



E83025-00 E29937-00
E29936-00



CREWMAN™ AS20B

20" Automatic Scrubber
with Brush Assist



Operator Manual

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RECEIVING THE MACHINE

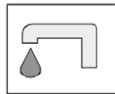
Immediately check, when receiving the machine, that all the materials indicated on delivery documents have been received and also that the machine has not been damaged in transit. If it has been damaged, this damage must be immediately reported to the shipper and also to our customer's service department. Only acting promptly in this manner will make it possible to receive missing material and to be compensated for damage.

INTRODUCTION

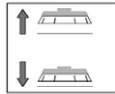
This is an automatic scrubber which, via the mechanical action of the rotating brush and the chemical action of a water/detergent solution, can clean many types of hard flooring. As it advances, it also collects the dirt removed and the detergent solution not absorbed by the floor.

The machine must be used only for this purpose. Even the best machines will only work well if used correctly and kept in good working order. We therefore suggest you read this instruction booklet carefully and re-read it whenever difficulties arise while using the machine. Please contact our technical service department or your dealers if you have any questions about the machine.

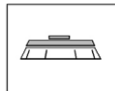
SYMBOLS USED ON THE MACHINE

**Cock symbol**

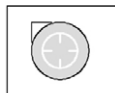
Indicates the cock lever
Indicates the cock open signal lamp

**Brush base lift/lower symbol**

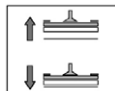
Indicates the base lift lever

**Brush symbol**

Indicates the brush motor switch

**Suction motor symbol**

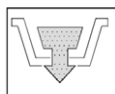
Indicates the suction motor switch

**Squeegee lift/lower symbol**

Indicates the squeegee lift lever

**Battery symbol****Indicator of the battery charge level**

Indicates the detergent solution maximum temperature



Indicates the recovery tank outlet pipe

TECHNICAL DESCRIPTION	Measurement Unit	Crewman™ AS20B
Working width	In (mm)	20 (508)
Rear squeegee width	In (mm)	26 (660)
Work capacity	ft ² /h (m ² /h)	18,500 (1720)
Brush & Pad (diameter)	in (mm)	20 (500)
Brush RPM	RPM	275
Brush pressure	lb. (Kg)	50 (22)
Brush motor	V / HP (V / W)	24 / 0.54 (24 / 400)
Drive Type		Semi-Automatic
Vacuum motor	V / HP (V / W)	24 / 0.5 (24 / 370)
Vacuum motor suction	inches of water (mbar)	40 (100)
Solution tank capacity	Gal (l)	9 (33)
Recovery tank capacity	Gal (l)	10.5 (40)
Weight of machine (excluding batteries)	lb. (Kg)	165 (75)
Charger	V / A	24 / 12
Battery compartment dimensions (Length / Height / Width)	in x in x in	14.2 x 12.8 x 10.0
	(mm/mm/mm)	(360 /325 /250)
Noise level	dBA	65

GENERAL SAFETY REGULATIONS

The regulations below must be carefully followed in order to avoid harm to the operator and damage to the machine.

- Read all labels on the machine carefully. Do not cover them for any reason and replace them immediately if they become damaged.
- The machine must be used exclusively by authorized and trained personnel.
- When operating the machine be careful of other people.
- The machine is not designed for cleaning carpets.
- The power cable outlet must be provided with a proper ground.
- Avoid damaging the power cable of the battery charger by crushing, bending, cutting or stressing it.
- Whenever the power cable of the battery charger is damaged, immediately contact a BETCO service center.
- Do not mix different types of detergent as this may produce harmful gases.
- Do not set containers on the machine.
- Machine storage temperature is between -10°F and 130°F, never store outside under humid conditions.
- Operating conditions: room temperature between 33°F and 100°F with relative humidity between 30% to 95%.
- Only use the machine in closed areas and do not expose it directly to rain.
- Never use the machine in an explosive environment.
- Do not use the machine as a means of transport.
- Never use acidic chemicals which could damage the machine.
- Avoid running the brushes with the machine stopped; this could damage the floor.
- Never vacuum up flammable liquids.
- Never use the machine to gather dangerous powders.
- Use a powder fire extinguisher in case of fire. Do not use water.
- Do not hit against shelving or scaffolding. The operator must always be equipped with the appropriate safety device (gloves, shoes, helmet, glasses, etc.)
- Do not use the machine on surfaces with an inclination greater than the one shown on the serial plate.
- The machine is designed to wash and dry floors simultaneously. Signal the presence of wet floors with suitable signs.
- If the machine does not work properly, perform routine maintenance. Otherwise, request the assistance of the BETCO technical service.
- When replacing parts ask for ORIGINAL spare parts from your Authorized BETCO Dealer and/or Retailer.
- Always turn off the machine and disconnect the battery connector whenever maintenance is performed.
- Never remove guards that require tools for removal.
- **Never wash the machine with direct or pressurized jets of water or with corrosive substances.**
- Have your BETCO service center check the machine once a year.
- To prevent the formation of scale in the solution tank filter, do not store the machine with detergent solution in the tanks.
- Before using the machine make sure that all doors and covers are positioned as shown in this operating and maintenance manual.
- When your BETCO machine is ready to be retired, the machine must be disposed of properly. It contains oils and electronic components. The machine was built using totally recyclable materials.
- Use only brushes furnished with the machine or those specified in the user's manual. Use of other brushes can compromise safety.
- When removing the battery, unplug the battery connection, unplug the charger and disconnect the battery terminals.
- Before recycling the machine, remove the battery.

MACHINE PREPARATION

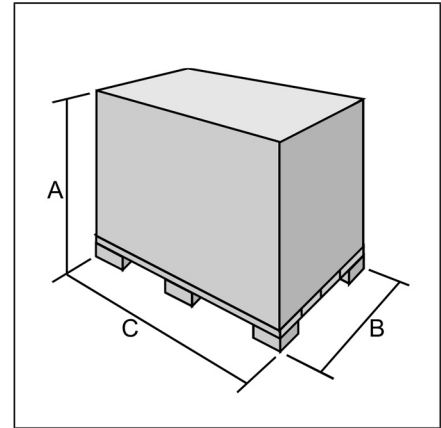
1. HANDLING THE PACKED MACHINE

Do not place more than two packages on top of each other.

The total weight is 220 lb. (100 kg).

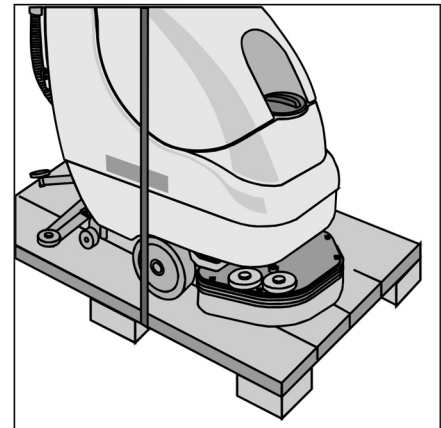
The overall dimensions of the package are:

- A : 50 in (1260 mm)
- B : 26 in (660 mm)
- C : 48.4 in (1230 mm)

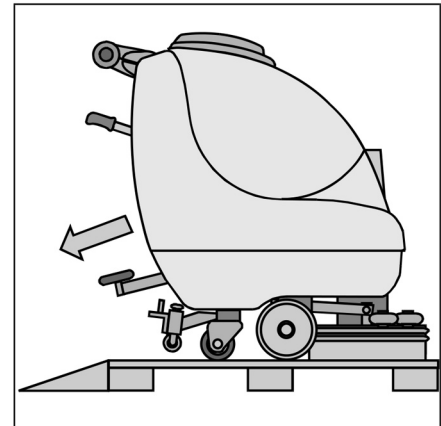


2. HOW TO UNPACK THE MACHINE

- A. Remove outer packaging.
- B. The machine is strapped to it's pallet.
- C. Remove the strap.



- D. Use a ramp to get the machine down from the pallet, pulling it backwards.
- E. Keep the pallet for any future transport needs.



MACHINE PREPARATION

3. BATTERY INSTALLATION

The machine will be supplied with a battery charger and either two 12V Wet or AGM batteries. The batteries must be housed in the battery tray in the battery compartment beneath the recovery tank.

To insert the batteries you must:

- A. Open the recovery tank lid.
- B. Disconnect the squeegee hose (1) from the recovery tank.
- C. Remove the suction cap (2) by turning it counterclockwise.
- D. Disconnect the "recovery tank" drain hose from the proper hook.
- E. Remove the recovery tank.
- F. Place the battery.
- G. Connect the battery connector (2) to the machine connector (1).
- H. Reassemble everything.



WARNING: To avoid acid spillage you can use sealed batteries.

WARNING: Perform one battery charging cycle before using the machine.

4. BATTERY CHARGER

Make sure that the battery charger is suitable to the installed battery, both in capacity and in type (lead/acid or GEL and equivalent).



WARNING! Never charge a GEL battery with an unsuitable battery charger. Strictly follow the instructions provided by the battery and battery charger manufacturer.

In order to avoid permanent damages to the battery, they should never be totally discharged. To do this, they should be recharged within a few minutes after the battery discharge signal starts to flash.

NOTE: Never leave the battery completely discharged, even if the machine is not being used.

ATTENTION! For daily recharging of the battery it is necessary to strictly follow the instructions provided by the manufacturer or dealer. Specialists must carry out all installing and maintenance procedures. Danger of exhalation of gas and emission of corroding substances. Danger of fire: Keep away from flames.

MACHINE PREPARATION

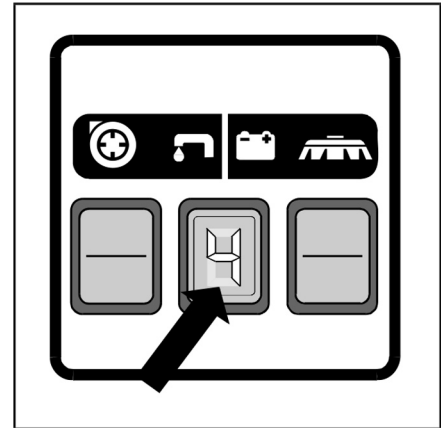
5. BATTERY CHARGE LEVEL GAUGE

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 = (blinking) discharged batteries)

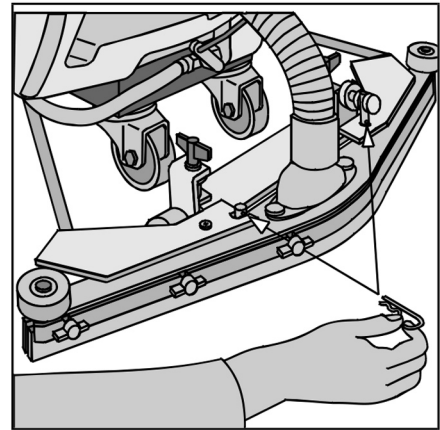


WARNING! Some seconds after that "0" blinks, the brush motor automatically switches off. Anyway, the machine can finish to dry before recharging the batteries.



6. INSTALLING THE SQUEEGEE

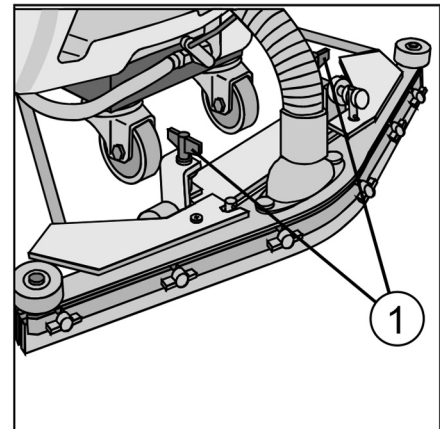
The squeegee is supplied separately from the machine, due to packing reasons. It must be installed as shown in the picture, threading the retaining pin into the squeegee column. Put the squeegee suction hose into its sleeve.



7. SQUEEGEE HEIGHT ADJUSTING

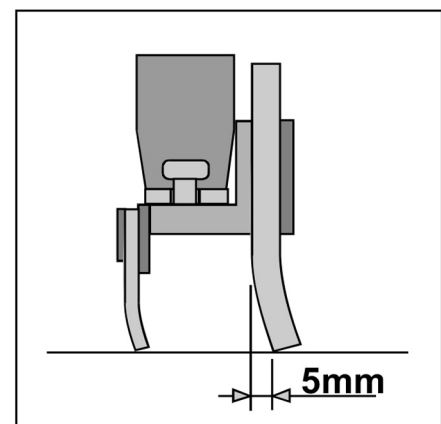
The squeegee height is maintained by the guide wheels. To adjust this: rotate the wing nuts (1) counterclockwise to lift the squeegee and clockwise to lower it.

Note: The right and left wheels must be set at the same height, to allow the squeegee to work parallel to the ground.



