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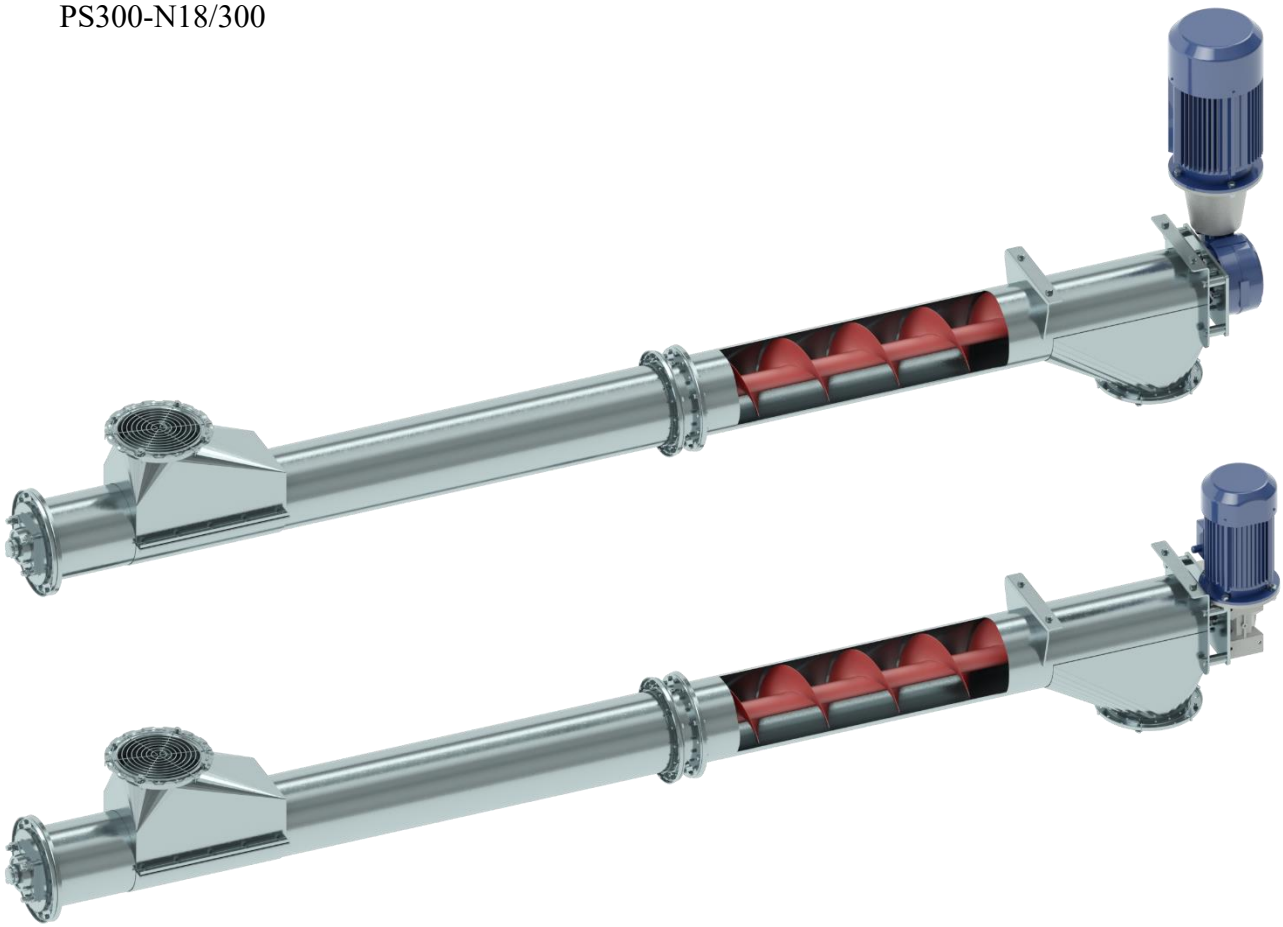
SCREW CONVEYOR PS300

Model: PS300-N7.5/200
PS300-N11/200
PS300-N11/300
PS300-N15/200
PS300-N15/300
PS300-N18/200
PS300-N18/300



OPERATING MANUAL (IO:PS300)

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Chapter I. General and introductory information

1. Introduction

The Operating Manual aims at acquainting the user with a correct operation of the purchased product. This Operating Manual contains practical guidelines that must be known to an operator of the screw conveyor system. **If any content of this Operating Manual is not understood by or is unclear for the user, please, contact the manufacturer or its representative.**

This operating manual forms an integral part of the product, and should be kept for further reference.

Before starting to operate screw conveyors, read this operating manual, and, in particular, the chapters concerning safety at work.

Each use of the device for purposes other than those specified in the operating manual will be treated as the misuse.
The manufacturer of the product shall not be held responsible for damages resulting from misuse. The user bears the sole risk related to the misuse. All and any unauthorised changes to the product design exclude the manufacturer's responsibility regarding any resultant damages.

Screw conveyors are high power electromechanical devices. Incorrect operation may cause fire, fatal electric shock, burning, or other severe injury.

The warning sign in the operating manual indicates that the special caution must be exercised because of the danger to people and possibility of product damage.

2. Safety

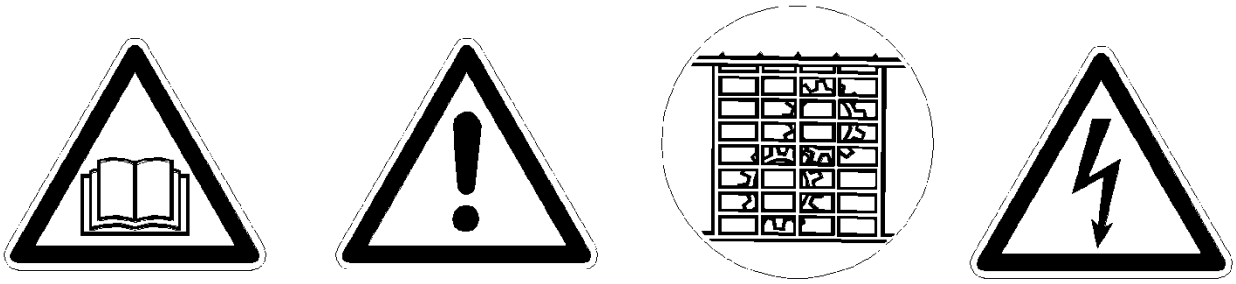
2.1. Basic safety rules

1. People employed to use or operate the screw conveyors, as well as people within the area of their operation are obliged to adhere to general OHS regulations.
2. The user is obliged to read and understand operating manuals for the screw conveyors and for all other auxiliary equipment, and to strictly adhere to them.
3. Before the device is started, check the location to which the grain will be transported (e.g. a silo) for presence of any people or animals.
4. In particular, the following is forbidden:
   - operation by any "third" persons, who are not familiar with the Operating Manual;
   - operation by any persons that are ill or intoxicated (with alcohol or narcotic drugs, etc.) or by minors.
5. The location of the conveyor work and its controllers should be secured against any access of children and unauthorised people.
6. A conveyor owner is obliged to provide it with detailed occupational health and safety instructions.
7. In the event of bad lighting conditions, a location where the conveyor is operated should be equipped with additional general lighting.
8. During its operation, the screw conveyor must be supervised at all times.
9. Conveyors and their surroundings should always be kept tidy and clean.
10. It is forbidden to switch on the conveyor without guards or to remove them during work.
11. An electric motor cannot be covered by any items. Before each starting up, remove accumulated dust from the motor. Ignoring above recommendations creates a risk of motor overheating or a fire.
12. The power supply system to which the conveyor is connected should be equipped with sufficient differential current and short-circuit protective devices, a PE protective cable, and voltage failure and phase sequence relays.

13. All components of the power supply system must be secured against any damage.
14. In the event of any power outage, turn the main switch into the “O” position and secure it with a padlock. Switch all devices cooperating with the conveyor off.
15. Design development, construction of a wiring system and the first test start-up of the conveyor must be performed by a person holding relevant licences, on a basis of guidelines provided in this operating manual.
16. Descriptions and diagrams of the wiring system provided in this operating manual represent general guidelines for development of a design for the wiring system by authorised people.
17. Any modifications of the above diagrams can only be made in such way that all protective functions of the devices specified in descriptions and diagrams are maintained.
18. At least once a year, the user should order a qualified electrician holding relevant licences to inspect all electric equipment components.
19. A power supply cable should not be twisted or exposed to a risk of cutting. Any damages pose a risk of electrical shock
20. The power supply cable must be routed in such way that it does not pose any other hazards.
21. The motor should be switched off by smoothly switching the switch to the position "O".
22. The user themselves shall equip the main switch with the padlock securing the devices against start-up by unauthorised people, as well as against an unintended start-up during maintenance operations.
23. The user is responsible for correct connection of power delivery points and their correct operation.
24. A location where the conveyor is operated must be used and maintained in a way preventing a fire, and it should be provided with fire extinguishing equipment, including a dry powder or carbon-dioxide extinguisher.
25. In the event of the fire:
    - evacuate people from the danger zone;
    - call the fire brigade;
    - disconnect the device from the power supply;
    - start extinguishing fire.
26. Extinguishing electrical systems fires with water or a foam extinguisher is forbidden.
27. Before commencing installation, checked whether the conveyor and its components were not damaged during transport or storage.
28. When the operation is completed, secure the main switch with a padlock.
29. When any situation posing a threat to human life or health occurs, the device must be switched off immediately and disconnected from the mains.
30. The technical servicing, maintenance and/or repairs must be performed only when the power supply is disconnected with the main switch that is secured with a padlock.
31. The user is obliged to read the operating manual for electrical motors, and to adhere to it.
32. If conveyors cooperate with BIN silos, the user is obliged to acquaint themselves with operating manuals of those silos and strictly adhere to it.
33. BIN silos, with which the conveyors work, must be equipped with an emergency duct (if it is not provided as a standard feature of the said silos) for unloading the silo in the event of the conveyor failure or grain aggregation over the conveyor inlet.
34. Warning signs, nominal plates and other information provided on the equipment must be kept legible and clean. When they are damaged or destroyed, or a part containing them is replaced, new plates should be purchased from BIN Company and installed on the product to replace damaged ones.
35. When the Investor themselves or any other installation company not authorised by BIN installs the screw conveyor(s) (for reasons independent of the manufacturer), the Investor is obliged to obtain the detailed screw conveyor installation instruction and placing (sticking) warning and information signs on the product.
36. When the device is delivered without a nominal plate or the nominal plate is destroyed, the user should notify this to the manufacturer to receive its copy.
37. It is forbidden to make any changes in design or to change the intended use of the equipment without the manufacturer’s consent in writing.

2.2. Information and warning signs

The screw conveyor PS300 is labelled with the BIN logo, and with information and warning signs. The nominal plate, and information and warning signs are placed on the PS300 conveyor pipe (Figure 1).

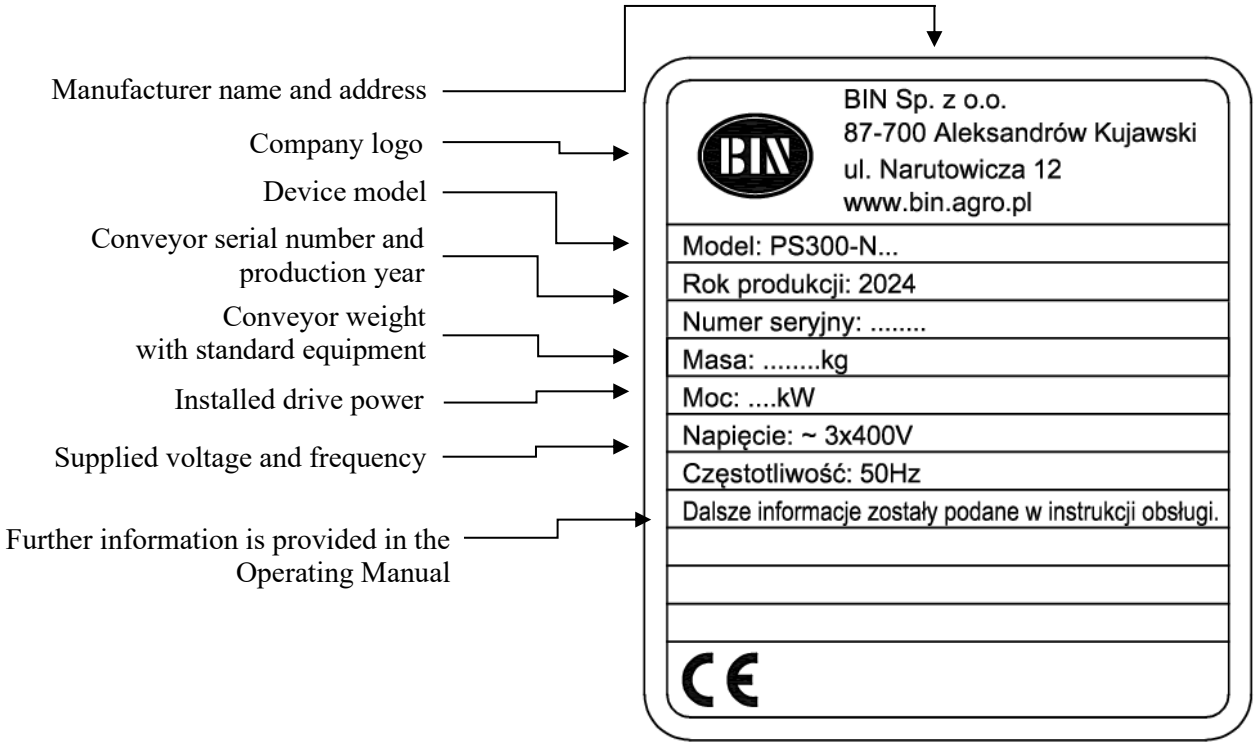


READ THE OPERATING MANUAL

ATTENTION! DANGER

MANDATORY USE OF GUARDS

RISK OF ELECTRIC SHOCK



Note! Warning signs, nominal plates and other information provided on the equipment must be kept legible and clean. When they are damaged or destroyed, or a part containing them is replaced, new plates should be purchased from BIN Company and installed on the product to replace damaged ones.

