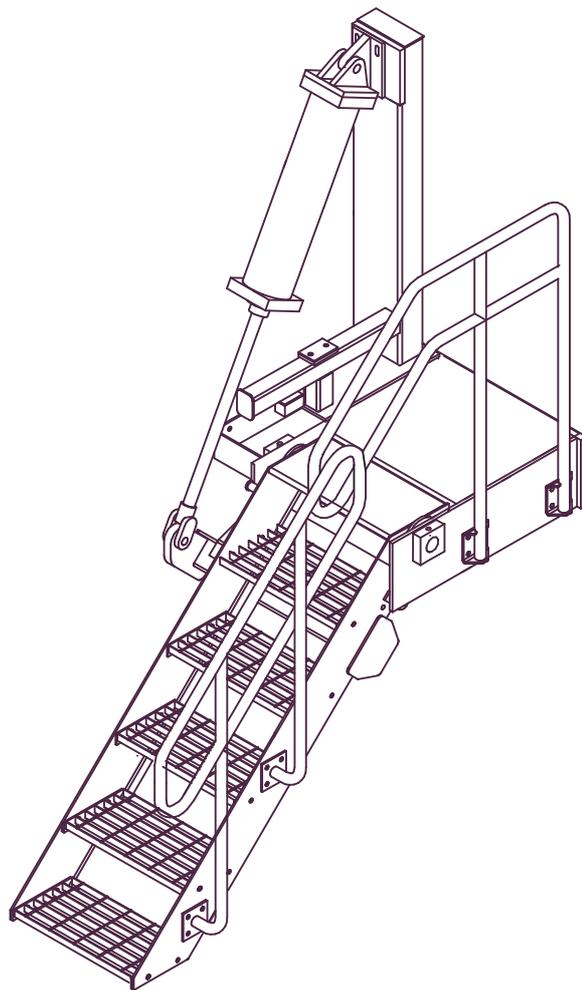




FOLDING RETRACTABLE STAIRWAY

Manual for Cat 793C Haul Truck
Pneumatic Operation



Model No.: PSA-793C-FS
Serial No.: 793C-001 - ~
Date Manufactured:

FOLDING STAIRWAY

Caterpillar 793C Haul Truck

Pneumatic Operation



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3	<u>Section 1</u> Fitment of Additional Mounting Blocks
4	<u>Section 2</u> Assembly Procedure
5	<u>Section 3</u> Electrical Installation
6	<u>Section 4</u> Installation of Pneumatic Control Enclosure
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FOLDING STAIRWAY

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Section 1 Fitment of Additional Mounting Blocks

See page 13 for Installation Drawing

For the fitment of the Power Step Folding Stairway (PSFS) assembly, two (2) additional mounting blocks are welded to the right hand end of the standard factory supplied bumper bar.

Remove air cleaner service platform on right hand side of 793C if this has already been fitted.

Bolt additional mounting blocks to supplied mounting jig plate, with the thinner of the two mounting blocks to the right hand side (front) of the mounting jig plate, using M16 x 20 bolts (4 is sufficient).

Temporarily position mounting jig plate 12mm holes on mounting jig plate line up with factory fitted mounting plates and mark location of new mounting plates - remove jig.

Remove all paint and primer from weld area on end of bumper and weld edges of new mounting blocks.

Reposition mounting jig plate, and bolt onto existing platform mounting points with M12 x 20 bolts - tighten firmly.

Tack additional mounting blocks in position, with tack welds to all four corners.

Remove mounting jig plate.

Weld mounting blocks in position with 10mm full penetration weld, allow weld to cool, thoroughly clean weld area, prime and paint.

Do not paint mating face of mounting blocks.

FOLDING STAIRWAY

Caterpillar 793C Haul Truck

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Section 2 Stairway Assembly

NOTE

Follow all on-site/Mine lifting and safety procedures when installing PSFS to Truck.

Procedure

It is recommended that the Power Step Folding Stairway (PSFS) assembly not be fitted until after all welding in the front right hand deck area of the 793C has been completed, and the Air Cleaner assembly has been mounted.

Prior to installation of the Right Hand Air Cleaner Assembly it is recommended that the outer deflector guard be removed - this is necessary for ease of fitment of PSFS and modification of this deflector.

Remove paint from mating surface of factory fitted platform mountings on bumper.

Remove paint from corresponding areas of **PSFS** mounting plate if not supplied paint free.

Lift **PSFS** into position with correct lifting equipment.

When lifting into position with crane, sling around main hinge pin.

Take care not to damage air cleaner assembly with lifting equipment as stairway is positioned.

Stairway can readily be positioned using a forklift, with forks close together, and under the platform plates. Assembly will balance on forks

Fit M16 x45 (6 off) bolts and M12 x 45 bolts (6 off) - ensure thread lubricant is used and hardened washers fitted. Prior to tightening these 12 bolts, ensure platform and stairway assembly is square to machine.

Recommended tightening torque's.

M16 -	240 +/- 40Nm (176 +/- 30 Lb Ft.)
M12 -	100 +/- 20Nm (75 +/- Lb Ft.)

To lower PSFS if machine is in-operable, and pneumatics have not been installed, remove pressure lines from cylinder and lower either with overhead crane, or forklift, until stairway will lower no further - then unscrew lock valve out of cylinder, and then lower stairway to lowest position.

FOLDING STAIRWAY

Caterpillar 793C Haul Truck

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Section 3 Electrical Installation

PROCEDURE

Remove centre console panel in cabin -
- to do this remove six (6) screws and gear selection knob.

Position stairway indicator panel on centre console, above hour meter.
- drill two mounting screw holes (6mm or 7/32")
- one electrical cable hole (12mm or 15/32")
- do not re-fix console Panel

Remove four (4) screws holding Caterpillar fuse panel behind operator's seat. Drill one hole to insert Caterpillar fuse holder - fit fuse holder, into fuse indicator panel - tighten. Drill size (12mm or 15/32").

Remove rear access panel from back of cabin and run short conduit through the main cable gland to inside centre console, ensuring conduit goes underneath control box.

Connect blue wire start from conduit above to blue wire of cabin indicator panel harness.

In rear access, connect black wire, with 10mm eye terminal to machine ground, and blue wire to outer terminal of newly inserted fuse holder.

Install short blue wire to screw terminal of Caterpillar circuit breaker, and other end to fuse holder.

Run wiring harness from Power Step Folding Stairway magnetic proximity switch around under radiator, and follow cabling/hose routing up to air line/ electrical outlet on rear Right Hand Side of cabin.

On unit 1 to 14, it will be necessary to install into this wiring harness the Deutsch connections and bulkhead fitting, supplied separately to stairways.

Drill hole in RH Cabin access panel - route wiring harness in through access panel, and through to under centre console - connect wires appropriately as colour coded. Hole saw/drill size (24mm), cable tie harness as appropriate, approximately every 300mm.

