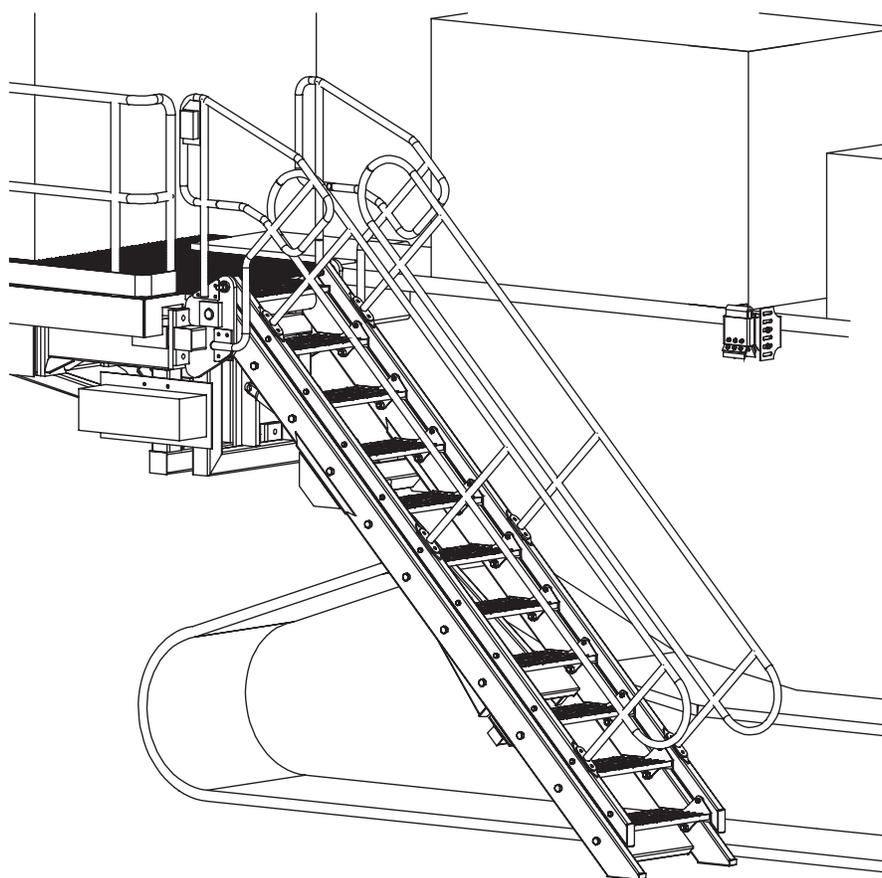


# Operations & Maintenance Manual Atlas Copco - DML Drill Modulating Stair Assembly



FOR FINAL CHECK  
23-07-09

Model No. PSA-DML-DSA  
Serial No. DML-001 & DML -002  
Date Manufactured: Jan 2009

# STAIR DML DRILL



## CONTENTS

Page 3	Section 1 <u>Installation and Mounting instructions</u>
	Installation Drawings
	Maintenance Notes
6	Section 2 <u>Recommended Maintenance procedure</u>
7	Section 3 <u>Operating Procedure</u>
	Section 4 <u>Drawings and Repair Parts lists</u>
8	4 Assembly Complete
9	4-1 Mounting Frame Assembly
10	4-2 Stair Assembly Parts List
12	4-3 Handrail Assemblies Parts List
13	4-4 Hydraulic Cylinder Parts List Valve diagram
15	5-1 Electrical Parts and Items Supplied

