

# Linea ACRS

rack conveyor dishwashers



designed for hygiene



## Comenda: a history of technological innovation

The founder company of the Ali group, Comenda has been synonymous with the best in professional dishwashing equipment for over 40 years. One of the industry's top players both in Europe and worldwide, Comenda manufactures and markets more than 200 dishwashing solutions, from the smallest glasswashers for bars through to large automated continuous flow systems for restaurants, hotels, hospitals, canteens and in-flight catering. Comenda also designs and installs customized solutions for individual space and workload specifications.



### ergonomics and functionality

For Comenda, ergonomics means "easy to use". Operating simplicity improves work procedures and guarantees personnel safety. Machine electronic control that manages each process phase and lateral wash arms that guarantee exceptional results are just some of the benefits of the Linea ACRS, reflecting the attention that Comenda devotes to its users.

### service on your doorstep

Continuous contact between production and service engineers is the key to effective support whenever maintenance is required: certainly, this is one of the distinguishing characteristics of Comenda's technical assistance. An extensive network of highly skilled service engineers provides full territorial coverage. Rapid turnaround on service calls and immediate availability of spare parts complete the Comenda offer and ensure excellent quality of service.

## designed for hygiene

Hygiene design takes quality beyond the dimension of product form. At Comenda, designed for hygiene means form plus technology plus functionality. Comenda's strength is its attention to every last detail, to provide superior washing solutions that comply with the severe hygiene standards required in public catering.

## design expertise at the user's service

A perfect blend of advanced research, design expertise and technical know-how, the Comenda product range combines superior performance with eye-pleasing form, to deliver quality down to the smallest construction details. Maximum reliability goes hand in hand with minimum maintenance. Components are located for easy access and replacement: at Comenda, an efficient after-sales service begins with product design.

## products to cover every requirements

For Comenda, the needs of the customer are paramount in the design of customized solutions for hygiene of the highest quality. Every product installed at the customer site must satisfy stringent requirements for productivity, ease of use, cost-effective operation and safety. Absolute reliability in washing glasses, plates, trays, pots and pans of every shape and size. Front loaders, hood models, rack conveyors and flight machines equipped with a complete set of accessories make Comenda the ideal partner for every catering professional.



## respect for the environment respect for people

With the ECO2 Economy + Ecology project Comenda has made significant progress in limiting consumption, with a focus on sustainability that translates into respect for the environment and respect for people. Comenda systems keep running costs down by using less water and detergent during the wash cycle and cutting energy consumption, without sacrificing hygiene efficiency. Silent machine operation and lower heat dispersion ensure pleasant conditions in the workplace.



# Linea ACRS

## rack conveyor dishwashers



The Linea ACRS is the ideal solution when a large number of dishes need to be quickly washed at reduced running costs. Available with different hourly production capacities, all models feature high automation levels. Linea ACRS offers all Comenda safety features: durable and resistant materials and components, safety devices for all the electrical and

mechanical equipment; stringent controls for each machine and all its parts. Just push the racks into the tunnel. The machine does the rest. Dishes exit the other side clean and dry, ready to be used. "High" speed to accelerate washing time and save energy whenever possible; "low" speed to deep clean tougher soil (according to DIN 10510 standards).





Not only top to bottom but even from the sides: water directly hits dishes to ensure perfect cleaning in the shortest amount of time and to fight tougher soil even in less accessible areas. The corner washing tunnels let Linea ACRS models be installed in even "difficult" rooms. The same machine body can be installed in a straight angle or "U" configuration.

Linea ACRS's high flexibility permits customised washing systems to satisfy any room situation. The robust support frame (3 mm thick) and body are made entirely of 18/10 AISI 304 stainless steel. All construction materials have been carefully selected to stand up to the most aggressive detergents and high temperatures.