8. SQUEEGEE INCLINATION ADJUSTING

During operation, the back rubber is to be lightly inclined backwards (about 5 mm, on its whole length). Should it be necessary, you can increase the rubber central inclination by inclining backwards the squeegee body, turning the regulator counterclockwise (1). To increase the bending of the rubber on the squeegee sides, turn the register clockwise. Once the adjustment is finished, lock the block nut.

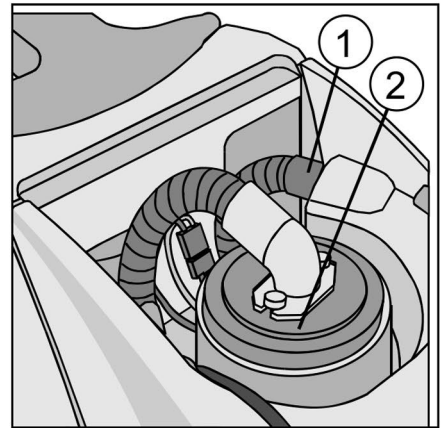


MACHINE PREPARATION

9. RECOVERY TANK

Open the cover and check if the suction plug **(2)** is insert correctly and its notches are locked turning the plug clockwise and is well connected with the hose which leads to the suction motor.

Furthermore check, that the squeegee hose **(1)** is well connected and that the exhaust plug at the back of the machine is closed.

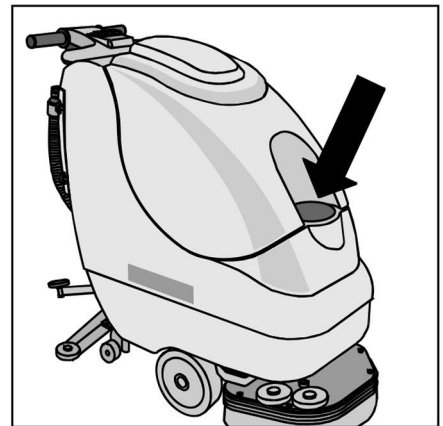


10. SOLUTION WATER

Fill the solution tank with clean water at a temperature not in excess of 120°F (50°C). Add liquid detergent in the amounts and using the procedures recommended by the detergent manufacturer. Use only a minimal percentage of detergent to prevent formation of an excessive quantity of foam, as this could damage the suction motor. Close the cap.

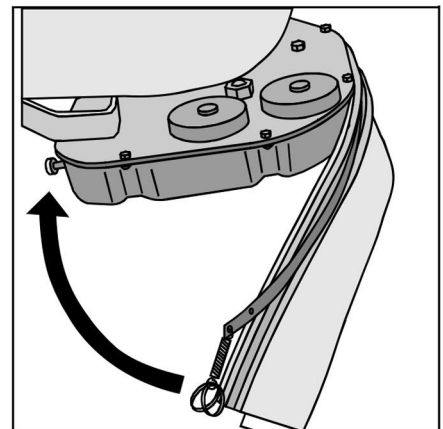


ATTENTION! Always use low-foam detergent. Introduce a small amount of anti-foam detergent in the recovery tank before operating, to be sure to prevent foam formation. Never use pure acids.



11. INSTALLING THE SPLASH-GUARD

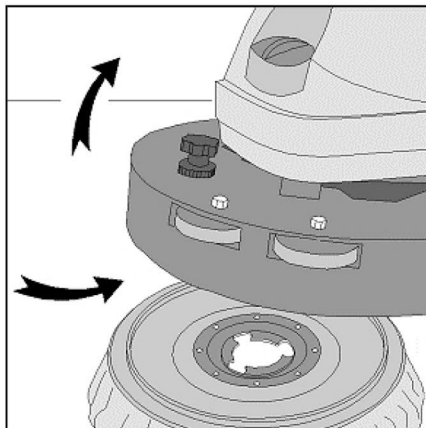
The splashguard is supplied separately from the machine, for packing reasons, and is to be installed as shown in the picture.



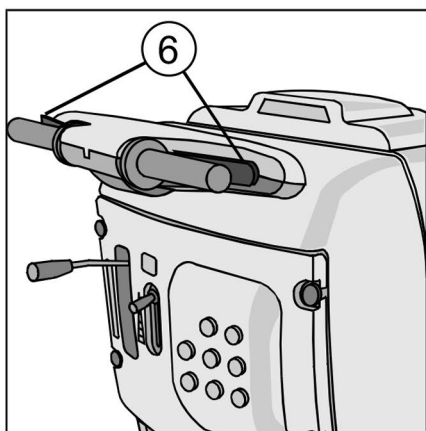
MACHINE PREPARATION

12. BRUSH ASSEMBLY

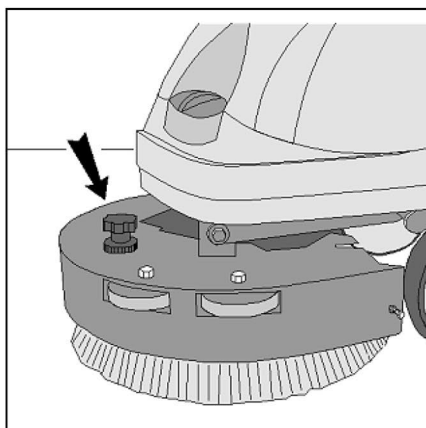
- A. Push the pedal in order to lift the brush base.
- B. With lifted brush base try to bring the brushes in the right position corresponding to the center of the machine.
- C. Let the brush base down by releasing on the pedal.



- D. Press the operator present control lever (6) and the brush will be hooked automatically.



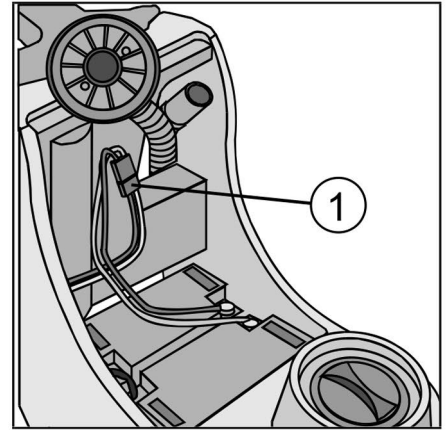
- E. In order to vary the advancement speed act upon the knob indicated in the illustration.



OPERATION

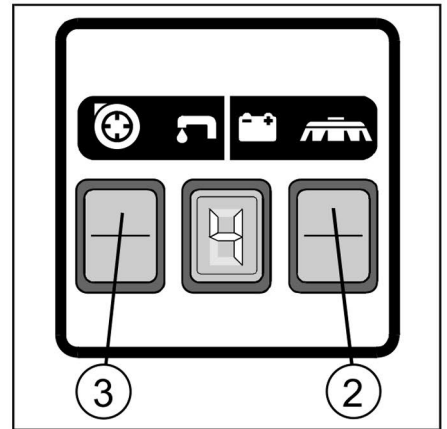
1. MACHINE OPERATION

A. Connect the battery cable (1).



B. Press the brush switch (2).

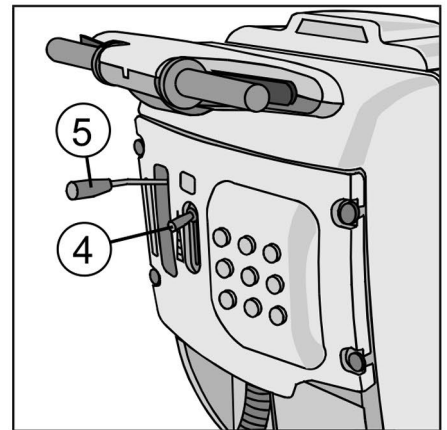
C. Press the suction switch (3).



D. Use the solution knob (4) to adjust the detergent solution quantity: it should be enough to regularly wet the floor but not as much as to flow out the splashguard. Please note the right solution quantity depends on floor type, on dirt importance and on speed.

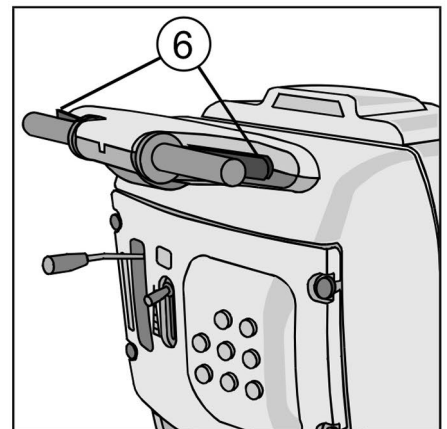
E. Release the pedal and let the base lower.

F. Lower the squeegee using the lever (5).



G. Pulling the trigger will cause (6) the brushes to start turning and the squeegee starts drawing in.

H. During the first few feet check that the amount of water is sufficient and that the squeegee dries the floor perfectly.



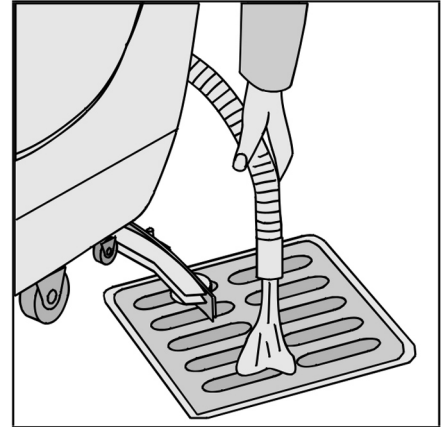
OPERATION

2. OVERFLOW DEVICE

The machine is supplied with float that trips whenever the recovery tank is full, closing the suction tube. In this case you should empty the recovery tank by removing the outlet pipe cap.



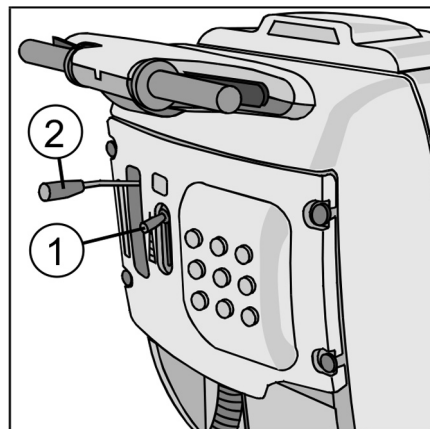
ATTENTION! Always wear gloves during this procedure, to avoid any contact with dangerous substances.



SHUTTING DOWN THE MACHINE

At the end of the work, and before performing any type of maintenance:

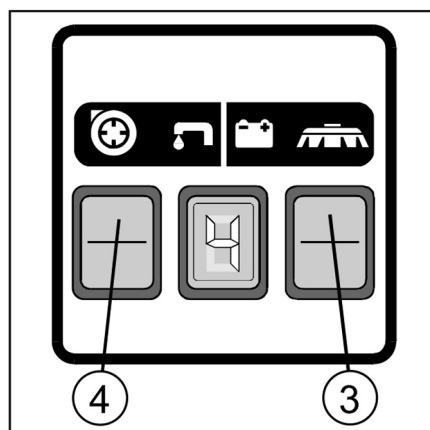
1. Close the solution valve(1).
2. Raise deck by pressing on foot pedal.
3. Raise squeegee lever (2).



4. Turn off the brush switch (3).
5. Turn off suction motor switch (4).



ATTENTION! If after having switched off the brush switch (3) the display of the battery indicator remains on, this means that, the solution valve is open. Close the water valve using the lever (1) in order to avoid leakage of the detergent solution.



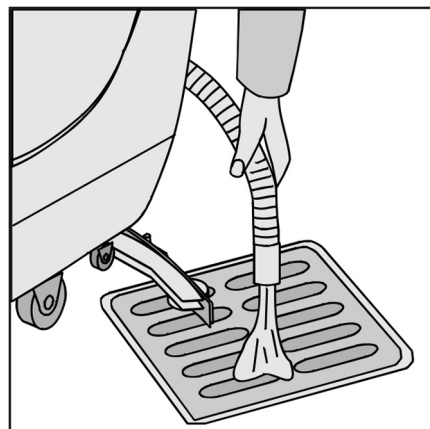
6. Move the machine to the water disposal point.

7. Hold the hose placed on the back of the machine.
8. Remove the outlet cap and empty the tank.



ATTENTION! Always wear gloves during this procedure to avoid any contact with dangerous substances.

9. Disassemble the brush and clean it by a jet of water (for the disassembly of the brush see the following "DISASSEMBLY OF THE BRUSH").



