
Operating instructions and spare parts list

PT7

Dense phase conveyor



Translation of the original operating instructions

Documentation PT7 Dense phase conveyor

© Copyright 2002 Gema Switzerland GmbH

All rights reserved.

This publication is protected by copyright. Unauthorized copying is prohibited by law. No part of this publication may be reproduced, photocopied, translated, stored on a retrieval system or transmitted in any form or by any means for any purpose, neither as a whole nor partially, without the express written consent of Gema Switzerland GmbH.

MagicCompact, MagicCylinder, MagicPlus, MagicControl, OptiFlex, OptiControl, OptiGun, OptiSelect, OptiStar and SuperCorona are registered trademarks of Gema Switzerland GmbH.

OptiFlow, OptiCenter, OptiMove, OptiSpeeder, OptiFeed, OptiSpray, OptiSieve, OptiAir, OptiPlus, OptiMaster, MultiTronic, EquiFlow, Precise Charge Control (PCC), Smart Inline Technology (SIT) and Digital Valve Control (DVC) are trademarks of Gema Switzerland GmbH.

All other product names are trademarks or registered trademarks of their respective holders.

Reference is made in this manual to different trademarks or registered trademarks. Such references do not mean that the manufacturers concerned approve of or are bound in any form by this manual. We have endeavored to retain the preferred spelling of the trademarks, and registered trademarks of the copyright holders.

To the best of our knowledge and belief, the information contained in this publication was correct and valid on the date of publication. Gema Switzerland GmbH makes no representations or warranties with respect to the contents or use of this publication, and reserves the right to revise this publication and make changes to its content without prior notice.

For the latest information about Gema products, visit www.gemapowdercoating.com.

For patent information, see www.gemapowdercoating.com/patents or www.gemapowdercoating.us/patents.

Printed in Switzerland

Gema Switzerland GmbH
Mövenstrasse 17
9015 St.Gallen
Switzerland

Phone: +41-71-313 83 00

Fax.: +41-71-313 83 83

E-Mail: info@gema.eu.com

Table of contents

General safety regulations	3
Safety symbols (pictograms).....	3
Proper use.....	3
Product-specific safety measures.....	4
Personnel safety	4
Safety concept	4
Proper use.....	4
About this manual	5
General information	5
Function description	7
Field of application	7
PT7 Dense phase conveyor – structure	7
Overview	7
PT7 Dense phase conveyor – function.....	8
Overview.....	8
Function description.....	8
Technical data	9
PT7 Dense phase conveyor.....	9
Pneumatic data	9
Maintenance	11
Replacing the pinch valve sleeve.....	11
Dismantling	11
Assembly.....	12
Spare parts list	13
Ordering spare parts	13
PT7 Dense phase conveyor – spare parts list.....	14
PT7 Dense phase conveyor – spare parts	15

General safety regulations

This chapter sets out the fundamental safety regulations that must be followed by the user and third parties using the PT7 Dense phase conveyor.

These safety regulations must be read and understood before the PT7 is put into operation.

Safety symbols (pictograms)

The following warnings with their meanings can be found in the Gema Switzerland operating instructions. The general safety precautions must also be followed as well as the regulations in the operating instructions.

**DANGER!**

Danger due to electrically live or moving parts. Possible consequences: death or serious injury

**WARNING!**

Improper use of the equipment could damage the machine or cause it to malfunction. Possible consequences: minor injuries or damage to equipment

**INFORMATION!**

Useful tips and other information

Proper use

1. The PT7 Dense phase conveyor is built to the latest specification and conforms to the recognized technical safety regulations and is designed for the normal application of powder coating.
2. Any other use is considered non-compliant. The manufacturer shall not be liable for damage resulting from such use; the user bears sole responsibility for such actions. Gema Switzerland GmbH must be consulted prior to any use of the PT7 for any purposes or substances other than those indicated in our guidelines.
3. Observance of the operating, service and maintenance instructions specified by the manufacturer is also part of conformity of use. The PT7 Dense phase conveyor should only be used, maintained and

started up by trained personnel, who are informed about and are familiar with the possible hazards involved.

