

ICE USA

A DIVISION OF ICE COBOTICS

www.ice4usa.com



Operator & Parts Manual

Automatic Scrubber



i20NBL

i20NBTL-OB

i20NBTL

i24BTL

i-SYNERGY
Cleaning Management in Motion

8130060
REV.06 (03-2018)



READ OPERATOR MANUAL CAREFULLY!

IMPORTANT: To ensure full warranty protection, please fill out & return your warranty card.

Please fill out at time of installation for future reference.

Model No. _____

Serial No. _____

Machine Options _____

Sales Rep. _____

Sales Rep. Phone No. _____

Customer ID Number _____

Installation Date _____

HOW TO ORDER PARTS

Only use ICE Company supplied or equivalent parts. Parts and supplies may be ordered online, by phone, by fax or by mail.

1. Identify the machine model.
2. Identify the machine serial number from the data label.
3. Ensure the proper serial number is used from the parts list.
4. Identify the part number and quantity.
Do not order by page or reference numbers.
5. Provide your name, company name, customer ID number, billing and shipping address, phone number and purchase order number.



PROTECT THE ENVIRONMENT

Please dispose of packaging materials, old machine components such as batteries, hazardous fluids, including antifreeze and oil, in an environmentally safe way according to local waste disposal regulations.



Always remember to recycle.

ICE Company Limited

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Specifications and parts are subject to change without notice.

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SAFETY PRECAUTIONS

This machine is intended for commercial use. It is designed exclusively to scrub hard floors in an indoor environment and is not constructed for any other use. Only use recommended accessories.

All operators shall read, understand and exercise the following safety precautions:

1. Do not operate machine:

- Unless trained and authorized.
- Unless you have read and understand the operators manual.
- In flammable or explosive areas.
- If not in proper operating condition.
- In outdoors areas.

2. Before starting machine:

- Make sure all safety devices are in place and operate properly.

3. When using machine:

- Go slow on inclines and slippery surfaces.
- Follow all safety guidelines.
- Be very careful when using the machine in reverse.
- Reduce speed when turning.
- Report and fix any damage to machine prior to operating it.
- Never allow children to play on or around.
- Do not operate on inclines that exceed 5% (3°).

4. Before leaving or servicing machine:

- Stop on level surface.
- Turn off machine.

5. When servicing machine:

- Read operators manual thoroughly prior to operating or servicing this machine.
- Use manufacturer supplied or approved replacement parts.
- Secure machine with wheel blocks prior to jacking the machine up.
- Use approved jack or hoist to safely elevate the machine.
- Disconnect batteries prior to working on machine.
- Avoid moving parts. Do not wear loose fitting clothing while servicing machine.



WARNING: Fire or Explosion Hazard. Keep sparks and open flames away! Keep battery compartment open when charging.

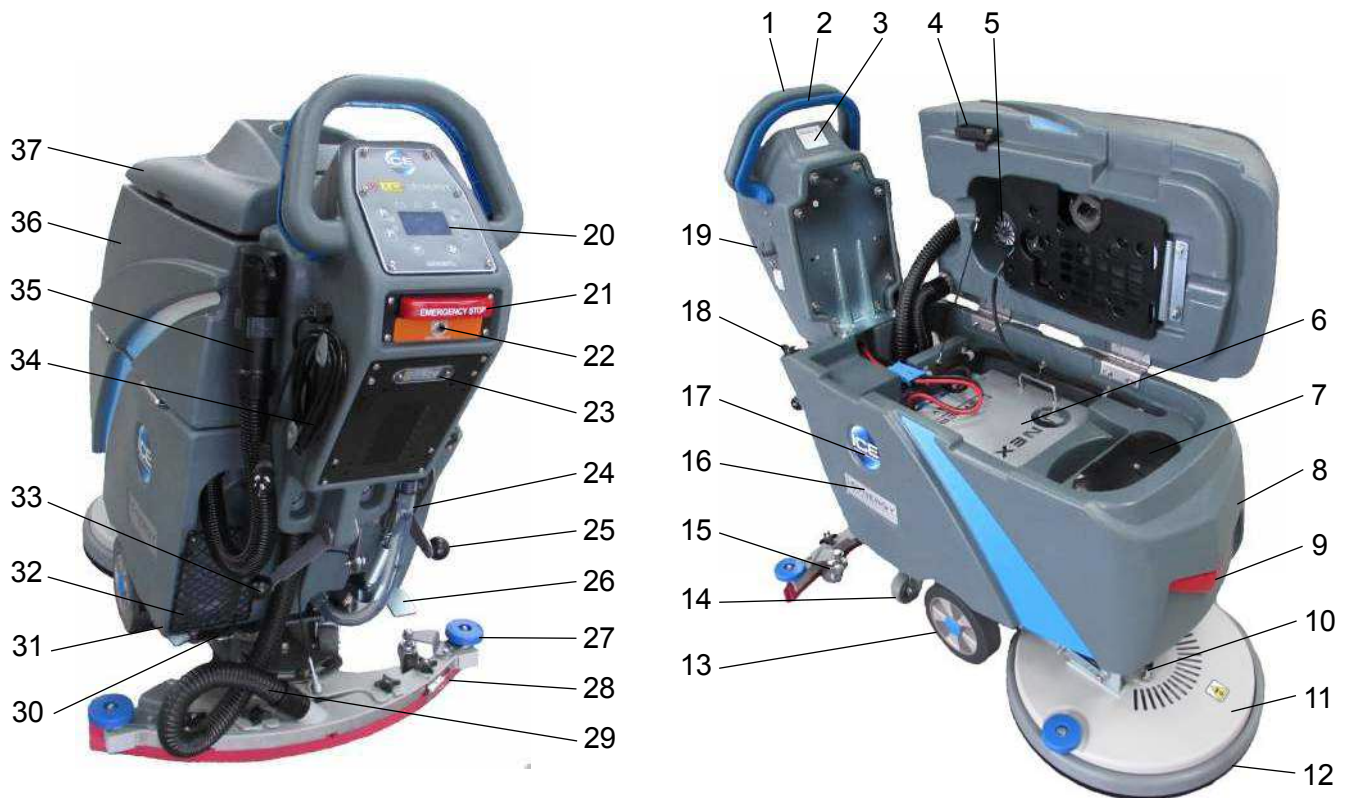


WARNING: Flammable materials can cause an explosion or fire. Do not use flammable materials in tanks.



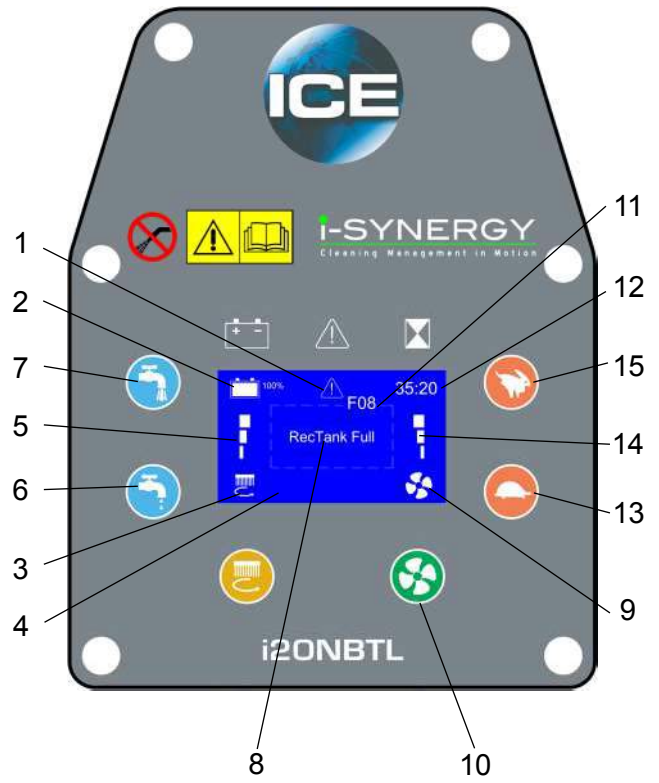
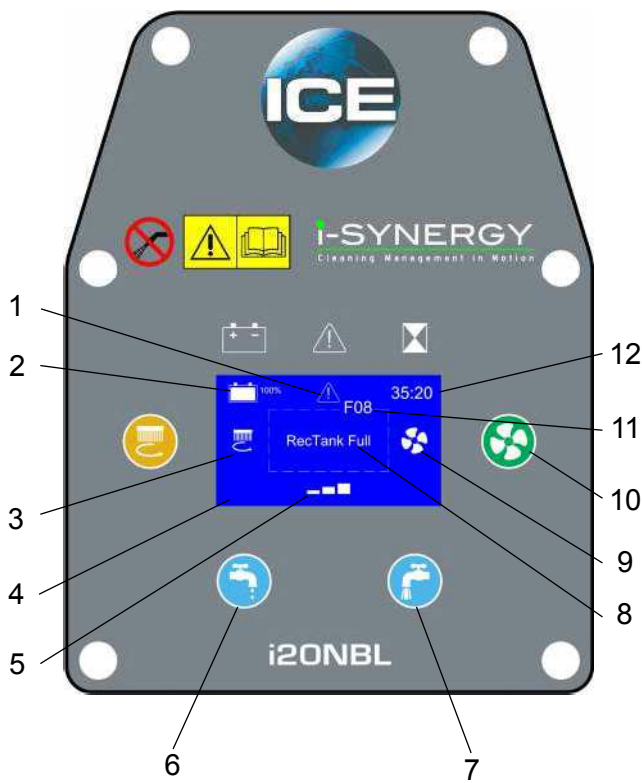
WARNING: Flammable materials or reactive metals can cause explosion or fire. Do not pick up.

MACHINE COMPONENTS



1. Control Handle
2. Control Handle Start Bail
3. i-synergy™, ID card scanning area
4. Recovery Tank Support Stand
5. Vacuum Motor, 24VDC
6. Lithium-ion Batteries
7. Bucket Fill Port/ Clean-Out Port
8. Solution Tank
9. LED Light
10. Motor Hub Lock Pin (Disk Models)
11. Scrub Head Assembly
12. Scrub Head Skirt
13. Wheels, 8 Inch
14. Caster, 3.15 Inch
15. Caster, 2 Inch, Squeegee Blade Adjustment
16. i-SYNERGY decal
17. ICE Logo
18. Hose Fill-Port
19. Squeegee Storage Bracket
20. Control panel (see Panel components)
21. Emergency Stop Button (Drive Models)
22. Main controller breaker
23. On-board battery charger / Window
24. Solution Tank Level / Drain Hose
25. Heavy Down Pressure Lever
26. Scrub Head Lift Pedal
27. Bumper Rollers
28. Squeegee Assembly
29. Squeegee Vacuum Hose
30. Filter Assembly
31. Ball Valve
32. Cargo Mesh Bag
33. Squeegee Lift Lever
34. Power cord, on-board Battery charger
35. Recovery Tank Drain Hose
36. Recovery Tank
37. Recovery Tank Cover

PANEL COMPONENTS



1. Fault indicator
2. Battery meter
3. Brush motor indicator
4. LED display screen
5. Solution flow indicator
6. Solution flow control button (-)
7. Solution flow control button (+)
8. Fault message display area

9. Vacuum motor indicator
10. Vacuum motor switch
11. Fault code
12. Timer
13. Speed control button (-)
14. Speed indicator
15. Speed control button (+)

i-synergy™ INTRODUCTION

i-synergy™ collects operational data from cleaning machines and transmit the information to ICE's server. The ICE server generates daily reports and send them to designated end users by email. From these reports, end users will have information about machines' usage and even specific timings.

Besides, i-synergy™ also collects data on lithium-ion battery, vacuum motor, brush deck motor, transaxle, and other electrical components at least once every minute when the machine is in use and even during battery charging.

i-synergy™ will send notifications instantly to the ICE server in case of any malfunction. ICE maintenance personnel will receive a SMS within minutes from the ICE server for immediate servicing.

MACHINE SET UP & INSTALLATION

UNCRATING MACHINE

Be sure and check packing carton for any damage. Immediately report any damage to carrier. Check the contents of package to ensure that the following items are included:

- Machine
- Lithium-ion Batteries
- Squeegee assembly
- Battery Charger
- Pad Driver

INSTALLING BATTERIES

The machine uses the Lithium-ion batteries, the batteries are already in the machine upon delivery; However you will need to connect the Lithium ion batteries to the machine.



WARNING: Fire or Explosion Hazard. Keep sparks and open flames away! Keep battery compartment open when charging.

1. Turn off the machine.
2. Open recovery tank to gain access to battery compartment.
3. Carefully place the Lithium-ion batteries into the compartment. Place the battery brace at the rear of the batteries.

DO NOT DROP BATTERIES INTO COMPARTMENT!

4. Plug the batteries connector to the machine adaptor, connect machine i-synergy™ COM port with the batteries.

MACHINE SET UP

PRE-OPERATION CHECKS

1. Sweep or dust mop the surface to be cleaned.
2. Check battery meter to make sure batteries are fully charged. (See BATTERY CHARGING)
3. Check that squeegee is properly installed.
4. Check that brush / pad is properly installed.

INSTALLING PAD DRIVER OR BRUSH

1. Ensure that the machine is turned off.
2. Step down on the scrub head lift pedal (see machine components, item #26) to raise the scrub head off the floor.
3. If using a Pad Driver, first attach the appropriate pad to the pad driver surface.
4. Turn the brush motor hub until the slot with the spring clip is visible through the scrub head window.
5. Mount the pad driver or brush to the brush motor hub by lining up the three studs with the three holes in the brush motor hub. Once in the holes, rotate the driver toward the spring clip to lock the pad driver into place.
If necessary, press down on the motor hub lock pin (see machine componts, item # 10)to lock motor hub in place.
6. For Orbital head Model i20NBTL-OB, you need to attach a rectangular, 20in(508mm)×14in(356mm) Pad to the Orbital Pad driver. align the pad to the Orbital pad driver, press from front-to-back and side to side to alignment.

MOUNTING THE SQUEEGEE ASSEMBLY

1. Lift the squeegee lift lever (see machine components, item #33)to the upward position.
2. Mount the squeegee assembly to the squeegee pivot bracket. make sure the knobs are completely seated into the slots before securing knobs.
3. Connect the vacuum hose to the squeegee assembly. Loop the hose by using the hose clip provided.
4. Check the squeegee blades for proper adjustment.

OPERATOR MANUAL

FILLING THE SOLUTION TANK

The machine is equipped with a hose fill-port (see machine components, item #18) at the rear of the machine, and a bucket fill-port (see machine components, item #7) located under the recovery tank. Before accessing the bucket fill-port make sure that the recovery tank is empty.

Fill the solution tank to the "60L" level on the solution tank sight gauge. When using the bucket fill-port, stop filling when the level reaches the bottom edge of the fill-port.

NOTE: When filling the solution tank with a bucket, make sure that the bucket is clean. Do not use the same bucket for filling and draining the machine.



WARNING: Do not put any flammable materials into solution tank. this can cause an explosion or a fire. Only use recommended cleaning chemicals. Contact your janitorial supply distributor for recommendations on proper chemicals.

MACHINE OPERATION



WARNING: Do not operate machine unless you have read and understand this manual.

1. Lower squeegee assembly to the floor by lowering the squeegee lift lever(see machine components, item #33).
2. Lower the scrub head to the floor by stepping on the scrub head lift pedal(see machine components, item #26).
3. Swiping the ID card (see machine components, item #3) to turn on the machine.
4. Check the battery meter (see Panel components, item #2), if the battery is very low, there will be a Fault code & message on the LED display screen(see Fault code section), and the Fault indicator will blink continuously accompany an audible alarm. please DO NOT continue to operate the machine and recharge the batteries immediately.
5. Check the solution flow indicator (see Panel components, item #5), press the solution flow control button (see Panel components, item #6, 7) to a desired flow rate.
NOTE: Solution will not begin to flow until the control handle bail is pulled.
6. Turn on the vacuum motor switch(see Panel components, item #10).
7. i20NBL: Pull the control handle bail(see machine components, item #2) backwards to start scrubbing by moving the machine forward.

The drive model i20NBTL / i24BTL: Pull the control handle bail(see machine components, item #2) backwards to start scrubbing. The machine will automatically propel forward. To reverse the drive model, simply push the control handle bail forward. the speed can be adjusted, Adjust the speed control button (see Panel components, item #13, 15) to a desired scrubbing speed.

NOTE: 45-60 meters (150-200 ft)per minute is the recommended scrubbing speed.

8. When more brush pressure is needed for heavily soiled areas simply lift the down pressure lever(see machine components, item #25).
9. To stop scrubbing, release the control handle bail, raise the scrub head and the squeegee assembly.

WHILE OPERATING MACHINE



WARNING: Fire Or Explosion Hazard. Do Not Pick Up Flammable Materials Or Reactive Metals.

1. Go slow on inclines and slippery surfaces. Do not operate the machine on inclines that exceed 5% (3°).
2. Do not keep the machine in the same position with pad / brush spinning, keep the machine moving to prevent damage to floor finish.
3. If the squeegee assembly leaves streaks on the floor, raise the squeegee off the floor and wipe the blades down with a damp cloth. Pre-sweep the area to prevent leaving streaks on the floor.
4. Pour a recommended defoamer into the recovery tank if excessive foam appears.



WARNING: Do not allow foam to enter the float shut-off screen, vacuum motor damage will result. Foam will not activate the float shut-off screen.

5. Occasionally check the battery meter(see Panel components, item #2). when the battery is very low, stop scrubbing and recharge the batteries.



WARNING: When battery is very low, do not continue to operate the machine. Battery damage may result.