## SAVINGS

- Heat pump: heats water to the best washing temperature and improves working environment
- Pre-Wash Plus: additional pre-wash
- Mid-Wash Plus: additional intermediate wash

## HYGIENE

- Deep-drawn tank with rounded corners: prevents soil accumulation
- Flux Control: controls rinse water flow
- Machine self-cleaning at the end of the day
- Hygiene Plus System

## EFFICIENCY

- Adjustable side washing arms equipped with clog-proof nozzles
- "Detrempe" module with removable filter: prevents food residue accumulation in the pre-wash area
- Osmosis rinse that automatically recognises glass and cutlery racks

## SAFETY AND FLEXIBILITY

- RCD Rinse Control Device: prevents backflow and keeps rinse water pressure constant
- Separate wash and rinse doors: improve accessibility
- Possibility of excluding pre-wash and dryer

# savings

With the ECO2 project Comenda has made significant progress in limiting consumption in three important areas – water, energy and detergent – by implementing a series of advanced technologies.

## PRS Proportional Rinse System

It's a new and patented Comenda system. PRS allows to save up to 30% of water, energy, detergent and rinse aid. PRS regulates correct rinse water quantity according to conveyor speed.



## energy savings

### heat recovery unit

This system lets the machine run with cold water, pre-heating it to 45-50 °C. It exploits the heat and steam that would otherwise be dispersed in the air with significant energy savings (from 9 to 17 kW/hour according to the model). It is available with an exhaust conduit that runs along the entire machine length.

### heat pump

Exploits the heat produced during a refrigeration cycle to heat rinse water and in some models also the wash tank. This system lets the machine run with cold water affording significant energy savings (from 15 to 25 kW/hour according to the model). Emitted heat and steam are simultaneously cooled to further improve work room conditions.

### autotimer

It reduces consumption by stopping the pumps when the system is idle automatically restarting when racks are loaded.

### Double skin execution

To save energy and to reduce sound and heat dispersion in the room.

## chemical savings

### midwash plus

Using a part of ecorinse water for additional pre-wash reduces the quantity of water added in the wash area and consequently detergent consumption up to 50%.

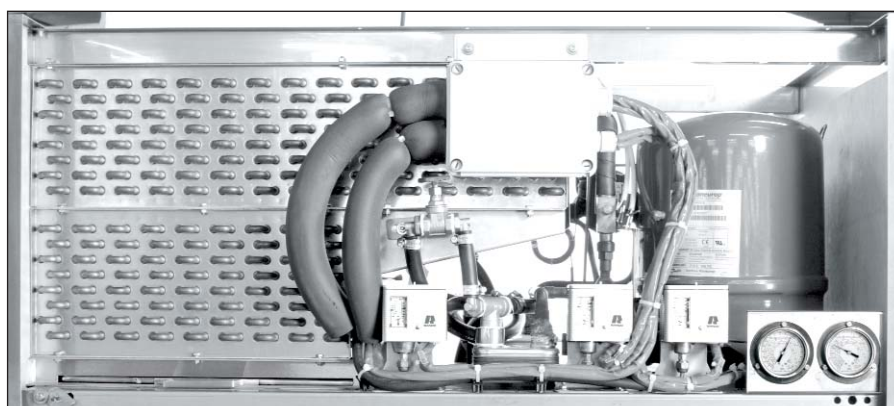
## water savings

### ecorinse

With this system, final rinse water is reused for pre-rinse cycles not only providing significant water savings (from 20 to 30% litres/hour according to the model) but also energy and rinse-aid savings.

### economizer

The rinse area is equipped with a water and energy savings device when the rinse area is on stand-by.



