Granule jet blasting device

PG 5–8

Owner's Manual

81 29 2 208 034

Translation of the original instructions

Other languages, spare parts and accessories: www.tkr-service.com

1.1 Information regarding this manual

Note Legislation stipulates that users must be trained in the use of manually operated blasting equipment.

State-of-the-art The granule jet blasting device corresponds with the state of technology. To ensure that the equipment operates safely, it must be operated in a proper and safe manner.

Technical modifications In the interests of quality assurance, we reserve the unrestricted right to proceed to technical modifications arising out of further developments in technology and product improvements, without prior notification.

Read instruction manual Read the instruction manual carefully before using the device.

Handling All handling necessary to ensure correct operation is described in the instruction manual.

Faults No work methods other than those expressly approved by the manufacturer may be used.If faults occur during operation of the device, they must be remedied by trained experts only.

1.2 Permitted operators

The owner/operator of the machine must make the operating instructions available to the operator and ensure that they have been read and understood. Only then may the operator start up the device.

1.3 Pictograph key

Several sections of these operating instructions are marked with internationally recognised warning signs, danger notes and general prohibition signs. Please comply with all notes and safety rules!

Follow all instructions and safety rules

The individual pictographs are explained in the following.


Instruction manual
general instructions


Observe the general instructions


Wear face mask


Wear hearing protection


Wear gloves


Wear protective clothing


Warning
General source of danger


Warning
System under pressure


Risk of hearing damage


Warning - noise with high sound pressure level


Please note the following.


Arrow to clarify pressing together

Arrow indicating direction


For further information see chapter...


Audibly engage


Shorten


Blow out with air


Clean with air/granule mixture

2.1 Use for intended purpose

The granule jet blasting device complies with the machinery directive 98/37 EC and is used for processing the surface of metal using a grainy blasting material, that is blasted onto the surface that is being processed. The blasting material is transported using compressed air.

The GP 5-8 granule jet blasting device is used for removing carbonized material from the inlet channel and valves of combustion engines.

The jet blasting device may only be operated in combination with the vacuum adapters that are approved for the relevant engine type and a vacuum cleaner with sufficient suction power.

Unauthorised modifications or changes to the device are not permitted for safety reasons.

2.2 Danger sources

The granule jet blasting device is safe if used for its correct purpose.

If it is used incorrectly and/or negligently by untrained personnel, serious injuries could be caused by the escaping granules.

The blasting probe must never be used without the provided vacuum adapter and vacuum equipment with adequate power.

Never direct the blasting probe at persons or look into the opening of the blasting probe. Risk of injury!

The device must only be operated using hoses that are approved for the purpose of use and the operating pressure of the device.

The device may only be used by trained personnel.

Never throw or drop the granule jet blasting device.

The granule jet blasting device may only be used at ambient temperatures of between 5 °C and 50 °C.

The granule jet blasting device must not be used in potentially explosive areas!

The device must never be operated without suitable protective clothing, such as a safety mask and safety shoes. Risk of injury!

Before carrying out maintenance or cleaning work and always before filling the device with granules, the compressed air supply must be disconnected and the device depressurised.

Chapter 5.1

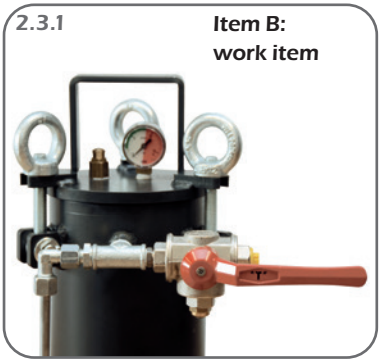
The granule jet blasting device may only be operated with compressed air.

The granule jet blasting device must always be set up on a level surface or the floor of the workshop. The device must not be set up on tables, workbenches or other objects. (Container is under pressure!)

Chapter 2.4

Hoses and supply lines must be routed in such a way that they cannot be damaged or become trapped! The hoses must also be routed in a way that prevents people from tripping over them.

2.3 Safety devices on the equipment



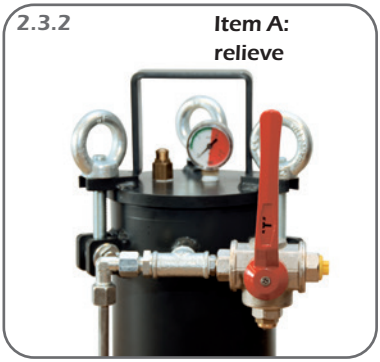


Fig. 2.3.1 There is a 3-way ball valve on the granule container that applies compressed air to the container and the control system in the operating position.

Fig. 2.3.2 In the „Off" position the container and the control system are depressurised.

If a control function fails, the device must be taken out of service immediately and repaired by a trained expert!

There is a pressure gauge on the granule container. The maximum operating pressure of the device may never exceed 8 bar. A safety valve is installed on the granule container that controls the maximum operating pressure of the device. The valve opens at pressure of approx. 8.5 bar.

There is a 2-way ball valve on the handle of the blasting lance. This can be operated if a control function fails. If the ball valve is closed, no air or other blasting material can exit from the lance.

Fig. 2.3.3

If the safety equipment malfunctions, the device must be taken out of service immediately! The device should undergo preventive maintenance at least once per annum by a specialist company!

2.4 Safety measures at the installation site

Fig. 2.4.1 The surface on which the device is installed must be level, load-bearing and stable in accordance with the weight of the device.

