



Marathon S-1300 Solvent Based Dry Lamination Machine



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| | | |
|------------|--|-------------------|
| 1.1 | Coating station | |
| | number of coating station | 1 |
| | type of coating | gravure |
| 1.2 | Machine width | |
| | maximum web width | 1300 mm |
| | maximum coating width | 1280 mm |
| | minimum web width (recommended) | 650 mm |
| 1.3 | Coating roller width | |
| | maximum | 1350 mm |
| | minimum | 1050 mm |
| 1.4 | Coating repeat | |
| | maximum | 800 mm |
| | minimum | 400 mm |
| | (for register cold seal application only) | |
| 1.5 | Materials to be laminated | |
| | PET | 10 to 40 microns |
| | BOPP / OPP / CPP / BOPA | 15 to 40 microns |
| | PE | 25 to 100 microns |
| | Film Laminates | 25 to 150 microns |
| | Paper & Paper Laminates | 30 to 120 gr/sqm |
| | other suitable materials within web tension range | |
| 1.6 | Production speed | |
| | maximum | 250 m/min |
| | register coatings (if applicable) | 150 m/min |
| | minimum | 30 m/min |
| | actual production speed varies according to printing conditions such as : * quality, thickness and type of material * coating thickness * coating roller and pressure roller * type of adhesive, lacquer and solvent * print repeat tolerance of pre-printed material | |

1.0 Technical Data

| | | | |
|--|--|------------------------------------|--|
| 1.7 | Unwind and rewind : | | |
| | maximum reel outer diameter | 800 mm | |
| | web tension range | 4 to 40 kgs | |
| | core inner diameter unwind rewind | 76 & 152 mm 152 mm | |
| 1.8 | Type of adhesives used | solvent based | |
| 1.9 | Heating source | indirect by thermal oil | |
| 1.10 | Utilities : | | |
| | Electrical supply : | | |
| | machine voltage | 415 V | |
| | auxiliary voltage | 230 V | |
| | allowed variation | +/- 5% | |
| | frequency | 50 Hz (+/- 2%) | |
| | if the power voltage does not comply with these values, isolation transformer, voltage stabilizer or UPS will be required. (not in our scope of supply) | | |
| | Compressed air : | | |
| | for the machine | 6 bar | |
| | for Rossini sleeves (if applicable) | 16 bar | |
| | quality of air | non lubricated, dried and filtered | |
| | (compressors not in our scope of supply) | | |
| | Thermal oil heating : | | |
| | minimum temperature | 230 degree C | |
| | pressure | 2 – 2.5 bar | |
| | (heating system not in our scope of supply) | | |
| Cooling water : | | | |
| inlet temperature to cooling rollers | 15 – 18 degree C | | |
| Pressure | 2 – 2.5 bar | | |
| water flow rate | 1500 lt/h | | |
| (cooling plant not in our scope of supply) | | | |

| | | |
|------|---|---|
| 1.11 | Web direction (viewing from operator side) | left to right OR right to left (please specify) |
| 1.12 | Machine colour : | |
| | machine side frames and electrical cabinets | Grey RAL 7035 |
| | cover for catwalk & lower panels | Green RAL 5012 OR Yellow RAL 1028 |
| 1.13 | Ambient temperature (inside the plant) | 20 to 40 degree C |
| 1.14 | Plant relative humidity | 30 to 80% (at 20 degree C) |
| 1.15 | Altitude | max.1000 meters above sea level |
| 1.16 | Noise level : | within 85 d(A) |
| | noise level must be measured at a distance of one meter from the machine, standing at the operator side. reading should be taken with only the machine running without any other background noise. printing room should have adequate acoustic insulation to prevent sound reflection. supply air, exhaust air and all other ducts should have proper sound insulation. (insulation not in our scope of supply) | |
| 1.17 | Machine safety and electrical standards : (see optional features for more details) | machine can be made in compliance with CE regulation and directives. |
| 1.18 | Machine Foundation (At Customer's Site) (“H” beams not in our scope of supply) | machine should be assembled on “H” type steel beams, which are recessed, into the floor. foundation layout and details will be provided. |

2.0 Machine Description :

2.1 Shaftless Unwind Unit (Primary Web)

| | |
|------------------------|-------------|
| max. reel diameter | 800 mm |
| max. reel weight | 600 kgs |
| core internal diameter | 76 & 152 mm |
| tension range | 4 to 40 kgs |

- reel locking by means of mechanical chucks activated pneumatically.
- automatic tension control having a pneumatic brake assembly.
- tension feedback & display by load cells.

mechanical provision can be made for mounting a corona treating unit and active anti static bars.

