Operating Instructions

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VARIO

Ion Blower Nozzle R36
Ion Blower Pistol PR36
Ion Blower Nozzle Bar LR36
tubeBLOW EAR36E

BA-en-2043-2403

ellex
electrostatic
innovations

List of contents

Dear customer,

Electrostatic charges occurring during production processes often cause severe disruptions, reducing production speed and product quality.

The R36 ion blower nozzle, the PR36 ion blower pistol, the LR36 ion blower nozzle bar and the EAR36E discharge adapter are components of a discharging system with outstanding range and depth effect. This is particularly important in winding reels up or down because the reel diameter and therefore also the distance from the discharging units changes. The powerful decoupling effect of neutralizing charge particles supported by the blown air results in a high degree of efficiency in discharging, even at larger distances from the product.

Charged surfaces which attract dirt particles can be effectively discharged with the help of either the blower pistol or the blower nozzle, keeping the surfaces free of dust before converting and finishing.

Designing the ion blower nozzle as an adapter allows the integration of the ionization system into commercial blower nozzles. The combination of ionization with a high degree of efficiency and flow-optimized air nozzles results in synergies showing in excellent discharge performance.

The R36 ion blower nozzle, the PR36 ion blower pistol, the LR36 ion blower nozzle bar and the EAR36A discharge adapter are characterized by the following features:

- high degree of discharging efficiency
- compact design
- adapter design
- small dimensions
- easy installation
- flow-optimized air nozzle
- variable air supply

The compact design of the ion blower nozzles and its high efficiency allow a wide variety of applications. Flexible ball-joint hoses allow the accurate alignment of individual nozzles.

Each single nozzle is equipped with an air cock to select any desired flow profile. The air can be connected to the existing air supply or to an optional compressor.

The ion blower nozzle is used in fixed installations; the ion blower pistol is designed for manual use.

The EAR36E discharge adapter is specially designed for neutralising electrostatically charged and thus adhering pneumatically conveyed goods in the hose system and/or a downstream metal hopper.

The injected ions discharge and loosen the adhering conveyed material (granulate) and thus reduce the standstills required for cleaning the conveyor system.

Please read the operating instructions carefully before operating the unit. This will help you prevent personal injuries and damage to property. Please note and observe the safety and warning notices.

Please give us a call if you have any suggestions, proposals or ideas for improvements. We greatly appreciate the feedback from the users of our appliances.

1. Overview PR36, R36/R36E, LR36 und EAR36E

1.1 Overview PR36 ion blower pistol and R36/R36E ion blower nozzles

Illustrative example: Circular jet nozzle and fishtail nozzle design

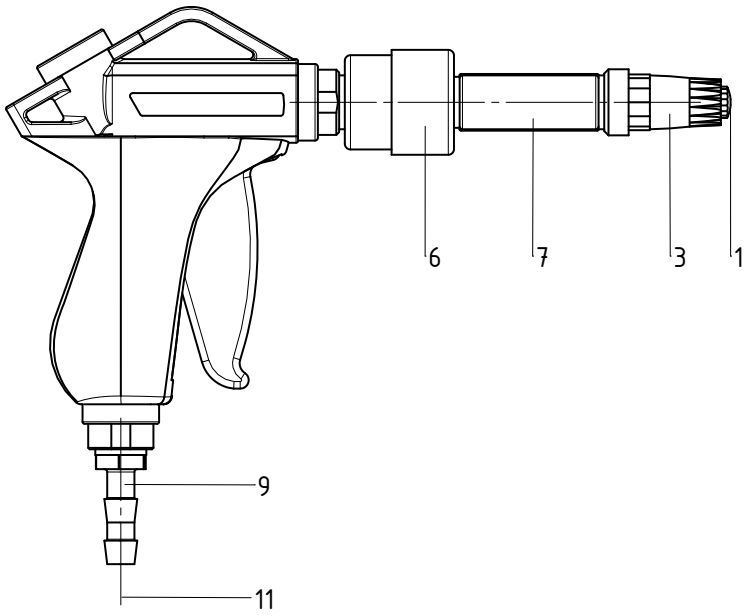

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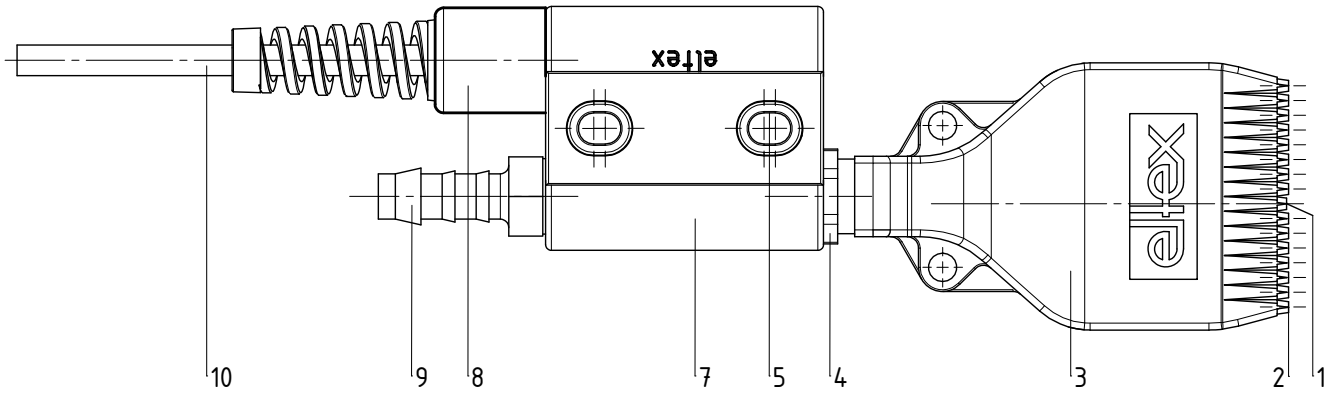
Fig. 1: Ion blower pistol PR36/FR (with filter and circular jet nozzle)

1 Emission tip (exchangeable for nozzles C, F, R and K)
2 Air outlet boreholes
3 Blower nozzle
4 Locknut for fishtail nozzle
detachable, rotatable by 0...360°, max. 1 turn)
5 Attachment lugs
6 Filter
7 Bar element
8 High voltage connection
9 Air connection for air hose DN8 (R36/R36E)
air connection for air hose DN10 (PR36)
10 High voltage cable,
R36 with or without flexible tube (order separately)
PR36 with fixed flexible tube
11 Cable fixing

Alternative available is the easyCLEAN rotating nozzle, the varioCLEAN rotating nozzle, the rotating nozzle, the circular jet nozzle, the fishtail nozzle or the compact fishtail nozzle design (see chap. 8 Dimensions).

After consultations with Eltex is the integration of commercial plastic blower nozzles possible.



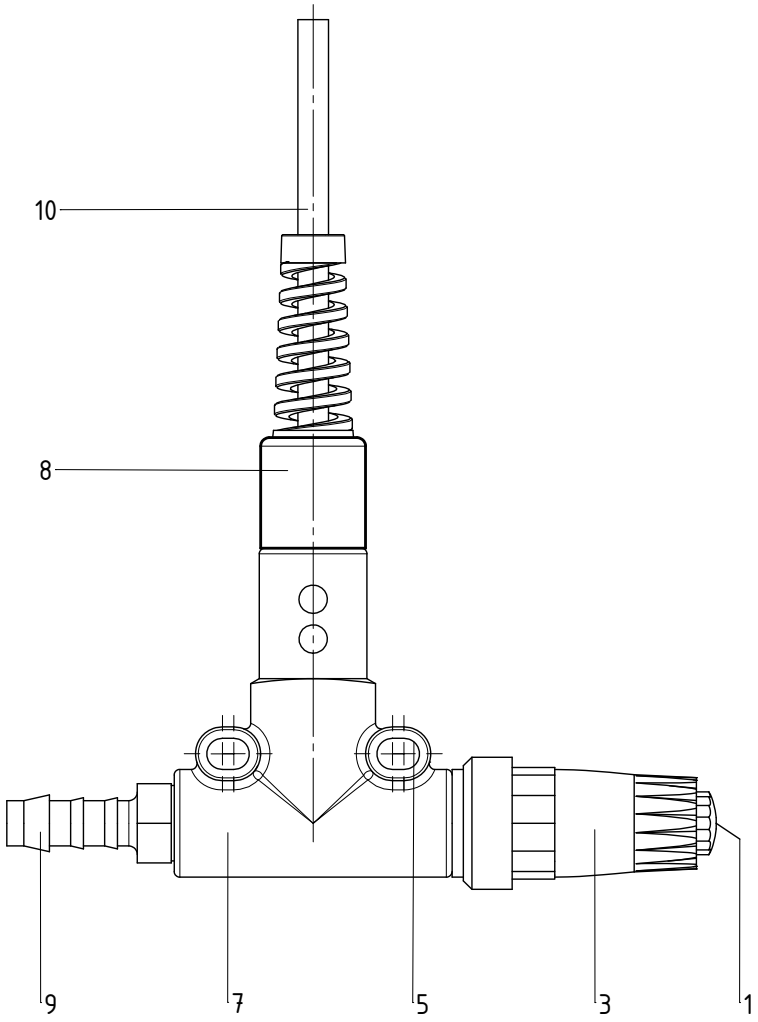


Fig. 2:
Ion blower nozzle R36E/AF (axial design with fishtail nozzle) and R36E/RR (radial design with circular jet nozzle)

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Variants

R36E Ion blower nozzle:

Bar elements (axial and radial design) with fixed connected high voltage cable and six different nozzles are available:

- fishtail nozzle, axial design: R36/AF, radial design R36/RF
- circular jet nozzle, axial design: R36/AR, radial design: R36/RR
- compact fishtail nozzle, axial design:R36/AW, radial design: R36/RW
- circular jet nozzle mini, axial design: R36/AK, radial design: R36/RK
- rotating nozzle, axial design: R36/AC, radial design: R36/RC
- rotating nozzle varioCLEAN, axial design: R36/AE, radial design: R36/RV

R36 Ion blower nozzle:

Combination of bar body and nozzle; detachable highvoltage cable can be ordered separately (do not use for new constructions).