The device may only be used in combination with the suction adapters that are provided for the respective motor type and an adequately dimensioned vacuum cleaner.

Hoses and supply lines must be routed so that they do not damage the device and cannot become trapped! The hoses must also be routed in such a away that they cannot be tripped over.

3.1 Unpacking the device

- Place box on a level surface
- Open box and carefully remove the device
- Check the accessories
  - Operating instructions
  - Granule container with connected hose package and handle
  - Straight blasting lance
  - Angled blasting lance
  - Possibly other accessories, see delivery note


3.1.1

3.2 Identification and description of the device components

Main elements of the granule jet blasting device

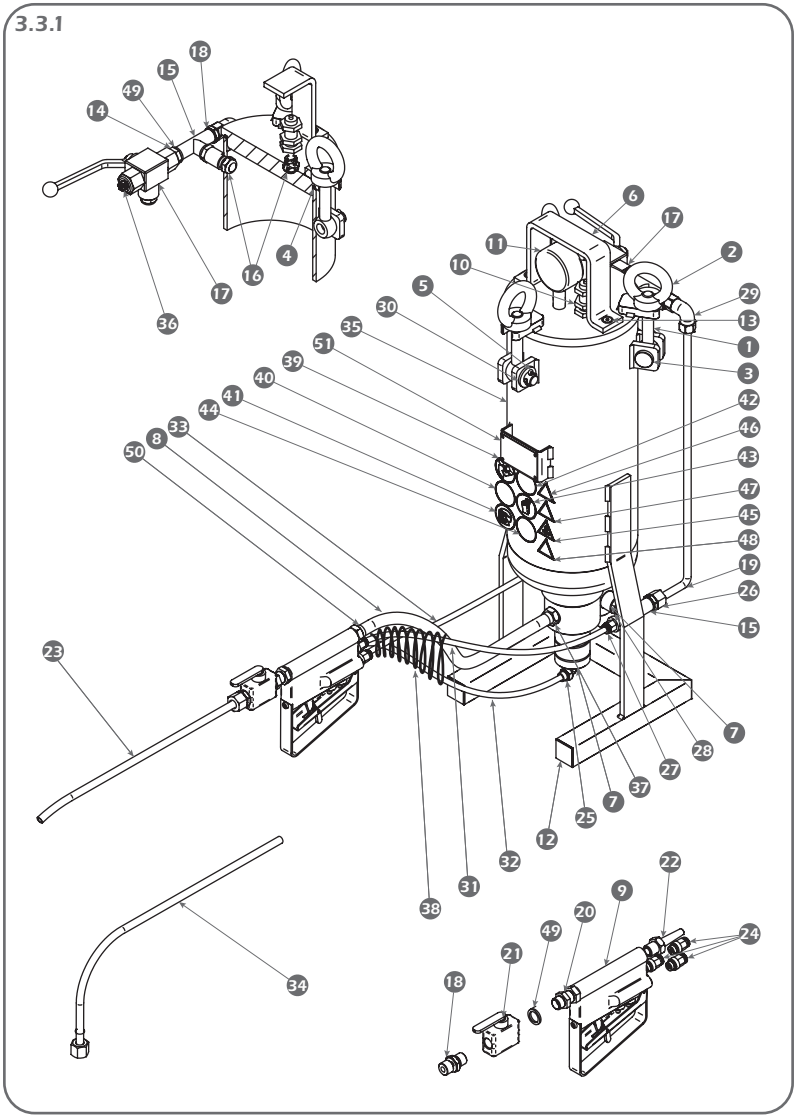
Granule blasting material container with 3-way ball valve, granule control valve, compressed air control valve, pressure gauge and safety valve.

Hose package with granule transportation hose, and three colour-coded control hoses.

Handle with 2-way ball valve and connection for the blasting lance. The control function in the handle is activated using two control valves connected in series. The operating lever is equipped with a safety device to prevent unintentional reactivation.

