

DATASHEET FOR STORAGE TANKS							
Client :	Hexion Botlek B.V.		Tank number:	V620 / V630		Number required:	2
MECHANICAL DATA							
Design code	:	EN 14015:2004	Roof construction	:	Cone		
Diameter (inside)	:	9,500 m	Roof structure *	:	Outside		
Shell height	:	(inside flush) 10,000 m	Floating roof, type	:	N.A.		
Design Liquid Height	:	10,000 m	seal	:	N.A.		
Product	:	Formaldehyde	Tank material	:	See sheet 6		
Product properties	:	FP= 77 °C BP= 100 °C	NoBo	:	Lloyd's, NL-CBIT or KVG		
Pump in rate	:	290 m³/hr	T & IP	:	Acc. EN 14015 and PGS29		
Pump out rate	:	180 m³/hr	Calibration	:	By contractor		
TANK DESIGN DATA							
Design pressure	:	0,056 Barg	Working pressure	:	0,005 Barg		
Design vacuum	:	-0,006 Barg	Working vacuum	:	-0,004 Barg		
Test pressure	:	0,062 Barg	Operating temp.	:	70 °C - max.72 (secured) °C		
Design temperature	:	- 10 / + 100 °C	Nominal capacity	:	700,000 m³		
Min.Design Metal Tem	:	0 °C	Gross capacity	:	708,822 m³		
Design density:	:	1150 kg/m³	Net working capacity	:	655,200 m³		
Density test product	:	1010 kg/m³	Corrosion allowance	:	roof : 0,0 mm		
Design windspeed	:	45 m/s		:	shell : 0,0 mm		
Life load on roof **	:	1,60 kN/m²		:	bottom : 0,0 mm		
Tank frangible	:	No		:	nozzles : 0,0 mm		
Tank roof	:	Cone slope 1:5		:	Anchor bolts : 0,0 mm		
Dome radius	:	N.A. m		:			
Tank bottom	:	Butt welded Sloping 1:100	Hydrostatic test required	:	Yes		
Drip ring	:	Yes SS / 100x6 mm	Quality test water	:	Chloride free		
FABRICATION AND INSPECTION REQUIREMENTS							
Construction acc. to	:	EN 14015:2004 -	Welding electrodes	:	Approved by NoBo		
WPS / PQR required	:	Yes -	Welding schedule	:	Yes -		
HEATING COIL							
Design pressure	:	10 barg	Working pressure	:	4,5 barg		
Design temperature	:	180 °C	Working temperature:	:	150 °C		
Hazard category	:	accoring PED	Heating transfer fluid:	:	Hot Water * density : 1000 kg/m³		
Heating transfer cap	:	59 KW	Hazard category	:	SEP * or steam		
Heating transfer cap	:	14 m²	Coil diameter	:	DN50		
Coil length	:	90 m	No. of coil sections	:	1 type : single coil		
INSULATION DATA							
Shell insulation ***	:	Yes	Roof insulation ***	:	Yes		
Thickness	:	100 mm	Thickness	:	100 mm		
Material	:	Foamglass	Material	:	Foamglass, walkable		
Cladding type	:	Track-loc or similar	Cladding type	:	Aluzinc		
Cladding thickness	:	0,6 mm	Cladding thickness	:	0,8/1,0 mm		
Bottom insulation	:	No -		:			
Thickness	:	by civil contractor ****, mm		:			
Material	:	N.A. -		:			
REMARKS							
* For calculation roof structure (and tank shell) take into account the loads and forces destributed by the Agitator.							
** LL + v _a = 1,0 + 0,6 = 1,6 KN/m², for calculation of roof structure weight of roof plates and loads agitator should be added.							
*** according CINI 4.5.00, NOTE: roof insulation needs to be walkable.							
**** including sand/bitumen layer between foam glass and tank bottom.							
DESIGN NOTE							
For the hydrostatic testing of the tank the test water shall be free of chloride.							
Equipment no.	:	V620/V630	Rev	:	0	A	B
Plant	:	Hexion Botlek B.V.	Date	:	23-06-20	26-06-20	30-07-20
Contact	:	P. Groenendijk	Signed	:	GHvG	GHvG	GHvG
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CALCULATIONS, WELDING, TESTING AND INSPECTION

CALCULATIONS

CALCULATIONS		
Description	Y/N	
Liquid load and internal pressure	Y	*
Wind load and internal vacuum	Y	*
Axial load calculation	Y	*
Overturning	Y	*
Anchorage	Y	*
Lifting lugs for transport	Y	***
Walkways between tanks	Y	** / ***
Nozzle loading and deflection	Y	* / *** (especially for Agitator and piping nozzles)

SITE ERECTION AND TOLERANCES		
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According NEN-EN 14015:2004, chapter 16

WELDING	
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According NEN-EN 14015:2004, chapter 17 and 18

TESTING AND INSPECTION

According NEN-EN 14015:2004, chapter 19, which includes the use of tables 29, 30 and 31

* According NEN-EN 14015:2004 (with references to eurocode EN 1993-4-2)

**	NEN-EN 14122-1 u/i 4	Safety of machines - Permanent access to machines and industrial installations
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*** Eurocode NEN-EN 1990 Eurocode Basis of structural design

Eurocode NEN-EN 1991 Eurocode Action on structures

REMARKS

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DATASHEET FOR STORAGE TANKS						
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MANHOLES AND NOZZLES

