

Operating Instructions and Spare Parts List

Tribo Jet Manual Powder Gun

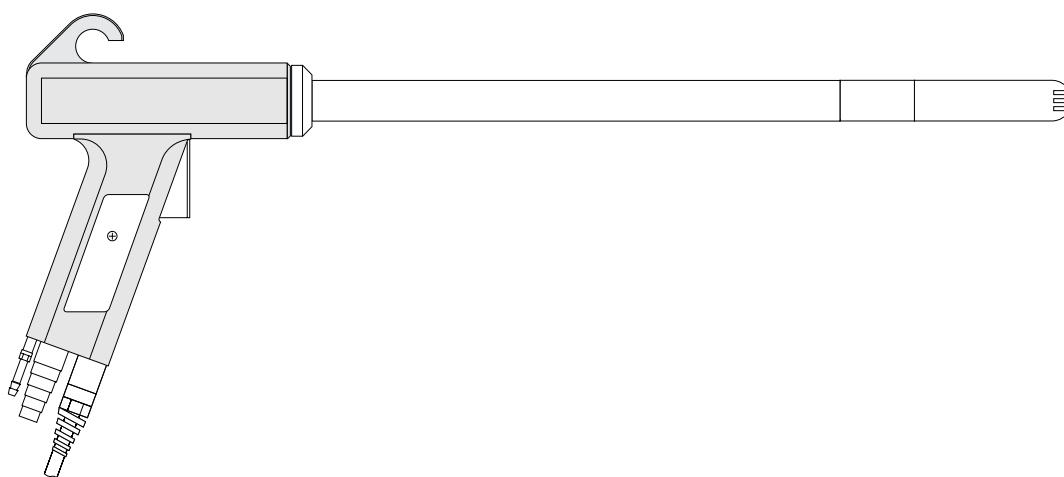


Table of Contents

Function description	1
General	1
Operation Principle	1
Application	1
Preparation for Start-Up	2
Connecting the gun	2
Function Control	2
Start-Up /Switching off the Equipment	3
Maintenance	4
Daily maintenance /Maintenance after every shift	4
Weekly maintenance	4
Cleaning material	4
Dismantling the gun	4
Assembling the gun	5
Spare Parts List for Tribo Jet Tribo Gun	6

Tribo Jet Manual Powder Gun

Function Description

General

Tribo guns are used for electrostatic powder coating of all types of workpieces with automatic process controlled booths or manual coating booths.

The operation of the gun is characterized by the following :

- Electrostatic charging of the powder through contact and separation with a second material (Teflon)
- No high-voltage supply necessary

Because a high-voltage power supply is not required the construction of the Tribo gun is simpler, which makes dismantling and maintenance of the gun easier.

Operating Principle of the Gun

In Nature electrostatic charging through contact has been observed on certain solid objects of non-conducting materials. When the surfaces of two such objects come into contact with each other and separate electrons are transferred from the surface of one to surface of the other. The electron-discharged object is thereby positively charged. It retains the charge, even if the objects are separated or excess electrons are discharged from a negatively charged object.

Tribo guns also operate according to this principle. Powder is fed along the spindle on the inside of the gun tube where it discharges electrons to the surface of the sleeves forming the inner surface of the gun tube. The excess electrons are picked up from here by a specially designed metal outer sleeve and discharged to ground through the gun body to the gun cable. Powder leaves the gun nozzle positively charged.

For control, and measurement of the powder charge, the discharge current is fed via the gun cable to the control unit, and a high-voltage meter, which also serves as an ammeter.

A normal powder injector is used to convey the powder from the fluidizing hopper to the gun. Conveying air, and supplementary air, are set separately on the control unit.

The rinsing air flow rate increases in the gun thereby improving powder charge. The setting of the rinsing air is done separately on the control unit.

Application

In order to obtain an object-specific powder cloud a flat jet nozzle, a fan nozzle, a wide jet nozzle or a deflector plate can be fitted to the front of the gun.

Preparation for Start-Up of the Gun

Connecting the Gun

- Connect the powder hose to the powder connector (**4**) and to the injector.
- Connect the rinsing air hose to the rinsing air hose connector (**3**), and to output - **1.4** at the rear of the control unit.
- Connect the gun cable (**5**) to the gun cable connection, and to the gun socket - "**Gun A**" at the rear of the control unit.

