



MANUAL

REKO STATIC SCREEN TYPE LB + LBH + TS

ORDER NUMBER : _____
SERIAL NUMBER : _____
TYPE : _____
YEAR : _____
SLOTWIDTH : _____mm
APPLICATION : _____
CAPACITY : _____m³/h

REKO Industrial Equipment b.v.

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1) GENERAL DESCRIPTION

All REKO screens and screenplates are standard made out of stainless steel AISI 304.

The REKO static screens are being produced in several standard types, each in a few different sizes.

The standard slot openings for REKO screenplates are : 0.15 - 0.25 - 0.5 - 0.75 - 1.0 - 1.5 and 2.5 mm.

Standardized sizing of screenplates, housing, flange connections, etc. to create the possibility for mutually exchange without alterations.

1.1 Application and capacity

The screen delivered to you should only be used for the application mentioned on the coversheet of this manual.

The capacity mentioned on the coversheet is the maximum capacity for this screen. We strongly recommend against exceeding the mentioned capacity.

A change of the screen capacity might sometimes be possible by choosing a different slotwidth.

> > > Alterations to the screen are only permitted after consulting REKO Industrial Equipment B.V.

In case alterations are being made without the consent of REKO Industrial Equipment B.V. all warranties will be withdrawn.

2) SAFETY

Strictly spoken the REKO static screens are not influenced by the European CE-rules and guidelines for quality and safety for machinery.

Nevertheless, REKO Industrial Equipment B.V. has striven after complying with these rules and guidelines for the static screens as much as possible.

2.1 Rules for safety

The Dutch standards are based on the basic concepts of the CE-standard (Conformité Européen), established by the "European Committee for Standardization" (CEN).

By the design of the REKO screens the following Dutch harmonised standards are applied :

- EN 292-1, September 1991 :
"Safety of machinery - Basic concepts, general principles for design - Part 1 : Basic terminology, methodology"
- EN 292-2, September 1991 :
"Safety of machinery - Basic concepts, general principles for design - Part 2 : Technical principles and specifications"

Each REKO machine is checked and approved individually with respect to the quality demands.

2.2 Certificates

Since the REKO static screens, strictly spoken, are not influenced by the CE-standards, no certificates are delivered with the screen.

However, the use of working gloves is recommended when handling/inspecting the machine.

2.3 Warnings regarding safety

No additional warning signs are attached to the screen housing.

During inspection of the screen, while in operation, proper **personal protection**, such as protective clothing and safety glasses, is recommended.

3) INSTALLATION

The REKO screens are standard designed with connection flanges in accordance with DIN 2642 or depending on the type with pipe-ends.

The housing of a REKO static screen is a free-standing construction and does not require substantial foundations. However, for an efficient operation it is important that the unit is installed level, especially in the plane of the weir.

The screen needs to be installed **stable** and has to be firmly connected to its support. Overload of the support, the housing and/or the connections has to be prevented.

To make bolting of the housing to a firm base possible, the 4 bottom edges of the housing are provided with bolt holes.

Recommended installation procedure

We recommend the following steps :

- 1) Place the REKO static screen in the most suitable position near the liquid-sump to be treated. Ensure that there is sufficient access space around the unit to remove the screenplate in the future. Bolt the housing onto a flat floor or frame using the provided holes. Check for the housing to be installed level by using a spirit level on top of the curved weir. If necessary, tap fill-plates near the bolts under bottom edges of the housing to accomplish levelling. Tighten the 4 foundation bolts.
- 2) Assemble the piping and fit DIN 2642 - PN 10 flanges corresponding with the flanges of the housing.
If the screen has pipe-ends, sleeves can be used for the connections.

In case vibrations in the piping for influent/effluent are to be expected, the use of compensators between the pipes and the screen's connections is highly recommended.

Assemble the piping for spray water supply in case a cleaning system is mounted.

