

**BOSS**<sup>TM</sup>

# X-Series

The ultimate range of push  
around micro powered  
access platforms



**MAINTENANCE  
MANUAL**



**EN 280**

**IP24**



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# SECTION 1 - DESCRIPTION, SPECIFICATION AND OPERATION

## 1.1 INTRODUCTION

This Maintenance Manual provides the necessary information to enable maintenance to be undertaken on BoSS X-Series single person push around micro scissor lifts. Maintenance engineers should read and understand all the information contained in this manual before carrying out work on any BoSS X-Series machine.

This manual does not apply to BoSS X3 machines with serial numbers between YMG 11001 and 11300.

Additional copies of this Maintenance Manual may be obtained from the manufacturer please see contact details in Section 1.3 on this page. The manual is also available to download from our website at [bossaccesstowers.com](http://bossaccesstowers.com)

## 1.2 INTENDED USE

BoSS X-Series machines have been designed to comply with the safety requirements of the European Machinery, Low Voltage and Electromagnetic Compatibility Directives and in accordance with the European Standard EN 280 Mobile Elevating Work Platforms – Design calculations – Stability criteria – Construction – Safety – Examinations and tests.

BoSS X-Series machines are intended to lift one person, plus essential tools and materials, to enable work to be undertaken at height. BoSS X-Series machines are designed for indoor use only and must be used on level ground which is able to support the weight of the machine and its maximum safe working load. Typical applications include maintenance, cleaning, painting, fit out work etc. at varying heights above ground level.

### **WARNING**

The user must obtain the guidance and written approval of the manufacturer in the event of any special working methods or conditions which are outside those specified in this section.

## 1.3 MODIFICATIONS

No modifications shall be made to any BoSS X-Series machine unless the manufacturer has given full written approval. If in doubt please contact us for advice:

Youngman Group Ltd.  
The Causeway  
Maldon  
Essex  
CM9 4LJ  
United Kingdom

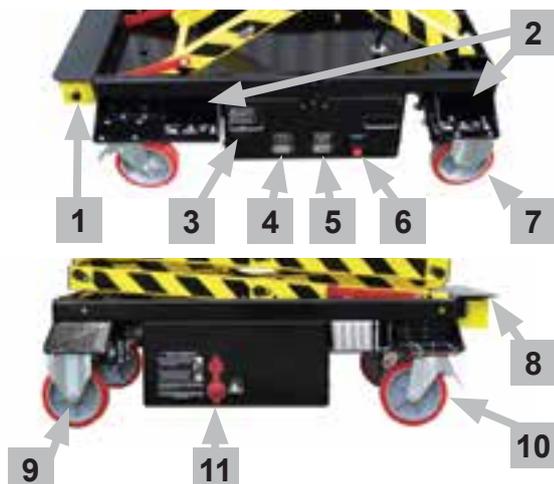
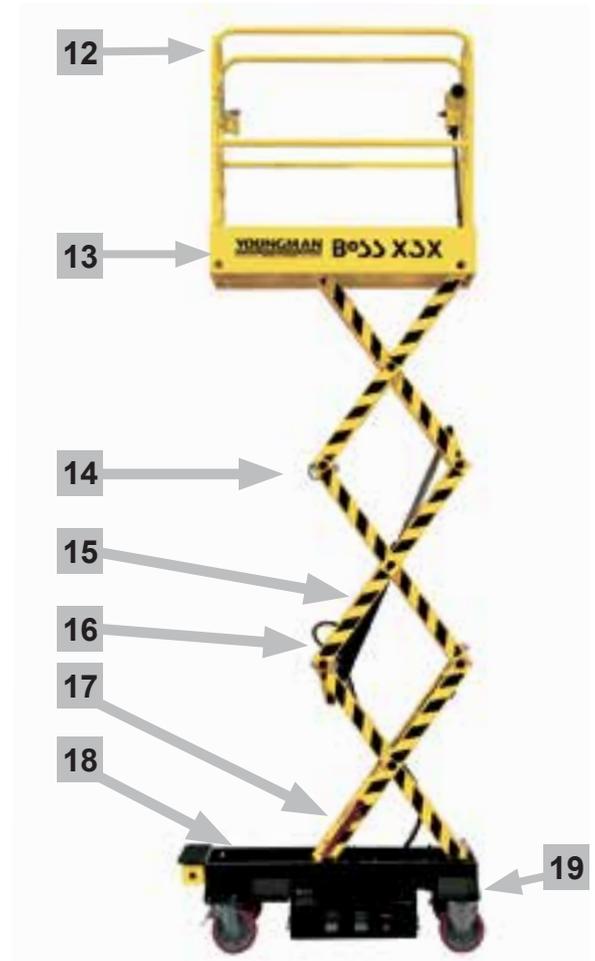
**t** +44 (0) 1621 745900

**f** +44 (0) 1621 859845

**e** [uk.customer@wernerco.com](mailto:uk.customer@wernerco.com)

## 1.4 TERMINOLOGY

- 1** Charging cables and guardrail tools tray
- 2** Forklift access, hoisting and transit strap points
- 3** Battery charging connection point
- 4** Battery charging indicator
- 5** Battery charge level indicator
- 6** Base unit emergency stop
- 7** Smooth roll castors with non marking tyres
- 8** Step up to platform
- 9** Fixed castors with auto braking applied as the platform is raised
- 10** Swivel castors with click on brakes
- 11** Emergency lowering release valve
- 12** Guardrails
- 13** Work platform
- 14** Scissor assembly
- 15** Hydraulic ram
- 16** Pressure loss valve
- 17** Fail-safe props
- 18** Chassis
- 19** Winching eye
- 20** Handset control unit
- 21** Instructions for Use storage tube
- 22** Access gate
- 23** Slip resistant deck incorporating lanyard point



## 1.5 TECHNICAL DATA

|   | BoSS X3X                                     | BoSS X3                 | BoSS X2                |
|---|--|-------------------------|------------------------|
| <b>Rated load, manual forces and weight:</b>        |  |                         |                        |
| Safe working load                                   | 240kg  |                         |                        |
| <i>equivalent to</i>                                | 1 person (80kg) plus 160kg tools & materials |                         |                        |
| Maximum allowable manual force                      | 200N (interior use only)                     |                         |                        |
| Maximum allowable chassis inclination               | 1.25°  | 1.5°                    | 1.5°                   |
| Maximum allowable wind speed                        | 12m/s  |                         |                        |
| Maximum load per wheel                              | 450kg  |                         |                        |
| Machine weight                                      | 370kg  | 349kg                   | 313kg                  |
| Maximum point loading                               | 17.43kg/cm <sup>2</sup>                      | 16.83kg/cm <sup>2</sup> | 15.8kg/cm <sup>2</sup> |
| <b>Dimensions:</b>                                  |  |                         |                        |
| Maximum platform height                             | 3.2m   | 2.55m                   | 2.01m                  |
| Minimum platform height                             | 0.695m                                       | 0.695m                  | 0.6m                   |
| Maximum safe working height                         | 5.2m   | 4.55m                   | 4.01m                  |
| Platform delay on descent height                    | 1.87m  | 1.85m                   | 1.4m                   |
| Platform width                                      | 0.57m  |                         |                        |
| Platform length                                     | 1.25m  | 1.05m                   | 1.05m                  |
| Platform guardrail height                           | 1.1m   |                         |                        |
| Toeboard height                                     | 0.15m  |                         |                        |
| Overall width                                       | 0.76m  | 0.7m                    | 0.7m                   |
| Stowed height                                       | 1.8m   | 1.8m                    | 1.7m                   |
| Stowed length                                       | 1.41m  | 1.21m                   | 1.21m                  |
| Ground clearance                                    | 0.05m  |                         |                        |
| <b>Electrical:</b>                                  |  |                         |                        |
| Voltage   | 12V DC                                       |                         |                        |
| Motor   | 1.2kW  | 1.2kW                   | 0.8kW                  |
| Battery (deep cycle/sealed gel)                     | 12V/100Ah                                    | 12V/100Ah               | 12V/80Ah               |
| Battery charger                                     | Automatic multi voltage 110 and 240v         |                         |                        |
| <b>Hydraulics:</b>                                  |  |                         |                        |
| Maximum hydraulic pressure                          | 225 bar                                      |                         |                        |
| Working pressure                                    | 150 bar                                      |                         |                        |
| Hydraulic fluid reservoir                           | 2 litres                                     |                         |                        |
| <b>Performance:</b>                                 |  |                         |                        |
| Maximum number of lifts and descents on one charge: |  |                         |                        |
| with 80kg platform load                             | >325   | >430                    | >565                   |
| with 240kg platform load                            | >215   | >225                    | >250                   |
| Ascent times:                                       |  |                         |                        |
| with 80kg platform load                             | 15 seconds                                   | 12 seconds              | 10 seconds             |
| with 240kg platform load                            | 18 seconds                                   | 15 seconds              | 12 seconds             |
| Descent times*:                                     |  |                         |                        |
| with 80kg platform load                             | 21 seconds                                   | 17 seconds              | 15 seconds             |
| with 240kg platform load                            | 21 seconds                                   | 18 seconds              | 15 seconds             |

\* Including 3 seconds for intermediate stop on descent

## 1.6 ENGAGING THE BRAKES

The BoSS X-Series machine is fitted with two braking systems:

- Fixed castors – these brakes are applied automatically as the platform rises
- Swivel castors – these brakes are engaged by the use of a foot pushing down on the lever as shown in the picture below. To release, push the foot under the lever and flick upwards. The swivel castors **MUST** be locked whenever the machine is stationary whether or not it is in use.



## 1.7 BATTERY ISOLATION SWITCH

The BoSS X-Series machine is provided with a key operated switch which is used to isolate the battery and therefore the electrical system, preventing unauthorised use.

To enable the electrical system, insert the key and turn clockwise, as shown below making sure the red emergency stop button is fully released.

Ensure that when the machine is not in use, the emergency stop button is depressed and the key removed.



## 1.8 BATTERY CHARGING

A battery charge level indicator is fitted to the BoSS X-Series machine. When the battery is fully charged the segment at the far right hand side of the display will be illuminated red, as shown in *figure 1* opposite.

When the second segment from the left is illuminated, as shown in *figure 2* below, it is time to put the BoSS X-Series machine on charge



Figure 1



Figure 2

BoSS X-Series machines are fitted with low battery protection. If the battery level falls below 20% then the platform will not raise but can still descend.

The BoSS X-Series machine is fitted with an integral battery charger.

To charge the battery, follow the steps below:

- Depress the emergency stop button on the handset control unit and remove the key.
- Remove the cover from the charging connection point as shown in *figure 1* below.



Figure 1

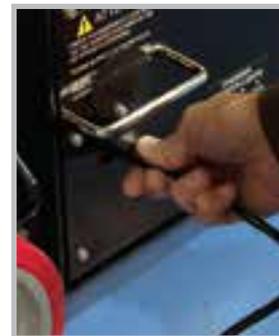


Figure 2

- Connect either the mains or 110V transformer charging cable to the BoSS X-Series machine charging connection point, as shown in *figure 2* above. These cables are to be found in the charging cable and guardrail tools tray under the step up to the platform.
- Connect the charging cable to a suitable power supply (110V transformer or mains)
- Whilst the battery is charging to 80% of capacity the second light will be flashing as shown in *figure 1* on the following page and when the charging of the remaining 20% is underway the third light will begin flashing as indicated in *figure 2* on the following page.

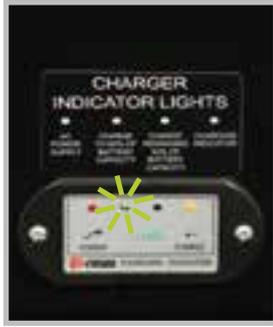


Figure 1



Figure 2

- f. When the battery is fully charged all four lights will illuminate after approximately 10 hours.

**WARNING**

BoSS X-Series machines must be charged where the ambient temperature is between 0 and 50°C.

**1.9 HANDSET CONTROL UNIT**

The handset control unit houses the platform raise and lower controls.

Pressing the 'UP' button raises the platform.  
Pressing the 'DOWN' button lowers the platform

To avoid crushing or shearing hazards, an intermediate stop feature on lowering is fitted to activate when the platform reaches a base of work platform height from ground level of:

- BoSS X3X – 1.87m
- BoSS X3 – 1.85m
- BoSS X2 – 1.4m

This is a safety mechanism that reminds the operator to look around the machine to determine whether any persons are adjacent to the machine. After a time delay and when the operator is sure it is safe to do so, the 'DOWN' button can be depressed a second time to continue the descent.



BoSS X-Series machines are fitted with an overload sensor system. If the platform load is exceeded the platform will not raise and the red LED indicator on top of the handset will illuminate as shown on the right.



**1.10 EMERGENCY LOWERING**

In the unlikely event of a power failure of the BoSS X-Series machine the platform can be lowered manually by use of the following procedure.

1. Turn the finger screw on the pressure loss valve anticlockwise until it will not turn any further as shown in *figure 1*.
2. Then, turn the emergency valve on the base unit anticlockwise until the platform begins to descend, as shown in *figure 2*. If you need to stop the descent simply turn this valve clockwise again.



Figure 1

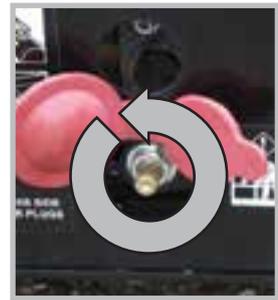


Figure 2

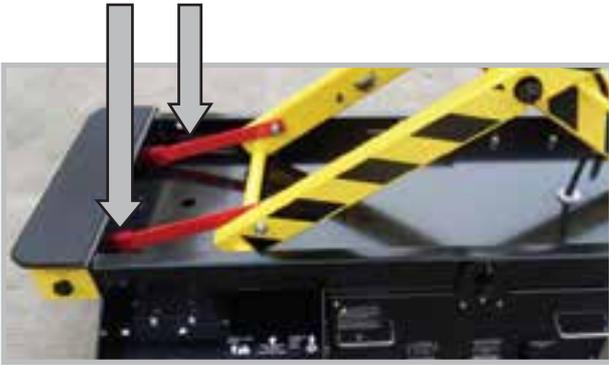
**WARNING**

Always ensure someone other than the operator is trained to perform this rescue.

## SECTION 2 - SAFETY DURING MAINTENANCE

When carrying out maintenance on a BoSS X-Series machine with the platform elevated, always ensure that the maintenance props are deployed as shown in the picture below.

*Maintenance Props*



## SECTION 3 - SERVICE ENGINEER ATTRIBUTES

The BoSS X-Series service engineer should:

- a. be physically fit and competent to carry out the work being undertaken;
- b. appear to be comfortable working at height when taken up in the work platform of a MEWP;
- c. have a responsible attitude;
- d. demonstrate an ability to learn;
- e. be able to communicate clearly with other personnel on site;
- f. be able to identify equipment;
- g. be able to demonstrate an understanding of and apply the information contained in this Maintenance Manual;
- h. be able to demonstrate that they can diagnose, rectify and record faults;
- i. be able to demonstrate an understanding and knowledge of how to carry out inspections (other than thorough examinations) and can make recommendations for the continued use of the equipment;
- j. be able to demonstrate an understanding of and apply company procedures;
- k. be able to demonstrate that they can operate the equipment safely;
- l. be able to demonstrate that they can carry out functional checks and setting procedures;
- m. be able to demonstrate knowledge of how to record all maintenance work carried out;
- n. be able to demonstrate the required knowledge and expertise of the BoSS X-Series machines for service and maintenance purposes;
- o. be undergoing a form of Continuous Professional Development.

