

User's Manual

Master



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RIONED has the right to change parts at any time without any prior or direct warning to the client. Also, the contents of this manual can be changed without any prior warning.

This manual is to be used only for this machine.

For extra information on adjustments, maintenance and repair, please contact the technical department of your dealer.

Foreword

This user's manual is a manual for the professional user.

This user's manual has the purpose to control the machine in a safety manner and must be saved with the machine.

The photos and drawings help you understand the text easier.

First the user's manual gives you an overview of the most important safety aspects. Then we explain how the machine is built up and the global working of the machine.

Chapter "Technical specifications" gives you information about the working characteristics, performance under normal use and construction specifications.

"Control" is the next chapter. This chapter explains how to use the machine systematically.

In the chapter "Maintenance", the user can do small maintenance on the machine.

Chapter "Trouble shooting" has the purpose to solve simple defects.

With the "Exploded views" you can order original spare parts, are also useful for mounting, and disassemble the machine.

Finally gives the chapter "Appendix" information about electrical and/or hydraulic connections.

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1 INTRODUCTION

RIONED wishes to thank you for your purchase of the RIONED drain and sewer-clearing machine. We recommend that you read this manual thoroughly and see that the machine is handled and maintained in the proper manner. If your machine should give trouble and need servicing, when you want to order parts, or if you have any questions, contact your RIONED dealer.

The machine is built by:

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Your machine is specifically designed to clean drain- and sewer pipes with a diameter from \varnothing 75 mm to \varnothing 250 mm by using specially manufactured cleaning springs with a diameter of \varnothing 20 mm diameter.

The machine may only be used by authorized personnel.

The machine can not be used in an explosive environment.

Fill the spring drum only with springs we describe in this manual.

In this manual you will find all necessary information concerning operations and maintaining your machine. If handled properly, your machine is guaranteed according the general delivery conditions.

1.1 Use

The main shaft is being driven by the electrical motor by means of a V-belt. On this axle the spring drum is mounted. The drum contains the spring which is to be lead into the drain or sewer opening. By means of the spring transporter and rotation direction the spring can be:

- A Fed out of the drum.
- B Fed into the drum.
- C Kept in place.

2 SECURITY

Be responsible for other people when you are working with this machine.

This manual contains instructions for fundamental conditions that must be followed by use and maintenance of this machine.

That is why it is necessary that authorised and qualified personnel must read the user's manual and the user's manual must always be available with the machine. Near the general regulations in this chapter, you must also follow the security regulations in the other chapters.

2.1 Instruction indications in this manual

The in this manual containing security instructions, which are dangerous if they are not obeyed, are marked with general security signs.



Security sign DIN 4844-W9.

2.2 Descriptions security measures

- Emergency stop
This machine is equipped with an emergency stop. By operating the emergency stop, the machine will stop immediately. Do not use this button for normal stopping. Only use it when dangerous situations occur. After use, remove the danger and pull the emergency stop in order to be able to start up again. Make sure the emergency stop can always be reached.
- Security covers
This machine is equipped with several security covers over parts that are rotating. It is forbidden to remove these security covers during operating this machine. You can only remove them if there is maintenance on the machine. Stop the machine and take the plug out of the wall socket.
- Spring guidance tube
The spring guidance tube protects you against the rotating spring. Now your clothes can not get clamped between the spring openings.

2.3 Personnel protection outfit

- Protection looking glasses
- Gloves (Recommended)
- Dust cover (Recommended)

2.4 Warnings

Never take the spring when turning.

Do not let the spring turn outside (swing of the spring).

Do not start the machine with switched in feed unit.

Take care of a stable disposition of the machine.

Never block the control lever, unless this is mentioned.

Do not wear cloth that hangs loose.

Please note safety instructions (*See Chapter 9.5 "Safety instructions" page: 35*).

Dust that arises when working on material containing asbestos or stonework containing crystalline silicic acid is harmful to the health. Please follow accident prevention regulations.

Do not pierce the motor housing as this could damage the double insulation (use adhesives).

Keep mains lead clear from working range of the machine. Always lead the cable away behind you.

Never touch the spring if it is rotating. Not even with auxiliaries or other tools.

Never let the spring rotate outside a sewer, drain or pipe.

Never start the machine with the spring pusher downwards.

Never touch the spring if it is rotating. Not even with auxiliaries or other tools.

Never let the spring rotate outside a sewer, drain or pipe.

Make sure the machine is stable during operation.

Do not let the machine operate without supervision.

2.5 Personnel qualification and education Personnel that use, maintain and inspect the machine must have the right qualifications for this job. Responsibility and authorisation of the personnel and the supervision on the personnel must be embedded. If the knowledge is not present, the user must provide for the necessarily education.

2.6 Danger that can occur if the security regulations aren't observed If the security regulations are not observed, danger can occur for personnel and for the environment. No amends are given if the regulations are not observed.

If the regulations are not observed, this can results in:

- Failure of important functions of the machine.
- Failure of prescribes methods for maintenance.
- Exposure of persons to dangers of electrical or mechanical failures

2.7 Working safely The in this manual named security prescriptions, the national prescriptions to prevent accidents and the internal labour, company and security prescriptions must be followed by the user.

2.8 Security regulations for the user and technical service

- Protections of moving parts (for example couplings) may not be removed if the machine is working.
- Leakage of dangerous mediums must disposed in a manner that there is no danger for the personnel and environment. Statutory regulations must be followed.
- Danger caused by electricity must be excluded.

2.9 Security regulations for maintenance, inspection and mounting activities

- The user sees to it that qualified technicians do all maintenance, inspection and mounting activities. They must study the manual thoroughly.
- Maintenance may only be done when the machine is not functioning and the plug is out of the wall socket.
- The in the user's manual mentioned handling to stop the machine must be notified.
- Directly after maintenance of the machine, all the security and protection facilities must be functionally.
- Before starting the machine again, you must follow the instructions correctly.

2.10 Making changes and fabricate spare parts Changes to the machine are only permitted if Rioned has given written authorisation. The use of original spare parts and accessories are for the safety necessary. Rioned is not responsible for injuries or damages if other spare parts are used.

