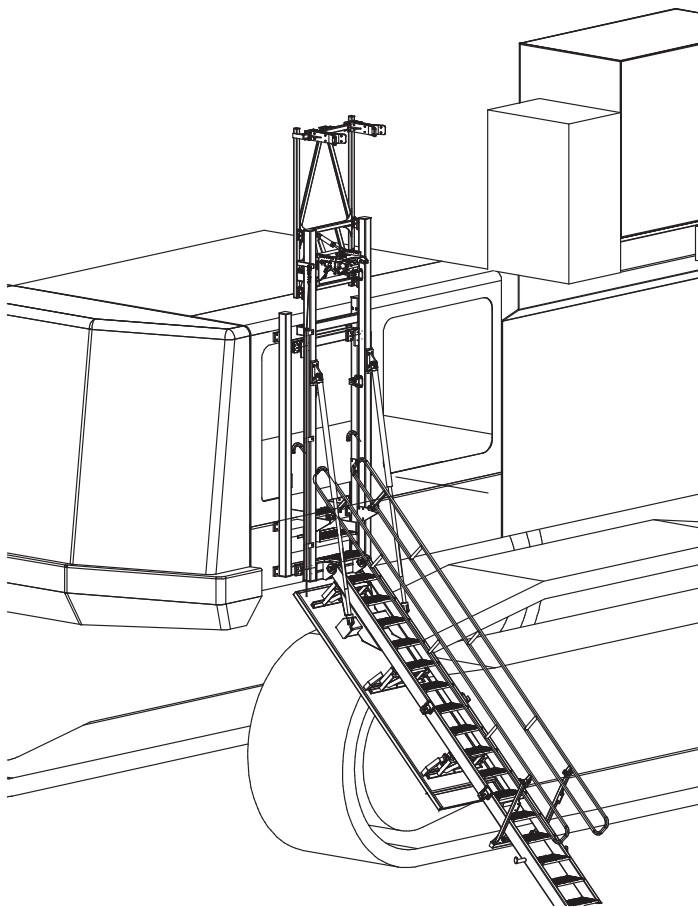




Operations and Maintenance Manual

Liebherr 996-2 (Rev 2)

Folding Stair Assembly



Model No.PSA-LIE996 -L/STAIR
Serial No.LIE996-00LL to
Date manufactured January 2009

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LIGHT STAIRWAY

LIEBHERR 996-2



SECTION 1

Installation and Mounting Instructions

NOTE

Follow all on-site/Mine lifting and safety procedures when installing Light Stairway to Liebherr 996 Excavator

INSTALLATION PROCEDURE (Refer Drawing 23 331)

See Page 6 and 7

1. **Per View 1**, relocate piping and other existing fittings outside the alignment of the original outer skin of the excavator.
2. **Per View 1**, remove the rear half of the noise suppression enclosure.
3. **Per View 1**, if so directed by MAC engineer/s, sheet over the vent window above the existing ladder landing with suitable gridmesh flooring to make a working floor.
4. **Per View 3.2**, trim the outer edge of the existing flooring in front of the rearmost radiator to align with the inner surface of the outer skin of the excavator, leaving only the part that will become the stairway landing protruding beyond the skin. If the existing flooring does not protrude 90 beyond the skin, the landing part must be extended but that can be done later.
5. **Per View 7**, at the side of the excavator where the stair is to be fitted, measure the distance from the existing floor down to the lip of the well where the original ladder was fitted. If the distance is less than 570mm (probably Machine 211 only) cut and fit an infill piece to reduce the distance to 550mm approx.
6. **Per View 2**, using **23 328** Installation Jig, locate and mark out positions of Bolting Pads and Bolting Bar on surface of excavator. Grind the paint away from the places to be welded. Ensure the pads etc are aligned with the machine (ie not necessarily aligned to the earth - the machine might not be level). Check the location of pads against the dimensions in **View 3**. Weld in place, 6cfw around all pieces.
7. Sling the assembled stair set into place and bolt to Bolting Pads and Bolting Bar using bolts as listed with sleeves provided.
8. Manually release stair latch and remove securing safety straps/chains and, using crane, lower stair to deployed access position.
9. Fit Hydraulic Power Unit (under landing per MAC engineer's directions). Fit hydraulic piping and hoses and electrical control and power circuits.

LIGHT STAIRWAY LIEBHERR 996-2



SECTION 1

Installation and Mounting Instructions

INSTALLATION PROCEDURE (Cont.) (Refer Drawing 23 331)

See Page 6 and 7

10. Per Drawing 23 391 Latch adjustment, check/adjust operation and performance of Latch.
11. If necessary (ie if not already done) fit extension to flooring as directed in Item iv.
12. Adjust handrail keepers (J-Hook 23 310 99 and Leader Pad 23 310 98, mounted to Stair and Stair Portal) so that handrails will be held firm when stair is in raised, stowed position.
13. Fit replacement handrails to the 'inside' of the Mounting Frame per **View 5** (bolt on).
14. Fit Rear Toeboard to 'inside' of Mounting Frame, bolt on, per **View 5**. Fit Front Toeboard to outside of excavator wall. Weld the heads of 2 bolts M12 x 30 to outside of wall, positioned per dimensions shown in **View 3.1** Bolt toeboard components per **View 6**.
15. Fit 23 337 SWL Sign on inside wall of machine, location to suit (see View 5). Cut into pieces if necessary.
Glue or other fixing.

NOTE:

All welding is to be Cat SP to AS 1554, 6cfw uno.
Flat washer under each bolt head and nut, uno.



SECTION 1

Installation and Mounting Instructions (Cont.)

WARNING

Raising the POWER STEP Light Stair by external means can create a vacuum in the hydraulic cylinder and create the opportunity to allow air into the hydraulic system, defeating the inherent safety features of the POWER STEP.

This must be avoided to maintain safe operation of the POWER STEP and to avoid damage to the cylinders and step assembly.

In instances where the use of external means to raise the Light Stair must be used, please follow the following instructions:

Tag or lock out the Power pack assembly.

Loosen hard plumbed hydraulic lines on cylinder side of lock valve on cylinder.

Raise Light Stair by available means.

NOTE: Make necessary arrangements to collect displaced oil, and be aware that air enters the piston side of the cylinder as Light Stair is raised. Lock in raised position.

Tagout the POWER STEP.

SECURE THE LIGHT STAIR IN THE RAISED POSITION, MECHANICALLY, CHAIN & RETIGHTEN HYDRAULIC FITTINGS.

To recommission the POWER STEP:

Connect Step to the correct lifting device.

Remove the lock out device and take the load.

Loosen hydraulic fittings on cylinder side of lock valve.

Note: Collect displaced oil.

Lower Light Stair to lowest position, using alternate safety approved means, fully extending cylinder. Ensure all personnel are clear of step radius.

Operate electrical control switch to purge air from the hydraulic line systems, lock valve and cylinder.

Tighten the hydraulic fittings either side of lock valve to restriction fitting.

Cycle step unloaded several times to purge all air from hydraulic system.

Check the oil level during the cycles.

The Power Step will not operate correctly if there is any air in the hydraulic circuit (due to the incorrect operation of the lock valve).

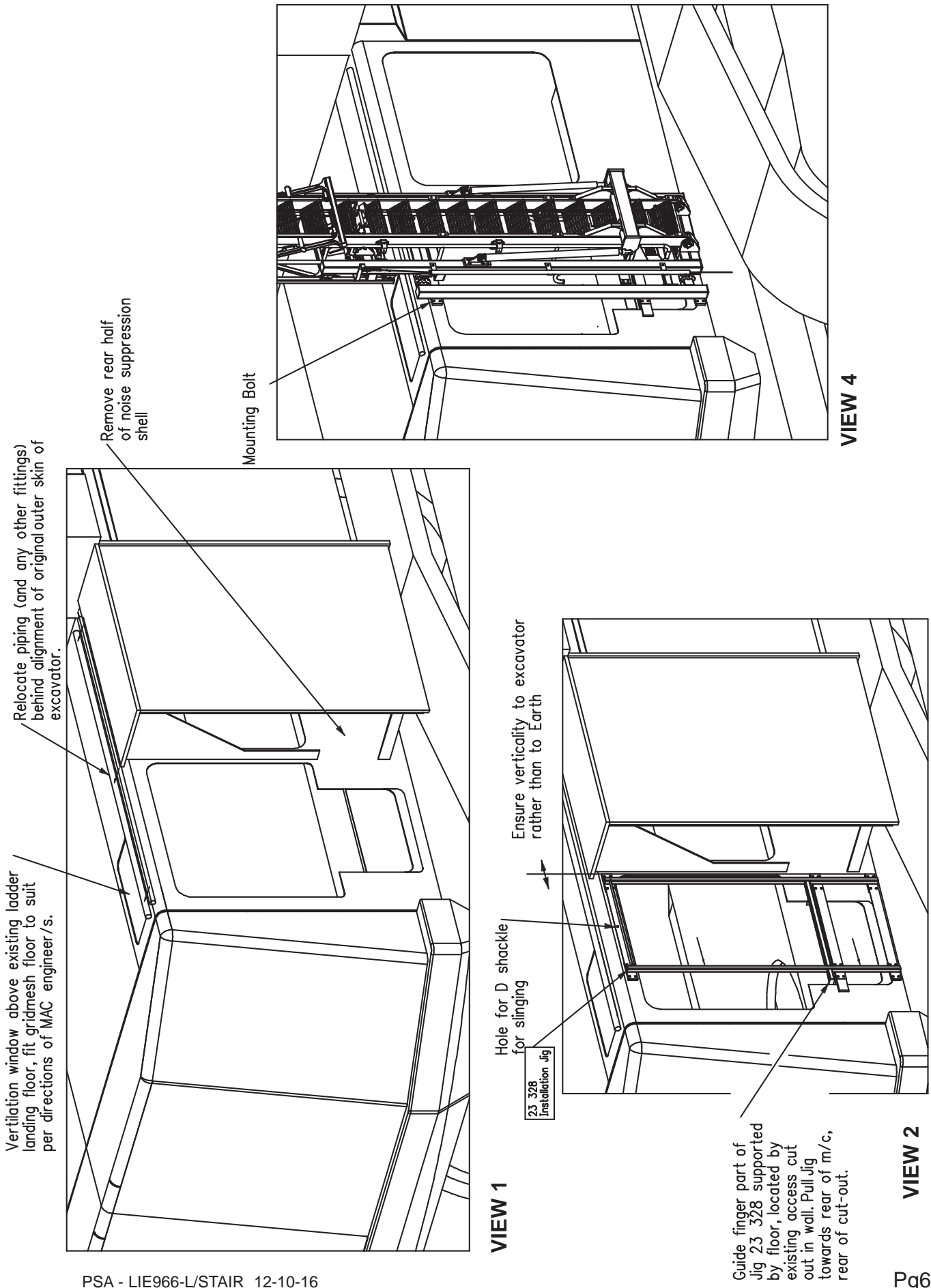
Once step is working correctly check the oil level in the Power Pack.

Clean up work area and remove all safety Tags.

LIGHT STAIRWAY LIEBHERR 996-2



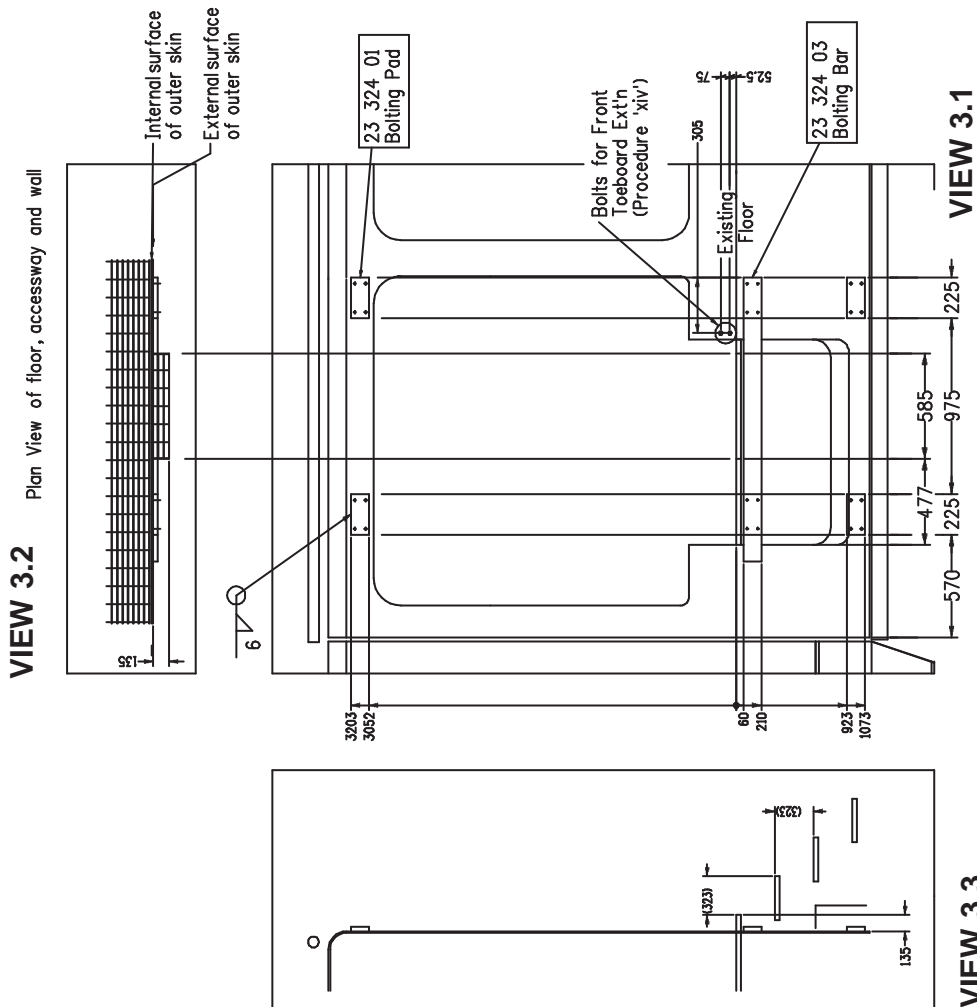
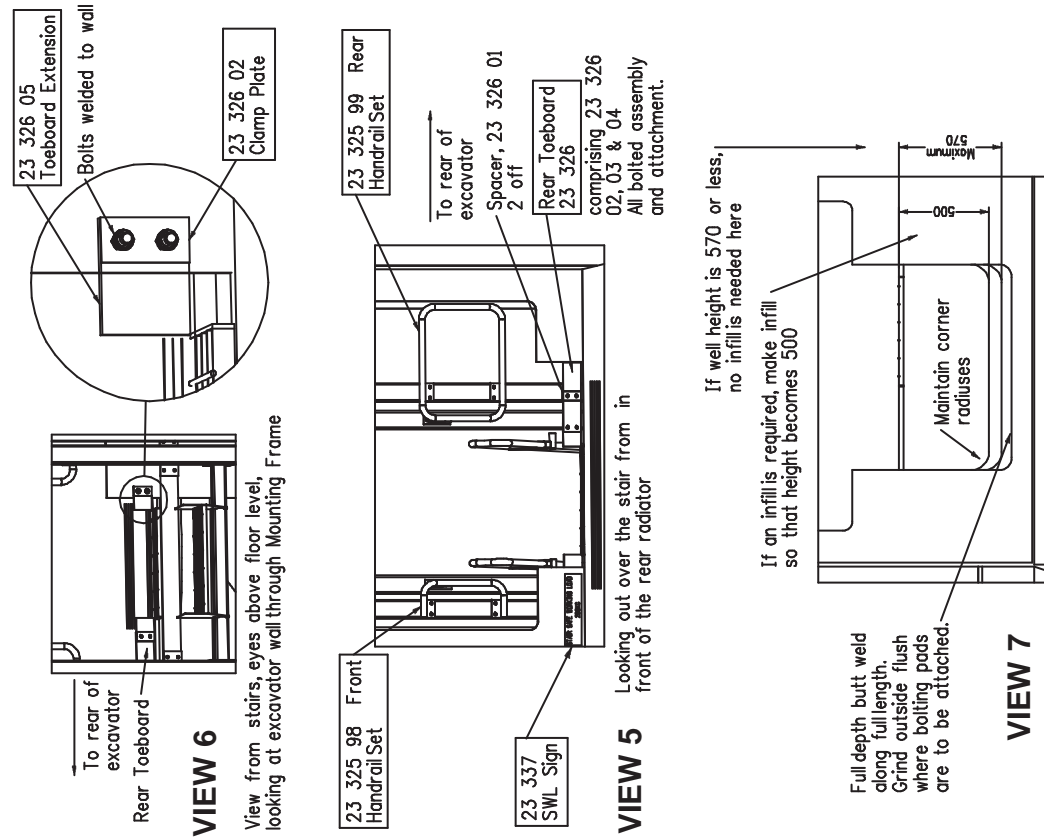
SECTION 1 Installation Drawing 1 23 331



LIGHT STAIRWAY

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SECTION 1 Installation Drawing 2 23 331



LIGHT STAIRWAY

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SECTION 1 Installation Drawing 23 336



Noise Enclosure Replacement Panel

(See Fabrication Drg. 23 338)