## SECTION 4 - COMPETENT PERSON FOR THOROUGH EXAMINATION ATTRIBUTES

The competent person carrying out a thorough inspection of a BoSS X-Series machine should:

- a. be physically fit;
- b. appear to be comfortable working at height when taken up in the work platform of a MEWP
- c. have a responsible attitude;
- d. demonstrate an ability to learn;
- e. be able to communicate clearly with other personnel on site;
- f. comply with EN 45004;
- g. be capable of detecting defects or weaknesses in the BoSS X-Series machine for the purpose of the thorough examination;
- h. have sufficient knowledge and experience to assess the importance of defects or weaknesses in the BoSS X-Series machine and identifying what actions need to be taken in order to rectify them. In particular they should be able to:
  - i. verify that the BoSS X-Series machine is operating as it is intended to in accordance with the Instructions for Use;
  - ii. identify defects or weaknesses which could compromise the use of the BoSS X-Series machine;
  - iii. specify the appropriate time scales within which identified defects or weaknesses need to be rectified;
  - iv. establish that defects identified in the previous report of thorough examination have received attention;
  - v. assess the correct function of all safety devices;
  - vi. check that warning notices are correctly fixed and legible; and where necessary specify any limitations to the use of the BoSS X-Series machine;
  - vii. carry out any testing required as part of the thorough examination;
  - viii. report on the findings of the thorough examination.

## SECTION 5 - PERIODICAL MAINTENANCE AND CHECKS

The following checks should be undertaken at the intervals shown:

|  | Daily/pre-use | Monthly | 6 monthly | Annually |
|--|---------------|---------|-----------|----------|
| Inspect structure  | ●             | ●       | ●         | ●        |
| Check condition of castellated scissor nuts and split pin retainers  | ●             | ●       | ●         | ●        |
| Inspect platform   | ●             | ●       | ●         | ●        |
| Check condition of castors including tyres   | ●             | ●       | ●         | ●        |
| Check castor brake function - auto braking on fixed castors and manually applied brakes on swivel castors. | ●             | ●       | ●         | ●        |
| Inspect hydraulic circuit for oil leaks  | ●             | ●       | ●         | ●        |
| Check condition of hydraulic hose  | ●             | ●       | ●         | ●        |
| Check condition of electrical cables   | ●             | ●       | ●         | ●        |
| Check battery charge level   | ●             | ●       | ●         | ●        |
| Check platform raise & lower functions including descent delay   | ●             | ●       | ●         | ●        |
| Inspect platform full height cut off and descent delay switches  | ●             | ●       | ●         | ●        |
| Inspect all safety labelling and machine plate   | ●             | ●       | ●         | ●        |
| Check handset emergency stop   | ●             | ●       | ●         | ●        |
| Check base unit emergency stop   | ●             | ●       | ●         | ●        |
| Check emergency lowering function  | ●             | ●       | ●         | ●        |
| Check hydraulic oil level  | ●             | ●       | ●         | ●        |
| Check operation of descent alarm   | ●             | ●       | ●         | ●        |
| Check operation of tilt sensor and alarm   | ●             | ●       | ●         | ●        |
| Check electrical connectors  |               | ●       | ●         | ●        |
| Grease scissor nipples   |               | ●       | ●         | ●        |
| Grease platform and chassis roller nipples   |               | ●       | ●         | ●        |
| Grease castor nipples  |               | ●       | ●         | ●        |
| Check all castor nuts are fully tightened  |               | ●       | ●         | ●        |
| Check integrity and tightness of all visible fixings eg screws, nuts and bolts                             |               |         | ●         | ●        |
| Replace hydraulic oil  |               |         |           | ●        |

Prior to the first use of a BoSS X-Series machine all daily/pre-use checks should be undertaken.

If the BoSS X-Series machine has been out of service for any length of time the six monthly checks referred to in the table above should be undertaken by an authorised, competent and suitably trained person.

The Lifting Operations and Lifting Equipment Regulations 1998 (LOLER) require that lifting equipment for lifting persons must be THOROUGHLY EXAMINED every six months (UK only).

Following any maintenance of a BoSS X-Series machine, a full test of the functionality should be undertaken to ensure the correct operation of the machine.

It is essential that only Youngman approved replacement parts are used when maintaining and servicing the BoSS X-Series machine. Failure to do so may result in an unsafe machine. Details on how to order replacement parts can be found by visiting [bossaccessstowers.com](http://bossaccessstowers.com) or by calling +44 (0) 1621 745900.

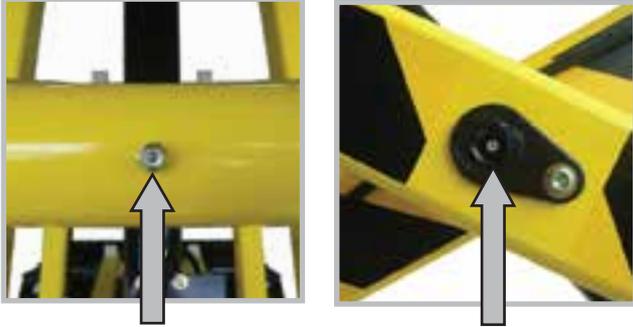
You will need to provide our parts distributor with:

- Name of model ie BoSS X2, X3 or X3X
- Serial number to be found on the machine plate attached to the chassis of the machine
- Year of construction
- Date of purchase of machine
- Part number from this Maintenance Manual
- Description from this Maintenance Manual
- Quantity required
- Company invoice address
- Delivery address and contact number at this address
- Desired method of shipment

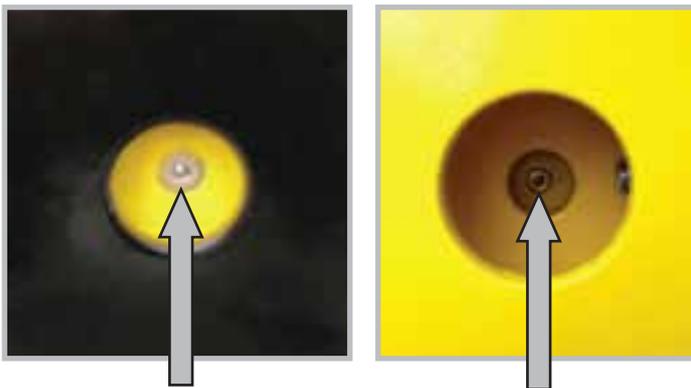
## Lubrication

The recommended lubricant for use with the BoSS X-Series machines is standard machine grease and the lubrication points are shown in the pictures below.

### Scissors



### Scissor rollers



### Hydraulic oil

The hydraulic oil used to top up the reservoir of the BoSS X-Series machine or when a complete oil change is required should be a VG 46 fully inhibited hydraulic oil manufactured in accordance with DIN 51524 Part 2.

#### VG 46 Hydraulic Oil

|                              |                    |
|------------------------------|--------------------|
| Appearance                   | Amber coloured oil |
| Relative density at 15 °C    | 0.87-0.89          |
| Kinematic viscosity at 40 °C | 41.4-50.6 cSt      |
| Flash point (open cup) (°C)  | >180               |
| Pour point (°C)              | -12                |

The hydraulic oil level should be checked daily and topped up as required. Following removal of the cap to the hydraulic reservoir, the oil as specified above should be poured from a small jug or through a funnel into the reservoir until the oil covers the aluminium plate just inside the reservoir, see *figure 1* opposite, and the cap replaced.

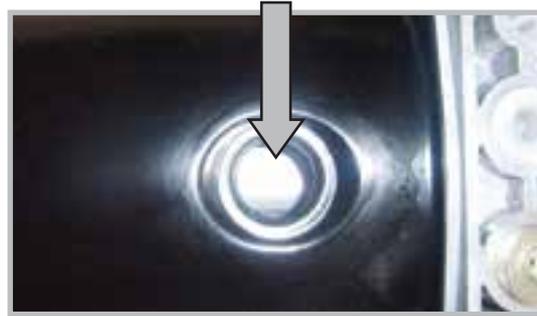


Figure 1

#### WARNING

Ensure the platform is fully lowered when checking the oil level.

Do not overfill the hydraulic oil reservoir and take care not to spill the oil on any of the surrounding machine components.

The hydraulic oil is changed as follows:

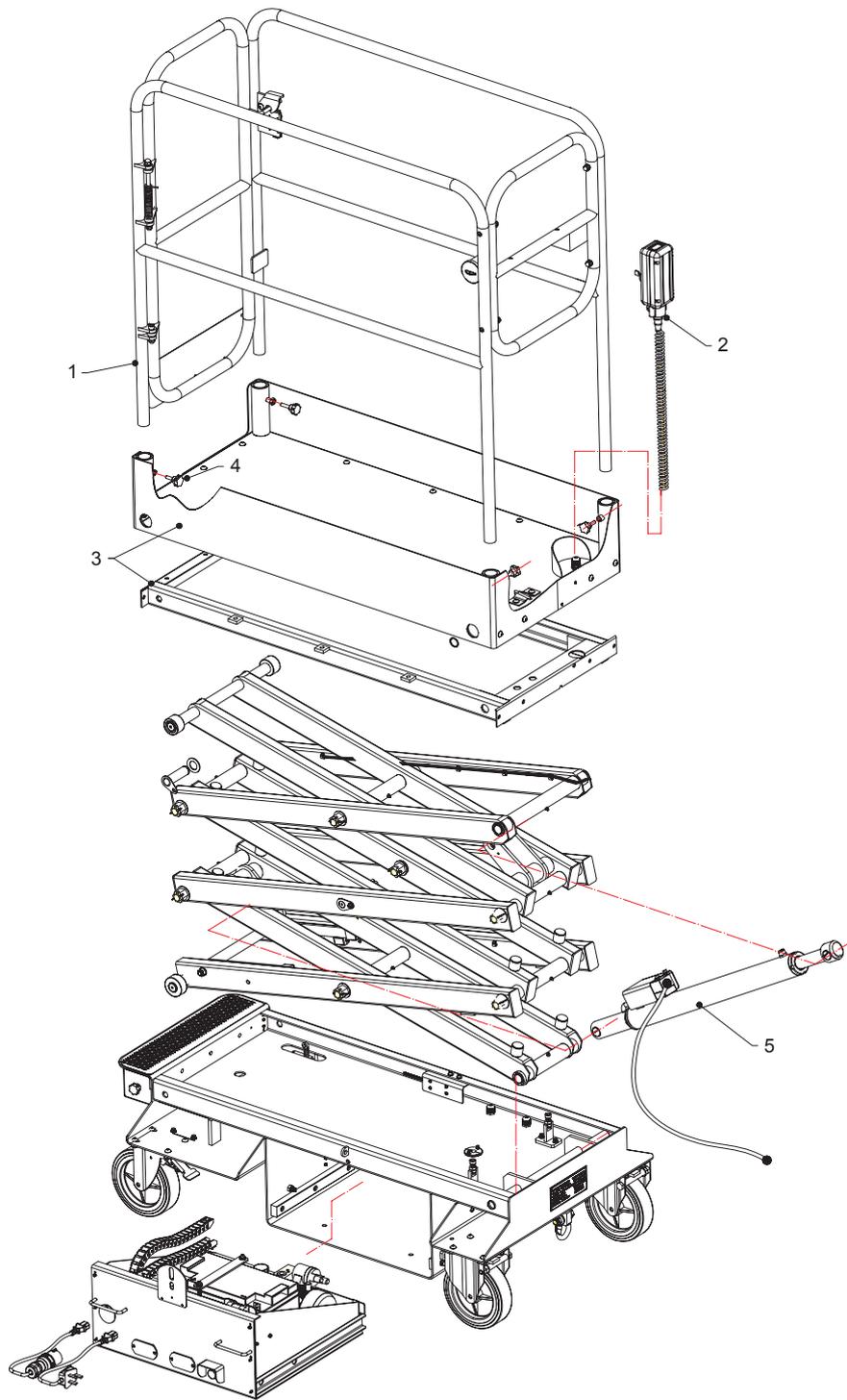
1. Ensure the platform is fully lowered.
2. Lift the machine with a forklift using the lateral forklift points and secure with safety props.
3. Slide out the component drawer of the machine.
4. Remove the red and black oil reservoir cap from the top of the reservoir.
5. Look under the drawer where you will see an M10 Allen bolt as shown below.



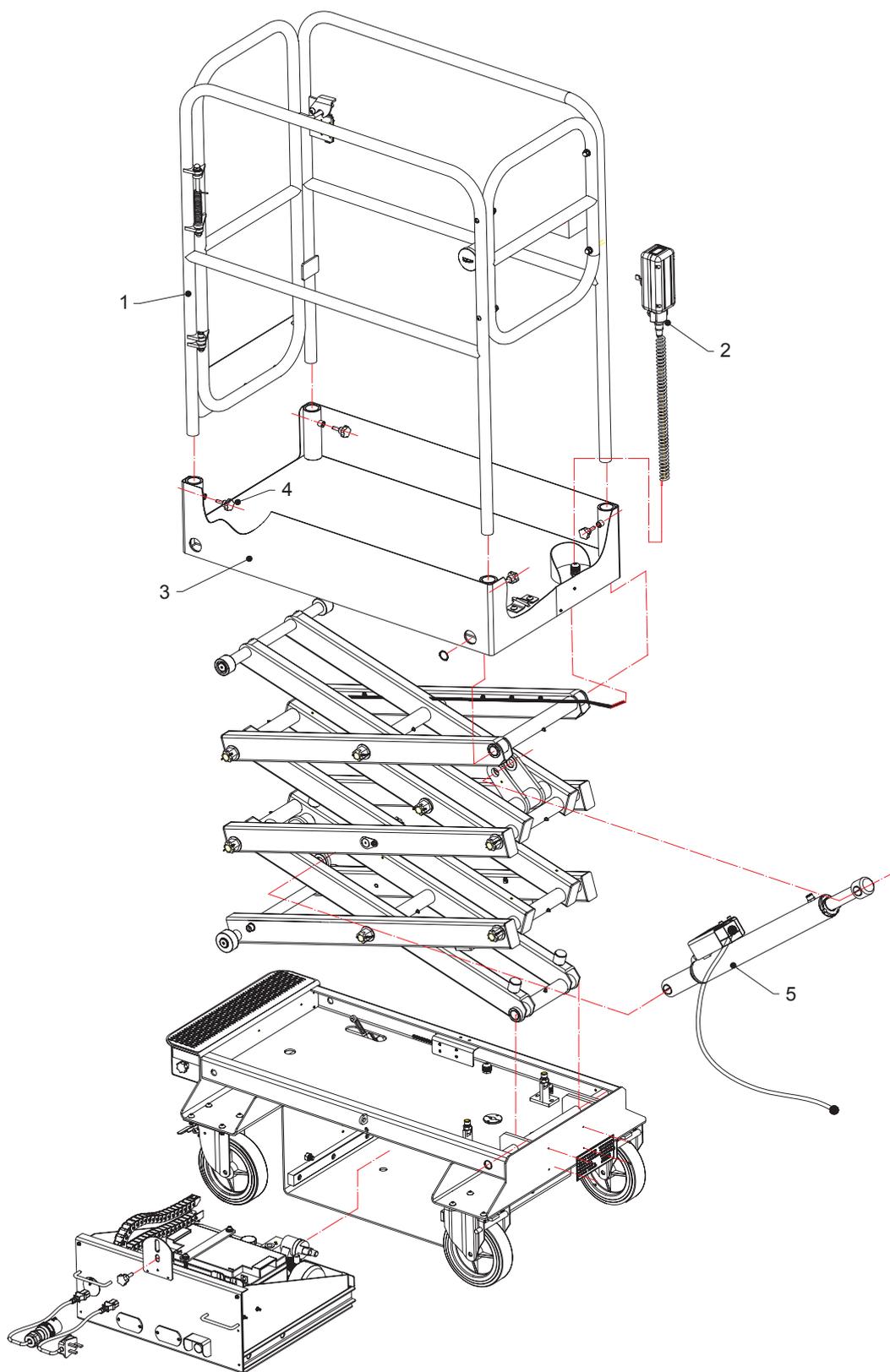
6. Undo the bolt and let the oil drain into an open top container which can hold a minimum of 2 litres. Dispose of the oil at an approved disposal facility.
7. Replace M10 bolt and refill reservoir until the aluminium plate at the opening to the reservoir is just covered.
8. Replace the reservoir cap.

