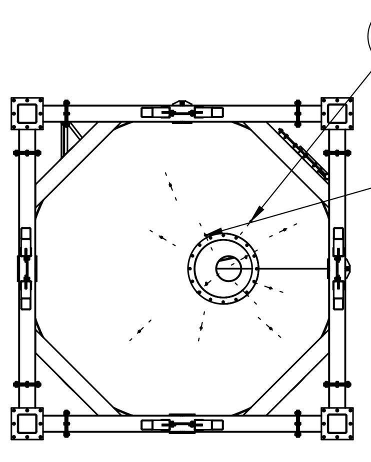
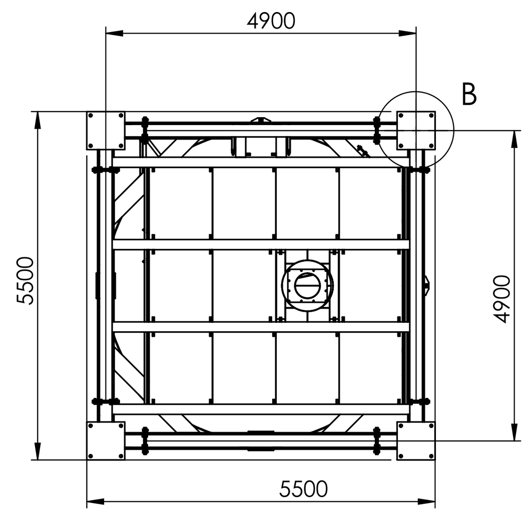
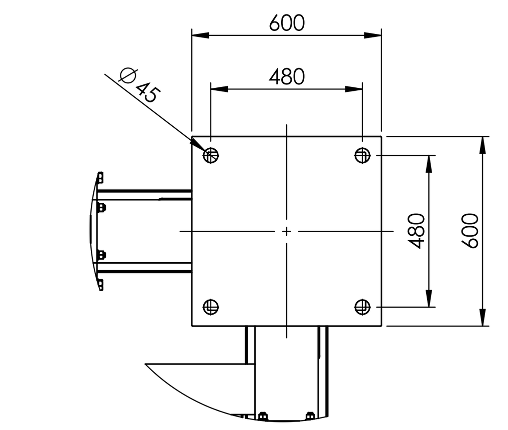
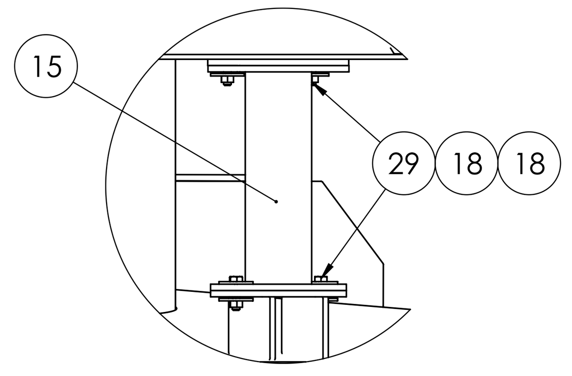


