AS Series Checkweighers

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CAUTIONARY ADVICE

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2.1 Safety Warnings

Listed below are all the safety warnings that are used throughout this manual. It is strongly recommended that personnel who are, or will be, responsible for either installing, maintaining or operating the equipment described in this manual should read and understand these warnings.

1. **LETHAL HAZARD – ELECTRICAL SUPPLIES**. A current of 100 milli-amps passing through the body for one second can kill. This can occur at voltages as low as 35V a.c. or 50V d.c. The equipment described in this manual uses electrical power which can be lethal. Unless absolutely necessary, cleaning, inspection and maintenance must not be carried out without first isolating the equipment from all electrical supplies.

2. **LETHAL HAZARD – COMPRESSED AIR SUPPLIES**. The equipment described in this manual may be supplied with a compressed air supply operating at a pressure which may be lethal. Unless absolutely necessary, cleaning, inspection and maintenance must not be carried out without first isolating the equipment from all compressed air supplies.

3. **WORKING ON EQUIPMENT**. If it is essential to work on the equipment with electrical and/or compressed air power connected, the work must be undertaken only by qualified personnel who are fully aware of the danger involved and who have taken adequate safety precautions to avoid contact with dangerous voltages and/or compressed air supplies.

4. **OPERATION IN A WET LOCATION.** The AS1200 is only designed for use in dry environments and must not be used in a wet location. If any other type of machine is operated in a wet location, it must be used in conjunction with either a Ground Fault Interrupter or RCCB.

5. **REJECT DEVICES**. At no time, with compressed air and/or electrical power applied to an automatic reject device, should any part of the body be placed within the operating area of the reject device.

6. **EXCESSIVE NOISE**. When an air blast reject device operates, the noise emitted may constitute a noise hazard. While short exposure to this noise will not cause permanent damage to hearing, prolonged exposure may cause some damage. It is recommended that ear defenders are worn by personnel who are regularly exposed to the noise.

7. **HEAVY EQUIPMENT**. The equipment described in this manual is extremely heavy and considerable care must be taken when handling it. Sufficient personnel and a suitable fork-lift truck or pallet truck must be used to ensure safe handling.

8. **CONTAMINANTS**. Oils and greases must always be handled with care. Prolonged bare skin exposure to certain oils and greases can cause skin problems. Always handle oils and greases in accordance with the manufacturer's instructions.

9. **TRAPPED FINGERS**. Do not place fingers on the underside of the checkweigher conveyors when the machine is operating. It is possible for fingers to be trapped and subsequently crushed between a moving and fixed component of the machine.

10. **O.S.H.A**. “In the United States of America, the Occupational Safety and Health Administration (O.S.H.A.) Acts quite clearly place the burden of compliance on the user of equipment, and the acts are generalized to the extent that determination of adequacy of compliance is a judgement decision on the part of the local inspector. Hence Loma cannot be held responsible for meeting full requirements of O.S.H.A. or O.H.S.A. with regards to any equipment supplied, nor can Loma be held liable for penalty which may be assessed for failure to meet the requirements of the acts as interpreted by an authorized inspector. Loma, however, does act in a responsible manner with regard to safe design of equipment and will always work with customers to assist where possible in the remedy of any violations at a reasonable cost to the buyer.

2.2 Emergency Procedures

2.2.1 Emergency Shutdown Of Conveyors

This equipment is fitted with an emergency ‘Stop’ button. This is mounted on the Control Unit and is coloured red. In the event of an emergency which requires the checkweigher to be immediately stopped, press the ‘Stop’ button.

2.2.2 Dealing With Fire

In the unlikely event of fire occurring in an item of equipment manufactured by Loma Engineering, it is important that a fire extinguisher containing the correct type of extinguishing material is used. Fire on electrical equipment must be extinguished using a dry powder extinguisher (Blue label).

2.3 Quality Assurance

By your selection of a Loma checkweigher you have demonstrated your intention to assure the quality of your products, and thereby protect your customers.

The performance of an automatic weighing system is influenced by the item to be inspected and the environment that the equipment is operated in. Therefore the following points are recommended:-

1. Ensure that your Loma checkweighing system is commissioned by a Loma engineer or authorised representative.

2. Before using the system in production for the first time, check the accuracy and performance with each package or product type (i.e. size, shape and weight) and record this information for future reference. Repeat these performance checks when new package or product types are added, or after major equipment repair or service.

3. Check local and national legislation to ensure that any relevant allowances are added to the mandatory inspection set points.

4. Carry out a routine check on performance and re-calibrate if the **average** indication of the test pack shows an unreasonable error. If **repeatability** is poor, check the following:

   that the entered data matches the current product,

   that the product is presented to the machine with correct orientation,

   that the product is presented to the machine with regular spacing,

   that the machine is stable,

   that all conveyors are running at the correct speed,

   that the machine is not subjected to high levels of vibration,

   that the machine is not subjected to air flow from air conditioning or open doors.

If necessary call your local Loma Service centre or authorised representative.

5. Routine performance checks should be carried out at least on a daily basis, but preferably at the beginning of each shift. (Check local/national legislation).

6. Document test procedures and test frequency to ensure consistency by all your staff (this follows the general principles of ISO 9000).

7. Record all routine test results and investigate variations from the normal or initial performance data.

8. Ensure the equipment is cleaned and maintained regularly; preventative maintenance can save money in the long term.

9. Finally, ensure your staff are trained in the use, operation and maintenance of this inspection equipment. Contact your local Loma Service centre or authorised representative for details on training.

PRODUCT DESCRIPTIONS

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AS1200C

3.1.1 Introduction

The Loma AS Series Powered Weigh Table (PWT) Checkweigher, which includes conveyor modules with 22mm or 25mm (PWT) & or 38mm (Infeed & Outfeed) diameter rollers.

Figure 3.1 A general view of AS1200C Series PWT Checkweigher

3.1.2 Technical Specification AS1200C

Dimensions ..... Dependent on line height and reject type

Weight ..... Displayed on identification plate mounted on frame

Power Requirements

Voltage

Standard Options ..... 220/240V, single phase, 50Hz
..... 110V, single phase, 60Hz

Non-Standard Options ..... 200V, single phase, 50Hz
..... 100V, single phase, 50Hz

Voltage Tolerance ..... +10% to -15%

Power Consumption 325VA

Reject air supply

Flipper

Optimum pressure ..... 80 psi (5.5 bar)

Minimum pressure ..... 65 psi (4.5 bar)

Maximum pressure ..... 90 psi (6.2 bar)

Capacity ..... 10 litres/second at 100 psi (6.9 bar)

Air blast reject

Optimum pressure ..... 100 psi (6.9 bar)

Minimum pressure ..... 100 psi (6.9 bar)

Maximum pressure ..... 120 psi (8.2 bar)

Capacity ..... 27 litres/second at 100 psi (6.9 bar)

Environment

Operating Temperature ..... 5°C to 40°C

Relative Humidity ..... 85% non-condensing (maximum)

3.2 AS1500

3.2.1 Introduction

The Loma AS Series Powered Weigh Table (PWT) Checkweigher, which includes conveyor modules with 22mm or 25mm (PWT) & or 38mm (Infeed & Outfeed) diameter rollers.

Figure 3.2 A general view of AS1500 Series PWT Checkweigher

3.2.2 Technical Specification AS1500

Dimensions .....Each machine is designed to suit a customer's requirements

Weight.....Displayed on identification plate mounted on frame

Power Requirements

Voltage

Standard Options.....220/240V, single phase, 50Hz
.....110V, single phase, 60Hz

Non-Standard Options.....200V, single phase, 50Hz
.....100V, single phase, 50Hz

Voltage Tolerance..... +10% to -15%

Power Consumption..... 325VA

Reject air supply

Pusher /Plough/Lift Flap/Declining Conveyor

Optimum pressure .....80 psi (5.5 bar)

Minimum pressure .....65 psi (4.5 bar)

Maximum pressure .....90 psi (6.2 bar)

Capacity..... 10 litres/second at 100 psi (6.9 bar)

Air blast reject

Optimum pressure .....100 psi (6.9 bar)

Minimum pressure .....100 psi (6.9 bar)

Maximum pressure .....120 psi (8.2 bar)

Capacity..... 27 litres/second at 100 psi (6.9 bar)

Environment

Operating Temperature.....5°C to 40°C

Relative Humidity.....85% non-condensing (maximum)

3.3 AS5000

3.3.1 Introduction

The Loma AS Series Powered Weigh Table (PWT) Checkweigher, which includes conveyor modules with 38mm diameter rollers.

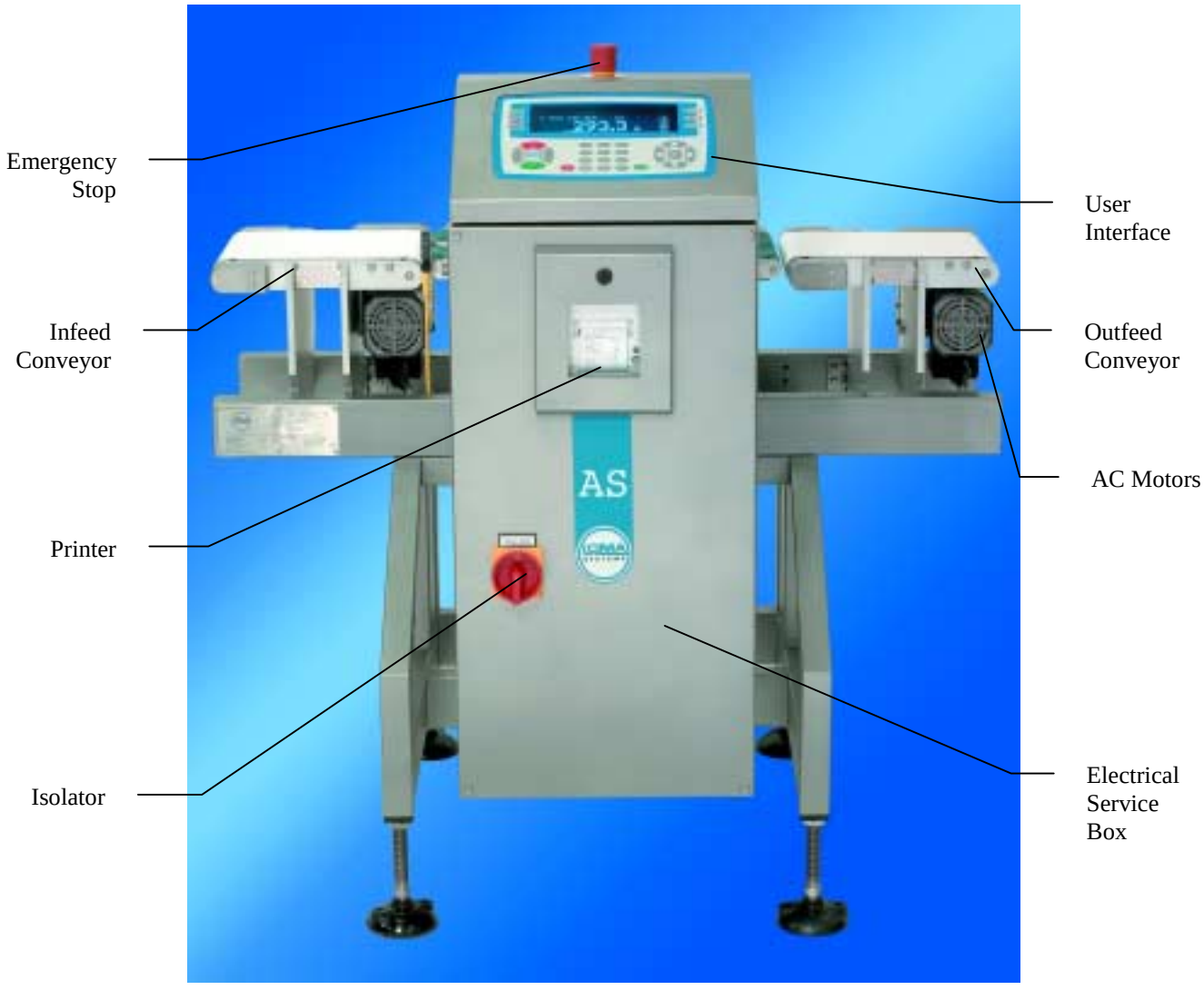

Figure 3.3 A general view of AS5000 Series PWT Checkweigher

3.3.2 Technical Specification AS5000

Dimensions .....Each machine is designed to suit a customer's requirements

Weight.....Displayed on identification plate mounted on frame

Power Requirements

Voltage

Standard Options.....220/240V, single phase, 50Hz
.....110V, single phase, 60Hz

Non-Standard Options.....200V, single phase, 50Hz
.....100V, single phase, 50Hz

Voltage Tolerance..... +10% to -15%

Power Consumption..... 325VA

Reject air supply

Pusher /Plough/Lift Flap/Declining Conveyor

Optimum pressure .....80 psi (5.5 bar)

Minimum pressure .....65 psi (4.5 bar)

Maximum pressure .....90 psi (6.2 bar)

Capacity..... 10 litres/second at 100 psi (6.9 bar)

Air blast reject

Optimum pressure .....100 psi (6.9 bar)

Minimum pressure .....100 psi (6.9 bar)

Maximum pressure .....120 psi (8.2 bar)

Capacity..... 27 litres/second at 100 psi (6.9 bar)

Environment

Operating Temperature.....5°C to 40°C

Relative Humidity.....85% non-condensing (maximum)

3.4 AS DragLink

3.4.1 Introduction

The Loma AS Series Drag Link Checkweigher, which includes conveyor modules with various types of transport belts & Pwt via chain.

Figure 3.4 A general view of AS Series Drag Link Checkweigher

3.4.2 Technical Specification Draglink

Dimensions .....Each machine is designed to suit a customer's requirements

Weight.....Displayed on identification plate mounted on frame

Power Requirements

Voltage

Standard Options.....220/240V, single phase, 50Hz
.....110V, single phase, 60Hz

Non-Standard Options.....200V, single phase, 50Hz
.....100V, single phase, 50Hz

Voltage Tolerance..... +10% to -15%

Power Consumption (excluding in/out conveyors) 300VA

…….....Plus 200VA per Conveyor

Reject air supply

Pusher /Plough/Lift Flap

Optimum pressure .....80 psi (5.5 bar)

Minimum pressure .....65 psi (4.5 bar)

Maximum pressure .....90 psi (6.2 bar)

Capacity..... 10 litres/second at 100 psi (6.9 bar)

Air blast reject

Optimum pressure .....100 psi (6.9 bar)

Minimum pressure .....100 psi (6.9 bar)

Maximum pressure .....120 psi (8.2 bar)

Capacity..... 27 litres/second at 100 psi (6.9 bar)

Environment

Operating Temperature.....5°C to 40°C

Relative Humidity.....85% non-condensing (maximum)

3.5 AS Heavyweight

3.5.1 Introduction

This section describes Loma AS Series heavyweight Checkweigher, which includes large 64mm diameter conveyor PWT rollers.

Figure 3.5 A general view of AS Series (Heavyweight) Checkweigher

3.5.2 Technical Specification Heavyweight

Dimensions .....Each machine is designed to suit a customer's requirements

Weight.....Displayed on identification plate mounted on frame

Power Requirements

Voltage

Standard Options.....220/240V, single phase, 50Hz
.....110V, single phase, 60Hz

Non-Standard Options.....200V, single phase, 50Hz
.....100V, single phase, 50Hz

Voltage Tolerance..... +10% to -15%

Power Consumption..... 300 VA plus 250 VA for each additional conveyor

Reject air supply

Optimum pressure .....80 psi (5.5 bar)

Minimum pressure .....65 psi (4.5 bar)

Maximum pressure .....90 psi (6.2 bar)

Capacity..... 10 litres/second at 100 psi (6.9 bar)

Environment

Operating Temperature.....5°C to 40°C

Relative Humidity.....85% non-condensing (maximum)

3.6 About the types of AS Series Checkweighers

PWT Checkweigher (AS1200C, AS1500 & AS5000)

These meet the requirements for accurate, general-purpose checkweighing utilising the powered weigh table principle. It employs a precision, lightweight, motor/gearbox assembly on the powered weigh table. This ensures good product transfer for a wide variety of package types and sizes up to 1.2kg for the AS1200C, 1.5kg for the AS1500 and 5kg for the AS5000.

Drag Link Checkweigher

These meet the requirements for accurate, general-purpose checkweighing utilising the Drag Link principle. It employs an AC drive motor/gearbox assembly on the Drag Link weigh platform. This provides a robust transport system for a wide variety of package types and sizes up to 6kg.

Heavyweight Checkweigher

These meet the requirements for accurate, general-purpose checkweighing for product weights up to 45kg utilising the powered weigh table principle.

The checkweigher enables suitably trained personnel to set up, change, calibrate, and obtain results from the checkweigher through a menu-driven user interface. The system provides the following serial data communications – EIA RS-232, EIA RS-422A – and is fully compatible with the Lomanet, Loma Online & Lomalink communications system. The checkweigher is also compatible with Loma metal detectors for complete end-of-line quality inspection.

Approved (R51) AS1500, AS5000 & Drag Link Checkweighers

These meet the requirements for R51 type approval and have been fitted with a digital loadcell as well as built to the type approved specification.

3.7 Reject Types

The checkweigher can be supplied with the following types of reject device, dependent on machine type and application.

- Air blast reject
- Pusher reject
- Plough reject
- Lift flap
- Declining/Inclining conveyor

With air blast, pusher and plough rejects two sizes of bin are available. The size of the bin is determined by the outfeed conveyor length and product details. For lift flap and declining rejects the bin (if fitted) is located within the machine frame and is manufactured to individual machine requirements. Note that AS1200C checkweighers are not supplied with reject bins.

Alternatively, the checkweigher can be supplied without a reject device but with 'Signal Only' output. On detection of an underweight or overweight product, the control unit provides an output signal only. This can be used by the customer, for wiring into equipment of his choice.

3.7.1 Air Blast Reject

The air blast reject uses a high-pressure blast of compressed air to blow the reject product off the belt into the reject bin. Two versions of air blast reject are available - a single nozzle system and a dual nozzle system. The AS1200C is only available with the single nozzle system.

3.7.2 Pusher Reject

The pusher reject is pneumatically operated and pushes reject product from the belt into a reject bin.

3.7.3 Plough Reject

The plough reject is pneumatically operated and diverts reject product from the belt into a reject bin.

3.7.4 Lift Flap Reject

The lift flap reject is pneumatically operated. The flap is normally located after the outfeed conveyor and lifts to allow reject product to drop into a bin below the flap.

3.7.5 Declining Conveyor Reject

The declining conveyor reject is pneumatically operated. The conveyor declines to allow reject product to fall into a bin located beneath the machine.

3.7.6 Reject Cover

A reject cover is fitted as standard over the reject conveyor and reject device. This protective device is intended to prevent direct access to the operating area of the reject device.

3.8 Electrical Services Box

Electrical supplies to the checkweigher are connected inside an electrical services box which forms has control support column on the AS1200C machine and is mounted at the front of all other machines. Supplies are connected via an isolator that is used for isolating the electrical power to the machine.

A 42-column printer may be mounted inside the control box on an AS1200C or inside the electrical service box on other machines. This provides a means of producing batch reports to comply with local or national trading standards.

3.8.1 Control Unit

The control unit is mounted on top of the electrical service box and is fitted with the user interface that had the 'Start' and 'Stop' keys. An emergency stop button is fitted to the front of the support column of the AS1200C or on top of the control box for other machines.

The ‘Start’ & ’Stop’ keys are used to start & stop the movement of the checkweigher and associated infeed and outfeed conveyors.

The ‘Emergency Stop’ pushbutton is coloured red. In the event of an emergency, pressing the button stops the checkweigher and conveyors, and exhausts air out of the pneumatic actuator of the reject device where applicable.

The user interface consists of a keypad with a single dedicated 256 x 64 VFD display module.

3.9 Other Standard Equipment

3.9.1 Product Registration Photo-Electric Cell

A Photo-Electric Cell (PEC) is mounted at the infeed end of the weigh platform. This is used to register the position of the products on the chekweigher.

3.9.2 Load Transducer

The AS Series checkweighers are fitted with a strain gauge loadcells and also the loadcells may be supplied in a range of finishes. (Stainless steel)

3.10 Optional Equipment

The following optional equipment may be supplied with a checkweigher. (These options are not available on the AS1200C).

3.10.1 Low Air Pressure Switch

A low air pressure failure switch can be fitted if the checkweigher is supplied with either a pusher reject or plough reject. The switch is set by Loma to operate if the pressure of the compressed air supply to the reject falls below 40psi (2.8 Bar). The conveyors then stop.

3.10.2 Infeed Product Guides

Guides can easily be adjusted to suit the width of a specific product that is being transported on the checkweigher.

3.10.3 ‘Bin Full’ Detection

A photo-electric cell may be fitted to detect and warn when the reject bin is full.

3.10.4 Reject Confirmation

A photo-electric cell may be fitted across the reject collection device to confirm that a pack has been rejected. If not, the conveyors stop.

3.10.5 Digital Loadcell

A digital loadcell can be fitted on to the checkweigher instead of a standard analogue version. The digital loadcell is used on all type-approved checkweighers and applications that need a faster sampling response.

INSPECTION CRITERIA

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4.1 General Considerations

It is sometimes necessary to add allowances to set points and other entered parameters. Please note the following points and check any local or national requirements:-

Tare weight; The Loma Checkweigher indicates the ***net weight*** of the package, so it is necessary to enter the *Tare weight* for each package type. This is normally the average weight of the product packaging, but check local/national requirements regarding allowances for tare variability.

Product storage; where a product is liable to lose weight, between the time it is weighed and the point of sale (e.g. due to moisture loss), it may be necessary to increase the mandatory set points to compensate for this loss.

Checkweigher accuracy; Although the *zone of indecision* (U_n) of a checkweigher is defined internationally as ***6 times the standard deviation,*** there are variations in the definition of accuracy in several countries and industries. Also, in some cases it may be necessary to increase the mandatory set points by half the zone of indecision if the error exceeds a certain specified level.

The Loma checkweigher series allow the user to inspect packages in respect of the following standard criteria:-

Minimum Weight

Average Weights legislation (European and Canadian)

American (NIST) MAV (3 zone and 4 zone)

In the sections that follow each method is described in more detail.

4.2 Minimum Weights

The following set points are available on the Loma checkweigher when operating to Minimum Weight requirements:-

Declared Weight This should be the weight printed on the package. All packages below this weight will be rejected.

Over Cut Point This is not a mandatory set point, but simply an upper limit which may be used to reject over-weight packages. The Over Cut Point will automatically default to { Declared + (4 x t.n.e.)} , but may be set to any reasonable value above Declared Weight. If all packages above High are to be accepted, you may leave the Over Cut Point at the default value and disable the Over Cut Point reject option.

4.3 Average Weights

In this mode of operation the machine complies with the requirements of European and Canadian Average Weights, which may be summarised as follows:-

Rule 1. The average weight of the contents of a group of packages must not be less than the declared weight printed on the package (known as the Nominal Weight, often abbreviated as Q_n).

Rule 2. No more than a certain percentage (2.5% in most European countries) may be deficient by more than a permitted amount, known as the *tolerable negative error, (t.n.e.).*

Rule 3. No package shall be deficient by more that twice the tolerable negative error.

The tolerable negative error may be calculated from the table below.

Nominal Weight	**Tolerable Negative Error**	
grams	% of Q_n	grams
5 - 50	9.0	
50 - 100		4.5
100 - 200	4.5	
200 - 300		9.0
300 - 500	3.0	
500 - 1000		15.0
1000 - 10,000	1.5	
10,000 - 15,000		150.0
over 15,000	1.0	

The following set points are available on the Loma checkweigher when operating to Average Weights requirements:-

Nominal Weight This should be the declared weight printed on the package.

Target weight This is normally set to equal the nominal weight but may be set higher when checkweigher automatically controls filling operation.

T_1 set point This automatically defaults to { Nominal - t.n.e.} , but may be reset to any weight less than nominal and greater than T_2. If all packages below T_1 are to be rejected, you may leave T_1 at the default value and set the percentage of acceptable packages between T_1 & T_2 to 0%.

T_2 set point This automatically defaults to { Nominal - (2x t.n.e.)} , but may be reset to any weight less than T_1.

High set point This is not a mandatory set point but simply an upper limit which may be used to reject over weight packages. High will automatically default to { Nominal + (2 x t.n.e.)} , but may be set to any reasonable value above Target. If all packages above High are to be accepted, you may leave High at the default value and disable the High reject option.

4.3.1 Average Weight Example

A package has a Declared (average) weight of 1000g.

- The t.n.e. for 1000g (from table) is 15g
- Set Nominal weight to 1000g
- T_1 will default to *Nominal* - t.n.e. = 1000 - 15 = 985g
- T_2 will default to *Nominal* - 2t.n.e. = 1000 - (2 x 15) = 970g
- *High* will default to *Nominal* + 2t.n.e. = 1000 + (2 x 15) = 1030g

Assuming that the reject configuration is correct, the checkweigher will now warn the user if the average weight falls below 1000g (see rule 1 above). The checkweigher will allow a maximum of 2.5% of the total accepted packages to be in the range 970-985g (T_1 to T_2 ; see rule 2 above). The checkweigher will reject all packages below 970g (T_2 ; see rule 3 above).

The Loma Checkweigher will classify and display each package weight as follows:-

Weight Range	**Classification Zone**
below 970g	T_2
970g to 985g	T_1
985g to 1000g	PASS -
1000g to 1030g	PASS +
over 1030g	HIGH

4.4 American (NIST) MAV

In the United States of America the requirements for *"Checking the net contents of packaged goods"* are governed by the National Institute for Standards and Technology (NIST) and detailed in NIST Handbook 133.

This method is available on the Loma Checkweigher as ***American MAV*** and ***American 3 zone***. In both cases the reject set points are determined from the NIST MAV table which contains the *maximum allowable variation (MAV).*

For meat and poultry products the MAV values are subject to USDA requirements and are shown in the appropriate table. Please note that this checkweigher model will not automatically calculate the USDA MAV values, but the user may enter the required set points manually in order to comply with this standard.

The requirements detailed in NIST Handbook 133 may be summarised by the following rules:-

Rule 1. The average weight of a group or "lot" must not be less than the Declared weight (i.e. the weight printed on the package). A "lot" must consist of at least 50 packages.

Rule 2. No packages shall be deficient by move than the MAV.

The following set points are available on the Loma Checkweigher when operating in this mode:-

Label Weight This is the declared weight of the package.

Under cutpoint This set point automatically defaults to { Label Weight - MAV} , but may be adjusted by the user to any weight less than or equal to the Label Weight.

Over Cutpoint This is not a mandatory set point but simply an upper limit which may be used to reject over-weight packages. Over Cutpoint will automatically default to { Label Weight + (2 x MAV)} , but may be set to any reasonable value above the Declared Weight. If all packages above Over Cutpoint are to be accepted, you may leave Over Cutpoint at the default value and disable the Over Cutpoint reject option.

NIST MAV TABLE

Avoirdupois Units				
Labelled Weight		MAV		
Pounds		Decimal Pounds	Fractional Ounces	
Over	Up to & Including			
-	0.08	10% of labelled weight		
0.08	0.12	0.008		1/8
0.12	0.18	0.012		3/16
0.18	0.26	0.016		1/4
0.26	0.34	0.020		5/16
0.34	0.46	0.024		3/8
0.46	0.58	0.028		7/16
0.58	0.70	0.032		1/2
0.70	0.84	0.036		9/16
0.84	0.94	0.040		5/8
0.94	1.08	0.044		11/16
1.08	1.26	0.048		3/4
1.26	1.40	0.052		13/16
1.40	1.54	0.056		7/8
1.54	1.70	0.060		15/16
1.70	1.88	0.064	1	
1.88	2.14	0.070	1	1/8
2.14	2.48	0.078	1	1/4
2.48	2.76	0.086	1	3/8
2.76	3.20	0.094	1	1/2
3.20	3.90	0.11	1	3/4
3.90	4.70	0.12	2	
4.70	5.80	0.14	2	1/4
5.80	6.80	0.15	2	1/2
6.80	7.90	0.17	2	3/4
7.90	9.40	0.19	3	
9.40	11.70	0.22	3	1/2
11.70	14.30	0.25	4	
14.30	17.70	0.28	4	1/2
17.70	23.20	0.31	5	
23.20	31.60	0.37	6	
31.60	42.40	0.44	7	
42.40	54.40	0.50	8	
54.40	-	2% of labelled weight		

Metric Units		
Labelled Weight		MAV
Grams		Grams
Over	Up to & Including	
-	36	10% of labelled weight
36	54	4
54	82	5
82	118	7
118	154	9
154	209	11
209	263	13
263	318	15
318	381	16
381	426	18
426	490	20
490	572	22
572	635	24
635	698	25
698	771	27
771	852	29
852	971	32
971	1,125	35
1,125	1,350	40
1,350	1,600	45
	45	50
1,600	1,800	55
1,800	2,100	65
2,100	2,640	70
2,640	3,080	80
3,080	3,800	85
3,800	4,400	100
4,400	5,200	115
5,200	6,800	130
6,800	8,200	145
8,200	10,600	170
10,600	14,300	200
14,300	19,250	230
19,250	24,700	
24,700	-	2% of labelled weight

USDA MAV TABLE

U.S. Department of Agriculture, meat and poultry, groups and lower limits for individual packages

Group Name	Definition of Group		Lower Limit for Individual Weights		
	Homongenous, Fluid when Filled (e.g., baby food or containers of lard)	All Other Products	10% of labelled quantity		
A	**less than 85 g (3 oz)**	**less than 85 g (3 oz)**	**g**	**oz**	**lb**
1	85 g (3 oz) to 453 g (16 oz)		7.1	0.25 8/32 4/16 2/10 2/8 1/4	0.016
2	over 453 g (16 oz)	85 g (3 oz) to 198 g (7 oz)	14.2	0.50 16/32 8/16 5/10 4/8 2/4	0.031
3		over 198 g (7 oz) to 1.36 kg (48 oz)	28.3	1	0.062
4		over 1.36 kg (48 oz) to 4.53 kg (160 oz)	42.5	1.50 1-16/32 1-8/16 1-5/10 1-4/8 1-2/4	0.094
5		over 4.53 kg (160 oz)	1% of labelled quantity		

4.4.1 American MAV Example

A package has a Label Weight of 1 pound;

- The MAV for 1lb (from the NIST MAV table) is 0.044 pounds
- Set Label Weight to 1lb
- Under Cutpoint will default to Label - MAV = 1 - 0.044 = 0.956lbs
- Over Cutpoint will default to Label + (2 x MAV) = 1 + (2 x 0.044) = 1.088lbs

Assuming that the reject configuration is correct, the checkweigher will now warn the user if the average weight falls below 1lb (see rule 1 above), and will reject all packages below 0.956lbs (see rule 2 above). If the Over Cutpoint reject is enabled the checkweigher will also reject all packages above 1.088lbs.

When using the *American 3 Zone* operating mode for the example above, the Loma Checkweigher will classify and display each package weight as follows:-

Weight Range	**Classification Zone**
below 0.956lbs	UNDERS
0.956 to 1.088lbs	CORRECTS
above 1.088lbs	OVERS

When using the *American 4 Zone* operating mode for the example above, the Loma Checkweigher will classify and display each package weight as follows:-

Weight Range	**Classification Zone**
below 0.956lbs	UNDERS
0.956 to 1lb	PASS -
1lb to 1.088lbs	PASS +
above 1.088lbs	OVERS

OPERATOR'S GUIDE

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Checkweigher Control Introduction

Control of the LOMA Checkweigher is easily achieved once the basic principles of operation are observed. The following two pages show diagrams of the User Interface and of the Menu Structure. Certain keys on the User Interface are used to control movement around the Menu Structure such that any position can be reached quite simply from any other.

The Menu Structure is organised into six logical groups:

- Run;
- Product Setup;
- Calibrate;
- Diagnostics;
- Reports and
- System Setup.

These menus are all accessed via main menu, which has password level access for different levels of entry. To become completely comfortable with the operation of the LOMA Checkweigher, it is necessary that the Menu Structure is fully understood. Spend some time now looking at the diagram of the Menu Structure overleaf and observe some of the possible routes to perform frequent tasks.

Following a more complete description of the User Interface and the Menu Structure is a Product Set-up example showing how to enter Product Parameters and Reject Timing Values, and how to Calibrate and Run a new product across the Checkweigher. Use this example to gain familiarity with the Checkweigher before attempting to set-up a new product or operate the machine.

Checkweigher Control

When the Checkweigher is switched on, the display will be showing the Loma systems display which has a dot time count of 5 seconds and then quickly followed by system initialising display and finally the main menu at an operators entry level.

In the unlikely event that any other display is shown following power-up, contact your LOMA Service Centre as data corruption may have occurred.

When the Checkweigher is powered-up, the Access Level will be automatically set to 'operators level'. To change the current Access Level at any time, press the [ ] key. The display will show: With the necessary Password Access Level, any or all of the Passwords can be changed to your preferred numbers.

For convenience and speed of initial set-up, the Checkweigher is shipped with the Passwords set as follows: - '0' for Quality Access Level, ` 6666` for Engineer Access Level, and ` 2000` for Loma Access Level password. Loma Plus Access Level password has been set by the factory and may be obtained from a service centre if there is a requirement or need to charge system parameters.

Use the [▲] & [▼] keys to select the required Access Level and press the [↵] key. If the required Access Level is higher than the current level, the display will prompt for a Password. Again use the [**NUMERIC**] keys to input the Password (which will not be displayed) and press the [↵] key. The display will return to the previous menu position with the newly appointed Access Level. The Menu Chapters give details of each of the menu positions and features, including the Access Levels required for each. The operator access level can be customised to meet different requirements of the user but this manual uses the standard (Default) setting for operation.

Operating Access Levels

There are four operating access levels and one access level that is customisable within the checkweigher and each of them has limitation of mode of operation. The following list shows the four access levels and what can be achieved within the checkweigher using that access level.

Access Level: Operator Standard (Default)

At this level it is not possible to enter or exit the 'RUN' mode.
In both modes it is possible to:

a. View the product setup parameters.
b. View the diagnostics: - Run error log, Failsafe log, System Faults log, Pack Pitch Monitor Results.

If already in 'RUN' it is also possible to:

a. View the results
b. View the product set parameters.
c. View the diagnostics: - Run error log, Failsafe log, System Faults log, Pack Pitch Monitor Results.
d. View the repeatability check results.
e. View the sample packs check results

Operator access level can also be customised in the features list in order to be able enable Run, Product Set-up (Not to have copy product mode), Calibrate and Diagnostics. This feature would be configured when a service engineer commissions the system.

Displayed as follows: - OPERATOR ACCESS:

RUN	ENABLE / DISABLE
PRODUCT SETUP	ENABLE / DISABLE
CALIBRATE	ENABLE / DISABLE
DIAGONSTICS	ENABLE / DISABLE

Access level: Quality

At this level it is possible to enter or exit 'RUN' mode.
In both modes it is possible to:

a. Copy product setup parameters
b. View / change the product setup parameters.
c. View / change reject parameters.
d. View / change pack pitch parameters.
e. View, reset and print run errors.
f. View, reset and print system faults.
g. View and print failsafe problems.
h. Print all reports
i. Reset a batch.

When in 'RUN' it is additionally possible to:

a. View the repeatability check results
b. View the sample packs check results.
c. View the results

When out of 'RUN' it is additionally possible to:

d. Calibrate the machine.

