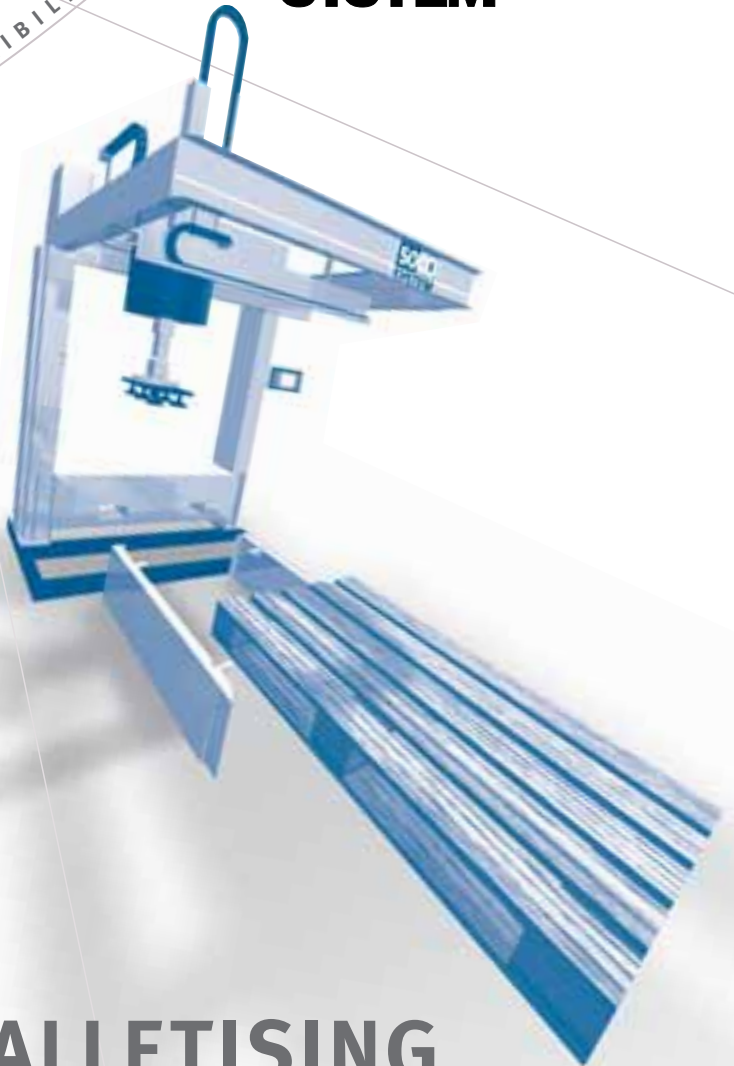


INDIVIDUAL SOLUTIONS

SOCO
SYSTEM

MODULES
FLEXIBILITY



PALLETISING ROBOT

A PERFECT END
OF A PACKAGING LINE



A MODULAR AND FLEXIBLE PALLETISING ROBOT PROGRAMME

The palletising robot is designed to automate heavy and physically strenuous palletising work. The palletising robot picks up items from an infeed conveyor and places them on the pallet with great precision. With its design and function, the robot fits perfectly into any conveyor and packaging line palletising items in an effective and rational way. The robot is compact and it works smoothly and very noiseless due to the use of special guides and timing belts. The robot forms a perfect end of a packaging line.

As a serial produced standard product, the robot is designed to supply a compact and modular solution at a very attractive price. Functions and specifications are based on SOCO SYSTEM's exten-

sive know-how and experience within the industry. The operation is simple – the palletising programmes are either pre-programmed prior to delivery or programmed on site using accompanying programming tools. As standard, the palletising robot is delivered as a complete "turn-key" unit which is quick and easy to install. A wide range of robot versions is available within the standard robot programme. As with all SOCO SYSTEM products, the palletising robot is based on thorough design down to the last detail. Standard vacuum heads together with special gripper and lifting heads are available. Combined with the rest of SOCO SYSTEM's modular product range, the robot constitutes yet another unique concept.

