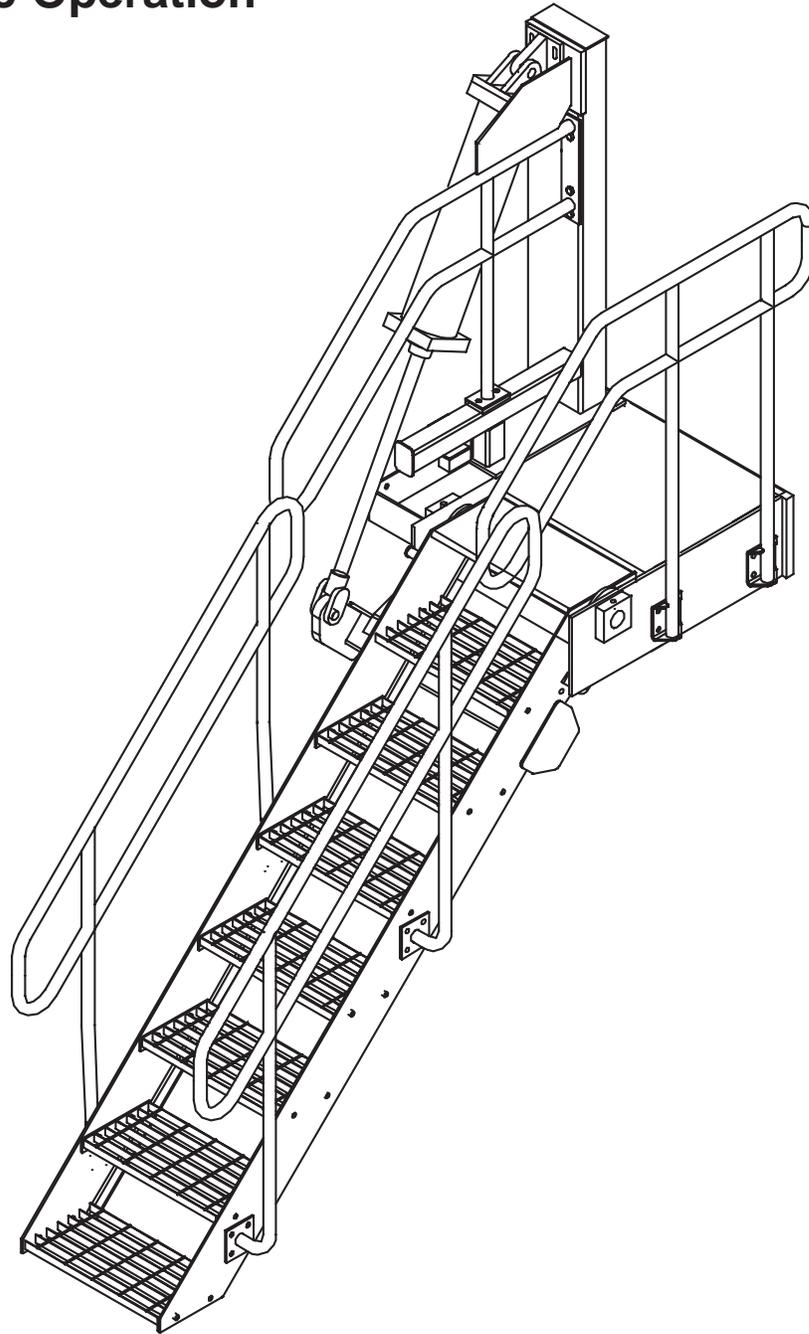


# FOLDING RETRACTABLE STAIRWAY

## Manual for Cat 793D Haul Truck Pneumatic Operation



Model No.: PSA-793D-PNEUMATIC-FS  
Serial No.: 793DA.001 to 793DA.014  
Date Manufactured: May 2007

# FOLDING STAIRWAY

## Caterpillar 793D Haul Truck

### Pneumatic Operation



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# **FOLDING STAIRWAY**

## **Caterpillar 793D Haul Truck**

### **Pneumatic Operation**



See page 12 for Installation Drawing

## **SECTION 1**

### **Fitment of Additional Mounting Blocks** (See page 12 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 793D 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.

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 793D Haul Truck

### Pneumatic Operation



## SECTION 2

### Stairway Assembly

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 793D 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 either a crane or forklift.

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

Take care not to damage air cleaner assembly with crane hook block as stairway is positioned.

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

Fit M16 x50 (6 off) bolts and M12 x 50 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 ± 40 Nm (176 ± 30 Lb Ft)
M12	-	100 ± 20 Nm (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 lowered position.

# FOLDING STAIRWAY

## Caterpillar 793D Haul Truck

### Pneumatic Operation



## SECTION 2 (Cont)

### Stairway Assembly (cont.)

Re-install lock valve and associated air lines.

Fit rubber buffer stop (supplied loose) to plate on side of stairway - tighten firmly and fit lock nut.

Fit handrail to platform, using M12 x 25 Bolts, nuts and washers -  
- tighten to  $100 \pm 20\text{Nm}$ .

Fit handrail to stairway, using M12 x 30 Bolts, nuts and washers - tighten to  $100 \pm 20\text{Nm}$ .  
It is recommended that all four upper bolts be inserted first (but not tightened) - then install four lower bolts - it may be necessary to use a bar to line up hole.

- all stairway handrails are individually matched to each stairway and numbered accordingly.