PR36 Ion blower pistol:

Ion blower pistols (with and without filter) with top air connection or bottom air connection and six different nozzles are available:

- Fishtail nozzle
  without filter, top air connection: PR36/OF
  without filter, bottom air connection: PR36/NF
  with filter, top air connection: PR36/GF
  with filter, bottom air connection: PR36/FF
- Circular jet nozzle mini
  without filter, top air connection: PR36/OK
  without filter, bottom air connection: PR36/NK
  with filter, top air connection: PR36/GK
  with filter, bottom air connection: PR36/FK
- Rotating nozzle
  without filter, top air connection: PR36/OC
  without filter, bottom air connection: PR36/NC
  with filter, top air connection: PR36/GC
  with filter, bottom air connection: PR36/FC
- Rotating nozzle easyCLEAN
  without filter, top air connection: PR36/OE
  without filter, bottom air connection: PR36/NE
  with filter, top air connection: PR36/GE
  with filter, bottom air connection: PR36/FE

To prevent damaging the nozzles, we recommend the use of a balancer together with an ion blower pistol. A balancer is available as optional equipment under article no. 111569.

The grease filter solely serves to eliminate grease and fat particles from piston gear of the blower pistol. Cleaned apparatuses air must be used as compressed air.

1.2 Overview LR36 Ion blower nozzle bar

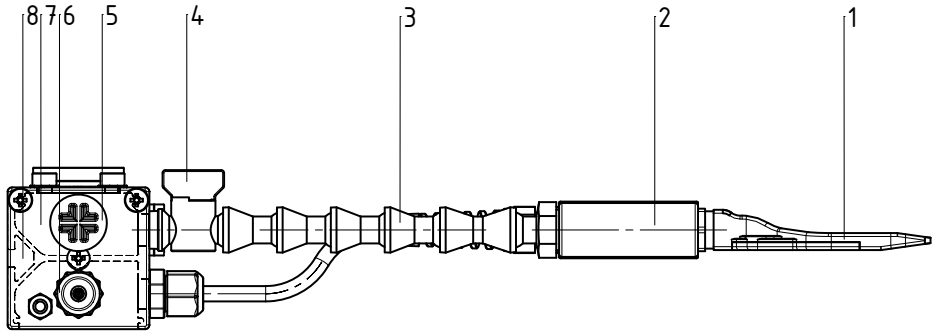

Fig. 3:
LR 36 ion blower nozzle bar illustrative example: fishtail nozzle design R36/AF

1 fishtail nozzle
2 bar element R36
3 ball joint hose
4 air cock
5 compressed air connection: DN12 resp. G 3/8" blanking plug
6 high voltage connector
7 air distributor
8 fixing slot for sliding nuts M5

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nozzles	total length	installation length	air connection		variant
n = pieces	GL in mm	EL in mm	frontal	rear	
1 nozzle	140 mm	-	1	x	A0140
2 nozzles	440 mm	1200 - 1400	1	1	B0440
3 nozzles	740 mm	1200 - 1540	1	1	C0740
4 nozzles	1040 mm	1240 - 1840	1	1	D1040
5 nozzles	1340 mm	1540 - 2140	1	1	E1340
6 nozzles	1640 mm	1840 - 2440	1	1	F1640
7 nozzles	1940 mm	2140 - 2740	1	1	G1940
8 nozzles	2240 mm	2440 - 3040	1	1	H2240
9 nozzles	2540 mm	2740 - 3340	x	1	I2540
10 nozzles	2840 mm	3040 - 3640	x	2	K2840
11 nozzles	3140 mm	3340 - 3940	x	2	L3140
12 nozzles	3440 mm	3640 - 4240	x	2	M3440
13 nozzles	3740 mm	3940 - 4540	x	3	N3740
14 nozzles	4040 mm	4240 - 4840	x	3	P4040
15 nozzles	4340 mm	4540 - 5140	x	3	Q4340

Flexible ball joint hoses allow the accurate alignment of individual nozzles.

Each nozzle is fitted with an air cock for setting any desired air flow profile. The air line can be connected to an existing air supply.

The standard type of the ion blower nozzle bar is employed with the R36/AF fishtail nozzle. After consultations with Eltex, other blower nozzles may be integrated.

1.3 Overview EAR36E Discharge adapter

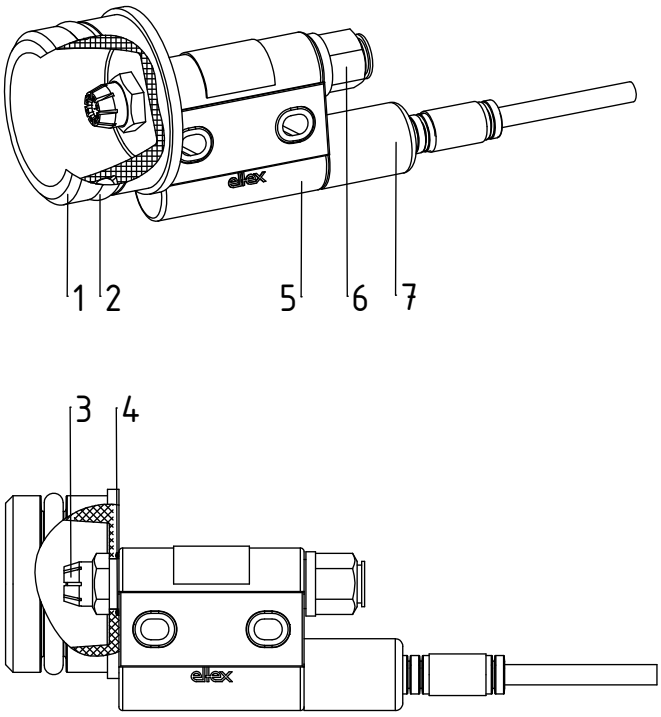

Fig. 4:
EAR36E
Discharge adapter

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1 Adapter
2 O-Ring
3 Air nozzle
4 O-Ring
5 R36E bar body
6 Air connection
7 High voltage connection (non-detachable)

2. Safety

The units have been designed, built and tested using state-of-the-art engineering, and have left the factory in a technically and operationally safe condition. If used improperly, the units may nevertheless be hazardous to personnel and may cause injury or damage. Read the operating instructions carefully and observe the safety instructions.

For warranty conditions, please refer to the General Terms and Conditions (GTC), see www.eltex.de.

2.1 Identification of risks and hazards

Possible risks and hazards resulting from the use of the units are referred to in these operating instructions by the following symbols:

Warning!
This symbol appearing in the operating instructions refers to operations which, if carried out improperly, may result in serious personal injuries.

Caution!
This symbol appearing in the operating instructions refers to operations which, if carried out improperly, may result in damage to property.

2.2 Contact protection

The site of installation and/or use of the units is outside the control of Eltex, contact protection against inadvertent contact of the bars and of live components by personnel as specified by the employer's liability insurance association may have to be provided (e.g. DGUV V3 in Germany). Contact protection devices made of conductive material must be grounded.

2.3 Inspection of the protective resistors - contact protection

The function and the appearance of the protective resistors must be inspected at regular intervals. The inspection intervals are specified in the accident prevention regulations, as amended (e.g. in Germany DGUV V3).

The function of the series resistors must be checked using a suitable measuring device. The test voltage must be 1,000V. The measured resistance between the high-voltage connection and the individual emission tip must not fall below 80 MOhm and not exceed 120 MOhm.

2.4 Technical advance

The manufacturer reserves the right to make changes to the technical specifications without prior notice in order to adapt the units to state-of-the-art engineering. Eltex will provide the latest information on any changes or modifications in the operating instructions on request.

2.5 Proper Use

The R36/R36E ion blower nozzle, PR36 ion blower pistol, LR36 ion blower nozzle bar and the EAR36E discharge adapter must be used only for discharging static surfaces, for separating stacked or wound sheets, for cleaning dusty surfaces and for neutralising charged conveyed goods.

The R36f/R36E ion blower nozzle, PR36 ion blower pistol, LR36 ion blower nozzle bar and the EAR36E discharge adapter must be operated only together with the 5 resp. 6 kV AC Eltex power unit which ensures an optimum match with the required operating conditions.

Other uses are not permitted. The manufacturers will not assume any liability and warranty if the units are used improperly or used outside the intended purpose.
Modifications or changes made to the devices are not permitted.
Use only original Eltex spare parts and equipment.

2.6 Work and operational safety

Warning!
Carefully observe the following notes and the complete chapter 2 "Safety", page 14!

- Before carrying out repairs, cleaning or maintenance work and before resetting after malfunctions, switch off the power supply and disconnect the mains supply voltage (see chapter 5 "Maintenance", page 27, chapter 6 "Troubleshooting", page 29).
- Before carrying out any work involving the units, the machine which has the units fitted must not be in operation (see chapter 5 "Maintenance", page 27, chapter 6 "Troubleshooting", page 29).
- Any work involving the units must be carried out by qualified electricians (see chapter 5 "Maintenance", page 27, chapter 6 "Troubleshooting", page 29).
- The bars passively absorb energy from the moving substrate web. The high voltage cable must be plugged in or grounded to the generator. If the high voltage cable is disconnected, the plug is live (high voltage) and applies with full power on the plug; this may cause a spark discharge and may lead to a risk of injury. Disconnected high voltage plugs are not permitted or have to be grounded (see chapter 5 "Maintenance", page 27).

- The minimum spacing between the ion blower nozzle tip and grounded metal parts should be 10 mm (see chapter 3.1 "Installation", page 18).
- Connect or disconnect the high voltage cables only with the power supply switched off (see chapter 3.2 "Connecting the high voltage cable to the ion blower nozzle", page 19, chapter 3.3 "Connecting the high voltage cable to the power supply of series ES5x, ES6x, ES24 and PI", page 20).
- Depending on the type of power supply unit, only devices with a permanently connected high voltage cable (e.g. R36E, PR36) are permitted (see chapter 3.3 "Connecting the high voltage cable to the power supply of series ES5x, ES6x, ES24 and PI", page 20).
- In applications involving moving ion blower nozzles, the high voltage cable must be attached such that there is no cable movement near the connection zone of the ion blower nozzles and the power supply unit. Use suitable clamps to attach the high voltage cables (see chapter 3.3 "Connecting the high voltage cable to the power supply of series ES5x, ES6x, ES24 and PI", page 20).
- In units equipped with existing ground cables, the cables must be permanently connected to ground potential. The ground cable should have a minimum cross section of 1.5 mm^2 (see chapter 3.4 "Connecting to ground (LR36)", page 20).
- Check the units and the high voltage cables at regular intervals and before startup for any damage. Any damaged components must be repaired or replaced before continuing to operate the unit, or the units must be disabled.

Warning!
The cable is permanently fixed to the PR36 ion blower pistol, the R36E ion blower nozzle and the EAR36E discharge adapter and must on no account be changed; the cables of the LR36 ion blower nozzle bar must also not be changed.
In the event of defects, please notify Eltex Service or return the unit for repair.