PROCEDURE

See Page 9

1. Sling the Panel Frame into position against the side of the excavator with the bolting pads bolted on, in the position shown in **View 3.2**. Tack weld the bolting pads to the excavator as shown in **Views 1.0, 1.1 and 1.2** (with the front two directly on the skin of the machine but the rear two on the existing bolting pads). Unbolt the frame from the bolting pads. Weld the bolting pads on.
2. Fit the frame back on the bolting pads.
3. Bolt Side Trim to inner edge of panel, per **View 4**. Trim if necessary.
4. Weld Door Jamb, Rear to the outer edge of the frame per **View 4**, located per **View 3.1**.
5. Panel the side and top of the frame to suit.
Side: 3045 x 1020 rectangular approx
Top: 750 x 630 triangular approx.
Note that the protrusion of the bottom of the machine's counterweight might necessitate trimming and/or alteration of the plain rectangular shape of the side panel.
6. Fit compressible sealing strip to suit between Jamb and door to suit, per **View 3.1**

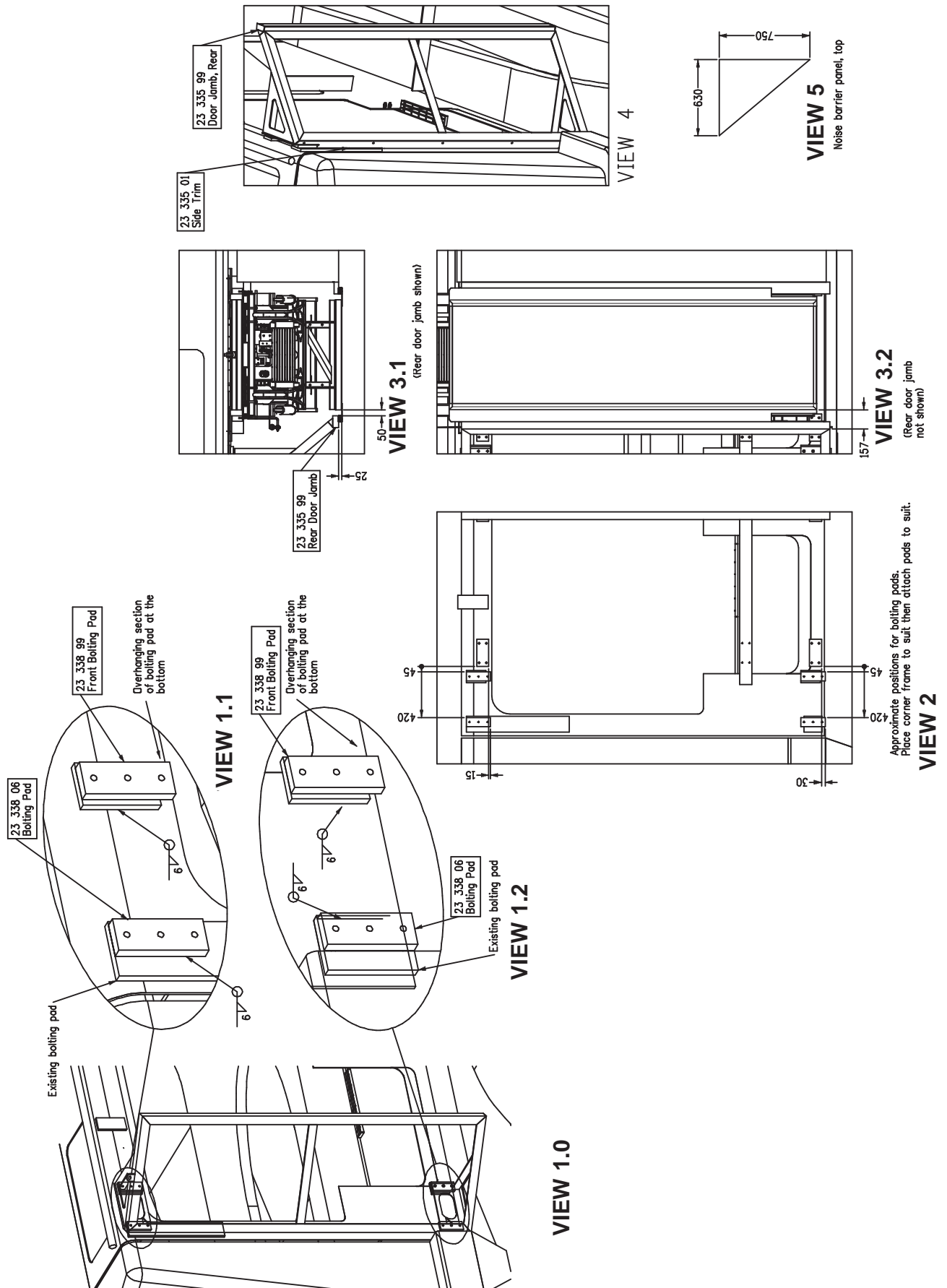
LIGHT STAIRWAY

LIEBHERR 996-2

SECTION 1 Installation Drawing 3 23 336



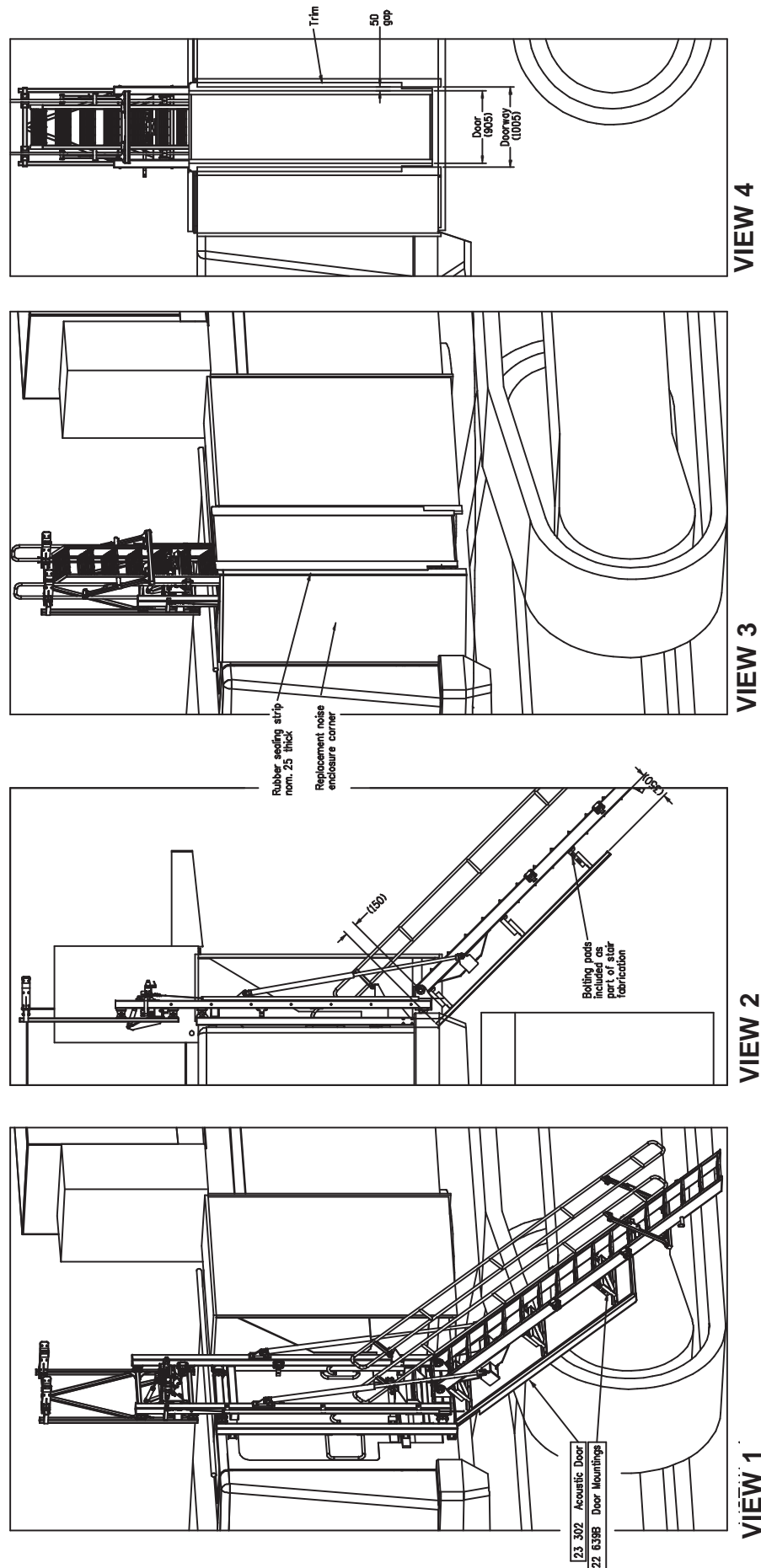
Noise Enclosure Replacement Panel



LIGHT STAIRWAY

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SECTION 1 Installation Drawing 4 23 332

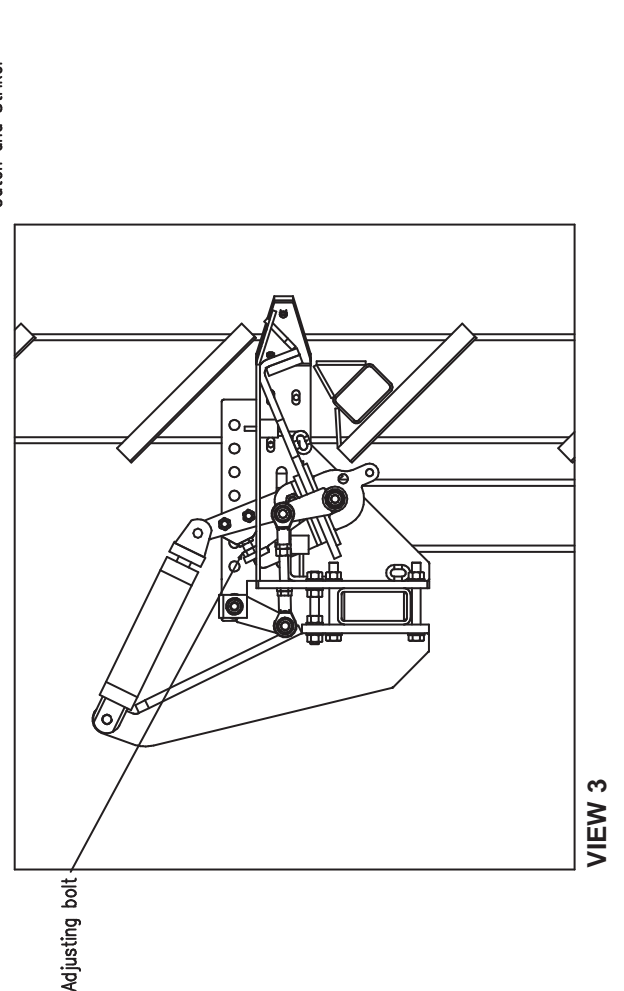
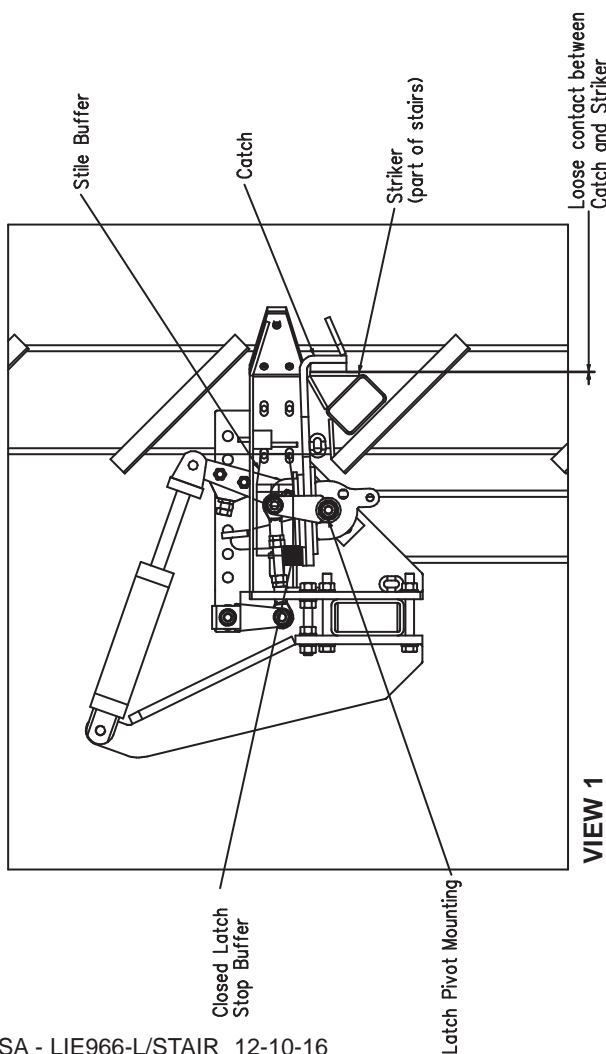
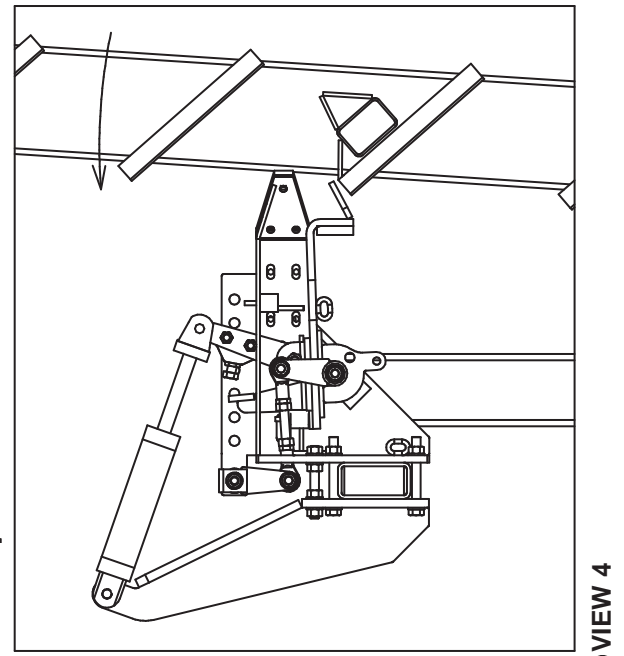
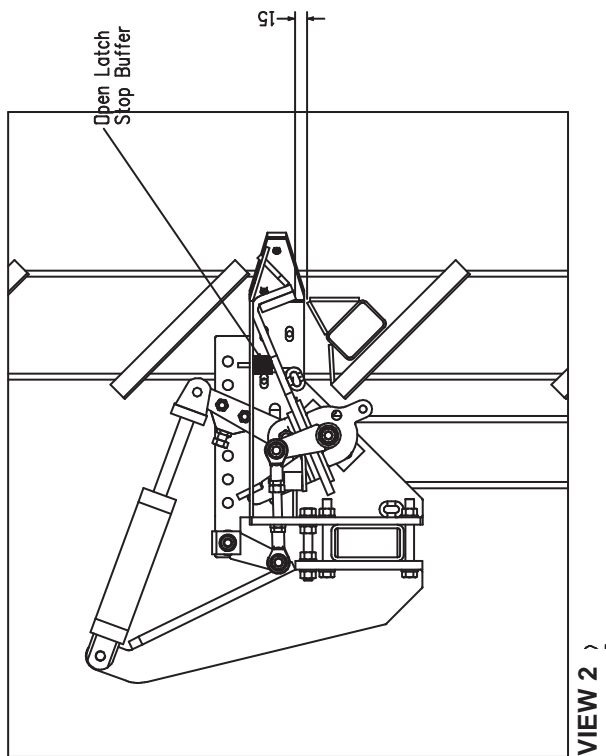


1. FIT ACOUSTIC DOOR PER VIEWS 1 & 2
2. FIT REPLACEMENT COURNER TO REAR OF NOISE SUPPRESSION ENCLOSURE AND TRIM EXISTING ENCLOSURE SIDE WALL TO SUIT PER VIEWS 3 & 4

LIGHT STAIRWAY LIEBHERR 996-2



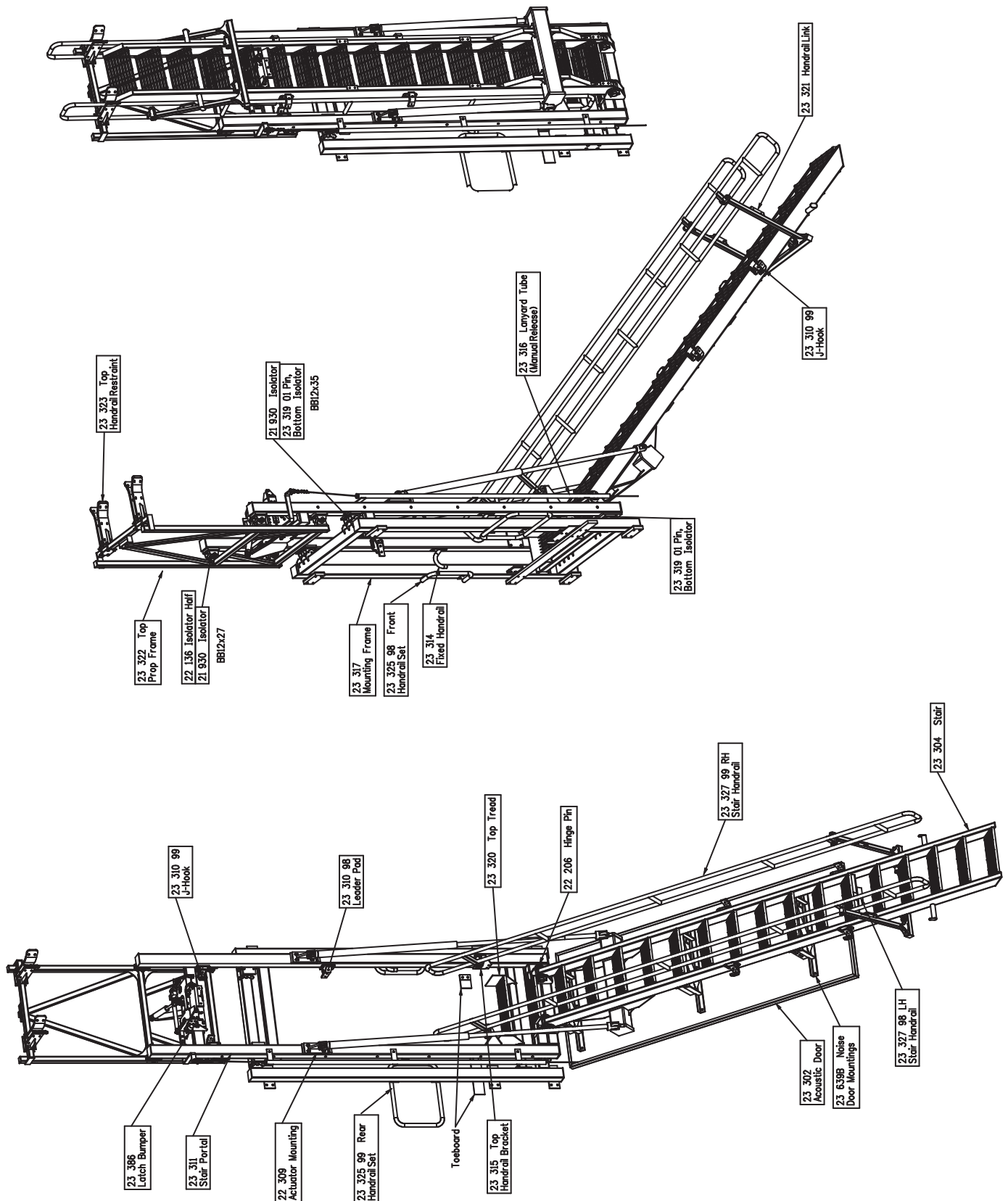
SECTION 1 Latch Adjustment 23 334



LIGHT STAIRWAY LIEBHERR 996-2



SECTION 1 Stair Assembly 23 334





SECTION 2

Operating Procedure

To Lower Stairway (from the machine)

Position machine in a level, safe area, away from the work face, whenever possible.
Apply park brake and lower engine speed to idle.

