



# INNOVATIVE SCRAPER SYSTEMS

Home of the clean stable

[www.joz.nl/en](http://www.joz.nl/en)



The life of dairy farmers can be made easier and more profitable by saving labour. Animals in the barn deserve an environment that guarantees their well-being. We make time-consuming and heavy work redundant and our solutions make the barn more comfortable for animals. That's why we make high technical devices that clean up manure and push feed.

## Home of the clean stable

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# DRIVE UNITS



JOZ supplies manure scraping systems which are propelled using rope, sunken steel cables and a steel chain. The JOZ scraping systems can be used on slatted, closed concrete, rubber and low-emission floors.



- ✓ Easy to maintain
- ✓ Increased lifespan because of large-diameter drum and heavy construction
- ✓ Only stops working due to position measurement, not extreme resistance

## Drum drive – rope & cable

The drum drive unit consists of a narrow, large-diameter drum which can be used with rope or plastic-coated steel cables. A scraper system always includes two drive units. While one drive station rolls up the rope, the other station unrolls it. Therefore, the system does not have to be under tension. The narrow drum and the guide ensure that the rope or cable is always perfectly rolled.

The drum drive is available set up on the ground (beyond the reach of the cows) or on a console which is installed inside or outside the stable. Thanks to the large diameter and the robust and powerful gear motor (0.75 kW), the drive is especially suitable for stables with long alleys and for intensive use.

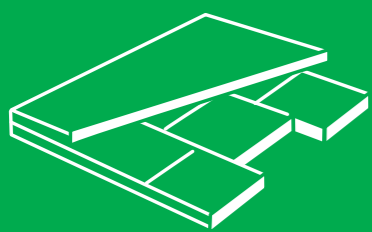
The drum (cable) drive unit is used with JOZ deposit hatches (type 650). A steel cable can be installed between the manure scrapers if needed. The top surround of the drive station is made of a combination of stainless steel and plastic. The front and back are easy to install or uninstall, so any maintenance required is easy to perform. The stainless steel protective surrounds on the console provide easy access for maintenance.

## Operation of JOZ drive units

The drive units are controlled by JOZ's MSC control panel. This control panel is unique because it communicates with a precision sensor on the drive engine. As a result, the control panel always knows the position of the manure scraper in the alley. Various settings are possible and JOZ can adjust the manure scraper to your needs, no matter how detailed. Optionally, the system can be equipped with frost protection and a remote control.

For more information, see page 14 for all the benefits of JOZ's control technology.





### Use on floor types

- ✓ Slatted floor
- ✓ Closed concrete floor
- ✓ Rubber floor
- ✓ Low-emission floor



### Use with manure alley lengths

- ✓ Plastic-coated cable, 8 mm, max. 150 metres
- ✓ Plastic-coated cable, 10 mm, max. 125 metres
- ✓ Dyneema rope, 10 mm, max. 125 metres
- ✓ Polytex rope, 16 mm, max. 38 metres



### Benefits of plastic-coated cable

- ✓ Long alley length is possible
- ✓ No pieces of steel wire in manure
- ✓ Prevents injury to claws and hooves



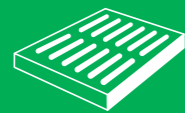
### Benefits of rope

- ✓ Animal-friendly
- ✓ Easy to repair
- ✓ Extremely strong Dyneema rope

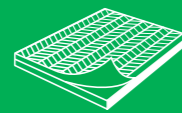
# Chain drive unit



Closed concrete floor



Slatted floor



Rubber floor



Low-emission floor

The JOZ chain manure scraping systems are equipped with one drive unit per system. A chain system is suitable for one or two manure alleys; depending on the situation, one or more scrapers can be used per alley.

The weight of the drive is determined by the length of the stable, with the choice of a 0.55 kW, 0.75 kW or a 1.5 kW motor gear unit. The quiet motor gear units are of heavy-duty quality for a long lifespan and they feature a direct drive without belts. The drive is placed on a vertical console which has protective surrounds on the telescopic part of the drive station. The surrounds are hot-dip galvanised and optionally available in stainless steel. The top surround of the drive station is made of a combination of stainless steel and plastic. The front and back are easy to install or uninstall.



With a 1.5 kW unit, a set of braces is also supplied, to ensure a very sturdy attachment to the floor. This brace set is optionally available for the 0.55 kW and the 0.75 kW models and is also suitable for existing drive units.



### Use of drive engine and max. chain length\*:

0.55 kW	max. 120 metres
0.75 kW	max. 240 metres
1.5 kW	max. 350 metres

\*maximum alley length of 160 metres

## Fully automatic hydraulic tension

In addition to the manual tensioning of the chain (with the supplied tension jack or crank) you can also opt for automatic tension setting. This not only saves labour because you don't have to shorten extra chain while changing the drive sprockets and manual tensioning is no longer needed, but it also provides lower maintenance costs. The system is always at the proper tension, which results in less wear. It is reliable, considering you are never too late with applying tension.



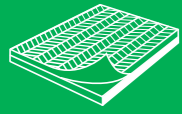
# BENEFITS of chain system

- ✓ Optional automatic tensioning system with extra long tension length saves time
- ✓ Motor gear units placed on vertical console, to be installed among the cows or outside
- ✓ Unequal alley lengths are no problem
- ✓ Combination of chain over the drive unit and cable on the back is possible
- ✓ For multiple scrapers per manure alley, a drawbar between the scrapers can be used
- ✓ Maintenance according to your schedule; no surprises from cable, rope or chain breakage

Maximum hygiene, healthy cows and optimal safety with vertical protective surrounds



# Cable drive unit



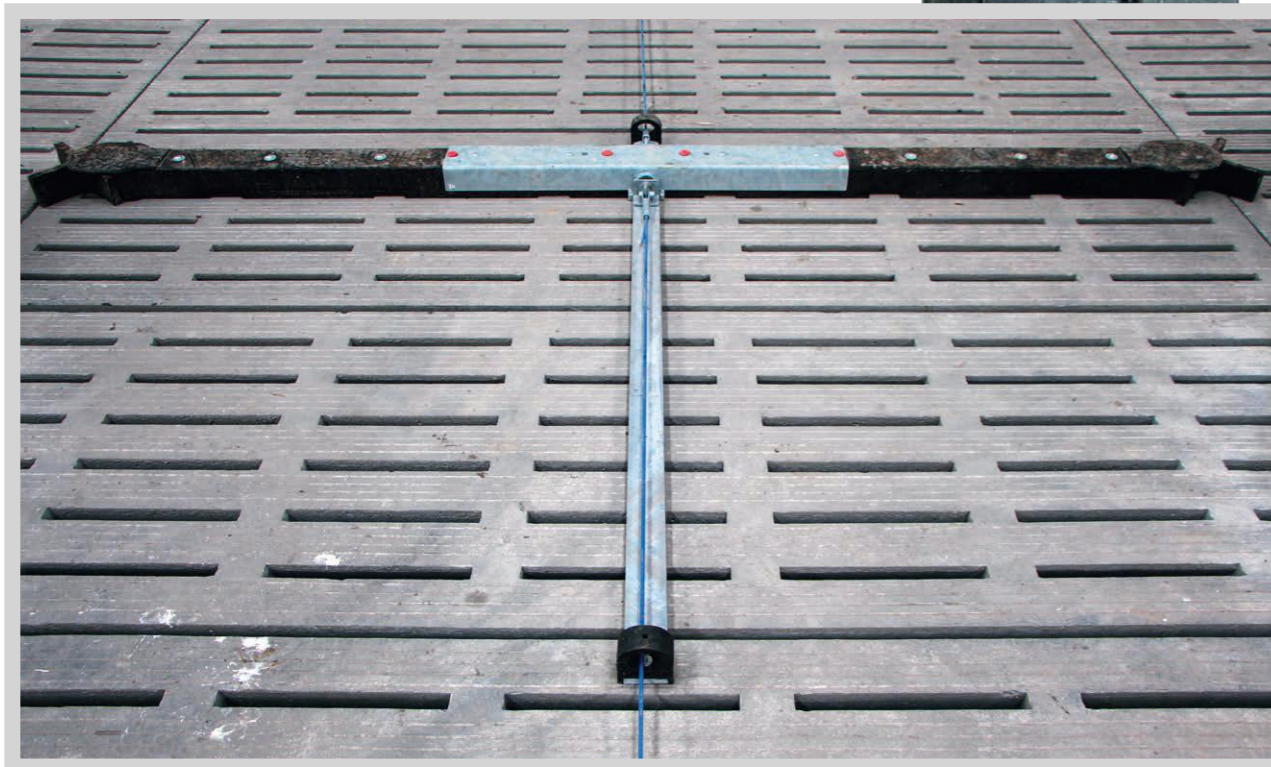
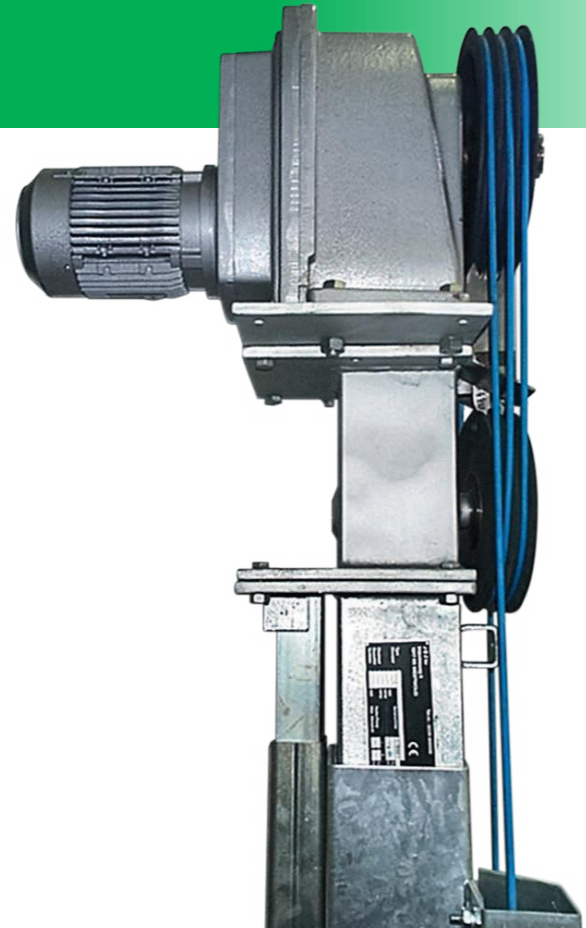
Rubber floor

In addition to the drum drive mechanism (rope/cable) and the chain drive unit, JOZ also supplies a cable manure scraping system which is propelled by means of a sunken steel cable. The cable scraping system has one drive unit per system, which pulls the cable back and forth. The system is driven using a drive roll or Penta system.

The cable drive unit is also operated with JOZ's MSC control panel. Read more about JOZ's control solutions on page 14.

### Use of drive engine and max. chain length\*:

0.55 kW	max. 100 metres
0.75 kW	max. 120 metres
0.55 kW Penta	max. 120 metres
0.75 kW Penta	max. 160 metres



# DRIVE UNITS ACCESSORIES

JOZ has developed special products which lengthen the lifespan of the drive units.



