Nottinghamshire County Council

Part III: Layout
Chapter 9: Agricultural Access

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9.1 Introduction

The purpose of this guidance is to ensure that access points between agricultural land and the public highway are designed to operate safely and effectively, reducing risks to all road users and protecting the structural integrity of the highway. The same design principles apply where land is accessed for equestrian purposes or for infrastructure such as solar farms. This document provides adopted highway design guidance. It does not remove the Local Highway Authority's discretion to accept alternative designs where applicants can demonstrate that an equivalent or better level of safety and highway protection would be achieved.

Relationship between Chapters 3.9 and 3.10

Chapter 3.9 (Agricultural Access) and Chapter 3.10 (Historic Single-Track Lanes) address different highway design considerations and may apply independently or together depending on site context.

Chapter 3.9 governs the design of individual agricultural, equestrian or rural accesses to the public highway, regardless of road type.

Chapter 3.10 governs the operational suitability and mitigation of historic single-track lanes where development traffic relies on passing places rather than continuous carriageway width.

Where a proposal involves a new or intensified access taken directly from a historic single-track lane, both chapters apply: Chapter 3.9 to the access itself, and Chapter 3.10 to the operation of the lane as a whole.

9.2 Location and Positioning

Proper positioning ensures that vehicles entering or leaving an agricultural access have clear sightlines, reducing the risk of collisions and improving overall road safety. Accesses should be located to maximize visibility in both directions, so avoid positioning near bends, crests, or junctions where visibility is restricted.

9.3 Visibility Requirements

Maintaining visibility splays and controlling vegetation height ensures drivers can see oncoming traffic and pedestrians, which is critical for preventing accidents. Visibility splays should be provided in accordance with Part 3.3. Paragraph 3.3.17 Agricultural Accesses. Justification for the visibility splay assumptions are provided in Section 9.13 of this Chapter.

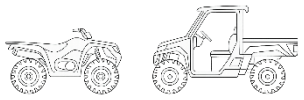
9.4 General Principles

When providing access from agricultural land to the public highway, the selection between a dropped kerb vehicle crossover and a radius kerbed access should be based on anticipated traffic volumes, vehicle types, and road classification. These thresholds are intended to provide a proportionate framework for distinguishing between low-intensity and higher-risk agricultural accesses, recognising that highway risk is influenced by vehicle size, manoeuvring characteristics, and the nature of access movements, rather than traffic volume alone. Where an agricultural or equestrian access is taken from a historic single-track lane served by passing places, the siting and design of the access shall also have regard to the operational principles in Chapter 3.10, including intervisibility, reversing risk and proximity to passing places.

1. **Occasional Agricultural Use**

   Traffic:
   - 0–4 movements per day two-way
   - Short seasonal bursts only

   Vehicles:
   - ATVs / UTVs (All-Terrain Vehicles / Utility Task Vehicles)
   - Small tractors (80–150hp)
   - Light tractor–trailer combinations
   - Gross vehicle weight (GVW): up to 12t



   Typical Access Choice:

   - Dropped-kerb vehicle crossover

2. **Intermediate Agricultural Use**

   Traffic:
   - 4–10 movements per day two-way
   - Moderate seasonal peaks (e.g., light grain movements, mid-season spraying)

   Vehicles:
   - Medium tractors (120–180hp)
   - Medium trailers (silage / bale / fertiliser)
   - Self-propelled sprayers (lighter models)
   - Gross vehicle weight (GVW): 12–18t

   Typical Access Choice:
   - Either dropped kerb *or* radius kerbed, depending on:
     - Turning movements (movements that can use more of the carriageway → dropped kerb; tighter near-side movements → radius kerbs)
     - Road classification (classified roads lean toward radius kerbs)
     - Sightlines and safety
     - Extent of verge strengthening required

3. **Frequent / Heavy Agricultural Use**

   Traffic:
   - >10 movements per day two-way
   - High-intensity, heavy seasonal flows (harvest, slurry operations, AD plant inputs, grain-store traffic)

Vehicles:

- Large tractors (150–300+ hp)
- Grain/silage trailers (18–30t)
- Sprayers (large boom / high-capacity)
- Combines
- HGVs (32.5–44t)

Typical Access Choice:

- Radius-kerbed junction

4. **Rule of Thumb**
   - If vehicles regularly exceed 18t, or traffic regularly exceeds 10 movements two-way / day, the access should be treated as a radius-kerbed junction, not a dropped kerb.