Access level: Engineer

As Quality and can also enter maintenance menu which allows user to:

a. Set up reject configuration and mode.
b. Set up machine ID.
c. Set up passwords for access levels:- Quality.
d. Compute gain range zeros.
e. Monitor platform load.
f. Change calibrate window.
g. Look at system diagnostics.
h. Set up date and time.
i. Change auto zero parameters
j. Set up serial links (if enabled)

Access level: Loma

As level Engineer but can also:

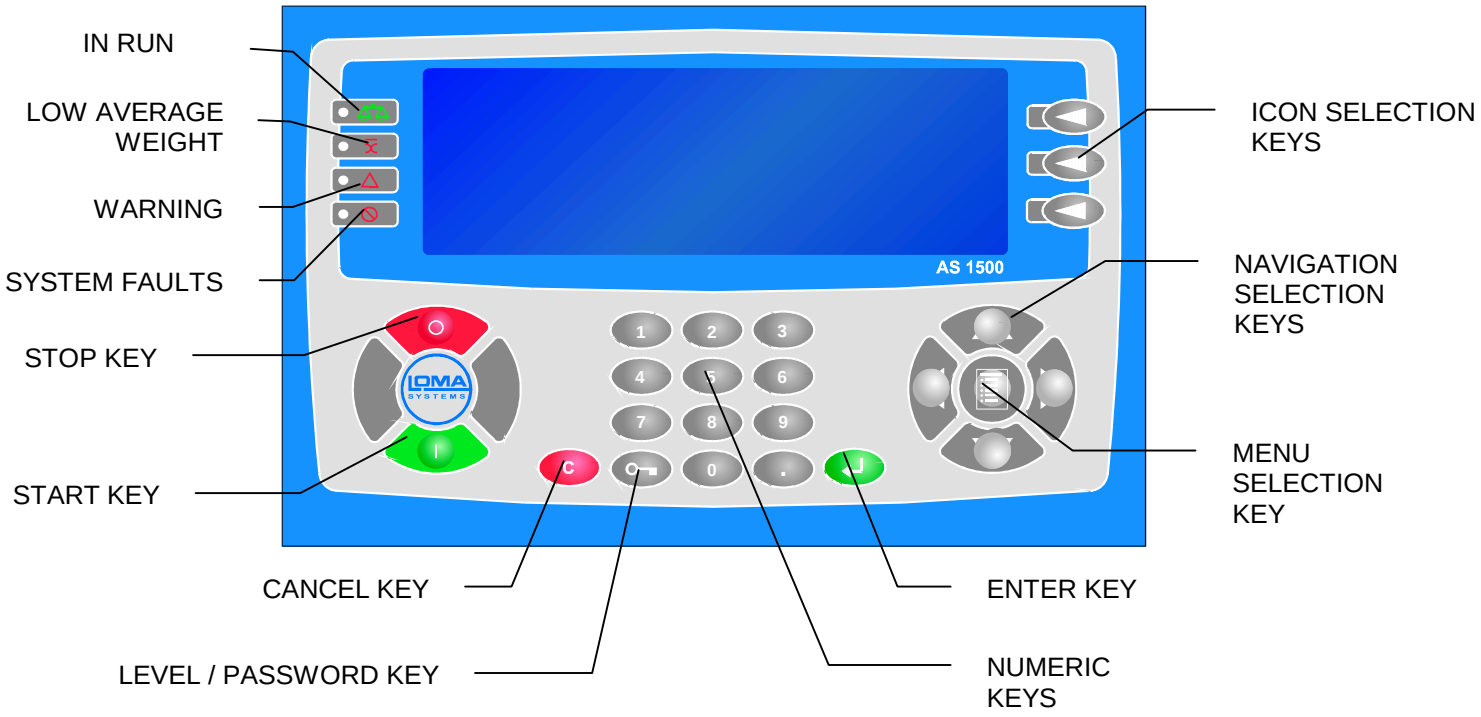
a. View service information log
b. Set up passwords from level Quality and Engineer.
c. Set up factory presets in the Features list

Access level: Loma Plus (Service Engineers Only)

As level Loma but can also:

a. Set up factory presets in the Weighing Parameters.
b. Cold start the machine
c. Operator Access level customised configuration.
d. Operating Languages as follows :- English, Dutch, French, Spanish, Portuguese & German.

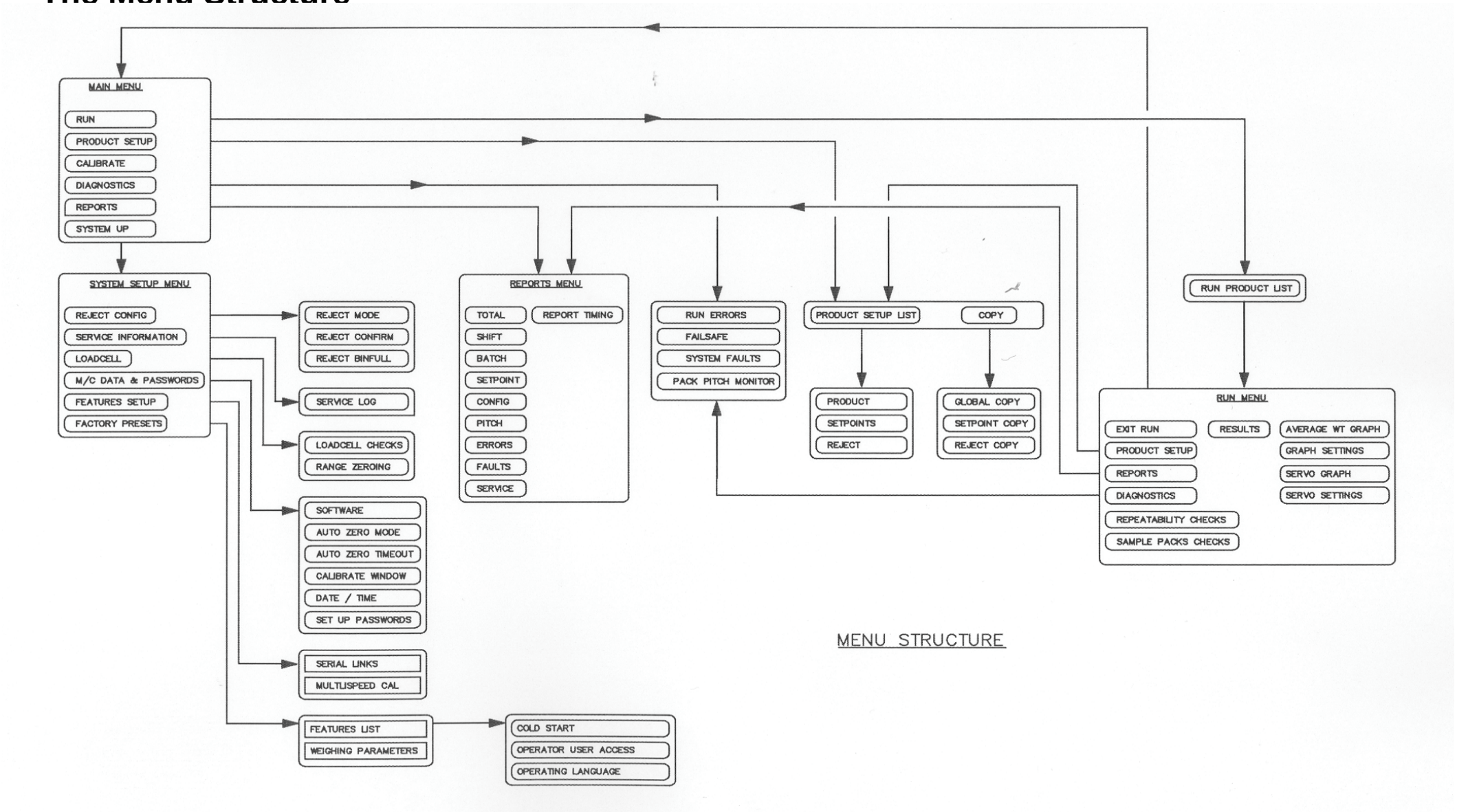
The User Interface



Throughout this manual the keys of the user interface are represented as follows:-

UP	[▲]
LEVEL / PASSWORD ACCESS	[🔑]
MINIMUM ACCESS LEVEL	QUALITY
DOWN	[▼]
NUMERIC KEYS	[NUMBERS]
ENTER	[↵]
CANCEL	[C]
MENU KEY	[☰]
DISPLAY ICONS SELECTION KEYS	[◁]

The Menu Structure



Setup Example

Introduction

This section provides a step-by-step guide to setting-up the LOMA Checkweigher, including Product Set-up, Reject Timing Set-up, Calibration and Run.

Throughout these examples, certain assumptions have been made, i.e. the weighing method chosen will be 'European Average Weights' and Under Weight packs will be rejected by the Checkweigher. This does not constitute a recommendation for checkweigher operation; simply that all permutations cannot be covered effectively in this manual.

Begin by switching the Checkweigher on and inspecting the User Interface. The displays may appear as shown in the previous section: we wish to continue from the Main Menu.

Although products can be set up while in the Run menu, for the purposes of this example we shall begin from the Main menu. If the display shows the Run Menu: select EXIT RUN (Access Level 'QUALITY) and press the [ ] key, then select YES or NO via the [ ] & [ ] keys and press the [ ] key to exit from Run.

When the Checkweigher is switched on, the Access Level is always set to ' Operator ' to prevent unauthorized use of the machine. A higher Access Level is required to perform the set-up actions detailed in this example: select Access Level 'QUALITY' which will be sufficient for all the actions required in this example.

Setup Example - Product

Product Setup

Press the [▽] key to select the PRODUCT SETUP menu:

Press the [↵] key to enter the PRODUCT SETUP menu:

Pressing the [▽] key to scroll to select product memory required. In this example we shall set up a Product Number '6'. Pressing the [↵] key to enter product number 6 setup menu.

If you wish you may enter a Product Identity code here. Press the [↵] key as requested by the display:

Using the [▽] , [△] [◁] [▷] & [↵] keys to select the first character of your chosen Product Identity code and then pressing the [↵] key. The Product Identity code can be as long as sixteen characters and may include spaces and numbers. The numbers may be entered directly from the keypad on the User Interface. To delete a character press the [◁] key next to the Del icon on the display.

When the code is complete, press the [↵] key again and the display will show the entered code on the product set menu which has been accepted at the top of the display.

* Note that the block highlight has stepped down to the next item on the list to be set.

Press the [↵] key will enable a selection menu for operation mode.

Using the [▽] & [△] keys to select required mode then press the [↵] key to initialise selected mode of operation. This will return to the product setup menu and note that the block highlight has stepped down to the next item on the list to be set.

Use the [**NUMBERS**] keys to input the pack length then press the [↵] key ; always add a little to the actual flow dimension to cater for pack presentation variances and for fluctuations in conveyor speed, etc., (say 5% – 10%). This will return to the product setup menu and note that the block highlight has stepped down to the next item on the list to be set.

Press the [↵] key to select the required legislation, this will display four options for Weights Legislation: 'Average Weight' (average), American MAV, American 3 zone and 'Minimum'. If 'European/Canadian' is not already selected, press [▽] key to select European Weights Legislation and then press the [↵] key. This will return to the product setup menu and note that the block highlight has stepped down to the next item on the list to be set.

When the Batch Interval expires, a report is issued and the accumulated batch statistics are reset. This may be done on a timed basis or by count. Enter a value here if you wish to produce a Batch Report after a specific number of packs have been accepted in the batch. This is done by pressing the [**NUMBER**] keys followed by pressing the [↵] key to initialise the entered number.

* Note this will return to the product setup menu and note that the block highlight has stepped up to the top of the item on the list to be set. Press the [◁] key next to the down arrow icon on the display.

Use the [**NUMBERS**] keys to input the Tare (packaging) Weight for your product and use the [↵] key to step to the next item on the list.

The Nominal Weight refers to the actual declared weight of the product itself. The product setpoints are automatically calculated from this entry, in accordance with the European Weights legislation. For this example, enter a value of 300 grams by pressing the [**NUMBER**] keys then press the [↵] key.

This will automatically insert all the values for the high set point, Tu1 set point & Tu2 set point.

Press the [▽] key to step to the next item on the list.

The High Setpoint defaults to Target Weight plus twice the Tolerable Negative Error. This value can be changed if required in the usual fashion. Your system may be configured to reject packs with weights above this limit. In this example we shall assume that this setpoint is used for classification purposes only.

Press the [▽] key to step to the next item on the list.

The TU1 Setpoint defaults to Nominal Weight minus the Tolerable Negative Error. This value can be changed if required in the usual fashion. Your system may be configured to reject 2.5% of packs with weights between this limit and TU2. In this example we shall assume that this is the case.

Press the [▽] key to step to the next item on the list.

The TU2 Setpoint defaults to Nominal Weight minus twice the Tolerable Negative Error. This value can be changed if required in the usual fashion. Your system should be configured to reject all packs with weights below this value. In this example we shall assume that this is the case.

Press the [◁] key next to the down arrow icon on the display will step to the next item on the list.

- Note the exact contents of this list will depend on the configuration of your machine. As stated in the introduction to this section, we shall assume that your system is configured to reject underweight packs.

- At this stage you will not necessarily know the delay time required for successful rejection. Enter the same value entered for another product of similar size, or an approximate value which can be 'fine tuned' later.

The delay time is the elapsed time between the pack breaking the PEC beam on the Weigh Platform and the reject device activating.

Press the [▽] key to step to the next item in the list.

Again, at this stage, the Dwell Time (reject operation time) may not be known. Enter the same value entered for a similar product, or an approximate value which can be 'fine tuned' later.

Press the [◁] key next to the up arrow icon on the display will scroll back up the menu list or press the [▤] key will return to the product set main menu.

The basic Product Parameters have now been set up.

Setup Example – Calibrate

Calibrate

Press the [▽] key to select the CALIBRATE menu:

Press the [↵] key to enter 'Calibrate' mode.

Using the [▽] , [△] [◁] [▷] & [◁] keys to select the required product code to be calibrated. The [◁] key next to the up & down arrow icon on the display will scroll back up or down the menu list. Press the [↵] key which will display the calibration status.

The [ ] key next to the screwdriver icon on the display will start the calibration the display will change to:

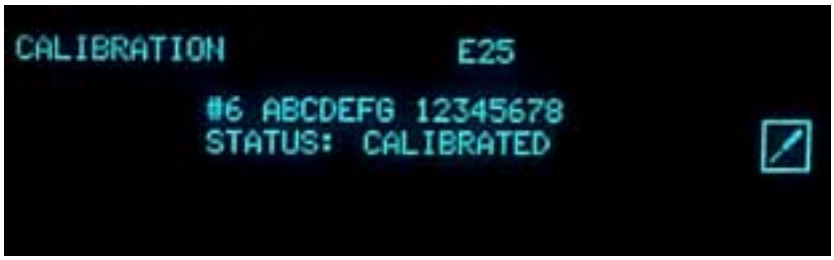
Use the [**NUMBERS**] keys to input the gross weight of the pack (nominal weight + tare weight) to be used for calibration purposes.

Then press the [ ] key to begin the checkweighing calibration procedure.

The status message on the display will be flashing on and off stating to pass packs to perform calibrate:

Pass the Calibration Pack over the system the required number of times (usually 10) - as indicated by the display. When calibration is complete, the following message will appear: WEIGHING CALIBRATE COMPLETE.

Press the [ ] key, will return to the calibrate status display menu.



* Note that the status has changed to calibrated, once this has been confirmed press the [ ] key again will return to the product set main menu.

Setup Example – Calibrate (Pattern Approved)

Calibrate

Press the [▽] key to select the CALIBRATE menu:

Press the [↵] key to enter 'Calibrate' mode.

Using the [▽] , [△] [◁] & [▷] keys to select the required product code to be calibrated. The [◁] key next to the up & down arrow icon on the display will scroll back up or down the menu list. Press the [↵] key which will display the calibration status.

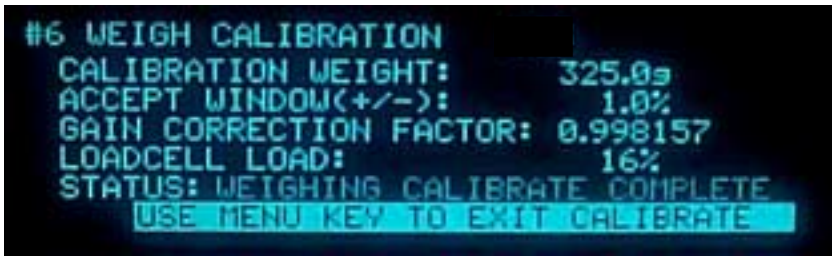
The [ ] key next to the screwdriver icon on the display will start the calibration the display will change to:

Use the [**NUMBERS**] keys to input the gross weight of the pack (nominal weight + tare weight) to be used for calibration purposes.

Then press the [ ] key to begin the checkweighing calibration procedure which will perform a time out platform zero level before weigh calibration can take place.

The status message on the display will be flashing on and off stating to pass packs to perform calibrate:

Pass the Calibration Pack over the system the required number of times (usually 10) - as indicated by the display. When calibration is complete, the following message will appear: WEIGHING CALIBRATE COMPLETE.



Press the [ ] key, will return to the calibrate status display menu.

* Note that the status has changed to calibrated, once this has been confirmed press the [ ] key again will return to the product set main menu.

Setup Example - Run

Run

Now that a product has been set up and calibrated, it is possible to enter 'Run'.

Press the [ ] key to select the RUN menu:

Press the [ ] key to enter 'RUN' mode.

Using the [ ] , [ ] [ ] & [ ] keys to select the required product code to be run in this case 6. The [ ] key next to the up & down arrow icon on the display will scroll back up or down the menu list. Press the [ ] key which will display the run status.

(This screen will only appears on pattern approved checkweighers)

Press the [⏎] key to enter 'RUN' mode, which will perform a time out platform zero level before weighing can take place. (Pattern approved only)

The status message on the inspection of production will now commence.

The 'Run Results' list contains information about the current production run. Press the [◁] key next to the down arrow icons on the display will to enter the Results list; and using the [◁] keys next to the up & down arrow icons on the display to scroll up & down the inspect data. There will be a [★] icon appear every few seconds on the weight display screen this is the auto zero taken place. (Pattern approved only)

Example Screens as follows:-

Press the [◁] key next to the down arrow icon on the display will step to the next display data.

Press the [◁] key next to the down arrow icon on the display will step to the next display data.

Press the [◁] key next to the down arrow icon on the display will step to the next display data.

Press the [◁] key next to the down arrow icon on the display will step to the next display data.

Press the [◁] key next to the down arrow icon on the display will step to the next display data.

Press the [ ] key next to the down arrow icon on the display will step to the next display data.

Press the [ ] key will scroll back to beginning.

Press the [ ] key next to the graph icon on the display will display average weight graphically display & data.

Press the [ ] key next to the down arrow icon on the display will display average weight graphically data.

Press the [ ] key will scroll back to beginning.

If during a production run it is apparent that the Reject Timing is not correctly set up: step into the Reject list via the 'Setup' menu and make adjustments for the appropriate product. Your changes will have an immediate effect.

Loadcell calibration and setting-up

This section provides a step-by-step guide to setting-up and calibration of the LOMA Checkweigher loadcell, there are two versions of loadcells which are available those being analogue loadcell and digital loadcell.

Please note that after performing a loadcell calibration on either an analogue or digital loadcell the products will all have to be calibrated.

Analogue Loadcell Version

ENGINEER

Description

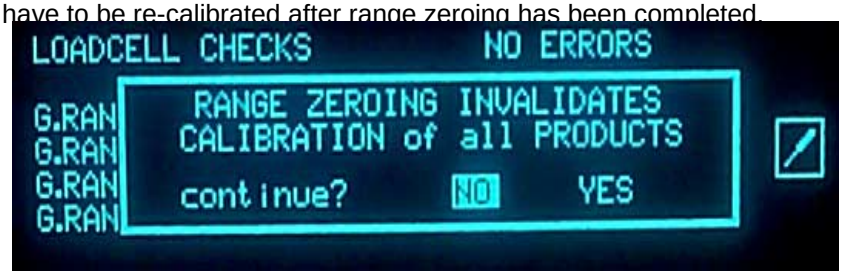
Use the [ ] key in this menu to select loadcell and then pressing [ ] key will show the Platform Load as a percentage for each of the Gain Ranges.

The nominal value for Platform Load is 5%.

The Platform Load should be between 3% and 7% for each of the Gain Ranges when there are no packs on the platform. If the Platform Load readings are outside this range, the DAC Nulls should be re-computed as follows.

Press the [ ] key next to the screw driver icon on the display.

A text message will appear asking if calibration has to continue. Note that all products will have to be re-calibrated after range zeroing has been completed.



Press the [▷] key to select the Yes command to continue the range zeroing.

This will go through each of the gain ranges setting them up one at a time, after each has been set a message at the side of each one will be displayed as success until it has finished the zeroing. Press the [◁] key next to the up arrow key will return to the system setup screen.To view the results use the [▽] key in this menu to select loadcell and then pressing [↵] key will show the Platform Load as a percentage for each of the Gain Ranges.

NOTE

The nominal value for Platform Load is 5%.

The Platform Load should be between 3% and 7% for each of the Gain Ranges when there are no packs on the platform. If the Platform Load readings are outside this range, the DAC Nulls should be re-computed (see Compute DAC Nulls). If the Platform Load values remain outside the range, call your Loma Service Centre.

It is acceptable for Gain Range 0 to be between 0% and 10%.

Digital Loadcell Version

LOMA

Description

Use the [▽] key in this menu to select loadcell and then pressing [↵] key will show the Platform Load as a weight in grams.

The nominal value for Platform Load is approximately 0.0g but will vary by a few tenth of a gram until calibration has been completed.

Press the [◁] key next to the screw driver icon on the display.

A text message will appear asking if calibration has to continue. Note that all products will have to be re-calibrated after platform nulling has been completed.

Press the [◇] key to select the Yes command to continue the platform nulling.

The Platform Load should be about 0.0g when there is nothing on the platform and no movement on the platform.

Press the [↵] key which will store the zero settings in the system.

Select the correct calibration weight for checkweigher from below: -

AS1500 = 2kg calibration weight
AS5000 = 5Kg calibration weight
ASDL = 5Kg calibration weight

Next place the calibration weight on the weigh platform and wait until the reading on the display has stabilised. Note that the reading will not read 2kg (AS1500) until it has been calibrated.

Press the [↵] key which will now store the maximum settings in the system and will also read the correct weight i.e. 2000g.

Press the [↵] key which will store the zero settings in the system.

Press the [☰] key when finished will return to system setup menu.

NOTE

A check can be carried out after calibration has been completed, this is done by entering loadcell checks menu again and with the platform clear the reading should be approximately 0.0g or +/- 0.2g and when the platform has a load of 1500g it should be within +/- 0.2g statically.

THE MENUS, A to Z

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Auto Zero Mode

ENGINEER

Description

Auto-Zero is a means by which the weight of the unloaded platform can be found automatically by the System. This is necessary as some production environments can cause product or debris build-up on the weigh-platform, which would otherwise affect the weight of the products and the accuracy of the machine.

Selection

Press the [▽] key to select the Auto-Zero mode selection position. Use the [↵] key to list the options available and step through to the required selection using the [▽] key and then press the [↵] key. Note the [△] key can be used to step backwards through the list of options.

Scope

NONE or SINGLE or TREND.

Default

TREND.

NOTE

‘NONE’ and ‘SINGLE’ modes are for unusual applications: do not select either of these modes unless you are advised to do so by your LOMA Service Engineer.

Batch Report

QUALITY

Description

The Batch Report is a hard copy of the statistics accumulated by the System since the last Batch Reset. Use the [ ] key) to manually select a requested Batch Report and press the [ ] key or by pressing the printer icon select [ ] key.

Batch Reports will also be issued when the System is taken out of Run mode; if the machine powers-up into Run automatically; or if a Batch Interval (count or time) has expired.

By pressing the screw driver icon select [ ] key this will enable the batch report to be enable to be by time & interval and not by batch count.

NOTE

This facility is only available on models supporting either an integral or external printer device or any of the MISM products i.e. Lomanet or Loma Online.

Calibrate

QUALITY

Description

Before the system can be used to inspect product it must be calibrated using a production package. Pressing the screw driver icon select [ ] key will enable this function to be carried out.

Recommended Values

For checkweighing systems use a sample product as close to the normal weight as possible. The entered weight during calibration is the GROSS weight (net weight and tare).

Calibrate Window

ENGINEER

Description

When passing the sample pack during the Checkweighing calibration procedure, values will only be accepted within a certain range. If a pass generates a value outside the range selected from the Calibrate Accept Window, the calibration procedure will re-start.

Scope

0.1% to 99.9% of F.S.D. (where F.S.D. is the Full Scale Deflection under a given Gain Range).

Defaults

1.0% F.S.D. It is rarely necessary to increase the default value, except during system diagnosis. If calibration values exceeds the calibration window, check for high levels of vibration, possibly due to worn bearings, drive belts or other conveyor components.

Check (In Run) Repeatability Checks

QUALITY

Description

Weigh check mode maybe used to check the performance of the Checkweigher.

During Check, the pack weight is displayed on the User Interface along with the sample Mean Weight, UN, Average Weight and a individual pack weight.

By passing the same sample package over the machine 20 times, the user may assess the repeatability and the accuracy of the checkweigher. After the 20th pass the display shows 6 SIGMA (6 x STANDARD DEVIATION) giving a measure of repeatability. By comparing the displayed MEAN WEIGHT with the actual package net weight, the user may assess the accuracy or mean error of the checkweigher.

Selection

Press the [ ] key to select the repeatability checks mode selection position and press the [ ] key to allow enter to run checks and to exit this function by pressing the [ ] key.

NOTE

Any packs passed during CHECK are not accumulated into the batch statistics. Therefore the CHECK facility should not be used whilst production is running.

Clear Log

QUALITY

Every time a System fault, Run error, or FAILSAFE problem is detected, the occurrence is logged in the appropriate Log, with the date and time it occurred, and the type of fault, error or size of the contaminant signal.

After this information has been viewed or printed as required, the Log containing the contaminant details can be cleared by pressing the [▽] key to select clear, then the [↵] key.

Compute DAC Nulls (Gain Range Zeroing)

ENGINEER

Description

The Compute DAC (Digital to Analogue Conversion) Nulls command is used to bring the unloaded weight of the weigh platform to approximately 5% Full Scale Deflection for each of the eight weighing Gain Ranges. This command must always be performed following a cold start, before any weighing activity can commence. However this would usually have been carried out either during Final Test, or when the machine is commissioned.

If for any reason you are required to perform the Compute DAC Nulls command, first make sure the weigh platform is unloaded and that the machine has been turned on for at least 15 minutes. Pressing the [ ] key to select loadcell and then pressing the [ ] key which will allow the system to enter loadcell checks. Pressing the [ ] key at the side of the screw driver icon on the display will carry out a range zeroing function in all 8 gain ranges. The gain ranges 0 to 7 will be stated as success when completed this command, to exit this function after completed by pressing the [ ] key next to the up arrow icon on the display.

The Compute DAC Nulls (Range Zeroing) command may take a minute or two to complete.

Configuration Report

QUALITY

Description

The Configuration Report contains details of values entered into the memory during System Build. These values include the weigh platform length, the conveyor speed, etc.

Use the [] key) to manually select a requested Config Report and press the [] key or by pressing the printer icon select [] key.

A copy of the System Configuration Report is sealed in a plastic wallet and attached to the side of the Electronic Control Chassis. This will be used by a service engineer to re-configure your machine in the event that the System Data is lost.

Copy

QUALITY

Description

When entering product details into the System, certain values or groups of values may be common to more than one product type.

The Copy commands can be used to help speed up entering new product details by allowing some or all of a particular product's details to be copied to one other product number, or to *all* other product numbers.

Selection

Pressing the [ ] key next to the two page icon on the display will allow entry in to a copy commands. The types of copy are Globe copy, setpoint copy & reject copy from this product details can be copied from one destination in to another destination. Using the [ ] key next to select the appropriate copy command followed by the [ ] key to enter source product No & Destination details.

Date

ENGINEER

Description

The AS Series checkweigher System contains a Clock & Calender function which is used to date and time-stamp reports and errors, etc.

Selection

The date can be set up by pressing the [ ] & [ ] keys to select the correct date, time & day and then enter numerically the correct figure followed by pressing the [ ] key to enter the information. Pressing the [ ] key will exit the machine data / passwords menu.

Item	Range	Default
Date	Day 0-31	01
	Month 0 - 12	01
	Year 0 -9999	1992
Time	Hours 01 - 24	01
	Minutes 01 - 59	01
	Seconds 01 - 59	01
Day	(Monday- Sunday)	Monday

Error Report

QUALITY

Description

The Errors Report will produce a hard copy of the contents of the Error Log. Each error listed will contain the date and time of the incident, together with an Error Number and a brief textual description.

Selection

Use the [▽] key to manually select a requested Errors Report and press the [↵] key or by pressing the printer icon select [◁] key.

Exit Run

QUALITY

Description

Use the [↵] key in this menu to Exit from the run mode will produce a screen asking to Exit Run ? Using the [◁] & [▷] keys to select YES or No and then pressing the [↵] key to initialise the selection which will return to the main menu.

This will be required to either calibrate the system, to change running product numbers, or to make adjustments within the Engineer level Menus. Most other tasks can be performed without leaving ‘Run’.

Factory Presets

LOMA

Description

The Factory Presets list contains information regarding machine set-up; for example, the length of the weigh platform, conveyor speed, and features list menu are entered here.

There should be no need to enter this list unless memory corruption has occurred, in which case you should contact your LOMA Service Centre.

Failsafe Problems

OPERATOR — View

QUALITY — Change

Description

The system will enter a failsafe mode if any of the following conditions occur:

- Any Electronic Failure Occurs
- Reject Operation Fails
- Reject Binfull is Detected
- Low Air Pressure is Detected
- The Photo Electric Cell is Damaged or Obscured
- Conveyor Guarding is Open

For more information see the FAULT & ERROR DIAGNOSIS section of the manual.

These conditions will cause the systems conveyors to stop, all inspection and rejection is suspended, in addition an output for a lamp or an alarm is provided.

Select the required function by pressing the [▽] key and then pressing the [↵] key to initialise the command.

- View the FAILSAFE PROBLEMS LOG
- Clear the FAILSAFE PROBLEMS LOG
- Clear all active FAILSAFE PROBLEMS

To generate a FAILSAFE PROBLEM LOG REPORT by pressing the [◁] key next to the printer icon on the display.

For further information on failsafe see the FAILSAFE REPORTING SYSTEM section of the MAINTENANCE SECTION of this manual.

NOTE

Some systems may have been configured with failsafe disabled. Check with your maintenance engineer or Loma representative.

Faults Report

QUALITY

Description

The Faults Report will produce a hard copy of the contents of the Fault Log. Each fault listed will contain the date and time of the incident, together with a Fault Number and a brief textual description.

Selection

Use the [] key to manually select a requested Fault Report and press the [] key or by pressing the printer icon select [] key.

Loadcell Checks (Pattern Approved)

ENGINEER

LOMA +

View **Change**

Description

The loadcell checks are used to check the status of the weigh platform and to calibrate the loadcell to the maximum working capacity of the system.

This command must always be performed following a cold start, before any weighing activity can commence. However this would usually have been carried out either during Final Test, or when the machine is commissioned.

If for any reason you are required to perform the calibration command, first make sure the weigh platform is unloaded and that the machine has been turned on for at least 20 minutes before calibration command is performed.

Logs Menu

View **Change**

Description

Use the [▽] key to manually select the required function from this menu to reach the System Faults, Run Error, Failsafe Problems Logs, & Pack pitch monitor menu. Then pressing the [↵] key to enter the selected function in the menu.

Machine ID

ENGINEER

Description

When your Loma Checkweigher was commissioned, the Machine Identity entered here was the Machine Serial Number.

You may change this value to reflect the line number/naming conventions in your factory if you wish.

The Machine Identity appears on all printed reports generated by the Checkweigher.

Pack Pitch Monitor

View **Change**

Description

This menu is for the 'Pack Pitch' Monitor built into the Loma Checkweigher. This allows the product presentation to be assessed for a given product and conveyor speed.

Using the [▽] key to select Parameters then pressing the [↵] key in this menu gives access to the following information:

Value	Range	Default	Selection
Nominal Pack Pitch	0 to 999 mm	0	Numbers Keys
Pitch Zone Width	0 to 20% of Pack Pitch	0	Numbers Keys
Pack Pitch Monitor	On/Off	Off	[◁] and [▷] Keys

The nominal pack pitch should normally be set to the length of the weigh platform + 50mm, and the zone width to around 10% of the Nominal Pack Pitch.

The results can then be viewed by pressing the [▽] key to select results then pressing the [↵] key in this menu which will give access to the information.

To reset the results by selecting reset in this menu using the [▽] key and then pressing the [↵] key.

For full details of the pack pitch monitor, refer to the appropriate manual supplement.

Passwords

ENGINEER

Description

Use the [] &] keys from this menu to check or change the Passwords assigned to the three Access Levels on your Loma Checkweigher.

Each Access Level from Quality, Engineer & Loma may be assigned a Password within the range 0 to 9999 by using the [**NUMBERS**] keys.

Access Level Loma remains protected for the protection of the user; there should be no requirement to access this level. If it is felt access is required, please contact your Loma Service Centre.

Platform Load

ENGINEER

Description

Use the [ ] key in this menu to select loadcell and then pressing [ ] key will show the Platform Load as a percentage for each of the Gain Ranges.

NOTE

The nominal value for Platform Load is 5%.

The Platform Load should be between 3% and 7% for each of the Gain Ranges when there are no packs on the platform. If the Platform Load readings are outside this range, the DAC Nulls should be re-computed (see Compute DAC Nulls). If the Platform Load values remain outside the range, call your Loma Service Centre.

It is acceptable for Gain Range 0 to be between 0% and 10%.

Product

OPERATOR — View

QUALITY — Change

Description

Use the [▽] key to select the Product setup and then pressing the [↵] key , and then using the [▽] and [△] keys to step through the list of products. Once the required product number / name has been selected press the [↵] key this will allow entry into product setup. Pressing the [◁] key next to the up & down arrow icons on the display will page up & down the menu. The actual parameters available will vary depending on the set-up of your particular machine, but may contain some or all of the following:

Product Memory Number

Product Code

Operation Mode: Combination
Metal Detector
Checkweigher

Pack Length

Weight Legislation: Average Weights
American MAV
American 3 Zone
Minimum Weights

Batch Count

Tare Weight

Nominal or Label Weight

Target Weight

High Setpoint or Over Cutpoint

TU1 Setpoint or Under Cutpoint

TU2 Setpoint

Reject Dwell & Delay settings.

Tracker & Servo (Options)

Reject Binfull

QUALITY

Description

Enter this menu position to select the desired Reject Outputs to have Binfull Detection.

Selection

Using the [ ] & [ ] keys to select the required reject binfull outputs and then to enable the command by pressing the [ ] key. Then pressing the [ ] & [ ] keys to select the Binfull Detection ON or OFF as required.

NOTE

The Reject Binfull list is not available unless enabled in the Features List.

Reject Configuration

ENGINEER

Description

Enter this menu position to select the desired Reject Station for each type of reject. It is possible to direct all types to the same reject station, or up to three separate stations can be used.

Selection

Using the [↵] key to enter the Reject Configuration list and then pressing the [▽] & [△] keys to step further through the list on the first page in the menu. To carry on to the next page press the [⇨] key next to the up & down arrow icons on the display will page up & down the pages.

For each of the listed reject Categories enter a value 1 to 3 to select the Reject Station where packs within that category will be rejected. Enter a zero for no rejection of packs of that category.

