2 NAS 205	387	2.530	400	2.000
SP 1/2 NAS 300	387	3.530	400	3.000



MP-300

Dough Feeder

Dough feeder for dough slices production. Designed to continuously feed the Gravi-Flux divider when loading dough quantities greater than the Gravi-Flux hopper capacity.



Teflon-coated cutting star



Technical Features

- Hopper capacity 300 kg of dough
- Teflon coated stainless steel hopper with safety rope
- Sensor to read the dough level inside the Gravi-Flux hopper for automatic continuous loading of the divider
- Teflon coated cutting star diameter 300 mm - length 700 mm
- Production of dough pieces of 15/18 kg

Dough feeder with belt application, to load the dough into plastic boxes for subsequent proofing.

Optional

- Increased cutting star dimensions to produce larger dough slices
- Hopper with increased capacity over 300 kg
- Belt application for feeding plastic boxes feeding



Gravi-Rif

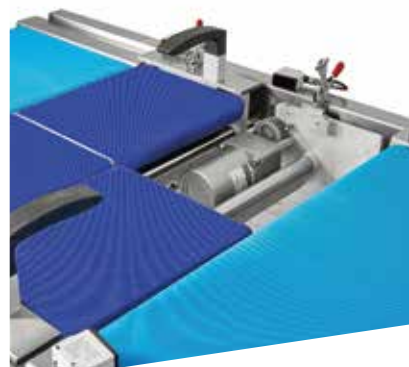
Aligning Unit

Automatic unit designed to align the dough pieces in the flow direction when the line is working at n.2 rows. Required for feeding subsequent automatic panning system. Equipped with n.4 independent aligning belts, controlled by one photocell each.



Technical Features

- 1 feeding belt, 4 aligning belts, 1 discharge belt
- All belts with adjustable speed through inverters
- Touch screen control panel
- Removable aligning belts, for ease of cleaning and maintenance
- Mounted on wheels with locking system



Removable aligning belts, for ease of cleaning and maintenance

Gravi-Centra

Centring and Aligning Video Unit

Automatic centring and aligning unit with high precision camera and moving belts, to align and centre the dough pieces coming in n.2 rows. The unit is able to prepare for subsequent automatic panning systems dough pieces of any shape: squared, round or oval.



Step 1 - Position identification

The dough pieces are not aligned, their position is read by the camera as they pass below it



Step 2 - Centering

The belts move in the direction perpendicular to the flow, to achieve the dough pieces spacing required by the panning system



Step 3 - Alignment

The belt with the first piece stops in order to wait for the second one: the dough pieces exit together



High-precision camera, able to detect the barycentre of moving dough pieces

Technical Features

- High-precision camera
- 1 feeding belt, 4 aligning and centring belts, 1 discharge belt
- All belts with adjustable speed through independent inverters
- High-precision brushless-motors for centring belts

Gravi-Integlia

Automatic Panning System

Programmable automatic panning system, able to discharge Gravi-Line products on any kind of tray, from 60x80cm to 120x80cm. Gravi-Integlia can manage without problems pieces of different shapes, such as squared products, round products or baguettes.



Technical Features

- Retractable tape width: 650 mm
- Maximum excursion of retractable tape: 800 mm
- Movement through motors with inverter
- N.50 programs for:
 - Number of pieces for tray length
 - Number of pieces for tray width
- Suitable for all kind of products: rectangular, round and loaf
- Both flat and corrugated trays can be used
- Possible trays dimensions: 800x600 - 800x800 - 800x1000 mm
- Tray height from 10 to 37 mm
- Manual tray loading and unloading with n.1 tray at a time

Optional

- Transverse conveyor belt for trays loading/unloading
- Configuration with incoming trays storage for n.3 trays, outgoing trays storage for n. 3 trays
- Configuration with incoming trays storage for n.15 trays, outgoing trays storage for n. 3 trays

Gravi-Line Layouts

Modular Structure

Thanks to its modular structure, Gravi-Line can be configured to cover a wide range of production requirements, from simple dough dividing to full automatic lines with rounding, moulding and even panning. The next pages show the most common layouts, but many more are possible.

From Medium-Sized Bakeries to Full Automatic Plants

The flexibility of the modular design allows to cover a wide range of production needs. This is why Gravi-Line is widely used in both medium-sized bakery looking to increase their production, and large food industries looking to get a high-quality end product without losing productivity.