- ✓ Cow-friendly corner units
- ✓ Long lifespan
- ✓ JOZ is your sparring partner

# Drive unit accessories

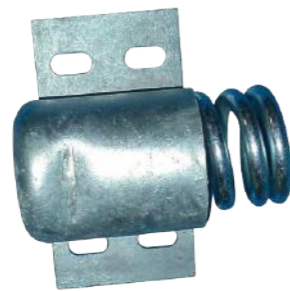


## Corner roller box

The JOZ manure scraping chain systems can be used on slatted, closed concrete, rubber and special low-emission floors. Corner roller boxes are also used with these systems.

The construction of the thick-walled corner roller box also takes into account cow-friendliness. For example, JOZ has fully integrated the greasing nipple of the corner roll so that the claws of the cows' hooves cannot become damaged. The large diameter and the hardened axis ensure that the fully hot-dip galvanised corner roll has a long lifespan.

A special 180-degree corner roller box is available for a single alley with chain. There is also a corner roller box for use in situations where rope or cable must run closely along a wall. JOZ is your sparring partner.



## Stand-alone compression spring

For driving units implemented as a grate installation, a compression spring which can be installed on the corner roller box is supplied as standard. The compression spring forms the mechanic end points of the system. While 'learning', the MSC control panel measures the distance between the compression spring ends. Then, under automatic operation, the compression spring is no longer used to stop the scraper at the end points, because the MSC control panel will stop at the distance travelled. This maximises the lifespan of the chain, rope or cable. With concrete installation, a stand-alone compression spring is supplied as standard. This compression spring can be installed at a different location.

## Connecting link

In situations where two manure alleys are of unequal length, JOZ can produce 'unequal alley' scrapers. The welded-on link must be ordered separately. This block makes sure the scraper which cleans the shorter manure alley is able to make a shorter pass than the scraper in the longer manure alley. The clamping block assembly is able to go around the corner and through the press wheels. The clamping block cannot go over the drive drum. At each unequal alley, two welded-on connecting links are supplied as standard.



## Special lift socket

In cable and a combination of cable/chain systems, a special lift socket must always be used. This lift socket allows the cable to be attached to the scraper. In addition, it is also used to attach the cable and the chain to each other.



## Complete lift socket

The enclosed lift socket is used with cable systems. This lift socket allows the cable to be attached to the scraper and also ensures that the cable or rope is not pinched during attachment. This prevents premature breakage. The cable or rope can always be easily loosened with a lift socket, which simplifies maintenance. These lift sockets are supplied as standard with the grate scrapers using cable.

# CONTROL TECHNOLOGY



The unique JOZ control panel distinguishes itself by communicating with a precision sensor on the engine. This allows the control panel to know where the manure scraper is on the floor at all times.

- ✓ Simple controls (three buttons for manual start, stop and reverse)
- ✓ Unique cow protection for empty and full manure scraper, suitable for all JOZ drive units

## Precision communication

The unique JOZ control panel distinguishes itself by communicating with a precision sensor on the engine. This allows the control panel to know where the manure scraper is on the floor at all times. Various settings are possible and the JOZ control panel can adjust the manure scraper to your wishes precisely. The simple controls mean that the system is easy to operate for the livestock farmer but it also means that it doesn't present any problems for any temporary worker.

The control panel is available with a frequency drive (one phase - 220 V) or a power control unit (PCU) (three phases - 380 V). The advantage of the frequency drive is the stepless speed restriction when switched on and off. This increases the lifespan of the gearbox. The advantage of the PCU is that it is not affected by voltage drops. The system also offers a unique cow protection. You can adjust the sensitivity of the cow protection electronically. This makes the JOZ control technology one of a kind!

### Speed control

It is also possible to limit the speed at, for example, a gate or letterbox deposit hatch. The speed can be temporarily reduced to approx. 2 metres per minute. The speed of the entire scraping cycle can also be set between 4 and 6 metres per minute. The PCU works with pulses.

### Manure scraper position

The panel offers the ability to set the manure scrapers at a special position at adjustable times. It's a tool that's handy for the livestock farmer if the scrapers are normally parked by the entrance to the waiting area or the barn door to the pasture. When the cows have to be milked or allowed into the fields, the scraper can be automatically set in a position where it doesn't get in the way for the cows. The cycle counter, that is, the part of the route that has been done and has yet to be done, is also shown in the display. The duration of the switch-off delay is also visible on the screen.

When the combi or comb scraper is not moving, the main wings remain open. This isn't cow-friendly and cows can damage their hooves. With the MSC control panel you can set the main wings to close when they are not moving. The scraper will then move slightly forwards so that the main wing goes into the scraper position. It is also possible to park the scrapers in an adjustable position instead of by the corner roller box. If it is by the corner roller box and there is a lot of cow traffic, JOZ's advice is always to set a different parking position. The scraper then always returns to the corner roller box at the start of the scraping cycle in order to scrape the whole alley.

## Remote control (optional)

The installation can be started or stopped at a distance with the remote control. The scraper or scrapers can be moved from the shovel when laying straw in the boxes so that you don't have to wait for them. There are also various inputs and outputs available to which the installer can fit a pump or sprinkler installation, for example.



#### Remote control application:

- 1 remote control per MSC
  - o 1 drum drive per remote control
  - o 2 cable/chain drive-systems per remote control
- 150 metre radius
- Start/stop function
- MSC returns to the 'auto' mode automatically



## Deposit

Depositing is even easier with the MSC control panel. When depositing waste from a single manure floor (in a single line installation), the deposit side can be chosen. Another advantage of the MSC control panel is the phased movements or reduced speed when depositing in the middle or at the end of the manure floor. The manure and manure then falls into the deposit opening in small amounts, avoiding its blockage or the blockage of the cross channel.

## Specific zone

The MSC control panel allows you to divide the manure floor into specific zones. For example, you can set it so that the front section, where the dry cows stand, is not scraped at night because of calving. Cow protection can be adjusted per zone.

## Maintenance & notifications

Every system needs maintenance and a manure scraping installation is no different. The MSC control panel reminds you periodically that maintenance is required and that period is set by the technician. If the chain, cable or rope breaks nonetheless, the system detects it and reports it on the panel.

## Automatic restart

The control panel is also equipped with an automatic restart function after a power cut. As a livestock farmer, you won't notice anything about the manure scraping system if there is a power cut in the middle of the night and the power returns some time later. Once the power is back on, the installation restarts automatically. The scraping cycle is continued and the manure floor scraped clean.



## Frost protection (optional)

The frost protection starts automatically if it gets cold. The lower the temperature, the more often the scraper moves forwards and backwards slightly, preventing the installation from freezing to the floor. It is also possible to open the deposit hatch during these movements so that it does not freeze either.

## JOZ data logger

When scraping manure on a low-emission floor the connection of a JOZ data logger to the MSC control panel is compulsory. The Dutch government obliges livestock farmers to scrape low-emission manure floors entirely clean every 1.5 or 2 hours, depending on the type of floor. You are also obliged as a livestock farmer to prove that you have done this for the last three months. The JOZ datalogger records the scraping movements and the log file (Excel file) is easy to read out by means of a USB stick.



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# ADVANTAGES of the JOZ control panel

It's not just the speed control, remote control and all the other aspects that have been mentioned that make the control panel unique. It also has:

- ✓ The option to connect an external emergency stop or signals
- ✓ The option to connect the manure removal systems in the deposit area to create a fully automatic system
- ✓ Power start after laying straw in the stalls



JOZ's cow protection means that cows' welfare is central

# MANURE SCRAPERS

JOZ develops and supplies high-tech manure scrapers for each type of stable and every type of box litter.

- ✓ Cleaner environment, cleaner cows, fewer hoof problems
- ✓ Decrease in bacterial load (especially around the edges of the boxes)
- ✓ Improvement of general hygiene in the stable

## Cleaner floor, healthier cows

Cow comfort is an important economic parameter in livestock farming. Cow comfort, animal well-being and hygiene cannot be viewed separately. They influence each other and JOZ takes each of these aspects into account for every solution.

Healthy legs and hooves are the basis for proper cow performance and a longer life. Hoof problems are related to feed, hygiene and stable environment.

Infectious hoof diseases, such as digital dermatitis, interdigital dermatitis and foot rot are caused by bacteria that occur in cattle manure. Lameness causes a lot of damage on cattle farms. This damage can be broken down into direct economic damage (costs of treatment and non-delivery of milk from sick or treated cows) and indirect damage (lower milk production, decreased fertility and early disposal). Good hoof health contributes to animal welfare and ease of working on the farm.

JOZ takes these aspects into account and uses the principle of clean and dry hooves as basis for selection of the right manure scraper. "Home of the clean stable"!

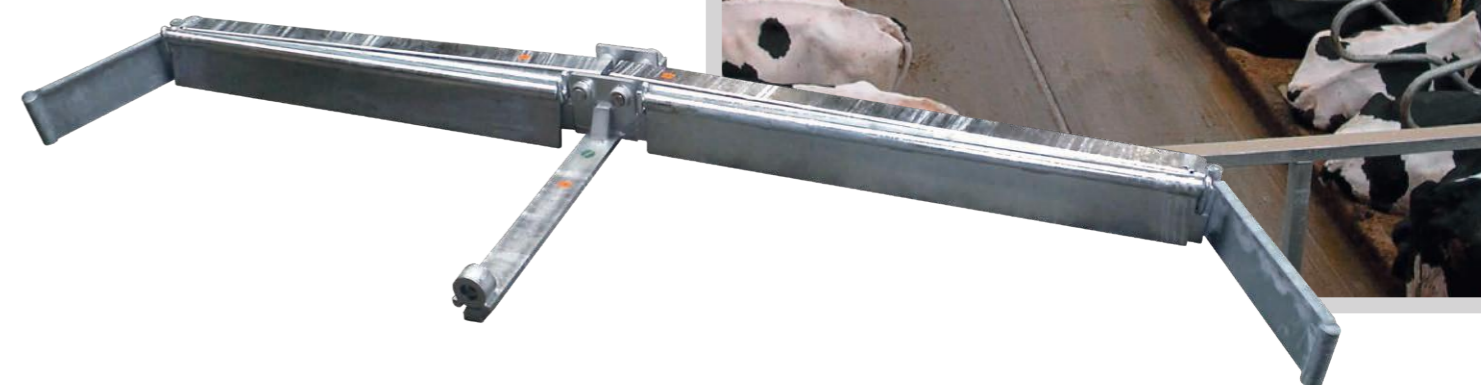
The type of floor impacts walkability and, as such, animal comfort and quiet in the stable. Given environmental requirements and legislation, the choice of floor is not always a free one. JOZ has a suitable, tried and tested manure scraping system for each combination of floor type, litter and animal.

### JOZ offers the following types of scraper:

- Combi scraper
- Multiscraper **(NEW)**
- Delta scraper
- Flex scraper
- Slatted floor scraper

## Robust and animal-friendly

"In addition to their optimal performance, all JOZ manure scrapers have a very animal-friendly finish and are hot-dip galvanised for optimum corrosion protection."



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# COMBI SCRAPER

The JOZ combi scraper has been developed especially for stables with closed or semi-closed floors. These can be flat floors with discharges at fixed distances or sloping floors where the manure drains to the middle or outside. There is a special combi scraper that can be driven over for use in stables where vehicles are used.

JOZ supplies different types of combi scrapers, depending on the stable situation.