- The high voltage cable must be routed to make sure that it does not make contact with moving machine parts. Avoid mechanical deformations and bending radii smaller than 60 mm. The high voltabe cable must not be installed on the floor, as it may break under load; the cable must also not be subjected to tensile stress (see chapter 3.5 "Routing the high voltage cable", page 20).
- The air hose must be routed to make sure that it does not make contact with moving machine parts. Avoid mechanical deformation and excessively small bending radii (see manufacturer´s specifications); see chapter 3.7 "Routing the air hose", page 21.
- Cleaned apparatuses air must be used as compressed air (see chapter 3.8 "Compressed air properties", page 21).

- To ensure that the permissible operating temperature is not exceeded, the blower nozzle, the ion blower pistol or the ion blower nozzle bar must not be exposed to direct heat radiation (see chapter 3.9 "Impact of heat radiation", page 21).
- Do not open the balancer! It holds a set of springs which may result in personal injury if used improperly (see chapter 3.10 "Balancer (optional)", page 22).
- To avoid severe damage, keep other objects from hitting against the nozzle (see chapter 4 "Operation", page 26).
- Make sure that the units are clean at all times.
  Dirt results in malfunctions and in premature wear of the units.
- When cleaning the units do not soak the units and the high voltage cable in solvent and do not damage the emission tips; allow the solvent to evaporate completely before restarting the unit (see chapter 5 "Maintenance", page 27, chapter 6 "Troubleshooting", page 29).
- Do not touch the emission tips - risk of injury.
  If the high voltage supply is connected, reflex responses to electrical irritation can lead to secondary accidents. The charging bar as such is safe to touch. If contact is made (single touch), the energy transferred is so low that there is no risk of injury.
- Potential risk for wearers of cardiac pacemakers:
  Moving the chest closer than 3.5 cm to the emission tips of the discharging bar or making surface contact with several emission tips (touching a single tip is not critical) can result in a temporary switchover of the cardiac pacemaker into the fault mode. Permanent proximity or contact can therefore cause severe problems. If it is likely that the chest of such a person comes closer than 3.5 cm to the emission tips of the discharging bar, or if several emission tips are touched at the same time, the appropriate warning notices must be displayed.
- During operation of the devices, small amounts of ozone (O_3) may be produced at the emission tips depending on a variety of boundary conditions such as site of installation, bar voltage and current, air circulation, etc.
  If the maximum allowable concentration of ozone must be observed at the site of installation of the bar, the concentration must be measured on site.

3. Installation and assembly

3.1 Installation

The ion blower nozzles can be mounted via the attachment lugs of the bar element using M5 screws.

The fishtail nozzle may be attached using the attachment lugs of the blower nozzle.
The fishtail nozzle can be turned by 0...360° (max. 1 turn). To turn, loosen the lock nut (4, Fig. 1) and tighten again after adjustment.

The compact fishtail nozzle can be set in request position using a clamp.

The version with the extensions (especially with the rotary nozzle) must also be secured in place mecanically in the area of the extension.

To prevent damaging the nozzles, we recommend the use of a balancer together with an ion blower pistol. A balancer is available as optional equipment under article no. 111569.

Use the attachment angle pieces to mount the ion blower nozzle bar to the wall of the machine or directly with the groove to the back of the profile. During mounting, grounding as specified by the Machinery Directive must be observed.

The blower nozzles can be positioned via a flexible ball joint hose.

The EAR36E discharge adapter is pressed into the upward-pointing branch of a Y-branch pipe to be provided by the customer. To prevent damage to the O-ring during installation, we recommend that the customer fit an insertion chamfer, see Fig. 5.

Furthermore, it must be ensured that the Y-pipe is installed in such a way that the discharge adapter and thus the ions are blown in in the material conveying direction, see Fig. 5.

Warning!
For safe operation, please note the following:

- The minimum spacing between the ion blower nozzle tip and grounded metal parts should be 10 mm.

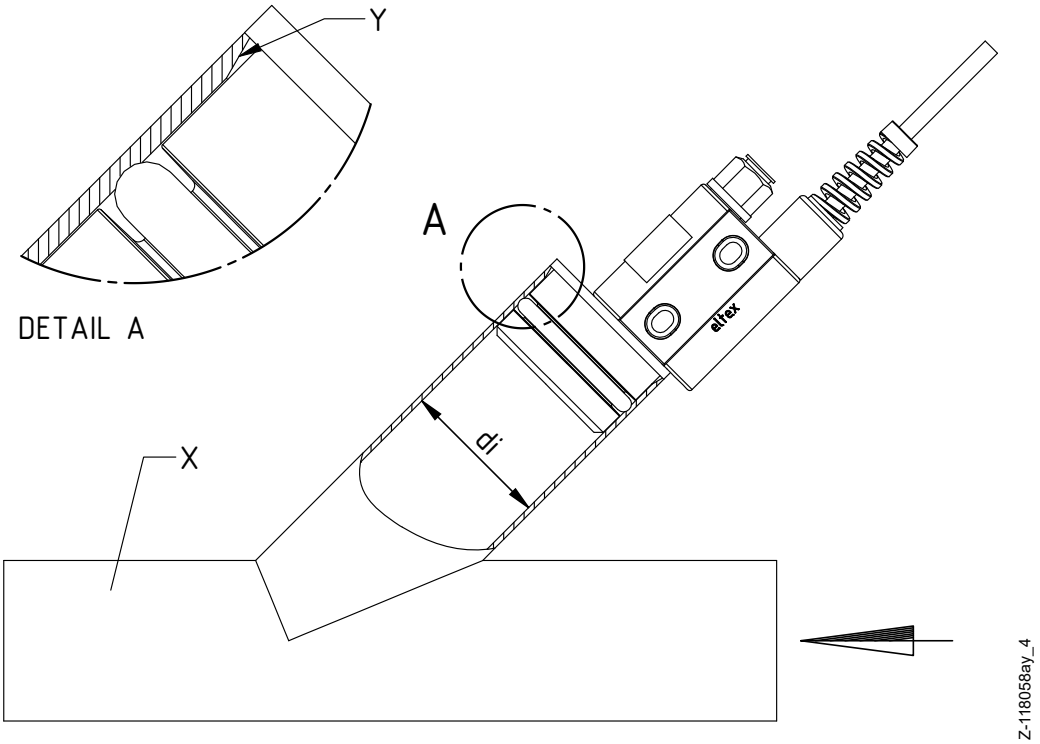

Fig. 5: Installation situation Example: EAR36E/AKS_ _L

X Y branch pipe, provided by customer
Y Insertion slope, installation by customer, approx. 3 - 4 mm, 15 - 20°
di Internal pipe diameter
← Material feed direction

3.2 Connecting the high voltage cable to the ion blower nozzle

Depending on the unit version, e.g. PR36, R36E or EAR36E with a fixed high voltage cable, the high voltage cable is fixed connected to the ion blower nozzle.

Unit version with detachable cable connection:

Warning!
Connect or disconnect the high voltage cable only with the power supply switched off.

Connect the ion blower nozzle to the power supply using the prefabricated high voltage cable. Push the high voltage cables into the sockets up to the stop. Then the cable gland is screwed in up to the stop.

3.3 Connecting the high voltage cable to the power supply of series ES5x, ES6x, ES24 and PI

Warning!
Connect or disconnect the high voltage cables only with the power supply switched off!

Depending on the type of power supply unit, only devices with a permanently connected high voltage cable (e.g. R36E, PR36) are permitted.

Connect the ion blower nozzles to the power supply using the prefabricated high voltage cable. Push the high voltage cables into the sockets up to the stop. Then secure the adapter in the socket with the clip provided (see Fig. 6).

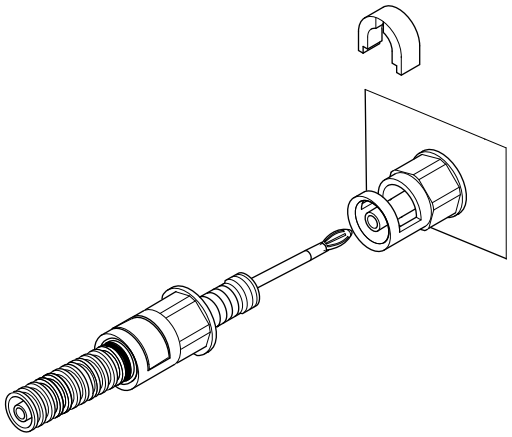

Fig. 6: Connecting the high voltage cable

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Warning!
In applications involving moving ion blower nozzles, the high voltage cable must be attached such that there is no cable movement near the connection zone of the ion blower nozzles and the power supply unit. Use suitable clamps to attach the high voltage cables.

3.4 Connecting to ground (LR36)

In units equipped with existing ground cables, the cables must be permanently connected to ground potential. The ground cable should have a minimum cross section of 1.5 mm^2.

3.5 Routing the high voltage cable

The high voltage cable must be routed to make sure that it does not make contact with moving machine parts. Avoid mechanical deformations and bending radii smaller than 60 mm. The high voltabe cable must not be installed on the floor, as it may break under load; the cable must also not be subjected to tensile stress.

3.6 Connecting compressed air

The R36 ion blower nozzle is delivered with an air nipple DN8 and the PR36 ion blower pistol with an air nipple DN10. Attach the hose for the air supply to the air nipple (9, Fig. 1). However a G 1/4" or R 1/4" screw thread can also be used. Secure the air hose with a hose clip or a cable binder.
Use a 10 mm hose, for greater length via a G 3/4" thread (see Table page 11), to connect the LR36 ion blower nozzle bar at the rear.

3.7 Routing the air hose

The air hose must be routed to make sure that it does not make contact with moving machine parts. Avoid mechanical deformation and excessively small bending radii (see manufacturer´s specifications).

3.8 Compressed air properties

The compressed air must be free from oil, water and dust. If the air supply hoses are very long, a water separator must be fitted immediately upstream from the ion blower nozzle, the ion blower pistol or the ion blower nozzle bar. Maximum rated air pressure depends on the used nozzle type (see chap. 7 Technical specifications).

3.9 Impact of heat radiation

To ensure that the permissible operating temperature is not exceeded, the ion blower nozzle, the ion blower pistol or the ion blower nozzle bar must not be exposed to direct heat radiation.

In the event of heat radiation caused by hot moulds or blowing tools, a sheet metal guard (3 mm gauge) or a special plastic guard must be provided. A sheet metal guard must not be allowed to make direct contact with the ion blower nozzle and must always be grounded.

The ion blower nozzle, the ion blower pistole and the ion blower nozzle bar may also be operated with pulsed blown air to prevent tools from cooling down, for instance. The compressed air will only be switched on when the tool opens to eject a moulded part.

