

## SECTION 3 - SERVICE OPERATIONS

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**CAUTION!**

Prior to carrying out any maintenance procedures on the machine, the following safety precautions must be observed:

- Switch the machine OFF by turning the isolator switch on the rear of the insert head cover to the 'off' position. *Turning the switch does not isolate the PC from mains supply, which is left on for access to technical documentation. To switch this off also, the power cable must be isolated from the incoming supply by switching off at supply source.*
- If it is intended to access the mains distribution DIN rail behind the insert head, the machine *must* be isolated from the mains supply. *Failure to isolate the mains could result in death or injury!* The DIN rail is protected by an inner safety panel, retained along its top edge by 2 screws. The panel must always be replaced when maintenance work is completed.
- Before switching the machine back on after completion of maintenance work, ensure all external covers are in place and undamaged. Replace any covers that are damaged.

**PUT SAFETY FIRST!**

The following electrical information for the incoming mains supply on the 1000/1200 must be noted. Mains wiring should not normally need attention and unless there is a specific reason, it should not be changed.

**Input Voltage**

230v @ 50/60Hz ( $\pm 10\%$  maximum)

**Power Connector**

Machine fitted with BS4343 32A IP44 industrial free plug connector, conforming to EN60309 1 & 2 and CEE17. Mating socket required at supply source.

**Notes:**

1. If for any reason it is required to change away from the supplied plug please note that the replacement device used must have a rated current carrying capability greater than 30A and meet all safety requirements for that country.

2. Changing the supplied plug negates any responsibility of the Company for the safety integrity of the machine.

3. Changing the supplied plug must be carried out by a qualified electrician.

4. If 2 x Hi-Cap Folders, a Hi-Cap and a Lo-Cap Folder or an OMR/Barcode Folder with any other unit are located next to each other on the same track pair, it is necessary to order and fit an additional power supply kit 184-156 to ensure correct operation.

**Incoming Mains Connections**

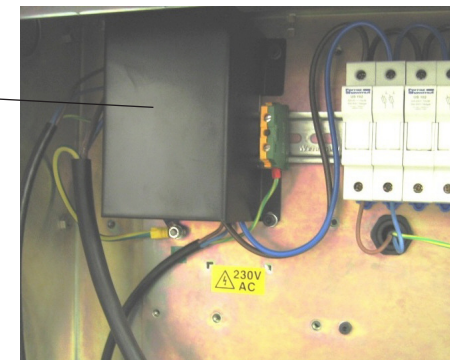
The mains is connected to the isolator switch located at the rear of the insert head, above the wetter fluid bottle. To gain access, remove the outer cover, then the plate holding the switch. Observe the polarity of the incoming mains cables - the brown cable (line) connects to L1, the blue cable (neutral) connects to N (note that colours may vary depending on locality). The cables exiting at the bottom of the switch are connected to the DIN rail fuses, as described below.

**DIN rail fuses**

The mains supply from the mains switch (see above) is connected to the main 30A fuses, located on a DIN rail with all other fuses at the rear of the insert head, below the envelope feeder. To gain access, remove the outer cover below the envelope feeder, then the cover panel inside. The main fuses are protected by a further cover, as shown below.

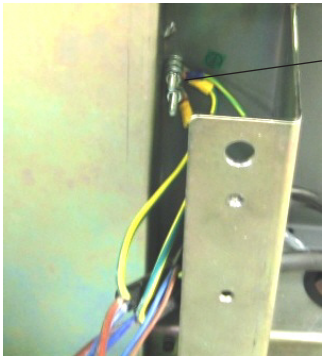
Protective cover over fuses and mains cables.

**Warning: High voltage PC always live unless isolated at wall.**



Earth Connections

The earth wires from incoming mains, outgoing mains and the connection to all other fuses terminate at the main earth post. This is located at the rear of the insert head and is visible after removing the panel for the mains switch, as described on the previous page.



Earth connection


Warning and Safety Labels

The 1000/1200 is fitted with a number of warning and safety labels which must be in place and undamaged. If any are found not to be, they must be replaced. Labels are identified below.


Model No.  
**E1532BA**  
Serial No.  
**OAQ 59 61**  
  
**115-230 V~ 50/60 Hz**  


Rating and Compliance Plates

Located on inside of hinging top cover of envelope feeder

NEOPOST TECHNOLOGIES LTD  
Loughton, Essex IG10 3TZ, UK  
  
CE 

neopost  NEOPOST TECHNOLOGIES LTD  
Loughton, Essex IG10 3TZ, UK  
**Model No. E1532BA**  
**Serial No. OAQ 59 61**  
  


 T2A 250V  
CAUTION  
FOR CONTINUED PROTECTION AGAINST RISK OF FIRE REPLACE ONLY WITH SAME TYPE AND RATING OF FUSE  
DOUBLE POLE / NEUTRAL FUSING  
VORSICHT  
WEDEN BRANDGEFAHR SICHERUNGEN NUR GEGEN GLEICHEN  
TYP UND STÄRKE AUSTAUSCHEN  
PHASEN – UND NULLLEITERSICHERUNG  
PRECAUCION  
PARA EVITAR RIESGO DE INCENDIO – EMPLEAR SOLAMENTE  
FUSIBLES DEL MISMO TIPO Y CAPACIDAD  
DOS FUSIBLES – POSITIVO Y NEGATIVO  
ATTENTION  
POUR NE PAS COMPROMETTRE LA PROTECTION CONTRE LES  
RISQUES D'INCENDIE, REMPLACER PAR UN FUSIBLE DE MÊME  
TYPE ET DE MÊME CARACTÉRISTIQUES NOMINALES  
PROTECTION DES DEUX POLES, FUSIBLE SUR LE NEUTRE

Fuse caution label 2A G3297A


Fitted to the electrical panel behind the PC, next to the socket connecting the PC

HIGH LEAKAGE CURRENT  
Earth connection essential  
before connecting supply  
  
COURANT DE FUITE ÉLEVÉ  
Raccordement à la terre indispensable  
avant le raccordement au réseau

High Leakage Current Label G3357A

Fitted to the outer cover behind the insert head, below the envelope feeder

Warning and Safety Labels (cont.)


	<b>CAUTION</b> THIS BEAM PRODUCES LASER LIGHT. DO NOT STARE INTO BEAM. THE BEAM MAY BE DAMAGING TO YOUR EYES IF IT IS NOT PROPERLY CONTROLLED. ALWAYS WEAR LASER SAFETY GLASSES. DO NOT POINT BEAM AT ANY PERSON OR ANIMAL.	<b>ACHTUNG</b> DIESER BEAM ERZEUGT LASERLICHT. STARE NICHT IN DAS LICHT. DAS LICHT KÖNNTE IHR AUGEN SCHÄDIGEN. ALLES ZEIT TRAGEN LASERSCHUTZBRILLEN. NICHT AUF MENSCHEN ODER TIERE ZEIGEN.
	<b>ATENÇÃO</b> ESTE RAIÃO PRODUZ LUMIÈRE LASER. NÃO OLHE PARA O RAIÃO. O RAIÃO PODE SER DANOSAMENTE PARA OS SEUS OLHOS SE NÃO FOR PROPRAMENTE CONTROLADO. SEMPRE USE ÓCULOS DE PROTEÇÃO CONTRA LASER.	<b>CAUTION</b> CE RAYON PRODUIT UNE LUMIÈRE LASER. NE REGARDEZ PAS LE RAYON. IL PEUT ÊTRE DANGEREUX POUR LES VOS YEUX S'IL N'EST PROPREMENT CONTRÔLÉ. PORTER TOUJOURS LE PROTECTEUR CONTRE LASER.

Laser warning label  
G3363A

Fitted on the horizontal surface close to the OMR/Barcode read head on all OMR/Barcode units.

Warning plate G3068A

Fitted to the top of opening covers on: collator; flatbed feeder, single O/L; vertical stacker (one of each of two covers); hi/lo-cap, feeder

	Keep fingers, long hair, loose clothing and jewellery clear of moving parts
	Finger, offenes haar, lose kleidung, ketten und armbänder von beweglichen teilen fernhalten Mantener los dedos, pelo, pañuelos y caligantes apartados de las partes en movimiento Conserver les doigts, cheveux, vêtements amples et bijoux à distance des pièces en mouvement

conveyor, and to diverter below top tray.

**CAUTION!**

Observe the safety notes on the previous pages before carrying out any maintenance procedures. Lethal voltages are present when the machine is still connected to the mains.

Ensure the mains supply is completely isolated before removing any machine covers, or carrying out any other maintenance operations.

**3.1 PREVENTATIVE MAINTENANCE CHECK-LIST**

(When all items have been carried out, worksheet must be signed to confirm).

**3.1.1 GENERAL**

1. Ask how the machine has been working lately and use this information as a guide for checking the machine.
2. Ask if there has been a change of use e.g. high production runs or a change of material.
3. Check the operator adjustments of the machine and the material being processed.
4. Switch on machine and confirm that no errors appear on the display screen.
5. If necessary, generally instruct the operators again with regard to their specific problem area.
6. Enter the total forms count on the service sheet.
7. When all service or repair operations have been carried out, the machine must be left with all parts reassembled, leaving no risk of injury.

**3.1.2 SERVICE AT 6 MONTHS OR 1 MILLION INSERTS (1000) or 1.5 MILLION (1200)**

1. Implement the actions in section 3.1.1 'General'.
2. Remove all machine covers.
3. Vacuum clean all modules to remove internal dust. Clean all covers.

4. Print and check sensor calibration (see Engineering Diagnostics under section 3.5), then clean all sensors and re-check calibration.
5. Check envelope and insert side guides for movement, stop position and parallelism to chassis.
6. Check that steel overguide tapes on shuttles, insert track and kicker are not bent, twisted or damaged. Replace any that are.
7. Check that gas struts properly support all opening covers, envelope opener clamshell and collate unit conveyors (where fitted). Replace if any are defective or sinking.
8. If gears on insert feeder run noisily, lubricate **sparingly** with Moly slip MBG moly bentone grease. Raise cover at front end of feeder to access.

In addition to the above, carry out the following in individual modules. **Note:** rubber feed wheels/rollers must be cleaned using a clean, lint-free cloth dampened with water. **Do not use any other cleaning agents.**

**Feeders (insert and envelope)**

1. Clean conveyor belts and inspect for damage. Replace if necessary.
2. Clean feed wheels and inspect for wear. Replace tyres if necessary.

**Folders**

1. Clean fold rollers and inspect for wear. Replace if necessary.
2. Clean output wheels and inspect for wear. Replace tyres if necessary.

**Hi/Lo capacity feeders**

1. Clean feed wheels and inspect for wear. Replace if necessary.



**Track**

1. Check pawled belts for tension and wear. Replace if necessary.
2. Check pawled belt pulleys for wear. Replace if necessary.
3. Check stepper motor belts for tension and wear. Replace if necessary.
4. Check all paper control springs for damage.
5. Clean track cassette solenoids.

**Envelope opener**

1. Check opener plate for wear. Replace if necessary.
2. Clean conveyor belts and inspect for damage. Replace if necessary.
3. (1200 only) Using 'DC Motors' in the engineering screens, run the envelope side guides, at HP1 & HP2 in and out to check operation and free movement. If operation is sluggish then remove the overguide assembly to gain access to and service the side guide assembly.

**Kicker**

1. Check pawled belts for wear. Replace if necessary.
2. Check pawled belt pulleys for wear. Replace if necessary.
3. Check stepper motor belts for wear. Replace if necessary.
4. Check tips of insert fingers for wear. Replace if necessary. Note that for the 1200, the finger tips are independently replaceable.

**Handover**

1. Clean pawled belts and check for wear. Replace if necessary.

**Wetter closer**

1. Clean conveyor belts and rollers.
2. Check wetter sponge and roller. Replace if necessary.

3. Clean wetter reservoir. Replace tank if necessary.

**Collator**

1. Clean conveyor belts and inspect for damage. Replace if necessary.
2. Clean feed wheels and inspect for wear. Replace tyres if necessary.
3. Check that gas struts support covers and conveyors.
4. Check, and if necessary replace the collate pocket backstop springs.

**3.1.3 RELIABILITY INFORMATION (1000 series)**

The following reliability information applies to 1000 series. See following page for 1200 series figures.

**1. (MCBE) Mean Cycles Between Error**

This is the mailing reliability of the machine and is based on a job, which has been fully set up to run at its best performance for documents, speed, etc.

Achievable MCBE better than 1/1000.

**2. (MTBF) Mean Time Between Failure (Service Call)**

This is the mechanical reliability of the machine between Service Calls and assumes the machine has been properly maintained.

'Failure' does not necessarily mean the machine has broken down but that the customer has requested a service call that cannot be overcome by phone support.

The MTBF is based on a 4 station machine with an IS collate unit and 3 feeders. We also assume that the collate unit is processing an average of 2 sheets per document.

Estimated MTBF 300,000.

**3. (MTTR) Mean Time To Repair**

Repair times for the 1000 need to be broken into 2 categories:

- a) Time to get machine back up and running.

MTTR 2 hours.

- b) Time to repair a module fault away from the machine (machine already repaired and running). This is usually possible due to the modular nature of the machine.

MTTR 2 hours

The worst case here would be for a module to take the maximum time to diagnose and replace followed by the maximum time to repair away

from the machine. In this case the MTTR would be 4 hours.

It should also be noted that a technician would normally expect to remain on site, after a repair has been made, to ensure that normal running has resumed. It is estimated that this is a minimum of 1 hour.

**4. Machine (Service) Life**

The machine is designed to have a service life of:-

Machine Life 30M cycles.

The life of the machine does not mean that it cannot be used beyond this number of cycles. The life of the machine is based on the fact that many of the functional mechanical components are designed to last 30 million cycles. Subsequently, after 30 million cycles the machine must be inspected to determine what components/modules need to be replaced to allow the machine to be returned to a serviceable unit.

Service contracts will not be offered on machines that have not been inspected and refurbished after 30 million cycles.



**3.1.4 RELIABILITY INFORMATION (1200 series)**

The following reliability information applies to 1200 series. See previous page for 1000 series figures.

**1. (MCBE) Mean Cycles Between Error**

This is the mailing reliability of the machine and is based on a job, which has been fully set up to run at its best performance for documents, speed, etc.

Achievable MCBE better than 1/1500.

**2. (MTBF) Mean Time Between Failure (Service Call)**

This is the mechanical reliability of the machine between Service Calls and assumes the machine has been properly maintained.

'Failure' does not necessarily mean the machine has broken down but that the customer has requested a service call that cannot be overcome by phone support.

The MTBF is based on a 4 station machine with an IS collate unit and 3 feeders. We also assume that the collate unit is processing an average of 2 sheets per document.

Estimated MTBF 400,000.

**3. (MTTR) Mean Time To Repair**

Repair times for the 1200 need to be broken into 2 categories:

- a) Time to get machine back up and running.

MTTR 2 hours.

- b) Time to repair a module fault away from the machine (machine already repaired and running). This is usually possible due to the modular nature of the machine.

MTTR 2 hours

The worst case here would be for a module to take the maximum time to diagnose and replace followed by the maximum time to repair away

from the machine. In this case the MTTR would be 4 hours.

It should also be noted that a technician would normally expect to remain on site, after a repair has been made, to ensure that normal running has resumed. It is estimated that this is a minimum of 1 hour.

**4. Machine (Service) Life**

The machine is designed to have a service life of:-

Machine Life 40M cycles.

The life of the machine does not mean that it cannot be used beyond this number of cycles. The life of the machine is based on the fact that many of the functional mechanical components are designed to last 40 million cycles. Subsequently, after 40 million cycles the machine must be inspected to determine what components/modules need to be replaced to allow the machine to be returned to a serviceable unit.

Service contracts will not be offered on machines that have not been inspected and refurbished after 40 million cycles.



## 3.2 MODULE IDENTIFICATION

The machine is constructed of a number of modules, each one being removable and serviceable as a separate unit. Each module has a unique name, and these names are used uniformly throughout all documentation and software, and must also be used if referring to Technical Support Department.

All modules are listed below:

- Fig. 1. Feeder Interface
- Fig. 1. Shuttle
- Fig. 2. Shuttle Bed
- Fig. 2. Track Cassette
- Fig. 3. Kicker
- Fig. 3 & 4. Turnover
- Fig. 4. Handover
- Fig. 5. Envelope Opener
- Fig. 6. Envelope Opener Conveyor
- Fig. 5 & 7. Feeder
- Fig. 8. Folder
- Fig. 9. Wetter Closer

This section shows the location of each module and identifies its name.

