Note: The planning, construction and installation of the carrier system for the CalfRail are the sole responsibility of the operator or the personnel authorized by the operator. The statics of the carrier system should be checked by an architect / structural engineer.

For safe installation the following must be observed.

Statics of the carrier system

The suspensions of the rails to the carrier system must be designed so that they can hold not only the vertical but also the horizontal loads in the rail direction and transverse to the rail direction.

For the carrier system planning the following trailing loads from the CalfRail system must be considered for the most load-bearing carrier:

- $V_{g,k}$ = 1.0 kN (vertical trailing load due to dead load)
- $V_{p,k}$ = 0.10 kN (vertical trailing load due to life load)
- $H_{L,k}$ = 0.05 kN (horizontal load in the rail direction due to mass forces)
- $H_{Q,k}$ = 0.06 kN (horizontal load transverse to the rail due to diagonal pull)

Note: All trailing loads include the dynamic increasing factors!

The specified values apply under the following conditions:

- Distance of the rail suspensions ≤ 3.0 m
- Distance of the carrier of the carrier system in which the rail is suspended ≤ 6.0 m

The rail

- The rail shall hang at a height of 2.2 meters (measured from platform where the calf is standing on to the rail).
- The distance between the suspension points for the rail shall not be more than 3 meters.
- The rail must withstand the 40 kg weight of the CalfRail unit.
- The rail system must be laid without ascending slope or inclination.
- A roofing of the rail is recommended.
- The rails must not be welded to the carrier system.

Note: The carrier system must be adjusted.

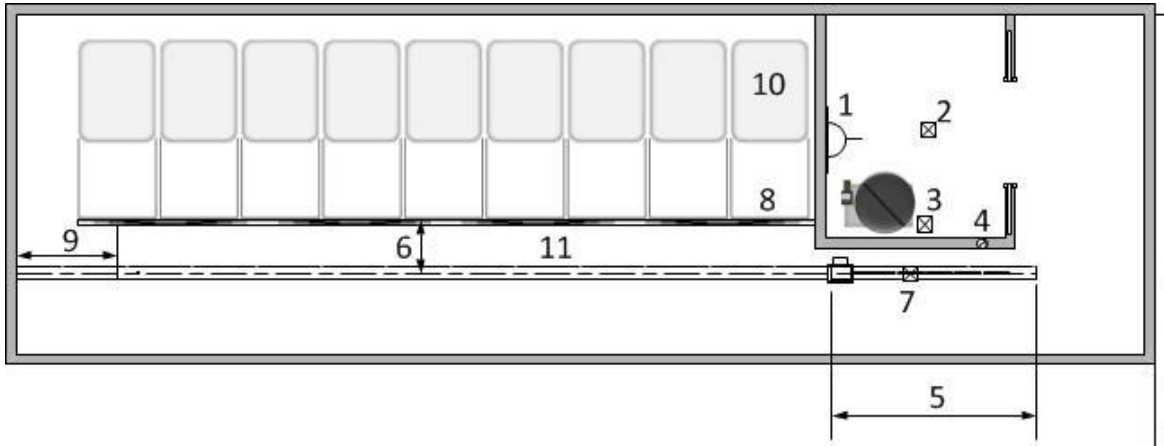
Hose package

- The maximum length of the hose package per CalfRail is 30 m, from the automatic feeder to the CalfRail.
- After each about 3 m, the hose package has one rail vehicle. In the extended status, the hose package must sag 30 cm between two rail vehicles (buffer).
    - This means, the rail length isn`t the same like the hose package length.

Connections and dimensions

To operate CalfRail the following is required for installation:

- The automatic feeder Vario as of model June 2007 (as of software version H08.07/S02.00)
    - 1 x 400V power supply
    - Water connection
    - Discharge for cleaning water
- CalfRail
    - 1 x 230V power supply for the CalfRail and 2 x 230V as a reserve next to the automatic feeder
    - Ideally, a discharge for cleaning water at the parking position
    - Space for the parking position min. 0.6 meters wide and 1.5 – 3.0 meter long