## 1 pre-wash

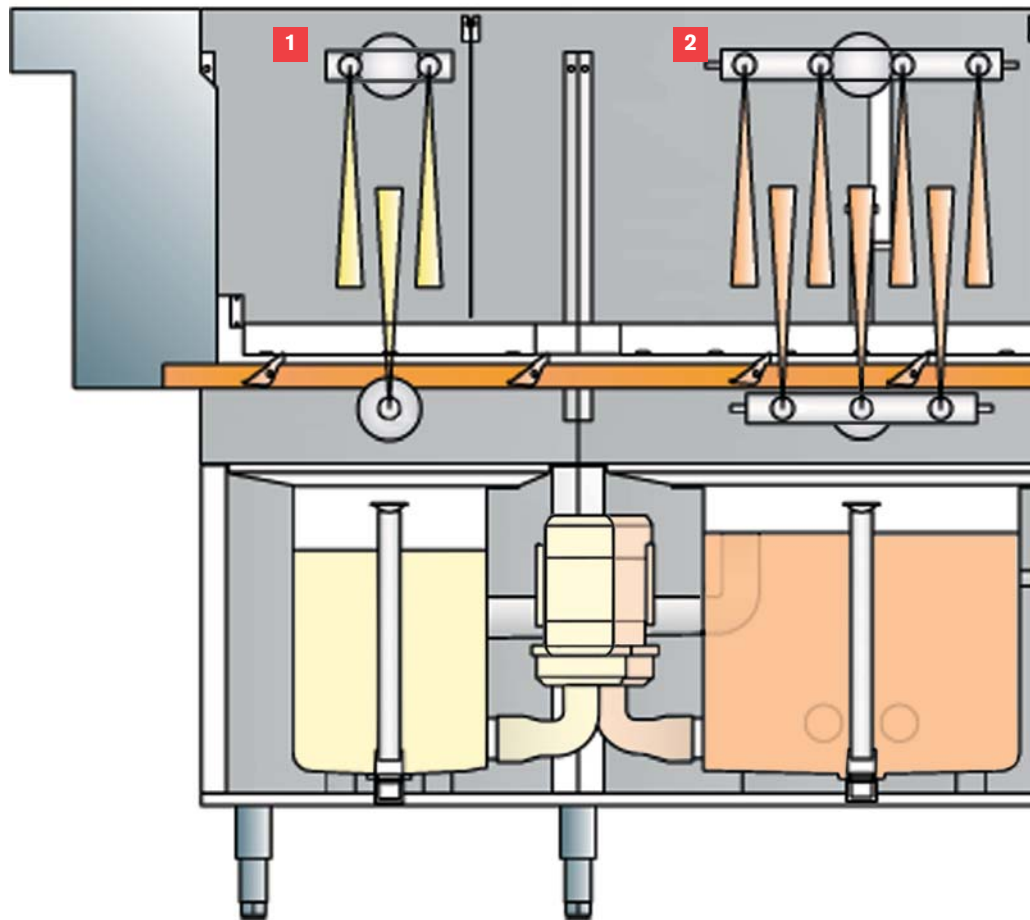
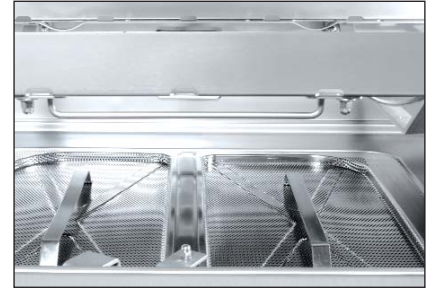
Efficient water filtering thanks to a wide and proficient stainless steel filtering surface covering the entire tank; easy to remove cartridge filters, deep drawn tank with rounded corners to prevent dirty water from stagnating and improve hygiene. High-capacity pump with a filter on the intake. Available in the 900 mm version for heavy duty pre-wash with stainless steel top and bottom wash systems completely removable for cleaning and equipped with deep drawn nozzles to achieve the best results. Upper and lower proportional pressure regulation system. Constant temperature control and automatic cooling over set limits.

## 2 main wash

Stainless steel top, bottom and side wash systems, completely removable for cleaning and equipped with deep drawn nozzles to achieve the best results, upper and lower proportional pressure regulation system. Constant water level and temperature control in the tank. Efficient water filtering thanks to a wide and proficient stainless steel filtering surface covering the entire tank and easy to remove cartridge filters. Deep-drawn tank with rounded corners. High-capacity pump equipped with intake filter.

## 3 ecorinse: pre-rinse and final rinse

Pre-rinse: tank with dual filter system and pump with stainless steel impeller reuse clean rinse water for a pre-rinse cycle, thus saving energy and water. Rinse: supply water is heated to 85 °C to sanitise dishes. Equipped with an economizer system to reduce water and energy consumption. Easy to remove stainless steel arms and nozzles.



