



E83007-00



CRS28

**28" Cylindrical
Automatic Scrubber**



**Operator's Manual
Parts Schematic**

CRS 28

Chemicals
Equipment
Programs
Process



28" Cylindrical Brush Rider Scrubber

Betco's CRS 28 Cylindrical Brush Rider Scrubber is a highly effective and efficient way to maintain your floors. A simple design makes this rider scrubber easy to operate and reduces operator training. Compact in size, this machine still offers large solution and recovery tanks enhancing productivity. The innovative dual cylindrical brush system offers single pass sweeping and scrubbing, debris is deposited into a waste hopper giving the squeegee a smooth clean surface for maximum water recovery.

Applications

- General cleaning
- Heavy duty cleaning

Features

- Simple design for easy operation
- Large tank capacities
- Easy access parts design
- Heavy duty curved squeegee assembly
- Compact size enhances maneuverability
- Dual cylindrical brush offers single pass sweeping and scrubbing

Warranty

Tank: 10 Year

Other components: 3 Year*

*Please refer to Betco Equipment Price/Product Guide for complete equipment warranty information.

Specifications

Cleaning path	28"
Brush system	Cylindrical
Brush motor	(1) 1.75 hp
Brush pressure	150 lbs.
Brush speed	800 RPM
Vacuum motor	(1) .75 hp
Noise level	70 dB
Water lift	75"
Drive motor	0.6 hp variable speed
Maximum drive speed	4 mph
Solution control	Gravity feed - adjustable
Solution tank	30 gallon
Recovery tank	30 gallon
Weight	705.5 lbs. w/o batteries
Weight	1378 lbs. w/batteries
Dimensions	Length 66" / Height 53.5"
Dimensions	Width 31.5" w/o squeegee
Dimensions	Width 42.25" w/squeegee
Volts	36 volt system
Batteries	(6) 6 volt
Run time	Approximately 4.5 hours
Tires	Heavy duty non-marking
Productivity	35,000 sq. ft./hour

Available In

CRS28 - 28" Cylindrical Rider: Item #83007-00

Literature Item #83007-92

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On consignment of the machine

When the machine is consigned to the customer, an immediate check must be performed to ensure all the material mentioned in the shipping documents have been received and moreover to find out that the machine has not suffered damage during transportation. If damage has occurred, get the shipping agent to verify immediately the amount and nature of the damage suffered and at the same time inform our claim department. It is only by prompt action of this type that compensation for damage may be successfully claimed.

Introductory comment

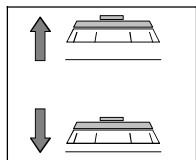
This is a sweep-scrubbing machine which, using the mechanic abrasive action of two rotary brushes, the sweeping action of two cylindrical brushes and the chemical action of a solution water-detergent, is able to clean any type of floor, picking up during its advance movement, the removed dirt and the detergent solution which has not been absorbed from the floor.

The machine must be used only for such purpose. We would impress upon you that any machine will function efficiently and operate successfully, only if used correctly and maintained in fully efficient working order. We therefore suggest you to read this instruction booklet carefully and re-read it whenever difficulties arise in the course of machine use. Our Service Department is at your disposal for all such advice and servicing as may prove necessary.

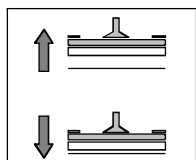


TECHNICAL DATA	U.M.	TRIPLA 65	TRIPLA 65S
Cleaning width	mm	650	700
Base side movement	mm	50	50
Squeegee width	mm	830	1015
Working capacity, up to	sqm/h	2925	3150
Brushes (No. 2)	Ø mm	345	150x700
Brushes rpm	rpm	170	800
Brushes pressure	kg	65	60
Brushes motor	W	900	2x650
Traction motor	W	450	450
Traction wheels	Ø mm	250	250
Movement speed	km/h	0÷4.5	0÷4.5
Max. gradient under full load	%	10	10
Suction motor	W	670	670
Suction vacuum	mbar	190	190
Solution tank	l	100	100
Recovery tank	l	115	115
Steering diameter	mm	2310	2310
Machine length	mm	1680	1680
Machine height	mm	1360	1360
Machine width (without squeegee)	mm	750	800
Battery compartment	mm	380x844xH418	
Voltage of the machine	V	36	36
Batteries	Ah	240	240
Batteries weight	kg	305	305
Machine weight (empty and without batteries) with brushes base	kg	325	320
Acoustic radiation pressure level (in conformity with IEC 704/1)	dB (A)	<70	<70
Vibration level to the hand	m/sqs	0,71	1,05
Vibration level to the body	m/sqs	0,74	0,73

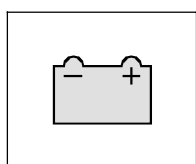
SYMBOLOLOGY USED ON THE MACHINE



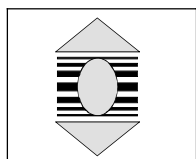
Symbol denoting up – down of the brushes base
It is used to indicate the manipulator of the brushes base rise - descent



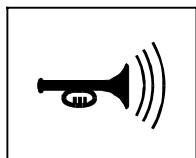
Symbol denoting up – down of the squeegee
It is used to indicate the manipulator of the squeegee rise - descent



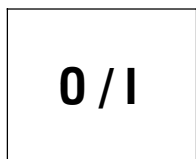
Symbol denoting charge level of the batteries



Symbol denoting



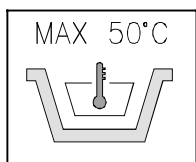
Symbol denoting the horn button



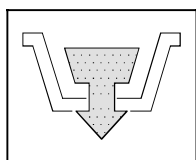
Symbol denoting general switch with key



Simbolo di regolazione rubinetto

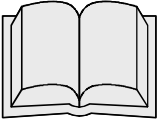


Indica la temperatura massima della soluzione detergente
E' situato vicino alla bocca di carico del serbatoio soluzione



Indica il tubo di scarico del serbatoio recupero

SYMBOLGY USED ON THE MACHINE



Symbol denoting the open book
Indicates that, the operator has to read the manual before the use of the machine

SYMBOLGY USED ON THE MANUAL



Symbol denoting a warning
Read carefully the sections preceded by this symbol, for the safety of the operator and of the machine

MACHINE PREPARATION

1. HANDLING OF THE PACKED MACHINE

The machine is packed in a specific package provided on a pallet for the handling with fork trucks. The packages cannot be placed on top of each other.

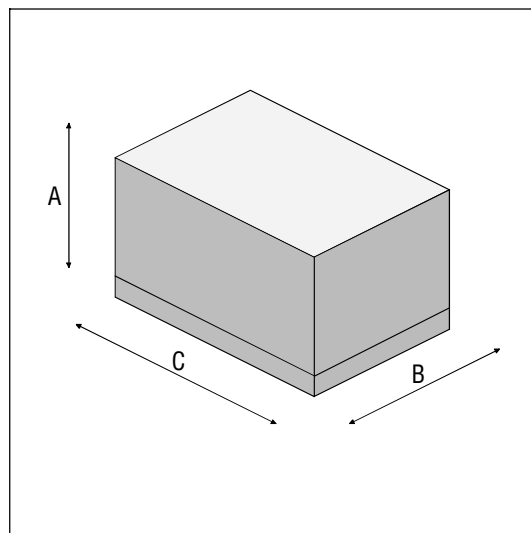
The total weight is of 400 kg (without batteries)

The overall dimensions are:

A : 1550 mm

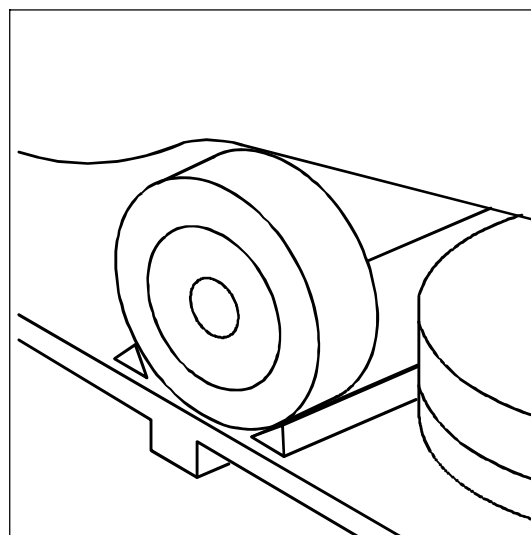
B : 1000 mm

C : 1740 mm

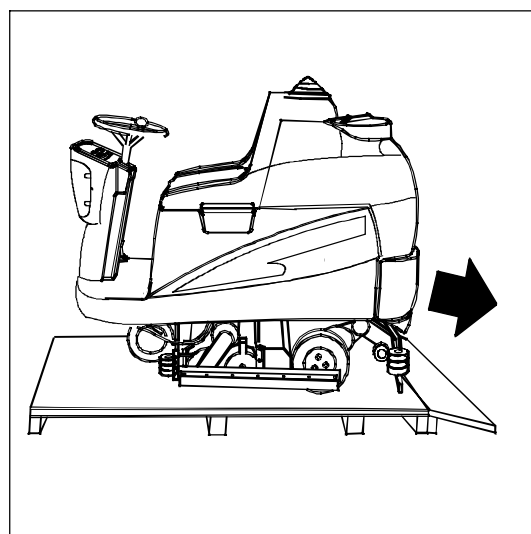


2. HOW TO UNPACK THE MACHINE

1. Take off the outer package
2. The machine is fixed on the pallet with wooden wedges which block the wheels
3. Take off these wedges



4. Using a chute, get the machine down from the pallet, pushing it in reverse motion.
5. Keep the pallet for eventual transport necessities



MACHINE PREPARATION

3. INSTALLATION OF THE BATTERIES INTO THE MACHINE

The batteries are fitted in the appropriate compartment under the base support of the seat and under the recovery tank and must be handled by using appropriate lifting equipment suitable both for the weight and for the coupler system.

They must moreover satisfy the requirements quoted in the Specification CEI 21-5.

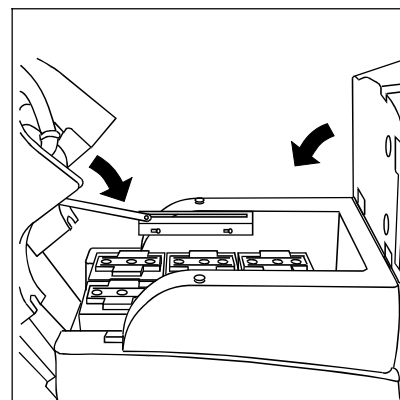
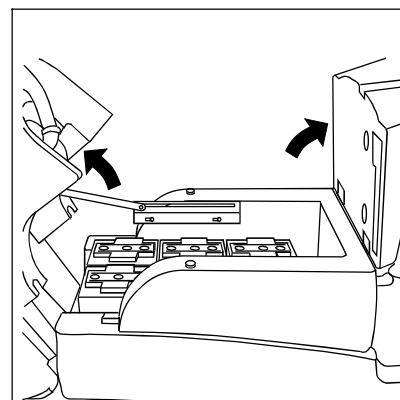
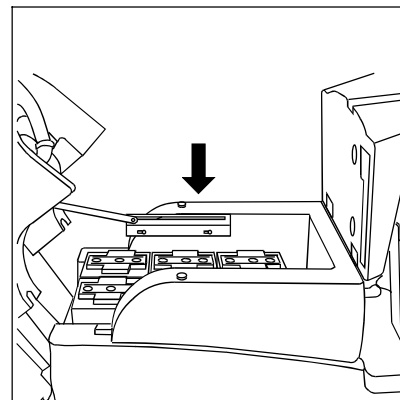
THE DIMENSIONS OF THE BATTERY COMPARTMENT ARE: 380 x 844 x H418 mm



ATTENTION! For maintenance and daily recharge of the batteries, it is necessary to follow strictly all the indications given from the constructor or from his dealer. All the installation and maintenance operations must be carried out by specialized staff.

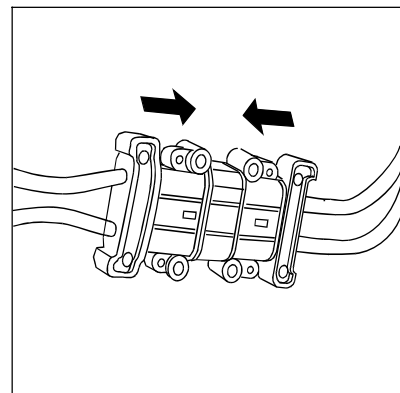
For the battery installation it is necessary to:

1. Lift the base support of the seat
2. Lean the seat onto the steering wheel
3. Rotate backwards the recovery tank until it locks in place
4. Put the batteries into position and connect the battery cables
5. Release the support and put the recovery tank into its working position
6. Lower the base support of the seat



4. CONNECTION OF THE BATTERY CONNECTOR

The battery connector is in the battery compartment and must be connected to the connector of the machine.



MACHINE PREPARATION

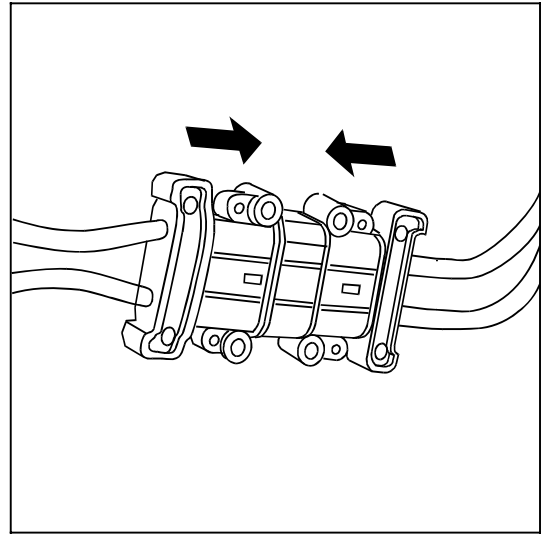
5. CONNECTION OF THE BATTERY CHARGER

1. Raise the seat base support
2. Disconnect the machine connector from the battery connector
3. Connect the battery charger directly to the battery connector

The coupling connector of the battery charger is delivered in the bag where this instruction booklet is found and must be assembled on the battery charger cables following the suitable instructions (see instruction booklet of the battery recharger).



ATTENTION! This operation has to be carried out by specialized staff. A wrong or incomplete cable connection to the connector can cause serious damages to persons or things.



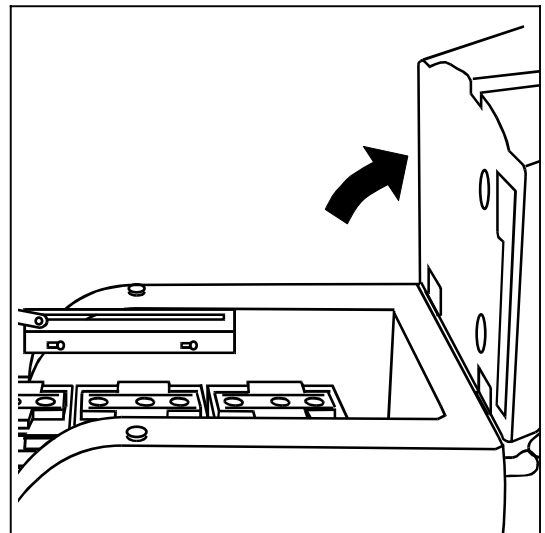
6. RECHARGE OF THE BATTERIES

Make sure that the battery charger fits the installed batteries both for capacity as for type (lead/acid or GEL and equivalents).

ATTENTION! Never charge a GEL battery with an unsuitable battery charger. Carefully follow the instructions given by the manufacturer of batteries and battery charger.

To prevent permanent damage to the batteries, avoid their complete discharge and effect recharging within a few minutes after that the signal lamp of discharged batteries begins to blink.

NOTE: Never leave the batteries completely discharged, even if the machine is not being used. **When recharging the batteries, keep the base support of the seat lifted.** After every 20 recharging operations, check the level of the electrolyte and, if necessary, top up with distilled water.



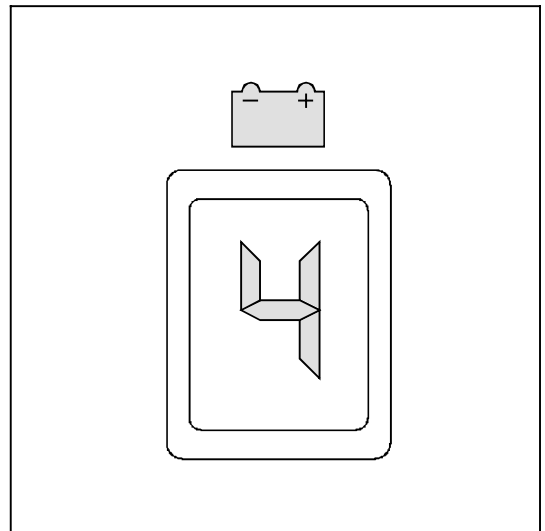
7. LEVEL INDICATOR FOR THE CHARGE OF THE BATTERIES

The batteries' indicator is digital with 4 fixed positions and a blinking one. The numbers which appear on the display show the approximate charge level.

4 = maximum charge, **3** = charge 3/4, **2** = charge 2/4, **1** = charge 1/4, **0** = discharged batteries (blinking)



ATTENTION! Some seconds after that "0" blinks, the brushes motor automatically switches off. Anyway, the machine can finish to dry before recharging the batteries.

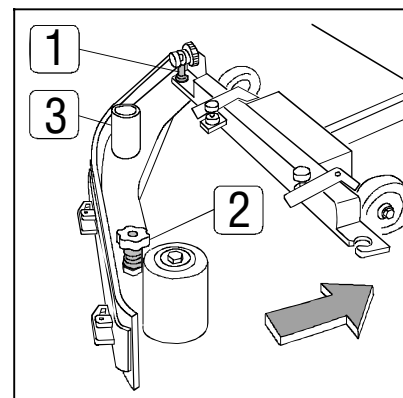


MACHINE PREPARATION

8. SQUEEGEE ASSEMBLY

The squeegee, which is packed separately from the machine, should be assembled as shown in the figure. Insert first the left squeegee pin (1) in the left arm slot, then the right pin (2) into the right slot, paying attention to keep the spring and the washer over the blade of the arm itself. To simplify this operation the handwheel placed on top of the pin should be loosened previously. Afterwards, lock the handwheel to block the squeegee in position.

Fit the squeegee hose into its coupling (3)

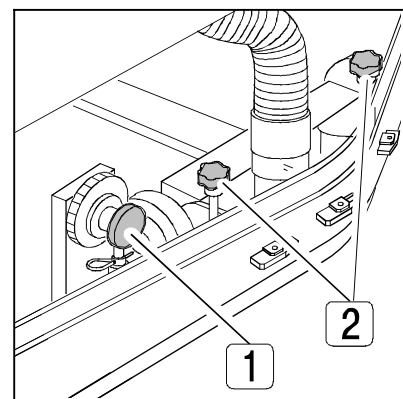


9. SQUEEGEE INCLINATION

During working operation, the rear rubber has to work slightly tilted backwards and this equally in its whole length for about 5mm.

This allows the squeegee rubber to be used four times before it has to be replaced.

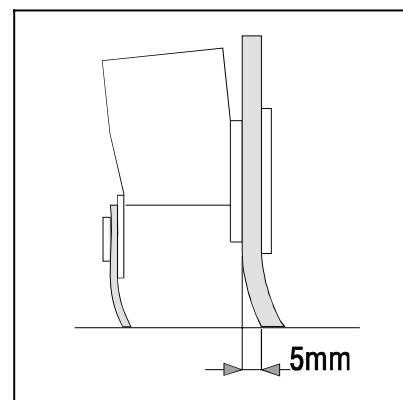
If it is necessary to increase the rubber bending in the central part, tilt the squeegee body backwards and turn the adjuster (1) counterclockwise. If the rubber bending is to be noticeable at the sides of the squeegee, turn the adjuster (1) clockwise.



10. ADJUSTMENT HEIGHT SQUEEGEE SUPPORT

The squeegee has to be regulated depending on the wearing of the rubbers. To adjust this, rotate the knob (2) clockwise (tighten) to lift the squeegee and counterclockwise (loosen) to lower it.

Note: The right and left wheels must be regulated in the same amount so that the squeegee works in parallel to the floor.

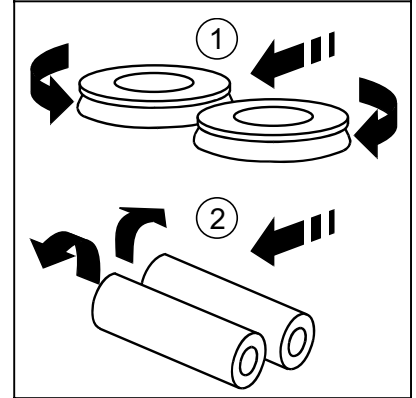


MACHINE PREPARATION

11. ASSEMBLY OF THE WASHING OR WASHING/SWEEPING UNITS

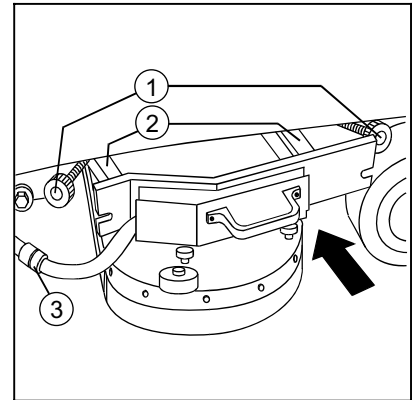
The machine is supplied as a base unit. There are two different washing units available, to be chosen according to the type of floor and its conditions:

1. washing unit with rotary brushes. Suitable for all types of floors, and used for routine maintenance scrubbing. Also it can be used for aggressive scrubbing, cleaning, and stripping;
2. washing & sweeping unit with cylindrical brooms. Suitable for rough, uneven, and grouted surfaces. Will scrub and sweep debris in one pass and collect the solid debris into a hopper without obstructing the squeegee rubbers.



12. WASHING UNIT ASSEMBLY (rotary brushes)

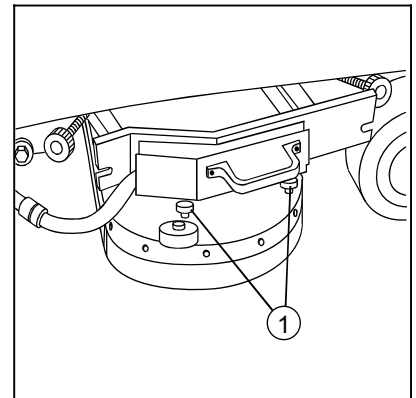
1. Loosen the knobs (1) from the horizontal pins on the left side of the units and rotate them outwards
2. Position the base under the machine into the proper guides (2)
3. Rotate the knobs towards the inner part of the base and block them
4. Connect the quick water coupling (3)
5. Connect the bipolar connector of the thermal protections into the machines produced prior to 15/02/01



13. ADJUSTMENT HEIGHT SPLASH GUARD RUBBERS OF THE WASHING UNIT

During working operation, the splash guards of the brushes base have to touch lightly the floor.

1. To change the support height, and consequently the splash guards, it is necessary to screw down or to unscrew the horizontal knobs (1)
2. After having adjusted correctly the rubber height, block the knobs.

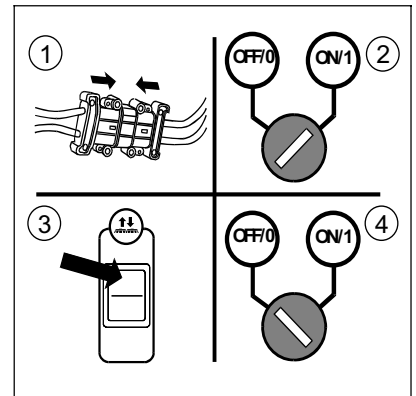


14. ASSEMBLY ROTARY BRUSHES

1. Connect the battery connector
2. Turn the key into position ON
3. With the switch lift the brushes base
4. Turn the key into position OFF and take it off from the instrument board



ATTENTION! To carry out the brush assembly operation with the current connected could cause damage to the hands.

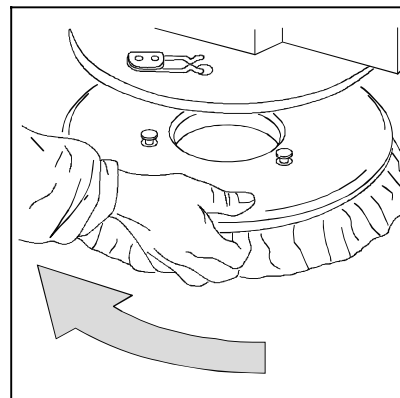


MACHINE PREPARATION

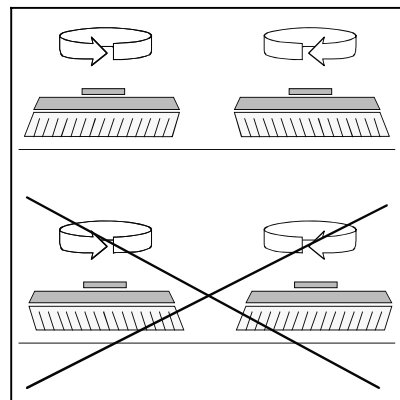
- With the brushes base in lifted position, insert the brushes into the seat of the plate under the base until the three buttons fit into the holes of the plate. Turn the brush so that the buttons are pushed towards their retaining springs until the brush is clamped in place. The figure shows the direction of rotation for the coupling of the right brush. The left brush has to be rotated inversely.



ATTENTION! Use gloves to protect your hands when performing the steps listed above.

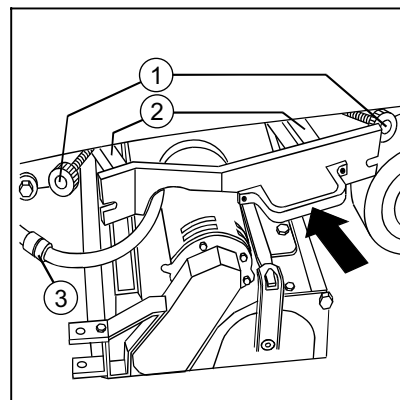


- It is recommended to invert daily the position of the right brush with the left one and vice versa. If the brushes are not new and they show deformed bristles, it is better to reassemble them in the same position (the right to the right side and the left to the left side), to avoid that the different inclination of the bristles causes an overload to the brushes motor and excessive vibrations.



15. WASHING/SWEEPING UNIT ASSEMBLY (cylindrical brooms)

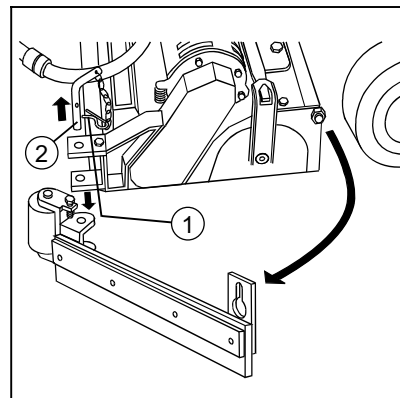
- Loosen the knobs (1) from the horizontal pins on the left side of the units and rotate them outwards
- Position the base under the machine into the proper guides (2)
- Rotate the knobs towards the inner part of the base and block them
- Connect the quick water coupling (3)
- Connect the bipolar connector of the thermal protections into the machines produced prior to 15/02/01



16. ASSEMBLY AND DISASSEMBLY SIDE SPLASH GUARD

This operation is to be made with the base down.

- Take off the pin (1)
- Remove the pin (2)
- Position the bar into the proper support
- Reassemble all parts following the above operations inversely



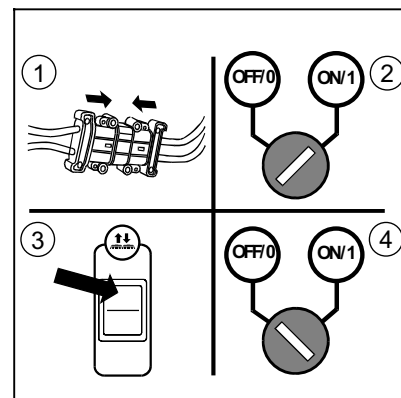
MACHINE PREPARATION

17. CYLINDRICAL BROOMS ASSEMBLY

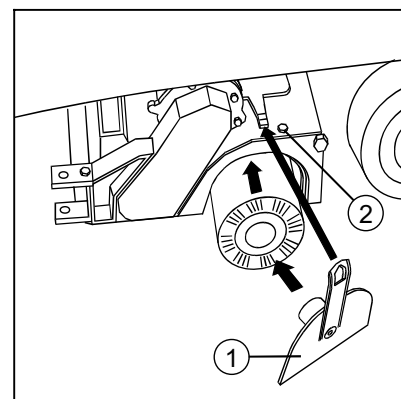
1. Connect the battery connector
2. Turn the key into position ON
3. Move the switch to raise the base
4. Turn the key into position OFF and take it off from the instrument board
5. Take off the side splash guards (see ASSEMBLY AND DISASSEMBLY OR ADJUSTMENT SIDE SPLASH GUARDS OF THE WASHING/SWEEPING BASE)



ATTENTION! To carry out the operations of brushes assembly with connected current can cause damage to the hands.



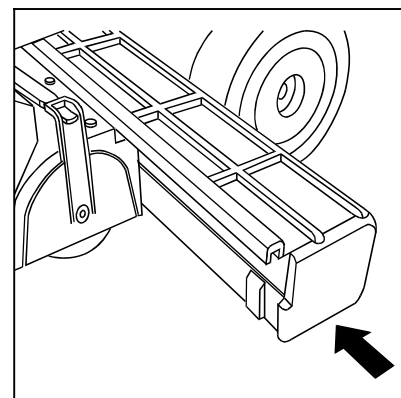
6. With the base in lifted position, unhook, by pushing downwards and then outwards, the two movable supports (1)
7. Insert the broom into the tunnel until you block it in the holder hub, keeping the “v” shaping as in the picture
8. Insert the idle hub of the movable support into the broom and into the spring
9. Push the support downwards, and then inwards to refasten it into the bayonet caps
10. Regulate the brushes adjustment acting upon the screw (2)
11. Repeat the operation also for the second support
12. Reassemble the side splash guards (see ASSEMBLY AND DISASSEMBLY OR ADJUSTMENT SIDE SPLASH GUARDS OF THE WASHING/SWEEPING BASE)



ATTENTION! This operation has to be carried out using gloves to protect the hands.