1. Combi scraper single-acting
2. Combi scraper single-acting *overdriveable*
3. Combi scraper single-acting *with sliding pulling bar*
4. Combi scraper dual-acting *with end discharge*
5. Combi scraper dual-acting *with central discharge*
6. Combi scraper single-acting
7. Combi scraper HCI W5 floor
8. Combi scraper Berkel D4 floor
9. JOZ Chicken manure scraper



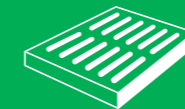
The JOZ combination scraper is robust and compact and delivers optimum scraping results!



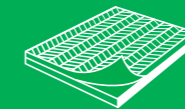
## Combination scraper single-acting



Closed concrete floor



Slatted floor



Rubber floor



Low-emission floor

The principle of the combi scraper is that it has main wings on either side of the central pulling bar, which are in vertical position during scraping and are raised when the scraper returns. This way, the combi scraper can return through the manure virtually without carrying along manure. The two wings scrape the side walls perfectly clean along the entire width, even if the walls are not perfectly straight.

The scraper requires little room to park and opens very fast at the beginning of the alley.

### Features of this scraper are:

- Equal or unequal alley length with chain
- Suitable for flat floor and UNP profile
- Versions with or without rubber on the main and side wings
- Suitable for chain, cable or rope drive units
- Animal-friendly construction and tail protector
- Normal quantity of box litter, little or no straw



### The single-acting combi scraper is suitable for:

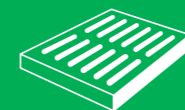
Alley width of: 135 cm to 600 cm\*

\*alley widths over 600 cm in consultation with JOZ

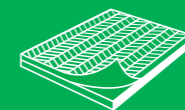
## Combi scraper single-acting overdriveable



Closed concrete floor



Slatted floor



Rubber floor



Low-emission floor

The single-acting combi scraper is also available in an overdriveable version. The scraper requires little room to park and opens very fast at the beginning of the alley.

### Features of this scraper are:

- Equal or unequal alley length with chain
- Suitable for flat floor and UNP profile
- Versions with or without rubber on the main and side wings
- Manual folding of the frame
- Is supplied with hooks to remove locking pins and fold or unfold the frame
- Suitable for chain, cable or rope drive units
- Normal quantity of box litter, little or no straw

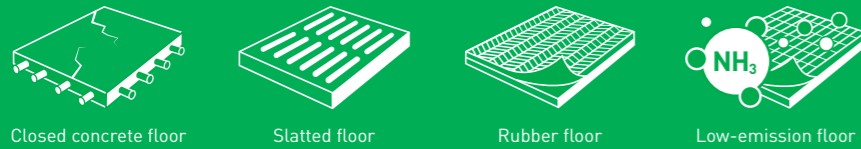
Please note: no side wing limiter possible



### The single-acting overdriveable combi scraper is suitable for:

Alley width of: 135 cm to 420 cm\*

## Combi scraper single-acting with sliding pulling bar



If you want an optimally clean manure alley or if there is little room around the discharge, you can opt for a single-acting combi scraper with sliding pulling bar. This manure scraper scrapes the entire alley clean and the long pulling bar automatically retracts when nearing the discharge, so that there is no wasted space in your stable. A unique feature of this scraper in the unequal alley version is the fact that it can be turned off manually, while the other scraper of the same system continues to run.



### Features of this scraper are:

- Equal or unequal alley length with chain
- Suitable for flat floor and UNP profile
- Versions with or without rubber on the main and side wings
- Little room required for parking scraper
- Strip on side wing
- Scraper opens very fast at the beginning of the alley
- Suitable for chain, cable or rope drive units
- Animal-friendly construction and tail protector
- Normal quantity of box litter, little or no straw

Please note: no bottom connection possible and not suitable for use in combination with discharge hatches

### The single-action combi scraper with sliding pulling bar is suitable for:

Alley width of: 135 cm to 460 cm

## Combi scraper dual-acting with central discharge



Dual-acting combi scrapers with central discharge are used in stables with a discharge in the manure alley. The open discharge must be at least 50 cm long. It does not have to be located in the middle. The scraper automatically changes direction when it drives over an open discharge and, as such, works in both directions. This scraper cannot be used in stables where long straw is used as litter. This scraper comes with side wing limiter.



### Features of this scraper are:

- Equal or unequal alley length with chain
- Only suitable for UNP profile
- Versions with or without rubber on the main and side wings
- Little room required for parking scraper
- Scrapes the full alley width in a short distance
- Suitable for chain, cable or rope drive units
- Animal-friendly construction and tail protector
- Normal quantity of box litter, little or no straw

### The dual-acting combi scraper with central discharge is suitable for:

Alley width of: 135 cm to 400 cm

## Combi scraper dual-acting with end discharge



Dual-acting combi scrapers with end discharge are used in stables that have a discharge at the beginning and end of the manure alley. The scraper cleans the alley on both the outward and the return pass. This scraper has a standard side wing limiter.



### Features of this scraper are:

- Equal or unequal alley length with chain
- Suitable for flat floor and UNP profile
- Versions with or without rubber on the main and side wings
- Little room required for parking scraper
- Scrapes the full alley width in a short distance
- Suitable for chain, cable or rope drive units
- Animal-friendly construction and tail protector
- Normal quantity of box litter, little or no straw

### The dual-acting combi scraper with end discharge is suitable for:

Alley width of: 135 cm to 460 cm

## Comb scraper



The comb scraper is a version of the combination scraper that is used for slatted floors. These can be either concrete or rubber floors. A comb scraper is only available as single-acting version and is suitable for chain, cable or rope drive units. Normal quantity of box litter, straw only with single pass.



### Features of this scraper are:

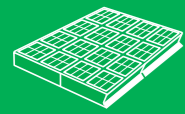
- Equal or unequal alley length with chain
  - Only suitable for UNP profile
  - Always with rubber on the main and side wings
  - Little room required for parking scraper
  - Heavy-duty construction
  - Scrapes the full alley width in a short distance
  - Strip on side wing
  - Standard adjustable side wing limiter
  - No longer side wings possible
  - Distance 1st slat to edge of box depends on type of floor
  - Animal-friendly construction and tail protector
  - Normal quantity of box litter, straw only with single pass
- Please note: no side wing limiter possible

### The comb scraper is suitable for:

Alley width of: 135 cm to 400 cm



# Combi scraper HCI W5 floor



Element floor

The HCI W5 floor is a closed, sloping floor with smooth, sloping urine channels. By allowing the urine channel to drain separately from the slab, the liquid and solid fractions are separated on the slab. JOZ has designed a unique scraper for the HCI W5 floor. The scraper is suitable for chain, cable or rope drive units. The scraper is also capable of handling a normal quantity of box litter and little or no straw.



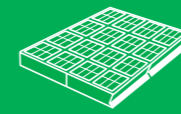
### Features of this scraper are:

- Equal or unequal alley length with chain
- Always with rubber on the main and side wings
- Hinged arms that follow the slope
- Main frame slightly bent forward
- Suitable for discharge hatch
- Strip on side wing
- Side wing limiter
- Little room required for parking scraper
- Animal-friendly construction and tail protector

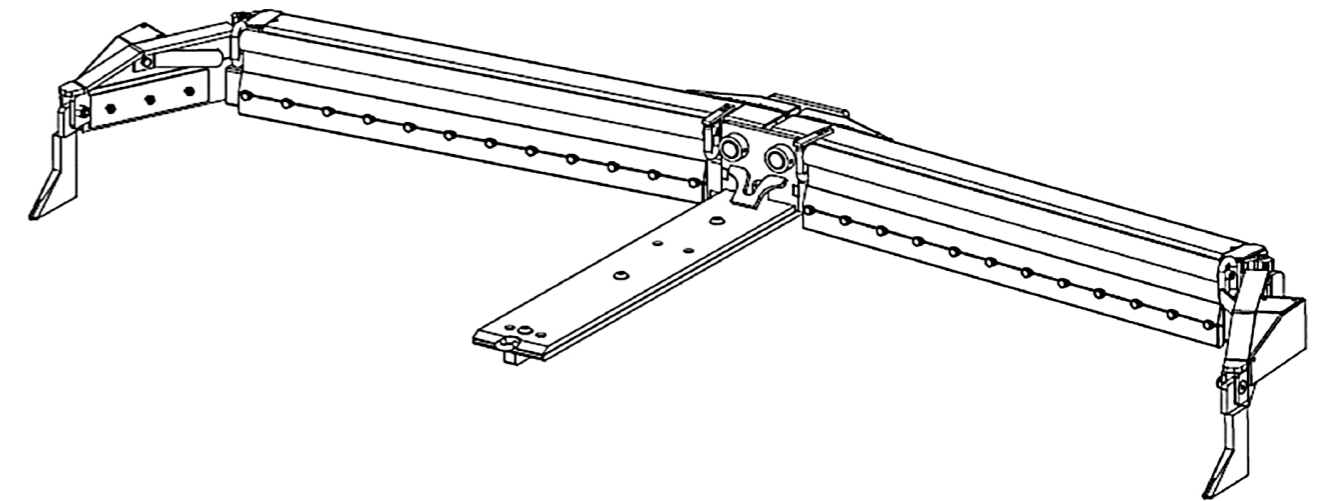
### The combi scraper HCI W5 floor is suitable for:

Alley width of: 250, 300, 350 and 400 cm

# Combi scraper Berkel D4 floor



Element floor



The Berkel D4 floor is an ammonia-reducing floor that slopes to both sides. There are urine channels along the outsides. JOZ has designed a unique scraper for the Berkel D4 floor. This scraper has modified single-action side wings that clean the liquid manure channels on the side of the floor. The unique feature of this manure scraper is that the liquid manure cleaners are up during the return pass, which ensures optimum manure discharge.

### Features of this scraper are:

- Hinged arms (frames and wings)
- Follows the 1.5% slope of the floor
- Bevelled side wings
- Boxes with brisket locator
- Rope and chain drive units
- Suitable for deep-litter boxes

This scraper follows the slope of the floor and the main frames are bent forward approx. 5 degrees. The scraper is fitted with heavy-duty SBR rubber with inlays. Both the pulling bar and the side wings are capable of opening the discharge hatches (provided the manure alley is NOT longer than 50 metres). This scraper has bevelled single-action side wings fitted with paddles that clean the channels on the outside of the floor. The side wings can be set so that they do not collapse inward during the return pass. The side wing fastenings have a hole in them to facilitate replacement. This fastening is also used for other combination scrapers.

The length of the pulling bar (128 cm) is optimal and ensures a very stable and solid construction. A wear-resistant plastic strip has been mounted underneath the pulling bar in order to avoid damaging floor.

### The combi scraper Berkel D4 floor is suited for:

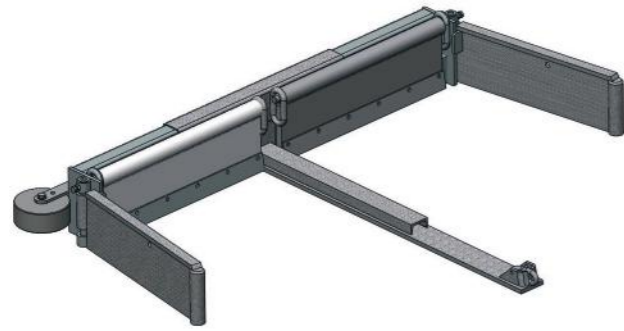
Alley width of: 250, 300, 350 and 400 cm



# JOZ Chicken manure scraper



Flat floor



JOZ manufactures manure scrapers for all forms of animal husbandry, including poultry farming. The JOZ Chicken manure scraper is a type of combination scraper with heavy-duty main wings that uses guided rollers next to the main frame. This scraper aggressively cleans the floor using a spoiler, which always produces a perfect result, even with extremely dry manure. These scrapers are made from manganese steel in order to minimise wear and tear.

