# Translation of the original operating instructions

## Pneumatic rammer ST 1 G

English version D11 · 16.10.2026 · Translation of the original instructions

MK 2 tool socket



**Read in full before use. Keep available at the workplace and pass on with the tool.**

| Item | Tool socket | Supplied |
|---|---|---|
| 052-60081052-60082052-60091052-60092052-60093 | MK 2 | without rammer foot |

**For ST 1 AP.1G (052-60081), AP.2G (052-60082), AR.1G (052-60091), AR.2G (052-60092), AR.3G (052-60093). These instructions cover connection, operation, foot replacement and maintenance. Each is supplied without a rammer foot.**

# Contents

The chapters in the contents are clickable. Blue, underlined part numbers open the corresponding item in the shop.

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# Explanation of symbols

The safety signs help you recognise important information quickly. Always also follow the accompanying text: it describes the hazard and the protective measures required.

| Sign | Meaning | What must be observed? |
|---|---|---|
|  | General warning sign | Warns of a hazard. The accompanying warning describes the possible injury and how to avoid it. |
|  | Hot surface | The inserted tool or workpiece may be hot. Do not touch without protection; allow to cool before changing the tool. |
|  | Read the instructions | Read the instructions in full before first use and keep them available at the workplace. |
|  | Wear eye protection | Wear suitable eye protection with side shields when working. Use any required face protection in addition. |
|  | Wear hearing protection | Wear suitable hearing protection during operation. Also protect people in the affected work area. |
|  | Wear safety footwear | Wear safety footwear when working to protect your feet, particularly against falling parts. |
|  | Wear protective gloves | Choose protective gloves suitable for the task, particularly when handling sharp-edged, hot or cold parts. Do not reach into moving parts. |
|  | Wear respiratory protection | Use respiratory protection appropriate to the material and risk assessment if engineering measures are insufficient. This sign does not specify a particular filter type or protection class. |

## Signal words in the text

**⚠WARNING: The hazard described can result in serious or fatal injury.**

**⚠CAUTION: The hazard described can result in minor or moderate injury.**

**NOTICE: This information concerns possible property damage.**

Yellow triangles warn of hazards. Blue circles indicate required actions or protective measures. For measures that depend on the task, the conditions described in the text apply; respiratory protection and gloves in particular must be selected to suit the task.

# Versions ST 1 G

The AP-G versions have a polygonal piston rod; the AR-G versions have a round piston rod. The 5 versions differ in length, weight and vibration value. All have vibration damping but no noise damping. MK 2 mounting taper; supplied without a rammer foot.

## Drawing and spare parts

The general drawing and corresponding spare-parts list are in Chapters 9 and 10.

## Recommended connection accessories

Optional Variacor swivel joint G 3/8 female × G 3/8 male, swivels through 90° and rotates through 360°: 306-DV11MFG38. Fit with threaded connections between tool and hose to ease hose handling.

Air connection: G 3/8 female. Required hose bore: 13 mm. Suitable connection components are available separately as accessories.

Do not confuse the tool socket with the air connection: MK 2 is the rammer-foot socket; G 3/8 female is the compressed-air connection.

Hose coupling for 13 mm internal hose diameter: 306-0304 (SKG 13). Fit at the hose end away from the tool. Ensure a matching coupling, secure hose fastening and sufficient flow. Accessories available separately; blue part numbers open the shop.

Connection sequence: rammer → short hose with threaded connection → quick-release coupling. No quick-release coupling directly at the tool inlet. Coupling and plug must match. Size the air supply for 0.64 Nm³/min and a maximum of 6 bar at the tool. Assemble and disconnect components according to the manufacturer's instructions.

## Design and assembly

Only use rammer feet matching the MK 2 socket and having an undamaged taper. The foot must be securely seated. Use a suitable wedge for removal and do not bend the piston rod. See Chapter 6.

# 1 Use and limitations

ST 1 AP.1G/AP.2G and AR.1G/AR.2G/AR.3G are hand-held pneumatic rammers for commercial ramming and compacting with suitable feet. The operating lever actuates the valve and starts the reciprocating motion of the piston rod.

## Intended use

- Ramming and compacting work, for example on moulding sand, using a rammer foot suitable for the material and task.
- Only use rammer feet for the MK 2 socket.
- Before starting, check the material, ground and work area for suitability and hazards.
- Only operate with a securely seated rammer foot placed on the working surface.

Select the rammer foot to suit the material, task and socket. Do not operate the rammer without a foot, with a loose foot or with the piston rod striking freely.

Keep hands and feet out of the rammer foot's work area. There is a crushing hazard between the piston rod, rammer foot and ground. The ground may change during compacting; maintain secure footing and controlled guidance.

## Intended users and working conditions

Operation is restricted to instructed persons who understand the instructions and can assess the hazards of their task. Repairs and work on internal components must be carried out by qualified personnel. Work with secure footing, adequate room to move and a securely supported or secured workpiece. These operating instructions must accompany the rammer when it is passed on, including on loan or hire. The operator must be instructed in safe use.

Check the material, coatings, service lines and ambient conditions before starting. Work inside vessels or confined spaces requires workplace authorisation, safe ventilation and the necessary protective measures. Do not work on vessels that are closed, pressurised or have not been safely cleaned.

## Avoid foreseeable misuse

- Do not operate without a suitable, securely seated rammer foot or without contact with the material to be compacted.
- Do not use as a lever or striking tool. Do not bend the piston rod through lateral loading or forced removal.
- Do not lock the operating lever or remove or modify safety parts. Do not point at people or animals.
- Do not use in potentially explosive atmospheres or on live electrical components. Electrical insulation and suitability for potentially explosive areas have not been established.

**These instructions apply exclusively to the five articles named on the cover. Observe length, piston shape and spare-part allocation.**

# 2 Mechanical safety

WARNING indicates a hazard that can result in serious or fatal injury. CAUTION indicates a hazard that can result in minor or moderate injury. NOTICE concerns possible property damage.

### ⚠WARNING Compressed air and unintended starting

Unintended movements and whipping hoses can cause serious injury. A pressurised hose can whip if disconnected or torn off. Before every tool change, cleaning or maintenance, shut off the air supply and disconnect the rammer from the compressed-air supply. No separate venting step is required at the tool. Follow the instructions for the hose coupling when disconnecting. The complete procedure is in Chapter 5.