18. HOPPER

Check that the hopper is closed properly, otherwise push it until the clamping of the closing is obtained.



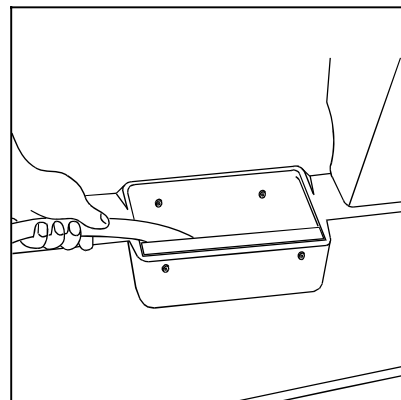
MACHINE PREPARATION

19. SOLUTION WATER

Fill the solution tank with clean water at a temperature not more than 50°C and add liquid detergent in the proper concentration following the instructions of the manufacturer. Excess foam in the recovery tank could damage the suction motor, so use only the minimum amount of detergent necessary.

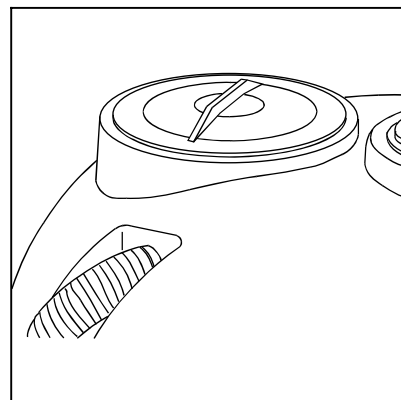


ATTENTION! Always use low foam detergent. To avoid the production of foam, before starting to clean, put a minimum quantity of antifoam liquid into the recovery tank. **Never use pure acid.** Replace into position the cover of the water inlet.

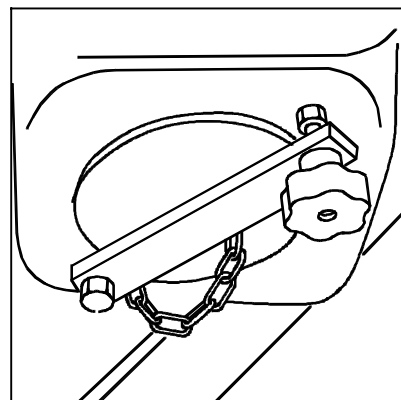


20. RECOVERY TANK

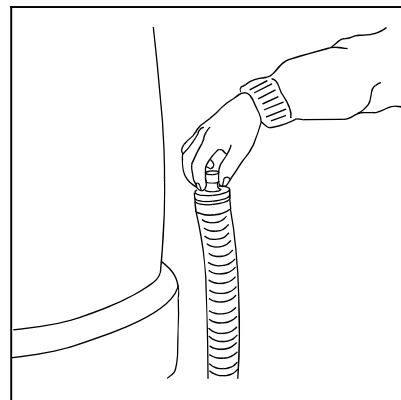
Check that the inspection cover has been tightened,



and that the exhaust plug of the tank



and the plug of the exhaust pipe are closed.



GENERAL RULES OF OPERATION

The rules below have to be followed carefully in order to avoid damages to the operator and to the machine.

- _ Read the labels carefully on the machine. Do not cover them for any reason and replace them immediately if damaged
- _ The machine must be used exclusively by authorized staff that has been instructed for its use
- _ During the working of the machine, pay attention to other people and especially to the children
- _ Do not mix different detergents, avoiding harmful odors
- _ Do not place any liquid containers onto the machine
- _ The storage temperature has to be between -13° F and +131° F
- _ Operating conditions: room temperature between 35°F and 104°F with respective humidity between 30 and 95%
- _ Do not use the machine in explosive atmosphere
- _ Do not use the machine as a means of transport
- _ Do not use acid solutions which could damage the machine and/or the persons
- _ Avoid working with the brushes when the machine stands still, in order to prevent floor damage
- _ Do not vacuum inflammable liquids
- _ This appliance is not suitable for picking up hazardous dust
- _ In case of fire, use a powder extinguisher. Do not use water
- _ Do not strike shelving or scaffolding, where there is danger of falling objects
- _ Adapt the utilization speed to the adhesion conditions
- _ Do not use the machine on areas having a higher gradient than the one stated on the number plate
- _ When the machine is in parking position, turn off the key and set the parking brake
- _ The machine has to carry out simultaneously the operations of washing and drying. Different operations have to be carried out

in areas which are not permitted for the passage of non employed staff. Signal the areas of moist floors with suitable signs

_ If the machine does not work properly, check by conducting simple maintenance procedures.

Otherwise, it is better to ask for BETCO technical service

_ When parts are required, ask for ORIGINAL spare parts to an agent and/or to an authorized BETCO dealer

_ Use only original BETCO brushes indicated in the paragraph "CHOICE AND USE OF BRUSHES"

_ For any maintenance operation disconnect the power supply from the machine

_ Restore all electrical connections after any maintenance operation

_ Do not take off the pieces which require the use of tools to be removed

_ Do not wash the machine with direct water jets or with high water pressure nor with corrosive material

_ Every 200 working hours have a machine check through a BETCO service department

_ In order to avoid scales on the solution tank filter, do not fill the detergent solution many hours before the machines' use

_ Before using the machine, check that all doors and coverings are in their position as indicated in this use and maintenance catalogue

_ Be sure the recovery tank is empty before lifting it

_ Provide for the scrapping of the material of normal wear following strictly the respective rules

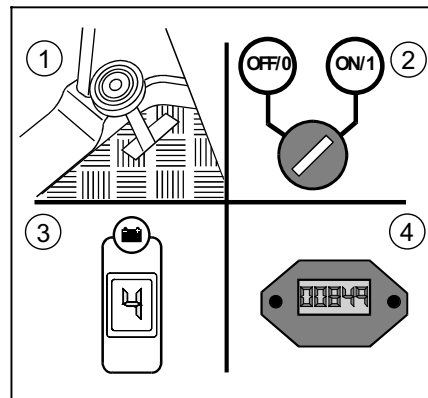
_ When, after years of precious work, your BETCO machine has to be abandoned, provide for the scrapping in appropriate

Centers, because of the presence of toxic-harmful materials, especially oils, batteries and electronic components, and considering that the machine itself has been constructed using materials integrally recyclable.

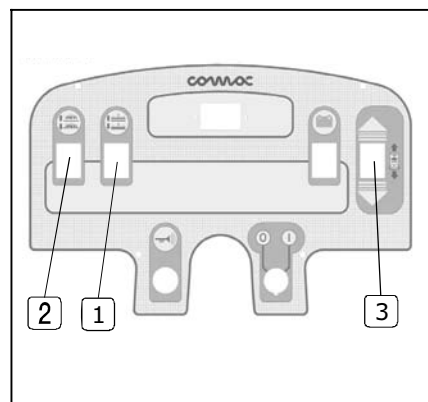
PERFORMANCE

SETTING FOR WORK

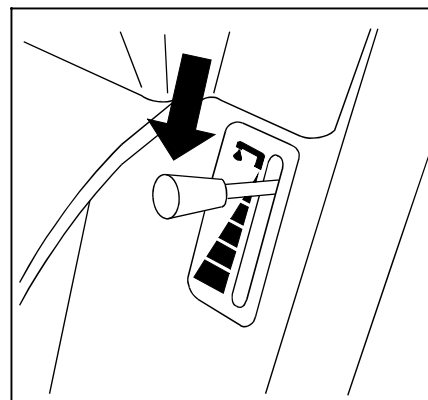
1. Carry out the operations for the preparation of the machine
2. Sit on the driver's seat
3. Check that the parking brake is released (1)
4. Turn the key of the general switch (2) clockwise of a quarter turn. Immediately the battery display (3) and the hour meter (4) switch on.



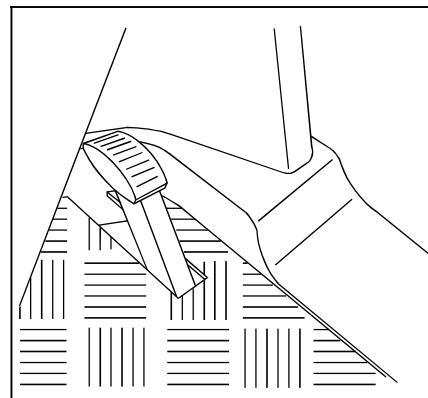
5. Position the switch of the squeegee up/down (1) into position down, the suction motor starts to work
6. Push the switch of the brushes base up/down (2) into position down, until you reach the stroke end. The brushes will start rotating only by operating the accelerator pedal
7. Collocate the drive selector (3) into the forward position



8. Open the cock by lowering the lever. The water is dispensed only when the machine is moving forward.

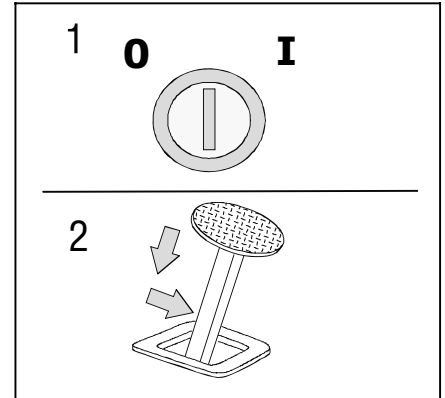


9. Press the accelerator pedal. The machine begins to move, the squeegee begins to lower itself and the brushes start to rotate. During the first metres of operating, check that the quantity of the detergent solution is sufficient and that the squeegee dries perfectly. The machine will now start working efficiently until the detergent solution runs out.

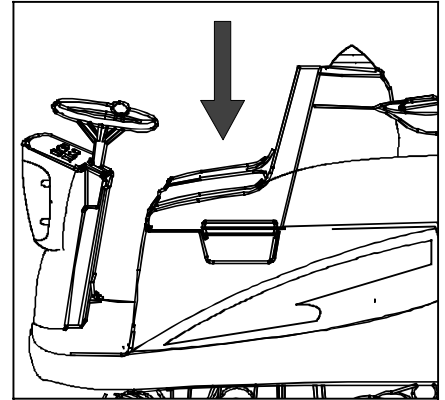


PERFORMANCE

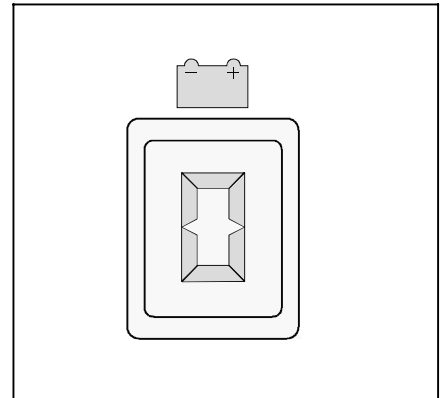
Whenever the machine develops operating problems during working, immediately turn off the key (1), act upon the emergency brake lever (2) pushing it downwards and pulling it towards yourself until it is coupled. These commands disconnect all the functions on the machine. To start the machine again, once the problem has been solved, switch on the key (1) and release the pedal of the emergency brake (2).



The machine will not start if the operator is not properly seated.



When the charge level of the batteries is exhausted, the “blinking zero” on the display appears and the brushes motor automatically switches off. It is therefore necessary to effect recharging as soon as possible.



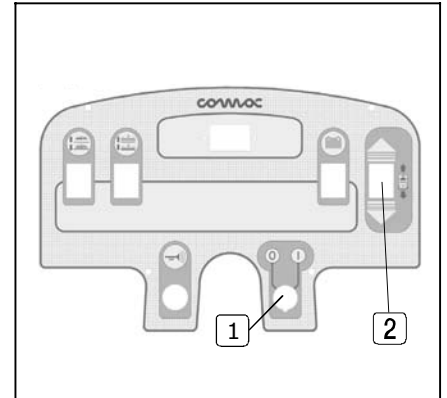
DEVICE TOO FULL

The machine is equipped with a float, which intervenes when the recovery tank is full, causing the closure of the suction hose. In that case it is necessary to proceed for the emptying of the recovery tank.

PERFORMANCE

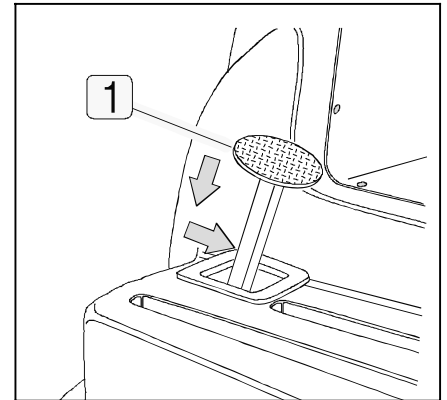
TRACTION

These machines are equipped with electronically commanded traction. To move the machine, it is necessary to turn the key (1) and then move forwards (forward movement) or backwards (rear movement) the manipulator (2). Press the drive pedal and the machine will start to move. The movement speed can be adjusted acting upon the pedal.



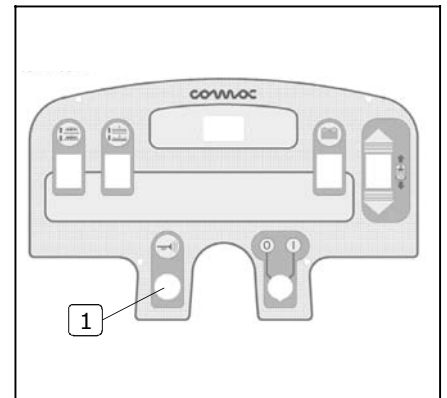
BRAKES

The machine is equipped with an electronic brake system. To brake in normal working conditions, it is enough to lift the foot from the drive pedal. In case of bad operation of the service brake, or in case of necessity (stop, danger, etc.), act upon the mechanical brake pedal pushing downwards and pulling backwards until the lever (1) is coupled.



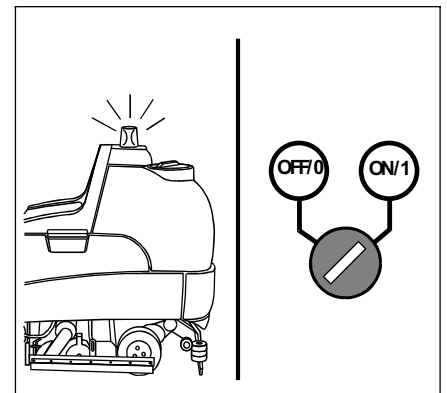
HORN

The machine is equipped with a horn switch. To operate it, press the push button as shown in the figure (1).



BLINKING LIGHT

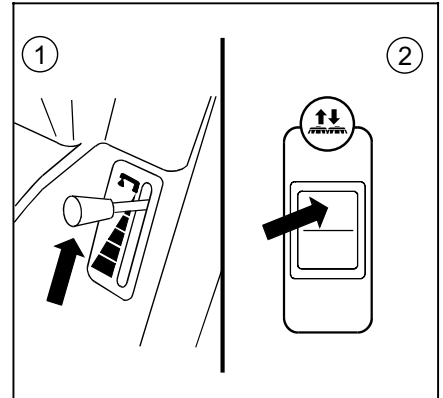
The machine is equipped with a blinking light that turns on automatically when you turn the key clockwise of a quarter turn onto position ON.



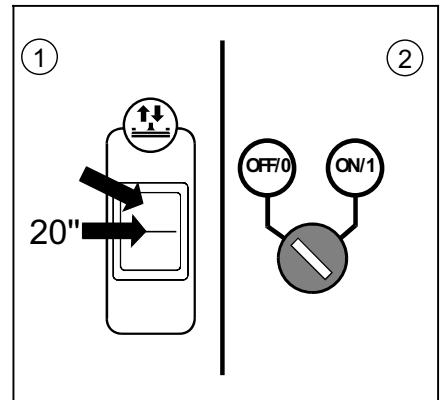
ON COMPLETION OF THE WORK

Having finished the job and before any type of maintenance is done, proceed as follows:

1. Close the cock (1)
2. Push the brushes base switch (2) into the UP position, until the maximum UP position is reached



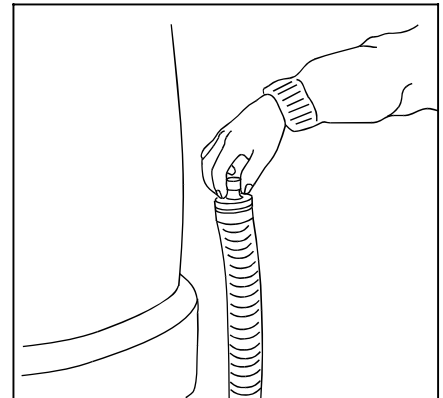
3. Position the switch of squeegee up/down (1) into the central position, so that the suction motor keeps on working to empty the suction hose for about 20 seconds, then put it into the UP position.
4. Bring the machine up to the place provided for the water outlet
5. Turn the general key switch (2) 1/4 round counterclockwise



6. Take off the exhaust pipe from its hook, unscrew the exhaust plug and empty the recovery tank. To simplify draining operation, it is recommended to hold with one hand the hose upwards more than the water level inside the tank is and with the other hand unscrew the knob and take off the plug. Slowly lower the hose and the liquid will start draining at the desired speed.



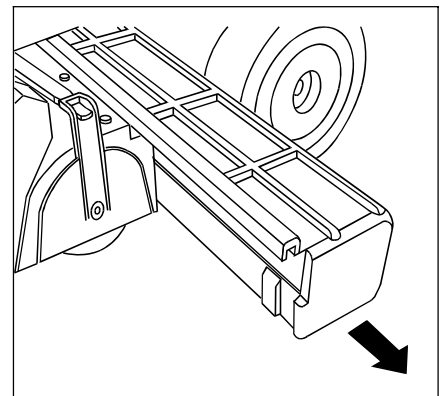
ATTENTION! This operation has to be carried out using gloves to protect from contact with dangerous solutions.



7. The squeegee has to be lifted when the machine is not operating. In this way damage to the squeegee rubbers is avoided.
8. Take off the brushes and clean them with a water jet (for the brushes disassembly please read further on under "DISASSEMBLY OF THE BRUSHES").
9. Remove the hopper unit (if washing/sweeping unit is being used) to empty debris, then clean out carefully.



ATTENTION! This operation has to be carried out using gloves to protect from contact with dangerous solutions.



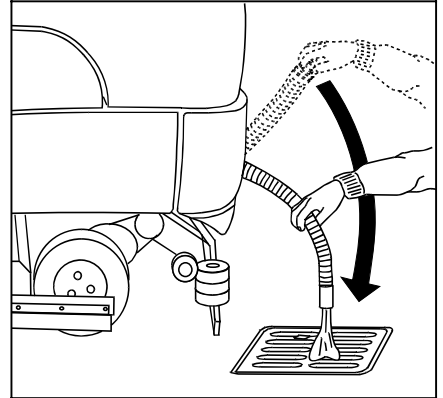
DAILY MAINTENANCE

RECOVERY TANK CLEANING

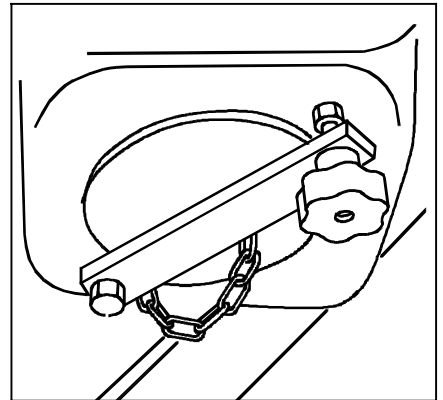
1. Empty the tank through the flexible hose, unscrewing of some turns the knob and then taking off the exhaust plug



ATTENTION! This operation has to be carried out using gloves to protect from contact with dangerous solutions



2. Open the side plug by unscrewing the knob and rotating the closing blade
3. Rinse the tank and clean the exhaust plug
4. Check the perfect position of the side plug gasket
5. Retighten the side plug and the plug onto the exhaust pipe



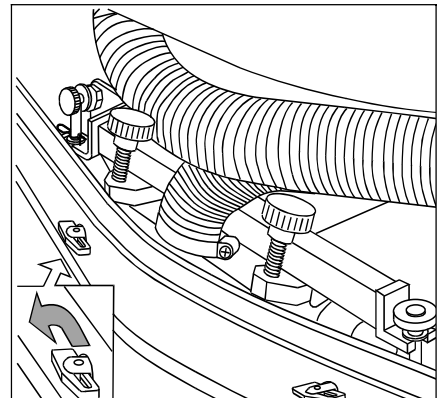
CLEANING OF THE SQUEEGEE

Clean the squeegee with a water jet. Check the rubber wear and if necessary, turn them upside-down or change them. The careful cleaning of the complete suction group assures higher life of the suction motor.

REPLACEMENT OF THE SQUEEGEE RUBBER

If the squeegee rubber is worn and does not dry well, it is possible to change the drying edge proceeding as follows:

1. Push and rotate the fixing plates
2. Slip off the rubber blade and the rubber itself
3. Turn the rubber upside-down and if necessary, replace it
4. Adjust the squeegee height as indicated in "ADJUSTMENT HEIGHT SQUEEGEE SUPPORT" under "MACHINE PREPARATION"
5. Reassemble everything repeating inversely above operations

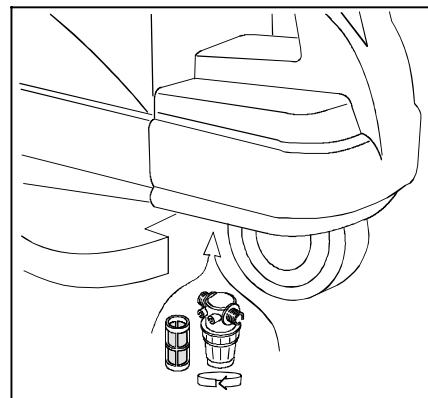


DAILY MAINTENANCE

SOLUTION TANK AND FILTER CLEANING

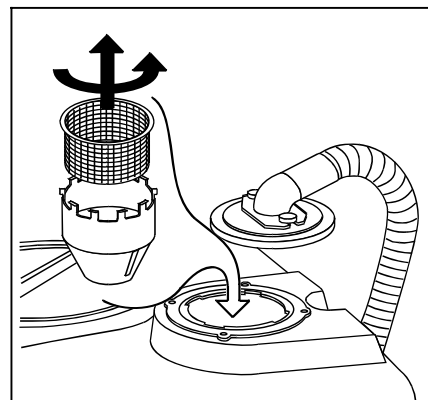
When the solution tank is empty:

1. Open the cock
2. Unscrew the filter and rinse it thoroughly
3. Take off the solution tank plug
4. Clean the inside of the solution tank with a water jet
5. Take off the filter cartridge and clean it
6. Reassemble everything again repeating inversely above operations



FILTER AND RECOVERY TANK CLEANING

1. Turn over forwards the seat
2. Take off the plug from the recovery tank
3. Remove the filter with the antifoam protection
4. Rotate counterclockwise the filter inside the protection till it is free and take it off from the protection
5. With a water jet clean the walls and the filter bottom. Carry out the washing operations carefully on all the parts
6. Reassemble everything again following inversely above operations

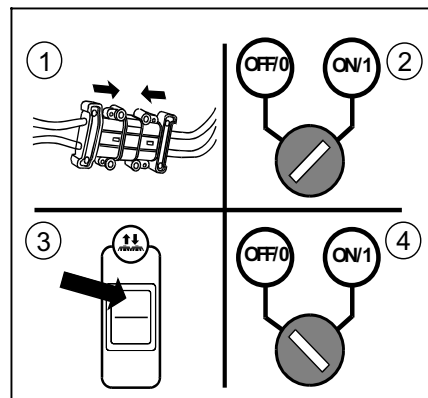


DISASSEMBLY ROTARY BRUSHES

1. Connect the battery connector if it is not connected
2. Turn the key into position ON
3. With the switch of brushes base up/down raise the base (if it is not already in up position)
4. Turn the key into position OFF and take it off from the instrument board



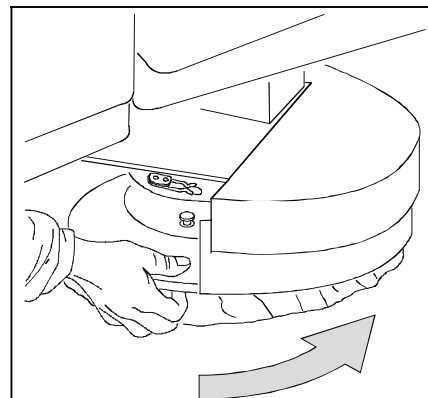
ATTENTION! To carry out the brush disassembly operation with the current connected could cause damage to the hands.



5. Rotate the brush until it comes off from the brush plate seat as shown in the figure. The figure shows the rotating direction for the disassembly of the right brush, the left one has to be rotated inversely.

ATTENTION! In case of brushes block follow the procedure up to point 4, remove the cover unscrewing the knobs. Rotate the brush until the hole of the brushes holder plate is under the hole of the base, insert a screwdriver in the hole and block the plate. Rotate hard the brush up to its release.

6. Reassemble everything again following inversely above operations.



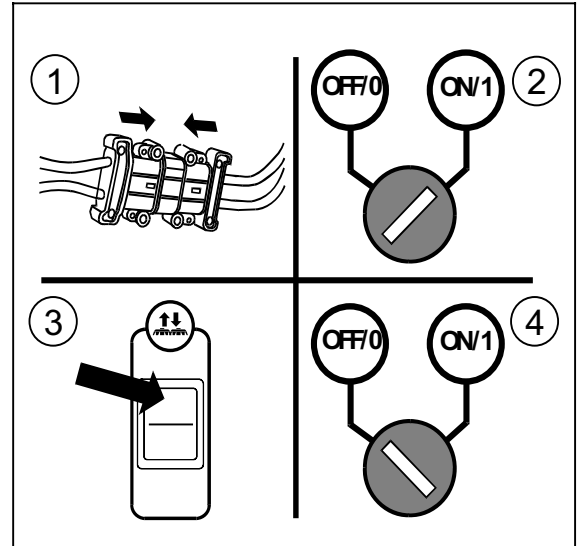
DAILY MAINTENANCE

DISASSEMBLY BROOMS

1. Connect the battery connector
2. Turn the key into position ON
3. With the switch of brushes base up/down, raise the base (if it is not already up)
4. Turn the key into position OFF and take it off from the board



ATTENTION! To carry out the brush disassembly operation with the connected current on, may cause damage to the hands.

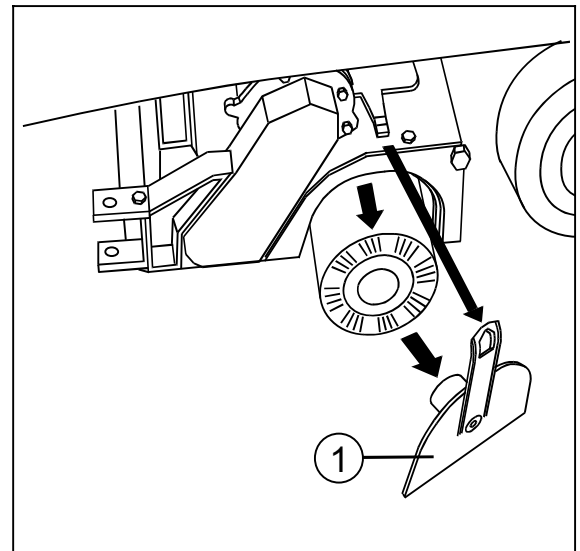


5. Remove the side splash guards
6. With the base in up position release, pushing downwards and then outwards, the two movable supports (1)
7. Remove the brush
8. Repeat the operation also for the second support



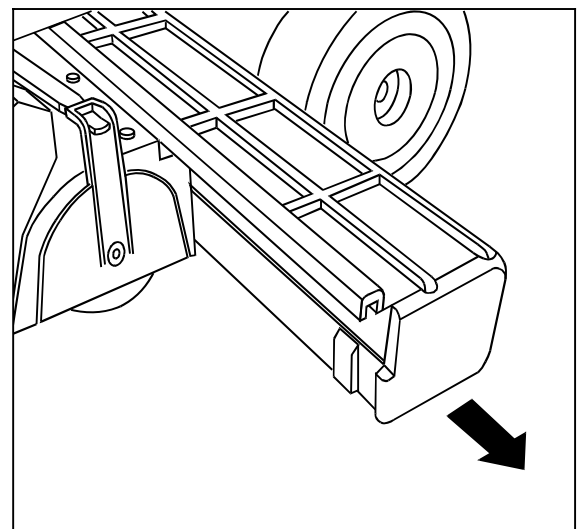
ATTENTION! This operation must be made by using gloves to protect from possible contact with dangerous materials and solutions.