SHELL

Description	Mark	No.	Size	Press.	Code	Type	Diam	Sch.	Elev/R	Remarks
Outlet with sump (lage zuig)	N1	1	DN150	PN16	EN1092-1	11	168,3	XS		
Level transmitter 1)	N2	1	DN80	PN16	EN1092-1	11	88,9	XS	+450*	DP type
Level transmitter	NX	1	DN80	PN16	EN1092-1	11	88,9	XS	+9700	
Temperature transmitter	N3	1	DN25	PN16	EN1092-1	11	33,4	XS	+1100	
Spare	N12	1	DN25	PN16	EN1092-1	11	33,4	XS		To be blinded
Spare	N13	1	DN100	PN16	EN1092-1	11	114,3	XS		To be blinded
Drain (hoge zuig)	N14	1	DN150	PN16	EN1092-1	11	168,3	XS		To be blinded
Heating coil inlet	N16	1	DN50	PN16	EN1092-1	11	60,3	XS		
Heating coil outlet	N17	1	DN50	PN16	EN1092-1	11	60,3	XS		
Shell manhole with davit 2)	MH1	1	DN600		EN14015		ID600	12,7		
										* top of concrete

ROOF

Description	Mark	No.	Size	Press.	Code	Type	Diam	Sch.	Elev/R	Remarks
Pressure-/ Vacuum vent 3)	N4	1	DN200	PN10	EN1092-1	11	219,1	10S	R2000	
Vapor vent	N5	1	DN150	PN16	EN1092-1	11	168,3	10S	R4000	
Formalin inlet	N6	1	DN80	PN16	EN1092-1	11	88,9	10S	R3000	
Water inlet	N7	1	DN50	PN16	EN1092-1	11	60,3	10S	R4000	
High Level switch	N8	1	DN100	PN16	EN1092-1	11	114,3	10S	R4350	HHLA
Radar 4)	N9	1	DN100	PN16	EN1092-1	11	114,3	10S	R3000	Radar, HLA
Agitator (mixer) nozzle 5)	N10	1	DN500	150#	ASME B16.5	WN.FL.	508,0	t.b.d.		to be calculated
Spare	N15	1	DN80	PN16	EN1092-1	11	88,9	10S	R4000	To be blinded
Roof manhole with Davit	MH2	1	DN600		EN14015		ID600	6,0	R4000	

General note: all nozzles and manholes needs to be inside flush and shall also be welded at the inside of the tank. Sharp edges as well as protruding edges are not allowed.

REMARKS

- 1) DP type 62013/63013
- 2) Straman coupling or similar to be installed on manhole cover plate
- 3) Including installation and excluding delivery of P/V valve
- 4) Radar type 62012/63012 - High Level Alarm (HLA)
- 5) Excluding delivery of one Agitator type SDR-45-10-V.
Mounting flange; D=699 mm with 20 holes ø32 mm on pitch circle D=635 mm
Including installation of Agitator and installation of three tank baffles,
distance to tank shell 200 mm, width 800 mm.
NOTE: see for nozzle loads as a result of the installed Agitator page 9 of the datasheet.

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Number required: 2

MOUNTINGS

OTHERS	
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Description	Mark	No.	Size	
Earthing Boss	EB	2		1)
Lightning Rod on tank roof	LR	1		2)
Name plate with Bracket	NP	1		
Name plate for heating coil	NP	1		
Railing around roof		1		
Wind girder, intermediate		0		
Holding down bolts with brackets		10 *	T.B.D.	* minimum amount of anchors
Heating coil	HC	1		For design see data sheet 1
Anchorage		N.A.		to be delivered and installed by civil contractor

SUPPORTS				
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[illegible]

REMARKS

NOTE: Contractor shall deliver and install isolation kits for preventing galvanic corrosion between CS and SS tank parts.

- 1) Including earthing resistance measurement by certified company and connecting of tank earthing bosses to earthing stakes including delivery and installation of all necessary materials .
- 2) Including design and delivery of all necessary materials and installation.
- 3) Total amount of supports per tank, width of supporting approx.1000 mm and should be sufficient for vertical pipes to nozzles N5, N6 and N7.

Equipment no.

Plant	: V630	Rev	0	A	B	C	
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DATASHEET FOR STORAGE TANKS			
Client :	Hexion Botlek B.V.	Tank number: V620 / V630	Number required: 2

Painting Specification		
Tank		
Parts	Painting system	Remarks
Bottom :		
Internal	1)	
External (underside)	2)	
Shell plates :		
Internal	1)	
External	1)	
Roof Plates :		
Internal	1)	
External	1)	
Roof Construction	5)	
Stair Threads and grating	3)	
Stair and platforms	4)	
Handrailing	4)	
Internal Piping	5)	

PAINTING SYSTEMS							
1) Sheet finish; 1D hot rolled, welds pickling and passivating 2) Sheet finish; 1D hot rolled 3) Carbon Steel Hot Dip Galvanised 4) Carbon Steel Hot Dip Galvanised, note; SS clips 5) Welds pickling and passivating							