Table 9.1 – Agricultural Access Design – Quick Reference Table

Category	Traffic Level	Typical Vehicles	Approx. GVW Range	Typical Access Type	Key Design Drivers
Occasional Agricultural Use	0–4 movements two-way / day; short seasonal bursts	ATVs/UTVs; small tractors (80–150 hp); light tractor–trailer combinations	Up to 12t	Dropped kerb vehicle crossover	Low volume; light vehicles; minimal verge loading
Intermediate Agricultural Use	4–10 movements two-way / day; moderate seasonal peaks	Medium tractors (120–180 hp); medium trailers; light sprayers	12–18t	Dropped kerb or radius kerbed access	Turning movements; road class; sightlines; verge strengthening
Frequent / Heavy Agricultural Use	>10 movements two-way / day; intense seasonal flows	Large tractors (150–300+ hp); large trailers; sprayers; combines; HGVs	18–44t	Radius kerbed junction	High volumes; heavy vehicles; safety; durability; stacking space
Rule of Thumb	—	—	>18t or >10 movements / day	Treat as radius kerbed junction	Heavier vehicles and higher flows warrant junction geometry

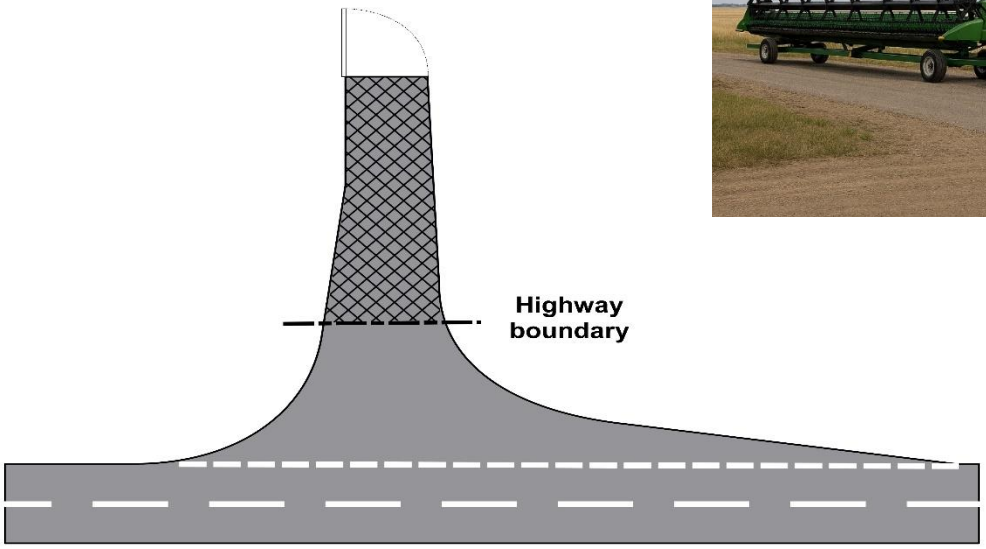
9.5 Width and Turning

9.5.1 Adequate width for ahead movements and turning radii ensures large agricultural vehicles can manoeuvre safely without encroaching on opposing lanes or damaging verges. Turning into an agricultural access through 90° requires sufficient space and appropriate corner radii to accommodate the swept paths of large vehicles.

