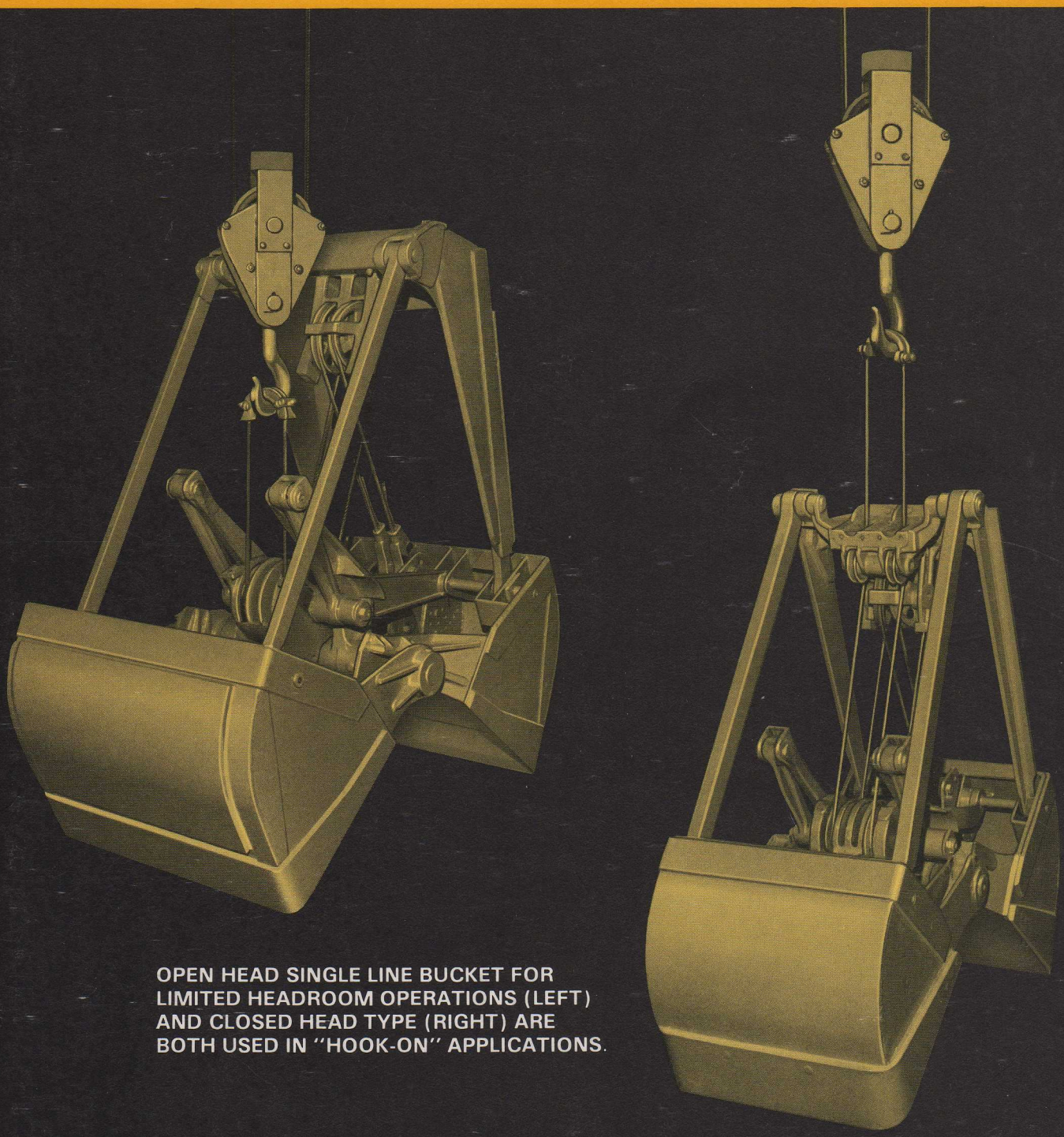
BLAW-KNOX

SINGLE LINE BUCKETS



OPEN HEAD SINGLE LINE BUCKET FOR LIMITED HEADROOM OPERATIONS (LEFT) AND CLOSED HEAD TYPE (RIGHT) ARE BOTH USED IN "HOOK-ON" APPLICATIONS.