#### Features of this scraper are:

- Heavy-duty main wings
- Manganese steel scrapers
- Side wing limiter
- Guided rollers next to main frame
- Reinforced main frame
- Secure attachment of chain to pulling bar
- Chickens, ducks, furred animals
- Suitable for chain, cable and rope drive units

#### The JOZ Chicken manure scraper is suitable for:

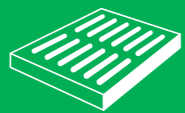
Alley width of: 135 cm to 340 cm



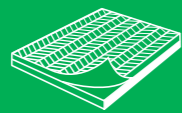
# Multi-Scraper *NEW*



Closed concrete floor



Slatted floor



Rubber floor



Low-emission floor

More than 60 years' experience in manure removal technology and the drive to create the best products for livestock farmers and their animals has resulted in the introduction of the Multi-Scraper. JOZ is proud of this achievement because the Multi-Scraper – with its modular construction, adaptability, hard-wearing components and rounded (animal-friendly) design – is the leader in its class.

The Multi-Scraper is constructed from different cast steel parts, which are more abrasion-resistant than carbon steel. The modular design means that all worn parts can be easily replaced, allowing the manure scraper to enjoy an unlimited working life with minimal maintenance costs. All worn parts have visual wear indicators, which enable them to be replaced in a timely and opportune manner without reducing the scraper's functionality.

The animal-friendly, rounded shape of the entire scraper, the two special mainframe hinged arms (enabling the frame to be angled forward, even during operation), the adaptable capacity of the scraper and the adjustable pulling bar make this multi-scraper a unique quality product that delivers an unequalled scraping result.

The advantage of moving the scraper's main arms forward is that, when a lot of (dry) box litter is used, the manure and litter will glide to the middle of the scraper. As a result, manure will never run into in the boxes and the scraper pulls more evenly and lightly. This ensures maximum hygiene and lower maintenance costs.

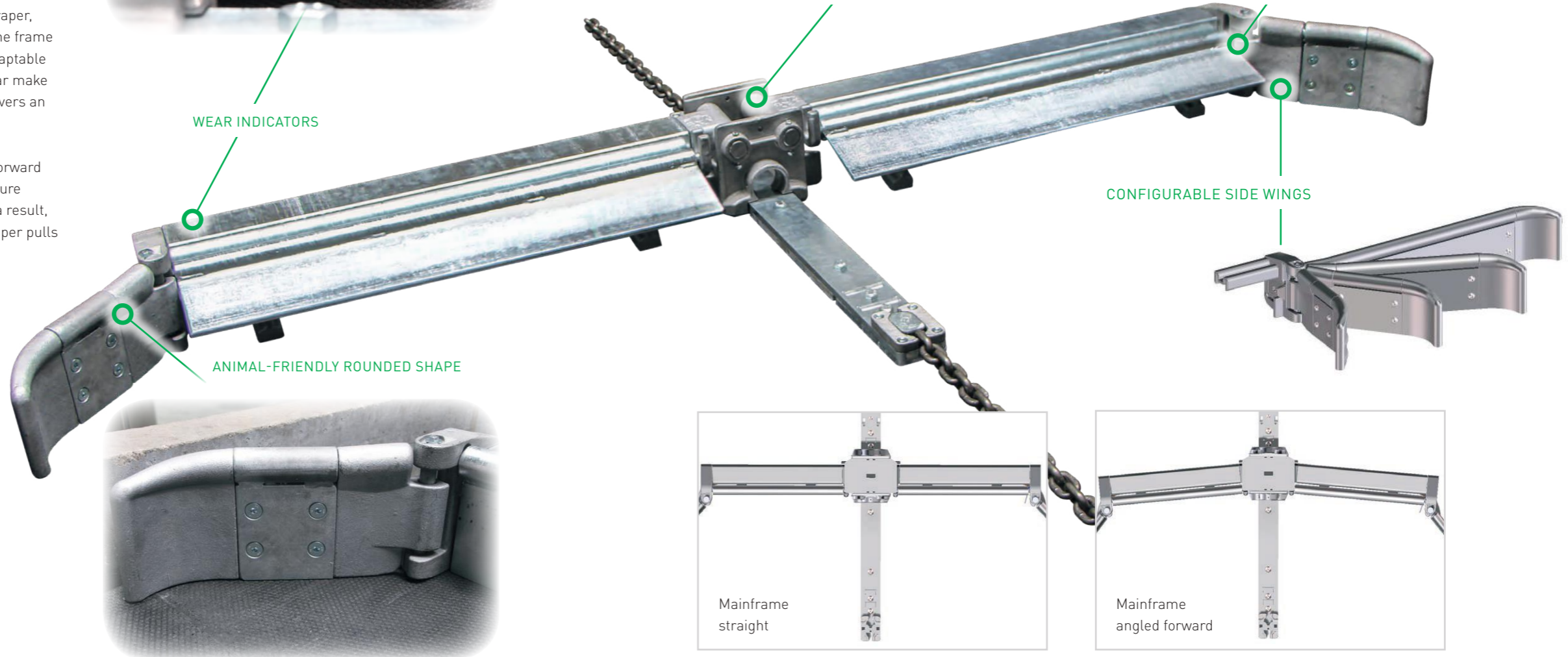
The advantage of the adaptable arms is that the scraper follows the floor optimally and makes it perfectly clean. The Multi-Scraper is therefore very suitable for floors with a slope to the middle.

## The Multi-Scraper is suitable for:

Alley widths of: 135 cm to 460 cm



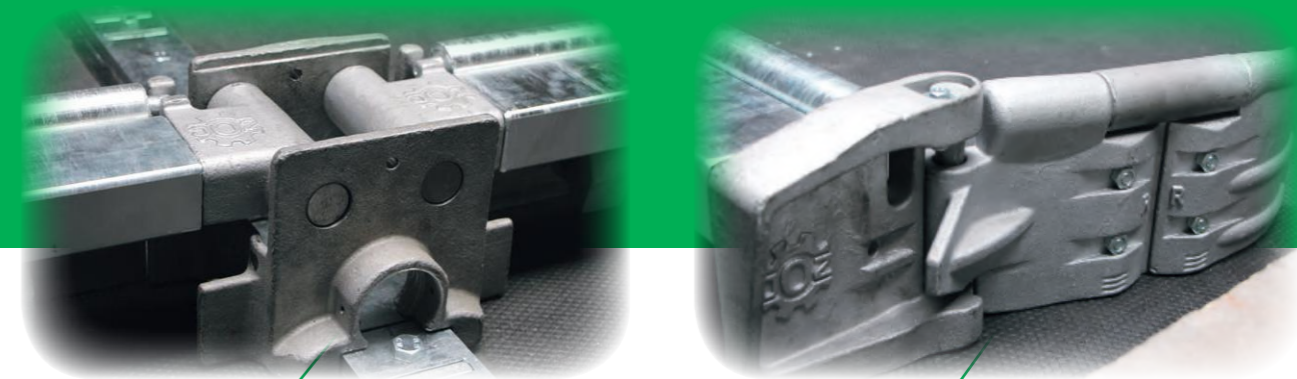
WEAR INDICATORS



Mainframe straight



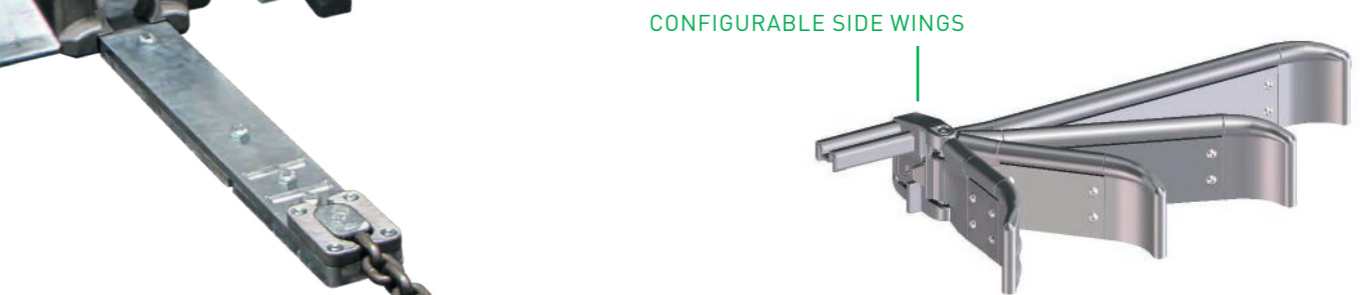
Mainframe angled forward



ADAPTABLE ARMS

SIDE WING LIMITS

CONFIGURABLE SIDE WINGS



## The multi-scraper features:

- The most animal-friendly construction
- Equal or unequal alley length with chain
- Suitable for level floors and UNP guidance
- Versions with or without rubber on the main and side casings
- Limited space required to park the scraper
- Configurable
- Adaptable capacity
- Wear indicators
- Mainframe can be positioned straight or angled forward as desired, at any time
- Scraper opens very quickly at the beginning of the alley
- Adjustable for chain, cable or rope drive unit
- Normal quantity of box litter, little to no straw



# Delta scraper



Closed concrete floor



In the case of a stable with lying boxes or a sloped stable in combination with the use of a lot of long straw, the delta scraper is the most suitable. The straw is guided to the middle of the scraper, along with the manure, so that the manure does not enter the lying area and the scraper pulls evenly and lightly. This ensures that cows do not have to walk through the manure when they step over the scraper. When the delta scraper returns, the arms fold together so that a minimal amount of straw and manure is carried along. In its folded position, it is possible to drive over the scraper, which is useful when using a vehicle to spread straw in the stable. The cows are not bothered by the delta scraper as it returns with closed arms. The guide profile in the middle of the floor ensures that the scraper is stable.

The delta scraper pulls the fixed manure to the end of the manure alley. If desired, the manure can be temporarily stored on a manure plate or transported to a manure heap completely automatically, using a side disposal system. Phased disposal is possible by means of the JOZ control panel, the greatest advantage being that large amounts of straw can be disposed of in small quantities and in a phased way, in order to prevent blockages. Depending on



the roughness of the floor, it takes approximately 1.5 times the width of the manure alley before the delta scraper is completely opened. This should be taken into account when designing the stable. JOZ offers a delta scraper with a quick opener, so that the delta scraper is opened mechanically and less space is required before the delta scraper scrapes the entire manure alley width. See also page 31.

The delta scraper is also the perfect solution for stable alleys which have variable widths. The scraper effortlessly adjusts to the changing manure alley width without leaving manure behind. It is an animal-friendly scraper (the cows can easily step over it) and, because it folds in during its return passage, the scraper offers plenty of space for the cows' rear legs and for passing it in the manure alley.

