

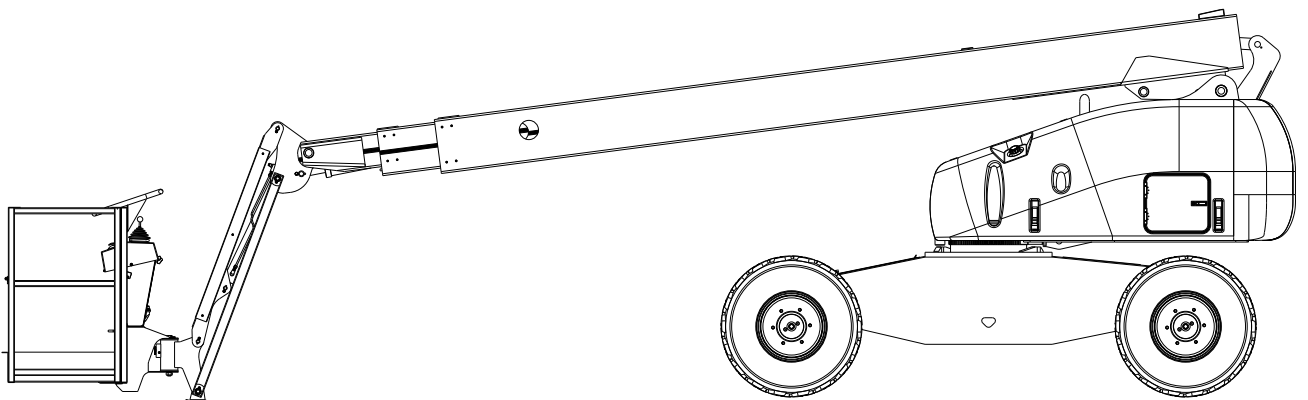
# Snorkel

## **Maintenance and Repair Parts Manual**

**SP17**

**SP18**

**DIESEL POWERED**



## LIMITED WARRANTY

Snorkel warrants each new machine manufactured and sold by it to be free from defects in material and workmanship for a period of one (1) year from date of delivery to a Customer or for one year after the machine has been placed in first service in a Dealer rental fleet, whichever comes first. Any part or parts which, upon examination by the Snorkel Service Department, are found to be defective, will be replaced or repaired, at the sole discretion of Snorkel, through its local Authorized Dealer at no charge.

Snorkel further warrants the structural components; specifically, the mainframe chassis, turntable, booms and scissor arms, of each new machine manufactured by it to be free from defects in material and workmanship for an additional period of four (4) years. Any such part or parts which, upon examination by the Snorkel Service Department, are found to be defective will be replaced or repaired by Snorkel through its local Authorized Dealer at no charge; however, any labor charges incurred as a result of such replacement or repair will be the responsibility of the Customer or Dealer.

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

Customer and Dealer shall not be entitled to the benefits of this warranty and Snorkel shall have no obligations hereunder unless the "Pre-Delivery and Inspection Report" has been properly completed and returned to the Snorkel Service Department within ten (10) days after delivery of the Snorkel product to Customer or Dealer's rental fleet. Snorkel must be notified, in writing, within ten (10) days, of any machine sold to a Customer from a Dealer's rental fleet during the warranty period.

At the direction of the Snorkel Service Department, any component part(s) of Snorkel products to be replaced or repaired under this warranty program must be returned freight prepaid to the Snorkel Service Department for inspection. All warranty replacement parts will be shipped freight prepaid (standard ground) from the Snorkel Service Department or from Snorkel's Vendor to Dealer or Customer.

## REPLACEMENT PARTS WARRANTY

Any replacement or service part made or sold by Snorkel is not subject to the preceding **Limited Warranty** beyond the normal warranty period of the machine upon which the part was installed.

### **THIS WARRANTY EXCLUDES AND SNORKEL DOES NOT WARRANT:**

1. Engines, motors, tires and batteries which are manufactured by suppliers to Snorkel, who furnish their own warranty. Snorkel will, however, to the extent permitted, pass through any such warranty protection to the Customer or Dealer.
2. Any Snorkel product which has been modified or altered outside Snorkel's factory without Snorkel's written approval, if such modification or alteration, in the sole judgment of Snorkel's 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, 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, Repair Parts Manuals. Snorkel is not responsible for normal maintenance, service adjustments and replacements, including but not limited to hydraulic fluid, filters and lubrication.
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. Any Snorkel product that has come in direct contact with any chemical or abrasive material.
6. 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 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's President, Vice President-Engineering, Vice President-Sales or Vice President-Marketing.

**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.**

The Customer shall make all warranty claims through its local Authorized Dealer and should contact the Dealer from whom the Snorkel product was purchased for warranty service. Or, if unable to contact the Dealer, contact the Snorkel Service Department for further assistance.

Effective July 1995

## General Specifications

General Specifications—SP17	3
General Specifications—SP18	4
Working Envelope - SP17	5
Working Envelope - SP18	6
Engine Specifications	7
Engine Oil Viscosity	7

## Maintenance Information

About this Manual:	9
Manual Organization	9
General specifications	9
Maintenance	9
Repair parts and drawings	9
Hydraulics	9
Electrical	9
Options	9
Parts index - Page locator	9
Maintenance and Schematics	9
Maintenance information	9
Maintenance schedules	10
Daily Maintenance	11
Pre-operational Inspection	11
Hydraulic Hose Age	11
<b>90 day or 150 hour maintenance</b>	12
<b>Yearly or 500 hour maintenance</b>	12
Lubricants	13
Pressure gun application	13
Rotation bearing	13
Rotation gear teeth and pinion	13
Swing drive	13
Gear hubs	13
Hydraulic oil reservoir	13
Engines	14
Door hinges and latches	14
Platform rotator	14
Hydraulic oil return filter	14
Batteries	14
90 day or 150 hour checklist	15
Torque Chart	17
To order service or repair parts	18
ANSI and OSHA compliance	18
Manuals	18

## Section 1. - Repair Parts

Base Assembly	1-2
Base Assembly - drawing	1-3
Steer Axle Assembly - drawing	1-4
Steer Axle Assembly	1-5
Swing Drive	1-6
Swing Drive - drawing	1-7
Swing Drive, Perfection	1-8
Swing Drive, Perfection - drawing	1-9
Column Assembly	1-10
Column Assembly - drawing	1-11
Column Cover - drawing	1-12
Column Cover	1-13
Booms	1-15
Booms	1-15
Booms	1-16
Booms - drawing	1-17
Hose Carrier - drawing	1-18
Hose Carrier	1-19
Extension Cylinder	1-20
Extension Cylinder - drawing	1-21
Jib Boom SP18 - drawing	1-22
Jib Boom SP18	1-23
Jib Boom Exploded SP18	1-24
Jib Boom Exploded SP18 - drawing	1-25
Platform Assembly - drawing	1-26
Platform Assembly	1-27
Platform Rotator SP17	1-28
Platform Rotator SP17 - drawing	1-29
Fuel Tank Assembly	1-30
Fuel Tank Assembly - drawing	1-31
Slew Sensor Assembly	1-32
Deutz Engine Assembly	1-33
Deutz Engine Assembly	1-34
Deutz Engine Assembly - drawing	1-35
Placards and Decals - drawing	1-36
Placards and Decals Installation	1-37

# Table of Contents

---

## Section 2. - Hydraulics

---

SP17 Hydraulic Schematic [Hydraulic Controls] - drawing . . . . .	2-3
SP18 Hydraulic Schematic [Hydraulic Controls] - drawing . . . . .	2-4
SP17 Hydraulic Schematic [Electric Controls] - drawing . . . . .	2-5
SP18 Hydraulic Schematic [Electric Controls] - drawing . . . . .	2-6
Range manifold . . . . .	2-7
Main Manifold Block. . . . .	2-8
Main Manifold Block - drawing . . . . .	2-9
Drive Motor . . . . .	2-10
Drive Motor - drawing . . . . .	2-11
Oil Tank Assembly. . . . .	2-12
Platform Rotator, Parker SP17 . . . . .	2-13
Centrepost and Fittings . . . . .	2-14
Extend Cylinder and Support Bracket. . . . .	2-15
Cylinder, Master Level - Rosenboom . . . . .	2-16
Cylinder, Slave Level - Rosenboom . . . . .	2-17
Cylinder, Slave Level - GBI . . . . .	2-18
Cylinder, Slave Level - Seabee. . . . .	2-19
Cylinder, Slave Level - Prince. . . . .	2-20
Lift Cylinder . . . . .	2-21
Jib Lift Cylinder . . . . .	2-22
Victor Steer Cylinder . . . . .	2-23
Axle Cylinder . . . . .	2-24
Cylinder, Extension - Rosenboom. . . . .	2-25
Dual Holding Valve, Platform Rotation SP17 . . . .	2-26

## Section 3. - Electrical

---

Electrical Schematic Models SP17 / 20 With Electric Controls. . . . .	3-3
Electrical Schematic Models SP18 / 22 With Electric Controls. . . . .	3-4
Electrical Schematic All Snorkel SP Models With Hydraulic Controls . . . . .	3-5
Wiring, Lower Control Box Schematic All Snorkel SP Models . . . . .	3-6
Upper Controls Assembly . . . . .	3-7
Upper Control Box . . . . .	3-8
Upper Control Box - drawing . . . . .	3-9
Upper Control Box, Hydraulic Controls - drawing .	3-10
Upper Control Box - Hydraulic Controls . . . . .	3-11
Platform Foot Switch . . . . .	3-12
Boom Switch . . . . .	3-13
Controller, Drive / Steer. . . . .	3-14
Controller, Drive / Steer - drawing. . . . .	3-15
Controller, Lift / Swing . . . . .	3-16
Controller, Lift / Swing - drawing . . . . .	3-17

## Section 4. - Options

---

Work Lights . . . . .	4-3
Tow Option Assembly . . . . .	4-4
Tow Option Assembly - drawing . . . . .	4-5
Steel Covers - drawing . . . . .	4-6
Steel Covers . . . . .	4-7

## ■ General Specifications—SP17

Working height . . . . .	16.8m (55' 1")
Maximum platform height . . . . .	15m (49' 2")
Horizontal outreach . . . . .	12.2m (40')
Turntable rotation . . . . .	360° continuous
Main boom	
Articulation . . . . .	-16° to +75°
Platform	
Dimensions	
Standard . . . . .	780 x 1720mm (30.7" x 67.7")
Optional . . . . .	780 x 2440 (30.7" x 96")
Guardrail height . . . . .	1100mm (43.3")
Rated work load . . . . .	227 kg (500 lb)
Rotation . . . . .	180°
Maximum number of occupants . . . . .	2 people
Cycle times	
Turntable rotation . . . . .	115/120 sec
Main boom	
Up . . . . .	45/55 sec
Down . . . . .	35/45 sec
Extend . . . . .	55/65 sec
Retract . . . . .	45/55 sec
Platform rotation . . . . .	16/20 sec
Drive system	
Standard . . . . .	4-wheel drive
Steering system	
Standard . . . . .	2-wheel steer
Tires, 14ply	
Foam filled . . . . .	14 x 17.5 HD
Gradeability . . . . .	40%
Drive speed	
High . . . . .	4 km/h (2.5 mph)
Low . . . . .	1.6 km/h (1 mph)
Turning radius, inside	
Inside . . . . .	3.8m (12' 2")
Outside . . . . .	6.1m (20')
Tailswing	
Stowed . . . . .	270mm (10.6")
Overside . . . . .	893mm (35.1")
Stowed height . . . . .	2560mm (8' 6")
Stowed width . . . . .	2270mm
Stowed length . . . . .	7420mm
Wheelbase . . . . .	2600mm (8' 6")

Ground clearance . . . . .	440mm (17.3")
Axle oscillation . . . . .	7.8°
Maximum single wheel load . . . . .	2995kg (6603 lb)
Weight . . . . .	5800kg (12784 lb)
Ground bearing strength	
Minimum . . . . .	335kPa (48 psi)
Electrical system	
Voltage . . . . .	12 V DC negative chassis ground
Source . . . . .	1 - 12 V 15 plate 600 CCA battery
Fluid recommended . . . . .	distilled water
Hydraulic system	
Maximum pressure . . . . .	3250 psi (224 bar)
Reservoir capacity . . . . .	100 litres (26.3 US gal)
System capacity . . . . .	129 litres (33.9 US gal)
Maximum operating temperature . . . . .	93°C(200°F)
Hydraulic fluid recommended	
Shell Tellus T37 . . . . .	
Engine . . . . .	Deutz F3L2011F
Fuel tank capacity . . . . .	100 litres (26.3 US gal)
Ambient air temperature operating range	
Celsius . . . . .	-18°C to 43°C
Fahrenheit . . . . .	0°F to 110°F
Maximum wind speed	
12.5m/sec . . . . .	45 km/h (28 mph)

# General Specifications

---

## ■ General Specifications—SP18

Working height . . . . . 18.3m (60')

Maximum platform height . . . . . 16.5m (54' 3")

Horizontal outreach . . . . . 14m (45' 11")

Turntable rotation . . . . . 360° continuous

### Main boom

Articulation . . . . . -16° to +72°

Jib boom articulation . . . . . -72 to + 72 degrees

### Platform

#### Dimensions

Standard . . . . . 760 x 1720mm (30.7" x 67.7")

Optional . . . . . 780 x 2440mm (30.7" x 96")

Guardrail height . . . . . 1100mm (43.3")

Rated work load . . . . . 227 kg (500 lb)

Rotation . . . . . 180°

Maximum number of occupants . . . . . 2 people

### Cycle times

Turntable rotation . . . . . 115/120 sec

#### Main boom

Up . . . . . 45/55 sec

Down . . . . . 35/45 sec

Extend . . . . . 55/65 sec

Retract . . . . . 45/55 sec

Platform rotation . . . . . 30/40 sec

#### Jib boom

Up . . . . . 20/25 sec

Down . . . . . 15/20 sec

### Drive system

Standard . . . . . 4-wheel drive

### Steering system

Standard . . . . . 2-wheel steer

### Tires, 14ply

Foam filled . . . . . 14 x 17.5 HD

Gradeability . . . . . 40%

### Drive speed

High . . . . . 4 km/h (2.5 mph)

Low . . . . . 1.6 km/h (1 mph)

### Turning radius, inside

Inside . . . . . 3.8m (12'2")

Outside . . . . . 6.1m (20')

### Tailswing

Stowed . . . . . 270mm (10' 6")

Overside . . . . . 893mm (35.1")

Stowed height . . . . . 2580mm (8' 5")

Stowed width . . . . . 2270mm

Stowed length . . . . . 6770mm

Wheelbase . . . . . 2600mm (8' 6")

Ground clearance . . . . . 440mm (17.3")

Axle oscillation . . . . . 7.8°

Maximum single wheel load . . . . 3304kg (7284 lb)

Weight . . . . . 6400kg (14105 lb)

### Ground bearing strength

Minimum . . . . . 370kPa (54 psi)

### Electrical system

Voltage . . . . . 12 V DC negative chassis ground

Source . . . . . 1 - 12 V 15 plate 600 CCA battery

Fluid recommended . . . . . distilled water

### Hydraulic system

Maximum pressure . . . . . 3250 psi (224 bar)

Reservoir capacity . . . . . 100 litres (26.3 US gal)

System capacity . . . . . 129 litres (33.9 US gal)

Maximum operating temperature . . . 93°C(200°F)

### Hydraulic fluid recommended

Shell Tellus T37 . . . . .

Engine . . . . . Deutz F3L2011F

Fuel tank capacity . . . . . 100 litres (26.3 US gal)

### Ambient air temperature operating range

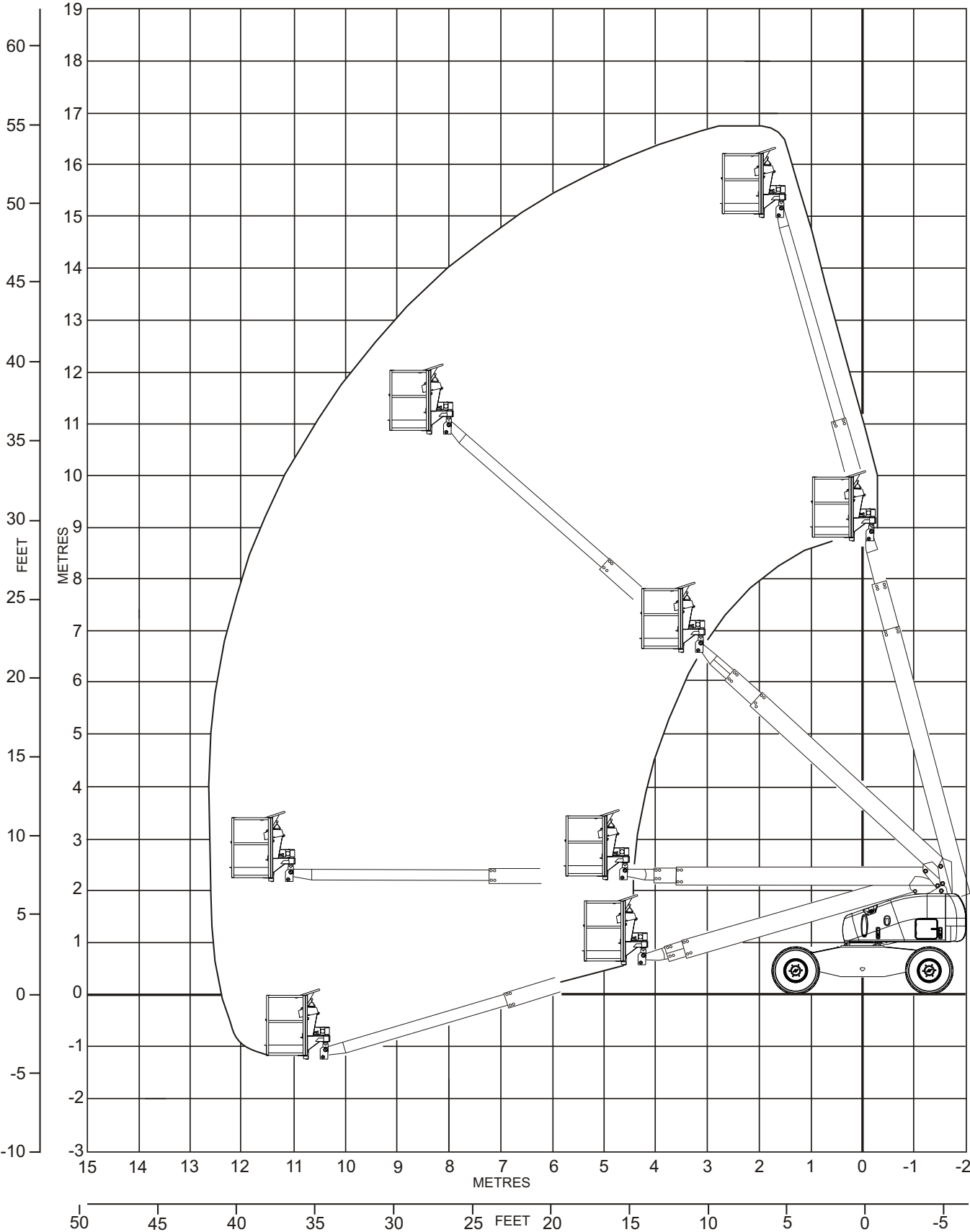
Celsius . . . . . -18°C to 43°C

Fahrenheit . . . . . 0°F to 110°F

### Maximum wind speed

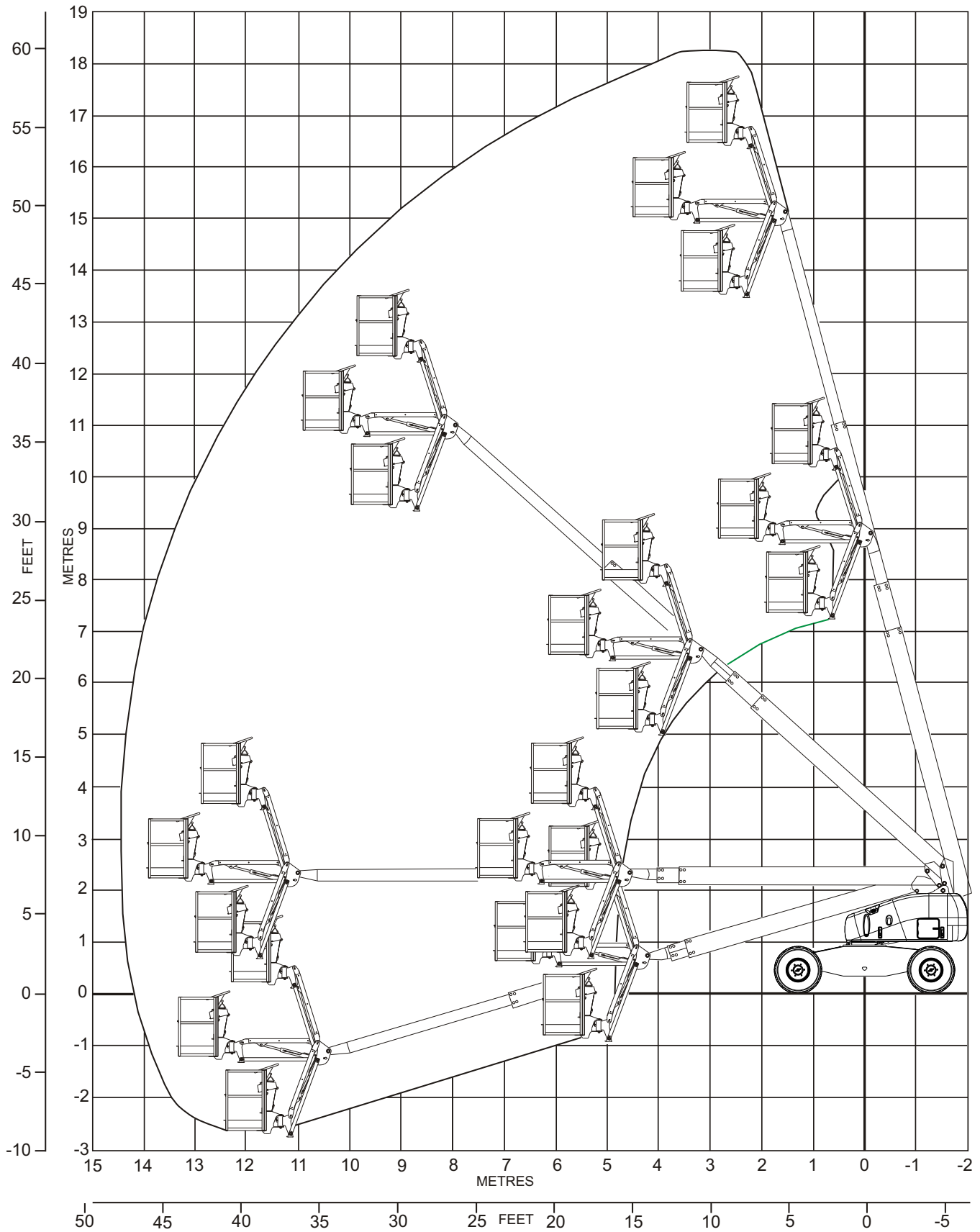
12.5m/sec . . . . . 45 km/h (28 mph)

■ Working Envelope - SP17



# General Specifications

## ■ Working Envelope - SP18

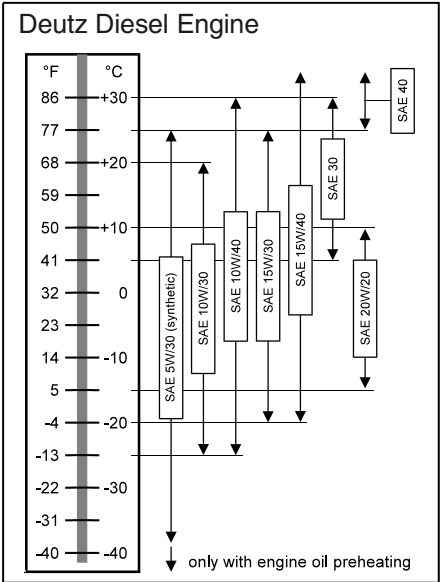




■ Engine Specifications

Engine Make	Deutz
Model	F3L-1011
Horsepower	40.23 hp @ 3000 rpm
Coolant	Air
Fuel Type	Diesel
Grade	DIN 51 601 BS 2869: A1 and A2 ASTM D 975-81: 1-D and 2-D W-F-800C: DF-A, DF-1 and DF-2.
Operating temperature	172°F to 203°F (78°C to 95°C)
Oil capacity	5.51L (5.77 US qt)
Oil grade	API: CF-4 CG-4 CH-4
Oil viscosity	See engine Oil Viscosity
Oil filter capacity	0.5 L (0.52 US qt)
Running time	One full tank of diesel will last for eight hours under normal working conditions

■ Engine Oil Viscosity



## ■ 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 18 of this chapter). This information is found on the serial number placard.*

## ■ Manual Organization

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

Subassemblies and detailed parts are identified by index numbers on the drawings 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 SP17/18.

### □ Maintenance

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

### □ Repair parts and drawings

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

### □ Hydraulics

(Section 2), contains parts listings and drawings 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 drawings of electrical components installations including wiring schematics.

### □ Options

Options (Section 4), contains parts listings and drawings 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 drawing.**

## ▲ CAUTION

**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 inspections.

## **▲ 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.

## ■ Daily Maintenance

### ☐ Pre-operational Inspection

Components	Service Required
Emergency power motor/pump	Check operation
Air filter	Check condition
Engine oil	Check oil level
Fuel leaks	Visually inspect (hoses, connections, etc.)
Fuel tank cap	Visually inspect (installation)
Engine coolant	Check fluid level
Engine fuel level	Check fuel gauge
Bolts and fasteners	Visually inspect (looseness)
Platform gate	Visually inspect (operation)
Slide pads	Visually inspect (boom wear marks)
Structural damage and welds	Visually inspect (weld cracks, dents)
Tires and wheels	Visually inspect (condition)
Battery fluid level	Check fluid level
Battery terminals	Visually inspect (corrosion)
Charging system	Visually inspect (belt)
Control switches	Visually inspect (operation)
Wiring harnesses	Visually inspect (installation, condition)
Hydraulic leaks	Visually inspect (hoses, tubes, fittings)
Hydraulic oil	Check fluid level
Placards and decals	Visually inspect (installation, condition)

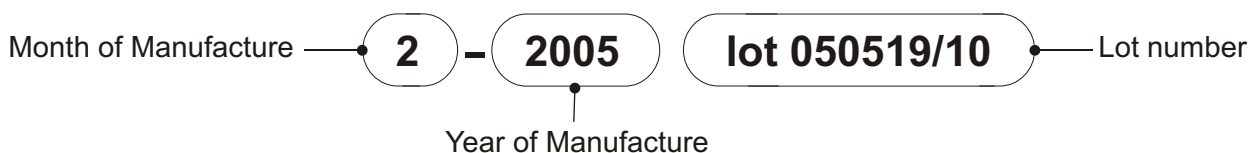
## ■ Hydraulic Hose Age

EN982 Clause 7.3.1 requires the manufacturing date of each hydraulic hose to be clearly visible on the hose.

Hoses used in production of this unit are manufactured by Hydraulink and have a code stamped on the lay line that offers the following information.

The key to decode the date is as follows:

Sample Hose Code **2-2005 lot 050519/10**



## Maintenance Information

### ■ 90 day or 150 hour maintenance

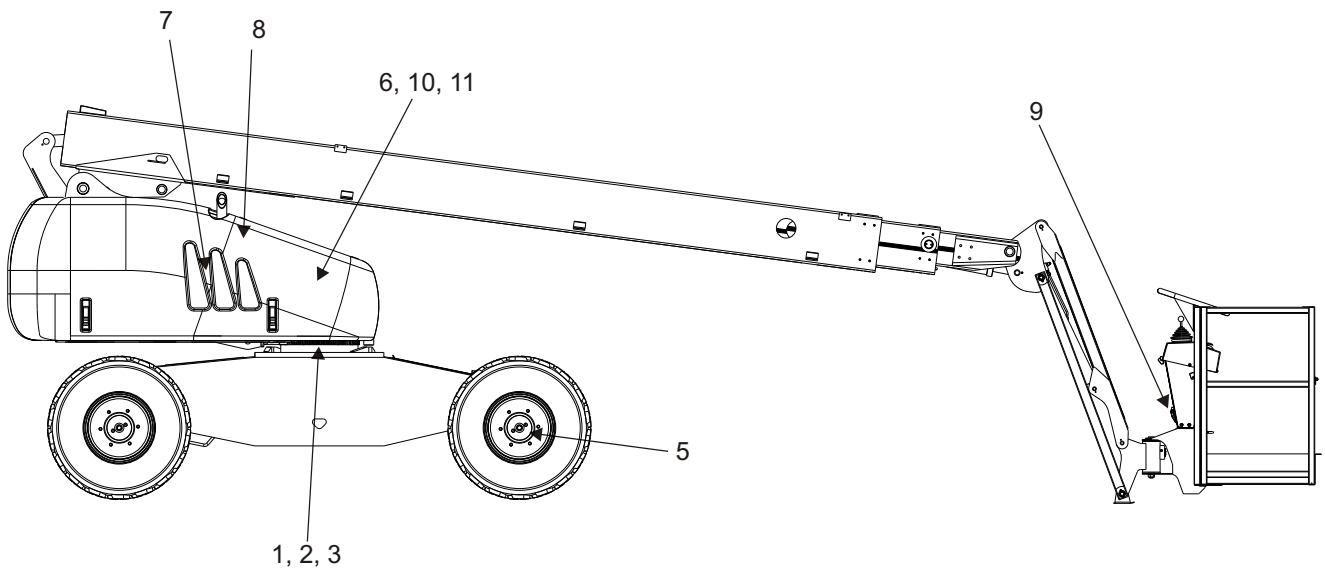
(Trained service technician)

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
Door hinges and latches	Lubricate	SAE 10W oil or spray lubricant
Rotation bearing	Lubricate	Conoco Super Sta #2 Above 32° Mobilgrease CM-P Below 32° Mobilgrease CM-L
Rotation bearing teeth & pinion	Lubricate	Mobil Mobiltac 375NC
Gear hubs	Check fluid level, fill if low	Mobil Mobilube HD 80W-90
Swing drive	Check fluid level, fill if low	Mobil Mobilube HD 80W-90
Platform rotator	Refill if disassembled for repairs	Consult factory
Platform controller	Check smooth operation & speeds	
Batteries	Check specific gravity	1.260/1.275 at 80° F.
Hydraulic return filter	Check condition	Replace if dirty
Engine RPM	Check for proper engine RPM	Idle = 1900RPM
Engine oil and filter	Replace per engine owners manual	High Revs = 2400RPM
Engine fuel filter	Check condition	Replace every 6 months or if dirty

### ■ 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 T37
Hydraulic return filter	Replace	After 1st. 50 hours, thereafter at recommended interval
Hydraulic reservoir suction filter	Clean and reinstall	
Hydraulic pressures	Check pressures	
Gear hubs	Replace fluid	Mobil Mobilube HD 80W-90
Swing drive	Replace fluid	Mobil Mobilube HD 80W-90
Engine coolant	Check Condition	See engine manufacturer's owner's manual



The drawing locates the lubrication points of the SP17/SP18

## ■ Lubricants

Specific lubricants as recommended by Snorkel, should be used in maintaining your unit. If in doubt regarding the use of lubricants other than those listed, contact Snorkel Customer Service Department, St. Joseph Missouri, for evaluation and recommendation.

Refer to the above lubrication drawing for location of item numbers.

## □ Pressure gun application

Service all fittings as indicated in the Maintenance Schedule and lubrication drawing. 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 (item 1.): Pressure gun lubricate bearing at recommended interval using lubricant as outlined in the maintenance schedule. Rotate while lubricating. Lubrication fitting is located on the front plate of the turntable.

## □ Rotation gear teeth and pinion

Rotation gear teeth and pinion (item 2.): Gear teeth and gear box pinion should be lubricated with a spray-on type open gear lubricant.

## □ Swing drive

To check oil level, remove check plug located on the side of the gear box. Unit is full if oil is level with bottom of fill hole or just starts to run out.

## □ Gear hubs

Gear hubs (item 5.): To check and fill Gear hubs:

1. Rotate wheel until bottom of filler/drain plug is about 1 inch above horizontal centerline.
2. Remove plug with drive ratchet and extension.
3. Fill until lubricant is level with bottom of fill hole.

## **Note:**

*Do not overfill gear hubs as they are not vented and need air space for expansion of oil to prevent damage to hubs.*

## □ Hydraulic oil reservoir

Hydraulic oil reservoir (item 6.): The fluid level should be kept between the low and full marks on the sight gauge indicator 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.

## Maintenance Information

---

The reservoir filler/breather cap should be removed and the cap strainer cleaned with Kerosene, Fuel Oil, or other solvent at this time.

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

### **Note:**

*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 Customer Service Department, PO Box 1041, Levin 5500, New Zealand for further information.

### **Engines**

Engine (item 7.): 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.

### **Door hinges and latches**

Door hinges and latches (item 8.): After lubricating, remove any excess oil or over spray so it will not collect dirt or debris.

### **Platform rotator**

Platform rotator (item 9.): Platform rotators will require lubrication only if disassembled for repairs.

Consult factory for proper lubricant if replacement of platform rotator is required.

### **Hydraulic oil return filter**

Return filter (item 10.): On SP17/18 models, the hydraulic oil return filter is mounted on top of the hydraulic oil reservoir.

The filter element is a throw-away type filter and should be changed after the initial break-in period (approximately 50 hours operation time).

The filter is equipped with a hydraulic pressure gauge to indicate the filter element condition. A by-pass relief within the filter base is provided and is set to by-pass at 25 PSI. If pressure readings are above 25 PSI, the filter should be changed.

The filter condition should be checked at the 90 day or 150 hour Preventive Inspection Maintenance interval or more frequently under extreme working conditions.

The filter condition indicator is accurate only when the engine is running at maximum RPM and pump is discharging maximum flow, which occurs only during full speed driving. This requires that the indicator be observed while the unit is in motion, booms fully retracted and in stowed position, drive range switch in "LO" position, and drive controller fully forward. Oil temperature should be at least 90 degrees.

### **Note:**

*Use extreme caution while observing the condition indicator because of the motion of the drive wheels. The condition indicator is best observed from outside of the tract of the vehicle wheels to avoid possible personal injury or machine damage.*

When changing the filter element, the oil inside of the filter element, should be examined for deposits of metal cuttings, which if present, could indicate excessive wear in some of the system components.

