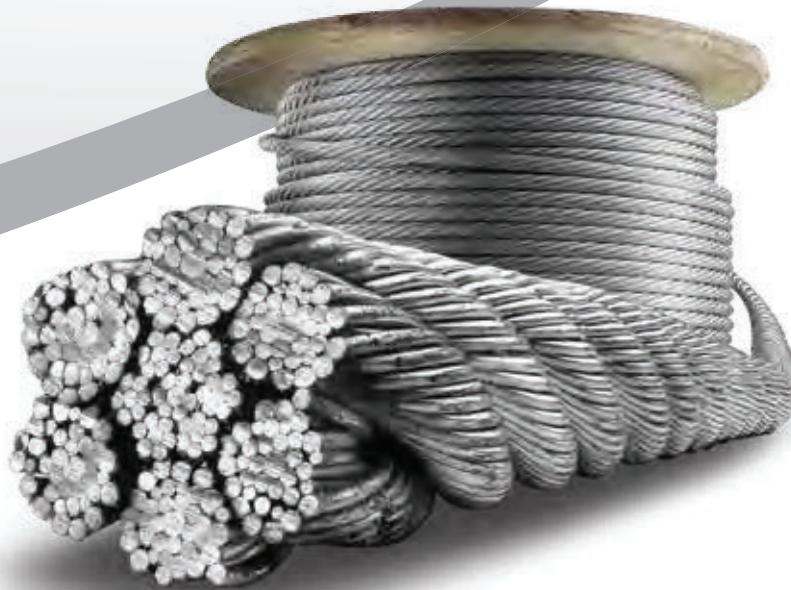


**2022/23
CATALOG**

NORTHERN  **STRANDS**
Canadian owned and operated since 1970

LIFTING CHAIN AND ACCESSORIES



GRADE 80 & 100 ALLOY CHAIN



General Information

WORKING LOAD LIMIT

The "Working Load Limit" is the maximum load in pounds which should ever be applied to chain, when the chain is new or in as-new condition, and when the load is uniformly applied in direct tension to a straight length of chain.

PROOF TEST

The "Proof Test" is a term designating the tensile test applied to new chain for the sole purpose of detecting injurious defects in the material or manufacture. It is the load that the chain has withstood under a test in which the load has been applied in direct tension to a straight length of chain.

MINIMUM ULTIMATE LOAD

The "Minimum Ultimate Load" is the minimum load at which new chain will break when tested by applying direct tension to a straight length of chain at a uniform rate of speed in a testing machine.

ATTACHMENTS

Any attachments, such as hooks or links, should have a rated "Working Load Limit" at least equal to the chain with which it is used.

SYMMETRICAL LOADING

Rated Working Load Limit assumes symmetrical loading of all sling legs.

SPECIFICATIONS: ASME B30.9 2006

Paragraph 9-1.6 .1 "Prior to initial use, all new and repaired chain and components of an alloy steel chain sling, either individually or as an assembly, shall be proof tested by the sling manufacturer or qualified person."

GRADE 80/100 CHAIN SLING CHARTS

GRADE 80 CHAIN SLINGS

WORKING LOAD LIMITS IN POUNDS*								
SIZE OF CHAIN	TYPES OR C	DOUBLE BRANCH TYPE D						
INCHES	MM	FOUR POINT LIFT BEARING USED SINGLE	FOUR POINT LIFT BEARING USED AT 60° ANGLE	FOUR POINT LIFT BEARING USED AT 45° ANGLE	FOUR POINT LIFT BEARING USED AT 30° ANGLE	TRIPLE / QUAD 60° ANGLE	TRIPLE / QUAD 45° ANGLE	TRIPLE / QUAD 30° ANGLE
7/32"	5.5	2100	3600	3000	2100	5450	4450	3150
9/32"	7.0	3500	6100	4900	3500	9100	7400	5200
3/8"	10.0	7100	12300	10000	7100	18400	15100	10600
1/2"	13.0	12000	20800	17000	12000	31200	25500	18000
5/8"	16.0	18100	31300	25600	18100	47000	38400	27100
3/4"	20.0	28300	49000	40000	28300	73500	60000	42400
7/8"	22.0	34200	59200	48400	34200	88900	72500	51300
1"	26.0	47700	82600	67400	47700	123900	101200	71500
1 1/4"	32.0	72300	125200	102200	72300	187800	153400	108400