#### 4 osmosis rinse

Rinse with demineralised water, especially indicated for cutlery and glasses. Two possible solutions:

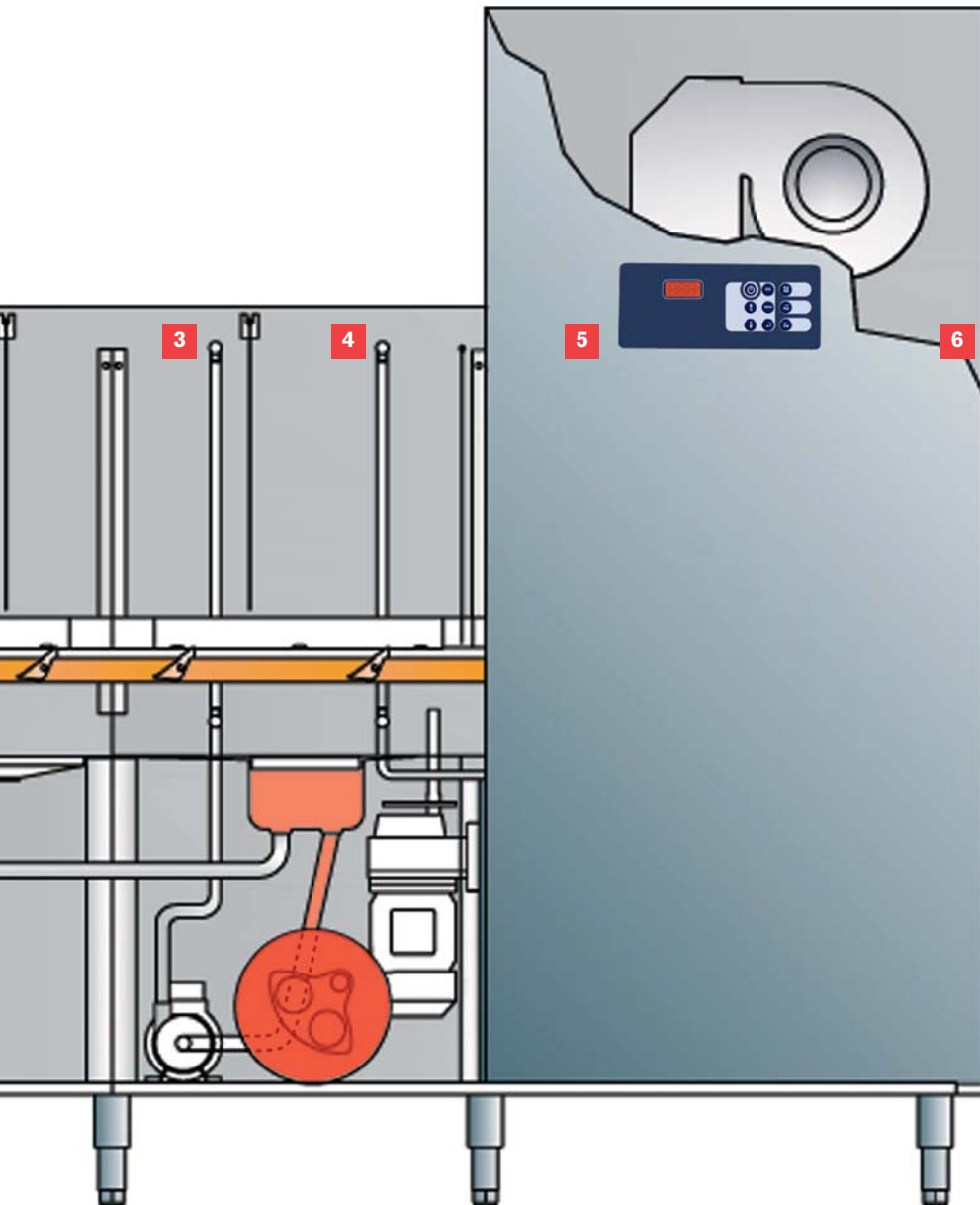
- machine with complete demineralised water rinse
- machine with additional 400 mm osmosis rinse area and automatic rack recognition system

#### 5 electronic control panel

Provides settings and control of the various washing phases and signals any malfunctions. In this version it is mounted on the front of the drying unit.

#### 6 dryer

Available in various sizes, straight or fitted to 90° or 180° curves with different outputs.



#### RCD Rinse Control Device

Guarantees an excellent rinse even with low pressure water flow. RCD complies with severe backflow prevention specified by WRAS and DVGW.

#### steam condenser

System avoids that warm humid air exits the machine by condensing it with a cold water battery.

