

Alloy Steel BK Self-Locking Hook Warnings and Use Limitations

This document contains warnings and use limitation information applicable to Gunnebo Lifting G80 & G100 Alloy Steel BK self-locking hooks and is furnished with all Gunnebo Johnson Corporation shipments. Component distributors and lift system manufacturers must pass on this information in their Warnings and Use Limitation literature where Gunnebo Lifting BK self-locking hooks are involved.



Protect yourself and others

- NEVER use a hook without training.
- ALWAYS inform yourself... Ask your employer for hook safe use instructions.
- ALWAYS comply with applicable Federal and local regulations.
- ALWAYS know hook load.
- NEVER use a hook without a legible product identifier.
- NEVER overload a hook.
- NEVER ride on hook or load.
- NEVER rig a hook to a load improperly.
- NEVER use a worn-out or damaged hook.
- NEVER use a hook in extreme temperatures.
- NEVER use a hook in acidic conditions.

- **Never use a hook without training ...** OSHA regulation requires responsible work practice. “The employer shall permit only those employees qualified by training or experience to operate equipment or machinery” – OSHA 1926.20 (a) (4).

Employee training should include information given in OSHA training literature, ASME B30.9 – 2003 “Slings” and ASME B30.10 – 2005 “Hooks” safety standards and this document.

- **Always inform yourself ...** Ask your employer for hook safe use instruction.

“The employer shall instruct each employee in the recognition and avoidance of unsafe conditions and the regulations applicable to his work environment to control or eliminate any hazards or other exposure to illness and injury” – OSHA 1926.21 (b) (2).

- **Always comply with applicable Federal and local regulations ...** Federal and local regulations govern worksite activity.

Understand all governing laws and safety standards before use of BK self-locking hooks. OSHA 1910.184 regulates sling safe operating practices, product identification, inspection requirements, and use limitations. The following safety standards provide additional recommendations for self-locking hook use.

ASME B30.9-2003 “Slings”,
 ASME B30.10-2005 “Hooks”,
 ASME B30.5-2004 “Mobile and Locomotive Cranes”,
 ASME B30.16-2003 “Overhead Hoists (Underhung)”,
 ASME B30.21-2005 “Manually Lever Operated Hoists”.

“If a particular standard is specifically applicable to a condition, practice, means, method, operation, or process, it shall prevail over any different general standard...” – OSHA 1910.5 (c) (1).

Contact OSHA at (800) 321-6742, www.OSHA.gov and ASME at 800-843-2763, www.ASME.org for reference assistance.

- **Always know hook load ...** Avoid hook failure.

“Fittings shall be: (i) of a minimum breaking strength equal to that of the sling ...” – OSHA 1910.184 (i) (3) (i).

“It shall be determined that the weight of the load to be lifted does not exceed the lesser of the load rating of the hook or the load rating of the equipment of which the hook is a part.” – ASME B30.10-1.3 (a).

Maximum lift system load applied to self-locking hook must be known for proper self-locking hook selection.

- **Never use a hook without a legible product identifier ...** Product Identification is required to insure proper application.

“Hooks, rings ... or other attachments shall have a rated capacity at least equal to that of the alloy steel chain with which they are used or the sling shall not be used in excess of the rated capacity of the weakest component ...” – OSHA 1910.184 (e) (2) (i).

Gunnebo Lifting product identifier is forged into self-locking hook and is designated as (trade size)-(grade); Example: 13-8.

Gunnebo Lifting Grade 80 and Grade 100 Alloy Steel BK self-locking hook Working Load Limits for selected design factors are listed in pounds and given in TABLE 1A and TABLE 1B.

**TABLE 1A
G80 ALLOY STEEL BK SELF-LOCKING HOOK
WORKING LOAD LIMITS***

BK HOOK		WORKING LOAD LIMIT*			
TRADE		IN POUNDS			
SIZE		DESIGN FACTOR			
MM	IN	4:1	5:1	6:1	9:1
5/6	7/32	2100	1680	1400	930
7/8	9/32	3500	2800	2330	1560
10	3/8	7100	5680	4730	3160
13	1/2	12000	9600	8000	5330
16	5/8	18100	14480	12070	8040
18/20	3/4	28300	22640	18860	12570
22	7/8	34200	27360	22800	15200
26	1	47700	38160	31800	21200
28	1 1/8	55100	44080	36700	24480

*Working Load Limits are valid between temperatures of -40°F and 400°F.

