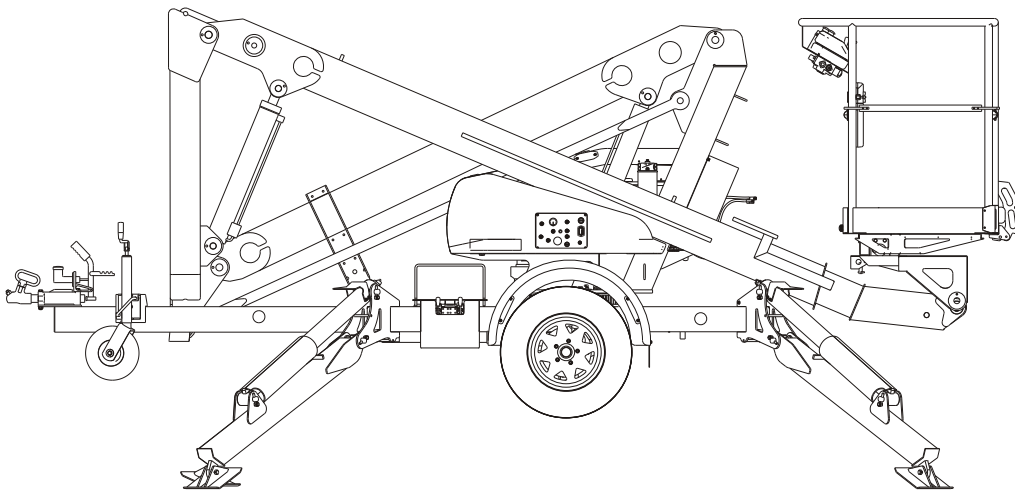




MHP14AT
MHP13AT



Diesel
Gasoline
Battery Electric
Bi-Energy Options

REPAIR PARTS MANUAL

Serial Number MHP14AT - 07-000001 and after
MHP13AT- 07-000001 and after

Part Number 13618-2
April 2018 (Rev C)

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■ General Specifications MHP14AT

SPECIFICATIONS	MHP14AT	
Nominal working height	13.5m	44.3'
Maximum height to basket floor	11.5m	37.7'
Maximum outreach	6.4m	21.0'
Maximum width of base		
Stabilisers retracted	1.6m	5.2'
Stabilisers extended	3.6m	11.8'
Safe working load (unrestricted)	215kg	474lbs
Platform size	1.15 x 0.70m	3.8' x 2.3'
Platform construction	Steel	Steel
Travelling height	2m	6.6'
Overall length	4.7m	15.4'
Maximum towing speed	80km/h	50mph
Turntable rotation	540° Non continuous	
Trailer tongue weight (approximately)	Less than 100kg	Less than 225lbs
Maximum rated axle capacity	2000kg	4409lbs
Insulation rating	Nil (on standard models)	
Weight	1460kg (Petrol model)	3218lbs (Petrol model)
Maximum chassis inclination	1°/1°	
Maximum stabiliser load	978kg	2156lb
Maximum allowable force	400N	

General Specifications

■ General Specifications MHP13AT

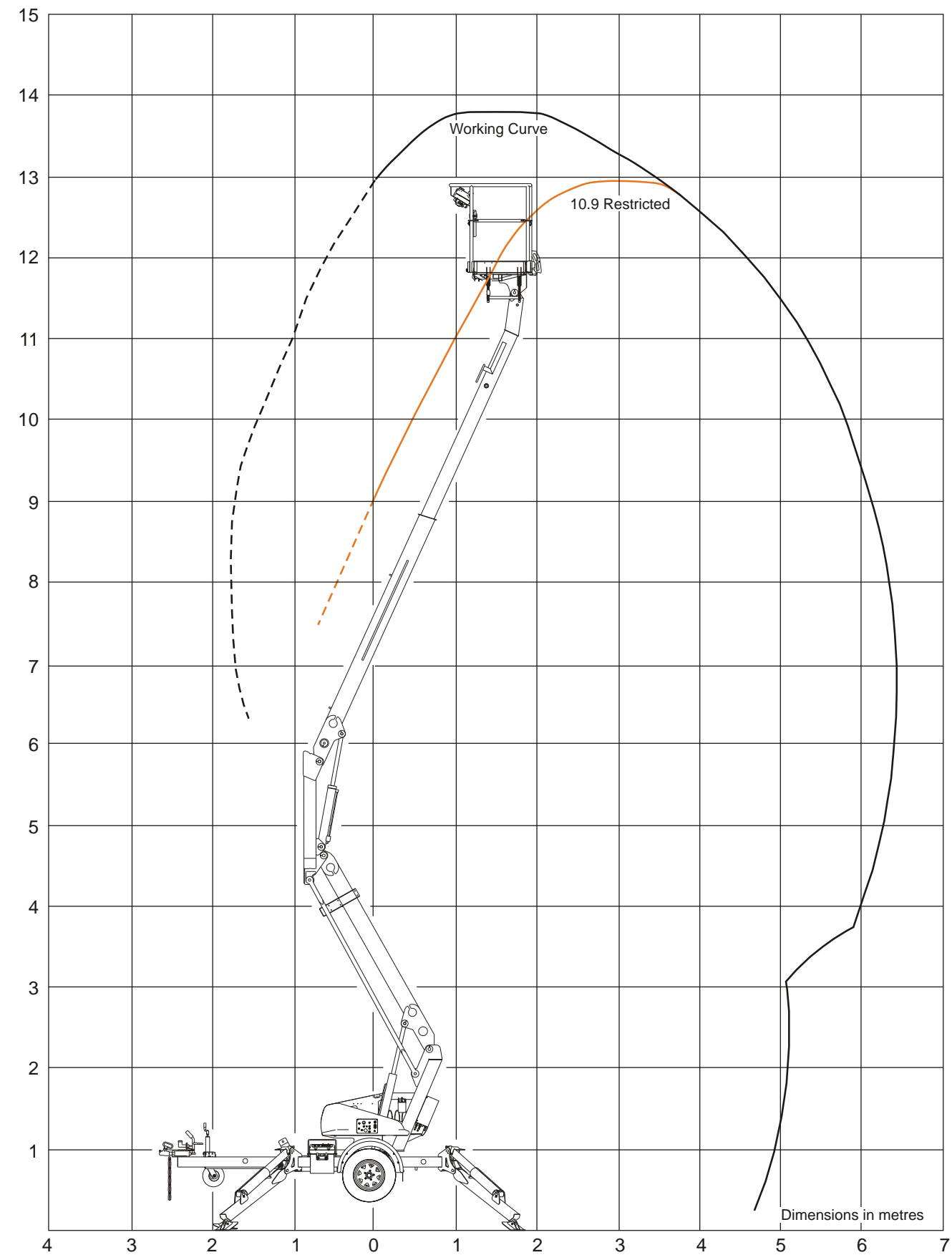
SPECIFICATIONS	MHP13AT	
Nominal working height	12.9m	42.3'
Maximum height to basket floor	10.9m	35.8'
Maximum outreach	6.4m	21.0'
Maximum width of base		
Stabilisers retracted	1.6m	5.2'
Stabilisers extended	3.6m	11.8'
Safe working load (unrestricted)	215kg	474lbs
Platform size	1.15 x 0.70m	3.8' x 2.3'
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Maximum allowable force	400N	

■ Engine Specifications

Engine Make	Honda (gasoline)
Model	GX 160
Engine type	4-stroke, over head valve, 1 cylinder
Displacement	163 cm ³ (9.9 cu-in)
Bore x Stroke	68 x 45 mm (2.7 x 1.8 in)
Max. output	4 kW/4,000 rpm
Max. torque	1.1 kg-m (8.0 ft-lb)/ 2500 rpm
Fuel	gasoline
Fuel Grade	automotive gasoline (unleaded or lowleaded preferred)
Fuel consumption	230 g/PSh
Cooling system	Forced air
Ignition system	Transistor magneto
PTO shaft rotation	Counterclockwise
Oil Capacity	0.60 litres (0.60 US qt, 0.53 Imp qt)
Oil Grade	SAE 10W-30

General Specifications

■ Working Envelope MHP14AT, MHP13AT



■ Classification

Group B Type 1

■ AS1418.1 Group Classification

C3

■ Commissioning Information

Commissioning of the machine consists of performing the Pre Delivery and Inspection Report (PDIR) satisfactorily.

This PDIR is performed by Snorkel or it's agent before the machine is delivered.

A completed PDIR can be obtained, by request, from the salesagent.

■ Introduction

Units built for the Australian market may be fitted with a 10.9m height restriction kit.

This kit is fitted to allow the maximum height to the platform floor to be restricted to 10.9m from the ground.

This is to allow the unit to be operated by unlicensed operators in accordance with Australian legislation.

⚠ IMPORTANT

If this machine is fitted with a 10.9m kit you must ENSURE that you read and understand the information in this section.

■ Signage

If the machine is fitted with a 10.9m kit the decal below will be attached to the base/column adjacent to the height lockout switch.

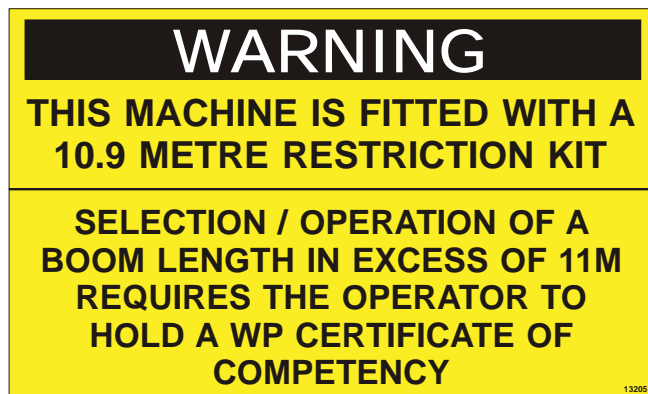


Figure 1 - Decal

■ Operation

When the 10.9m function is selected, via the key switch mounted at the base, the unit operates normally until a micro switch at the knuckle is activated by a cam.

This then powers a solenoid valve that shuts off oil to the upper lift cylinders and prevents the upper boom raising any further.

The key switch ① allows the unit to operate normally so the platform floor height is 12.8m (15m working height) when the **DISABLED** position ③ on the key switch is selected (see Figure 2 / Figure 3).

When the key switch is placed in the **ENABLED** position ② the unit is restricted to a platform floor height of 10.9m (see Figure 2 / Figure 3). The key can only be removed in the disabled position thus

effectively 'locking' the machine into the restricted mode.

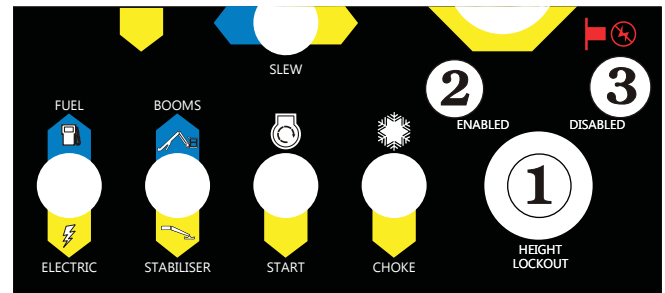


Figure 2 - Key Switch

⚠ IMPORTANT

In order to operate this machine in the unrestricted mode (DISABLED) the operator is required to hold a WP Certificate of Competency.

⚠ WARNING

The use of a machine fitted with a 10.9m height restriction kit, in the unrestricted (DISABLED) mode by an uncertified operator is a breach of Australian law.

⚠ IMPORTANT

If a machine is fitted with a 10.9m height restriction kit, and the machine is to be made available for hire,

IT IS THE RESPONSIBILITY OF THE HIRE COMPANY OR OWNER

to establish that the person hiring the machine, or the person who will be operating the machine, has a WP class Certificate of Competency.

If they do not have such a qualification the machine must be restricted to 10.9m operation and the key must be removed thus locking the unit in that mode prior to the hiree removing the machine.

■ Operation In Unrestricted Mode

If the machine is being operated in the unrestricted (DISABLED) mode, by a suitably qualified operator, the key **MUST** be switched to restricted (ENABLED) mode and the key removed from the switch any time that the qualified operator leaves the machine.

10.9 Height Restriction

As previously stated this effectively 'locks' the machine into the 10.9m mode thus preventing any unqualified person from operating the machine in the unrestricted mode.

■ Tamper Protection

In order to reduce the likelihood of the machine being tampered with to gain the extra height by an unqualified operator, a tamper protection device is installed on the machine.

This consists of a lockwire and lead seal and the owner must check this on a regular basis to ENSURE that the protective device is in place.

▲ WARNING

If the seal is broken the owner of the machine must:

1. **ENSURE that the 10.9m lockout function still operates correctly.**
2. **Replace the seal.**
3. **ENSURE that the machine continues to meet the requirements of the relevant Australian legislation.**

■ About this Manual:

This Maintenance and Repair Parts manual covers current production machines only.

While Snorkel has attempted in every way to confirm that all information in this manual is correct, improvements are being constantly made to the machine that may not be reflected in this manual.

NOTE:

It is recommended that you record the serial and model number of your machine (see page 10 of this chapter). This information is found on the serial number placard.

■ Manual Organization

The Repair Parts Manual consists of five sections with an individual table of contents preceding sections 1 through 4.

Subassemblies and detailed parts are identified by index numbers on the illustrations that correspond to the item numbers on the parts listing. When requesting any part, always specify complete part number, description, model and serial number of your unit.

The following is a general description of each section and its contents.

☐ General Specifications

The section immediately preceding, contains information relating to the general specifications of the MHP14AT / MHP13AT.

☐ Maintenance

The pages immediately following, contain information as to the maintenance schedules - lubricants and procedures for proper lubrication of the unit.

☐ Repair parts and illustrations

Repair Parts (Section 1), contains parts listings and illustrations for general mechanical repair parts of all major installations and subassemblies of the unit. Hydraulics

☐ Hydraulics

(Section 2), contains parts listings and illustrations of hydraulic components installations including hydraulic schematics and individual components such as cylinders, controls valves and solenoid operated valves.

☐ Electrical

Electrical (Section 3), contains listings and illustrations of electrical components installations including wiring schematics.

☐ Options

Options (Section 4), contains parts listings and illustrations of optional installations that may be installed on your unit.

☐ Parts index - Page locator

The parts index - page locator, identifies the component by name and directs you to the section and page number where you may find information for that part such as its part order number, etc.

■ Maintenance and Schematics

☐ Maintenance information

The parts drawings located in the repair parts sections, are designed for use as a guide for proper disassembly of the machine and components as well as for parts replacement. Always refer to the hydraulic system installation drawings and the electrical wiring diagram before removing or disassembling associated parts.

⚠CAUTION

Do not attempt to disconnect or remove any hydraulic line before reading and understanding all text concerning the system hydraulics. In most cases, disassembly of the machine will be obvious from the illustration.

⚠IMPORTANT

DO NOT modify this ariel platform without prior written consent of Snorkel Engineering Department.

Modification may void the warranty, adversely affect stability, or affect the operational characteristics of the ariel platform.

When disassembling or reassembling components, complete the procedural steps in sequence. Do not partially disassemble or assemble one part, then start on another. Always check your work to assure that nothing has been overlooked.

The following list is a gentle reminder when disassembling or assembling the machine.

Maintenance Information

- ✓ Always be conscious of weight.
- ✓ Never attempt to lift heavy objects without the aid of a mechanical device.
- ✓ Do not allow heavy objects to rest in an unstable condition.
- ✓ Always make sure work platform is in stowed position - blocked or the weight removed by a suitable lifting device before disconnecting the hydraulic hose from the motor/pump unit to the lift cylinder.
- ✓ When raising a portion of the machine, be sure that adequate blocking is properly positioned - Do not depend on lifting device to hold and secure weight.
- ✓ If a part resists removal, check to see if all fasteners, electrical wiring, hydraulic lines, etc., have been removed or that other parts are not interfering.

Parts should be thoroughly inspected before restoring to service at the time of reassembly. Burrs, nicks or scratches may be removed from machined surfaces by honing or polishing with #600 crocus cloth, followed by a thorough cleaning in an approved cleaning solvent, and blown dry with compressed air. Do not alter the contour of any part. If this operation does not restore the part to a serviceable condition, replace the part.

Replace all O-rings, seals, and gaskets at reassembly. Use new roll pins or cotter pins. Dip all packing rings and seals in hydraulic oil before reassembling in cylinder and manifold installations. Replace any part having imperfect threads. In general, units that have been disassembled can be reassembled by reversing the order of disassembly.

Remember that the service life of a machine can be increased by keeping dirt and foreign materials out of the vital components. Precautions have been taken to safeguard against this; shields, covers, seals and filters are provided to keep air and oil supplies clean; however, these items must be maintained on a scheduled basis in order to function properly.

At any time air or oil lines are disconnected, clean surrounding areas as well as the opening and fittings themselves. As soon as a line or component is disconnected, cap or cover all openings to prevent the entry of dirt or foreign materials.

New parts should remain in their container until they are ready to be used.

Clearly mark or tag hydraulic lines and electrical wiring connections when disconnecting or removing them from unit. This will assure that they are correctly reinstalled.

Proper assembly is critical to the successful rebuilding of any unit. Carefully inspect any parts which are to be reused. If in doubt, replace.

“SAFETY FIRST” is a good slogan.

Replace any guards and protective devices that have been removed to carry out maintenance and repair work.

■ Maintenance schedules

Snorkel has established a Preventive Maintenance Schedule that includes:

- ✓ Daily Maintenance (Operator's Inspection)
- ✓ 90 Day or 150 Hour (frequent) Maintenance
- ✓ Yearly or 500 Hour (annual) Maintenance,

These schedules should ensure the detection of any defective, damaged or improperly secured parts and provide information regarding lubrication and other minor maintenance items.

The Maintenance Schedule following, outlines the requirements of these maintenance checks for each time interval. The Operator's Pre-operational inspection must be performed by a trained operator. All other maintenance and inspections must be performed by a trained service technician only.

Note that the 90 Day or 150 hour (frequent) and yearly or 500 hour (annual) Maintenance, require use of the Preventive Inspection Maintenance Checklist to pinpoint all inspection items. Retain a copy of these forms for your records.

They also require that all placards and decals on the unit are to be inspected.

All placards and decals must be in place and legible. Use the placards installation drawing and parts listing in the repair parts section 1 of this manual to check these placards and decals.

Snorkel recommends that you make additional copies of the Preventive Inspection Maintenance Checklist forms for your use in performing these

▲ DANGER

Failure to perform the Preventive Maintenance at the intervals outlined in the Maintenance Schedule may result in a unit being operated with a defect that could result in INJURY or DEATH of the unit operator. DO NOT allow a unit to be operated that has been found to be defective.

Repair all defects before returning the unit to service.

□ Pre-operational Inspection

Item	Service Required
Engine fuel level	Look to see that the fuel tank is full
Fuel tank cap	Check to see that the cap is tight
Engine oil level	Check oil level (between dipstick lines)
Fuel leaks	Visually inspect (hoses and connections)
Engine cooling	Check that grills are not blocked
Wiring harnesses	Visually inspect (installation, condition)
Battery terminals	Visually inspect (no corrosion)
Battery fluid level	Check fluid level (1/4" or 6 mm below filler neck)
Hydraulic oil level	Visually inspect level (between lines on decal)
Hydraulic oil leaks	Visually inspect (hoses, tubes)
Tyres and wheels	Visually inspect (condition)
Tyre pressure	Check pressure (measure)
Bolts and fasteners	Visually inspect (condition)
Structural damage and welds	Visually inspect (weld cracks, dents)
Lanyard anchor points	Visually inspect (condition)
Platform gravity gate	Check condition and operation
Platform guardrails	Visually inspect (condition)
Flashing light (option)	Visually inspect (operation)
Ground control switches	Actuate and inspect for proper operation
Ground control valve levers	Check operation (causes correct motion)
Ground emergency lower	Check operation (causes correct motion)
Platform control box switches	Actuate and inspect for proper operation
Platform emergency lower	Check operation (causes correct motion)
RCD/ELCB AC outlet (option)	Check operation
Platform work lights (option)	Check operation
Placards and decals	Visually inspect (installation, condition)
Platform entry ladder	Visually inspect (condition)

■ Daily Maintenance

Note:

Refer to the Operator Manual, Chapter 7 Pre-operational Inspection for details of this procedure.

At the start of each work day (or 8 hour shift), an MHP14AT / MHP13AT qualified operator must perform the Pre-operational Inspection as listed in the table above.

The purpose of the Pre-operational Inspection is to keep the MHP14AT / MHP13AT in proper working condition and to detect signs of malfunction at the earliest possible time.

The MHP14AT / MHP13AT should be in the STOWED POSITION and the **Master Key Switch** set to OFF before you begin this inspection.

Defective parts and/or equipment malfunctions jeopardize the safety of the operator and other personnel, and can cause damage to the machine.

⚠ DANGER

DO NOT operate an MHP14AT / MHP13AT that is known to be damaged or malfunctioning.

Repair all equipment damage or malfunctions, before placing the MHP14AT / MHP13AT into service.

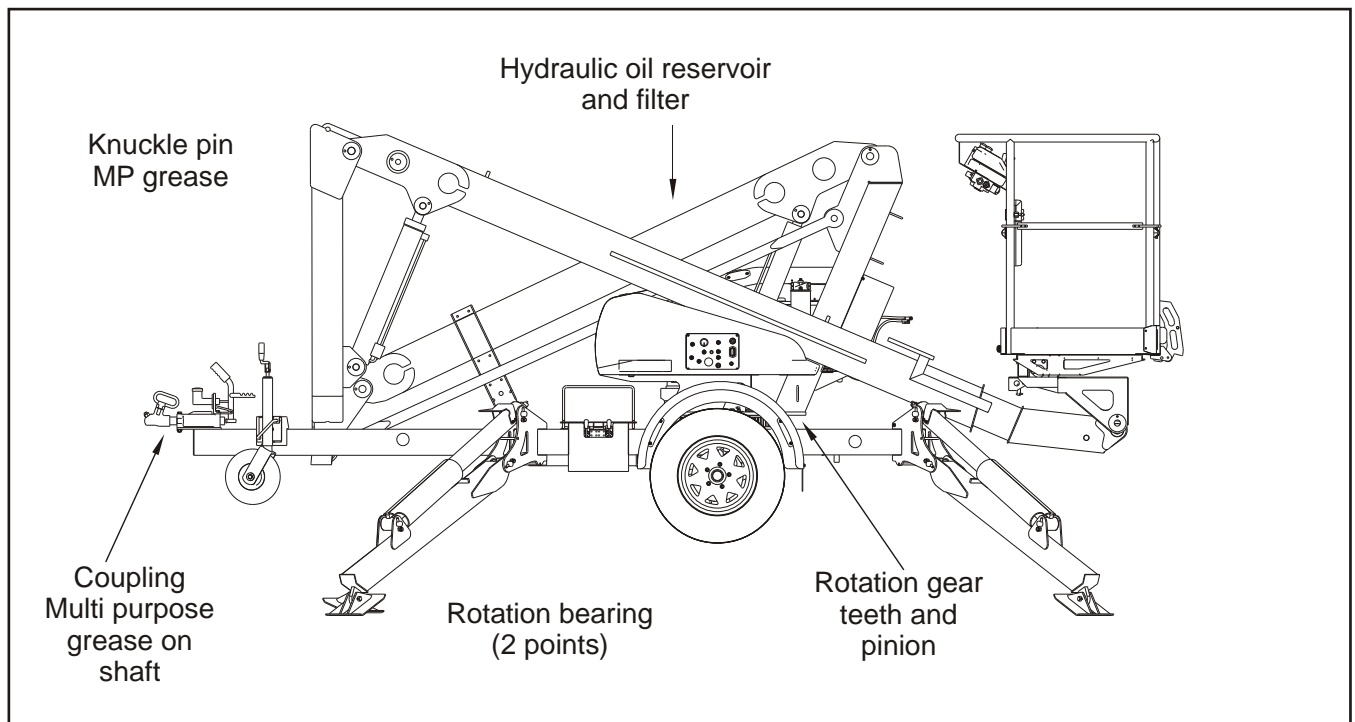
Maintenance Information

■ 90 Day or 150 Hour Maintenance (Trained Service Technician)

Components	Service Required	Recommended Lubricant or Further Instructions
Daily maintenance	Perform maintenance as per schedule	
Preventive inspection maintenance checklist	Perform inspection, complete form	Retain copy of checklist
Placards and decals inspection	Inspect using drawing and parts listing in section 1 (repair parts)	Replace any missing or unreadable decals/placards
Rotation bearing	Lubricate	Conoco Super Sta #2 Above 32° Mobilgrease CM-P Below 32° Mobilgrease CM-L
Rotation bearing teeth & pinion	Lubricate	Conoco Super Sta #2 Above 32° Mobilgrease CM-P Below 32° Mobilgrease CM-L
Platform rotator	Check smooth operation	Repair or replace if not working properly
Platform controls	Check smooth operation & speeds	
Battery	Check specific gravity	1.260/1.275 at 27° C.
Hydraulic filter	Check condition	Replace if dirty
Engine RPM	Check for proper engine RPM (3000)	See engine manufactures owner's manual
Engine oil	Replace per engine owners manual	

■ Yearly or 500 Hour Maintenance (Trained Service Technician)

Components	Service Required	Recommended Lubricant or Further Instructions
90 day or 150 hour maintenance	Perform maintenance per schedule	
Hydraulic oil reservoir	Clean and replace fluid	Shell Tellus 32 or similar
Hydraulic filter	Replace	After 1st. 50 hours, thereafter at recommended interval
Hydraulic pressures	Check pressures	
Wheel bearings	Clean and re-pack	EP Grease



The illustration locates the lubrication points of the MHP14AT / MHP13AT.

■ Lubricants

To obtain maximum life of any industrial equipment, a well planned maintenance programme should be followed. The information provided on these and preceding pages is intended to provide guidelines for proper lubrication, however, some operating conditions will require more frequent checks and lubrication than listed - for example applications with much dust or moisture will require modification of the schedule to fit that particular application.

The use of high grade lubricants and fluids should be encouraged. Sources of these lubricants may be from almost any of the oil companies. Those listed are typical and any lubricant with equal specifications may be used. However if in doubt regarding the use of lubricants other than those listed, contact Snorkel.

□ Pressure gun application

Service all fittings as indicated in the Maintenance Schedule and lubrication illustration. Wipe away all excess lubricant from exposed surfaces. Over lubrication can collect dirt and foreign matter which acts as an abrasive. Lubrication of accessory equipment should be in accordance with the manufacturer's recommendations.

□ Rotation bearing

Rotation bearing. Pressure gun lubricate bearing at recommended interval using lubricant as outlined in the maintenance schedule. Rotate while lubricating.

□ Rotation gear teeth and pinion

Rotation gear teeth and pinion. Gear teeth and gear box pinion should be lubricated with a open gear grease.

□ Engines

Engine. Refer to the engine manufacturer's instruction manual or consult your local engine service representative if engine adjustments or repairs are needed. The engine **MUST** be operated in accordance with manufacturer's instructions and serviced at recommended intervals.

□ Hydraulic oil reservoir

Hydraulic oil reservoir. The fluid level should be kept between the low and full marks on the dipstick and should be checked with all cylinders fully retracted and the platform in stowed position.

The interior of the reservoir should be wiped out and cleaned each time the hydraulic oil is changed.

It is absolutely necessary that only new, clean hydraulic oil is added.

Maintenance Information

⚠CAUTION

If it becomes necessary to add or use an oil other than the recommended fluid, it is important that it be compatible and equivalent to the factory fill. Local oil suppliers can generally furnish this information.

If questions still remain, contact Snorkel for further information.

❑ Filling hydraulic system

This procedure must be followed when starting up a new machine or after any major service affecting the hydraulic system when a considerable volume of oil may have been drained from the system.

⚠IMPORTANT

It is most important that the machine is not operated unless the lower boom cylinder is completely filled with oil.

It is also advisable to follow this procedure if there is any doubt about the condition of the machine, i.e. if it has been standing idle for more than a week, or as a safeguard, when a new operator is taking charge of the machine.

NOTE - Air in Oil

If a cylinder is empty, filling it will cause the level in the reservoir to fall and may result in air being discharged from the cylinder into the tank.

In this event, when the cylinder is fully extended the engine should be stopped to allow the air to separate from the oil (about five minutes is sufficient) and the oil topped up again before restarting the engine.

1. Fill the reservoir with the recommended hydraulic oil. Leave the filler cap off so that any drop in the oil can be seen.
2. Lower the stabiliser legs to the operating position.
3. Raise the lower boom halfway.
4. Lower the lower boom and raise the hydraulic legs.
5. Check the oil level as in ❶.
6. Lower stabiliser legs to operating position.
7. Raise the lower boom fully then raise the upper boom fully.
8. Rotate the turntable through 360°.
9. Lower all booms and raise the hydraulic legs.
10. Check the oil level as in ❶.

The machine's hydraulic system is now correctly filled.

NOTE - Oil Seals:

It is best to leave oil seals undisturbed if the machine is operating satisfactorily. If replacement of seals is necessary, extreme care must be taken not to damage the surface of the seals, cylinder bore or the chrome plated piston shaft.

- Absolute cleanliness is essential.

⚠CAUTION

At all times when a cylinder is stripped down make sure that the cylinder bore and the piston rod are not damaged in any way. Particular care is necessary that the cylinder head nut is not allowed to drop off the head and damage the chromium plated shaft.

If questions still remain, contact Snorkel for further information.

■ Battery

Battery. The battery will have longer life if the water level is maintained and it is kept charged. The unit will have better starting characteristics with a fully charged battery.

In cold weather the battery should be maintained at full charge to keep from freezing. An extremely low or dead battery can freeze in cold weather. Make sure connections are clean and tight.

Make sure charging equipment is operating properly.

⚠DANGER

Lead-acid batteries contain sulfuric acid which will damage eyes or skin on contact. When working around batteries, ALWAYS wear a face shield to avoid acid in eyes.

If acid contacts eyes, flush immediately with clear water and get medical attention.

Wear rubber gloves and protective clothing to keep acid off skin, if acid contacts skin, wash off immediately with clear water.

Lead-acid batteries produce flammable and explosive gases. NEVER allow smoking, flames or sparks around batteries.

■ Preventive inspection maintenance 90 day or 150 hour checklist

OK	OK - No Service Required
✓	Corrective Action Required
X	Corrected, (Record description of corrective action).