3.10 Balancer (optional)

Suspend the balancer from a suitable attachment point. You may also use an appripriate tripod or stand.

Adjust the desired spring force.
To avoid unnecessary wear and tear, make sure that the balancer moves freely.

Adjusting the spring force

+	To increase the spring force, turn the rotary button anticlockwise.
-	To decrease the spring force, turn the rotary button clockwise.

- Make sure that the ropes moves freely over its entire length.
- Hang the ion blower pistol onto the lower hook and secure it against inadvertently falling off.
- Check the condition of the rope at regular intervals. If damaged, the balancer must be replaced at once for safety reasons.
- Do not use the balancer above its maximum load of 1.0 kg.

Warning!
Do not open the balancer! It holds a set of springs which may result in personal injury if used improperly.

3.11 Functioning of the varioCLEAN ion blower nozzle

Two speed-controlled drive nozzles guarantee an equal rotation even with compressed air fluctuations.

Two cleaning nozzles with a pulsating air jet can be activated individually or together. The nozzle diameter can be set without tools depending on the application. This significantly reduces the compressed air consumption. The blowing direction can flexibly be adapted to the respective cleaning task by adjusting the blow-out angle.

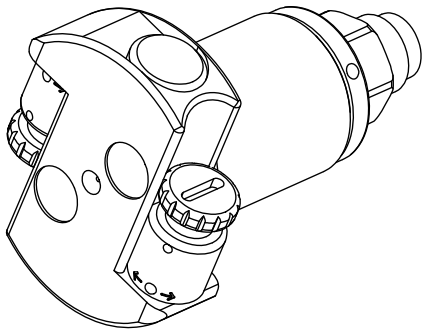

Fig. 7: varioCLEAN ion blower nozzle

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3.11.1 Adjusting the nozzle diameter for nozzle R36(E)/_V

The nozzle openings are marked with dotted brackets.

The nozzle diameters can be adjusted as follows:

- (X) = nozzle closed
- (0.8) = 0.8 mm nozzle diameter
- (1.1) = 1.1 mm nozzle diameter
- (1.4) = 1.4 mm nozzle diameter
- (1.6) = 1.6 mm nozzle diameter

Turn the blower drum until the desired nozzle diameter engages (clicking sound).

Fig. 8: Blower drum

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3.11.2Adjusting the blow-out angle for nozzle R36(E)/_V

The blowing direction can be flexibly adapted to the respective cleaning task by adjusting the blow-out angle α.

- α_{min} = 70° α_{max} = 270°
- Set the blow-out angle α with a 1.5 mm hexagon socket screw key.
- The direction of the hexagon socket screw key indicates the set nozzle angle (= blow-out angle α).
- For optimal cleaning with the SCC-P, we recommend setting both nozzles to 90°.

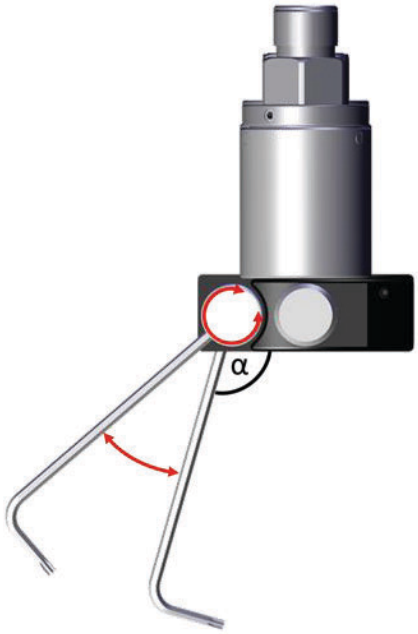

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Fig. 9:
Blow-out angle

3.11.3 Speed monitoring

A speed sensor is available as an option, Article No. 118485 chapter 9 "Spare parts and accessories”, page 40.

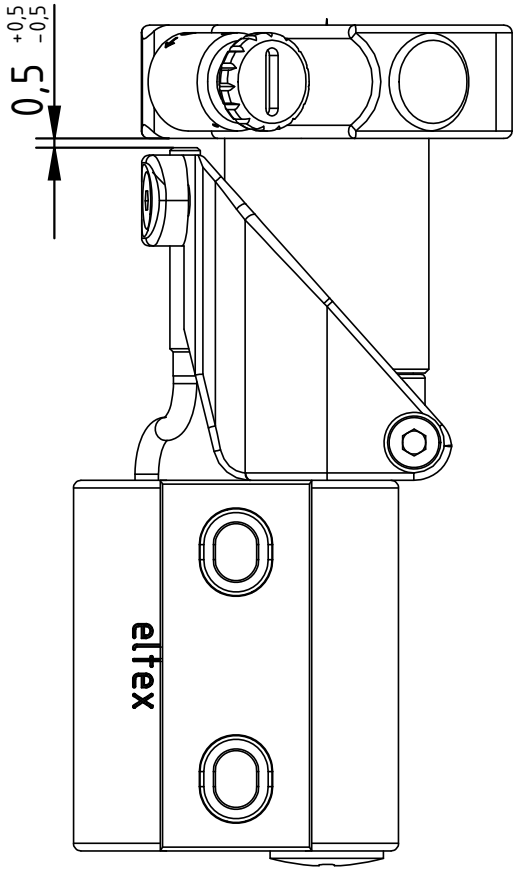

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Fig. 10:
Speed monitoring

Power input	10 mA
Supply voltage	10 ... 30 V DC
Rated operating distance	The distance between the sensor and the rotating nozzle should be max. 1 mm.
Switching output	PNP (NC
Reverse polarity protected	yes
Cable length	2 m
Enclosure material	stainless steel
Dimensions	Ø 4 x 27 mm

4. Operation

4.1 Startup

Once all the connections have been made correctly, the system is operational and the supply voltage can be switched on at the power supply. The ion blower nozzle, the ion blower pistol, the ion blower nozzle bar resp. the discharge adapter are also operational now.

4.2 Operating voltage

The ion blower nozzle, the ion blower pistol, the ion blower nozzle bar and the discharge adapter are supplied via the Eltex high voltage supply unit and are operated with an optimum operating voltage of 5 resp. 6 kV.

4.3 Function control

Use the Eltex Volt Stick or a glow-lamp voltage tester to check the proper function of the emission tips. Quote Article No. 109136 when ordering the Volt Stick from Eltex.

Caution!
To avoid severe damage, keep other objects from hitting against the nozzle!

5. Maintenance

Warning!
Electric shock hazard!

- Switch off the power supply unit and disconnect the supply voltage before carrying out any maintenance or repair work.
- The bars passively absorb energy from the moving substrate web. The high voltage cable must be plugged in or grounded to the generator. If the high voltage cable is disconnected, the plug is live (high voltage) and applies with full power on the plug; this may cause a spark discharge and may lead to a risk of injury. Disconnected high voltage plugs are not permitted or have to be grounded.
- The machine which has the units fitted must not be in operation.
- Repairs and maintenance work must be carried out by qualified electricians only.

5.1 Cleaning the nozzle inserts

To ensure the trouble-free function of the ion blower nozzles and the ion blower pistol, the surface from which the emission tip and the blown air exit must be clean and dry at all times. Dirty blower nozzles must be cleaned with a suitable solvent (benzine) and a brush with soft plastic bristles (see chapter 9 "Spare parts and accessories", page 40). To prevent the air exit holes from clogging up with dirt during clea-ning, the compressed air (0.3...0.5 x 10^5 Pa) must be switched on during cleaning.

To clean the round jet nozzle of the discharge adapter EAR36E, it must be pulled out of the Y-branch pipe and pressed back into the Y-branch pipe after cleaning.

Make sure that the O-ring is not damaged when pressing it in.

Warning!
Risk of deflagration!
Allow the solvent to evaporate completely before restarting the unit.

Caution!
Do not damage the emission tips when cleaning.

5.2 Exchanging the nozzle inserts of the rotary nozzle type C

- Remove the nozzle insert by a slight turn with a 6 mm fixed spanner.
- Take out the nozzle insert.
- Insert and fix a new nozzle insert, making sure not to overtighten to avoid damaging the thread

5.3 Filter / Filter change

Inspect and, if necessary, exchange the filter for dirt deposits at regular intervals.

Hold filter casing tight, loosen and pull off the union nut.
Exchange the filter and turn back in reverse order. Finally, check the proper assembly.

5.4 Inspection of the protective resistors - contact protection

The function and the appearance of the protective resistors must be inspected at regular intervals. The inspection intervals are specified in the accident prevention regulations, as amended (e.g. in Germany DGUV V3).

The function of the series resistors must be checked using a suitable measuring device. The test voltage must be 1,000V. The measured resistance between the high-voltage connection and the individual emission tip must not fall below 80 MOhm and not exceed 120 MOhm.

6. Troubleshooting

Warning!
Electric shock hazard!

- Switch off the power supply unit and disconnect the supply voltage before carrying out any maintenance or repair work.
- The machine which has the units fitted must not be in operation.
- Repairs and maintenance work must be carried out by qualified electricians only.
- Disconnect the compressed air supply before carrying out any maintenance or repair work.

For other malfunctions, see also the operating instructions for the power supply.

Fault	**Cause**	**Measure**
Efficiency of the application declines.	Dirt on ion blower nozzle / pistol / nozzle bar.	Clean ion blower nozzle / pistol with compressed air and a plastic brush. Grease, oil, inks, etc. on the blower nozzle / pistol must be cleaned off using a suitable solvent (benzine). **Caution!** Allow the solvent to evaporate completely before restarting the unit. Do not soak the blower nozzle / pistol in solvent.
	Short circuit in the high voltage cable.	If required, exchange the high voltage cable at the R36 ion blower nozzle. In the event of defective high voltage cables at the PR36 ion blower pistol and the LR36 ion blower nozzle bar, please notify Eltex Service or return the complete unit for repair. Do not replace or exchange the cable.
	Defective ion blower nozzle / pistol / nozzle bar.	Check the blower nozzle / pistol / nozzle bar for any damage caused by leakage currents. If more than one blower nozzle / pistol / nozzle bar is connected to the power supply, disconnect all devices and replace one after the other device to localize the defective blower nozzle / pistol / nozzle bar. Replace the defective device.
PR36 volume flow declines.	(optional) dirty filter.	Change filter.

