

NORDENMATIC 1702

Norden Machinery supplies tube filling systems and provides world class after sales service





The world's leading supplier of tube filling systems.

Norden Machinery is a medium size company producing first class packaging machinery. Operating globally we still maintain very close relationships with our customers. Every year we supply 150 packaging systems to every corner of the world, which in one way or another are designed and built specifically to meet the requirements of each customer.

Our 5000 machines in operation worldwide provide us with the industrial feedback and customer relations necessary for our future development. When you choose Norden you invest for the future with an innovative, forward looking partner, which is dedicated to the success of its customers. Norden Machinery originates from Arenco, which was founded in 1877.

The first tube filling machine was designed in 1934. In 1980 the Norden Company was founded. In January 2004 Norden became part of the Sirius Machinery Group, which is owned by the Swedish Industrial Company Nordstjernan.

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THE NM1702

The most flexible and reliable tube filling machine on the market

Flexibility, access, reliability and quality:

Values that have made Norden what it is today; a strong and leading player in the worldwide packaging industry.

Norden's values are well known to our customers and are based not only on the quality of our machines but on customer service and long standing relationships with our customers.

Flexibility:

As standard our well proven oval tube transport system is available in a clockwise or anti-clockwise version allowing the customer to choose the line layout most appropriate for their factory.

Sealing units to suit aluminium, laminated or plastic tubes are available. A combined unit for all tube types is also available providing maximum flexibility.

The NM1702 may be supplied as a standalone tube filling machine or as part of a complete line incorporating a robotic tube feed system, cartoning and/or tray packing.

The machine table is designed with clean lines to facilitate easy line clearance, cleaning, changeover and maintenance.

Norden's new and innovative in-line checkweighing system positioned after the filler, before the cartoner or other downstream equipment secures the fill accuracy and traceability of each tube. The system reduces the number of rejects, increasing efficiency and requires less footprint, whilst providing complete control of the tube at start and stop.

With Norden's unique, enclosed "tunnel" concept for tube transfer between clean or sterile rooms and packing rooms, the NM1702 becomes a compact and efficient option for the pharmaceutical industry.



Nordenmatic 1702

INFEED SYSTEMS

The NM 1702 may be equipped with either Robotic Tube Loader or Hinged Cassettes

Hinged Cassettes

A cost efficient and ergonomic system for loading tube transport boxes at a convenient height for the operators. A special design has been developed to assure reliable and easy feeding of small tubes.