- 3) Connect the piping after ensuring that the flanges and gasket used are properly aligned and centred and are of the right type. To prevent the REKO static screen against stresses, caused by the heavy (filled) pipes or by pipe movements, it is very important to support the piping separately.
Tighten the flange bolts using the cross-over method after having supported the piping.

If a cleaning system is mounted, also connect the spray water supply.

NOTES :

- A) The flanged connections are sized for handling the maximum admissible flow. However, the various standard types have a very wide flow tolerance. If reduction of the pipe diameter is required, taper pieces should be used to avoid dead spots which enable solids to accumulate.
 - B) To control the influent volume flow (especially in case of free gravity feeding), a hand operated valve with full bore or butterfly valve should be fitted in the influent piping.
 - C) If tip feeding directly into the admission chamber is used, the following is recommended :
 - Fit a suitable blind flange with gasket on the inlet flange at the rear of the screen.
 - To create a optimal influent flow, the lower end of the inlet pipe should debouch under the liquid level (distance of 100 to 150 mm from the chamber's bottom).
 - D) The fitted discharge piping should have a suitable capacity and should enable a free and quick evacuation of the effluent. Flow restrictions and the length of the pipe should be kept to a minimum.
- 4) If mounted (option), open the hinged cover over the screenplate.
 - 5) Check if the hinged baffle plate on top of the screenplate (not available on all types) is able to move freely.
 - 6) Place a solids collecting container, hopper or conveyor at the front of the unit under the screenplate.
 - 7) Ensure that the compression relieve flap/inspection opening at the back of the housing is not obstructed. The opening must be free to prevent overpressure in the housing.

4) STARTING UP

During the start-up of a screen several steps have to be taken. See underneath for a summary.

- 1) Check for and remove coarsely dirt out of the unit, if any.
- 2) To prevent leakage during start-up, the screenplate has to be made wet before the influent flow is activated.
- 3) Start the feedpump and/or slightly open the influent feed valve (if mounted). Wait until the liquid level rises above the top of the feedpipe opening. Until that moment heavy splashing of water caused by air inclosed in the pipelines can be expected.
- 4) Check if the liquid spreads equally over the full width of the screenplate. Also check the equability of the overflowing liquid. (Is the screen installed level?)
- 5) Check the unit for leakages (housing, flange connections, drainplug, etc.).
- 6) Regulate the flow until the required capacity is obtained and check for proper operation.

5) INSPECTION AND MAINTENANCE

Thanks to the robust and simple construction the REKO screens do require little maintenance.

5.1 First inspection

The first inspection should take place after 24 hours.

- Check all connections for leakage.

5.2 Cleaning of the screenplate

It is recommended to clean the front of the screenplate periodically, especially if after an operation cycle a longer period of rest is anticipated (national holidays, weekends, etc.). By wind and temperature, the solids remaining on the screenplate might dry-up and clog the slot openings. The result during re-start-up will then be a passing down of the influent on the clogged screenplate until the dried-up solids are softened and the slot openings are cleared. The experience is that it is best to clean the front surface of the screen periodically.

Ways to clean the screenplate are :

- high pressure water jet (+ detergent solution)
- tap water + brush (+ detergent solution)
- steam cleaning

When using a brush, make a rectilinear horizontal direction on the screenplate.

NOTE : **Do not use aggressive liquids that may damage the stainless steel material of the screen ! Never use a steel wire brush to clean stainless steel material !**

Thanks to the construction of the triangular section wedge-wire screenplate, cleaning of only the front surface is effectual. However, in some cases it is recommended to clean the screen at the backside with a frequency of once a year. To do so the screenplate can be reached through the inspection opening(s) in the back of the housing. For complete cleaning, the screenplate has to be taken out of the housing.

5.3 Cleaning system to clean the screenplate

If more frequent cleaning is anticipated to be necessary, it is recommended to apply the screen with a REKO automatic cleaning system (e.g. when treating wastewater from poultries, slaughterhouses, organic or biologically active slurries and other difficult applications).

The automatic cleaning system has been designed especially to be mounted to REKO screens of the LB type for fully automatic cleaning of the screenplate.

