DM - IPM 500 User's Manual

Operating manual and Maintenance

Anadolu Mah. Yıldırım Beyazı Cad. No:68 Arnavutköy / İstanbul TÜRKİYE

DENMAK

DM - IPM 500

IPM 500 Wet and Dry Shotcrete Machine

This concrete spraying machine is designed for efficient processing of both wet and dry mixtures, making it ideal for shotcrete applications in tunnels, mines, bridges, buildings, and slope stabilization. Built for ease of use, it features an intuitive manual operation system for seamless control.

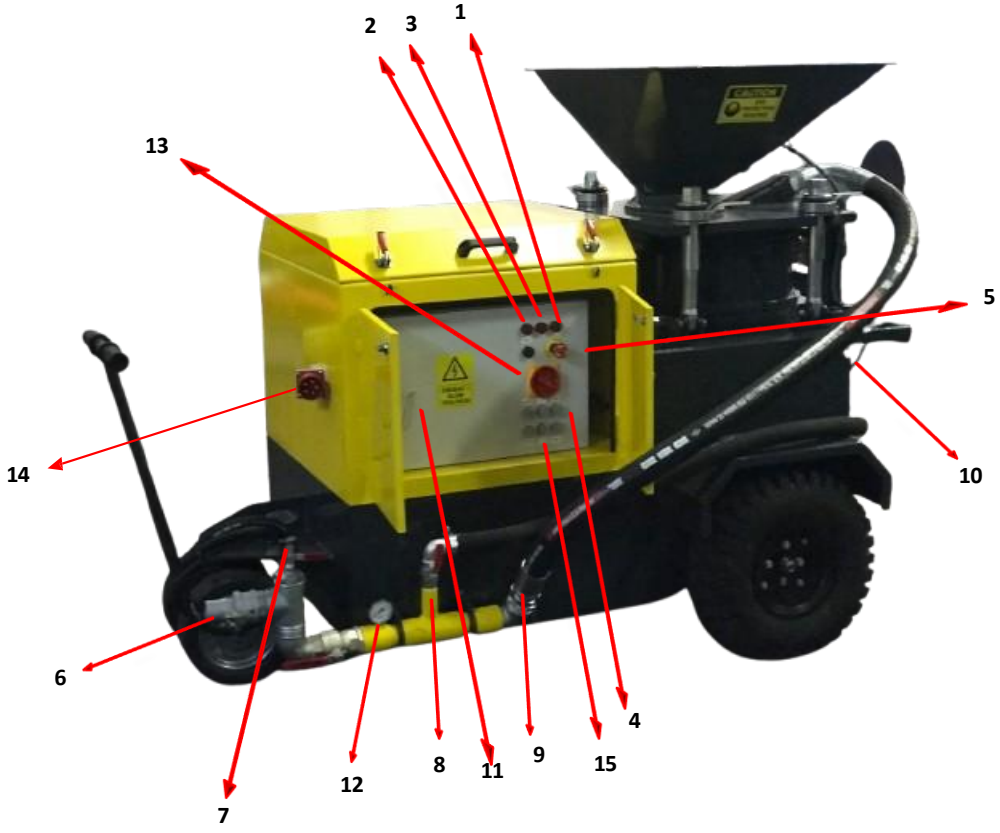
The machine delivers precise and reliable spraying performance. Its electrical protection system prevents motor overload, while the Smart variable speed drive provides adjustable speed control for optimized output.

The machine's hydraulic clamping arm operates on four points and is tightened with a torque wrench, minimizing rubber consumption during operations. Available in both chassis and wheeled options, the machine is easily transportable and adaptable to various job sites. Its compact design makes it suitable for confined or low-ceiling environments, allowing for single-person cleaning and maintenance.

For added convenience, the dosing pump can be mounted separately, enabling simultaneous operation of both the machine and the dosing system. High serviceability is a key feature, with parts replacement being quick and straightforward—requiring no calibration or adjustments afterward and eliminating the need for specialized personnel. Designed for both wet and dry applications, this versatile spraying machine supports aggregates up to 12 mm in diameter, with a capacity of 10 m^3/h for wet and 15 m^3/h for dry shotcrete applications.