4. Start-up (i.e. the execution of a particular operation) is forbidden until it has been established that the PT7 Dense phase conveyor has been set up and wired according to the guidelines for machinery (2006/42 EG). EN 60204-1 (machine safety) must also be observed.
5. Unauthorized modifications to the PT7 Dense phase conveyor exempt the manufacturer from any liability from resulting damage.
6. The relevant accident prevention regulations, as well as other generally recognized safety regulations, occupational health and structural regulations are to be observed.
7. Furthermore, the country-specific safety regulations also must be observed.

Product-specific safety measures

Personnel safety

The dense phase conveyor may only be switched on and operated after careful reading of this manual. Incorrect operation of the dense phase conveyor can lead to personal injuries as well as damages to property.

Safety devices may not be dismantled, bypassed or ignored!

Safety devices must be held in perfect functioning and may be not put out of operation.

Maintenance work on the dense phase conveyor may only take place when the power supply is switched off.

Safety concept

The dense phase conveyor is a constituent part of the system and is thus integrated into the safety system of the plant. If it is to be used in a manner outside the scope of the safety concept, then corresponding measures must be taken.

Only original Gema spare parts should be used! Any warranty claim for damage caused by the use of foreign parts is void.

Repairs on the dense phase conveyor may only be carried out by Gema trained personnel!

Proper use

The dense phase conveyor is only intended for the defined application range. The use outside of this range is considered as not intended use.

If it is to be used in a manner outside the scope of the safety concept, then corresponding measures must be taken.



NOTE:

For further information, see the more detailed Gema safety regulations!

About this manual

General information

This operating manual contains all the important information you require for the working with the PT7 Dense phase conveyor. It will safely guide you through the start-up process and give you references and tips for the optimal use of your new powder coating system.

Information about the function mode of the individual system components – booth, gun control unit, gun or powder injector – should be referenced to their enclosed corresponding documents.



DANGER:

Working without operating instructions

Working without operating instructions or with individual pages from the operating instructions may result in damage to property and personal injury if relevant safety information is not observed.

- ▶ Before working with the device, organize the required documents and read the section "Safety regulations".
 - ▶ Work should only be carried out in accordance with the instructions of the relevant documents.
 - ▶ Always work with the complete original document.
-

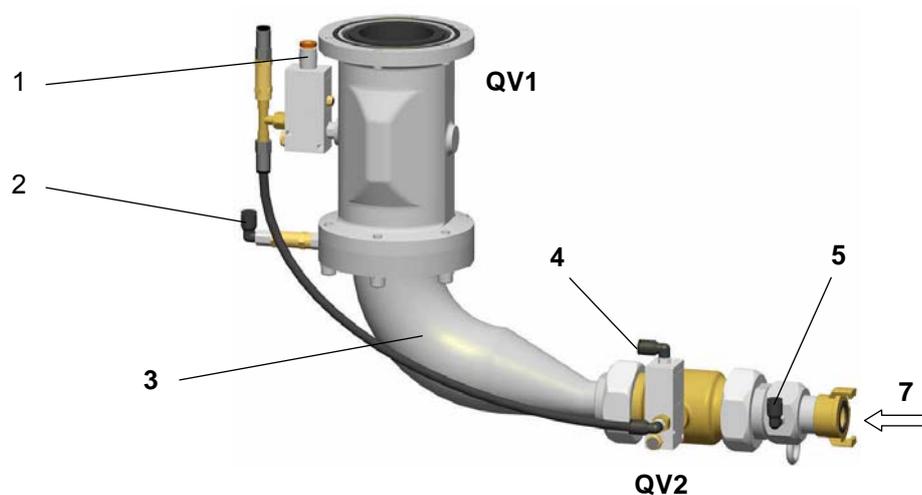
Function description

Field of application

The sieved powder is transported by the dense phase conveyor to the powder center and into the powder container. This powder transport principle permits a very careful and dust-free powder transport, because the air requirement necessary and the transport speed are very low.

