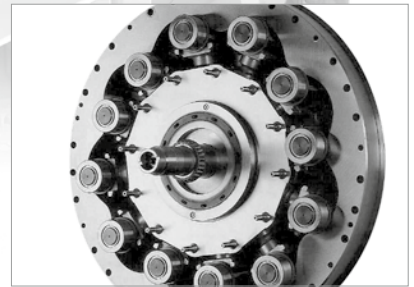
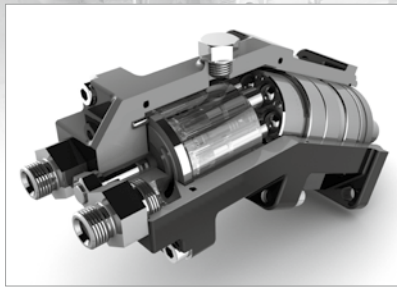
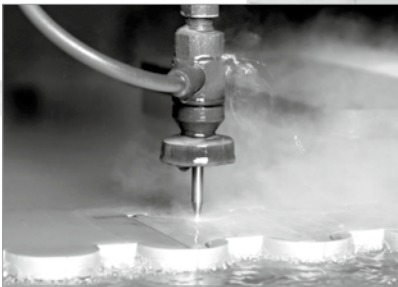


**oerlikon**  
balzers

# Reliable hydraulic power.

BALINIT® DLC for long-living hydraulic- and high pressure piston pumps.



**General Engineering**



## BALINIT® coatings deliver performance and efficiency.

Radial- and Axial Piston pumps are used to transform the energy of diesel engines into extreme working forces. These are required in earth movement construction machines, cranes or industrial applications like elevation of off shore oil platforms. Core of hydraulic drives are hydraulic pump and motor. They operate at high hydraulic oil pressure. This requires component designs with very small tolerances. At high load and tight tolerances even hardened or nitrided steel components or components made of bronze suffer by wear because of too high friction (nitride components) or too high wear (bronze components). High pressure piston pumps are used to produce extremely high forces (e.g. metal working industry, water jet cutting,...). Plunger, camshaft and seals can suffer by sliding- and abrasive wear. BALINIT® DLC (diamond like carbon) coating combines in a unique way low friction and high hardness and is therefore ideal for highly loaded precision components of axial-, radial- and high pressure piston pumps.

## Your advantages with BALINIT® DLC coated piston pumps components.

- High protection against seizure due to low friction
- Good resistance against abrasive particles due to high hardness
- Little stick slip and starting torque
- Increased efficiency due to reduced friction

## Use constantly low actuation forces and resistance against premature wear.

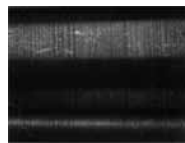


### BALINIT® C (WC/C) coated roller show:

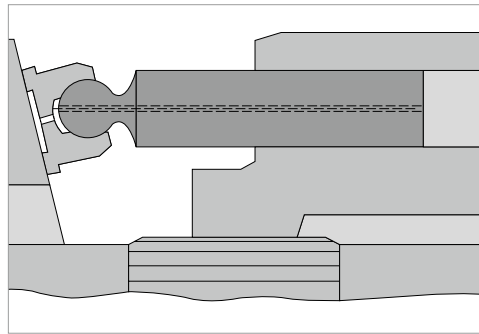
- No seizure
- After 58,000 revolutions nearly no wear
- Static friction between roller and piston decreased by 40%
- Losses at start-up reduced by 18%
- Less "stick-slip"



Nitrided piston



BALINIT® coated piston



### Test conditions

Pressure: 400bar  
Speed: 3000 rpm  
Time: 1000 hours

BALINIT® DLC coated pistons prevent wear at highly loaded plungers of axial piston pumps compared to nitrided pistons.

## We recommend: BALINIT® DLC for optimum values.

Coating	Coating material	Micro-hardness (HV 0.05)	Typical thickness	Coefficient of friction $\mu$ against steel (dry)	Colour
<b>BALINIT® DLC</b>	a-c:H	2500	2-4 $\mu\text{m}$	0.1 - 0.2	Black-grey
<b>BALINIT® C</b>	WC/C	1000	2-4 $\mu\text{m}$	0.1 - 0.2	Anthracite

**There's much more to talk about – please get in touch to discuss what we can do to improve your business.**

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