REMARKS							
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MATERIALS

DESCRIPTION	MATERIAL	CODE	Certificate **)
Bottom plates	Duplex DX2205 (1.4462)	NEN-EN 10088-1 u/i 3	3.1
Annular plates	Duplex DX2205 (1.4462)	NEN-EN 10088-1 u/i 3	3.1
Drip ring	SS304L (1.4307) or higher	NEN-EN 10088-1 u/i 3	3.1
Shell plates	Duplex DX2205 (1.4462)	NEN-EN 10088-1 u/i 3	3.1
Roof plates	Duplex DX2205 (1.4462)	NEN-EN 10088-1 u/i 3	3.1
Roof structure	SS316L (1.4404) or higher	NEN-EN 10088-1 u/i 3	2.2
Structural steel	S235JR or S355J2	NEN-EN 10025-2	2.2
Manhole flange	Duplex DX2205 (1.4462)	NEN-EN 10088-1 u/i 3	3.1
Manhole neck	Duplex DX2205 (1.4462)	NEN-EN 10088-1 u/i 3	3.1
Nozzle flange	Duplex DX2205 (1.4462)	NEN-EN 10088-1 u/i 3	3.1
Nozzle neck	Duplex DX2205 (1.4462)	NEN-EN 10216-5/ 10217-7	3.1
Nozzle reinf.plate	Duplex DX2205 (1.4462)	NEN-EN 10088-1 u/i 3	3.1
Stud bolts	SS - SA193 Gr.B/ SA194 gr.2H	ASME B16.5/ B18.2.2	-
Bolts	Stainless steel A4	ASME B18.2.1 *	-
Nuts	Stainless steel A2	ASME B18.2.2 *	-
Gaskets	Garlock Gylon 3501 (DIN)	or similar	-
Anchors	CS - 8.8 (HDG)		

* or equal

** according EN 10204:2004

REMARKS

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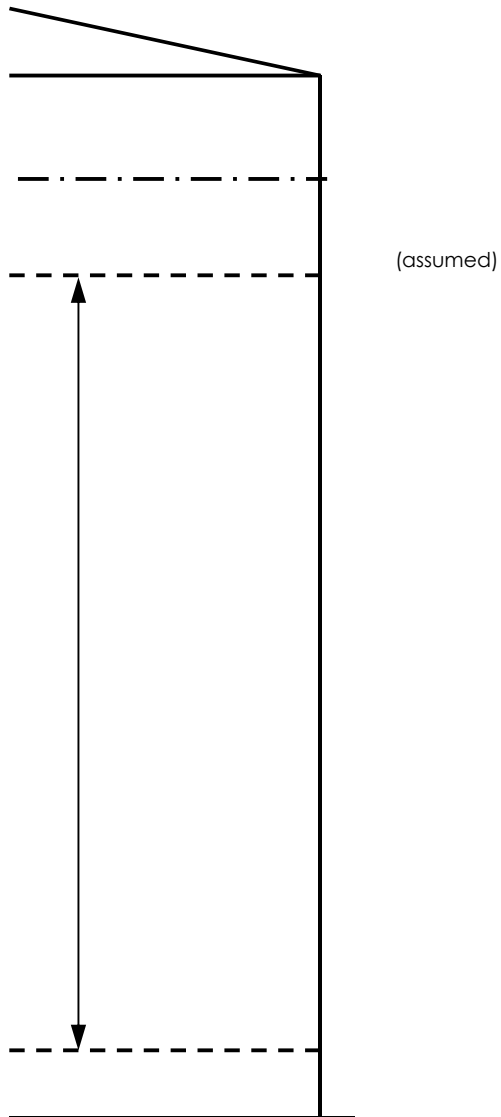
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STORAGE TANK VOLUMES

H= 10000 mm Top of tank shell
 V = 709 m³
 H= 10000 mm Design Liquid Level
 V = 709 m³
 H= 9500 mm Normal fill level
 V = 673 m³