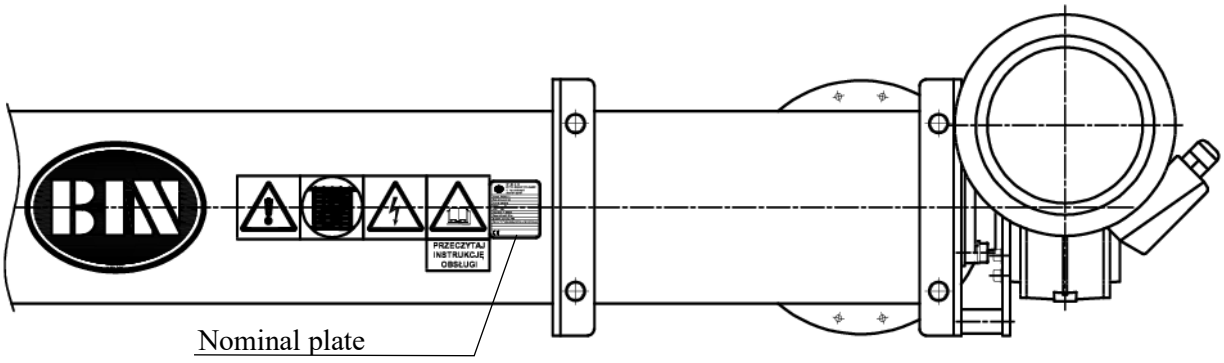


Figure 1. Labelling of the PS300 conveyor with a nominal plate.

Chapter II. General product description.

1. Intended use of the product

Screw conveyors PS300 are intended to be used for transport of cereal and maize grain, and oil seeds. Furthermore, they can collect transported material from under feed hoppers, unloading hoppers, tanks or conveyors, and transfer it to other tanks or conveyors. In particular, they can be used to operate together with silos manufactured by BIN, to transport grain between silos, and from an inlet hopper to a bucket elevator, etc.

Note: Screw conveyors of the PS300 type were designed for working with the pipe filling ratio of ca. 65% for conveyors working at 200 rpm and of ca. 55% for conveyors working at 300 rpm. Taking the above into account, the quantity of grain transported by the conveyor must not exceed its nominal capacity.
When the pipe filling ratio exceeds the values specified above, the sudden overload of the conveyor motor and its emergency switching off will occur. A start-up of the motor overloaded in this way may require its dismantling or result in the motor damage.

2. Product technical parameters

Table 1. Technical specification of the screw conveyor PS300.

Device (model)	Nominal motor power	Nominal motor speed	Voltage/ Frequency of power supply	Nominal current	Conveyor maximum length[1)]	Nominal motor speed	Screw diameter	Device weight
	kW	rpm	V/Hz	A	m	rpm	mm	kg
PS300-N7.5/200	7.5	1500	3x400/50	14.4	7.5	200	Ø 280	155
PS300-N11/200	11.0	1500	3x400/50	20.9	11.0	200		150
PS300-N11/300	11.0	3000	3x400/50	19.6	9.0	300		164
PS300-N15/200	15.0	1500	3x400/50	28.3	15.0	200		261
PS300-N15/300	15.0	3000	3x400/50	26.2	12.0	300		318
PS300-N18/200	18.5	1500	3x400/50	33.9	18.0	200		374
PS300-N18/300	18.5	3000	3x400/50	32.1	15.0	300		325

Additional equipment of the screw conveyor PS300

Device	Total length	Total height	Screw diameter	Dimensions (diameter) of inlet/outlet	Equipment weight
	mm	mm	mm	mm	kg
PS300-P2.0/N	2200	558	Ø 280	Ø 300	115
PS300-P1.0	1000	400		-	38
PS300-P1.5	1500	400		-	51
PS300-P2.0	2000	400		-	65
PS300-P2.5	2500	400		-	78
PS300-P3.0	3000	400		-	92
PS300-LOZ/P1	380	390	-	-	43
PS300-MOCBET	98	376	-	-	8
PS300-LACZ1	606	638	-	-	33
PS300-LACZ2	606	570	-	-	33
RU300-MOC1	100	454	-	-	15
PS300-I/O-300	600	533	-	Ø 300	33

In no device described in this manual the level of noise exceeds 70 dB(A).

1. The maximum conveyor length includes the length of all extensions (PS300-P…) being a part of the complete conveyor (Figure 20).

3. Design description for the screw conveyors PS300

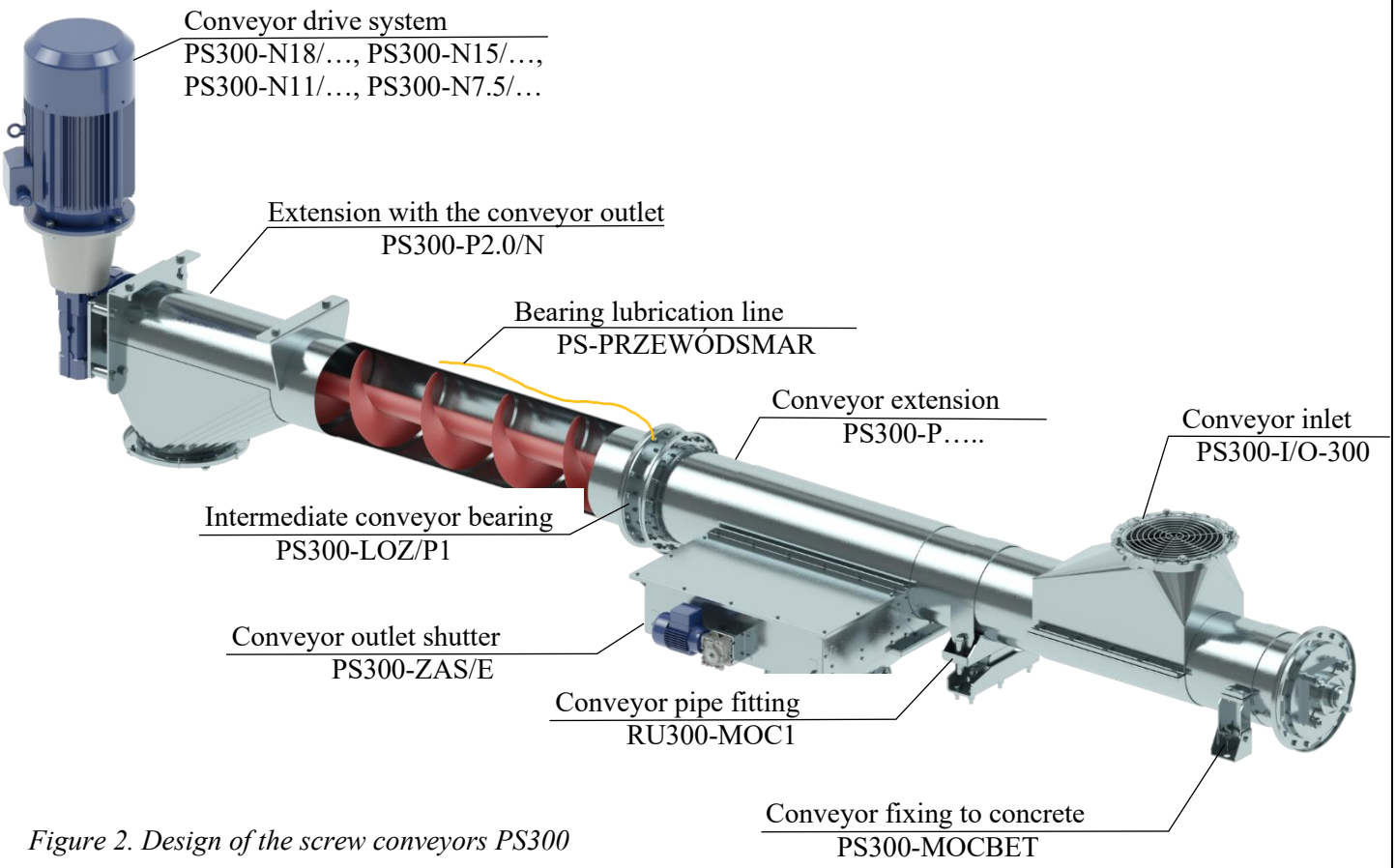


Figure 2. Design of the screw conveyors PS300

The PS300 screw conveyors are of modular design. The selection of applied modules is influenced by technological and technical requirements, as well as Investor's needs. The following modules are manufactured as a part of the PS300 system:

- **PS300-N18/200, PS300-N18/300, PS300-N15/200, PS300-N15/300, PS300-N11/200, PS300-N11/300, PS300-N7.5/200** (The drive of 18kW, 15kW, 11kW, 7.5kW):
The drive system of the screw conveyor PS300 (Figure 3 and Figure 4) consists of a worm gear speed reducer (item 2), which receives drive from the electric motor (item 1). The reducer is mounted on a special adapter (item 4), facilitating installation of other modules of the PS300 conveyor system. The drive hub (item 3), mounted on the reducer via a key joint (item 5) transfers the drive power from the electric motor, via the reducer. The complete module also includes bolts, nuts and washers, which are necessary to install other PS300 system modules, as well as a nominal plate and electric equipment. In PS300-N18/200, PS300-N18/300, PS300-N15/200, and PS300-N15/300 drives, a worm gear speed reducer of the RS130 type, of a gear ratio i = 7 or i = 10 was installed. In PS300-N11/200, PS300-N11/300, and PS300-N7.5/200 drives, a worm gear speed reducer of the RT110 of a gear ratio i=7 or i=10 was installed.

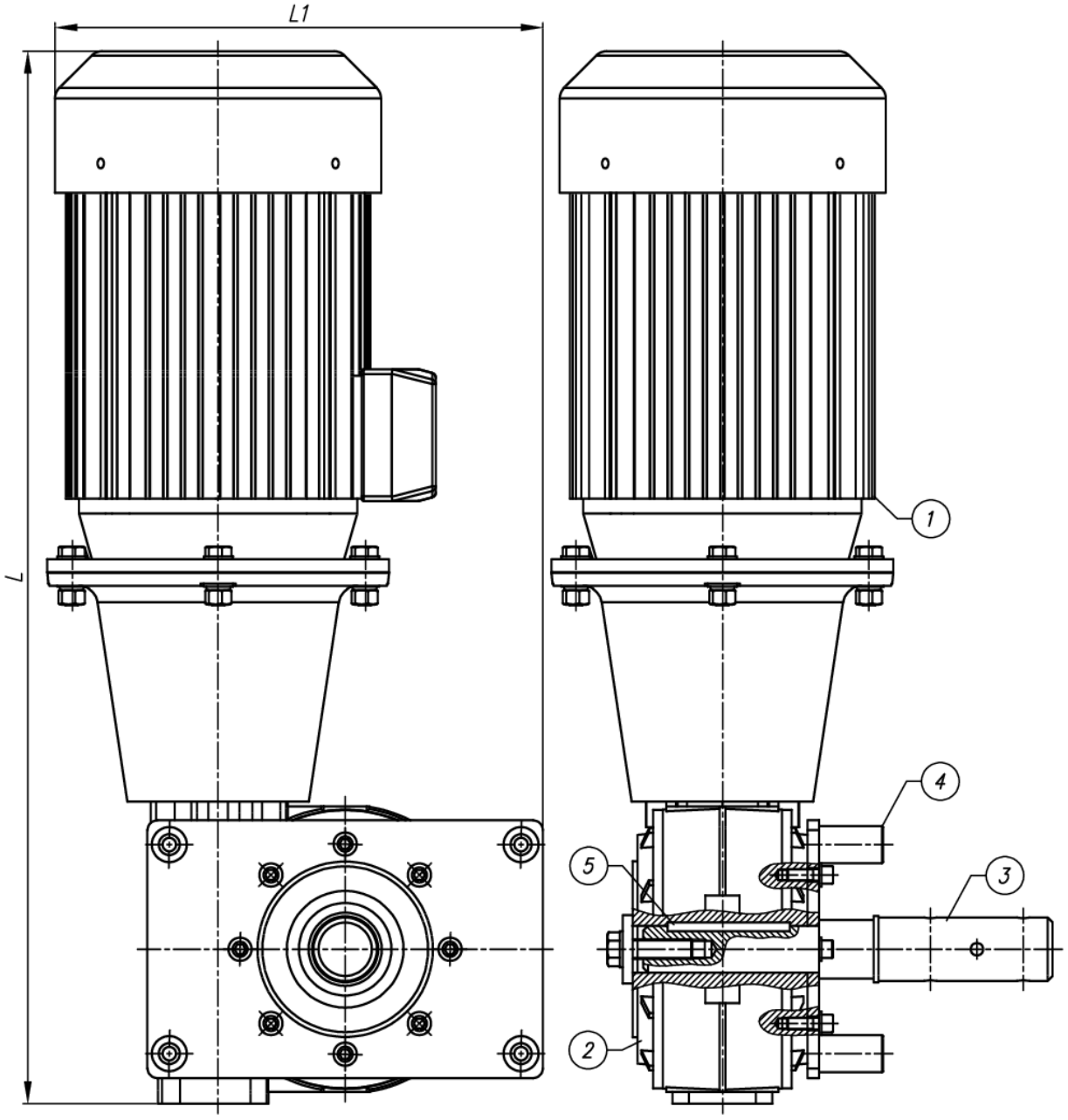


Figure 3. A drive of 18 kW and 15 kW (PS300-N18/200, PS300-N18/300, PS300-N15/200, and PS300-N15/300).

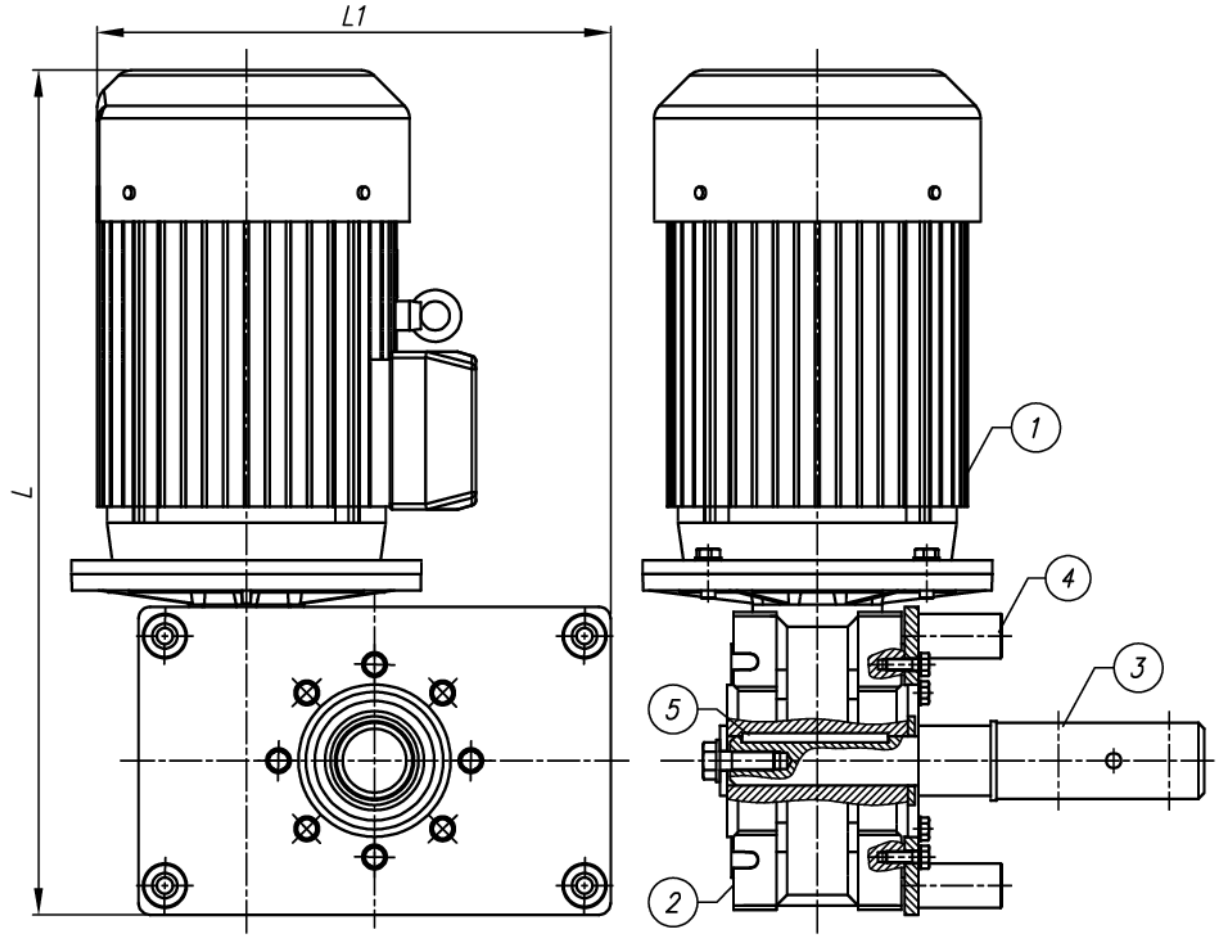


Figure 4. A drive of 11 kW and 7.5 kW (PS300-N11/200, PS300-N11/300, PS300-N7,5/200).