2.11 Improper use The security during working with the machine is only guaranteed if the use of the machine is conform the user's manual. The limits that are written in chapter "Technical Specifications" and "Ap-

pendix” may never be overstept.

If the machine does not work or give troubles, it is forbidden to work further with the machine. Telephone your dealer or the technical department of Rioned

Telephone: +31 (0) 13-5479100

This manual contains all the necessary information concerning control and maintenance. If the device is positioned correctly, properly controlled, and regularly maintained, a warranty will be given according to the general conditions of delivery. However, should it arise that the control and maintenance procedures are not diligently followed, the warranty will become invalid.

3 TECHNICAL SPECIFICATIONS

3.1 General

Description (<i>symbol</i>)	Unit
Type	: Master
Total length (<i>l</i>)	: 0,65 m
Total height (<i>h</i>)	: 0,80 m
Total width (<i>b</i>)	: 0,57 m
Weight (dry) (<i>m</i>)	: 42 kg
Spring lengths (<i>l</i>)	: 5 m, 10 m, 15 m, 20 m and 25 m
Maximum spring length	: 60 m
Spring diameter	: Ø 20 mm
Springs suitable for sewer diameter	: Ø 75 - Ø 250
Place type plate	: Behind, on the protection cover
Place frame number	: Behind, left on crossbeam
Sound level	: See Chapter 9.3 Sound level report Page: 33
Measure position	: See Chapter 9.3 Sound level report Page: 33
In and out speed spring	: 0 - 6 m/min
Rotation direction	: left and right
Year of construction (<i>month/year</i>)	: 01/11

3.2 Motor

Description (<i>symbol</i>)	Unit
Type	: AEG
Power (<i>P</i>)	: 450 W
Voltage and frequency	: 230 V, 50 Hz.
Number of revolutions	: 1300 min ⁻¹
Current	: 3,7 A
Condensator	: 16μF / 400 V
Security	: Thermal
Isolation class	: IP 54

4 CONSTRUCTION

The spring cleaning device contains the following main parts:

Illustration 4.1

A	Electric motor
B	Lobe knob
C	Pressure knob
D	Starting button (Green)
E	Stop button (Red)
F	Rotation direction left (Black)
G	Feed unit
H	Guide tube
I	Spring guidance tube
J	Metal case
K	Support wheel
L	Frame
M	Tyres
N	Transport grib
O	Lobe knob for Transport grib
P	Emergency stop
Q	Drum

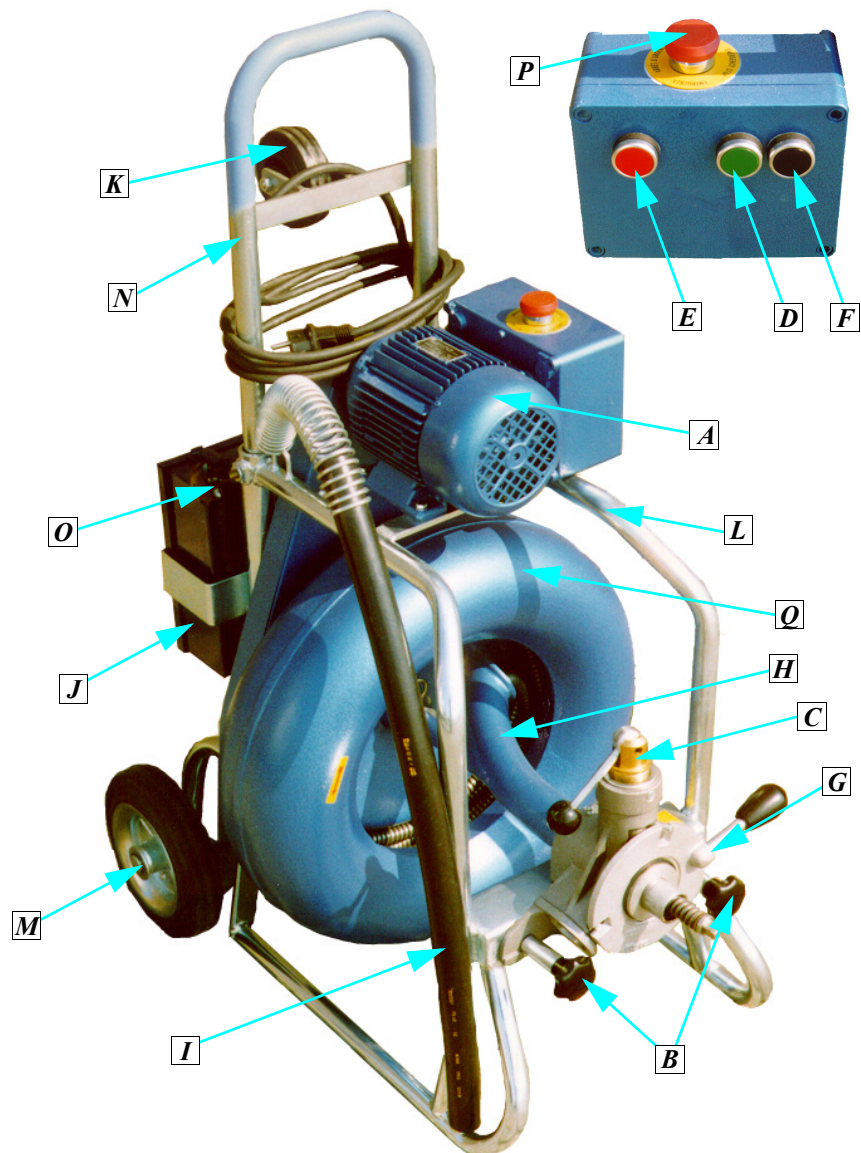


Illustration 4.1
Spring cleaning device Master

5 CONTROL



If you control, maintain or inspect the machine, you must have the right qualifications for this job. If you do not have the necessary knowledge, you may not use the machine. Further, you must convince yourself that you understand this manual thoroughly.