Default Values

Category	Default Value
TU2 / UNDER REJ ECT OUTPUT	1
TU1 REJ ECT OUTPUT	1
TU1 TO TU2 ACCEPT	2.5%
PASS/CORRECT OUTPUT	0
HIGH/OVER REJ ECT OUTPUT	0
NWM REJ ECT OUTPUT	0
METAL REJ ECT OUTPUT	0
AMC REJ ECT OUTPUT	0
MIS-WEIGH REJ ECT OUTPUT	0
SAMPLE PACKS REJ ECT OUTPUT	0
CALIBRATION REJ ECT OUTPUT	0

Suggested Settings

The Loma Checkweigher will generally be set up with the Underweights rejects (TU2/Under, TU1) set for station 1.

Reject Confirmation

QUALITY

Description

Press the [↵] key to set up the Reject Confirmation. You will need to enter the Reject Confirmation Delay Time and the Reject Confirmation Window for each Reject Station in the system that has been configured for Reject Confirmation.

The Delay is the time the system will wait before beginning to look for a rejected pack. The Window is the time interval in which the system expects to see that pack.

Selection

Press the [◁] & [▷] key to select which confirmation output is required in the menu and then pressing the [↵] key . Using the [◁] & [▷] keys to select OFF or ON. You will need to enable Reject Confirmation for every station that requires it, and then enter the delay and dwell time.

ITEM	RANGE ms	DEFAULT	SELECTION
Reject Station 1			
Confirm Delay Time	0 – 999	0	[**NUMBERS**]
Reject Station 1			
Confirm Window	0 – 999	0	[**NUMBERS**]
Reject Station 2			
Confirm Delay Time	0 – 999	0	[**NUMBERS**]
Reject Station 2			
Confirm Window	0 – 999	0	[**NUMBERS**]

NOTE

The Reject Confirmation would usually have been set up during Final test, or when the machine was commissioned.

Reject Mode

QUALITY

Description

Enter Reject Mode to select the desired Mode of Operation for each of the Reject Stations. Each Reject Station can be configured to operate in either 'Pulse', 'Pulse Extension' or 'Reject Till Accept' modes.

Selection

Using the [ ] & [ ] keys to select the required reject output 1 through 3 press the [ ] key in this menu. Then using the [ ] & [ ] keys to step through the list to select the desired mode of operation press the [ ] key.

Scope

Pulse, pulse extension, or reject-till-accept.

Default

Pulse mode.

NOTE

***Pulse* mode is suitable for all pusher and bopper types of reject, and has two parameters to set up:**

***Delay*: the time from the pack passing the PEC to the reject device operating.**

***Dwell*: The amount of time for which the reject device is activated.**

***Pulse Extension* mode is the same as pulse mode described above, except that the dwell time is extended if a second reject product reaches the reject device before the first reject product has timed out. This is suitable only for air blast type rejects..**

***Reject-till-Accept* mode is suitable for lift flap or drop flap reject devices, and has only a delay value. Once activated the reject will stay active until a good pack passes, at which point it will de-activate to allow the good pack down the line.**

Rejects

QUALITY

Description

This menu is used to set up the Rejects Delay Time and Reject Dwell for a particular product as follows:

ITEM	RANGE	RESOLUTION
Product Number	1 – 30	N/A
Reject Delay	0.00 – 99.99 S	0.01 S
Reject Dwell	0.00 – 9.99 S	0.01 S

NOTE

Delay Time is the elapsed time from the pack breaking the PEC beam to activation of the reject device.

Dwell is the length of time the reject device is activated for, and may not be meaningful for all devices. Refer to the section on reject modes for more information.

Report Log

QUALITY

Description

Any of the systems logs may be printed out using the **REPORT** key in the appropriate LOG menu.

The report will contain the last 20 entries that occurred, all of which is date and time stamped and detail the type of problem.

Reports

QUALITY

Description

The Reports request menus are selected using [↵] key from the report menu, and are used to generate print-outs showing information on Configuration, Errors, Faults, Pitch and Setpoints; as well as statistical information gathered during a production run in the form of Batch, Shift and Total Reports.

Reset Logs

QUALITY

Description

Every time a System Fault or Run Error is detected, the occurrence is logged in the appropriate Log. The Run Error and System Fault status lamp on the User Interface will illuminate if this is the case.

When the Log has been viewed and the errors and faults acted upon, if necessary, the Status Lamp may be turned off by pressing the [▽] key and selecting the various reset commands from there menu position and pressing the [↵] key.

Results (In Run)

OPERATOR

Description

This menu is used to view statistics on Pack classifications, values and Counts for the current batch. The following information is displayed – using the [ ] key next to the graph icon on the display and [ ] key next to the down arrow icon on the display. Pressing the [ ] key next to the up & down icons on the display will step through the list.

- Product No
- Small Display Text Weight
- Mean Weight & Average Weight
- Trend Graph Display
- Graph Settings
- Packs in Samples
- Graph Increment
- Product No & ID
- Large Display Text Weight
- Mean Weight & Average Weight
- Pack Classification
- Standard Deviation (SD)
- Coefficient of Variation (CV)
- Give Away Weight
- TU1-2 Percentage (%)
- TU2 Count & Weight
- TU1-TU2(R) Count & Weight
- TU1-TU2(A) Count & Weight
- Pass +/- Count & Weight
- High Count & Weight
- Accept Pack Count & Weight
- Reject Count & Weight
- Total Count & Weight
- Reject Ratio (%) & Run Errors

Run

QUALITY

Description

This function is used to start the machine operating (i.e. inspection of production) and should be entered only after all required set-ups and calibrations have been performed.

When entering the run mode select RUN using the [▽] & [△] keys then press the [↵] key. Select the required product number or name using the [▽] & [△] keys then press the [↵] key.

NOTE

Entry to RUN will only be allowed if a valid calibrate has been carried out. If this is not the case, an error message will be displayed.

It is recommended that a calibration is always carried out, before entry to Run.

Runtime Errors

OPERATOR

View

QUALITY

Change

Description

The Runtime Errors Menu allows you to View, Clear, Reset and Report the Runtime Error Log contents.

Run Time Errors will be generated by the Loma Checkweigher at any time if it detects certain conditions. These may include problems in the presentation of the product to the system. The Run Error Status Lamp on the User Interface will illuminate if this is the case.

Press the [↵] key to enter the Runtime Error menu.

Sample Packs Check

QUALITY

Description

Press [⏎] to start the check.

This special check routine requires:-

enabling (via the ***features list***)

'sample packs' must be assigned to a reject device

a printer must be included with the equipment

The sample packs routine allows the user to automatically remove and record a sample group of production packs without interrupting the production process. The sample packs printed report details the average weight and standard deviation of the sample group, in addition to the weight of each sample pack. By comparing the printed average weight with the actual weight obtained using an independent weighing machine, the user may assess the *mean error*. If the mean error is considered excessive the user should perform the **calibrate** routine.

Scope

The sample group may be set to a maximum of 100 packs. The default value is 5 packs.

Serial Links

ENGINEER

Description

The Serial Links menu contains the following information relevant to Serial Link control via the CCB Serial Port.

The number of Serial Links available will depend on the CCB Card fitted to the System. The Serial Links can be used for an External Printer, to transmit Pack Weights, the short term mean or send production information to a remote computer via the LOMALINK.

NOTE

The Serial Link menu is not available unless enabled in the Features List. This can be identified by NOT having * icon at the side of Serial Links.

Service Information

LOMA

Description

The Service Information contains details of entries into the Service Log. This information can be helpful to the Service department in analysing reasons for certain types of System Faults. Press the [↵] key to view and clear service log information via selecting the required command and pressing the [⇦] key next to the printer icon on the display will printer the information from the service log.

Setpoint Report

QUALITY

Description

This function is used to generate a print-out containing the following information:

Machine Identity

Product Number

Pack Length

Date and Time of Last Weighing Calibration

TU1 and TU2 Setpoints

Nominal Weight

Target Weight

High Setpoint

Tare Weight

Reject Station Delay & Dwell times

This report is automatically printed on entry to RUN.

Selection

Using the [▽] key to manually select a requested Set Point Report and press the [↵] key or by pressing the [◁] key next to the printer icon on the display.

NOTE

This facility is only available on models supporting an integral or external printer.

Setup Menu (Product)

OPERATOR — **View**

QUALITY — **Change**

Description

The product setup menu is used for entering information about the products that are to be run on the system. This includes product information, reject timing values and metal detection information.

Selection

To enter the product setup mode select PRODUCT SETUP using the [▽] & [△] keys then press the [↵] key. Select the required product number or name using the [▽] & [△] keys then press the [↵] key.

Shift Report

QUALITY

Description

The Shift Report is a hard copy of the statistics accumulated by the system since the last Shift Reset.

Shift Reports will also be issued when the system is taken out of Run mode; if the machine powers-up into Run automatically; or if a Shift Interval time has expired.

Selection

Using the [▽] key to manually select a requested Shift and press the [↵] key or by pressing the [◁] key next to the printer icon on the display.

NOTE

This facility is only available on models supporting an integral or external printer.

System Diagnostic

OPERATOR

View

QUALITY

Change

Description

This menu position is used for diagnosing system faults, run faults and failsafe problems which depending on password access level gains entry.

System Faults

Description

The System Faults menu allows you to View, Clear, Reset and Report the fault log contents.

System Faults will be generated by the system at any time if it detects certain conditions. These are generally related to the serial link functions. The System Faults Status Lamp on the user interface will illuminate if this is the case.

Selection

Press the [↵] key to enter the System Faults menu.

System Setup Menu

ENGINEER

Description

The System Setup Menus contain information more related to the operation of the System, as opposed to product information.

Refer to the diagram of The Menu Structure near the beginning of the Operator's Guide to see what functions are available in the System Setup Menus.

Selection

Use the [▽] key to select the System Setup and then pressing the [↵] key , and then using the [△] and [▽] keys to step through the list of functions. Once the required function has been selected press the [↵] key this will allow entry into the function.

Time

ENGINEER

Description

This function is used to set the time on the machine's internal clock (in 24-hour format).

Selection

The time can be set up by pressing the [ ] & [ ] keys to select the correct time and then enter numerically the correct figure followed by pressing the [ ] key to enter the information. Pressing the [ ] key will exit the machine data / passwords menu.

Item	Range	Default
Hours	0 – 24	12
Minutes	0 – 59	0

Timings

QUALITY

Description

This menu is used to set the time intervals for the batch, shift and totals reports. Pressing the [ ] or [ ] keys to select the type of report followed by the [ ] to enter the timings menu.

Separate timing parameters can be entered for Batch, Shift and Totals reports. You will need to enable a time interval for each report, and then enter the timing details. For example, to set the batch report to print every 2 hours,

First set:

BATCH REPORT TIME INTERVAL * ON,

then step down the menu to enter the time: hh:mm

BATCH INTERVAL TIME: 02:00

This procedure should be followed for shift and totals reports if required.

The REPORT SYNCH TIME is used to synchronise the generation of all reports to a particular time. For example, if your production starts at 6am, you may wish to enter this as a synch time. If the system is already in RUN before this time, then as 6am is reached, an interim report is issued, the batch, shift and totals statistics are reset, and the report intervals are synchronised at 6am.

Default

REPORT TYPE	DEFAULT TIME INTERVAL
BATCH	00:00 (OFF)
SHIFT	00:00 (OFF)
TOTALS	00:00 (OFF)

NOTE

If the time interval is set to OFF for any report, the report will be printed on exit from RUN.

Totals Report

QUALITY

Description

The Total Report is a hard copy of the statistics accumulated by the System since the last Total Reset.

Total Reports will also be issued when the System is taken out of Run mode; if the machine powers-up into Run automatically; or if a Total Interval time has expired.

Selection

Using the [▽] key to manually select a requested Shift and press the [↵] key or by pressing the [◁] key next to the printer icon on the display.

NOTE

This facility is only available on models supporting an integral or external printer.

View Logs

OPERATOR

Description

The list of errors, faults, and failsafe problems can be viewed by pressing the key at the appropriate menu position menu and then scrolling through the list using the up and down keys.

When the log contents have been viewed and acted upon, if necessary, the Status Lamp may be turned off and all " active" entries set to " passive" by resetting them.

Selection

Use the [ ] key to manually select the required function from this menu to reach the System Faults, Run Error, and Failsafe Problems Logs menu. Then pressing the [ ] key to enter the selected function in the menu.

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7.1 Installation – Mechanical (AS1200C, AS1500, AS5000 PWT & AS Draglink)

7.1.1 Preparing to Install the Machine

The system is dispatched from Loma Engineering in the following state:

- Feet are screwed fully in.
- The load transducer oil breather is closed.
- Delicate items are covered in protective wrapping material.
- The powered weigh table is locked by the platform stops (if fitted)

7.1.2 Space Required for Installation and Maintenance

It is important that sufficient free space is left at the front and back of a checkweigher to enable commissioning and maintenance personnel to easily gain access to components. It is recommended that a minimum of 1 metre free space is available at the front and rear of the machine.

7.1.3 Lifting and Moving the Machine

Either a crane or a fork-lift truck will be required to lift and move it to the final location.

7.1.3.1 Using a crane

1. Position the straps beneath the machine so that it will not tilt when lifted. Attach the straps to the crane.
2. Lift the machine and carefully move it to the required location.
3. Lower the machine and remove the straps.

7.1.3.2 Using a Fork Lift Truck

1. Position the forks beneath the machine so that it does not tilt. Raise the lift sufficiently to lift the machine clear of the ground and any obstacles.

2. Carefully move the machine to the required location.

3. Lower the forks and withdraw them from the machine.

NOTE

Do not attempt to lift or move a machine by a reject cover. Reject covers are made of plastic and are easily damaged.

7.1.4 Removal Of Packing Materials

1. Remove and discard all packing and protective materials.

2. Machines for customers in Europe or Eire may have been secured to the pallet by 20mm bolts which are screwed into the underside of the legs. Remove these bolts if fitted.

7.1.5 Adjusting/Levelling the Machine

1. Level the machine by adjusting the foot studs. The stud flats are 17mm A/F. Make sure that all feet are firmly on the ground, and are evenly supporting the machine so that it does not rock. If necessary, anchor the machine to the ground using bolts screwed into the feet. Do not fasten the machine to any other piece of machinery as vibration can be transmitted to the platform, resulting in inaccurate weighing.

2. When the height is correct, lock the foot stud half-nuts. The lock nut hexagon is 30mm A/F. Failure to do so can have an adverse effect on performance.

3. You are recommended to apply silicone sealant around the feet and floor.

7.1.6 For Machines Incorporating Metal Detection

If your system includes a metal detector please read the following notes:

7.1.6.1 External Factors Affecting Metal Detection

The following factors may have detrimental effect on the performance of the metal detector part of this equipment.

Fixed Metal

Metal that is nearer to the metal detector aperture than 1.5 times the smaller of the two aperture dimensions can be a major cause of poor performance, requiring the detector to be run at a reduced sensitivity.

Moving Metal

Moving metal must be sited at least 3-times the smaller of the two aperture dimensions from the centre of the head. Supply cables or conduits draped across or to one side of the conveyor and not rigidly fixed can constitute moving metal.

Vibration

It is important that the head is not subjected to excessive vibration, do not use the head as a convenient point to anchor any conduit or pipework whatever, whether it be rigid or flexible.

Do not use the head as a walkway across the conveyor or as a convenient writing desk or repository for odds and ends.

Electrical Interference

The detector head has been designed with a high immunity to mains borne interference. If trouble is experienced, the offending devices should be located and suppressed at source where it is much easier to control. The detector may have to be run at a reduced sensitivity if this is not possible. We must also highlight the possible problem of other metal detectors that may be in the vicinity. These could cause interference if operating on the same frequency. We advise a distance of not less than SIXTEEN TIME THE SMALLEST APERTURE (i.e. Height or Width) between the detectors.

All inductive devices, such as reject solenoid valve coils, motor starter contacters and similar devices, should be suppressed by fitting suitable suppressors across the inductive load as close as possible to the coil. Other devices such as thyristor control gear should be suppressed in the best possible

manner. Airborne interference is more difficult to deal with as it is being picked up by the search coil acting as an aerial. Common sources are radio paging aerials and loops, R.F. Heaters, welders of all types and even airport radar. The only cure is to re-orientate either detector head or the source of interference so that the aperture is not looking directly at it.

Spurious Triggering

As the unit is a metal detector it can detect moving metal anywhere within the metal free area up to a distance of twice the smaller of the aperture dimensions away from the head.

This metal can be:

- Operators rings or watches.
- Belt contamination even by small particles of rust.
- Metallic inks or labels.
- Metallic frames to infeed or outfeed guards.
- Low grade or reclaimed cardboard packaging materials which often contain metallised paper or foil.
- Washers or swarf under the skid plate.

7.1.7 Setting the Weigh Platform Stops (When Fitted)

Prior to leaving the Loma factory, the platform stops are set to protect the weighcell during transit. Before the checkweigher can be used, but after it has been placed in position, the platform stops must be adjusted. Do this as described below.

1. Refer to Figure 7.1. Wind the four bottom stops and four side stops fully back, by loosening the locknuts and screwing back the stop bolts, using a 10mm A/F spanner.

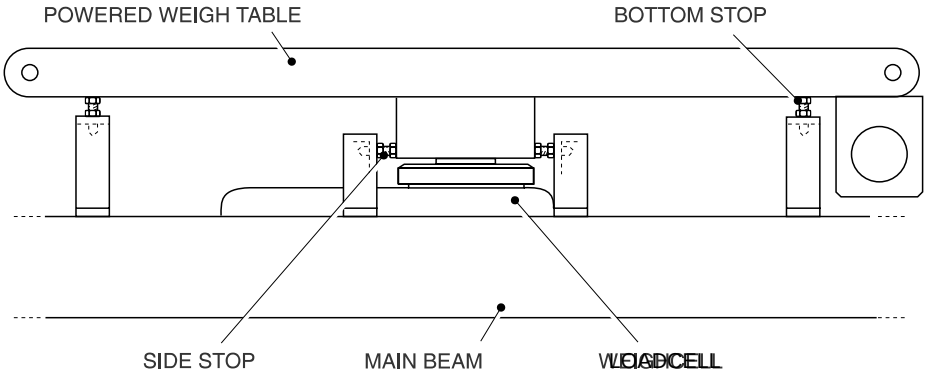

Figure 7.1 Weigh Platform Stops

2. Refer to Figure 7.2. Using a feeler gauge, set the gap between the head of each of the four side stop bolts and the support bracket to 1 mm. When each gap is correct, lock into position by tightening the lock nut.

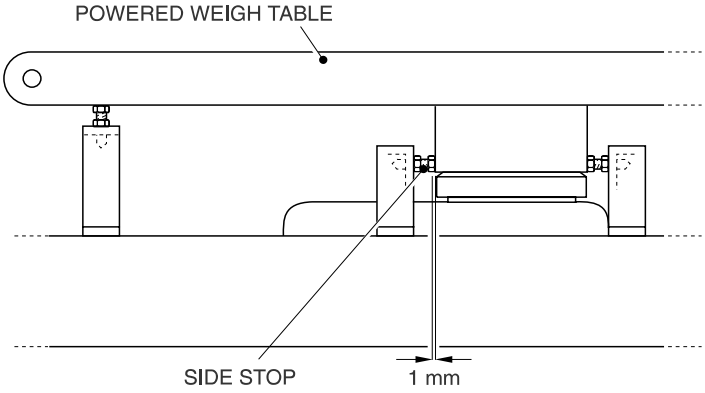

Figure 7.2 Weigh Platform Side Stops

7.1.8 Loadcell Systems

If the system is fitted with a strain gauge loadcell, then after the machine has been placed in line, set the loadcell as described. Identify the loadcell model, then follow the appropriate section below, note that the AS1200C platform appears different to that shown but the setting procedure is the same.

Caution

The system must be allowed to stand still for a minimum of 3 hours prior to use. Failure to do so may cause blockage of the breather holes, resulting in malfunction of the loadcell.

7.1.8.1 Loadcell model 240

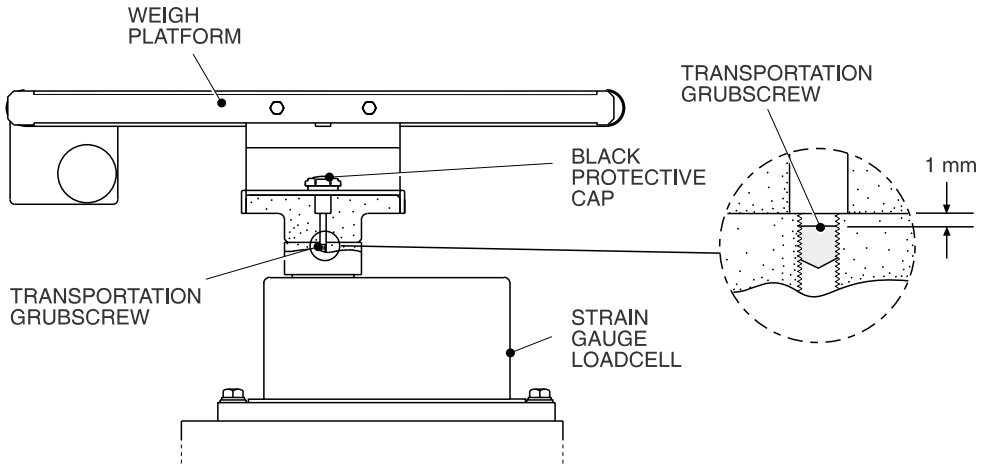

Figure 7.3 Model 240 Strain Gauge Loadcell

1. Remove the black protective cap.

2. Using a 3mm A/F Allen key, turn the transportation grubscrew counter-clockwise.

3. Replace the black protective cap.

   If the machine needs to be moved, screw the transportation grubscrew fully down before doing so. When the machine is re-positioned carry out the above procedure.

7.1.8.2 Loadcell model 9010

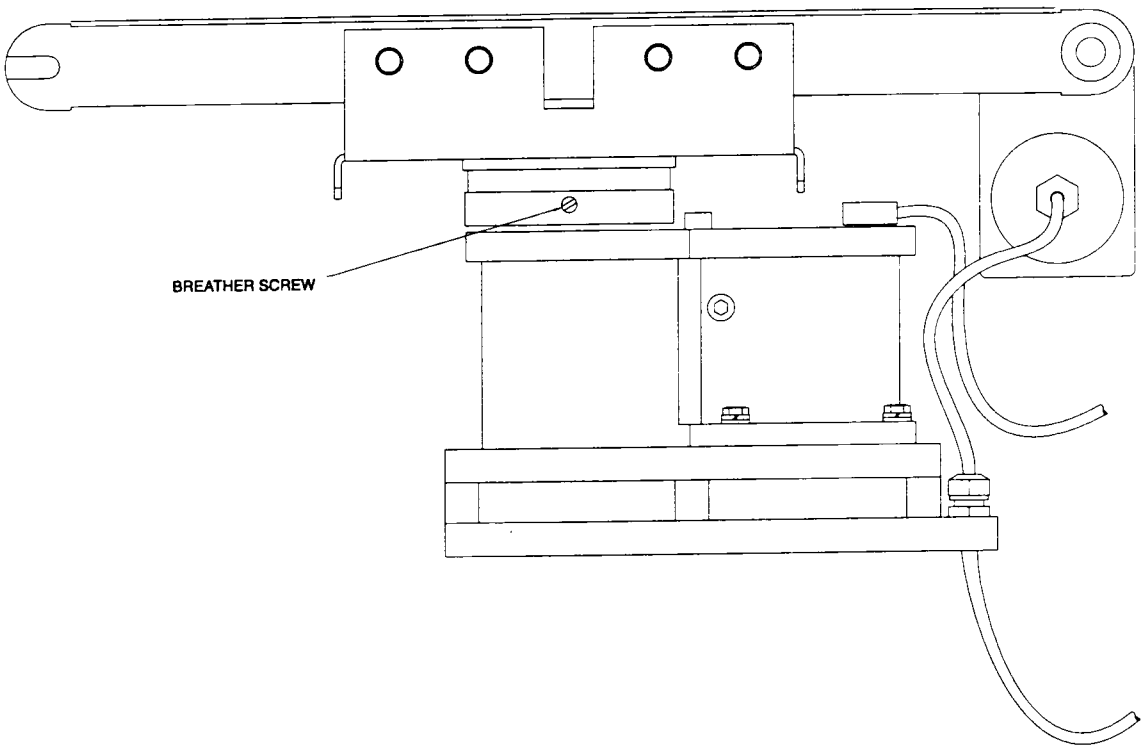

Figure 7.4 Model 9010 Strain Gauge Loadcell

Open breather screw (4 turns counter clockwise).

If the machine needs to be moved, screw the transportation grubscrew fully down before doing so. When the machine is re-positioned carry out the above procedure.

7.2 Installation – Mechanical (AS Heavyweight)

7.2.1 Preparing to Install the Machine

The system is dispatched from Loma Engineering in the following state:

- Feet are screwed fully in.
- Delicate items are covered in protective wrapping material.
- The powered weigh table is locked by the platform stops (if fitted)

7.2.2 Space Required for Installation and Maintenance

It is important that sufficient free space is left at the front and back of a checkweigher to enable commissioning and maintenance personnel to easily gain access to components. It is recommended that a minimum of 1 metre free space is available at the front and rear of the machine.

7.2.3 Lifting and Moving the Machine

Caution

Do not use a crane or hoist to install this equipment as this may result in damage to the weigh platform or loadcell

7.2.3.1 Using a Fork Lift Truck

1. Position the forks beneath the machine so that it does not tilt at the lifting points indicated (see Figure 7.5). Raise the lift sufficiently to lift the machine clear of the ground and any obstacles.

2. Carefully move the machine to the required location.

3. Lower the forks and withdraw them from the machine.

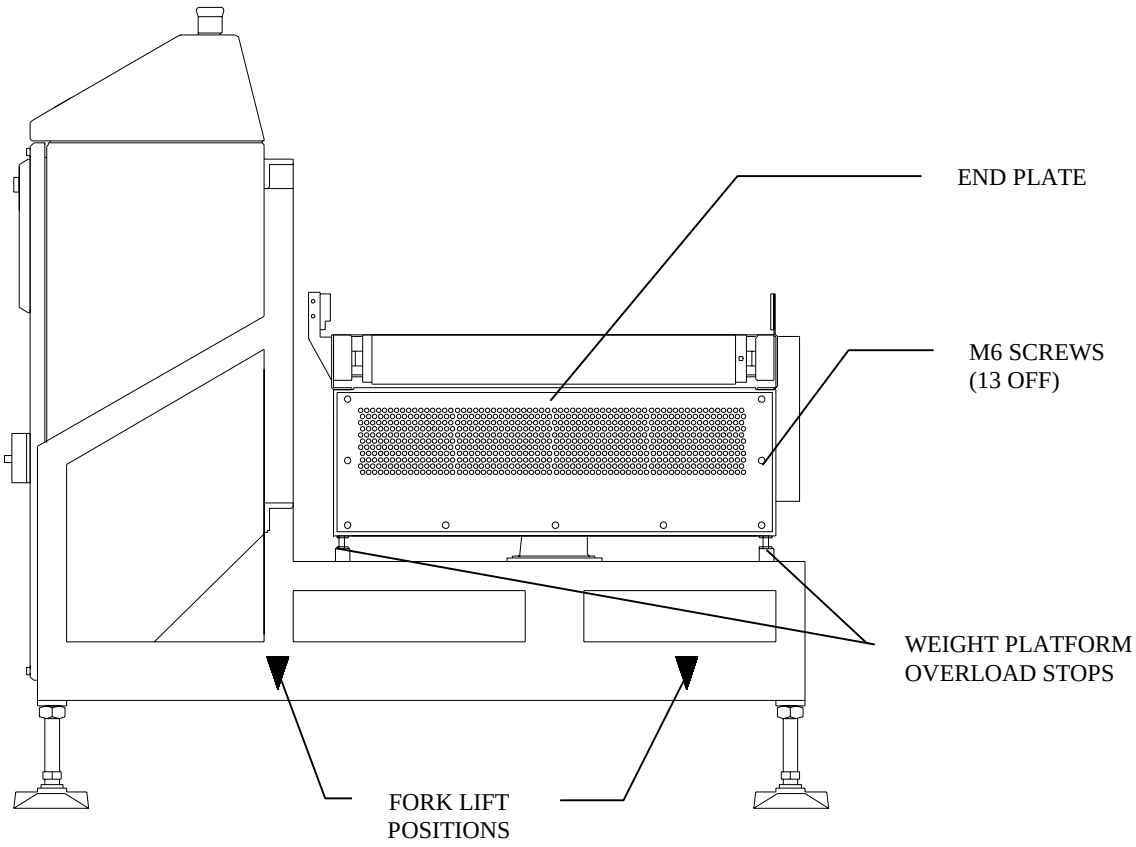

Figure 7.5 End View of Checkweigher

7.2.4 Removal of Packing Materials

1. Remove and discard all packing and protective materials.

2. Machines for customers in Europe or Eire may have been secured to the pallet by 20mm bolts which are screwed into the underside of the legs. Remove these bolts if fitted.

7.2.5 Adjusting/Levelling the Machine

1. Level the machine by adjusting the foot studs. The stud flats are 17mm A/F. Make sure that all feet are firmly on the ground, and are evenly supporting the machine so that it does not rock. If necessary, anchor the machine to the ground using bolts screwed into the feet. Do not fasten the machine to any other piece of machinery as vibration can be transmitted to the platform, resulting in inaccurate weighing.

2. When the height is correct, lock the foot stud half-nuts. The lock nut hexagon is 30mm A/F. Failure to do so can have an adverse effect on performance.

3. You are recommended to apply silicone sealant around the feet and floor.

7.2.6 For Machines Incorporating Metal Detection

If your system includes a metal detector please read the following notes:

7.2.6.1 External Factors Affecting Metal Detection

The following factors may have detrimental effect on the performance of the metal detector part of this equipment.

Fixed Metal

Metal that is nearer to the metal detector aperture than 1.5 times the smaller of the two aperture dimensions can be a major cause of poor performance, requiring the detector to be run at a reduced sensitivity.

Moving Metal

Moving metal must be sited at least 3-times the smaller of the two aperture dimensions from the centre of the head. Supply cables or conduits draped across or to one side of the conveyor and not rigidly fixed can constitute moving metal.

Vibration

It is important that the head is not subjected to excessive vibration, do not use the head as a convenient point to anchor any conduit or pipework whatever, whether it be rigid or flexible.

Do not use the head as a walkway across the conveyor or as a convenient writing desk or repository for odds and ends.

Electrical Interference

The detector head has been designed with a high immunity to mains borne interference. If trouble is experienced, the offending devices should be located and suppressed at source where it is much easier to control. The detector may have to be run at a reduced sensitivity if this is not possible. We must also highlight the possible problem of other metal detectors that may be in the vicinity. These could cause interference if operating on the same frequency. We advise a distance of not less than SIXTEEN TIME THE SMALLEST APERTURE (i.e. Height or Width) between the detectors.

All inductive devices, such as reject solenoid valve coils, motor starter contacters and similar devices, should be suppressed by fitting suitable suppressors across the inductive load as close as possible to the coil. Other devices such as thyristor control gear should be suppressed in the best possible manner. Airborne interference is more difficult to deal with as it is being picked up by the search coil acting as an aerial. Common sources are radio paging aerials and loops, R.F. Heaters, welders of all types and even airport radar. The only cure is to re-orientate either detector head or the source of interference so that the aperture is not looking directly at it.

Spurious Triggering

As the unit is a metal detector it can detect moving metal anywhere within the metal free area up to a distance of twice the smaller of the aperture dimensions away from the head.

This metal can be:

- Operators rings or watches.
- Belt contamination even by small particles of rust.
- Metallic inks or labels.
- Metallic frames to infeed or outfeed guards.
- Low grade or reclaimed cardboard packaging materials which often contain metallised paper or foil.
- Washers or swarf under the skid plate.

7.2.7 Setting Overload Stops

7.2.7.1 Loadcell Overload Stop

The checkweigher loadcell is fitted with an overload stop. This stop is set prior to the checkweigher leaving the Loma factory. It does not require any further adjustment.

7.2.7.2 Setting the weigh platform Overload Stops

Caution

Before the checkweigher is transported, the weigh platform stops must be unscrewed so as to touch the bottom of the platform, then locked in position. Take care not to jack up the platform with these stops.

To protect the weigh platform and loadcell from any accidental damage due to overloading or off-centre loading during transit and prior to operation, four overload stops are provided – one at each corner of the platform.

Before the machine is used, but after it has been placed in position, the platform stops must be adjusted. Do this as described below.

1. Refer to Figure 7.6. Loosen the lock nuts using a 13mm A/F spanner.

2. Using a feeler gauge, set the gap between the head of each of the four stop bolts and the weigh platform to between 2 – 3 mm. When the gap is correct, lock into position by tightening the lock nuts.

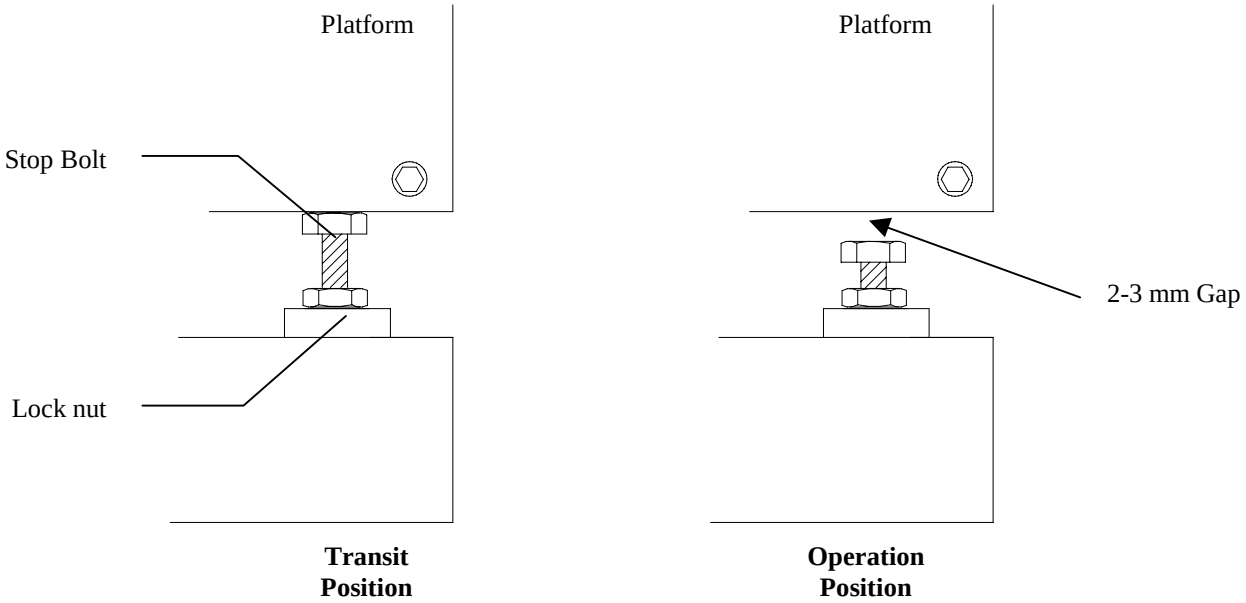

Figure 7.6 Overload Stop Adjustment

7.3 Installation - Electrical

7.3.1 Connecting Electrical Supplies

NOTE: - A 10Amp Type `C` miniature circuit breaker will have to be fitted to main distribution board due to the inverters high inrush current. The supply voltage for the system is indicated on the identification plate that is mounted on the frame.

1. Open the door of the electrical service box by unscrewing the bolts that hold the door in place.

2. The isolator switch is located at the front left-hand side of the box. Beneath it at the rear of the box there is a cable gland mounted in the bottom. This provides access for the power cable.

3. The system requires a single-phase mains input. Delta Enfield 326-MF3 cable is recommended for this purpose. Insert the cable through the cable gland.