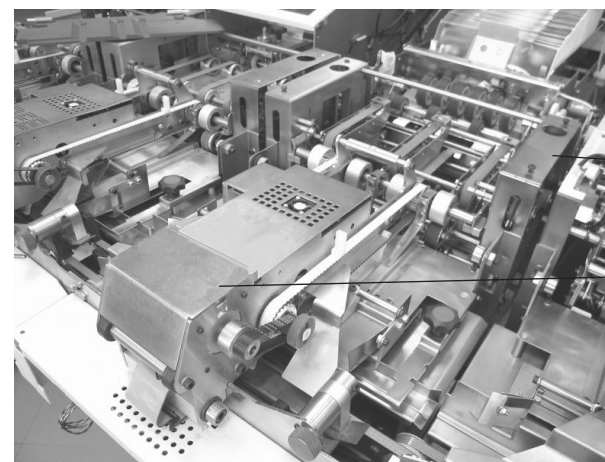


Fig. 1



Fig. 2

Feeder Interface

Shuttle

Shuttle Bed  
(Raise shuttle to reveal)

Track Cassette

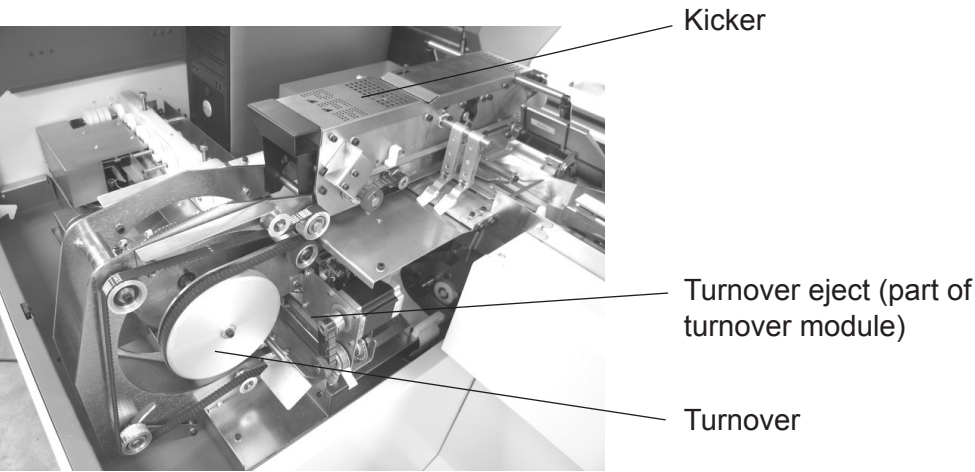


Fig. 3  
See also below

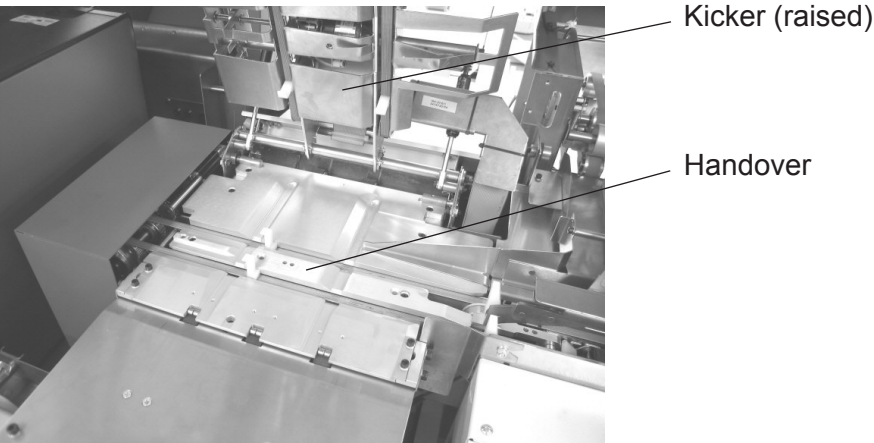


Fig. 4

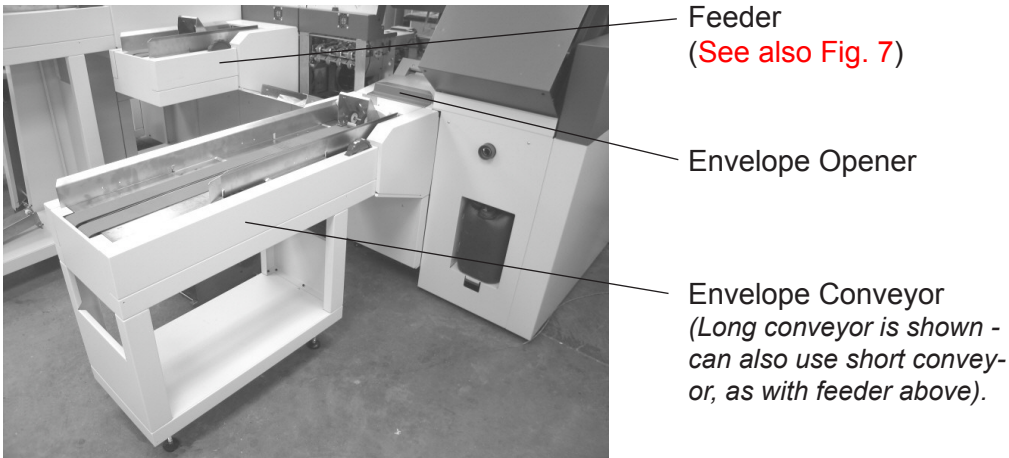


Fig. 5  
See also below

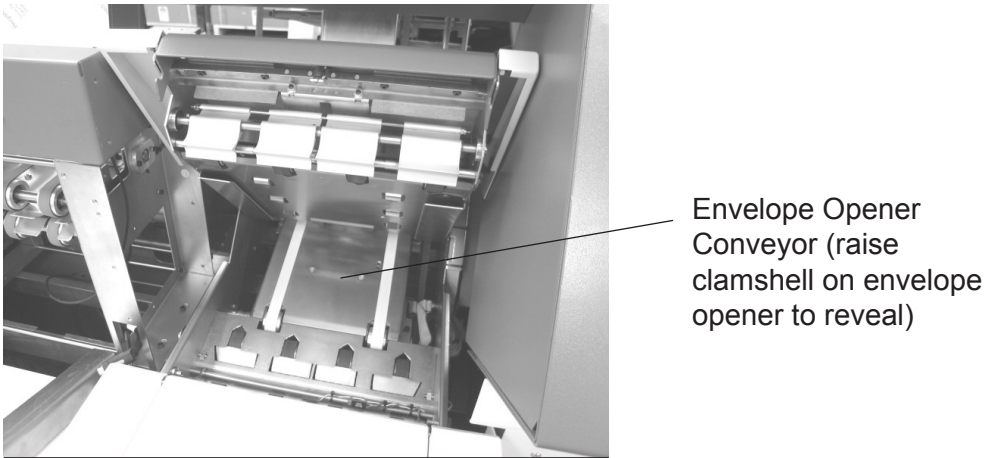
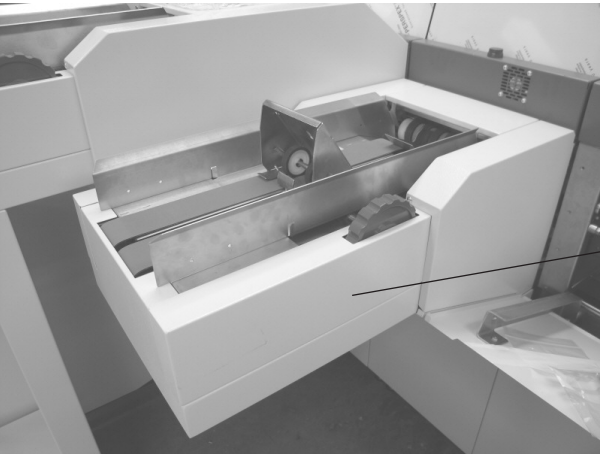
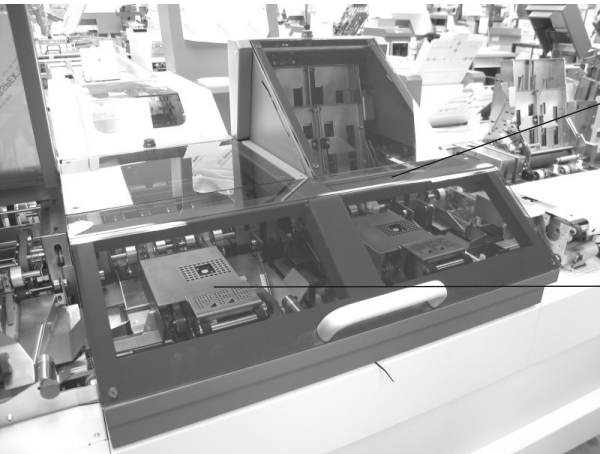


Fig. 6



Feeder - rear view  
**see also Fig. 5**  
*(Note that insert and envelope feeders are identical units except for drive pulley and belt. Coneyor can be short or long).*

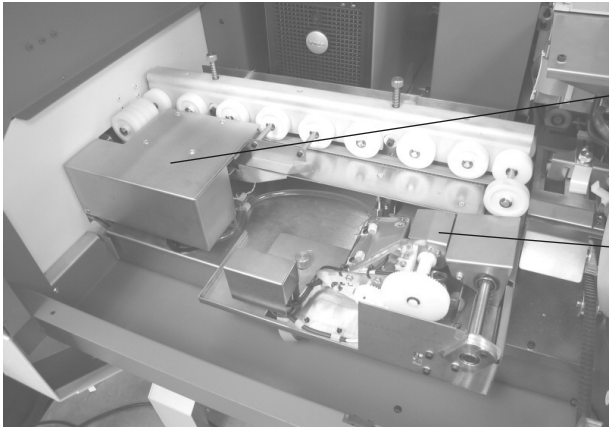
Fig. 7



Folder - front view

Feeder - front view

Fig. 8



Closer

Wetter

Fig. 9

### 3.3 DRIVE / CONVEYOR BELT REPLACEMENT

The 1000/1200 has been designed for easy access of most of the drive or conveyor belts on the machine. In some cases this entails removal of the relevant module, in other cases the belt is replaced in situ.

#### 3.3.1 TRACK CASSETTE BELT REPLACEMENT

To replace the track cassette belt, first remove the track cassette.

1. Raise the track interface shuttle, and also the track interface bed.
2. Remove the overguide by taking out the thumbscrew.
3. Unplug the ribbon cable from the PCB next to the motor. Lift the cassette upwards to remove it from the slide posts (see Fig. 10 below).
4. With the cassette now removed from the machine, slide the belts from the lower pulleys and remove them from the cassette. Fit the new belts. **Note: ensure that the pawls are facing in the right direction, and that the pawls of both belts are in line.**

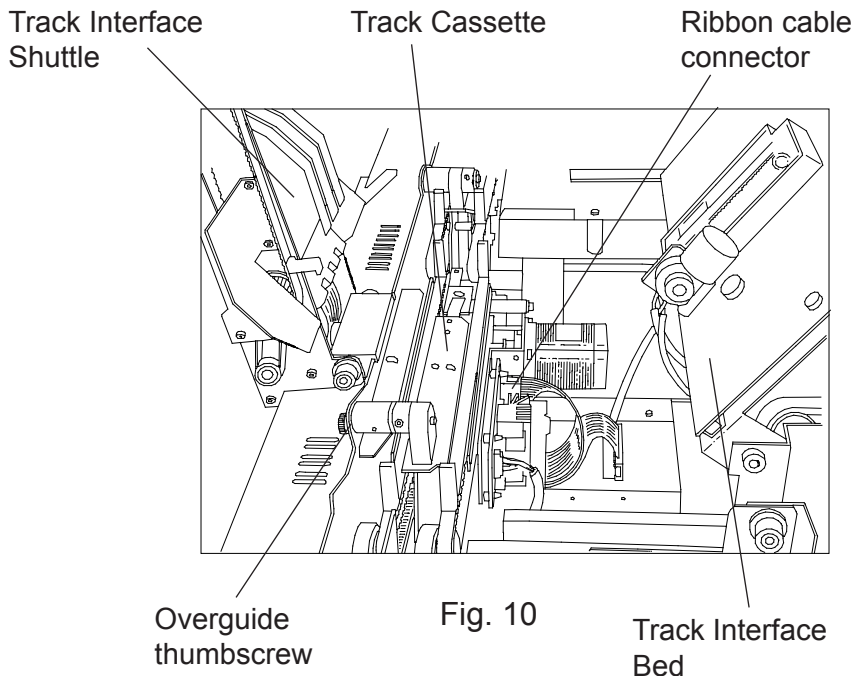


Fig. 10

5. Refit the cassette to the machine and plug the ribbon cable back into the PCB. Refit the overguide. The pawls will automatically move to their correct position when the machine is next run.

#### 3.3.2 FOLDER DRIVE BELT REPLACEMENT

The folder has two drive belts, located on the RH side. To replace them, the folder must first be removed from the 1000.

1. Raise the track interface shuttle and also the track interface bed to gain access to the PCB at the front of the folder. Remove the data and power cable from the LH end of the PCB.
2. Gain access to the rear of the folder by withdrawing the feed device (Hi/Lo Cap Feeder or IS Collator with Hi/Lo Cap Feeder).
3. Remove the two lower side-infill covers from the rear of the folder (2 x Csk Head screws each side). This will provide access to the four mounting screws (see Fig. 11 below).

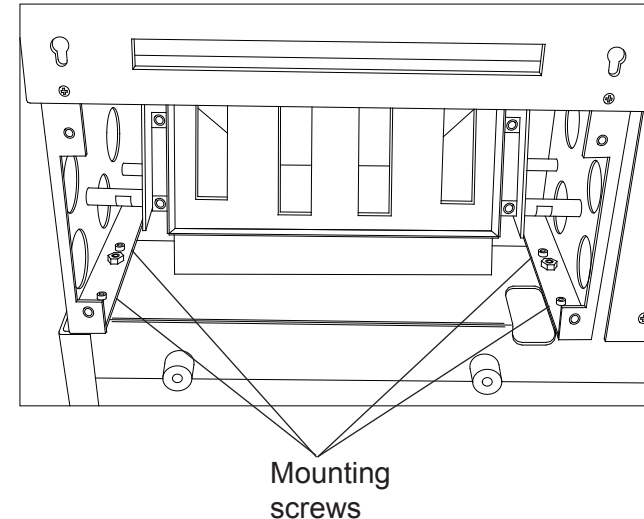


Fig. 11

4. Slacken the mounting screws (it is not necessary to remove them fully). Slide the folder back to clear the keyhole slots, and lift the folder off the stand. **Warning! The folder is very heavy - lifting should not be undertaken without suitable assistance.**

contd.



5. Place the folder unit on a suitable bench or stand. The two drive belts are visible on the RH side, as shown in Fig. 12 below. To remove the outermost belt, slacken the tensioner adjustment screw and lift the belt out through the cutouts in the chassis. There is no tensioner on the innermost belt, and this should be slipped off the lower pulley and the belt removed through the cutouts. Fit the new belts and re-tension the outermost belt - it should be tight with no perceptible play.

6. Fit the folder unit back onto the machine and reconnect the cables.

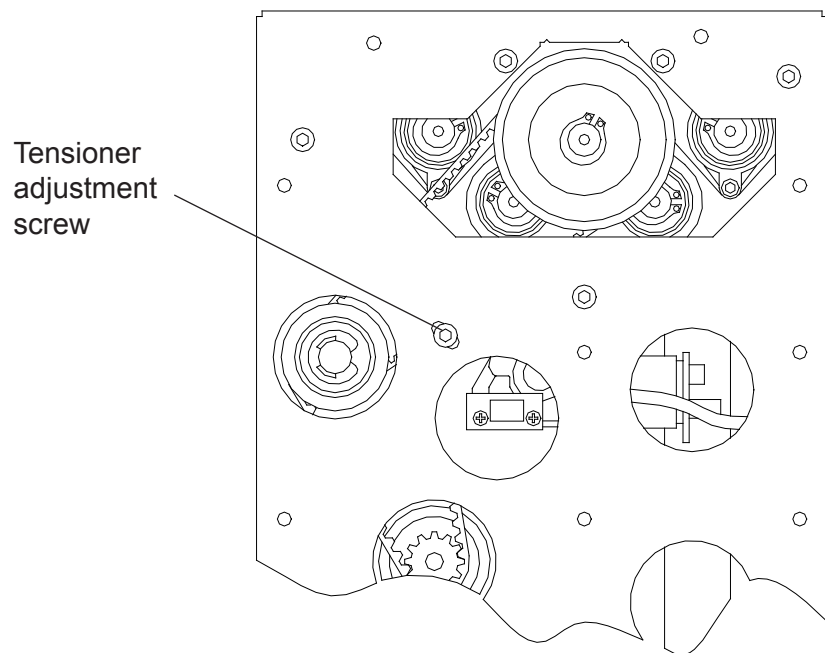


Fig. 12

### 3.3.3 FEEDER INTERFACE BELT REPLACEMENT

The feed interface contains two sets of conveyor belts (upper and lower) and two drive belts. To replace any of them, the feed interface must be removed from the machine. Prior to this, the feeder on the rear of the feed interface must be removed, as described below:

1. Remove the two side covers on the feeder, and also the underpanel below.
2. To reduce weight, remove the feeder conveyor from the feeder as described in [section 3.3.4](#).
3. Remove the screw retaining the vertical flange either side of the feeder. From underneath, remove the screw either side retaining the feeder to the angled support brackets (screws are located inside the feeder).
4. On the LH side, pull out the power and signal lead connectors. The feeder can now be lifted away from the machine. **Warning! The feeder is very heavy - lifting should not be undertaken without suitable assistance.**

With the feeder now removed, the feed interface can be also. Removal is the same as for a folder ([see section 3.3.2](#)), except that no cables have to be disconnected. With the unit on a suitable working surface, belt replacement can now proceed as described on the following page.

