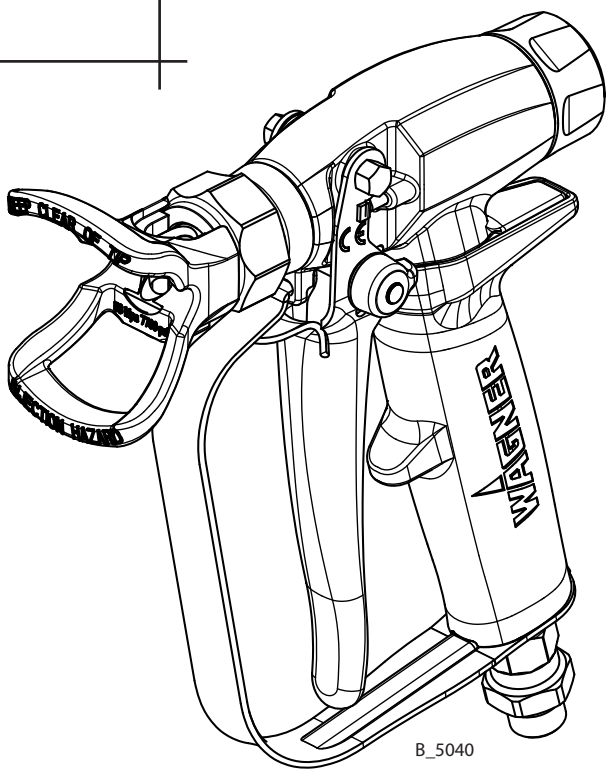
WAGNER

Translation of the Original Operating Manual

GM 1-350
GM 1-530

Version 02/2015

Airless manual gun



B_5040

CE Ex II 2G X (Atex)

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1 ABOUT THESE INSTRUCTIONS

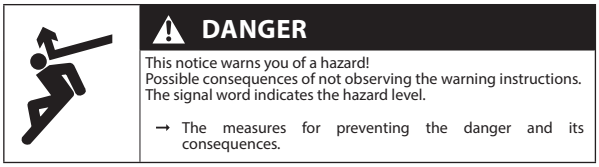
1.1 PREFACE

The operating manual contains information about safely operating, maintaining, cleaning and repairing the device. The operating manual is part of the device and must be available to operating and service staff. The device may only be operated by trained staff and in compliance with this operating manual. Operating and service personnel should be instructed according to the safety instructions. This equipment can be dangerous if it is not operated according to the instructions in this operating manual.

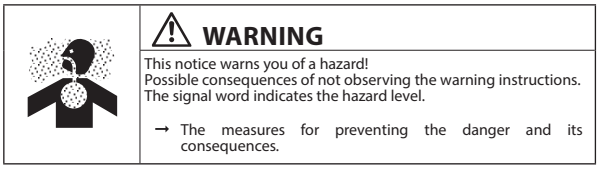
1.2 WARNINGS, NOTICES AND SYMBOLS IN THESE INSTRUCTIONS

Warning instructions in this operating manual highlight particular dangers to users and to the device and state measures for avoiding the hazard. These warning instructions fall into the following categories:

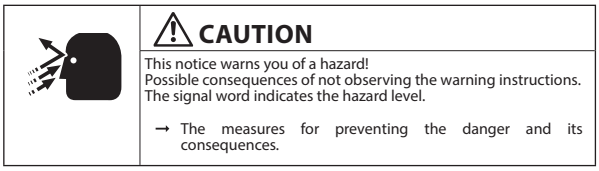
Danger - immediate risk of danger.
Non-observance will result in death or serious injury.



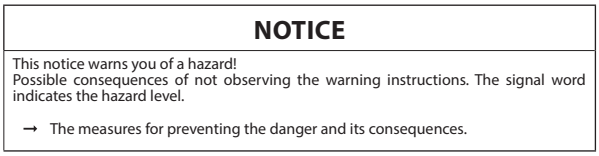
Warning - possible imminent danger.
Non-observance may result in death or serious injury.



Caution - a possibly hazardous situation.
Non-observance may result in minor injury.



Notice - a possibly hazardous situation.
Non-observance may result in damage to property.



Note - provides information about particular characteristics and how to proceed.

1.3 LANGUAGES

The operating manual is available in the following languages:

Language:	Order No.	Language:	Order No.	Language:	Order No.
German	2348756	English	2349369	French	2355489
Italian	2355491	Spanish	2355493	Russian	2356564
Chinese	2356565	Swedish	2356566	Polish	2356567
Norwegian	2356568	Dutch	2356570	Finnish	2356571
Czech	2356572				

The service manual is available in the following languages:

Language:	Order No.	Language:	Order No.
German	2355505	English	2355506

Additional languages on request or at: **www.wagner-group.com**

2 CORRECT USE

2.1 SAFETY PARAMETERS

WAGNER accepts no liability for any damage arising from incorrect use.

- → Use the device only to work with the products recommended by WAGNER.
- → Only operate the device as a whole.
- → Do not deactivate safety fixtures.
- → Use only WAGNER original spare parts and accessories.

The device may only be operated under the following conditions:

- → The operating staff must be trained on the basis of this operating manual.
- → The safety regulations listed in this operating manual must be observed.
- → The operating, maintenance and repair information in this operating manual must be observed.
- → The statutory requirements and accident prevention regulation standards in the country of use must be observed.

2.2 REASONABLY FORESEEABLE MISUSE

The forms of misuse listed below may result in physical injury or property damage:

- → coating work pieces which are not grounded;
- → unauthorized conversions or modifications to the system;
- → processing dry or similar coating products, e.g., powder;
- → using defective components, spare parts or accessories other than those described in the "Accessories" chapter of this operating manual;
- → continuing work with a defective or kinked product hose;
- → working with incorrectly set values;
- → processing food.

2.3 RESIDUAL RISKS

Residual risks are risks which cannot be ruled out even in the event of correct use.
If necessary, warning and prohibition signs at the relevant points of risk indicate residual risks.

Residual risk	Source	Consequences	Specific measures	Lifecycle phase
Skin contact with lacquers and cleaning agents	Handling of lacquers and cleaning agents	Skin irritations, allergies	Wear protective clothing, observe safety data sheets	operation, maintenance, disassembly
Lacquer in air outside the defined working area	Lacquering outside the defined working area	Inhalation of substances hazardous to health	Observe work and operation instructions	operation, maintenance

3 IDENTIFICATION

3.1 CE EXPLOSION PROTECTION IDENTIFICATION

The device is compliant with Ex II 2G X regulations and is suitable for use in potentially explosive areas (zone 1) in accordance with Directive 94/9/EC (ATEX).

Device type: Airless manual gun
Manufacturer: J. Wagner AG, CH - 9450 Altstätten

Ex II 2G X

CE	European Communities	2	Category 2 (Zone 1)
Ex	Symbol for explosion protection	G	Ex-atmosphere gas
II	Device class II	X	Special Notice

3.2 IDENTIFICATION "X"

X: The maximum surface temperature corresponds to the permissible product temperature. This and the permissible ambient temperature can be found in the "Technical Data" chapter.

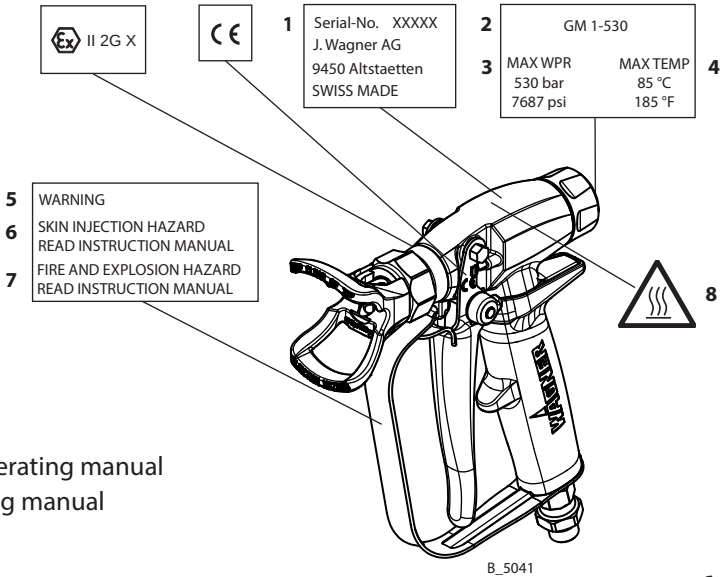
Safe handling of WAGNER spray devices
Mechanical sparks can form if the device comes into contact with metal.
In an explosive atmosphere:
→ Do not knock or push the device against steel or rusty iron.
→ Do not drop the spray gun.
→ Use only tools that are made of a permitted material.