Courtesy of Machine.Market

A Versatile Workhorse

One of the most widely used materials handling tools in many mills, foundries, and heavy manufacturing plants is the single line bucket. "Single line" means the bucket requires only one hoisting drum for operation so it can be used with most available overhead cranes. Opening of the scoops is either automatic or controlled manually.

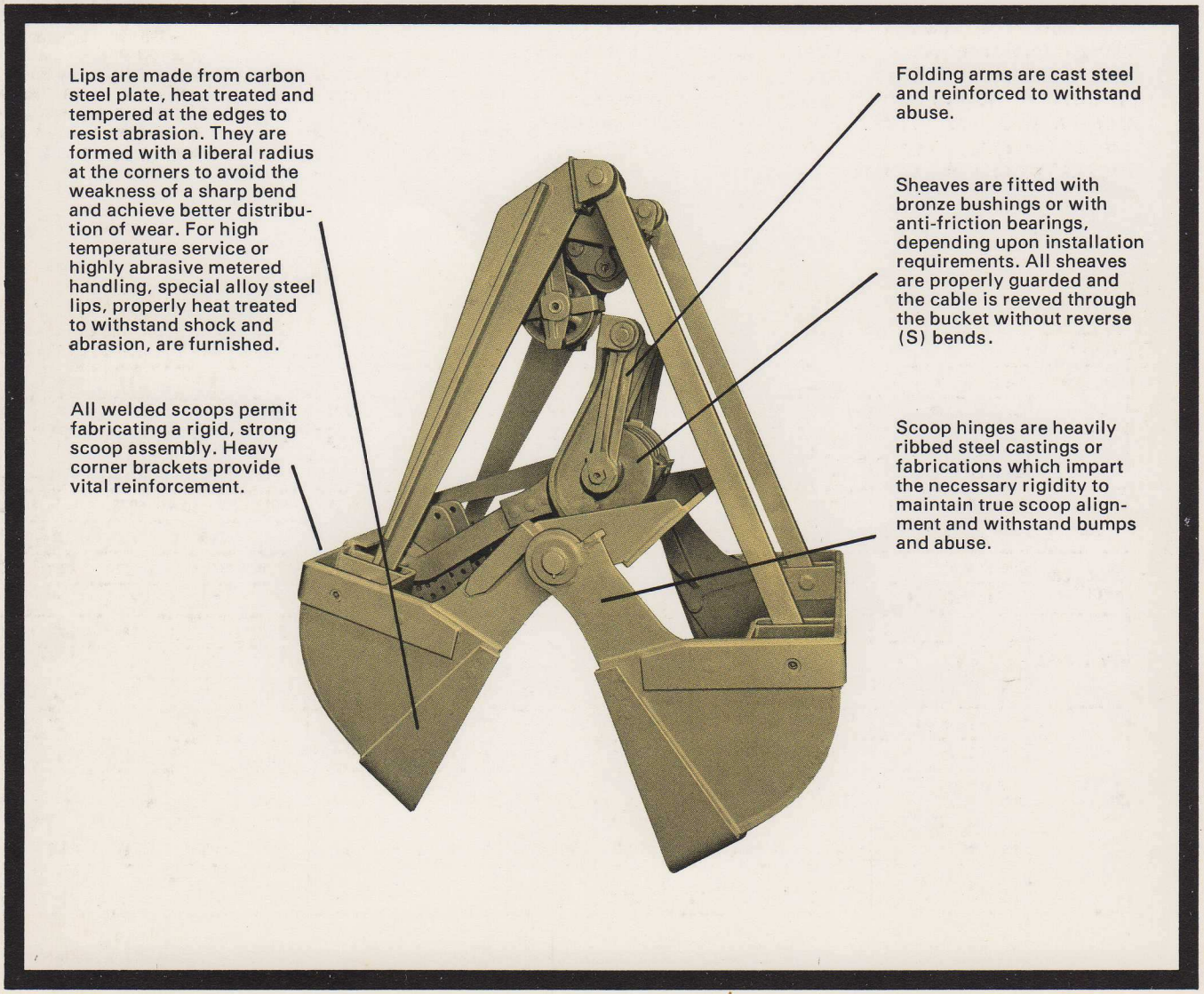
The most popular type of single line bucket is the "hook-on." It can be picked up whenever necessary by a single crane hook and, after use, can be quickly detached.

