



a coesia company

NM 902





Speed. Durability. Flexibility.

Boasting a robust and high performance design, speed is the name of the game when talking about the Nordenmatic 902. This compact tube filling machine has a production output of 100 tubes per minute as standard, or up to 120 tubes per minute as option. The NM 902 is able to handle a wide range of tube sizes, from 10 mm to 50 mm, whether they are plastic, laminate, or aluminium. It also comes with a full complement of options and upgrades to suit your needs, both today and as your production needs grow.

The machine is equipped with 28-tube holder links as standard, while our well-proven oval tube transport system, which facilitates good machine access and smooth integration of new equipment, is available in clockwise or anti-clockwise versions. The NM 902 allows you to choose the most efficient line layout to best suit your factory and production needs.

In addition, our user-friendly Norden EasyWare interface makes controlling and monitoring the NM 902 a snap. The control system features a 6,5" color screen and allows up to 30 pre-programmed format tables that, together with improved access for maintenance, reduce changeover time to a minimum.

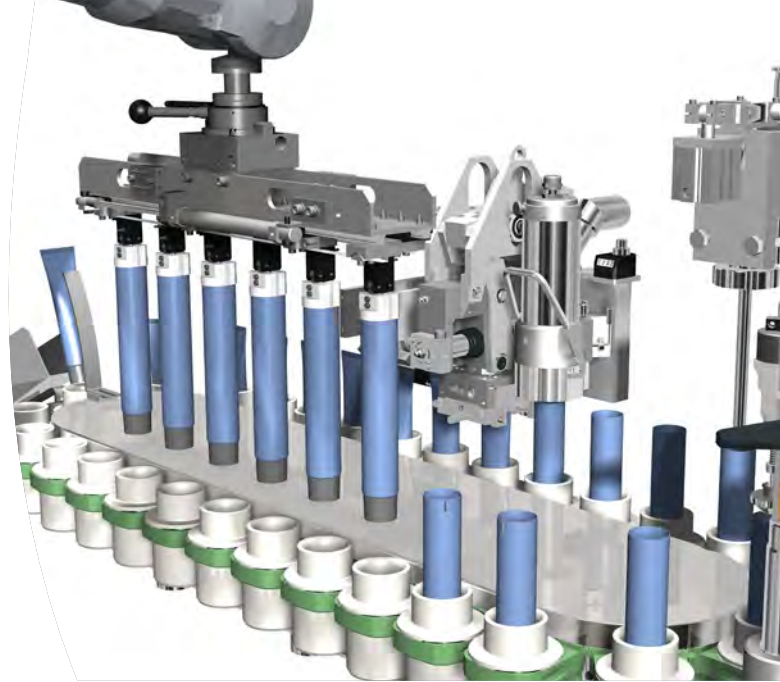
Main technical features

- Clean and covered design – suitable for clean room production
- Superior accessibility for easy operation and maintenance
- Future-proof design allowing for future upgrades
- Sturdy – designed for 24/7 production at 120 tubes per minute (option – 100 tpm default).



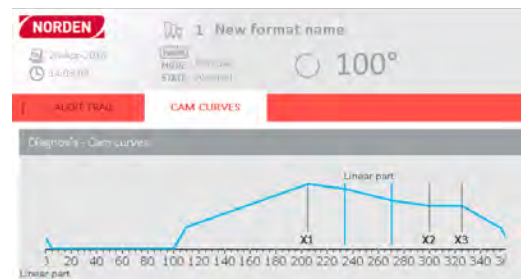
Infeed Systems

The NM 902 can be fitted with a number of infeed systems, including semi-automatic infeed with storage capacity and complete with motorized sorting device, an ergonomic system for loading complete tube transport boxes at a convenient height for machine operators, and a robot tube loader that assures the best possible line efficiency and which is suitable for both small and large tube diameters, even most oval tubes.