Table 9.2

Radius Kerbed Access Requirements		
Vehicle	**Indicative Clear Gate Width**	**Corner Treatment**
Single tractor (solo)	4.5 to 5.0m	8 to 10m kerb radius or splay
Tractor + drawbar trailer	6.0 to 7.0m	12 to 15m kerb radius or splay
Combine harvester (without header)	8.0 to 9.0m	15 to 18m kerb radius or splay
Two-way agricultural access	7.5 to 8.0m	15 to 20m combined with flared/splayed approaches

9.5.2 Use flared entrances and or splayed verges to accommodate swept paths to reduce verge damage. Consider swept path analysis software (e.g., AutoTrack or Vehicle Tracking in CAD) for precise design based on actual vehicle dimensions.



Note**:** Junctions with splayed verges or flared entrances are generally discouraged in locations with regular pedestrian use, including footways, public rights of way, or settlement edges, where flared geometry would materially reduce pedestrian comfort or safety.

UK Agricultural Vehicle Legal Dimensions Road Vehicles (Construction and Use) Regulations 1986, Regulation 7 and 8

Table 9.3

Vehicle Type	Length	Width	Height	Notes
Agricultural Tractor 	Max **12.0m** (as a motor vehicle)	Standard max **2.55m**; tractors with **flotation tyres or dual wheels may reach ~3.5m** subject to wide-vehicle rules	No fixed statutory limit; over **3.0m** requires cab notice of height	When towing a trailer, **combination limit applies** (18.75m).
Agricultural Trailer 	Max **12.0m** for drawbar trailers (excluding drawbar)	Standard **2.55m** (typical agricultural trailers)	Not specified in C&U; practical limit often **up to ~4.65m** for agricultural vehicles in general guidance	Trailer + tractor combination must comply with 18.75m max length
Tractor + Trailer Combination 	Max **18.75m** (motor vehicle towing a non–semi-trailer)	Tractor widths: **2.55–3.5m**, depending on tyres/wheels and wide-vehicle rules	Operational height guidance generally **up to ~4.65m** for agricultural vehicles	No special permission for standard moves; wider vehicles may require notification.
Combine Harvester 	Self-propelled machines typically **<12m**; if towing header trailer, tractor + trailer **must not exceed 18.75m** overall	Typically, **3.0–3.5m** without special requirements; **3.5–4.3m** requires police notification and movement restrictions	No fixed statutory height; often treated under agricultural machinery guidance (commonly ≤ **~4.65m**)	Movements over 3.5 m wide require police notification, an escort/attendant, etc.

9.6 Setback and Gate Position

9.6.1 Setting gates back from the highway allows vehicles to wait off the carriageway, preventing obstruction to through-traffic and reducing the likelihood of rear-end collisions. Gates should normally be set back 20m from the highway boundary. Accesses should not be positioned within sections of forward visibility or within junction visibility splays, as waiting vehicles may encroach into critical sightlines. Sufficient useable space must also be provided within the accessed land to allow vehicles to turn and avoid the need to reverse onto the public highway.

9.6.2 Where accesses are used only occasionally for agricultural or equestrian purposes—and where they are unlikely to be used by 18.75 m maximum-length legal vehicles or combinations—a proportionate relaxation of the setback distance may be appropriate. A typical estate car or SUV (the usual equestrian tow vehicle) is approximately 4.5–5.0m long. UK regulations permit a maximum trailer length of 7m, excluding the A-frame, for vehicles up to 3,500 kg. Allowing for the A-frame, the overall length of a car towing a horse trailer is typically up to 13m. This length also accommodates light agricultural combinations, such as a small tractor with a short

trailer. Accordingly, where only such shorter vehicles are anticipated, the setback may be reduced provided that the entire vehicle or combination can stand clear of the carriageway and outside any forward or junction visibility envelopes. Internal manoeuvring space remains necessary.