**TABLE 1B
G100 ALLOY STEEL BK SELF-LOCKING HOOK
WORKING LOAD LIMITS***

BK HOOK		WORKING LOAD LIMIT*			
TRADE		IN POUNDS			
SIZE		DESIGN FACTOR			
MM	IN	4:1	5:1	6:1	9:1
5/6	7/32	2700	2160	1800	1200
7/8	9/32	5700	4560	3800	2530
10	3/8	8800	7040	5860	3900
13	1/2	15000	12000	10000	6660
16	5/8	22600	18080	15060	10040
18/20	3/4	35300	28240	23530	15680
22	7/8	42700	34160	28460	18970

*Working Load Limits are valid between temperatures of -40°F and 400°F.

- **Never overload a hook ...** Understand Working Load Limits.

“Slings shall not be loaded in excess of their rated capacities.” – OSHA 1910.184 (c) (4).

Working Load Limit (WLL) is the maximum working load to be applied to a BK self-locking hook for the given application. WLL applies to in-line loading and does not include torsional, binding, shock or side load effects.

“The design factor for alloy steel chain slings shall be a minimum of 4.” – ASME B30.9 - 1.4.

“The design factor for wire rope slings shall be a minimum of 5” – ASME B30.9-2.4.

“The design factor for metal mesh slings shall be a minimum of 5.” – ASME B30.9-3.4.

“Increased design factors may be required for use with natural fiber ropes.”

“The design factor for synthetic rope slings shall be a minimum of 5.” – ASME B30.9-4.4.

The design factor for synthetic webbing slings shall be a minimum of 5. – ASME B30.9-5.4.

The design factor for round slings shall be a minimum of 5. – ASME B30.9-6.4.

Standard Gunnebo Lifting WLL's are based on a 4 design factor. Lift dynamics, duty cycle and lift system type may require an increased design factor, hence a reduced WLL. Inattention to required design factor can result in hook overload. Contact Gunnebo Johnson Corporation Service Department for assistance at (800) 331-5460.

- **Never ride on hook or load ...** Avoid death or injury.

Sling use regulation requires: "All employees shall be kept clear of loads about to be lifted and of suspended loads." – OSHA 1910.184 (c) (9).

General worksite regulations require "No hoisting, lowering, swinging or traveling shall be done while anyone is on the load or hook."
– OSHA 1910.180 (h) (3) (v).

Construction worksite regulation stipulates: "The use of a crane or derrick to hoist employees on a personnel platform is *prohibited, except* when the erection, use, and dismantling, of conventional means of reaching the worksite, such as a personnel hoist, ladder, stairway, aerial lift, elevating work platform or scaffold, would be *more hazardous* or is *not possible* because of structural design or worksite conditions." – OSHA 1926.550(g) (2).

"Bridles and associated rigging for attaching the personnel platform to the hoist line shall be used only for the platform and the necessary employees, their tools and the materials necessary to do their work and shall not be used for any other purpose when not hoisting personnel." – OSHA 1926.550 (g) (4) (iv) (E).

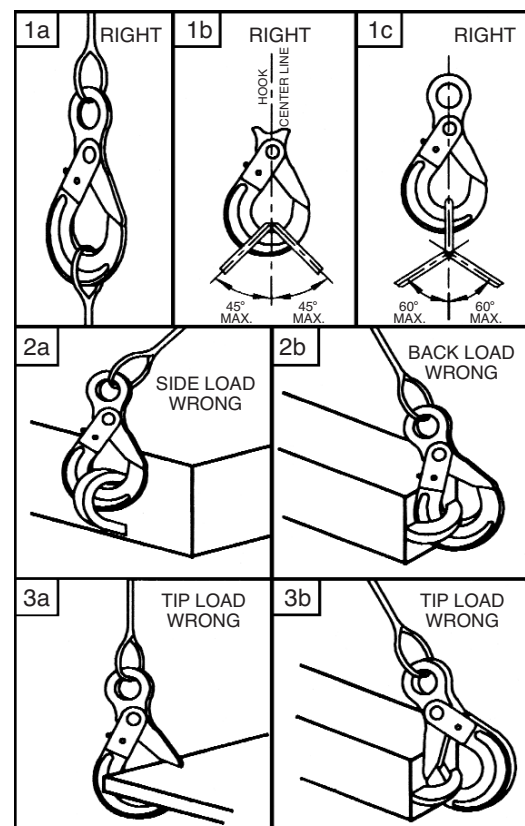
Alloy steel BK self-locking hooks may be used to rig personnel platforms when lift system is in full compliance with OSHA 1926.550(g) and TABLE 3.

- **Never rig a hook to a load improperly ...** Avoid dropped loads and hook damage.

