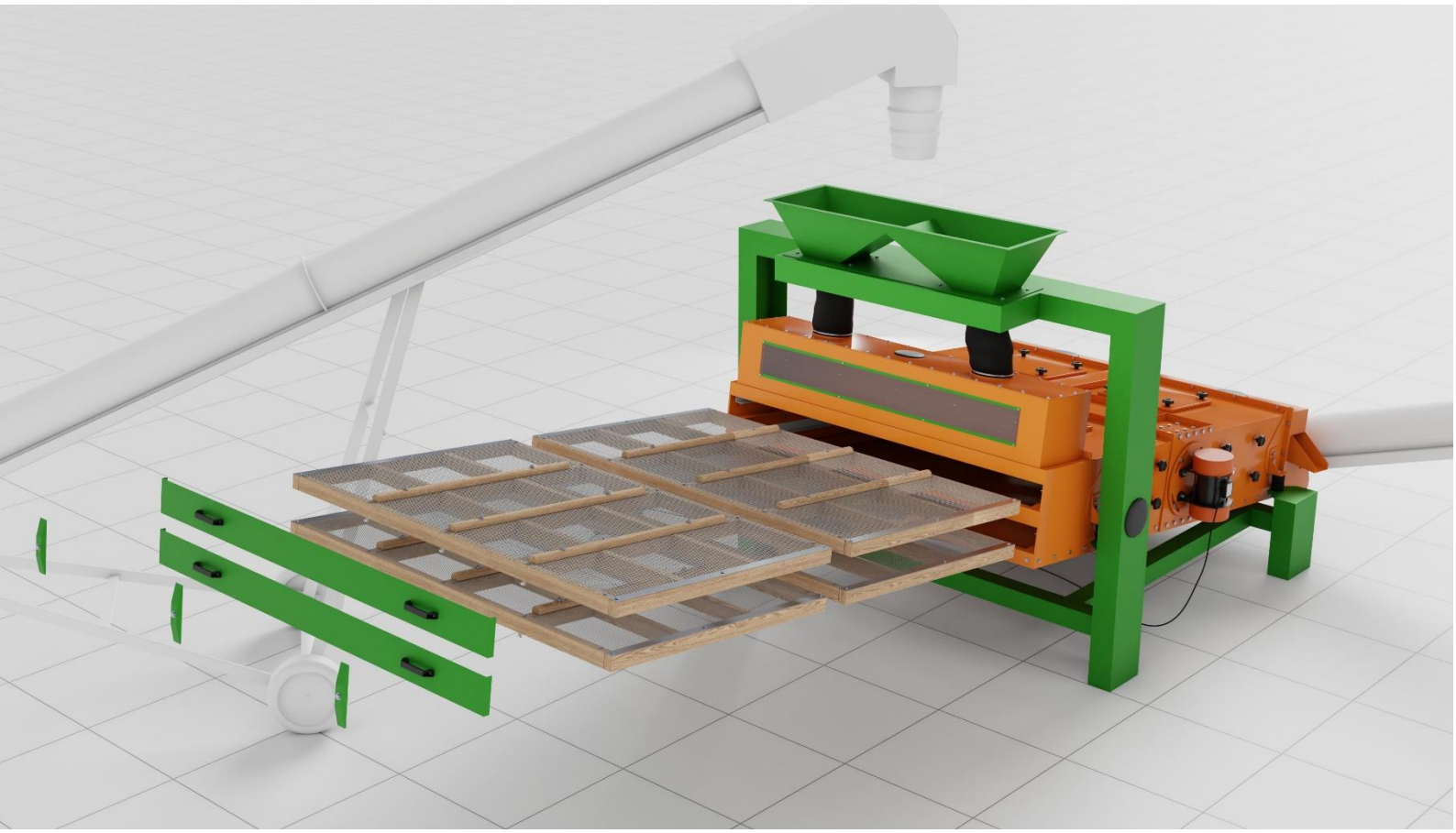
Grain Cleaner - Vibrating Type

METRA VDSC



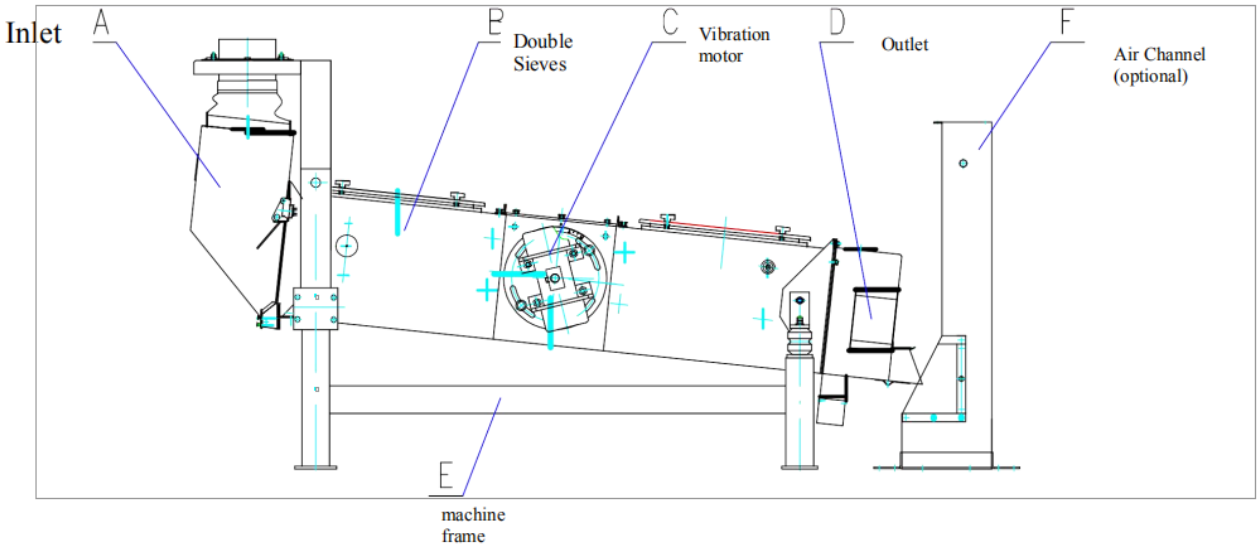
Ⅰ. Introduction

Use and Specific Properties

The grain cleaner, vibrating type, is designed for pre-cleaning and cleaning various materials in flour mills, rice mills, feed plants, chemical, and food processing factories. It is versatile and capable of cleaning wheat, corn, rice, and oil materials by using different types of sieve frames.

Equipped with an aspiration channel, the grain cleaner efficiently separates low-density impurities and dust, resulting in a more thorough cleaning process. The machine can be adjusted to handle different levels of coarse and fine impurities in the materials. It is an excellent equipment with a simple structure, smooth operation, high cleaning efficiency, high output, compact size, low power consumption, low noise, and easy operation and maintenance.

Main Technical Parameters (See Table 1)



Ⅱ. Structure and Working Principle

Structure

A. Material Inlet Device

The material inlet device consists of welded steel plates and screws, allowing for easy dismantling of the sieve frame from the front of the sifter body.

B. Sifter

The sifter is made of welded steel plates and screws, and the vibrating motor and drive device are located at the center of the machine. The throw angle can be adjusted within the range of 0 to 45 degrees. The sieve frame is fixed with a fixture (3), and the sifter is supported by hollow rubber springs.

C. Vibrating Motor

The vibrating motor powers the straight-line motion of the sifter body. The simple structure allows for easy adjustment of the throw angle and vibration amplitude.

D. Material Outlet Device

The material outlet device is made of steel plate structure connected with the sifter by bolts.

E. Machine Frame

The machine frame is a steel structure with a crossbeam that can be installed at any height to adjust the sieve surface's inclination within the range of 1 to 12 degrees.

Working Principle

Materials are fed into the inlet through an eccentric taper funnel (6) from the inlet pipe (5) and cloth tube (4), and then onto the scattering material board (9) inside the material box (8). The taper funnel (6) can rotate, ensuring the materials fall in the middle of the scattering material board (9). The material feed box vibrates with the sieve set, causing the materials to spread on the bottom board (10) of the receiving material drawer (10) and flow over the entire sieve surface. If the materials are not evenly spread, the dividing material board (7) can be adjusted to achieve the desired state.

