



Seed Corn Plantability Guidelines

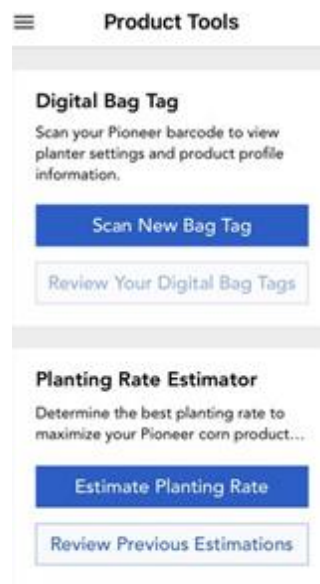
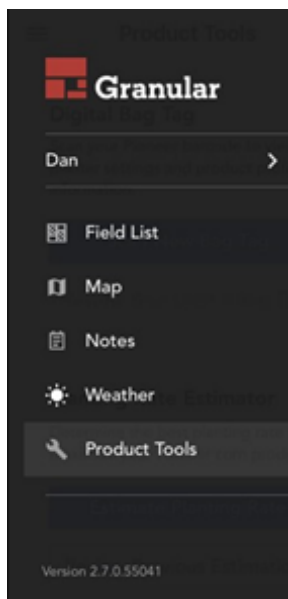
Excellent planting accuracy and stands can be achieved with all seed sizes when using appropriate planter adjustments and calibration. These plantability guidelines are designed to provide management tips to help growers achieve maximum planter performance and precise planting accuracy with seed of all sizes.

Batch-Specific Plantability Information

For the most precise recommendations, you can access information for individual seed batch numbers and your specific planter type on the Granular Insights App.



Under Product Tools, the digital bag tag functionality in the app allows users to easily scan a seed bag tag to indicate the product and seed size by batch. Once in the tool, planter type can be selected to maximize planter performance and seed-drop accuracy. The app then generates a customized list with the suggested plate or disc size, pressure or vacuum setting speed, and the singular setting, in addition to the predicted seed drop for each individual batch and planter combination.



The Granular Insights app is available for iPad®, iPhone® and Android™ devices. To download, go to the Apple Store® or Google Play™ store on your device.

Hybrid Plantability

with LumiGEN® Seed Treatments

LumiGEN® seed treatments provide Pioneer® brand seed corn premium protection against early-season diseases and insects.



LumiGEN seed treatments utilize polymer coatings for improved seed flow and plantability while reducing dust-off. Many planter manufacturers recommend adding talc or graphite to the seed to improve plantability. The polymers used as part of seed treatments by Pioneer are not intended as a substitute.

Excellent planting accuracy and plant stand establishment can be achieved with all seed sizes and shapes, regardless of seed treatment recipe and environmental conditions, through careful planter aid usage and planter adjustments. More details can be found on Corteva Agriscience's Planting Accuracy Guidelines for Corn.

Bulk Planter Systems

Delivery of seed from center-fill hopper to meter may be impacted by several factors. These include planting time, atmospheric environment, use of planter lubricant, ground speed, level of treatment, and seed size. The liberal use of talc, graphite, or a talc-graphite blend, specific by planter type, is critical. Thorough mixing of these lubricants in seed generally produces the best results. High population settings, combined with high ground speed may create challenges. Conversely, low population settings and/or low ground speed may create another set of challenges for certain seed types and/or treatments due to infrequent movement of the seed in the inductor or mini-hopper. If meters are "starving" for seed, reduced ground speed may provide a solution. The proper fan speed or pressure in the bulk delivery system is an adjustment that can be made to enhance seed delivery. This varies by planter manufacturer. Also, depending on the planter manufacturer, other attachments/adjustments may be

available to enhance seed delivery. Consult the planter operator's manual for proper setting and any troubleshooting guides. Larger seed, especially with high-rate treatment, can be delivered to the meter and planted accurately if consideration is given to the points above.

Seed Lubricant Guidelines by Planter Manufacturer¹

Kinze Manufacturing and John Deere finger-type planters –

When planting treated seed, use your planter manufacturer's recommended amounts of dry powdered graphite. To ensure good seed coverage, add graphite at several levels as the hopper is filled, rather than only on the top.