In most cases, additional, manual cleaning is no longer required with the exception of the once a year cleaning and in very difficult applications.

The cleaning system consists of a horizontal linear drive along which a vertical spray pipe moves.

The vertical spray pipe is equipped with nozzles and is being fed with water under high pressure.

The spray pipe moves horizontally along the width of the screenplate.

During this movement the surface of the screenplate is being cleaned by the pressurised water.

6) EXCHANGING THE SCREENPLATE

The REKO screens are available with various different slotwidths.

Since each application requires a specific rate of separation, a change of liquid and/or solids might require a change of screenplate to preserve an efficient operation.

For this reason the screenplates are mounted in a way to enable easy exchange and are fabricated within small tolerances.

The way to remove/install a screenplate is described in the following.

Depending on the type of screen and the size of the screenplate **1 or 2 persons** are required to exchange a screenplate.

Required tools :

- 2 pcs. wrenches 13 mm
- small crowbar or large screwdriver
- silicone with pistol

NOTE : **Before you start to replace a screenplate, ensure yourself that the flow towards the screen is disconnected !**

6.1 Removing the screenplate

- 1) Open the hinged cover over the screenplate (optional).
- 2) Pivot the hinged baffle plate at the top of the screenplate away to the topside.
- 3) Cut the silicone seal between the lower edge of the screenplate and the sides (models LB and TS).
- 4) Loosen the nuts of the 4 threaded tension rods at the side of the screen housing.

NOTE : **Do not remove the tension rods at type LB and TS !**

For a screen type W : The hinged screenplate can be taken out by removing the tension rod at the upperside of the screenplate. This tension rod is the only support of the screenplate.

- 5) Place 2 heavy screwdrivers or crowbars on both outsides of the screenplate at the lower end of the screenplate and pull up the screenplate over the pivot-bolt. Pull the screenplate forwards and also downwards out of the upper support and lower it on the floor. The screenplate is guided by the tension rods.
- 6) Remove all silicone material from the screen housing. The screen housing should be cleaned before a new screenplate is placed.

6.2 Installing the screenplate

Before installing, ensure that the screen is positioned in the correct direction.

- 1) Shove the screenplate between the sides of the housing such that it is supported by the tension rods.

For a screen type W : The screenplate has to be positioned within the screen housing in such a way that the holes in the screenplate support correspond with the holes in the side of the screen housing.

- 2) For a screen type LB or TS : Shove the screenplate up until the upper end is positioned under the overflow. Be certain that the upper surface of the screen is in contact with the underside overflow over the total width.

NOTE : To get a correct tangential flow of the influent on the screen, the space between these planes should be as small as possible.

- 3) The REKO screen is heavy constructed, however it is possible that the pre-shaped radius is changed more or less during handling. Before tightening the nuts on the tension rods, the curvature of the screen should be checked. If necessary, reset the screen curve by pushing the screen surface near the both housing planes after having slightly tightened the toggle nuts and lock nuts of the tension rods.
- 4) Push the lower edge of the screenplate in position to the back buffer angle.
Tighten the pivot-bolts in the welded nuts under the lower support lip.
Tighten the nuts of the tension rods.

For a screen type W : Bring the tension rod back into position and tighten the nuts.

- 5) Seal the connection between the screenplate and the housing with silicone or similar elastomer.
- 6) Reposition the hinged baffle plate on top of the screenplate.
- 7) Close the hinged cover over the screenplate (optional).

7) TROUBLE SHOOTING

REKO static screens are constructed very robust and will not give any operational problems under normal conditions. However, if the structure of the influent is changed, it is possible that the screenplate has to be replaced by one with a different slotwidth to continue efficient performance.

Performances under different circumstances

Temperature : Lower temperatures will lower the screen's performance. If the REKO static screen is installed in a place where freezing can occur, suitable protection must be taken. As long as the influent is flowing, no problems will rise, as long as the temperature rate is not less than approx. minus 10 degrees centigrade.