FEATURES & FUNCTIONS

- Serial produced standard product
- Attractive price level
- Compact
- Many versions
- Vacuum, gripper and lifting heads
- Noiseless
- IPC-Controller
- Colour "touch screen" monitor
- Servomotors
- Telescopic z-axis

ERGONOMICAL CONSIDERATIONS

Lifting can put strain on the joints, muscles and tendons of the body – especially when it comes to the structure of the back. In connection with heavy and repeated lifts, the heart and circulation are also effected as the body's requirements for oxygen and nourishment increases.

Lifts can cause damage as a result of either heavy, unexpected, unaccustomed or long lasting work loads.

A typical example of palletising work could be an operator lifting 10 kg cartons. Four of such cartons are to be placed on a pallet per minute. The total weight lifted is 2.4 tons per hour or app. 17 tons per workday. In one week, this makes 85 tons corresponding to 2 medium-size tanks!

Health damaging lifts can be avoided by sensible planning, suitable technical facilities and a practical arrangement of the working place.

SOCO SYSTEM offers such ergonomical working stations often built around the palletising robot and e.g. extended with carton erector, pick&place, conveyors, carton sealer, pallet conveying and pallet handling equipment.





THE SINGLE ROBOT *– a compact one-man pack station.*

The idea behind the development of the palletising robot has been to make a price-attractive, compact robot, which can easily be installed in connection with a typical one-man pack station to improve efficiency and ergonomics. Easy to install, fast programming to different pallet patterns and a short payback time make the single robot solution attractive.



THE DOUBLE ROBOT *The double robot has two pallet places that can be utilised in several ways.*

No waiting time during pallet change

The double robot can palletise the same product onto two pallets. When one pallet is full, the robot automatically starts to palletise on the second pallet, giving plenty of time to remove the first full pallet and to put in an empty pallet.

Product sorting

The double robot can palletise two different products – one on each pallet. The two different products can arrive on the same infeed conveyor. Photocells or other sensor equipment will then tell the robot what product is to be palletised onto which pallet.



Double line operation

The double robot can handle two different products that arrive to the robot on two separate infeed conveyors – one from each production line. The robot takes each product to its own pallet.



Automatic layer sheet insertion

Finally the double robot is useful when layer sheets are used in the pallet load. The layer sheets are placed on one of the pallet places. Depending on the type and quality of the layer sheets, they are either placed direct on a pallet or in a specially made dispenser. When a layer sheet is required, the robot automatically picks it up and places it in the pallet load.





THE GANTRY ROBOT

– 2, 3, 4, 5 or more pallet places.

The gantry robot can be configured to accommodate for 2, 3, 4, 5 or more pallet places. The gantry robot is ideal for relatively low-capacity sorting of different products onto different pallets or it can serve a number of relatively low-capacity individual production lines where each product goes to its own pallet. Many alternative configurations are possible – e.g. a 3 pallet place robot with layer sheets placed in the middle and 2 pallet places for the same product for easy "no-waiting-time" pallet change.



THE ROBOT AS "BUILDING BLOCK" IN TOTAL END-OF-LINE SOLUTIONS

Using the palletising robot as "building block", large palletising solutions can now be built from a modular and flexible point of view – focusing on a decentralised

solution to the palletising task. Decentralised palletising provides security against total production stops. The robot as standard product module ensures that an installation can easily be modified or extended if new requirements should arise.



ACCESSORIES AND PERIPHERALS

On the infeed side, the palletising robot can be combined with pallet magazine and driven roller conveyors for automatic infeed of new empty pallets. On the output side, full pallets can be removed by driven roller conveyors or transfer truck to accumulate for pickup by truck or to go to final stretch wrapping. The robot can also be fitted with the special pallet changer that makes pallet change quick and effective. In short, the palletising robot can be combined with the rest of the product modules in the SOCO SYSTEM product range in an almost unlimited way.

VERSIONS

The palletising robot is available in a number of standard versions of which the most important are:

Pallet size

As standard, the palletising robot will handle 800 mm x 1200 mm, 1000 mm x 1200 mm, 1200 mm x 1200 mm pallets and any variation between these limits.

Pallet orientation

The various robot versions are available for cross-wise or length-wise placing of pallets in the robot.

