

Machinery and Equipment: Information Sheet



—BROCK SOLID®—

Safeguarding Your Grain® Since 1957

BROCK® EVEREST® NARROW-CORRUGATION STIFFENED GRAIN STORAGE FLAT-BOTTOM BINS

Bin Size			Maximum Capacity* - Peaked Storage				Eave Height		Fill Height		
Diameter	Rings	Bin Model	Bushels	U.S. Tons Corn	Metric Tons Corn	U.S. Tons Wheat	Metric Tons Wheat	Feet/Inches	Meters	Feet/Inches	Meters
30 Ft. (9.1 m)	7	E-03007		336	305	358	325	18'-10"	5.73	27'-0"	8.23
	8	E-03008		378	343	403	366	21'-6"	6.55	29'-8"	9.05
	9	E-03009		420	381	448	406	24'-2"	7.38	32'-4"	9.85
	10	E-03010		462	419	492	447	26'-10"	8.17	35'-0"	10.67
	11	E-03011		503	457	537	487	29'-6"	8.99	37'-8"	11.49
	12	E-03012		545	495	582	528	32'-2"	9.81	40'-4"	12.28
	13	E-03013		587	533	626	568	34'-10"	10.61	43'-0"	13.11
	14	E-03014		629	571	671	609	37'-6"	11.43	45'-8"	13.93
	15	E-03015		671	609	716	649	40'-2"	12.25	48'-4"	14.72
	16	E-03016		713	647	760	690	42'-10"	13.05	51'-0"	15.54
	17	E-03017		755	685	805	730	45'-6"	13.87	53'-8"	16.37
	18	E-03018		797	723	850	771	48'-2"	14.69	56'-4"	17.16
	19	E-03019		839	761	895	812	50'-10"	15.48	59'-0"	17.98
	20	E-03020		881	799	939	852	53'-6"	16.31	61'-8"	18.81
	21	E-03021		922	837	984	893	56'-2"	17.13	64'-4"	19.60
	22	E-03022		964	875	1,029	933	58'-10"	17.92	67'-0"	20.42
	23	E-03023		1,006	913	1,073	974	61'-6"	18.75	69'-8"	21.24
	24	E-03024		1,048	951	1,118	1,014	64'-2"	19.57	72'-4"	22.04
	25	E-03025		1,090	989	1,163	1,055	66'-10"	20.36	75'-0"	22.86
	26	E-03026		1,132	1,027	1,207	1,095	69'-6"	21.18	77'-8"	23.68
	27	E-03027		1,174	1,065	1,252	1,136	72'-2"	22.01	80'-4"	24.48
	28	E-03028		1,216	1,103	1,297	1,176	74'-10"	22.80	83'-0"	25.30
	29	E-03029		1,258	1,141	1,341	1,217	77'-6"	23.62	85'-8"	26.12
	30	E-03030		1,300	1,179	1,386	1,258	80'-2"	24.44	88'-4"	26.91
	31	E-03031		1,341	1,217	1,431	1,298	82'-10"	25.24	91'-0"	27.74
	32	E-03032		1,383	1,255	1,476	1,339	85'-6"	26.06	93'-8"	28.56
	33	E-03033		1,425	1,293	1,520	1,379	88'-2"	26.88	96'-4"	29.35
	34	E-03034		1,467	1,331	1,565	1,420	90'-10"	27.68	99'-0"	30.18
	35	E-03035		1,509	1,369	1,610	1,460	93'-6"	28.50	101'-8"	31.00
	36	E-03036		1,551	1,407	1,654	1,501	96'-2"	29.32	104'-4"	31.79
	37	E-03037		1,593	1,445	1,699	1,541	98'-10"	30.11	107'-0"	32.61
	38	E-03038		1,635	1,483	1,744	1,582	101'-6"	30.94	109'-8"	33.44
	39	E-03039		1,677	1,521	1,788	1,622	104'-2"	31.76	112'-4"	34.23
	40	E-03040		1,718	1,559	1,833	1,663	106'-10"	32.55	115'-0"	35.05

Bushels by Weight

Crop	Bushel Weight (lb)	Moisture Content (%, wet basis)
Barley	48	14.5
Shelled corn	56	15.5
Oats	32	14.0
Soybeans	60	13.0
Sunflowers (oil)	30	10.0
Sunflowers (confectionery)	24	10.0
Wheat	60	13.5

Wet bushels (bu) = total weight (lb) ÷ bushel weight (lb/bu)

Dry bushels (bu) = wet bushels (bu) x [(100 - total moisture shrink) ÷ 100]

[Measured test weight of grain is not used in calculating bushels by weight.]