Serial Number _____

Inspection Procedures Codes
(1) Weld cracks, dents and/or rust
(2) Installation
(3) Leaks
(4) Operation
(5) Condition
(6) Tightness
(7) Residue buildup
(8) See placards and decals inspection chart

Check	OK	✓	X
Chassis			
Structural (1)			
Tires (5)			
Tire pressure (45psi, 310kpa) (5)			
Hydraulic tubes and hoses (3,5)			
Decals and placards (2,8)			
Wheel nuts (6) Torque 95lbft 130Nm			
Lubrication points			
Pins, pin keepers (2)			
Slew ring bolts (2,6)			
Turntable			
Structural (1)			
Swivel mount assembly (2,3)			
Hydraulic tubes and hoses (3,5)			
Cowling (5, 6)			
Wire harness (2,5)			
System pressure (Max 2500 psi)			
Lubrication points			
Emergency bleed down valve (4,3)			
Engine (2,4)			
Engine charging system (4)			
Engine air filter (5)			
Hydraulic pump (4)			
Engine oil (5)			
Electric choke (4)			
Hydraulic oil reservoir (2,3,5)			
Hydraulic oil reservoir filler/breather cap (2,6)			
Hydraulic oil reservoir fluid level (5)			
Hydraulic oil filter (3,4)			
Pins, pin keepers (2)			
Lower Booms			
Structural (1)			
Boom lift cylinder pins (2,6)			
Boom lift cylinder and holding valve (3,4)			
Hydraulic tubes and hoses (3,5)			
Electrical Wires (5,2)			
Pins and keepers (2,6)			
Telescopic Booms			
Structural (1)			
Hydraulic tubes and hoses (3, 5)			
Pins and keepers (2,6)			
Upper Booms			
Structural (1)			
Electrical wires (5)			

Check	OK	✓	X
Hydraulic hoses and tubes (3,5)			
Decals and Placards (2,8)			
Boom lift cylinder pins			
Boom lift holding valve (3,4)			
Pins and keepers (2,6)			
Platform			
Structural (1)			
Decals and placards (2,8)			
Platform gate (4)			
Platform mounting bolts (2,6)			
Correct operator's manual in document holder (2)			
Correct operation of tail lights, indicators (4)			
Battery			
Battery terminals (6,7)			
Battery electrolyte level (5)			
Fuel Tank			
Fuel tank (3,5)			
Fuel tank cap (2,3,4,5)			
Ground Control Station			
Station selector switch @ ground controls platform controls DO NOT work (4)			
Station selector switch @ platform controls ground controls DO NOT work (4)			
Cold start (4) Choke			
Keyed master switch (4)			
Boom speed rheostat switch (4)			
Turntable rotation (4)			
Upper boom lift UP - DOWN (4)			
Lower boom lift UP - DOWN (4)			
Tele boom IN - OUT (4)			
Emergency stop (4)			
Stabiliser controls (4)			
Emergency lower upper boom (4)			
Emergency lower lower boom (4)			
Interlocks			
Booms will not raise with legs stowed (4)			
Legs will not raise with booms up (4)			
Platform Control Station			
Foot switch / Enable switch (4)			
Enable switch / Foot switch, functions OPERATE when engaged (4)			
Enable switch / Foot switch, functions DO NOT operate when NOT ENGAGED (4)			
Start switch (4)			
Cold start (4) Choke			
Boom speed rheostat switch (4)			
Turntable rotation (4)			
Upper boom lift UP - DOWN (4)			
Lower boom lift UP - DOWN (4)			
Tele boom IN - OUT (4)			
Emergency stop (4)			
Emergency lower (4)			
Platform level UP - DOWN (4)			
Platform rotation - manual (4)			

Maintenance Information

Check	OK	✓	X
Optional Equipment			
Battery disconnect switch (4)			
Air line to platform (2,4)			
Dual fuel system (2,4)			
Platform work lights (2,4)			
Flashing light (2,4)			
Spare Wheel (2,5)			
10.9m height lockout kit (2,4)			
Battery isolate switch (2,4)			
Platform foot switch (2,4)			

Corrective Action Required




This image shows a blank sheet of white paper with horizontal ruling lines. The lines are evenly spaced and run across the width of the page. There are no margins, text, or other markings on the paper.

Note: If correction action is required on any item, attach sheet indicating problem and action taken.

All items have been properly checked and tested and found to be operating satisfactory or necessary corrective action has been completed.

Inspected By: _____ Date _____

■ Torque chart

NOM SIZE X PITCH	TENSILE STRESS AREA A _s (mm ²)	PROPERTY CLASS 8.8			PROPERTY CLASS 10.9		
		CLAMP LOAD W (N)	TORQUE (N.m)		CLAMP LOAD W (N)	TORQUE (N.m)	
			DRY k=0.20	LUBED k=0.15		DRY k=0.20	LUBED k=0.15
M3 x 0.5	5.03	2 200	1.32	0.99	2 990	1.79	1.34
M3.5 x 0.6	6.78	2 960	2.07	1.55	4 030	2.82	2.11
M4 x 0.7	8.78	3 830	3.07	2.30	5 220	4.17	3.13
M5 x 0.8	14.2	6 200	6.20	4.65	8 430	8.43	6.33
M6 x 1	20.1	8 770	10.5	7.90	11 950	14.3	10.8
M8 x 1.25	36.6	15 975	25.6	19.2	21 750	34.8	26.1
M8 x 1	39.2	17 100	27.4	20.5	23 275	37.3	27.9
M10 x 1.5	58.0	25 325	51	38.0	34 450	69	52
M10 x 1.25	61.2	26 725	53	40.1	36 350	73	55
M12 x 1.75	84.3	36 800	88	66	50 075	120	90
M12 x 1.25	92.1	40 200	96	72	54 700	130	98
M14 x 2	115	50 200	140	105	68 300	190	145
M14 x 1.5	125	54 550	155	115	74 250	210	155
M16 x 2	157	68 525	220	165	93 250	300	225
M16 x 1.5	167	72 900	235	175	99 200	320	240
M20 x 2.5	245	106 950	430	320	145 550	580	435
M20 x 1.5	272	118 750	475	355	161 550	650	485
M24 x 3	353	154 100	740	555	209 700	1 010	755
M24 x 2	384	167 600	805	605	228 100	1 100	820
M27 x 3	459	200 350	1 080	810	272 650	1 470	1 100
M27 x 2	496	216 500	1 170	875	294 600	1 590	1 150
M30 x 3.5	561	244 900	1 470	1 100	333 250	2 000	1 500
M30 x 3	580	253 150	1 520	1 140	344 500	2 070	1 550
M30 x 2	621	271 050	1 630	1 220	368 850	2 210	1 660
M33 x 3.5	694	302 950	2 000	1 500	412 250	2 720	2 040
M33 x 2	761	332 200	2 200	1 640	452 050	2 980	2 240
M36 x 4	817	356 600	2 570	1 930	485 300	3 490	2 620
M36 x 3	865	377 600	2 720	2 040	513 800	3 700	2 780
M39 x 4	976	426 000	3 320	2 490	579 750	4 520	3 390
M39 x 3	1 028	448 700	3 500	2 630	610 650	4 760	3 570
M42 x 4.5	1 121	489 300	4 110	3 080	665 850	5 590	4 200
M42 x 3	1 206	526 400	4 420	3 320	716 350	6 020	4 510
M45 x 4.5	1 306	570 050	5 130	3 850	775 750	6 980	5 240
M45 x 3	1 398	610 250	5 490	4 120	830 400	7 470	5 610
M48 x 5	1 473	642 950	6 170	4 630	874 950	8 400	6 300
M48 x 3	1 604	700 150	6 720	5 040	952 800	9 150	6 860
Grade marking   							

Maintenance Information

■ To order service or repair parts

When placing an order for service or repair parts, please have the following information available for your machine.

- ✓ Machine model number
- ✓ Machine serial number
- ✓ Snorkel part number
- ✓ Description of part
- ✓ Quantity of parts required
- ✓ Your purchase order number
- ✓ Address for order to "Ship To"
- ✓ Your desired shipment method

All correspondence relative to this unit, such as field reports, discrepancy reports, requests for service information, etc., should be directed to:

Snorkel New Zealand
36 Bruce Road
P.O. Box 1041
Levin 5510
New Zealand

Phone: +64 06 368-9168
Fax: +64 06 368-9164

Attention: Parts Department

□ Manuals

Manuals are available from Snorkel to support any of the machines that we produce.

The specific manuals for MHP14AT / MHP13AT are as follows:

- ✓ Operator's Manual
Snorkel part number - 13618-1
- ✓ Repair Parts Manual
Snorkel part number - 13618-2

■ Product Warranty

For full terms of your warranty policy refer to the rear of this manual after the Index section, or check with your Snorkel distributor, or check the Snorkel website.

□ ANSI and OSHA compliance

All owners and users of the aerial platform must read, understand, and comply with all applicable regulations. Ultimate compliance to OSHA regulations is the responsibility of the user and their employer.

ANSI publications clearly identify the responsibilities of all personnel who may be involved with the aerial platform. A reprint of the "Manual of Responsibilities for Dealers, Owners, Users, Operators, Lessors and Lessees of ANSI/SIA A92.5-1992 Boom-Supported Elevating Work Platforms" is available from Snorkel dealers or from the factory upon request.

Copies are also available from:

Scaffold Industry Association
20335 Ventura Blvd. Suite 310
Woodland Hills, CA 91364-2471 USA

Record machine information here:

Model number*

Serial number*

Date of purchase

Purchased from

Snorkel dealer or distributor

* This information is found on the serial number placard attached to your machine.

■ Stability Testing MHP14AT / MHP13AT

□ Introduction

The purpose of this test is to assess if the MHP 14AT / MHP13AT meets the requirements of AS 1418-10 2004 Appendix G Stability Calculations. The situation for minimum stability is with the booms at maximum outreach over the drawbar, with the maximum rated load in the platform, a manual force pulling toward the drawbar and maximum wind load acting on the back of the machine.

Since this testing involves taking the machine to the edge of its stability envelope care must be taken to ensure the test is failsafe i.e. the machine can not tip over if it fails the test. To this end the rated load is to be hung from the Test Weight Harness and the test weight is suspended 200mm above the ground during the test. If the machine starts to tip over the test weight will contact the ground, reducing the overturning moment, so that the machine can not continue to tip over.

□ Equipment

- MHP14AT / MHP13AT
- Spirit level
- Rope
- Pulley
- Test weights & harness
- Ratchet tie down

□ Setup and Procedure

The Test Weight harness location is at the rear edge of the platform. The test load for a standard machine is 215kg.

The manual force is 400N with an additional multiplication factor of 1.1 giving 440N or 45kg. The line of action of this force is such that it produces the greatest overturning moment. That is the line of action of the force is perpendicular to a line joining the top rail of the platform to the tipping line (see Figure 1).

The wind load is assumed to act at the centre of area of the elevated components. The overturning moment from the wind is used to find an equivalent force along the line of action of the manual force. The calculated force due to wind is 20.7kg

The load simulating the wind and manual force is therefore 65.5kg.

The test procedure is as follows (Refer Figure 2).

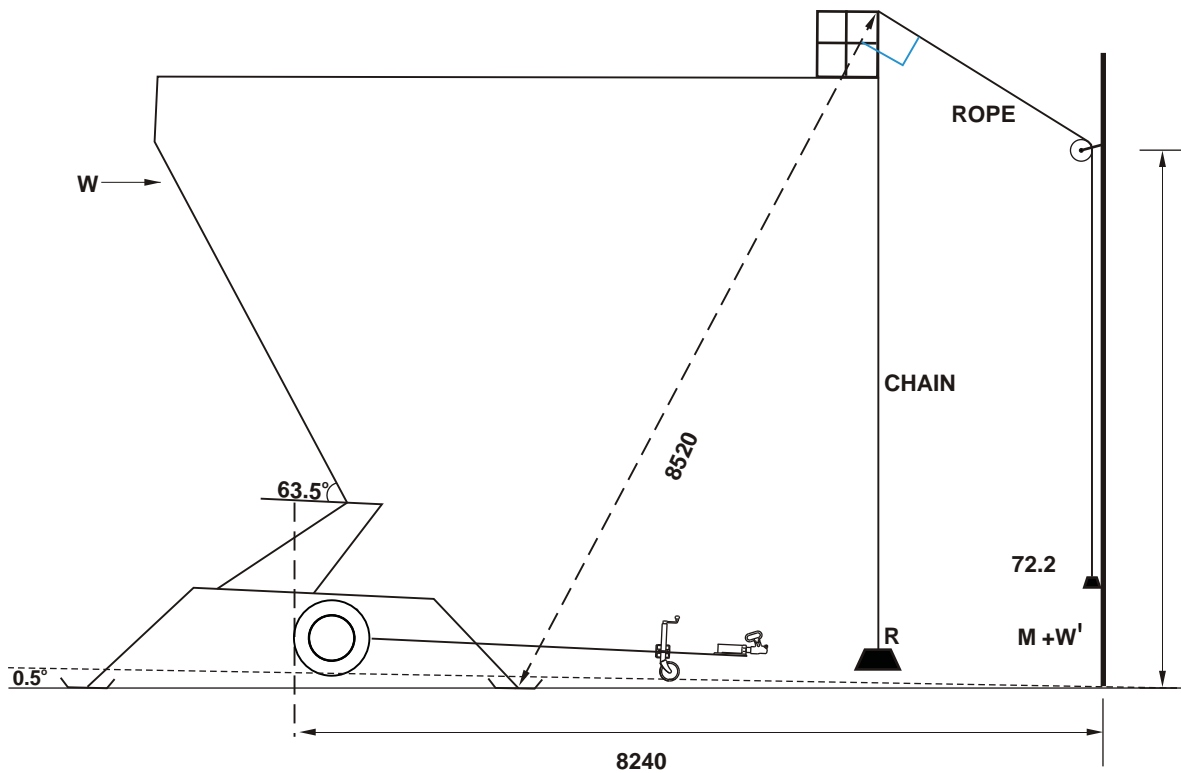
1. Set the pulley on the pole such that a line joining the foot and rear top edge of the basket makes a right angle with the rope to the pulley (see Figure 1 over page).
2. Raise the machine on the stabilisers to maximum height.
3. Level the machine laterally using the spirit level.
4. Level the machine fore and aft such that it is 0.5 deg drawbar down from level. (This simulates a poor setup by the end user).
5. Slew the booms until the rear of the basket is pointing towards the pole.
6. Tie the rope from the pulley around the top rail of the platform on the basket centre line.
7. Attach the Test Weight Harness and the Test Weight to the platform.
8. Raise the booms to maximum outreach (lower boom fully up and top boom horizontal). The Test load must be between 100 and 200mm above ground.
9. Attach a ratchet tie down to the rope coming from pulley. Attach the other end to the Load simulating the wind and manual force.
10. Raise the Load simulating the wind and manual force with the ratchet tie down until the load is between 100 and 200mm above the ground. Ensure that the loads are not swinging i.e. the loads are static. (If both 'rear' legs lift clear of the ground STOP the test and release the ratchet).

□ Pass Criteria

The machine can be assessed as meeting the requirements of AS 1418-10 2004 Appendix G Stability Calculations if the Test Load and the Load simulating the wind and manual force can be raised clear of the ground simultaneously while maintaining at least 3 point contact i.e. not more than 1 stabiliser foot off the ground.

Stability Testing

□ Figure 1



RATED LOAD $R = 215\text{kg}$
STANDARD MACHINE

MANUAL FORCE $M = 45\text{kg}$

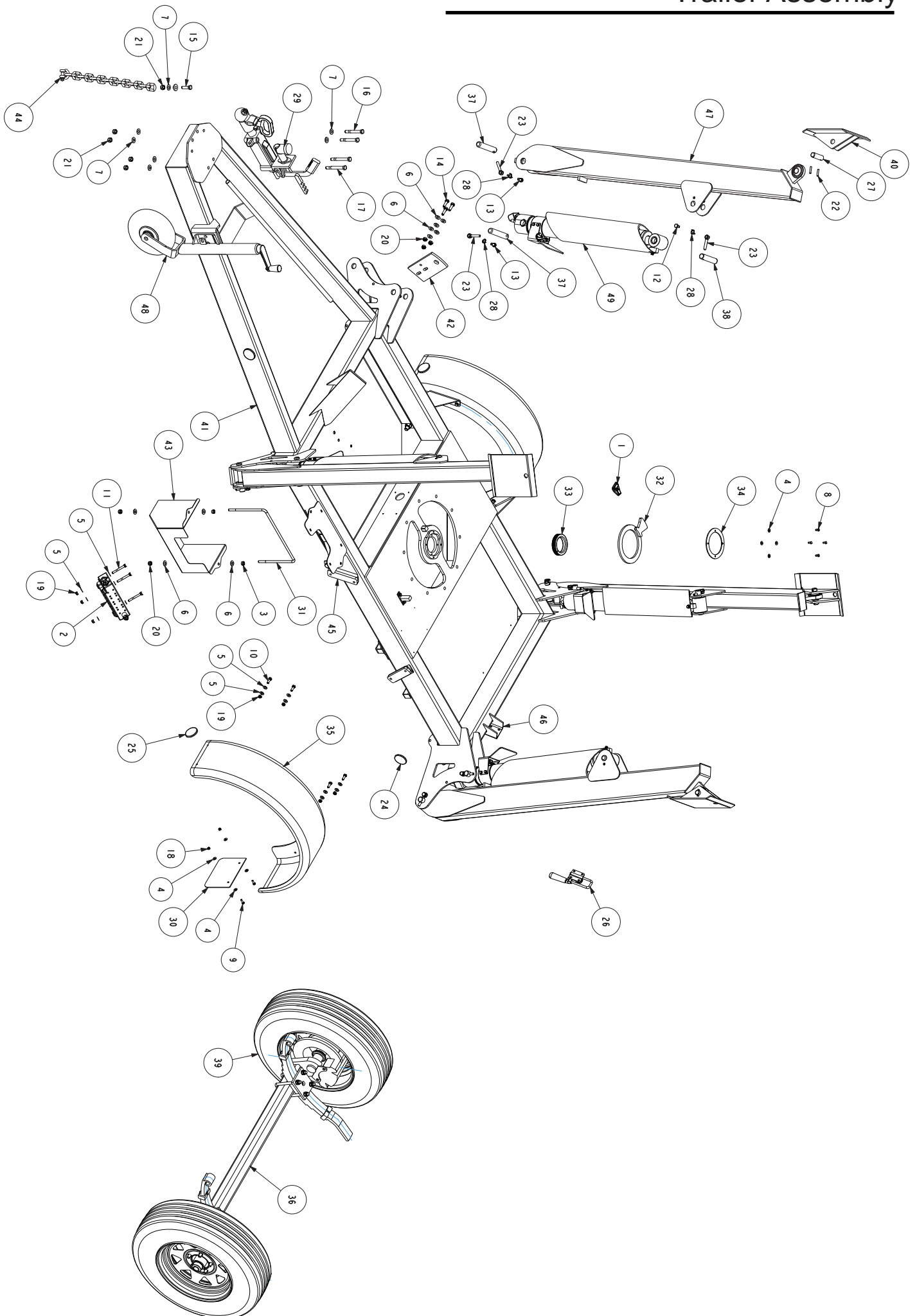
WIND FORCE $W = 20.7\text{kg}$

LOAD ON PULLEY $= 65.5\text{kg}$

Trailer Assembly	1-2
Boom Assembly	1-4
Platform Assembly	1-6
Platform Mount Assembly	1-8
Column Covers Assembly	1-10
Column Assembly	1-12
Slew Ring Assembly	1-14
Placards and Decals	1-16
Honda Engine Assembly	1-18
Axle Assembly	1-20

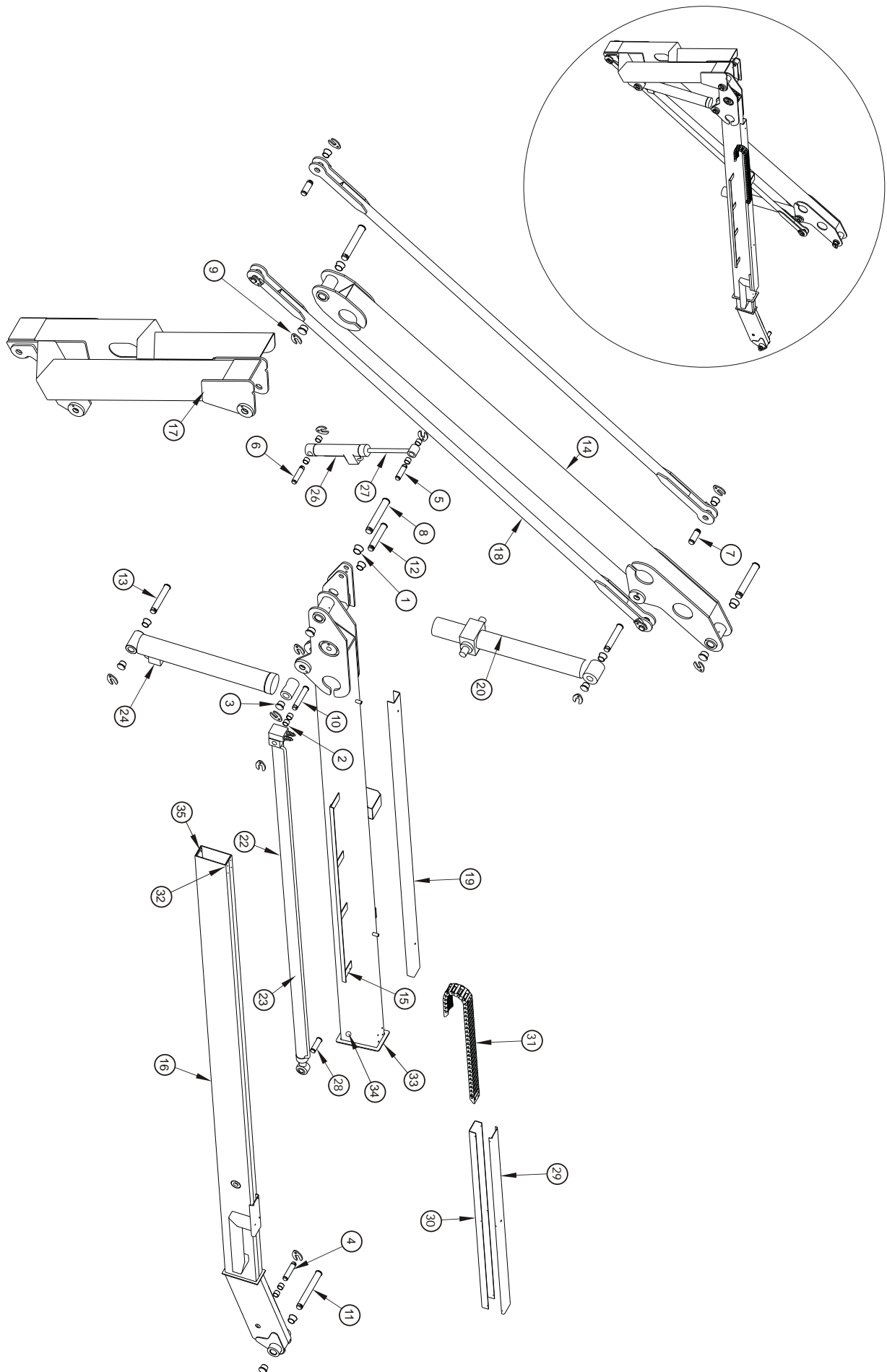
Trailer Assembly

Item	Part No	Qty	Description
0	13504	1	Trailer Assembly
1	1273-2	1	Level Bubble
2	1651	1	Casappa Valve
3	3602-10	2	Metric Hex Nut
4	3603-06	12	Plain Washer
5	3603-08	21	Plain Washer
6	3603-10	10	Plain Washer
7	3603-12	7	Plain Washer
8	3610-06012	4	Metric Bolt
9	3610-06020	4	Metric Bolt
10	3610-08025	8	Metric Bolt
11	3610-08065	3	Metric Bolt
12	3610-10016	4	Metric Bolt
13	3610-10020	8	Metric Bolt
14	3610-10035	3	Metric Bolt
15	3610-12040	1	Metric Bolt
16	3610-12090	2	Metric Bolt
17	3610-12100	2	Metric Bolt
18	3611-06	4	Metric Nylock Nut
19	3611-08	10	Metric Nylock Nut
20	3611-10	5	Metric Nylock Nut
21	3611-12	13	Metric Nylock Nut
22	60000-036	8	Roll Pin
23	8626	12	Pin Keeper
24	9875-1	4	Reflector Lens Orange
25	9875-2	2	Reflector Lens White
26	10029	1	Toggle Clamp
27	11379	4	Pin
28	11492-3	12	Tab Washer
29	15083	1	Tow Coupling
30	11585-3	2	Mudflap
31	12418-1	1	Valve Bank Guard
32	12420	1	Slew Stop Traveller
33	12349	1	Trim Panel
34	12444	1	Slew Traveller Hold Down
35	12475	2	15" Plastic Mudguard
36	12701	1	Axle and Hub Assembly
37	12741	8	Pin
38	12742	4	Pin
39	12772	2	Wheel and Tyre Assembly
40	12790	4	Foot
41	13216	1	Trailer Weldment
42	13216-5	1	Boom Rest Guide
43	13295	1	Leg Valve Cover
44	13388	1	Chain Assembly
45	13500	2	Mudguard Spacer
46	13975-2	1	Latch Mount
47	14011	4	Stabiliser Leg Weldment
48	13908	1	Jockey Wheel
49	13518	4	Leg Cylinder Assembly
50	12703	1	Spring Kit



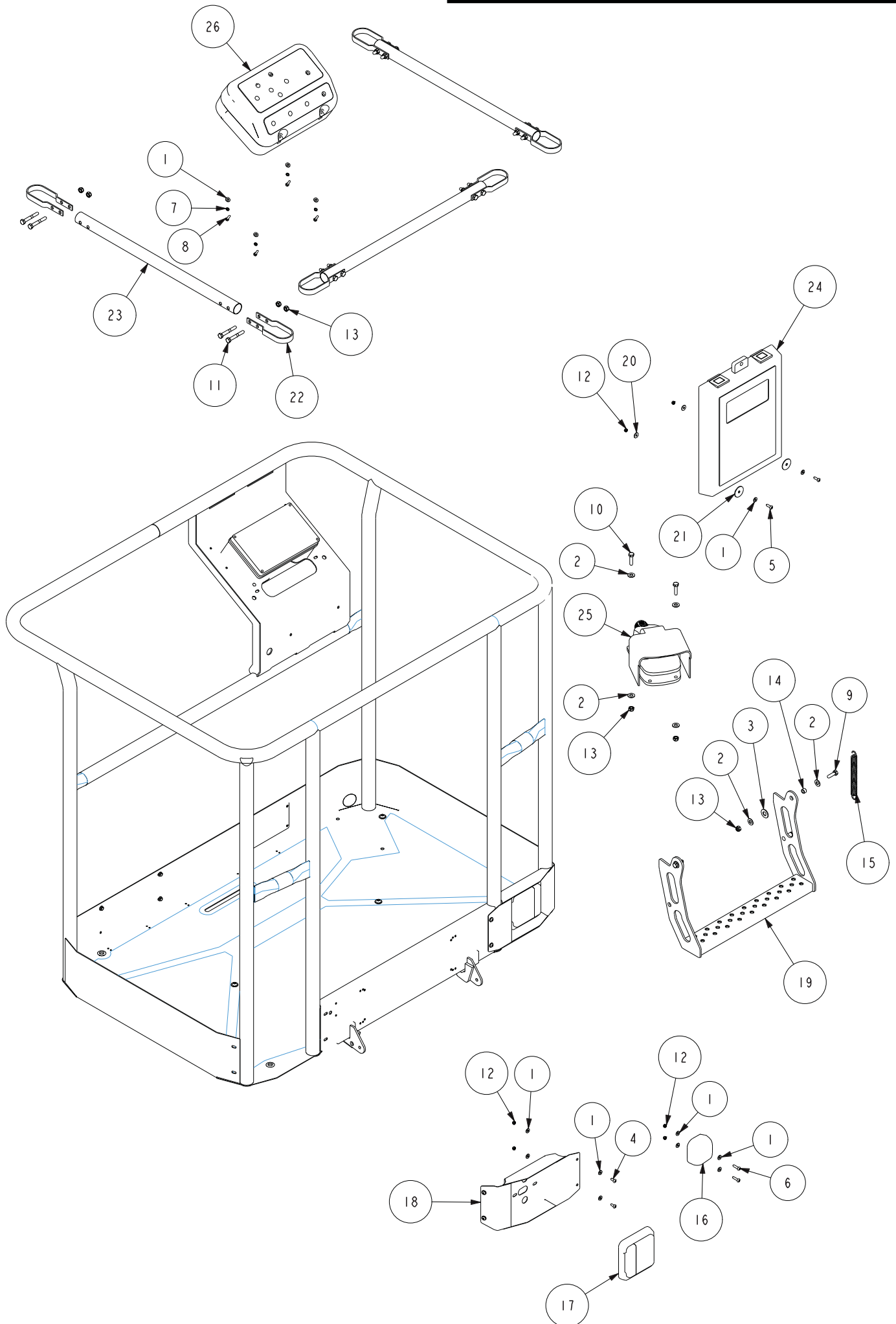
Boom Assembly

Item	Part No	Qty	Description
1	3626-12	6	Bush
3	3626-6	12	Bush
4	058053-001	1	Pin
5	058053-004	2	Pin
6	058053-005	1	Pin
7	058054-001	4	Pin
8	058055-006	3	Pin
9	058056-000	14	Pin Lock Plate
10	058056-006	1	Pin
11	058066-001	1	Pin
12	500070-000	2	Pin
13	058066-007	1	Pin
14	058413-000	1	Lower Boom Weldment
15	058414-001	1	Outer Boom
16	058415-000	1	Inner Boom
17	058416-000	1	Turret Weld
18	058417-000	2	Lower Level Rod
19	058457-000	1	Cover, Outer Boom
20	504504-000	1	Lower Cylinder Assembly
22	058461-000	1	Tele Cylinder Assembly
24	504505-000	1	Upper Cylinder Assembly
26	058734-000	1	Master Level Cylinder Assembly
28	500254-000	1	Pin
29	500265-000	1	Cover For Energy Chain Support Channel
30	500266-000	1	Energy Chain Support Channel
31	500458-000	1	Energy Chain, Complete
32	057975-000	2	Wear Pad, Inner
33	500275-001	2	Wear Pad, Outer
34	0260297	2	Wear Pad, Adjustable
35	500512-000	1	Wear Pad, Tele Cylinder



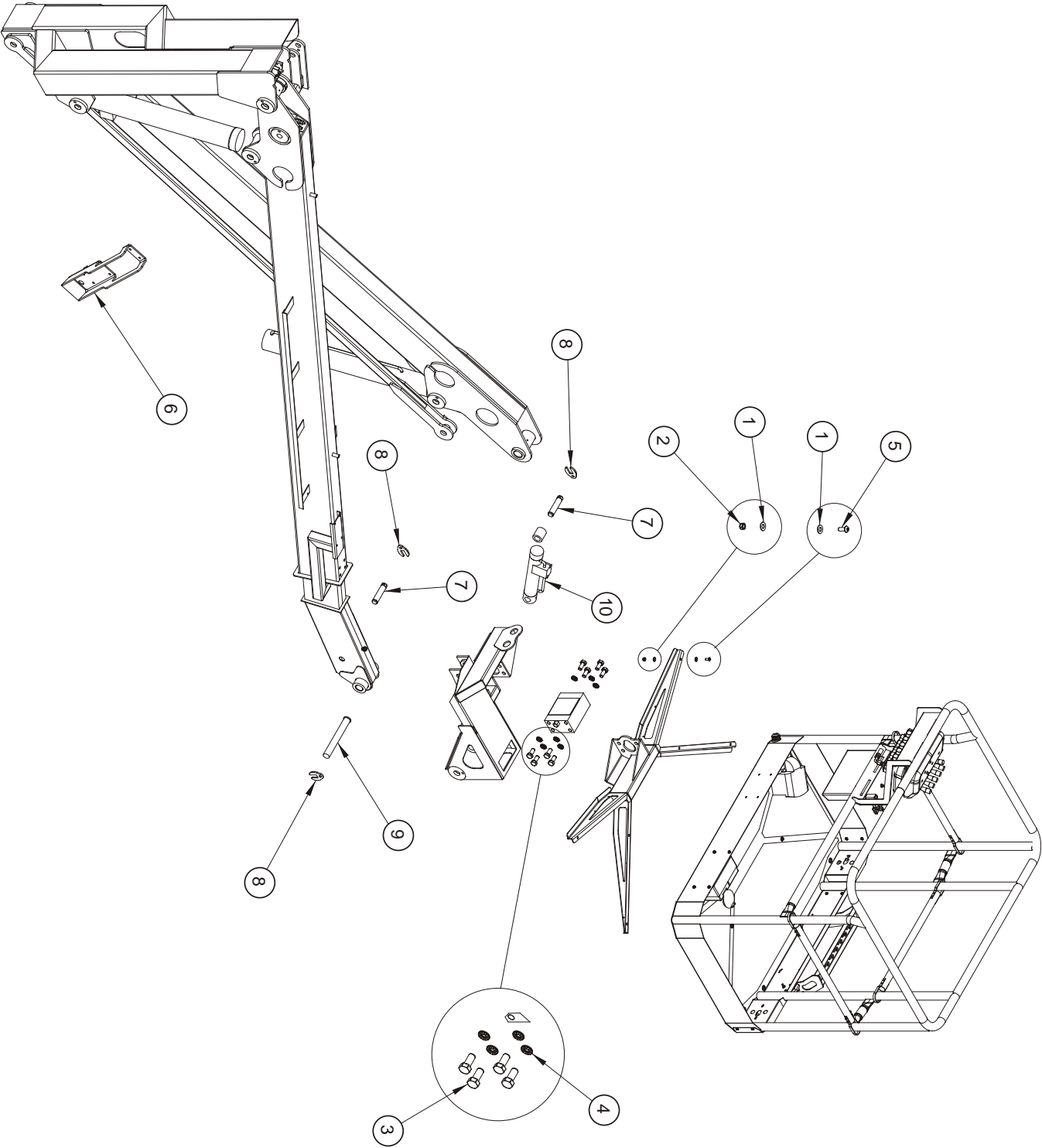
Platform Assembly

Item	Part No.	Qty.	Description
0	13501-01	1	Platform Assembly
1	3603-05	32	Plain Washer
2	3603-08	20	Plain Washer
3	3603-12	2	Plain Washer
4	3604-05012	8	Screw, Pan Head Pozzi- M5 x 12 ZP
5	3604-05016	2	Machine Screw
6	3604-05020	2	Screw, Pan Head Pozzi- M5 x 20 ZP
7	3605-05	4	Spring Washer
8	3610-05016	7	Metric Bolt
9	3610-08025	2	Metric Bolt
10	3610-08030	2	Metric Bolt
11	3610-08055	12	Metric Bolt
12	3611-05	15	Metric Nyloc Nut
13	3611-08	22	Metric Nyloc Nut
14	11429-32	2	Bush
15	11429-34	1	Spring
16	12386-2	1	Licence Plate Lamp LED
17	13056-4	2	Trailer Light, Combination
18	13484-18	2	Recessed Light Guard
19	13514	1	Folding Step Weld
20	13525-05	2	Washer - Mini Fender M5
21	60030-198	2	1/4" Fender Washer
22	508932-000	6	U Bracket
23	513767-010	3	Drop Bar - 610 long
24	562386	1	Literature Compartment
25	3020021	1	Foot Switch
26	13487A	1	Upper Control Box Assembly