### **Batteries**

Batteries (not shown): Batteries will have longer life if the water level is maintained and they are 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 produce flammable and explosive gases. Never allow smoking, flames or sparks around batteries.**

**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.

## ■ 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
<b>A CHASSIS</b>				
1	Structural (1)			
2	Steering cylinder pins (2,6)			
3	Steering linkage (2,4,5)			
4	Tires (5)			
5	Hydraulic tubes and hoses (3,5)			
6	Decals and placards (2,8)			
7	Drive motor brake (4)			
8	Torque drive wheel lugs per placard on wheel (6)			
9	Torque steer wheel lugs per placard on wheel (6)			
10	Right drive motor (Front and Rear) (2,3,5)			
11	Left drive motor (Front and Rear) (2,3,5)			
12	Lubrication points (2)			
<b>B TURNTABLE</b>				
1	Structural (1)			
2	Torque turntable top bolts @ 180 ft. lbs. (6)			
3	Torque turntable bottom bolts @ 180 ft. lbs. (6)			
4	Hydraulic hoses and tubes (3,5)			
5	Centerpost (3)			
6	Centerpost securing bolts (6)			
7	Lift cylinder pin caps and tie wire (2,6)			
8	Cowling (4,5)			
9	Wire harness (2,5)			
10	Lift cylinder and holding valves (3,4)			
11	Decals and placards (2,8)			
12	Master level cylinder pin caps and tie wire (2,6)			
13	Master level cylinder and holding valves (3,4)			
14	Rotation brake (4)			
15	Rotation backlash (5)			
16	Correct operators manual in document holder (2)			
17	System pressure (2,5)			
18	Lubrication points (2)			
19				
<b>C GROUND CONTROL STATION</b>				
1	Station selector switch ñ ground controls platform controls DO NOT work (4)			
2	Emergency lower (bleed down) (4) Extension cylinder bleed down (4)			
3	Ground controls switches (4)			
4	Turntable rotation (4)			
5	Boom UP-DOWN (4)			




	Check	OK	✓	X
6	Boom extension IN-OUT (4)			
7	Platform levelling (4)			
8	Emergency power, all functions (4)			
9	Platform rotation (4)			
10	Jib boom, UP-DOWN (SP18 only) (4)			
<b>D BOOMS</b>				
1	Structural (1)			
2	Lift cylinder pin caps and tie wire (2,6)			
3	Hydraulic hoses and tubes (3,5)			
4	Extension cylinder and holding valve (3,4)			
5	Hose carrier tube (5,7)			
6	Hose carrier support (5,7)			
7	Plastic hose track (5)			
8	Electrical wires (5)			
9	Extend/retract wire ropes and sheaves (2,5,6)			
<b>E PLATFORM</b>				
1	Structural (1)			
2	Decals and placards (2,8)			
3	Gravity gate (4,5)			
4	Hydraulic tubes and hoses (3,5)			
5	Slave level cylinder pin caps and tie wire (2,6)			
6	Slave level cylinder and holding valve (3,4)			
<b>F PLATFORM CONTROL STATION</b>				
1	Foot switch, unit will not start when engaged (4)			
2	Foot switch, functions operate when engaged (4)			
3	Engine START-STOP (4)			
4	Hi rpm (4)			
5	Turntable rotation (4)			
6	Boom UP-DOWN (4)			
7	Boom extension IN-OUT (4)			
8	Jib boom, UP-DOWN (SP18 only) (4)			
9	Platform levelling (4)			
10	Platform rotation (4)			
11	Drive speed, HIGH-LOW (4)			
12	Motion alarm (4)			
13	Emergency power, all functions (4)			
14	Emergency shutdown control (4)			
15	Gradual start to stop lift/swing/drive controls (4)			
16	Speed limit switch (4)			
17	4° tilt alarm/indicator (4)			
18	AC power to platform (2,4)			
19	Axle lockout indicator (4)			
20	Horn (4)			





■ Torque Chart

NOM SIZE X PITCH	TENSILE STRESS AREA A <sub>s</sub> (mm <sup>2</sup> )	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  
36 Bruce Road  
P.O. Box 1041  
Levin 5500  
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 SP17/18 are as follows:

- ✓ Operator's Manual  
Snorkel part number - 11972A
- ✓ Repair Parts Manual  
Snorkel part number - 11972B

## □ 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.

Base Assembly . . . . .	1-2
Base Assembly - drawing . . . . .	1-3
Steer Axle Assembly - drawing . . . . .	1-4
Steer Axle Assembly . . . . .	1-5
Swing Drive . . . . .	1-6
Swing Drive - drawing . . . . .	1-7
Swing Drive, Perfection . . . . .	1-8
Swing Drive, Perfection - drawing . . . . .	1-9
Column Assembly . . . . .	1-10
Column Assembly - drawing . . . . .	1-11
Column Cover - drawing . . . . .	1-12
Column Cover . . . . .	1-13
Booms . . . . .	1-15
Booms . . . . .	1-15
Booms . . . . .	1-16
Booms - drawing . . . . .	1-17
Hose Carrier - drawing . . . . .	1-18
Hose Carrier. . . . .	1-19
Extension Cylinder. . . . .	1-20
Extension Cylinder - drawing. . . . .	1-21
Jib Boom SP18 - drawing . . . . .	1-22
Jib Boom SP18 . . . . .	1-23
Jib Boom Exploded SP18 . . . . .	1-24
Jib Boom Exploded SP18 - drawing . . . . .	1-25
Platform Assembly - drawing. . . . .	1-26
Platform Assembly. . . . .	1-27
Platform Rotator SP17. . . . .	1-28
Platform Rotator SP17 - drawing. . . . .	1-29
Fuel Tank Assembly . . . . .	1-30
Fuel Tank Assembly - drawing . . . . .	1-31
Slew Sensor Assembly . . . . .	1-32
Deutz Engine Assembly . . . . .	1-33
Deutz Engine Assembly . . . . .	1-34
Deutz Engine Assembly - drawing . . . . .	1-35
Placards and Decals - drawing . . . . .	1-36
Placards and Decals Installation. . . . .	1-37

## Base Assembly

---

Item	Part No	Qty	Description
1.	11983-1	2	Wheel assembly right hand
2.	11935	2	Rear hub assembly
3.	6030018	2	Wheel motor
4.	11808-18	2	Cover, chassis rear
5.	11967	1	SP17-18 Chassis weldment
6.	11983-2	2	Wheel assembly left hand
7.	562386	1	Literature compartment
8.	11808-23	1	Locker lid
9.	11903	1	Anti-Luce fastener
10.	11747-1	2	Butt hinge
11.	11833	1	Centrepost mount plate
12.	11834	1	Centrepost stop plate
13.	0110465	1	Centrepost assembly
14.	007-0021	1	Slew ring
15.	11817	1	Drive manifold
16.	11808-17	1	Cover, chassis front
17.	11967-18	1	Axle cylinder cover
18.	11989	1	Oscillating axle pin
19.	8626	1	Pin keeper
20.	11492-3	1	Tab washer
21.	11813	1	Pin, oscillating axle, centre
22.	11968A	1	Front axle assembly
23.	9991-1	As Req	Thrust washer
24.	3631-16	20	Disc lock

F

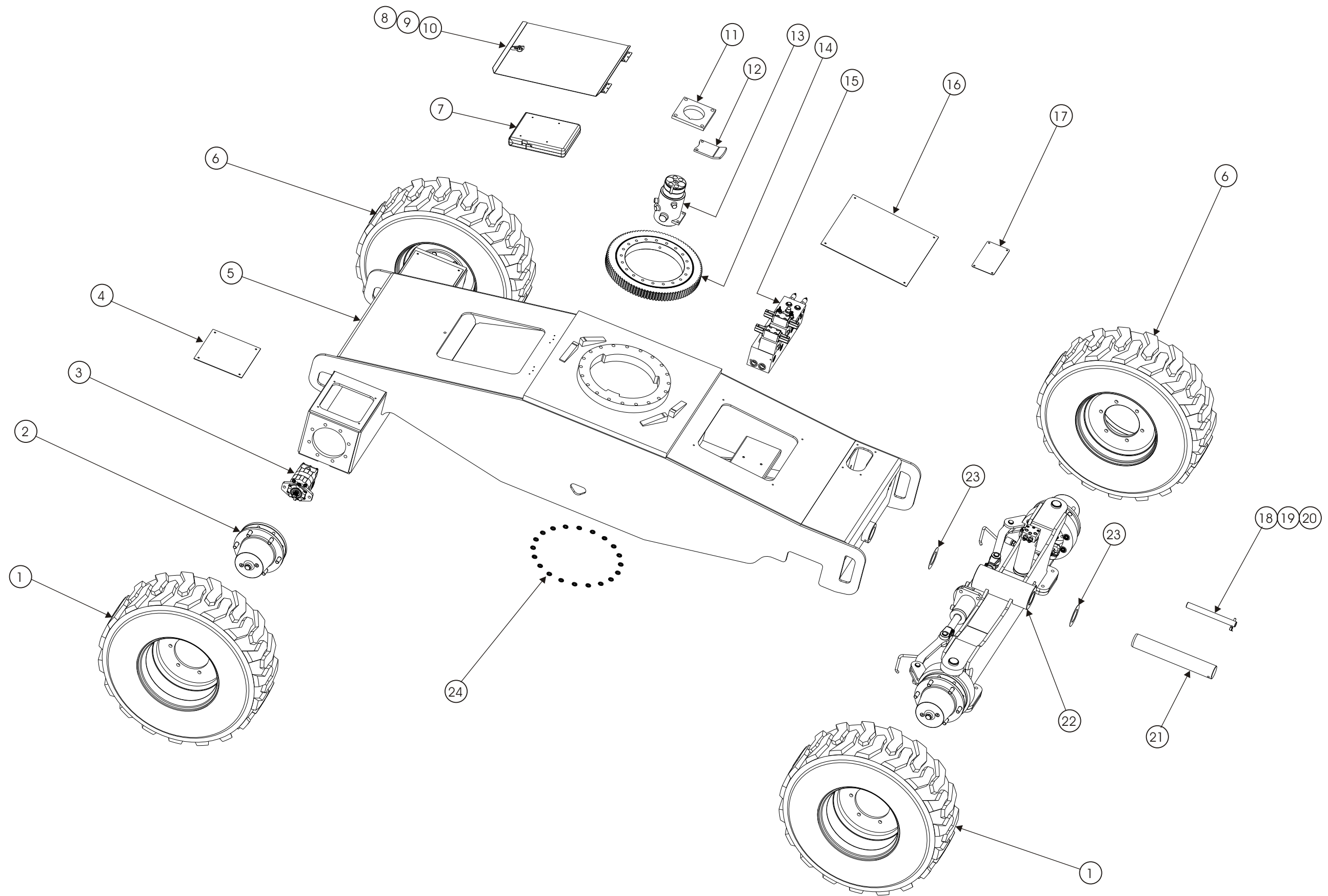
E

D

C

B

A



TITLE Base Assembly

DWG. 000000

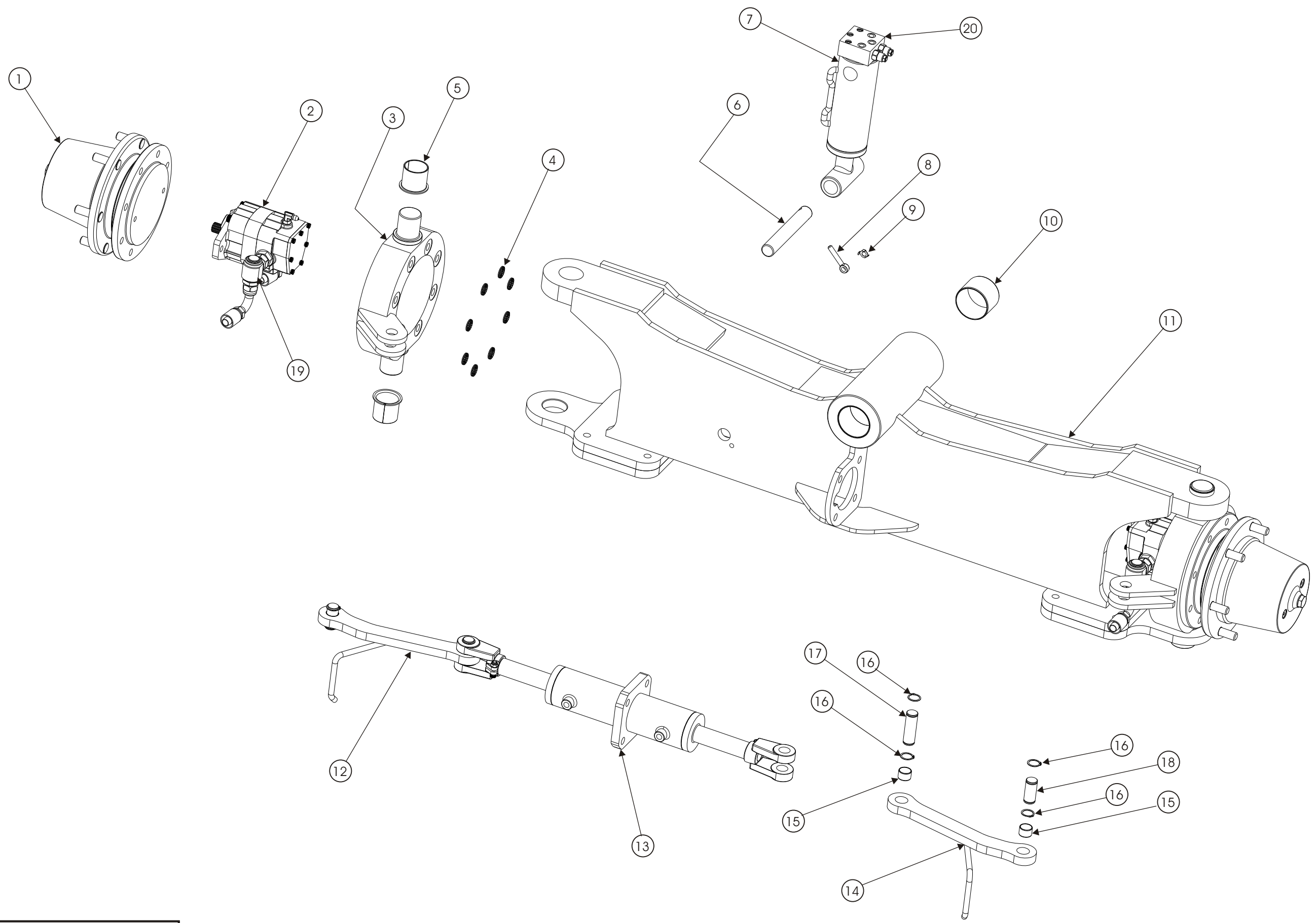
Snorkel model SP17 / SP18



Page 1 - 3

1 2 3 4 5 6 7 8 9

F  
E  
D  
C  
B  
A



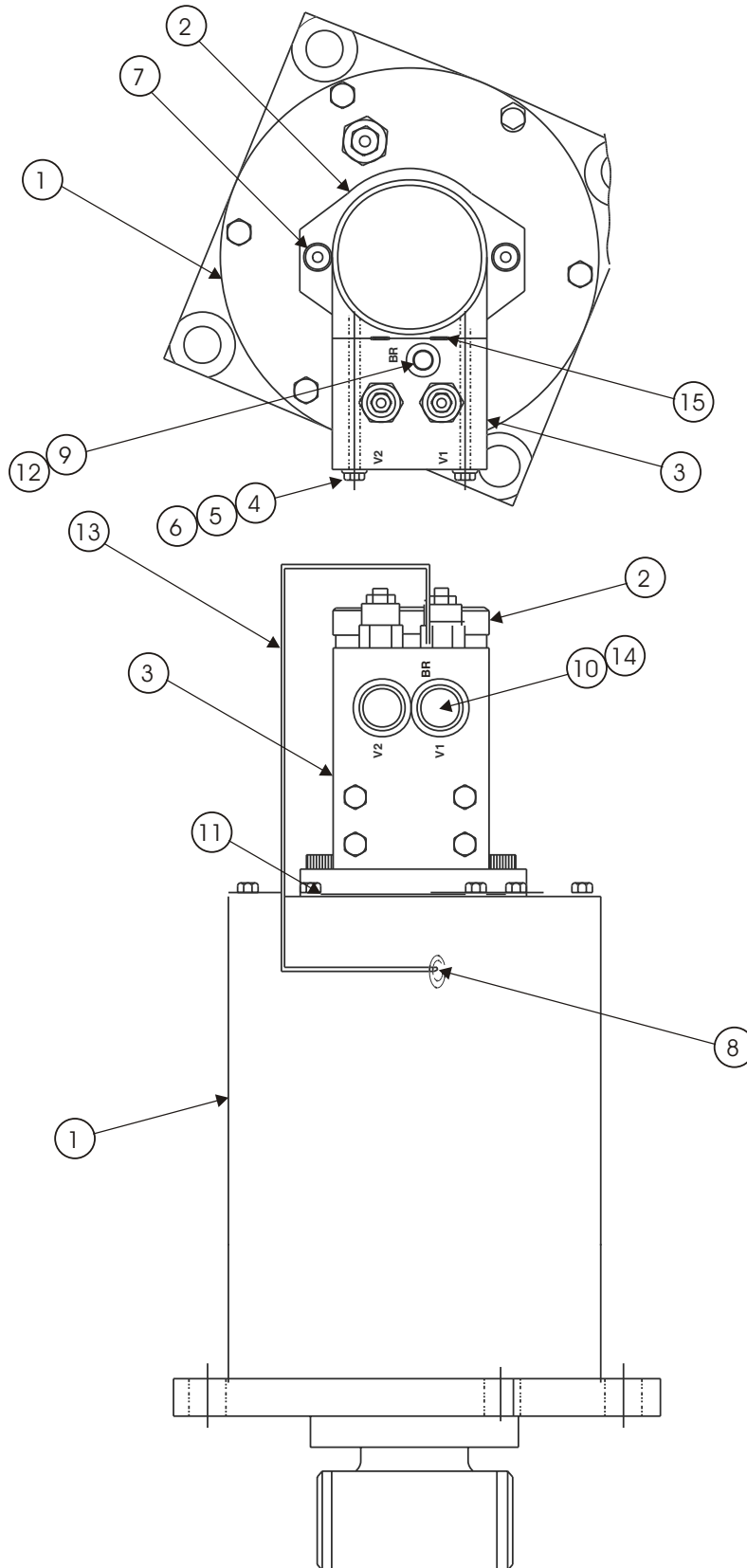
Item	Part No	Qty	Description
1.	11935	2	Wheel hub assembly
2.	6030018	2	Wheel motor
3.	11987	2	Yoke weldment
4.	3631-16	20	Disc lock washer
5.	3626-4	4	Flanged permaglides bush
6.	11990	1	Bottom axle pin
7.	11969	1	Axle cylinder
8.	8626	1	Pin keeper
9.	11492-3	1	Tab washer
10.	3624-28	2	Permaglide bush
11.	11968	1	Steer axle weldment
12.	11988L	1	Tie rod assembly, left hand
13.	11811	1	Steer cylinder SP17-18
14.	11988R	1	Tie rod assembly, right hand
15.	3624-3	4	Permaglide bush
16.	3619-1	8	Circlip
17.	11815	2	Pin, steering, inner
18.	11815-1	2	Pin, steering, outer
19.	11865	2	Swivel fitting
20.	12007	1	Dual counterbalance valve



# Swing Drive

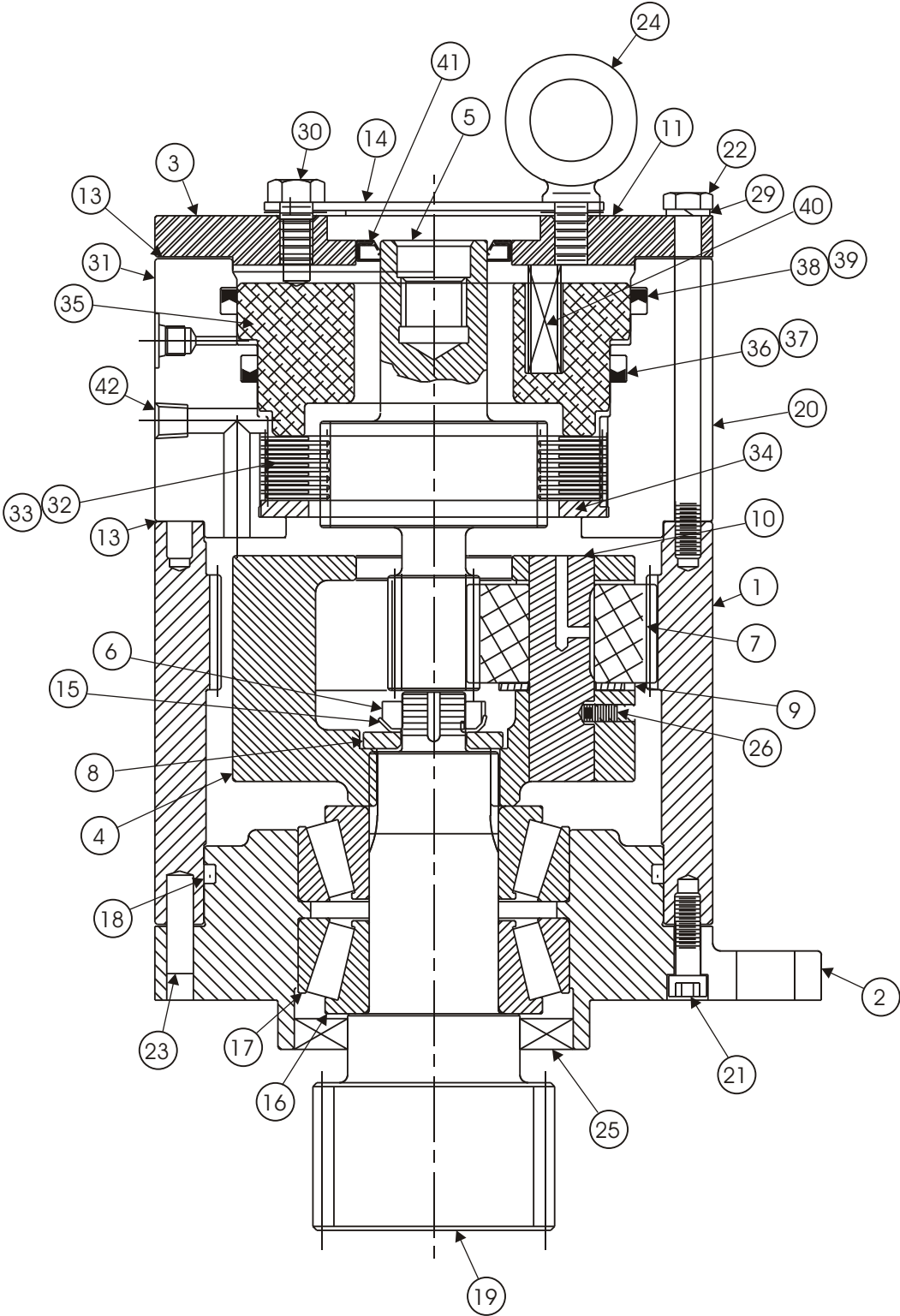
---

Item	Part No	Qty	Description
	0073026	1	Swing drive, complete
1.	0070047-99	1	Swing drive
2.	6030020	1	Motor, swing drive
	8200004	1	Seal repair kit - Ross/TRW motor
	0090352	1	Seal repair kit - Charlynn/Eaton motor
	0073359	1	Seal repair kit - White/Roller Stator motor
3.	6010250	1	Motion control valve, turntable swing
4.	5560641	4	Capscrew 5/16-18 x 3-1/2 inch long hex head grade 5
5.	986269	4	Washer 5/16 medium flat
6.	987109	4	Washer 5/16 medium lock
7.	5560087	2	Capscrew special self locking
8.	5035303	1	Straight thread 90 degree elbow
9.	5065703	1	Straight thread adaptor
10.	5062726	1	Straight thread adaptor
12.	7190005	1	Gasket, swing drive
13.	0020283	1	¼ inch hydraulic hose
14.	5036905	2	Swivel nut 45 degree elbow
15.	7110112	2	O-ring



# Swing Drive, Perfection

Item	Part No	Qty	Description
	0070047-99	1	Swing drive, perfection
	0074837	1	Seal and shim repair kit #1 - (includes items 11, 18, 25 and 41)
	0074838	1	Brake repair kit - (includes items 32, 33 and 40)
	0074839	1	Seal and shim repair kit #2 - (includes items 11, 36, 37, 38 & 39)
1.	0074800	1	Housing
2.	0074801	1	Mounting flange
3.	0074802	1	Motor adaptor
4.	0074803	1	Planetary carrier
5.	0074804	1	Input pinion
6.	0074805	1	Lock nut
7.	0074806	3	Spur gear
8.	0074807	1	Washer
9.	0074808	3	Washer idler
10.	0074809	3	Idler pin
11.	Kit item	1	Hydraulic motor gasket - (not sold separately)
12.	0172054	1	Reducer bushing
13.	0074836	2	Brake gasket
14.	0074811	1	Hydraulic motor cover
15.	0074812	1	Lock washer
16.	0074813	2	Bearing cup
17.	0074814	2	Bearing cone
18.	Kit item	1	O-ring - (not sold separately)
19.	0074816	1	Output shaft
20.	0172053	1	Pressure vent plug
21.	0071817	8	Bolt 3/8-16 x 1-1/4
22.	0074818	6	Bolt 3/8-16 x 5-1/4
23.	0074819	3	Dowel pin
24.	0074820	1	Eyebolt
25.	Kit item	1	Oil seal - (not sold separately)
26.	0074822	3	Screw
27.	0074823	1	Bushing
28.	0074824	2	Nut, hex 1/2-13
29.	0074825	6	Lock washer
30.	0074826	2	Bolt
31.	0074827	1	Housing brake
32.	Kit item	7	Pressure disc (thin) - (not sold separately)
33.	Kit item	7	Friction disc
34.	0074830	1	Pressure disc (thick)
35.	0074831	1	Piston
36.	Kit item	1	O-ring - (not sold separately)
37.	Kit item	1	O-ring plate - (not sold separately)
38.	Kit item	1	O-ring - (not sold separately)
39.	Kit item	1	O-ring plate - (not sold separately)
40.	Kit item	24	Spring - (not sold separately)
41.	Kit item	1	Oil seal - (not sold separately)
42.	0172050	5	Pipe plug



## Column Assembly

---

Item	Part No	Qty	Description
1.	12000	1	SP17-18 Column weldment
2.	12017	1	SP-18 Counter weight
3.	11818-22	1	Cover support, engine side
4.	11958A	1	Deutz F3L1011F engine assembly
5.	6020058	1	Electric hydraulic pump
6.	3052	1	Battery
7.	10268-4	1	Battery clamp
8.	11830	1	Battery tray
9.	0073026	1	Swing drive assembly
10.	12000-11	1	Slew guard, left hand
11.	12000-12	1	Slew guard, right hand
12.	11828	1	Fuel oil tray assembly
13.	11826	1	Fuel tank assembly
14.	11827	1	Oil tank assembly
15.	11931A	1	Lower control valve assembly
16.	11818-21	1	Cover support, control side
17.	11819C	1	Range control block, electric controls
18.	11864	1	Lower control box

F

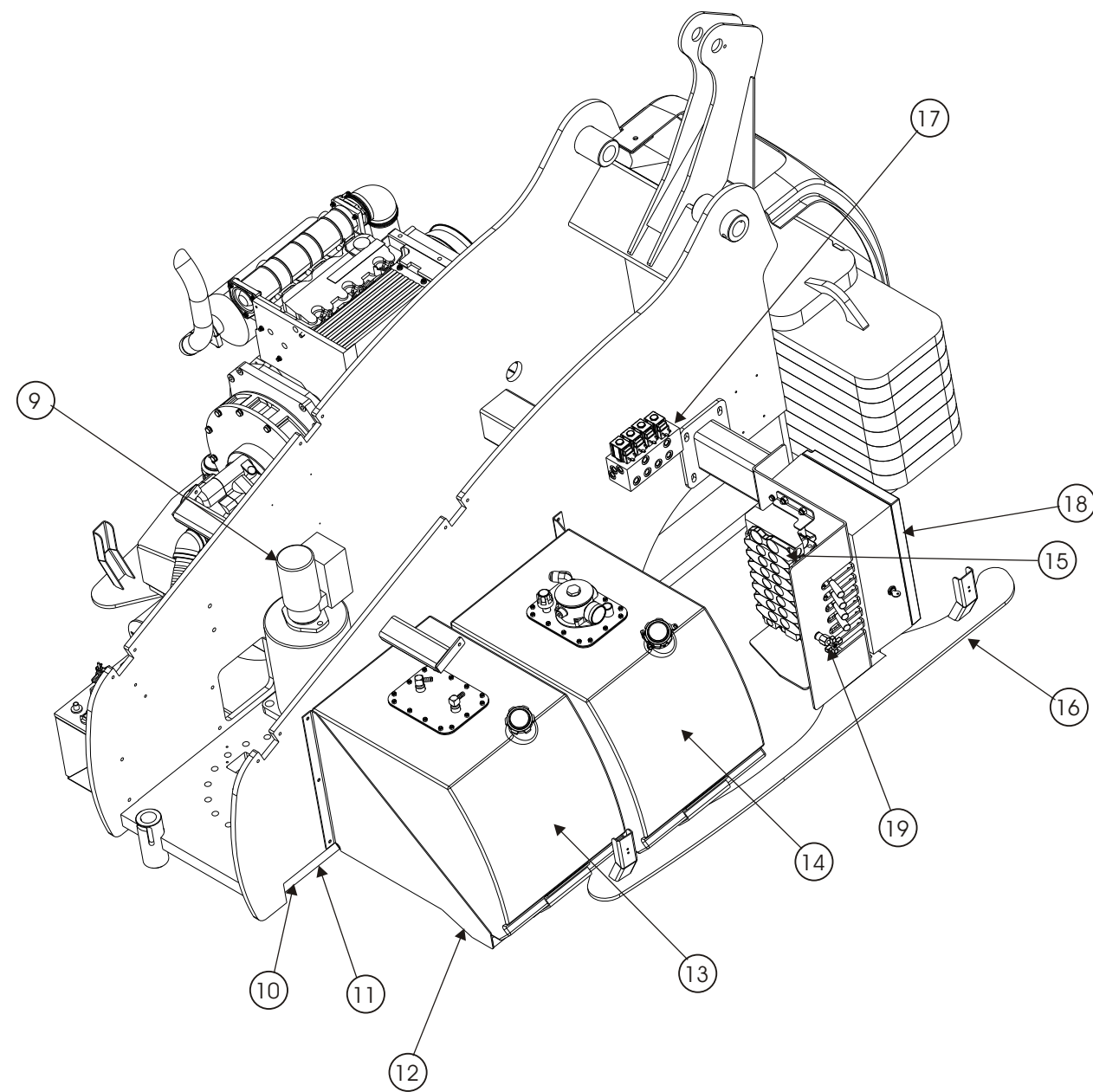
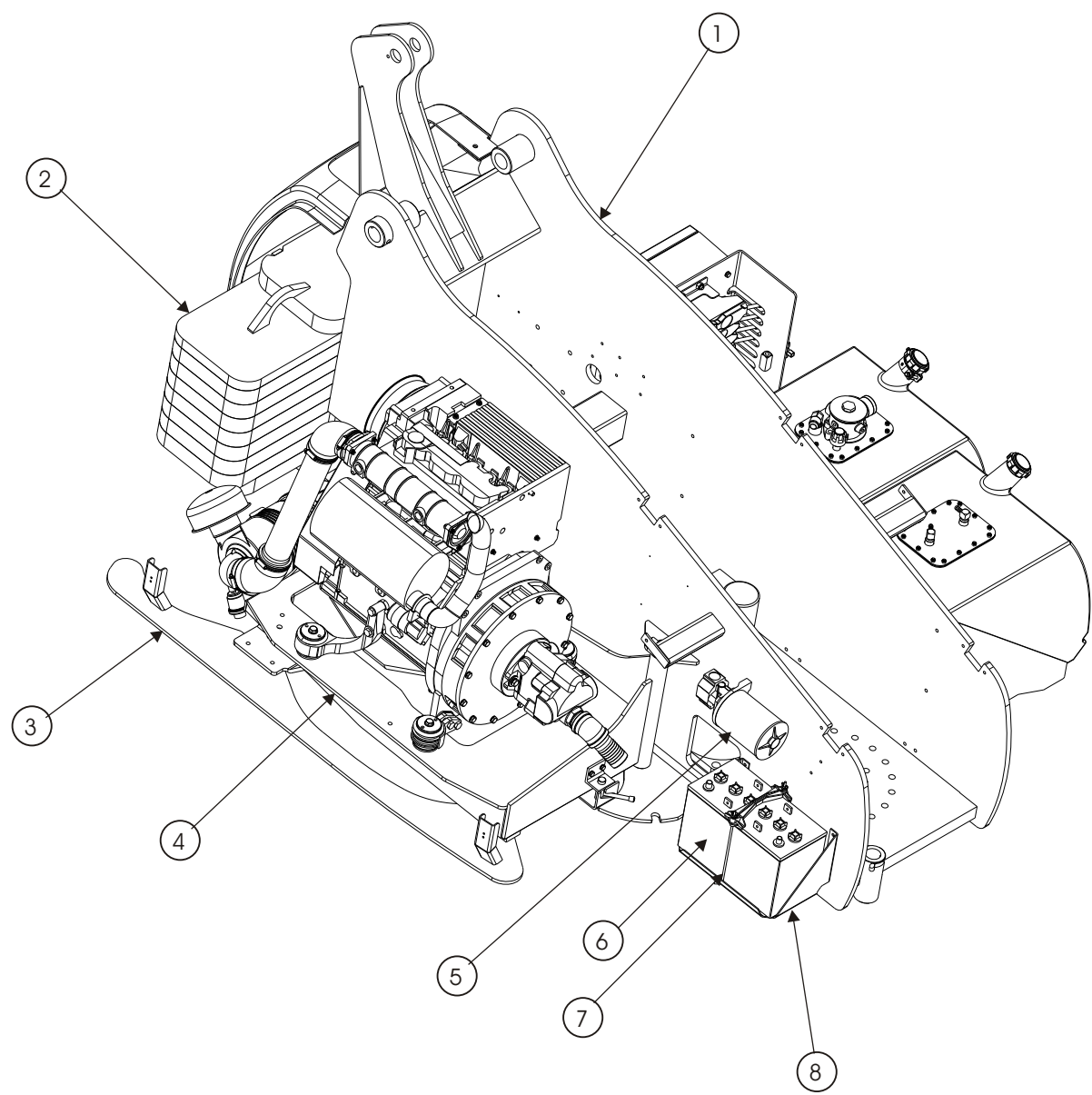
E

D

C

B

A



Rev. A July 5 2005

DWG. 000000

TITLE Column Assembly  
 Snorkel model Sp17 / SP18

**Snorkel**  
 Page 1 - 11

1 2 3 4 5 6 7 8 9

F

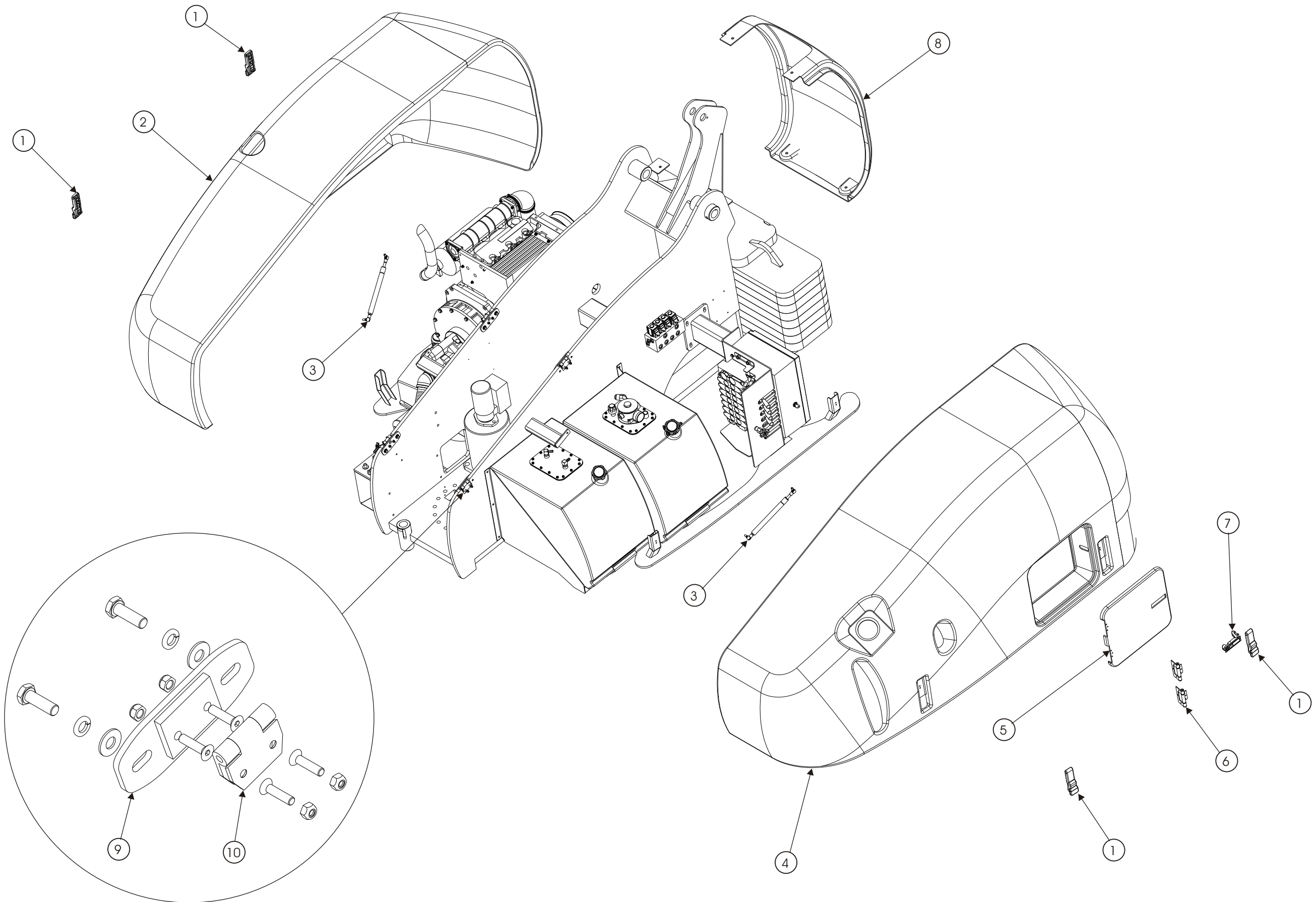
E

D

C

B

A



Item	Part No	Qty	Description
1.	11781	4	C7 latch
2.	11775	1	Fibreglass cover, engine side
3.	11906	2	Gas strut
4.	11779	1	Fibreglass cover, control side
5.	11779-1	1	Control door
6.	11846	2	Control door hinge
7.	8342416	1	Latch, adjustable trigger
8.	12026	1	Column centre rear cover
9.	11920	4	Hinge mounting plate
10.	11927	4	Hinge





Item	Part No	Qty	Description
	0072872	1	Booms, TB50
1.	0072672-99	1	Tip boom, TB50
2.	0072696-99	1	Intermediate boom, TB50
3.	0072718-99	1	Base boom, TB50
4.		1	Extension cylinder - (see page 21 for parts breakdown)
5.	0070942	2	Wire rope, retract - TB50
6.	0070443	1	Pin, level cylinder to boom
7.	0080399-99	1	Slave level cylinder - (see hydraulics section for make and parts)
8.	5560683	12	Capscrew 3/8-16 x 5/8 inch long hex head grade 5
9.	987119	40	Washer 3/8 medium lock
10.	986299	28	Washer 3/8 medium flat
11.	0080293	6	Slide pad
12.	0070485-99	2	Slide pad spacer
13.	0070030	16	Slide pad shim, .030 inch thick
14.	0072567	18	Slide pad shim, .063 inch thick
15.	0090141	16	Slide pad shim, .090 inch thick
16.	0072681-99	2	Slide pad mount
17.	0072682	2	Slide pad
18.	972469	8	Capscrew 3/8-16 x 1 inch long socket flat head
19.	5560033	56	Nut 3/8-16 self locking
20.	970426	12	Capscrew 3/8-16 x 7/8 inch long hex head grade 5
21.	970439	12	Capscrew 3/8-16 x 5/8 inch long socket flat head
22.	0070033-99	2	Pin lock
23.	0070473	4	Capscrew 5/16-18 drilled head
24.	987109	8	Washer 5/16 medium lock
25.	9980012	1	.040 inch diameter stainless steel safety lockwire - (sold in one pound can)
26.	0072688-99	1	Slide pad plate
27.	0072690	1	Slide pad
28.	5560644	39	Capscrew 3/8-16 x 1-1/4 inch long socket flat head
29.	970259	8	Capscrew 5/16-18 x 1 inch long hex head grade 5
30.	986269	8	Washer 5/16 medium flat
31.	5560031	8	Nut 5/16-18 self locking
32.	986359	4	Washer 1/2 medium flat
33.	5560053	4	Hex jam nut, drilled
34.	0070025-99	2	Wire rope anchor
35.	0080294	2	Slide pad
36.	5560005	4	Anchor bolt
37.	5560683	8	Capscrew 3/8-16 x 5/8 inch long hex head grade 5
38.	972429	12	Capscrew 3/8-16 x 1/2 inch long socket flat head
39.	0070486-99	1	Slide pad spacer
40.	0072689-99	1	Slide pad plate
41.	0072691	1	Slide pad
42.	0072680	2	Slide pad shim
43.	0070639	2	Slide pad
44.	0070390	2	Cylinder anchor pin
45.	0072751-99	2	Cylinder anchor
46.	988179	1	Cotter pin 1/8 inch diameter x 1 inch long
47.	0070448-99	2	Pin, cable retainer
48.	0073515-99	2	Sheave cage
49.	0073981-99	1	Cable sheave
50.	2500035	2	Bearing
51.	0070439	1	Pin, retract sheave
52.	5560015	12	Thread insert 3/8-16
53.	972509	6	Capscrew 3/8-16 x 2 inch long socket flat head
54.	0073520-99	1	Cable retainer