6. When the solution tank runs empty, raise the brush head off the floor. Keep the squeegee down and continue to vacuum until all the dirty water is picked up.

NOTE: See **TANK DRAINING** section to learn how to drain recovery and solution tanks.

OPERATOR MANUAL

CIRCUIT BREAKER

The machine is equipped with a resettable circuit breaker(see machine components, item #22) to protect the Main controller. If the circuit breaker should trip, it can't be reset immediately. You must first determine what caused the breaker to trip, and allow the Controller to cool down and then you can manually reset the circuit breakers.

NOTE: Contact an Authorized Service center for machine repairs.

HOURLY METER

The hour meter (see Panel components, item #12) records the number of total hours the brush motor has been powered on. Use the hour meter to determine when to perform recommended maintenance procedures and to record service history.

TANK DRAINING

1. Turn the machine off.
2. With the squeegee and scrub head in their "up" position, transport machine to approved area for draining tank(s).

DRAINING THE RECOVERY TANK

Any time scrubbing is completed, or when refilling solution tank, the recovery tank should be drained and cleaned.



WARNING: If the recovery tank is not drained when the solution tank has been refilled, foam or water may enter the float shut-off screen and cause damage to the vacuum motor.

1. While holding the drain hose (see machine components, item #35) upward, remove the cap and lower hose to drain.
2. Open the recovery tank cover and rinse out the tank. Use a rag to remove any excess dirt.
3. Clean the float shut-off screen and debris tray located in the recovery tank .

DRAINING THE SOLUTION TANK

Any time scrubbing operation is completed, the solution tank should be drained and cleaned.

1. Pull the solution tank level hose(see machine components, item #24) off the hose fitting, this will allow the solution to flow freely into a bucket or floor drain.
2. Remove the cover of the filter assembly(see machine components, item #30) to drain the solution tank, check the filter screen and clean up it if necessary.
3. Rinse the solution tank with clean water after every use. This will help prevent chemical buildup and clogging of the solution lines.
4. After rinsing out the tank, securely reconnect the tank level hose to the hose fitting, replace the filter assembly cover and be sure the filter screen and the "O" ring is in the correct position.

BATTERY CHARGING



WARNING: Fire Or Explosion Hazard. Keep Sparks and Open Flame Away. Keep Battery Compartment Propped Open When Charging.

Only use ICE supplied or approved batteries charger, use unapproved charger may cause damage to the batteries and machine.

Batteries charger specifications:

- Applicable to charging Lithium-ion batteries
- Automatic shut off circuit
- Output current of 15 Amps
- Output voltage of 24 volts

1. Place machine in a well ventilated area.
2. Turn the machine off.
3. Connect the charger's AC power supply cord (see machine components, item #34)to a properly grounded receptacle.
4. Prop up the recovery tank by the support stand (see machine components, item #4) for ventilation when charging.
5. The charger will automatically begin to charge and will automatically shut off once the batteries are fully charged.
6. Upon completion of charging, disconnect the AC power supply cord.

PREVENTATIVE MAINTENANCE



WARNING: Before performing any maintenance on the machine, be sure that the power is turned off, or the batteries are disconnected!



WARNING: Repairs are to be completed by Authorized service centers only. Any repairs completed by unauthorized persons will void the warranty.

DAILY MAINTENANCE

1. Remove pad driver/ brush and clean with approved cleaner.
2. Drain recovery and solution tanks completely and rinse out with clean water. Visually check the recovery tank for debris and clean out as necessary.
3. Raise the squeegee assembly off floor and wipe it down with a damp towel. Be sure to store the squeegee in the up position.
4. Remove the float shut-off assembly and rinse it out with clean water.
5. Clean machine with an approved cleaner and a damp towel.
6. Recharge the batteries.
7. Check the condition of the squeegee blade wiping edge, rotate blade if worn.

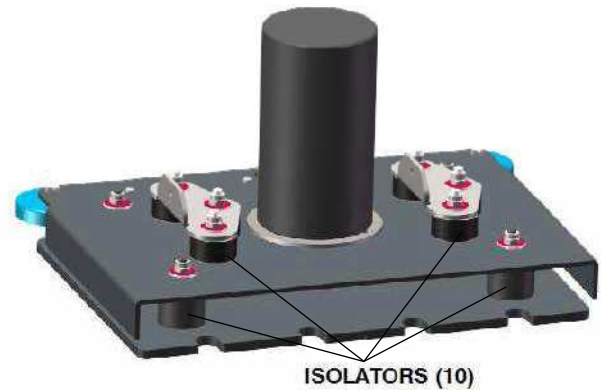
MONTHLY MAINTENANCE

1. Clean the battery tops to prevent corrosion.
2. Check for loose battery cable connections.
3. Inspect and clean the recovery tank cover seal. Replace it if damaged.
4. Lubricate all grease points and pivot points with silicon spray and approved grease.
5. Check the machine for loose nuts and bolts.
6. Check the machine for leaks.

ORBITAL HEAD MAINTENANCE

For Orbital head, you should have checked the eight isolators located in the Orbital head every 300 hours.

1. Using a flashlight, do a visual inspection of the isolators by looking through the opening in the Orbital head and checking for wear or damage to four isolators in the front and four in the rear of the Orbital head. The locations of the isolators are shown below.



2. If any of the eight isolators show signs of wear, degradation or damage, contact your local distributor to replace all eight isolators.

MACHINE STORAGE

1. Always store the machine indoors.
2. Always store the machine in a dry area.
3. Always store the machine in its upright position.
4. Always store the machine with the pad driver/ brush raised off the floor.
5. Always store the machine with the squeegee assembly raised off the floor.
6. If storing in an area which may reach freezing temperatures, be sure to drain all fluids from the machine prior to storage. Any damage caused by freezing temperatures will not be covered by the warranty.
7. Drain the recovery tank.
8. Drain the solution tank of all fluid.

FAULT CODE & SOLUTION

The machine is equipped with a LED display screen (see Panel components, item # 4), the LED screen will display the operating hours (see Panel components, item # 12) and the battery level status (see Panel components, item # 2).

When the machine detects a fault, there will be a Fault code (see Panel components, item #11) & Fault message (see Panel components, item #8) display on the LED screen, and the Fault indicator (see Panel components, item #1) will flash continuously, accompany an audible alarm Occasionally.

Once fault occurring, please DO NOT continue operate the machine unless the fault are eliminated. Turn off the machine, then to solve the fault, the fault code & message will be eliminated when machine restart.

If the fault is occurred frequently, or the fault can't be eliminated, please contact ICE service center.

Please refer to the below table to determine the fault cause and the solution.

| FAULT CODE | FAULT MESSAGE | MODEL | | FAULT CAUSE | SOLUTION |
|------------|--------------------------------|--------|-------------------|----------------------------------|--|
| | | i20NBL | i20NBTL i24BTL | | |
| F01 | Lower Brush Deck | ● | | Brush deck is off the floor | Release the control handle bail Or Lower the Brush deck |
| F04 | Vac Mtr O.L. RE-START! | ● | ● | Vacuum motor overload | Turn off the machine,after a moment, RE-START machine |
| F06 | Bru Mtr O.L. RE-START! | ● | ● | Brush motor overload | |
| F07 | Propel Mtr O.L. RE-START! | | ● | Propel motor overload | |
| F10 | Batt Low Charge Batt | ● | ● | Battery is low | Charge the battery |
| F11 | Batt Empty Charge Batt NOW | ● | ● | Battery is empty | Charge the battery NOW |
| F12 | Brake Wiring Error | | ● | Bad Brake wiring Bad Brake | Check the brake wiring Replace the Brake assembly |
| F14 | Replace Brake Assy | | ● | Bad Brake assembly | Replace the brake assembly |
| F16 | Control Unit Overheat! Wait | ● | ● | Control Unit Overheat | Turn off the machine,after a moment, RE-START machine |
| F17 | Replace Control Unit | ● | ● | Control Unit Fault | Replace the control unit |
| F20 | Check Brush Motor | | ● | Bad brush motor | Check the brush motor / Wiring |
| F21 | Check Vac Mtr | ● | ● | Bad Vacuum motor or wiring | Check the vacuum motor / Wiring |
| F22 | Check Soln Solenoid | ● | ● | Solution solenoid wiring fault | Check the wiring & Contactors |
| F23 | Replace Soln solenoid | ● | ● | Bad Solution solenoid | Replace the solution solenoid |
| F24 | Check Propel Motor | | ● | Bad propel motor | Check the propel motor / Wiring |
| F25 | Check Brush Motor | ● | | Bad brush motor | Check the brush motor / Wiring |
| F40 | Check Proximity Sw | ● | ● | Proximity switch fault | Check the Proximity switch |
| F41 | Release Handle | ● | ● | Operation mistake | Release the control handle bail |
| F42 | Replace Control Unit | ● | ● | Bad Control Unit | Replace the control unit |
| F43 | Turn Dead Sw Off RE-START! | | ● | Emergency stop button activated. | Release emergency stop button and restart machine. |
| F44 | Replace Control Unit | ● | ● | Bad Control Unit | Contact service center, Replace the Control Unit |
| F45 | Return Control Unit | ● | ● | | |
| F46 | Return Control Unit | ● | ● | | |
| F47 | Return Control Unit | ● | ● | | |
| F48 | Return Control Unit | ● | ● | | |

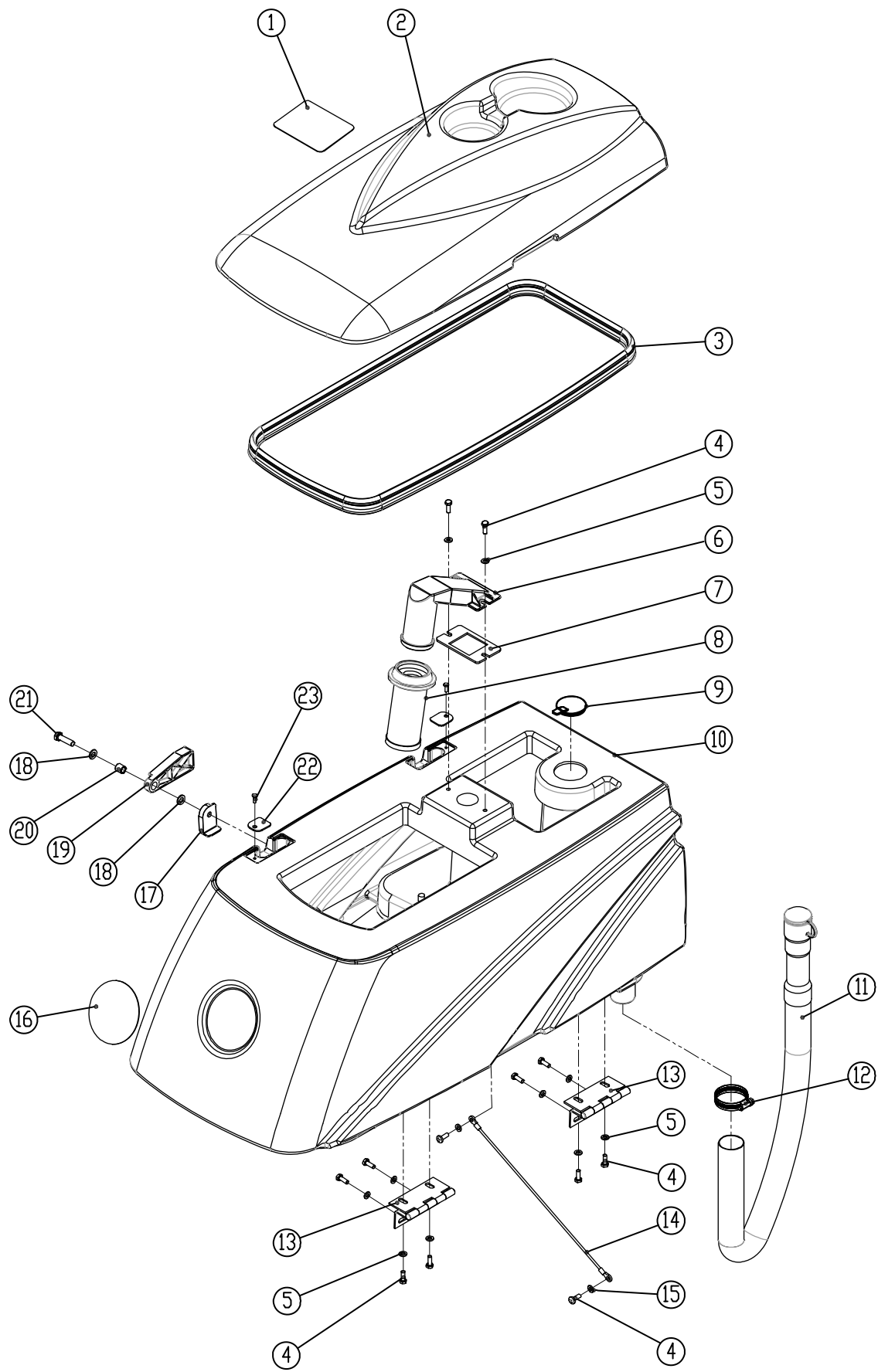
BASIC TROUBLESHOOTING

| PROBLEM | CAUSE | SOLUTION |
|---------------------------------------|--|---|
| Machine will not operate | Control handle bail not pulled | Pull control handle bail |
| | Lithium-ion batteries need to be charged | Charge batteries |
| | Bad lithium-ion batteries | Replace batteries |
| | Loose batteries connection | Tighten the connector |
| | Main control unit circuit breaker tripped | Reset main control unit breaker |
| | Faulty i-synergy™ module | Contact ICE service center |
| Brush motor will not operate | Scrub head is raised off floor | Lower scrub head |
| | Faulty scrub head (up/down) switch | Contact ICE service center |
| | Faulty control handle bail switch | Contact ICE service center |
| | Faulty brush motor or wiring | Contact ICE service center |
| | Worn Motor carbon brushes | Contact ICE service center |
| Machine does not propel (Drive model) | Faulty transaxle motor or wiring | Contact ICE service center |
| | Worn Motor carbon brushes | Contact ICE service center |
| Vacuum motor will not operate | Faulty vacuum motor or wiring | Contact ICE service center |
| | Worn Motor carbon brushes | Contact ICE service center |
| Little or no solution flow | Ball valve set too low or shut off | Turn on the ball valve |
| | Solution flow control knob set too low or shut off | Adjust solution control flow knob |
| | Clogged solution tank filter or solution hose | Clean solution tank filter or flush out solution hose |
| | Clogged solution Solenoid valve | Remove valve and clean |
| Poor water pick up | Recovery tank is full | Drain recovery tank |
| | Loose drain hose cap | Tighten cap |
| | Clogged float shut-off screen located in recovery tank | clean screen |
| | Clogged squeegee assembly | Clean squeegee assembly |
| | Worn squeegee blades | Replace or rotate squeegee blades |
| | Incorrect squeegee blade deflection | Adjust squeegee blade height |
| | Loose vacuum hose connections | Secure hose connections |
| | Clogged vacuum hose | Remove clogged debris |
| | Damaged vacuum hose | Replace vacuum hose |
| | Recovery tank cover not in place | Properly position cover |
| | Damaged recovery tank cover seal | Replace seal |
| | Faulty vacuum motor | Contact ICE service center |
| | Low battery charge | Recharge batteries |
| Short run time | Low battery charge | Fully recharge batteries |
| | Defective batteries | Replace batteries |
| | Faulty battery charger | Repair or replace battery charger |
| | Down pressure lever is set for extra scrub head pressure | Lower down pressure lever |

TECHNICAL SPECIFICATIONS

| MODEL | i20NBL Brush Assist | i20NBTL W/ Drive | i20NBTL-OB Orbital head | i24BTL Dual disk |
|---|--|---|---|---|
| DIMENSIONS L | 55.7 in / 1,415 mm | | 53.5 in / 1,360 mm | 52.2 in / 1,325 mm |
| DIMENSIONS W | 22 in / 560 mm | | 22 in / 560 mm | 25.6 in / 650 mm |
| DIMENSIONS H | 44.9 in / 1,140 mm | | 44.9 in / 1,140 mm | 44.9 in / 1,140 mm |
| WEIGHT | 210 lbs / 95 Kg | 230 lbs / 105 Kg | | |
| WEIGHT with BATTERIES | 310 lbs /140 Kg | 330 lbs / 150 Kg | | |
| RECOVERY TANK CAPACITY | 17.2 Gal / 65 L | | | |
| SOLUTION TANK CAPACITY | 15.9 Gal / 60 L | | | |
| SQUEEGEE WIDTH | 30 in / 762 mm | | | |
| CLEANING PATH WIDTH | 20 in / 500 mm (Disk) | | 500 mm / 20 in (20 in x 14 in Pad) | 24 in / 600mm |
| PRODUCTIVITY RATE | 19,375 ft ² / 1,800 m ² h | 23,680 ft ² / 2,200 m ² h | | 28,000 ft ² / 2,600m ² h |
| DRIVE SYSTEM | Brush Assisted | Transaxle, 0.27 hp / 0.2KW | | |
| TRAVEL SPEED, MAXIMUM | N/A | 246 ft / Min 75 m / Min | | |
| MINIMUM AISLE TURN | 63 in / 1,600 mm | | | |
| PAD/BRUSH PRESSURE | 65 lbs / 30 Kg Min 100 lbs / 45 Kg Max | | | |
| SOLUTION FLOW RATE | 0 ~ 0.37 Gal / Min 0 ~ 1,400 ml / Min | | | |
| BRUSH MOTOR | 0.75hp / 0.55KW 220 RPM | | 0.75hp / 0.55KW 2,200RPM | 0.9hp / 0.68KW 2,000RPM |
| VIBRATIONS @ CONTROLS | N/A | | < 2.5 m / s ² < 8.2 ft / s ² | N/A |
| VACUUM MOTOR | 0.7hp / 0.5KW | | | |
| WATER LIFT - AIR FLOW | 45 in / 1,143 mm | | | |
| BATTERIES | Lithium-ion batteries, 120AH | | | |
| RUN TIME PER CHARGE | 3.5 Hours | 3 Hours | | |
| VOLTAGE DC | 24V | | | |
| DECIBEL RATE AT OPERATOR'S EAR, INDOORS | 68dB(A) | | <70dB(A) | 68dB(A) |
| GRADE LEVEL, MAX | 5% (3°) | | | |