A pressure door (11) is installed at the connection of the receiving material drawer and the end-surface of the sieve board, ensuring even material distribution at the same height. The materials flow into the first sieve surface (3), and the materials passing through it fall onto the second sieve surface (2). The materials above the sieve are discharged from the outlet (1). The materials passing through the second sieve fall onto the bottom board (12) and are discharged from the outlet (13) at the machine's middle back. Materials above the second sieve surface are passed through the pressure door (14) and discharged into the next working procedure. Aspiration separator or Air-recycling aspirator is used to separate the low-density impurities from the materials and achieve a better cleaning effect.

Ⅲ. Transport, Installation, Adjustment

Transport:

To ensure safety during transport, four pieces of safety angle steel (2) painted with yellow color are fixed with the grain cleaner and separator frame. These angle steel pieces must be removed before using the machine. The machine must not be transported or hung up without these safety angle steel pieces to protect the rubber springs.

Installation:

A. Installing the Machine: The machine must be installed directly on the floor frame, and additional machine frames may be added if necessary. It should not be installed with one foot on a beam and another foot on a thin wooden floor; adding a beam is necessary. The machine must be installed on a firm base and securely fixed with bolts. All machine bases must be on the same level surface.
B. Material Inlet Tube: The turning eccentric circle-awl of the material inlet device should be in front of the machine to ensure the material is sent to the center of the machine. Adjust the position of the tube during connection. The best cleaning function is achieved when the materials are evenly spread over the entire separator surface.
C. Electric Cable: Ensure that the two vibrating motors turn in the same direction. An electric interlock device should be equipped to ensure both motors start and stop simultaneously.

Adjustment:

A. Swing: Adjust the swing to 5-5.5 mm, with the maximum journey being 6 mm, as indicated on the journey display. While the machine is in operation, adjust the balance weight piece on the motor shaft to change the separator's swing. Increasing the journey should move the balance weight pieces closer together, and decreasing the journey should move them apart. Ensure that the position of the two motors' balance weight pieces is the same and adjusted as required.
B. Vibration Direction Angle: The vibration direction can be adjusted from 0° to 45°. In flour mill cleaning, a 20° angle is needed, while pre-cleaning requires a 25° angle. To change the vibration direction, loosen the four fixed bolts, turn the motor, find the best angle during operation, and record it. Note that this adjustment must be made when the machine is stationary.
C. Sieve Angle: The angle of the separator can be adjusted within the range of 0° to 12°. To adjust the angle, simply loosen bolts (1), and move the entire sifter to the desired angle according to the direction display scale. Ensure that the electricity is shut off while adjusting the machine.

Ⅳ. Operation

Preparing Before Starting the Machine:

1. Remove the four pieces of safety angle steel.
2. Check the installation of the sieve frame and clean balls. Depending on requirements, three to six clean balls should be placed in each sieve frame.
3. Verify the turning direction of the motor. Both motors must turn in the same direction and start and stop simultaneously.
4. Ensure the fixing of the dividing material board (7) and install the cloth tubes securely.
5. Ensure that no tools or other parts are placed on the machine.

Starting the Machine at No Loading:

1. Check the swing indicated on the journey plate.
2. Observe the rubber spring's support to ensure that it is not loose or coming out.
3. After starting the machine for 10-15 minutes, stop it and let it quiesce. Inspect and tighten the bolts of the driving device, which may have loosened during transport, using the force handle (8 kg m).

Working with Materials:

1. Check the feeding material system's proportion. If it does not meet the requirements, adjust the system as described above.
2. The aspiration channel should be adjusted to achieve the most effective cleaning.

Ⅴ. Maintenance

Lubrication of Vibration Motor Bearings:

a) Every 2000 hours (approximately 3 months), pour lubricating grease into the vibration motor bearings. Use No. 3 lubricating grease or equivalent lubricating oil.
b) Every 5000 hours (approximately 8 months), change the lubricating grease. If the bearings are dismantled and cleaned, pour 1/3 volume of lubricating grease into the bearing.

Cleaning the Sieve Surface:

The sieve surface should be cleaned periodically. Do not knock the sieve surface with a hammer. Use a scrape board to clean the sieve surface. Check the sieve surface regularly, and if it is damaged or the cleaning balls are worn out, replace them to ensure optimal separation.

Inspection of Bolts and Fixing Parts:

Inspect the bolts and other fixing parts regularly to ensure they are tightened.