High temperatures will tend to better performances. However, by the changing of the structure and properties (e.g. softening or becoming more sticky) of solids, fats, etc. it may then cause clogging of the screen.

Concentration: High suspended solid concentrations in the influent will assist performance.

Very low concentrations will reduce the efficiency.

Materials having solids with difficult drainage properties will increase the water content of the retained material.

The nominal grain size separation is equivalent with the half of the slotwidth (e.g. 1 mm slot-width separates particles with a length or diameter in excess of 0.5 mm, while the smaller particles pass through the slotted openings).

Surface tension: Low surface tension liquids can be dewatered very efficiently by the REKO static screen. However, for the treatment of high surface tension liquids it is recommended to use a REKO vibrating screen.

Foaming : Highly aerated or foaming liquids will reduce the performance. Addition in moderate concentrations of normal available dispersants or anti-foam fluids will normally improve the screens efficiency.

Grease/fat : Greasy or fat containing liquids must be handled with special care and should be treated as cold as possible to separate, or hot enough to melt the fats for passing through the slot openings. Fats have a tendency to build-up on the backside of the screenplate, between the slotted openings. In most cases it leads to clogging of the screenplate.

If highly concentrated greasy or fat liquids have to be treated, the use of a REKO vibrating screen is recommended.

If you have further questions about operational problems with your REKO static screen, please do not hesitate to contact our office or representative agent.

8) SPARE PARTS

As the REKO screen has a simple and reliable construction, the need for spare parts will be poor.

In case spare parts are needed, please state at your enquiry :

- serial number of the screen
- type of screen and slotwidth
- description of the part to be replaced (see enclosed drawings)

9) DESCRIPTION OF ITEMS AND FUNCTION ON DRAWING

9.1 Screen type LB

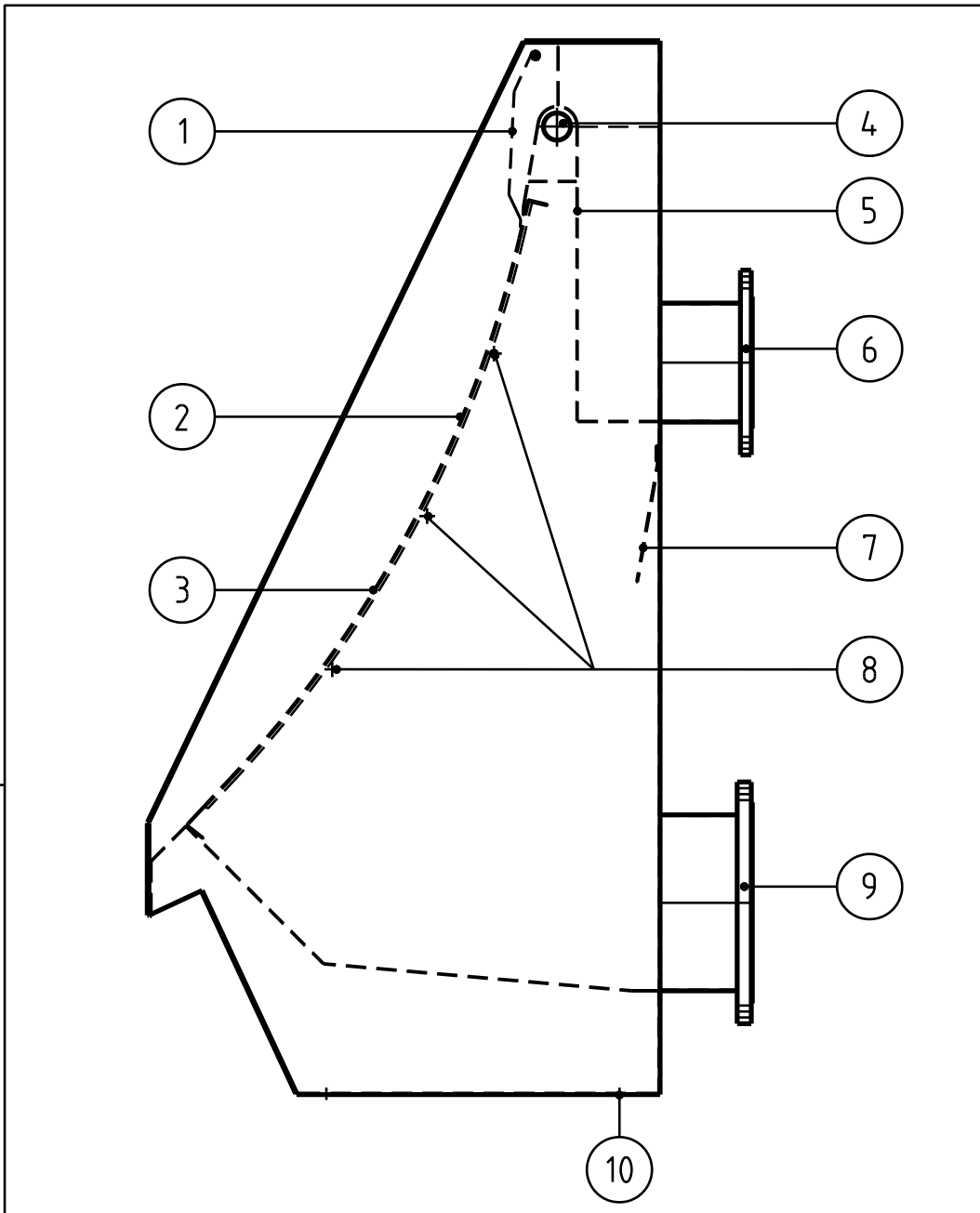
- 1) Hinged baffleplate
- 2) Screenplate
- 3) Gasket (silicone)
- 4) Lifting hole
- 5) Inlet chamber and weir
- 6) Inlet flange
- 7) Inspection hatch with rubber slap
- 8) Tension rods
- 9) Outlet flange
- 10) Holes for frame / floor bolting