7. Technical specifications

R36/R36E ion blower nozzle, PR36 ion blower pistol and EAR36E discharge adapter

Operating voltage	5 resp. 6 kV, 50/60 Hz
High voltage supply	via Eltex power supplies, operating voltage max. 6 kV AC
Operating ambient temperature	0... +80 °C (+32...+176 °F) with blown air blown air temperature max. 30 °C 0...+60 °C (+32...+140 °F) without blown air
Ambient humidity	max. 70 %, no dewing permitted
Bar element	plastic (PA6.6 30 % GF)
Emission tip	tungsten, current-limited and low capacitance
Short-circuit current emission tips/ground	0.05 mA
Contact protection	contact protected according to EN 61140
Assembly	attachment lugs of the bar element
High voltage connection	connection to screened Eltex high voltage cables with protective hose: plug type w without protective hose: plug type y
Air connection	R36/R36E /EAR36E: DN 8 mm hose PR36: DN 10 mm hose
Dimensions	see chap. 8 Dimensions
Weight	R36(E)/_F: approx. 60 g PR36/_F: approx. 240 g PR36/_C: approx. 410 g EAR36E: approx. 90 g each without high voltage cable
Air pressure	max. 6 x 10^5 Pa, deviating air pressures, see table air consumption"
Balancer (optional)	Capcity: 0.4 kg - 1.0 kg Travel: 1600 m Weight: 630 g
UL Approval	File No. E227156

as shown on appliance marking:

Air consumption [Nm³/h] Air pressure [10^5 Pa]	0.5	1.0	1.5	2.0	2.5	3.0	3.5	4.0	4.5	5.0	5.5	6.0
(P)R36(E)/_F, (P)R36(E)/_R	4.9	9.6	12.6	15.6	18.7	21.8	25.0	27.3	30.5	33.8	35.9	39.2
(P)R36(E)/_K, EAR36E	3.4	5.8	7.7	9.4	11.0	12.6	14.4	15.7	17.6	19.6	20.9	23.0
(P)R36(E)/_W max. 1 x 10^5 Pa	4.9	9.1										
(P)R36(E)/_T max. 6 x 10^5 Pa	5.9	10.2	14.2	18.2	21.5	25.0	28.4	31.3	34.9	38.2	41.0	45.0
(P)R36(E)/_B max. 6 x 10^5 Pa	5.9	11.0	15.7	19.4	23.6	27.6	31.4	34.9	38.7	42.4	45.9	50.3
(P)R36(E)/_M max. 6 x 10^5 Pa	0.9	1.5	2.0	2.4	2.9	3.3	3.7	4.1	4.6	5.0	5.5	6.1
PR36/_E min. 4 x 10^5 Pa, max. 6 x 10^5 Pa								12.3	13.6	14.7	15.6	16.4
R36(E)/_V min. 2,5 x 10^5 Pa max. 6 x 10^5 Pa Nozzles Ø 0.8 1.1 1.4 1.6					3.8 5.2	4.4 5.8		5.2 7.2 8.7 9.5		6.5 8.5 10.3 12.2		7.5 10.0 12.2 13.1
(P)R36(E)/_C min. 5 x 10^5 Pa max. 6 x 10^5 Pa nozzle insert Ø 1.2** 1.6 1.8 2.0 ** Standard	* at 6 x 10^5 Pa with 2 nozzle inserts per side											25.8* 47.4* 59.4* 72.6*

LR 36 ion blower nozzle bar

Operating voltage	5 resp. 6 kV, 50/60 Hz
High voltage supply	via Eltex power supplies, operating voltage max. 6 kV AC
Operating ambient temperature	0... +80 °C (+32...+176 °F) with blown air; blown air temperature max. 30 °C 0...+60 °C (+32...+140 °F) without blown air
Ambient humidity	max. 70 %, no dewing permitted
Bar element	plastic (PA6.6 30% GF)
Emission tip	tungsten, current-limited and low capacitance
Short-circuit current emission tips/ground	0.05 mA
Contact protection	contact protected according to EN 61140
Profile	aluminium powder-coated
Assembly	Mounting brackets if requested. The profiled assembly section of the nozzle bar is grooved. Sliding nuts pushed into this groove allow the blower nozzle bar to be mounted in any configuration.
High voltage cable	Type KE screened, prefabricated, permanently connected
Air connection	nozzle bar prepared for: a) air hose DN12 / G3/8" frontal b) for greater lengths G3/4" on the back (table page 12) Use the flexible ball joint hose to set the nozzles such that they point in the optimal desired blowing direction.
Dimensions	see figures
Weight	approx. 2 kg per meter length
Air pressure	max. 2.5 x 10^5 Pa

CE

Filter

Gas retaining rate of the metal fibre fleece filter					
0.01 µm	0.07 µm	0.1 µm	0.2 µm	0.3 µm	0.4 µm
99.995 %	97.656 %	96.679 %	96.805 %	98.747 %	99.484 %

For particle sizes < 0.1 µm the rate of separation becomes more effective through particles adhering to the fleece.

Air consumption

Air consumption [Nm³/h]	**Typical values**					
Air pressure [10^5 Pa]	0.5	1.0	1.5	2.0	2.5	
LR36	3	7	9	12	15	(per nozzle)

8. Dimensions

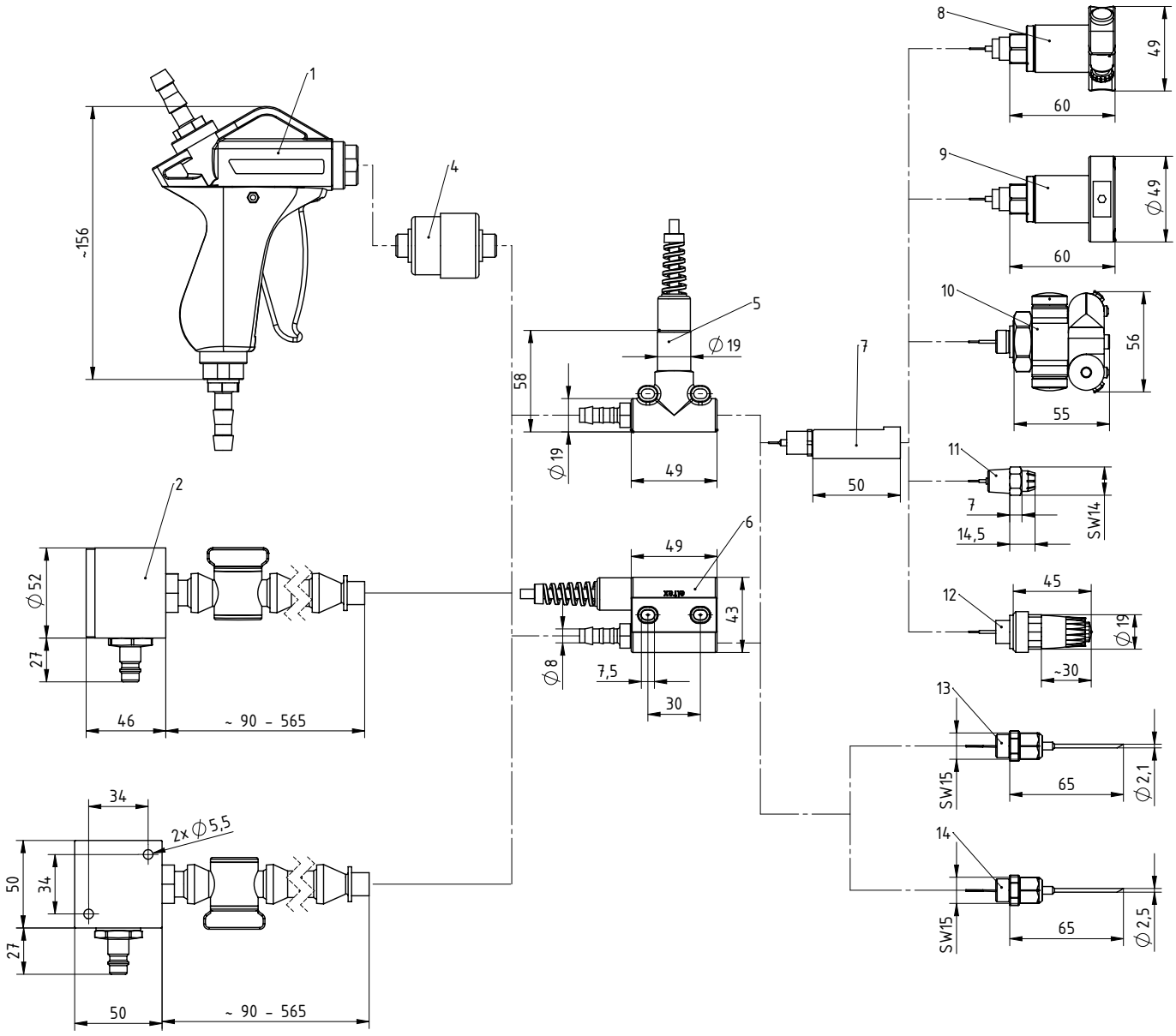


Fig. 11:
Drawing -No. Z-116969dy_1
Dimensions ion blower pistol, various nozzles and accessories

Fig. 11 and Fig. 12 shows the currently available designs. After consultations with Eltex, standard commercial blower nozzles made of plastic material may also be integrated.

1	Ion blower pistol (only available for nozzles C, E, F and K)
2	Magnet holder 118078 (3 x thread G1/4")
3	Cross distributor 118075 (4 x thread G1/4")
4	Filter (optional)
5	Ion blower nozzle, type R36E/R
6	Ion blower nozzle, type R36E/A
7	Extension (optional) not available for PR36 and nozzles B, M and N
8	Rotating nozzle varioCLEAN, type V
9	Rotating nozzle easyCLEAN, type E
10	Rotating nozzle, type C
11	Circular jet nozzle, type K
12	Circular jet nozzle, type R
13	Hollow needle, type M
14	Hollow needle, type N

