HOOPER SILOS

They are intended for storage of grain in the form of dry and wet. They are ideal as warehouses for long-term storage of grain, they mostly used as the buffer silos at the heating chambers and the cleaning chambers. Discharge in a form of a hooper allows to quickly discharge the silo.
There is a choice of silos of different angles of the hooper: 40^{o}, 50^{o} and 60^{o} (optional).
The silos for difficulty-discharging materials, such as e.g. middlings, press cake etc. are offered as well.

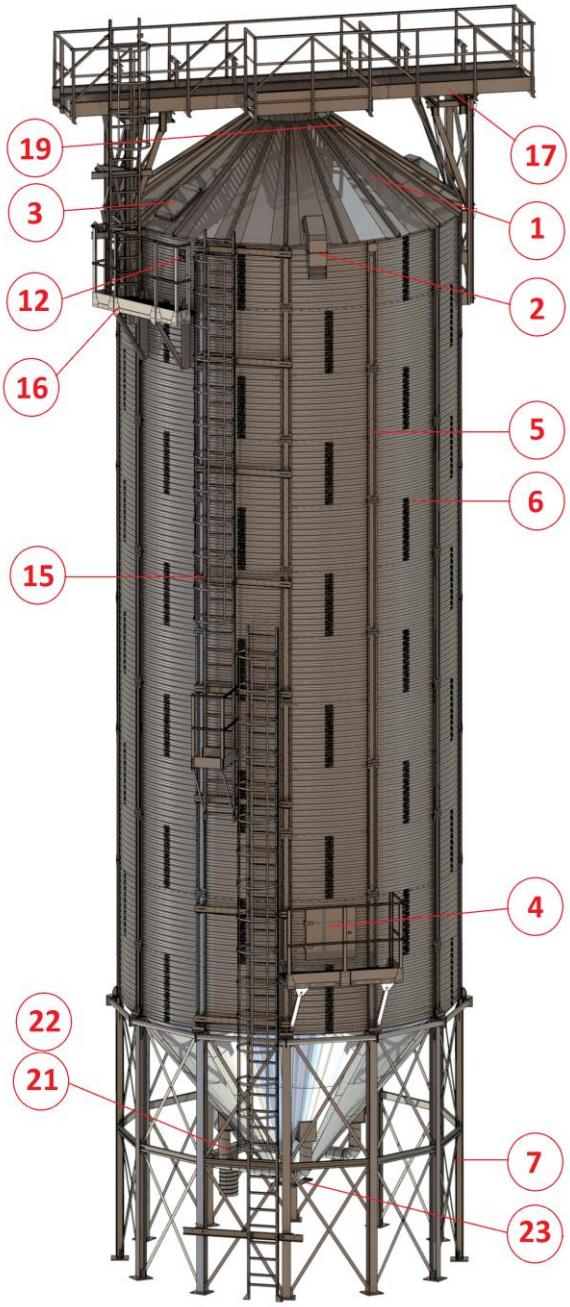
- Diameter from 1.9m to 8.6m.
- Capacity from 5 to 900 tons.
- It is made of galvanized steel sheet with galvanisation thickness 275 g/m^2 (on request: 450 g/m^2 and 600 g/m^2, Galfan coating with addition of 5 % of aluminium or Magnelis).
- The whole is screwed with screws of hardness of 8.8.
- Application of corrugated steel sheet provides structural strength, guaranteeing a longer life of the silo and less heating up of the silo in summer by breakage of direct sunlight.
- Caring about the aesthetic design of our structure, we offer the silos with an internal basket, i.e. with a hooper covered with a corrugated steel sheet.
- As standard, we use vents eliminating water condensation under a roof in case of temperature differences inside and outside the silo.
- We have developed a system of ventilation of the silo, which simultaneously cools and aerates grain.
- We use the system of monitoring the temperature, which allows to constantly view of the grain parameters.
- We install the side lining on the so-called brick to extend the life of the silo.
- A new feature involves the increased angle of the roof (34^{o}).
  The advantages of this solution are:
  - No lying snow in winter and the lack of dangerous overhangs and icy covers.
  - Increased capacity of the silos.
- They can be constructed individually or in batteries of the silos creating the storing and drying base.
- Our offer of the hooper silos includes as well:
  - Forwarding silos
  - Square-shaped silos

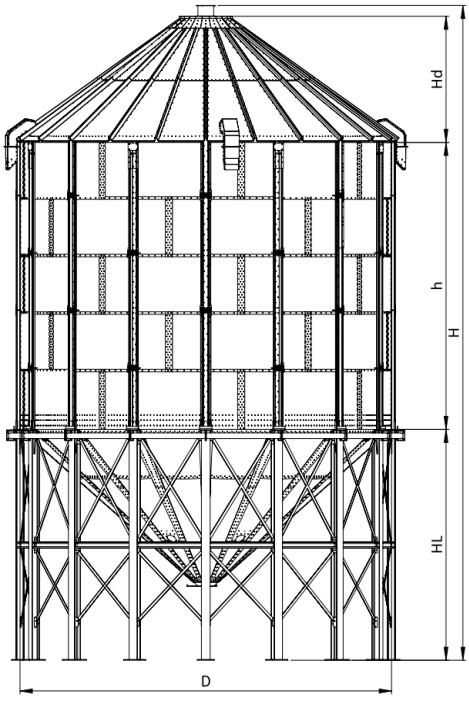
Standard equipment of the silo:

1.Silo roof
2.Roof vents
3.Galvanised roof hatch
4.Galvanised side hatch
5.Galvanised, bearing pillars of the silo
6.Side lining of the silo - galvanised, corrugated construction steel
7.The silo hooper - steel galvanised structure
8.Set of bolts, nuts and mounting washers of 8.8 class
9.Set of anchors mounting the silo to the ground
10.Sealing for galvanised steel sheets
11.Foundation guidances under the chosen silo

Additional equipment of the silo:

12.Filling sensor
13.Roof electric fan
14.Roof air supply system for the silos line
15.External ladder with a hoop stick
16.Resting platforms
17.Gallery with platforms under filling transport
18.Roof stairs
19.Temperature probe with the measurement system
20.Sharp-pillar disperser
21.Lower fan to ventilate grain with moving truck and the connection system
22.Air supply of the silo hopper
23.Electric, pneumatic or manual under-silo gate valve
24.Computer monitoring system
29. Cooler to grain blowing





FSL 40° WITH OPEN HOPPER

Ilość carg / Wysokość części walcowej h[m]	OBJĘTOŚĆ [m3] / (ŁADOWNOŚĆ [ton])					
	TYP SILOSU / ŚREDNICA - D [m]					
	FSL 3,8	FSL 4,8	FSL 5,7	FSL 6,7	FSL 7,6	FSL 8,6
	3,82	4,78	5,73	6,68	7,63	8,60
2 / 2,24	32 (24)					
3 / 3,37	45 (34)	75 (57)	105 (80)			
4 / 4,49	58 (44)	95 (72)	134 (102)	190 (144)	261 (198)	342 (256)
5 / 5,61	71 (54)	115 (87)	163 (124)	230 (175)	312 (237)	407 (309)
6 / 6,73	84 (64)	135 (103)	192 (146)	269 (204)	363 (276)	472 (359)
7 / 7,85	97 (74)	155 (118)	221 (168)	308 (234)	415 (315)	538 (409)
8 / 8,98	109 (83)	176 (134)	250 (190)	348 (264)	466 (354)	603 (458)
9 / 10,10		196 (149)	279 (212)	387 (294)	517 (393)	668 (508)
10 / 11,22		216 (164)	308 (234)	426 (324)	569 (432)	733 (557)
11 / 12,34			337 (256)	465 (353)	620 (471)	798 (606)
12 / 13,46			365 (277)	505 (384)	672 (511)	863 (656)
13 / 14,59			394 (299)	544 (413)	723 (549)	928 (704)
14 / 15,71			423 (321)	583 (443)	775 (589)	994 (755)
15 / 16,83					826 (628)	1059 (805)
16 / 17,95						1124 (854)
WYSOKOŚĆ DACHU - Hd [m]						
	1,22	1,55	1,84	2,14	2,46	2,81
WYSOKOŚĆ LEJA - HL [m]						
	2,80	3,20	3,55	3,97	4,49	4,87

* przybliżona wartość dla pszenicy o wilgotności 14% i gęstości 0,76 t/m3

FSL 50° WITH OPEN HOPPER

Ilość carg / Wysokość części walcowej h[m]	OBJĘTOŚĆ [m3] / (ŁADOWNOŚĆ [ton])					
	TYP SILOSU / ŚREDNICA - D [m]					
	FSL 3,8	FSL 4,8	FSL 5,7	FSL 6,7	FSL 7,6	FSL 8,6
	3,82	4,78	5,73	6,68	7,63	8,60
2 / 2,24	35 (27)					
3 / 3,37	48 (36)	80 (61)	114 (87)			
4 / 4,49	61 (46)	100 (76)	143 (109)	204 (155)	281 (214)	371 (282)
5 / 5,61	74 (56)	120 (91)	172 (131)	243 (185)	332 (252)	437 (332)
6 / 6,73	86 (65)	140 (106)	201 (153)	283 (215)	384 (292)	502 (382)
7 / 7,85	99 (75)	161 (122)	229 (174)	322 (245)	435 (331)	567 (431)
8 / 8,98	112 (85)	181 (138)	258 (196)	361 (274)	487 (370)	632 (493)
9 / 10,10	125 (95)	201 (153)	287 (218)	401 (305)	538 (409)	697 (530)
10 / 11,22		221 (168)	316 (240)	440 (334)	589 (448)	762 (579)
11 / 12,34		241 (183)	345 (262)	479 (364)	641 (487)	827 (629)
12 / 13,46		262 (199)	374 (284)	519 (394)	692 (526)	893 (679)
13 / 14,59			403 (306)	558 (424)	744 (565)	958 (728)
14 / 15,71			432 (328)	597 (454)	795 (604)	1023 (778)
15 / 16,83					847 (644)	1088 (827)
16 / 17,95					899 (683)	1153 (876)
17 / 19,07					943 (717)	
WYSOKOŚĆ DACHU - Hd [m]						
	1,22	1,55	1,84	2,14	2,46	2,81
WYSOKOŚĆ LEJA - HL [m]						
	3,42	4,00	4,49	5,11	5,64	6,38

* przybliżona wartość dla pszenicy o wilgotności 14% i gęstości 0,76 t/m3

FSL 40°
WITH INTERNAL BASKET

Ilość carg / Wysokość części walcowej h[m]	OBJĘTOŚĆ [m3] / (ŁADOWNOŚĆ [ton])					
	TYP SILOSU / ŚREDNICA - D [m]					
	FSL 3,8	FSL 4,8	FSL 5,7	FSL 6,7	FSL 7,6	FSL 8,6
	3,82	4,78	5,73	6,68	7,63	8,60
2 / 2,24	32 (24)					
3 / 3,37	45 (34)	72 (55)	105 (80)			
4 / 4,49	58 (44)	92 (70)	134 (102)	190 (144)	261 (198)	342 (256)
5 / 5,61	71 (54)	112 (85)	163 (124)	230 (175)	312 (237)	407 (309)
6 / 6,73	84 (64)	132 (101)	192 (146)	269 (204)	363 (276)	472 (359)
7 / 7,85	97 (74)	152 (116)	221 (168)	308 (234)	415 (315)	538 (409)
8 / 8,98	109 (83)	172 (131)	250 (190)	348 (264)	466 (354)	603 (458)
9 / 10,10		192 (146)	279 (212)	387 (294)	517 (393)	668 (508)
10 / 11,22		212 (161)	308 (234)	426 (324)	569 (432)	733 (557)
11 / 12,34			337 (256)	465 (353)	620 (471)	798 (606)
12 / 13,46			365 (277)	505 (384)	672 (511)	863 (656)
13 / 14,59			394 (299)	544 (413)	723 (549)	928 (704)
14 / 15,71			423 (321)	583 (443)	775 (589)	994 (755)
15 / 16,83					826 (628)	1059 (805)
16 / 17,95						1124 (854)
WYSOKOŚĆ DACHU - Hd [m]						
	1,22	1,55	1,84	2,14	2,46	2,81
WYSOKOŚĆ LEJA - HL [m]						
	2,95	3,36	3,70	4,12	4,64	5,02