Platform Mount Assembly

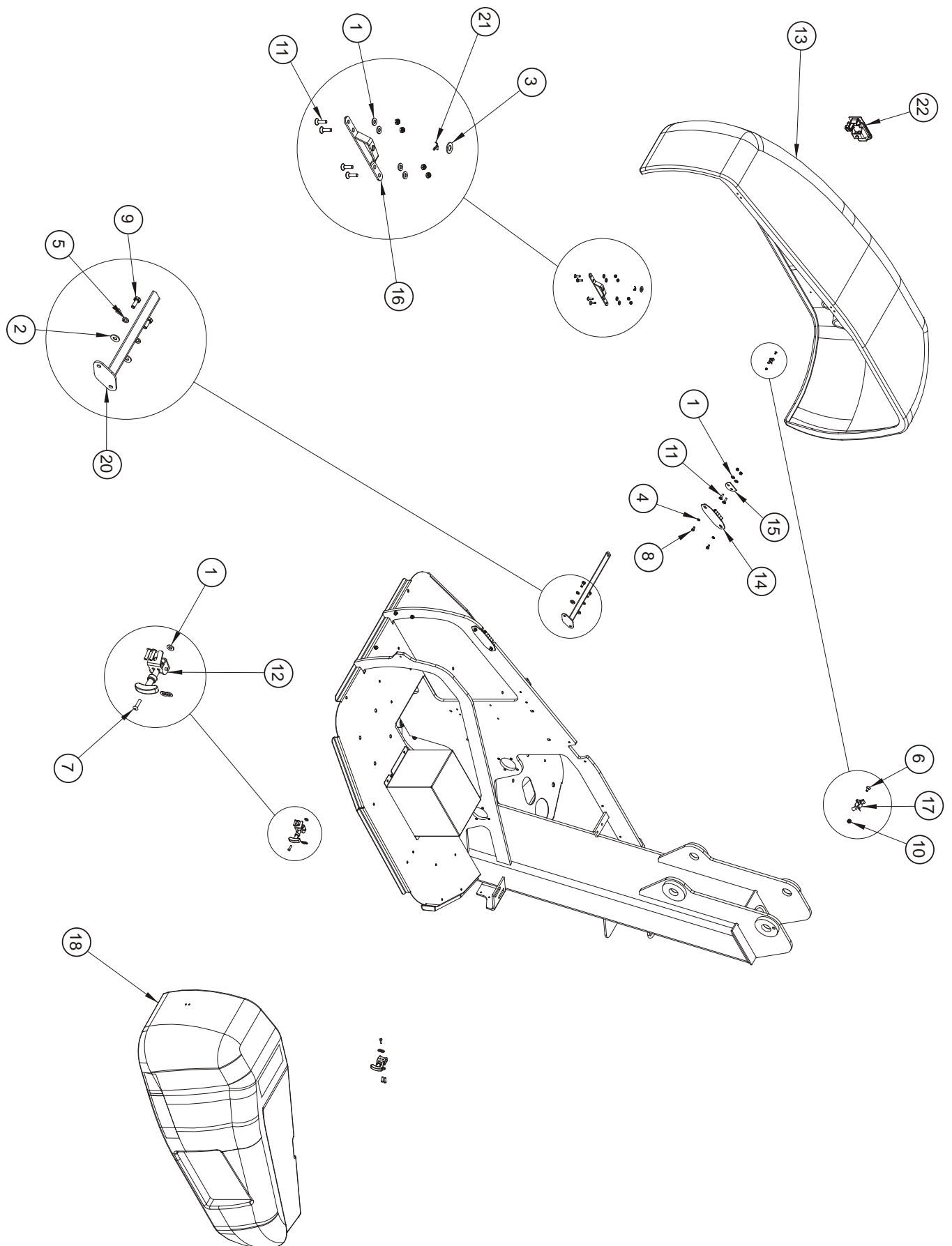
Item	Part No.	Qty.	Description
1	3603-08	6	Plain Washer
2	3611-08	3	Metric Nyloc Nut
3	3617-16035	8	Metric Bolt
4	3631-16	7	Disc lock m16
5	3668-08020	3	Button Head Socket Screw
6	13246	1	Boom Rest Clamp Weld
7	058053-001	2	Pin, 25 Diameter x 93
8	058056-000	3	Pin keeper, Square
9	058066-001	1	Pin, diameter 80 x 230
10	058735-000	1	Cylinder, Slave
11	13484A	1	Basket Assembly



Column Covers Assembly

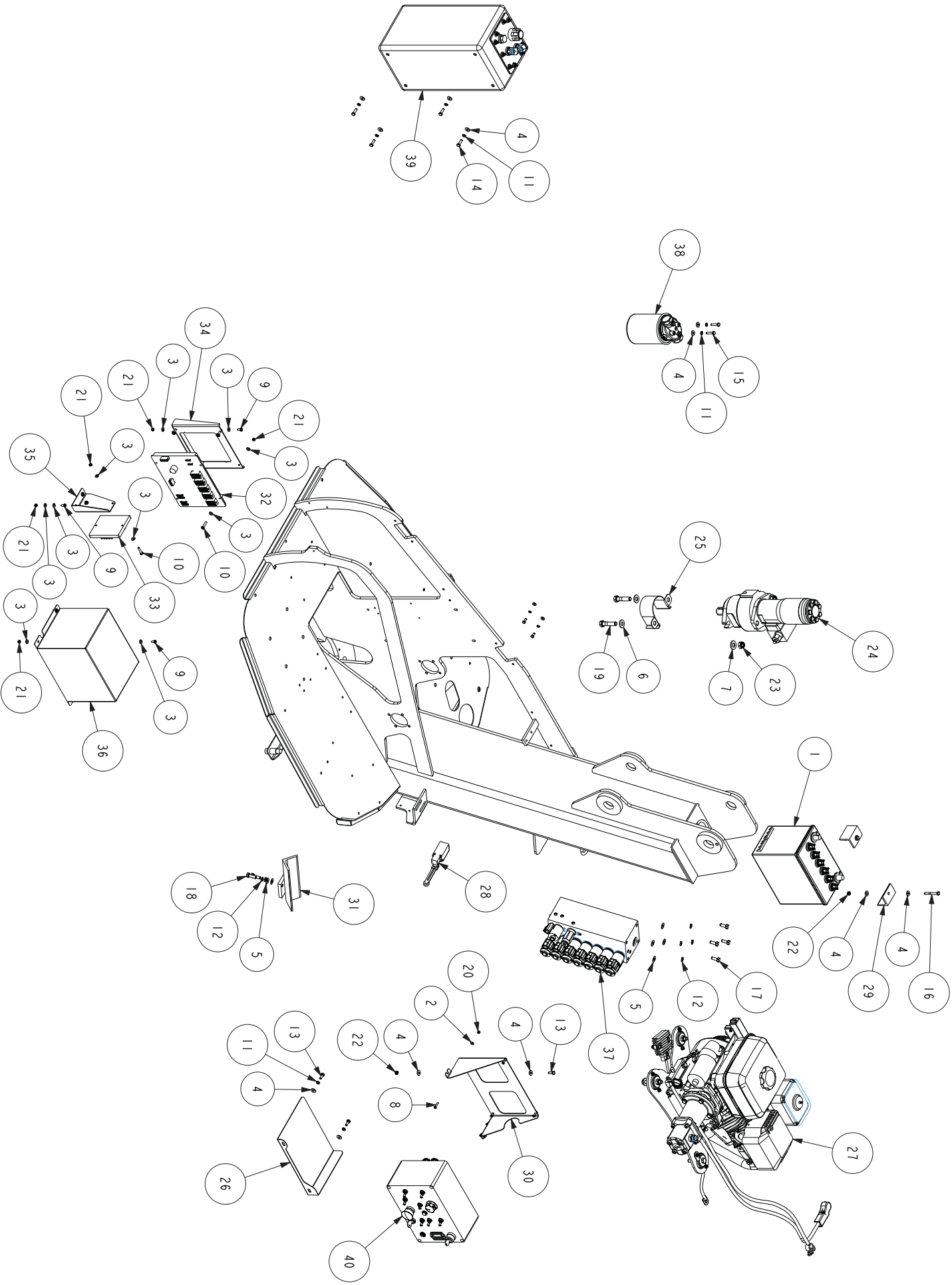
Item	Part No	Qty	Description
1	3603-05	20	Plain Washer
2	3603-06	2	Plain Washer
3	3603-08	1	Plain Washer
4	3605-05	6	Spring Washer
5	3605-06	2	Spring Washer
6	3606-03008	1	Countersunk Socket Head Screw
7	3607-05019	6	Rivet - 3/16 x 1/2" Aluminium
8	3610-05010	4	Metric Bolt
9	3610-06016	2	Metric Bolt
10	3611-03	1	Metric Nylock Nut
11	3660-05020	8	Countersunk Screw
12	9466-1	2	Latch
13	12388-2	1	Cover - Hydraulic Side
14	12392	2	Hinge Weldment
15	12392-2	2	Cover Hinge Spacer
16	12414-20	1	Stay Pivot Mount
17	12440	1	Tool Clip
18	13334	1	Cover - Controls Side
20	13632-10	1	Stay Bracket
21	60038-006	1	Split Pin
22	5510014	1	Latch Side Cover

Column Covers Assembly



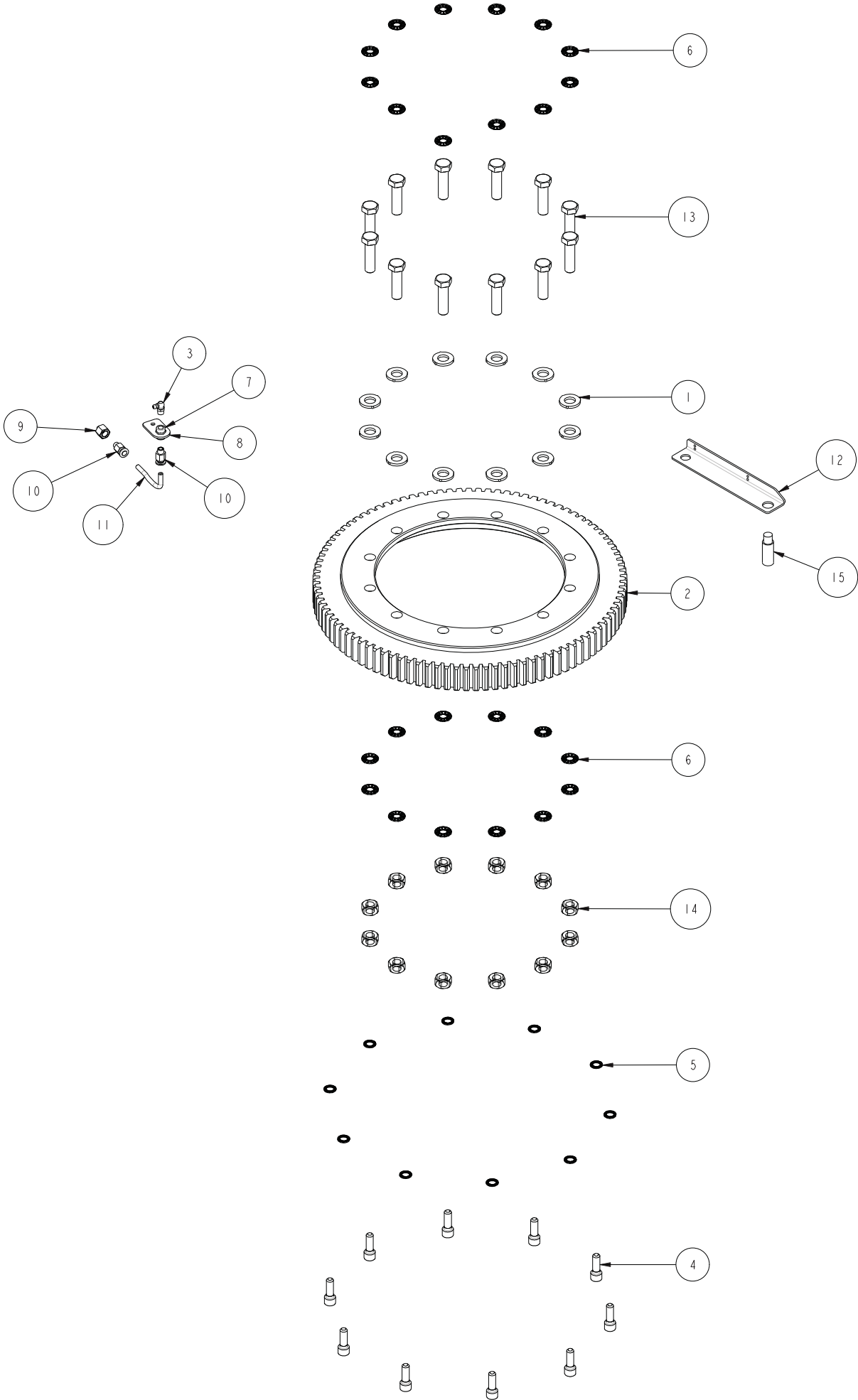
Column Assembly

Item	Part No	Qty	Description
0	13506	1	Column Assembly
1	1288	1	Battery G4I
2	3603-04	4	Plain Washer
3	3603-05	30	Plain Washer
4	3603-06	18	Plain Washer
5	3603-08	6	Plain Washer
6	3603-12	2	Plain Washer
7	3603-12HD	2	Plain Washer
8	3604-04020	4	Screw, Pan Head Pozzi- M4 x 20 ZP
9	3604-05012	8	Screw, Pan Head Pozzi- M5 x 12 ZP
10	3604-05025	6	Screw, Pan Head Pozzi- M5 x 25 ZP
11	3605-06	8	Spring Washer
12	3605-08	6	Spring Washer
13	3610-06016	5	Metric Bolt
14	3610-06020	4	Metric Bolt
15	3610-06025	2	Metric Bolt
16	3610-06050	2	Metric Bolt
17	3610-08020	4	Metric Bolt
18	3610-08025	2	Metric Bolt
19	3610-12050	2	Metric Bolt
20	3611-04	4	Metric Nyloc Nut
21	3611-05	14	Metric Nyloc Nut
22	3611-06	5	Metric Nyloc Nut
23	3611-12	2	Metric Nyloc Nut
24	11943	1	Slew Drive & Brake Assembly
25	12381-25	1	Pinion Gear Guard
26	12381-40	1	Heat Deflector
27	12413-02	1	Engine Assembly
28	12445-1	1	Limit Switch- Roller/Lever, Adjustable
29	13219-10	2	Battery Clamp
30	13219-5	1	Lower Control Box Mount
31	13366	1	Upper Boom Rest
32	13485-01	1	Trionics - GP400C
33	13485-03	1	Trionics - TBM
34	13549	1	Mount Bracket - GP400
35	13550	1	Mount Bracket - TBM
36	13551	1	Cover Box Fold
37	13911-04	1	Manifold Assy- Main MHP AT, Rotate, Bi-energy
38	301440	1	AE-10 Oil Filter
39	13237A	1	Hydraulic Oil Tank Assembly
40	13530A	1	Control box, Lower



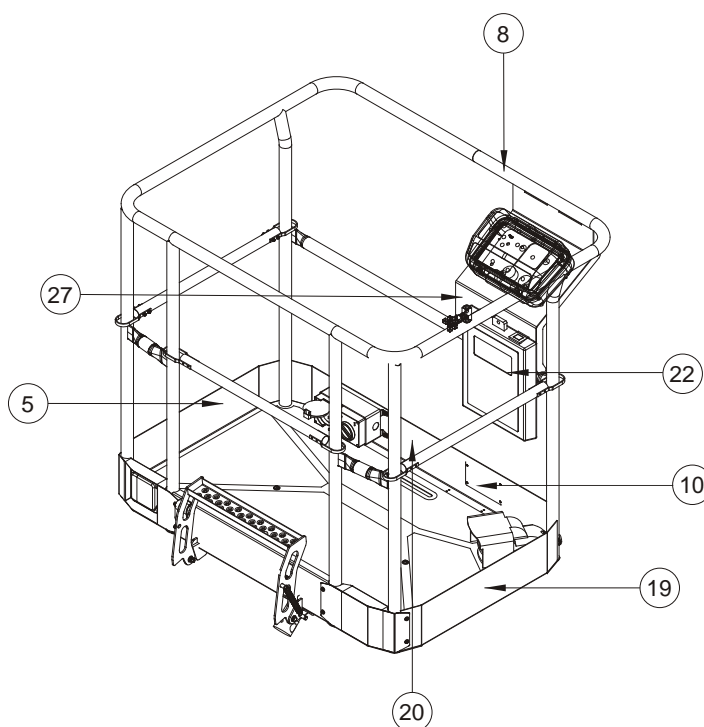
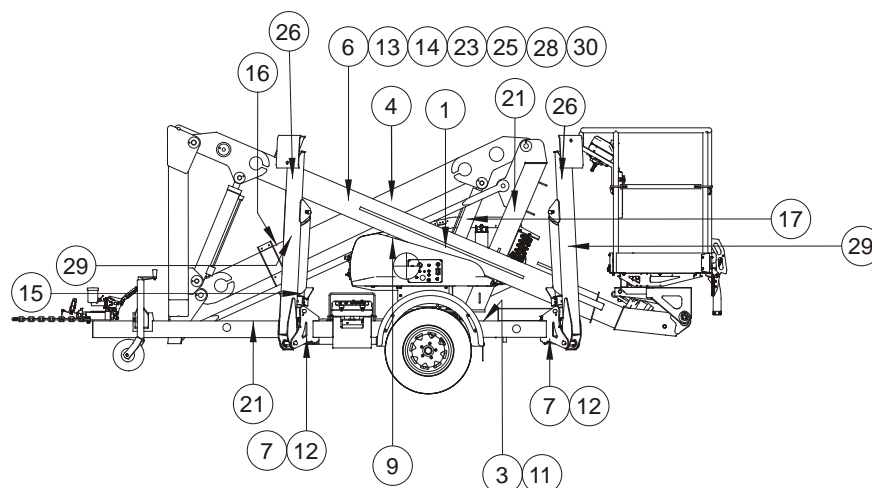
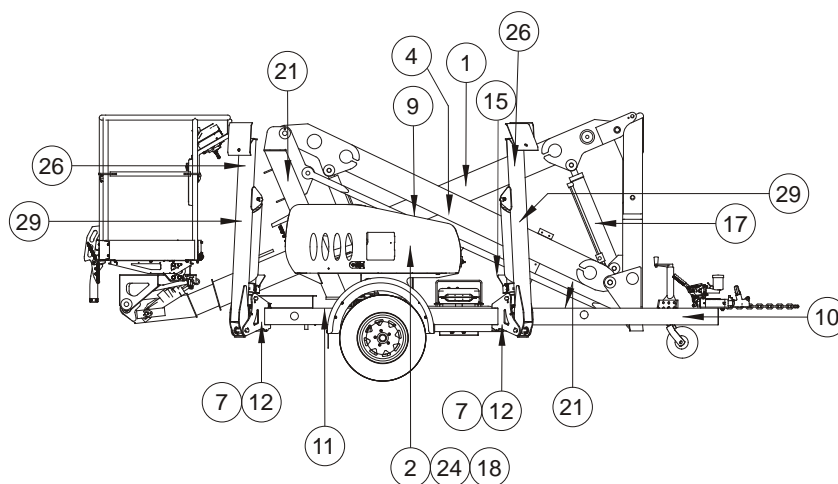
Slew Ring Assembly

Item	Part No.	Qty.	Description
1	1034-120	12	M16 Galv Hardened & Temp Washer
2	1067	1	Slew Ring
3	2030-003	1	Grease Nipple
4	3613-12035	10	Socket Head Cap Screw
5	3631-12	10	Disc Lock Washer
6	3631-16	12	Disc Lock Washer
7	7021-001	1	1/8-27 NPT Socket
8	12483-1	1	Remote Grease Nipple
9	12483-2	1	Adapter
10	12483-3	2	Connector
11	12483-4	1	Tube
12	13537-20	1	Slew Position Prox Bracket
13	60020-028N	12	UNF Hex Bolt
14	60021-016	12	UNF Nut
15	505072-000	1	Inductive Prox NO



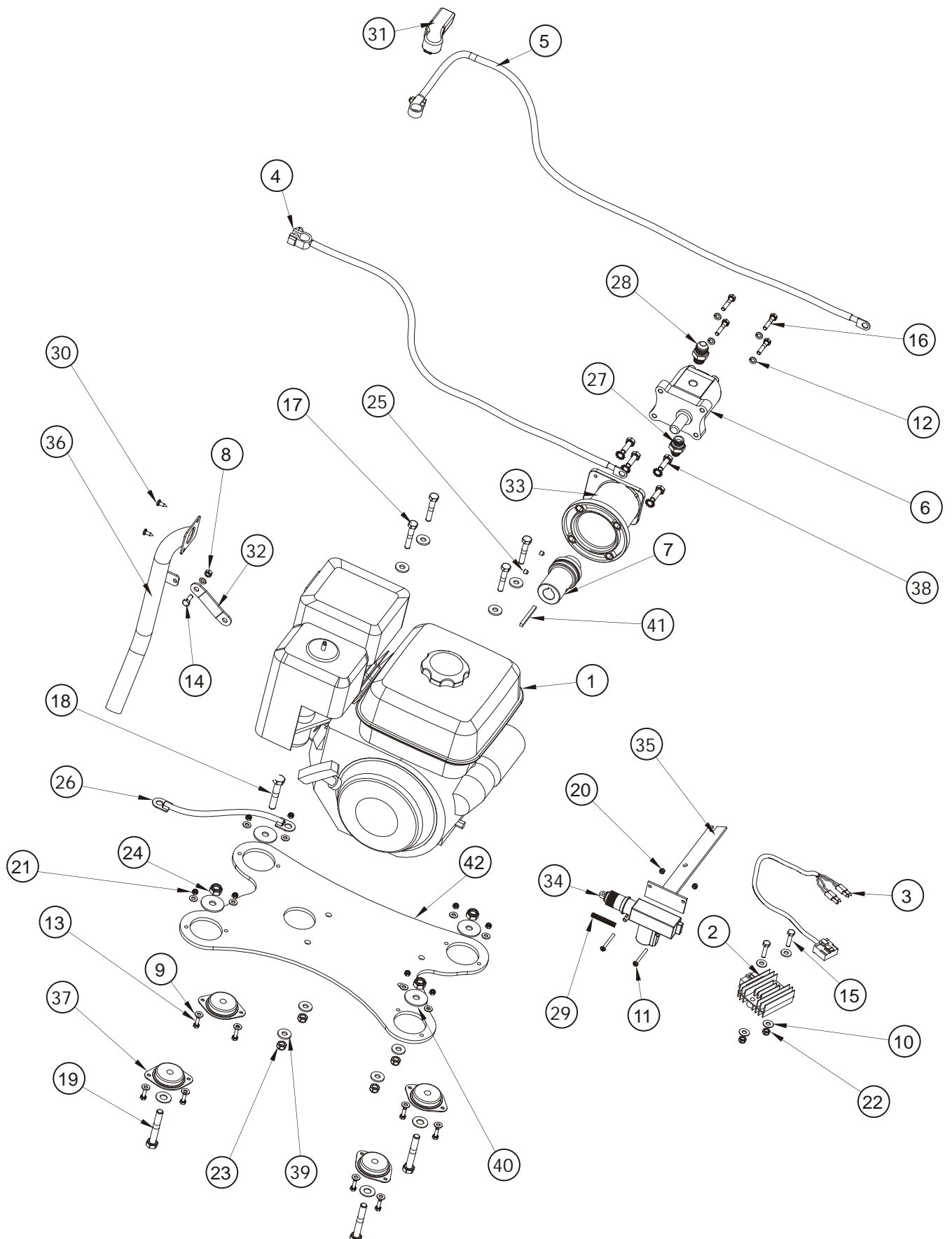
Placards and Decals

Item	Part No	Qty	Description
1	511067-000	2	Decal, Snorkellift.com Logo
2	12814	1	Decal, Hydraulic Fluid
3	12883-2	1	Decal, Serial Number Plate
4	13471-04	2	Decal, MHP14AT Logo
5	99228-1	1	Decal, Caution
6	300699	1	Decal, Operators Checklist
7	451986	4	Decal, Do Not Disable Limit Switch
8	45198-7	1	Decal, Wind Speed Rating
9	302559	2	Decal, Danger Pinch Point
10	13030	1	Decal, Electrocution Hazard (Basket)
11	7856-45	2	Decal, Tyre Pressure
12	0083426	4	Decal, Lifting and Tie Down
13	013-0025	1	Decal, Warning With Stabilisers
14	12545	1	Decal, Auto Stabiliser Operation
15	13111	2	Decal, Danger Pinch Point
16	1772-002-K	1	Decal, Fit Boom Cradle Lock Pin
17	13276	2	Decal, Emergency Bleed Down Valve Operation
18	9213	1	Decal, Petrol
19	12423-215	1	Decal, Rated Load
20	0150448	1	Decal, Caution Safety Harness
21	015-0602	4	Decal, Danger Keep Clear Of Descending Boom
22	562426	1	Decal, Operation Manual Enclosed
23	13183	1	Decal, Remove From Towing Vehicle Before Operating
24	302950	1	Decal, Hydraulic Oil Level
25	12617	1	Decal, Approved Lift Method
26	0080650	4	Decal, Shackle Foot Point
27	13373	1	Decal, Emergency Lower From Platform
28	0072531	1	Decal, Electrocution Hazard
29	501453-000	4	Decal, Foot Crush Hazard
30	0323897	1	Decal, Machine Operation



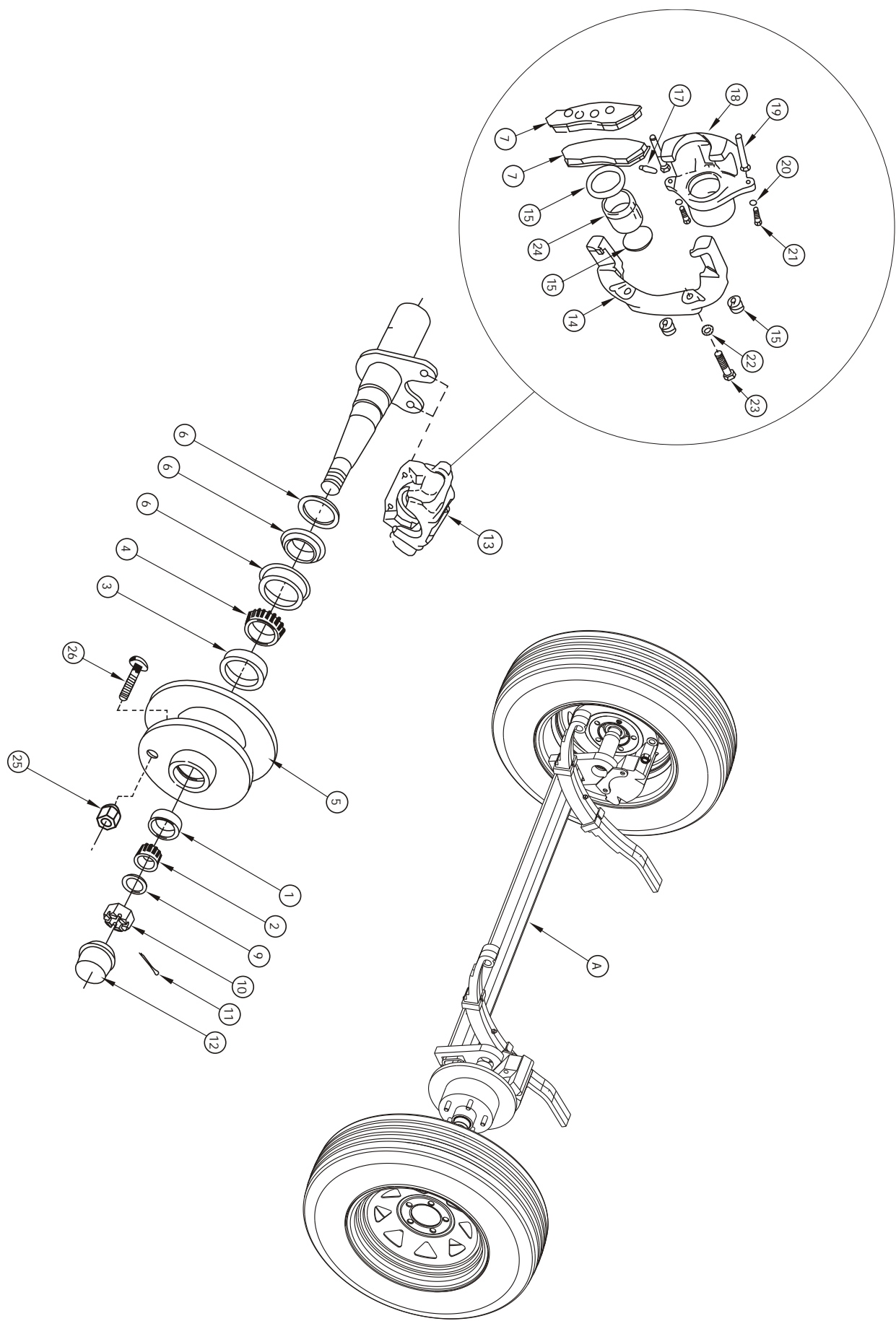
Honda Engine Assembly

Item	Part No	Qty	Description
0	12413-02	1	Honda Engine Assembly
1	1171-4	1	Honda GX160
2	1171-4-022	1	Regulator / Rectifier
3	1171-4-025	1	Loom
4	1650-030	1	Hamel Cable BS24C
5	1650-031	1	Hamel Cable BS24C
6	15081	1	Gear Pump
7	1880-001	1	Drive Coupling
8	3602-06	16	Metric Hex Nut
9	3603-05	4	Plain Washer
10	3603-06	4	Plain Washer
11	3604-04040	5	Pan Head Screw
12	3605-06	7	Spring Washer
13	3610-05016	8	Metric Bolt
14	3610-06016	2	Metric Bolt
15	3610-06025	4	Metric Bolt
16	3613-06020	4	Metric Bolt
17	3610-08045	4	Metric Bolt
18	3610-10055	3	Metric Bolt
19	3610-10065	2	Metric Bolt
20	3611-04	8	Metric Nylock Nut
21	3611-05	8	Metric Nylock Nut
22	3611-06	4	Metric Nylock Nut
23	3611-08	4	Metric Nylock Nut
24	3611-10	2	Metric Nylock Nut
25	3612-06006	2	Metric Grub Screw
26	3649-10	1	Battery Cable
27	7013-003	1	Adapter BSPPM (Dowty) x JICM Straight 3/8" - 9/16"
28	7013-004	1	Adapter BSPPM (Dowty) x JICM Straight 3/8" - 3/4"
29	8398	1	Spring
30	8978-1	1	Self Tapping Screw
31	12054	1	Battery Terminal Cover
32	10350-4	1	Exhaust Bracket
33	10417	1	Bellhousing
34	11444	1	Choke Solenoid 12V
35	11497	1	Choke Solenoid Bracket
36	13241	4	Exhaust Weldment
37	12524	4	Engine Mount
38	60016-090N	4	3/4" x 1/4" NC Bolt (Plated)
39	60030-3N	4	5/16" Flat Washer
40	5560179	1	Flat Washer - Special
41	1875	1	3/16 Key Steel
42	12526	1	Engine Mount Plate