Ignition temperature of the coating material
→ Ensure that the ignition temperature of the coating product is above the maximum surface temperature.

Cleaning
If there are deposits on the surfaces, the device may form electrostatic charges. Flames or sparks can form during discharge.
→ Remove deposits from the surfaces to maintain conductivity.

3.3 TYPE PLATE

3.3.1 GM 1-530 EXAMPLE TYPE PLATE



1 Serial number
2 Spray gun designation
3 Maximum product pressure
4 Maximum product temperature
5 Warning
6 Danger of injury from injection/read operating manual
7 Fire and explosion hazard/read operating manual
8 "Warning – Hot surface!"

4 GENERAL SAFETY INSTRUCTIONS

4.1 SAFETY INSTRUCTIONS FOR THE OPERATOR

→ Keep this operating manual at hand near the device at all times.
→ Always follow local regulations concerning occupational safety and accident prevention.

4.1.1 ELECTRICAL EQUIPMENT

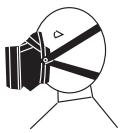
Electrical devices and equipment

→ To be provided in accordance with the local safety requirements with regard to the operating mode and ambient influences.
→ May only be maintained by skilled electricians or under their supervision.
→ Must be operated in accordance with the safety regulations and electrotechnical regulations.
→ Must be repaired immediately in the event of problems.
→ Must be decommissioned if they pose a hazard.
→ Must be de-energized before work is commenced on active parts. Inform staff about planned work. Observe electrical safety regulations.

4.1.2 PERSONNEL QUALIFICATIONS

→ Ensure that the device is operated and repaired only by trained persons.

4.1.3 SAFE WORK ENVIRONMENT

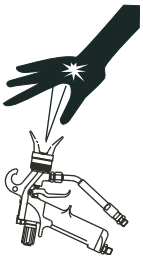


→ Ensure that the floor in the working area is static dissipative in accordance with EN 61340-4-1 (resistance must not exceed 100 megohms).
→ Ensure that all persons within the working area wear static dissipative shoes. Footwear must comply with EN 20344. The measured insulation resistance must not exceed 100 megohms.
→ Ensure that during spraying, persons wear static dissipative gloves. The grounding takes place via the gun's bow guard.
→ If protective clothing is worn, including gloves, it has to comply with EN 1149-5. The measured insulation resistance must not exceed 100 megohms.
→ Paint mist extraction systems/ventilation systems must be fitted on site according to local regulations.
→ Ensure that the following components of a safe working environment are available:
- Product/air hoses adapted to the working pressure.
- Personal safety equipment (breathing and skin protection).
→ Ensure that there are no ignition sources such as naked flames, sparks, glowing wires, or hot surfaces in the vicinity. Do not smoke.

4.2 SAFETY INSTRUCTIONS FOR STAFF

→ Always follow the information in this manual, particularly the general safety instructions and the warning instructions.
→ Always follow local regulations concerning occupational safety and accident prevention.

4.2.1 SAFE HANDLING OF WAGNER SPRAY DEVICES



The spray jet is under pressure and can cause dangerous injuries.
Avoid injection of paint or flushing agents:
→ Never point the spray gun at people.
→ Never reach into the spray jet.
→ Before all work on the device, in the event of work interruptions and functional faults:
- Switch off the energy/compressed air supply.
- Relieve the pressure from the spray gun and device.
- Secure the spray gun against actuation.
- In the event of functional faults, remedy the fault as described in the "Troubleshooting" chapter.

→ If necessary or at least every 12 months, the liquid ejection devices should be checked for safe working conditions by an expert (e.g., Wagner Service Technician) in accordance with the guidelines for liquid ejection devices (ZH 1/406 and BGR 500 Part 2 Chapter 2.29 and 2.36).
- For shut down devices, the examination can be suspended until the next start-up.

→ Carry out the work steps as described in the "Pressure Relief" chapter:
- If pressure relief is required.
- If the spraying work is interrupted or stopped.
- Before the device is cleaned on the outside, checked or serviced.
- Before the spray nozzle is installed or cleaned.

In the event of skin injuries caused by paint or flushing agents:
→ Note the paint or flushing agent that you have been using.
→ Consult a doctor immediately.

Avoid risk of injury from recoil forces:
→ Ensure that you have firm footing when operating the spray gun.
→ Only hold the spray gun briefly in a position.

4.2.2 GROUNDING THE DEVICE

In order to avoid electrostatic charging of the device, the device must be grounded.
Friction, flowing liquids and air or electrostatic coating processes create charges. Flames or sparks can form during discharge.
→ Ensure that the device is grounded for every spraying operation.
→ Ground the work pieces to be coated.
→ Ensure that all persons inside the working area are grounded, e.g., that they are wearing static dissipative shoes.
→ Wear static dissipative gloves when spraying. The grounding takes place via the gun's bow guard.

4.2.3 PRODUCT HOSES

- → Ensure that the hose material is chemically resistant to the sprayed products and the used flushing agents.
- → Ensure that the product hose is suitable for the pressure generated.
- → Ensure that the following information can be seen on the high pressure hose:
  - Manufacturer
  - Permissible operating pressure
  - Date of manufacture
- → Make sure that the hoses are laid only in suitable places. Hoses should not be laid in the following places under any circumstances:
  - In high-traffic areas
  - At sharp edges
  - On moving parts
  - On hot surfaces
- → Ensure that the hoses are never run over by vehicles (e.g. fork lifts), or that the hoses are never put under pressure from the outside in any other way.
- → Ensure that the hoses are never kinked. Observe maximum bending radii.
- → Make sure that the hoses are never used to pull or move the equipment.
- → The electrical resistance of the product hose, measured at both valves, must be less than 1 megohm.
- → Suction hoses may not be subjected to pressure.

Several liquids have a high expansion coefficient. In some cases their volume can rise with consequent damage to pipes, fittings, etc. and cause fluid leakage.
When the pump sucks liquid from a closed tank, ensure that air or a suitable gas can enter the tank. Thus a negative pressure is avoided. The vacuum could implode the container (squeeze) and can cause it to break. The container would leak and the liquid would flow out. The pressure created by the pump is a multiplication of the inlet air pressure.

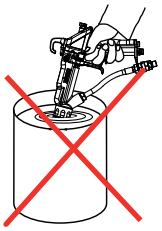
4.2.4 CLEANING AND FLUSHING

- → Relieve the pressure from the device.
- → De-energize the device electrically.
- → Preference should be given to non-flammable cleaning and flushing agents.
- → Observe the specifications of the paint manufacturer.
- → Ensure that the flash point of the cleaning agent is at least 15 K above the ambient temperature or that cleaning is undertaken at a cleaning station with technical ventilation.
- → Take measures for workplace safety (see Chapter 4.1.3).
- → When commissioning or emptying the device, please note that an explosive mixture may temporarily exist inside the lines and components of equipment:
  - depending on the coating product used,
  - depending on the flushing agent (solvent) used,
  explosive mixture inside the lines and items of equipment.

→ Only electrically conductive tanks may be used for cleaning and flushing agents.
→ The containers must be grounded.

An explosive gas/air mixture forms in closed containers.
→ Never spray into a closed tank when using solvents for flushing.

External cleaning



When cleaning the exterior of the device or its parts, also observe the following:
→ Disconnect the pneumatic supply line.
→ Use only moistened cloths and brushes. Never use abrasive agents or hard objects, and never spray cleaning agents with a spray gun. Cleaning the device must not damage it in any way.
→ Ensure that no electrical component is cleaned with nor even immersed into solvent.

4.2.5 HANDLING HAZARDOUS LIQUIDS, VARNISHES AND PAINTS

→ When preparing or working with lacquer and when cleaning the device, follow the working instructions of the manufacturer of the lacquers, solvents and cleaning agents being used.
→ Take the specified protective measures, in particular wear safety goggles, protective clothing and gloves, as well as skin protection cream if necessary.
→ Use a mask or breathing apparatus if necessary.
→ For sufficient health and environmental safety: Operate the device in a spray booth or on a spraying wall with the ventilation (extraction) switched on.
→ Wear suitable protective clothing when working with hot products.