### Drive belt replacement

1. On the RH side, slacken the screw behind the tensioner pulley to relieve belt tension (see Fig. 14 below). Turn the unit by hand to wind the belt off. Note that the screw is awkward to reach, but a standard Allen key should allow slackening. The upper pulley may also need to be slackened to allow belt removal/replacement.
2. Fit the new belt in reverse order to removal and re-tighten the tensioner pulley. The belt must be tight, with no perceptible play.

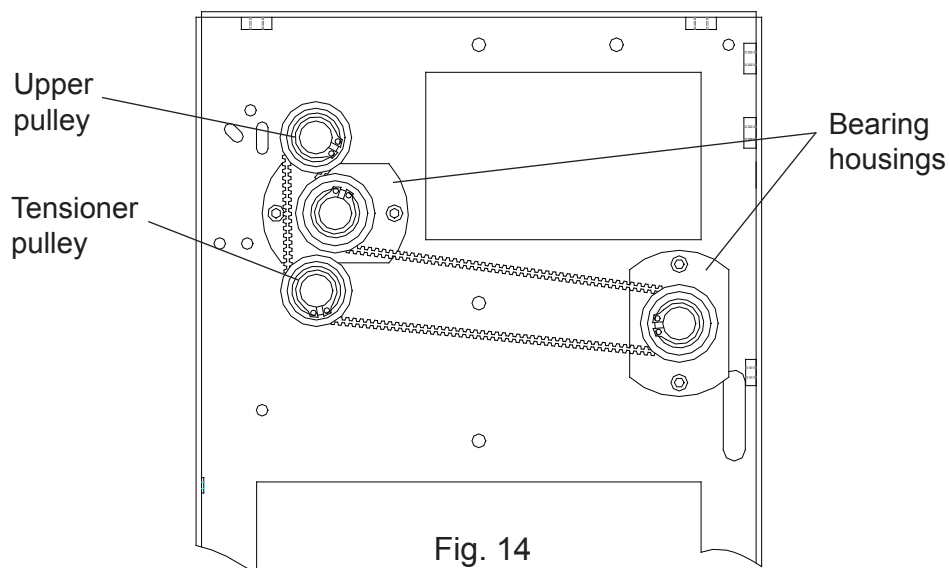


Fig. 14

3. If replacement of the inner drive belt for the feeder is required, see the following paragraph 'Lower conveyor belt replacement'.

### Upper conveyor belt replacement

Replacement of the upper conveyor belts requires removal of the upper conveyor. Proceed as follows

1. Remove the drive belt as previously described.
2. Remove the pulleys in front of the upper bearing housing (see Fig.14) - these are retained with a circlip.
3. Remove the bearing housings on both sides of the unit. Note that on the LH side, the housing and bearing can both be removed. On the RH side, the drive pin will obstruct the bearing, so pull the housing off the bearing. After removal of the housing, the pin and bearing may also be removed.
4. The conveyor may now be worked out of the chassis. When it is free, slide the old belts off over the ends of the conveyor and fit the new ones. Belts should always be replaced as a set. Note the direction of rotation when fitting, and ensure that the belts are centrally located on the pulleys.

### Lower conveyor belt replacement

Replacement of the lower conveyor belts requires removal of both the upper and lower conveyors. The procedure for removing the lower conveyor is the same as for the upper conveyor, as described above. It will also be necessary to remove the top end of the two tension springs at the end of the conveyor - take off the nyloc nut on each spring.

The belts are replaced in similar manner to that described above for the upper conveyor. If the feeder drive belt requires replacement, proceed as described on the following page:

### 3.3.4 FEEDER CONVEYOR BELT REPLACEMENT

To replace the feeder conveyor belts requires removal of the feeder conveyor from the input section of the feeder. Proceed as follows:

1. Remove the side covers from the feeder unit, and also the end/undercover from the far end of the conveyor. Disconnect the conveyor motor from the module board under the feeder head.
2. Remove the retaining screws (1 x Skt Cap head) from each side, as shown in Fig. 15 below. Lift the conveyor upwards and rearwards to remove it from the input end of the feeder.

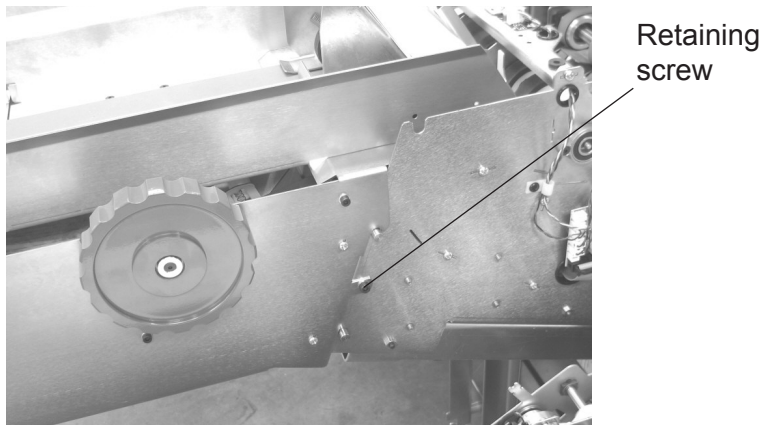


Fig. 15

Place the conveyor upside down on a suitable working surface, taking care not to damage the side guides.

Referring to Fig. 16 opposite:

1. Remove the tensioner assemblies from the bulkhead plate (2 screws and washers each), remove the screws for the bulkhead, inner plate, roller shaft and tiebars. Also remove the outer screws on the motor plate posts and the screws at the other end of the motor plate but leave the motor plate attached to the bulkhead. Leave the tensioners on the belts at this stage.
2. Remove the drive belt, bulkhead plate with motor plate attached, inner plate, roller shaft and tiebars.

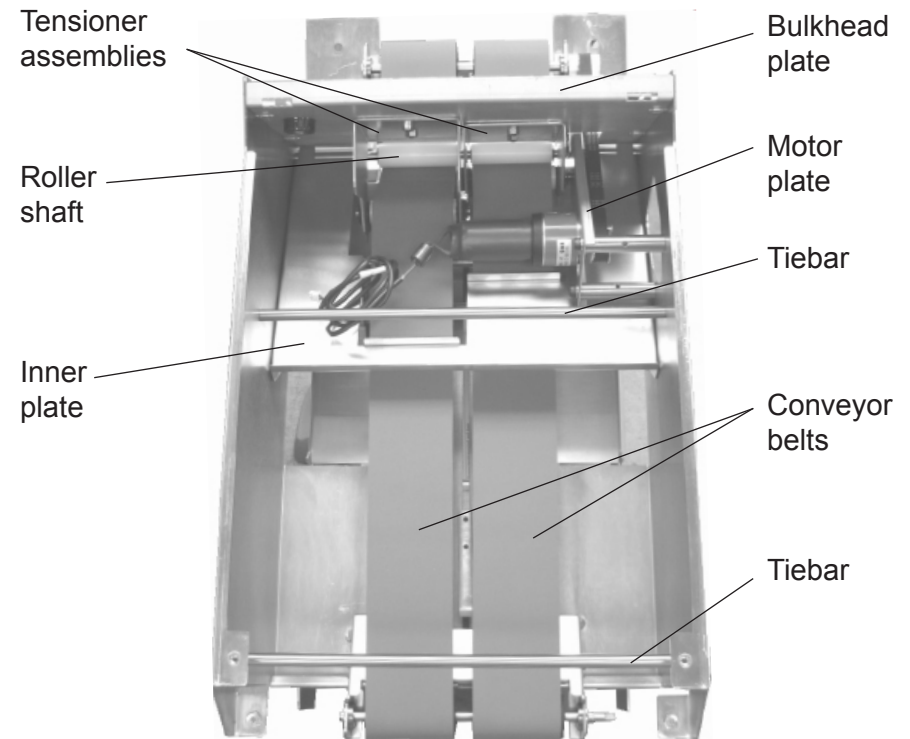


Fig. 16

(Viewed from underside of conveyor)

3. Slide the belts out from underneath the backstop on the top surface and slip them over the sides of the conveyor. Fit the new belts in a similar manner.
4. Replace the bulkhead plate, roller shaft, inner plate and tiebars. Reassemble the tensioners in reverse order to their removal and adjust them so that free play is removed from the belts, but they are not excessively tight.
5. Refit the feeder conveyor to the front of the feeder, reconnect the motor cable and replace the end/undercover.



1. Remove the conveyor belts.
2. At the non-drive pulley end of the conveyor shaft, remove the 'E' clip on the inside, next to the flanged bearing. Slide the bearing inboard and work the shaft free of the conveyor.
3. Fit the new belt and replace the shaft in reverse order to removal. Ensure that the wavy washers (one each end) are properly in place.

### Refitting the conveyors

Refit the conveyors in reverse order to their removal. When the bearing housings are in place, fit the pulleys and clips back on the shafts, then refit and tension the drive belt as previously described.

#### Points to note:

1. The bearing housing at the RH end of the upper conveyor is retained with countersunk screws; all other housings use cap head screws.
2. Ensure the large wavy washers are in place inside the bearing housings before assembling.
3. Ensure the drive pins are in place on the shafts before fitting the pulleys for the drive belt.
4. When fitting the tension springs on the lower conveyor, do not tighten the nuts fully, but ensure that at least one full turn is made after the locking insert has been reached.

### 3.3.5 SHUTTLE & KICKER BELT REPLACEMENT

The shuttle and the kicker each contain a pair of conveyor belts and a drive belt, and the procedure for replacement is similar. This section describes the procedure for the shuttle, with any differences highlighted. It is not necessary to remove the shuttle or kicker to replace the belts.

#### Drive belt replacement

To replace the drive belt, wind it off the motor pulley by turning the knob on the driven pulley (see Fig. 17 below). Fit the new belt similarly. Take care that the pawls on the conveyor belts do not contact any obstruction - it is preferable to raise the unit first.

#### Conveyor belt replacement

To replace the conveyor belts, proceed as follows:

1. Remove the drive belt as described above.
2. Wind the conveyor belts off the rear pulleys by turning the knob as previously described. **Shuttle only:** Work the belts out of the gap between the front pulleys and the guide plates and remove them. Note: the sensor on the LH side will have to be unclipped in order to take out the belt.
3. Fit the new belts as a pair (not singly). Ensure that the pawls are aligned.
4. Refit the drive belt. The belts will automatically move to their correct position when the machine is next run.

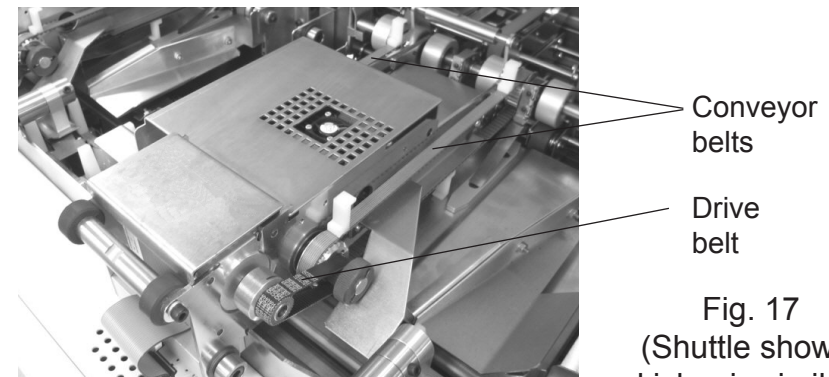


Fig. 17  
(Shuttle shown,  
kicker is similar)

### 3.3.6 TURNOVER BELT REPLACEMENT

There are five belts in the region of the turnover - 2 turnover conveyor belts, 1 turnover drive belt, 1 eject conveyor belt and 1 eject drive belt (see Fig. 18 below). All can be replaced in-situ.

#### Turnover conveyor belts

These can be slipped off the pulleys after loosening of the upper envelope guide, retained by 2 screws either side on the front vertical face. It is not necessary to remove the guide completely.

#### Eject conveyor and drive belts

Both of these can be wound off the pulleys to remove. Note the direction of the pawls on the conveyor belt.

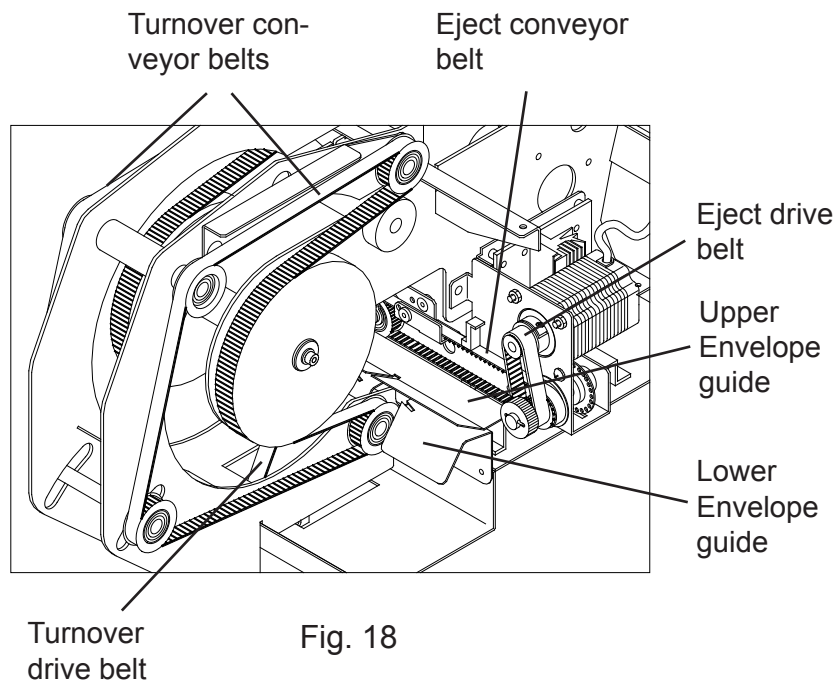


Fig. 18

#### Turnover drive belt

The turnover drive belt can be replaced with the turnover in place.

1. Remove the turnover conveyor belts as previously described.
2. Remove the upper envelope guide (4 screws on 2 posts).
3. On the drive shaft, remove both of the outer pulleys by taking off the circlips. Also pull out the drive pins and remove both bearing housings.
4. Work the belt off the end of the freed shaft. Fit the new belt and replace all items in reverse order to their removal.

### 3.3.7 ENVELOPE CONVEYOR BELT REPLACEMENT

The envelope conveyor contains 2 conveyor belts and 2 drive belts. All can be replaced with little or no disassembly, by removing the envelope conveyor from the opener unit.

#### Conveyor removal

Raise the clamshell on the opener unit to gain access to the envelope conveyor. Unplug the ribbon cable (see Fig. 19 below), and remove the two retaining screws. The conveyor conveyor can now be lifted upwards and withdrawn. Take care not to damage the 2 solenoids underneath it, and note that the external drive belt will come loose as the conveyor is withdrawn.

#### Belt replacement

As previously stated, the external drive belt will be freed as the conveyor is withdrawn. The 2 conveyor belts can be slipped off the rollers without any disassembly. When replacing the belts, note the direction of travel, and ensure that the black rubberised side is inwards.

To replace the internal drive belt, remove the conveyor belts and the top plate (6 countersunk screws). The belt can now be wound off the pulleys and the new one fitted similarly.

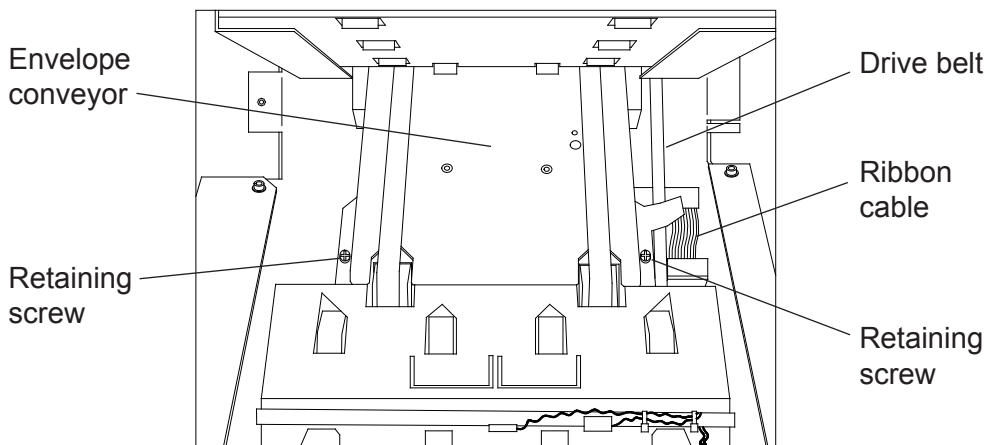


Fig. 19

#### Conveyor replacement

Replacement of the conveyor is a reverse of its removal. Guide the drive belt onto the pulleys as the conveyor is moved into position, and ensure that the tensioner is underneath both runs of the belt. Refit the retaining screws and plug the ribbon cable back in when the conveyor is in place.

### 3.3.8 HANDOVER BELT REPLACEMENT

The handover is located between the turnover and the envelope conveyor assembly, and contains 2 conveyor belts and 2 drive belts. To replace the belts, it will be necessary to remove the turnover, and then the handover.

#### Turnover removal

First lower the angled undercover below the turnover and wetter/closer. To do this, remove the two screws (one each side) on the inside of the angled edge, near the top - note that the cover is quite heavy, and will hinge down when the screws are removed.