John Deere vacuum-type including ProMAX 40 Flat Disk

Talc lubricant is required for optimum performance of the vacuum meter and CCS system (if equipped). Add talc at the rate of 2.5 ounces per 80,000-kernel unit of seed or 11 cups per 35 bushels or 16 cups per 50-bushel fill. Adjust these rates as necessary so all seeds become coated with talc, while avoiding an accumulation of talc in the bottom of the tank or hopper. Double the talc recommendation when planting small seed, large seed, seeds with heavy treatment, or in humid planting conditions. If seed treatment is building up on the disc, use additional talc. Add talc throughout the box while filling, not just on top.

John Deere Exactemerge planter

Talc–graphite lubricant is required for optimum performance of the vacuum meter and CCS system (if equipped). To obtain consistent seed release from the seed bowl and improve spacing accuracy, properly lubricate the seed.

Precision Planting eSet® or vSet®

Use 1/4 cup of the company's eFlow seed lubricant (or an 80% talc/20% graphite mix) per 80,000-kernel bag. Heavily treated seed may require a higher rate.

Kinze Vacuum planter

Manufacturer recommends mixing 1 Tbsp of powdered graphite into each hopper-fill of seed. Mix thoroughly so all kernels are coated. Adjust graphite rate as needed. Planting in high humidity conditions may require use of talc as a drying agent.

Kinze Air Seed Delivery (ASD) system

Powdered graphite should be added with the seed each time the bulk seed hopper is filled. Use 1½ - 2 pounds per 50 units of seed. Graphite should be added in layers as the bulk seed hoppers are filled. Use of powdered graphite will prolong the life of the seed meter components, reduce buildup of seed treatment on components in the meter and improve seed spacing.

White Planters

When using insecticide treated seed the manufacturer recommends mixing 1/3 cup of talc per bushel hopper fill, or one gallon per 45-bushel tank when filling CFS. Spread the talc on the seed in layers as the central hoppers are filled. Seed treatments may also affect seed monitor performance and require periodic cleaning of the seed disc.

Case IH 1200 series - Advanced Seed Meter (ASM)

Graphite is recommended for lubrication. Talc is not recommended as a sole lubricant for the Advanced Seed Meter, though a 50/50 mix of talc/graphite may be used to improve flow in bulk delivery of seed. Do NOT exceed 50% talc with the ASM seed meter in order to avoid buildup on meter components.

On-row Hopper: Case IH recommends 1/8 cup of seed flow lubricant per row- unit hopper.

Bulk Fill System: Case IH recommends 1/8 cup of seed flow lubricant per two units of seed as a starting point for most seed sizes and treatments. Some seed sizes and treatments may require additional lubrication to flow into the delivery system in high humidity conditions. In such situations, the amount of seed flow lubricant applied can be increased to as much as 4X the initial recommended amount.

¹ Refer to individual planter manufacturer owners' manual for complete recommendations.

Case IH 2100 Series – vSet Seed Meter

Talc is not recommended as a sole lubricant on 2100 series planters. A 50-50 talc/graphite blend available through CaseIH dealers is the recommended product for seed lubrication, although mixes containing 80% talc / 20% graphite may be used. In conditions of high humidity, additional seed flow lubricant may be necessary.

On-row Hopper: Case IH recommends 1/8 cup of seed flow lubricant per row-unit hopper. Bulk Fill System: Case IH recommends 1/8 cup of seed flow lubricant per two units of seed as a starting point for most seed sizes and treatments. Some Seed sizes and treatments may require additional lubrication to flow into the delivery system in high humidity conditions. In such situations, increasing the amount of graphite or graphite/talc mix is recommended to as much as 4X the initial recommended amount.

Monosem Precision Planters

No seed lubricant is required for row-unit box planters. Talc is recommended for all central-fill planters. Use 1/3 to 1/2 cups talc per bushel. Double the usage rate for high humidity or heavy seed treatments.

Planter and Meter Maintenance

Planter and meter maintenance are critical to seed singulation, spacing accuracy and planting the targeted population. Even spacing reduces competition between plants and maximizes ear count. Extensive research conducted by Pioneer has consistently shown that with other variables remaining constant, improved plant spacing produces a yield increase. It is recommended that meters be inspected and maintained prior to season to allow for optimal performance. Several opportunities exist for professional assistance with meter maintenance and calibration, including assistance from your Pioneer sales professional.



