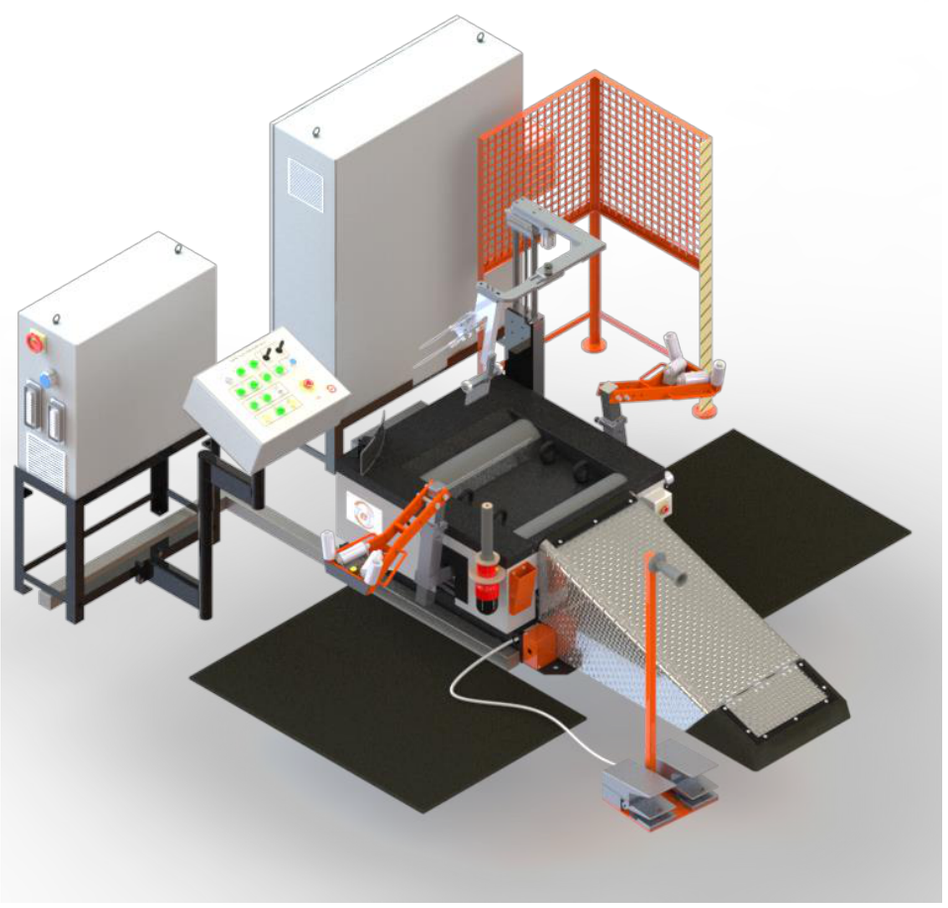
INSPECTION SPREADER IS6-3-1
INSTRUCTION MANUAL



ELGI Rubber Company Limited

2000, Trichy Road, Coimbatore, India

Tel: +91-422-2321000 Email: info@in.elgirubber.com

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1. General Information / Introduction

Introduction

Elgi Rubber Company Limited is a pioneer in Tyre Retreading, providing one stop solutions for the Tyre Retreading Segment.

Thank you for purchasing our product Inspection Spreader.

Company Profile:

Elgi Rubber Company Limited has its headquarters in India with subsidiaries in Australia, Brasil, Kenya, the Netherlands, Sri Lanka and the United States of America. Elgi manufactures a comprehensive range of raw material, equipment, tools and accessories used in the 'Rubber Industry', predominantly in the 'Tyre sector'. With state of the art manufacturing facilities, testing laboratories and R&D centres around the world, Elgi is able to deliver products to the most demanding users.

Elgi's products are sold under the following brands:

Jet

Retread and Repair Systems

CRS

Cincinnati Retread Systems

Expandable Rims & Hubs

Armonas

Retread Process Equipment

Pincott

Rasp Blades, Hubs & Spacers

Carbrasive

Brazed Carbide Tools

Midwest Rubber

Midwest Rubber

Gums, Adhesives & Sealants

Westernweld

Tyre & Tube Repair Products

Rubber Resources

Ecorr® Reclaim Rubber from Rubber Resources

Reclaim Rubber

Rubber Compounding Holland

Rubber Compounding Holland

Rubber Compounds

1. General Information / Contact Information

Contact information

Our Head Office is located at Coimbatore, Tamil Nadu, India.

Address :Elgi Rubber Company Limited,

2000, Trichy Road, Coimbatore-641005

Tamil Nadu. India.

Phone :(91)-422-2321000

E-Mail : info@in.elgirubber.com

Technical Support

ERCL's Technical team will answer your technical queries regarding the installation, use, troubleshooting, and maintenance of our products. You may also email your queries to info@in.elgirubber.com

Reference materials

Upon email request to info@in.elgirubber.com, reference materials including Outline, Mounting drawings, Operator's Manuals, Technical Bulletins, Pneumatic schematics, Electrical schematics, Troubleshooting procedures and Spare parts details will be provided.

Warranty

Warranty of the equipment is applicable for a period of 6 months from the date of commissioning or 9 months from the date of Invoice whichever is earlier, against manufacturing defects only. Warranty for bought out Electrical Pneumatic items etc., will not be governed by the manufacturer's warranty.

Limitation of Liability

The manufacturer assumes no liability for damage resulting from:

- Disregard / non-observance of the operating manual
- Intentional misuse
- Use other than as intended
- Operation by untrained personnel
- Operation by lay persons (to carry out maintenance work, etc)

Technical modifications to the unit have not been agreed with the manufacturer

Use of replacement parts that have not been approved by the manufacturer

Responsibilities of the operator

The unit is used for commercial purposes. The operator of the unit is therefore subject to the statutory obligations relating to occupational safety. In addition to the safety instructions in this instruction manual, the regulations on safety, accident prevention and environmental protection that apply to the unit's field of use must be complied with.

In particular, the following apply:

- The operator must be familiar with the applicable occupational safety regulations.
- The operator must ensure that all employees who use the unit have read and understood this operating manual.
- The operator must also train personnel at regular intervals and inform them of the dangers that can arise when using the unit.
- The operator must provide personnel with the necessary protective equipment.
- The operator must have all safety devices checked regularly for operability and completeness.

Documentation

Content and structure

This instruction manual is an essential part of this unit. It contains instructions and information on how to use the unit safely and must be available to all users throughout the unit's service life. This instruction manual is intended for use by trained operating personnel.

2. Safety

Safety

The ***Inspection spreader*** machine is a commercial machine, used in Tyre retreading facilities to inspect the suitability of Tyre for retreading.

Requirements for personnel

Trained and qualified personnel who know how to use the unit and whose specialist training, sills, experience and knowledge of the relevant regulations enables them to carry out the tasks assigned to them independently and recognize and avoid potential hazards.

Hazard information

Hazard information includes terms, symbols, and instruction used in this manual or on the equipment to alert both operating and service personnel to the recommended precautions in the care, use and handling.

Labelling scheme for integrated text boxes and references

The following safety notices are used in this manual.

Certain terms are used throughout this manual or on the equipment labels. User need to familiarize with their definitions and significance.

⚠ **Danger:** Imminent hazards which, if not avoided, will result in fatal or serious injury.

⚠ **Warning:** Potential hazards which, if not avoided, could result in fatal or serious injury.

⚠ **Caution:** Potential hazards or unsafe practices which, if not avoided, may result in minor or moderate injury.

Caution: Potential hazards or unsafe practices which, if not avoided, may result in Product damage.

Important: Important information or recommendation concerning the subject under discussion.

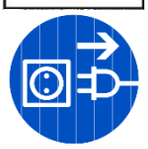
Note: Point of interest for more efficient or convenient equipment operation; additional information or explanation concerning the subject under discussion.

2. Safety / Symbols and Definitions

Symbols and Definitions

Earth / PE:

Earth or PE connection to be made to avoid the earth leaked shock



Warning:
Disconnect Power supply before Servicing or Cleaning

Warning:
No Loose Connection

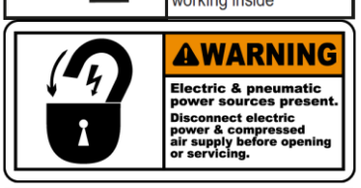
Warning:
Foot Protection Required

Warning:
Crush Hazard – Keep feet clear

Warning:
Finger protection on rollers

Warning:
Electric Shock Hazard

Danger:
Electrical Shock or Burn Hazard
Turn off power supplying this equipment before working inside.



Warning:
Electric & Pneumatic power sources present. Disconnect electric power and compressed air supply

Danger:
Crush Hazard
Keep Hands Clear, Follow lockout procedure before servicing

2. Safety / General Hazards

General hazards

Following are description of general hazards and unsafe practices that could result in fatal, severe injury, or product damage. Specific warnings and cautions not appearing in this section are found throughout the manual.

Danger Serious personal injury 	This is Electrical Class 1 product which runs with 110/220 VAC, Single phase, 50/60HZ, AC source where it could consume maximum of 25A running current. This machine has DC converter Drive, which converts 110V AC source into high Direct Current source to Operate the Machine. Do not allow or Direct or indirect contact with Electrical Parts without proper PPE and safe procedure. Direct or indirect contact with Electrical part inflict severe corneal injuries leading to permanent disability or fatal accident. This product is not intended for use in explosive, or potentially explosive, atmospheres.

Warning Serious personal injury 	This Machine has rollers which is operated by steady torque motor. Do not allow or Direct or Indirect contact with Roller Section. Don't Try or alter the safety protection at Roller section. Direct or indirect contact with Roller parts may leading to permanent disability or finger loss.

2. Safety / General Hazards

Caution Minor or moderate injury 	This Machine has rotating shaft which run with product running speed Do not allow or Direct or Indirect contact with rotating shafts. Don't Try or alter the safety protection at rotating shaft section. Direct or indirect contact with rotating shaft may leading to minor or moderate injury.