4.2.6 TOUCHING HOT SURFACES

⚠ WARNING

Hot coating products!
Burns
→ Wear antistatic protective gloves.
→ When operating the device with a coating product with a temperature of > 43 °C;109.4 °F, identify the device with a warning label that says "Warning - hot surface".

→ Only touch hot surfaces (temperature > 43 °C; 109 °F) if you are wearing protective gloves.
→ When operating the device with a coating product with a temperature of > 43 °C; 109.4 °F:
- Identify the device with a warning label, "Warning – Hot surface".

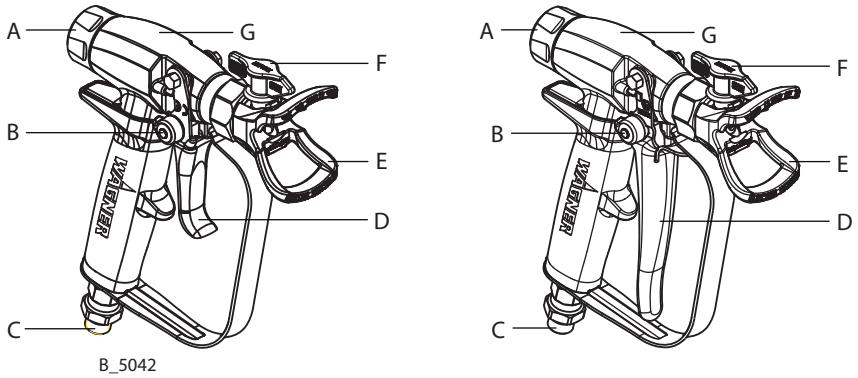
Order No.

9998910	Instruction label
9998911	Protection label

Note: Order the two stickers together.

5 DESCRIPTION

5.1 DESIGN



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	Designation		Designation
A	Preload nut	E	Nozzle holder
B	Trigger locking device	F	Reversible nozzle (not included in scope of delivery)
C	Product connection with swivel joint	G	Gun housing
D	Trigger		

5.2 DEVICE TYPE

Airless manual gun for manually coating work pieces.

5.3 TYPE OF USE

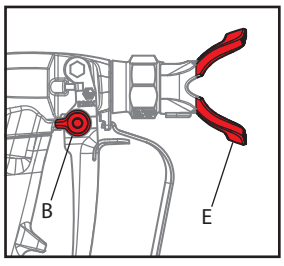
The spray gun is intended for atomizing liquid coating products under pressure (airless process).

5.4 MODE OF OPERATION

A high-pressure pump sucks in the coating product and conveys it under pressure to the nozzle in the spray gun. The coating product atomizes as it is pressed through the nozzle at high pressure. The product valve opens if the trigger (D) is operated with the locking device (B) released. The spray profile changes depending on the nozzle selection.

5.5 PROTECTIVE AND MONITORING EQUIPMENT

Secure the spray gun with the locking device (B).
The nozzle holder (E) has an anti-contact guard.



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5.6 SCOPE OF DELIVERY

This Airless manual gun is available in two different variants (350 bar, 530 bar). The choice of nozzle depends on the application, therefore these components are not included in the scope of delivery. A selection guide for gun accessories can be found in Chapter 12.

Stk	Order No.	Designation	Field of application
1	2349286	GM 1-350	35 MPa; 350 bar; 5076 psi, NPSM1/4" product connection, finishing
1	2349287	GM 1-530	53 MPa; 530 bar; 7687 psi, NPSM1/4" product connection, protective coating

The standard equipment for spray guns includes:

Stk	Order No.	Designation
1	2355332	CE Declaration of Conformity
1	2348756	Operating manual, German
1	See Chapter 1.3	Operating manual in local language

For special versions the delivery note applies.

5.7 DATA

5.7.1 MATERIALS OF PAINT-WETTED PARTS

Metals			Plastics	
Carbide	Stainless steel 1.4305	Aluminum	POM	UHMW-PE
Stainless steel 1.4301	Stainless steel 1.4104		PTFE	

5.7.2 PROCESSIBLE MATERIALS

Top-coat paints, primer paints, corrosion protection, textured lacquers, lyes, staining solvents, clear lacquers, separating agents, etc. with a solvent or water base. If you want to spray working materials other than the aforementioned, please contact a WAGNER representative.

Note:
Please contact your local WAGNER dealer and the lacquer manufacturer if you encounter application problems.

5.7.3 TECHNICAL DATA

		Airless manual gun	
Description	**Devices**	**GM 1-350**	**GM 1-530**
Maximum product pressure	MPa; bar; psi	35; 350; 5076	53; 530; 7687
Fluid inlet	inch	NPSM 1/4"	
Filter *	Mesh	50, 100, 150, 200	
Weight	g; oz	511 g; 18.0 oz	581 g; 20.5 oz
pH range of the product	pH	3.5 – 9.0	
Maximum product temperature	°C; °F	85; 185	
Sound level at 12 MPa; 120 bar; 1,740 psi product pressure**	dB(A)	75	
Storage conditions	°C; °F	-20 – 60 ; -4 – 140	
Installation conditions	°C; °F	0 – 40; 32 – 132	
Relative humidity at the storage or assembly location	%	10 – 95	
Dimensions	mm; inch	Length: 163; 6.42 Height: 195; 7.68 Width: 39; 1.54	

* For filter sizes, see Chapter 13.2

** A-rated sound pressure level of emissions measured at a distance of 0.5 m, Lpa0.5m, in accordance with DIN EN 14462: 2005.

6 ASSEMBLY AND COMMISSIONING

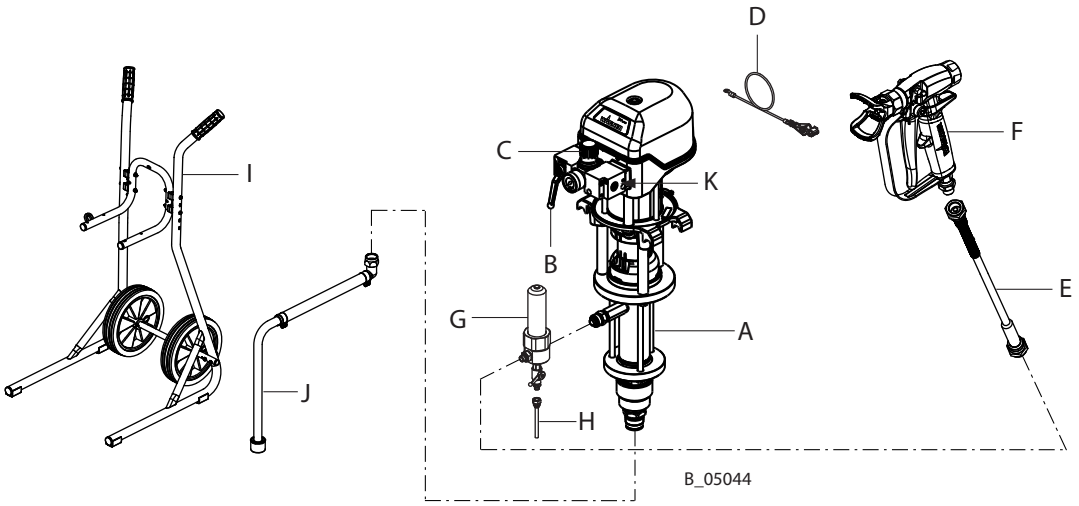
6.1 TRAINING ASSEMBLY/COMMISSIONING STAFF

→ The assembly and commissioning staff must have the technical skills to safely undertake commissioning.
→ When assembling, commissioning and carrying out all work, read and follow the operating manuals and safety regulations for the additionally required system components.

A skilled person must check to ensure that the device is in a reliable state after it is installed and commissioned.

6.2 ASSEMBLY AND INSTALLATION

6.2.1 TYPICAL AIRLESS SPRAYING SYSTEM



A	Material pump
B	Pressure air shut-off valve
C	Pressure regulator
D	Grounding cable
E	High-pressure paint hose, electrically conductive

F	Airless manual gun
G	High-pressure filter/fluid pressure release
H	Return line
I	Pump mounting trolley
J	Suction system
K	Compressed air main

The Airless manual gun GM 1-350/530 must be combined with various components to make up a spraying system. The system shown in the figure is only one example of an Airless spraying system. Your Wagner distributor would be happy to assist you in creating a spraying system solution that meets your individual needs.
You must familiarize yourself with the operating manuals and the safety regulations for all additional system components required before starting with commissioning.