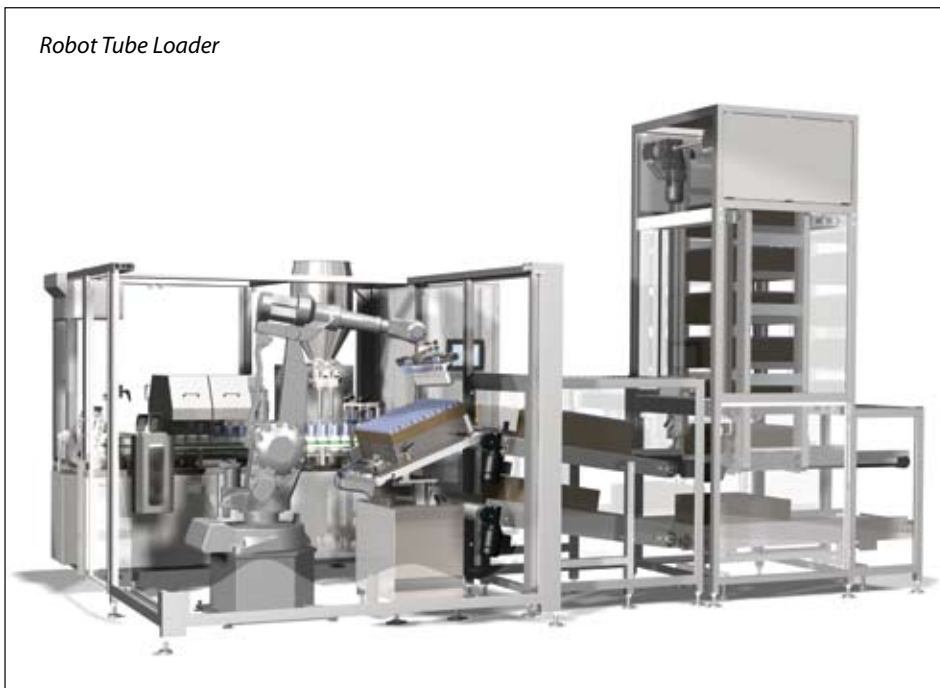
Robot Tube Loader

The robotic tube loader provides the best possible line efficiency and is suitable for all kind of tubes, all diameters as well as oval tubes. A special vertical magazine for increased tube box storage is available as an option.

Hinged Cassettes



Robot Tube Loader





MAVIA



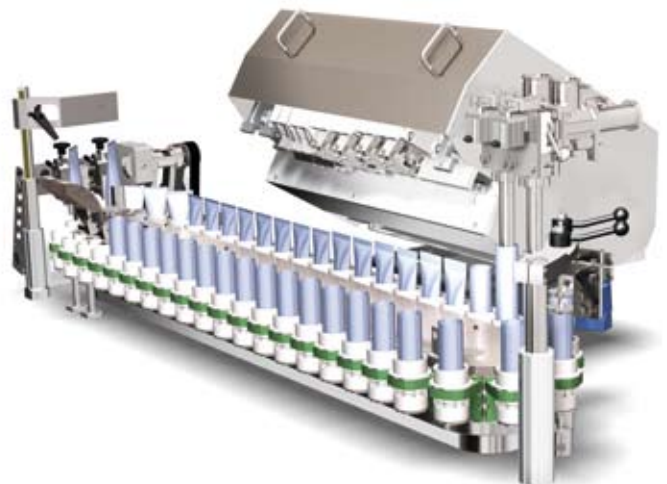
Hoist Device

A hoist that lifts the complete filling unit including pumps, nozzles and hopper is very useful for quick and ergonomic changeover. Wagons for storing, transportation and handling the pump system are available. Having a second set of wet parts together with a hoist system is the fastest way to guarantee quick and safe changeover of the filling system.