Replacement of Rubber Parts:

Timely replace any worn or broken rubber parts.

Ⅵ. Parts of easily damaged

No	NAME	TYPE	QTY	REMARK
1	Feed in material Cloth tube	Ø 157 (VDSC 400) Ø 208 (VDSC 800) Ø 252 (VDSC 1600 & 2000 & 4000)	1	VDSC 4000 use two
2	Rubber spring	Ø 85x95 (VDSC 400) Ø 105x105 (VDSC 1600) Ø 120x120 (VDSC 2000)	4	
3	Cleaning ball	Ø 25 Ø 35	some	400 type 1600 and 2000
4	Sieve board	Ø 997x1002 (750) (VDSC 400) Ø 1498x1000 (VDSC 1600) Ø 1798x1000 (VDSC 2000)	4(2)	750 for VDSC 800 VDSC 400 use two

WARRANTY

Product name:

METRA VDSC - ______________________________

Manufacturer: ______________________________

Serial number ____________ Delivery date ____________ 20____

______________________ (signature)

_ _ _ _ _ _ _ _ _ _ _ _ _ _ (print full name)

Stamp here

The manufacturer guarantees the accordance of the METRA VDSC provided that the requirements of transportation and operation prescribed in this Certificate are followed.

13.1. Terms of warranty:

Warranty repair is the replacement of cracked or broken parts, and parts with initial defect, detected during operation and/or caused the breakdown.

- The manufacturer service personnel makes the decision on the adoption of a defective equipment on maintenance service.
- The buyer has the right of free repair during the warranty period.
- The warranty applies to the power unit, frequency converter and frames.
- The warranty repair is performed in case of presenting by the buyer a fully filled warranty card.
- The warranty does not apply to materials and parts, which are considered as wear during operation: wheels, tires, sealing elements, protection covers.

13.2. Warranty interruption:

Warranty obligations may be interrupted in the following cases:

1. Discrepancy of the METRA VDSC serial number to warranty the serial number fixed in the warranty card and/or other written agreements.
2. If unauthorized penetration into METRA VDSC parts is detected.
3. Changes to the software settings of the frequency converter.
4. Improper storage and preservation of the METRA VDSC.
5. The presence of visible or sheltered mechanical damages of the METRA VDSC caused by transportation, storage or user rules violation identified before or during the warranty repair process.
6. Connection of the METRA VDSC to the electric mains with higher nominal voltage than stated by the manufacturer.
7. Presence of foreign objects inside the METRA VDSC, regardless of their nature, if the possibility of such is not specified in the technical documentation and certificate for this machine.
8. Breakdown of the METRA VDSC due to failures in the power supply network.
9. Any unauthorized design changes and repairs of the METRA VDSC.
10. The Metra Grain Cleaner breakdown caused by force majeure factors exposure.
11. The mounting, adjustment and training which are carried out by non certified specialists.

The manufacturer shall not be liable for any lost profits or other damages resulting from the breakdown of the METRA VDSC

The manufacturer shall not be liable for any breakdown caused by the transportation, storage or user rules violation of the METRA VDSC.

Warranty period of the METRA VDSC is 12 months since the date of delivery.

______________________ (signature of the buyer)

_ _ _ _ _ _ _ _ _ _ _ _ _ _ (print full name of the buyer)

CERTIFICATE OF SALE

METRA VDSC - _____

No. _____

made in accordance with the requirements of specifications TSU 29.3-37090655-001:2010, and is found fit for service.

_____ _

(signature) (print full name)

Stamp here

20____ / _____ / _____

(year / month / day)

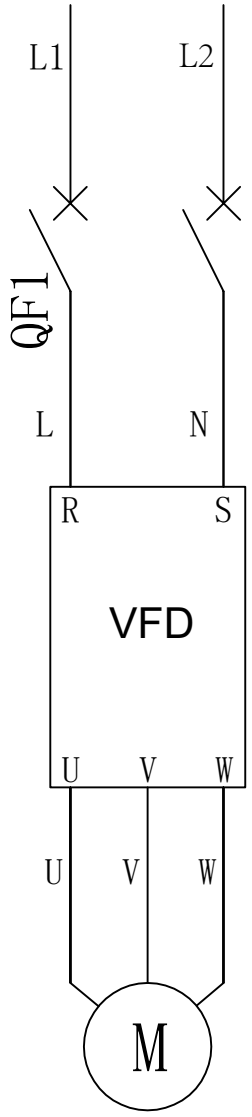
STORAGE

- Storage of the METRA VDSC is carried out in a dry & ventilated space.
- Rainfall and foreign object precipitation is not allowed.

