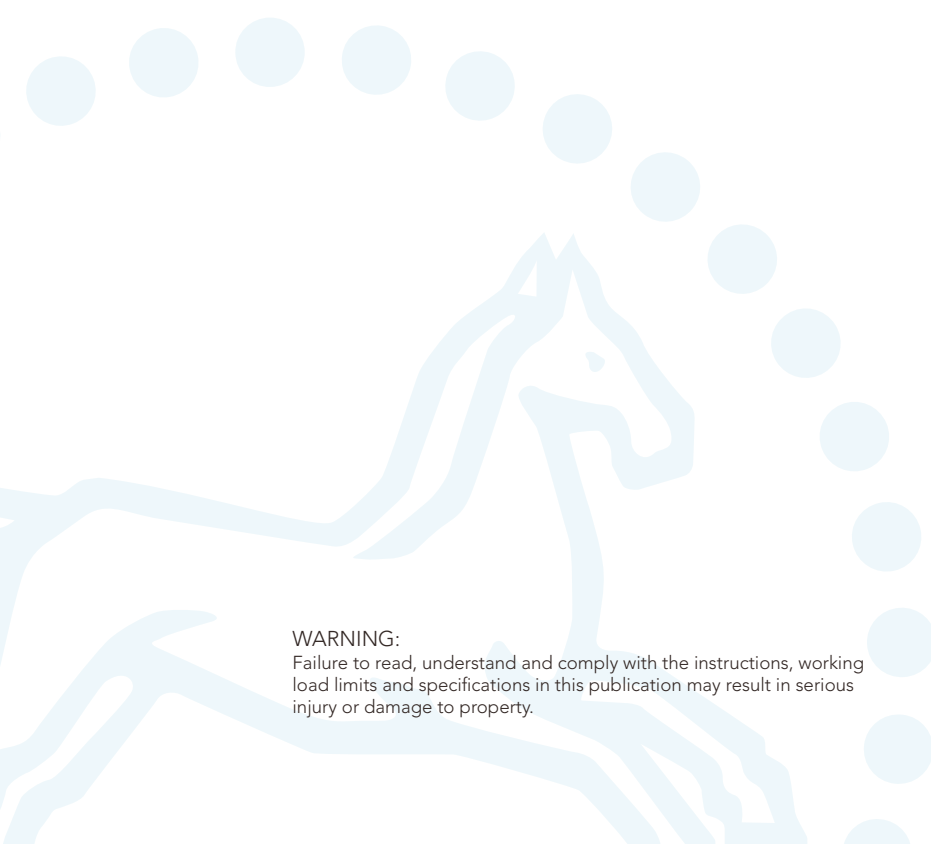


Chain

Chain, Grade 10 (200), GrabiQ	5:3
Chain, Grade 10 (400), GrabiQ	5:3
Chain, Short Link, Grade 8, Classic	5:3
Chain, Short Link, Grade 8	5:4
Chain, Mid-link, Grade 8	5:4
Chain, Long-link, Grade 8	5:4
Chain, Short Link, Galvanized, Grade 7	5:5
Chain, Mid-link, Galvanized, Grade 7	5:5
Chain, Long-link, Galvanized, Grade 6/7	5:5

Technical Information

Chain Manufacturing	5:6
Safe Use and Extreme environments	5:7
Definitions	5:7



WARNING:
Failure to read, understand and comply with the instructions, working load limits and specifications in this publication may result in serious injury or damage to property.



Chain, GrabiQ Grade 10 (200)

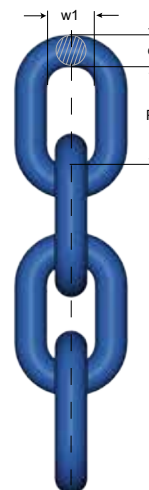
Short link, KL

Heat treatment
Quenched and tempered.
Note! For chain grade 10 (200) the
maximum in service temperature is 392°F.