NOTE: DESIGN FACTOR = 4:1 WARNING: DO NOT EXCEED RATED CAPACITIES

GRADE 100 CHAIN SLINGS

WORKING LOAD LIMITS IN POUNDS*								
SIZE OF CHAIN	TYPES OR C	DOUBLE BRANCH TYPE D						
INCHES	MM	FOUR POINT LIFT BEARING USED SINGLE	FOUR POINT LIFT BEARING USED AT 60° ANGLE	FOUR POINT LIFT BEARING USED AT 45° ANGLE	FOUR POINT LIFT BEARING USED AT 30° ANGLE	TRIPLE / QUAD 60° ANGLE	TRIPLE / QUAD 45° ANGLE	TRIPLE / QUAD 30° ANGLE
7/32"	5.5	2700	4700	3800	2700	7000	5700	4000
9/32"	7.0	4300	7400	6100	4300	11200	9100	6400
3/8"	10.0	8800	15200	12400	8800	22900	18700	13200
1/2"	13.0	15000	26000	21200	15000	39000	31800	22500
5/8"	16.0	22600	39100	32000	22600	58700	47900	33900
3/4"	20.0	35300	61100	49900	35300	91700	74900	53000
7/8"	22.0	42700	74000	60400	42700	110900	90600	64000
1"	26.0	59700	103400	84400	59700	155100	126000	89550
1 1/4"	32.0	90400	156600	127800	90400	234900	191700	135600

NOTE: DESIGN FACTOR = 4:1 WARNING: DO NOT EXCEED RATED CAPACITIES

USE, CARE & INSPECTION OF GRADE 80 AND GRADE 100 CHAIN SLINGS

THE LIFE AND STRENGTH OF GRADE 80 AND GRADE 100 SLINGS DEPEND ON PROPER USE, MAINTENANCE AND INSPECTION. REFER TO ASME B30.9 AND OSHA REGULATIONS FOR ADDITIONAL INFORMATION. ALWAYS REFER TO ASME B30.9 IN REGARDS TO PROPER INSPECTION AND REJECTION CRITERIA FOR SLINGS.

Use

Observing the following precautions when using chain slings will help protect both operators and materials.

1. Inspect chain slings before use as indicated in inspection section.

2. Do not exceed working load limit as indicated on sling identification tag.† Any of the following factors can lower the load the chain will hold:

- Rapid load application can produce dangerous overloading.
- Variation in the angle of the load to the sling. As the angle decreases, the working load of the sling will decrease. Refer to Working Load Limit Chart.
- Twisting, knotting and kinking subjects links to undesirable loading which decreases the working load limit of the sling.

- Conditions other than that for which slings are intended can reduce the working load limit of the sling. For example, use at elevated temperatures will result in a reduction in working limit.

3. Free all twists, knots and kinks.

4. Center load in hook(s). Hook latches must not support load.

5. Avoid sudden jerks when lifting and lowering.

6. Balance all loads, avoid tipping of loads.

7. Use pads around sharp corners.

8. Don't drop load on chairs.

9. Select attachments such as hooks or rings for use with chain to match the size and working load limit of the chain.

10. Use only GR. 80 and 100 Alloy Chain.

† The identification tag is found on the master coupling link of each chain sling and contains the following information:

• Grade • Size • Reach • Type • Working Load Limit (at a specific angle of lift) • Serial Number

Care

Chain slings require proper care as follows:

1. Store slings on an 'A' Frame in a clean, dry place.
2. Avoid corrosion. Oil chains before prolonged storage.
3. Never alter the thermal treatment of GR. 80 and 100 chain by heating.
4. Do not plate or change surface finish of sling. Contact Northern Strands for special requirements.

Inspection

It is important to inspect chain slings regularly and to keep a record of each chain inspection. The following is a guide for such an inspection procedure. Northern Strands will supply sling record cards or sheets as requested.