FOLDING STAIRWAY

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Section 4 Installation of Pneumatic Control Enclosure

See also the Installation Drawing Pg 13

Main Enclosure

Position Main Pneumatic Enclosure on top of front bumper, as indicated Position to allow easy access as walking up or down diagonal stairway across front of radiator.

Mark mounting position.

Remove M10 x 15 bolts from bottom of enclosure to release mounting plates.

Remove paint from mounting area and mounting plate.

Stitch weld mounting plates in position.

Allow to cool, thoroughly and clean area, prime and paint.

Remount Enclosure, with ports to right hand side of truck.

Ground Level Control - Front Bumper

Mount with pneumatic ports to right hand side of truck - it will be necessary to undo front plate to mount, with three (3) M6 x 15 Set Series. On re-assembly, mount front cover in correct alignment.

FOLDING STAIRWAY

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Section 5 Installation of Pneumatic Lines

Pneumatic Lines

Main Supply

Remove $\frac{3}{4}$ " BSPP plug from main air reservoir, and install $\frac{3}{4}$ " BSPP $\frac{1}{2}$ " BSPP Reducing Socket, $\frac{1}{2}$ BSPP 90° Elbow and Safety Release Valve (already assembled into one unit) into air reservoir, with tap/hose adapter facing toward middle of truck.

Route 8.0mm main supply air line from air reservoir to main Power Step pneumatic enclosure so it is not going to be damaged by falling rocks and debris, operators boots, vibration, wear etc.

Connect into Port 1 (top port)

Park Brake Interlock

Remove $\frac{1}{4}$ NPT 45° Female/Female adapter from outlet No.3 of air lines connection on Right hand side of cabin - fit $\frac{1}{4}$ NPT "T", fitted with tube adapter and $\frac{1}{4}$ NPT Nipple (supplied as one assembly) to outlet 3, and then refit $\frac{1}{4}$ NPT 45° Female/Female adapter.

Route supply line from above fitting adjacent to existing pneumatic and electrical lines, around top of engine compartment to main air reservoir supply air line and continue to main Power Step pneumatic enclosure.

Connect line into Port 7.

Ground Level Control - Front Bumper

Once Ground level control box is mounted in front bumper extension, route three (3) 4.0m lines from Power Step pneumatic enclosure down inside of right hand chassis rail, into back of bumper through light wiring grommet, and plumb into control box.

FOLDING STAIRWAY
Caterpillar 793C Haul Truck
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Section 5 Cont. Pneumatic Lines

Ground Level Control - Front Bumper

Plumbing is:

Main Pneumatic Enclosure		
Port 2	Up Air	Centre Port
Port 3	Supply Air	Upper Port
Port 6	Down Air	Lower Port

Pneumatic Cylinder

Route two (2) 8.0m pneumatic lines along with ground level control lines from Power Step pneumatic enclosure, down inside of right hand chassis member.

Route out under right hand side of cowl to cylinder.

Connect to appropriate ports on cylinder lock valve.

Main Pneumatic Enclosure		Cylinder Port
Port 4	Cylinder Lower	Top
Port 5	Cylinder Raise	Lock Valve (Bottom)

FOLDING STAIRWAY

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Section 6 Commissioning

Should machine air not be available, a source of Compressed air can readily be coupled into Port 1 of the Power Step Main Pneumatic Enclosure.

This will allow the **PSFS** to be raised and lowered, but will not be interlocked with the machine park brake.

When initially supplying compressed air to the system, ensure stairway is clear to operate, as if all air has been removed from system, stairway will raise of its own accord, with connection of air supply.

PSFS should raise and lower by operation of either set of control buttons.

With machine operating, or machine air system fully charged **PSFS** should not lower if Park Brake is not applied, irrespective of which control station or button is operated.

With the machine park brake applied **PSFS** should raise or lower from either operating station.

With Park Brake applied and **PSFS** lowered, on release of the Park Brake by the operator, the PSFS should raise automatically, without the operator of any Control station.

With PSFS in raised position, and machine ignition on, GREEN L.E.D. on centre consul indicator should be illuminated - this L.E.D. should be off, if ignition is off.

With **PSFS** lowered, RED L.E.D. should be illuminated (Green - extinguished).

Should L.E.D.'s not change, irrespective of **PSFS** position, move magnetic proximity switch on stairway buffer stop tube closer to metallic button on rear side of stairway.

Note: Pneumatic pressure regulator inside Main Pneumatic Enclosure is set, pre-delivery at 80 PSI, to allow for variation in supply air pressure from machine reservoir. To adjust speed of raise/descent, adjust flow control valves on top of cylinder or lock valve on rod end of cylinder.

FOLDING STAIRWAY

Caterpillar 793C Haul Truck

Pneumatic Operation



Section 7 Recommended Maintenance Procedure

Daily

Visually check stairway and structure for damage, loose components, handrails, etc.

Notify the appropriate supervisor for any observed damage or malfunction.

500 Hours

Grease 4 grease nipples on rotation shaft and sector gears, all of these are accessible with the stairway lowered, and accessed from under the stairway.

Check main mounting bolts for torque.

Repeat daily check as above.

5000 Hours

Retorque all main mounting bolts.

8 off, M20 x 65, Grade 10.9

6 off, M12 x 65, Grade 10.9

Check all M12 bolts & nuts holding rubber isolators to body and rear support plate of truck.

These can be checked by hand.

Repeat daily check as above.

FOLDING STAIRWAY
Caterpillar 793C Haul Truck
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Section 8 Drawings and Repair Parts lists

- 8-1 Installation Instruction and Drawing

- 8-2 Main Assemblies

- 8-3 Landing Assembly
Parts List

- 8-4 Stair Assembly
Parts List

- 8-5 Pneumatic Cylinder
Parts List

- 8-6 Air Control Box & Fittings
Parts List

- 8-7 Electrical System

FOLDING STAIRWAY

Caterpillar 793D Haul Truck



Section 8-1 Installation Instruction & Drawing

See Drawing Page 13

PROCEDURE

1. Remove original ladder from mounting blocks at the right hand end of the bumper.
2. Fit the additional mounting blocks to the template.
3. Using bolts in the vacant ~13 holes in the template, fit the template and mounting blocks against the truck chassis & bumper. Tackweld the mounting blocks to the truck.
4. Fully weld the new mounting blocks to the truck. 8 cfw. Increase the size of the welds on the original mounting blocks to 8cfw if not already that big, including the welds attaching the front piece of the fabricated mounting block to the side pieces.
5. Fit the Stair Landing. Bolt to all mounting blocks - the originals that mounted the I ladder and the new ones attached per this drawing.
6. Mount Power pack. Using 6 M10 bolts and box as template, position the tapped mounting block to top of bumper as shown Allow for cable exit clearance, Mark position of block, remove paint in weld region. Tack and weld block to bumper Re-paint to match and bolt down.