.2 Web Guiding Unit

- web alignment is controlled by an electronic web guide assembly having an edge sensing ultrasonic sensor.
- motorized actuator (+/- 20 mm).

2.3 Infeed Nip Unit (Optional)

- this unit is only provided in the machine for register cold seal application.
- isolates the web and provides a separate and independent tension zone between the unwind unit and coating station.
- one chrome plated steel roller.
- one full width anti static rubber roller of 70/75 shore hardness.
- rubber roller is pneumatically activated with pneumatic cylinders mounted on both sides of the assembly having individual adjustable pressure regulators.
- pneumatic controls are mounted on the infeed unit side frame.
- steel roller is driven by an AC Asynchronous Servo Motor having a variable speed Digital AC Drive.
- automatic closed loop tension control having encoder & load cell feedback.
- tension display by load cells.
- tension range : 4 to 40 kgs.
- safety interlock of machine speed with infeed nip activation.
- safety guarding for the nip area.

2.4 Coating Station

- The coating station consists of the following sub assemblies :

2.4.1 Side Frame Assembly

- 50 mm thick steel plates for the side frame assembly.

2.4.2 Coating Roller Assembly

- this unit is designed for mounting hollow type or integral shafted coating roller.
- one full width shaft is provided with taper cones and lock nut for the hollow type coating rollers.
- coating rollers can be transported on light weight lacquer trolleys for easy mounting and removal from the coating station.
- printing repeat range : 400 to 800 mm.
(only applicable for register cold seal application)

see point "2.4.5" for more details on the lacquer trolleys.

2.4.3 Coating Roller Drive Assembly

- coating roller is driven by an AC Asynchronous Motor having a variable speed Digital AC drive.
- closed loop speed control having encoder feedback.

2.4.4 Doctor Blade Assembly

- reciprocating traversal movement of +/- 5 mm on low friction linear bearing slide assembly.
- variable traversal speed, controlled by individual Explosion proof AC motors having a variable speed Digital AC drive.
- precise 3 way movement for blade positioning with micrometric dial indication.
- doctor blade pressure is pneumatically activated with pneumatic cylinders mounted on both sides of the assembly having a common adjustable pressure regulator.
- pneumatic controls are mounted on each printing station.
- doctor blade height can be easily changed by a handwheel provided in the center of the assembly.
(this is a very important feature to get a precise doctor blade angle and a precise doctor blade position with respect to the coating roller circumference and covering the complete range of coating repeat – for register cold seal application)
- blade locking & removal by eccentric mechanism without any tools.
- doctor blade holder designed for 50 mm blades.

2.4.5 Lacquer Assembly

- immersion type lacquer system mounted on a light weight trolley.
- easy handling of the trolley by a single machine operator.
- one lacquer trolley for the coating station, consisting of :
 - * one dual overflow type stainless steel tray
 - height is adjustable according to coating roller diameter.
 - easy removal of trays for cleaning and changeovers.
 - teflon rods mounted at the bottom of each tray protect coating roller from damage.
 - * one stainless steel tank of 45 liter capacity.
 - * one circulation pump (Explosion proof centrifugal type) mounted on the tank.
- one set of flexible pipes for inlet, outlet and circulation of lacquer between pump, tray and tank.
- front, side and back splash guards having provision for easy mounting of teflon cloth.