DM - IPM 500

1	SPEEDCONTROL
2	STOP
3	START
4	VIBRATIONSTART-STOP
5	EMERGENCYSTOP
6	MAIN AIR INPUT/ MAIN AIR VALVE
7	AIR VALVE FOR CLEAN THE MACHINE AFTER USE
8	LOWER AIR VALVE
9	UPPER AIR VALVE
10	GREASE FEEDER FOR ROTOR
11	GRASE PUMP
12	MONOMETER
13	MAIN ON / OFF
14	MAIN POWER SUPPLY
15	MANUAL GREASE PUMP



DM - IPM 500

22	EXHAUST
23	CLAMPINGARMS
24	OUTLET
25	ELECTRICAL VIBRATION
26	FEEDER
27	RUBBER DISCS
28	METAL DISCS
29	ROTOR

General Instructions

1. Begin by establishing external connections.

2. Connect the concrete hose of the machine to the outlet port by attaching the gasket to the connection area and securing it with a clamp.

3. Connect the air hose from the compressor to the main air inlet in the connection area, securing it with a clamp.

4. Attach a hose to the water inlet in the concrete hose.

5. Adjust the plug to fit the power supply.

6. In case of an emergency, immediately press the stop button.

7. Verify that the rotor rotates in the correct direction (counterclockwise) by pressing the start button. If it doesn't, press the stop button, reverse the direction, or check the cable ends. Replace the cable ends, if necessary, before operating the machine.

8. Supply air from the compressor, ensuring that both the lower and upper air valves of the machine are closed. Check for sufficient air pressure. With the main valve open, there should be at least 9 bar pressure indicated on the leftmost manometer (for a 40-meter concrete hose). Carefully and gradually open the bottom and top valves to allow airflow. Maintain an average pressure of 4–6 bar on all three manometers during concrete shot operations.

General Instructions

1. Open the water valve at the nozzle end and allow water to escape with the air.
2. Ensure the machine is ready for use.
3. Start the drive motor by pressing the start button.
4. Empty the material into the feeder section.
5. Immediately activate continuous shooting after starting the vibration motor.
6. Adjust the tensioning arms, ensuring they are evenly tightened.
7. Use a torque wrench to apply a force between 30 and 50 newtons.
    1. For concrete hoses ranging from 20 to 100 meters, set the torque between 30 and 40 newtons.
    2. For hoses between 100 and 300 meters, set the torque between 40 and 50 newtons.
8. Adjust clamping settings according to the air pressure applied to the machine.
9. During operation, ensure that discharging is consistently occurring; a closed discharge decreases capacity.

Run the machine until the material is finished. Afterward, clean the machine using air with the cleaning hose located on the machine. Then, close the drive motor and the vibration motor by pressing the stop buttons. Next, stop the water and air connection to halt the operation. Proceed to clean the machine arms, rotor, and outlet, ensuring there is no residue. If a dry shot has been made, use air only for cleaning; if a wet shot has been made, clean with water. Finally, ensure all components are thoroughly cleaned and free of any material or debris.

Clamping arms and Torque Wrench

The IPM 500 is equipped with clamping arms on four points and tightened using a torque wrench. Ensure the arms are at the same height by measuring with a meter. Tightening should be done within a range of 30 to 50 newtons.

- For concrete hoses between 20 and 100 meters, set the torque between 30 and 40 newtons.

- For hoses between 100 and 300 meters, set the torque between 40 and 50 newtons. Ensure that dust and air do not come between the discs during operation. If there is a leak, readjust the levers. If concrete is coming from the exhaust during evacuation, check the air settings. It is crucial to maintain cleanliness during operation; otherwise, the plates will start to deform within 5 minutes.

Air Connection And Vibration System

Air Connection: Air is supplied from the compressor, ensuring that the lower valve of the machine are closed initially. Check if the air pressure is sufficient. When the main valve is open, there must be at least 9 bar pressure indicated on the leftmost manometer (for a 40-meter concrete hose). Carefully and gradually open the bottom and top valves to provide airflow The manometer should indicate an average pressure of 4–6 bar during concrete shot operations.

Electrical Vibration: Additionally, the machine is equipped with an electrical vibration system on the hopper, providing another option for the easy release of dry or wet cement into the rotor.

Air Connection

If the middle and rear valves are out of adjustment, cement may leak between the exhaust and the disc. Ensure that the air valve adjustment is made properly so that no cement comes from the upper discharge. Pay attention to the sound of the machine's shot. A regular sound output indicates that your machine is working flawlessly. If the sound is irregular, you need to adjust the upper air valve.

Disassembly of Plates;

1. Separate the three tension arms of the machine from the loading head and ensure that you unlock the security pin. The security pin is located behind the rotor under the main plate.

2. Sew from the loading head to the back of the machine.

3. Remove the flange on the hub of the steel plate on the rotor using a 5 hex socket. Take out the steel plate and its gasket, then lift the rotor.

4. Remove the flange at the hub of the steel plate in the lower part using a 6 Allen key. Take out the steel plate and its gasket.