SECTION C-C

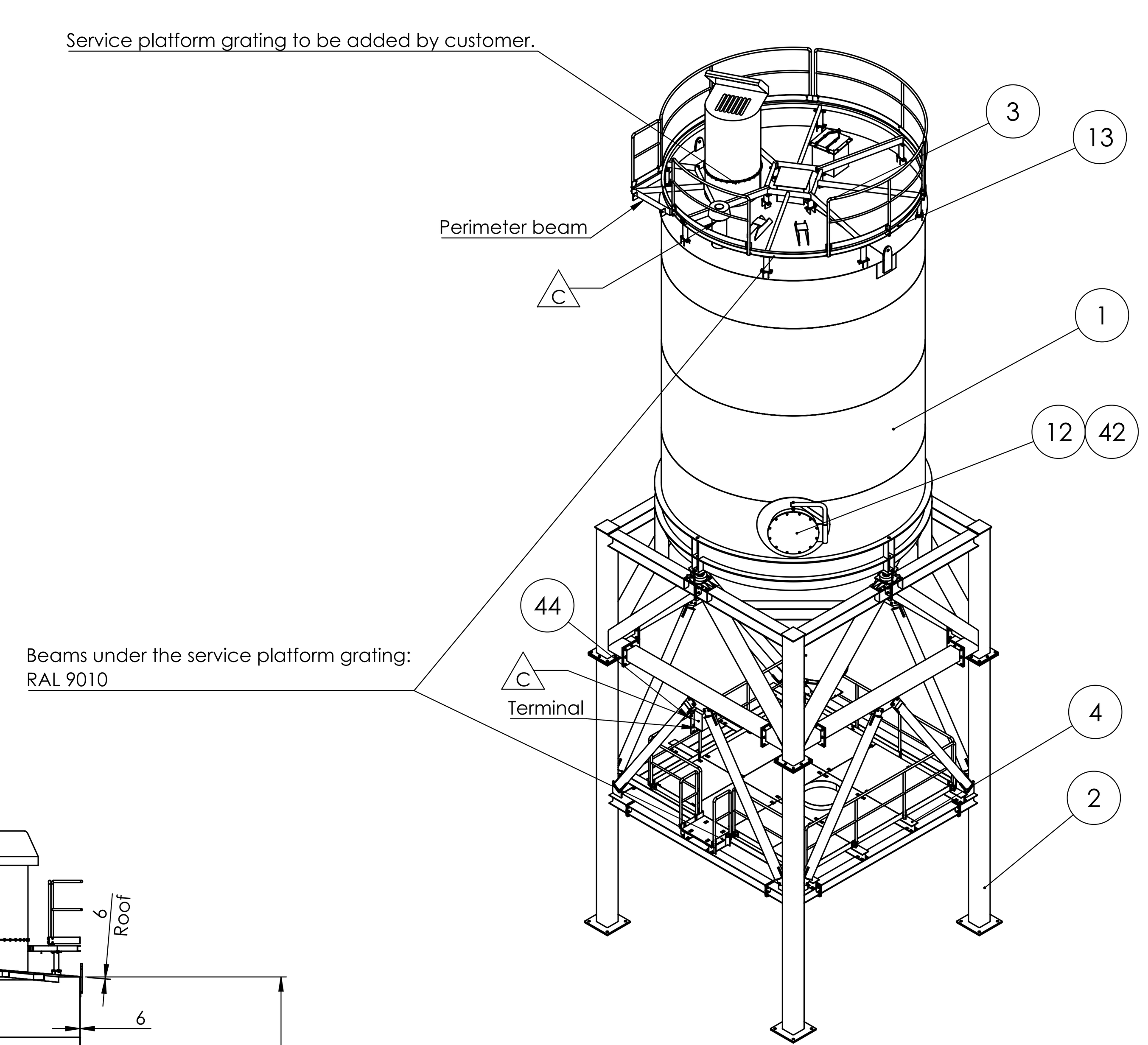




DETAIL B
SCALE 1 : 20

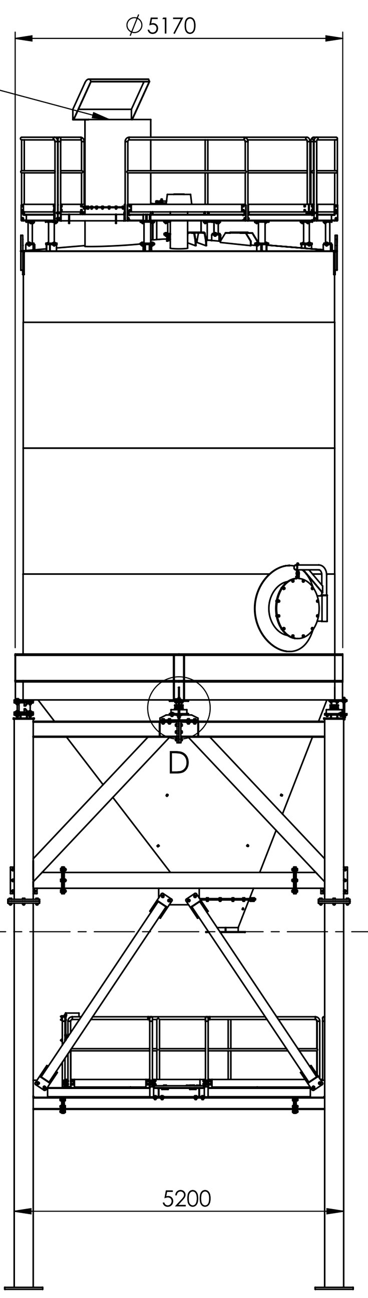


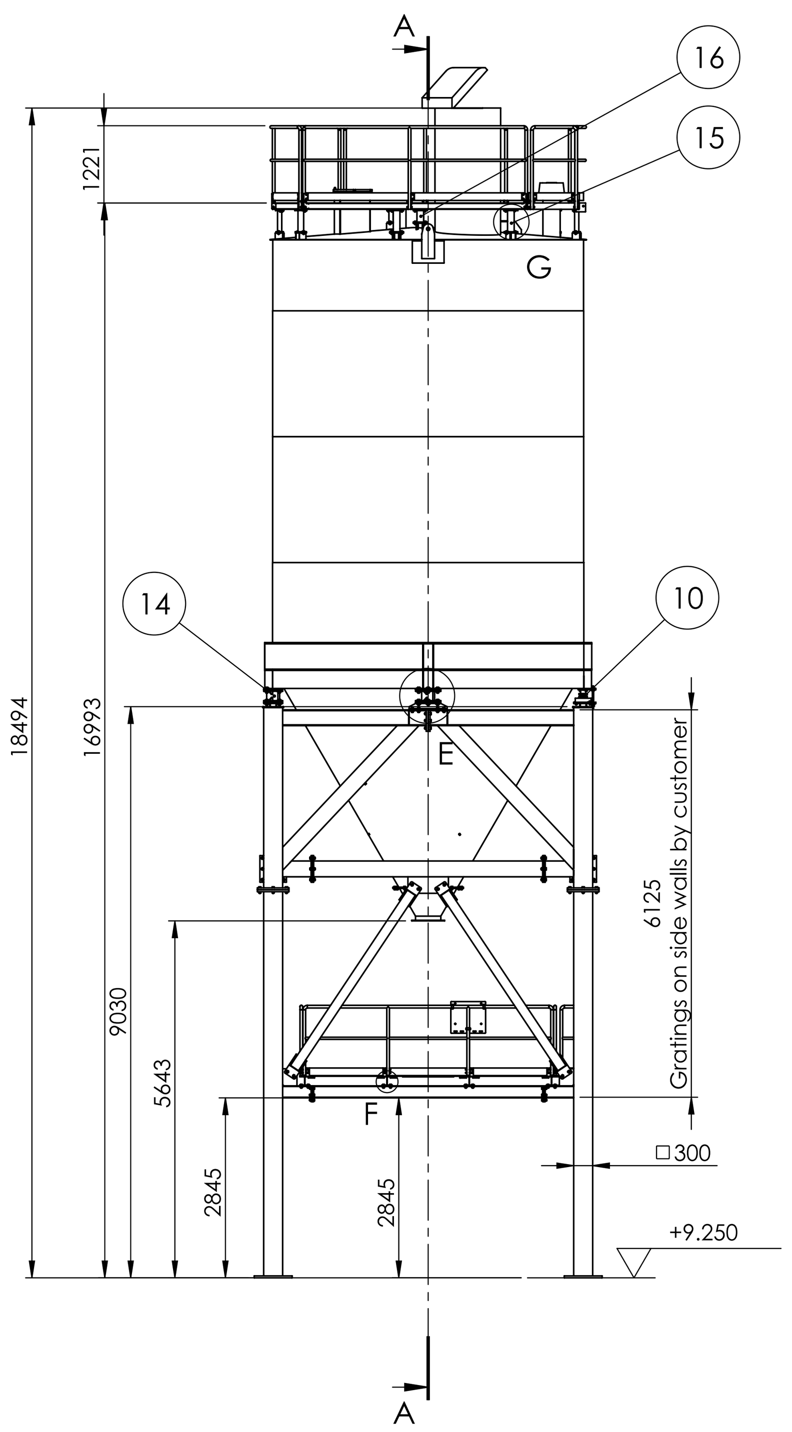
DETAIL G
SCALE 1 : 10

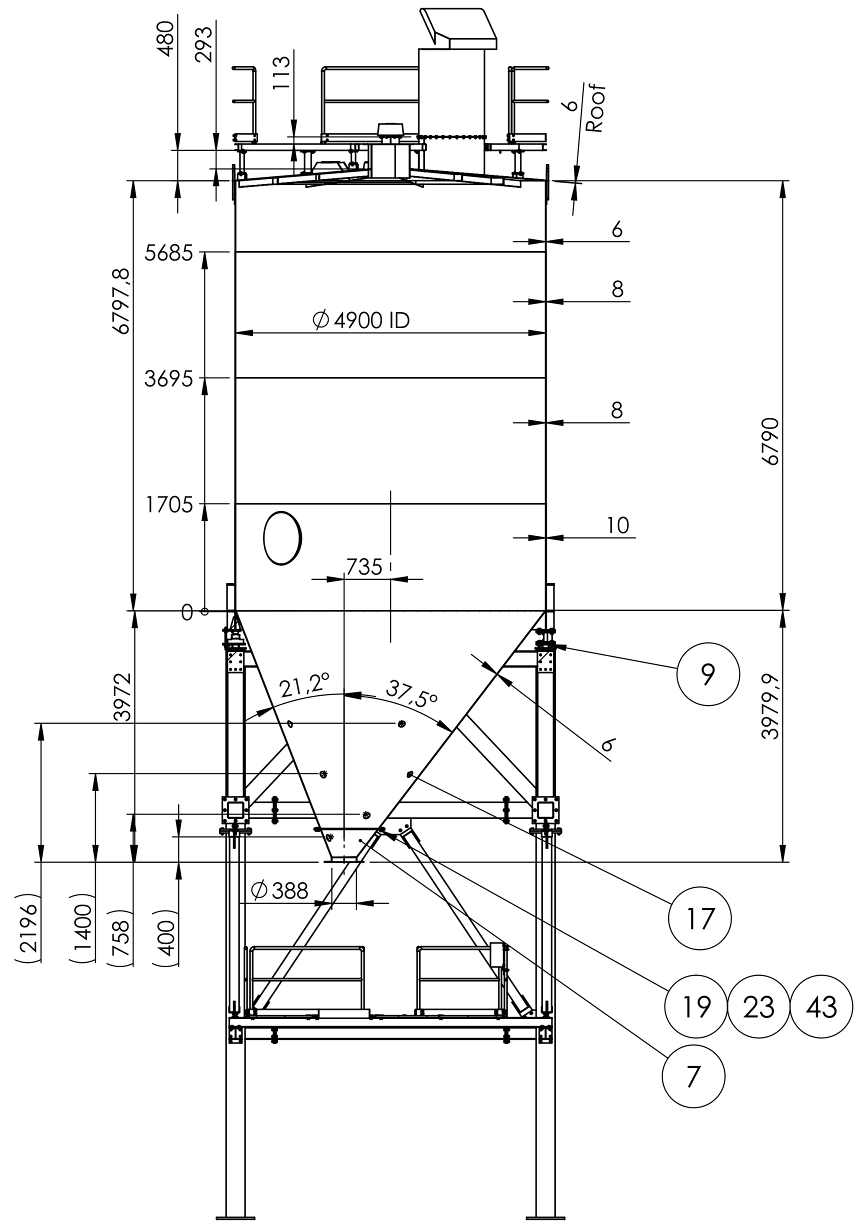


Design brief	
Design rules	Loads EN 1991-4, Design EN1993-4-1
Stored solids	EN 1991-4 Table E.1 Limestone powder (Maximum temperature 100°C) Material properties are shown in bottom of the table
Volumes and capacity	Net volume 134m^3, Cross volume 155m^3. Process capacity 123 tonne, Structural capacity 177 tonne
Action assessment class	AAC2
Consequence Class	CC2
Production category	PC2
Service category	SC1
Actions on structure to be taken in to count	EN 1991-4 annex A load combinations: -Filling -Discharge -Snow and wind Other loads: -Service platform: EN 14122-2 (2kN/m^2)