6.2.2 VENTILATION OF THE SPRAY BOOTH

Observe the safety instructions in Chapter 4.1.3.

→ Operate the device in a spray booth approved for the working materials.
-or-
→ Operate the device on an appropriate spraying wall with the ventilation (extraction) switched on.
→ Observe national and local regulations for the outgoing air speed.

6.2.3 PRODUCT SUPPLY

NOTICE

Impurities in the spraying system!
Spray gun blockage, materials harden in the spraying system

→ Flush the spray gun and paint supply with a suitable flushing agent.

6.3 GROUNDING

Observe the safety instructions in Chapter 4.2.2.

⚠ WARNING

Discharge of electrostatically charged components in atmospheres containing solvents!
Explosion hazard from electrostatic sparks or flames.

→ Ground all device components.
→ Ground the work pieces to be coated.

A conductive connection (potential equalization cable) must be established between original bundles and the equipment.

6.3.1 GROUNDING CHECK

Daily: Before starting work, carry out a visual inspection to ensure that the system is grounded.

6.4 SAFETY CHECKS

Daily: Check the grounding (see Chapter 6.3) and hoses (see Chapter 8.2.3.1).

6.5 PREPARATION OF LACQUER

The viscosity of the lacquer is of great importance. The best spraying results are obtained with values between 80 and 260 millipascals x sec (mPa·s).

Please also read the technical data sheet of the lacquer for optimal processing, viscosity adjustment and intermixing of the product.

6.6 COMMISSIONING

6.6.1 SAFETY INSTRUCTIONS

→ Observe safety instructions in Chapter 4.

6.6.2 PREPARATION FOR COMMISSIONING

NOTICE

Impurities in the spraying system!
Clogging of the spray gun

→ Flush the spray gun and paint supply with a suitable flushing agent before commissioning.

6.6.3 COMMISSIONING

1. Secure the spray gun.
2. Connect the product hose to the spray gun and product supply system.
3. For spray guns with filters → insert a suitable filter (filter insert, see Chapter 13.2).
4. Insert the saddle and seal into the nozzle holder. Push in the ProfiTip nozzle. Screw the entire nozzle holder onto the spray gun. Tighten nozzle holder using an open-end wrench (size 30).
5. Visually check the permissible pressures for all the system components.
6. Make sure that the device and all other conductive parts within the work area are grounded.
7. To perform a leak test on the entire installation, the pressure is slowly increased using a suitable medium, step by step, until the maximum pressure indicated on the type plate is reached.
   Note:
   Set the operating pressure to 100 bar; 10 MPa; 1450 psi.
   Pull the trigger and check whether the gun closes cleanly upon release.
8. Relieve the pressure of the spray gun and product pressure generator and secure the spray gun.

6.6.4 VERIFYING A SAFE OPERATIONAL CONDITION

A skilled person must check to ensure that the device is in a reliable state after it is installed and commissioned.

This includes:
- Carry out a safety check in accordance with Chapter 8.2.3.

7 OPERATION

7.1 TRAINING THE OPERATING STAFF

→ The operating staff must be qualified and fit to operate the entire system.
→ The operating staff must be familiar with the potential risks associated with improper behavior as well as the necessary protective devices and measures.
→ Before work commences, the operating staff must receive appropriate system training.

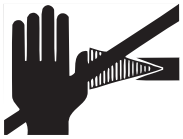
7.2 SAFETY INSTRUCTIONS

→ Observe the safety instructions in Chapters 4.1, 4.1.3, 4.2, and 4.2.1.

7.3 WORK

Ensure that:
→ the regular safety checks are carried out in accordance with Chapter 8.2.3,
→ commissioning is carried out in accordance with Chapter 6.6.

7.3.1 STARTING TO SPRAY WITH THE AIRLESS



⚠ WARNING

High pressure spray jet!
Danger to life from injecting paint or solvent

→ Never reach into the spray jet.
→ Never point the spray gun at people.
→ Consult a doctor immediately in the event of skin injuries caused by paint or solvent. Inform the doctor about the paint or solvent used.
→ Never seal defective high pressure parts, instead relieve the pressure from them and replace them.
→ Wear the appropriate protective clothing, gloves, eyewear and respiratory protection.

1. Start up with product supply set to approx. 10 MPa; 100 bar; 1450 psi operating pressure.
2. Spray (release locking device and pull trigger) and at the same time observe how the product is atomizing.
3. Set the fluid pressure on the material pump to a point where good product atomization is achieved.

Note:
- Adjust the nozzle, product pressure and product temperature until you find the optimum setting.
- The amount of product can be adjusted by changing the product pressure and temperature or by inserting another nozzle (see Chapter 7.3.3 and Chapter 12.1).

7.3.2 PRESSURE RELIEF / WORK INTERRUPTION

The pressure must always be relieved:
- when the spraying tasks are finished,
- before carrying out maintenance work on the spraying system,
- before carrying out cleaning tasks on the spraying system,
- before moving the spraying system to another location,
- if something must be checked on the spraying system,
- if the nozzle or the filter is removed from the spray gun.

The components for pressure relief on a CE-compliant spray system include:
- Air cock with pressure relief hole mounted between compressed air source and pneumatic pump.
- Product pressure relief valve mounted between pump and spray gun.

Please read the general safety instructions in Chapter 4.

Pressure relief procedure:
1. Secure the spray gun with the locking device.
2. Close air supply to pump and relieve air pressure in air motor.
3. Release the locking device on the spray gun.
4. Press the electrically conductive part of the spray gun against grounded metal tank for return product and open the spray gun using the trigger guard; keep it open until no further overpressure is detected.
5. Secure the spray gun with the locking device.
6. Open product pressure relief valve (see system description) and leave open.

If the pressure is still not completely relieved after this:
- **If nozzle is clogged:** slowly and carefully loosen the union nut to release the remaining pressure.
- **If product hose is obstructed:** slowly loosen the hose connections to release the remaining pressure.

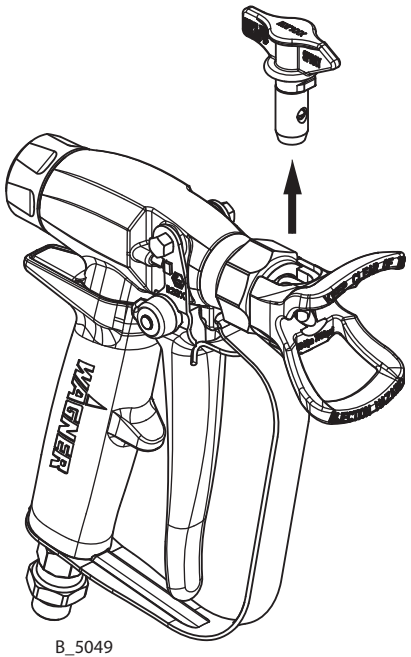
Note:
Always follow the procedure described above if pressure relief is specified in the instructions.

7.3.3 CHANGING THE AIRLESS NOZZLE

NOTICE
Defective Airless nozzle! Insufficient paint application quality → Do not use sharp-edged objects on the carbide on the Airless nozzle.

Nozzles can be easily removed and replaced without having to take apart the Airless spray gun.

1. Relieve the pressure on the spray gun and product pressure generator in accordance with Chapter 7.3.2.
2. Secure the spray gun with the locking device.
3. Remove the nozzle from the opening at the nozzle holder. Attention: when removing the reversing nozzle, always aim the spray gun at the floor, as product can still come out due to product being trapped between the reversing nozzle and the valve seat.
4. Insert the new nozzle into the opening at the nozzle holder. The tip on the reversing nozzle has to point forward in the direction of spray.