5.1 Transport

1. Pull the plug out of the wall socket.
2. Wind the wire over the handle. (*See Illustration 4.1 N page: 15*).
3. Couple the spring loose and put in storage.
4. Let the standard spring reach a little bit out of the feed unit.
5. Turn the lobe knobs loose (*See Illustration 4.1 O page: 15*).
6. Pull the handle (*See Illustration 4.1 N page: 15*) completely out of the frame (*See Illustration 4.1 L page: 15*).
7. Fasten the lobe knob.
8. Overturn the spring machine by means of the handle.
9. Now you can move the spring machine.

The support wheel can be used when you want to lay down the Master and drive somewhere under!

5.2 Controls

1. Lobe knob (*See Illustration 4.1 B page: 15*):
By loosening the two lobe knobs, you can dismantle the feed unit.
2. Pressure knob (*See Illustration 4.1 C page: 15*):
By turning the pressure knob, you can bring the feed unit in and out of order.
 - a Turn pressure knob clockwise:
Feed unit activated. Spring rotates and gets transported.
 - b Turn pressure knob counter clockwise:
Feed unit out of order. Spring rotates, no transportation.
3. Press button “Green” (*See Illustration 4.1 D page: 15*):
With this button, the motor starts. The drum begins to rotate.
4. Press button “Red” (*See Illustration 4.1 E page: 15*):
With this button the motor stops.
5. Press button “Black” (*See Illustration 4.1 F page: 15*) (only in combination with press button “Green”):
This press button can only be used in combination with the “Green” press button. By pushing the “Black” and the “Green” button at the same time, the drum rotates the other direction.
6. Emergency stop (*See Illustration 4.1 P page: 15*) (“Red” button with yellow back plate):
This machine is equipped with an emergency stop. By operating the emergency stop, the machine will stop immediately. Do not use this button for normal stopping. Only use it when dangerous situations occur. After use, remove the danger and pull the emergency stop in order to be able to start up again. Make sure the emergency stop can always be reached.
7. Feed unit handle (*See Illustration 4.1 G page: 15*):
By operating this handle, the transportation of the spring is controlled (Only the green button).
 - a Lever maximum upwards:
Spring transport speed maximum in.
 - b Lever maximum downwards:
Spring transport speed maximum out.
 - c Lever horizontal:
No spring transport.

5.3 Before unblocking

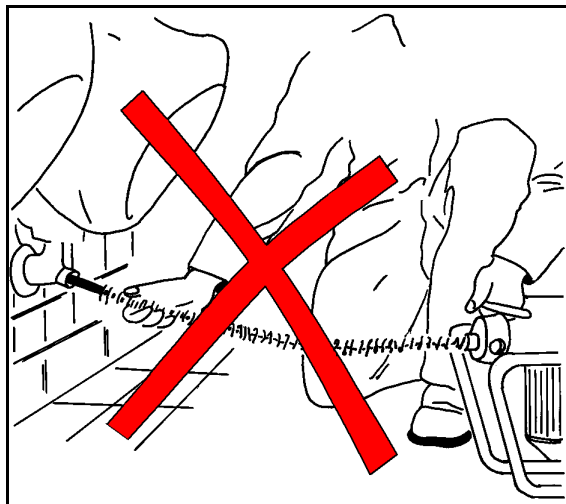
1. Couple a spring with a diameter of 16 mm onto the standard spring.
2. Loosen the pressure knob (*See Illustration 4.1 C page: 15*).
3. Press the **green press button**.
4. Keep the handle upwards.
5. Fasten carefully the pressure knob.
Now the spring gets fed into the spring drum.
6. Press the **red stop button** if the beginning of the spring is in sight.
7. Let the handle loose.
The spring is now wind up in the spring drum.
8. Couple the spring guidance tube onto the feed unit.
9. Press the **green press button**.
10. Keep the handle downwards.
11. Fasten carefully the pressure knob.
Now the spring is fed out of the spring drum.
12. Press the **red stop button** if the beginning of the spring is come out of the spring guidance tube.
13. Release the handle.
14. Loosen the pressure knob.
15. Couple the desired cleaning head (*See Chapter 7.2 Auxiliaries that can be coupled: page: 24*) onto the spring coupling.

5.4 Unblocking

1. Put the spring machine as near as possible to the drain opening.



Never use the spring without the spring guidance tube (*Illustration 5.4.1*).
When the spring guidance tube is not long enough, you can use the telescope-inlet-tube or another guide tube (*Illustration 5.4.3*).
Never let the machine run without supervision!



*Illustration 5.4.1
Wrong manner of
working:
Guiding the spring
without spring guidance
tube.*

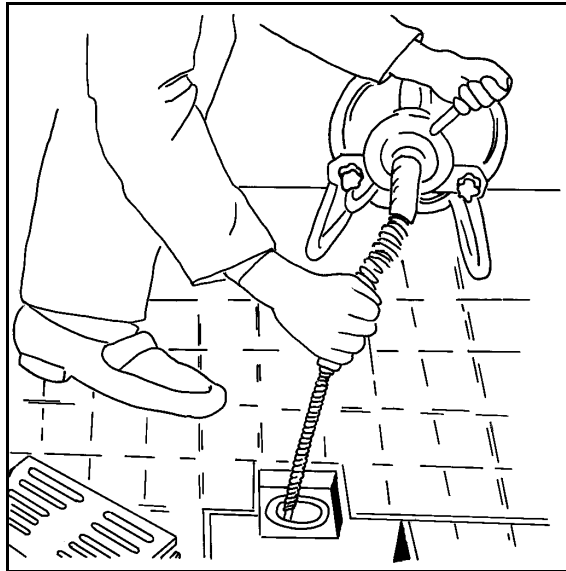


Illustration 5.4.2
Right manner of working:
Hand on handle and
spring guidance tube.

2. Feed the spring in the drain that has to be cleaned (*Illustration 5.4.2*).
3. Check if the pressure knob is loose.
4. Press the **green start button** (See *Illustration 4.1 D page: 15*).
5. Push the handle downwards.
6. Fasten the pressure knob.
 Now the spring can be fed in.
 Depending of the position of the handle, the spring moves quicker or slower in or out of the spring drum.

