

EN

Injector 7G300FF, 7G300MF

Assembly and Operation Instructions

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1. General information

1.1 Introduction

- These instructions apply to series 7G300 Injectors, also referred to below as fittings.
- Read the instructions completely before using our products to prevent injuries, material damage and malfunctions!
- Save the instructions for later reference.
- All rights including copyright and industrial property rights are explicitly reserved.

1.2 Warnings

- Warnings are always identified by a signal word. The following signal words or hazard levels are used:

 Danger	Danger: Failure to follow instructions will lead to serious injuries or death. High risk level of endangerment.
 Warning	Warning: Failure to follow instructions may lead to serious injuries or death. Moderate risk level of endangerment.
 Caution	Caution: May lead to slight or moderate injuries. Low risk level of endangerment.
	Note: Refers to an instruction that must absolutely be followed.
	Information: Gives useful tips and recommendations..

1.3 Special Hazards

- It must be ensured that the fitting is resistant for the media and temperatures that will be used. The resistance of the fitting with aggressive media depends in individual cases on many variables (such as the temperature, concentration ratio of the medium, material, environment, tube material etc.). The person ordering the fitting is responsible for checking for the specific application. In case of doubt install the fitting on a trial basis.
- Always comply with the safety data sheets or the safety requirements for the media you are using!
- Before removing the fitting it must be ensured that there is no more medium in the flexible tube/pipe system and the pressure has completely dissipated. Exercise caution for toxic, corrosive or hot media residue flowing out of the line or remaining in dead spaces.

1.4 General Safety Instructions

- The fitting must be properly connected to the flexible tube/pipe system.
- Before installing the fitting make certain that external mechanical effects such as thrust and bending forces are not acting on the flexible tube/pipe system.
- Installation, commissioning, operation, installation, maintenance, troubleshooting and disassembly must only be performed by qualified specialists with due consideration of accident prevention regulations. Personnel must be capable based on their technical training and experience of performing assembly tasks, following technical specifications and recognizing possible dangers.
- Personnel with deficient knowledge must be trained and instructed.
- Areas of responsibility and responsibilities must be precisely regulated and personnel must be monitored.

These safety instructions do not take into consideration any:

- Coincidences and events that could occur at the customer location during assembly, operation and maintenance.
- Local safety requirements, for which the operating company is responsible to ensure compliance, including assembly personnel who are used.

1.5 Designated Use

- The fitting must only be operated within the permitted usage ranges for pressure and temperature.
- Only the operating media named in the documentation are permitted to flow through the fitting.
- The fitting must only be operated if it is in flawless technical condition.
- The fitting must not be operated if it is in partially assembled condition.
- If other operating modes are not named in the documentation, they must be approved with the manufacturer.

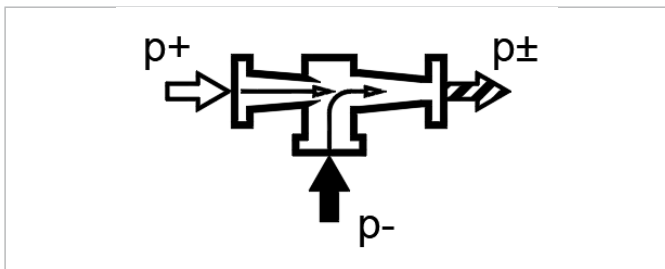
1.6 Reasonably Foreseeable Misuse

- Any usage other than designated use.
- Do not make any modifications to the product by yourself!
- Components should only be retrofitted after consultation with the manufacturer.

2 Manufacturer's Specification

2.1 Description

- The injectors of the 7G series are pumps which are used to convey and mix various gaseous media.
- They are driven by a gaseous medium (→ motive medium) which escapes at high pressure and high speed through a motive nozzle. The rapid change in volume creates a vacuum which is used to suck in another medium (→ inlet medium). In the following mixing pipe an impulse exchange of both media takes place, whereby they are homogenized and can be supplied to the production process.
- Injectors can either be designed for a particularly high intake volume or intake pressure. **emtechnik's** injectors have been optimized for a particularly large intake flow rate.
- The inlets and outlets of the 7G series injectors are marked with the following pictogram:



- p+ motive medium inlet (gaseous) = G1
 p- intake medium inlet (gaseous) = G3
 p± outlet = G2

2.2 Transport and Storage

- The fitting must be protected against mechanical damage, moisture, dirt and dust. The storage temperature range is 10 – 40°C.
- Avoid UV radiation and direct sunlight.
- Leave the fitting in its original packaging to ensure the best possible protection.
- Dispose of the packaging material according to disposal requirements/environmental protection regulations.