Incremental Investment

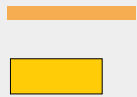
Gravi-Line modularity allows to plan for incremental investments: it is possible to start with just the divider, and add the other modules in a second moment. This allows the customer to automate its production process gradually, without losing the investment made in the first steps.

Customised Projects

For particular production needs Turri develops customised projects, as for example “L” shaped or “U” shaped layouts for installation with limited space available.

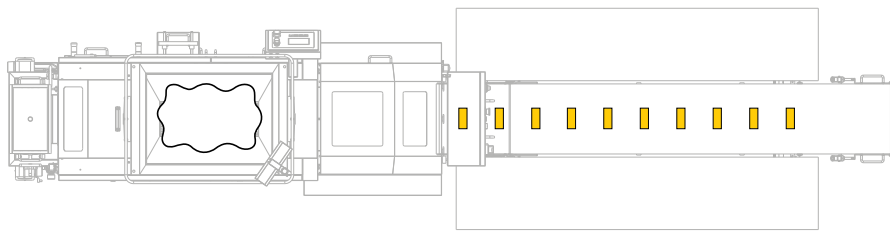


Dividing



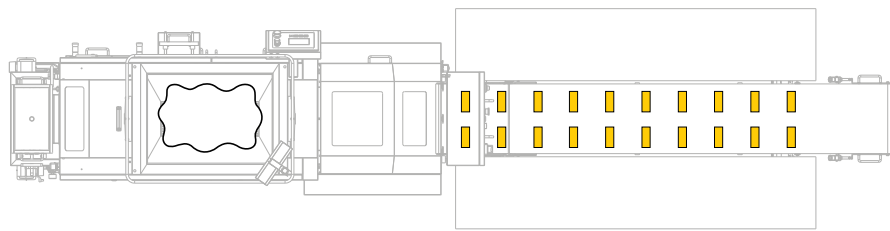
1 Row

Product	Gravi-Flux	Gravi-Nas
	✓	✓