## SECTION 6 - EXPLODED DRAWINGS AND PARTS LIST

### BoSS X3X Assembly

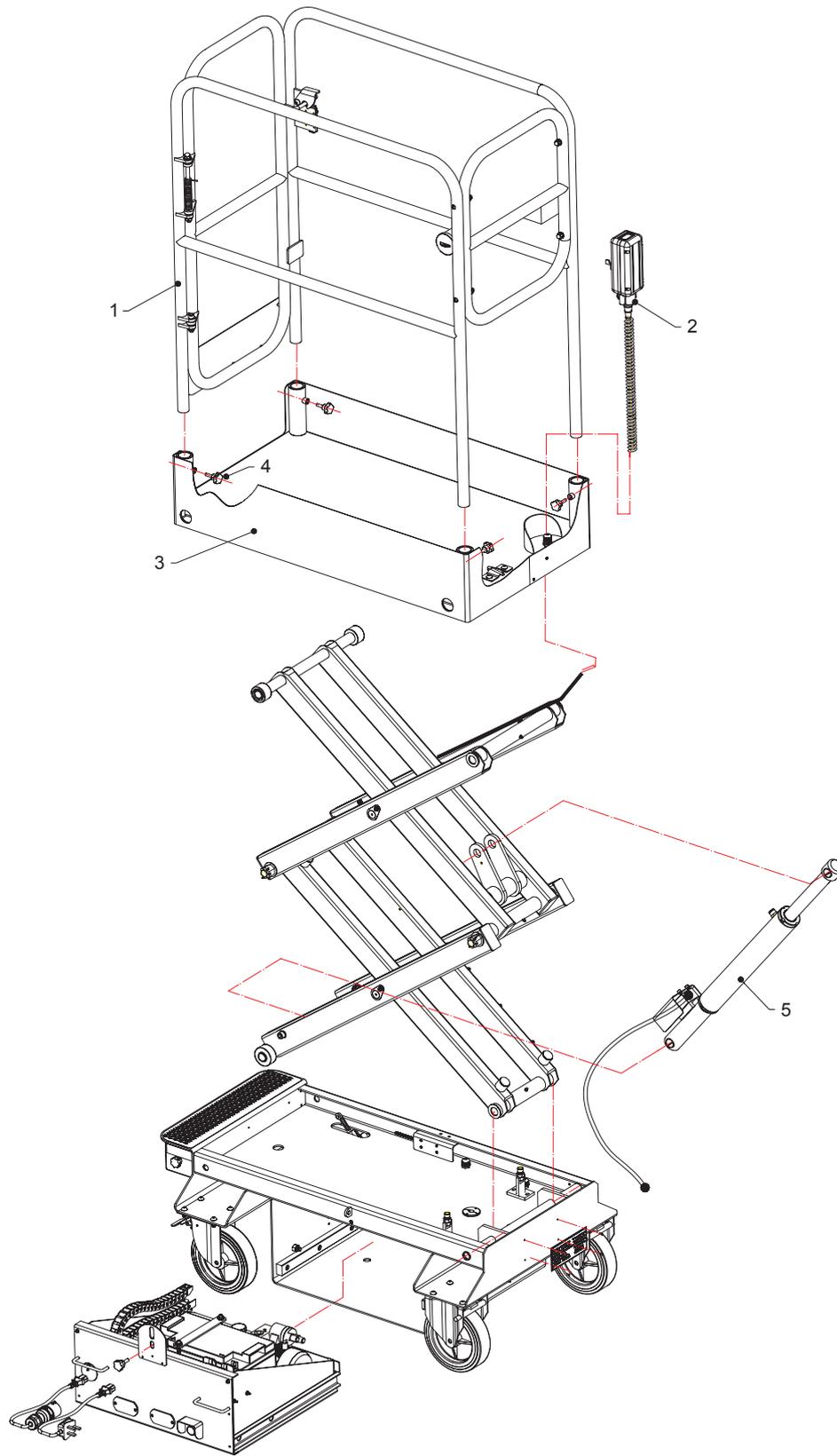


| Item Ref | Part No. | Description                         | Qty. |
|----------|----------|-------------------------------------|------|
| 1        | 83901000 | Guardrail assembly                  | 1    |
| 2        | 81908000 | Handset controller assembly         | 1    |
| 3        | 83902000 | Aluminium platform and steel runner | 1    |
| 4        | 81902014 | Handle screw with locking nut       | 4    |
| 5        | 83904000 | Cylinder assembly X3X               | 1    |



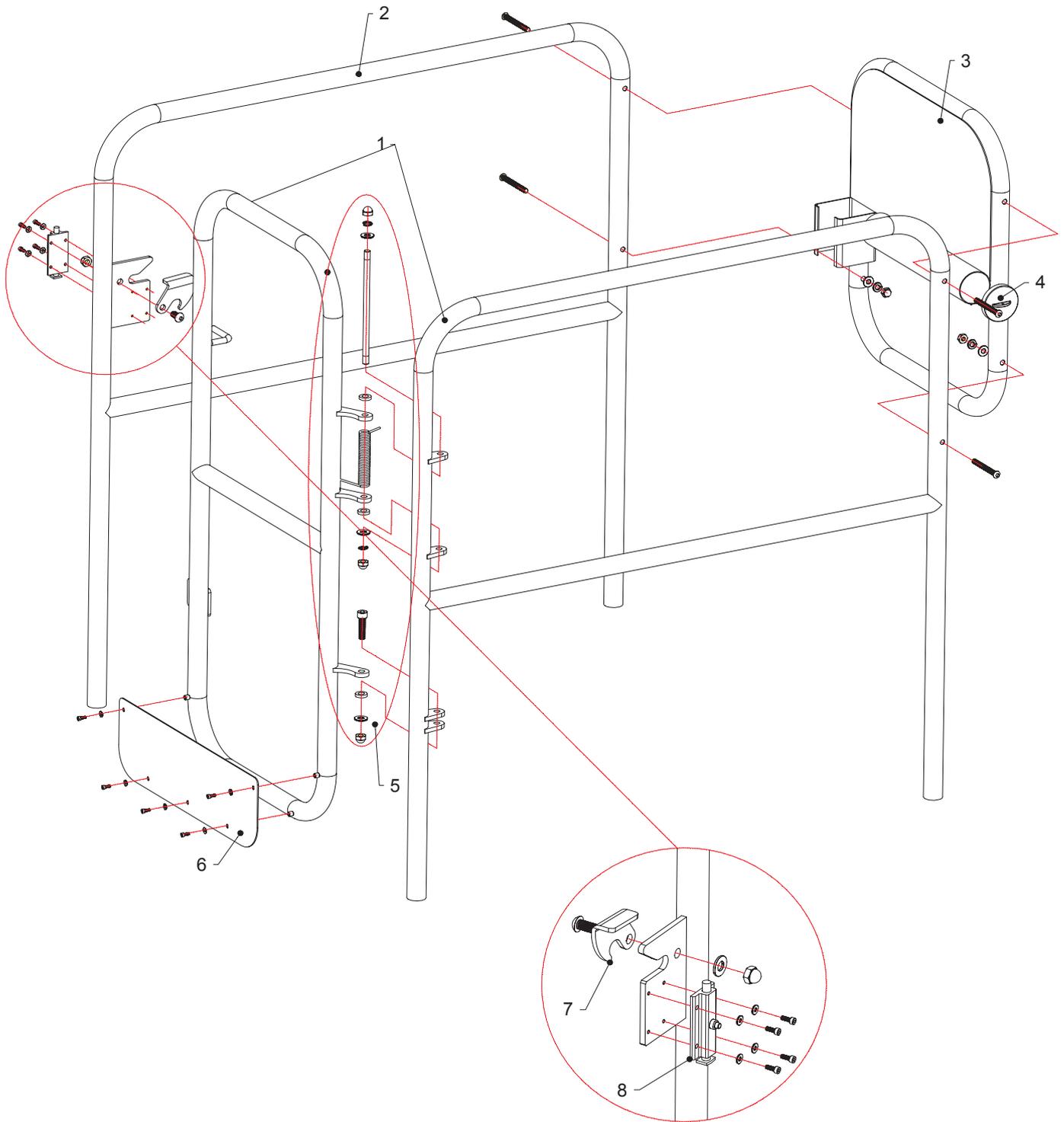
| Item Ref | Part No. | Description                   | Qty. |
|----------|----------|-------------------------------|------|
| 1        | 81901001 | Guardrail assembly            | 1    |
| 2        | 81908000 | Handset controller assembly   | 1    |
| 3        | 81902001 | Platform assembly             | 1    |
| 4        | 81902014 | Handle screw with locking nut | 4    |
| 5        | 81904000 | Cylinder assembly X3          | 1    |

# BoSS X2 Assembly



| Item Ref | Part No. | Description                   | Qty. |
|----------|----------|-------------------------------|------|
| 1        | 82901001 | Guardrail assembly            | 1    |
| 2        | 81908000 | Handset controller assembly   | 1    |
| 3        | 82902001 | Platform assembly             | 1    |
| 4        | 81902014 | Handle screw with locking nut | 4    |
| 5        | 82904000 | Cylinder assembly X2          | 1    |

# BoSS X3X/X3/X2 Guardrail Assembly



## BoSS X3X/X3/X2 Guardrail Assembly continued

### X3X Guardrail Assembly

| Item Ref | Part No. | Description                     | Qty. |
|----------|----------|---------------------------------|------|
| 1        | 83801001 | Right guardrail & gate assembly | 1    |
| 2        | 83901003 | Left guardrail assembly         | 1    |
| 3        | 83901007 | Back guardrail assembly         | 1    |
| 4        | 81020071 | Instruction tube cap            | 1    |
| 5        | 81801017 | Gate hinge fixing kit           | 1    |
| 6        | 83901024 | Gate toeboard with label        | 1    |
| 7        | 81020101 | Gate latch                      | 1    |
| 8        | 81122061 | Transit gate lock               | 1    |

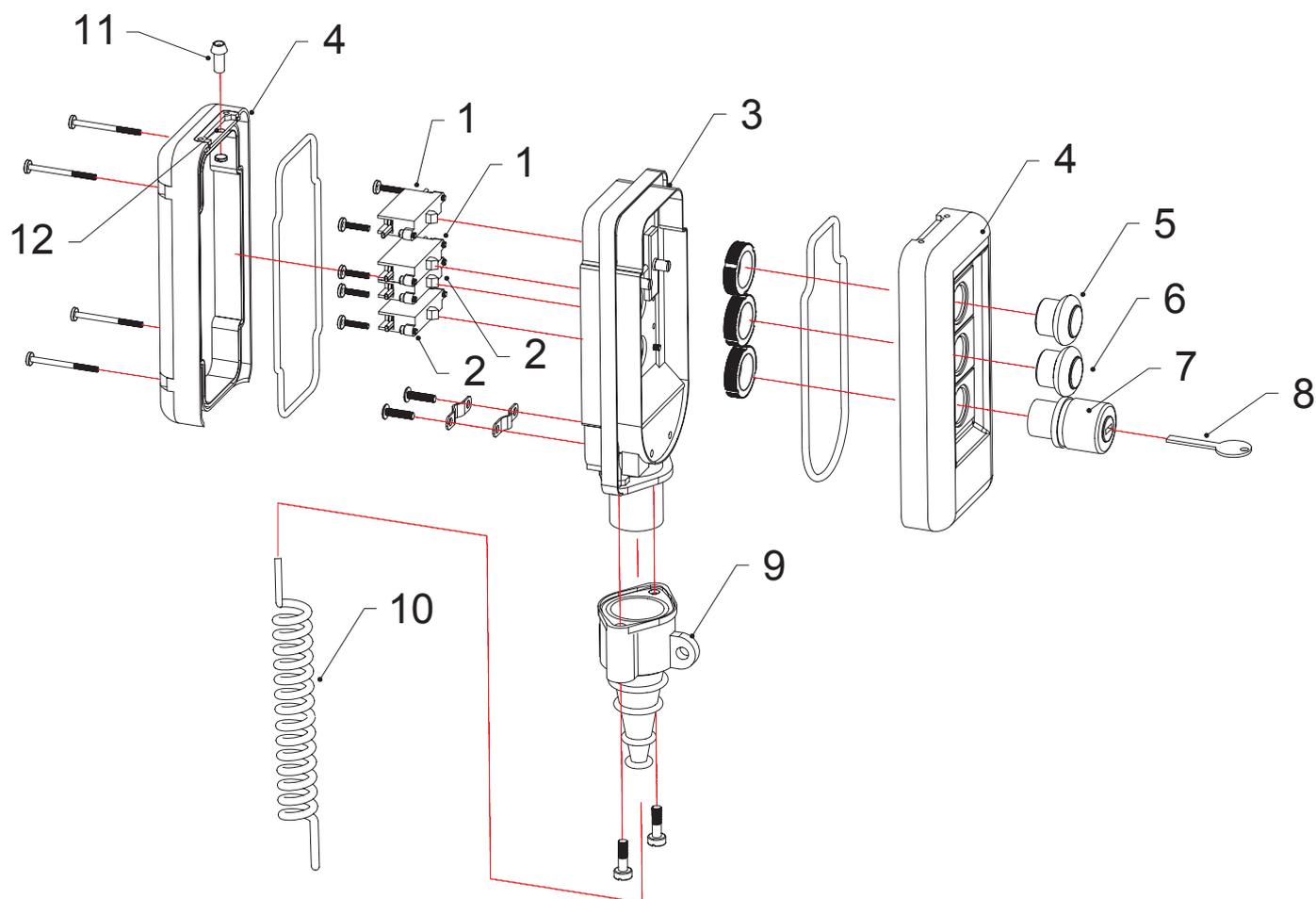
### X3 Guardrail Assembly

| Item Ref | Part No. | Description                     | Qty. |
|----------|----------|---------------------------------|------|
| 1        | 81801001 | Right guardrail & gate assembly | 1    |
| 2        | 81901005 | Left guardrail assembly         | 1    |
| 3        | 81901007 | Back guardrail assembly         | 1    |
| 4        | 81020071 | Instruction tube cap            | 1    |
| 5        | 81801017 | Gate hinge fixing kit           | 1    |
| 6        | 81901024 | Gate toeboard with label        | 1    |
| 7        | 81020101 | Gate latch                      | 1    |
| 8        | 81122061 | Transit gate lock               | 1    |