Danger Serious  personal injury	This Machine has Power and Control circuit electrical panel which is operate 110V/220V, single phase AC, 60Hz/50Hz, source. Do not operate the machine at Electrical panel at open condition. Always ensure that, the electrical panel is completely in locked condition. Direct or indirect contact with electrical panel components or conductive foreign materials or dust deposition may cause highly flammable in and around the machine area. It may lead to serious personal injury to the Operator.

Caution Serious personal injury 	This Machine has chain guided rotating parts which is operated by the motor drive. Do not allow or Direct or indirect contact with rotating shafts. Don't Try or alter the safety protection at belt guided rotating parts enclosure. Direct or indirect contact with belt guided rotating parts may leading to minor or moderate injury.

2. Safety / Hazard Information

Hazard information

IS6-3-1 should be installed and operated in manufacturing or laboratory facilities by trained personnel only. Due to the considerable risks and hazards associated with the installation and operational use of any equipment incorporating automated functions, the operator must follow product warning labels and instructions to the user regarding safety. To prevent exposure to direct or indirect hazards, following all safety precautions specified throughout this manual and exercise safe operating practices as per electrical safety standards.

Lock Out Tag Out (LOTO)

This Machine designed with LOTO concept as per OSHA standards. Whenever the machine undergoes any Electrical or Mechanical or Cleaning activity, turn **OFF** the main **ISOLATOR** switch and follow LOTO procedure.

List of Hazards Associated with this Machine

- Electrical hazards.
- Pneumatic hazards.
- Sharp Edge hazards.
- Rotating and pinch point hazards.

Use standard safety procedure while working with respective source and use proper recommended PPE's.

Grounding

This machine needs additional body protecting grounding or Earth, which needs to be connected with the Machine to Ground / Earth with Copper wire or conductor or rod.

Other Hazards

The following hazards are typical for this product family when incorporated for intended use:

a) Risk of injury when lifting or moving the unit;
b) Risk of exposure to hazardous Electrical energy through unauthorized removal of access panels, doors or protective barriers;
c) Risk of exposure to hazardous Electrical Energy and injury due to failure of personnel to use proper PPE while involving in maintenance or troubleshooting;
d) Risk of exposure to hazardous or lethal voltage through unauthorized removal of cover, doors, or access panels;
e) Risk of exposure to hazardous when connected with non-standards voltage source apart from mention specification in machine electrical name plate.

Disposal

This product contains components that are considered hazardous industrial waste. If a situation occurs where the machine is non-functional and cannot be repaired, it may be returned to Elgi Rubber Company Limited who, for a fee, will ensure adequate disassembly, recycling, and/or disposal of the product.

2. Safety / Personal Protecting Equipment

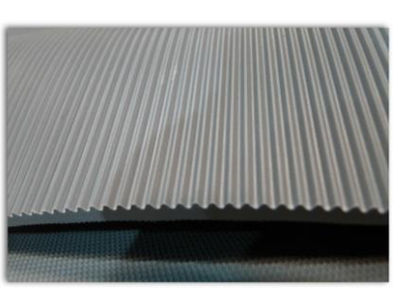
Personal Protecting Equipment

Caution Serious personal injury	Personal Protecting Equipment listed below to be used wherever applicable . Failing to use may cause serious personal injury

Industrial Safety Goggle to be used for Eye protection from any fine dust particles during the Tyre inspection

Industrial High Voltage Safety Glove (rated insulation up to 50KV and CE certified) to be used, if Inspection Spreader is purchased with Nail Hole Detection system.

Industrial Safety Shoes to be used to protect the foot from impact due to Tyre rolling on the foot. If Nail Hold Detection system is purchased along with Inspection spreader, Electrical Safety Shoes to be used to protect from any Electrical Shock.



If Nail Hole Detection system is purchased along with Inspection Spreader, suitable Class 4 Industrial Electrical Safety Mat should be used.

3. Getting started

Getting started

Chapter Overview

Use information in this chapter to prepare your Inspection Spreader **IS6-3-1** for operation. The order of information presented in this chapter is the same as the order of task that you will need to perform. The best way to get your machine ready for operation is to start at unpacking and work your way through connection.

This chapter contains the following information:

- Introduction- Introduces the Inspection Spreader **IS6-3-1**, lists important feature, and describes about machine function.
- Unpacking- Provides important information about unpacking the Inspection Spreader **IS6-3-1**.
- Package Contents- Displays and describes all components shipped with this machine may vary as per the optional features purchased.
- Mounting- Describes how to assemble the Inspection Spreader parts
- Connections- Explains how to connect power, control cables and pneumatic connections of this machine.

Introduction

The Introduction section includes subsection:

- **About IS6-3-1**
- Inspection Spreader Machine's nomenclature
- Unpacking
- Package Contents

About IS6-3-1

The Inspection Spreader IS 6-3-1 is a simple and rugged, pneumatically operated machine which facilitates a thorough inspection of Tyres and can also serve as a repair station. Loading and Unloading of Tyres done effortlessly with the help of the ramp. Rollers are provided for easy rotation of Tyres.

A handheld inspection lamp enables the operator to view the inside of the casing and the injury clearly. Forward and reverse rotation buttons are incorporated into the body of the hand lamp for operator convenience. Foot switch rotation control (forward and reverse) is also included.

The spreader has pneumatically controlled spreading claws that have built in LED lighting to further enhance the inspection of the inside of the casing.

The machine pneumatically lifts the casing to individual operator height for easy, ergonomic operation.

3. Getting started / Inspection Spreader

Inspection Spreader - Nomenclature

Inspection Spreader **IS6-3-1** major sections

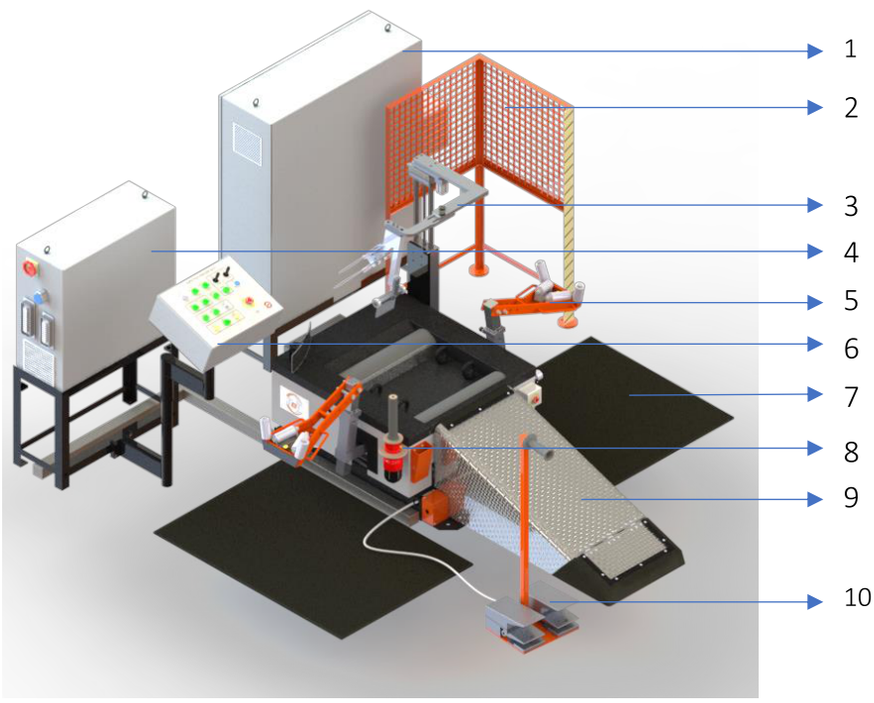


Figure 3-0-1 Inspection Spreader Machine

1	NHD Panel – Optional	6	HMI / Operating Panel
2	Guard – Optional	7	Insulation Floor Mat
3	NHD Probe Arm – Optional	8	Inspection Lamp
4	Control Panel	9	Ramp
5	Claw Holder	10	Foot Switch

3. Getting started / Unpacking

Unpacking

The unpacking section includes the below:

- Incoming inspection.
- Un-Packaging guidelines.

Incoming inspection

Upon arrival, inspect all shipping containers for singles of damage. If you discover shipping damages, document the damage (photographically if possible), then immediately notify the shipping carrier and Elgi Rubber Company Limited.

The shipping carrier is responsible for any damage occurring during transportation from Elgi Rubber Company Limited to your receiving dock.

Packing guidelines

Unpacking

- To prevent equipment damage or loss of small components, use care when removing packaging materials.
- After unpacking, review the Package Contents section and verify that all components are available (optional items would be available only if purchased).
- Lift the machine only at the indicated locations of the machine.
- Save all shipping containers and packaging materials, including cover and plugs. Use these specialized packing materials when shipping the machine to another location.

a. b. c.

Figure 3-2 Lifting Eyebolts

a. Machine main frame (4 Nos)
b. NHD Panel (2 Nos)
c. Control Panel (2 Nos)

3. Getting started / Unpacking

Shipment Lock Clamps

- Shipment Lock clamps would be used to fastening the base and top for transportation.
- Before operating the machine, Shipment Lock clamps (1 and 2) should be removed.

