

COSMETIC FINISH STANDARD**MACHINE COVERS****DSF 3.2.3****Definition:**

This standard defines the minimum acceptable cosmetic criteria for all covers of all ASM (DEK) Printing Machines and its subsidiaries.

ASM (DEK) Application:

This standard applies to any ASM (DEK) covers used on a machine, or supplied as a spare by the vendor.

All components must meet the criteria set out in this standard, unless a concession has been granted by ASM (DEK).

Where conflict is found between this standard and any other specification, the priority should be as follows:-

- | | |
|--|-------------------------------------|
| 1 st Customer Specified Requirement. | 3 rd Purchasing contract |
| 2 nd ASM (DEK) Engineering specification. | 4 th This standard |

This standard is not an exhaustive list, any component displaying a non-specified symptom which may cause a customer issue should be reviewed only by authorised ASM(DEK) personnel.

Only upon this approval can the component be released from ASM (DEK) or its vendor.

Glossary:

Damage: Any unexpected change to the surface can be labelled as damage that affects its value, purpose & appearance.

Front Object: Any part that is frequently seen by the end user is defined as a front object. For Machine Covers this includes:-

a) Front Top Cover; b) Front Left Panel; c) Front Right Panel; d) Front Lower Panel.

Rear Object: Parts that do not belong to the front group, but can be seen by the end user including:-

a) Rear Top Cover; b) Rear Left Panel; c) Rear Right Panel; d) Rear Lower Panel.

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COSMETIC FINISH STANDARD**MACHINE COVERS****DSF 3.2.3****ASM (DEK) Discolouration-difference of colour- Inspection procedure:**

Mount the item to be inspected onto the machine. If not possible, ensure that it is in the same orientation as used on the machine.

Set the distance between the item and the inspector to 2,5metres.

1. Ensure the lighting system in the inspection area is normal and that light intensity is in the region of 800 LUX.
2. Without using any optical magnifying equipment, look at the item with the naked eye only. (The inspector is allowed to wear their normal prescription glasses but these must be clear transparent glasses and not coded glasses or sun glasses).
3. If the difference of colour is visible within 30 seconds, and the item is set to the correct distance; it can be considered **rejected**.
4. If the difference of colour is hardly visible or completely invisible within 30 seconds and the item is set to the correct distance; it can be considered **acceptable**.
5. Ensure all cover parts on view for one machine is a colour match.
6. A value of $\Delta E < 1$ between painted part & released colour sample is **acceptable**.
For detail, see Notes page 5.

ASM (DEK) Visual Inspection procedure:

Mount the item to be inspected onto the machine. If not possible, ensure that it is in the same orientation as used on the machine.

Determine whether it is a Front Object or Rear Object. See **Glossary**.

Front Object: The distance between the object and the inspector is 0.7metres.

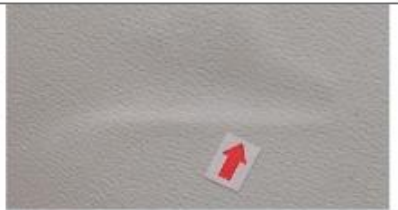
Rear Object: The distance between the object and the inspector is 1.0 metres.

1. Ensure the lighting system in the inspection area is normal and that light intensity is in the region of 800 LUX.
2. Without using any optical magnifying equipment, look at the damaged area with the naked eye only. (The Inspector is allowed to wear their normal prescription glasses but these must be clear transparent glasses and not coded glasses or sun glasses).
3. If the damage is clearly visible within 30 seconds at the correct distance, the part is **rejected**.
4. If the damage is hardly visible or completely invisible within 30 seconds at the correct distance, the part is **acceptable**.

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COSMETIC FINISH STANDARD**MACHINE COVERS****DSF 3.2.3****ASM (DEK) Acceptable Criteria:**

Type of Damage	Straight /Spline	
Length	No greater than 5.0mm in length if approaching maximum width	
Width	No greater than 0.3mm at the largest width measured	
Visual Inspection	See Visual Inspection Rules	
Damage qty allowed	No greater than 3 lines over total outer surface of the panel being checked.	

Type of Damage	Concave Dent (circle / any form)	
Damage Point	No greater Dia 2.0mm	
Damage of any form	No greater than area of 5.0mm x 5.0mm	
Visual Inspection	See Visual Inspection Rules	
Damage qty allowed	No greater than 3 ea over the total outer surface of the panel being checked.	