## The delta scraper features:

- Equal or unequal alley length with chain
- Only suitable for manure alley with UNP guidance
- Low maintenance
- Can be driven over
- Suitable for sloped stables
- Frame is fitted with a spoiler for extra pressure on the floor (cleaner floor)
- Takes 1.5 times the alley width to open the scraper arms
- Suitable for chain and cable drive units
- Strong and animal-friendly construction
- Very suitable for straw stables



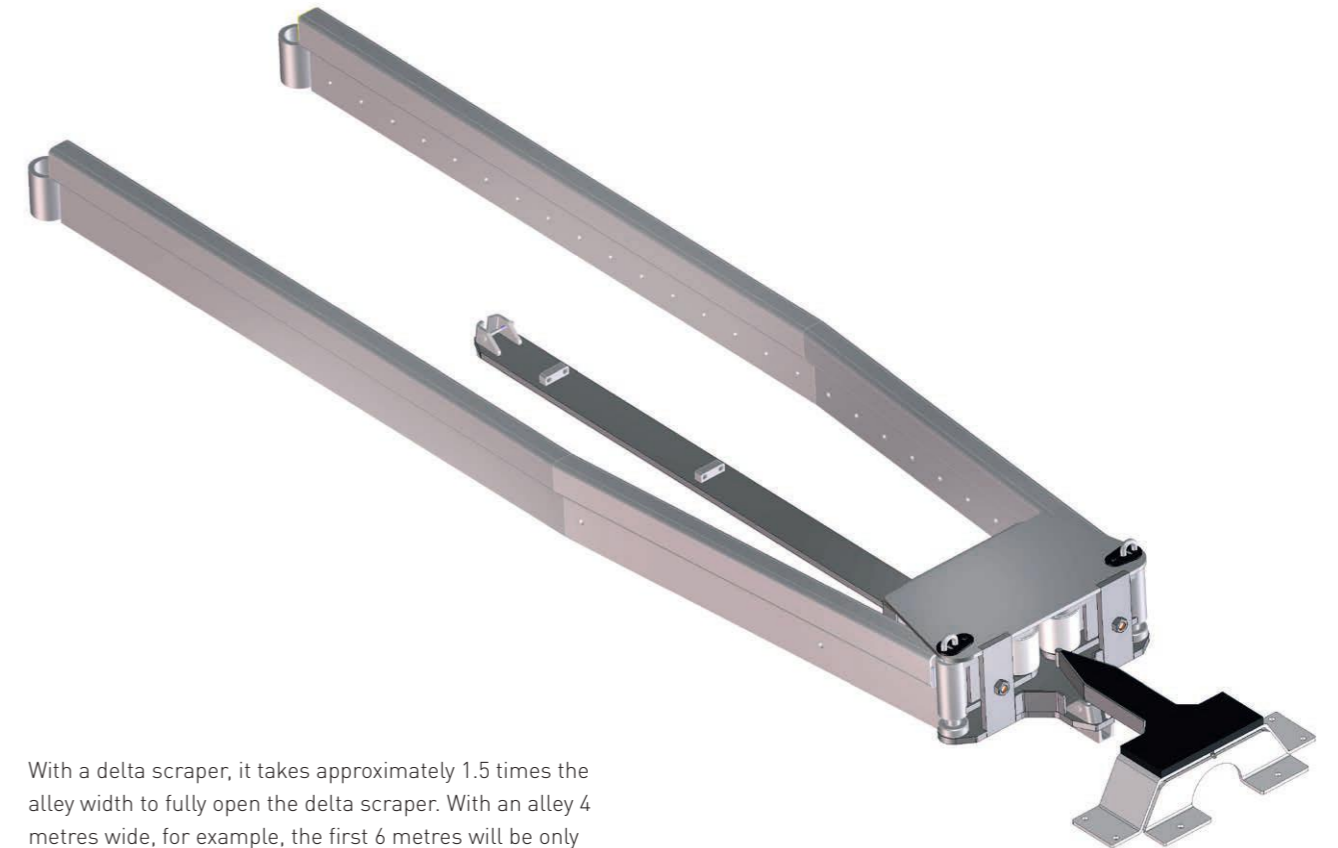
### The Delta Scraper is suitable for:

Alley widths of: 135 cm to 520 cm

# Quick Opener Delta Scraper



Closed concrete floor



With a delta scraper, it takes approximately 1.5 times the alley width to fully open the delta scraper. With an alley 4 metres wide, for example, the first 6 metres will be only partially scraped. The JOZ quick opener offers a solution for this situation.

The quick opener is a steel wedge with rubber on top which is installed in front of the corner cabinet at the beginning of the manure alley. The delta scraper is fitted with rolls on the inside of the arms, next to the hinged point. The wedge presses against these rolls and forces the scraper to open.

The JOZ MSC control panel has a special setting so that the scraper temporarily receives extra power when opening, but while scraping it maintains a perfect (sensitive) setting for the safety of the cows.

Please note: the arms open quickly, so no cows should be located in that section. This space must be protected using fencing.

## Benefits of a quick opener:

- On the delta scraper's return, the opener makes sure that the delta scraper opens completely in front of the corner cabinet
- Minimal space is required in the manure alley before the delta scraper is fully open
- The entire manure alley is scraped; a large parking space is not needed

## The quick opener:

- Only to be used in a zone fenced off from people and animals
- Only to be used with a special JOZ delta scraper developed for this purpose
- Only to be used with the JOZ MSC control panel
- Not for use with disposal on a level manure plate
- Not for use with unequal alley lengths



# Flex scraper



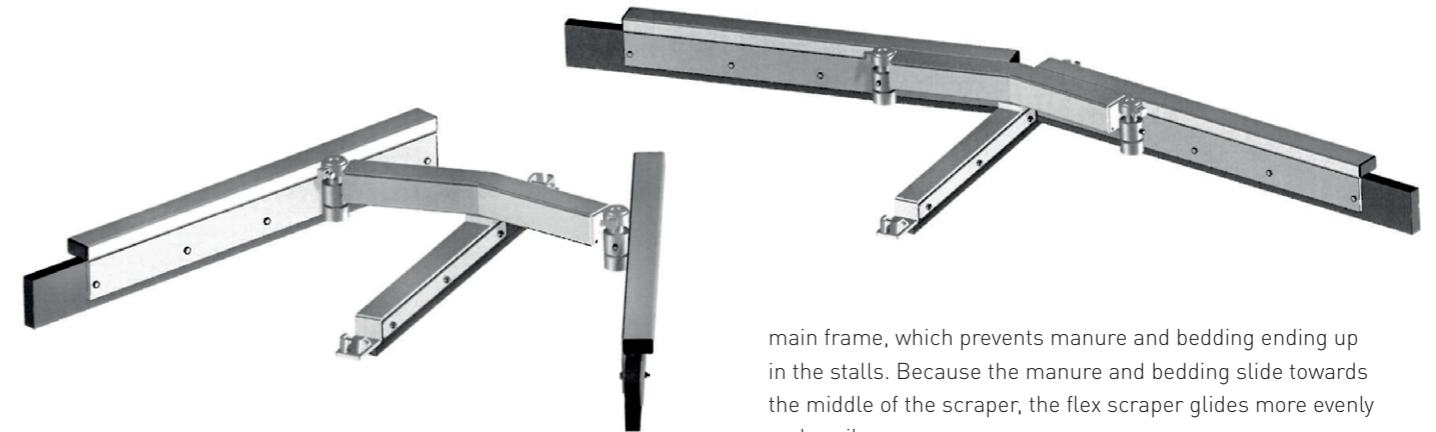
Closed concrete floor



Low-emission floor



Flat floor



main frame, which prevents manure and bedding ending up in the stalls. Because the manure and bedding slide towards the middle of the scraper, the flex scraper glides more evenly and easily.

JOZ has extensive experience with manure scrapers in barns with sand bedding. The main challenge in barns with sand bedding in the stalls is limiting wear and tear, as sand is highly aggressive. This experience has resulted in the flex scraper. This flex scraper was developed especially for stables with sand bedding, but can also be used for other types of bedding.

The flex scraper is fitted with special wear-resistant rubber (4-cm thick) along its entire underside, so it is very easy to maintain. The entire frame is at the top of the scraper, and there is no contact between the steel and the floor. Thanks to the narrow main frame, the scraper opens rapidly and both arms fold double on the return pass of the flex scraper. This means it is possible to drive over the flex scraper, and it allows cows to pass the scraper on its return without having to negotiate obstacles. The flex scraper has a bend in the

## Features of the flex scraper:

- Equal or unequal alley length with chain
- Suitable for flat floors and UNP profile
- Heavy-duty, galvanised frame on top of scraper
- Low-maintenance
- Can be driven over
- Opens faster than delta scraper
- Suitable for chain, cable and rope drive units
- Strong, animal-friendly construction
- Ideal for barns with sand bedding
- Suitable for barns with up to 1.5 kg straw per cow per day

### The flex scraper is suitable for:

Alley widths of: 135 cm to 400 cm



# SLATTED FLOOR SCRAPER

The slatted floor scraper is mainly used on slatted floors and on some low-emission floors. Various types of slatted floor scrapers are available, such as versions with or without rotor, rubberised, galvanised, and/or rubber-reinforced. The slatted floor scrapers are suitable for cable, rope and chain drive units.

## No lateral guides

An important advantage of the JOZ slatted floor scraper is that no lateral guides are needed. Special rotors on the sides of the scraper ensure that obstacles such

as standpipes by the feeding fence, water mains, and tails can be circumvented without problems. Even when the manure alleys are of uneven lengths, the JOZ slatted floor scraper can be used without problems with chain, cable or rope.

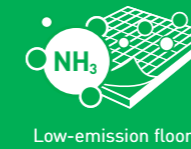
## Automatically adjustable

The scraper is pulled over the floor by a chain, cable or rope, powered by a silent electric motor, at a speed of 4 m/min. The progress of the scraper can be controlled fully automatically with the latest JOZ MSC control panel

JOZ supplies four types of slatted floor scrapers, depending on the type of barn for which they will be used.

- ✓ Animal-friendly finish
- ✓ Less manure on the slats, so fewer claw problems and cleaner stalls
- ✓ Better general hygiene

## Rubberized slatted floor scraper without rotor



### Features of rubberised slatted floor scraper

- Rubberised frames, very animal-friendly.
- Unequal alley for chain, otherwise 2 scrapers per (longest) alley



- Raised crossing passages necessary, or use guide iron
- Rubber guide eye for rope / cable / chain
- 2 rubbers (front+rear), cleans very thoroughly.
- Standard 220-cm pulling bar for additional stability
- Optionally reinforced
- Suitable for cable, rope or chain drive units
- Normal amount of stall bedding

Option: Herding fence / pulling bar off centre

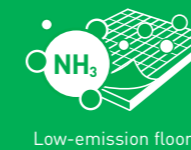
### Note:

use guidance in cross passage.

**The rubberized slatted floor scraper without rotor is suitable for:**

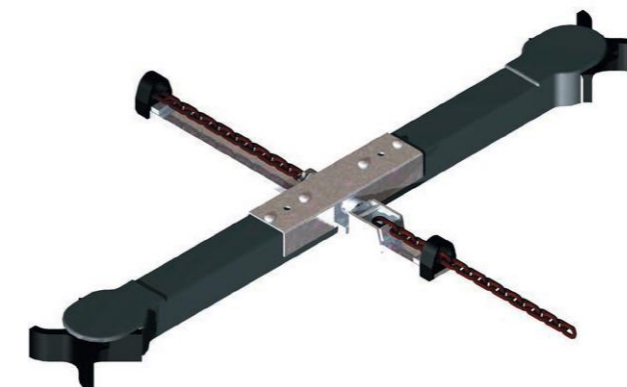
Alley widths of: up to 320 cm

## Rubberized slatted floor scraper with rotor



### Features of rubberized slatted floor scraper with rotor

- Strong, animal-friendly construction
- Available in a heavy-duty version for use in wide alleys with large amounts of bedding.