# **FOLDING STAIRWAY**

## **Caterpillar 793D Haul Truck**

### **Pneumatic Operation**



## **SECTION 3**

### **Electrical Installation**

Remove centre consul 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 consul, 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**

## **Caterpillar 793D Haul Truck**

### **Pneumatic Operation**



## **SECTION 4**

### **Installation of Pneumatic Control Enclosure**

See also the Installation Drawing Pg 12

#### **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**

## **Caterpillar 793D Haul Truck**

### **Pneumatic Operation**



## **SECTION 5**

### **Pneumatic Lines**

#### **Main Supply**

Remove 3/4" BSPP plug from main air reservoir, and install 3/4" BSPP 1/2" BSPP Reducing Socket, 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 1/4 NPT 45° Female/Female adapter from outlet No.3 of air lines connection on Right hand side of cabin - fit 1/4 NPT "T", fitted with tube adapter and 1/4 NPT Nipple (supplied as one assembly) to outlet 3, and then refit 1/4 NPT 45° Female/Female adapter.

Route 4.0m 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 4.0m 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 793D Haul Truck**  
**Pneumatic Operation**



**SECTION 5 (CONT.)**

**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.

<b>Main Pneumatic Enclosure</b>		<b>Cylinder Port</b>
Port 4	Cylinder Lower	Top
Port 5	Cylinder Raise	Lock Valve (Bottom)