Parts list continued on next page

## Booms

---

Item	Part No	Qty	Description
55.	0071801	1	Boom switch, drive speed - (see page for parts breakdown)
56.	5560649	1	Machine screw #10-24 x 1 inch long truss head
57.	986009	6	Washer #10 medium flat
58.	5560034	3	Nut #10-24 self locking
59.	0071216-99	3	Guard, boom switch
60.	5560169	8	Washer 5/8 hard flat ASTM-F436
61.	984449	8	Nut 5/8-11 hex jam
62.	0073275-99	4	Spacer, long
63.	0073274-99	4	Spacer, short
64.	2502028	2	Bearing
65.	0072683	2	Slide pad spacer, 1/4 inch thick
66.	0073111	2	Slide pad spacer, 1/8 inch thick
67.	5560674	2	Capscrew 5/16-18 x 1-1/2 inch long hex head grade 5
68.	984089	2	Nut 5/16-18 hex
69.	5034501	2	Bulkhead straight thread 90° elbow
70.	0073128	2	3/8 inch hydraulic hose
71.	0070768	2	1/4 inch hydraulic hose
72.	5074401	2	Bulkhead locknut
73.	2502836	2	Bearing
74.	5560680	2	Capscrew 3/8-16 x 1-3/4 inch long socket flat head
75.	0070031	2	Slide pad
76.	0073519	2	Slide pad
77.	5560126	6	Threaded insert 3/8-16 thread
78.	0070043	2	Slide pad shim, .030 inch thick
79.	0073342	2	Slide pad shim, .063 inch thick
80.	0073343	2	Slide pad shim, .090 inch thick
81.	0073340-99	2	Slide pad spacer, 1/4 inch thick
82.	986269	2	Washer 5/16 medium flat

F

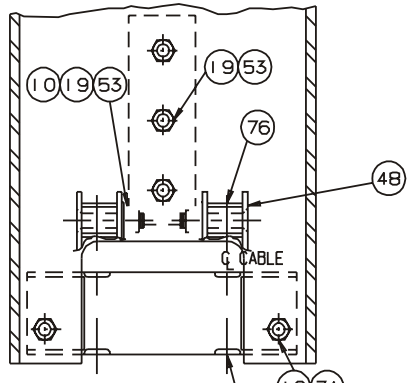
E

D

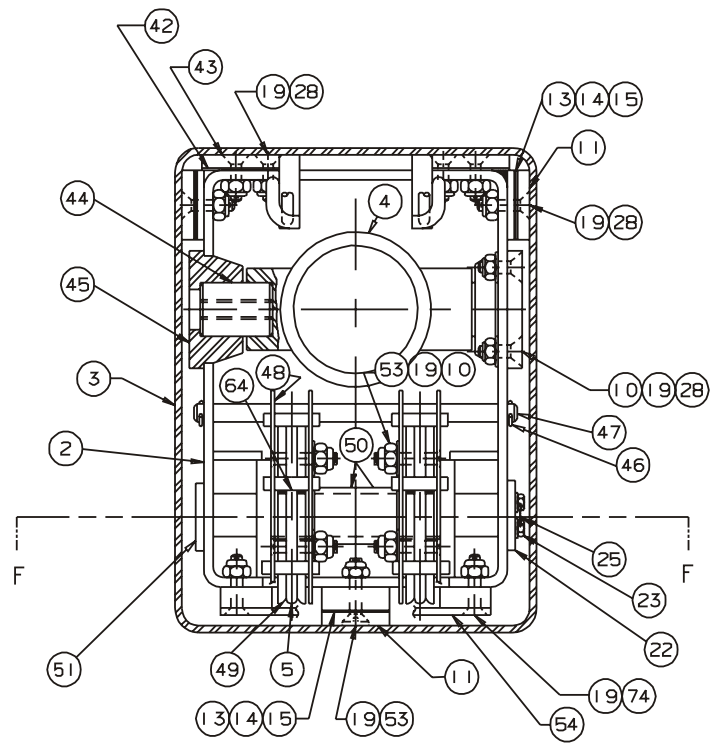
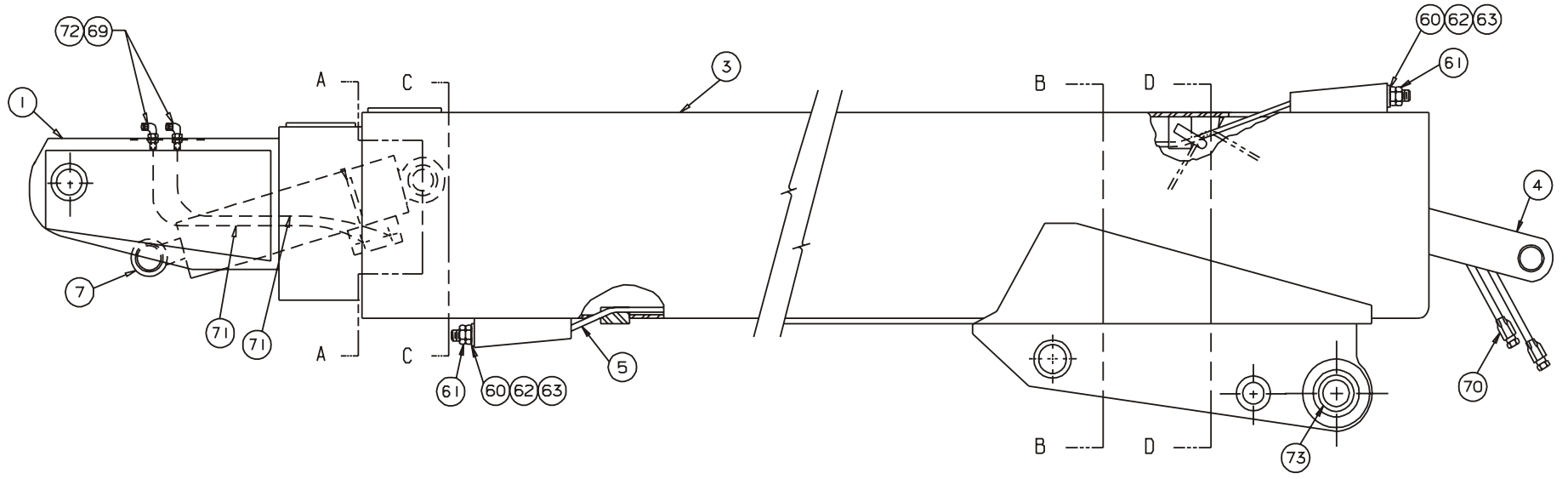
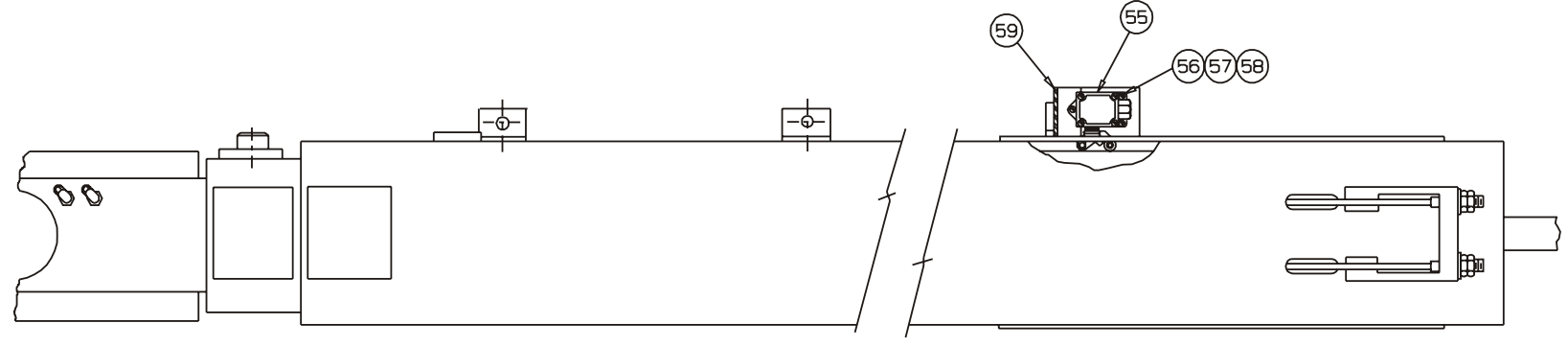
C

B

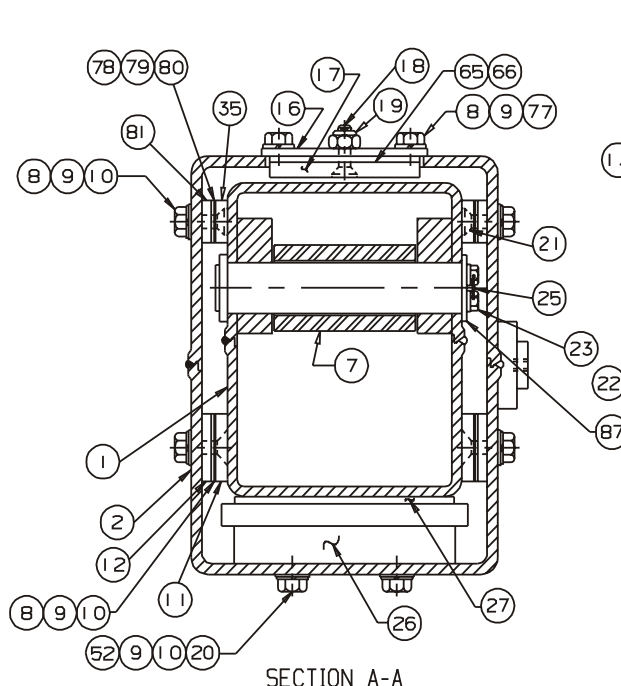
A



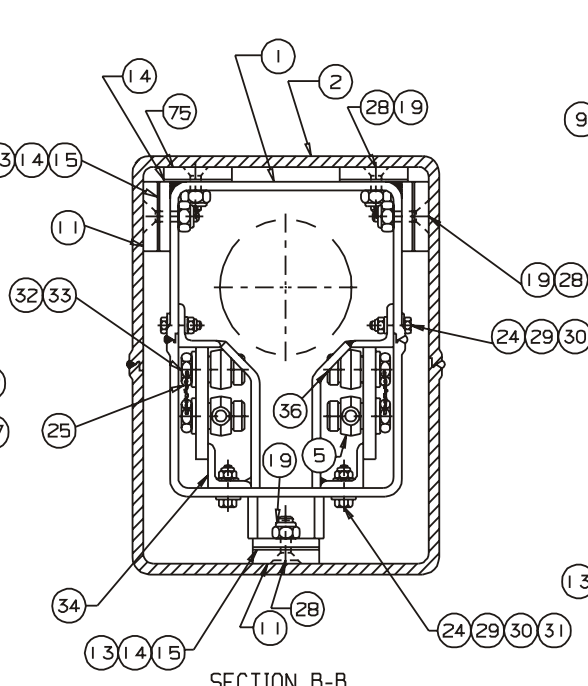
VIEW F-F



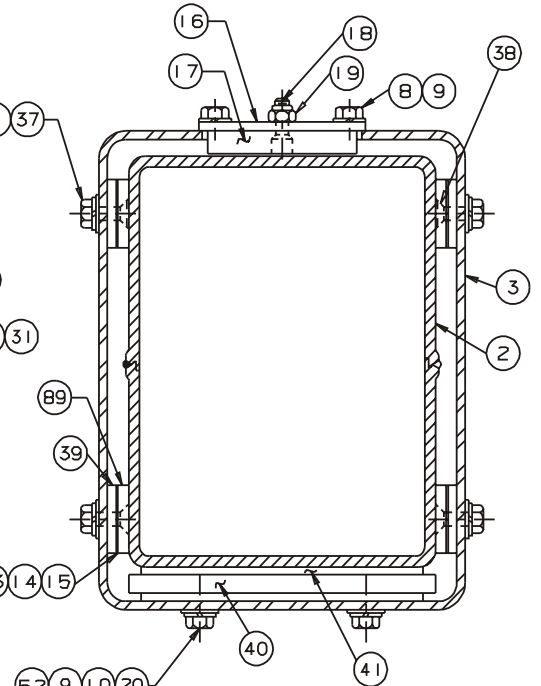
SECTION D-D



SECTION A-A



SECTION B-B



SECTION C-C

TITLE Booms

DWG. 000000

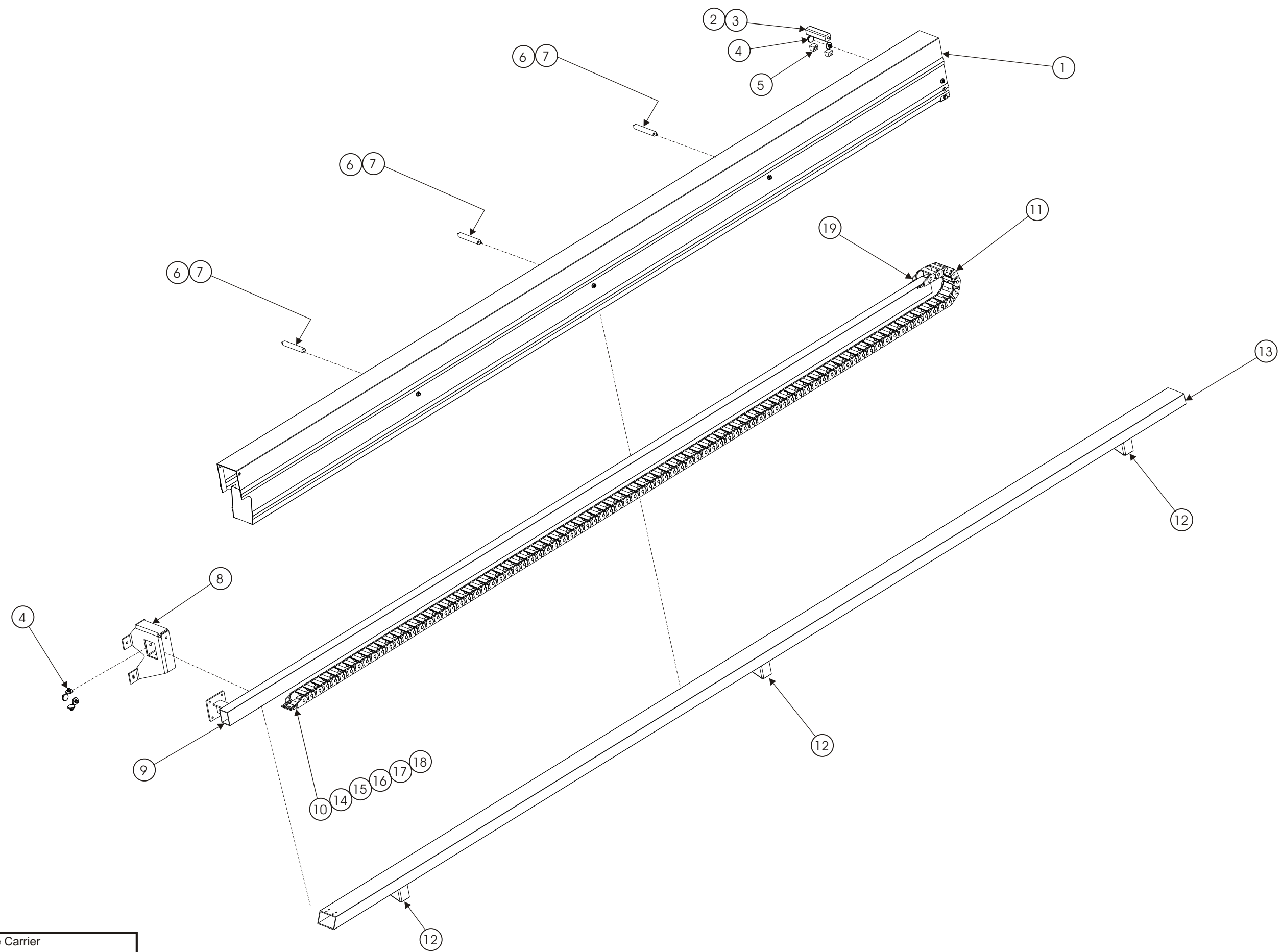
Snorkel model SP17 / SP18



Page 1 - 17

1 2 3 4 5 6 7 8 9

F  
E  
D  
C  
B  
A

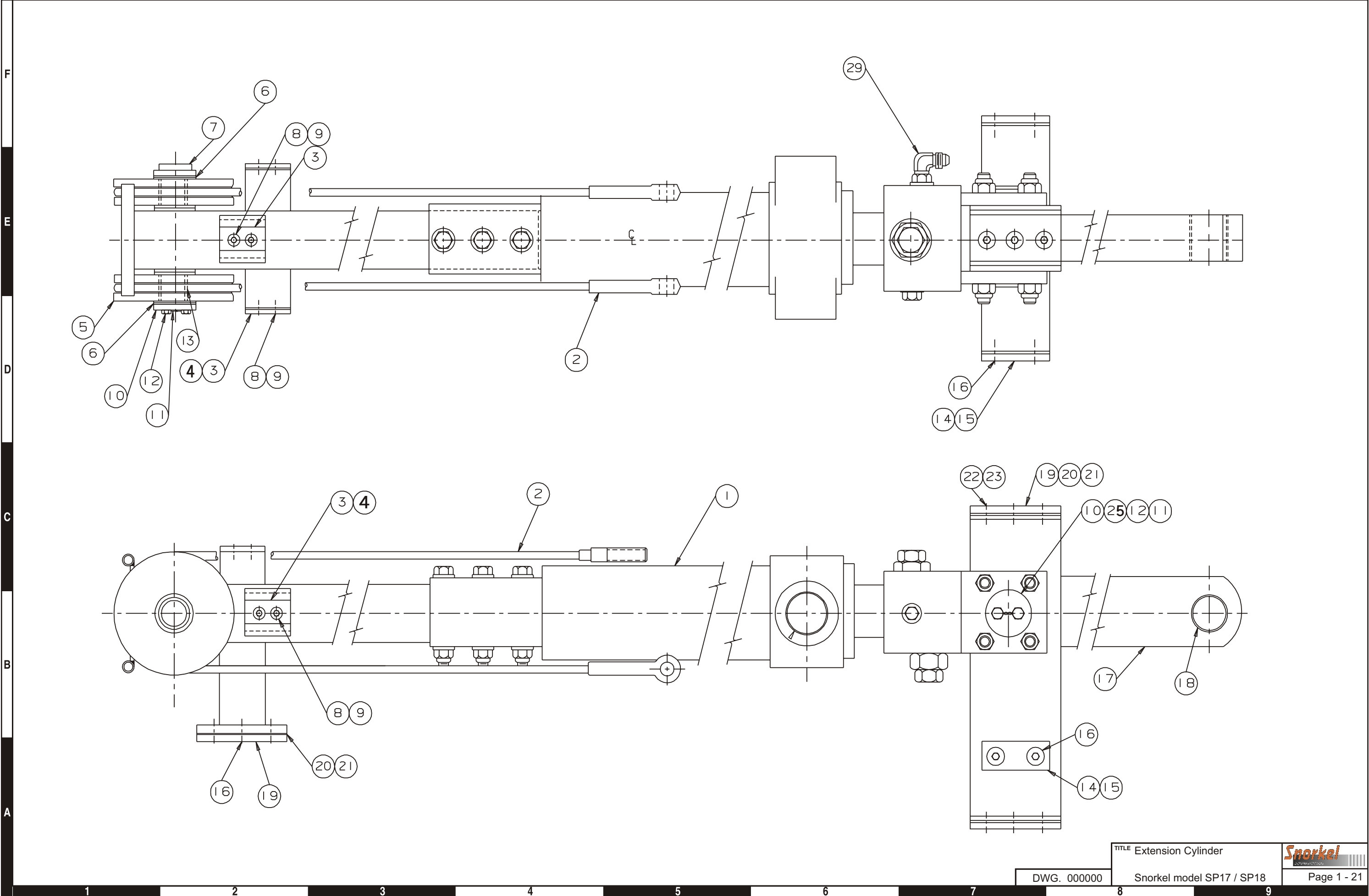


Item	Part No	Qty	Description
1.	12021-100	1	Cat track cover weldment
2.	12021-9	1	Linear bearing
3.	12021-18	1	Threaded rod
4.	11658-20	6	Wear button 4.5mm
5.	12021-19	2	Bush cover, base end attachment
6.	12021-10	1	Slide roller
7.	12021-18	1	Threaded rod
8.	12021-103	1	Tip bracket weldment
9.	12021-104	1	Tip hose support weldment
10.	992-0015	1	Link bracket, male
11.	992-004	90	Hose track links
12.	12021-13	3	Base to tube bracket
13.	12021-11	1	Right hand side, tube hose support
14.	9427	20m	Cable, 12 core 1.5mm PVC/PVC
15.	3010005	20m	Cable, 18 core 1.5mm
16.	1812	20m	Cable, 3 core 1.5mm TPE flex
17.	11924	20m	Cable, 2 core 5mm flat
18.	1076-028	84m	Paraflex 550-H black hose
19.	992-0016	1	Link bracket, female

## Extension Cylinder

---

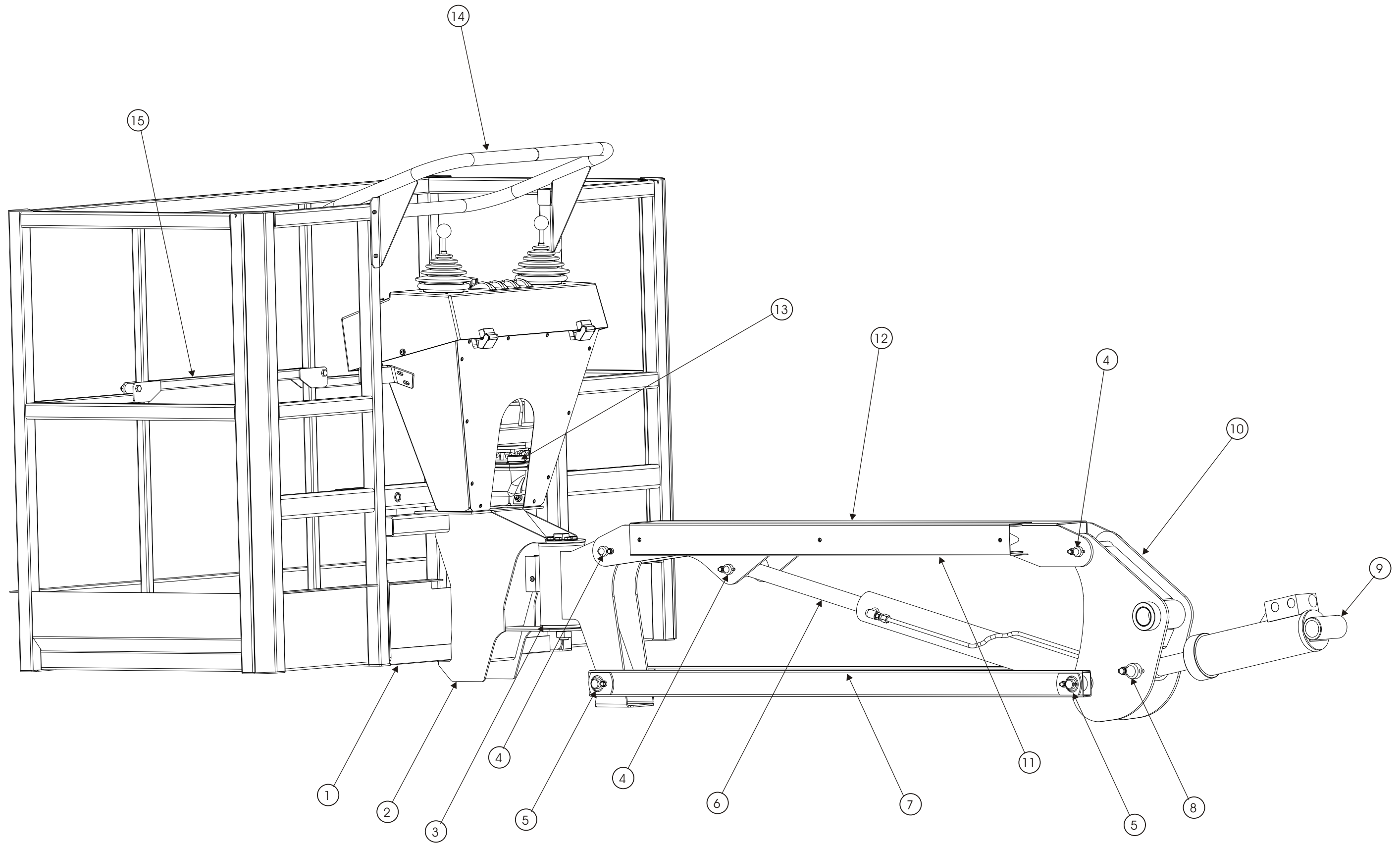
Item	Part No	Qty	Description
	0072856	1	Extension cylinder TB50
1.	0072854	1	Extend cylinder and support bracket TB50 - (see Hydraulics Section for parts breakdown)
2.	0070943	2	Wire rope, TB50
3.	0060089	3	Slide pad
4.	0071342	2	Shim
5.	0073981-99	2	Cable sheave
6.	5560254	7	Thrust washer
7.	0070438	1	Pin, extend sheave
8.	5560331	6	Capscrew 1/4-20 x 1 inch long socket flat head
9.	5560004	6	Nut 1/4-20 self locking
10.	0070033-99	2	Pin lock
11.	9980012	1	.040 inch diameter stainless steel safety lockwire - (sold in one pound can)
12.	0070473	4	Capscrew 5/16-18 drilled head
13.	2502028	2	Bearing
14.	0070141	2	Slide pad
15.	0071341	2	Slide pad shim, .063 inch thick
16.	972449	7	Capscrew 3/8-16 x 3/4 inch long socket flat head
17.	0070016-99	1	Link
18.	2502432	2	Bearing
19.	0070029	3	Slide pad
20.	0070838	3	Slide pad shim, .030 inch thick
21.	0071272	3	Slide pad shim, .063 inch thick
22.	5560644	6	Capscrew 3/8-16 x 1-1/4 inch long socket flat head
23.	5560033	6	Nut 3/8-16 self locking
24.	5035305	2	Straight thread 90° elbow
25.	0070440	1	Link pin



F  
E  
D  
C  
B  
A



F  
E  
D  
C  
B  
A



Item	Part No	Qty	Description
1.	12002	1	SP17 Platform weldment
2.	11885	1	Platform mounting frame
3.	11879	1	Helac platform rotator
4.	11886	3	Pin
5.	11887	2	Pin
6.	11884A	1	Jib lift cylinder
7.	11883	2	Lower jib strut
8.	11891	1	Pin, slave cylinder
9.	0071486	1	Slave level cylinder
10.	11881	1	Jib inner quadrant
11.	11904	1	SP22 jib boom cover
12.	11882	1	Upper jib arm
13.	6020042	1	Hydraulic power unit
14.	12002-17	1	Control guard weldment
15.	11429-20	1	Platform gate assembly

## Jib Boom Exploded SP18

---

Item	Part No	Qty	Description
1.	0071468	1	Slave level cylinder
2.	11881	1	Jib inner quadrant
3.	11883	2	Lower jib strut
4.	11879-2	1	Helac platform rotator
5.	11884A	1	Jib lift cylinder
6.	11885	1	Platform mounting frame
7.	11850	1	Upper control box support box
8.	11882	1	Upper jib arm
9.	12002-21	1	Stabilising bracket left
	12002-27	1	Sabilising bracket right
10.	6020042	1	Hydraulic power unit
11.	11993	1	Upper controls assembly, electric
12.	8628	5	Pin keeper
13.	11886	3	Pin
14.	11887	2	Pin
15.	11888	2	Pin, retaining boss
16.	3610-06	2	Bolt, class 8_8
17.	3611-06	2	Nylock nut M6
18.	3610-06	5	Bolt, class 8_8
19.	11492-1	5	Tab washer
20.	8626	1	Pin keeper
21.	11891	1	Pin, slave cylinder
22.	11492-3	1	Tab washer
23.	3610-10	9	Bolt, class 8_8
24.	3605-10	8	HD spring washer
25.	3624-11	2	Permaglide bush
26.	3626-5	4	Flanged permaglide bush 25 x 28 11_5
27.	11894	1	Bracket, hydraulic power unit
28.	3610-24250	1	Rotator M24 through bolt
29.	3605-24	1	HD spring washer
30.	3602-24	1	Nut
31.	3626-1	8	Flanged permaglide bush
32.	11904	1	SP22 jib boom cover
33.	3624-29	2	Permaglide bush
34.	11850-5	1	Removable cover

F

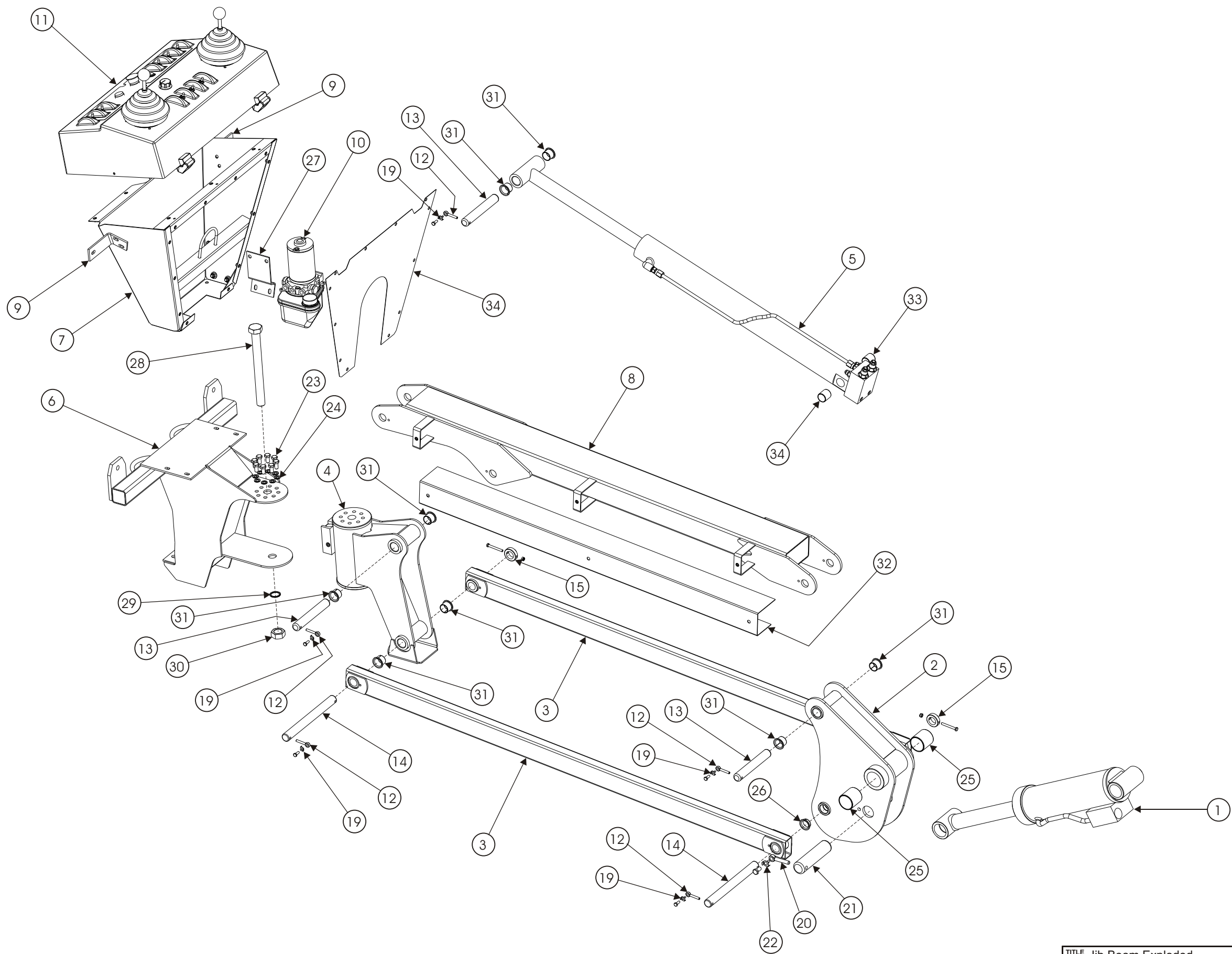
E

D

C

B

A

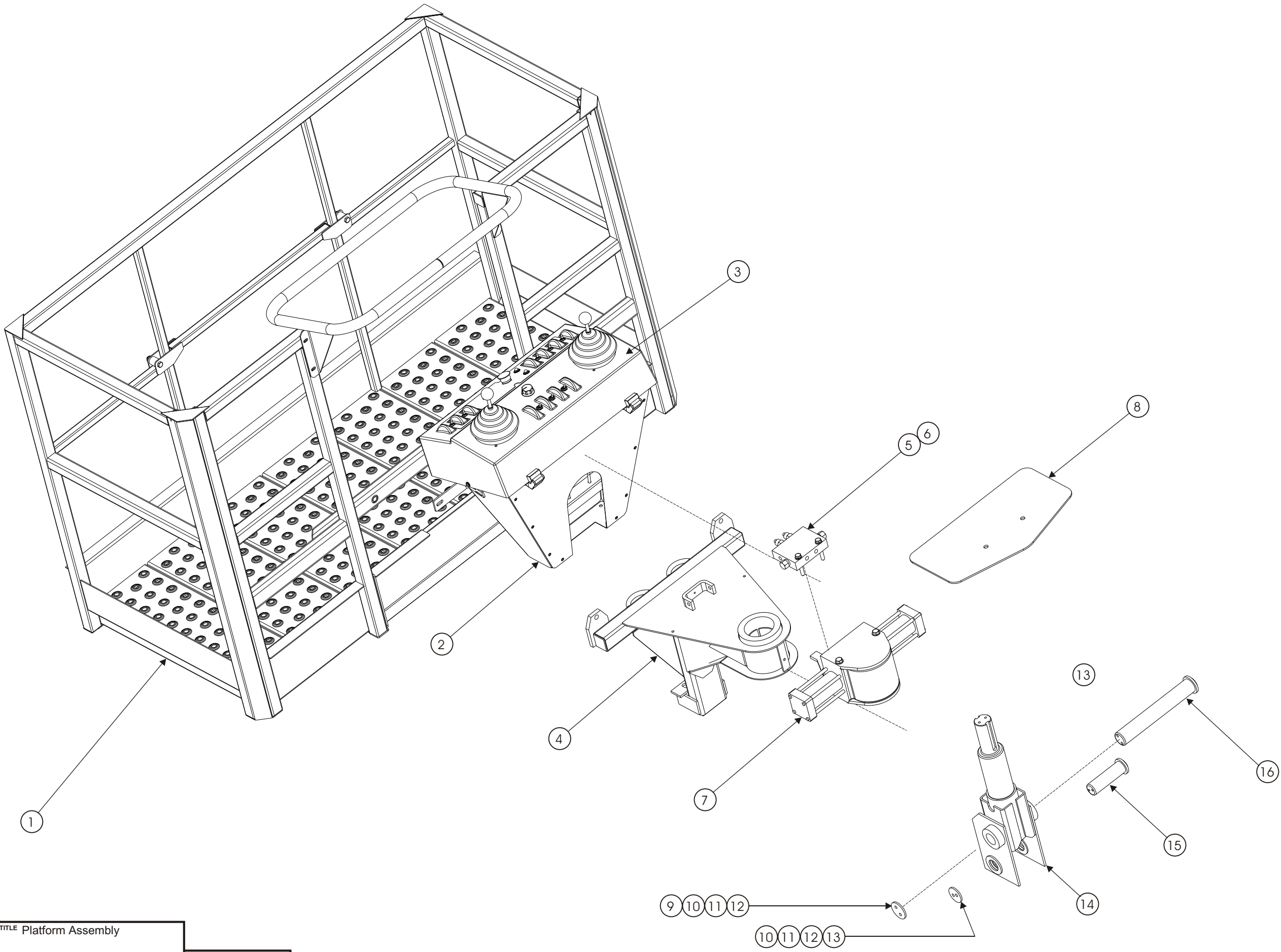


1      2      3      4      5      6      7      8      9

DWG. 000000

TITLE Jib Boom Exploded	<b>Snorkel</b> <small>INTERNATIONAL</small>
Snorkel model SP18	
Page 1 - 25	