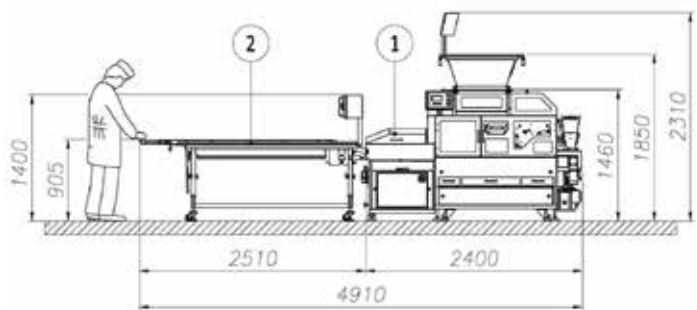


2 Rows

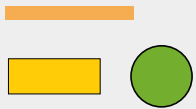
Product	Gravi-Flux	Gravi-Nas
	✓	✓



Pos.	Model	Machine Type
1	Gravi-Flux	Divider
2	Gravi-Nas 205	Exit conveyor belt



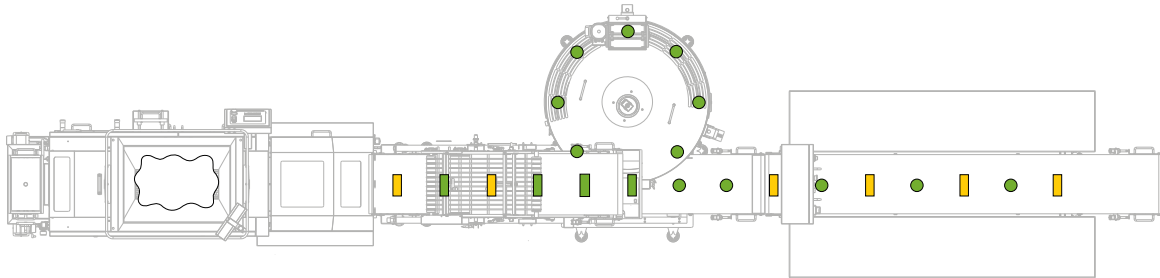
Dividing and Rounding



With Single-Head Rounder

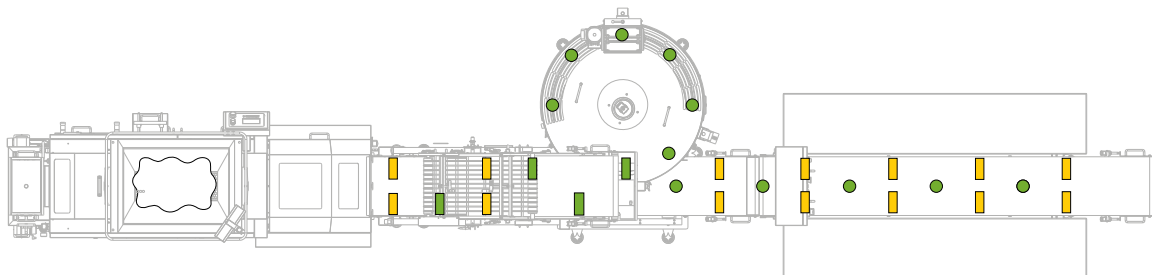
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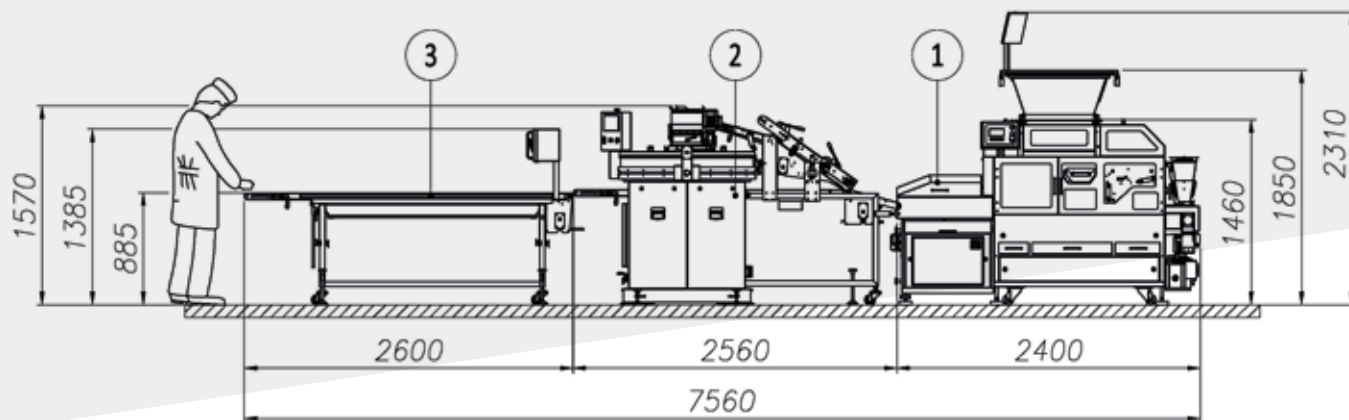
Product	Gravi-Flux	Gravi-Rondo	Gravi-Nas
	✓		✓
	✓	✓	✓



2 Rows

Product	Gravi-Flux	Gravi-Rondo	Gravi-Nas
	✓		✓
	✓	✓	✓



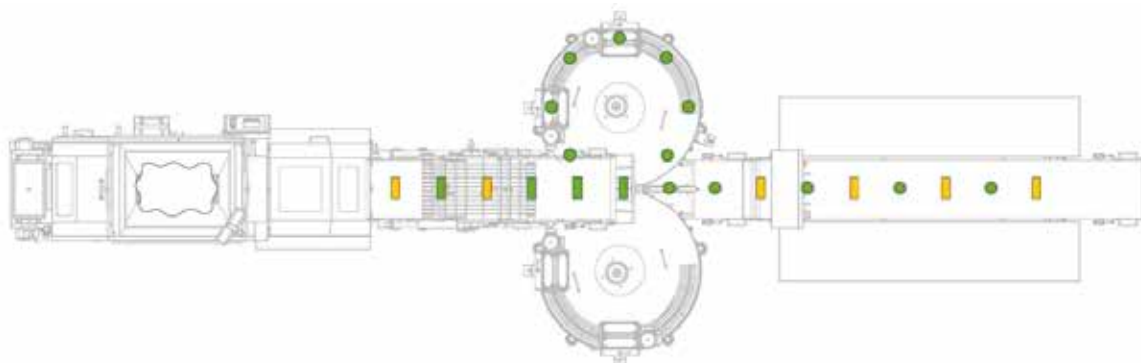


Pos.	Model	Machine Type
1	Gravi-Flux	Divider
2	Gravi-Rondo	Rounder
3	Gravi-Nas 205	Exit conveyor belt