# FOLDING STAIRWAY

## Caterpillar 793D Haul Truck

### Pneumatic Operation



## 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 793D Haul Truck**

### **Pneumatic Operation**



## **Section 7.**

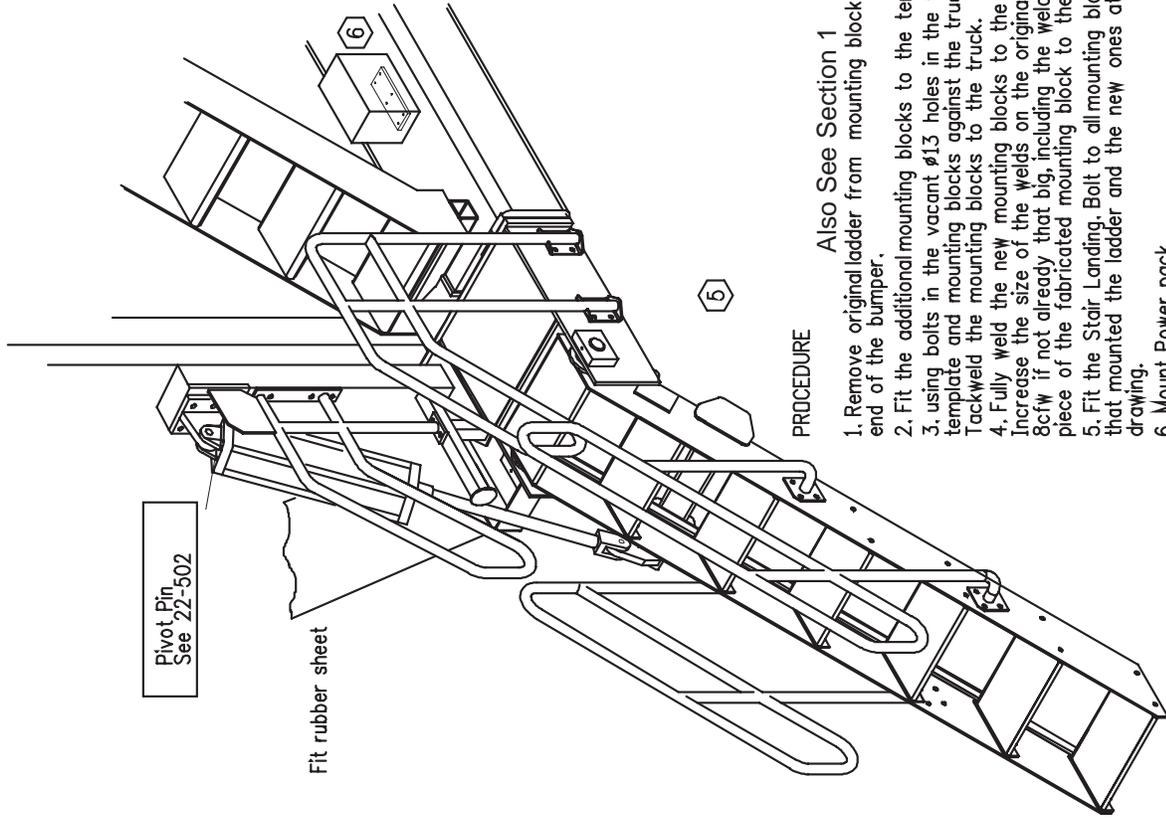
### **Drawings and Repair Parts lists**

- 7-1 Installation Instruction Drawing 22-508H
  
- 7-2 Assembly complete  
Parts List
  
- 7-3 Landing Assembly  
Parts List
  
- 7-4 Stair Assembly  
Parts List
  
- 7-5 Electrical System Controls
  
- 7-6 Pneumatic Cylinder
  
- 7-7 Power Pack

# Caterpillar 793D Haul Truck

## Installation

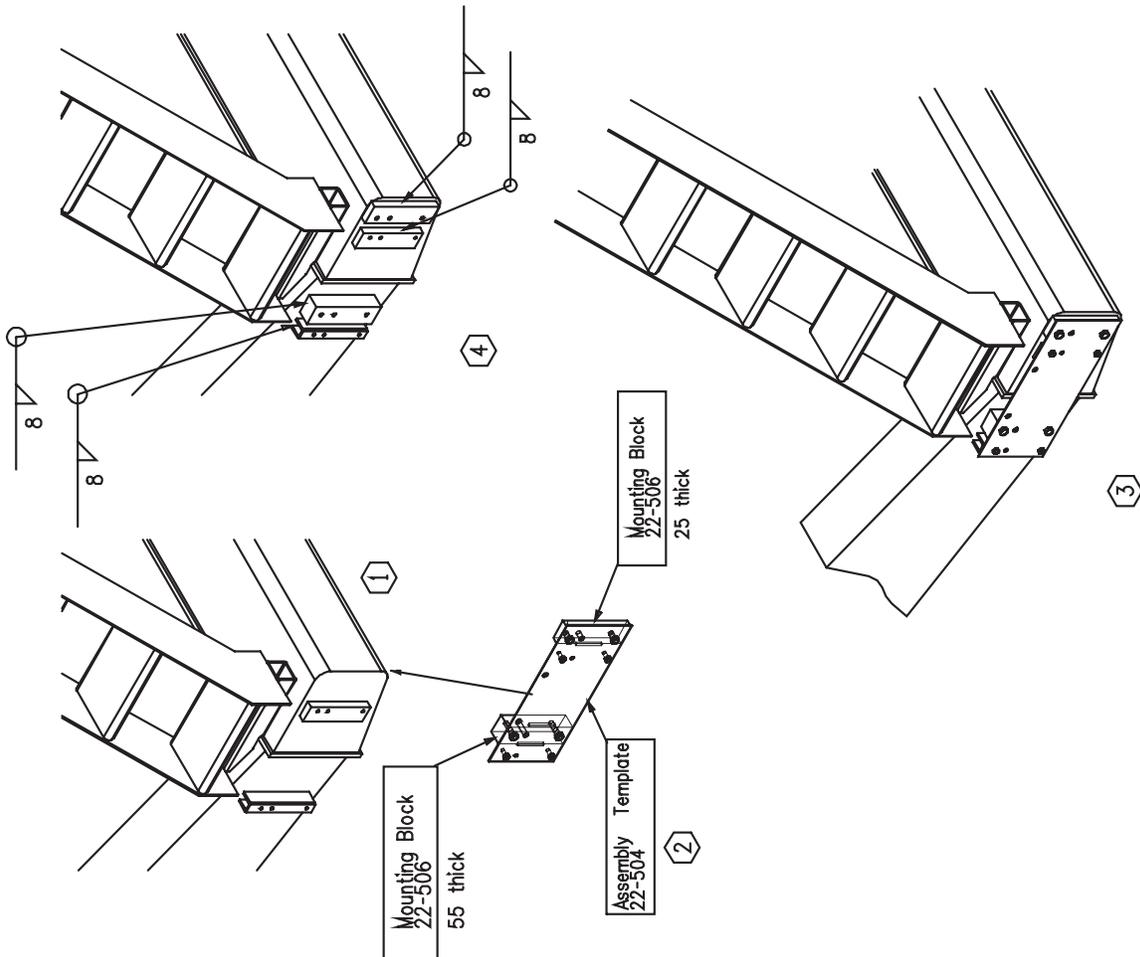
(Pneumatic Operation)



**PROCEDURE**

Also See Section 1

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  $\varnothing 13$  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 c/w. Increase the size of the welds on the original mounting blocks to 8c/w 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 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



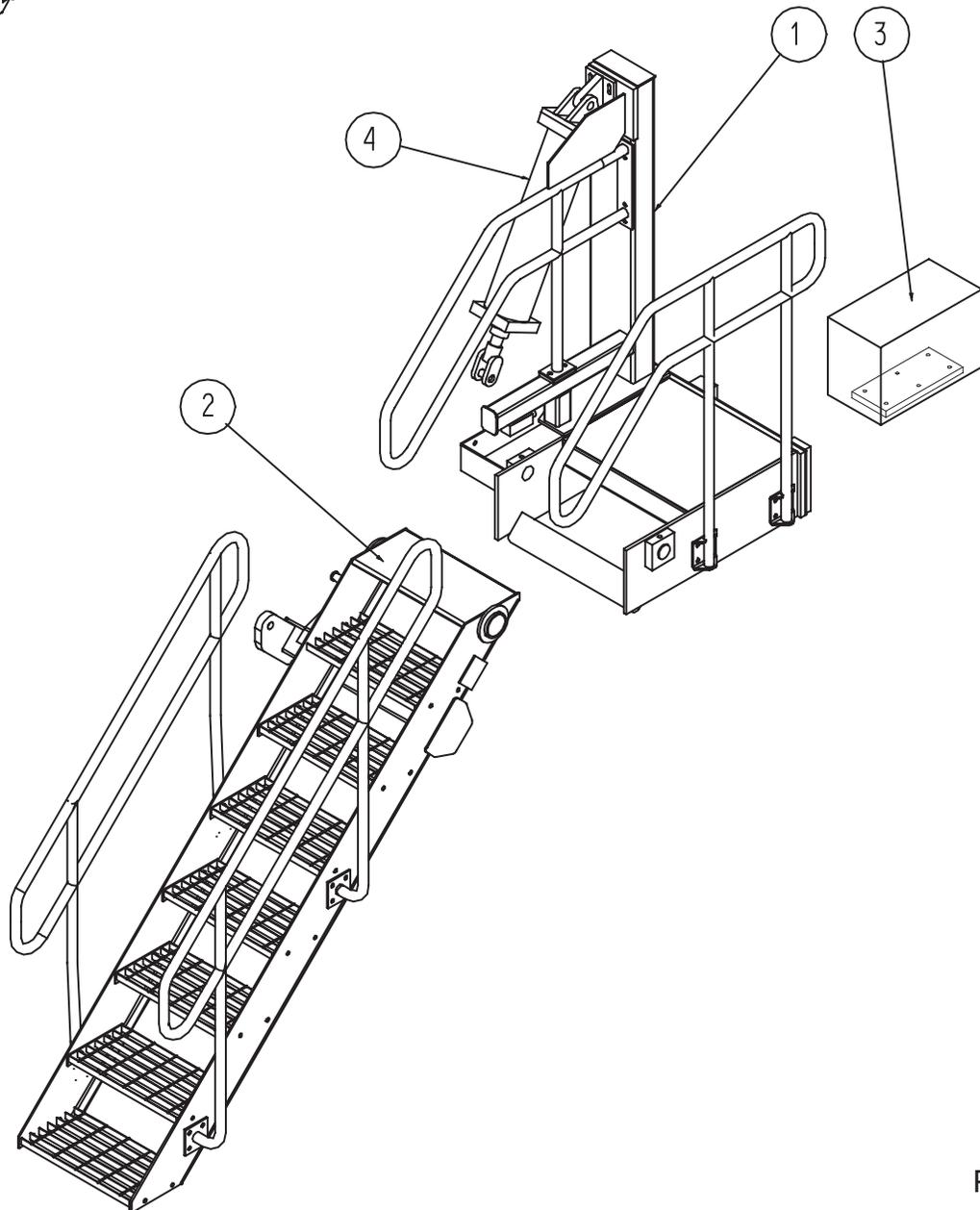
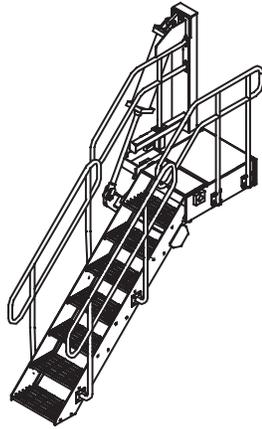
# FOLDING STAIRWAY