Servo-driven lift and pump

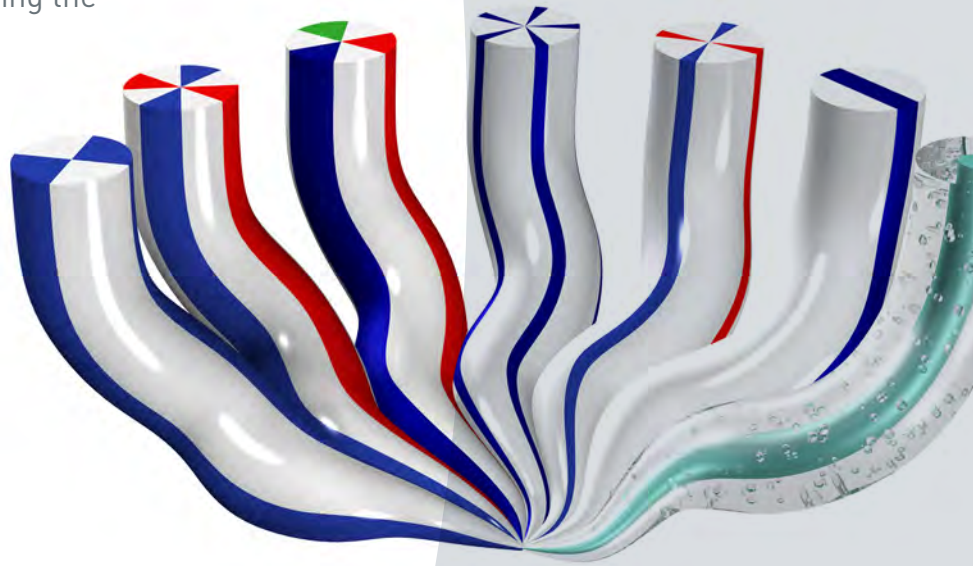
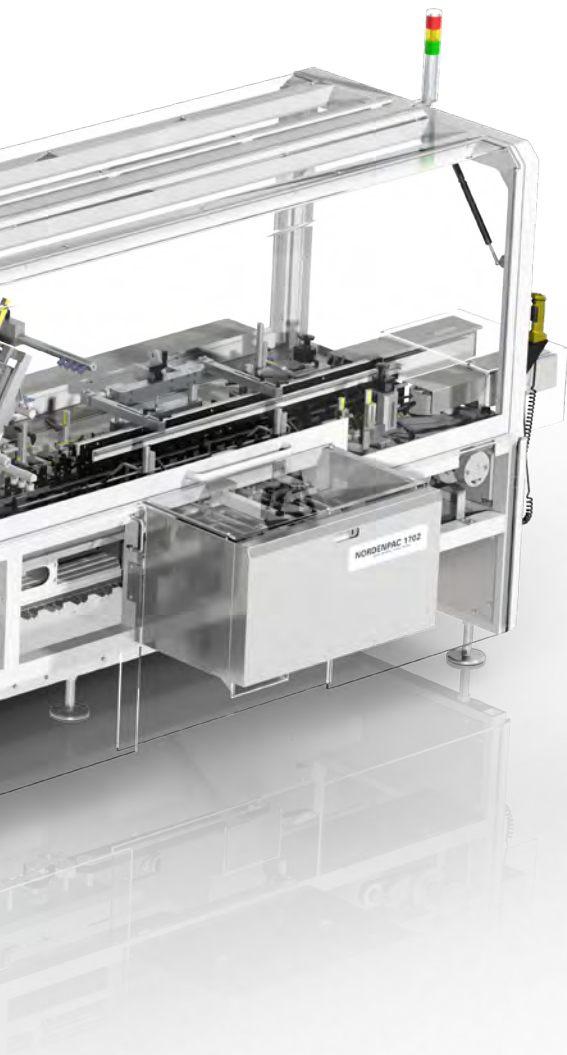
HMI graphics for quick overview of how the servo curves harmonize between lift at filling and pump stroke movement.



NM 902 configured with a NP 1702 cartoning machine (clockwise operation).