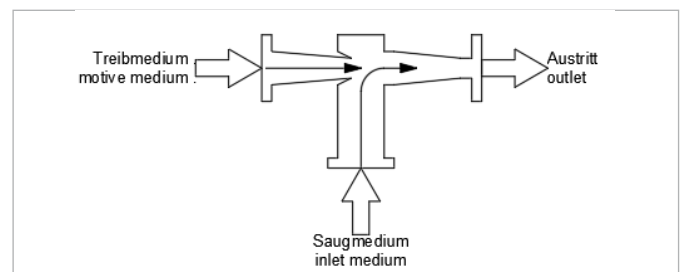
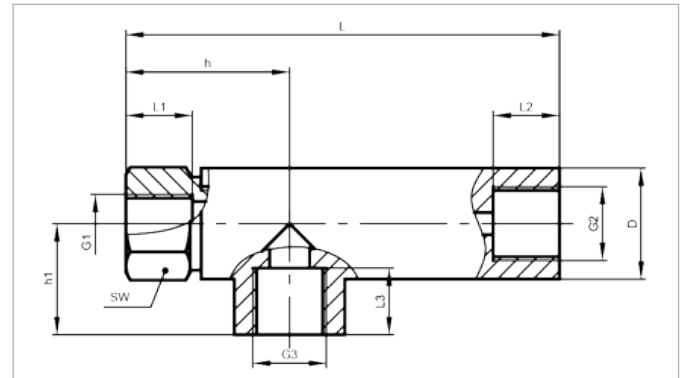


Warning

3 Technical Data

3.1 Dimensions

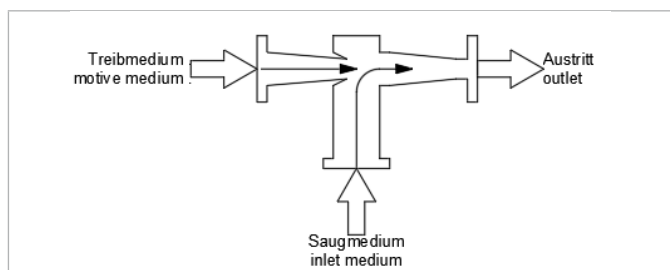
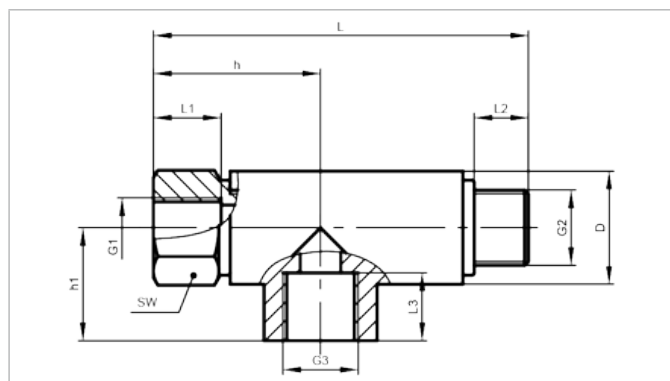
3.1.1 7G300FF



Art.-No.	G1	G2	G3	L	L1	L2	L3	h	h1	D
7G300FF181818PP	1/8"	1/8"	1/8"	56	10	10	10	22	18	15
7G300FF181818PV	1/8"	1/8"	1/8"	56	10	10	10	22	18	15
7G300FF143838PP	1/4"	3/8"	3/8"	98	15	15	15	37	25	25
7G300FF143838PV	1/4"	3/8"	3/8"	98	15	15	15	37	25	25
7G300FF143838PF	1/4"	3/8"	3/8"	98	15	15	15	37	25	25
7G300FF383838PP	3/8"	3/8"	3/8"	98	15	15	15	37	25	25
7G300FF383838PV	3/8"	3/8"	3/8"	98	15	15	15	37	25	25
7G300FF383838PF	3/8"	3/8"	3/8"	98	15	15	15	37	25	25