* przybliżona wartość dla pszenicy o wilgotności 14% i gęstości 0,76 t/m3

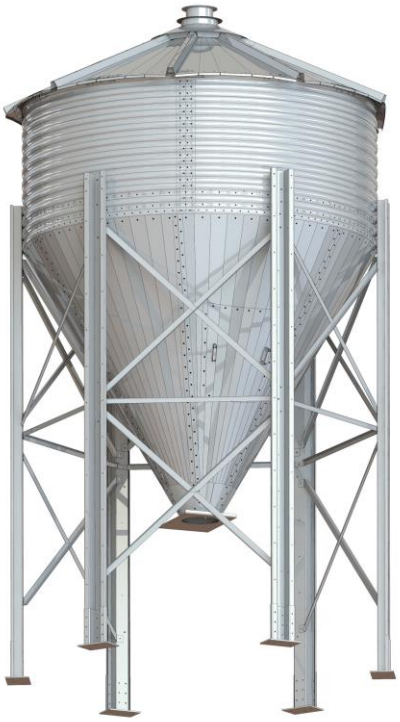
FSL 50°
WITH INTERNAL BASKET

Ilość carg / Wysokość części walcowej h[m]	OBJĘTOŚĆ [m3] / (ŁADOWNOŚĆ [ton])					
	TYP SILOSU / ŚREDNICA - D [m]					
	FSL 3,8	FSL 4,8	FSL 5,7	FSL 6,7	FSL 7,6	FSL 8,6
	3,82	4,78	5,73	6,68	7,63	8,60
2 / 2,24	38 (29)					
3 / 3,37	51 (38)	89 (67)	124 (95)			
4 / 4,49	64 (48)	109 (83)	153 (117)	216 (164)	296 (225)	399 (303)
5 / 5,61	77 (58)	129 (98)	182 (139)	255 (194)	347 (263)	464 (353)
6 / 6,73	89 (67)	149 (113)	211 (161)	295 (224)	399 (303)	529 (402)
7 / 7,85	102 (77)	169 (129)	239 (182)	334 (254)	450 (342)	594 (451)
8 / 8,98	115 (87)	189 (144)	268 (204)	373 (283)	502 (381)	659 (501)
9 / 10,10	128 (97)	209 (159)	297 (226)	413 (314)	553 (420)	724 (550)
10 / 11,22		229 (174)	326 (248)	452 (343)	604 (460)	789 (600)
11 / 12,34			355 (270)	491 (373)	656 (498)	854 (649)
12 / 13,46			384 (292)	531 (403)	707 (537)	920 (699)
13 / 14,59			413 (314)	570 (433)	759 (576)	985 (749)
14 / 15,71			442 (336)	609 (463)	810 (615)	1050 (798)
15 / 16,83					862 (655)	1115 (847)
16 / 17,95					914 (694)	1180 (897)
WYSOKOŚĆ DACHU - Hd [m]						
	1,22	1,55	1,84	2,14	2,46	2,81
WYSOKOŚĆ LEJA - HL [m]						
	3,82	4,48	4,90	5,50	6,00	6,73

* przybliżona wartość dla pszenicy o wilgotności 14% i gęstości 0,76 t/m3

FEED SILO 60°

Ilość carg / Wysokość części walcowej h[m]	OBJĘTOŚĆ [m3] / (ŁADOWNOŚĆ [ton])	
	TYP SILOSU / ŚREDNICA - D [m]	
	FSL 1,9	FSL 2,9
	1,91	2,86
1 / 1,12		12 (8)
2 / 2,24	8 (5)	19 (12)
3 / 3,37	11 (7)	27 (18)
4 / 4,49	14 (9)	34 (22)
WYSOKOŚĆ DACHU - Hd [m]		
	0,51	0,83
WYSOKOŚĆ LEJA - HL [m]		
	2,75	3,58
* przybliżona wartość dla paszy o gęstości 0,65 t/m3		

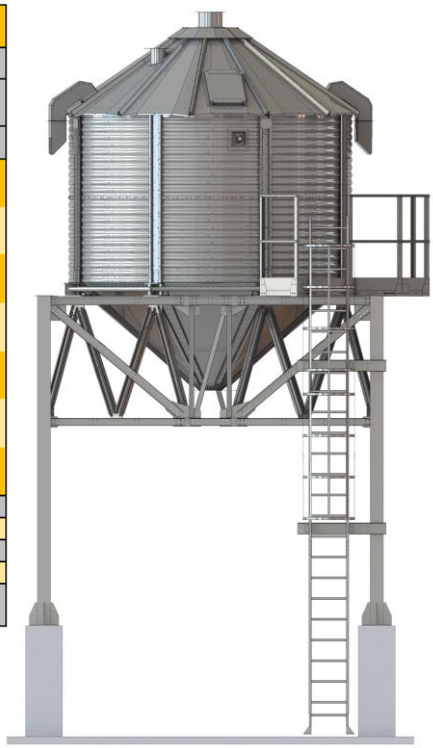


SILO WITH ASYMMETRIC HOPPER

Ilość carg / Wysokość części walcowej h[m]	OBJĘTOŚĆ [m3] / (ŁADOWNOŚĆ [ton])	
	TYP SILOSU / ŚREDNICA - D [m]	
	FSL 2,9	FSL 3,8
	2,86	3,82
1 / 1,12		24 (18)
2 / 2,24	19 (14)	37 (28)
3 / 3,37	26 (20)	50 (38)
4 / 4,49	34 (26)	63 (48)
5 / 5,61	41 (31)	76 (58)
6 / 6,73	48 (36)	88 (67)
7 / 7,85		101 (77)
8 / 8,98		114 (87)
WYSOKOŚĆ DACHU - Hd [m]		
	0,83	1,15
WYSOKOŚĆ LEJA - HL [m]		
	4,21	5,45
* przybliżona wartość dla pszenicy o wilgotności 14% i gęstości 0,76 t/m3		

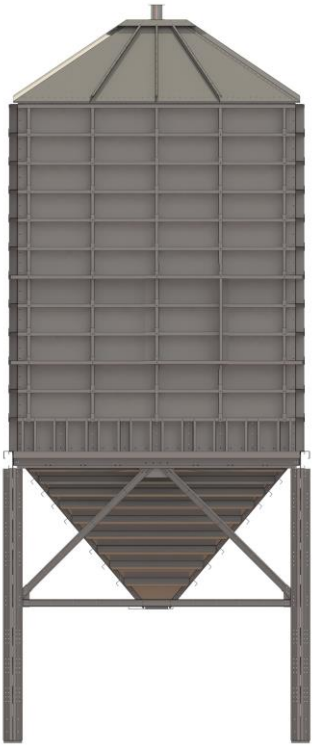
FSS SILO

Ilość carg / Wysokość części walcowej h[m]	OBJ. [m3] / (ŁADOW. [ton])		
	TYP SILOSU \ KĄT LEJA		
	FSS 3,8	FSS 3,8	FSS 3,8
	40st	50st	60st
2 / 2,24	32 (24)	35 (27)	38 (30)
3 / 3,37	45 (34)	48 (36)	51 (38)
4 / 4,49	58 (44)	61 (46)	64 (48)
5 / 5,61	71 (54)	74 (56)	77 (58)
6 / 6,73	84 (64)	86 (65)	88 (66)
7 / 7,85	97 (74)	99 (75)	101 (76)
8 / 8,98	109 (83)	112 (85)	115 (87)
WYSOKOŚĆ DACHU - Hd [m]			
	1,22	1,22	1,22
WYSOKOŚĆ LEJA - HL [m]			
	2,80	3,42	4,00
* przybliżona wartość dla pszenicy o wilgotności 14% i gęstości 0,76 t/m3			



FSB SILO (SQUARE)

Ilość carg / Wysokość części walcowej h[m]	OBJĘTOŚĆ [m3] / (ŁADOW. [ton])
	TYP SILOSU
	FSB 3,94
	50st
7 / 3,18	55 (42)
8 / 3,58	60 (46)
9 / 3,98	66 (50)
10 / 4,38	72 (55)
11 / 4,78	77 (58)
WYSOKOŚĆ DACHU - Hd [m]	
	1,35
WYSOKOŚĆ LEJA - HL [m]	
	2,17
* przybliżona wartość dla pszenicy o wilgotności 14% i gęstości 0,76 t/m3	



HOPPER SILO WITH INTERNAL BASKET

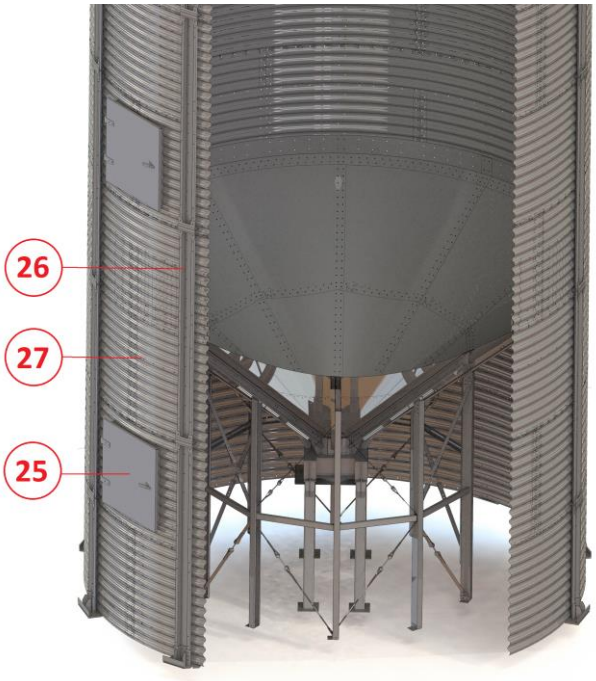
It provides all the same functions described for the hooper silos, and additionally it has additional features such as:

- ✓ Larger capacity of silos with an angle of 50 degrees (compared to open hoppers).
- ✓ Reduced construction costs associated with ordering of the lift, which is required to install the chamber with an open hooper.
- ✓ Aesthetic design and better presentation.
- ✓ The possibility to enclose the blowing fan, which is associated with soundproofing.

- There is a choice of silos of different angles of the hooper: 40^{o}, 50^{o} (28^{o} and 60^{o} optional).
- Diameter from 3.8m to 8.6m.
- Capacity from 24 to 900 tons.
- The whole is screwed with screws of hardness of 8.8.
- They can be constructed individually or in batteries of the silos creating the storing and drying base.

Standard equipment of the silo (additional elements in this type of the silo):
25. Galvanised side hatch no. 2
26. Additional. galvanised, bearing pillars of the silo
27. Additional side lining of the silo - galvanised,

Any additional non-standard elements are not provided. The producer reserves that the silo will not be able to be applied to all technological cases.



FSL 40°
WITH INTERNAL BASKET

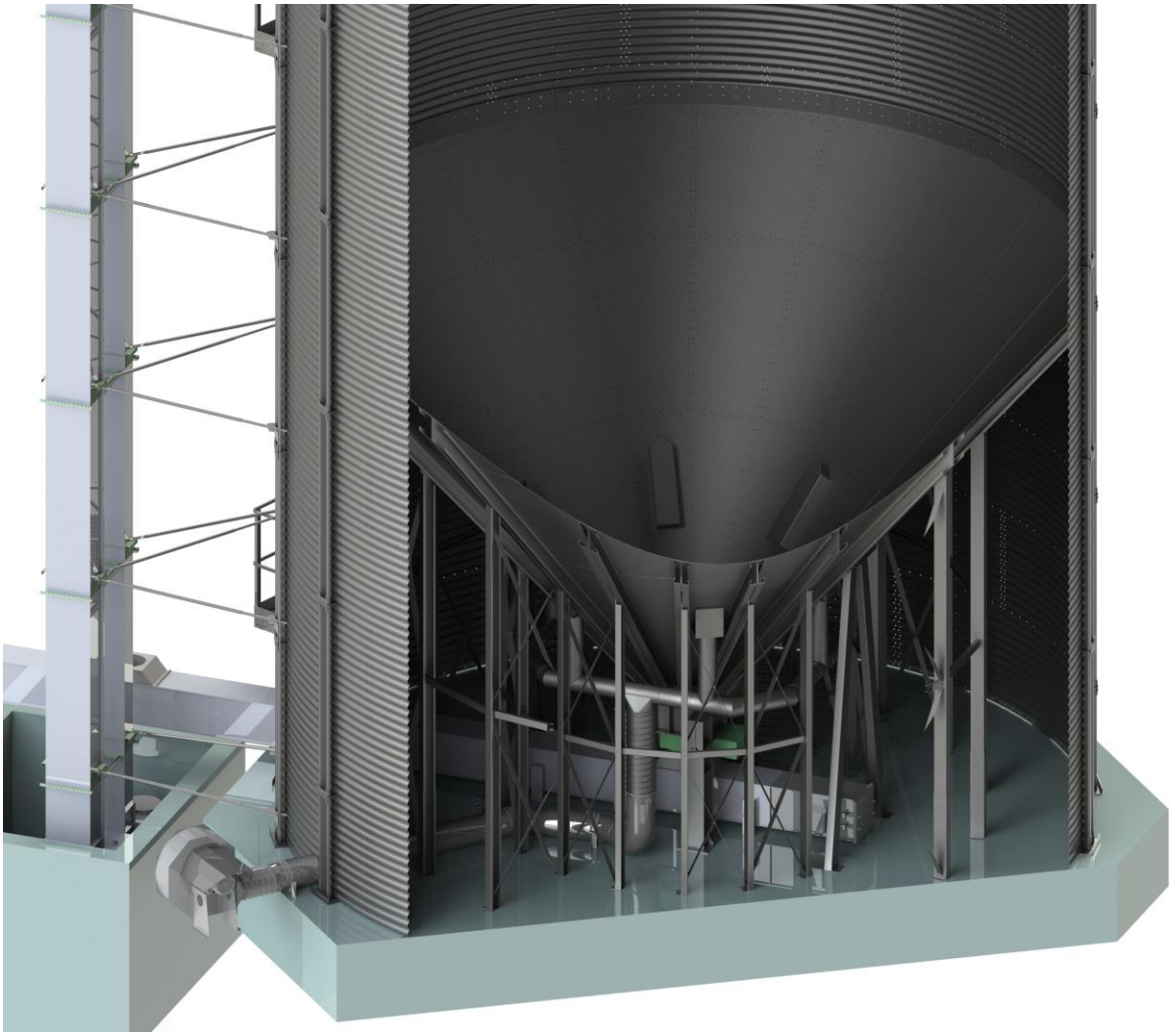
Ilość carg / Wysokość części walcowej h[m]	OBJĘTOŚĆ [m3] / (ŁADOWNOŚĆ [ton])					
	TYP SILOSU / ŚREDNICA - D [m]					
	FSL 3,8	FSL 4,8	FSL 5,7	FSL 6,7	FSL 7,6	FSL 8,6
	3,82	4,78	5,73	6,68	7,63	8,60
2 / 2,24	32 (24)					
3 / 3,37	45 (34)	72 (55)	105 (80)			
4 / 4,49	58 (44)	92 (70)	134 (102)	190 (144)	261 (198)	342 (256)
5 / 5,61	71 (54)	112 (85)	163 (124)	230 (175)	312 (237)	407 (309)
6 / 6,73	84 (64)	132 (101)	192 (146)	269 (204)	363 (276)	472 (359)
7 / 7,85	97 (74)	152 (116)	221 (168)	308 (234)	415 (315)	538 (409)
8 / 8,98	109 (83)	172 (131)	250 (190)	348 (264)	466 (354)	603 (458)
9 / 10,10		192 (146)	279 (212)	387 (294)	517 (393)	668 (508)
10 / 11,22		212 (161)	308 (234)	426 (324)	569 (432)	733 (557)
11 / 12,34			337 (256)	465 (353)	620 (471)	798 (606)
12 / 13,46			365 (277)	505 (384)	672 (511)	863 (656)
13 / 14,59			394 (299)	544 (413)	723 (549)	928 (704)
14 / 15,71			423 (321)	583 (443)	775 (589)	994 (755)
15 / 16,83					826 (628)	1059 (805)
16 / 17,95						1124 (854)
WYSOKOŚĆ DACHU - Hd [m]						
	1,22	1,55	1,84	2,14	2,46	2,81
WYSOKOŚĆ LEJA - HL [m]						
	2,95	3,36	3,70	4,12	4,64	5,02