## Caterpillar 793D Haul Truck

### Pneumatic Operation



### Section 7-2 Assembly Complete



# FOLDING STAIRWAY

## Caterpillar 793D Haul Truck

### Pneumatic Operation



### Section 7- 2 Main Assemblies

See Drawing Pg 13

ITEM	PART NO.	PART NAME	QTY		
1	PS-22502A	LANDING ASSEMBLY (INC.HANDRAILS) REFER TO 7.3 FOR DETAILS	1		
2	PS-22503A	FOLDING STAIRS ASSEMBLY (INC.HANDRAILS) REFER TO 7.4 FOR DETAILS	1		
3	PS-ACK-793	KIT FOR PNEUMATICS (Power Pack) REFER TO 7.7 FOR DETAILS	1		
4	PS-50501	PNEUMATIC CYLINDER REFER TO 7.6 FOR DETAILS	1		

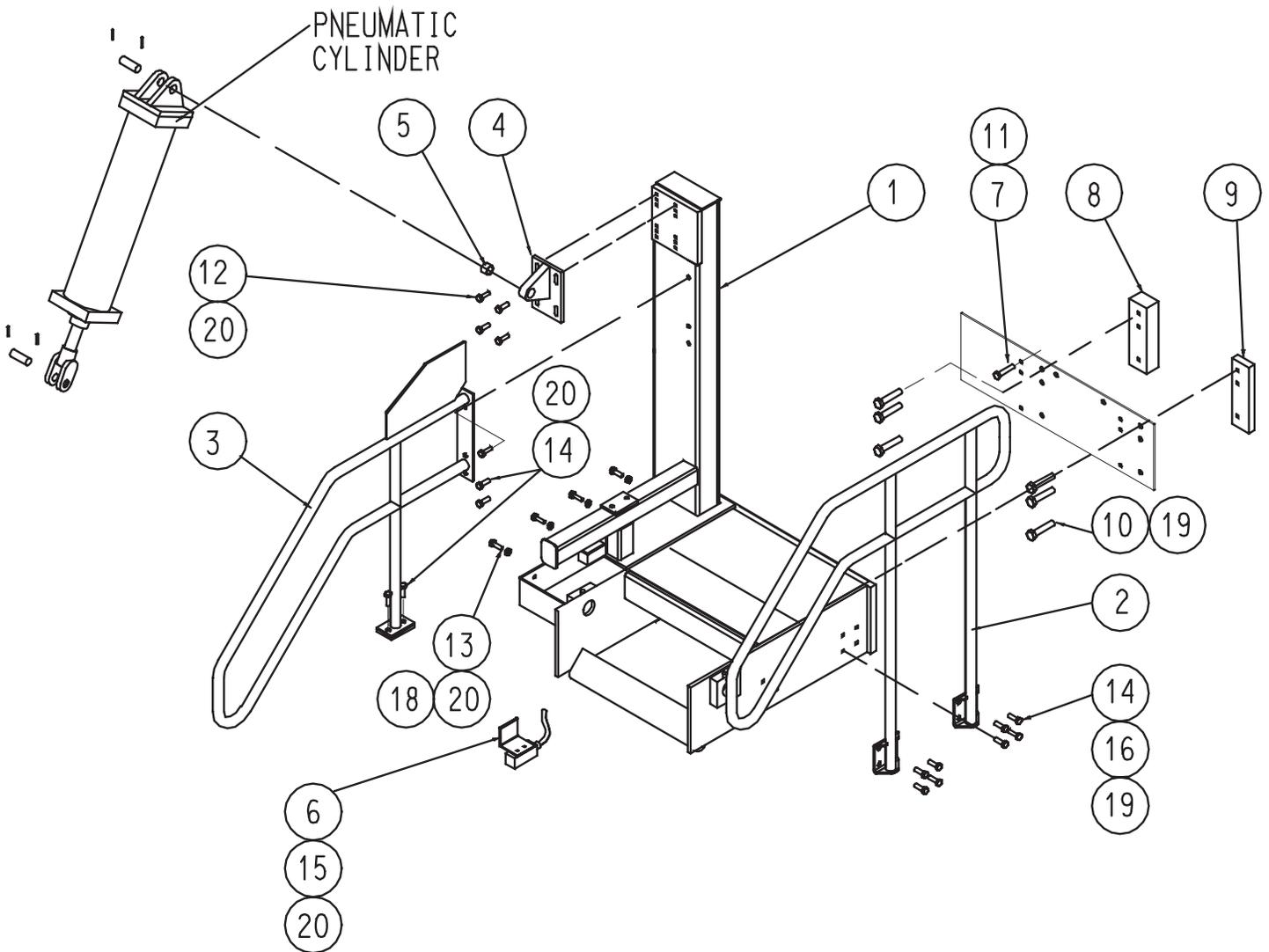
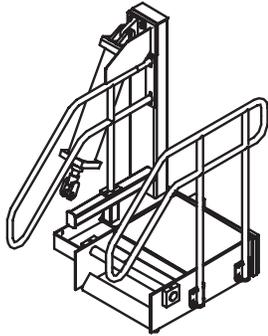
# FOLDING STAIRWAY