PT7 Dense phase conveyor – structure

Overview

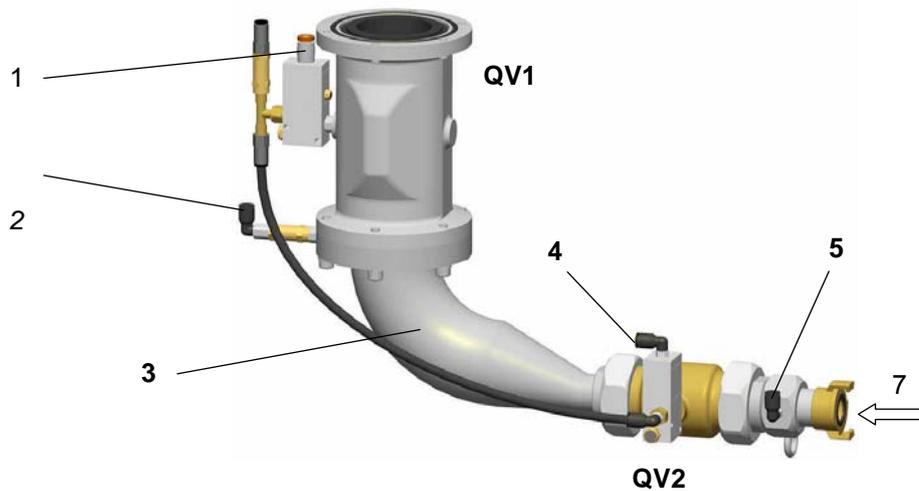


PT7 Dense phase conveyor – structure

1	Switching air connection QV1	4	Switching air connection QV2
2	Conveying air connection	5	Spiral air connection
3	Intermediate piece	7	Conveying hose connection
QV1	Pinch valve 1	QV2	Pinch valve 2

PT7 Dense phase conveyor – function

Overview



PT7 Dense phase conveyor – function

Function description

1. The upper pinch valve **QV1** opens. The recovered powder falls through the pinch valve **QV1** into the intermediate piece (3)
 - The lower pinch valve **QV2** remains thereby closed
 - The spiral air (5) is constantly in operation
 - The conveying air (2) is switched off
2. The pinch valve **QV1** closes
3. The pinch valve **QV2** opens
 - The pinch valve **QV1** is thereby closed
 - The spiral air (5) is constantly in operation
 - The conveying air (2) is switched on for a short time

The powder is pressed through the pinch valve **QV2** into the conveying hose by the overpressure in the intermediate piece (3). By switching on the conveying air (2) for a short time, the powder in the conveying hose (7) will be transported a further step.

4. The pinch valve **QV2** closes
 - After a short delay, the pinch valve **QV1** opens again
 - The steps 1-4 will be repeated continuously

After a short time, the conveying hose will be filled with many powder sections, which are transported continuously into the powder container. The conveying efficiency depends on the powder type, the pulse frequency and the length of the conveying hose with the actual dimensions of the used pinch valve and conveying hose.

Technical data

PT7 Dense phase conveyor

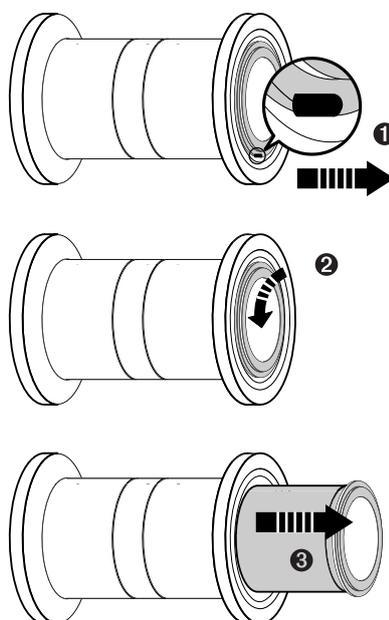
Pneumatic data

PT7 Dense phase conveyor	
Conveying performance (powder)	2,0 kg/min
Max. input pressure	10 bar
Min. input pressure	6 bar
Max. water vapor content of the compressed air	1,3 g/m ³
Max. oil vapor content of the compressed air	0,1 mg/m ³