2.4.6 Pressure Roller Assembly

- this unit is designed for integral shaft type or hollow type rubber pressure roller.
 - one full width anti static rubber roller of 160 mm diameter having 75/80 shore hardness is supplied at the coating station.
 - rubber hardness of pressure roller will differ according to materials being coated :
 - * 75/80 : for PET / BOPP
 - * 85/90 : for Paper
 - vertical movement of pressure roll group mounted on a high precision pivot roll assembly.
 - precise pressure setting by the low friction pivot assembly.
 - coating pressure is pneumatically activated with pneumatic cylinders mounted on both sides of the assembly having individual adjustable pressure regulators.
 - pneumatic controls are mounted on the coating station side frame.
 - automatic release of pressure roll at machine stops.
- ***
- as an option, this unit can be designed with rossini sleeve type pressure roller.
 - sleeve change is activated manually by means of a dedicated button.
 - sleeves are inserted and removed pneumatically on the steel mandrel from the operator side of the press without any tools, without web removal and without release of web tension.
 - safety interlock for the sleeve changing panel door.

2.4.7 Register Control Assembly (Optional)

- this unit is only provided in the machine for register cold seal application.
- longitude (length) register controlled by an automatic register control system.
- lateral (side) register controlled manually.

2.4.8 Adjustable Skew Roller Assembly

- one adjustable skew roller at the inlet of the coating station for easy setting of web thickness variation across the web width.

2.5 Drying & Exhaust

2.5.1 Drying System :

- lacquer drying by means of hot air blown on the web through nozzles designed for maximum efficiency and minimum energy consumption.
- driven rollers support the web in opposite position and at equal distance with respect to each nozzle.
- drive to the rollers is by a separate AC Motor having a variable speed Digital AC drive.
- drying hoods pneumatically open for easy cleaning of rollers and manual web threading.
- drying system is designed for thermal oil heating and includes the following for each drying hood :
 - * one supply air blower.
 - * one thermal oil heat exchanger with two flexible steel hoses.
 - * one proportional three way pneumatic temperature control valve.
 - * one digital temperature controller (pid type).
 - * one manual damper for controlling fresh air intake.
 - * one flexible pipe between drying hood and supply air blower.
- for each drying hood the following parameters can be manually set:
 - * air temperature.
 - * air volume for supply, exhaust and re-circulation.
- drying tunnel consisting of :

| | |
|-------------------------------|----------------------------|
| number of drying hoods | 4 |
| drying path length | 7200 mm |
| max. air temperature | 120 degree C |
| plant environment temperature | 20 degree C |
| number of supply air blowers | 4 |
| air volume | 4500 m ³ /h * 4 |
| heat load | 60,000 kcal * 4 |

- safety interlock for the drying and exhaust system.

excluded from Berkeley supply

- thermal oil heating equipment, manual control valves, circulation system and complete pipeline for oil.
- insulation of all ducts, pipe connections and heat exchangers.
- monitoring of solvent concentration levels. (LEL)

2.5.2 Hot Air Recirculation

- provision for manual dampers (for hot air recirculation) will be made in the main exhaust ducts.
- volume of hot air recirculation can be manually controlled at each drying zone.

- proper monitoring of solvent concentration levels is recommended during hot air recirculation.

excluded from Berkeley supply

- monitoring of solvent concentration levels. (LEL)

2.5.3 Exhaust System

Local exhaust :

- solvent fume suction duct is mounted at the lower base of the coating station.
- flexible pipe is provided between the coating station and the main exhaust duct.
- provision for manual dampers (for local exhaust air) will be made in the main exhaust duct.
- local exhaust air volume can be manually controlled.

- one exhaust blower.
- safety interlock for the drying and exhaust system.

Coating exhaust :

- solvent fume exhaust nozzles are spread equally across each drying hood.
- flexible pipe is provided between each drying hood and the main exhaust duct.
- provision for manual dampers (for coating exhaust air) will be made in the main exhaust duct.
- coating exhaust air volume can be manually controlled.

- one common exhaust blower.
- safety interlock for the drying and exhaust system.

excluded from Berkeley supply

- main ducts for local exhaust and coating exhaust along with manual dampers.
- extension of ducts from the machine to building outlet.
- mounting of all exhaust blowers.
- insulation of all ducts, dampers and connections.
- monitoring of solvent concentration levels. (LEL)

2.5.4 Blower Mounting Assembly

- one common steel structure is provided along the machine length for mounting all supply air blowers and heat exchangers.

2.5.5 Drying Hood Access

- one catwalk complete with handrail is provided on the operator side along the full machine length.
- one fixed ladder is positioned either on the unwind or rewind side of the machine.