V = 673 m³ Nett working capacity

H= 0 mm Minimum fill level
 V = 0,0 m³

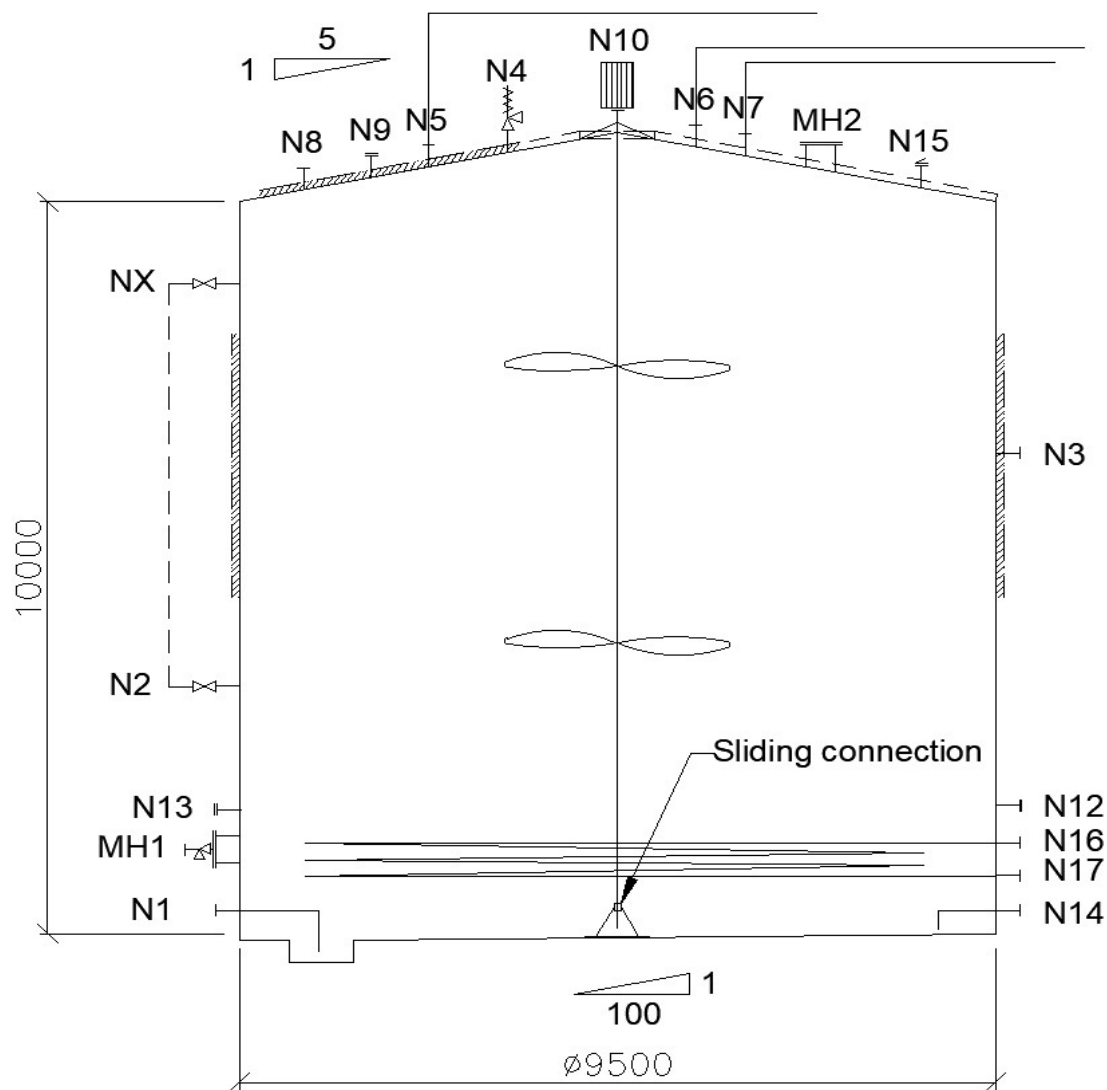


REMARKS

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DATASHEET FOR STORAGE TANKS

Client :	Hexion Botlek B.V.	Tank number: V620 / V630	Number required: 2
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TANK CONNECTIONS

REMARKS

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NOZZLE LOADS

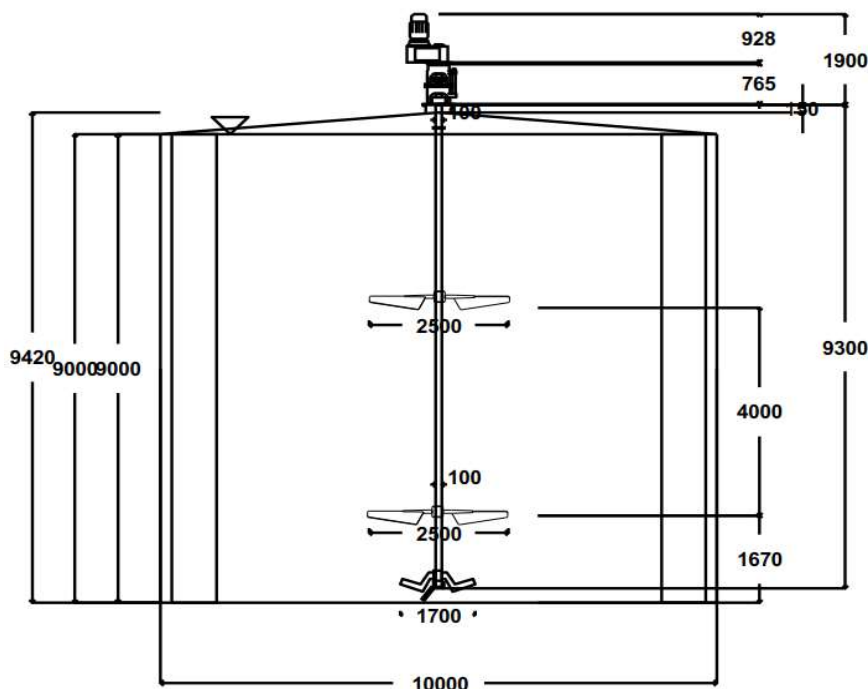
As a result of the Agitator



	Min.	Max.	Static	Kippmoment / Breakdown Torque	Mittel / Average	
Axialkraft FA [N]	++++++	++++++	22.800	++++++	++++++	Axial force by weight
Querkraft FQ [N] (wechselnd)	2.700	4.500	++++++	++++++	3.600	Shear force (alternating)
Biegemoment Mb [Nm] (wechselnd)	5.400	9.000	++++++	++++++	7.200	Bending moment (alternating)
Torsionsmoment Mt [Nm] (schwellend)	4.500	7.500	++++++	15.000	6.000	Torque (increasing)
Axialkraft FA [N] dyn.	-8.100	-13.500	++++++	++++++	-10.800	Axial force by thrust

Der Behälter ist so zu dimensionieren, dass o.g. Kräfte zu einer Auslenkung in der Flanschebene des Rührwerk-stützens von maximal 0,25° führen