Maintenance

Replacing the pinch valve sleeve

The replacement of the sleeve in the pinch valve of the PT7 Dense phase conveyor takes place according to the following instructions:



Replacing the pinch valve sleeve

Dismantling

1. Remove the pinch valve from the dense phase conveyor
2. Remove the black positioning pin with pliers (1)
3. Turn the pinch valve sleeve 45° counter-clockwise (2)
4. Pull out the pinch valve sleeve and replace it (3)

Assembly

1. Place the wide lug of the pinch valve sleeve into the wide pinch valve slot
2. Push the pinch valve sleeve into the pinch valve up to the stop
3. Turn the pinch valve sleeve 45° clockwise up to the stop pin
4. Insert the positioning pin
5. Check the O-rings for damage and replace it, if necessary
6. Reinsert the pinch valve to the dense phase conveyor

Spare parts list

Ordering spare parts

When ordering spare parts for powder coating equipment, please indicate the following specifications:

- Type and serial number of your powder coating equipment
- Order number, quantity and description of each spare part

Example:

- **Type** PT7
Serial number 1234 5678
- **Order no.** 203 386, 1 piece, Clamp – Ø 18/15 mm

When ordering cable or hose material, the required length must also be given. The spare part numbers of this bulk stock is always marked with an *.

Wearing parts are always marked with a #.

All dimensions of plastic hoses are specified with the external and internal diameter:

Example:

Ø 8/6 mm, 8 mm outside diameter (o/d) / 6 mm inside diameter (i/d)



WARNING!

Only original Gema spare parts should be used, because the explosion protection will also be preserved that way. The use of spare parts from other manufacturers will invalidate the Gema guarantee conditions!