Check that the area below the Ladder Access System is clear of people and obstacles, and lower ladder by operating the two position electrical switch adjacent to the ladder, by pressing the down switch down.

Hold the switch in the down position until ladder is fully lowered.

If the Excavator is parked on uneven ground, the bottom of the stairway may touch the ground before the ladder is in the fully lowered position.

Should this occur, descend the ladder with caution or raise the ladder and move the machine to a clear flat area.

To Raise Stairway

Ascend the ladder onto the landing of the Excavator.

Ensure the area around the ladder is clear of people and standing to the side, clear of the area the handrails and ladder raises into, operate the electrical switch to the raise position (up) Switch.

Hold the switch in the up position until the ladder is in the fully raised position.

The ladder is now raised and stored.

WARNING

**LOW VOLTAGE BATTERIES WILL HARM THE FUNCTION
OF THE POWER PACK AND THE CONTROL SWITCHES.**

**DAMAGE RESULTING DUE TO LOW VOLTAGE
BATTERIES WILL VOID WARRANTY ON ALL
ELECTRICAL COMPONENTS.**

SECTION 3

Recommended Maintenance Procedure

Daily

Visually check stairway and structure for damage, loose components, handrails, cylinder pins, split pins and up and down switches.

**Check for hydraulic oil leaks from hydraulic cylinders, plumbing and hoses.
Check all rubber stops.
Notify the appropriate supervisor for any observed damage or malfunction.**

500 Hours

Grease any nipples where used. 2 - Hinge Pins (Ladder)

Check and adjust all rubber stops and safety latches/ladder

Check main mounting bolts for torque.

Check hydraulic oil level in power pack and top up as necessary. (Stairway in raised position).

Top up using same hydraulic oil as used in hydraulics of machine. (Val 68)

Thoroughly check all electrical wiring for damage, replace as necessary.

Check all switches, up, down, go switches (magnetic)

Slew Brake to be fitted by Mine if required.

Repeat daily check as above

5000 Hours

Change hydraulic oil in tank of hydraulic power pack (10 litres) (Val 68)

It is recommended that the same hydraulic oil be used in the power pack as the hydraulics of the machine.

Carry out daily and 500 hour service procedure.

Check and inspect all main bolts on light stair system & Pins (Ladder pins) & Bushes Retorque if required.

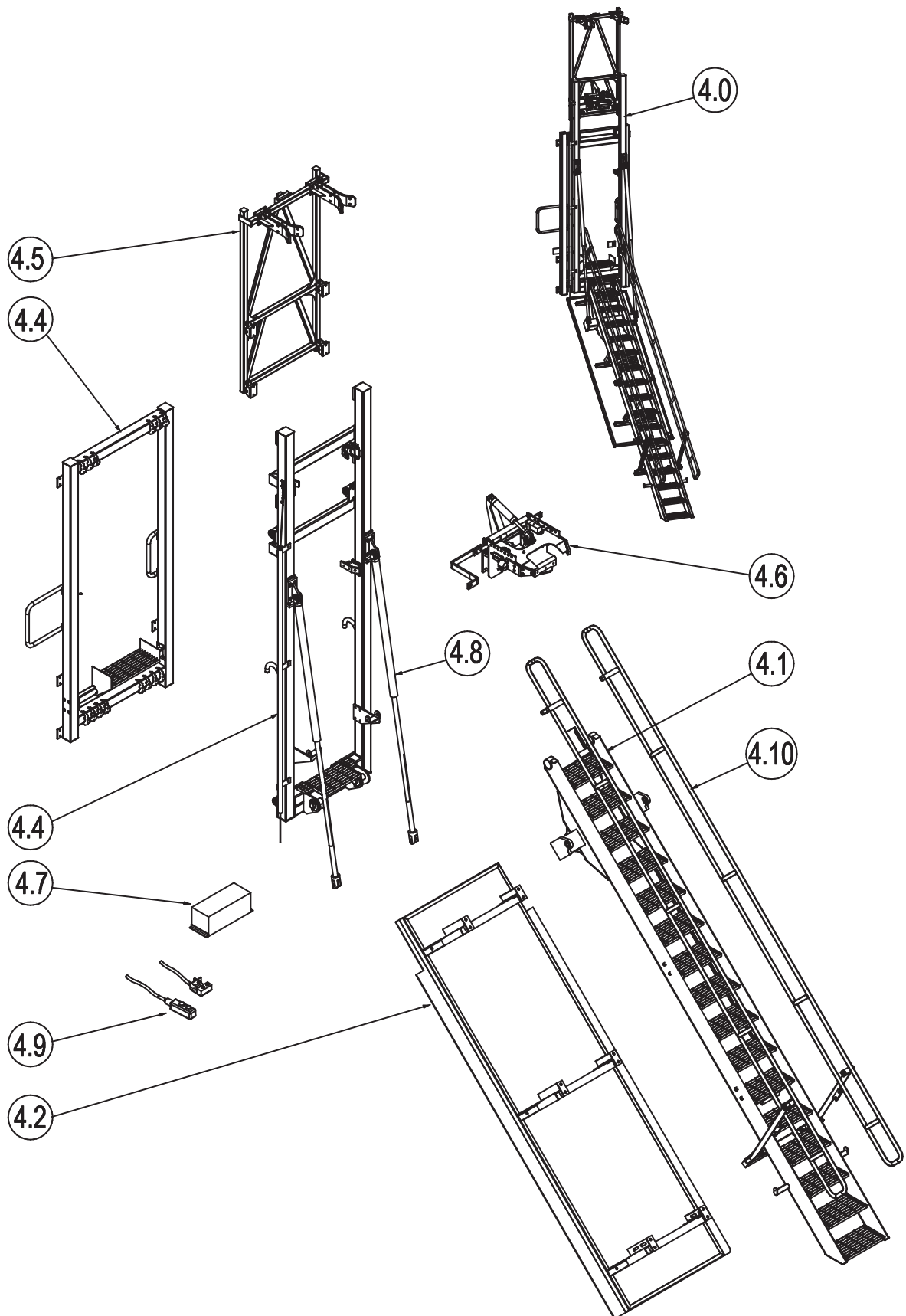
Check cylinder seals or replace. Lock adjust and assemble.

Repeat daily check as above

LIGHT STAIRWAY LIEBHERR 996-2



SECTION 4 Assembly Complete PSA-LIE996-L/STAIR



LIGHT STAIRWAY LIEBHERR 996-2



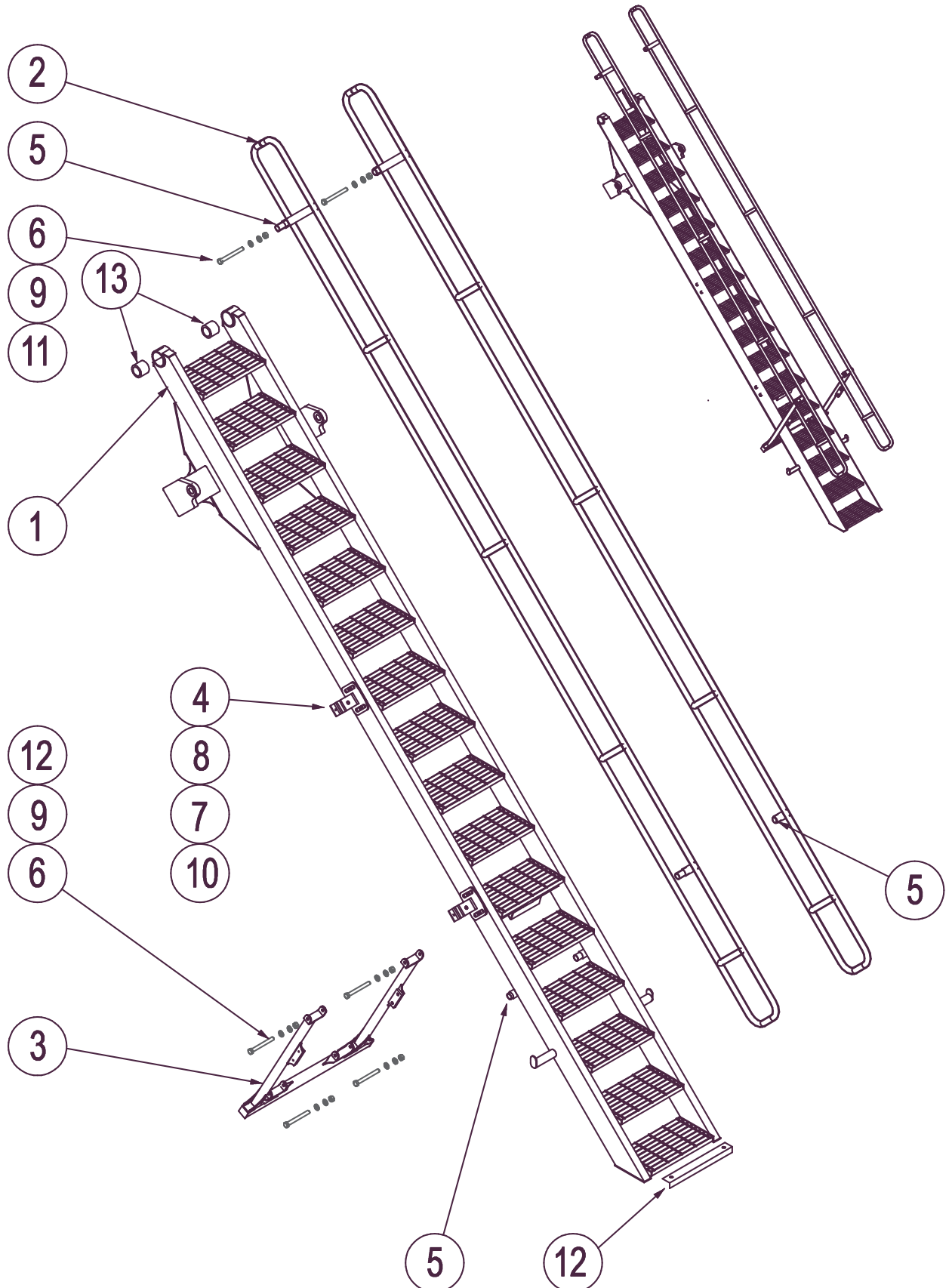
SECTION 4 Assemblies

| ITEM | PART NO. | PART NAME | QTY | | |
|------|------------------|-----------------------------|-----|--|--|
| 4 | PS-23344A | STAIR ASSEMBLY COMPLETE | 1 | | |
| 4.1 | PS-23304A | LADDER STAIR ASSEMBLY | 1 | | |
| 4.10 | PS-23327 | LADDER HANDRAILS | 2 | | |
| 4.2 | PS-23302A | NOISE CONTROL DOOR ASSEMBLY | 1 | | |
| 4.3 | PS-23317A | MOUNTING FRAME ASSEMBLY | 1 | | |
| 4.4 | PS-23311 | STAIR PORTAL ASSEMBLY | 1 | | |
| 4.5 | PS-23333 | TOP PROP FRAME | 1 | | |
| 4.6 | PS-23386 | HYDRAULIC LATCH ASSEMBLY | 1 | | |
| 4.7 | PS-80106A-LIE996 | POWER PACK ASSEMBLY | 1 | | |
| 4.8 | PS-63016 | CYLINDERS | 2 | | |
| 4.9 | - | ELECTRICAL COMPONENTS | 1 | | |

LIGHT STAIRWAY LIEBHERR 996-2



SECTION 4-1 Stair Assembly PS-23304B



LIGHT STAIRWAY

LIEBHERR 996-2



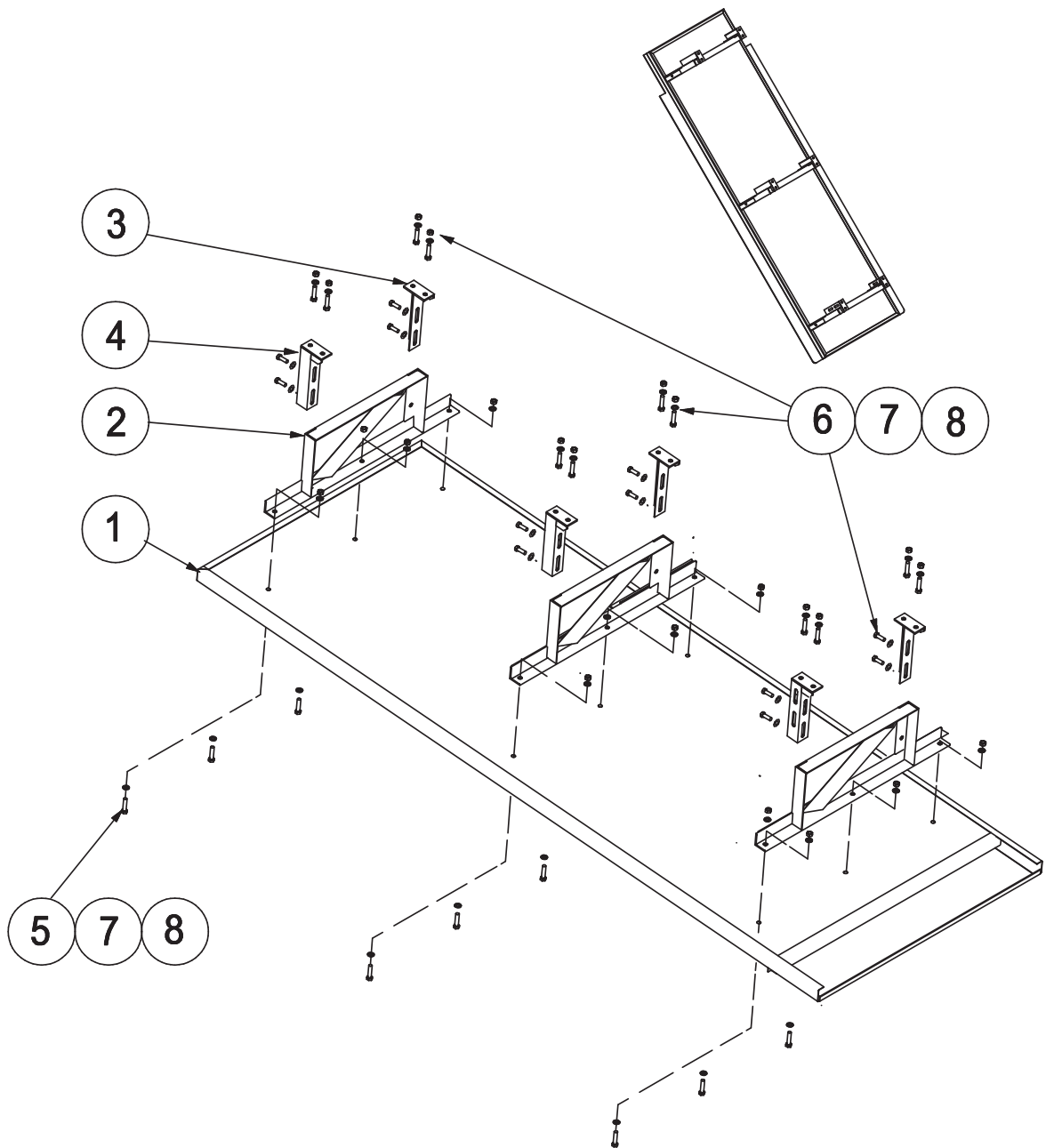
SECTION 4-1 Stair Assembly PS-23334B

| Item | Part No. | Part Name | Qty | | |
|------|---------------|----------------------|-----|--|--|
| 1 | PS-23304 | STAIR FABRICATION | 1 | | |
| 2 | PS-23327 | STAIR HANDRAILS | 2 | | |
| 3 | PS-23321 | HANDRAIL LINK | 1 | | |
| 4 | PS-23310-97 | "J" HOOK | 4 | | |
| 5 | PS-S245 | BUSHES (Mackay S245) | 12 | | |
| 6 | CPS-M12X150ZP | BOLT-M12 x150 | 6 | | |
| 7 | CPS-M12X30ZP | BOLT-M12 x 30 | 8 | | |
| 8 | CPS-M6X20ZP | BOLT PAN HD.M6 x 20 | 12 | | |
| 9 | CPS-M12NN | NUT-NYLOC-M12 | 6 | | |
| 10 | CPS-M6NN | NUT-NYLOC-M6 | 12 | | |
| 11 | CPS-M12WH | WASHER-HARDENED-M12 | 12 | | |
| 12 | PS-32266-SAN | NON-SLIP NOSING | 16 | | |
| 13 | PS-22316 | LADDER HINGE BUSH | 2 | | |