RECOVERY TANK GROUP

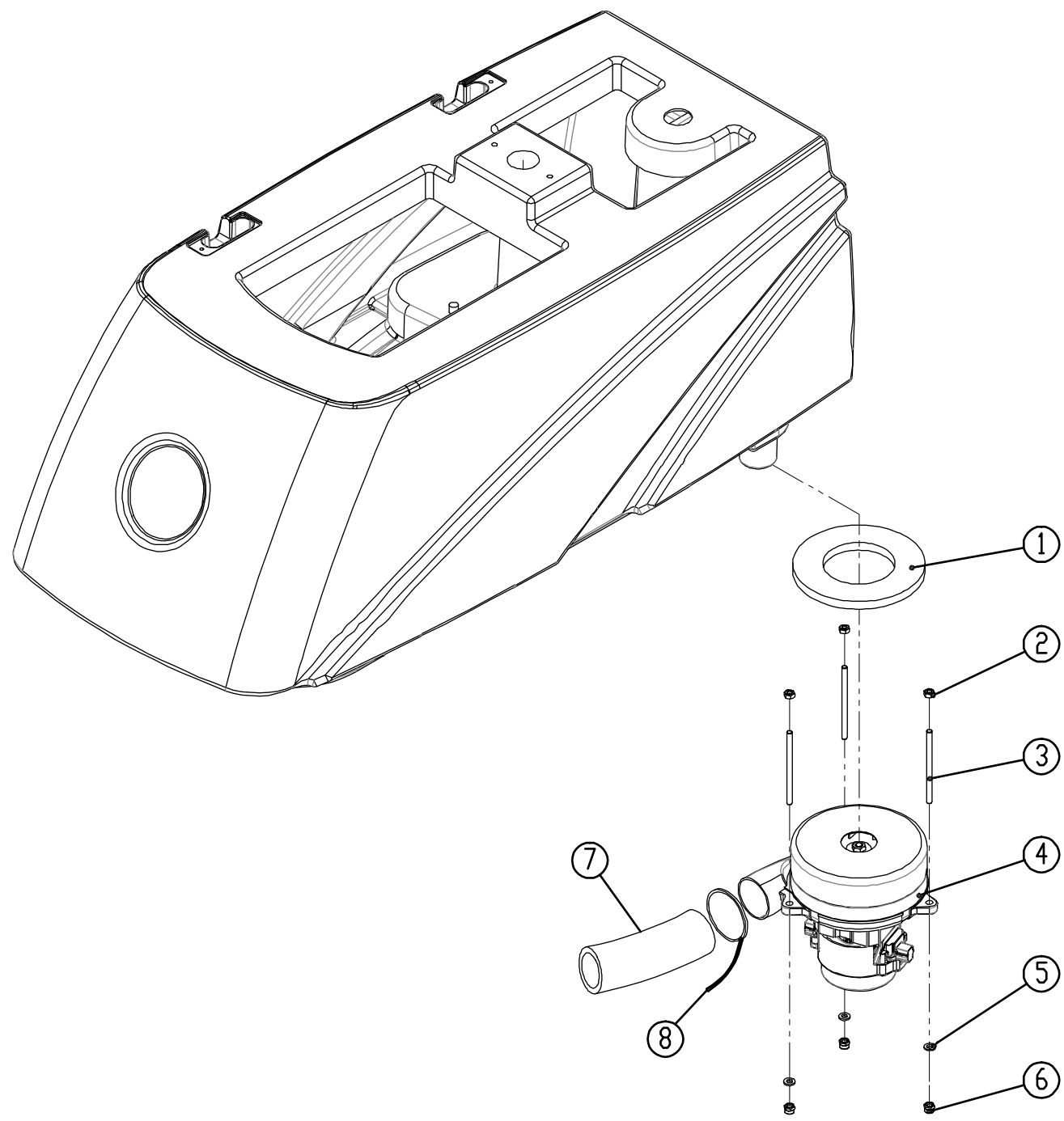


PARTS LIST

RECOVERY TANK GROUP

| DIA NO. | PART NUMBER | DESCRIPTION | NO REQ'D |
|---------|-------------|-------------------------------|----------|
| 1 | 8111022 | WARNING LABEL | 1 |
| 2 | 8131002 | RECOVERY TANK COVER | 1 |
| 3 | 8131005A | RECOVERY TANK COVER SEAL | 1 |
| 4 | 1021616 | HEX BOLT M6 X 16 | 12 |
| 5 | 1421618 | FLAT WASHER M6× ϕ 18×1.6 | 10 |
| 6 | 8111014 | FLOAT ADAPTER | 1 |
| 7 | 8111001 | GASKET | 1 |
| 8 | 8111015 | FLOAT, SHUT-OFF | 1 |
| 9 | 8131003 | CAP | 1 |
| 10 | 8131001 | RECOVERY TANK | 1 |
| 11 | 8131010 | DRAIN HOSE | 1 |
| 12 | 1962050 | CLAMP | 1 |
| 13 | 8111300 | HINGE ASSEMBLY | 2 |
| 14 | 8131020 | CABLE | 1 |
| 15 | 1421612 | FLAT WASHER M6× ϕ 12×1.6 | 2 |
| 16 | 4010316 | ICE LOGO | 1 |
| 17 | 8111008 | BRACKET | 1 |
| 18 | 1421816 | FLAT WASHER M8× ϕ 16×1.6 | 2 |
| 19 | 8111007 | RECOVERY TANK SUPPORT | 1 |
| 20 | 8115404 | SLEEVE, P/M | 1 |
| 21 | 1021830 | HEX BOLT M8×30 | 1 |
| 22 | 8111016 | PLATE | 2 |
| 23 | 1221412 | SCREW M4×12 | 2 |

VACUUM FAN GROUP

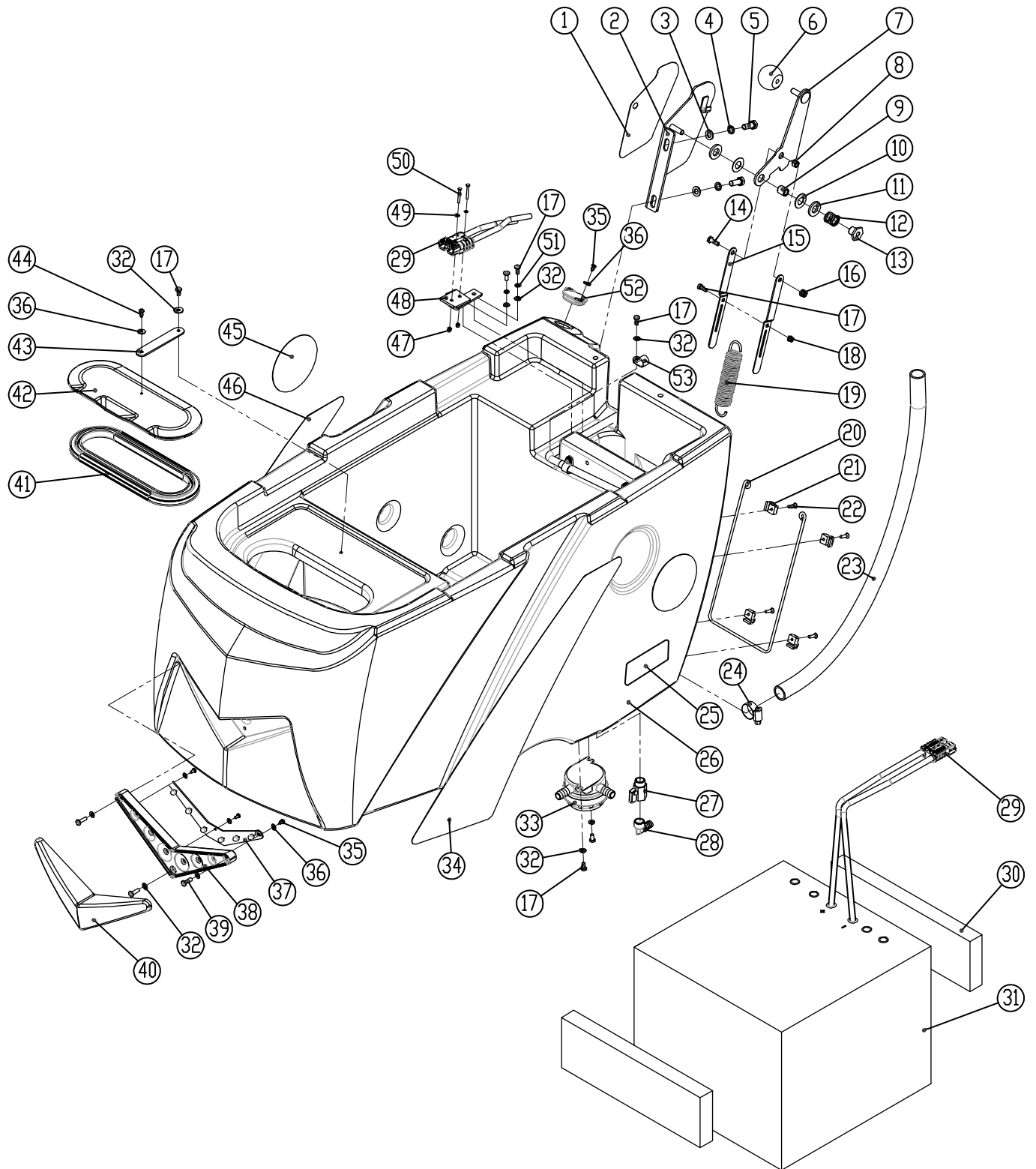


PARTS LIST

VACUUM FAN GROUP

| DIA NO. | PART NUMBER | DESCRIPTION | NO REQ'D |
|---------|-------------|----------------------------------|----------|
| 1 | 8112005 | GASKET, VACUUM MOTOR | 1 |
| 2 | 1121605 | HEX NUT M6 | 3 |
| 3 | 8112006 | STUD M6×92 | 3 |
| 4 | 8132050 | AMETEK VACUUM MOTOR , KIT, 24VDC | 1 |
| | 8132006 | CARBON BRUSH, 24VDC VACUUM MOTOR | 2 |
| 5 | 1421612 | FLAT WASHER M6× ϕ 12×1.6 | 7 |
| 6 | 1123608 | LOCK NUT M6 | 3 |
| 7 | 8132007 | MUFFLER, VACUUM MOTOR | 1 |
| 8 | 1914300 | TIE, NYLON, 5X300 | 2 |

SOLUTION TANK GROUP



PARTS LIST

SOLUTION TANK GROUP

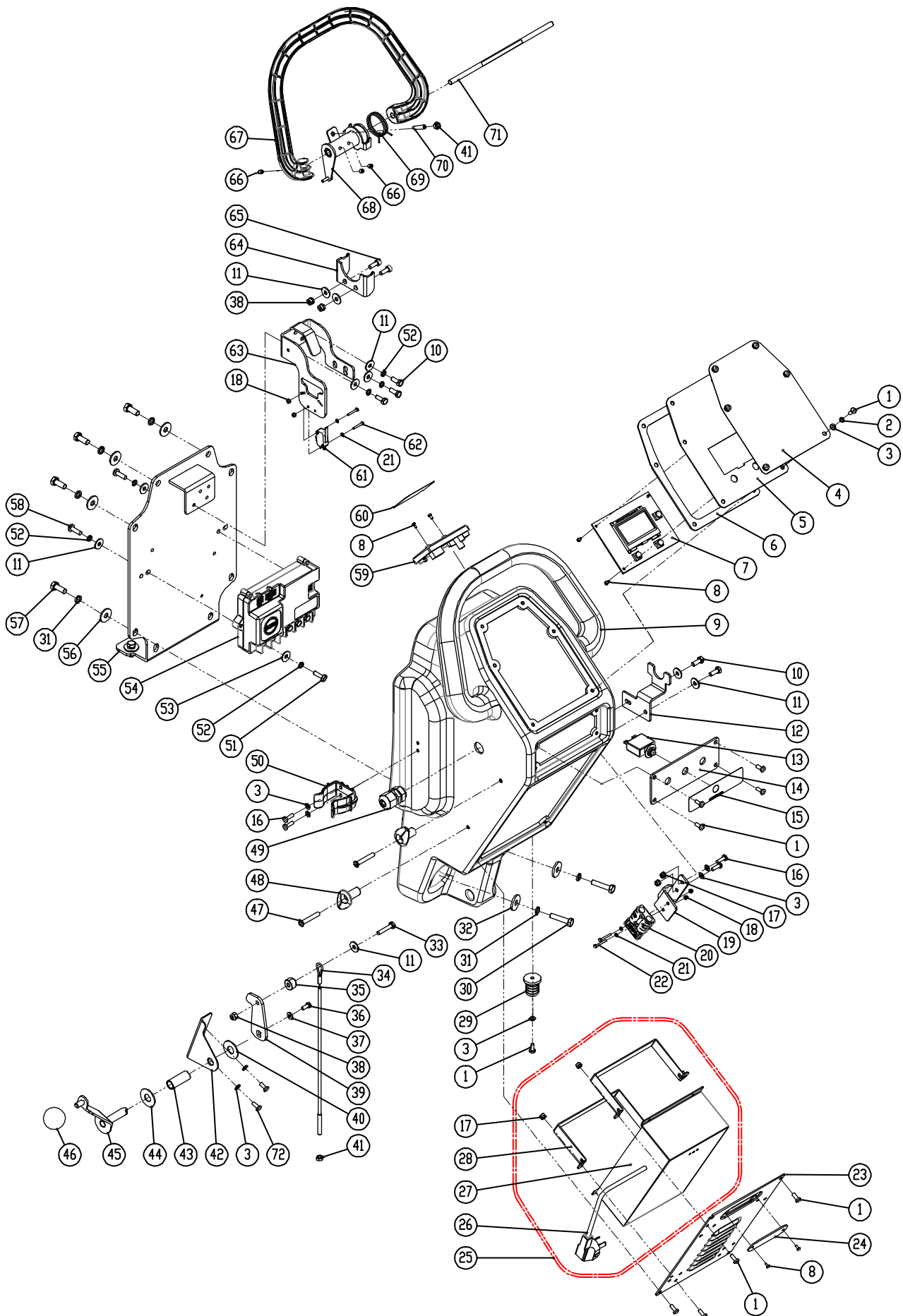
| DIA NO. | PART NUMBER | DESCRIPTION | NO REQ'D |
|---------|-------------|--|----------|
| 1 | 8113115 | DOWN PRESSURE LABEL | 1 |
| 2 | 8113101 | DOWN PRESSURE LEVER BRACKET | 1 |
| 3 | 1421816 | FLAT WASHER M8× ϕ 16×1.6 | 2 |
| 4 | 1422821 | LOCK WASHER M8 | 2 |
| 5 | 1021820 | HEX BOLT M8×20 | 2 |
| 6 | 8113104 | BALL KNOB | 1 |
| 7 | 8113106 | DOWN PRESSURE LEVER | 1 |
| 8 | 8113112 | BUSHING | 1 |
| 9 | 8113110 | SLEEVE, P/M | 1 |
| 10 | 8113111 | NYLON FLAT WASHER ϕ 12.9× ϕ 25.4×0.8 | 2 |
| 11 | 8113109 | THRUST BEARING | 2 |
| 12 | 8113114 | SPRING | 1 |
| 13 | 8113107 | RETAINER, SPRING | 1 |
| 14 | 8113103 | BOLT M6×18 | 1 |
| 15 | 8113108 | LINK, SPRING | 2 |
| | 8133108 | LINK, SPRING, ORBITAL HEAD MODEL | 2 |
| 16 | 1123608 | LOCK NUT M6 | 1 |
| 17 | 1221512 | SCREW M5×12 | 15 |
| 18 | 1123507 | LOCK NUT M5 | 1 |
| 19 | 8133113 | SPRING | 1 |
| 20 | 8133501 | CARGO NET | 1 |
| 21 | 8133502 | CLAMP | 4 |
| 22 | 1221412 | SCREW M4X12 | 4 |
| 23 | 8133008 | CLEAN TUBING | 1 |
| 24 | 1962025 | CLAMP 16-25mm | 1 |
| 25 | 8130099 | i-SYNERGY DECAL | 2 |
| 26 | 8133001 | SOLUTION TANK | 1 |
| 27 | 8119005 | BALL VALVE, G1/2 | 1 |
| 28 | 8119007 | ELBOW G1/2 | 1 |
| 29 | 8134750 | CONNECTOR, GRID, BLUE | 2 |
| 30 | 8113013 | SPACER, BATTERY | 2 |
| 31 | 9324101 | LITHIUMS-ION BATTERIES, 110AH | 1 |
| 32 | 1421510 | FLAT WASHER M5× ϕ 10×1 | 17 |
| 33 | 8119100 | FILTER ASSEMBLY | 1 |
| 34 | 8133025 | LABEL, LEFT SIDE | 1 |