FOLDING STAIRWAY

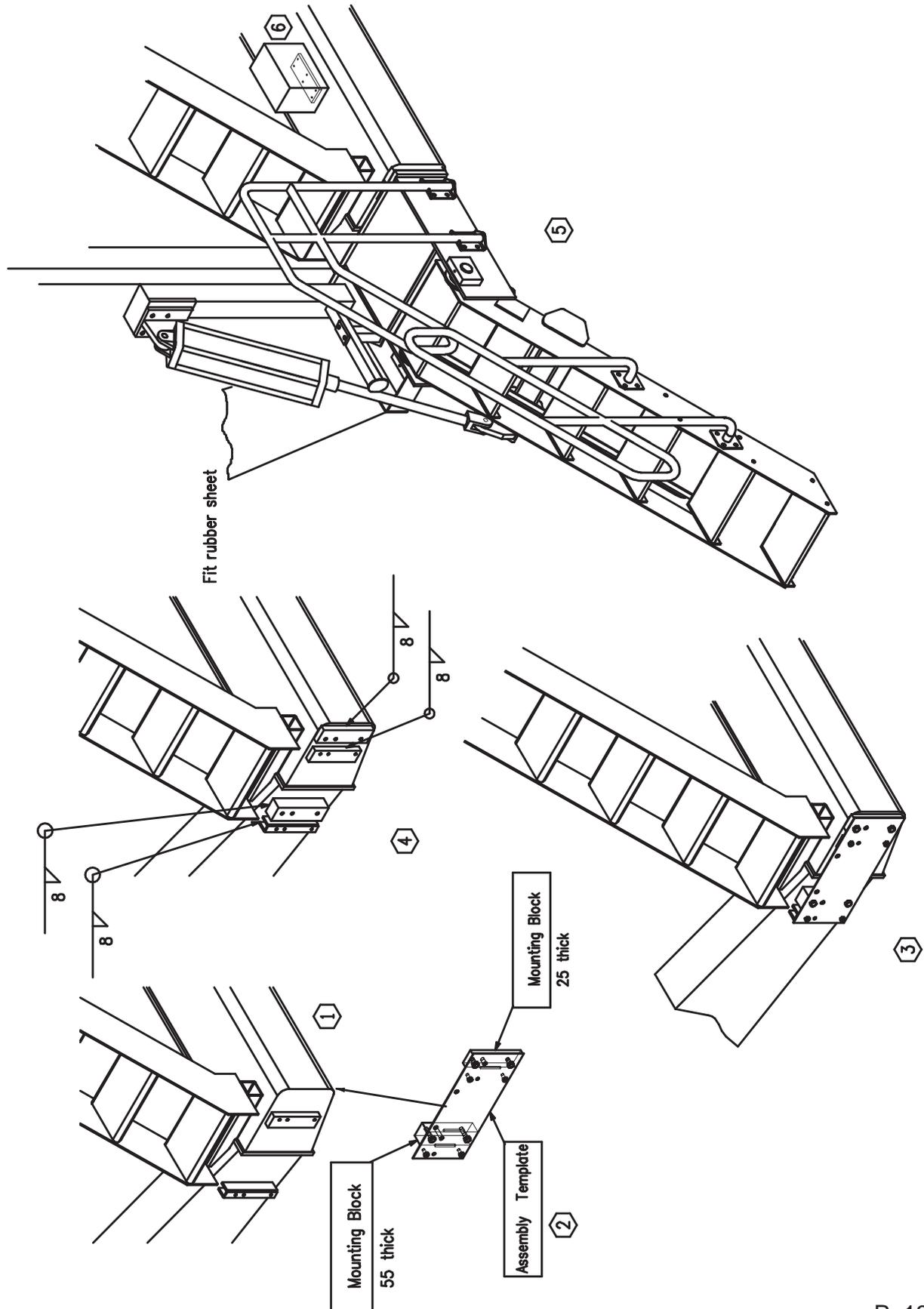
Caterpillar 793C Haul Truck

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Section 8-1 Cont. Installation Instruction Drawing

See Procedure notes Page 12



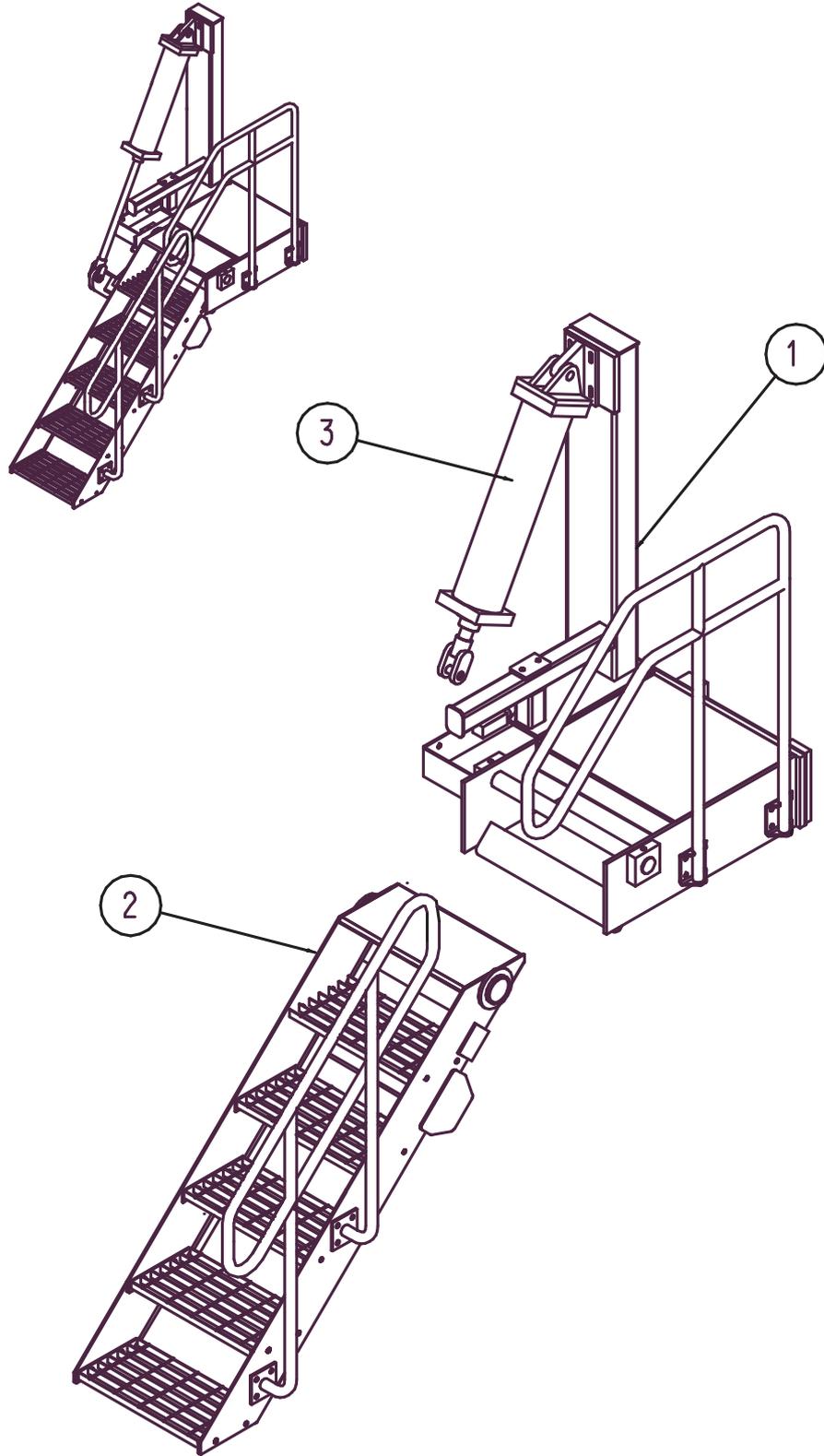
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Section 8-2 Main Assemblies