2.6 Shaftless Unwind Unit (Secondary Web)

| | |
|------------------------|-------------|
| max. reel diameter | 800 mm |
| max. reel weight | 600 kgs |
| core internal diameter | 76 & 152 mm |
| tension range | 4 to 40 kgs |

- reel locking by means of mechanical chucks activated pneumatically.
- automatic tension control having a pneumatic brake assembly.
- tension feedback & display by load cells.

mechanical provision can be made for mounting a corona treating unit and active anti static bars.

2.7 Web Guiding Unit

- web alignment is controlled by an electronic web guide assembly having an edge sensing ultrasonic sensor.
- motorized actuator (+/- 20 mm).

2.8 Lamination Nip Unit

- chrome plated steel roll of 250 mm diameter having heating provision by hot oil or hot water circulation through rotary union.
- one full width rubber roller of 160 mm diameter having 85/90 shore hardness.
- rubber roller is pneumatically actuated with individual pneumatic cylinders mounted on both sides of the assembly having individual adjustable pressure regulators.
- pneumatic controls are mounted on the laminating unit side frame.
- steel roller is driven by an AC Asynchronous motor having a variable speed Digital AC drive.
- automatic tension control having load cell feedback.
- tension display by load cells.
- tension range : 4 to 40 kgs.
- safety guarding for the nip pinch point.

2.9 Water Cooling Unit

- one chrome plated steel roll of 250 mm diameter having provision for cold water circulation through rotary union.
- drive to the steel roller is common with the laminating nip roller.

excluded from Berkeley supply (for above both units) :

- thermal oil heating equipment, water heating equipment, water cooling equipment, temperature control valves, manual valves, circulation system and complete pipeline for oil and water.
- insulation of all pipelines.

2.10 Shaftless Rewind Unit

| | |
|------------------------|-------------|
| max. reel diameter | 800 mm |
| max. reel weight | 600 kgs |
| core internal diameter | 152 mm |
| tension range | 4 to 40 kgs |

- reel locking by means of mechanical chucks activated pneumatically.
- AC motor and Digital AC drive for the rewind reel.
- automatic closed loop tension control having encoder and load cell feedback.
- can choose between constant tension mode and taper tension mode.
- tension display by load cells.
- pneumatically actuated lay on roll assembly having individual pneumatic cylinders on either sides with individual adjustable precision pressure regulators.
- rubber lay on roller ensures a proper rewind reel profile throughout the reel diameter.

mechanical provision can be made for mounting active anti static bars.

3.0 Electricals & Electronics

3.1 Control Panels :

- one control panel having all Digital AC drives.
- one control panel for all supply and exhaust air blowers.

- three operator panels at the unwind and rewind turret units having the following controls :
 - * three touch screens (HMI's) for the splicing controls.
 - * web guide control at the unwind units.
 - * pneumatic controls for the lay on roll at rewind unit.
 - * emergency stops.

- one operator panel at the infeed nip unit (if applicable) having the following controls :
 - * pneumatic controls for the nip unit.
 - * emergency stops.

- one operator panel at the lamination nip unit having the following controls :
 - * one touch screen (HMI) having all machine controls.
 - * pneumatic controls for the nip unit.
 - * emergency stops.

- one operator panel at the coating station having the following controls :
 - * pneumatic controls for the pressure roll assembly & doctor blade assembly.
 - * controls for the doctor blade oscillation motor.
 - * auto register controls (only for register cold seal application).
 - * emergency stops.

see point "3.2" for details of the HMI.



3.2 Human Machine Interface (HMI) :

- the operator can control and manage the following machine parameters from the touch screen (HMI) :

| DATA | DISPLAY | MODIFY | |
|---|---------|--------|--|
| Core Diameters | X | X | |
| Web Tensions | X | X | |
| Web Length | X | | |
| Line Speed | X | X | |
| | | | |
| Coating Repeat (only for register cold seal application) | X | X | |
| | | | |
| Alarms & Failures | X | | |
| Diagnostic Messages | X | | |
| | | | |
| Emergency Stops | X | | |

“ X ” = possible operations.

- following diagnostic reports can be checked :
 - * failure of any drive, failure of any motor, power loads, motor revolutions and emergency stop warnings.