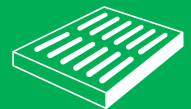
- Rotors guarantee clean stall walls and make guidance unnecessary in crossing passages.
- Rubber guide eye for rope / cable / chain
- 2 rubber strips under the scraper guarantee very thorough cleaning.
- Unequal alley for chain, otherwise 2 scrapers per (longest) alley
- Standard 220-cm pulling bar for additional stability
- Suitable for cable, rope or chain drive units
- Normal amount of stall bedding

Option: pulling bar / herding fence off centre

**The rubberized slatted floor scraper with rotor is suitable for:**

Alley widths of: up to 320 cm

## Rubberized slatted floor scraper with or without rotor - Reinforced



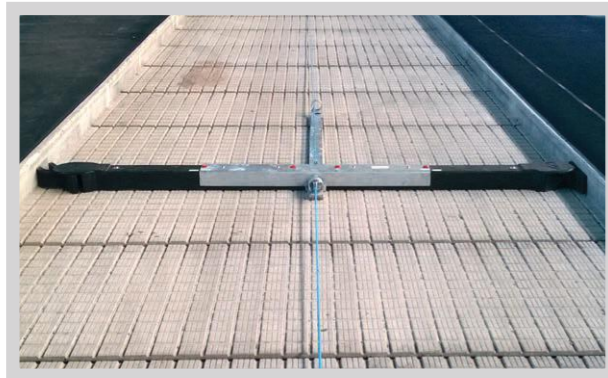
Slatted floor



Low-emission floor

### Features of reinforced Rubberized slatted floor scraper

- strong construction
- reinforced, more pressure on the floor, cleaner floors
- Rotors guarantee clean stall walls and make guidance unnecessary in crossing passages.
- Rubberized frames, very animal-friendly
- Rubber guide eye for rope / cable / chain
- Unequal alley for chain, otherwise 2 scrapers per (longest) alley
- Standard 220-cm pulling bar for additional stability
- Suitable for cable, rope or chain drive units
- Normal amount of stall bedding



Option: pulling bar / herding fence off centre

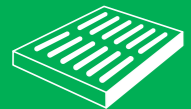
### Please note:

On low-emission floors, a discharge is required (open on two sides). Otherwise, the scraper can only be used in combination with mats.

**The reinforced rubberized slatted floor scraper is suitable for:**

Alley widths of: up to 420 cm

## Galvanised slatted floor scraper with rotor



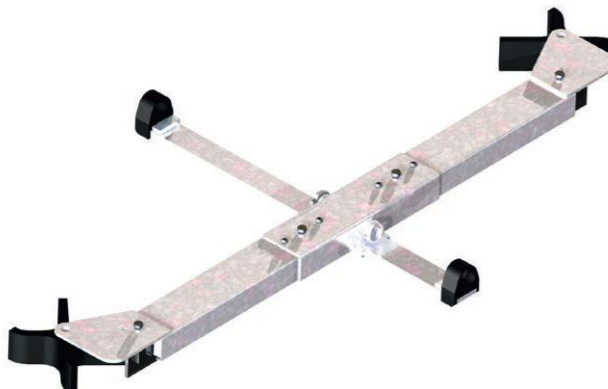
Slatted floor



Low-emission floor

### Features of galvanised slatted floor scraper with rotor

- Standard reinforced version for use in wide alleys and with generous amounts of box litter.
- Rotors guarantee clean box walls and make guidance unnecessary in cross passages
- Height of scraper rubber adjustable on both sides.
- Rubber guide eye for rope / cable / chain
- Cow-friendly finish.
- Unequal alley for chain, otherwise 2 scrapers per (longest) alley
- Standard 220-cm pulling bar for additional stability
- Suitable for cable, rope or chain drive units
- Suitable for large amounts of bedding



Option: Herding fence / pulling bar off centre / green flag floor / Meadow floor

**The galvanised slatted floor scraper with rotor is suitable for:**

Alley widths of: up to 460 cm

# ADVANTAGES of slatted floor scraper

- ✓ Animal-friendly finish
- ✓ Optional: adjustable pulling bar
- ✓ More hygienic milking, allowing delivery of better milk quality
- ✓ Less manure on the slatted floors, so fewer claw problems and cleaner stalls
- ✓ Less manure behind the stalls, keeping cows cleaner
- ✓ Less washing needed, so quicker milking
- ✓ Less sawdust or straw bedding in the stalls



Clean floor, clean cows, and better hygiene with JOZ manure scrapers



# OPTIONS FOR COMBI SCRAPERS

As a livestock farmer, you may want to add certain options to a specific type of combination scraper. These options include additional components for the manure scraper, or parts for the barn which further improve the scraper.

- ✓ Cow-friendly corner rollers
- ✓ Long service life
- ✓ JOZ works with you

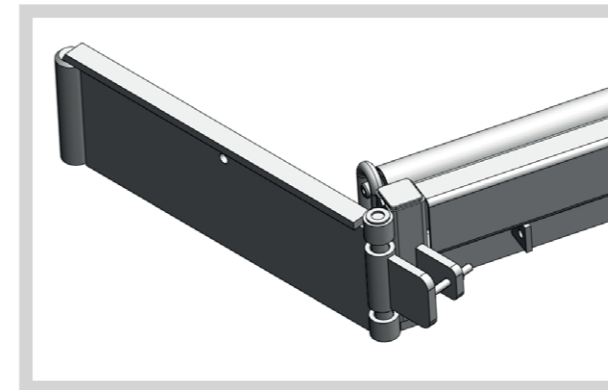
## Options for combi scrapers



### Guiding feet at grid transition / grid discharge

Guiding feet can be used to prevent blocking of the combination scraper in slatted floors or overcome uneven transitions between elements.

There are two types of feet; one for standard combination scrapers, and one for rubberised combi scrapers.



### Adjustable side wing limiter

The opening of the side wing of a manure scraper can be limited by adjusting a bolt.

#### These options are applied:

- With flat-floor combi scrapers
- With UNP combination scrapers, which do not always have lateral guides
- With UNP combi scrapers, when prefab stall slabs are used



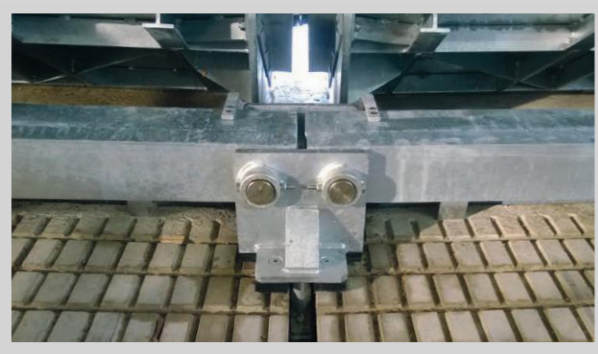
### Herding fence

Herding fences can be used on the combi scraper, the flex scraper, the delta scraper and the slatted floor scraper.

#### Herding fence features

- Push-button control in milking parlour
- Can be installed manually on the scraper
- Maximum alley width 350 cm
- Use 2 herding fences for wider manure alleys
- Distance of 1st scraping movement adjustable
- Subsequent scraping movements adjustable

# Options for combi scrapers



## Compensate slope to middle of manure alley

This requires a bend in the frame for a fixed slope. Hinged frames are also highly suitable for differences in slope. These floor-following arms are highly efficient for cleaning manure floors.

## Guide irons on side wings

If the level at crossing passages is the same as that of the manure alley and there is no guide edge, it is recommended that a guide iron is mounted to properly guide the scraper to the edge of the stalls. It is better for cows if crossing passages between stalls are at the same level as the manure alley, as it reduces the risk of claw damage.

### Application:

- For manure passages without guide edge
- Sealed floors with U-profile
- The manure scraper must have a side wing limiter



## Bottom connection pulling bar

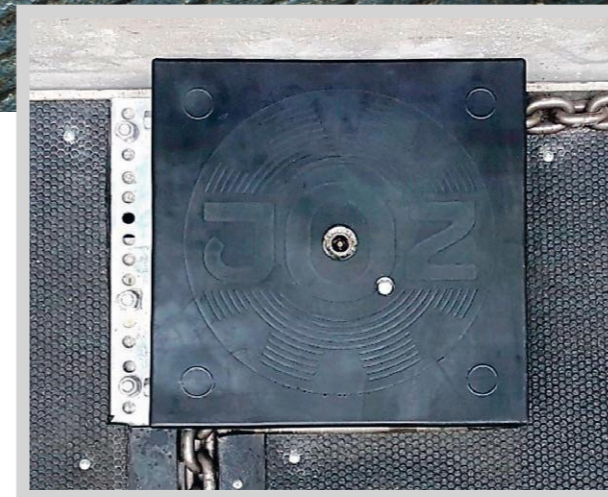
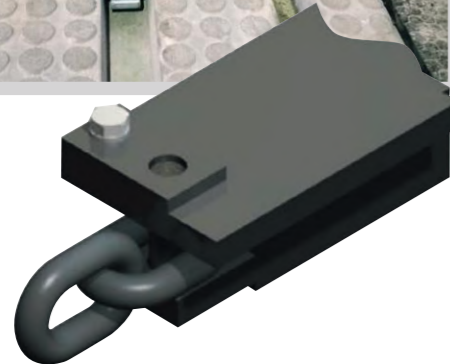
A bottom connection of the pulling bar is a very animal-friendly solution. The bottom connection can be made at the front or rear of the pulling bar.

### Features of bottom connection:

- Chain / cable / rope remains in the recess in the floor
- Shortening the chain requires more effort
- Recess in floor at least 30 mm deep
- Less pressure on pulling bar!
- Corner roller box / drive unit can be recessed in concrete

### Application:

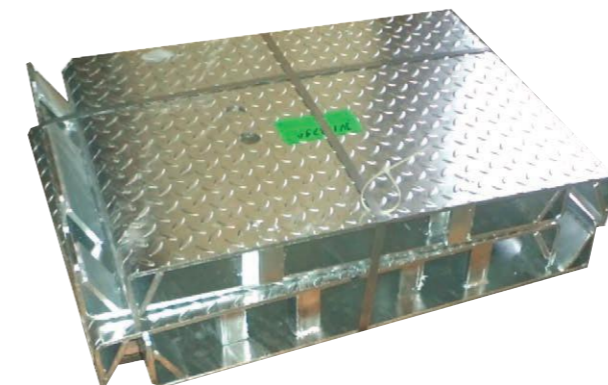
- For combi scrapers and flex scrapers
- Only possible for scrapers with same alley length
- MDV 9.1



## Corner roller box cover

Attention to cow welfare is a priority for JOZ. The robust corner roller boxes JOZ uses in the stable may not be the best solution for cows' claws, so JOZ offers a solution in the form of a rubber cover. The profile on the top of the rubber cover also allows improves the cows' grip.

In addition to the rubber cover of the corner roller box, a lid can be mounted on top of the box. If the corner roller boxes are covered with this lid, they can be driven over. This has positive consequences for the Yardstick of Sustainable Stockholding (MDV).



# DISCHARGE SYSTEMS

There are several discharge options to remove manure from stable floors.