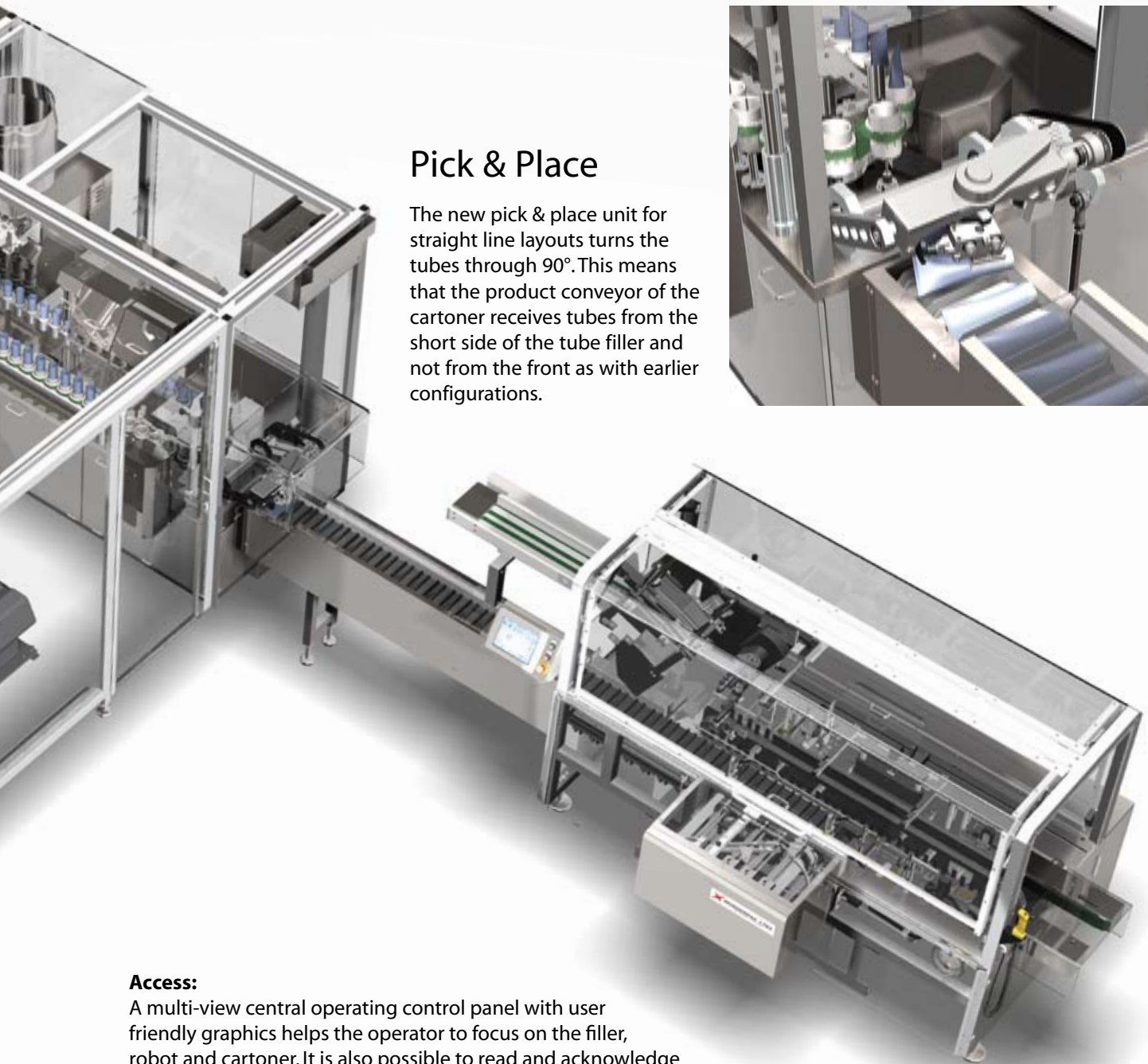
Tiltable Sealing Unit

The tiltable sealing unit allows excellent access for cleaning and changeover.



Pick & Place

The new pick & place unit for straight line layouts turns the tubes through 90°. This means that the product conveyor of the cartoner receives tubes from the short side of the tube filler and not from the front as with earlier configurations.



Access:

A multi-view central operating control panel with user friendly graphics helps the operator to focus on the filler, robot and cartoner. It is also possible to read and acknowledge alarms from the filler on the cartoner operator panel.

The new pick & place unit increases accessibility and provides a smaller footprint for straight line solutions even if the filler is paced in a clean or sterile room.

Reliability and quality:

The company's long history of building machines gives us the experience and technical knowledge to choose high quality materials and the most up to date and appropriate technology to ensure longevity and high performance from our equipment.

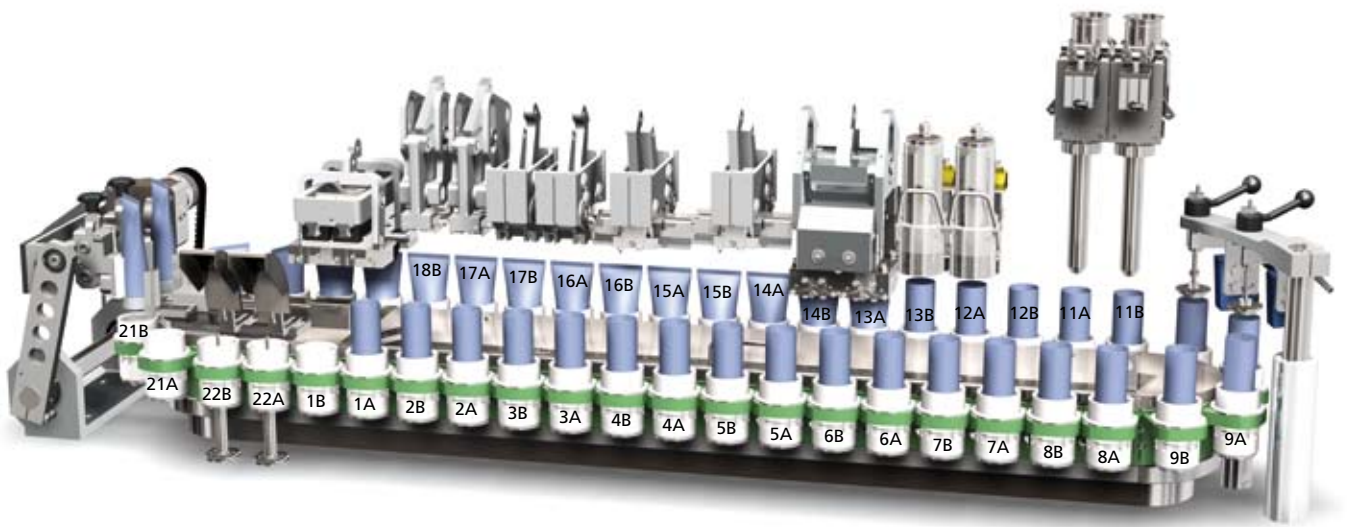
Customer service:

Norden has a longstanding, well developed, world wide service organisation, providing first class support to our customers, helping them to achieve the highest efficiency from their machines.

OPERATION CYCLE

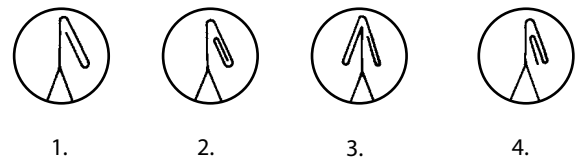
44 tube holders are standard, extension is possible

Pos. 1A-8B	Alternative tube infeed equipment	Pos. 12A-19B	Alternative sealing equipment
Pos. 9B-9A	Tube cleaning and cap tightening	Pos. 21B-20A	Discharge
Pos. 10B-10A	Tube checking and tube print orientation	Pos. 22B-22A	Reject
Pos. 11B-11A	Filling		



TUBE SEALING SYSTEM

M-FOLDING
for aluminium tubes



HA-SEALING
for plastic and laminate tubes



SCOOP SEAL®
for plastic and laminate tubes



HF-SEALING
for al-laminate tubes



TECHNICAL SPECIFICATION

NM 1702

Running capacity (max tubes/min)	170 ¹
Filling volume	1-300 ml
Dosing accuracy	0,1-0,5 %
Tube length	50-250 mm
Tube diameter	10-50 mm

	M	HF	HA
Power consumption, max kW	5	10	10
Air consumption ² , Nm ³ /h	11 ³	16 ³	90 ³
Water consumption ⁴ , l/min	-	6	8

ROBOT

Power consumption, max kW	6,7
Air consumption ² , Nm ³ /h	15

SHIPPING SPECIFICATION

NM 1702

Net weight approx.	4800 kg
Gross weight (case) approx.	5300 kg
Volume approx.	19,0 m ³

ROBOT (incl. el cabinet, conveyor)

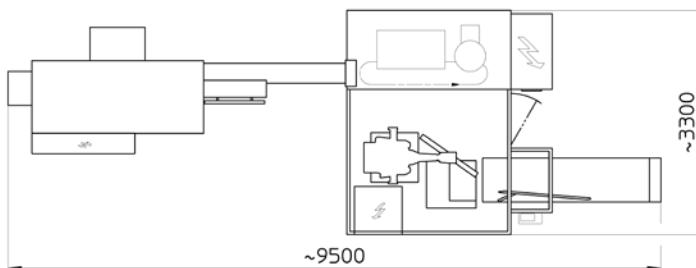
Net weight approx	1700 kg
Gross weight (case) approx	2300 kg
Volume approx	15,0 m ³

- (1) Depending on tube size, filling product and quality of tube and filling material.
- (2) Air pressure MPa 0,6 (6 bar).
- (3) Depending on tube size and material.
- (4) Water pressure - min 2 bar in to the machine and max 0,5 bar counter pressure at water outlet.