#### inlet and exit tables

A wide range of corner or straight loading tables, under-shelves, sinks and showers are available to eliminate soil before the pre-wash cycle. Exit roller tables and 90° automatic unload systems are also available.





## hygiene

All structural and system components including pumps and washing columns in the Linea ACRS are installed outside the wash chamber, leaving only smooth surfaces inside preventing residue build-up. The wide filtering surfaces and deep-drawn tanks with rounded corners make inspection easy and keep wash tanks cleaned. Self-draining wash pumps are also programmable to be self-cleaning. This way clean water is used to completely wash the machine and remove all residue. Flux Control® makes sure that the quantity of rinse water provides excellent results and maximum hygiene. It also signals low water levels or waste during the rinse cycle.

The Sanitizing System® can also be included. In each wash and rinse area, powerful jets of water with the addition of specific detergents are aimed at the internal surfaces by adjustable nozzles to guarantee maximum hygiene at the end of each working day. The entire system is easily accessible.



## electronics

The re-designed and easy to use Linea ACRS control panel ensures simple and immediate machine use. It provides the user with precise and timely information on machine functions. The scrollable four-row LCD display shows:

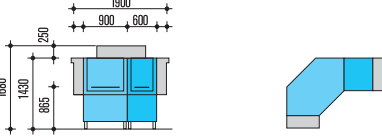
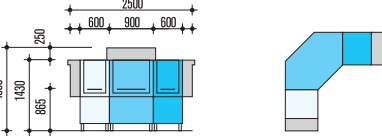
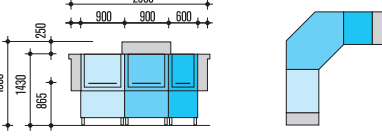
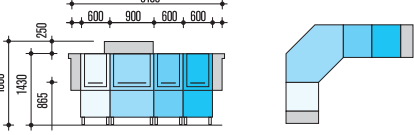
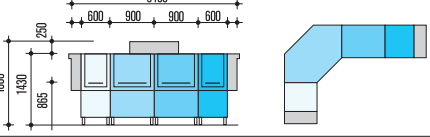
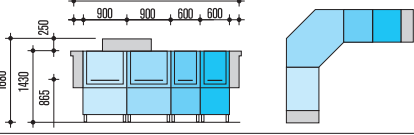
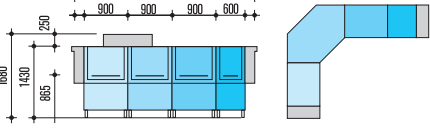
- machine status
- information messages
- machine data
- malfunctions



A large amount of significant machine data can be set and controlled to guarantee perfect cleaning and total hygiene. In particular, pre-wash, wash, rinse and drying temperatures are constantly monitored and any

malfunction immediately detected.

This monitoring system also includes the correct amount of clean water in the rinse area to ensure quality and hygiene. The confidence of having a system in perfect operating conditions is no less important; the system reminds the user to perform routine maintenance by displaying the hours remaining until the next operation. These are only some of the numerous benefits the electronic control system offers by communicating with the user in the language of the country where the machine is installed. The last-generation digital panel is also able to send HACCP procedure data to a printer or PC via the HPS (Hygiene Plus System) programme.

Linea ACRS	output		pre-wash			heavy duty pre-wash					1 <sup>st</sup> wash		
	1 speed rack/hour dishes/hour	2 speed rack/hour dishes/hour	width mm	tank litres	pump kW	width mm	tank litres	pump kW	heating kW	heating kg/hour	width mm	tank litres	pump kW
<b>ACRS 145</b> 	93 1674	140 2520	-	-	-	-	-	-	-	-	900	100	2,6
<b>ACRS 205</b> 	133 2394	200 3600	600	50	1,1	-	-	-	-	-	900	100	2,6
<b>ACRS 225</b> 	150 2700	220 3960	-	-	-	900	90	2,6	10*	17,2	900	100	2,6
<b>ACRS 245</b> 	160 2880	240 4320	600	50	1,1	-	-	-	-	-	900	100	2,6
<b>ACRS 260</b> 	173 3114	260 4680	600	50	1,1	-	-	-	-	-	900	100	2,6
<b>ACRS 265</b> 	176 3168	265 4770	-	-	-	900	90	2,6	10*	17,2	900	100	2,6
<b>ACRS 305</b> 	203 3654	305 5490	-	-	-	900	90	2,6	10*	17,2	900	100	2,6