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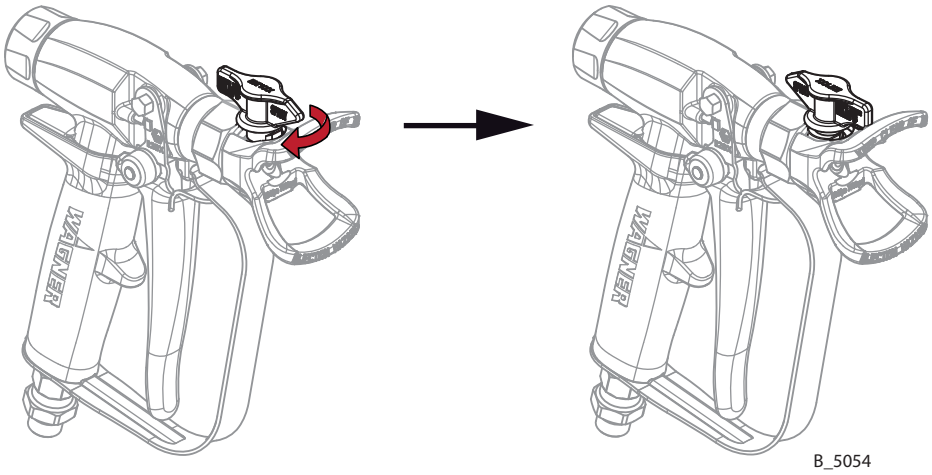
7.3.4 CLEANING THE AIRLESS NOZZLE

For disassembly and assembly of Airless nozzles, see Chapter 7.3.3.
The Airless nozzle can be placed into a cleaning solution recommended by the paint manufacturer.

7.3.5 ELIMINATE NOZZLE CLOGGING

1. Relieve the pressure on the spray gun and product pressure generator in accordance with Chapter 7.3.2.
2. Secure the spray gun with the locking device.
3. Rotate the reversing nozzle 180° so that its tip is pointing opposite the direction of spray.
   Attention: when rotating the reversing nozzle, always aim the spray gun at the floor, as product can still come out due to product being trapped between the reversing nozzle and the valve seat.
4. Briefly trigger the spray gun so that the pressure eliminates the clog.

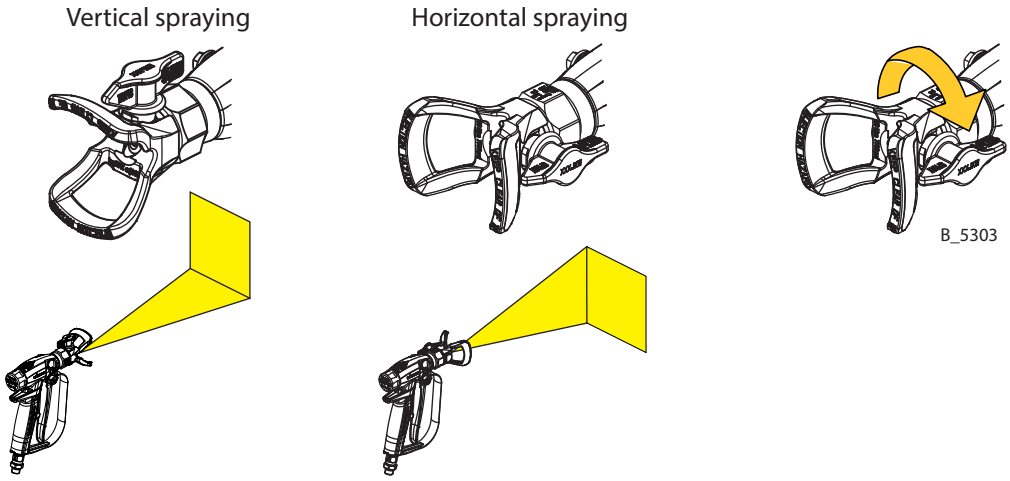
Note:
Only activate the trigger briefly if the nozzle is installed in the reversed direction.



7.3.6 HORIZONTAL/VERTICAL SPRAYING

1. Secure the spray gun with the locking device.
2. Turn the nozzle holder to the desired position.

Attention: always turn the nozzle holder clockwise (see illustration) so that the threaded connection cannot become loose. After turning, check whether the nozzle holder is tight. If not, tighten.



8 CLEANING AND MAINTENANCE

8.1 CLEANING

8.1.1 CLEANING STAFF

Cleaning work should be undertaken regularly and carefully by qualified and trained staff. They should be informed of specific hazards during their training.

The following hazards may arise during cleaning work:

- Health hazard from inhaling solvent vapors
- Use of unsuitable cleaning tools and aids

8.1.2 SAFETY INSTRUCTIONS

⚠ DANGER

Exploding gas / air mixture!
Danger to life from flying parts and burns
→ Never spray into a closed tank.
→ Ground the tank.

⚠ WARNING

Explosive atmosphere!
Explosive gases are produced when aluminum comes into contact with halogenated hydrocarbons

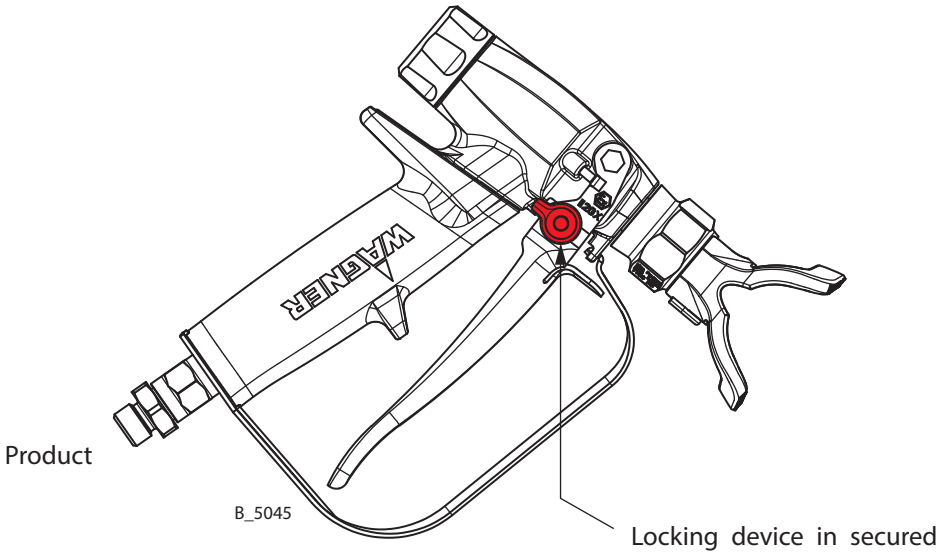
→ To clean aluminum, do not use liquids containing halogenated hydrocarbons.

⚠ WARNING

Discharge of electrostatically charged components in atmospheres containing solvents!
Explosion hazard from electrostatic sparks or flames.

→ Ground all device components.
→ Ground the work pieces to be coated.

8.1.3 FLUSHING AND CLEANING THE SPRAY GUN



→ Observe safety instructions in Chapter 4.

The spray gun and the device must be cleaned and flushed daily. The cleaning/flushing agents used for cleaning or flushing must correspond with the working material.

Note:
Methylene chloride is not recommended as an agent for flushing or cleaning the spray gun or other system components.

1. Relieve the pressure on the spray gun and product pressure generator in accordance with Chapter 7.3.2.
2. Secure the spray gun with the locking device.
3. Connect the solvent supply.
4. Disassemble the Airless nozzle and clean it separately (see Chapter 7.3.3 and 7.3.4).
5. Raise the pressure of the rinsing agent supply to a maximum of 4 MPa; 40 bar; 580 psi, unlock the spray gun and thoroughly rinse it.
6. Relieve the pressure on the spray gun and product pressure generator.
7. Secure the spray gun with the locking device.
8. Clean the spray gun body with a cleaning agent recommended by the lacquer manufacturer and dry with a cloth or blow gun.

8.2 MAINTENANCE

8.2.1 MAINTENANCE STAFF

Maintenance work should be undertaken regularly and carefully by qualified and trained staff. They should be informed of specific hazards during their training.

The following hazards may arise during maintenance work:
- Health hazard from inhaling solvent vapors
- Use of unsuitable tools and aids

An authorized person must ensure that the device is checked for being in a reliable state after maintenance work is completed.

8.2.2 SAFETY INSTRUCTIONS

DANGER

Incorrect maintenance/repair!
Danger to life and equipment damage.

→ Only a WAGNER service center or a suitably trained person may carry out repairs and replace parts.
→ Only repair and replace parts that are listed in the Chapter "Spare parts" and that are assigned to the unit.
→ Before all work on the device and in the event of work interruptions:
- Switch off the energy and compressed air supply.
- Relieve the pressure from the spray gun and device.
- Secure the spray gun against actuation.
→ Observe the operating manual and service manuals at all times when carrying out work.

→ Observe the safety instructions in Chapter 4 and Chapter 8.1.2.

Prior to maintenance
- Flush and clean the system. → Chapter 8.1.3.