* przybliżona wartość dla pszenicy o wilgotności 14% i gęstości 0,76 t/m3

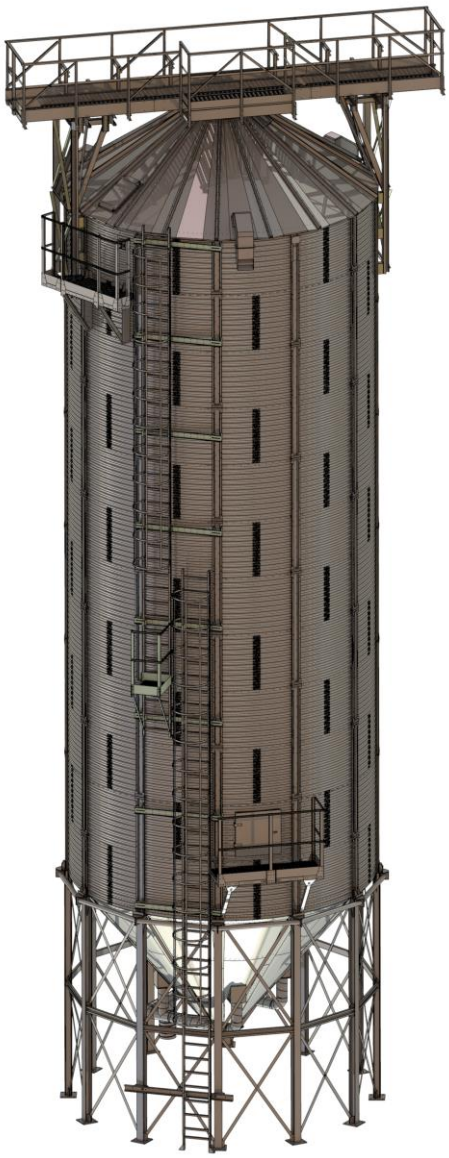
FSL 50°
WITH INTERNAL BASKET

Ilość carg / Wysokość części walcowej h[m]	OBJĘTOŚĆ [m3] / (ŁADOWNOŚĆ [ton])					
	TYP SILOSU / ŚREDNICA - D [m]					
	FSL 3,8	FSL 4,8	FSL 5,7	FSL 6,7	FSL 7,6	FSL 8,6
	3,82	4,78	5,73	6,68	7,63	8,60
2 / 2,24	38 (29)					
3 / 3,37	51 (38)	89 (67)	124 (95)			
4 / 4,49	64 (48)	109 (83)	153 (117)	216 (164)	296 (225)	399 (303)
5 / 5,61	77 (58)	129 (98)	182 (139)	255 (194)	347 (263)	464 (353)
6 / 6,73	89 (67)	149 (113)	211 (161)	295 (224)	399 (303)	529 (402)
7 / 7,85	102 (77)	169 (129)	239 (182)	334 (254)	450 (342)	594 (451)
8 / 8,98	115 (87)	189 (144)	268 (204)	373 (283)	502 (381)	659 (501)
9 / 10,10	128 (97)	209 (159)	297 (226)	413 (314)	553 (420)	724 (550)
10 / 11,22		229 (174)	326 (248)	452 (343)	604 (460)	789 (600)
11 / 12,34			355 (270)	491 (373)	656 (498)	854 (649)
12 / 13,46			384 (292)	531 (403)	707 (537)	920 (699)
13 / 14,59			413 (314)	570 (433)	759 (576)	985 (749)
14 / 15,71			442 (336)	609 (463)	810 (615)	1050 (798)
15 / 16,83					862 (655)	1115 (847)
16 / 17,95					914 (694)	1180 (897)
WYSOKOŚĆ DACHU - Hd [m]						
	1,22	1,55	1,84	2,14	2,46	2,81
WYSOKOŚĆ LEJA - HL [m]						
	3,82	4,48	4,90	5,50	6,00	6,73

* przybliżona wartość dla pszenicy o wilgotności 14% i gęstości 0,76 t/m3



HOPPER SILO WITH OPEN HOOPER



It provides all the same functions described for the hooper silos, and it has additional features such as:

- ✓ The possibility to move the hooper of the silo on the legs if an additional device is required to be used.
- ✓ The possibility of execution on the reinforced concrete pillars.

- There is a choice of silos of different angles of the hooper: 40^{o}, 50^{o} (28^{o} and 60^{o} optional).
- Diameter from 3.8m to 8.6m.
- Capacity from 24 to 900 tons.
- The whole is screwed with screws of hardness of 8.8.
- They can be constructed individually or in batteries of the silos creating the storing and drying base.

FSL 40° WITH OPEN HOPPER

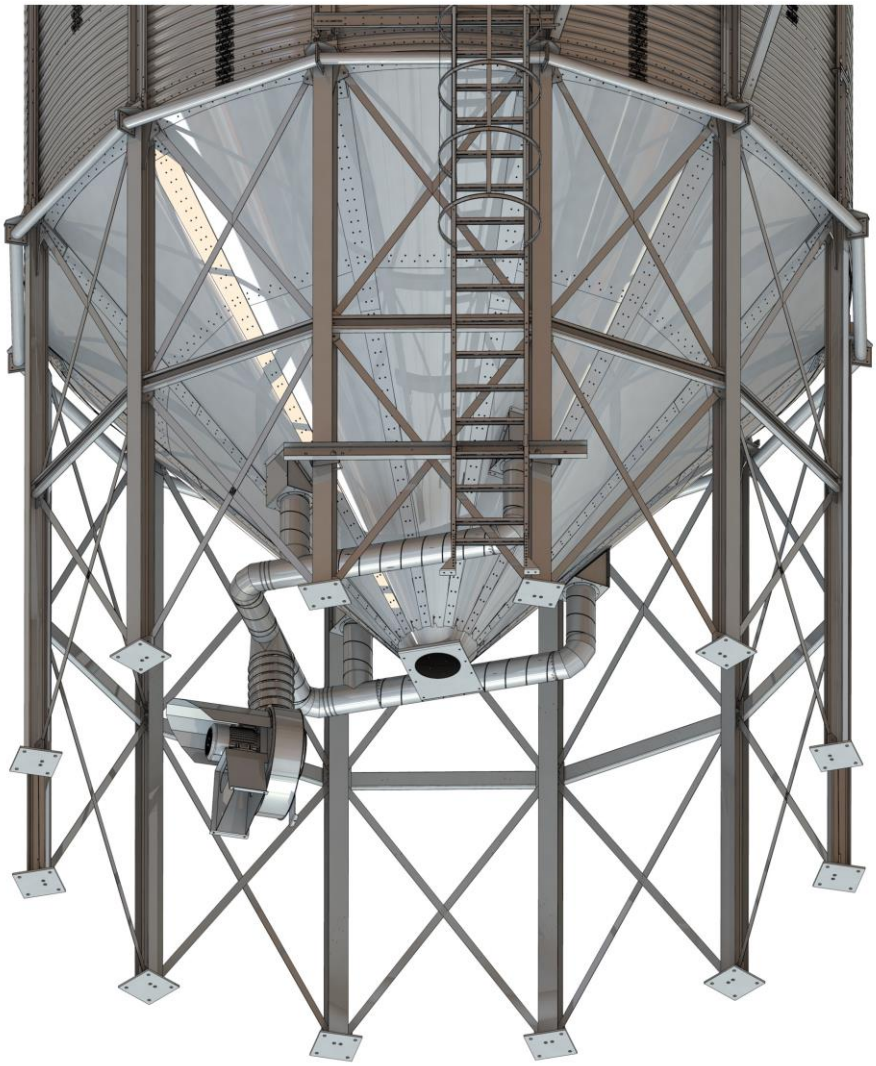
Ilość carg / Wysokość części walcowej h[m]	OBJĘTOŚĆ [m3] / (ŁADOWNOŚĆ [ton])					
	TYP SILOSU / ŚREDNICA - D [m]					
	FSL 3,8	FSL 4,8	FSL 5,7	FSL 6,7	FSL 7,6	FSL 8,6
	3,82	4,78	5,73	6,68	7,63	8,60
2 / 2,24	32 (24)					
3 / 3,37	45 (34)	75 (57)	105 (80)			
4 / 4,49	58 (44)	95 (72)	134 (102)	190 (144)	261 (198)	342 (256)
5 / 5,61	71 (54)	115 (87)	163 (124)	230 (175)	312 (237)	407 (309)
6 / 6,73	84 (64)	135 (103)	192 (146)	269 (204)	363 (276)	472 (359)
7 / 7,85	97 (74)	155 (118)	221 (168)	308 (234)	415 (315)	538 (409)
8 / 8,98	109 (83)	176 (134)	250 (190)	348 (264)	466 (354)	603 (458)
9 / 10,10		196 (149)	279 (212)	387 (294)	517 (393)	668 (508)
10 / 11,22		216 (164)	308 (234)	426 (324)	569 (432)	733 (557)
11 / 12,34			337 (256)	465 (353)	620 (471)	798 (606)
12 / 13,46			365 (277)	505 (384)	672 (511)	863 (656)
13 / 14,59			394 (299)	544 (413)	723 (549)	928 (704)
14 / 15,71			423 (321)	583 (443)	775 (589)	994 (755)
15 / 16,83					826 (628)	1059 (805)
16 / 17,95						1124 (854)
WYSOKOŚĆ DACHU - Hd [m]						
	1,22	1,55	1,84	2,14	2,46	2,81
WYSOKOŚĆ LEJA - HL [m]						
	2,80	3,20	3,55	3,97	4,49	4,87

* przybliżona wartość dla pszenicy o wilgotności 14% i gęstości 0,76 t/m3

FSL 50° WITH OPEN HOPPER

Ilość carg / Wysokość części walcowej h[m]	OBJĘTOŚĆ [m3] / (ŁADOWNOŚĆ [ton])					
	TYP SILOSU / ŚREDNICA - D [m]					
	FSL 3,8	FSL 4,8	FSL 5,7	FSL 6,7	FSL 7,6	FSL 8,6
	3,82	4,78	5,73	6,68	7,63	8,60
2 / 2,24	35 (27)					
3 / 3,37	48 (36)	80 (61)	114 (87)			
4 / 4,49	61 (46)	100 (76)	143 (109)	204 (155)	281 (214)	371 (282)
5 / 5,61	74 (56)	120 (91)	172 (131)	243 (185)	332 (252)	437 (332)
6 / 6,73	86 (65)	140 (106)	201 (153)	283 (215)	384 (292)	502 (382)
7 / 7,85	99 (75)	161 (122)	229 (174)	322 (245)	435 (331)	567 (431)
8 / 8,98	112 (85)	181 (138)	258 (196)	361 (274)	487 (370)	632 (493)
9 / 10,10	125 (95)	201 (153)	287 (218)	401 (305)	538 (409)	697 (530)
10 / 11,22		221 (168)	316 (240)	440 (334)	589 (448)	762 (579)
11 / 12,34		241 (183)	345 (262)	479 (364)	641 (487)	827 (629)
12 / 13,46		262 (199)	374 (284)	519 (394)	692 (526)	893 (679)
13 / 14,59			403 (306)	558 (424)	744 (565)	958 (728)
14 / 15,71			432 (328)	597 (454)	795 (604)	1023 (778)
15 / 16,83					847 (644)	1088 (827)
16 / 17,95					899 (683)	1153 (876)
17 / 19,07					943 (717)	
WYSOKOŚĆ DACHU - Hd [m]						
	1,22	1,55	1,84	2,14	2,46	2,81
WYSOKOŚĆ LEJA - HL [m]						
	3,42	4,00	4,49	5,11	5,64	6,38

* przybliżona wartość dla pszenicy o wilgotności 14% i gęstości 0,76 t/m3

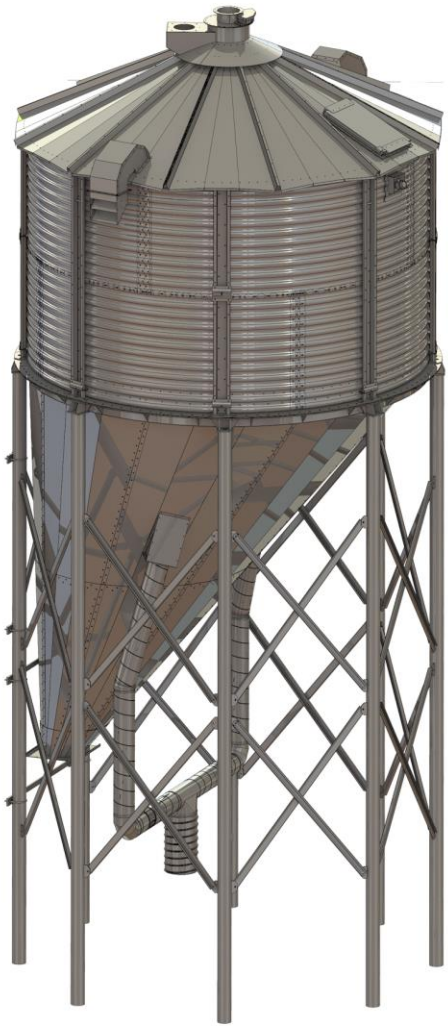


SILO WITH ASYMMETRIC HOPPER

It provides all the same functions described for the hooper silos. Additionally, it has features such as:

- ✓ Sharp angle of the hopper allows free discharging of the bulk material from the silo, which is viscous and has a high angle of discharging.
- ✓ Due to the asymmetric angle of the hooper, it is possible to directly fill with a short technological path of an appropriate point.