LIGHT STAIRWAY LIEBHERR 996-2



SECTION 4-2 Noise Control Door Assembly PS-23302A

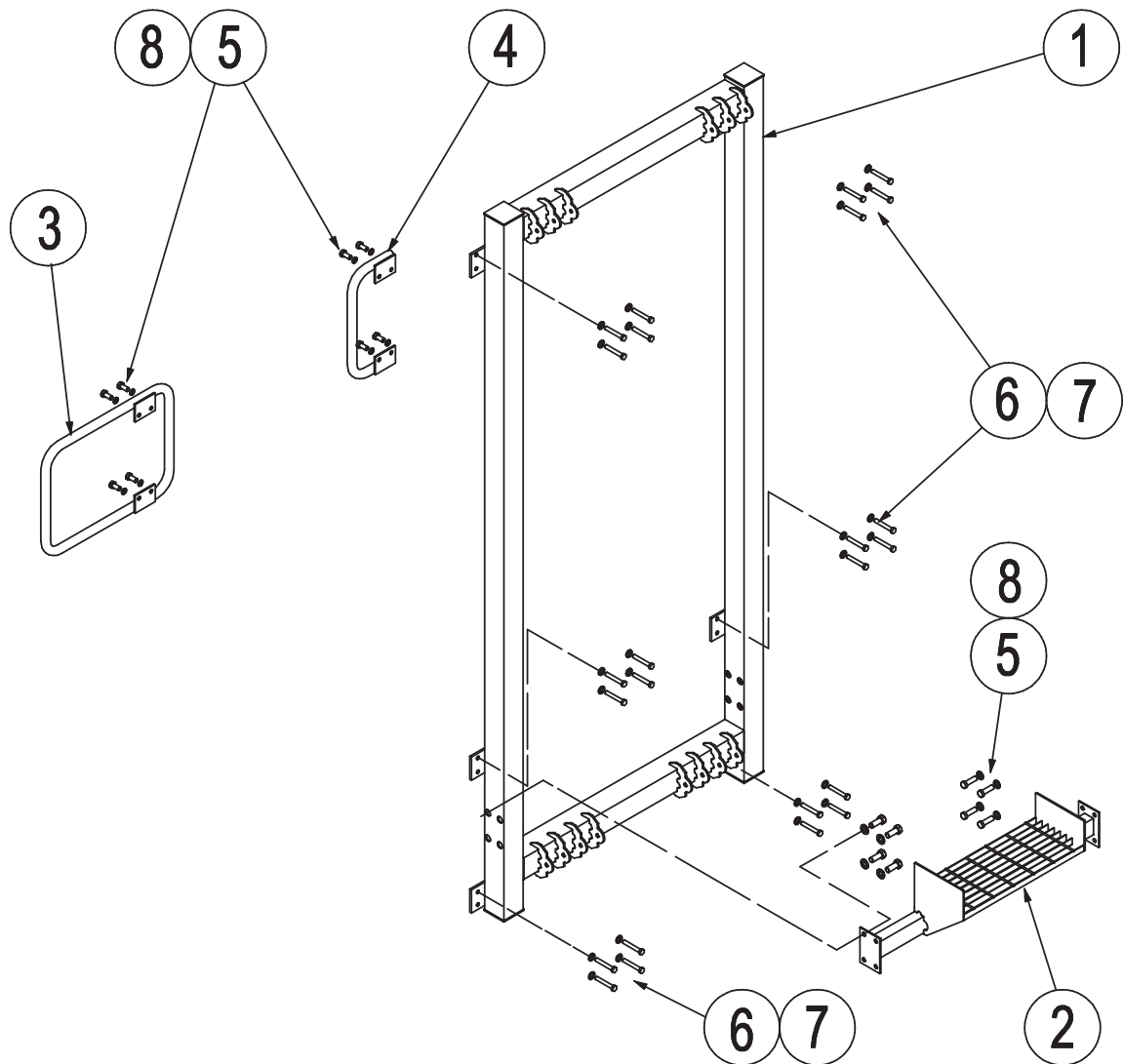


| Item | Part No. | Part Name | Qty | | |
|------|----------------|---------------------|-----|--|--|
| 1 | PS-23302A-DOOR | PANEL FABRICATION | 1 | | |
| 2 | PS-22639-99B | MOUNTING BEAM | 3 | | |
| 3 | PS-22639-97D | MOUNTING POSTS | 2 | | |
| 4 | PS-22639-98D | MOUNTING POSTS | 4 | | |
| 5 | CPS-M12X85ZP | BOLT-M12 x 85 | 9 | | |
| 6 | CPS-M12X30ZP | BOLT-M12 x 30 | 24 | | |
| 7 | CPS-M12NZP | NUT-M12 | 33 | | |
| 8 | CPS-M12WH | WASHER-HARDENED-M12 | 66 | | |

LIGHT STAIRWAY LIEBHERR 996-2



SECTION 4-3 Mounting Frame Assembly PS-23317A

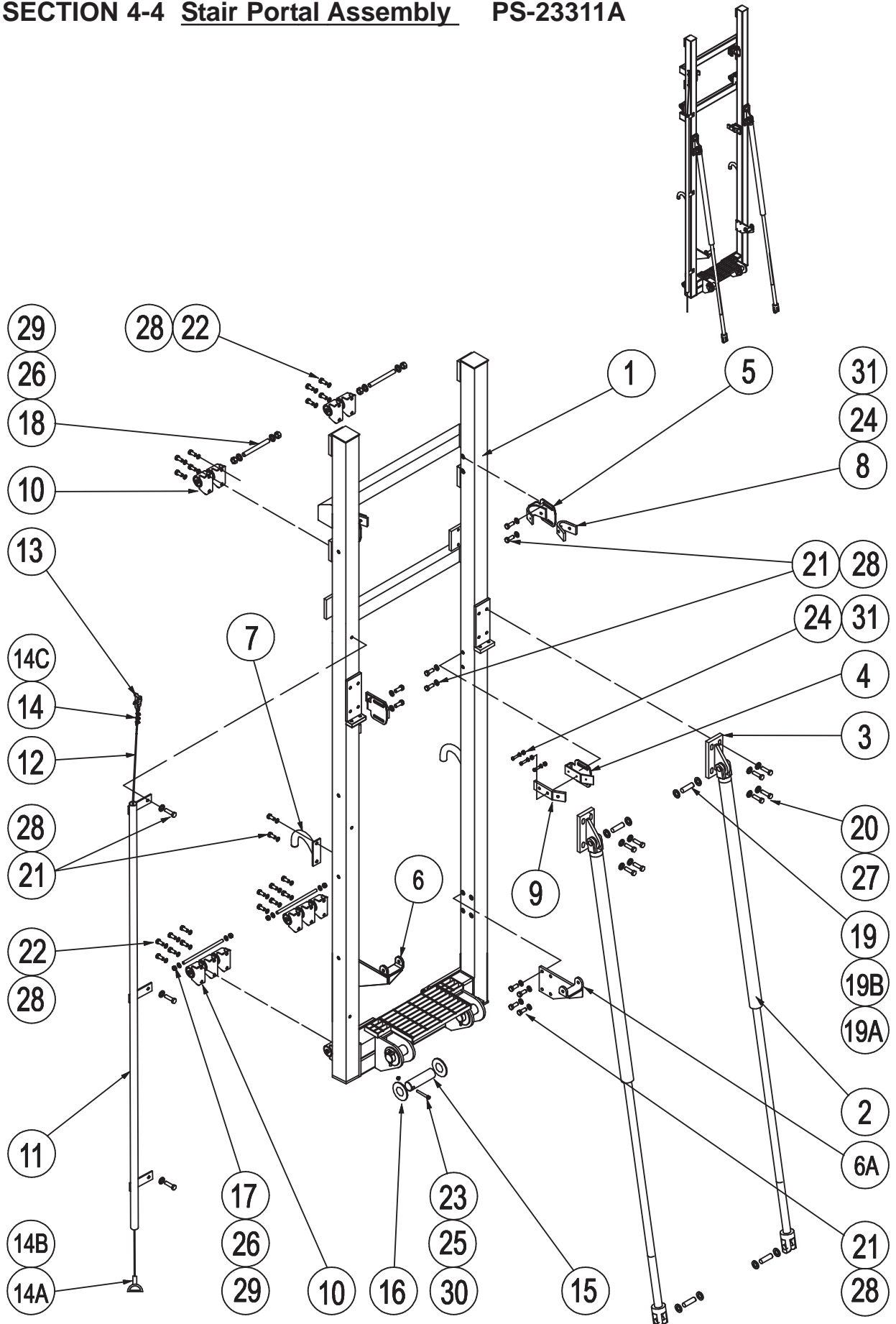


| Item | Part No. | Part Name | Qty | | |
|------|---------------|-------------------------|-----|--|--|
| 1 | PS-23317A | MOUNTING FRAME ASSEMBLY | 1 | | |
| 2 | PS-23320 | TOP TREAD | 1 | | |
| 3 | PS-23325-99 | REAR HANDRAIL | 1 | | |
| 4 | PS-23325-98 | FRONT HANDRAIL | 1 | | |
| 5 | CPS-M12X30ZP | BOLT-M12 x 30 | 16 | | |
| 6 | CPS-M16X100ZP | BOLT-M16 x 100 | 24 | | |
| 7 | PS-23330 | FABRICATED BUSH | 24 | | |
| 8 | CPS-M12WH | WASHER-HARDENED-M12 | 16 | | |

LIGHT STAIRWAY LIEBHERR 996-2



SECTION 4-4 Stair Portal Assembly PS-23311A

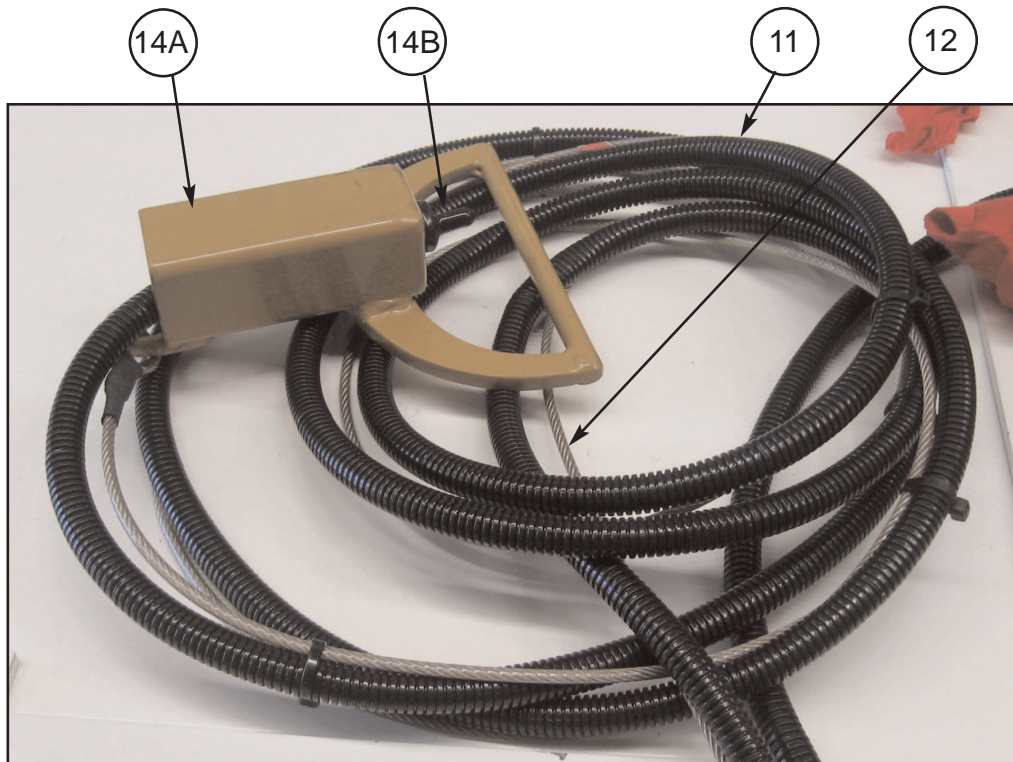


LIGHT STAIRWAY LIEBHERR 996-2



SECTION 4-4 Stair Portal Assembly PS-23311 See Parts List Page 23

LANYARD COMPONENTS



LIGHT STAIRWAY

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SECTION 4-4 Stair Portal Assembly PS-23311