### X2 Guardrail Assembly

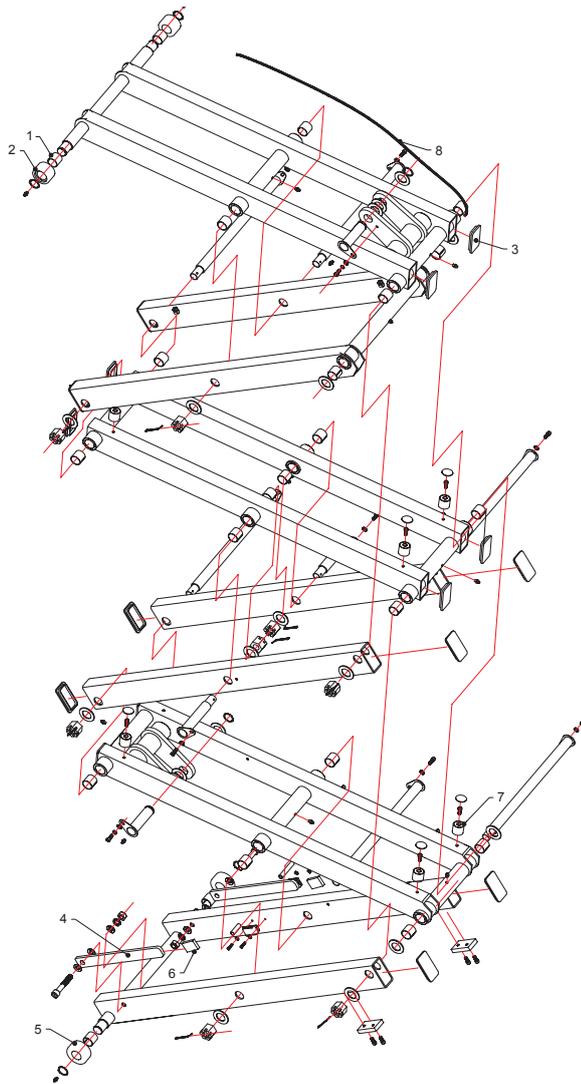
| Item Ref | Part No. | Description                     | Qty. |
|----------|----------|---------------------------------|------|
| 1        | 82801001 | Right guardrail & gate assembly | 1    |
| 2        | 81901005 | Left guardrail assembly         | 1    |
| 3        | 82901007 | Back guardrail assembly         | 1    |
| 4        | 81020071 | Instruction tube cap            | 1    |
| 5        | 81801017 | Gate hinge fixing kit           | 1    |
| 6        | 82901024 | Gate toeboard with label        | 1    |
| 7        | 81020101 | Gate latch                      | 1    |
| 8        | 81122061 | Transit gate lock               | 1    |

## BoSS X3X/X3/X2 Handset Controller Assembly



| Item Ref | Part No. | Description              | Qty. |
|----------|----------|--------------------------|------|
| 1        | 81130041 | Normally open switch     | 2    |
| 2        | 81130171 | Normally closed switch   | 2    |
| 3        | 81130051 | Main body                | 1    |
| 4        | 81130181 | Front plate & back plate | 1    |
| 5        | 81130081 | Up button                | 1    |
| 6        | 81130091 | Down button              | 1    |
| 7        | 81130101 | Emergency stop           | 1    |
| 8        | 81801016 | Key                      | 1    |
| 9        | 81130131 | Waterproof cover         | 1    |
| 10       | 81020121 | Curly cable assembly     | 1    |
| 11       | 81801002 | Overload light assembly  | 1    |
| 12       | 81911018 | Overload label           | 1    |

## BoSS X3X/X3 Scissor Assembly



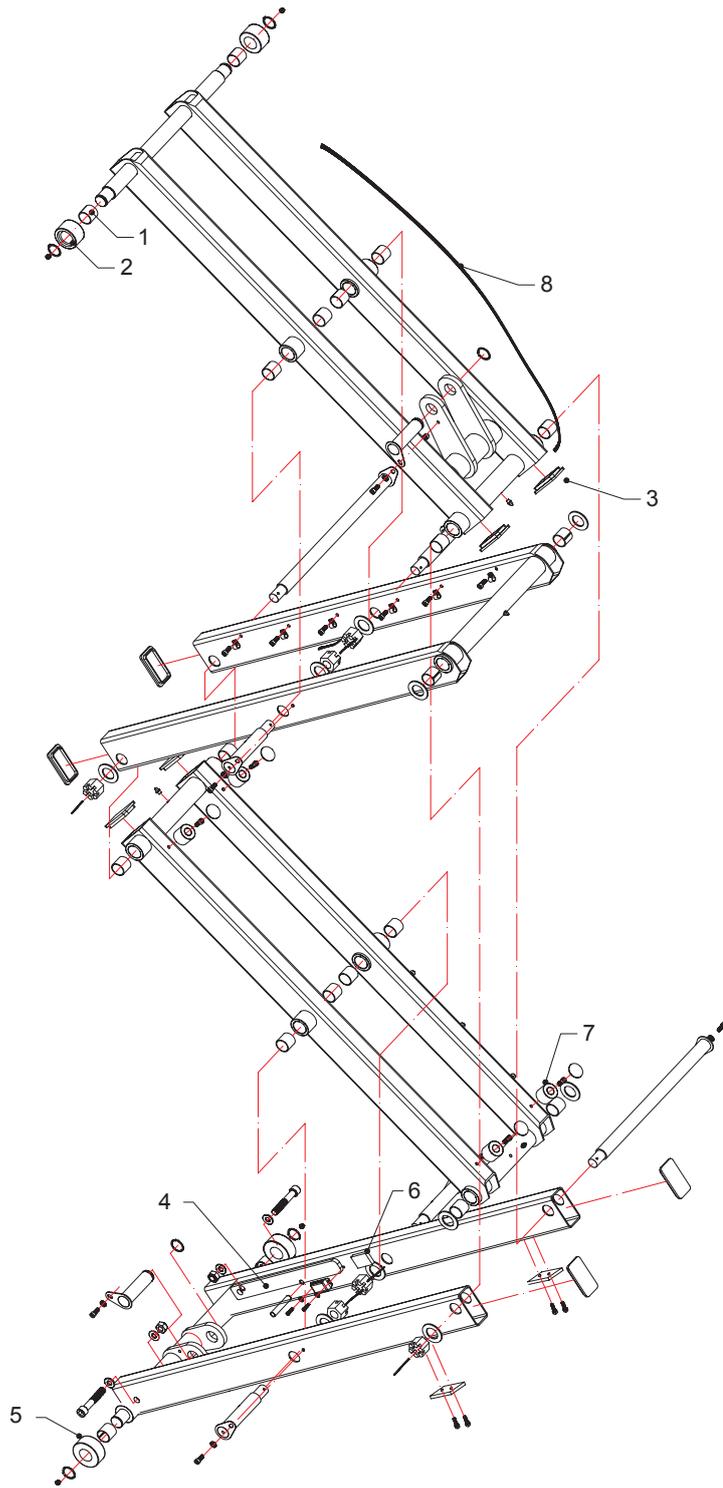
### X3X Scissor Assembly

| Item Ref | Part No. | Description                | Qty. |
|----------|----------|----------------------------|------|
| 1        | 81070091 | Scissor bush               | 24   |
| 2        | 81070111 | Platform roller            | 2    |
| 3        | 81200151 | Scissor black end cap      | 16   |
| 4        | 81903041 | Maintenance prop assembly  | 2    |
| 5        | 81903039 | Base roller                | 2    |
| 6        | 81070131 | Caps for maintenance props | 2    |
| 7        | 81903037 | Scissor pads               | 8    |
| 8        | 83905013 | X3X scissor cable          | 1    |

### X3 Scissor Assembly

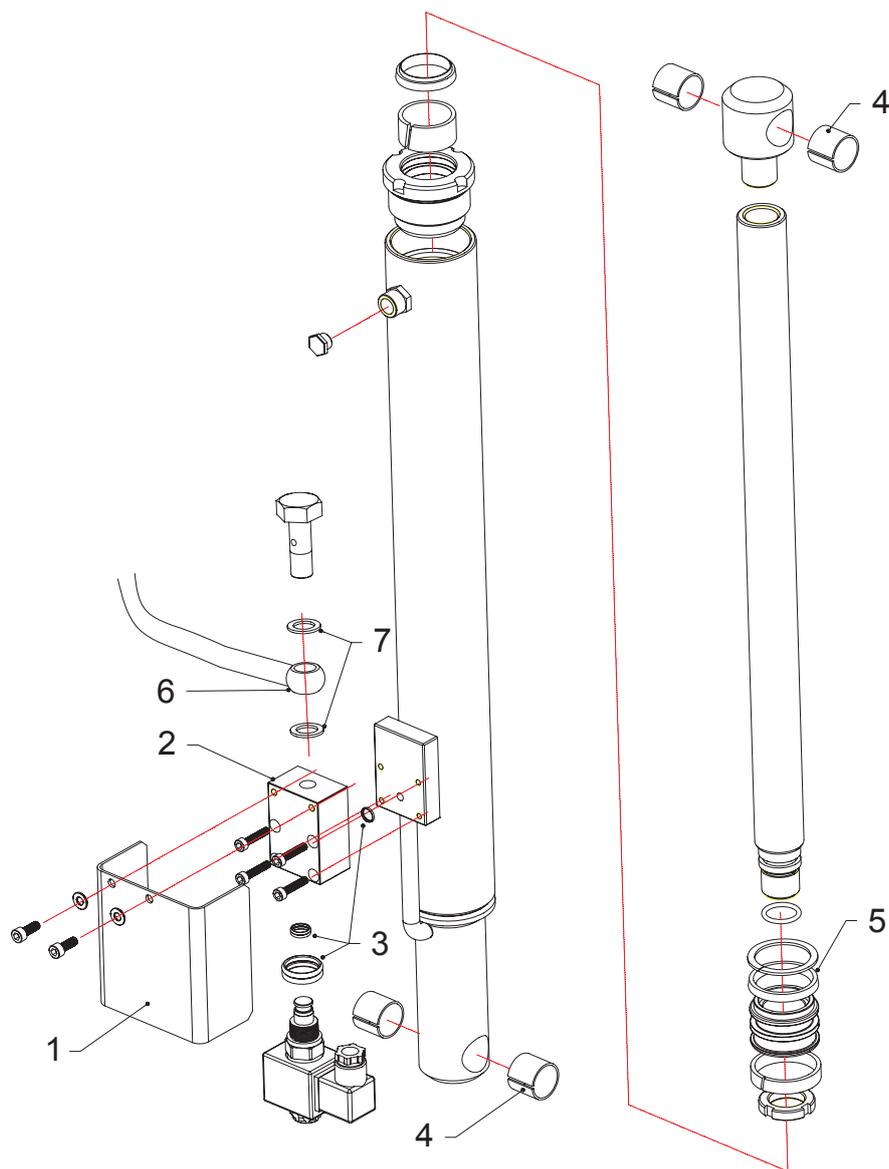
| Item Ref | Part No. | Description                | Qty. |
|----------|----------|----------------------------|------|
| 1        | 81070091 | Scissor bush               | 24   |
| 2        | 81070111 | Platform roller            | 2    |
| 3        | 81200151 | Scissor black end cap      | 16   |
| 4        | 81903041 | Maintenance prop assembly  | 2    |
| 5        | 81903039 | Base roller                | 2    |
| 6        | 81070131 | Caps for maintenance props | 2    |
| 7        | 81903037 | Scissor pads               | 8    |
| 8        | 81910028 | X3 scissor cable           | 1    |

## BoSS X2 Scissor Assembly



| Item Ref | Part No. | Description                | Qty. |
|----------|----------|----------------------------|------|
| 1        | 81070091 | Scissor bush               | 24   |
| 2        | 81070111 | Platform roller            | 2    |
| 3        | 81200151 | Scissor black end cap      | 8    |
| 4        | 81903041 | Maintenance prop assembly  | 2    |
| 5        | 81903039 | Base roller                | 2    |
| 6        | 81070131 | Caps for maintenance props | 2    |
| 7        | 81903037 | Scissor pads               | 4    |
| 8        | 82905003 | X2 scissor cable           | 1    |

## BoSS X3X/X3 Hydraulic Cylinder Assembly



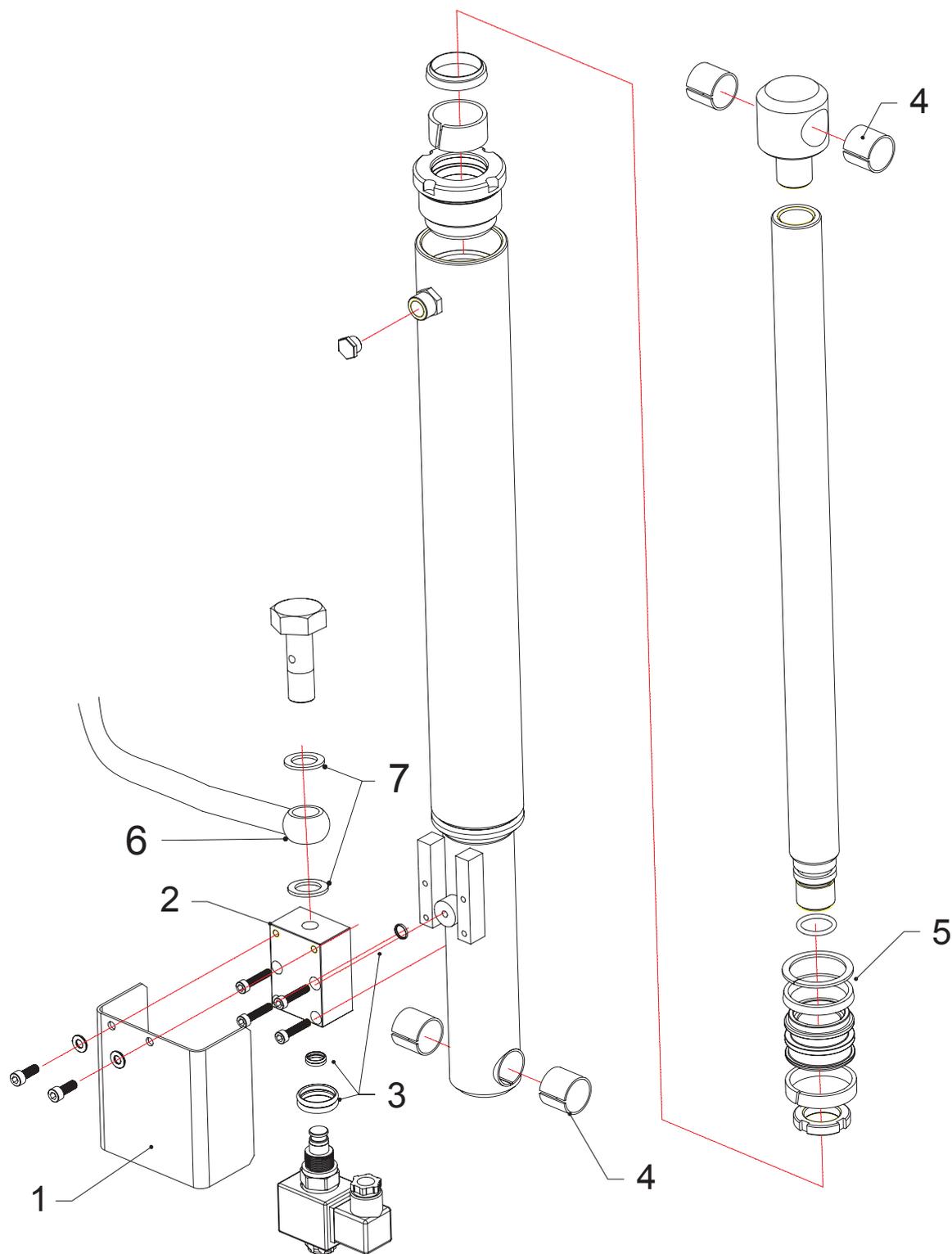
### X3X Hydraulic Cylinder Assembly

| Item Ref | Part No. | Description                  | Qty. |
|----------|----------|------------------------------|------|
| 1        | 81904026 | Pressure loss valve cover    | 1    |
| 2        | 81904006 | Pressure loss valve          | 1    |
| 3        | 81801003 | Pressure loss valve o-rings  | 1    |
| 4        | 81070091 | Bush                         | 4    |
| 5        | 81801004 | Seal kit                     | 1    |
| 6        | 83904002 | X3X hydraulic hose           | 1    |
| 7        | 81904031 | Pressure loss valve seal kit | 1    |