Remove the ribbon cable from the PCB on the RH side of the turnover eject motor. On the LH side, trace the ribbon cable from the PCB, through the chassis and leading to the Module PCB on the front electrical panel. Pull out the connector and lead the cable up through the chassis opening.

Remove the two screws securing the turnover base to the chassis. These are located near the front corners of the unit. Slide the turnover forward and lift it out of the chassis. **Caution:** the turnover is heavy - do not attempt to lift it without suitable assistance.

#### Handover removal

With the turnover removed from the chassis, locate the ribbon cable leading from the handover Motor PCB to the Module PCB on the head. Disconnect it from the Module PCB.

Slacken the two screws marked 'A' in Fig. 20 opposite and remove the two 'E' clips. Lift the unit upwards slightly to clear the screw heads in the keyhole slots, and then slide it forward on the locating pegs to remove it.

#### Belt replacement

Slacken the two screws marked 'B' in Fig. 20 to release belt tension. Remove the old belts and fit the new ones, ensuring that the pawls on each belt are aligned. Tension the belt and tighten the screws.

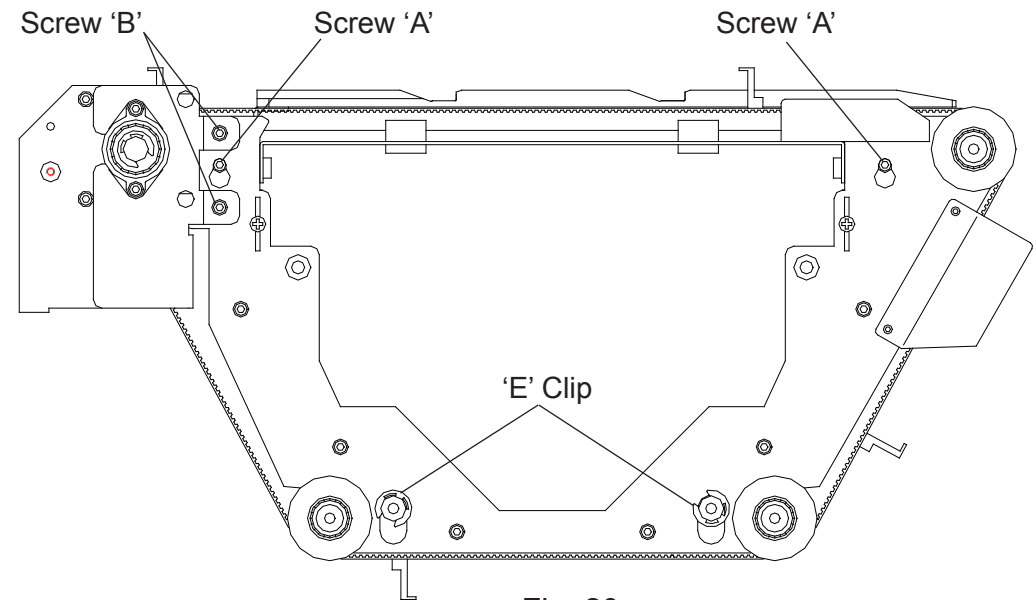


Fig. 20

Reassemble the handover to the machine, replacing the 'E' clips and tightening screws 'A'. Reassemble the turnover unit and reconnect the 2 ribbon cables from the turnover and 1 ribbon cable from the handover. Refit the underpanel.

When the machine restarts, the belts will automatically position themselves.

### 3.3.9 WETTER / CLOSER BELT REPLACEMENT

The wetter/closer is fitted with 2 conveyor belts and 1 drive belt. To replace, refer to Fig. 21 below and proceed as follows:

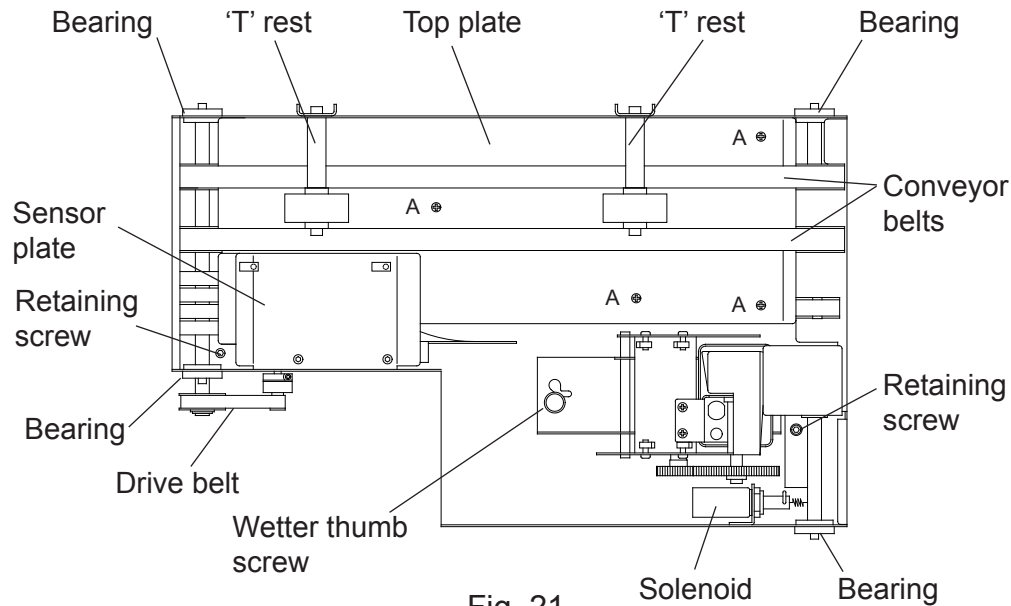


Fig. 21

#### Drive belt replacement

Gain access to the drive belt by removing the cover over it - slacken, but do not remove the two retaining screws through the access holes on the front face. Use a 3mm extended Allen key to undo the screws. Lift the cover up and off. Slacken the collar on the drive pulley and remove the circlip on the driven pulley. Slide both off the shafts, together with the belt. Fit the new belt in reverse order to removal.

#### Conveyor belt replacement

1. Remove the drive belt and pulleys as described above.
2. Lift off the carrier assembly located on the 'T' rests.
3. Lift out the wetter assembly by undoing the wetter thumb screw.

4. Remove the 2 retaining screws shown in Fig. 21 and slide the whole unit forwards to clear the rear (unseen) spigots. Unplug the ribbon cables and JST connectors at the front edge. Place a rag under the connector of the fluid pipe, press in the latch and separate the connector. Lift out the wetter tank. The unit can now be lifted out of the machine.
5. Take out the 2 sensor plate screws and hang the plate over the top of the front face. Take care to avoid straining the sensor wires.
6. Remove the 'T' rests, and also the screw below in each vertical channel. Remove the 4 screws marked 'A' and lift out the top plate, unclipping the 2 sensors underneath as it is withdrawn.
7. Detach the solenoid spring from the plunger by pulling out the clip.
8. Remove the bearing in 4 positions as shown (note that the ball bearing is loose in the housing, and there is wavy washer inside the front housings only). Alternatively, leave the bearings in place, but open up the circlip on the inside of each bearing and slide it inboard.
9. Move the far ends of the conveyor shafts inboard of the chassis sufficiently to allow the belts to be looped off over the ends of the shafts. Fit the new belts in a similar manner.
10. Reassemble all parts in reverse order to their removal.

### 3.4 FOLDER MAINTENANCE

The folder module consists of five fold rollers and three fold plates, allowing all combinations of folds. Fold plates 1 & 3 are vertical mounted above the rollers; fold plate 2 is below, pointing downwards. A spring-loaded blanking beam is fitted to the roller at the opening of each fold plate, this being automatically operated when required by a pusher on the backstop of the fold plate. The fold plates are motor driven and no manual settings are required. The two lower fold rollers are spring-loaded, the tension of which can be adjusted.

#### Roller spring adjustment

The folder springs on the two lower rollers are adjustable by means of eccentric spring posts. The springs are factory set to maximum tension which should suit the great majority of applications, but if lightweight forms are being processed (min. 70 gsm), rippling of the form will be prevented by reducing spring tension, as described below.

1. Unlatch fold plates 1/3 and hinge forward.
2. Slacken the screws behind the adjustable spring posts (see Fig. 22 below) and turn the posts to reduce spring tension. Each post on each side must be turned by a similar amount. Ensure the screws are fully re-tightened.
3. Test run the machine to determine improvement and adjust further if required - the springs should be as tight as possible while maintaining a smoothly folded form

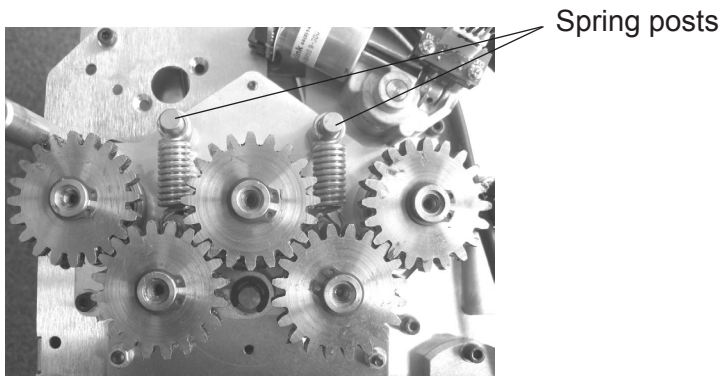


Fig. 22

#### Fold roller replacement

The folder is a complex structure with the roller shaft locked to the bearings with adhesive. Further positive locking is provided by 2 ring nuts on the ends of each shaft, these also being locked in place by adhesive. It is designed for considerable longevity and fold roller should not normally need replacement. However, if they do, or they become damaged, it is not considered feasible to strip the assembly and it must be replaced as a whole. Folder module A0286A is available as a spares assembly which comprises the core folder assembly. It does **not** include: fold plates, outer side plates & posts, pulleys, belts, circuit board, drive motor, fold plate motors, microswitch.

1. Remove the folder as described in [section 3.3.2](#).
2. Remove the outer side plates, posts and stretcher bars. **Note:** one of the posts requires removal of the PCB chassis - see step 5.
3. Remove fold plate 2 by taking out the 4 screws behind (leaving the blocks in place). From the inside, remove the 2 screws securing the fold plate motor; lift this out and disconnect the cable (see Fig. 23 below) . Also remove the angled chassis plate behind the fold plate.



Fig. 23

4. Tilt fold plates 1/3 forward and remove the fold plate motors from inside the chassis, as with fold plate 2. Take out the screw at each end of the pivot shaft and lift out the fold plate assembly.



5. Disconnect the cables to the circuit board. Pull off the daughter board, remove the metal plate over the board, and then the securing screws/posts securing the board. Do **not** disconnect cables from the daughterboard. Remove the 3 chassis screws and lift out of the chassis. See Fig. 24 below:

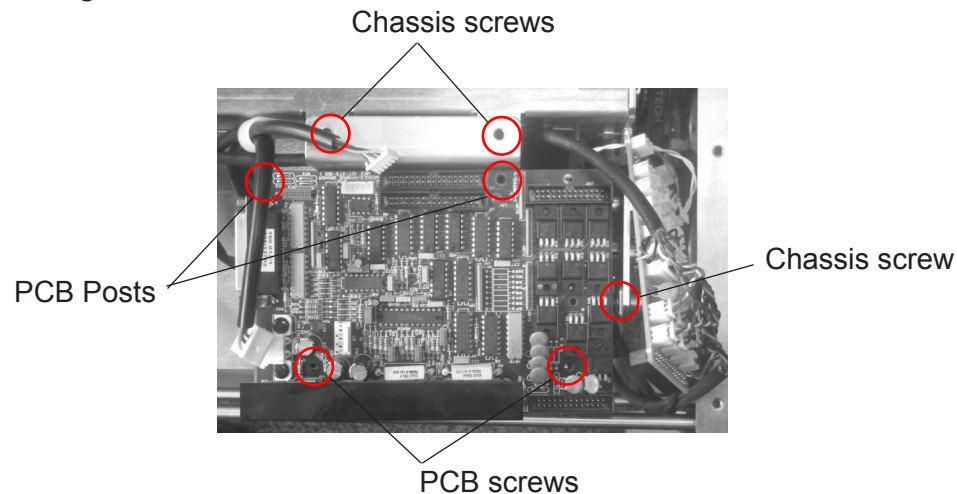


Fig. 24

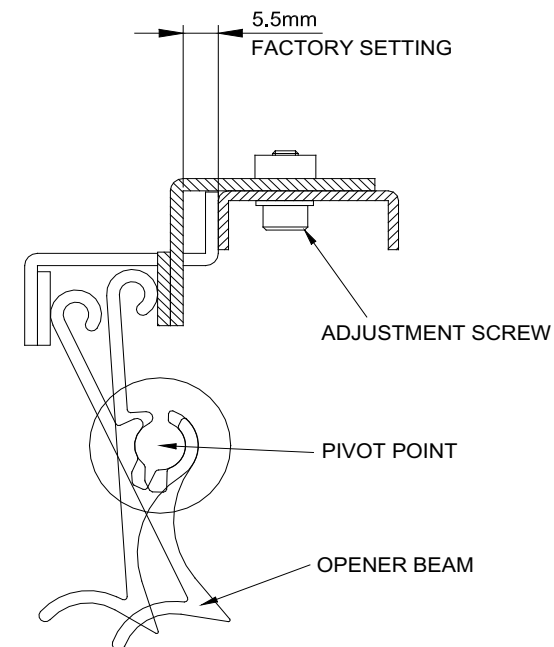
6. Remove the drive shaft assembly (with the 4 rollers) by taking off the bearing housings and bearings. **Note:** the bearings may be secured with Loctite; if so, knock the end of the shaft to break the seal. The bearings will then have to be replaced - order part no. E1054A. Remove the springs with the shaft, and also the locating screws in the chassis bridge.
7. Remove the pivoting sensor plate above the drive shaft, complete with the pivots.
8. Remove the lock plates at the top of the chassis (one with micro-switch).
9. Remove the drive motor.
10. Unclip all wiring from the chassis and remove the 'P' clips with plastic rivets.
11. All parts have now been removed. Reassemble them all to the new assembly in reverse order to removal and fit the assembly to the machine.

### 3.5 ENVELOPE OPENER BEAM

The envelope opener uses a pivoting extruded beam to catch the partly open envelope flap, opening it fully. The beam pivots back and forth very rapidly between constraints, so to reduce noise, rubber pads are attached to the faces of the constraining brackets. The rear bracket is adjustable with a default factory setting as shown in Fig. 25 below.

This setting is appropriate for most envelopes, but in time, it may stray and impair performance. If envelope flaps are not opening properly, or the opener is becoming noisy, check that the rubber pads are intact and that the setting has not moved. Problem envelope flaps may open better by deviating slightly from the factory setting.

The opener beam can be easily accessed by opening the envelope opener assembly at the front of the envelope conveyor; it is located at the open end on the inside.





### 3.6 REMOTE CONTROL UNIT SETUP INSTRUCTIONS

Part Numbers (Receiver and Hand-held Transmitter):

184-6990 Remote Control Assy Viper

The remote control unit on the machine consists of two parts: a hand-held transmitter, and a receiver mounted in the machine, in front of the PC. The frequency on which they communicate is factory set and should not normally require retuning, even if the battery in the hand-held TX is renewed. Should either part be replaced however, or if communication fails for any other reason, then re-tuning will be required. This entails removal of the RX from the machine and establishing the frequency link between TX and RX.

#### **To remove the receiver from the 1200 G3 (Viper models)**

Open the insert head cover. The receiver will be seen inside the machine, on the LH side against the end panel. Remove the 3 screws holding the receiver to the support bracket and lift it out on the end of its cable.

#### **Pairing a Transmitter to a Receiver**

Each transmitter has a unique identity. Each time a transmitter Switch is operated, it emits a secure RF signal. The Receiver can learn this signal and allocate to any of its outputs.

The only limitation is that each receiver has a maximum memory for up to 40 pairings, these can be from the same or any number of transmitters.

**Hint:** the same transmitter may be taught to different receivers to create 'master keys'.

#### **VIPER-S1 / VIPER-S2 / VIPER-S4 (12-30Vdc Receivers)**

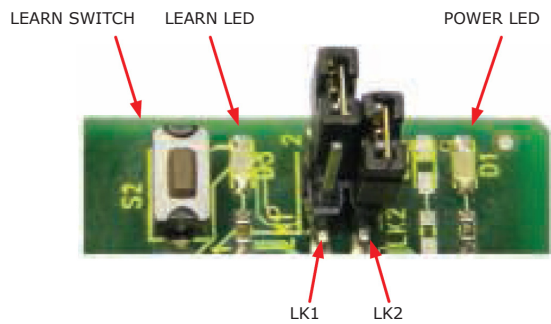
##### **To Learn a New Transmitter switch, follow this procedure**

Any transmitter button can be learnt to one or many of the receiver output relays.

Each button must be learnt to each relay individually by following this procedure:

1. Select the receiver output relay to learn to:
2. Briefly press the receiver Learn switch (S2) once.
3. The Learn LED will flash once to indicate output relay 1 is selected.
4. After the LED stops flashing, press the Learn switch again to select the next relay channel.
5. Repeat step 2 until the required output relay is selected.
6. Press the button on the transmitter you want to learn to the relay output.
7. The Learn LED will then illuminate, press the same transmitter button again.
8. The Learn LED will then flash to indicate learning is complete.