NOTE: - Do not use rigid conduit of any type. Rigid conduit can lead to vibration being transmitted to the platform, resulting in inaccurate weighing.

4. Split the cable inside the box and cut the wires to suitable lengths.

5. Refer to Figures 7.7-1 & 7.7-2 for the two versions of isolator switch wiring details. Make the connections to the isolator switch as specified in Table 7.1.

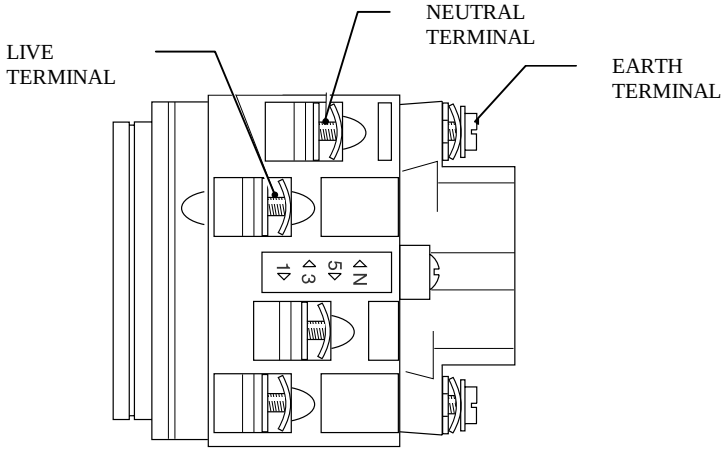

Figure 7.7-1 Isolator Switch Terminals (Klockner- Moeller)

Figure 7.7-2 Front view of Isolator Switch Terminals (Telemecanigue)

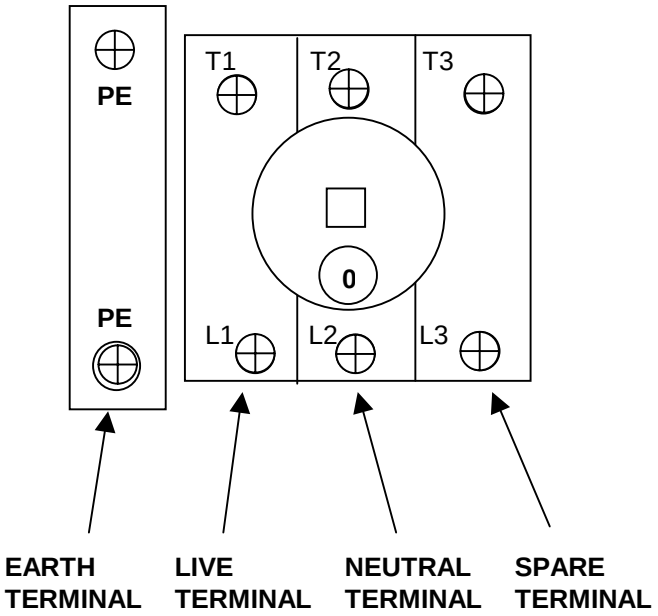

Table 7.1 Electrical Supply Connections

European	Colour	North America	Colour	Terminal (Klockner-Moeller)	Terminal (Telemecanigue)
LIVE	Brown or Black	HOT	Black	3	L1
NEUTRAL	Blue	NEUTRAL	White or Blue	N	L2
EARTH	Green/Yellow	GROUND	Green	E	PE
SCREEN	-	SCREEN	-	E	PE
SPARE	-	SPARE	-	-	L3

6. Check that all connections are secure

7. Finally, close the door and tighten the securing bolts.

7.4 Installation - Pneumatics

7.4.1 Connecting the Air Supply

NOTE

If the system does not have a pneumatically-operated reject, this section can be ignored.

A compressed air supply is required when the system is fitted with an pneumatically-operated automatic reject system. The minimum air pressure must not fall below 65psi (4.5 bar) when the reject operates.

With the exception of a system that is fitted with an air-blast reject, the air supply is connected to an air regulator assembly. This is connected to the reject device. An air-blast type reject does not require the use of the regulator. If the checkweigher is fitted with a plough reject mechanism, a filter unit is also supplied. This is attached to the regulator. Other air-operated reject mechanisms do not require the use of a lubricator, and one is therefore not fitted. Figure 7.8 shows a typical air regulator and Filter unit assembly.

If the system is fitted with an air regulator/filter unit, adjust the pressure setting described below. Refer to Figure 7.8.

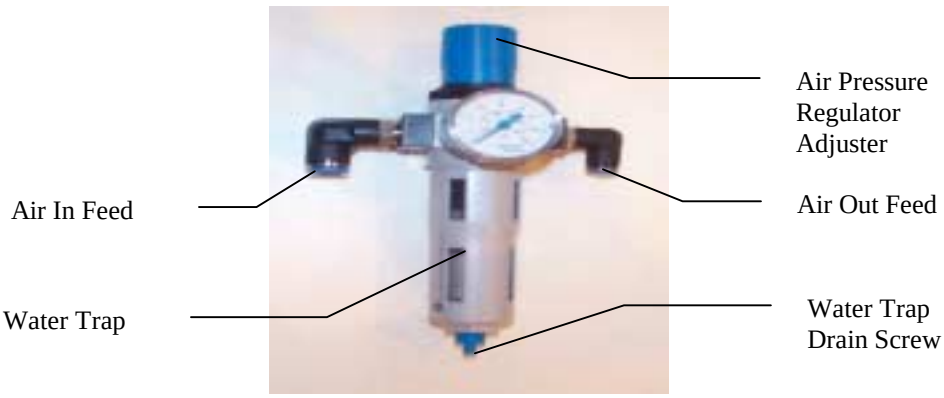

Figure 7.8 Air Regulator and Filter Unit Assembly

NOTE

The checkweighers may be fitted with a low-air pressure switch that is wired into the failsafe circuit. This goes open circuit if the air pressure falls below 40psi (2.8 bar) and automatically stops all system conveyors.

1. The air supply to the machine should be connected to the push-in fitting provided. This fitting is located either on the air filter-regulator unit, near the air pressure switch or on the air blast solenoid valve.

2. Adjust the air pressure to 80 psi (6 bar), using the regulator.

3. If the reject is an air-blast type, an air regulator is not fitted to the system. Refer to Figure 7.9.

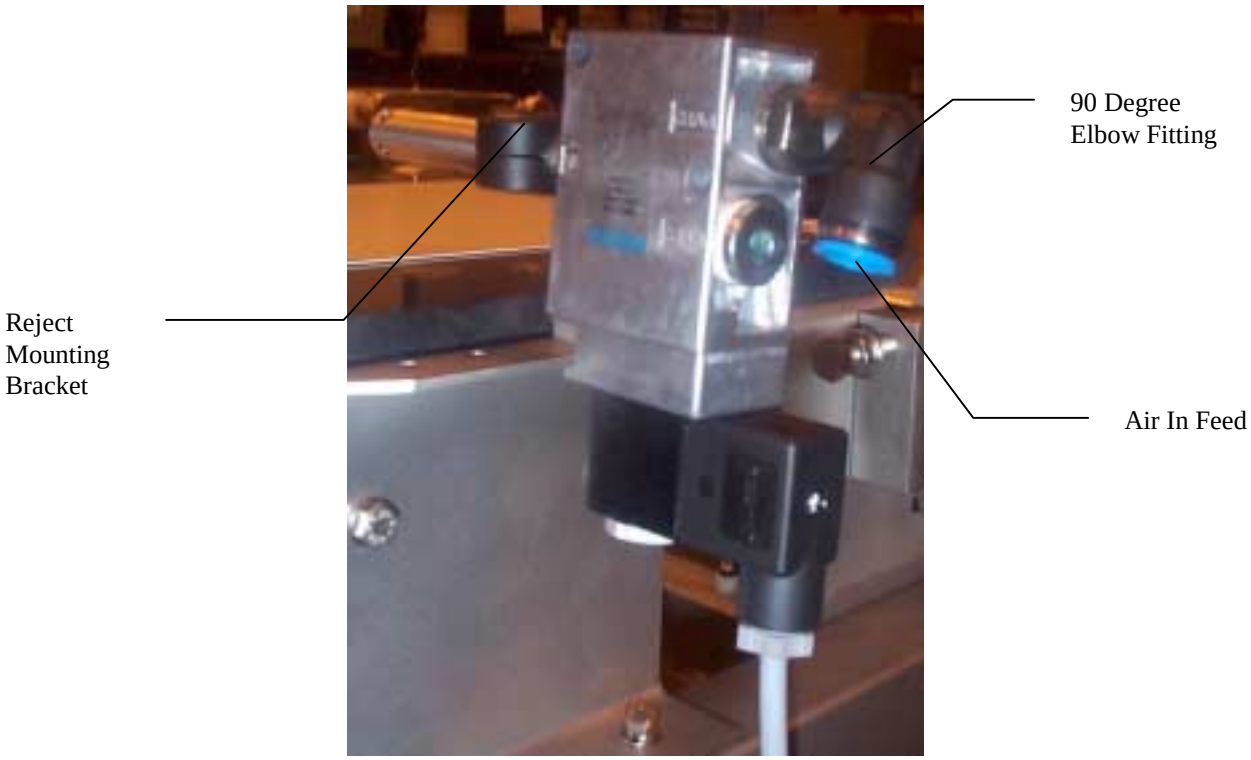

Figure 7.9 Direct Air Supply Connection to an Air Blast Reject

7.5 Checking

7.5.1 Checking Guards

1. Check that all guards are securely fastened in place.

2. Check that the infeed and outfeed of the system are clear of obstructions.

7.5.2 Powering Up the System

WARNINGS

1. LETHAL HAZARD – ELECTRICAL AND COMPRESSED AIR SUPPLIES. This equipment uses electrical and compressed air supplies that can be lethal. Unless absolutely necessary, work must not be carried out without first isolating the equipment from all electrical and compressed air supplies.

2. WORKING ON EQUIPMENT. If it is essential to work on the equipment with electrical and/or compressed air power connected, the work must be undertaken only by qualified personnel who are fully aware of the danger involved and who have taken adequate safety precautions to avoid contact with dangerous voltages or compressed air supplies.

3. EMERGENCY SHUTDOWN OF A CONVEYOR. This equipment is fitted with an emergency stop button that is coloured red. In the event of an emergency which requires the checkweigher to be immediately stopped press the emergency stop button.

1. At the electrical services box, switch on the main isolator.

2. Switch on the compressed air supply to the system.

3. At the Control Unit, press the ‘Start’ button. Check that the Conveyor belts run in the correct direction.

7.5.3 Checking Belt Tracking

The belt must be checked for correct tracking before running the conveyors for any length of time. The tracking adjusters are found on the conveyor idle rollers on the checkweigher.

If belt tracking needs to be reset, carry out the belt tracking procedure described in the section titled *Routine Maintenance (Weekly/Monthly)* in the Maintenance section of this manual.

7.5.4 Setting Up Reject

WARNING

REJECT DEVICES. At no time, with air and/or electrical power applied to an automatic reject device, should any part of the body be placed within the operating area of the reject device.

7.5.4.1 General

The system is supplied with the reject mechanism correctly set up for at least one product.

If the reject Delay and Dwell times need to be adjusted for further products, these are set up via the user interface from the control panel. Refer to the sections titled *Reject Options* in the A-Z Menu section, and *Rejects* in the Product Setup example in the Operators Guide section.

7.5.5 Air Blast Reject

Since this type of reject has no throttles, the only variables that can be adjusted are the reject delay and dwell times. There is no air regulator supplied with the air blast reject. However, the air supply pressure should be approximately 100psi (6.9 bar).

7.5.6 Pusher and Plough Rejects

The system is supplied with the reject cylinders already set, and normally no further adjustment should be necessary.

If adjustment is required, refer to Figure 7.10 and carry this out as described below.

1. At the solenoid valve, adjust the two throttle screws, in conjunction with the reject delay and dwell times, until the required reject timing and speed of operation are obtained. Both the reject timing and the speed of operation are affected by the air pressure supplied to the system.

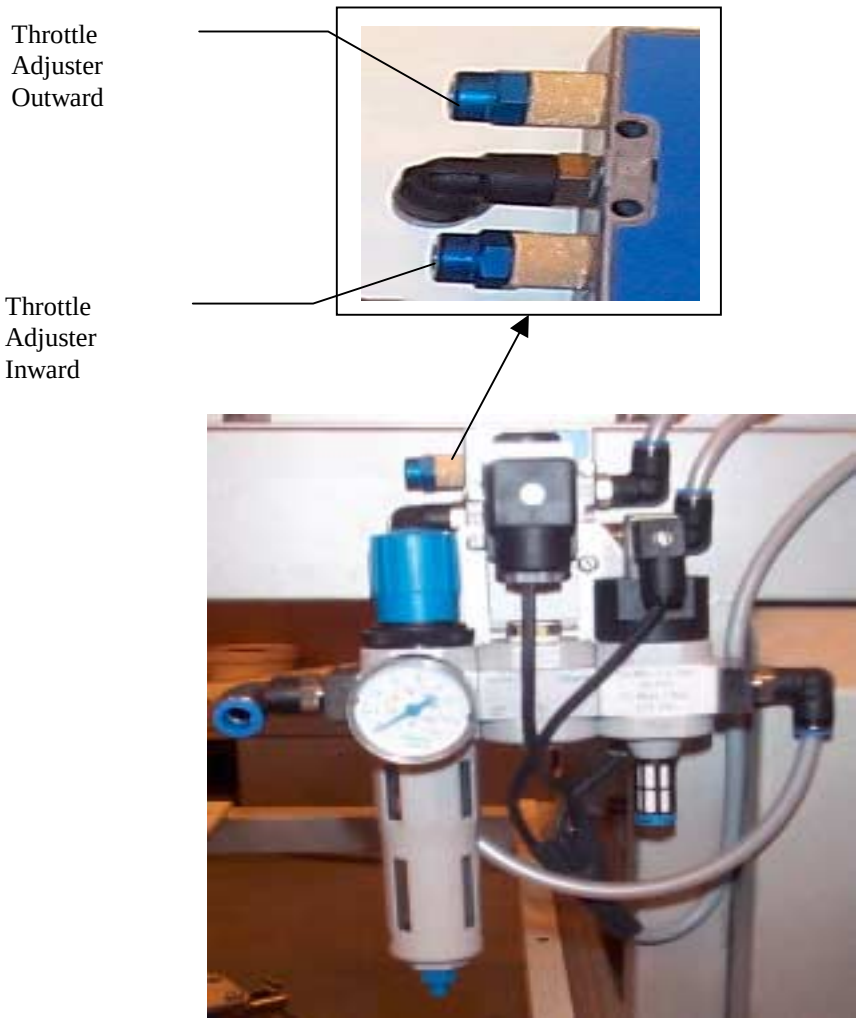

Figure 7.10 Pusher and Plough Reject

In certain instances Loma may supply a Reject Device only, and the end user supplies the Reject Catchment Device, Bin / Table, etc. The safety of the Reject Device is therefore a function of the design of the User's Reject Catchment Device. It becomes the User's responsibility to ensure the safety of the complete Reject System.

In most instances the product is delivered onto the system by conveyors. The System has to have entry and exit points. There is a possible hazardous area at the transfer between the conveyors. Loma rely on the total line being made safe by the End User.

WARNING

The Electrical Services Box contains electrical devices which are at 240V, 220V or 110V potential. These voltages may cause injury or death on contact. Work in this area should only be carried out by a qualified Technician with the Isolator switched off. (The Isolator is located at the bottom left-hand side of the Electrical Services Box.)

Diagnostic work should not be undertaken unless the Technician has been Loma trained.

WARNING

OPERATION IN A WET LOCATION. Under no circumstances must an AS1200C machine be used in a wet location. Any other AS machine must be used in conjunction with either a ground fault interrupter or RCCB.

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8.1 Inspection and Cleaning

(All types of AS series checkweighers).

WARNINGS

1. **LETHAL HAZARD – ELECTRICAL AND COMPRESSED AIR SUPPLIES. This equipment uses electrical and compressed air supplies that can be lethal. Unless absolutely necessary, inspection and cleaning must not be carried out without first isolating the machine from all electrical and compressed air supplies.**

2. **WORKING ON EQUIPMENT. If it is essential to work on the equipment with electrical and/or compressed air power connected, the work must be undertaken only by qualified personnel who are fully aware of the danger involved and who have taken adequate safety precautions to avoid contact with dangerous voltages or compressed air supplies.**

8.1.1 Cleaning Materials Required

The AS1200C machine is designed for wipe down cleaning; a damp cloth only should be used to clean the machine. Under no circumstances should an AS1200C machine be subjected to a wash down cleaning regime.

The other AS machines can be washed down and the following are required:

- Mild detergent.
- Clean water

8.1.2 Daily

1. Isolate the electrical and compressed air power supplies to the system.
2. Check that there is no build up of debris on the weigh platform.
3. Check that the belt and belt rollers are clean and are free from a build up of either product or foreign material, e.g. wrapping film. Material on the rollers may cause incorrect tracking of the belt.
4. Check that the reject container is not full. This is particularly important if a ‘Bin Full’ detection device is not fitted. If necessary, empty the container in accordance with company practice.
5. Either wipe or wash the system using a mild detergent solution.

6. Thoroughly clean the weigh platform and belt rollers, ensuring that they are free from a build up of either product or foreign material, e.g. wrapping film.

NOTE

When cleaning the weigh platform, take care not to subject the loadcell or platform to any abnormal forces.

7. Clean the photo-electric cell (PEC) and reflector.

8. Switch on the electrical and compressed air power supplies to the system.

WARNING

REJECT DEVICES. At no time, with air and/or electrical power applied to an automatic reject device, should any part of the body be placed within the operating area of the reject device.

9. Check that the reject mechanism successfully rejects a recognised bad product into the reject collection device.

8.1.3 Weekly Inspection

1. Isolate the electrical and compressed air power supplies to the system.

2. Check the security of fixtures and fittings. Check that all guards are securely fastened in place. (Electrical interlocks may be fitted).

3. Check that the system and associated equipment has been cleaned correctly and there is no build-up of product or debris.

4. Inspect the conveyor belts for damage.

5. Check that the conveyor belts are correctly tensioned and are neither too tight or too slack. If a belt feels too loose but is still capable of moving the product without slippage, it may need to be adjusted. If a belt is too loose, adjust it as described in the section titled *Routine Maintenance (Daily/Weekly)*. **Over tensioning the belt may cause damage to bearings and motors.**

8.2 Routine Maintenance (Daily/Weekly)

(All types of AS series checkweighers).

The 'Daily/Weekly' routine must be carried out on a daily basis when the system is in constant use, but can be stretched to a week when the demands on it are low. If you have any queries relating to the maintenance of your system, your Loma Service Centre will be pleased to advise you.

WARNINGS

1. **LETHAL HAZARD – ELECTRICAL AND COMPRESSED AIR SUPPLIES. This equipment uses electrical and compressed air supplies that can be lethal. Unless absolutely necessary, maintenance must not be carried out without first isolating the system from all electrical and compressed air supplies.**

2. **WORKING ON EQUIPMENT. If it is essential to work on the equipment with electrical and/or compressed air power connected, the work must be undertaken only by qualified personnel who are fully aware of the danger involved and who have taken adequate safety precautions to avoid contact with dangerous voltages or compressed air supplies.**

3. **CONTAMINANTS. Oils and greases must always be handled with care. Prolonged bare skin exposure to certain oils and greases can cause skin problems. Always handle oils and greases in accordance with the manufacturer's instructions.**

8.2.1 General Maintenance

WARNING

REJECT DEVICES. At no time, with air and/or electrical power applied to an automatic reject device, should any part of the body be placed within the operating area of the reject device.

1. Switch on the electrical and compressed air supplies to the system.

2. Ensure that the system feet are all in firm contact with the floor and that the locking nuts are tight.

3. If a reject mechanism is fitted, check it by passing a known underweight pack and ensuring a clean reject is achieved. (For systems fitted with metal detection also check using a test piece).

Reject timing (Delay and Dwell) are product related and can be accessed in the 'Parameters 2' menu (see the *Menus* section).

For air-operated rejects, further control of the reject operation may be available by means of the air throttles on the reject cylinder. Adjust the reject mechanisms as is described in the section titled *Routine Maintenance (Weekly/Monthly)*.

4. Check that the conveyor belts are tracking correctly. If tracking is not correct, adjust it as described in the section titled *Routine Maintenance (Weekly/Monthly).*

5. Using the facility of Platform Load (see the *Menus* section), check that an empty platform produces a result of approximately 5% for all Gain Ranges, except Range 0 which may be disregarded.

   If the platform load readings are not as above, call your Loma Service Centre.

6. If a printer is fitted, check that there is enough paper left on the feed-reel and that the print-out is not getting too faint. If new paper or ribbon are required, refer to the section titled *Printer Paper (Customer Option)* and to the *Recommended Spares* section.

8.2.2 Photo-Electric Cells (PEC)

1. To ensure reliable detection of the product, check that there is no build up of dirt or dust on the PEC or reflector and ensure that they are correctly aligned.

2. Check that the photo-eye operates and adjust the sensitivity if required.

8.2.2.1 Standard side mounted Photo-Electric Cell

1. Check that the photo-eye operates such that the green and red LEDs are normally illuminated and the red LED turns off when the beam is broken. If this does not happen, then adjust the PEC as follows:

   (1) Turn the adjuster on top of the PEC fully counter-clockwise. The red LED will be off, and the green LED will be on.

   (2) Keep turning the adjuster clockwise until the green LED comes on with the red. The PEC is now correctly set.

2. Check that there is no build-up of dust or dirt on the PEC or reflector.

3. Ensure that the PEC and reflector are in alignment.

8.3 Routine Maintenance (Weekly/Monthly) AS1500 & AS5000

8.3.1 Air Regulator Unit Maintenance

In addition to the Daily / Weekly checks, the following operations should be carried out on a weekly / monthly basis.

The 'Weekly / Monthly' routine must be carried out on a weekly basis when the system is in constant use, but can be stretched to a month when the demands on it are low. If in doubt, your Loma Service Centre will be pleased to advise you.

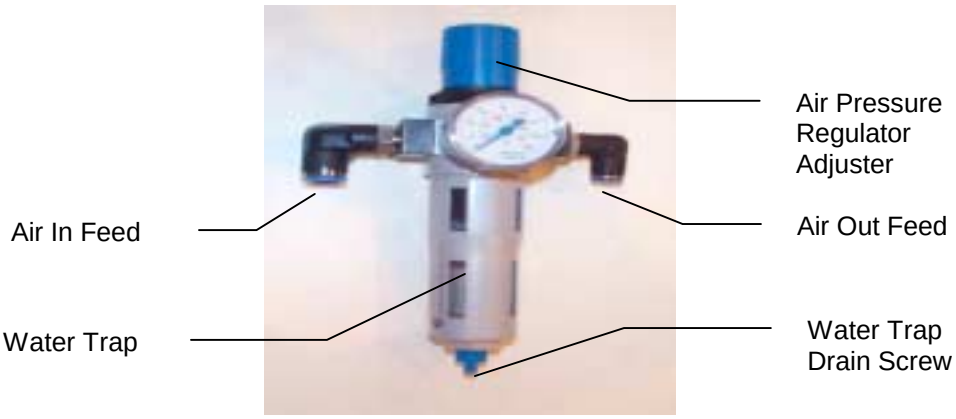


Figure 8.1 Air Regulator and Filter Unit Assembly

1. If the system is fitted with an air regulator/lubricator/filter unit, check that the regulator pressure setting is correct. This should be between 60psi (4.2 bar) and 80psi (5.5 bar). To adjust the regulator pressure, pull up the cap and turn it either clockwise to increase the pressure or counter-clockwise to decrease the pressure. Push down the cap to lock it when finished.

2. Check that the water trap is empty. Empty it by unscrewing the drain screw. Refer to Figure 8.1.

8.3.1.1 Aligning a Conveyor – Transfer Point Inspection

Check that all infeed and/or outfeed conveyors are at the correct height using the powered weigh platform as a datum. If necessary, adjust the height of the conveyor's infeed and/or outfeed as described below (see Figure 8.2 for standard conveyors).

1. Loosen the conveyor adjustment bolts that are located at each corner of the conveyor using a 10mm A/F spanner.
2. Lay a 'straight edge' on top of the weigh platform. Place it carefully so as not to damage the weighing transducer.
3. Adjust the height of the conveyor to the straight edge.

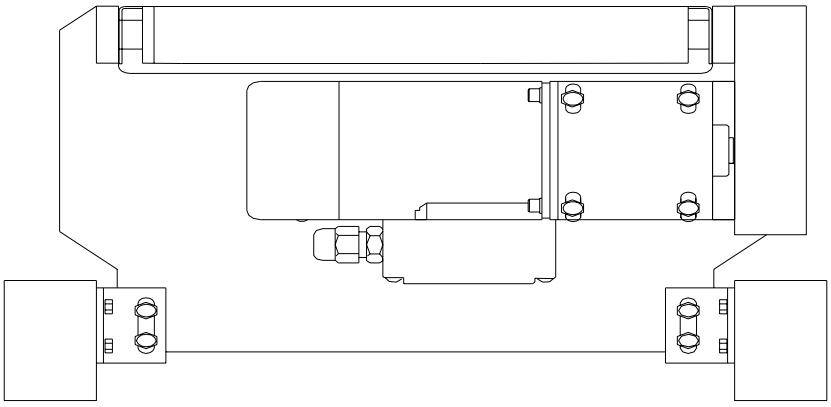


Figure 8.2 Standard Conveyor Adjustment

8.3.2 Checking the Weigh Platform

1. Check that there is no build-up of debris on the weigh platform (see Figure 8.3).

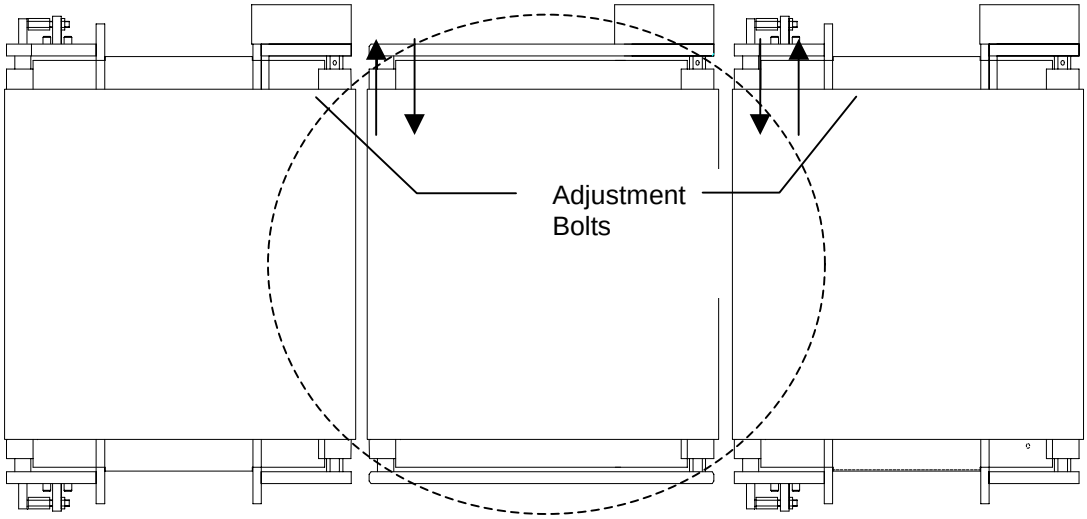


Figure 8.3 Weigh Platform

2. If the following message will be displayed in the RUN ERROR LOG which is located in the Diagnostics menu:

Example

11:10:03 07/06/2000 ACTIVE
E12 ZERO VALUE TOO BIG-DEBRIS ON PLATFORM

then check the platform area, shown above. Remove any debris and clean thoroughly. Take care not to exert any force on the weigh platform or subject the loadcell to direct jets of high pressure water or steam.

Note:- Active which is displayed means the problem has not been cleared, when it has been cleared the message will not have this displayed.

8.3.3 Replacing a Drive Belt

Check that the toothed drive belts from the motor to the drive rollers on each conveyor are in good condition, e.g. no broken teeth etc. Do this as follows.

8.3.3.1 Conveyors with 20mm rollers

1. Refer to Figure 6. At the drive cover, unscrew and remove the single M5 screw using a 8mm A/F spanner. Remove the drive cover. This allows the belt to be inspected.

2. If the toothed belt is damaged or worn, replace it as follows:

   (1) Loosen the two M5 socket cap screws, using a 4mm A/F hex Allen key. Slide the motor assembly towards the drive roller.

   (2) Remove the old toothed belt and fit with a new belt.

   NOTE

   Do not lever the toothed belt over the timing pulley flanges. This may adversely effect the strength of the belt.

   (3) Push the motor assembly back away from the drive roller to tension the drive belt. When correctly tensioned, the drive belt should have between 6mm and 10mm movement at the central position, between the two timing pulleys.

   (4) When the drive belt is correctly tensioned, refit and tighten the two M5 socket cap screws.

   (5) Refit the drive cover and secure using the single M5 screw. (Do not overtighten this screw.)

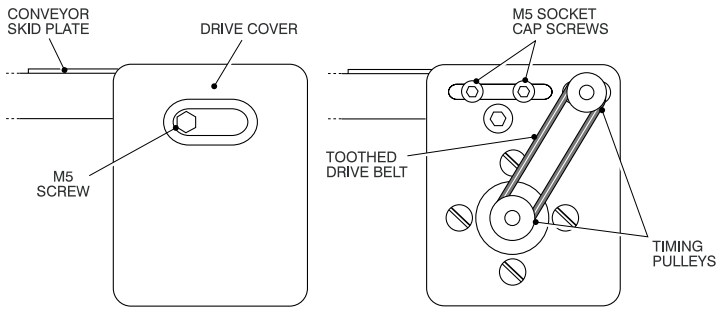


Figure 8.4 Drive Belts on a Conveyor with 20mm Rollers

8.3.3.2 Conveyors with 38mm Rollers

1. Refer to Figure 8.5. At the drive cover, unscrew and remove the two M6 hex head screws using a 10mm A/F spanner. Remove the drive cover. This allows the belt to be inspected.

2. If the toothed belt is damaged or worn, replace it as follows:

   (1) Loosen the four M6 hex head motor mounting screws. Slide the motor assembly upwards to the drive roller.

   (2) Remove the old toothed belt and fit with a new belt.

NOTE:- Do not lever the toothed belt over the timing pulley flanges. This may adversely effect the strength of the belt.

   (3) Push the motor assembly back down away from the drive roller to tension the drive belt. When correctly tensioned, the drive belt should have between 6mm and 10mm movement at the central position, between the two timing pulleys.

   (4) When the drive belt is correctly tensioned, tighten the four M6 hex head screws.

   (5) Refit the drive cover and secure using the two M6 hex heads. (Do not overtighten these screws.)

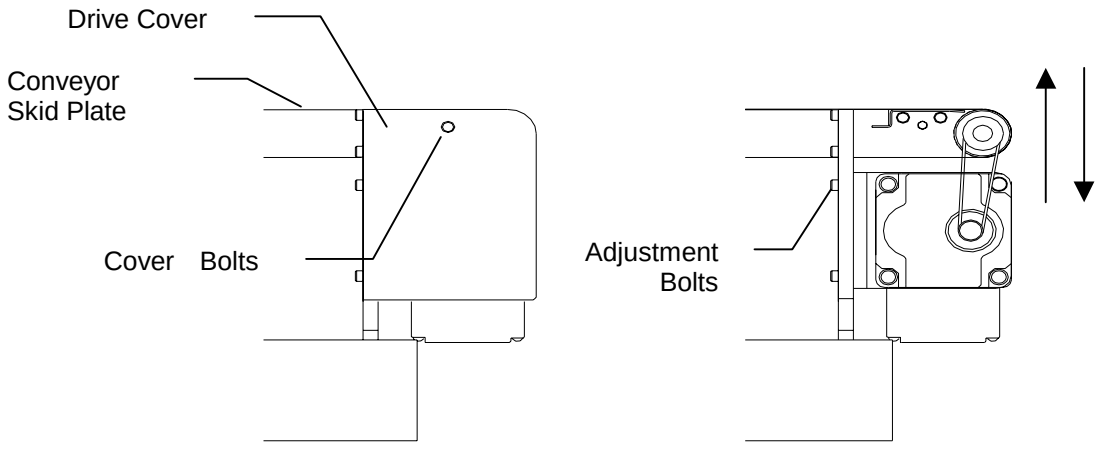


Figure 7 Drive Belts on a Conveyor with 38mm Rollers

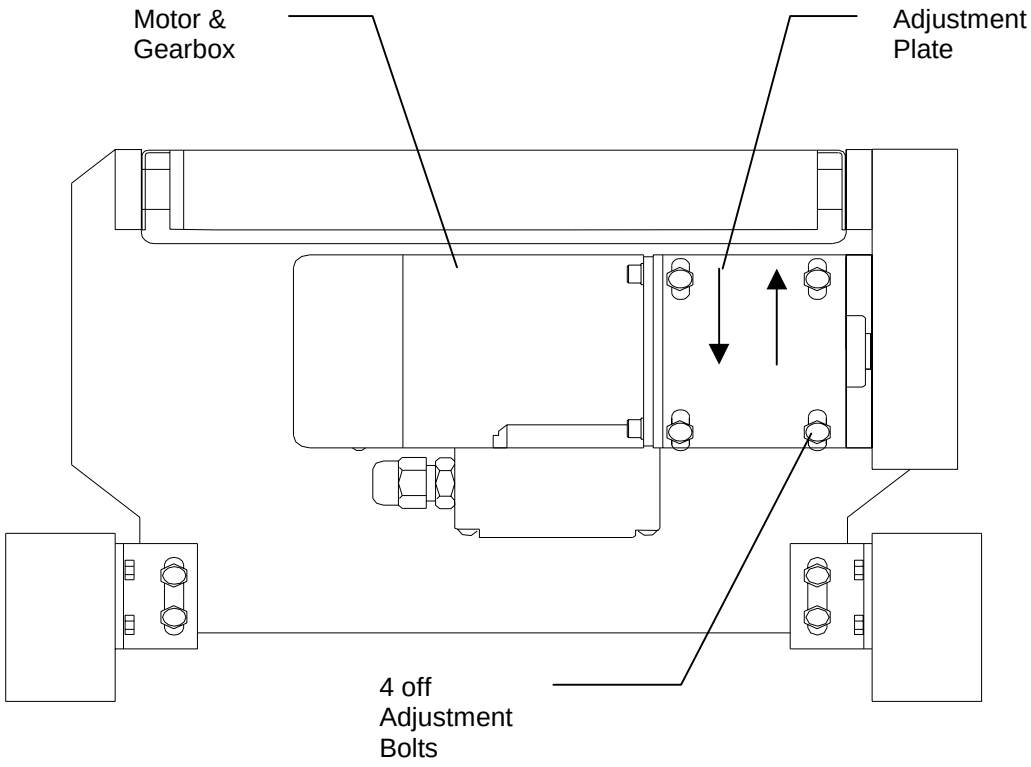


Figure 8.6 Drive Belts on a Conveyor with 38mm Rollers

8.3.4 Checking and Adjusting the Conveyor Belt

Conveyor belt tracking should be checked and, if necessary, adjusted as follows (see Figures 8.7 & 8.8).

If any difficulty is found with tensioning or tracking, consult your local Loma Customer Service Department.

NOTE

A build up of product on the rollers may adversely effect belt tracking. If necessary, clean the rollers and belt prior to retracking.