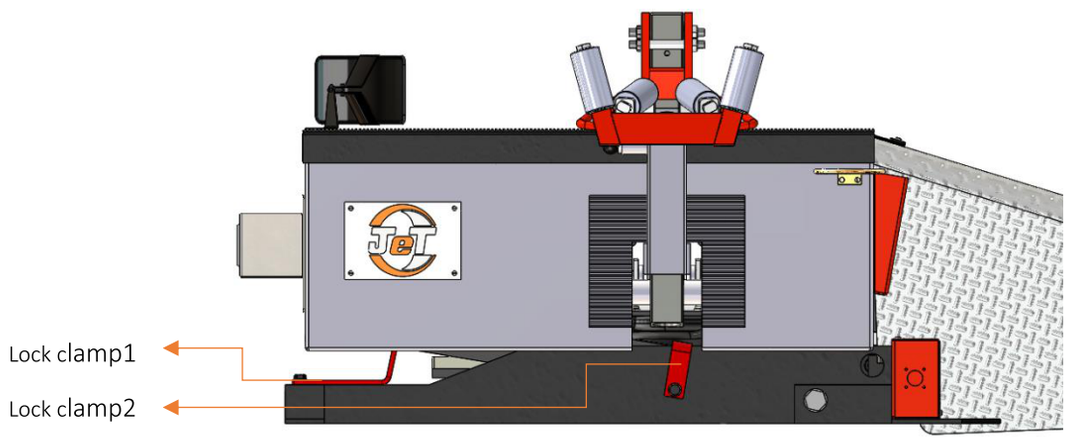


Figure 3-3 Shipment Lock Clamps

Packing

- When packing a machine for shipment, be sure to remove all accessory items not originally attached to the machine including external electrical and pneumatic incoming connections.
- Refer to Inspection Spreader packaging instruction drawings and image in the technical reference chapter for details on packaging the machine using Elgi Rubber Company Limited supplied shipping materials.
- When shipping machine, release the stored energy like pneumatic supply locked in cylinder.
- Ensure the proper fixing of shipment lock clamps before shipping.

3. Getting started / Package Contents

Package Contents

S No.	Shipping Box Contents	Qty
1	Inspection Spreader Machine Assembly	1 No
2	Operating Panel / HMI	1 No
3	Control Panel	1 No
4	Foot Switch	1 No
5	Inspection Lamp	1 No
6	Guard (Optional)	1 No
7	Insulation Floor Mat (Optional)	1 No
8	Pair of Insulation Gloves (Optional)	1 No
9	Stand for Control Panel	1 No
10	NHD Panel (Optional)	1 No
11	Stand for NHD Panel (Optional)	1 No
12	NHD Probe Arm (Optional)	1 No

Contents description

Each item listed in Table1-1 is described below

1. Inspection Spreader Machine Assembly: A complete mechanical assembly of the Tyre inspection machine, includes the geared DC motor for operation.
2. Operating Panel / HMI – device to control the operation of the machine
3. Control Panel – contains all the control electronics, drives etc
4. Foot Switch – enables the operator to use the controls over foot switch
5. Inspection Lamp – handheld lamp light for inspection and to control the motor forward and reverse movement.
6. Guard (optional) – to prevent the person from impact hazard while operating NHD functions.
7. Insulation Floor Mat (optional) – to insulate the operator from High Voltage
8. Pair of Insulation Gloves (optional) – to insulate the operator from High Voltage from accidentally touching the Tyre while operating NHD functions.
9. Stand for Control Panel – Control Panel to be mounted on the stand provided.
10. NHD Panel (optional) – High Voltage based NHD panel
11. Stand for NHD Panel – NHD Panel to be mounted on the stand provided
12. Telescope Arm (optional) – Telescope Arm will be fitted with the machine if purchased. This is to test the Tyre using High Voltage.

3. Getting started / Declaration of Conformity

Declaration of Conformity:

Elgi Rubber Company Limited
2000, Trichy Road, Coimbatore – 641 005, India
info@in.elgirubber.com, www.elgirubber.com, CIN:L25119TZ2006PLC013144

EU Declaration of Conformity

We, Elgi Rubber Company Limited, 2000 Trichy Road, Coimbatore – 641 005, India, Email: info@in.elgirubber.com, www.elgirubber.com

Declare under sole responsibility that the following described product in our delivered version complies with the appropriate essential health and safety requirements of the

Machinery Directive	**2006/42/EC**
Low Voltage Directive	**2014/35/EU**

Based on its design and type, as brought into circulation by us.
In case of alteration of the machine, not agreed upon by us, this declaration will lose its validity.

Description of the Product:

Nomenclature : Inspection Spreader
Model Number/s : IS6-3-1

Applicable Harmonized Standards:

Machinery Directive

EN ISO 12100:2010	Safety of machinery - General principles for design - Risk assessment and risk reduction
EN ISO 4414:2010	Pneumatic fluid power. General rules and safety requirements for systems and their components

Low Voltage Directive

EN 60204-1: 2018	Safety of machinery. Electrical equipment of machines. General requirements

Year in which CE Marking was affixed: 2019

Elgi Rubber Company Limited

ELGI RUBBER COMPANY LTD

24 May 2019

E.V. Krishnan
Chief Operating Officer

3. Getting started / Specifications of the Product

Specifications of the product:

Model	IS 6-3-1
Machine	Inspection Spreader
Tyre Range	650 - 14 to 12.00 – 24.5
Air Pressure Requirement	800 kpa (8 kg/cm2)
Dimensions in mm	1600 L x 670 W x 450 H
Electrical Requirement	110/220 V AC - 60/50Hz - 1Ph
Weight	195 Kgs (Approx.)
Installation	To be fixed to the floor
Conformity	CE
Storage Temperature	-5^{O}C to 50^{O}C
Ambient Temperature	0^{O}C to 40^{O}C

Description

The Inspection Spreader IS 6-3-1 consists of the following major components:

1. **Mainframe:** The main frame houses all the main components of the machine with the lifting adjustment and the Tyre operating table.
2. **Table Lift:** This helps the operator in lifting the table to the operator's convenient height. This is controlled pneumatically with the help of pneumatic cylinder.
3. **Operating Table:** The operating table which holds the Tyre to the convenient height of operator. It consists of the Tyre expanding claws and rollers controlled by a motor. Spreading and releasing of the Tyre beads is done pneumatically and the spreading claws our outfitted with built in LED lights to further enhance casing inspection.
4. **Foot Switch:** This is moveable and can be brought to any position to the operator's convenience. This controls the up and down movement of the table.
5. **Airline Assembly:** This is provided with a shut of valve, filter cum regulator.
6. **Inspection Lamp:** This facilitates the operator to control the forward and reverse movement and has a lamp for inspecting the Tyre.
7. **Operating Panel / HMI:** This provides the controls on operating the machine
8. **Control Panel:** This has all the control electronics for the machine.
9. **NHD Panel (Optional):** This has the High Voltage electronics for the NHD function.

3. Getting started / Assembly and Commissioning

Assembly and Commissioning Tools

1 Accessories

Standard	• Installation Kit
Optional	• Vacuum Cleaner • Nail Hole Detection System (NHD) - Auto Probe Positioning • Nail Hole Detection System (NHD) - Manual Probe Positioning

2 Tools

- Spanners
- Double End 10 - 22 1 Set
- Ring End 16 - 19 1 Set
- Box bit 24" with Extn. Rod 1 No
- Screw Driver - 6” & 8” 1 No. Each
- Line tester 1 No.
- Allen Keys - mm 1 Set
- Combination Pliers - 8", 10” 1 No. Each
- Nylon Hammer 1 No
- Cir-clip Pliers - Internal & External - 6” 1 No Each
- Ball Peen Hammer (500 Gr) 1 No.

3 Materials

- Air Lubricator oil ISO 68 or SAE 40 ¼ Ltr
- 2.5 Sqmm x 4 core flexible copper cable Length as per installed position

Preparing Product for Use: Installation and Commissioning

Unloading

Unload the machine only by using eye bolt provision given in the machine. Remove the machine bed bolt & take out the wooden pallet.

Positioning

The machine does not need any foundation. Machine should be grouted to the floor, at the indicated anchoring points. Position the machine in the desired location on a level surface. The area where the machine is located should be well illuminated and free of noise.

- Rear side of the machine should be provided with the clearance of 1.25 m, to do maintenance and service on the panels.
- Right side and left side of the machine should be provided with the clearance of 0.6 m from the Panels.
- Front side of the machine should be provided with the clearance of 1.6 m to bring and load the Tyre onto the machine.