Surface treatment
Painted blue

Fulfills the requirements in:
ASTM A973/A973M-07(2012)
EN 818+2:2008 (WLL +25%,
reduced temperature range)

Art. no. Box	Code	WLL lb	d nom.	P	w1	Weight lb/foot	MPF kN	Breaking force lb
Z802300 - 1 x 656 ft	KLA 6-10 (200)	3 306	(6mm)	0.71	0.33	0.54	8 272	13 240
Z802337 - 1 x 656 ft	KLA 7-10 (200)	4 300	9/32"	0.83	0.39	0.74	10 790	17 309
Z802301 - 1 x 656 ft	KLA 8-10 (200)	5 700	5/16"	0.94	0.43	0.94	14 162	22 929
Z802302 - 1 x 328 ft	KLA 10-10 (200)	8 800	3/8"	1.18	0.55	1.55	22 030	35 518
Z802303 - 1 x 328 ft	KLA 13-10 (200)	15 000	1/2"	1.54	0.70	2.55	37 316	60 246
Z802304 - 1 x 328 ft	KLA 16-10 (200)	22 600	5/8"	1.89	0.86	3.77	56 424	90 369
Z802305 - 1 x 164 ft	KLA 20-10 (200)	35 300	3/4"	2.36	1.06	6.32	88 346	141 624
Z802246 - 1 x 164 ft	KLA 22-10 (200)	44 080	7/8"	2.60	1.14	7.93	110 376	176 468
Z802248 - 1 x 164 ft	KLA 26-10 (200)	59 500	1"	3.07	1.38	9.81	149 267	238 737
Z802440 - 1 x 82 ft	KLA 32-10 (200)	88 160	1-1/4"	3.78	1.64	16.40	220 528	361 928



Chain, GrabiQ Grade 10 (400)

Short link, KL

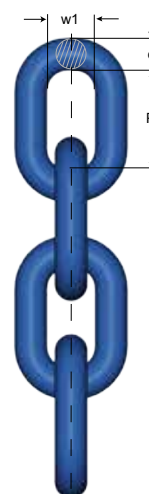
Heat treatment
Quenched and tempered.
Note! For chain grade 10 (400) the
maximum in service temperature is 752°F.

Surface treatment
Painted blue

Fulfills the requirements in:
EN 818-2:2008 (WLL+25%,
material dimension \varnothing +10%)

Note: This chain is marked with "8+" in addition to the marking required by the machine directive

Art. no. Box	Code	WLL lb	d nom.	P	w1	Weight lb/foot	MPF kN	Breaking force lb
Z802306 - 1 x 656 ft	KLA 6-10 (400)	3 306	0.26	0.71	0.35	0.67	8 272	13 218
Z802307 - 1 x 656 ft	KLA 8-10 (400)	5 500	0.35	0.94	0.44	1.14	14 162	22 929
Z802308 - 1 x 328 ft	KLA 10-10 (400)	8 800	0.43	1.18	0.57	1.75	22 030	35 518
Z802309 - 1 x 328 ft	KLA 13-10 (400)	14 800	0.56	1.54	0.76	3.02	37 316	60 246
Z802310 - 1 x 328 ft	KLA 16-10 (400)	22 040	0.68	1.89	0.91	4.50	56 424	90 369



Chain, Classic Grade 8

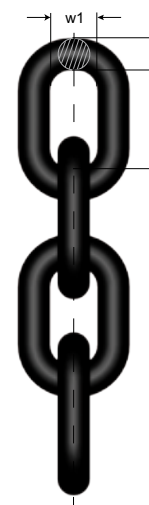
Short link, KL

Heat treatment
Quenched and tempered.

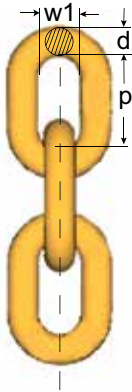
Surface treatment
Painted black (KLB)
Painted yellow (KLU)

Fulfills the requirements in:
EN 818-2:2008, AS 2321:2014,
ASTM A391/A 391M-07 (2012)