- The offer includes the silo with a variable angle of the hooper: from 50° to 90°
- Diameter from 2.9m to 3.8m.
- Capacity from 14 to 87 tons.
- Made of galvanised corrugated steel sheet.
- The whole is screwed with screws of hardness of 8.8.
- The silos of this type do not have side hatches.
- Safe and free service is guaranteed by ladders and service platforms.



Ilość carg / Wysokość części walcowej h[m]	OBJĘTOŚĆ [m3] / (ŁADOWNOŚĆ [ton])	
	TYP SILOSU / ŚREDNICA - D [m]	
	FSL 2,9	FSL 3,8
	2,86	3,82
1 / 1,12		24 (18)
2 / 2,24	19 (14)	37 (28)
3 / 3,37	26 (20)	50 (38)
4 / 4,49	34 (26)	63 (48)
5 / 5,61	41 (31)	76 (58)
6 / 6,73	48 (36)	88 (67)
7 / 7,85		101 (77)
8 / 8,98		114 (87)
WYSOKOŚĆ DACHU - Hd [m]		
	0,83	1,15
WYSOKOŚĆ LEJA - HL [m]		
	4,21	5,45
* przybliżona wartość dla pszenicy o wilgotności 14% i gęstości 0,76 t/m3		

FEED SILO 60°

They are intended for storage of feed or other bulk material with low own density. They are perfect as long-term and short-term warehouses of grain. Discharge in a form of a hooper allows to quickly discharge the silo.
There is a choice of silos of an angle of the hooper: 60°.

- Diameter from 1.9m to 2.9m.
- Capacity from 5 to 22 tons.
- It is made of galvanized steel sheet with galvanisation thickness 275 g/m^2 (on request: 450 g/m^2 and 600 g/m^2, Galfan coating with addition of 5 % of aluminium or Magnelis).
- The whole is screwed with screws of hardness

Ilość carg / Wysokość części walcowej h[m]	OBJĘTOŚĆ [m3] / (ŁADOWNOŚĆ [ton])	
	TYP SILOSU / ŚREDNICA - D [m]	
	FSL 1,9	FSL 2,9
	1,91	2,86
1 / 1,12		12 (8)
2 / 2,24	8 (5)	19 (12)
3 / 3,37	11 (7)	27 (18)
4 / 4,49	14 (9)	34 (22)
WYSOKOŚĆ DACHU - Hd [m]		
	0,51	0,83
WYSOKOŚĆ LEJA - HL [m]		
	2,75	3,58
* przybliżona wartość dla paszy o gęstości 0,65 t/m3		

Standard equipment of the silo:
1.Silo roof
3.Galvanised roof hatch
5.Galvanised, bearing pillars of the silo
6.Side lining of the silo - galvanised, corrugated construction steel
7.The silo hooper - steel galvanised structure
8.Set of bolts, nuts and mounting washers of 8.8 class
9.Set of anchors mounting the silo to the ground
10.Sealing for galvanised steel sheets
11.Foundation guidances under the chosen silo

Additional equipment of the silo:
12.Filling sensor
15.External ladder with a hoop stick
16.Resting platforms
17.Gallery with platforms under filling transport
23.Electric, pneumatic or manual under-silo gate valve

1.SILO ROOF - 34°

A part of the silo used to protect the content of the silo chamber against external factors.

- It is made of galvanized steel sheet with galvanisation thickness 275 g/m^2 (on request: 450 g/m^2 and 600 g/m^2, Galfan coating with addition of 5 % of aluminium or Magnelis).
- It is possible to execute the roof of galvanized steel sheet coated with polyester coating in gloss of DX51 with275 with different colours.
- The whole is screwed with screws of hardness of 8.8.
- For the silos diameter of 9.6 m we use self-supporting roofs. For this reason, the silos are lighter and thus cheaper.
- As standard, we use vents eliminating water condensation under a roof in case of temperature differences inside and outside the silo.
- We have developed a system of ventilation of the silo, which simultaneously cools and aerates grain.
- **A new feature involves the increased angle of the roof (34°).** The advantages of this solution are:
  - No lying snow in winter and the lack of dangerous overhangs and icy covers.
  - Increased capacity of the silos.

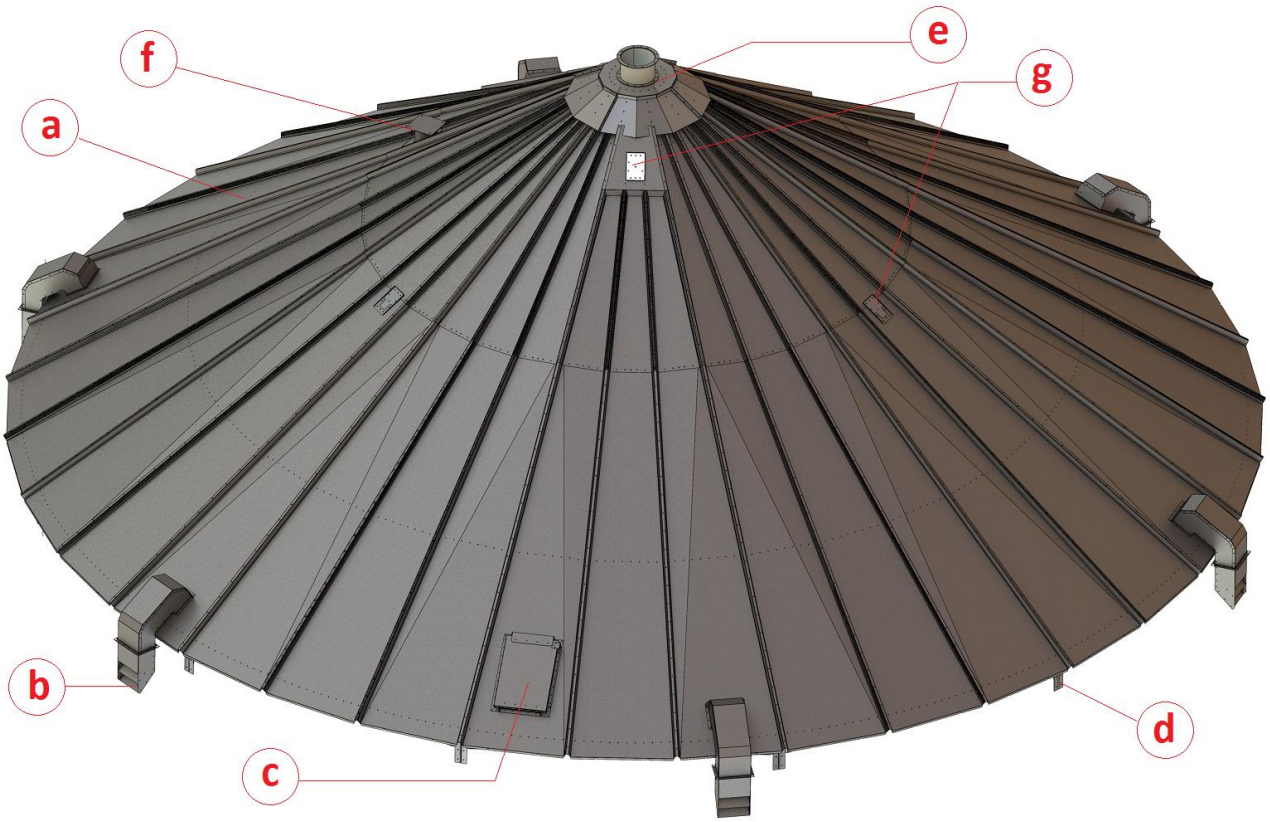
Standard equipment of the silo roof:

a.Silo roof steel sheets
b.Roof vents
c.Galvanised roof hatch
d.Roof frame (from diameter of 10.5m)
e.Roof node with filling
f.Base under the fan
g.Handle under the temperature probe
h.Set of bolts, nuts and mounting washers of 8.8 class
i.Sealing for galvanised steel sheets

Additional equipment of the silo roof:

j. Roof electric fan
k. Air supply system for the silos line
l. Roof stairs
m. Sharp-pillar disperser
n. Temperature probe with the measurement system

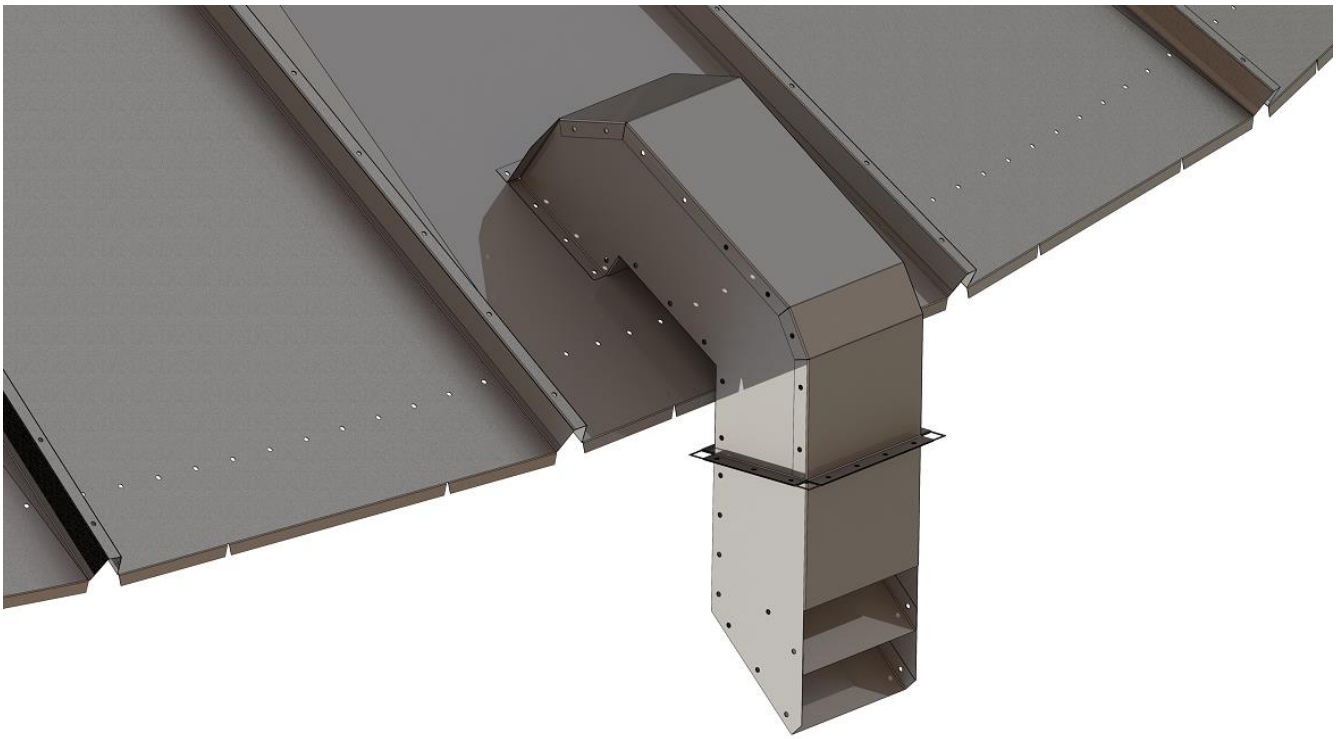
DACHY SILOSÓW (TYP, ŚREDNICA, WYSOKOŚĆ)							
TYP SILOSU / ŚREDNICA - D [m]							
FSL 1,9	FSL 2,9	FSL 3,8	FSL 4,8	FSL 5,7	FSL 6,7	FSL 7,6	FSL 8,6
1,91	2,86	3,82	4,78	5,73	6,68	7,63	8,60
SAMONOŚNE							
WYSOKOŚĆ DACHU - Hd [m]							
0,51	0,83	1,15	1,47	1,84	2,11	2,45	2,71



2. ROOF VENTS

They are used to eliminate water condensation under the roof in case of temperature differences inside and outside the silo.