3.3 Device components

3.3.1

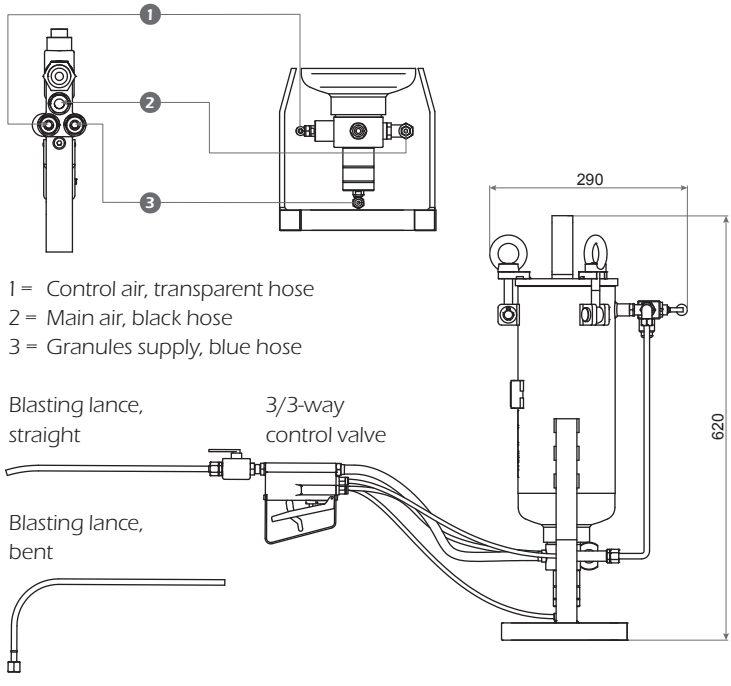


No.	Title
1	Eye bolt
2	Annular nut
3	Pin
4	O-ring
5	Split pin
6	Handle
7	Control block
8	PVC hose Ø 14 mm
9	Handle
10	Relief valve
11	Pressure gauge Ø 50 mm
12	Kapsto plastic cover
13	Countersunk screw
14	Double nipple
15	T-piece
16	Exhaust valve
17	3-way ball valve
18	Straight threaded male connector
19	Ermeto pipe 8x1
20	Bulkhead nipple
21	2-way ball valve
22	Threaded nozzle
23	Nozzle, straight
24	Straight insert nuts
25	Elbow fitting
26	Screw-in fitting
27	Straight male connector
28	Double nipple

No.	Title
29	Elbow fitting connection
30	Disc
31	Hose, black Ø 6 mm
32	Hose, blue Ø 6 mm
33	Hose, transparent Ø 6 mm
34	Nozzle, bent
35	Granule container
36	Kapsto sealing screw
37	Press nipple
38	Protective hose
39	Follow manual
40	Observe the general information
41	Wear face mask
42	Wear ear protection
43	Wear gloves
44	Wear protective clothing
45	Warning! System under pressure
46	Warning! General source of danger
47	Warning against damage to hearing
48	Warning against high levels of noise
49	PVC washer for 1/4“ connection
50	Hose clamp
51	Type plate

3.4 Technical Data

3.4.1



Length	290 mm
Width	ca. 280 mm
Height	620 mm
Max. operating pressure	8 bar
Container volume	5 l
Weight	15.5 kg
Hose package working length	4 m

Length and weight without hoses

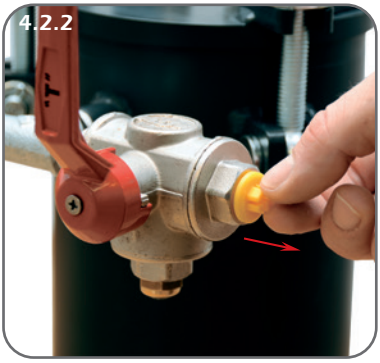
4.1 Operation of the granule jet blasting device

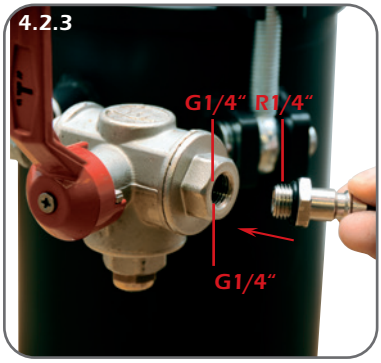
- Fill with blasting material.
- Connect vacuum adapter to vacuum device.
- Attach blasting lance to handle.
- Connect granule jet blasting device to the compressed air supply.
- Start the cleaning process.
- Blasting with air / blowing out.
- Blasting with air/granule mixture / cleaning.
- Cleaning the inlet valves and the inlet channel.
- Taking device out of service.
- Maintaining the granule jet blasting device.

Always check the condition of the hoses before starting up the device!

Stop using defective hoses immediately. Risk of injury!

4.2 Granule jet blasting device preparation and connection





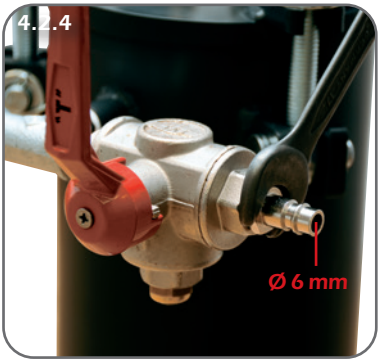
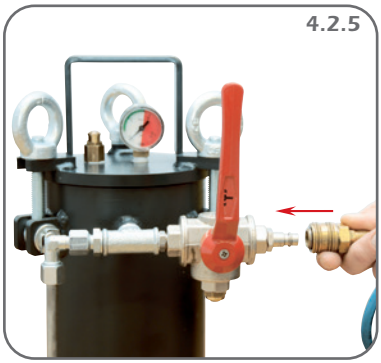


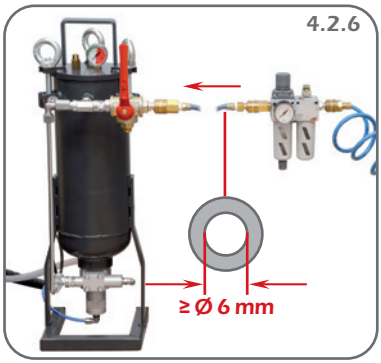
Fig. 4.2.1 The device is supplied from the factory without a compressed air coupling. The ball valve has a connecting thread with a female thread of G ¼“. The thread is fitted with a closing cap.

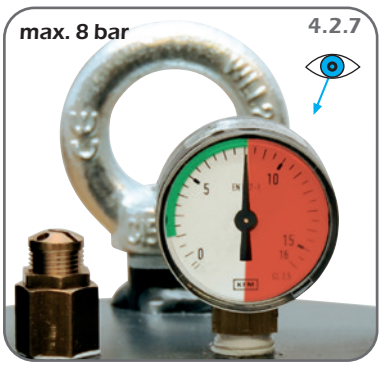
Fig. 4.2.2 Insert a suitable compressed air connection with seal into the thread.