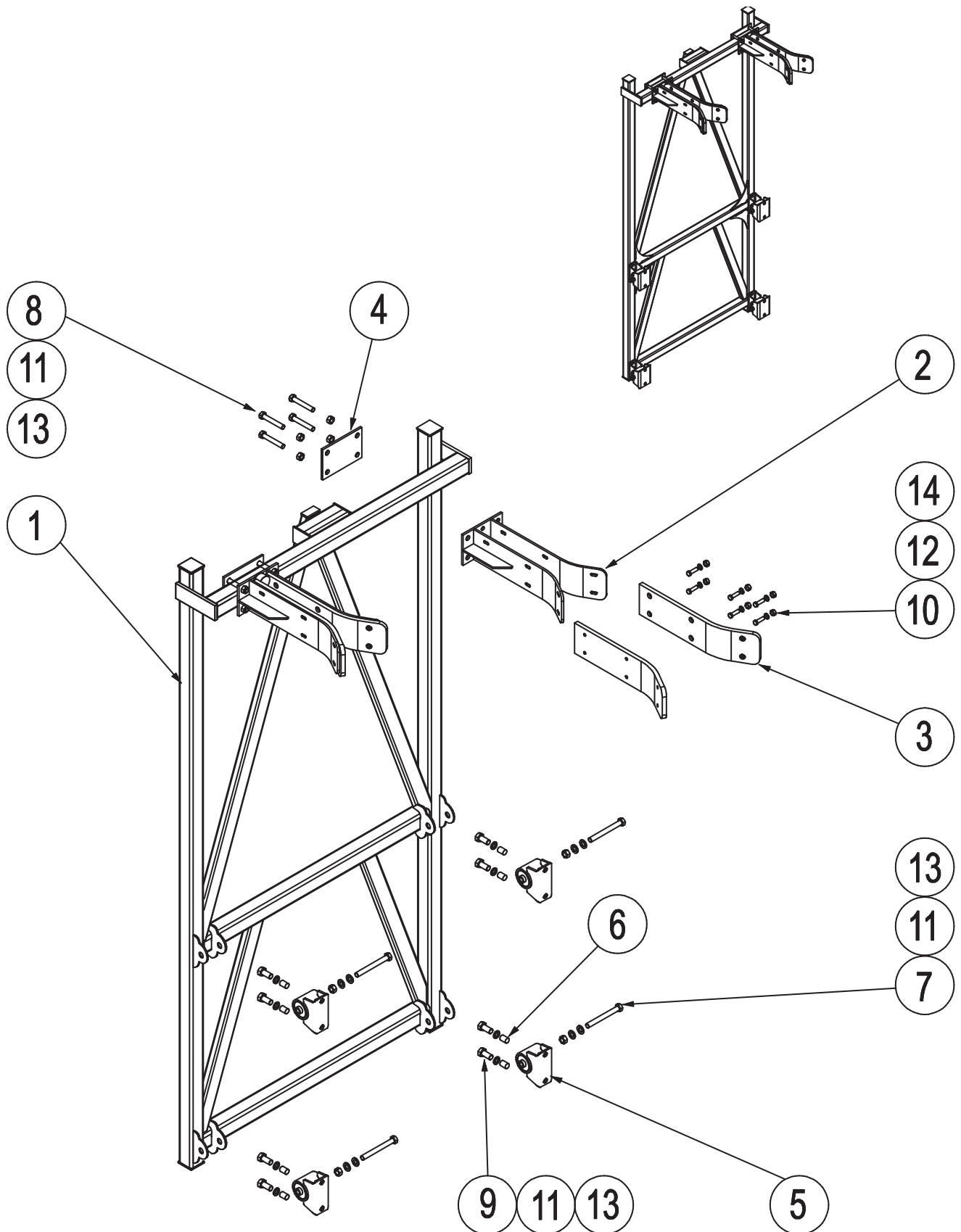
See Page 21 & 22

| Item | Part No. | Part Name | Qty | | |
|------|--------------|--|-----|--|--|
| 1 | PS-23311A | STAIR PORTAL-COMPLETE ASSEMBLY | 1 | | |
| 2 | PS-63016A | CYLINDER 1.5" Bore x 48"stroke Perp Port | 2 | | |
| 3 | PS-22309 | CYLINDER MOUNTING | 2 | | |
| 4 | PS-23310-98 | LEADER PAD | 2 | | |
| 5 | PS-23310-99 | PORTAL "J" HOOK | 2 | | |
| 6 | PS-23315-00L | TOP HANDRAIL BRACKET-LEFT | 1 | | |
| 6A | PS-23315-00R | TOP HANDRAIL BRACKET-RIGHT | 1 | | |
| 7 | PS-23314 | FIXED HANDRAIL | 2 | | |
| 8 | PS-23310-01 | RUBBER LINER | 2 | | |
| 9 | PS-23310-05 | RUBBER LINER | 2 | | |
| 10 | PS-21930A | ISOLATOR ASSEMBLY | 10 | | |
| 11 | PS-23316 | LANYARD TUBE | 1 | | |
| 12 | PS-39005-PC | LANYARD CABLE-8 METERS | 1 | | |
| 13 | CPS-04625902 | "D" SHACKLE | 2 | | |
| 14 | PS-39006 | CABLE CLAMP | 2 | | |
| 14A | PS-21003 | PULL HANDLE | 1 | | |
| 14B | PS-73012 | SWITCH KIT | 1 | | |
| 14C | PS-39007 | THIMBLE | 12 | | |
| 15 | PS-22306 | HINGE PIN 50mm x 150mm | 2 | | |
| 16 | PS-23312-03 | SPACER RING 100OD x 50ID x 6MM | 4 | | |
| 17 | PS-23319-01 | ISOLATOR PIN-LONG 330mm | 2 | | |
| 18 | PS-23319-02 | ISOLATOR PIN-SHORT 245mm | 2 | | |
| 19 | PS-63009-TP | CYLINDER PIN | 4 | | |
| 19A | CPS-M8X56 | SPLIT PINS | 8 | | |
| 19B | CPS-1"WH | WASHER 1" | 8 | | |
| 20 | CPS-M16X45ZP | BOLT-M16 x 45 | 8 | | |
| 21 | CPS-M12X30ZP | BOLT-M12 x 30 | 26 | | |
| 22 | CPS-M12X75ZP | BOLT-M12 x 75 | 20 | | |
| 23 | CPS-M10X75ZP | BOLT-SOCKET HD.- M10 x 75mm | 4 | | |
| 24 | CPS-M6X20ZP | BOLT-Pan Hd.-M6 x 20 | 12 | | |
| 25 | CPS-M10NN | NYLOC NUT-M10 | 4 | | |
| 26 | CPS-1/2"NN | NUT-NYLOC-1/2" UNC | 8 | | |
| 27 | CPS-M16WH | WASHER-HARDENED-M16 | 12 | | |
| 28 | CPS-M12WH | WASHER-HARDENED-M12 | 43 | | |
| 29 | CPS-1/2"WH | WASHER-HARDENED-1/2" | 8 | | |
| 30 | CPS-M10WH | WASHER-HARDENED-M10 | 8 | | |
| 31 | CPS-M6WH | WASHER-HARDENED-M6 | 12 | | |

LIGHT STAIRWAY LIEBHERR 996-2



SECTION 4-5 Top Prop Frame PS-23333A



LIGHT STAIRWAY

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SECTION 4-5 Top Prop Frame PS-23333A

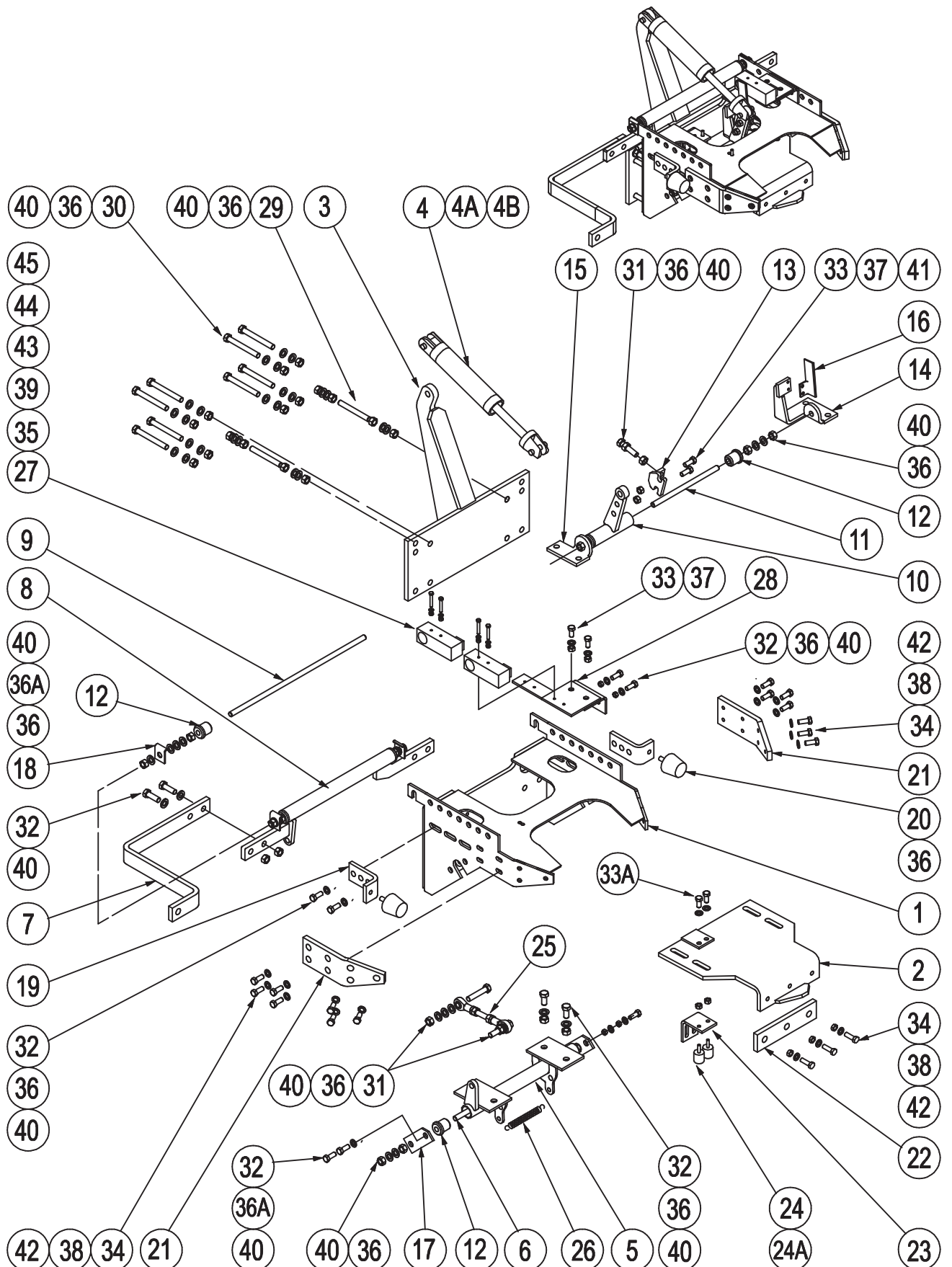
See Page 24

| Item | Part No. | Part Name | Qty | | |
|------|---------------|------------------------|-----|--|--|
| 1 | PS-23322A | TOP PROP FRAME | 1 | | |
| 2 | PS-23323 | TOP HANDRAIL RESTRAINT | 2 | | |
| 3 | PS-23323-05 | LINER | 4 | | |
| 4 | PS-23323-02 | CLAMP PLATE | 2 | | |
| 5 | PS-21930A | ISOLATOR ASSEMBLY | 4 | | |
| 6 | PS-23330 | FABRICATED BUSH | 8 | | |
| 7 | CPS-M12X130ZP | BOLT-M12 x 130 | 4 | | |
| 8 | CPS-M12X90ZP | BOLT-M12 x 90 | 8 | | |
| 9 | CPS-M12X75ZP | BOLT-M12 x 75 | 8 | | |
| 10 | PS-M6X20ZP | BOLT-PAN Hd.-M6 x 20 | 24 | | |
| 11 | CPS-M12NN | NUT-NYLOC-M12 | 12 | | |
| 12 | CPS-M6NN | NUT-NYLOC-M6 | 24 | | |
| 13 | CPS-M12WH | WASHER-HARDENED-M12 | 24 | | |
| 14 | CPS-M6WH | WASHER-HARDENED-M6 | 24 | | |

LIGHT STAIRWAY LIEBHERR 996-2



SECTION 4-6 Hydraulic Latch Assembly PS-23386

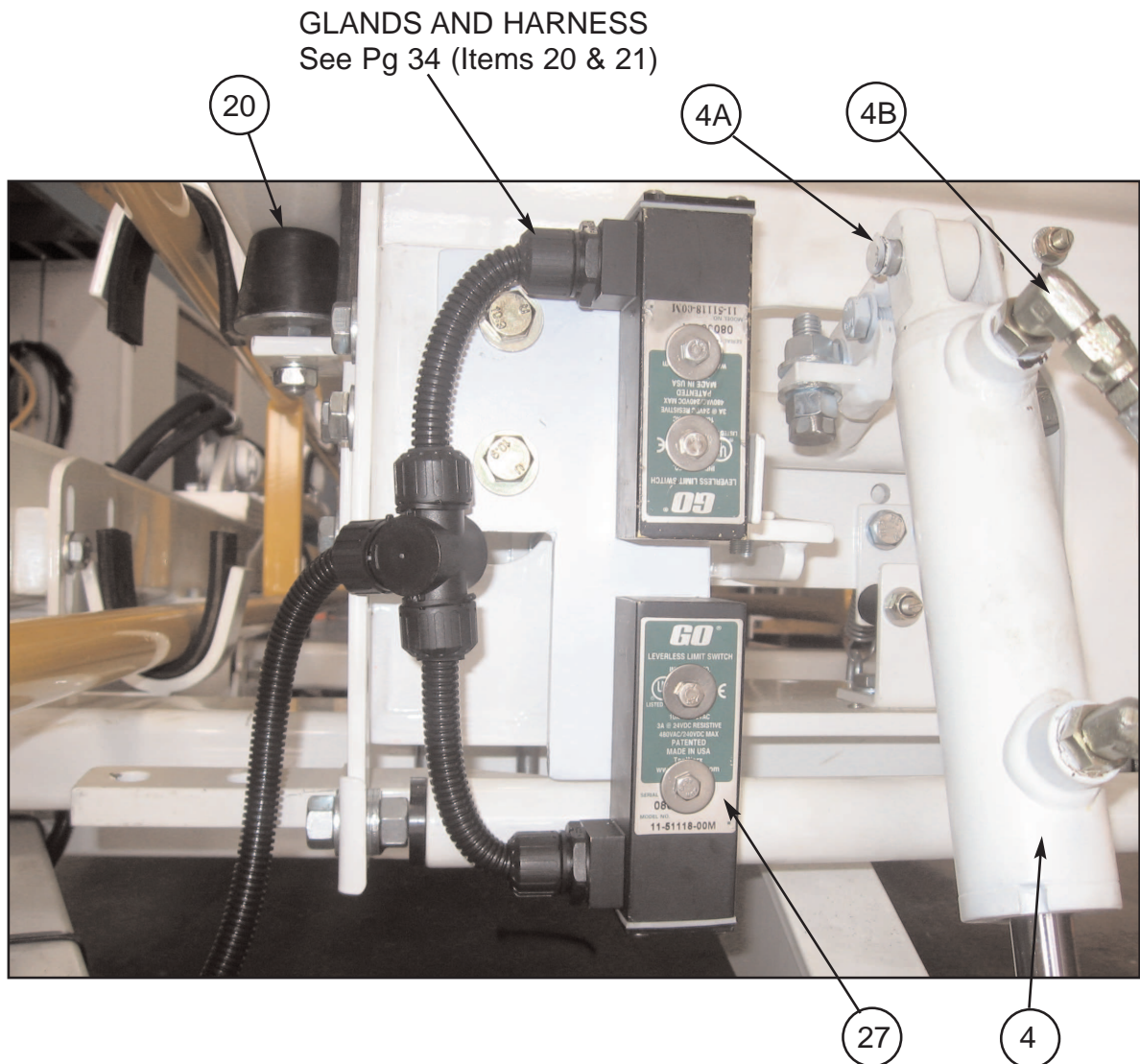


LIGHT STAIRWAY LIEBHERR 996-2



SECTION 4-6 Hydraulic Latch Assembly

See Parts List Pg 28 & 35



LIGHT STAIRWAY

LIEBHERR996-2



SECTION 4-6 Hydraulic Latch Assembly PS-23386

Parts List

| Item | Part No. | Part Name | Qty | | |
|------|------------------|--|-----|--|------------------|
| 1 | PS-23383 | BUMPER BASE | 1 | | |
| 2 | PS-23381 00 | CATCH HOOK | 1 | | |
| 3 | PS-23376 | HYDRAULIC CYLINDER MOUNTING | 1 | | |
| 4 | PS-62997 | CYLINDER GSN 1.5" x 4" | 1 | | |
| 4A | PS-62997-P | PIN-TOP & BOTTOM | 2 | | |
| 4B | PS-61152 | FITTING-90Deg JIC 9/16" to 916"UNO | 2 | | |
| 5 | PS-23379-99 | LATCH AXLE ASSY. Inc.6,12,17,27,38,42. | 1 | | |
| 6 | PS-23379-05 | LATCH PIVOT SHAFT | 1 | | |
| 7 | PS-23387 | LANYARD LEVER | 1 | | |
| 8 | PS-22849 | LANYARD LEVER SHAFT TUBE | 1 | | |
| 9 | PS-22849-02 | LANYARD LEVER PIVOT SHAFT | 1 | | |
| 10 | PS-23378-00 | ACTUATOR LEVER ASSY(Inc.11,12,13,14,&15) | 1 | | |
| 11 | PS-23378-07 | ACTUATOR LEVER PIVOT SHAFT | 1 | | |
| 12 | PS-S245 | ACTUATOR LEVER BUSH-RUBBER/POLY. | 6 | | (2 Req for Assy) |
| 13 | PS-23378-98 | BRACKET FOR STOP BOLT | 1 | | |
| 14 | PS-23380-99 | LEFT BRACKET | 1 | | |
| 15 | PS-23380-04 | RIGHT BRACKET | 1 | | |
| 16 | PS-22893-01 | STRIKER | 1 | | |
| 17 | PS-22844-05 | LATCH MOUNTING BAR | 2 | | |
| 18 | PS-23384-01 | SHAFT KEEPER | 2 | | |
| 19 | PS-22844-02 | STILE BUFFER BRACKET | 2 | | |
| 20 | PS-40003 | BUFFER-INSUL 8 50-77925 | 2 | | |
| 21 | PS-22848-02 | BUMPER PAD | 2 | | |
| 22 | PS-22848 01 | LATCH PAD | 1 | | |
| 23 | PS-22844-01 | LATCH STOP BRACKET | 1 | | |
| 24 | PS-40006 | BUFFER-LATCH STOP-MACAY M12252555 | 2 | | |
| 24A | PS-40006-STUD | STUD | 2 | | |
| 25 | PS-22849-99 | LINKAGE ASSEMBLY | 1 | | |
| 26 | PS-39000-LIE-996 | SPRING | 2 | | |
| 27 | PS-75430 | GO SWITCH | 2 | | |
| 28 | PS-75430-996B | BRACKET-GO SWITCH | 1 | | |
| 29 | CPS-M12X100ZP | BOLT-M12 x 100 | 2 | | |
| 30 | CPS-M12X100ZP | BOLT-M12 x 100 | 8 | | |
| 31 | CPS-M12X50ZP | BOLT-M12 x 50 | 3 | | |
| 32 | CPS-M12X40ZP | BOLT-M12 x 40 | 10 | | |

LIGHT STAIRWAY

LIEBHERR 996-2



SECTION 4-6 Hydraulic Latch Assembly PS-23386

Parts List cont.

| Item | Part No. | Part Name | Qty | | |
|------|-------------------------|----------------------------------|-----|--|--|
| 33 | CPS-M10X35ZP | BOLT-M10 x 35 | 4 | | |
| 33A | CPS-M10X16ZP | BOLT-M10 x 16 | 2 | | |
| 34 | CPS-M8X20ZP | BOLT-PAN/SOCKET HD.-M8 x 20 | 17 | | |
| 35 | CPS-3/16" x 2" | SCREW-3/16" x 2"- S/S | 4 | | |
| 36 | CPS-M12NZP | NUT-M12 | 42 | | |
| 36A | CPS-M12NN | NUT-NYLOC-M12 | 6 | | |
| 37 | CPS-M10NZP | NUT-M10 | 24 | | |
| 38 | CPS-M8NN | NUT-NYLOC M8 | 17 | | |
| 39 | CPS-BSW3/16" NUT S/S | NUT-3/16"S/S | 4 | | |
| 40 | CPS-M12WH | WASHER-M12 | 64 | | |
| 41 | CPS-M10WH | WASHER-M10 | 8 | | |
| 42 | CPS-M8WH | WASHER-M8 | 17 | | |
| 43 | CPS-WASHERS/S3/16"X3/4" | WASHER-LARGE-M3/16" x 3/4"OD S/S | 4 | | |
| 44 | CPS-WS/S 3/16"x 1/2" | WASHER-SMALL-M3/16"S/S | 4 | | |
| 45 | CPS-WS/S SPRING 3/16" | SPRINGWASHER 3/16" S/S | 4 | | |