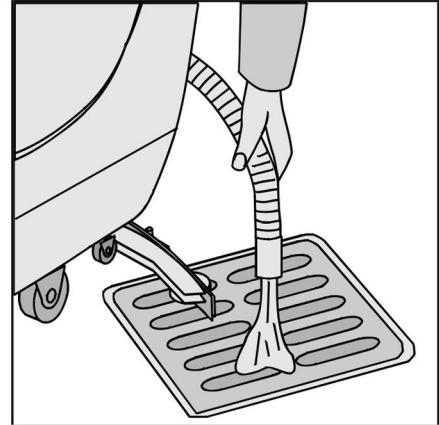
DAILY MAINTENANCE

1. RECOVERY TANK CLEANING

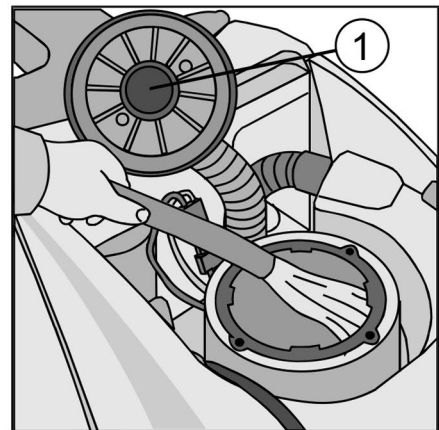
- A. Hold the recovery tank outlet hose.
- B. Remove the outlet cap and empty the tank.



ATTENTION! Always wear gloves during this procedure, to avoid any contact with dangerous substances.

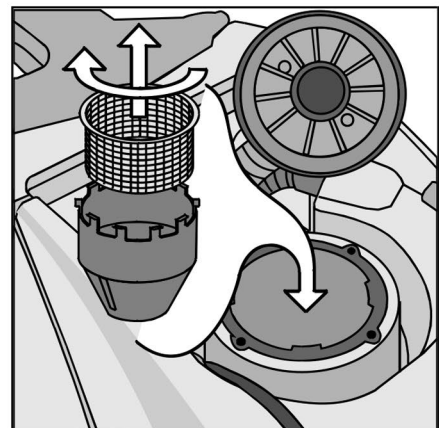


- C. Lift the recovery tank lid.
- D. Remove the suction cap (1) turning it counterclockwise.
- E. Remove the filter and its protection.
- F. Rinse the tank with a jet of water.



2. SUCTION FILTER CLEANING

- A. Lift the lid.
- B. Remove the suction cap turning in counterclockwise.
- C. Remove the filter.
- D. Clean the filter walls and bottom by a jet of water.
- E. Carry out the cleaning procedures very carefully.
- F. Reassemble everything.

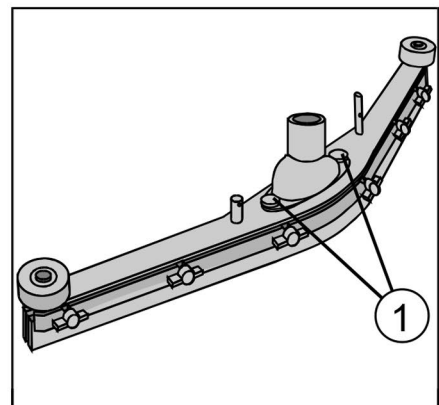


3. CLEANING THE VACUUM HOSE FILTER

The squeegee must be in perfect working condition to achieve a good drying process.

Proceed as follows to clean it:

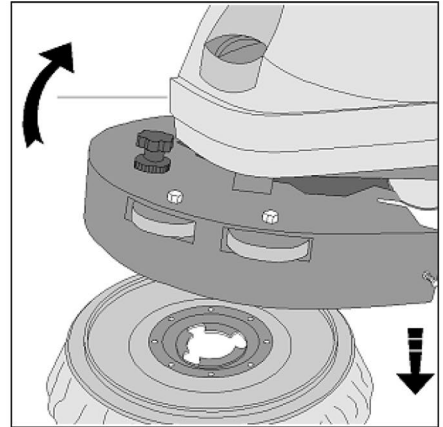
- A. Remove the hose from the squeegee.
- B. Loosen the knobs (1) shown in picture.
- C. Remove the mouth and clean it.
- D. Carefully clean the inside of the squeegee.
- E. Carefully clean the squeegee blades.
- F. Reassemble everything.



DAILY MAINTENANCE

4. BRUSHES DISASSEMBLY

- A. Lift the brush base through the pedal (push down).
- B. With brush base in lifted position operate the operator control lever, and the brush will unhook automatically.

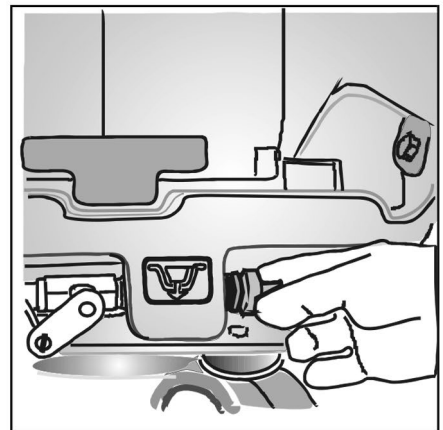


5. CLEANING SOLUTION FILTER

- A. Take off the filter on the solution tank.
- B. Clean it thoroughly.
- C. Reassemble everything.



ATTENTION! Always wear gloves during this procedure, to avoid any contact with dangerous substances.



WEEKLY MAINTENANCE

1. CLEANING SQUEEGEE HOSE

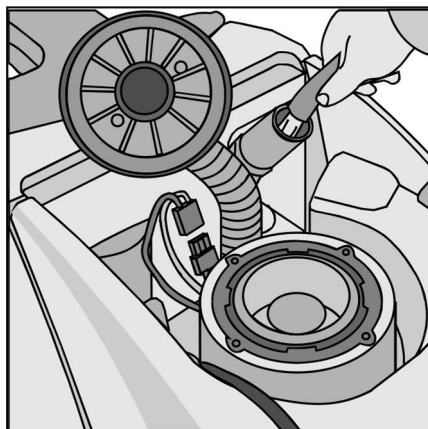
Weekly, or whenever the suction is insufficient, it is necessary to check that the squeegee hose is not obstructed. Should it be the case, proceed as follows to clean it:

- A. Unthread the hose from the squeegee sleeve.
- B. Unthread the other end from the recovery tank.

- C. Wash the inside of hose by a jet of water.
- D. To reassemble the hose repeat the above-mentioned operations.



ATTENTION! Do not wash the hose connecting the vacuum motor to the suction cap.

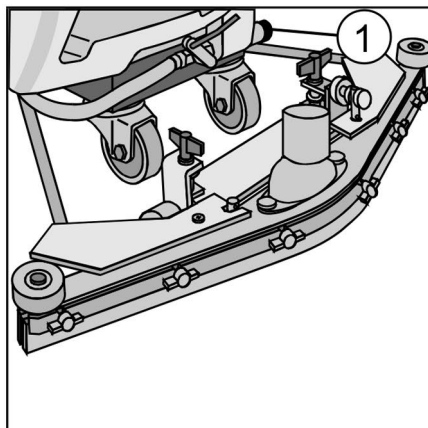


2. CLEANING SOLUTION TANK

- A. Remove the cap from the solution tank.
- B. Rinse with a jet of water.
- C. Remove the outlet cap (1) and empty the tank.



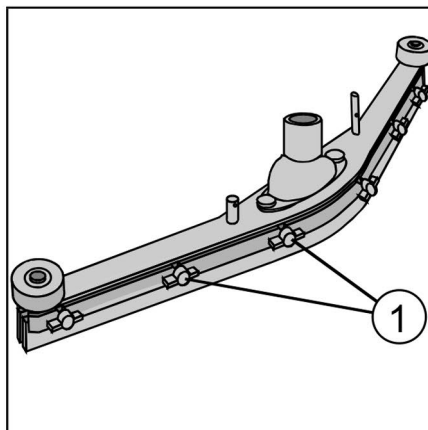
ATTENTION! Always wear gloves during this procedure, to avoid any contact with dangerous substances.



3. REAR SQUEEGEE BLADE REPLACEMENT

Check the squeegee blade wear and replace them if necessary. Proceed as follows:

- A. Unthread the squeegee hose from sleeve.
 - B. Remove the pin from column.
 - C. Remove the squeegee from its support.
 - D. Loosen the wing nuts (1) holding the squeegee blades and take them off.
 - E. Replace the squeegee blades.
- To reassemble the squeegee repeat the above-mentioned operations.



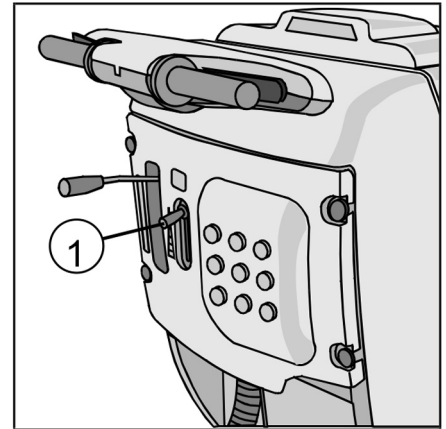
TROUBLESHOOTING GUIDE

INSUFFICIENT WATER TO THE BRUSHES

1. Check that the solution valve (1) is open.
2. Check that there is water in the solution tank.

THE MACHINE DOES NOT CLEAN PROPERLY

1. Check the brush wear and replace them if necessary (the brushes must be replaced when bristles are 15 mm high). To replace brushes see "BRUSHES DISASSEMBLY" and "BRUSH ASSEMBLY".
2. Use another type of brush rather than the standard brush. We recommend, for cleaning exceptionally difficult dirt floors, the use of special brushes, supplied on request and according to your specific needs (see "CHOICE OF BRUSHES AND COMMON ORDERED PARTS").



THE SQUEEGEE DOES NOT DRY EFFECTIVELY

1. Check that the squeegee blades are clean.
2. Adjust the squeegee inclination (see "SQUEEGEE" in "PREPARING THE MACHINE").
3. Check that the suction hose is correctly housed in its seat on the recovery tank.
4. Remove the whole suction unit and clean it.
5. Replace the blades if worn.
6. Check that the suction motor switch is turn on.
7. Check the squeegee height wheels.

TOO MUCH FOAM IS GENERATED

Check that low-foam detergent is used. Add, if necessary, a small quantity of defoaming liquid to recovery tank. Please remember that more foam is generated when the floor to be cleaned it is not very dirty. In this case use a more diluted detergent solution.

CHOICE OF BRUSHES AND COMMON ORDERED PARTS

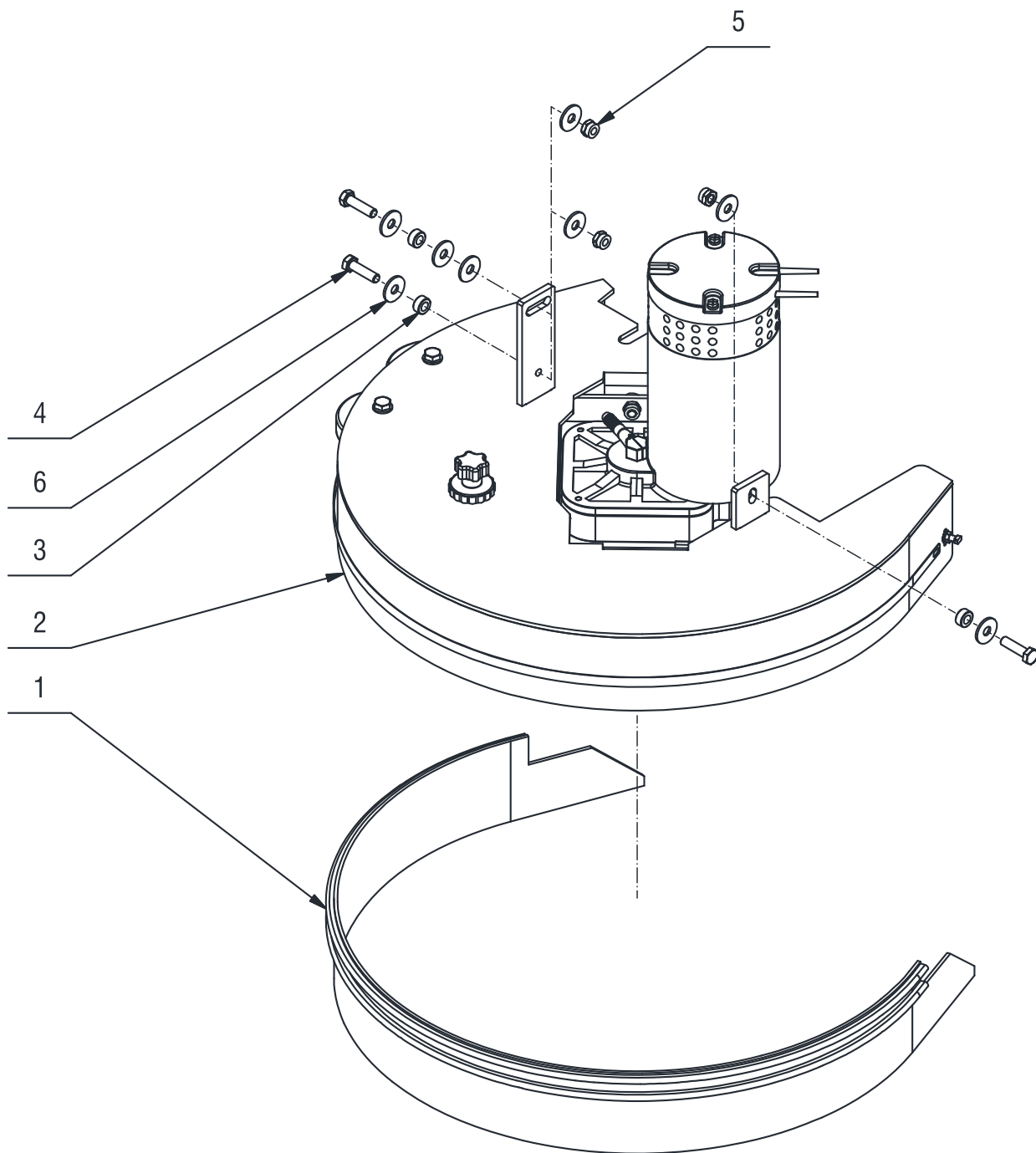
CREWMAN™ AS20B BRUSH OPTIONS

Item Number	Description
E88268-00	Pad Driver
E88330-00	Brush, General Purpose 20" 0.3mm PPL
E88269-00	Brush, Medium Duty 20" 0.55mm PPL
E88270-00	Brush, Heavy Duty 20" 0.7mm PPL
E88271-00	Brush, Stripping Grit 20" 1.2mm