F  
E  
D  
C  
B  
A

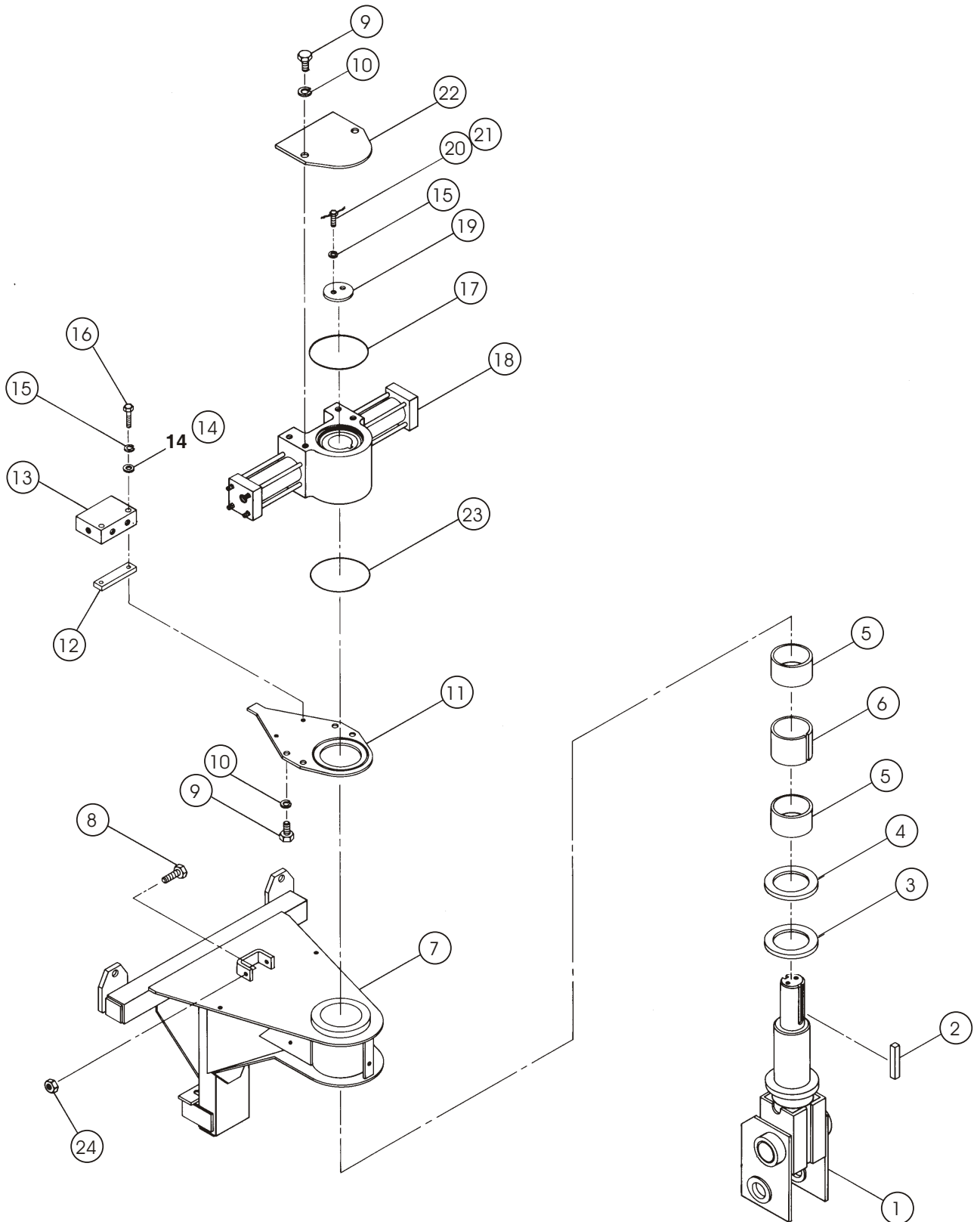


Item	Part No	Qty	Description
1.	12002	1	SP17 Platform assembly
2.	11850	1	Upper control box support box
3.	11993	1	Upper control box, electric
4.	007-2556	1	Mounting frame, platform rotator
5.	6010628	1	Dual holding valve
6.	0073783	1	Spacer plate
7.	0070570	1	Rotary actuator assembly
8.		1	Rotator cover
9.	007-0032	1	Pin lock, Snorkel lift
10.	0070473	4	Capscrew 5/16-18, drilled head
11.	9980012		0.040 inch diameter stainless steel safety lockwire
12.	987109	4	Washer, 5/16 medium lock
13.	007-0033	1	Pin lock, Snorkel lift
14.	007-2553	1	Pylon weldment, platform rotator
15.	0070441	1	Pin, leveling cylinder to platform
16.	0070446	1	Pin, lift cylinder to base

## Platform Rotator SP17

---

Item	Part No	Qty	Description
	0072552	1	Platform rotator
1.	0072553-99	1	Pylon, platform rotator
2.	0070916	1	Key
3.	0072555-99	1	Collar
4.	0072561	1	Thrust bearing
5.	2505846	2	Bearing
6.	0072562	1	Bearing spacer
7.	0072556-99	1	Mounting frame, platform rotator
8.	970919	2	Capscrew 1/2-13 x 1-3/4 inch long hex head grade 5
9.	970849	6	Capscrew 1/2-13 x 1/4 inch long hex head grade 5
10.	987139	6	Washer 1/2 medium lock
11.	0072818-99	1	Torque plate, platform rotator
12.	0073783-99	1	Valve spacer
13.	6010628	1	Dual holding valve, platform rotation
14.	986269	2	Washer 5/16 medium flat
15.	987109	4	Washer 5/16-18 x 2-3/4 inch long hex head grade 5
16.	970349	2	Capscrew 5/16-18 x 2-3/4 inch long hex head grade 5
17.	7110348	1	O-ring
18.	0070570-99	1	Platform rotator, Parker
19.	0070132	1	Pin lock
20.	0070473	2	Capscrew 7/16-18 drilled head
21.	9980012	1	.040 inch diameter stainless steel safety lockwire
22.	0072508	1	Cover plate, platform rotator
23.	7110348	1	O-ring
24.	984409	2	Nut 1/2-13 hex jam



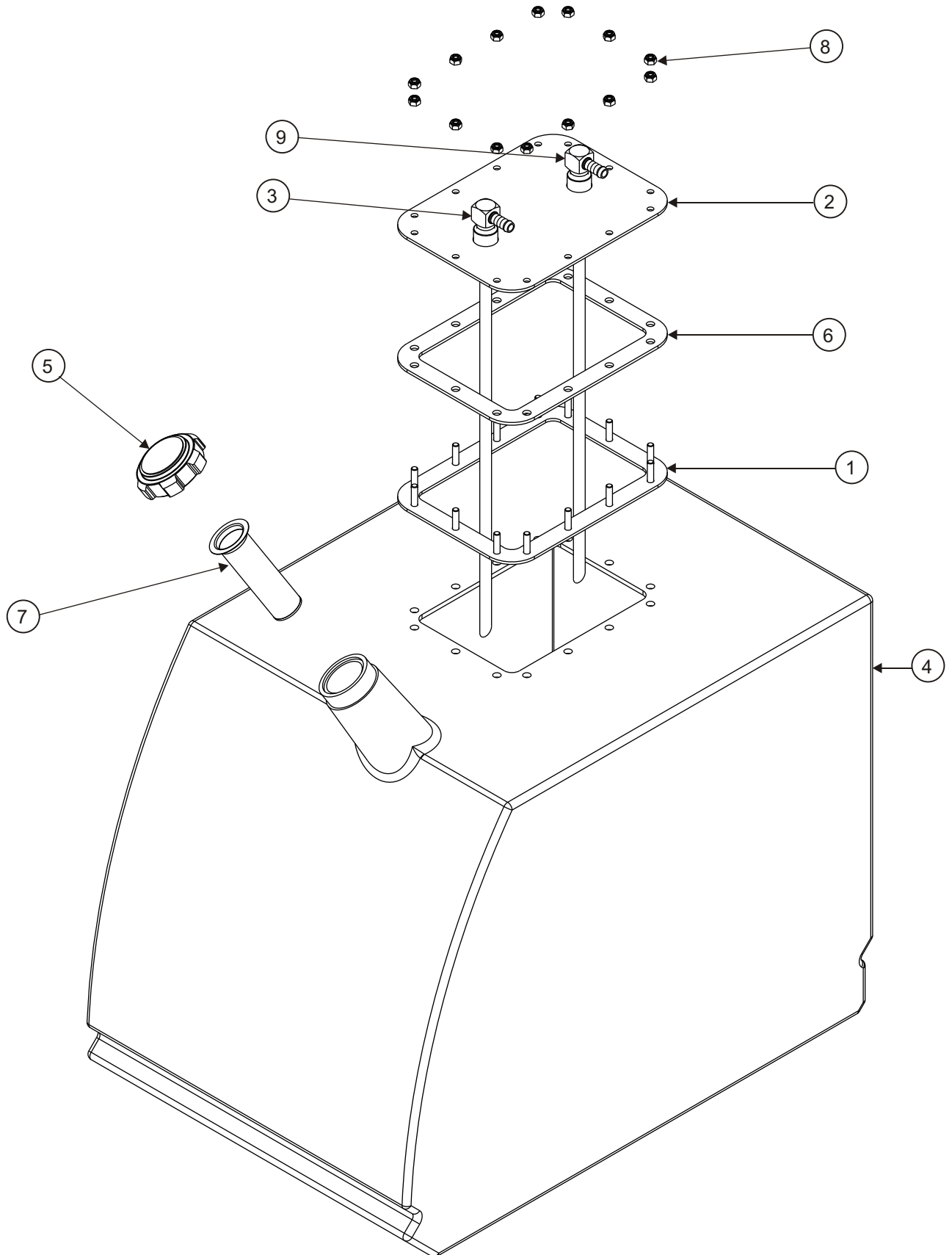


## Fuel Tank Assembly

---

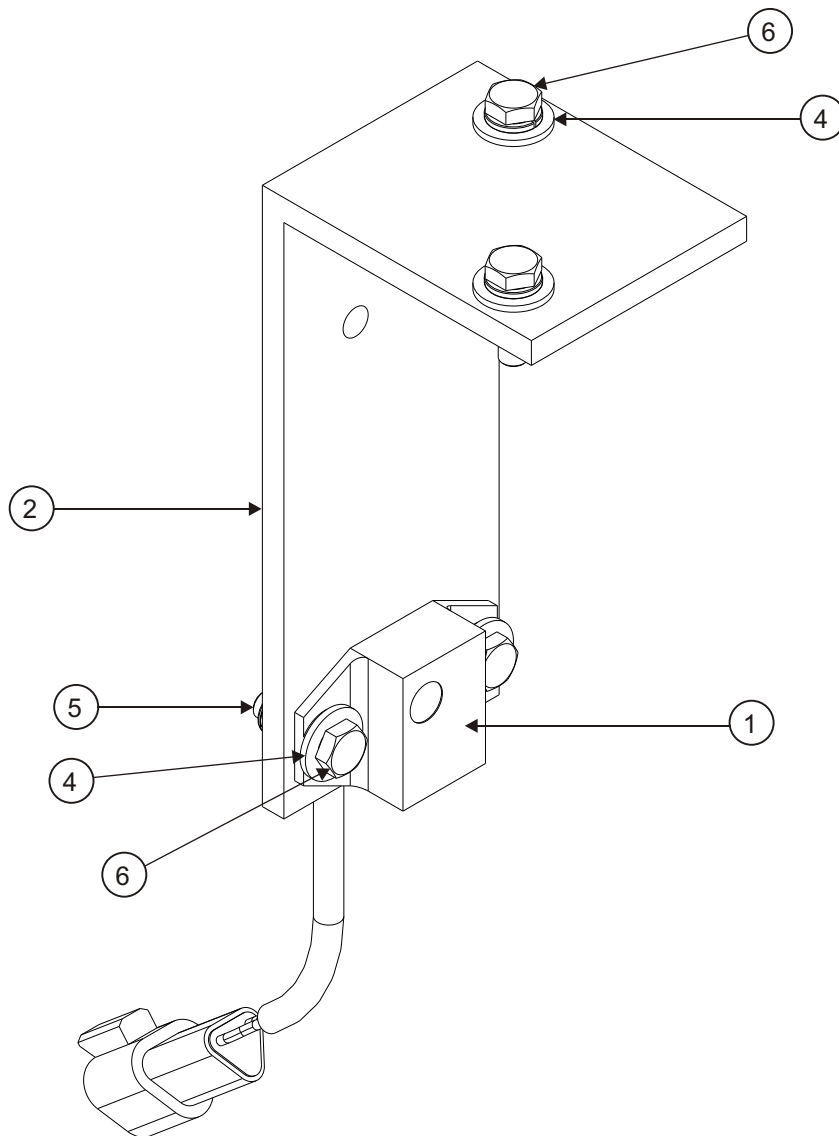
Item	Part No	Qty	Description
1.	11828-1	1	Fuel oil lower bolt plate
2.	11828-3	1	Plate, fuel tank top, welded
3.	11826-2	1	Fuel pick-up pipe
4.	11825	1	Tank
5.	605256	1	Fuel cap, vented
6.	11828-2	1	Gasket
7.	605-246	1	Filter
8.	3611-06	14	Nylock nut M6
9.	11826-3	1	Fuel return pipe

# Fuel Tank Assembly - drawing



# Slew Sensor Assembly

Item	Part No	Qty	Description
1.	560278A	1	Magnetic proximity switch
2.	11835	1	Slew sensor bracket
3.	3605-06	2	HD spring washer
4.	3603-06	4	Flat washer
5.	3611-06	2	Nylock nut M6
6.	3610-06	4	Bolt class 8-8



Item	Part No	Qty	Description
1.	11492-3	1	Tab washer
2.	11821-6	1	Engine tray retaining pin
3.	11831	1	Adjustable draw latch
4.	11840	1	Coupling
5.	11851	1	Suction hose assembly, engine end
6.	11863-1	1	Drive plate, Deutz
7.	11863-10	1	Engine control solenoid mount
8.	11863-11	1	Spacer
9.	11863-13	1	Air filter bracket, Deutz
10.	11863-14	1	Straight rubber joiner
11.	11863-4	1	Deutz exhaust pipe
12.	11905-3	1	Round cap
13.	11905	1	Engine tray lock handle
14.	11913	1	Deutz engine tray weldment
15.	11917	1	Adaptor plate, Deutz
16.	2650001	1	Swivel, in line
17.	2690004	1	Rod end
18.	304-0174	1	Solenoid
19.	3603-06	4	Flat washer
20.	3603-08	4	Flat washer
21.	2690004	1	Rod end
22.	3603	2	Washer
23.	3605-06	7	HD spring washer
24.	3605-08	6	HD spring washer
25.	3605-10	12	HD spring washer
26.	3605-12	2	HD spring washer
27.	3605-16	3	HD spring washer
28.	3610-06016	6	Bolt, class 8_8
29.	3610-06035	1	Bolt, class 8_8
30.	3610-08020	2	Bolt, class 8_8
31.	3610-08025	2	Bolt, class 8_8
32.	3610-10020	1	Bolt, class 8_8
33.	3610-10025	14	Bolt, class 8_8
34.	3610-12030	2	Bolt, class 8_8
35.	3610-12095	4	Bolt, class 8_8
36.	3610-16035	3	Bolt, class 8_8
37.	3611-08	2	Nylock nut
38.	3611-12	4	Nylock nut
39.	3613-08035	3	Capscrew, grade 12.9
40.	3618-42	2	Hose clip
41.	3624-12	1	Permaglide bush
42.	3626-1	1	Flanged permaglide bush
43.	3628-06	4	Nutsert M6
44.	60021-008	1	Nut, 1_4 UNF
45.	8626	1	Pin keeper
46.		1	Deutz air filter
47.		1	Exhaust clamp, 2inch
48.	11958	1	F3L1001F engine
49.	11838	1	PAVC38 hydraulic pump
50.	7630006	1	Service air filter gauge
51.		2	Gasket
52.		1	Intake manifold flange
53.	3618-2	2	Hose clip
54.	11863-9	1	Rubber elbow, air intake
55.	11863-2	1	Filtered air pipe

Parts list continued on next page

# Deutz Engine Assembly

---

Item	Part No	Qty	Description
56.	3618-42	2	Hose clip
57.	11958-1	1	Rubber elbow, 45 degree 3 inch ID
58.	11936-5	1	Air inlet stack cap
59.	11936	1	Fleetguard air filter for Deutz F3L1011F
60.	11936-4	1	Mounting band

F

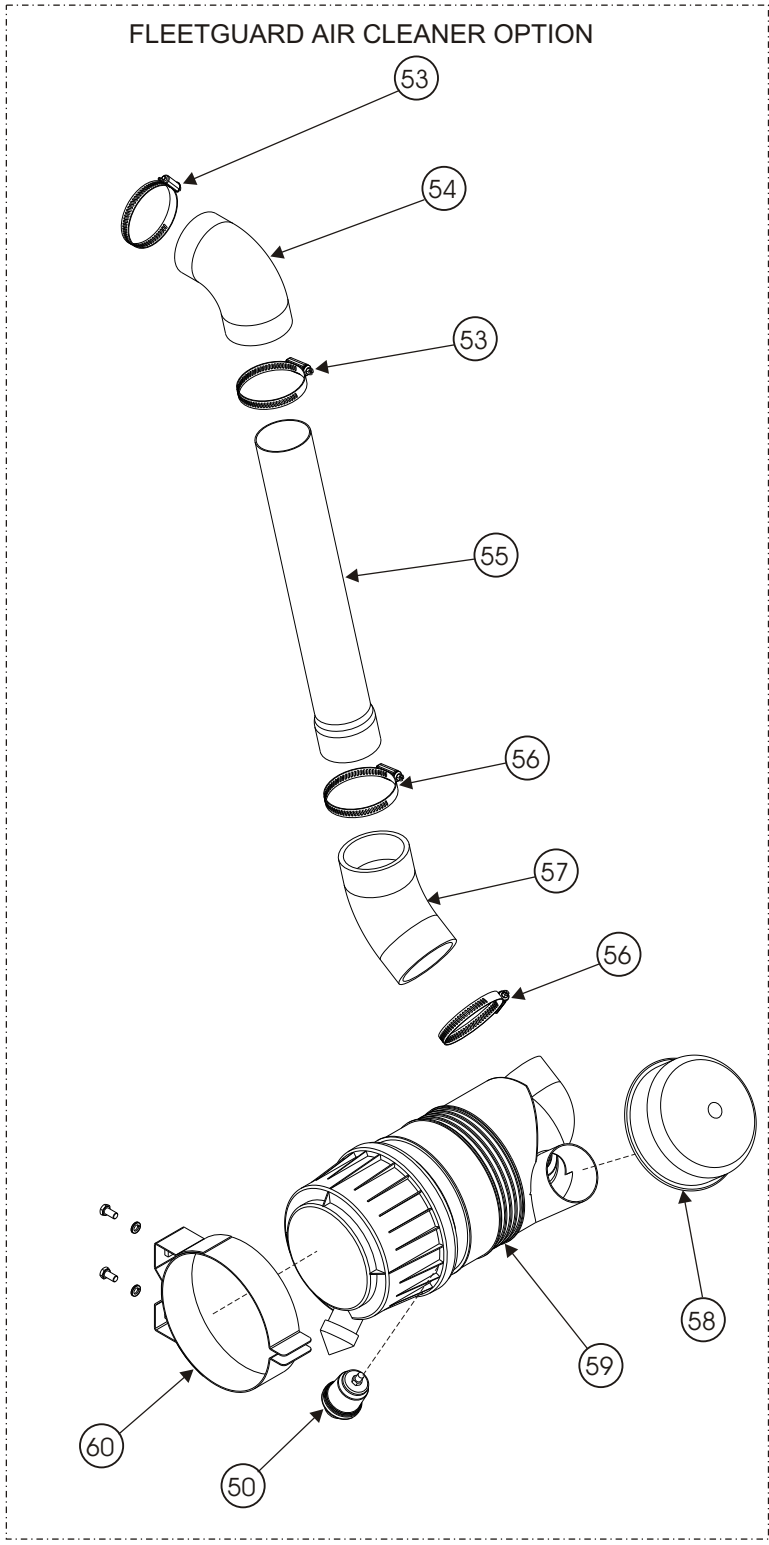
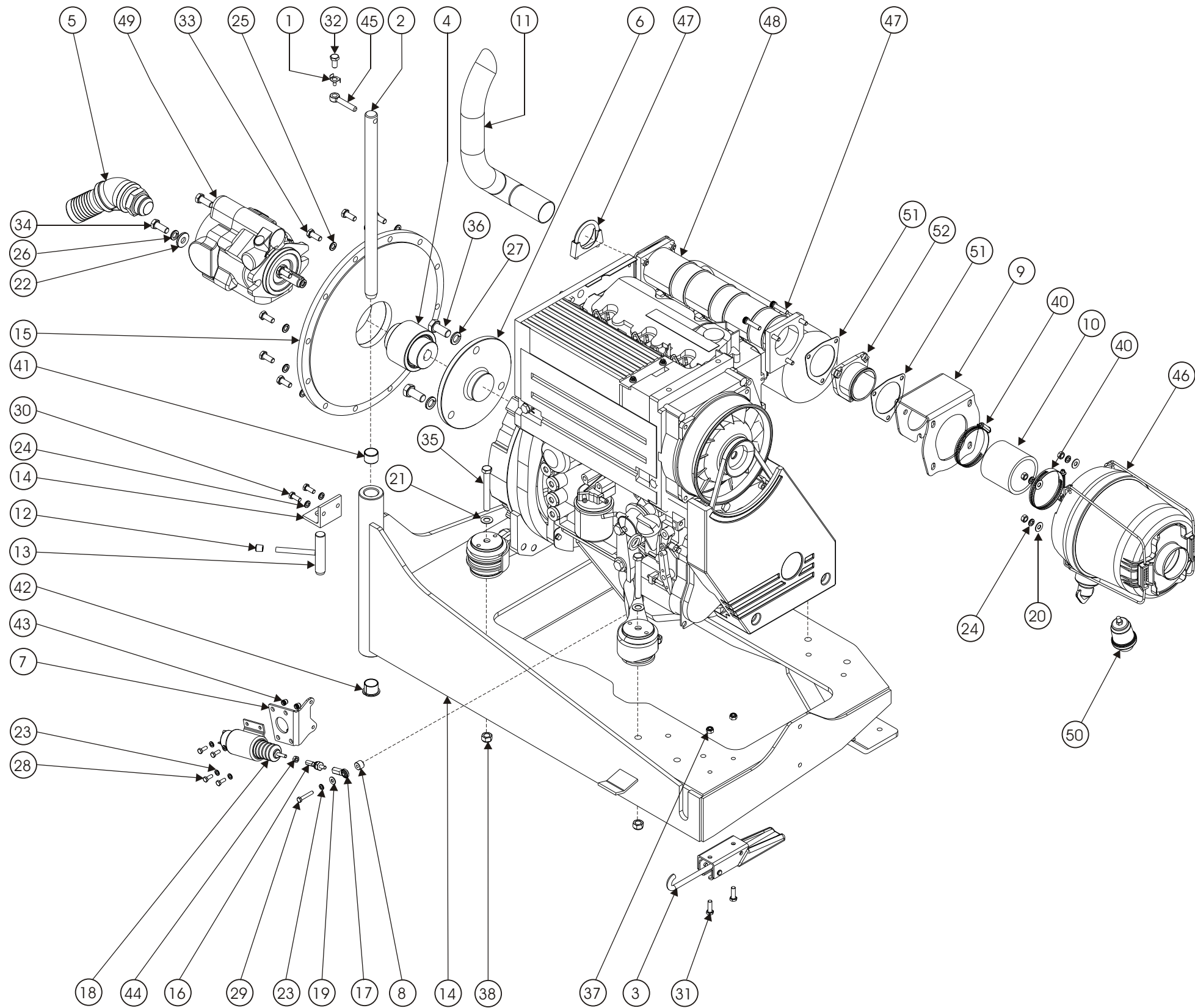
E

D

C

B

A



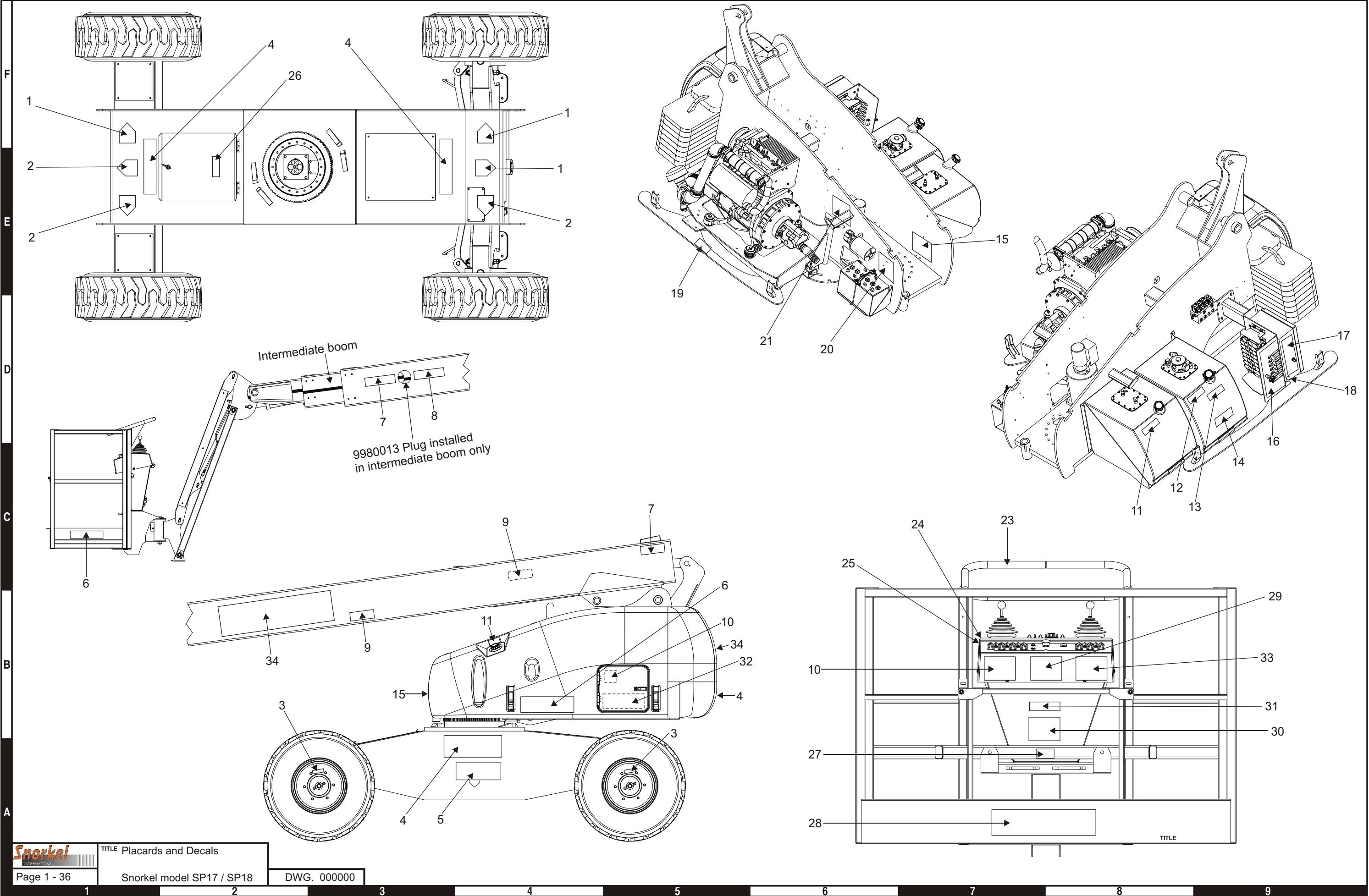
TITLE Deutz F3L1011F Engine  
 Assembly  
 Snorkel model SP17 / SP18



DWG. 11958

Page 1 - 35

1 2 3 4 5 6 7 8 9



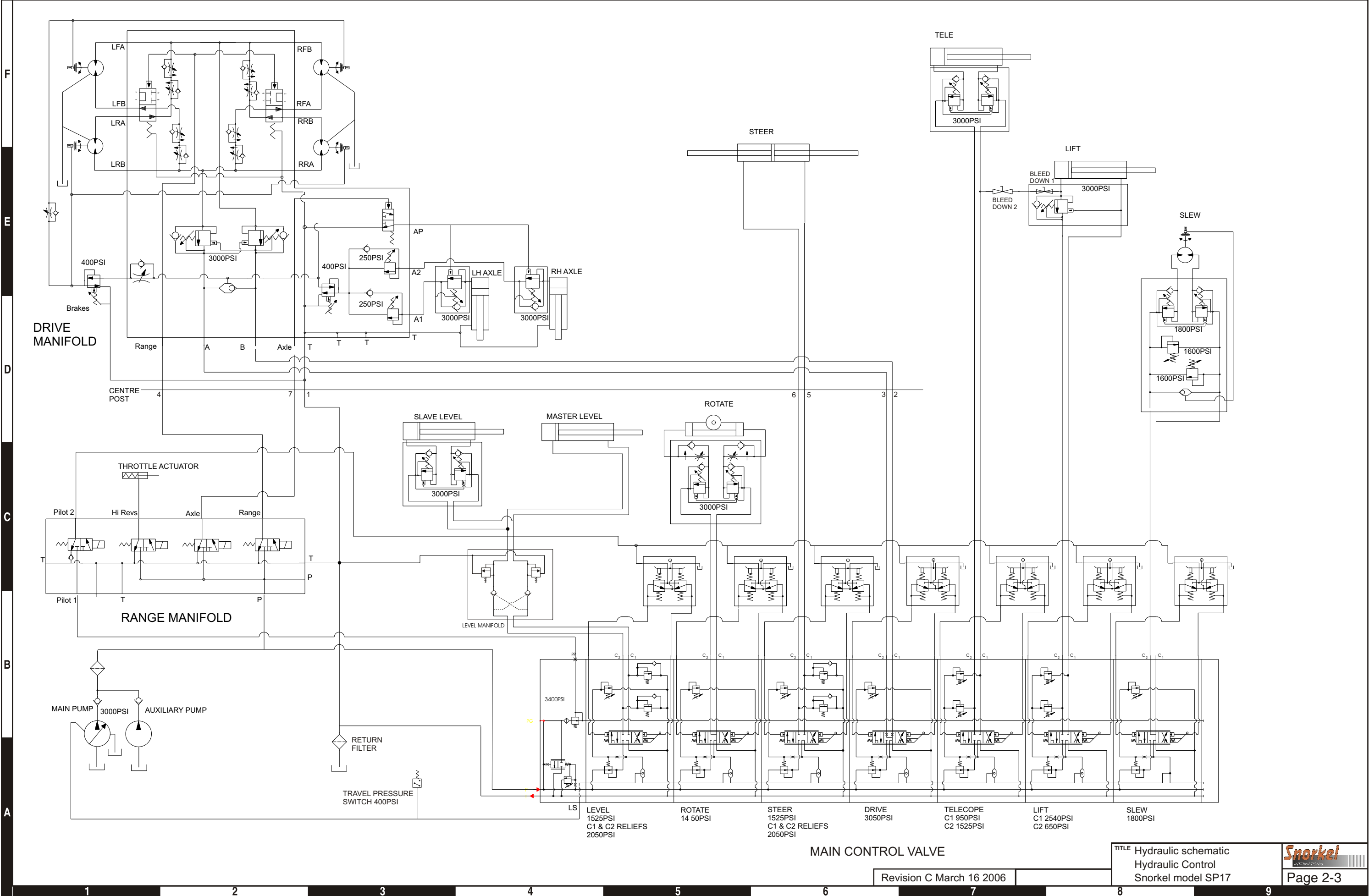
Item	Part No	Qty	Description
1.	0070541	3	Decal, blue arrow
2.	0070540	3	Decal, yellow arrow
3.	12044	4	Decal, lug nut torque
4.	0323896	5	Decal, electrocution
5.	0073298	2	Decal, foam filled tires
6.	0112471	4	Decal, Snorkel
7.	0073667	4	Decal, inspect wire ropes
8.	0190989E	2	Decal, do not reach
9.	451986	2	Decal, limit switch
10.	0323897	2	Decal, must not operate
11.	9212	2	Decal, diesel
12.	12814	1	Decal, hydraulic fluid level
13.	302950	1	Decal, hydraulic oil min/max
14.	9207	1	Decal, hydraulic oil
15.	0073429	1	Decal, greasing instruction
16.	11854	1	Decal, lower control valve SP17
	11875	1	Decal, lower control valve SP18
17.	11857	1	Decal, Lower control box
18.	9751	1	Decal, New Zealand made
19.	11868	1	Decal, engine tray latch
20.	0102006	1	Decal, battery disconnect
21.	0070901E	1	Decal, serial number
23.	0072531	1	Decal, electrocution hazard
24.	11855	1	Decal, upper controls SP17
	12001	1	Decal, upper controls SP18
25.	11856	1	Decal, upper controls switch panel SP17
	11873	1	Decal, upper controls switch panel SP18
26.	562426	1	Decal, literature compartment
27.	0150448	1	Decal, harness points
28.	2025-227	1	Decal, platform capacity
29.	1843	1	Decal, warning, New Zealand only
	9428	1	Decal, electrical hazard, Australia only
30.	99228	1	Decal, safety harness
31.	0073668	1	Decal, do not use boom
32.	300699	1	Decal, operation check list
33.	0323899	1	Decal, electrocution hazard
34.	11892	3	Decal, SP17
	11893	3	Decal, SP18





SP17 Hydraulic Schematic	
[Hydraulic Controls] - drawing . . . . .	2-3
SP18 Hydraulic Schematic	
[Hydraulic Controls] - drawing . . . . .	2-4
SP17 Hydraulic Schematic	
[Electric Controls] - drawing . . . . .	2-5
SP18 Hydraulic Schematic	
[Electric Controls] - drawing . . . . .	2-6
Range manifold . . . . .	2-7
Main Manifold Block. . . . .	2-8
Main Manifold Block - drawing . . . . .	2-9
Drive Motor . . . . .	2-10
Drive Motor - drawing . . . . .	2-11
Oil Tank Assembly. . . . .	2-12
Platform Rotator, Parker SP17 . . . . .	2-13
Centrepost and Fittings . . . . .	2-14
Extend Cylinder and Support Bracket. . . . .	2-15
Cylinder, Master Level - Rosenboom . . . . .	2-16
Cylinder, Slave Level - Rosenboom . . . . .	2-17
Cylinder, Slave Level - GBI . . . . .	2-18
Cylinder, Slave Level - Seabee. . . . .	2-19
Cylinder, Slave Level - Prince . . . . .	2-20
Lift Cylinder . . . . .	2-21
Jib Lift Cylinder . . . . .	2-22
Victor Steer Cylinder . . . . .	2-23
Axle Cylinder . . . . .	2-24
Cylinder, Extension - Rosenboom. . . . .	2-25
Dual Holding Valve, Platform Rotation SP17 . . . .	2-26

