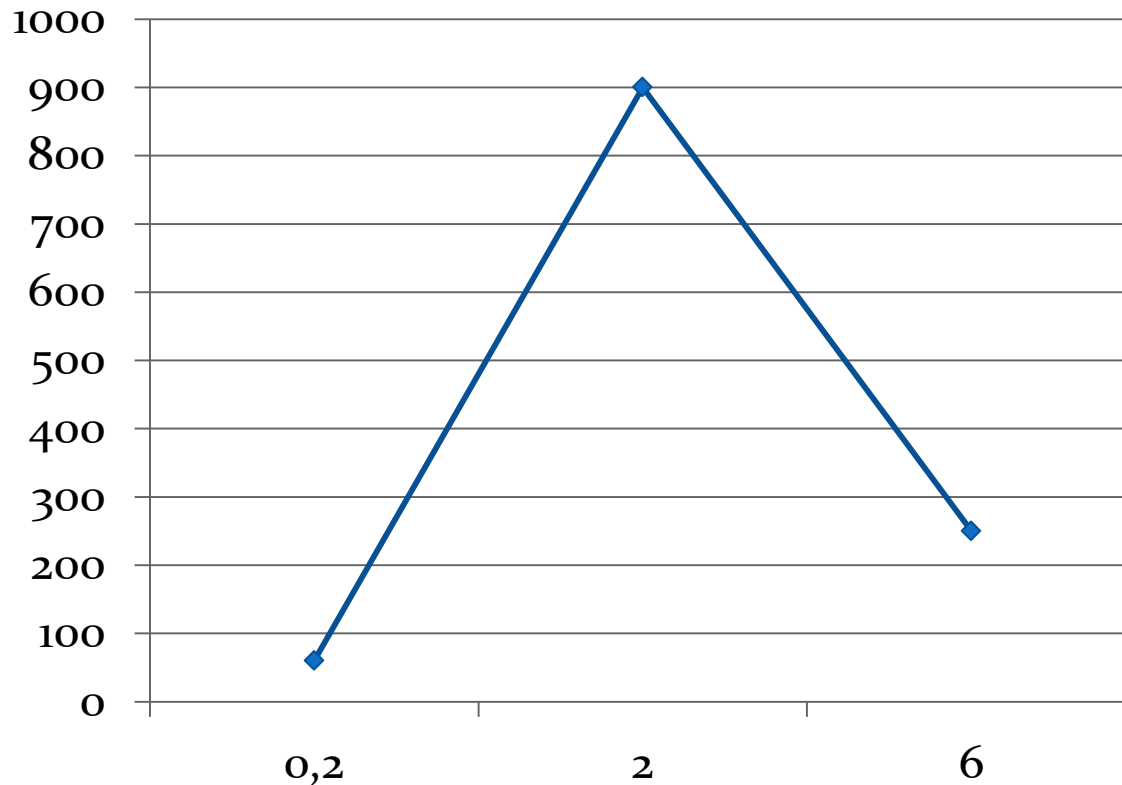


Riveted chains

Hardening method – Pins & Bush

Induction process



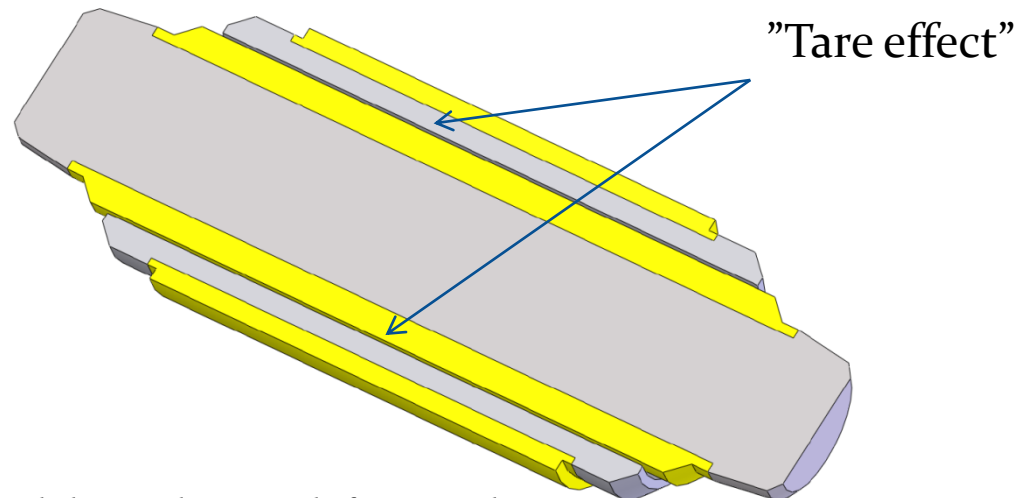
- Low Frequency hardening machine (1-3 kHz)
- Time aprox. 5-6 sec.
- Frequency, size of item, alloy etc. can influence the hardenes depth
- Surface hardness HRC 40-58
- Hardening depth 0,5-1,5mm
- Not graduated hardness layer
- Carbon level 0,4-0.45%



Riveted chains

Hardening method – Pins & Bush

• Pin riveted 1 (Induction hardened – Most EU manuf)	=	BM311
• Hardness	=	40-58 HRC (@ 0,40-0,45% Carbon Content)
• Hardness depth	=	0,5-1,5 mm
• Pin riveted 2 (case hardened – Most Chinese and some EU manuf)	=	40Cr
• Hardness	=	48-55 HRC (@ 0,40-0,45% Carbon Content)
• Hardness depth	=	N/A
• Bush riveted 1 (Induction hardened – Most EU manuf)	=	CK45
• Hardness	=	50-55 HRC (@ 0,40-0,45% Carbon Content)
• Hardness depth	=	0,8mm
• <i>Only hardened outside of bush</i>		
• Bush riveted 2 (Case hardened – Most Chinese and some EU manuf)	=	20Cr
• Hardness	=	78-80 HRC (@ 0,40-0,45% Carbon Content)
• Hardness depth	=	N/A



Welded chains

Pros.