PARTS LIST

SOLUTION TANK GROUP

| DIA NO. | PART NUMBER | DESCRIPTION | NO REQ'D |
|---------|-------------|------------------------------------|----------|
| 35 | 1321110 | SELF-TAPPING SCREW ST3.5 ×10 | 4 |
| 36 | 1421409 | FLAT WASHER M4× 6 9×0.8 | 5 |
| 37 | 8133610 | LED LIGHT, KIT | 1 |
| 38 | 8133601 | LED LIGHT MNTG BASE | 1 |
| 39 | 1221520 | SCREW M5X20 | 3 |
| 40 | 8133602 | LED LIGHT COVER | 1 |
| 41 | 8113030 | SEAL | 1 |
| 42 | 8113002 | COVER | 1 |
| 43 | 8113007 | STRAP | 1 |
| 44 | 1321213 | SELF-TAPPING SCREW ST4.2X13 | 1 |
| 45 | 4010316 | ICE Logo | 2 |
| 46 | 8133026 | LABEL, RIGHT SIDE | 1 |
| 47 | 1123305 | LOCK NUT M3 | 2 |
| 48 | 8113010 | BRACKET, CONNECTOR MTG | 1 |
| 49 | 1434300 | LOCK WASHER, TOOTH, M3 | 2 |
| 50 | 1211325 | SCREW M3×25 | 2 |
| 51 | 1422513 | LOCK WASHER M5 | 2 |
| 52 | 8133002 | CAP, SOLUTION FILL | 1 |
| 53 | 8113009 | NYLON, CLAMP | 9 |

CONTROL CONSOLE GROUP (i20NBL)



PARTS LIST

CONTROL CONSOLE GROUP (i20NBL)

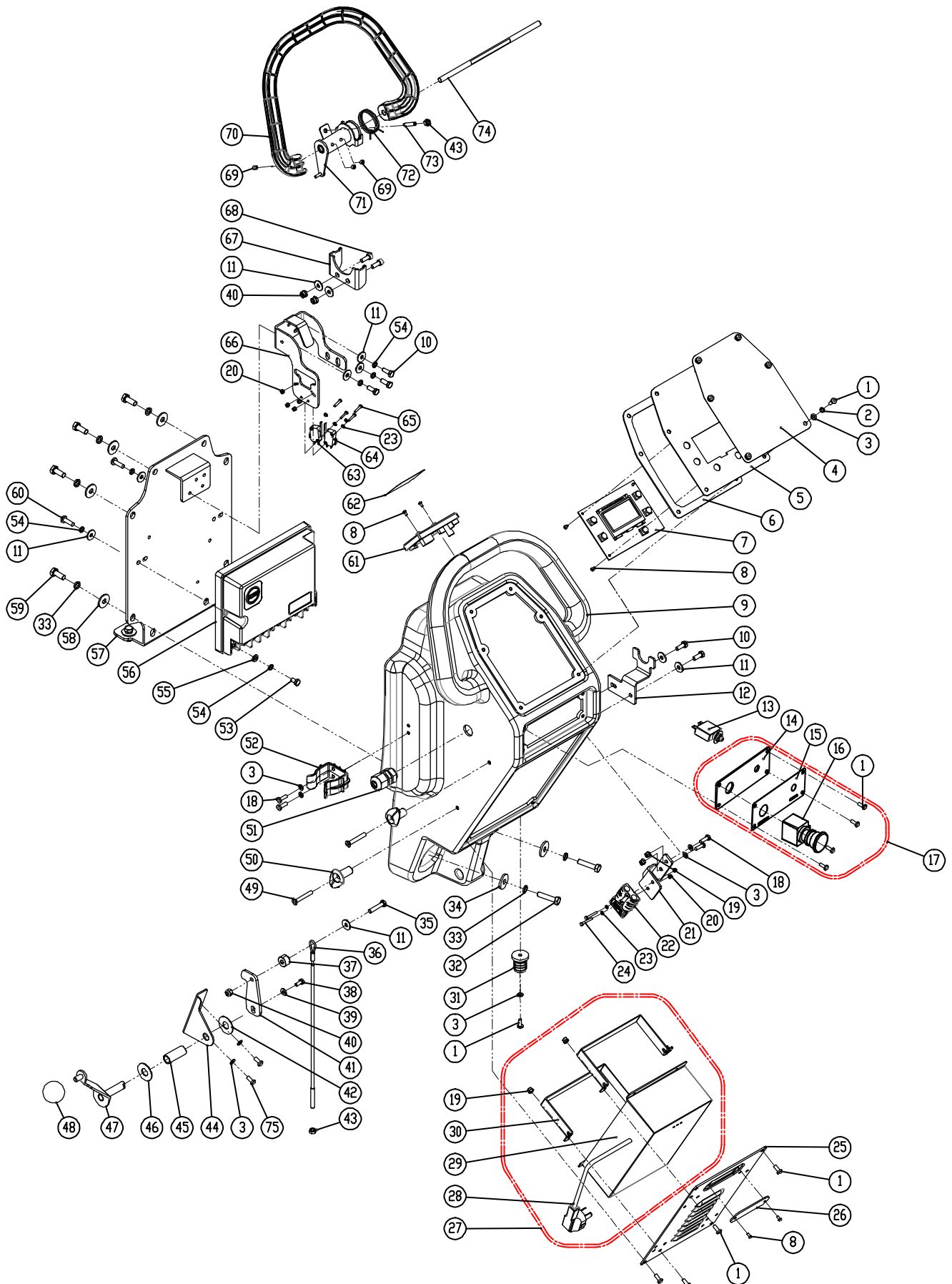
| DIA NO. | PART NUMBER | DESCRIPTION | NO REQ'D |
|---------|-------------|-------------------------------------|----------|
| 1 | 1221512 | SCREW M5×12 | 19 |
| 2 | 1422513 | LOCK WASHER M5 | 6 |
| 3 | 1421510 | FLAT WASHER M5× ϕ 10×1.0 | 13 |
| 4 | 8134725 | CONTROL PANEL DECAL, i20NBL | 1 |
| 5 | 8134721 | CONTROL PANEL, i20NBL | 1 |
| 6 | 8134015 | GASKET | 1 |
| 7 | 8134732 | CONTROL PANEL PCB, i20NBL (LI / EN) | 1 |
| 8 | 1221306 | SCREW M3×6 | 7 |
| 9 | 8134005 | CONTROL HOUSING | 1 |
| 10 | 1021616 | HEX BOLT M6 X 16 | 5 |
| 11 | 1421618 | PLAIN WASHER M6× ϕ 18×1.6,SS | 10 |
| 12 | 8114008 | BRACKET, SQGE STORAGE | 1 |
| 13 | 8310740 | CIRCUIT BREAKER, 5A | 1 |
| 14 | 8134006 | PLATE, CIRCUIT BREAKERS MNTG | 1 |
| 15 | 8144025 | LABEL, CIRCUIT BREAKER | 1 |
| 16 | 1221515 | PH SCREW M5×15 | 4 |
| 17 | 1123507 | LOCK NUT M5 | 6 |
| 18 | 1123305 | LOCK NUT M3 | 4 |
| 19 | 8113010 | BRACKET, CONNECTOR MTG | 1 |
| 20 | 8134750 | CONNECTOR, GRID, BLUE | 1 |
| 21 | 1434300 | LOCK WASHER, TOOTH, M3 | 4 |
| 22 | 1211325 | SCREW M3×25 | 2 |
| 23 | 8134060 | PLATE, ON BOARD BATTERY CHARGER | 1 |
| 24 | 8134061 | CLEAR COVER | 1 |
| 25 | 8134600-US | ON BOARD BATTERY CHARGER,KIT | 1 |
| 26 | 8112030A | BATTERY CHARGER POWER CORD, KIT | 1 |
| 27 | 8134610A | ON BOARD BATTERY CHARGER, 110VAC | 1 |
| 28 | 8134062 | CLAMP, BATTERY CHARGER | 2 |
| 29 | 8114005 | CONNECTOR | 1 |
| 30 | 1021840 | HEX BOLT M8×40 | 2 |
| 31 | 1422821 | LOCK WASHER M8 | 12 |
| 32 | 1421828 | FLAT WASHER M8× ϕ 28×3 | 2 |
| 33 | 1021630 | HEX HEAD BOLT M6×30,SS | 1 |
| 34 | 8134082 | CABLE, SQGE LIFT | 1 |
| 35 | 8014101 | LIFTING ROPE SPACER | 1 |
| 36 | 1021610 | HEX HEAD BOLT M6×10,SS | 1 |

PARTS LIST

CONTROL CONSOLE GROUP

| DIA NO. | PART NUMBER | DESCRIPTION | NO REQ'D |
|---------|-------------|--|----------|
| 37 | 1421616 | FLAT WASHER M6× ϕ 16×1.0 | 1 |
| 38 | 1123608 | LOCK NUT M6 | 3 |
| 39 | 8014012 | BAFFLE | 1 |
| 40 | 8113111 | NYLON FLAT WASHER ϕ 12.9× ϕ 25.4×0.8 | 1 |
| 41 | 1121605 | HEX NUT M6 | 2 |
| 42 | 8134501 | BRACKET | 1 |
| 43 | 8134081 | SLEEVEE | 1 |
| 44 | 1421132 | FLAT WASHER M12× ϕ 32×1.5 | 1 |
| 45 | 8134080 | SQUEEGEE LIFTING HANDLE | 1 |
| 46 | 8113104 | BALL KNOB M8 | 1 |
| 47 | 1222641 | SUNK HEAD SCREW M6 X 40 | 2 |
| 48 | 8210112 | HOOK, POWER CORD | 2 |
| 49 | 8014054 | STRAIN RELIEF | 1 |
| 50 | 6210111 | CLAMP, DRAIN HOSE | 1 |
| 51 | 1023612 | HEX BOLT M6 X 12, COPPER | 6 |
| 52 | 1422616 | LOCK WASHER, M6 | 11 |
| 53 | 1423612 | FLAT WASHER M6× ϕ 12×1, COPPER | 6 |
| 54 | 8134790 | MAIN CONTROLLER, i20NB | 1 |
| 55 | 8134070 | REAR PLATE, CONTROL CONSOLE | 1 |
| 56 | 1421824 | FLAT WASHER M8× ϕ 24×2 | 10 |
| 57 | 1021820 | HEX BOLT M8×20 | 10 |
| 58 | 1221620 | PH SCREW M6 X 20 | 2 |
| 59 | 8134768 | RFID BOARD | 1 |
| 60 | 8134035 | LABEL, i-SYNERGY™ CARD SCANNING | 1 |
| 61 | 8114712 | MICRO SWITCH | 1 |
| 62 | 1021320 | SCREW M3 X 20 | 2 |
| 63 | 8134022 | BRACKET, SWITCH | 1 |
| 64 | 8114402 | BRACKET, SPRING | 1 |
| 65 | 1521616 | SCREW M6X16, HEX SCOKET | 2 |
| 66 | 1534608 | SET SCREW M6 × 8 | 4 |
| 67 | 8134300 | LEVER, BAIL | 1 |
| 68 | 8114300 | ACTUATOR | 1 |
| 69 | 8114306 | SPRING | 1 |
| 70 | 1535630 | SET SCREW M6 ×30 | 1 |
| 71 | 8114101 | SHAFT | 1 |
| 72 | 1021512 | HEX HEAD BOLT M5×12,SS | 2 |

CONTROL CONSOLE GROUP (i20NBTL/i24BTL)



PARTS LIST

CONTROL CONSOLE GROUP (i20NBTL/i24BTL)

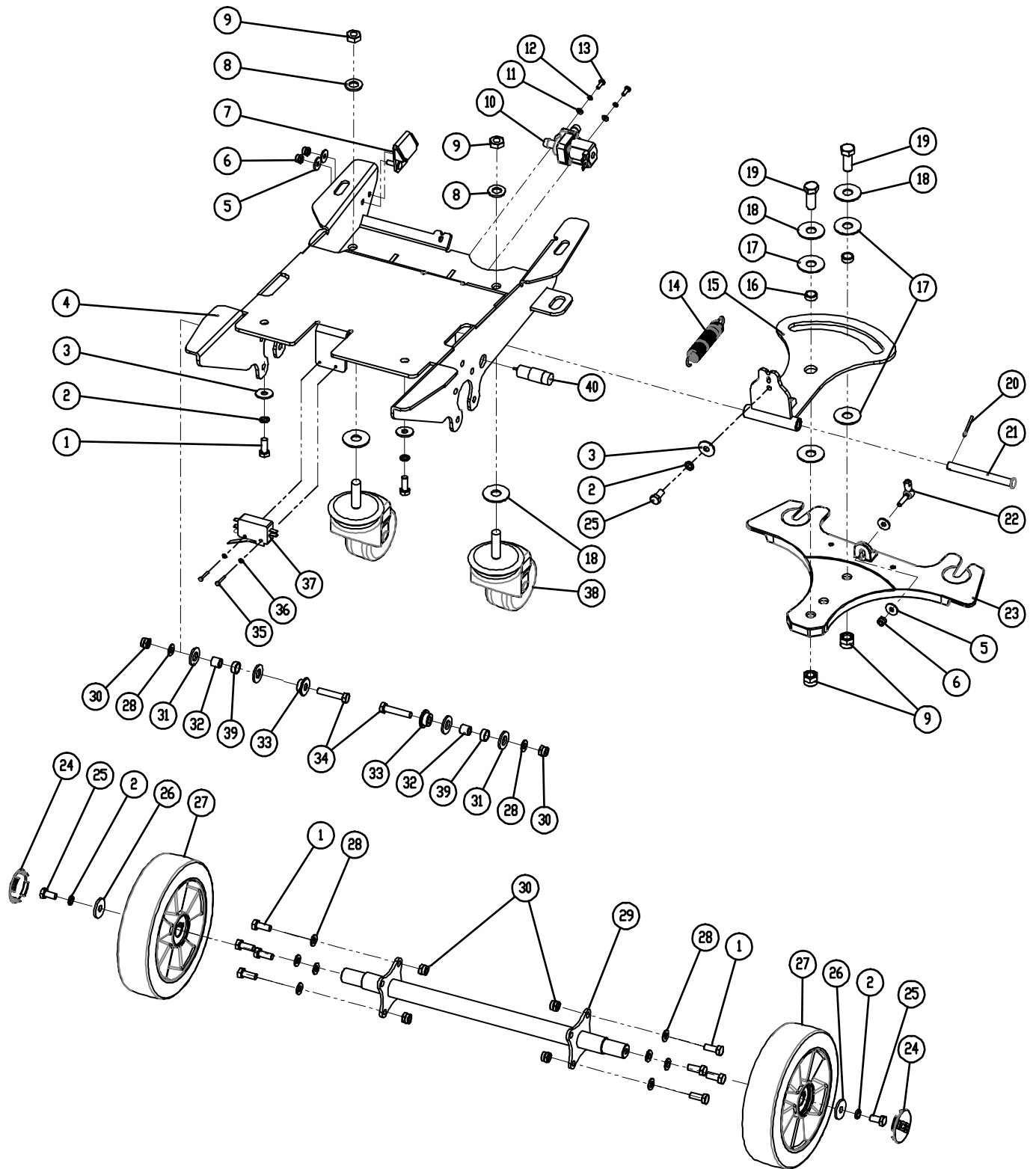
| DIA NO. | PART NUMBER | DESCRIPTION | NO REQ'D |
|---------|-------------|--------------------------------------|----------|
| 1 | 1221512 | SCREW M5×12 | 19 |
| 2 | 1422513 | LOCK WASHER M5 | 6 |
| 3 | 1421510 | FLAT WASHER M5× ϕ 10×1.0 | 13 |
| 4 | 8144726 | CONTROL PANEL DECAL, i20NBTL | 1 |
| | 8144727 | CONTROL PANEL DECAL, i24BTL | 1 |
| 5 | 8144721 | CONTROL PANEL, i20NBTL | 1 |
| 6 | 8134015 | GASKET | 1 |
| 7 | 8144793 | CONTROL PANEL PCB, i20NBTL (LI / EN) | 1 |
| 8 | 1221306 | SCREW M3×6 | 7 |
| 9 | 8134005 | CONTROL HOUSING | 1 |
| 10 | 1021616 | HEX BOLT M6 X 16 | 5 |
| 11 | 1421618 | PLAIN WASHER M6× ϕ 18×1.6,SS | 10 |
| 12 | 8114008 | BRACKET, SQGE STORAGE | 1 |
| 13 | 8310740 | CIRCUIT BREAKER, 5A | 1 |
| 14 | 8134007 | BASE, EMERGENCY STOP SWITCH | 1 |
| 15 | 8144027 | LABEL, EMERGENCY STOP SWITCH | 1 |
| 16 | 8310707 | BUTTON,EMERGENCY STOP | 1 |
| 17 | 8124730 | EMERGENCY STOP SWITCH KIT | 1 |
| 18 | 1221515 | PH SCREW M5×15 | 4 |
| 19 | 1123507 | LOCK NUT M5 | 6 |
| 20 | 1123305 | LOCK NUT M3 | 6 |
| 21 | 8113010 | BRACKET, CONNECTOR MTG | 1 |
| 22 | 8134750 | CONNECTOR, GRID, BLUE | 1 |
| 23 | 1434300 | LOCK WASHER, TOOTH, M3 | 6 |
| 24 | 1211325 | SCREW M3×25 | 2 |
| 25 | 8134060 | PLATE, ON BOARD BATTERY CHARGER | 1 |
| 26 | 8134061 | CLEAR COVER | 1 |
| 27 | 8134600-US | ON BOARD BATTERY CHARGER,KIT | 1 |
| 28 | 8112030A | BATTERY CHARGER POWER CORD, KIT | 1 |
| 29 | 8134610A | ON BOARD BATTERY CHARGER, 110VAC | 1 |
| 30 | 8134062 | CLAMP, BATTERY CHARGER | 2 |
| 31 | 8114005 | CONNECTOR | 1 |
| 32 | 1021840 | HEX BOLT M8×40 | 2 |
| 33 | 1422821 | LOCK WASHER M8 | 12 |
| 34 | 1421828 | FLAT WASHER M8× ϕ 28×3 | 2 |
| 35 | 1021630 | HEX HEAD BOLT M6×30,SS | 1 |
| 36 | 8134082 | CABLE, SQGE LIFT | 1 |
| 37 | 8014101 | LIFTING ROPE SPACER | 1 |
| 38 | 1021610 | HEX HEAD BOLT M6×10,SS | 1 |
| 39 | 1421616 | FLAT WASHER M6× ϕ 16×1.0 | 1 |
| 40 | 1123608 | LOCK NUT M6 | 3 |

