



1. What makes Daetwyler different from any other blade supplier?

Commitment - Max Daetwyler Corporation provides doctor blades that meets or exceeds our customer's expectations in terms of quality, responsiveness and innovation. In an effort to achieve our vision, we strive for continuous improvement. Our organization is committed to research and development of innovative technologies for the existing needs of the printer while working hard to anticipate future demands.

Quality - Very few highly specialized steel manufacturers in the world are capable of producing doctor blade steel of the utmost purity. Our base material is special high grade steel with 600 Hardness Vickers, and is a product of our superior suppliers. MDC's own metallurgists supervise further refinement into precise strip-steel. Each step is closely monitored to maintain stringent control of the material's mechanical properties and to ensure the highest purity. This insures that the material reaching the final production stage is perfectly straight, absolutely uniform and flawless. To meet precise quality standards, our doctor blades are manufactured with specialty machines designed and built by Daetwyler. These proprietary machines allow us to customize our blades to fit our customer's specific needs.

Finally, our specially designed packages guarantee 100% protection of our doctor blades and are available in different packaging options. This will ensure that MDC Doctor Blades reach our customers in perfect condition, regardless of how far the package travels.

Market Approach - MDC designs doctor blades specific for each application. These specially designed blades are created to control or eliminate press issues and printability problems. All our products are manufactured in Huntersville, NC with the exception of our coated products of Longlife, Ultralife, Starlife, GoldStar and Soft Doctor Blades. These blades are manufactured in our headquarters facility in Switzerland.

Training and Technical Assistance - We offer on-site technical assistance and training. Free Doctor Blade seminars at your facility covering variations in blade type and thickness, correct angles, correct pressure, correct set-up, and safety. One to two hours of classroom instruction is targeted to reducing anilox wear and increase blade life and print quality.

On-Press Technical Assistance – Daetwyler offers a unique approach to solving printability problems through our Doctor Blade technical staff. Daetwyler continuously brings new doctor blade technology to our industry to solve flexographic printing problems such as streaking, anilox score lines and press chatter. We bring years of experience to the pressroom floor and work side-by-side with the press crews to solve difficult issues.

Doctor Blade Evaluations – We are continuously evaluating “worn” doctor blades from various printing plants to determine wear angles, wear characteristics, blade life, metallurgical breakdown and/or areas of concern. By correlating this data with that of your anilox suppliers, ink suppliers and press crews, we make written recommendations to improve our product's performance, improve print quality, reduce defects and lower waste and downtime. These recommendations may involve on-site visits to gather additional data. We then communicate our findings and corrective measures to your staff.

Packaging - All packaging, regardless of the chosen option, maintains the same cost structure as quoted. MDC does not charge additional fees for the specialized packaging options of rolls, custom cut-to-length roll form, custom cut-to-length in individual boxes and custom cut-to-length in long flat U-boxes.



2. How long should a doctor blade last?

This is one of the questions we are most often asked during our technical seminars and one which there is no definite answer. Good blade life is a direct result of:

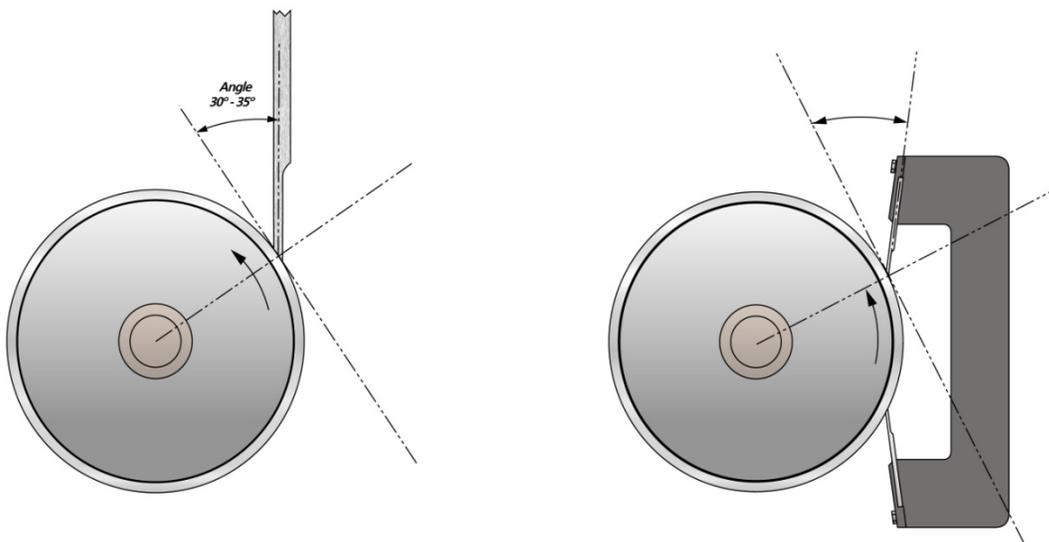
- Proper set-up of blade, blade holder and end seal
- Correct match of blade type to anilox screen count and volume
- Correct match of blade type to ink (solvent, water, UV, metallic)
- Lightest possible blade pressure
- Good press maintenance
- Clean and filtered ink

3. What is the correct amount of blade pressure?

The correct blade pressure does not follow a formula or number. Since all presses have differences in width, geometry, speeds, holder designs, inks and pumping systems, blade pressures are relative to their press and their application. A good rule of thumb – as little as possible and as much as needed to achieve a clean consistent wipe. Many pressman over pressure a blade assembly to compensate for things such as wavy blades (maybe from poor holders or unclean holders), incorrect end seals (wrong material or geometry doesn't match the anilox and holder) or incorrect chamber alignment. Excess pressure often leads to poor blade performance, lower blade life as well as lower anilox life.