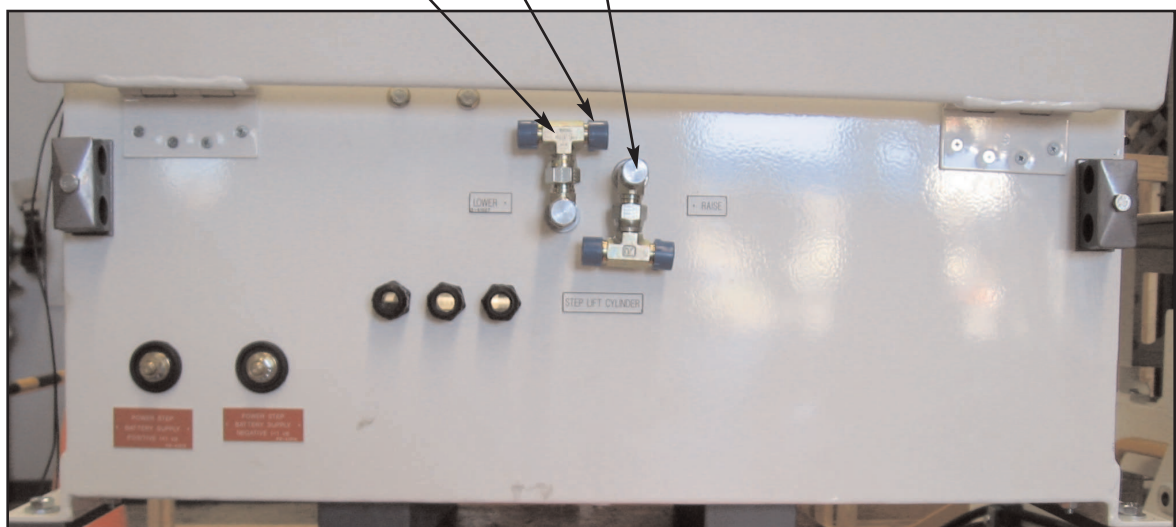
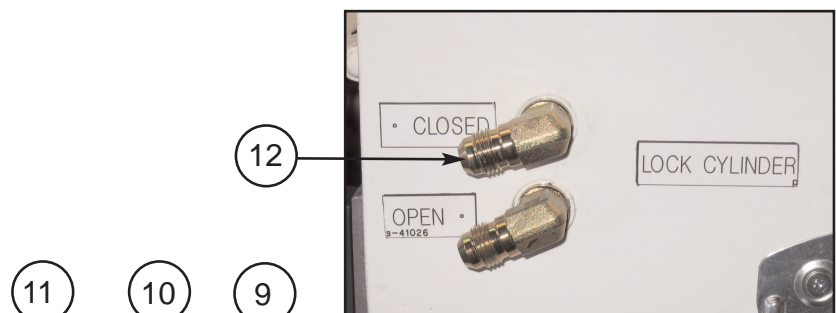
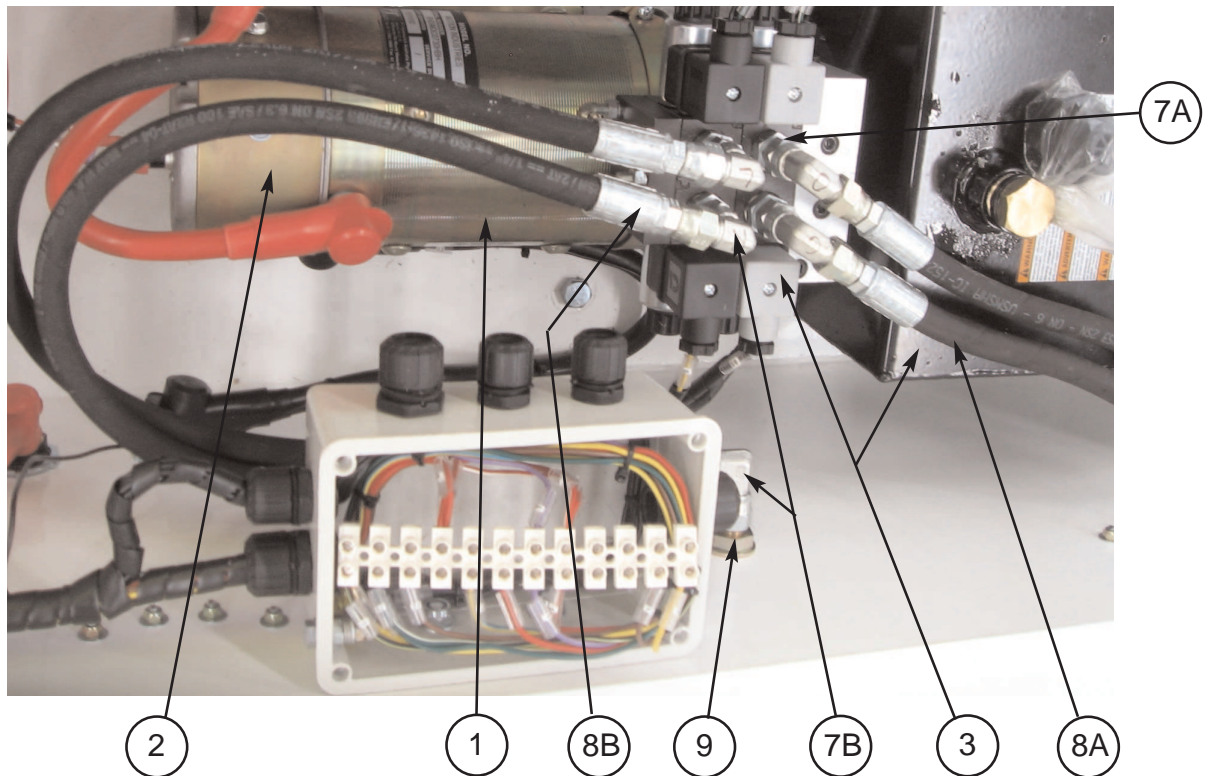
LIGHT STAIRWAY LIEBHERR 996-2



SECTION 4-7 Power Pack Assembly PS-80106A-LIE996

Hydraulic Components

SeeParts List (Pg. 31)



LIGHT STAIRWAY LIEBHERR 996-2



SECTION 4-7 Power Pack Assembly PS-80106A-LIE996

Hydraulic Components

Parts List

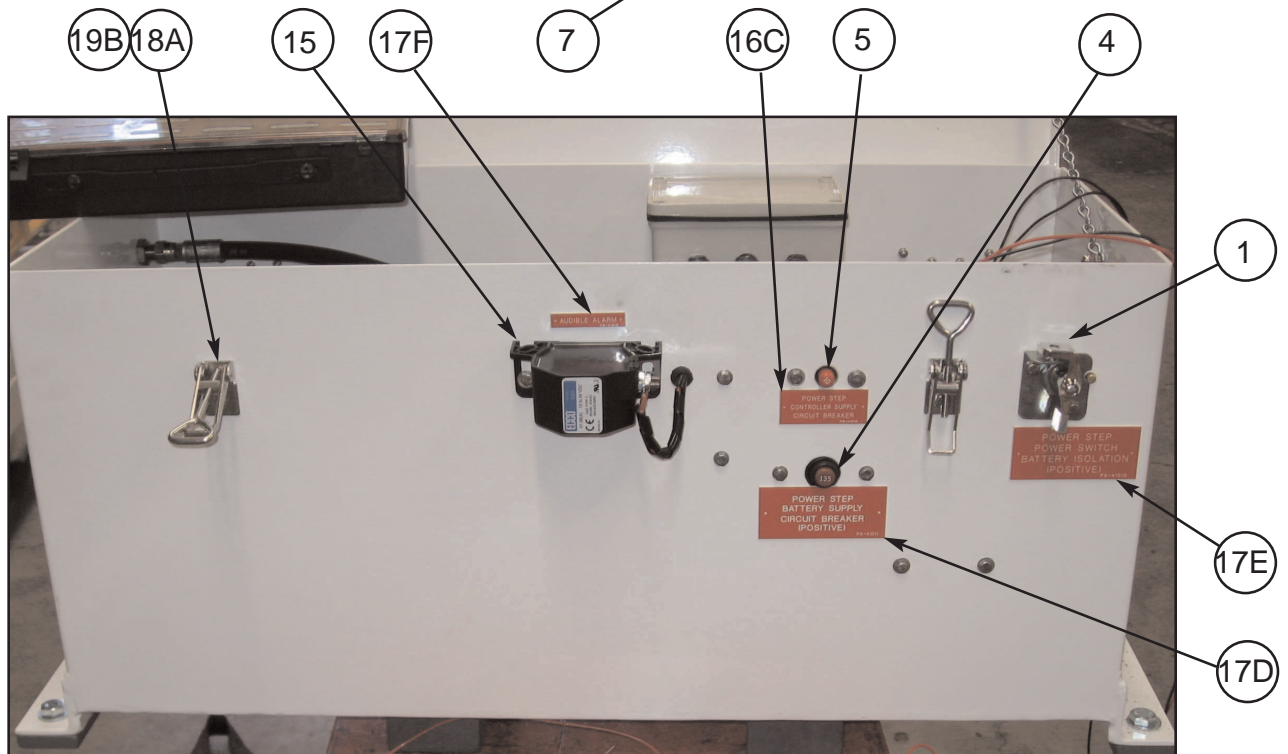
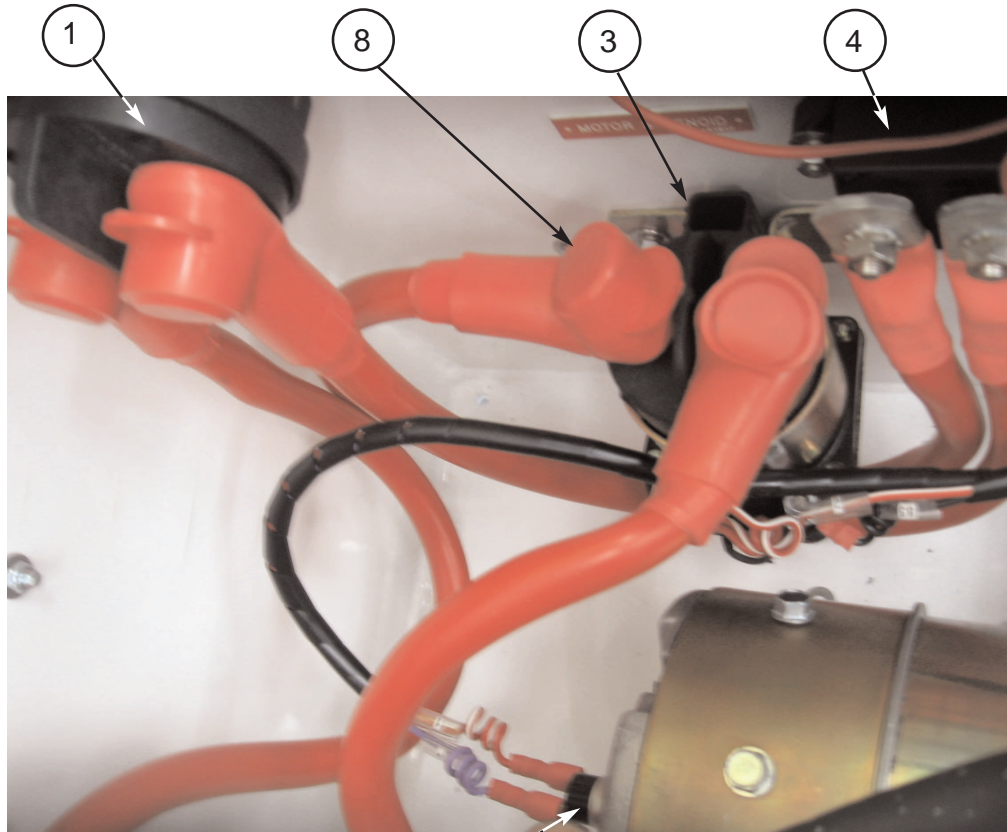
| Item | Part No. | Part Name | Qty | | |
|------|----------------|------------------------------------|-----|--|-----------|
| 1 | PS-80106A | PUMP MOTOR & TANK ASSEMBLY | 1 | | |
| 2 | PS-82407A | ELECTRIC MOTOR (Incl. Heat Sensor) | 1 | | |
| 3 | PS-80106-P&T | HEAD END TANK & VALVES | 1 | | |
| 4 | PS-80106-EH | END HEAD PUMP | 1 | | NOT SHOWN |
| 5 | PS-80106-KH | PUMP KIT | 1 | | NOT SHOWN |
| 6 | _____ | _____ | — | | |
| 7A | PS-61157 | FITTING-Straight | 4 | | |
| 7B | PS-61159 | FITTING-Swivel- Right Angle | 6 | | |
| 8A | PS-60051-370mm | HYDRAULIC HOSE-LOCK CYL. - 370mm | 2 | | |
| 8B | PS-60051-700mm | HYDRAULIC HOSE-LIFT CYL.- 700mm | 2 | | |
| 9 | PS-61180 | TEE-BULKHEAD- 9/16" JIC 3/4" JIC | 2 | | |
| 10 | PS-61143 | CAP-9/16" JIC | 2 | | |
| 11 | PS-61181 | FITTING-TEE- 3/4" JIC | 2 | | |
| 12 | PS-61168 | FITTING-FIREWALL- 9/16" JIC | 2 | | |

LIGHT STAIRWAY LIEBHERR 996-2



SECTION 4-7 Power Pack Assembly Electrical Components

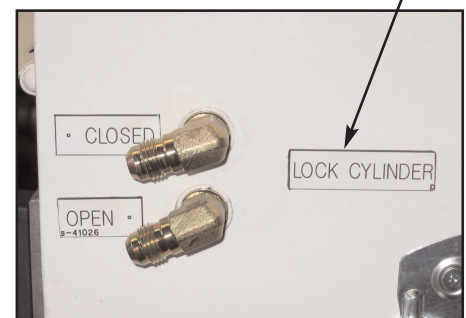
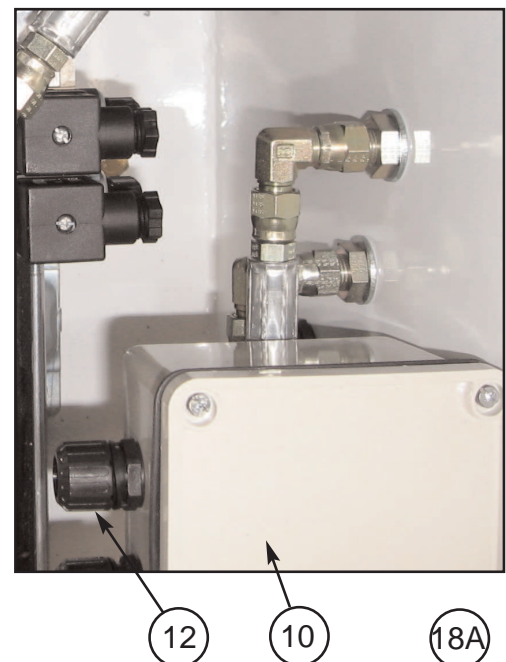
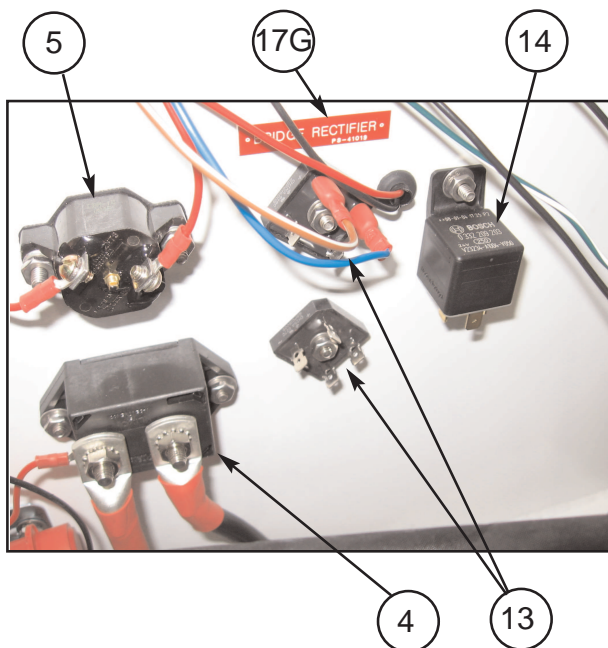
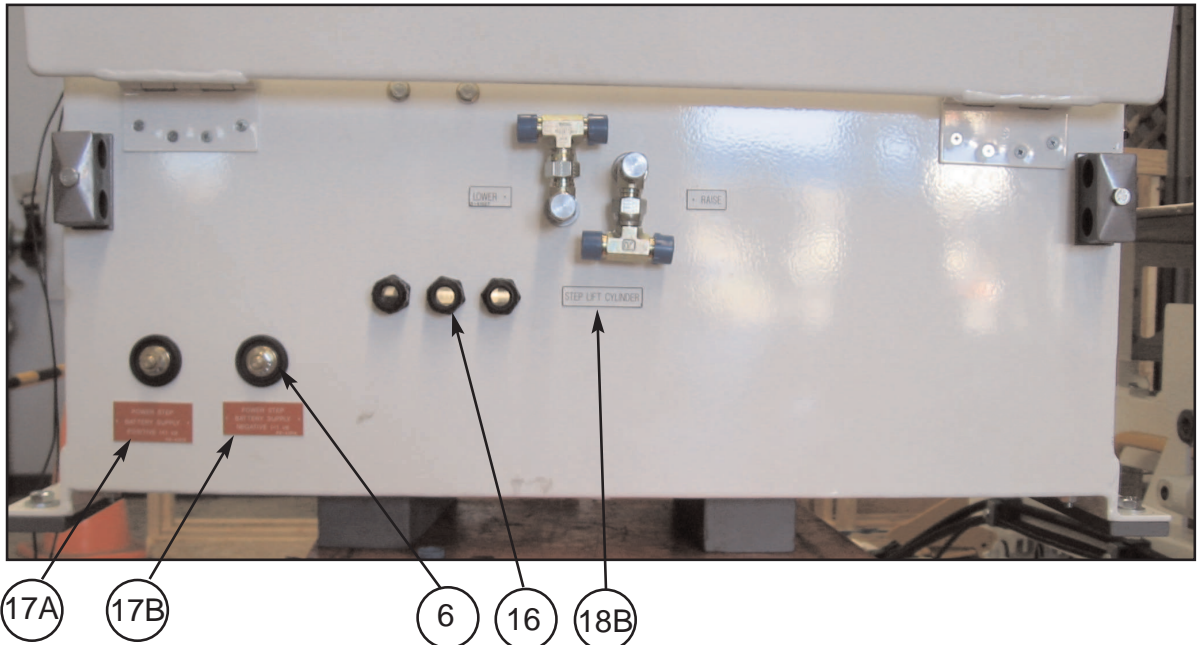
PS-80106A-LIE996