Optimizing Performance of John Deere Vacuum Planters

- Singulator settings based on a 1-10 scale with a recommended starting point of 5 and more detail available on the Pioneer plantability app and on Pioneer.com.
- The manufacturer’s recommended maximum operating speed is 38 disk RPMs.
- This planter uses vacuum rather than air pressure to hold the seed against the disks.
- Three disks are available: regular, small, and ProMAX 40. The standard corn disk (A50617) will accurately plant seed sizes up to approximately 2,000 seeds per pound. The small disk (A43215) is designed for small seed – usually greater than 2,000 seeds per pound. The ProMAX 40 Flat disk (A52391) is designed to plant all seed sizes.
- The ProMAX 40 disk may under-populate if vacuum is too low. Set at higher vacuum levels, the ProMAX 40 disk is much more tolerant because the doubles eliminator prevents over-population.
- Vacuum levels taken from charts are a starting point. However, high- rate seed treatment, uneven ground conditions and/or faster ground speeds require higher levels of vacuum than indicated. Perform a field check and adjust level to obtain proper population.
- John Deere also recommends adding talc to improve seed singulation and row spacing of all treated seed.

Recommended Vacuum Setting for John Deere ExactEmerge™ (A92777)						
LumiGEN® Seed Treatment premium package (Vacuum Listed in Inches)						
Size Range (seeds/Lb)	PDR	PDF	F14	R23	F12	R22
2900 - 2999						
2800 - 2899						
2700 - 2799	16					
2600 - 2699	16					
2500 - 2599	16					
2400 - 2499	16					
2300 - 2399	16	16				
2200 - 2299	18	18				
2100 - 2199	18	18				
2000 - 2099	20	20				
1900 - 1999	20	20	20			
1800 - 1899	22	22	22	22		
1700 - 1799	22	22	22	22		
1600 - 1699	23	23	23	23		
1500 - 1599	23	23	23	23	23	
1400 - 1499	24	24	24	24	24	
1300 - 1399		24	24	24	24	24
1200 - 1299			26	26	26	26
1100 - 1199				26	26	26
1000 - 1099						27
900 - 999						27

Recommended Vacuum Setting for John Deere - ProMax 40 Flat Disk (A52391)						
LumiGEN® Seed Treatment premium package (Vacuum Listed in Inches)						
Size Range (seeds/Lb)	PDR	PDF	F14	R23	F12	R22
2900 - 2999						
2800 - 2899						
2700 - 2799	12					
2600 - 2699	12					
2500 - 2599	12					
2400 - 2499	12					
2300 - 2399	12	14				
2200 - 2299	12	14				
2100 - 2199	12	14				
2000 - 2099	14	14				
1900 - 1999	14	14	14			
1800 - 1899	14	14	14	14		
1700 - 1799	14	16	14	14		
1600 - 1699	14	16	14	16		
1500 - 1599	14	16	16	16	16	
1400 - 1499	14	16	16	16	16	
1300 - 1399		16	16	16	16	16
1200 - 1299			16	16	16	18
1100 - 1199					18	18
1000 - 1099						18
900 - 999						18

Recommended Vacuum Setting for John Deere MaxEmerge™ 5 Standard Disk (A50617)						
LumiGEN® Seed Treatment premium package (Vacuum Listed in Inches)						
Size Range (seeds/Lb)	PDR	PDF	F14	R23	F12	R22
2900 - 2999						
2800 - 2899						
2700 - 2799	6					
2600 - 2699	6					
2500 - 2599	6					
2400 - 2499	8					
2300 - 2399	8	14				
2200 - 2299	8	14				
2100 - 2199	8	14				
2000 - 2099	8	14				
1900 - 1999	10	14	8			
1800 - 1899	10	14	10	14		
1700 - 1799	12	14	10	14		
1600 - 1699	12	14	10	14		
1500 - 1599	12	14	12	14		
1400 - 1499	14	14	12	14	14	
1300 - 1399		14	14	14	14	14
1200 - 1299			14	14	14	14
1100 - 1199				14	14	14
1000 - 1099						14
900 - 999						14