9.7 Gradients

Table 9.4

Agricultural Access Gradient Requirements			
Section	**Gradient**	**Percentage**	**Notes**
General Approach	1 in 15	6.7%	Maximum gradient for safe operation
Junction Approach (last 10m)	1 in 40 (Desirable)	2.5%	Preferred for visibility and control
Junction Approach (last 10m)	1 in 25 (Absolute)	4%	Allowed only after safety assessment

Notes:

General Approach Gradient (Maximum 1 in 15 / ~6.7%)

- Safety and Traction: Agricultural vehicles often tow heavy loads or operate with large trailers. A gradient steeper than 1 in 15 increases the risk of wheel slip, loss of traction, and rollback, especially in wet, muddy, or icy conditions.
- Vehicle Performance: Tractors and trailers have limited braking and acceleration compared to standard vehicles. A moderate gradient ensures controlled movement without excessive strain on braking systems.
- Drainage Control: A gradient of 1 in 15 allows effective surface water runoff without creating excessive flow that could erode the access or discharge mud onto the highway.

Junction Approach Gradient (Last 10m: Desirable 1 in 40 / ~2.5%, Absolute 1 in 25 / ~4%)

- Stopping and Visibility: Flattening the gradient near the highway improves sightlines and reduces the risk of vehicles rolling into traffic. It also allows drivers to stop safely before entering the carriageway.
- Smooth Transition: A gentle gradient at the junction minimizes the risk of agricultural vehicles grounding or destabilizing when moving from private access to the public road.
- Safety Assessment: The absolute maximum of 1 in 25 provides flexibility where topography limits design options but still prioritizes safety by keeping the approach relatively flat.

9.8 Agricultural Dropped Kerb Vehicle Crossover

Where it is appropriate to install a dropped kerbed vehicle crossover based on anticipated traffic volumes, vehicle types, or road classification, the above gradients may be relaxed in some locations to a maximum of 1 in 12 / ~8%.

9.9 Alignment with Best Practice

These figures reflect common standards in local authority design guides and are consistent with the principles in Manual for Streets and DMRB for safe access design, even though agricultural access is not explicitly covered in national documents.

9.10 Runoff and Pollution Control: Agricultural Accesses

Proper drainage is essential to prevent water from flowing onto the highway, reducing hazards such as hydroplaning, ice formation, and surface deterioration. Agricultural accesses must be designed to prevent surface water runoff onto the public highway and into drainage systems.

Key design measures include:

- Cut-off Drains and Soakaways: These should be installed where necessary to intercept and manage surface water before it reaches the highway.
- Drainage Interceptors and Silt Traps: Positioned at the interface with the highway, these features help capture solids and prevent pollutants from entering road drainage infrastructure.
- Grading and Cross-Fall: Access tracks should be graded to direct surface water away from the highway. A slight cross-fall should be incorporated to prevent direct discharge onto the carriageway.
- Vegetated Buffer Zones and Swales: Surface water should be directed into vegetated areas or swales that help slow flow, trap sediment, and absorb nutrients, reducing the risk of pollution.

These measures support both highway safety and environmental protection.

9.11 Surfacing and Maintenance

A stable, well-maintained surface reduces the risk of mud, clay, stones, slurry, silage effluent, fines or surface debris from being tracked onto the highway, reducing slip hazards and maintaining safe driving conditions. Within 13m or 20m as appropriate of the highway boundary the approach should be stable and suitable for all-weather use. Regular maintenance is required to prevent rutting, erosion, or obstruction of the highway. Drainage must be kept clear of mud, debris, and other obstructions. The first 13m / 20m of any agricultural or equestrian access must achieve the following outcomes to prevent material being deposited on the public highway:

Stable, All-Weather Surface

- The surface must remain firm, non-rutted and load-bearing in all seasons.
- Must not soften, break up, or pump fines under agricultural or equestrian traffic.

No Exportation of Material onto the Highway

- Mud, soil, stones, slurry and loose aggregate must not be tracked or washed onto the public highway.
- The surface must be sufficiently tight-bound to avoid loose material migration.

Effective Tyre Cleaning

- The 13m / 20m section must allow tyres to shed soil before reaching the highway.
- The surface must not pick up additional material or create smear.

Positive Drainage Away from the Highway

- Water must drain away from the carriageway.
- Runoff must not carry sediment or debris toward the highway.