FOLDING STAIRWAY
Caterpillar 793C Haul Truck
Pneumatic Operation



Section 8- 2 Main Assemblies

See Drawing Pg 14

ITEM	PART NO.	PART NAME	QTY		
1	PS-35001-A	LANDING ASSEMBLY (INC.HANDRAILS) REFER TO 8.3 FOR DETAILS	1		
2	PS-35010-A	FOLDING STAIRS ASSEMBLY (INC.HANDRAILS) REFER TO 8.4 FOR DETAILS	1		
3	PS-50501-A	PNEUMATIC CYLINDER REFER TO 8.5 FOR DETAILS	1		

FOLDING STAIRWAY

Caterpillar 793C Haul Truck

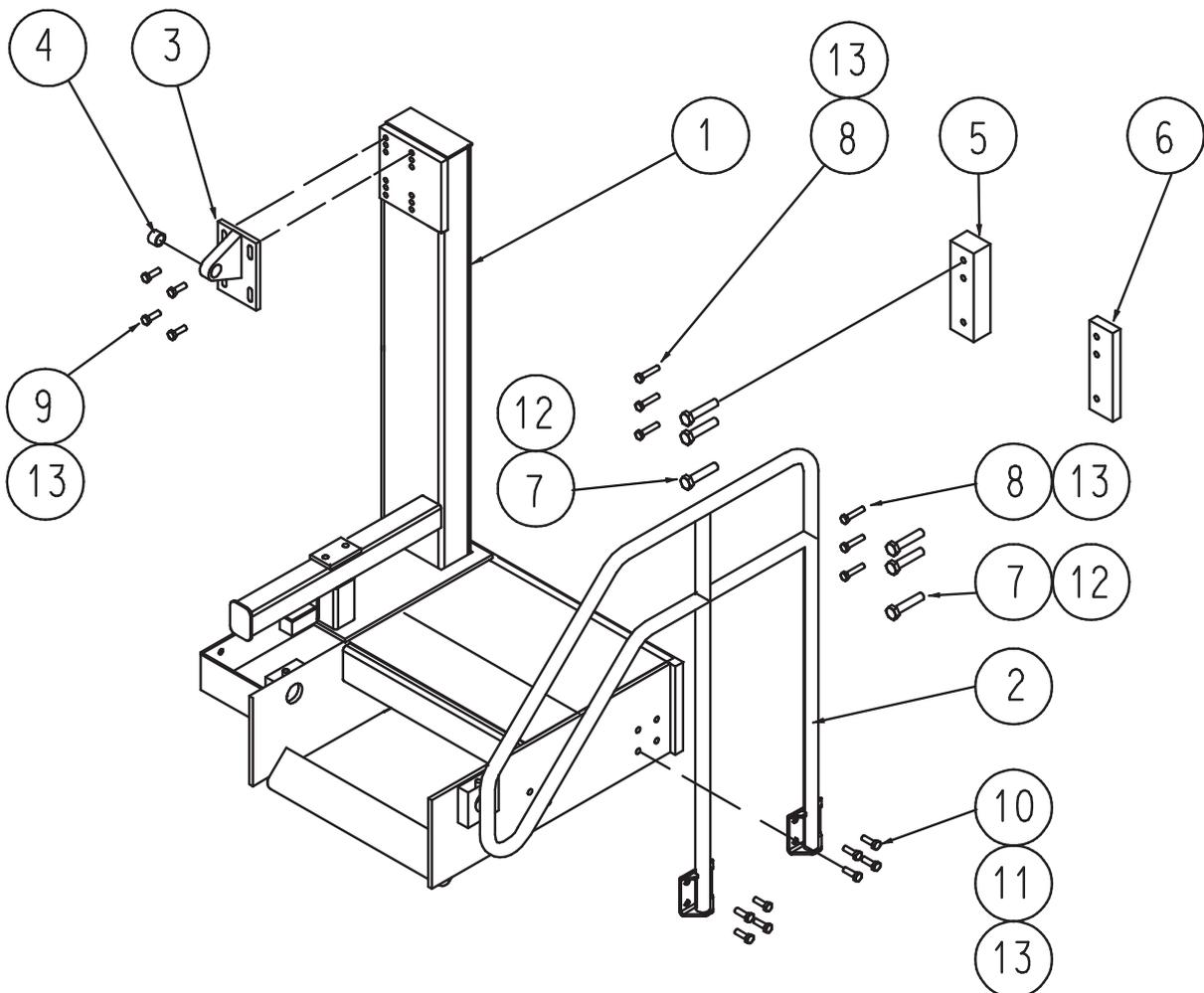
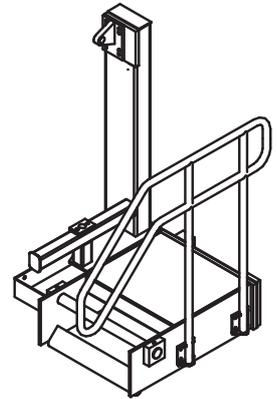
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Section 8- 3 Landing Assembly

See Parts List Pg 17

PS-35001-A



FOLDING STAIRWAY
Caterpillar 793C Haul Truck
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Section 8- 3 Landing Assembly

PS-35001-A

Parts List

See Drawing Pg 16

Item	Part No.	Part Name	Qty		
1	PS-35002	FRAME	1		
2	PS-35003	HANDRAIL - FRONT	1		
3	PS-35007	CYLINDER MOUNTING	1		
4	PS-22502-PB	CYL-MOUNTING-BUSH- 1 1/4"OD x 25mm x 30 lg	1		
5	PS-11701	MOUNTING BLOCK LH	1		
6	PS-11702	MOUNTING BLOCK RH	1		
7	CPS-M16X45ZP	BOLT-M16 x 45	6		
8	CPS-M12X45ZP	BOLT-M12 x 45	6		
9	CPS-M12X40ZP	BOLT-M12 x 40	4		
10	CPS-M12X35ZP	BOLT- M12 x 35	8		
11	CPS-M12NZP	NUT-M12	8		
12	CPS-M16WH	WASHER - HARDENED - M16	6		
13	CPS-M12WH	WASHER - HARDENED - M12	18		