CREWMAN™ AS20B COMMON PARTS

Item Number	Description
E83909-00	Front Squeegee Blade, Polyurethane 30" x 1 3/4" x 1/8"
E12686-00	Wiping Squeegee Blade, Gum Rubber 30 3/4" x 1 3/4" x 1/8"
E88276-00	Wiping Squeegee Blade, Polyurethane 30 3/4" x 1 3/4" x 1/8"
E12560-00	Support Blade, Polyurethane 30 3/4" x 1 3/4" x 1/8"
E11767-00	Battery 12V 130AH Wet
E86276-00	Battery 12V 115AH Wet
E88030-00	Battery 12V 110AH AGM
E88035-00	Charger 24VDC 12AMP

BRUSH DECK DIAGRAM

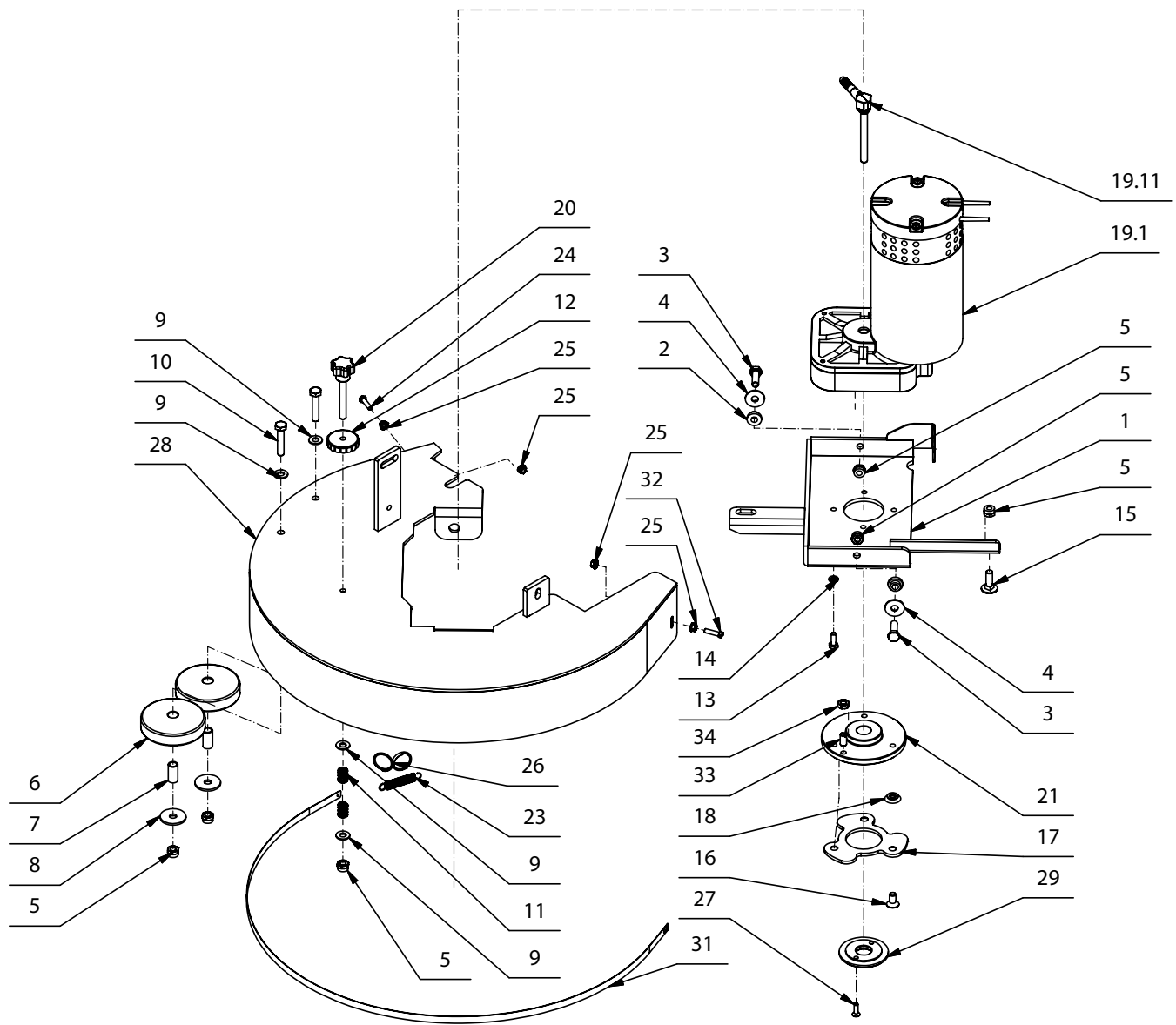


BRUSH DECK PARTS LISTING

Item#	Part #	Description	Qty.
1	E88272	Brush Deck Splash Guard	1
2	E20073	Brush Deck	1
3	E83970	Bushing	3

Item#	Part #	Description	Qty.
4	E83802	Hex Bolt M8x30 Zinc	3
5	E81709	Nyloc Hex Nut, M8 Zinc	3
6	E83404	Flat Washer M9x24x2.5 Zinc	8

BRUSH DECK DRIVE DIAGRAM

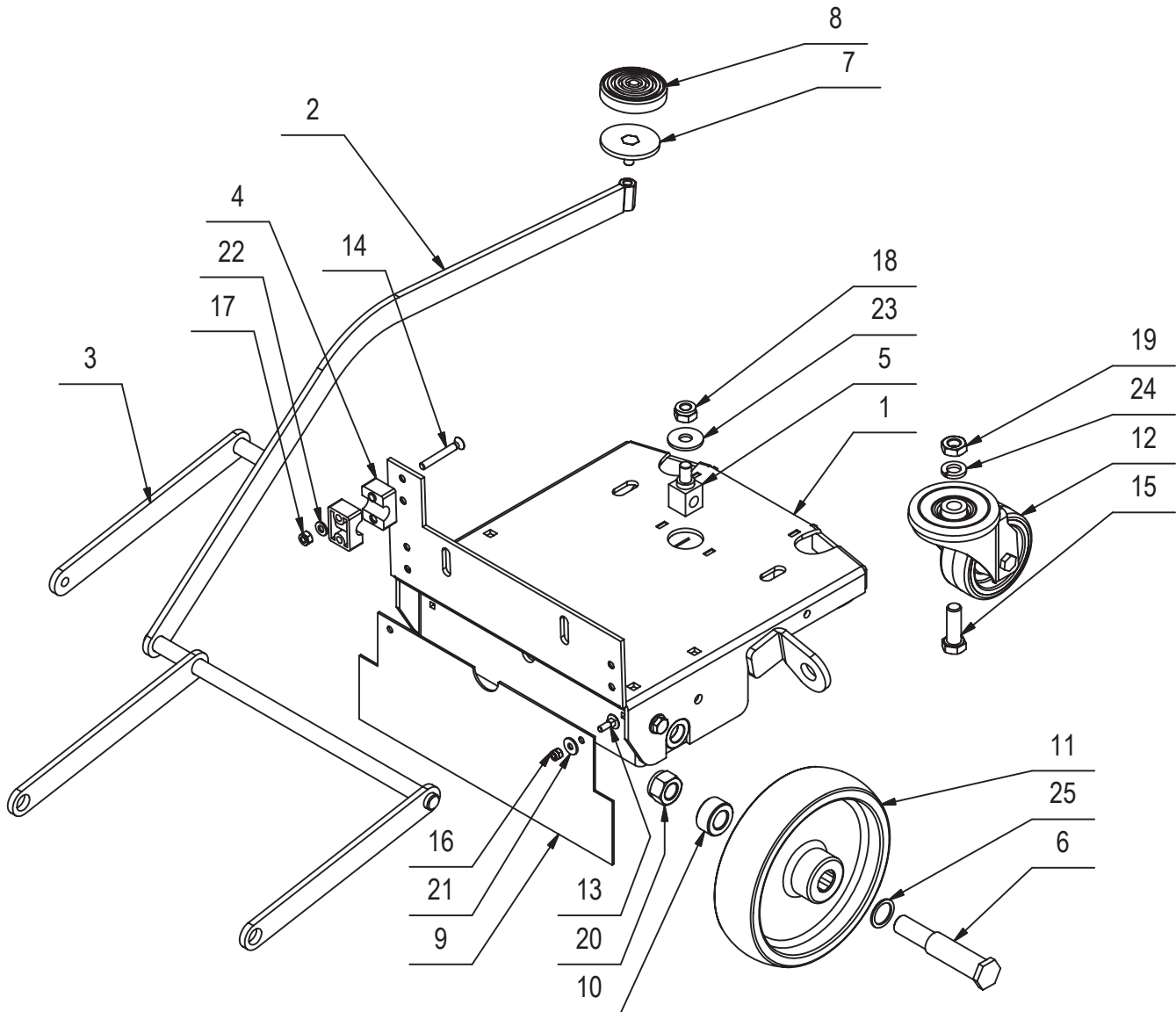


BRUSH DECK DRIVE PARTS LISTING

Item#	Part #	Description	Qty.
1	E20011	Motor Mount Plate	1
2	E82312	Bushing	2
3	E83833	Hex Bolt M8x25 Zinc	2
4	E83404	Flat Washer M9x24x2.5 Zinc	2
5	E81709	Nyloc Hex Nut, M8 Zinc	6
6	E83895	Wheel 80 OD x 23 W	2
7	E83524	Bushing	2
8	E81918	Flat Washer M9x32x2.5 Zinc	2
9	E81874	Flat Washer M8x17x1.6 Zinc	4
10	E83830	Hex Bolt M8x40 Zinc	2
11	E82309	Spring, Compression	2
12	E83331	Knob	1
13	E83547	M6x16 Bolt, Zinc Hex Head 4	
14	E82774	Lock Washer, M6 Zinc	4
15	E20093	Carriage Bolt M8x25 Zinc	1
16	E20297	Flat Hd Soc Machine Screw M8x16 Zinc	3
17	E82844	Clutch Plate	1

Item#	Part #	Description	Qty.
18	E82845	Spacer	3
19	E88245	Motor, Geared 24V 400W 140 RPM	1
19.11	E20451	Fitting, Solution Delivery Tube	1
20	E83565	Knob	1
21	E88246	Brush, Flange Threaded	1
23	E83491	Spring	1
24	E83881	Hex Bolt M5x20 Zinc	1
25	E88010	Hex Nut, M5	4
26	E83489	Rings	1
27	E20290	Flat Hd Soc Machine Screw M5x16 SS	2
28	E20507	Brush Deck	1
29	E20584	Retainer	1
31	E86169	Band Clamp	1
32	E83823	Screw M5x20/ SS Custom	1
33	E20592	Dowel Pin M8	1
34	E83672	Hex Jam Nut, M8x5 SS	1

