



Did you Know?

Paper Run Issues

Explanation

A good paper run is one of the essentials for a good production and a major topic, when it comes to printing speed. Very often, issues with the paper run are the reason for a low printing speed. Especially when it comes the specific printing materials like very thin or thick substrates the setting of the paper run can be challenging. Wrong air settings, on feeder or delivery as well as the conditions in the press room are just a few of the influencing parameters that are affecting the paper run.

All in all, issues with the paper run lead to a higher number of stops or trips at the feeder or delivery and thus reduce the time for production. To solve this issue, printers tend to reduce the speed of the press, as the paper is more stable at lower speeds. Of course, this also means a reduced output and thus less jobs that can be printed.

The following paper run issues can occur during print production

Causes and Influencing Parameters

Double Sheets

As double sheets, we define a bundle of sheets (at least two) that passes one of the several installed double sheet controls at the feeder table. By detecting a double sheet, the machine immediately stops the production. A double sheet running into the press can cause damages within the printing press.

The occurrence of double sheets is usually related to wrong air and general settings at the suction head. The suckers at the suction head take too many sheets at once and transport them onto the feeder table. There, they cannot be separated anymore which means a machine stop will occur.

At the suction head, ensure that your blowers are using the right amount of air to separate the sheets. Also check the air settings of the suckers and change the suction disc according to the material. In case you have an issue with static loading also use an anti-static device and check the conditions in the pressroom.

Keep in mind, Double sheets are generated at the suction head. As soon as they are on the feeder table, there is nothing you can do to avoid it.

Sheet Alignment Errors

The sheet arrival control at the front and side lays checks whether the sheet arrives within a defined time window. If the sheet arrives at the front lays outside the correct time

window, the feeder or the press stops. The status displays on the feeder touch screen or the printing unit touch screen show sheet arrival trends or malfunctions. The display changes color depending on the deviation from the reference value.

- Black Sheet arrival matches the reference value
- Yellow Sheet arrival is within tolerances
- Red Sheet arrival is outside of tolerances

The feeder/press stops. The displayed information distinguishes between the following cases:




- Early sheet or overrunning sheet
- Late sheet or missing sheet
- Misaligned sheet
- Sheet infeed/pull lay

Early or Overrunning sheets

Overrunning sheets are sheets that arrives before the front lays are in the alignment position. The grippers are not able to grip the sheet and transfer it to the first printing unit in a correct way. After the detection of an early or overrunning sheet the machine stops.

Depending on the stock properties and the press speed, entire sheets or sheet pieces may be drawn into the press until it comes to a standstill. This can cause several problems:

- The sheets or sheet pieces may be clamped between the gripper systems. When the press starts up again, they may be transported through several printing units and even reach the delivery. The sheets or sheet pieces may be folded several times during this process and cause press damage.
- The sheets or sheet pieces may bypass the grippers and remain in the press. If they are not removed, they may be transported in uncontrolled manner into the sheet guiding system when the press starts up again, and cause press damage.

Symbol	Meaning
	Correct sheet arrival left, black symbol: lead edge is correct right, black symbol: side edge is correct
	Sheet arrival: Trend towards early sheet left, yellow symbol: lead edge is within the correct time window. There is a trend towards early sheet arrival. right, black symbol: side edge is correct
	Sheet arrival: Early sheet/Overrunning sheet left, red symbol: lead edge is outside the time window, early sheet right, black symbol: side edge is correct

Overrunning sheets can be caused at the suction head or the feeder table. Everything that affects the transport of the sheet from the suction head to the front lays influences the time of arrival of the sheets. Too much air at the suction head can lead to sheets that are transferred earlier to the feeder table. Also, the air settings of the suction belt on the feeder table has a high impact. Depending on the substrate, too much or too less suction air has a negative effect. Especially by the use of very thin substrates the air needs to be decreased to a minimum. In case the vacuum is still too strong, open the bypass ventil of the suction belt.



Late or Missing Sheets

Just like overrunning sheets arrive at the front lays too soon, late sheets arrive too late or not at all at the front lays. The result is also a machine stop, as the grippers might not be able to grip the sheet correct which could lead to problems in the further transportation.