The other major installation mode of single line buckets is "direct-reeved." This is a more permanent installation in which the bucket cables are reeved directly to the drum of the crane.

In its more than 50 years of building single line buckets for the most rugged industrial applications, Blaw-Knox Equipment has developed highly specialized engineering and manufacturing skills. Today's single line bucket is a streamlined materials handling machine that loads to capacity, transports without spillage, and empties on target. Blaw-Knox Equipment single line buckets are built to last. Some are still operating after 20 years with only replacement of pins, bushing, lips and other parts directly exposed to wear. The latest generation is completely welded. This provides a more rigid construction, and one that is much easier to repair in the field because welders are readily available.

Lifting and closing the bucket using only a single line is achieved by a three-point toggle folding arm principle. This mechanism keeps the bucket tightly closed and assures that no loss of material will occur as the bucket is moved to the discharge point. Once the folding arm is in closed position, the bucket cannot be opened by jarring or bumping.

The bucket can be operated automatically or with a hand tripping option. When operating automatically, setting down the bucket relieves tension on the lines. The folding arms disengage by gravity, allow-



Courtesy of Machine.Market

ing the scoops to swing open as the bucket is lifted, thus discharging the load. The empty bucket is then moved to the loading point and cable payed out until the folding arms fall back into the closing position. Then when you take up on the cable the bucket digs into the pile. When the scoops are closed the bucket is lifted out of the material and transported to the discharge area. The folding arm principle does not incorporate any latches or springs which can get out of adjustment and require periodic resetting.

For dumping with the bucket suspended in air, a hand tripping arrangement is available.

Blaw-Knox Equipment single line "hook-on" buckets are available in lightweight, medium, and heavy-duty configurations. They can be used in a variety of applications, including handling materials from stockpiles to hoppers, unloading railroad cars, and unloading materials from barges or ships. The bucket may be equipped with teeth for penetration of lumpy or hard crusted materials, or with special lips for handling abrasive materials.

Blaw-Knox Single Line "Hook-on" Buckets

"Hook-on" buckets, as the name implies, are used with existing cranes for materials handling operations which are irregular or intermittent, such as clean-up or transfer of material.

One of the major considerations in using this equipment is headroom. Blaw-Knox Equipment furnishes both a "closed" head design for normal conditions, and an "open" head bucket for limited operating headroom. The latter can be used when headroom is as little as 7'3".

Headroom clearance, as measured from the throat of the crane hook when it is at the highest point, down to the highest object, such as car or bin, must be sufficient so that bucket can clear.