Depth 800mm

\*Heater interlocked

1<sup>st</sup> speed according to DIN 10510

		2 <sup>nd</sup> wash					ecorinse				rinse			drive					
heating kW	heating kg/hour	width mm	tank litres	pump kW	heating kW	heating kg/hour	width mm	tank litres	pump kW	heating kW	capacity litres/hour	heating kW	heating kg/hour		tank capacity litres	electric power kW	steam power kW	steam consumption kg/hour	total length mm
12	20,7	-	-	-	-	-	600	10	0,15	4,2	300	16	27,6	0,15	110	35,1	7,1	48,3	1900
12	20,7	-	-	-	-	-	600	10	0,15	5	360	18	31	0,15	160	39	9	51,7	2500
12	20,7	-	-	-	-	-	600	10	0,15	6	380	20	34,5	0,15	200	43,5	11,5	72,4	2800
10	17,2	600	65	1,1	12	20,7	600	10	0,15	6	390	20	34,5	0,15	225	53,1	11,1	72,4	3100
10	17,2	900	100	2,6	12	20,7	600	10	0,15	6	420	21	36,2	0,3	270	55,75	12,75	74,1	3400
10	17,2	600	65	1,1	12	20,7	600	10	0,15	6	420	21	36,2	0,3	265	55,75	12,75	91,4	3400
10	17,2	900	100	2,6	12	20,7	600	10	0,15	6	500	24	41,4	0,3	310	60,25	14,25	96,6	3700

Technical variations reserved

Please note that some characteristics described in this brochure are optional



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# Linea ACS

rack conveyor dishwashers

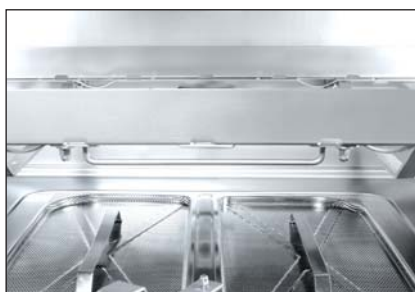


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### ergonomics and functionality

For Comenda, ergonomics means easy of use. Operating simplicity improves work procedures and guarantees personnel safety. The potential of creating "corner" installations and the deep-drawn tanks with rounded corners that ensure hygiene are just some of the benefits of Comenda products, reflecting the attention that the company devotes to its users.

### service at your doorstep

Continuous contact between production and service engineers is the key to effective support whenever maintenance is required: certainly, this is one of the distinguishing characteristics of Comenda's technical assistance. An extensive network of highly skilled service engineers provides full territorial coverage. Rapid turnaround on service calls and immediate availability of spare parts complete the Comenda offer and ensure excellent quality of service.

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## respect for the environment, respect for people

With the ECO2 Economy + Ecology project Comenda has made significant progress in limiting consumption, with a focus on sustainability that translates into respect for the environment and respect for people. Comenda systems keep running costs down by using less water and detergent during the wash cycle and cutting energy consumption, without sacrificing hygiene efficiency. Silent machine operation and lower heat dispersion ensure pleasant working conditions in the workplace.





plus

With the ECO2 project Comenda has made significant progress in limiting consumption in three important areas – water, energy and detergent – by implementing a series of advanced technologies with a focus on sustainability that translates into respect for the environment and respect for people.

#### heat recovery unit

Built to supply the machine with cold water, preheat it to 45/50 °C exploiting the heat and steam that would otherwise be dispersed in the air with significant energy savings. It also condenses machine steam and reduces the temperature of air emissions.

#### heat pump

Exploits the heat produced during a cooling cycle to heat rinse water, also due to the upper exhaust conduit. This system lets the machine run with cold water with significant energy savings (from 15 to 25 kW/hour according to the model). Emitted heat and steam are simultaneously cooled to further improve work room conditions.

#### RCD Rinse Control Device

Guarantees an excellent rinse even with low pressure water flow. RCD complies with severe backflow prevention specified by WRAS and DVGW.

#### steam condenser

System avoids that warm humid air exits the machine by condensing it with a cold water battery.