1	Connections: Automatic feeder: 1x 400 V/16 A 1x water, 1 – 6 bar CalfRail: 1x 230 V/16 A
2	Drain room
3	Drain Automatic feeder
4	Opening for hose kit: Ø 15 cm
5	Parking position: 1.5 – 3.0 m
6	Distance from rail to calf box: 0.7 - 1,0 m
7	Drain CalfRail, approx. 1.5 m after parking position
8	Drain channel
9	Rail end until last stopping position ≥ 1.5 m
10	Calf boxes
11	CalfRail rail

Figure 1: sketch of a mounting example

Individual hutch/box

- The calf boxes shall, if possible, have only one opening in the middle.
  - This facilitates easy installation as opposite boxes can be mounted inversely.
  - If the opening is not in the middle, the staggered boxes have an individual alignment and possibly a longer rail and hose length as the teat must always stop in the middle of the opening.

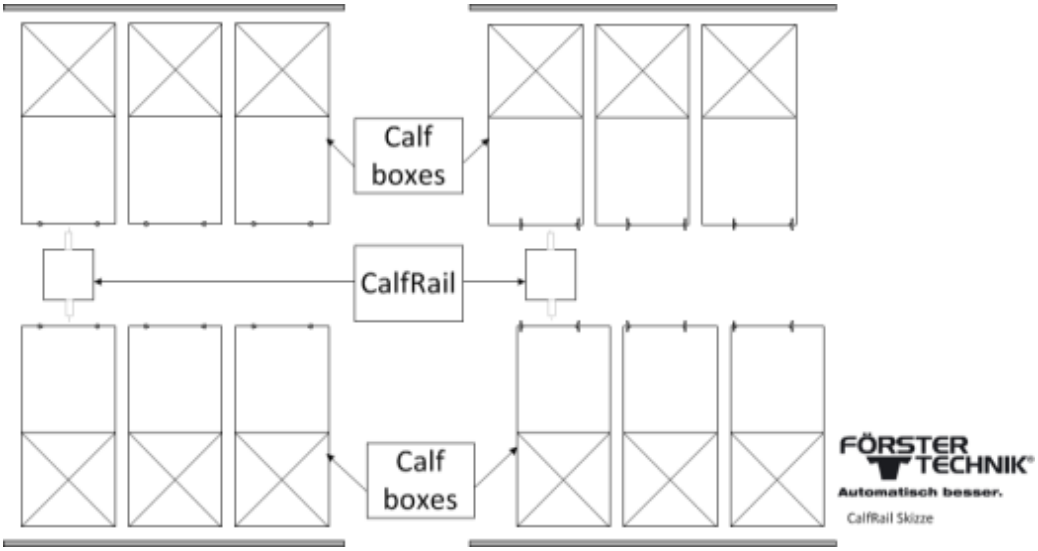


Figure 2: Potential location of the boxes
Left: Opening in the middle
Right: Opening in the left half

- Distance from the rail to the calf box 0.7 to 1 meter. The width of the feeding table must be:
  - min. 1 meter distance from the wall of the building to the calf box.
  - min. 1.4 meter and max. 2 meters from one calf box to another.