FOLDING STAIRWAY

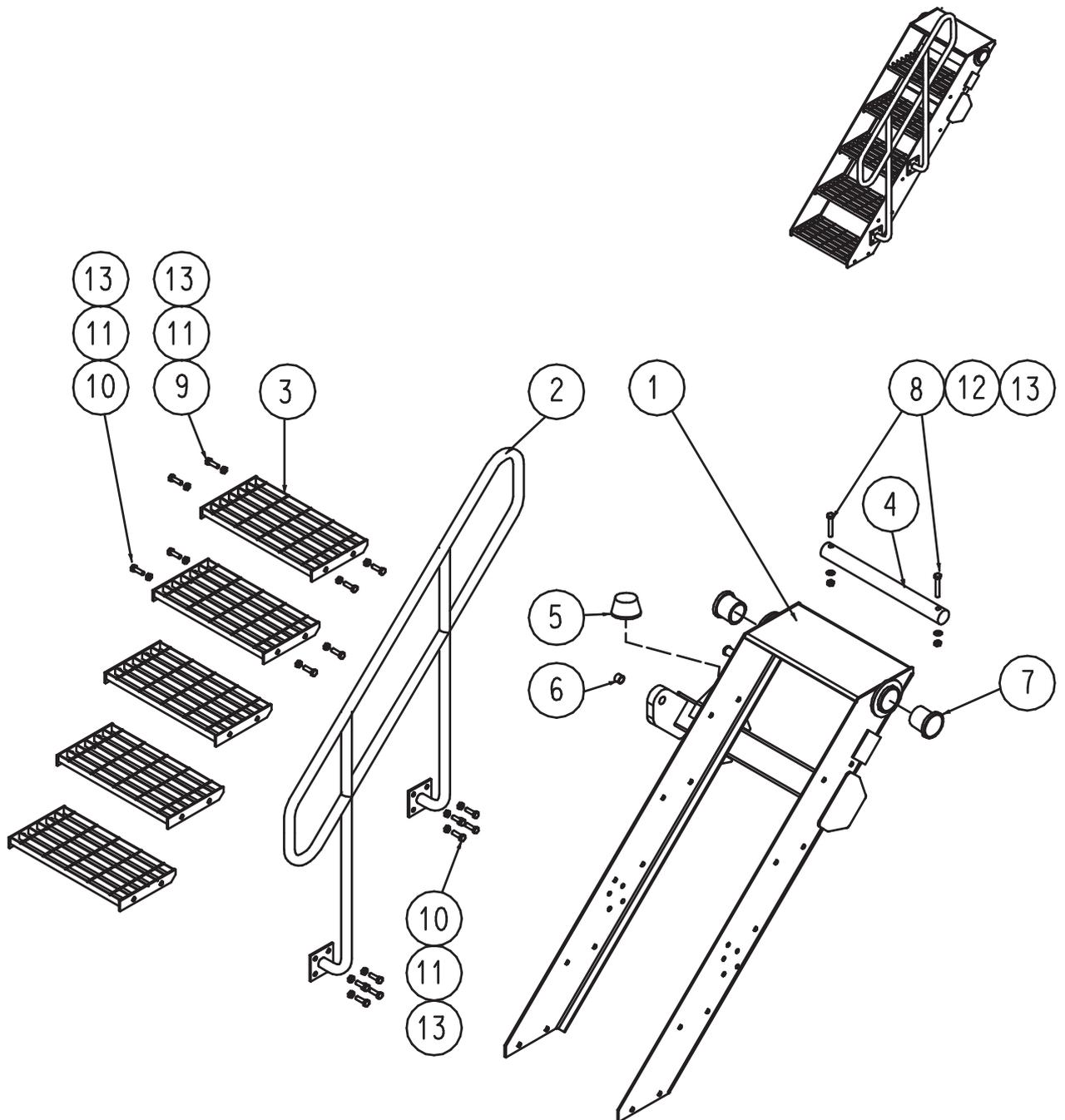
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Section 8- 4 Stair Assembly

PS-35010-A



FOLDING STAIRWAY
Caterpillar 793C Haul Truck
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Section 8- 4 Stair Assembly

PS-35010-A

Parts List See Drawing Page 18

Item	Part No.	Part Name	Qty		
1	PS-35101	STRINGER ASSEMBLY ONLY	1		
2	PS-35013	HANDRAIL-FRONT	1		
3	PS-21351	STAIR TREADS	5		
4	PS35004	PIVOT SHAFT-STAIRS	1		
5	PS-40001	RUBBER STOP	1		
6	PS-22502-PB	CYL-MOUNTING-BUSH - 1 1/4"OD x 1" x 30	1		
7	PS-29009	PIVOT BUSH	2		
8	CPS-M12X120ZP	BOLT-M12 x 120	2		
9	CPS-M12X35ZP	BOLT-M12 x 35	2		
10	CPS-M12X30ZP	BOLT-M12 x 30	24		
11	CPS-M12NZP	NUT-M12	26		
12	CPS-M12NN	NYLOC NUT	2		
13	CPS-M12WH	WASHER-HARDENED	36		
14	PS-61006-2	GREASE NIPPLE 1/4"BSP (Not shown)	2		

