User Manual

Refractory Concrete Spraying Machine

TTS 300, 400, 600, 800

MANUFACTURER: FILAMOS, s.r.o.
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I. Introduction

This Use Manual (hereinafter "UM") is applicable to gaining general information about safe use of a refractory concrete spraying machine of the TTS series (hereinafter the "Machine"), manufactured by FILAMOS, s.r.o., Hatě 546, 261 01 Příbram. More information, recommendations and technical specifications (parameters) are provided in the Machine Service and Maintenance Manual prepared by the manufacturer. Instructions for use are binding upon all users working with the respective Machine.

II. Use

The TTS Machine is designed for spraying refractory concrete mixtures on furnace, boilers, coke-oven battery and other aggregates lining in the energy industry and metallurgy. Spraying may be done under cold or hot conditions.

The Machine is possible to also be used for blasting concrete, reinforced concrete and stone areas.

III. Function

The Machine works on the principle of pneumatic transport – its fundamental part is a pressure vessel (tank) from which dry mixture is pushed up (by pressure) into transport hoses or pipes (if temperatures are high) and carried out to a spraying jet at a place of mixture application. The transported mixture is moistened in the spraying jet into which water (or water with a hardening accelerator) is led through a separate hose. The jet is controlled by one of the workers supervising the Machine operation.

The Machine works in cycles determined by time over which the mixture is pressed out from the vessel (tank) and time over which it is refilled with guniting mixture.

The Machine does not require any other energy sources except for compressed air.

Working environment temperature fluctuates between + 5 °C ÷ + 40 °C.

IV. Description

The Machine consists of the following parts:

- pressure vessel (tank);
- feeding hopper (feeder);
- closure (mixer);
- controlling panel;
- undercarriage;
- transporting accessories with a jet.

The pressure vessel (tank) is an upright tank (vessel) with a conical bottom. It is welded from steel sheets and equipped with flanges for connection of the feeder and lower closure. It is provided with a manometer, pipe for compressed air outlet and safety valve. In order to fix it on a frame, it is provided with bases and a holder in the lower part of the conical termination for a vibrator fixation.

This is about a stable pressure vessel (tank) by virtue of the Czech National Standard *(ČSN)* 690010.

The feeding hopper (feeder) is screwed on the upper part of the vessel (tank) and equipped with a bell-shaped closure sealed with a rubber segment and mesh of 16 x 16 mm in mesh size. At the same time, it serves to measure the mixture quantity poured in – capacity of 80 dm^3.

The vessel (tank) may be filled up to the maximum of:

a) 230 dm^3, i.e. 3 multiple of the feeder capacity (TTS 300);
b) 350 dm^3, i.e. 4.5 multiple of the feeder capacity (TTS 400);
c) 550 dm^3, i.e. 7 multiple of the feeder capacity (TTS 600);
d) 750 dm^3, i.e. 9.5 multiple of the feeder capacity (TTS 800).

The closure is connected to the bottom part of the vessel (tank). It serves for closing as well as mixing the mixture with compressed air helping to transport the mixture to a place of application.

The controlling panel is a set of control valves and pressure regulator in an inlet of the compressed air. It is fixed on the Machine frame. The interconnection to different places is provided for by rubber hoses. The air inlets to the vessel (tank) are equipped with pressure gauges in order to control air pressure.

The undercarriage is a weldment of steel profiles. It is equipped with rubber wheels and a controllable front axle. The traveling wheels may be replaced by a solid frame. The entire Machine is provided with a platform being a part of the undercarriage in order to control filling (or manual filling). At the same time, it covers the controlling air panel.

The transporting accessories consist of a tail and water hoses. The tail hose is provided with a mix spraying jet. The connection of the hose is made by a quick coupler.

The spraying jets are of a different construction upon request of a user. They may be of a different length and provided with variably curved adapters.

V. Technical Data

Technical Specifications (Parameters)

Parameter	TTS 300	TTS 400	TTS 600	TTS 800
Volume of pressure vessel (tank) [l]	300	400	600	800
Theoretical output [m^3/h]	2 ÷ 3			
Maximum transport distance - horizontal [m]	50			
Maximum transport distance - vertical [m]	20			
Maximum granularity of mixture [mm]	5			
Maximum moisture content [%]	4			
Inner diameter of transport hose(s) [mm]	DN 40			
Maximum air pressure [MPa]	0.6			
Air consumption [m^3/min]	5			

Key Dimensions (Size); Weight

Parameter	TTS 300	TTS 400	TTS 600	TTS 800
Length [mm]	1640	1630	1830	2030
Width [mm]	1060	1080	1080	1280
Height [mm]	1820	2150	2470	2800
Weight (no accessories) [kg]	632	710	765	835

VI. Accessories

Basic accessories are:

- jet DN 40/P
- rotating jet DN 40/O
- end piece 30° a 45°
- tail hose DN 40
- water hose DN 20

VII. Material

The material used for manufacture in its chemical content and mechanical properties reflects the applicable manufacture documentation.