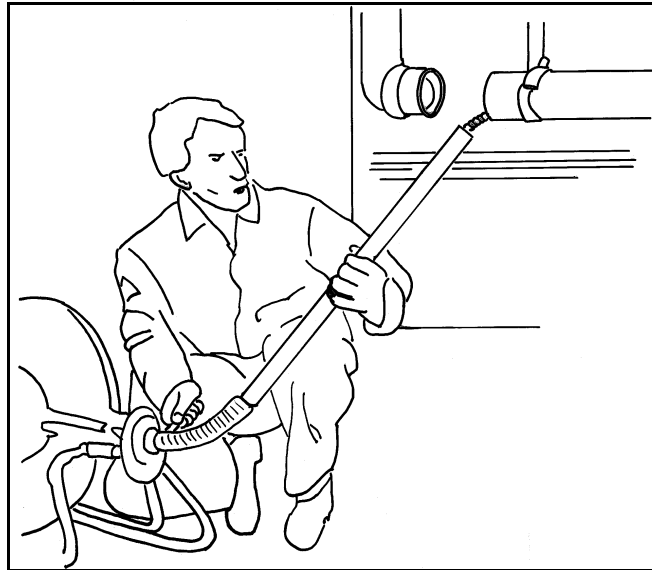
Fasten the pressure knob more when slip occurs during transport.
 If the slip stays, change the rotation direction!



Stop the machine if the slip does not disappear!

The spring is locked in the pipe and must be pulled out or the press rollers are damaged and must be replaced.

7. When there is any resistance in the pipe, you must stop feeding in the spring immediately. Pull the handle upwards. Then move the spring several times back and forwards at the place of the blockage.
8. By feeding the spring into the drum, move the handle completely upwards. Place the machine $\pm 0,5$ meter from the inlet opening. In this way, you can see the end of the spring with cleaning head come out of the pipe.



*Illustration 5.4.3
Spring guiding by means
of a telescope tube.*

9. Keep the handle in his neutral position if the spring is completely out of the pipe. In this way the spring stays turning at the same place.
10. Loosen the pressure knob.
11. Press the **red stop button** (*See Illustration 4.1 E page: 15*) and the rotation stops.

Clean the pressure rollers after every unblocking. Protect the pressure rollers against oxidation. Use the special spray. The spray can also be used to protect the springs against oxidation.

6 MAINTENANCE



Warning!

Always stop the engine and take the plug out of the wall socket before serving or repairing the machine.

6.1 General

The machine is maintenance free, except the feed Unit.

Use only original spare parts (*See Chapter 8 Exploded Views page: 27*).

Clean regular the feed unit housing.

Check regular the bearings in the pressure Rollers.

Keep the machine clean; it will extend the life of the machine.

6.2 Cleaning the feed unit

The feed unit is outside the machine. By loosening the two lobe knobs, the feed unit can easily be removed and cleaned.

See for the numbers the exploded view (*See Chapter 8 Exploded Views page: 27*).

1. Remove pressure piece (25) from the feed unit.
2. Loosen the two lobe knobs (59).
3. Lift the feed unit (5) out of the two frame holes (91).
Hold the guidetube (94) tightly, because if you do not, the guide tube slams against the spring drum (36)!
4. Pull the feed unit from the guide tube.
5. Remove the circlip (8) from the feed unit.
6. Remove the tilting disc (9).
7. Loosen the lower tilting disc bolt (12).
8. Remove the circlip (13) from the feed unit.
9. Remove the CTP plates (14) with the bearing (15) from the feed unit.
10. For the other pressure piece, repeat point 1 to 9 again.
11. Loosen the upper tilting disc bolt (12).
12. Remove the upper pressure knob (21).
13. Clean everything thoroughly.
14. Check the pressure bearings (18).
Replace pressure bearings:
 - a Remove the axle (17) from the pressure piece.
 - b Remove the rings (71) and the pressure bearing (18).
 - c Place the new rings and the new pressure bearings in the pressure piece.
 - d Place the axle (17) back into the pressure piece by means of a rubber hammer
15. Put new grease on the pressure rollers.
16. Mount everything in opposite order.

6.3 Extensive periodical maintenance

Have the machine checked and maintained from time to time by the technical service of your dealer. In this way, long life and quality will be guaranteed.

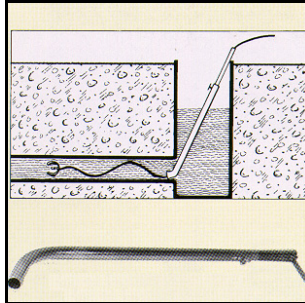
6.4 Maintenance schedule

Description	Interval
Cleaning the feed unit	: Every time before using the machine and by strong pollution.
Checking pressure rollers	: Once a month. Change by wastage.
Cleaning the body of the machine	: Weekly or by strong pollution.
Lubrication moving parts	: Every 50 hours or at least ones every 6 months.

7 ACCESSORIES

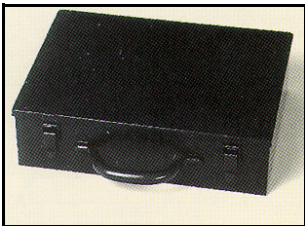
7.1 Supplies

1. Inlet guide tube:
To guide the spring on difficult places.



Ordernumber: 10.160.001.000

2. Metal case.



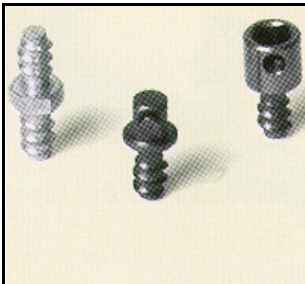
Ordernumber: 13.500.100.001

3. Spring drum empty.



Ordernumber: 13.300.001.025

4. Repair and quick couplings:
To connect springs or to repair broken springs.



Ordernumber: 12.300.017.300 (16 mm)