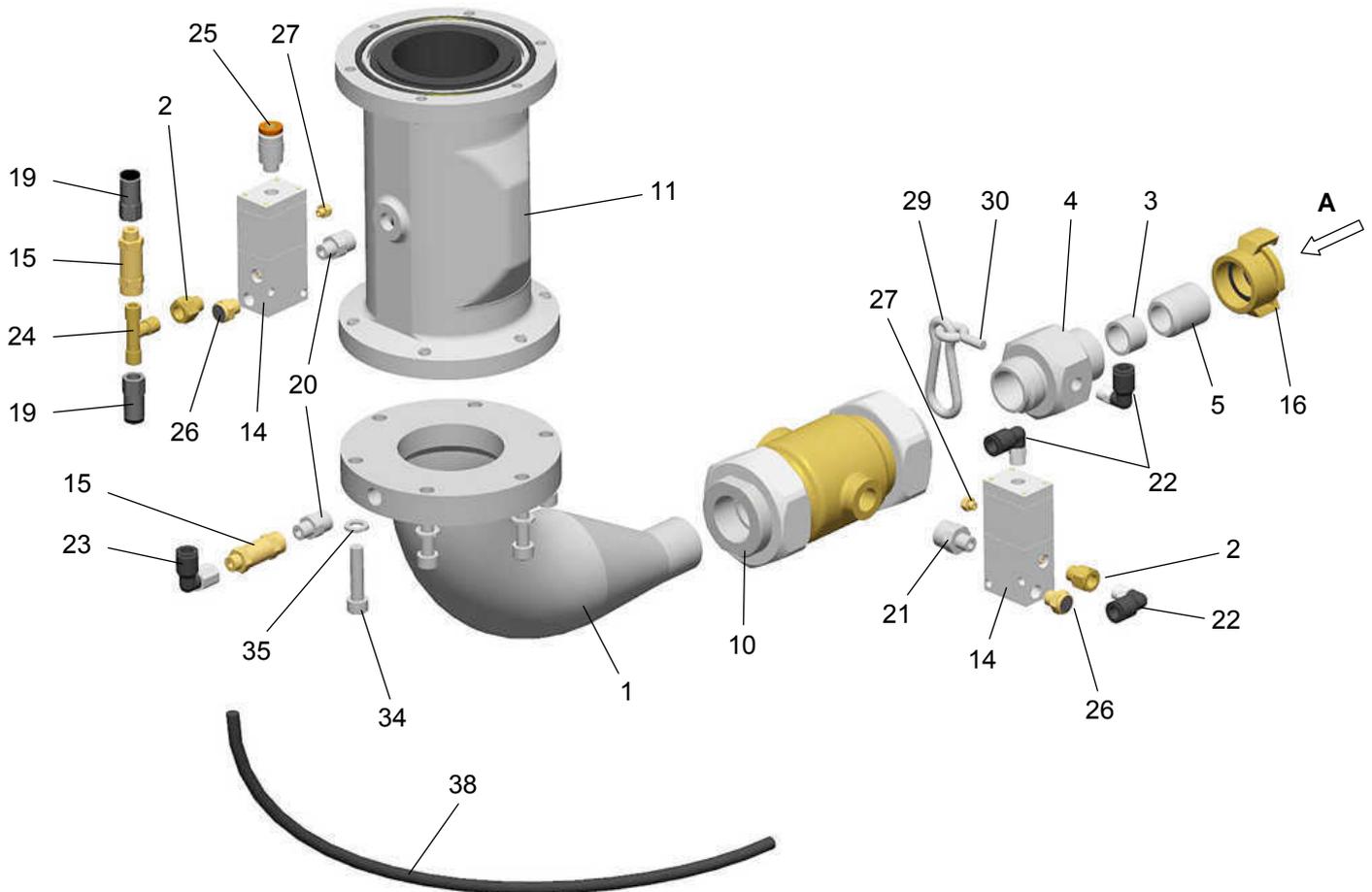
PT7 Dense phase conveyor – spare parts list

	PT7 Dense phase conveyor – complete	390 160
1	Elbow connection	390 178
2	Flow restrictor – Ø 1.9 mm	372 900
3	Fluidizing ring	363 570
4	Connecting piece	377 368
5	Spacer sleeve	377 376
10	Pinch valve – NW 25	253 707
	Sleeve – NW 25 (for pos. 10)	255 246#
11	Pinch valve – NW 65	258 520
	Sleeve – NW 65 (for pos. 11)	711 576#
14	Valve unit – Af-2600/Ch2	390 356
15	Check valve – 1/8"-1/8"	202 240
16	Geka coupling	1000 854
19	Connection sleeve – 1/8", Ø 8 mm	236 020
20	Double nipple – 1/4"-1/8"	242 209
21	Double nipple – 3/8"-1/8"	240 079
22	Elbow joint – 1/8", Ø 8 mm	203 050
23	Elbow joint – 1/8", Ø 8 mm	253 987
24	T-connection – 1/8"-1/8"-1/8"	237 760
25	Screw-in nipple – 1/8", Ø 8 mm	246 956
26	Silencer – 1/8"	251 305
27	Silencer – M5	265 764
29	Spring hook – 60x6 mm	250 694
30	Eye bolt – M6x15 mm	261 122
34	Allen cylinder screw – M8x35 mm	216 526
35	Lock washer – M8	215 953
38	Plastic tube – Ø 8/6 mm, black	103 756*
A	Hose connection – complete (not shown), consisting of:	
	Coupling with hose connector – Ø 25 mm	1002 132
	Hose – Ø 33/25 mm	104 604
	Hose clamp – 25-35 mm	226 335
	Safety wire – L=200 mm	374 628

* Please indicate length

Wearing part

PT7 Dense phase conveyor – spare parts



PT7 Dense phase conveyor – spare parts