The pressure vessel (tank) is made of attested materials and by application of a prescribed method.

VIII. Design

All parts are made according to manufacture drawings. Non-tolerated dimensions (sizes) are set in compliance with ČSN ISO 2768-1.

The parts metal-coating is done according to the manufacture documentation and in compliance with ČSN EN 12329. Uncoated parts are provided with a priming coat prior to the installation.

The welds are completed according to the drawings and in compliance with ČSN EN ISO 9692-1. The product finish treatment is carried out according to the documentation; a coat is 100 μm in thickness.

IX. Labeling

The Machine is labeled with the manufacture's plate containing the following information:

- manufacturer's name and registered office;
- CE compliance mark;
- manufacture number/manufacture year;
- maximum air pressure;
- machine weight.

The pressure vessel (tank) is provided with its own plate.

X. Testing

The Machine testing takes place in the manufacturer's plant. The tests of the pressure vessel (tank) are carried out in compliance with ČSN 690010.

Results of the pressure vessel (tank) test are a part of the pressure vessel (tank) passport in compliance with ČSN 690010 – 7.2.

The tests completion is confirmed in Product Quality and Completeness Certificate.

XI. Delivery

The Machine is delivered in an assembled state and accompanied by the original documentation containing:

- Use Manual;
- Service and Maintenance Manual;
- Product Quality and Completeness Certificate;
- Pressure Vessel (Tank) Passport in compliance with ČSN 690010 – 7.2;
- Safety Valve Certificate.

XII. Warranty

The warranty period is set at 12 (twelve) months from the Machine delivery to a purchaser unless the purchase agreement sets forth otherwise. The spare parts are subject to warranty of 3 (three) months.

The manufacturer does not honor the warranty:

- if the Machine is used for other purposes and in any other manner than as set out in the Use Manual and Service and Maintenance Manual;
- if the Machine is not duly cared of (unfitting storage, defective assembly, service);
- if a change, adjustment or repairs are made to the product without the prior consent of the supplier (manufacturer);
- if the product is damaged by a third person or due to Force Majeure (Act of God);
- at submission of a claim without the Product Quality and Completeness Certificate;
- on parts used up (wear and tear) as a result of a regular operation, i.e. mixing jet, transport hose, jet.

XIII. Packing

The Machine is delivered to domestic and international markets on a pallet. Other manner of packing must be agreed upon in the purchase agreement. The standard accessories are delivered either loose or on a pallet. All packing material is nonrefundable and any costs associated therewith are borne by the customer (purchaser).

XIV. Transport

The Machine transport is executed using common transport means. The Machine must be fixed over the transport so that its spontaneous movement or damage is avoided. The carrier is liable for fixation of the product over the course of transport.

Transport in a Site

1. At transporting the Machine, the vessel (tank) must always be empty and clear.
2. Maximum tilting over the course of transport in longitudinal or transversal direction is set at 3°.
3. Maximum transport speed is set at 5 km/hour.
4. At lifting by crane, 4 (four) ropes must be tied together under the Machine feeder.

XV. Storage

The Machine and its accessories are necessary to be stored in an areas protected from negative weather conditions, excessive humidity, caustic agent vapors, oils and molds.

XVI. Service

The service is performed according to the conditions and terms set out in the purchase agreement.

XVII. Special Accessories

Upon a special order, a rotating jet with a tail piece for use of an adapter of 1 ½“ with angle adapters of the identical clearance (1 ½“) and in a design as the basic accessories are possible to be supplied.

An option to provide accessories with clearance of 2“ (50 mm) is also available.

XVIII. Standards Summary

The conformity with the following Standards have been observed at the Machine designing and reviewing: European Parliament and Council Directive No. 97/23/ES implemented by Act No. 22/1997 Coll., as amended, and Government Order No. 26/2003 Coll., as amended, ČSN ISO 2768-1, ČSN EN 12329, ČSN EN ISO 9692-1 and ČSN 690010.