ATTENTION! The cylindrical brush unit, when not in use, should not be stored directly on the brushes. This could cause deformity to the bristles and when re-using the machine, produce strong and dangerous vibrations



HOPPER CLEANING

1. Release and rotate the left side splash guard
2. Remove the hopper
3. Empty it and clean it with a jet of water
4. Reassemble the hopper
5. Refasten the left side splash guard



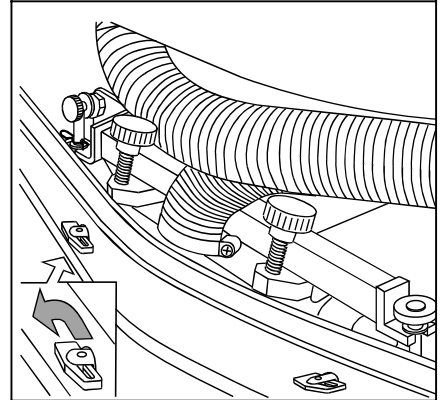
WEEKLY MAINTENANCE

REPLACEMENT REAR SQUEEGEE RUBBER

If the rear squeegee rubber is worn and does not dry well, it is possible to change the drying edge proceeding as follows:

1. Push and rotate the fixing plates
2. Slip off the rubber blade and the rubber itself
3. Turn the rubber upside-down and if necessary, replace it
4. Reassemble everything repeating inversely above operations

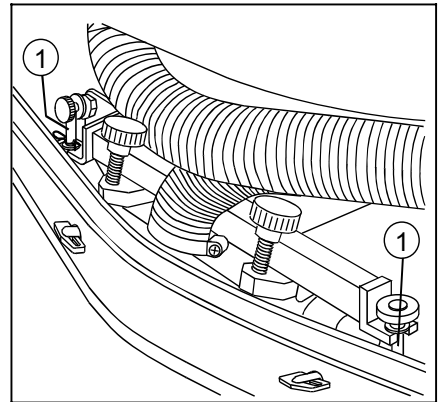
Adjust the squeegee height depending on the rubber (see under "ADJUSTMENT HEIGHT SQUEEGEE SUPPORT")



REPLACEMENT FRONT SQUEEGEE RUBBER

If the front squeegee rubber is worn, a good suction is not achieved and therefore the machine does not dry perfectly. In that case proceed as follows with the replacement:

1. Take off the squeegee from the machine (1)
2. Loosen the screws which block the front rubber
3. Slip off the rubber blade
4. Slip off the rubber and replace it
5. Reassemble everything repeating inversely above operations

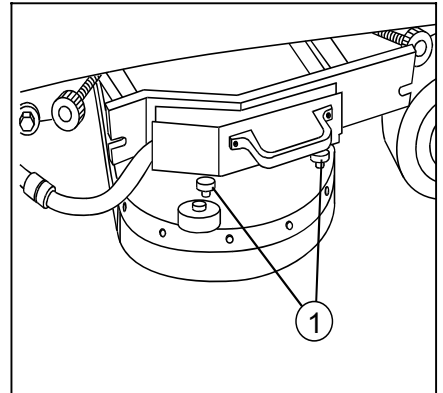


ADJUSTMENT SPLASH GUARDS WASHING BASE (rotary brushes)

Periodically proceed with the height adjustment of the side splash guards of the brushes base. This operation has to be carried out with the base down.

1. Loosen the fixing knobs of the covers (1)
2. Position the covers again
3. Retighten the knobs

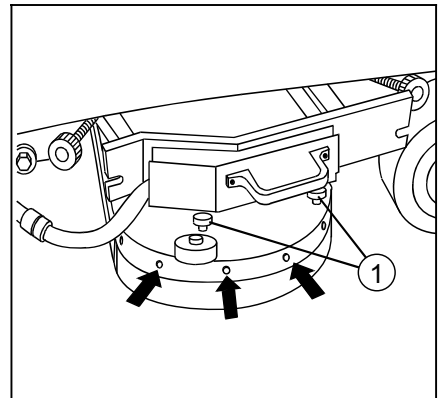
It is important to remember that the rubber must skim over the floor and be parallel to it.



REPLACEMENT SPLASH GUARDS WASHING BASE

Check periodically the wear of the base splash guards. In case of necessity, to replace them, proceed as follows:

1. Disassemble the covers unscrewing the knobs (1)
2. Unscrew the blades that block the splash guard rubbers
3. Take off the splash guards and replace them
4. Reassemble everything again following inversely above operations



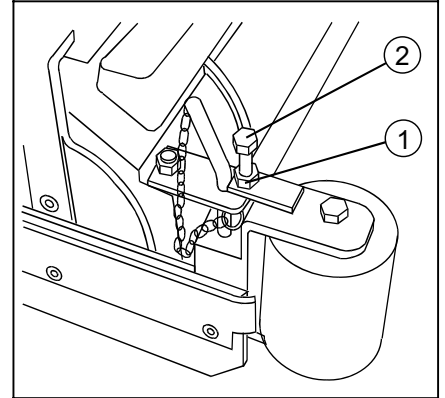
WEEKLY MAINTENANCE

ADJUSTMENT SPLASH GUARDS WASHING/SWEEPING BASE (brooms)

Periodically proceed with the height adjustment of the side splash guards of the base. This operation has to be carried out with the base down:

1. Loosen the fixing lock nut of the support bars (1)
2. Regulate the splash guards with the screw (2)
3. Block the lock nut (1)

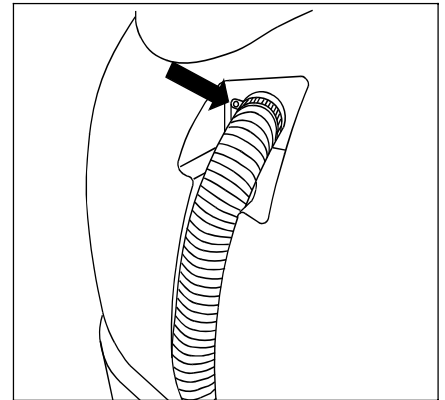
Keep in mind that the rubber must skim the floor and must be parallel to it.



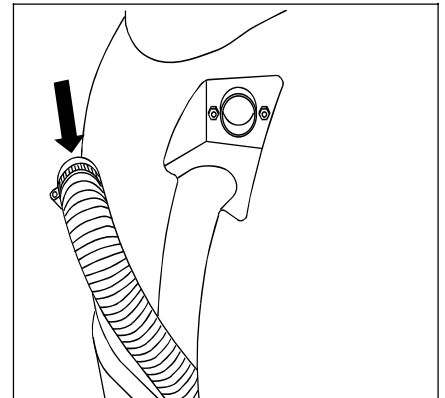
SUCTION HOSE CLEANING

Whenever suction seems to be unsatisfactory, check that the suction hose is not obstructed. Eventually, clean it with a water jet introduced from the side where it is being connected to the tank. Proceed as follows:

1. Loosen the clamp which tightens the hose



2. Clean with a water jet introduced from the side where it is connected to the tank
3. Reassemble everything proceeding inversely with above operations

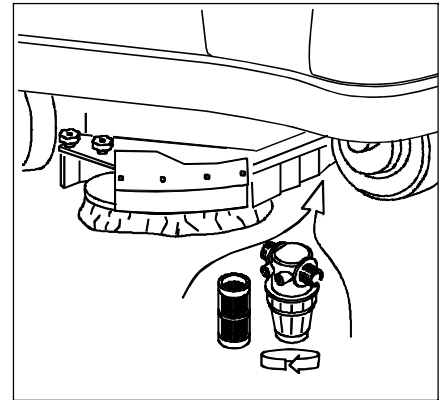
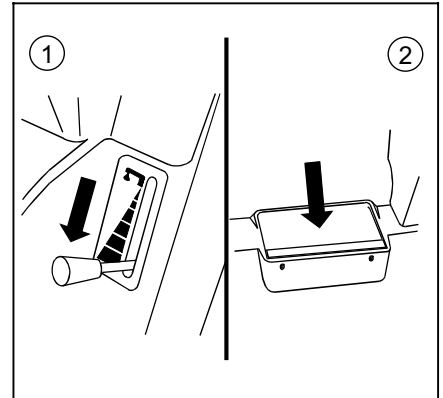


ATTENTION! This operation must be made by using gloves to protect from the possible contact with dangerous materials and solutions.

TROUBLE SHOOTING GUIDE

INSUFFICIENT WATER ONTO THE BRUSHES

1. Make sure that the cock is open
2. Make sure that there is water in the solution tank
3. The water is dispensed only when the machine is moving forward
4. Clean the solution filter
5. Check that no thermic protection (circuit breaker) is activated. (see "THERMIC PROTECTIONS")



THE MACHINE DOES NOT CLEAN SATISFACTORILY

1. Check the condition of the brushes and replace them, if necessary (the brushes have to be changed when the bristles reach around 15mm). For their replacement see under "DISASSEMBLY BRUSHES" or "ASSEMBLY BRUSHES".
2. Use a different kind of brushes to the ones fitted as standard. For cleaning operations on floors where the dirt proves to be particularly resistant, we recommend using special brushes which may be supplied optionally according to needs (see under "CHOICE AND USE OF BRUSHES").

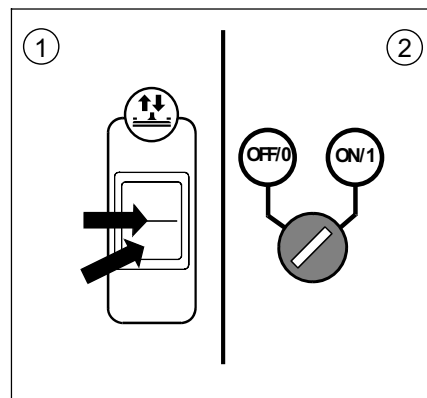
THE SQUEEGEE DOES NOT DRY PERFECTLY

1. Check that the squeegee is clean
2. Check the squeegee adjustments (see under "MACHINE PREPARATION")
3. Clean the whole suction group (see "DAILY MAINTENANCE" and "WEEKLY MAINTENANCE")
4. Replace the rubbers, if worn (see "WEEKLY MAINTENANCE")
5. Check that no thermic protection (circuit breaker) is activated (see THERMIC PROTECTIONS)

TROUBLE SHOOTING GUIDE

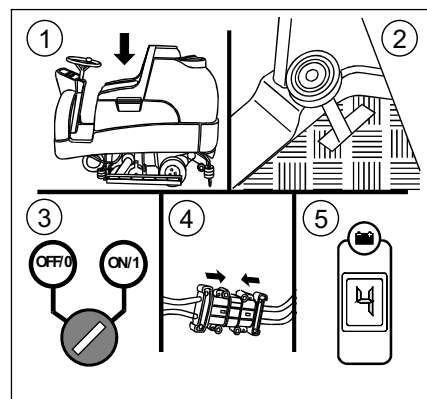
THE SUCTION MOTOR DOES NOT FUNCTION

Check that the squeegee is in its working position and/or that the switch squeegee up/down is in the low or central position.



THE MACHINE DOES NOT START

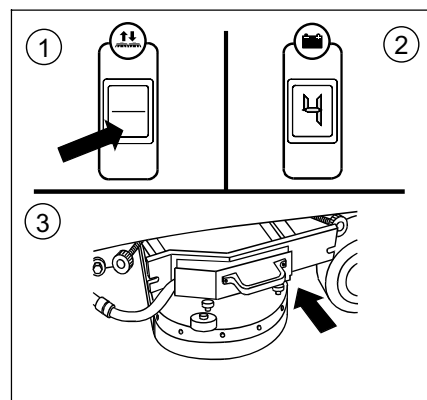
1. The operator must be properly seated in the driving position
2. Check that the brake pedal is completely released
3. Check that the general switch key is on
4. Check that the connector is connected to the batteries
5. Check through the battery indicator that the batteries are fully charged
6. Check that no thermic protection is activated (see THERMIC PROTECTIONS)



THE BRUSHES MOTOR DOES NOT WORK

ATTENTION! To avoid damages to the floor, the motor starts only when the machine goes forward.

1. Check that the base is down
2. Check through the battery indicator that the batteries are fully charged
3. Check the correct connection of the electric connector of the washing group



IT IS NOT POSSIBLE TO RAISE OR LOWER THE BASE

Check that no thermic protection has occurred (see THERMIC PROTECTIONS)

TROUBLE SHOOTING GUIDE

THE HORN DOES NOT WORK

Check that no thermic protection is occurred (see THERMIC PROTECTIONS)

EXCESSIVE FOAM PRODUCTION

Check that a low foam detergent has been used. If required, add a small quantity of antifoam liquid into the recovery tank.

Remember that, when the floor is not very dirty, more foam is generated. In this case dilute more the detergent.

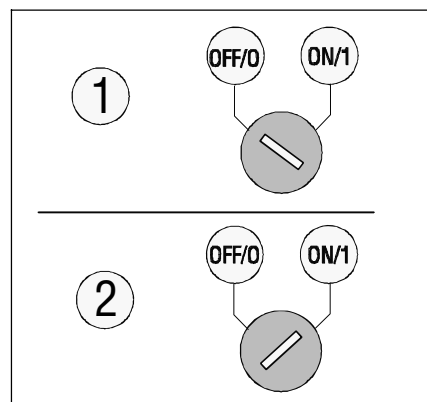
ELECTRIC FUSES AND THERMIC PROTECTIONS

The machine is equipped with the following protection devices:

- power fuses located in the electric compartment to protect from short circuit
- low current restorable fuses to protect:
 - General services
 - Solenoid valve and water pump
 - Horn
 - Traction management device
 - Actuator up/down brushes base
 - Actuator up/down squeegee

If one of the restorable fuses interfere, turn the key into position OFF (1), wait for a few seconds, then turn the key into position ON (2).

If the problem still persists, please get in touch with the COMAC technical service.



CHOICE AND USE OF BRUSHES

POLYPROPYLENE BRUSH (PPL)

It is used on all types of floors which are hot water resistant (not more than 60°C). The Polypropylene brush is nonhygroscopic and therefore conserves its characteristics even if working in the wet conditions.

NYLON BRUSH

It is used on all types of floors with excellent wear and hot water resistance (more than 60°C). The nylon is hygroscopic and so, over time, loses its characteristics working on the wet.

TYNEX BRUSH

The brush bristles are charged with very aggressive abrasives. It is used to clean very dirty floors. To avoid floor damages, work strictly only with the necessary pressure.

STEEL BRUSH

The bristles are made of steel wires; it is used to descale floors which are anyhow resistant to the abrasion, very uneven or with wide joints.

THICKNESS OF THE BRISTLES

The thicker the bristles are, the more rigid they will be. These ones are therefore used on smooth floors or with small joints.

On uneven floors with deep joints it is recommended that, softer bristles, which enter more easily in depth, are used.

Please bear in mind that, when the bristles are worn out and get too short, they will get rigid and cannot penetrate anymore. As well as for thick bristles, the brush will begin to jump.

PAD HOLDER

The pad holder is recommended to clean glossy areas.

There are two types of pad holders:

1. The traditional pad holder is equipped with anchor points which allow the abrasive pad to be held and dragged during the work process.
2. The pad holder is of the CENTER LOCK type, apart from the anchor points, is equipped with a central blocking release system made in plastic. This allows a perfect match with the abrasive pad and to hold it without the risk of falling down. This type of pad holder is recommended especially for machines with more brushes, where the centering of the pads is difficult.

LIST FOR THE CHOICE OF THE BRUSHES

Machine	Q.ty	Code	Bristles type	Thick Ø	Brush Ø	Length	Notes
TRIPLA 65	2	66807010	PPL	0.3	345		
		66807020	PPL	0.6	345		
		66807030	PPL	0.9	345		
		66807040	TYNEX		345		
		66807050	PPL/STEEEL		345		
		66718010	PAD HOLDER CENTER LOCK	1.0	330	700	CYLINDRICAL
		66807210	PPL	0.8	150	700	CYLINDRICAL
		66807220	PPL	1.0	150	700	CYLINDRICAL
		66807230	TYNEX		150		

CATALOGO RICAMBI

INTRODUZIONE

Il presente vuole essere da guida per l'ordinazione delle parti di ricambio ed è stato realizzato in modo da consentire una rapida identificazione della macchina in tutte le sue versioni e quindi una rapida visualizzazione dei pezzi che la compongono.

MODALITA' DI ORDINAZIONE

Per facilitare la ricerca di magazzino e la spedizione dei pezzi di ricambio, si pregano vivamente i Sigg. Clienti di attenersi alle seguenti norme e specificare sempre:

- a) modello e numero di matricola della macchina;
- b) numero di posizione e numero di tavola dove sono rappresentati;
- c) codice di ordinazione e denominazione;
- d) quantità dei pezzi desiderati;
- e) indirizzo esatto e ragione sociale del Committente, completo con l'eventuale recapito per la consegna della merce;
- f) mezzo di spedizione desiderato. (Nel caso questa voce non sia specificata la Ditta Costruttrice si riserva di usare a sua discrezione il mezzo più opportuno).

SPARE PARTS CATALOGUE

INTRODUCTION

This catalogue is intended to serve as a guide for the ordering of spare parts and is designed to facilitate rapid identification of the machine in all its versions and to rapid location of its component parts.

HOW TO ORDER

For the purpose of simplifying stock searching and the delivery of spare parts, we would ask our customers to observe the following standard procedures, at all times specifying:

- a) the model and part number of the machine;
- b) the position number and the number of the table of chart in which the parts appear;
- c) ordering code and part name;
- d) quantity of parts required;
- e) precise address and company status of the purchaser placing the order, complete with address for delivery of the goods;
- f) shipping means required.

CATALOGUE DES PIECES
DE RECHANGE

INTRODUCTION

Le présent catalogue a pour but de guider l'utilisateur dans les commandes de pièces détachées. Il a été réalisé pour faciliter une identification rapide de la machine dans toutes ses versions et permet ainsi un repérage rapide de ses composants.

COMMENT PASSER COMMANDE

Afin de simplifier la recherche dans le magasin et l'expédition des pièces de rechange, nous prions notre clientèle de respecter la procédure suivante en indiquant toujours:

- a) le modèle et numéro de la machine;
- b) le numéro de la position et numéro du tableau sur lequel figure la pièce;
- c) la référence et la dénomination;
- d) la quantité des pièces demandées;
- e) l'adresse exacte et la raison sociale de l'acheteur qui passe la commande, en indiquant l'adresse de livraison;
- f) le moyen de transport désiré (dans le cas où ceci n'est pas précisé l'expéditeur se réserve le droit de choisir le transporteur).

ERSATZTEILKATALOG

EINLEITUNG

Der vorliegende Katalog versteht sich als Führer für Ersatzteile und soll eine rasche Identifikation der Maschine in all ihren Ausführungen ermöglichen und daher ein sofortiges Erkennen der Teile, aus denen sie besteht.

BESTELLVORSCHLAG

Um ein Auffinden im Lager und den Versand der Ersatzteile zu erleichtern, werden die Kunden ersucht, sich an folgende Normen zu halten und immer folgendes anzugeben:

- a) Modell- und Gerätenummer;
- b) Positions- und Tafelnummer, wo sie dargestellt sind;
- c) Bestellnummer und Handelsbezeichnung;
- d) Menge der gewünschten Teile;
- e) Genaue Adresse und Firmennamen des Auftraggebers, gemeinsam der ev. Anschrift für die Zusendung der Ware;
- f) Die gewünschte Versandart (falls nicht angegeben, behält sich der Lieferant das Recht vor, die günstigste Art zu wählen).

CATALOGO PIEZAS
DE REPUESTO

INTRODUCCIÓN

Ese catálogo quiere servir cómo guía para pedir las piezas de repuesto y se ha realizado de manera de consentir una rápida identificación de la máquina en todas sus versiones y por consiguiente una rápida individuación de las piezas que la componen.

MODALIDADES DE LOS PEDIDOS

Para la búsqueda en el almacén y el envío de las piezas de repuesto, se ruega encarecidamente a los Sres. Clientes de seguir las reglas siguientes y de especificar siempre:

- a) el modelo y el número de matrícula de la máquina;
- b) el número de posición y el número de la tabla donde son representadas;
- c) el código de pedido y la denominación;
- d) el número de piezas que se desean;
- e) las señas exactas y la razón social del Comitante, indicando también las señas eventuales para la entrega de la mercancía;
- f) El medio de envío que se desea. (En caso de que ese dato no se haya especificado, la Empresa Constructora se reserva el derecho de utilizar a su elección el medio más adecuado).

SIMBOLOGIA USATA NEL CATALOGO

SYMBOLGY USED IN THE CATALOGUE

SIMBOLE DANS LE CATALOGUE

SIMBOLGEBRAUCH IM KATALOG

SIMBOLOGIA EMPLEADA EN EL CATALOGO

→ I XXXXXXXX

Codice utilizzato fino alla matricola indicata
Code used up to the indicated serial number
Code utilisé jusqu'au numéro indiqué
Artikel benutzt bis zur angegebenen Nummer
Código utilizado hasta el número indicado

XXXXXXX I →

Codice utilizzato dalla matricola indicata
Code used from the indicated serial number
Code utilisé a partir du numéro indiqué
Artikel benutzt ab angegebenen Nummer
Código utilizado desde el número indicado

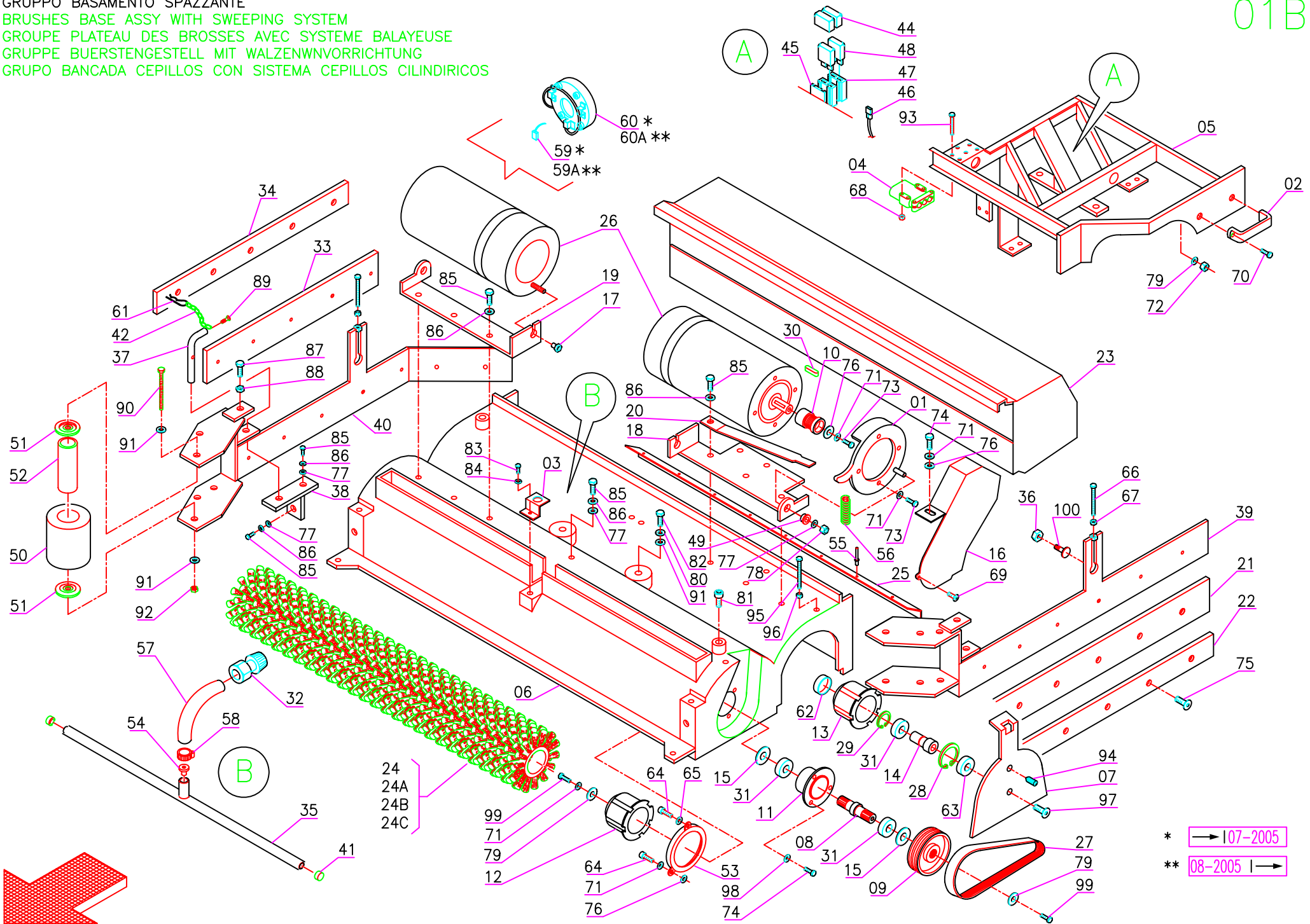
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TAV. 04	GRUPPO STERZO STEERING GEAR / ENSEMBLE DE VOLANT / LENKGRUPPE / GRUPO DE DIRECCIÓN
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TAV. 06	GRUPPO FRENO E RUOTE BRAKE AND WHEELS ASSEMBLY / GROUPE DE FREIN ET ROUES / BREMSANLAGE - HINTERRÄDER / GRUPO FRENO Y RUEDAS
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TAV. 08	GRUPPO SERBATOIO RECUPERO RECOVERY TANK ASSEMBLY / GROUPE DE RESERVOIRS RECUPERATION / GRUPPE SCHMUTZWASSERTANK / GRUPO TANQUES RECUPERACIÓN
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GRUPPO BASAMENTO SPAZZANTE
BRUSHES BASE ASSY WITH SWEEPING SYSTEM
GROUPE PLATEAU DES BROSSES AVEC SYSTEME BALAYEUSE
GRUPPE BUERSTENGESTELL MIT WALZENWVORRICHTUNG
GRUPO BANCADA CEPILLOS CON SISTEMA CEPILLOS CILINDRICOS

01B

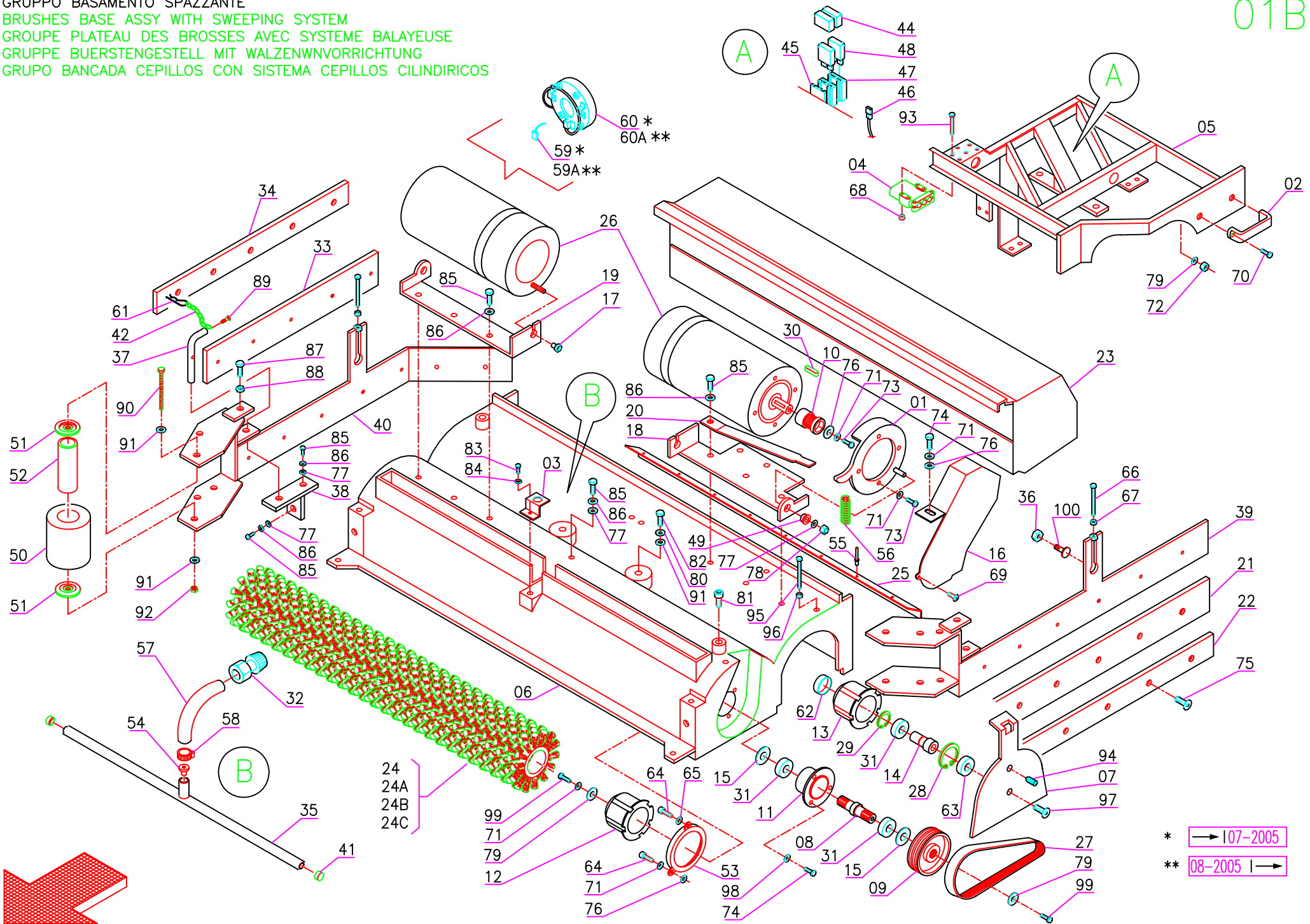


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ITEM	SKU	QTY	Description
1	203665	2	PLAQUE
2	E88090	1	Handle Enjoy 365
3	400364	1	SUPPORT
4	E83254	1	Female connector lug (Fr.)
04A	E83254	1	Female connector lug (Fr.)
5	203674	1	COUPLING
6	E83705	1	Brush housing
7	E83272	2	Plaque
8	E83893	2	Kit, Brush Hub
9	E83893	2	Kit, Brush Hub
10	E82370	2	Pulley
11	E83274	2	support
12	E83893	2	Kit, Brush Hub
13	E83434	2	Brush hub front DRS/CRS
14	E83435	2	Pin / shaft DRS/CRS
15	E83276	4	washer
16	E83667	2	Belt cover
17	408023	2	BUSHING
18	203668	1	LEFT SUPPORT MOTOR
19	203669	1	RIGHT SUPPORT MOTOR
20	E88000	2	Bracket, Spring CRS/DRS
21	E83112	1	Splash Guard, Left
22	E83682	1	Left blade
23	E82056	1	Hopper for 28" Rider
24	E83194	2	Brush, Soft 0.7mm
24A	E83101	2	Brush, Stiff 1.0mm
24B	E83100	2	Brush, Standard 0.9mm
24C	E83102	2	Brush, Tynex Grit
25	400363	1	BLADE
26	E83285	2	motor CSR28
27	E83154	2	Brush drive belt 28"
28	E83436	2	Seeger ring DRS/CRS
29	E83437	2	Retaining Ring - External
30	E83700	2	Shaft Key
31	E83277	6	Bearing, 6202 2RS
32	E83318	1	Female Coupler, Tripla
33	E83113	1	Splash Guard, Right
34	E83677	1	Right blade
35	E83516	1	Pipe
36	E83512	2	Spacer
37	E83675	2	Pin
38	203673	2	COUPLING
39	E83678	1	Left support
40	E83673	1	Right support
41	409832	2	Cap
42	E83674	2	Chain
44	E81641	2	Cover, Fuse
45	E88497	1	Fuse Block End Cap
46	E81658	2	Cable
47	E81642	2	Fuseholder
48	E81734	2	Fuse, 40 amp, Rider Scrubber
49	E81730	2	Bushing
50	E83681	4	Wheel
51	E83380	8	Washer
52	E83679	4	Pin
53	E83580	2	Ring