All data in mm

3.1.2 7G300MF



Art.-No.	G1	G2	G3	L	L1	L2	L3	h	h1	D
7G300MF143838PP	1/4"	3/8"	3/8"	83	15	12	15	37	25	25
7G300MF143838PV	1/4"	3/8"	3/8"	83	15	12	15	37	25	25
7G300MF143838PF	1/4"	3/8"	3/8"	83	15	12	15	37	25	25
7G300MF383838PP	3/8"	3/8"	3/8"	83	15	12	15	37	25	25
7G300MF383838PV	3/8"	3/8"	3/8"	83	15	12	15	37	25	25
7G300MF383838PF	3/8"	3/8"	3/8"	83	15	12	15	37	25	25

All data in mm

3.2 Operating Medium

- Neutral, gaseous media that do not negatively affect the physical and chemical properties of the relevant housing material.
- The motive gas must not contain any solid particles, as these could clog the nozzle or even damage it.
- The motive gas must not be abrasive, as this could damage the nozzle.
- If you have questions about resistance please contact **emtechnik**.
- For the maximum permitted operating pressure/temperature see the pressure guide.

3.3 Pressure Guide

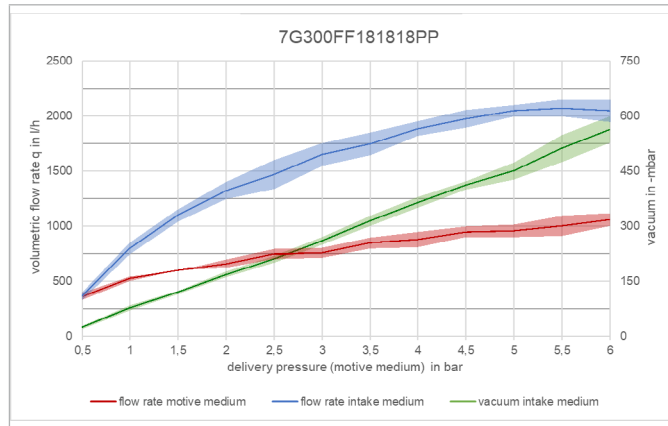
As the temperature rises, the effectiveness of the fitting falls, as shown by this table:

Material	PP	PVDF	PFA
Pressure Stage	PN 10	PN 10	PN 10
-40°C		75%	75%
-20°C		100%	100%
5°C	100%	100%	100%
20°C	100%	100%	100%
30°C	80%	80%	90%
40°C	70%	70%	85%
50°C	60%	60%	80%
60°C	50%	50%	70%
70°C	40%	45%	60%
80°C	30%	40%	50%
90°C	20%	35%	40%
100°C		35%	40%
110°C		30%	35%
120°C		25%	30%
130°C		25%	30%
140°C		10%	25%
150°C			20%
160°C			15%
170°C			10%
180°C			10%

3.4 Flow Rate

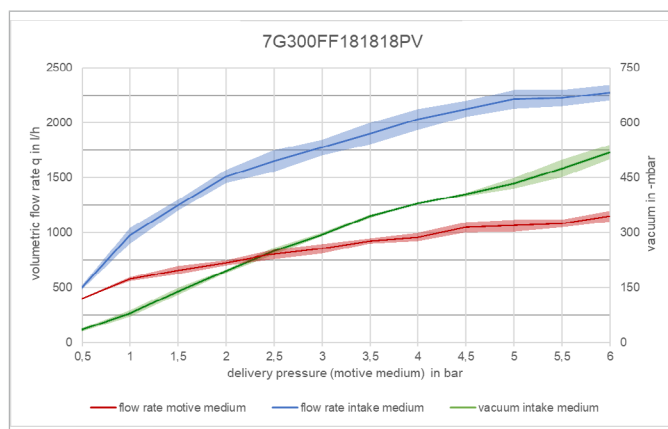
The following characteristic curves were determined by means of a test setup in which the pressure loss on the inlet was kept as low as possible. This means that cross-sectional constrictions were avoided and the supply line was as short as possible.