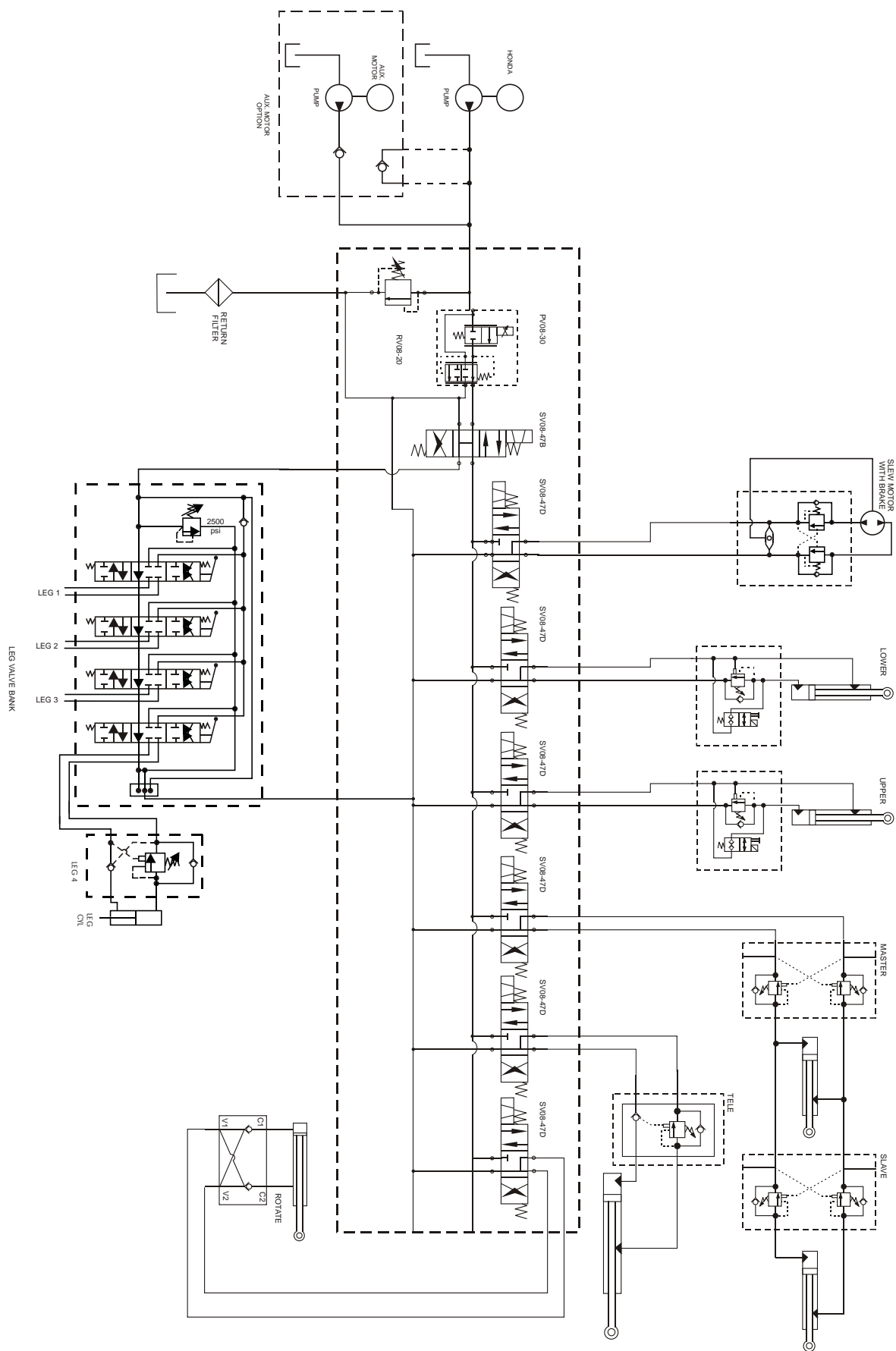
Axle Assembly

Item	Part No	Qty	Description
0	12701	Ref	Axle Assembly
1	12701-10	2	Wheel Bearing Kit (Includes 1, 2, 3, 4)
2		Ref	Wheel Bearing
3		Ref	Wheel Bearing
4		Ref	Wheel Bearing
5	12701-1	1	Wheel Hub
6	12701-4	2	Seal Kit, Hub
7	2045-004	1 Pair	Brake Pads
9	1033-008	2	Nut Kit (Includes 10, 11)
10		Ref	Washer
11		Ref	Split Pin
12	9922-7	2	Grease Cap
13	2045-001	Ref	Caliper Assembly (Includes 12 - 24)
14	9945-9	2	Anchor Plate
15	2045K	Ref	Seal Kit, Caliper
17	2045-003	2	Bleed Screw
18	2045-13	2	Housing
19	2045-5	4	Guide Pin
20	3605-08	4	Spring Washer
21	3610-08030	4	Metric Bolt
22	60005-013	2	Lock Washer
23	3610-12035	2	Metric Bolt
24	2045-010	2	Piston
25	1649-041	10	Wheel Nut, UNF 1/2"
26	1649-040	10	Wheel Stud, UNF 1/2"

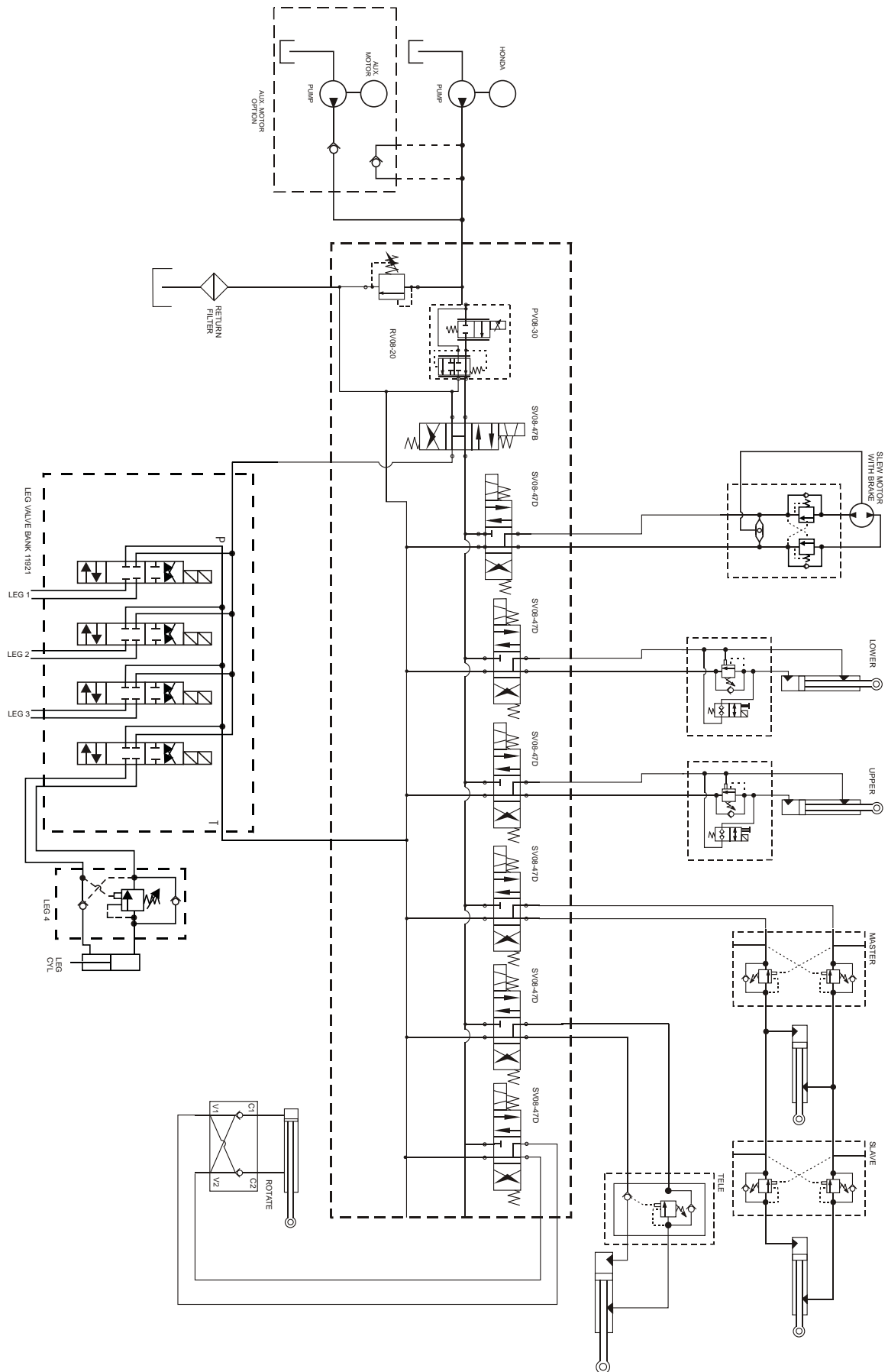


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Hydraulic Schematic, Standard Machines



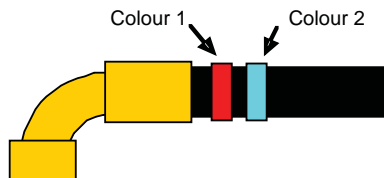
Hydraulic Schematic, Auto Level Machines



READING HOSE TAGS

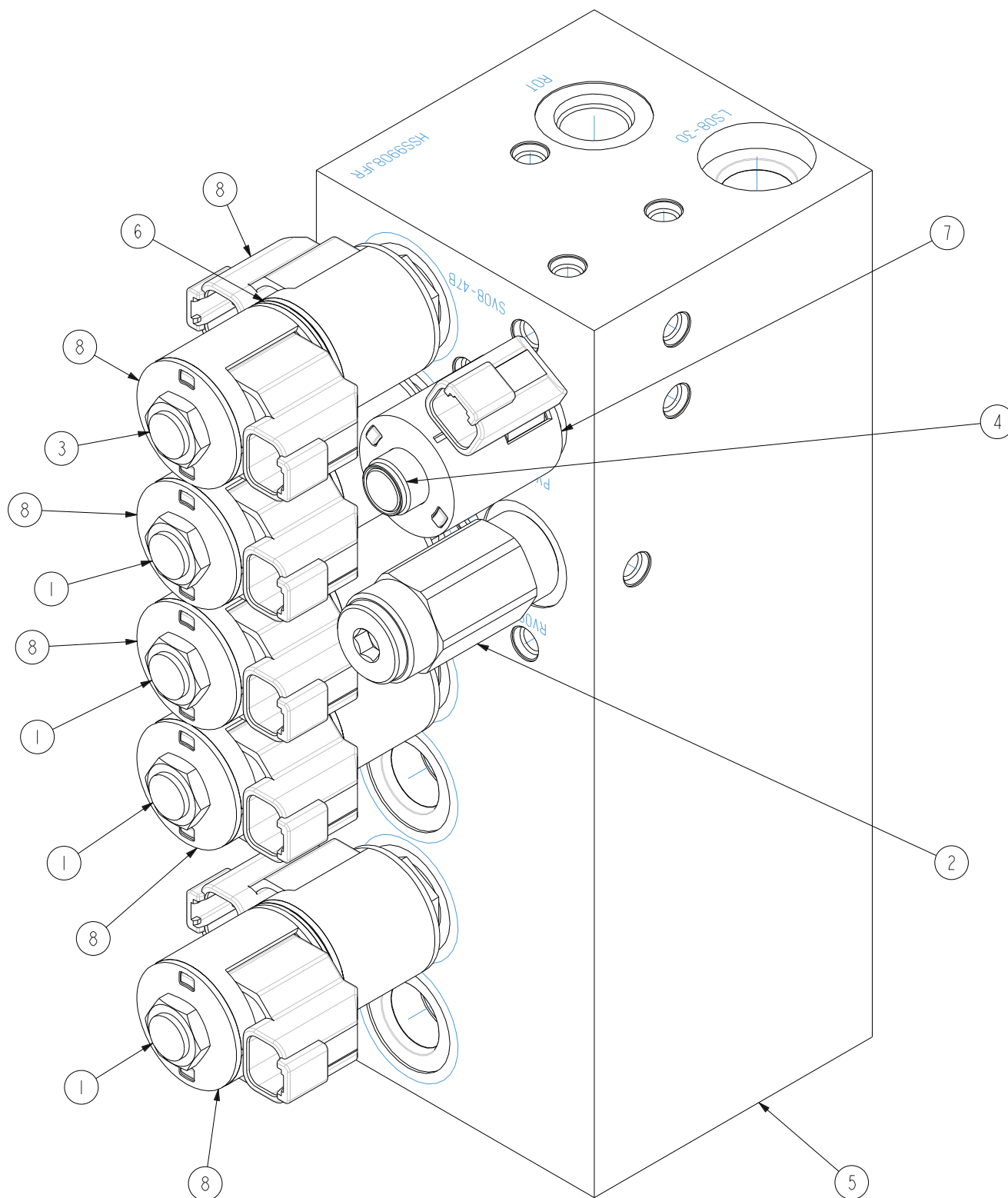
Hose tags are read from the fitting side of the hose in towards the hose.

As such colour 1 is the closest to the fitting, colour 2 the next colour then 3, 4 etc...

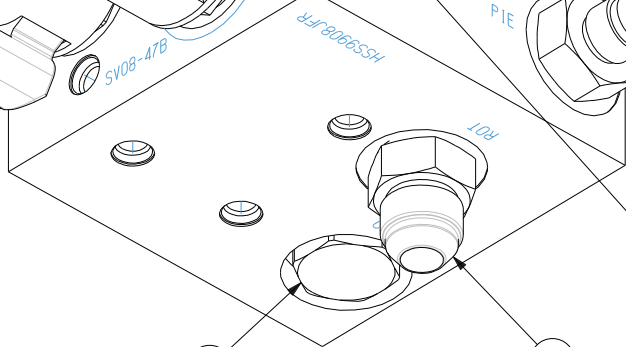


Part No	Colour 1	Colour 2	Hose use
13254-01	Red	Yellow	Leg valve (a) > LF Leg cylinder (b), Extend
13254-02	Red	Green	Leg valve (a) > LF Leg cylinder (b), Retract
13254-03	Orange	Yellow	Leg valve (a) > RF Leg cylinder (b), Extend
13254-04	Orange	Green	Leg valve (a) > RF Leg cylinder (b), Retract
13254-05	Yellow	Yellow	Leg valve (a) > LR Leg cylinder (b), Extend
13254-06	Yellow	Green	Leg valve (a) > LR Leg cylinder (b), Retract
13254-07	Green	Yellow	Leg valve (a) > RR Leg cylinder (b), Extend
13254-08	Green	Green	Leg valve (a) > RR Leg cylinder (b), Retract
13254-09	Black	Yellow	Main valve (a) > Leg valve (b), Pressure
13254-10	Black	White	Main valve (a) Leg valve (b) Return
13254-11	Red	Yellow	Main manifold > Lower lift cylinder, Extend
13254-12	Red	Green	Main manifold > Lower lift cylinder, Retract
13254-13	Orange	Yellow	Main manifold > Master level cylinder, Extend
13254-14	Orange	Green	Main manifold > Master level cylinder retract
13254-15	Yellow	Yellow	Main manifold > Upper lift cylinder, Extend
13254-16	Yellow	Green	Main manifold > Upper lift cylinder, Retract
13254-17	Green	Yellow	Main manifold > Tele cylinder, Extend
13254-18	Green	Green	Main manifold > Tele cylinder, Retract
13254-19	Blue	Yellow	Master level cylinder > Slave level cylinder, Extend
13254-20	Blue	Green	Master level cylinder > Slave level cylinder, Retract
13254-21	Blue	Yellow	Slew left, Main manifold > Slew motor
13254-22	Blue	Green	Slew right, main manifold > Slew motor
13254-23	Red	---	Oil tank > Pump suction
13254-24	Orange	---	Main manifold > Return filter
13254-25	Yellow	---	Return filter > Tank
13254-26	Green	---	Pmp pressure > Main manifold

Main Manifold, No Fittings

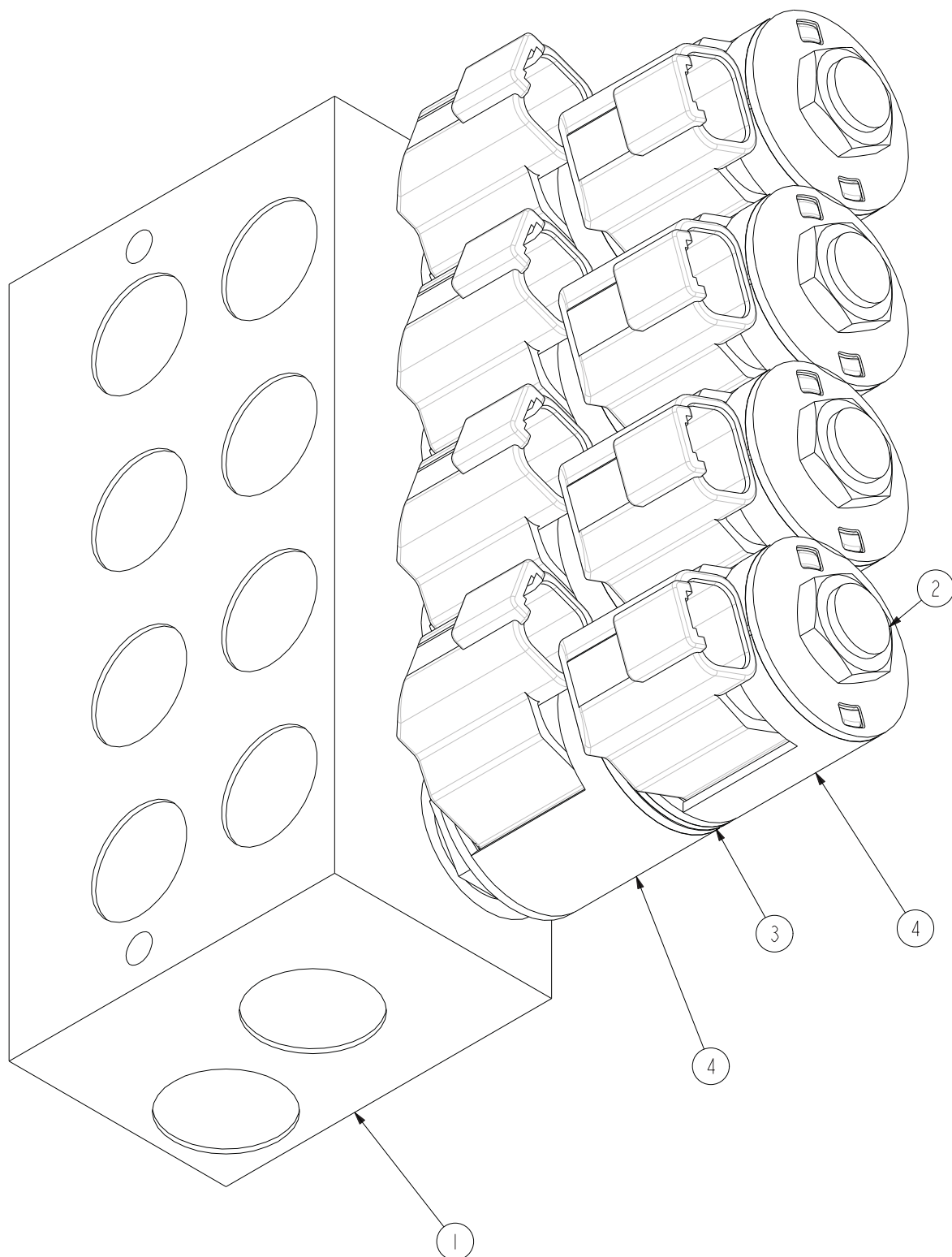


Item	Part No.	Qty.	Description
0	13879-01	1	Main Manifold, No Fittings
1	12567-4	4	Cartridge, Solenoid- Spool, 4-Way, 3-Posn, Motor Spool
2	12567-8	1	Cartridge- Relief, Direct-Acting Poppet
3	13269-1	1	Cartridge, Solenoid- Spool, 4-Way, 3-Posn, Open Centre
4	13269-2	1	Cartridge- Proportional Flow Control
5	13879	1	Manifold Block- Main, MHP EC
6	13881-08	5	Coil Spacer- 08
7	13910	1	Coil- 08 12V Proportional Deutsch DT Connector
8	6019180	10	Coil - 08 12V Deutsch DT Connector



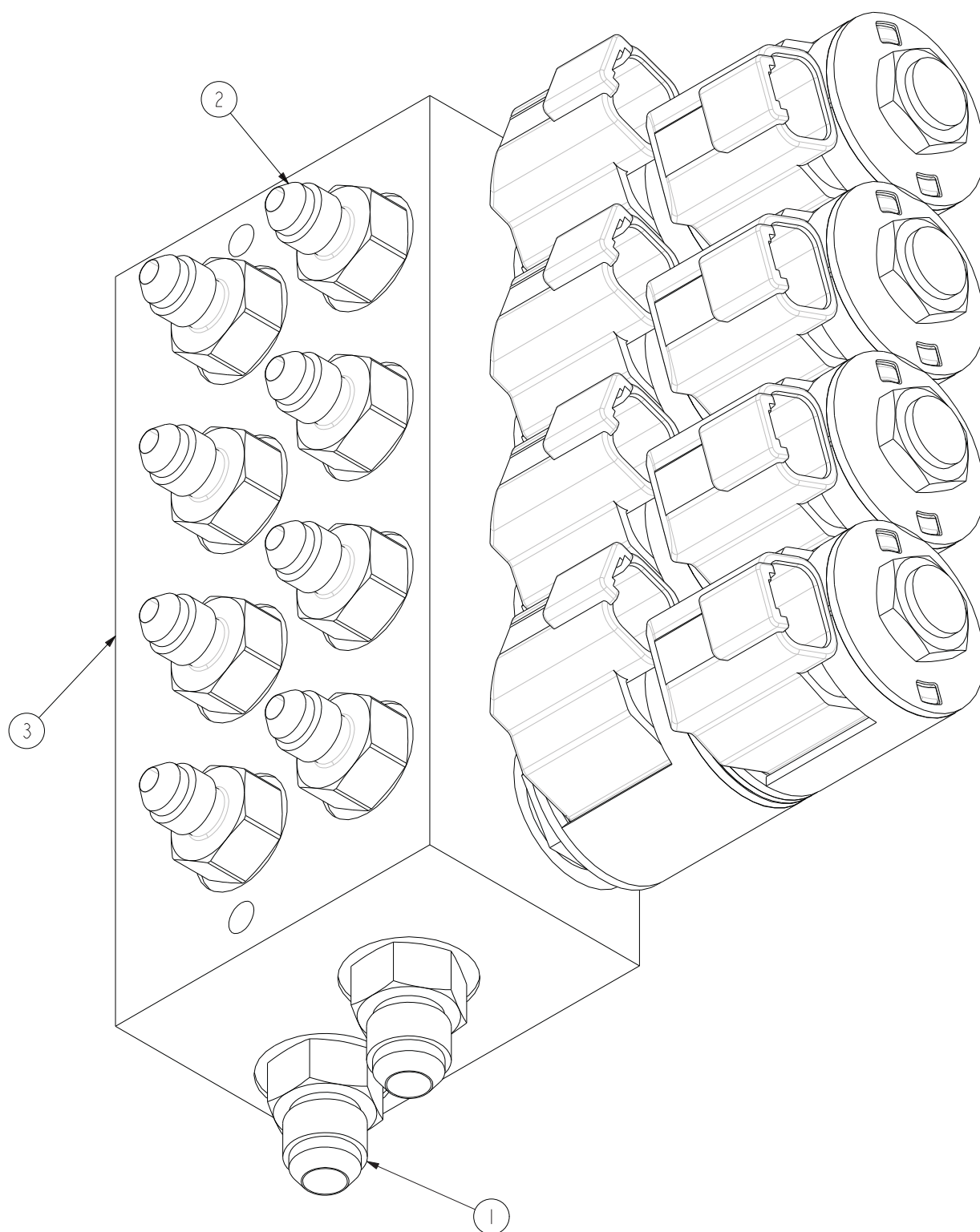
Item	Part No.	Qty.	Description
0	13911-04	1	Main Manifold, Fittings
1	7025-001	2	Adapter JICM - UNO Straight 9/16" - 9/16"
2	7025-003	1	Adapter JICM - UNO Straight 3/4" - 3/4"
3	7025-004	4	Adapter JICM - UNO Straight 9/16" - 3/4"
4	7025-013	10	Adapter JICM - UNO Straight 7/16" - 9/16"
5	10996-2	1	Test Point- UNO, 9/16
6	12567-22	1	Cartridge- Load Shuttle
7	12567-4	6	Cartridge, Solenoid- Spool, 4-Way, 3-Posn, Motor Spool
8	13881-08	7	Coil Spacer- 08
9	6019180	14	Coil - 08 12V Deutsch DT Connector

Auto Stabiliser Manifold, No Fittings



Item	Part No.	Qty.	Description
0	11921-2	1	Auto Stabiliser Manifold, No Fittings
1	11921-BLOCK	1	Auto Stabiliser, Block
2	12567-4	4	Cartridge, Solenoid- Spool, 4-Way, 3-Posn, Motor Spool
3	13881-08	4	Coil Spacer- 08
4	6019180	8	Coil - 08 12V Deutsch DT Connector

Auto Stabiliser Manifold, With Fittings

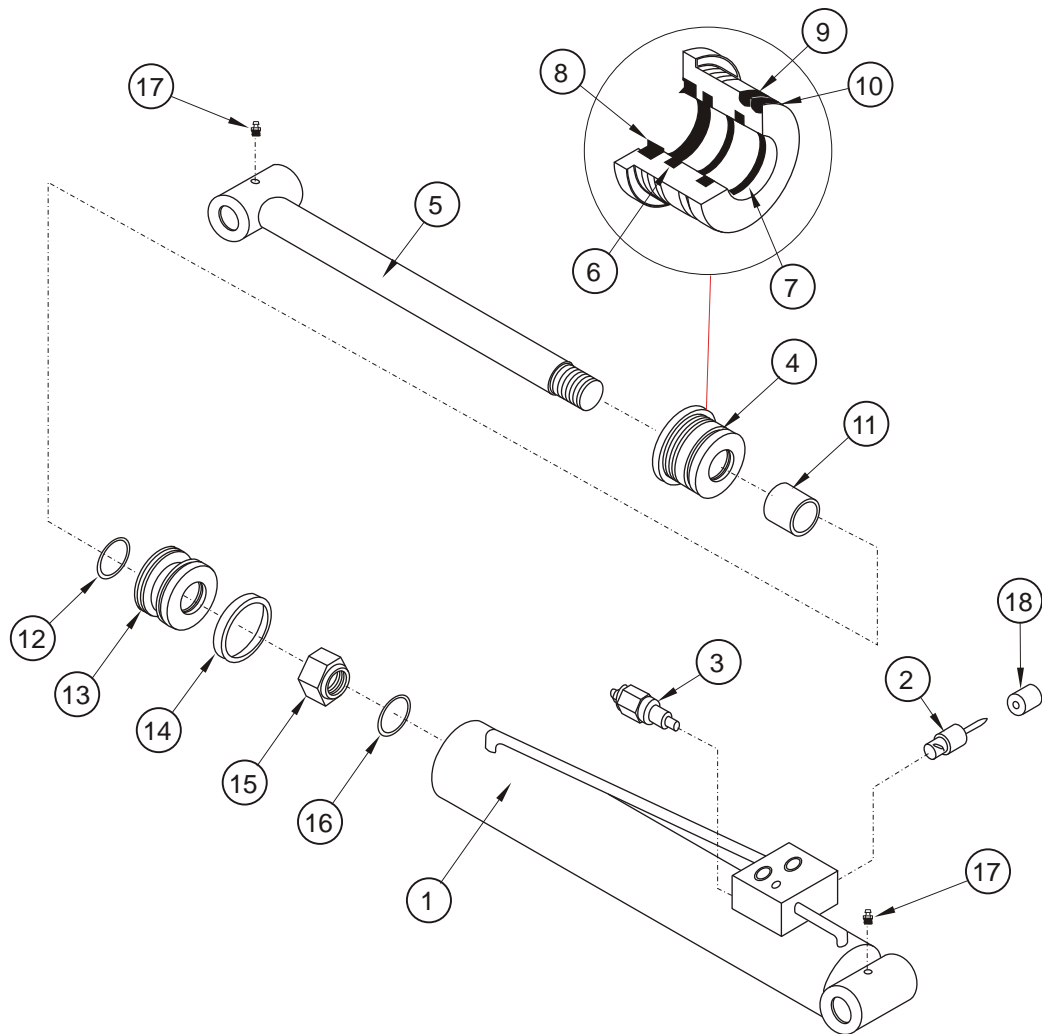


Item	Part No.	Qty.	Description
0	11921-2A	1	Auto Stabiliser Manifold, Fittings
1	7025-001	2	Adapter JICM - UNO Straight 9/16" - 9/16"
2	7025-013	8	Adapter JICM - UNO Straight 7/16" - 9/16"
3	11921_BLOCK	1	Auto Stabiliser, Block

Upper Lift Cylinder Assembly

Item	Part No	Qty	Description
0	504505-000	1	Cylinder Assembly
1		1	Cylinder Body
2	13273	1	Emergency Lowering Valve
3	058728-000	1	Single Over Centre Valve
4		1	End Cap
5		1	Rod and End Pivot
6		1	U-Ring Rod Seal
7		1	Rod Seal
8		1	Wiper
9		1	Back Up O-Ring
10		1	O-Ring
11		1	Spacer
12		1	Piston O-Ring
13		1	Piston Head
14		1	Piston Seal
15		1	Piston Locknut
16		1	Washer
17	057048-000	2	Grease Nipple
18	12835-2	1	Coil, 12V

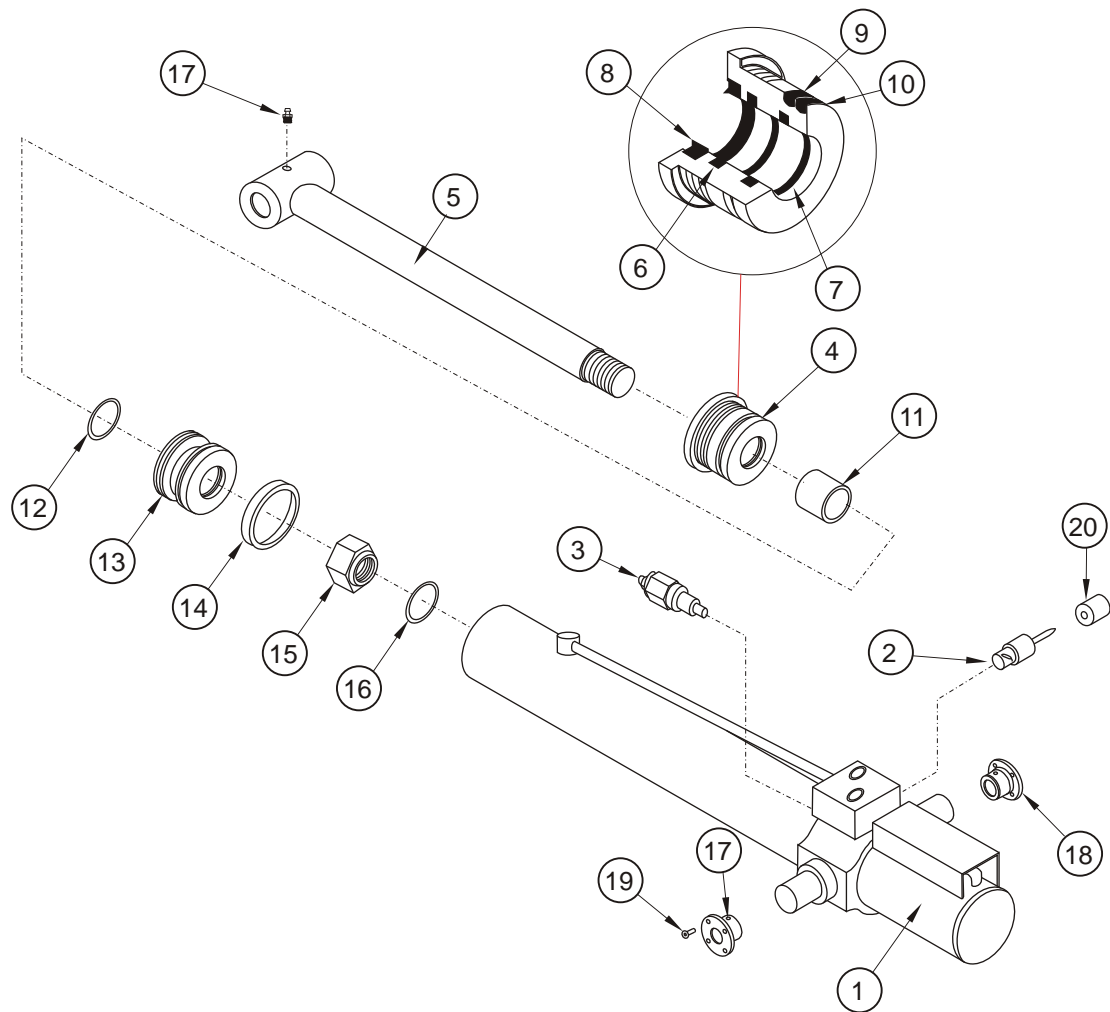
Note: Items 6 to 10 inclusive 12 & 14 form the seal kit for the machines upper lift cylinder.
Seal part no: 500458-000.