### X3 Hydraulic Cylinder Assembly

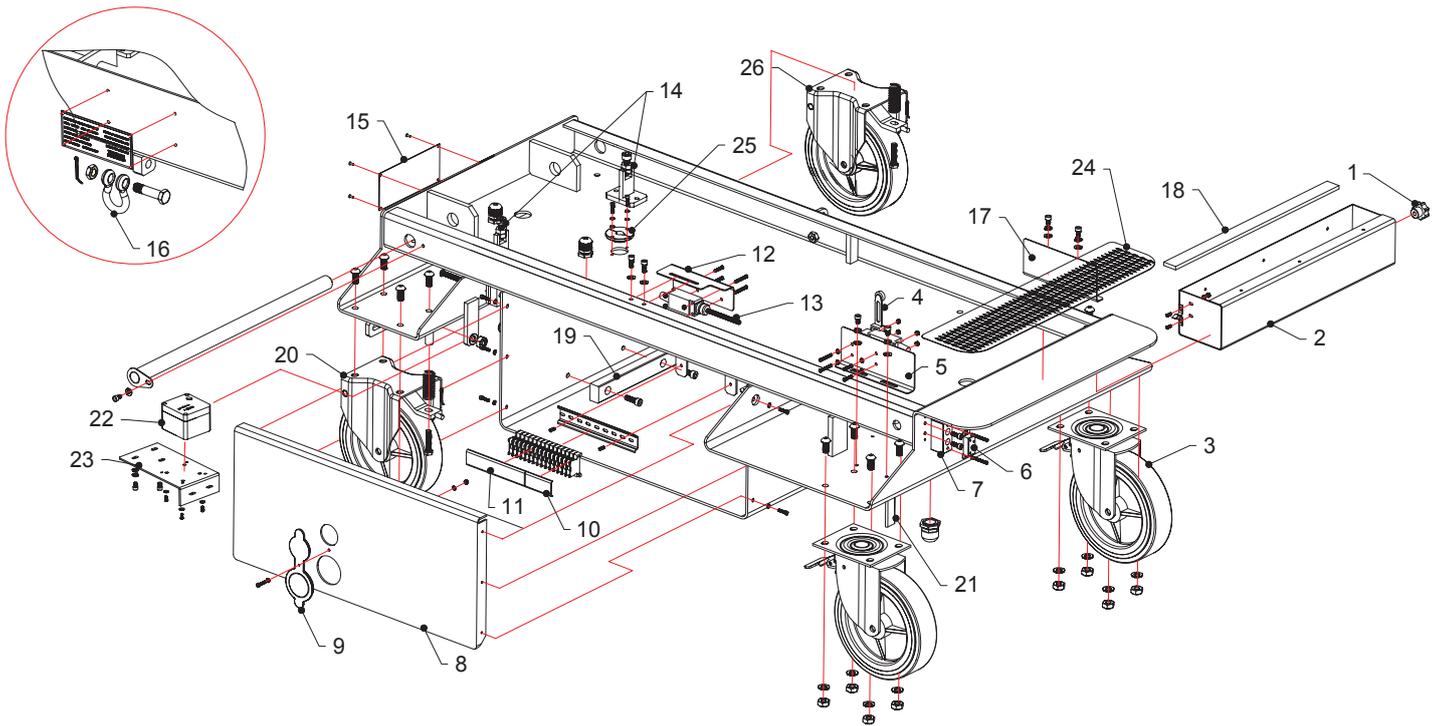
| Item Ref | Part No. | Description                  | Qty. |
|----------|----------|------------------------------|------|
| 1        | 81904026 | Pressure loss valve cover    | 1    |
| 2        | 81904006 | Pressure loss valve          | 1    |
| 3        | 81801003 | Pressure loss valve o-rings  | 1    |
| 4        | 81070091 | Bush                         | 4    |
| 5        | 81801004 | Seal kit                     | 1    |
| 6        | 81904014 | X3 hydraulic hose            | 1    |
| 7        | 81904031 | Pressure loss valve seal kit | 1    |

## BoSS X2 Hydraulic Cylinder Assembly



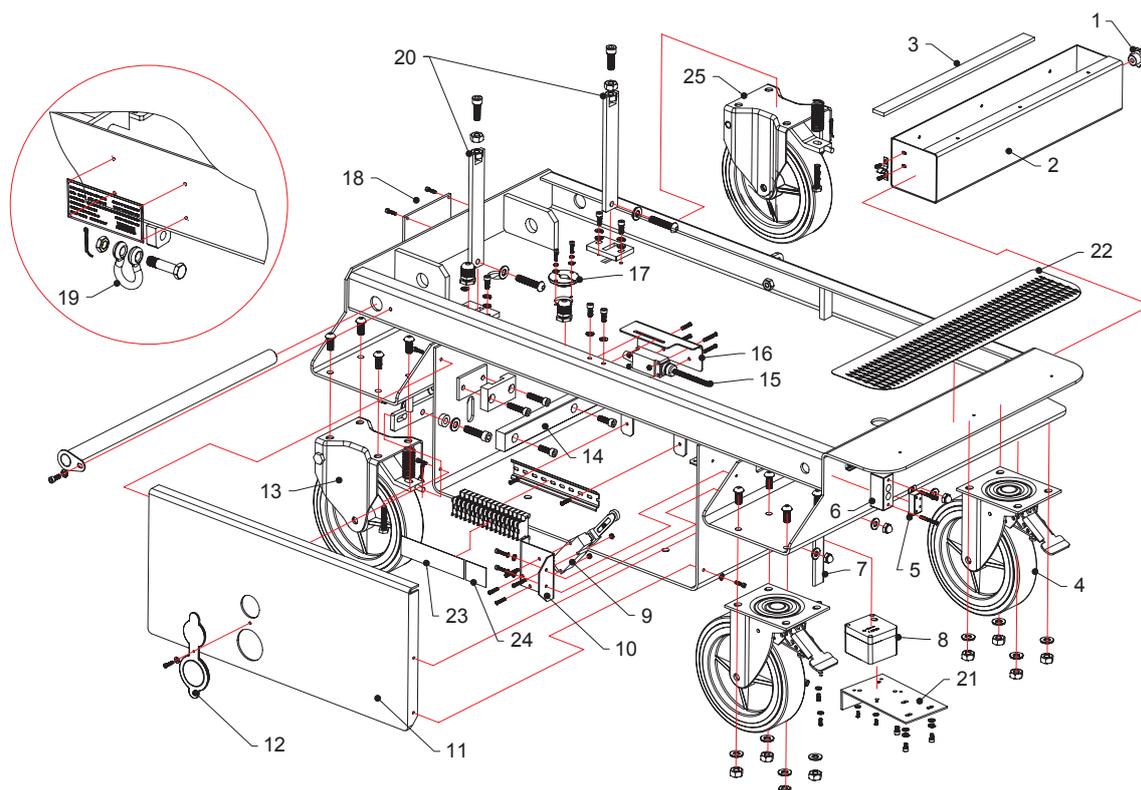
| Item Ref | Part No. | Description                  | Qty. |
|----------|----------|------------------------------|------|
| 1        | 81904026 | Pressure loss valve cover    | 1    |
| 2        | 81904006 | Pressure loss valve          | 1    |
| 3        | 81801003 | Pressure loss valve o-rings  | 1    |
| 4        | 81070091 | Bush                         | 4    |
| 5        | 81801004 | Seal kit                     | 1    |
| 6        | 82904014 | X2 hydraulic hose            | 1    |
| 7        | 81904031 | Pressure loss valve seal kit | 1    |

## BoSS X3X Base Unit Assembly



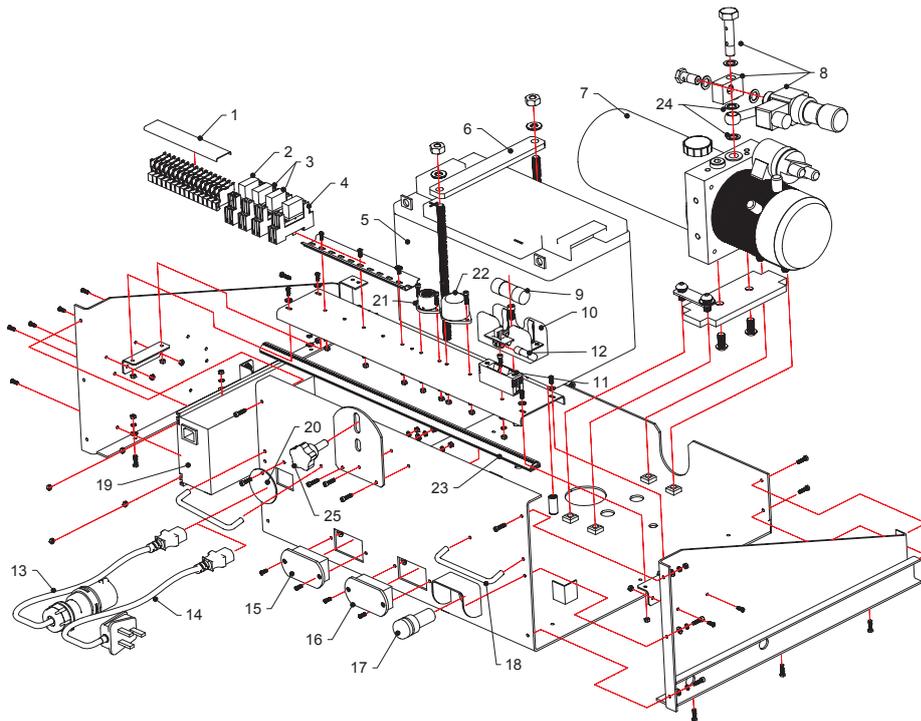
| Item Ref | Part No. | Description                             | Qty. |
|----------|----------|---|------|
| 1        | 81905027 | Charging cables drawer knob             | 1    |
| 2        | 81905018 | Charging cables drawer                  | 1    |
| 3        | 81905030 | Braked swivel castor                    | 2    |
| 4        | 83905010 | Descent cut-out limit switch            | 1    |
| 5        | 83905008 | Descent cut-out switch protection plate | 1    |
| 6        | 81905040 | Charging cables drawer clip             | 1    |
| 7        | 81905039 | Charging cables clip block              | 1    |
| 8        | 81905022 | Base back plate assembly                | 1    |
| 9        | 81905038 | Waterproof cover                        | 1    |
| 10       | 81910035 | Tilt sensor connector cover             | 1    |
| 11       | 81910034 | Connector cover                         | 1    |
| 12       | 81905015 | Steel protector for height limit switch | 1    |
| 13       | 81910018 | Height limit switch                     | 1    |
| 14       | 81801005 | Fixed castor brake assembly             | 1    |
| 15       | 81905041 | Machine plate – stamped with details    | 1    |
| 16       | 81905025 | Winching eye                            | 1    |
| 17       | 83905009 | Blanking plate                          | 1    |
| 18       | 81801006 | Charging cables drawer rail             | 2    |
| 19       | 81905024 | Drawer runner                           | 2    |
| 20       | 81905031 | Left fixed castor                       | 1    |
| 21       | 81905028 | Anti static strip                       | 1    |
| 22       | 83801007 | Tilt sensor                             | 1    |
| 23       | 81801008 | Assembly plate for tilt sensor          | 1    |
| 24       | 81905029 | Slip resistant step cover               | 1    |
| 25       | 81090141 | Hydraulic hose fixing                   | 1    |
| 26       | 81905042 | Right fixed castor                      | 1    |

## BoSS X3/X2 Base Unit Assembly



| Item Ref | Part No. | Description                             | Qty. |
|----------|----------|---|------|
| 1        | 81905027 | Charging cables drawer knob             | 1    |
| 2        | 81905018 | Charging cables drawer                  | 1    |
| 3        | 81801006 | Charging cables drawer rail             | 2    |
| 4        | 81905030 | Braked swivel castor                    | 2    |
| 5        | 81905040 | Charging cables drawer clip             | 1    |
| 6        | 81905039 | Charging cables clip block              | 1    |
| 7        | 81905028 | Anti static strip                       | 1    |
| 8        | 81801007 | Tilt sensor                             | 1    |
| 9        | 81910022 | Descent cut-out limit switch            | 1    |
| 10       | 81905016 | Descent cut-out switch protection plate | 1    |
| 11       | 81905022 | Base back plate assembly                | 1    |
| 12       | 81905038 | Waterproof cover                        | 1    |
| 13       | 81905031 | Left fixed castor                       | 1    |
| 14       | 81905024 | Drawer runner                           | 2    |
| 15       | 81910018 | Height limit switch                     | 1    |
| 16       | 81905015 | Steel protector for height limit switch | 1    |
| 17       | 81090141 | Hydraulic hose fixing                   | 1    |
| 18       | 81905041 | Machine plate – stamped with details    | 1    |
| 19       | 81905025 | Winching eye                            | 1    |
| 20       | 81801005 | Fixed castor brake assembly             | 1    |
| 21       | 81801008 | Assembly plate for tilt sensor          | 1    |
| 22       | 81905029 | Slip resistant step cover               | 1    |
| 23       | 81910034 | Connector cover                         | 1    |
| 24       | 81910035 | Tilt sensor connector cover             | 1    |
| 25       | 81905042 | Right fixed castor                      | 1    |

## BoSS X3X/X3/X2 Base Unit Drawer Assembly



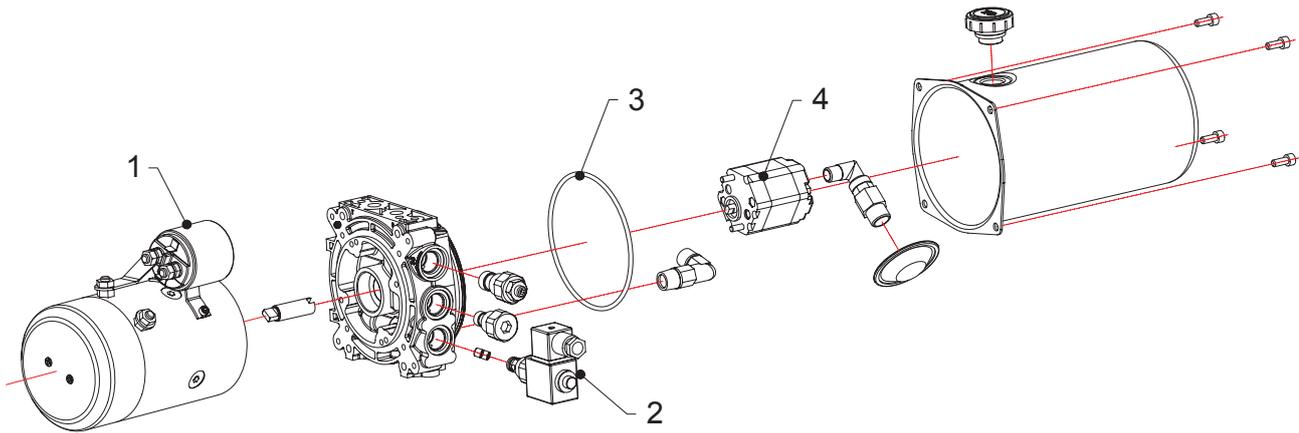
### BoSS X3X/X3 Base Unit Drawer Assembly

| Item Ref | Part No. | Description                  | Qty. |
|----------|----------|------------------------------|------|
| 1        | 81910043 | Transparent connector cover  | 1    |
| 2        | 81801009 | Relay assembly 16A           | 1    |
| 3        | 81801010 | Relay assembly 5A            | 2    |
| 4        | 81801011 | Timer relay assembly         | 1    |
| 5        | 81120581 | Battery 100A                 | 1    |
| 6        | 81907014 | Battery fixing plate         | 1    |
| 7        | 81910078 | Power pack 1.2kW             | 1    |
| 8        | 81801012 | Pressure sensor assembly     | 1    |
| 9        | 81801013 | Fuse 100A                    | 1    |
| 10       | 81801015 | Fuse 100A base               | 1    |
| 11       | 81801014 | Fuse 5A base                 | 1    |
| 12       | 81910041 | Fuse 5A                      | 1    |
| 13       | 81120821 | 110V charging cable          | 1    |
| 14       | 81120811 | Mains charging cable         | 1    |
| 15       | 81910083 | Charging indicator           | 1    |
| 16       | 81910062 | Battery level indicator      | 1    |
| 17       | 81120491 | Emergency stop button        | 1    |
| 18       | 81909037 | Handle                       | 2    |
| 19       | 81910082 | Charger 12A                  | 1    |
| 20       | 81907017 | Charging point cover         | 1    |
| 21       | 81910051 | Descent alarm                | 1    |
| 22       | 81910050 | Tilt alarm                   | 1    |
| 23       | 81909038 | Rubber seal on top of drawer | 1    |
| 24       | 81904030 | Pressure sensor seal kit     | 1    |
| 25       | 81040181 | Drawer closer bolt           | 1    |