- Before use, check hoses, couplings and connections for damage and secure fitting. Have defective connections replaced.
- Use only suitable compressed-air components rated for the supply pressure. Maximum 6 bar at the tool. Do not use other compressed gases.
- Never direct compressed air at the body. Do not grab a whipping hose; shut off the supply at a safely accessible point.
- Protect hoses from being run over, sharp edges and hot surfaces; route them to avoid trip hazards and pulling forces on the rammer.

### ⚠WARNING Loose rammer foot and thrown material

A damaged or unsuitable rammer foot can come loose. Only use feet suitable for MK 2 and check secure seating before every use. Do not operate a defective tool.

Wear eye protection with side shields; also wear face protection where the task requires it. Screen the work area against flying fragments and keep bystanders away. A face shield does not replace the required eye protection. Keep body parts out of the direction of impact and ejection.

### ⚠WARNING Crushing and loss of control

Uncontrolled movements can cause serious crushing and impact injuries. Place the rammer foot on the material before actuating. One hand holds the tool at the operating lever area; the second may support the lower housing. Keep hands and feet away from the rammer foot and moving piston rod. Do not operate without a foot or with unrestricted reciprocating motion.

Wear safety footwear and suitable protective clothing. Keep grip areas clean and free of oil. Stand securely and watch for changes in the ground. Do not reach under the foot or between moving parts.

Do not continue using rammer feet with cracks, deformation or a damaged taper. Keep the socket and working surface clean. Protect the piston rod from impacts and lateral loading.

# 3 Health and working environment

**⚠WARNING Dust and harmful substances**

Inhaling hazardous dust or fumes can cause serious respiratory disease. Ramming and compacting can raise dust. Check the material and existing contamination before starting work. If substances are unknown or hazardous, stop work until clarified.

Reduce release at its source wherever possible, using suitable workplace extraction installed independently of the rammer. Direct exhaust air and dust away from the breathing zone. Avoid raising dust during cleaning; do not blow off with compressed air. Use respiratory protection selected through the risk assessment if technical measures are insufficient. Filter type and protection class depend on the substance present.

**⚠WARNING Noise**

High noise levels can permanently damage hearing. The rammer generates high noise. Wear suitable hearing protection and protect people nearby. Stop and have the tool checked if its noise changes noticeably. Use screening, work organisation and limits on exposure time to reduce noise exposure.

### ⚠WARNING Hand-arm vibration

Vibration can damage nerves, blood vessels and joints. Hold the rammer with only the force needed for safe control. Remedy wear promptly. Limit exposure according to the workplace risk assessment and alternate tasks. Vibration damping does not replace these protective measures. Do not continue working if the damping is damaged or blocked.

Plan task changes and recovery periods according to the workplace risk assessment. Keep hands warm and dry. If you experience tingling, numbness, pain or unusual discolouration of the fingers, stop work, inform the responsible person and seek medical assessment. Emission values alone cannot be used to determine a safe daily operating time.

### ⚠WARNING Hot and cold surfaces

Hot tools and workpieces, and handle areas that have become very cold, can cause burns or cold injury. Allow hot parts to cool before touching them and wear suitable gloves.

The inserted tool and material being worked on can become hot; expanding compressed air can cool areas of the handle. Allow parts to cool before changing the tool and use suitable gloves. Select gloves according to the cutting, heat and cold hazards; they must allow a secure grip. Gloves are not a substitute for vibration reduction.

### ⚠WARNING Electric shock, fire and explosion

Damaged electricity or gas lines can cause serious or fatal injury. Identify vulnerable service lines before starting work and have them secured or isolated. Take account of ignition sources and flammable materials in the work area.

Before compacting, locate electrical, gas, water and other services. Have endangered services secured or isolated. Do not work on live parts or in potentially explosive atmospheres. The rammer is not electrically insulated.

## Residual risks

Even with proper use, risks remain from thrown material, noise, vibration, dust, hot or cold surfaces and uncontrolled movements. Adapt protective measures to the material, ground and working environment.

# 4 Technical data and emissions

| Characteristic | Value |
|---|---|
| Maximum operating pressure | 6 bar |
| Weight | Depending on version; see following page |
| Length | Depending on version; see following page |
| Air consumption | 0.64 Nm³/min |
| Air connection | G 3/8 female |
| Impact rate | 1,080 $min^{-1}$ |
| Piston stroke | 126 mm |
| Piston diameter | 26 mm |
| Piston weight | 765 g |

## Controls

- Operating lever on the hood: starts reciprocating motion; release to stop.
- Air connection on the hood: G 3/8 female for a supply regulated to a maximum of 6 bar.
- Piston rod with MK 2 socket: carries the suitable rammer foot. Do not touch moving parts.
- Swivelling air connection: connect the hose to the free leg of elbow (25). Check connection and pivot pin for secure seating and leaks.

## Vibration and noise emission values

| Measured quantity | Value | Measurement method and uncertainty |
|---|---|---|
| Vibration value | Depending on version; see following page | DIN EN ISO 28927-6; measurement in three coordinate directions (X, Y, Z) |
| Sound pressure level | 100.0 dB(A) | DIN EN ISO 15744; measurement uncertainty ±3.0 dB(A) |

# Technical differences between versions

| Version | Item | Weight kg | Length retracted / extended mm | Vibration m/s² |
|---|---|---|---|---|
| AP.1G | 052-60081 | 7.3 | 935 / 1,060.5 | 13.68 |
| AP.2G | 052-60082 | 7.2 | 865 / 990.5 | 13.85 |
| AR.1G | 052-60091 | 7.3 | 935 / 1,061 | 13.85 |
| AR.2G | 052-60092 | 7.1 | 865 / 990.5 | 14.04 |
| AR.3G | 052-60093 | 7.8 | 1,208 / 1,334 | 12.85 |

All 5 versions have an MK 2 mounting taper and a 13 mm hose bore, are supplied without a rammer foot and have vibration damping but no noise damping. For sound pressure level and measurement methods, see the preceding page.

# Notes on measured values and workplace exposure

The stated emission values were measured under specified laboratory conditions. Comparison with other tools requires the same measurement standards and comparable test conditions. The stated measurement uncertainties must be taken into account.

These measured values do not describe actual exposure at every workplace and are not sufficient on their own for a workplace risk assessment. Exposure during work may be higher. It depends, among other factors, on working methods, the inserted tool, workpiece, rammer condition, workplace design and exposure duration. Individual physical condition also affects the health risk.

The employer must assess the actual conditions of use and exposure times and specify suitable protective measures. Workplace measurements are required if the available data are insufficient. The stated measured values cannot be used to derive a universally safe daily operating time.