## Caterpillar 793D Haul Truck

### Pneumatic Operation



### Section 7- 3 Landing Assembly



**FOLDING STAIRWAY**  
**Caterpillar 793D Haul Truck**  
**Pneumatic Operation**



**Section 7- 3 Landing Assembly**

**Parts List**

See Drawing Pg 15

Item	Part No.	Part Name	Qty		
1	PS-22502	FRAME	1		
2	PS-22507-97	HANDRAIL - FRONT	1		
3	PS-22507-96	HANDRAIL - REAR	1		
4	PS-22502-01	CYLINDER MOUNTING	1		
5	PS-22502-PB	CYL-MOUNTING-BUSH - 1 1/4"OD x 1" x 30 lg	1		
6	PS-22502-11	MOUNTING - GO SWITCH	1		
7	PS-22504	TEMPLATE FOR MOUNTING FRAME	1		
8	PS-22506-1	MOUNTING BLOCK LH	1		
9	PS-22506-2	MOUNTING BLOCK RH	1		
10	CPS-M16X50ZP	BOLT-M16 X 50	6		
11	CPS-M12X50ZP	BOLT-M12 X 50	6		
12	CPS-M12X40ZP	BOLT-M12 X 40	4		
13	CPS-M12X35ZP	BOLT- M12 X 35	4		
14	CPS-M12X30ZP	BOLT- M12 X 30	13		
15	CPS-M4X20SS	BOLT-M4 x 20 S/S	4		
16	CPS-M12NZP	NUT-M12	8		
17	CPS-M12NN	NUT M12 NYLOC	4		
18	CPS-M16WH	WASHER - HARDENED - M16	6		
19	CPS-M12WH	WASHER - HARDENED - M12	23		
20	CPS-M4WH?	WASHER - M4 S/S	4		
21	CPS-1/2" x 1 1/2"	BOLT-1/2" x UNC x 1.5"	6		