Recommended Vacuum Setting for John Deere MaxEmerge™ 5 - Small Disk (A43215)						
LumiGEN® Seed Treatment premium package (Vacuum Listed in Inches)						
Size Range (seeds/Lb)	PDR	PDF	F14	R23	F12	R22
2900 - 3099						
2800 - 2999						
2700 - 2899						
2600 - 2799	6					
2500 - 2699	8					
2400 - 2599	10					
2300 - 2499	10					
2200 - 2399	10	14				
2100 - 2299	12	14				
2000 - 2199	12	14				
1900 - 2099	12	14				
1800 - 1999	12	14	14			
1700 - 1899	14	14	14	14		
1600 - 1799	14	14	14	14		
1500 - 1699	14	14	14	14		
1400 - 1599	14	14	14	14	14	
1300 - 1499	14	14	14	14	14	
1200 - 1399		14	14	14	14	14
1100 - 1299			14	14	14	14
1000 - 1199				14	14	14
900 - 1099						14

Tips When Using Precision Planting vSet® and eSet®

- One disk plants all seed sizes.
- Most seed plants at 15" to 22" of vacuum.
- Very large seed may benefit from additional vacuum.
- Precision Planting recommends use of their eFlow lubricant, a mix of talc and graphite.

Recommended Vacuum Setting for Precision Planting eSet Disk (720003)						
LumiGEN® Seed Treatment premium package (Vacuum Listed in Inches)						
Size Range (seeds/Lb)	PDR	PDF	F14	R23	F12	R22
2900 - 2999						
2800 - 2899						
2700 - 2799	15					
2600 - 2699	15					
2500 - 2599	15					
2400 - 2499	15					
2300 - 2399	15	15				
2200 - 2299	15	15				
2100 - 2199	15	15				
2000 - 2099	18	15				
1900 - 1999	18	18	18			
1800 - 1899	18	18	18	22		
1700 - 1799	18	18	18	22		
1600 - 1699	18	18	18	22		
1500 - 1599	18	18	18	22	18	
1400 - 1499	18	18	18	22	20	
1300 - 1399		18	18	22	22	22
1200 - 1299				22	22	22
1100 - 1199				22	22	22
1000 - 1099						22
900 - 999						22

Recommended Vacuum Setting for Precision Planting VSet® Meter						
LumiGEN® Seed Treatment premium package (Vacuum Listed in Inches)						
Size Range (seeds/Lb)	PDR	PDF	F14	R23	F12	R22
2900 - 2999						
2800 - 2899						
2700 - 2799	20					
2600 - 2699	20					
2500 - 2599	20					
2400 - 2499	20					
2300 - 2399	20	20				
2200 - 2299	20	20				
2100 - 2199	20	20				
2000 - 2099	20	20				
1900 - 1999	20	20	20			
1800 - 1899	20	20	20	20		
1700 - 1799	20	20	20	20		
1600 - 1699	20	20	20	20		
1500 - 1599	20	20	20	20	20	
1400 - 1499	20	20	20	20	20	
1300 - 1399		20	20	20	20	20
1200 - 1299				20	20	20
1100 - 1199				20	20	20
1000 - 1099						20
900 - 999						20

Optimizing Performance of Kinze Vacuum Planter

- True Rate® meter: Seed Disc Part No. B0678
- Corn disk will plant seed sizes in the range of 35 to 70 lbs per 80,000 kernel bag (2,286 to 1,143 seeds per lb.)
- For most kernel sizes, it is recommended to set vacuum at 18". Singulator settings for corn should be set on 2 with fine adjustments for improved singulation.
- For larger, heavier seed, set at 20" for best plantability. Incrementally increase the vacuum level to improve accuracy as needed on larger, more heavily treated seed.

Recommended Vacuum Setting for Kinze Vacuum Planter Disk (B0678)						
LumiGEN® Seed Treatment premium package (Vacuum Listed in Inches)						
Size Range (seeds/Lb)	PDR	PDF	F14	R23	F12	R22
2900 - 2999						
2800 - 2899						
2700 - 2799	12					
2600 - 2699	12					
2500 - 2599	12					
2400 - 2499	12					
2300 - 2399	12	18				
2200 - 2299	12	18				
2100 - 2199	12	18				
2000 - 2099	14	18				
1900 - 1999	14	18	18			
1800 - 1899	14	18	18	16		
1700 - 1799	14	18	18	18		
1600 - 1699	16	18	18	18		
1500 - 1599	16	18	18	18	18	
1400 - 1499	16	18	18	18	18	
1300 - 1399		18	18	18	20	20
1200 - 1299			18	20	20	20
1100 - 1199				20	20	20
1000 - 1099						20
900 - 999						20