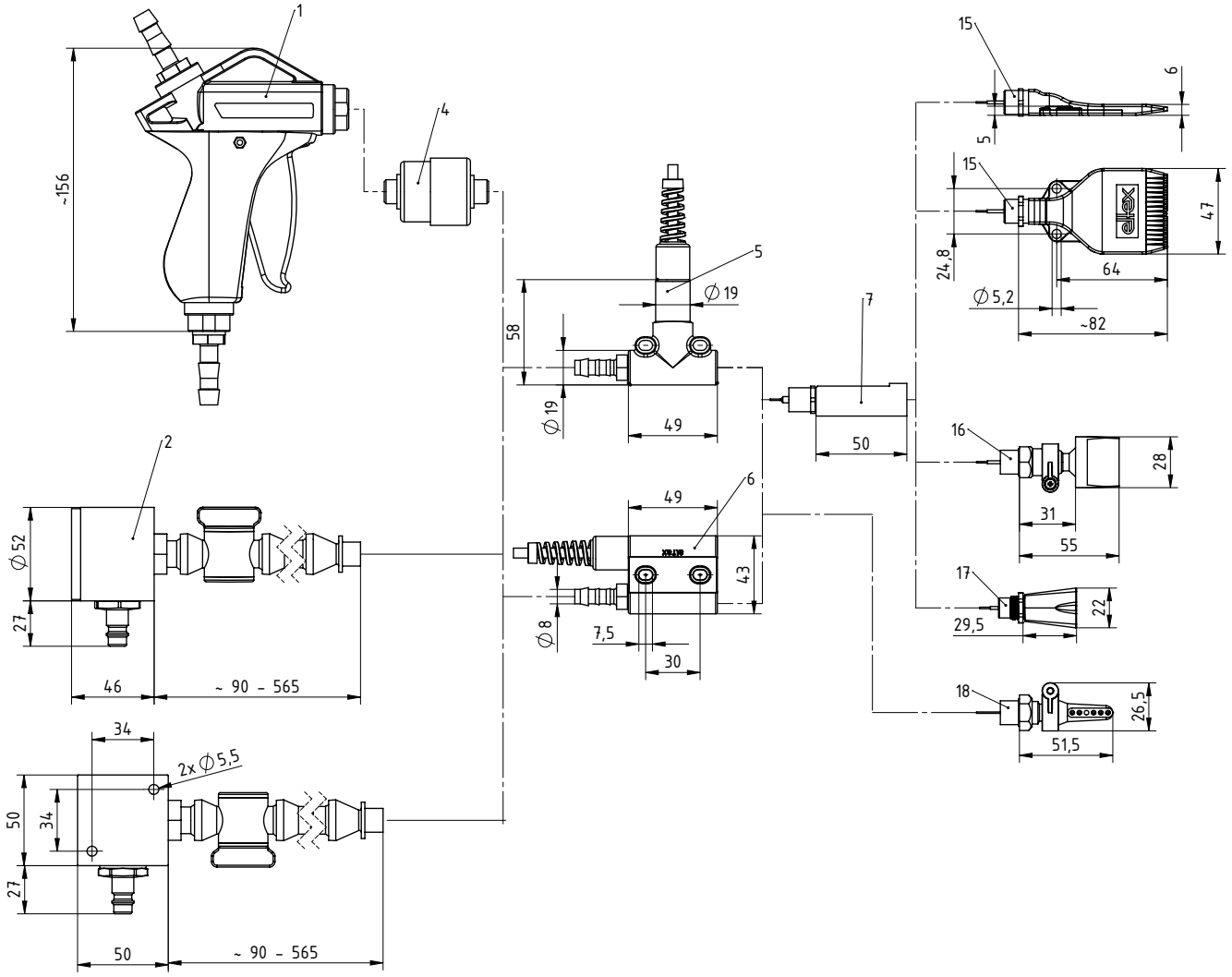


Fig. 12:
Drawing -No. Z-116969cy_2
Dimensions ion blower pistol, various nozzles and accessories

15	Fishtail nozzle, type F
16	Compact fishtail nozzle, type W
17	Support air blower, type T
18	Side blower, type B

Dimensions LR36 ion blower nozzle bar

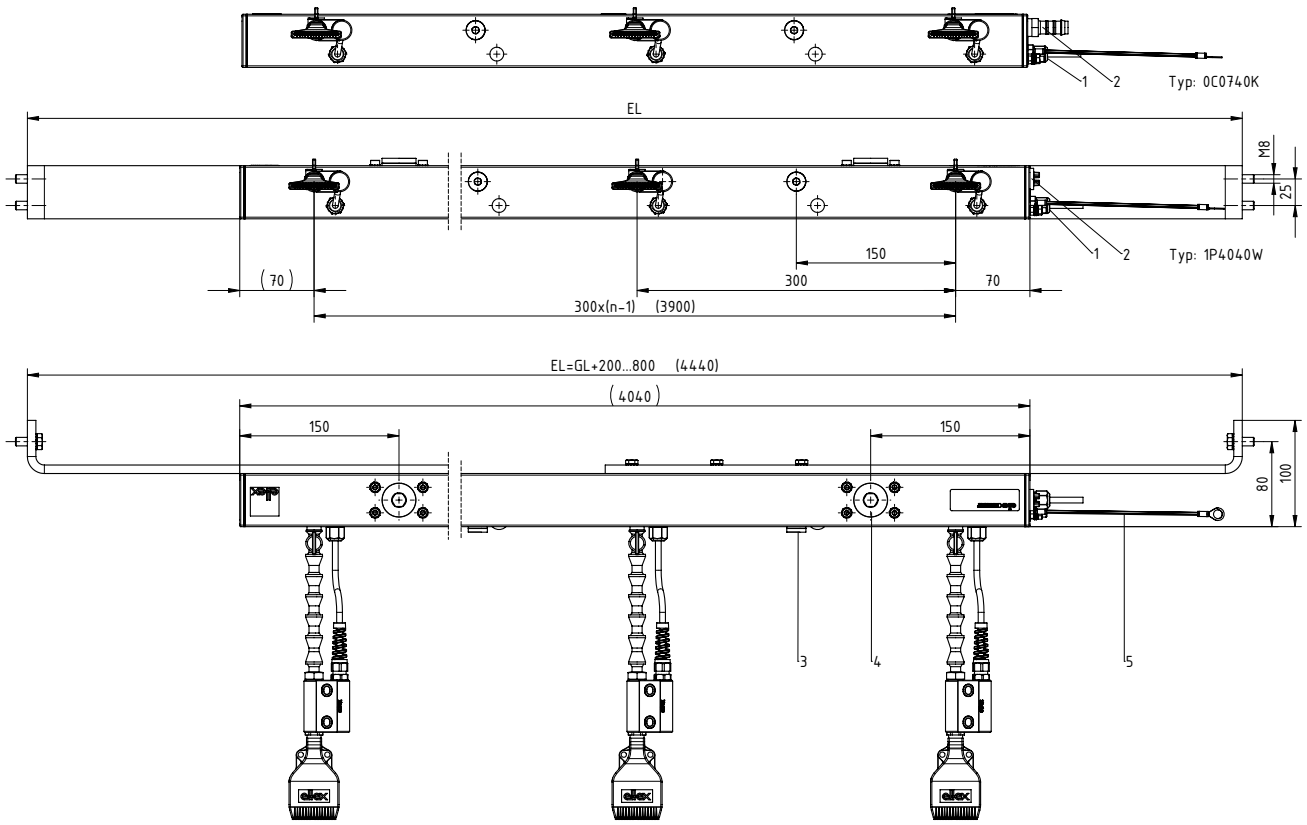


Fig. 13:
Dimensions LR36 ion blower bar

EL = installation length (GL + 200 ... 800)
GL = total length of the carrier section
n = number of nozzles (standard up to n = 15)

1 high voltage connector
2 compressed air connection: DN12 bzw. G 3/8" blanking plug
3 blanking plug: G 1/4"
4 compressed air connection: G 3/4" from 9 nozzles
(optional from 6 nozzles)
5 grounding cable