Type of Damage	Convex Protrusion (circle / any form)	
Damage of any form	No greater than area of 5.0mm x 5.0mm	
Height	No greater than 1.0mm	
Visual Inspection	See Visual Inspection Rules	
Damage qty allowed	No greater than 3 ea over the total outer surface of the panel being checked.	

Type of Damage	Uneven paint at Edge or Corner (drip / residue / any form)	
Length	No greater than 25.0mm	
Thickness	No greater than 1.5mm	
Visual Inspection	See Visual Inspection Rules	
Damage qty allowed	No greater than 1 ea per panel.	

Type of Damage	Paint peel off (chip off / peel off)	
Damage of any form	No greater than area of 1.0mm x 1.0mm	
Visual Inspection	See Visual Inspection Rules	
Damage qty allowed	No greater than 3 ea over the total outer surface of the panel being checked.	

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COSMETIC FINISH STANDARD**MACHINE COVERS****DSF 3.2.3****ASM (DEK) Acceptable Criteria:**

Type of Damage	Uneven surface of painting (rough surface or paint run)	
Damage of any form	No greater than area of 25mm x 25mm	
Visual Inspection	See Visual Inspection Rules	
Damage qty allowed	No greater than 2 ea over the total outer surface of the panel being checked.	

Type of Damage	Loss of Textured Finish (smooth surface)	
Damage of any form	No greater than area of 25mm x 25mm	
Visual Inspection	See Visual Inspection Rules	
Damage qty allowed	No greater than 2ea over the total outer surface of the panel being checked.	

Type of Damage	Discoloration (Difference of colour)	
Visual Inspection	See Visual Inspection Rules	

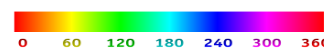
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Notes

DIN EN ISO 11664-4/ CIELAB.

Colour differences are increasingly being described by means of colour coordinates. A formula is used which combines & compares these coordinates to generate an ΔE value (**total** colour difference). ΔE (Delta-E) is a single, positive number that represents the 'distance' between the colour sample (standard) and a colour match (painted part). An ΔE of 1.0 is the smallest colour difference a human eye can detect. Traditionally three components have been identified that combine to make a colour:-

- **Lightness.** Tone. The amount of black (0) or white (10) added to a colour.
- **Chroma.** Purity. A 100% saturation means no additional grey therefore the colour is completely pure.
- **Hue.** Colour. Described as an angle in a 360° degree colour palette.



Each component now has a colour space (tolerance) and this is expressed as a colour coordinate (colorimetric value), which can have a positive or negative value.

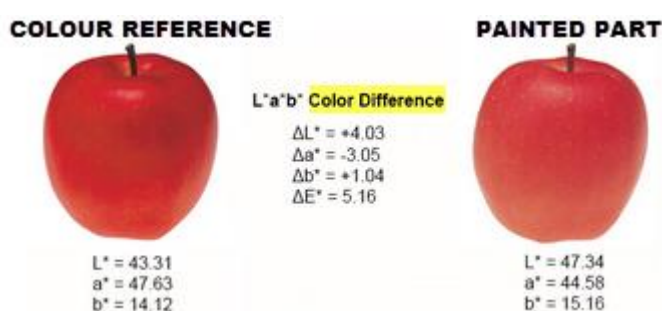
- **Lightness.** L^* (L^* painted part minus L^* colour sample) = difference in lightness and darkness (+ = lighter, - = darker).
- **Chroma.** a^* (a^* painted part minus a^* colour sample) = difference in red and green (+ = redder, - = greener)
- **Hue.** b^* (b^* painted part minus b^* colour sample) = difference in yellow and blue (+ = yellower, - = bluer)

To determine the **total** colour difference between the painted part and colour sample the three colour coordinates (**L**, **a** & **b**) from each are identified & recorded using a spectrophotometer. The numerical difference of these coordinate values from the painted part & colour sample are identified as the colour difference. (ΔL , Δa & Δb)

The **total** colour difference is calculated by taking the three values from the colour difference (ΔL , Δa & Δb) and including them in the following formula:-

$$\Delta E = (\Delta L^2 + \Delta a^2 + \Delta b^2)^{1/2} \quad \Delta E = \text{total colour difference}$$

The ASM (DEK) acceptable total colour difference is $\Delta E < 1$



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