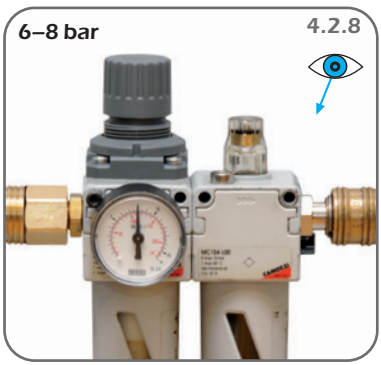
Fig. 4.2.3 Remove the closing cap.

Fig. 4.2.4 Tighten the compressed air connection using a suitable tool.









The device may only be operated using dry, oil-free compressed air!

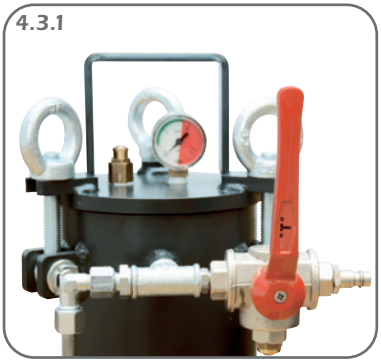
The granule jet blasting device may only be operated with an external supply unit with variable operating pressure!

Fig. 4.2.6

The operating pressure of the device should be between 6 and 8 bar, and may never exceed an operating pressure of 8 bar!

Fig. 4.2.7
Fig. 4.2.8

4.3 Filling with blasting material



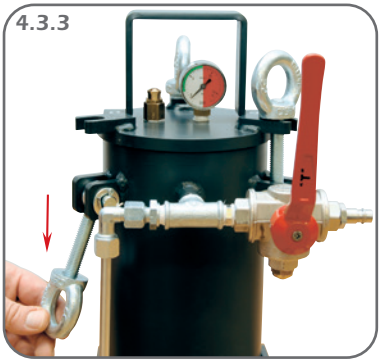


Fig. 4.3.1
3-way ball valve in „Relieve“ position

Fig. 4.3.2
Pressure gauge must not be indicating any pressure

Fig. 4.3.3
Undo eye bolts and swivel out swivelling screw fitting

Attention! Device may only be filled if container is depressurised and the air supply line has been disconnected.

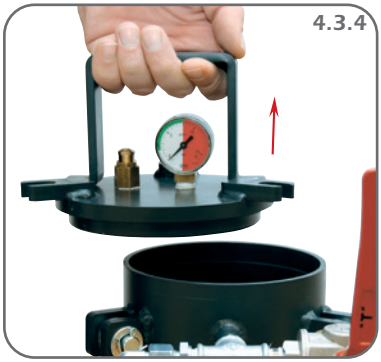


Fig. 4.3.4
Remove lid of container

Fig. 4.3.5
Filling with granules

Fig. 4.3.6
Max. filling level 20–30 mm below air inlet connection

Only blasting material that has been approved by the manufacturer may be used: Cleaning granulate. The blasting material must be free of impurities.

Never re-use blasting material.

4.3 Filling with blasting material

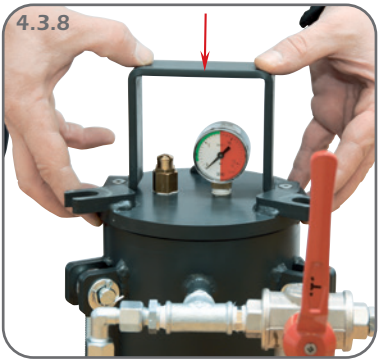


Fig. 4.3.7 Check lid seal. Seal must be clean and must not be damaged.

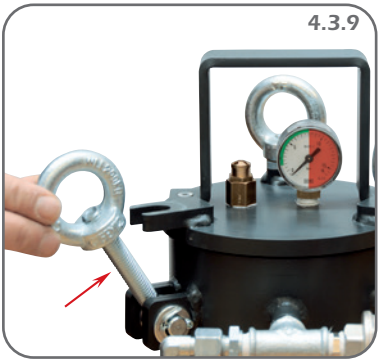
Fig. 4.3.8 Place lid on container.

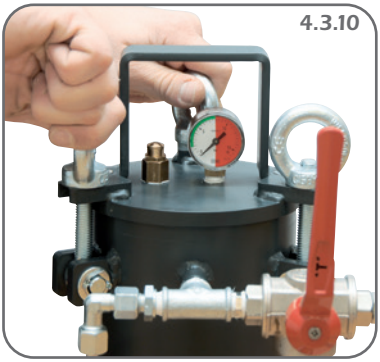
Fig. 4.3.9 Fit swivelling screw fitting.

Fig. 4.3.10 Tighten eye bolts by hand.

Fig. 4.3.11 3-way ball valve in „Relieve“ position

Check device for leaks!
If compressed air is leaking from the device, the working process must be interrupted and the cause thereof remedied!