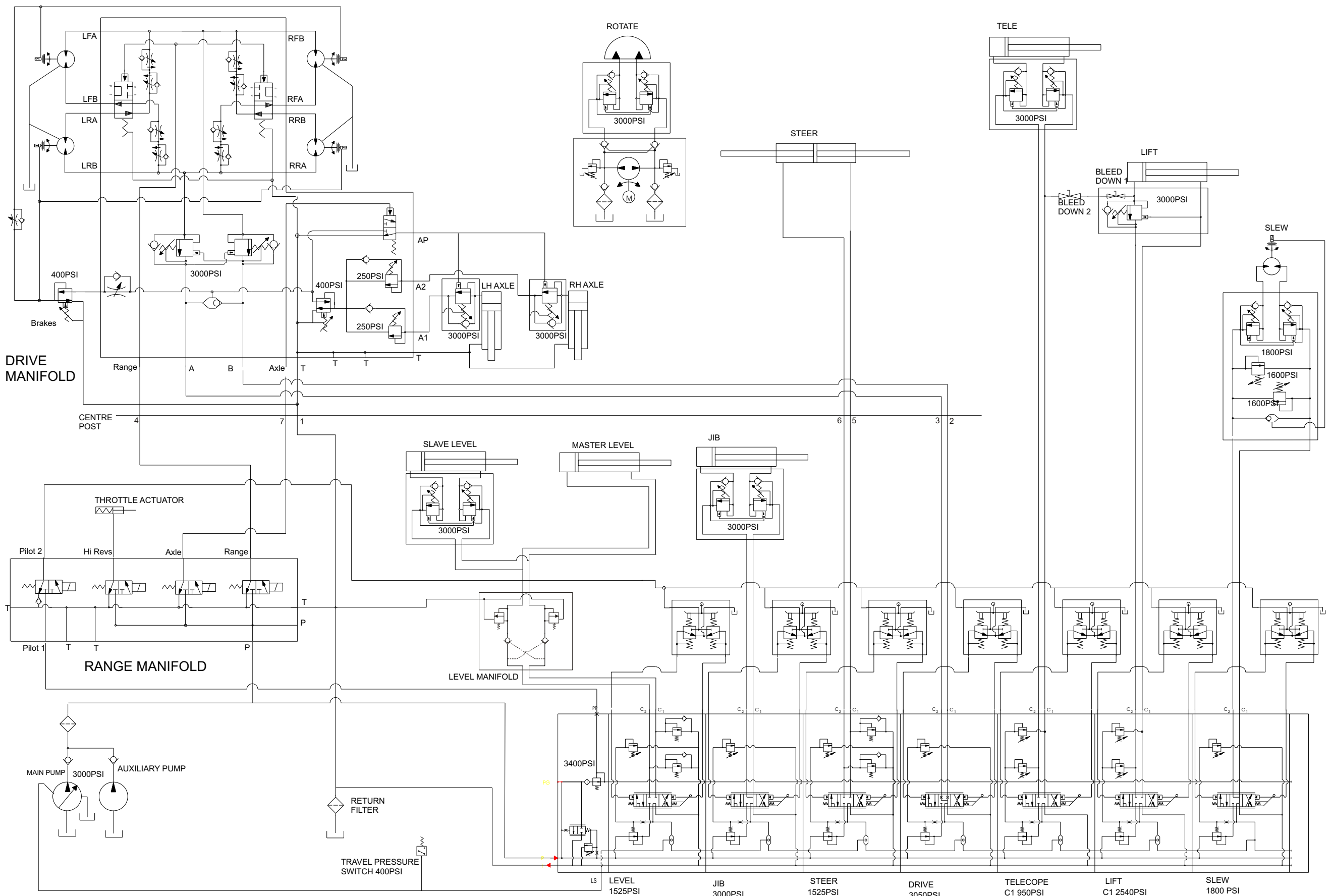




TITLE Hydraulic schematic  
Hydraulic Control  
Snorkel model SP17

Revision C March 16 2006

MAIN CONTROL VALVE



DRIVE MANIFOLD

RANGE MANIFOLD

MAIN PUMP 3000PSI  
AUXILIARY PUMP

RETURN FILTER

TRAVEL PRESSURE SWITCH 400PSI

LEVEL  
1525PSI  
C1 & C2 RELIEFS  
2050 PSI

JIB  
3000PSI

STEER  
1525PSI  
C1 & C2 RELIEFS  
2050PSI

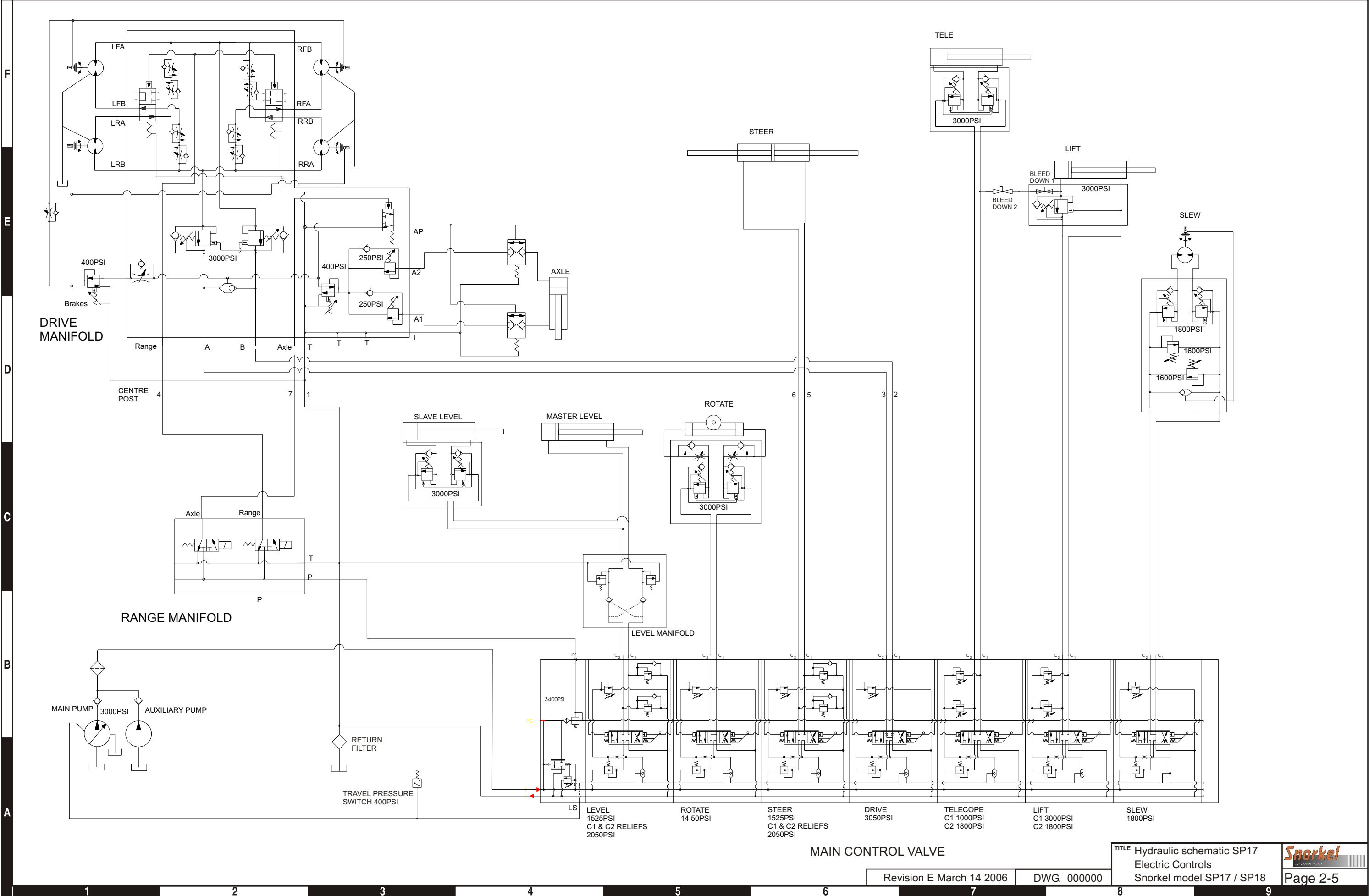
DRIVE  
3050PSI

TELESCOPE  
C1 950PSI  
C2 1525PSI

LIFT  
C1 2540PSI  
C2 650PSI

SLEW  
1800 PSI

MAIN CONTROL VALVE

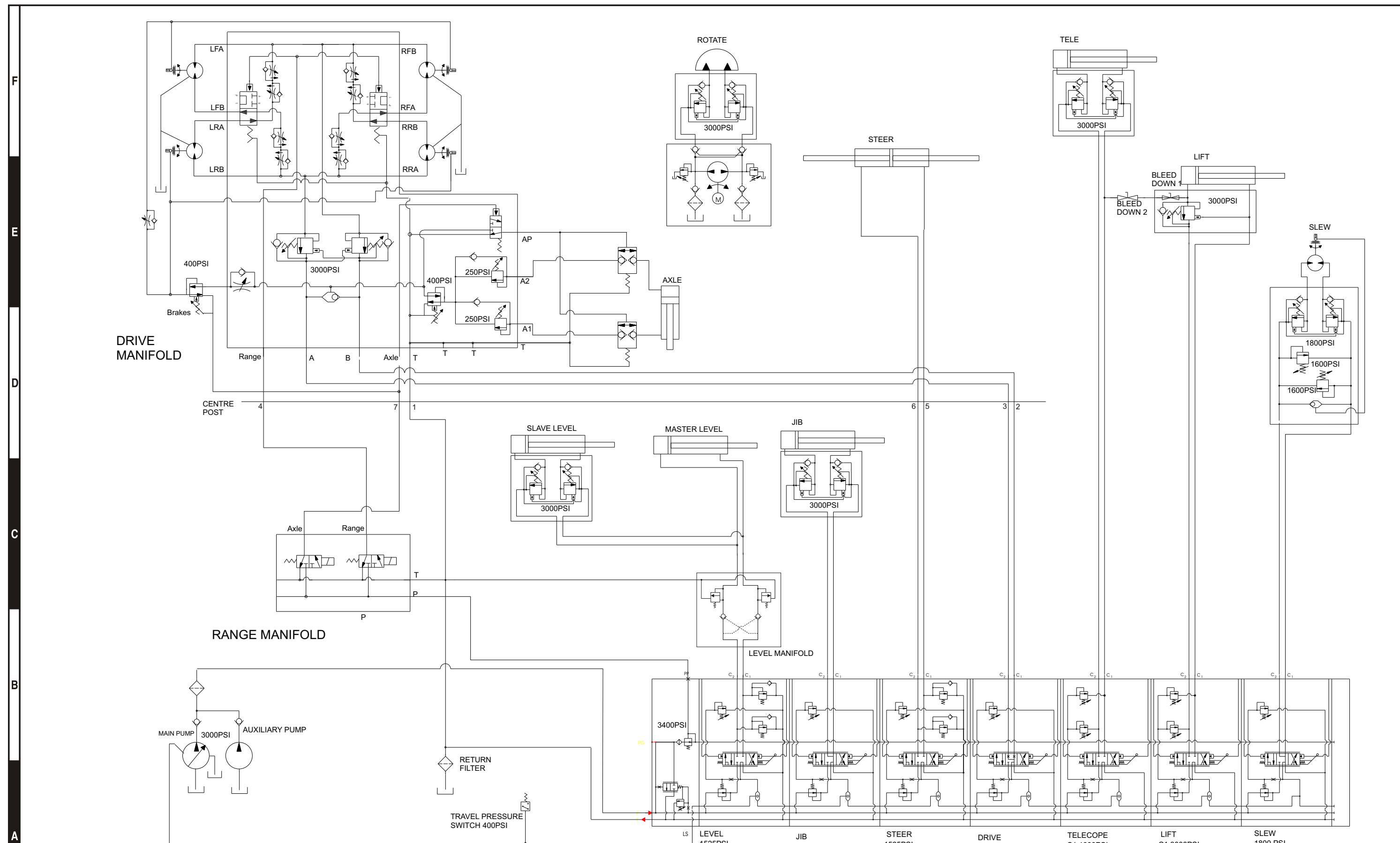


MAIN CONTROL VALVE

TITLE Hydraulic schematic SP17  
 Electric Controls  
 Snorkel model SP17 / SP18

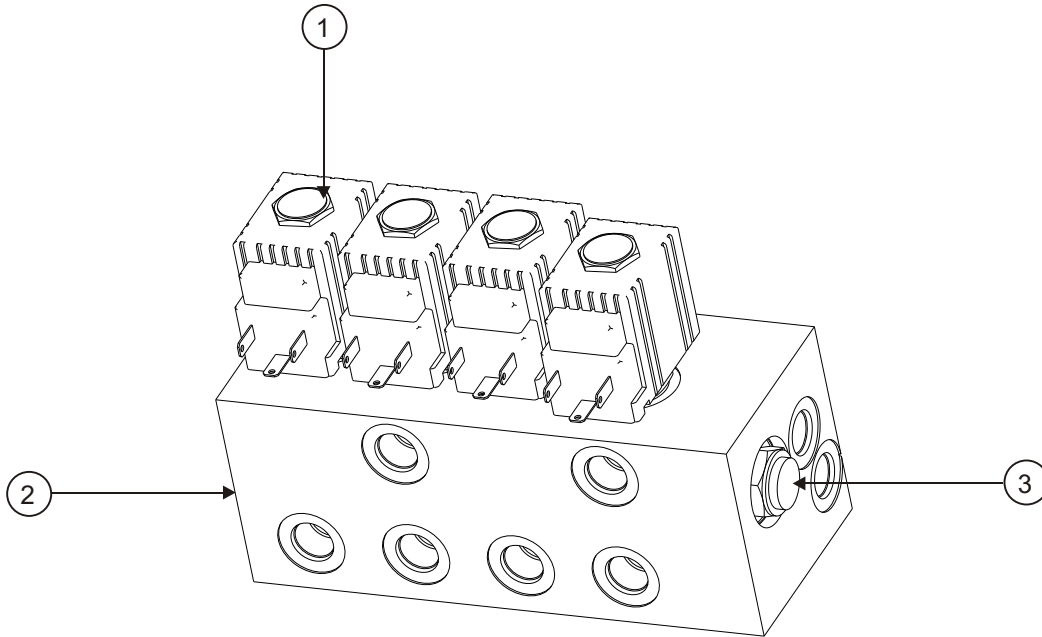
Revision E March 14 2006

DWG. 000000



**MAIN CONTROL VALVE**

Item	Part No	Qty	Description
1.	11819-2	4	Solenoid valve
2.	11819-1	1	Valve body
3.	11819-3	1	Check valve



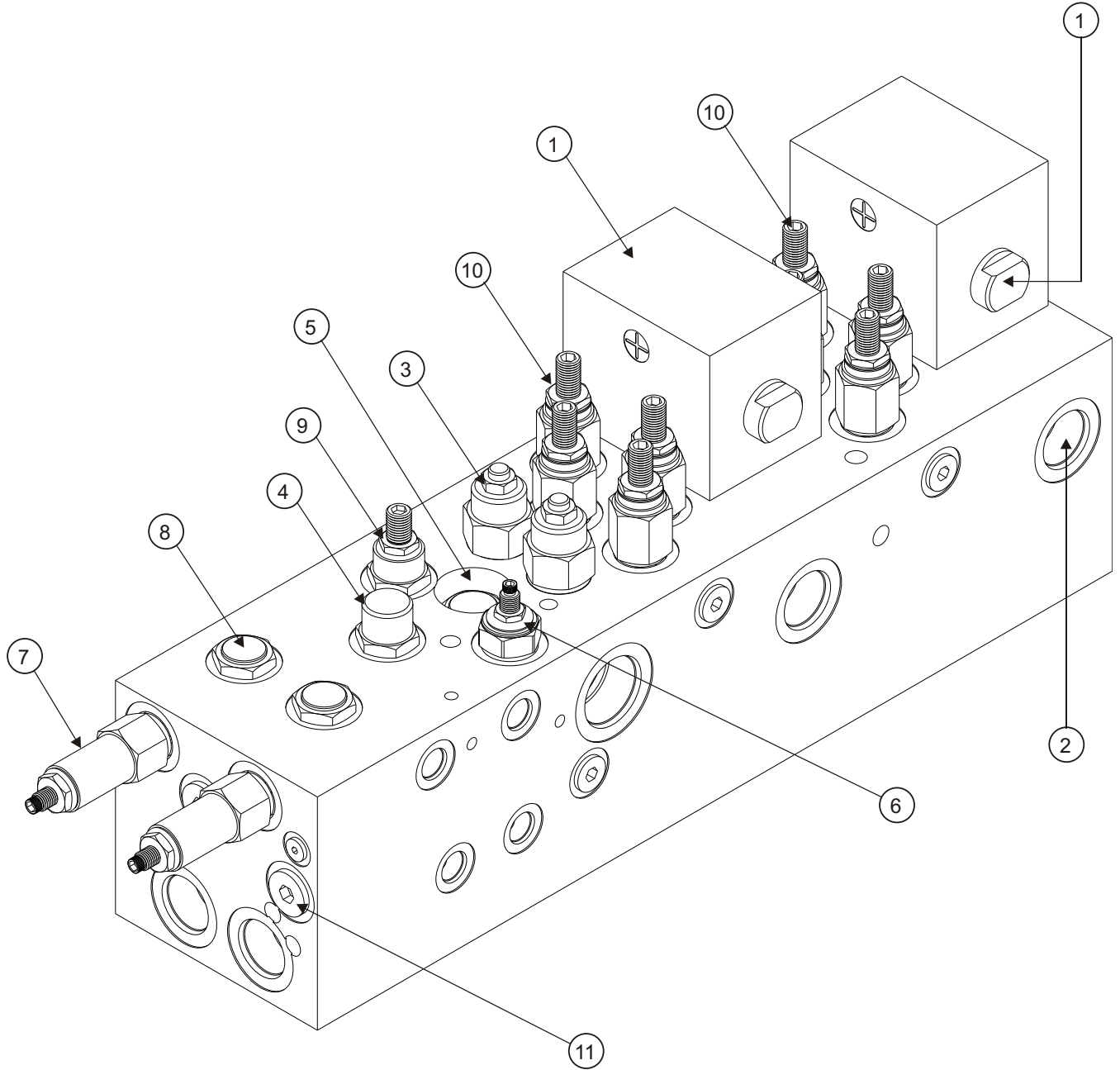


## Main Manifold Block

---

Item	Part No	Qty	Description
1.	11817-1	2	Drive control valve
2.	11817-2	1	Manifold Block (Ref)
3.	11817-3	2	Counterbalance valve
4.	11817-4	1	Axle pilot valve
5.	11817-5	1	Ball shuttle valve
6.	11817-6	1	Axle pressure reducing valve
7.	11817-7	2	Axle cylinder relief valve
8.	11817-8	2	Axle check valve
9.	11817-9	1	Flow control valve, brakes
10.	11817-10	8	Flow control valve, drive
11.	11817-11	3	Blanking plug

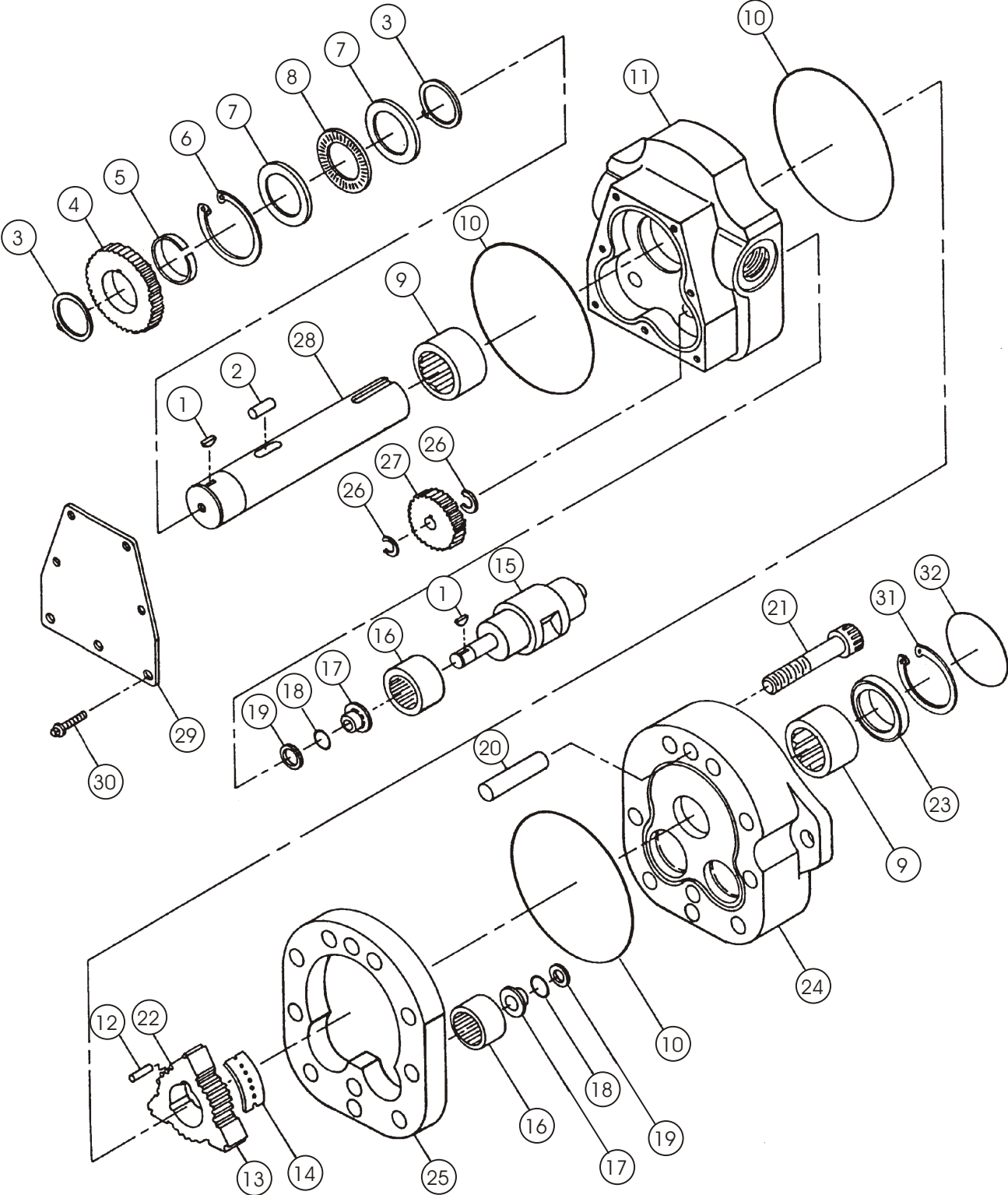
# Main Manifold Block - drawing



# Drive Motor

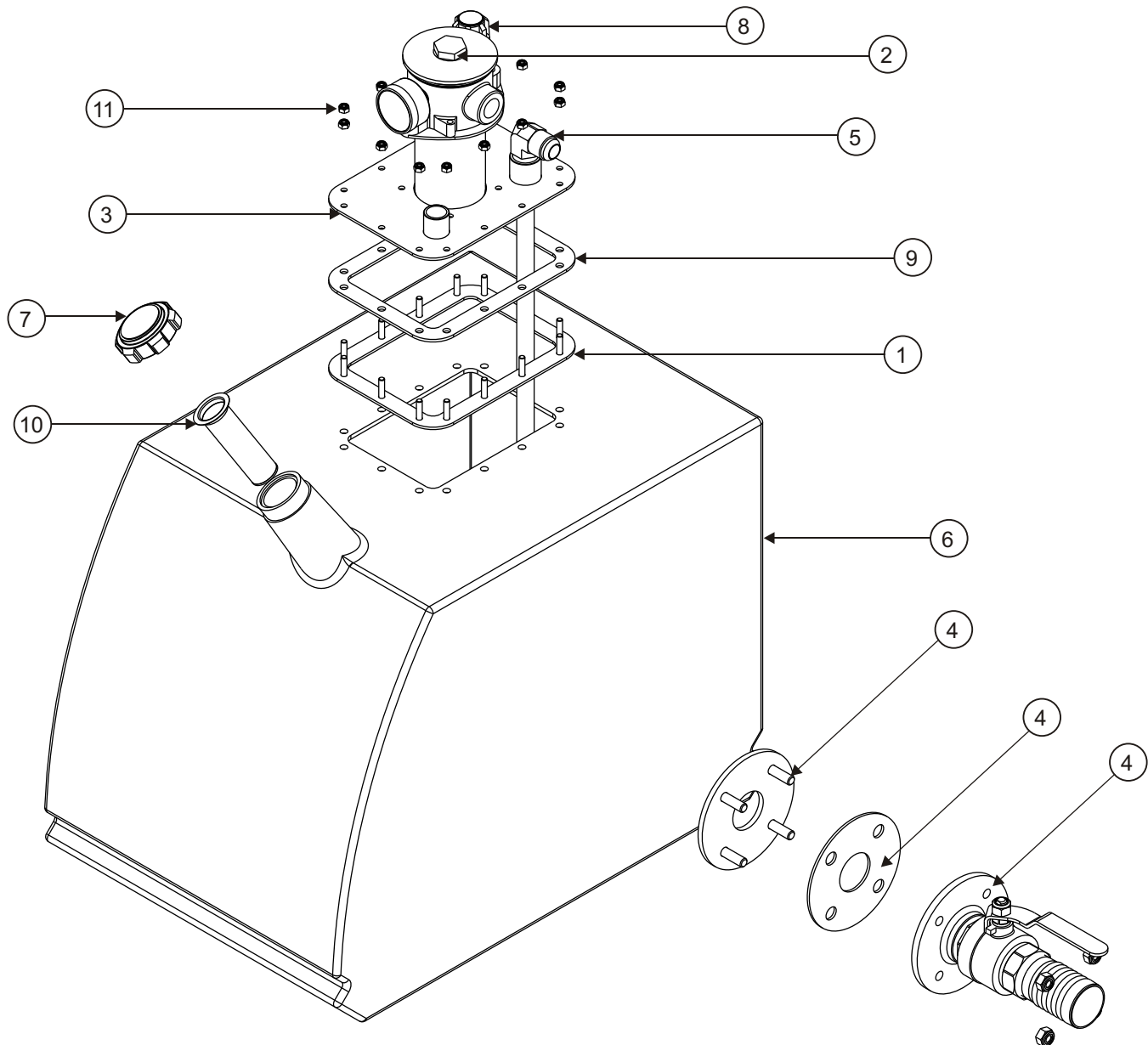
---

Item	Part No	Qty	Description
	6030018-99	1	Drive motor
	0071092	1	Seal repair kit - (includes items 10, 18, 19, 23 and 31)
1.	8220126	3	Woodruff key
2.	8220127	1	Drive pin
3.	8220005	2	Retaining pin
4.	8220128	1	Gear drive
5.	8220129	1	Spacer washer
6.	8220130	1	Retaining pin
7.	8220006	2	Thrust bearing race
8.	8220007	1	Thrust bearing
9.	8220027	2	Needle bearing
10.	8220131	3	Oil seal
11.	8220132	1	Rear end cap
12.	8220133	3	Tip seal roller
13.	8220134	1	Rotor
14.	8220028	3	Seal plate
15.	8220135	2	Abutment valve
16.	8220028	4	Needle bearing
17.	8220030	4	Step bearing
18.	8220136	4	O-ring
19.	8220137	4	Back-up ring
20.	8220138	4	Dowel pin
21.	8220139	9	Capscrew
22.	8220140	18	Body seal roller
23.	8220146	1	Shaft seal
24.	8220031	1	Front end cap
25.	8220141	1	Displacement housing
26.	8220142	4	Retaining ring
27.	8220143	2	Gear pinion (std.)
28.	8220156	1	S-shaft
29.	8220147	1	Gear cover
30.	8220148	7	Capscrew
31.	8220144	1	Retaining ring
32.	8220145	1	O-ring
33.	8220117	1	Front sealing cap

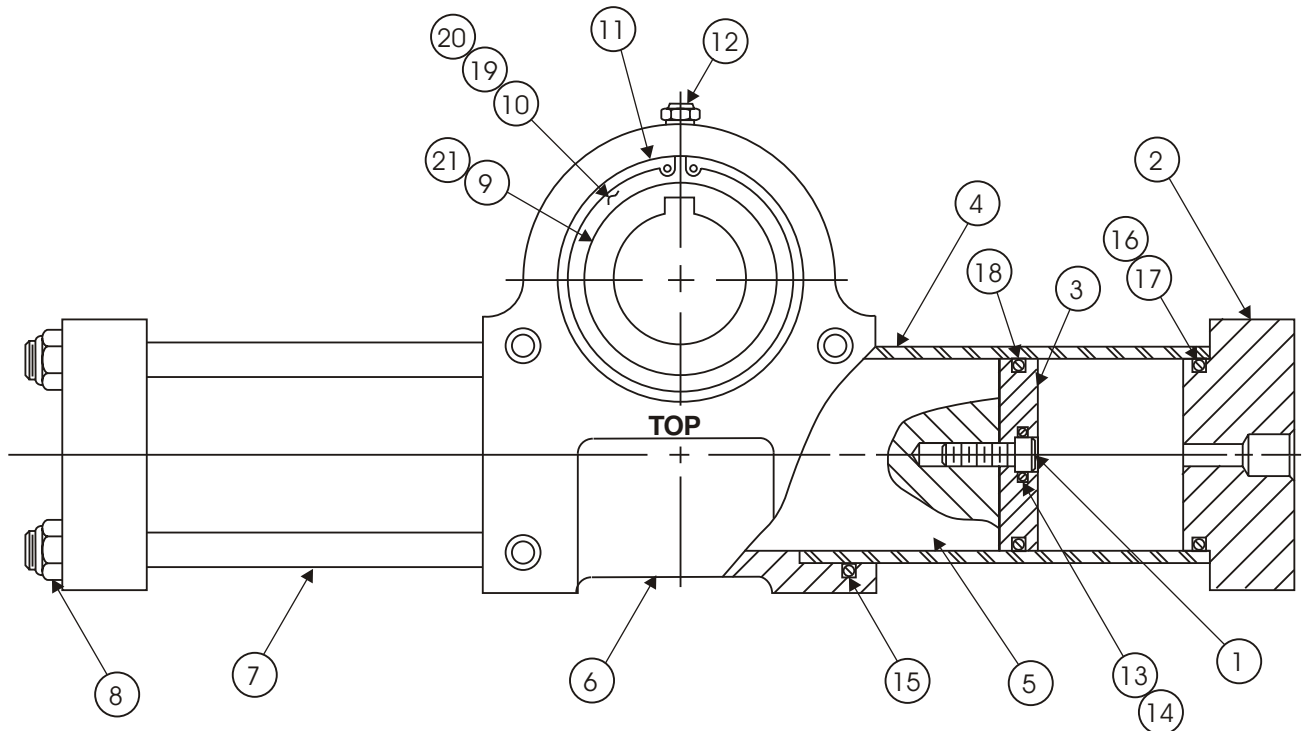


# Oil Tank Assembly

Item	Part No	Qty	Description
1.	11828-1	1	Fuel oil lower bolt plate
2.	11829	1	Filter, complete with gauge
3.	11828-4	1	Plate, oil tank top, welded
4.	11839	1	Suction tube assembly
5.	11852	1	Auxiliary oil pump suction fitting
6.	11825	1	Oil fuel tank
7.	605256	1	Fuel cap, vented
8.	11487	1	Breather
9.	11828-2	1	Gasket
10.	605-246	1	Fuel oil filter
11.	3611-06	14	Nylock nut M6

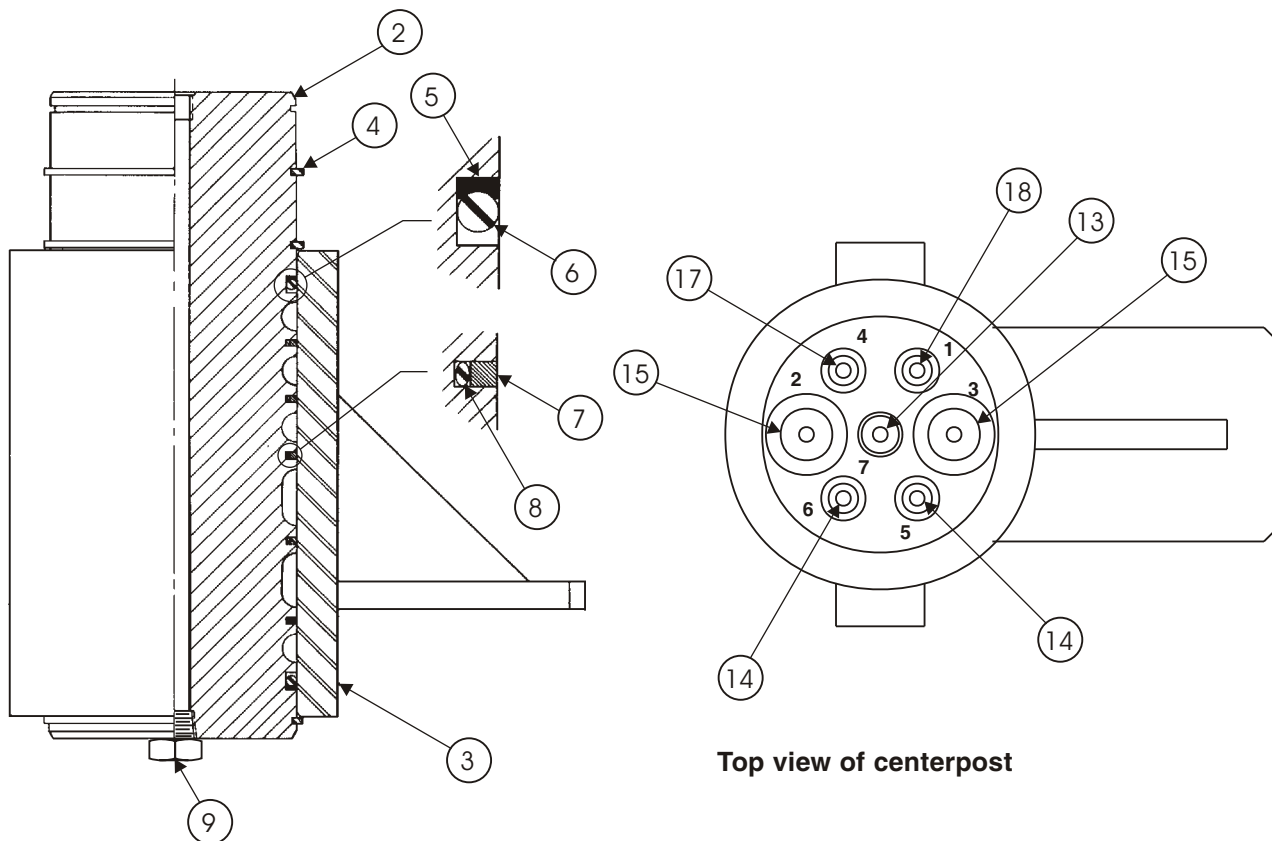


Item	Part No	Qty	Description
	0070570-99	1	Platform rotator, Parker
	0071275	1	seal repair kit - (includes items 13 through 21)
1.	8080018	2	Rack bolt
2.	8080016	2	End cap
3.	8080015	2	Piston
4.	8080040	2	Cylinder
5.	8080060	1	Rack </td
6.	8080039	1	Housing
7.	0073281-99	8	Tie rod
8.	8080041	8	Lock nut
9.	8080061	1	Pinion
10.	8080038	2	Pinion bushing
11.	8080062	2	Snap ring
12.	8080064	1	Relief valve
13.	Kit item	2	O-ring - (not sold separately)
14.	Kit item	2	Parbat seal - (not sold separately)
15.	Kit item	2	O-ring - (not sold separately)
16.	Kit item	2	O-ring - (not sold separately)
17.	Kit item	2	Parbat seal - (not sold separately)
18.	Kit item	2	Polypak seal - (not sold separately)
19.	Kit item	2	O-ring - (not sold separately)
20.	Kit item	2	Parbat seal - (not sold separately)
21.	Kit item	1	O-ring - (not sold separately)



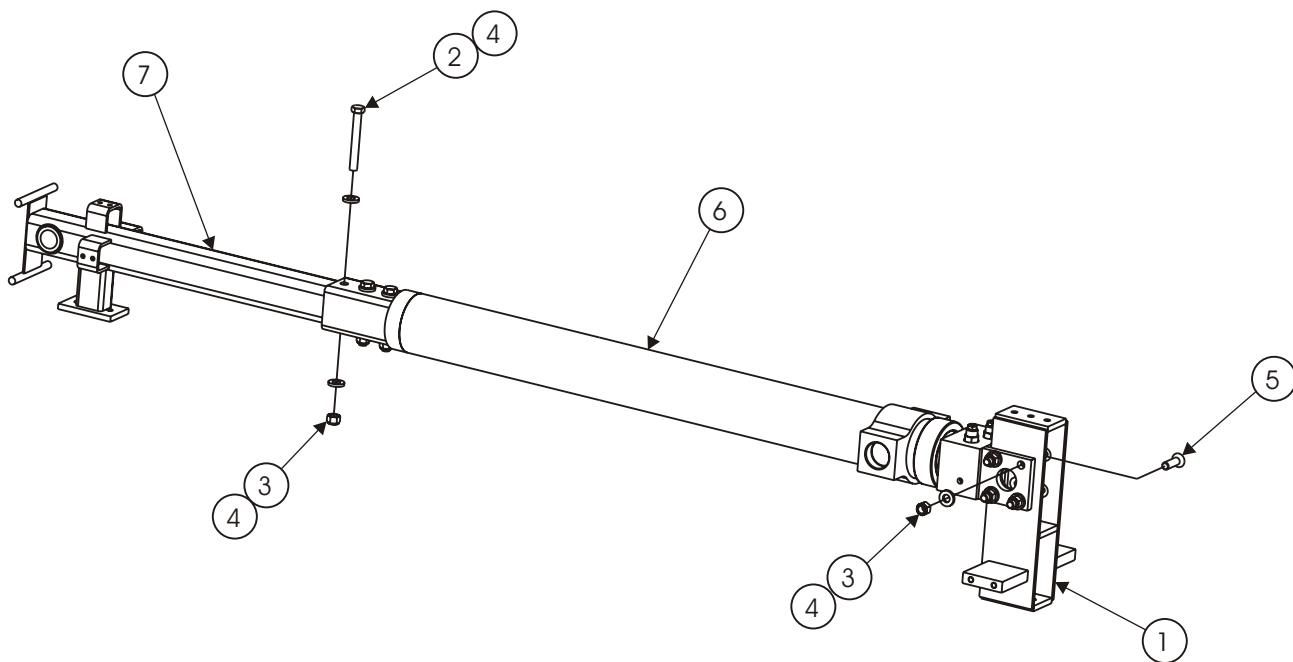
# Centrepost and Fittings

Item	Part No	Qty	Description
1.	0110465	1	Centrepost - (includes items 2 through 8)
	0070991	1	Seal repair kit - (includes items 5, 6, 7, and 8)
2.	0110466	1	Centrepost
3.	0110466	1	Centrepost manifold
4.	5590003	3	Retaining ring
5.	Kit item	2	Parback seal - (not sold separately)
6.	Kit item	2	O-ring - (not sold separately)
7.	Kit item	5	Seal ring - (not sold separately)
8.	Kit item	5	O-ring - (not sold separately)
9.	7714203	1	Hex head plug
			Centrepost and manifold port fittings - (fittings not shown, ports marked on parts)
10.	5035308	2	Straight thread 90° elbow - (manifold ports #2 and #3)
11.	5035316	1	Straight thread 90° elbow - (manifold port #1)
12.	5035318	1	Straight thread 90° elbow - (manifold port #4)
13.	5075205	3	Hex head plug - (centrepost port #7, manifold ports #8 and #9)
14.	5065707	2	Straight thread adaptor - (centrepost ports #5 and #6)
15.	5065714	2	Straight thread adaptor - (centerpost ports #2 and #3)
16.	5035305	2	Straight thread 90° elbow - (manifold ports #5 and #6)
17.	5075705	1	Straight thread adaptor - (centrepost #4)
18.	5065728	1	Straight thread adaptor - (centrepost port #1)