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BROCK® EVEREST® WIDE-CORRUGATION STIFFENED GRAIN STORAGE FLAT-BOTTOM BINS

Bin Size			Maximum Capacity* - Peaked Storage					Eave Height		Fill Height	
Diameter	Tiers	Bin Model	Bushels	U.S. Tons Corn	Metric Tons Corn	U.S. Tons Wheat	Metric Tons Wheat	Feet/Inches	Meters	Feet/Inches	Meters
27 Ft. (8.2 m)	6	E	11,781	311	282	332	301	22'-2"	6.75	29'-6"	8.99
	7	E	13,548	358	325	382	346	25'-10"	7.87	33'-1"	10.09
	8	E	15,314	405	367	431	391	29'-6"	8.99	36'-10"	11.22
	9	E	17,081	451	409	481	437	33'-2"	10.11	40'-6"	12.34
	10	E	18,847	498	452	531	482	36'-10"	11.22	44'-1"	13.44
	11	E	20,614	545	494	581	527	40'-6"	12.34	47'-10"	14.57
	12	E	22,380	591	536	631	572	44'-2"	13.46	51'-6"	15.70
	13	E	24,147	638	579	680	617	47'-10"	14.58	55'-1"	16.79
	14	E	25,913	685	621	730	662	51'-6"	15.69	58'-10"	17.92
	15	E	27,680	731	663	780	708	55'-2"	16.81	62'-6"	19.05
	16	E	29,446	778	706	830	753	58'-10"	17.93	66'-1"	20.15
	17	E	31,213	824	748	879	798	62'-6"	19.05	69'-10"	21.28
	18	E	32,979	871	790	929	843	66'-2"	20.16	73'-6"	22.40
	19	E	34,746	918	833	979	888	69'-10"	21.28	77'-1"	23.50
	20	E	36,512	964	875	1,029	933	73'-6"	22.40	80'-10"	24.63
	21	E	38,279	1,011	917	1,079	978	77'-2"	23.52	84'-6"	25.76
	22	E	40,045	1,058	960	1,128	1,024	80'-10"	24.63	88'-1"	26.85
	23	E	41,812	1,104	1,002	1,178	1,069	84'-6"	25.75	91'-10"	27.98
	24	E	43,578	1,151	1,044	1,228	1,114	88'-2"	26.87	95'-6"	29.11
30 Ft. (9.1 m)	6	E	14,704	388	352	414	376	22'-2"	6.75	30'-4"	9.24
	7	E	16,886	446	405	476	432	25'-10"	7.87	34'-0"	10.36
	8	E	19,067	504	457	537	487	29'-6"	8.99	37'-8"	11.49
	9	E	21,248	561	509	599	543	33'-2"	10.11	41'-4"	12.59
	10	E	23,429	619	561	660	599	36'-10"	11.22	45'-0"	13.72
	11	E	25,610	677	614	722	655	40'-6"	12.34	48'-8"	14.84
	12	E	27,792	734	666	783	710	44'-2"	13.46	52'-4"	15.94
	13	E	29,973	792	718	845	766	47'-10"	14.58	56'-0"	17.07
	14	E	32,154	849	771	906	822	51'-6"	15.69	59'-8"	18.20
	15	E	34,335	907	823	967	878	55'-2"	16.81	63'-4"	19.29
	16	E	36,517	965	875	1,029	933	58'-10"	17.93	67'-0"	20.42
	17	E	38,698	1,022	927	1,090	989	62'-6"	19.05	70'-8"	21.55
	18	E	40,879	1,080	980	1,152	1,045	66'-2"	20.16	74'-4"	22.65
	19	E	43,060	1,137	1,032	1,213	1,101	69'-10"	21.28	78'-0"	23.77
	20	E	45,241	1,195	1,084	1,275	1,156	73'-6"	22.40	81'-8"	24.90
	21	E	47,423	1,253	1,136	1,336	1,212	77'-2"	23.52	85'-4"	26.00
	22	E	49,604	1,310	1,189	1,398	1,268	80'-10"	24.63	89'-0"	27.13
	23	E	51,785	1,368	1,241	1,459	1,324	84'-6"	25.75	92'-8"	28.25
	24	E	53,966	1,426	1,293	1,521	1,379	88'-2"	26.87	96'-4"	29.35

Volume Bushels (all measurements in feet):

Bushels shelled grain (bu) = 0.8 x cubic feet (cu.ft.)