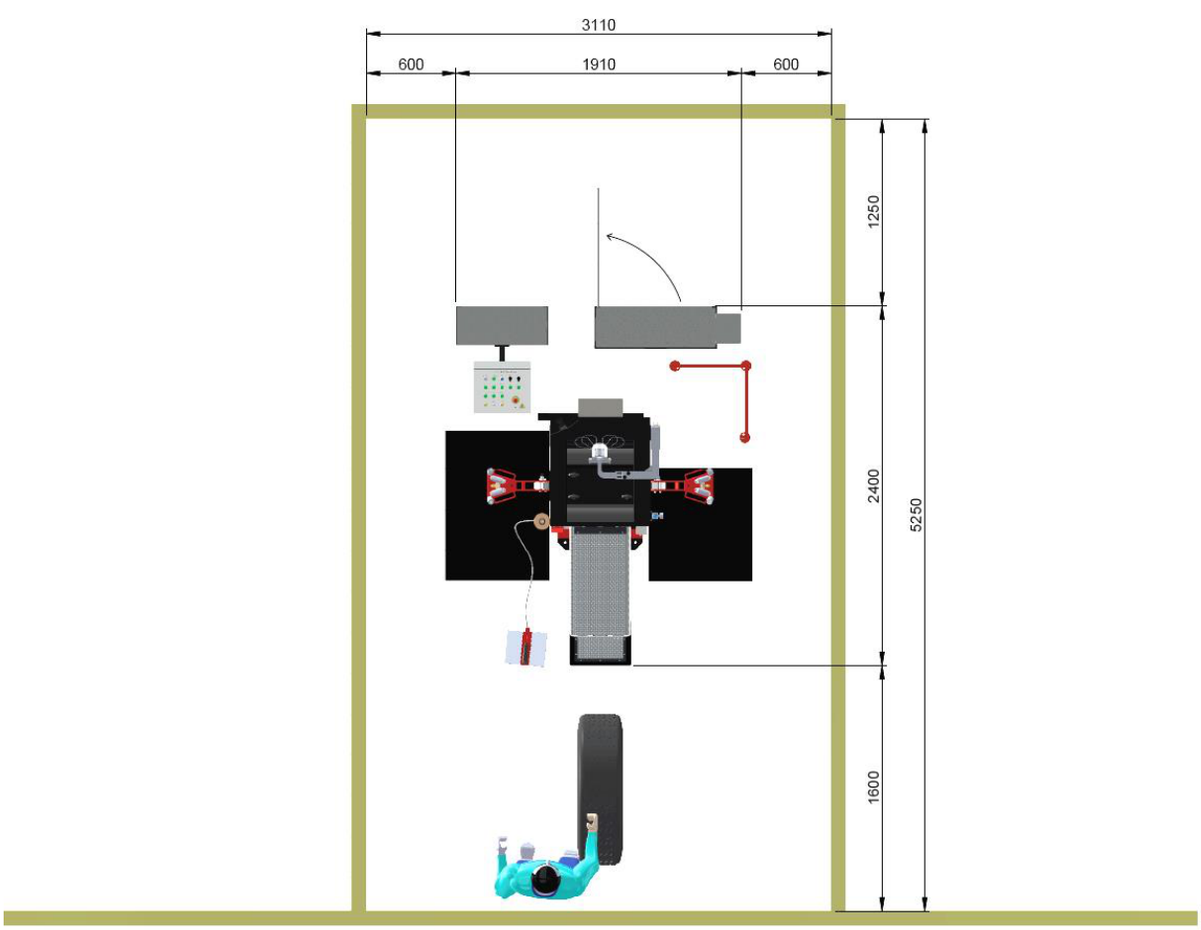


Figure 3-4 Machine Footprint

3. Getting started / Connection Layout

Connection Layout

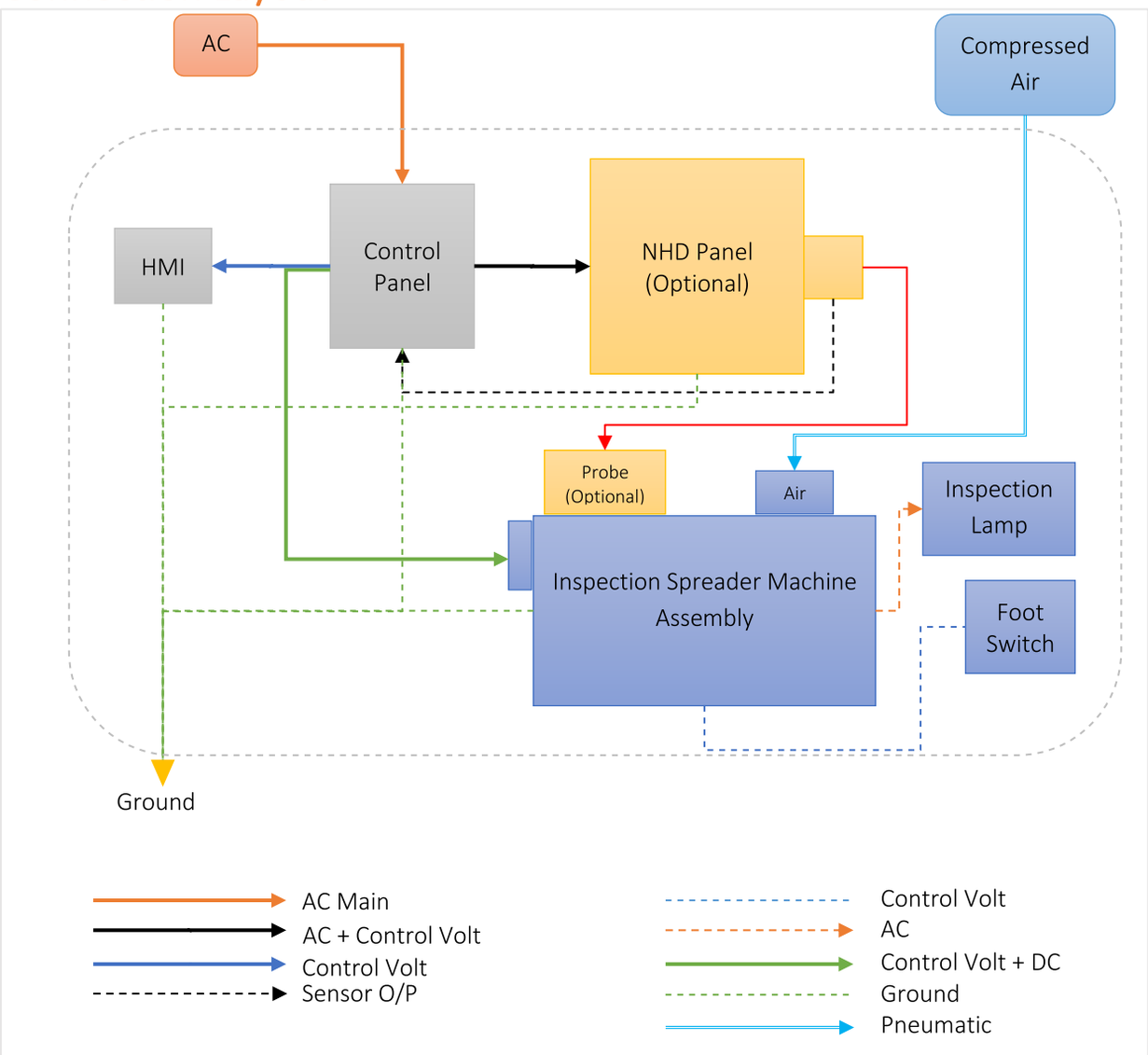


Figure 3-5 Connection Layout

3. Getting started / Connections

Connections

Connections section describes the below:

- Electrical Connection
- Grounding
- Pneumatic connection

⚠ **Caution** Possible equipment damage	The Pneumatic connections and Electrical connections should be made after completion of mounting instruction. After the connection, don't turn on the energy sources until understand the Operation Instructions. Failing of above caution will lead to machine damage or non-recoverable parts damage.

⚠ **Danger** Serious personal injury 	Electrical and Pneumatic source should be connected as specified in machine specification. Follow proper safety procedure. Don't Power on the machine until understand the machine operating procedure. Failing of this may lead to serious personal injury.

Electrical Connection

Follow the below instructions to establish power connection to this machine.

- Connect the machine with the help of 2.5 Sq mm copper 3 core cable.
- From the nearest air point, draw a line using PU12 Pneumatic hose with quick connection fittings.

AC Power supply

1. Verify the input voltage before connecting the power cables to the machine terminals.
2. Recommended input voltage is 110/220 V AC, 50/60 Hz, 1ϕ , 25 A (Factory set configuration is 220V AC, 50Hz).

Important: To operating with 110 V AC, 60Hz contact Elgi Technical Support Team to set the configuration.

3. Getting started / Connections

3. Connect the input supply as depicted in Fig 2-14.

Important: *The Earth cable (Yellow Green) of the AC input 3 core cable is internally connected to the machine Electrical panel and machine parts. Separate Ground connection to the machine body to be made as described in the Grounding section (Fig 2-16).*

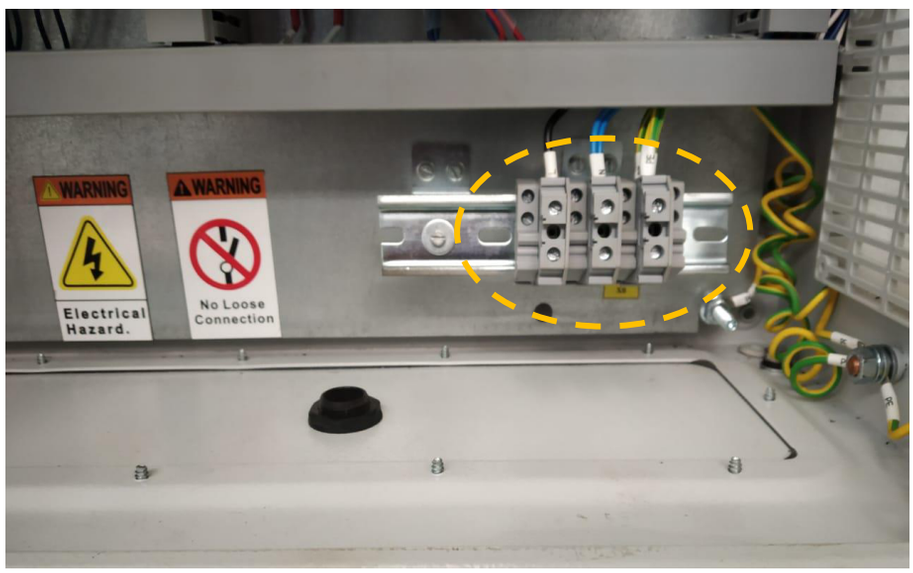


Figure 3-6 Electrical Connection – AC main line input at Control Panel

Caution Possible machine damage	Do not reverse the polarities when connecting the AC electrical power cables to your string cutting machine. Reversed AC supply connection will damage the electrical components.

Caution Possible machine damage	When relocating the machine to another country, verify the input voltage rating configured in the machine with the Voltage specification of the country where the machine is to be installed and operated. Failing to verify and modifying the configuration may possibly damage the machine.

3. Getting started / Connections

Grounding

The Inspection Spreader Machine **IS6-3-1**'s metal body needs Ground / Earth to be connected. Use suitable connector and copper wire to make ground connection.

Figure 3-7 PE / Ground connection on Panel and Machine

Pneumatic connection

Follow the below instructions to establish the pneumatic connection to this machine.

1. Connect PU-8 pneumatic tube to the quick connection port. Input pressure should be in the range of 8-12 bar.
2. Set the regulator at 8 Kg/cm2 by rotating the knob clockwise and then lock it.

Important: *Incoming air pressure should be maintained at 8 – 12 bar during machine operation. Impact – when the pressure goes less than 8 bar, it affects the next cycle of UP DOWN movement of inspection base.*

Figure 3-8 Pneumatic Connection at Mainframe machine assembly

4. Operation

Operation

Chapter Overview

This chapter provides the information to start up and control the Inspection Spreader Machine **IS6-3-1.**

This chapter describes the following sections:

- Controls and Indicators – displays and describes exterior controls and indicators on Control Panel, NHD Panel (Optional) and HMI / Operating Panel
- Initial Startup -Explains how to start the Inspection Spreader and to verify the proper operation and running.