Prolonged or high exposure to hand-arm vibration can damage blood vessels, nerves and joints. Follow the protective measures in Chapter 3. If you experience tingling, numbness, pain or unusual discolouration of the fingers, stop work, inform the responsible person and seek medical assessment.

Frölich & Klüpfel recommends involving the occupational physician in the assessment and ensuring the necessary occupational health surveillance. Symptoms should be identified early and work procedures and protective measures adjusted accordingly.

# 5 Connection and safe shutdown

## Before each start-up

1. Check the rammer, operating lever, hood, piston rod, rammer foot, socket and hoses for completeness, damage and secure attachment. Do not start if defective.
2. Check the material, ground and surroundings. Keep the danger area clear, provide dust control and put on personal protective equipment.
3. Check that the suitable MK 2 rammer foot is securely seated on the tapered socket. The piston rod and foot must be undamaged.
4. Ensure secure footing. Hold the rammer with one hand at the operating area with the operating lever. If necessary, support the lower housing with the second hand. Place the foot on the material before actuating.

## Connection

### ⚠WARNING Unintended starting and whipping hose

When air is admitted, unintended starting or a loose hose connection can cause serious injury. Do not actuate or lock the control. Check inserted-tool seating and connections before admitting air; secure the rammer and hose. Admit air slowly and shut it off immediately if anything abnormal occurs.

1. Shut off the supply. Prepare the hose and coupling for safe connection according to their manufacturers’ instructions.
2. Attach a short, suitable hose to the rammer with a threaded connection, optionally via a threaded Variacor; fit the quick-release coupling only at the hose end away from the tool. Do not actuate the operating lever. Route the hose so the rammer can be guided freely.
3. Supply clean, dry, lubricated compressed air; check the filter and air preparation unit. The operator must limit pressure at the tool to a maximum of 6 bar using an upstream pressure regulator. The rammer has no built-in pressure limiter. A flow control does not replace a pressure regulator.
4. Hold the rammer securely, point the tool away from people and admit air slowly. Watch for leaks or unexpected movement. Shut off again immediately if anything abnormal occurs.

# Safe shutdown and disconnection

**⚠WARNING Pressurised hose connection**

Disconnecting a pressurised connection can cause the hose to whip and inflict serious injury. Shut off the air supply and secure it against reopening. Secure the hose and coupling and disconnect them according to the coupling manufacturer’s instructions. Do not loosen a pressurised threaded connection.

1. Release the operating lever and wait for all movement to stop. Secure the rammer and inserted tool against falling or uncontrolled movement.
2. Close the air supply at the designated shut-off device and secure it against unintended reopening.
3. Secure the hose and coupling against uncontrolled movement. Follow the disconnection sequence and protective measures specified by the coupling manufacturer; the supply line may be pressurised independently of the tool.
4. Disconnect the coupling according to its instructions and completely disconnect the rammer from the compressed-air supply. Prevent unintended reconnection.

**The tool does not require separate venting. This does not replace safe disconnection of the hose connection. Do not loosen a pressurised threaded connection.**

**Connection sequence: rammer → short hose with threaded connection → quick-release coupling. No quick-release coupling directly on the rammer. Air connection G 3/8 female, hose bore 13 mm. Follow the connection-component manufacturer's instructions.**

# 6 Changing the rammer foot

**⚠WARNING Unintended starting during foot replacement**

Unintended reciprocating motion can cause serious crushing injuries. Completely disconnect the rammer from the compressed-air supply and prevent reconnection. Do not actuate the operating lever. Secure the rammer foot against falling and allow hot parts to cool. Do not touch the moving piston rod or reach between the foot and housing.

## Selecting a suitable rammer foot

Use rammer feet with a matching MK 2 tapered socket. Do not rework the socket to fit unsuitable feet.

Check the foot's working surface and tapered socket and the piston rod. Do not use parts with cracks, deformation, heavy wear or damaged contact surfaces. A damaged taper can prevent secure seating.

## Preparation and removal

Shut down the rammer safely according to Chapter 5, disconnect it completely from the compressed-air supply and prevent reconnection. Put the tool down securely and prevent it from falling. Allow hot parts to cool. Secure the rammer foot against falling. Insert a drift wedge into the hole provided in the foot and drive it in so that the foot is pressed down off the piston-rod taper. Do not bend the piston rod or apply lateral levering force. Remove the released foot and drift wedge.

# Fitting and checking the rammer foot

1. Select a suitable, undamaged rammer foot for the MK 2 socket.
2. Clean dirt from the foot and socket contact surfaces and inspect for damage.
3. Fit the suitable rammer foot onto the piston-rod taper. Do not force unsuitable feet into place.
4. Place the rammer upright with the fitted foot resting on the surface: steel rammer feet on sand; rubber rammer feet may also rest on firm ground. Keep hands and feet out of the stroke area. Guide the tool securely at the designated operating area.
5. Reconnect compressed air according to Chapter 5. With the foot resting on the material, apply a few light strokes to seat the taper. Do not actuate with the foot raised or the piston rod striking freely.
6. Release the control and wait for all movement to stop. Completely disconnect the rammer from the air supply again. Check that the foot is securely seated. Do not continue operating if the seating is loose, parts are damaged or the fit is uncertain; have the cause professionally investigated.

## Restarting

Only reconnect according to Chapter 5 after the full check. For the test run, place the rammer foot on suitable material and actuate briefly. Do not test with the piston rod striking freely. Stop and disconnect immediately if the foot is loose, noise is unusual or operation is erratic.

The rammer is supplied without a rammer foot. A suitable, securely seated foot is essential for operation. Do not strike the exposed piston rod or actuate the rammer without a foot.

# 7 Operation and handling malfunctions

## Ramming and compacting

**⚠WARNING Crushing and loose rammer foot**

The moving piston rod and a loose rammer foot can cause serious crushing or impact injuries. Only work with a suitable, securely attached foot. Keep hands and feet out of the stroke area, secure the work area and place the foot on suitable material before actuating. No idle strokes.

1. Fit a suitable rammer foot and check secure seating. Prepare the ground and work area. Place the foot on the material to be worked; keep hands and feet out of the stroke area.
2. Hold and guide with one hand at the operating lever area. If necessary, support the lower housing with the second hand. Do not touch the moving piston rod or rammer foot. Keep exhaust openings clear.
3. Actuate the operating lever and work with secure contact with the material. Avoid unnecessarily high grip forces, lateral loading and idle strokes.
4. Release the operating lever and wait for all movement to stop before lifting the foot or changing working position.