Bushels ear corn (bu) = 0.4 x cubic feet (cu.ft.)

Rectangular bin volume (cu.ft.) = length x width x height

Cylindrical bin volume = 0.785 x diameter² x height *

Cone volume = 0.262 x diameter² x height *

Pyramid volume = 0.333 x length x width x height

Pile height = tangent of angle repose x [0.5 x rectangular pile width or round pile diameter]

[* diameter² = diameter x diameter]

Angle of Repose

Crop	Angle (degrees)	Tangent
Barley	28	0.53
Shelled corn	23	0.42
Oats	28	0.53
Soybeans	25	0.47
Sunflowers	27	0.51
Wheat	25	0.47

[Also see publication *Calculating Bushels*, or
<http://www.bae.umn.edu/extens/postharvest/bushels.html>]

Maximum storage time in months for shelled corn *

Corn	Corn Moisture Content					
Temp.	13%	14%	15%	16%	17%	18%
40°F	150	61	29.0	15.0	9.5	6.1
50°F	84	34	16.0	8.9	5.3	3.5
60°F	47	19	9.2	5.0	3.0	1.9
70°F	26	11	5.2	2.8	1.7	1.1
80°F	15	6	2.9	1.6	0.9	0.9

[*Based on 0.5% maximum dry matter loss – calculated on the basis of USDA research at Iowa State University.]

TABLE 5. Airflow rates for grain drying and storage processes

Process	Airflow rate range cfm/bu
Aeration	0.1 - 0.5
Dry aeration	0.5 - 1.0
Natural air drying	1 - 3
Low temperature drying	1 - 3
Layer drying	1 - 3
Batch-in-bin drying	5 - 15
In-bin continuous drying	1 - 20
Continuous flow drying	75 - 125

Total airflow = Number of bushels × airflow rate per bushel
= 11,310 × 1 = 11,310 cfm

TABLE 6. Static pressure (inches of water) for corn at different airflow rates

Grain depth (ft)	Airflow rate (cfm/bushel)*					
	0.25	0.5	0.75	1.0	2.0	3.0
2	0.52	0.51	0.51	0.52	0.54	0.56
4	0.54	0.53	0.55	0.58	0.68	0.80
6	0.57	0.58	0.63	0.69	0.95	1.29
8	0.61	0.65	0.75	0.86	1.40	2.10
10	0.66	0.75	0.91	1.09	2.04	3.28
12	0.73	0.87	1.12	1.41	2.90	4.90
14	0.80	1.03	1.39	1.81	4.02	7.00
16	0.89	1.21	1.71	2.30	5.41	9.63
18	1.00	1.43	2.10	2.88	7.10	12.86
20	1.11	1.69	2.55	3.58	9.11	16.72
22	1.24	1.98	3.08	4.38	11.47	
24	1.39	2.32	3.68	5.31	14.20	
26	1.55	2.69	4.36	6.35	17.32	
28	1.73	3.11	5.12	7.53		
30	1.92	3.58	5.97	8.85		

*0.5" water column has been added to static pressure to account for ducts and vents

MK100 /MK80

- Flared lower tube for improved feeding with replaceable 24" flight section.
- MK80 series available in 51', 61' and 71' lengths.
- MK80 capacity: up to 3,900 bu/hr.
- MK100 series available in 36', 51', 61', 71', 81' and 91' lengths
- MK100 capacity: up to 6,000 bu/hr.



Trussing

Heavy duty cable trussing provides maximum support with full bin reach.



Extendable Axles

32" of axle extension for increased stability. Retraction offers reduced width for transport.



Single Cylinder Hydraulic Lift

Proven Cylinder lift provides smooth, fast operation with minimal hydraulic requirements. Combined with the "A" frame undercarriage, Westfield's design allows you to position your auger at the bin with safety and confidence from your tractor seat.



The Westfield Name

When you make only one product, you get to be very good at it. For over 50 years, Westfield has developed and refined the best grain augers available. We've learned what farmers want – affordable, simple, straight-forward designs for labor saving performance and dependability. Westfield's grain augers are built with the best materials, components and features to provide value and performance you can count on. This is our promise and the reason why we're the industry leader.