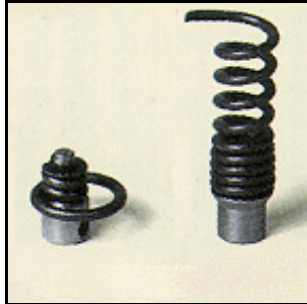
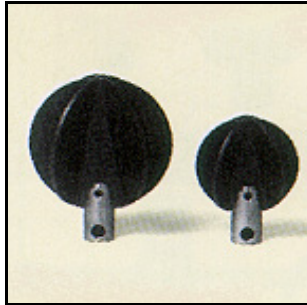
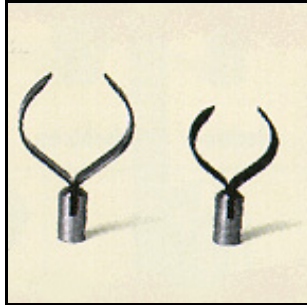
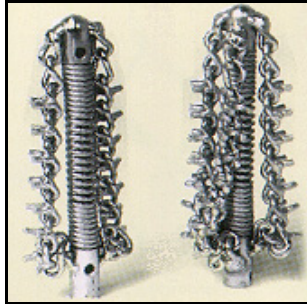
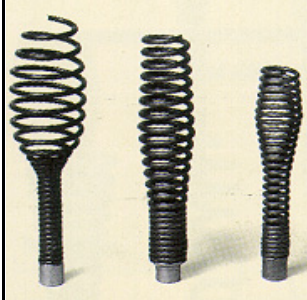
5. Anti-oxidation-spray.



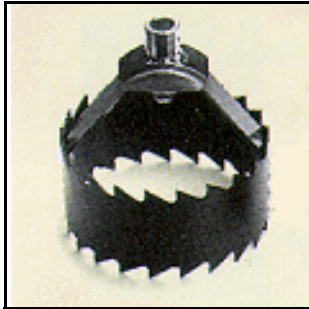
Ordernumber: 71.007.000.000

6. Mounting tools:
To mount and dismantle spring couplings and auxiliaries.

7.2 Auxiliaries that can be coupled:

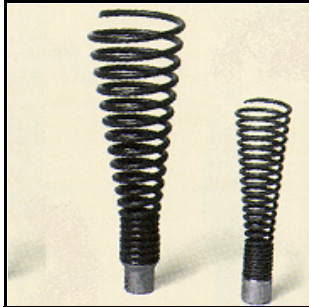
1. Retrieving hook:
To remove obstacles from pipes. For example: cloth, rags, napkins, sheets, etc.

Ordernumber: 12.600.410.560 (22x4)
12.600.410.561 (16 mm)
2. 4-blade drill and 6-blade drill:
To mill pipes that are clogged with frying fat.

Ordernumber: 12.600.410.580 (40 mm)
12.600.410.581 (50 mm)
12.600.410.582 (60 mm)
3. Cutting knife:
To mill big pipes. The knife diameter can be chosen for the right kind of sewer.

Ordernumber: 12.600.410.500 (45 mm)
12.600.410.501 (65 mm)
12.600.410.550 (35 mm)
4. Chain head:
To clean steel and iron pipes.

Ordernumber: 12.600.410.570 16 mm 2 smooth
12.600.410.571 16 mm 2 ridges
12.600.410.572 16 mm 4 smooth
12.600.410.573 16 mm 4 ridges
5. Drilling head:
For light unclogging in polluted pipes.

Ordernumber: 12.600.410.526 16 x 2,5 flexible
12.600.410.527 22 x 4 heavy
12.600.410.530 16 x 2,5
12.600.410.531 22 x 4 fortified

6. Root cutter:
To saw tree roots.



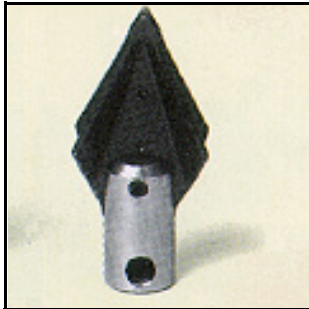
Ordernumber: 12.600.420.583 (65 mm)
12.600.420.584 (90 mm)
12.600.420.585 (125 mm)

7. Funnel drill:
For long bended pipes.



Ordernumber: 12.600.410.540 (16 x 2,5 small)
12.600.410.541 (22 x 4 big)

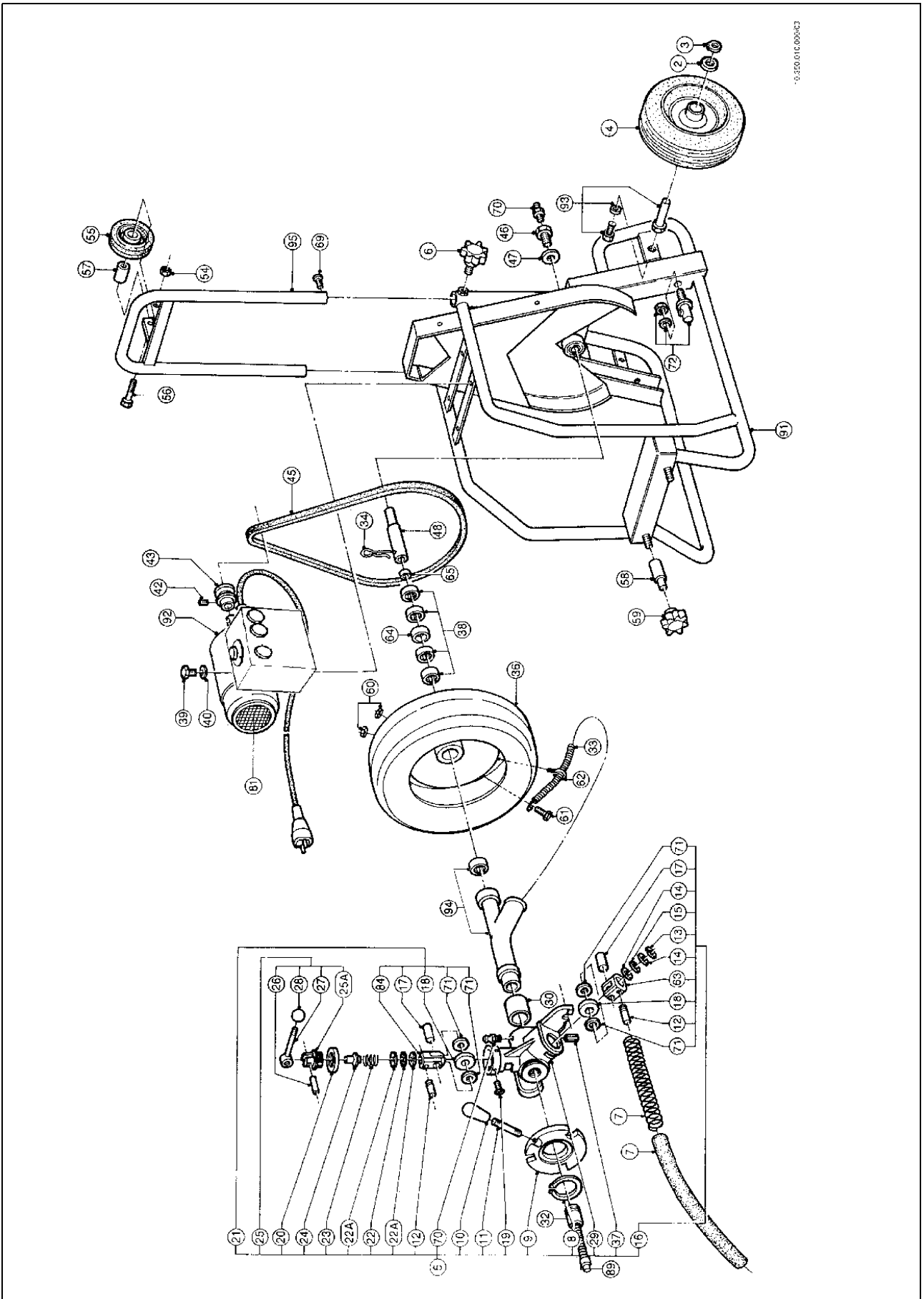
8. Pointed head:
For pipes coked with lime or uric stones.