Suitable for Expected Vehicle Loads

- The 13m / 20m must withstand the vehicle types and intensities using the access without deterioration (ATVs to HGVs as applicable).

Adequate Length for Transition

- The length must allow full wheelsets of agricultural vehicles to pass over a cleanable, stable surface before entering the highway.

Maintainable Over Time

- The surface, drainage and surrounding edges must be capable of simple routine maintenance to maintain cleanliness and function.

Note: Where access gradients, soil conditions, or vehicle types increase risk, a greater length may be required to achieve these outcomes.

9.12 Works Within the Public Highway

In Nottinghamshire, any new or altered agricultural access affecting the public highway requires formal approval from Nottinghamshire County Council (the Local Highway Authority). The Highways Act 1980 governs the construction of new access points across the verge or footway. This approval is mandatory for all agricultural gateways, field entrances, and temporary construction accesses, and ensures that works are undertaken safely and to the Council's specification. This process allows the applicant to employ an approved, NRSWA-accredited contractor to complete highway works, subject to detailed design checking, inspection, the payment of associated fees, and proof of sufficient public liability insurance. Additional consents may be required where works include other excavations or drainage-related activities within the highway boundary.

9.13 Driver Eye Point Assumptions for Agricultural Tractors – Visibility Splay Design Guidance

Summary

9.13.1 This guidance sets conservative, repeatable assumptions for plotting visibility splays at agricultural accesses where the tractor type and any attachments cannot be fixed or enforced. It adopts a driver eye height of 2.0 to 2.2m above carriageway level and an X-distance of 4.5m measured from the foremost reasonable point of the tractor (including any front-mounted equipment) back to the driver's eye. The approach is intentionally cautious because front-mounted equipment can define the true leading edge of the vehicle at the give-way position; using car-based or tractor-only assumptions risks understating intervisibility. Where there is site-specific evidence that front-mounted equipment with materially greater forward projection is routinely used, a greater X-distance should be applied.

Scope and Purpose

9.13.2 This guidance provides the rationale for the specified X-distance (observation position on the minor arm) and driver eye height to be applied at agricultural accesses, as these parameters are not currently addressed in national design standards. The selection of the Y-distance (visibility distance along the major road) continues to be based on the applicable Stopping Sight Distance (SSD) for the prevailing speed environment.

Design Philosophy

9.13.3 Where the size and configuration of tractors using an access cannot reasonably be controlled or fixed over time, visibility should not be assessed using a "typical" tractor. Instead, a single conservative design envelope is adopted that remains valid over time and reflects realistic agricultural practice, including the potential presence of front-mounted equipment.

9.13.4 This Visibility Splay guidance provides standardized and conservative driver eye point assumptions for agricultural tractors for use when plotting visibility splays at agricultural accesses. It is intended for developer guidance where the specific tractor type is unknown, cannot be fixed, or may change over time, and where enforceable restrictions on tractor size or attachments are not reasonably practicable or self-enforcing. The adopted values are intended to be robust for typical rural and agricultural operating conditions, including the foreseeable use of front loaders, carried implements, or protruding front weights.

Definitions

9.13.5 Seat Index Point (SIP): The seating reference is the Seat Index Point (SIP), defined for tractors and machinery for agriculture and forestry in ISO 5353, which provides the recognized seat datum.

9.13.6 Operator eye position: Operator field-of-view assessment for agricultural tractors is addressed by ISO 5721-1 (field of vision to the front). Where an auditable eye position relative to the SIP is required, ISO-based visibility and anthropometry frameworks (for example ISO 5006 and ISO 3411) provide a consistent basis for defining representative operator eye locations.

Establishing the Driver Eye Height from a Seated Position

9.13.7 Where the SIP height above carriageway level is known (from manufacturer package information) or measured on a representative vehicle, the driver eye height may be derived by applying a standardized offset from the SIP to the operator's eye position used in machinery visibility assessment. In ISO-style visibility test procedures for seated off-road machinery, the representative eye point is taken as 680mm above the SIP. Accordingly, the driver eye height above carriageway level may be calculated as (SIP height above carriageway + 0.68m). This provides a transparent and repeatable method of linking a tractor seating datum to an auditable driver observation point for visibility assessment.