MK Series

- "A" frame design for maximum stability.
- Choice of mechanical or hydraulic swing auger drives on 8" and 10" models.
- Equipped with heavy duty constant velocity (CV) PTO shaft to eliminate vibrations for smoother running and less stress on the drive train.
- Wear Edge flighting at critical grain transfer points.
- Spring loaded safety discharge door on intake hopper guards against main auger overloading.
- Trussing provides maximum support with full bin reach.

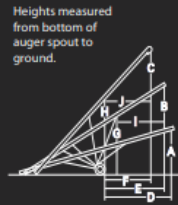
MK AUGER GENERAL SPECIFICATIONS

	MK80 51'	MK80 61'	MK80 71'	MK100 51'	MK100 61'	MK100 71'	MK100 81'	MK100 91'	MK130 61'	MK130 71'	MK130 81'	MK130 91'	MK130 111'
Tubing	14 gauge welded steel			14 gauge welded steel					12 gauge welded steel				
Main Flighting	10 gauge stretched and welded			7 gauge stretched and welded					1/4" stretched and welded				
Reinforced Flight (10 ga wear edge)	On Intake Hopper flighting, Initial Incline flighting and Boot flighting			On Intake Hopper flighting, Initial Incline flighting and Boot flighting					On Intake Hopper flighting, Initial Incline flighting and Boot flighting				
Flight Shaft	1.66" x 11 GA tubing			2" x 11 GA tubing					3" x 11 GA tubing				
PSI Required to Raise Auger	850 psi	950 psi	1200 psi	1000 psi	1200 psi	1400 psi	1800 psi	1800 psi	1400 psi	1600 psi	1600 psi	1950 psi	2000 psi
PTO Line Drive	14 series with 5/16" shear bolt			14 series with 5/16" shear bolt			35 series with 5/16" shear bolt		35 series with 3/8" shear bolt		55 series with 3/8" shear bolt		
HP Required	40	45	50	50	60	65	75	80-90	85	100	110-120	120-140	140-160
Tube Trussing	5/16" Aircraft Type Galvanized Cable			5/16" Aircraft Type Galvanized Cable			3/8" Aircraft Type Galv. Cable	Combination 2-1/2" x 11 Ga. Steel Tubing & 3/8" Galv. Cable	3/8" Aircraft Type Galvanized Cable		Combination 2-1/2" x 11 Ga. Steel Tubing & 3/8" Galv. Cable	Combination 3" x 11 Ga. Steel Tubing & 3/8" Galv. Cable	
Track	High yield 11 Ga. Roll Formed			High yield 11 Ga. Roll Formed			Double 2" x 3" x 1/4" angle iron		Double 2" x 1-1/2" x 3/16" angle iron		Double 2" x 3" x 1/4" angle iron		
Track Shoe	Double 2-3/4" rollers			Double 2-3/4" rollers			Four 3" rollers		Double 3" rollers		Four 3" rollers		
Undercarriage	3" x 11 Ga. Frame			3" x 11 Ga. Frame			3-1/2" x 11 Ga. A Frame	2" x 5" x 3/16" A Frame	4" x 11 Ga. Frame		2" x 5" x 3/16" A Frame		3" x 6" x 3/16" A Frame
Axle	2-1/2" x 2-1/2" x 1/8" Wall Square Tubing			2-1/2" x 2-1/2" x 1/8" Wall Square Tubing			3-1/2" x 3-1/2" x 3/16" Wall Square Tubing	Double 3" x 3" x 3/16" Wall Square Tubing, Arched	3" x 3" x 3/16" Wall Square Tubing		3-1/2" x 3-1/2" x 3/16" Wall Square Tubing	Double 3" x 3" x 1/4" Wall Square Tubing	
Hubs & Wheels	4 bolt automotive type hubs - 15" wheels			4 bolt automotive type hubs - 15" wheels			Heavy duty 6 bolt cast iron hubs - 15" heavy gauge wheels		Heavy duty 6 bolt cast iron hubs - 15" heavy gauge wheels				
Wheel Tread	106"	112"	118"	106"	112"	118"	112" retracted	176"	118"	124"	112" retracted	176"	184"
Hydraulic Lift	One 4" cylinder with 5/16" aircraft cable			One 4" cylinder with 5/16" aircraft cable			One 4-1/2" cyl with 3/8" aircraft cable	Dual 4" cylinders with 5/16" aircraft cable	Dual 4" cylinders with 5/16" aircraft cable		Dual 4-1/2" cyl. with 3/8" aircraft cable		
Transport Height	12' 10"	13' 6"	14' 6"	12' 10"	13' 6"	14' 6"	13' 6"	14' 6"	13' 6"	14' 6"	13' 6"	14' 6"	17' 2"
Tires Required	15" Automotive Tires			15" Automotive Tires			11L-15 x 8 ply		15" Automotive Tires		11L-15 x 8 ply		
*Standard Hopper Height	10 1/2"						12"				14 1/2"		
*Low-Profile Hopper Height	N/A						10 1/2"				10 1/2"		
Approx. Hyd. Fluid Req'd to raise auger	6.2 Litres/ US Quarts	7.5 Litres/ US Quarts	9.0 Litres/ US Quarts	6.2 Litres/ US Quarts	7.5 Litres/ US Quarts	9.0 Litres/ US Quarts	5.0 Litres/ US Quarts		15.0 Litres/ US Quarts	18.0 Litres/ US Quarts	5.0 Litres/ US Quarts		