## BoSS X2 Base Unit Drawer Assembly

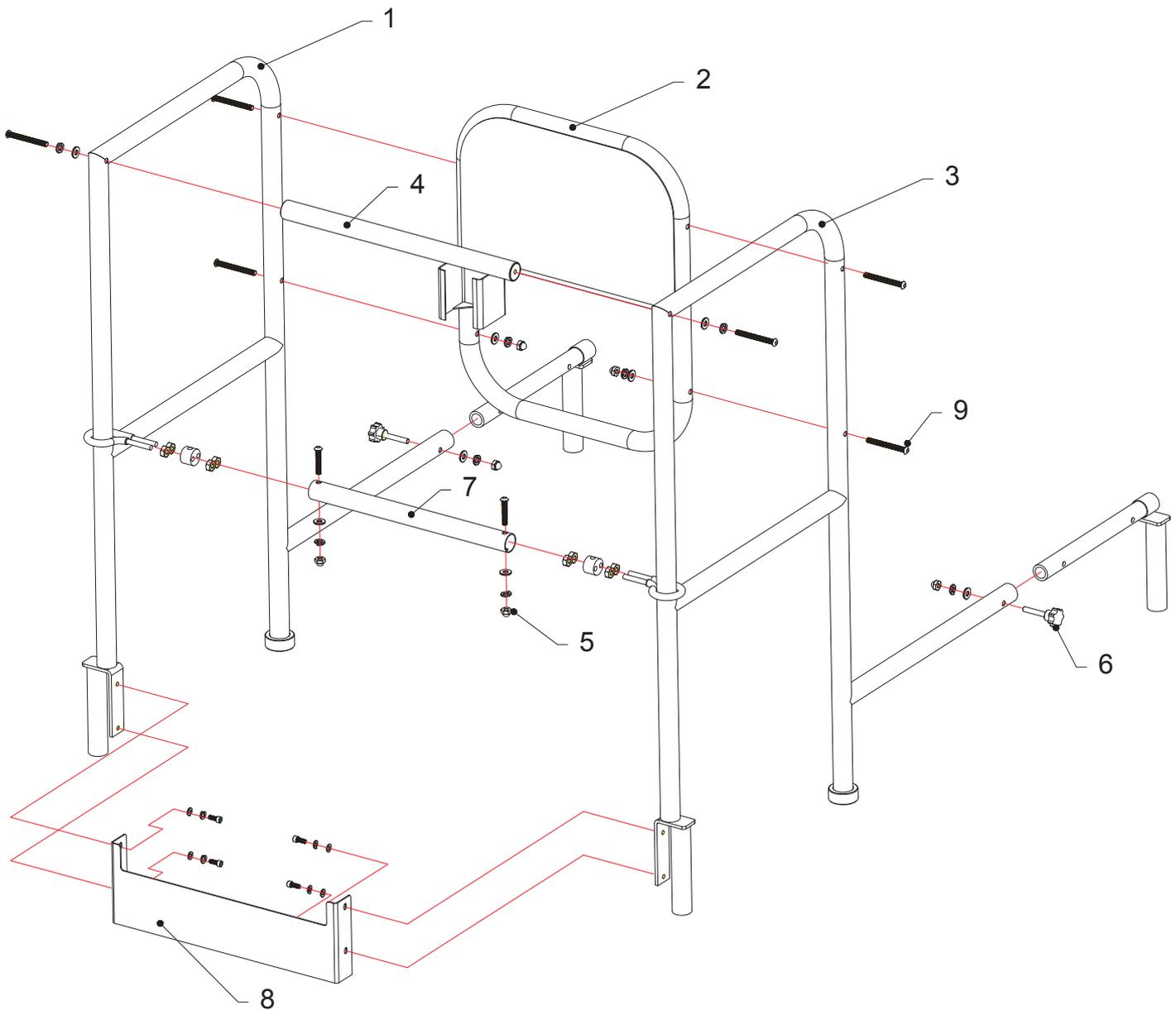
| Item Ref | Part No. | Description                  | Qty. |
|----------|----------|------------------------------|------|
| 1        | 81910043 | Transparent connector cover  | 1    |
| 2        | 81801009 | Relay assembly 16A           | 1    |
| 3        | 81801010 | Relay assembly 5A            | 2    |
| 4        | 81801011 | Timer relay assembly         | 1    |
| 5        | 82910003 | Battery 80A                  | 1    |
| 6        | 81907014 | Battery fixing plate         | 1    |
| 7        | 82910002 | Power pack 0.8kW             | 1    |
| 8        | 81801012 | Pressure sensor assembly     | 1    |
| 9        | 81801013 | Fuse 100A                    | 1    |
| 10       | 81801015 | Fuse 100A base               | 1    |
| 11       | 81801014 | Fuse 5A base                 | 1    |
| 12       | 81910041 | Fuse 5A                      | 1    |
| 13       | 81120821 | 110V charging cable          | 1    |
| 14       | 81120811 | Mains charging cable         | 1    |
| 15       | 81910083 | Charge indicator             | 1    |
| 16       | 81910062 | Battery level indicator      | 1    |
| 17       | 81120491 | Emergency stop button        | 1    |
| 18       | 81909037 | Handle                       | 2    |
| 19       | 82910004 | Charger 8A                   | 1    |
| 20       | 81907017 | Charging point cover         | 1    |
| 21       | 81910051 | Descent alarm                | 1    |
| 22       | 81910050 | Tilt alarm                   | 1    |
| 23       | 81909038 | Rubber seal on top of drawer | 1    |
| 24       | 81904030 | Pressure sensor seal kit     | 1    |
| 25       | 81040181 | Drawer closer bolt           | 1    |

## BoSS X3X/X3/X2 Power Pack Assembly



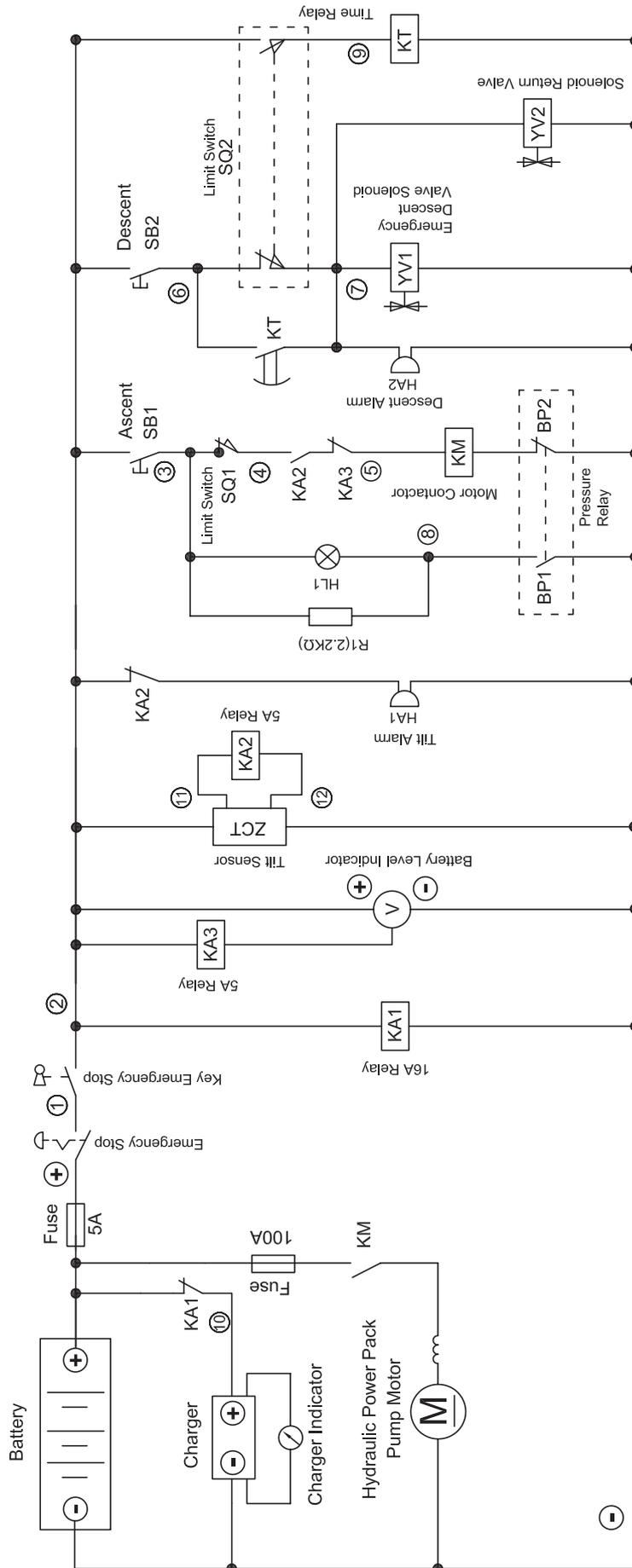
| Item Ref | Part No. | Description                        | Qty. |
|----------|----------|------------------------------------|------|
| 1        | 81100021 | Motor contactor                    | 1    |
| 2        | 81100091 | Solenoid & emergency release valve | 1    |
| 3        | 81801018 | O-ring                             | 1    |
| 4        | 81801019 | Pump                               | 1    |

**BoSS X3X/X3/X2 Confined Space Guardrail Assembly** (Accessory available to purchase separately)

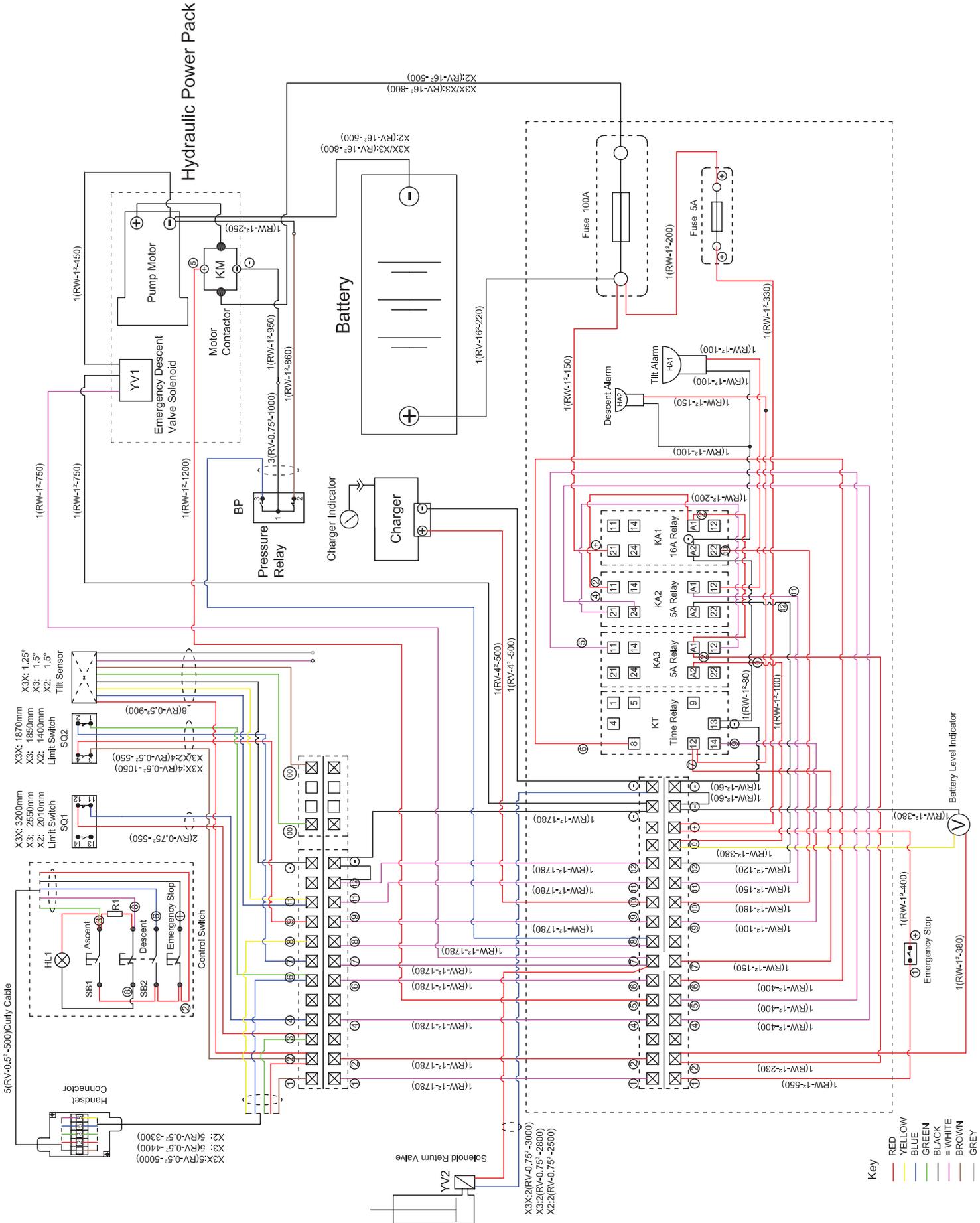


| Item Ref | Part No. | Description              | Qty. |
|----------|----------|--------------------------|------|
| 1        | 81250241 | Left guardrail assembly  | 1    |
| 2        | 81250021 | Back guardrail assembly  | 1    |
| 3        | 81250251 | Right guardrail assembly | 1    |
| 4        | 81250081 | Top bar                  | 1    |
| 5        | 81250211 | Sliding bar gate fixings | 1    |
| 6        | 81250221 | Handle screws M8         | 2    |
| 7        | 81250091 | Slider bar assembly      | 1    |
| 8        | 81250071 | Toeboard                 | 1    |
| 9        | 81250231 | Guardrail fixings        | 1    |

# SECTION 7 - ELECTRICAL SCHEMATIC



# SECTION 8 - WIRING DIAGRAM



## SECTION 9 - TILT SENSOR

The tilt sensor is programmed to trigger if the angle of inclination of the chassis of the BoSS X3X exceeds 1.25° or for the BoSS X3 and X2 the angle is 1.5°. This applies to the tilt sensor built into the machine and any replacement tilt sensor supplied by Youngman or our approved parts distributor.