After maintenance
- Carry out a safety check in accordance with Chapter 8.2.3.
- Put the system into operation and check for leaks as described in Chapter 6.6.

→ In accordance with the guideline for liquid ejection devices (ZH 1/406 and BGR 500 Part 2 Chapter 2.29 and Chapter 2.36):
- The liquid ejection devices should be checked by an expert (e.g. Wagner service technician) for their safe working conditions as required and at least every 12 months.
- For shut down devices, the examination can be suspended until the next start-up.

8.2.3 SAFETY CHECKS

Daily: Check the grounding (see Chapter 6.3) and hoses (see Chapter 8.2.3.1).

8.2.3.1 PRODUCT HOSES, TUBES AND COUPLINGS

DANGER

Bursting hose, bursting threaded joints!
Danger to life from injection of product and from flying parts.

→ Ensure that the hose material is chemically resistant to the sprayed products and the used flushing agents.
→ Ensure that the spray gun, threaded joints, and product hose between the device and the spray gun are suitable for the generated pressure.
→ Ensure that the following information can be seen on the hose:
- Manufacturer
- Permissible operating pressure
- Date of manufacture.

The service life of the complete hoses between product pressure generator and application device is reduced due to environmental influences even when handled correctly.

→ Check hoses, pipes, and couplings every day and replace if necessary.
→ Before every commissioning, check all connections for leaks.
→ Additionally, the operator must regularly check the complete hoses for wear and tear as well as for damage at intervals that he/she has set. Records of these checks must be kept.
→ The complete hose is to be replaced as soon as one of the two following intervals has been exceeded:
- 6 years from the date of the hose crimping (see fitting embossing).
- 10 years from the date of the hose imprinting.

Fitting embossing	Meaning
xxx bar	Pressure
yymm	Crimping date (year/month)
XX	Internal code

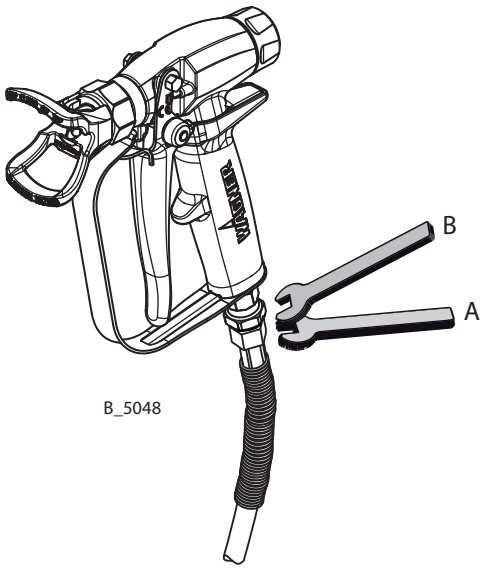
Hose imprinting	Meaning
Wagner	Name / Manufacturer
yymm	Date of manufacture (year/ month)
xxx bar (xx MPa) e.g. 270 bar (27MPa)	Pressure
XX	Internal code
DNxx (e.g. DN10)	Nominal diameter

8.3 REPLACING THE PRODUCT HOSE

1. Flush and clean the spray gun as described in Chapter 8.1.3.
2. Relieve the pressure on the spray gun and product pressure generator in accordance with Chapter 7.3.2.
3. Secure the spray gun with the locking device.

Product hose

4. Place the size B open-end wrench on the lower wrench size across flats of the product connection and hold it in place.
5. Unscrew the product hose nut using the size A open-end wrench.



Assembly:

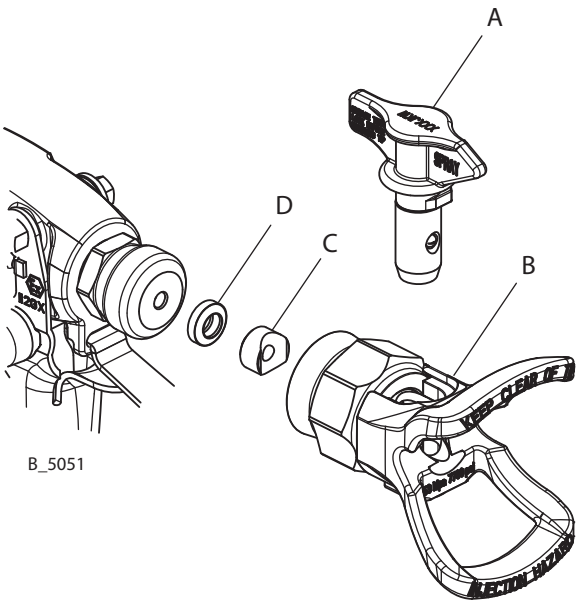
1. Fit product hose by hand and tighten with 2 open-ended wrenches.

Description	Wrench A wrench size	Wrench B wrench size
GM 1 350 / 530 with filter NPS1/4"	17 mm 0.67 inch	19 mm 0.75 inch

8.4 REPLACING THE NOZZLE SEAL

1. Flush and clean the spray gun as described in Chapter 8.1.3.
2. Relieve the pressure on the spray gun and product pressure generator in accordance with Chapter 7.3.2.
3. Secure the spray gun with the locking device.
4. Remove reversing nozzle (A).
5. Unscrew nozzle holder (B).
6. Carefully release saddle (C) and nozzle sealing (D) using a screwdriver.
7. Insert a new nozzle seal (D) and saddle (C) into the nozzle holder noting the installation position (see illustration).
8. Screw the nozzle holder onto the spray gun and push the reversing nozzle (A) into the opening.

Note:
The tip of the reversing nozzle must point forward in the direction of spray.



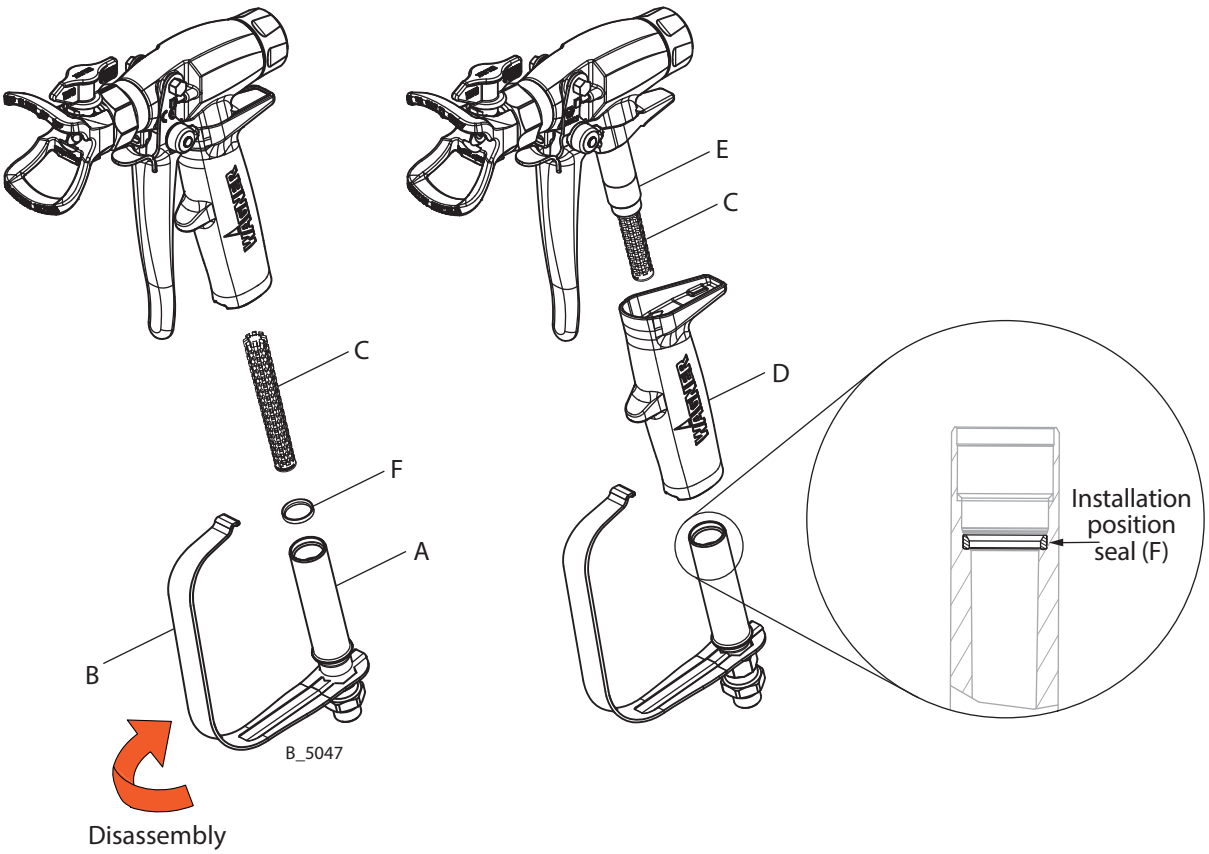
8.5 CHANGING OR CLEANING FILTER INSERT

1. Flush and clean the spray gun as described in Chapter 8.1.3.
2. Relieve the pressure on the spray gun and product pressure generator in accordance with Chapter 7.3.2.
3. Secure the spray gun with the locking device.
4. Use the guard bracket (B) with integrated hex tool to loosen and unscrew the filter housing (A).
5. Remove the filter insert (C) from the filter housing (A).
6. Thoroughly clean the filter housing and gun handle with cleaning agent.