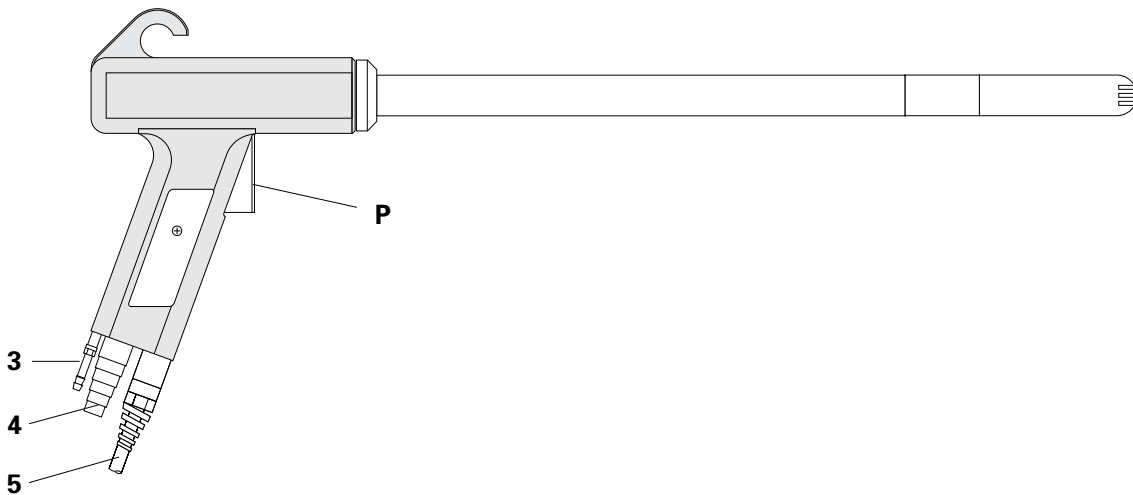


Figure 1

Function Check

The bold numbers in brackets below refer to Figure 2 in the Spare Parts List.

A function check should be carried out :

- at the first start-up of the equipment,
- each time the gun has been dismantled,
- parts have been replaced or
- after the equipment has not been used for a long period.

Procedure :

1. Switch the equipment on according to the corresponding operating instructions.
2. Switch off the conveying air, and supplementary air on the control unit.
3. Set the rinsing air to approximately 3 m³/h.
4. Start the coating process by pressing the gun trigger (**P**) - rinsing air must be felt at the nozzle exit.
5. Check for leaks at the rinsing air connector.
ATTENTION !! Air should not escape from the powder hose connector, however, if this is the case, retighten the connector.
6. Release the gun trigger (**P**).

7. Check the spray nozzle.
 - For guns with a flat jet or a wide jet nozzle - check the seating of the flat jet nozzle, then remove and check if the front cone (**14**) is screwed on correctly and is tight.
 - For guns with fan jet nozzles - check the seating of the connection tubes and also the spray heads.
 - For guns with deflector plates - check the seating of the deflector plate. The front cone must be fitted and deflector plate holder must also be fitted and screwed on tightly.
8. Check the powder charging as follows :
 - Set the conveying air on the control unit to approximately 2 bar.
 - Start the coating process according to the control unit operating instructions.
IMPORTANT! The control knob for the high-voltage on the PGC 1 Control Unit must be pushed in.
When powder is ejected from the gun the high-voltage meter on the control unit must indicate a value. If this is not the case, check if the gun cable (**5**) is connected to the control unit.
9. Switch off the equipment.

Start-Up / Switching Off

Procedure :

1. Fit a suitable nozzle for the workpiece to the gun.
2. Switch on the equipment.
3. Set the rinsing air to between 0.5 - 3.0 m³/h according to the type of powder.
4. Start the coating process by pressing the gun trigger (**P**).
5. Check the charging current on the high-voltage meter, which is also serves as an ammeter (e.g. 30 kV is approximately 3.0 μ A). Normally, a charging current of 2-4 μ A is sufficient. If the charging current does not indicate the desired value, then the rinsing air should be increased.
ATTENTION !! *Increasing the supply of rinsing air not only achieves better charging of the powder, but it also influences the shape of the powder cloud.*
6. Adjust the powder flow, and powder cloud by regulating the conveying air, and the supplementary air on the control unit. (See also "Setting table for the PI Injector" in the corresponding operating instructions).
7. Readjust the rinsing air.
8. Switch off the equipment after coating is finished.