With Double-Head Rounder

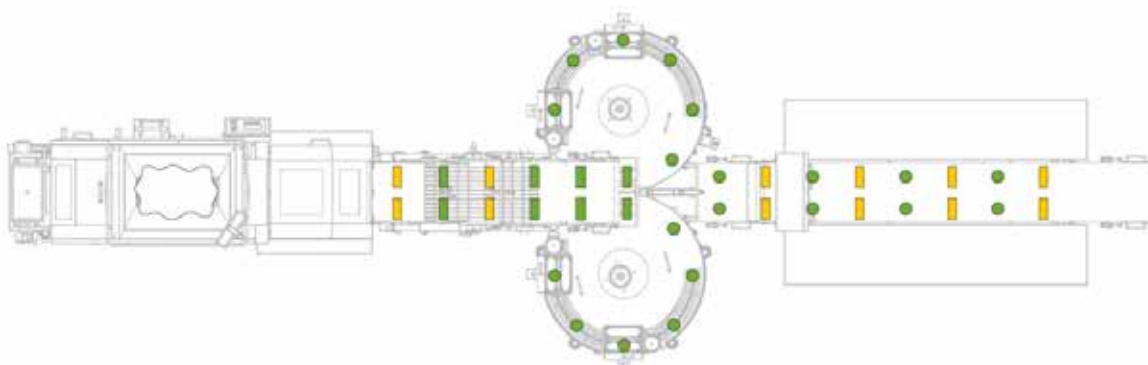
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Product	Gravi-Flux	Gravi-Rondo	Gravi-Nas
	✓		✓
	✓	✓	✓

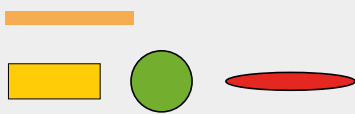


2 Rows

Product	Gravi-Flux	Gravi-Rondo	Gravi-Nas
	✓		✓
	✓	✓	✓






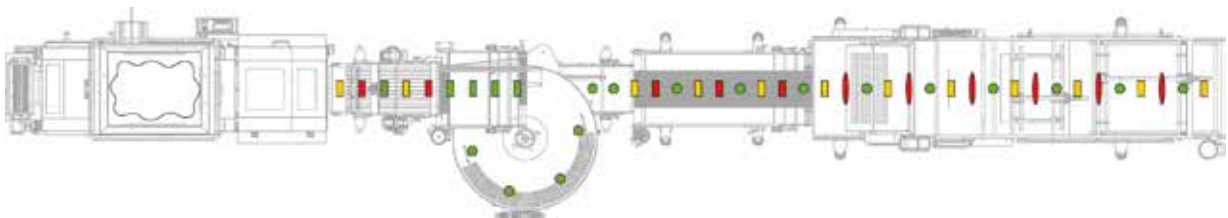
Dividing, Rounding and Moulding






With Single-Head Rounder

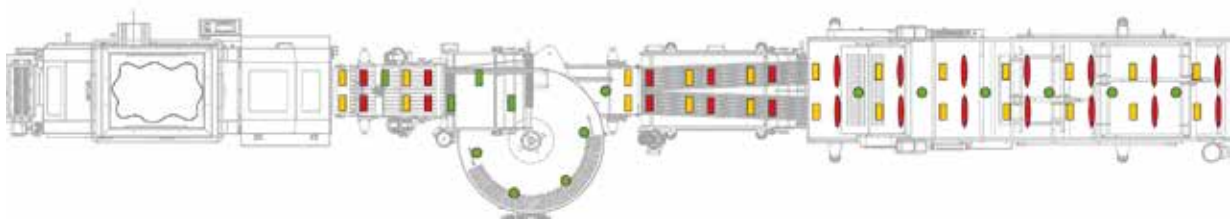
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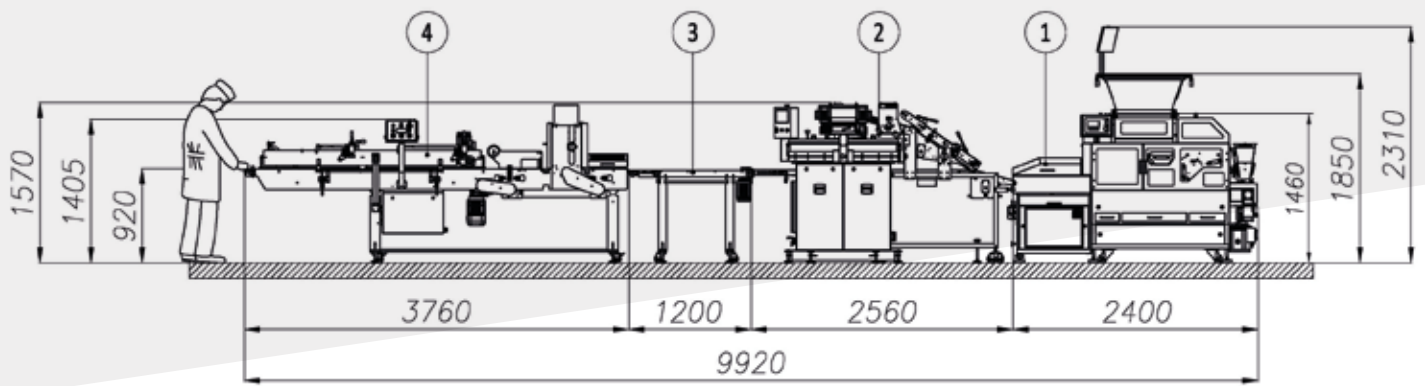
Product	Gravi-Flux	Gravi-Rondo	Gravi-Split	Gravi-Forma
	✓			
	✓	✓		
	✓			✓