Art. no. Box	Code	WLL lb*	d nom.	P	w1	Weight lb/foot	Manufacturing proof force lb	Breaking force lb
Z802174 - 1 x 656 ft	KLB 6-8E	2 500	(6mm)	0.71	0.33	0.54	6 362	10 161
Z802175 - 1 x 656 ft	KLB 7-8E	3 500	9/32"	0.83	0.39	0.74	8 655	13 938
Z802176 - 1 x 656 ft	KLB 8-8E	4 500	5/16"	0.94	0.43	0.94	11 308	18 120
Z802156 - 1 x 328 ft	KLB 10-8E	7 100	3/8"	1.18	0.55	1.55	17 760	29 225
Z802157 - 1 x 328 ft	KLB 13-8E	12 000	1/2"	1.54	0.70	2.55	29 900	48 109
Z802177 - 1 x 328 ft	KLB 16-8E	18 000	5/8"	1.89	0.86	3.77	45 187	72 389
Z801203 - 1 x 328 ft	KLB 19-8E	25 600	3/4"	2.24	1.06	5.24	63 846	102 738
Z801228 - 1 x 164 ft	KLB 22-8E	34 200	7/8"	2.60	1.16	7.13	85 428	137 134
Z801231 - 1 x 164 ft	KLB 26-8E	47 700	1"	3.07	1.38	9.95	119 374	191 089
Z801232 - 1 x 82 ft	KLB 32-8E	72 300	1-1/4"	3.78	1.64	14.52	180 747	292 253



Short Link Chain KLFU, Grade 8



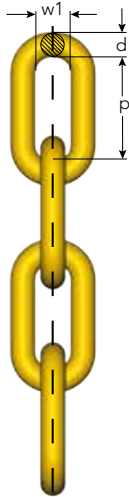
Heat treatment
Quenched and tempered,
Stress relieved

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

Mid-Link Chain MLFU, Grade 8



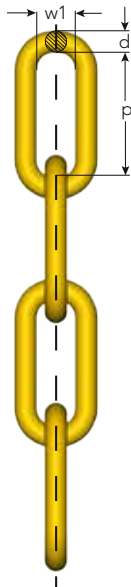
Heat treatment
Quenched and tempered,
Stress relieved

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			
Z802332	MLFU-10-8	3/8"	1.57	0.57	1.34	27 770	1 x 328 ft
Z802333	MLFU-13-8	1/2"	2.17	0.80	2.22	47 166	1 x 328 ft
Z800564	MLFU-16-8	5/8"	2.56	0.81	3.36	709 69	1 x 328 ft
Z800476	MLFU-19-8	3/4"	2.95	1.14	4.77	100 062	1 x 328 ft
Z800661	MLFU-22-8	7/8"	3.46	1.18	6.32	134 444	1 x 164 ft
Z801770	MFLU-26-8	1"	3.58	1.34	9.34	189 544	1 x 164 ft

Long-Link Chain LLU, 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	P	w1			
Z801934	LLU-9-8		2.09	0.56	0.02	22 481	4 x 328 ft
Z801935	LLU-11-8	7/16"	2.52	0.73	0.02	33 942	4 x 328 ft
Z801936	LLU-13-8	1/2"	3.15	0.83	0.03	47 166	3 x 328 ft
Z802160	LLU-16-8	5/8"	3.94	1.06	0.05	70 969	1 x 328 ft
Z601983	LLU-19-8	3/4"	3.94	1.06	0.08	100 062	1 x 328 ft
Z700526	LLU-22-8	7/8"	4.72	1.38	0.10	134 444	1 x 164 ft

Short Link Chain - KLFZ, Grade 7

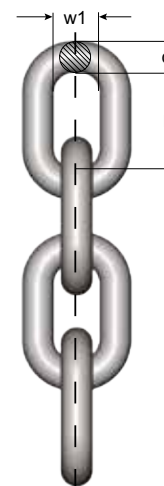
Heat treatment
Quenched and tempered

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)



Mid-Link Chain MLFZ, Grade 7

Heat treatment
Quenched and tempered

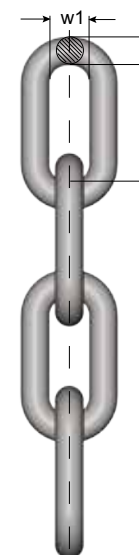
Surface treatment
Hot Dip Galvanized (HDG)

Not for lifting purposes

Art. No	Code	Link dimensions			Min. breaking load (lb)	Weight lb/foot	Delivery length
		d nom.	P	w1			
Z802455	MLFZ 10-6**	3/8"	1.57	0.57	22 040	1.34	1 x 328 ft
Z802335	MLFZ-13-7	1/2"	2.17	0.80	39 672	2.22	1 x 328 ft
Z801645	MLFZ-16-7	5/8"	2.56	0.81	61 712	3.36	1 x 328 ft
Z801477	MLFZ-19-7	3/4"	2.95	1.14	88 160	4.77	1 x 328 ft