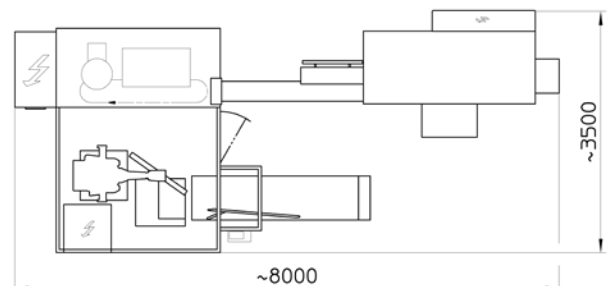
MACHINE LAYOUTS

NM 1702 with robot infeed in line with NP 1702

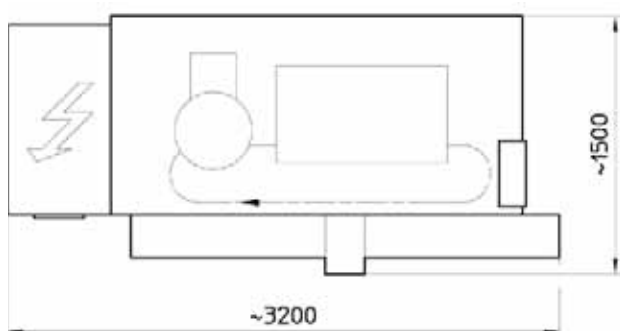
anti-clockwise



clockwise



NM 1702 with cassette infeed



STANDARD EQUIPMENT

Basic machine

- The machine is built up on a frame of massive steel plates.
- Doors and covers under machine table are in stainless steel.
- Doors and covers above machine table are in Plexiglas PMMA.
- Framework made of anodised aluminium.
- Electrical cabinet integrated on machine painted in RAL7042, stainless steel look.
- Machine table is covered with stainless steel.
- Indexing mechanism in closed oil bath casting
- The tube holder chain links are lined with Teflon and are furnished with magnets to ensure that the tube-holders remain in the same position in the links during indexing.
- Tube holder links are attached to a polyurethane timing belt.
- Oval racetrack for tube transport with overload protection.
- 44 tube holders in the tube transport are standard.
- The tube infeed station has a tilter where the tubes are kept tight to the tilter by means of an under pressure.
- Max production speed: 170 tubes / minute.

Standard equipment

- Semi-automatic tube infeed with an inclined chute.
- The tube infeed has a vacuum assisted tilter mechanism and a mechanically cam controlled push rod for automatically inserting tubes into the tube holder chain. With an overload protection and electrical supervision.
- Tube print registration with teach-in photocell. A photoelectric tube print registration station ensures correct positioning of the tube decoration prior to sealing.
- Tube print orientation driven by a stepper motor. Tubes may be stopped in any position through 360 degrees. Stop position set from the control system.
- Two volumetric pump units in stainless steel. Parts in contact with the fill product are made of ASTM 316L (DIN 1.4404, BS 316S12 or SIS 2348).
- Pump insert size depends on the filling volume.

Filling volumes (ml):	Piston diameter (mm):
1-5	15
1,5-15	20
3,5-50	30
15-165	45
25-300	60
- Filling nozzle, type depends on the product to be filled. Available nozzles types are blow-off, cut-off, combination blow-off and cut-off.
- A mechanical cam for lift at filling, bottom-up filling. The cam is designed according to the fill product characteristics controls raise and fall of the tube. Including electrical tube holder control at set position.
- Lift at filling in pairs.
- One side coding 6 characters, 0-9 character total 60 characters.

- Product hopper made of stainless steel ASTM 316L: Size 90L
- No tube no filling function
- Manual reject, faulty tubes.
- Automatic discharge of tube with tail first on gable.
- Variable speed control by frequency converter.
- Size parts for one tube and one fill product.
- Tube holder designs depend on tube size, material, cap design and required machine speed. The type is chosen according to delivered tube samples.
- Over load clutch for tube holder chain.
- Pressure guard and drain valve on incoming air.
- One set of "first aid" spare parts and tools.
- Machine standard in accordance with European standard EN 60204-1 that is based on IEC204-1: 1992.