3.3 Machine Internal Cabling :

- all wires and cables for the machine internal wiring is in our scope of supply.
- internal machine wiring is done at our place and later opened during machine delivery.
- machine re-wiring (during installation) will be done by our engineer with assistance from buyer's electrical person.
- cable trench for the machine length is in our scope of supply.

3.4

Motors :

- following motors are supplied with the machine :

| | |
|--|-------------------------------|
| Infeed drive (Optional) (for register cold seal application) | 1 AC Asynchronous Servo Motor |
| Coating station : | |
| coating roller drive | 1 AC Asynchronous Motor |
| doctor blade drive | 1 Explosion proof AC Motor |
| circulation pump | 1 Explosion proof AC Motor |
| Drying tunnel drive | 1 AC Motor |
| Lamination nip drive | 1 AC Asynchronous Motor |
| Rewind : | |
| rewind drive | 1 AC Motor |
| Supply air blowers | 4 AC Motors |
| Exhaust air blowers : | |
| local exhaust | 1 AC Motor |
| coating exhaust | 1 AC Motor |

3.5

Heat Load :

| | |
|------------------|-----------------|
| All drying zones | 60,000 kcal * 4 |
|------------------|-----------------|



4.0 Make Of Main Components :

| | |
|------------------------------|--|
| Web Guiding Unit | E+L, BST |
| Load Cells | RE, Puretronics |
| Pneumatics | Festo, SMC |
| Turret Indexing Motors | Rossi |
| AC Motors | Siemens, Nav Bharat |
| Explosion Proof AC Motors | LHP, Nav Bharat |
| AC Asynchronous Servo Motors | Fukuta, Siemens, Leroy Somer |
| Digital AC Drives | Control Technique, Siemens |
| Auto Register Control | Selectra, Hitech (for register cold seal application) |
| Touch Screens | Mitsubishi, Siemens |
| Encoders | P&F, Kuebler |
| E/P Regulators | SMC, Festo |
| Impression Sleeves | Rossini (if applicable) |
| Mandrel For Sleeves | Rossini (if applicable) |
| Lacquer Pump | Valence |
| Supply & Exhaust Blowers | Nadi, Standard, Tiger |

For continuous improvement of our machines, we reserve the right to carry out any modification or changes in the machine features, specifications and make of components.

5.0 Scope of Supply & Price

One Marathon S-1300 Solvent based dry lamination machine consisting of :

- Shaftless unwind unit (Primary web) :
 - * reel cones for 76 mm & 152 mm core id.
 - * one edge sensing web guiding unit.

- Infeed nip unit (**Optional** : only for register cold seal application)

- Coating station :
 - * one shaft for mounting hollow coating roller.
 - * one light weight lacquer trolley consisting of :
 - one full width dual pan type tray with one set of splash guards.
 - one 45 litre tank and one circulation pump.
 - one set of flexible pipes for supply, drain and circulation of lacquer between the pump, tray and tank.
 - * one full width pressure rubber roller.
 - * one full width doctor blade holder.
 - * one mirror backing plate and scanner holding bar for auto register control system (**Optional** : only for register cold seal application).

- For each drying hood :
 - * one supply air blower.
 - * one thermal oil heat exchanger.
 - * one three way proportional temperature control valve.
 - * one temperature controller and one thermo probe.

- Exhaust system :
 - * one exhaust air blower for local exhaust.
 - * one exhaust air blower for coating exhaust.

- Shaftless unwind unit (Secondary web) :
 - * reel cones for 76 mm & 152 mm core id.
 - * one edge sensing web guiding unit.

- Lamination nip unit :
 - * one steel nip roller.
 - * one water cooling roller.
 - * rotary unions for all rollers.

- Shaftless rewind unit :
 - * reel cones for 152 mm core id.



- Control panels :
 - * one panel having all AC drives.
 - * one panel for all supply air and exhaust air blowers.
 - * three operator panels at unwind and rewind units.
 - * one operator panel at the lamination nip unit.