#### autotimer

Stops the pumps when the machine is idle, automatically restarting when the machine is reloaded.

#### detrempe module

with removable filter: prevents food residue accumulation in the pre-wash area

#### double skin execution

Improves energy savings and contributes in reducing sound and heat dispersion in the work room.

#### ecorinse

With this system, final rinse water is reused for pre-wash cycles providing significant water savings (from 90 to 180 litres/hour according to the model) but also energy and rinse-aid savings.

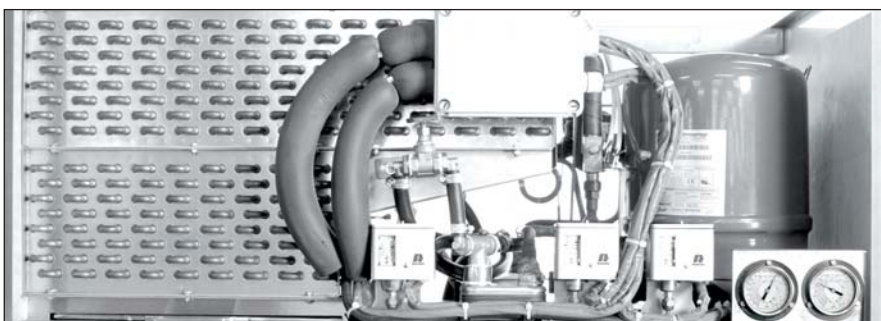
#### economizer

The rinse area is equipped with a water and energy savings device.



#### hygiene

All structural and system components in the Linea ACS are installed outside the wash tank, leaving only smooth surfaces inside to prevent any soil build-up. The wide filtering surfaces and deep-drawn tanks with rounded corners make inspection easy and prevent dirt from accumulating. The self-draining wash pumps are also self-cleaning. This way clean water is used to completely wash the machine and remove all residue. Flux Control® ensures that the quantity of rinse water provides excellent results and maximum hygiene. It also signals low water levels or waste during the rinse cycle. The Sanitizing System® can also be included. In each wash and rinse area, powerful jets of water with the addition of specific sanitizers are aimed at the internal surfaces by adjustable nozzles to guarantee maximum hygiene at the end of each cycle. The entire system is easily accessible.





# Linea ACS

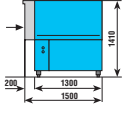
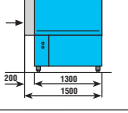
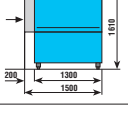
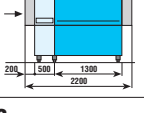
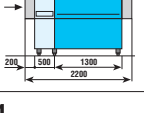
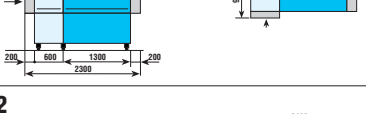
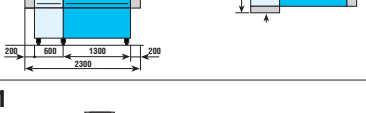
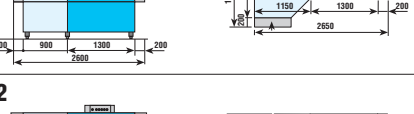

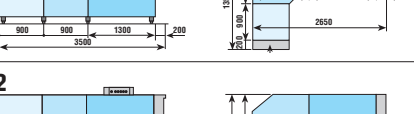
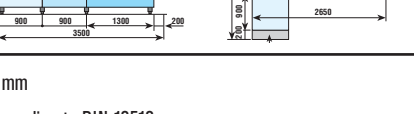
## rack conveyor dishwashers



Compact, practical, durable and reliable, Linea ACS dishwashers offer customers the best in technological evolution. Built combining basic functional modules, Linea ACS dishwashers are available in models with outputs from 85 to 245 racks/hour. Automated, equipped with all the most advanced technological and construction details, Linea ACS dishwashers are

distinguished by their wide range of accessories that permit overall machine control and self-diagnosis. Deep-drawn tanks, self-draining pumps and raised feet guarantee maximum hygiene while the support structure, durable mechanics and construction details provide high-quality safety features. The corner installation option for "difficult" rooms is an important

asset to the Linea ACS. Even the drying unit can be installed in a corner straight thru. A wide range of corner or straight loading shelves, under-shelves, sinks and showers are available to eliminate soil before the pre-wash cycle and roller tables with end switches automatically stop racks if not removed.