9. The transmitter button will now operate the relay.



Erasing Receiver’s Memory

- 1. Press and hold the receiver Learn Switch for approx. 10 seconds.
- 2. When the Learn LED turns OFF all memory is erased.

**NOTE:** You cannot erase individual Tx encoders.

Configuring Receiver Outputs

The jumper links configure the outputs to be Momentary or Latching.

The jumper links are made / removed by the small link ‘cap’ placed over the pin header.

Link Positions		Relay Outputs			
LK1	LK2	RLY 1	RLY 2	RLY 3	RLY 4
Closed	Closed	Mom	Mom	Mom	Mom
Closed	Open	Mom	Mom	Latch	Latch
Open	Closed	Mom	Latch	Latch	Latch
Open	Open	Latch	Latch	Latch	Latch

(The configuration shown in the picture above represents the third row of the table)  
See ‘Remote Transmitter Overlay’ right for relating the Relay Outputs to the remote control buttons.

Remote Transmitter Overlay

The hand-held remote has a purpose-made overlay fitted which alters the appearance of the standard Viper buttons.

The buttons translate from standard to IMOS versions as shown below.



Standard Viper Transmitter



With overlay applied

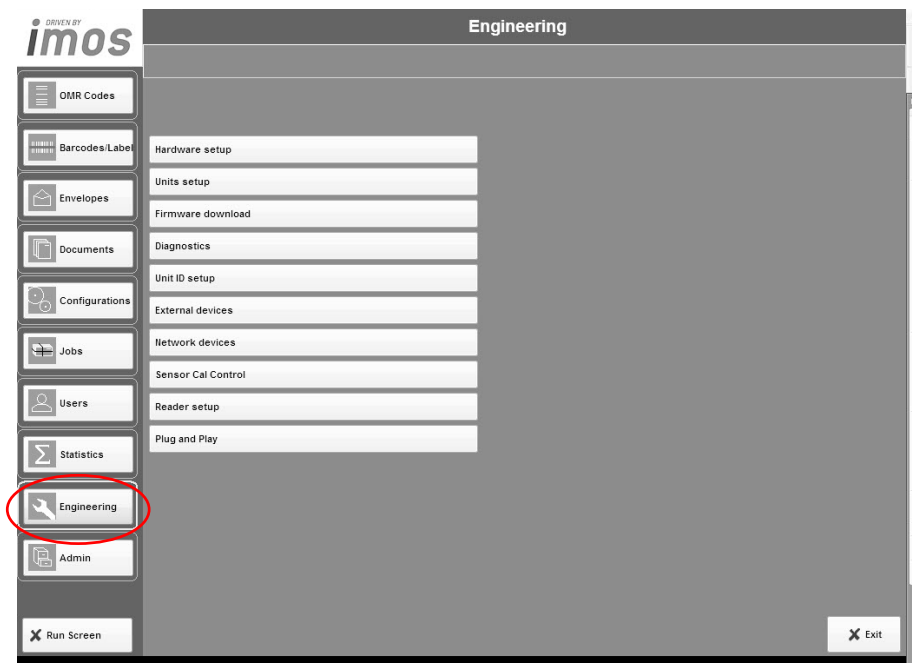
Viper TX button number	IMOS Overlay description
1	Autoend
2	Start
3	Single Cycle
4	Stop

3.7 ENGINEERING SCREEN

The Engineering screen allows engineer functions in the three following areas:

- 1. Setup of existing and added feed units.
- 2. Setting direction of motors and drive ratio.
- 3. Downloads of updated firmware.
- 4. Diagnostic testing of motors, solenoids and sensors.

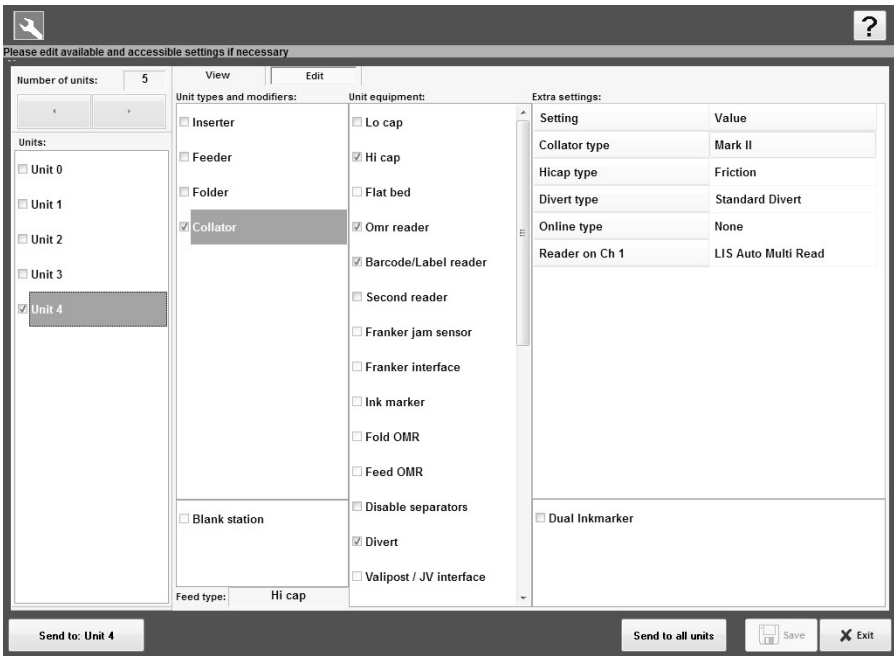
To enter Engineering mode, click the Engineering button in the setup screen. This will display the dialog box shown below to allow the required function to be selected.



Note: Prior to using any of the engineering functions, the paper paths should be cleared by pressing the Autoend button on the run screen. Remove all stationery from the feed units.

Hardware Setup

This displays the current hardware setup of each feed unit on the machine, and allows any setting to be changed. Referring to the screen below:



Make changes by selecting the **Edit** tab at the top and then the unit you wish to configure. Select the appropriate settings in the other columns. The **View** tab provides an overview of the settings.

**Units column:** This shows the units currently defined on the machine; when a unit is physically added to a station, it will not be recognised by the software until it has been defined in edit mode (this is described later). Click the arrows at the top of the column to add or subtract units. Clicking on any unit already defined will show its settings.

Editing the settings

When in edit mode, click the unit that you wish to add or modify, and then select the unit type and unit equipments (select the option of 'Disable Separators' only if you wish to continue to run the machine if a separator has malfunctioned - the station would otherwise prevent the machine functioning). Also select the unit type modifier of 'Blank Station' if this has been fitted in place of an operable unit.

Click the 'Save' button to update the INI file (the file that retains the information that the machine is to work from). Now click the 'Send to unit x' button to synchronise the software with the updated INI file. **It is important that both these functions are carried out, or else either the INI file or the machine software will not be updated.** Synchronisation can be confirmed by clicking the 'View machine' button to reveal the settings in the lower columns, and then the 'View INI' button to reveal the INI file settings - they should be the same. The former indicates the settings actually received by the machine software, the latter indicates the settings in the INI file, but not necessarily sent to the machine.

If a number of units have been modified/added in one session, the machine software update for all units together can be effected by clicking the 'Send to all units' button.

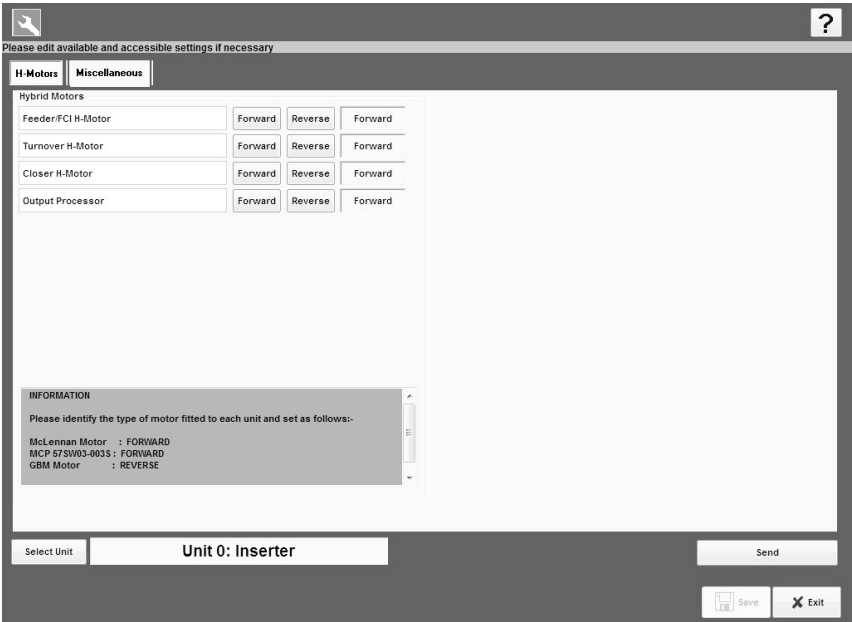
**Caution! Always exercise care when using Edit mode, as the software will accept any settings that you apply regardless of the actual hardware fitted - incorrect settings could result in operating errors.**

To return to read-only mode, click the 'Edit' button so that the brackets are unchecked.

When all changes are complete, click the 'Exit' button to return.

Units Setup

Hybrid motors fitted to the machine are bi-directional and must be set to either forward or reverse direction. This is factory set for new machines, but if a replacement motor is fitted, it must be set for direction.



H-Motors

Click on the 'Select Unit' button and select the required station - this will show the hybrid motors fitted to the unit. Select the required direction according to the data shown in the Information panel. Click the 'Save' button to save the data, then the 'Send' button to transmit this to the unit. **Important:** H-Motors must be set to either forward or reverse, not 'undefined'.

Miscellaneous

These features are set as default values by the software upon initial installation and should not be altered without consulting IPSS department.

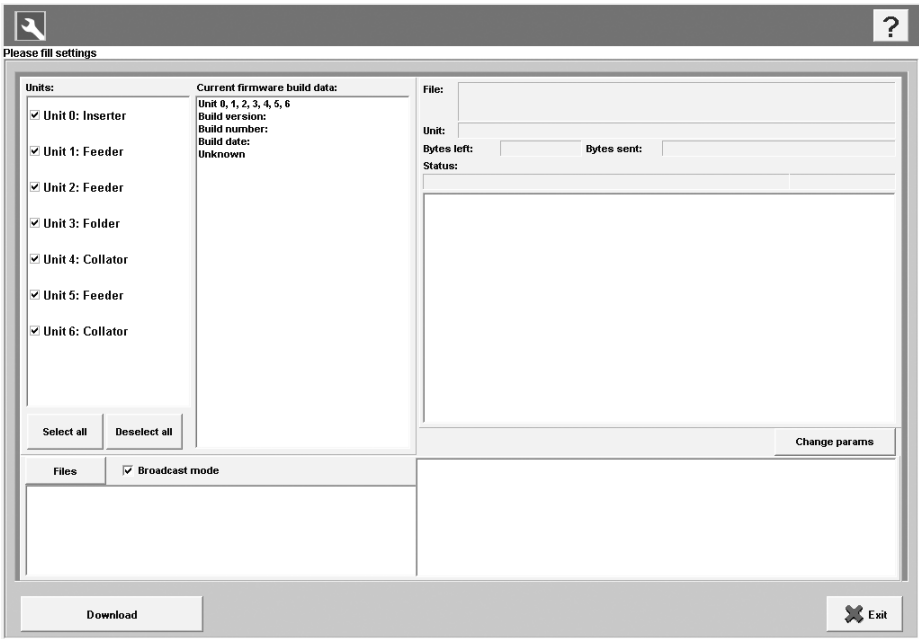
Firmware Download

The machine firmware (EPROM program) can be updated in this screen using the appropriate file copied to the local computer. All station units can then be updated together (default), or under certain circumstances, selected units only. As shown below, the current firmware build data will be displayed and this will be updated when the download is complete.

**Broadcast mode:** this allows insert head and all other modules to be upgraded simultaneously, rather than each unit in turn. Default is ON and should only be turned OFF if problems are encountered when downloading and being reported in the right-hand window. With the mode switched off, it will be possible to upgrade each module separately.

**Change params:** parameters should not normally be changed without consulting Technical Support. The defaults should always apply unless there is specific reason otherwise. These defaults are:

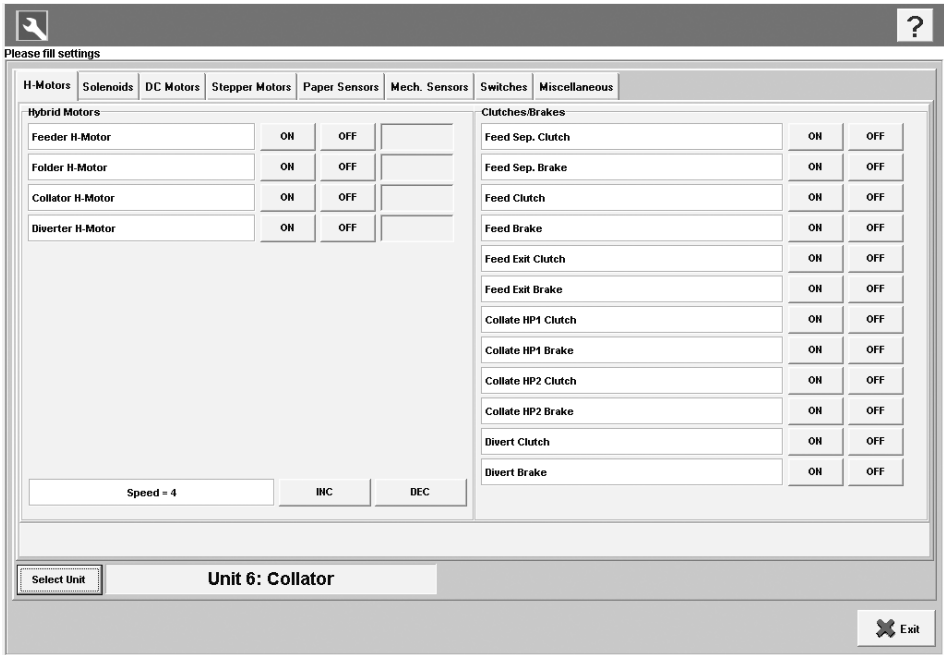
Packet numbers	4
Send interval (ms)	1
Overflow timeout (s)	10



Use the 'Browse' button to find the .txt file on the local computer and click the 'Download' button. The right hand side of the screen will show the selected file and the status of the download. Under normal circumstances, no messages will appear in the text area, but should errors or special conditions occur, these will be displayed here.

Engineering Diagnostics

**Note:** Prior to operating Engineer Diagnostics, the paper paths should be cleared by pressing the Autoend button on the run screen. Remove all stationery from the feed units.



H-Motors

Tests the hybrid motors. Use the buttons to switch the unit on and off. Motors can be tested at all speeds up to 9.

Solenoids

Tests the solenoids and clutches. Use the buttons to switch the unit on and off. 'Light' refers to the blue indicator. Clutches and brakes will be heard to click when switched, though this will be faint - it is suggested that the feeder motor is switched on first, then the clutches and brakes will activate their shafts.

DC Motors

Tests the small DC motors. Use the buttons to switch the unit on and off.

Stepper Motors

Tests the stepper motors. Use the buttons to switch the unit on and off.

Paper Sensors

All sensors auto-calibrate at the finish of each auto-end cycle. This ensure that any build up of paper dust and toner will not degrade performance over a period of time. Auto-calibration can be turned off from 'Sensor Cal Control' in the engineering screen.

Tests the paper sensors. Condition of sensor is indicated, as shown below. Note that this is a read-only display and is for information only. Particularly check the clear and blocked voltages; sensors outside the ranges shown should be replaced.

Percentage of 'effort' to calibrate sensor, eg. high figure probably means calibrating when blocked.

Clear (C): 0.5 to 0.9v  
Blocked: 4.5 to 4.9v

Turnover	2.8V	3mA	20%	C 0.8V
Opener Flap	2.8V	3mA	56%	C 0.7V
Opener Entry	2.8V	3mA	12%	C 0.7V
Insert SideGuide Home *	2.5V	13mA	50%	C 0.2V
Envelope BS Clock *	2.5V	3mA	50%	B 4.7V
VS Entry	2.8V	3mA	44%	C 0.8V

Yellow means value has changed since last calibrated.

Threshold voltage (switch point from blocked to clear)

Current drawn to achieve threshold. Depends upon distance between sensor halves, and ambient light.

**Mech. Sensors**

Tests the mechanical sensors. Condition of sensor is indicated. Note that sensor may correctly be shown as blocked, depending on whether the flag or disc is interrupting it.

It is not normally required to check sensor voltage, but to do so, follow emitter wires back to connector on PCB (GRN/WHT for narrow angle, YEL/WHT for wide angle). Push DC meter probes onto contacts in connector housing - voltage should be 0.1 to 0.8v with sensor clear, >4.5v blocked. Note that WHT wire is positive.

**Switches**

This displays the state switches on the selected, clear or blocked. If the state remains unchanged when the switch is activated, the switch is defective.

**Reader Setup**

This is used to set up the OMR or Barcode reader. See following page for details.

**Miscellaneous**

This provides a read-only display of the unit's total count. In the case of the inserter head, both feeder (envelope) and output counts are shown.

**Component Failure**

If any component or sensor has failed, it will need to be replaced. Locations of all components and sensors can be found from the look-up list in section 5.5 (Motors, Solenoids & Switches) or section 5.6 (Sensors).