Multicolor filling

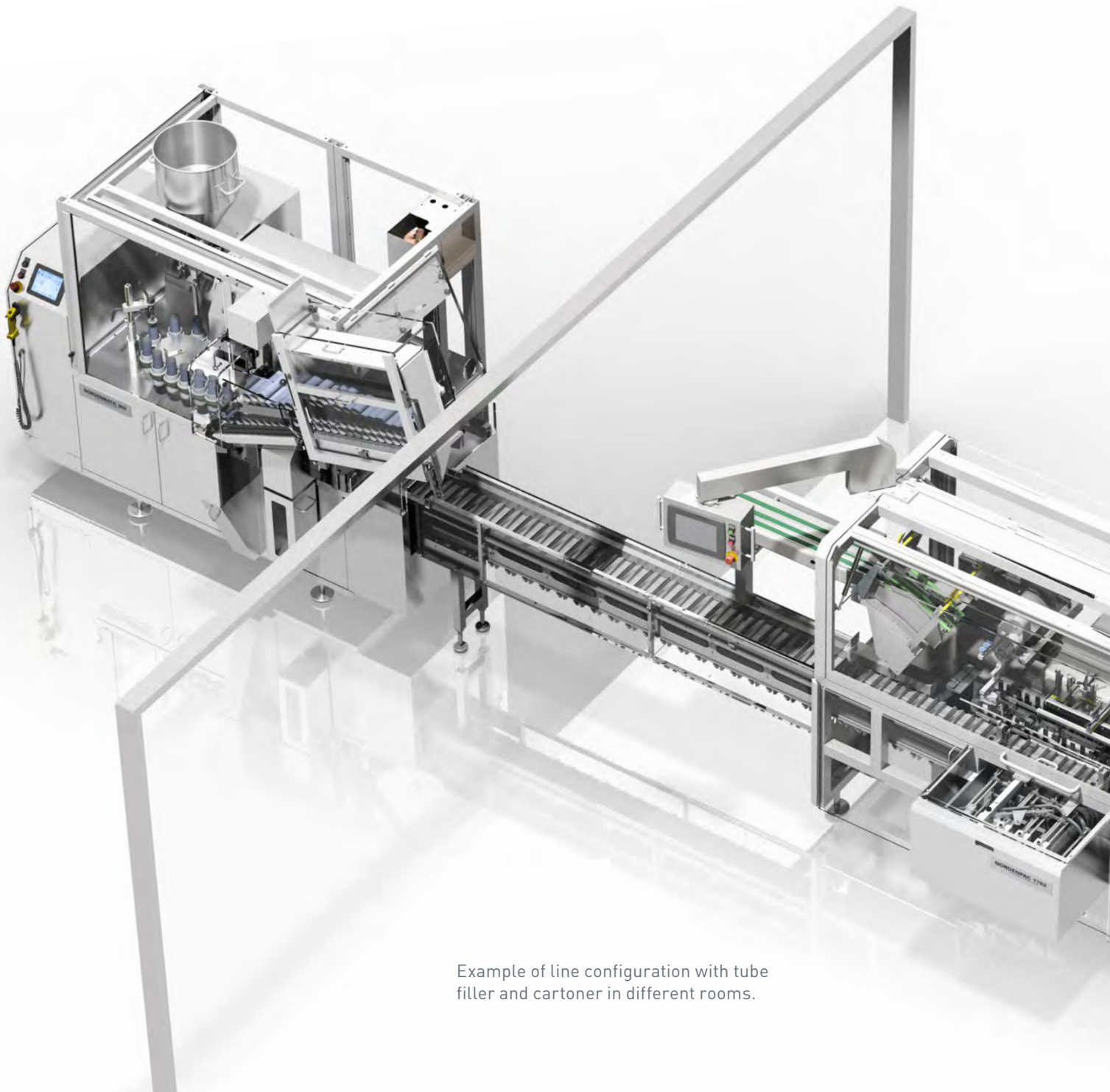
This is the filling of multiple colors at the same time into one tube, typified by 3-colour striped toothpaste. The striking look is achieved by three multiple pumps pumping the different colors through one complex filling nozzle, thus creating the eye-catching striped product.