Maintenance

Normally, it is not necessary to dismantle the outer tube **(8)**, the inner sleeve **(8.1)**, and the nozzle holder **(15)**.

Daily Maintenance or Maintenance after each Shift

- Clean the nozzle with compressed air; clean off heavy contamination with a clean, dry cloth.
- Clean the exterior of the gun.

Weekly Maintenance

- Disconnect the powder hose and rinsing hose from the gun.
- Blow compressed air through the gun via the powder hose connector **(4)**.
- Unscrew the gun tube and clean with a clean, dry cloth, and compressed air.
- Clean the injector according to the corresponding operating instructions.

Cleaning Aids

Only clean, dry cloths should be used as cleaning material, together with oil/water-free compressed air.

ATTENTION !! Do not wet clean ! Do not use solvents such as acetone etc !

Dismantling the Tribo Gun

(The bold numbers in brackets in the text refer to the numbers in Figure 2 in the Spare Parts List).

1. Pull the nozzle off the nozzle holder.
2. Detach the powder hose, and rinsing air hose from their connectors **(3 and 4)**.
3. Unscrew the gun tube **(8)** from the gun grip **(1)**.
4. Pull the rinsing air tube **(6)** out of the gun tube **(8)**.
5. Press out the complete spindle **(10)** with the aid of the plastic tube supplied.
ATTENTION !! The plastic tube must be placed over the front cone **(14)**.
6. Dismantle the friction spindle according to the drawing in the spare parts list.
7. Check the gun tube **(8)** for wear and clean inside the tube with a brush, if necessary.

ATTENTION !! The nozzle holder **(15)** and sleeves **(8.1)** should only be replaced if damaged or worn. Replacement of these parts can only be done at temperatures lower than 5° C.

Reassemble the Tribo gun as follows :

1. Reassemble the spindle completely according to Figure 2 in the spare parts list
2. Carefully push the whole spindle into the rear of the gun tube **(8)** as far as it will go
ATTENTION !! Sharp points (9 and 14) !!
3. Fit the rinsing air tube **(6)** into the rear of the gun tube **(8)**. Carefully fit the nozzle holder tube **(15)** into the front of the gun tube **(8)** (There should not be a gap)
4. Screw the powder gun tube **(8)** into the gun grip **(1)** until resistance is felt. The distance between the pistol grip **(1)** and the screw **(7)** must be between 0.5-2 mm.
5. Connect the powder, and rinsing air hoses to their connectors
6. Push the nozzle onto the nozzle holder tube **(15)**

Spare Parts List for Tribo Jet Manual Powder Gun

	Tribo Jet Gun - complete (Items 1 - 16)	356 310
1	Gun grip without fittings	355 054
1.1	O-ring ø 24 x 3 mm	247 014
1.2	Right grounding contact plate	300 918
1.3	Left grounding contact plate	300 926
1.4	Reed-switch complete with holder	356 298
2	Centering bush	355 038#
3	Rinsing air connector	328 820
4	Powder hose connector	355 046
5	Gun cable - complete	356 280
5.1	Flexible cable clamp	208 426
6	Rinsing air tube	352 519
6.1	O-ring ø 17.3 x 2.4 mm	246 921
7	Tube carrier	352 535
7.1	Grub screw (for Item 7)	220 744
8	Gun tube	352 527
8.1	Outer friction sleeve	352 608
9	Rear cone	352 551
10	Spindle sleeve	352 586
11	Spindle support	352 594
12	Spacing sleeve	352 578
13	Threaded shaft	352 543
14	Front cone	352 624
15	Nozzle holder	352 616
16	Flat jet nozzle	352 560
17	Wide jet nozzle	355 402
18	Spacing deflector rod	353 566
19	O-ring - ø 21.8 x 2.4 mm	226 874
20	Fan jet nozzle (incl. Items 19 and 21)	353 582
21	Nozzle (Shower head form)	353 558
22	Deflector holder support	355 500
23	Deflector holder	355 496
24	O-ring - ø 5 x 1 mm	231 606
25	Deflector plate - ø 16 mm	331 341#
	Deflector plate - ø 24 mm	331 333#
	Deflector plate - ø 32 mm	331 325#
	Deflector plate - ø 50 mm	345 822#
	Deflector plate - ø 70 mm	353 949#
	Plastic tube - ø 11/13 mm (for ejecting the spindle)	351 326
	Gun brush for Tribo Jet	246 719
	Powder hose ø 11/16 mm	103 128*#
	Rinsing air hose 6 m	339 954*
	Cable clamp	303 070