TABLE I NORMAL DUTY Single Line "Hook-on" Type Buckets

SIZE NO.	Closed Head Model	300-NS	300-LHS (H)	300S	300SS	300SW			302S	305S			310S		310WS	
	Open Head Model						0-300S	0-300-SI			306	306-I		311		311W
CAPACITY	Rating, Cubic Yards	1/5	1/5	1/4	1/3	1/3	1/3	3/8	3/8	1/2	1/2	3/4	3/4	3/4	1	1
	Heaped, Cubic Feet	6.6	7.1	8	10	10.5	10.5	13.6	12	20	20	27	27	27	36	36
	Plate Line, Cubic Feet	5.4	5.3	6.9	8.4	8.8	8.8	11.4	10.3	15.2	15.2	20.6	21	21	28	28
	Water Level, Cubic Feet	4.5	4.2	5.8	7.1	7.4	7.4	9.3	8.7	12.6	12.6	17.1	17	17	23	23
WEIGHT (LBS.)	Bucket Standard Wt.	1035	1235	1340	1700	1420	1360	1550	1425	2300	2200	2500	2950	2900	3400	3400
	Bucket Ex. Hvy. Wt.	..	..	1700	..	..	1520	..	1725	3110	3200	..	3380	3350	3800	3875
OPERATING HEAD ROOM	Reeved 2 Parts	10'11"	9'0"	11'3"	11'6"	11'3"	7'8"	7'8"	11'0"	11'9½"	7'3"	7'3"	13'6"	8'9"	13'6"	8'9"
	Reeved 3 Parts	..	..	..	..	..	..	..	13'6"	14'10½"	10'4"	10'4"	17'1"	12'3"	17'1"	12'3"
DATA FOR HOOK BLOCK	Hook Travel to Close — Reeved 2 Parts	5'8"	3'9½"	5'9"	5'9"	5'9"	5'9"	5'6"	5'4"	5'10"	5'10"	5'10"	6'6"	6'6"	6'6"	6'6"
	Hook Travel to Close — Reeved 3 Parts	..	..	..	..	..	..	..	8'2"	9'0"	9'0"	9'0"	10'0"	10'0"	10'0"	10'0"
DIMENSIONS	Width	1'6"	1'10½"	Note W	2'0"	2'4"	2'4"	3'0"	2'9"	3'0"	3'0"	4'0"	3'0"	3'0"	4'3"	4'3"
	Open Length	4'10"	3'10"	4'10"	5'4"	4'10"	4'10"	4'10"	4'11"	5'1"	5'1"	5'1"	6'7"	6'7"	6'7"	6'7"
	Closed Length	3'9"	3'9½"	3'9"	4'1"	3'9"	3'9"	3'9"	3'9"	4'5"	4'5"	4'5"	4'8"	4'8"	4'8"	4'8"
	Open Height	5'4"	5'2½"	5'4"	5'6"	5'4"	5'5"	5'5"	5'2"	5'10"	5'10"	5'10"	7'0"	6'11"	7'0"	6'11"
CABLE DATA	Sheave Diameter	8½"	8½"	8½"	8½"	8½"	8⅜"	8⅜"	8½"	8½"	8½"	8½"	10"	10"	10"	10"
	Size of Cable	⅜"	⅜"	⅜"	⅜"	⅜"	⅜"	⅜"	⅜"	½"	½"	½"	½"	½"	½"	½"
	Length—Reeved 2 Parts	26'0"	23'0"	30'0"	30'0"	30'0"	19'0"	19'0"	30'0"	33'0"	26'0"	26'0"	36'0"	27'0"	36'0"	27'0"
	Length—Reeved 3 Parts	..	..	..	..	..	..	..	36'0"	40'0"	30'0"	30'0"	44'0"	35'0"	44'0"	35'0"
	Center to Center of Cable	..	..	9¾"	9¾"	9¾"	6"	6"	14½"	6½"	6½"	6½"	6½"	6½"	6½"	6½"

Note W—Bucket width standard weight 1'10½", heavy weight 2'0¼".
H—Bucket equipped with 90° head.

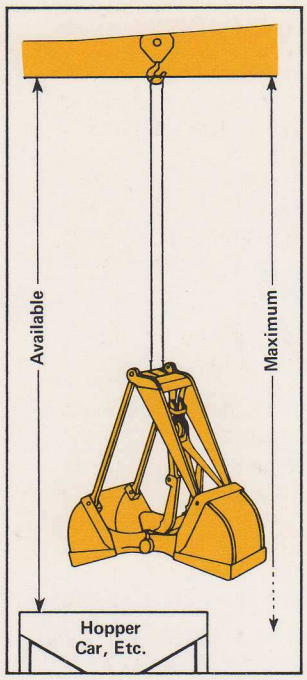
Supplied complete with cable and hook-on yoke installed.
The bucket is ready for immediate operation.

Courtesy of Machine.Market

Other space factors to be considered include size of hopper into which bucket discharges, size of pit, car, trench, bin, etc., and obstructions, such as structural supports over which the bucket must travel.

Cable scoring on drum and drum position should be arranged so that the crane hook can be lowered to the floor or bottom of pit, (lowest level on which bucket must rest) with existing cable and available scoring on drum.