FOLDING STAIRWAY

Caterpillar 793C Haul Truck

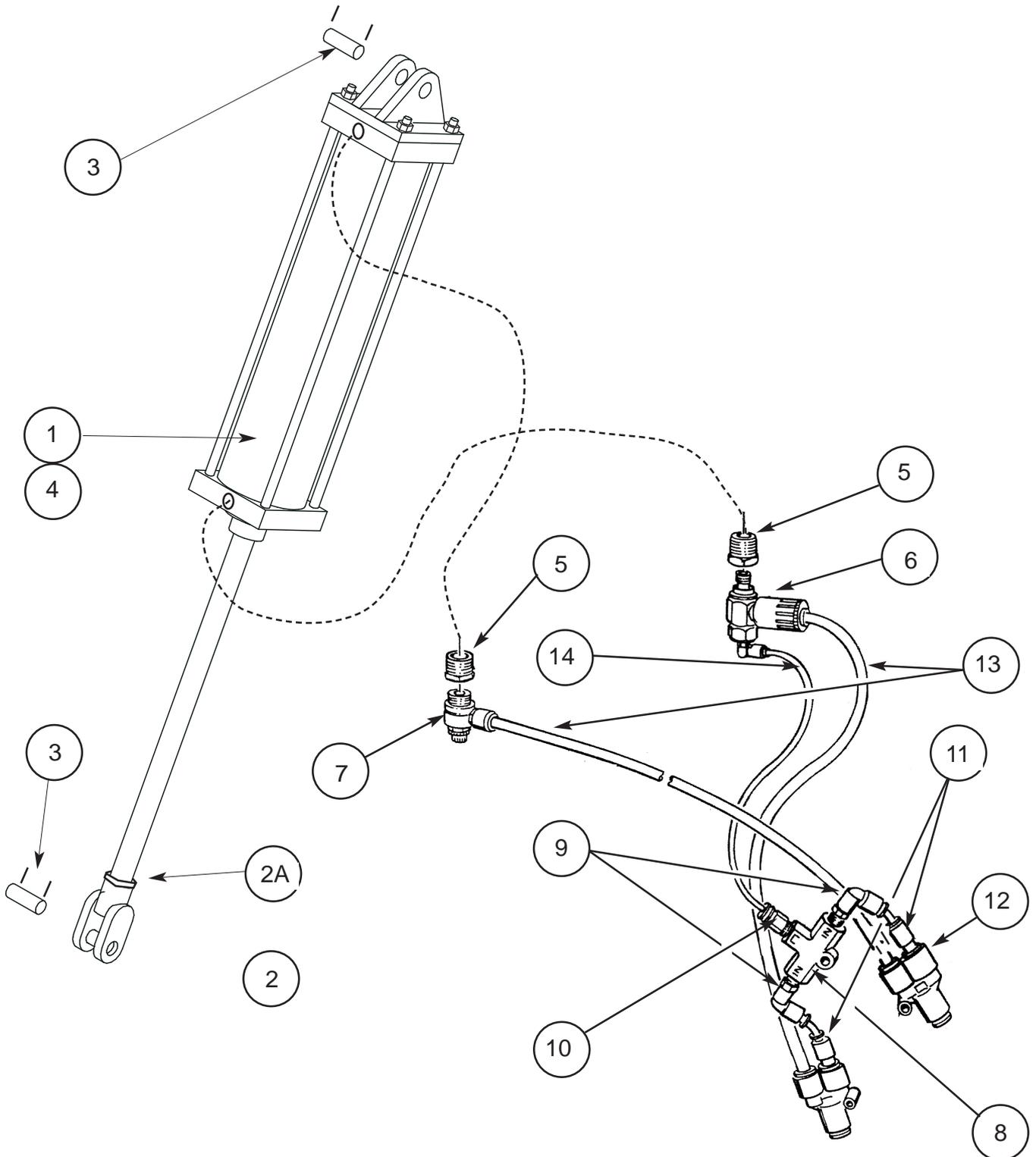
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Section 8- 5 Pneumatic Cylinder

PS-50501-A

See Parts List Pg 21



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Caterpillar 793C Haul Truck
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Section 8- 5 Pneumatic Cylinder

PS-50501-A

See Drawing Page 20

Item	Part No.	Part Name	Qty		
1	PS-50501	CYLINDER 2 1/2"	1		
2	PS-50502	CLEVIS	1		
2A	PS-50503	CLEVIS LOCK NUT	1		
3	PS-50504	PIN-CYLINDER WITH SPLIT PINS	2		
4	PS-50501-1	SEAL KIT (not shown)	1		
5	PS-50008	REDUCING BUSH 1/2"BSP - 1/4" BSP	2		
6	PS-51003	LOCK/FLOW CONTROL VALVE	1		
7	PS-51002	FLOW CONTROL VALVE	1		
8	PS-55105	SHUTTLE VALVE	1		
9	PS-55203	ELBOW 1/8"- 4MM 90 DEG.	2		
10	PS-55205	ADAPTOR 1/8"- 4MM STRAIGHT	1		
11	PS-55216	ADAPTOR 8MM- 4MM STRAIGHT	2		
12	PS-55215	JUNCTION JOINER Y 8MM	2		
13	PS-8MM-TUBE	AIR TUBE 8MM	-		
14	PS-4MM-TUBE	AIR TUBE 4MM	-		

FOLDING STAIRWAY

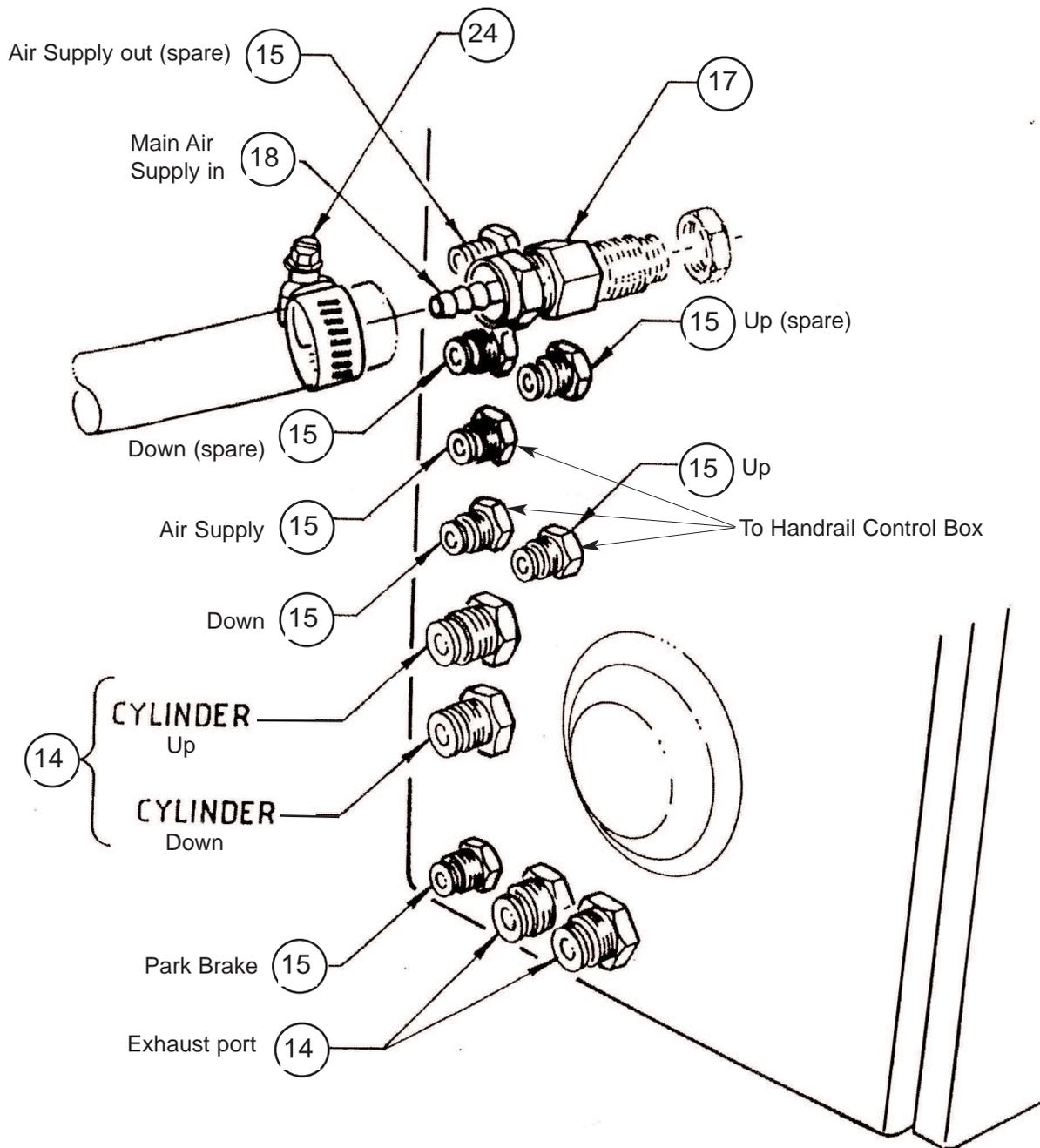
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Section 8-6 Air Control Box & Fittings