## Extend Cylinder and Support Bracket

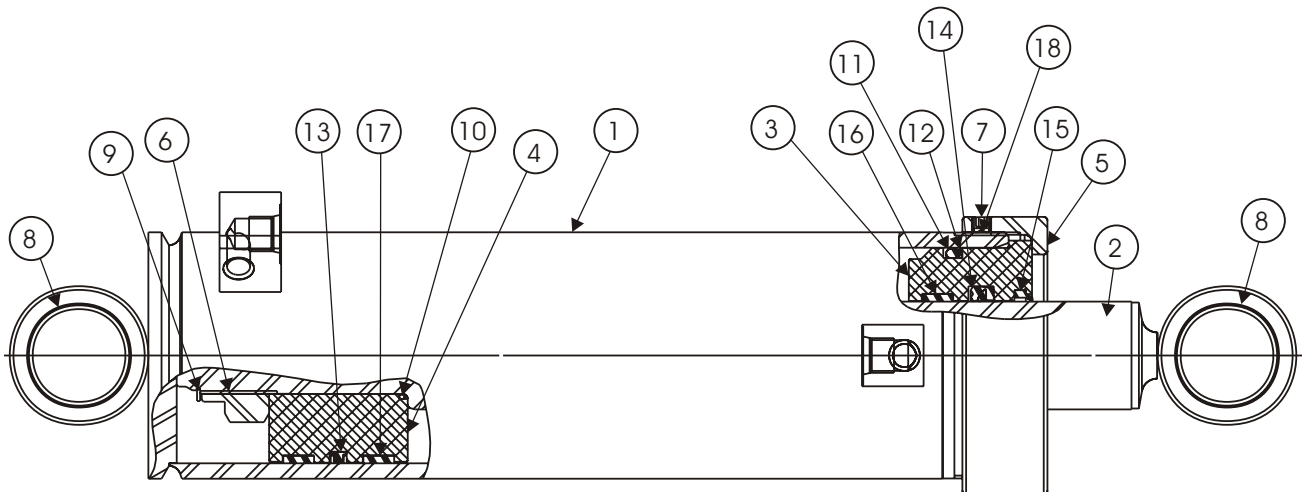
Item	Part No	Qty	Description
	0072854	1	Extend cylinder and support bracket TB50
1.	0072848-99	1	Support bracket, rod end
2.	971009	3	Capscrew 1/2-13 x 4 inch long hex head grade 5
3.	5560039	11	Nut 1/2-13 self locking
4.	5560168	14	Washer 1/2 hard flat ASTM-F436
5.	5560718	8	Capscrew screw 1/2-13 x 1-3/4 inch long socket flat head
6.	0074906-99	1	Cylinder, extend TB50 - (see Repair Parts Section for parts breakdown)
7.	0071318-99	1	Support bracket, base end





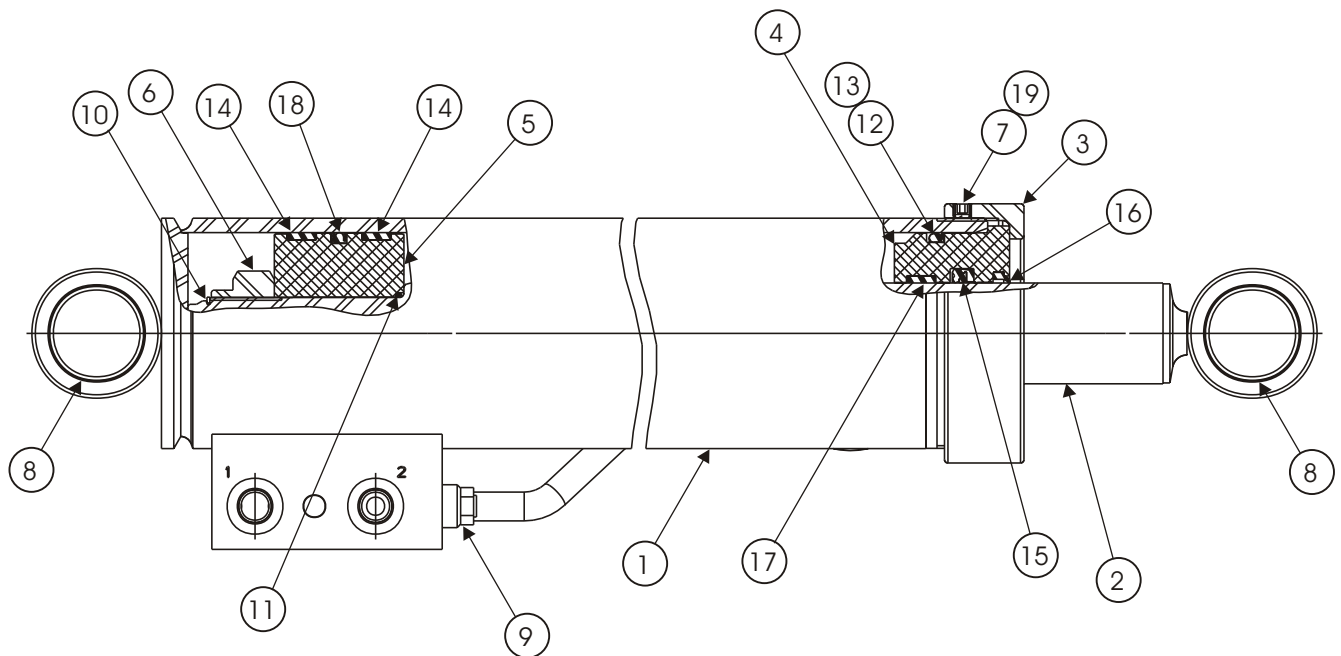
# Cylinder, Master Level - Rosenboom

Item	Part No	Qty	Description
	0070007-99	1	Cylinder, master level - Rosenboom
	6091260	1	Seal repair kit - (includes items 9 through 18)
1.		1	Tube - (not sold separately)
2.	6091374	1	Rod
3.	6091257	1	Head gland
4.	6091256	1	Piston
5.	6091250	1	Head gland cap
6.	6091259	1	Lock nut
7.	5569835	1	Set screw
8.	2502416	4	Bearing
9.	Kit item	1	Snap ring - (not sold separately)
10.	Kit item	1	O-ring - (not sold separately)
11.	Kit item	1	O-ring - (not sold separately)
12.	Kit item	1	Back-up - (not sold separately)
13.	Kit item	1	Capped T-seal - (not sold separately)
14.	Kit item	1	Deep Z-seal - (not sold separately)
15.	Kit item	1	Rod wiper - (not sold separately)
16.	Kit item	1	Wearband - (not sold separately)
17.	Kit item	2	Wearband - (not sold separately)
18.	Kit item	1	Locking insert - (not sold separately)



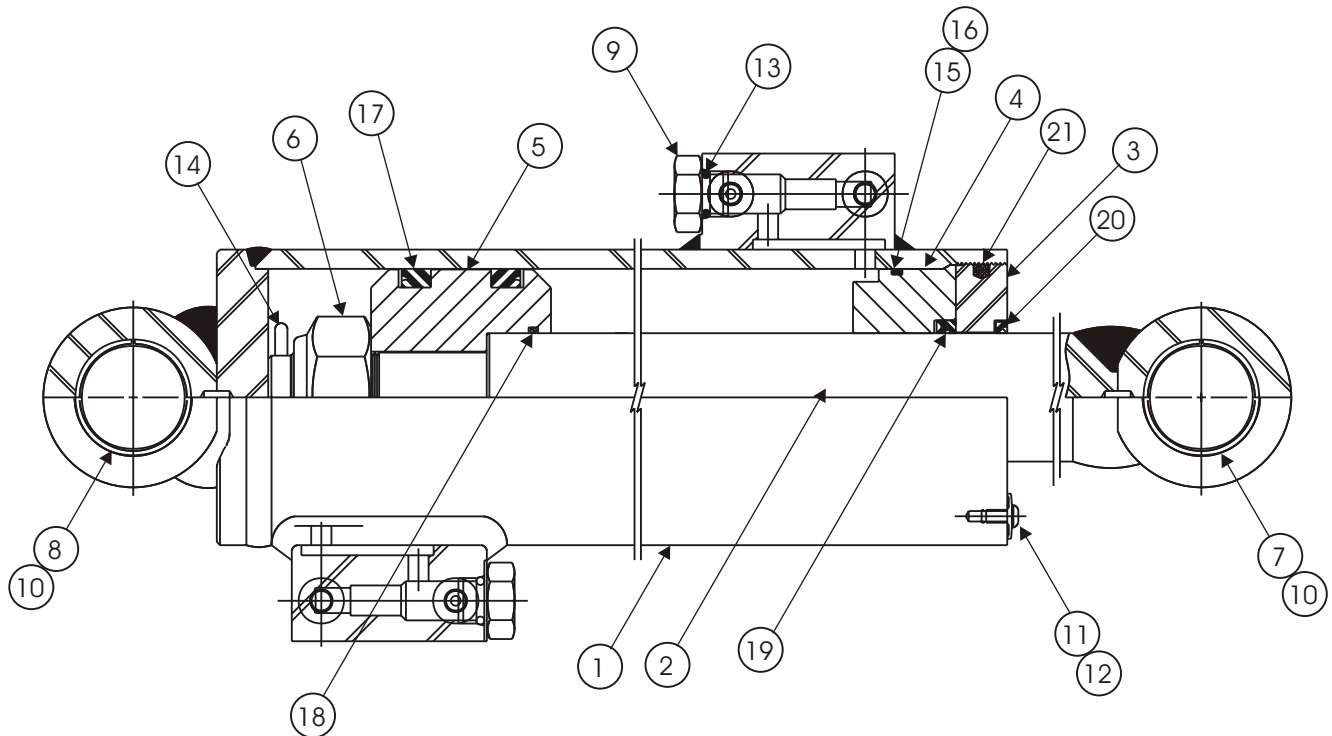
# Cylinder, Slave Level - Rosenboom

Item	Part No	Qty	Description
	0074713	1	Cylinder, slave level - Rosenboom
	6091260	1	Seal repair kit - (kit includes items 10 through 19)
1.		1	Cylinder tube - (not sold separately)
2.	6091258	1	Rod
3.	6091255	1	Head gland cap
4.	6091257	1	Head gland
5.	6091256	1	Piston
6.	6091259	1	Lock nut
7.	5569835	1	Set screw
8.	2502416	4	Bushing
9.	6010794	2	Cartridge holding valve - (factory preset, do not reset)
10.	kit item	1	External snap ring - (not sold separately)
11.	kit item	1	O-ring - (not sold separately)
12.	kit item	1	O-ring - (not sold separately)
13.	kit item	1	Back-up ring - (not sold separately)
14.	kit item	1	T-seal - (not sold separately)
15.	kit item	1	Deep Z-seal - (not sold separately)
16.	kit item	1	Rod wiper - (not sold separately)
17.	kit item	1	Wearband - (not sold separately)
18.	kit item	2	Wearband - (not sold separately)
19.	kit item	1	Locking insert - (not sold separately)

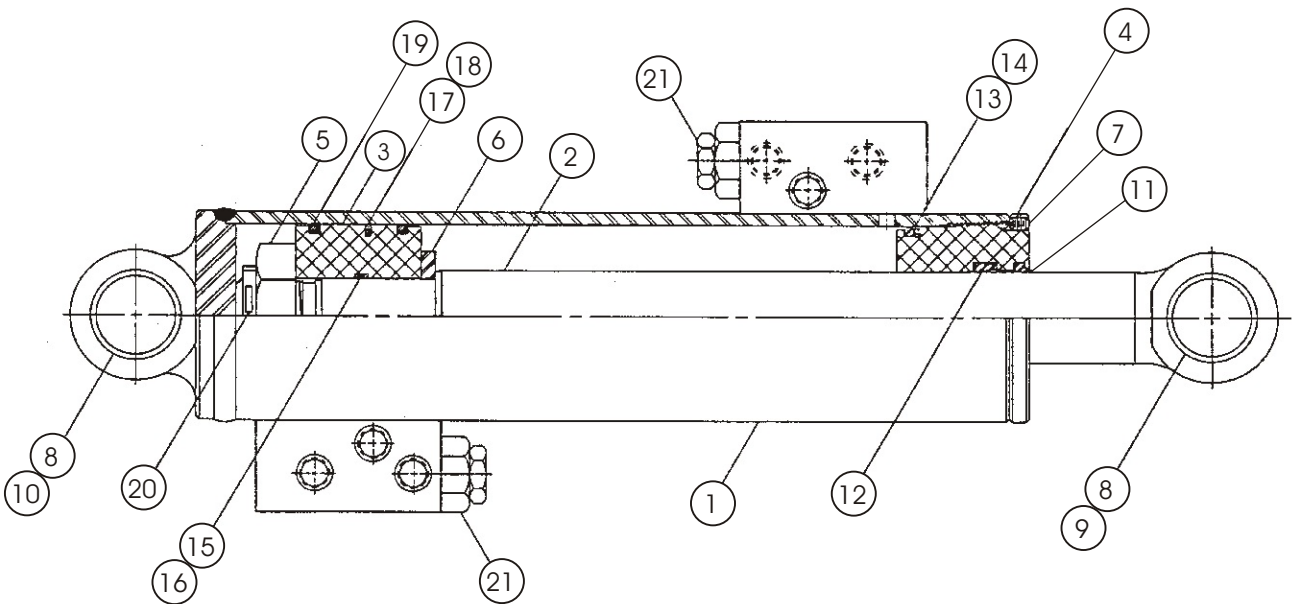


# Cylinder, Slave Level - GBI

Item	Part No	Qty	Description
	0071486	1	Cylinder, Slave level - GBI
	8070624		Seal repair kit - (kit includes items 13 through 21)
1.		1	Tube - (not sold separately)
2.	8070625	1	Rod
3.	8070621	1	Retainer
4.	8070620	1	Bearing
5.	8070619	1	Piston
6.	8070503	1	Nut
7.	8070618	1	Spacer
8.	8070617	1	Spacer
9.	8070564	2	Port plug
10.	8070616	4	Bushing
11.	8070507	1	Lock washer
12.	8070506	1	Capscrew
13.	kit item	2	O-ring - (not sold separately)
14.	kit item	1	Cotter pin - (not sold separately)
15.	kit item	1	Back-up - (not sold separately)
16.	kit item	1	O-ring - (not sold separately)
17.	kit item	2	U-ring - (not sold separately)
18.	kit item	1	O-ring - (not sold separately)
19.	kit item	1	U-ring - (not sold separately)
20.	kit item	1	Wiper - (not sold separately)
21.	kit item	1	Nylon plug - (not sold separately)

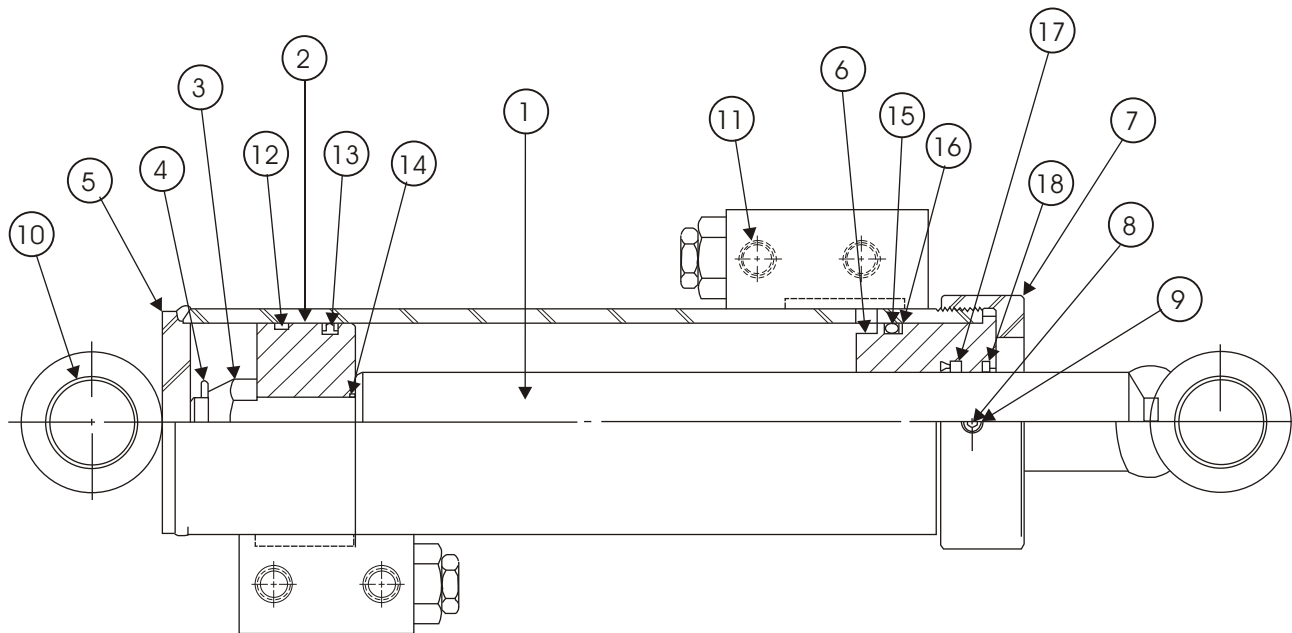


Item	Part No	Qty	Description
	0071486	1	Cylinder, slave level - Seabee
	0072833	1	Seal repair kit - (kit includes items 11 through 20)
1.		1	Case - (not sold separately)
2.	8190036	1	Shaft
3.	8190038	1	Piston
4.	8190074	1	Head gland
5.	8190123	1	Piston nut
6.	8190124	1	Thrust plate
7.	8190125	1	Set screw
8.	2502416	4	Bearing
9.	8190066	1	Bearing spacer, rod end
10.	8190067	1	Bearing spacer, base end
11.	kit item	1	Wiper - (not sold separately)
12.	kit item	1	U-ring - (not sold separately)
13.	kit item	1	O-ring - (not sold separately)
14.	kit item	1	Back-up - (not sold separately)
15.	kit item	1	O-ring - (not sold separately)
16.	kit item	2	Back-up - (not sold separately)
17.	kit item	1	Piston seal - (not sold separately)
18.	kit item	2	O-ring - (not sold separately)
19.	kit item	2	Piston ring - (not sold separately)
20.	kit item	1	Cotter pin - (not sold separately)
21.	6010120	1	Cartridge holding valve - (preset by factory, do not reset)

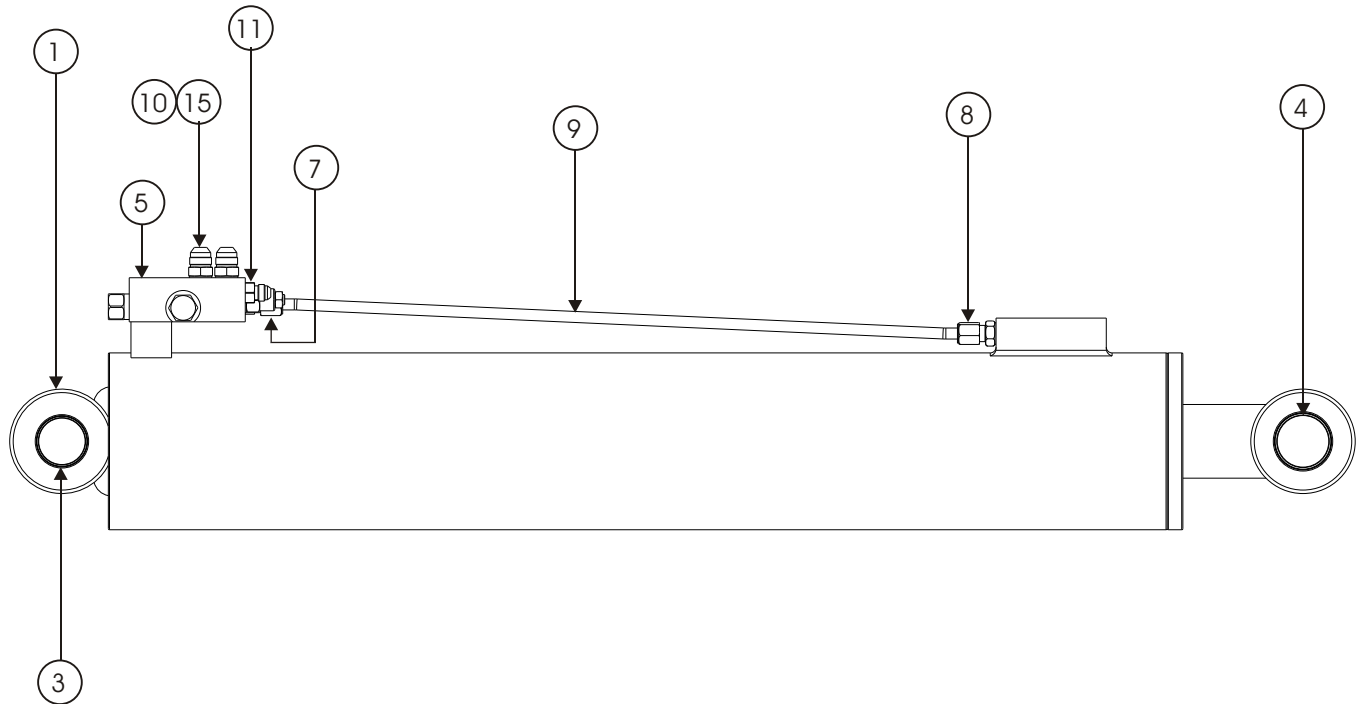


# Cylinder, Slave Level - Prince

Item	Part No	Qty	Description
	0071486	1	Cylinder, slave level - Prince
	8160206	1	Seal repair kit - (kit includes items 4 and 12 through 18)
1.	8160195	1	Piston rod
2.	8160196	1	Piston
3.	6091104	1	Locknut
4.	kit item	1	Cotter pin
5.		1	Butt and tube - (not sold separately)
6.	8160037	1	Gland
7.	8160198	1	Gland cap
8.	8160039	1	Nylon lock
9.	8160038	1	Set screw
10.	8160199	4	Bearing
11.	8160131	6	Plug
12.	kit item	1	Piston ring - (not sold separately)
13.	kit item	1	T-seal - (not sold separately)
14.	kit item	1	O-ring - (not sold separately)
15.	kit item	1	O-ring - (not sold separately)
16.	kit item	1	BU-washer - (not sold separately)
17.	kit item	1	U-cup - (not sold separately)
18.	kit item	1	Wiper - (not sold separately)
19.	8160205	2	Plug

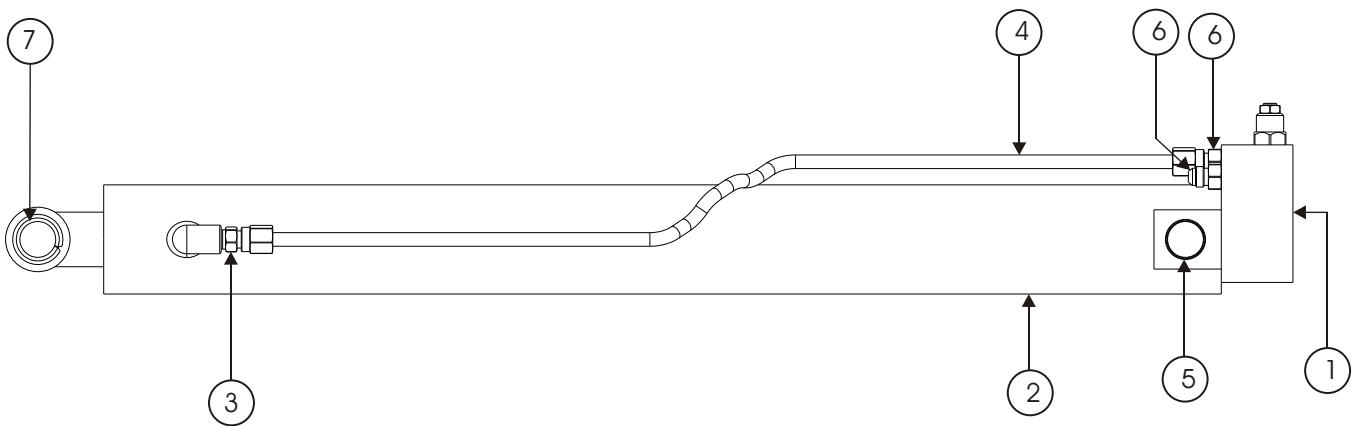


Item	Part No	Qty	Description
	12011A	Ref	Lift cylinder assembly
1.	12011	1	Lift cylinder
	12011K		Seal kit lift cylinder
3.	3624-15	2	Permaglide bush
4.	3624-33	2	Permaglide bush
5.	12012	1	Valve block
6.	3613-08	2	Capscrew, grade 12.9
7.	11611-6	1	Ferlock UNO
8.	11934-7	1	Ferlock BSP
9.	7288-1	1	3/8 hydraulic tube 720mm
10.	7025-012	2	JIC x UN O-ring, male nipple
11.	506-5707	1	JICM x UN O-ring, male nipple
12.	6999-003	2	JICM x JICF swivel nut, 90 ELB

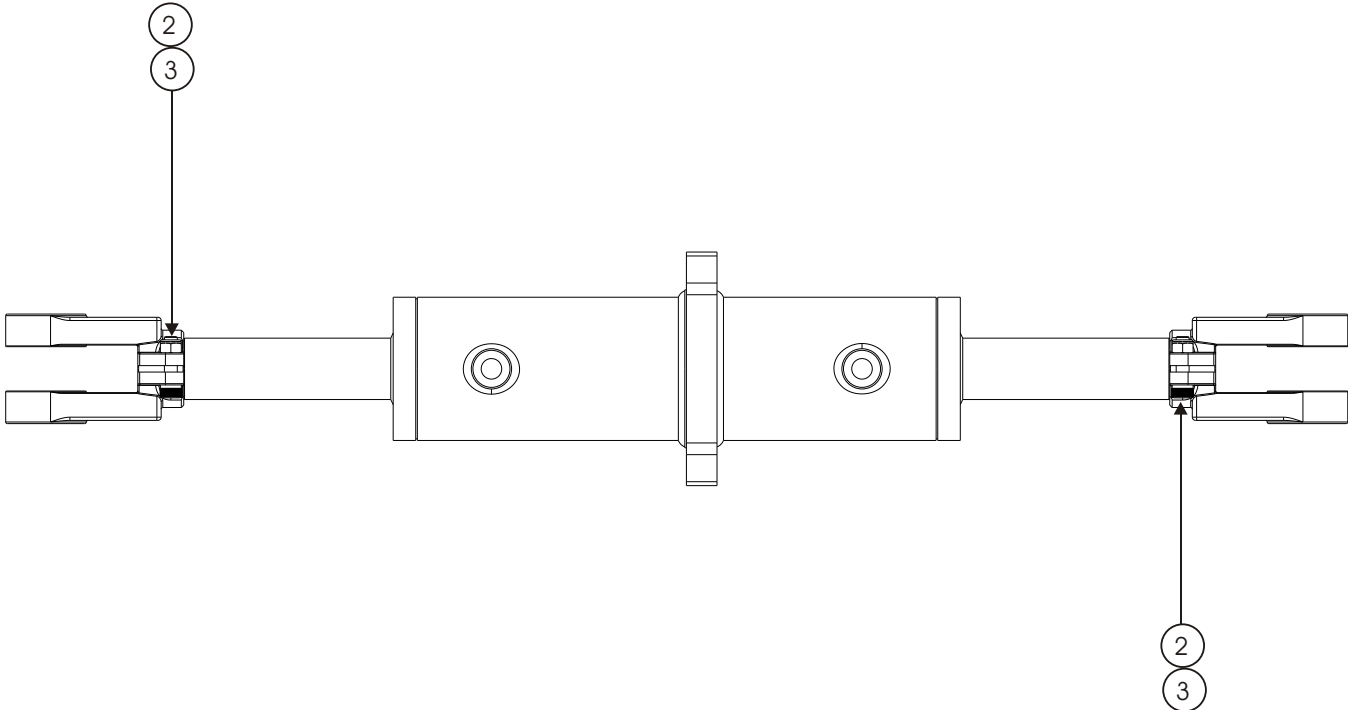


# Jib Lift Cylinder

Item	Part No	Qty	Description
	11884A	Ref	Jib cylinder assembly
1.	11889	1	CB valve block, jib lift
	11884K	1	Seal kit
2.	11884	1	Jib cylinder
3.	7019-001	1	BSPTM x JIC, male nipple
4.	11884-1	1	Jib cylinder oil pipe
5.	3624-29	2	Permaglide bush
6.	506-5707	3	JICM x UN O-ring, male nipple
7.	3626-1	2	Flanged permaglride bush
8.	3613-08	2	Capscrew, grade 12.9



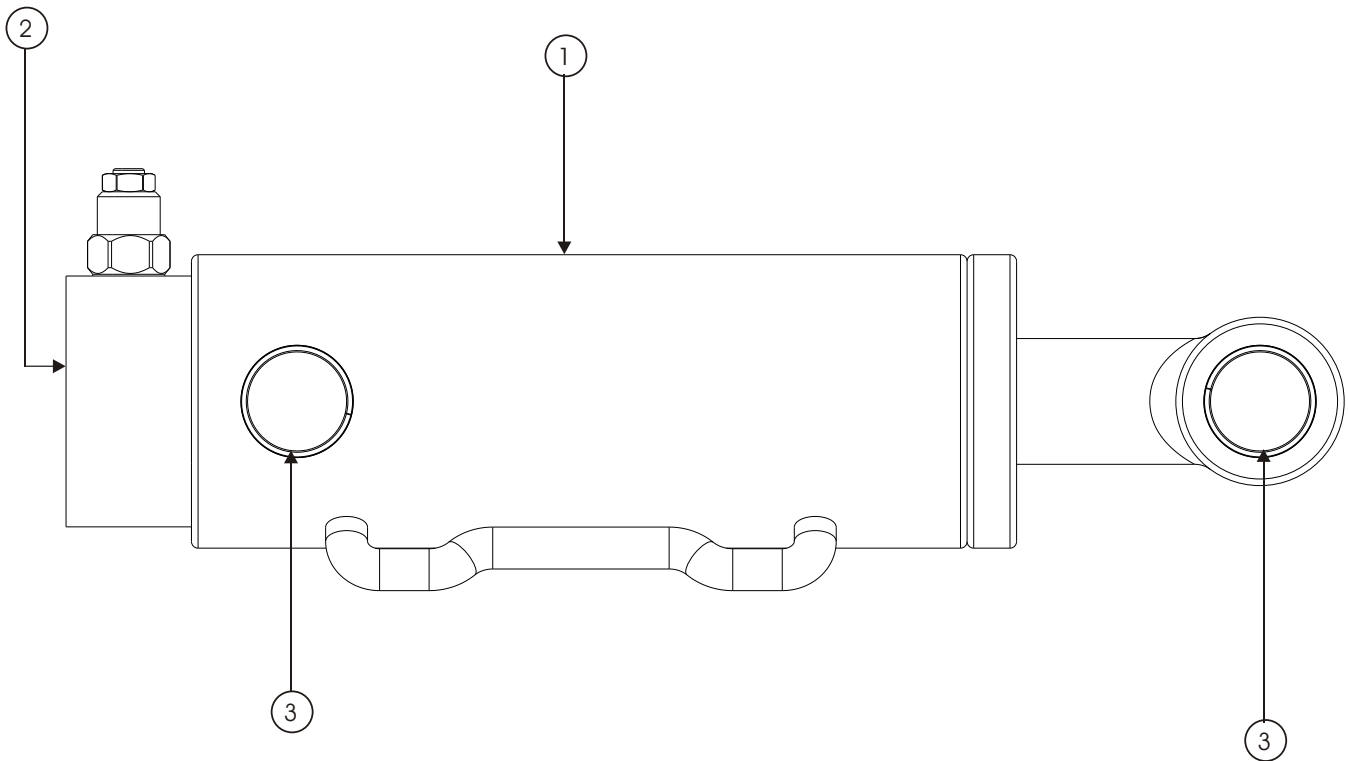
Item	Part No	Qty	Description
1.	11811	1	Steer cylinder
	11811K	1	Seal kit
2.	3613-08	2	Capscrew, grade 12.9
3.	3611-08	2	Nylock nut





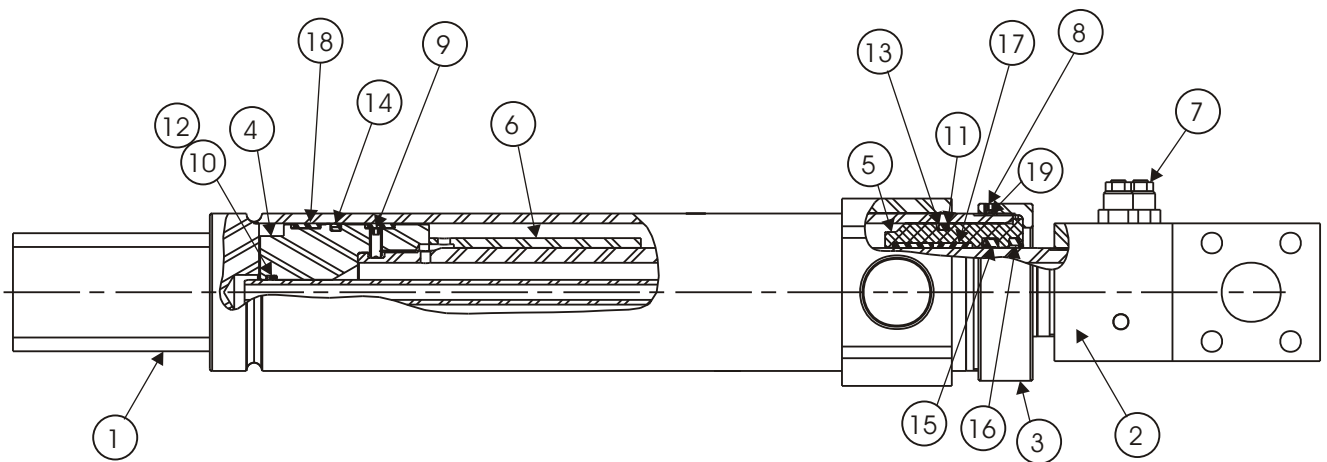
# Axle Cylinder

Item	Part No	Qty	Description
1.	11969	1	Axle cylinder
	11969K	1	Seal kit
2.	12007	1	Dual holding valve
3.	3624-31	4	Permaglide bush, 30 shaft x 40 length



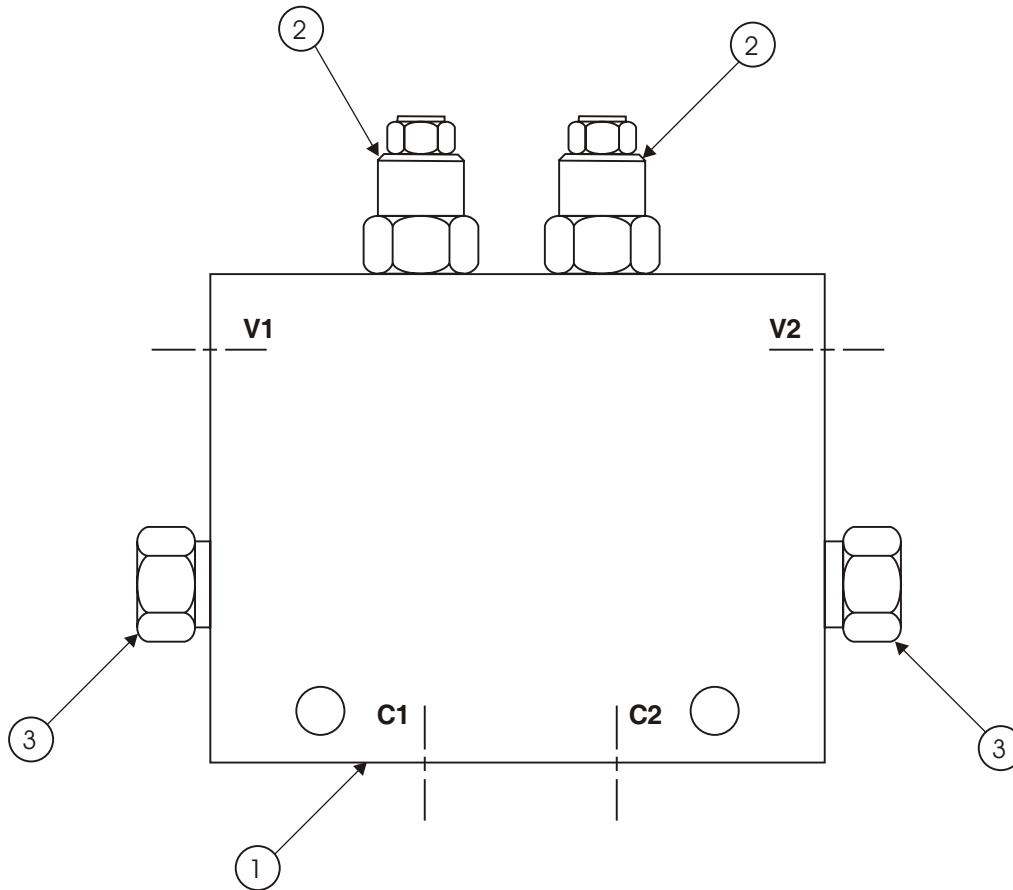
# Cylinder, Extension - Rosenboom

Item	Part No	Qty	Description
	0074906-99	1	Cylinder, extend TB50 - Rosenboom
	6091266	1	Seal repair kit - (kit includes items 10 through 19)
1.		1	Tube - (not sold separately)
2.	6091387	1	Rod
3.	6091255	1	Head gland cap
4.	6091262	1	Piston
5.	6091263	1	Head gland
6.	6091264	1	Rod spacer
7.	6091314	2	Counterbalance holding valve - (preset by factory, do not reset)
8.	5569835	1	Set screw 5/16-18 x 1/4 inch long
9.	975729	1	Set screw 5/16-18 x 3/4 inch long
10.	Kit item	1	O-ring - (not sold separately)
11.	Kit item	1	O-ring - (not sold separately)
12.	Kit item	2	Back-up - (not sold separately)
13.	Kit item	1	Back-up - (not sold separately)
14.	Kit item	1	Diso-pac - (not sold separately)
15.	Kit item	1	U-cup - (not sold separately)
16.	Kit item	1	Rod wiper - (not sold separately)
17.	Kit item	2	Wearband - (not sold separately)
18.	Kit item	2	Wearband - (not sold separately)
19.	Kit item	1	Locking insert - (not sold separately)



# Dual Holding Valve, Platform Rotation SP17

Item	Part No	Qty	Description
1.	6010628	1	Dual holding valve, platform rotation
2.	6010794	2	Cartridge holding calve - (preset by factory, do not reset)
	0150563	1	Seal repair kit
3.	6010640	2	Flow control cartridge



