

 THE EXPERTS IN INK TRANSFER TECHNOLOGIES



MDC DOCTOR BLADE  
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MAXIMIZING DOCTOR BLADE  
LIFE: A PRIMER FOR PRINTERS.



**Daetwyler**

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## PRESS OPERATION CHALLENGES



Day-to-day press operation often comes with challenges. One of the most common – unpredictable doctor blade failures – also comes with a number of additional concerns such as safety, quality, service and, cost. As technical advisors for professional print operators across the country, Daetwyler encounters these situations on an almost daily basis. This article will address multiple “problem” areas regarding optimum press operation and doctor blade life, while also reviewing ways to reduce risks, frequency, and side effects of doctor blade failure.

### SAFETY

Many companies claim that safety is their number one goal. While the position is certainly to be applauded, this does not always happen in practice. Press teams are under pressure to meet schedules to preserve the company’s bottom line, and the easiest way to achieve that is to shortcut some safety guidelines and simply clean up messes before anyone notices.

Take for instance a scenario such as a major increase in print volume with tight delivery timelines. It is not uncommon for operators to skip steps during changeovers such as not replacing items which can lead to unscheduled messes when systems fail. It is an accident waiting to happen all because of a decision to push quickly through the changeover. In a competitive and

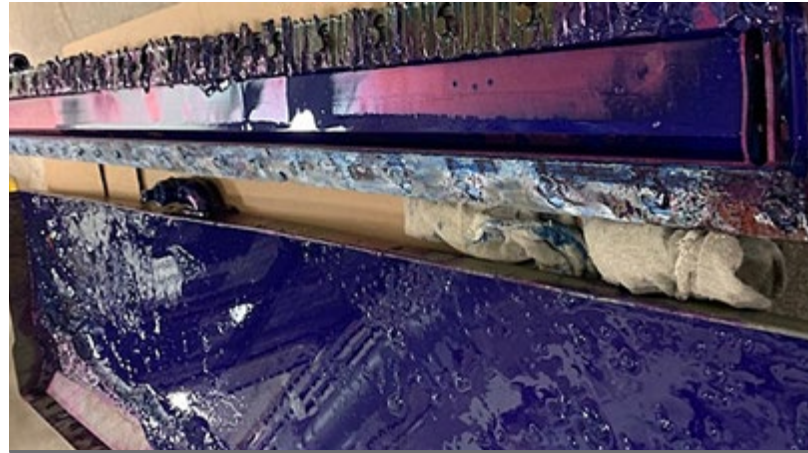
fast-paced manufacturing environment, there must be a healthy balance between making safety a “number one” priority while also protecting profitability by properly utilizing the necessary tools and procedures for completing projects and achieving company goals.

### QUALITY

Quality is another area of concern that pressrooms often struggle with balancing against productivity. Effective, trouble-free doctoring is critical for consistent, high-quality outputs. Poor doctoring leads to substandard performance and lower-quality outputs related to dirty print, leaky chambers, density, and dot gain. All these issues can directly impact customer satisfaction, which ultimately damages profitability.

Under-processed material and increased setup times due to clean-up of uncontrolled messes have the same impact – inefficiencies that add up to decreased productivity, more waste, increased costs, and once again, poor bottom-line financial performance. The adage that doing things right the first time costs less than fixing problems afterward is a smart rule of thumb to weigh against many decisions regarding doctor blades. With a realistic quality benchmark in mind that is an achievable standard – these decisions become easier for teams to make across each and every job.