Lower Lift Cylinder Assembly

Item	Part No	Qty	Description
0	504504-000	1	Lower Cylinder Assembly
1		1	Cylinder Body
2	13273	1	Emergency Lowering Valve
3	058728-000	1	Single Over Centre Valve
4		1	End Cap
5		1	Rod and End Pivot
6	Seal Kit	1	U Ring and Rod Seal
7	Seal Kit	1	Rod Seal
8	Seal Kit	1	Wiper
9	Seal Kit	1	Back Up O-Ring
10	Seal Kit	1	O-Ring
11		1	Spacer
12	Seal Kit	1	Piston O-Ring
13		1	Piston Head
14	Seal Kit	1	Piston Seal
15		1	Piston Locknut
16		1	Washer
17	057048-000	2	Grease Nipple
18	058447-000	2	Lower Lift Cylinder Boss
19	058516-000	8	Boss Caphead Screw
20	12835-2	1	Coil, 12V

Note: Items 6 to 10 inclusive 12 & 14 form the seal kit for the machines lower lift cylinder.
Seal part no: 500458-000.

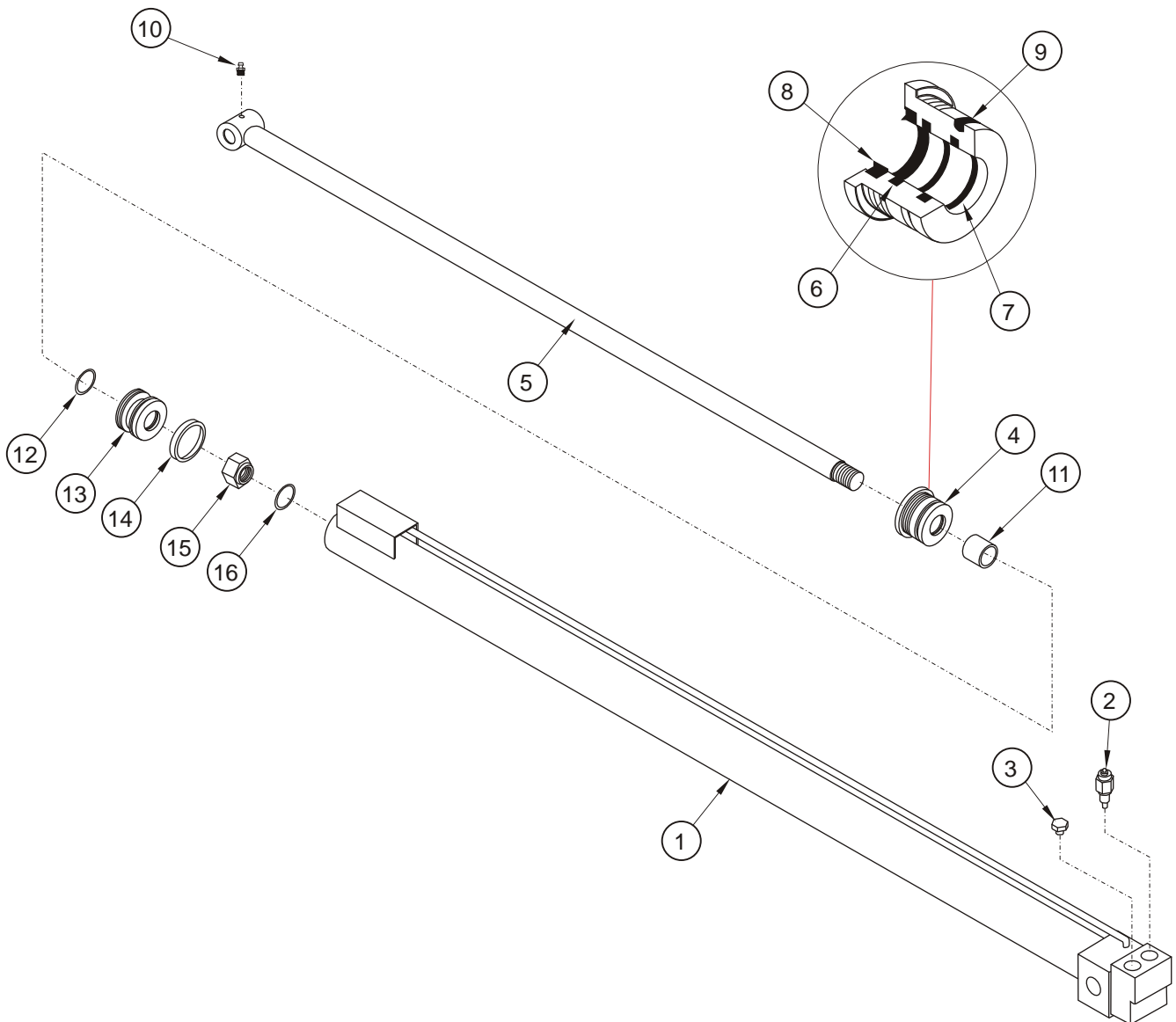


Tele Boom Cylinder Assembly

Item	Part No	Qty	Description
0	058461-000	1	Cylinder Assembly
1		1	Cylinder Body
2	058728-000	1	Single Over Centre Valve
3	058714-000	1	Single PO Check Valve
4		1	End Cap
5		1	Rod and End Pivot
6		1	U-Ring Rod Seal
7		1	Rod Seal
8		1	Wiper
9		1	O-Ring
10	057048-000	1	Grease Nipple
11		1	Spacer
12		1	Piston O-Ring
13		1	Piston Head
14		1	Piston Seal
15		1	Piston Locknut
16		1	Washer

Note: Items 6 to 9 inclusive 12 & 14 form the seal kit for the machines tele boom cylinder.
Seal part no: 500459-000.

Tele Boom Cylinder Assembly

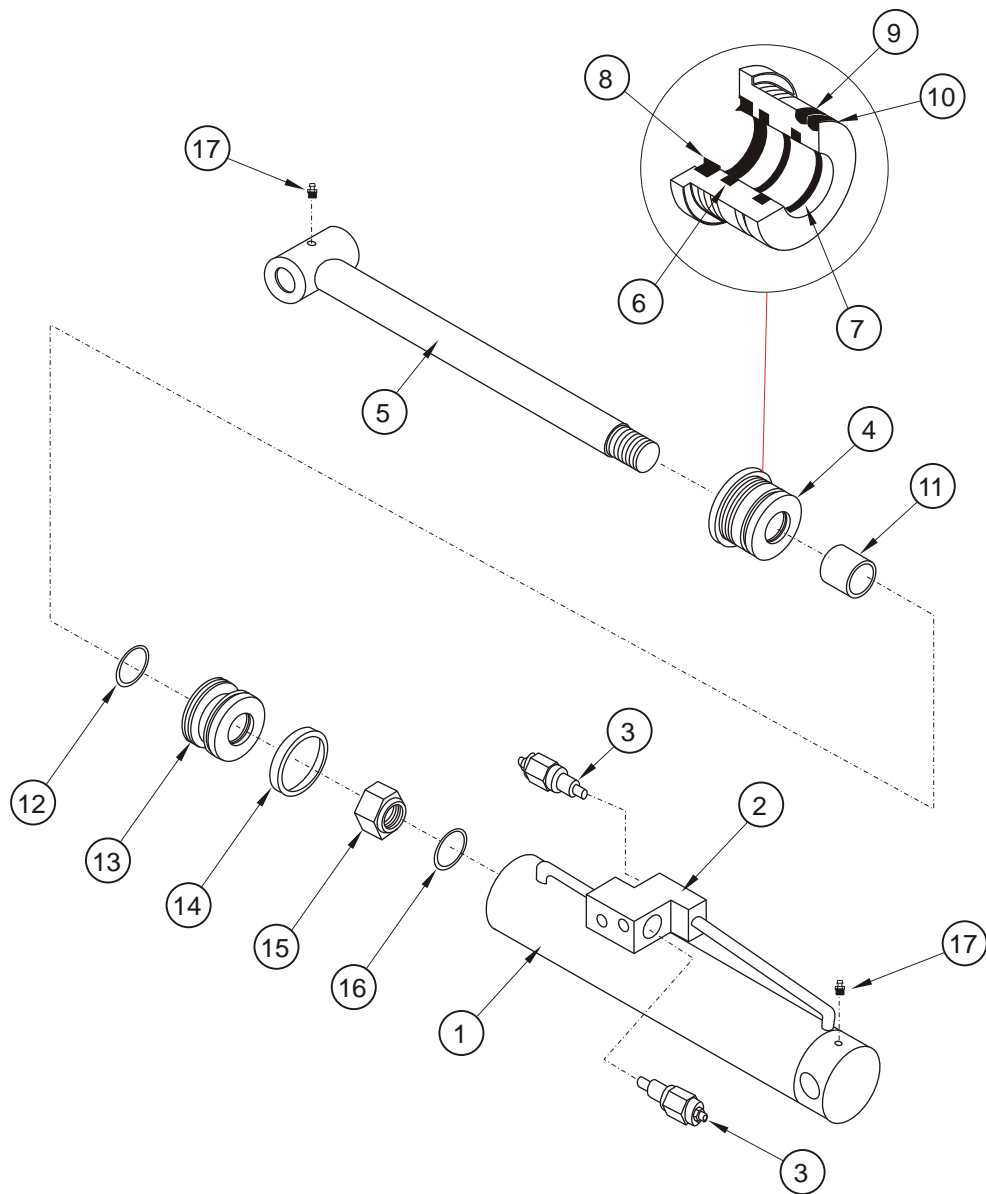


Master / Slave Cylinder Assembly

Item	Part No	Qty	Description
A	058735-000	1	Slave Level Cylinder
B	058734-000	1	Master Level Cylinder
1	058728-000	1	Cylinder Body
2		1	Valve Block Body
3		1	Single Over Centre Valve
4		1	End Cap
5		1	Rod and End Pivot
6		1	U-Ring Rod Seal
7		1	Rod Seal
8		1	Wiper
9		1	Back Up O-Ring
10		1	O-Ring
11		1	Spacer
12		1	Piston O-Ring
13		1	Piston Head
14		1	Piston Seal
15		1	Piston Locknut
16		1	Washer
17	057048-000	2	Grease Nipple

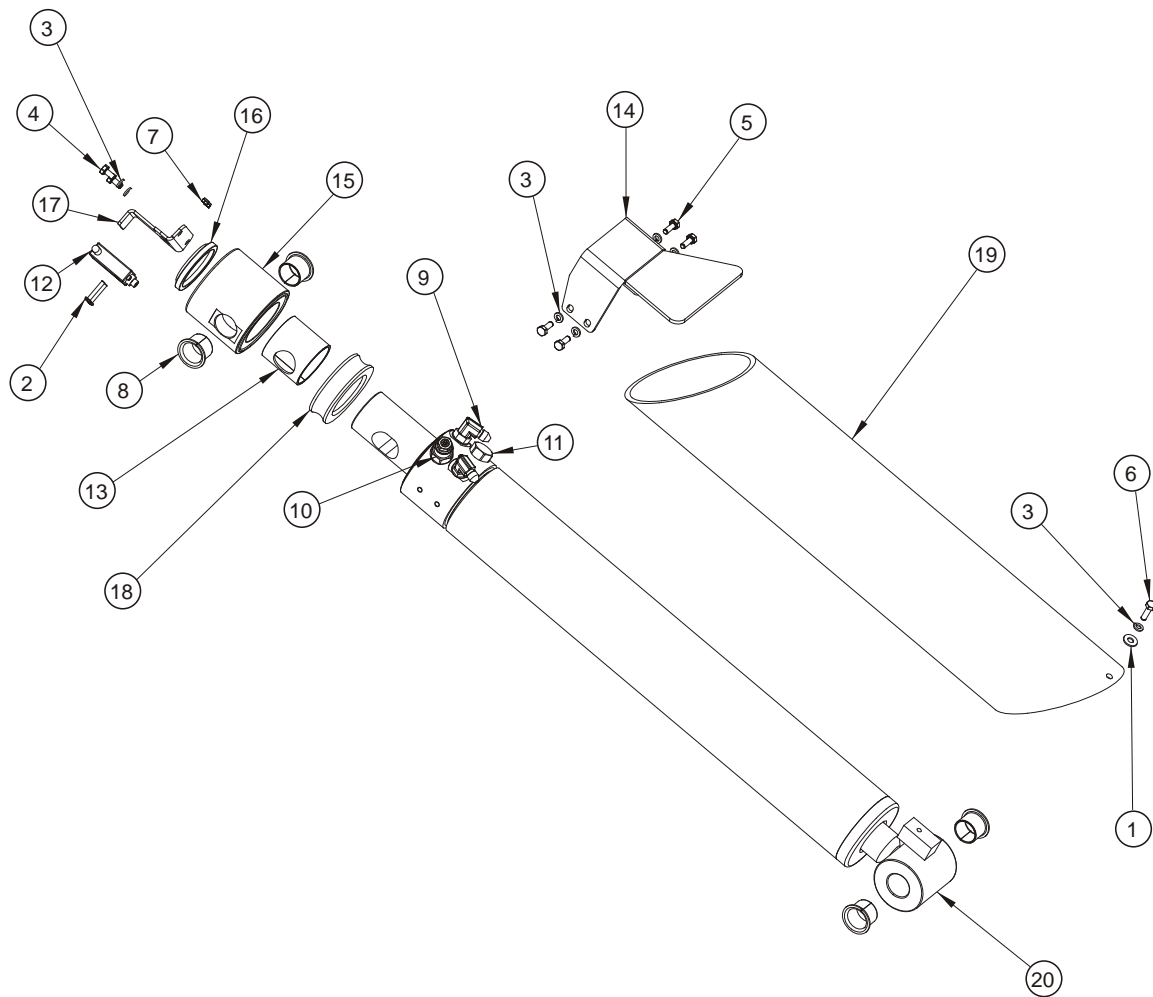
Note: Items 6 to 10 inclusive 12 & 14 form the seal kit for the master / slave cylinders.
Seal part no: 058750-000.

Master / Slave Cylinder Assembly



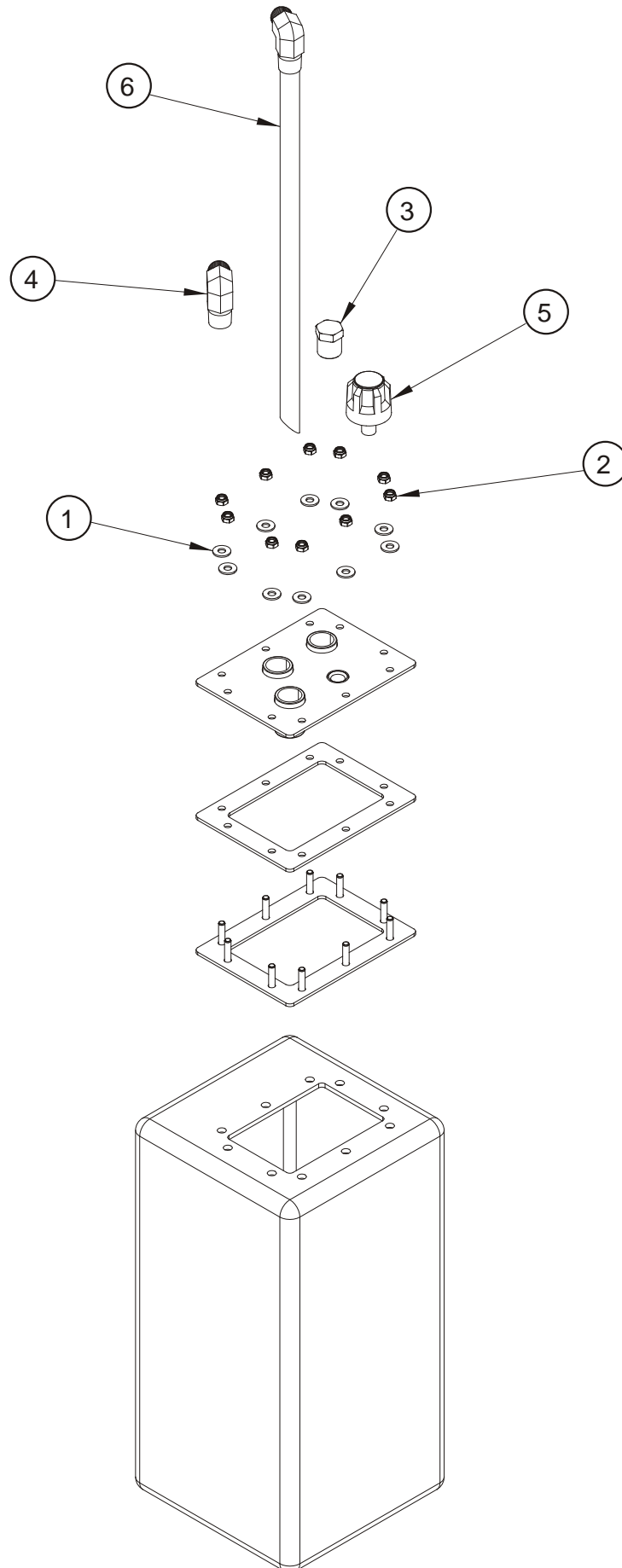
Stabiliser Cylinder Assembly

Item	Part No	Qty	Description
0	12336A	1	Stabiliser Leg Cylinder Assembly
1	3603-06	1	Plain Washer
2	3604-04025	2	Pan Head Screw
3	3605-06	7	Spring Washer
4	3610-06012	2	Metric Bolt
5	3610-06016	4	Metric Bolt
6	3610-06020	1	Metric Bolt
7	3611-04	2	Metric Nylock Nut
8	3626-1	4	Flanged Permaglide Bush
9	7031-002	2	JICM x UN O-Ring M Elbow
10	10286-3	1	Counterbalance Cartridge
11	10286-4	1	Check Cartridge
12	12336-10	1	Limit Switch
13	12336-11	1	Sliding Bush
14	12336-20	1	Valve Guards
15	12336-2	1	Cylinder Base
16	12336-3	1	Wiper Seal
17	12336-4	1	Switch Mount
18	12336-7	1	Rubber Spring
19	12425	1	Leg Cylinder Guard



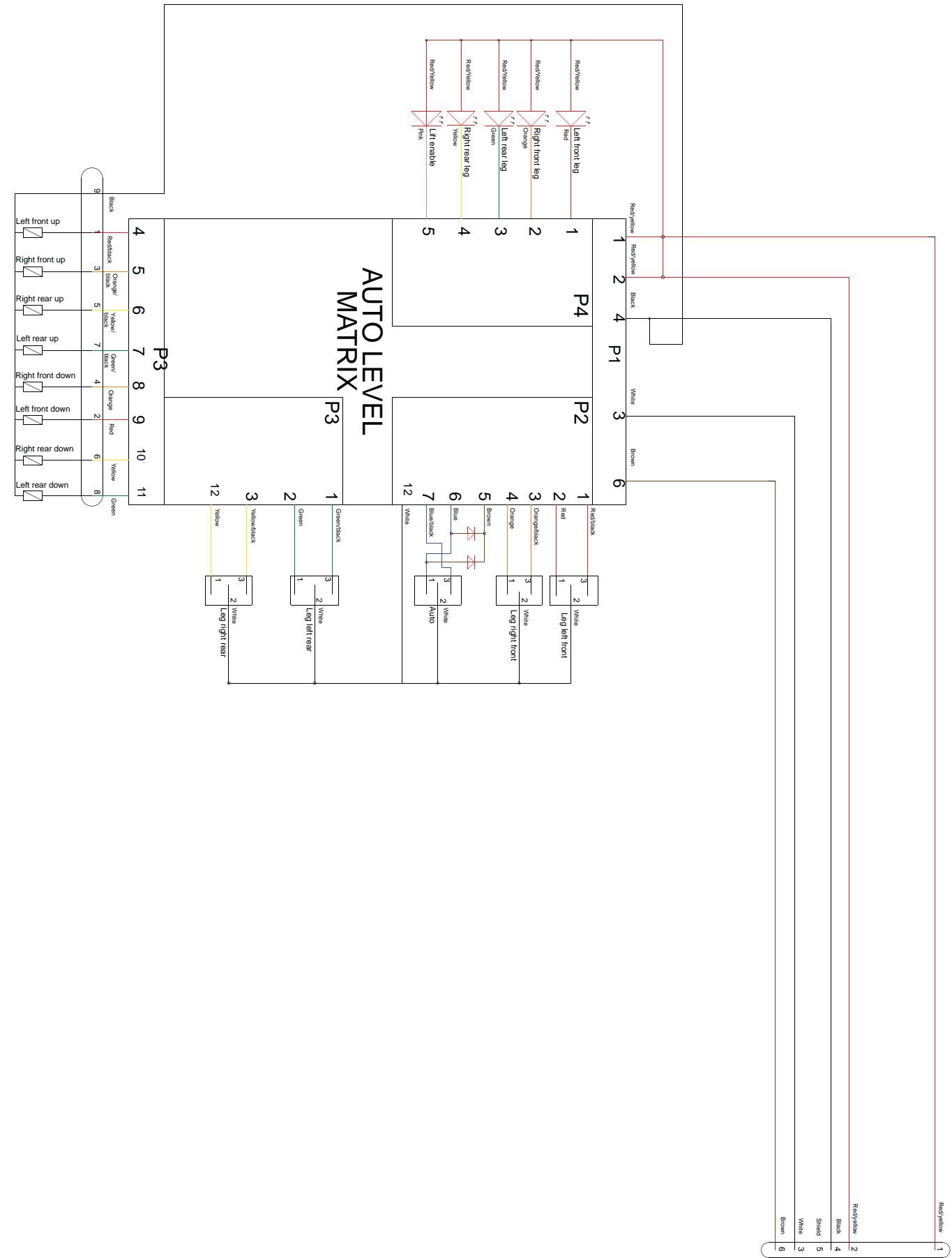
Hydraulic Oil Tank Assembly

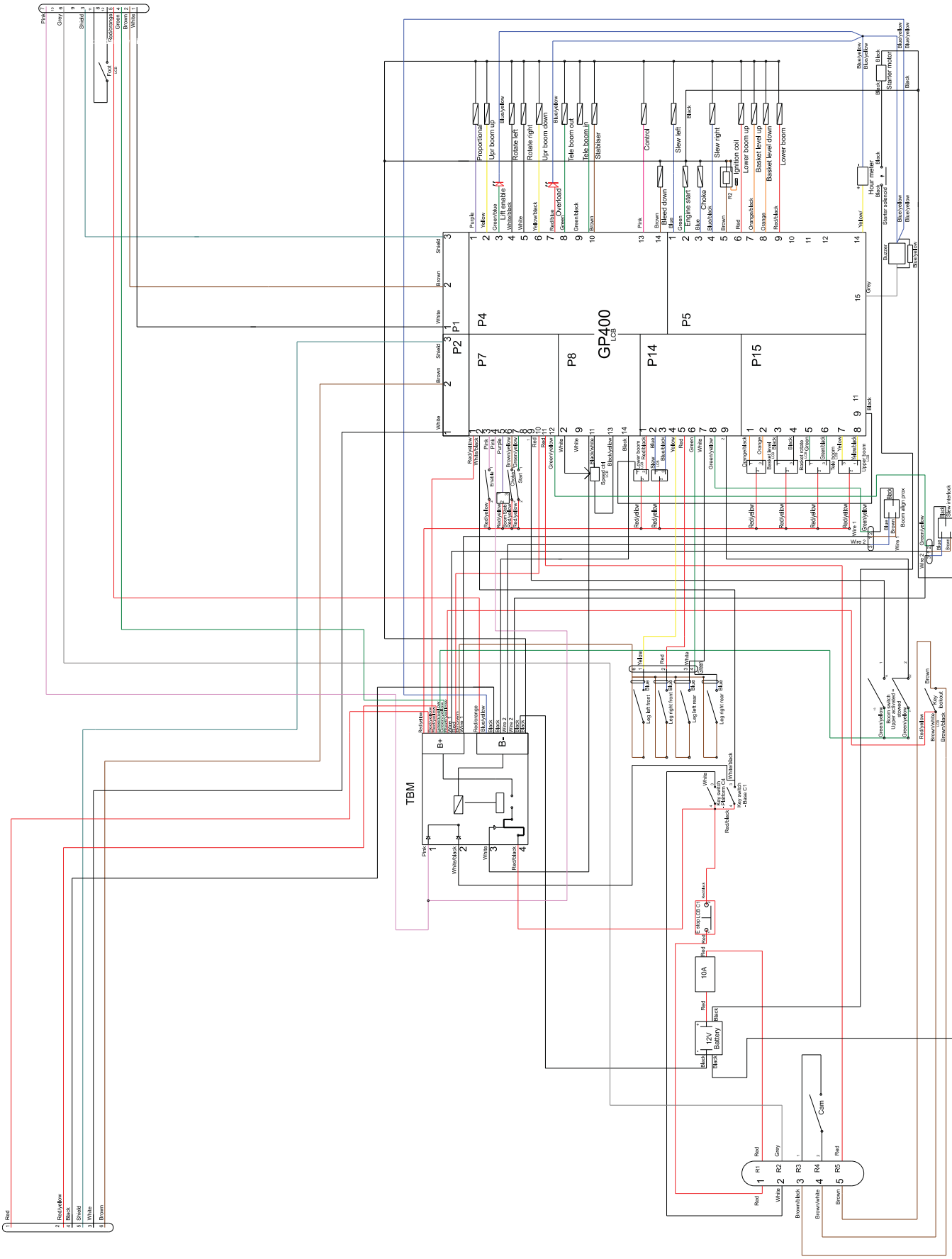
Item	Part No	Qty	Description
0	13237A	1	Hydraulic Oil Tank Assembly
1	3603-06	10	Plain Washer
2	3611-06	10	Metric Nylock Nut
3	7034-004	1	0.5" BSPTM Plug
4	7046-007	1	Elbow, 90deg 1/2 BSPTM -> 3/4 JICM
5	11487	1	Filter Breather
6	13237-6	1	Suction Pipe Weldment