Before inspecting, clean the chain sling so that marks, nicks, wear and other defects can be seen. Use a non-acid/non-caustic solvent. Each chain link and sling component should be individually inspected for the following conditions:

1. Twists or bends.
2. Nicks or gouge.
3. Excessive wear at bearing points. Refer to Wear Allowance Chart.
4. Stretch.
5. Distorted, worn or damaged master links, coupling links, or attachments, especially spread in throat opening of hooks.

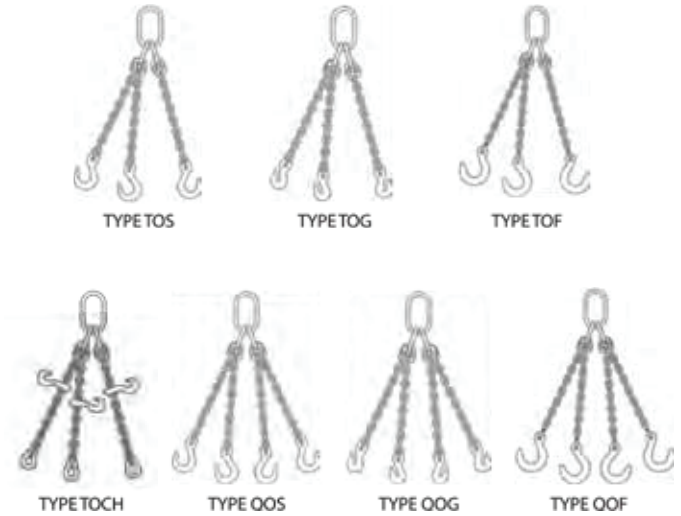
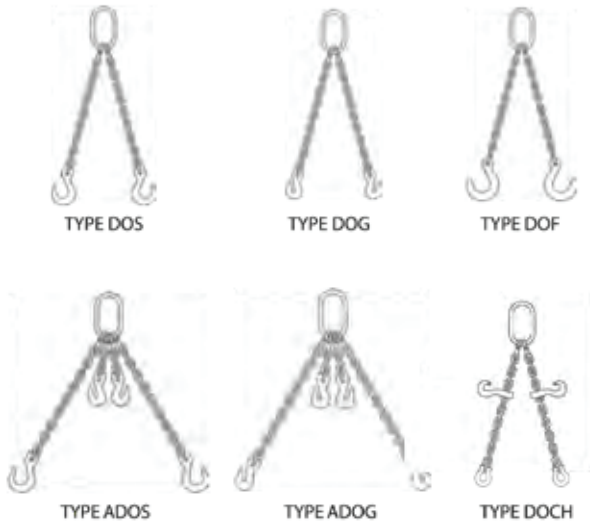
Each link or component having any condition listed above is to be marked with paint to plainly indicate rejection and eliminated from service until properly repaired.

NOTE:

Northern Strands and Manufacturer assume no responsibility for the misuse or misapplication of any of its products. Products are provided with the express understanding that the purchaser and/or user are thoroughly familiar with the correct application and proper use. Warnings and definitions are provided as an aid to the user in understanding correct application and proper use.

Working Load Limit – Refers to the maximum load (rated capacity) in pounds that shall be applied to the chain sling. Refer to Working Load Limit Chart. The manufacturer does not accept any liability for damages which result from the sling being used in excess of the working load limit or from abuse.

GRADE 100 CHAIN SLING CONFIGURATIONS



TYPE	DESCRIPTION
DOS	Double Chain Sling with Master Link and Sling Hook
DOG	Double Chain Sling with Master Link and Grab Hook
DOF	Double Chain Sling with Master Link and Foundry Hook
ADOS	Adjustable Double Chain Sling with Master Link and Sling Hook
ADOG	Adjustable Double Chain Sling with Master Link and Grab Hook
DOCH	Double with 1355 Choker

TYPE	DESCRIPTION
TOS	Triple Chain Sling with Master Link and Sling Hook
TOG	Triple Chain Sling with Master Link and Grab Hook
TOF	Triple Chain Sling with Master Link and Foundry Hook
TOCH	Triple with 1355 Choker
QOS	Quadruple Chain Sling with Master Link and Sling Hook
QOG	Quadruple Chain Sling with Master Link and Grab Hook
QOF	Quadruple Chain Sling with Master Link and Foundry Hook