"Safe operating practices ..." – OSHA 1910.184 (c)
 "Operating practices ..." – ASME B30.5-3.2.
 "Operating practices ..." – ASME B30.9-1.10, 2.10, 3.10, 4.10, 5.10, 6.10.
 "Operating practices ..."

- (c) Loads shall be centered in the base (bowl/saddle) of hook to prevent point loading of the hook. (See Figure 1a, 1b & 1c)
- (d) Hooks shall not be used in such a manner as to place a side load or back load on the hook. (See Figure 2a & 2b)
- (e) When using a device to close the throat opening of the hook, care shall be taken that the load is not carried by the closing device. (See Figure 3a & 3b)
- (f) Hands, fingers and body shall be kept from between hook and load...
- (i) The use of a hook with a latch does not preclude the inadvertent detachment of a slack sling or a load from the hook. Visual verification of proper hook engagement is required in all cases.
- (j) Self-locking hooks shall be locked during use.
- (k) "When a hook is equipped with a latch, the latch should not be restrained from closing during use." – ASME B30.10-1.3.

"Operation ..." – ASME B30.16-3.



"Operation ..." – ASME B30.21-1.7; 2.6; 3.6.

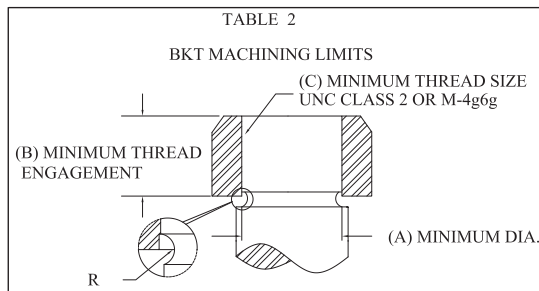
Self-locking hooks shall not be rigged with more than two (2) sling legs in the hook saddle and sling leg angles shall not be greater than 45° from hook centerline. (Figure 1b)

Self-locking hooks shall be rigged with a master ring or shackle when three (3) or more sling legs are used or sling leg angles exceed 45° from hook centerline. (Figure 1c)

Synthetic slings may require a working load limit (WLL) reduction when used in self-locking hook eye or saddle. See synthetic sling manufacturers' recommendations.

Chain sling WLL when choked with BK self-locking hooks equals 80% of sling identification tag WLL.

BKT self-locking hook shank machining limits are defined and are given in TABLE 2 and these limits are required for WLL's given in TABLE 1A and 1B. Failure to comply can result in stripped threads and loss of load.



English				
Trade Size		(A)	(B)	(C) Min. Thread
MM	IN	Dia.	Len.	Class 2
5/6	7/32	.430	.563	9/16-12 UNC
7/8	9/32	.485	.625	5/8-11 UNC
10	3/8	.600	.750	3/4-10 UNC
13	1/2	.820	1.00	1-8 UNC
16	5/8	1.048	1.25	1-1/4-7 UNC
Metric				
Trade Size		(A)	(B)	(C) Min. Thread
MM	IN	Dia.	Len.	Class 4g6g
5/6	7/32	11	14	M14x2
7/8	9/32	13	16	M16x2
10	3/8	16	20	M20x2.5
13	1/2	20	24	M24x3
16	5/8	25	30	M30x3.5

Hook shank threads shall end with a thread relief. Hook shank shall not be swaged to wire rope or rod. Hook shank shall not be drilled and internally threaded.

Gunnebo Johnson Corporation cannot assume responsibility for:

- (1) Machining quality,
- (2) Application,
- (3) Attachment to power source or load.

• **Never use a worn-out or damaged hook.**

"Each day before being used, the sling and all fastenings and attachments shall be inspected for damage or defects by a competent person designated by the employer. Additional inspections shall be performed during sling use where service conditions warrant. Damaged or defective slings shall be immediately removed from service." – OSHA 1910.184 (d).

"In addition to the inspection required by paragraph (d) of this section, a thorough periodic inspection of alloy steel chain slings in use shall be made on a regular basis, to be determined on the basis of (A) frequency of sling use; (B) severity of service conditions; (C) nature of lifts being made; and (D) experience gained on the service life of slings used in similar circumstances. Such inspections shall in no event be at intervals greater than once every 12 months." – OSHA 1910-184 (e) (3) (i).

"The thorough inspection of alloy steel chain slings shall be performed by a competent person designated by the employer, and shall include a thorough inspection for wear, defective welds, deformation and increase in length. Where such defects or deterioration are present, the sling shall be immediately removed from service." – OSHA 1910.184 (e) (3) (iii).

"Worn or damaged alloy steel chain slings or attachments shall not be used until repaired." – OSHA 1910.184 (e) (7) (i).