Ion blower pistol without filter with bottom air connection

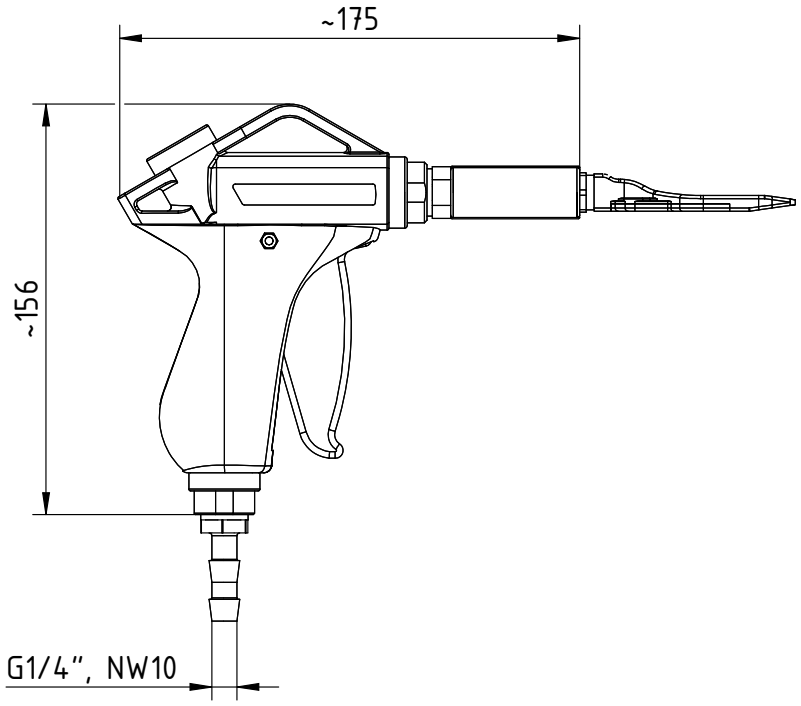


Fig. 14: Dimensions PR36/NF ion blower pistol

Z-114228by_2

Ion blower pistol with filter with bottom air connection

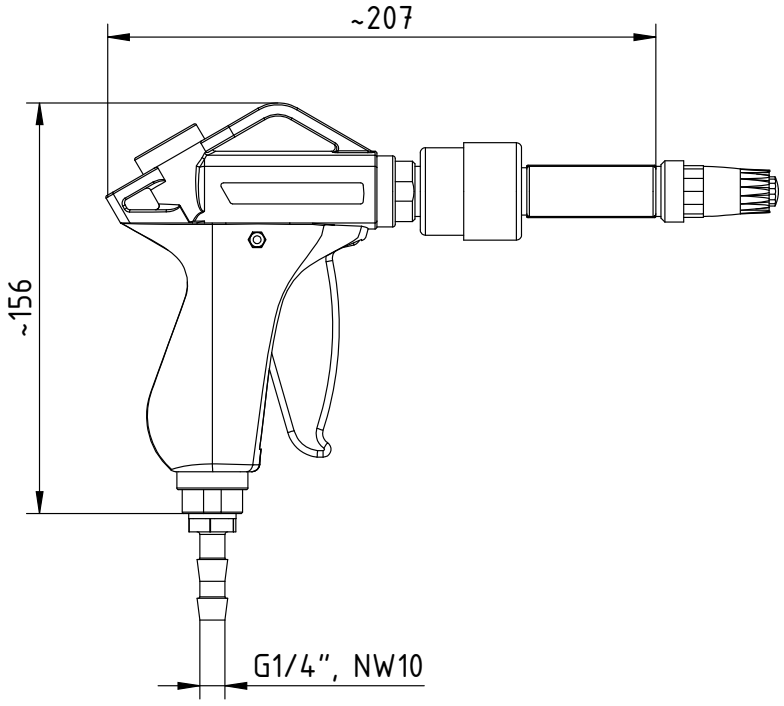
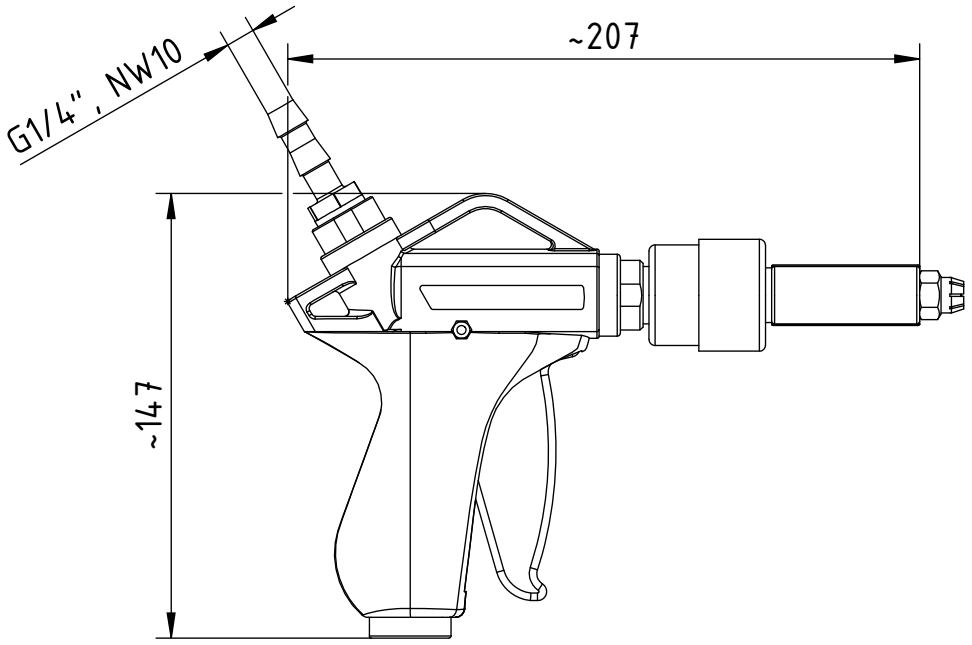


Fig. 15: Dimensions PR36/FR ion blower pistol

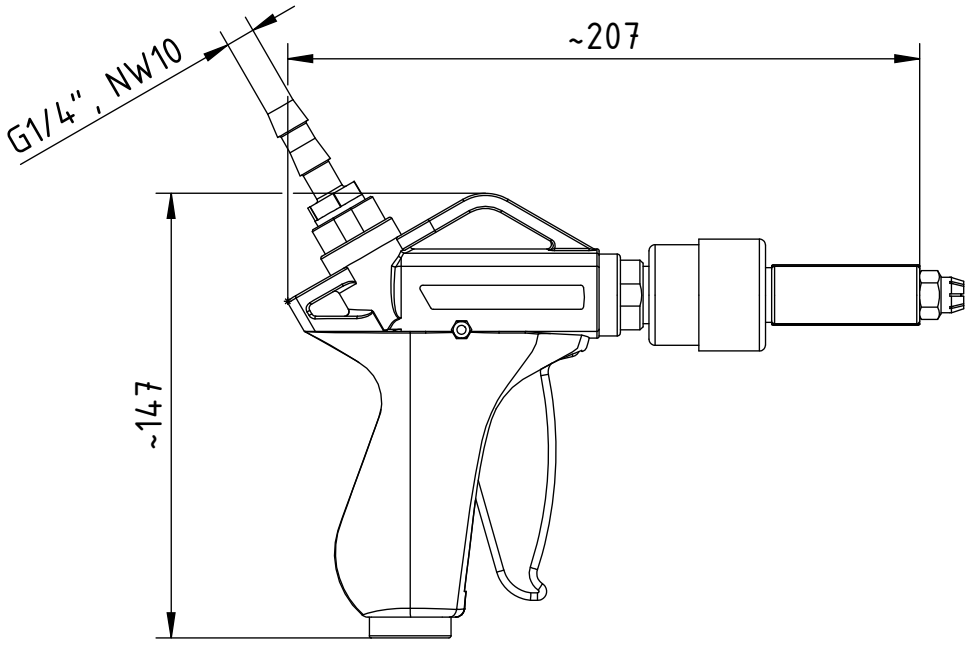
Z-114228by_3

Ion blower pistol with filter with top air connection



Z-114228by_4

Fig. 16:
Dimensions
PR36/GR
ion blower pistol



Z-114228by_5

Fig. 17:
Dimensions
PR36/OE
ion blower pistol

EAR36E Discharge adapter

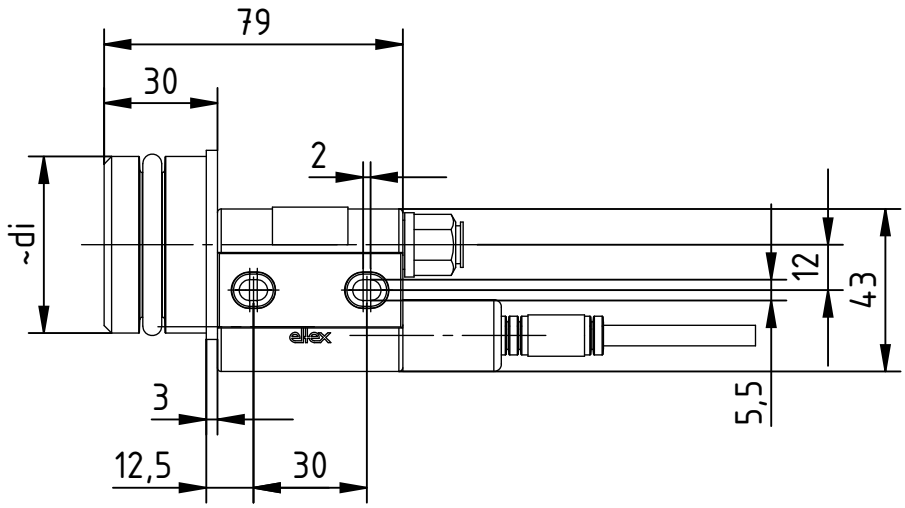


Fig. 18: Dimensions EAR36E/A discharge adapter axial

Z-118058ay_2

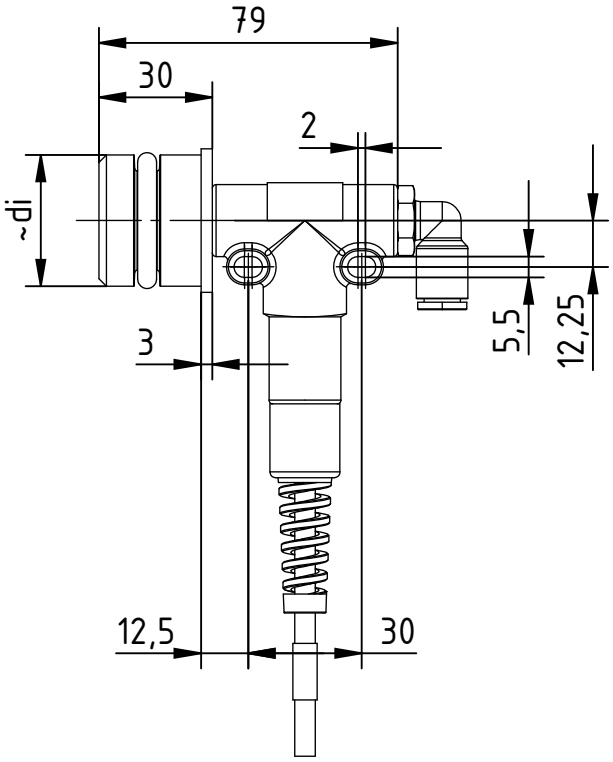


Fig. 19: Dimensions EAR36E/R discharge adapter radial

Z-118058ay_3

9. Spare parts and accessories

Article	Article No.
High voltage connection (specify cable lengths)	
High voltage cable without flexible tube from power supply ES5x or distributor ESV resp. ESVY61/_S to ion blower nozzles R36 (specify cable length)	KE/SY___
High voltage cable with flexible tube from power supply ES5x or distributor ESV resp. ESVY61/_S to ion blower nozzles R36 (specify cable length)	KE/LW___
Plug "S" Set for prefabricating the high voltage cable without flexible tube for power supply ES5x, ES6x and PI	101366
Plug "L" Set for prefabricating the high voltage cable with flexible tube for power supply ES5x, ES6x and PI	103289
Plug "X" Set for prefabricating the high voltage cable without flexible tube for power supply ES47	113259
Blanking plug for high voltage connection	101881
Cable fixing for PR36	108354
Bar elements and ion blower pistols	
Replacement Bar element for ion blower nozzle, axial design	R36/AOG0
Replacement Bar element for ion blower nozzle, radial design	R36/ROG0
Replacement Bar element for ion blower pistol / ion blower nozzle axial design with fixed connected high voltage cable and plug (specify cable length and plug type)	R36E/ AOG0_ _ _ _
Replacement Bar element for ion blower nozzle radial design with fixed connected high voltage cable and plug (specify cable length and plug type)	R36E/ ROG0_ _ _ _
Plastic blower pistol with bottom air connection	109682
Plastic blower pistol with top air connection	109683
Adapter pistol / bar element	109589
Sealing for adaptor article no. 109589	112138