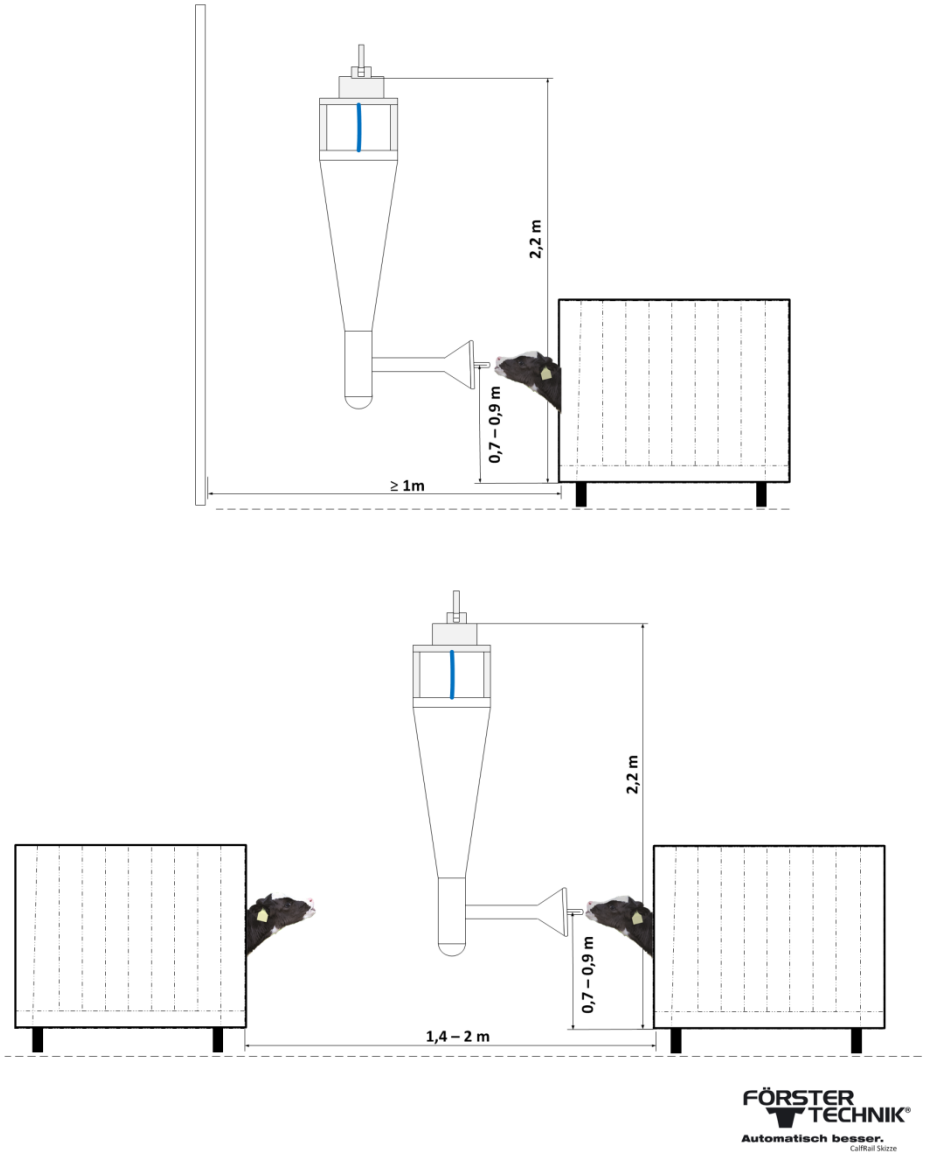


Figure 3: Distance from the wall of the building to the calf box or from one calf box to another

Installation of curves

As of CRS 2 an installation of curve rails is possible.

- The available curve rail is 1,8 m long and 1,8 m wide with a 90° bend.
- Per CalfRail unit one curve rail can be mounted.
- The CalfRail arm runs about 0,5 m on the outside of the curve rail. As the CalfRail arm could swing to the left and right, a bigger floor space has to be calculated.