4.3.9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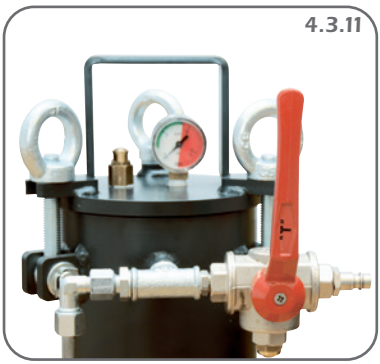
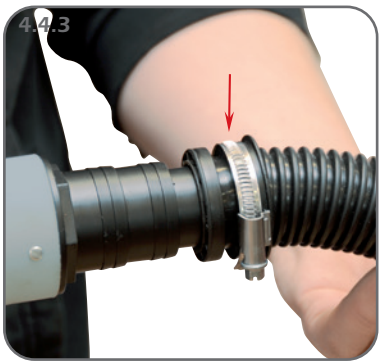

4.3.11

4.4 Connect vacuum adapter to vacuum cleaner



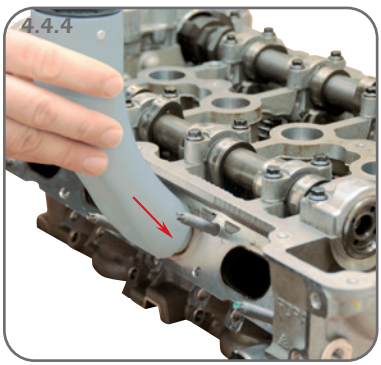


Fig. 4.4.1
Attach stepped grommet of vacuum adapter to suction hose of vacuum cleaner.

Fig. 4.4.2
Remove adapter segments that are too small from stepped grommet.

Fig. 4.4.3
Secure suction hose with a hose clamp

Fig. 4.4.4
Fix suction adapter in the inlet channel of the cylinder head

The correct adapter for the respective cylinder head must be used!

Pay attention to marking!

If you use the wrong adapter it may leak and blasting materialmay escape! Warning! Risk of injury.

4.5 Attach blasting lance to handle

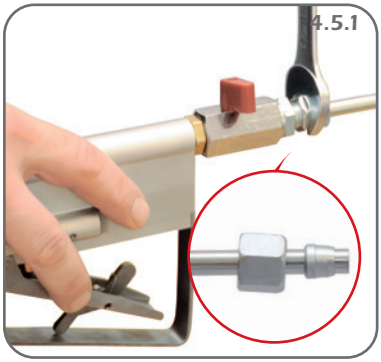


Fig. 4.5.1
Screw suitable blasting lance to 2-way ball valve.

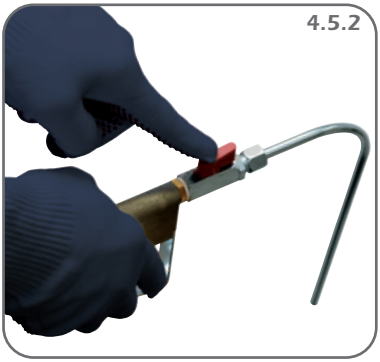


Fig. 4.5.2
Move 2-way ball valve to the open position.

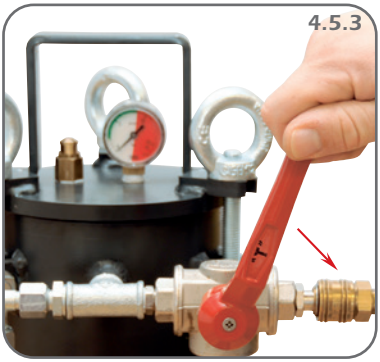


Fig. 4.5.3
Slowly turn 3-way ball valve to the working position.

Fig. 4.5.4
No air must come out of the blasting lance unless the hand lever is operated.

The device is now ready for operation!

4.6 Starting the cleaning process

Before the cleaning process is started, the operator must put on the prescribed protective clothing!

Only trained and instructed experts may operate the device!

4.7 Blasting

Fig. 4.7.1
Blasting with air / blowing out

When the pull-off lever is moved to position 1 (half-way position) only air comes out of the blasting lance.

This working position is used to blow out the cleaning area.

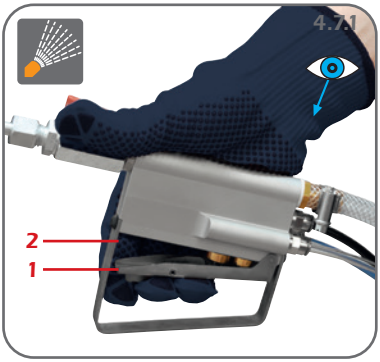
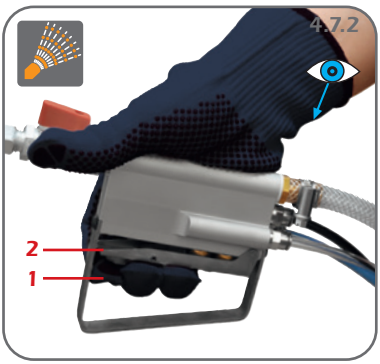


Fig. 4.7.2
Blasting with air/granule mixture / cleaning

When the pull-off lever is moved to position 2 (pushed all the way) air and granules flow out of the blasting lance with considerable power.

This working position is used to clean the carbonized areas).



The blasting lance must never be pulled out of the vacuum adapter during the cleaning process!
Risk of injury!