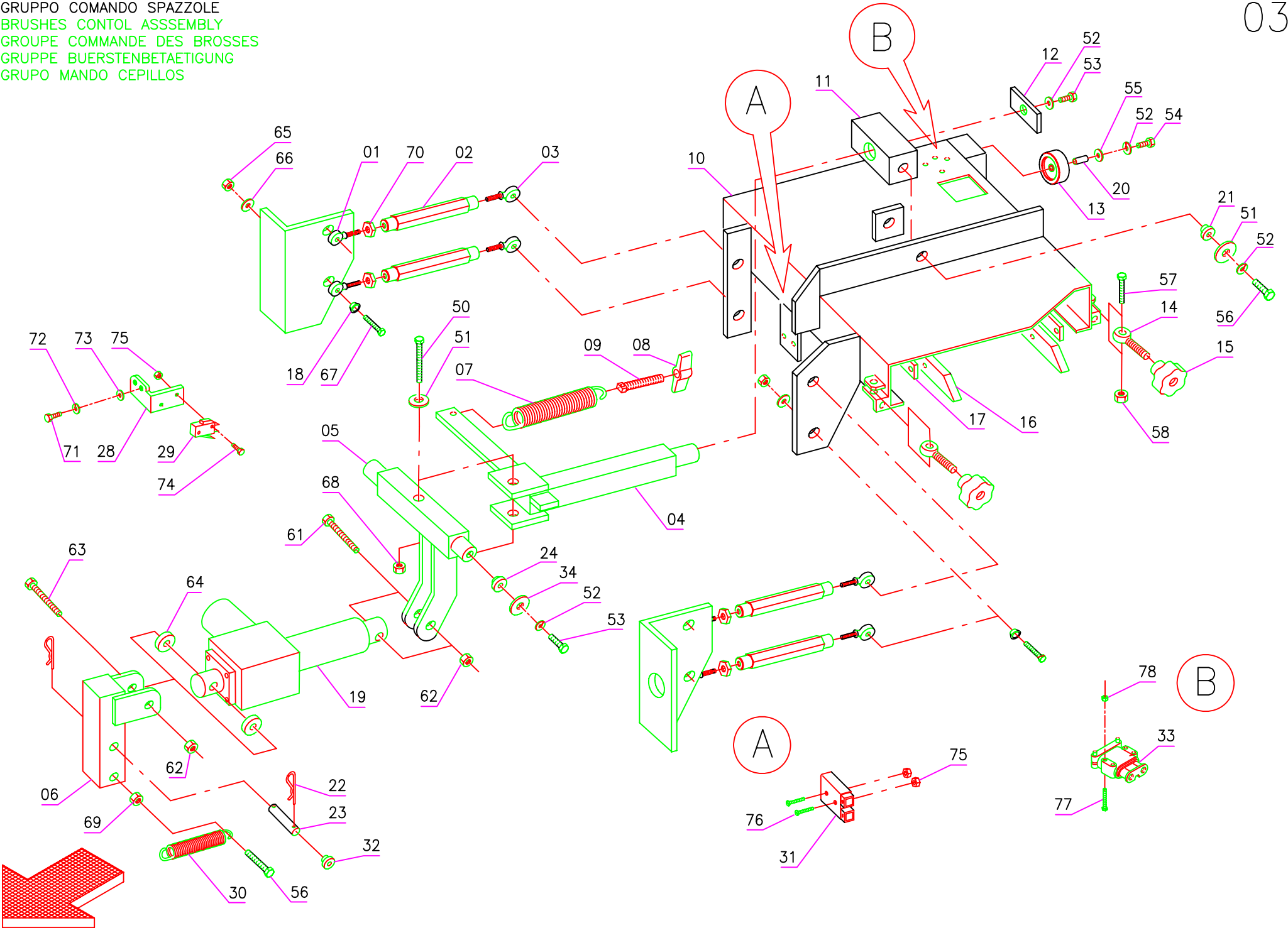
GRUPPO BASAMENTO SPAZZANTE
BRUSHES BASE ASSY WITH SWEEPING SYSTEM
GROUPE PLATEAU DES BROSSES AVEC SYSTEME BALAYEUSE
GRUPPE BUESTENGESTELL MIT WALZENWVORRICHTUNG
GRUPO BANCADA CEPILLOS CON SISTEMA CEPILLOS CILINDRICOS

01B



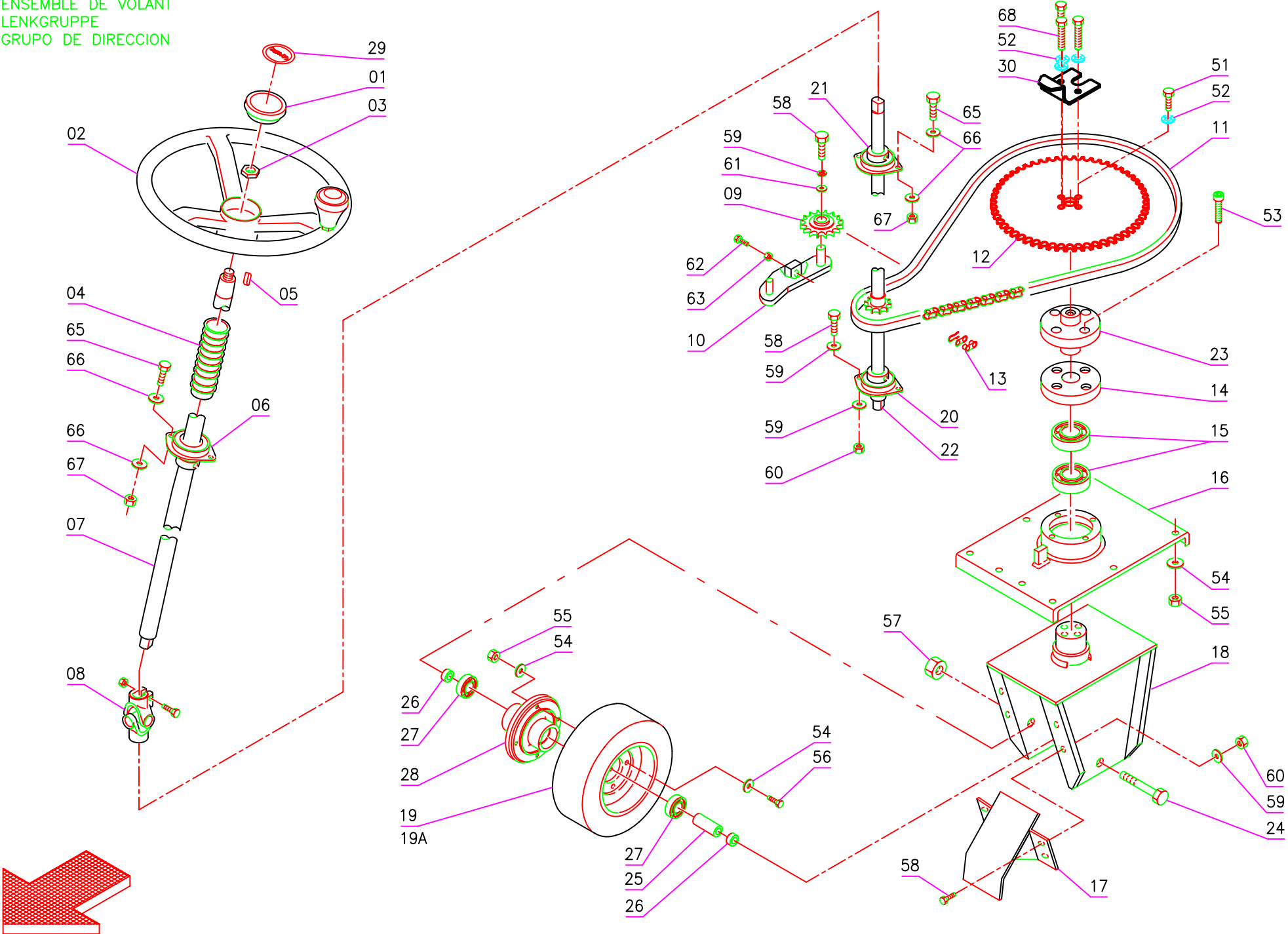
ITEM	SKU	QTY	Description
54	E83440	2	Dowel DRS/CRS
55	E81741	9	Rivet
56	E83698	2	Tension Spring
57	E83587	1	Solution feed hose CRS
58	E83586	1	Clamp D/CRS
59	E82678	4	Carbon Brush
59A	409419	4	CARBON BRUSH MOTOR
60	E81040	1	Brush Holder - Motor
60A	409750	1	CARBON BRUSH HOLDER
61	E83683	2	Clip
62	E83438	2	Cover DRS/CRS
63	E83439	2	Oil seal DRS/CRS
64	E83578		Soc Hd Cap Screw M6x25 Zinc
65	E82761		Washer 6x12x1.6
66	E83933		Screw, Tripla Side Squeegee
67	E83508		Nut WM
68	E82256		Nyloc Hex Nut, M5x7 Zinc
69	E88042		Flat Hd Soc Machine Screw M6x16 Zinc
70	408796		SCREW
71	E82774		Lock Washer, M6 Zinc
72	E83550		NyLoc Hex Nut, M6 Zinc
73	E83547		M6x16 Bolt, Zinc Hex Head
74	E82619		Screw, 6x10
75	E20290		Flat Hd Soc Machine Screw M5x16 SS
76	E82798		Washer, 6x18x1.5
77	E81874		Flat Washer M8x17x1.6 Zinc
78	E81709		Nyloc Hex Nut, M8 Zinc
79	E83278		Flat Washer M6.5x24x2 Zinc
80	E83948		Lock Washer M10x18x2.2 Zinc
81	E83884		Screw
82	E81017		Hex Bolt 10x30 Zinc
83	E20085		Hex Bolt M5x25 SS
84	E83841		External Serrated Lock Washer M5 Zinc
85	E81917		Hex Bolt M8x20 Zinc
86	E83704		Lock Washer M8x13x2.2 Zinc
87	E83671		Hex Bolt M8x30 SS
88	E83672		Hex Jam Nut, M8x5 SS
89	E83680		Screw
90	E83676		Screw
91	E82773		Flat Washer M10x21x2 Zinc
92	E83381		Nyloc Hex Nut, M10 Zinc
93	E87291		Screw, M5 x 35 CRS28/DRS26
93A	408833		SCREW
94	E83440		Dowel DRS/CRS
95	E88025		Bolt, M6 x 60 CM 70 HS
96	E83852		Hex Nut, M6x5
97	E83441		Screw DRS/CRS
98	E83658		Lock washer
99	E83279		screw
100	E83511		Carriage bolt 6mm

GRUPPO COMANDO SPAZZOLE
BRUSHES CONTROL ASSEMBLY
GROUPE COMMANDE DES BROSSES
GRUPPE BUERSTENBETAETIGUNG
GRUPO MANDO CEPILLOS

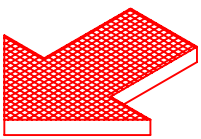
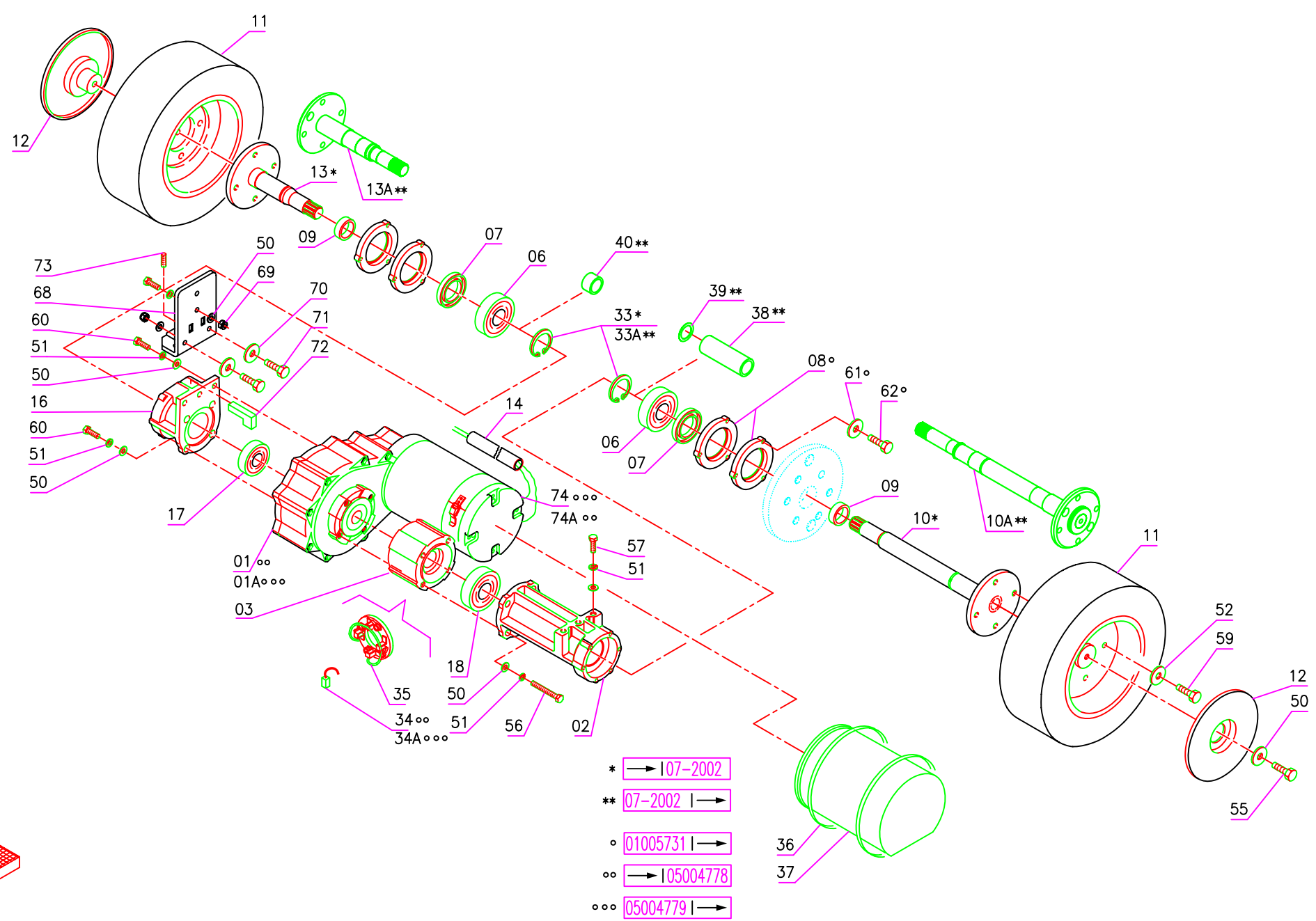


ITEM	SKU	QTY	Description
01	E88541	4	ARTICULATION HEAD
02	204376	4	ARM
03	E88542	4	ARTICULATION HEAD
04	206590	1	ARM
05	E86271	1	SHAFT
06	206588	1	COUPLING
07	408114	1	SPRING
08	E83531	1	KNOB
09	206061	1	ADJUSTER
10	203617	1	SUPPORT
11	206591	1	BLOCK
12	204946	1	PLAQUE
13	E82451	1	WHEEL
14	E88336	2	TIE ROD
15	E83864	2	KNOB
16	400744	2	GUIDE
17	203619	2	SHIM
18	E83131	16	SPACER
19	E82501	1	ACTUATOR ASSEMBLY
20	E82253	1	BUSHING
21	E85767	2	BUSHING
22	E83683	2	CLIP
23	206592	1	PIN
24	E88255	2	BUSHING
28	203620	1	SUPPORT
29	E83164	1	MICROSWITCH
30	408110	1	SPRING
31	E83254	1	CONNECTOR
32	408081	2	BUSHING
33	E83254	1	CONNECTOR FEMALE
34	E81915	2	SPECIAL WASHER
50	408740		SCREW
51	E86255		WASHER
52	E83704		WASHER
53	E81917		SCREW
54	E83801		SCREW
55	E81874		WASHER
56	E83833		SCREW
57	407671		SCREW
58	E81352		NUT
59	E83795		SCREW
60	E81915		SPECIAL WASHER
61	E83873		SCREW
62	E83381		LOCK NUT
63	408727		SCREW
64	E82773		WASHER
65	409093		LOCK NUT
66	E85722		WASHER
67	408749		SCREW
68	409091		LOCK NUT
69	E83891		NUT
70	E83829		NUT
71	E83665		SCREW
72	E20123		WASHER
73	E83879		WASHER
74	408833		SCREW
75	E81673		LOCK NUT
76	408835		SCREW
77	408638		SCREW
78	E83867		LOCK NUT

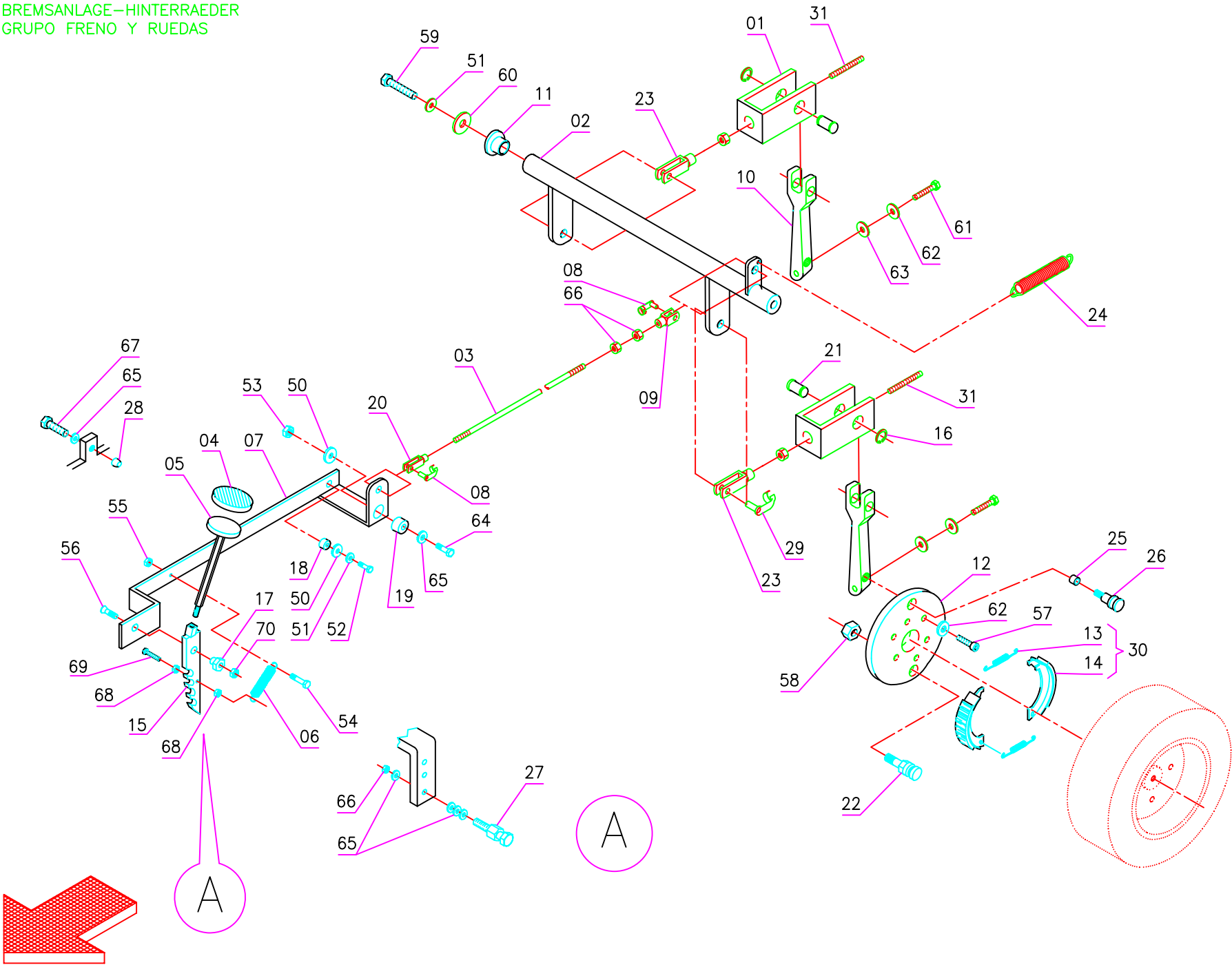
GRUPPO STERZO
STEERING GEAR
ENSEMBLE DE VOLANT
LENKGRUPPE
GRUPO DE DIRECCION



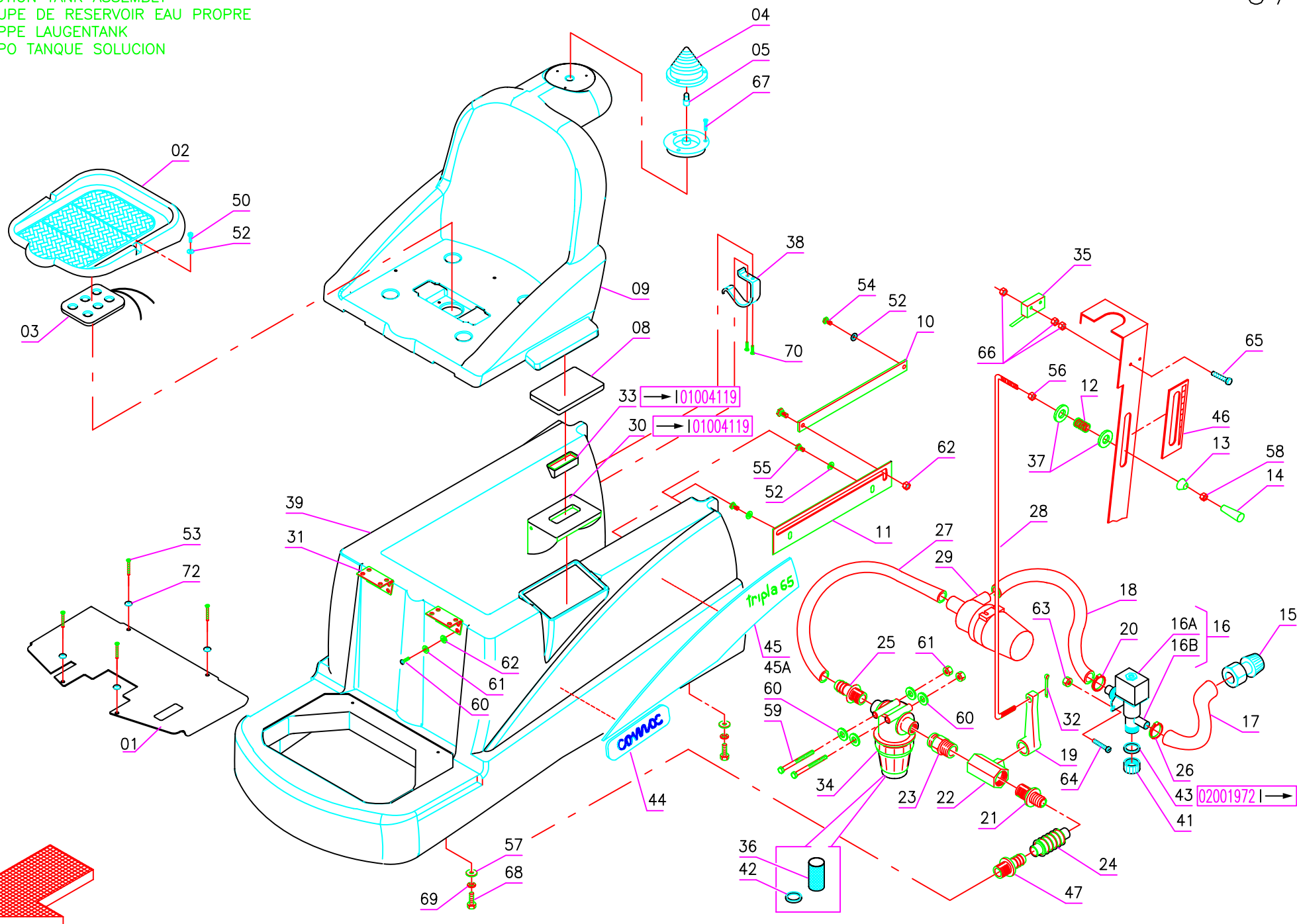
ITEM	SKU	QTY	Description
01	409845	1	CAP
02	408171	1	STEERING WHEEL ASSEMBLY
03	205250	1	SPECIAL NUT
04	E88185	1	BELLOWS
05	408405	1	KEY
06	408479	1	BEARING
07	206719	1	SHAFT
08	410558	1	UNIVERSAL JOINT
09	E82531	1	CHAIN TIGHTENER
10	203631	1	SUPPORT
11	408383	1	CHAIN
12	203630	1	CROWN GEAR
13	E83424	1	JOINT CHAIN
14	203981	1	BEARING SUPPORT
15	E88020	2	BEARING
16	400780	1	PLAQUE
17	400779	1	FENDER
18	400778	1	SUPPORT WHEELS
19	E83256	1	WHEEL
19A	E82510	1	WHEEL
20	E86742	1	BEARING SUPPORT
21	408476	1	SUPPORT
22	E83684	1	SHAFT
23	203951	1	HUB
24	206721	1	PIN
25	E81826	1	SPACER
26	202444	2	SPACER
27	E81657	2	BEARING
28	E88339	1	WHEEL HUB
29	404930	1	DECAL
30	206726	1	CAM WHEEL
50	E81871		SCREW
51	408703		SCREW
52	E83868		LOCK WASHER
53	408824		SCREW
54	E82773		WASHER
55	E83381		LOCK NUT
56	E82455		SCREW
57	409100		LOCK NUT
58	E83547		SCREW
59	E82761		WASHER
60	E83550		LOCK NUT
61	E83278		WASHER
62	E83703		SCREW
63	E83891		NUT
64	409211		WASHER
65	E81917		SCREW
66	E81874		WASHER
67	E81709		LOCK NUT
68	E83827		SCREW



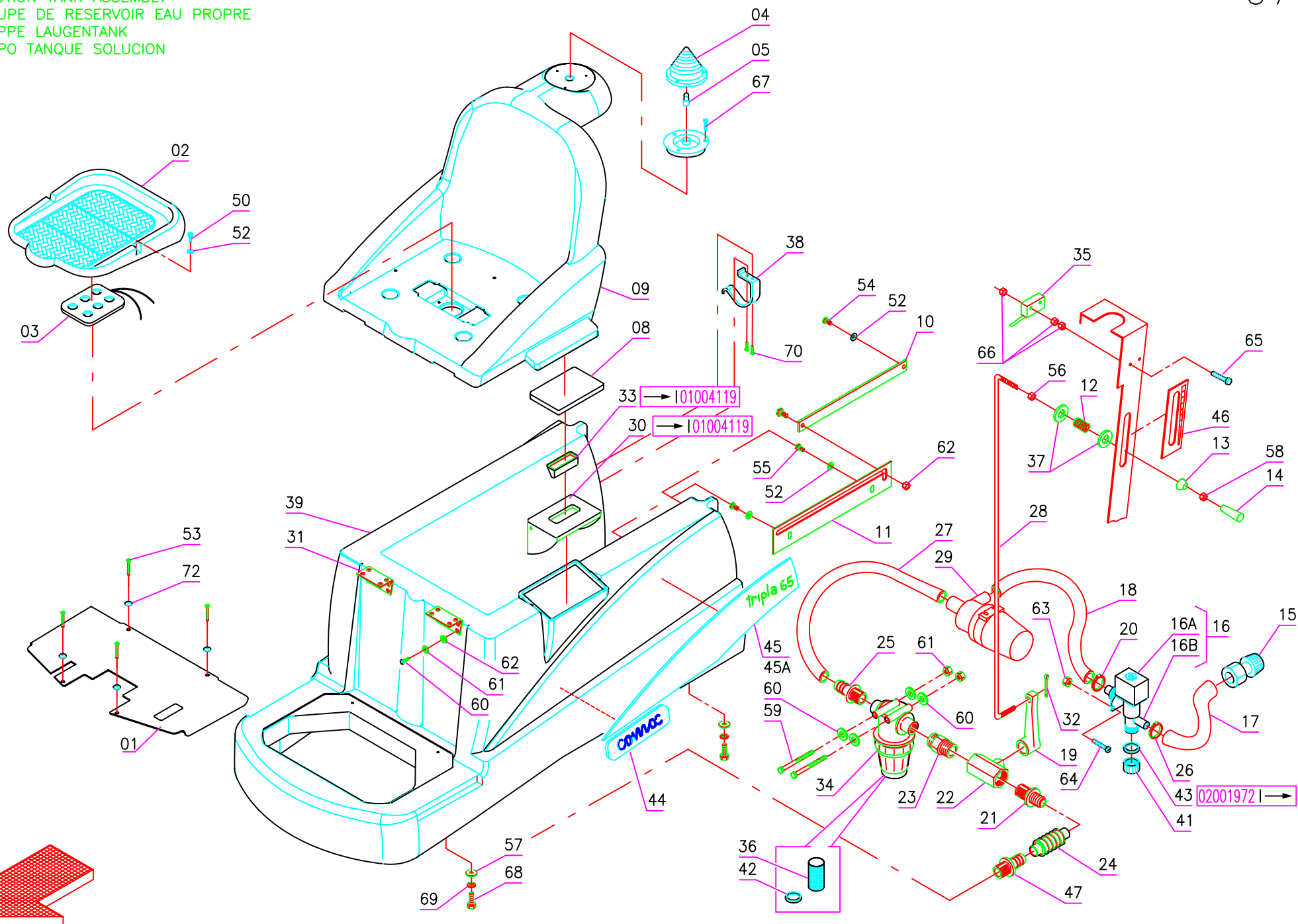
Item	SKU	QTY	Description
01	E83283	1	GEARED MOTOR
01A	E81939	1	GEARED MOTOR
02	E82539	1	LEFT SUPPORT
03	E85493	1	SPACER
06	E83483	2	BEARING
07	E83152	2	OIL SEAL
08	E81674	4	COVER
09	E82448	2	SPACER
10	E82519	1	LEFT AXLE SHAFT
10A	E81966	1	LEFT AXLE SHAFT
11	E83646	2	WHEEL
12	E83967	2	WHEEL COVER
13	E83363	1	RIGHT AXLE SHAFT
13A	E82653	1	RIGHT AXLE SHAFT
14	209371	1	SHEATH
16	E81965	1	SUPPORT
17	E83923	1	BEARING
18	E88505	1	BEARING
33	E83825	2	SEEGER RING
33A	E83874	2	SEEGER RING
34	E82678	4	CARBON BRUSH MOTOR
34A	409419	4	CARBON BRUSH MOTOR
35	409744	1	CARBON BRUSH HOLDER
36	E83920	2	CLAMP
37	E83916	1	SHROUD
38	202447	1	SPACER
39	E83848	1	SHIM RING
40	E83496	1	SPACER
50	E81874		WASHER
51	E83704		WASHER
52	E83948		LOCK WASHER
55	E83833		SCREW
56	E83703		SCREW
57	E83795		SCREW
59	408826		SCREW
60	408672		SCREW
61	E82774		LOCK WASHER
62	E20342		SCREW
68	206682	1	REINFORCEMENT
69	E81709		LOCK NUT
70	E83404		WASHER
71	E83833		SCREW
72	206683	1	SUPPORT
73	206680	1	PIN
74	E81940		MOTOR
74A	E81482		MOTOR