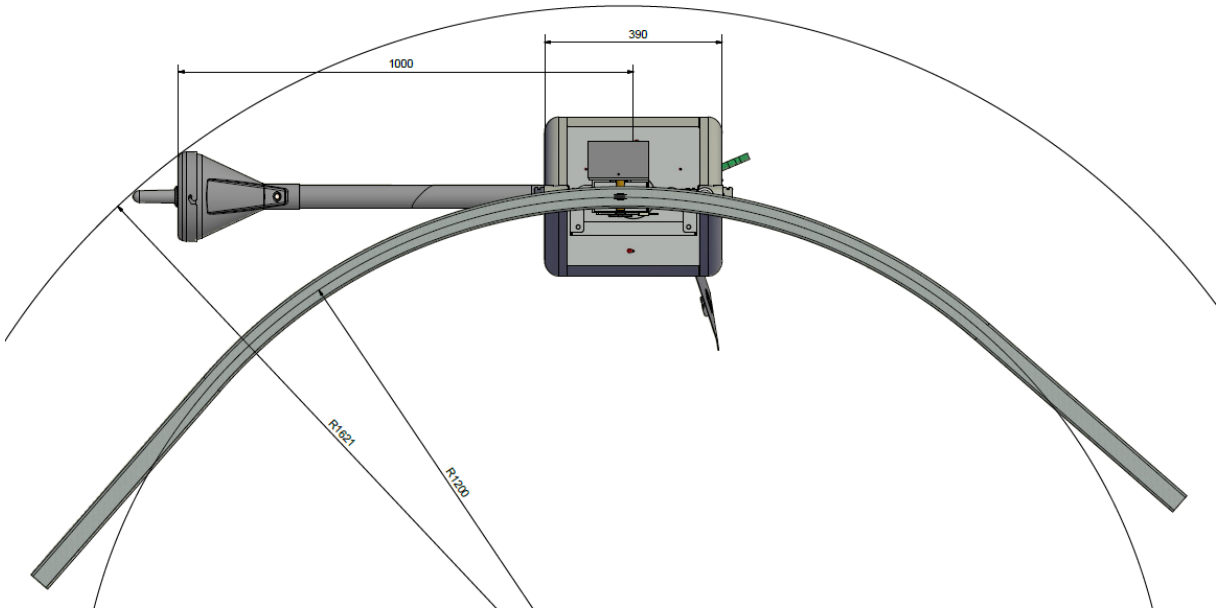


Figure 4: CalfRail in a curve. Dimensions in mm

Mounting examples

The following two pages show installation examples of CalfRail.

- Figure 5: Farm with two CalfRail units with one automatic feeder
- Figure 6: Farm with a combination of a CalfRail and two groups with one automatic feeder

The last two pages contain a quick form with a sketch to record the data on the farm.

