

**FOR OPTIMAL PERFORMANCE AND LONG SERVICE LIFE**

# Nozzle installation instructions

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## Grenades

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### Models included

- GRENADE 80, GRENADE 60 and GRENADE 50.
- GRENADE 120, GRENADE 100 and GRENADE 70.
- BULLET GRENADE 60.



**GRENADE 120**



**BULLET GRENADE 60**



**GRENADE 70**

**IMPORTANT** These nozzles must only be used as part of a suitable high-pressure water cleaning system. Pressure, flow, hose and connection components must match the calibration and model used.

**BRUNA · Roberto Bruña, S.L.**

# Scope and intended use

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BRUNA designs and manufactures high-performance nozzles for cleaning pipes and drainage networks. The Grenade family is intended for general cleaning and for dragging sand, gravel, stones and other debris from the bottom of pipelines, depending on the model used.

These instructions describe installation, operation, maintenance and storage. Keep this document available for all personnel who install or operate the nozzle.

## Models covered

- GRENADE 50.
- GRENADE 60.
- BULLET GRENADE 60.
- GRENADE 70.
- GRENADE 80.
- GRENADE 100.
- GRENADE 120.

## Manufacture, sales and service

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**IMPORTANT** The exact technical characteristics of each unit depend on its calibration. Do not replace inserts, jets or internal components with parts not approved for the model.

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## Product description

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Grenade nozzles are connected to a high-pressure hose and use rear water jets to move through the pipe while cleaning. The jet angle, number of jets and body design determine the cleaning behaviour and thrust of each model.

Within this family, some models are intended for general cleaning, while others are optimized for dragging sediment and debris from the bottom of the pipe over short or long distances.

### **General cleaning models**

GRENADE 60 and GRENADE 80 use rear jets at different angles to clean pipe walls and remove common deposits such as soap, grease and standard buildup. They can also be configured with an optional front jet.

### **Bottom-cleaning and dragging models**

GRENADE 50, BULLET GRENADE 60, GRENADE 70, GRENADE 100 and GRENADE 120 are designed to move sand, gravel, stones and other sediment deposited at the bottom of the pipe. Their jet arrangement and body shape provide strong dragging action.

# Safety instructions

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**DANGER** High-pressure water can cause severe or fatal injuries. Never test a nozzle at working pressure outside a pipe or a controlled test area.

## Main warnings

- Completely depressurize the system before installing, removing or inspecting the nozzle.
- Never direct high-pressure jets toward people, animals, electrical equipment or unprotected objects.
- Check that all water outlets are free from obstruction before use.
- Do not twist the hose during installation. Turn the nozzle or use a suitable swivel fitting if required.
- Insert the nozzle into the pipe before applying pressure.
- Use only pressure and flow values compatible with the nozzle calibration and the cleaning system.
- Do not use the nozzle if threads, body or inserts are damaged.

## Operator responsibility

The operator must assess site-specific risks, establish a safe working area, control access and ensure that all personnel are trained in the use of high-pressure water equipment.

## Personal protective equipment

- Suitable close-fitting work clothing.
- Eye and face protection against splashes and particles.
- Protective gloves suited to the task.
- Slip-resistant safety footwear.
- Respiratory protection and any additional PPE required by the worksite conditions.

## Transport, storage and cleaning

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- Transport the nozzle so it cannot move, fall or strike other objects.
- After use, remove dirt and contamination carefully.
- Dry the nozzle before storage.
- Store the nozzle in a case, tray or holder that protects the body and water outlets from impacts.
- Avoid long-term storage with water trapped inside the nozzle.

### Installation and first use

#### Checks before installation

- Verify that the selected model matches the pipe diameter and available flow.
- Check thread compatibility between nozzle, adapter and hose.
- Inspect the thread, body and jets visually.
- Make sure all jets are clean and unobstructed.
- Confirm that the system is fully depressurized before handling the connection.

#### Connection to the hose

1. Place the nozzle and hose on a stable surface away from the manhole edge or pipe entrance.
2. Screw the nozzle or the suitable adapter on by hand without forcing the thread.
3. Avoid twisting the hose to tighten the connection.
4. Tighten with the appropriate tool without overloading the thread or nozzle body.
5. Install skids, guides or other accessories when required by the pipe diameter or application.
6. Insert the nozzle into the pipe in a controlled manner before pressurizing the system.

## Operation

- Keep unauthorized persons away from the working area.
- Apply pressure only when the nozzle is inside the pipe and in a safe position.
- Increase pressure gradually to the required working level.
- Control forward and backward movement to avoid impacts on bends, fittings or section changes.
- Do not try to free a stuck nozzle by sudden pressure spikes.
- Before fully removing the nozzle, stop the water and release residual pressure.