## Interrupting work

Release the operating lever. Disconnect according to Chapter 5 before putting the tool down or leaving it. Put it down securely; do not touch hot parts. If air fails, release the lever and shut off the supply: with the lever held, the rammer can start when pressure returns. Check secure foot seating before resuming.

## If the rammer foot becomes blocked

**⚠WARNING Sudden release of forces**

When a blockage is released, the rammer, foot or worked material can move suddenly and cause serious injury. Release the control, secure the tool and material, and shut off and disconnect the air supply according to Chapter 5. Release the blockage only in a controlled manner; consult qualified personnel if stored forces are unclear.

1. Release the operating lever immediately. Do not keep ramming, lever sideways or pull on the hose.
2. Secure the tool and material against uncontrolled movement. Isolate and disconnect the supply according to Chapter 5.
3. Have an assessment made of how the jam can be removed without an uncontrolled release of forces. Do not release clamped or stressed parts in an uncontrolled manner. If safe release is not possible, consult qualified personnel.
4. After releasing the blockage, check the foot, tapered socket and piston rod for damage. Have damaged parts replaced before the next use.

## In the event of a dangerous malfunction

**⚠WARNING Uncontrolled movement and loose parts**

A rammer that keeps running, a loose inserted tool or a whipping hose can cause serious injury. Stop work immediately. If the tool does not stop, close the air supply at a safely accessible shut-off point. Keep clear, do not reach into moving parts and do not attempt to restart until the fault has been clarified.

Stop immediately if noise is unusual, vibration increases, the inserted tool is loose, there is leakage or the operating lever does not return. If the rammer does not stop when released, close the air supply at the safely accessible shut-off point. Stay outside the danger area and do not touch moving parts.

Once stopped, disconnect the rammer from the compressed-air supply and mark it to prevent reuse. Have the cause rectified by qualified personnel; do not attempt to restart until the fault has been clarified. If a hose whips, keep clear and shut off the air supply.

## After work

Check the disconnected rammer for damage, clean and lubricate according to Chapter 8. Report defects. Allow the foot to cool; store the tool and accessories securely.

# 8 Care and maintenance

**⚠WARNING Starting during maintenance**

Unexpected starting during maintenance can cause serious impact and crushing injuries. Shut off and disconnect as described in Chapter 5 before any work. Only qualified personnel may work on internal components. Item numbers refer to Chapters 9 and 10.

## Checks and care by instructed persons

| Time or occasion | Check and action |
|---|---|
| Before every use and after changing the tool | Check the rammer foot and socket, piston rod, operating lever, housing and connections. Do not start if defective. |
| After use and when dirty | Clean external surfaces gently. Do not push dirt into the holder or air connection; do not blow off dust. |
| During operation | Ensure lubrication and correct operation of the air preparation unit; watch for leakage and changes in sound, vibration and performance. |
| After damage, jamming or repair | Inspection by qualified personnel and documented release before returning to service. |

The rammer requires lubricated compressed air. Use suitable resin-free and acid-free pneumatic lubricating oil. Without a line lubricator, add oil at the air inlet after about two to three operating hours with the supply disconnected, not into the hose. Suitable F+K pneumatic lubricating oil: 307-1654. The 10 ml stated on the Liquid bottle is the container size, not the dosage. Avoid dry running and over-oiling.

After about 120 operating hours or at least every six months, have qualified personnel dismantle, clean and inspect the tool for wear. In particular, check the guide, packing, piston rod, tubular valve, operating lever, valve, air connections and vibration-damping components. Perform a function test after assembly.

# Work by qualified personnel

**⚠WARNING Unintended starting during dismantling**

Unintended starting can cause serious impact and crushing injuries. Before opening the rammer, completely disconnect the compressed-air supply according to Chapter 5 and prevent reconnection. Secure components against falling; internal work must only be carried out by qualified personnel.

**⚠WARNING Preloaded components and pinch points**

Applying preload or releasing it uncontrollably can cause sudden component movement and serious injury. Secure spring-loaded parts before loosening them. Use suitable holding or clamping fixtures, keep hands away from pinch points, and apply or release preload in a controlled manner.

1. Repairs may only be carried out by qualified personnel on the fully disconnected tool. Clamp lever valve (13) in soft protective jaws.
2. Loosen fitting (7), locknut (8) and nut (27). Remove control housing (9), tubular valve (10), control housing cover (11) and piston rod (2).
3. Secure spring-loaded parts and release their tension in a controlled manner; do not release them uncontrollably. Clean, inspect and reassemble in reverse order, lightly oiled.
4. Refer to the variant drawing.
5. Packing (6) prevents dirt ingress and supports piston-rod guidance. Loosen locknut (8) and adjust fitting (7) only enough for the piston rod to move freely.
6. Retighten the locknut. Replace stuffing box (4) and packing (6) if worn.
7. Use piston rod (2), guide bush (3), stuffing box (4), cylinder (1) and nut (27) to match the AP-G or AR-G version. Pivot pin (20) requires two O-rings 307-2154 (21).
8. Check the springs and guide of the vibration-damping unit for damage. We recommend replacing wear parts with article numbers beginning 307- every twelve months, or sooner if worn.

## Checks after repair

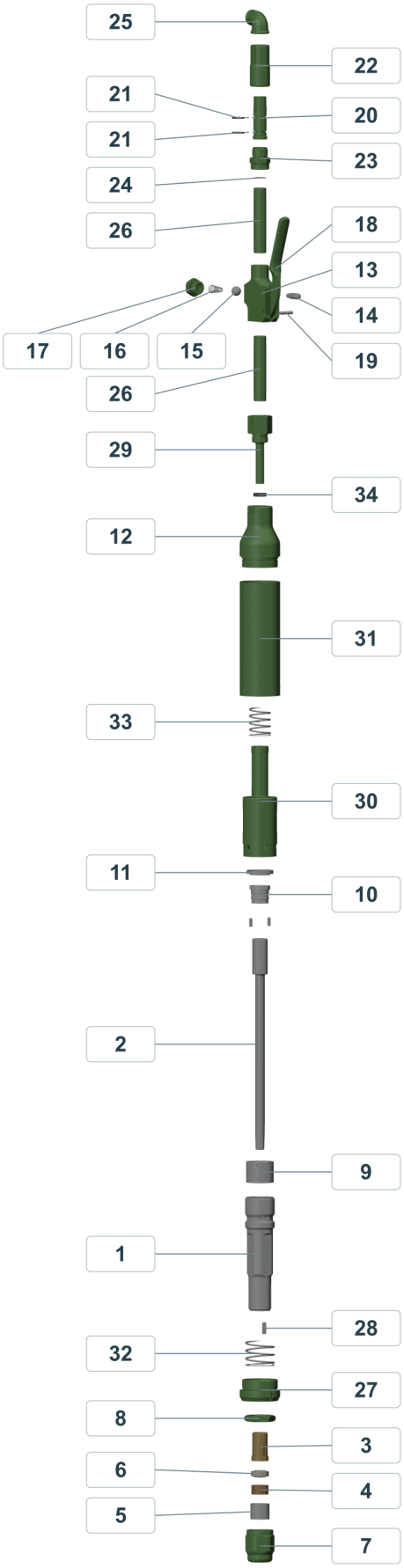
**⚠WARNING Incorrect assembly and loose rammer foot during testing**