Table 2. A drive of the screw conveyor PS300 - dimensions

Product	L	L1
	mm	mm
PS300-N7.5/200	724	453
PS300-N11/200	754	453
PS300-N11/300	754	453
PS300-N15/200	1077	500
PS300-N15/300	1077	500
PS300-N18/200	1157	508
PS300-N18/300	1077	500

- PS300-P2.0/N, PS300-P1.0, PS300-P1.5, PS300-P2.0, PS300-P2.5, PS300-P3.0 (An extension of the screw conveyor PS300):

An extension module consists of a screw (item 1), of 280 mm in diameter, and a screw housing (an extension pipe - item 2), of 300 mm in diameter. BIN manufactures the following types of extensions for the PS300 conveyor:

- PS300-P1.0 – 1.0 m long extension
- PS300-P1.5 – 1.5 m long extension
- PS300-P2.0 – 2.0 m long extension
- PS300-P2.5 – 2.5 m long extension
- PS300-P3.0 – 3.0 m long extension
- PS300-P2.0/N – a 2.0 m long extension with an outlet of 300 mm in diameter permanently welded on.

The PS300-P2.0/N extension is installed in each assembly of the screw conveyor PS300 as the first extension. The PS300 drive is always fixed to the PS300-P2.0/N extension on the outlet side. The extensions listed above form successive parts of the conveyor. The outlet is equipped with a protective guard (item 4), which must be dismantled when the extension outlet is installed on another device for grain transport. Furthermore, PS300-P2.0/N also includes an end hub unit (item 3) consisting of an end flange, to which
a self-aligning bearing in a housing is fixed.

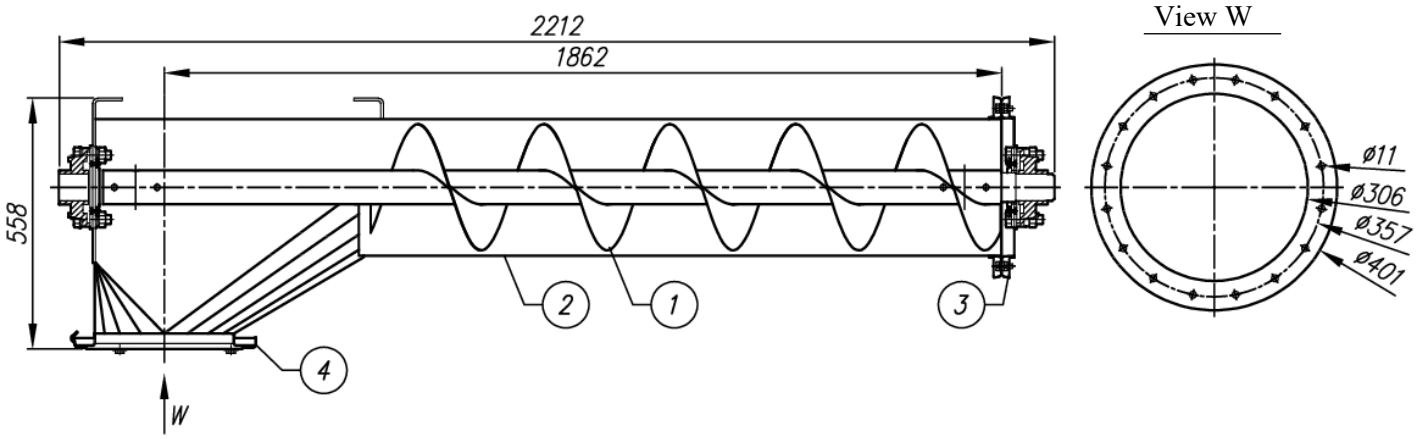


Figure 5. An extension with the outlet of the screw conveyor PS300 (PS300-P2.0/N).

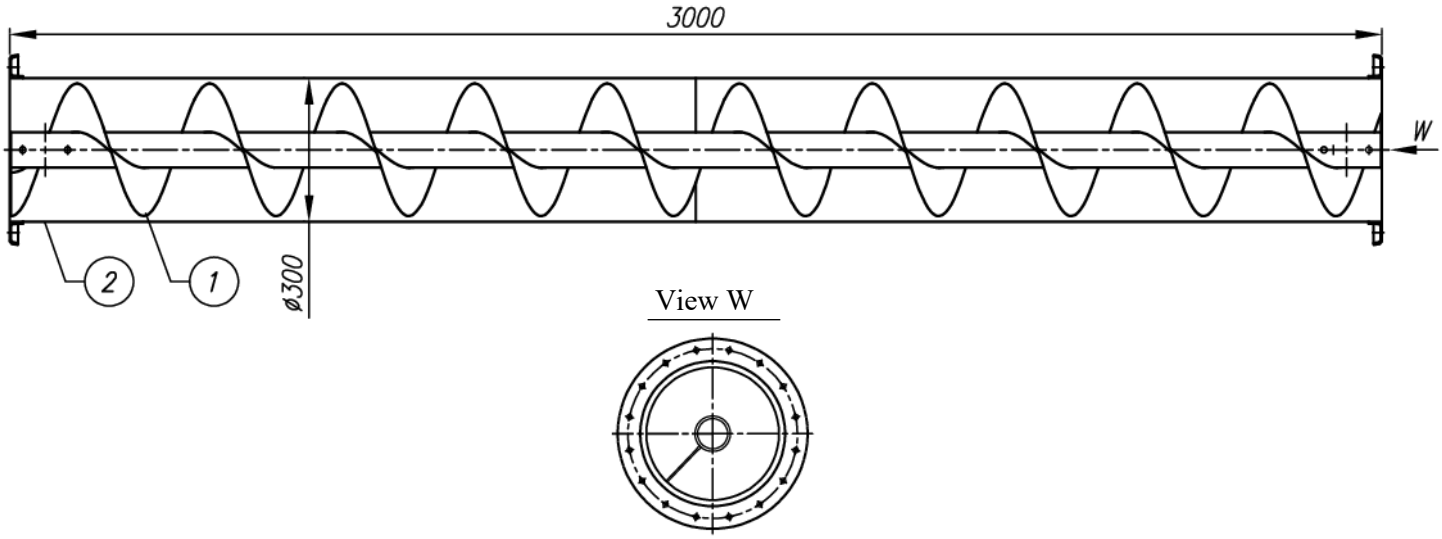


Figure 6. A 3.0 m long extension of the screw conveyor PS300 (PS300-P3.0)

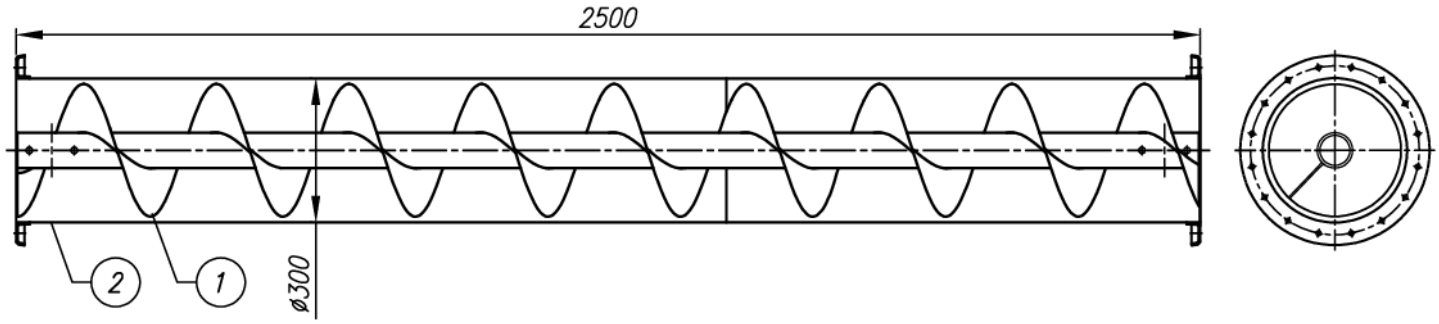


Figure 7. A 2.5 m long extension of the screw conveyor PS300 (PS300-P2.5)

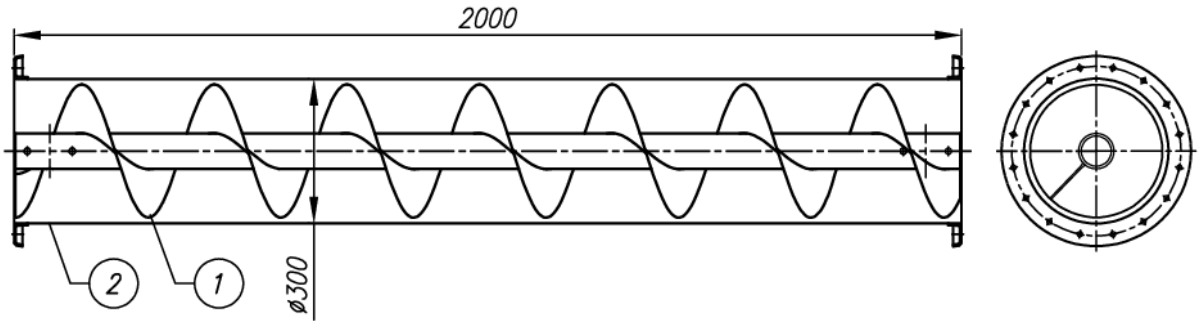


Figure 8. A 2.0 m long extension of the screw conveyor PS300 (PS300-P2.0)

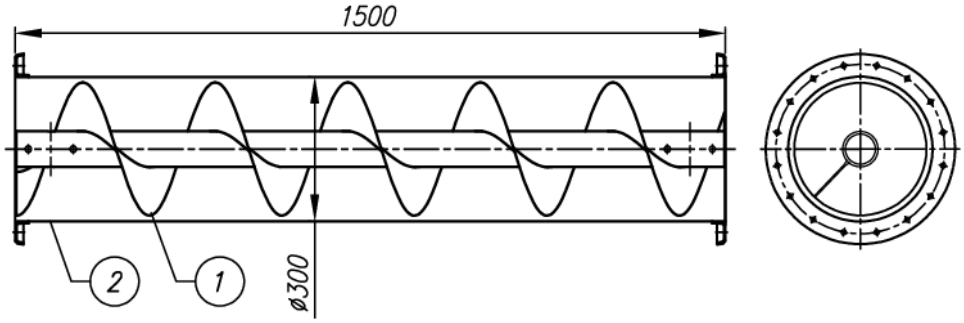


Figure 9. A 1.5 m long extension of the screw conveyor PS300 (PS300-P1.5)

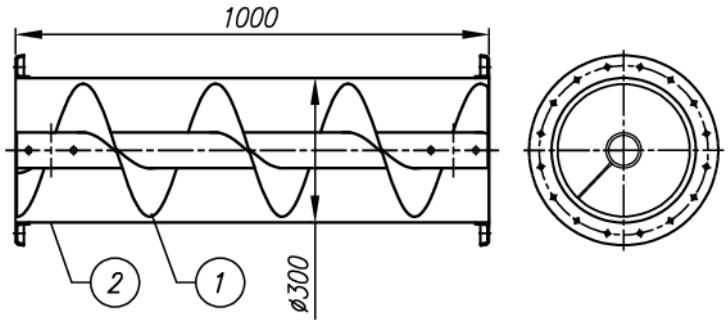


Figure 10. A 1.0 m long extension of the screw conveyor PS300 (PS300-P1.0).

- PS300-LOZ/P1 (Indirect bearing of the screw conveyor PS300):
The indirect bearing of the screw conveyor PS300 consists of the body (item 1), in which a slide bearing (item 2) is installed, secured with a set screw (item 3). The slide bearing is used for installation of the intermediate hub (item 4), and it is lubricated via the special lubrication bore ending with a greasing nip
(item 5). This module also includes spacers used to adjust the length of the conveyor extensions.