*At first, faster changeovers seem attractive to press operators because of perceived increases in productivity. However, the truth can be different.*



## SERVICE

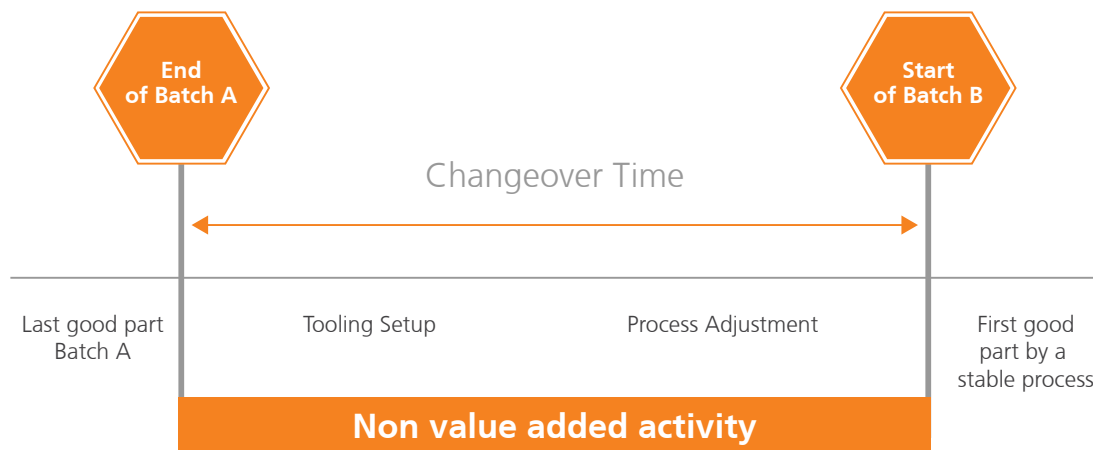
When jobs get smaller, one of the simplest ways to maintain or stabilize revenue is to complete a greater number of total jobs in the same time period. The same holds true for businesses looking to maximize their active time on press by scheduling additional jobs to fit into tight run times on press.

As the industry continues to see reductions in job sizes and requests, it becomes more and more important to speed up change-over times in order to accommodate multiple runs in a single day or week. When teams are established to conduct QCO (Quick Change Over) evaluations, it becomes clear that a significant loss of time is attributable to changing doctor blades and end seals. The definition of "non-value-added activity" is an

action taken that does not increase the worth of what is delivered to the customer. Changeovers fall solidly within this definition – and the longer they take, the more they ultimately cost the company in terms of production and on-time delivery.

At first, faster change overs seem attractive to press operators because of perceived increases in productivity. However, the truth can be different. If QCO activities lead to declines in print quality, the actual time saved is quickly replaced by the need to fix improper settings or even complete another changeover for the same job. Likewise, if a quick change over results in damage to equipment, hard costs for maintenance increase which can eliminate any savings gained from productivity.

## WHAT IS A SET UP OR CHANGE OVER?



*"Quick Change Over" is a method to reduce the time spent going from producing one batch of material to the next through the use of a team.*



*Pressrooms often struggle with balancing price vs. value. Calculating actual ROI is a smart way to make profitable long-term decisions.*

Understanding that process improvement teams' primary focus should be to remove all "non-value-added activities," it makes more sense to utilize long-life doctor blade and end seal products that can last the entire work week or until the next scheduled blade change, as opposed to doctor blades and end seals that require changes during each and every change-over.

There will always be occasions in which specialty setups may be necessary, but besides those instances, the complexity of each change-over increases the amount of down-time when presses aren't producing work.

The advancements in doctor blade technology for longer life and anilox protection have proven effective across a wide variety of applications, which means frequent blade changes can add up to huge potential wastes in terms of valuable press time as well as associated material costs. Being able to eliminate non-value-added activity should be one of the primary influencers of change-over procedures – with a final decision that reflects a company's business model and production goals.

#### **COST**

Many businesses still regard doctor blades and end seals as consumables only rather than important tools for high-quality output. Because of this, pressrooms tend to struggle with the perceived price versus the value and savings that quality doctor blades provide.

This is why an ROI calculator is so important. It allows press operators and businesses to quantify the true costs – both in terms of materials as well as in labor and set up – of selected materials, equipment, and procedures. What these calculations often reveal is that what seemed to be a lower initial price actually cost companies thousands of dollars in lost productivity.

## Using a Return-On-Investment (ROI) Model for Equipment and Materials Purchasing Decisions



Below illustrates an annual savings when using a Longlife doctor blade setup in comparison to a standard doctor blade set up.