See Parts List Pg 26



FOLDING STAIRWAY

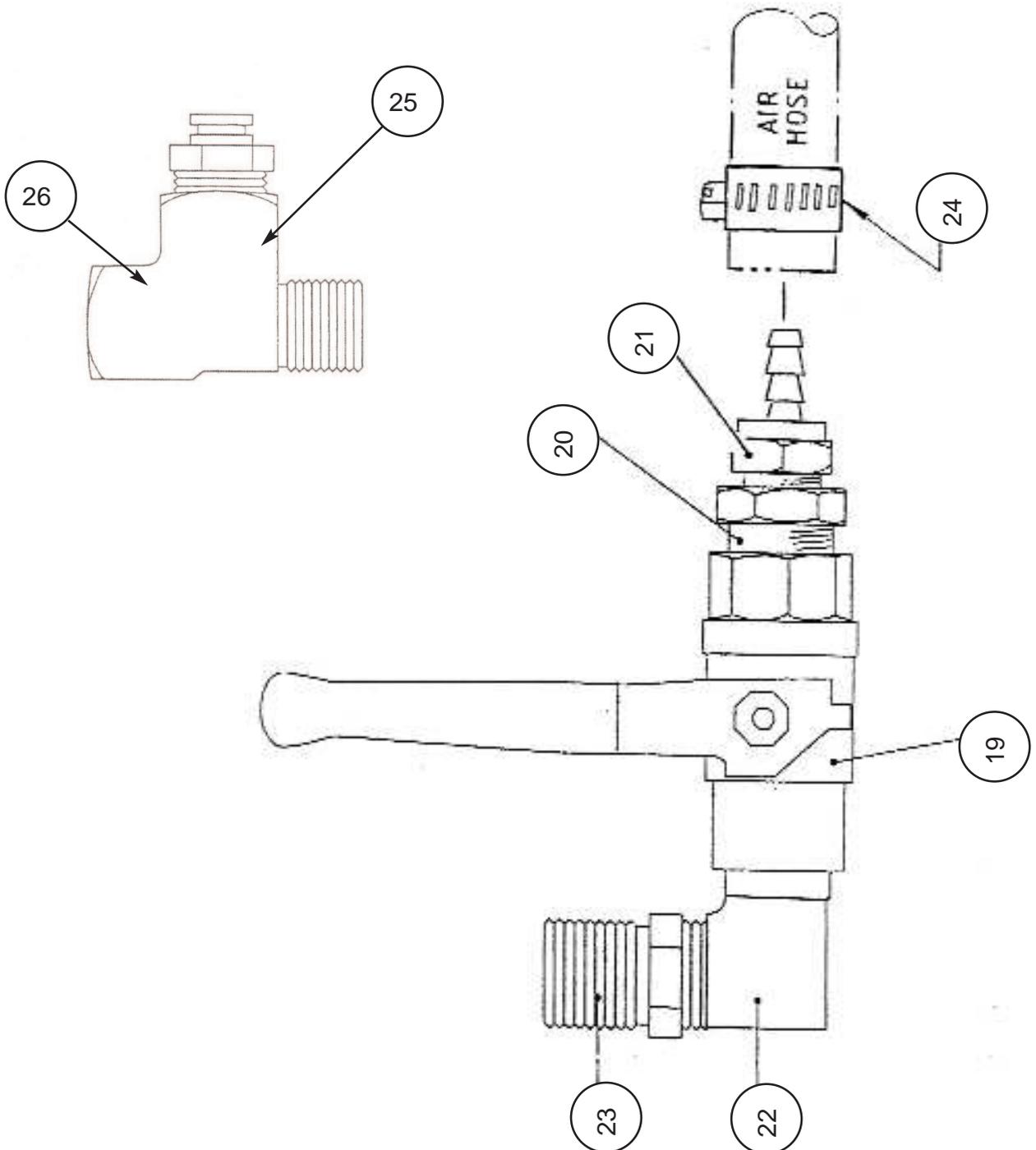
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Section 8-6 Air Control Box & Fittings

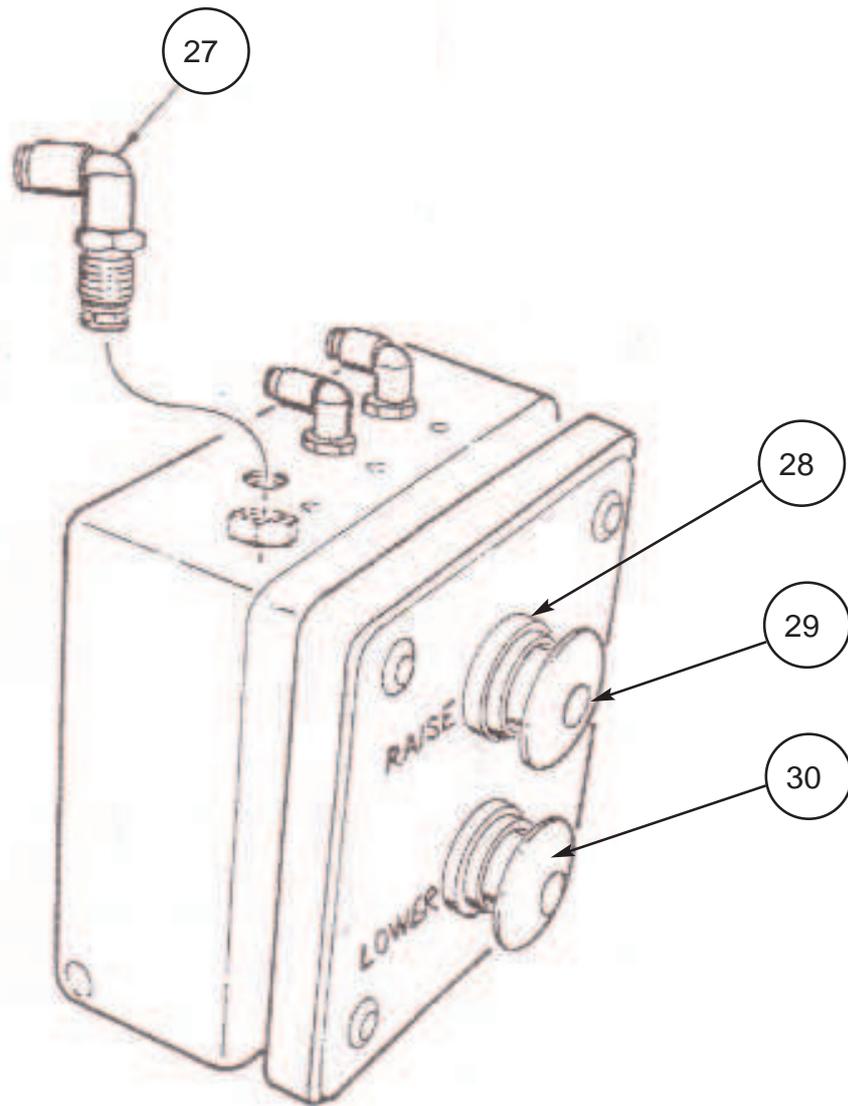
See Parts List Pg 26



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Section 8-6 **Air Control Box & Fittings** **Handrail Control Box**