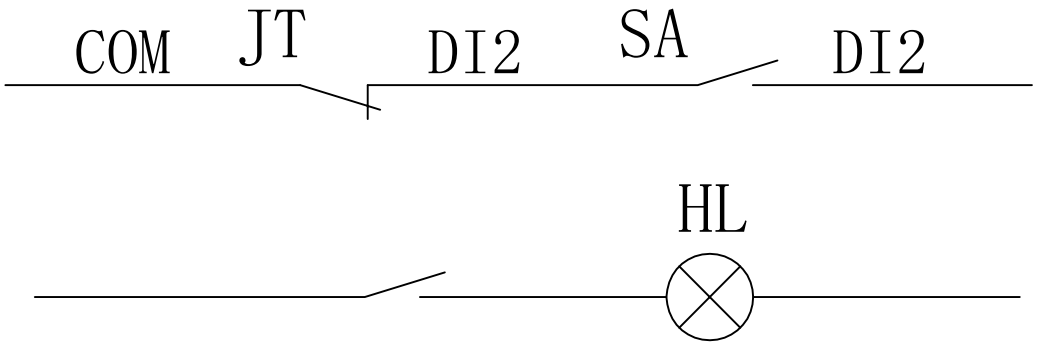
Date		Storage conditions	Storage type	Remarks
Accepted for storage	Withdrawn from storage			

REPAIR

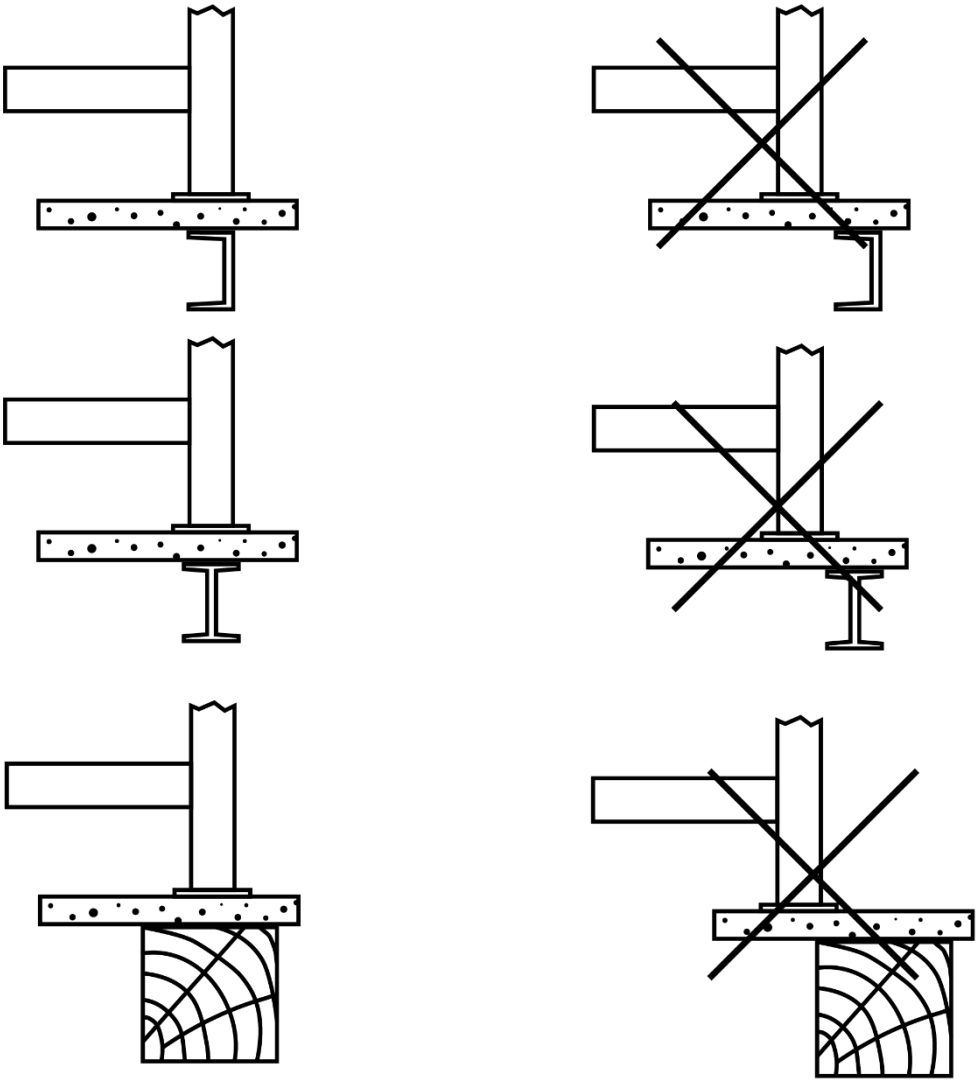
Date	Operating time since the beginning of operation period, hours	Operating time after the last repair, hours	Reason for repair	Information about repair