Inlet side

As standard, the items that are to be palletised can be let in from the left, from the right or from the rear. Furthermore, variations can be made where items arrive from different sides to different pick up points.

Control panel position

The control panel of the robot can be mounted to the left or to the right according to requirements.

Loading height

The robot is available in 4 loading heights (pallet load including pallet): 1500 mm, 1800 mm, 2100 mm and 2400 mm.

Controlling the robot



The palletising robot is controlled by an IPC-Controller, which is located in one of the pillars. When not in use, the IPC-Controller can be slid into the pillar – securing the electronics in the best possible way.

INDUSTRIAL PC

The IPC-Controller is essentially an industrial PC in a specially designed cabinet. The high quality electronic components are specified to resist dust, shocks, electromagnetic effects etc., which may occur in a production environment.



SPECIFICATIONS OF THE IPC-CONTROLLER

The IPC-Controller is fitted with a colour "touch screen" monitor from where the robot is operated. The IPC-Controller has a basic operating processor, which runs the SOCO-Tronic command language and communicates with the x-, y-, z-axis and other I/O devices through CAN-bus technology. As standard, the IPC-Controller is fitted with 3.5" floppy drive, 1 parallel port, 1 serial port and connection for optional external keyboard. A flash memory drive will hold an almost unlimited number of palletising programmes.

THE SOCO-TRONIC OPERATING MENU AND COMMAND LANGUAGE

The SOCO-Tronic is an operating menu and a high level command language. SOCO-Tronic has been specially designed for easy set-up and administration of the robot. The SOCO-Tronic command language is tailored for programming of multiple axis movements as well as relevant machine functions, connected equipment and other I/O devices. The positioning of items in a pallet pattern is specified in an external position table, which makes changes and creation of new patterns very easy. Furthermore, the SOCO-Tronic has a "teach-in" function that can be used in the programming of the robot.

With limited training, an operator will be able to operate the robot through the basic SOCO-Tronic front-end and even programme new pallet patterns. More extensive programming of new features and functions requires a more in depth knowledge of the SOCO-Tronic command language, which can be obtained with additional training or with assistance from a SOCO SYSTEM service technician.

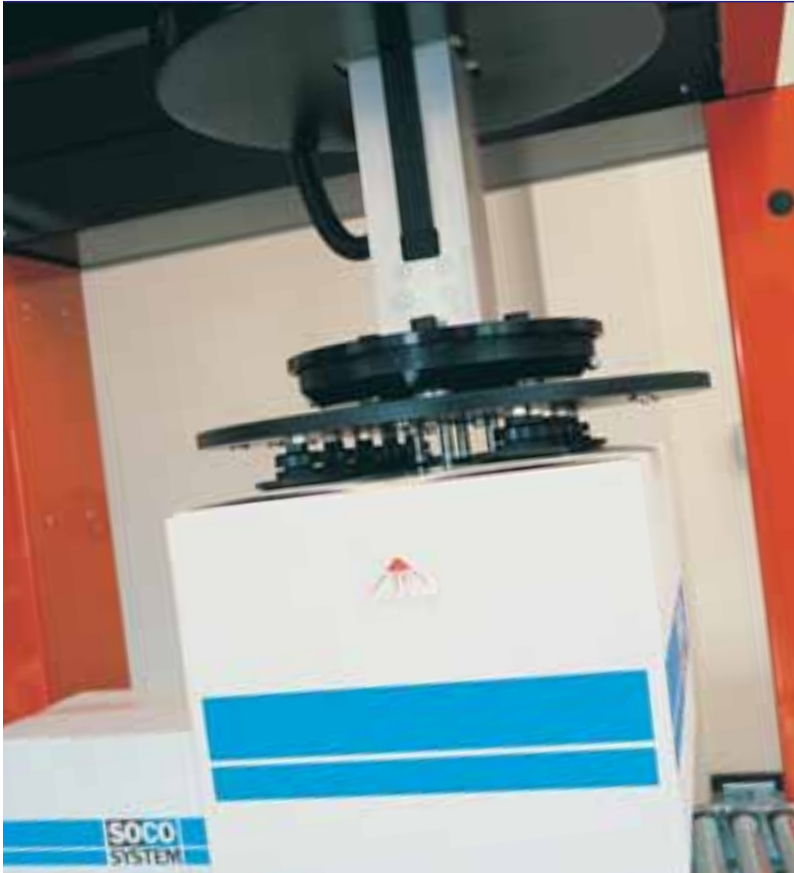


DOUBLE PROCESSOR VERSION OF THE IPC-CONTROLLER FOR EXTENSIVE HUMAN/MACHINE INTERFACE (HMI)