PARTS LIST

CONTROL CONSOLE GROUP (i20NBTL/i24BTL)

| DIA NO. | PART NUMBER | DESCRIPTION | NO REQ'D |
|---------|-------------|---|----------|
| 41 | 8014012 | BAFFLE | 1 |
| 42 | 8113111 | NYLON FLAT WASHER $\phi 12.9 \times \phi 25.4 \times 0.8$ | 1 |
| 43 | 1121605 | HEX NUT M6 | 2 |
| 44 | 8134501 | BRACKET | 1 |
| 45 | 8134081 | SLEEVEE | 1 |
| 46 | 1421132 | FLAT WASHER M12 $\times \phi 32 \times 1.5$ | 1 |
| 47 | 8134080 | SQUEEGEE LIFTING HANDLE | 1 |
| 48 | 8113104 | BALL KNOB M8 | 1 |
| 49 | 1222641 | SUNK HEAD SCREW M6 X 40 | 2 |
| 50 | 8210112 | HOOK, POWER CORD | 2 |
| 51 | 8014054 | STRAIN RELIEF | 1 |
| 52 | 6210111 | CLAMP, DRAIN HOSE | 1 |
| 53 | 1023612 | HEX BOLT M6 X 12, COPPER | 8 |
| 54 | 1422616 | LOCK WASHER, M6 | 13 |
| 55 | 1423612 | FLAT WASHER M6 $\times \phi 12 \times 1$, COPPER | 8 |
| 56 | 8144790 | MAIN CONTROLLER, i20NBT | 1 |
| 57 | 8134070 | REAR PLATE, CONTROL CONSOLE | 1 |
| 58 | 1421824 | FLAT WASHER M8 $\times \phi 24 \times 2$ | 10 |
| 59 | 1021820 | HEX BOLT M8 $\times 20$ | 10 |
| 60 | 1221620 | PH SCREW M6 $\times 20$ | 2 |
| 61 | 8134768 | RFID BOARD | 1 |
| 62 | 8134035 | LABEL, i-SYNERGY™ CARD SCANNING | 1 |
| 63 | 8114712 | MICRO SWITCH | 1 |
| 64 | 8124743 | MICRO SWITCH | 1 |
| 65 | 1021320 | SCREW M3 X 20 | 4 |
| 66 | 8134022 | BRACKET, SWITCH | 1 |
| 67 | 8114402 | BRACKET, SPRING | 1 |
| 68 | 1521616 | SCREW M6X16, HEX SCOKET | 2 |
| 69 | 1534608 | SET SCREW M6 $\times 8$ | 4 |
| 70 | 8134300 | LEVER, BAIL | 1 |
| 71 | 8114300 | ACTUATOR | 1 |
| 72 | 8114306 | SPRING | 1 |
| 73 | 1535630 | SET SCREW M6 $\times 30$ | 1 |
| 74 | 8114101 | SHAFT | 1 |
| 75 | 1021512 | HEX HEAD BOLT M5 $\times 12$, SS | 2 |

FRAME & WHEEL GROUP (i20NBL)

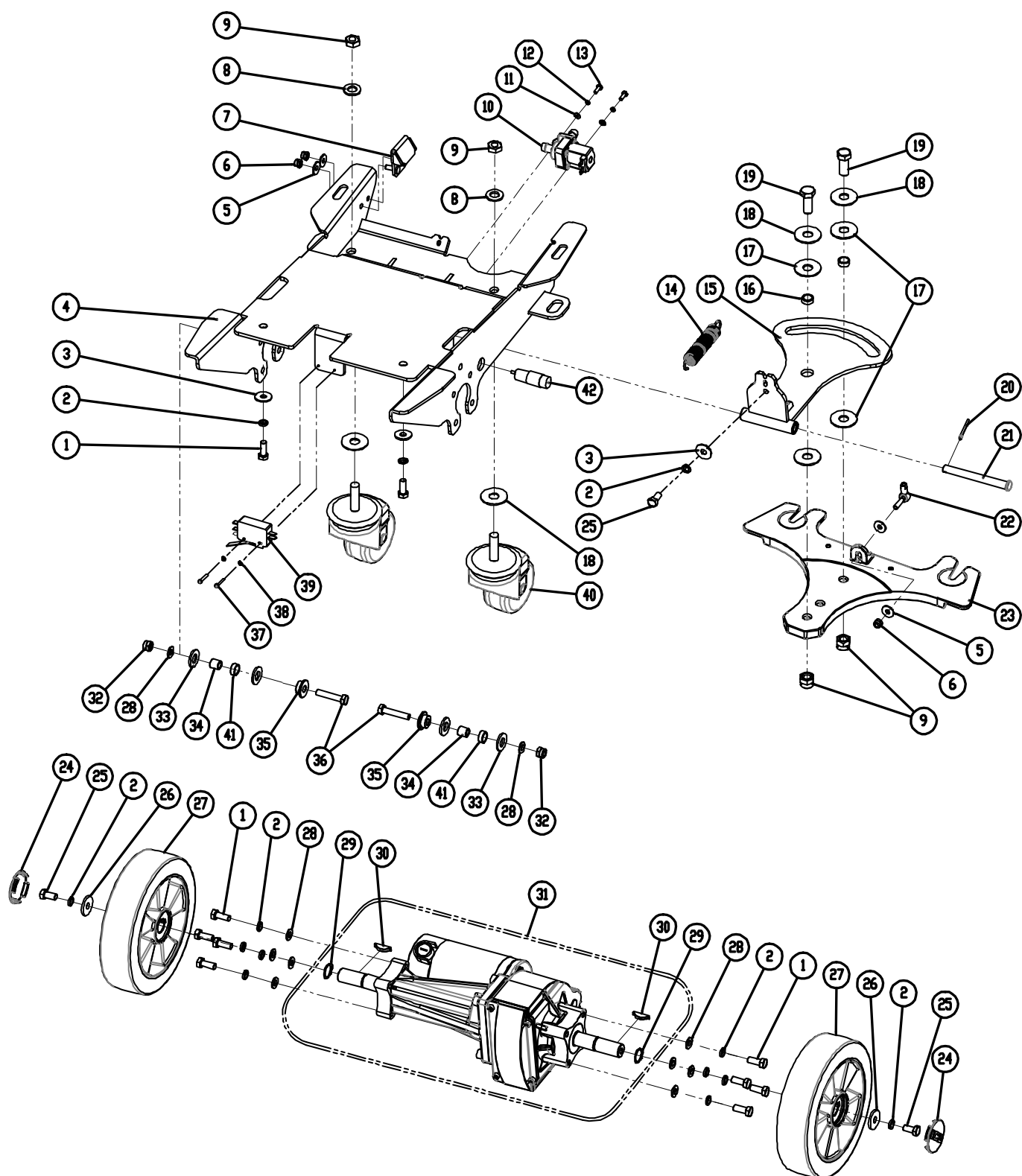


PARTS LIST

FRAME & WHEEL GROUP (i20NBL)

| DIA NO. | PART NUMBER | DESCRIPTION | NO REQ'D |
|---------|-------------|--|----------|
| 1 | 1021820 | HEX BOLT M8×20 | 12 |
| 2 | 1422821 | LOCK WASHER M8 | 7 |
| 3 | 1421824 | FLAT WASHER M8× ϕ 24×2 | 5 |
| 4 | 8145100 | MAIN FRAME | 1 |
| 5 | 1421618 | FLAT WASHER M6× ϕ 18×1.6 | 4 |
| 6 | 1123608 | LOCK NUT M6 | 3 |
| 7 | 8115300 | BRACKET, PEDAL LOCKING | 1 |
| 8 | 1421124 | FLAT WASHER M12× ϕ 24×2.5 | 4 |
| 9 | 1123115 | LOCK NUT M12 | 4 |
| 10 | 8119003 | SOLENOID VALVE, 24VDC | 1 |
| 11 | 1421409 | FLAT WASHER M4× ϕ 9×0.8 | 2 |
| 12 | 1422411 | LOCK WASHER M4 | 2 |
| 13 | 1221412 | SCREW M4×12 | 4 |
| 14 | 8115004 | SPIRNG | 1 |
| 15 | 8135010 | BRACKET, SQGE LIFT | 1 |
| 16 | 8115005 | AXLE SLEEVE | 2 |
| 17 | 8135001 | PLASTIC THRUST WASHER M12× ϕ 30×1.5 | 4 |
| 18 | 1421132 | FLAT WASHER M12× ϕ 32×1.5 | 4 |
| 19 | 1021230 | HEX BOLT M12 × 30 | 2 |
| 20 | 1645324 | COTTER 3.2 × 24 | 1 |
| 21 | 8115003 | PIN | 1 |
| 22 | 8114511 | BALL JOINT M6 | 1 |
| 23 | 8115001 | BRACKET, SQGE MNTG | 1 |
| 24 | 8115203 | COVER, WHEEL | 2 |
| 25 | 1021816 | HEX BOLT M8 ×16 | 3 |
| 26 | 1421828 | FLAT WASHER M8× ϕ 28×3 | 2 |
| 27 | 8115200 | WHEEL, 8 INCH | 2 |
| | 1612607 | BALL BEARING, 6004LU | 4 |
| 28 | 1421816 | FLAT WASHER M8× ϕ 16×1.6 | 10 |
| 29 | 8135405 | SHAFT | 1 |
| 30 | 1123810 | LOCK NUT M8 | 10 |
| 31 | 8117007 | NYLON WASHER ϕ 12.9× ϕ 24×2.5 | 4 |
| 32 | 8115404 | BEARING, JOURNAL | 2 |
| 33 | 8145001 | BUSHING | 2 |
| 34 | 1021840 | HEX BOLT M8 ×40 | 2 |
| 35 | 1211325 | SCREW M3×25 | 2 |
| 36 | 1434300 | LOCK WASHER, TOOTH, M3 | 2 |
| 37 | 8014071 | MICRO SWITCH 20A | 1 |
| 38 | 8115500 | CASTER, SWIVEL, 80MM | 2 |
| 39 | 8115405 | SLEEVE, P/M | 2 |
| 40 | 8134709A | PROXIMITY SENSOR, KIT | 1 |

FRAME & TRANSAXLE GROUP (i20NBTL/i24BTL)

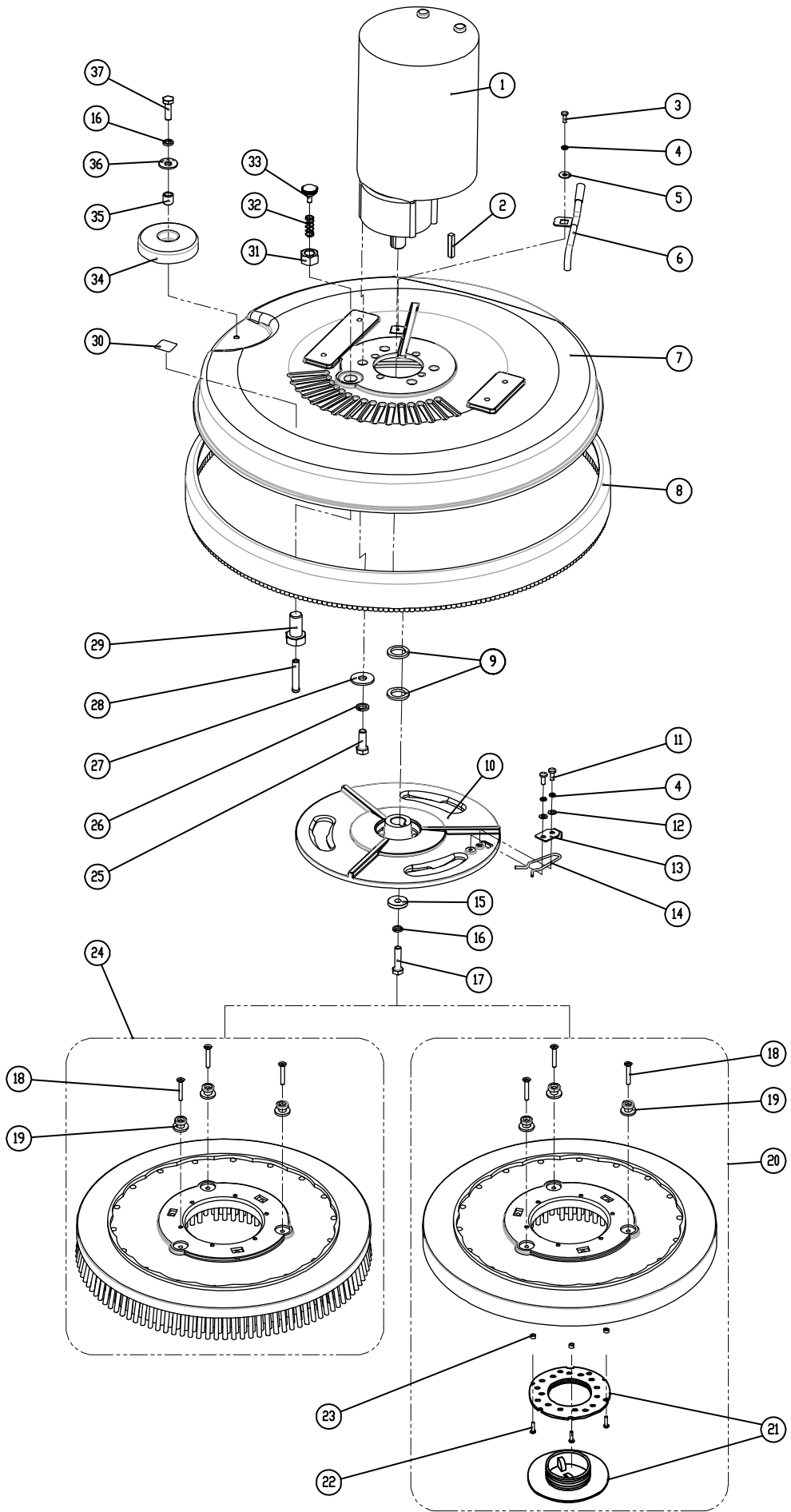


PARTS LIST

FRAME & TRANSAXLE GROUP (i20NBTL/i24BTL)

| DIA NO. | PART NUMBER | DESCRIPTION | NO REQ'D |
|---------|-------------|--|----------|
| 1 | 1021820 | HEX BOLT M8×20 | 12 |
| 2 | 1422821 | LOCK WASHER M8 | 15 |
| 3 | 1421824 | FLAT WASHER M8× ϕ 24×2 | 5 |
| 4 | 8145100 | MAIN FRAME | 1 |
| 5 | 1421618 | FLAT WASHER M6× ϕ 18×1.6 | 4 |
| 6 | 1123608 | LOCK NUT M6 | 3 |
| 7 | 8115300 | BRACKET, PEDAL LOCKING | 1 |
| 8 | 1421124 | FLAT WASHER M12× ϕ 24×2.5 | 4 |
| 9 | 1123115 | LOCK NUT M12 | 4 |
| 10 | 8119003 | SOLENOID VALVE, 24VDC | 1 |
| 11 | 1421409 | FLAT WASHER M4× ϕ 9×0.8 | 2 |
| 12 | 1422411 | LOCK WASHER M4 | 2 |
| 13 | 1221412 | SCREW M4×12 | 4 |
| 14 | 8115004 | SPIRNG | 1 |
| 15 | 8135010 | BRACKET, SQGE LIFT | 1 |
| 16 | 8115005 | AXLE SLEEVE | 2 |
| 17 | 8135001 | PLASTIC THRUST WASHER M12× ϕ 30×1.5 | 4 |
| 18 | 1421132 | FLAT WASHER M12× ϕ 32×1.5 | 4 |
| 19 | 1021230 | HEX BOLT M12 × 30 | 2 |
| 20 | 1645324 | COTTER 3.2 × 24 | 1 |
| 21 | 8115003 | PIN | 1 |
| 22 | 8114511 | BALL JOINT M6 | 1 |
| 23 | 8115001 | BRACKET, SQGE MNTG | 1 |
| 24 | 8115203 | COVER, WHEEL | 2 |
| 25 | 1021816 | HEX BOLT M8×16 | 3 |
| 26 | 1421828 | FLAT WASHER M8× ϕ 28×3 | 2 |
| 27 | 8125200 | WHEEL, 8 INCH | 2 |
| | | | |
| | | | |
| 28 | 1421816 | FLAT WASHER M8× ϕ 16×1.6 | 10 |
| 29 | 1436019 | RETAINING RING 19 | 2 |
| 30 | 8125403 | WOODRUFF KEY | 2 |
| 31 | 8125410 | TRANSAXLE, KIT | 1 |
| | 8116011 | CARBON BRUSH, DRIVE MOTOR | 2 |
| 32 | 1123810 | LOCK NUT M8 | 10 |
| 33 | 8117007 | NYLON WASHER ϕ 12.9× ϕ 24×2.5 | 4 |
| 34 | 8115404 | BEARING, JOURNAL | 2 |
| 35 | 8145001 | BUSHING | 2 |
| 36 | 1021840 | HEX BOLT M8 ×40 | 2 |
| 37 | 1211325 | SCREW M3×25 | 2 |
| 38 | 1434300 | LOCK WASHER, TOOTH, M3 | 2 |
| 39 | 8014071 | MICRO SWITCH 20A | 1 |
| 40 | 8115500 | CASTER, SWIVEL, 80MM | 2 |
| 41 | 8115405 | SLEEVE, P/M | 2 |
| 42 | 8134709A | PROXIMITY SENSOR, KIT | 1 |