Vessel must be designed in a way that based on above forces the max. deflection of the nozzle flange is below 0,25°


REMARKS

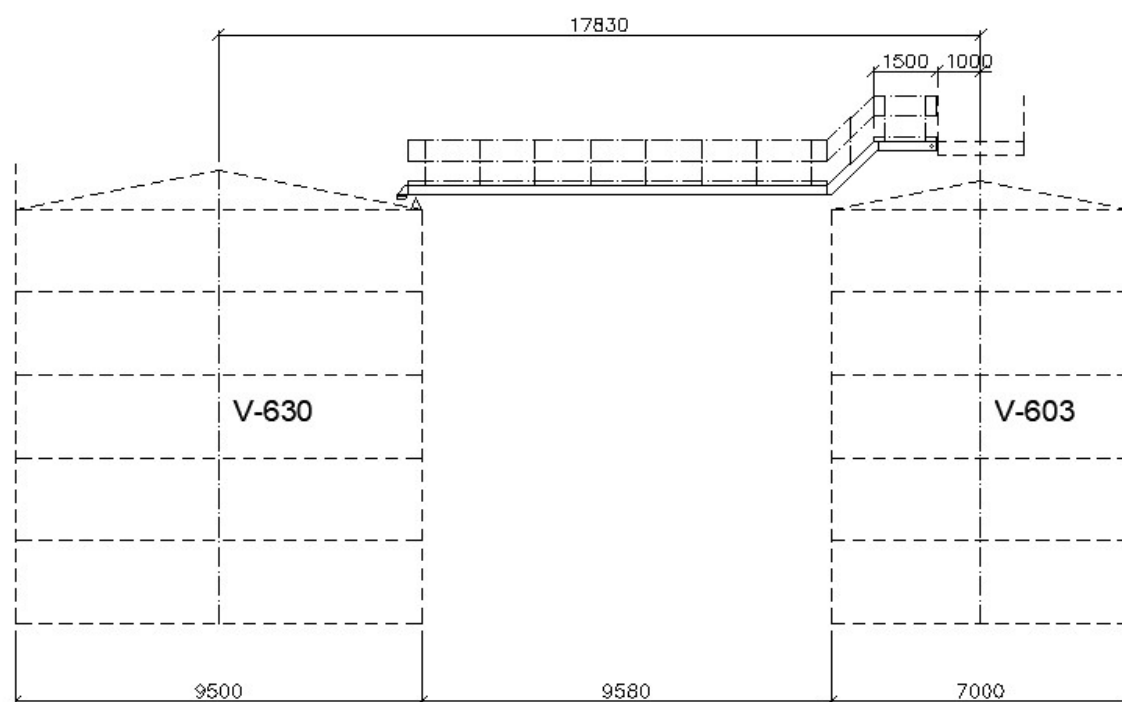
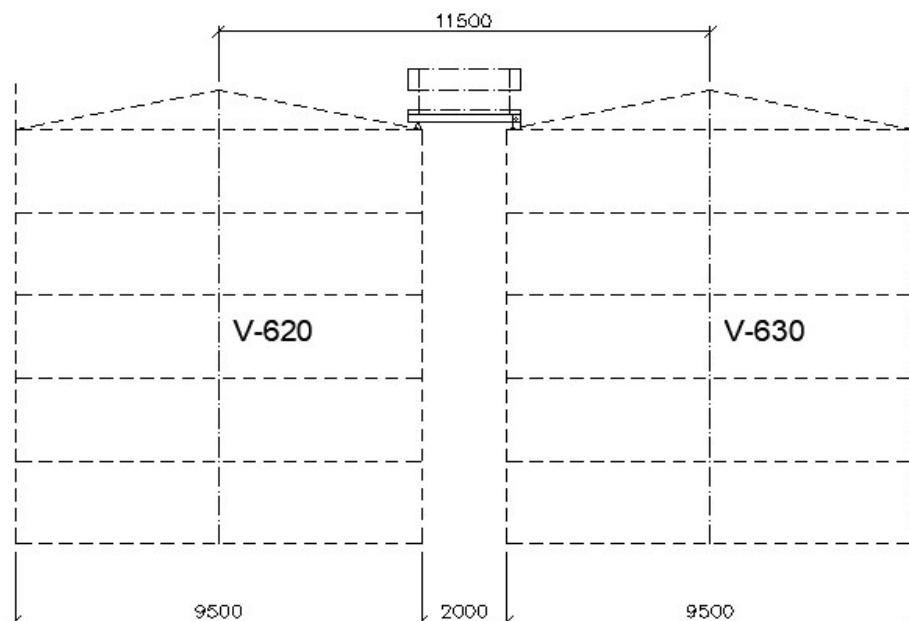
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INTERCONNECTING WALKWAYS

1 of 2

**REMARKS**

Two sliding points; one at tank V-620 and one at tank V-630

Two hinged points; one at tank V-630 and one at tank V-603

Existing tank V-603 and new connection to top platform to be checked by means of calculation.