ITEM	SKU	QTY	Description
01	400776	2	FORK
02	400774	1	SHAFT
03	206706	1	TIE ROD
04	E83669	1	PEDAL COVER
05	E83668	1	PEDAL
06	E83491	1	SPRING
07	E88175	1	LEVER
08	E83931	2	PIN
09	E81651	1	FORK
10	E82540	2	LEVER
11	E88255	2	BUSHING
12	203627	2	BRAKE DISK
13	E83151	4	SPRING
14	E83124	4	BLOCK
15	E81720	1	LEVER
16	408348	2	SEEGER RING
17	408076	1	BUSHING
18	E83932	1	BUSHING
19	400775	1	SPACER
20	410457	1	FORK
21	206705	2	PIN
22	E88166	2	PIN
23	E86154	2	FORK
24	E81714	1	SPRING
25	408026	2	BUSHING
26	410532	2	PIN
27	206704	1	BRAKE LOCK
28	E83449	1	CAP
29	E81907	2	PIN
30	210550	1	BLOCK-SPRING
31	206703	2	ROD
50	E83404		WASHER
51	E83704		WASHER
52	E83833		SCREW
53	E81709		LOCK NUT
54	E83807		SCREW
55	E83535		NUT
56	E83826		SCREW
57			SCREW
58			LOCK NUT
59			SCREW
60			WASHER
61			SCREW
62			LOCK WASHER
63			WASHER
64			SCREW
65			WASHER
66			NUT
67			SCREW
68			NUT
69			SCREW
70			NUT

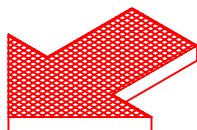
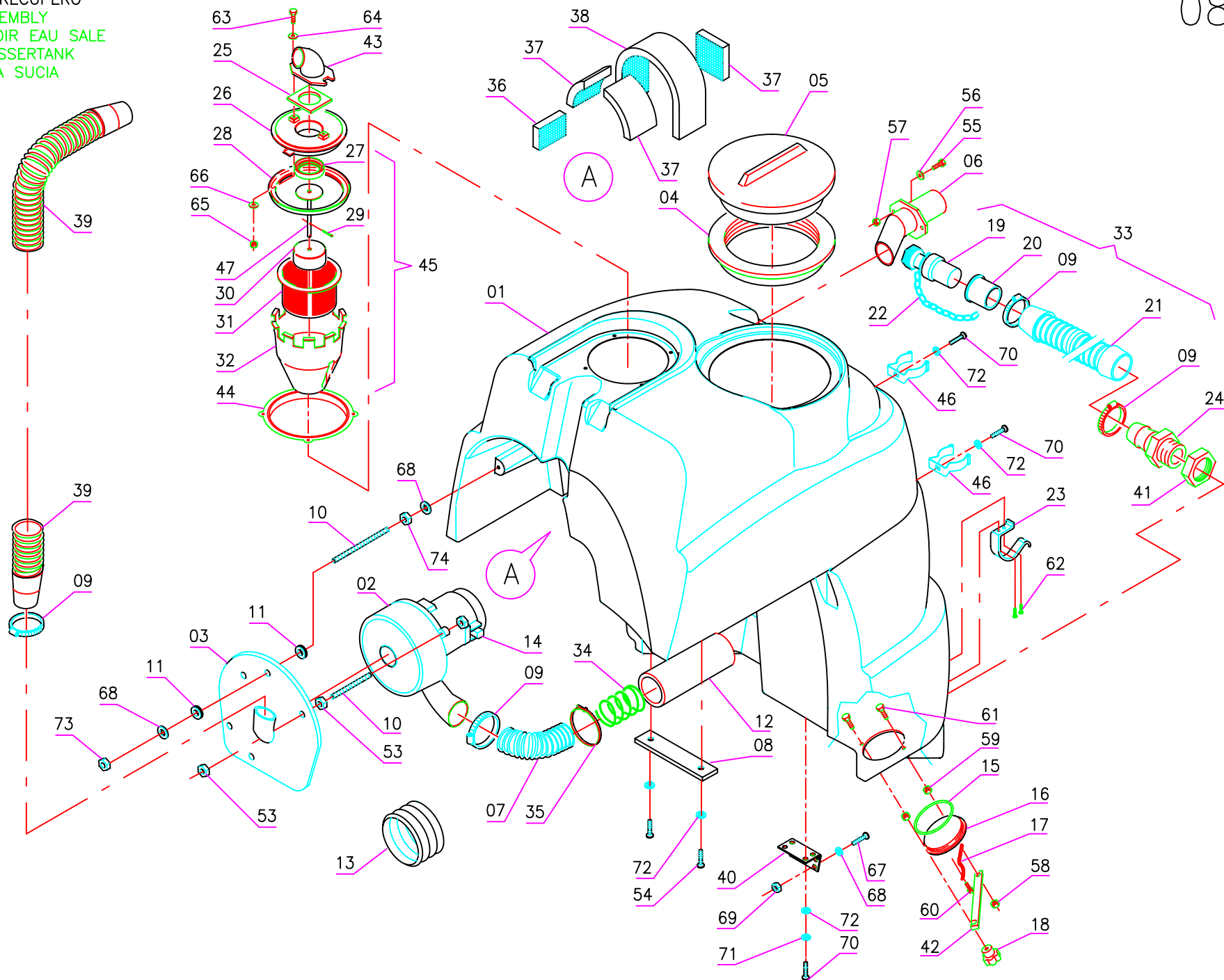


Item	SKU	QTY	Description
01	400794	1	BOTTOM PLATE
02	400461	1	SEAT
03	E83165	1	MICROSWITCH
04	E82345	1	WINKING LIGHT
05	E83180	1	ELECTRIC BULB
08	E83122	1	GASKET
09	400793	1	SUPPORT
10	203639	1	PROP
11	E81932	1	SUPPORT
12	E82309	1	SPRING
13	E83850	1	SPECIAL WASHER
14	E83639	1	KNOB
15	E83304	1	COUPLING
16	E83121	1	SOLENOID VALVE
16A	E86172	1	COIL
16B	E81794	1	SOLENOID VALVE BODY
17	E83585	2	HOSE
18	E83498	1	HOSE
19	E83600	1	COCK LEVER
20	E83499	1	CLAMP
21	E83601	1	CONNECTOR
22	E83361	1	COCK
23	E83602	1	NIPPLE
24	E83603	1	BELLOWS
25	E83604	1	CONNECTOR
26	E83586	1	CLAMP
27	E83497	1	HOSE
28	205632	1	ROD
29	E83120	1	PUMP ASSEMBLY
30	400785	1	DOOR
31	E83697	2	HINGE
32	E83605	1	SPLIT PIN
33	400786	1	HANDLE
34	E83118	1	FILTER
35	E83164	1	MICROSWITCH
36	E83119	1	FILTER CARTRIDGE
37	E83798	2	WASHER
38	E83468	1	COUPLER
39	E81725	1	SOLUTION TANK
41	E83616	1	CAP
42	E82341	1	O-RING
43	E83617	1	O-RING
44	404988	2	DECAL
45	404980	1	DECAL
45A	404979	1	DECAL



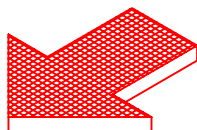
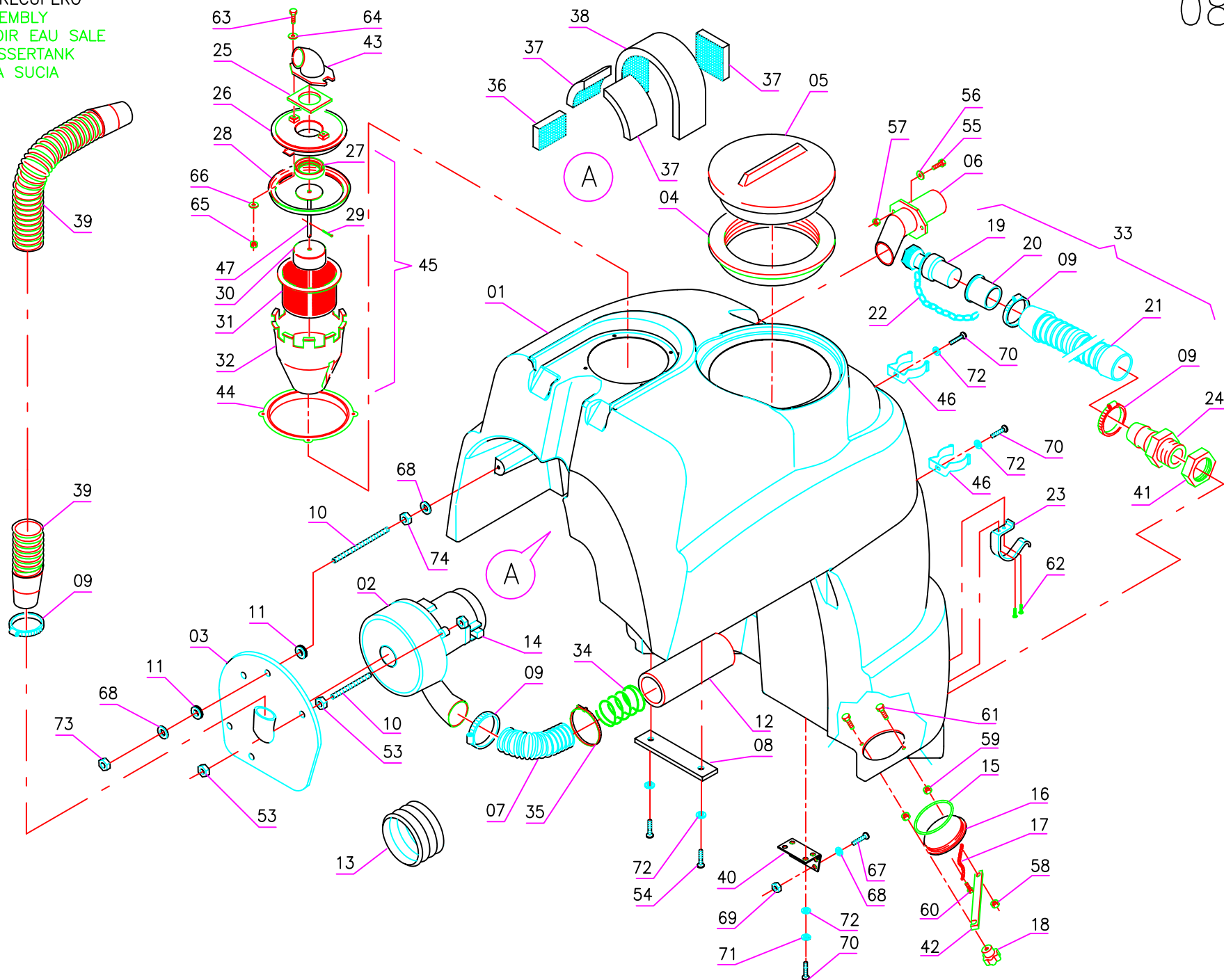
Item	SKU	QTY	Description
46	E82108	1	DECAL
47	E82452	1	CONNECTOR
50	408861		SCREW
51	E81438		LOCK WASHER
52	E83799		WASHER
53	E83831		SCREW
54	E83914		SCREW
55	407664		SCREW
56	E83535		NUT
57	E82798		WASHER
58	E82317		NUT
59	E83606		SCREW
60	E81874		WASHER
61	E81709		LOCK NUT
62	E83404		WASHER
63	E83867		LOCK NUT
64	408846		SCREW
65	408837		SCREW
66	409033		NUT
67	E83796		SCREW
68	E82772		SCREW
69	E82798		WASHER
70	E88017		SCREW
71	408876		SCREW
72	E83850		WASHER

→ I05004778



ITEM	SKU	QTY	Description
01	E82573	1	RECOVERY TANK
02	E83155	1	SUCTION MOTOR
03	E81933	1	PLAQUE
04	E83582	1	RING WITH GASKET
05	E83265	1	COVER
06	400784	1	FITTING
07	E83243	1	PIPE
08	E82491	1	BLADE
09	E82695	4	CLAMP
10	E88297	3	STUD BOLT
11	E87975	3	FAIRLEAD
12	E83244	1	DEADENING HOSE
13	E83944	1	SHROUD
14	E83954	2	CARBON BRUSH MOTOR
15	E83518	1	O-RING
16	400617	1	PLUG
17	203594	1	CHAIN
18	E83864	1	KNOB
19	E83543	1	PLUG EXHAUST PIPE
20	E83196	1	PIPE
21	E83107	1	PIPE
22	E83695	1	CHAIN
23	E83468	2	COUPLER
24	E82487	1	CONNECTOR
25	E83994	1	GASKET
26	E82450	1	COVER
27	E82313	1	GASKET
28	E82381	1	GASKET
29	E83605	2	SPLIT PIN
30	E82138	1	FLOAT
31	E81615	1	FILTER
32	E81006	1	PROTECTION
33	E83299	1	EXHAUST PIPE ASSEMBLY
34	E83871	1	SPRING
35	E83920	1	CLAMP
36	E88548	1	DEADENING
37	E88549	3	DEADENING
38	E82561	1	DEADENING
39	E83288	1	PIPE
40	E83697	2	HINGE
41	E82445	1	RING NUT
42	203593	1	BLADE
43	E82267	1	OPENING
44	E83995	1	FILTER HOLDER
45	E83123	1	FLOAT ASSEMBLY

→ I05004778

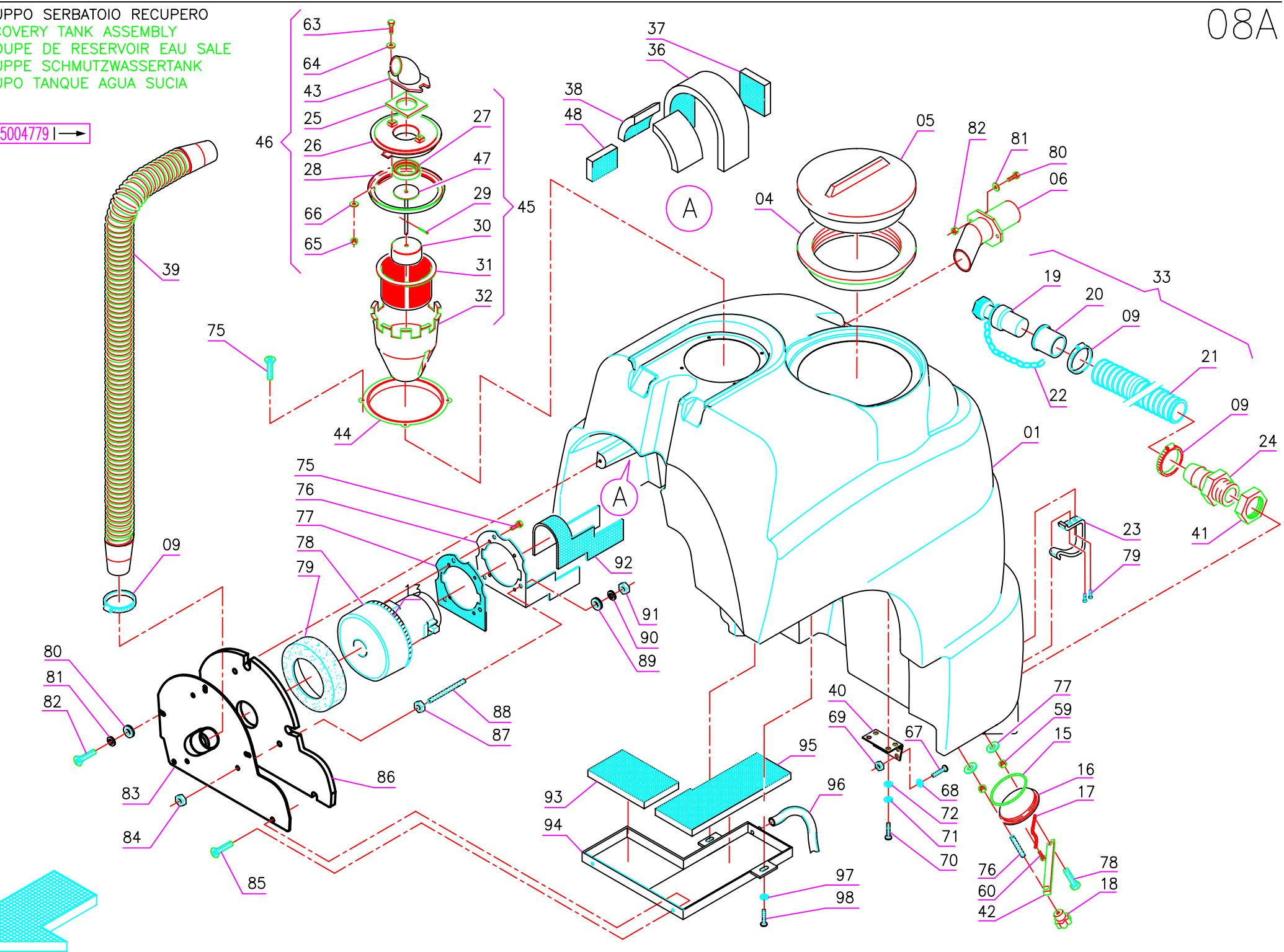


ITEM	SKU	QTY	Description
46	408126	2	CLIP HOSE FIXING
47	E82611	1	ROD
51	E20122		WASHER
52	E83841		LOCK WASHER
53	E86701		NUT
54	E82288		SCREW
55	E83914		SCREW
56	E83799		WASHER
57	E83550		LOCK NUT
58	409088		LOCK NUT
59	409051		NUT
60	E82638		SCREW
61	408916		DOWEL
62	E88017		SCREW
63	E83886		SCREW
64	E83878		WASHER
65	E87287		NUT
66	E83859		WASHER
67	E83547		SCREW
68	E82761		WASHER
69	E83550		LOCK NUT
70	E83665		SCREW
71	E20123		WASHER
72	E83879		WASHER
73	E82256		LOCK NUT
74	E83535		NUT
75	E87972		SCREW
76	E87973	1	PLAQUE
77	E87974	1	DEADENING
78	E81686	1	SUCTION MOTOR
79	E83944	1	SHROUD
80	E87975		FAIRLEAD
81	E83879		WASHER
82	408854		SCREW
83	E85789		PLAQUE
84	E83852		NUT
85	E83367		SCREW
86	E85790		DEADENING
87	E83852		NUT
88	E88297		STUD BOLT
89	E87975		FAIRLEAD
90	E82798		WASHER
91	E83550		LOCK NUT
92	E87976		DEADENING
93	405880		DEADENING
94	205637		DISTRIBUTOR
95	405879		DEADENING
96	202212		PIPE
97	E81618		WASHER
98	E83852		NUT

APPPO SERBATOIO RECUPERO
 RECOVERY TANK ASSEMBLY
 COUPE DE RESERVOIR EAU SALE
 KUPPE SCHMUTZWASSERTANK
 KPO TANQUE AGUA SUCIA

08A

5004779 | →

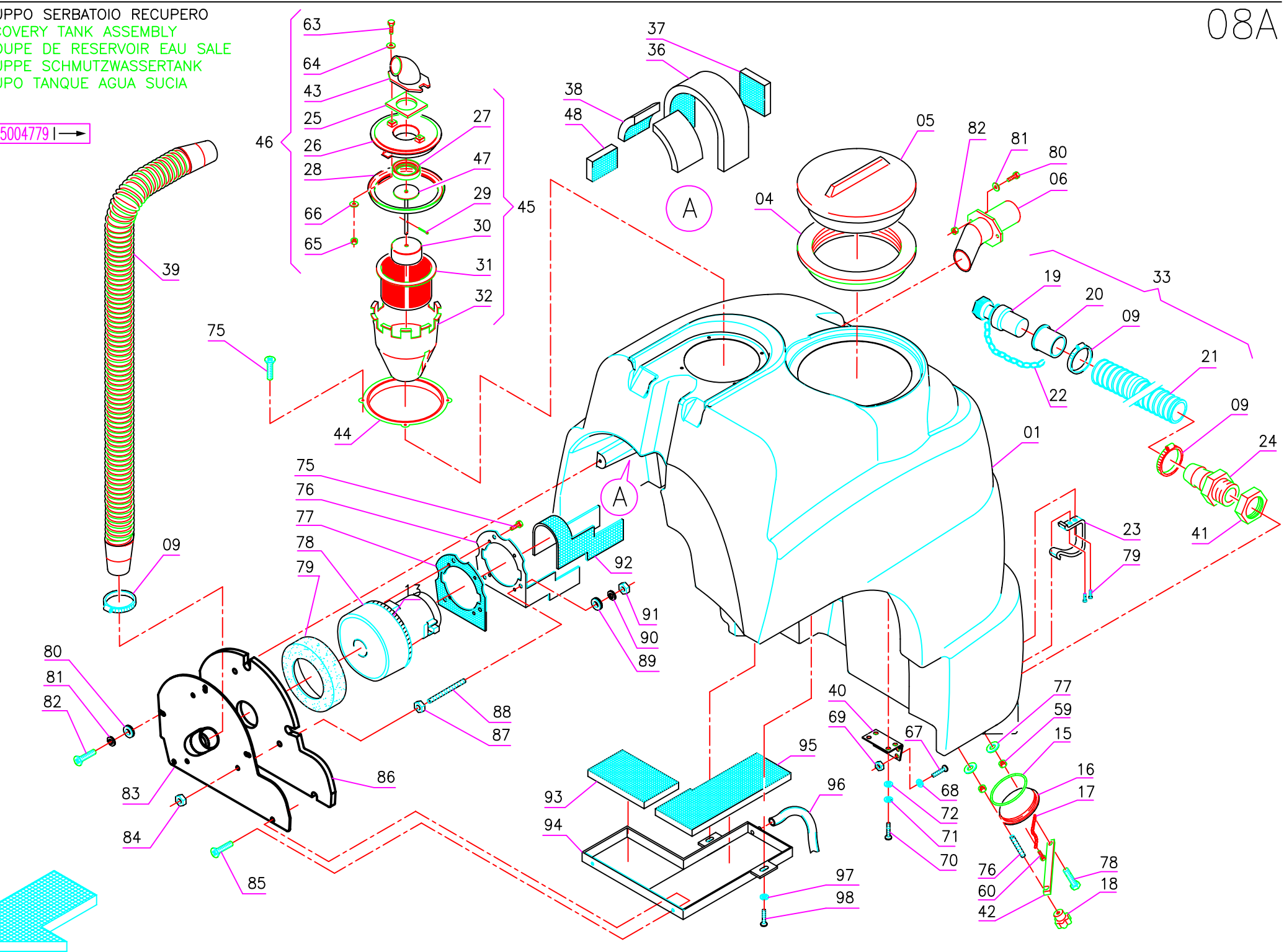


ITEM	SKU	QTY	Description
01	E82573	1	RECOVERY TANK
02	E83155	1	SUCTION MOTOR
03	E81933	1	PLAQUE
04	E83582	1	RING WITH GASKET
05	E83265	1	COVER
06	400784	1	FITTING
07	E83243	1	PIPE
08	E82491	1	BLADE
09	E82695	4	CLAMP
10	E88297	3	STUD BOLT
11	E87975	3	FAIRLEAD
12	E83244	1	DEADENING HOSE
13	E83944	1	SHROUD
14	E83954	2	CARBON BRUSH MOTOR
15	E83518	1	O-RING
16	400617	1	PLUG
17	203594	1	CHAIN
18	E83864	1	KNOB
19	E83543	1	PLUG EXHAUST PIPE
20	E83196	1	PIPE
21	E83107	1	PIPE
22	E83695	1	CHAIN
23	E83468	2	COUPLER
24	E82487	1	CONNECTOR
25	E83994	1	GASKET
26	E82450	1	COVER
27	E82313	1	GASKET
28	E82381	1	GASKET
29	E83605	2	SPLIT PIN
30	E82138	1	FLOAT
31	E81615	1	FILTER
32	E81006	1	PROTECTION
33	E83299	1	EXHAUST PIPE ASSEMBLY
34	E83871	1	SPRING
35	E83920	1	CLAMP
36	E88548	1	DEADENING
37	E88549	3	DEADENING
38	E82561	1	DEADENING
39	E83288	1	PIPE
40	E83697	2	HINGE
41	E82445	1	RING NUT
42	203593	1	BLADE
43	E82267	1	OPENING
44	E83995	1	FILTER HOLDER
45	E83123	1	FLOAT ASSEMBLY

PPO SERBATOIO RECUPERO
 RECOVERY TANK ASSEMBLY
 COUPE DE RESERVOIR EAU SALE
 KUPPE SCHMUTZWASSERTANK
 KPO TANQUE AGUA SUCIA