- Higher breakload than DIN
 - ~30% (Tested at Teknologisk Institut in DK)
- Lower C content in sideplate, pin and bush.
- Secure assembly by welding "V-Braze"
- Shoulder on pin and bush for easy and secure assembly
- Sideplates countersunk for welding
- Stable
- Long lifetime due to mat. composition
- Bush case hardened with even surface hardness on inner and outer surface.
 - Bush surface hardness matches pin's surface hardness
- Assembly instruction included



Cons.

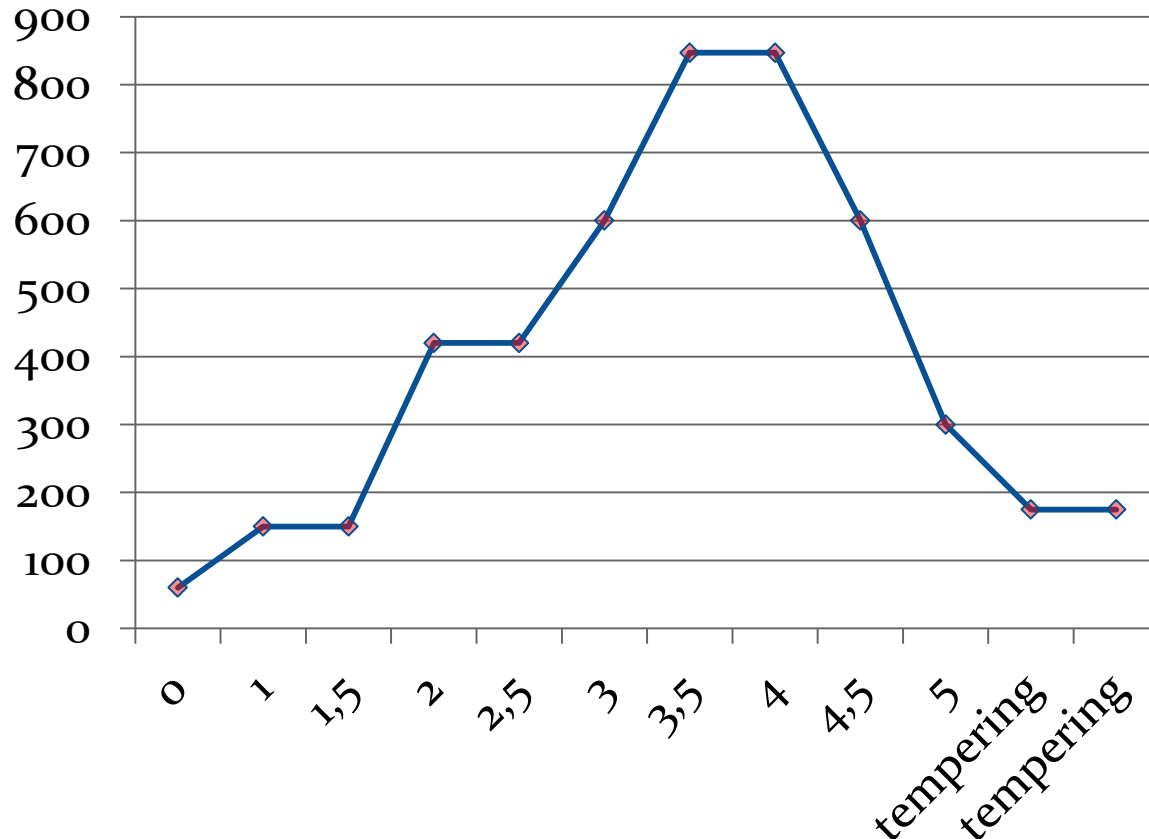
- Higher price compared to rivetted
- Difficult to handle at assembly stage (Bolted vers. Optional)
- Difficult to handle at service stage if no correct tooling is at hand.
- Only welded pin as std. from M160/FV140
 - Smaller types available by request
- Only welded pin and bush as std. from M224/FV180



Welded chains

Hardening method – Pins & Bush

Case hardening process



- Case hardening in Carbon rich and controlled atmosphere
- Time varies.
 - 0,7mm = 5 hours
 - 1,5mm = 20 hours
- Surface hardness HRC 52-56
- Hardening depth 0,5-1,0mm depending on the size of chain
- Graduated hardness layer
- Carbon level 0,20%
- Tempering in air to improve "toughness".



Welded chains

Hardening method – Pins & Bush

- | | | |
|--|---|--|
| • Bush welded (Case hardened) | = | 16MnCr5 (Some European manufacturers uses - 20MnCr5) |
| • Hardness | = | 58-60 HRC (@ 0,20% Carbon Content) |
| • Hardness depth | = | 0,8-1,0mm |
| • <i>Hardened outer and inner side of bush</i> | | |
| • Pin welded (Case hardened) | = | BM212 |
| • Hardness | = | 60-65 HRC (@ 0,20% Carbon Content) |
| • Hardness depth | = | 0,8-1,0 mm |