The IPC-Controller can be supplied as a double processor version, where the central operating processor is extended by a second processor (plus a hard disc) that is capable of handling extensive human/machine interfaces designed on the Microsoft Windows platform. On the second dedicated HMI platform, standard administrative software can be installed e.g. Windows based diagnostic software and on-line instruction manuals.

Other relevant software such as pallet optimisation software and general "log book" and line administration software can be added. Finally, the HMI platform can serve as the basis for an optional modem or network communication with the robot such as remote control and digital video surveillance.

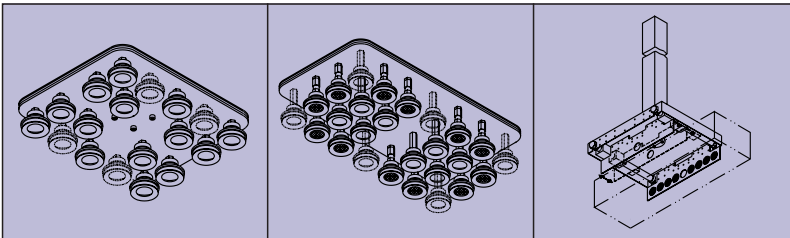




VACUUM, GRIPPER AND LIFTING HEADS

As standard, the palletising robot is equipped with a compact vacuum head made as a "sandwich" construction (pat. pend.) where the air runs inside the plate. By this principle, the use of fragile tubes and fittings is avoided and the unique "sandwich" construction makes it easy and inexpensive to tailor vacuum heads for individual requirements.

In addition to the standard vacuum head, SOCO SYSTEM develops special gripper and lifting heads on request to handle e.g. shrink wrapped items, trays, crates, cans etc.



BUILT-IN SECURITY SWITCHES

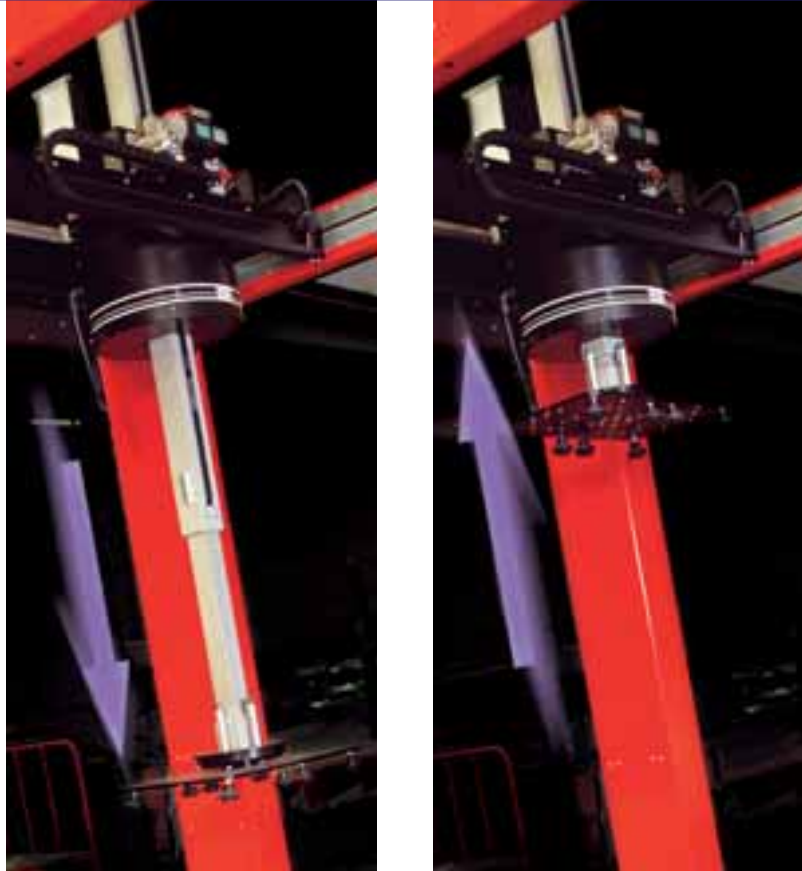
All robot heads are fitted with built in security switches to protect against overload of the x-, y-, z-axes and of the turn movement.