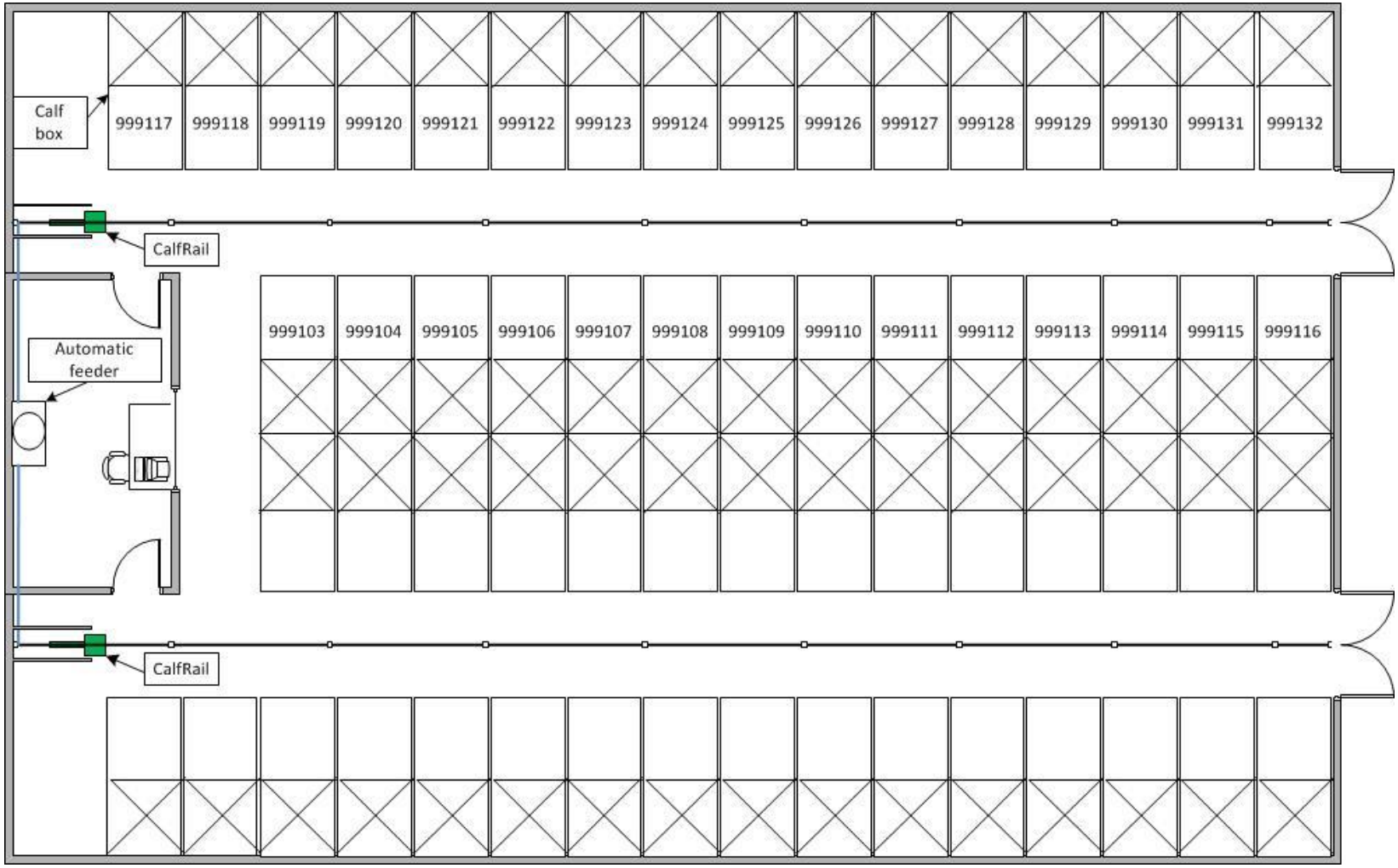


Figure 5: Farm with two CalfRail units with one automatic feeder

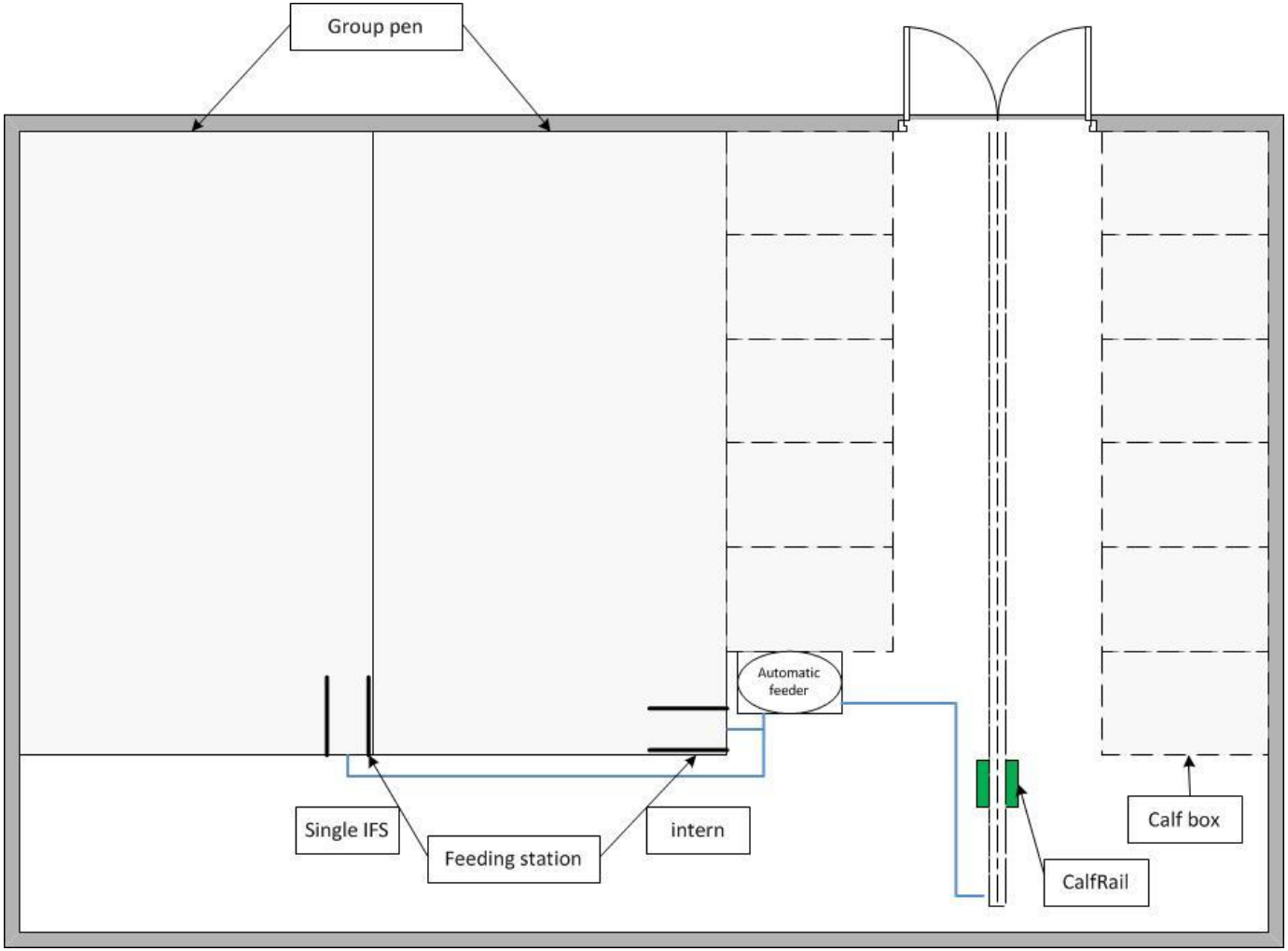


Figure 6: Farm with a combination