4. Operation / Controls and Indicators

Controls and Indicators

The Controls and indicators section describes the below:

Control Panel

Control Panel has Isolator / LOTO switch

Panel Door has a white indicator which indicates the presence of electrical power in the Panel.

Connectors provided in the machine

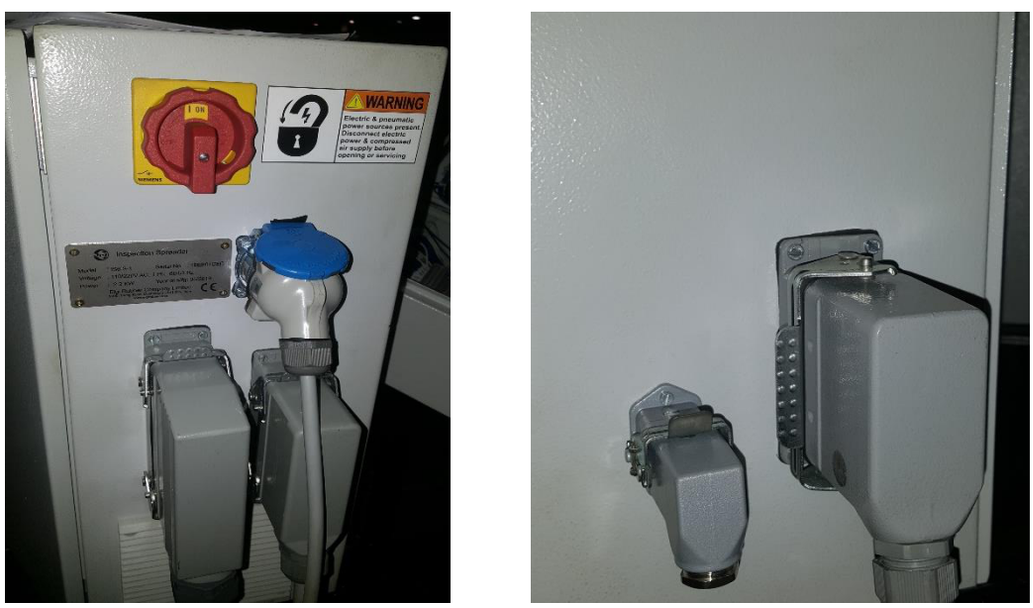


Figure 4-1 Connectors in Panels

ISOLATOR/LOTO:

- **ISOLATOR/LOTO** is the main Electrical **ISOLATOR** for this machine to Power ON / OFF.
- It is a Two position rotatory, maintained type **ISOLATOR** switch which has the indication mark **ON/OFF**.
- It's has the feature of **LOTO** (Lock Out & Tag Out), whenever the machine undergoes maintenance, the service personnel can use the safety padlock provision to isolate and lock the Electrical Energy of the machine for safety.

⚠ **Danger** Serious personal injury 	When the ISOLATOR/LOTO is in OFF position, the electrical energy to the electrical circuit only isolated. However, the incoming electrical supply still exists in input terminals of ISOLATOR/LOTO. The ISOLATOR/LOTO will only isolate the electrical supply to other electrical parts to the machine. It will not isolate the pneumatic energy source. When the ISOLATOR/LOTO is in OFF position, the pneumatic energy still exists in the machine. The pneumatic energy should be released from the machine manually by reducing pressure using regulator in pneumatic section.

4. Operation / Controls and Indicators

Operating Panel / HMI - Machine Control

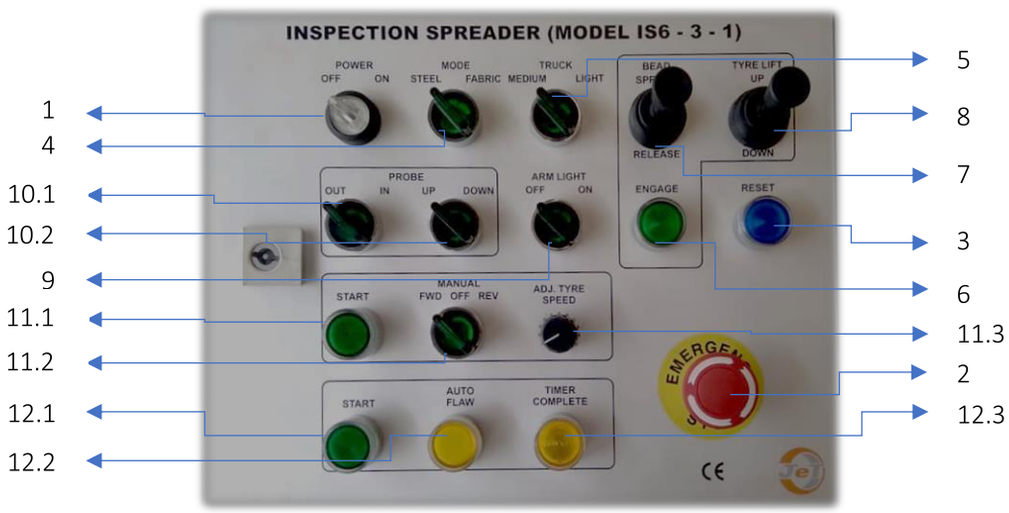


Figure 4-2 Operating Panel / HMI

Control Elements and Descriptions:

1. **POWER**

   POWER is a 2 way switch with WHITE indicator. White indicator shows the status of the POWER in the Control Panel and Readiness of the system for operation.

   1.1. **OFF**

   Selector switch in OFF position keeps the system not ready for operation.

   1.2. **ON**

   Selection switch in ON position keeps the system ready for operation.

2. **Emergency Stop**

   Emergency Stop – Mushroom Head push button provides machine halt function when it is pressed in emergency condition.

   Additional Emergency Stop provided in Machine main frame also.

3. **RESET**

   RESET push button to be pressed to set the machine ready for operation, every time when the machine is powered ON and Emergency Stop push button is disengaged.

4. **MODE** (Applicable only with NHD operation - optional)

   MODE – Two way selector switch allows to set the type of Tyre to be tested.

4. Operation / Controls and Indicators

4.1. **Steel**

Selector switch in STEEL position, when Tyre to be tested is with Steel

4.2. **Fabric**

Selector switch in FABRIC position, when Tyre to be tested is with Fabric

5. **TRUCK** (Applicable only with NHD operation – optional)

TRUCK is a 2 way selector switch to set the type of Tyre to be tested based on size

5.1. **MEDIUM**

Selector switch in MEDIUM position, when Tyre to be tested is of medium size

5.2. **LIGHT**

Selector switch in LIGHT position, when Tyre to be tested is of LCV type

6. **ENGAGE**

ENGAGE is a push button, to be used with BEAD joystick and TYRE LIFT joystick.

7. **BEAD** (To be operated along with ENGAGE push button)

BEAD is a 3 position joystick, stays in neutral position. It should be moved vertically for SPREAD and RELEASE operation.

7.1. **SPREAD**

Moving the joystick towards SPREAD, moves the claw holders towards outside and spread the beads. When not moved, joystick stays in neutral position.

7.2. **RELEASE**

Moving the joystick towards RELEASE, moves the claw holders towards inside and release the beads. When not moved, joystick stays in neutral position.

8. **TYRE LIFT** (To be operated along with ENGAGE push button)

TYRE LIFT is a 3 position joystick, stays in neutral position. It should be moved vertically for UP and DOWN operation.

8.1. **UP**

Moving the joystick towards UP, moves the main frame of the machine towards UP direction. When not moved, joystick stays in neutral position.

8.2. **DOWN**

Moving the joystick towards DOWN, moves the main frame of the machine towards DOWN direction. When not moved, joystick stays in neutral position.

9. **ARM Light**

ARM LIGHT is a 2 position selector switch which sets the LED light in the Claw holder arms.

4. Operation / Controls and Indicators

9.1. **ON**

ON position, sets the LEDs in the Claw holder arms to turn ON.

9.2. **OFF**

OFF position, sets the LEDS in the Claw holder arms to turn OFF.

10. **PROBE**

PROBE is an attachment to perform the Nail Hole Detection function (Applicable only with NHD – optional). Two 2 way selector switches (OUT-IN and UP-DOWN) perform the Probe movements.

10.1. **OUT-IN**

OUT-IN is a two way selector switch

10.1.1. **OUT**

Selector switch in OUT position moves the probe from inside to outside.

10.1.2. **IN**

Selector switch in IN position moves the probe from outside to inside.

10.2. **UP-DOWN**

UP-DOWN is a two way selector switch

10.2.1. **UP**

Selector switch in UP position moves the probe from down to up.

10.2.2. **DOWN**

Selector switch in DOWN position moves the probe from up to down.

11. **MANUAL**

MANUAL section has a push button with GREEN indicator, a 3 position selector switch and speed control Potentiometer.

11.1. **START**

START push button, rotates the Tyre in FWD or REV direction according to the position of the 3 position selector switch FWD/OFF/REV.

11.2. **FWD OFF REV**

FWD OFF REV is a 3 position selector switch, to set the Tyre rotation direction in Forward, OFF and Reverse respectively.

11.3. **ADJ TYRE SPEED**

ADJ TYRE SPEED is a potentiometer which sets the Tyre rotating speed (works only in MANUAL operation)

4. Operation / Controls and Indicators

12. **AUTO** (applicable only with NHD operation – optional)

AUTO section has a push button with GREEN indicator, a push button with YELLOW indicator and a separate YELLOW indicator for TIMER COMPLETE

12.1. **START**

START is a push button with GREEN indicator to start the AUTO cycle. GREEN indicator GLOWS bright when the AUTO cycle is started. Pressing again stops the AUTO cycle. AUTO cycle completes with the TIMER COMPLETE indication.

12.2. **FLAW**

FLAW is a push button with YELLOW indicator, Glows when a flaw is detected during NHD operation. Push button is to verify the detected flaw.

12.3. **TIMER COMPLETE**

TIMER COMPLETE is an YELLOW colour indicator, GLOWS when AUTO START function completes the Tyre rotation as per the set timer.

