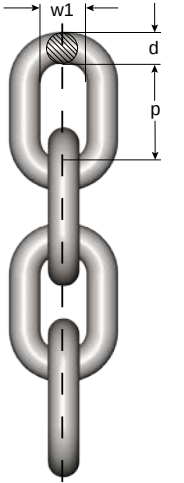
Short Link Chain - KLFZ, Grade 7

Heat treatment
Quenched and tempered

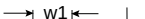
Surface treatment
Hot Dip Galvanized (HDG)



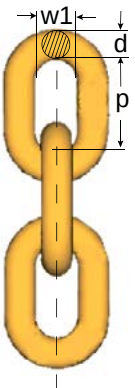
Not for lifting purposes

Art. No	Code	Link dimensions			Min. breaking load (lb)	Weight lb/foot	Delivery length
		d nom.	P	w1			
Z800666	KLFZ-10-7	3/8"	1.18	0.55	24 244	1.48	1 x 328 ft
Z802329	KLFZ-13-7	1/2"	1.54	0.68	39 672	2.49	1 x 328 ft
Z801644	KLFZ-16-7	5/8"	1.89	0.85	61 712	3.90	1 x 328 ft
Z801409	KLFZ-17-7	17	1.89	0.91	66 120	4.30	1 x 328 ft
Z801407	KLFZ-19-7	3/4”	2.24	1.06	88 160	5.38	1 x 328 ft

Fulfills requirements in: EN 1461:2009 (Average surface thickness 3.35 mils)



Short Link Chain KLFU, Grade 8



Heat treatment
Quenched and tempered,
Stress relieved

Surface treatment
Painted yellow

Not for lifting purposes

Art. no.	Code	Link dimensions			Weight lb/foot	Min. breaking load (lb)	Delivery length
		d nom.	P	w1			
Z802330	KLFU-10-8	3/8"	1.18	0.55	1.48	27 770	1 x 328 ft
Z802331	KLFU-13-8	1/2"	1.54	0.69	2.49	47 166	1 x 328 ft
Z801146	KLFU-16-8	5/8"	1.89	0.85	3.90	709 69	1 x 328 ft
Z327377	KLFU-19-8	3/4″	2.24	1.06	5.38	100 062	1 x 328 ft
Z327385	KLFU-22-8	7/8"	2.60	1.18	7.39	134 444	1 x 164 ft
Z801505	KLFU-26-8	1"	3.07	1.38	9.95	189 544	1 x 164 ft

Technical Information

Chain Manufacturing - Quality and Strength Requirements

Chains are divided into grades based on minimum nominal breaking stress.

Chain Grade	Surface treatment	Code	Minimum breaking stress N/in²	Minimum breaking stress N/mm²	Mean breaking stress "ksi"	Load factors			Typical use
						WLL	MPF	Breaking force	
8	Yellow U Black B	KL	31.50	800	116	1	2.5	4	General lifting (KL), Container lashing (LL). Extra heavy towing (ML), Lashing (KL, LL). Fishing (KL, ML, LL)
		ML	31.50	800	116	-	1	4	
		LL	31.50	800	116	-	1	4	
10	Blue A	KL	39.37	1000	145	1	2.5	4	General lifting

Testing and Quality Control- GrabiQ & Classic Chain (Grade 10 & 8)

In each step of the manufacturing of the chain, our systematic quality monitoring will ensure the highest safety and the longest life span in the product. Here are some especially important aspects of quality:

Material

The incoming material is supplied with test certificates only from qualified manufacturers and according to our stated material specifications.

Manufacturing

During forming and welding, the operators continuously control that the links meet the specified dimensions both before and after welding.

Single link samples are continuously mandrel tested on the weld. Shape, dimensions and deburring are then inspected visually.

Sample lengths are heat treated and then destruction load tested. Following these tests, the chain is heat treated.