9.2 Screen type TS

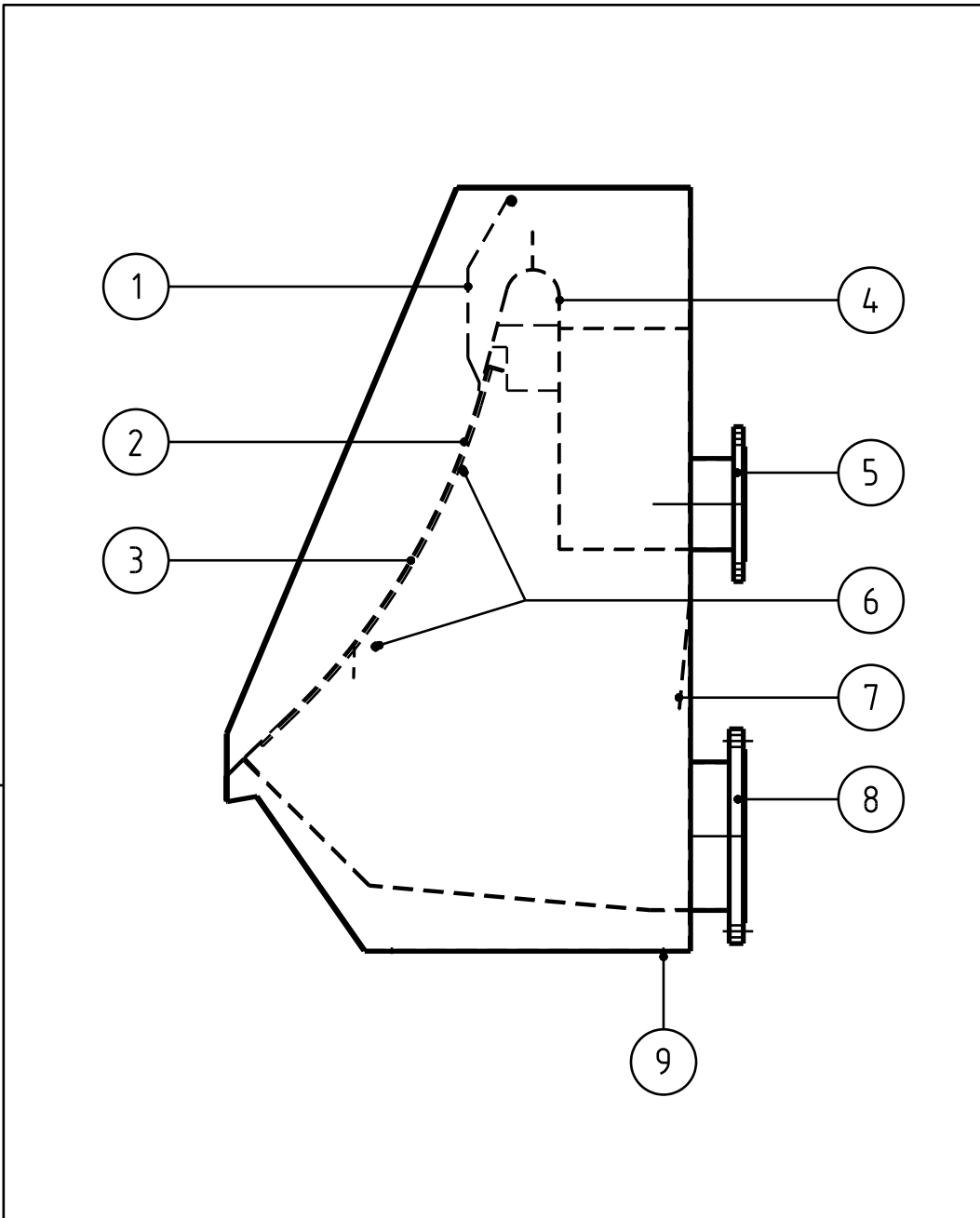
- 1) Hinged baffleplate
- 2) Screenplate
- 3) Gasket (silicone)
- 4) Inlet chamber and weir
- 5) Inlet flange (optional)
- 6) Tension rods
- 7) Inspection hatch with rubber slap
- 8) Outlet flange
- 9) Holes for frame / floor bolting