Ordernumber: 12.600.410.595 (16 mm)

8 EXPLODED VIEWS

8.1 Exploded view
Master.



**8.2 Bill of material
Master**

Pos.	Order number	Number	Description	
2	31-035-214-025	4	WASHER	21X 40 X 2,5
3	31-025-500-145	2	LOCK RING	J 45 DIN 472
4	36-050-640-200	2	WHEEL AND TYRE MASSIVE	200 X 50 X 20
5	13-350-001-005	1	FEED UNIT COMPLETE	
6	30-101-050-010	2	STAR KNOB	
7	13-350-001-007	1	SPRING GUIDE	20 M M 89/90
8	31-025-500-060	1	LOCK RING	A 60 DIN 471
9	13-350-001-009	1	FEED UNIT TURN-OVER DISC	
10	30-012-000-010	1	HANDGRIP	
11	32-205-008-055	1	SCREW END	M 8 X 55 DIN 939
12	13-350-001-012	3	TURN OVER SCREW	
13	31-025-500-148	2	LOCK RING	J 48 DIN 472
14	45-003-003-047	4	PLATE	CTP AS 3047 30 X 47 X 0,8
15	45-002-003-047	2	BEARING	AXK 3047 30X47X5
16	13-350-001-016	2	LOWER BEARING FORK COMPLETE	
17	13-350-001-017	3	BEARING SPINDLE	
18	45-004-000-202	3	BEARING	LR 202 NPP 15 X 40 X 11
19	32-214-006-010	3	SCREW	M 6 X 10 DIN 964
20	13-350-001-020	1	LOCKING NUT	
21	13-350-001-021	1	UPPER BEARING FORK COMPLETE	
22	45-002-001-226	1	BEARING	AXK 1226 13X26X2,8
22A	45-003-001-226	1	PLATE	CTP AS 1226 13 X 25 X 0,8
23	13-350-001-023	1	PRESSURE SPRING FEED UNIT	
24	13-350-001-024	1	PRESSURE PIECE	
25	13-350-001-031	1	ECCENTRIC FORK COMPLETE	
25A	13-350-001-025	1	ECCENTRIC FORK	
26	73-045-008-020	1	PIN	8 X 20 DIN 1481
27	13-350-001-027	1	ECCENTRIC HANDLE	
28	30-100-032-008	1	KNOB	M 8 X 32 DIN 319
29	13-350-001-029	1	FEED UNIT HOUSING	EMPTY
30	13-350-001-030	1	BEARING BUSH	
32	13-350-001-032	1	INLET GUIDE TUBE	
33	13-350-001-033	1	SPRING	
34	30-040-000-004	1	CLIP	4 M M
36	13-350-001-036	1	DRUM EMPTY	
37	73-045-008-020	2	PIN	8 X 20 DIN 1481
38	45-001-002-512	4	BEARING	HK 2512 25 X 32 X 12
39	32-201-006-016	4	BOLT	M 6 X 16 DIN 933
40	31-035-500-006	4	WASHER	M 6 DIN 125A
42	32-211-006-008	1	INBUS SCREW	M 6 X 8 DIN 916
43	34-366-114-034	1	PULLEY	
45	34-364-201-400	1	V-BELT	A 55 1400
46	79-115-001-015	1	GREASE BOLT	
47	31-029-000-014	1	RING	M 14
48	13-350-001-048	1	DRUM AXLE	25
54	32-206-000-008	1	NUT	M 8 DIN 934
55	13-350-001-055	1	WHEEL	P 100
56	32-201-008-075	1	BOLT	M 8 X 75 DIN 933
57	13-350-001-057	1	DISTANCE BUSH	MASTER 89
58	13-350-001-058	2	INTERMEDIATE PIECE	
59	30-102-048-010	2	STAR KNOB	DIN 6336 M .10 ø 48
60	32-206-000-006	2	NUT	M 6 DIN 934
61	32-201-006-025	1	BOLT	M 6 X 25 DIN 933
62	13-350-001-062	1	SPRING FIXATION HOOK	
63		2	PRESSURE PIECE BELOW	MASTER
64	13-350-001-064	1	DISTANCE BUSH 1989	MASTER
65	45-001-001-512	1	BEARING	HK 1512 15 X 21 X 12
69	32-215-002-008	2	PLATE SCREW	3/8 X 8 DIN 7971
70	64-072-180-006	2	GREASE NIPPLE	
71	31-037-152-235	6	RING	
72	12-300-019-310	1	CONNECTING NIPPLE	19 M M MNL X M 10 UW
81	85-050-505-204	1	FAN	
84		1	PRESSURE PIECE EMPTY ABOVE	
89	12-300-020-100	1	QUICK COUPLING	
91	13-350-003-085	1	FRAME	
92	85-050-500-375	1	ELECTRIC MOTOR	0,45 kW
93	13-350-003-076	2	AXLE	ALLROUND '90+MASTER '90
94	13-350-003-094	1	GUIDE TUBE	MASTER MODEL 1990
95	13-350-003-095	1	SUPPORTING BOW	
Description			MASTER	
Order number			10-350-010-000	
Date			6-1-2011	