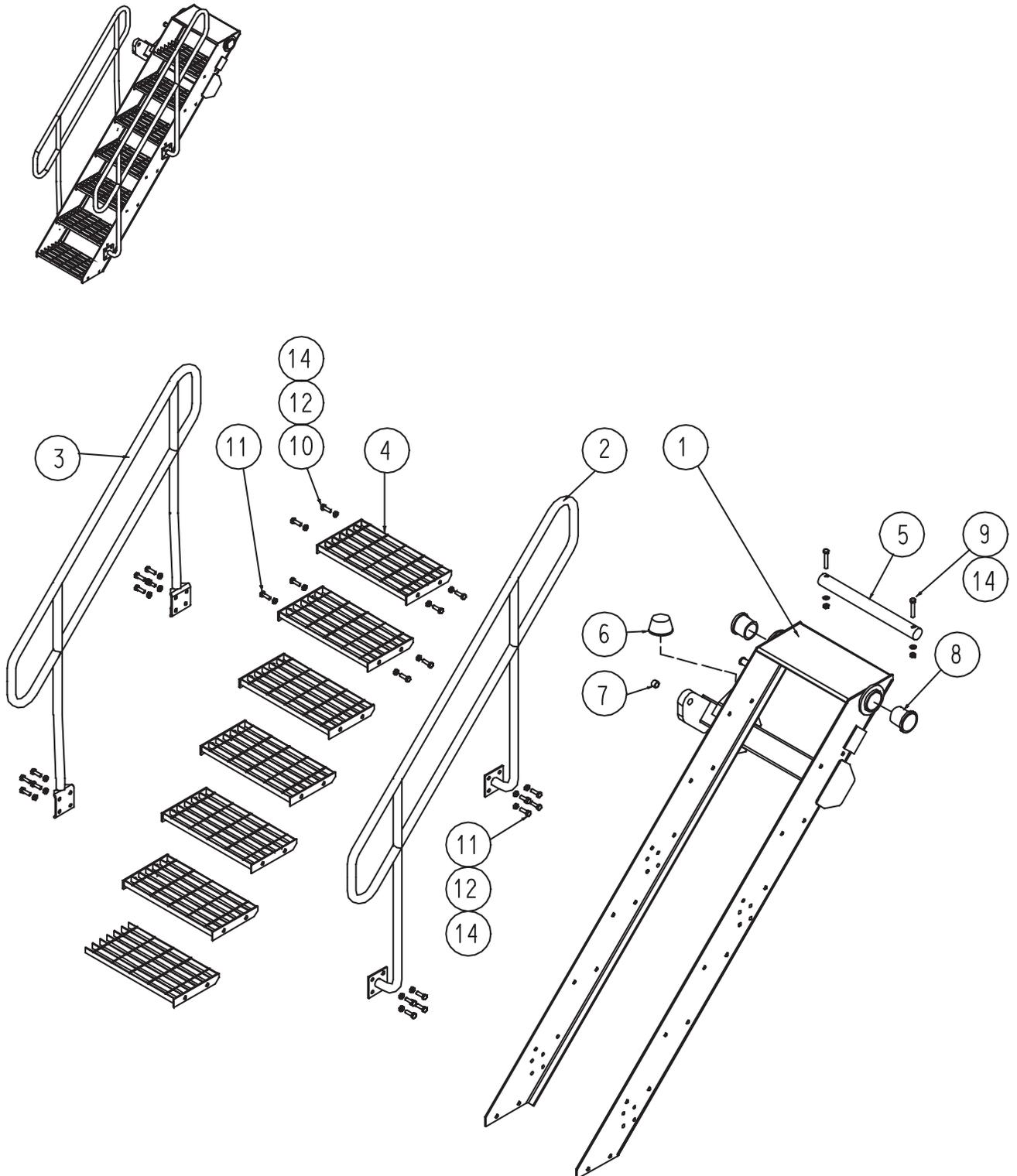
# FOLDING STAIRWAY

## Caterpillar 793D Haul Truck

### Pneumatic Operation



#### Section 7- 4 Stair Assembly



**FOLDING STAIRWAY**  
**Caterpillar 793D Haul Truck**  
**Pneumatic Operation**



**Section 7- 4 Stair Assembly**

**Parts List**

See Drawing Page 17

Item	Part No.	Part Name	Qty		
1	PS-22503	STRINGER ASSEMBLY	1		
2	PS-22507-98	HANDRAIL-FRONT	1		
3	PS-22507-99	HANDRAIL-REAR	1		
4	PS-22501	STAIR TREADS	7		
5	PS22509	PIVOT SHAFT-STAIRS	1		
6	PS-40001	RUBBER STOP	1		
7	PS-22502-PB	CYL-MOUNTING-BUSH - 1 1/4"OD x 1" X 30	1		
8	PS-22510	PIVOT BUSH	2		
9	CPS-M12X120ZP	BOLT-M12 x 120	2		
10	CPS-M12X30ZP	BOLT-M12 x 30	2		
11	CPS-M12X25ZP	BOLT-M12 x 25	42		
12	CPS-M12NZP	NUT-M12	44		
13	CPS-M12NN	NYLOC NUT	2		
14	CPS-M12WH	WASHER-HARDENED	44		
15	PS-61006-2	GREASE NIPPLE 1/4" BSP	2		