GRADE 100 CHAIN SLING CONFIGURATIONS

To Make Your Grade 100 Alloy Chain Sling:

Follow these simple steps in making a sling assembly:

1. Determine the maximum load to be lifted by the sling assembly.
2. Choose the type of sling assembly suited for the shape of the load and the size of the sling assembly for the load to be lifted. The decision must take into account the angle of the sling legs in multileg slings.
3. Determine the overall reach from bearing point of master link to bearing point on hook (see Fig. 1).
4. Select components, assemble chain and components.
5. Affix sling identification tag to sling.



Fig. 1

Each sling shall be marked to show: name or trademark of manufacturer, grade, nominal chain size, number of legs, rated load for the type(s) of hitch(es) used and angle upon which it is based (reach).

If measurement comes in the link, cut the following link. For two leg type slings, count the links and use an even number for clevis hooks and an odd number for eye hooks. This will position hooks in the same plane. In multileg slings always use the same number of links in each leg.

When using chain slings in choker applications, the Working Load Limit must be reduced by 20%. Recommended minimum angle of choke of 120 degrees. Consult Northern Strands when planning to use an angle of choke of less than 120 degrees. If A-1338 cradle grab hooks are used at a minimum angle of choke of 120 degrees, the full sling rated WLL can be utilized.



In shortening applications, a 20% reduction of the Working Load Limit is required except when using the A-1338 Cradle Grab Hooks, S-1311 Chain Shortener Link, the A-1355 Chain Choker Hook in conjunction with the S-1325 Chain Coupler Link, or the shortener link. They can be used without any reduction to the Working Load Limit.



TYPE	DESCRIPTION
CO	Single Chain Sling with Master Link each end
SOS	Single Chain Sling with Master Link and Sling Hook
SOG	Single Chain Sling with Master Link and Grab Hook
SOF	Single Chain Sling with Master Link and Foundry Hook
SSS	Single Chain Sling with Sling Hook each end
SGS	Single Chain Sling with Grab Hook and Sling Hook
ASOS	Adjustable Single Chain with Master Link and Sling Hook
ASOF	Adjustable Single Chain Sling with Master Link and Foundry Hook
ASOG	Adjustable Single Chain Sling with Master Link and Grab Hook
SOCH	Single with 1355 Choker

GRADE 80 & 100 ALLOY CHAIN

Caution

Only Grade 80 and Grade 100 chain, should be used for overhead lifting applications.

General Usage – It must be recognized that certain factors in the usage of chain and attachments can be abusive and lessen the load that the chain or attachments can withstand. Some examples are twisting of the chain; disfigurement; deterioration by straining; usage; weathering and corrosion; rapid application of load or jerking; applying excessive loads; sharp corner cutting action and non-symmetrical loading effects.

When using chain slings in choker applications, the Working Load Limit must be reduced by 20%. Northern Strands recommends a minimum angle of choke of 120 degrees. Consult Northern Strands when planning to use an angle of choke of less than 120 degrees. If Northern Strands cradle grab hooks are used at a minimum angle of choke of 120 degrees, the full sling rated WLL can be utilized.



In shortening applications, a 20% reduction of the Working Load Limit is required except when using the Northern Strands Cradle Grab Hooks, Chain Shortener Link, the Chain Choker Hook in conjunction with a Chain Coupler Link, or the Crosby ELIMINATOR® shortener link. They can be used without any reduction to the Working Load Limit.

Care should be taken to observe these derated applications or chain may fracture or permanently stretch at loads less than the advertised chain ultimate strength and proof load respectively.

Environmental Effects – Excessive high or low temperatures, or exposure to chemically active environments such as acids or corrosive liquids or fumes, can reduce the performance of the chain.

Temperature

- Extreme temperatures will reduce the performance of alloy steel chain slings.
- Normal operating temperature is -40°F to 400°F (-40°C to 204°C).
- See the temperature exposure chart (Table 1) to determine reduction of WLL due to operation at, and exposure to, elevated temperatures.

Chemically Active Environments can have detrimental effects on the performance of chain. The effects can be both visible loss of material and undetectable material degradation causing significant loss of strength.