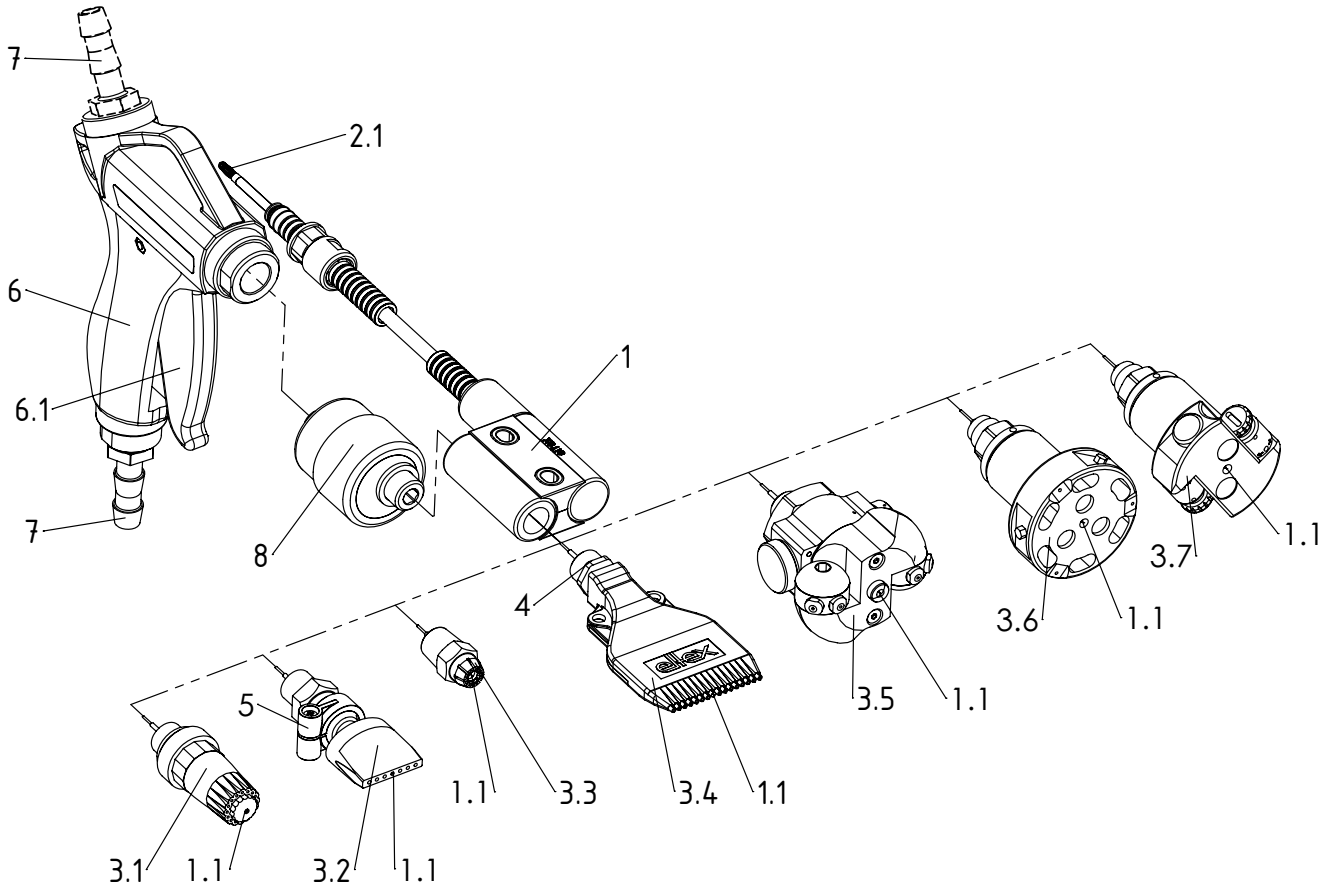
Article	Article No.
Complete filter: - filter housing - cover for filter - air connection G1/4'' for filter - screw cap for filter - filter (metal fiber web)	109355 109443 108415 108414 107640 107830
Nozzles and emission tips	
Complet replacement set: Fishtail nozzle (type F) - fishtail nozzle - emission tip for fishtail nozzle	110530 106799 108260
Complet replacement set: Circular jet nozzle (type R) - circular jet nozzle - sealing ring for circular jet nozzle - emission tip for circular jet nozzle	110532 103776 112138 108262
Complet replacement set: Compact fishtail nozzle (type W) - compact fishtail nozzle - threaded nipple for compact fishtail nozzle - clamping ring with screw for compact fishtail nozzle - Sealing ring - emission tip for compact fishtail nozzle	110535 113995 108389 107502 113521 108261
Complet replacement set: Circular jet nozzle for EAR36E adapter - circular jet nozzle incl. emission tip - sealing ring for circular jet nozzle	118093 117588 116349
Mini circular jet nozzle (type K) incl. emission tip	109592
Complet replacement set: Rotating nozzle (type C) - rotating ion blower nozzle - sealing ring for rotating nozzle - emission tip for rotating nozzle_	110529 110331 112138 110332
Nozzle inserts for the rotating nozzle (type C) air nozzle insert 1.2 air nozzle insert 1.6 air nozzle insert 1.8 air nozzle insert 2.0	108216 108218 108219 108220
Complet replacement set: easyCLEAN Rotating nozzle (type E)	116964
Complet replacement set: varioCLEAN Rotating nozzle (type V)	117303

Article	Article No.
Complet replacement set: varioCLEAN Rotating nozzle (type V) with encoder disc for speed sensor	118429
Air connection	
Air nipple for R36 R1/4’’, DN8	101617
Air nipple for PR36 R1/4’’, DN10	MCH00162
Threaded union, axial G1/4", NW8	110309
L-threaded union, G1/4", NW8	116295
Air hose, DN8	MCH02407
Air hose, DN10	MCH00126
Sealing ring 1/4"	112138
Ball-joint hose, 580 mm, connection 1/2’’	108772
Ball-joint hose, 542 mm, connection 1/2’’	110773
Ball-joint hose, 455 mm, connection 1/2’’	109335
Magnet holder for ball joint hose (matching Art. No. 108772)	109580
Ball-joint hose for LR36, connection 1/4’’	105369
Miscellanious	
Adapter for EAR36E	
Adapter di 35	117622
Adapter di 42	117589
Adapter di 47	117625
O-Ring for adapter di 35	117624
O-Ring for adapter di 42	117620
O-Ring for adapter di 47	117627
Balancer	111569
Speed sensor with holder for varioCLEAN rotary nozzle (type R36/_V), only for version with encoder disc	118485
Cleaning brush with handle	RBR22
Volt Stick	109136
Operating instrucions (specify language)	BA-xx-2043

Please specify the article number when ordering.

A. Inspection Instruction PR36

The recurring test intervals are shown in the appropriate accident prevention and health and safety at work regulations (e.g. DGUV V3 for Germany). .



1 Bar element
1.1 Emission tips
2 High voltage cable
2.1 High voltage connection
3.1 Circular jet nozzle R
3.2 Compact fishtail nozzle W
3.3 Circular jet nozzle mini K
3.4 Fishtail nozzle F
3.5 Rotating nozzle C
3.6 easyCLEAN rotating nozzle E (only PR36/_E)
3.7 varioCLEAN rotating nozzle V (only R36/_V)
4 Fixing nut
5 Clamp
6 Blower pistol
6.1 Operating lever
7 Air connection DN10 (bottom or top)
Filter

A.1 Electrical Test

Warning!
Electrical shock hazard!

- Switch off the power supply and disconnect the supply voltage and the compressed air supply of the unit to be tested.
- The tests must be carried out by qualified electricians.

A.1.1 Inspection the protective resistors - contact protection

The function of the series resistors must be checked using a suitable measuring device. The test voltage must be 1,000V. The measured resistance between the high-voltage connection (2.1) and the individual emission tip (1.1) must not fall below 80 MOhm and not exceed 120 MOhm.

A.2 Mechanical and visual check

- Check the operating lever (6.1) of the air valve for proper function (easy movement), no leakages when closed.
- Check the hook at the body of the blower pistol (6) for any damage.
- Checking the setting down unit and the balancer, if fitted.
- Check the compressed air supply line and the compressed air connection at the air nipple or the plug connection (7) of the ion blower pistol for any damage, deformation and for firm connection.
- For appliance versions fitted with air filters (8), check the filter insert for any dirt and grime and if required, exchange the filter insert.
- For appliance versions fitted with rotating nozzles (3.5 - 3.7), check the unit for easy movement.
- The high voltage cable (2) must be routed to make sure that it does not make contact with moving machine parts. Avoid mechanical deformations and bending radii smaller than 60 mm. The high voltabe cable (2) must not be installed on the floor, as it may break under load; the cable must also not be subjected to tensile stress.
  The high voltage cable (2) or the protective hose and the connection at the power supply and at the ion blower pistol must be checked for any damage, deformation, material or surface conditon and for firm connection.
- The blower pistol (6), the bar element (1) and the nozzle (3.1 - 3.7) must be checked for any damage.
- The emission tips (1.1) must be checked for any damage and any signs of wear.

If any damage or defect is found, the unit must no longer be used. Please contact Eltex Service.

EU-Declaration of Conformity

CE-2043-en-2402

Eltex-Elektrostatik-Gesellschaft mbH
Blauenstraße 67 - 69
D-79576 Weil am Rhein

declares in its sole responsibility that the product

Ion Blower Nozzle R36 / R36E / Ion Blower Pistol PR36 / Ion Blower Nozzle Support LR36 / Discharging adapter EAR36E (according to Eltex reference code)

complies with the following directives and standards.

Relevant EU-Directive:	
2014/35/EU	Low Voltage Directive
Harmonized standard applied:	
EN 60204-1:2018	Safety of machinery – Electrical equipment of machines – General requirements
Relevant EU-Directive:	
2014/30/EU	EMC Directive
Harmonized standards applied:	
EN IEC 61000-6-2:2019	Compatibilité électromagnétique (CEM) – Normes génériques – Immunité pour les environnements industriels
EN 55011:2016 + A1:2017 + A11:2020 + A2: 2021	Industrial scientific and medical equipment – Radio-frequency disturbance characteristics – limits and methods of measurement
Relevant EU-Directive:	
2011/65/EU	RoHS Directive

in the version effective at the time of delivery.

Eltex-Elektrostatik-Gesellschaft mbH keep the following documents for inspection:

- proper operating instructions
- plans
- other technical documentation

Weil am Rhein, 13.02.2024
Place/Date

Lukas Hahne, Managing Director

UKCA Declaration of Conformity

CA-2043-en-2402

Eltex-Elektrostatik-Gesellschaft mbH
Blauenstraße 67 - 69
D-79576 Weil am Rhein

declares in its sole responsibility that the product

Ion Blower Nozzle R36 / R36E / Ion Blower Pistol PR36 / Ion Blower Nozzle Support LR36 / Discharging adapter EAR36E (according to Eltex reference code)

complies with the following directives and standards.

Applicable Regulation:	
S.I. 2016 No. 1101	Electrical Equipment (Safety) Regulations
Used Designated Standard:	BS EN 60204-1:2018
Applicable Regulation:	
S.I. 2016 No. 1091	Electromagnetic Compatibility Regulations
Used Designated Standard:	BS EN IEC 61000-6-2:2019 BS EN 55011:2016+A2:2021
Applicable Regulation:	
S.I. 2012 No. 3032	RoHS Regulations

in the version effective at the time of delivery.

Eltex-Elektrostatik-Gesellschaft mbH keep the following documents for inspection:

- proper operating instructions
- plans
- other technical documentation

Weil am Rhein, 15.02.2024
Place/Date

Lukas Hahne, Managing Director

Eltex offices and agencies

The addresses of all Eltex agencies can be found on our website at www.eltex.de

Z01007y

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