Important: After testing, positions of backstops, separators etc. may have changed. Original positions may be restored by selecting 'Clear Machine and Restart' from the Run screen.

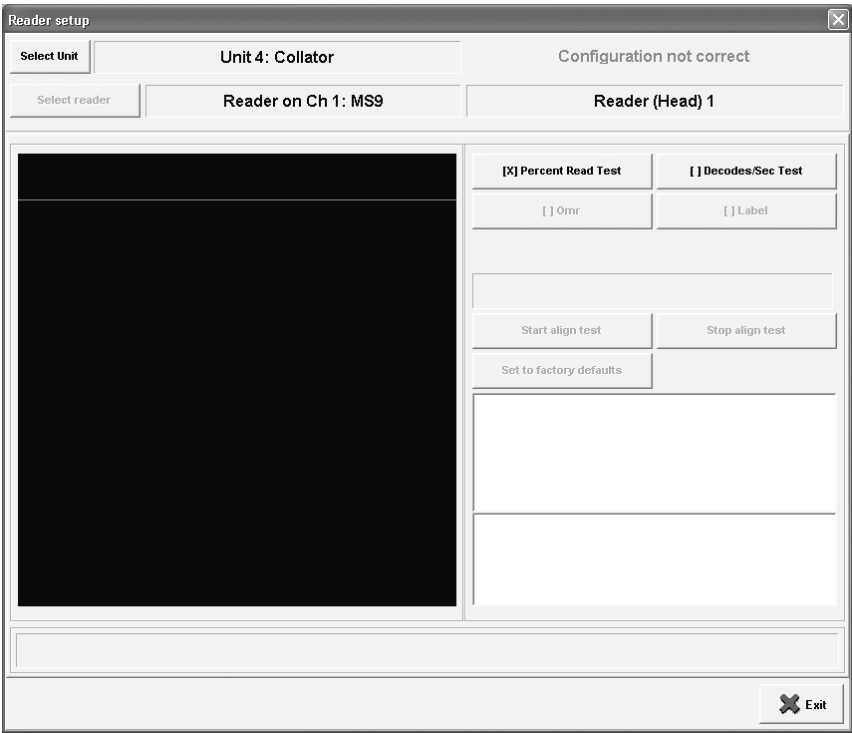


OMR/Barcode Reader Setup

The procedure is different for OMR and barcode. With OMR, a calibration sheet must be used, and the machine must be OMR calibrated when setup is complete. With barcode no calibration sheet or procedure is required. Instructions for creating a calibration sheet can be found in C:\Program Files\PFE\AutoMailer 5\Documentation\Other Documentation\Test Documents\Calibration Sheets. Note that ideally, the calibration sheet should be printed from the same printer as the stationery. OMR calibration is described on the following page.

Select the job on which the reader is to be set up and load a calibration sheet into the feed tray (OMR) or paper with label printed (barcode). In the Run screen, press the unit which has the reader fitted, to display the fine-tuning screen. Press 'Load to reader' and follow the instructions to feed a calibration sheet under the reader.

Assuming the selected unit has OMR or Barcode reading enabled, the Reader Setup tab will be present. The setup procedure must be followed before reading can be used.



Setup Procedure

Ensure all covers are closed and the unit is switched on. On the screen, select whether OMR or barcode. If OMR is selected, press the 'Number of Marks' button and enter the required number.

Select the 'Percent Read Test' button and then 'Start align test' to test the head alignment. The black screen area will show a graphical readout of the results - all peaks should be above, or close to the red line. The status line below the screen will indicate the percentage success. Run the test for at least 10 seconds, then click the 'Stop align test' button.

Now click the 'Decodes/Sec Test' button and observe the same procedure as for the Percent Read Test.

If either test results in excessively low readings, the angular alignment of the read head, or its closeness to the paper may require adjustment. Observe the position of the red beam through the perspex cover over the read head - the side to side position should be centrally placed on the marks or barcode. If necessary, slacken the lock screws and adjust the head to suit (it will be necessary to close the cover after each small adjustment, as the beam switches off when the cover is raised). **Note: OMR Reading** - Depending on paper orientation, and whether the Gate mark is the first or last mark past the head, the head must be physically positioned according to the chart on the following page. To change position, slacken the lock screws and position the head on the other side of the sliding bracket. (See following page).

Head	Gate Mark	Direction	Position
Cable towards Hi-Cap Feeder	First mark under reader head	Foward*	Gate Mark
		Paper direction	
Cable towards Hi-Cap Feeder	Last mark under reader head	Reverse*	Gate Mark
		Paper direction	
Cable towards Collator	First mark under reader head	Reverse*	Gate Mark
		Paper direction	
Cable towards Collator	Last mark under reader head	Foward*	Gate Mark
		Paper direction	

\* As set in OMR Screen in setup (see [Operating Instructions page 25](#)).

Repeat the tests, and if results are still poor, slacken the lock screws and move the head closer to, or further from the paper as necessary until the test results are good. If read problems are still occurring, carry out a read rate test, as decribed opposite.

OMR Calibration

This need only be carried out for OMR readers. Load the calibration sheet into the unit’s feed hopper and press ‘OMR Calibration’ on the Run screen. The sheet will feed to the divert bin (or to the track) with a screen message to advise of successful calibration.

Read Rate Test

If the reader head is having problems reading marks, run the following Read Rate Test. Remove the reader head and scan the following barcodes in sequence.

Scan this barcode to enable the test - reader head should bleep and flash LEDs.



Scan this barcode to enable symbologies. LEDs should flash up and down, settling on 100%.



Scan this barcode to start read rate test. LEDs should flash up and down, settling on 100%.



To end the Read Rate Test, scan this barcode.



If the test does not perform as described above, repeat it. The reader head should should be moved fairly briskly through the barcodes, making sure that the outer ends of the red line do not pick up spurious readings from any other distracting marks at the sides.

Note: The test must be performed in the Engineering screen as follows:  
Engineering/Diagnostics/Reader Setup tab/Barcode/Start Align Test

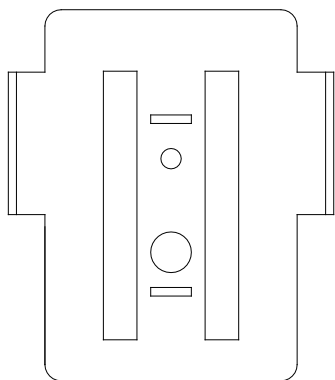
Now perform the Read Rate Test as described above.

### 3.8 QX HAWK READER

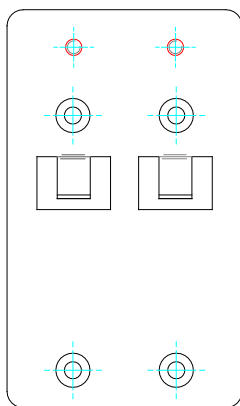
#### 2D DataMatrix Set Up (for QX Hawk)

##### Installation Instructions

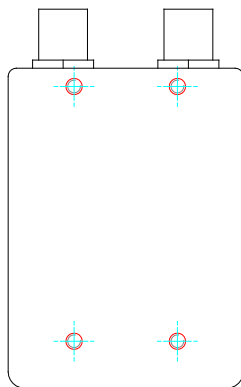
Attach the 2D reader mount, B2-2169-P, to the QX Hawk CCD reader, 179-8661. Attach the reader assembly to the vertical head bracket, B8616P, ensuring the correct orientation (see diagram below).



B8616P

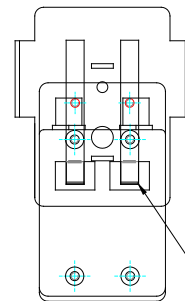


B2-2169-P



179-8661

Note that the QX Hawk mount should be allowed to drop to the lowest position on the vertical head bracket as shown in the assembled image below.



END STOPS SHOULD BE ALLOWED TO DROP TO THE LOWEST POSITION



The vertical head bracket B8616P can be mounted in the orientation as shown using the same fixing components that are used on the standard head carrier assembly.

Connect the QX Hawk to the barcode interface PCB, 180-711, using cable 182-8666. The QX Hawk must be connected to J1 (LHS) on the PCB. Any other reader will then be connected to J2 (RHS).

##### Hardware/ Software Setup

Install the latest upgrade of software and firmware from the web site.

Note that s/f must be higher issue level than the following:-  
Software version number:-  
6.7.0.3

Firmware version number:-  
DS-1000: V10-02-00-00  
DS-1200: V00-02-00-00

Open the IMOS application.

Adding a second reader

Go to the hardware set-up screen and add a 2nd reader.

In the 'Extra settings tab select 'Reader on channel 1' to QX Hawk.

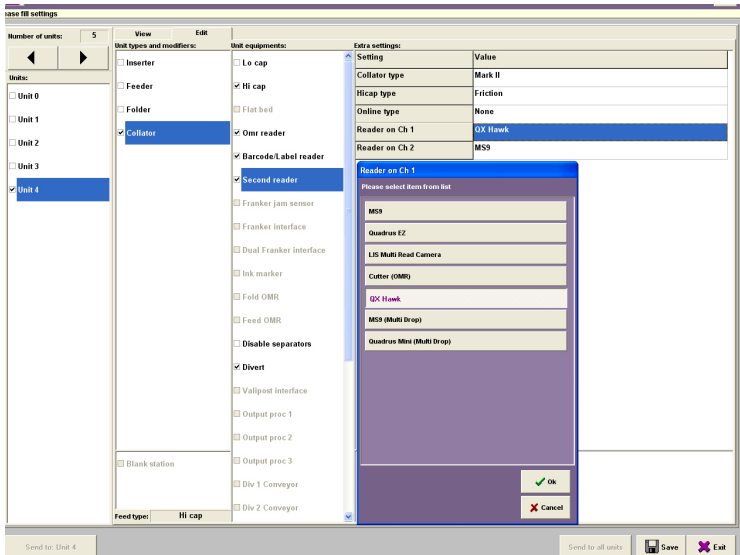
If you have moved a second reader from channel 1 to channel 2 you will also need to select the reader type for the second reader.

The screen dump below shows the correct settings.

Changing readers from Quadras to QX Hawk

Go to the hardware set-up screen.

In the 'Extra settings tab select 'Reader on channel 1' to QX Hawk.



Label Setup Procedure

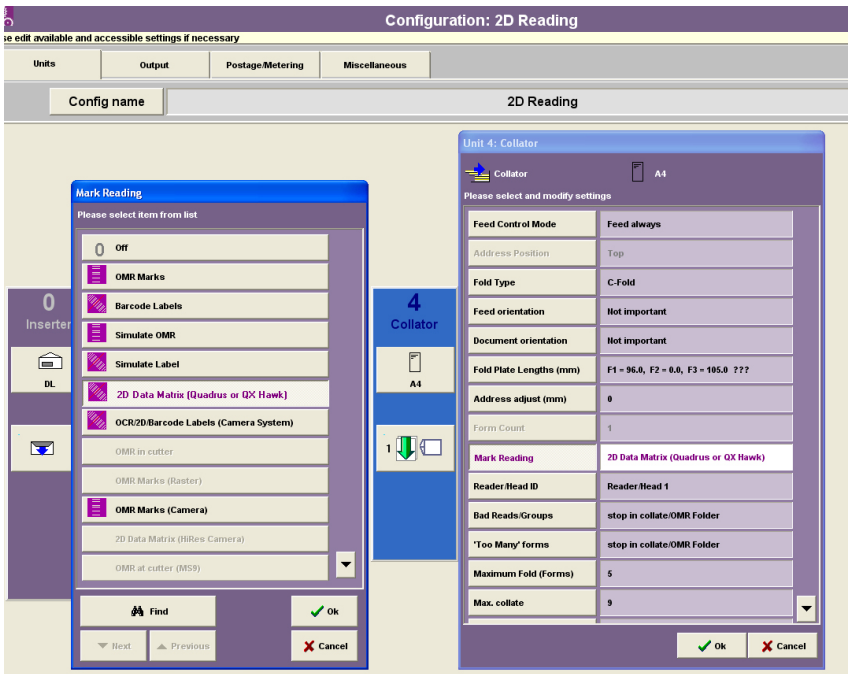
Setup a new label for the 2D data matrix, following the standard procedure (defining the number of characters, the control method, the position of the control characters in the label, the data logging parameters, etc). The distance from the leading edge to the label center must be filled in for your particular document. (Measure in mm the distance from the leading edge (LE) of the document to the center of the 2D data matrix label) (This dimension is required to get the label in the FOV of the QX Hawk).

Configuration Setup Procedure

This is the procedure for the first time setup of the reader. All subsequent configurations will work without needing to find the optimum settings for the label.

Setup a new configuration (we have called it '2D Reading'), select the mark reading as 2D Data Matrix and the reader as reader 1.

Set the bad reads to stop in the collate. This will cause any bad read document to stop at collate HP1 or collate HP2. (When the set-up/diagnostics is complete set the bad read destination back to divert 1 or 2 or however you require it for this configuration).

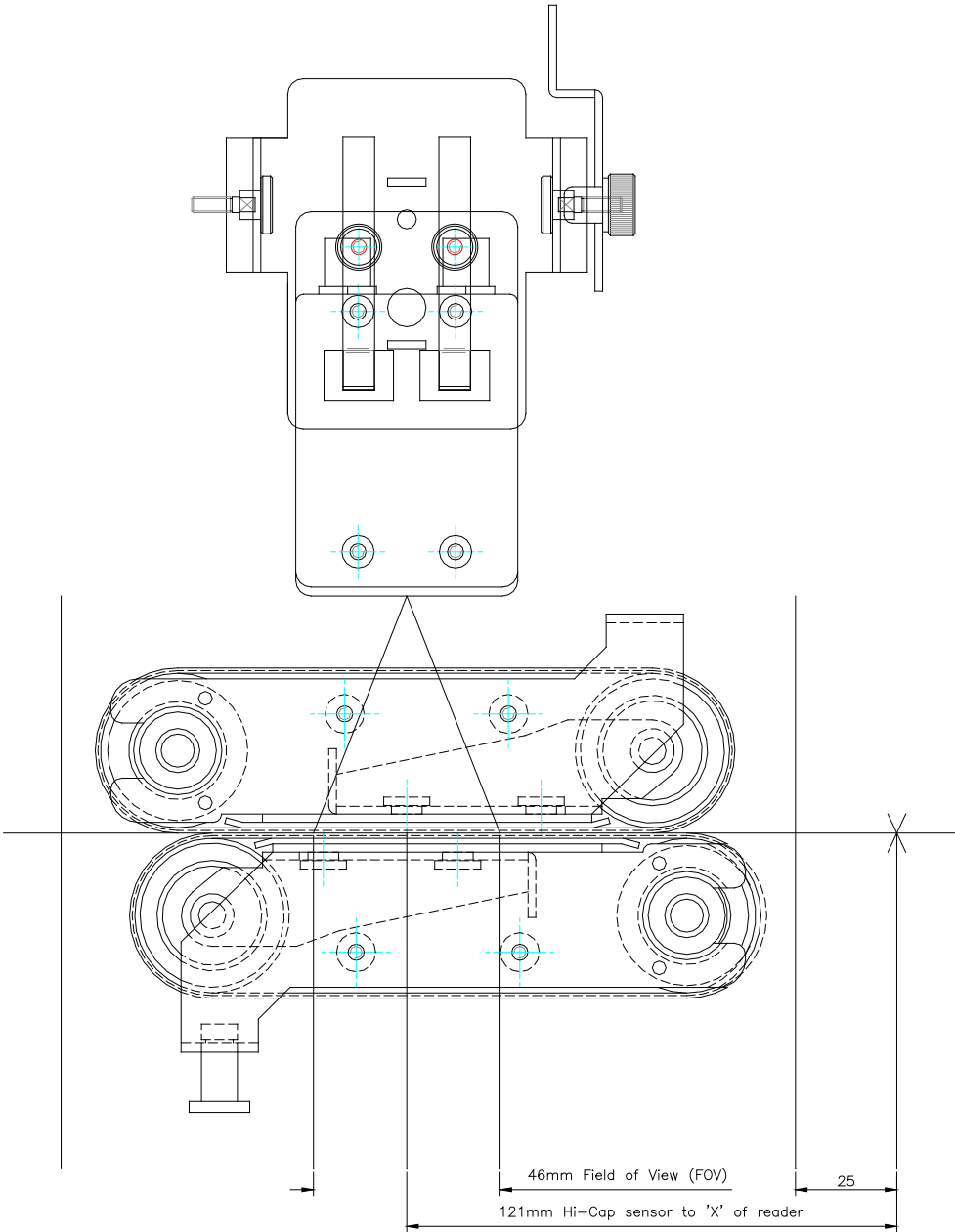


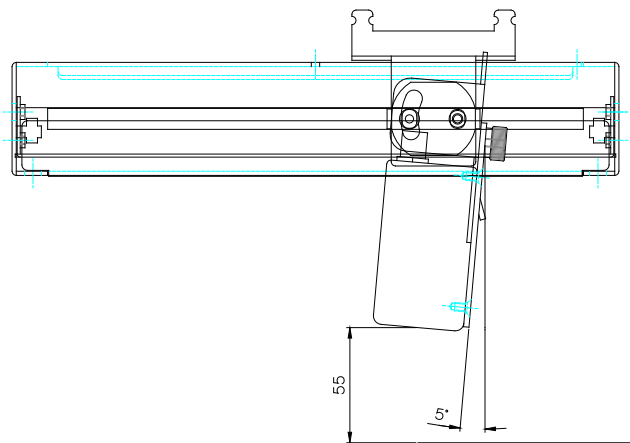
Reader Setup Procedure

Ensure the 2D label is not obstructed by the conveyor assemblies (A2710A & A2711A) Adjust if necessary so the label is correctly positioned on the paper support bracket (B7388A) away from any metal work. The alignment is aided by the 'load to reader' feature (activated from the 'Fine tuning' screen). Follow the on screen instructions.