SCRUB HEAD GROUP (i20NBL / i20NBTL)

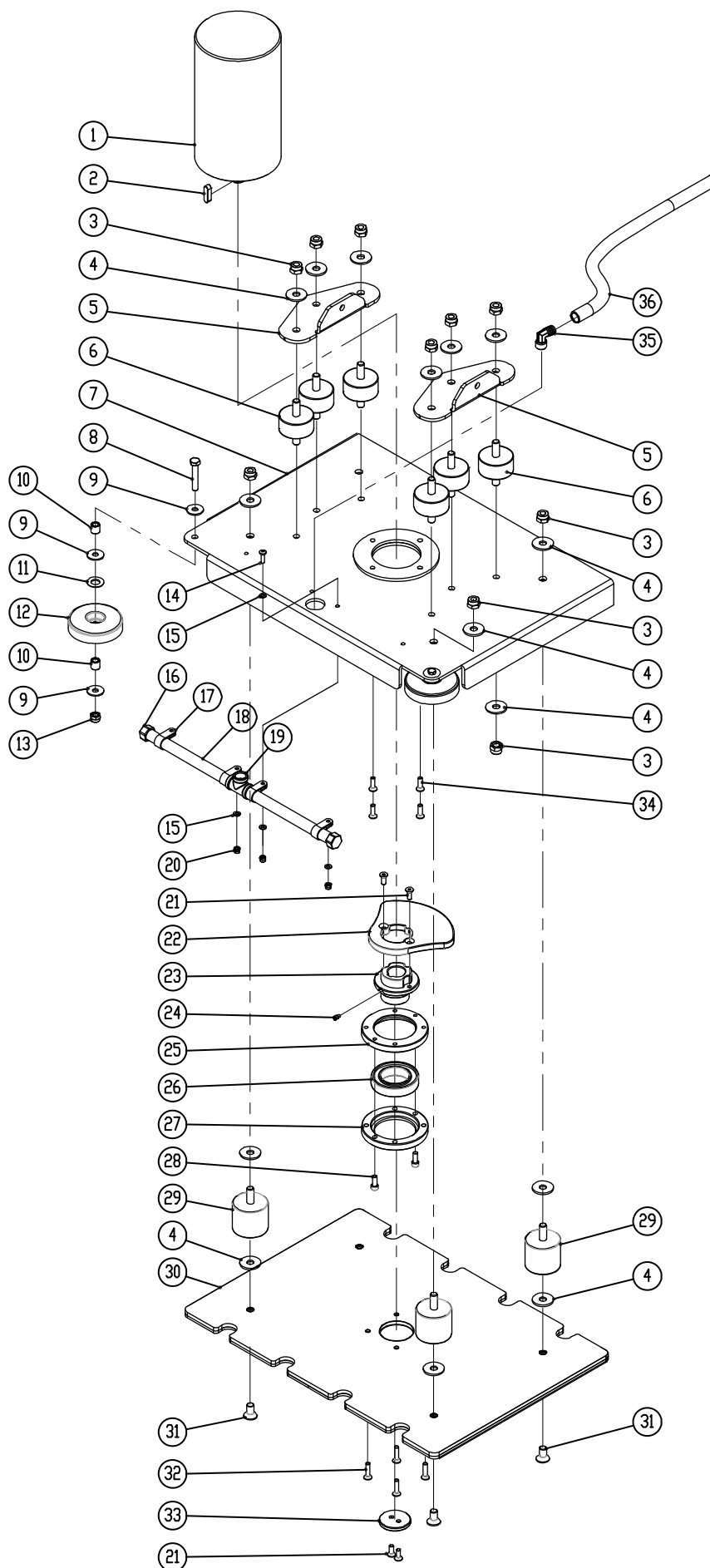


PARTS LIST

SCRUB HEAD GROUP (i20NBL / i20NBTL)

| DIA NO. | PART NUMBER | DESCRIPTION | NO REQ'D |
|---------|-------------|---|----------|
| 1 | 8116200 | BRUSH MOTOR, 24VDC 1.0HP, KIT | 1 |
| | 8116007 | BRUSH MOTOR CARBON BRUSH | 2 |
| 2 | 1656433 | KEY | 1 |
| 3 | 1221412 | SCREW M4×12 | 1 |
| 4 | 1422513 | LOCK WASHER M5 | 3 |
| 5 | 1421518 | FLAT WASHER M5× ϕ 18×2 | 1 |
| 6 | 8116100 | WATER SUPPLY TUBE | 1 |
| 7 | 8116006 | SCRUB HEAD HOUSING | 1 |
| 8 | 8116020 | BUMPER, SCRUB HEAD | 1 |
| 9 | 8116001 | SPACER | 2 |
| 10 | 8116008 | HUB, DRIVE, 3 LUG | 1 |
| 11 | 1221512 | SCREW M5×12 | 2 |
| 12 | 1421510 | FLAT WASHER M5× ϕ 10×1 | 2 |
| 13 | 8116002 | BRUSH CLAMP PLATE | 1 |
| 14 | 8116003 | SPRING CLIP | 1 |
| 15 | 8116010 | FLAT WASHER ϕ 8.5× ϕ 25.4×4.5 | 1 |
| 16 | 1422821 | LOCK WASHER M8 | 2 |
| 17 | 1023815 | HEX BOLT 5/16-18 ×1.5" UNC | 1 |
| 18 | 1222635 | SCREW, M6X35 | 6 |
| 19 | 8116030 | STUD | 6 |
| 20 | 9040019 | 19" PAD DRIVER | 1 |
| | 9040019K | 19" PAD DRIVER (OPTION) | 1 |
| 21 | 9000001 | BIG MOUTH | 1 |
| | 9000003 | CENTER-LOK 3 (OPTION) | 1 |
| 22 | 1321325 | SELF-TAPPING SCREW, ST4.8X25 | 3 |
| 23 | 8116040 | SPACER | 3 |
| 24 | 9050020 | 20" BRUSH, 0.7mm PP BRISTLE (OPTION) | 1 |
| | 9050020E | 20" BRUSH, 0.5mm PP BRISTLE (OPTION) | 1 |
| 25 | 1023010 | HEX BOLT 3/8-16 ×1" UNC | 4 |
| 26 | 1422026 | LOCK WASHER M10 | 4 |
| 27 | 1421030 | FLAT WASHER M10× ϕ 30×2.5 | 4 |
| 28 | 8116202 | PIN | 1 |
| 29 | 8116205 | SCREW M14 × 20 | 1 |
| 30 | 8111023 | WARNING LABEL | 1 |
| 31 | 1121913 | HEX NUT M14 | 1 |
| 32 | 8116204 | SRPING | 1 |
| 33 | 8116210 | KNOB M6 | 1 |
| 34 | 8116009 | PROTECTIVE WHEEL | 1 |
| 35 | 8115404 | SLEEVE, P/M | 1 |
| 36 | 1421824 | FLAT WASHER M8× ϕ 24×2.0 | 1 |
| 37 | 1021825 | HEX BOLT M8×25 | 1 |

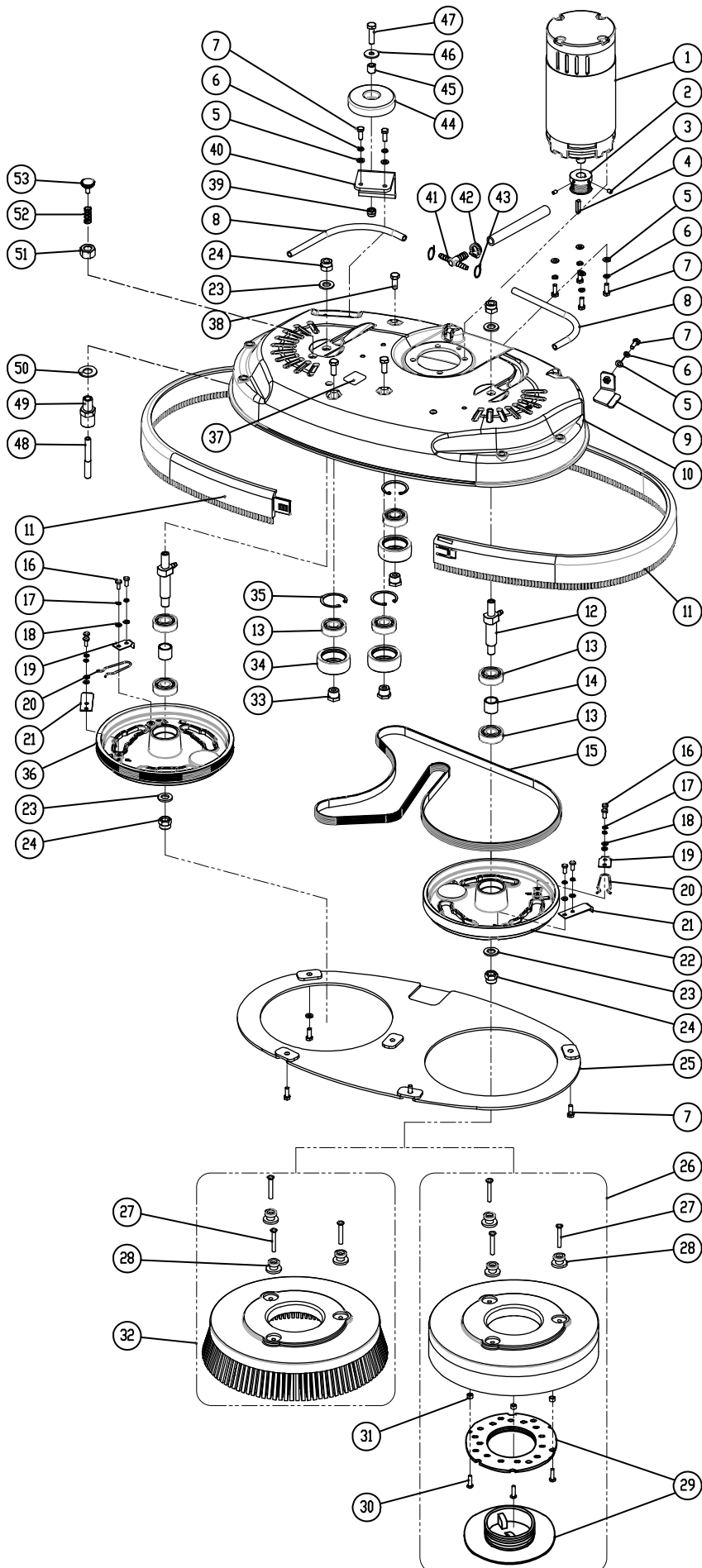
ORBITAL HEAD GROUP (i20NBTL-OB)



PARTS LIST

ORBITAL HEAD GROUP (i20NBTL-OB)

| DIA NO. | PART NUMBER | DESCRIPTION | NO REQ'D |
|---------|-------------|--------------------------------|----------|
| 1 | 8146199 | MOTOR, 24VDC 550W 2200RPM, KIT | 1 |
| | 8146198 | CARBON BRUSH, MOTOR | 2 |
| 2 | 8146110 | KEY, 8×7×28 | 1 |
| 3 | 1123012 | LOCK NUT, M10 | 16 |
| 4 | 1421030 | FLAT WASHER M10× ϕ 30×2.5 | 24 |
| 5 | 8146520 | MOUNTING BRACKET, ORBITAL HEAD | 2 |
| 6 | 8146116 | ISOLATORS, M10×25 | 6 |
| 7 | 8146501 | BRACKET, MOTOR MOUNTING | 1 |
| 8 | 1022845 | HEX BOLT M8×45 | 2 |
| 9 | 1421824 | FLAT WASHER M8× ϕ 24×2.0 | 6 |
| 10 | 8115404 | BEARING, JOURNAL | 4 |
| 11 | 1435013 | WAVE WASHER | 2 |
| 12 | 8116009 | PROTECTIVE WHEEL | 2 |
| 13 | 1123808 | LOCK NUT, M8 | 2 |
| 14 | 1221515 | SCREW M5×15 | 4 |
| 15 | 1421510 | FLAT WASHER M5× ϕ 10×1.0 | 8 |
| 16 | 8146303 | END CAP 3/8 | 2 |
| 17 | 8146305 | PLASTIC CLAMP | 4 |
| 18 | 8146508 | PVC TUBING | 2 |
| 19 | 8146301 | TEE FITTING 3/8 | 1 |
| 20 | 1123507 | LOCK NUT M5 | 4 |
| 21 | 1513616 | HEX SOCKET SCREW, M6×16 | 4 |
| 22 | 8146202 | ECCENTRIC | 1 |
| 23 | 8146201 | ECCENTRIC SHAFT | 1 |
| 24 | 1535610 | SET SCREW, M6×10 | 1 |
| 25 | 8146204 | BEARING HOUSING | 1 |
| 26 | 1612608 | BALL BEAING 6008 | 1 |
| 27 | 8146203 | BEARING HOUSING | 1 |
| 28 | 1521616 | HEX SOCKET BOLT M6×16 | 2 |
| 29 | 8146107 | ISOLATORS, M10×25 | 4 |
| 30 | 8146502 | PAD DRIVER | 1 |
| 31 | 1513020 | HEX SOCKET SCREW, M10×20 | 4 |
| 32 | 1513625 | HEX SOCKET SCREW, M6×25 | 4 |
| 33 | 8146205 | PLATE | 1 |
| 34 | 1513620 | HEX SOCKET SCREW, M6×20 | 4 |
| 35 | 8146511 | ELBOW, 3/8 | 1 |
| 36 | 8146512 | TUBING, WIRE REINFORCED | 1 |

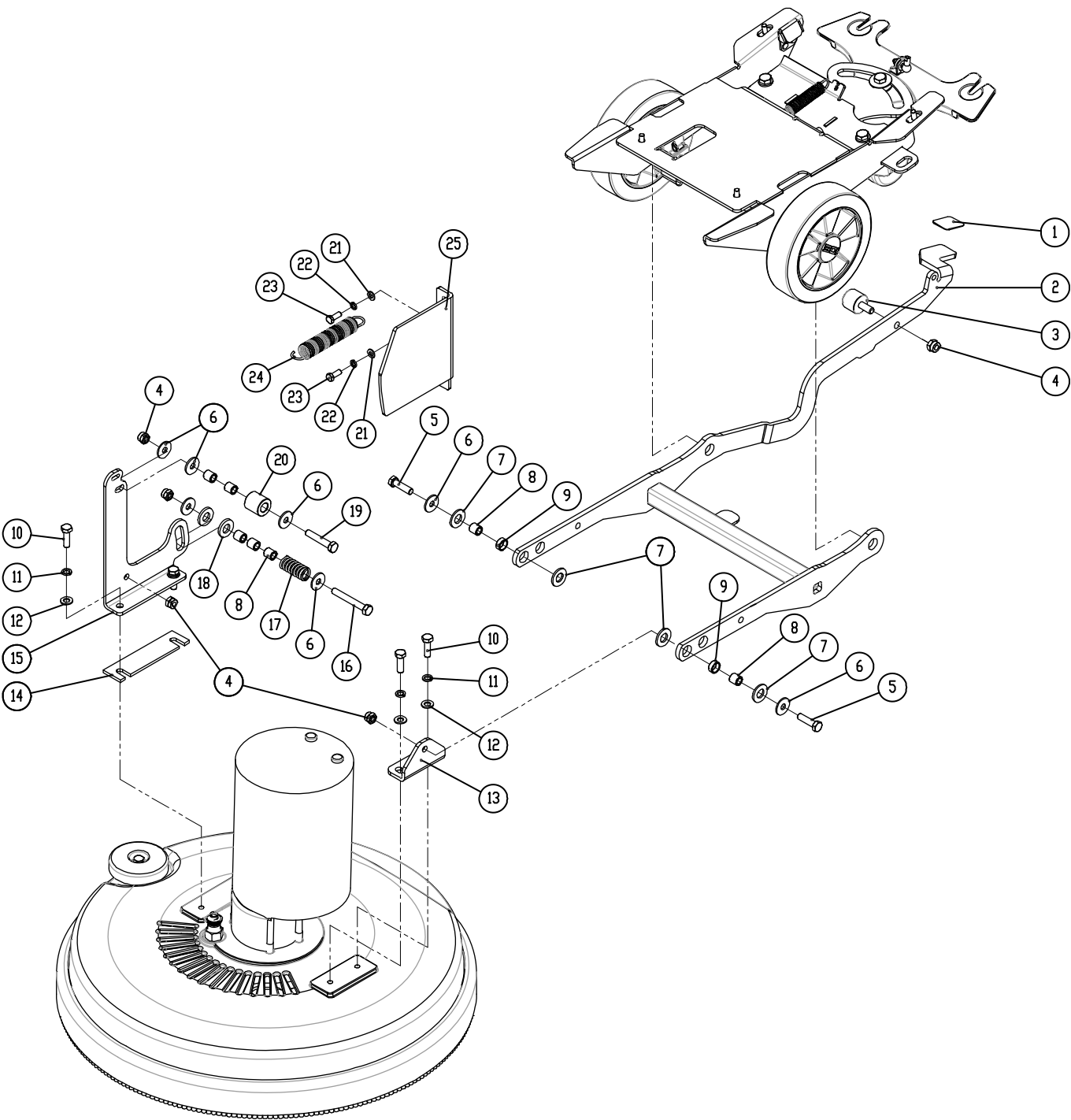


PARTS LIST

SCRUB HEAD GROUP (i24BTL)