Assembly:

7. Insert a new filter insert (C) with opening downwards into the filter housing (A). Check the seal (F) to make sure it is in good condition and positioned correctly. Notice: if the seal (F) becomes damaged, it must also be replaced (order no. 364340).
8. Use the guard bracket to screw in and tighten the filter housing (A).

Note: If the filter insert (C) gets stuck in the filter socket (E), pull off the gun handle (D) and carefully remove the filter insert (C).



9 TROUBLESHOOTING AND RECTIFICATION

Functional fault	Cause	Remedy	See Chapter
Insufficient product output.	Nozzle too small.	Select larger nozzle.	12
	Product pressure too low.	Increase product pressure.	
	Spray gun filter or high-pressure filter clogged at pump.	Clean or replace filter.	8.4
	Nozzle is clogged.	Nozzle cleaning.	7.3.4/7.3.5
	The valve rod path is too short.	Replace the valve rod.	See service manual
Poor spray pattern	Nozzle worn.	Replace nozzle.	7.3.3
	Product pressure too low.	Increase the product pressure at pump.	
	The product viscosity is too high.	Dilute the spray product in accordance with the manufacturer's instructions.	
	The nozzle is partially clogged.	Nozzle cleaning.	7.3.4 / 7.3.5
Valve rod leaks	The seals on the valve rod are damaged or the valve rod itself is damaged.	Completely replace valve rod.	See service manual
Gun will not shut off correctly	The valve seat or the valve ball is damaged.	Completely replace valve rod.	See service manual

10 REPAIR WORK

10.1 REPAIR STAFF

Repair work must be carried out carefully by qualified and trained staff. They should be informed of specific hazards during their training. The repairs must be carried out in accordance with the corresponding service manual.

The following hazards may arise during repair work:

- Health hazard from inhaling solvent vapors
- Use of unsuitable tools and aids

A skilled person must ensure that the device is checked for being in a reliable state after repair work is completed.

11 DISPOSAL

When the equipment must be scrapped, please differentiate the disposal of the waste materials.
The following materials have been used:

Stainless steel	Aluminum	Plastics	Carbide

Consumable products (lacquers, adhesives, flushing and cleaning agents) must be disposed of in accordance with all applicable legal requirements.

12 ACCESSORIES

12.1 NOZZLES

Wagner Profi Tip HP nozzle chart

Article No. 1006xxx

In order to determine the article number of a nozzle, please select the number from the table and replace the three xxx. Example: This means nozzle 411 has article number: 1006411

Size	Spray angle							
	10°	20°	30°	40°	50°	60°	70°	80°
07***				407				
09***		209	309	409	509	609		
11	111	211	311	411	511	611		
13	113	213	313	413	513	613		813
15	115	215	315	415	515	615	715	815
17		217	317	417	517	617	717	
19		219	319	419	519	619	719	819
21		221		421	521	621		821
23		223		423	523	623	723	823
25		223		425	525	625		825
27		223		427	527	627		827
29						629		
31		223		431	531	631		
33				433				
35		223		435	535	635		
43		223			543			
52					552			

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Spray pattern width (inch)**							
51 (2,0)	104 (4,0)	152 (6,0)	203 (8,0)	254 (10,0)	305 (12,0)	356 (14,0)	406 (16,0)

Material filter (in mesh)
200
150
100
50

Drilled hole inch (mm)	Material flow* l/min (gal/min)
0,007(0,18)	0,23(0,061)
0,009(0,23)	0,26(0,069)
0,011(0,28)	0,38(0,100)
0,013(0,33)	0,55(0,145)
0,015(0,38)	0,75(0,198)
0,017(0,43)	0,96(0,254)
0,019(0,48)	1,20(0,317)
0,021(0,53)	1,45(0,383)
0,023(0,58)	1,62(0,428)
0,025(0,64)	1,92(0,507)
0,027(0,69)	2,25(0,594)
0,029(0,75)	2,57(0,679)
0,031(0,79)	2,95(0,779)
0,033(0,83)	3,35(0,885)
0,035(0,90)	3,80(1,004)
0,043(1,10)	5,89(1,556)
0,052(1,30)	6,14(1,622)

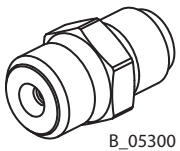
* Specification in l/min, tested with water and 100 bar pressure

** Spray width at approx. 30 cm distance from the sprayed object and 110 bar (11 MPa) of pressure with lacquer 56 DIN/4 seconds

*** Possible deviations in the spray jet width

12.2 INTERMEDIATE PIECE

Order No.	Designation
2353547	Intermediate piece "F" 11/16-16-UN



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13 SPARE PARTS

13.1 HOW CAN SPARE PARTS BE ORDERED?

Always supply the following information to ensure delivery of the right spare part:

Order number, designation and quantity

The unit quantity does not have to be identical with the numbers in the "**Stk**" columns of the lists. This number merely indicates how many of the respective parts are used in each component.

The following information is also required to ensure smooth processing of your order:

- Address for the invoice
- Name of the person to be contacted in the event of any queries
- Address for delivery
- Type of delivery (normal mail, express delivery, air freight, courier, etc.)

Identification in spare parts lists.
Explanation of column "**K**" (labeling) in the following spare parts lists:
◆ Wearing parts
Note: These parts are not covered by warranty terms.
● Not part of standard equipment, available, however, as additional extra.

DANGER

Incorrect maintenance/repair!
Danger to life and equipment damage.

→ Only a WAGNER service center or a suitably trained person may carry out repairs and replace parts.
→ Only repair and replace parts that are listed in the Chapter "Spare parts" and that are assigned to the unit.
→ Before all work on the device and in the event of work interruptions:
- Switch off the energy and compressed air supply.
- Relieve the pressure from the spray gun and device.
- Secure the spray gun against actuation.
→ Observe the operating manual and service manuals at all times when carrying out work.