Late sheets have the same source of error as the overrunning sheets. The air settings at the suction head as well as on the feeder table are very important.

While with double sheets, the suction head transports too many sheets on the feeder table, there is a missed transport when it comes to missing sheets. The reason for missing sheets is usually caused by wrong settings at the suction head. The suckers are not able to take the sheet properly and transport it to the feeder table.

Reasons could be wrong air settings, wrong suckers, height of the suction head, etc.





Symbol	Meaning
	Sheet arrival: Trend towards late sheet left, yellow symbol: lead edge is within the correct time window. There is a trend towards late sheet arrival. right, black symbol: side edge is correct
	Sheet arrival: Late sheet left, red symbol: lead edge is outside the time window, late sheet right, black symbol: side edge is correct

Misaligned sheets

Sheets that are misaligned when they arrive at the front lays and its position can no longer be corrected are called misaligned sheets. As soon as a misaligned sheet was detected the feeder stops and machine reports a misaligned sheet.

Depending on the direction of the misalignment, we differentiate between a misaligned sheet at the operator or drive side





Misaligned sheets are most likely be cause by wrong settings at the suction head. The suction head transports the sheet onto the feeder table slightly slanting. The sheet is then transported by the suction tape into the first printing unit. Also, the forwarding roller settings could be set incorrectly.

Symbol	Meaning
	Sheet arrival: Trend towards misaligned sheet O.S. The sheet does not arrive simultaneously on D.S. and O.S. There is a trend towards misaligned sheets in direction of O.S.
	Sheet arrival: Trend towards misaligned sheet D.S. The sheet does not arrive simultaneously on D.S. and O.S. There is a trend towards misaligned sheets in direction of D.S.
	Sheet arrival: Misaligned sheet on O.S. Sheet arrival on D.S. and O.S. is outside a defined tolerance. The feeder stops.
	Sheet arrival: Misaligned sheet on D.S. Sheet arrival on D.S. and O.S. is outside a defined tolerance. The feeder stops.

Pull errors

If the side edge of the sheet is too far away from the side lay, a pull error is generated. As soon as a pull error was detected the press informs the customer by creating a notice with every pull of the pull lay. In addition to the graphic display, the system also emits an acoustic warning. A pull error does not cause a press or feeder stop.

Reasons for pull errors could be the air setting of the suction belt or the side lays. These air settings should be coordinated. If for example the suction belt has too much vacuum, the pull lay is not able to pull the sheet anymore, which leads to an issue. Another issue could also be that the paper stock is simply not centered correctly.

Symbol	Meaning
	Sheet infeed: Trend, sheet infeed too far on D.S. The sheet is too close to the stop prior to pulling. Remedy: Increase the pull distance.
	Pull lay: Trend, pull distance too great on D.S. The sheet is not at the stop after pulling. Remedy: Decrease the pull distance, increase the pulling suction, if necessary.
	Sheet infeed: Trend, sheet infeed too far on O.S. The sheet is too close to the stop prior to pulling. Remedy: Increase the pull distance.
	Pull lay: Trend, pull distance too great on O.S. The sheet is not at the stop after pulling.

Overrunning Sheets Delivery

An Overrunning sheet in the delivery is defined as a sheet that passes the delivery sheet control. It ensures that no print sheets are conveyed beyond the delivery pile. The printing press stops when a print sheet:

- overruns the delivery pile
- gets stuck to the gripper
- is pulled along by the gripper

The reason for overrunning sheets at the delivery could be wrong air settings, wrong sheet brake setting or simply grippers that open too late and transport the sheet too far right into the delivery sheet control.

Lost sheets

Lost sheets are sheets that are lost while running through the press. The machine recognizes but doesn't stop the production.



Summary

Issues with the paper run are one of the major parameters with a high impact on the overall performance of your press. Not being able to transport substrates through the press while running at higher speeds reduces your average production speed and thus the number of sheets you are able to print within a specific time frame. Also, feeder and delivery trips reduce the net output.

Understanding paper run and how you can adjust settings in regard to certain issues helps you to speed up your print process and increases your overall production.

If you have problems with the paper run and don't know how to improve it, check our online training possibilities, or get in touch with Heidelberg for specific training. Remember, low speed means less printed sheets and less money.