Crop	**Seed Disc Kit	Seed Disc Part No.	Ejector Wheel (Color)	Cells	Seed Size Range	Singulator Zone Setting	Vacuum Setting Inches of Water (kPa)	Lubricant
Corn	G9040X	B0678 (Light Blue)	1 row 5 punches (Light Blue)	40	35-70 lbs/80k (2500-5000 seeds/kg)	2	18-20 (4.5-5.0)	Graphite* Talc* Bayer Fluency (if mandated)

Install selected seed disc. Position vacuum cover on meter by aligning keyhole slots over bolt heads. Push cover on meter and turn counter clockwise to lock in place.

Optimizing Performance of Kinze or John Deere Finger Planters

- The manufacturer’s recommended maximum operating speed is 75 finger RPMs. This corresponds to the maximum suggested ground speed for most sprocket combinations. Ground speed will vary depending on the sprocket combination being used.
- Proper finger and spring tension is important.
- John Deere factory specifications are that fingers should be set at 23 to 25-inch lbs. Consult owner’s manual for adjustment procedure.
- Kinze factory specifications are 22 to 25-inch lbs. of rolling torque. Consult owner’s manual for adjustment procedure.
- Worn parts should be replaced. Worn brushes can cause up to 15 percent overplant, especially when using smaller kernel sizes. Grooves worn into the faceplate also can cause overplanting.

Finger mechanism planter meter: Finger mechanism planter meters can accurately plant a wide range of kernel sizes. Finger tension adjustment for large seed sizes such as R22, and small kernel sizes such as PDF® seed may improve drop accuracy. Individual meter calibration using the actual seed size to be planted, can significantly improve the spacing accuracy of this finger mechanism meter. Increasing field speed increases seed drop on these planter units.

Always check actual field populations to ensure desired accuracy. If desired drop is not achieved, consider the following options:

- Well-maintained planter units experience less variance. Have a qualified technician check planter unit condition and adjustment. Proper calibration using the actual seed size to be planted will help minimize this problem.
- Move sprocket combination up one setting. Population drop will increase by approximately 3%. Consult manufacturer operator’s operation manual.
- Seed coated thoroughly with graphite will provide potential increase in seed drop of 1-2%.
- Plant within the manufacturer’s recommended speed range.

Precision Planting Finger-Type Precision Meter

Pioneer has not tested plantability of the precision meter from Precision Planting because it is assumed these units will be custom calibrated by a trained MeterMax® technician. If all seed being planted is large (R23 or R22), Precision Planting makes shims (part number 34056) that may be placed under the cam to increase the opening height of the fingers. The standard finger configuration will do an adequate job on large seeds, and is preferred if planting a variety of small, medium, and large seed sizes.

Optimizing Performance of White Planters

- The manufacturer recommends a disk speed of 32 RPMs with suggested disk and air pressure. Adjustments to air pressure can be made depending upon the disk used and the kernel size being planted. Smaller seeds usually require less air pressure.
- Air pressure can be adjusted from 1.0 to 5.0 inches of water. The percentage of skips or doubles is managed with increases or decreases in air pressure.
- The manufacturer does not recommend the use of talc with the seed unless seed coatings interfere with metering.
- **A disk (700736528) (Catalog #6001409) is now available for planting PDF, F14 and F12 flat seed sizes, 1200 to 2200 seeds/lb.**

Recommended Vacuum Setting for White Pneumatic Planters (Small Disk)						
LumiGEN® Seed Treatment premium package (Pressure Listed in Ounces)						
Size Range (seeds/Lb)	PDR	PDF	F14	R23	F12	R22
2900 - 2999						
2800 - 2899						
2700 - 2799	1.5					
2600 - 2699	1.5					
2500 - 2599	1.5					
2400 - 2499	1.5					
2300 - 2399	1.5	1.5				
2200 - 2299	1.5	1.5				
2100 - 2199	1.5	2.0				
2000 - 2099	1.5	2.0				
1900 - 1999	1.5	2.0	1.5			
1800 - 1899	2.0	2.0	1.5	1.5		
1700 - 1799	2.0	2.0	2.0	1.5		
1600 - 1699	2.0	2.5	2.0	2.0		
1500 - 1599	2.0	2.5	2.0	2.0	3.0	
1400 - 1499	2.5	2.5	2.0	2.0	3.0	
1300 - 1399		2.5	2.5	2.0	3.0	2.5
1200 - 1299			2.5	2.0	3.0	2.5
1100 - 1199				2.5	3.0	2.5
1000 - 1099						3.0
900 - 999						3.0