FRAME ASSEMBLY DIAGRAM

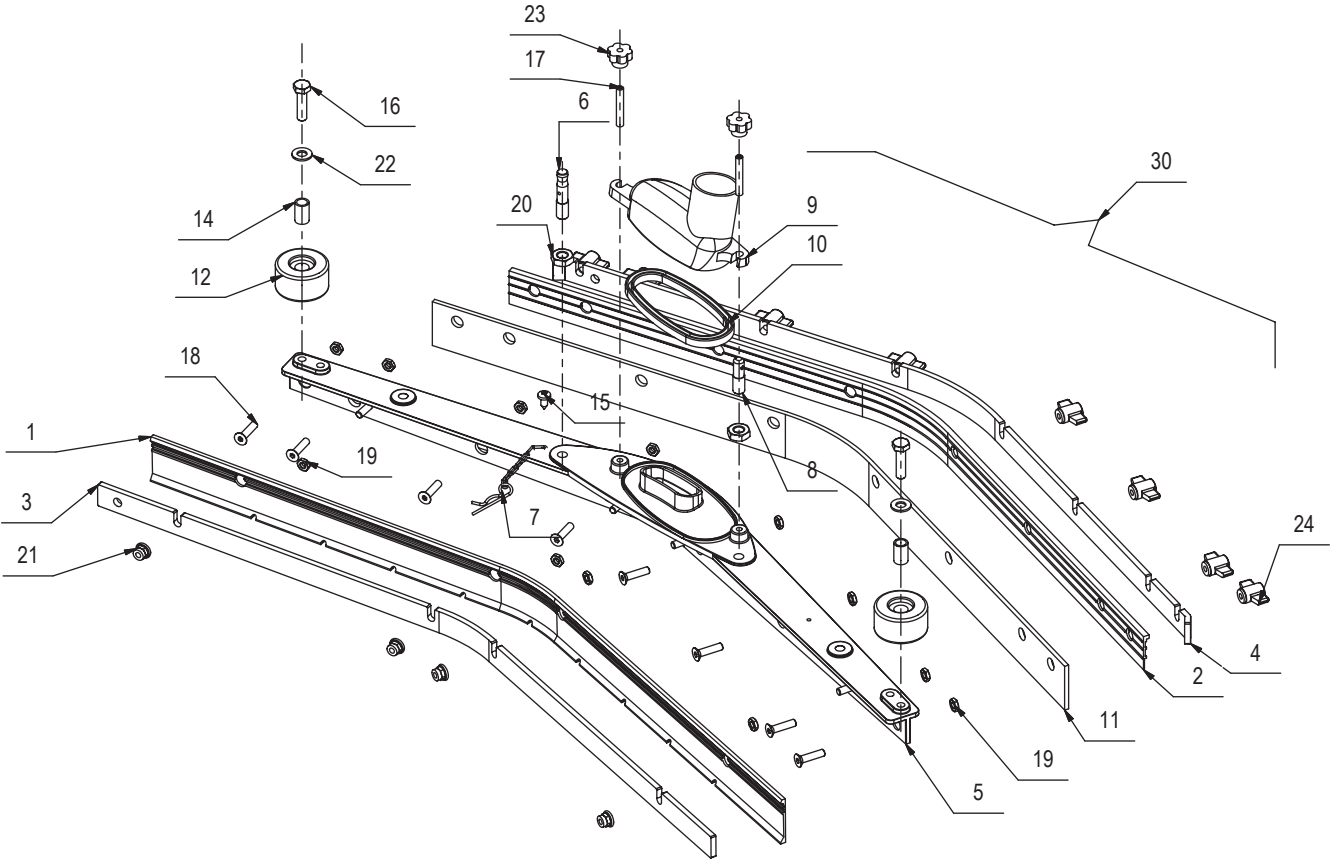


FRAME ASSEMBLY PARTS LISTING

Item#	Part #	Description	Qty.
1	E20430	Main Frame ASM	1
2	E82525	Arm s42	1
3	E82833	Arm	1
4	E82834	Pivot Block	6
5	E22146	Coupling	1
6	E20647	Axle Shaft	2
7	E20370	Foot Pedal	1
8	E83669	Pedal cover	1
9	E20501	SPLASH GUARD	1
10	E88103	Spacer	2
11	E82551	Transport Wheel 175 OD x 45 W	2
12	E82529	Caster, Rear Abila	2
13	E20488	Carriage Bolt M5x16 Zinc	2

Item#	Part #	Description	Qty.
14	E81635	Screw, M6X45	6
15	E81735	Hex Bolt M12x35 Zinc	2
16	E20705	Nyloc Hex Nut, M5 Zinc	2
17	E83550	NyLoc Hex Nut, M6 Zinc	6
18	E83381	Nyloc Hex Nut, M10 Zinc	1
19	E83829	Hex Jam Nut, M12X7 Zinc	2
20	E81627	Nyloc Hex Nut, M16 Zinc	2
21	E20122	Flat Washer M5 x 15 x 1.5 SS	2
22	E82761	Washer 6x12x1.6	6
23	E81020	Washer, 11x30X2.5	1
24	E81738	Flat Washer M4x12x3 Zinc	2
25	E81948	Flat Washer M20x26x1.5 AL	2

SQUEEGEE ASSEMBLY DIAGRAM

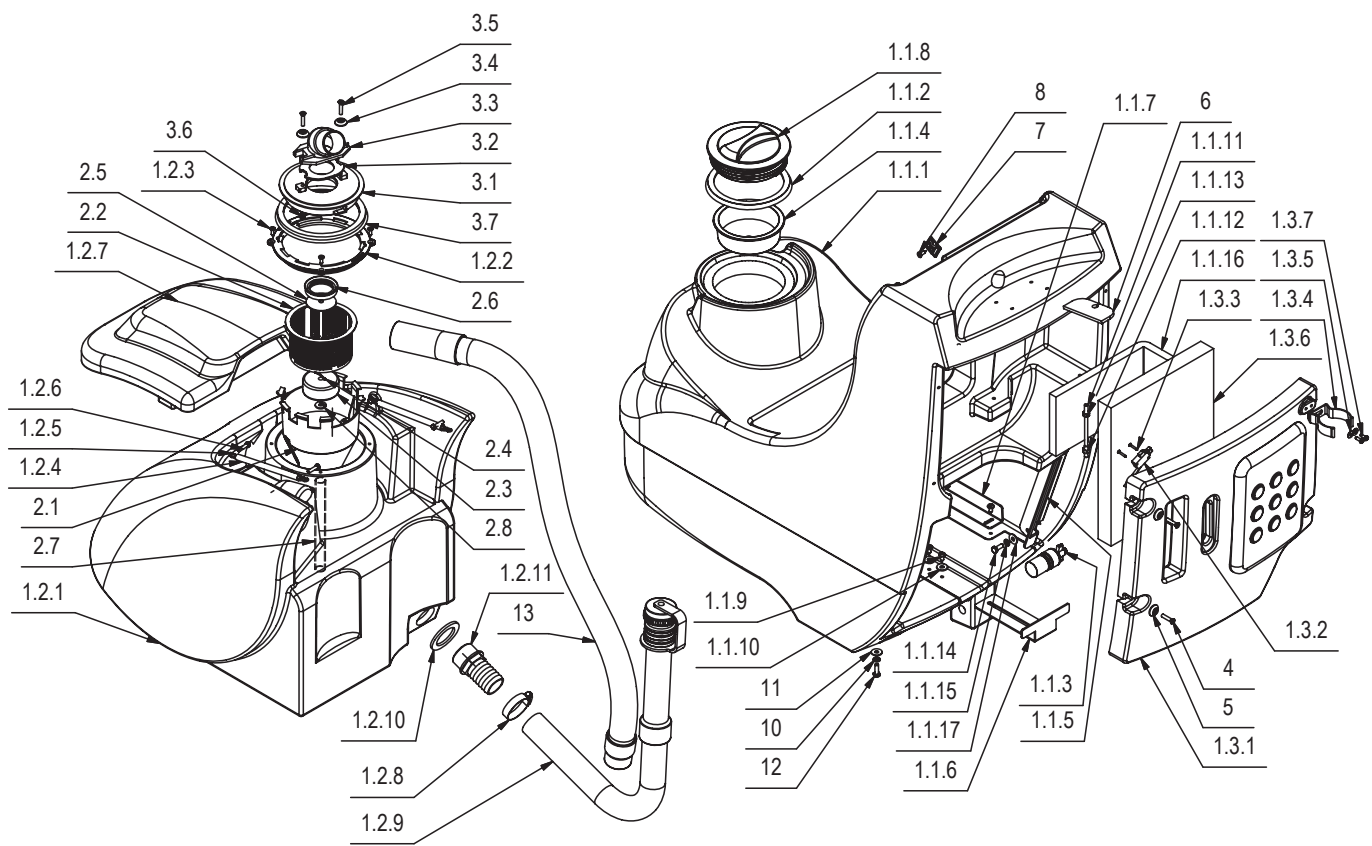


SQUEEGEE ASSEMBLY PARTS LISTING

Item#	Part #	Description	Qty.
1	E83909	Squeegee Blade, Polyurethane 30" x 1 3/4" x 1/8"	1
2	E12560	Squeegee Blade, Polyurethane 30 3/4" x 1 3/4" x 1/8"	1
3	E82608	Band Clamp 29 1/2" x 7/8" x 1/8"	1
4	E82676	Band Clamp 31 1/4" x 7/8" x 1/8"	1
5	E88240	Squeegee Body	1
6	E83911	Stud Bolt M10x46 Custom	1
7	E83590	Chain	1
8	E83945	Stud Bolt M10x33 Custom	1
9	E82307	Squeegee Vacuum Adapter	1
10	E83971	Gasket	1
11	E12686	Squeegee Blade, Gum Rubber 30 3/4" x 1 3/4" x 1/8"	1
12	E82451	Wheel 45 OD x 25 W	2
13	E83914	Hex Bolt M6x20 SS	2

Item#	Part #	Description	Qty.
14	E82253	Bushing, Brass OD 11.95mm x ID 8.9mm x L 8.45mm	1
15	E83851	Screw, Pan Hd Phil Self Tap M5.5x13 SS	2
16	E83802	Hex Bolt M8x30 Zinc	2
17	E82707	Set Screw Hex Soc Flat End M6x40 SS	8
18	E81848	Flat Hd Soc Machine Screw M6x25 SS	12
19	E20114	Hex Jam Nut, M6X3 SS	2
20	E83875	Hex Jam Nut, M10X6 Zinc	4
21	E20117	Nyloc Hex Jam Nut, M6x9 SS	2
22	E81874	Flat Washer M8x17x1.6 Zinc	2
23	E83810	Knob	8
24	E83591	Knob	1
30	E88536	Squeegee Assembly	1