Linea ACS	wash zones	output		pre-wash		1 <sup>st</sup> wash		
		1 speed rack/hour plates/hour	2 speed rack/hour plates/hour	tank litres	pump kW	tank litres	pump kW	heating kW heating kg/hour
<b>ACS 91</b> 	WASH RINSE	100 1800	-	-	-	100	2,2	9 15,5
<b>ACS 101</b> 	WASH RINSE	80 1440	120 2160	-	-	100	2,2	9 15,5
<b>ACS 122</b> 	WASH ECORINSE RINSE	88 1584	130 2430	-	-	100	2,2	9 15,5
<b>ACS 161</b> 	PRE-WASH WASH RINSE	103 1854	155 2790	20	0,3	100	2,2	9 15,5
<b>ACS 162</b> 	PRE-WASH WASH ECORINSE RINSE	110 1980	165 2970	20	0,3	100	2,2	9 15,5
<b>ACS 181</b> 	PRE-WASH WASH RINSE	115 2070	175 3150	50	1,1	100	2,2	9 15,5
<b>ACS 182</b> 	PRE-WASH WASH ECORINSE RINSE	123 2214	185 3330	50	1,1	100	2,2	9 15,5
<b>ACS 201</b> 	PRE-WASH WASH RINSE	133 2394	200 3600	90	1,5	100	2,2	9 15,5
<b>ACS 202</b> 	PRE-WASH WASH ECORINSE RINSE	140 2520	210 3780	90	1,5	100	2,2	9 15,5
<b>ACS 241</b> 	PRE-WASH 1 <sup>st</sup> WASH 2 <sup>nd</sup> WASH RINSE	150 2700	230 4140	90	1,5	100	2,2	9 15,5
<b>ACS 242</b> 	PRE-WASH 1 <sup>st</sup> WASH 2 <sup>nd</sup> WASH ECORINSE RINSE	163 2934	245 4410	90	1,5	100	2,2	9 15,5

Depth 800 mm

1<sup>st</sup> speed according to DIN 10510

2 <sup>nd</sup> wash			ecorinse		rinse		drive	dryer		elect. power tot.		steam power	
tank litres	pump kW	heating kW heating kg/hour	tank litres	pump kW	water litres/hour	booster kW booster kg/hour	kW	fan kW	battery kW battery kg/hour	MACHINE STANDARD	WITH OPT. DRYING UNIT	MACHINE STANDARD	WITH OPT. DRYING UNIT
										installed kW/hour	installed kW/hour	kW kg/hour	kW kg/hour
-	-	-	-	-	285	12,5 21,5	0,12	0,75	6 10	23,8	30,5	2,32 (37)	3,07 (47)
-	-	-	-	-	330	14 24	0,15	0,75	6 10	25,3	32	2,32 39,5	3 49,5
-	-	-	7	0,15	285	12,5 21,5	0,15	0,75	6 10	24	31	2,5 37	3,25 47
-	-	-	-	-	400	20 34	0,15	0,75	6 10	31,5	38,5	2,5 49,5	3,25 59,5
-	-	-	7	0,15	320	16 27,5	0,15	0,75	6 10	27,6	34,3	2,65 43	3,4 53
-	-	-	-	-	430	20 34	0,15	0,75	6 10	32,5	39,2	3,6 49,5	4,2 59,5
-	-	-	7	0,15	350	18 31	0,15	0,75	6 10	30,5	37,5	3,6 46,5	4,2 56,5
-	-	-	-	-	440	20 34	0,15	0,75	6 10	33	39,8	4 49,5	4,75 59,5
-	-	-	7	0,15	360	18 31	0,15	0,75	6 10	31	37,8	4 46,5	4,75 56,5
100	2,2	9 15,5	-	-	450	20 34	0,15	0,75	6 10	44	50,8	6 65	6,75 75
100	2,2	9 15,5	7	0,15	380	20 34	0,15	0,75	6 10	44,2	51	6 65	6,75 75

Technical variations reserved  
Please note some characteristics described in this brochure are optional



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