Sealing systems

Combination Sealing Unit

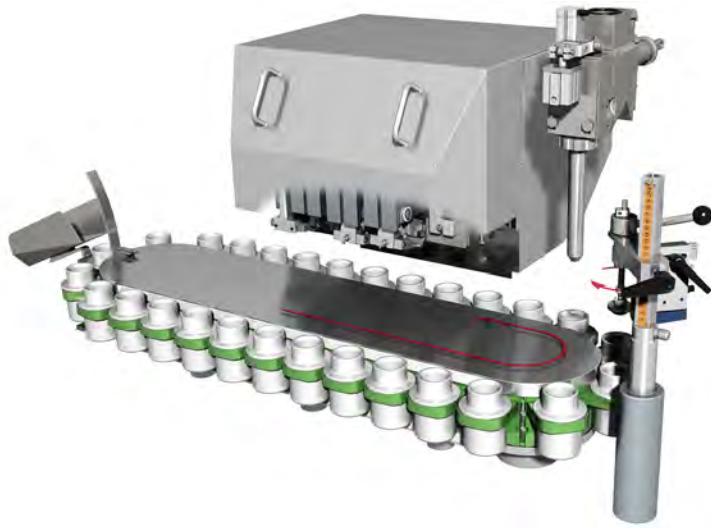
The combination sealing unit allows you to switch between plastic/laminate and metal tubes on one machine. Usually, switching complete metal and hot air beams takes up several hours of your valuable production time. But with our combination beam on your Norden filling machine, you can switch from hot air to metal sealing in 15 minutes without any tools.



Example of line configuration with tube filler and cartoner in different rooms.

Metal Sealing Unit

The metal sealing unit is completely covered for pharma applications.



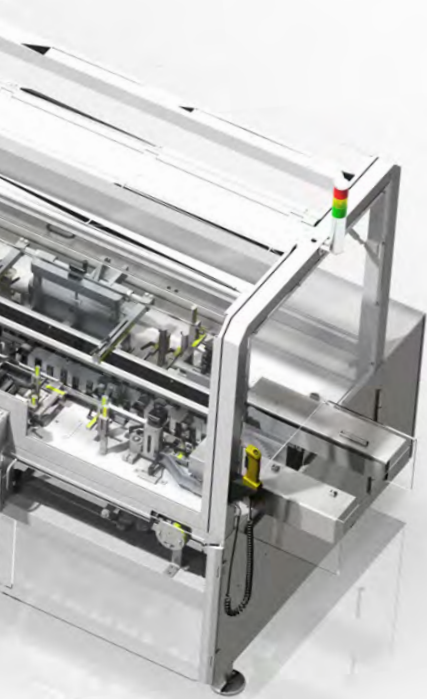
Design-A-Seal®

Design-A-Seal® makes it possible to alter the appearance of tubes without compromising production output or seal integrity. Design variations include rounded, angular, or wide shapes, which can all be considered and incorporated into the package design.

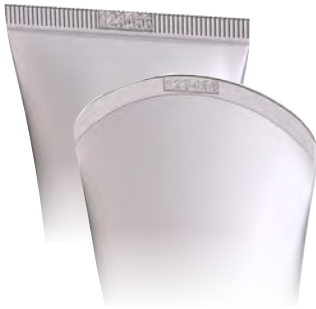


Hot Air sealing system

Norden's highly efficient and patented Hot Air sealing beam can handle all your plastic and laminate tubes. It has a quick disconnect of the hot air nozzle and cooling ring block, and includes counters and scales for fast and repeatable changeovers. The system is the strongest and most attractive way of sealing tubes, and yields very little waste.



Tube sealing options



Hot Air sealing

For plastic and laminate tubes.



Scoop Seal®

For plastic and laminate tubes.



High Frequency sealing

For aluminium-laminate tubes.



Metal folding

For aluminium tubes.

Metal folding types



1.



2.