Caution Serious personal injury 	The Emergency Stop Button is only for stopping the machine function during uncertainty situation. It is not a regular Function Button to Stop the machine. Do not use the Emergency Stop Button as a safety interlock. It will not protect from any accident during machine troubleshooting / operation / maintenance. Use **ISOLATOR/LOTO** to isolate the electrical energy of machine. Use LOTO while doing troubleshooting or maintenance.

Caution Possible equipment damage	The Panel Cooling Fan is fixed inside the enclosure with filter. Don't insert or keep any items near to this Cooling Fan. It automatically runs when **ISOLATOR/LOTO** is ON. Periodically check and ensure that the cooling fan is running. Failure of cooling fan will lead to Panel elements getting overheating and eventual damage.

4. Operation / Initial Startup

Initial Startup

Danger Serious personal injury 	Read and familiarize with all the instructions given in this manual. Do not bypass the safety and Operating Instruction which is given in this manual. Do not energize the machine with any out of specification source like over voltage or low-pressure air supply. Failing this will lead to serious personal injury.

Powering the Energy Sources of machine

The Inspection Spreader machine **IS6-3-1** needs two type of energy sources.

1. Electrical Energy Source
2. Pneumatic Energy Source

1. Electrical Energy Source.

- Establish the electrical connection as per Fig 2-14.
- Energize the Inspection Spreader with single Phase 110 / 220 V AC, 60/50 HZ AC supply.
- Refer the detailed instructions given in section 2-Getting Started / connections / Electrical connection.

2.Pneumatic Energy Source.

- Establish the pneumatic connection as per Fig 2-15.
- Energize the string cutting machine by providing 8 bar air pressure.
- Refer the detailed instructions given in section 2-Getting Started / connections / Pneumatic connection.

Danger Serious personal injury 	Before turning on the main **ISOLATOR/LOTO**, ensure that the main electrical panel door in the machine should be in closed condition and the Emergency Button should be in released condition. Failing of this will lead to Serious personal injury.

Pre - Operation Checks

- Remove the shipment clamps that are provided below the table, which are marked and painted red/orange (Refer to included drawings)
- When moved to new location where the supply voltage is different than the previous location, check with Elgi Technical Support to set up the system suitable for the new location.
- Check for the free movement of all the moving parts.
- Check that all nuts & bolts are properly tightened.
- Check if the inserting locks of the claws are uniformly fitted.
- Check if the roller is seated in place.
- Check and ensure no twists, crush in airline.
- Check the bulb wires, they should not be touching the body.
- Check for any earth leakage (always maintain the Earth (PE) – Neutral (N) Voltage < 2 V, preferred <1 V)
- Check for any air leakage on the pneumatic lines.

Important: It is recommended to conduct the above safety checks weekly once and document it. This is to ensure that the human and machine safety functions are working properly. Practicing these safety checks will reduce accidents and these safety check documents can be used for safety audit and quality audit purposes.

4. Operation / Operating Instruction

Operating Instruction:

Inspection Spreader

1. Roll the Tyre over the ramp & position it in between the rollers (i.e Tyre is rested on rollers only)
2. Put the claws on the bead. Based on bead width the claw height can be adjusted.

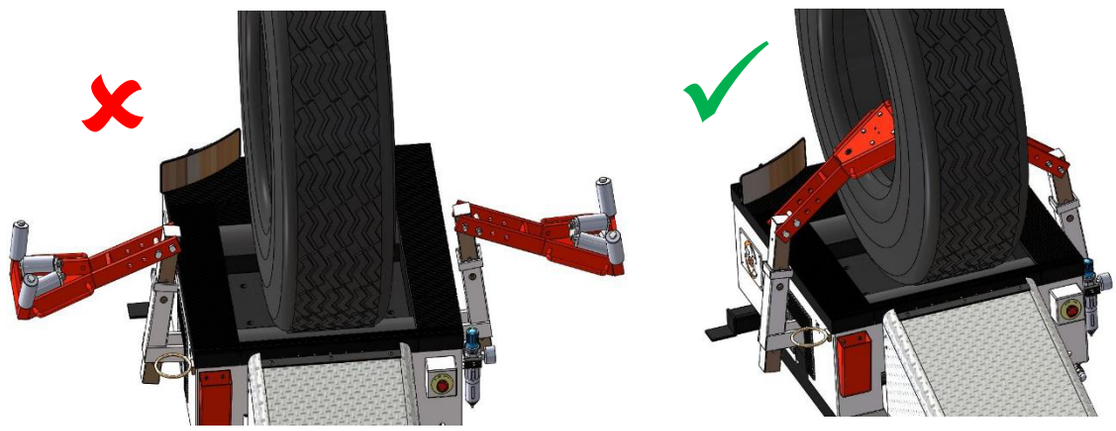


Figure 4-3 Wrong Method (Left) and Correct Method (Right) of placing Tyre and Claw Holder

⚠ **Danger**	
Serious personal injury	*Without Claw holder placing inside the Tyre, rotation of Tyre should not be done, as it may make the Tyre instable and thereby making the Tyre to fall on the sides.* *Failing this will lead to serious personal injury*

3. Expand the claw by pressing the ‘ENGAGE’ push button + 'SPREAD/RELEASE' joystick on the operating panel as highlighted in Blue dotted lines in the Figure 4-4.

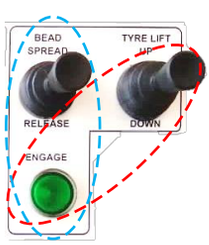


Figure 4-4 Engage and Joystick

4. Operation / Operating Instructions

4. Lift the machine to operator convenient height by pressing 'UP/DOWN' joystick on the operating panel as highlighted in Red dotted lines in the Figure 4-4.
5. For claw lamp, put the ‘ARM LIGHT’ selector switch to ON on the operating panel.

Figure 4-5 Arm Light

6. Rotate the Tyre by
    1. pressing FORWARD/REVERSE foot pedal switch or
    2. by using the FORWARD/REVERSE switches on the Inspection Lamp or
    3. by using START push button and FWD/OFF/REV 3 position selector switch on the Operating Panel / HMI.

Figure 4-6 Tyre Rotation Controls

7. Press the “ON switch” on Inspection lamp.
8. Visual/Manual inspection can be done by following the usual inspection method.

Nail Hole Detection (NHD) operation

1. For NHD, switch the claw lamp OFF
2. Choose the type of Tyre, using MODE selector switch STEEL/FABRIC by selecting the switch on the operating panel / HMI.
3. Choose the size of the Tyre, using TRUCK selector switch MEDIUM/LIGHT by selecting the switch on the operating panel / HMI.
4. Press the RESET button on the operating panel to clear the previous flaws pending detected.
5. Press the PROBE IN switch to position the PROBE inside the Tyre

4. Operation / Operating Instructions

Important:

- Default position of PROBE is at the UP and OUT position.
- For LIGHT TRUCK Tyre, before loading the Tyre, PROBE has to be brought IN and DOWN first and then bringing UP and OUT would position the PROBE at suitable height.
- Without bringing the PROBE IN, DOWN movement of PROBE is not allowed for safety reasons.
- Without bringing the PROBE UP, OUT movement of PROBE is not allowed for safety reasons.

6. Press the PROBE DOWN switch to place the PROBE in between the beads.
7. Press the START BUTTON in AUTO section. The Tyre rotation will start and continues till TIMER COMPLETE.

Important:

- In AUTO cycle, TYRE is allowed to rotate only in REV direction and FWD direction is not possible.

8. If Nail Hole is found:
    a) The Tyre rotation will stop & the FLAW lamp button will glow on the operating panel.
    b) To position the high spark area,
        1. In the MANUAL section, select the FWD / REV selector switch to change the direction of TYRE rotation and Press the START push button or
        2. press the foot pedal in FWD or REV direction.
    c) Remove the NDT Probe arm by choosing PROBE UP & OUT.
    d) Mark the spark notified area.
    e) Now again put the probe inside of the Tyre & start the AUTO cycle again from point # 7.
    f) Repeat the above said process to complete the Tyre cycle.
9. If Nail hole is not found:
    a) If there is no Nail hole, the Tyre will rotate fully & TIMER COMPLETE light will glow.
    b) Switch OFF the NDT
    c) Press the PROBE UP switch.
    d) Press the PROBE OUT switch.
    e) Switch OFF the claw lamp & remove the claw from the Tyre.
    f) Roll the Tyre off of machine on ramp.

Important:

- IN case of any malfunction, Hit the emergency button on the operating panel & call for service technician.

4. Operation / Do’s and Don’ts

Do’s and Don’ts

Do's

a) Place the machine in a quiet open space where there is ample light and ventilation.

b) Use recommended personal protecting equipment

c) Ensure that there is no leakage in the pneumatic valve and cylinder.

d) Ensure correct pressure for cylinder as recommended are maintained.

e) Ensure always working tools are provided in the pocket at the side of the operating table (mainframe) highlighted in Yellow dashed lines in the fig 4.7

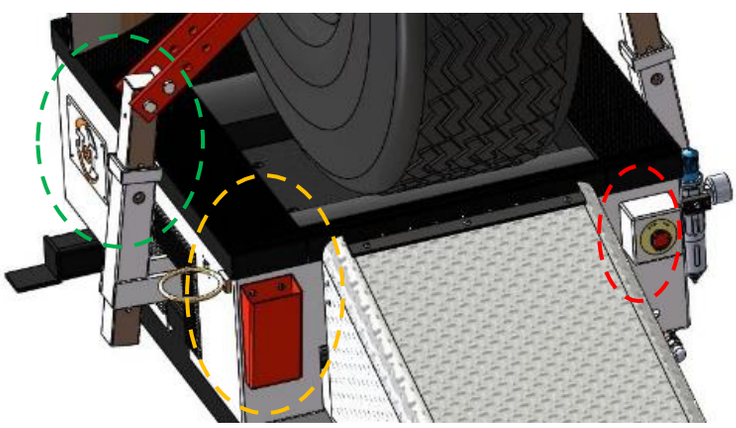


Figure 4-7 Tyre Rotation Controls

f) Ensure that the locks are inserted properly in the Claw holder arm highlighted in Green dashed lines in fig 4.7

g) Use the Emergency Stop provided in the machine whenever necessary, highlighted in Red dashed lines in fig 4.7

h) Locking nuts of the Tyre claws are to be tightened firmly.

i) Ensure the lift is at the bottom while loading & unloading the Tyre.

j) Use ramp only to load all type of Tyres on the machine.

k) After closing the claw holders, switch on the claw lights.

l) Lubricate the chains weekly.

m) Use eye bolts only to lift the machine.