### Model guidance during operation

| Model / group               | Main use                                                                  | Operational guidance                                                                        |
|-----------------------------|---------------------------------------------------------------------------|---------------------------------------------------------------------------------------------|
| GRENADE 60 / 80             | General cleaning, soap, grease and common buildup.                        | Maintain controlled travel speed and evaluate whether a front jet is required.              |
| GRENADE 50 / BULLET 60 / 70 | Dragging sand, small stones and debris in small to medium pipe diameters. | Control the path carefully and avoid repeated impacts in bends or fragile fittings.         |
| GRENADE 100 / 120           | Heavy sediment, sand and stones in larger pipe diameters.                 | Work with sufficient flow and control nozzle return to avoid impacts when exiting the pipe. |

## Maintenance and troubleshooting

**IMPORTANT** Carry out maintenance work only with the system completely stopped, isolated and depressurized.

- Inspect the nozzle after every use.
- Replace damaged or obstructed inserts or jets that cannot be cleaned properly.
- Check the overall condition of the body and threads.
- Use only BRUNA spare parts or parts expressly approved for the model.

### After maintenance

- Verify that all dismantled parts have been reassembled correctly.
- Check the tightness of threaded parts.
- Remove tools and materials from the work area.
- Restart the system in a controlled manner.

### Common issues and corrective actions

| Symptom                           | Possible cause                                    | Action                                                          |
|-----------------------------------|---------------------------------------------------|-----------------------------------------------------------------|
| Irregular thrust or unstable path | One or more jets partially obstructed.            | Depressurize, dismantle and clean the jets; inspect for damage. |
| Reduced cleaning performance      | Insufficient flow or incorrect setup.             | Check available flow, calibration and insert condition.         |
| Poor bottom-cleaning performance  | Incorrect nozzle model or excessive travel speed. | Select the suitable model and work with controlled movement.    |
| Leak at the connection            | Incorrect or damaged thread, seal or adapter.     | Depressurize and replace the defective component.               |

## Technical data

Values taken from the BRUNA 2026 catalogue. Flow values are shown as the published minimum reference for each model. Final calibration must be adapted to the customer equipment.

| Model       | Thread            | Pipe         | Jets                                 | Flow           | Dimensions   | Weight | Notes              |
|-------------|-------------------|--------------|--------------------------------------|----------------|--------------|--------|--------------------|
| GRENADE 80  | 1" or 3/4"        | 250 - 500 mm | (R) 10 x M8 (30° - 10°) · (F) 1 x M8 | from 160 l/min | 80 x 170 mm  | 4 kg   | Optional front jet |
| GRENADE 60  | 1" or 3/4"        | 200 - 300 mm | (R) 6 x M8 (30° - 10°) · (F) 1 x M8  | from 160 l/min | 60 x 110 mm  | 1.3 kg | General cleaning   |
| GRENADE 120 | (1" - 1/4") or 1" | 300 - 800 mm | (R) 15 x M13 (7° - 15° - 20°)        | from 250 l/min | 120 x 190 mm | 10 kg  | Laminar flow       |
| GRENADE 100 | 1" or 3/4"        | 300 - 600 mm | (R) 10 x M8 (7° - 15°)               | from 200 l/min | 100 x 177 mm | 4 kg   | Sediment dragging  |

R = rear jets · F = front jet(s).

# Technical data · continued

| Model                | Thread       | Pipe         | Jets                     | Flow           | Dimensions  | Weight  | Notes                   |
|----------------------|--------------|--------------|--------------------------|----------------|-------------|---------|-------------------------|
| BULLET<br>GRENADE 60 | 1" or 3/4"   | 200 - 300 mm | (R) 6 x M8 (10°)         | from 59 l/min  | 60 x 110 mm | 1.3 kg  | Long distances          |
| GRENADE 70           | 1" or 3/4"   | 200 - 400 mm | 12 x M8 (7° - 14° - 21°) | from 136 l/min | 70 x 125 mm | 2 kg    | 12 rear jets            |
| GRENADE 50           | 1/2" or 3/8" | 125 - 300 mm | (R) 8 x M8 (7° - 15°)    | from 41 l/min  | 50 x 95 mm  | 0.75 kg | Sand, stones and debris |

**IMPORTANT** If the available pressure or flow does not match the nozzle calibration, contact BRUNA before use. An unsuitable setup may reduce performance and increase the risk of damage.



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