Self-locking hook with wear greater than 10 percent of the original dimension for any cross-section shall be removed from service.

Inspect self-locking hook and threads with magnetic particle and/or dye penetrant at intervals no greater than once annually. Some disassembly may be required.

Self-locking hook with corroded threads shall be removed from service and shall not be returned to service unless approved by a competent person.

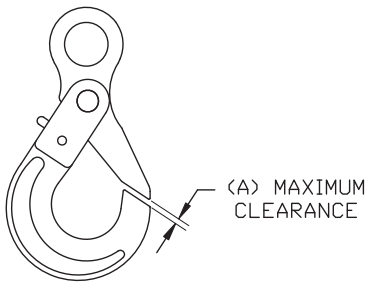
Self-locking hook that is broken, cracked, bent, stretched, twisted, or welded on shall be removed from service and shall not be repaired.

Self-locking hook that is nicked, gouged or lapped shall be removed from service and shall not be returned to service unless properly repaired.

Hook latch shall properly close and lock.

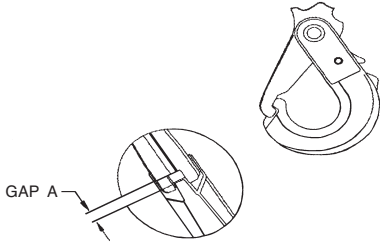
Self-locking hook with latch tip opening greater than amount given in TABLE 3A and TABLE 3B shall be removed from service and shall not be returned to service unless properly repaired.

TABLE 3A



Trade Size		(A) Max. Clearance			
		Material Handling		Personnel Handling	
MM	IN	MM	IN	MM	IN
5/6	7/32	2.2	.09	1.5	.06
7/8	9/32	2.7	.11	1.9	.07
7	9/32	2.7	.11	1.9	.07
8	5/16	2.7	.11	1.9	.07
10	3/8	3.2	.13	2.2	.09
13	1/2	3.7	.15	2.6	.10
16	5/8	4.7	.19	3.2	.13
18/20	3/4	5.3	.21	3.6	.14
22	7/8	6.3	.25	4.2	.17
26	1	6.8	.27	4.6	.18
28	1-1/8	7.7	.30	5.1	.20

TABLE 3B



Trade Size		(A) Max. Clearance			
		Material Handling		Personnel Handling	
MM	IN	MM	IN	MM	IN
5/6	7/32	3.2	.13	2.2	.09
7/8	9/32	3.7	.15	2.7	.11
7	9/32	3.7	.15	2.7	.11
8	5/16	3.7	.15	2.7	.11
10	3/8	4.2	.17	3.2	.13
13	1/2	4.7	.19	3.7	.15
16	5/8	5.7	.23	4.7	.19
18/20	3/4	6.3	.25	5.3	.21
22	7/8	7.3	.29	6.3	.25

- Never use a hook in extreme temperatures.

Alloy steel self-locking hooks shall not be used while heated above 1000°F or cooled below -40°F.

Alloy steel self-locking hooks shall be permanently removed from service if heated above 1000°F.

Working Load Limits (WLL) given in TABLE 1A and 1B are valid between temperature of -40° and 400°F.

WLL shall be reduced in accordance with TABLE 4A & 4B when heated between 400°F and 1000°F.

Permanent WLL reduction shall be made in accordance with TABLE 4A and 4B for self-locking hooks heated over temperatures indicated. Lifting equipment identification tag shall be replaced and the new tag shall have the reduced WLL.

TABLE 4A GRADE 80

Hook Component Temperature	Percentage of TABLE1A WLL	
	During Exposure	After Exposure
-40°F to 400°F	None	None
>400°F to 500°F	95%	None
>500°F to 600°F	90%	None
>600°F to 700°F	82%	None
>700°F to 800°F	75%	90%
>800°F to 900°F	65%	75%
>900°F to 1000°F	60%	70%

TABLE 4B GRADE 100

Hook Component Temperature	Percentage of TABLE1B WLL	
	During Exposure	After Exposure
-40°F to 400°F	None	None
>400°F to 500°F	95%	95%
>500°F to 600°F	90%	90%
>600°F to 700°F	82%	85%
>700°F to 800°F	75%	80%
>800°F to 900°F	65%	75%
>900°F to 1000°F	60%	70%

- **Never use a hook in alkaline or acidic conditions.**

Gunnebo Lifting alloy steel BK self-locking hooks shall not be used in alkaline or acidic conditions. Resulting metal embrittlement and accelerated corrosion can cause sudden failure. Hot dipped galvanizing and electro-zinc plating shall be done only by Gunnebo Lifting.