of a CalfRail and two groups with one automatic feeder

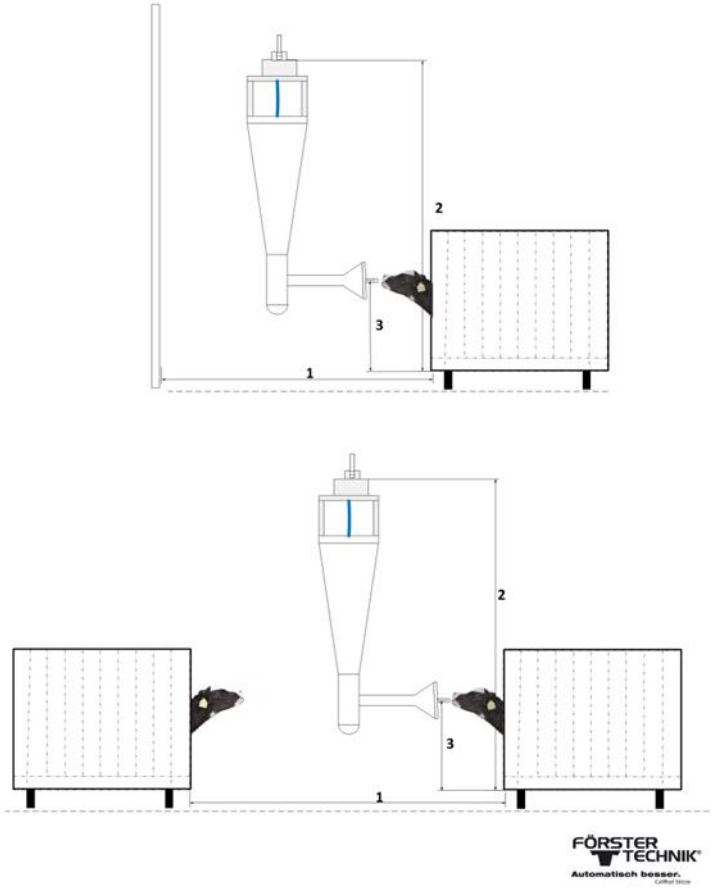
FÖRSTER TECHNIK Automatisch besser.	**CalfRail** **Installation Requirements**	