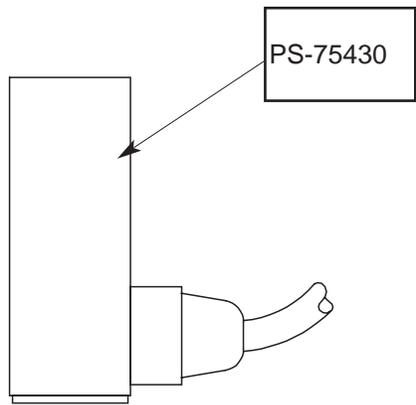
# FOLDING STAIRWAY

## Caterpillar 793D Haul Truck

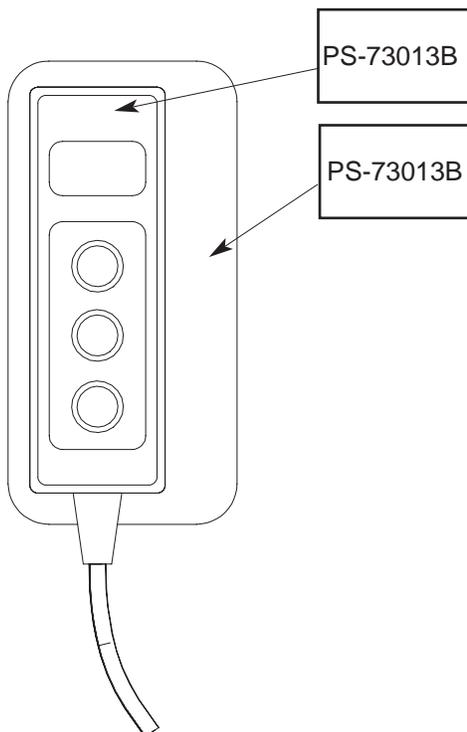
### Pneumatic Operation



### Section 7- 5 Electrical System Controls



**Proximity Switch-Magnetic Assembly**  
**PS-77004**  
Mounted on Landing



**Control Pendant**  
Mounted on Handrail

# FOLDING STAIRWAY

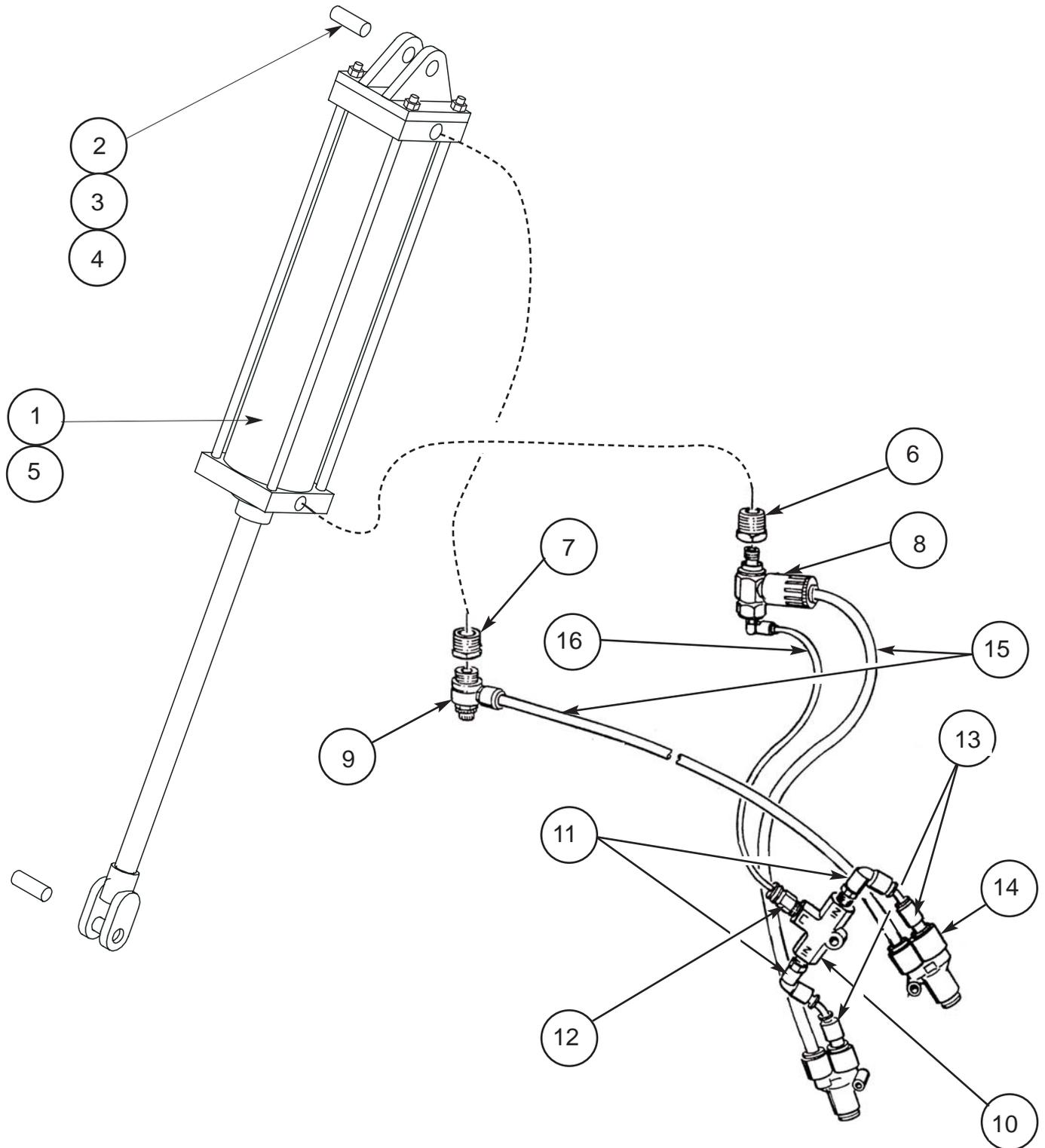
## Caterpillar 793D Haul Truck

### Pneumatic Operation



#### Section 7- 6 Pneumatic Cylinder

See Parts List Pg 21



**FOLDING STAIRWAY**  
**Caterpillar 793D Haul Truck**  
**Pneumatic Operation**



**Section 7- 6 Pneumatic System**

See Drawing Page 20

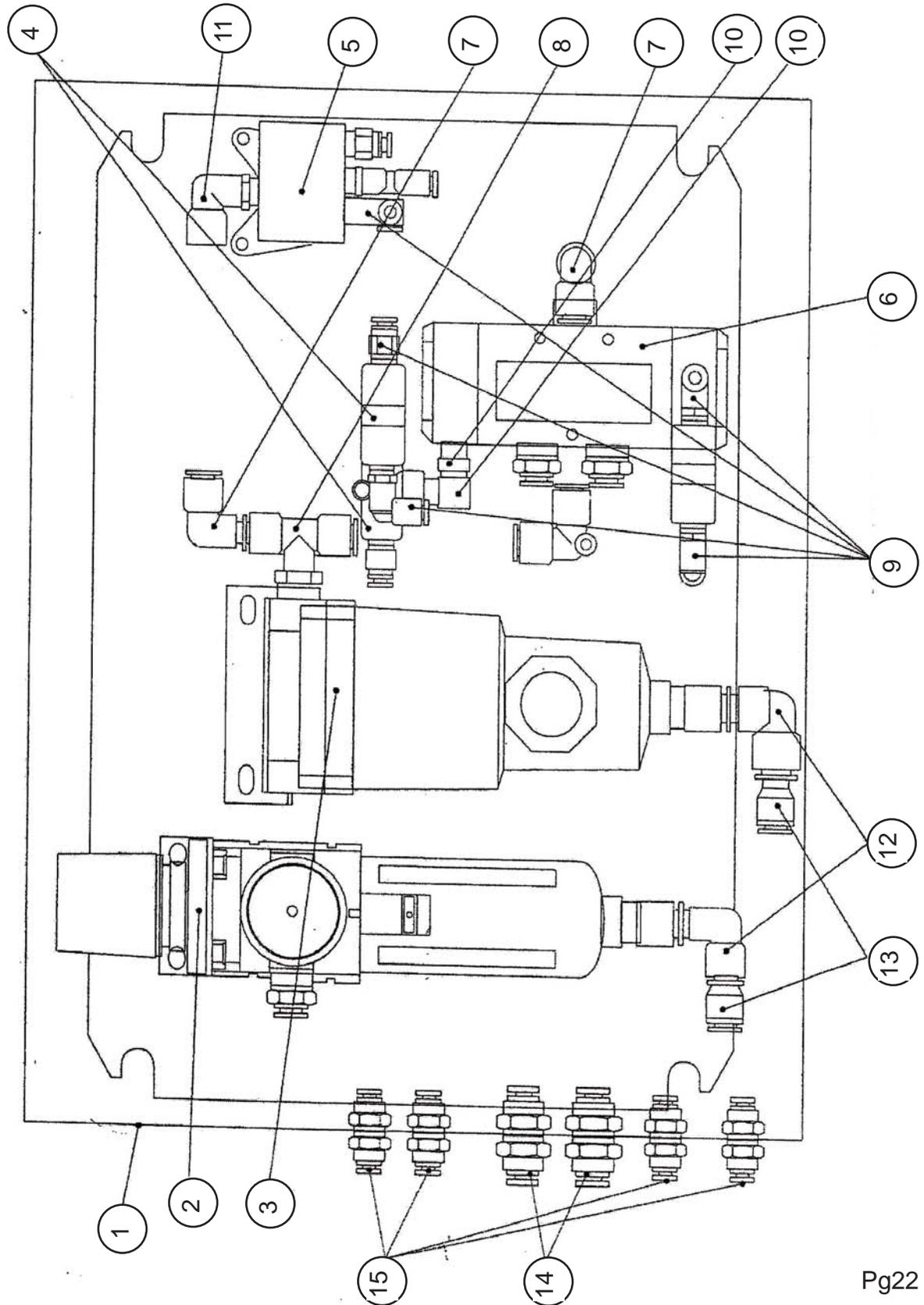
**Cylinder**

Item	Part No.	Part Name	Qty		
1	PS-50501	CYLINDER 2 1/2"	2		
2	PS-50502	CLEVIS	2		
2A	PS-50503	CLEVIS LOCK NUT	2		
3	PS-50503	PIN-CYLINDER	2		
4	PS-93001	SPLIT PIN	4		
5	PS-50501-1	SEAL KIT	1		
6	PS-50008	REDUCING BUSH 1/2"BSP - 1/4" BSP	1		