3.



4.

Specifications

Running capacity ¹ (max tubes/min)	100 (120 optional)
Filling volume ²	1–300 ml
Dosing accuracy	±0,1–0,5 %
Tube length	50–250 mm
Tube diameter ³	10–50 mm

	M	H F	H A
Power consumption (max, kW)	2	8	6
Air consumption ⁴ (Nm ³ /h)	10	15	20–50 ³
Water consumption ⁵ (l/min)	–	3	4

Shipping specifications	NM 902	Store Magazine (NSM 180)
Net weight, approx.	3000 kg	300 kg
Gross weight (case), approx.	3300 kg	500 kg
Volume, approx.	13,0 m ³	3,7 m ³

1 Depending on tube size, filling product and quality of tube and filling material.

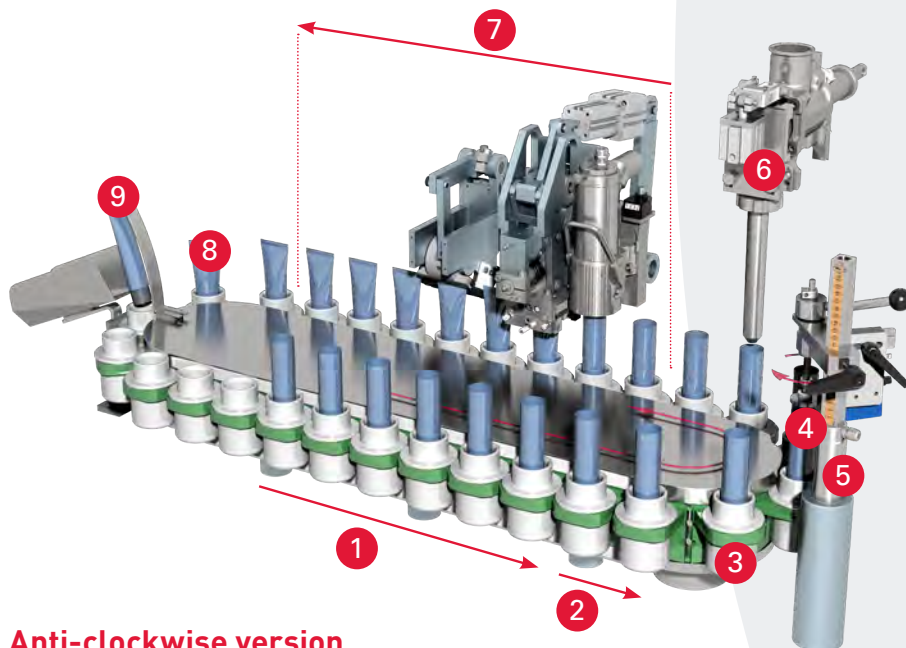
2 An optional design for filling volumes up to 600 ml is available on request.