4.8 Cleaning the inlet valves and the inlet channel

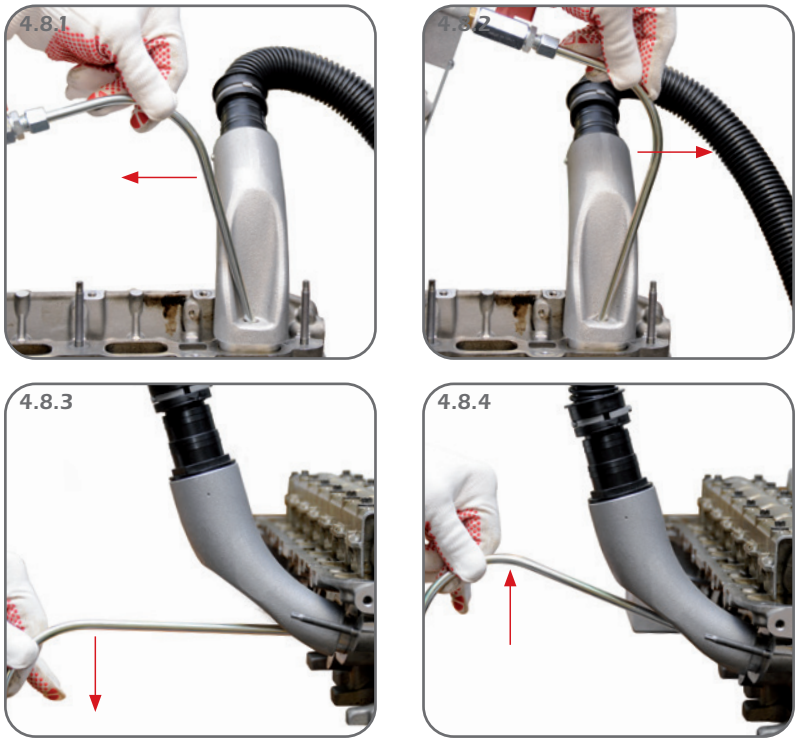
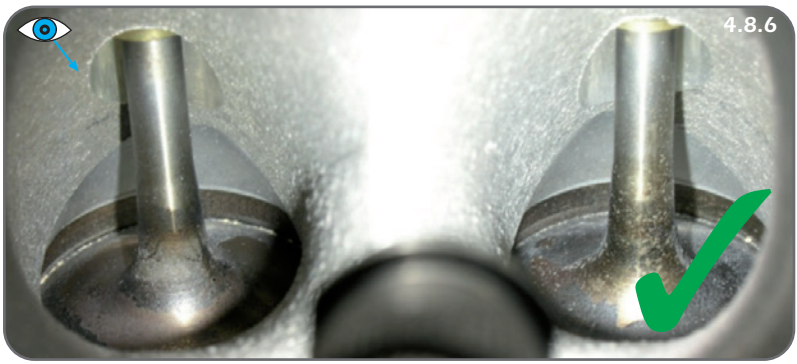


Fig. 4.8.1 – 4.8.4 The blasting lance must be positioned close to the surfaces that are being cleaned. The cleaning phases should last no more than 2-3 seconds. Then the cleaning area should be blown out again with air.

Repeat changeover between cleaning and blowing out several times. Each time the blasting lance must be moved to a different position so that the entire carbonised area is cleaned.

No blasting material should exit from the vacuum adapter during cleaning and blowing out! If blasting material comes out, the power of the vacuum device is insufficient.



After all cleaning positions have been blasted once, the cleaning result must be visually inspected. If the result is unsatisfactory, the process must be repeated and /or the working pressure of the device increased. **Max. 8 bar!**

Fig. 4.8.5

The inlet valves and the inlet channel area should be bare and free of carbonisation.

Fig. 4.8.6

4.9 Taking the device out of service

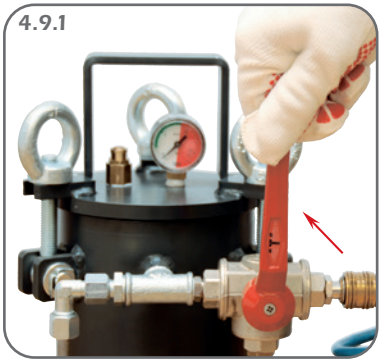


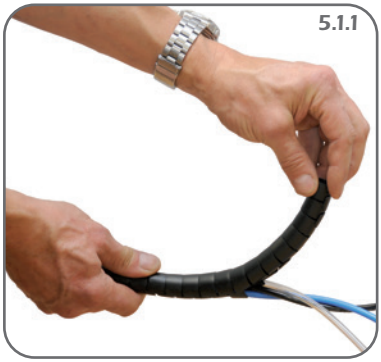
Fig. 4.9.1
After each working procedure the 3-way ball valve must be moved to the „Relieve" position.

Fig. 4.9.2
The compressed air supply line can be disconnected if no pressure is being indicated on the pressure gauge.

Fig. 4.9.3
Remove cover of blasting device and remove remainder of granules.

The granules must always be stored in a dry place!

5.1 Maintenance / cleaning



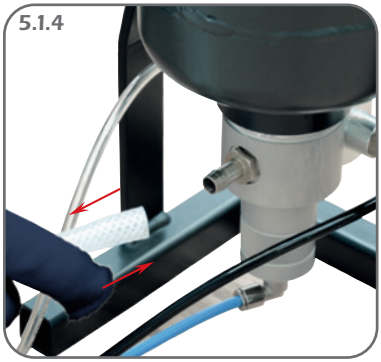
Attention! The blasting material hose is also subject to wear during operation, and must be checked for damage at least every two months.