TANK ASSEMBLIES DIAGRAM

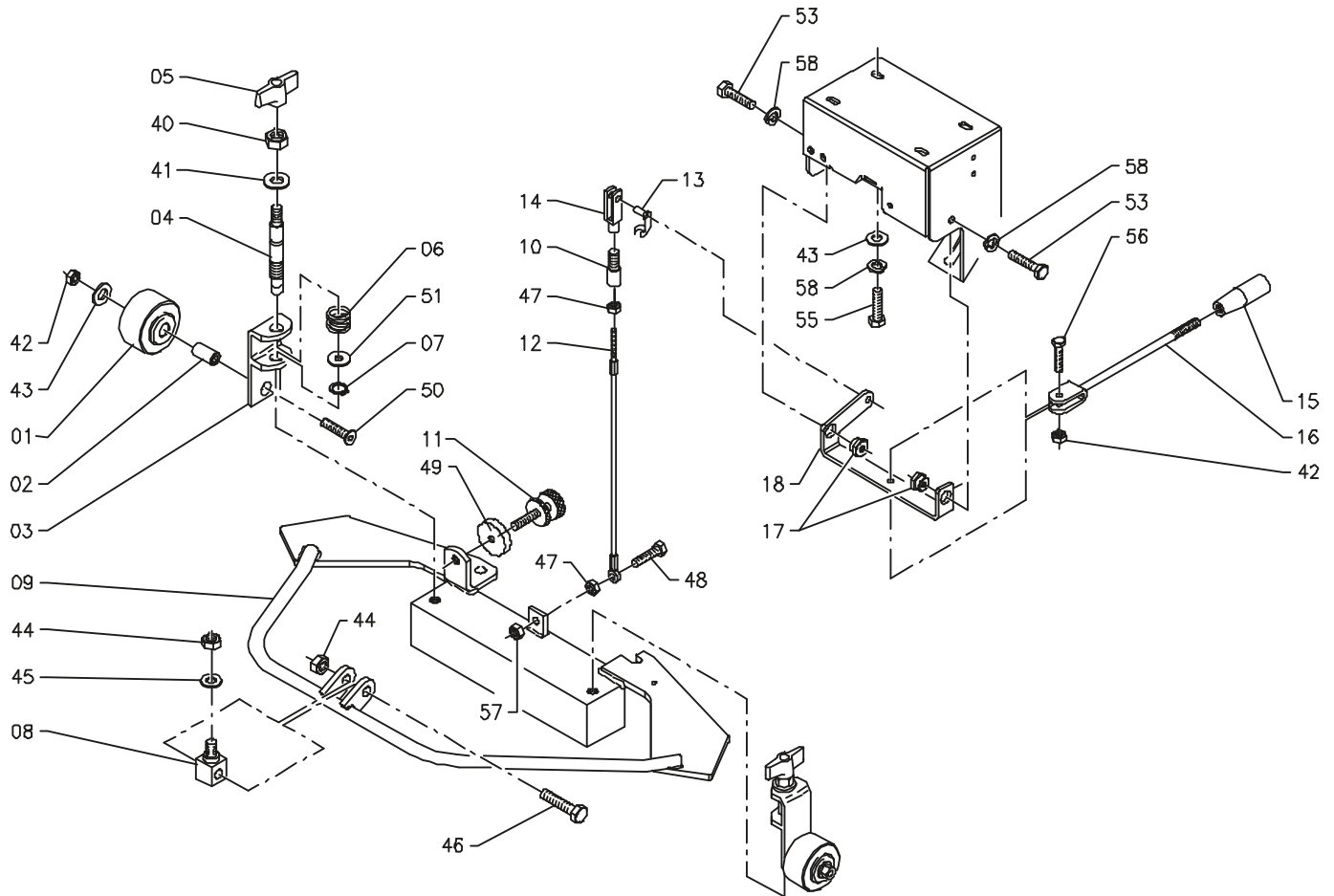


TANK ASSEMBLIES PARTS LISTING

Item#	Part #	Description	Qty.
1.1.1	E82319	Solution Tank, Crewman AS20B 	1
1.1.2	E82332	Gasket	1
1.1.3	E83560	Filter Asm	1
1.1.4	E82612	Filter	1
1.1.5	E83561	Bracket WS17	1
1.1.6	E83533	Angle WS17	1
1.1.7	E22147	Support	1
1.1.8	E82429	Cap	1
1.1.9	E83851	Screw, Pan Hd Phil Self Tap M5.5x13 SS	4
1.1.10	E83799	Flat Washer M6.6x18x2 SS	2
1.1.11	E81614	Stud bolt	2
1.1.12	E86701	Nut M6	2
1.1.13	E83550	NyLoc Hex Nut, M6 Zinc	2
1.1.14	E83547	M6x16 Bolt, Zinc Hex Head	2
1.1.15	E82774	Lock Washer, M6 Zinc	2
1.1.16	E83707	Deadening WS17	1
1.1.17	E82798	Washer, 6x18x1.5	2
1.2.1	E81470	Abila Recovery Tank	1
1.2.2	E83995	Ring	1
1.2.3	E83796	Screw, Pan Hd Phil Self Tap M4.2x16 Zinc	4
1.2.4	E82254	Chain Protector	2
1.2.5	E88430	Support Chain Tank Cover	2
1.2.6	E83881	Hex Bolt M5x20 Zinc	4
1.2.7	E82352	Cover, Abila	1
1.2.8	E83966	Hose Clamp	1
1.2.9	E88023	Hose, Drain Assembly Abila 42	1
1.2.10	E85764	Gasket	1
1.2.11	E85763	Connector	1
1.3.1	E22148	Cover, Back Panel	1
1.3.2	E83164	Micro Switch	1
.3.3	E22293	Screw	2

Item#	Part #	Description	Qty.
1.3.4	E87296	Drain Hose Clip	1
1.3.5	E83037	Flat Washer M4x12x1.6 Zinc	2
1.3.6	E85784	Vac Motor Deadening	1
1.3.7	E20106	Screw	2
2	E83123	Float Protection Assembly	1
2.1	E81006	Vacuum Splash Guard	1
2.2	E81615	Filter	1
2.3	E83338	Float WS17	1
2.4	E83605	Split pin	2
2.5	E82611	Rod	1
2.6	E82313	Grommet	1
2.7	E82490	Hose, Abila	1
2.8	E83799	Flat Washer M6.6x18x2 SS	1
3	E85756	Recovery Tank Lid Assembly	1
3.1	E82450	Cover	1
3.2	E83994	Gasket	1
3.3	E82267	Coupling	1
3.4	E83850	Flat Washer M5x20 SS	2
3.5	E83934	Screw m5x25	2
3.6	E20705	Nyloc Hex Nut, M5 Zinc	2
3.7	E82381	Gasket Ring	1
4	E83934	Screw m5x25	4
5	E83850	Flat Washer M5x20 SS	4
6	E22149	Foam Pad	2
7	E81619	Cable Tie Holder	4
8	E83796	Screw, Pan Hd Phil Self Tap M4.2x16	4
9	E20089	Hex Bolt M6x22 Zinc	2
10	E82774	Lock Washer, M6 Zinc	4
11	E82798	Washer, 6x18x1.5	4
12	E20088	Hex Bolt M6x18 Zinc	2
13	E83536	Squeegee hose	1

SQUEEGEE CONTROL ASSEMBLY DIAGRAM

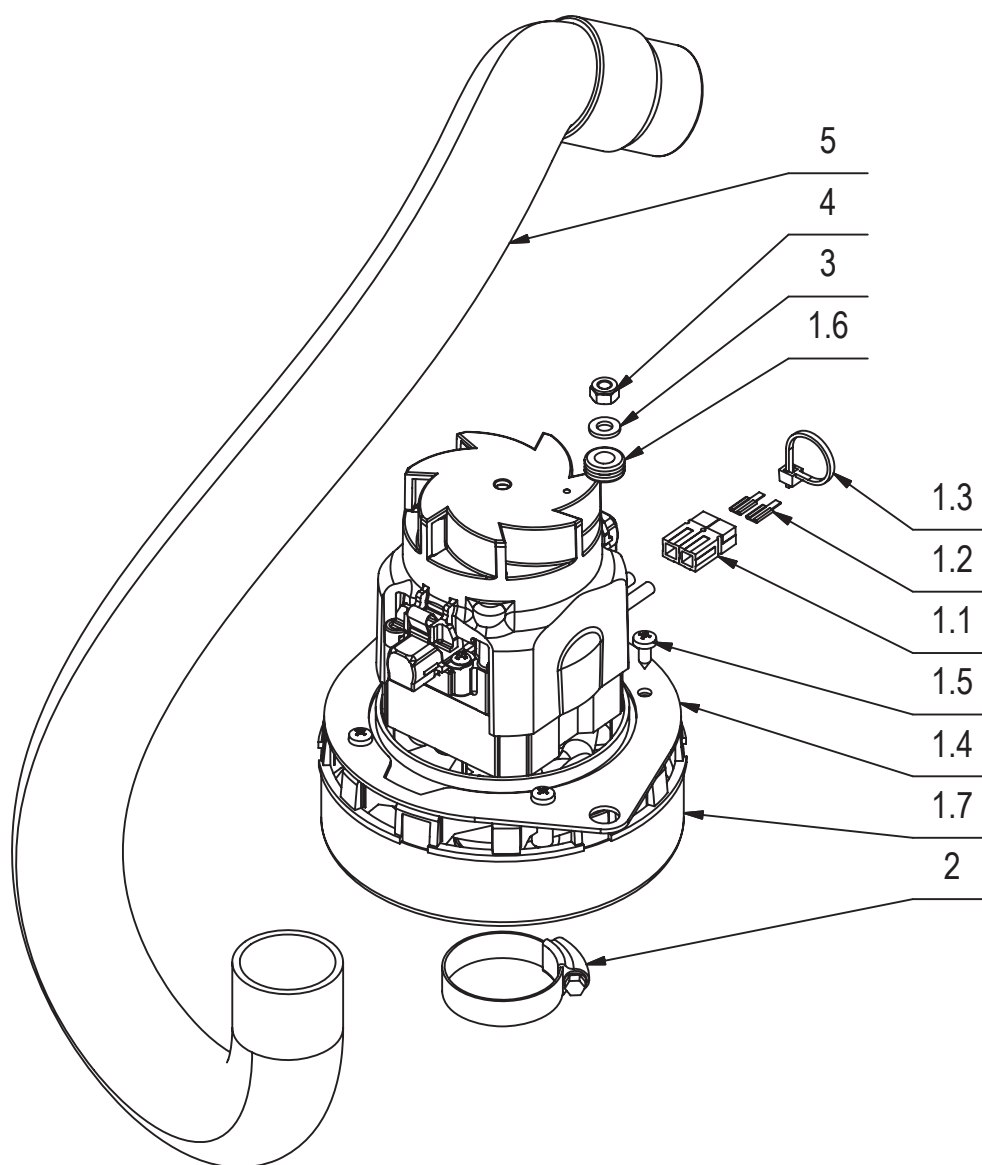


SQUEEGEE CONTROL ASSEMBLY PARTS LISTING

Item#	Part #	Description	Qty.
1	E82428	Wheel 52 OD x 28 W	2
2	E82273	Bushing	2
3	E85497	Weldment, Squeegee Wheel Support	2
4	E82329	Threaded Pin	2
5	E83531	Knob	2
6	E81634	Spring Compression	2
7	E85498	Retaining Ring, E-Style, M9	2
8	E22146	Coupling	1
9	E86246	Coupling, Squeegee	1
10	E83541	Extension Tube	1
11	E83655	Adjuster Knob	1
12	E83453	Squeegee Lift Cable	1
13	E83542	Clip WS17	1
14	E83538	Fork WS17	1
15	E81477	Knob 25X50 M8	1
16	E82550	Handle - Lever	1
17	E82698	Bushing	2
18	E83540	Lever	1

Item#	Part #	Description	Qty.
40	E85499	Hex Nut, M8x6.5 SS	1
41	E81874	Flat Washer M8x17x1.6 Zinc	2
42	E83550	NyLoc Hex Nut, M6 Zinc	2
43	E88585	Washer, Flat, M6 x 18, Zinc	4
44	E83381	Nyloc Hex Nut, M10 Zinc	1
45	E81736	Flat Washer M17x30x3 Zinc	1
46	E10646	Bolt, M10 x 45	1
47	E83535	Hex Nut, M5x5 Zinc	1
48	E83881	Hex Bolt M5x20 Zinc	1
49	E83656	Hex Nut, M8x6.5 Zinc	2
50	E85721	Screw, Machine M6 x50	2
51	E85722	Flat Washer M13x24x2.5 Zinc	2
53	E82456	Hex Bolt M6x14 Zinc	1
55	E83547	M6x16 Bolt, Zinc Hex Head	1
56	E82772	Hex Bolt M6x20 Zinc	1
57	E82256	Nyloc Hex Nut, M5x7 Zinc	1
58	E88594	Washer, Split Lock, M6, Zinc	3

VACUUM MOTOR ASSEMBLY DIAGRAM

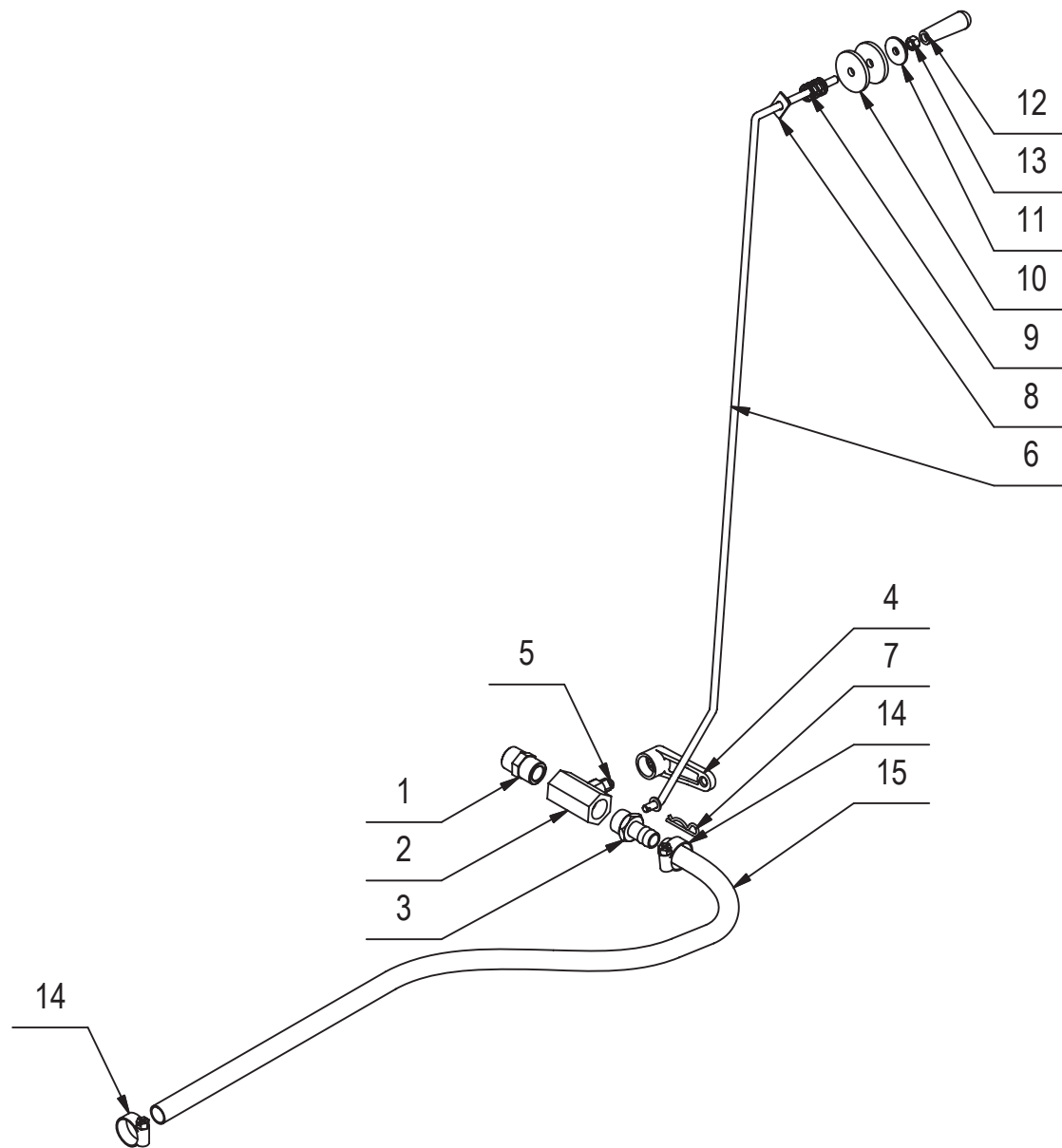


VACUUM MOTOR ASSEMBLY PARTS LISTING

Item#	Part #	Description	Qty.
1	E83454	Vacuum Motor, 24 volt	1
1.1	E83897	Connector, Electrical Housing 30A	2
1.2	E83883	Lug, Electrical 30A	2
1.3	E83935	Wire Tie	1
1.4	E82838	Motor Plaque	1
1.5	E88017	Screw, Pan Hd Phil Self Tap M4.8x13 SS	4