Electric motor



Design		Approval			Main circuit diagram
Approval		Date			
Review					



Examples of Equipment Installation

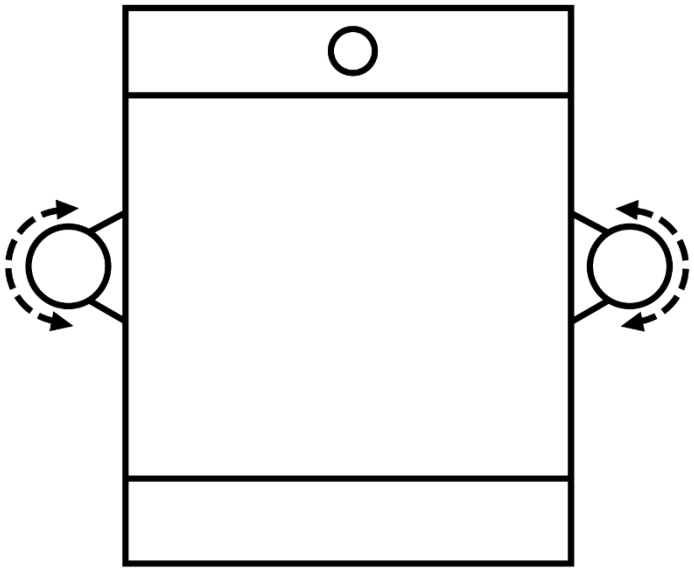
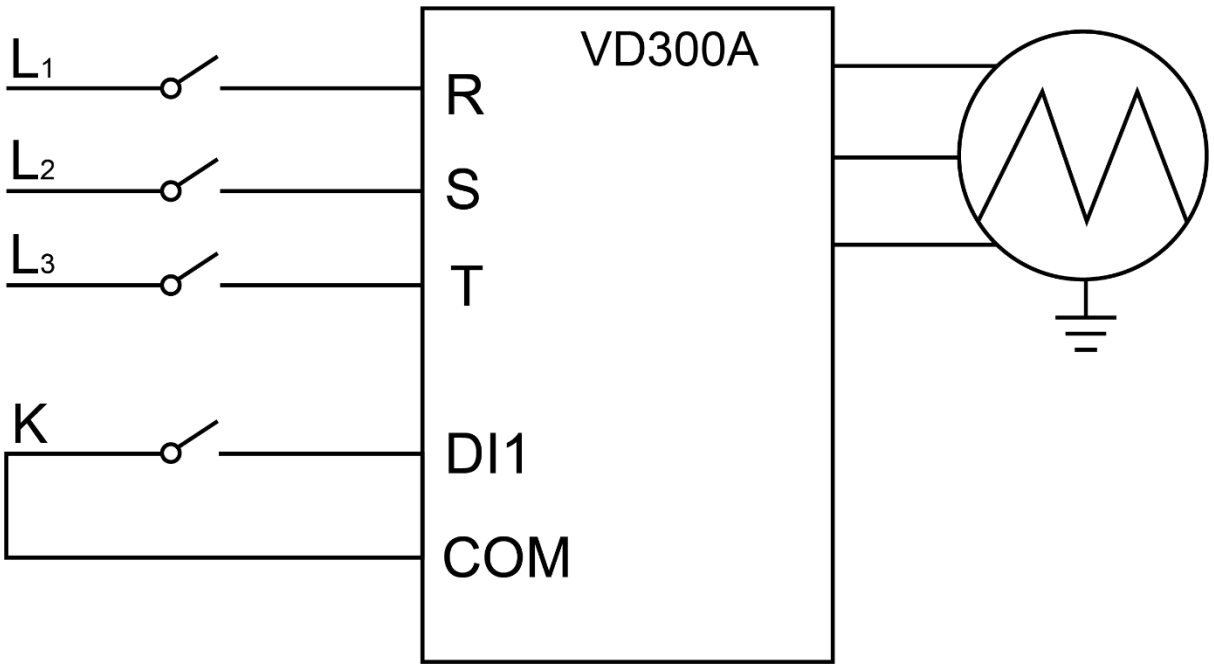