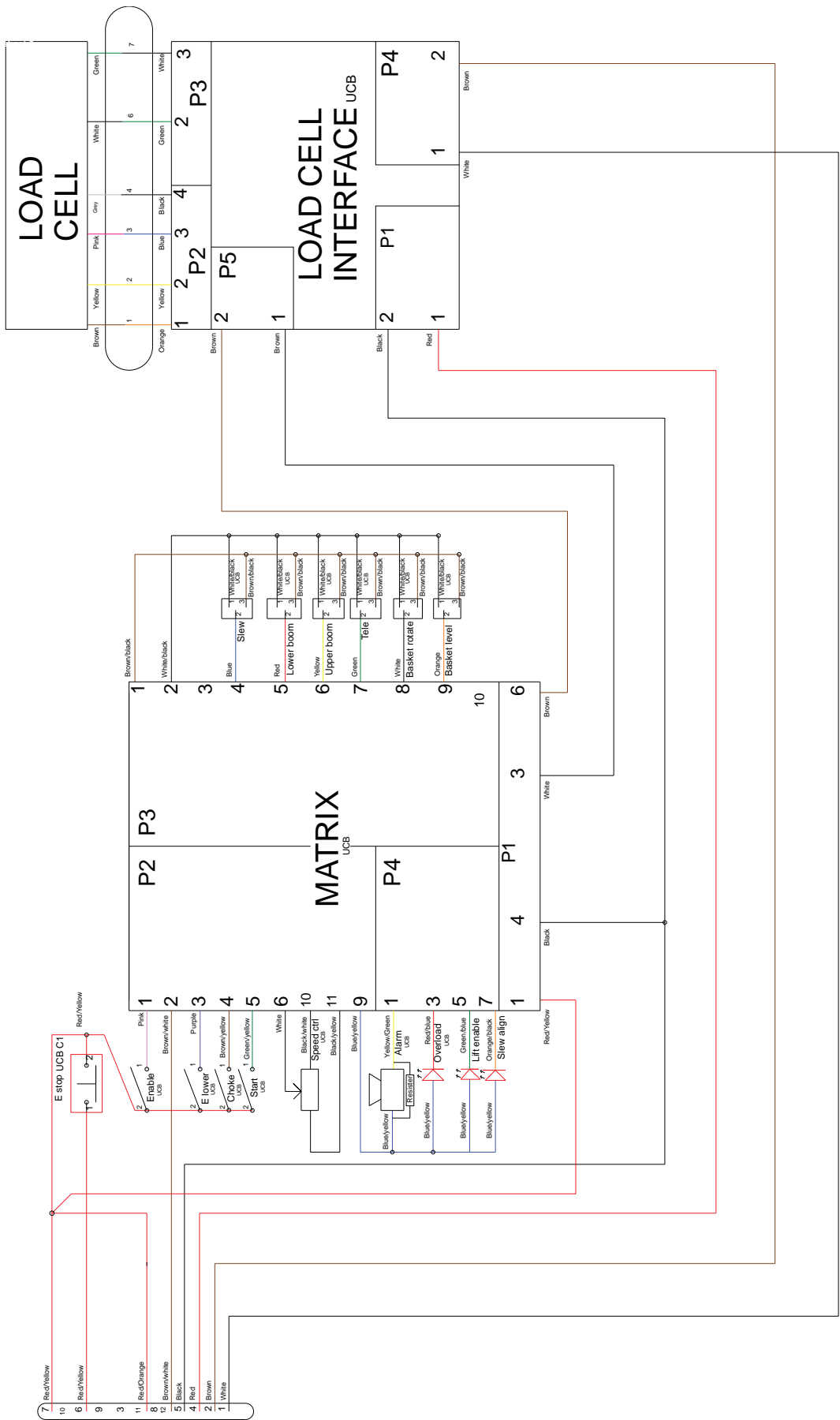


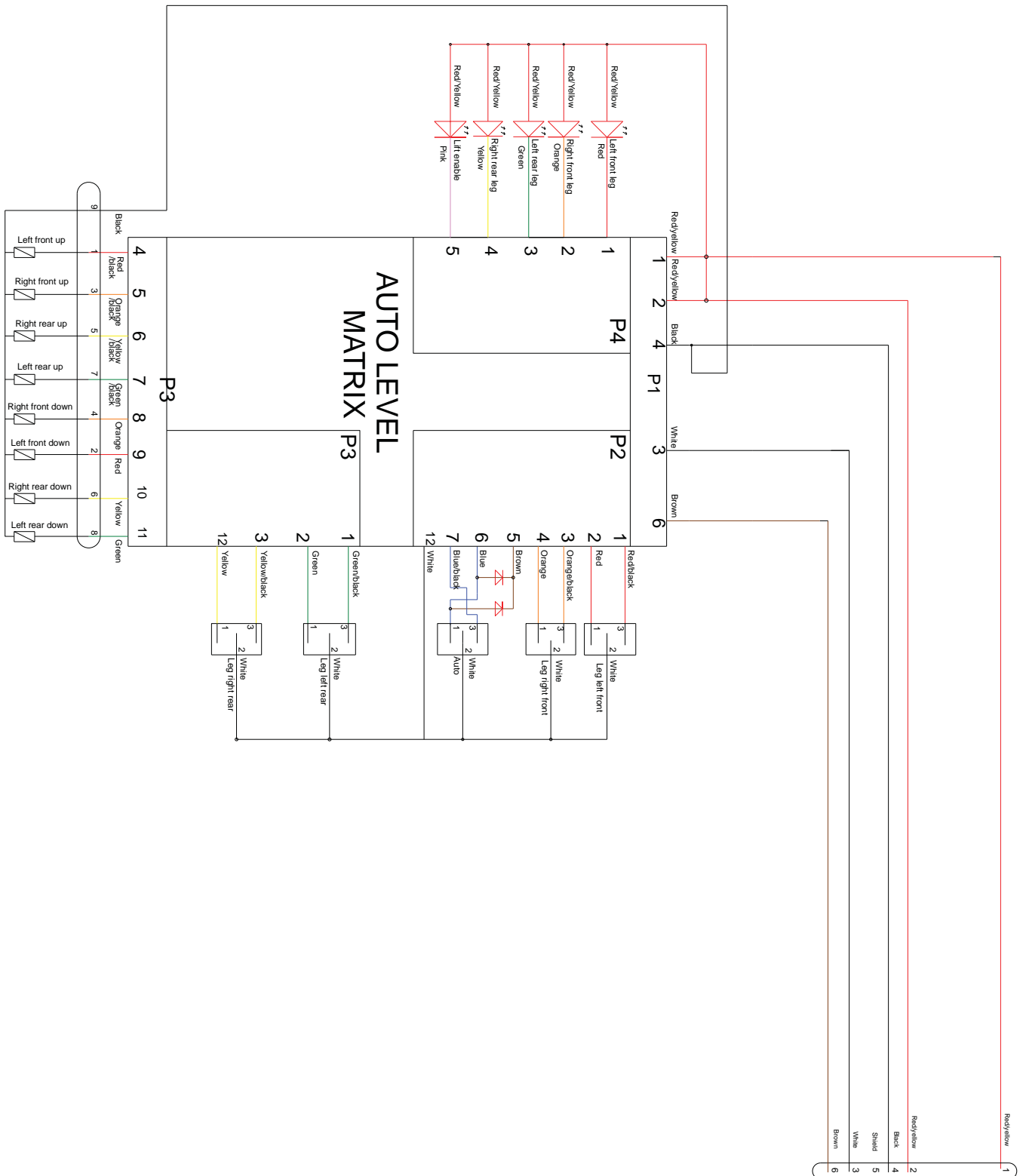
Standard Machine Wiring	3-2
24V Only Optional Machine Wiring	3-5
24V Bi-Energy Option Machine Wiring	3-8
230V AC Option Machine Wiring	3-11
LED Taillights Wiring	3-14
Upper Control Box Assembly	3-15
Lower Control Box Assembly	3-16
Auto Stabiliser Control Box Assembly	3-17