Item#	Part #	Description	Qty.
1.6	E87975	Stud Bolt Tripla	2
1.7	E83454	Vacuum Motor, 24 volt	1
2	E83966	Hose Clamp	1
3	E82761	Washer 6x12x1.6	2
4	E83550	NyLoc Hex Nut, M6 Zinc	2
5	E82371	Vac exhaust hose	1

SOLUTION ASSEMBLY DIAGRAM

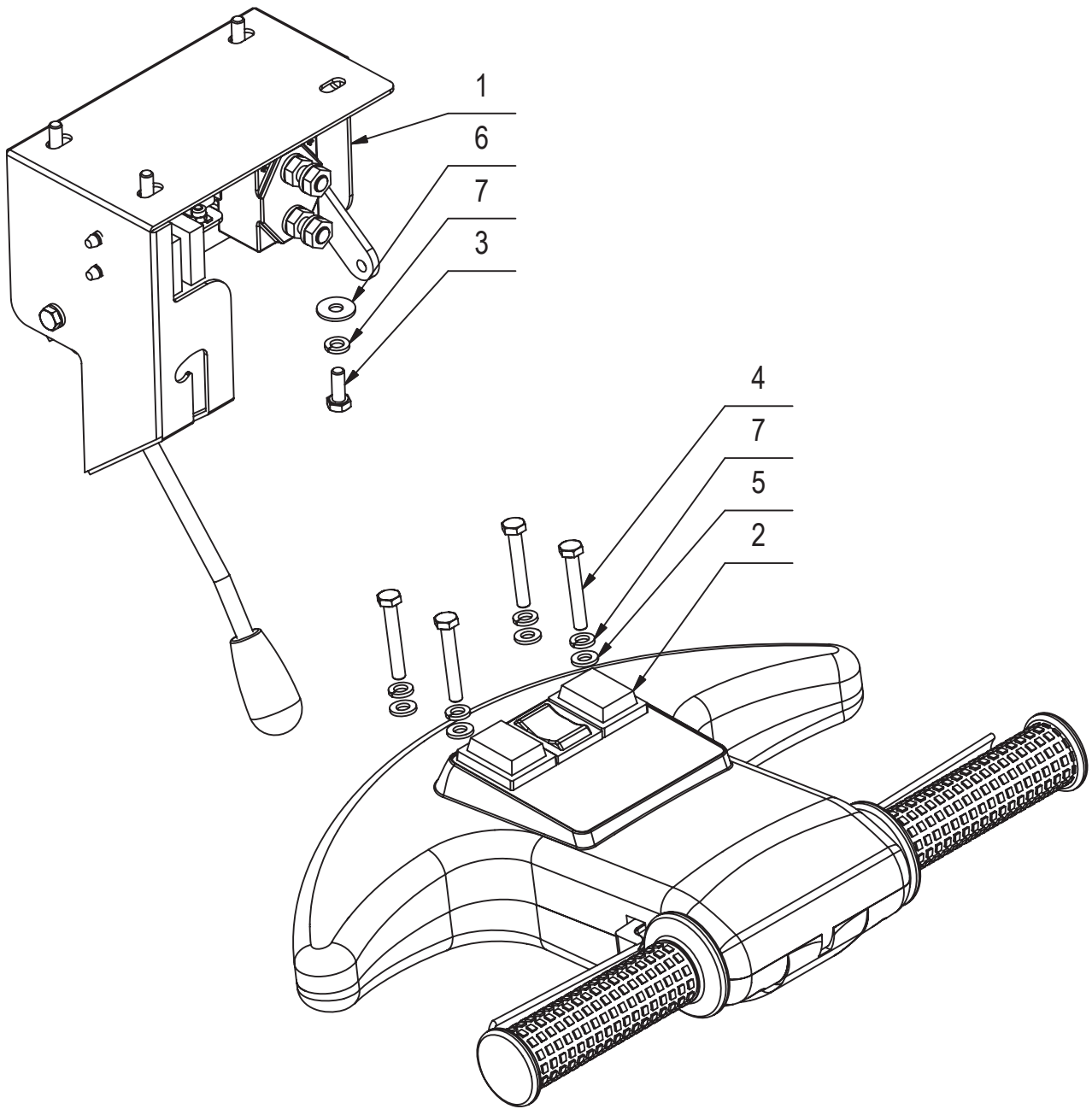


SOLUTION ASSEMBLY PARTS LISTING

Item#	Part #	Description	Qty.
1	E83943	Nipple, Double Male 3/8"	1
2	E83361	Ball Valve, 5/8 Double Female	1
3	E82269	Barbed Fitting, 3/8 in.	1
4	E83534	Solution valve lever	1
5	E83816	Screw	1
6	E83532	Solution rod	1
7	E83537	Clip	1
8	E83845	Nut, M5	1

Item#	Part #	Description	Qty.
9	E82309	Spring, Compression	1
10	E83798	Flat Washer M6x30x3 PVC Black	2
11	E83850	Flat Washer M5x20 SS	1
12	E83639	Solution control knob	1
13	E83535	Hex Nut, M5x5 Zinc	1
14	E83499	Hose Clamp	2
15	E82306	Hose	1

ELECTRIC COMPONENTS DIAGRAM

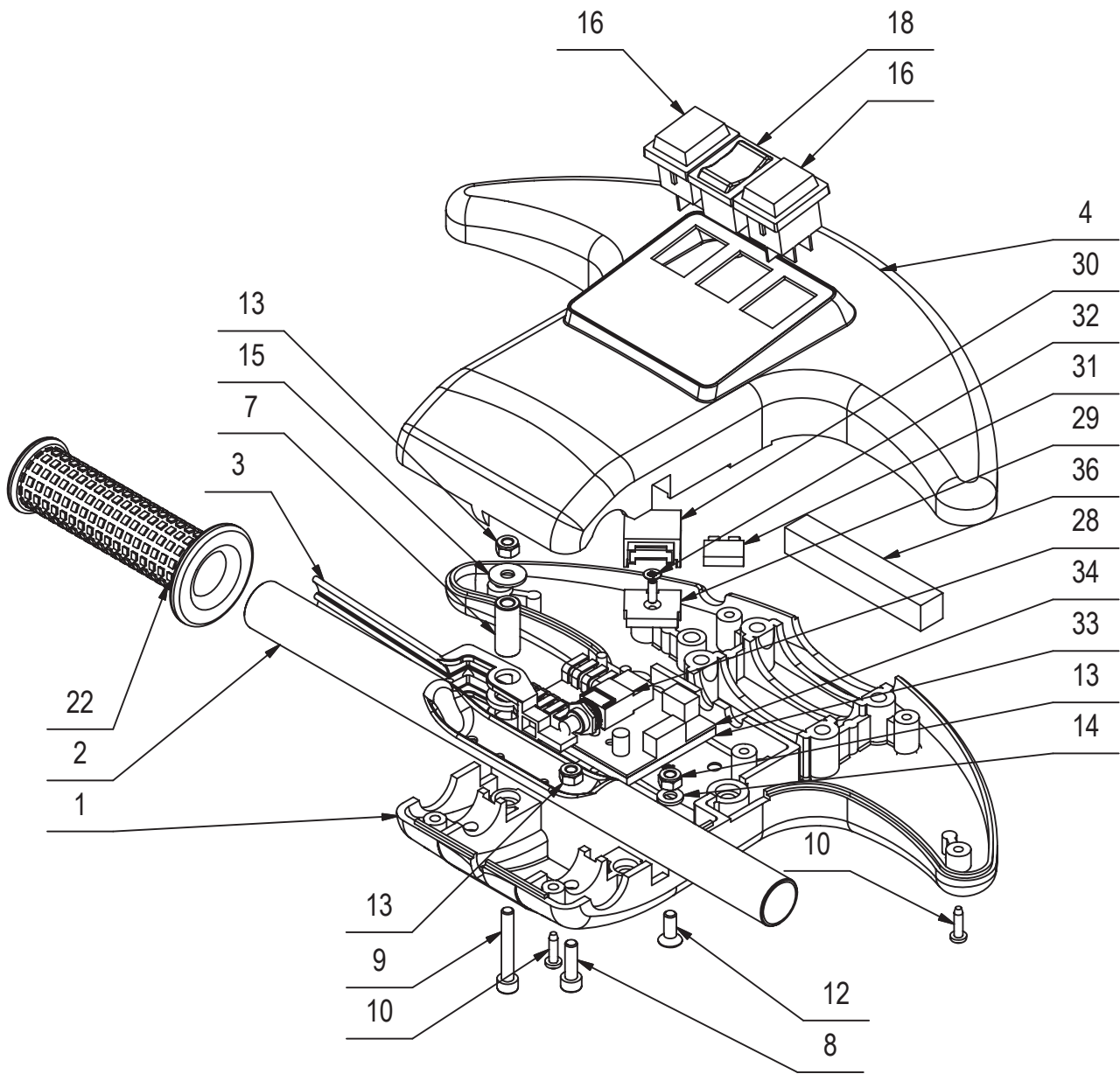


ELECTRIC COMPONENTS PARTS LISTING

Item#	Part #	Description	Qty.
1	E22151	Electric System	1
2	E22152	Handlebar Assembly	1
3	E83547	M6x16 Bolt, Zinc Hex Head	4
4	E81983	Hex Bolt M6x40 Zinc	4

Item#	Part #	Description	Qty.
5	E82761	Washer 6x12x1.6	4
6	E82798	Washer, 6x18x1.5	4
7	E82774	Lock Washer, M6 Zinc	8