Diagram of Motor Rotation Direction

Examples of Equipment Installation and Diagram of Motor Rotation Direction

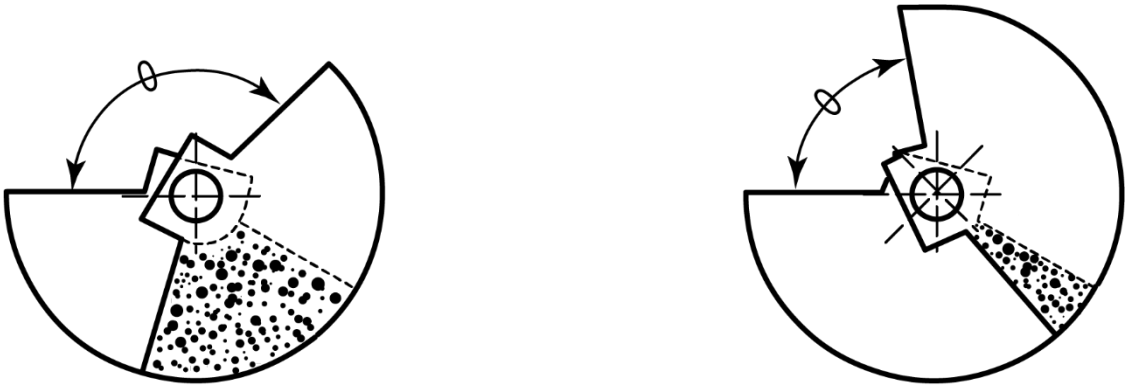
Electrical Wiring Diagram



Parameter: P00.01 = 1
P05.00 = 0
P05.01 = 1
P01.02 = 0 (The running command of the power-on terminal is invalid)

It can ensure that when a sudden power failure occurs and the operation switch is still in the "ON" state, it will not be started. You must turn the operation switch to "OFF" again, and then turn it to "ON" before running.

Amplitude Adjustment and Vibration Motor Steering Diagrams



a. large amplitude b. small amplitude

Fig.: amplitude adjustment diagram

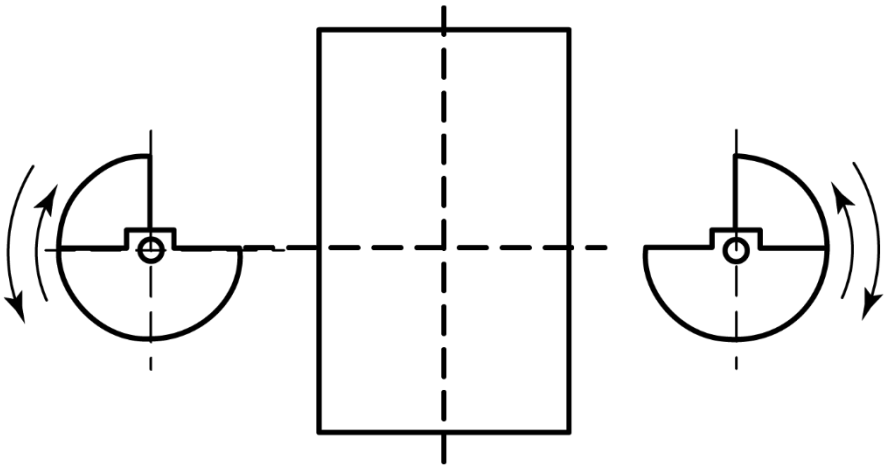


Fig.: steering diagram of vibration motor