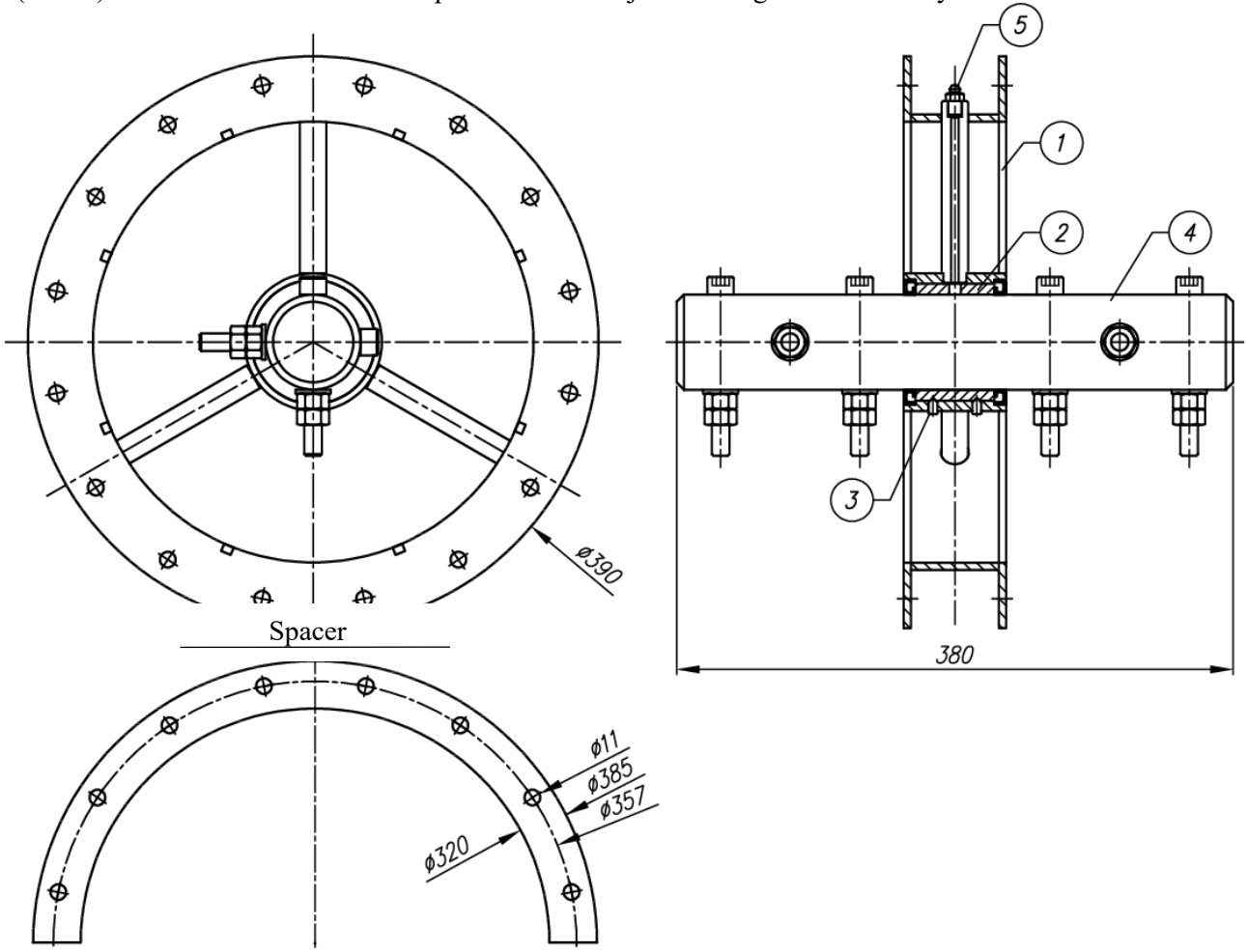


Figure 11. An indirect bearing of the screw conveyor of 300 mm *in diameter (PS300-LOZ/P1).*

- PS-PRZEWÓDSMAR (Indirect bearing lubrication line)
The 3 m long indirect bearing lubrication line is used when access to the indirect bearing is difficult, e.g. when the screw conveyor is installed under the silo floor. The line set includes a connector, for connecting several lines together.

- PS300-I/O-300 (Screw conveyor PS300 inlet):
The inlet of the screw conveyor P300 consists of a body (item 2), which, together with a clamp (item 1), facilitates installation of this unit on the casing (pipe) of the screw conveyor PS300. The inlet is equipped with a protective guard, which must be dismantled when the inlet is installed on another device for grain transport.

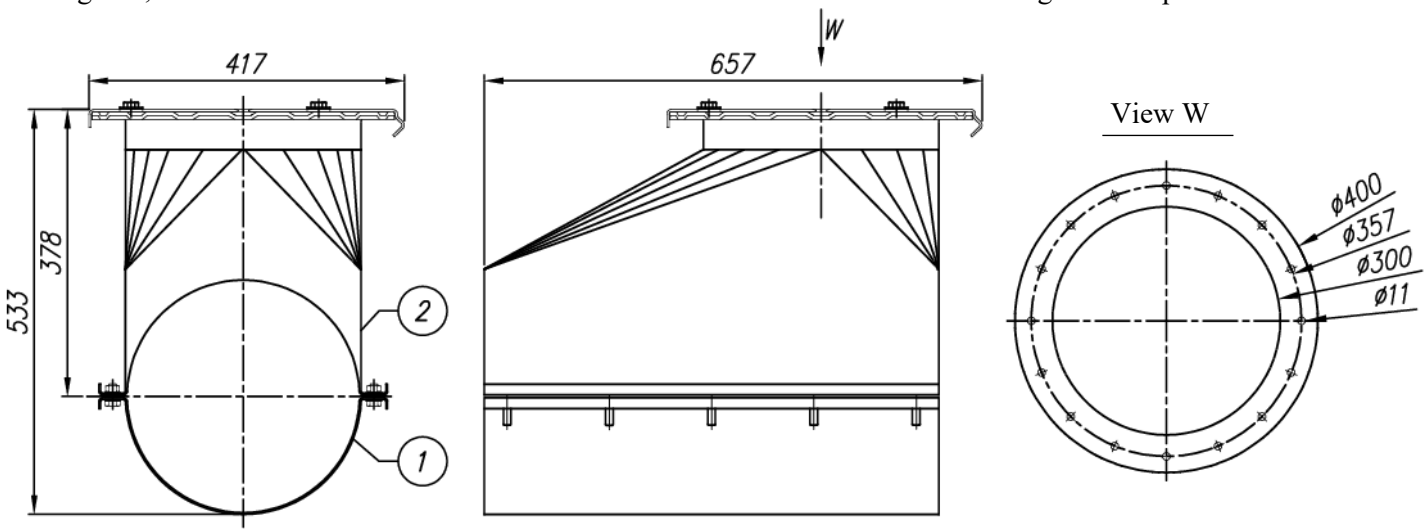


Figure 12. An inlet of the screw conveyor of 300 mm *in diameter (PS300-I/O-300).*

- RU300-MOC1 (Fixing of the screw conveyor PS300):
The fixing of pipes of the screw conveyor PS300 consists of a two-part base - a fixed part (item 1), fixed to the floor, a mobile part (item 2), and a clamp (item 3). The mobile part is articulated, so it can be turned ±180° around its vertical axis, and ±90° around its horizontal axis.

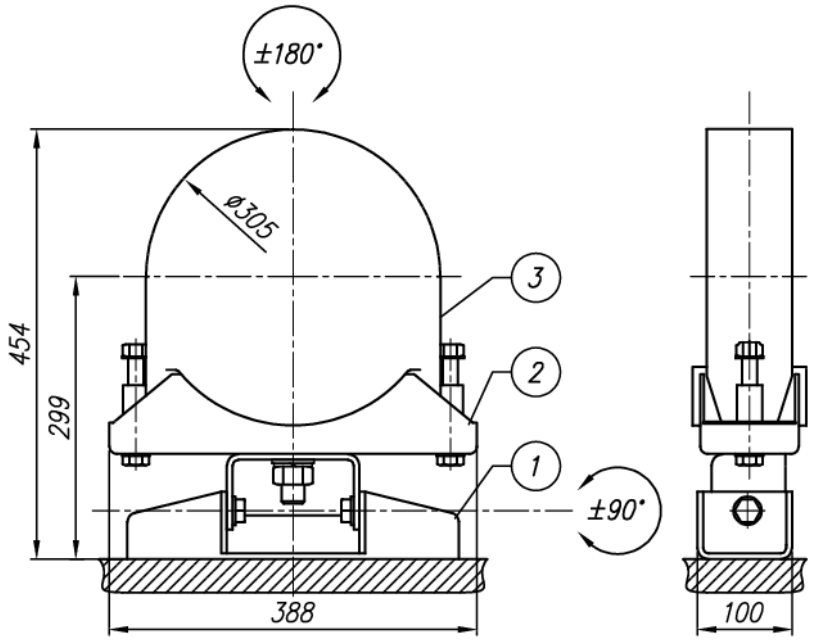


Figure 13. Fixing of the screw conveyor PS300 (RU300-MOC1).

- **PS300-MOCBET** (Fixing of the screw conveyor PS300 to concrete):
Fixing of pipes of the screw conveyor PS300 consists of a base (item 1) of an adjustable height, and of clamps (item 2). The fixing is provided with rawplugs (item 3), for permanent fixing of the conveyor to concrete.

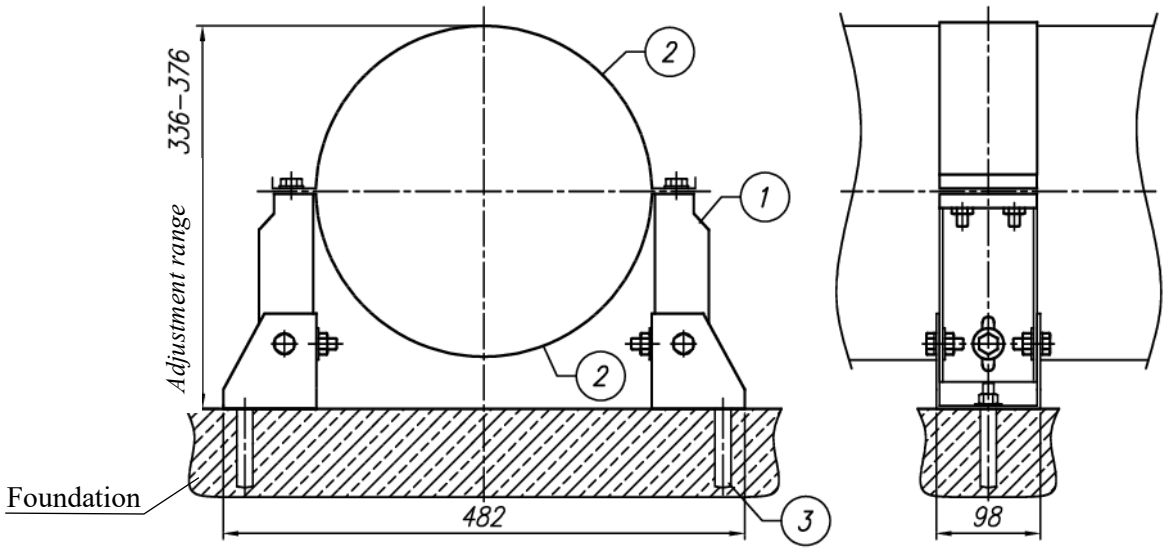


Figure 14. Fixing of the screw conveyor PS300 to concrete (PS300-MOCBET).

- PS300-LACZ2 (Connector of the screw conveyor PS300 to PSW500, PSW1000, and PSW1500):
The connector of the screw conveyor P300 consists of a body (item 2), which, together with a clamp (item 1), facilitates installation of this unit on the casing (pipe) of the screw conveyor PS300 and underfloor trusses RUSZT-REDWLOT. Using the PS300-LACZ2 connector, a system can be constructed for grain unloading from the BIN silo equipped with an internal screw conveyor PSW500, PSW1000, or PSW1500, using the PS300 conveyor as an underfloor unloading conveyor for the silo. This system requires using in the silo a steel floor on concrete blocks together with the underfloor trusses with the central inlet RUSZT-REDWLOT.

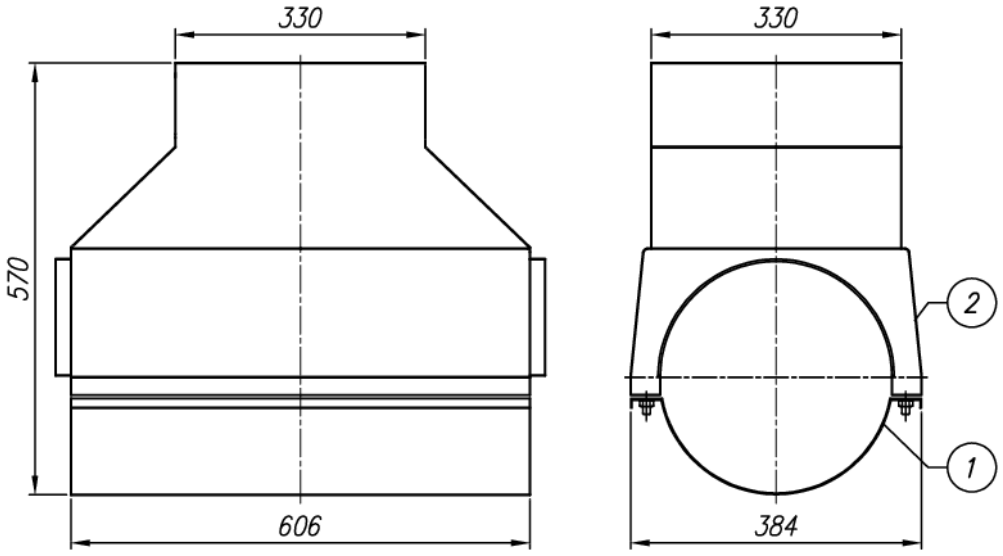


Figure 15. A connector of the screw conveyor PS300 to PSW500, PSW1000, and PSW1500 (PS300-LACZ2).