Another important consideration is character and state of material. Every material offers a certain resistance to penetration depending on the weight per cubic foot, size and shape of pieces, compaction, etc. This influences amount of bucket weight required to exert sufficient penetrating force for a full load. It also influences amount of cable overhaulage and this determines the required operating headroom. Occasionally for hard digging, extra weight is required. This is particularly true with "hook-on" type buckets when restricted headroom clearance limits their closing power to two-part reeving.



Available operating headroom for the "hook-on" type bucket is the distance from the throat of hook (in highest position) down to the top of highest object the bucket must clear.

Maximum operating headroom is distance from throat of hook (in highest position) down to floor or bottom of pit.

TABLE II NORMAL DUTY Single Line "Hook-on" Type Buckets

SIZE NO.	Closed Head Model		3100		3125		3125-1		3150		3125-2		325-S	3175		3175-2	
	Open Head Model			0-3100		0-3125		0-3125-1		0-3150		0-3125-2			0-3175		0-3175-2
CAPACITY	Rating, Cubic Yards		1¼	1¼	1½	1½	1¾	1¾	1¾	1¾	2	2	2	2	2	3	3
	Heaped, Cubic Feet		36	36	45	45	52	52	54	54	60.6	60.6	54	63	63	86	86
	Plate Line, Cubic Feet		32.3	32.3	40.4	40.4	47.7	47.7	48.4	48.4	54.4	54.4	54	56.5	56.5	77.9	77.9
	Water Level		22.8	22.8	28.5	28.5	32.7	32.7	34.2	34.2	37.9	37.9	28	39.9	39.9	53.4	53.4
WEIGHT (LBS.)	Bucket Standard Wt.		4100	4100	4550	4600	4640	4825	6050	6150	4770	4940	4400	6475	6675	7200	7550
	Bucket Ex. Hvy. Wt.		4800	4800	5150	5250	..	..	7225	7500	..	..	..	7700	8100	..	..
OPERATING HEAD ROOM	Reeved 2 Parts		15'4"	9'7"	15'4"	9'7"	15'5"	9'8"	17'5"	11'3"	15'5"	9'8"	15'8"	17'5"	11'3"	17'6"	11'4"
	Reeved 3 Parts		19'7"	13'10"	19'7"	13'10"	19'8"	13'11"	21'10"	15'11"	19'8"	13'11"	19'7"	21'10"	15'11"	21'11"	16'0"
DATA FOR HOOK BLOCK	Hook Travel to Close	Reeved 2 Parts	7'9"	7'9"	7'9"	7'9"	7'9"	7'9"	9'2"	9'2"	7'9"	7'9"	7'6"	9'2"	9'2"	9'2"	9'2"
		Reeved 3 Parts	11'10"	11'10"	11'10"	11'10"	11'10"	11'10"	13'7"	13'7"	11'10"	11'10"	11'4"	13'7"	13'7"	13'7"	13'7"
DIMENSIONS	Width		3'6"	3'6"	4'4"	4'4"	4'4"	4'4"	4'0"	4'0"	5'1"	5'1"	3'3"	4'8"	4'8"	5'8"	5'8"
	Open Length		7'1"	7'1"	7'1"	7'1"	7'7"	7'7"	8'2"	8'2"	7'6"	7'6"	8'11"	8'2"	8'2"	8'7"	8'7"
	Closed Length		5'10"	5'10"	5'10"	5'10"	6'3"	6'3"	6'7"	6'7"	6'2"	6'2"	7'1"	6'7"	6'7"	6'11"	6'11"
	Open Height		8'0"	8'0"	8'0"	8'0"	8'1"	8'1"	9'2"	9'2"	8'1"	8'1"	8'7"	9'2"	9'2"	9'3"	9'3"
CABLE DATA	Sheave Diameter		12"	12"	12"	12"	12"	12"	14"	14"	12"	12"	12"	14"	14"	14"	14"
	Size of Cable		⅝"	⅝"	⅝"	⅝"	⅝"	⅝"	¾"	¾"	⅝"	⅝"	⅝"	¾"	¾"	¾"	¾"
	Length—Reeved 2 Parts		38'0"	28'2"	38'0"	28'2"	38'0"	28'2"	47'0"	32'11"	38'0"	28'2"	37'0"	47'0"	32'11"	42'6"	32'11"
	Length—Reeved 3 Parts		46'6"	36'2"	46'6"	36'2"	46'6"	36'2"	56'0"	43'4"	46'6"	36'2"	45'0"	56'0"	43'4"	53'10"	43'4"
	Center to Center of Cable		7¾"	7¾"	7¾"	7¾"	7¾"	7¾"	8¾"	8¾"	7¾"	7¾"	6½"	8¾"	8¾"	8¾"	8¾"