- Usage Exposure – Exposure to chemically active environments such as acids or corrosive liquids or fumes can reduce the performance of the chain.
- Special Surface Coating/Plating/ Galvanizing – Chain should not be subjected to galvanizing, or any plating process.
- If it is suspected that the chain has been exposed to chemically active environment, remove from service.



TABLE 1					
Use of Crosby Alloy Chain at Elevated Temperatures					
Temperature of Chain		Grade 8 (80) Chain		Grade 10 (100) Chain	
(F°)	(C°)	Temporary Reduction of Rated Load at Elevated Temperature*	Permanent Reduction of Rated Load After Exposure to Temperature**	Temporary Reduction of Rated Load at Elevated Temperature*	Permanent Reduction of Rated Load After Exposure to Temperature**
Below 400	Below 204	None	None	None	None
400	204	10%	None	15%	None
500	260	15%	None	25%	5%
600	316	20%	5%	30%	15%
700	371	30%	10%	40%	20%
800	427	40%	15%	50%	25%
900	482	50%	20%	60%	30%
1000	538	60%	25%	70%	35%
Over 1000	Over 538	OSHA 1910.184 and ASME B30.9 requires all slings exposed to temperatures over 1000° F to be removed from service.			

* The use of Alloy Chain at temperatures above 800 degrees F is not recommended.

** When chain is used at room temperature after being heated to temperatures shown in the the first column.

LIFTING CHAIN



GRADE 100 LIFTING CHAIN (ALLOY)

SIZE	W.L.L.
9/32"	4,300 LBS
5/16"	5,700 LBS
3/8"	8,800 LBS
1/2"	15,000 LBS
5/8"	22,600 LBS
3/4"	35,300 LBS
7/8"	42,700 LBS
1"	59,700 LBS

Grade 100 chain, similar to the Grade 80 chain, is commonly used for overhead lifting applications because of its excellent energy absorption properties; however Grade 100 chain has the greatest strength to weight ratio of the alloy chains. Grade 100 chain has a 4:1 factor of safety.

GRADE 100 LINKS AND HOOKS

G-100 CLEVIS SELF-LOCKING HOOK



GRADE 100 CHAIN	WLL (lbs)	DIMENSIONS (in.)				WT. lbs
		H	K	P	T	
1/4-5/16	5,700	1.02	4.69	1.34	0.79	1.8
3/8	8,800	1.34	5.59	1.73	1.02	3.1
1/2	15,000	1.65	7.01	2.01	1.18	6.2
5/8	22,600	2.00	8.39	2.36	1.42	12.3
3/4	35,300	2.56	9.61	2.76	2.09	19.8
7/8	42,700	2.80	10.75	3.15	1.93	24.0

G-100 SWIVEL SELF-LOCKING HOOK



(WITH BRASS BUSHING)

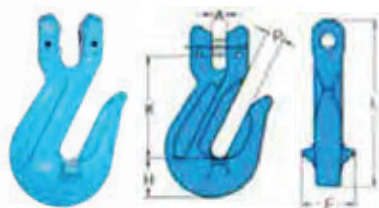
GRADE 100 CHAIN	WLL (lbs)	DIMENSIONS (in.)							WT. lbs
		A	B	D	H	K	P	T	
1/4-5/16	5,700	1.42	1.14	0.51	1.02	7.32	1.34	0.79	2.4
3/8	8,800	1.61	1.34	0.63	1.34	8.58	1.73	1.02	4.4
1/2	15,000	1.81	1.69	0.83	1.50	10.87	2.01	1.18	8.8
5/8	22,600	2.40	2.19	0.91	1.97	13.15	2.36	1.42	15.0
3/4	35,300	3.40	3.50	0.98	2.56	15.85	2.76	1.93	27.8
7/8	42,700	3.82	3.74	1.30	2.50	17.99	3.15	2.09	39.6
1	59,700	4.84	4.53	2.01	3.11	21.06	3.90	2.20	69.3



(WITH BALL BEARING)