Application in this Guide

9.13.8 The ISO references in paragraphs 9.13.5 and 9.13.6 are used to establish an auditable basis for defining a tractor driver observation point for highway visibility checks. This guidance does not require applicants to undertake ISO field-of-vision testing; rather, the standards are cited to justify applying a consistent driver eye height suitable for plotting visibility splays where tractor type or configuration may be unknown or subject to change over time. This differs from conventional car- and lorry-based visibility splay practice, which typically adopts a driver eye height in the range of 1.05m to 2.0m, reflecting lower seating positions. Accordingly, the agricultural tractor design envelope set out in paragraph 9.13.11 replaces car- and lorry-based assumptions with a conservative tractor-specific eye height to avoid understating intervisibility. The eye height value in **Table 9.5** is a representative reference aligned with the 'large-frame' tractor class. The ISO references are cited to support the reasonableness and auditability of the adopted assumptions and are not imposed as a requirement on applicants.

Establishing the Observation Position on the Minor Arm (X-distance)

9.13.9 The baseline X-distance in **Table 9.5** is a representative reference aligned with the 'large-frame' tractor class. However, agricultural tractors commonly operate on the public highway with front-mounted equipment such as weight blocks, loader frames, buckets or forks. UK regulations permit such equipment to project forward of the tractor body, subject to marking, lighting and general safety requirements. As a result, the foremost point of a tractor in highway use may be defined by attached equipment rather than the tractor bonnet. In some circumstances, forward projections of several metres are lawful without police notification and may materially influence the position at which a driver can observe oncoming traffic. Consequently, for highway design purposes, reliance on conventional car-based or tractor-only assumptions risks understating visibility

requirements at junctions and accesses. Where attachments are fitted, the outermost forward projection may govern the true stopping position relative to the carriageway.

9.13.10 Where tractor size or configuration cannot reasonably be fixed, controlled or enforced over time, visibility splays shall be assessed using a single conservative design envelope that reflects realistic agricultural practice, including front-mounted equipment. This approach ensures that access designs remain robust to changes in machinery and operating patterns. The X-distance adopted in this guidance represents a conservative allowance for front-mounted equipment, measured from the vehicle's foremost reasonable projection back to the operator's eye point. This avoids overstating intervisibility where attachments, rather than the tractor bonnet, define the true leading edge of the vehicle at the give-way position.

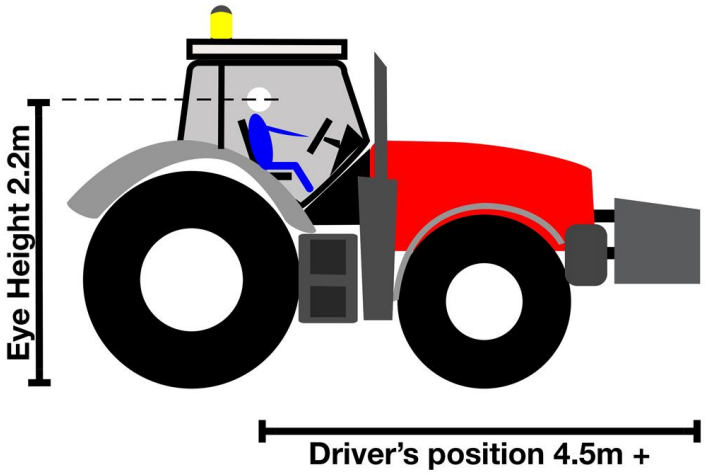
Table 9.5: Design Envelope Values

Scenario	X (m)	Eye height (m)
Design envelope – unknown tractor type/configuration	4.50	2.0 - 2.2
Context only (not for design): tractor without front equipment – illustrative baseline (representative large-frame tractor)	2.72	2.2