| DIA NO. | PART NUMBER | DESCRIPTION | NO REQ'D |
|---------|-------------|--------------------------------------|----------|
| 1 | 8126200 | BRUSH MOTOR, 24VDC 680W 2000RPM, KIT | 1 |
| | 8126070 | CARBON BRUSH, BRUSH MOTOR | 2 |
| 2 | 8126006 | SHEAVE, SS | 1 |
| 3 | 1534508 | SCREW, SET, M5X8 | 2 |
| 4 | 1655025 | KEY, 5X5X25 | 1 |
| 5 | 1421612 | FLAT WASHER M6× ϕ 12×1.6 | 7 |
| 6 | 1422616 | LOCK WASHER, M6 | 7 |
| 7 | 1021616 | HEX BOLT M6×16 | 12 |
| 8 | 8119301 | TUBING, ID=6mm, L=250mm | 2 |
| 9 | 8126007 | BRACKET, GUIDE, BELT | 1 |
| 10 | 8126002 | SCRUB HEAD HOUSING | 1 |
| 11 | 8126050 | BUMPER, SCRUB HEAD | 2 |
| 12 | 8126040 | SHAFT, PULLY | 2 |
| 13 | 1612203 | BEARING, 6203RS | 7 |
| 14 | 8126008 | BUSHING | 2 |
| 15 | 8126005 | BELT, 6PJ1598 | 1 |
| 16 | 1221512 | SCREW M5×12 | 8 |
| 17 | 1422513 | LOCK WASHER M5 | 8 |
| 18 | 1421510 | FLAT WASHER M5× ϕ 10×1 | 8 |
| 19 | 8116002 | BRUSH CLAMP PLATE | 2 |
| 20 | 8116003 | SPRING CLIP | 2 |
| 21 | 8126009 | PLATE, CLAMP, BRUSH | 2 |
| 22 | 8126004 | HUB, DRIVER, 3LUG, PULLY | 1 |
| 23 | 1421124 | FLAT WASHER M12× ϕ 24×2.5 | 4 |
| 24 | 1123115 | LOCK NUT M12 | 4 |
| 25 | 8126020 | BRACKET, GUARD, SPLASH | 1 |
| 26 | 9040011U | 11" PAD DRIVER | 2 |
| | 9050012U | 11" PAD DRIVER (OPTION) | 2 |
| 27 | 1222635 | SCREW, M6X35 | 12 |
| 28 | 8116030 | STUD | 12 |
| 29 | 9000001 | BIG MOUTH | 2 |
| | 9000003 | CENTER-LOK 3 (OPTION) | 2 |
| 30 | 1321325 | SELF-TAPPING SCREW, ST4.8X25 | 6 |
| 31 | 8116040 | SPACER | 6 |
| 32 | 9050012 | 12" BRUSH (OPTION) | 2 |
| 33 | 8126032 | SPACER, IDLER | 3 |
| 34 | 8126031 | PULLEY, IDLER | 3 |
| 35 | 1437040 | RING, RETAINING, 40 | 3 |
| 36 | 8126003 | HUB, DRIVE, 3LUG, 6GRV | 1 |
| 37 | 8111023 | WARNING LABEL | 1 |
| 38 | 1021820 | HEX BOLT M8×20 | 3 |
| 39 | 1123810 | LOCK NUT M8 | 1 |
| 40 | 8126012 | BRACKET, WALL-ROLLER | 1 |
| 41 | 8119004 | FITTING, PLASTIC, TEE | 1 |
| 42 | 1962016 | CLAMP, 10-16mm | 1 |
| 43 | 1914300 | TIE, NYLON, 5X300 | 2 |
| 44 | 8116009 | PROTECTIVE WHEEL | 1 |
| 45 | 8115404 | SLEEVE, P/M | 1 |
| 46 | 1421824 | FLAT WASHER M8× ϕ 24×2.0 | 1 |
| 47 | 1021825 | HEX BOLT M8×25 | 1 |
| 48 | 8126202 | PIN | 1 |
| 49 | 8126205 | GUIDE, M14X20 | 1 |
| 50 | 1421428 | FLAT WASHER M14× ϕ 28×2.0 | 1 |
| 51 | 1121913 | NUT M14 | 1 |
| 52 | 8116204 | SPRING | 1 |
| 53 | 8116210 | KNOB M6 | 1 |

SCRUB HEAD LIFT GROUP (i20NBL / i20NBTL)

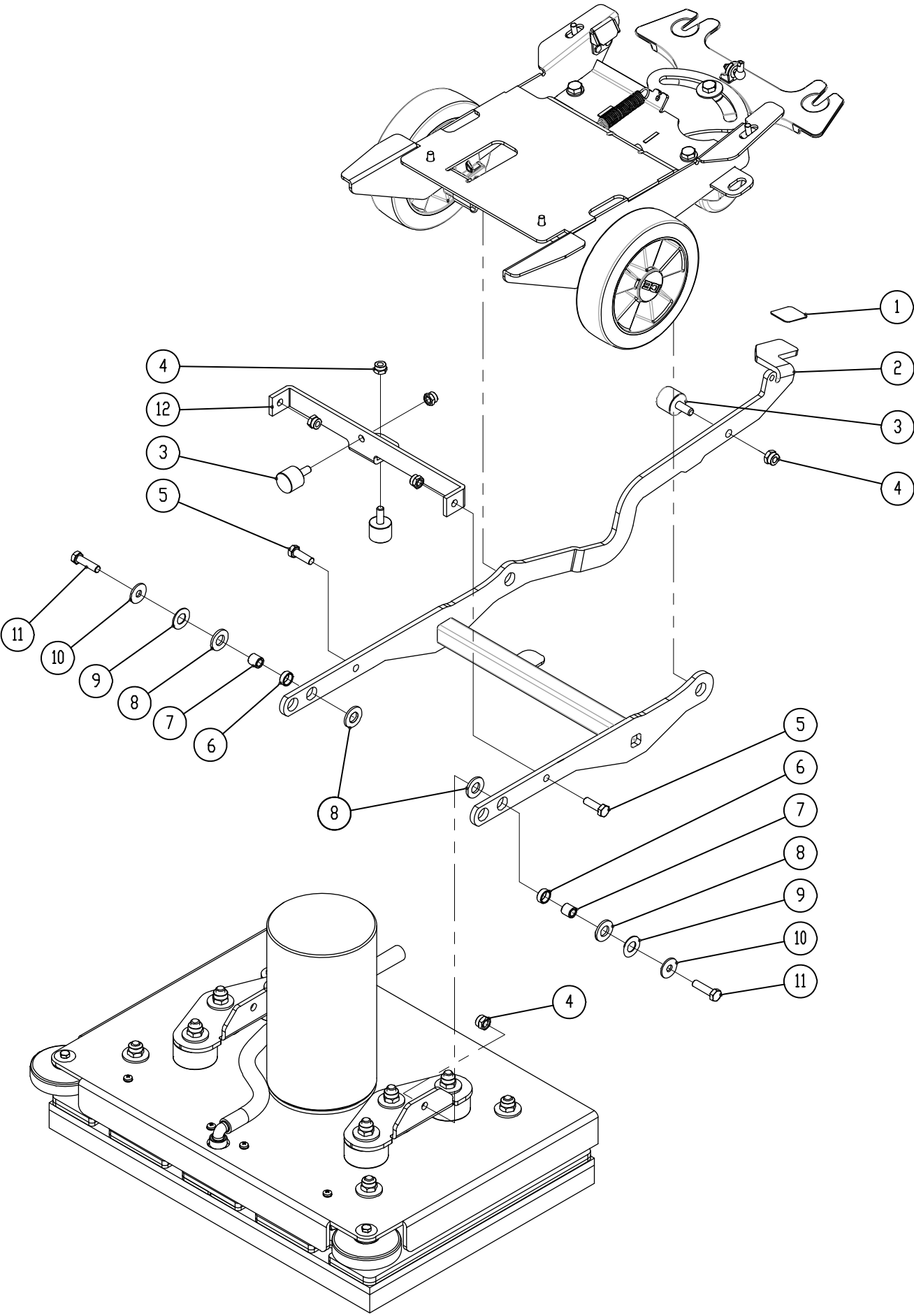


PARTS LIST

SCRUB HEAD LIFT GROUP (i20NBL / i20NBTL)

| DIA NO. | PART NUMBER | DESCRIPTION | NO REQ'D |
|---------|-------------|---|----------|
| 1 | 8137006 | NON-SLIP MAT | 1 |
| 2 | 8137100 | BRACKET, SCRUB HEAD LIFT | 1 |
| 3 | 8133151 | BUMPER | 1 |
| 4 | 1123810 | LOCK NUT M8 | 5 |
| 5 | 1021830 | HEX BOLT M8×30 | 2 |
| 6 | 1421824 | FLAT WASHER M8× ϕ 24×2 | 6 |
| 7 | 8117007 | NYLON WASHER ϕ 12.9× ϕ 24×2.5 | 4 |
| 8 | 8115404 | BEARING, JOURNAL | 7 |
| 9 | 8115405 | SLEEVE, P/M | 2 |
| 10 | 1021825 | HEX BOLT M8×25 | 4 |
| 11 | 1422821 | LOCK WASHER M8 | 4 |
| 12 | 1421816 | FLAT WASHER M8× ϕ 16×1.6 | 4 |
| 13 | 8117002 | LEFT BRACKET | 1 |
| 14 | 8117005 | SPACER(I20NB) | 1 |
| 15 | 8117003 | RIGHT BRACKET | 1 |
| 16 | 1022860 | HEX BOLT M8 × 60 | 1 |
| 17 | 8117008 | SPRING | 1 |
| 18 | 8113109 | BEARING, THRUST | 2 |
| 19 | 1022845 | HEX BOLT M8 × 45 | 1 |
| 20 | 8117004 | ROLLER | 1 |
| 21 | 1421612 | FLAT WASHER M6× ϕ 12×1.6 | 2 |
| 22 | 1422616 | LOCK WASHER M6 | 2 |
| 23 | 1021616 | HEX BOLT M6 × 16 | 2 |
| 24 | 8117009 | SPRING | 1 |
| 25 | 8117001 | BRACKET, GUIDE | 1 |

ORBITAL HEAD LIFT GROUP (i20NBTL-OB)

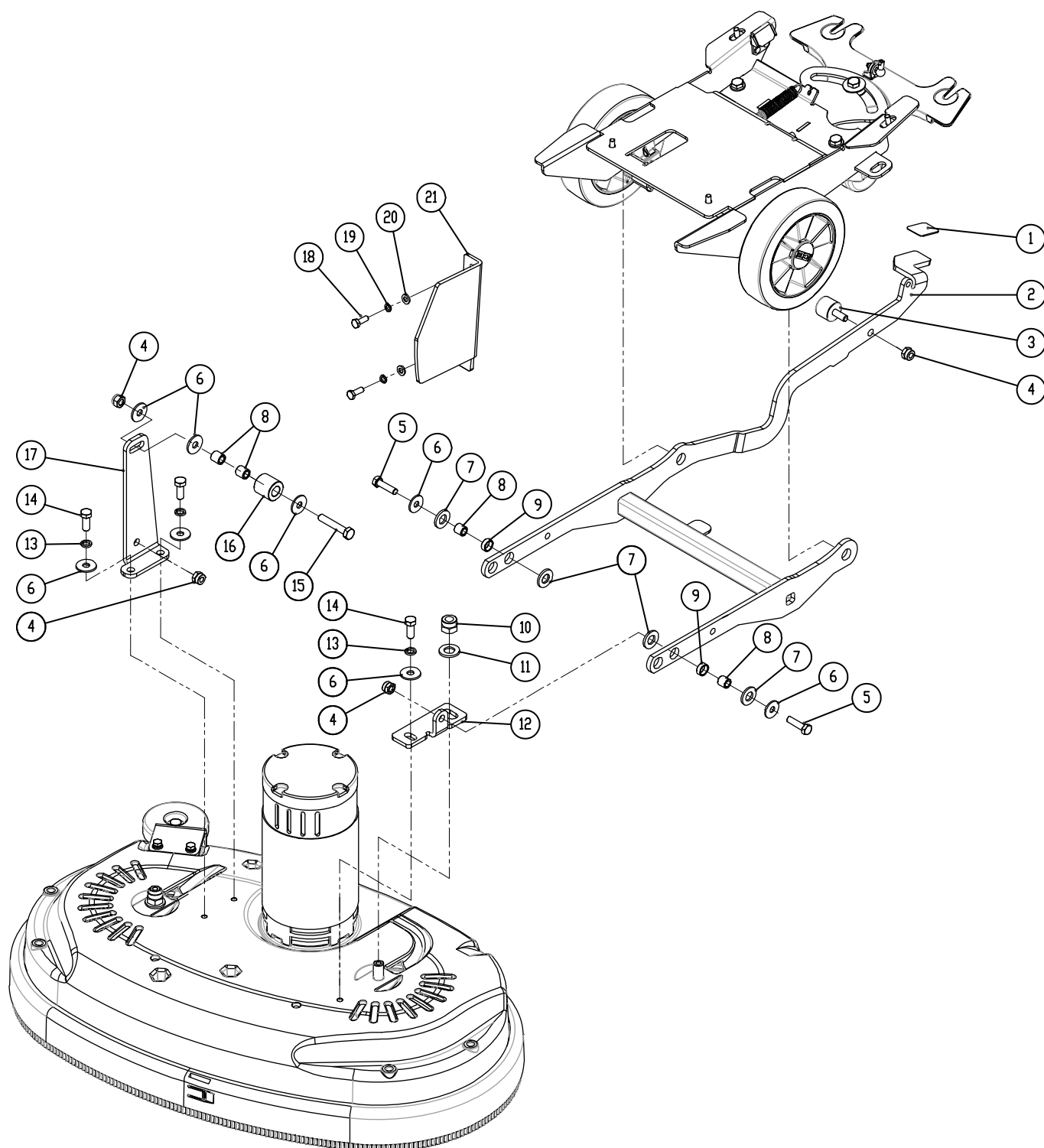


PARTS LIST

ORBITAL HEAD LIFT GROUP (i20NBTL-OB)

| DIA NO. | PART NUMBER | DESCRIPTION | NO REQ'D |
|---------|-------------|--|----------|
| 1 | 8137006 | NON-SLIP MAT | 1 |
| 2 | 8137100 | BRACKET, SCRUB HEAD LIFT | 1 |
| 3 | 8133151 | BUMPER | 3 |
| 4 | 1123810 | LOCK NUT M8 | 7 |
| 5 | 1021820 | HEX HEAD BOLT M8×20 | 2 |
| 6 | 8125415 | JOURNAL BEARING,SS | 2 |
| 7 | 8125414 | SLEEVEE,STAINLESS STEEL | 2 |
| 8 | 8117007 | NYLON WASHER $\phi 12.9 \times \phi 24 \times 2.5$ | 4 |
| 9 | 1435013 | WAVE WASHER | 4 |
| 10 | 1421824 | FLAT WASHER M8× $\phi 24 \times 2$ | 2 |
| 11 | 1021830 | HEX HEAD BOLT M8×30 | 2 |
| 12 | 8146530 | BRACKET, ORBITAL HEAD LIFT | 1 |

SCRUB HEAD LIFT GROUP (i24BTL)