GRADE 100 CHAIN	WLL (lbs)	DIMENSIONS (in.)							WT. lbs
		A	B	D	H	K	P	T	
5/8	22,600	2.40	2.19	0.91	2.00	12.95	2.36	1.42	15.0
3/4	35,300	2.91	3.23	0.98	2.56	15.24	2.76	1.93	27.8
7/8	42,700	3.82	3.74	1.30	2.80	17.99	3.15	2.09	39.6

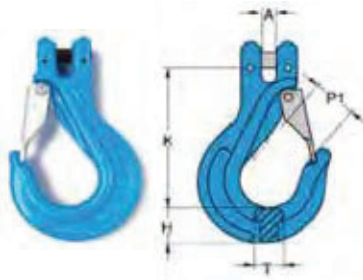
G-100 CLEVIS GRAB HOOK



GRADE 100 CHAIN	WLL (lbs)	DIMENSIONS (in.)						WT. lbs
		A	D	H	K	P	T	
1/4-5/16	5,700	0.39	1.18	0.87	2.09	3.66	0.39	0.7
3/8	8,800	0.43	1.61	1.14	3.03	5.04	0.51	1.8
1/2	15,000	0.59	2.05	1.50	3.90	6.50	0.67	3.5
5/8	22,600	0.71	2.24	1.77	4.49	7.68	0.83	5.9
3/4	35,300	0.87	2.87	2.05	5.12	8.74	0.91	10.1

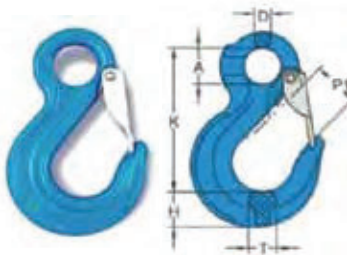
GRADE 100 LINKS AND HOOKS

HOOK - CLEVIS, SLING, GRADE 100



GRADE 100 CHAIN (in)	WLL (LBS)	DIMENSIONS (in.)					WT./EA. (LBS)
		A	H	K	P1	T	
9/32	5700	0.39	0.87	3.86	1.21	0.71	1.3
3/8	8800	0.43	1.18	4.80	1.50	0.94	2.4
1/2	15 000	0.59	1.46	5.79	1.73	1.18	5.1
5/8	22 600	0.71	1.65	6.54	1.89	1.54	8.6
3/4	35 300	0.87	2.52	8.15	2.24	1.89	18.9

HOOK - EYE, SLING, GRADE 100



GRADE 100 CHAIN (in)	WLL (LBS)	DIMENSIONS (in.)						WT./EA. (LBS)
		K	P1	A	D	T	H	
9/32	5700	3.86	1.10	0.98	0.47	0.79	0.91	1.1
3/8	8800	4.76	1.42	1.26	0.59	0.91	1.22	2.0
1/2	15 000	5.98	1.88	1.57	0.71	1.06	1.50	3.5
5/8	22 600	7.28	1.73	1.97	0.87	1.26	1.77	6.8
7/8	42 700	9.65	2.99	2.01	1.22	2.05	2.48	20.5

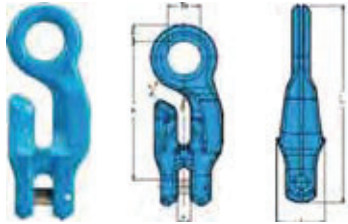
G-100 EYE FOUNDRY HOOK



GRADE 100 CHAIN	WLL (LBS)	DIMENSIONS (in.)						WT. (LBS)
		K	P	A	D	T	H	
3/8	8,800	5.87	2.91	1.26	0.59	0.91	1.26	3.5
1/2	15,000	7.09	3.46	1.57	0.75	1.26	1.54	5.5
5/8	22,600	8.39	3.86	1.97	0.98	1.61	1.85	9.7
3/4	35,300	9.76	4.45	2.36	1.02	1.81	2.24	20.5