Adopted Design Values (required for unknown / variable tractor type)

9.13.11 The design envelope assumes an X-distance of 4.5m measured from the assumed front of the vehicle to the driver eye point. Driver eye height has been taken as between 2.0m and 2.2m. While 2.0m represents the conventional upper limit typically adopted for driver eye height, the use of 2.2m in this instance reflects a deliberate and conservative departure from the standard to account for higher-seated vehicle types and to ensure robustness of the visibility assessment. Standard visibility splays in accordance with this highway design guidance shall also be met as a minimum, with the bespoke design envelope providing a conservative enhancement where applicable.

9.13.12 Within the visibility splay, a clear and unobstructed view of an obstacle must be available between heights of 0.6m and 2.0m. Where the speed of traffic exceeds 60kph, the lower height threshold is reduced to 0.26m, in accordance with accepted visibility design practice.



Note**:** The minimum 4.5m X-distance is intended as a conservative worst-case design envelope for agricultural accesses where tractor type or configuration is unknown or may change over time. It represents a large agricultural tractor operating on the public highway where front-mounted equipment may reasonably be present. The design envelope provides a conservative observation point and avoids overstating intervisibility

where the vehicle's foremost point may be defined by the forward projection of front-mounted equipment rather than the tractor bonnet. Where site-specific evidence demonstrates that front-mounted equipment with materially greater forward projection is routinely used at an access, a greater X-distance should be applied.

Table 9.6: Indicative Driver Eye Point Geometry for Representative UK Agricultural Tractor Classes (Context Only)

Manufacturer	Model (UK market examples)	Class	X: Front → Driver eye point (m)	Driver eye height above ground (m)
John Deere	5R Series	Utility	2.10	1.98
John Deere	6M 120 / 135	Mid-range	2.32	2.08
John Deere	6M 150 / 155	Mid-range	2.32	2.08
John Deere	6M 175 / 185	Mid-range (long frame)	2.45	2.08
John Deere	6R 155 / 185	Large-frame	2.72	2.18
John Deere	7R Series	Large-frame	2.85	2.18
John Deere	8R Series	Extra-large	2.85	2.23
New Holland	T5 Series	Utility	2.10	1.98
New Holland	T6.125 / 150	Mid-range	2.32	2.08
New Holland	T6.160 / 175	Mid-range	2.32	2.08
New Holland	T7.170 / 210	Large-frame	2.72	2.18
New Holland	T7 LWB models	Large-frame (long WB)	2.85	2.18
Case IH	Vestrum	Utility	2.10	1.98
Case IH	Maxxum 115 / 125	Mid-range	2.32	2.08
Case IH	Maxxum 135 / 150	Mid-range (long frame)	2.45	2.08
Case IH	Puma 150 / 165	Large-frame	2.72	2.18
Case IH	Puma 185 / 220	Large-frame	2.85	2.18
Massey Ferguson	5S Series	Utility	2.10	1.98
Massey Ferguson	6S Series	Mid-range	2.32	2.08
Massey Ferguson	7S Series	Large-frame	2.72	2.18
Massey Ferguson	8S Series	Set-back cab	2.32	2.08
Claas	Arion 400	Utility	2.10	1.98
Claas	Arion 500	Mid-range	2.32	2.08
Claas	Arion 600	Large-frame	2.72	2.18
Claas	Axion 800	Large-frame	2.85	2.18
Claas	Axion 900	Extra-large	3.00	2.23
Fendt	200 / 300 Vario	Utility	2.10	1.98
Fendt	500 Vario	Mid-range	2.32	2.08
Fendt	700 Vario	Large-frame	2.72	2.18
Fendt	800 / 900 Vario	Extra-large	3.00	2.23
Valtra	A / G Series	Utility	2.10	1.98
Valtra	N Series	Mid-range	2.32	2.08
Valtra	T Series	Large-frame	2.72	2.18
Valtra	S Series	Extra-large	3.00	2.23

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