Once the label is positioned correctly on the paper support bracket the QX Hawk needs to be adjusted. Go to the fine tuning screen and turn the reader ON.

The following are critical to ensure reliable reading of the labels. The QX Hawk needs to be 55mm above the label, parallel to the mounting bracket, at an angle of approx 5 deg (to avoid direct reflection), the center of the "X" pattern needs to be on the center of the label and the center of the "X" pattern 121mm from the hi-cap feeder exit sensor. (See diagrams below).





When the label is correctly positioned, relative to the QX Hawk, a static read rate/alignment test is required.

From the Engineer screen go to 'Reader set up'. Select the correct unit number. Start the read rate test (checking the label box is selected). This will turn the "X" pattern ON and perform the read rate test. The results are displayed in the status line (percentage read and the label data). The percentage should be 100% (The black screen area will show a graphical readout of the results – all peaks should be 100%).

If the test results in excessively low readings (less than 100%), the angular alignment of the QX Hawk will need to be adjusted (an angle between 5-15 deg is acceptable). Observe the position of the "X" pattern on the label, the label should be centrally placed directly under the "X" pattern.

The QX Hawk is pre-programmed with set values for:-

Shutter speed:	1/30,000
Focus:	55mm
Gain:	40

This should be suitable for most applications when the 2D label is of good quality and on a white background. Please read the 'OCR and 2D DataMatrix specification' to ensure your label design is within the acceptable range.

Centring the label in the FOV

There is no TV image supplied with the QX Hawk so the initial set up will help to manually calibrate the label position in the FOV.  
Setup is as follows:-

1. Measure the position from the leading edge of the document to the centre of the label.
2. Enter the value in the barcode setup screen as the 'Distance from LE to label centre' (DLE, in our example 174).
3. Start running the job.
4. If the job runs correctly then adjust the DLE in increments of 3mm up until you start to get bad reads. Record the value.
5. Now adjust the DLE down until you start to get bad reads. Record the value.
6. The true setting will be the mid-point between the two values.
7. If the mid-point is greater than the measured value then you should add this same correction to all other jobs, similarly if it is lower than the measured value.
8. The error between the measured value and the true centre can be trimmed out mechanically by tilting the reader in the plane of paper travel or by adding/subtracting the fixed amount measured to each future job.

Barcode name	2D Reading
Definition mode	As fed
Number of characters in label	14
Label machine control	Standard BCS Control
Symbology	Default
Grouping	End-of-Group
Good decode reads	3
Security check	None
Data log enabled	Last page
Distance of LE to Label Centre	174
Checksum	Off
Data logging characters	
Start pos.	1
Length	2

## Shingle Feeder

If you are fitting a QX Hawk to a shingle feeder or an output divert unit please read the following:-

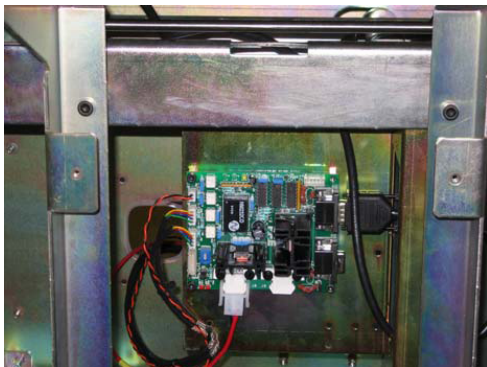
### 2D Data Matrix Reader (QX Hawk) fitted to a Shingle Feeder And Reading through a Windowed Envelope

#### Introduction

This supplement is to be used in conjunction with the '2D DataMatrix Setup' document. The additional information here is for a shingle feeder and for reading through the window of an envelope.

#### Shingle Feeder Installation

The basic setup of the QX Hawk is still the same. There is a fixed focal length so the reader must be positioned 55 mm from the reading surface. All readers fitted to a shingle feeder are bottom mounted with the PCB located behind the lower rear feeder cover.



OMR PCB in correct orientation

## Windowed Envelope Setup

With some additional setup it is possible to read a 2D data matrix label through a windowed envelope. The basic problem with reading the 2d label through a windowed envelope is reflection.

This can be eliminated by increasing the angle of the 2d reader so that the label is clearly visible in the QX Hawk field of view (FOV).



Reflected view



No reflection from envelope window as the QX Hawk angled steeply

As it is not possible to see images from the QX Hawk it is a simple case of trial and error to find the best reading angle.



### 3.9 RECOMMENDED SPARES

The following list shows the parts recommended for Service Agents to hold in stock to provide a measure of breakdown cover for the DS-1200 G3. It includes parts most likely to fail in service, or be subject to damage. **In addition to these holding spares, consumable spares (as described on the following page) should also be obtained. These would normally be chargeable items to the customer, or supplied as part of a service contract.**

A full set of holding spares can be obtained by ordering part number A0-0491-A (230v/115v).

<b>NTL Part No.</b>	<b>SAP Part No.</b>	<b>Description</b>	<b>Unit</b>	<b>Qty.</b>
135-317UL	9100332M	Fuse, On-board, 10A	EA	2
135-410	9100333N	Fuse, 38mm, 10A	EA	2
135-430	9100334P	Fuse, 38mm, 30A	EA	1
167-011	9100366X	SLEEVE H50X25 BLACK	EA	10
180-675	9100702X	PCB assy, Stepper	EA	1
180-676	9100703Y	PCB assy, Control	EA	1
180-689	9100709E	PCB assy, disc sensor	EA	1
180-692	9100711G	PCB assy, vane sensor	EA	1
180-701	9100714K	PCB assy, Hicap Motor	EA	1
180-702	9100715L	PCB assy, Wetter	EA	1
180-709	9100718P	PCB assy, Interlock	EA	1
180-711	9100719Q	PCB assy, OMR	EA	1
180-713	9100720R	PCB assy, CPU	EA	1
180-714	9100721S	PCB assy, overflow	EA	1
180-776	9100753A	Wide Body Index Sensor	EA	1
180-808	9107532M	PCB assy, Dual Distribution	EA	1
180-811	9107507L	PCB assy, Module (no heatsink)	EA	1
180-812	9108027C	PCB assy, Module (with heatsink)	EA	1
180-813	9108028D	PCB Assy, Daughter A	EA	1
181-049	9100778B	Motor, DC Hybrid	EA	1
181-064	9100786K	MTR Wired 179-802 (PCB)	EA	1
181-0820	9109535Y	MTR Step 3STK S/S Wired	EA	1
181-0830	9108552Z	MTR Step 3STK D/S Wired	EA	1

<b>NTL Part No.</b>	<b>SAP Part No.</b>	<b>Description</b>	<b>Unit</b>	<b>Qty.</b>
181-0840	9108494P	Side guide motor assy.	EA	1
181-0880	9109536Z	MTR Step 1STK S/S Wired	EA	1
181-128	9100807G	Clutch, Lenze 04	EA	1
181-129	9100808H	Brake, Lenze 04	EA	1
181-130	9100809J	Solenoid 25 dia	EA	1
181-131	9100810K	Solenoid 19 dia	EA	1
181-132	9100811L	Clutch, Lenze 03	EA	1
181-133	9100812M	Brake, Lenze 03	EA	1
181-134	9100813N	Solenoid, rotary	EA	1
181-138	9100814P	Clutch, Lenze 03 (collator)	EA	1
182-333	9100973E	Switch, reed (3 Pin In-Line)	EA	1
182-340	9100978K	Emitter, chassis mnt. 200mm	EA	1
182-343	9100981N	Emitter, chassis mnt. 300mm	EA	1
182-437	9101007Q	Emitter, PCB 100mm	EA	1
182-439	9101009S	Receiver, PCB 100mm	EA	1
182-440	9101010T	Emitter, PCB 200mm	EA	1
182-441	9101011U	Receiver, PCB 200mm	EA	1
182-442	9101012V	Receiver, PCB 200mm N/A	EA	1
182-443	9101013W	Emitter, PCB 300mm	EA	2
182-444	9101014X	Receiver, PCB 300mm	EA	2
182-445	9101015Y	Receiver, PCB 300mm N/A	EA	2
182-464	9101023G	Harness, Power Sharing	EA	4
182-487	9101029N	Blue Indicator Light	EA	2
182-494	9101032R	Switch, reed (4 Pin PCB)	EA	1
A0-0496-A	9104482K	Itrack pawl belt kit	EA	1
A0-0502-A	9107759Y	Shuttle pawl belt kit	EA	1
A0286A	9101269N	Spares Fold Roller	EA	1
A2-1014-A	9105234T	Gearbox assy, cast	EA	1
A2-1196-A	9108386B	Encoder Assy (Spares)	EA	1

<b>NTLPart No.</b>	<b>SAP Part No.</b>	<b>Description</b>	<b>Unit</b>	<b>Qty.</b>
A2-1197-A	9108381W	Bearing Holder Assy (Spares)	EA	10
A2-1219-A	9109480R	Back stop assy (DS-1200)	EA	1
A2675A	9101562T	Roller assy, Hi-cap Feed	EA	1
B0-0207-A	9107762B	Pawl Plate (1)	EA	6
B0-0216-A	9108387C	Guide Spring	EA	2
B0-0218-A	9108496R	Collate Brush	EA	1
B0-0219-A	9108497S	Pawl Plate (2)	EA	6
B0-0220-A	9108498T	Pawl Plate (3)	EA	6
B0199A	9105549W	Track Overguide Spring (1)	EA	1
B0200A	9105548V	Track Overguide Spring (2)	EA	1
C8-0204-A	9106869W	Outfeed Roller (Folder)	EA	4
C8171A	9103537A	Roller, Hi-cap Separator	EA	4
E0346A	9103783G	Spring, preload	EA	2
E0574A	9105864Z	Rubber Foot	EA	4
E0590A	9105229N	Wetter Tank	EA	2
E1-0155-A	9110970T	INA Bearing Needle	EA	6
E1054A	9103819U	Bearing, 12mm roller	EA	4
E1061A	9103826B	Bearing, 8mm roller	EA	8
E1078A	9103835L	Bearing, 8mm x 22mm flanged roller	EA	4
E1087A	9103838P	Bearing, 12mm x 21mm flanged roller	EA	4
E1-0155-A	9110970T	Bearing, needle roller	EA	6
E4033A	9104072H	Washer, waved 8mm ID	EA	2
E4051A	9104081S	Washer, waved 22mm ID	EA	6
E4052A	9104082T	Washer, waved 13mm ID	EA	6
E5015A	9104097J	Pin, dowel 3x24	EA	3
E5071A	9104133W	Pin, dowel 3 x 14	EA	10
E5074A	9104135Y	Pin, dowel 3 x 8	EA	5
E5098A	9104147L	Pin, dowel 3 x 18	EA	20
F4150A	9104398X	Gear, 40 tooth	EA	2
F4151A	9104399Y	Gear, feeder	EA	2

<b>NTL Part No.</b>	<b>SAP Part No.</b>	<b>Description</b>	<b>Unit</b>	<b>Qty.</b>
F5003A	9104431G	Belt, Folder (Fold Rollers, 150XL)	EA	1
F5005A	9104433J	Belt, Envelope Opener 170XL	EA	1
F5007A	9104435L	Belt, 200XL	EA	1
F5011A	9104439Q	Belt, Folder (Motor, 120XL)	EA	1
F5012A	9104440R	Belt, collate 190XL	EA	1
F5013A	9104441S	Belt, Envelope Opener 210XL	EA	1
F5015A	9104443U	Belt, 230XL	EA	1
F5022A	9105228M	Belt, 300DXL	EA	1
F5024A	9105639Q	Belt, 290XL	EA	1
F5029A	9104452D	Belt, collate 200DXL	EA	1
F5101A	9104488R	Belt, Stepper STS 110T	EA	1
F5102A	9104489S	Belt, 450DXL	EA	1
F5107A	9104491U	Belt, 260 S2M	EA	1
F5159A	9108392H	Belt T5 50T 10 Wide with Pawls	EA	1
F5163A	9105227L	Belt HTD 425 (Feeder)	EA	1
F5164A	9105226K	Belt HTD 280 (Feeder)	EA	1
G0178A	9105225J	Sponge, Wetter Roller	EA	4
G1001C	9104606P	Spring Bush	EA	2
G1-0253-A	9106458T	Fold Roller Spring	EA	2
G1-0269-A	9108393J	Collate Spring	EA	2
G1001C	9104606P	Spring, Brush	EA	2
G1025A	9104625J	Spring, pressure	EA	2
G1026A	9104626K	Spring, Conveyor	EA	2
G1054A	9104639Y	Spring, Holder	EA	2
G1108C	9104679Q	Spring, Opener return	EA	1
G1111A	9104681S	Spring, light (green)	EA	2
G1116A	9104685W	Spring, medium (yellow)	EA	2
G1160A	9104701N	Spring, No Fold Return	EA	2
G1162A	9104703Q	Spring, Conveyor interface	EA	4
G1165A	9104705S	Spring, Solenoid	EA	2

<b>NTL Part No.</b>	<b>SAP Part No.</b>	<b>Description</b>	<b>Unit</b>	<b>Qty.</b>
G1176A	9104710X	Spring, Stop	EA	2
G5043A	9104860D	Belt, Envelope Opener Conveyor	EA	2
G5048A	9104864H	Belt, Upper Conveyor	EA	6
G5049A	9104865J	Belt, Lower Conveyor	EA	6
G5074A	9107157W	Conveyor Belt (HAT-5E) Feeder	PR	1
G5075A	9107284D	Conveyor Belt (HAT-5E) Long Feeder	PR	1
G6144A	9104914K	Tape, Turnover restrictor	EA	2
G6-0235-A	9110753S	Tape Turnover Restrictor	EA	2

**Consumable Spares**

Order these parts as required to suit the units fitted to the machine. Quantities will depend upon machine usage and can be calculated for any configuration by contacting IPSS department. Items shown are for both 1000 and 1200 except where indicated otherwise.

**Insertter Head**

<b>NTL Part No.</b>	<b>SAP Part No.</b>	<b>Description</b>
A0275A	9101264H	Envelope Sealing Fluid 10 litres
A2634A (1000)	9101551G	Finger Assy. LH
A2635A (1000)	9101552H	Finger Assy. RH
A2-1198-A (1200)	9108388D	Finger Tip Kit LH (Spares)
A2-1199-A (1200)	9108389E	Finger Tip Kit RH (Spares)
C8106A	9103503Q	Roller Feed
C8132A	9105484D	Transport Roller
D0009A	9103593J	Tyre Feed Wheel
D0015A	9103598P	Tyre Conveyor Roller
D0037A	9103610B	Closer Feed Tyre
F5025A	9104450B	Belt XL 110 Tooth
F5078A	9104480H	Belt STS 90 Tooth
A0-0498-A	9104485N	Handover Pawl Belt Kit
F5095A	9109502P	Turnover Eject Pawl Belt (single)
F5096A (1000)	9109503Q	Kicker Belt (pair)
F5101A (1200)	9104488R	Timing Belt 220 STS S2M
F5103A	9104490T	Turnover Transport Belt
F5154A (1200)	9104511Q	Kicker Belt (single - 3 reqd)

**NTL Part No.****SAP Part No.****Description**

G0128A	9104596D	Turnover Brush
G0178A	9105225J	Wetter Sponge
G5043A	9104860D	Envelope Conveyor Belt
G6144A	9104914K	Turnover Restrictor Belt

**Track****NTL Part No.****SAP Part No.****Description**

F5078A	9104480H	Belt STS 90 Tooth
F5079A (1000)	9109341W	Shuttle Belt (pair)
F5-0167-A (1000)	9109351G	Cassette Pawl Belt (pair)
F5161A (1200)	9109504R	Shuttle Belt (pair)
F5-0167-A (1200)	9109351G	Cassette Pawl Belt (pair)
G5048A	9104864H	Conv. belt MAM-04H (350 x 15)
G5049A	9104865J	Conv. belt MAM-04H (454 x 15)

**Feeder****NTL Part No.****SAP Part No.****Description**

C8106A	9103503Q	Roller Feed
C8127A	9103509W	Feed Roller
D0038A	9103611C	Feed Wheel Tyre
D0046A	9103614F	Silicon Feed Tyre
F5000A	9104428D	Belt 90XL

**Flatbed Feeder****Part No.****SAP Part No.****Description**

C8171A	9103537A	Separator Roller (Higrip)
D0038A	9103611C	Feed Wheel Tyre
D0046A	9103614F	Silicon Feed Tyre
F5000A	9104428D	Belt 90XL
F5023A	9104449A	Belt 300XL



**Folder**

<b><u>NTL Part No.</u></b>	<b><u>SAP Part No.</u></b>	<b><u>Description</u></b>
A2-1018-A	9107055Q	Outfeed Roller Assy
A0286A	9101269N	Spares Fold Roller