- General :
 - * pneumatic connection within the machine.
 - * cables and trench for internal machine wiring.
 - * one set of standard tool kit.

| |
|---|
| Price |
| One Marathon S-1300 Solvent Based Dry Lamination Machine |
| Price quoted on request |
| |

**6.0 Optional Features & Equipment
(not included in our scope of supply and machine price)**

- Turret unwind and rewind reel stands with auto splicing.
- Rossini sleeve type pressure roller.
- Corona treating unit.
- Register cold seal application on pre-printed web.
- Peristaltic pump for cold seal circulation.
- Explosion proof / Non explosion proof active anti static bars with control units.
- LEL monitoring and detection system for solvent concentration levels.
- CE & EU safety requirement :
 - * machine can be made in compliance with CE / EU norms and directives.
 - * machine manual and other documents as per CE norms.



- Tele-assistance :
 - * tele-assistance allows us to verify, visualise and modify most of the electronic parameters and systems of the machine through the net.
 - * customer has to provided the net connection.

- Fire suppression system :
 - * distribution pipeline running along the machine length.
 - * two discharge nozzles for the ink tray.
 - * one discharge nozzle for the ink tank.
 - * one discharge nozzle for the exhaust duct.

excluded from Berkeley supply :

temperature sensors, CO2 bottles, electronic discharge valves and electronic controls.

7.0 Technical Documentation

The following drawings and layouts will be given within one month after the order finalization :

- * machine foundation layout
- * exhaust duct layout
- * machine lay out showing all utilities like :
 - air inlet
 - position of thermal oil heat exchangers
 - cold water inlet
 - electrical power inlet
 - power cable details
- * layout for coating roller.
- * register control sequence mark (for register cold seal application).

The following will be given along with the machine :

- one notebook pc having :
 - * operation & instructions manuals of all bought out parts.
 - * mechanical and electronic drawings of the machine.
 - * operation and instruction manual of the machine.
 - * electronic parameters of the machine.

**8.0 List of Recommended Spares
(not included in our scope of supply and machine price)**

Electronic :

- * digital ac drive of all type
- * ac & asynchronous servo motor of all type
- * encoder of all type
- * load cell amplifier card
- * E to P regulator for dancer rollers
- * load cells
- * hmi of all type
- * optical sensor for auto register control system
(for register cold seal application)
- * 3 way temperature control pneumatic valve
- * temperature controller

Mechanical :

- * splicing blade
- * rubber roll of all type
- * pneumatic cylinder of all type
- * pressure regulators and pressure gauges
- * pneumatic fittings and flow control valves
- * bearings of all type
- * safety chucks
- * rubber tubes and air valves for air expanding shafts
- * unwind and rewind air shafts
- * light weight lacquer trolleys
- * tanks, trays & circulation pumps
- * doctor blade holders

price of above spares can be provided on request.



9.0 Excluded From Berkeley Scope of Supply :

- Unloading and Shifting of the machine.
- Foundation of the machine including steel beams, steel plates, foundation bolts and all masonry work.
- Electric supply to the control panels including the main power cable and main switch gears.
- Isolation transformer, Voltage stabilizer & UPS for the machine.
- Water cooling plant, complete circulation system and water pipeline.
- Thermal oil heating plant, manual control valves, circulation system and oil pipeline.
- All exhaust ducts for the machine length and extension from the machine to building outlet.
- Insulation of all air ducts and pipeline.
- Insulation of all heat exchangers.
- Sound insulation.
- Mounting and installation of exhaust blower including the connecting adaptor between blower and duct.
- Compressor, compressed air treatment equipment and pipeline for air.
- Means of loading and unloading unwind rewind reels.
- Coating rollers and doctor blades.
- All materials required for conducting test run at our place before delivery and at Buyer's place after installation.
- Additional features, materials and services, not mentioned in the above scope of supply.
- Any kind of ancillary equipment not listed in the above scope of supply.
- All other necessary equipment or supplies required for installation, start-up & commissioning of the machine, not mentioned in the above scope of supply.

10.0 Terms & Conditions Of Supply :

10.1 Price Validity

This offer is valid for a period of 30 days from the date of our quotation.

10.2 Delivery Period

16 – 18 weeks after the Order Confirmation, Machine Specifications duly signed by the Buyer and receipt of advance payment – whichever is last.

10.3 Insurance & Transport

Transit insurance has to be covered by the Buyer.