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

** Average surface thickness 2.75 mils



Long Link Chain LLZ, Grade 6

Heat treatment
Quenched and tempered

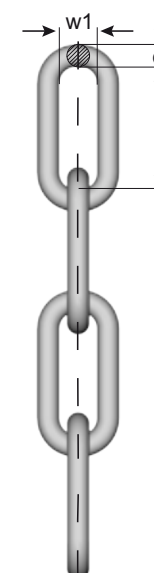
Surface treatment
Hot Dip Galvanized (HDG)

Not for lifting purposes

Art. No	Code	Link dimensions			Min. breaking load (lb)	Weight lb/foot	Delivery length
		d nom.	P	w1			
Z802453	LLZ-9-6**	6/16"	2.09	0.56	17 191	0.94	1 x 328 ft
Z802454	LLZ-11-6**	7/16"	2.52	0.73	25 566	1.41	4 x 328 ft
Z800682	LLZ-13-6	1/2"	3.15	0.83	35 925	1.95	3 x 328 ft
Z802207	LLZ-13-6	1/2"	3.15	0.83	35 925	1.95	1 x 750 ft
Z801567	LLZ-16-6	5/8"	3.94	1.06	54 439	3.09	1 x 328 ft
GS1073	LLZ-16-6	5/8"	3.94	1.06	54 439	3.09	1 x 656 ft
Z801458	LLZ-19-6	3/4"	3.94	1.06	76 699	4.37	1 x 390 ft
Z801887	LLZ-22-6	7/8"	4.72	1.38	102 706	5.85	1 x 164 ft
Z802447	LLZ-25-6	1"	5.51	1.54	132 240	8.07	1 x 164 ft

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

** Average surface thickness 2.75 mils



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/in ²	Minimum breaking stress N/mm ²	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.

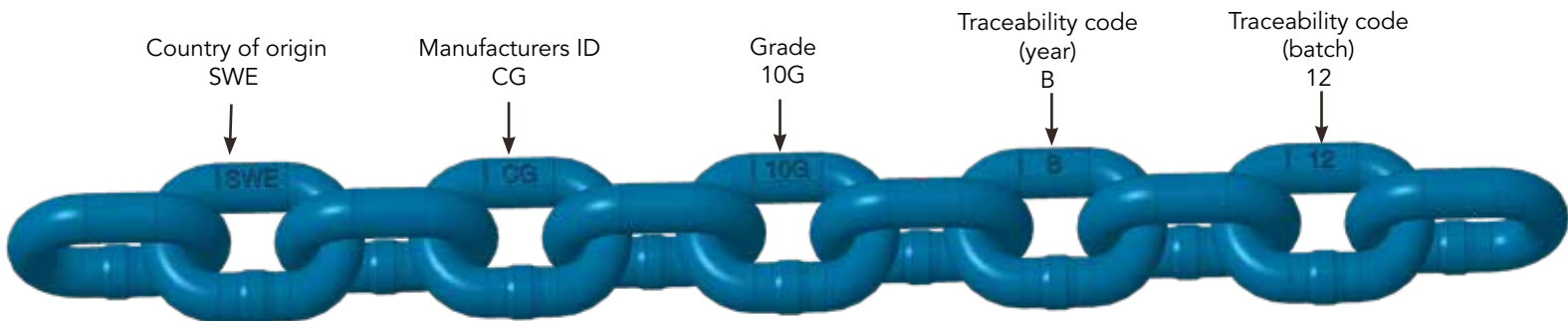
Hardening and tempering is carried out continuously in computer controlled induction furnaces with regular samplings.

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 - CG - 10G - B - 12", where the "B" and the "12" 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.



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):

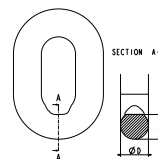
The highest static force a chain is exposed to during test loading before breaking.

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.



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

Lashing Components

Chain Tensioner • Other Lashing Products



GUNNEBO
Industries