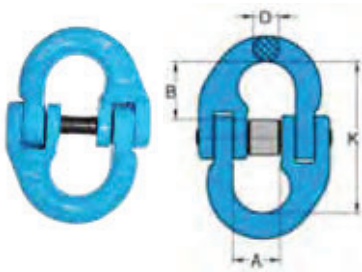
GRADE 100 LINKS AND HOOKS

HOOK - CLEVIS, EYE, GRABEX, GRADE 100



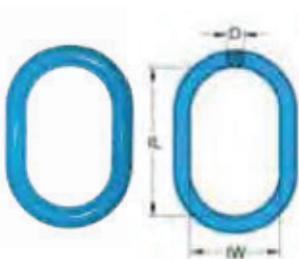
WLL (LBS) 5:1 @ 45°	WLL (LBS) 4:1 @ 45°	Chain Size (in)	DIMENSIONS (in.)							WT./EA. (LBS)
			A	B	D	F	K	L	P	
4 600	5 700	9/32 - 5/16	0.39	0.94	0.51	1.26	4.02	5.28	0.47	1.2
7 000	8 800	3/8	0.47	1.22	0.55	1.57	4.92	6.42	0.58	2.3
12 000	15 000	1/2	0.63	1.46	0.71	2.01	6.22	8.19	0.79	4.8
18 100	22 600	5/8	0.75	1.89	0.94	2.52	7.95	10.39	0.83	9.7

G-100 CONNECTING LINK



GRADE 100 CHAIN	WLL (LBS)	DIMENSIONS (in.)				WT. (LBS)
		A	B	D	K	
9/32	5,700	0.71	0.81	0.42	2.32	0.4
3/8	8,800	0.98	1.10	0.53	2.72	0.7
1/2	15,000	1.18	1.50	0.63	3.62	1.5
5/8	22,600	1.42	1.61	0.75	3.98	2.6
3/4	35,300	1.65	1.97	0.91	4.80	4.2
7/8	42,700	1.93	2.48	0.95	5.98	7.7
1	59,700	2.17	2.60	1.18	6.38	11.7
1-1/4	90,400	2.72	3.35	1.42	7.99	20.5

G - 100 FORGED OBLONG MASTER LINK



SIZE	WLL 5:1 (LBS)	INSIDE LENGTH (in)	CHAIN SIZE (in)		INSIDE WIDTH (in)	DIA. (in)	WT. (LBS)
			1-LEG	2-LEG			
1/2"	7,400	4.72	*1/4 - 5/16	*7/32	2.76	0.55	1.1
5/8"	9,000	5.51	*3/8	*1/4 - *5/16	3.15	0.67	1.6
3/4"	12,300	5.91	*1/2	-	3.54	0.75	2.4
7/8"	15,200	6.30	*1/2	*3/8	3.74	0.87	3.5
1"	26,000	7.48	*5/8	-	4.33	0.98	5.1
1-1/8"	30,000	7.09	*5/8	*1/2	4.13	1.10	5.9
1-1/4"	39,100	7.87	*3/4	-	4.72	1.18	7.6
1-3/8"	42,000	9.45	*7/8	*5/8	5.51	1.34	11.7
1-1/2"	61,100	9.84	*1	-	5.91	1.50	15.8

GRADE 100 LINKS AND HOOKS

LINK - MASTER LINK ASSEMBLY, WITH 2X GRABEX HOOKS, GRADE 100



WLL (LBS) 5:1 @ 45°	WLL (LBS) 4:1 @ 45°	Chain Size (in)	DIMENSIONS (in.)				WT./EA. (LBS)
			D	A	B	K	
6,500	8 100	5/16	0.75	6.30	3.74	10.31	4.8
9 900	12 400	3/8	0.87	6.69	4.13	11.61	8.3
17 000	21 200	1/2	1.10	7.48	4.33	13.70	15.4
25 600	32 000	5/8	1.26	9.06	5.12	16.99	29.8

LINK - MASTER LINK ASSEMBLY, WITH 4X GRABEX HOOKS, GRADE 100



WLL (LBS) 5:1 @ 45°	WLL (LBS) 4:1 @ 45°	Chain Size (in)	DIMENSIONS (in.)				WT./EA. (LBS)
			D	A	B	K	
9 700	12 100	5/16	0.87	6.69	4.13	12.05	10.1
15 000	18 700	3/8	1.10	7.48	4.33	13.98	17.8
25 400	31 800	1/2	1.26	9.06	5.12	17.24	34.8
38 300	47 900	5/8	1.50	10.83	5.91	21.34	63.6