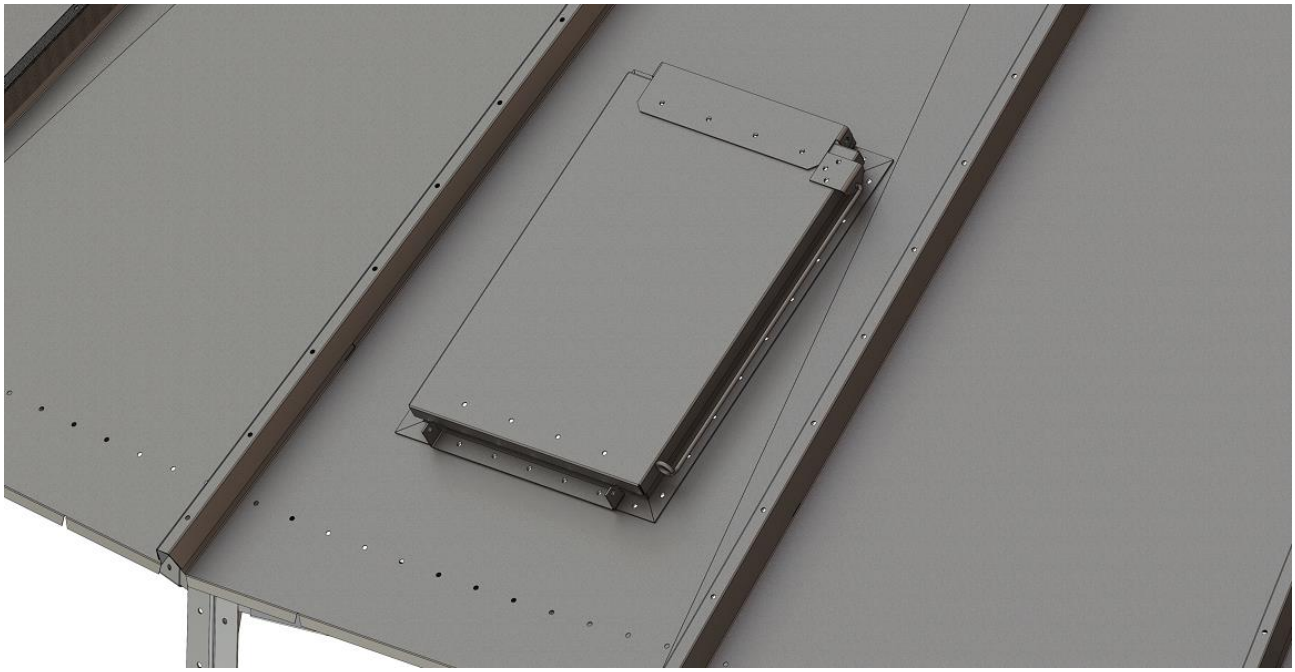
- They are made of galvanized steel sheet with galvanisation thickness 275 g/m^2.
- Made of steel sheet of 0.9mm.
- The whole is screwed with screws of hardness of 8.8.
- Depending on the size of the silo, the number of vents is increased.
- The special design prevents rain or snow from entering inside.
- It has additional protection (net) against birds.
- Simple structure.
- It is of compact structure.
- The element is light and small.
- Installation is very quick.



3. ROOF HATCH

It is used to communicate or as a viewfinder. If necessary, one can enter and exit through it inside the silo. You can also look to see whether nothing happens inside the silo.

- They are made of galvanized steel sheet with galvanisation thickness 275 g/m^2.
- The whole is screwed with screws of hardness of 8.8.
- It is located on the silo roof.
- The special design prevents rain or snow from entering inside.
- It has a protection against opening.
- It has a rod to hold the open flap.
- Simple structure.
- It is of compact structure.
- The element is light and small.
- Installation is very quick.

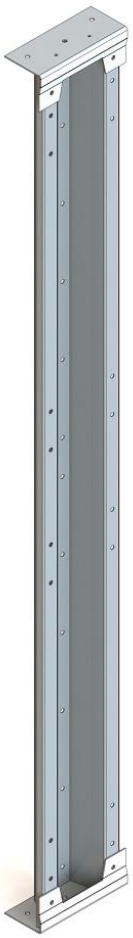


4. SIDE HATCH

It is used to communicate or as a viewfinder. If necessary, one can enter and exit through it inside the silo. You can also look to see whether nothing happens inside the silo (it is not possible when the silo is filled).

- They are made of galvanized steel sheet with galvanisation thickness 275 g/m^2.
- Made of steel sheet of 2-3mm.
- The whole is screwed with screws of hardness of 8.8.
- It is in the 2nd cargo from the bottom of the silo.
- The special design prevents rain or snow from entering inside.
- Double door additionally protects against uncontrolled entry to the silo when it is filled.
- Simple structure.
- It is of compact structure.
- The element is light and small.
- Installation is very quick.
- Not all silos have the side hatch. They are not present in the feed and forwarding silos.

5. BEARING PILLARS OF THE SILO



They are used as bearing supports for the chamber and the roof of the silo. They move the vertical forces of gravity of the structure and a variable weight, i.e. bulk material.

- It is made of galvanized steel sheet with galvanisation thickness 275 g/m^2 (on request: 450 g/m^2 and 600 g/m^2, Galfan coating with addition of 5 % of aluminium or Magnelis).
- Made of steel sheet of 2-3mm.
- The whole is screwed with screws of hardness of 8.8.
- Their shape has been carefully optimized.
- The bearing pillars are stacked on the so-called brick. This is to strengthen the connection places. The structure is more rigid.
- Depending on the height and diameter of the silo, the bearing pillars change their thickness accordingly. Each silo has thoroughly chosen vertical pillars.
- Simple structure.
- The element is light and small.

6. SILO SIDE LINING

It is used as bearing supports for the chamber and the roof of the silo. They move the vertical forces of gravity of the structure and a variable weight, i.e. bulk material.

- It is made of galvanized steel sheet with galvanisation thickness 275 g/m^2 (on request: 450 g/m^2 and 600 g/m^2, Galfan coating with addition of 5 % of aluminium or Magnelis).
- Made of steel sheet of 0.75-2.5mm.
- The whole is screwed with screws of hardness of 8.8.
- Their shape has been carefully optimized.
- Side surfaces are stacked on the so-called brick. This is to strengthen the connection places. The structure is more rigid vertically, and thus extends the life of the silo.
- Depending on the height and diameter of the silo, the cargos change their thickness accordingly. Each silo has thoroughly chosen side surfaces (side steel sheets).
- Application of corrugated steel sheet provides structural strength, guaranteeing a longer life of the silo and less heating up of the silo in summer by breakage of direct sunlight.

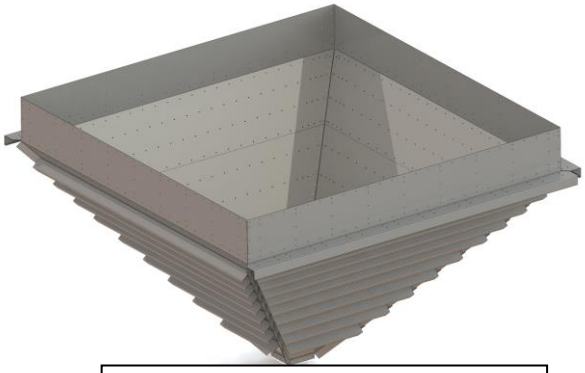
7. SILO HOOPER

A part of the silo for:
- Easier and quicker discharging the silo. There is no need for additional transport to rake grain and there is a need to clean the silo inside, because grain in wholly, gravitationally discharged.
- Keep grain inside the silo.
- Protects the contents of the chamber against external conditions.

There is a choice of silos of different angles of the hooper: 40°, 50° and 60° (optional).

- Diameter from 1.9m to 8.6m.
- It is made of galvanized steel sheet with galvanisation thickness 275 g/m^2 (on request: 450 g/m^2 and 600 g/m^2, Galfan coating with addition of 5 % of aluminium or Magnelis).
- The whole is screwed with screws of hardness of 8.8.
- Ventilation of the silo simultaneously cools and aerates grain.
- There are the following hoopers:
  - on the basis of open wheels
  - on the basis of covered wheels (with internal basket)
  - on the basis of asymmetrical wheels
  - on square basis

Hooper on the basis of open



Hooper on square basis

Hooper on the basis of covered

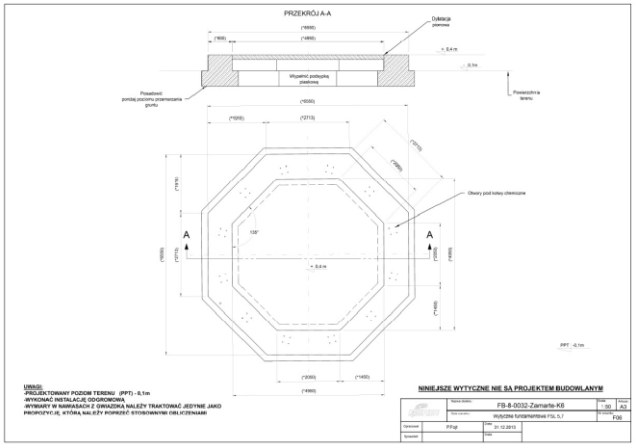
Hooper on the basis of asymmetrical

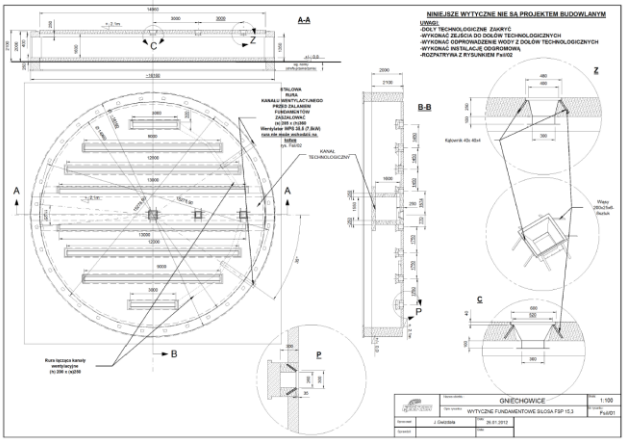
LEJE SILOSÓW (TYP, ŚREDNICA, WYSOKOŚĆ)							
TYP SILOSU / ŚREDNICA - D [m]							
FSL 1,9	FSL 2,9	FSL 3,8	FSL 4,8	FSL 5,7	FSL 6,7	FSL 7,6	FSL 8,6
1,91	2,86	3,82	4,78	5,73	6,68	7,63	8,60
WYSOKOŚĆ LEJA 40° - HL [m]							
-	-	2,80	3,20	3,55	3,97	4,49	4,87
WYSOKOŚĆ LEJA 50° - HL [m]							
-	-	3,42	4,00	4,49	5,11	5,64	6,38
WYSOKOŚĆ LEJA 60° - HL [m]							
2,75	3,58	OPCJONALNIE					

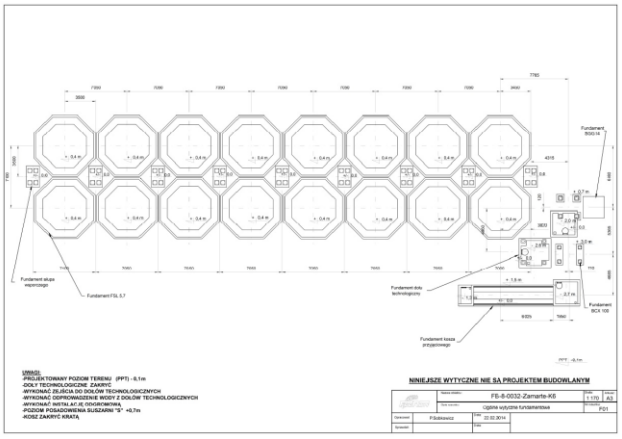
11. FOUNDATION GUIDELINES UNDER THE SILO

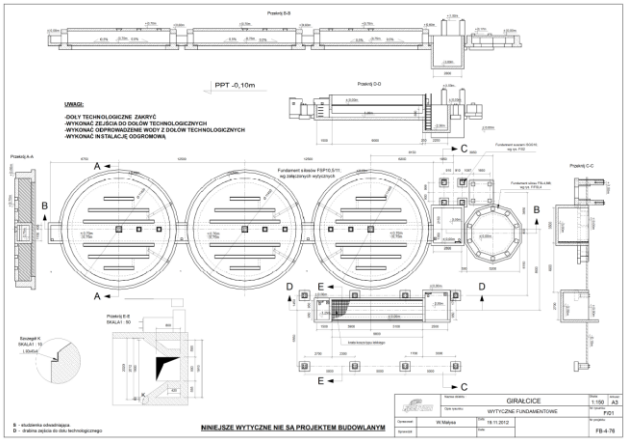
This is 2D figure showing the foundations of the silo. These are the guidelines showing how the foundation should look. This is a very large help for designers, who develop the building permit design.
Please note that these are only the guidelines under the foundation of the silo, and not the approved design.
For the building permit design, always develop the geological documentation concerning the ground area where the object will be placed.
In addition to the guidelines for the foundation, the customer will be provided with:
- conceptual figures
- the guidelines for the foundations under all products and the whole object
- the object technological chart
- the object installation figures

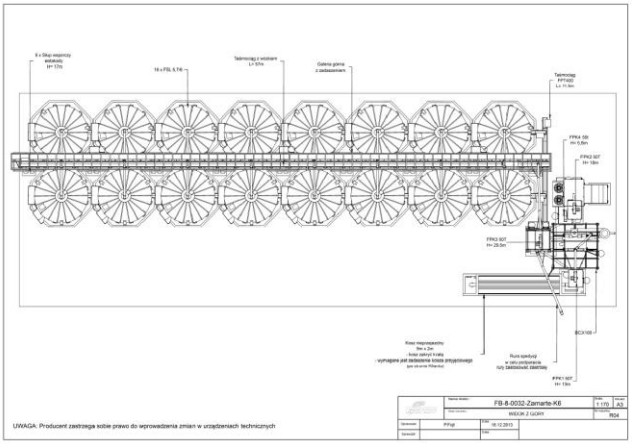
In addition, we can accept the order for development of the building permit design.