* Indicate length

Wear part

Tribo Jet Manual Powder Gun

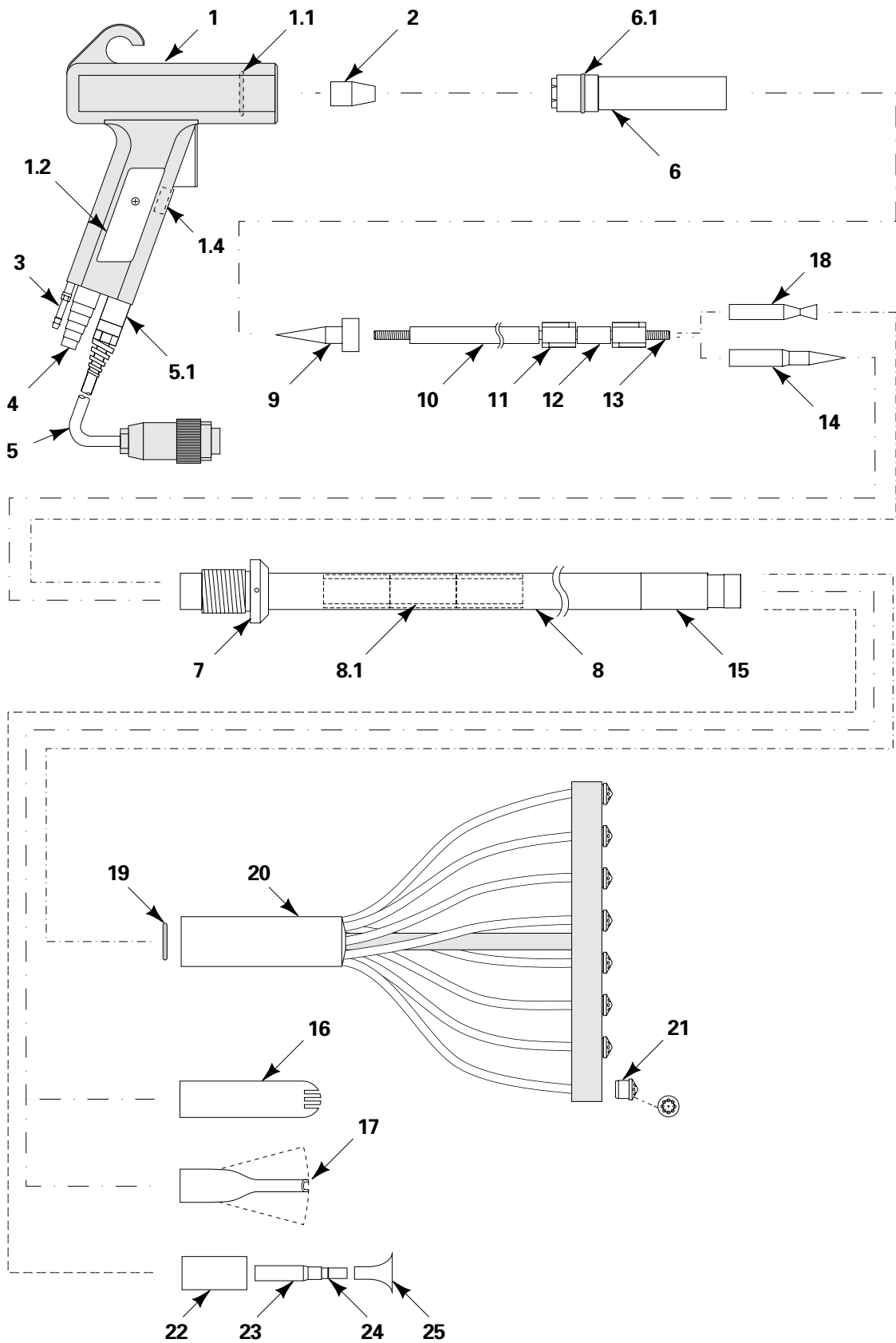


Figure 2

Documentation Tribo Jet

© Copyright 1993 GEMA-VOLSTATIC AG, CH-9015 St. Gall.

All technical products from GEMA-VOLSTATIC AG are constantly being developed based on our continuing research and applications.

The data found in this publication may therefore change at any time without prior notification.

Printed in Switzerland