**Collator**

<b><u>NTL Part No.</u></b>	<b><u>SAP Part No.</u></b>	<b><u>Description</u></b>
B0177A (1200)	9101829W	Bearing Holder (4 reqd.)
C6315A (1000)	9103397E	Ball Carrier
C6394A (1200)	9108390F	Ball Carrier
C6395A (1200)	9108391G	Paper Back Support
D0009A	9103593J	Tyre Feed Wheel
E1-0155-A (1200)	9110970T	Ø6.5 Needle Bearing (8 reqd.)
E5105A (1200)	9104150P	Pin Dowel Ø3 x 24 (4 reqd.)
F5087A	9104484M	Conv. Belt 170T T5
F5101A (1200)	9104488R	Belt STS S2M 220
F5159A (1200)	9108392H	Collate Pawl Belt (Pair)
G5041A	9105215Y	Conv. belt MAM-5E (1417 x 14)
G5042A	9105610K	Conv. belt MAM-5E (1583 x 14)
G5048A	9104864H	Conv. belt MAM-04H (350 x 15)
G1-0269-A (1200)	9108393J	Collate Spring
F5138A	9109482T	Belt 370 DXL

**Hi/Lo-Cap**

<b><u>NTL Part No.</u></b>	<b><u>SAP Part No.</u></b>	<b><u>Description</u></b>
A2759A	9101589W	Drive Roller Assy.
A2796A	9101595C	Feed Roller
A2797A	9101596D	Feed Roller
B0-0202-A	9108363C	Anti-Wedging Brush
C8127A	9103509W	Feed Roller
C8171A	9103537A	Hi-Grip Separator
D0009A (1200)	9103593J	Transport Tyre
D0050A	9103617J	Pick-up Roller Tyre

**On-line with CEM Cutter (Collator or Folder) - see also following page**

<b><u>NTL Part No.</u></b>	<b><u>SAP Part No.</u></b>	<b><u>Description</u></b>
D0009A	9103593J	Tyre Feed Wheel
G5052A	9105612M	Conv. belt MAM-5E (911 x 14)
G5059A	9106333N	Conv. belt MAT-02H (265 x 15)
G5064A	9108708M	Conv. belt MAM-04H (1646 x 15)
G5067A	9106456R	Conv. belt MAT-02H (697 x 15)
SC-08019941	9105148D	Tractor Pick
SC-21008033	9105174F	Felt Pressure Spring
SC-21008726	9105175G	Pressure Spring
SC-24007216	9105179L	Circular Knife
SC-24016275	9105181N	Lower Blade 320
SC-24016274	9105180M	Upper Blade 1/6" 320
SC-320RG_SET	9107506K	Re-ground Blade Set

**Output Processor**

The following list shows the parts recommended to be held for an Output Processor E1524AA, E1525AA, E1526AA or E1529AA.

A full set of the parts can be obtained by ordering part no. A0428A (230v/115v)

<b><u>NLT Part No.</u></b>	<b><u>SAP Part No.</u></b>	<b><u>Description</u></b>	<b><u>Qty.</u></b>
181-153	9107231Y	SOLENOID W/D 179-348 SM	1
A2-1014-A	9105234T	GEARBOX ASSEMBLY (CAST)	1
F1243A	9104274T	PULLEY 18XL x 8mm	1
F5005A	9104433J	BELT 170XL 037	1
F5014A	9104442T	BELT 100XL 037	1
F5077A	9104479G	BELT 175MXL	1
F5124A	9104504H	BELT 100-S2M-300 STS	1
G1025A	9104625J	SPRING PRESSURE	2

**Flatbed Feeder**

The following list shows the parts recommended to be held for an E1554AA Flatbed Feeder.

A full set of the parts can be obtained by ordering part no. A0427A (230v/115v)

<b><u>NLT Part No.</u></b>	<b><u>SAP Part No.</u></b>	<b><u>Description</u></b>	<b><u>Qty.</u></b>
181-132	9100811L	CLUTCH W/D 179-154 2WXH	1
F5001A	9104429E	BELT 130XL 037	1
F5138A	9109482T	BELT 370 DXL	1
G1201A	9109483U	TURNOVER SPRING	2

**Note:** These holding spares are in addition to the consumable spares shown previously.

**Single On-line Interface**

The following list shows the parts recommended to be held for an E1571 Single On-line Interface (this unit is used with E1546AA, E1562AA and E1564AA).

A full set of the parts can be obtained by ordering part no. A0425A (230v/115v)

<b><u>NTL Part No.</u></b>	<b><u>SAP Part No.</u></b>	<b><u>Description</u></b>	<b><u>Qty.</u></b>
A2819A	9107524D	STOP ASSY.	1
B0156A	9106378K	GUIDE TAPE	12
B0165A	9106863Q	GUIDE SPRING	2
F5000A	9104428D	BELT 90XL 037	1
F5011A	9104439Q	BELT 120XL 037	1
F5012A	9104440R	BELT 190XL 037	1
F5014A	9104442T	BELT 100XL 037	1
F5021A	9104448Z	BELT 408XL 037	1
F5029A	9104452D	BELT 200DXL 037 D/SIDED	1

**Note:** These holding spares are in addition to the consumable spares shown previously.

**Vertical Stacker**

If a Vertical Stacker is fitted, the following spares are recommended to be held in addition to the main spares. There are 2 sets available, either with or without ink marker spares.

A full set of the parts can be obtained by ordering part no. A0417A (230v/115v) for machines with ink markers, or A0416A (230v/115v) for machines without.

**A0417A (With ink markers)**

<b><u>NTL Part No.</u></b>	<b><u>SAP Part No.</u></b>	<b><u>Description</u></b>	<b><u>Qty.</u></b>	<b><u>Where Used</u></b>
117-240	9100130B	Opto pair long range sensors	1 pair	Main Chassis
179-8780	9107427C	Motor	1	Conveyor
180-745	9107019C	PCB Assy. 5 Sen,5 Sol	1	Main Chassis/Elect. Panel
180-180-790	9105270F	PCB Long range sensors	1	Main Chassis
181-079	9107462P	Motor Assy.	1	Side Guide Drive
181-141	9100815Q	Solenoid Dual LS/SS (XH)	1	Ink Marker
181-153	9107231Y	Solenoid W/D 179-348	1	Jog Assy.
B0174A	9105552Z	Input Control Spring	2	Main Chassis
B0192A	9105551Y	Conveyor Belt Shield	5	Stacking Conveyor
C4444A	9109481S	Spindle	2	Ink Marker
E0237A	9103765N	Ink Roller (Red)	1	Ink Marker
E0472A	9106275C	Ink Roller (Blue)	1	Ink Marker
A0-0647-A	9110958F	Photoflag Retrofit Kit	1	Insert Track
F5010A	9104438P	Belt 240XL 037	1	Main Chassis - Main Drive
F5016A	9104444V	Belt 80XL 037	1	Side Guide Drive
F5036A	9105640R	Belt 90MXL 9.7	1	Main Chassis-Roller Drive
F5135A	9107674K	Belt 180-S3M-420 PU	1	Main Chassis - Wheel
Drive				
F5145A	9105593S	Belt 100-S2M-322	1	Insert Track
F5-0168-A	9109500M	Belt T5 420T 10mm Wide	1	paiInsert Track
G1217A	9105605E	Spring Finger (alternative)	8	T/over Wheel
G1217A	9105605E	Spring Finger	8	T/over Wheel
G1218A	9105606F	Spring Finger	8	T/over Wheel

**A0416A (Without ink markers)**

<b><u>NTPart No.</u></b>	<b><u>SAP Part No.</u></b>	<b><u>Description</u></b>	<b><u>Qty.</u></b>	<b><u>Where Used</u></b>
117-240	9100130B	Opto pair long range sensors	1 pair	Main Chassis
179-8780	9107427C	Motor	1	Conveyor
180-745	9107019C	PCB Assy. 5 Sen,5 Sol	1	Main Chassis/Elect. Panel
180-790	9105270F	PCB Long range sensors	1	Main Chassis
181-079	9107462P	Motor Assy.	1	Side Guide Drive
181-153	9107231Y	Solenoid W/D 179-348	1	Jog Assy.
B0174A	9105552Z	Input Control Spring	2	Main Chassis
B0192A	9105551Y	Conveyor Belt Shield	5	Stacking Conveyor
A0-0647-A	9110958F	Photoflag Retrofit Kit	1	Insert Track
F5010A	9104438P	Belt 240XL 037	1	MainChassis-Main Drive
F5016A	9104444V	Belt 80XL 037	1	Side Guide Drive
F5036A	9105640R	Belt 90MXL 9.7	1	MainChassis-Roller Drive
F5135A	9107674K	Belt 180-S3M-420 PU	1	Main Chassis-Wheel Drive
F5145A	9105593S	Belt 100-S2M-322	1	Insert Track
F5-0168-A	9109500M	Belt T5 420T 10mm Wide	1 pair	Insert Track
G1217A	9105605E	Spring Finger (alternative)	8	T.over Wheel
G1217A	9105605E	Spring Finger	8	T/overWheel
G1218A	9105606F	Spring Finger	8	T/overWheel

In addition to the standard spares list, the following list will also be required if a CEM Cutter is fitted. Order part number A0303A. Note: These holding spares are in addition to the consumable spares shown previously.

NTL Part No.	SAP Part No.	Description	Qty
SC-06014919	9105147C	GAS STRUT	1
SC-08019941	9105148D	TRACTOR PICK	10
SC-14000494	9105149E	BALL BEARING 5-16-5	2
SC-14001107	9105150F	BALL BEARING 8-22-7	3
SC-14001225	9105151G	BALL BEARING 6-19-6	2
SC-14001279	9105152H	BALL BEARING 10-30-9 6200RS	3
SC-14001319	9105153J	BALL BEARING 10-26-8	4
SC-14004101	9105154K	BALL BEARING 17-35-10 6003/ZZ	4
SC-14004915	9105155L	CAM FOLLOWER	4
SC-14009464	9105156M	BALL BEARING 20-42-12 6004 2RS	2
SC-14009770	9105157N	NEEDLE BEARING 10-14-10 DHK 10.10	2
SC-14009771	9105158P	NEEDLE BEARING 22-30-13 RNA 4903	1
SC-14009772	9105159Q	NEEDLE BEARING HK 0810	3
SC-14009805	9105160R	NEEDLE BEARING 10-17-12 NK 10/12	2
SC-14009912	9105161S	NEEDLE BEARING 12-16-10 HK-1210	2
SC-14017777	9105162T	BALL BEARING 17-35-8 16003 2Z	4
SC-15014918	9105163U	TOOTHED BELT 200XL050 DUAL	1
SC-15015070	9105164V	TOOTHED BELT MXL 80094	1
SC-15016815	9105165W	TOOTHED BELT TRACTOR	1
SC-15019403	9105166X	TOOTHED BELT 120XL050	1
SC-15023039	9105167Y	BELT 128 XL037	1
SC-16016846	9105168Z	O-RING OR4075	14
SC-21000600	9105171C	BRUSH OPENING SPRING	1
SC-21000985	9105172D	BRUSH PRESSURE SPRING	2
SC-21007736	9105173E	BEARING COMPRESSION SPRING	2
SC-21014682	9105176H	TENSION SPRING	6
SC-21051134	9105177J	BLADE PRESSURE SPRING	2
SC-24007216	9105179L	CIRCULAR KNIFE	4
SC-24016274	9105180M	UPPER BLADE 1 1/6 TUNGSTEN	1
SC-24016275	9105181N	LOWER BLADE	2
SC-28022112	9105183Q	SIBONI MOTOR ASSY	1
SC-63005157	9105184R	FUSE 15A SLOW-125V 10x38mm.	2
SC-63005310	9105185S	Fuse 10 A slow	2
SC-63005313	9105186T	Fuse 3,15 A slow	2
SC-63005501	9105187U	5A FUSE	2
SC-63005633	9105188V	FUSE 6.3A SLOW	2
SC-64001042	9105189W	MICROSWITCH	1
SC-64009156	9105190X	FIBER OPTICS	1
SC-64009159	9105191Y	PHOTOCELL SICK WT160-N470	1

SC-64009162	9105192Z	FIBRE OPTICS AMPLIFIER	1
SC-66000551	9105193A	+12V,5V PWR SPLY BD. EL.00-V.3	1
SC-66002565	9105194B	AC 3A MODULE EL.00_V.3	1
SC-66002566	9105195C	DC DRIVER EL.00_V.3	1
SC-66002568	9105196D	KEYB. + DISPLAY ASS.Y EL.00_V.3	1
SC-66002571	9105197E	PROX. SENSOR ASSEMBLY	1
SC-69000307	9105198F	30 V LAMP	2
SC-69003834	9105199G	JAM PHOT. CABLE	1

The following list shows only the parts recommended to be held for emergency breakdown requirements on the CEM Cutter. Order part number A0302A.

NTL Part No.	SAP Part No.	Description	Qty
SC-07050033	9106695Q	RETAINING BLOCK	2
SC-08019941	9105148D	TRACTOR PICK	10
SC-14004915	9105155L	CAM FOLLOWER	2
SC-15015070	9105164V	TOOTHED BELT MXL 80094	2
SC-16016846	9105168Z	O-RING OR4075	14
SC-21000985	9105172D	BRUSH PRESSURE SPRING	2
SC-21014682	9105176H	TENSION SPRING	6
SC-24007216	9105179L	CIRCULAR KNIFE	4
SC-24016274	9105180M	UPPER BLADE 1 in/6 TUNGSTEN	1
SC-24016275	9105181N	LOWER BLADE	2
SC-28018465	9107013W	WIRE PAPER GUIDE	2
SC-49021873	9109520H	DC MOTOR	1
SC-63005157	9105184R	FUSE 15A SLOW-125V 10x38mm.	2
SC-63005310	9105185S	FUSE 10A SLOW	2
SC-63005313	9105186T	FUSE 3,15 A SLOW	2
SC-63005501	9105187U	FUSE 5A	2
SC-63005633	9105188V	FUSE 6.3A SLOW	2
SC-66002545	9107593A	ENCODER	1
SC-66002777	9107612V	DC DRIVE EL.00 V.3	1
SC-69000431	9106464Z	30V LAMP	2
SC-69003842	9108447Q	CABLE	1



In addition to the standard spares list, the following list will also be required if a Tecna Cutter is fitted. Order part number A0-0680-A (9112066K).

NTL Part No.	SAP Part No.	Description	Qty
ST-COMM0145	9110864H	BELT	2
ST-COMM0146	9110865J	BELT	1
ST-COMM0168	9110866K	BELT	1
ST-COMM0335	9110867L	SPRING (compression)	2
ST-COMM0366	9110868M	O-RING	1
ST-COMM0394	9110869N	GAS SPRING	3
ST-COMM0405	9110870P	FAN	4
ST-COMM0406	9110871Q	SENSOR	2
ST-COMM0407	9110872R	CAPACITOR	2
ST-COMM0411	9110873S	MOTOR DRIVER	5
ST-COMM0412	9110874T	MOTOR DRIVE	2
ST-COMM0415/UL	9110875U	MOTHERBD	1
ST-COMM0415/UL/RS	9110876V	MOTHERBD + COM.CONTR	1
ST-COMM0477	9110877W	PHOTOCELL	4
ST-COMM0495	9110878X	MICRO SWITCH	2
ST-COMM1124/1	9110879Y	BRUSH	1
ST-COMM7193	9110880Z	OMR READING PHOTOCELL	2
ST-COMM8056	9110881A	PHOTOCELL	1
ST-COMM8453	9110882B	TRANSFORMER	1
ST-COMM8478	9110883C	GAS DAMPER	2
ST-COMM8572	9110884D	MOTOR	4
ST-COMM8715	9110885E	GAS SPRING	2
ST-COMM8756	9110886F	BELT	2
ST-COMM8758	9110887G	BELT	1
ST-COMM8993	9110888H	BELT	2
ST-COMM9268	9110889J	RECTIFIER	2
ST-COMM9359	9110890K	BELT	1
ST-CT 12-02-B01 W	9110891L	COUNTER BLADE	1
ST-CT 12-02-B02 W	9110892M	GUILLOTINE BLADE	1
ST-CT 12-02-B15 W	9110893N	GUILLOTINE BLADE	1
ST-CT 12-07-A96	9110894P	ROLLER (at Traction Group)	4
ST-CT 18-01-C03	9110895Q	CIRCULAR KNIFE	6
ST-CT 18-01-C23 DX	9110896R	RIGHT GEAR	2
ST-CT 18-01-C23 SX	9110897S	LEFT GEAR	2
ST-CT 18-01-C39	9110898T	TRANSPORT ROLLER	4
ST-MG 03 12	9110899U	TRANSMISSION ROLLER	1
ST-R/0024	9110900V	GEAR + SHAFT GROUP	1

NTL Part No.	SAP Part No.	Description	Qty
ST-R/0120	9110901W	INPUT MERGER ROLLER GROUP	1
ST-R/0122	9110902X	UPPER ROLLER GROUP	4
ST-R/0151	9110903Y	MOTOR WITH 90° CABLES EXIT	1
ST-R/0152	9110904Z	EJECTION GROUP	1
ST-R/COMM0401/C	9110905A	B/LESS MOTOR + ENCODER	2
ST-R/COMM0410	9110906B	KEYBOARD + DISPLAY	1