3 Depending on tube size and material.

4 Air pressure MPa 0,6 (6 bar).

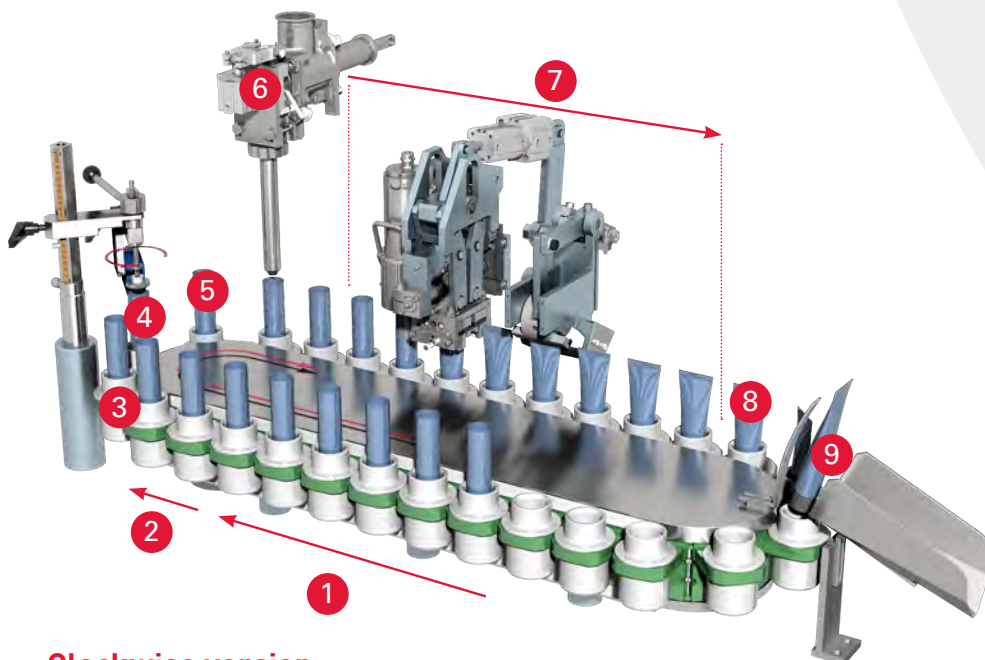
5 Water pressure – min 2 bar in to the machine and max 0,5 bar counter pressure at water outlet.

Operation Cycle



Anti-clockwise version

- | | |
|--------------------------------------|--|
| 1. Alternative tube infeed equipment | 6. Filling |
| 2. Available for extra equipment | 7. Alternative sealing equipment |
| 3. Tube cleaning and cap tightening | 8. Available for reject of faulty tubes or extra equipment like laser/inkjet |
| 4. Tube print orientation | 9. Discharge |
| 5. Available for extra equipment | |