Incorrectly assembled parts, a sticking piston rod or loose rammer foot can cause uncontrolled movements and serious injury. Before connecting, check completeness, assembly and foot seating. Only test with a securely fitted foot on suitable material; keep hands and feet out of the stroke area. No idle strokes.

1. After repair, check completeness, assembly, free piston-rod movement, secure foot seating and leak-tightness. Test with a fitted rammer foot on suitable material.
2. The rammer must stop automatically when the operating lever is released. No idle strokes.
3. Record the test results, person performing the test and release for use.

# 9 Exploded views ST 1 AP.1G

ST 1 AP.1G – article 052-60081. Dedicated exploded view for part identification; not a dimensioned drawing. Blue part numbers open the shop.



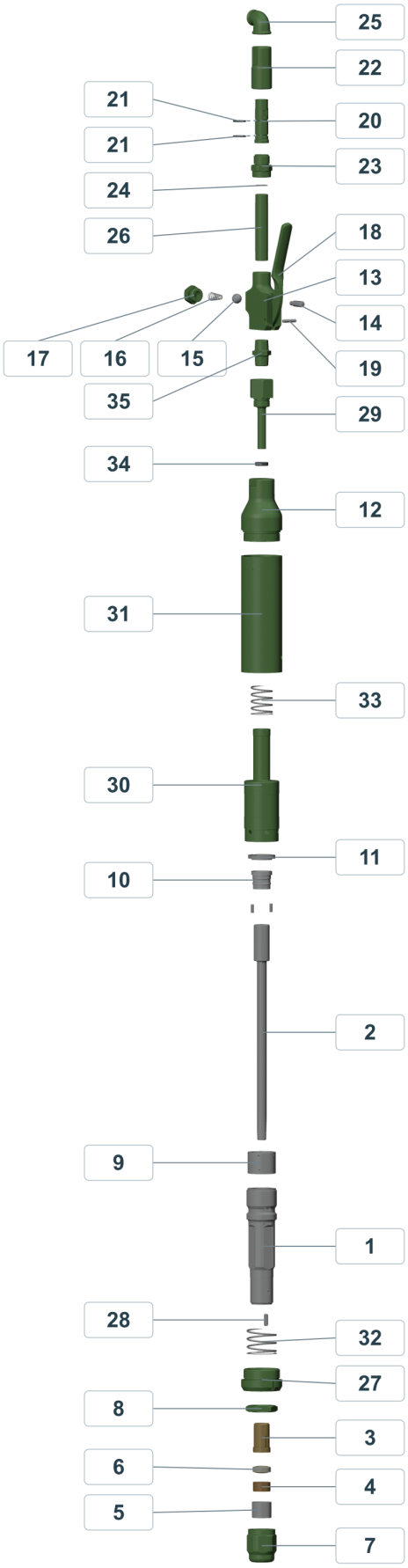

## 10 Spare parts

| Item | Qty. | Description | Part number |
|---|---|---|---|
| 1 | 1 | Cylinder | 052-2920 |
| 2 | 1 | Piston rod | 052-2213 |
| 3 | 1 | Guide bushing | 052-2263 |
| 4 | 1 | Stuffing box | 052-2253 |
| 5 | 1 | Tube | 052-2251 |
| 6 | 1 | Packing | 052-2268 |
| 7 | 1 | Threaded fitting | 052-2250 |
| 8 | 1 | Locknut | 052-2208 |
| 9 | 1 | Valve housing | 052-1364 |
| 10 | 1 | Valve sleeve | 052-1365 |
| 11 | 1 | Valve housing cover | 052-1312 |
| 12 | 1 | Hood | 052-2915 |
| 13 | 1 | Complete lever valve | 052-0467 |
| 14 | 1 | Valve pin | 052-7427 |
| 15 | 1 | Ball | 307-2088 |
| 16 | 1 | Compression spring | 304-7044 |
| 17 | 1 | Plug | 306-0267 |
| 18 | 1 | Lever | 052-0429 |
| 19 | 1 | Pin | 304-3442 |
| 20 | 1 | Pivot pin | 052-2254 |
| 21 | 2 | O-ring | 307-2154 |
| 22 | 1 | Pin guide | 052-2255 |
| 23 | 1 | Nipple | 052-0417 |
| 24 | 1 | Strainer | 304-5066 |
| 25 | 1 | Elbow | 304-6434 |
| 26 | 2 | Upper support tube | 052-0470 |
| 27 | 1 | Nut | 052-2921 |
| 28 | 1 | Parallel key | 304-4498 |
| 29 | 1 | Tube section | 052-2918 |
| 30 | 1 | Hood | 052-2914 |
| 31 | 1 | Tube | 052-2916 |
| 32 | 1 | Spring | 304-7538 |
| 33 | 1 | Spring | 304-7539 |
| 34 | 1 | U-cup seal | 307-2446 |

**Variants and spare-parts orders**
Polygonal piston rod (2) with feather key (28), MK 2 mounting taper. Two O-rings (21) on pivot pin (20). Lever valve (13, 052-0467) is also available complete. Cylinders and nuts differ between AP-G and AR-G; order only parts for the version shown. Supplied without a rammer foot. When ordering, state ST 1 AP.1G, article 052-60081, and the spare-part number.