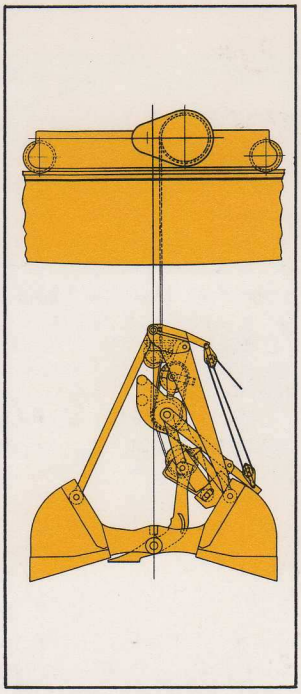
Supplied complete with cable and hook-on yoke installed.
The bucket is ready for immediate operation.

Courtesy of Machine.Market

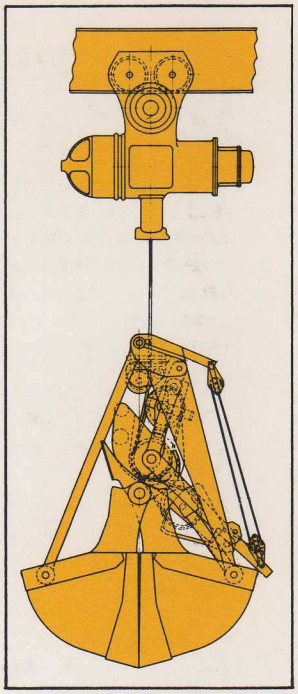
Blaw-Knox Equipment "Direct Reeved" Single Line Buckets

The "direct reeved" type of installation is for buckets used in continuous operation. As with the "hook-on" types, selection criteria is based on crane capacity, space limitations, and type of material to be moved.

For cable scoring and drum position, there are additional considerations. The user should make certain there is sufficient scoring on the drum to wrap all the cable required to close and hoist the bucket from the lowest to the highest position. "Direct reeved" buckets are built to open in a direction parallel or at right angles to the drum axis.



When both lines are reeved directly to the hoisting drum of an overhead crane or monorail, bronze bushed sheaves are normally furnished. In this type of installation the bucket normally opens in a direction at right angles to the drum axis.



The two ends of the closing line that pass between the lead-in guide rollers and guide sheaves at the head of the bucket are normally in a plane at right angles to open length of bucket. Therefore, the bucket normally opens in a direction parallel to monorail drum axis.