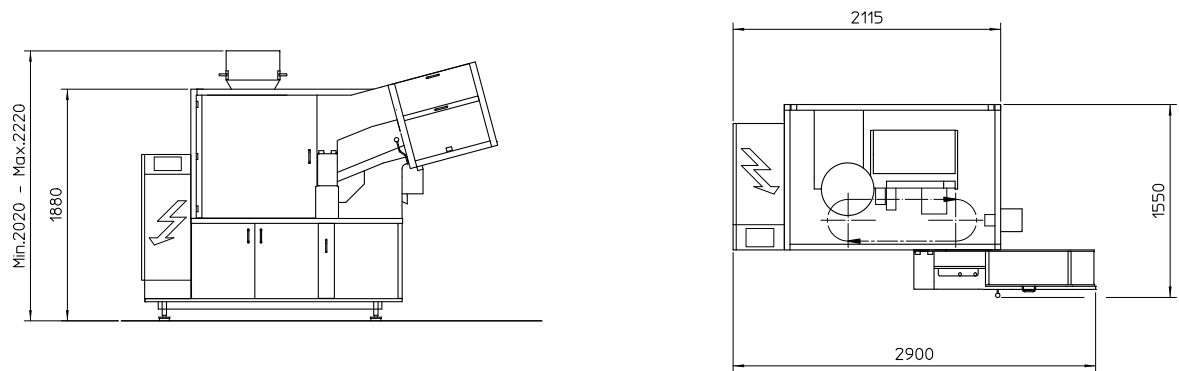


Clockwise version

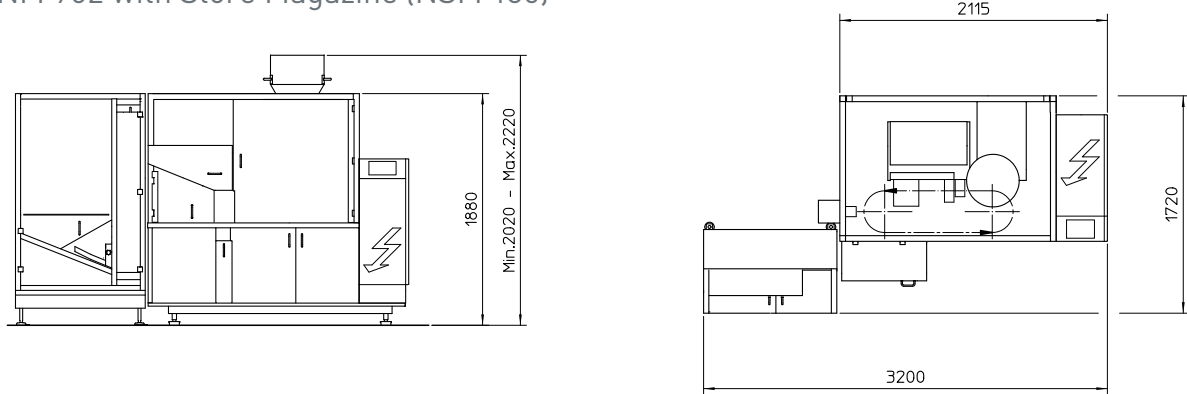
- | | |
|--------------------------------------|--|
| 1. Alternative tube infeed equipment | 6. Filling |
| 2. Available for extra equipment | 7. Alternative sealing equipment |
| 3. Tube cleaning and cap tightening | 8. Available for reject of faulty tubes or extra equipment like laser/inkjet |
| 4. Tube print orientation | 9. Discharge |
| 5. Available for extra equipment | |

Machine layouts

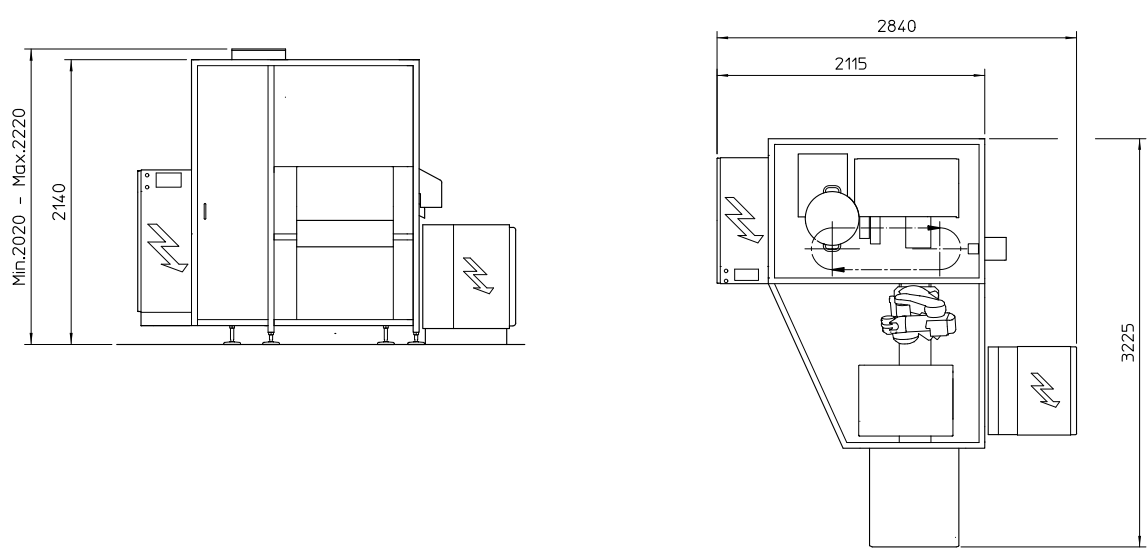
NM 902 with Cassette Infeed



NM 902 with Store Magazine (NSM 180)



NM 902 with Robot Infeed



Equipment overview - standard configuration

Equipment

- All major machine surfaces and operating units made of stainless steel. Plexiglas PMMA doors and covers above machine table
- Semi-automatic tube infeed with an inclined chute, and a vacuum assisted tilter mechanism and push rod for automatically inserting tubes into the tube holder chain
- One volumetric pump unit in stainless steel. Parts in contact with the fill product are made of ASTM 316L (DIN 1.4404, BS 316S12 or SIS 2348).
- Size parts for one tube and one fill product

Available sizes:

Filling volume (ml)	Piston dia. (mm)
1–5	15
1,5–14	20
3,5–50	30
15–165	45
25–300	60

Available nozzle types:

Blow-off
Cut-off
Combination blow-off, cut-off

- Oval racetrack with tube transport raised to facilitate cleaning of machine table
- Tube holders with steel teeth for exact tube orientation. Holder links lined with Teflon and furnished with magnets to ensure that the tube holders remain in the same position in the links during indexing. 28 tube holders in the tube transport is standard. (Tube holder design depends

on tube size, material, cap design and required machine speed. We can help you determine the specific type based on delivered tube samples.)