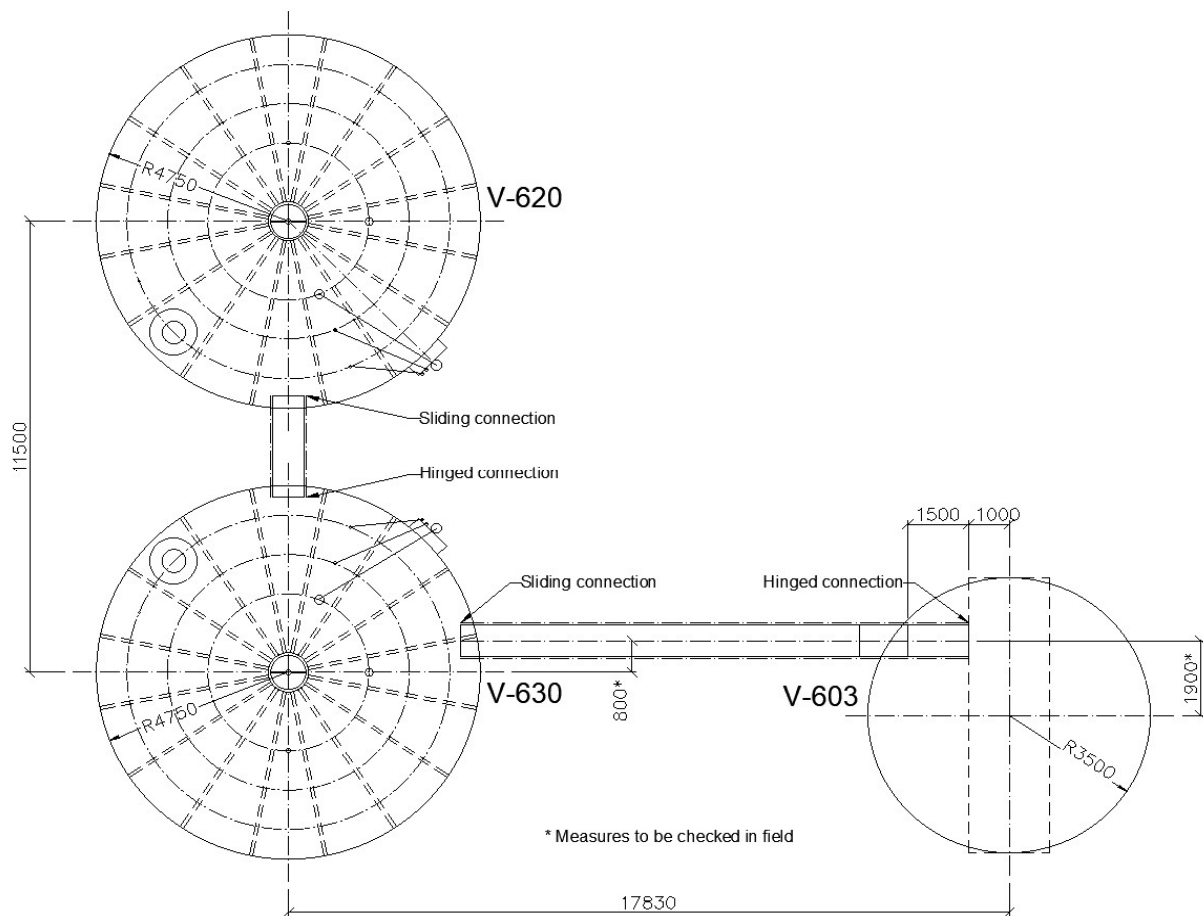
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DATASHEET FOR STORAGE TANKS

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INTERCONNECTING WALKWAYS

2 of 2



NOTE: connection walkway to existing platform tank V-603 to existing beam (H=330, W=160, tf=12 mm)