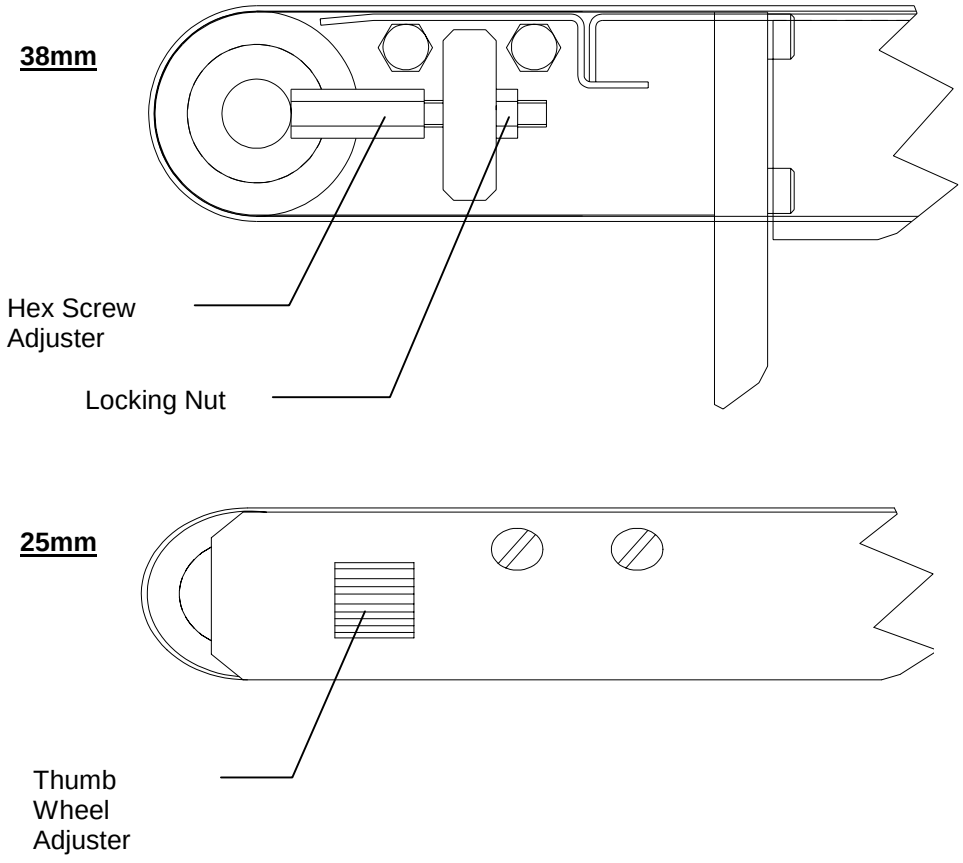


Figure 8.7 Conveyor Belt Tracking Adjustment

1. Run the machine and observe the belt. Watch for the belt ‘wandering’ across the skid plate in either direction.

2. If the belt ‘wanders’ towards one side, adjust the idle roller out at that side with either a:

   (a) Thumb wheel adjuster for the 25mm rollers or;

   (b) 8 A/F spanner for the 38mm rollers.

3. Loosen the locking nuts at the adjuster end.

4. Turn the hex screw only about 1/4 of a turn maximum each time to avoid over adjusting the idler roller.

NOTES

(1) If at any time the belt moves rapidly towards one side, switch the machine off quickly so as to avoid the belt being damaged. Run the belt back into a central position, adjust the idler roller appropriately and restart the machine.

(2) Do not over-tension the belt as this will cause premature wear of the bearings.

3. When the belt runs centrally, leave the conveyor running for at least 20 minutes to check that the tracking is correct. If the belt still runs out, repeat steps 1 and 2.

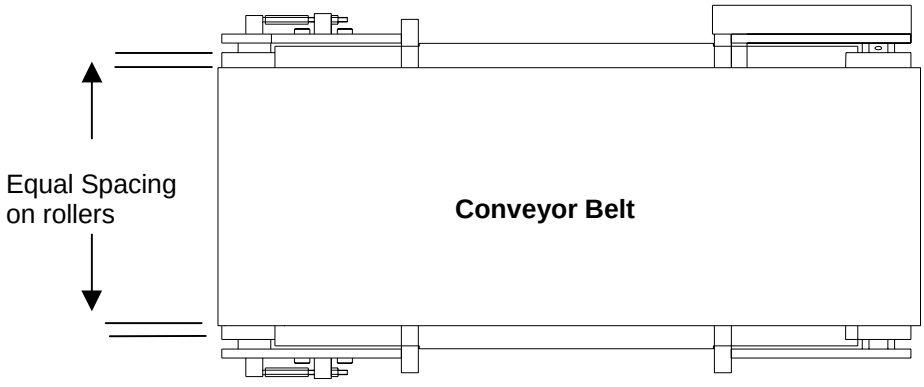


Figure 8.8 Conveyor Belt Tracking

8.3.5 Adjusting the Reject Mechanisms

WARNING

REJECT DEVICES. At no time, with air and/or electrical power applied to an automatic reject device, should any part of the body be placed within the operating area of the reject device.

If the reject Delay and Dwell times need to be adjusted, these are set up via the user interface from the control panel. Refer to the sections titled *Rejects* in the A-Z Menu section, and *Rejects* in the Product Setup example in the Operators Guide section.

8.3.5.1 Pusher and Plough Rejects

If adjustment is required, refer to Figures 8.9 & 8.11 and carry this out as described below.

1. At the solenoid valve, adjust the two throttle screws, in conjunction with the reject delay and dwell times, until the required reject timing and speed of operation are obtained. Both the reject timing and the speed of operation are affected by the air pressure supplied to the system.

8.3.5.2 Air Blast Reject

Since this type of reject has no throttles, the only variables that can be adjusted are the reject delay and dwell times. There is no air regulator supplied with the air blast reject. However, the air supply pressure should be approximately 100psi (6.9 bar). See Figure 8.10.

Figure 8.9 Pusher and Plough Reject

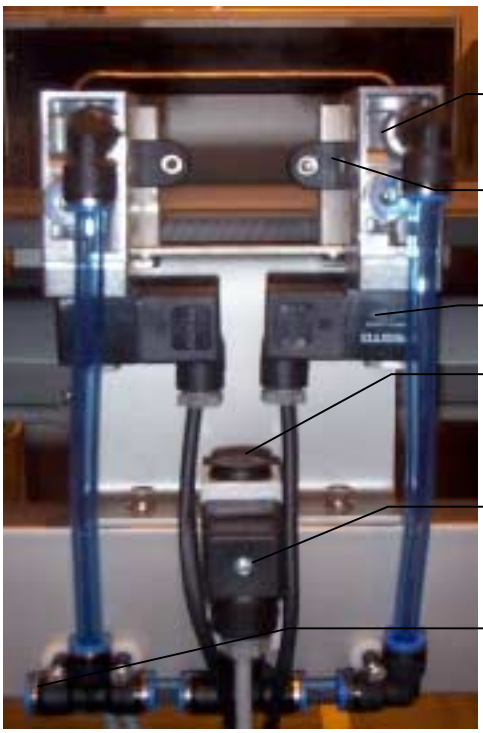


Figure 8.10 Air Blast Reject

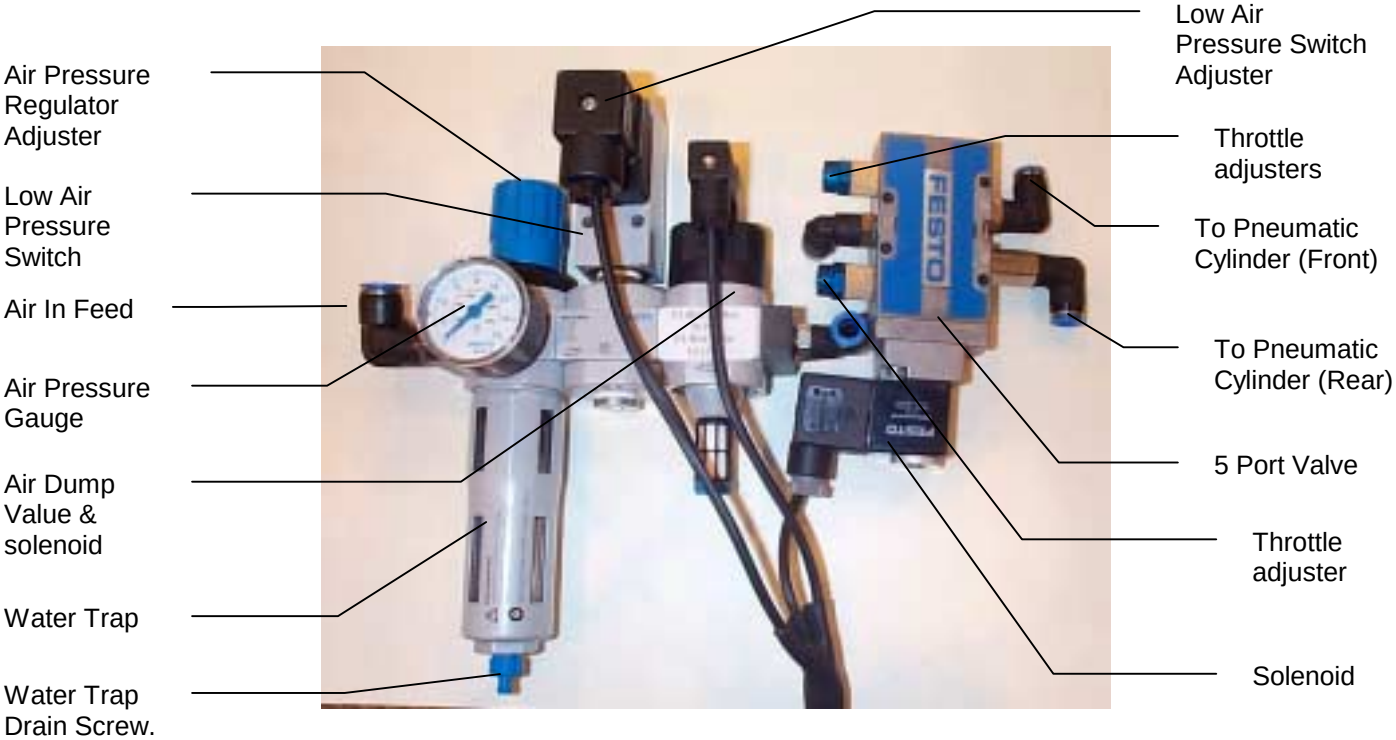


Figure 8.11 Pusher and Plough Reject Components

8.4 Routine Maintenance (Weekly/Monthly) (AS Heavyweight)

The ` Weekly / Monthly` routine must be carried out on a weekly basis when the system is in constant use, but can be stretched to a month when the demands on it are low. If in doubt, your Loma Service Centre will be pleased to advise you.

In addition to the Daily / Weekly checks, the following operations should be carried out a weekly / monthly basis.

8.4.1 Grease Roller Bearings

1. Refer to Figure 4. At each roller bearing housing, remove the plastic plug which fits into the grease hole in the housing and fit a grease nipple in its place (1/4in UNF). (The Loma Part No for the grease nipple is 101063).

2. Using the grease gun, fill each of the four bearings full of grease through the grease nipple. (Use Energrease LS 2 –manufactured by BP – or a direct equivalent).

3. When you have finished greasing each bearing, remove the grease nipple and refit the plastic plug in the hole in the bearing housing. (The Loma Part No. for the plastic plug is 101058).

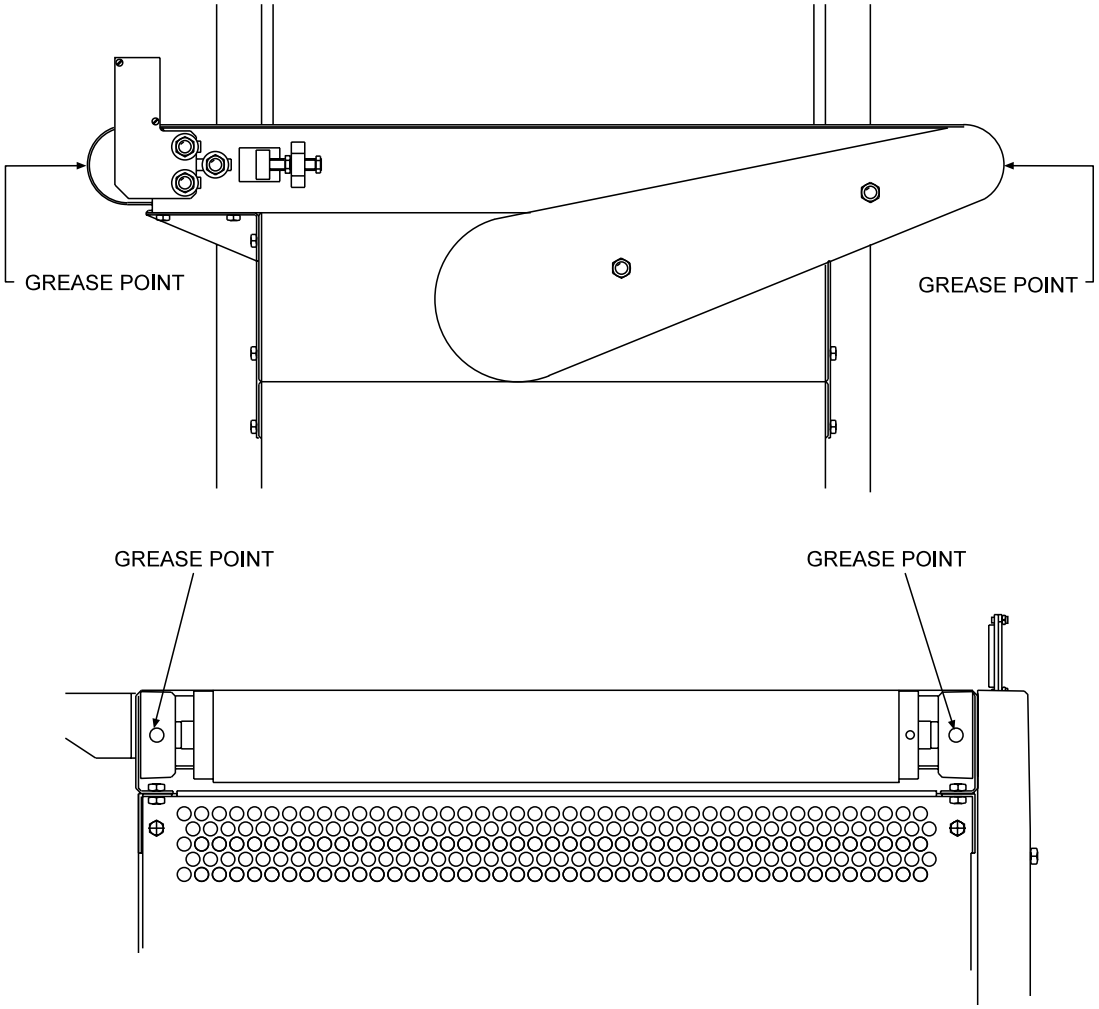


Figure 8.12 Roller Bearing Housing Greasing Points

8.4.2 Aligning a Conveyor

1. Check that the infeed and/or outfeed conveyors are correctly aligned with the checkweigher transport belt and are at the correct height. If necessary, adjust the height of the checkweigher to the height of the infeed/outfeed conveyors.

2. Check that the infeed and outfeed conveyors are not touching the checkweigher at any point.

8.4.3 Replacing the Drive Belt

Check that the toothed drive belt from the motor to the drive rollers on the conveyor is in good condition, e.g. no broken teeth.

Adjusting the toothed belt involves slackening four nuts that secure the drive motor in position. To do this you will need to modify a 17mm A/F combination spanner as shown in Figure 8.13.

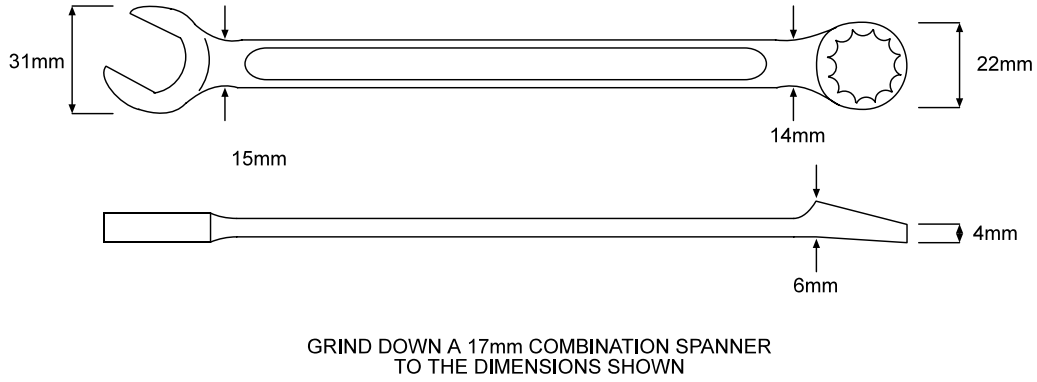


Figure 8.13 Modified 17mm A/F Combination Spanner

1. Refer to Figure 7. At the belt drive cover, unscrew and remove the two M6 screws (10mm A/F hex. head). Remove the cover. This allows the belt to be inspected.

2. Check that the toothed drive belt is in good condition. If the belt is worn, replace it as described in steps 3 to 11.

NOTE

It is recommended that prior to starting to replace the belt, you set the four platform overload stops to the Transit position. This is described in the section titled *Setting Overload Stops* in the chapter titled *Installation.*
Take care NOT to jack up the platform.

3. At each end of the checkweigher, unscrew and remove the 13 M6x12 (10mm A/F) hex. head screws that secure the end plate (see Figure 1).

4. For the next operation you will need the modified 17mm A/F spanner. Loosen the four M10 nyloc nuts (17mm A/F hex.) that secure the motor to the platform. There is no need to grip the bolts as these are coach bolts. Only turn the nuts counter-clockwise about 1½ turns.

5. To slacken the belt, slide the motor towards the drive roller.

6. Remove the worn drive belt and replace it with a new one.

7. Adjust the position of the motor to tension the drive belt. When correctly tensioned, the drive belt should have approximately 25mm movement at the central position, between the two pulleys.

8. When the drive belt is correctly tensioned, tighten the four M10 Nyloc nuts using the modified spanner.

9. Refit the belt drive cover using the two M6x12 (10mm A/F) hex. head screws. Take care not to overtighten these screws.

10. Refit each end plate in turn and secure with the 13 M6x12 (10mm A/F) hex. head screws.

11. Reset the four platform stops to give a 3–4mm gap ready for operation.

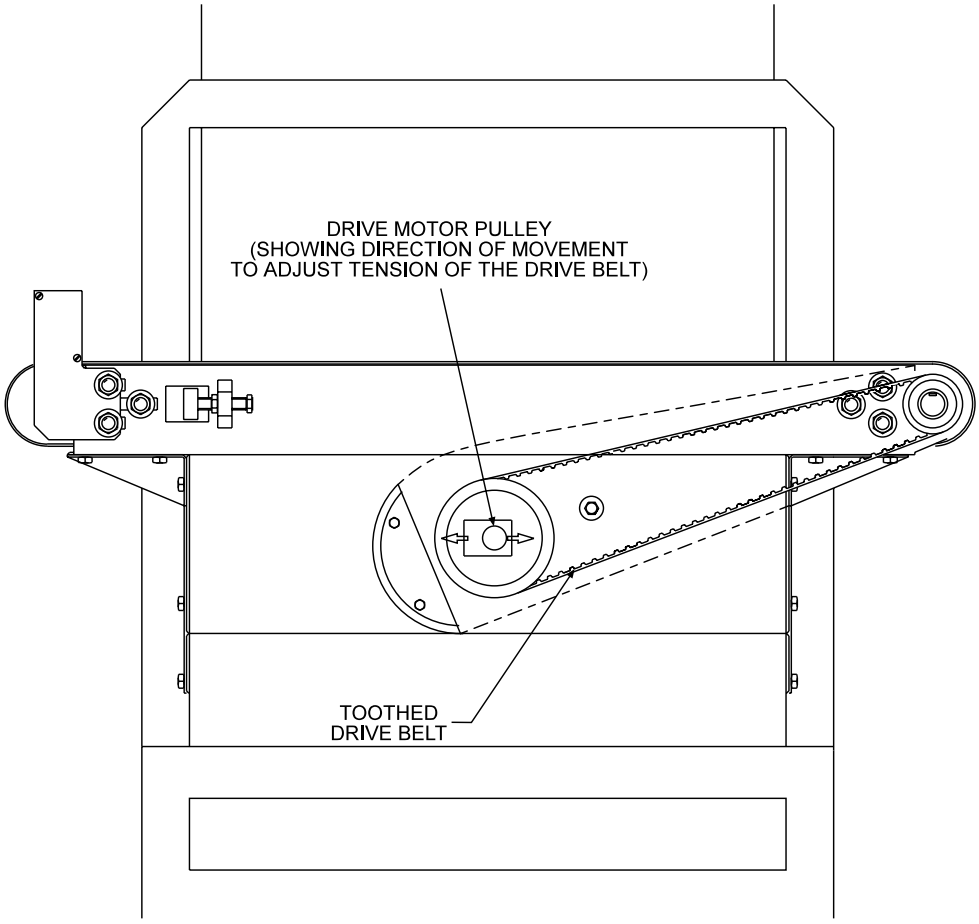


Figure 8.14 Toothed Drive Belt

8.4.4 Checking and Adjusting Transport Belt Tracking

Transport belt tracking should be checked and, if necessary, adjusted as follows (see Figure 8.15).

If any difficulty is found with tensioning or tracking, consult your local Loma Customer Service Department.

NOTES

(1) The transport belt must be run for at least 30 minutes before the tracking is adjusted. This ensures that all components are at working temperature.

(2) A build up of product on the rollers may adversely effect belt tracking. If necessary, clean the rollers and belt prior to retracking.

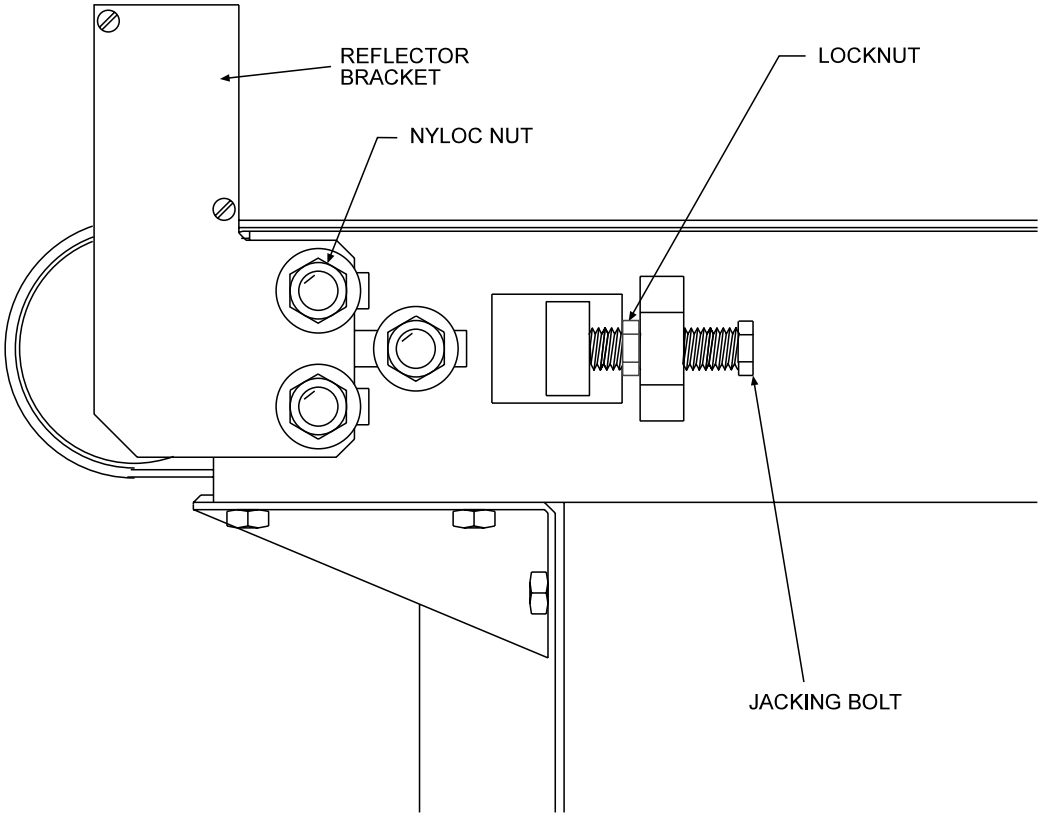


Figure 8.15 Transport Belt Tracking

1. Loosen the six M8 (13mm A/F) nyloc nuts that hold the idler roller bearing housing assembly in position (three each side).

2. Loosen the two M10 (17mm A/F) locknuts that hold the M10 (17mm A/F) jacking bolts in position.

3. Run the machine and check the belt for 'wandering' across the skid plate in either direction.

4. If the belt 'wanders' towards one side, adjust the idler roller on that side using the M10 jacking bolt. Turn the bolt about 1/4 of a turn maximum each time to avoid over adjusting the idler roller.

NOTES

(1) If at any time the belt moves rapidly towards one side, switch the machine off quickly to avoid the belt being damaged. Run the belt back into a central position, adjust the idler roller appropriately and restart the machine.

(2) Do not over-tension the belt as this will cause premature wear of the bearings.

5. When the belt seems to run centrally, re-tighten the six M8 (13mm A/F) nyloc nuts and the two M10 (17mm A/F) locknuts. Leave the conveyor running continuously for at least 30 minutes to check that the tracking is correct. If the belt still runs out of line, repeat steps 1 to 4.

8.4.5 Adjusting the Reject Mechanisms

WARNING

REJECT DEVICES. At no time, with air and/or electrical power applied to an automatic reject device, should any part of the body be placed within the operating area of the reject device.

If the reject Delay and Dwell times need to be adjusted, these are set up via the user interface from the control panel. Refer to the sections titled *Rejects* in the A-Z Menu section, and *Rejects* in the Product Setup example in the Operators Guide section.

8.4.5.1 Pusher and Plough Rejects

If adjustment is required, refer to Figure 8.16 and carry this out as described below.

1. At the solenoid valve, adjust the two throttle screws, in conjunction with the reject delay and dwell times, until the required reject timing and speed of operation are obtained. Both the reject timing and the speed of operation are affected by the air pressure supplied to the checkweigher.

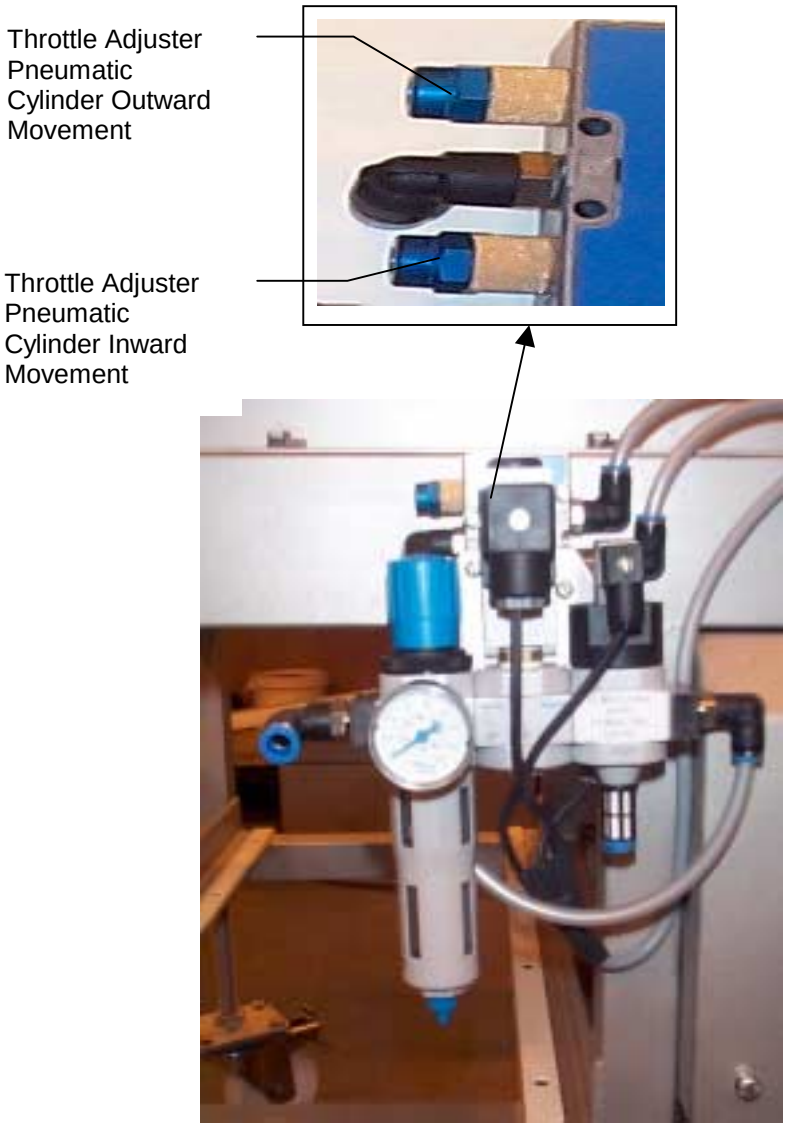


Figure 8.16 Pusher and Plough Reject Throttle Adjusters

8.4.6 Quick Release Belt Option

An option is available that enables the transport belt to be removed and refitted without the need for retracking the belt (see Figure 8.17).

NOTE

This applies only to the belt that is already fitted. If a replacement belt is fitted, then tracking must be carried out, as described in the section titled *Routine Maintenance (Weekly/Monthly)*.

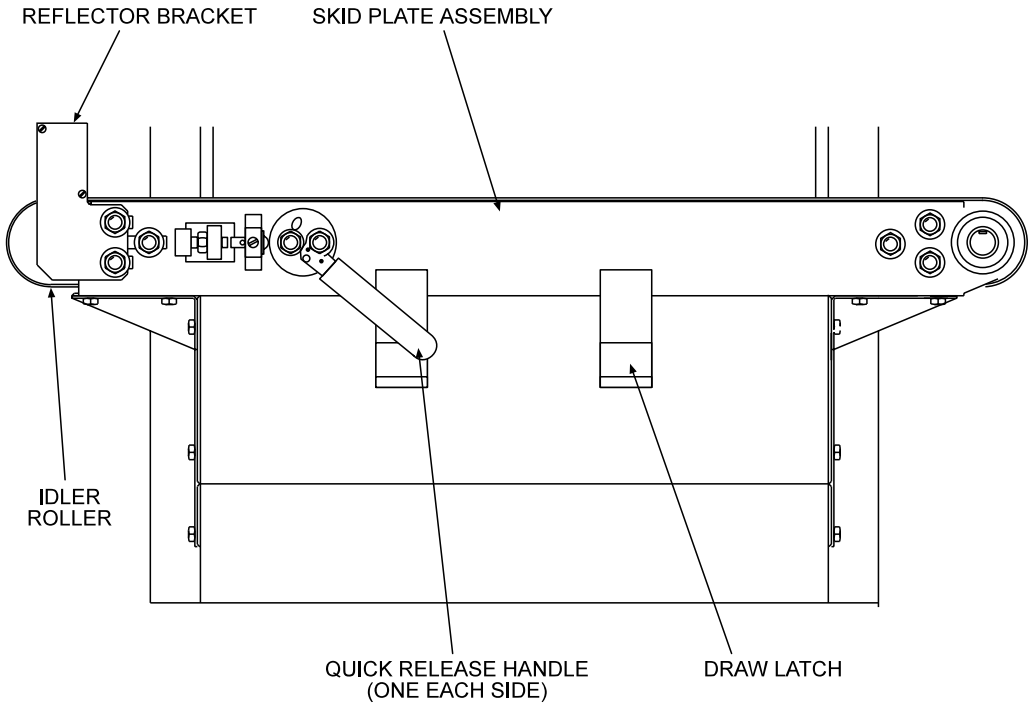


Figure 8.17 Quick Release Transport Belt Assembly

1. At each end of the checkweigher, unscrew and remove the 13 M6x12 (10mm A/F) hex. head screws that secure the end plate. Remove each end plate.

2. Loosen the two M8 (13mm A/F Hex) nyloc nuts that secure the PEC reflector bracket to the skid plate. Slide off the PEC reflector bracket.

3. Lift both quick release handles upwards.

4. Push the idler roller inwards to relieve the tension on the transport belt.

5. Release both draw latches that secure the skid plate.

6. Lift the skid plate assembly approximately 10mm (25mm max.) and carefully slide off the transport belt.

7. Reassemble in the reverse order.

8.5 Routine Maintenance (Weekly/Monthly) (Draglink)

8.5.1 Air Regulator Unit Maintenance

If the system is fitted with an air regulator/lubricator/filter unit, adjust the pressure setting and fill with oil as described below. Refer to Figure 8.18.

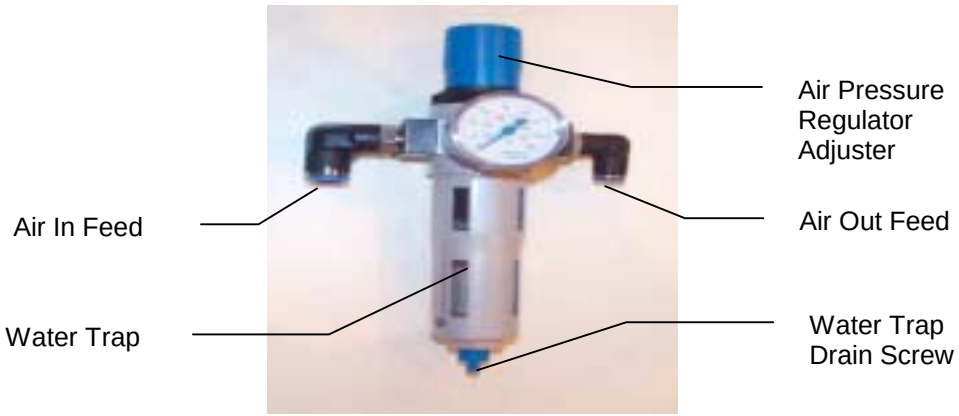


Figure 8.18 Air Regulator and Filter Unit Assembly

1. Check that the regulator pressure setting is correct. This should be between 60psi (4.2 bar) and 80psi (5.5 bar).To adjust the regulator pressure, pull up the cap and turn it either clockwise to increase the pressure or counter-clockwise to decrease the pressure. Push down the cap to lock it when finished.

2. Check that the water trap is empty. Empty it by unscrewing the drain screw.

3. The ‘Weekly / Monthly’ routine must be carried out on a weekly basis when the system is in constant use, but can be stretched to a month when the demands on it are low. If in doubt, your Loma Service Centre will be pleased to advise you.

   In addition to the Daily / Weekly checks, the following operations should be carried out on a weekly / monthly basis.