- ✓ Clean floor, clean cows
- ✓ Customised
- ✓ JOZ is your sparring partner

## Squeaky clean

In the stable concept, JOZ considers it important that the system results in clean and dry claws. That is the basis for good claw health and is at the heart of all our product advice. In slatted floors, manure is pushed through the slots by the scraper. In all closed and semi-closed floors as well as most low-emission floors, the manure scraper transports the manure to an open discharge, guided by discharge irons. In closed and semi-closed floors, we see additional possibilities for diagonal steel grates and the JOZ lifting hatches.

It is important to have a discharge at least every 60 to 80 metres. This limits the amount of manure in front of the scraper and means that the cows do not have to walk through a pool of manure. In larger stables, it is important to opt for multiple discharges or a discharge in the middle of the stable.

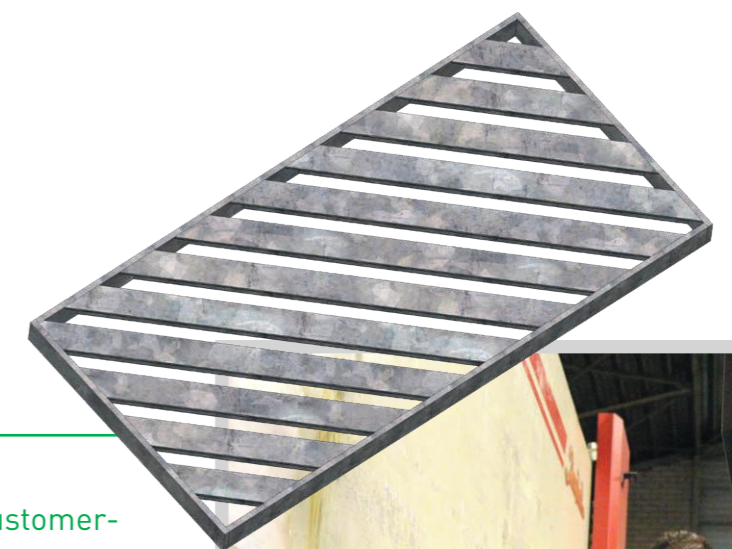
JOZ is happy to advise you. There are many possibilities, and your choices will help determine the success of your stable for years to come!

### JOZ offers the following types of discharge:

- Steel grid discharge
- Lifting hatches
- Letterbox discharge

## Customised grids, built in-house

- ✓ Lifting hatches are produced in a customer-specific manner and can be covered with animal-friendly rubber.
- ✓ The Letterbox is realised in cooperation with JOZ.



## J0Z steel grid discharge

The steel grids are ideal for the disposal of thin manure. These steel grids perform better than concrete grids as the open surface is larger. The grids are suitable for discharge at the end and in the middle. The maximum length is 120 cm. The grid discharge is produced in a customer-specific manner. Manure that is too thick will not pass through the grids. In practice, thicker manure usually does not pass through the steel grids and the cattle breeder has to do this manually. The grid discharges are suitable for primary manure separation.

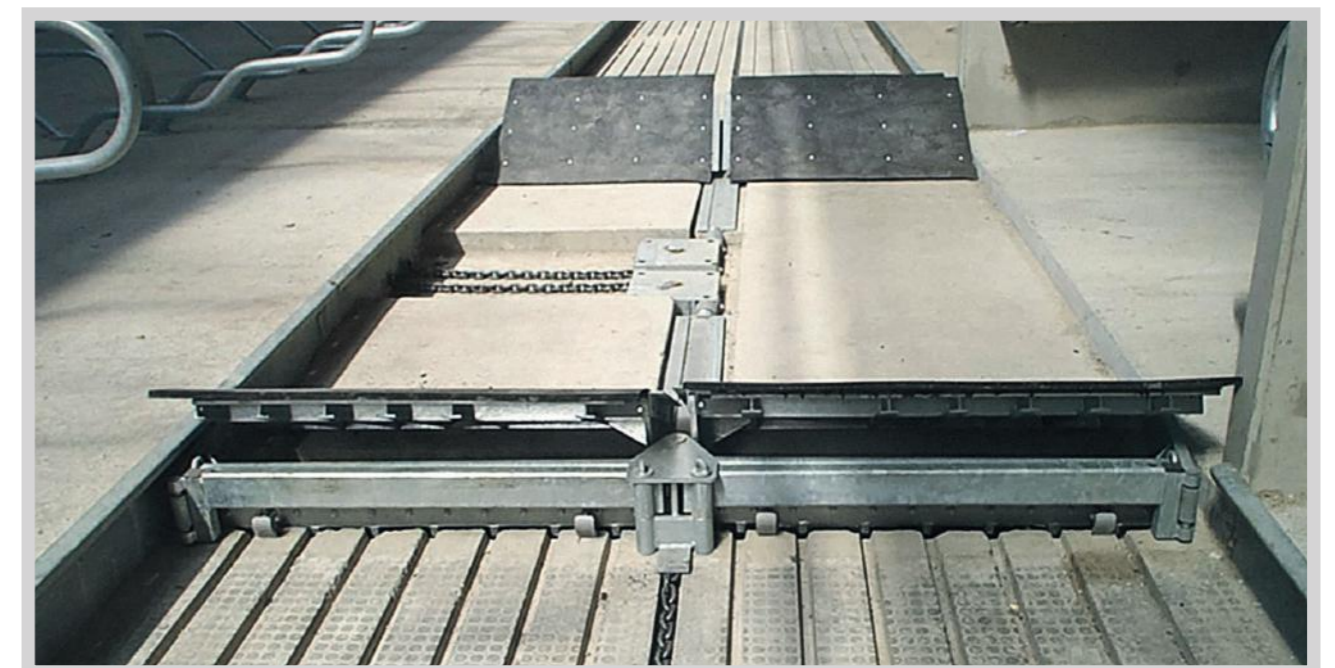


- ✓ Suitable for primary manure separation
- ✓ In straight or diagonal version
- ✓ Walkable discharge for animals, humans and work traffic

## J0Z lifting hatches

The lifting hatch has been developed to safely cover manure discharging for humans, animals and traffic. The lifting hatches are automatically opened and closed by the manure scraper and controlled by the unique settings of the J0Z MSC control panel technology. This technology ensures that the system is operated only when the lifting hatch is approached. This optimises cow safety in the manure alley.

Lifting hatches are produced in a customer-specific manner and can be covered with animal-friendly rubber.



### Applications and advantages of lifting hatches:

- ✓ Walkable and overdriveable discharge
- ✓ Open discharge, no manure residues
- ✓ Type 650 or type 1000 (2 length versions)
- ✓ Adjustable sensitivity
- ✓ Can be applied with combi scrapers
- ✓ Also in combination with low-emission floors
- ✓ Animal-friendly in combination with rubber



## JOZ letterbox discharge

An open discharge is the only discharge that performs reliably and under all (weather) conditions. The manure can be discharged quickly and the discharge is at least 300 mm wide. JOZ advises an opening of 500 mm. In deep-litter boxes, the minimum width of an open discharge is 450 mm. With open discharges, it is important to consider the safety of animals and humans. A fence to prevent access is a prerequisite.

Safety is very important to JOZ, which is why JOZ offers the option of a cover for an open discharge, the 'letterbox'. This is realised in cooperation with JOZ. For low-emission floors, JOZ always advises use of an open discharge with letterbox or lifting hatches and discharge irons.

The advantages of discharge irons are that the scraper always moves above the discharge and no manure remains in front of the discharge. The discharge irons are easy to assemble. Grids can be used for thin manure only, but this is only effective in exceptional circumstances. Also when using mats in the stable.

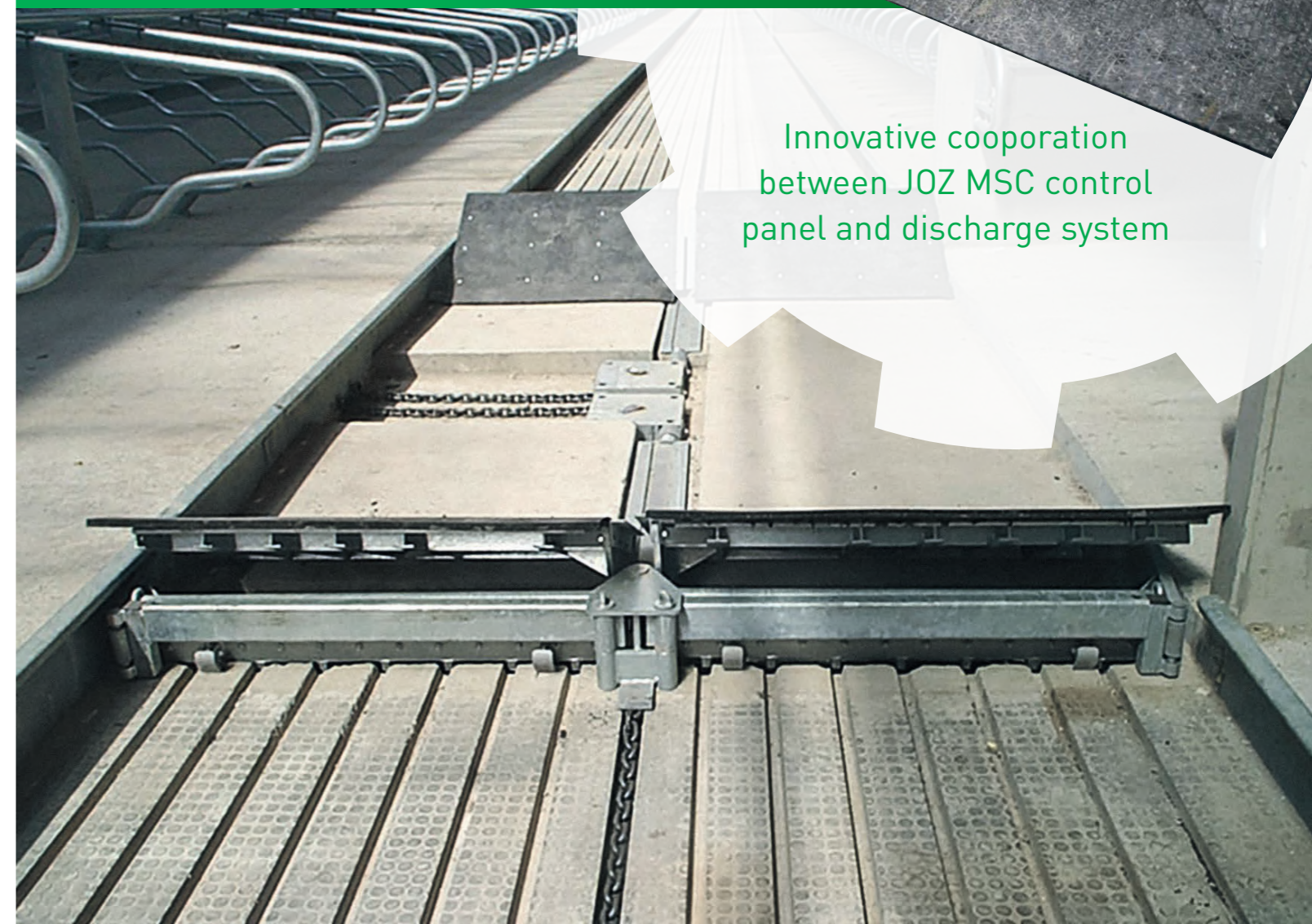


# THE ADVANTAGES of JOZ discharge systems

- ✓ Customised
- ✓ Focus on safety for humans and animals
- ✓ Less manure residues
- ✓ Animal-friendly



Innovative cooperation  
between JOZ MSC control  
panel and discharge system



# SCRAPER ROD SYSTEMS

In addition to the manure scrapers, JOZ has also developed mechanical scraping systems that transport the manure further along in the discharge process.