3.4.1 7G300FF181818PP



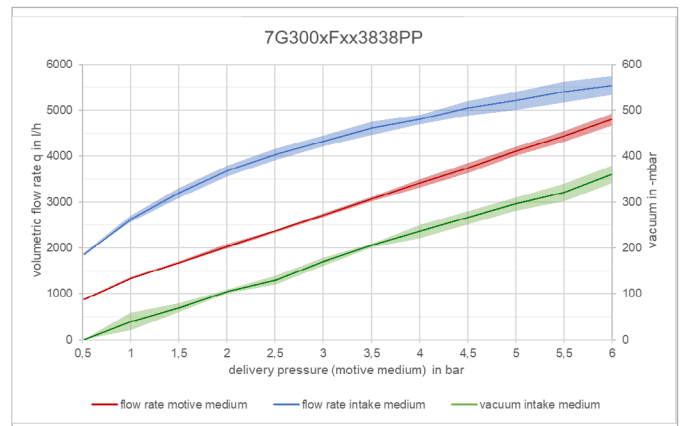
Motive Medium		Intake Medium		
No.	Delivery Pressure in bar	Flow Rate in l/h	Flow Rate in l/h	Intake Pressure in -mbar
1	0.5	365±9.59%	370±8.11%	25±20%
2	1	525±4.76%	800±6.25%	77.5±9.68%
4	1.5	600±0%	1100±4.55%	120±4.17%
6	2	660±6.06%	1325±5.66%	168.5±5.04%
8	2.5	750±6.67%	1470±8.84%	210.5±4.99%
10	3	760±6.58%	1650±6.06%	261±4.21%
11	3.5	850±5.88%	1750±5.71%	315±4.76%
12	4	880±7.95%	1887.5±3.31%	365±4.11%
13	4.5	950±5.26%	1975±3.8%	411.5±2.79%
14	5	960±6.25%	2050±2.44%	451±5.32%
15	5.5	1005±9.45%	2075±3.61%	512.5±7.32%
16	6	1060±5.66%	2050±4.88%	563.5±6.48%

3.4.2 7G300FF181818PV



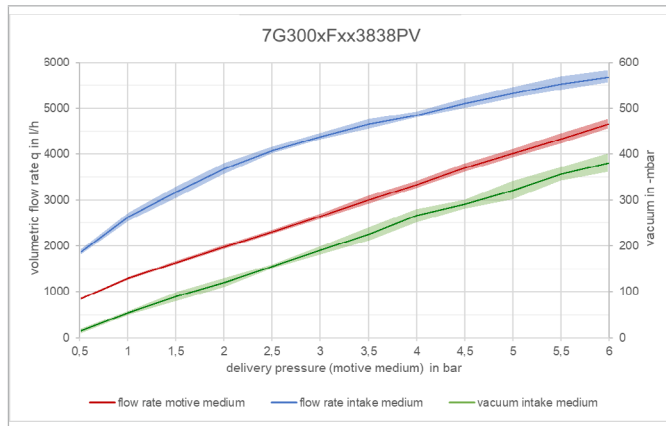
Motive Medium		Intake Medium		
No.	Delivery Pressure in bar	Flow Rate in l/h	Flow Rate in l/h	Intake Pressure in -mbar
1	0.5	405±1.23%	502.5±4.48%	35±14.29%
2	1	580±3.45%	975±7.69%	80±12.5%
4	1.5	660±6.06%	1250±4%	140±7.14%
6	2	725±3.45%	1512.5±4.13%	195±2.56%
8	2.5	805±5.59%	1650±6.06%	250±4%
10	3	855±5.26%	1775±4.23%	295±1.69%
11	3.5	925±2.7%	1900±5.26%	345±1.45%
12	4	960±4.17%	2030±4.68%	380±0%
13	4.5	1050±4.76%	2125±3.53%	405±1.23%
14	5	1065±5.16%	2212.5±3.95%	435±3.45%
15	5.5	1085±3.23%	2225±3.37%	475±5.26%
16	6	1150±4.35%	2275±3.3%	520±3.85%