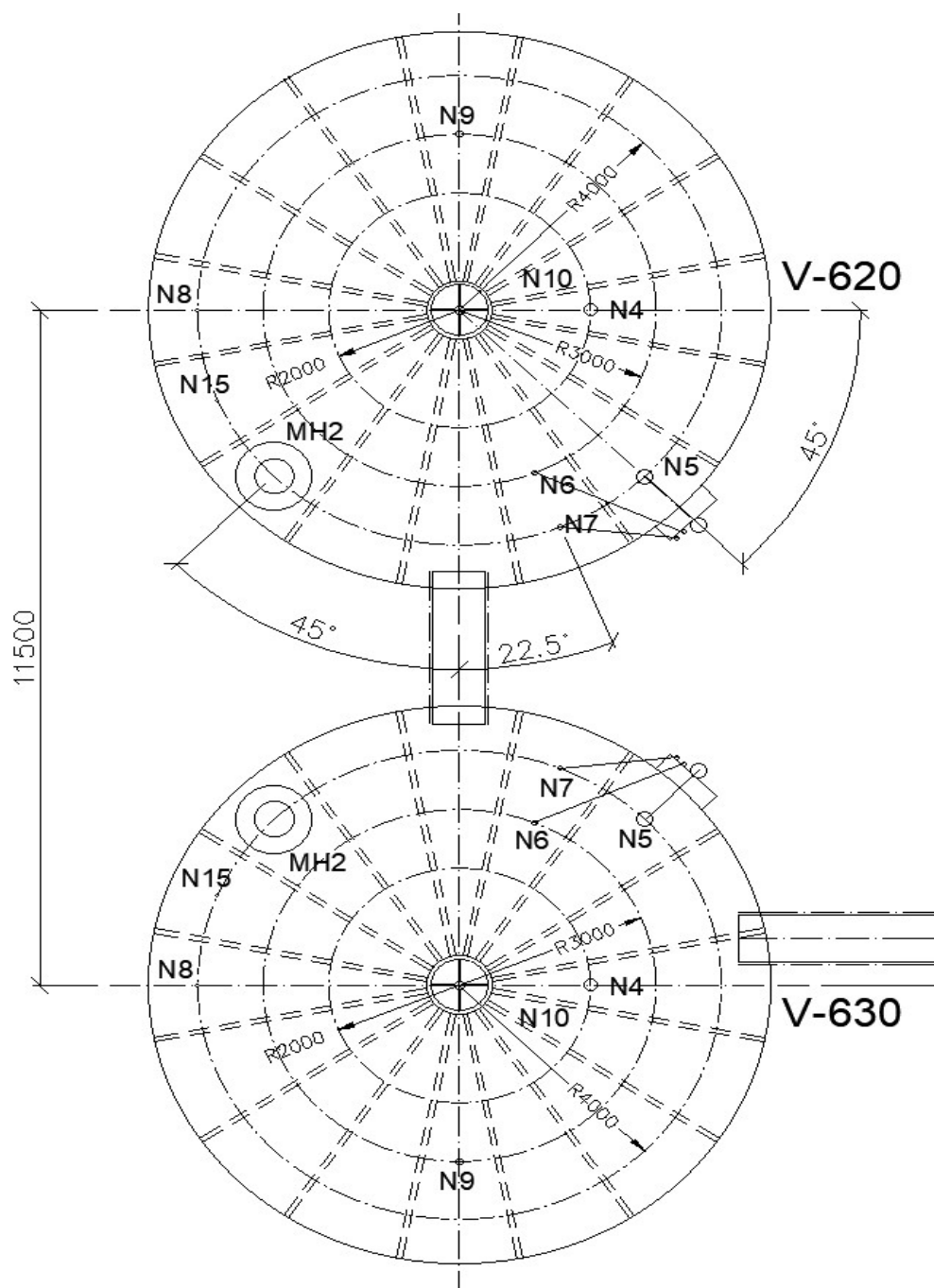
REMARKS

Two sliding points; one at tank V-620 and one at tank V-630
Two hinged points; one at tank V-630 and one at tank V-603

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NOZZLE ORIENTATION

REMARKS

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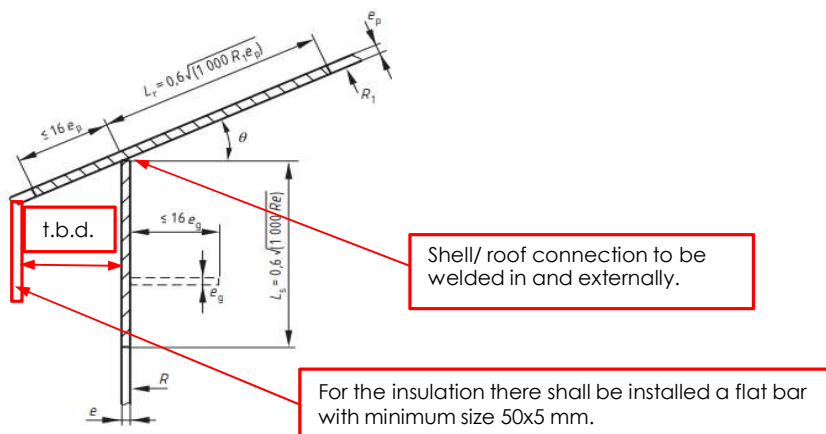
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Construction details

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Detail top corner shell/ roof

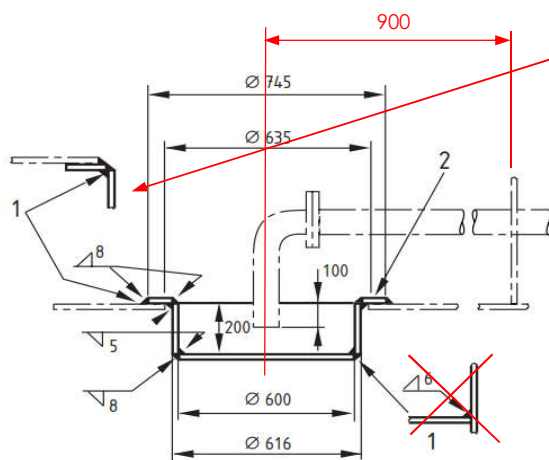
Design of tank shall be without top corner profile.



According EN14015:2004, figure 8 a)

Detail sump (drain)

The sump shall be installed under the tank bottom, see (alternative) detail 1.



According EN14015:2004, figure O.5 a)