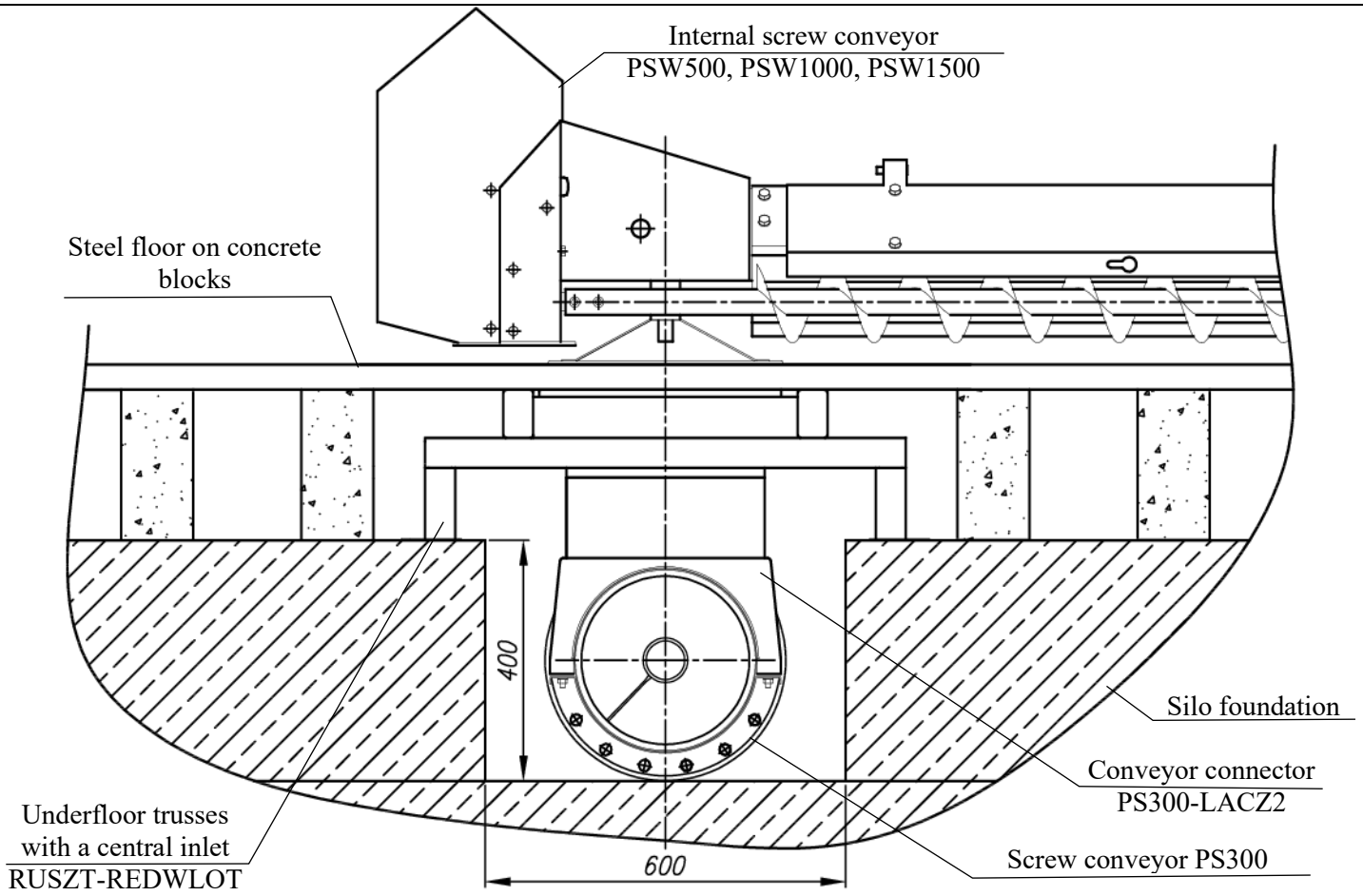


Figure 16. A method for connecting the PS300 conveyor with PSW500, PSW1000, or PSW1500 using the connector PS300-LACZ2, a floor on concrete blocks, and underfloor trusses with the central inlet RUSZT-REDWLOT.

- **PS300-LACZ1** (Connector of the screw conveyor PS300 to PSWEX):

The connector of the screw conveyor P300 consists of a body (item 2), which, together with a clamp (item 1), facilitates installation of this unit on the pipe of the screw conveyor PS300 and the central inlet, PSWEX-WLC-BL-UNI or PSWEX-WLC-RS-UNI.

Using the PS300-LACZ2 connector, a system can be constructed for grain unloading from the BIN silo equipped with an internal screw conveyor of the PSWEX type, using the PS300 conveyor as an underfloor unloading conveyor for the silo. This system requires using in the BIN silo a steel floor on concrete blocks combined with the underfloor trusses with a central inlet PSWEX-WLC-BL-UNI, or a steel floor on steel trusses combined with a central inlet PSWEX-WLC-RS-UNI.

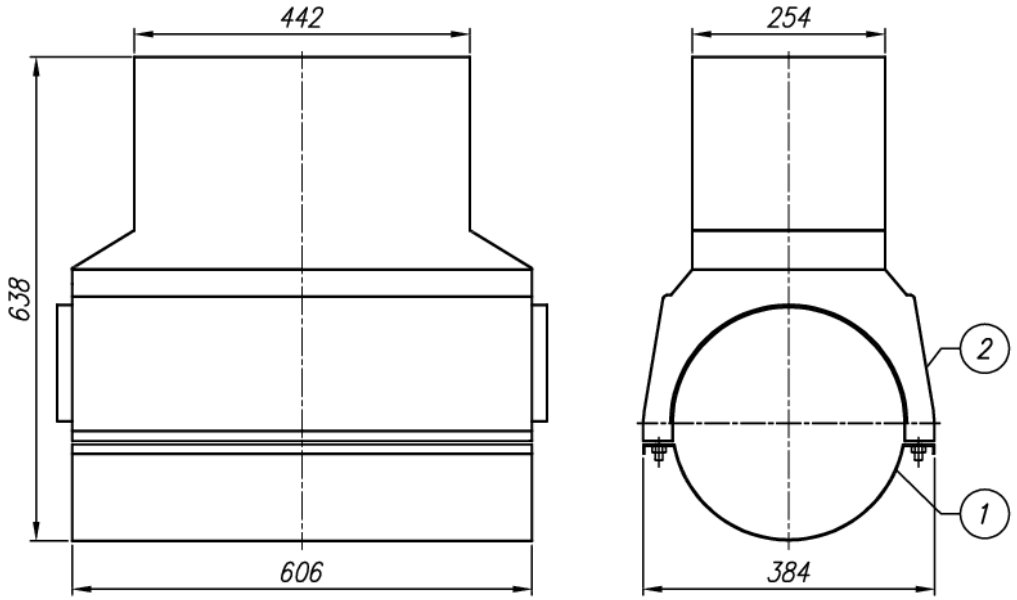


Figure 17. Connector of the screw conveyor PS300 to PSWEX (PS300-LACZ1).

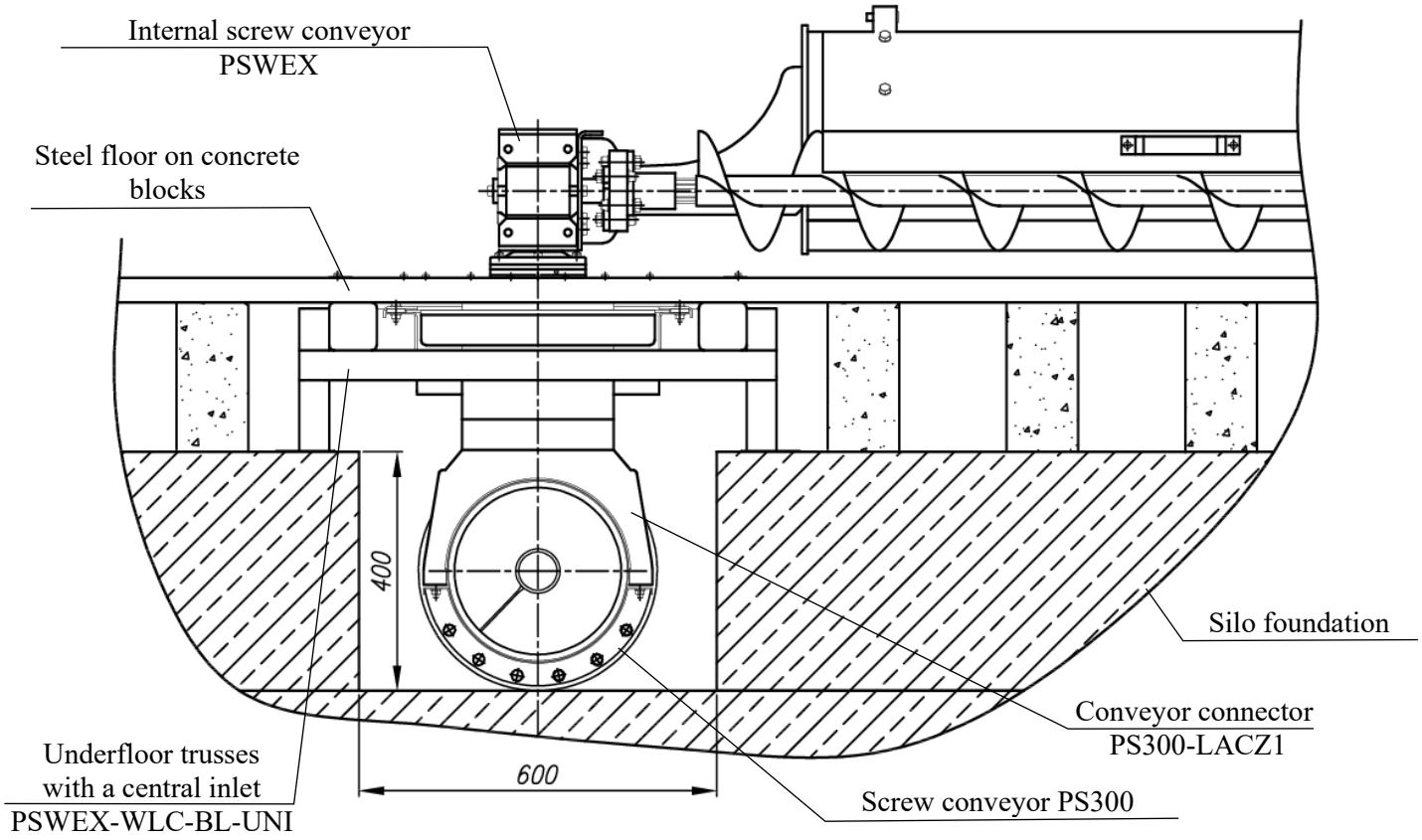


Figure 18. A method for connecting the PS300 conveyor with PSWEX using the connector PS300-LACZ1, a steel floor on concrete blocks, and underfloor trusses with the central inlet PSWEX-WLC-BL-UNI.

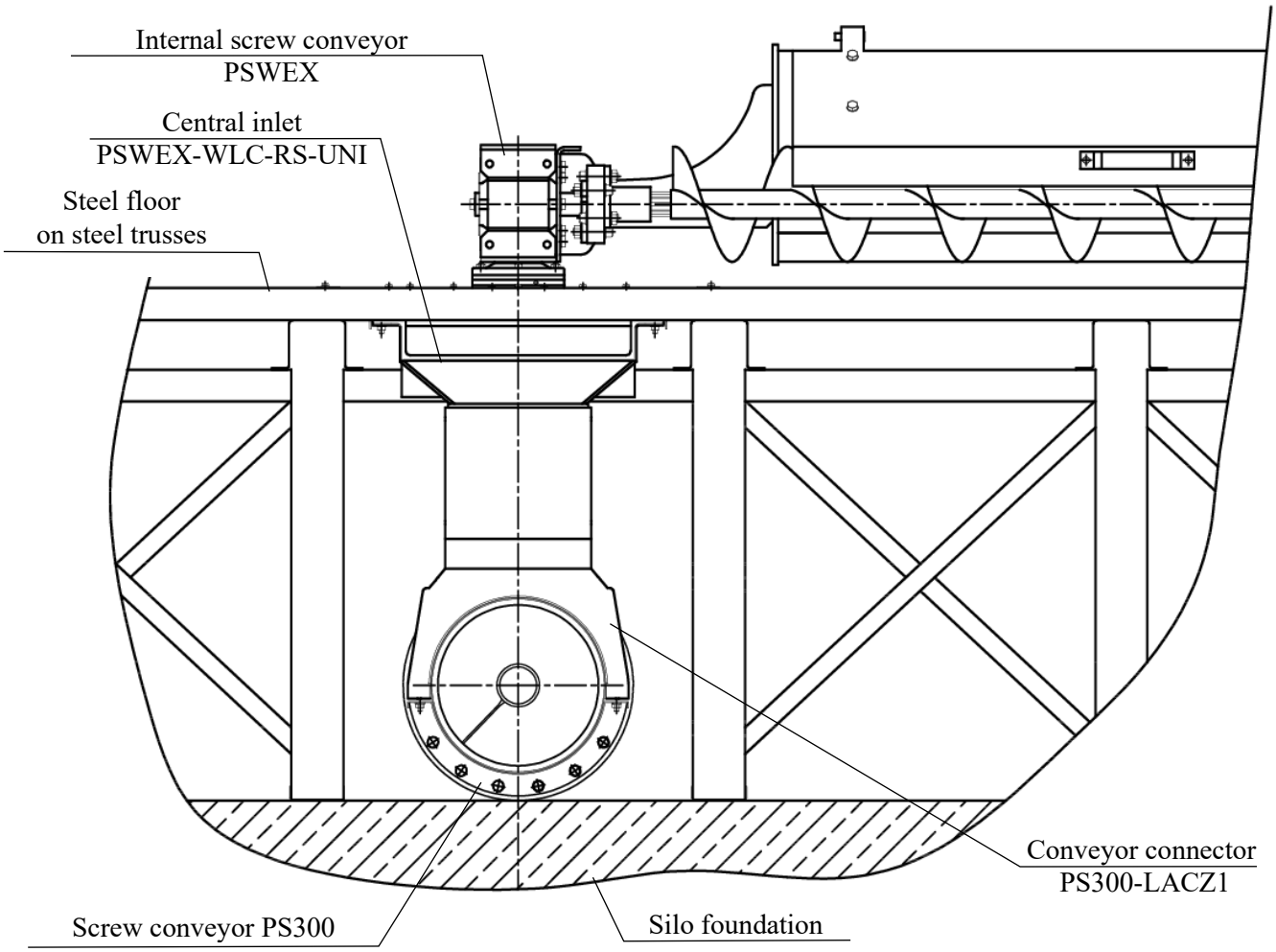


Figure 19. A method for connecting the PS300 conveyor with PSWEX using the connector PS300-LACZ1, a steel floor on steel trusses, and the central inlet PSWEX-WLC-RS-UNI.

4. Installation and start-up of the conveyor

4.1. Conveyor installation

Installation of the conveyors requires use of special equipment, and relevant know-how. Therefore, the equipment should only be installed by installation companies authorised by BIN. The installation company should cooperate with an entity ordering installation, in terms of works organisation, financial settlements, and acceptance of installation works. The drive power, the number and the length of extensions, the type and the location of grain inlets, and the number and the type of conveyor fixings depend on the type and the capacity of devices operating together with the PS300 conveyor. Depending on needs and their intended use. screw conveyors from the PS300 system can be assembled in different ways. The manufacturer accepts an option for operation of these devices in a horizontal arrangement or at an angle not exceeding 25º.