- One set of emergency spare parts and tools
- Machine manufactured in accordance with European electrical standard EN 60204-1

Main functions

- Photoelectric tube print registration station, ensuring correct positioning of the tube decoration prior to sealing.
- All main operations precision controlled by servo driven motors
- Bottom-up filling
- Electrical variable machine speed
- Jogging device with low speed forward
- Tube orientation. Tubes may be stopped in any position through 360 degrees. Stop position set from the operator panel.
- Cycle stop in the most favourable position
- One side coding of 6 characters, digits 0 through 9, with a total of 60 characters per channel
- Automatic reject station for faulty tubes

Safety functions

- Control functions, error reporting and overload protection for tube indexing operation. Should an error occur, the machine is stopped and the error reported on the operator panel. Minor faults are registered and reported. The number of consecutive faults allowed before the machine stops can be set from the operator panel.

- Electronic guard switches. All doors pneumatically interlocked during operation.
- Alarm signalling system with a three-color lamp and buzzer
- Emergency stop button

Operator panel

- Color touch screen utilizing Norden EasyWare, based on ELAU electrical control system
- Line status information
- 30 programmable format tables
- 16+16 freely programmable functions
- Production statistics (OEE) on operator panel
- All alarms reported and described. Indicators may be pre-programmed by the customer.
- Operator panel functions secured by 7 different access levels
- Power supply for main controller backed up by UPS

120 tubes/min option

- High-speed filler configuration
- Complete servo functions at filling for lift, pump column, piston, spindle and valve.
- Double picking rate for optional Pick & Place unit

Optional equipment

Infeed

- Cassette infeed system. Individual cassettes tailored to each carton size.
- Robot infeed system

Tube Control

- Tube cleaning with diving air blow nozzle and air evacuation.
- Code reading system
- Cap tightening
- Cap control stations. If a cap is missing the tube will be marked faulty.

Product Feeding

- Product level control
- Heated product hopper
- Stirring device
- Pressure equalizing system

Filling

- Complete extra pump unit to allow fast product changeover

- Overload protection for the filling pump
- Clean in place (CIP)
- Sterilization in place (SIP)
- Hoist system for wet parts
- Inert gas injection before and/or after filling

Sealing and coding

- Hot Air sealing unit for plastic, plastic-laminated and aluminium-laminated tubes.
- Plain or crimped closure
- Tilttable sealing unit
- Design-A-Seal® sealing unit for plastic and plastic-laminated tubes. One seal shape.
- Kits for quick changeover of coding unit
- Unit for coding on both sides of the tube
- Corner trimming device

Discharge

- Pick & Place unit for direct transfer to cartoner
- Cap first discharge for line configurations

General

- Size parts for additional tube sizes and/or products
- Central lubrication
- Energy save
- Validation
- Individual indication of open doors

Coesia Group in the world



COESIA is a group of innovation-based industrial and packaging solutions companies operating globally, headquartered in Bologna, Italy.

Coesia's companies are leaders in the sectors of:

- **Advanced automated machinery**
- **Industrial process solutions**
- **High-performance transmissions**

Coesia's customers are leading players in a broad range of industries, including Consumer Goods, Tobacco, Healthcare, Aerospace, Racing & Automotive and Electronics.

NORDEN MACHINERY AB

P O Box 845
SE-391 28 Kalmar
Sweden
T (+46) 480 44 77 00
sales@nordenmachinery.s



nordenmachinery.com