REMARKS

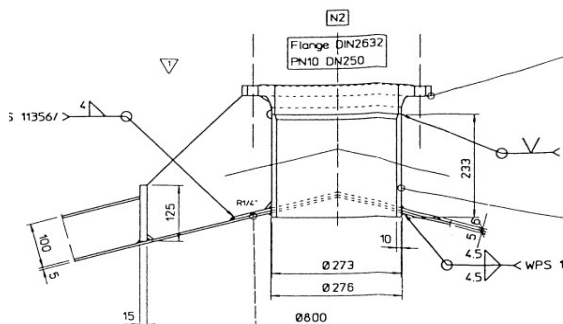
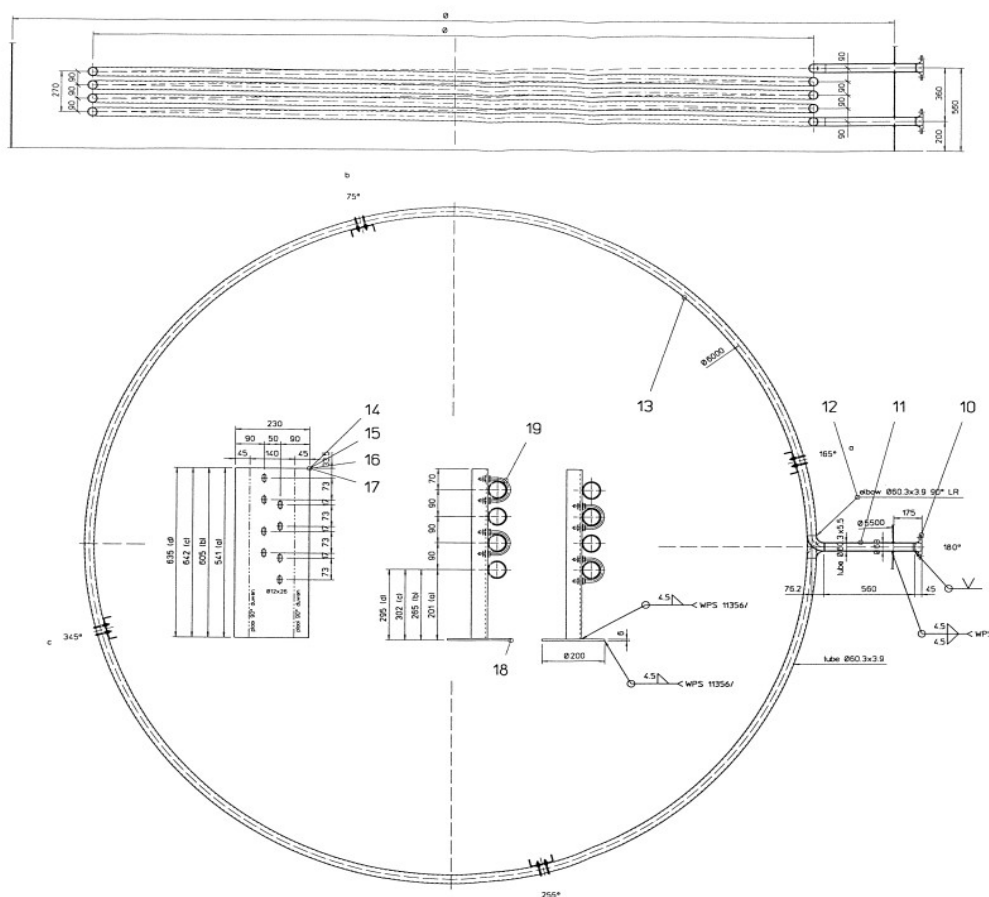
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Construction details

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Example detail for Agitator nozzle

Example heating coil

REMARKS

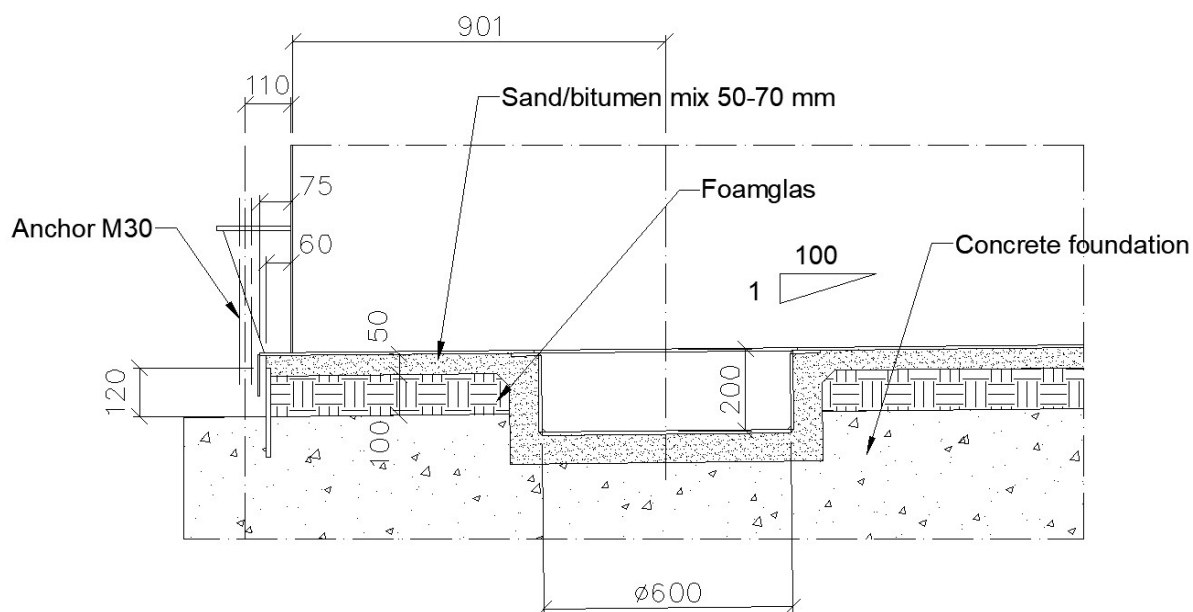
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Construction details

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Detail foundation/ anchors**REMARKS**

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