L_{max} - the conveyor maximum length, as m;
α - the angle of the conveyor incline, as º,
φ_{max} – maximum filling of the conveyor with transported material, as %;
W - capacity as tonnes/hour

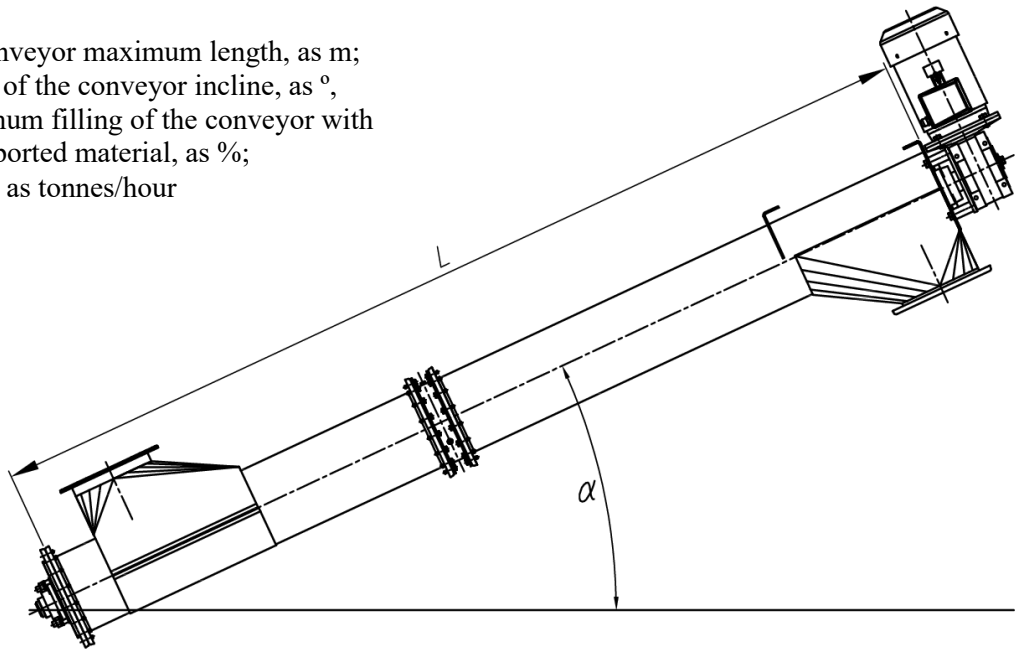


Figure 20. Specification of data for designing screw conveyors PS300.

Table 3. Indicative data for designing screw conveyors PS300.

Drive system	α = 0˚		α = 10˚		α = 15˚		α = 20˚		α = 25˚	
	φ max (%)	W (t/h)	φ max (%)	W (t/h)	φ max (%)	W (t/h)	φ max (%)	W (t/h)	φ max (%)	W (t/h)
PS300-N7.5/200	65	≤ 100	65	≤ 90	65	≤ 85	65	≤ 75	65	≤ 70
PS300-N11/200										
PS300-N15/200										
PS300-N18/200										
PS300-N11/300	55	≤ 120	55	≤ 108	55	≤ 100	55	≤ 90	55	≤ 80
PS300-N15/300										
PS300-N18/300										

The nominal capacity of grain transport with the screw conveyor PS300 is determined by material bulk density, depending on its type, moisture content, and the contamination level. Therefore, values specified in Table 3 should be treated solely as indicative and general guidelines for designing of a conveyor system.

The manufacturer does not provide for the conveyor work with an uncovered (open) inlet/outlet. Both inlet and outlet should be adapted for connection of auxiliary devices (pipes of other conveyors, downpipes, etc.) or use securing covers being standard equipment of relevant PS300 systems.

When the Investor themselves or any other installation company not authorised by BIN installs the conveyor(s), the Investor is obliged to obtain the detailed conveyor installation instruction from the manufacturer and place (stick) the nominal plate on the product.

To ensure correct operation of the screw conveyor PS300, the appropriate sequence of installation of individual modules needs to be observed:

- The first step of the installation of the PS300 conveyor involves assembling of the conveyor drive (PS300-N18/300, PS300-N18/200, PS300-N15/300, PS300-N15/200, PS300-N11/300, PS300-N11/200, PS300-N7,5/200) with a 2.0 m extension with an outlet (PS300-P2.0/N). Cover the shaft of the conveyor drive with a layer of solid grease of the ŁT-43 type or similar.

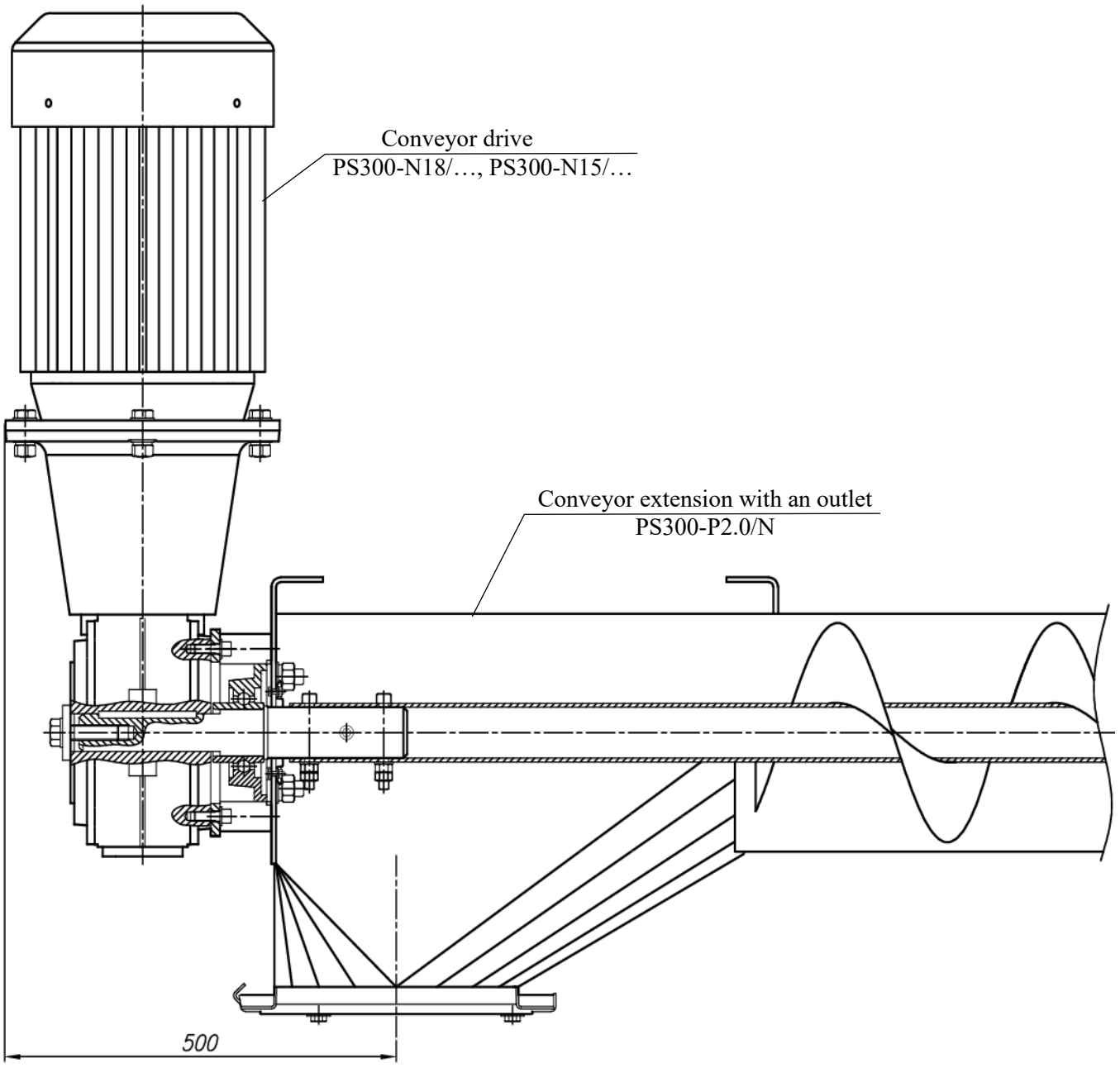


Figure 21. Connection of the 18kW and 15kW drive, a reducer of the RS130 type, and an extension with an outlet.

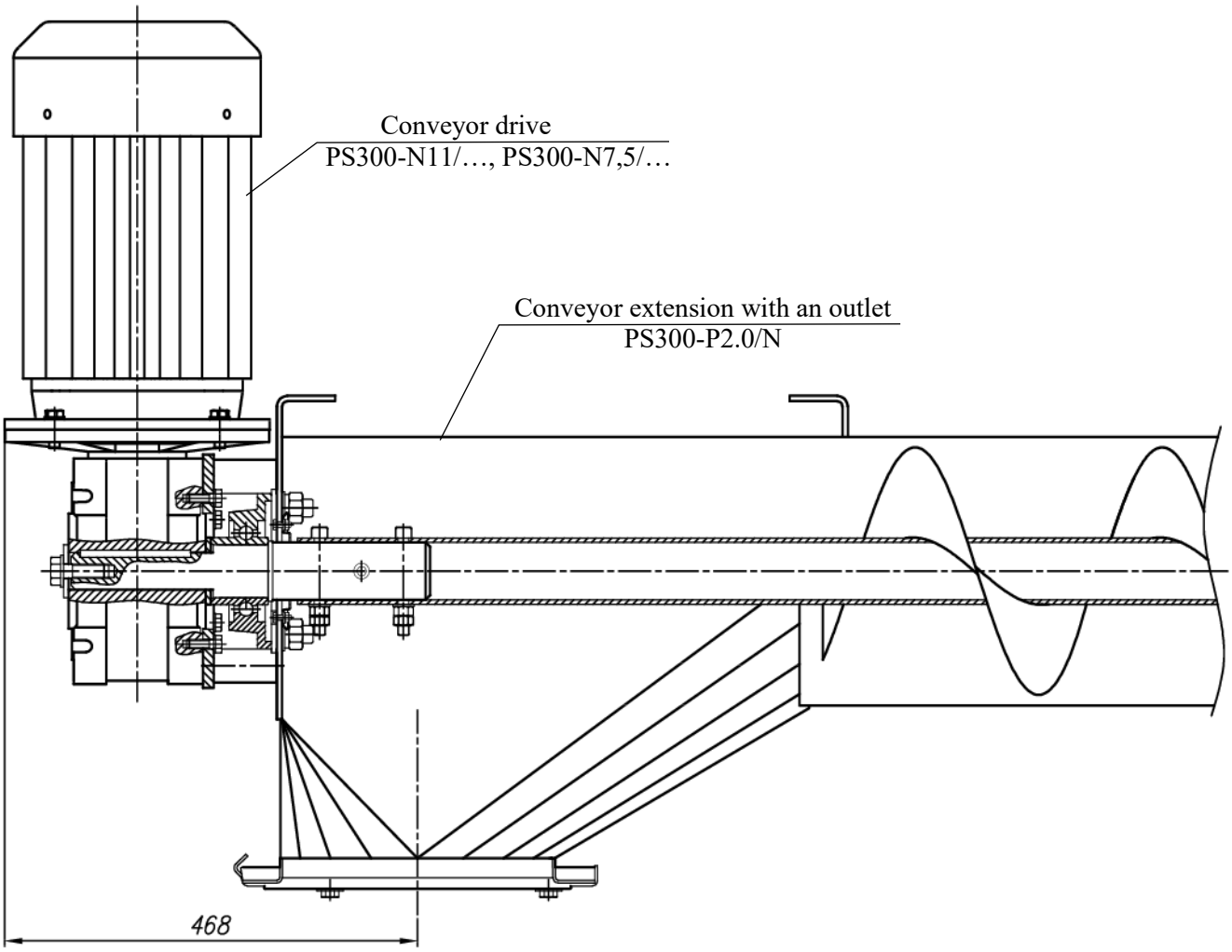


Figure 22. Connection of the 11kW and 7.5kW drive, a reducer of the RS110 type, and an extension with an outlet.

- At the next step, further extensions and intermediate bearings need to be installed on the assembled conveyor drive with the extension with the outlet. Install one spacer from the conveyor set between the intermediate bearing and the extension (Fig. 23). During installation, monitor the extension length of the intermediate bearing shaft (Fig. 24). The extension length of the intermediate bearing shaft cannot be shorter than 153 mm and longer than 157 mm. The extension length of the bearing shaft should be verified before a screw of another conveyor extension is installed. If necessary, the extension length of the bearing shaft can be adjusted by installing or removing of spacers between the intermediate bearing and the extension. Cover the shaft of the intermediate bearing with a layer of solid grease of the ŁT-43 type or similar, and fill the bearing with grease. During installation, seal all flanges of the conveyor with roofing sealant.

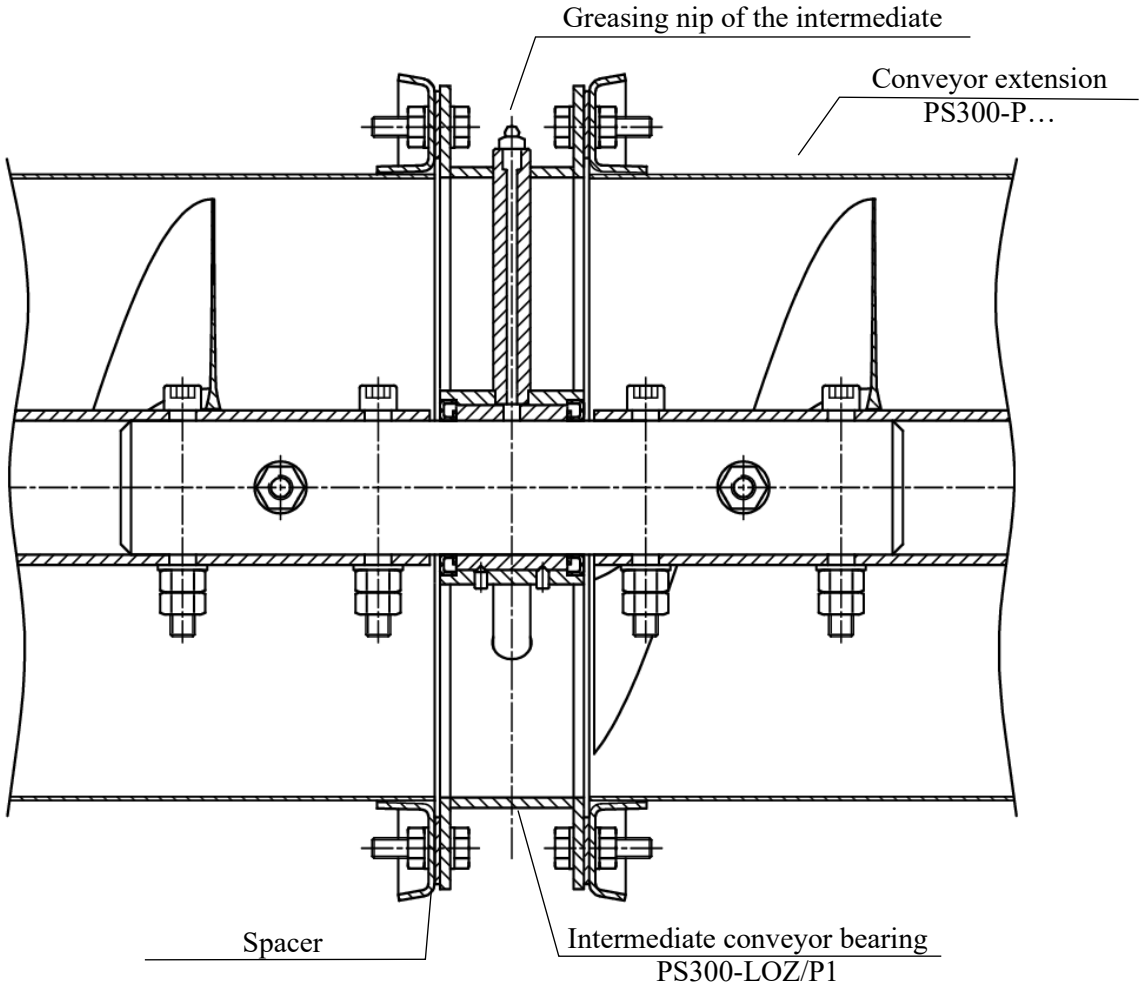


Figure 23. Connection of the intermediate bearing of the PS300-LOZ/P1 conveyor to extensions of the PS300-P…. conveyor