5. Remove the two bolts in the hub of the lower and upper rubber plates using a 6 Allen key.

6. Clean and wipe the floor of the dismantled areas with a wire brush or a spatula.

7. For rubber and steel discs, use 6 and 8 Allen keys respectively. Also, be sure to place a paper gasket between the steel plates.

Montage of new plates;

After replacing the Upper and Lower wear plates assemble the Upper and Lower rubber plates first and wipe their surfaces (be careful not to leave any dust on their surfaces).

Put the lower steel plate with the gasket on the lower part of the rotor and tighten it with the flange on the hub and put the rotor on the machine

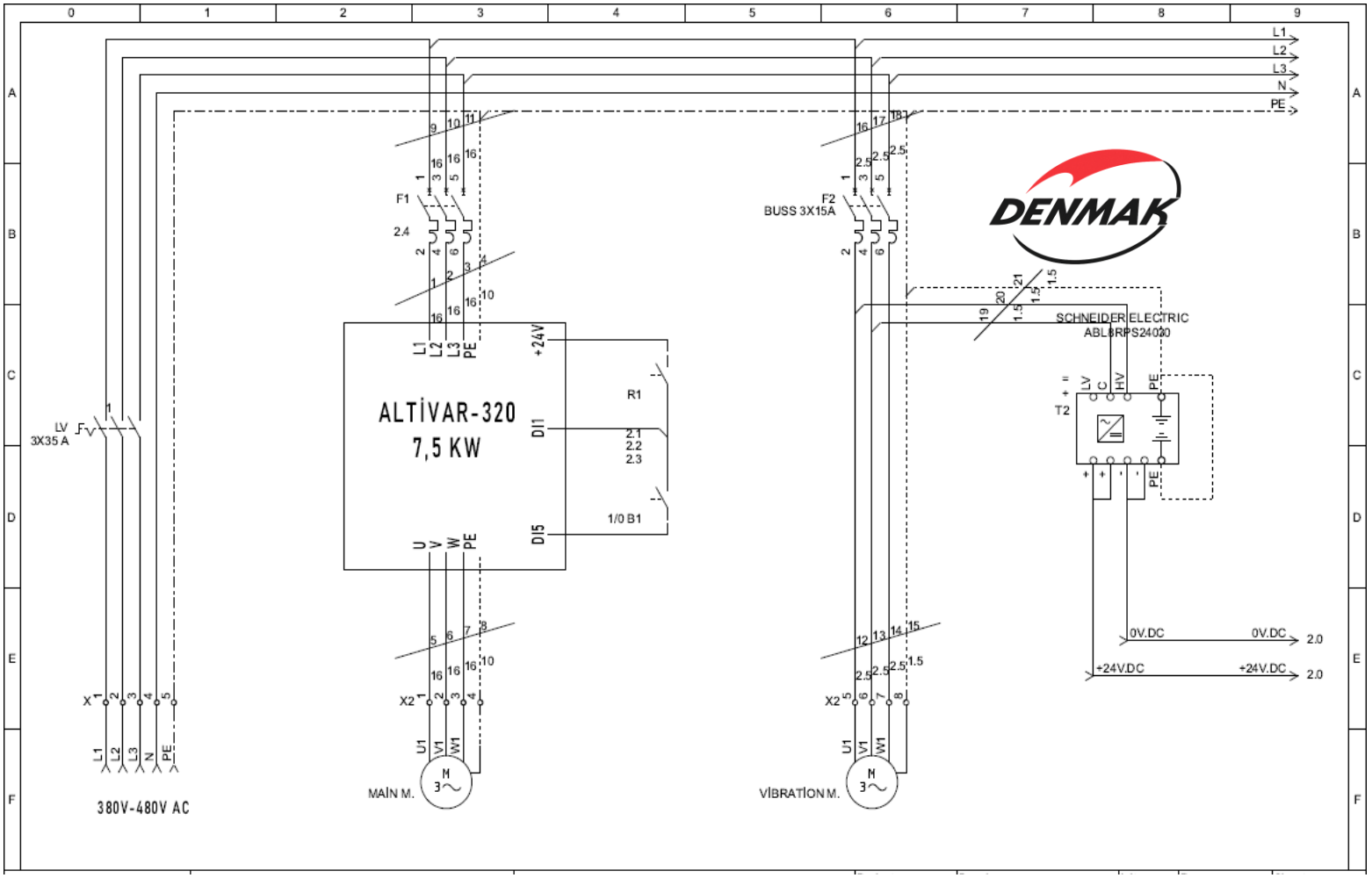
Put the upper steel plate with its gasket on the rotor and tighten the flange removed from the hub.