Electrical Schematic Models SP17 / 20  
    With Electric Controls . . . . . 3-3

Electrical Schematic Models SP18 / 22  
    With Electric Controls . . . . . 3-4

Electrical Schematic All Snorkel SP Models  
    With Hydraulic Controls . . . . . 3-5

Wiring, Lower Control Box Schematic  
    All Snorkel SP Models . . . . . 3-6

Upper Controls Assembly . . . . . 3-7

Upper Control Box . . . . . 3-8

Upper Control Box - drawing . . . . . 3-9

Upper Control Box, Hydraulic Controls - drawing. 3-10

Upper Control Box - Hydraulic Controls . . . . . 3-11

Platform Foot Switch . . . . . 3-12

Boom Switch . . . . . 3-13

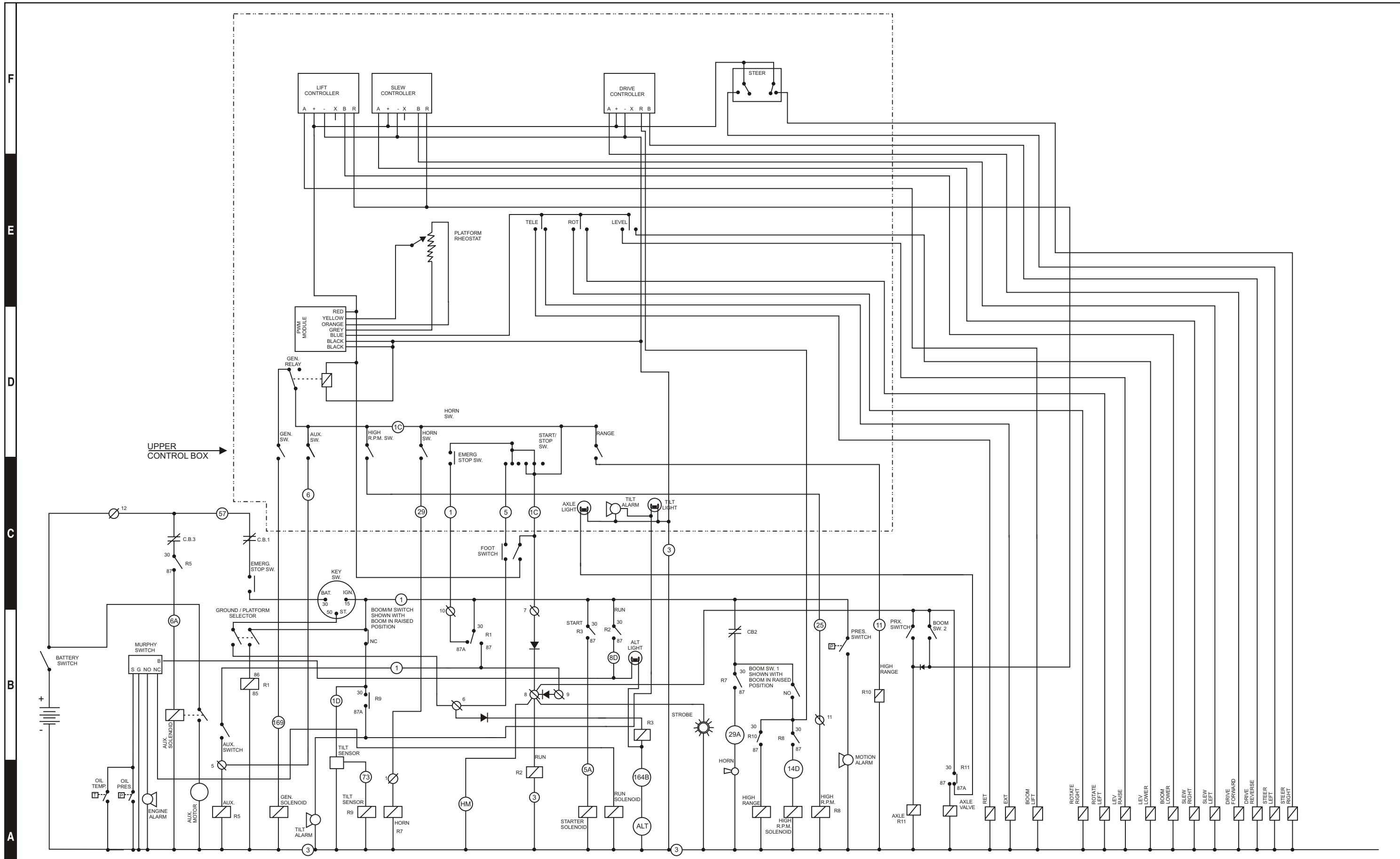
Controller, Drive / Steer . . . . . 3-14

Controller, Drive / Steer - drawing. . . . . 3-15

Controller, Lift / Swing . . . . . 3-16

Controller, Lift / Swing - drawing . . . . . 3-17





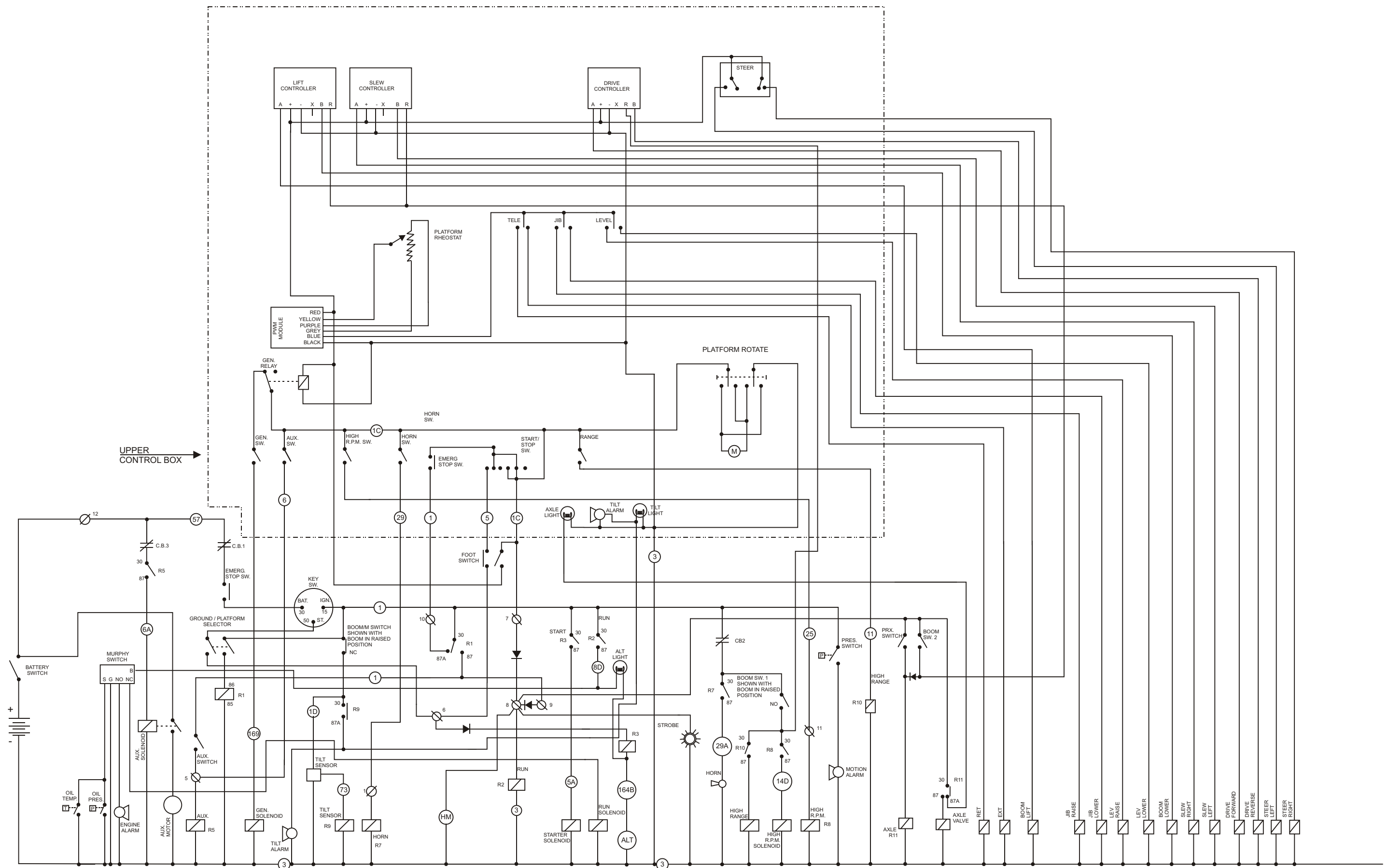
R1 THROUGH R11 ARE RELAYS INSIDE THE LOWER CONTROL BOX  
 NUMBER ① THROUGH ⑳ ARE WIRE NUMBERS  
 TERMINAL 1Ø THROUGH 12Ø ARE TERMINALS IN LOWER CONTROL BOX

TITLE Electrical Schematic  
 Snorkel Models SP17 / SP20  
 with Electric Controls

F  
E  
D  
C  
B  
A

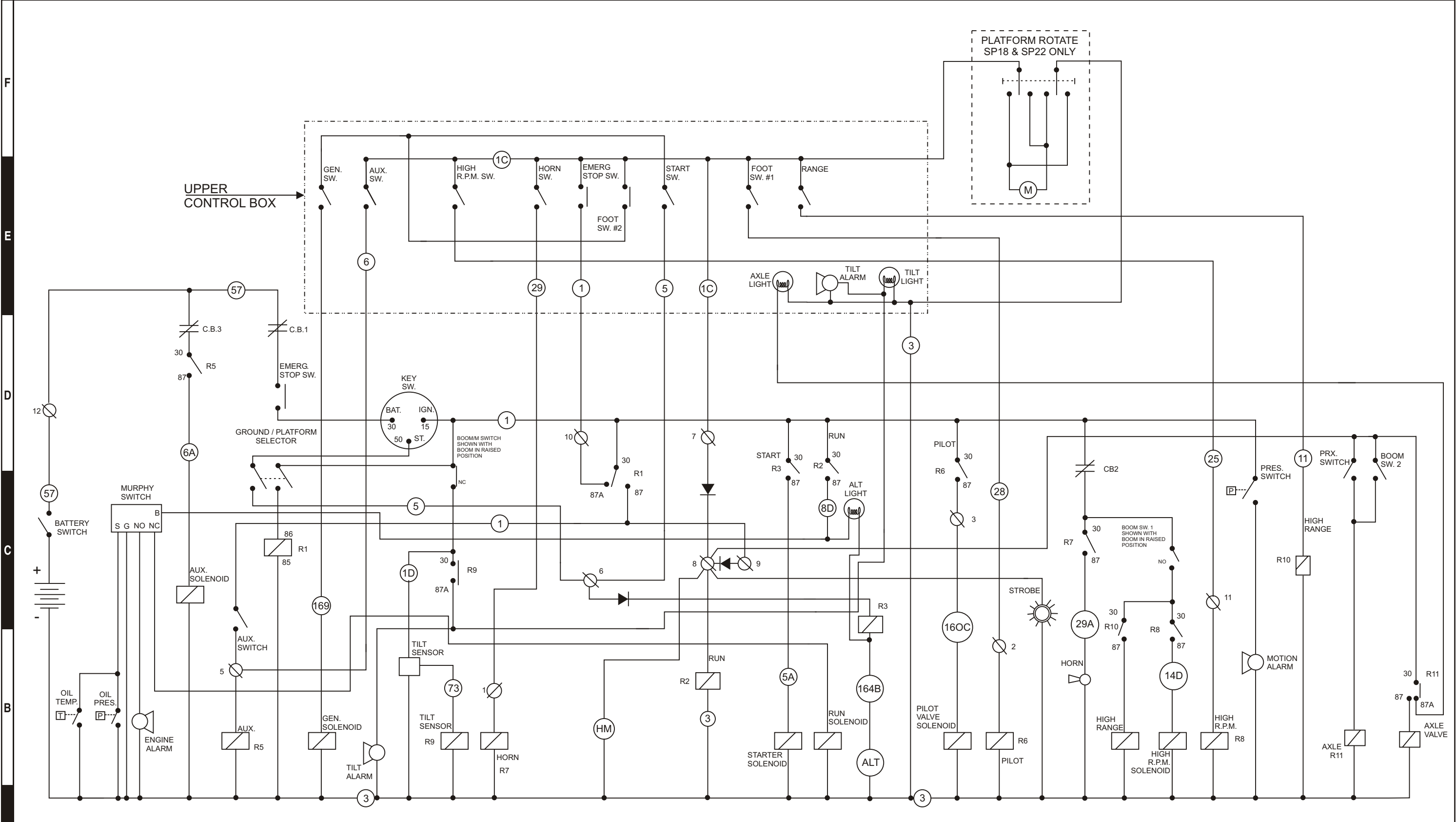
1 2 3 4 5 6 7 8 9

F  
E  
D  
C  
B  
A



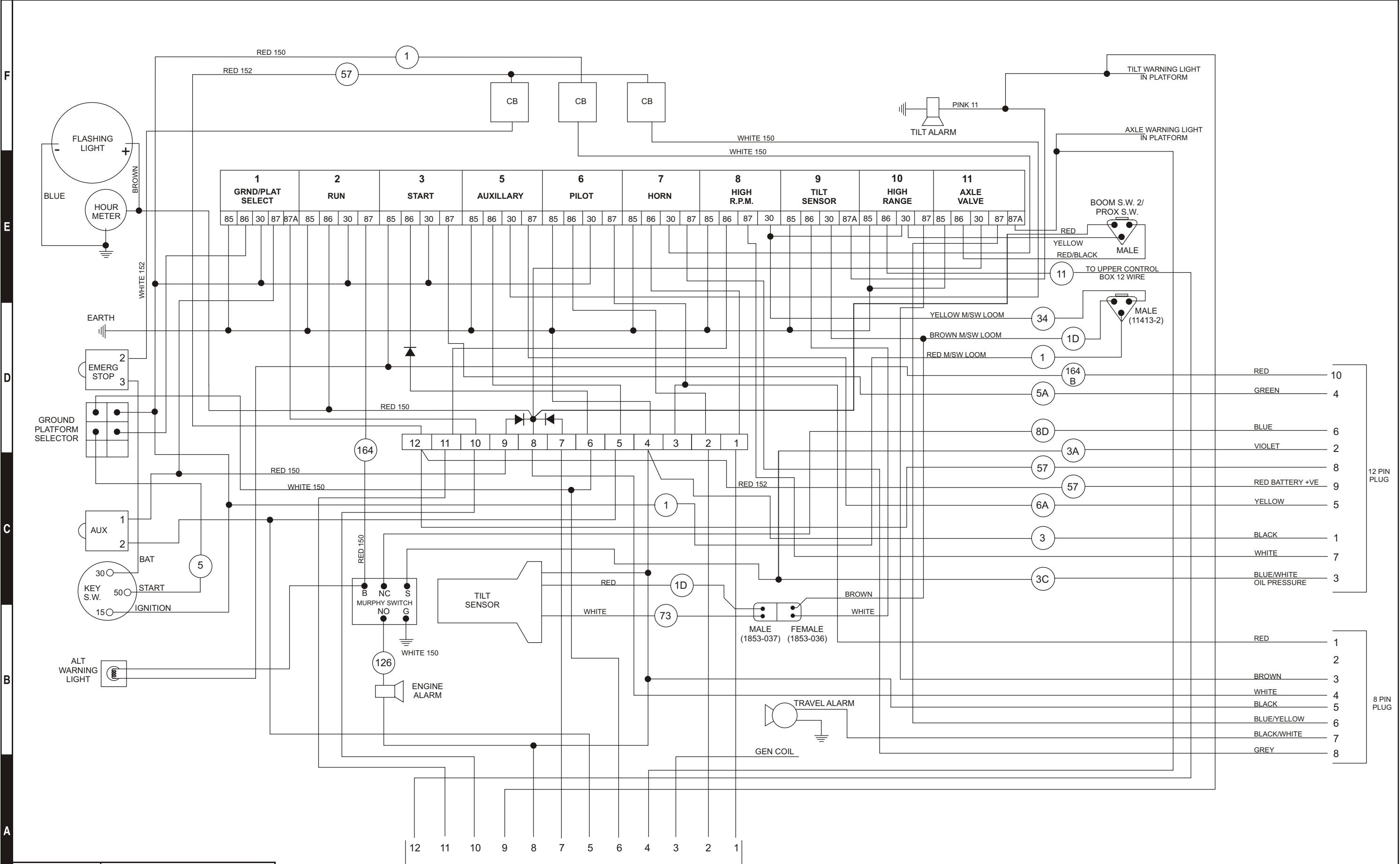
R1 THROUGH R11 ARE RELAYS INSIDE THE LOWER CONTROL BOX  
 NUMBER ⑩ THROUGH ⑹⑨ ARE WIRE NUMBERS  
 TERMINAL ⑩ THROUGH ⑫⑩ ARE TERMINALS IN LOWER CONTROL BOX

1 2 3 4 5 6 7 8 9



R1 THROUGH R11 ARE RELAYS INSIDE THE LOWER CONTROL BOX  
 NUMBER ① THROUGH ⑥⑨ ARE WIRE NUMBERS  
 TERMINAL 1 ∅ THROUGH 12 ∅ ARE TERMINALS IN LOWER CONTROL BOX

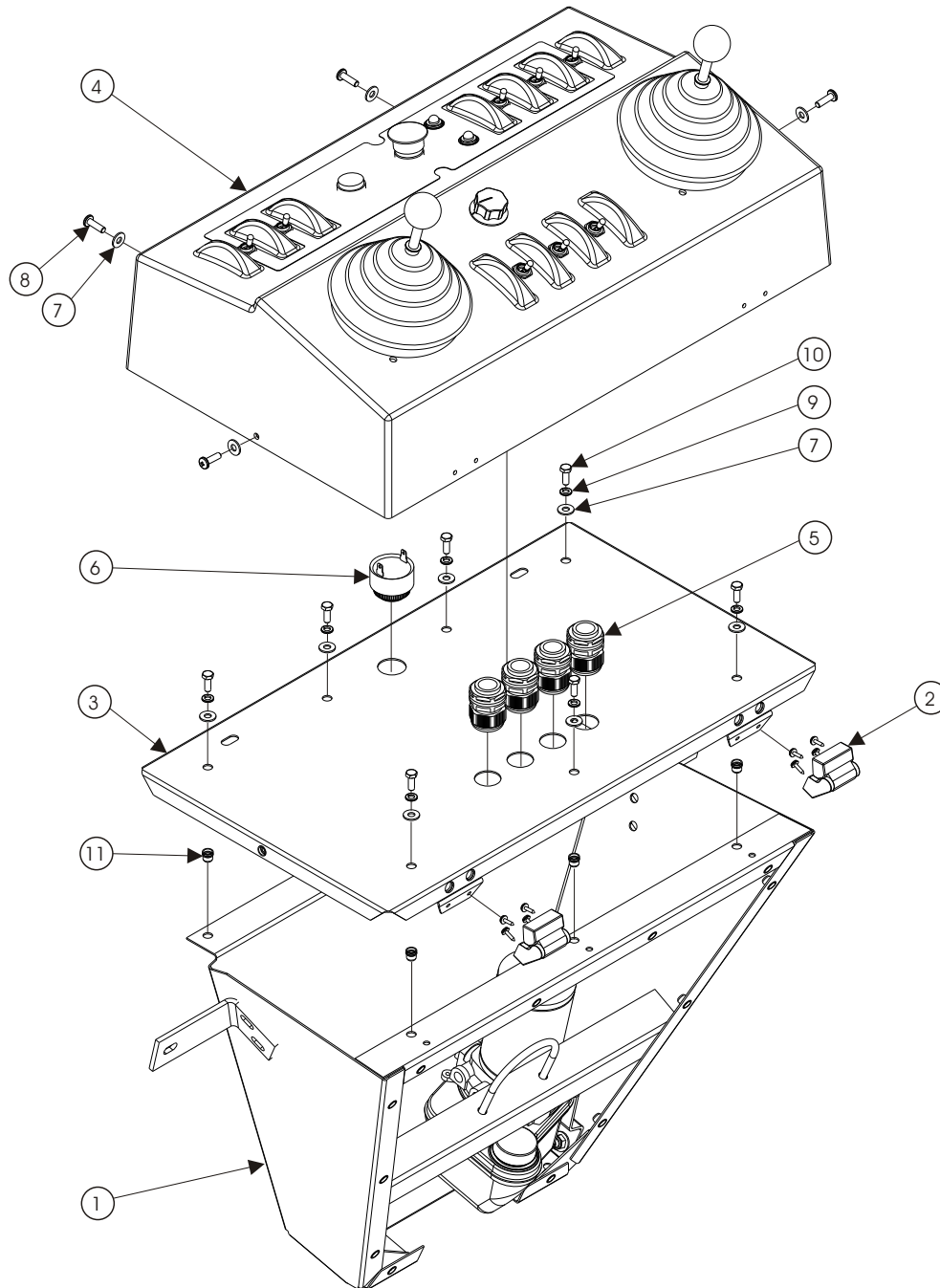




**Snorkel** TITLE Wiring, Lower Control Box

# Upper Controls Assembly

Item	Part No	Qty	Description
1.	11850	1	Upper control box support box
2.	11993-2	2	Plastic hinge
3.	11993-3	1	Control box sealing plate
4.	11993-1	1	Upper control, electric version
5.	1815	4	M25 nylon cable gland
6.	304-0411	1	Alarm buzzer
7.	3603-06	11	Flat washer
8.	3604-06020	4	Machine screw
9.	3605-06	7	Spring washer
10.	3610-06016	7	Bolt, class 8_8
11.	3628-06	7	Nutsert M6



## Upper Control Box - [Pilot Hydraulic Option]

---

Item	Part No	Qty	Description
1.	302-0018	4	Switch, toggle, SPST MOM-OFF
2.	11899	1	Lamp, red, tilt alarm
3.	9775	1	Stop head switch
4.	9776	1	Collar and contact
5.	10116	1	Black push button, horn
6.	11873	1	Decal, upper electrics panel
7.	3040619	1	Pot, 5KOhm
8.	304-0438	1	Speed control knob
9.	3040493	1	Electric controller, slew/lift
10.	11993-1	1	Control box, electric controls
11.	3040492	1	Electric controller, drive/steer
12.	11899-1	1	Lamp, green, axle lockout
13.	3020013	2	Switch, ON/OFF
14.	3028797	1	Switch, ON/OFF/START
15.	3020015	1	Switch, OFF/MOM
16.	12001	1	Decal
17.	10112	1	Collar and contact, horn

F

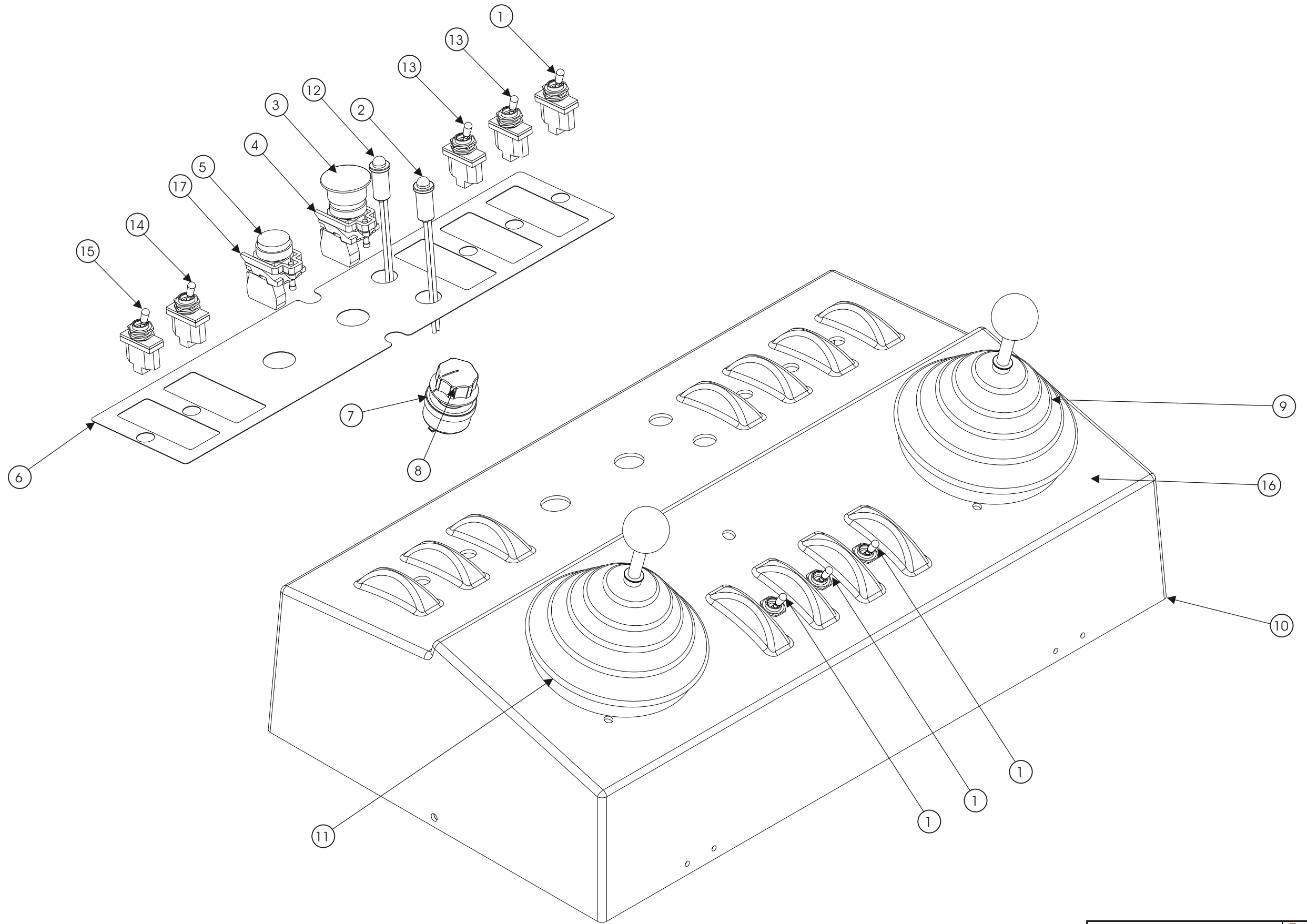
E

D

C

B

A



TITLE Upper Control Box



DWG. 000000

Snorkel model SP17 / SP18

Page 3-9

1

2

3

4

5

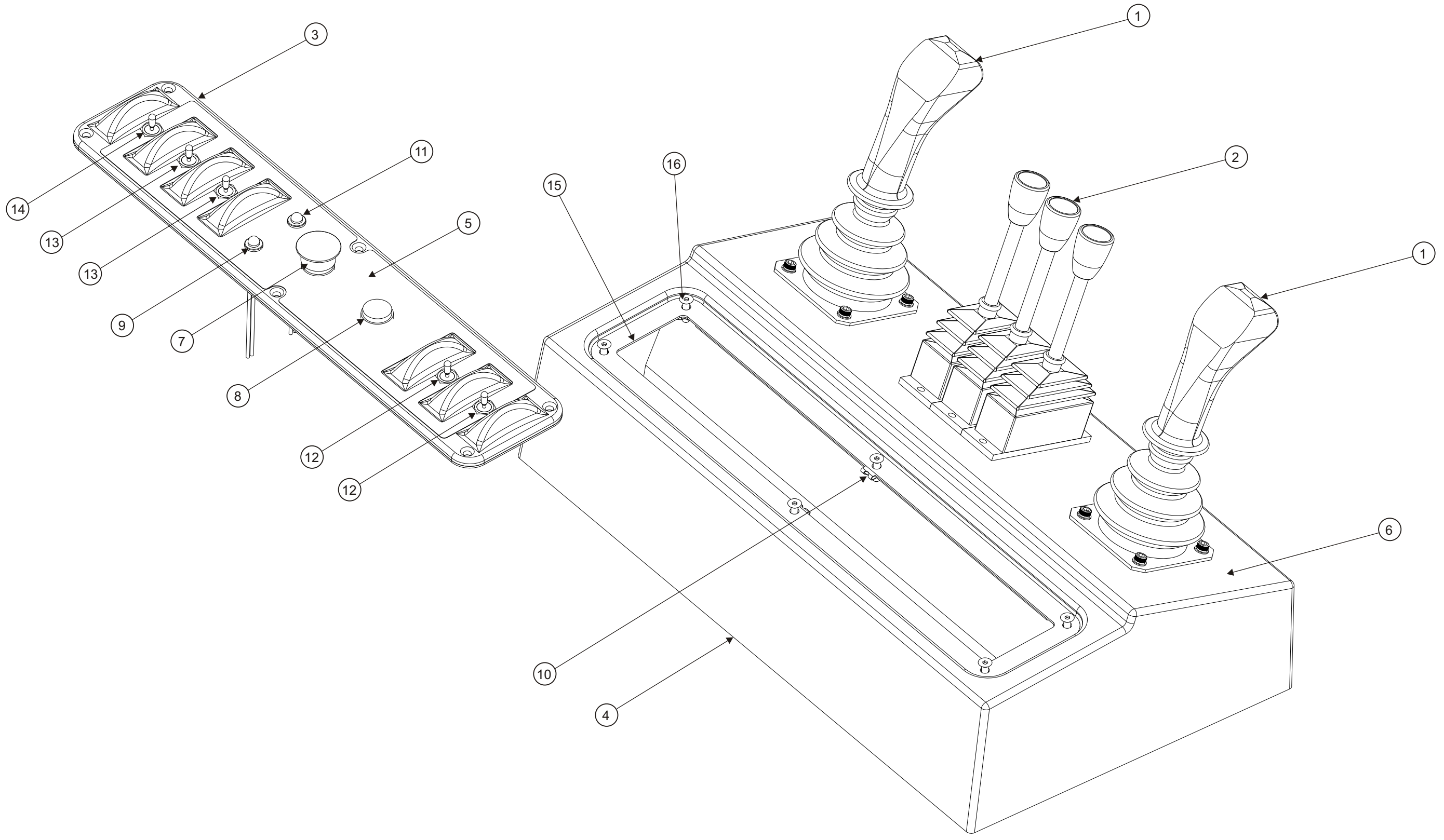
6

7

8

9

F  
E  
D  
C  
B  
A



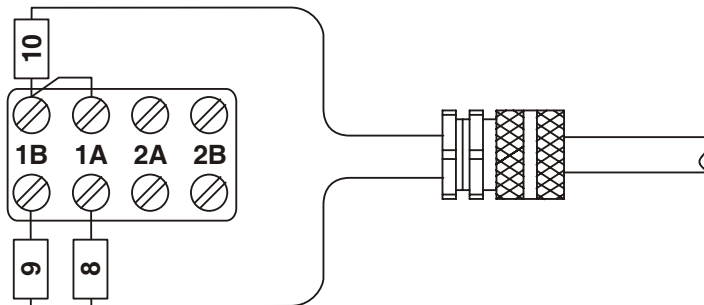
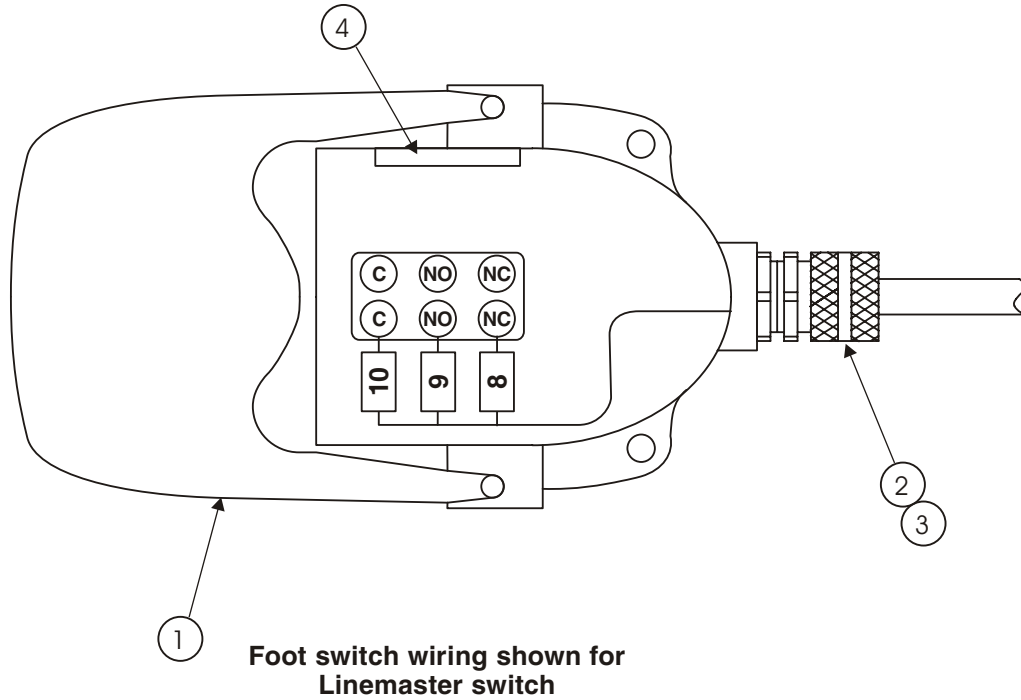
## Upper Control Box - Hydraulic Controls

---

Item	Part No	Qty	Description
1.	10543	2	Proportional valve
2.	10544	1	3 bank valve assembly
3.	11853-3	1	Upper electrics panel
4.	11853-1	1	Fibreglass control box
5.	11856	1	Decal, switch panel SP20
	11873	1	Decal, switch panel SP22
6.	11855	1	Decal, joystick SP20
	11874	1	Decal, joystick SP22
7.	9775	1	Stop switch
8.	10116	1	Horn switch
9.	11899-1	1	Lamp, green
10.	7434	1	Captive nut M6
11.	11899	1	Lamp, red
12.	3020015	2	Switch, momentary
13.	3020013	2	Switch, on/off
14.	3020016	1	Switch, momentary - SP22 only
15.	11853-8	1	Gasket, upper control box electrics panel
16.	3606-06025	6	Countersunk screw M6

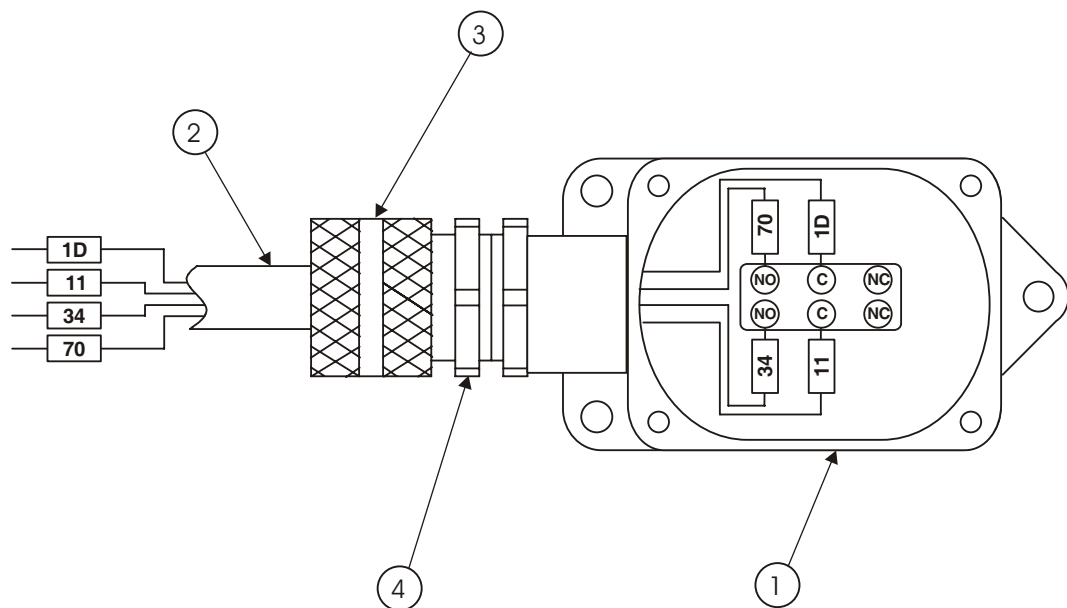
# Platform Foot Switch

Item	Part No	Qty	Description
1.	3020021	1	Foot switch
2.	3040116	1	Connector
3.	3040110	1	Connector locknut
4.	0070967	1	Corrosion inhibitor