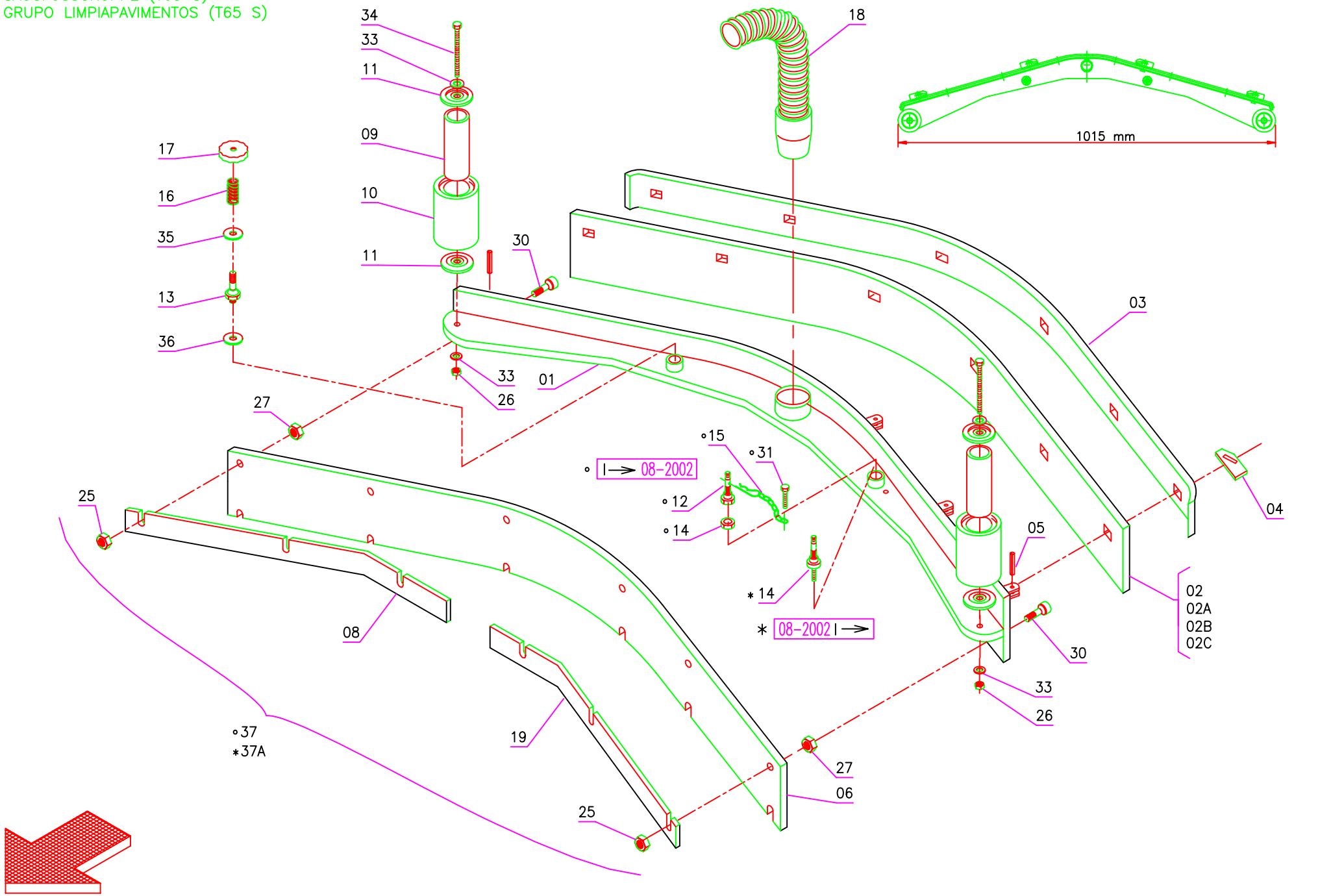
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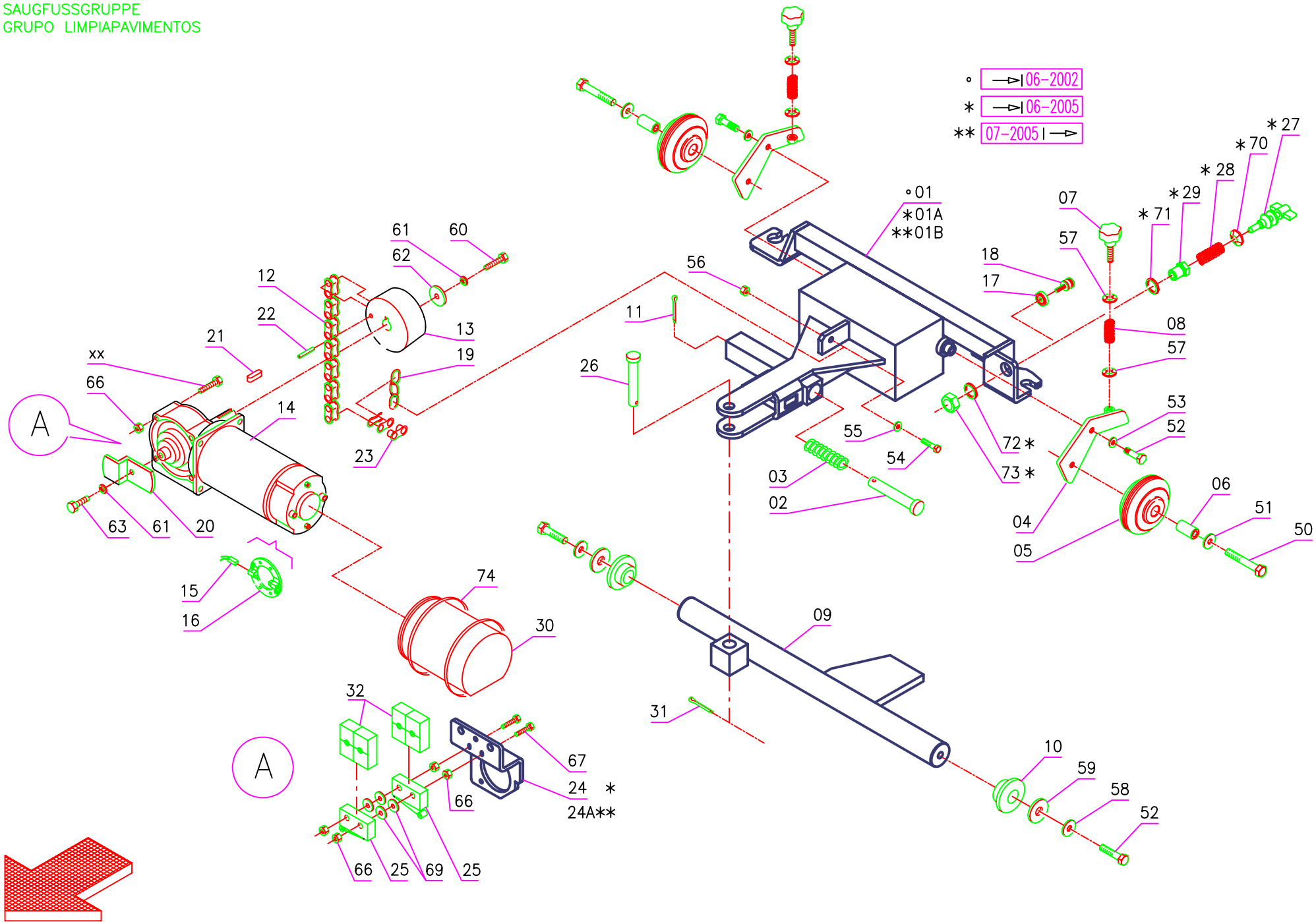


ITEM	SKU	QTY	Description
46	408126	2	CLIP HOSE FIXING
47	E82611	1	ROD
51	E20122		WASHER
52	E83841		LOCK WASHER
53	E86701		NUT
54	E82288		SCREW
55	E83914		SCREW
56	E83799		WASHER
57	E83550		LOCK NUT
58	409088		LOCK NUT
59	409051		NUT
60	E82638		SCREW
61	408916		DOWEL
62	E88017		SCREW
63	E83886		SCREW
64	E83878		WASHER
65	E87287		NUT
66	E83859		WASHER
67	E83547		SCREW
68	E82761		WASHER
69	E83550		LOCK NUT
70	E83665		SCREW
71	E20123		WASHER
72	E83879		WASHER
73	E82256		LOCK NUT
74	E83535		NUT
75	E87972		SCREW
76	E87973	1	PLAQUE
77	E87974	1	DEADENING
78	E81686	1	SUCTION MOTOR
79	E83944	1	SHROUD
80	E87975		FAIRLEAD
81	E83879		WASHER
82	408854		SCREW
83	E85789		PLAQUE
84	E83852		NUT
85	E83367		SCREW
86	E85790		DEADENING
87	E83852		NUT
88	E88297		STUD BOLT
89	E87975		FAIRLEAD
90	E82798		WASHER
91	E83550		LOCK NUT
92	E87976		DEADENING
93	405880		DEADENING
94	205637		DISTRIBUTOR
95	405879		DEADENING
96	202212		PIPE
97	E81618		WASHER
98	E83852		NUT

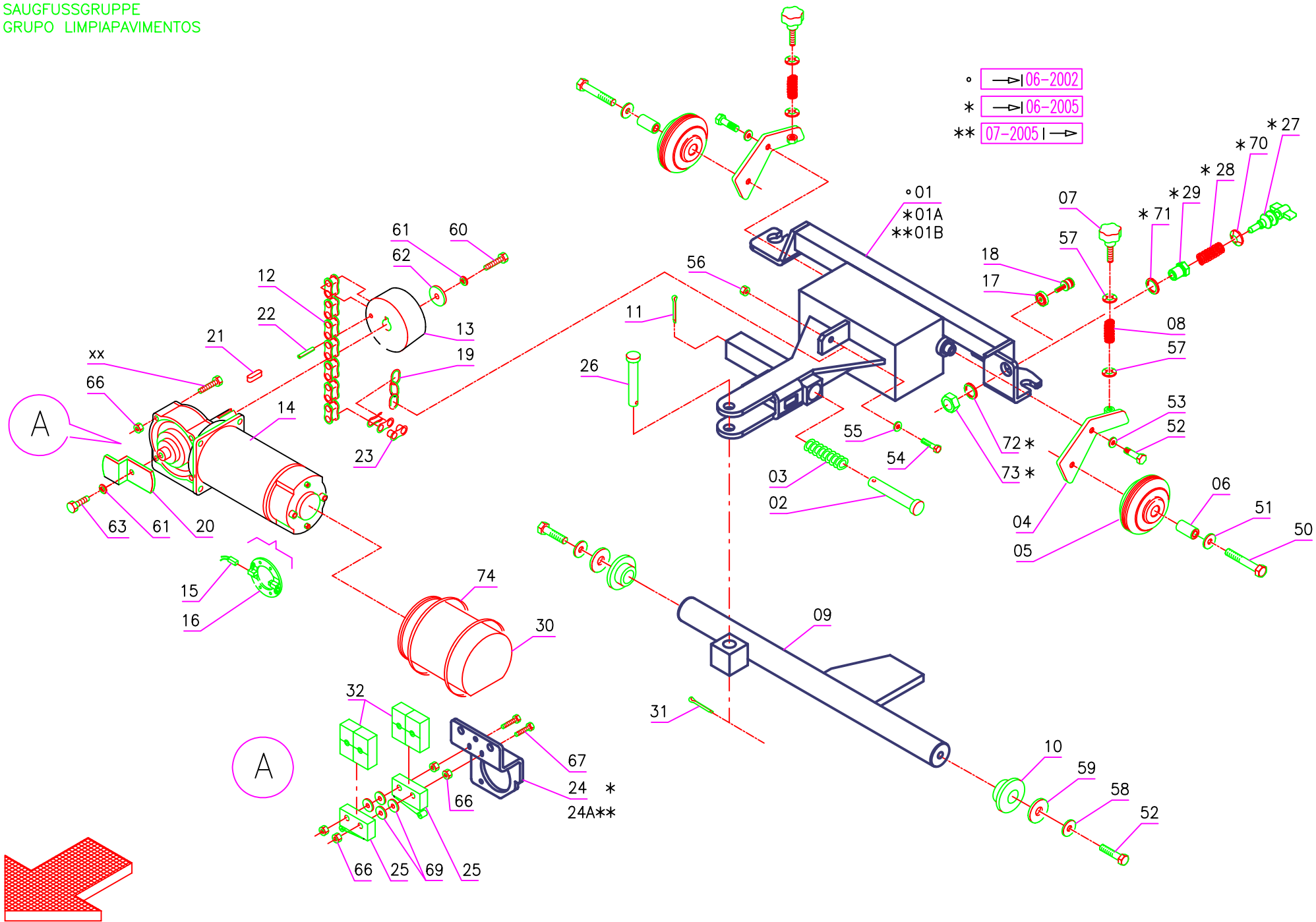
GRUPPO TERGIPAVIMENTO (SPAZZANTE)
SQUEEGEE ASSEMBLY (T65 S)
ENSEMBLE DE SUCEUR (T65 S)
SAUGFUSSGRUPPE (T65 S)
GRUPO LIMPIAPAVIMENTOS (T65 S)



Item	SKU	QTY	Description
01	210346	1	SQUEEGEE BODY
02	E83115	1	REAR RUBBER 33 SHORE
02A	E83978	1	REAR RUBBER 40 SHORE
02B	E83592	1	REAR RUBBER OIL-RESISTANT
02C	406145	1	REAR RUBBER POLYURETHANE
03	E82325	1	BLADE
04	E88372	6	PLATE
05	E83876	6	SPRING PIN
06	E83114	1	FRONT RUBBER
08	E82422	1	RIGHT BLADE
09	E83679	2	PIN
10	E83681	2	WHEEL
11	E83380	4	SPECIAL WASHER
12	E83365	1	STUD BOLT
13	E83400	1	STUD BOLT
14	E83401	1	SPECIAL NUT
15	E83590	1	CHAIN
16	E83402	1	SPRING
17	E83331	1	HANDWHEEL
18	E83106	1	PIPE
19	E82423	1	LEFT BLADE
20	E82333	1	STUD BOLT
25	E83550		LOCK NUT
26	E83381		LOCK NUT
27	E83508		NUT
30	E83831		SCREW
31	E83367		SCREW
33	E82773		WASHER
34	408736		SCREW
35	E83404		WASHER
36	E81751		WASHER
37	E83599	1	SQUEEGEE ASSEMBLY
37A	E83599	1	SQUEEGEE ASSEMBLY

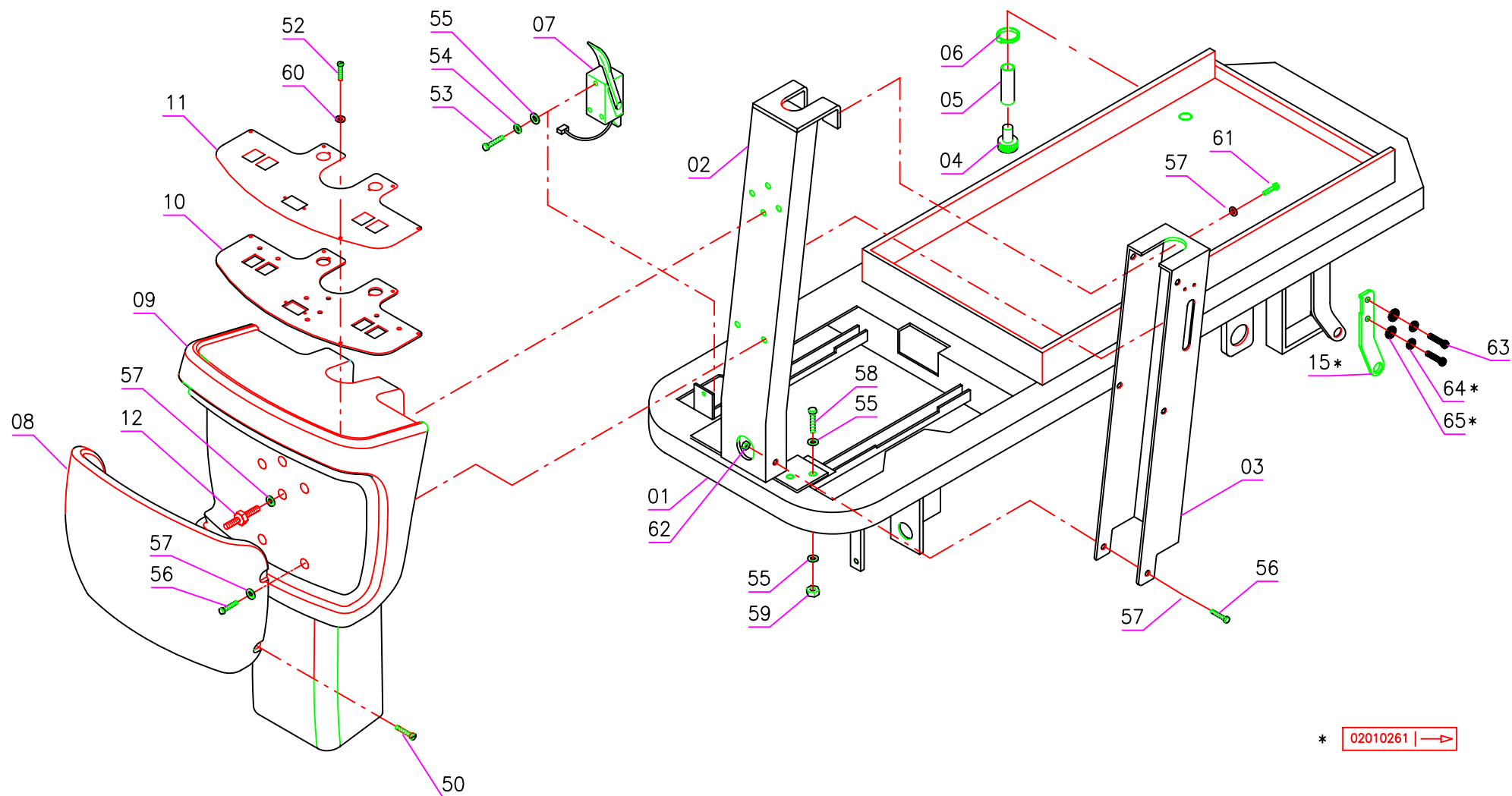


ITEM	SKU	QTY	Description
01	E82512	1	ARM
01A	E88114	1	ARM
01B	E88114	1	ARM
02	E86200	1	PUSH BUTTON
03	E81690	1	SPRING
04	E83564	2	SUPPORT
05	E83105	2	WHEEL
06	E81768	2	BUSHING
07	E83565	2	KNOB
08	E82286	2	SPRING
09	E82534	1	SHAFT
10	E83596	2	BUSHING
11	E81691	1	SPLIT PIN
12	E83422	1	CHAIN
13	E83699	1	ROLLER
14	E83183	1	GEARED MOTOR
15	E83552	2	CARBON BRUSH MOTOR
16	E83553	1	CARBON BRUSH HOLDER
17	E83339	1	HANDWHEEL
18	E83340	1	ADJUSTER
19	E83423	1	CHAIN
20	E83551	1	LEVER
21	E83700	1	KEY
22	E83701	1	SPRING PIN
23	E83424	1	JOINT CHAIN
24	E82276	1	SUPPORT
24A	400769	1	SUPPORT
25	E83163	2	MICROSWITCH
26	E82373	1	PIN
27	E83576	1	ADJUSTER
28	E82703	1	SPRING
29	E82302	1	BUSHING
30	E82375	1	SHROUD
31	E83840	1	SPLIT PIN
32	E82335	2	PROTECTION
50	E83873		SCREW
51	E82773		WASHER
52	E83795		SCREW
53	E81874		WASHER
54	E83914		SCREW
55	E83799		WASHER
56	E83550		LOCK NUT
57	E83868		LOCK WASHER
58	E83704		WASHER
59	E81918		WASHER

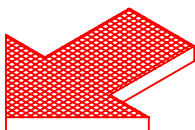


ITEM	SKU	QTY	Description
60	E82772		SCREW
61	E82774		LOCK WASHER
62	E83702		WASHER
63	E83547		SCREW
64	E82761		WASHER
65	E83550		LOCK NUT
66	E83535		NUT
67	E83807		SCREW
68	E82256		LOCK NUT
69	E83879		WASHER
70	E81406		WASHER
71	E81359		WASHER
72	E81430		WASHER
73	E82315		NUT
74	E83920		CLAMP

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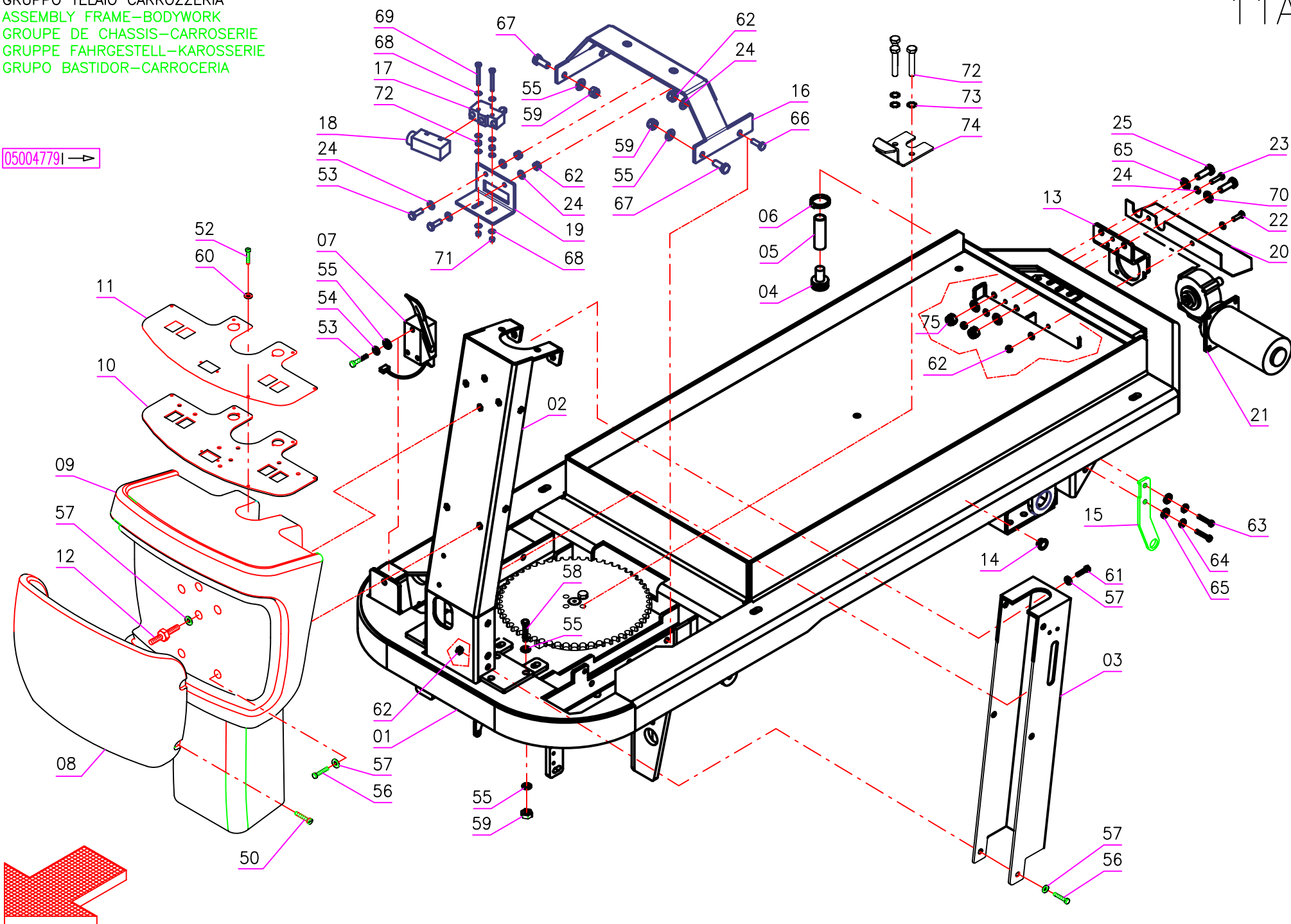


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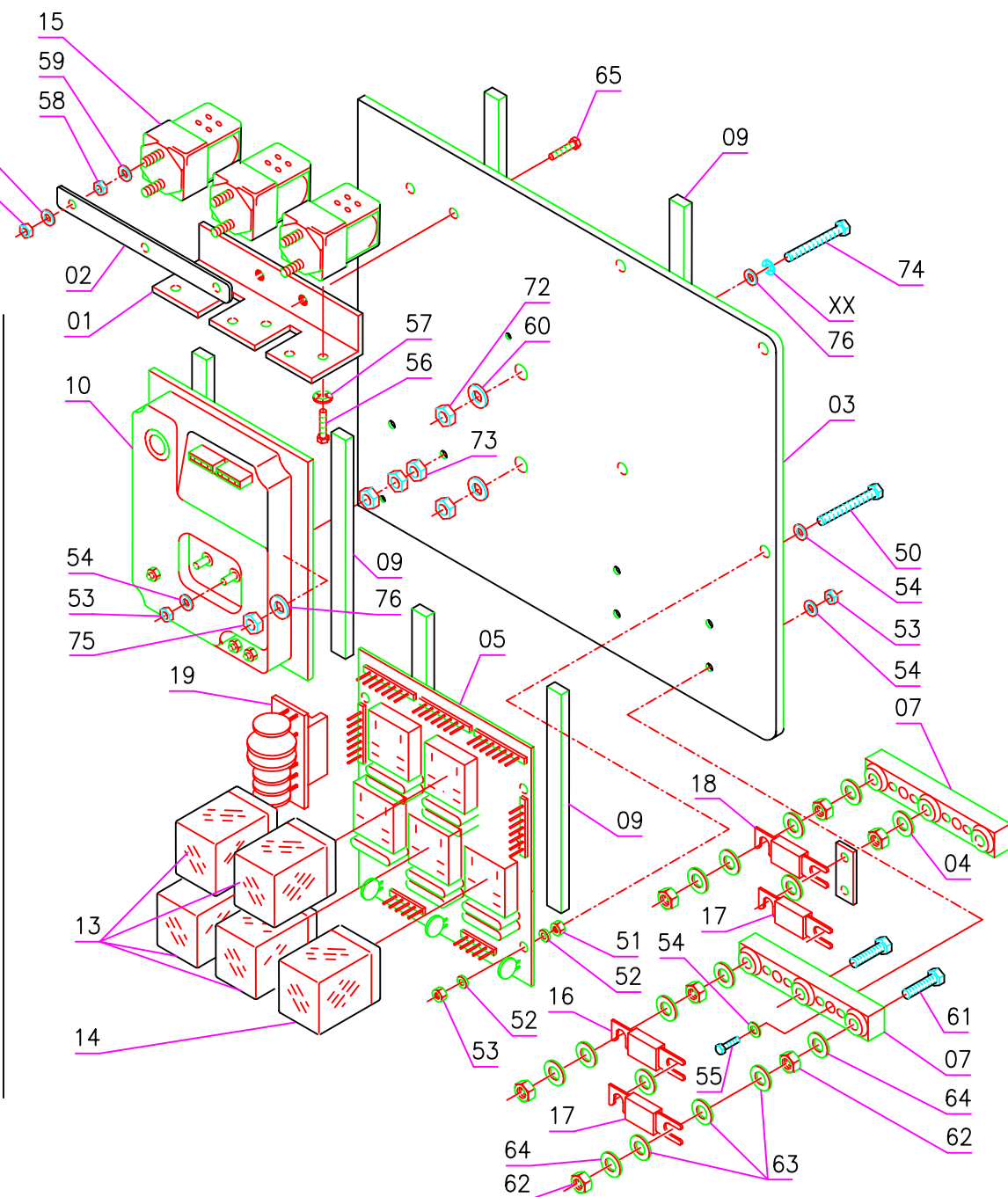
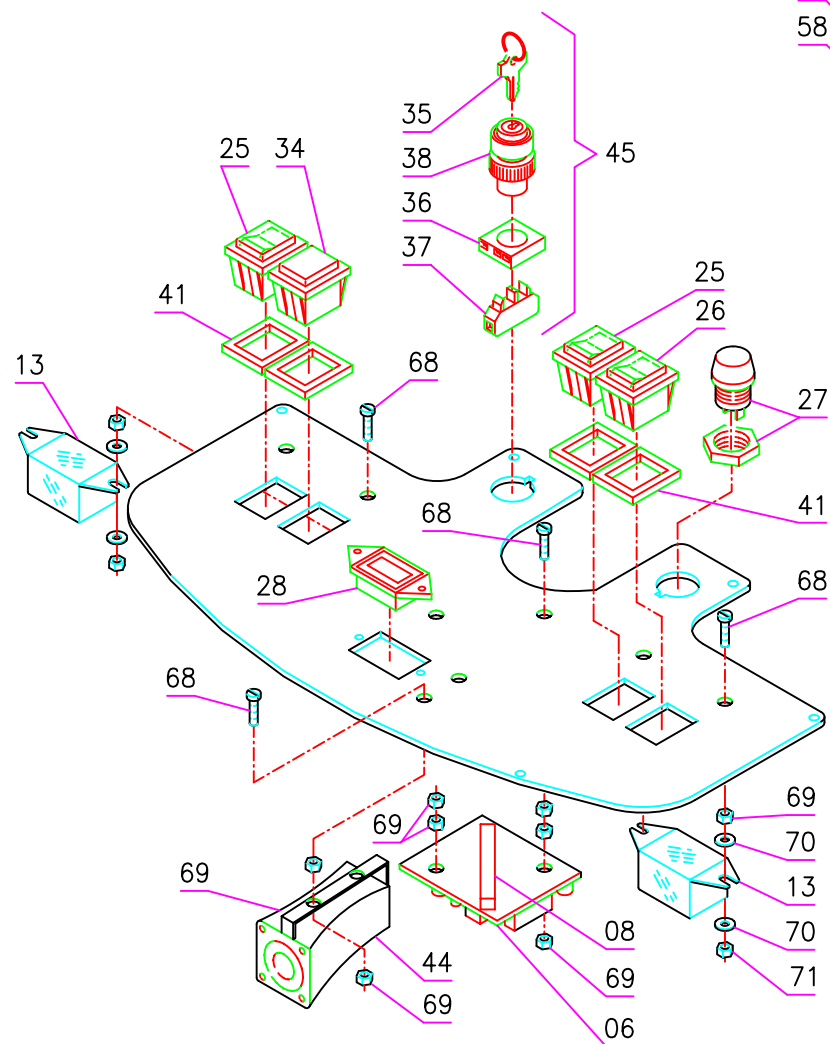


ITEM	SKU	QTY	Description
01	209909	1	FRAME
02	E88130	1	FRAME
03	206752	1	COVER
04	E82391	1	CAP
05	E82397	1	PIPE
06	E83499	1	CLAMP
07	E83486	1	PEDAL
08	E81441	1	COVER
09	400791	1	COVER
10	206755	1	PLATE
11	E88146	1	DECAL
12	206766	2	STUD BOLT
15	E83640	1	COUPLING
50	E86263		SCREW
52	408870		SCREW
53	E83795		SCREW
54	E83704		WASHER
55	E81874		WASHER
56	E82772		SCREW
57	E83278		WASHER
58	E83833		SCREW
59	E81709		LOCK NUT
60	409147		WASHER
61	408861		SCREW
62	E83550		LOCK NUT
63	408718		SCREW
64	E83948		WASHER
65	E82773		WASHER