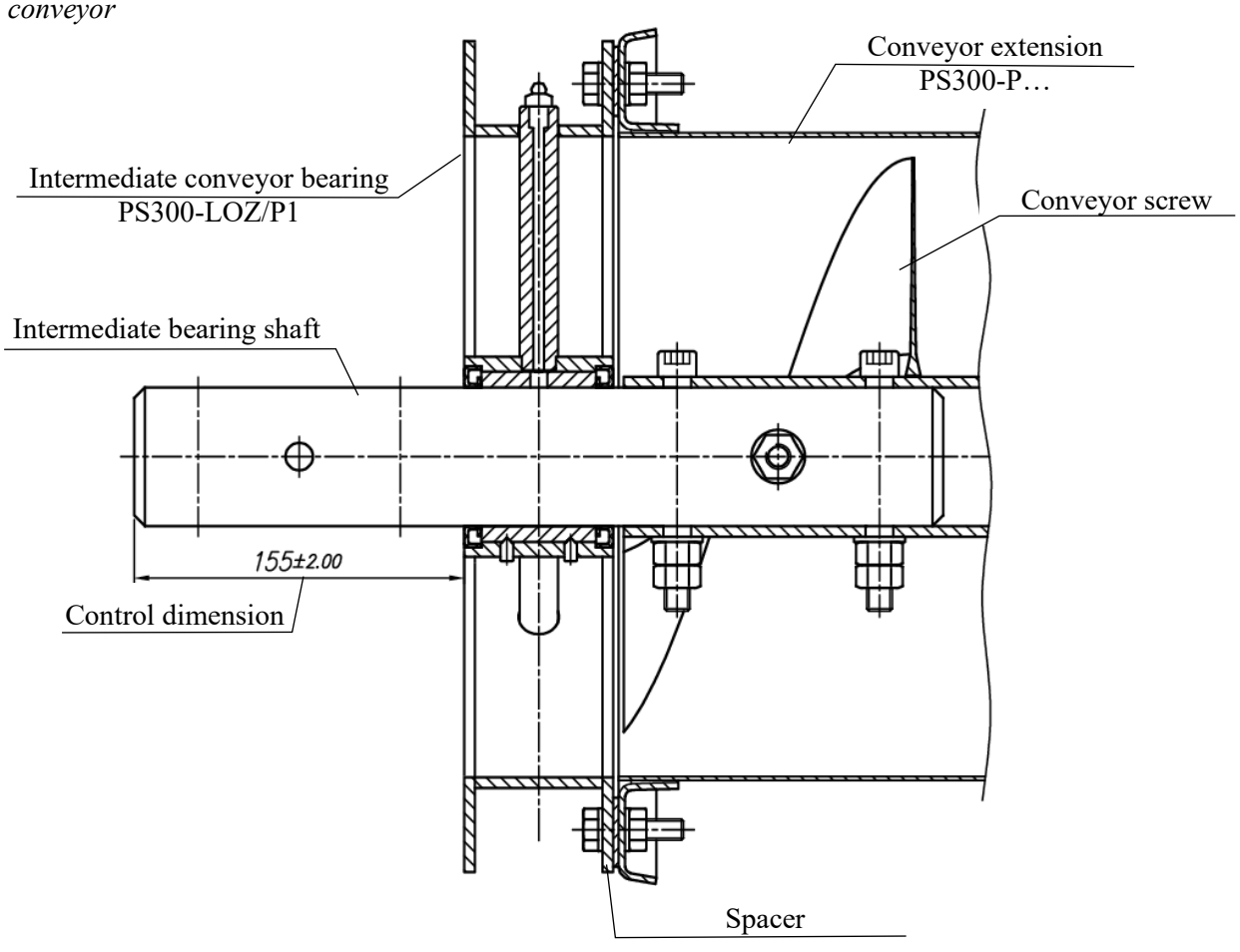


Figure 24. Correct extension length of the conveyor intermediate bearing shaft

- Following installation of the conveyor extensions and bearings, the end bearing shaft unit of the conveyor is assembled (Fig. 25). Cover the bearing shaft with solid grease of the ŁT-43 type or similar, and seal the connection between a flange of the end bearing body and the conveyor extension with roofing sealant.

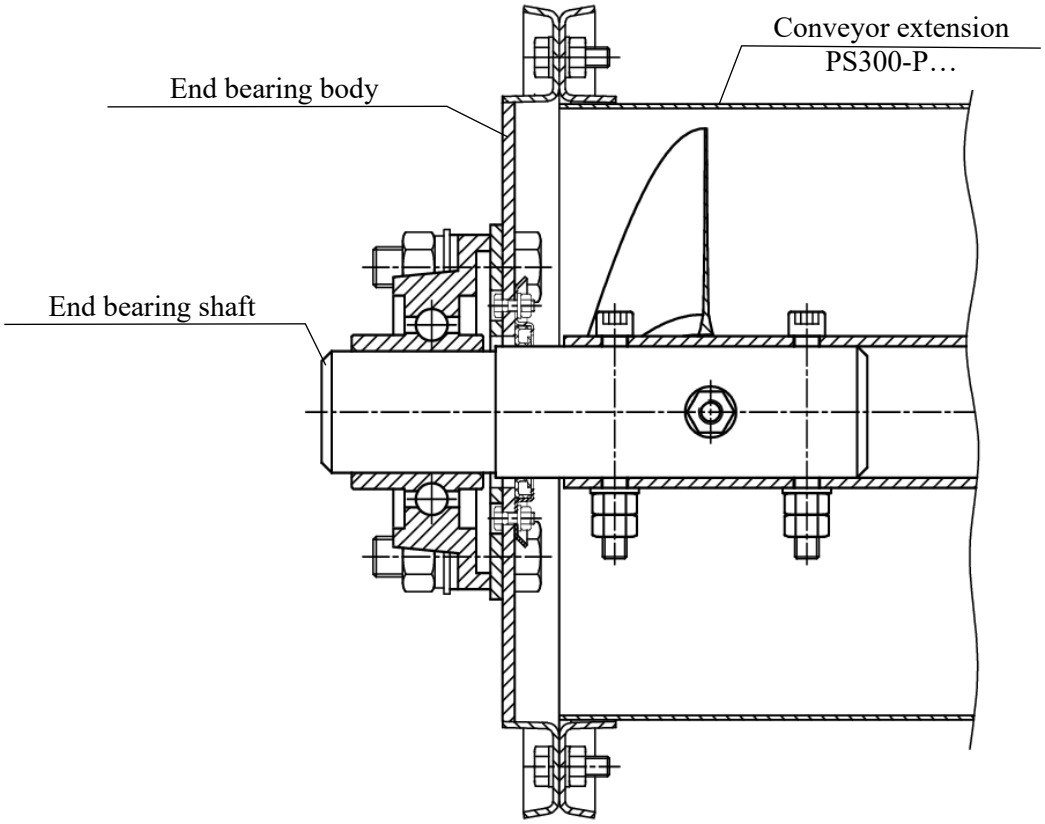


Figure 25. Installation of the end bearing shaft unit of the PS300 conveyor.

- Install grain inlets and fixings of the conveyor. Stick a nominal plate onto the conveyor pipe (Figure 1).
  The PS300 conveyors must be installed on a stable base, and a distance between components fixing the conveyor pipe to the base should not exceed 4.5 m (Fig. 27). The installation should be performed in a way ensuring the conveyor's stable fixing at its ends, i.e. near the driving gearmotor and the end hub. A pipe fixing element, RU300-MOC, or fixing to the concrete, PS300-MOCBET, can be used to fix conveyors to the base. The PS300 extension with an outlet is provided with handles for fixing of the conveyor.
  To install the PS300-I/O-300 inlet, an opening needs to be cut out in the PS300-P... housing (Fig. 26) Seal areas of the inlet connection to the conveyor with roofing sealant.

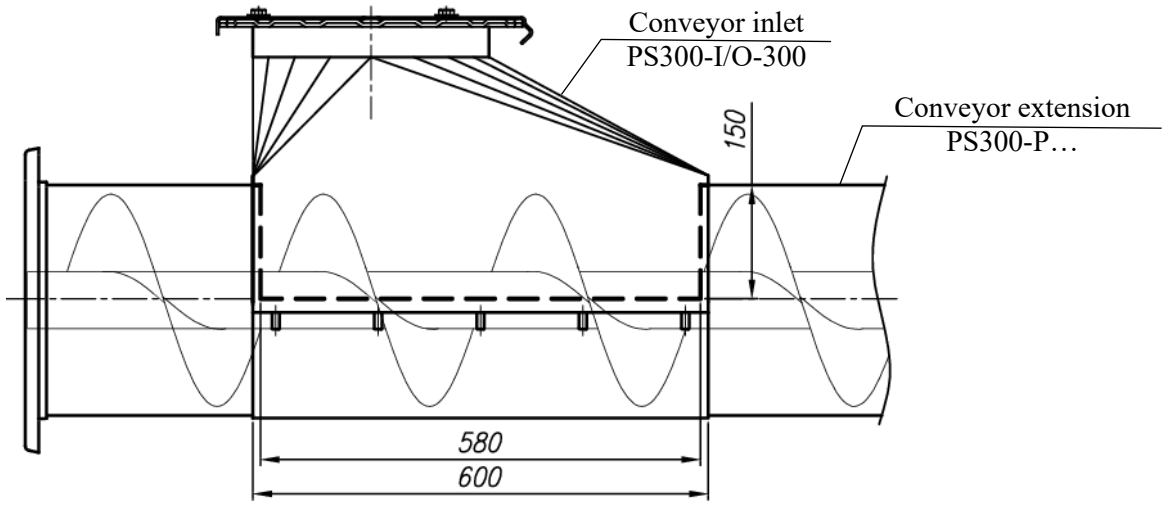


Figure 26. Installation of the inlet of the screw conveyor PS300 of 300 mm in diameter.

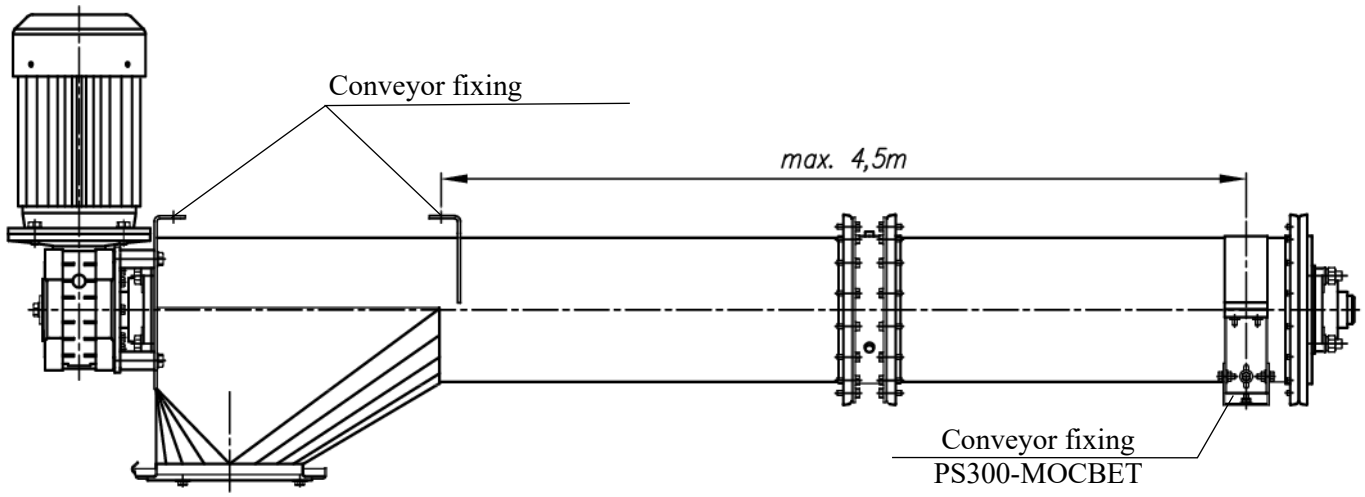


Figure 27. A method for fixing the screw conveyor PS300.

4.2. Conveyor wiring system

The manufacturer equips conveyors with the following electric subunits (Fig. 28):

- (M1) three-phase electric motor;
- (Q3) lockable main switch;
- (Q2) thermal overcurrent circuit breaker;
- (Q1) undervoltage release;

The design documentation of the investment must include appropriate design study for the wiring system, taking into account the conveyor connection, together with auxiliary equipment. The investor is responsible for ensuring that this design study is drawn up by a person holding relevant licences in accordance with current legislation.
The investor is responsible for construction of the electrical wiring system in accordance with the said design study by an electrician holding relevant licences.
Regardless of the function and construction method, the design study and the constructed wiring system must meet the following requirements:

- motor correctly connected (as required by a motor manufacturer) (M1),
- motor secured by a correct connection and adjustment of the thermal switch (Q2);
- securing against unintended starting of the conveyor after power outage (Q1);
- option for securing the conveyor against unintended start (e.g. a lockable main switch with a padlock) (Q3);
- voltage supplied to all units should be within ranges specified by manufacturers of those units;
- function for automatic stop of the conveyor work in the event of any abnormal work of auxiliary equipment (K) (e.g. failure of another conveyor) or people entering areas dangerous for them (e.g. a silo in which the conveyor works) - switches and/or sensors are not included as the conveyor equipment;

The investor is responsible for delivery (at its own expense) of all electrical equipment and units not being a part of the conveyor equipment, but necessary for construction of the required electrical wiring.
The investor is responsible for providing guidelines of the conveyor manufacturer (included in this operating manual) to a person designing and constructing the wiring system.
A person constructing the wiring system should perform the first test starting of the conveyor, check correctness of the motor rotations and consistence of current values on nominal plates of the motor and the thermal switch.
The manufacturer requires a written confirmation of construction and checking of the wiring system by an electrician holding required licences.