LIGHT STAIRWAY LIEBHERR 996-2



SECTION 4-7 Power Pack Assembly PS-80106A-LIE996 Electrical Components



LIGHT STAIRWAY

LIEBHERR 996-2



SECTION 4-7 Power Pack Assembly PS-80106A-LIE996

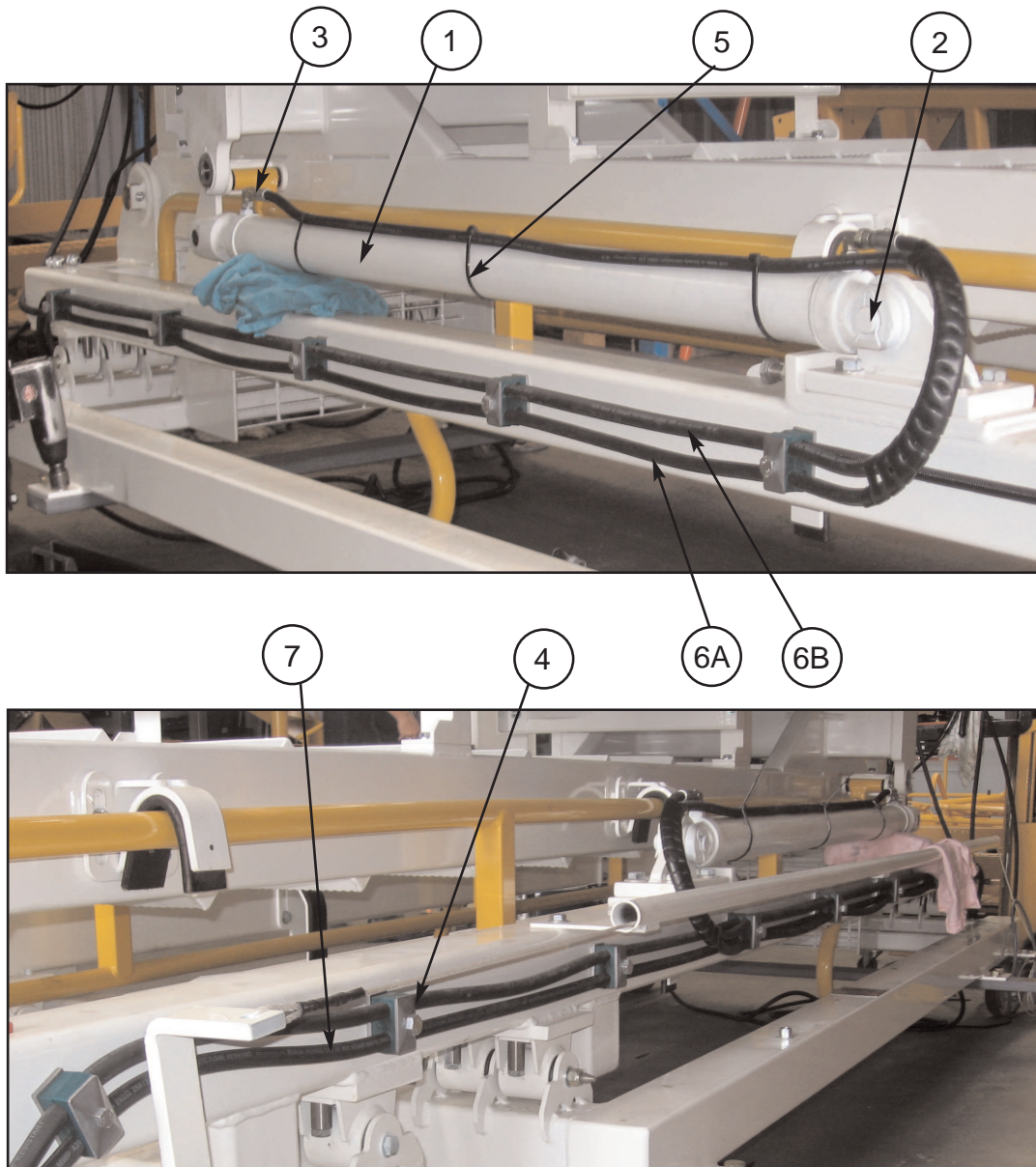
Electrical Components Parts List

| Item | Part No. | Part Name | Qty | |
|------|----------------|-------------------------------------|-----|-----------|
| 1 | PS-84303 | MASTER SWITCH | 1 | |
| 2 | _____ | _____ | — | |
| 3 | PS-82491 | MOTOR START SOLENOID | 1 | |
| 4 | PS-84215 | 150 Amp CIRCUIT BREAKER | 1 | |
| 5 | PS-84212 | 5 Amp CIRCUIT BREAKER | 1 | |
| 6 | PS-82493 | BATTERY TERMINALS (Firewall) | 2 | |
| 7 | PS-84201-100 | HEAT SENSOR | 1 | |
| 8 | PS-73010 | BATTERY CABLE Red Boot | 7 | |
| 9 | PS-73009 | BATTERY CABLE Black Boot | 3 | |
| 10 | PS-265-4 | MAIN ELECTRICAL BOX | 1 | |
| - | CPS-ACX2711 | CONNECTOR WIRING STRIP (Not shown) | 1 | |
| 12 | CPS-CAB12M16 | ELECTRICAL BOX CABLE GLANDS | 4 | |
| 13 | PS-84214 | BRIDGE RECTIFIER | 2 | |
| 14 | PS-82417 | Relay 24 Volt | 1 | |
| 15 | PS-82415 | ALARM ASSEMBLY | 1 | |
| 16 | CPS-CAB12M20 | MOTOR ENCLOSURE ELECTRICAL GLANDS | 3 | |
| 17A | PS-41013 | DECAL-Battery Supply-Positive | 1 | |
| 17B | PS-41014 | DECAL-Battery Supply-Negative | 1 | |
| 17C | PS-41012 | DECAL -Controller Supply C/B-10A | 1 | |
| 17D | PS-41011 | DECAL-Battery Supply C/B-135A | 1 | |
| 17E | PS-41010 | DECAL-Battery Isolation | 1 | |
| 17F | PS-41018 | DECAL-Audible Alarm | 1 | |
| 17G | PS-41019 | DECAL-Bridge Rectifier | 1 | |
| 17H | PS-41017 | DECAL- Motor Solenoid | 2 | |
| 18A | PS-41026 | HYDRAULIC DECALS- Lock Cylinder | 1 | |
| 18B | PS-41027 | HYDRAULIC DECALS-Step Lift Cylinder | 1 | |
| 19A | PS-30113-1 | LATCH-STAINLESS STEEL | 2 | |
| 19B | PS-30113-1A | LATCH BRACKET-STAINLESS STEEL | 2 | |
| 20 | CPS-CAB12M20 | GLANDS - GO SWITCH | 2 | See Pg 27 |
| 21 | PS-77004-996CH | HARNESS - GO SWITCH | 2 | See Pg 27 |
| 22 | PS-73013 | HAND CONTROL PENDANT SWITCH | 1 | See Pg 37 |
| 23 | PS-73013-B | HAND CONTROL BRACKET | 1 | See pg 37 |
| 24 | PS-77005-996 | HAND CONTROL HARNESS | 1 | See pg 37 |

LIGHT STAIRWAY LIEBHERR 996-2



SECTION 4-8 Lift Cylinder Hydraulic Components

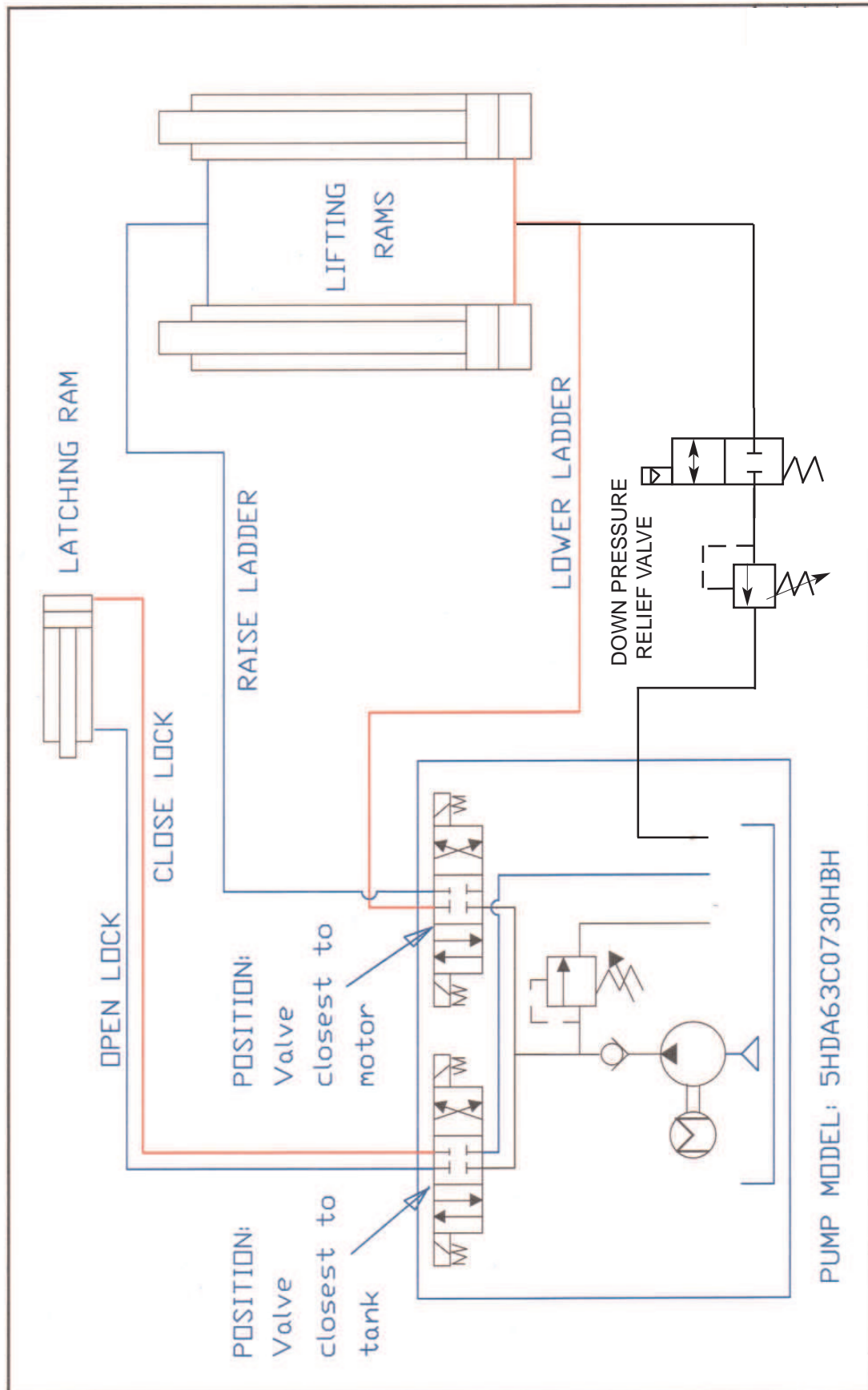


| Item | Part No. | Part Name | Qty | | |
|------|----------------|--|-----|--|--|
| 1 | PS-63016 | LIFT CYLINDER- 2.5" x 48" | 2 | | |
| - | PS-63103 | SEAL KIT- LIFT CYL. (Not shown) | 2 | | |
| 2 | PS-6300P-TP | PINS- LIFT CYL. | 4 | | |
| 3 | PS-61182 | FITTING-JIC 3/4" to 3/4" UNO- S91-1212 | 4 | | |
| 4 | PS-60103 | STAUFF CLAMP | 10 | | |
| 5 | PS-60104 | HOSE CLAMPS | 12 | | |
| 6A | PS-60051-08-4M | HOSES- 4m (Cyl end-L/H & R/H) | 2 | | |
| 6B | PS-60051-08-6M | HOSES- 6m (Rod end-L/H & R/H) | 2 | | |
| 7 | PS-60051-04 | HOSE- 1/4"X 9/16"- 6M | 2 | | |

LIGHT STAIRWAY LIEBHERR 996-2



SECTION 4-8 Hydraulic Layout



LIGHT STAIRWAY LIEBHERR 996-2

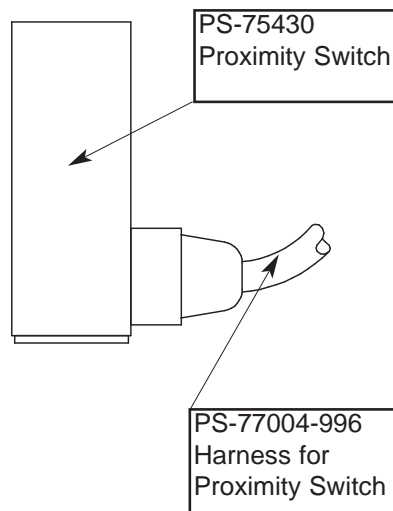


SECTION 4-9 Electrical Controls

See Parts List Pg 34

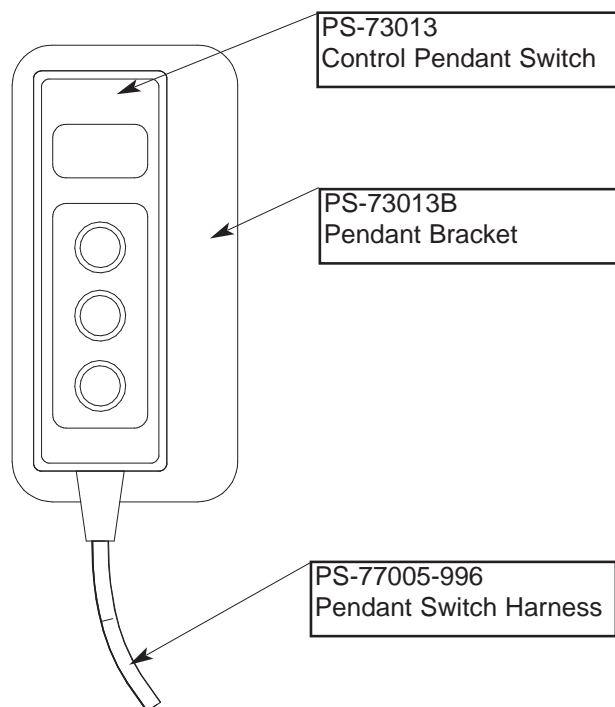
Proximity Switch Assembly

Mounted on Fixed Landing



Control Pendant Switch

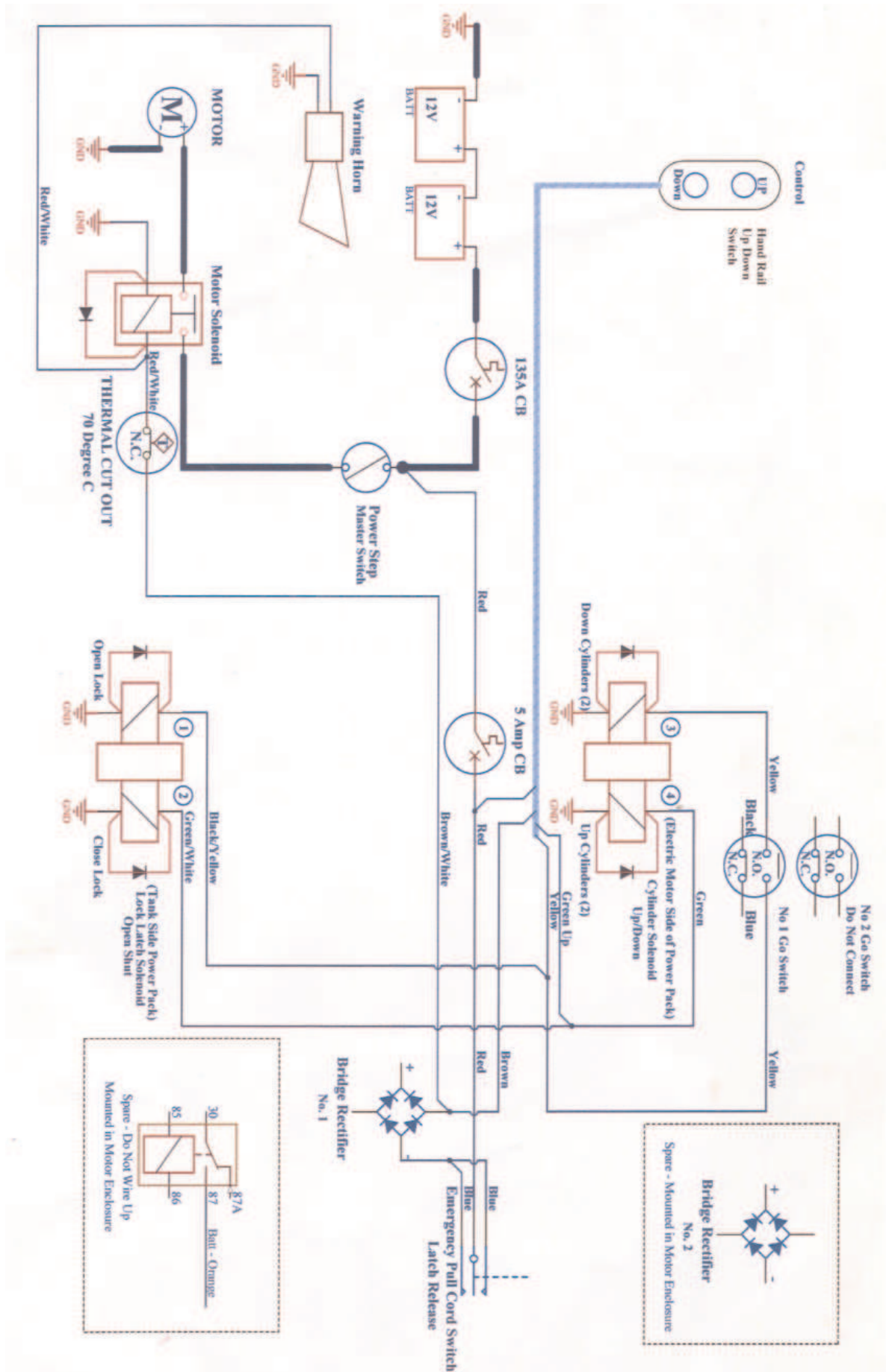
Mounted on Handrail



LIGHT STAIRWAY LIEBHERR 996-2



SECTION 4-9 Electrical Controls (Electrical Layout)