8.5.2 Maintaining Transport Chains

Check the transport chains for wear, damage or an excessive build-up of debris. To remove a chain for cleaning or replacement proceed as follows:

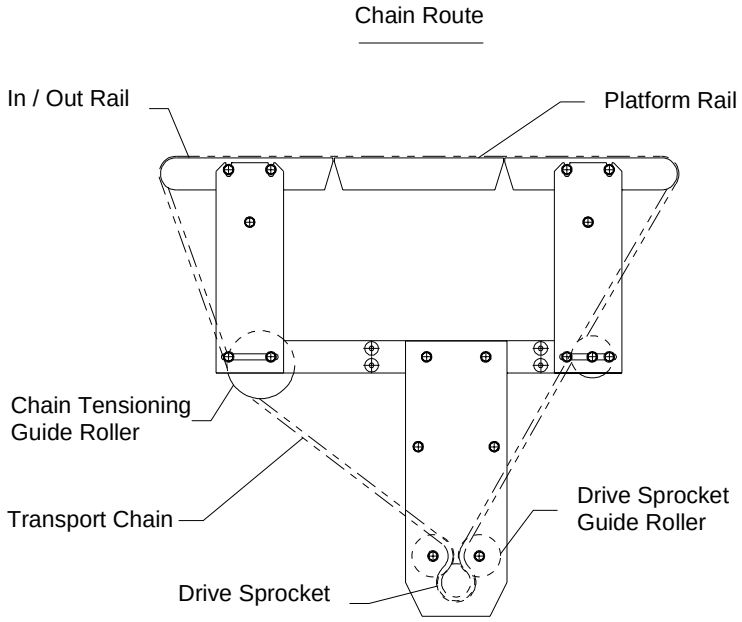


Figure 8.19 Transport

1. Remove M6 screws (4 off) that secure the drive sprocket guide roller shafts to the front and back dead plates.

2. Lift the chains off the top platform rail.

3. Feed the chain round the top guide shafts (2 off).

4. Remove the chain from the drive sprocket.

5. Lift the chain from the machine, through the gap between the beam and the front dead plate.

6. Reverse process for re-fitting.

NOTE

The chain is used as a method for moving product across the weigh platform and not as a drive, therefore conventional chain tensioning does not apply. As a guide there should be approximately 60mm of chain slack when checked near the centre of the platform rails.

The ‘Weekly / Monthly’ routine must be carried out on a weekly basis when the system is in constant use, but can be stretched to a month when the demands on it are low. If in doubt, your Loma Service Centre will be pleased to advise you.

In addition to the Daily / Weekly checks, the following operations should be carried out on a weekly / monthly basis.

8.5.3 Recommended Greases

Use a suitable multipurpose grease.

Lubricating the Bearings

This operation only applies to bearings fitted with grease nipples

1. Using a grease gun, slowly apply grease to each nipple in turn, taking care not to damage the bearing seals.

2. Wipe off any excess grease after lubricating.

8.5.3.1 Aligning a Conveyor – Transfer Point Inspection

NOTE

The machine is delivered correctly set up. This should not need adjustment.

The transfer of product across the weighing area must be as smooth as possible. In the event that adjustment is required, set this as follows (see Figure 8.20):

1. Loosen the M6 hex. head screws that secure the tie bars of the infeed and outfeed rails in position.

2. Place a ‘straight edge’ along the top of the weigh platform and infeed/outfeed rails carefully, so as not to damage the weighing transducer.

3. With the transfer points level. tighten the M6 hex. head screws.

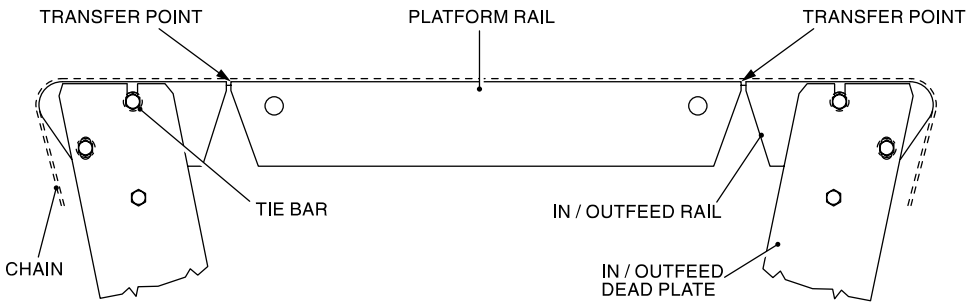


Figure 8.20 Conveyor Alignment

8.5.4 Checking the Weigh Platform

1. Check that there is no build-up of debris on the weigh platform (see Figure 8.21).

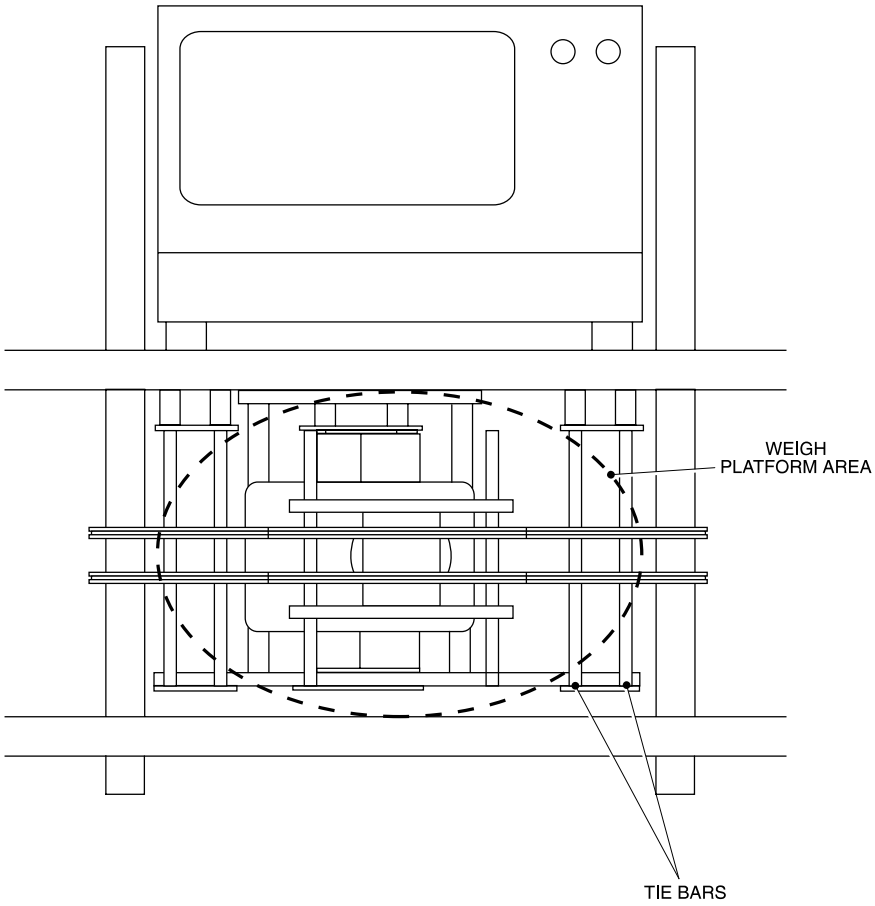


Figure 8.21 Weigh Platform

2. If the following ‘RUN ERROR’ message is displayed:

“ZERO VALUE GREATER THAN ZERO”
“DEBRIS ON PLATFORM”

then check the platform area, shown above. Remove any debris and clean thoroughly. Take care not to exert any force on the weigh platform or subject the weighcell or loadcell to direct jets of high pressure water or steam.

8.5.5 Replacing a Drive Belt

Check that the toothed drive belts from the motor to the drive rollers on each conveyor are in good condition, e.g. no broken teeth etc. Do this as follows.

1. Remove the M6 screws (3 off) and washers retaining the drive cover and place aside the cover.

2. If the drive belt is worn it should be replaced as follows:

    - Loosen the M6 screws (4 off) holding the motor in position
    - Slide the motor towards the drive roller, introducing enough slack to facilitate the removal of the belt
    - Replace with new belt and tension by adjusting motor position

NOTE

There should be 15mm of free play in the belt at mid-point.

- Tighten the motor mounting screws (4 off) and replace drive cover

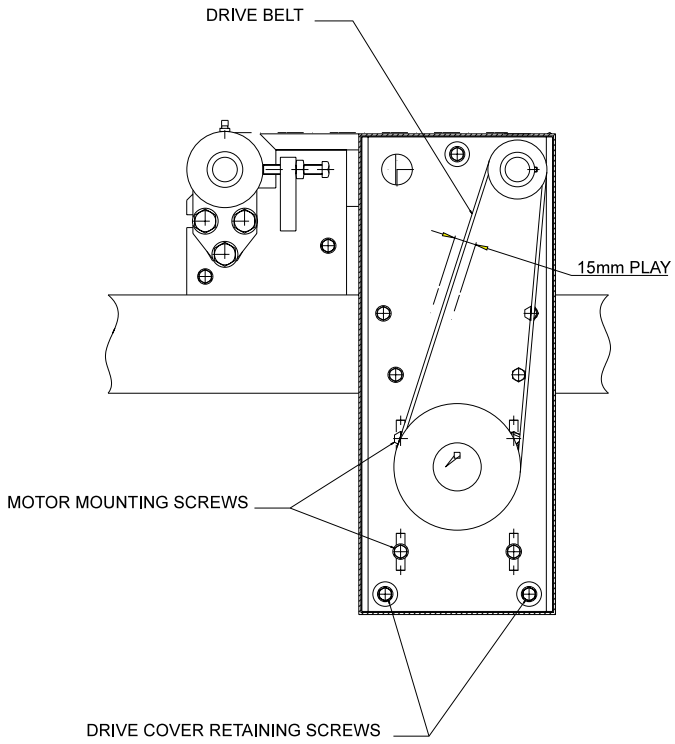


Figure 8.22 Drive Belt

8.5.6 Checking and Adjusting Conveyor Belt Tracking

Tracking the flat belts on the infeed and outfeed conveyors should be checked and adjusted if necessary.

If any difficulty is found with tensioning or tracking, consult your authorised Loma Customer Service Department.

NOTE

A build up of product on the rollers may adversely effect belt tracking. If necessary, clean the rollers and belt prior to retracking.

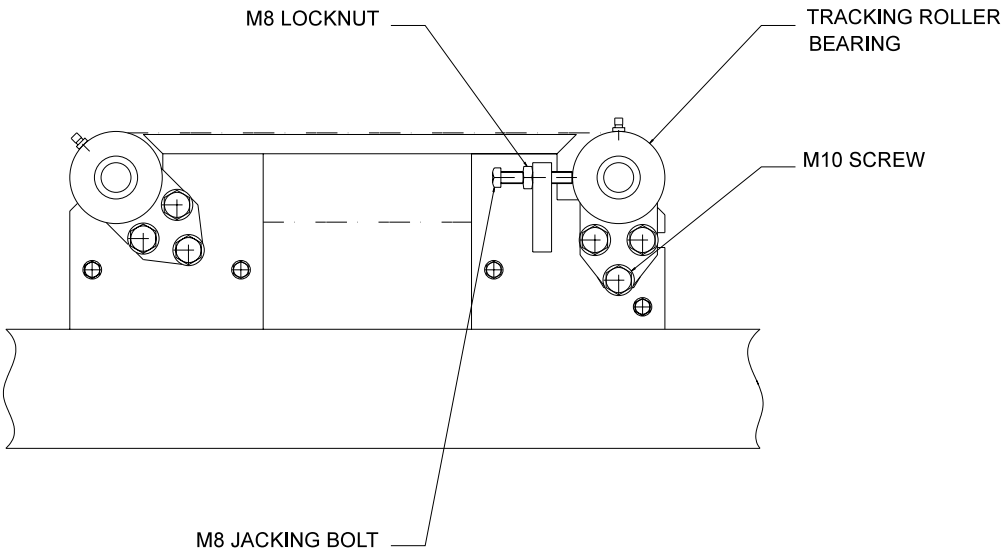


Figure 8.23 Conveyor Belt Tracking Adjustment

Adjust belt tracking as follows:

1. Loosen the M10 screws (6 off) that hold the tracking roller bearings in position.

2. Loosen the M8 locknuts (2 off) that hold the M8 jacking bolts in position.

3. Run the machine and observe the belt.

4. If the belt moves across the skidplate towards one end of the roller, jack out the tracking roller at that side using the M8 jacking bolt. Only turn the bolt 1/4 turn each time to avoid over correcting belt tracking.

NOTE

If the belt moves rapidly towards either end of the roller immediately stop the transport to avoid belt damage. Move the belt back to the centre, adjust the appropriate jacking bolt, then re-start the transport.

5. When the belt runs centrally on the roller, tighten the M10 screws (6 off) and the M8 locknuts (2 off).

NOTE

Do not over tension the transport belts.

8.6 Routine Maintenance (Weekly/Monthly) AS1200C

8.6.1 Air Regulator Unit Maintenance

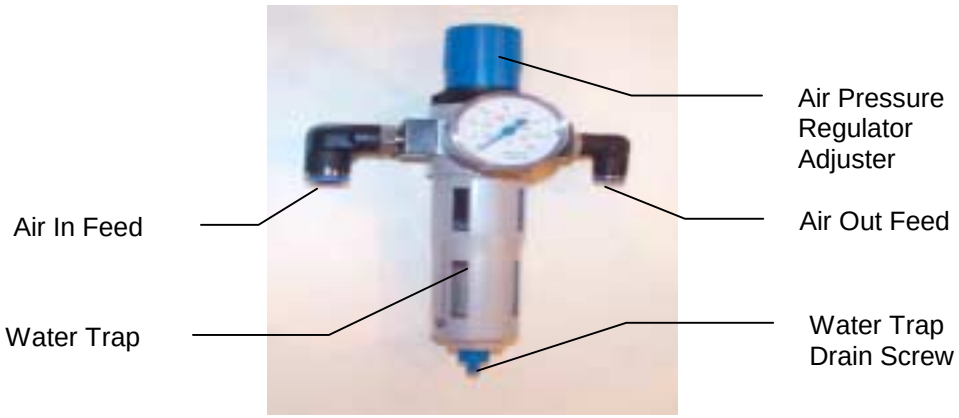


Figure 8.24 Air Regulator and Filter Unit Assembly

1. In addition to the Daily / Weekly checks, the following operations should be carried out on a weekly / monthly basis.

2. The 'Weekly / Monthly' routine must be carried out on a weekly basis when the system is in constant use, but can be stretched to a month when the demands on it are low. If in doubt, your Loma Service Centre will be pleased to advise you.

3. If the system is fitted with an air regulator/lubricator/filter unit, adjust the pressure setting and fill with oil as described below. Refer to Figure 8.24.

4. Check that the water trap is empty. Empty it by unscrewing the drain screw. Refer to Figure 8.24.

8.6.1.1 Aligning a Conveyor – Transfer Point Inspection

Check that the infeed and/or outfeed conveyors are set parallel to the weigh platform with a gap of 2-4mm between the platforms (see Figure 8.25). If necessary adjust the conveyors as follows:

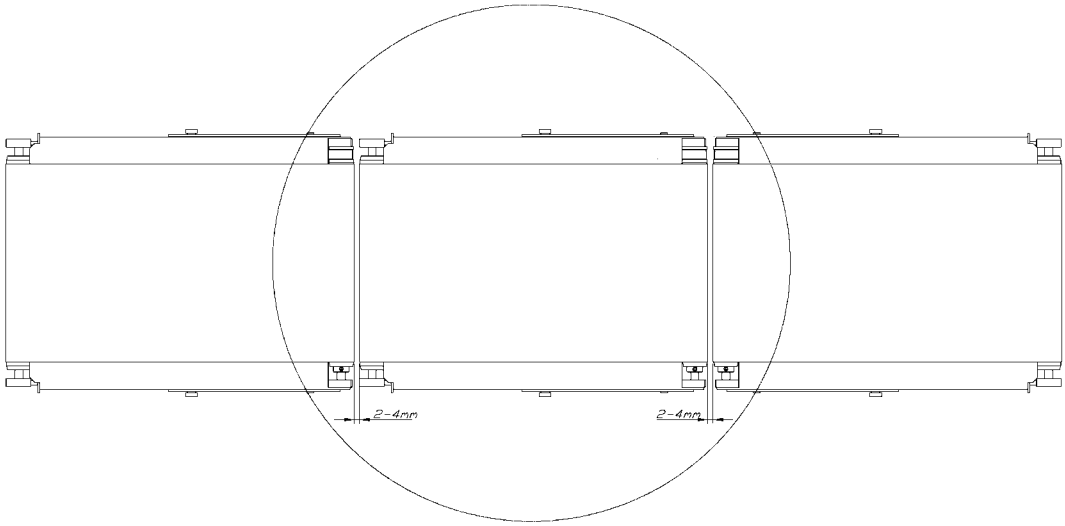


Figure 8.25 Aligning a Conveyor

1. Loosen the four M10 bolts that hold the conveyor to the frame (see Figure 8.26).

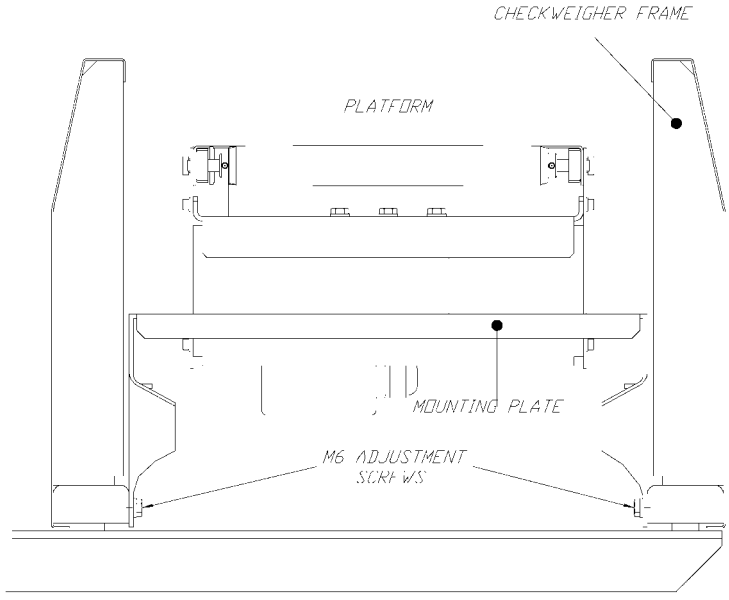


Figure 8.26 Conveyor Adjustment

2. Adjust the conveyors to give the correct gap and alignment.

3. Retighten the four fixing bolts.

4. If the weigh platform height needs to be adjusted the four M8 hexagon locknuts under the loadcell beam must be loosened. Refer to Figure 8.27.

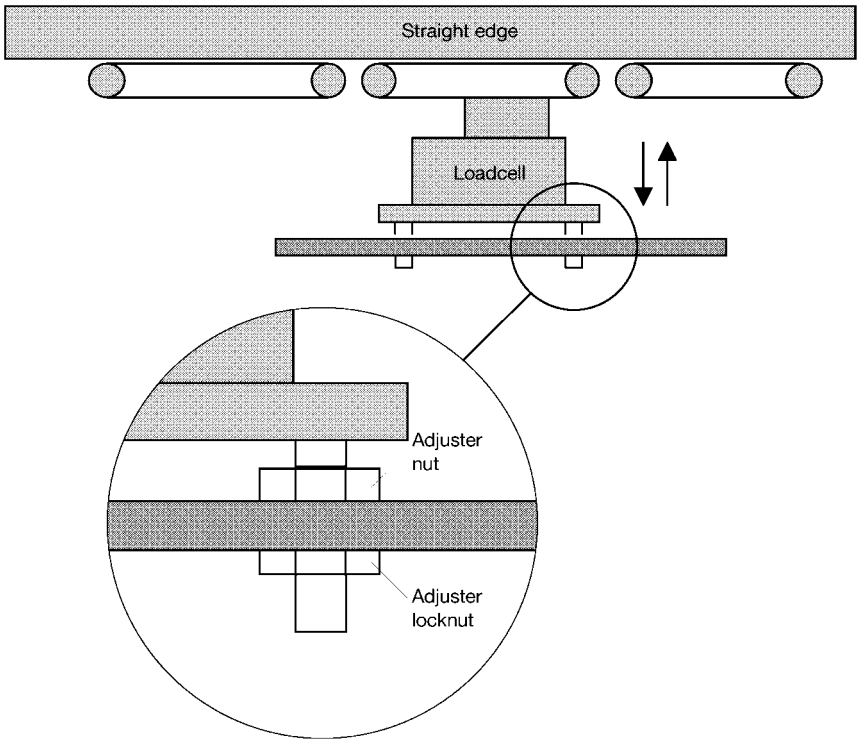


Figure 8.27 Conveyor Height Adjustment

5. Place a straight edge along the top of the conveyors taking care not to damage the loadcell.

6. Adjust the height of the conveyor using the four M8 hexagon adjuster nuts.

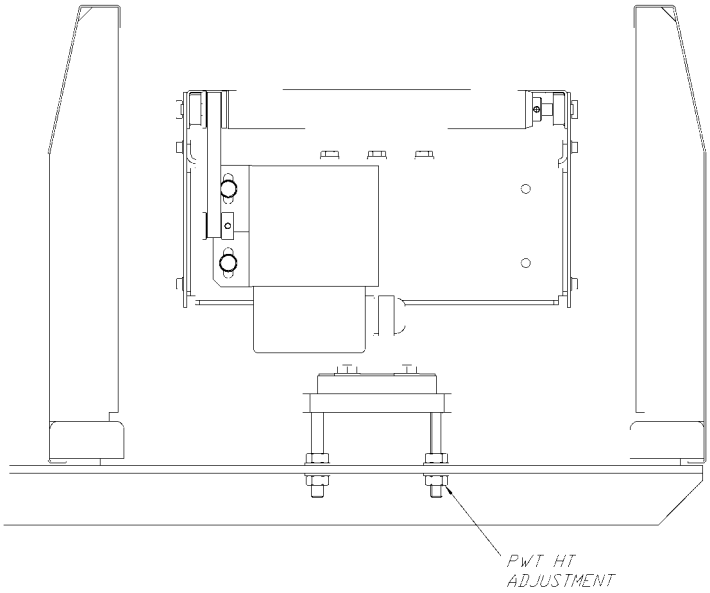


Figure 8.28 Conveyor Height Adjustment

7. Once the conveyor is level with the in and outfeed conveyors the locknuts must be retightened.

8. Check the platform area. Remove any debris and clean thoroughly taking care not to exert any forces on the weigh platform.

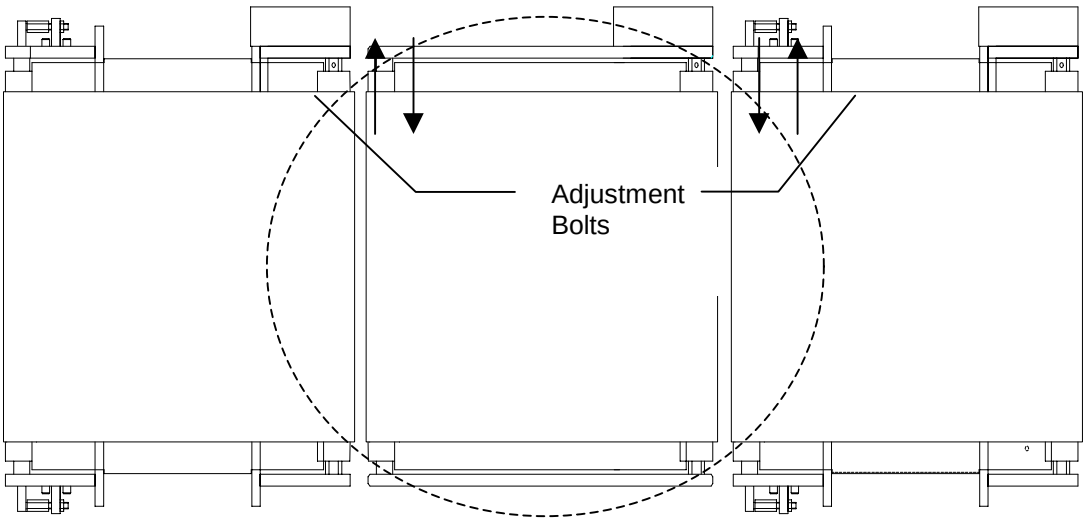


Figure 8.29 Weigh Platform

8.6.2 Replacing a Drive Belt

WARNING

REJECT DEVICES. At no time, with air and/or electrical power applied to an automatic reject device, should any part of the body be placed within the operating area of the reject device.

1. Check that the toothed drive belts from the motor to the drive rollers on each conveyor are in good condition, e.g. no broken teeth etc.

8.6.2.1 Conveyors with 20mm rollers

Undo the two knob screws on either side of the conveyor and lift the conveyor assembly up at one end. At the same time loop the drive belt to one side over motor pulley and lift conveyor assembly out.

If the drive belt is worn it should be replaced as follows:

1. Remove the two M3 counter sunk screws each side of the conveyor which holds the roller in position.

2. Slide the roller out from its position along with the worn drive belt.

3. Replace with new belt on the roller and re-insert the roller through the conveyor belt.

4. Refit the M3 counter sunk screws (4 off) and tighten.

5. Refit conveyor and tighten belt via the motor mounting screws (2 off).

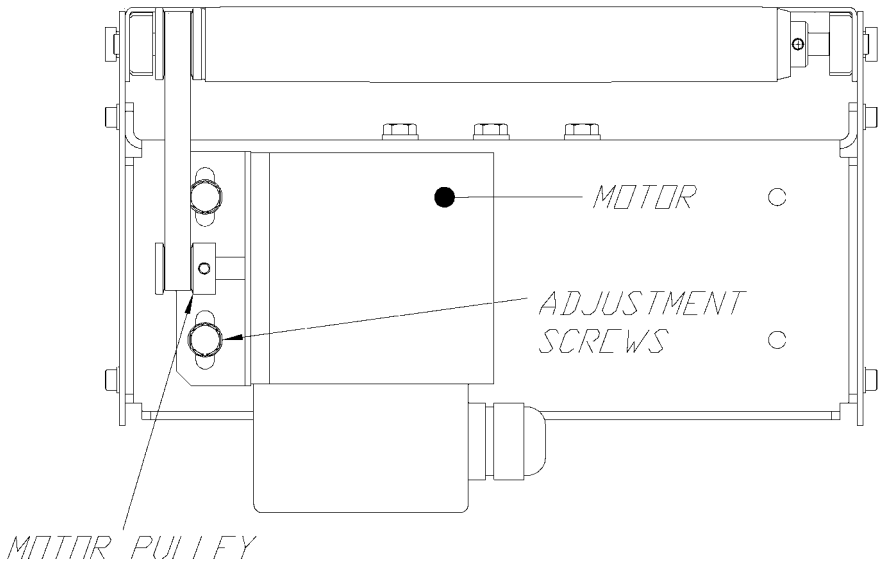


Figure 8.30 Conveyor Adjustment

8.6.3 Checking and Adjusting Conveyor Belt Tracking

The flat belt tracking on the infeed and outfeed conveyors should be checked and adjusted if necessary.

If any difficulty is found with tensioning or tracking, consult your authorised Loma Customer Service Department.

NOTE:

A build-up of product on the rollers may adversely effect belt tracking. If necessary, clean the rollers and belt prior to retracking.

Adjust belt tracking as follows:

1. Run the machine and observe the belt.

2. If the belt moves across the skid plate towards one end of the roller, jack out the tracking roller at that side using the M8 jacking bolt. Only turn the bolt 1/4 turn each time to avoid over correcting belt tracking.

NOTE

If the belt moves rapidly towards either end of the roller immediately stop the transport to avoid belt damage. Move the belt back to the centre, adjust the appropriate jacking bolt, then re-start the transport.

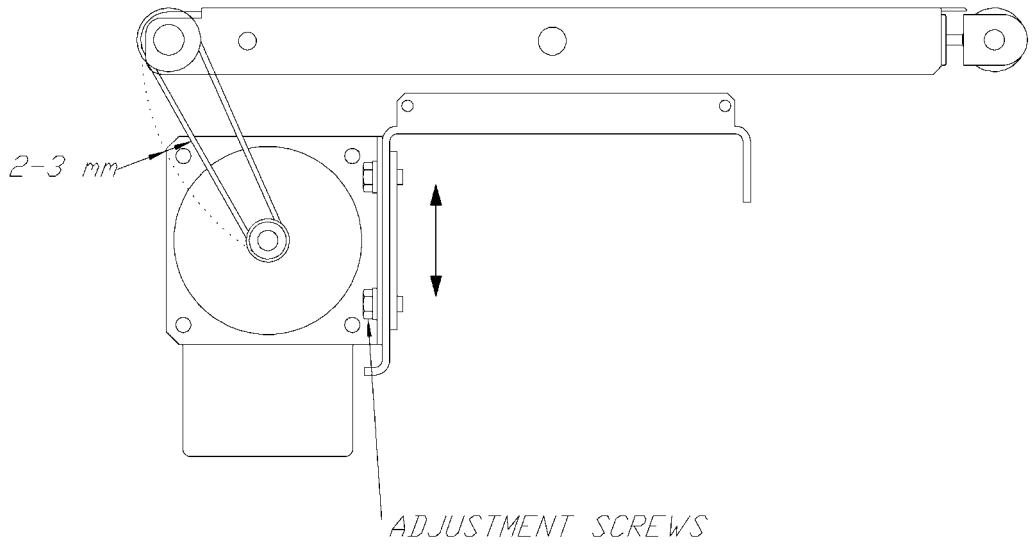


Figure 8.31 Conveyor Adjustment

5. When the belt runs centrally on the roller, tighten the locknuts (2 off) on each side of the thumb wheel adjusters.

NOTE

Do not over tension the transport belts. This should be approximately 5 – 8 mm height from the top of the skip plate to the belt at the central point.

8.6.4 Adjusting the Reject Mechanisms

If the reject delay and dwell times need to be adjusted, these are set up via the user interface from the control panel.

8.7 Printer Paper (Customer Option)

The printer (which is an optional fitting) is mounted on the inside of the electrical services box which faces outwards via its own door which it is locked. It is used to record statistical data.

8.7.1 Replacing Paper

If the “Paper Out” lamp on the User Interface is illuminated then the printer paper is exhausted. Replace the paper roll as follows (see Figure 8.32).

1. Open the door of the printer by using a 5mm allen key in the lock. Then pull the printer unit forward on its slide rail to gain excess to the paper roll.

2. 2 knurled bolts at the top of each side fix the front panel of the printer.

3. Unscrew the knurled bolts and lower the front panel to gain access for paper removal.

4. The printer will stop when you remove the paper roll of the printer unit holder and, if it has not already done so, the ‘Paper Out’ LED will illuminate (this is due to releasing a micro-switch mounted on the right of the printer at the rear.).

5. Remove the used spool of paper by pushing up the two spring catches and pulling it out.

6. The rewind spool pulls off horizontally sliding the used paper off the rewind take up spool.

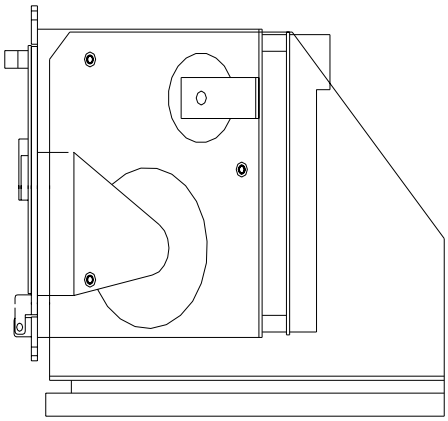
7. Place the new reel of paper onto the upper spool holder.

8. Pass the end of the new paper into the printer head and use the Forward Wind button to feed it through the head. As soon as there is enough paper fed through to get hold of, pull it *gently* up over the top roller. Refer to the Paper Run diagram for details of the correct path.

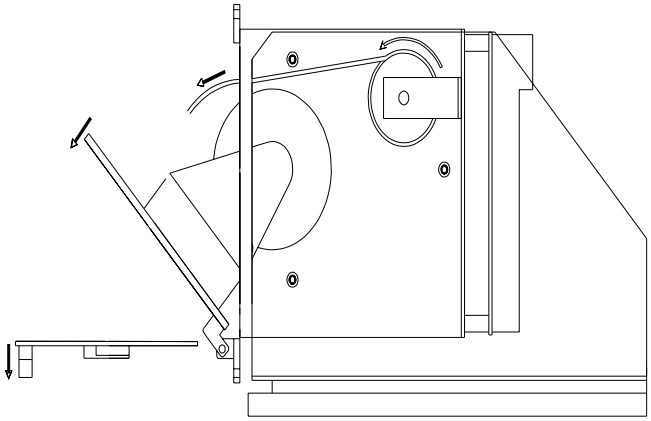
9. Place the end of the paper into the 3 forks hold of the spool by wrapping around a few times before reinstalling into the holder.

10. Close up the front panel and screw up the front panel via the 2 knurled bolts into position and pressing the Forward Wind button to take up any slack in the paper. The paper should move steadily through the printer head once any slack has been taken up. You should also refer to the *Recommended Spare Parts* section of this manual.

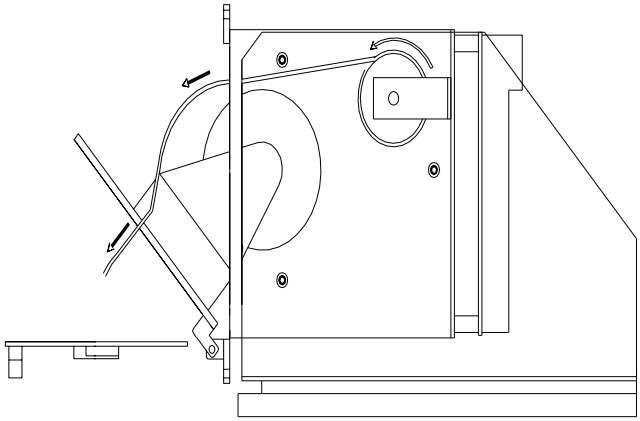
Step 1.



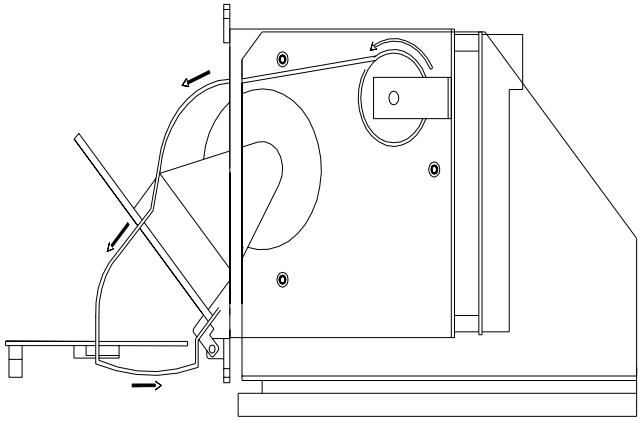
Step 2.



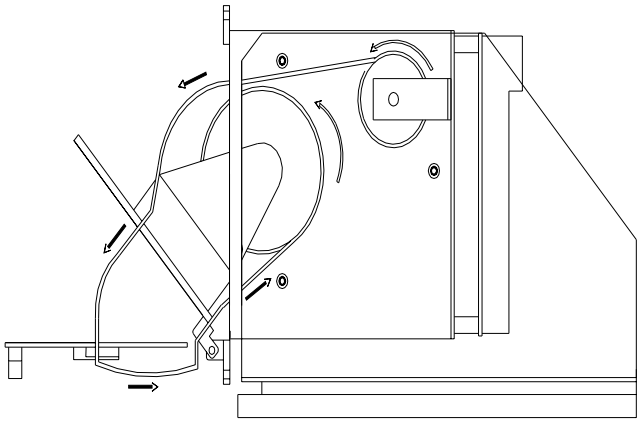
Step 3.



Step 4.



Step 5.



Step 6.

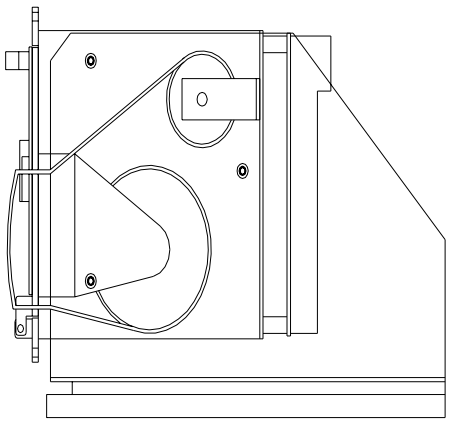


Figure 8.32 Replacing the Printer Paper

8.7.2 Replacing a Ribbon

If the printouts are faint and hard to read, then the ribbon is probably worn out. Ribbon replacement should be carried out while also replacing the paper since paper already installed has to be torn to release the ribbon.