Optimizing Performance of Monosem NG+ Planters

- Singulator setting of +1, adjust as needed to singulate
- Recommended seed plate DC2450 (24 cell) or DC3050 (30 cell)

Recommended Vacuum Setting for Monosem NG+ Planters						
LumiGEN® Seed Treatment premium package (<i>Vacuum Listed in Inches</i>)						
Size Range (seeds/Lb)	PDR	PDF	F14	R23	F12	R22
2900 - 2999						
2800 - 2899						
2700 - 2799	14					
2600 - 2699	14					
2500 - 2599	14					
2400 - 2499	14					
2300 - 2399	14	18				
2200 - 2299	14	18				
2100 - 2199	16	18				
2000 - 2099	16	18				
1900 - 1999	16	18	18			
1800 - 1899	18	20	18	22		
1700 - 1799	18	20	18	22		
1600 - 1699	20	20	20	24		
1500 - 1599	20	22	20	24	22	
1400 - 1499	20	22	20	24	22	
1300 - 1399		22	22	24	24	24
1200 - 1299			22	24	24	24
1100 - 1199				24	24	24
1000 - 1099						24
900 - 999						24

Optimizing Performance of Case IH 1200 Series ASM Planters

- Manufacturer vacuum range for corn planting is 18-22 inches of water vacuum.
- Seed disk number indicates number of holes and hole diameter. For example, seed disk 4855 contains 48 holes with each hole 5.5 mm in diameter.
- Vacuum level setting is in inches of water (inches H2O).
- Meter cover indicates baffle setting number. Meter inspection without draining seed can be made when baffle is set to position 0 (fully closed).
- Do not use singulator dial (lever) settings to control gross population; excessive doubles or skips will occur. Higher dial setting decreases singulator interference with seed disk holes.
- Pioneer testing indicates all Pioneer kernel sizes can be planted accurately with this unit. Test results for most seed sizes average within +/- 1% of the expected drop with this equipment.
- Remember to change singulators back after each seed adjustment for larger seed.
- Testing conducted at the Pioneer plantability laboratory suggest vacuum and singulator settings in the manufacturer's owner's manual should be considered as a starting point. Variations may be necessary to achieve optimum plantability, especially for larger and more heavily treated seed.

Recommended Singulator Setting for the Case-IH ASM Model 1200 (4855)						
LumiGEN® Seed Treatment premium package (<i>Singulator Setting</i>)						
Size Range (seeds/Lb)	PDR	PDF	F14	R23	F12	R22
2900 - 2999						
2800 - 2899						
2700 - 2799	2					
2600 - 2699	2					
2500 - 2599	2					
2400 - 2499	2					
2300 - 2399	2	3				
2200 - 2299	2	3				
2100 - 2199	2	3				
2000 - 2099	2	3				
1900 - 1999	2	3	2			
1800 - 1899	3	3	2	4		
1700 - 1799	3	3	2	4		
1600 - 1699	3	3	3	4		
1500 - 1599	3	3	3	4	4	
1400 - 1499	3	3	3	4	4	
1300 - 1399		3	4	4	4	4
1200 - 1299			4	5	5	6
1100 - 1199				5	5	6
1000 - 1099						8
900 - 999						8
Vacuum Setting	20-22	20-22	20-22	20-22	20-22	20-22

Optimizing Performance of Case-IH 800, 900, 950 and 955 Early Riser Planters

- The manufacturer recommended maximum drum speed is 35 RPMs, with seed metered in a 36-hole drum. Air pressure should be set from 9 to 11 ounces.
- Plant all seed sizes except R22 and R23 using 9 ounces of pressure. Plant R22 and R23 seed sizes at 11 ounces of pressure.
- Adjust the brush to the down position for all seed sizes. For most seed sizes, do not wire the brush down as is done for soybean planting. However, R22 and R23 seed are the exception and may plant best with the brush wired down.
- Replace the entire brush assembly when wear is apparent.

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True Rate® is a trademark of Kinze Manufacturing.

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