XIX. Schedules

Schedule No. 1: Machine Scheme and Binding Plan

End

Příbram - September 2006
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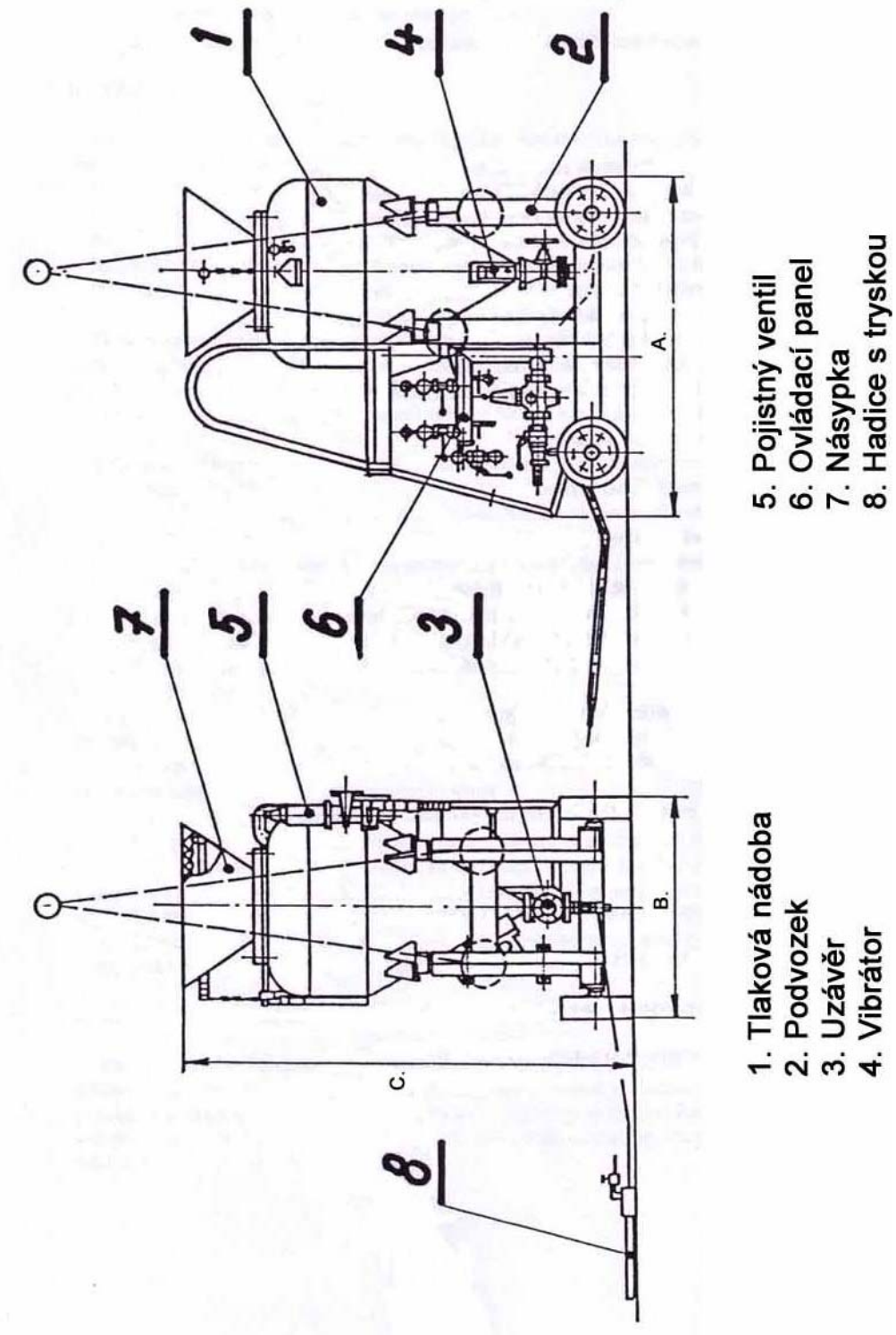
Schedule No. 1: Machine Scheme + Binding Plan
(Wheel undercarriage)

1. Pressure vessel (tank)
2. Undercarriage
3. Closure
4. Vibrator
5. Safety valve
6. Controlling panel
7. Feeding hopper (Feeder)
8. Hose with a jet



(solid frame)

1. Pressure vessel (tank)
2. Undercarriage
3. Air distribution
4. Closure
5. Hose with a jet
6. Vibrator