3.4.3 7G300FF143838PP, 7G300FF383838PP, 7G300MF143838PP, 7G300MF383838PP



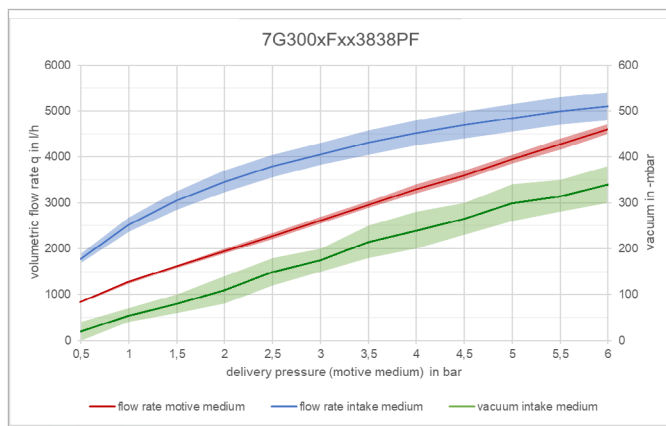
Motive Medium		Intake Medium		
No.	Delivery Pressure in bar	Flow Rate in l/h	Flow Rate in l/h	Intake Pressure in -mbar
1	0.5	870±3.45%	1855±1.35%	0
2	1	1340±2.24%	2630±2.66%	40±50%
4	1.5	1680±1.79%	3195±3.6%	70±14.29%
6	2	2035±2.7%	3675±3.4%	105±4.76%
8	2.5	2365±1.48%	4035±3.35%	130±7.69%
10	3	2715±1.66%	4325±2.89%	170±5.88%
11	3.5	3060±1.96%	4600±3.26%	205±2.44%
12	4	3405±2.79%	4795±2.19%	235±6.38%
13	4.5	3735±3.08%	5040±3.17%	265±5.66%
14	5	4100±2.44%	5205±3.94%	295±5.08%
15	5.5	4425±2.82%	5390±4.27%	320±6.25%
16	6	4790±2.92%	5535±3.88%	360±5.56%

3.4.4 7G300FF143838PV, 7G300FF383838PV, 7G300MF143838PV, 7G300MF383838PV



Motive Medium		Intake Medium		
No.	Delivery Pressure in bar	Flow Rate in l/h	Flow Rate in l/h	Intake Pressure in -mbar
1	0.5	850±3.53%	1860±3.23%	15±33.33%
2	1	1295±2.7%	2625±3.62%	55±9.09%
4	1.5	1640±2.44%	3170±4.1%	90±11.11%
6	2	1970±2.54%	3675±3.4%	120±8.33%
8	2.5	2300±2.17%	4075±1.84%	155±3.23%
10	3	2640±2.27%	4375±1.71%	190±5.26%
11	3.5	2995±3.17%	4640±2.37%	225±6.67%
12	4	3320±2.41%	4840±1.45%	265±5.66%
13	4.5	3695±2.57%	5090±2.16%	290±3.45%
14	5	4000±2.5%	5320±2.26%	320±6.25%
15	5.5	4315±2.67%	5520±2.72%	355±4.23%
16	6	4640±2.37%	5665±2.38%	380±5.26%

3.4.5 7G300FF143838PF, 7G300FF383838PF, 7G300MF143838PF, 7G300MF383838PF



Motive Medium		Intake Medium		
No.	Delivery Pressure in bar	Flow Rate in l/h	Flow Rate in l/h	Intake Pressure in -mbar
1	0.5	840±2.38%	1785±5.88%	20±100%
2	1	1275±2.75%	2525±6.14%	55±27.27%
4	1.5	1615±2.17%	3050±6.56%	80±25%
6	2	1945±2.83%	3465±6.78%	110±27.27%
8	2.5	2275±2.86%	3800±6.58%	150±20%
10	3	2615±2.87%	4065±5.78%	175±14.29%
11	3.5	2955±2.54%	4315±6.14%	215±16.28%
12	4	3300±3.03%	4525±6.08%	240±16.67%
13	4.5	3600±2.78%	4695±6.28%	265±13.21%
14	5	3950±2.53%	4850±6.19%	300±13.33%
15	5.5	4275±2.92%	5000±6%	315±11.11%
16	6	4605±2.28%	5105±5.97%	340±11.76%

4 Assembly and Operation

4.1 Assembly Instructions

- Make certain the fitting is suitable for the relevant application. The fitting must be suitable for the operating conditions of the pipeline system (medium, concentration, temperature and pressure) as well as the relevant ambient conditions.
- Check the fitting for transport damage before installing it. If the fitting is damaged do not install it.
- The planner, the construction company or operating company are responsible for the positioning and installation of the fitting. Planning and installation errors can adversely affect the reliable functionality of the fitting and may represent a significant potential for hazard.
- After the fitting is installed perform a tightness and function check.



4.2 Required Tools

- The injector is delivered fully assembled and no further assembly is necessary.
- Tools for connecting the injector depend on the connections used and are not included in the delivery.