TABLE III DIRECT REEVED Single Line Type Buckets

SIZE NO.		301S	303S	308S	312S	312WS	R3100	R3125	R-3125-1	R-3125-2	318S	R3150	326S	R3175
CAPACITY	Rating, Cu. Yd.	1/3	3/8	1/2	3/4	1	1 1/4	1 1/2	1 3/4	2	1 1/4	1 3/4	2	2
	Heaped, Cu. Ft.	7.8	11.6	19.8	27	36	35.6	44.5	52.0	61.0	36	53.4	54	62.3
	Plate Line, Cu. Ft.	6.5	10.3	15.2	21	28	32.3	40.4	47.7	54.4	36	48.4	54	56.5
	Water Level, Cu. Ft.	5.4	8.7	12.6	17	23	22.8	28.5	32.7	37.9	18.7	34.2	28	39.9
WEIGHT (LBS.)	Bucket Only	1200	1700	2350	3075	3700	4200	4650	4750	4880	4730	6075	4770	6500
	Teeth (No. & Weight)	5-60	5-140	5-150	5-150	7-210	5-215	7-301			5-215	5-215	5-215	7-301
OPERATING HEIGHT	Open Height	5'5"	5'2"	5'10"	7'0"	7'0"	8'0"	8'0"	8'1"	8'1"	8'4"	9'2"	8'9"	9'2"
	For Teeth Add Approx.		8 1/2"	8 1/2"	8 1/2"	8 1/2"	10"	10"	10"	10"	8 1/2"	10"	10"	10"
DIMENSIONS	Width	1'9"	2'9"	3'0"	3'0"	4'3"	3'6"	4'4"	4'4"	5'1"	3'3"	4'0"	3'3"	4'8"
	Open Length	4'10"	4'11"	5'1"	6'7"	6'7"	7'1"	7'1"	7'7"	7'6"	7'4"	8'2"	8'11"	8'2"
	Closed Length	3'9"	4'8"	4'5"	4'8"	4'8"	5'10"	5'10"	6'3"	6'2"	5'10"	6'7"	6'10"	6'7"
CABLE DATA	Sheave Diameter	8 3/8"	8 1/2"	8 1/2"	10"	10"	12"	12"	12"	12"	12"	14"	12"	14"
	Size of Cable	3/8"	3/8"	3/8"	1/2"	1/2"	5/8"	5/8"	5/8"	5/8"	5/8"	3/4"	5/8"	3/4"
	Line Reeved in Open Bucket	12'8"	35'0"	35'0"	40'7"	40'7"	45'0"	45'0"	45'0"	45'0"	45'0"	51'0"	34'0"	51'0"
	Line Pulled Out to Close Bucket	5'8"	16'5"	17'6"	20'4"	20'4"	23'7"	23'7"	23'7"	23'7"	25'6"	27'2"	15'6"	27'2"
	Center to Center of Cable	2 1/4"	14 1/2"	6 1/2"	6 1/2"	6 1/2"	7 3/4"	7 3/4"	7 3/4"	7 3/4"	6 1/2"	8 3/4"	6 1/2"	8 3/4"