4. Which way does the doctor blade tip go?

The blade tip or ground side of the blade always faces away from the anilox roll. The drawing below identifies the correct direction.



5. What type of blade or blade tip should I be using?

Daetwyler doctor blades are designed specifically for the application they are used in. A blade application sheet is located inside this sales binder which identifies specific blades for specific problems on the press. For general guidelines, our first step is usually identifying the anilox line screen and matching the blade tip to achieve the best possible wipe as well as longevity. The chart below can be used as a reference to determine a correct match.



Blade Tip Thickness	Anilox Line Screen				
	400	600	800	1000	1200
75 microns					x
95 microns				x	
125 microns			x		
150 microns		x	x		
200 microns	x	x			
250 microns	x				

*These guidelines represent the use of a stepped edge (commonly known as a lamella tip). Bevel blades are sometimes used, but their specific beveled angle should be determined by your technical specialist at Daetwyler.

Common thicknesses for blades are .006", .008" and .010". As a general guideline, .006" is used mainly in narrow web printing, .008" is mainly used in wide web applications and .010" is used in higher speed wide web presses.

6. Should my containment blade be wider than my wiping blade?

If steel blades are used on both the wiping and containment side, the blades should always be the same width. The only case where the containment blade should be wider than the wiping blade is when a plastic material is used. This plastic material should be no thicker than .020" and should not be more than 1/8" wider than the wiping blade.

7. What type of blade should I use on abrasive inks such as Titanium dioxide white inks?

Daetwyler offers six variations of doctor blades with specialized coatings covering the blade tip. These coatings vary in hardness and the choice is mostly determined by the inks and press size. For wide-web applications, Daetwyler's Starlife is a common doctor blade used to slow down wear due to the heavy pigment load of hardened particles in these inks. If higher line screen anilox rollers are used to transfer these abrasive inks, then Daetwyler's Goldstar is suggested. The Goldstar has an additional component used to better lubricate the contact point and protect the anilox roll. For narrow web applications, a Longlife blade is often used. This blade has a special coating (originally designed for gravure chrome cylinders) to reduce wear on both the anilox and the blade when light pressure can be achieved because of the shorter blade length.

8. What is special about doctor blade steel used to manufacture Daetwyler doctor blades?

MDC starts by making sure we only use the finest steel. Under strict ISO Certification Standards, our on-staff Metallurgist at Daetwyler SwissTec in Switzerland inspects every roll of steel scheduled to become MDC doctor blades. The manufacturing process requires that several steps are followed and specific tests are performed to insure only top quality steel is being used to produce our blades. MDC will first check on non-metallic inclusions, which may not exceed a certain size and amount.

The next test will be a chemical analysis that determines the chemical composition of the steel. These test results will reveal the exact chemical composition of the steel, which must meet the specifications set by MDC for the approved chemical composition. Once the roll of steel meets all of the MDC specifications and



our metallurgist is satisfied with the quality of the steel, the steel mill is giving charge and roll numbers. (Roll numbers help to track and identify each roll and to make sure when the steel arrives at MDC for use it has met the same quality specifications of the tested steel and is part of our ISO certification standards.) At this time, approval is given to proceed with the rolling of the specified thickness. Our Metallurgist will then repeat all the aforementioned tests on every specified thickness (roll) delivered to MDC.

The second set of test results must match the first set of test results for MDC quality specifications. In addition to these tests, the steel must now pass additional quality inspections. The steel hardness is measured, as well as the material's straightness, thickness, flatness, and surface finish or smoothness. In this stage, the grain structure of the steel is closely examined. A key element for a good, long lasting doctor blade is the uniform displacement of the carbide particles throughout the steel. When looking at the grain structure of steel, the key factors that are checked are particle size, the amount of carbides, and that the amount of carbides is spread evenly throughout the steel. Extra attention is given to the grain structure details when producing steel for Daetwyler. Again, the steel must meet all of the MDC specifications or the material will be rejected.

Our research and development requires wear tests to be done using laser engraved ceramic rollers, with line screens comparable to those common to flexographic printing. A doctor blade is placed in a Daetwyler designed test unit, the system is filled with ink and the entire test is performed in a very controlled environment using specific times and speeds.

After testing, the doctor blades are removed from the test unit, measured and examined by light microscopy. The degree of wear is then determined and this amount must meet MDC specifications. Throughout the entire manufacturing process, from the melting bath to the finished product, Max Daetwyler Corporation doctor blades are subject to strict inspections to guarantee their purity and quality. By setting these high manufacturing standards, MDC guarantees our customers are using doctor blades that surpass others for quality and performance.

9. When should I use plastic blades?

On wide-web applications, plastic blades are often used as thin containment blades to help control "back doctoring". Back doctoring occurs when excess ink film still remains on the anilox surface after the printing plate contact. As this ink film returns to the containment side of the chamber, the ink's hydraulic force lifts a thinner plastic blade allowing the ink to pass through and return to the chamber. The thickness of this material is determine by the press's wash-up system. If "on-board" washing is used (for example W & H turbo wash) internal pressure from the washing solvent requires a containment blade with a thickness of .020". For other applications, a .015" polyester may be used.

Plastic is mainly used as a wiping blade in corrugated and envelope printing applications and is rarely used in flexible packaging or label printing. It may a good choice for many coating applications which have certain chemicals which may be harmful to steel doctor blades.

10. How do I fix a leaky chamber?

Leaking chambers can be caused by over pressure, improper end seals (materials or design), improper blade installation or wrong specified doctor blades. As a precautionary measure, chambers should always be checked for alignment and levelness as this can cause leaking as well. Your technical Daetwyler specialist can specify and check for this problem.