13.2 SPARE PARTS LIST GM 1-350/530

Spare parts list GM 1

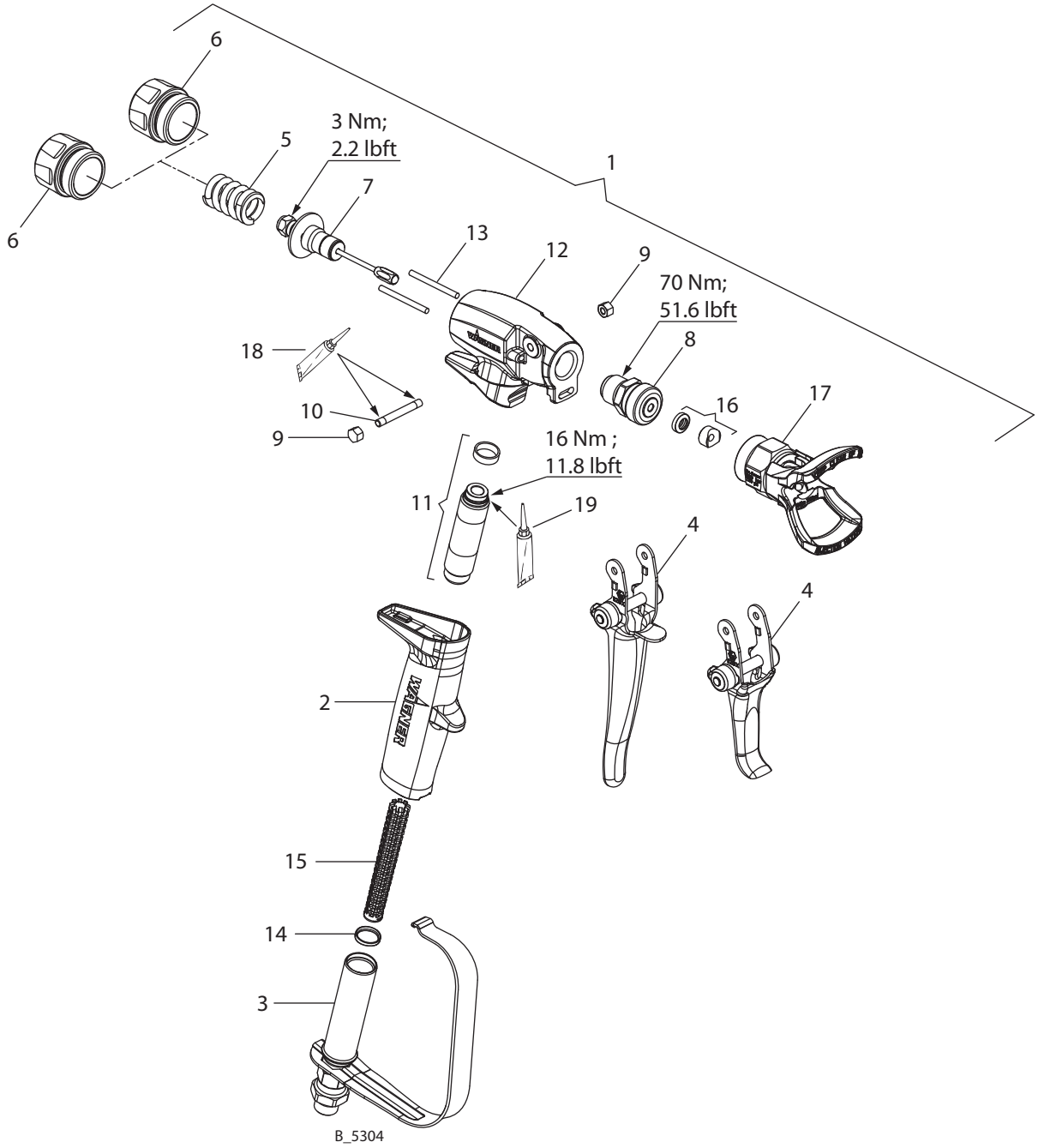
Pos	K	Stk	35 MPa Order No.	53 MPa Order No.	Designation
1		1	2347536	2346856	GM1
2		1	2346614	2346614	Handle
3		1	2353559	2353559	Filter housing with guard bracket
4		1	-	2353599	Trigger guard 4F, complete
4		1	2353600	-	Trigger guard 2F, complete
5		1	347335	347335	Pressure spring
6		1	-	2353606	Preload nut, 530 bar
6		1	2353607	-	Preload nut, 350 bar
7	★	1	2353556	2353556	Valve rod unit
8	★	1	2353546	2353546	Intermediate piece "G" 7/8-14-UNF
9		2	9910403	9910403	Cap nut
10		1	2343085	2343085	Bolt
11		1	2353611	2353611	Filter socket with seal
12		1	2353613	2353613	Spray gun body
13		2	43411	43411	Actuating pins
14	★ ●	1	364340	364340	Seal, filter
15	◆	1	-	-	Filter insert, yellow (middle), 100 mesh per inch *
	◆ ●	1	2315723	2315723	* Filter insert, red (fine), 200 mesh per inch – 10 pieces
	◆ ●	1	2315724	2315724	* Filter insert, blue (middle), 150 mesh per inch – 10 pieces
	◆ ●	1	2315725	2315725	* Filter insert, yellow (middle), 100 mesh per inch – 10 pieces
	◆ ●	1	2315726	2315726	* Filter insert, white (coarse), 50 mesh per inch – 10 pieces

16	★ ●	1	2353548	2353548	Seal kit PT-HD GM1 – 5 pieces
17	●	1	2353549	2353549	Nozzle holder PT-HD GM1
18		1	9992590	9992590	Loctite 222
19		1	9992804	9992804	Loctite 648
20	●	1	2353551	2353551	Service set GM1

◆ = Wearing parts

★ = Included in service set

● = Not part of the standard equipment, but available as a special accessory



14 WARRANTY AND CONFORMITY DECLARATIONS

14.1 IMPORTANT NOTES REGARDING PRODUCT LIABILITY

As a result of an EC regulation effective from January 1, 1990, the manufacturer shall only be liable for his product if all parts originate from him or are approved by him, and if the devices are properly mounted, operated and maintained.
The manufacturer will not be held liable or will only be held partially liable if third-party accessories or spare parts have been used.
With genuine WAGNER accessories and spare parts, you have the guarantee that all safety regulations are complied with.

14.2 WARRANTY CLAIM

Full warranty is provided for this device:
We will at our discretion repair or replace free of charge all parts which within 24 months in single-shift, 12 months in 2-shift or 6 months in 3-shift operation from date of receipt by the purchaser are found to be wholly or substantially unusable due to causes prior to the sale, in particular faulty design, defective materials or poor workmanship.
The type of warranty provided is such that the device or individual components of the device are either replaced or repaired as we see fit. The resulting costs, in particular shipping charges, road tolls, labour and material costs will be borne by us except where these costs are increased due to the subsequent shipment of the device to a location other than the address of the purchaser.
We do not provide warranty for damage that has been caused or contributed to for the following reasons:
Unsuitable or improper use, faulty assembly or commissioning by the purchaser or a third party, normal wear, negligent handling, defective maintenance, unsuitable coating products, substitute products and the influence of chemical, electrochemical or electrical agents, except when the damage is attributable to us.
Abrasive coating products such as red lead, emulsions, glazes, liquid abrasives, zinc dust paints and so forth reduce the service life of valves, packaging, spray guns, nozzles, cylinders, pistons etc. Wear and tear due to such causes are not covered by this warranty.
Components that have not been manufactured by WAGNER are subject to the original warranty of the manufacturer.
Replacement of a component does not extend the period of warranty of the device.
The device should be inspected immediately upon receipt. To avoid losing the warranty, we or the supplier company are to be informed in writing about obvious faults within 14 days upon receipt of the device.
We reserve the right to have the warranty compliance met by a contracting company.
The services provided by this warranty are dependent on evidence being provided in the form of an invoice or delivery note. If the examination discovers that no warranty claim exists, the costs of repairs are charged to the purchaser.
It is clearly stipulated that this warranty claim does not represent any constraint on statutory regulations or regulations agreed to contractually in our general terms and conditions.

J. Wagner AG

14.3 CE DECLARATION OF CONFORMITY

Herewith we declare that the supplied version of

GM 1-350
GM 1-530

comply with the following guidelines:

2006/42/EC
94/9/EC

Applied standards, in particular:

DIN EN ISO 12100: 2010	DIN EN ISO 14462: 2005 + A1: 2009
DIN EN 1127-1: 2011	DIN EN 13463-1: 2009
DIN EN 1953: 2013	DIN EN 13463-5: 2011
DIN EN ISO 9001: 2009	DIN EN ISO 13732-1: 2008
DIN EN ISO/IEC 80079-34: 2012	DIN EN ISO 4413: 2010

Applied national technical standards and specifications, in particular:

BGR 500 Part 2, Chapter 2.36	TRBS 2153
BGR 500 Part 2, Chapter 2.29	BGI 740
ZH 1/406	

Note: All titles can be ordered from Heymanns Publishing House in Cologne, or they can be found on the Internet.

EC Certificate of Conformity
The CE certificate of conformity is enclosed with this product. If needed, further copies can be ordered through your WAGNER dealer by specifying the product name and serial number.

Order number: 2355332

14.4 NOTES ON NATIONAL REGULATIONS AND GUIDELINES

a) BGR 500 Part 2, Chapter 2.36 "Working with Liquid Ejection Devices"
b) BGR 500 Part 2, Chapter 2.29 "Working with Coating Products"
c) BGR 180 Guidelines for equipment cleaning work pieces with solvents
d) TRBS 2153 Avoiding ignition risks
e) BGI 740 Painting rooms and equipment
f) ZH 1/406 Guidelines for liquid ejection devices

Note: All titles can be ordered from Heymanns Publishing House in Cologne, or they can be found on the Internet.

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