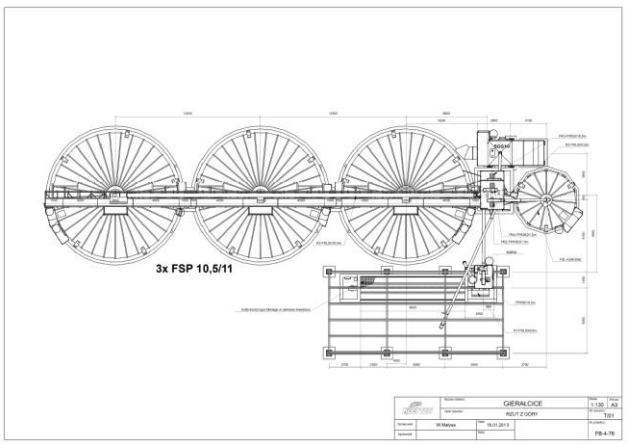




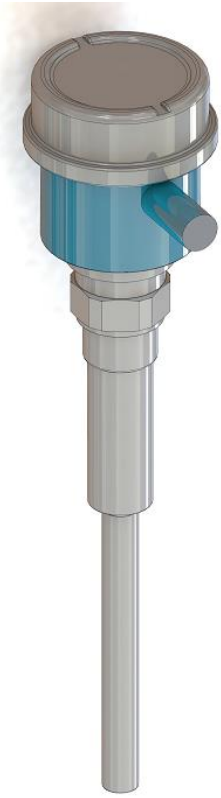






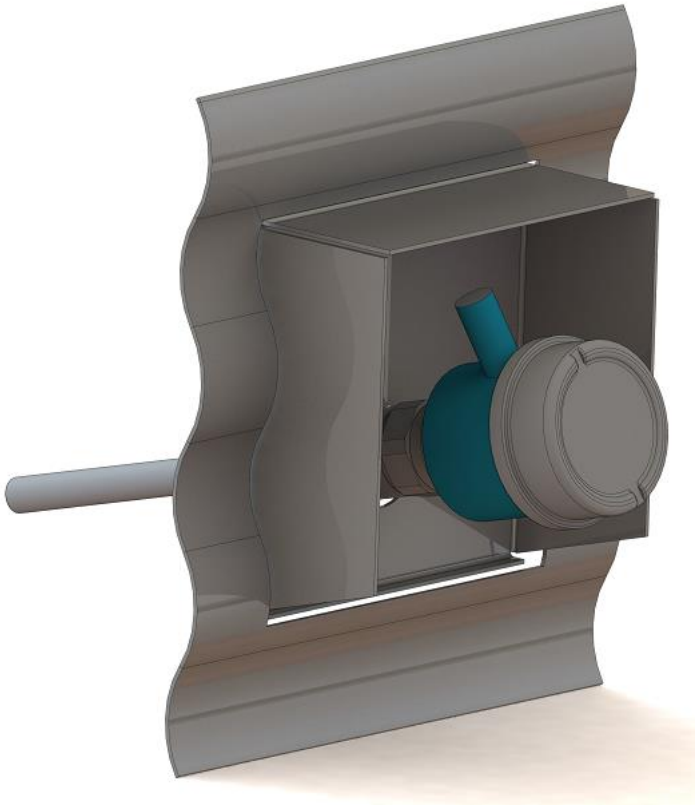


12. FILLING SENSOR



It is an additional equipment element.
The sensor transmits information to the control system with a maximum filling of the tank. It makes sure that the silo is not overfilled and thus does not collapse.

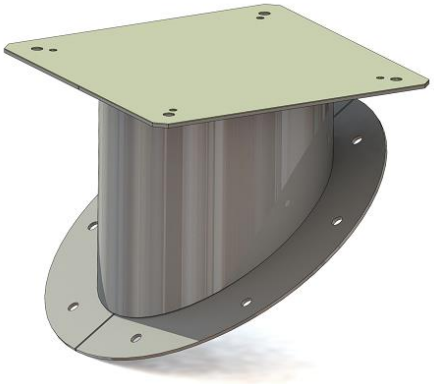
- The special design prevents rain or snow from entering inside.
- It is of compact structure.
- The element is light and small.
- Each silo has specifically designated installation place. It is usually installed on the 1st cargo from above at the roof hatch.
- It is possible (on special order) to install several sensors of max. grain filling. Then, additional communication is designed, and the silo that has additional inspection holes is designed.

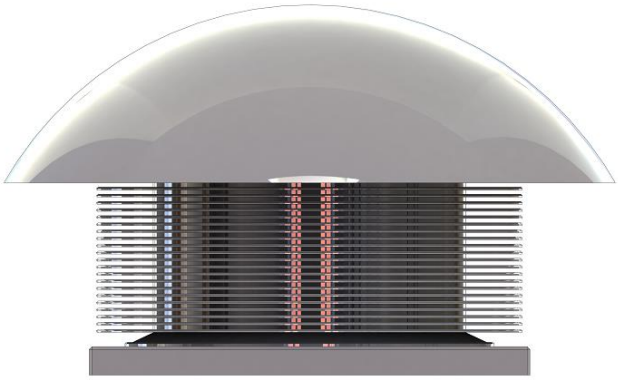


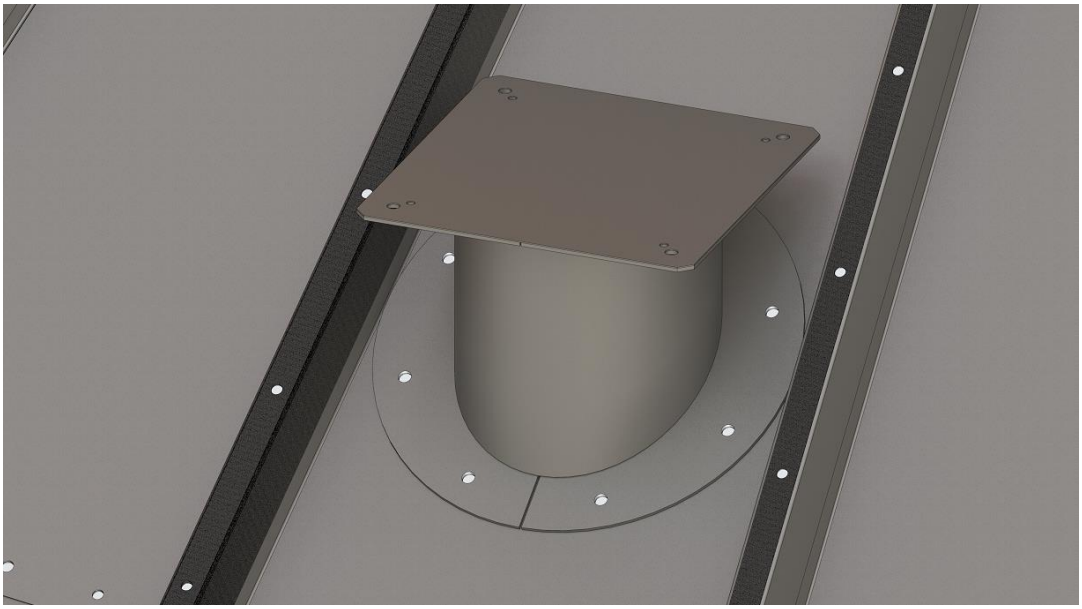
13.ROOF ELECTRONIC FAN

It is an additional equipment element.
It is used to discharge excess of moisture in the silo during the discharging and filling. In addition, it supports operation of the ventilators. It is used to eliminate water condensation under the roof in case of temperature differences inside and outside the silo. The fan is also used to vent, cool and aeration of grain.

- Energy consumption from 0.05 to 4.0kW
- Smoke exhausting fan
- Low noise level to 65dB
- The special design prevents rain or snow from entering inside.
- It is of compact structure.
- The element is light and small.
- Installation is very quick.
- It is installed to the base of the fan.



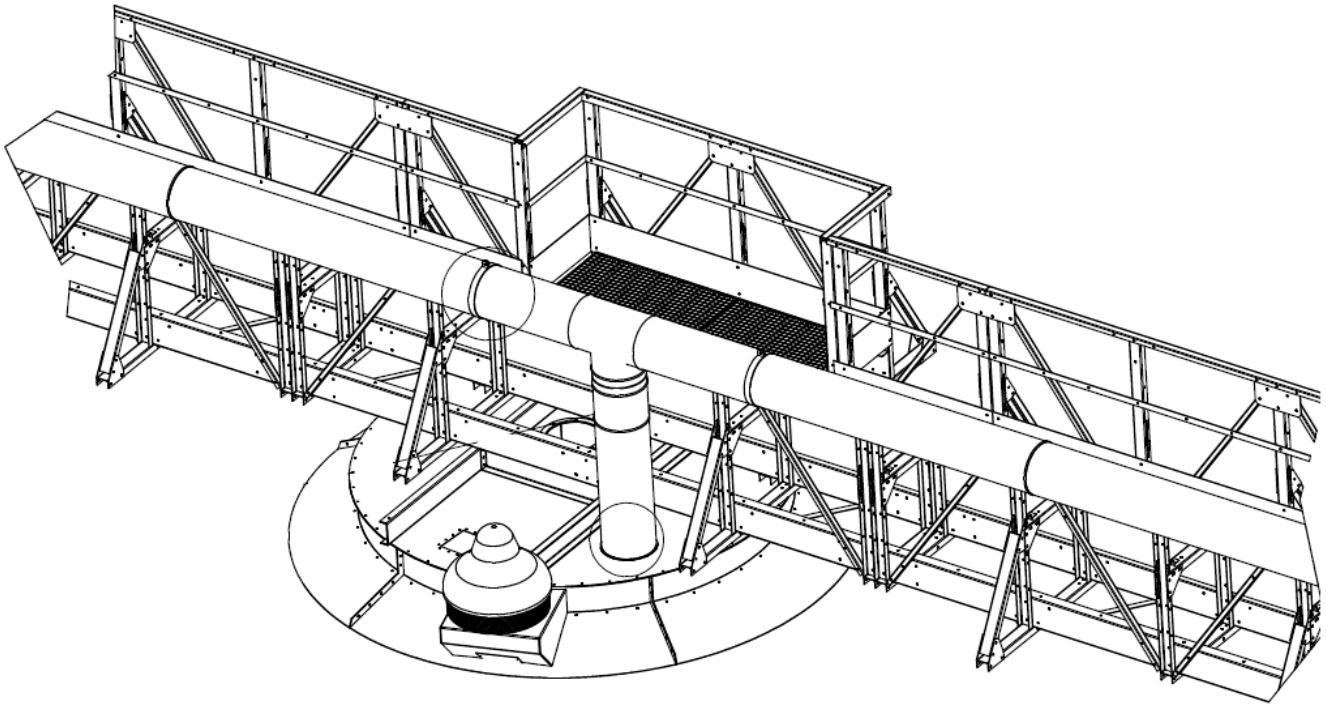


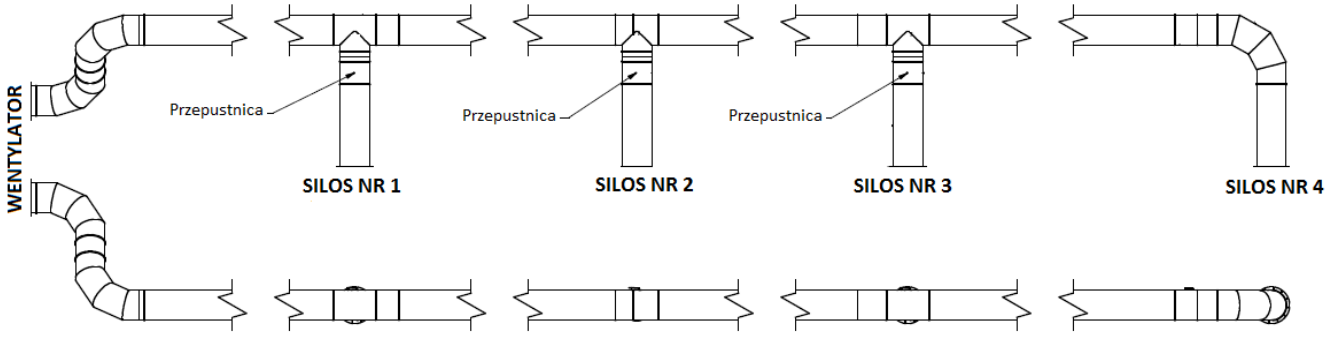


14.AIR SUPPLY SYSTEM FOR THE SILOS LINE

It is an additional equipment element.
This is a supporting elements for the electronic fans operations in large containers. It is used to discharge excess of moisture in the silo during the discharging and filling. In addition, it supports operation of the ventilators. It is used to eliminate water condensation under the roof in case of temperature differences inside and outside the silo. The fan is also used to vent, cool and aeration of grain.

- Installation is very quick.



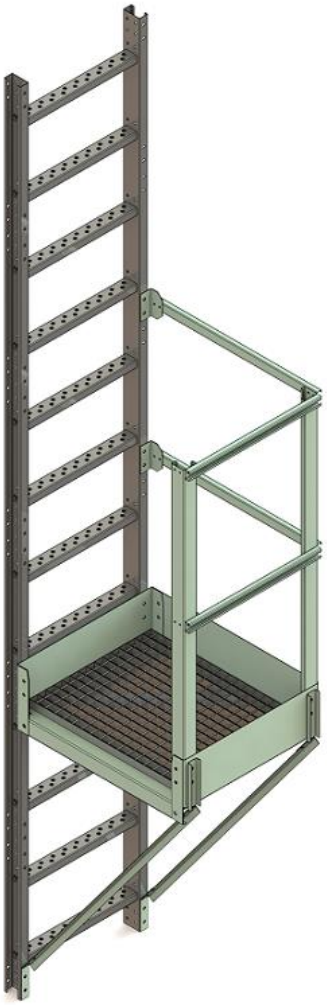


15. EXTERNAL LADDER WITH A HOOP STICK

It is an additional equipment element.
It is used to communicate. This is a part of the communication line from the foundations to the above silo gallery. The line is usually completed with a platform. For the safety reasons, there is no longer connected ladders than 10m.