7	PS-50004	REDUCING BUSH 1/2"BSP - 3/8" BSP	1		
8	PS-51003	LOCK/FLOW CONTROL VALVE	1		
9	PS-51002	FLOW CONTROL VALVE	1		
10	PS-55105	SHUTTLE VALVE	1		
11	PS-55203	ELBOW 1/8"- 4MM 90 DEG.	2		
12	PS-55205	ADAPTOR 1/8"- 4MM STRAIGHT	1		
13	PS-55216	ADAPTOR 8MM- 4MM STRAIGHT	2		
14	PS-55215	JUNCTION JOINER 'Y' 8MM	2		
15	PS-8MM	AIR TUBE 8MM	48Ft	15M	
16	PS-4MM	AIR TUBE 4MM	96Ft	29M	

# FOLDING STAIRWAY

## Caterpillar 793D Haul Truck

Pneumatic Operation  
**Section 7-7 Power Pack**  
See Parts List Pg 25





# FOLDING STAIRWAY

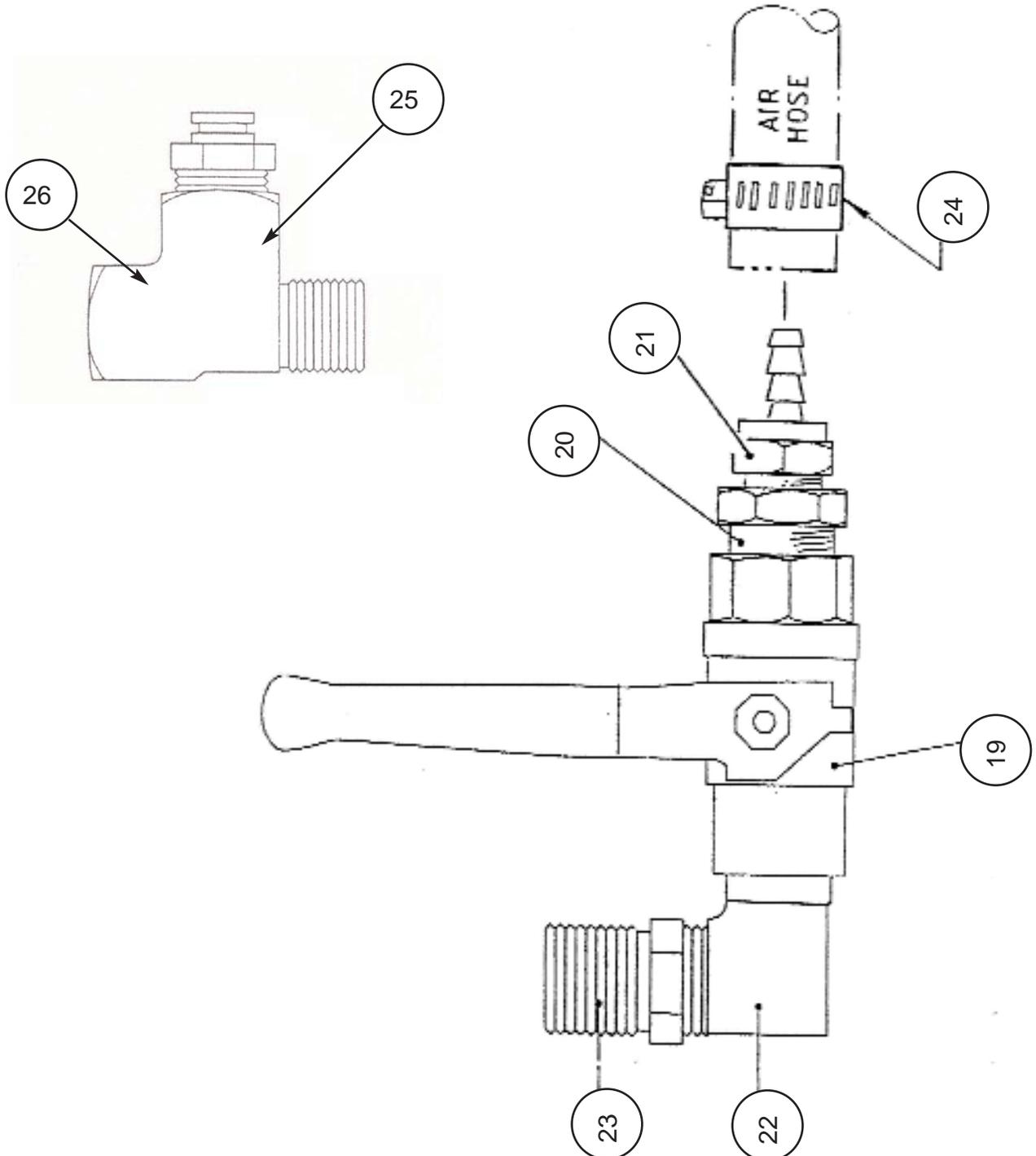
## Caterpillar 793D Haul Truck

### Pneumatic Operation



#### Section 7- 7 Power Pack

See Parts List Pg 25



# FOLDING STAIRWAY

## Caterpillar 793D Haul Truck



### Section 7-7 Power Pack

**Power Pack and Plumbing** See pages 22, 23 & 24

Item	Part No.	Part Name	Qty		
1	PS-55001	MOTOR ENCLOSURE- SEALED ST/ST	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		