Foot switch wiring shown for Square D switch

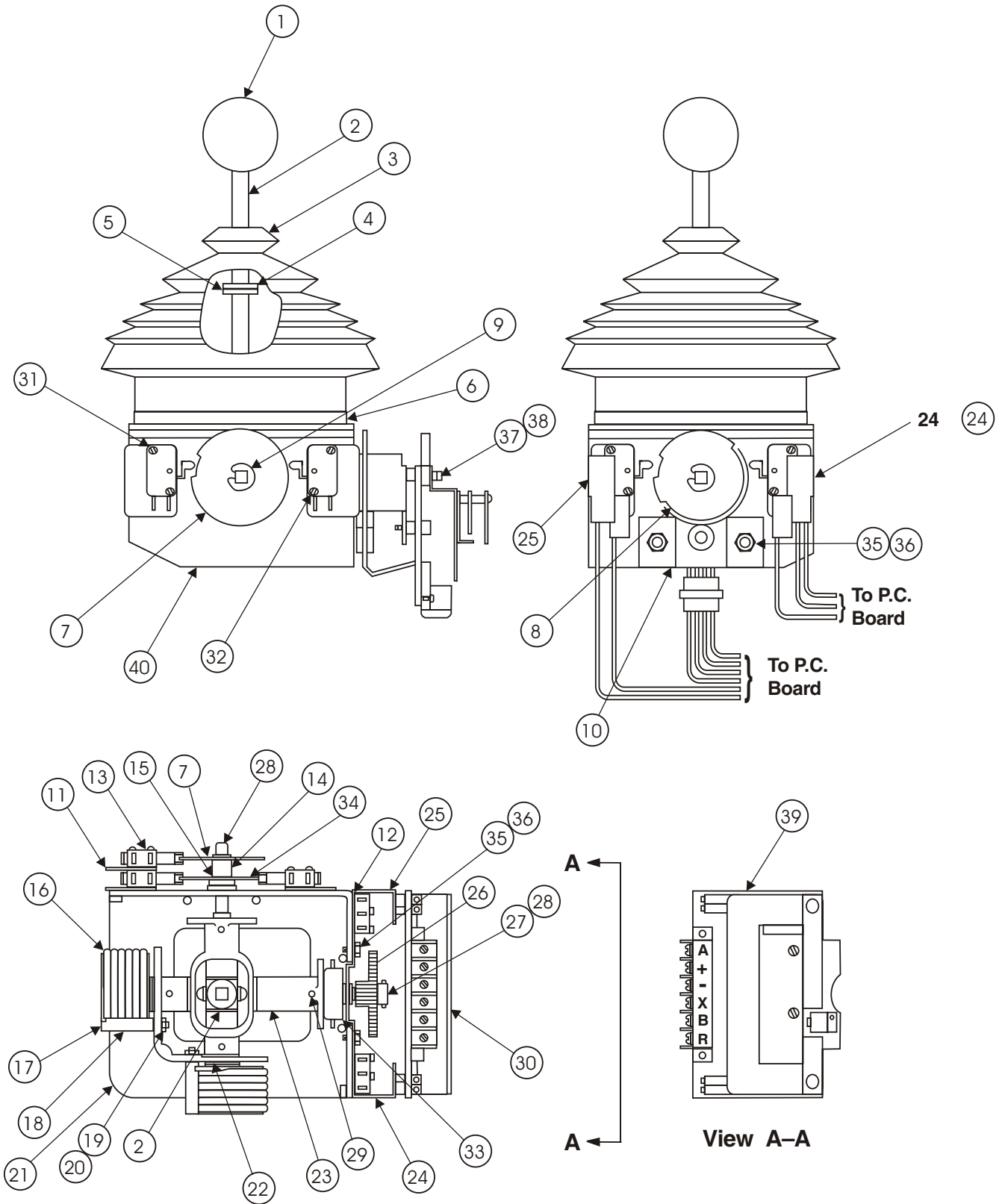
Item	Part No	Qty	Description
	0081975	1	Boom switch
1.	3020019	1	Switch
2.	0081976	1	Wire harness, boom switch
3.	3040187	1	Connector
4.	3040070	1	Locknut





## Controller, Drive / Steer

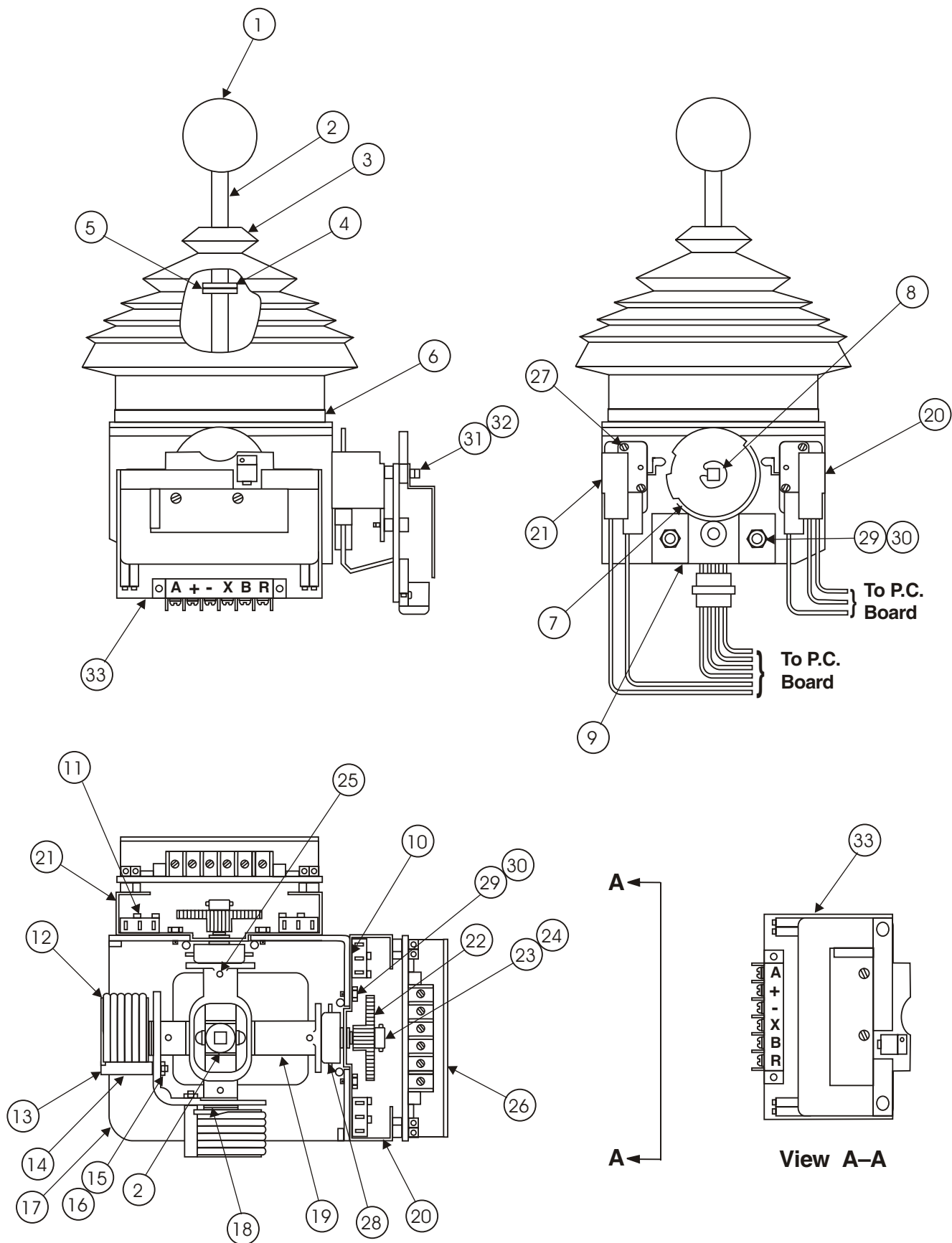
Item	Part No	Qty	Description
	3040492	1	Controller, drive/steer
1.	2660002	1	Knob
2.	3040086	1	Shaft
3.	3040146	1	Boot
4.	8150145	1	Ring
5.	8150146	1	Tension clip
6.	3040169	1	Boot clamp ring
7.	8150147	2	Cam
8.	8150009	1	Fixed cam
9.	8150135	4	"E" clip
10.	8150148	1	Modified bracket
11.	8150138	4	Insulator
12.	8150139	2	Insulator
13.	3020033	6	Microswitch
14.	8150136	2	Cam spacer
15.	8150149	1	Brass washer
16.	8150005	2	Spring return with housing
17.	8150004	2	Spring return bolt
18.	8150150	2	Washer
19.	8150144	2	Washer split 5M black
20.	8150143	2	Nut 5M hex
21.	8150003	1	Casting, modified
22.	3040271	4	Bushing
23.	8150094	1	Second axis
24.	8150151	1	Bracket, right side
25.	8150152	1	Bracket, left side
26.	3040073	1	Drive gear
27.	3040072	1	Slave gear
28.	8150082	2	Blank cam shaft
29.	8150013	4	Tension pin
30.	8150153	1	Heat sink
31.	8150140	4	Screw #4-40 x 1-1/4 inch long
32.	8150137	4	Screw #4-40 x 3/4 inch long
33.	3040392	1	Pot with bracket and connector
34.	8150084	2	Fixed cam
35.	8150154	2	Screw metric M4 x 6mm long din 85
36.	8150155	2	Washer metric M4
37.	8150141	2	Washer metric M3.5 x 16mm long din 85
38.	8150156	4	Washer
39.	8150142	1	Gate for drive/steer controller
40.	3040518	1	Circuit board, 33 Hertz - (trim pots not preset, controller adjustment required)



## Controller, Lift / Swing

---

Item	Part No	Qty	Description
	3040493	1	Controller, lift/swing
1.	2660002	1	Knob
2.	3040086	1	Shaft
3.	3040146	1	Boot
4.	8150145	1	Ring
5.	8150146	1	Tension clip
6.	3040169	1	Boot clamp ring
7.	8150009	1	Fixed cam
8.	8150135	4	"E" clip
9.	8150148	2	Modified bracket
10.	8150138	4	Insulator
11.	3020033	4	Microswitch
12.	8150005	2	Spring return with housing
13.	8150004	2	Spring return bolt
14.	8150150	2	Washer
15.	8150144	2	Washer split 5M black
16.	8150143	2	Nut 5M hex
17.	8150003	1	Casting, modified
18.	3040271	4	Bushing
19.	8150094	1	Second axis
20.	8150151	2	Bracket, right side
21.	8150152	2	Bracket, left side
22.	3040073	2	Drive gear
23.	3040072	2	Slave gear
24.	8150082	4	Blank cam shaft
25.	8150013	4	Tension pin
26.	8150153	2	Heat sink
27.	8150140	8	Screw #4-40 x 1-1/4 inch long
28.	3040392	2	Pot with bracket and connector
29.	8150154	4	Screw metric M4 x 6mm long din 85
30.	8150155	4	Washer metric M4
31.	8150141	4	Screw metric M3.5 x 16mm long din 85
32.	8150156	8	Washer
33.	3040518	1	Circuit board, 33 Hertz - (trim pots not preset, controller adjustment required)

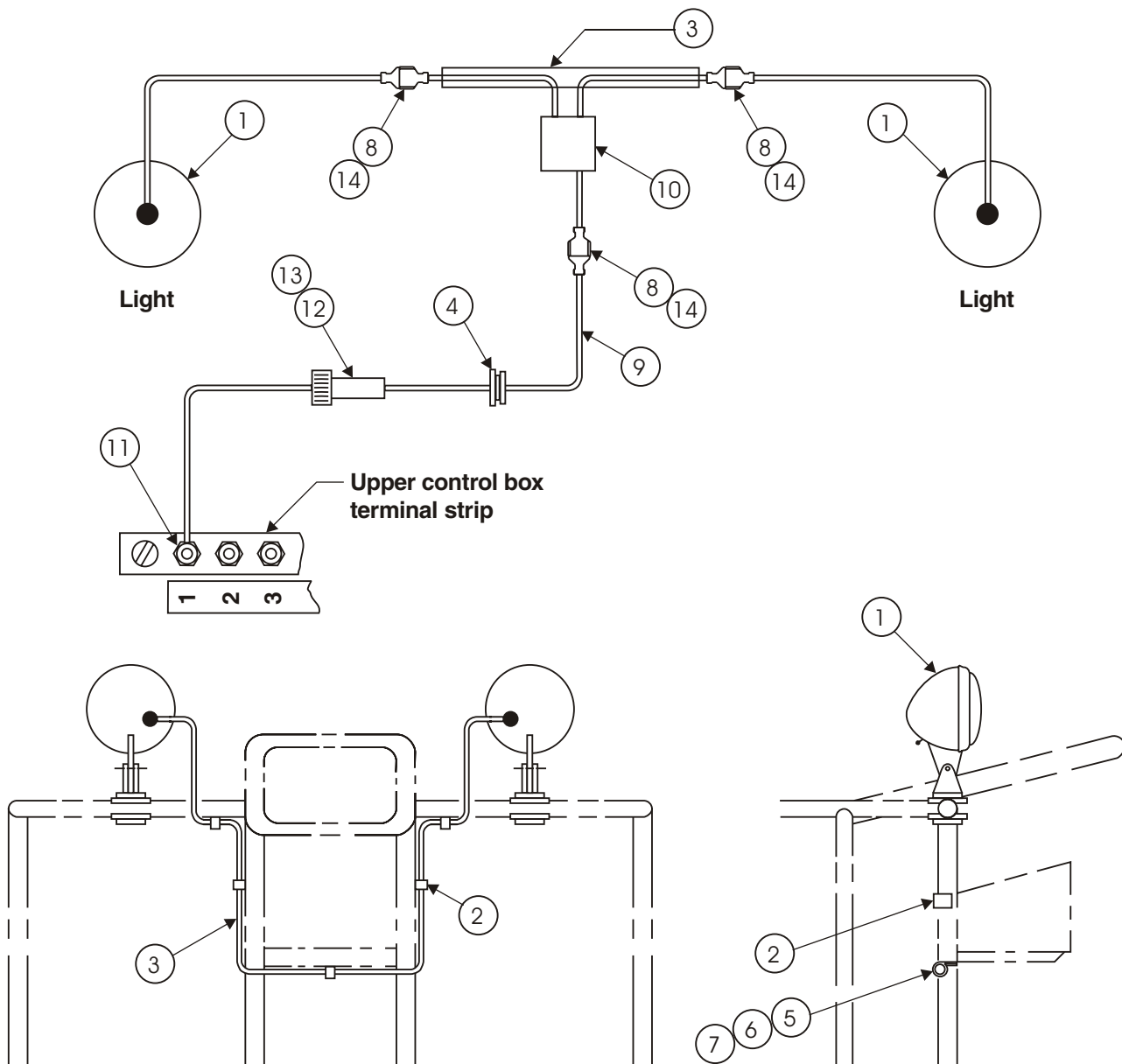




Work Lights ..... 4-3  
Tow Option Assembly ..... 4-4  
Tow Option Assembly - drawing ..... 4-5  
Steel Covers - drawing ..... 4-6  
Steel Covers ..... 4-7



Item	Part No	Qty	Description
1.	3064413	2	Light, incandescent with clamp bracket
	3067620	2	Light, halogen with clamp bracket
2.	5093019	7	Hose clamp
3.	3090019	1	Flexgard tube, 80 inch long
4.	5569003	1	Grommet
5.	970029	7	Capscrew 1/4-20 x 3/4 inch long hex head grade 5
6.	986019	7	Washer 1/4 medium flat
7.	987099	7	Washer 1/4 medium lock
8.	3040082	3	Terminal .250 tab male slip-on fully insulated 16/14 wire
9.	3011601	1	Wire, 16 gauge single conductor x 80 inch long
10.	3040114	1	Connector, in-line 16/14 wire
11.	3044161	1	Terminal #10 stud insulated 16/14 wire
12.	3040038	1	Fuse holder, in-line
13.	3040039	1	Fuse, 10 amp capacity
14.	3040083	3	Terminal .250 tab female slip-on fully insulated 16/14 wire



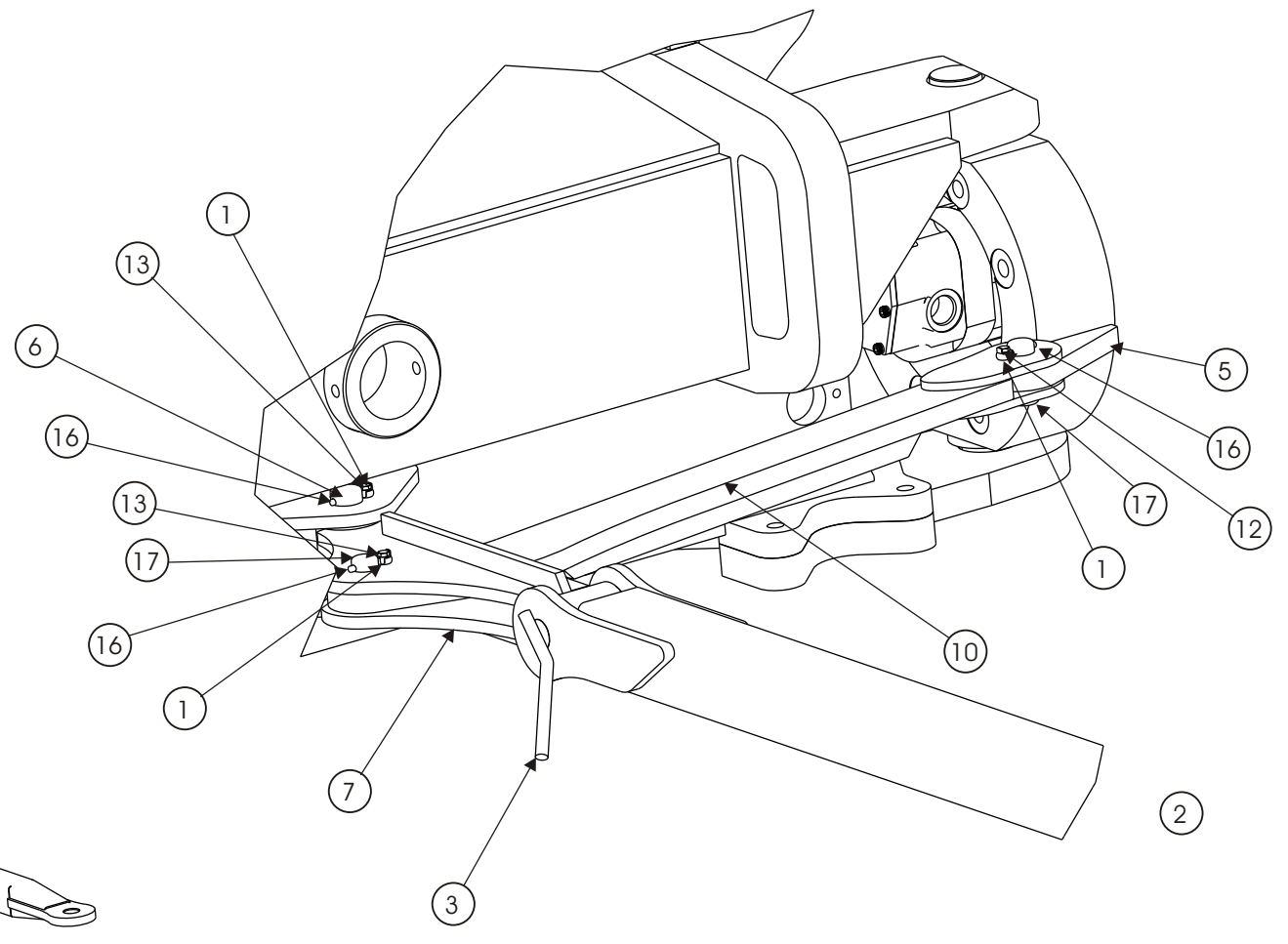
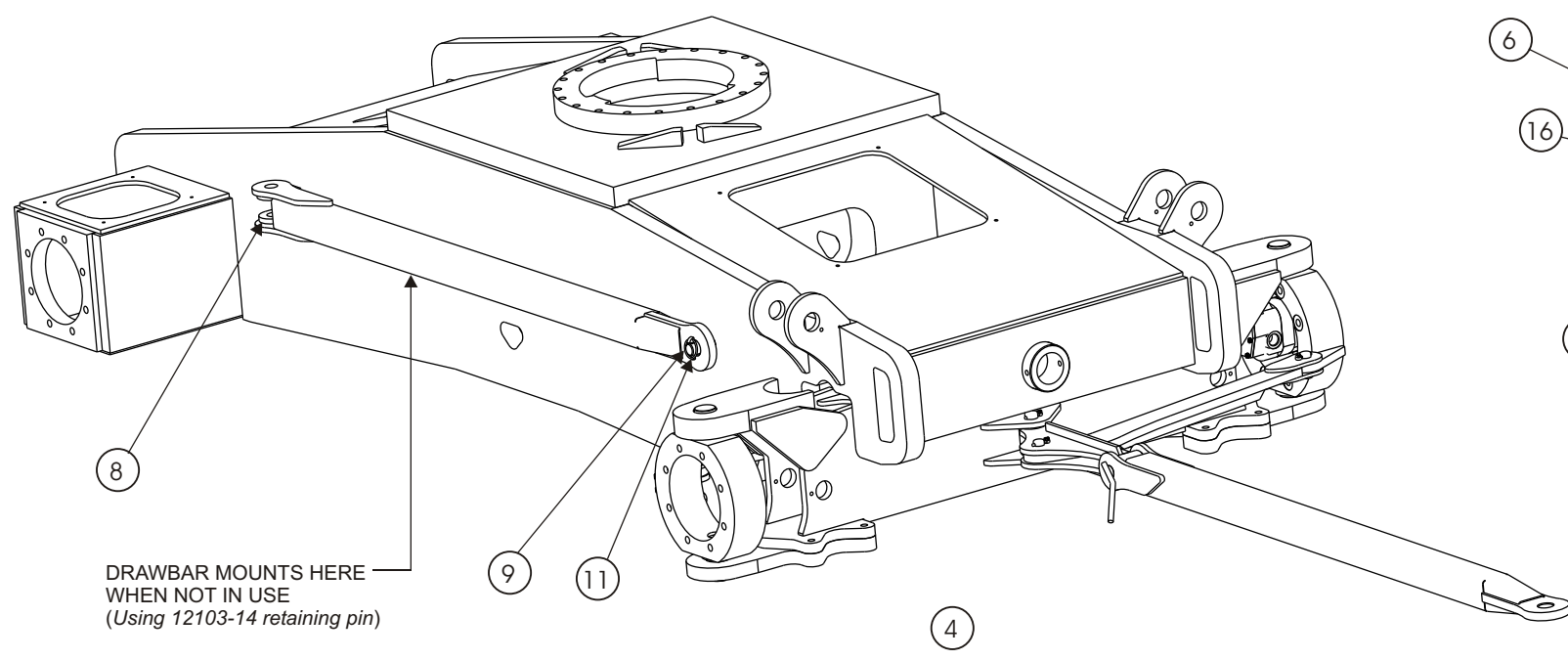
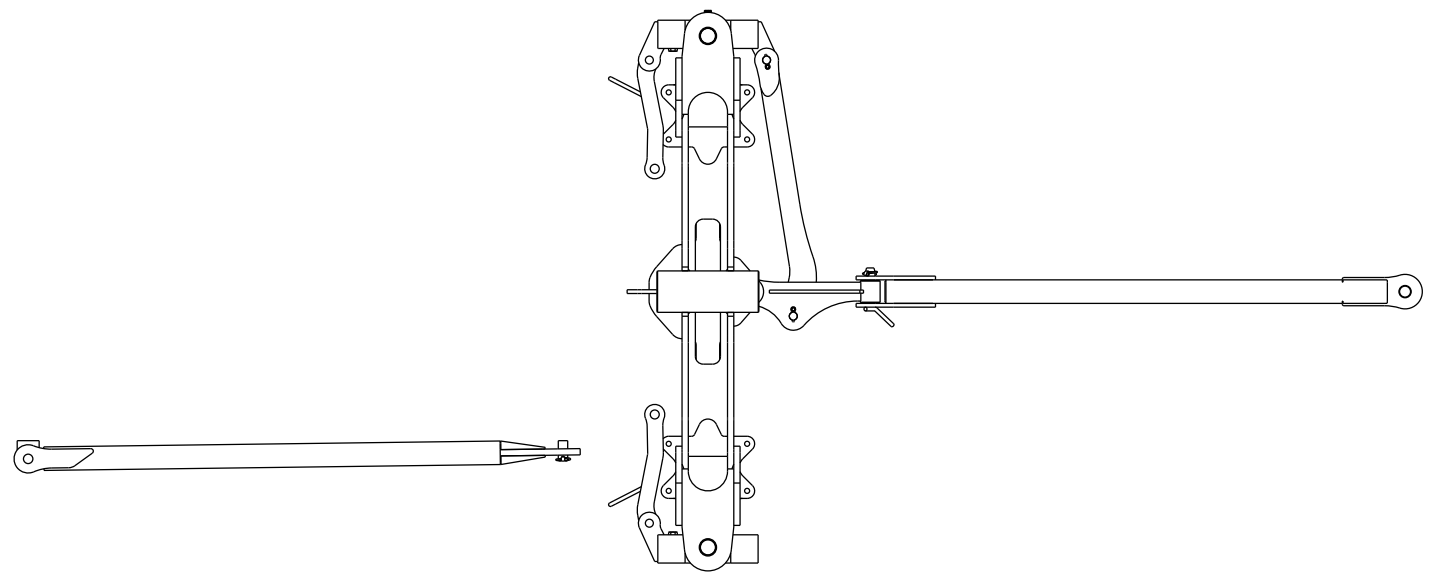
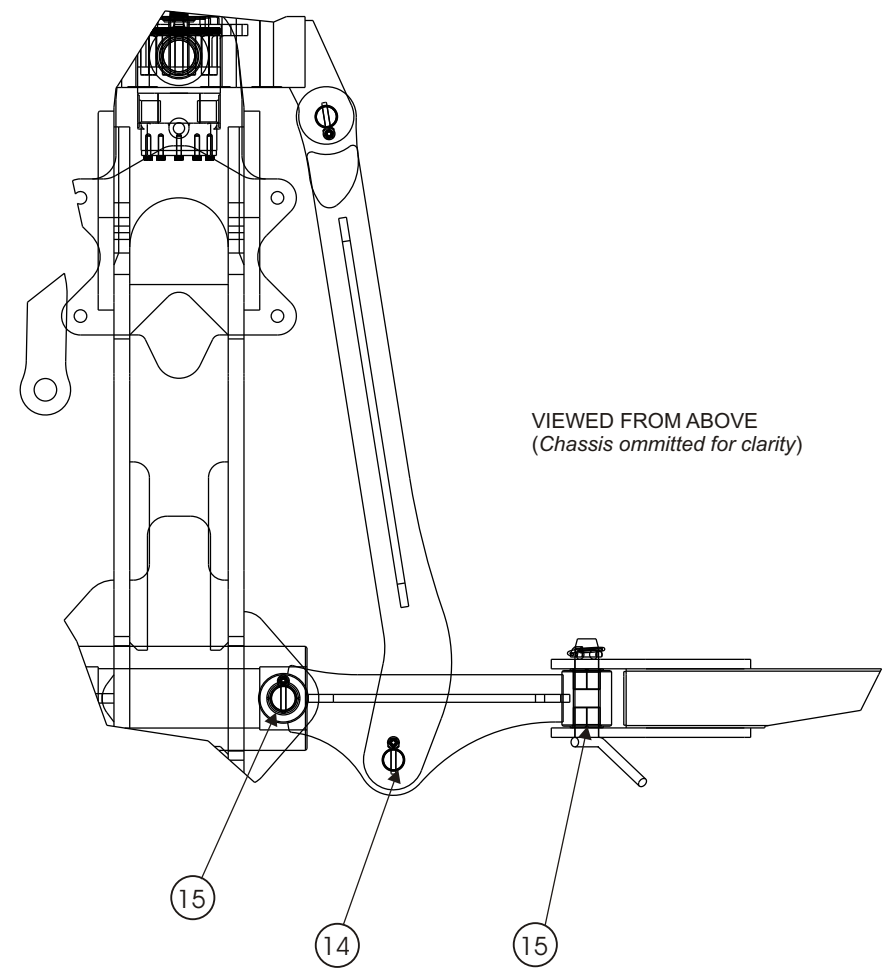


## Tow Option Assembly

---

Item	Part No	Qty	Description
1.	11492-1	3	Tab washer
2.	12103-1	1	Drawbar
3.	12103-14	1	Pin, drawbar
4.	12103-17	2	Pivot plate
5.	12103-18	1	Steer lug
6.	12103-19	1	Pin
7.	12103-2	1	Towbar pivot fulcrum
8.	12103-20	2	Retaining plate
9.	12103-21	1	Retaining pin
10.	12103-3	1	Link
11.	1771	2	Lynch pin
12.			
13.			
14.	3624-3	2	Bush
15.	3626-6	4	Flanged bush
16.	8628	3	Pin keeper
17.	9985	2	Pin

F  
E  
D  
C  
B  
A



1 2 3 4 5 6 7 8 9

F

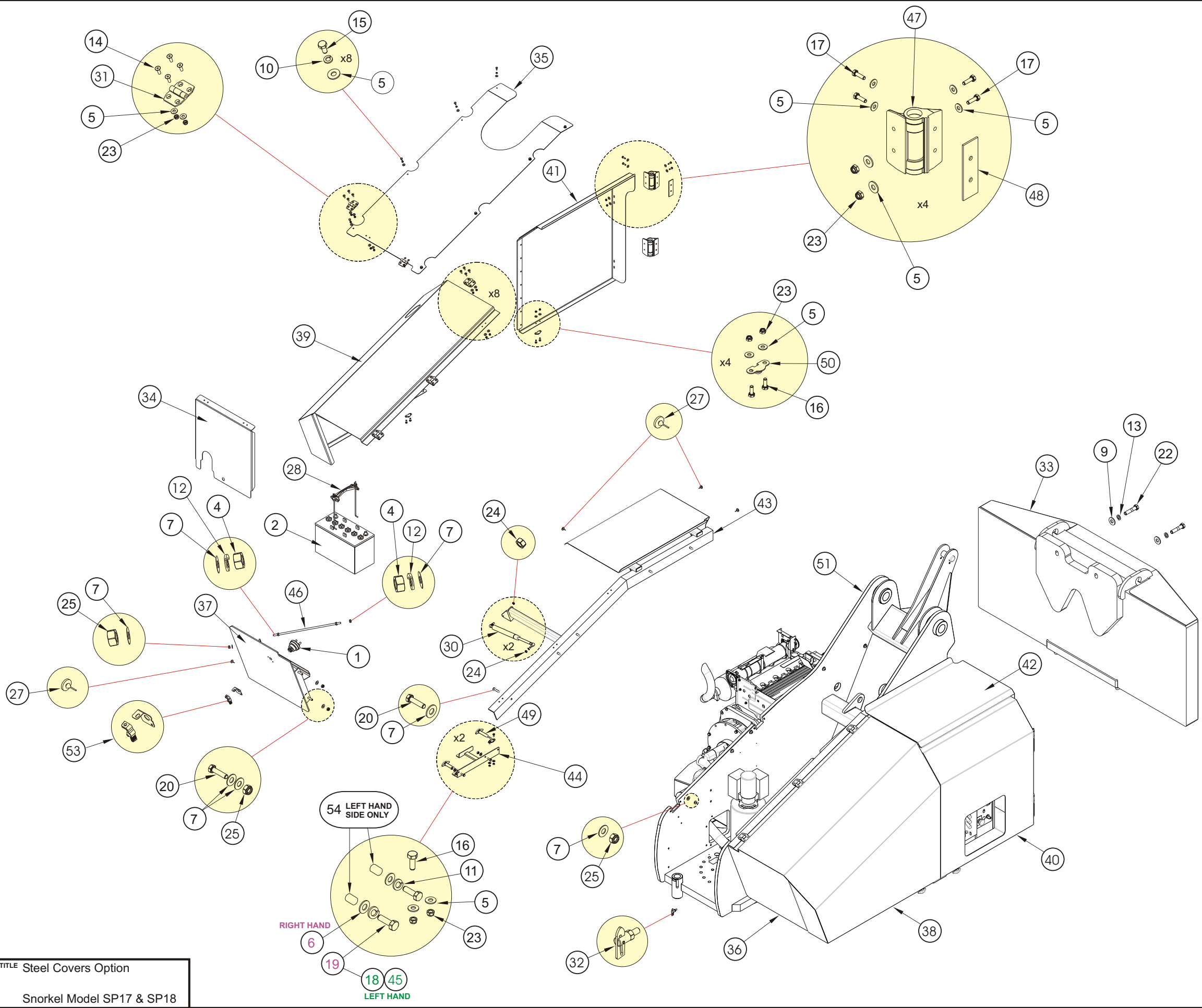
E

D

C

B

A



Item	Part No.	Qty	Description
1.	302-0049	1	Battery disconnect switch
2.	3052	1	Battery
4.	3602-10	4	Nut, M10, plated
5.	3603-06	80	Washer, plain, M6 x 16, ZP
6.	3603-08	4	Washer, plain, M8 x 19, ZP
7.	3603-10	36	Washer, plain, M10 x 24, ZP
8.	3603-16HD	9	Washer, plain, M16HD, galvanised
9.	3603-20	2	Washer, plain, M20 x 37, ZP
10.	3605-06	8	Washer, spring, M6
11.	3605-08	4	Washer, spring, M8
12.	3605-10	4	Washer, spring, M10
13.	3605-20	2	Washer, spring, M20
14.	3606-06020	32	Screw, socket head, countersunk, M6 x 20, ZP
15.	3610-06012	8	Bolt, M6 x 12, C8.8, ZP
16.	3610-06016	16	Bolt, M6 x 16, C8.8, ZP
17.	3610-06020	16	Bolt, M6 x 20, C8.8, ZP
18.	3610-08020	2	Bolt, M8 x 20, C8.8, ZP
19.	3610-08025	2	Bolt, M8 x 25, C8.8, ZP
20.	3610-10040	14	Bolt, M10 x 40, C8.8, ZP
21.	3610-16120	8	Bolt, M16 x 120, C8.8, ZP
22.	3610-20090	2	Bolt, M20 x 90, C8.8, ZP
23.	3611-06	56	Nut, nylock, M6
24.	3611-08	4	Nut, nylock, M8
25.	3611-10	18	Nut, nylock, M10
27.	7895	8	Anti rattle button
28.	10268-4	1	Battery clamp
30.	11906	2	Gas strut assembly
31.	11927	8	Hinge assembly, steel
32.	12649	1	Anti luce latch
33.	13084	1	Counterweight weld
34.	13105-32	1	Centre front panel
35.	13105-47	1	Tunnel cover
36.	13105-49	1	Nose panel, left hand side
37.	13105-50	1	Nose panel, right hand side
38.	13105-51	1	Flap weld assembly, left hand side
39.	13105-52	1	Flap weld assembly, right hand side
40.	13105-53	1	Door weld assembly, left hand side
41.	13105-54	1	Door weld assembly, right hand side
42.	13105-55	1	Frame subweld, left hand side
43.	13105-56	1	frame subweld, right hand side
44.	13105-73	2	Latch bracket assembly
45.	13105-74	2	Shim, left hand latch bracket assembly (as required)
46.	13105-83	2	Brace rod
47.	13160	4	Hinge assembly, plastic
48.	13160-1	4	Shim for hinge
49.	13165	4	Spring latch
50.	13165-1	4	Latch striker
51.	11818A	1	Column assembly
53.	300840	1	Battery isolator lock kit
54.	3628-08	2	Nutsert

## I

90 day or 150 hour checklist, 0-15  
90 day or 150 hour maintenance, 0-12

## A

Axle check valve, 2-8  
Axle cylinder relief valve, 2-8  
Axle pilot valve, 2-8  
Axle pressure reducing valve, 2-8

## B

Ball shuttle valve, 2-8  
Batteries, 0-14  
Boom switch, 3-13

## C

Centrepost, 2-14  
Counterbalance valve, 2-8  
Cylinder, master level - Rosenboom, 2-16

## D

Decal, battery disconnect, 1-37  
Decal, blue arrow, 1-37  
Decal, diesel, 1-37  
Decal, do not reach, 1-37  
Decal, do not use boom, 1-37  
Decal, electrical hazard, Australia only, 1-37  
Decal, electrocution, 1-37  
Decal, electrocution hazard, 1-37  
Decal, engine tray latch, 1-37  
Decal, foam filled tires, 1-37  
Decal, greasing instruction, 1-37  
Decal, harness points, 1-37  
Decal, hydraulic fluid level, 1-37  
Decal, hydraulic oil, 1-37  
Decal, hydraulic oil min/max, 1-37  
Decal, inspect wire ropes, 1-37  
Decal, joystick SP20, 3-11  
Decal, joystick SP22, 3-11  
Decal, limit switch, 1-37  
Decal, literature compartment, 1-37  
Decal, Lower control box, 1-37  
Decal, lower control valve SP20, 1-37  
Decal, lower control valve SP22, 1-37  
Decal, lug nut torque, 1-37  
Decal, must not operate, 1-37  
Decal, New Zealand made, 1-37  
Decal, operation check list, 1-37  
Decal, platform capacity, 1-37  
Decal, safety harness, 1-37  
Decal, serial number, 1-37  
Decal, Snorkel, 1-37  
Decal, SP20, 1-37  
Decal, SP22, 1-37  
Decal, switch panel SP20, 3-11  
Decal, switch panel SP22, 3-11  
Decal, upper controls SP20, 1-37  
Decal, upper controls SP22, 1-37  
Decal, upper controls switch panel SP20, 1-37  
Decal, upper controls switch panel SP22, 1-37  
Decal, warning, New Zealand only, 1-37  
Decal, yellow arrow, 1-37  
Door hinges and latches, 0-14  
Drive control valve, 2-8  
Drive motor, 2-10  
Dual holding valve, 2-26

## E

Engines, 0-14

## F

Fibreglass control box, 3-11  
Flow control valve, brakes, 2-8  
Flow control valve, drive, 2-8  
Foot switch, 3-12

## G

Gear hubs, 0-13

## H

Horn switch, 3-11  
Hydraulic oil reservoir, 0-13  
Hydraulic oil return filter, 0-14

## L

Lubricants, 0-13

## M

Magnetic proximity switch, 1-32  
Maintenance, 0-9  
Maintenance schedules, 0-10  
Manifold Block, 2-8  
Manual organisation  
    See Maintenance information - page 3  
Manual Organization, 0-9  
Motion control valve, turntable swing, 1-6  
Motor, swing drive, 1-6

## O

Oil fuel tank, 2-12

## P

Platform rotator, 0-14, 1-28  
Platform rotator, Parker, 2-13  
Pre-operational Inspection, 0-11  
Pressure gun application, 0-13  
Pylon, platform rotator, 1-28

## R

Rotation bearing, 0-13  
Rotation gear teeth and pinion, 0-13

## S

Slew sensor , 1-32  
Stop switch, 3-11  
Swing drive, 0-13, 1-6  
Swing drive, complete, 1-6  
Swing drive, perfection, 1-8

## T

Torque Chart, 0-17

## U

Upper electrics panel, 3-11

## W

Warranty - Limited  
    See inside front cover

## Y

Yearly or 500 hour maintenance, 0-12