- Installation is very quick.
- It is installed to a special cross member, which is then connected to the bearing pillars.
- Each silo has thoroughly chosen communication line.
- The steps have special imprints to prevent from slipping.
- It is rigid.

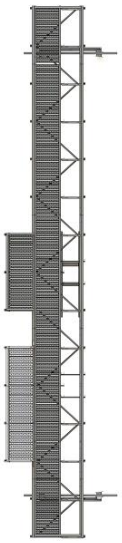
16. RESTING PLATFORMS



It is an additional equipment element.
They are used to communicate. These are the elements of the communication line, which are used to temporarily rest during entering and exiting the silos. In addition, they are used as a place for easy access to the strategic components in the tank. For the safety reasons, the platforms are distant from one another within no more than 10m.

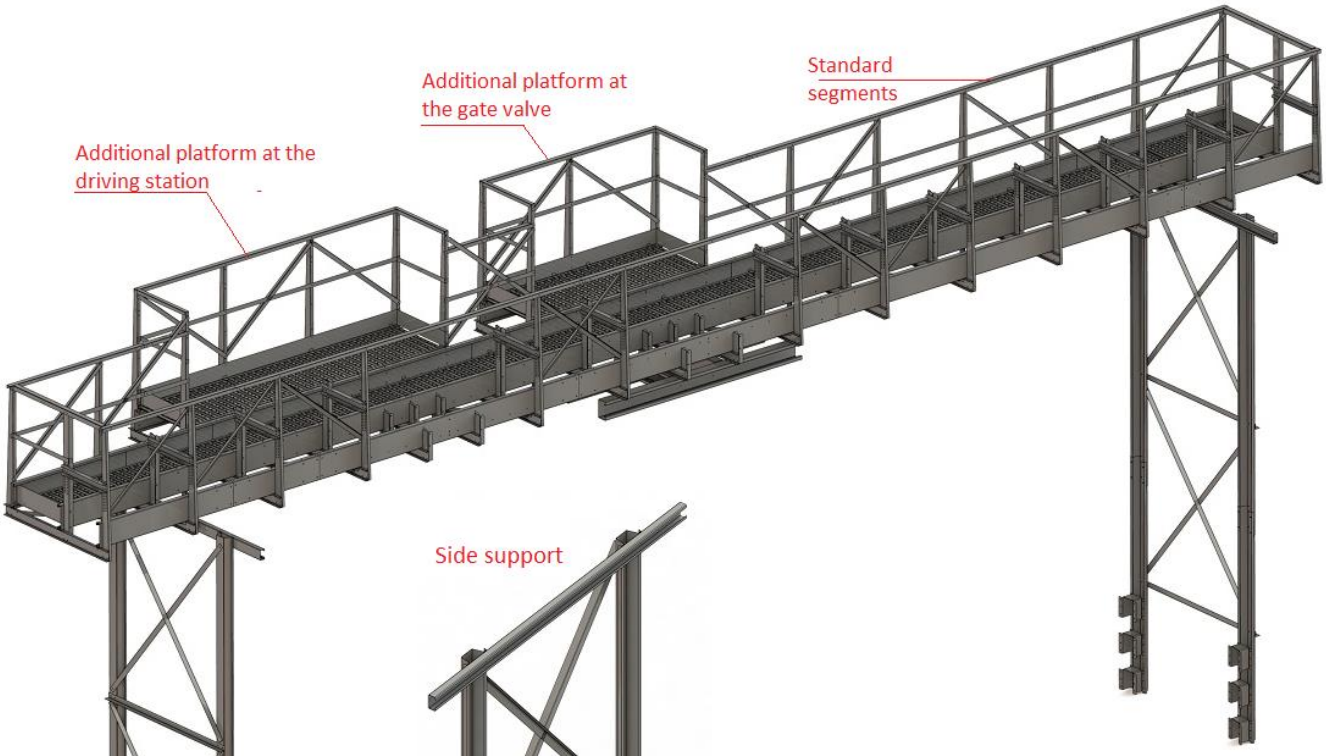
- Installation is very quick.
- They are installed to the bearing pillars of the silo, ladders or side surfaces.
- Each silo has thoroughly chosen communication line.
- They are rigid.
- The bearing part of the platform is covered with Wema grate.

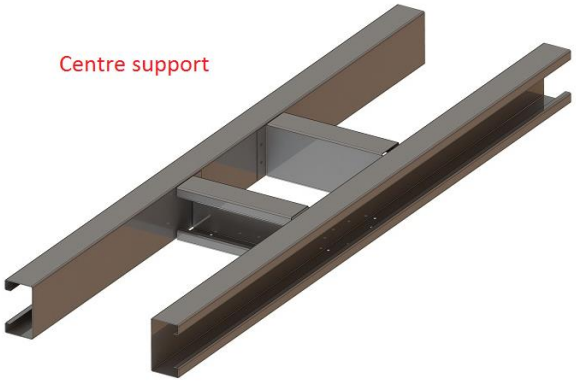
17. OVER-SILO GALLERY WITH SUPPORTS



It is an additional equipment element.
It is used to communicate. These are the elements of the communication line under the silo. This is the extended platform used to access the service to the tank filling transport.

- The gallery supports are installed to the bearing pillars of the silo.
- The gallery is supported by 2 side supports and 1 central support, which is located in the centre of the silo and supported by the roof node.

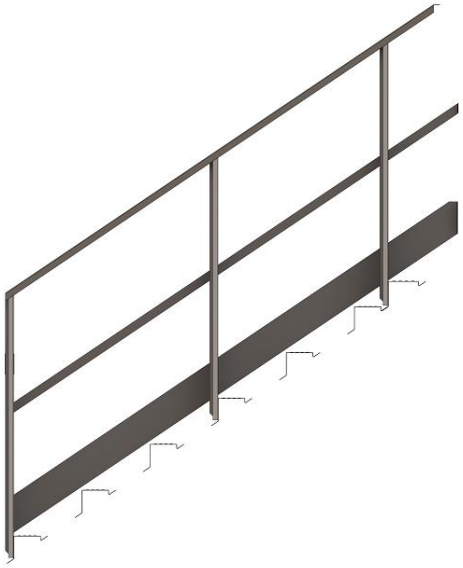


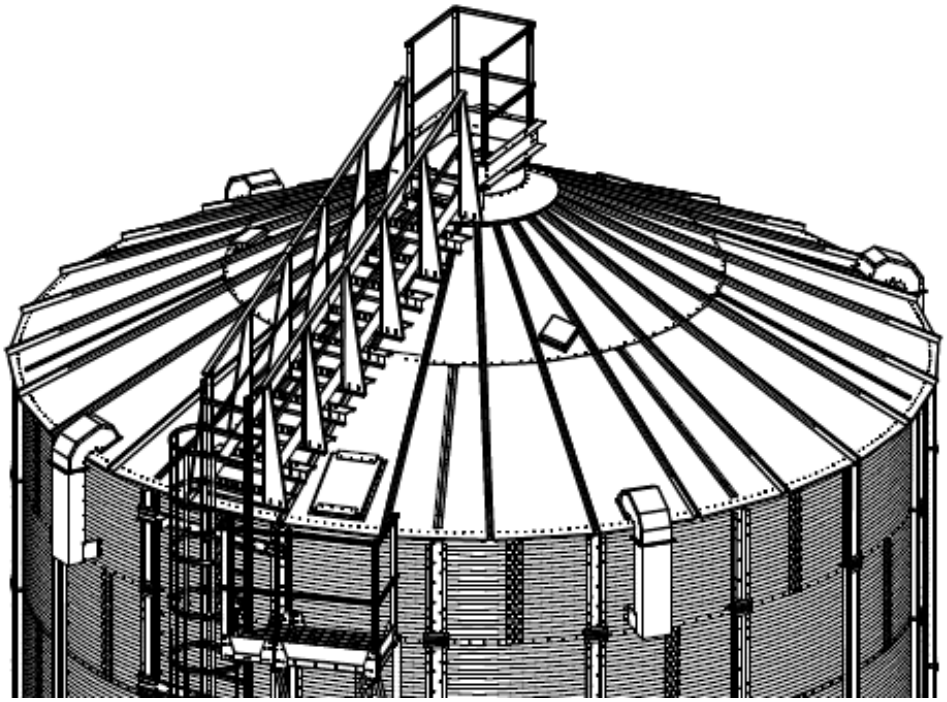


18. ROOF STAIRS

It is an additional equipment element.
It is used to communicate. This is th communication line from the upper landing to th silo filling. It is usually used when the project doe not include the over-silo gallery.

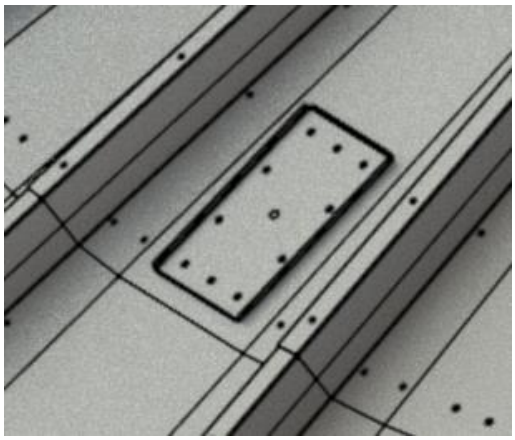
- Installation is very quick.
- It is installed to the steel sheets of the roo lining.



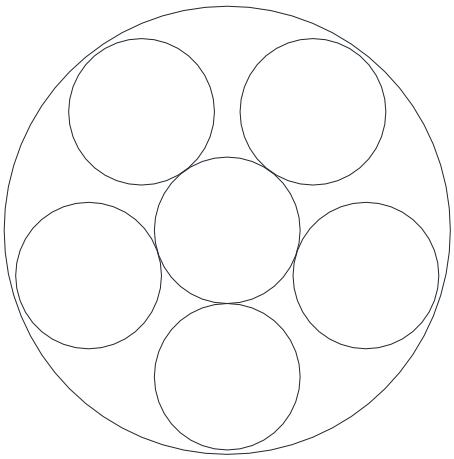


19. TEMPERATURE PROBE WITH THE MEASUREMENT SYSTEM

It is an additional equipment element.
It is used to measure the temperature inside the silo in the bulk material.



- Range of one probe is a sphere with a diameter of 5 m.
- Each silo has thoroughly chosen specific number of probes inside the silo. Depending on the height and diameter, there are properly prepared handles on the roof of the silo and the length of the probes.
- The special design prevents rain or snow from entering inside.
- If higher forces act on the probe than the set ones, the handle will break. This is additional protection for the silo roof.



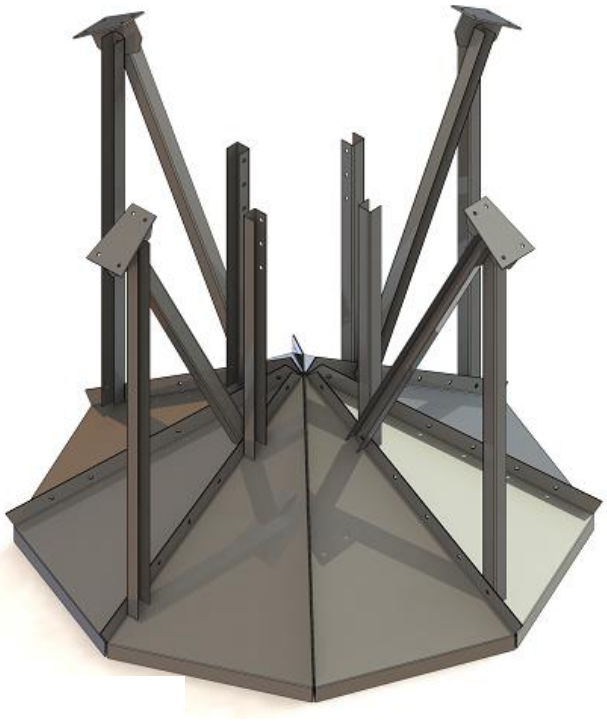
E.g. Flat bottomed silo 15.3m:

NUMBER OF CARGOS ON HEIGHT	NUMBER OF CENTRAL PROBES	LENGTH OF CENTRAL PROBES	NUMBER OF INTERMEDIATE PROBES	LENGTH OF INTERMEDIATE PROBES
[pc.]	[pc.]	[m]	[pc.]	[m]
8	1	11.3	5	9.1
9	1	12.4	5	10.2
10	1	13.6	5	11.4
11	1	14.7	5	12.5
12	1	15.8	5	13.6
13	1	16.9	5	14.7
14	1	18.1	5	15.9
15	1	19.2	5	17.0
16	1	20.3	5	18.1
17	1	21.4	5	19.2
18	1	22.5	5	20.3
19	1	23.7	5	21.5
20	1	24.8	5	22.6
21	1	25.9	5	23.7

20. SHARP-PILLAR DISPERSER

It is an additional equipment element.
It is used to evenly disperse bulk material inside the silo. In addition, it prevents from breaking grain hull to a certain height of the silo. This is because the material dissipates freely and is not coming out in one place, and beats on collected grain with full mass.