9.3 Screen type W

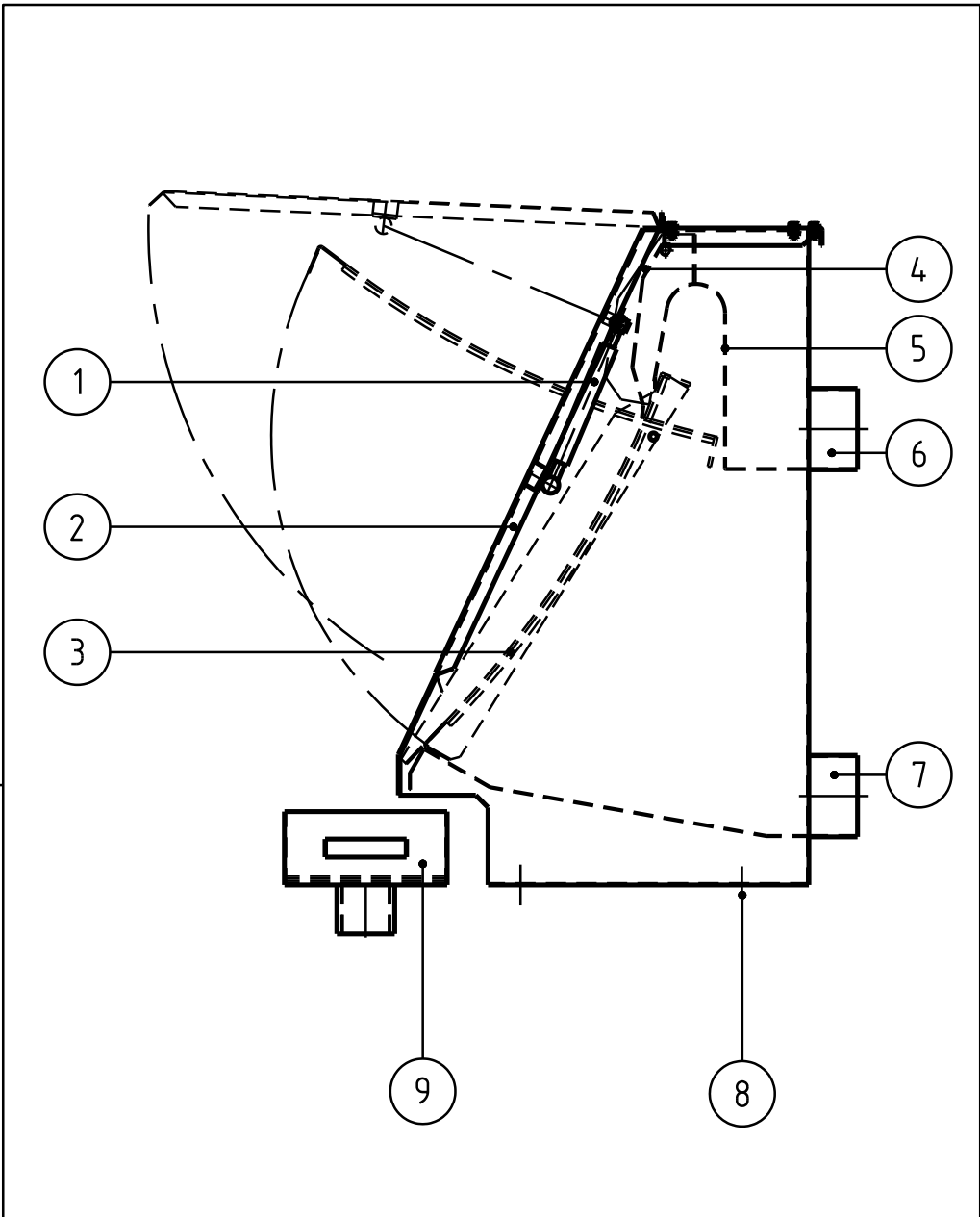
- 1) Gas-filled spring for cover
- 2) Hinged cover
- 3) Hinged screenplate
- 4) Hinged baffleplate
- 5) Inlet chamber and weir
- 6) Inlet pipe-end
- 7) Outlet pipe-end
- 8) Holes for frame / floor bolting
- 9) Solids collecting bin with pipe-end

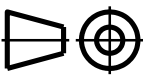



| | | | | | | |
|---|------------------------------|---|-----------|----|----------------|-------------|
| | TITLE: REKO-LB STATIC SCREEN | | | | A4 | SCALE: 1:10 |
| | MATERIAL: | | | | | |
| REKO Industrial Equipment by The Netherlands www.reko.com | REV | DESCRIPT. | DATE | BY | CHECK | |
| | 0 | NEW | '02/07/26 | PN | | |
| | 1 | | | | DRAWING NUMBER | |
| | 2 | | | | REKO-LB | |
| DO NOT SCALE THIS DRAWING IF IN DOUBT ASK | | © THIS DRAWING IS ISSUED BY REKO INDUSTRIAL EQUIPMENT BY SUBJECT TO THE CONDITIONS THAT IT IS NOT COPIED EITHER IN WHOLE OR IN PART OR DISCLOSED TO THIRD PARTIES UNLESS PRIOR WRITTEN AUTHORISATION IS GIVEN BY REKO INDUSTRIAL EQUIPMENT BY PREVIOUS VERSIONS OF THIS DRAWING SHOULD BE DESTROYED | | | | |