Standard Wiring Sheet 1

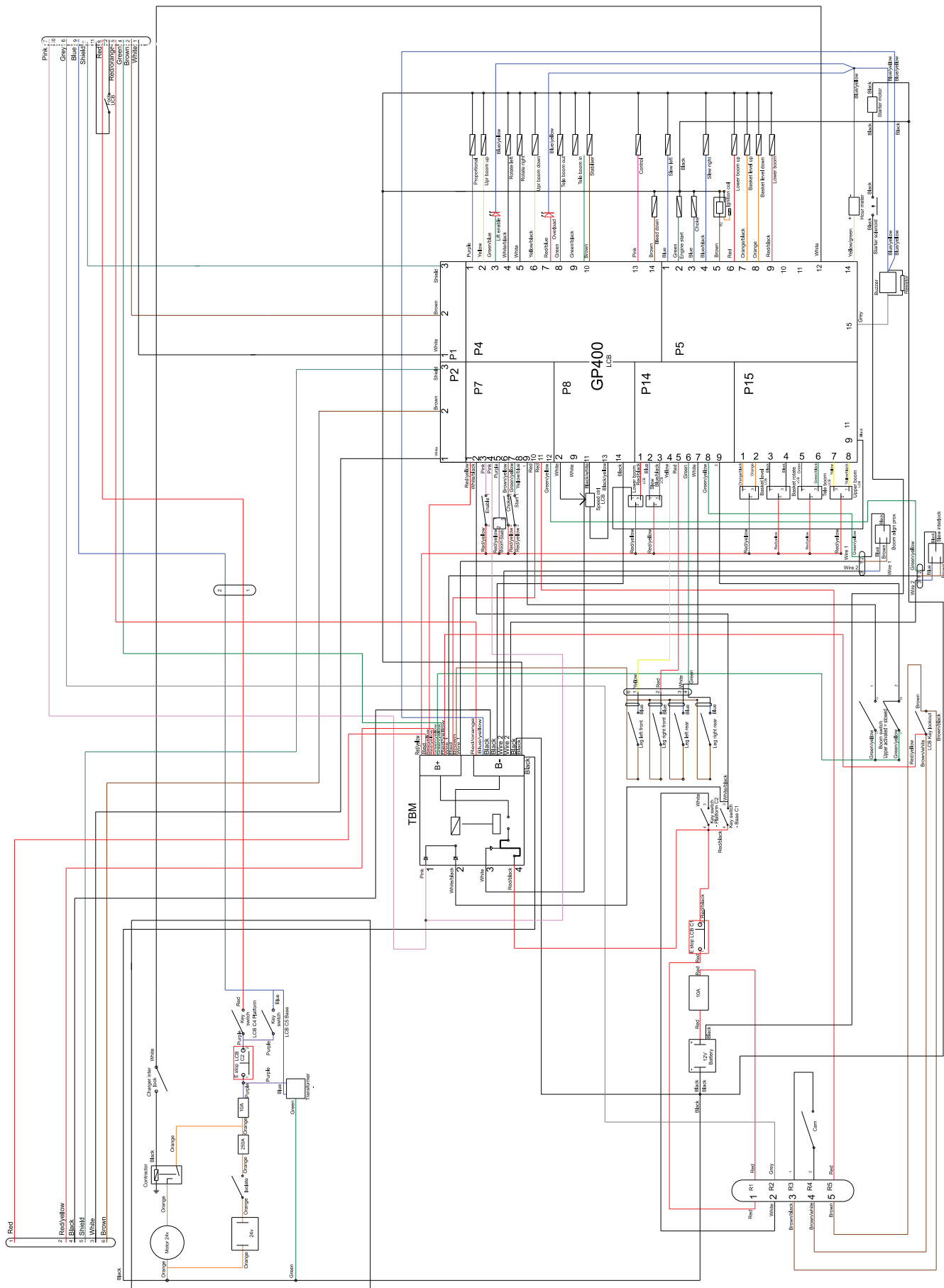


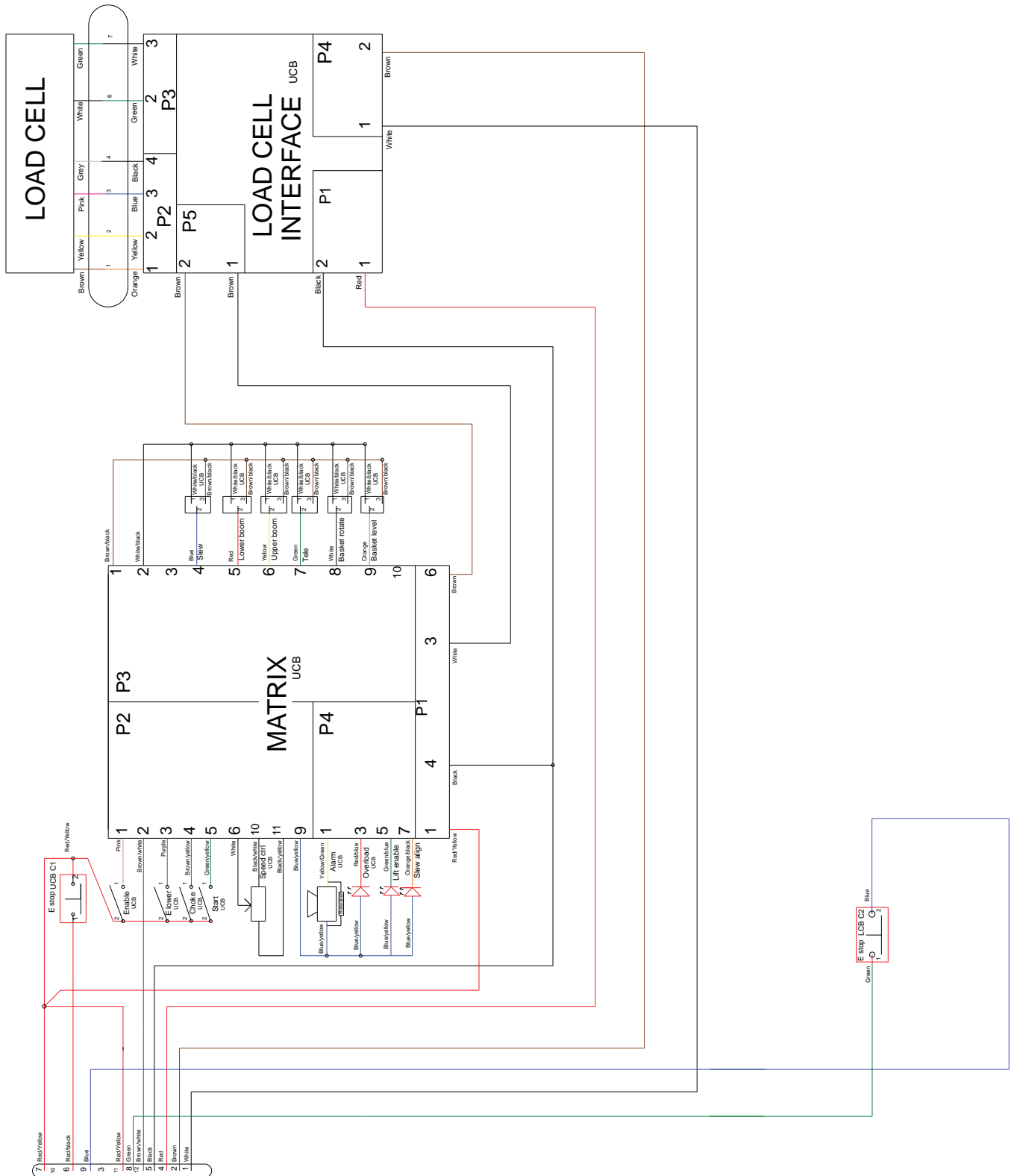




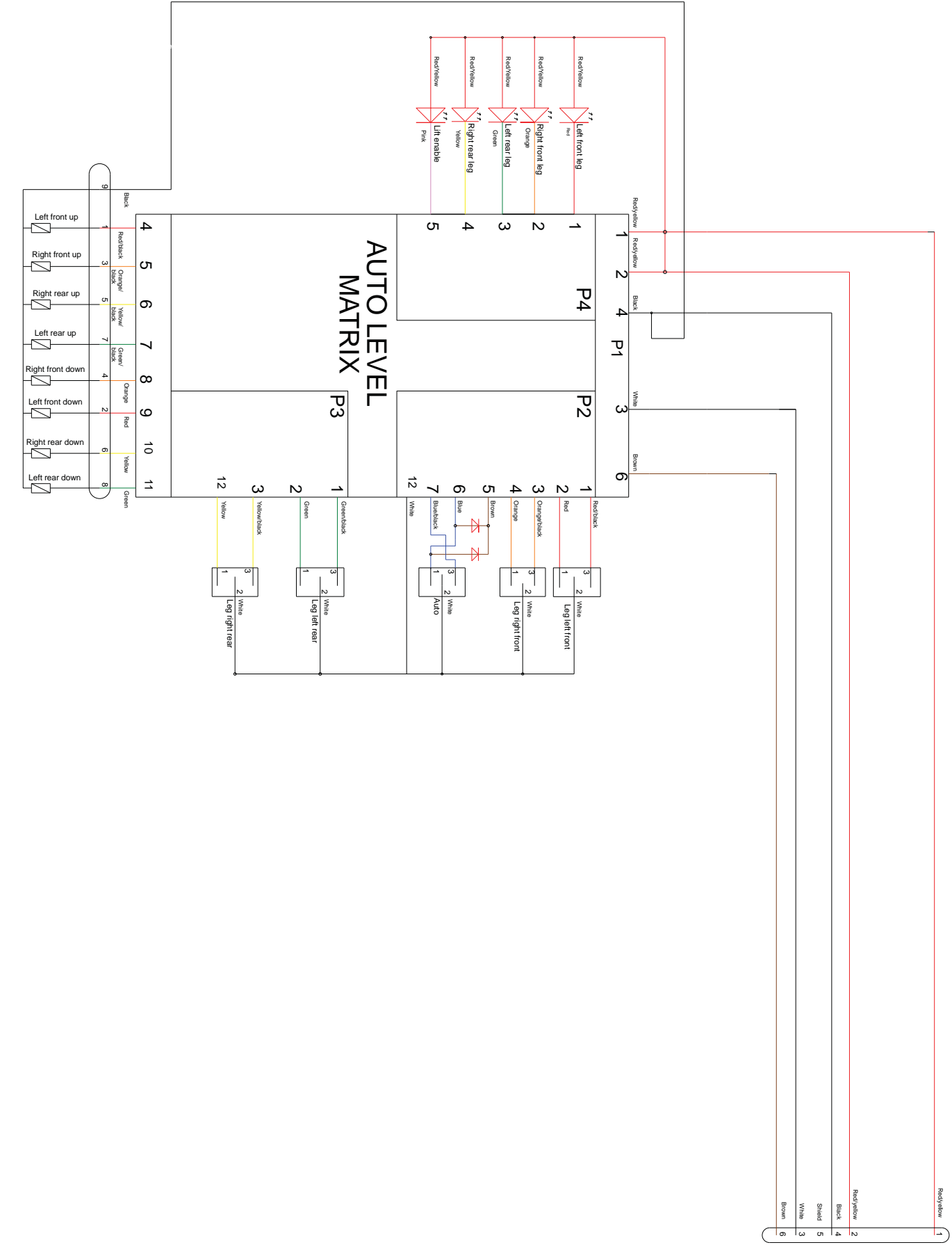


24V Only Option Wiring Sheet 2

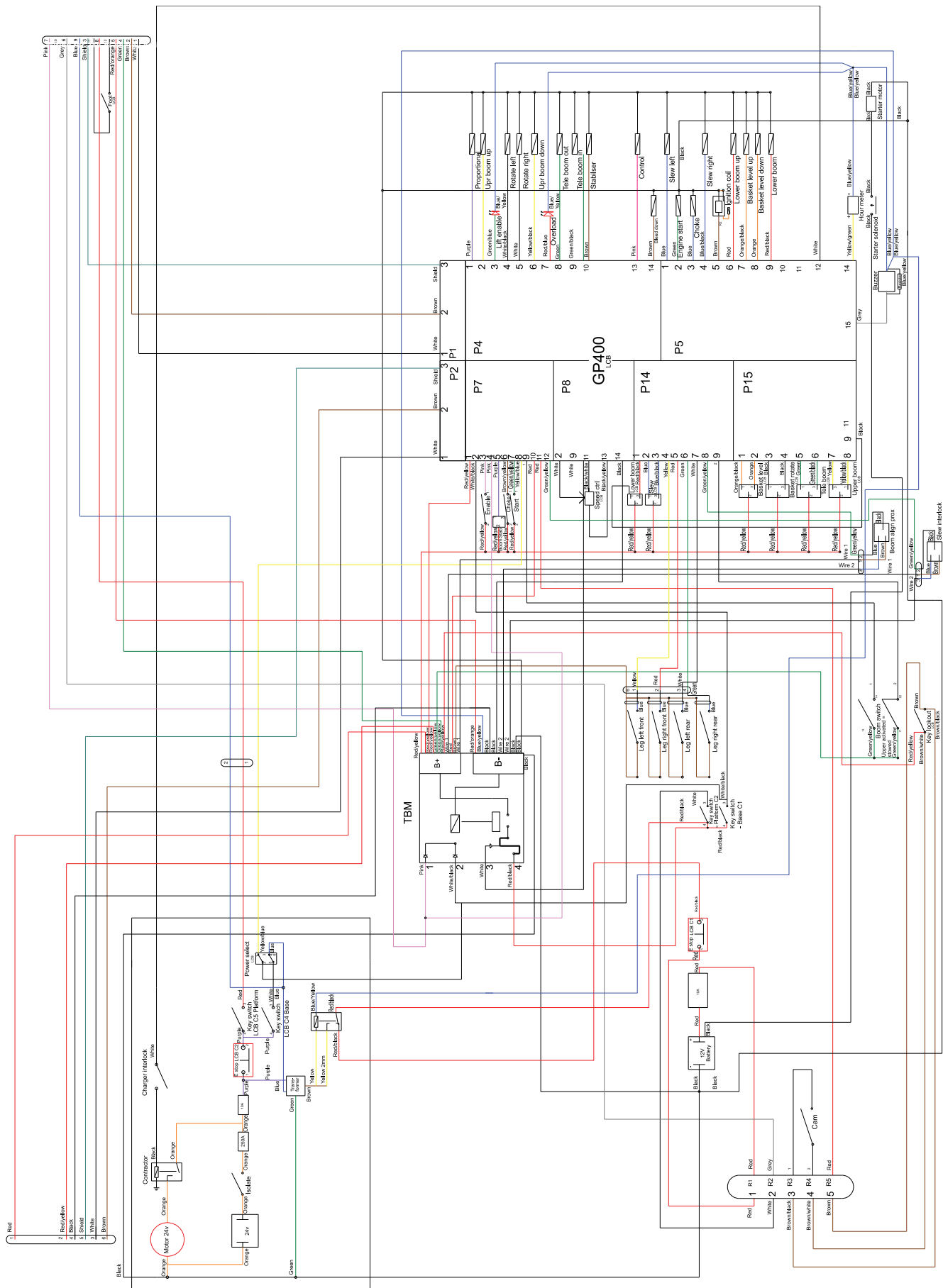




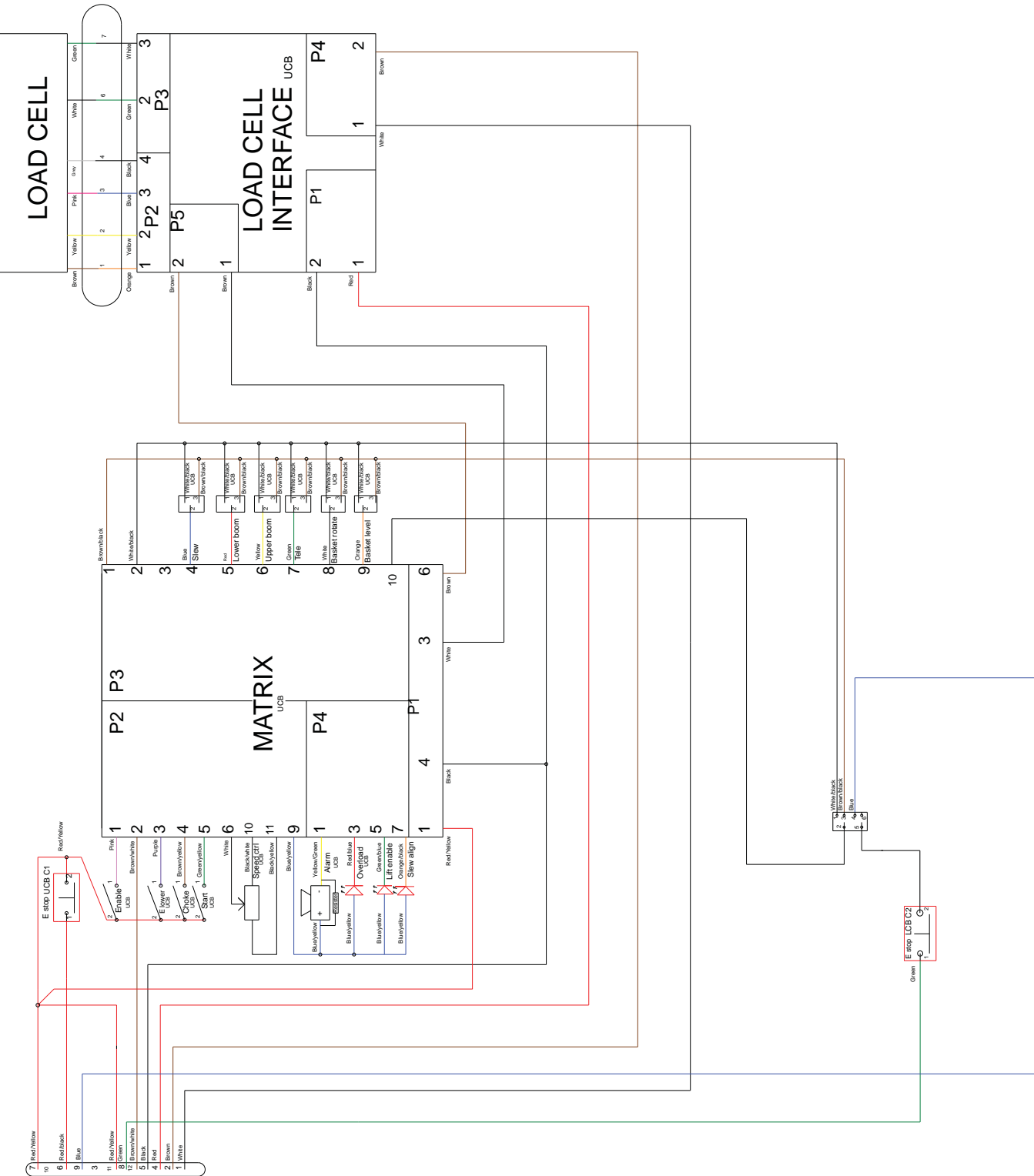
24V Bi-Energy Option Wiring Sheet 1

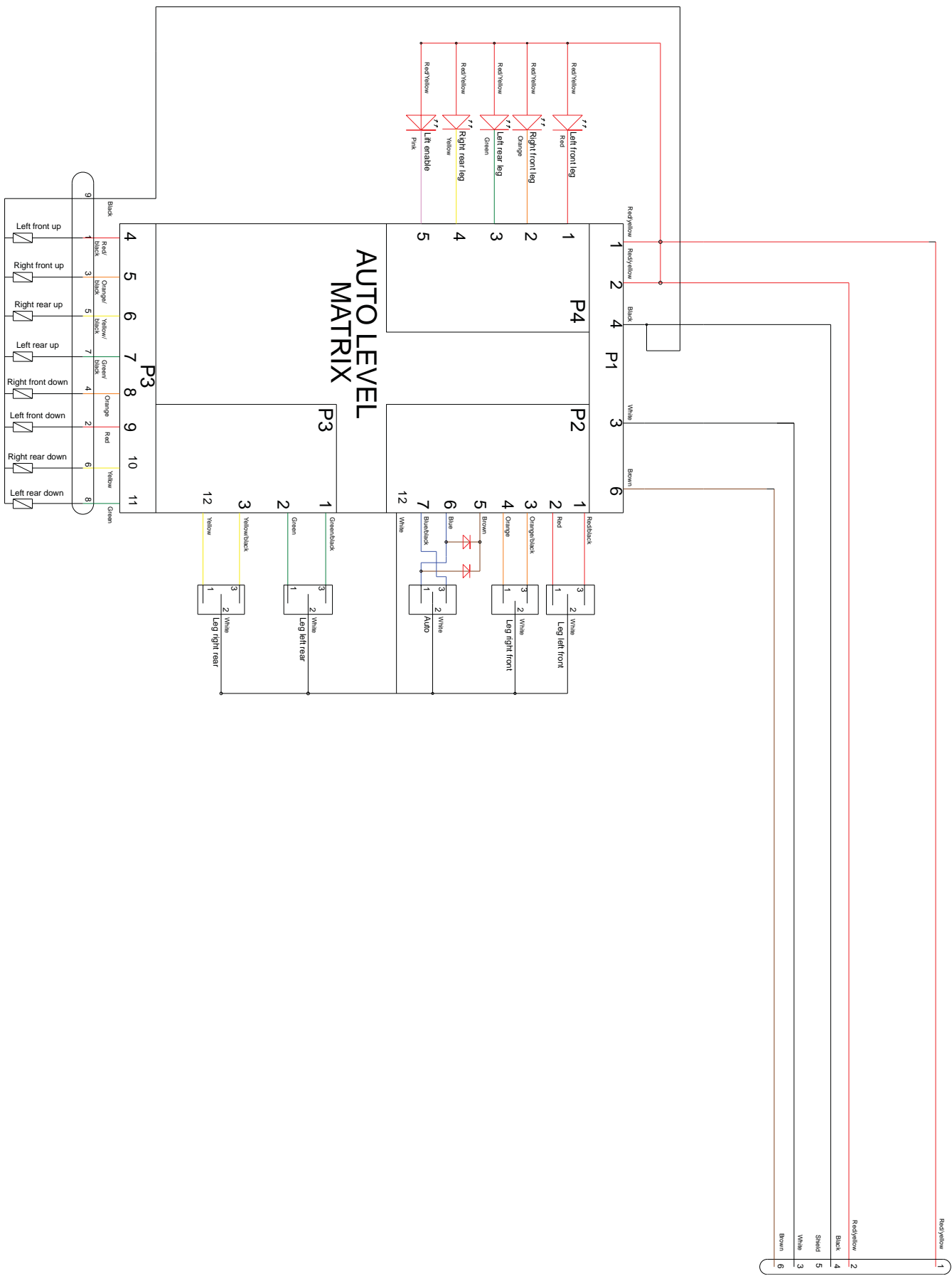


24V Bi-Energy Option Wiring Sheet 2

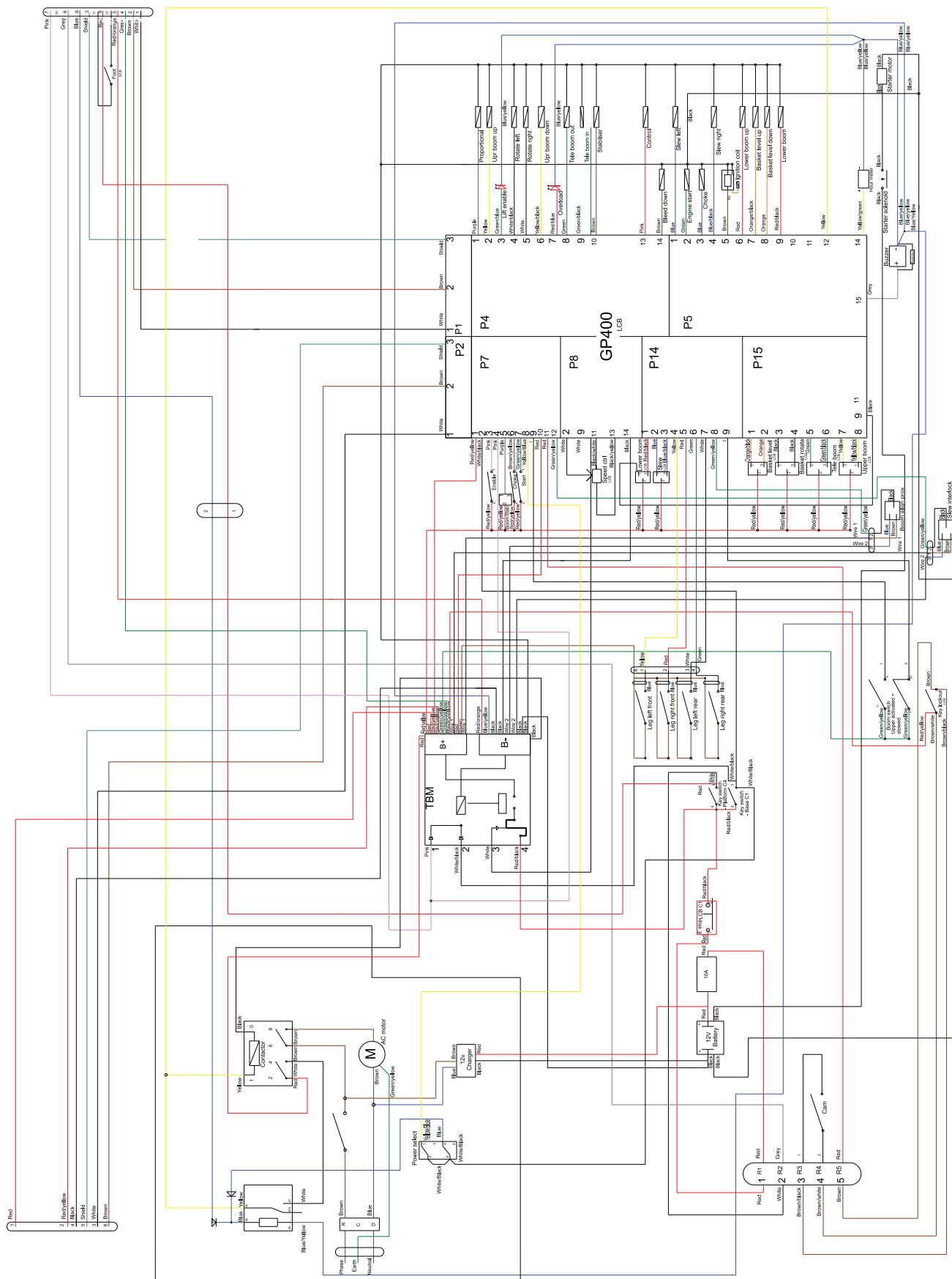


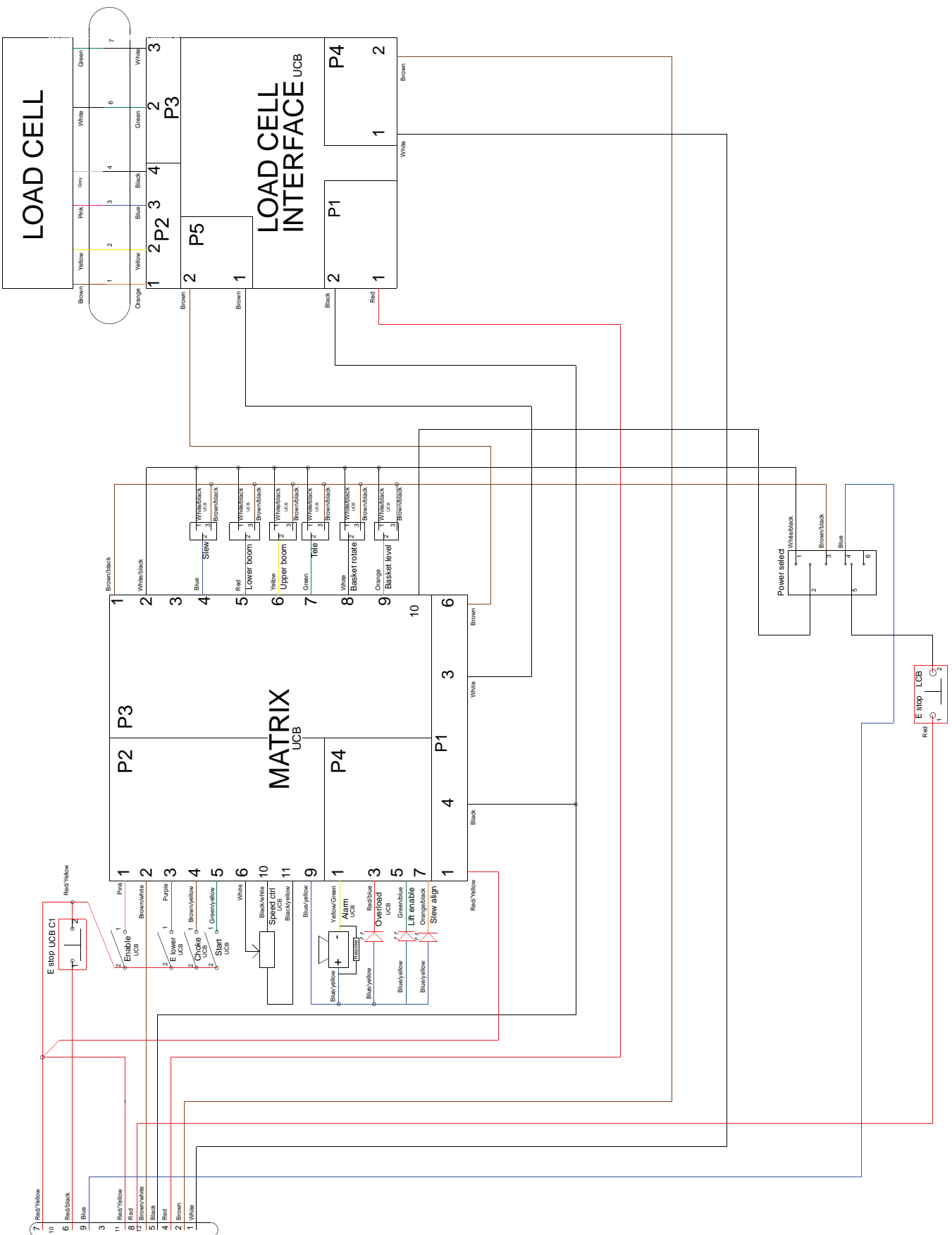
24V Bi-Energy Option Wiring Sheet 3



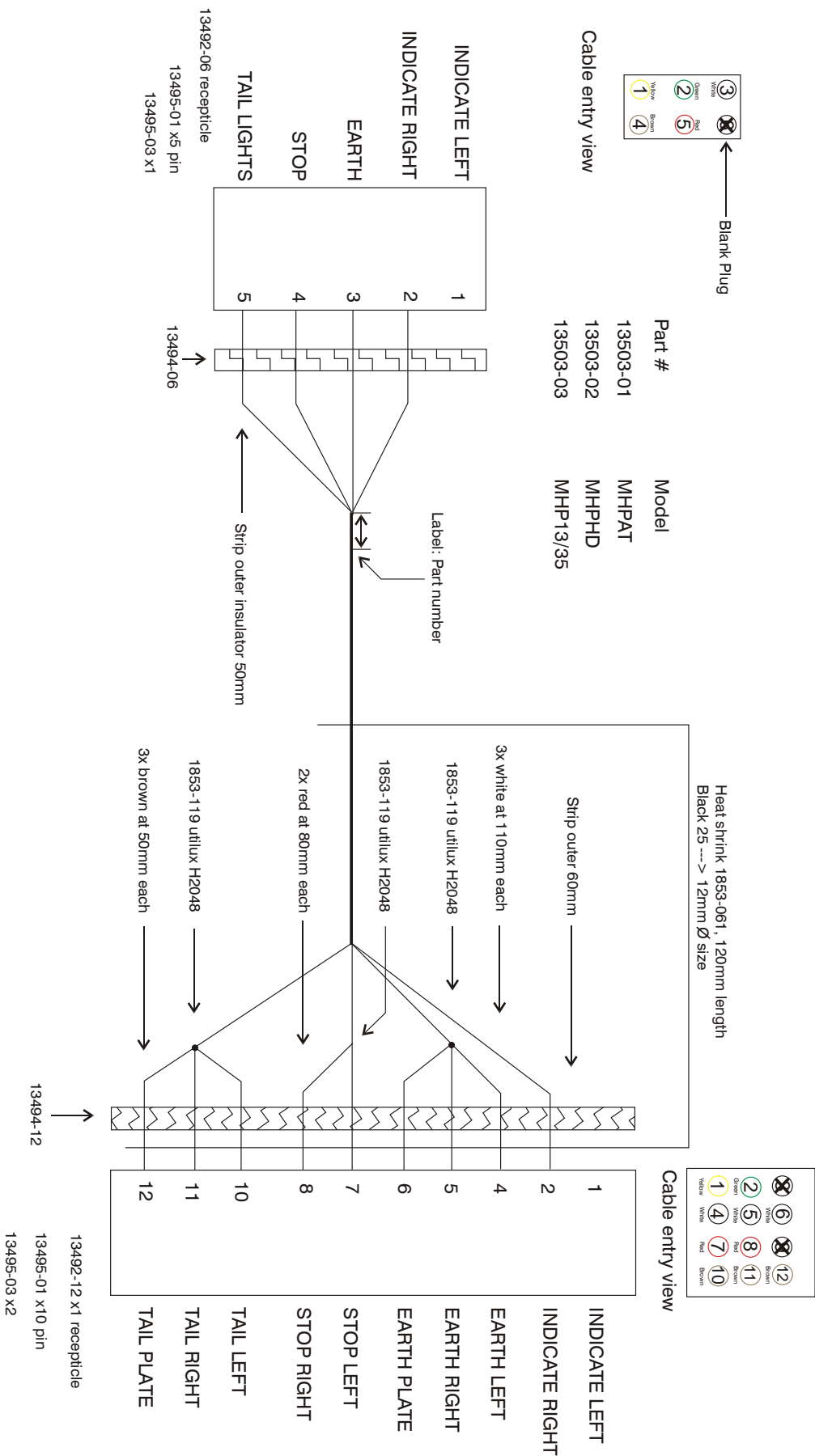


230V AC Option Wiring Sheet 2

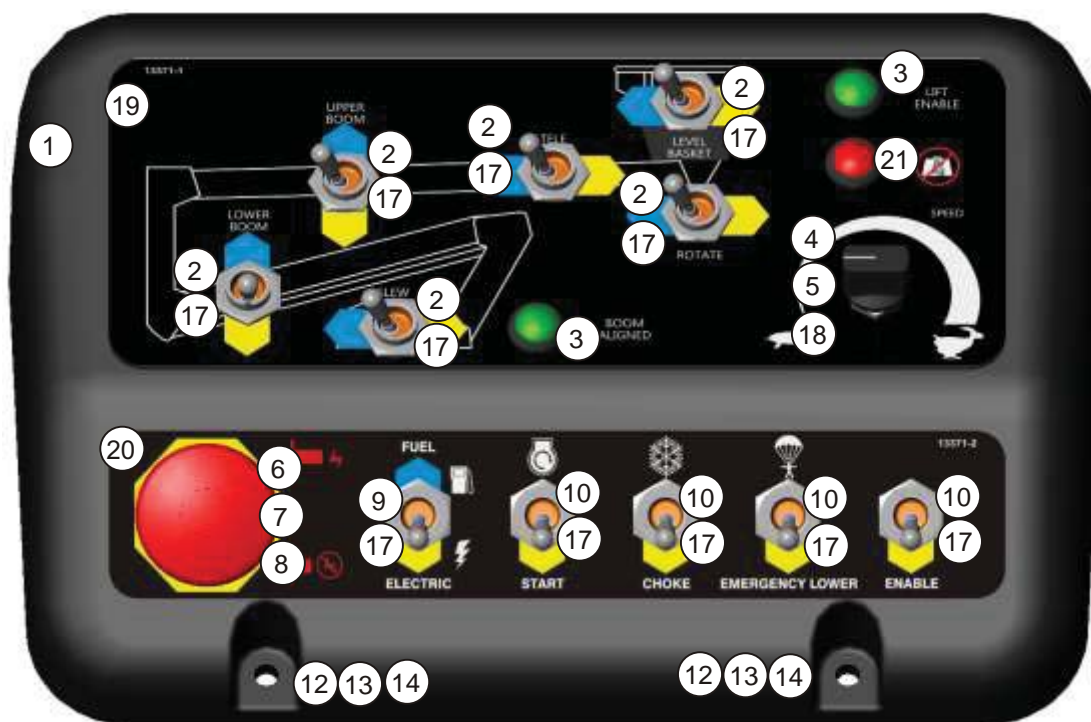




LED Tail Lights Wiring

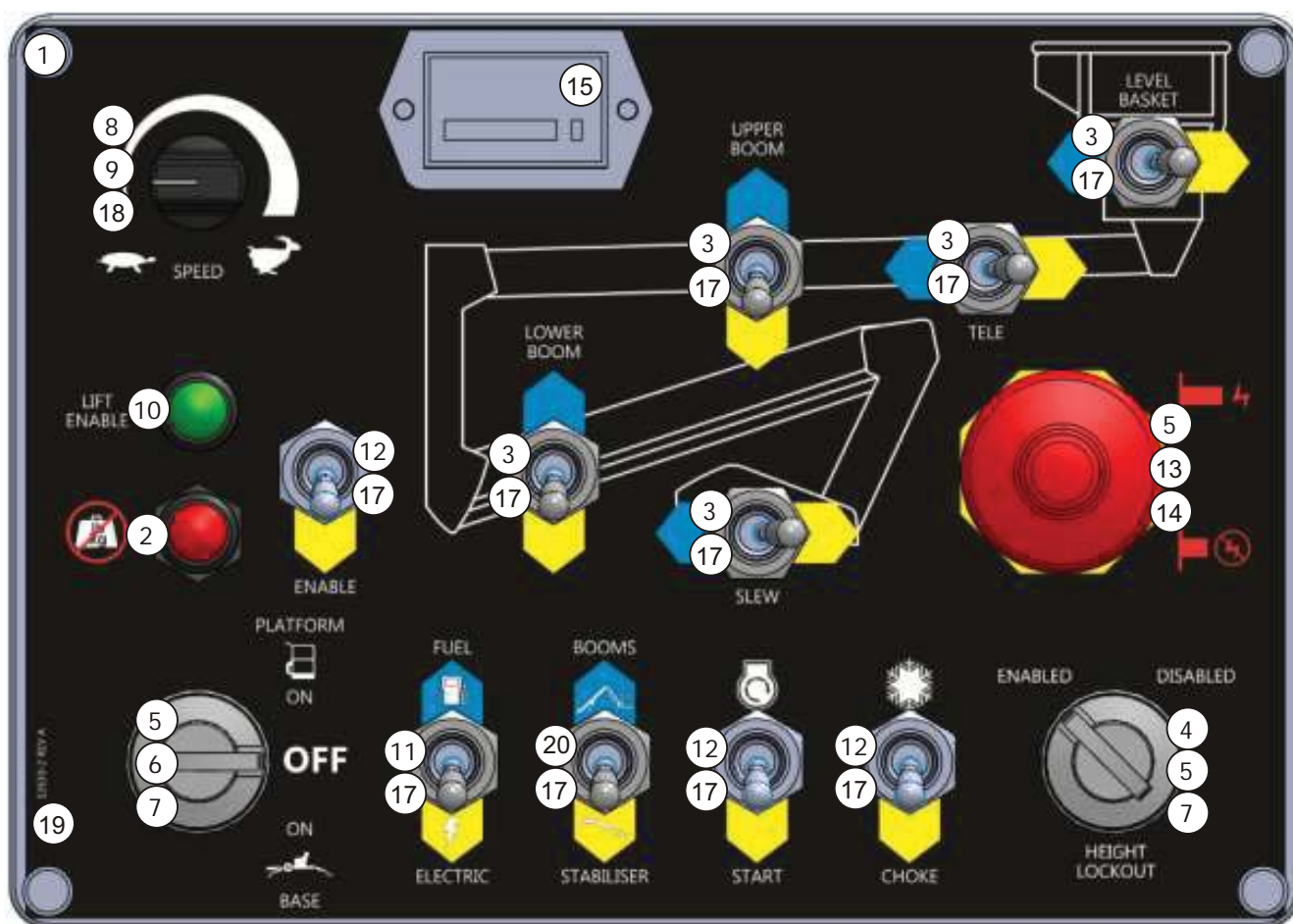


Upper Control Box Assembly



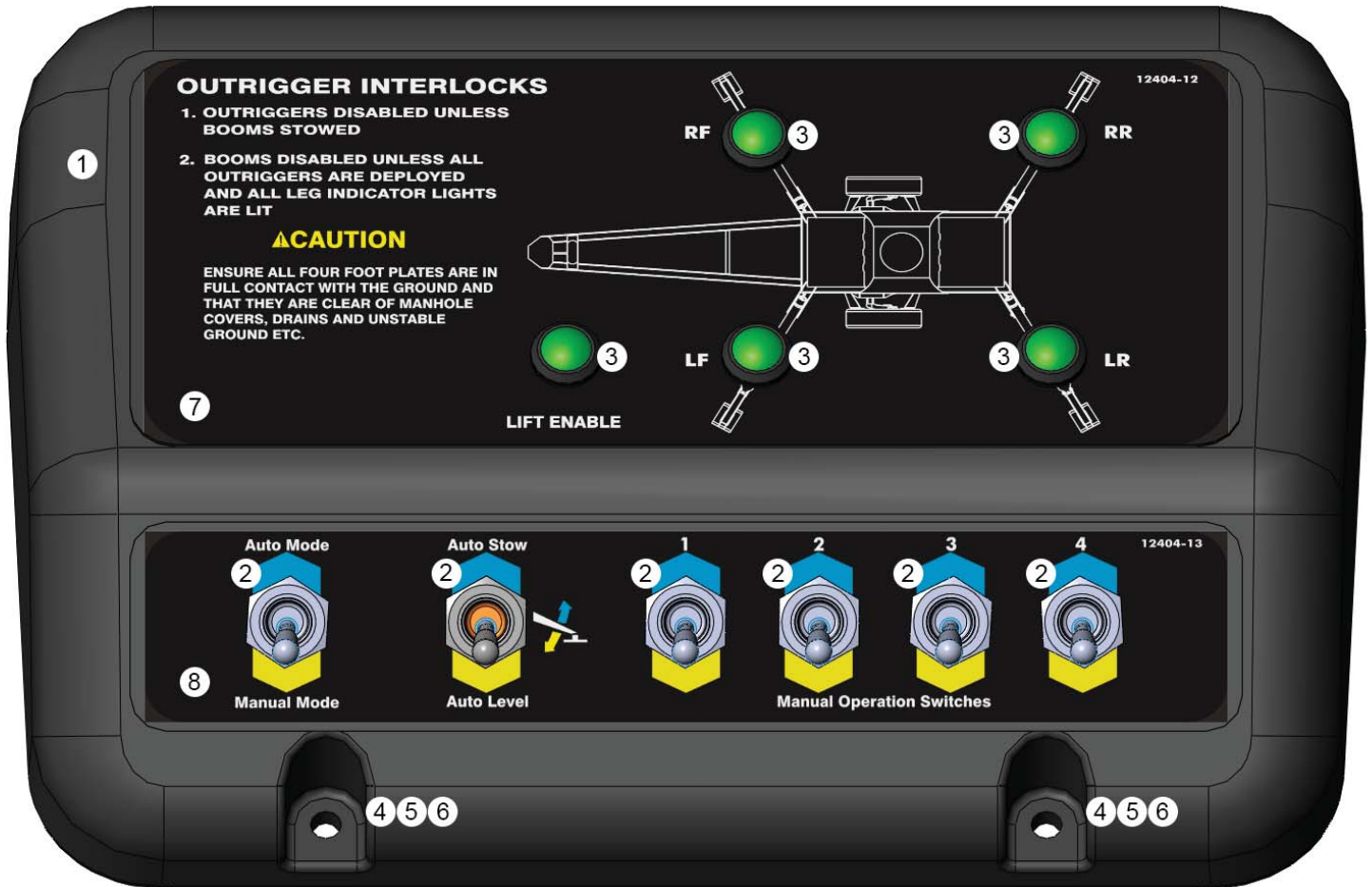
Item	Part No	Qty	Description
0	13487A	1	Upper Control Box Assembly
1	13487	1	Upper Control Box
2	3020016	6	Switch, Toggle DPDT (M/OFF/M)
3	12536-3	2	LED, Green, 12V, M10
4	13489-1	1	Knob - Speed Control Switch
5	13489	1	Rheostat
6	9775	1	Emergency Stop Switch - Pull Release
7	13380	1	Collar
8	10118	1	Contact N/C
9	3020097	1	Switch, Toggle DPDT (ON/OFF)
10	3020015	4	Switch, Toggle SPST (M/ON/OFF)
12	3604-05020	2	Pan Head Screw
13	3605-05	2	Spring Washer
14	3603-06	2	Plain Washer
15	12416	1	Hinge (Not Shown)
16	12408	1	Rubber Seal (Not Shown)
17	12515	11	Washer M12 Rubber
18	12516	1	Washer M10 Rubber
19	13371-1	1	Decal - Upper Control Box Large
20	13371-2	1	Decal - Upper Control Box Small
21	12536-4	1	LED, Red, 12V, M10
22	13487-2	1	Loom Kit (Not Shown)
23	3607-0416	8	Pop Rivet (Not Shown - For Hinge)
24	3040411	1	Alarm Mini Siren (Not Shown)
25	13468-01	1	Trionics - Load Cell (Not Shown)
26	13485-02	1	Trionics - Matrix (Not Shown)
27	13521	4	10mm Spacer (Not Shown)
28	13522-05040	4	Countersunk Screw (Not Shown)
29	3603-05	4	Plain Washer (Not Shown)
30	3611-05	4	Metric Nylock Nut (Not Shown)

Lower Control Box Assembly



Item	Part No	Qty	Description
0	13530A	1	Lower Control Box Assembly
1	12521	1	Enclosure
2	12536-4	1	LED, 12V, Red
3	3020016	5	Switch, Toggle SPDT (M/OFF/M)
4	13381	1	Key Switch, 2 Position
5	13380	2	Collar
6	13456	1	Key Switch, 3 Position
7	10114	2	Contact N/O
8	13489-01	1	Knob - Speed Control Switch
9	13489	1	Rheostat
10	12536-3	1	LED, 12V, Green
11	3020097	1	Switch, Toggle DPDT (ON/ON)
12	3020015	3	Switch, Toggle SPST (ON/OFF)
13	9775	1	Emergency Stop Switch, Pull Release
14	10118	1	Contact N/C
15	13531	1	Hour Meter
16	1815-1	1	Cable Gland, M32, Nylon (Not Shown)
17	12515	10	Washer M12 Rubber
18	12516	1	Washer M10 Rubber
19	13530-2	1	Decal - Lower Control Box
20	3020013	1	Switch, Toggle SPST (ON/OFF)
21	3040411	1	Alarm Mini Siren (Not Shown)
22	13530-3	1	Loom Kit (Not Shown)

Auto Stabiliser Control Box Assembly



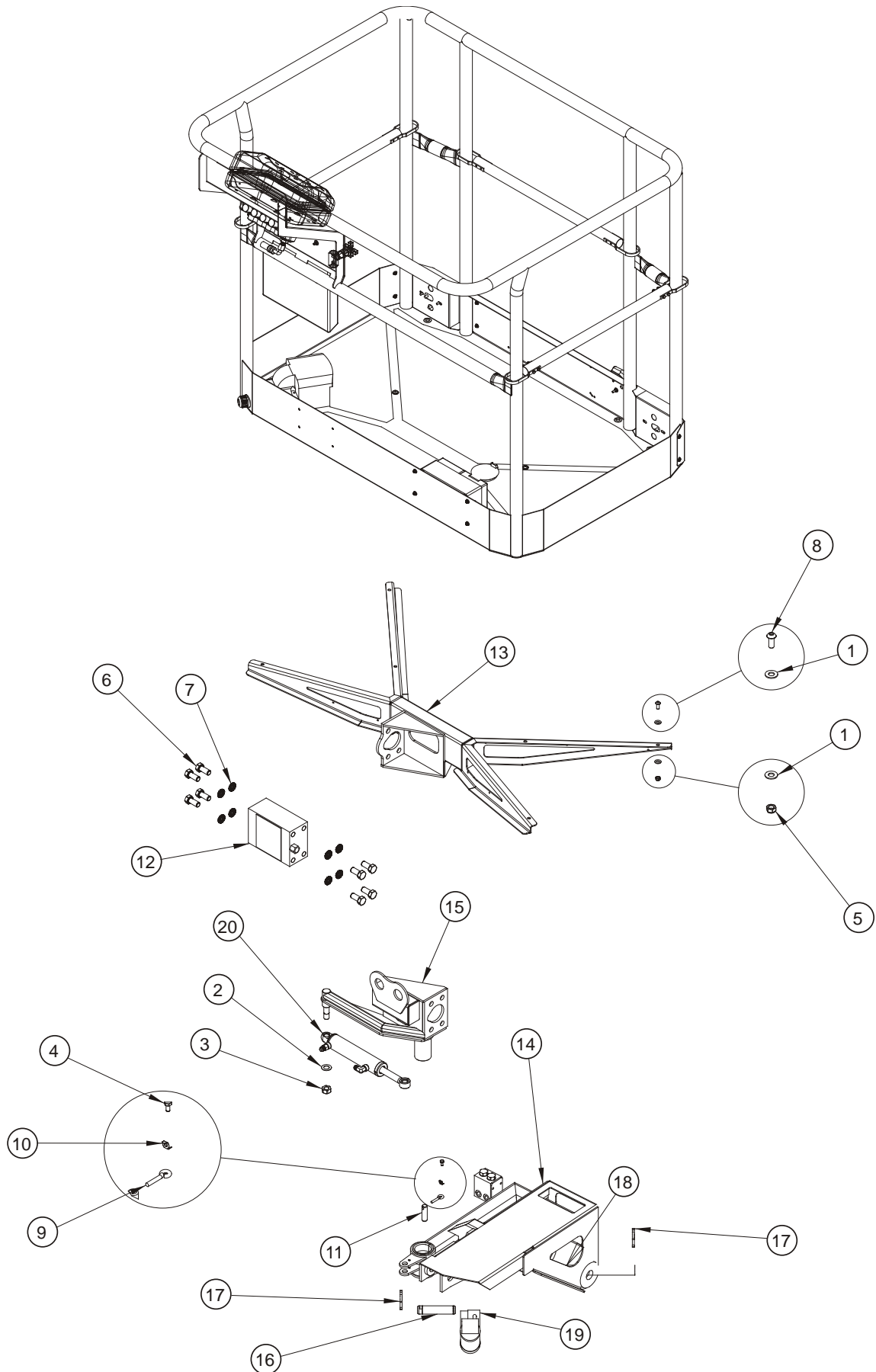
Item	Part No	Qty	Description
0	13581	1	Auto Stabiliser Control Box Assembly
1	12404	1	Control Box
2	3020016	5	Switch, Toggle, DPDT (M/OFF/M)
3	13536-3	5	LED, 12V, Green
4	3604-05020	2	Pan Head Screw
5	3605-05	2	Spring Washer
6	3603-06	2	Flat Washer
7	12404-12	1	Decal - Top
8	12404-13	1	Decal - Bottom
9	12515	5	Washer, M12, Rubber (Not Shown)
10	1815-1	1	Cable Gland, M32, Nylon (Not Shown)
11	12416	1	Hinge (Not Shown)
12	3607-0416	8	Pop Rivet (Not Shown - For Hinge)
13	13581-01	1	Loom Kit (Not Shown)
14	13485-02	1	Trionics - Matrix (Not Shown)
15	13522-05025	2	Countersunk Screws (Not Shown - For Matrix)
16	12408	0.695m	Rubber Seal (Not Shown)

Platform Rotator Assembly	4-2
Kohler 15LD350 Engine Assembly	4-4
Kohler KD225 Engine Assembly	4-6
24V DC Electric Motor And Pump Assembly	4-8
240V Petrol/AC Pump and Motor Assembly	4-9
24V DC Option	4-10
Spare Wheel Assembly	4-13

Platform Rotator Assembly

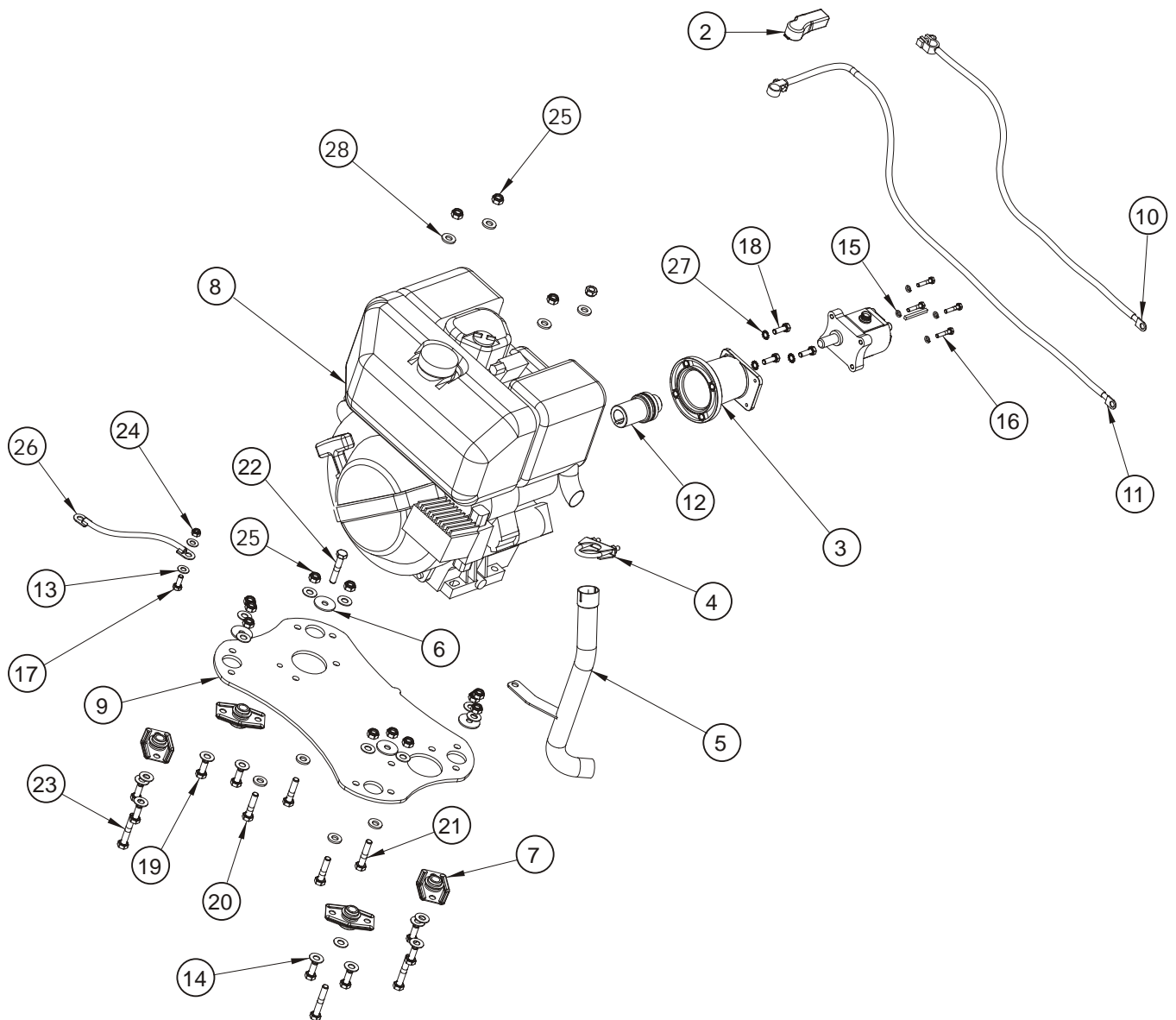
Item	Part No.	Qty.	Description
1	3603-08	16	Plain Washer
2	3603-16	1	Plain Washer
3	3608-16C	1	Cone Lock Nut
4	3610-06012	1	Metric Bolt
5	3611-08	8	Metric Nyloc Nut
6	3617-16035	8	Metric Bolt
7	3631-16	8	Disc lock m16
8	3668-08020	6	Button Head Socket Screw
9	8628	1	Pin Keeper - Rolled Eye 6mm
10	11492-1	1	Tab Washer
11	12468-22	1	PIN:16 x 55mm lg
12	13468	1	Load Cell
13	13497	1	Steel Basket Bottom Mount
14	13520	1	Basket Mount
15	13520-2	1	Basket rotator mount
16	058053-001	1	Pin, 25 Diameter x 93
17	058056-000	2	Pin keeper, Square
18	058066-001	1	Pin, diameter 80 x 230
19	058735-000	1	Cylinder, Slave
20	12330A	1	Rotator Cylinder