Should a replacement tilt sensor be fitted to the BoSS X-Series machine it must be zero calibrated (0 – 0.02°) once fitted to the chassis and with the chassis level on both the lateral and longitudinal axes as determined by the use of a suitable inclinometer. Once the level is achieved the two points on the zero connector block (see *figures 1 and 2* below) should be bridged with a piece of wire for three seconds (see *figure 3*) and the sensor will then be calibrated to 0 – 0.02°. The machine must be switched on and the platform raised and held in place by the fail-safe props during this calibration process.



Figure 1



Figure 2

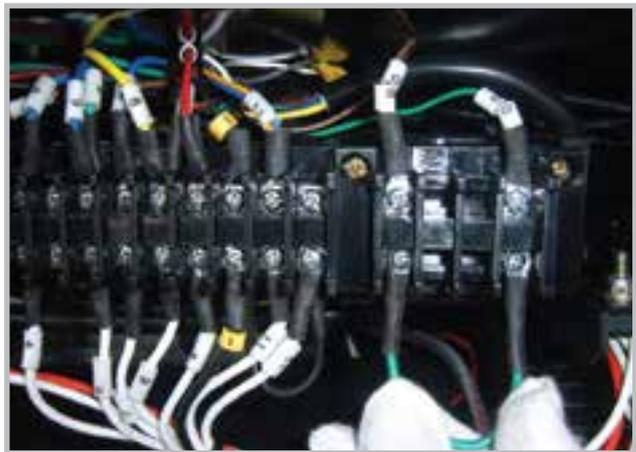
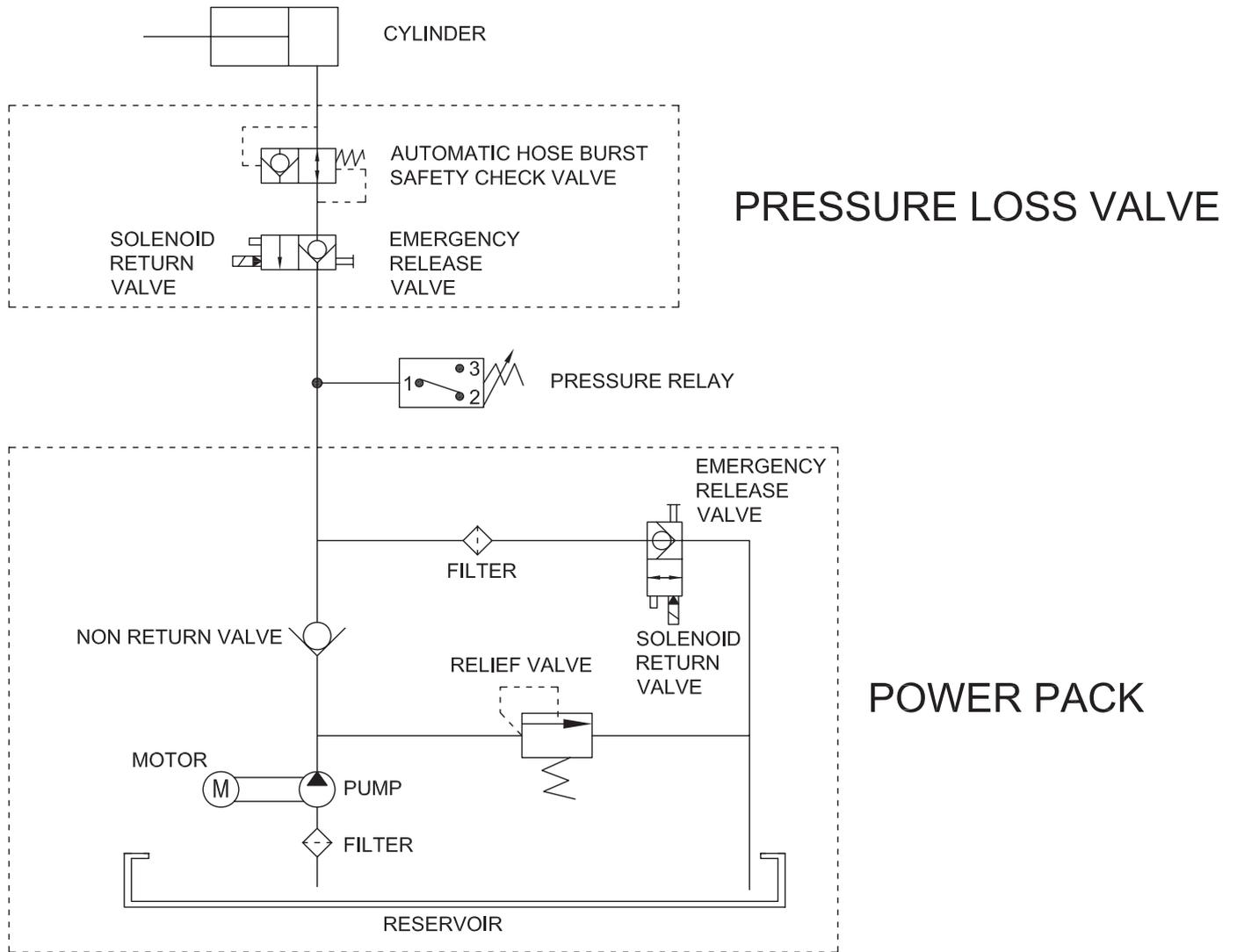


Figure 3

### **WARNING**

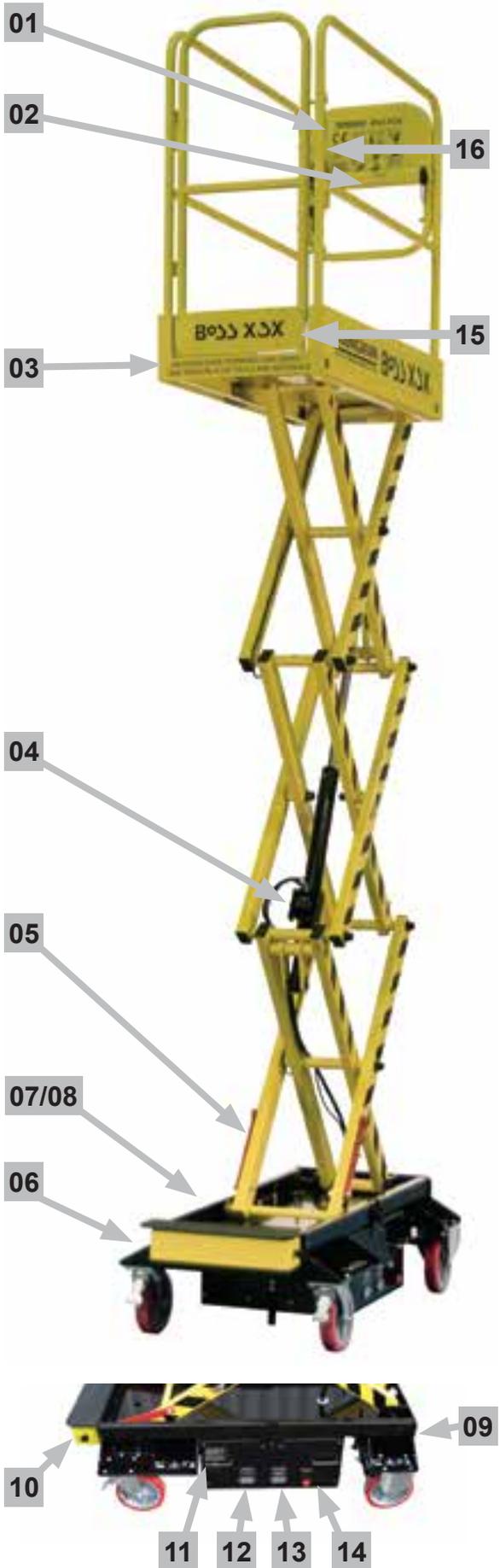
**Failure to correctly calibrate the tilt sensor will result in a failure of the tilt sensor to operate normally and could result in the serious injury or death of any subsequent operator of the BoSS X-Series machine.**

SECTION 10 - HYDRAULIC SCHEMATIC



# SECTION 11 - MACHINE LABELLING

See below for the correct location of the BoSS X-Series labels and machine plate



- 01
- 02
- 03
- 04
- 05
- 06
- 07
- 08
- 09
- 10
- 11
- 12
- 13
- 14
- 15
- 16

## SECTION 11 - MACHINE LABELLING CONTINUED

| Item Ref | Part No. | Description            | Qty. |
|----------|----------|------------------------|------|
| 1        | 83911031 | X3X branding decal set | 1    |
| 2        | 83911032 | X3X safety decal set   | 1    |
| 1        | 81911031 | X3 branding decal set  | 1    |
| 2        | 81911032 | X3 safety decal set    | 1    |
| 1        | 82911031 | X2 branding decal set  | 1    |
| 2        | 82911032 | X2 safety decal set    | 1    |

## SECTION 12 - STORAGE

The BoSS X-Series machine should be stored inside in a secure, clean and dry environment, the emergency stop on the handset depressed and the key removed. It should not be stored outside.

When the BoSS X-Series machine is parked the swivel castor brakes must be applied and if the machine has to be parked on a gradient the castors must be chocked. The BoSS X-Series machine must not be stored where the air temperature exceeds 50°C or falls below -20°C.

## SECTION 13 - TROUBLESHOOTING

| Problem  | Cause                                   | Repair   |
|--|---|--|
| Platform does not raise<br>(motor not running) | Faulty wiring                           | Check the wiring referring to the wiring diagram |
|  | Battery is disconnected                 | Reconnect the battery                            |
|  | Battery charge is insufficient          | Charge the battery                               |
|  | Tilt sensor has been triggered          | Reduce operating angle                           |
| Platform does not raise<br>(motor running)     | Platform is overloaded                  | Reduce platform load                             |
|  | Faulty adjustment of relief valve       | Adjust relief valve                              |
|  | Faulty hydraulic pump                   | Replace pump                                     |
|  | Insufficient hydraulic oil              | Add hydraulic oil                                |
| Platform creeps<br>(uncontrolled lowering)     | Oil leakage in power pack               | Replace lowering valve                           |
|  | Oil leakage from hydraulic circuit      | Check hydraulic circuit and repair               |
| Oil leaking from cylinder                      | Faulty sealing                          | Replace sealing                                  |
| Oil leaking from piping or joint               | Insufficient tightening or seal invalid | Tighten joint or replace seal                    |
| Oil leaking from air breather                  | Excessive quantity of oil               | Reduce oil quantity                              |

## SECTION 14 - DISPOSAL

At the end of its life the BoSS X-Series machine should be taken to a licensed centre for recycling.

## SECTION 15 - MODIFICATIONS TO LATER BOSS X-SERIES MACHINES (REFER TO SERIAL NUMBERS AT START OF THIS SECTION)

In accordance with the Youngman policy of continuous product development we have introduced the following four changes to machines.

These changes are effective on machines with the following or later serial numbers:

- BoSS X3X – YMG 32001
- BoSS X3 – YMG 12001
- BoSS X2 – YMG 22001

The following three changes apply to all three machines:

- Tool box moved from under the step up to the platform and fitted to the guardrail as shown below.



- Width of gate reduced to prevent trapping of fingers as shown below.



- Pressure loss release moved from the ram to under the step up to the platform as shown below.



This changes the **EMERGENCY LOWERING** procedure for machines fitted with this new mechanism:

1. Turn the emergency valve on the base unit anticlockwise until it will not turn any further as shown in *figure 1*.



Figure 1

2. Pull the pressure loss valve release handle, shown in *figure 2* below, which is mounted under the step up to the platform, until the platform lowers. It at any time you need to stop the descent simply release the handle.



Figure 2

### WARNING

**Always ensure someone other than the operator is trained to perform this rescue.**

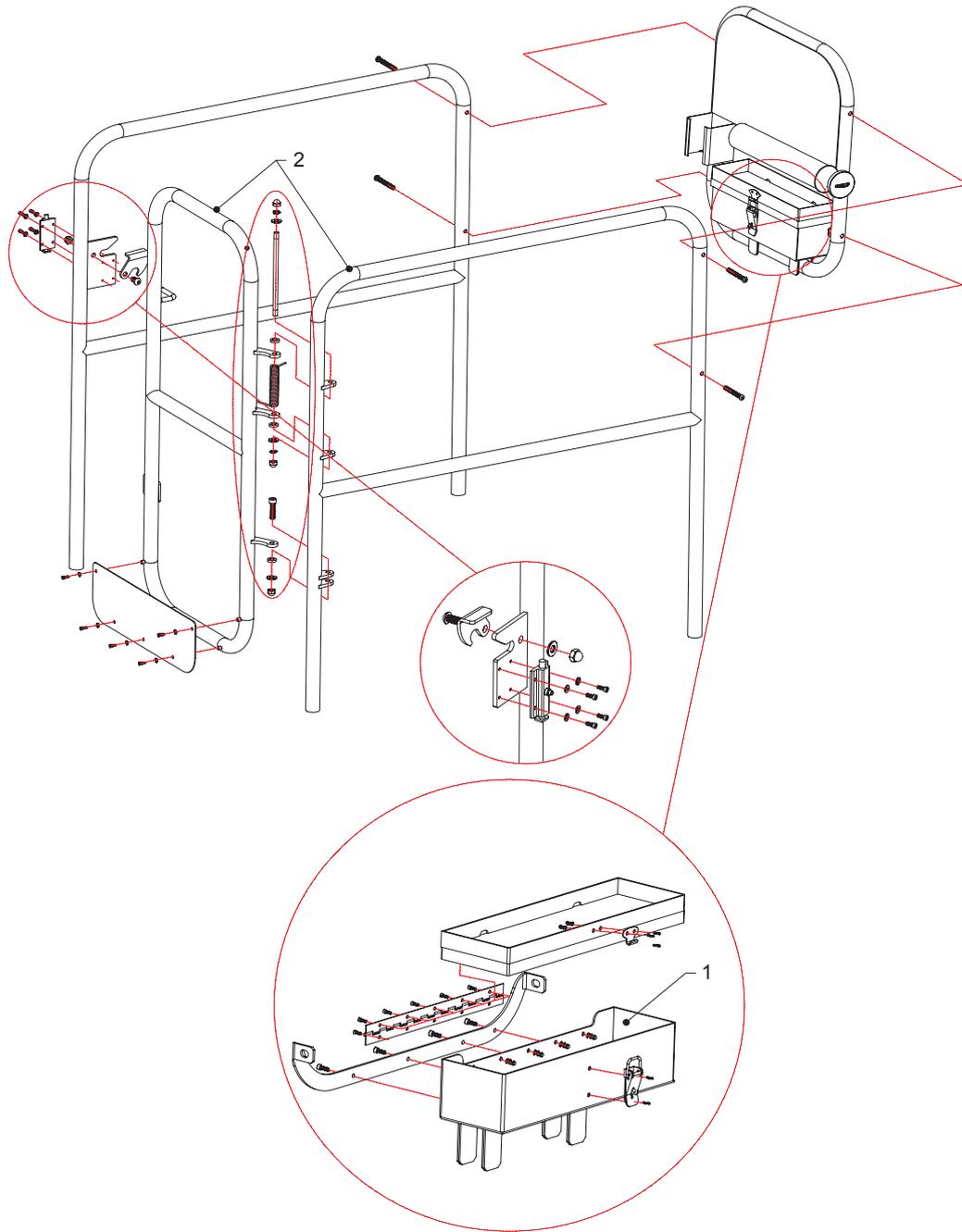
In addition, in order to shorten the length of the BoSS X3X for transport, the step has been redesigned to be detachable as shown below.