9 Appendix

9.1 EC declaration Of Conformity For Machinery RIOR B.V. / RIONED
Centaurusweg 45, Tilburg, The Netherlands,

Herewith declares that:

Spring cleaning machine Master,

- is in compliance with the Machinery Directive (2006/42/EC, 2006/95/EG);
- is in conformity with the provisions of the following other EEC directives: 2004/108/EG
- the following harmonized standards have been applied:

NEN-EN-ISO 12100-1, NEN-EN-ISO 12100-2, NEN-EN-ISO 13850,
NEN-EN-ISO 13857, NEN-EN-349, EN 61029-1 and EN 60204-1

Tilburg, The Netherlands, Thursday 4 March 2010

A handwritten signature in black ink, appearing to read 'J. Pieters', written over a horizontal line.

J. Pieters
Managing Director

9.2 Sales Managers EXPORT

D.Maas / H. de Laat
Area Sales Manager
Centaurusweg 45
5015 TC Tilburg
Tel.: +31 13-547 91 00
Fax: +31 13-547 91 04

REPAIR

THE NETHERLANDS

Rioned
Centaurusweg 45
5015 TC Tilburg
Tel.: +31 13-547 91 00
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9.3 Sound level report

Results of the sound level measurements "MASTER".

Tools: Realistic 42-3019 sound level meter
 Accuracy: ± 2 dB (A) at a sound level of 114 dB (A)
 Frequency range: 500 - 10.000 Hz, curve A
 Response: Slow

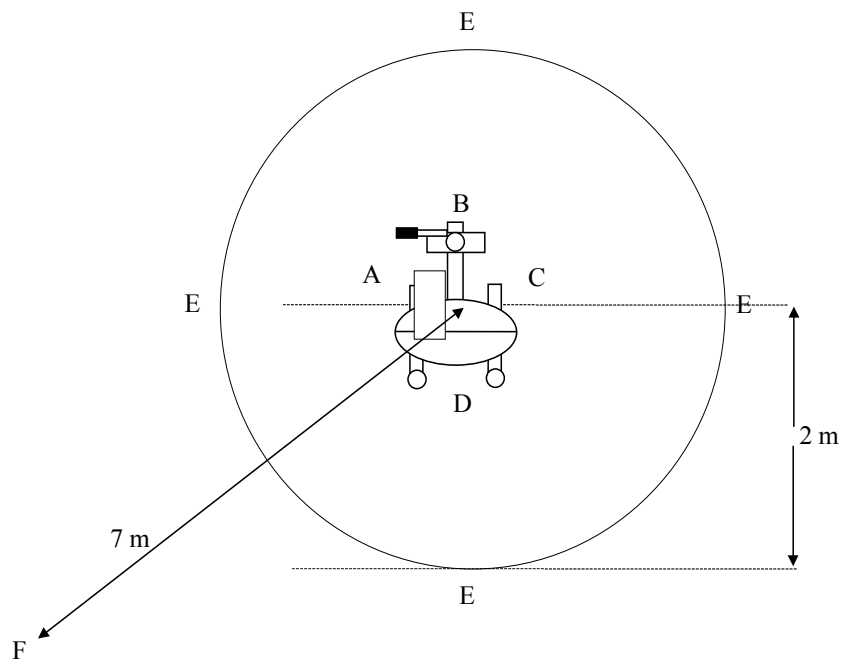
Measuring positions "MASTER"
 All the measure points are approx. 0,80 m above the ground and are representative for the circumstances by use of this machine.