4. Operation / Do's and Don'ts

Don'ts

a) Do not load the Tyre without ensuring the claw nut and telescopic arm adjustments are proper.

b) Do not place fingers in between the claw arms

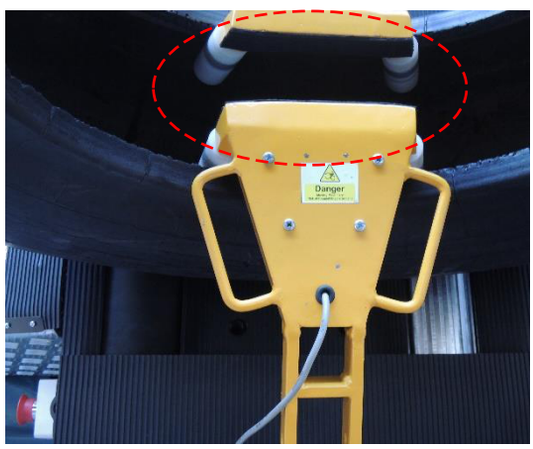


Figure 4-8 Claw holder arm

c) Do not swap the Claw arms from left to right or right to left to avoid wire numbering mismatch.

d) Do not operate the machine until the shipment locks are removed.

e) Do not place foot under the working table while operating.

Figure 4-9 Warning – Foot Crush

f) Do not touch the Tyre when NHD function is ON during AUTO cycle.

g) Do not operate NHD function without wearing Insulation Glove (Refer recommended PPE)

h) Do not operate the machine without wearing industrial safety goggle.

i) Do not operate the machine without wearing industrial safety shoes.

j) Do not operate the NHD function without wearing industrial electrical safety shoes.

k) Do not operate NHD function without insulation mat on the floor.

4. Operation / Do's and Don'ts

l) Do not remove the protection guard (applicable only if purchased with NHD system)

Figure 4-10 Guard to avoid impact hazard

m) Do not remove the protection guard (applicable only if purchased with NHD system)

n) Do not touch the NHD probe when NHD function is ON.

o) Do not attempt to place your fingers or any other tools between the rollers and machine main frame.

Warning Serious personal injury 	This Machine has rollers which is operated by steady torque motor. Do not allow or Direct or Indirect contact with Roller Section. Don't Try or alter the safety protection at Roller section. Direct or indirect contact with Roller parts may leading to permanent disability or finger loss.

Danger Serious personal injury 	While operating NHD function in AUTO cycle, High Voltage is applied on the Tyres. Touching the Tyre and Probe may cause serious personal injury. Operating NHD without insulation mat and electrical safety shoes, may cause serious personal injury

5. Maintenance & Troubleshooting

Maintenance &Troubleshooting

Chapter Overview

Use information in this chapter to perform maintenance or troubleshooting Inspection Spreader IS6-3-1

This chapter contains the following information:

- Maintenance – describes typical string cutting machine maintenance procedures.
- Troubleshooting – explains how to troubleshoot the string cutting machine when problem occurs.

5. Maintenance & Troubleshooting / Maintenance

Maintenance

The Maintenance section includes the below:

- Disabling the Inspection Spreader.
- Daily inspections.
- Cleaning Machine Parts.

Disabling the Inspection Spreader

Before performing any maintenance on your Inspection Spreader, be sure to completely disconnect the machine by disconnecting electrical and pneumatic energy source from the machine.

Daily inspections

Perform the following steps daily to keep your Inspection Spreader machine in optimum operation condition. Except for the procedures described below, no other service is required or should be attempted.

Caution Possible equipment damage	Operating the Inspection Spreader without performing the daily check will lead to the possibility of machine parts getting damage or the life time of machine spare parts would reduce.

- Check the **Machine Control Panel** is in closed condition.
- Check any loose parts in **Machine Control Panel** (control and indicators).
- Check **Machine Control Panel** Inlet Cooling filter and exhaust cooling filter & fan is not blocked.

Cleaning of Machine Parts.

Perform the following steps daily to keep the Inspection Spreader machine clean and healthy.

- Avoid keeping any unwanted objects / irrelevant material closer to the Inspection Spreader machine.
- Clean the machine with the help of clean cloth. If needed use cleaning agents like IPA for removing stains.

Troubleshooting

Introduction

This section helps to isolate problems in electrical and electro pneumatics parts only. Problems in DC motor, Drive module are outside the scope of this guide because they are not user-serviceable assemblies; do not attempt to repair them.

Contact Elgi authorized service person for repair/replacement information. For troubleshooting the Inspection Spreader, it is necessary to understand the sequence of events that must happen before turning the machine ON and operate.

Before you attempt to perform any service, we advise you to read the entire documents, troubleshooting guide and review the connection layout diagram, electrical schematics and pneumatic schematics. Symptoms and possible causes are highlighted by dark print and bullet points throughout this document. Information about each symptom and cause can be found in following paragraphs.

Caution Possible equipment damage	Attempting repair of Inspection Spreader without the express authorization of Elgi Rubber Company Limited will void the product warranty. If troubleshooting or service assistance is required, please contact Elgi Customer Service.

Danger Serious personal injury 	Read and familiarize with all the instructions which is given in this manual. Don't bypass any safety and Operating Instruction which is given this manual. Use recommended PPE while troubleshooting the machine with electrical and pneumatic energy sources. Failing of this will lead to serious personal injury.

Preventive Maintenance

Preventive Maintenance Program – Inspection Spreader IS6-3-1

Month	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	Sign
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Daily
- Clean the Machine thoroughly.
- Drain the water from the filter at the inlet.

Weekly
- Clean and apply oil all pins and piston rods with SAE 40 oil.
- Check the pneumatic fittings and lines for any leak.

Monthly
- Check the filters in the panels.
- Replace if required.

Trouble Shooting

S.No	SYMPTOMS / PROBLEMS	POSSIBLE CAUSES	REMEDIES
1	Working table not lifting	1. Air pressure line not connected. 2. Air pressure not suficient. 3. Leakage of Air 4. Cylinder not connected, or pneumatic lines are damaged	1. Connect the line 2. Replace the damaged line 3. Check compressor line & set air pressure
2	Claws not expanding	1. Leakage of air 2. Cylinder not connected, or hose is damaged 3. Improper tightening of the tie rods	1.Check and correct 2. Inspect, replace damaged seals. 3. Tighten the tie rods
3	Jerky movement of Tyre Lift cylinder	1. Low air pressure 2. Leakage of airlines 3. Cylinder seal faulty 4. Improper tightening of the tie rods	1. Correct the air pressure to be between 6kg/cm2 to 8kg/cm2 2. Check and correct 3. Inspect replace damaged seals 4. Check and tighten Tie rod
4	Working table dropping suddenly	1. Solenoid damaged 2. Valve seal damaged	1.Check and replace 2. Check and replace
5	Rollers rotating in opposite direction with respect to control switch	1. Incoming lines are Changed	1. Check the incoming and correct the phase sequence in the incoming main line. If it is correct, check the machine incoming line.
6	Lamp not working (Claw lamp & Hand-Held lamp)	1. Bulb fused 2. Electrical line to bulb has loose connection 3. Control switch (on/off) loose connection	1. Replace the bulb 2. Check the connection & correct 3. Check the connection & correct
7	Roller Drive Motor not working	1. Electrical line not connected 2. Loose connections in the motor terminals 3. Wiring circuit of the motor has loose connection 4. Coil inside motor is Short-Circuited	1. Check and correct 2. Check and correct 3. Check the circuit and correct 4. Check the windings and replace if needed (rewind)
8	Foot switch not working	1. Fault in electrical connections	1.Check and correct, if required replace
9	Body shock	1. Earthing not connected 2. Loose connection	1.Check and correct 2. Check and correct
10	Roller Drive Motor tripping frequently	1. Overload on Motor 2. Overload relay is faulty 3. Setting of amps in overload relay is less 4. Fault in the motor winding 5. Fault in electric circuit	1.Check & correct the drive mechanism 2. Check and replace 3. Check and correct 4. Check the winding & replace (if needed, rewind) 5. Check with electrical drawings & correct it.
11	Tyre jerking during rotation	1. Tyre not centred on the working table 2. Claw not seated in proper position 3. Uneven wear	1. Centre the Tyre properly 2. Check and correct 3. Correct the Tyre wear

6. Technical Reference

Technical Reference

Chapter Overview

Information provided in this chapter are technical references of this Inspection Spreader Machine and will be useful in maintenance aspects for the technicians while troubleshooting.

This chapter contains the following information.

- Technical Overview – briefly describes the basic concept.
- Parts List
    - Exploded View
    - Ordering Information

6. Technical Reference / Technical Overview

Technical Overview

The Technical overview section includes the below:

- Key features.
- Machine working concept.