Actions on structure not to be included in design	-Foundation settlement -Imposed deformations -Accidental loads (Vehicle impact, Fire, explosion) -Seismic loads -Thermal loads
National Annex	Finnish National Annex
Design service life	Under 10 000 cycles / 25 years
Other design rules	Service platforms according to EN 14122
Manufacturing	EN 1090-2: EXC 2 EN 1090-2 Essential manufacturing tolerances: - Cylindrical and conical shells: Class C Additional quality requirements: TBD Surface preparation grade: P2
Construction materials	Structural steels: S355J2
Material thicknesses	Wall: 6...10 mm Bottom: 6 mm Roof: 6 mm Corrosion and abrasion allowance on material contact: 2 mm
Surface treatment	Outside: SFS-EN ISO 12944-5 (2018): C4.06-EP/PUR (Teknos TEC4.06/H/E3 /EPPUR 240/3-FeSa 2½). RAL 5000 Inside: Primer Safety rail : Galvanized / Frame: RR20 / RAL 9010
Pressure relief valve	Opening pressures: MIN: 0.005 bar under pressure MAX: 0.05 bar over pressure
Insulation	Thickness:Roof 250mm, walls 120mm, hopper 250mm (Out of LAITEX scope of delivery) Material: Design density 70kg/m^3 (Out of LAITEX scope of delivery) Covers: Out of LAITEX scope of delivery
Foundation loads	Accroding to eurocode design values: See sheet 2 Dead load including stored solids without safety factors: Vertical: 4x501kN
Material properties in EN 1991-4	
Property	Value / Variation factor a
Upper unit weight	13 kN/m^3 / N/A
Lower unit weight (according customer spec)	9 kN/m^3 / N/A
Angle of repose f.r	36° / N/A
Angle of internal friction f.im	30° / 1,22
Lateral pressure ratio	0,54 / 1,2
Wall friction (D2 mild steel)	0,51 / 1,07

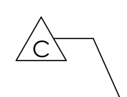
Connections:
-Air inlet/ purge air
12mm quick release
5-6bar, 5 l/min
-Control 24-260 V AC or DC