* to top of metal portion (add 4" for the rubber extension). Note: Capacities may vary according to the commodity and moisture content. Specifications and design are subject to change without notice.

HEIGHT AND REACH SPECIFICATIONS

	A	B	C	D	E	F	G	H	I	J
	Height Lowered	Height Halfway	Height Raised	Reach Lowered	Reach Halfway	Reach Raised	Height at Liftarms	Height at Wheels	Reach to Liftarms	Reach to Wheels
MK80/100 X 51'	10' 10"	23' 7"	34' 8"	23' 9"	22' 0"	19' 6"	14' 10"	19' 0"	18' 5"	19' 6"
MK80/100 X 61'	11' 5"	27' 0"	40' 6"	28' 10"	27' 0"	23' 3"	17' 0"	22' 4"	22' 6"	23' 3"
MK80/100 X 71'	12' 6"	32' 8"	46' 6"	33' 7"	30' 9"	27' 2"	20' 7"	25' 10"	25' 9"	26' 10"
MK100 X 81'	11' 6"	33' 6"	53' 9"	40' 6"	36' 6"	29' 6"	22' 6"	25' 0"	27' 0"	29' 6"
MK100/130 X 91'	12' 6"	36' 0"	59' 6"	44' 8"	41' 5"	34' 8"	23' 3"	28' 6"	31' 4"	38' 4"
MK130 X 61'	11' 0"	26' 6"	40' 0"	28' 10"	27' 0"	23' 3"	16' 7"	22' 2"	24' 2"	24' 0"
MK130 X 71'	12' 0"	32' 2"	46' 0"	33' 7"	30' 9"	27' 2"	20' 2"	25' 7"	27' 7"	27' 9"
MK130 X 81'	10' 7"	31' 5"	51' 9"	41' 3"	38' 7"	32' 0"	22' 4"	27' 2"	26' 6"	30' 8"
MK130 X 111'	15' 0"	42' 6"	71' 6"	54' 7"	50' 11"	42' 6"	27' 8"	33' 5"	38' 5"	48' 9"



Fan power (HP) = airflow (cfm) × static pressure (inches of water) ÷ 3,814

Fan motor cost (\$/h) = fan HP × (0.7475 kW/HP) × (\$/kW h)

BUSHEL WEIGHT CONVERSION

Standards:

Corn = 56 pounds per bushel at 15.5%

Soybeans = 60 pounds per bushel at 13.0%

Sorghum = 56 pounds per bushel at 14.0%

% Moisture	Pounds Corn	Pounds Soybeans	Pounds Sorghum
10.0	52.6	58.0	53.5
11.0	53.2	58.7	54.1
12.0	53.8	59.3	54.7
13.0	54.4	60.0	55.4
14.0	55.0	60.7	56.0
15.0	55.7	61.4	65.7
15.5	56.0	61.8	57.0
16.0	56.3	62.1	57.3
16.5	56.7	62.5	57.7
17.0	57.0	62.9	58.0
17.5	57.4	63.3	58.4
18.0	57.7	63.7	58.7
18.5	57.1	64.0	59.1
19.0	58.4	64.4	59.5
19.5	58.9	64.8	59.8
20.0	59.2		60.1
20.5	59.9		60.6
21.0	59.9		61.0
21.5	60.3		61.4
22.0	60.7		61.7
22.5	61.1		62.1
23.0	61.5		62.6
23.5	61.9		63.0
24.0	62.5		63.5
25.0	63.1		64.2
26.0	64.0		65.1
27.0	64.8		66.0
28.0	65.7		66.9
29.0	66.7		67.8
30.0	67.6		68.8