2 Rows

Product	Gravi-Flux	Gravi-Rondo	Gravi-Split	Gravi-Forma
	✓		✓	
	✓	✓	✓	
	✓		✓	✓



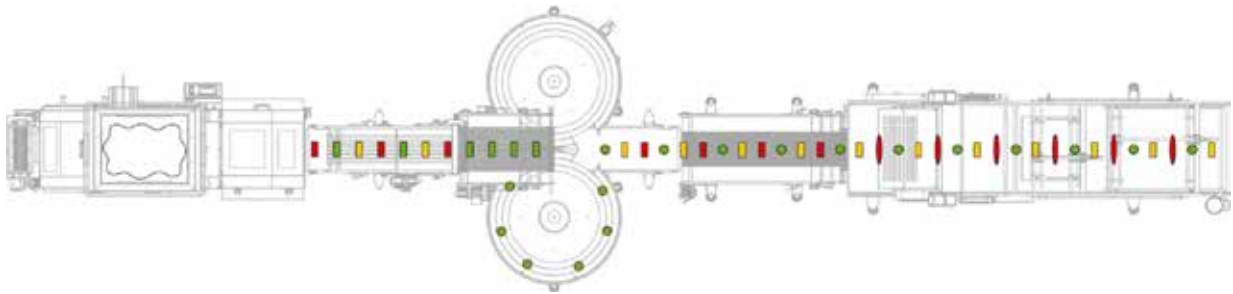


Pos.	Model	Machine Type
1	Gravi-Flux	Divider
2	Gravi-Rondo	Rounder
3	Gravi-Split	Dividing belt
4	Gravi-Forma	Moulder

With Double-Head Rounder

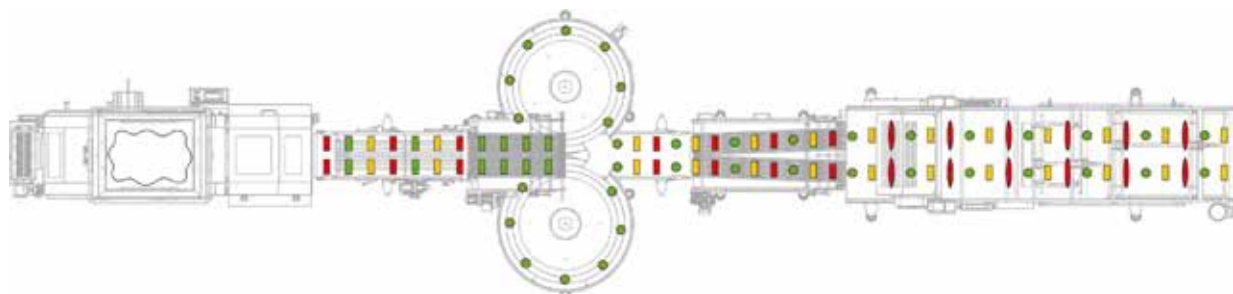
1 Row

Product	Gravi-Flux	Gravi-Rondo	Gravi-Split	Gravi-Forma
	✓			
	✓	✓		
	✓			✓



2 Rows

Product	Gravi-Flux	Gravi-Rondo	Gravi-Split	Gravi-Forma
	✓		✓	
	✓	✓	✓	
	✓		✓	✓





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