HANDLEBAR ASSEMBLY DIAGRAM

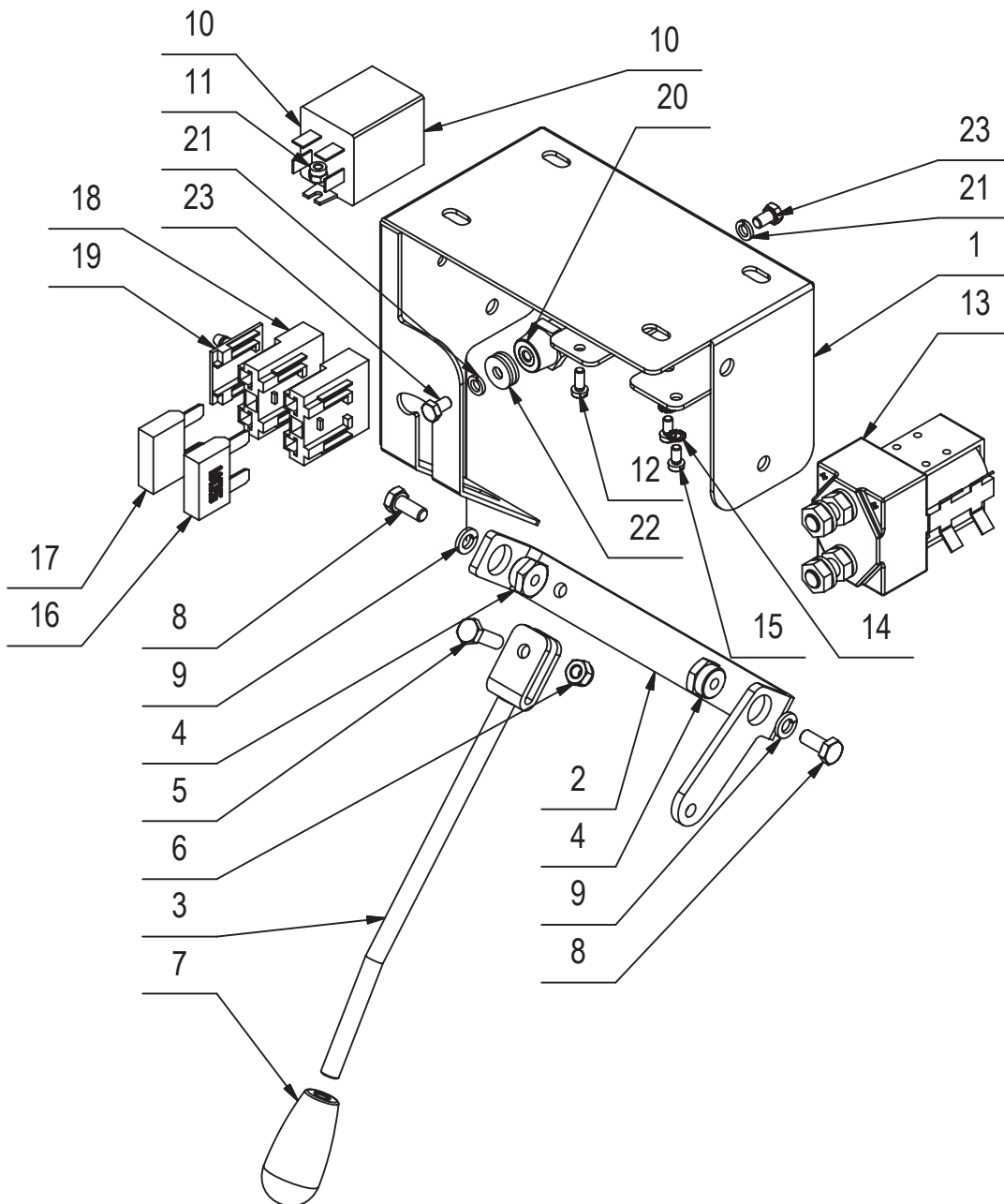


HANDLEBAR ASSEMBLY PARTS LISTING

Item#	Part #	Description	Qty.
1	E83407	Handle bar body WS17	1
2	E83408	Handle bar (pipe) WS17	1
3	E83465	WS17 lever	2
4	E83405	Handle bar cover WS17	1
7	E82308	Pin	2
8	E20489	Soc Hd Cap Screw M6x20 Zinc	2
9	E20342	Soc Hd Cap Screw M6x40 Zinc	2
10	E20107	Screw, Pan Hd Phil Self Tap M4.2x16 SS	4
12	E88042	Flat Hd Soc Machine Screw M6x16 Zinc	1
13	E83550	NyLoc Hex Nut, M6 Zinc	5
14	E82761	Washer 6x12x1.6	1
15	E82798	Washer, 6x18x1.5	2

Item#	Part #	Description	Qty.
16	E83328	Vacuum switch	2
18	E83175	battery level display	1
22	E83615	Handle grip WS17	2
28	E82796	Switch, Momentary	1
29	E22153	Mounting Plate	1
30	E88244	Fuse Holder for Crewman AS20B	1
31	E83168	Fuse, 3 amp	1
32	E86144	Screw, Battery Cover	1
33	E82704	Gasket	1
34	E83157	battery indicator card	1
36	E22154	Spacer 15x15x92	1

ELECTRIC CONTROLS DIAGRAM

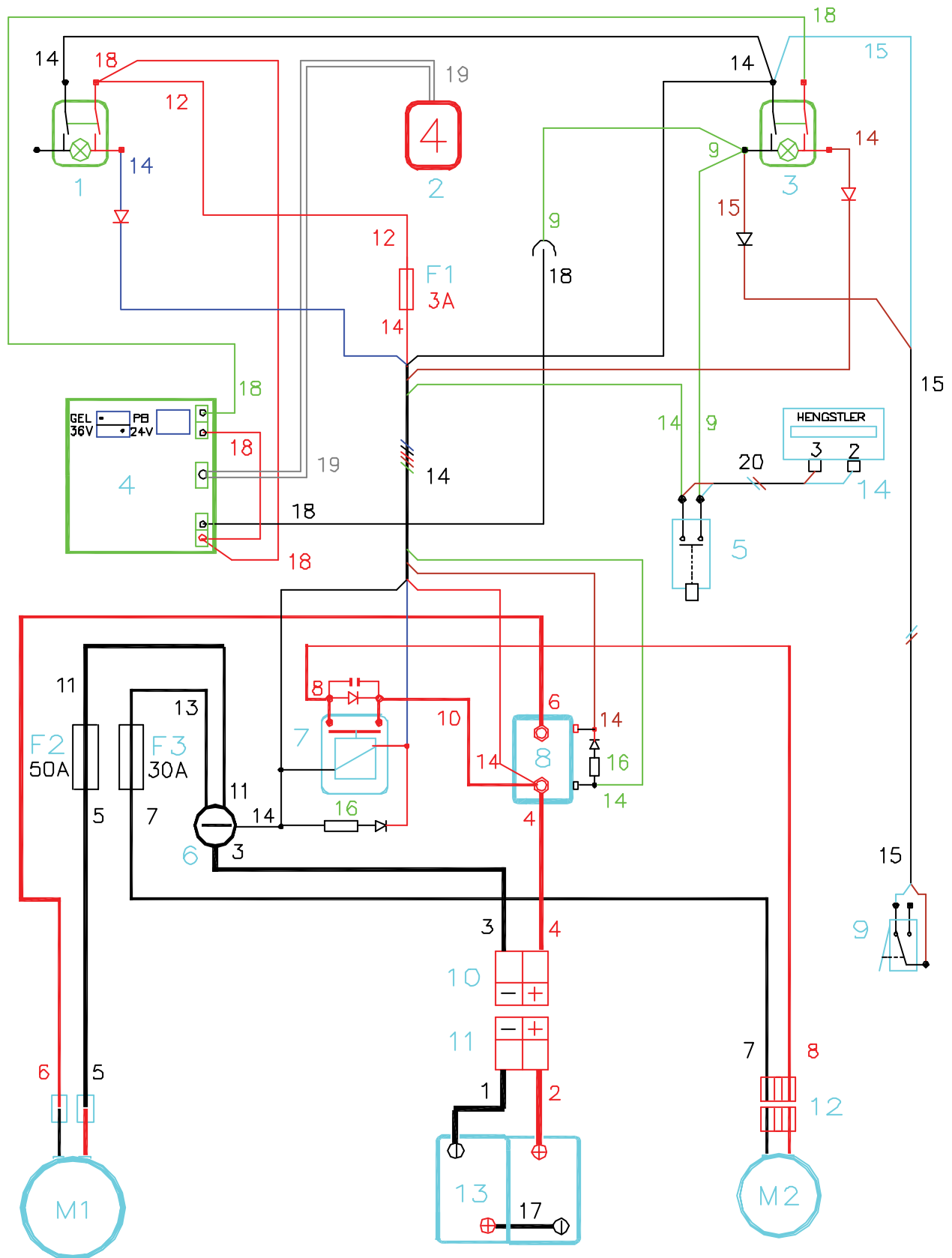


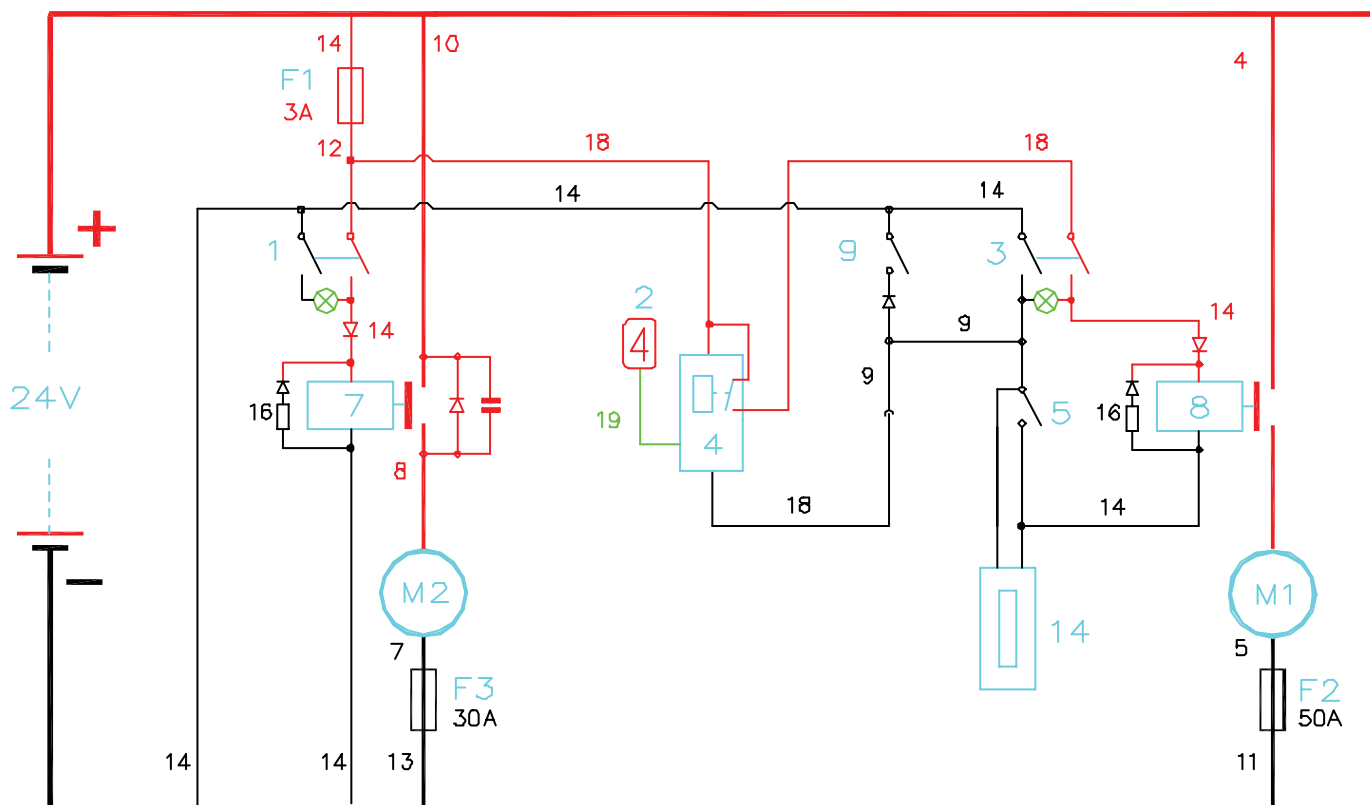
ELECTRIC CONTROLS PARTS LISTING

Item#	Part #	Description	Qty.
1	E22155	Electric Panel	1
2	E83540	Lever WS17	1
3	E82550	Handle - Lever S42	1
4	E82698	bushing	2
5	E82772	Hex Bolt M6x20 Zinc	1
6	E83550	NyLoc Hex Nut, M6 Zinc	1
7	E81477	Knob 25X50 M8	1
8	E82456	Hex Bolt M6x14 Zinc	2
9	E82774	Lock Washer, M6 Zinc	2
10	E83160	Relay 24VDC 30A	1
11	E83867	Nyloc Hex Nut, M4x6 Zinc	1
12	E83887	Screw M4X10	1

Item#	Part #	Description	Qty.
13	E83628	Contactora 24VDC	1
14	E81954	Washer, Lock	2
15	E83816	Screw	2
16	E82305	Fuse 50A faston brushes motor	1
17	E83972	Fuse 30A fasten	1
18	E81642	Fuseholder	2
19	E88497	Fuse Block End Cap	1
20	E83664	Insulator WS17	1
21	E20123	Lock Washer M5x1.6 Zinc	2
22	E20122	Flat Washer M5 x 15 x 1.5 SS	2
23	E81437	Screw	2

ELECTRICAL DIAGRAM





ELECTRICAL LISTING

Item#	Part #	Description
1	E83328	Vacuum Switch
2	E83175	Battery Level Display
3	E83328	Vacuum Switch
4	E83157	Battery Indicator Card
5	E82796	Switch, Momentary
6	E83664	Insulator
7	E83160	Relay 24VDC 30A
8	E83628	Contacting 24VDC
9	E83164	Micro Switch

Item#	Part #	Description
10	E86208	Connector, SB50, Red, #6, w/ Lugs
11	E86208	Connector, SB50, Red, #6, w/ Lugs
13	Various	Battery
M1	E88245	Motor, Geared 24V 400W
M2	E83454	Vacuum Motor, 24 volt
F1	E83168	Fuse, 3 amp
F2	E82305	Fuse 50A Brush Motor
F3	E83926	Fuse 30A Vacuum Motor

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.

- HF14 Upright Vacuum: #E88820-00
- Bac Pac Lite Vacuum: #85903-00
- FiberPRO® Floor Dryer: #85507-00
- WORKMAN™ Series Vacuums:
#85024-00, #85025-00, #83012-00,
#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 180 mile round trip at 50 cents per mile will be allowed for warranty consideration.

Propane Machine Warranty:

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).