In the event of any Insurance claim, the procedure has to be done by the Buyer.

10.4 Payment terms

40 % advance payment with Order
60 % payment prior to despatch

Advance & cancellation of order

The advance amount is non refundable and non-interest bearing.
In the event of cancellation of order, cancellation charges will be
Applicable in addition to forfeiture of the complete advance amount paid.

10.5 Trials of the Machine

Before delivery we conduct normal trials of all machines with our standard raw materials. If the Buyer needs specific trials, it should be informed to us during order finalization and the raw materials required for conducting such trials have to be supplied by the Buyer.
After machine installation at customer site, all raw materials required for machine trials have to be supplied by the Buyer.

10.6 Installation and Commissioning

The machine is fully assembled at our plant and after trials and inspection It has been disassembled into several sections for easy transportation.

Our engineer(s) will carry out the following jobs at the Buyer's plant :

- * Machine assembly including alignment and mounting of all separate sections
- * machine internal wiring connection.
- * Machine start-up
- * Conducting a dry run of the machine to check complete control synchronization and machine alignment.
- * Taking wet run of the machine with raw materials provided by the Buyer
- * Training to the Buyer's staff

To ensure a fast and effective installation, the Buyer must ensure that the following is ready before the arrival of our engineer :

- * The machines are unloaded and kept near the installation site.
- * Area where the machine has to be installed is completely ready including machine foundation.
- * Lifting and transport cranes, forklifts, manpower and tools – required for the machine movement, alignment and installation.
- * Technical staff (mechanical, electrical & electronic) as required during machine installation, start-up & training.
- * All on-site utility connections like : air, water, power, heating (including thermal oil pipeline and connections), etc.
- * All required material for conducting machine trials and acceptance tests.



We do not cover any consequential damages such as production loss or loss of profit which may occur during or after the installation & training period.

We also do not cover any personnel injury or damage to life and health of any person caused by our scope of delivery and/or services during or after the installation & training period.

10.7 Warranty

The goods offered under this quotation are warranted free from defects in design, material and construction for a period of 12 months from the date of dispatch.

Should a component fail during the 12 month warranty period it will be exchanged free of charge. The warranty is for parts only and does not include labour, travelling or delivery.

The warranty excludes all defects due to normal wear and tear of the components such as :

- * rubber tubes & bladders for air shafts & chucks,
- * ink & solvent circulation pipes/tubes,
- * ball bearings,
- * drive belts,
- * cutting knives & blades,
- * roller coatings (rubber, chrome, engraving, etc),
- * temperature control valves including I-P / E-P regulators,
- * rotary unions,
- * all pneumatic components including E-P regulators ,
- * all parts made of rubber, nylon and plastic.

All electronic parts and components of another make will carry back to back warranty of their respective suppliers.

The liability of such parts and components will be restricted to the liability claims entitled to us from the suppliers of such parts and components

Our liability under this warranty is restricted to the cost of new replacement parts or repairing of the defective parts, which under normal use appear to be defective in workmanship or material.

Transportation charges and all destination clearance charges related to such parts will be borne by the Buyer.

In the case of replacement of parts, the Buyer has to ensure that all such defective parts or equipment are returned to us or to their respective manufacturers prior to the dispatch of new / replaced parts and the cost for this will be borne by the Buyer.

If the services of our engineer is required to change these parts, then his travel and staying expenses including his pocket expenses will be borne by the Buyer.



This Warranty does not cover any consequential damages such as production loss or loss of profit which may occur from the non fulfilment of warranties.

This warranty does not cover any personnel injury or damages to life and health of any person caused by our scope of delivery and/or services.

In case the payment terms as agreed has not been fulfilled, this warranty expires immediately without any written notice.

10.8 Technical Specifications & Features

The technical specifications and features of our machine is according to our present machine design.

For continuous improvement of our machines, we reserve the right to carry out any modification or changes in the machine features, specifications and make of components.

10.9 Ownership

Until the complete payment of the machine is made, the ownership of all delivery items will remain our property until such payment has been effected.

10.10 Force Majeure

We shall be under no liability whatsoever on the occurrence of any Force Majeure.

10.11 Jurisdiction

All contracts of sale are subject to Jurisdiction of United Kingdom