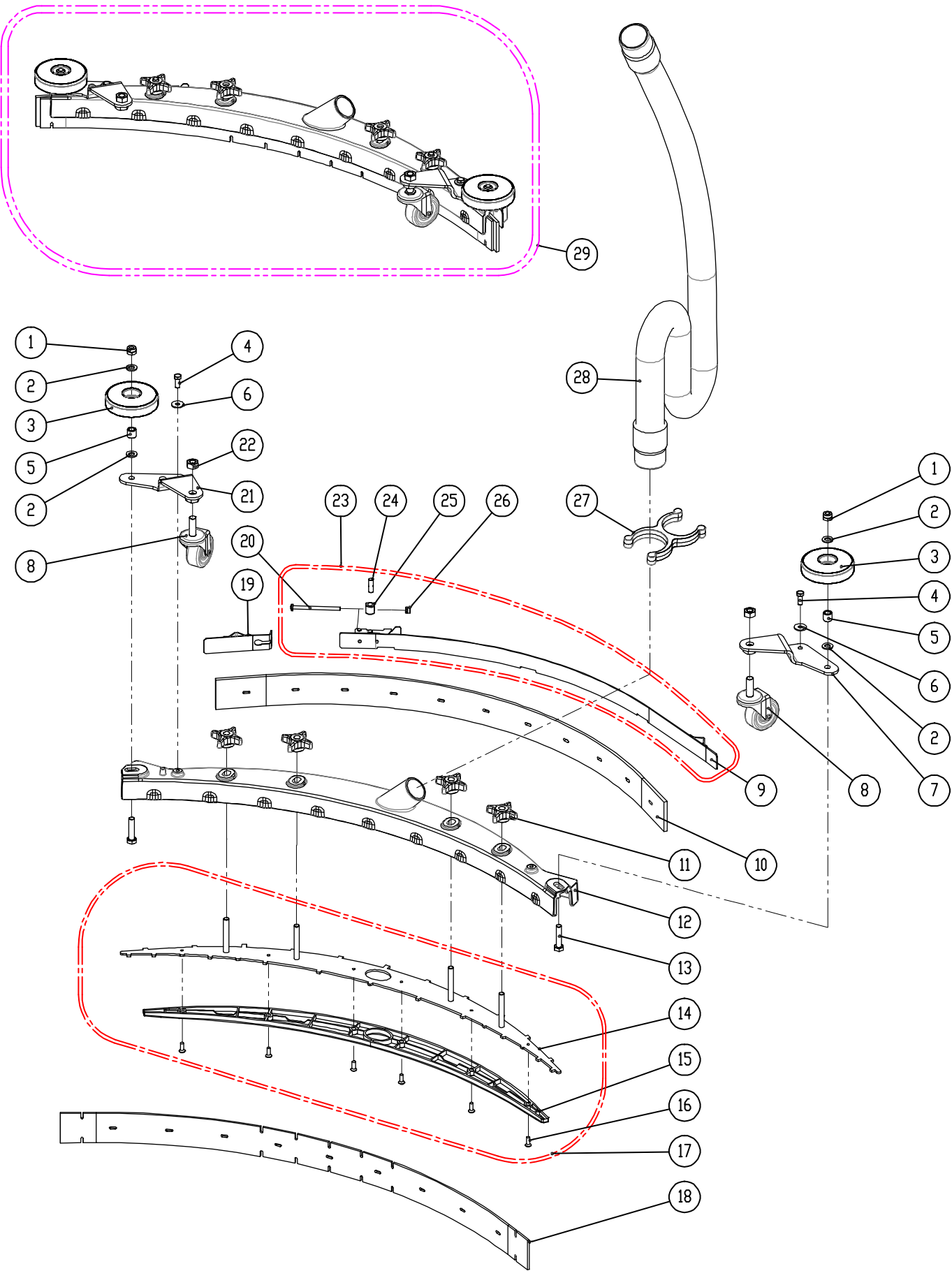


PARTS LIST

SCRUB HEAD LIFT GROUP (i24BTL)

| DIA NO. | PART NUMBER | DESCRIPTION | NO REQ'D |
|---------|-------------|---|----------|
| 1 | 8137006 | NON-SLIP MAT | 1 |
| 2 | 8137100 | BRACKET, SCRUB HEAD LIFT | 1 |
| 3 | 8133151 | BUMPER | 1 |
| 4 | 1123810 | LOCK NUT M8 | 5 |
| 5 | 1021830 | HEX BOLT M8×30 | 2 |
| 6 | 1421824 | FLAT WASHER M8× ϕ 24×2 | 8 |
| 7 | 8117007 | NYLON WASHER ϕ 12.9× ϕ 24×2.5 | 4 |
| 8 | 8115404 | BEARING, JOURNAL | 4 |
| 9 | 8115405 | SLEEVE, P/M | 2 |
| 10 | 1123115 | LOCK NUT M12 | 1 |
| 11 | 1421124 | FLAT WASHER M12× ϕ 24×2.5 | 1 |
| 12 | 8126011 | LEFT BRACKET | 1 |
| 13 | 1422821 | LOCK WASHER M8 | 3 |
| 14 | 1021820 | HEX BOLT M8 × 20 | 3 |
| 15 | 1022845 | HEX BOLT M8 × 45 | 1 |
| 16 | 8117004 | ROLLER | 1 |
| 17 | 8126010 | RIGHT BRACKET | 1 |
| 18 | 1021616 | HEX BOLT M6 × 16 | 2 |
| 19 | 1422616 | LOCK WASHER M6 | 2 |
| 20 | 1421612 | FLAT WASHER M6× ϕ 12×1.6 | 2 |
| 21 | 8137001 | BRACKET, GUIDE | 1 |

SQUEEGEE GROUP

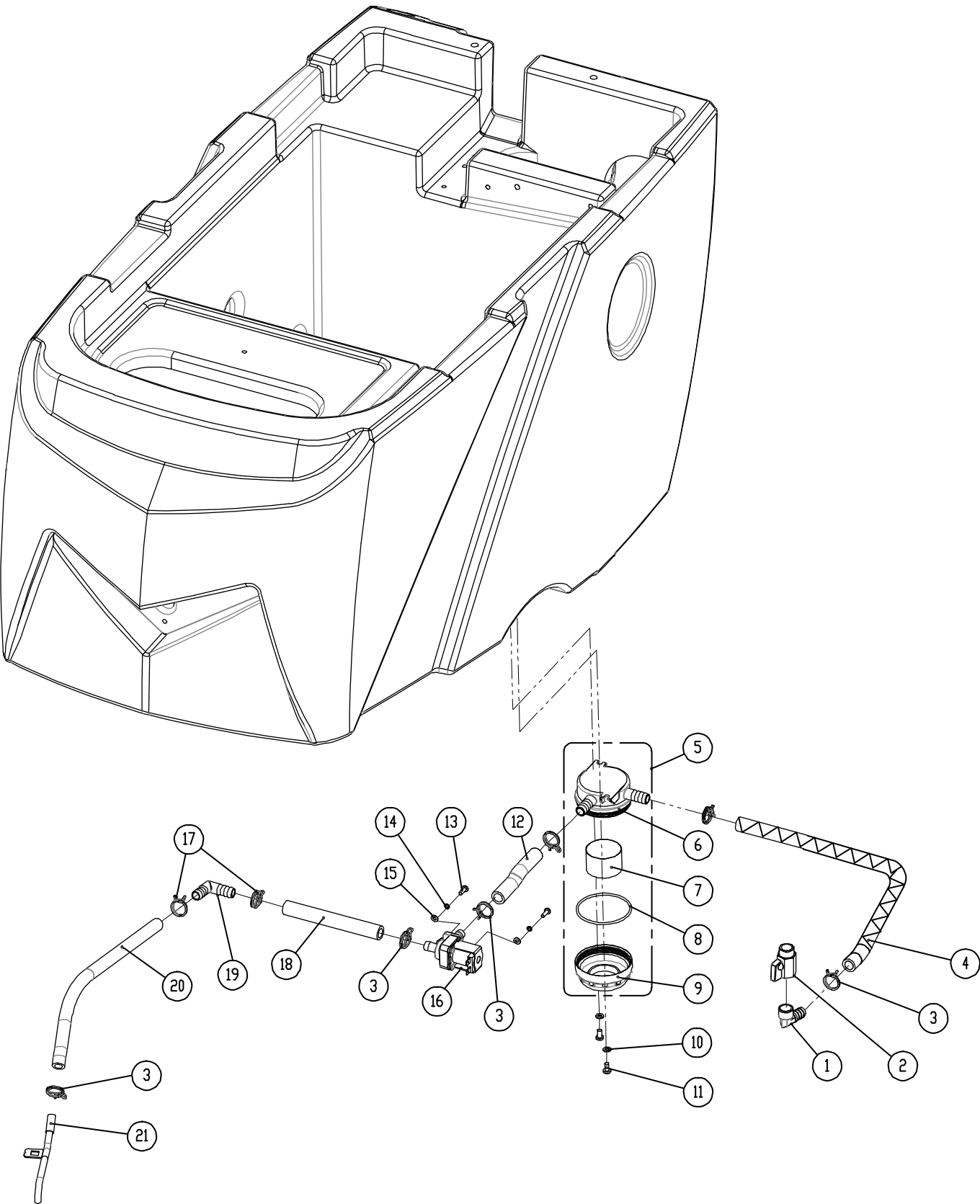


PARTS LIST

SQUEEGEE GROUP

| DIA NO. | PART NUMBER | DESCRIPTION | NO REQ'D |
|---------|-------------|------------------------------------|----------|
| 1 | 1123810 | LOCK NUT M8 | 2 |
| 2 | 1421824 | FLAT WASHER M8× ϕ 24×2.0 | 4 |
| 3 | 8116009 | PROTECTIVE WHEEL | 2 |
| 4 | 1021616 | HEX BOLT M6×16 | 2 |
| 5 | 8115404 | BEARING, JOURNAL | 2 |
| 6 | 1421612 | FLAT WASHER M6× ϕ 12×1.6 | 2 |
| 7 | 8118300 | RIGHT BRACKET | 1 |
| 8 | 8118400 | CASTER, 2 INCH | 2 |
| 9 | 8118600 | CLAMP ASSEMBLY, SQUEEGEE | 1 |
| 10 | 8118022 | SQUEEGEE BLADE, REAR, LINATEX | 1 |
| | 8118002 | SQUEEGEE BLADE, REAR, PU (OPTION) | 1 |
| 11 | 8118003 | STAR KNOB M8 | 4 |
| 12 | 8118004 | SQUEEGEE HOUSING | 1 |
| 13 | 1021835 | HEX BOLT M8×35 | 2 |
| 14 | 8118009 | STAINLESS STEEL RETAINER, SQUEEGEE | 1 |
| 15 | 8118008 | PLASTIC SPACER | 1 |
| 16 | 1222515 | COUNTERSUNK FLAT HEAD SCREW M5×15 | 6 |
| 17 | 8118010 | RETAINER KIT | 1 |
| 18 | 8118021 | SQUEEGEE BLADE, FRONT, LINATEX | 1 |
| | 8118001 | SQUEEGEE BLADE, FRONT, PU (OPTION) | 1 |
| 19 | 8118610 | SHORT CLAMP ASSEMBLY | 1 |
| 20 | 1221575 | SCREW M5×75 | 1 |
| 21 | 8118200 | LEFT BRACKET | 1 |
| 22 | 1121008 | HEX NUT M10 | 2 |
| 23 | 8118600A | CLAMP ASSEMBLY | 1 |
| 24 | 8118624 | SHAFT | 1 |
| 25 | 8118623 | SPACER | 1 |
| 26 | 1123507 | LOCK NUT M5 | 1 |
| 27 | 8118109 | HOLDER VACUUM HOSE | 1 |
| 28 | 8118006 | VACUUM HOSE | 1 |
| 29 | 8118000 | SQUEEGEE ASSEMBLY, LINATEX | 1 |
| | 8118000-PU | SQUEEGEE ASSEMBLY, PU | 1 |

SOLUTION GROUP



PARTS LIST

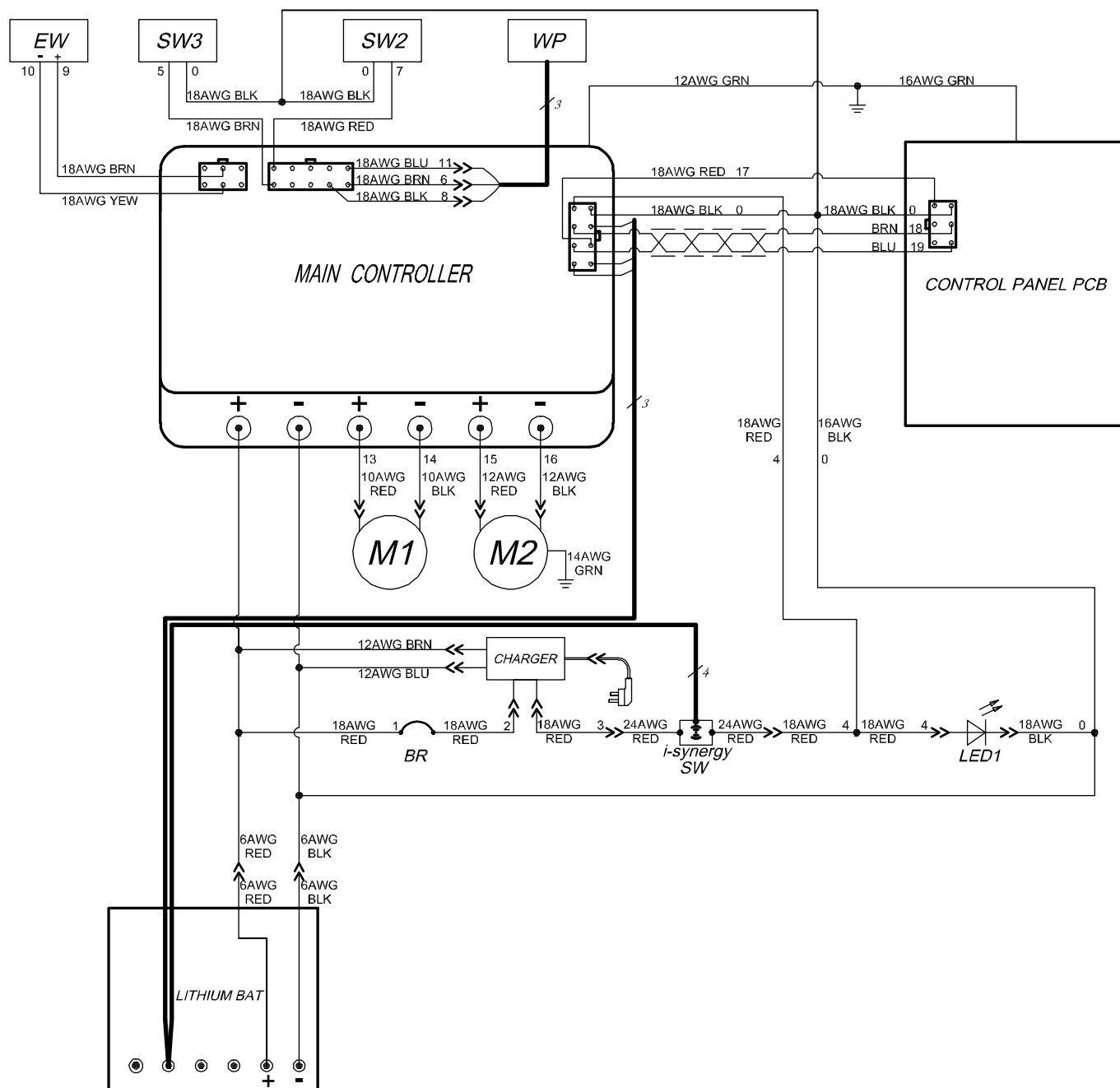
SOLUTION GROUP

| DIA NO. | PART NUMBER | DESCRIPTION | NO REQ'D |
|---------|-------------|----------------------------------|----------|
| 1 | 8119007 | ELBOW G1/2 | 1 |
| 2 | 8119005 | BALL VALVE, G1/2 | 1 |
| 3 | 1962016 | CLAMP, 10-16mm | 5 |
| 4 | 1869113 | TUBING, WIRE REINFORCED, L=210MM | 1 |
| 5 | 8119200 | FILTER ASSEMBLY, 40 MESH | 1 |
| 6 | 8119101 | BASE, FILTER ASSEMBLY | 1 |
| 7 | 8119104 | SCREEN, FILTER, 40 MESH | 1 |
| 8 | 1622760 | O RING | 1 |
| 9 | 8119102 | CAP, FILTER ASSEMBLY | 1 |
| 10 | 1421510 | FLAT WASHER M5× ϕ 10×1 | 2 |
| 11 | 1221512 | SCREW M5×12 | 2 |
| 12 | 8119202 | TUBING ID=12MM L=100MM | 1 |
| 13 | 1221412 | SCREW M4×12 | 2 |
| 14 | 1422411 | LOCK WASHER M4 | 2 |
| 15 | 1421409 | FLAT WASHER M4× ϕ 9×0.8 | 2 |
| 16 | 8119003 | SOLENOID VALVE,24VDC | 1 |
| 17 | 8119006 | CLAMP | 3 |
| 18 | 8119203 | TUBING ID=12MM L=135MM | 1 |
| 19 | 8119002 | ELBOW, TUBING BARB | 1 |
| 20 | 8119204 | TUBING ID=10MM L=360MM | 1 |
| 21 | 8116100 | WATER SUPPLY TUBE | 1 |

WEAR AND TEAR PARTS

| DIA NO. | PART NUMBER | DESCRIPTION | NO REQ'D |
|----------------|--------------------|--|-----------------|
| 1 | 8115200 | WHEEL, 8 INCH, i20NBL | 2 |
| | 1612607 | BEARING, BALL, 6004, 8"WHEEL | 4 |
| | 8125200 | WHEEL, 8 INCH, i20NBTL / i24BTL | 2 |
| 2 | 8116009 | PROTECTIVE WHEEL | 3 |
| 3 | 8118021 | SQUEEGEE BLADE, FRONT, LINATEX | 1 |
| 4 | 8118022 | SQUEEGEE BLADE, REAR, LINATEX | 1 |
| 5 | 9050020 | 20" BRUSH ,i20NBL/NBTL | 1 |
| | 9050020E | 20" BRUSH ,i20NBL/NBTL (OPTIONAL) | 1 |
| | 9050012 | 12" BRUSH , i24BTL | 2 |
| 6 | 9040019 | 19" PAD HOLDER, i20NBL/NBTL | 1 |
| | 9040019K | 19" PAD HOLDER, i20NBL/NBTL (OPTIONAL) | 1 |
| | 9040011U | 11" PAD HOLDER, i24BTL | 2 |
| | 9050012U | 11" PAD HOLDER, i24BTL (OPTIONAL) | 2 |
| 7 | 8146116 | ISOLATORS, M10×25, i20NBTL-OB | 4 |
| | 8146107 | ISOLATORS, M10×25, i20NBTL-OB | 4 |

WIRING DIAGRAM (i20NBL)



LITHIUM BAT: Lithium-ion Batteries

BR: Main controller circuit breaker, 5A

i-synergy SW: i-synergy starting up switch

LED1: Running lights

CHARGER: On board battery charger

M1: Brush motor

M2: Vacuum motor

MAIN CONTROLLER: Main controller

CONTROL PANEL PCB: Control panel PCB

EW: Solution solenoid valve switch

SW3: Control handle start bail switch

SW2: Safe switch, Scrub head lifting

WP: Proximity switch

WIRING DIAGRAM (i20NBTL, i20NBTL-OB & i24BTL)