- ✓ Solid construction
- ✓ Phased discharge
- ✓ Can be applied with large amounts of straw and/or long straw

## JOZ Scraper rod systems

Manure can be removed using an open discharge (pit), turning chain system or a second single-arm delta scraper installation.

### Suitable side discharges are:

- ✓ Mechanical scraper rod
- ✓ Hydraulic scraper rod
- ✓ Single-arm delta scraper
- ✓ Turning chain system
- ✓ Turning chain system conveyor
- ✓ Turning chain system pivoting conveyor

Rapid discharge of manure creates optimum general hygiene in the stable

# Scraper rod

The scraper rod is a simple, versatile system that has amply proved its value in use. The scraper rod comprises a heavy-duty beam fitted with hinged swivels. The beam's back and forth movement transports the manure outside. Maximum manure channel width 70 cm. A (pivoting) conveyor transports the manure to the manure heap outside. The conveyor has an independent drive unit and is available in lengths from 6 to 12 metres.

## Solid construction

The beam runs over guide bars that are cast in place in the manure channel. The hinges have special plastic bearings. The swivels can be removed. A strip is welded to the top of the individual swivels to prevent them damaging the cows' legs and hooves.

## Hydraulic or mechanical drive unit

The scraper rod system has a heavy-duty drive unit. The unit can be either mechanically driven (full oil bath with gear wheel transmission) or hydraulically driven. In the hydraulic system, the stroke of the scraper rod is fully controlled by a separate control panel with timer.

In a mechanically driven unit, everything is controlled by the JOZ MSC control panel. The scraper rod system can also be combined with a pivoting conveyor.

## The advantages of a scraper rod:

- ✓ Solid construction, making it very reliable
- ✓ Attractive in price
- ✓ Long life span as a result of the use of high-quality materials
- ✓ Fully secured
- ✓ Highly suitable for discharge at the side of the stable



# Closed floor single-arm delta scraper

The JOZ delta scraper also comes in a single-arm version. This is being increasingly used for discharge at the side, but also for grids in pig sties. The single-arm delta scraper has been developed for a width of 70 cm up to 135 cm.

Manure can be removed using an open discharge (pit), turning chain system or a second single-arm delta scraper system. The scraping frequency depends on the frequency of supply. If a JOZ supplying system is used, optimum phased discharge can be set. If large quantities of manure must be discharged within a short period of time, multiple scrapers must be installed in the discharge.

The single-arm delta scraper is also highly suitable for stables where large amounts of straw and/or long straw are used. There is no difference between a left or right version, as the scrapers are modular, making them very easy to use and user-friendly.

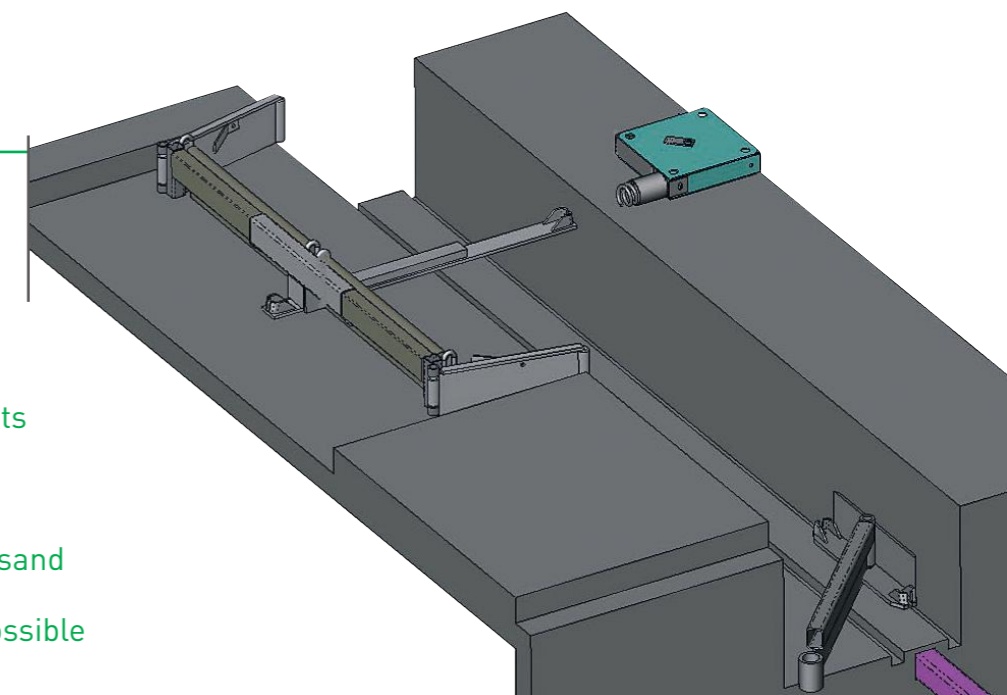
Where sand is used as bedding in the stable, it is better to use a single-arm delta scraper than a scraper rod system. Multiple single-arm delta scrapers can be used for each side discharge system. There must be a single-arm delta scraper at least every 15 metres. It is possible to mount drawbars or cable between the scrapers instead of a chain.



For optimal performance of the single-arm delta scraper, JOZ must be closely involved in the concrete drawings. A number of critical points that need to be taken into account are the location of the drive station, return side of the chain, and whether the return-side chain needs to be supported. Moreover, the pulling bar, drive chain and drive station must be installed opposite the discharge side.

## The advantages of the single-arm delta scraper:

- ✓ Solid construction
- ✓ Easy to use
- ✓ Optimal scraping result
- ✓ Standard system components
- ✓ UNP and flat floor possible
- ✓ Suitable for long straw and sand
- ✓ Connection to other MSC possible



# TURNING CHAIN SYSTEM

JOZ has been supplying the turning chain system for years and it is still widely used today.



- ✓ A household name for over 70 years
- ✓ Simple and reliable

## Simple and reliable

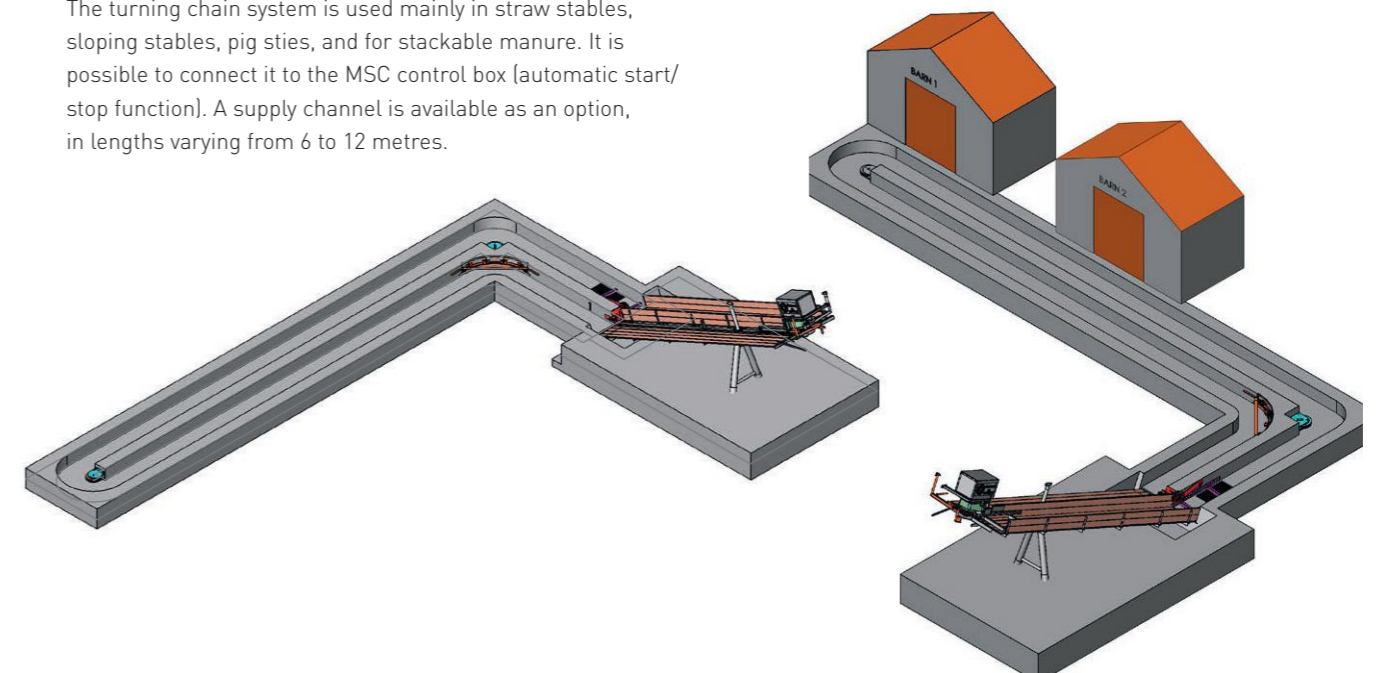
JOZ has been supplying the turning chain system for years and it is still widely used today. The fact that many of them are used to replace existing system shows that this JOZ manure discharge system has proven its value. This system is still in great demand, precisely because of its simplicity and reliability.

The turning chain stable cleaning system is also used frequently in combination with the JOZ manure scrapers. The solid manure is transported by the manure scraper from the cubicles or via the sloping stable to the end of the manure alley and discharged onto the turning chain system. This quickly and reliably carries the manure down to the manure storage.

The turning chain system is used mainly in straw stables, sloping stables, pig sties, and for stackable manure. It is possible to connect it to the MSC control box (automatic start/stop function). A supply channel is available as an option, in lengths varying from 6 to 12 metres.

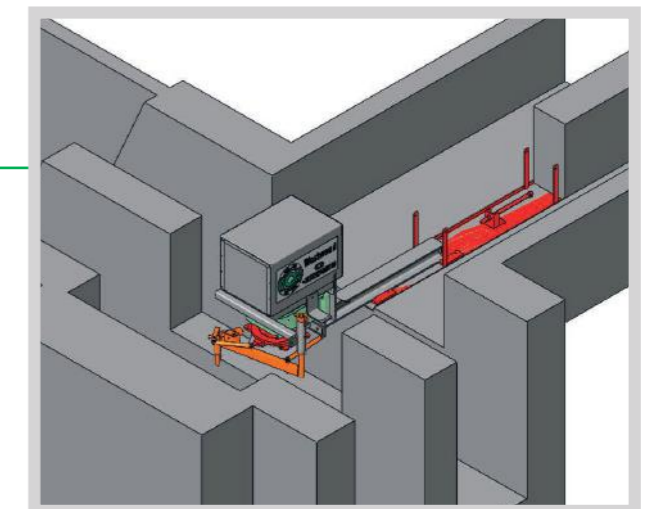
### The advantages of the turning chain system:

- ✓ Solid construction
- ✓ Attractive in price
- ✓ Long life span as a result of the use of high-quality materials
- ✓ Continuously variable tensile force protection



## Flat floor drive

There also is a version with flat floor drive. If the manure to be discharged is not deposited on a manure heap but in a pit, a conveyor is not advisable. In that case, the drive station is placed on a special anchor plate that is cast in the concrete.





**Manure robots**  
**Manure scrapers**  
**Feed pushers**

**JOZ b.v.**

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