Longlife Doctor Blade Package	Item Costs	Number of Blades Per Press	Cost per Set Up	Days Operational	Press Downtime Costs Per Hour	Days between change	Stops/Changes Per Year	Costs per year
Metering blade	\$20.00	10	\$200.00					
Containment blade	\$10.00	10	\$100.00					
End Seals	\$3.00	20	\$60.00					
Blade and Seal Costs per setup			\$360.00				52.00	\$18,720.00
Downtime				300	\$500.00	7	42.86	\$21,428.57
						Total		\$40,148.57

Standard Doctor Blade Package	Item Costs	Number of Blades Per Press	Cost per Set Up	Days Operational	Press Downtime Costs	Days Between Change	Stops/Changes Per Year	Costs per year
Wiping Blade	\$6.00	10	\$60.00					
Containment Blade	\$6.00	10	\$60.00					
End seals	\$1.50	20	\$30.00					
Blade and Seal Costs per setup			\$150.00				104.00	\$15,600.00
Downtime				300	\$500.00	1	300.00	\$150,000.00
						Total		\$165,600.00

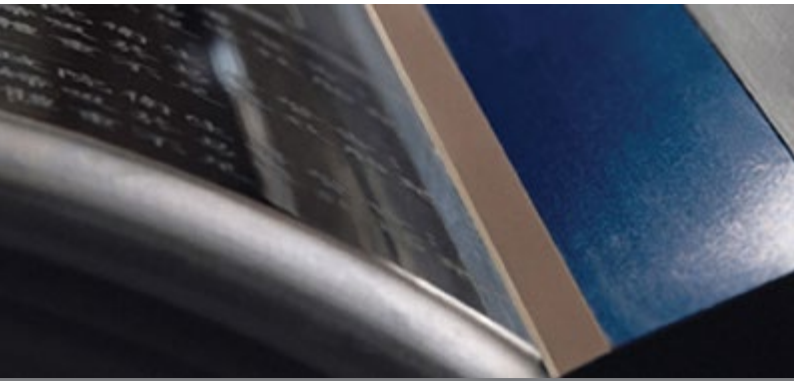
  

Number of Presses	1
Annual Blade and Seal Spend with Standard package	\$15,600.00
Annual Blade and Seal Spend with Longlife Package	\$18,720.00
Annual Blade and Seal Savings	\$(3,120.00)
Downtime with Standard Package spent changing blades/seals	\$150,000.00
Downtime with Longlife Package spent changing blades/seals	\$21,428.57
Total spend with Standard Package	\$165,600.00
Total spend with Longlife Package	\$40,148.57
Total Savings with Longlife Package	\$125,451.43



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## LONG-LIFE DOCTOR BLADES



Long-life blades typically have a single or multi-layered coating applied to the doctor blade tip and may be radius or rounded, lamella, or bevel edge. The coating helps protect the integrity of the steel for improved blade performance and extended durability when compared to traditional carbon steel materials. The coating also increases lubrication and offers much lower friction values.

The doctor blade wear particles are greatly reduced in size to help combat anilox score lines. As such, these blades require changing far less frequently than blades that are more prone to wear, uneven edges, bending or skewing, and other normal deterioration over time that can negatively impact print performance or damage other press equipment.

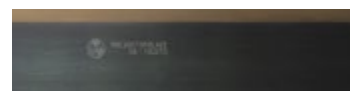
### DAETWYLER'S LONG-LIFE DOCTOR BLADES INCLUDE:



Gamutstar



Optilife Plus



Starlife



Optilife



Longlife



Ultralife



Durapro

## STEPS PRINTERS CAN TAKE TO BEAT THE AVERAGE



**Incorrect**



**Correct**

Horizontal Chamber Alignment

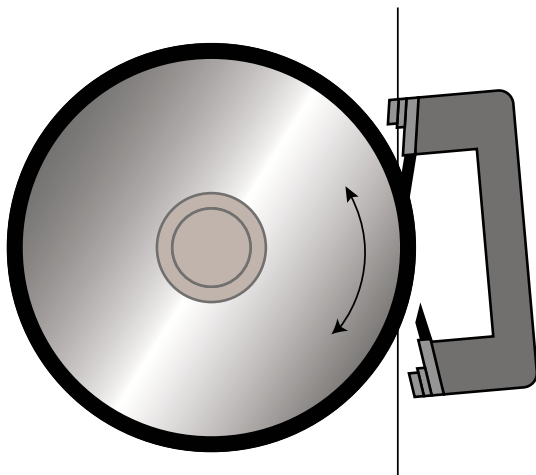
### PREVENTATIVE MAINTENANCE

Too often printers lose sight of the importance of deck calibrations and PMs as there is an assumption that these activities cut into press productivity as non-value-added tasks. At some point, however, the question becomes whether to “pay now” for proper preventive maintenance or “pay later” when shutting down for unexpected breakdowns and unplanned downtime. The latter typically has a far worse negative impact on the bottom line.

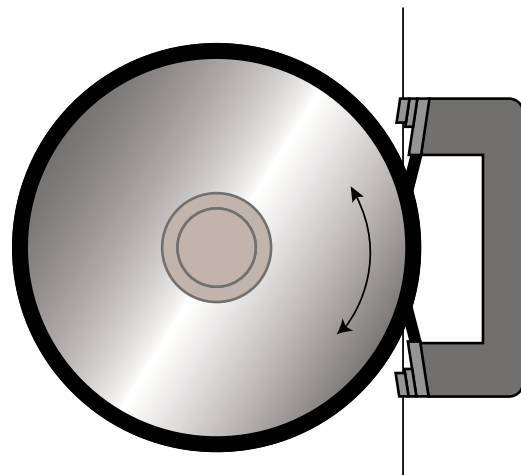
To ensure doctor blades perform as designed, it is essential that doctor blade chambers are calibrated on a regular basis or as mechanical conditions change.

For chambered doctor blade units, the alignment is critical so that the top and bottom blades contact the anilox roller at the same time to properly meter a consistent ink/film thickness, and to create a leak-free chamber.

A good way to check the contact is to engage an empty chamber (with no end seals) to the anilox and use a feeler gauge to make sure the amount of consistent drag is identical on both sides of the chamber, or make necessary adjustments as needed. Another important step for proper chamber alignment is to make sure the chamber is set parallel to the anilox by using a level to check position.



**Incorrect**



**Correct**

Vertical Chamber Alignment

## SCHEDULED DOCTOR BLADE CHANGES



Those unpredictable doctor blade failures can be costly in many ways – safety, quality, service, and cost. Scheduled doctor blade changes optimize the performance of assets to increase the reliability and availability, while minimizing costs and reducing those operational risks. Without having some sort of cleaning checklist or CILT (clean, inspect, lube, and tighten) schedule in place, those unpredictable doctor blade failures will cost precious downtime from cleaning up big messes and possibly missing critical customer deliveries.

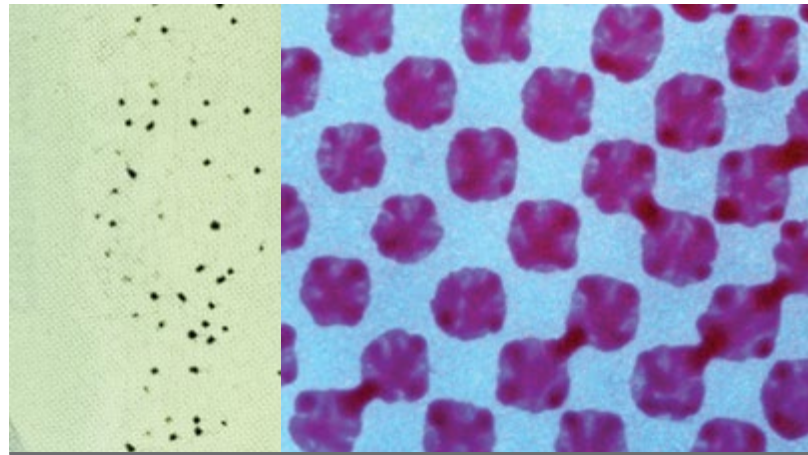
Maintenance schedules and check lists help identify the who, what, when, and where in the assignment of responsibilities – ensuring that deck chambers are being cleaned and set up to stated standards and expectations.