Close the feeder.

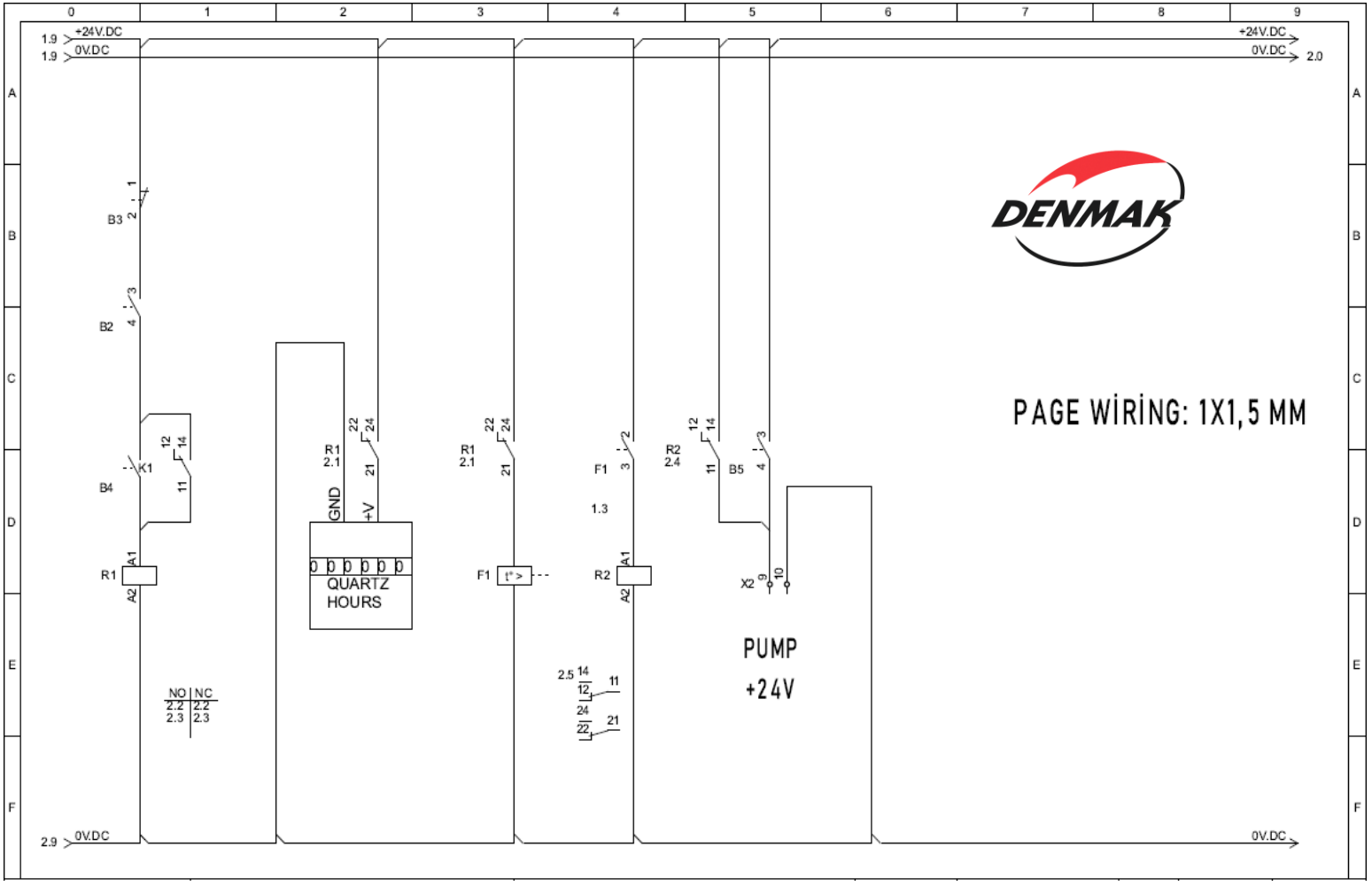
Fix the 4 tension arms equally.

When the tension rod is tightened more than necessary, it causes rapid deterioration.

It should not be tightened at an unnecessary point. When done, the wear of the consumable will be very rapid and its capacity will be reduced. And the machine will expel the cement from between the discs.



Anadolu Mah. Yıldırım Beyazı Cad. No:68 Arnavutköy / İstanbul TÜRKİYE



Anadolu Mah. Yıldırım Beyazı Cad. No:68 Arnavutköy / İstanbul TÜRKİYE