Replacing the ribbon is simple – as shown by the following diagrams in Figure 8.36 shown below.

Always carry out the change of ribbon as quickly as possible to prevent dust or dirt damaging the printer's head.

1. Unscrewing the 2 knurled bolts completely and dropping the outer panel of the front door accesses the cassette.

2. Once the front panel has been remove this will expose the cassette to be replaced, press the cassette at the left hand side that will spring out cassette.

3. Fit new cassette by pressing it in position with both hands until it clicks into position. The paper must pass through the cassette.

4. Replace front panel and tighten knurled bolts.

8.7.2.1 Printer self-test program

The printer program can be initialised by pressing the paper feed button in, on the front panel at the same time using the isolate switch on the front of the checkweigher turn off then turn on. This will produce the printer parameter settings and a complete set of characters, which the printer can produce.

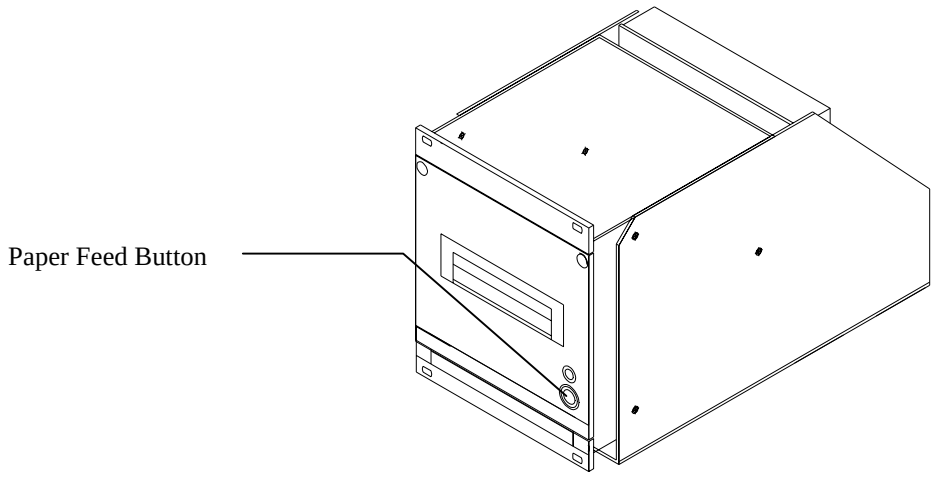


Figure 8.33 Internal Printer

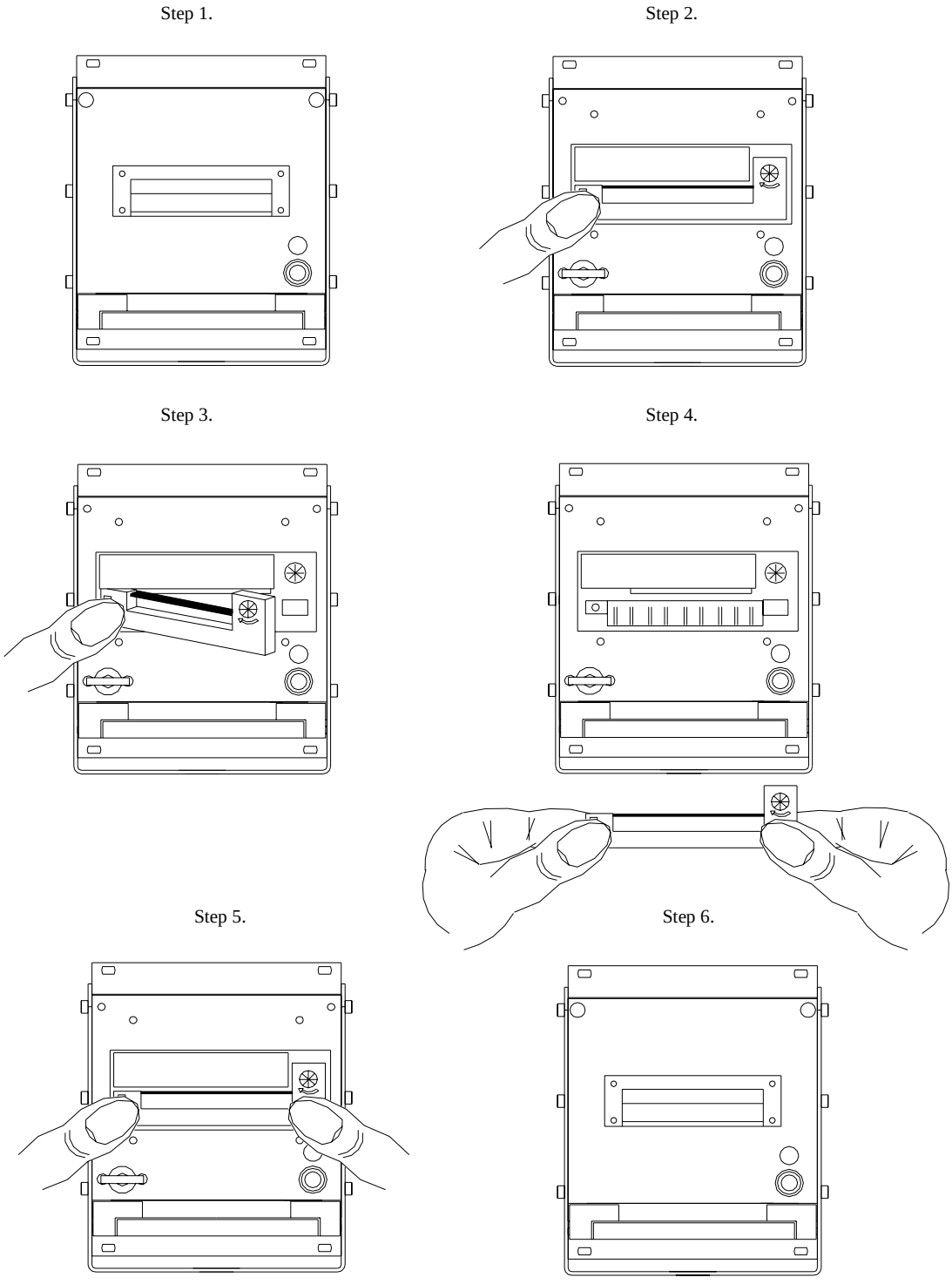


Figure 13 Changing the Printer Ribbon

8.8 Cold Start Setup Values

8.8.1 Engineer Menu 'Cold Start' Setup Values

Please ensure that the values below are recorded on installation of your Loma inspection station.

SELECT		VALUES
MAINTENANCE MENU		
FACTORY PRESETS		
SYSTEM CONSTANTS		
WEIGHING CONSTANTS		
PRODUCT UNITS OF WEIGHT	**=**	**Metric / Imperial** *
PRODUCT UNITS OF LENGTH	**=**	**Metric / Imperial** *
WEIGHING SENSOR	**=**	**Loadcell***
PLATFORM CONVEYOR LENGTH	**=**	
PLATFORM CONVEYOR SPEED	**=**	
PLATFORM SETTLING TIME	**=**	
MAXIMUM WEIGHING CAPACITY	**=**	
TRANSDUCER SENSITIVITY	**=**	
PACK RECOGNITION PEC LOGIC	**=**	

***** Delete as appropriate

If a printer is fitted, then also see System ‘Configuration’ Report.

CUSTOMER: _____

MACHINE SERIAL No: _____

SIGNED: **DATE:**

GENERAL WIRING SCHEMATICS & CABINET LAYOUTS

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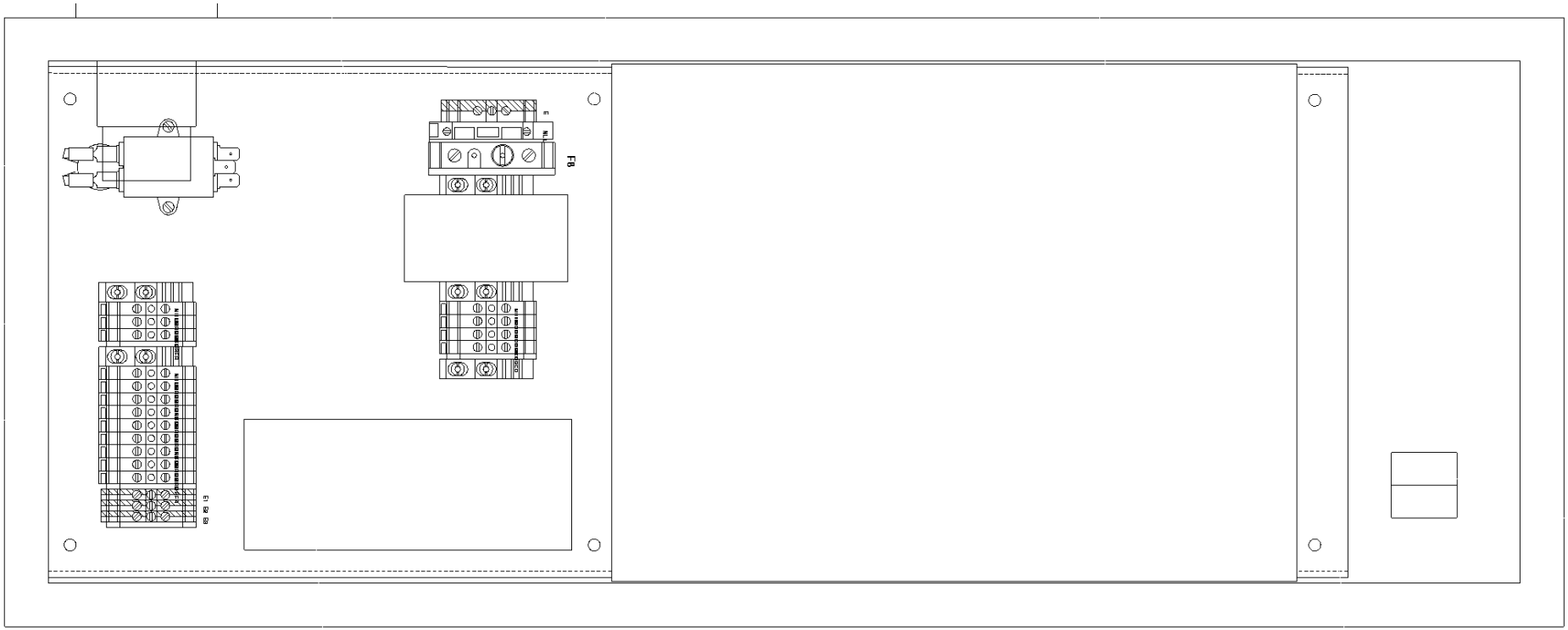
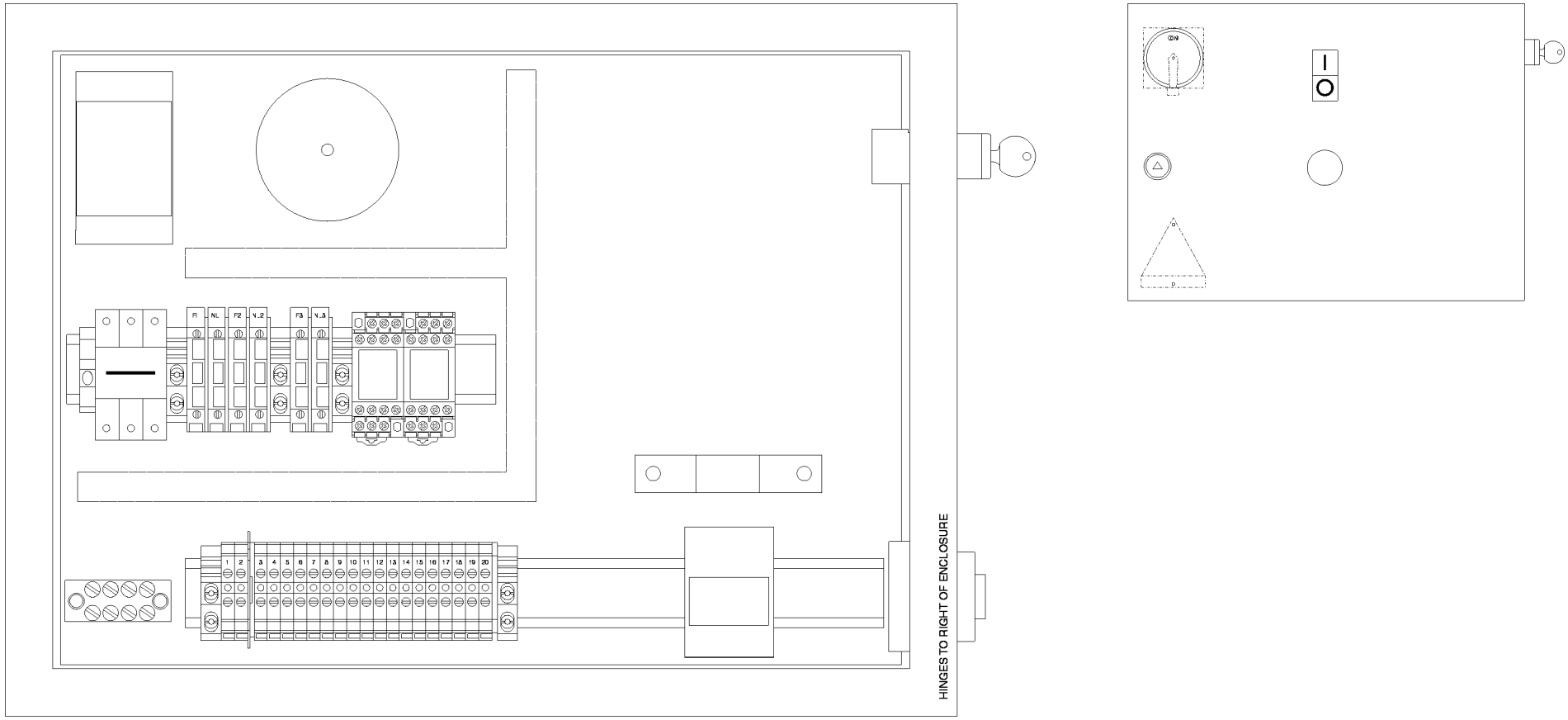
9.5 Control Cabinet Layout (AS1500 & AS5000 PWT) 9-7

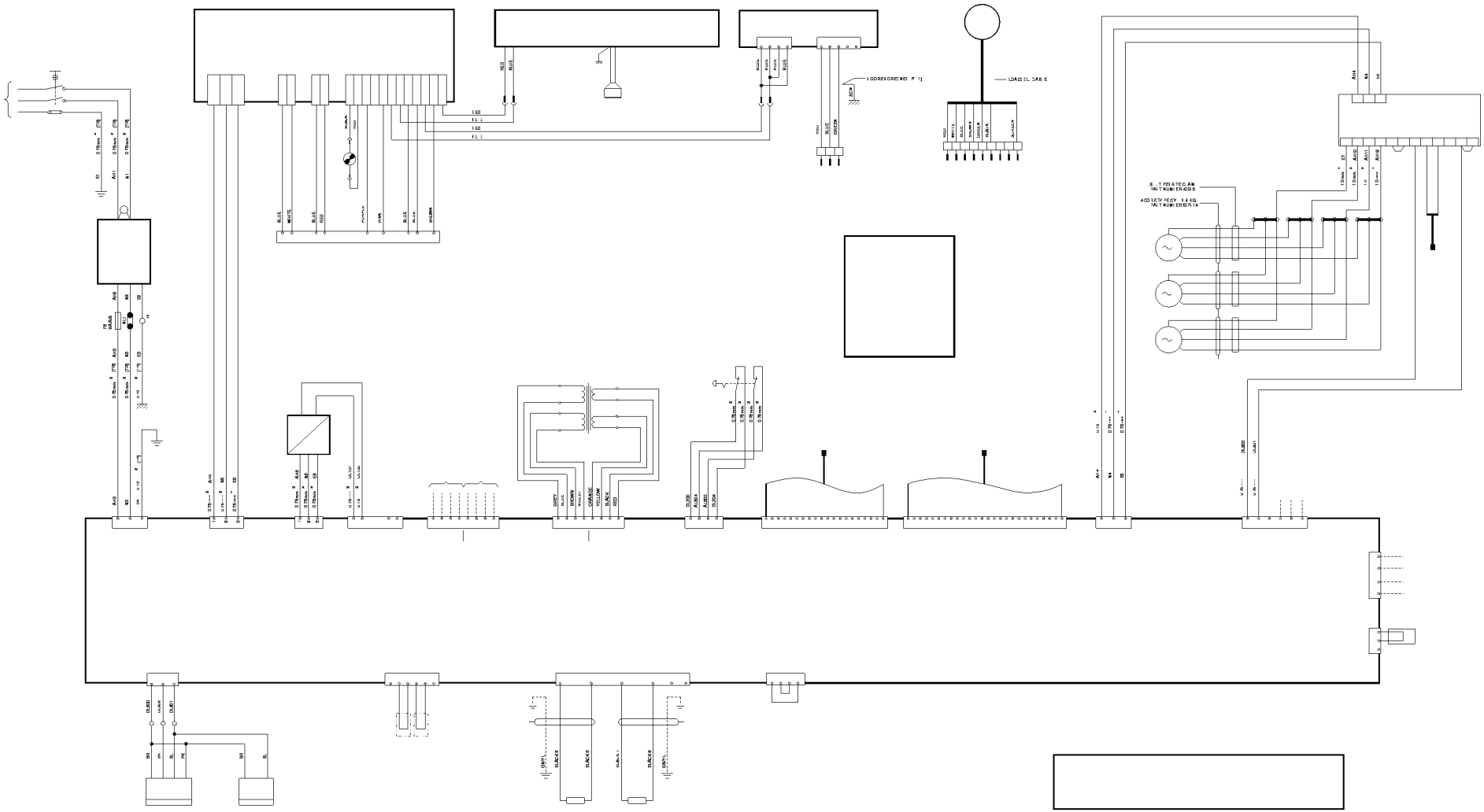
9.1 AS1200C Electrical Board



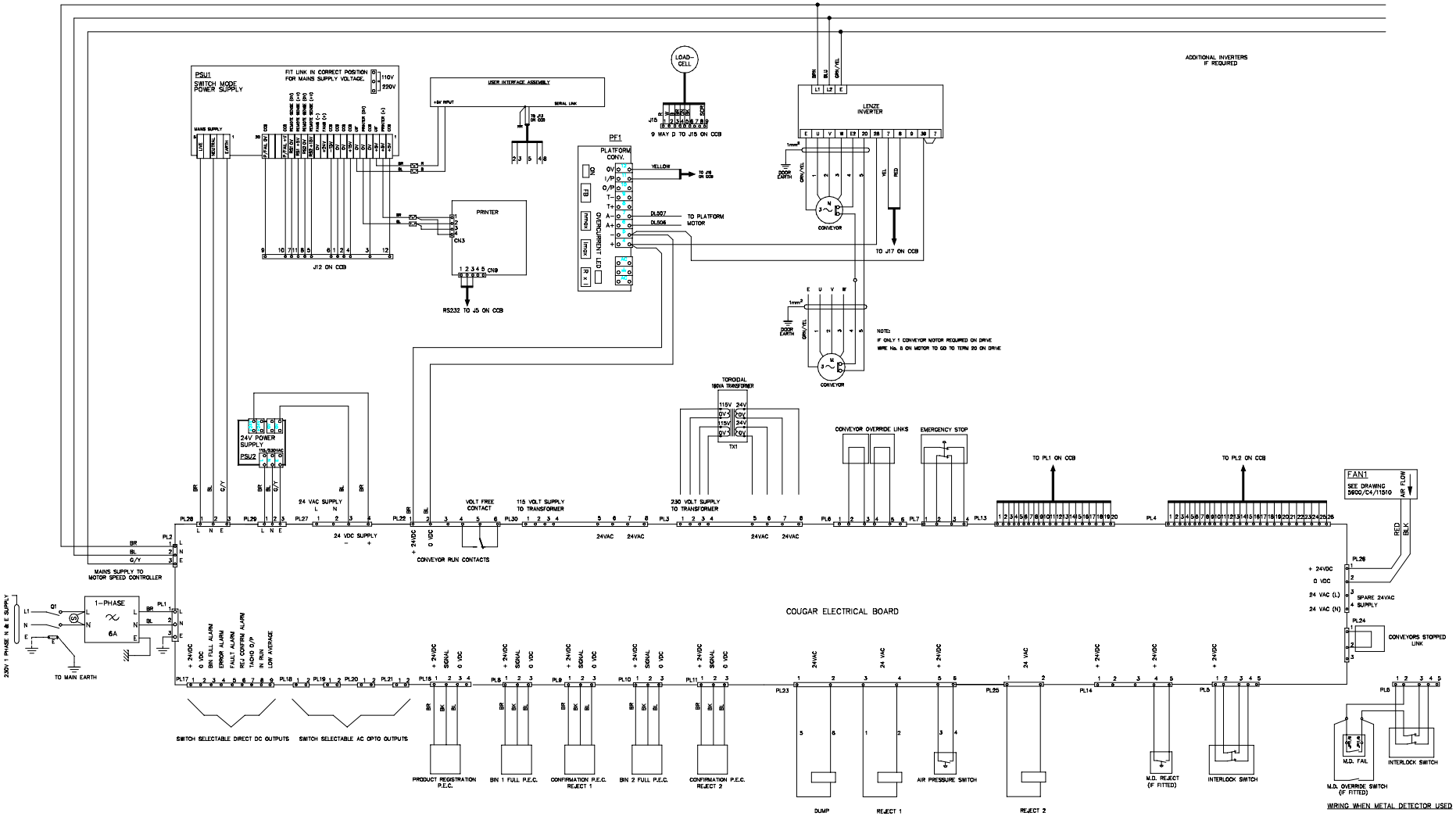
9.2 AS1200C 110V Wiring Diagram



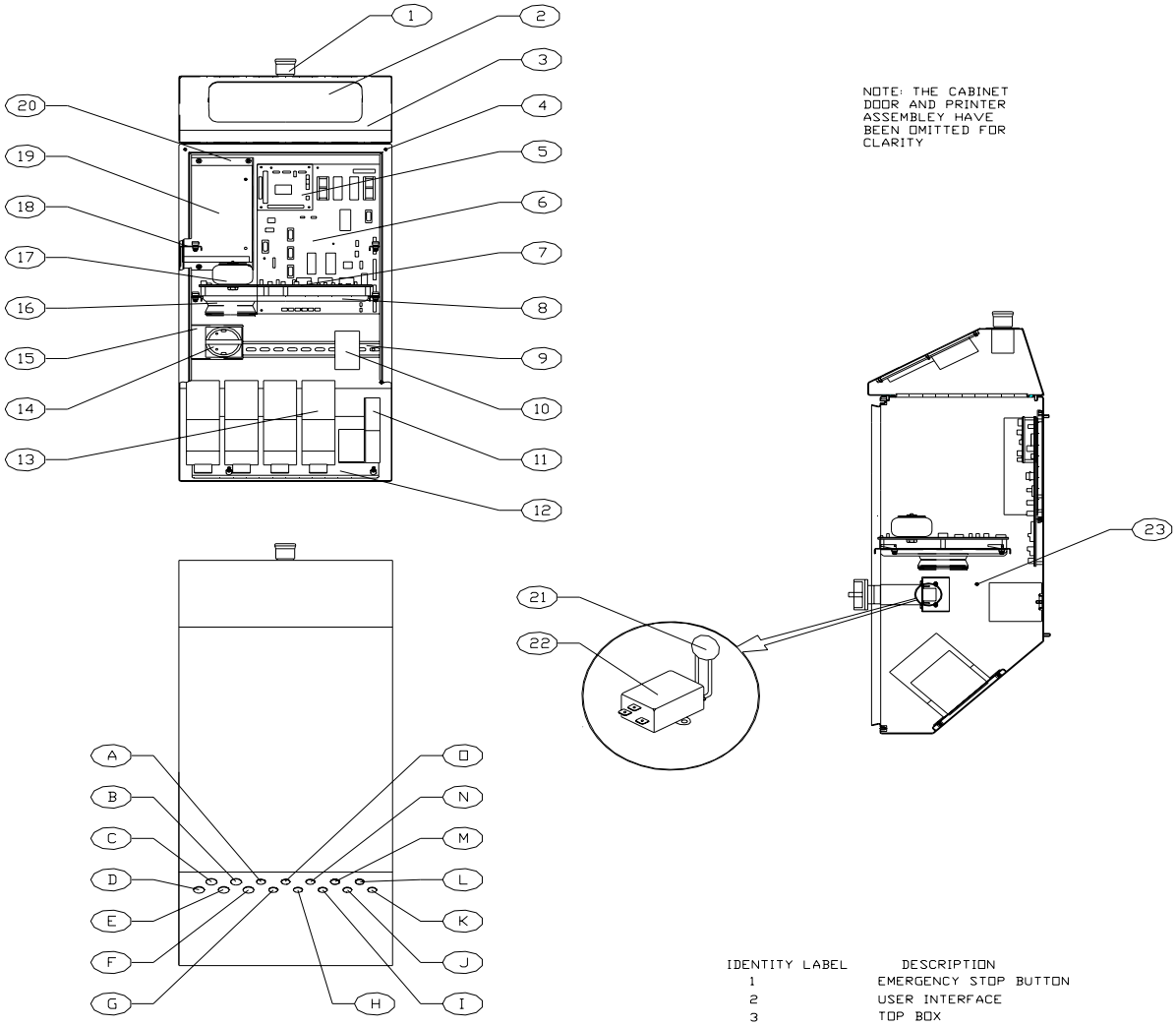
9.3 AS1200C 230V Wiring Diagram



9.4 Wiring Diagram for AS1500 & AS5000



9.5 Control Cabinet Layout (AS1500 & AS5000 PWT)



CABLE HOLE LABEL	DESIGNATION
A	PEC - BIN FULL 1
B	MAINS IN
C	PANASONIC INFEED / OUTFEED MOTOR 1
D	PANASONIC INFEED / OUTFEED MOTOR 2
E	PANASONIC INFEED / OUTFEED MOTOR 3
F	PANASONIC INFEED / OUTFEED MOTOR 4
G	REJECT SOLENOID 1
H	REJECT SOLENOID 2
I	PWT DC MOTOR
J	PEC - PRODUCT REGISTRATION
K	PRESSURE SWITCH
L	LOADCELL
M	PEC - REJECT CONFIRM 2
N	PEC - REJECT CONFIRM 1
O	PEC - BIN FULL 2

IDENTITY LABEL	DESCRIPTION
1	EMERGENCY STOP BUTTON
2	USER INTERFACE
3	TOP BOX
4	HOLES TO MOUNT DOOR
5	ARCOM 'AIM104-386EX' MODULE
6	COUGAR CONTROL BOARD
7	COUGAR ELECTRICAL BOARD
8	CEB MOUNTING SHELF
9	DIN RAIL
10	PULS 24V POWER SUPPLY
11	PUNOS DC MOTOR CONTROLLER
12	SPEED CONTROLLER MOUNTING PLATE
13	LENZE INVERTERS or MOTOR OVERLOAD
14	ISOLATER
15	ISOLATER MOUNTING PLATE
16	FAN
17	TRANSFORMER (PART OF CEB)
18	MOUNTING BRACKET FOR PRINTER SHELF
19	PHILIPS POWER SUPPLY
20	BACK PLANE
21	VARISTER SUPPRESSOR
22	MAINS FILTER - 6A
23	EARTH STUD

FAULT- ERROR DIAGNOSIS & PRINTED REPORTS

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10.1 Run – System – Failsafe List

SYSTEM FAULT No	DESCRIPTION
1.	" Loma link failure" ,
2.	" Loma link corruption" ,
3.	" CCB / AIM104: failure" ,
4.	" CCB / AIM104: corruption" ,

ERROR No	DESCRIPTION
11.	" Auto zero timed out" ,
12.	" Zero value too big - Debris on platform" ,
13.	" Negative zero - Debris on platform" ,
14.	" Ten consecutive under-weights" ,
15.	" Ten consecutive over-weights" ,
16.	" Failed weigh - no auto zero value" ,
17.	" Failed weigh - packs too close" ,
18.	" Packs touching or pack length too short" ,
19.	" Warning:Batch mean below Nominal weight" ,
20.	" Zero value required - clear platform" ,
21.	" Zero value > maximum accept limit" ,
22.	" Gain range overflow pack wt >= 98% FSD" ,
23.	" Warning:Batch mean below Label weight" ,
24.	" Warning:Batch mean below Declared weight" ,
25.	" Failed weigh - pack too long" ,
26.	" Pack Weight exceeds Maximum Rating" ,
27.	“zero exceeds 2% of machine capacity”
28.	“zero exceeds limits during calibration”

FAILSAFE No	DESCRIPTION
32.	" +5V supply out of specification" ,
33.	" +12V head supply out of specification" ,
34.	" -12V head supply out of specification" ,
35.	" +15V Analogue out of specification" ,
36.	" CCB CARD - Reset by watchdog" ,
37.	" Low air pressure" ,
38.	" P.E.C. is blocked or out of alignment" ,
39.	" Reject station 1 reject confirm fail" ,
40.	" Reject station 2 reject confirm fail" ,
41.	" Reject station 3 reject confirm fail" ,
42.	Not Used
43.	" Reject station 1 reject window fail" ,
44.	" Reject station 2 reject window fail" ,
45.	" Reject station 3 reject window fail" ,
46.	Not Used
47.	" Reject station 1 binfull detection" ,
48.	" Reject station 2 binfull detection" ,
49.	Not Used
50.	Not Used
51.	" Interlock guard switch broken" ,
52.	" Power failure occurred" ,
53.	" Power fail brown out " ,
54.	" Software reset occurred" ,
55.	" Verdict too late from detector" ,
56.	" Reject dwell time(s) incorrect" ,
57.	" Processor crashed - Reset by Hardware" ,

10.2 Run Errors

A Run Error is generated by the system when certain conditions are detected. The Warning status lamp on the User Interface illuminates if this is the case. The list of errors can be viewed, via the diagnostics logs menu, by scrolling through the list. All errors are described as either passive (problem logged but no longer exists) or active (problem still exists).

Message	Cause	Solution
Auto zero timed out **Error 11**	The auto zero software has not been able to take a zero value reading during the time entered in the engineer menu	1. Manually create a gap in production by removing a few consecutive packs. 2. Reset value for 'auto zero time-out' to suit the line conditions (15 min in most cases). 3. Fit a reject device upstream and enable the 'Reject if no auto zero' feature. This will automatically create the necessary gap in the production line.
Zero value too high - Debris on platform **Error 12**	Ten consecutive auto zero values exceed 2% of the target weight different from the current zero value.	1. Ensure platform is clear of product, debris, packaging or other foreign bodies. 2. Check PEC alignment and general operation. If broken it could cause packs to be missed. 3. Check loadcell is not sticking or being fouled.
Negative zero - Debris on platform **Error 13**	Auto zero software has a reading less than the permitted value (probably a negative value)	1. Ensure platform is clear from product, packaging and other foreign bodies. 2. Re-compute DAC nulls. 3. Check CCB Card. 4. Check loadcell is working correctly.
Ten consecutive under-weights **Error 14**	10 consecutive auto zero values are more than 2% of the target weight different from the current zero value.	If no other errors or faults are detected, and the weighing set-points are correctly set, these errors indicate the production line conditions are producing heavy or light packs.
Ten consecutive over-	Will only occur if 'Trend	

Message	Cause	Solution
weights **Error 15**	mode' has been selected for auto zero.	
Failed weigh - no auto zero value **Error 16**	Packs being weighed in calibrate while the platform is settling.	1. Keep platform clear until system prompts ' PASS PACKS'.
Failed weigh - packs too close **Error 17**	System is trying to weigh a pack while a second pack has come onto the platform.	1. Use Pack Pitch Monitor to assess pack presentation. 2. Adjust pack presentation so weighing can be optimised. 3. Check conveyor speeds and transfer points.
Packs touching or pack length too short **Error 18**	The PEC has remained blocked for longer than the time expected, based upon the entered pack length.	1. Check PEC is not blocked and is working correctly. 2. Check correct pack length is entered, making an adequate allowance for product skew. 3. Check the transport speeds for the weigh platform and infeed conveyor. 4. Ensure that the conveyors are not slowing down under load.
Warning: Batch mean below Nominal weight **Error 19**	The batch mean weight is less than the nominal weight.	1. Increase pack weight to raise the batch mean weight above the nominal weight.
Zero value required - clear platform **Error 20**	More than 5 packs have passed without a successful auto zero being carried out. Will only occur if machine is powered up with packs passing.	1. Don't allow packs to pass while system is powering up. 2. Create a gap large enough for one successful auto zero.
Zero value greater than max accept limit **Error 21**	The auto zero value is above 10% of the full scale deflection on the A.D.C. Possibly caused by the transport being stopped while a pack is on the platform.	1. Ensure platform is clear from product, packaging and other foreign bodies. 2. Check PEC, if broken it could cause packs to be missed. 3. Check loadcelll is not sticking or being fouled.

10.3 System Faults

A System Fault is generated by the system when certain conditions are detected. The system Fault status lamp on the User Interface illuminates if this is the case. The list of faults can be viewed, via the diagnostics logs menu, by scrolling through the list. All faults are described as either passive (problem logged but no longer exists) or active (problem still exists).

Message	Cause	Solution
Loma link failure **Fault 1**	The Loma link has sent a message 3 times but received no acknowledgement.	1. Check remote PC is 'online' 2. Check Serial Link cables. 3. Check and, if required, replace CCB Card.
Loma link corruption **Fault 2**	The Loma link has sent a message 3 times and received 3 no-acknowledgements.	1. Check remote PC is 'online' 2. Check Serial Link cables. 3. Check and, if required, replace CCB Card.
CCB / AIM104: failure **Fault 3**	The Display link has sent a message 3 times but received no acknowledgement.	1. Check the Display is 'online' 2. Check Serial Link cables. 3. Check and, if required, replace CCB Card.
CCB / AIM104: corruption **Fault 4**	The Display link has sent a message 3 times and received 3 no-acknowledgements.	1. Check the Display is 'online' 2. Check Serial Link cables. 3. Check and, if required, replace CCB Card.

10.4 Failsafe Reporting System

The FAILSAFE REPORTING SYSTEM has two modes of operation which exhibit different characteristics:

1. Access levels – OPERATOR - QUALITY MODE
2. Access levels – ENGINEER - LOMA MODE

10.4.1 Operator – Quality Mode

When one or more FAILSAFE conditions occur the system conveyors will stop running and the display area changes to one of the following types of display:

The diagnostic failsafe log display can be viewed to show if a Active fault is present – this fault should be corrected and then the display will change to the Active fault has gone passive type.

Press the reset key to return to the point in the menu system being viewed when the fault occurred and restart your systems conveyors.

10.4.2 Engineer – Loma Mode

Selecting engineering mode is done by raising your access level Engineer – Loma ; this immediately disables the FAILSAFE REPORTING SYSTEM and allows an engineer to move about the menu system in the normal way.

An engineer may look at the failsafe logs, attend to all the problems and then use the CLR FSC key in the FAILSAFE PROBLEMS menu to reset all FAILSAFE PROBLEMS and then return to the previous access level. Note the CLEAR FAILSAFE key will not operate until all current FAILSAFE PROBLEMS have been dealt with.

Returning to the previous access level will immediately re-enable the FAILSAFE REPORTING SYSTEM if any FAILSAFE PROBLEMS have not been dealt with.

10.5 Failsafe Problems

A FAILSAFE Problem is generated by the system when certain conditions are detected. This is indicated in the main display area and requires the operator to clear and acknowledge that the problem has been dealt with. The list of errors can be viewed, via the logs menu, by scrolling through the list. All errors are described as either passive (problem logged but no longer exists) or active (problem still exists).