Name: _____ **CalfRail No.:** _____ of _____

Address: _____

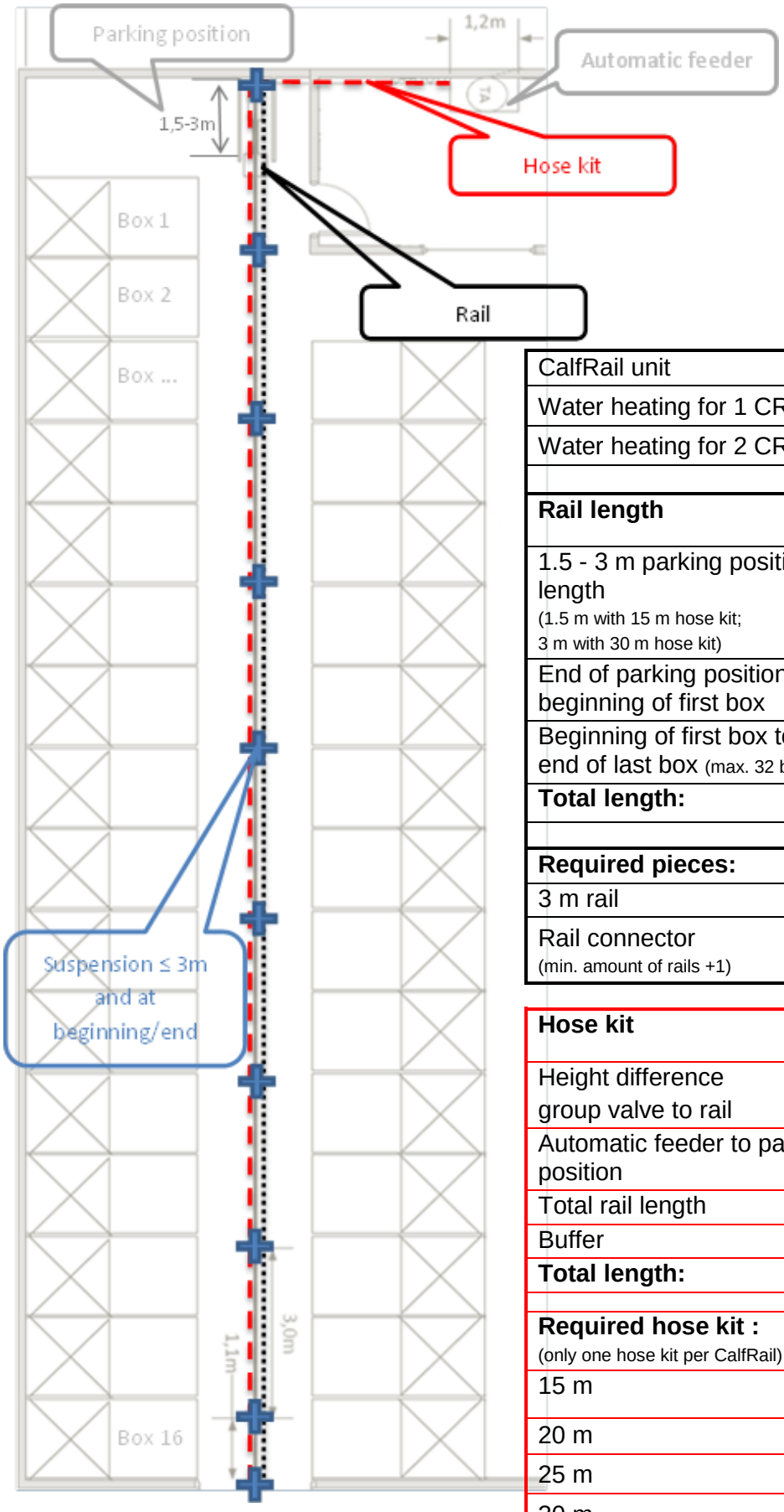
_____

Phone: _____



Nr.	Description	Requirements	On-site dimensions
1	Feeding table width	From box to wall: ≥ 1 m From box to box: 1.4 - 2 m	
2	Distance: Rail to platform where calf is standing	2.20 m	
3	Distance: Teat to platform where calf is standing	approximately 0.7 m	

CalfRail
Installation Requirements



CalfRail unit		Piece
Water heating for 1 CR		Piece
Water heating for 2 CR		Piece

Rail length	**On-site dimensions**	**Unit**
1.5 - 3 m parking position length (1.5 m with 15 m hose kit; 3 m with 30 m hose kit)		Meter
End of parking position to beginning of first box		Meter
Beginning of first box to end of last box (max. 32 boxes)		Meter
Total length:		Meter

Required pieces:		
3 m rail		Piece
Rail connector (min. amount of rails +1)		Piece

Hose kit	**On-site dimensions**	**Unit**
Height difference group valve to rail		Meter
Automatic feeder to parking position		Meter
Total rail length		Meter
Buffer		Meter
Total length:		Meter
Required hose kit : (only one hose kit per CalfRail)		
15 m		Piece
20 m		Piece
25 m		Piece
30 m		Piece