# 9 Exploded views ST 1 AP.2G

ST 1 AP.2G – article 052-60082



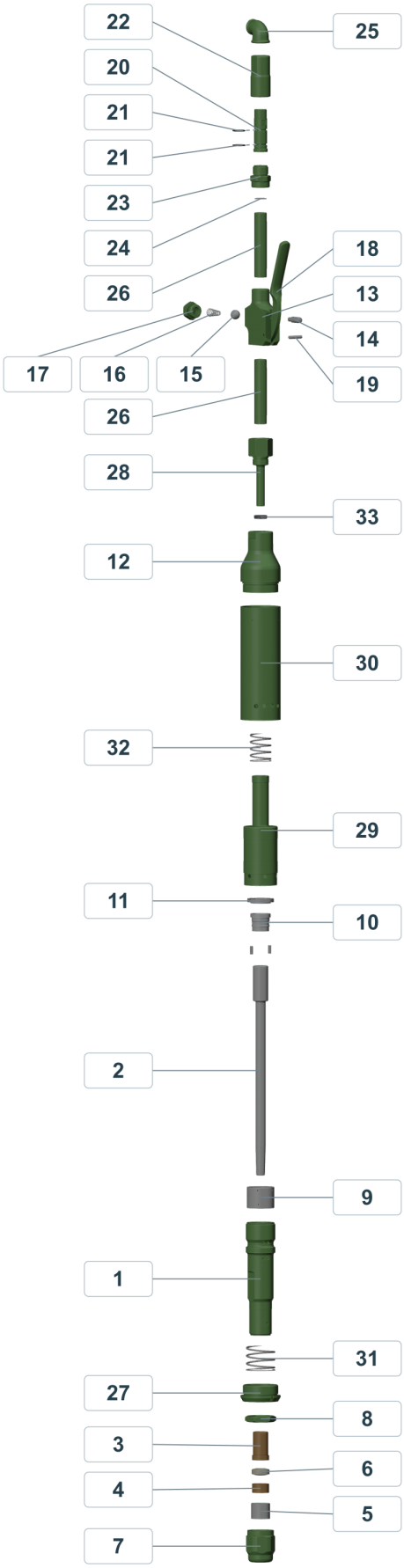

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| 9 | 1 | Valve housing | 052-1364 |
| 10 | 1 | Valve sleeve | 052-1365 |
| 11 | 1 | Valve housing cover | 052-1312 |
| 12 | 1 | Hood | 052-2915 |
| 13 | 1 | Complete lever valve | 052-0467 |
| 14 | 1 | Valve pin | 052-7427 |
| 15 | 1 | Ball | 307-2088 |
| 16 | 1 | Compression spring | 304-7044 |
| 17 | 1 | Plug | 306-0267 |
| 18 | 1 | Lever | 052-0429 |
| 19 | 1 | Pin | 304-3442 |
| 20 | 1 | Pivot pin | 052-2254 |
| 21 | 2 | O-ring | 307-2154 |
| 22 | 1 | Pin guide | 052-2255 |
| 23 | 1 | Nipple | 052-0417 |
| 24 | 1 | Strainer | 304-5066 |
| 25 | 1 | Elbow | 304-6434 |
| 26 | 1 | Upper support tube | 052-0470 |
| 27 | 1 | Nut | 052-2921 |
| 28 | 1 | Parallel key | 304-4498 |
| 29 | 1 | Tube section | 052-2918 |
| 30 | 1 | Hood | 052-2914 |
| 31 | 1 | Tube | 052-2916 |
| 32 | 1 | Spring | 304-7538 |
| 33 | 1 | Spring | 304-7539 |
| 34 | 1 | U-cup seal | 307-2446 |
| 35 | 1 | Nipple | 306-0427 |

**Variants and spare-parts orders**
Polygonal piston rod (2) with feather key (28), MK 2 mounting taper. Two O-rings (21) on pivot pin (20). Lever valve (13, 052-0467) is also available complete. Cylinders and nuts differ between AP-G and AR-G; order only parts for the version shown. Supplied without a rammer foot. When ordering, state ST 1 AP.2G, article 052-60082, and the spare-part number.