Key features

- This machine works with standard relay logic with all the necessary safety features required.
- This Machine can work with two different electrical configurations (110V or 230V configuration), may need to modify the connections in the control transformers in the Control Panel and NHD Panel (optional)
- This Machine conforms with CE

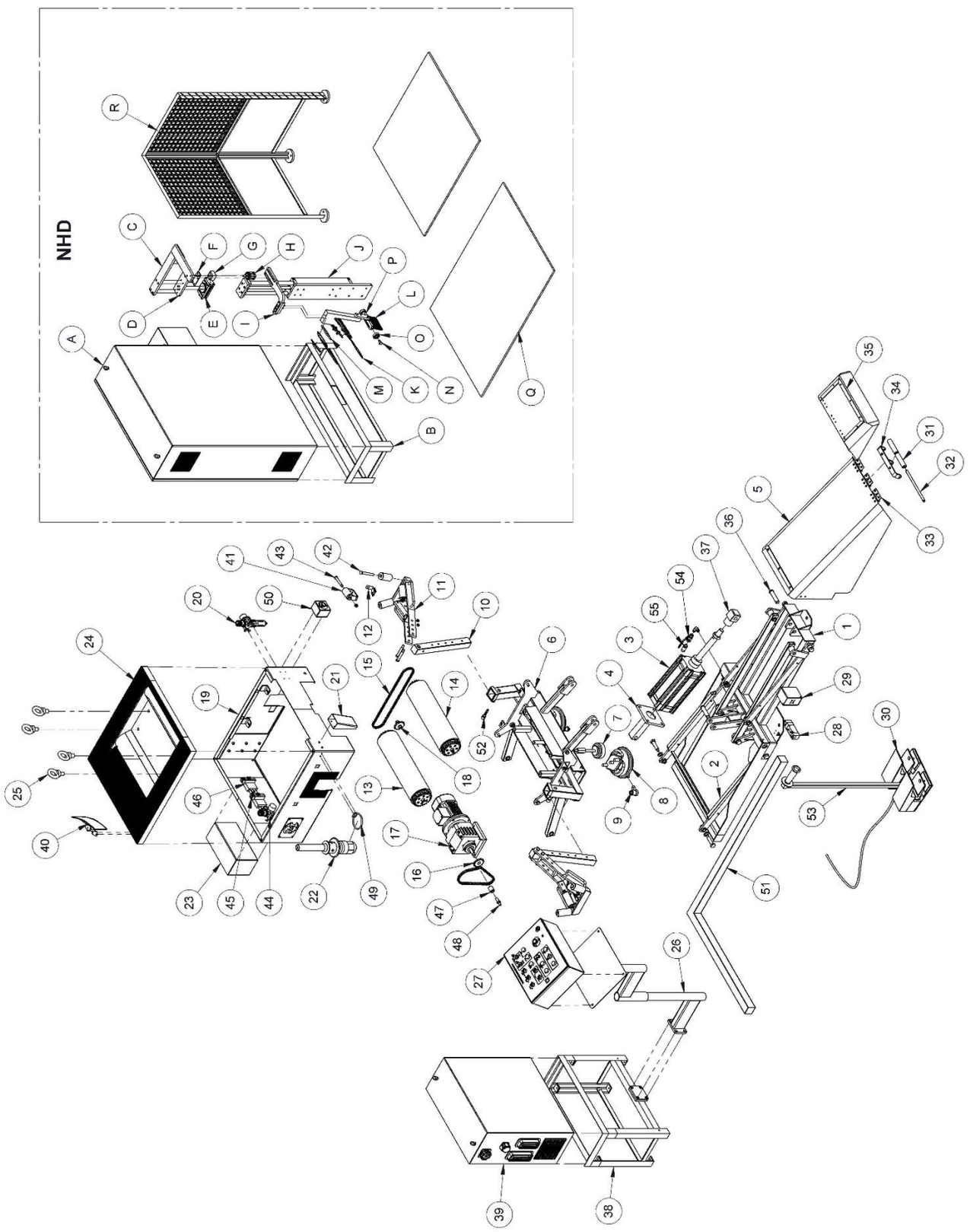
Machine working concept.

- Inspection spreader Machine is designed to check the suitability of Tyre for retreading.
- Base machine helps to visually check the defects in the casing of the Tyre.
- Nail Hole Detector works based on the HV discharge through the defective area of the Tyre.

6. Technical Reference / Parts List

Parts List

Exploded View



6. Technical Reference / Parts List

Order Information

S.No.	ORDER CODE	DESCRIPTION	UOM	QTY
1	MA0561CE-1	BASE FRAME - IS5	NOS	1
2	MA0561CE-2	LIFTING LEVER	NOS	1
3	MA0561CE-3	PNEUMATIC CYLINDER-125-160	NOS	1
4	MA0561CE-4	CYLINDER REAR MOUNT ASSEMBLY - IS5	NOS	1
5	MA0561CE-5	RAMP AL - IS5	NOS	1
6	MA0561CE-6	ROLLER FRAME - IS5	NOS	1
7	MA0561CE-7	VIBRO MOUNT ASSEMBLY	NOS	1
8	MA0561CE-8	BRAKE CHAMBER	NOS	2
9	MA0561CE-9	QUICK EXHAUST VALVE	NOS	2
10	MA0561CE-10	TELESCOPIC ARM - IS5	NOS	2
11	MA0561CE-11	CLAW HOLDER ASSEMBLY - IS5	NOS	2
12	MA0561CE-12	INDUCTION LAMP 24V/21W	NOS	2
13	MA0561CE-13	DRIVE ROLLER - IS5	NOS	1
14	MA0561CE-14	DRIVE ROLLER - (RUBBERIZED)	NOS	1
15	MA0561CE-15	INDUSTRIAL CHAIN 1/2" x 5/16" - ROLLON	METER	2
16	MA0561CE-16	SPROCKET 1/2" PITCH 14 TEETH	NOS	1
17	MA0561CE-17	PDMC MOTOR 0.5HP/180V/1500RPM/FLANGE MOUNT	NOS	1
18	MA0561CE-18	IDLER SPROCKET 14 TEETH	NOS	1
19	MA0561CE-19	MAIN FRAME CABINET - IS5	NOS	1
20	MA0561CE-20	AIR FILTER CUM REGULATOR LFR-1/4-D-MINI	NOS	1
21	MA0561CE-21	TOOLS BOX - IS5	NOS	1
22	MA0561CE-22	INSPECTION LAMP HOLDER – IS6	NOS	1
23	MA0561CE-23	ELECTRICAL TERMINAL BOX ASSEMBLY	NOS	1
24	MA0561CE-24	COVER MAIN FRAME CABINET - IS5	NOS	1
25	MA0561CE-25	EYE BOLT - 3/4" BSW - 1 T	NOS	4
26	MA0561CE-26	OPERAITNG PANNEL BOX STAND	NOS	1
27	MA0561CE-27	OPERAITNG PANNEL BOX ASSEMBLY	NOS	1
28	MA0561CE-28	SPOOL VALVE	NOS	1
29	MA0561CE-29	TERMINAL BOX COVER ASSEMBLY	NOS	1
30	MA0561CE-30	FOOT SWITCH	NOS	2
31	MA0561CE-31	RAMP FRONT ROLLER	Nos	2
32	MA0561CE-32	RAMP ROLLER PIN	Nos	1
33	MA0561CE-33	HINGE -RAMP	NOS	3
34	MA0561CE-34	RAMP ROLLER MOUNTING BRACKET	NOS	1
35	MA0561CE-35	RAMP FRONT END	NOS	1
36	MA0561CE-36	PIN - IS 5 - FRONT CYLINDER HINGE	NOS	1
37	MA0561CE-37	ADAPTER - IS 5 - CYLINDER MOUNTING FRONT	NOS	1
38	MA0561CE-38	ELECTRICAL PANEL FRAME	NOS	1
39	MA0561CE-39	ELECTRICAL PANEL	NOS	1
40	MA0561CE-40	INSPECTION MIRROR	NOS	1
41	MA0561CE-41	TYRE CLAW ROLLER	NOS	8
42	MA0561CE-42	TYRE CLAW ROLLER PIN M12	NOS	4
43	MA0561CE-43	TYRE CLAW ROLLER PIN M10	NOS	4

6. Technical Reference / Parts List

S.No.	ORDER CODE	DESCRIPTION	UOM	QTY
44	MA0561CE-44	REGULATOR FR-1/4	NOS	1
45	MA0561CE-45	MANIFOLD ASSEMBLY VTUG-14 -- T14S-GM+HS3	NOS	1
46	MA0561CE-46	MANIFOLD ASSEMBLY VTUG-14 -- Q6S-GG+HS3	NOS	1
47	MA0561CE-47	CHAIN TENSIONER ROLLER	NOS	1
48	MA0561CE-48	CHAIN TENSIONER PIN	NOS	1
49	MA0561CE-49	LAMP HOLDER RING	NOS	1
50	MA0561CE-50	EMERGENCY SWITCH	NOS	1
51	MA0561CE-51	CABLE TRAY	NOS	1
52	MA0561CE-52	HOLDER ARM LOCK PIN	NOS	2
53	MA0561CE-53	FOOT SWITCH FRAME	NOS	1
54	MA0561CE-54	BALL VALVE- AIR INLET	N OS	1
55	MA0561CE-55	QUICK COUPLER	NOS	1
		NHD		
S.No.	ORDER CODE	DESCRIPTION	UOM	QTY
A	MA0561CE-A	NHD PANEL BOX	NOS	1
B	MA0561CE-B	NHD PANEL BOX FRAME	NOS	1
C	MA0561CE-C	ROTATING ARM	NOS	1
D	MA0561CE-D	TOP PLATE - ROTATING ARM	NOS	1
E	MA0561CE-E	SEMI-ROTARY DRIVE	NOS	1
F	MA0561CE-F	LOCK PLATE - ROTATING ARM	NOS	1
G	MA0561CE-G	AL SPACER BOLCK	NOS	1
H	MA0561CE-H	COMPACT CYLINDER	NOS	1
I	MA0561CE-I	ADJUSTABLE ARM	NOS	1
J	MA0561CE-J	GUIDE CYLINDER	NOS	1
K	MA0561CE-K	BEAD WIRE - NHD	SET	1
L	MA0561CE-L	PROBE CHAIN	SET	1
M	MA0561CE-M	PADDLE - NHD	SET	1
N	MA0561CE-N	BEARING PIN NHD	NOS	1
O	MA0561CE-O	BALL BEARING - NHD	NOS	1
P	MA0561CE-P	PROBE END ROD	NOS	1
Q	MA0561CE-Q	INSULATION SAFETY MAT - NHD	SET	1
R	MA0561CE-R	SAFETY GUARD - NHD	NOS	1