Courtesy of Machine.Market

TABLE IV HEAVY DUTY Single Line "Hook-on" Type Buckets

														SHARKS TEETH			
SIZE NO.	Closed Head Model	3105		349		3201		337		337-W	3301			349-X		3201-X	
	Open Head Model		0-3105		351		3202		338			3302	3402		351-X		3202-X
CAPACITY	B/K Rating, O.H. Slag, Cu. Yds.	1 to 1⅓	1 to 1⅓	1½ to 2	1½ to 2	2	2	2½	2½	3	3 to 3¾	3 to 3¾	4	1½	1½	2	2
	Mfgr. Nom. Rating, Cu. Yds.	1.4	1.4	2	2	2⅓	2⅓	2½	2½	3	4¼	4¼	4¼	2.11	2.11	2.33	2.33
	Heaped, Cu. Ft.	42	42	64	64	72	72	80	80	93	126	126	126	64	64	72	72
	Plate Line, Cu. Ft.	38.2	38.2	57.2	57.2	62.9	62.9	69.8	69.8	81	114.6	114.6	114.6	57.2	57.2	62. 9	62.9
	Water Level, Cu. Ft.	22.7	22.7	34	34	38.8	38.8	43.1	43.1	50.1	68.1	68.1	68.1	34	34	38.8	38.8
WEIGHT (LBS.)	Heavy Weight	7780	8100	11500	11800	14625	15600	16500	17320	18150	. .	. .	. .	13700	12951	. .	. .
	EXTRA HEAVY WEIGHT	8800	9200	12100	12320	16460	16785	17800	18625	. .	25270	25890	27200	15150	15400	18600	19125
	Teeth (Number and Weight)	5-375	5-375	5-480	5-480	7-1064	7-1064	7-1064	7-1064	. .	7-1064	7-1064	7-1064	. .	. .	. .	. .
OPERATING HEAD ROOM	Reeved 2 Parts	19'5"	12'4"	22'2"	14'2"	22'8"	14'4"	22'8"	14'4"	22'8"	27'2"	17'7"	17'7"	22'8"	14'1"	23'2"	14'4"
	Reeved 3 Parts	23'7"	16'9"	27'0"	19'2"	27'7"	19'3"	27'7"	19'3"	27'7"	34'11"	25'4"	25'4"	27'6"	19'1"	28'1"	19'2"
	For Teeth Add Approximately	11"	11"	11"	11"	12"	12"	13"	13"	. .	11"	11"	11"	. .	. .	. .	. .
DATA FOR HOOK BLOCK	Travel Hook to Close — Reeved 2 Parts	10'10"	10'0"	11'5"	11'5"	11'7"	11'5"	11'7"	11'5"	11'7"	14'1"	14'1"	14'1"	11'5"	11'5"	11'7"	11'5"
	Travel Hook to Close — Reeved 3 Parts	14'2"	14'2"	16'2"	16'2"	16'5"	16'3"	16'5"	16'3"	16'5"	21'4"	21'4"	21'4"	16'2"	16'2"	16'5"	16'3"
DIMENSIONS	Width	4'4"	4'4"	4'11"	4'11"	5.3"	5.3"	5'9"	5'9"	6'8"	6'2"	6'2"	6'2"	5'7"	5'7"	5'11"	5'11"
	Open Length	7'6"	7'6"	8'7"	8'7"	9'0"	9'0"	9'0"	9'0"	9'0"	10'11"	10'11"	10'11"	9'3"	9'3"	9'8"	9'8"
	Closed Length	6'0"	6'0"	6'10"	6'10"	6'8"	6'8"	6'8"	6'9"	6'8"	8'10"	8'10"	8'10"	6'10"	6'10"	6'9"	6'8"
	Open Height	9'2"	9'5"	10'6"	10'6"	11'1"	10'9"	11'1"	10'9"	11'1"	13'5"	13'5"	13'5"	11'0"	11'0"	11'1"	10'9"
CABLE DATA	Sheave Diameter	14"	14"	16"	16"	18"	18"	18"	18"	18"	21"	21"	21"	16"	16"	18"	18"
	Size of Cable	¾"	¾"	⅞"	⅞"	1"	1"	1"	1"	1"	1⅛"	1⅛"	1⅛"	⅞"	⅞"	1"	1"
	Total Length to Reeve 2 Parts	46'0"	34'0"	57'6"	41'6"	61'0"	44'0"	61'0"	44'0"	61'0"	67'5"	48'2"	48'2"	57'6"	41'6"	61'0"	44'0"
	Total Length to Reeve 3 Parts	57'6"	46'0"	68'6"	52'6"	72'0"	55'0"	72'0"	55'0"	72'0"	84'9"	65'6"	65'6"	68'6"	52'6"	72'0"	55'0"
	Center to Center of Cables	8¾"	8¾"	13⅝"	13⅝"	10⅝"	10⅝"	10⅝"	10⅝"	10⅝"	13⅛"	13⅛"	13⅛"	13⅝"	13⅝"	10⅝"	10⅝"

Supplied complete with cable and hook-on yoke installed. The bucket is ready for immediate operation.

Heavy-Duty Single Line Buckets

For moving heavy material, such as slag, ferro manganese, ferro silicon, and certain types of ore, heavy-duty single line buckets are usually recommended. Size and capacity are indicated in the table above.

Additional Information

Blaw-Knox Equipment offers a full line of clamshell buckets designed for specific applications. Information on types of buckets and operational advantages is contained in the bulletins listed below. When writing, indicate title and number of bulletins which interest you.

Types of Buckets

Heavy-Duty Two-Line Buckets for Dredging and Industrial Use, Bulletin 2737.

Four Rope Buckets, Bulletin 2392-R.

Buckets for Cement, Chemical and Other Industrial Uses, Bulletin 2378-R.

Two Line Lever Arm Buckets, Bulletin 2726.

Operating Information

Loaded by Leverage (lever arm principles).

Cable Spacing Dimensional Information, Bulletin 2738.

Structural and Operating Advantages, Two Line Lever Arm Buckets, Bulletin 2742.

BLAW-KNOX

BLAW-KNOX EQUIPMENT, INC.

Blawnox, Pa. 15238

One of the White Consolidated Industries

WCI

Courtesy of Machine.Market