

No. 134/2021

30 March 2021

Our Ref: C38/21

**To: All Branches**

Dear Colleagues,

## **PSM Sorter Under Guard (Safety & Ergonomic Improvements) Re-Design & PSM Engineering Safety Modifications Update:**

### **Background**

Following the introduction of the new generation(1A/1B) Parcel Sorting Machines (PSMs) an issue was identified and discussed in detail at the RM/CWU National Joint PSM Safety Sub-Committee in relation to an unfortunate consequence of the 'Equinox sorter design' that parcels can fall from the trays at the sorter corners onto the under guarding. As the standard guarding design is fixed with no under guard access, it is a difficult, awkward task to recover fallen parcels that can build up in numbers and the only practical method is to reach for them from above by accessing them from within Mobile Elevating Work Platforms (MEWP). Recovery of the fallen parcels is difficult as they need to be pulled up through the sorter tray carriers using a grabber tool and this action can lead to engineers over-reaching, stretching etc., with the potential of back and arm strains.

The machine manufacturers and suppliers were approached but were not prepared to change the under guarding design as they believed the contractual obligation regarding through-put, rejects, mis-sorts and flyout items had been achieved and the contract terms satisfied.

Consequently, with the safety and ergonomic problem identified, Royal Mail decided to undertake an in-house re-design of the under guarding to significantly improve the search and recovery of fallen parcels in a safe and ergonomically sound way.

### **Concept Design**

Under the leadership of Les Curtis, Royal Mail Engineering PSM Asset Manager, the PSM project team conceived various ideas of under guard designs with the Swindon based on-site technicians. This resulted in cardboard mock-ups being stuck onto the sorter to assess the feasibility.

Following on from this, an external ergonomist designer was engaged to develop 3D visualisations of various potential designs along with scale models to show how they could look at how the fallen parcels could be safely and ergonomically recovered efficiently and comfortably in the PSM working environment.

The design had to take account of many different and often conflicting requirements, such as: head room, walkway clearance, overall safety, parcel recovery access, appearance, materials, viewing panels, robustness and maintenance.

Meetings of the RM/CWU National Joint PSM Safety Sub-Committee took place at PSM offices and workshops with the on-site engineering technicians in both Swindon MC and Warrington MC to agree the best design approaches to take forward. At this stage, it was decided a chute at corner 1 was a key design requirement, but corners 2 and 3 would not have a chute due to operational work area constraints.

The chosen design was developed and a full-size modelling board version was constructed and attached to the Swindon PSM to initially verify its form, fit and function.

The 3D design was converted into sketches so that Royal Mail Engineering's PETRA group could manufacture the panels in sheet aluminium in their Swindon workshop.

The prototype panels were then assembled onto a full-size wooden test rig built in the PETRA Swindon workshop which simulated a PSM sorter corner of the live machines. This enabled the design to be verified and tested before being fitted to a live operational machine. The testing included ensuring parcels did not get trapped, that the guarding was strong enough to retain the full weight of a York full of fallen parcels and that the parcels could be safely and easily removed through the access hatches or drop safely down the chute.

Once testing was successfully completed, the PETRA team dismantled the guarding from the test rig and fitted it onto the operational PSM in Swindon Mail Centre for live trials. The trials were run during the Christmas peak and proved successful.

Feedback from the on-site technicians at Swindon MC after the live trial led to further improvements to the prototype production design.

The main trial points were:

- The hatch key lock was awkward to use.
- The hatches need to be slightly taller to improve parcel removal.
- The hatches need to be held in the open position to free both arms for parcel removal.

The production version addresses these by:

- Changing the hatch lock to an easy to use square security key.
- Increasing the hatch openings to the maximum possible height.
- Installation of gas springs on each hatch to hold them in the open position.

KPK Sheet Metal Fabricators were commissioned to convert the prototype design into a production design. KPK have state-of-the-art sheet metal laser cutters and larger capacity power bending equipment and machinery, so, the production version design is simplified and manufactured to closer tolerances. KPK subsequently manufactured the corner 1 production version and this was installed by the PETRA team to replace the prototype on the Swindon MC PSM. The design fitted perfectly, confirming this corner design is now ready for fleet wide national roll-out.

The production designs for corners 2 and 3 are slightly different as neither can have a chute. The designs are nearly finalised and production versions will be manufactured and planned to be fitted on the Swindon MC PSM machine during April 2021. There is no change to the corner 4 under guard as parcels seldom drop from the trays at this corner, so it will remain as provided by the machine supplier.

## National PSM Fleet Wide Roll-Out and Deployment

The deployment of the new Sorter Under Guards across the Royal Mail PSM fleet is now being planned. The intention is to deploy the guarding on the three corners to all 20 operational PSMs during the Summer and Autumn of 2021, prior to Christmas peak.

**See attached photographs/images of the re-designed, modified PSM Under-Guard.**

### RM Driven Safety Modifications

Additionally, Royal Mail has developed 25 safety related modifications for the PSM machines. 19 modifications have already been deployed. 2 modifications are in development. 4 RM modifications are ready to deploy. See below list of all 25 modifications.

29014	Sorter Under-Guard Fixings Replacement	Mod Deployed
29015	C4 Anti Tip Brackets Replacement	Mod Deployed
29016	AC Torque Arm Safety Brackets Installation	Mod Deployed
29017	Installation of Davit Arm Lower Mast	Mod Deployed
29018	C3 Conveyor Bump Stop Installation	Mod Deployed
29019	Improved Operator Workstation Fans	Mod ready to deploy
29022	Unused Chute Vinyl Strips	Mod Deployed
29023	Sorter Corner Infill Panels	Mod ready to deploy
29026	Fit padding to vertical beam at base of stairs to DWS 2	Mod Deployed
29029	2 Hand Controller Cable Parking Socket	Mod Deployed
29030	Induct Operator Table Edging Strip	Mod Deployed
29033	Fitting of modesty panels	Mod Deployed
29037	Tipper Release Button	Mod Deployed
29038	Installation of Operator Chair Rubberized Wheel Castors	Mod Deployed
29039	Conveyor C15 Safety Signage Installation	Mod Deployed
29040	Raise DWS Cross Bar	Mod Deployed
29043	C4 Gate Infill Panel	Mod Deployed
29046	Issue of Special Tool J194	Mod Deployed
29053	Tipper Door Mesh Brackets	Mod Deployed
29057	Additional Earth Bonding	Mod Being Prepared
29058	Eject Chute Netting	Mod Being Prepared
29059	Over Sized Parcel Recovery Puller	Mod Being Prepared
29062	Suction Cup SWL Labels	Mod Deployed
29065	Reject Chute Edge Protection	Mod Deployed
290??	AC Outside Spill Netting	Mod In Design

### Attachments:

- Photographs/images of the re-designed, modified PSM Under-Guard.
- Photographs/images of the safety modifications.

Yours sincerely



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**National Health, Safety & Environment Officer**

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