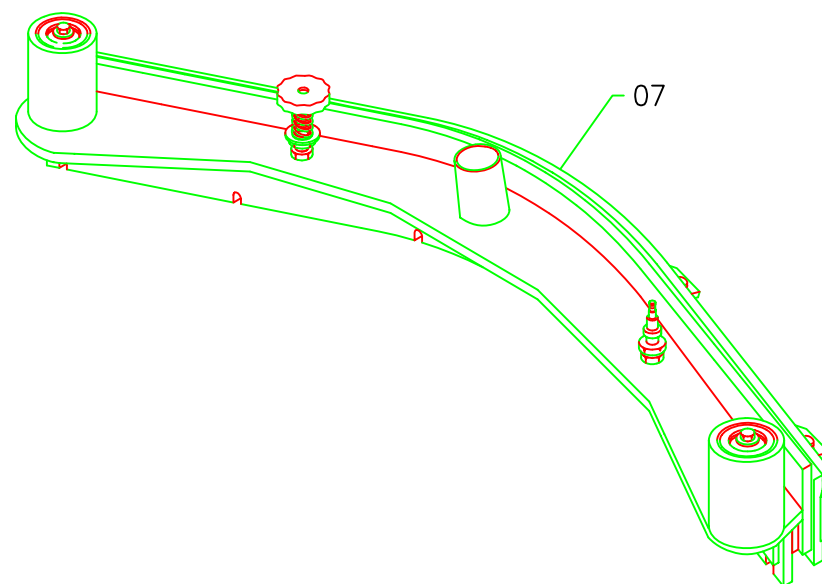
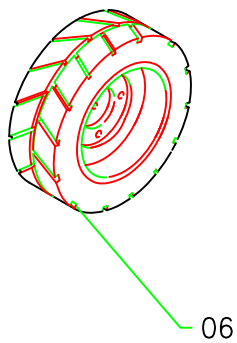
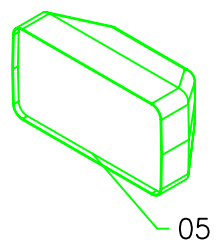
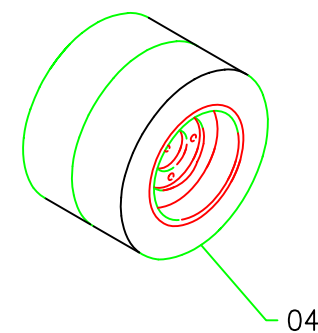
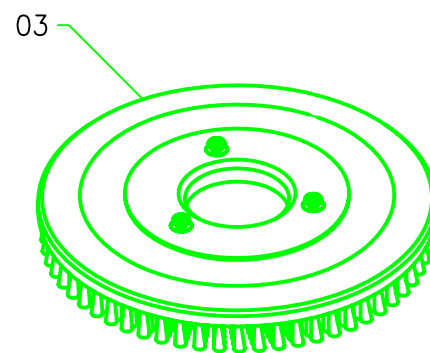
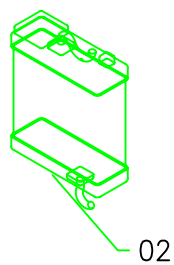
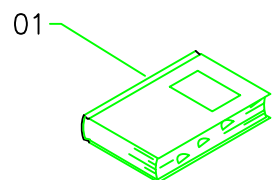
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ITEM	SKU	QTY	Description
01	209909	1	FRAME
02	E88130	1	FRAME
03	206752	1	COVER
04	E82391	1	CAP
05	E82397	1	PIPE
06	E83499	1	CLAMP
07	E83486	1	PEDAL
08	E81441	1	COVER
09	400791	1	COVER
10	206755	1	PLATE
11	E88146	1	DECAL
12	206766	2	STUD BOLT
13	400769	1	SUPPORT
14	E88255	1	BUSHING
15	E83640	1	COUPLING
16	206674	1	SUPPORT
17	E83163	1	MICROSWITCH
18	E82335	1	PROTECTION
19	206675	1	BLADE
20	400770	1	COVER
21	E83183	1	GEARED MOTOR
22	E82772		SCREW
23	E20090		SCREW
24	E82761		WASHER
25	E81017		SCREW
50	E86263		SCREW
52	408870		SCREW
53	E83795		SCREW
54	E83704		WASHER
55	E81874		WASHER
56	E82772		SCREW
57	E83278		WASHER
58	E83833		SCREW
59	E81709		LOCK NUT
60	409147		WASHER
61	408861		SCREW
62	E83550		LOCK NUT
63	408718		SCREW
64	E83948		WASHER
65	E82773		WASHER
66	407665		SCREW
67	E81917		SCREW
68	E88295		WASHER
69	408637		SCREW
70	E83867		LOCK NUT
71	409034		NUT
72	E83827		SCREW
73	E83868		WASHER
74	206726		CAM WHEEL

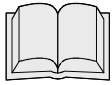


ITEM	SKU	QTY	Description
01	203405	1	SUPPORT
02	400433	1	BRIDGE
03	206765	1	PANEL
04	400808	1	BRIDGE
05	E83156	1	CHECK CARD CONTROLS
06	E83157	1	CHECK CARD BATTERIES
07	409584	2	FUSEHOLDER
08	E83996	1	GASKET
09	E82706	6	GASKET
10	E83158	1	CHOPPER CARD
13	E83159	6	RELAY
14	E83160	1	RELAY
15	E83503	3	REMOTE CONTROL SWITCH
16	E83169	1	FUSE
17	E83170	2	FUSE
18	E83171	1	FUSE
19	E83161	1	CHECK CARD FUSES
25	E82797	2	SWITCH
26	E83546	1	SWITCH
27	E88145	1	PUSH BUTTON
28	E83495	1	HOUR METER
34	E83175	1	BATTERY WARNING LIGHT
35	E83315	1	KEY
36	E81358	1	FLANGE
37	E83173	1	CONTACT
38	E83316	1	SWITCH WITH KEY
41	E81704	4	GASKET
44	E83177	1	HORN
50	408634		SCREW
51	409034		NUT
52	409145		WASHER
53	E83867		LOCK NUT
54	E88295		WASHER
55	408772		SCREW
56	E83816		SCREW
57	E81954		LOCK WASHER
58	409050		NUT BRASS
59	E83704		WASHER
60	E81874		WASHER
61	E83801		SCREW
62	E83656		NUT
63	409176		WASHER
64	E83704		WASHER
65	E82456		SCREW
68	E86107		SCREW
69	409032		NUT
70	E82090		WASHER
71	E81673		LOCK NUT
72	E81709		LOCK NUT
73	E83535		NUT
74	E88362		SCREW
75	E82256		LOCK NUT
76	409151		WASHER



ITEM	SKU	QTY	Description
01	410725	1	USE AND MAINTENANCE
02	410930	1	Battery Charger 230V
02A	410939	1	Battery Charger 230V
03	E83096	2	BRUSH
03A	E83095	2	BRUSH
03B	E83094	2	BRUSH
03C	E83097	2	BRUSH
03D	405594	2	BRUSH
03E	E82655	2	PAD HOLDER
03F	E83098	2	PAD HOLDER
03G	E83101	2	BRUSH
03H	E83100	2	BRUSH
03I	405560	2	BRUSH
04	200142	1	Front Twin Wheel Kit
04A	200143	1	Rear twin Wheel Kit
05	E82509	1	LIGHTS KIT
06	E82510	2	REAR RUBBER WHEELS
07	E83706	1	Squeegee Assembly
07A	E83599	1	Squeegee Assembly
07B	E82626	1	Squeegee Assembly

ADJUSTMENTS AND INSPECTIONS



READ THE USE AND MAINTENANCE HANDBOOK

PROGRAMMING WITH THE CONSOLE

Service of the console

The console allows to:

- set the chopper card for a personalised behaviour of the traction motor
- test the different electric values and the state of the electric circuit relative to the traction
- read the type of the alarm for a correct and easy trouble shooting

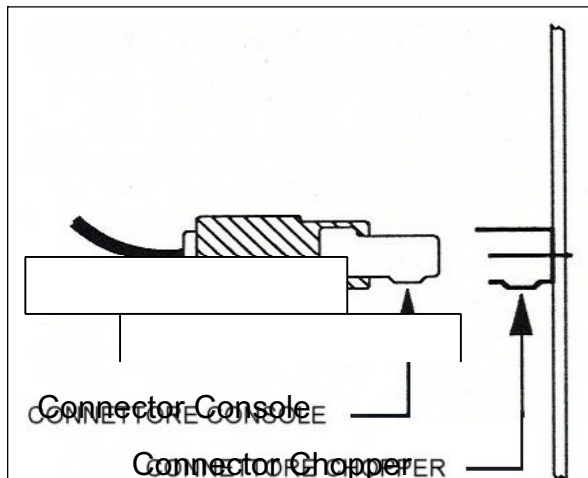
Service of the console

The use of this instrument is very easy and comparable to the most common electronic devices (such as mobile phones).

The sequence to follow always for the connection of the console is:

1. **SWITCH OFF THE GENERAL KEY** of the machine
2. Connect the console with the corresponding connection; if this operation results to be difficult, check if the connector is positioned in the correct direction (as indicated in following picture)
3. Switch on the general key of the machine and work with the console
4. Quit from all the programs (main menu of the ignition) and **SWITCH OFF THE GENERAL KEY** of the machine
5. Disconnect the console connector

THE WRONG OPERATION SEQUENCE CAN EASILY COMPROMISE THE FUNCTIONALITY OF THE CHOPPER CARD OR OF THE CONSOLE



Menu of the console

The following illustration indicates how to move inside the menu of the console and a short description of the menu (some menus provide only necessary information's for the correct functioning of the chopper and can not be modified without written authorisation from Comac).

For a detailed description, consult the chopper handbook. In the following we give you the basis information's for the debugging of the machine.

Press ENTER to get inside of the menu, in order to move inside of the different menus use the ROLL buttons, for changing the insert values use the button PARAM SET and OUT in order to quit one program.

For every modification of values in one menu the console will ask to confirm the modification when quitting the menu (ARE YOU SURE? YES=ENTER, NO=OUT).

HEADING: one reads the main characteristics of the console and of the chopper card: the name of the machine to which one is connected, voltage and maximum current of the chopper card, the working hours of the chopper card

PROGRAM: in this menu the parameters can be changed to personalise the machine. The adjustable parameters are: CUT BACK SPEED 1 (first speed limit of the machine) and CUT BACK SPEED 2 (second speed limit of the machine). All the other parameters are chosen from Comac relative to the assembled traction motor and it is forbidden to change them without previous authorisation of Comac.

TESTER: in this menu one can read the qualities of the electric characteristics (voltage traction motor, current motor, state of power switch = on/off ...)

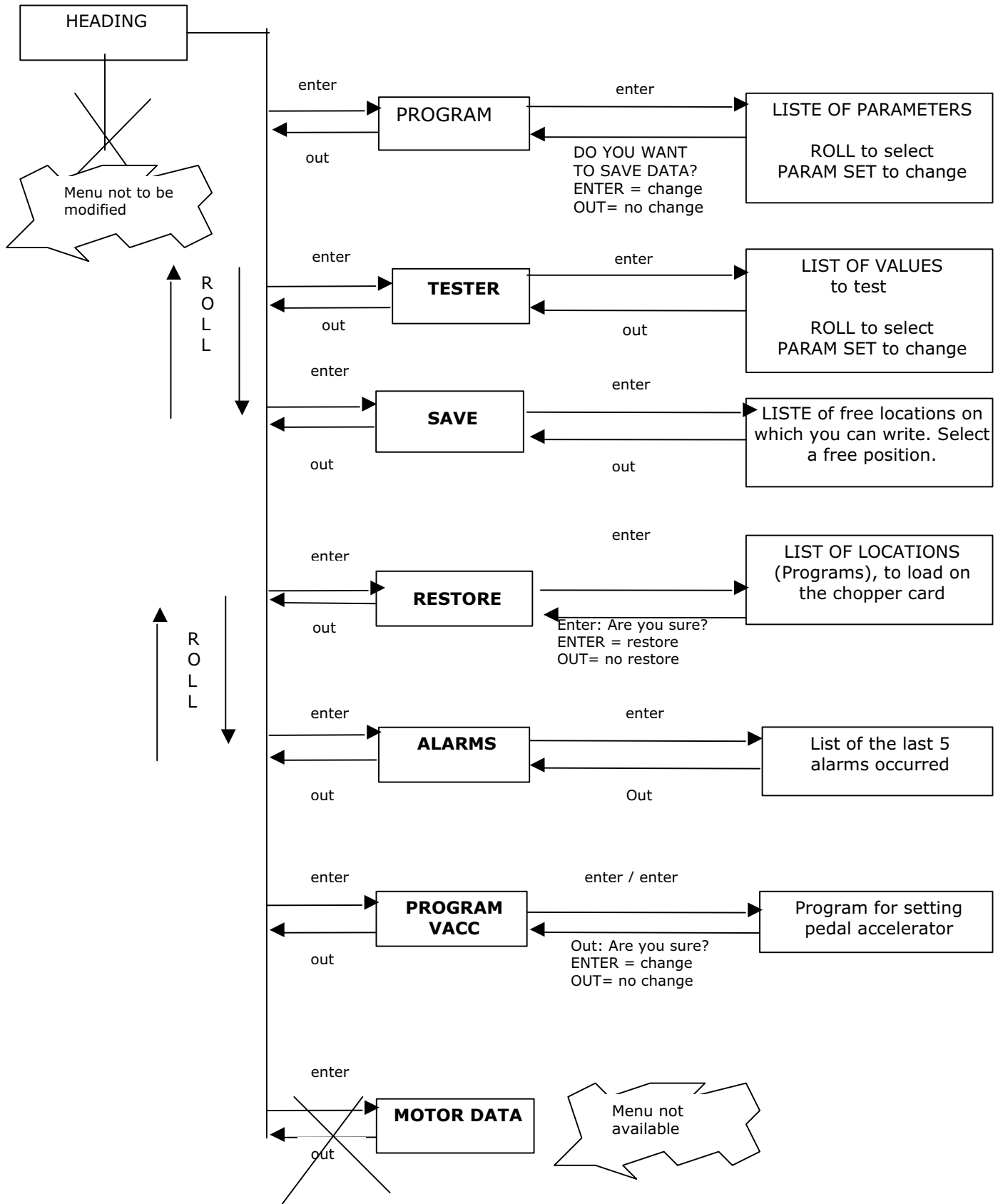
SAVE: this permits, once the parameters have been changed, to enter the new setting in the memory of the console; pay attention that in the console exists already parameter settings which contain the correct configurations for the machines C83 and C104.

RESTORE: this permits to restore on the chopper card a parameter set, which has been entered in the console.

ALARMS: indicates a list of the last five alarms occurred on the machine; according to the alarm a specific corrective action is adopted (see following paragraph)

PROGRAM VACC: this section is used to teach the chopper about the potentiometer which is assembled on the machine; **this operation must be carried out when the alarm Vacci not ok appears or when the potentiometer or the chopper card is replaced;** a wrong recognition of the potentiometer from the chopper card will block the machine.

Flow chard of the console



Alarms and decoding

The chopper card visualises an anomaly on two information levels:

1. Through a red LED alarm (on the machine's instrument board), which blinks for a quantity of times relative to the type of anomaly
2. Through a message on the console, that specifies more details on the nature of the anomaly

Following table reports for each alarm the possible anomaly and how to proceed on the machine.

DIAGNOSIS LIST ALARMS

(for a better understanding of the list refer also to the electrical layout of the machine – drawing 22.51.21 and drawing 22.51.22)

Number of blinking	MESSAGE	NOTES
1	WATCH DOG	Test in resting or working conditions: this is an internal self-diagnosis of the chopper <u>Possible causes</u> - The logic of the chopper card is damaged <u>Actions</u> Replace the chopper card
1	EEPROM DATA KO	Incorrect hourmeter dates in the chopper memory <u>Actions</u> - Switch on and off with the key; if the alarm do not persist the dates of the hourmeter are set to zero
1	EEPROM OFF LINE	Incorrect Dates of the hourmeter or the alarm-memory of the chopper <u>Actions</u> - Switch the machine on and off; if the alarm persist replace the chopper card - If the alarm do not occur again the dates of the hourmeter and the alarms are cancelled
1	EEPROM PAR KO	The chopper-memory has lost the program parameters <u>Actions</u> <u>Actions</u> - Switch the key off and on; if the problem is not solved replace the chopper card - If the alarm do not occur again the saved dates were cancelled and replaced by default dates

Number of blinking	MESSAGE	NOTES
2	INCORRECT START	Incorrect starting sequence <u>Possible causes</u> - Error in the sequence made by the operator - The pedal microswitch and/or drive-selection microswitch are sticking - Wiring not correct <u>Actions</u> - Verify the start sequence: switch on with the key – trip the microswitch - Verify, if the gear microswitch and the gear manipulator do not have sticking contacts and work exactly - Verify the continuity of the electrical circuit which connects the pedal microswitch, the manipulator and the chopper
3	VMN LOW	Initial test: VMN (negative voltage motor) under 1/4 of the battery voltage <u>Possible causes</u> - Wiring of the motor not correct - Current leakage because of insulation to the casing - Chopper damaged <u>Actions</u> - Replace the chopper, if the wiring and the motor are in good conditions
3	VMN HIGH	Initial test: controls possible power damages and indicates a short circuit between VMN and the positive connection of the battery <u>Possible causes</u> - Damages of the chopper - The logic of the MOS power-control is damaged <u>Actions</u> - Replace the chopper

Number of blinkings	MESSAGE	NOTES
4	VACC NOT OK	The alarm indicates, that the voltage of the potentiometer is more than 1 volt higher than the memorised minimum value <u>Possible causes</u> - The operator has pushed the accelerator before the speed was selected through the manipulator - The seat-microswitch does not work - The potentiometer and/or chopper were replaced and the relating values between the two components must be re-programmed - A cable of the potentiometer is interrupted - The potentiometer is faulty - The PROGRAM VACC (see chapter adjustment and inspection) has not been carried out correctly <u>Actions</u> - Select the speed and push afterwards the accelerator - Verify the seat-microswitch and the continuity of the connections between microswitch and chopper - Verify the continuity of the connections between the potentiometer and the chopper - Re-program the chopper with PROGRAM VACC (see chapter adjustment and inspections) - Verify the functionality of the potentiometer with the function TESTER of the console (it could be broken) and replace it if necessary (re-programming the chopper card afterwards with PROGRAM VACC)
5	I HIGH AT STAND	Test in resting conditions: control if the current is zero. <u>Possible causes</u> - Damaged current sensor inside the chopper - Damaged logic <u>Actions</u> - Replace the chopper if the problem persists
6	NPOT NOT OK	Permanent Test: anomalous negative of the potentiometer = 0 <u>Possible causes</u> - A cable of the potentiometer is not connected - Damaged potentiometer <u>Actions</u> - Verify the continuity of the connections of the potentiometer - Verify the functionality of the potentiometer with the function TESTER of the console (could be interrupted) and replace it if necessary (re-programming the chopper card with PROGRAM VACC afterwards)

Number of blinking	MESSAGE	NOTES
7	TH PROTECTION	High temperature of the chopper: above 75° the current will be reduced until it achieves "0" when the temperature raises up to 85° (with temperature working conditions -30°C + 40°C) <u>Possible causes</u> - The machine is working with activated brake or is used permanently in gradients with high field temperature - The thermic sensor is damaged <u>Actions</u> - Verify the external thermic conditions of the chopper - Control the current consumption of the motor
8	DRIVER SHORTED COIL SHORTED	Anomaly at the positive or negative driver of the gear-relay <u>Possible causes</u> - the driver is damaged <u>Actions</u> - Replace the chopper
32 PERMANENT	BATTERY LOW	Battery discharged <u>Possible causes</u> - battery charge lower than 10% - connections between battery and chopper oxidised or not fixed <u>Actions</u> - verify the charge-level of the batteries - verify the connections of the cables - insert the gear; if the batteries are discharged the chopper tails the power to the traction motor at 50 %
ALWAYS ON	FORW BACK	Permanent test: double gear request <u>Possible causes</u> - a contact of the gear manipulator is interrupted or sticks - damaged cable connection <u>Actions</u> - verify the contacts of the gear manipulator - verify the connections of the cables - if the error persist replace the chopper

Chopper programming

1. Check that all switches are off.
2. Lift the back wheels on a security stand (jack).
3. Insert the connector of the console in the **connection** of the chopper with Key in OFF-Position.
4. Switch on the machine (key ON).



5. It appears: kind of chopper or machine (C83 - C104) – voltage – ampere – working hours of the machine or "ALARMS".

MX v.2.1
HOURS . 0

6. Press ENTER in order to enter the main menu.
7. It appears the first menu: "PROGRAM" = CHANGE PARAMETER

*** SELECT MENU ***
1 - PROGRAM

8. Press ENTER and pass the values with ROLL. Verify if the values correspond with following table:

CHOPPER MX C83-C104	PARAMETER		
1. ACCELERATION DELAY	6*	ACCELERATION	SECONDS
2. CUTBACK SPEED 1	9	I SPEED LIMIT	% VOLT
3. CUTBACK SPEED 2	9	II SPEED LIMIT	% VOLT
4. COMPENSATION	9	POWER COMPENSATION	% AMP
5. TRACTION IMAX	9*	MAX. CURRENT	% AMP
6. BRAKING	7	DECELERATION BRAKING	% AMP
7. RELEASE BRAKING	6	RELEASE BRAKING	% AMP
8. INVERSION BRAKING	5*	BRAKING MOVEMENT INVERSION	% AMP
9. MAX SPEED FORW	9	MAX. FORWARD SPEED	% VOLT
10. MAX SPEED BACK	8	MAX. REVERSE SPEED	% VOLT
11. CREEP SPEED	2	MIN. DEPARTURE SPEED	% VOLT
* PARAMETER VARIED WITH COMPARISION TO C 83-C104			

9. At the end press OUT and confirm with ENTER, if parameters were changed

**DO YOU WANT
TO SAVE DATA ?**

ATTENTION: DO NOT CHANGE ANY SECURITY PARAMETERS, AS ACCELERATION, BRAKING, ETC. SUBSEQUENTLY IT IS POSSIBLE TO REDUCE THE MAX. SPEED OF THE REVERSE GEAR (MAX SPEED BACK)

WHEN THE CHOPPER MEMORY HAS LOST THE DATES:

1. Select with ROLL "RESTORE PARAM." = RE-PROGRAMMING OF THE CHOPPER-PARAMETERS.	* SELECT MENU * 4 - RESTORE
2. Press ENTER.	
3. It appears the code of the program 03	SELECT PROGRAM Mod. 03
4. Press ENTER in order to confirm the loading of the program.	
5. It appears the request to confirm the operation ENTER=YES, OUT=NO	ARE YOU SURE? YES=ENTER NO=OUT
6. Press ENTER to confirm the loading operation.	
7. It appears the message WAIT.	WAIT!
8. At the end of the operation appears again the description "RESTORE"	* SELECT MENU * 4 RESTORE
9. With ROLL select "PROGRAM".	* SELECT MENU * 1 PROGRAM
10. Press ENTER and verify passing the values with ROLL, if they correspond to the table at page 12 and save at the end, if parameters were changed	

PROGRAMMING VOLTAGE PEDAL ACCELERATOR:

1. Scroll with the button ROLL UP from "PROGRAM" to "PROGRAM VACC".	* SELECT MENU * 6 PROGRAM VACC
2. It appears the selected menu "PROGRAM VACC".	
3. Press ENTER to accede in the menu "PROGRAM VACC".	
4. It appears the actual max. values regarding forward and reverse gear.	FORW BACK 4,9 4,9
5. Press ENTER in order to reset the saved values.	
6. The chopper is now prepared to load new min. and max. values, which will be signalised from the potentiometer.	FORW BACK 0.0 0.0
7. Select with the gear manipulator the forward gear and press the pedal. Take care to move the pedal slowly at the beginning and to move it until the end (ONLY EVENT, IN WHICH THE MACHINE DOES NOT MOVE WITH INSERT GEAR)	
8. Repeat this operation with the reverse gear.	
9. On the display appear the new MIN and MAX values with reference to the directions (or similar values).	FORW BACK 4,9 4,9
10. Press ENTER.	

11. It appears the request for confirmation of the new values – press ENTER for confirmation.	ARE YOU SURE?
---	----------------------

VERIFY THE LOADED DATES: LIFT AT LEAST ON TRACTION WHEEL

1. Move in the list with the buttons ROLL UP or ROLL DOWN from "PROGRAM VACC" to the menu "TESTER".	* SELECT MENU * 2 TESTER
2. Press ENTER.	
3. Select with ROLL: " MOTOR VOLTAGE ".	MOTOR VOLTAGE VOLT = 00,0
4. Try to insert the forward and reverse gear. The initial voltage should be between 0 V and 1 V	
5. Press with the forward gear until the end and verify if you achieve the max. voltage of the battery. With ROLL move to "VOLT BATTERY". The two values should have only some tenth of difference.	
6. Note: The reverse gear is reduced about 30% in comparison to the forward gear for the safety of the operator.	
7. Press OUT and return to the initial description, switch off the general key and remove the console connection from the chopper.	MX v.2.1 HOURS 0
8. AFTER THE CONTROLS LET THE TRACTION WHEEL DOWN ON THE FLOOR.	MX v.2.1 HOURS 0

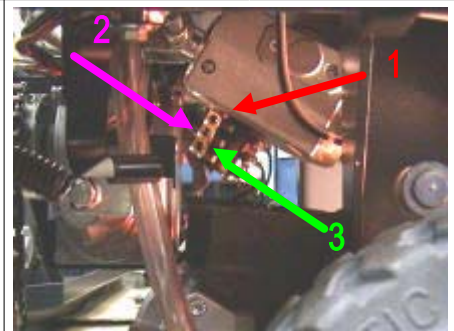
Functional inspection electric layout

1. Remove the battery connector.
2. Verify the cleanliness and the tightening of the battery cables.
3. Check the connections and the tightening of the power cables: batteries, **remote control switches**, **fuses**, motors, etc.
4. Re-connect the battery connector.
5. Switch the machine on by turning the key and check if the symbol of the hourmeter makes at least three blink signals.
6. Check control lamps and switches:
 - ? Check the functionality of the movement control: forward/reverse gear, pedal and speed reductions;
 - ? Check the functionality of the switches up-down movement brush base and squeegee;
 - ? Check the functionality of the suction motor with activated squeegee switch;
 - ? Check the AUT-MAN function related to the squeegee movement according to the squeegee switch position;
 - ? Check the forward gear, reverse gear, acceleration and braking;
 - ? Check the functionality of the battery control display;
 - ? Check the functionality of the hour meter;
 - ? Check the functionality of winking light with insert reverse gear;
 - ? Check the functionality of the horn;
 - ? Check the functionality of the buzzer of the reverse gear.



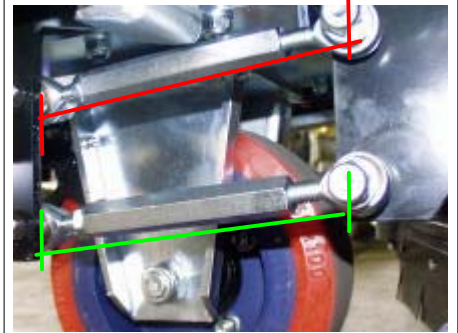
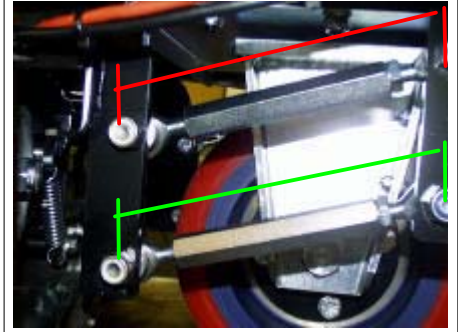
Adjustment microswitches brush base

1. On the actuator's support of the brush base are the microswitches with corresponding stops:
 - ? The **micro switch nr. 1**, is positioned in the upper part and refers to the upward movement; the corresponding stop must be adjusted, so that the bogie on the frame causes that the micro switch snaps; thus control in upper position that it does not pushes too much on the frame.
 - ? The **micro switch nr. 3**, is positioned in the lowest point of the micro box, and refers to the downward movement; consider that this is a security micro, therefore it does not work normally and is activated only if the brushes are not assembled and the basement is lowered too much, in order to avoid that the actuator is blocked. Adjust the micro in the way that the shaft does not come out more than **30mm**.
 - ? The **micro switch nr. 2**, in central position, is the brush consent micro; in order to adjust it let snap the micro with brush base in upper position, shut it when you notice the snap.



Regulation and adjustment of the brush base frame

1. When carrying out a general service check also the adjustment of the brush base inclination (the disc brushes should be lifted in front about 4 – 5 mm when they touch the floor with the back part).
2. On the **right side**, in movement direction, the measurements of the two tie rods should be:
 - ? Upper tie rod **191mm from one screw centre to the other**;
 - ? Lower tie rod **190mm from one screw centre to the other**.
3. On the **left side**, in movement direction, the measurements of the two tie rods should be:
 - ? Upper tie rod **201mm from one screw centre to the other**;
 - ? Lower tie rod **200mm from one screw centre to the other**.
4. When you have to restore the measurements, unscrew the adjuster nuts and screw or unscrew the tie rods according to the desired effects.



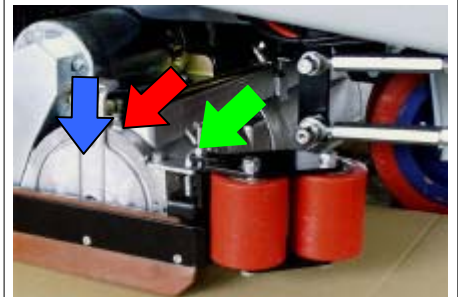
Adjustments and verifications of the disc brush assembly

1. Check that the oil in the reduction box is visible in transparent **level tap** (disc brushes) and arrives at the red level indication.
2. Check the wear of the belts.
3. Check the cooling holes of the motor
4. Check the wear of the motor carbon brushes.



Adjustment and verifications of the cylindrical brush assembly

1. Verify if the stamps of the brushes on the floor are uniform on both sides, if necessary **adjust the corresponding screws**.
2. If you notice vibrations on the cover of the brush support: screw the relevant **nylon dowel** until the noise is eliminated.
3. Adjust the rubber height of the lateral splash guard until achieving a uniform contact with the floor, fix the **adjuster nut**.



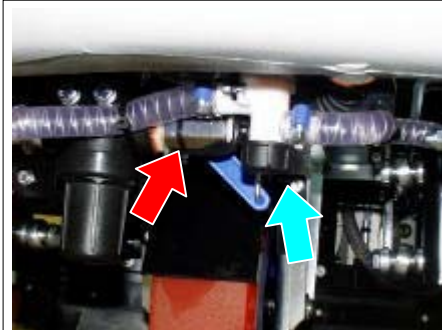
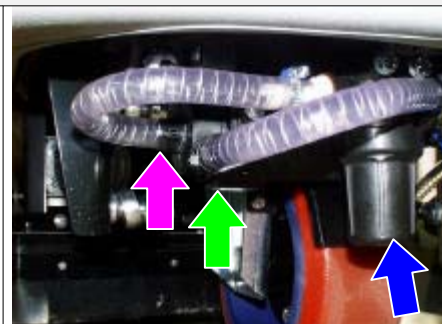
Steering and brake adjustments

1. Restore the right chain tension through the chain tightener:
 - ? Unscrew the adjuster nut;
 - ? Screw the **screw M8** sufficiently, (try to turn the steering completely to the right and the left, verify if there are not obstacles caused by excessive chain tension);
 - ? Fix the adjuster nut.
2. In order to restore the right pedal execution of the parking and emergency brake act onto the rod:
 - ? Unscrew the adjuster nut and screw the rod into the corresponding **fork**;
 - ? Verify that the wheels do not remain blocked, that they brake at the same time and that the pedal remain blocked for safety after two or three snaps;
 - ? If it does not work good, carry out adjustments on the right and left forks of the machine by unscrewing the adjuster nuts and regulation in order to achieve a uniform brake effect on both wheels;
 - ? Fix the adjuster nuts.