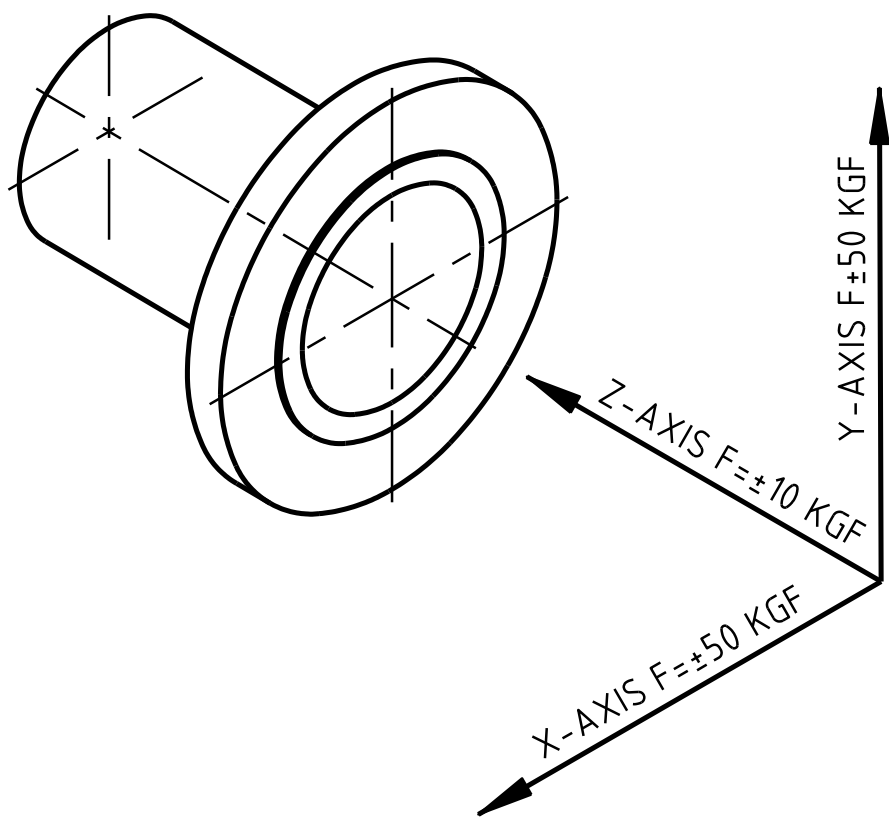


| | | | | | | |
|--|--------------------------------|--|-----------|----|----------------|-------------|
|   | TITLE: REKO - TS STATIC SCREEN | | | | A4 | SCALE: 1:10 |
| | MATERIAL: | | | | | |
|  REKO Industrial Equipment by The Netherlands www.reko.com | REV | DESCRIPT. | DATE | BY | CHECK | |
| | 0 | NEW | '02/07/26 | PN | | |
| | 1 | | | | DRAWING NUMBER | |
| | 2 | | | | REKO-TS | |
| | 3 | | | | | |
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| | | | | | |
|---|-------------------------------|---|-----------|----|----------------|
|  | TITLE: REKO - W STATIC SCREEN | | | A4 | SCALE: 1:10 |
| | MATERIAL: | | | | |
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| | 0 | NEW | '02/07/26 | PN | |
| | 1 | | | | DRAWING NUMBER |
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| | 3 | | | | |
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DE FLENZEN MOGEN NIET ALS PIJPONDERSTEUNING DIENEN
 THE FLANGES MAY NOT BE USED AS PIPESUPPORTS
 DER FLANSCH NICHT FÜR ROHRUNTERSTÜTZUNG



| | | | | | |
|---|--|-----------|------------|-----|----------------|
| | TITLE: MAXIMUM LOAD ON FLANGES OF SCREEN | | | | CHECKED: |
| | MATERIAL: | A4 | SCALE: 1:5 | | |
| REKO Reko Industrial Equipment by Stellendam The Netherlands | REV | DESCRIPT. | DATE | BY | DRAWING NUMBER |
| | 0 | NEW | '92/02/06 | LDJ | |
| | 1 | | | | |
| | 2 | | | | |
| | 3 | | | | FL-LOAD |