Standard function

- Electrical control system Norden EasyWare based on ELAU Electrical control system.
- Operator panel a 10,4" touch screen in colour.
- Multiview for line control, for all machines in line.
- Safety functions (emergency stop and guard switches).
- Supervision for release of overload clutch – machine stops.
- Alarm signalling system with a three-colour lamp and a buzzer
 - Red flashing: stop due to machine fault
 - Green continuous: machine is running correctly or runs by the jogging system
 - Green flashing: jogging mode, the machine stands still.
 - Yellow/Orange flashing: warning, low level.
 - Buzzer: short signal when machine starts on jogging mode.
- All alarm indicators may be pre-programmed by the customer from the operator panel.
- The electrical supply to the main controller is backed up by UPS
- Jogging device with low speed forward.
- All electrical format changeovers from main panel.
- Production statistics (OEE) on operator panel.
- Thirty (30) programmable format tables.
- 16 (XGP) + 16 (YGP) free programmable functions.
- Parameters of functions may be set from the operator panel.
- 7 different levels secure the operator panel functions.
- Cycle stop in the most favourable position.
- One emergency stop button.
- Electrical power supply – specify at order by customer.

OPTIONAL EQUIPMENT

Control and Check Functions Specification

- Faulty tube - no fill - tube rejection. Three consecutive faults - machine stops.
- No cap - no fill - tube rejection. Three consecutive faults - machine stops.
- Check after lift at filling, tube holder not seated - machine stops before indexing.
- Piston stroke not executed - machine stops.
- Low air pressure - machine stops.
- Tube print orientation control. Non orientation - tubes are rejected. Three consecutive faults - machine stops.

Tube sealing units for the NM 1702

- Metal tube folding unit.
- Hot Air sealing unit for plastic, plastic-laminated and aluminium-laminated tubes.
- Design-A-Seal® sealing unit for plastic and plastic-laminated tubes. Plain or crimped closure with coding on one or two sides. One shape of seal.
- Scoop Seal® sealing unit for plastic and plastic-laminated tubes.
- High Frequency sealing unit for aluminium-laminated tubes.
- Combination sealing unit for metal, plastic, plastic-laminated and aluminium-laminated tubes.

MACHINE PROGRAMME

We have different machine models for tube filling, with suitable cartoners or tray packers:

Nordenmatic	Output	Nordenpac	Output
250	25 tpm	702	70-140 cpm
402	40 tpm	1702	140-200 cpm
602	60 tpm	2002	220 cpm
702	80 tpm	3002	300 cpm
902	100 tpm	5002	500 cpm
1002	120 tpm	Norden Tray Pack Norden Store Magazine, NSM 180	
1702	170 tpm		
2002	200 tpm		
3002	300 tpm		
5002	500 tpm		

- Cassette infeed systems. Individual cassettes tailored to each carton size or hinged cassettes.
- Robot infeed system.
- Tube cleaning and cap tightening.
- Tube re-rounding for aluminium or aluminium laminate tubes.
- Code reading systems.
- Heated product hopper.
- Pressure equalizing system.
- Stirring devices.
- Servodrive system of filling pump.
- Servolift at filling.
- Separate lift at filling.
- Design, sterile parts, for sterile applications.
- Cleaning in place pump (CIP).
- Sterilization in place (SIP).
- Product level control.
- Additional paste filling devices for two or three colour filling.
- Deep or surface striping and concentric filling available.
- Complete extra pump unit to allow fast product changeover.
- Hoist for lifting out pumps and hopper.
- Inert gas injection before and/or after filling.
- Overload protection of the filling pump.
- Linear trimming device.
- Coding on both sides of the tube.
- Exhaust collector for trim waste.
- Corner trimming device.
- Cap first discharge for line configuration.
- Pick & Place unit for direct transfer to cartoner.
- Automatic rejection of faulty tubes avoiding unnecessary machine stops.
- Automatic reject station
- Kits for quicker changeover.
- Laminar flow hood and filter.
- Individual indication of open doors.
- Central lubrication.
- Communication for monitoring one or several machines on computer and/or printer.
- Validation IQ, OQ and "Norden" PQ and DQ.



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