# 9 Exploded views ST 1 AR.1G

ST 1 AR.1G – article 052-60091



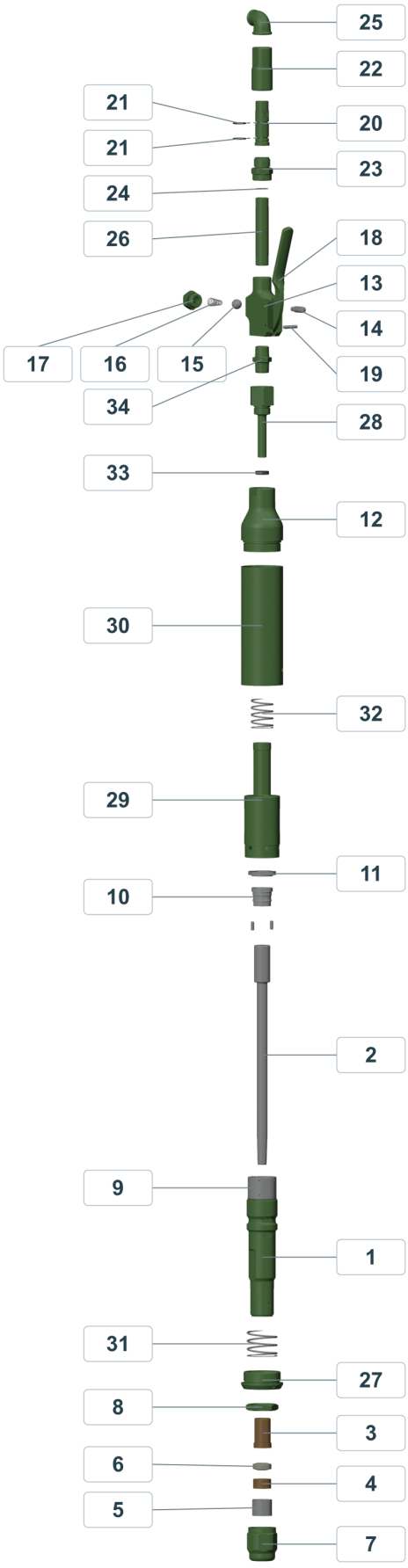

## 10 Spare parts

| Item | Qty. | Description | Part number |
|---|---|---|---|
| 1 | 1 | Cylinder | 052-2211 |
| 2 | 1 | Piston rod | 052-2327 |
| 3 | 1 | Guide bushing | 052-2262 |
| 4 | 1 | Stuffing box | 052-2252 |
| 5 | 1 | Tube | 052-2251 |
| 6 | 1 | Packing | 052-2268 |
| 7 | 1 | Threaded fitting | 052-2250 |
| 8 | 1 | Locknut | 052-2208 |
| 9 | 1 | Valve housing | 052-1364 |
| 10 | 1 | Valve sleeve | 052-1365 |
| 11 | 1 | Valve housing cover | 052-1312 |
| 12 | 1 | Hood | 052-2915 |
| 13 | 1 | Complete lever valve | 052-0467 |
| 14 | 1 | Valve pin | 052-7427 |
| 15 | 1 | Ball | 307-2088 |
| 16 | 1 | Compression spring | 304-7044 |
| 17 | 1 | Plug | 306-0267 |
| 18 | 1 | Lever | 052-0429 |
| 19 | 1 | Pin | 304-3442 |
| 20 | 1 | Pivot pin | 052-2254 |
| 21 | 2 | O-ring | 307-2154 |
| 22 | 1 | Pin guide | 052-2255 |
| 23 | 1 | Nipple | 052-0417 |
| 24 | 1 | Strainer | 304-5066 |
| 25 | 1 | Elbow | 304-6434 |
| 26 | 2 | Upper support tube | 052-0470 |
| 27 | 1 | Nut | 052-2922 |
| 28 | 1 | Tube section | 052-2918 |
| 29 | 1 | Hood | 052-2914 |
| 30 | 1 | Tube | 052-2916 |
| 31 | 1 | Spring | 304-7538 |
| 32 | 1 | Spring | 304-7539 |
| 33 | 1 | U-cup seal | 307-2446 |

**Variants and spare-parts orders**
Round piston rod (2), MK 2 mounting taper. Two O-rings (21) on pivot pin (20). Lever valve (13, 052-0467) is also available complete. Cylinders and nuts differ between AP-G and AR-G; order only parts for the version shown. Supplied without a rammer foot. When ordering, state ST 1 AR.1G, article 052-60091, and the spare-part number.

# 9 Exploded views ST 1 AR.2G

ST 1 AR.2G – article 052-60092



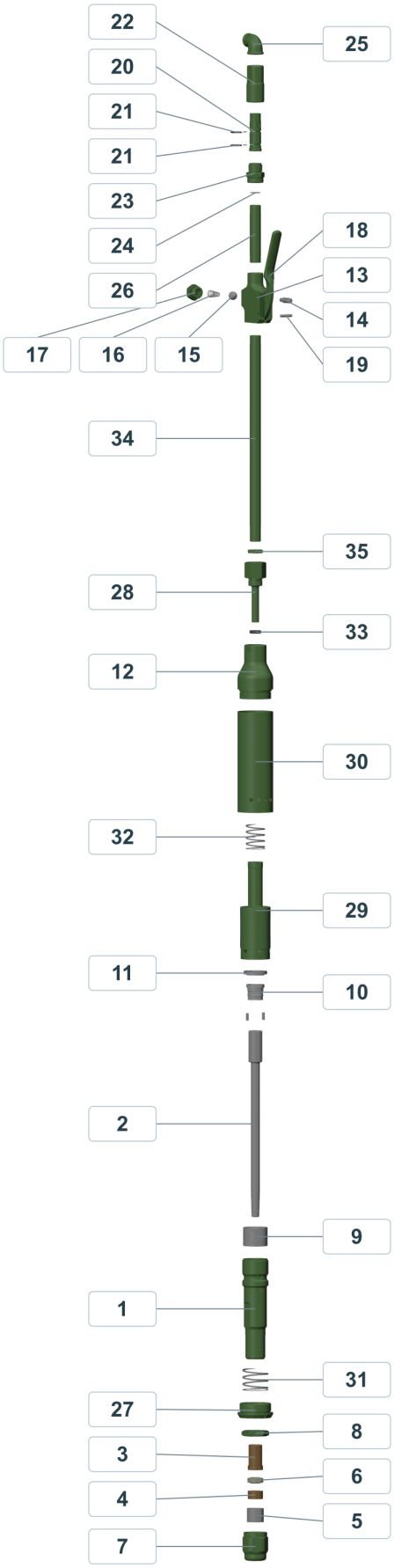

## 10 Spare parts

| Item | Qty. | Description | Part number |
|---|---|---|---|
| 1 | 1 | Cylinder | 052-2211 |
| 2 | 1 | Piston rod | 052-2327 |
| 3 | 1 | Guide bushing | 052-2262 |
| 4 | 1 | Stuffing box | 052-2252 |
| 5 | 1 | Tube | 052-2251 |
| 6 | 1 | Packing | 052-2268 |
| 7 | 1 | Threaded fitting | 052-2250 |
| 8 | 1 | Locknut | 052-2208 |
| 9 | 1 | Valve housing | 052-1364 |
| 10 | 1 | Valve sleeve | 052-1365 |
| 11 | 1 | Valve housing cover | 052-1312 |
| 12 | 1 | Hood | 052-2915 |
| 13 | 1 | Complete lever valve | 052-0467 |
| 14 | 1 | Valve pin | 052-7427 |
| 15 | 1 | Ball | 307-2088 |
| 16 | 1 | Compression spring | 304-7044 |
| 17 | 1 | Plug | 306-0267 |
| 18 | 1 | Lever | 052-0429 |
| 19 | 1 | Pin | 304-3442 |
| 20 | 1 | Pivot pin | 052-2254 |
| 21 | 2 | O-ring | 307-2154 |
| 22 | 1 | Pin guide | 052-2255 |
| 23 | 1 | Nipple | 052-0417 |
| 24 | 1 | Strainer | 304-5066 |
| 25 | 1 | Elbow | 304-6434 |
| 26 | 1 | Upper support tube | 052-0470 |
| 27 | 1 | Nut | 052-2922 |
| 28 | 1 | Tube section | 052-2918 |
| 29 | 1 | Hood | 052-2914 |
| 30 | 1 | Tube | 052-2916 |
| 31 | 1 | Spring | 304-7538 |
| 32 | 1 | Spring | 304-7539 |
| 33 | 1 | U-cup seal | 307-2446 |
| 34 | 1 | Nipple | 306-0427 |

**Variants and spare-parts orders**
Round piston rod (2), MK 2 mounting taper. Two O-rings (21) on pivot pin (20). Lever valve (13, 052-0467) is also available complete. Cylinders and nuts differ between AP-G and AR-G; order only parts for the version shown. Supplied without a rammer foot. When ordering, state ST 1 AR.2G, article 052-60092, and the spare-part number.