SERVOMOTORS

The x-, y- and z-axis the turn movement of the robot head are driven by servomotors. The servomotors work with extreme accuracy and substantial lifting power even down to very low speeds.

TELESCOPIC Z-AXIS

The telescopic axis reduces the floor-to-ceiling height required for the z-axis to move freely. When lifting upwards, the z-axis retracts, when going down the z-axis unfolds.



PALLET CHANGER

The robot can be fitted with the special pallet changer, that makes pallet change quick and effective. Unpractical and time-consuming stops are eliminated as well as the need for space to put a pallet in waiting position.



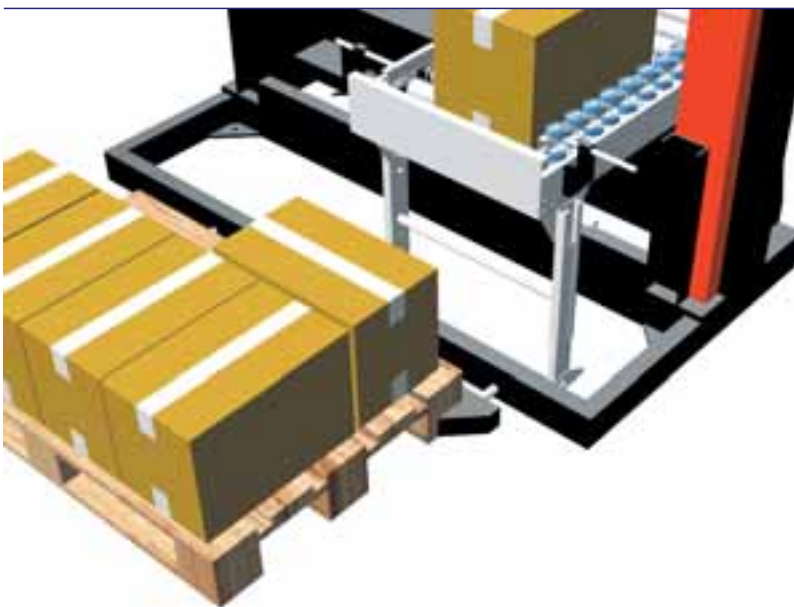


INFEED CONVEYOR WITH POWER ROLLERS

As standard, the robot is supplied with infeed conveyor driven by power rollers. The power rollers have built-in electronic controls that provides accumulation and separation of the incoming items.

TEFLON GUIDES

The x-, y- and z-axis move on non-friction teflon guides. This principle provides a very low-noise operation and is almost maintenance free.



PALLET POSITIONING

Pallet positioning guides on the floor ensure that the pallet is always placed in the correct position.


PALLET CONFIRMATION PHOTOCELL

On each pallet place, a photocell is fitted to confirm if a new, empty pallet is in place for palletising.



CUSTOMISED SECURITY FENCE PROGRAMME

According to international safety regulations, most palletising robots will have to be fitted with security fence or other security measures. A tailor made and integrated security fence programme is available for the robot including standard fence, standard doors, manual and automatic sliding doors, light curtains, double security circuits for multiple pallet places.



SINCE INTRODUCTION, THE PALLETISING ROBOT HAS BEEN INSTALLED IN HUNDREDS OF "END-OF-LINE" APPLICATIONS. TODAY, THE ROBOT PALLETISES ALL KINDS OF PRODUCTS, IN MANY DIFFERENT COMPANIES IN COUNTRIES ALL OVER THE WORLD.

WHEREVER IN THE WORLD A PALLETISING ROBOT IS INSTALLED, IT IS BACKED-UP BY LOCAL SERVICE AND SUPPORT.