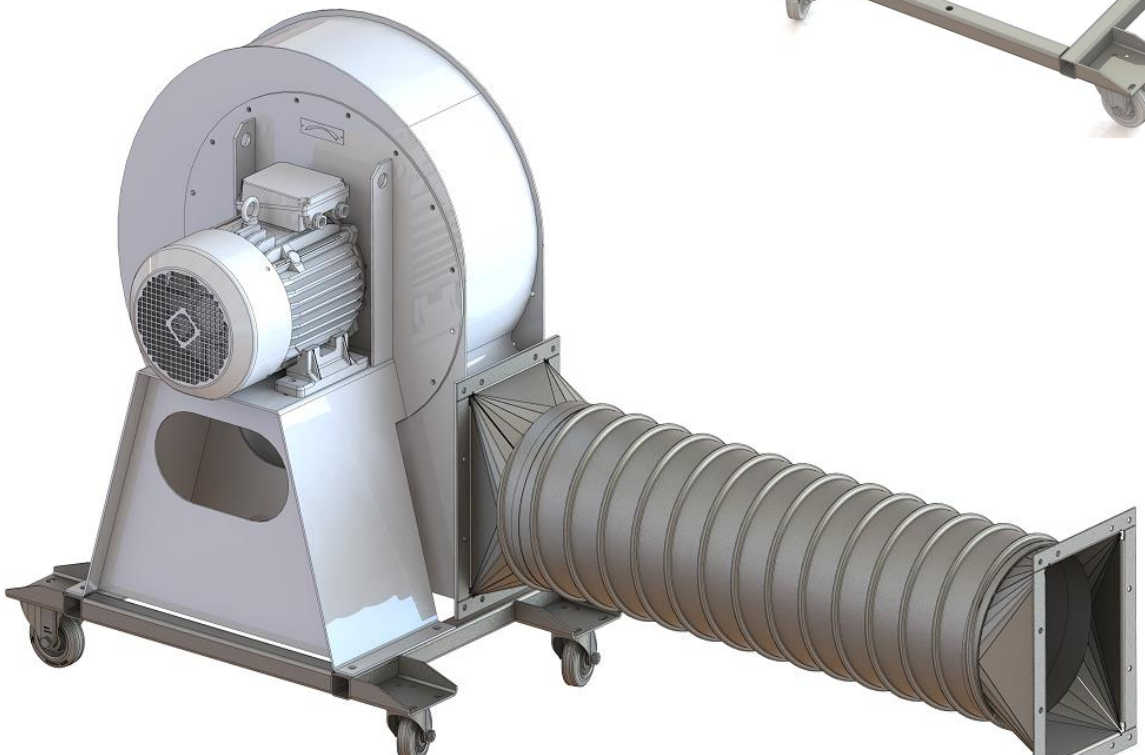
- The element is light and small.
- Installation is very quick.
- It is installed to the roof node.



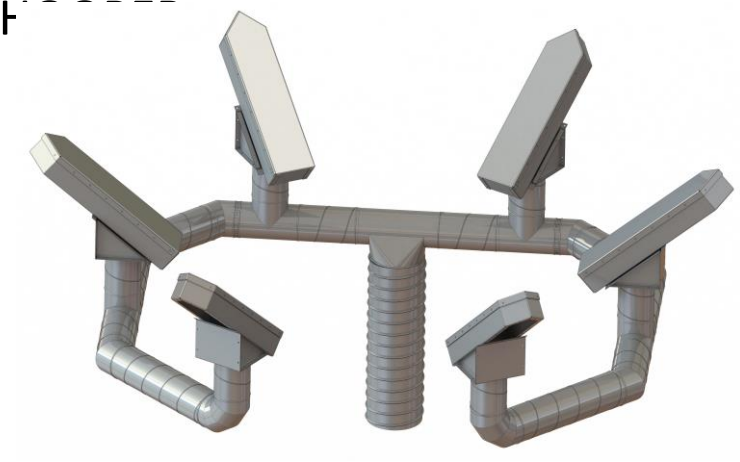
21. LOWER FAN TO VENTILATE GRAIN WITH MOVING TRUCK

It is an additional equipment element.
It is used to vent, aeration of the bulk material accumulated in the silo. In addition, it helps to remove moisture from grain.

- Power from 3.0 to 15kW.
- Air supplying fan
- The temperature of the flowing agent: from -40^{o} to 80$^{o.}$
- The special design prevents rain or snow from entering inside.
- It is of compact structure.
- The element is light and small.
- It is movable (due to a truck), which allows to use it to vent other silos.
- The connection pipe is flexible, so it is possible to connect the fan.
- Installation is very quick.
- It is installed to the fan connection embedded into the silo hooper. In order to make the connection tight, fasten the compression band correctly.

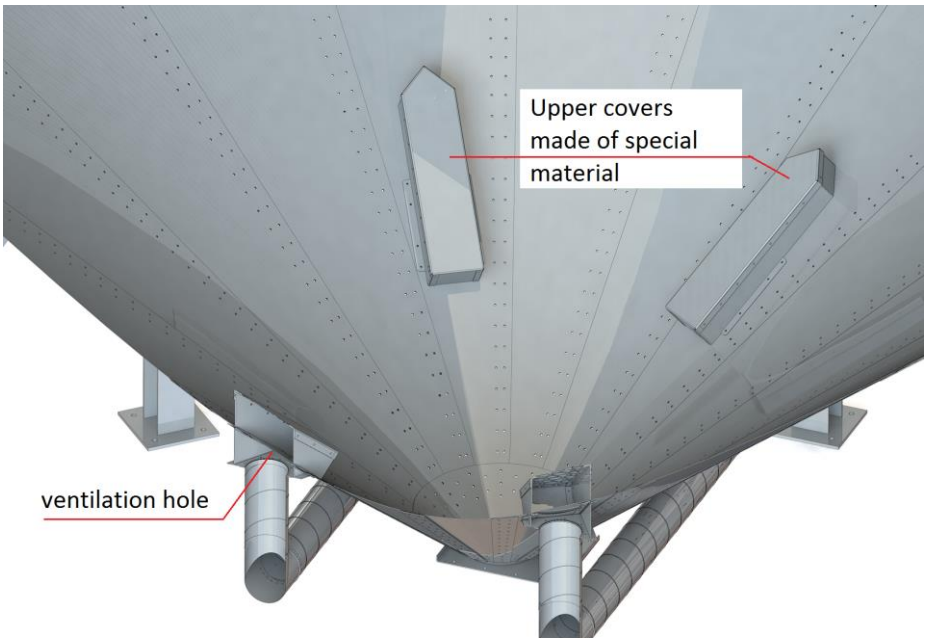


22. AIR SUPPLY OF THE SILO H



It is an additional equipment element.
It is used to transport air inside the silo to ventilate, aerate and cool the bilk material in the silo. In addition, it helps to remove moisture from grain.

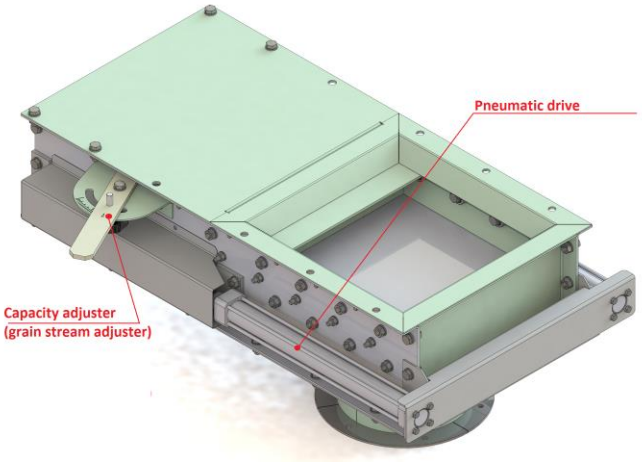
- The special design prevents from leaving grain or other bulk material outside the silo or entering into the air supplying system.
- The main connection pipe is flexible, therefore there are no problems with connecting the fan.
- It is installed to the silo hooper.
- The whole system is very light.



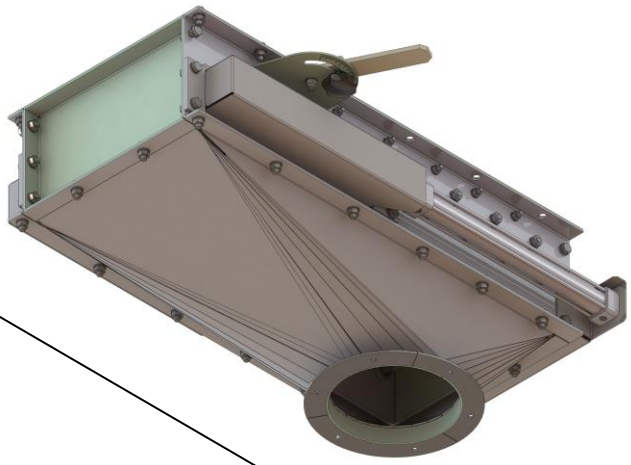
23. ELECTRIC, PNEUMATIC OR MANUAL UNDER-SILO GATE VALVE

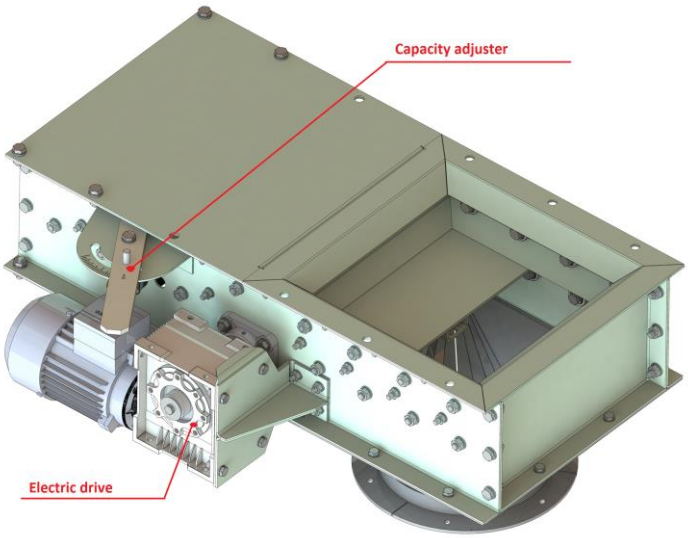
It is an additional equipment element.
It is used as a close on the draining devices, i.e. flat-bottomed and hopper silos. Feerum offers pneumatic, electrical and manual gate valves.

- Depending on capacity of the devices on the object, the gate valves are chosen with the corresponding discharging (fi 159, fi 219, fi 244, fi 324).
- The electric and pneumatic gate valves have additional adjustment of the grain stream, which also protects (e.g. against lack of current) and provides the possibility of manual closing.
- They are sealed due to a special structure.
- Easy opened gate valve due to a roller guide.
- The element is light and small.
- It is of compact structure.
- Installation is very quick.
- It is installed to discharge of the lower silo.

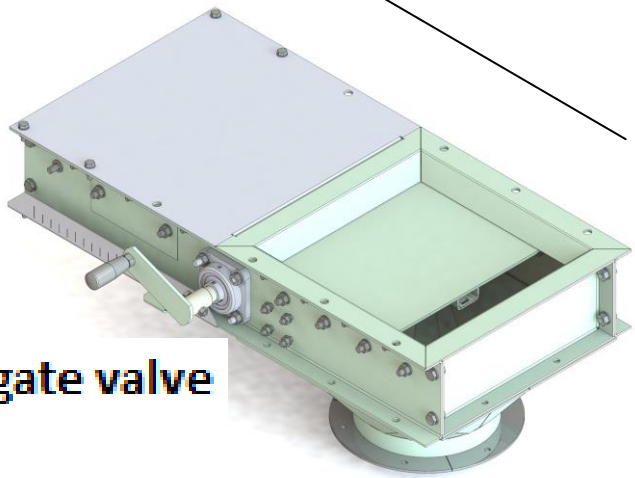


Pneumatic gate valve

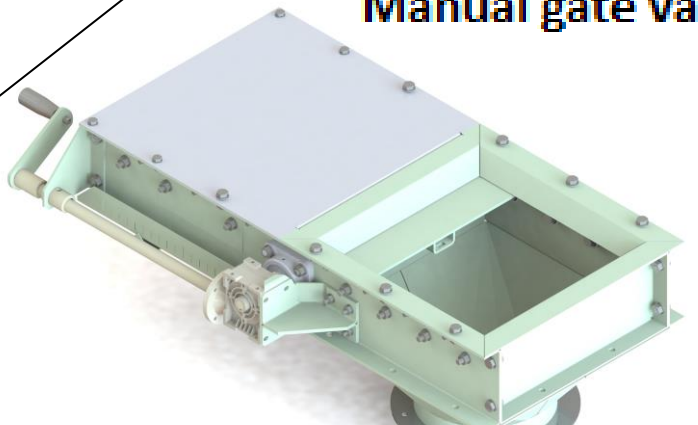




Electric gate valve



Manual gate valve



24. COMPUTER MONITORING SYSTEM

It is an additional equipment element.
It is a computer system used to monitor operation of a specific element or the whole object.
Ferrum standard control cabinets are produced based on the modern products by Eaton. In order to increase effectiveness of operation, the system is equipped with the program visualization.

29. COOLER TO GRAIN BLOWING

It is an additional equipment element.
It is used to vent, aeration of the bulk material accumulated in the silo. In addition, it helps to remove moisture from grain.

- The special design prevents rain or snow from entering inside.
- It is movable (due to wheels), which allows to use it to cool other silos.
- The connection pipe is flexible.
- Installation is very quick.
- It is installed to the fan. In order to make the connection tight, fasten the compression band correctly.