The stowed length of the BoSS X3X is reduced from 1.41 to 1.3 metres when the step is removed.

The following exploded drawings and tables have been revised to show these machine changes and the new spare parts required. If any spare part is not listed here please refer to Section 6.

## BoSS X3X/X3/X2 Guardrail Assembly - showing new tool box and narrow gate



### X3X Guardrail Assembly

| Item Ref | Part No. | Description                            | Qty. |
|----------|----------|--|------|
| 1        | 81200501 | X-Series tool box                      | 1    |
| 2        | 83801020 | Right guardrail & narrow gate assembly | 1    |

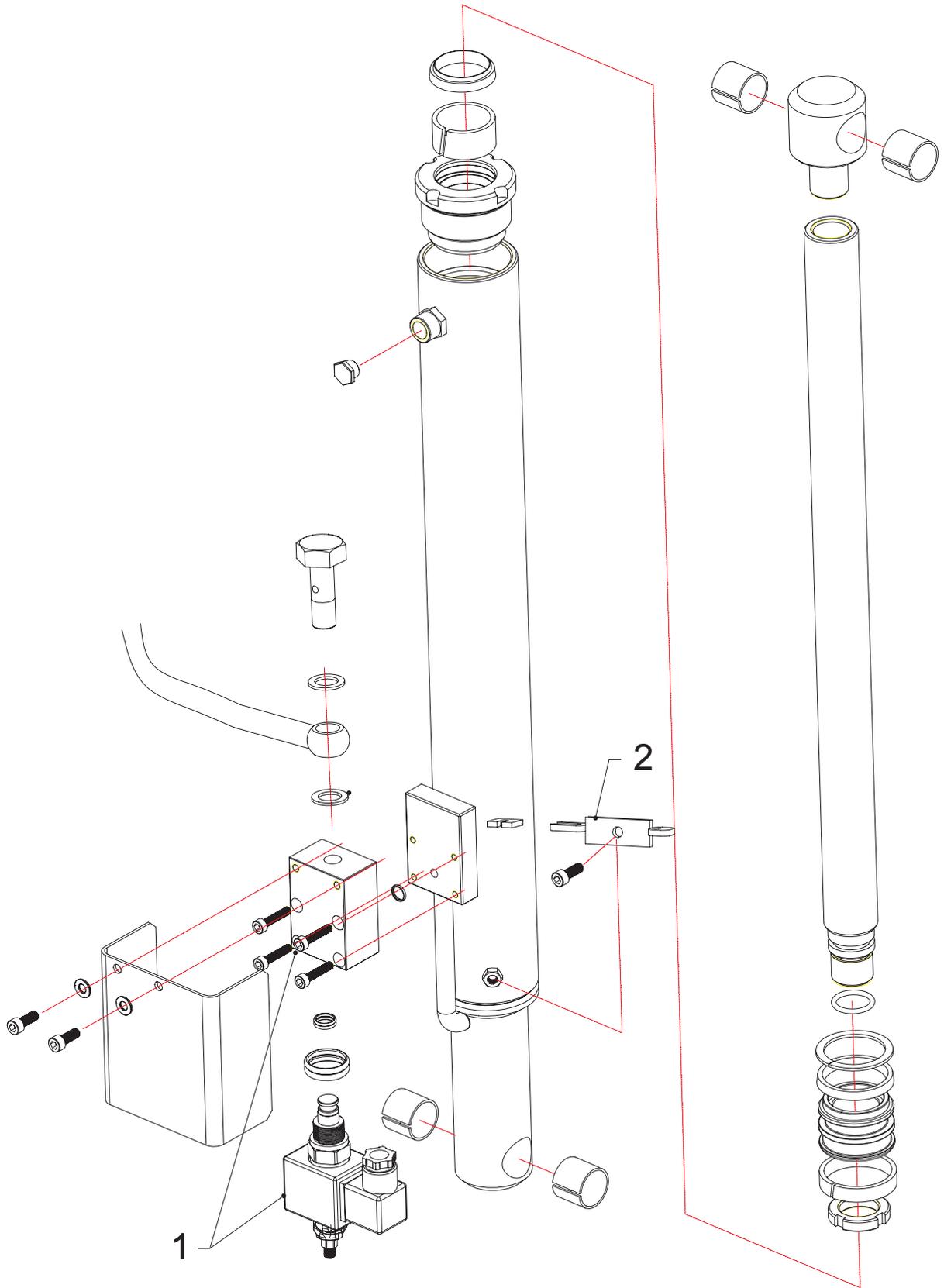
### X3 Guardrail Assembly

| Item Ref | Part No. | Description                            | Qty. |
|----------|----------|--|------|
| 1        | 81200501 | X-Series tool box                      | 1    |
| 2        | 81801020 | Right guardrail & narrow gate assembly | 1    |

### X2 Guardrail Assembly

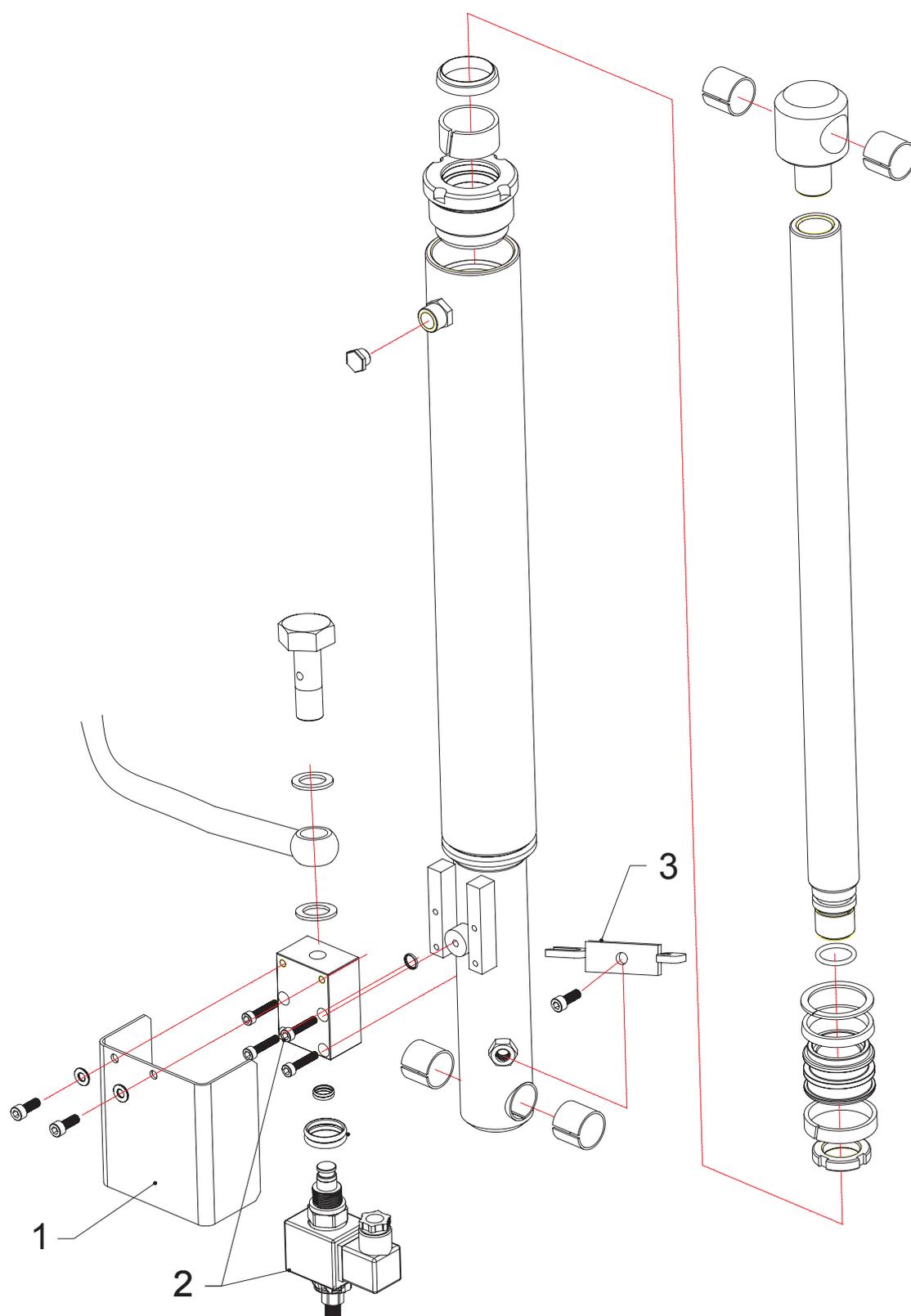
| Item Ref | Part No. | Description                            | Qty. |
|----------|----------|--|------|
| 1        | 81200501 | X-Series tool box                      | 1    |
| 2        | 82801020 | Right guardrail & narrow gate assembly | 1    |

BoSS X3X/X3 Hydraulic Cylinder Assembly - showing new pressure loss valve arrangement



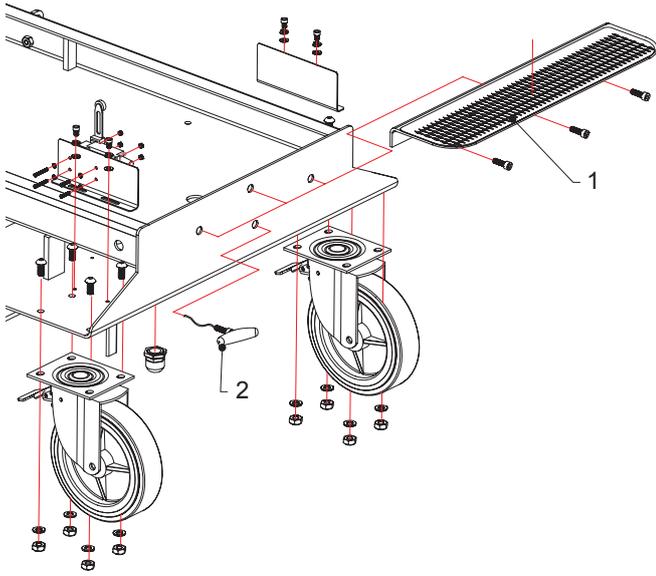
| Item Ref | Part No. | Description                                | Qty. |
|----------|----------|--|------|
| 1        | 81911021 | Pressure loss valve assembly – handle type | 1    |
| 2        | 84040019 | Pressure loss valve release linkage        | 1    |

BoSS X2 Hydraulic Cylinder Assembly - showing new pressure loss valve and cover arrangement



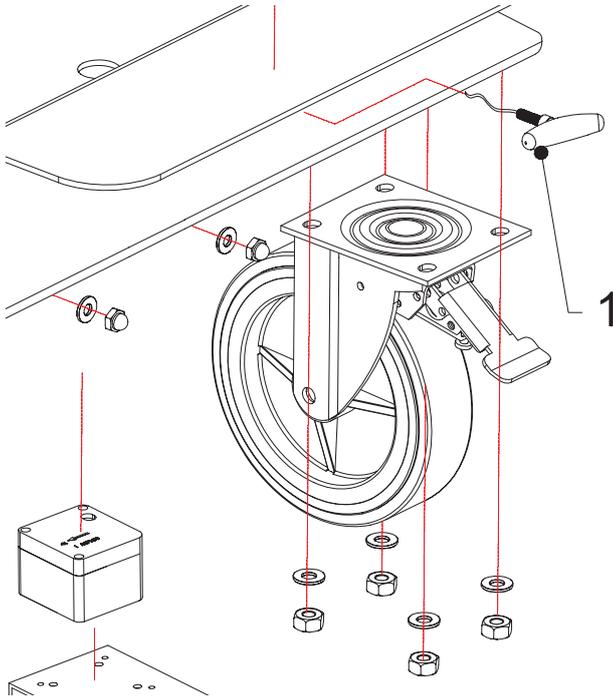
| Item Ref | Part No. | Description                                | Qty. |
|----------|----------|--|------|
| 1        | 82904026 | Pressure loss valve cover – handle type    | 1    |
| 2        | 81911021 | Pressure loss valve assembly – handle type | 1    |
| 3        | 82040019 | Pressure loss valve release linkage        | 1    |

**BoSS X3X Base Unit Assembly - showing emergency pressure loss valve release handle and detachable step**



| Item Ref | Part No. | Description                                      | Qty. |
|----------|----------|--|------|
| 1        | 83911019 | Detachable step                                  | 1    |
| 2        | 83911020 | X3X emergency pressure loss valve release handle | 1    |

**BoSS X3/X2 Base Unit Assembly - showing emergency pressure loss valve release handle**



**BoSS X3**

| Item Ref | Part No. | Description                                     | Qty. |
|----------|----------|---|------|
| 1        | 81911020 | X3 emergency pressure loss valve release handle | 1    |

**BoSS X2**

| Item Ref | Part No. | Description                                     | Qty. |
|----------|----------|---|------|
| 1        | 82911020 | X2 emergency pressure loss valve release handle | 1    |

As a result of these machine changes four new labels have been added to the machines – see positioning in pictures below.



Tool box



Emergency descent procedure



Charging point



Emergency pressure loss valve release handle

| Part No.                                   | Description                         | Qty. |
|--|-------------------------------------|------|
| <b>BoSS X3X Safety Decal Set (revised)</b> |                                     |      |
| 83911034                                   | BoSS X3X safety decal set (revised) | 1    |
| <b>BoSS X3 Safety Decal Set (revised)</b>  |                                     |      |
| 81911034                                   | BoSS X3 safety decal set (revised)  | 1    |
| <b>BoSS X2 Safety Decal Set (revised)</b>  |                                     |      |
| 82911034                                   | BoSS X2 safety decal set (revised)  | 1    |

## APPENDIX

### Report of a Thorough Examination

**Reference: "Lifting Operations and Lifting Equipment Regulations 1998" Regulation 10 Schedule 1**

1. Company: \_\_\_\_\_  
Address: \_\_\_\_\_

2. Site address (if different from above): \_\_\_\_\_

3. **Equipment**

|               |                      |
|---------------|----------------------|
| Manufacturer: | Serial number:       |
| Model:        | Year of manufacture: |

4. Date of last thorough examination: \_\_\_\_\_

5. Safe working load: \_\_\_\_\_

6. (a) Is this the first thorough examination since assembly? **YES / NO**  
(b) Is it safe to operate? **YES / NO**

7. a(i) Is this a thorough examination of lifting equipment for lifting persons within an interval of 6 months under regulation 9(3)(a)(i) ? **YES / NO**  
(iii) Is it in accordance with an examination scheme? **YES / NO**  
(iv) Is it due to exceptional circumstances e.g. major repair? **YES / NO**  
(b) Is it safe to operate? **YES / NO**

8. (a) Description of defect or defective part: \_\_\_\_\_  
(b) Details of repair required: \_\_\_\_\_  
(c) Details of a dangerous or potentially dangerous defect:  
(i) Time by which it could become a danger \_\_\_\_\_  
(ii) Particulars of any repair to remedy it \_\_\_\_\_

(d) Date next thorough examination is due: \_\_\_\_\_

(e) Details of any test:  
Safe Working Load: \_\_\_\_\_  
Overload: \_\_\_\_\_

(f) Other observations and recommendations: \_\_\_\_\_

9. Engineers name: \_\_\_\_\_  
Engineers CAP number: \_\_\_\_\_  
Engineers signature: \_\_\_\_\_  
Employed by: \_\_\_\_\_  
Address: \_\_\_\_\_

10. Clients appointed representative: \_\_\_\_\_  
Clients appointed representative signature: \_\_\_\_\_  
Address: \_\_\_\_\_

# BOSS™



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