SECTION A-A



LAITEX

Laitex Oy
Kuormaajankatu16
FI-53300 LAPPEENRANTA
FINLAND

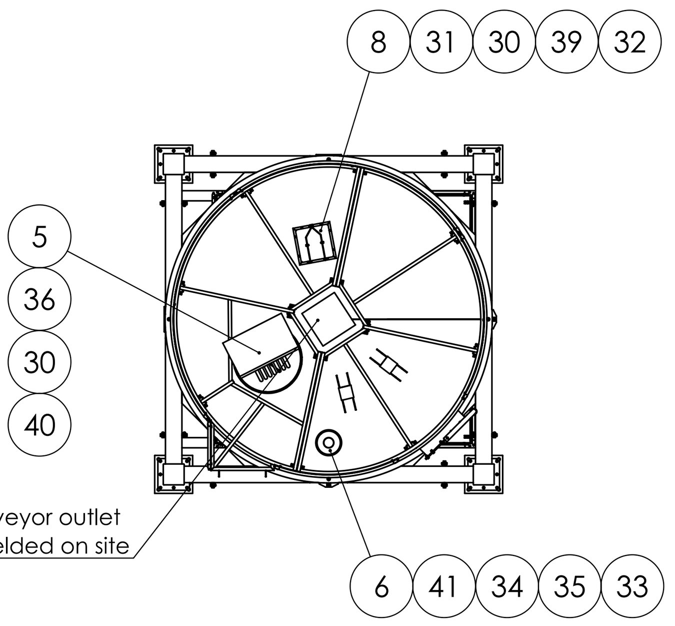
+358 (0)20 161 3300
www.laitex.fi

Storage equipment

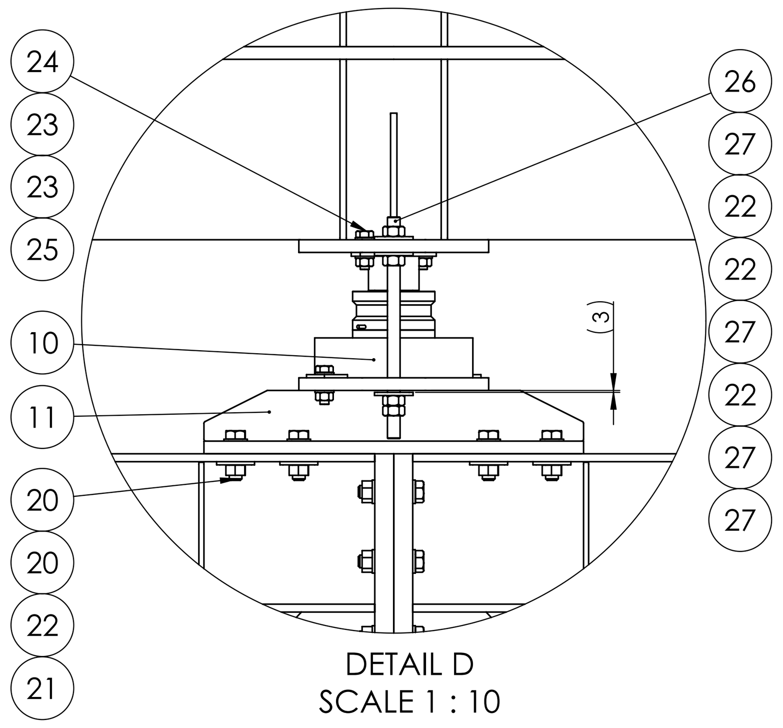
SN	7124		
Type	Silo	Year	2019
Gross Vol.	155 m³	Bulk type	Lime Dust
Net Vol.	134 m³	Bulk dens.	1,3 t/m³
Max overpressure	0,05 bar		
Min underpressure	0,005 bar		
Explosion hazard	No		