# 9 Exploded views ST 1 AR.3G

ST 1 AR.3G – article 052-60093




## 10 Spare parts

| Item | Qty. | Description | Part number |
|---|---|---|---|
| 1 | 1 | Cylinder | 052-2211 |
| 2 | 1 | Piston rod | 052-2327 |
| 3 | 1 | Guide bushing | 052-2262 |
| 4 | 1 | Stuffing box | 052-2252 |
| 5 | 1 | Tube | 052-2251 |
| 6 | 1 | Packing | 052-2268 |
| 7 | 1 | Threaded fitting | 052-2250 |
| 8 | 1 | Locknut | 052-2208 |
| 9 | 1 | Valve housing | 052-1364 |
| 10 | 1 | Valve sleeve | 052-1365 |
| 11 | 1 | Valve housing cover | 052-1312 |
| 12 | 1 | Hood | 052-2915 |
| 13 | 1 | Complete lever valve | 052-0467 |
| 14 | 1 | Valve pin | 052-7427 |
| 15 | 1 | Ball | 307-2088 |
| 16 | 1 | Compression spring | 304-7044 |
| 17 | 1 | Plug | 306-0267 |
| 18 | 1 | Lever | 052-0429 |
| 19 | 1 | Pin | 304-3442 |
| 20 | 1 | Pivot pin | 052-2254 |
| 21 | 2 | O-ring | 307-2154 |
| 22 | 1 | Pin guide | 052-2255 |
| 23 | 1 | Nipple | 052-0417 |
| 24 | 1 | Strainer | 304-5066 |
| 25 | 1 | Elbow | 304-6434 |
| 26 | 1 | Upper support tube | 052-0470 |
| 27 | 1 | Nut | 052-2922 |
| 28 | 1 | Tube section | 052-2918 |
| 29 | 1 | Hood | 052-2914 |
| 30 | 1 | Tube | 052-2916 |
| 31 | 1 | Spring | 304-7538 |
| 32 | 1 | Spring | 304-7539 |
| 33 | 1 | U-cup seal | 307-2446 |
| 34 | 1 | Lower support tube | 052-0445 |
| 35 | 1 | Nut | 304-7348 |

**Variants and spare-parts orders**
Round piston rod (2), MK 2 mounting taper. Two O-rings (21) on pivot pin (20). Lever valve (13, 052-0467) is also available complete. Cylinders and nuts differ between AP-G and AR-G; order only parts for the version shown. Supplied without a rammer foot. When ordering, state ST 1 AR.3G, article 052-60093, and the spare-part number.

# 11 Troubleshooting, storage and disposal

**⚠WARNING Unintended starting during troubleshooting**

With compressed air connected, unexpected movement or a whipping hose can cause serious injury. Before inspection, stop, shut off and disconnect completely as described in Chapter 5; secure against reconnection. Do not attempt to start while the fault remains unexplained. Only qualified personnel may inspect and repair internal components.

The following table helps identify faults with the tool stopped and disconnected.

| Fault | Possible cause | Action |
|---|---|---|
| Does not operate | No air supply; contamination or wear at valve, tubular valve or piston rod | Inspection by qualified personnel; have the tool cleaned, lubricated or repaired. |
| Does not operate after assembly | Incorrect assembly, packing adjusted too tightly or defective valve spring | Have qualified personnel check assembly and the spring. |
| Irregular operation | Valve sleeve mechanism or valve dirty or worn; excessive lubrication | Stop; have qualified personnel inspect, clean or repair the tool. |
| Low impact performance | Insufficient air supply or dirty supply line | Check supply and supply line; do not raise pressure above 6 bar. Clean only after safely disconnecting the compressed-air supply. |
| Heavy leakage or stiff stroke | Worn or incorrectly adjusted packing; damage to the guide or piston rod | Have professionally checked and repaired. Do not tighten packing until it binds. |
| Does not stop or rammer foot loose | Fault at the valve or tapered connection | Shut off the air supply; do not continue using the tool; contact Service. |

## Transport and storage

Disconnect from the compressed-air supply before transport. Carry securely by the housing, never by the hose or moving parts. Secure the foot against falling or pack it separately. Secure the tool against slipping and falling.

Clean and lubricate before extended periods out of use. Store in a dry, clean place protected against unauthorised use; protect the air connection against dirt. Before using again, perform the checks in Chapter 5.

**⚠WARNING Health hazards from cleaning agents**

Cleaning agents can harm the skin, eyes and respiratory tract; flammable agents also present a fire hazard. Work only with the tool completely disconnected from the compressed-air supply. Observe material compatibility and the safety data sheet, provide adequate ventilation, keep ignition sources away and apply the specified protective measures.

Internal cleaning and preservation only by qualified personnel. Clean dismantled parts with suitable, material-compatible cleaning agents. Do not damage seals or plastic parts. Observe safety data sheets, ventilate well and keep ignition sources away. Lubricate again after cleaning.

## Decommissioning and disposal

Disconnect the tool from the compressed-air supply. Collect lubricant residues and contaminated cleaning agents and dispose of them according to the safety data sheet and local requirements; do not allow them to enter the ground or wastewater system. Have the tool professionally dismantled and send the materials for appropriate recycling.

# 12 Conformity and documents

The signed EC declaration of conformity for the specifically identified machine is enclosed separately on paper. These instructions do not replace that declaration.

## Associated EC declaration of conformity

Details of the specific machine and the signature are in the separately enclosed declaration.

The separately enclosed, signed declaration for the specifically identified machine is authoritative.

| Field | Details |
|---|---|
| Manufacturer | „F. u. K.“ Frölich & Klüpfel Drucklufttechnik GmbH & Co. KG, Wernerstr. 32, 42285 Wuppertal |
| Product covered by these instructions | Pneumatic rammers ST 1 AP.1G, AP.2G, AR.1G, AR.2G, AR.3G; articles 052-60081 / 052-60082 / 052-60091 / 052-60092 / 052-60093 |
| Directive | 2006/42/EC |
| Applied standards | DIN EN ISO 12100:2011-03 with Corrigendum 1:2013-08; DIN EN ISO 11148-4:2013-05 |
| Signatory | M. Aschhoff, Managing Director |
| Person authorised to compile the technical file | M. Aschhoff, Managing Director<br>Frölich & Klüpfel Drucklufttechnik GmbH & Co. KG<br>Wernerstr. 32, 42285 Wuppertal |
| Individual machine details | Type, item number, serial number and year of manufacture as stated in the enclosed paper declaration |

Place of issue: Wuppertal. The date of issue, specific machine details and signature are stated in the separately enclosed EC declaration of conformity.

## Document version and enquiries

Identification: BA ST1 G EN D11 · 16.10.2026. For enquiries, state tool type, article number and serial number if present. Agree spare parts, technical changes and other applications with the manufacturer's service department.

Keep these instructions and the declaration of conformity with the tool and pass the documents on with it.