4.3 Connect the Injector

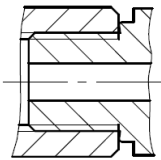
- The fitting must be connected to the pipeline so it is free of mechanical stress.
- The Injector has female/male G-threads according to DIN ISO 228-1 and can be connected with various connecting elements of the **emtechnik** system.



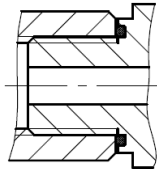
Cylindrical Threads

Sealing is provided by a sealing collar for Cylindrical threads (G). A version with an O-ring is also possible.

Sealing Collar



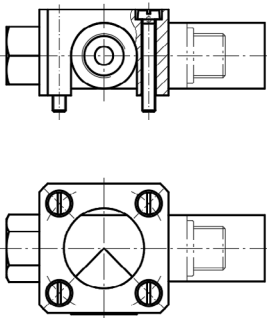
O-Ring



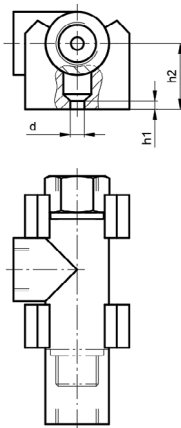
- Each thread must always be connected with the same thread type.
- If a plastic fitting is used in combination with a metallic male fitting, additional sealing with Teflon® tape is recommended.
- Make sure that the connections for the respective inlets and outlets are not interchanged.
- The function of the injector is only guaranteed if the lines for motive and intake gas are connected to the corresponding inlets.

4.4 Fastening Options

Mounting Bracket



Mounting Clip



Injector	Art.-No.	Injektor	Art.-No.
7G300FF181818xx	-	7G300FF181818xx	2x 3S0050PE5
7G300xFxx3838xx	7G2898PP	7G300xFxx3838xx	2x 3S0034PEB3

5 Commissioning

5.1 Precondition for Commissioning

- Protect against leaks: Take protective measures against exceeding the maximum permitted pressure due to possible pressure surges.
- Check the tightness and function of the fitting.
- In new systems and after repairs, flush the line system to remove foreign materials.



6 Maintenance

- When used as designated, the fitting is practically wear-free and generally requires no maintenance.
- The operating company must perform regular visual inspections of the fitting according to the operating conditions to prevent leaks and damage.

7 Disposal

- When disposing of the fitting and packaging, comply with the relevant disposal requirements and environmental protection regulations.
- When disposing of fittings, pay careful attention to any residues of toxic or corrosive media.



8 Return Delivery

Do not return before consulting with **emtechnik**.



1. Please consult with **emtechnik**.
2. Empty the fitting properly.
3. Rinse and clean the fitting thoroughly, especially if the media is being conveyed are harmful, explosive, hot, or hazardous in some other way.
4. For fittings that have been operated with aggressive, corrosive, combustible, toxic or water polluting media, a completely filled in clearance certificate must always be included.

9 Troubleshooting / Fault Rectification

Error	Possible Cause	Error Rectification
Flow rate decreases	Faulty supply line	Check supply line for leakage and pressure loss and rectify
	Solids present in intake medium, which settle in the mixing chamber/mixing pipe	Flush injector in opposite direction
	Solids present in motive gas, which clog the nozzle	Flush injector in opposite direction
Flow rate at the nozzle increases	Abrasive motive gas, which has reamed the nozzle bore	Contact with emtechnik
Injector is leaking at the connections	Connectors are improperly connected	Connect properly. Seal with PTFE tape if necessary
	Connectors have a non suitable thread (e.g. NPT)	Use connectors with suitable thread
Injector is leaking between nozzle and housing	When loosening a connector, the nozzle has come off slightly	Tighten the nozzle in the housing again

10 Manufacturer's Declaration

- The injectors do not fall under the scope of the Machinery Directive 2006/42/EC. However, the injectors can be incorporated in an installation that is considered as machinery. In this case regard the following note.
- The products may not be put into operation until it is made sure that the final machinery into which our products are incorporated complies with the provisions of the Machinery Directive 2006/42/EC.
- The warranty of armature expires in the following cases: Operating conditions which do not follow the intended use or do not follow technical specifications. Improper installation or assembly. Just as well as inappropriate use, dismantling or modification.
- Failure to observe information provided here may lead to injuries, material damage, malfunctions and impurities due to escaping medium.



Warning

11 Contact

In case of questions or suggestions please contact us:

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