For information on the safe use of the machine, see the operating manual

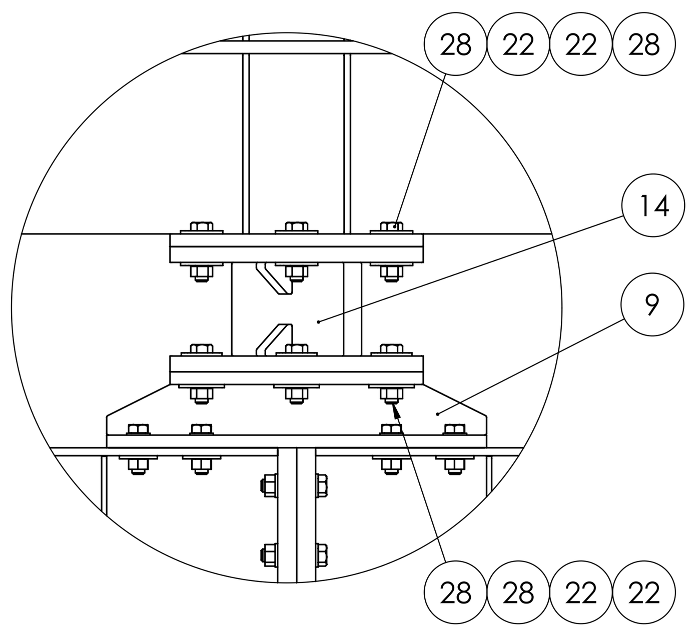
Osa Item	Piir. no. Dwg no.	Kuvaus Description	Aihio Blank	Standardi Standard	Materiaali Material	Mitat Dimensions	Lisätietoja Notes	PL FC	VO SI	Massa / kpl Mass / Qty	Default/Kpl Qty
44	L1097517	SUPPORT								16.33	1
43	L1093507	SEAL	PURCHASE ITEM	SIKAFLEX 221		300ml				0.00	1
42	L1093506	SEALING CORD	PURCHASE ITEM		FiberGlass (seal) WTG-302	3x10 L=2715			1	0.2	1
41	L1093505	SEALING CORD	PURCHASE ITEM		FiberGlass (seal) WTG-302	3x10 L=930			1	0.1	1
40	L1093503	SEALING CORD	PURCHASE ITEM		FiberGlass (seal) WTG-302	3x10 L=3306			1	0.2	1
39	L1093502	SEALING CORD	PURCHASE ITEM		FiberGlass (seal) WTG-302	3x10 L=2050			1	0.1	1
38	M503934	SQUARE WASHER, ROUND HOLE	PURCHASE ITEM	DIN 436	HDG	M16 HDG			1	0.1	72
37		SCREW SB-SET	PURCHASE ITEM	EN 15048 / ISO 4014+4032	8.8 HDG	M16x50				0.15	36
36	M500127	HEXAGON HEAD BOLT		DIN EN ISO 4017	8.8 ZNK	M12x35				0.04	30
35	M501696	WASHER	PURCHASE ITEM	SFS EN ISO 7089 DIN 125 A	HDG	A10			1	0.00	18
34	M500106	HEXAGON HEAD BOLT		DIN EN ISO 4017	8.8 ZNK	M10x25				0.02	9
33	M500007	Hexagon Nut	PURCHASE ITEM	SFS EN ISO 4032 DIN 934	8 HDG	M10			1	0.01	9
32	M500009	Hexagon Nut	PURCHASE ITEM	SFS EN ISO 4032 DIN 934	8 HDG	M12			1	0.02	38
31	M500138	HEXAGON HEAD BOLT		DIN EN ISO 4017	8.8 ZNK	M12x40				0.05	8
30	M501697	WASHER	PURCHASE ITEM	SFS EN ISO 7089 DIN 125 A	HDG	A12			1	0.01	76
29		SCREW SB-SET	PURCHASE ITEM	EN 15048 / ISO 4017+4031	8.8 HDG	M12x45				0.07	48
28		SCREW SB-SET	PURCHASE ITEM	EN 15048 / ISO 4014+4032	8.8 HDG	M20x80				0.33	24
27	M500013	Hexagon Nut	PURCHASE ITEM	SFS EN ISO 4032 DIN 934	8 HDG	M20			1	0.07	8
26	M501641	STUDBOLT	PURCHASE ITEM	DIN 975	8.8 HDG	M20x350				0.86	2
25	M500012	Hexagon Nut	PURCHASE ITEM	SFS EN ISO 4032 DIN 934	8 HDG	M16			1	0.03	8