LIGHT STAIRWAY LIEBHERR 996-2



SECTION 4-9 Electrical Controls

Note: 2nd Rectifier No 2 - Spare
"Do Not Wire Up"

Main Terminal Box

Change Over Relay - Spare
"Do Not Wire Up"

Hand Rail Switch Harness

Yellow - No 1
Brown - No 2a
Red - No 6
Green - No 8

Pull Handle Harness

Red - No 6
Blue - No 9
Black - Spare
Yellow - Spare

Go Switch No 1 Harness

Yellow - No 1
Yellow - No 7
Black - Spare
Blue - Spare

Go Switch No 2 Harness

All Wires Spare at This Stage

Black - Spare
Yellow - Spare
Red - Spare
Blue - Spare

| | |
|----|--|
| 1 | Black/Yellow Open Lock Solenoid |
| 2 | Brown/White (2) 70 deg Cut Out Switch Bridge Rectifier |
| 3 | Spare |
| 4 | Earth Wires Black (7 Wires) |
| 5 | |
| 6 | Red 5 Amp Circuit Breaker |
| 7 | Yellow Down Solenoid |
| 8 | Green - Up Solenoid Green/White - Close Lock Solenoid |
| 9 | Blue Rectifier No 1 |
| 10 | Spare |
| 11 | Red/White - 70 Degree Cut Out Switch Red/White - Motor Solenoid |
| 12 | Spare |



SECTION 4-9 Electrical Controls

Go Switch Harness

No 1

2 x Yellow - N.O. Contacts
Switches when lock is open
1 Black - N.C. Contacts - Spare
1 Blue - N.C. Contacts - Spare

No 2

Spare Go Switch
1 Blue - Spare
1 Black - Spare - NC (Bridged)
1 Red - Spare - NC
1 Yellow - Spare - NO



10m

Note:
Spare switch but wired up

Pull Handle Harness

Red - Power
Blue - Lower Solenoid
Bridge Both Open Contacts
Black - Spare
Yellow - Spare



6m

Hand Rail Switch Harness

Green - Up
Brown - Motor/Start Solenoid
Red - Power Supply - 5 Amp C.B.
Yellow - Down



6m

WARNING

**LOW VOLTAGE BATTERIES WILL HARM THE FUNTION
OF THE POWER PACK AND THE CONTROL SWITCHES.**

**DAMAGE RESULTING DUE TO LOW VOLTAGE
BATTERIES WILL VOID WARRANTY ON ALL
ELECTRICAL COMPONENTS.**

LIGHT STAIRWAY LIEBHERR 996-2 ACCESS SYSTEM



Recommended Parts list - Page 1.

| LIEBHERR 996 ACCESS SYSTEM RECOMMENDED PARTS LIST | | | | | |
|--|-----------------------------|-----|-------|------|---------|
| ASSEMBLY NUMBER | PSA-LIE996-L/STAIR | | | | |
| SECTION 4-1 | STAIR ASSEMBLY | | | | |
| ITEM NUMBER | DESCRIPTION | QTY | REF # | PAGE | REC STK |
| PS-23304 | STAIR FABRICATION | 1 | 1 | 18 | 1 |
| PS-23327 | STAIR HANDRAILS | 2 | 2 | 18 | 2 |
| PS-S245 | BUSHES | 12 | 5 | 18 | 12 |
| PS-32266-SAN | NON-SLIP NOSING | 16 | 12 | 18 | 6 |
| SECTION 4-2 | NOISE CONTROL DOOR ASSEMBLY | | | | |
| ITEM NUMBER | DESCRIPTION | QTY | REF# | PAGE | REC STK |
| PS-23302A-DOOR | DOOR PANEL FABRICATION | 1 | 1 | 19 | 1 |
| PS-23369-97 | MOUNTING POST | 2 | 3 | 19 | 2 |
| PS-23369-98 | MOUNTING POST | 4 | 4 | 19 | 2 |
| SECTION 4-3 | MOUNTING FRAME ASSEMBLY | | | | |
| ITEM NUMBER | DESCRIPTION | QTY | REF# | PAGE | REC STK |
| NIL | | | | | |
| SECTION 4-4 | STAIR PORTAL ASSEMBLY | | | | |
| ITEM NUMBER | DESCRIPTION | QTY | REF# | PAGE | REC STK |
| PS-23310-01 | RUBBER LINER | 2 | 8 | 23 | 2 |
| PS-22310-05 | RUBBER LINER | 2 | 9 | 23 | 2 |
| PS-21930A | ISOLATOR ASSEMBLY | 10 | 10 | 23 | 6 |
| PS-21930A | ISOLATOR ASSEMBLY | 6 | 5 | 25 | |
| PS-73012 | SWITCH KIT | 1 | 14B | 23 | 1 |
| PS-22306 | HINGE PIN 50X150 | 2 | 15 | 23 | 2 |
| PS-23312-03 | SPACER RING | 4 | 16 | 23 | 4 |
| PS-23319-01 | ISOLATOR PIN LONG 330MM | 2 | 17 | 23 | 2 |
| PS-23319-02 | ISOLATOR PIN SHORT 245MM | 2 | 18 | 23 | 2 |
| PS-39005-PC | LANYARD CABLE 8M | 1 | 12 | 23 | 1 |
| CPS-04625902 | D-SHACKLE | 2 | 13 | 23 | 2 |
| SECTION 4-5 | TOP PROP FRAME | | | | |
| ITEM NUMBER | DESCRIPTION | QTY | REF# | PAGE | REC STK |
| PS-23323-05 | LINER | 4 | 3 | 25 | 4 |
| SECTION 4-6 | HYDRAULIC LATCH ASSEMBLY | | | | |
| ITEM NUMBER | DESCRIPTION | QTY | REF# | PAGE | REC STK |
| PS-62997 | CYLINDER HYD. LATCH | 1 | 4 | 28 | 2 |
| PS-62997-P | PIN HYD CYL, TOP & BOTTOM | 2 | 4A | 28 | 4 |
| PS-23379-99 | LATCH AXLE ASSY | 1 | 5 | 28 | 1 |
| PS-23378-00 | ACTUATOR LEVER ASSEMBLY | 1 | 10 | 28 | 1 |
| PS-40003 | BUFFER | 2 | 21 | 28 | 2 |
| PS-22848-02 | BUMPER PAD | 2 | 22 | 28 | 2 |
| PS-22848-01 | LATCH PAD | 1 | 23 | 28 | 1 |
| PS-40006 | BUFFER LATCH STOP | 2 | 25 | 28 | 2 |
| PS-22849-99 | LINKAGE ASSEMBLY | 1 | 26 | 28 | 1 |
| PS-39000-LIE-996 | SPRING | 2 | 27 | 28 | 2 |
| PS-75420 | PROXIMITY SWITCH | 2 | 28 | 28 | 2 |

LIGHT STAIRWAY LIEBHERR 996-2 ACCESS SYSTEM



Recommended Parts list - Page 2.

| SECTION 4-7 | | POWER PACK ASSEMBLY - ELECTRICAL | | | |
|----------------------|-----------------------------------|----------------------------------|------|------|---------|
| ITEM NUMBER | DESCRIPTION | QTY | REF# | PAGE | REC STK |
| PS-80106A-LIE996 | POWER PACK ASSEMBLY | 1 | | 31 | 1 |
| PS-80101 | POWER PACK UNIT | 1 | 1 | 34 | 1 |
| PS-84201 | HEAT SENSOR | 1 | 2 | 34 | 1 |
| PS-81020 | SOLENOID COILS | 1 | 7 | 34 | 1 |
| PS-81021 | SOLENOID CAPS | 1 | 8 | 34 | 1 |
| PS-82492 | MOTOR START SOLENOID | 1 | 9 | 34 | 1 |
| PS-84303 | MASTER SWITCH | 1 | 1 | 37 | 1 |
| PS-84213 | 135AMP CIRCUIT BREAKER | 1 | 4 | 37 | 1 |
| PS-84212 | 5AMP CIRCUIT BREAKER | 1 | 5 | 37 | 1 |
| PS-84201 | HEAT SENSOR | 1 | 7 | 37 | 1 |
| PS-84214 | BRIDGE RECTIFIER | 2 | 13 | 37 | 2 |
| PS-84217 | RELAY VOLT 24V | 2 | 14 | 37 | 2 |
| PS-84215 | ALARM ASSEMBLY | 1 | 15 | 37 | 1 |
| PS-77004-996CH | HARNESS - GO SWITCH | 1 | 22 | 37 | 1 |
| PS-73013 | HAND CONTROL PENDANT SWITCH | 1 | 23 | 37 | 1 |
| PS-77005-996 | HAND CONTROL HARNESS | 1 | 25 | 37 | 1 |
| SECTION 4-7 | | POWER PACK ASSEMBLY - HYDRAULIC | | | |
| ITEM NUMBER | DESCRIPTION | QTY | REF# | PAGE | REC STK |
| PS-61157 | HYD FITTING STRAIGHT | 6 | 7A | 31 | 5 |
| PS-61159 | FITTING SWIVEL- 90 DEG | 2 | 7B | 31 | 5 |
| PS-61180 | TEE BULKHEAD 9/16" JIC - 3/4" JIC | 2 | 9 | 31 | 5 |
| PS-61143 | CAP 9/16" JIC | 2 | 10 | 31 | 5 |
| PS-61181 | TEE FITTING 3/4" JIC | 2 | 11 | 31 | 5 |
| PS-61168 | FITTING FIREWALL 9/16" JIC | 2 | 12 | 31 | 5 |
| PS-60051-08-4M | HOSE 4M CYL END | 2 | 21A | 34 | 2 |
| PS-60051-08-6M | HOSE 6M ROD END | 2 | 21B | 34 | 2 |
| PS-63016A | HYD CYLINDER | 2 | 23 | 34 | 1 |
| GENERAL | | HARDWARE ITEMS | | | |
| ITEM NUMBER | DESCRIPTION | QTY | REF# | PAGE | REC STK |
| CPS-1"WH | 1" WASHER | 8 | 19B | 23 | 10 |
| CPS-1/2"NN | 1/2" NYLOC NUT | 8 | 26 | 23 | 10 |
| CPS-1/2"WH | 1/2" HARD WASHER | 8 | 29 | 23 | 10 |
| CPS-3/16"X2" | SCREW 3/16X2" | 4 | 37 | 29 | 10 |
| CPS-BSW3/16" NUT S/S | NUT 3/16" STAINLESS STEEL | 4 | 41 | 29 | 10 |
| CPS-M10NN | M10 NYLOC NUT | 4 | 25 | 23 | 10 |
| CPS-M10NZP | M10 NUT | 24 | 39 | 29 | 50 |
| CPS-M10WH | M10 HARD WASHER | 8 | 30 | 23 | 50 |
| CPS-M10WH | M10 HARD WASHER | 8 | 43 | 29 | * |
| CPS-M10X16ZP | BOLT M10X16MM | 2 | 35A | 29 | 10 |
| CPS-M10X35ZP | BOLT M10X35MM | 4 | 35 | 29 | 10 |
| CPS-M10X75ZP | BOLT M10X75MM | 4 | 23 | 23 | 10 |
| CPS-M12NN | M12 NYLOC NUT | 6 | 9 | 18 | 50 |
| CPS-M12NN | M12 NYLOC NUT | 12 | 11 | 25 | * |

LIGHT STAIRWAY LIEBHERR 996-2 ACCESS SYSTEM



Recommended Parts list- Page 3.

| | | | | | |
|---------------------------|--------------------------------------|----|-----|----|-----|
| CPS-M12NN | M12 NYLOC NUT | 6 | 38A | 29 | * |
| CPS-M12NZP | M12 NUT | 33 | 7 | 19 | 50 |
| CPS-M12NZP | M12 NUT | 42 | 38 | 29 | * |
| CPS-M12WH | M12 HARD WASHER | 12 | 11 | 18 | 100 |
| CPS-M12WH | M12 HARD WASHER | 66 | 8 | 19 | * |
| CPS-M12WH | M12 HARD WASHER | 16 | 8 | 20 | * |
| CPS-M12WH | M12 HARD WASHER | 43 | 28 | 23 | * |
| CPS-M12WH | M12 HARD WASHER | 24 | 13 | 25 | * |
| CPS-M12WH | M12 HARD WASHER | 64 | 42 | 29 | * |
| CPS-M12X100ZP | BOLT M12X100MM | 2 | 30 | 28 | 10 |
| CPS-M12X100ZP | BOLT M12X100MM | 8 | 31 | 28 | * |
| CPS-M12X150ZP | BOLT M12X150MM | 6 | 6 | 18 | 10 |
| CPS-M12X30ZP | BOLT M12X30MM | 8 | 7 | 18 | 50 |
| CPS-M12X30ZP | BOLT M12X30MM | 24 | 6 | 19 | * |
| CPS-M12X30ZP | BOLT M12X30MM | 16 | 5 | 20 | * |
| CPS-M12X30ZP | BOLT M12X30MM | 26 | 21 | 23 | * |
| CPS-M12X50ZP | BOLT M12X50MM | 3 | 32 | 28 | 10 |
| CPS-M12X50ZP | BOLT M12X50MM | 10 | 34 | 28 | * |
| CPS-M12X75ZP | BOLT M12X75MM | 20 | 22 | 23 | 10 |
| CPS-M12X85ZP | BOLT M12X85MM | 9 | 5 | 19 | 10 |
| CPS-M12X90ZP | BOLT M12X90MM | | 30 | 34 | * |
| CPS-M16WH | M16 HARD WASHER | 12 | 27 | 23 | 10 |
| CPS-M16X100ZP | BOLT M16X100MM | 24 | 6 | 20 | 20 |
| CPS-M16X45ZP | BOLT M16X45MM | 8 | 20 | 23 | 10 |
| CPS-M6NN | M6 NYLOC NUT | 12 | 10 | 18 | 50 |
| CPS-M6NN | M6 NYLOC NUT | 24 | 12 | 25 | * |
| CPS-M6WH | M6 HARD WASHER | 12 | 31 | 23 | 50 |
| CPS-M6WH | M6 HARD WASHER | 24 | 14 | 25 | * |
| CPS-M6X20ZP | BOLT M6X20MM | 12 | 8 | 18 | 20 |
| CPS-M6X20ZP | BOLT M6X20MM | 12 | 24 | 23 | * |
| CPS-M8NN | M8 NYLOC NUT | 17 | 40 | 29 | 10 |
| CPS-M8WH | M8 HARD WASHER | 17 | 44 | 29 | 10 |
| CPS-M8X20ZP | BOLT M8X20MM | 17 | 36 | 29 | 10 |
| CPS-M8X56P | SPLIT PIN | 8 | 19A | 23 | 10 |
| CPS-WASHER S/S 3/16"X3/4" | 3/16" WASHER STAINLESS STEEL - LARGE | 4 | 45 | 29 | 10 |
| CPS-WS/S 3/16"X1/2" | 3/16" WASHER STAINLESS STEEL - SMALL | 4 | 46 | 29 | 10 |
| CPS-WS/S SPRING 3/16" | SPRING WASHER 3/16" | 4 | 47 | 29 | 10 |