Usually, during starting of the PS300 conveyor, its electrical motor is subjected to the maximum load. For this reasons, the use of the "star-delta" layouts, "soft start" devices and other solutions of this kind, preventing the electric motor from reaching its full nominal capacity during its start is strictly forbidden.

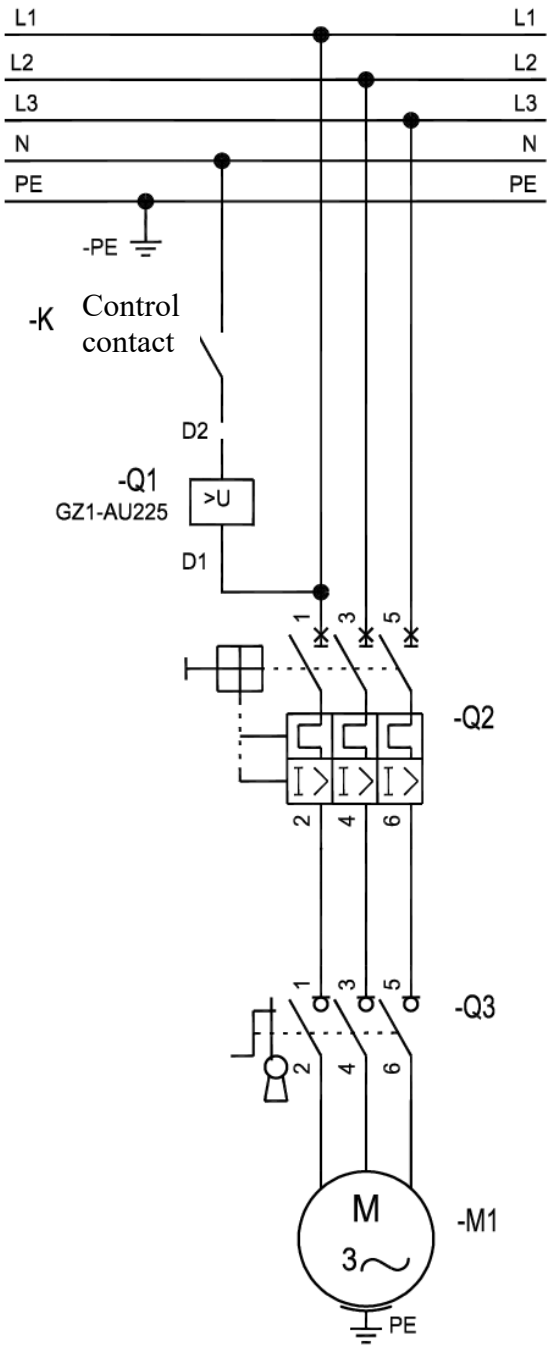


Figure 28. An example of the wiring diagram for the PS300 conveyor.

The above diagram represents general guidelines for construction of the wiring system for the PS300 conveyor. The units used can be replaced by equivalent devices having identical functions.

-M1: Three-phase electric motor,
-Q1: Undervoltage release;
-Q2: Thermal overcurrent circuit breaker;
-Q3: Lockable main switch;
-K: The control contact; when closed, the contact enables operation of PS300, when open, PS300 cannot work; the contact should open in the case of:

- an attempt to enter the silo by opening a manhole when PS300 operates as an unloading/loading conveyor for the silo;
- stopping of the conveyor or other equipment responsible for efficient reception of grain from PS300,
- other conditions (depending on individual investment solutions), when further work of PS300 may pose a threat to health or life of humans or animals, or may result in a damage to the conveyor or other equipment.

Chapter III. Initial operations and preparing the conveyor for operation.

1. Ordering the product.

Orders for conveyors and spare parts can be placed with BIN Sp. z o.o. or with authorised BIN sales representatives.
Each time, before purchasing any components, a person placing the order should consult the manufacturer or a sales representative in detail about planned investment.
The manufacturer prepares a complete conveyor, including ordered auxiliary equipment, spare parts, etc.

2. Transport of purchased devices

Transport of the components is arranged by a seller or the ordering person, under an additional agreement. The components require a vehicle of dimensions and capacity resulting from data - Table 4. The cargo body of the vehicle must be provided with a tight tarpaulin. In transport, all equipment must be secured against sudden movement. Loading and unloading should be performed with forklift trucks of capacity resulting from data - Table 4.

Table 4. Units of the screw conveyor PS300 packed for transport - weight and dimensions.

Product	Package dimensions	Product weight including packaging	Number of packs
	cm	kg	pcs.
PS300-N7.5/200	80x60x50	155	1
PS300-N11/200	80x60x50	150	1
PS300-N11/300	80x60x50	164	1
PS300-N15/200	125x70x60	261	1
PS300-N15/300	125x70x60	318	1
PS300-N18/200	125x70x60	374	1
PS300-N18/300	120x70x60	325	1
PS300-P3.0	ø40x300	92	1
PS300-P2.5	ø40x250	78	1
PS300-P2.0	ø40x200	65	1
PS300-P1.5	ø40x150	51	1
PS300-P1.0	ø40x100	38	1
PS300-P2.0/N	220x40x60	115	1
PS300-LOZ/P1	40x40x38	43	1
RU300-MOC1	40x45x10	15	1
PS300-MOCBET	40x20x10	8	1
PS300-LACZ1	60x40x65	33	1
PS300-LACZ2	60x40x60	33	1
PS300-I/O-300	60x40x55	33	1

IT IS FORBIDDEN TO CARRY THE LOAD ABOVE PEOPLE AND ANIMALS

DURING TRANSPORT AND STORAGE, CONVEYOR MODULES SHOULD BE PROTECTED AGAINST MOISTURE, ESPECIALLY COMPONENTS OF THE ELECTRICAL WIRING.
When the components become wet, they must be dried thoroughly, and their correct operation must be verified. Storage of wet elements may cause irreversible changes in the product parameters. The manufacturer shall not be held responsible for the above-mentioned defects resulting from a failure to observe the above recommendations.

3. Operation

3.1. Operation of conveyors

Methods for starting and stopping the conveyor may differ from those described below. This results from a design of the electrical wiring system, in which used electric units (mainly control devices) differ from those delivered by the conveyor manufacturer.

Starting the conveyor
- Set the main switch in the position "1",
- Press the black ON button on the motor switch.

Stopping the conveyor
- Cut the grain inflow to the conveyor off (close the shutters) and wait until the device is completely empty,
- Press the red OFF button on the motor switch,
- Set the main switch in the position "0",

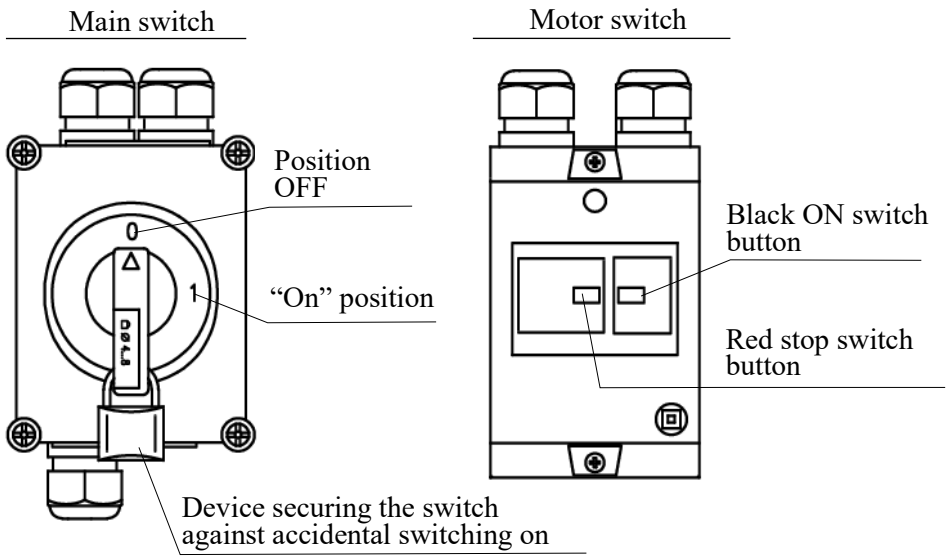


Figure 29. Control equipment for the PS300 conveyor.

Grain transport

Before starting the grain transport:
- check the operational condition of conveyors and their accessories;
- ensure that there are no people and/or animals at locations of grain inlet and outlet;
- arrange efficient collection of material from the conveyor outlet, to prevent its blocking (overload).

It is forbidden to stop the conveyor which pipe and screw are filled with grain. This may cause problem with restarting it.

Screw conveyors must be constructed in a way ensuring they are provided with devices dosing and cutting off the flow of transported material. The use of such devices prevents conveyor overfilling (blocking) and damaging.

The system of conveyors is not suitable for transport of material that is highly contaminated, locally aggregated, etc. Any attempt to transport such grain may result in overload or damage, and in consequence, stopping of the device. When the above remarks are considered, the conveyor can be started.

In an emergency, stop the device by pressing the red STOP button on the motor switch.

In the case of power outage, the system of conveyors will be permanently stopped. Restoring of power supply will not restart the machines automatically. To restart the conveyors, repeat the starting sequence from the beginning.

3.2. Conveyor maintenance

Correct and punctual maintenance inspections, maintenance and possible repairs guarantee availability of the full operating capacity of the conveyors and prevent their premature and excessive wear.

Periodic maintenance and regular repairs

Periodic maintenance covers:
-inspection of safety devices, that is, a motor switch, a main switch, etc. (correct operation, no mechanical damage, etc.);
- inspection of the electrical wiring system by an authorised electrician;
- inspection of a technical condition of welded, screwed and other connections;
- inspection of anti-corrosion coatings;
- inspection of sliding and roller bearings of the conveyor;
- inspection and possible replacement of sealants of the conveyor bearings;
- inspection of bearings, sealants, and other subunits of the electric motor and the reducer, as recommended by their respective manufacturers;
- lubrication of sliding and roller bearings;
- inspection of oil level and quality in the reducer, if required by the reducer manufacturer;
- inspection of other moving and fixed components.

Maintenance frequency:
Periodic maintenance frequency should be adapted to intensity of use, but it should take place at least once a year. All safety devices, i.e. the motor switch, the main switch, and other, should be inspected at least once a month or before each start of conveyors, as well as after each longer break in their use.

At least once a year, the User should order a qualified electrician holding relevant licences to inspect all electric equipment components.

The conveyors are equipped with a system for lubrication of sliding bearings. These bearings should be filled with grease after each 30 hours of operation.

The regular maintenance includes minor repairs, and possible repairs of paint coatings. Anti-corrosion coating of screws can be damaged during installation (tightening). In such case, regular repairs include applying anti-corrosion coatings on damaged surfaces.

Overhaul
Overhauls are performed according to a scope and needs, depending on the degree of wear of screws, connections, etc., and involve repair or replacement of relevant parts.
Such overhauls cover the scope of regular maintenance and:
- replacement of roller and sliding bearings, sealant, etc.
- applying of new anti-corrosion coatings;
- other relevant repairs.

All damages must be repaired immediately, and parts that are damaged or worn must be repaired or replaced with new ones.

4. Final and supplementary information

4.1. Storage

When the device is not used for a longer time, empty the conveyors completely, clean them and perform all necessary repairs and maintenance.
Preferably, dismount the drive unit of the screw conveyor PS300, perform preventive maintenance and store it in a dry room. When those units are left at the location of their operation, it is recommended to cover them, to secure them against any influence of weather conditions.

When starting the equipment after a longer break in use, follow the guidelines for the start-up (specified in this Operating Manual).

4.2. Spare parts

When any conveyor components are worn, damaged or lost, they can be purchased from BIN. The manufacturer does not provide for the use of spare parts from manufacturers other than BIN. To purchase spare parts, contact BIN in writing, specifying the following details:

- Device name
- Proof of purchase number;
- Device model
- Year of production
- Serial number.

Before the order is placed, the type of ordered spare parts must be precisely specified. A need for BIN representative's visit to correctly identify a part cannot be excluded. The manufacturer does not provide the conveyor with spare parts.

4.3. Disassembling and disposal

When it is found that the device cannot be no longer operated:

- dismantle all conveyor parts and units;
- sort the parts according to a location and a method for their disposal;
- all metal, plastic and other parts and units should be transferred to specialist entities processing and disposing of such materials;
- secure other parts against possible adverse effects on humans and the natural environment.

Disassembling and disposal should be ordered at a specialist company.

When performing disassembling and disposal operations, observe safety and security precautions specified for transport and handling activities (provided in this Operating Manual).

As of 27/09/2024, I approve for use the Operating Manual:
title - "Screw Conveyors PS300",
Edition - I,
issued on - 27/09/2024.

Chief Constructor
Mieczysław Laskowski

.....
(signature)

5. Warranty and warranty card

BIN Spółka z o. o. guarantees correct operation of the purchased product from our company. The warranty covers 12 months from the date of sales and is valid only together with a proof of sales issued to a user by us or by our representative. The warranty covers free of charge removal of defects significantly affecting product performance. Therefore, application of warranty provisions under Article 558§1 of the Civil Code is explicitly excluded.

General Guarantee Terms and Conditions

1. The territory of the guarantee application
   This guarantee is valid within the territory of Poland. The warrantor shall cover costs of transport related to an accepted warranty complaint for a distance of up to 250 kilometres covered, according to standard rates.
2. The warranty does not apply to defects resulting from incorrect or excessive operation, natural wear of parts, or other reasons outside the manufacturer's control.
3. The warranty shall not cover any other costs not specified above, especially costs being a consequence of the equipment stoppage.
4. The warranty becomes invalid in the following cases:
   - use of the product contrary to its intended use;
   - when installation was incorrect or any unapproved changes were made;
   - works requiring specialist licences are performed by unauthorised persons;

Specific Guarantee Terms and Conditions

1. In the case of products:
   - with electric motors, warranty for motors is granted by their manufacturer.
   - delivered as components - a customer will verify condition of these components on delivery, and then will store them on its own responsibility until they are assembled. Flat components of galvanised sheets require special attention. They should be stored in a way ensuring a free flow of air around each component. When wet galvanised metal sheets are in contact, this results in formation of irremovable spots, even during a short storage.
2. When arrangements made during placement of an order or included in the Operating Manual include obligations for a buyer, then the warranty does not cover consequences of failure to perform or incorrect performance of these obligations.
3. Outdated financial liabilities of a buyer towards the warrantor or the seller result in a loss of the warranty rights until the outstanding liabilities are covered.

Exercising of warranty rights

The customer notifies to the seller in writing any defects found. The seller shall notify the customer about a way of handling their complaint, and a place and a time of warranty repair no later than within 14 days of receiving the notification.

.....

Manufacturer:

BIN Sp. z o.o.
87-700 Aleksandrów Kujawski
at Narutowicza 12

Seller:

(*seller's signature is not required when an invoice includes a note of granting the warranty)*