Message	Cause	Solution
5V supply out of specification **Fault 32**	5V rail is less than 4.8V.	1. Remove and check CCB Card. 2. Check and, if required, replace PSU. 3. Replace CCB Card.
+12V head supply out of specification **Fault 33**	+12V rail is less than 11.6V.	1. Remove and check CCB Card. 2. Check and, if required, replace PSU. 3. Replace CCB Card.
-12V head supply out of specification **Fault 34**	-12V rail is greater than -11.6V.	1. Remove and check CCB Card. 2. Check and, if required, replace PSU. 3. Replace CCB Card.
+15V Analogue out of specification **Fault 35**	15V rail is greater than 15.25V or less than 14.38V	1. Check and, if required, adjust or replace P.S.U. 2. Check and, if required, replace CCB.
Software crashed - Reset by Watchdog **Fault 36**	The software has locked up and the watchdog has reset the hardware.	This should be self-clearing but if the problem persists: 1. Check the CCB connection and P.S.U. 2. Upgrade to latest version of software.
Low air pressure	Air Pressure switch has	1. Investigate air supply and restore to correct

Message	Cause	Solution
Fault 37	detected that the air pressure in the system is insufficient to operate the reject device.	pressure. 2. Check Air Pressure Switch.
PEC is blocked or out of alignment **Fault 38**	The pack detection PEC has been obstructed for more than 10 times the platform length.	If the PEC was not obstructed: 1. Check the Pack Detection PEC is working. 2. Check the PEC is wired correctly. 3. Check the PEC has been wired in the correct sense.
Reject Output 1, 2 reject confirm fail **Faults 39, 40, 41 and 42**	The reject system has attempted to reject a pack, but could not confirm that the pack was removed from the line in the specified time.	If the pack has been rejected: 1. Check that reject confirm sensor is working. 2. Check reject confirm sensor is correctly wired. 3. Check the reject confirm timing parameters are correct.
Reject 1, 2 Window Fail **Faults 43, 44, 45 and 46**	A pack needs to have its rejection confirmed, whilst the Reject Confirmation is still 'counting-out' the previous rejected pack.	1. Reduce the 'Reject Confirm Window' time. 2. Improve the pack presentation. 3. Check Reject Confirmation PEC is working. 4. Check Reject Confirm PEC is correctly wired.
Reject Output 1, 2, 'Bin Full' detection **Faults 47, 48, 49 and 50**	The reject 'Bin Full' sensor has detected that the bin is full.	If the bin is not full: 1. Check the 'Bin Full' sensor is working. 2. Check the 'Bin Full' sensor is wired correctly. 3. Check the sensor has been wired in the correct sense.
Interlock guard switch broken	The protective tunnel over	1. Close the guard

Message	Cause	Solution
Fault 51	the weighing system has been open and caused the conveyors to stop	2. Start conveyors
Power failure occurred **Fault 52**	The power has been removed from your machine for less than 2 seconds	1. Check quality of mains supply 2. Change P.S.U.
Reject dwell time(s) incorrect **Fault 56**	Reject system is still counting out the dwell time for a reject, when the next pack to be rejected comes along. Will only occur when in 'pulse' reject mode.	1. Check correct reject mode is being used for the reject device. 2. Reduce reject dwell time. 3. Check reject operation. 4. Improve the pack pitch.
Processor crashed - Reset by Hardware **Fault 57**	Any time the processor resets without the power supply failing	If fault keeps occurring it is normally only a symptom of a more serious fault which needs attention.

10.6 Service Log Entries

An entry is made in the Service Log when the system detects certain conditions. The list of errors can be viewed via the logs menu by scrolling through the list. All errors are described as either passive (problem logged but no longer exists) or active (problem still exists).

Message	Cause	Solution
CPU Bus failure exception **Fault 1**	The software has tried to access a part of the memory which doesn't respond.	If fault keeps occurring: 1. Remove all CCB card and visually inspect. 2. Upgrade to latest version of software. 3. Check P.S.U.
CPU address failure exception **Fault 2**	The software has tried to access an address on an odd byte boundary.	If fault keeps occurring: 1 Remove CCB card and visually inspect. 2. Upgrade to latest version of software. 3. Check P.S.U.
CPU Trace exception **Fault 3**	The software operating system has detected an error.	1. Upgrade to latest version of software.
Bad interrupt or exception **Fault 4**	The software has detected an exception which shouldn't occur.	If fault keeps occurring: 1. Remove CCB card and visually inspect. 2. Upgrade to latest version of software. 3. Check P.S.U.
Illegal instruction exception **Fault 5**	The software has attempted to execute an op code which doesn't exist.	If fault keeps occurring: 1. Remove CCB card and visually inspect. 2. Upgrade to latest version of software. 3. Check P.S.U.
Divide by zero exception **Fault 6**	The software has attempted to divide a number by zero.	If fault keeps occurring: 1. Remove CCB card and visually inspect. 2. Upgrade to latest version of software. 3. Check P.S.U.

Message	Cause	Solution
Privileged instruction exception. **Fault 7**	The software has attempted to execute a privileged instruction.	If fault keeps occurring: 1. Remove CCB card and visually inspect. 2. Upgrade to latest version of software. 3. Check P.S.U.
Spurious interrupt occurred **Fault 8**	The software has detected an interrupt for which it has no vector.	If fault keeps occurring: 1. Remove CCB card and visually inspect. 2. Upgrade to latest version of software. 3. Check P.S.U.
Out of bounds CHK exceptioon **Fault 9**	The software has attempted to execute a check instruction and failed	If fault keeps occurring: 1. Remove CCB card and visually inspect. 2. Upgrade to latest version of software. 3. Check P.S.U.
Overflow TRAPV exception **Fault 10**	The software has detected an overflow.	If fault keeps occurring: 1. Remove CCB card and visually inspect. 2. Upgrade to latest version of software. 3. Check P.S.U.
Uninitialised interrupt occurred **Fault 11**	The software has an interrupt for which it has no vector.	If fault keeps occurring: 1. Remove CCB card and visually inspect. 2. Upgrade to latest version of software. 3. Check P.S.U.
System pSOS service call failure **Fault 12**	The software operating system has detected an error.	1. Upgrade to latest version of software.

10.7 Printed Reports

This provides an introduction to the many printed reports available on Loma AS series checkweighers systems, when using either an internal or external printer.

10.7.1 Summary of contents

Production reports: -

- Batch Analysis; forms the basis of records required to satisfy Trading Standards authorities in terms of batch average weight, the rejection of inadequate packages, and the control of non-standard packages.
- Shift Analysis; may be configured to suit production shift intervals for comparing the output of one shift with another.
- Totals Analysis; generally configured to provide a daily summary of production output.
- Histogram; used in conjunction with the above reports to provide a graphical view of product distribution.

System configuration reports: -

- Setpoint Status Report; provides a record of settings associated with current product/package including mandatory set points, tare value, date & time of last calibration, and metal detection settings (if applicable).
- System Configuration Report; provides a record of all fundamental machine settings including transport speed, reject configuration, serial link data and all selected features.

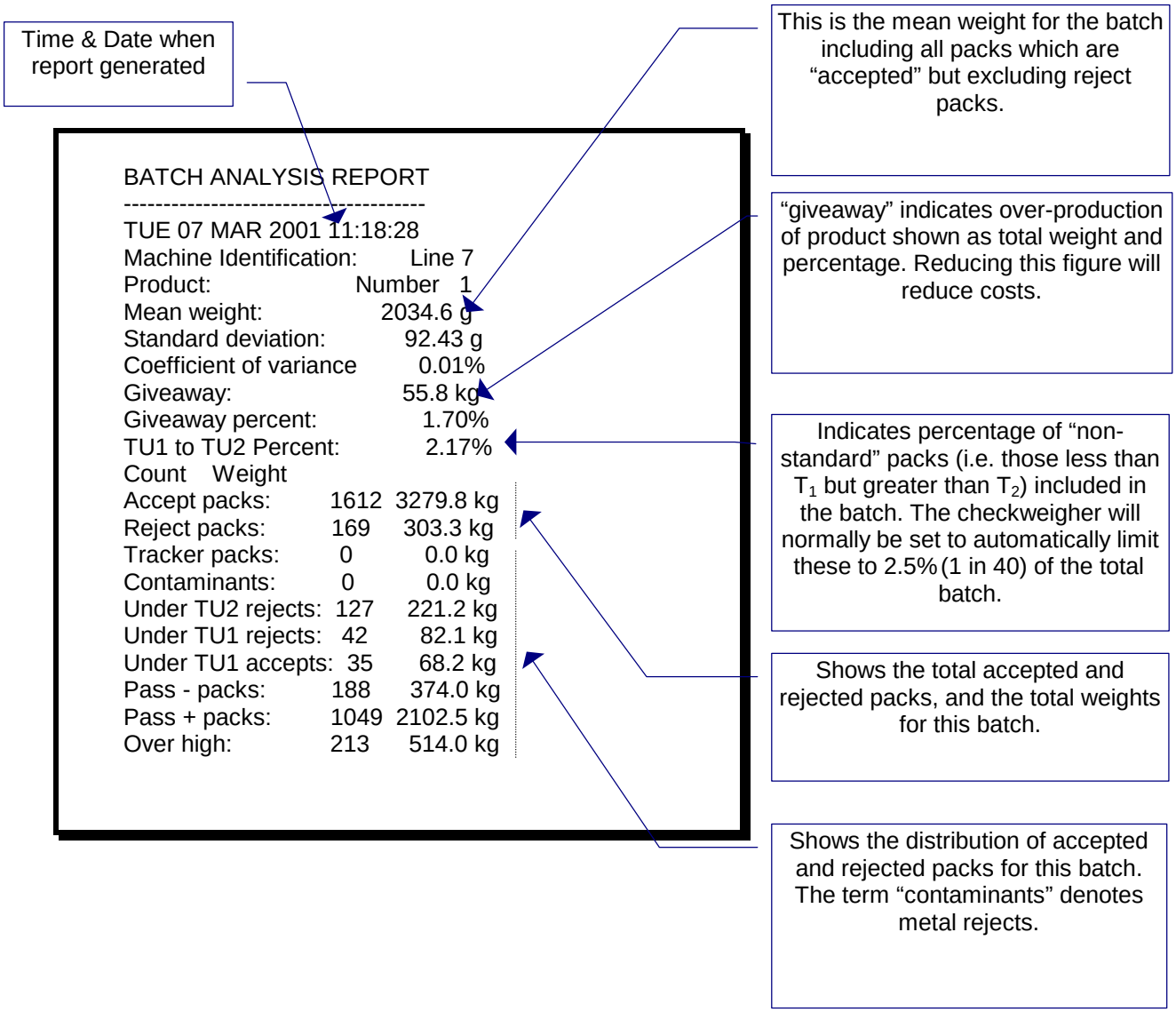
Diagnostic reports:-

- Sample Packs report are for a sample group of packs this report records the weight of each pack, the average weight and the standard deviation. Generally used to assess the mean error of the checkweigher without interrupting production.
- Pack Pitch Monitor report is used in the identification and rectification of package presentation problems (i.e. variations in package spacing).
- System Logs contain details of recent problems, errors, faults and warning messages.

10.7.2 Batch Analysis Report

The ***Batch Analysis Report*** may be configured to report by time (e.g. every hour) or by pack count (e.g. every 10,000 packs).
This report is used in Average Weights applications as evidence that the 3 rules for packers have been satisfied: -

- Average weight not less than nominal,
- No more than 2.5% of packs between T_1 & T_2 (or 2% in France & Germany),
- All packs below T_2 are rejected.



10.8 Shift report

The ***Shift report*** gives the same level of information as the Batch Analysis Report, but would typically be set to report over an 8-hour shift, rather than the much shorter batch interval.

SHIFT ANALYSIS REPORT

TUE 07 MAR 2001 11:18:54

Machine Identification:	Line 7
Product:	Number 1
Mean weight:	2033.2 g
Standard deviation:	189.51 g
Coefficient of variance	0.0 g
Giveaway:	55.3 kg
Giveaway percent:	1.63%
TU1 to TU2 Percent:	2.10%

	Count	Weight
Accept packs:	1665	3385.3 kg
Reject packs:	169	303.3 kg
Tracker packs:	0	0.0 kg
Contaminants:	0	0.0 kg
Under TU2 rejects:	127	221.2 kg
Under TU1 rejects:	42	82.1 kg
Under TU1 accepts:	35	68.2 kg
Pass - packs:	241	479.4 kg
Pass + packs:	1049	2102.5 kg
Over high:	213	514.0 kg

10.8.1 Total Analysis Report

The ***Total Analysis Report*** has the same level of detail as the Batch & Shift Reports but would typically be configured to provide a daily summary.

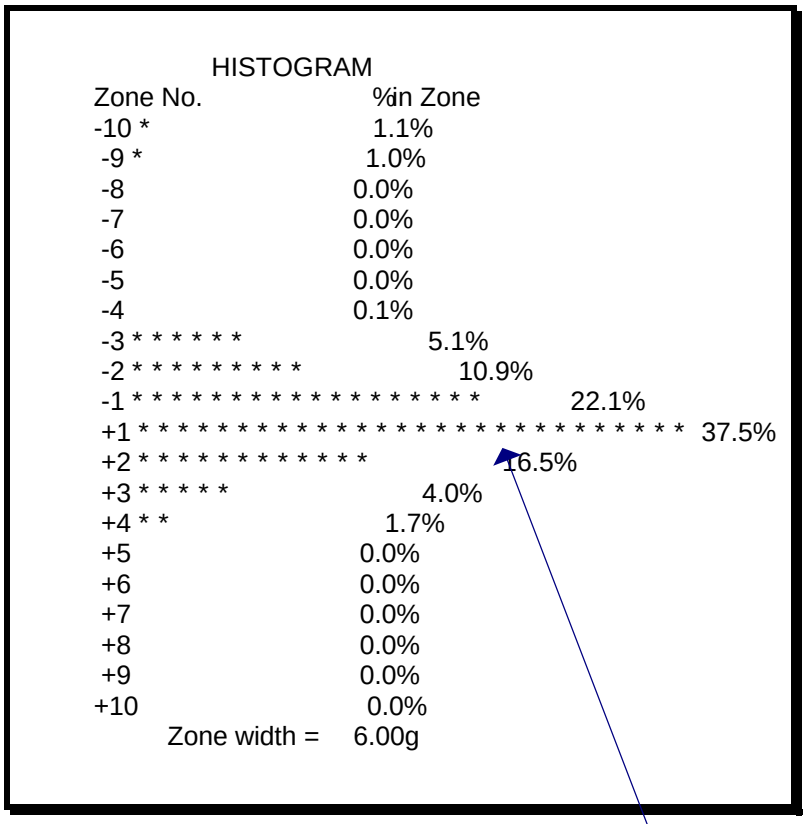
TOTAL ANALYSIS REPORT

TUE 07 MAR 1997 11:19:21

Machine:	Line 7	
Product:	Number 1	
Mean weight:	2031.9 g	
Standard deviation:	186.77 g	
Coefficient of variance	0.0 g	
Giveaway:	54.7 kg	
Giveaway percent:	1.57%	
TU1 to TU2 Percent:	2.04%	
	Count	Weight
Accept packs:	1717	3488.7 kg
Reject packs:	169	303.3 kg
Tracker packs:	0	0.0 kg
Contaminants:	0	0.0 kg
Under TU2 rejects:	127	221.2 kg
Under TU1 rejects:	42	82.1 kg
Under TU1 accepts:	35	68.2 kg
Pass - packs:	293	582.8 kg
Pass + packs:	1049	2102.5 kg
Over high:	213	514.0 kg

10.9 Histogram report

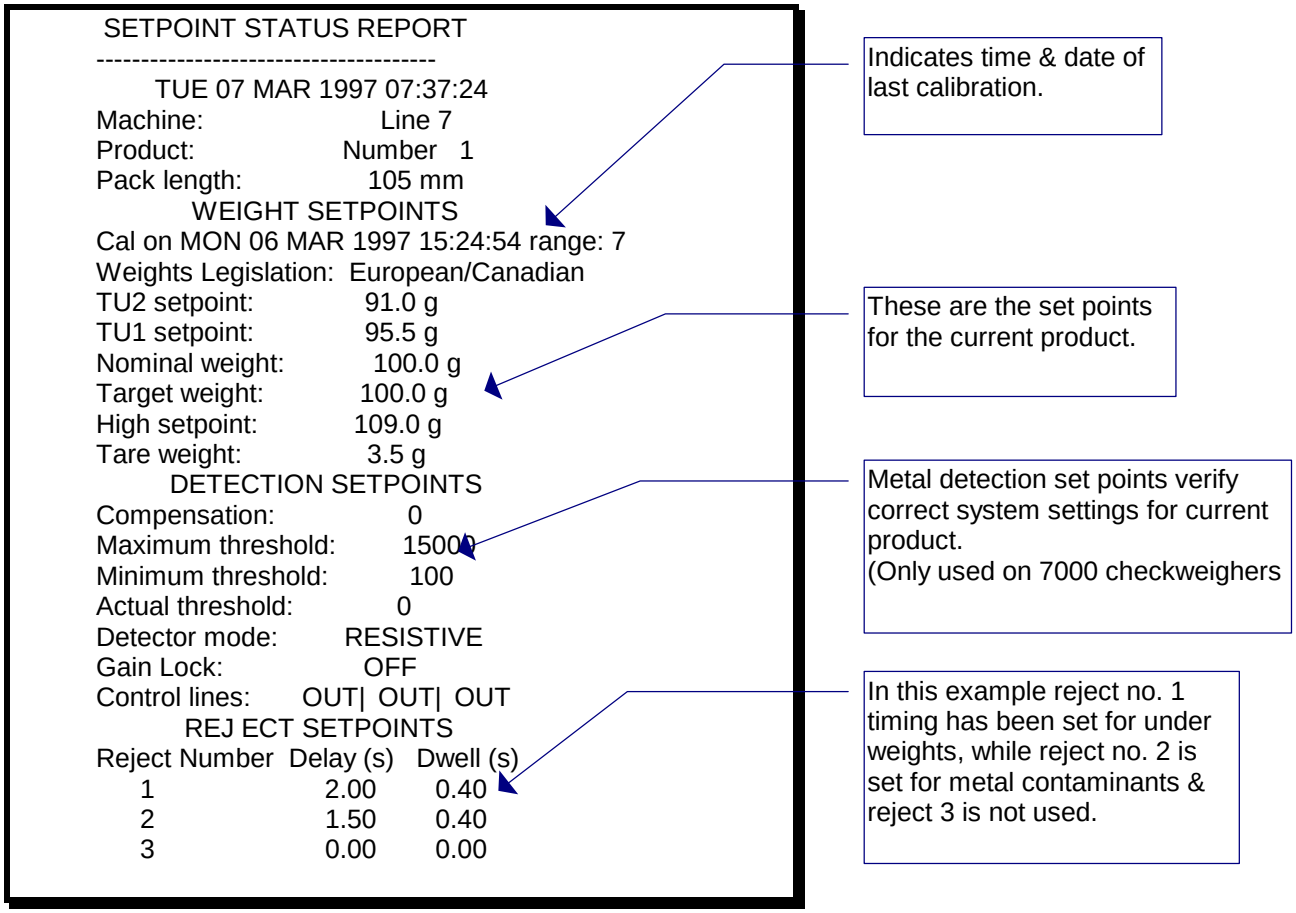
The ***histogram report*** is optional. When selected it will be generated with all Batch, Shift and Totals



Provides a clear indication of production variations in weight. The display or zone width is adjustable to suit the product.

10.9.1 Setpoint Status report

The ***setpoint status report*** is generated when the checkweigher enters a product in run and indicates all of the products settings.



10.9.2 Sample packs report

The ***sample packs*** feature allows the user to check the performance of the checkweigher without stopping or interrupting production.
The user may select a sample group size up to 100 packs. In operation, the weight of each sample pack is recorded and the sample pack is rejected from the line. The user may then weigh each sample pack, calculate the average, and compare this with the average on the printed Sample Packs Report. If the difference is excessive the checkweigher should be recalibrated

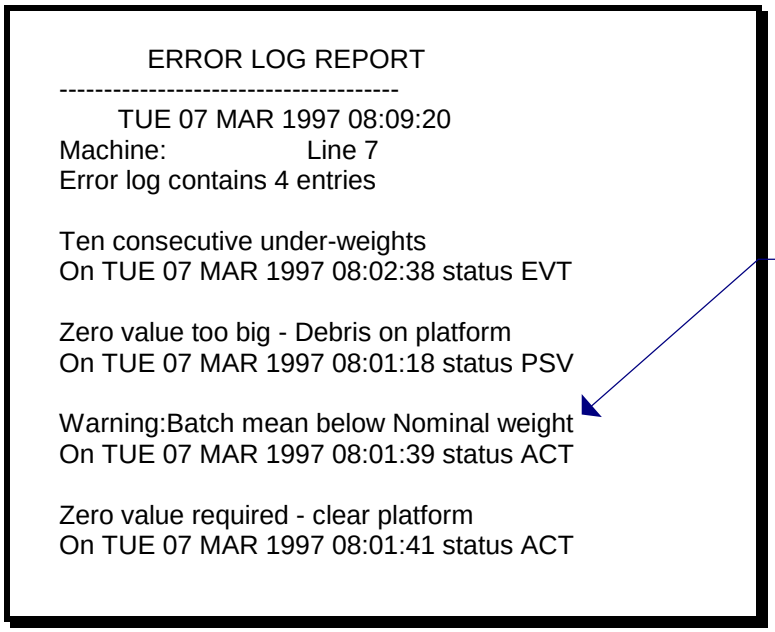
```
        SAMPLE PACKS REPORT
---------------------------------------
       SUN 01 J AN 2089 01:39:42
Machine:                  Line 7
Product:                Number  1
Sample Number   1  Weight  1940.96 g
Sample Number   2  Weight  1941.14 g

Sample Number   3  Weight  1941.23 g
Sample Number   4  Weight  1941.51 g
Sample Number   5  Weight  1941.51 g
Sample Number   6  Weight  1942.25 g
Sample Number   7  Weight  1941.42 g
Sample Number   8  Weight  1941.05 g
Sample Number   9  Weight  1941.14 g
Sample Number  10  Weight  1941.33 g
Sample Number  11  Weight  1941.23 g
Sample Number  12  Weight  1941.33 g
Sample Number  13  Weight  1941.14 g
Sample Number  14  Weight  1941.05 g
Sample Number  15  Weight  1941.05 g
Sample Number  16  Weight  1941.33 g
Sample Number  17  Weight  1941.05 g
Sample Number  18  Weight  1941.14 g
Sample Number  19  Weight  1941.05 g
Sample Number  20  Weight  1940.96 g
Sample group mean weight:   1941.24 g
Sample group std dev:         0.29 g
```

10.9.3 System diagnostics Reports

Various records or “logs” are included which aid the identification and rectification of problems.

10.9.4 Error Log

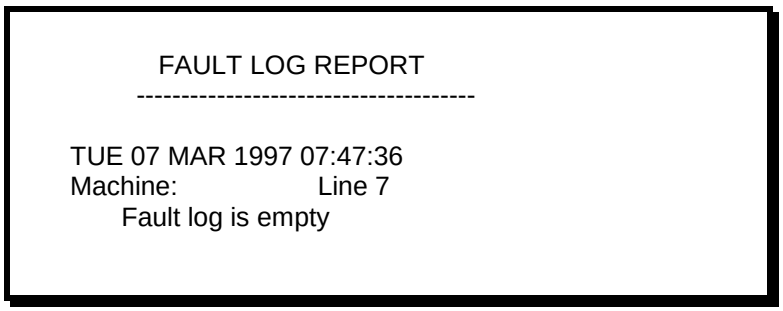
The ***error log*** will contain a summary of problems, which are typically associated with line conditions.



This warning indicates the need to adjust the filling process. The status “ACT” indicates that the condition is still ACTIVE and requires attention. When the batch mean rises above the Nominal weight, the status will change to PSV (passive).

10.9.5 Fault log

The ***fault log*** may contain a summary of problems associated with the checkweigher electronics or software (e.g. power supply out of limits).



10.9.6 Fail-Safe Log

For systems incorporating the fail-safe feature, the ***fail-safe log*** indicates problems, which have caused the system to stop functioning (e.g. Low air pressure).

```
        FAILSAFE LOG REPORT
      ---------------------------------------

   TUE 07 MAR 1997 07:51:51
   Machine:              Line 7
         Failsafe log is empty
```

10.9.7 Service Log Report

The ***service log*** provides important additional information for Loma Customer Support staff.

```
        SERVICE LOG REPORT
      ---------------------------------------

   TUE 07 MAR 1997 07:49:35
   Machine:              Line 7
         Service log is empty
```

10.9.8 Pack Pitch Monitor Report

The ***pack pitch monitor*** function may be used to assess pack presentation problems.
The pitch of all packs (i.e. the distance from leading edge of one pack to the leading edge of the next) must always be greater than the weigh platform length, otherwise the checkweigher cannot function correctly.

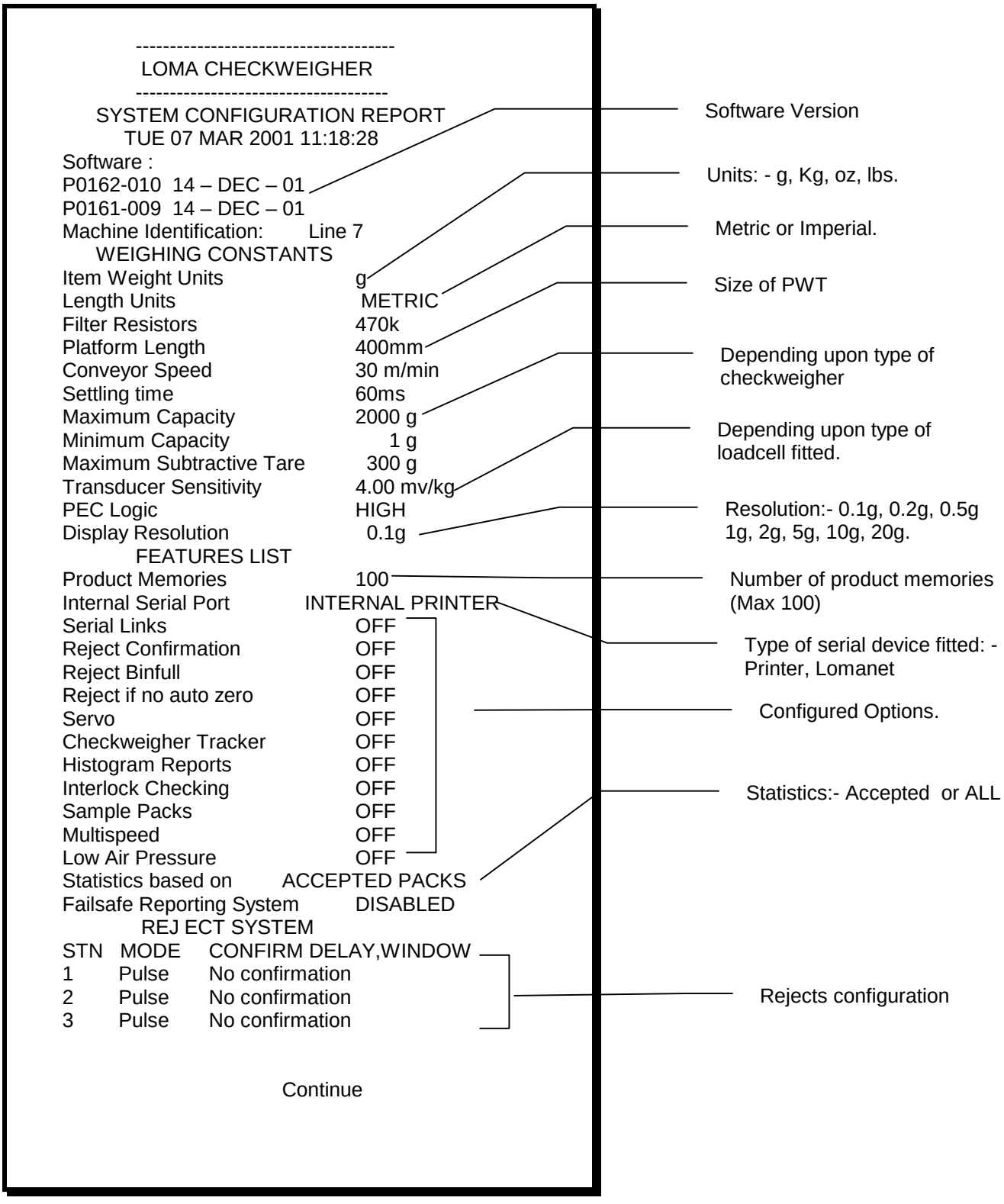
```
     PACK PITCH MONITOR REPORT
----------------------------------------
      TUE 07 MAR 1997 11:32:19
Machine:                    Line 7
Nominal pack pitch              400 mm
Pack pitch zone width            20 mm
 ZONE                        COUNT
< 300.0mm                       0
< 320.0mm                       0
< 340.0mm                       0
< 360.0mm                       1
< 380.0mm*                       44
< 400.0mm* * *                     105
> 400.0mm* * * * * * * * * * * * * * * * * * * * * * *    850
```

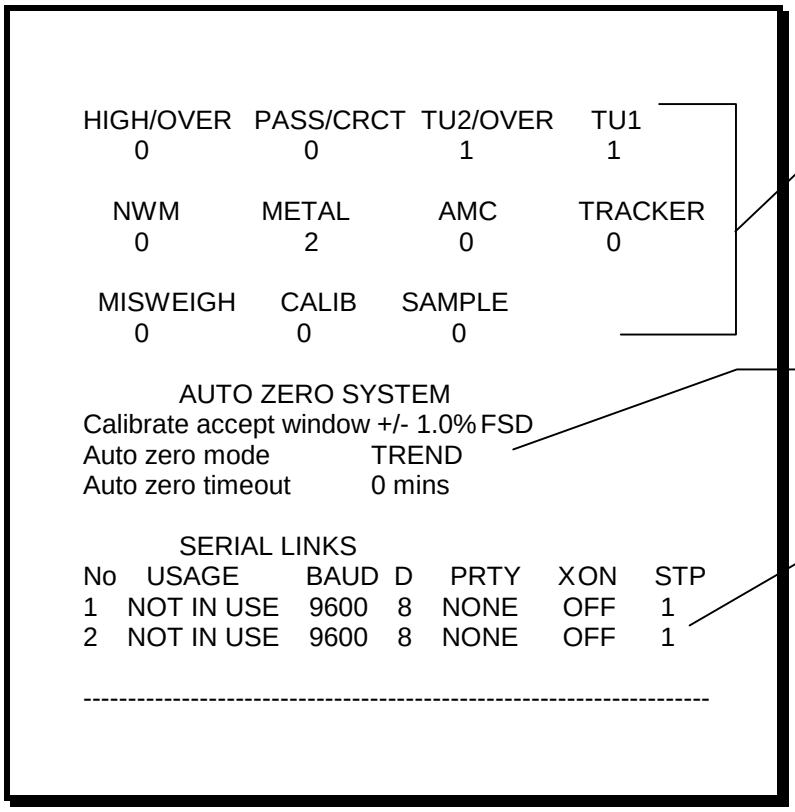
This report shows the results of a short run of packs. In this example; if the weigh platform is 400mm long, then the pitch of all packs must be greater than 400mm.

The report shows that there where 150 occasions out of 1000 where the pitch dropped below the critical distance of 400mm. This may result in 15% of product being rejected, and clearly requires inspection and adjustment of all conveyors and pack transfer points.

10.9.9 System Configuration Report

The **system configuration report** is the complete set-up settings for the checkweigher and the customised setting for features & reject.




HIGH/OVER PASS/CRCT TU2/OVER TU1
0 0 1 1
NWM METAL AMC TRACKER
0 2 0 0
MISWEIGH CALIB SAMPLE
0 0 0
AUTO ZERO SYSTEM
Calibrate accept window +/- 1.0% FSD
Auto zero mode TREND
Auto zero timeout 0 mins
SERIAL LINKS
No USAGE BAUD D PRTY XON STP
1 NOT IN USE 9600 8 NONE OFF 1
2 NOT IN USE 9600 8 NONE OFF 1
Configurable reject stations for weights & contaminate
Monitoring of weighing platform.
External Serial Link 1 & 2 settings

RECOMMENDED SPARE PARTS

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11.1 Introduction

At LOMA we customize our equipment to exactly meet our customer's requirements.

To ensure that the parts you purchase suit your particular machine, please quote its Serial Number. This will be found on the identification plate attached to your equipment (see Figure 11.1).

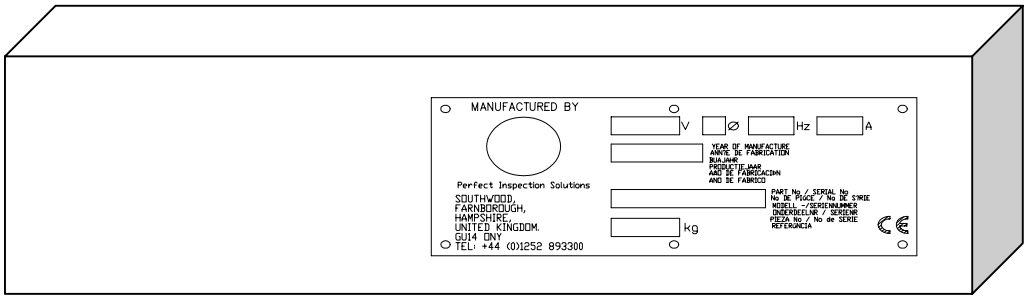

Figure 11.1 Location of Data Plate on Side Beam

There are two main categories of spares.

1. CONSUMABLE ITEMS

   These are items which have a life-expectancy of less than 2,000 hours.

2. DURABLE ITEMS

   These are items which have a life-expectancy of greater than 2,000 hours and are operation-critical.

   DURABLE ITEMS have been sub-divided for high and low priority line operation:

   If your production line needs to be in continuous operation and it is essential that the system remains operational, then it is important that the items listed under **'High Priority'** are kept in stock.

   If you can operate without the system and wait for normal Service response then all items can be regarded as **'Low Priority'**.

You should consider the Consumable Items as mandatory and choose the Durable priorities to suit your line requirements.

11.2 Service Exchange Items

Those items identified as service exchange will be available on a service exchange basis from the local service department.

11.3 Static Sensitive Items

Those items identified as static sensitive will be sent to you in a protective covering. Personnel must be suitably trained in handling such devices in order to prevent damage to the parts.

11.4 AS Series Checkweigher Component List

Description	**Part Number**
Bearing for rollers	101050
Timing belt - 115MXL	
Timing belt - 125MXL	202721 (124 LONG)
Drive pulley	102194
Drive roller (Balanced)	202721
Drive roller (Non-balanced)	202724
E-Stop	503037 or 503156
Idle roller (Balanced)	202722
Idle-roller (Non-balanced)	202723
Isolator	502029
Loadcell	218198

Description	Part Number
Motor	501456
Noise filter	519030
PEC Transmitter and receiver	404164 or 404052
Printer	516434
Printer door	219219
Printer paper	812131
Printer ribbon	812132
Processor CCB	416241
PSU PCB	419220 (ASTEC PSU)
CEB	416246
Speed controller 230V	502220 (LENZE 8200 INVERTER 0.2 KW 1PH)
Thumb wheel adjuster (conveyor)	105137
Transformer 100V	402227 (200VA PRIMARY -220V SECONDARY)
Transport belt 350 x 200mm	134678 (715 long)
Transport belt, flipper, 575 x 200mm	134766 (1150 long)