A simple audit of the cleaning checklist will indicate whether the process is being followed or if additional training is necessary to enforce standards and maximize doctor blade life.

[illegible]



*Where long-life blades ultimately excel is in their ability to reduce overall consumable costs, minimize the need for frequent blade/seal changes, and present favorable conditions for maintaining press uptime and profitability.*



Common Print Problems

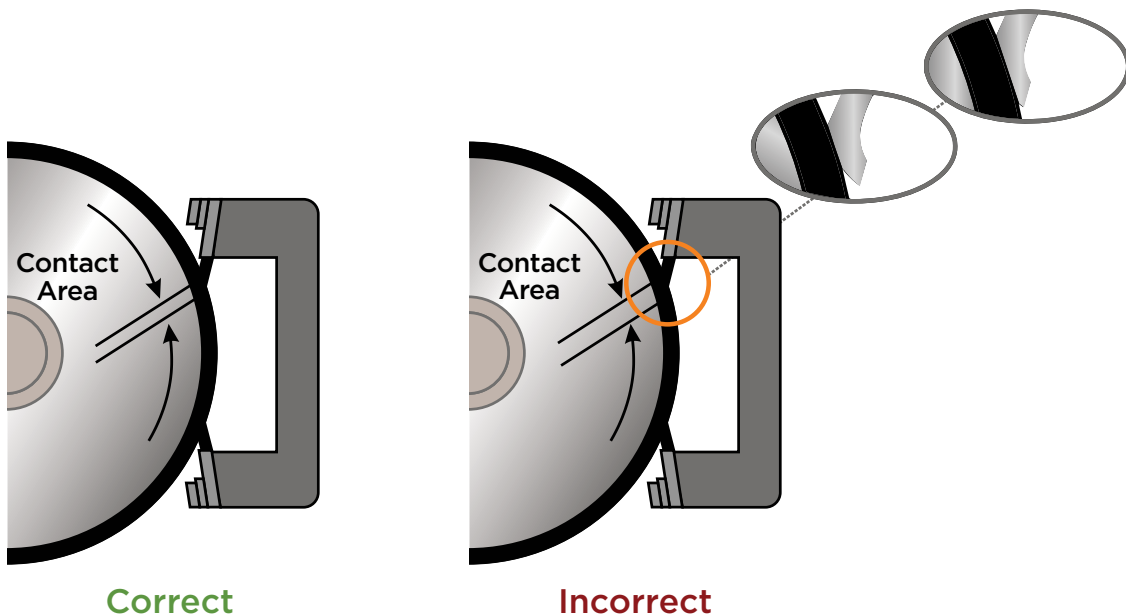
### PRESSURE CONTROL

On a CI press, the doctor blade chambers can be controlled by either manual or pneumatic adjustments to increase or decrease blade pressure depending on the circumstance.

Too much pressure on the doctor blade tip will cause more contact area on the anilox roll, allowing more ink to transfer onto the plate material making it difficult to control optimal ink/film thickness. When this occurs, printers will often struggle with dirty print and dot gain issues, controlling tonal values and impacting overall print quality.

Often when a new set of doctor blades are installed, the printer forgets or doesn't understand the importance to back the chamber out to the home position causing a larger contact area on a new set of blades.

This can also lead to premature doctor blade wear, anilox wear, ink contamination, and anilox scoring. More and more companies are realizing the benefits of using long-life doctor blade and end seal materials. **Safety, quality, service, and cost** are all equally important and balance the importance of using long-life doctor blade packages over time and across multiple jobs.





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He also held management positions in the pressroom and was Process Lead being certified in Lean Six Sigma and WCOM – World Class Operations Manufacturing.