Platform Rotator Assembly



Kohler 15LD350 Engine Assembly

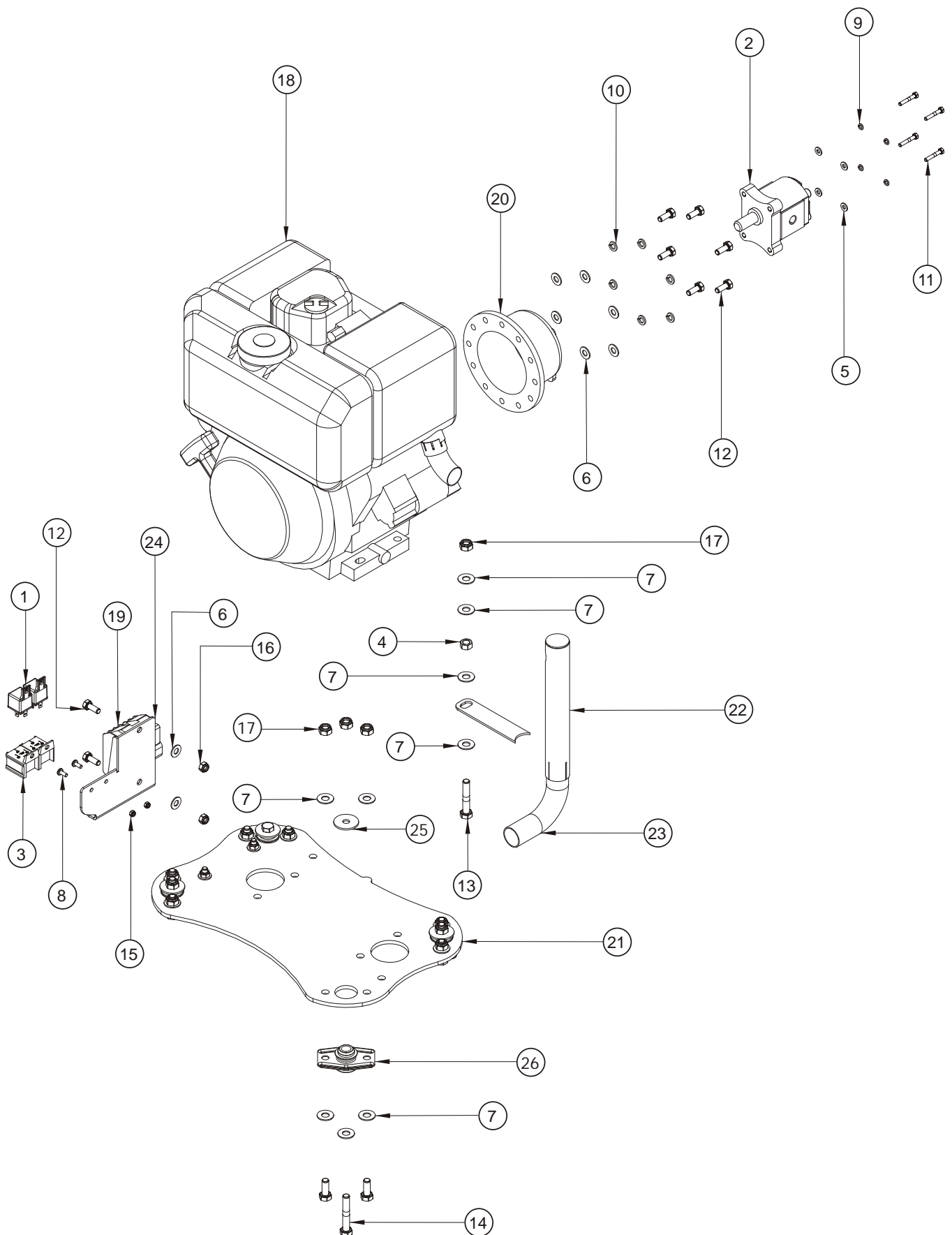
Item	Part No.	Qty.	Description
0	12449A	1	Kohler 15LD350 engine assembly
1	1659	1	1.9/2.1 Gear Pump
2	10254	1	Cover Battery Terminal HA 206U
3	10417	1	Bellhousing
4	12409	1	Exhaust Clamp -38mm
5	12450	1	Exhaust Weld
6	5560179	4	Flat Washer-Special
7	7630208	4	Engine Mount
8	1171-8	1	Kohler 15LD315
9	12449-1	1	Engine Mount Plate
10	1650-030	1	Hamel Cable BS24C
11	1650-031	1	Hamel Cable BS24C
12	1657-11	1	Drive Coupling
13	3603-08	2	Plain Washer
14	3603-10	19	Plain Washer
15	3605-06	4	Spring Washer
16	3610-06030	4	Metric Bolt
17	3610-08020	1	Metric Bolt
18	3610-08025	4	Metric Bolt
19	3610-10025	8	Metric Bolt
20	3610-10045	3	Metric Bolt
21	3610-10050	1	Metric Bolt
22	3610-10055	1	Metric Bolt
23	3610-10060	3	Metric Bolt
24	3611-08	1	Metric Nyloc Nut
25	3611-10	15	Metric Nyloc Nut
26	3649-10	1	Battery Cable
27	60005-054	4	5/16" Ext. Lockwasher
28	60030-061	8	3/8" Washer H/D



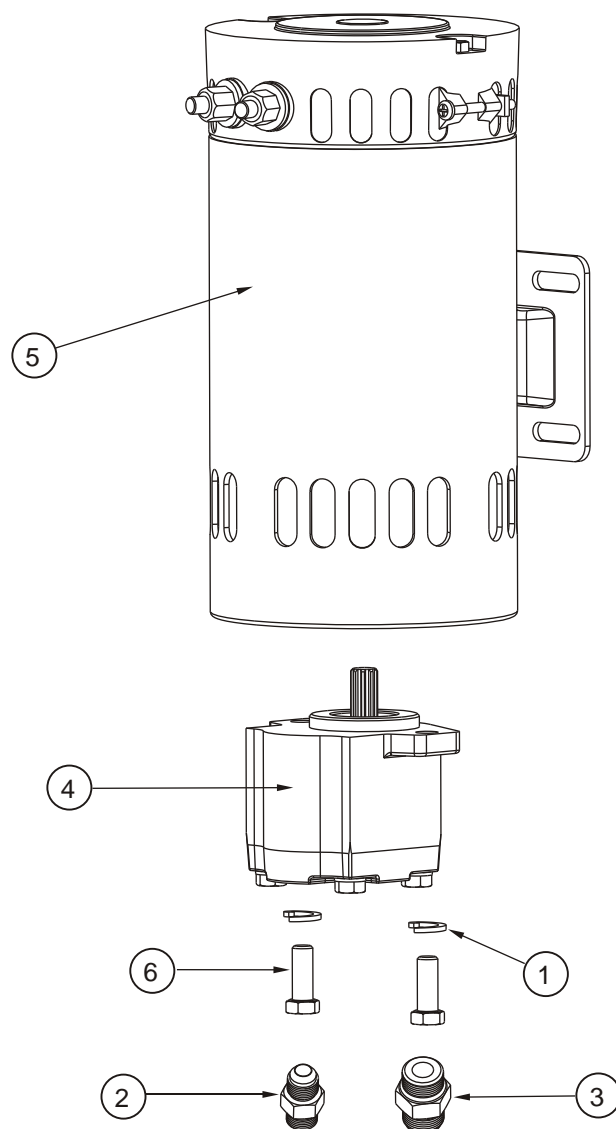
Kohler KD225 Engine Assembly

Item	Part No	Qty	Description
0	13700-02	1	Kohler KD225 Engine Assembly
1	1650-010	2	Relay 12V
2	1659	1	1.9/2/1 Gear Pump
3	2065-002	2	Plug In Relay Base
4	3602-10	1	Metric Hex Nut
5	3603-05	4	Plain Washer
6	3603-08	12	Plain Washer
7	3604-05012	2	Pan Head Screw
8	3605-05	4	Spring Washer
9	3605-08	6	Spring Washer
10	3610-05030	4	Metric Bolt
11	3610-08020	8	Metric Bolt
12	3610-10055	2	Metric Bolt
13	3611-05	2	Metric Nylock Nut
14	3611-08	4	Metric Nylock Nut
15	3611-10	12	Metric Nylock Nut
16	13695	1	Engine, Diesel - Kohler KD225
17	13695-01	1	Voltage Regulator
18	13695-02	1	Bellhousing
19	13698	1	Exhaust
20	13698-10	1	Exhaust Tailpipe
21	13699	1	Regulator Mount Bracket
22	5560179	4	Flt Washer - Special

Kohler KD225 Engine Assembly

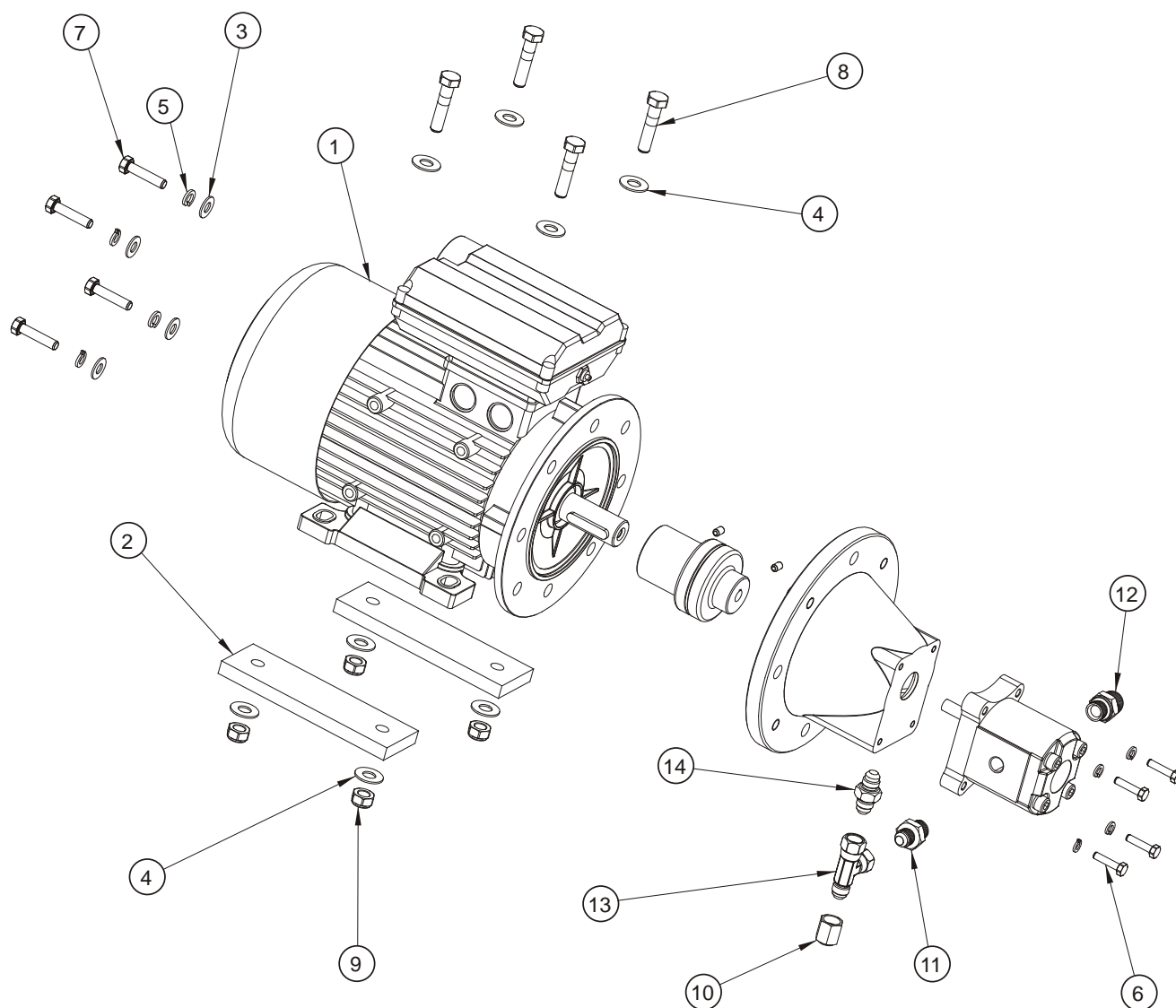


24V DC Electric Motor and Pump Assembly



Item	Part No	Qty	Description
1	3605-10	2	Spring Washer
2	11057-7	1	Check valve, 9/16 UNO > 9/16 JICM
3	7025-002	1	Adaptor, 9/16 UNO . 3/4 JICM
4	13343	1	Pump
5	3080046	1	24V DC Motor
6	60017-007	2	Bolt

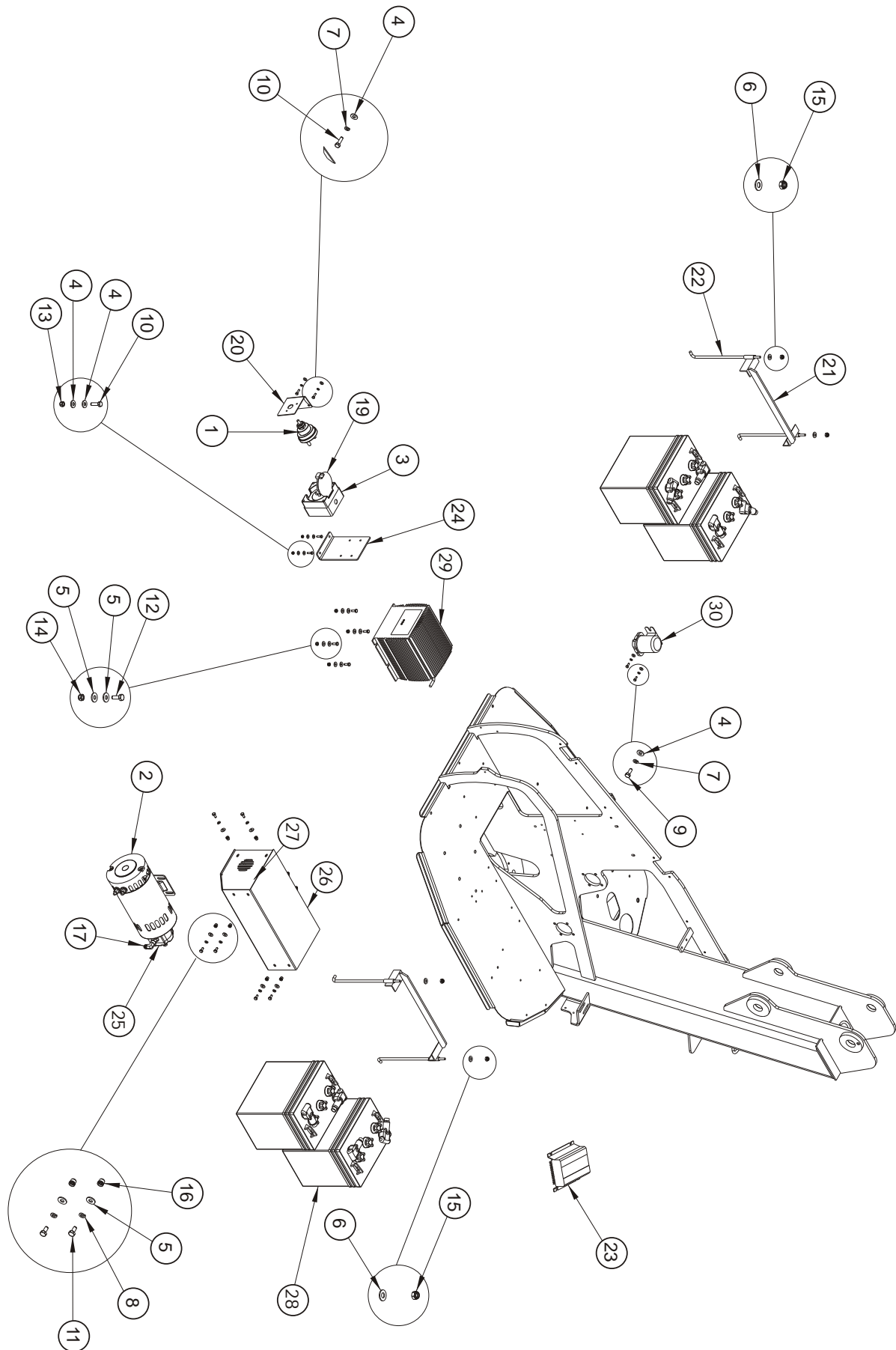
240V Petrol/AC Pump and Motor Assembly



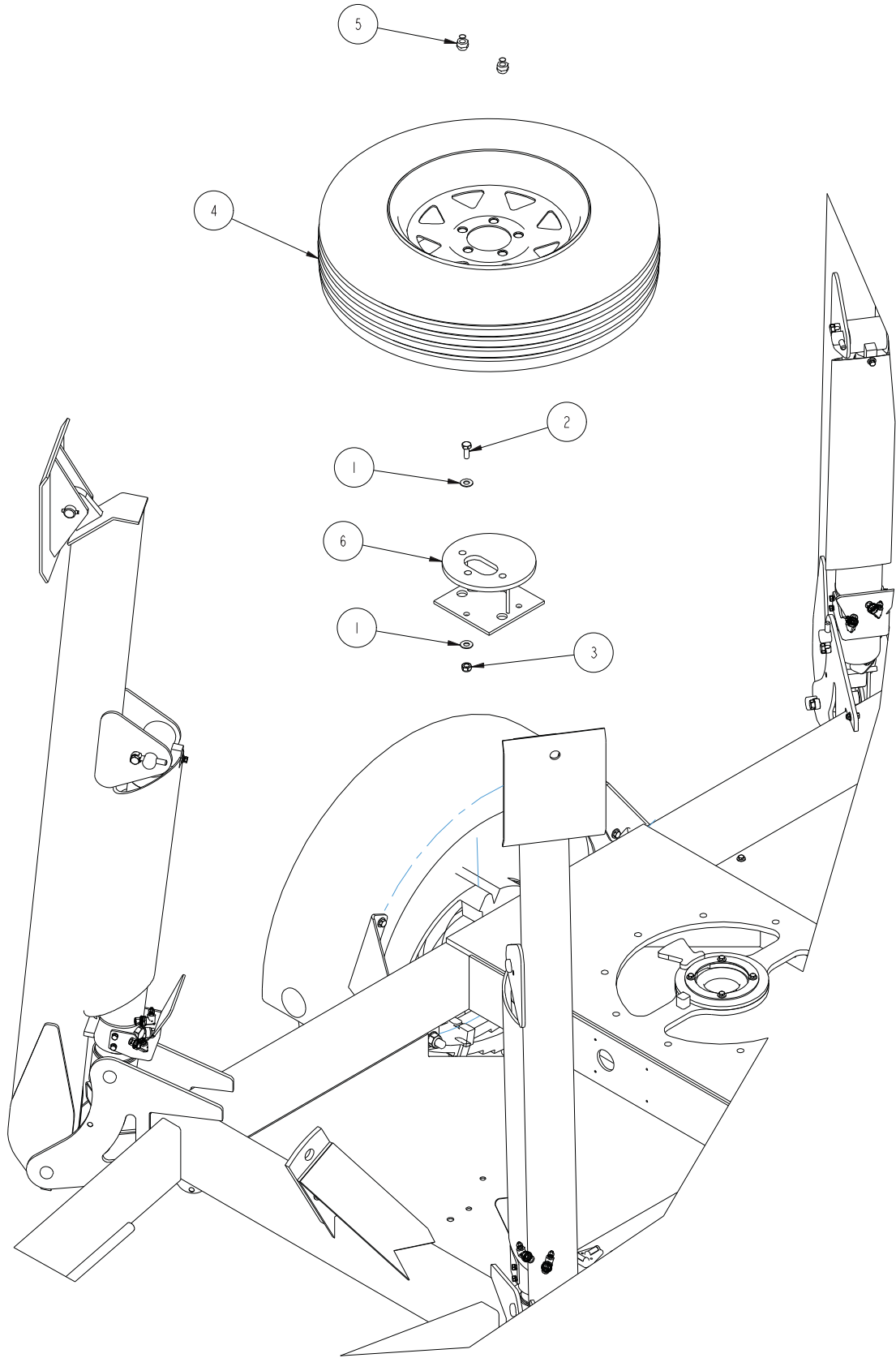
Item	Part No	Qty	Description
1	1867-001	1	Motor, 240VAC
2	1867-005	2	MTR Foot Adjustment
3	3603-08	4	Plain Washer
4	3603-10	8	Plain Washer
5	3605-08	4	Spring Washer
6	3610-06025	4	Metric Bolt
7	3610-08035	4	Metric Bolt
8	3610-10045	4	Metric Bolt
9	3611-10	4	Metric Nylock Nut
10	6983-001	1	Cap - JICF 9/16
11	7013-003	1	Adaptor BSPPM (Dowty) x JICM Straight 3/8" - 9/16"
12	7013-004	1	Adaptor BSPPM (Dowty) x JICM Straight 3/8" - 3/4"
13	9501-2	1	Tee, 9/16 JICF
14	11058-1	1	Check Fitting, JICM 9/16

24V DC Option Assembly

Item	Part No.	Qty.	Description
1	302-0049	1	Switch Battery Disconnect
2	308-0046	1	Motor - 24Vdc
3	1808	1	PDL Enclosure
4	3603-05	8	Plain Washer
5	3603-06	14	Plain Washer
6	3603-08	8	Plain Washer
7	3605-05	4	Spring Washer
8	3605-06	6	Spring Washer
9	3610-05012	2	Metric Bolt
10	3610-05016	4	Metric Bolt
11	3610-06012	6	Metric Bolt
12	3610-06016	4	Metric Bolt
13	3611-05	2	Metric Nyloc Nut
14	3611-06	4	Metric Nyloc Nut
15	3611-08	8	Metric Nyloc Nut
16	3628-06	6	Nutsert M6
17	6999-001	1	Adapter- 90deg, 9/16 JICM to 9/16 JICF
18	9466-1	2	Latch
19	10967-2	1	Appliance Inlet
20	11849	1	Battery Disconnect Switch, Bracket
21	12706	2	Battery holder
22	12706-11	4	Battery "J" Bolt
23	12707	1	Convertor- 24Vdc to 12Vdc
24	13118	1	Bracket- AC Inlet
25	13343	1	Pump, 1.3CC 2 Bolt 9 Spline
26	13614	1	Cover - 24V Motor, MHP AT
27	13637	2	Mount Bracket - 24V Motor
28	92222-1	4	Battery, 6V
29	3050097	1	Battery Charger- 24V Multi Input Voltage
30	3087787	1	Contactore- 24V Sealed



Spare Wheel Assembly



Item	Part No.	Qty.	Description
1	3603-10	2	Plain Washer
2	3610-10025	1	Metric Bolt
3	3611-10	1	Metric Nyloc Nut
4	12772	1	Wheel & Tyre Assembly
5	13196	2	Wheel Nut-1/2" UNF, Mag type
6	13252	1	Spare Wheel Bracket, 14"



Snorkel Product Warranty Policy

1. Snorkel warrants, its authorized sales and service centers (herein referred to as "SSC"), each new machine manufactured and sold by it to be free from defects in material and workmanship for a period of two (2) years from date of delivery to any customer. The warranty will apply subject to the machine being operated in accordance with the rules, precautions, instructions and maintenance requirements outlined in the relevant Snorkel Operator and Parts/Service manuals. Snorkel further warrants the structural components, specifically the mainframe chassis, turntable, booms and/or scissor arms of each new machine manufactured by it to be free from defects in material and workmanship for an additional period of three (3) years. Any such part or parts which, upon examination by the Snorkel Warranty Department or appointed representative, are found to be defective will be replaced or repaired by Snorkel through local authorized Dealers. The structural warranty specifically excludes adverse effects on the machine structure arising from damage, abuse or misuse of the equipment.
2. Machines may be held in an authorized Distributor/ SSC's stock for a maximum period of six (6) months from the date of shipment from Snorkel, before the warranty period is automatically initiated on each machine.
3. It is the responsibility of the Distributor/SSC to complete and return to Snorkel a Pre-delivery Inspection Record, Warranty Registration Form, before the act of rental / loan / demonstration of the machine or delivery to an end user. In the case of direct sale to end customers the same responsibility lies with the end customer.
4. Any end customer, SSC, distributor or dealer shall not be entitled to the benefits of this warranty and Snorkel shall have no obligations here under unless the "Pre-Delivery and Inspection Record" has been properly completed and returned to the Snorkel Warranty department within fifteen (15) days after delivery of the Snorkel product to the Customer or Dealer's demonstration / rental fleet. Snorkel must be notified, in writing, within ten (10) days, of any machine sold to a Customer from a Dealer/SSC's rental fleet during the warranty period.
5. Any part or parts which upon examination by the Snorkel Product Support Department are found to be defective within the specified warranty period, will be replaced or repaired at the sole discretion of Snorkel through its local Authorized Distributor/SSC, at no charge. Any parts replaced under warranty must be original Snorkel parts obtained through an authorized Snorkel Distributor/SSC unless expressly agreed otherwise in writing and in advance by Snorkel's warranty department.
6. All parts claimed under warranty must be held available for return and inspection upon request for a period of 90 days from date of claim submission, it is necessary that all parts are individually tagged or marked with their part number and the warranty claim number. All parts returning should be still in a factory state, free of any alteration to the original design. If the parts are subject to repair it will need to be pre authorized by the Snorkel Product Support Group and or Warranty Department prior to the repair being completed. After 90 days all parts replaced under warranty which have not been returned, to Snorkel should be destroyed. Failure to produce parts requested by the Warranty Administrator for inspection within a period of 14 days will result in the claim being automatically rejected in full. Materials returned for warranty inspection must have the following procedure:
 - Carefully packaged to prevent additional damage during shipping
 - Drained of all contents and all open ports capped or plugged
 - Shipped in a container tagged or marked with the RMA number
 - Shipped PREPAID (ground service only). Any item(s) returned for warranty by any other means
 - may be refused and returned, unless prior approval is agreed with Snorkel.



Snorkel Product Warranty Policy

7. At the direction of the Snorkel Warranty department, any component part(s) of Snorkel products to be replaced or repaired under this warranty program must be returned freight prepaid for inspection. An RMA (Returns material authorization) must be requested from Snorkel Warranty department, a copy to be placed with the returning component part(s).
8. All warranty replacement parts will be shipped freight prepaid (standard charges, ground shipping only) from the Snorkel Parts department, Service Department or from the Vendor to Dealer/SSC or Customer. Any other shipping method is the customer responsibility.
9. All warranty claims are subject to approval by Snorkel Service department. Snorkel reserves the right to limit or adjust claims with regard to defective parts, labor or travel time based on usual and customary guidelines.
10. Reimbursement policy, labor will be paid at 75% of posted hourly shop rate. Travel time will be paid at \$50 per hour up to a maximum of 3 hours. Snorkel will pay 1 hour of troubleshooting time per warranty claim, unless expressly agreed otherwise in writing and in advance by Snorkel's Warranty Department. An annual rate declaration must be supplied to the Snorkel Warranty administrator by January 31st and will be used as the reimbursable rate for that calendar year.

REPLACEMENT PARTS WARRANTY

- Any part replaced under this limited warranty is not subject to further warranty cover beyond the normal warranty period of the machine upon which the part was installed.
- Any replacement parts sold (not delivered under a warranty claim) will be subject to a warranty period of (6) six months from the date of invoice.
- Parts held by an authorized Distributor/SSC are covered under warranty for a period of (12) twelve months from the date of invoice, provided that those parts have been subject to appropriate storage to prevent damage and deterioration (conditional on Snorkel review).

CLAIM PROCEDURE

The Snorkel Warranty department must be notified within forty-eight hours (48) of any possible warranty situation during the applicable warranty period. Personnel performing major warranty repair or parts replacement must obtain specific approval by the Snorkel Warranty department prior to performing the warranty repair or replacement.

When a Distributor/SSC/Customer perceive a warranty issue to exist the following steps must be adhered to:

- Customer/SSC/Distributor to place a purchase order for genuine Snorkel replacement parts.
- Snorkel to dispatch parts via the requested method (in line with the required response time).
- Confirmation that a qualified technician is available to replace the part and that this person has been accepted by Snorkel to carry out such work under the warranty of the machine. Failure to do this may nullify the warranty.
- Customer/SSC/Distributor to allocate a warranty claim number to the repair.
- All correspondence in respect of the claim to be on an official Snorkel warranty claim form as supplied by Snorkel's warranty department.
- All warranty claims must be submitted within 30 days of the date of the machine repair.

FREIGHT DAMAGE

- If a machine is received in a damaged condition, then the damage must be noted on the bill of lading and/or delivery documents and photographs must be taken at the point of delivery, prior to signing acceptance of the consignment.
- The freight company and Snorkel must be contacted by the Distributor and a damage claim registered by either party immediately.
- The above requirements apply only to freight damage associated with equipment supplied by Snorkel transport. Customer freight issues are excluded from this warranty policy.



Snorkel Product Warranty Policy

THIS PRODUCT WARRANTY POLICY SPECIFICALLY EXCLUDES:

1. Engines, motors, tires and batteries are manufactured by specialist suppliers to Snorkel, who furnish their own warranty policies. Snorkel will, however, to the extent permitted pass through any such warranty protection to the Distributor/SSC/Customer.
2. Any Snorkel product which has been modified or altered outside Snorkel factories without written approval, if such modification or alteration, in the sole judgment of Snorkel Engineering and/or Service Departments, adversely affects the stability, reliability or service life of the Snorkel product or any component thereof.
3. Any Snorkel product which has been subject to misuse and abuse, improper maintenance or accident. "Misuse" includes but is not limited to operation beyond the factory-rated load capacity and speeds. "Improper maintenance" includes but is not limited to failure to follow the recommendations contained in the Snorkel Operation, Maintenance, and repair Parts Manuals.
4. Normal wear of any Snorkel component part(s). Normal wear of component parts may vary with the type, application or type of environment in which the machine may be used; such as, but not limited to sandblasting applications.
5. Routine maintenance, routine maintenance items and minor adjustments are not covered by this warranty, including but not limited to hydraulic fluid, filters and lubrication, paint and decals, engine tune-up, brake adjustments etc. Snorkel will not cover leaks from fittings, hoses and any other connection points after the unit has been in service for 90 days or 150 hours of operation which ever comes first.
6. Any Snorkel product that has come into direct contact with any chemical or abrasive material.
7. Incidental or consequential expenses, losses, or damages related to any part or equipment failure, including but not limited to freight cost to transport the machine to a repair facility, downtime of the machine, lost time for workers, lost orders, lost rental revenue, lost profits, expenses or increased cost. This warranty is expressly in lieu of all other warranties, representations or liabilities of Snorkel, either expressed or implied, unless otherwise amended in writing by Snorkel.
8. Snorkel warranty policy does not cover any duties, taxes, environmental fees including without limitation, disposal or handling of tires, batteries and petrochemical items.
9. Items specifically excluded are: fuel injectors, motor brushes, glow plugs, contactor tips and springs, filters, lamp bulbs, lamp lenses, coolants, lubricants, brake pads and cleaning materials.
10. Failure of replacement parts due to fault misdiagnosis or incorrect fitting by the Distributor/SSC/Customer.

SNORKEL MAKES NO WARRANTIES WHICH EXTEND BEYOND THE DESCRIPTION OF THIS LIMITED WARRANTY. SNORKEL MAKES NO IMPLIED WARRANTY OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE AND DISCLAIMS ALL LIABILITY FOR INCIDENTAL OR CONSEQUENTIAL DAMAGES, INCLUDING BUT NOT LIMITED TO INJURY TO PERSONS OR PROPERTY.



Snorkel Product Warranty Policy

Wherever possible the end customer shall obtain all warranty support and make all warranty claims through the local Snorkel authorized Distributor/SSC/Dealer. Warranty support should be from the Distributor/SSC/Dealer from whom the Snorkel product was purchased. Where Snorkel equipment is supplied directly from the factory the end customer, or if unable to contact the Distributor/SSC/Dealer, may contact the Snorkel Warranty Department for further assistance.

APPEAL

The buyer may appeal in writing against a rejected or adjusted claim to Snorkel warranty department within a period of 21 days of receiving the rejection or adjustment notice. The appeal should be grounded on express reasons and supported by relevant evidence. Appeals received outside of this time limit will not be considered.

SNORKEL WARRANTY SCHEDULE

Limited Warranty Periods

Item	Warranty Period
New machine materials and workmanship	2 year parts replacement
Structural components (Chassis, Turntable, Booms, Scissors)	5 years parts replacement or repair
Parts held in a Distributor's stock	12 months from date of invoice, subject to adequate storage/protection
Parts sold (non warranty)	6 months from date of invoice
Batteries supplied on new machines	6 months from warranty registration date
Other specifically excluded parts: Fuel injectors Motor brushes Glow plugs Contactor tips and springs Oils Filters Lamp bulbs Lamp lenses Coolants Lubricants Cleaning materials All consumable/wear parts	Not covered by Warranty

**Local Distributor / Lokaler Vertiebs Händler / Distributeur local
El Distribuidor local / Il Distributore locale**

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