Handrail Control Box Assembly **PS-55002**
Box Only **PS-55012**

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Section 8-6 Air Control Box & Fittings PS-55001

See Illustrations Pages 22 - 25

Including Items 1-16

Item	Part No.	Part Name	Qty		
1	PS-55011	SEALED ENCLOSURE BOX	1		
2	PS-55101	AIR FILTER/REGULATOR	1		
3	PS-55102	MIST SEPARATOR	1		
4	PS-55105	SHUTTLE VALVE	1		
5	PS-55104	PILOT VALVE	1		
6	PS-55103	PILOT VALVE	1		
7	PS-55212	ADAPTOR 8MM 90 DEG. MALE/FEMALE	1		
8	PS-55211	ADAPTOR 3/8"- 8MM TEE	1		
9	PS-55203	ADAPTOR 1/8" - 4MM 90DEG.	5		
10	PS-55402	NIPPLE HEX BRASS 1/8"	1		
11	PS-55403	ELBOW 90DEG. BRASS 1/8"	1		
12	PS-55213	ADAPTOR 10MM/10MM M/F 90 DEG	1		
13	PS-55214	ADAPTOR 10MM/8MM M/F STRAIGHT	2		
14	PS-55201	UNION BULKHEAD 8MM	2		
15	PS-55202	UNION BULKHEAD 4MM	2		
16	PS-55206	ADAPTOR 1/8" - 8MM 90 DEG.	7		
17	PS-55217	FITTING - BULKHEAD 8MM-3/8" BSPF	1		
18	PS-50101	ADAPTOR 3/8"BSPF	1		
19	PS-50003	BALL VALVE 1/2" SELF DRAINING	1		
20	PS-50004	REDUCER 1/2"-3/8" BSPP	1		
21	PS-50101	ADAPTOR 3/8"-8MM	1		
22	PS-50002	ELBOW 1/2"BSPP	1		
23	PS-50001	REDUCING SOCKET 3/4"-1/2" BSPP	1		
24	PS-50101-H	HOSE CLAMP	1		
25	PS-50102	ADAPTOR 1/4"NPT 4MM	1		
26	PS-50005	TEE 1/4 NPT	1		
27	PS-55218	BULK HEAD FITTING - 90Deg.	1		
28	PS-55108	SWITCH KIT	2		
29	PS-55109-BG	GREEN RUBBER COVER	1		
30	PS-55108-BR	RED RUBBER COVER	1		
31	PS-55107	PUSH BUTTON VALVE	2		not shown

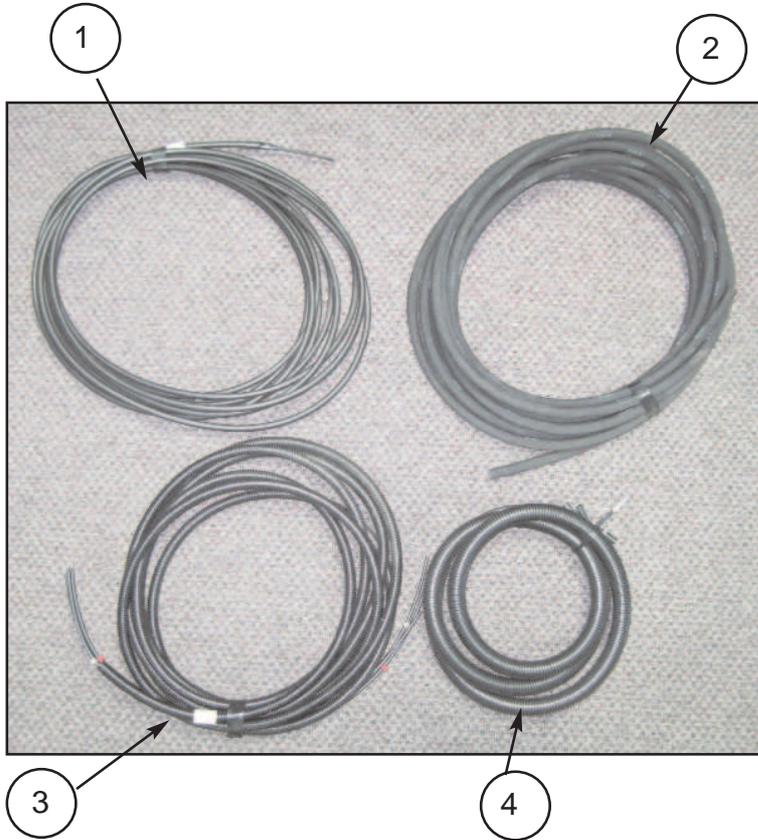
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Caterpillar 793C Haul Truck

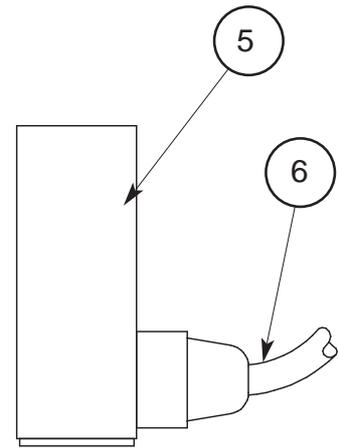
Pneumatic Operation



Section 8-7 Electrical Controls



Proximity Switch Assembly
Mounted on Fixed Landing



Cab Harness & Equipment
Refer Wiring Harness Drawings



FOLDING STAIRWAY
Caterpillar 793C Haul Truck
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Section 8-7 Electrical Controls

Item	Part No.	Part Name	Qty		
1	PS-55225	AIR PARK BRAKE HARNESS - 5M	1		
2	PS-55227	MAIN AIR HOSE - 10M	1		
3	PS-55226	MAIN CONTROL TO HANDRAIL BOX HARNESS - 5 M	1		
4	PS-55228	MAIN CONTROL BOX TO AIR CYLINDER	1		
5	PS-75430	PROXIMITY SWITCH	1		
6	PS-77004	PROXIMITY SWITCH HARNESS	1		
7	PS-77002	CABIN BOX LED LIGHT INDICATOR	1		
8	PS-77003	WIRING HARNESS	1		

WARNING

**LOW OR FAULTY BATTERIES WILL VOID
WARRANTY ON THE POWER PACK AND ALL
ELECTRICAL SWITCHES AND COMPONENTS**

FOLDING STAIRWAY

Caterpillar 793C Haul Truck

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Section 8-7 Electrical Controls - Wiring Diagram

0201-02
Sheet 1