24	M500162	HEXAGON HEAD BOLT		DIN EN ISO 4017	8.8 ZNK	M16x50				0.10	8
23	M501699	WASHER	PURCHASE ITEM	SFS EN ISO 7089 DIN 125 A	HDG	A16			1	0.01	48
22	M503935	SQUARE WASHER, ROUND HOLE	PURCHASE ITEM	DIN 436	HDG	M20 HDG			1	0.1	86
21	M501700	WASHER	PURCHASE ITEM	SFS EN ISO 7089 DIN 125 A	HDG	A20			1	0.02	32
20		SCREW SB-SET	PURCHASE ITEM	EN 15048 / ISO 4014+4032	8.8 HDG	M20x65				0.30	32
19		SCREW SB-SET	PURCHASE ITEM	EN 15048 / ISO 4017+4031	8.8 HDG	M16x45				0.14	16
18	M503933	SQUARE WASHER, ROUND HOLE	PURCHASE ITEM	DIN 436	HDG	M12 HDG			1	0.0	96
17	L1055583	BIN AERATOR		WAM		VBS				1.4	12
16	L1091235	SUPPORT								4.19	4
15	L1091101	SUPPORT								5.51	8
14	L1087436	JOINT									2
13	L1081651	FRAME								393.46	1
12	L1079264	HATCH								104.8	1
11	L1078257	SUPPORT								45.96	2
10	L1074527	SCALE								29.00	2
9	L1074478	SUPPORT								48.86	2
8	L1093493	INSPECTION HATCH								24.56	1
7	L1069262	CHUTE									1
6	L1069255	SPRING-LOADED PRESSURE RELIEF VALVES		WAM		VCP2732C	VCP Series R03			13.9	1
5	L1069254	SILO VENTING FILTER		WAM FLOW		16 m^2. FN/B.4.J.16.S/ 2.+.F.1.2/FV.S/1.1.4.+.W/ Y.+.++/P	24-260 V AC/DC - Pneumatic input 6 bar			13.5	1
4	L1088349	SERVICE PLATFORM								1203.85	1
3	L1088314	HAND RAIL								214.97	1
2	L1069355	FRAME								10705.1	1
1	L1069204	FRAME, WELDING								11119.7	1



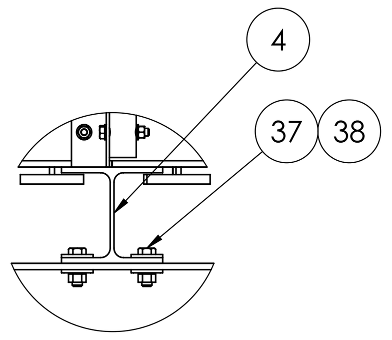
Opening for chain conveyor outlet chute to be cut and welded on site



DETAIL D
SCALE 1 : 10



DETAIL E
SCALE 1 : 10



DETAIL F
SCALE 1 : 10

FINAL 04.11.2019
UPDATED 04.12.2020

Toimittajan nimi	Toimittajan piirustusnumero/tiedostonimi	Päiväys	Lisätieto 1	Suunn.	Piirt.	Mittakaava
ECP Group Oy		9.5.2019				
Sijaintikoodi	Piirustuslaji / Yksilöintikoodi	Osakoodi	Lisätieto 2	Tark.	Hyv.	