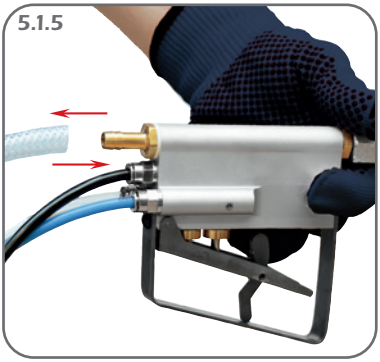
The blasting material hose should be replaced once per annum if the device is used regularly!

Fig. 5.1.1
Remove hose with protective braiding from hose package.

Fig. 5.1.2, 5.1.3
Detach hose clamps from grommet on control valve and handle.

5.1 Maintenance / cleaning





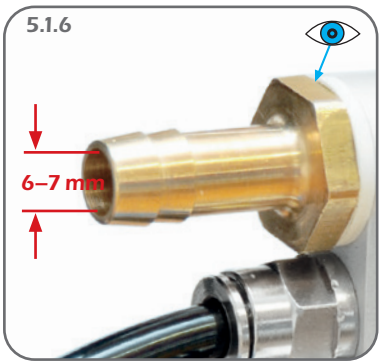
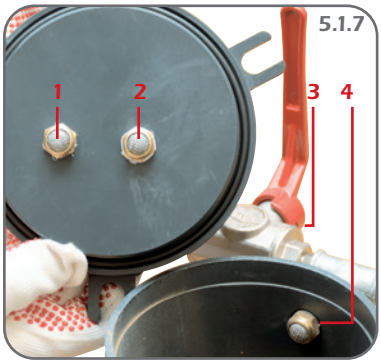


Fig. 5.1.4, 5.1.5
Remove hose and replace with new hose.

Fig. 5.1.6
This opportunity must be taken to check all hose grommets and connecting nipples on the control valve and the handle.

If the size of the hole has been increased significantly by the flow of blasting material, it must be replaced!

Original diameter	**6 mm**
Wear limit diameter	**7 mm**



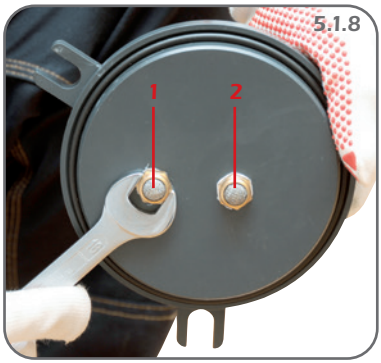


Fig. 5.1.7 – 5.1.9
At regular intervals, but after no more than 10–15 container fillings, the filter inserts in the blasting material container and the lid of the device must be cleaned!

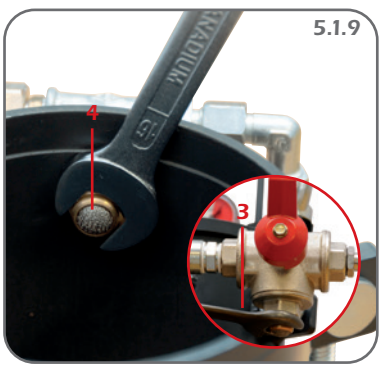
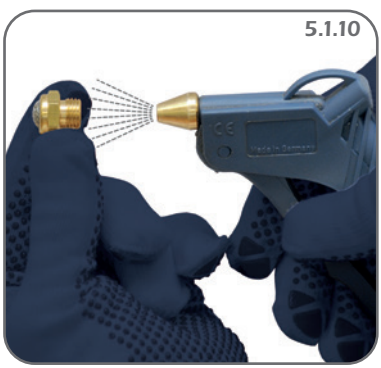
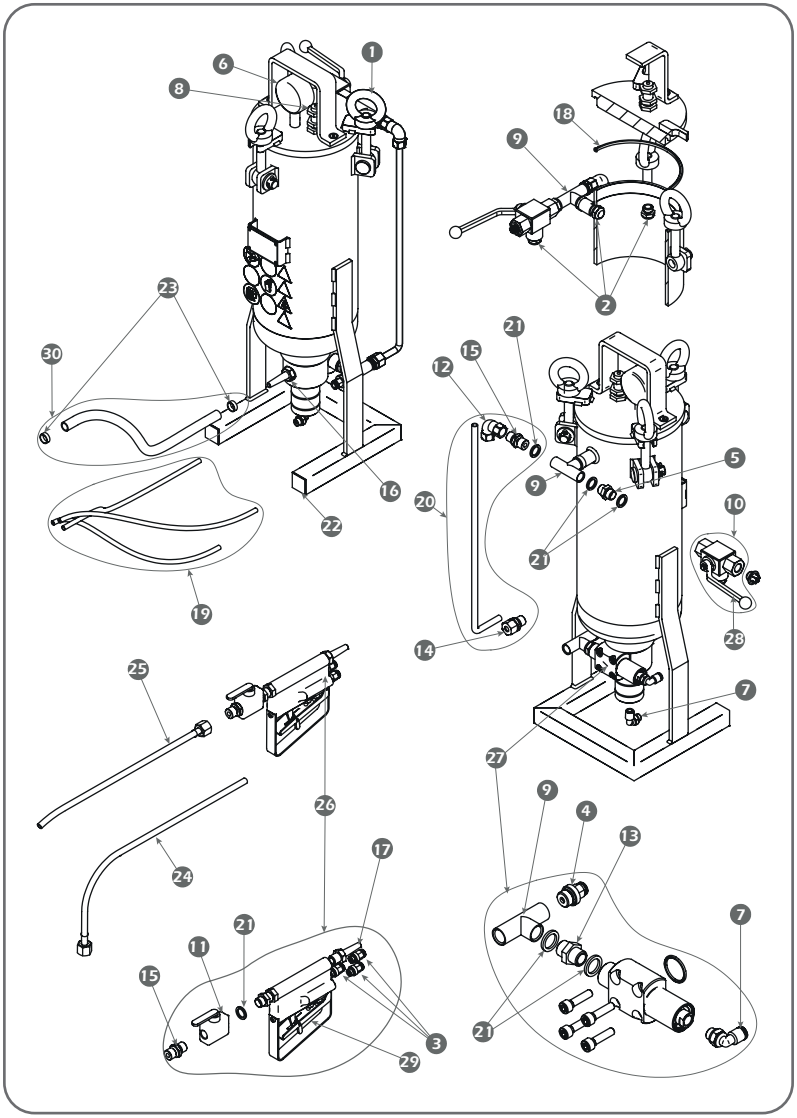