Inspection water unit

1. Check the cleaning and the positioning of the **solution filter**.
2. Fill the solution tank with water and check if there are no leakages of the water system.
3. Check the tightness of the hoses, the functionality of the **solenoid valve** and the adjustment of the water **cock**.
4. Check that the solution comes with opened cock regularly on the floor and that the flow is regularly on both brushes.
5. Fill the recovery tank with water and check the tightness.
6. Check the tightness of the exhaust pipe and the plug.
7. On the entering hose of the **pump** is insert a **reduction** in order to improve the uniform coming out of the solution; if you want to increase the flow it is possible to enlarge the hole.



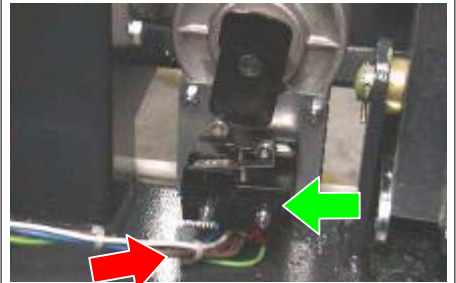
Inspection suction unit

1. Verify the cleaning and the functionality of the **filter** and the float.
2. Check depression tightness of the **cover gasket** on the recovery tank.
3. Check the tightness and the connections of the suction hoses and the squeegee hose.



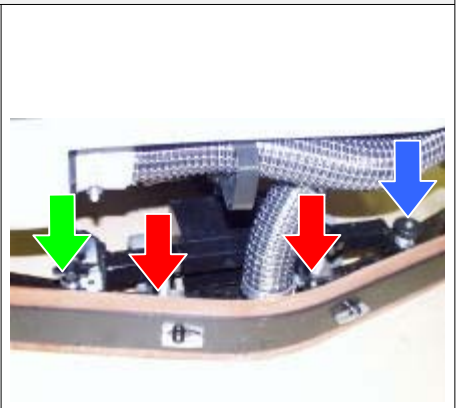
Adjustment squeegee micro switch

1. Both **micro-switches** have to be positioned, that there remains a play of **1 mm** between the micro-switch body and the control-lever with wheel, when it is pressed by the cam.
2. For the adjustment of the **micro-switch** relative to the lifting movement (external micro switch): unscrew the central screw of the cam and lift the squeegee, until you achieve a distance of **35-40 mm** between floor and lower part of the rubber.
3. Turn the cam until the lifting micro snaps, consequently fix the central screw of the cam: the other microswitch is adjusted automatically.



Adjustment squeegee

1. Unscrew the **knobs** for the adjustment of the wheel height completely.
2. Adjust the inclination with the **register**, so that the rubber has a uniform inclination on the floor at the side and the centre.
3. Fix the two **knobs** for the wheel height adjustment in the same way, so that the rubber is not pressed too strong on the floor nor lifted, but has a uniform inclination of about 30°.
4. Adjust the **hand wheel** of the automatic uncoupling system accordingly to the uncoupling pressure of bumps against the squeegee. In order to increase the uncoupling pressure screw clockwise, for decreasing the pressure turn counterclockwise.



Oil Reduction gear assembly

1. Reduction gear assembly disc-brush base: check that the oil inside the reduction gear assembly reach the **transparent oil-level control plug** (it should not exceed it). Use SHELL OMALA 460 (Oil quantity kg 0.35).
Refill through the *upper tap*.



2. Geared traction motor: check that the oil in the reduction gears assembly reach the **transparent oil-level control plug** (the oil should not exceed it). If necessary refill oil **SHELL** OMALA 220 or **FINA** GIRAN 220, (oil quantity: 0.25 - 0.35 ltr.).



Inspections functions of the machine

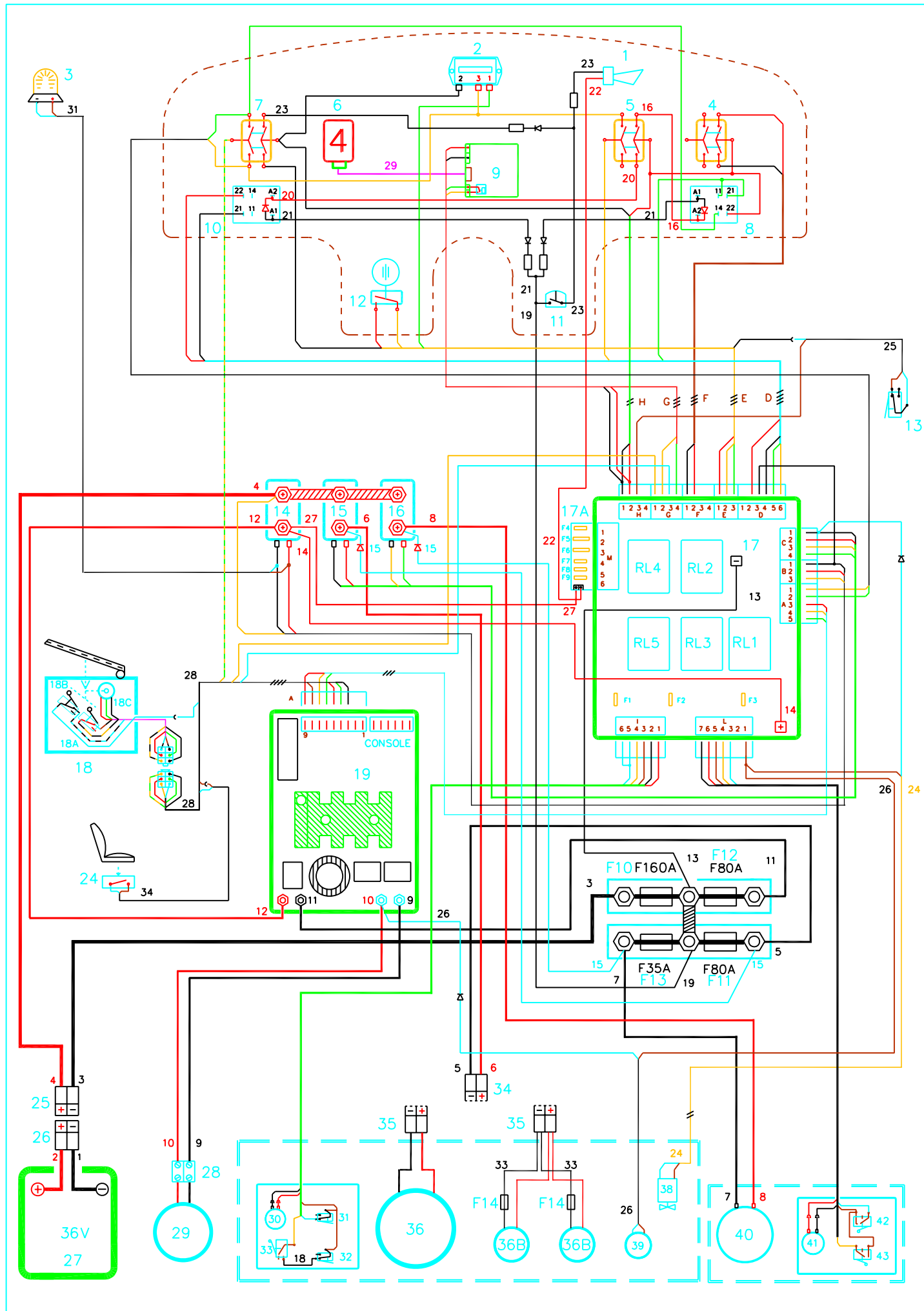
1. Check the functionality of the seat microswitch;
2. Check the functionality of the acceleration pedal;
3. Check the functionality of the brush base;
4. Check the functionality of the brush motor;
5. Check the functionality of the solenoid valve and the pump;
6. Check the functionality of the squeegee;
7. Check the functionality of the suction motor;
8. Check the functionality of the emergency and parking brake;
9. Check the functionality of the steer;
10. Check the battery conditions, the holdfasts and the cables;
11. Check the functionality of the horn and the buzzer of the reverse gear;
12. Check the functionality of the winking light.

Test the machine functions

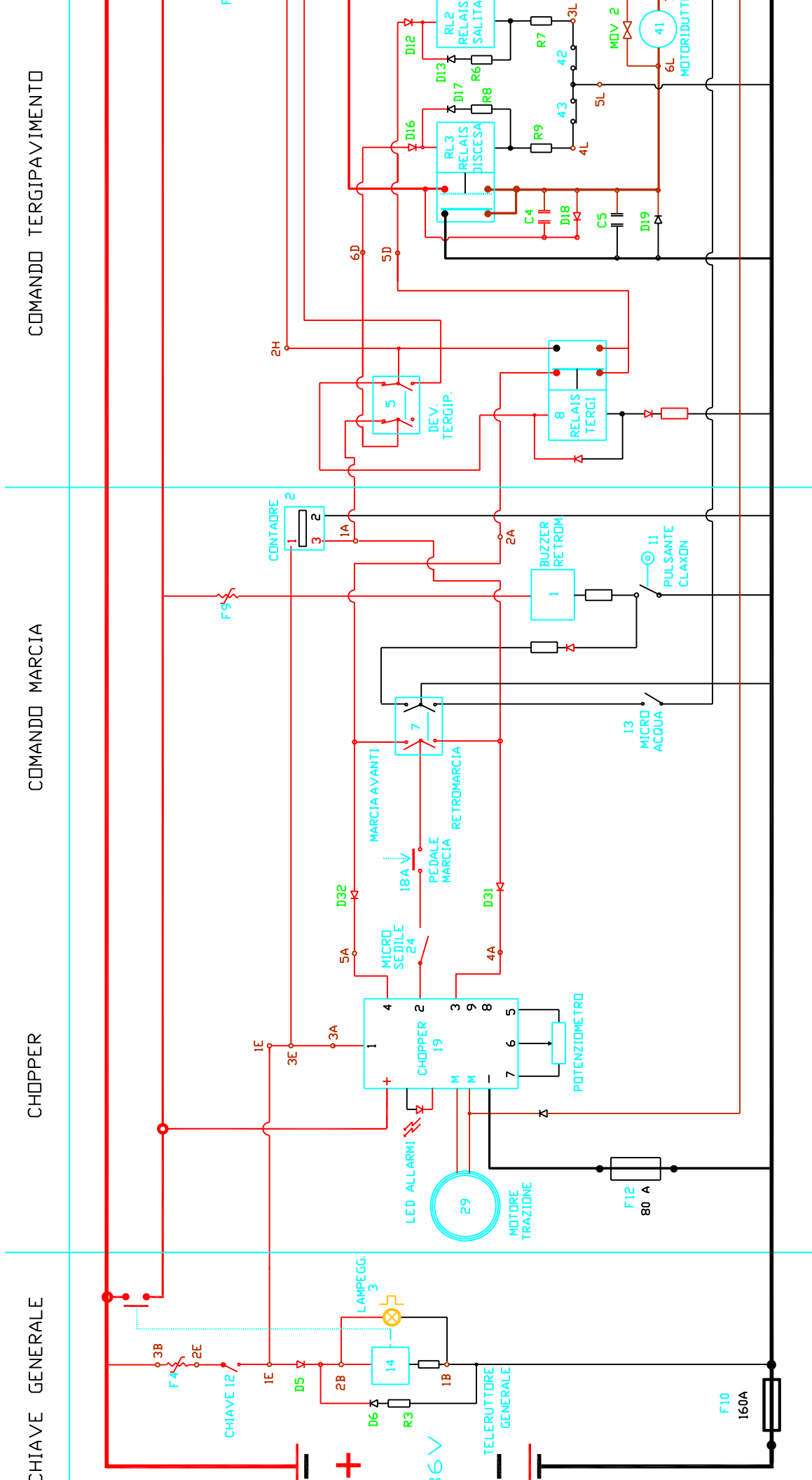
1. Fill the tank with water and check if there are any leakages.
2. Check the tightness of the water system and that the water outflow on both brushes is regularly.
3. Adjust the inclination and the wheels of the squeegee and carry out a test.
4. Adjust the inclination of the brush base and carry out a test.
5. Adjust through the knobs the lateral splashguards and carry out a test.
6. Check the efficiency of the parking and emergency brake: brake with max. speed and check that the wheels are blocked contemporarily.
7. Check that the machine launched with max. speed, with full tank, will stop after releasing the acceleration pedal within 85-90 cm. In contrary case, check the parameters of the console again, in particular "Release Braking".
8. Check the function of the seat micro-switch.
9. Check forward and reverse motion, acceleration and braking.

Final inspection

Check all the functions: scrubbing, suction, forward and reverse gear and braking.



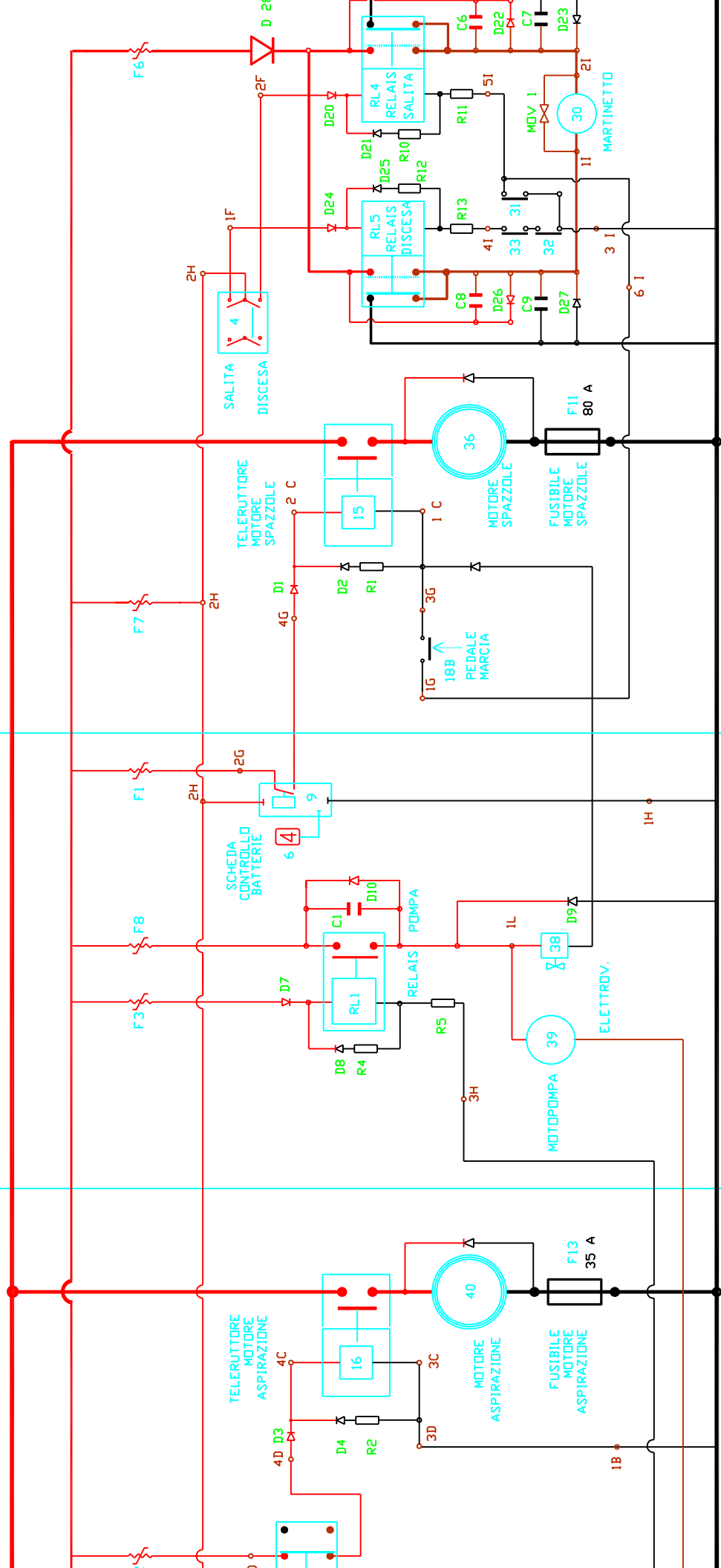
ITEM	SKU	Description
1	E83177	HORN
2	E83977	HOURLMETER
3	E82345	BLINKING LIGHT
4	E83546	BRUSH MOTOR SWITCH CONTROL
5	E82797	SQUEEGEE SWITCH CONTROL
6	E83175	BATTERY LEVEL INDICATOR
7	E82797	DRIVE SELECTOR
8	E83159	RELAY FOR THE AUTOMATIC SQUEEGEE RISE
9	E83157	BATTERY CARD
10	E83159	VACUUM MOTOR RELAY
11	E88145	HORN BUTTON
12	E83173	MAIN KEY SWITCH ON-OFF
13	E83164	SOLUTION COCK MICROSWITCH
14	E83503	MAIN POWER SWITCH
15	E83503	BRUSH MOTOR POWER SWITCH
16	E83503	VACUUM MOTOR POWER SWITCH
17	E83156	CONTROL ELECTRONIC CARD
17A	E83161	ELECTRONIC CARD FOR AUTOMATIC RESETTABLE FUSES
18	E83486	PEDAL ACCELERATOR
18A	E82270	DRIVE CONTROL MICROSWITCH
18B	E82270	BRUSH MOTOR CONTROL MICROSWITCH
18C	67900057	ELECTRONIC CARD FOR POTENTIOMETER
19	E83158	CHOPPER CARD ZAPI MX 36V/70A MOS
24	E83165	SEAT SWITCH
25	E83253	80A MALE CONNECTOR
26	E83254	80A FEMALE CONNECTOR
28	E82567	BRUSH MOTOR TERMINAL
29	E83283	TRACTION UNIT 450W
30	E82501	BRUSH HEAD ACTUATOR
31	E82268	UPSTROKE LIMIT MICRISWITCH - BRUSH HEAD
32	E82268	EXTRA DOWNSTROKE LIMIT MICRISWITCH - BRUSH HEAD
33	E83164	DOWNSTROKE LIMIT MICRISWITCH - BRUSH HEAD
34	E83254	80A FEMALE CONNECTOR
35	E83253	80A MALE CONNECTOR
36	E83627	BRUSH MOTOR
36B	E83285	SWEEPING MOTOR
38	E82461	SOLENOID VALVE
39	E83120	PUMP
40	E82631	THREE STAGE VACUUM MOTOR
41	E83183	SQUEEGEE ACTUATOR
42	E83163	UPSTROKE LIMIT MICRISWITCH - SQUEEGEE
43	E83163	DOWNSTROKE LIMIT MICRISWITCH - SQUEEGEE
F1	E83910	AUTOMATIC RESETTABLE FUSE - BRUSH CONTROL BRANCH
F2	E83910	AUTOMATIC RESETTABLE FUSE - VACUUM CONTROL BRANCH
F3	E83910	AUTOMATIC RESETTABLE FUSE - SOLENOID VALVE
F4	E83910	AUTOMATIC RESETTABLE FUSE - CHOPPER
F5	E82432	AUTOMATIC RESETTABLE FUSE - BRUSH HEAD ACTUATOR
F6	E82432	AUTOMATIC RESETTABLE FUSE - SQUEEGEE ACTUATOR
F7	E83910	AUTOMATIC RESETTABLE FUSE - AUTOM. MODE (SQUEEGEE)
F8	E83910	AUTOMATIC RESETTABLE FUSE - SOLENOID VALVE
F9	E83910	AUTOMATIC RESETTABLE FUSE - HORN
F10	E83171	160A FUSE FOR BATTERY PROTECTION
F11	E83170	80A FUSE FOR BRUSH MOTOR
F12	E83170	80 A FUSE FOR CHOPPER CARD
F13	E83169	35A FUSE FOR VACUUM MOTOR
F14	E81734	40A FUSE FOR SWEEPING MOTOR
RL1	E83160	RELAY FOR SOLENOID VALVE- PUMP
RL2	E83159	RELAY FOR SQUEEGEE RISE
RL3	E83159	RELAY FOR SQUEEGEE DESCENT
RL4	E83159	RELAY FOR BRUSH HEAD RISE
RL5	E83159	RELAY FOR BRUSHN HEAD DESCENT

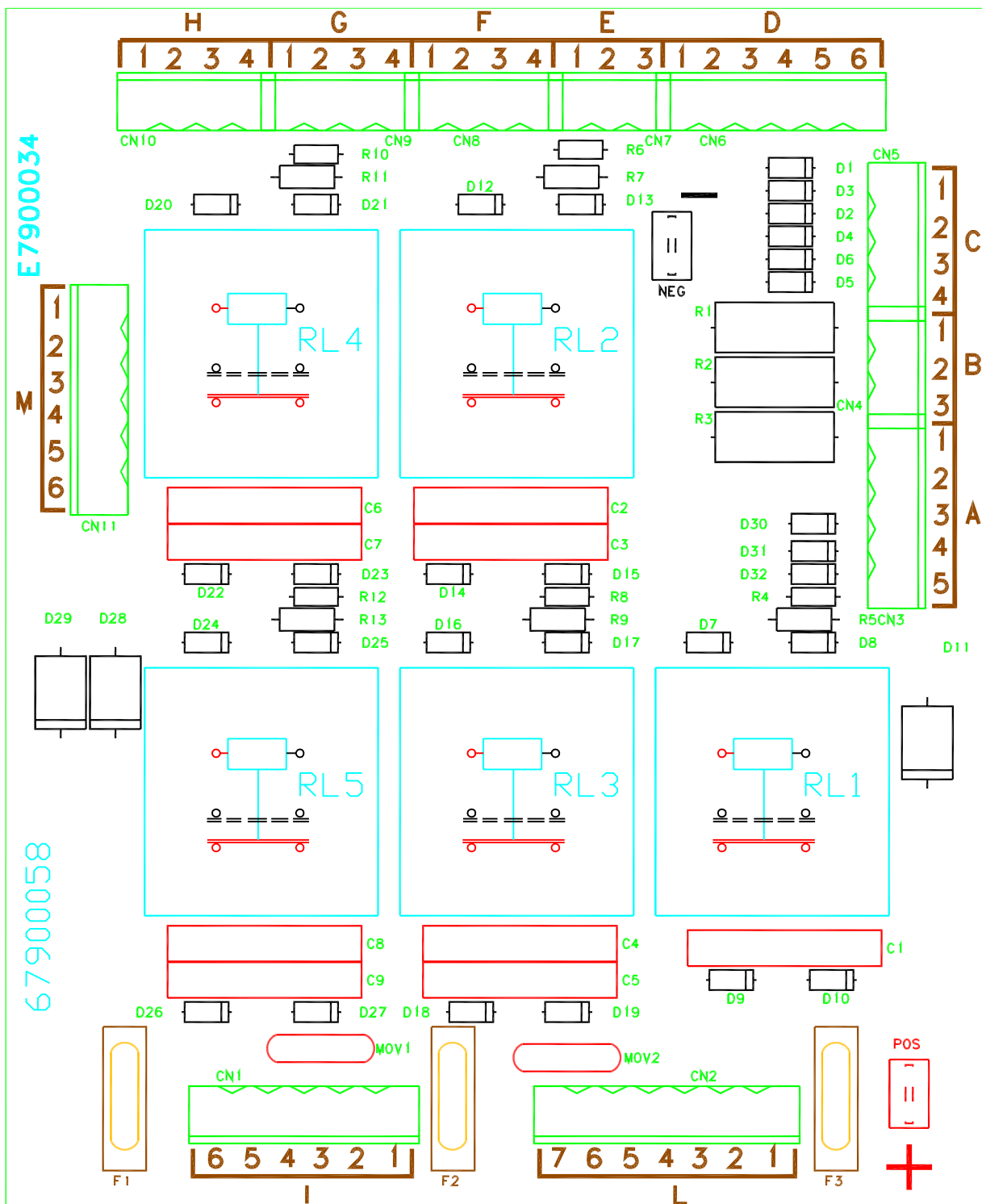


MOTORE ASPIRAZIONE

POMPA/ELETTROVALVOLA

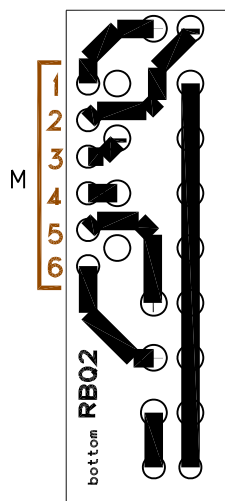
COMANDO SPAZZOLE



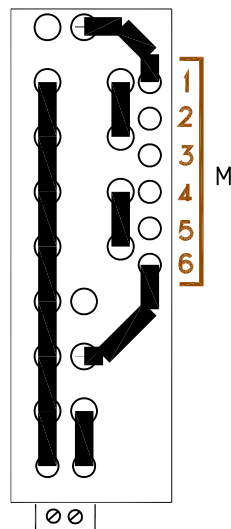


POS.	CODICE	DENOMINAZIONE
D17.../D10-D12/.../D27-D30-D31-D32		DIODI IN4007
D28-D29-D11		DIODI PK 600 OPPURE 6A6
R1-R2-R3		RESISTENZE 120 ohm - 1 W
R4-R5-R8-R10-R12		RESISTENZE 470 ohm - 1/4 W
R6-R7-R9-R11-R13		RESISTENZE 180 ohm - 1 W
C1/.../C9		CONDENSATORI PHILIPS 470K 250 V
MOV1-MOV2		SOPPRESSORI DI PICCO 100 Z 15
RL2/.../RL5	68420510	RELE' 20 A
RL1	68420410	RELE' 30 A
F1-F3-F3	72400301	RXE 185

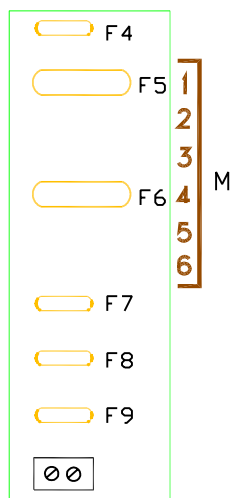
COMAS S.p.A.		S. Giovanni Lupatoto VERONA	
DISEGNATO	Olivo	CONTROLLATO	Dalla Verde
MACCHINA	Tripla 65	APPROVATO	Guerra
GRUPPO	Impianto Elettrico	DATA REVISIONE	0 20/03/02
OGGETTO	Scheda Controllo e Comandi 67900058	CODICE	67900058
		N° DISEGNO	22.51.26-1/3



SALDATURE



SALDATURE LATO COMPONENTI



COMPONENTI

LEGENDA COMPONENTI

F4-F7-F8-F9 = RXE 185 (cod. 72418501)

F5-F6= RXE 3755 (cod. 72437501)

 S.p.A.					S. Giovanni Lupatoto		VERONA	
DISEGNATO	Olivo	CONTROLLATO	Dalla Verde	APPROVATO	Guerra	DATA REVISIONE 0	22/03/02	
MACCHINA	Tripla 65					CODICE	67900059	
GRUPPO	Impianto Elettrico					N° DISEGNO	22.51.27	
OGGETTO	Scheda Fusibili 67900059							

BETCO US WARRANTY POLICY

10 year coverage

Subject to the conditions stated below, Betco warrants parts and labor on rotationally molded polyethylene tanks/housings and injection molded vacuum head assemblies to be free from defects in materials and workmanship for a period of ten years to the original purchaser.

3 Year Coverage

Subject to the conditions stated below, Betco warrants parts and labor on all other Betco components to be free from defects in materials and workmanship for a period of three years to the original purchaser.

1 Year Coverage

Subject to the conditions stated below, Betco offers a limited warranty on parts and labor on the following equipment: parts and accessories to be free from defects in materials and workmanship for a period of one year to the original purchaser.

- DM Series Vacuums: #85506-00, #85507-00
- Bac Pac Lite Vacuum: #85903-00
- FiberPRO® Floor Dryer: #85507-00
- WORKMAN™ Series Vacuums: #85024-00, #85025-00, #85026-00, #85027-00
- CV100T Vacuum: #85023-00
- All Tools and Accessories
- All Battery Chargers
- All Batteries are pro-rated for 1 year

Allowable Travel Time Warranty Reimbursement:

Eligible equipment: All battery and propane powered equipment products. Warranty period: 90 days from date of sale to the original purchaser. A maximum 60 mile round trip at 44 cents per mile will be allowed for warranty consideration.

Propane Machine Warranty:

Honda engines are warranted by Honda for a period of 2 years against manufacturer defects. Kawasaki engines are warranted by Kawasaki for a period of 2 years against manufacturer defects. All other components (except wear items)* are warranted by Betco for a period of 3 years.

***Wear Items exempt from Warranty consideration include but may not be limited to: power cords, transport wheels, vacuum bags, belts, squeegee blades, pad drivers, clutch plates, handle grips, filters, screens, throttle cables, brushes and carbon brushes.**

Subject to the conditions and exceptions stated in this warranty, Betco warrants the Betco products to be free from defects in material and workmanship, under normal use and service, for the periods listed under the warranty policy to the original purchaser. At any time during the warranty period, Betco will furnish replacement parts for the Betco parts to the original purchaser. Such parts will be furnished and charged including transportation costs, to the original owner through any Betco authorized Service Distributor. If the original part is returned within the warranty policy period from date of delivery for inspection by Betco and is found to be defective the owner will be credited for the cost of replacement parts plus shipping and handling. Replacement parts that have become defective through wear or abuse are not included in this warranty.

This warranty does not apply to damage or defect caused by accident, misuse, Negligence, fire, or to any Betco product which has been serviced or repaired by other than an authorized Betco Service Distributor or Betco factory personnel. This warranty is void if products are used for any purpose other than that which was intended. There are no other warranties expressed or implied. In no event shall Betco be liable for incidental or consequential damages or any damage to person or property. (Please note some states do not allow the exclusion or limitations for incidental and consequential damages)



1001 Brown Avenue • Toledo, Ohio 43607-0127

Customer Service: 888-GO-BETCO • Fax: 800-445-5056 • Technical Service: 877-856-5954 • www.betco.com

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