Measured spring-cleaning device: **MASTER**

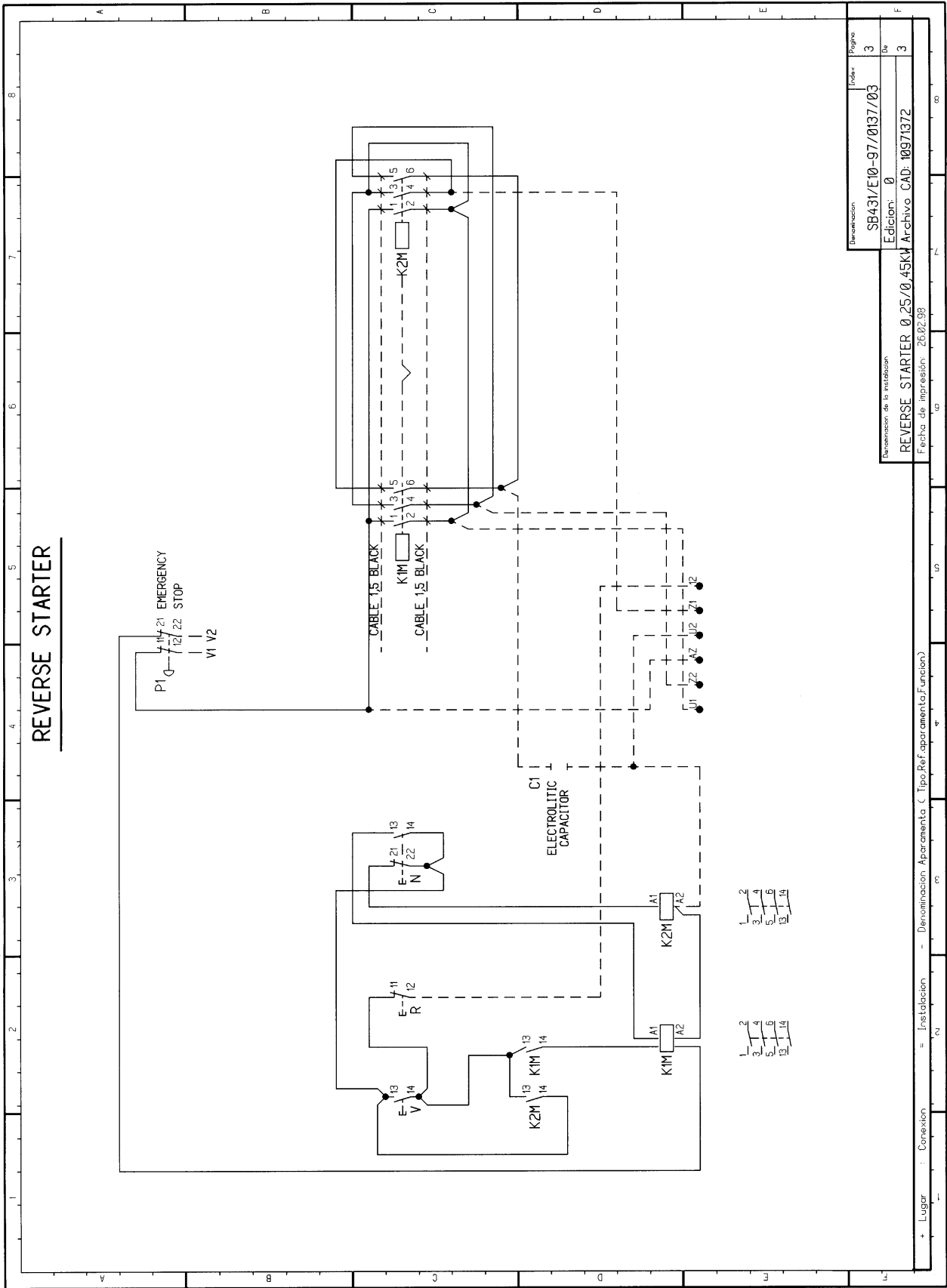
Date: Thursday, 20 February 1997

Position	Description	Standard spring completely in drum	Sound level	
			Only the standard spring in spring transporter	With spring of 15 m coupled
A	Left	<70	73	71
B	Front	<70	76	73
C	Right	<70	73	71
D	back	<70	72	70
E	On 2 meter (average)	<70	<70	<70
F	On 7 meter (average)	<70	<70	<70

Units in dB (A)



9.4 Electric schema





Warning: When using electric tools, basic safety precautions should always be followed to reduce the risk of fire, electric shock, and personal injury, including the following. Read all these instructions before attempting to operate this product and safe these instructions.

For safe operation:

1. **Keep working area clean.**
Cluttered areas and benches invite injuries.
2. **Consider working area environment.**
Don't expose electric tools to rain. Don't use electric tools in damp or wet locations. Keep working areas well lit. Do not use tool in presence of flammable liquids or gases.
3. **Guard against electric shock.**
Prevent body contact with grounded surfaces. For example: pipes, radiators, ranges, refrigerator enclosures.
4. **Keep children and visitors away.**
Do not let visitors contact tool or extension cord. All visitors should be kept away from work area.
5. **Store idle tools.**
When not in use, tools should be stored in dry, and high or locked place - out of reach of children.
6. **Don't force tool.**
It will do the job better and safer at the rate for which it was intended.
7. **Use right tool.**
Don't force small tool or attachment to do the job of a heavy-duty tool. Don't use tool for purpose not intended - for example - don't use circular saw for cutting tree limbs or logs.
8. **Dress properly.**
Do not wear loose clothing or jewellery. They can be caught in moving parts. Rubber gloves and non-skid footwear are recommended when working outdoors. Wear protective hair covering to contain long hair.
9. **Use safety glasses.**
Also use face or dust mask if cutting operation is dusty.
10. **Don't abuse cable.**
Never carry tool by cord or yank it to disconnect from receptacle. Keep cord from heat, oil, and sharp edges.
11. **Secure work.**
Use clamps or a vice to hold work. It's safer than using your hand and it frees both hands to operate tool.
12. **Don't overreach.**
Keep proper footing and balance at all times.
13. **Maintain tools with care.**
Keep tools sharp ~ clean for better and safer performance. Follow instructions for lubricating and -changing accessories. Inspect tool cords periodically and if damaged, have repaired by authorized service facility. Inspect extension cords periodically and replace if damaged. Keep handles dry, clean, and free from oil and grease.
14. **Disconnect tools.**
When not in use, before servicing, and when changing accessories, such as blades, bits, cutters.
15. **Remove adjusting keys and wrenches.**
Form habit of checking to see that keys and adjusting wrenches are removed from tool before turning it on.
16. **Avoid unintentional starting.**
Don't carry plugged-in tool with finger on switch. Be sure switch is off when plugging in.
17. **Outdoor use extension cords.**
When tool is used outdoors, use only extension cords intended for use outdoors and so marked.

- 18. Stay alert.**
Watch what you are doing. Use common sense. Do not operate tool when you are tired.
- 19. Check damaged parts.**
Before further use of the tool, a guard or other part that is damaged should be carefully checked to determine that it would operate properly and perform its intended function. Check for alignment of moving parts, binding of moving parts, breakage of parts, mounting, and any other conditions that may affect its operation. A guard or other part that is damaged should be properly repaired or replaced by an authorized service centre unless otherwise indicated elsewhere in this instruction manual. Have defective switches replaced by authorized service centre. Do not use tool if it cannot be turned on and off by the switch.
- 20. Warning.**
The use of any other accessory or attachment other than recommended in this operating instruction or the catalogue may present a risk of personal injury and could invalidate any guarantee.
- 21. Tool repairing by expert only.**
This electric tool is in accordance with the relevant safety rules. Repairing of electric tools may be carried out only by experts, otherwise it may cause considerable danger for the user.

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