Fig. 5.1.10
Unscrew all filter inserts and blow them out with a compressed air blow-out gun from threaded side until all granule or dust residue has been removed. After cleaning, the filter inserts must be screwed back into the relevant positions.



Independently of the normal cleaning and maintenance work, the device must be checked and maintained at least once per annum by a specialist company!

5.2 Spare parts and accessories for the PG 5–8 granule jet blasting device



Pos.No.	Item number	Title
1	SER-GPG-00000128	Annular nut
2	SER-GPG-00000129	Exhaust valve
3	SER-GPG-00000130	GE 1/8" thread to Ø6
4	SER-GPG-00000131	GE 1/4" thread to Ø6
5	SER-GPG-00000132	Double nipple 1/4"
6	SER-GPG-00000133	Pressure gauge
7	SER-GPG-00000134	Angle connector 1/8"
8	SER-GPG-00000135	Relief valve
9	SER-GPG-00000136	T-piece
10	SER-GPG-00000137	3-way ball valve
11	SER-GPG-00000138	2-way ball valve
12	SER-GPG-00000139	Male elbow fitting
13	SER-GPG-00000140	Double nipple
14	SER-GPG-00000141	Screw-in fitting
15	SER-GPG-00000142	Screw-in fitting
16	SER-GPG-00000143	Press nipple M 16x1.5
17	SER-GPG-00000144	Threaded nozzle 1/4" thread
18	SER-GPG-00000052	O-ring
19	SER-GPG-00000048	Hose set incl. protective hose
20	SER-GPG-00000050	Ermeto pipe set
21	SER-GPG-00000146	PVC washer
22	SER-GPG-00000147	Kapsto plastic cover
23	SER-GPG-00000148	Hose clamp
24	SER-GPG-00000055	Nozzle, bent
25	SER-GPG-00000056	Nozzle, straight
26	SER-GPG-00000053	Handle
27	SER-GPG-00000051	2/2-way valve
28	SER-GPG-00000049	Ball valve handle
29	SER-GPG-00000126	Operating lever
30	SER-GPG-00000047	PVC hose with clip
31	SER-GPG-00000046	Cleaning granulate

5.2 Warranty conditions

This device complies with the current safety regulations and was tested before leaving the factory. We provide a 24 month warranty and are obliged to carry out all repairs caused by material and/or manufacturing faults that become necessary during this time.

Warranty restrictions

1. The warranty is invalidated if repairs are made to the device by anyone other than a specialist company or the manufacturer.
2. The warranty is invalidated if the device is used for any other than its intended purpose.
3. The warranty is invalidated if the operating instructions are not followed and the maintenance work has not be carried out as stipulated.
4. The warranty is invalidated if the device is used incorrectly and/or the permitted operating parameters are exceeded.
5. The warranty is invalidated in the event of external effects such as transport damage and damage caused by impacts or collisions.
6. Repairs that have been carried out by unauthorised third parties.
7. Normal wear to the blasting probes, blasting hoses including handle and the granule control valve is not covered by the warranty.

Service address
TKR Spezialwerkzeuge GmbH
Am Waldesrand 9–11
D-58285 Gevelsberg (Germany)

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Fax +49 2332 66607-941
E-mail info@tkrgroup.com
Internet www.tkrgroup.com

EU Declaration of Conformity

In accordance with EU Machinery Directive 2006/42/EG

Manufacturer:	TKR Spezialwerkzeuge GmbH Am Waldesrand 9–11 58285 Gevelsberg, Germany
Person authorised to compile the technical documentation:	Thorsten Weyland
Equipment type:	Pneumatically operated granule jet blasting device
Type designation:	PG 5-8
	Has been developed and designed in accordance with the standards and guidelines of
	TKR Spezialwerkzeuge GmbH **Am Waldesrand 9–11** **58285 Gevelsberg (Germany)**
Serial number range:	00001–10000
Referenced harmonised device safety law:	German Product Safety Act (ProdSG) EN 286-1; EN 614-1; EN ISO 4414; EN ISO 13849-1
EU Machinery Directive:	2006/42/EG

As the manufacturer, we hereby declare that the appropriately marked products comply with the requirements of the listed directives and standards.

Thorsten Weyland

Gevelsberg, 3 Dec 2018 Thorsten Weyland
Technical Director

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PSD-BED-00000037, R5-19.03-V1