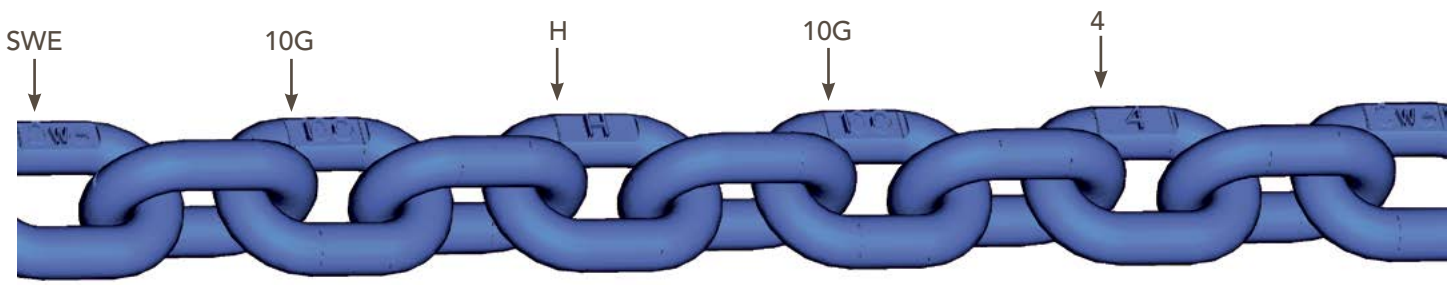
Hardening and tempering is carried out continuously in computer controlled induction furnaces with regular samplings.

Proof Force

The entire chain is test loaded. The manufacturing proof force for short link chain is 2.5 times the permitted working load limit. This gives the chain high safety in use. The chain is then visually inspected and cut into delivery lengths. A sample is taken from every length and tested to destruction. Dimensions and shape are also checked. All results are documented.

Marking and Traceability

The international standards for lifting chain require that the chain is marked with Grade and Manufacturers ID. On our chain we stamp "SWE - 10G - H - 10G - 4", where the "H" and the "4" is the combination for the traceability code. In case of the unlikely event of chain failure, we can trace the specific chain link back to the very batch and raw material as well as the year and place of manufacture. Each individual delivery length also has its unique batch number.



*Safety factor 4:1

All dimensions in inches

Use

- Never lift with a twisted chain.
- Use shortening hooks, knotting is not allowed.
- Use edge protectors to prevent sharp edges from damaging the chain.

See website or user instructions for assembly instructions.

Meets listed current specifications and standards at time of publication of this catalogue.

Maintenance

Periodic thorough examination must be carried out at least every 12 months or more frequently according to local statutory regulations, type of use and past experience.

1. Overloaded chain slings must be taken out of service.
2. Chain and components including load pins which have been damaged, deformed, elongated, bent or showing signs of cracks or gouges shall be replaced. Carefully grind away small nicks and burrs.
3. Additional testing by magnetic particle inspection and/or proof loading at max. 2 x WLL may be carried out. The wear of the chain and component shall in no place exceed 10% of the original dimensions.
4. The chain link wear - max. 10% - is defined as the reduction of the mean diameter measured in two directions.

Severe Environment

Chain and components must not be used in alkaline (>pH10) or acidic conditions (<pH6). Comprehensive and regular examination must be carried out when used in severe or corrosive inducing environments. In uncertain situations consult your Gunnebo Industries dealer.

Extreme Temperature Conditions

The in service temperature effects the WLL as following :

Temperature (°F)	Reduction of WLL			
	Grade 10 chain (400)	Grade 10 chain (200)	Grade 10 components	Grade 8 chain & components
-40 to +392 °F	0 %	0 %	0 %	0 %
+392 to +572 °F	10 %	Not allowed	10 %	10 %
+572 to +752 °F	25 %	Not allowed	25 %	25 %

After short heat exposure, maximum one hour, the sling reverts to its full capacity. Upon return to normal temperature, the sling reverts to its full capacity within the above temperature range. Chain slings should not be used above or below these temperatures.
For chain grade 10(200) the maximum in service temperature is 392° C.

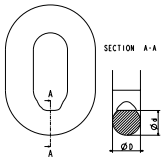
Definitions

Proof force:
Each individual chain link is tested to the Manufacturing Proof Force (MPF) level before delivery. The MPF level is 2.5 times the WLL, equal to 62.5% of the Minimum Breaking Force.

Breaking force (BF):
The highest static force a chain is exposed to during test loading before breaking.

Working load limit (WLL):
The maximum permitted load on a lifting chain under normal (vertical) lifting conditions.

Total ultimate elongation:
The elongation of the test item, relative to the original length, at the moment of breaking.



$$\frac{D+d}{2} > 0.9d_n$$

5