SE SUNILA

MEESAUUNIT
MU1 MEESAPÖLYN SIILO
423390

Liittyy — Materiaaliluettelo — Sivu/sivuja — Ohjelma/versio/tiedosto
Yksikkö — Piirustusnumero/tiedostonimi: 1BM780 — Muutos: C

Rev	Muutos / Change	Suunnittelija/Pvm, Designed/Date	Hyväksyjä/Pvm, Approved/Date
D		HG 04.12.2020	HG 04.12.2020

up / down
levityskuvassa up ja down merkitsee painimen puolta/ up and down means upper knife side in flat pattern

Ruuviliitokset / Screw joints:
Ruuvien lujuusluokka: / Strength class of screws: 8.8 (SFS-EN ISO 898-1)
Mutterien lujuusluokka: / Strength class of nuts: 8.8 (SFS-EN ISO 898-1)
Kiristysmomentit: / Tensioning moments: M10 47 Nm, M12 81 Nm, M16 196 Nm, M20 385 Nm, M24 665 Nm, M30 1310 Nm

Kaikki hitsaukset SFS-EN ISO 5817 - C
Pienahitsit a-mitta 3,5 mm
Terävät särmät pyöristettävä
All welds according to SFS-EN ISO 5817 - C
Fillet welds a-dimension 3,5 mm
Sharp edges shall be rounded
(1) Kulman mittatoleranssi
(1) Tolerance of angle dimension
t = mm/m

Yleiset toleranssit: / General tolerances: SFS-EN ISO 5817-C, SFS-EN ISO 9013-B, SFS-EN ISO 13920B, SFS-EN ISO 13920-F, SFS-EN ISO 22768-1-mK

Nimellismitta: Nominal dimension	> 0 < 3	≥ 3 < 10	≥ 10 < 35	≥35 < 125	≥ 125 < 315	≥ 315 < 1000	≥ 1000 < 2000	≥ 2000 < 4000	≥ 4000 < 8000	≥ 8000 < 12000	≥ 12000 < 16000	≥ 16000 < 20000	> 20000
Lastuava työstö: Machining:	± 0.1	± 0.1	± 0.2	± 0.3	± 0.5	± 0.8	± 1.2	± 2					
Leikkaus / taivutus: Cutting / bending:	± 0.2	± 0.2	± 0.5	± 0.8	± 1.2	± 2	± 3	± 4					
Terminen leikkaus: t = 3 - 50 mm Thermal cutting: t = 3 - 50 mm	-	-	-	± 1.8	± 1.9	± 2.3	± 3	± 4.2					
Hitsatut rakenteet (pituus): Welded constructions (linear):	± 1	± 1	± 1	± 2	± 2	± 3	± 4	± 6	± 8	± 10	± 12	± 14	± 16
Hitsatut rakenteet (kulma(1)): Welded constructions (angular(1)):	± 13	± 13	± 13	± 13	± 13	± 9	± 6	± 6					

Asiakas: Customer:	ECP GROUP - SUNILA
Työnumero: Work number:	19013 0160 — Laitekoodi: Device code: -
Nimitys: Description:	SIILO SILO — Kpl: Pcs: 1
Suunnittelija/Pvm: Designed/Date:	AM 04.02.2019 — Hyväksyjä/Pvm: Approved/Date: AM 18.09.2019 — Massa: Mass: 24402.9kg
Piirustusnumero: Drawing number:	L1069387 — Revisio: Revision: D — Mittasuhde: Scale: 1:100 — Arkki: Sheet: A1 1of3
Lisätietoja: Add. information:	LAITEX conveying solutions
Projektipäällikkö/Project Manager:	