Technical data and specifications

WIDTH OF THE INFEEED CONVEYOR

The standard width is 500 mm.

COLOUR

As standard, the robot is supplied in RAL 2002. Alternative colours are available at additional cost.

STAINLESS STEEL

The palletising robot is available in stainless steel.

AIR CONSUMPTION

Min. 6 Bar.
App. 15 l per transfer.

POWER

3 x 210/230/250 Vac + PE 50/60 Hz
or
3 x 360/400/440/480 Vac + PE 50/60 Hz.

CONNECTED LOAD

App. 2.5 kW.

AXIS

The 3 basic x-, y-, z-axis as well as 270 dg. turning of the robot head in steps of 1 dg.

PALLET TYPES

Standard:

800 mm x 1200 mm
1000 mm x 1200 mm
1200 mm x 1200 mm
and any variation in-between these sizes.

LOAD HEIGHT/ FLOOR-TO-CEILING HEIGHT

Standard

LOAD HEIGHT	FLOOR-TO-CEILING HEIGHT
1500 mm	3500 mm
1800 mm	4100 mm
2100 mm	4700 mm
2400 mm	5300 mm

Telescopic z-axis option

LOAD HEIGHT	FLOOR-TO-CEILING HEIGHT
1385 mm	2750 mm
1685 mm	3200 mm
1985 mm	3650 mm
2285 mm	4100 mm

CAPACITY

Up to 10 transfers per minute. The robot can transfer one, two or several items at a time depending on the pallet pattern, the size, weight and quality of the items together with the type and dimension of the vacuum head.

MAXIMUM ITEM WEIGHT

The maximum item weight depends on type and quality of the item, type of vacuum/gripper head, required speed etc. Tests will normally be necessary to find the maximum item weight for a given situation. The maximum item weight will typically be app. 30 kg.

IPC-CONTROLLER

Standard 1 processor version:

- 386, 40 MHz processor – for real-time operation
- 4 Mb flash memory drive
- Colour "touch screen" monitor
- 3.5" floppy drive
- 1 parallel port & 1 serial port
- External keyboard connection
- SOCO-Tronic operating menu and command language

Extended 2 processor version

(includes extra):

- Pentium 133 MHz processor – for extensive human/machine interface
- 16 Mb RAM
- 1 Gb Hard disc
- Microsoft Windows 95

TRADEMARKS

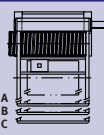
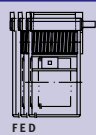
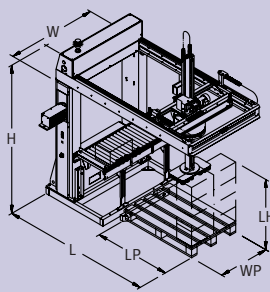
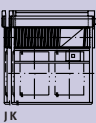
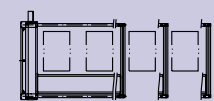
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MODELS/SPACE REQUIREMENTS

MODEL	PALLET ORIENTATION		NOMINAL SIZE (IN MM)		
			PRX-12XX W x L	PRX-XX12 W x L	
Single PRS-	 <p>A PRS-1208 B PRS-1210 C PRS-1212</p>	 <p>D PRS-0812 E PRS-1012 F PRS-1212</p>	A 1810 x 2200 B 1810 x 2400 C 1810 x 2600	D 1410 x 2600 E 1610 x 2600 F 1810 x 2600	
			J 2380 x 2600 K 2780 x 2600		
Double PRD-		 <p>J PRD-0812 K PRD-1012</p>			
Gantry PR-					



A WORLD OF MODULES, FLEXIBILITY AND INDIVIDUAL SOLUTIONS

SOCO SYSTEM is an international group with head office in Denmark, which develops, produces and markets a wide, modular constructed product range for end-of-line packaging and handling of retail-/ shipping packings and pallets.

SOCO SYSTEM's product range covers requirements from simple roller conveyors to fully automatic end-of-line systems with carton erection, pick&place, conveying, carton sealing, palletising and pallet stretch wrapping.

SOCO SYSTEM advises, delivers to and serves customers all over the world through a network of local subsidiaries and dealers.



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