# STAIR DML DRILL



## Section 1 Installation and Mounting Instructions

See Drawing Pg.4

### PROCEDURE

See Drawing 23431A Page 4

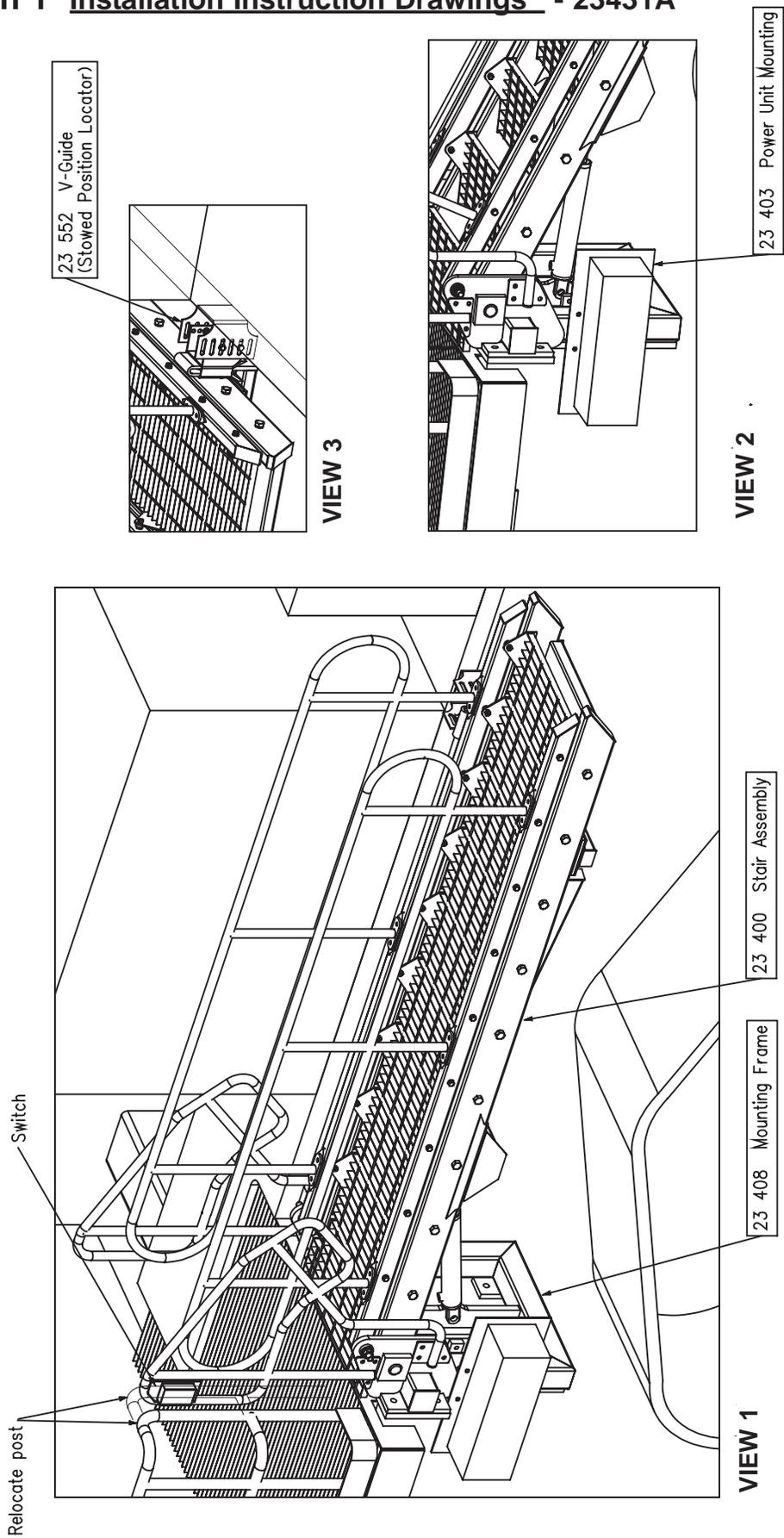
1. Fit the Mounting Frame and Stair Assembly to the mountings provided on the Drill. Bolt in place. Per **View 1**.
2. Per **View 1**, relocate one original handrail post on the drill platform (and alter handrails and toeboard to suit) to align with the fixed handrails of the stair set. Move 190mm approx.
3. Fit the Power Unit Mounting to the outer vertical member of the Mounting Frame, clamping it in position with bars supplied. OR weld the Power Unit Mounting to the stair mountings on the drill, to suit. Fit the Power Unit to the Mounting. Per **View 2**.
4. Per **View 3**, weld the V-Guide (Stowed Position Locator) to the floor structure of the drill beside the stair so the flat wedge plate attached to the stair will engage the V-Guide when the stair is raised. Position the V-Guide as low as possible (but still engaging the wedge plate) to allow for wear and tear later when the stair won't rise to horizontal.  
Reinforce the existing deck structure to suit if necessary.

CHECK NOTE  
THESE PROCEDURES REPLACE THOSE OF EARLIER INSTALL  
DRAWING 23431  
CONFIRM EARLIER BUMPER BRACKET OBSOLETE

# STAIR DML DRILL



## Section 1 Installation Instruction Drawings - 23431A



# STAIR DML DRILL



## Section 1 Installation and Mounting Instructions

### Maintenance Notes

#### **NOTE**

**Follow all on-site/Mine lifting and safety procedures when installing Power Step Stairs to Drill (DML)**

### **WARNING**

Raising the POWER STEP Stair by external means can create a vacuum in the hydraulic cylinder and 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.

In instances where the use of external means to raise the Stair must be used, please follow the following instructions: (With the Hydraulic Cylinder connected)

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

Raise 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 platform is raised.

Lock in raised position.

Re-tighten hydraulic fittings.

**SECURE THE STAIR IN THE RAISED POSITION, MECHANICALLY, CHAIN & TAG-OUT THE POWER STEP**

#### **To recommission the POWER STEP:**

Loosen hydraulic fittings on cylinder side of lock valve.

Note: Collect displaced oil.

Lower Stair to lowest position, using alternate safety approved means, fully retracting 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 oil level)

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).

# STAIR DML DRILL



## Section 2 Recommended Maintenance Procedure

### Daily

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

Check for hydraulic oil leaks from hydraulic cylinder, plumbing and hoses.

Notify the appropriate supervisor for any observed damage or malfunction.

### 500 Hours

Grease the nipples on the pivot shaft.

Check main mounting bolts for torque.

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

Top up using same hydraulic oil as used in hydraulics of machine.  
Thoroughly check all electrical wiring for damage, replace as necessary.

**Repeat daily check as above**

### 5000 Hours

Change hydraulic oil in tank of hydraulic power pack (5.0 litres)

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

Grease pivot shaft grease nipples.

Check and inspect all main bolts on stairway system.  
Retorque if required.

**Repeat daily check as above**

# STAIR DML DRILL



## Section 3 Operating Procedure

### **NOTE**

**Follow all on-site/Mine lifting and safety procedures when operating Power Step Stairs for Drill (DML)**

### **Lower Stair**

Position machine in a level safe area before lowering Stair.

If Drill is in operation - retract drill bit from ground - stop operation - apply hand brake - maintain hydraulic jacks in position - lower the stair.

Height of the Drill platform from the ground is not relevant to the Stair operation.

The modulating step treads will self-adjust to maintain a horizontal level at any Drill platform height.

To operate the Stair hold the switch in the down position.

Once the Stair is lowered to the ground level, release the Down Switch.

### **Raise Stair**

Ascend the Stair

Ensure area around the Stair is clear.

Hold down the switch to raise the Stair.

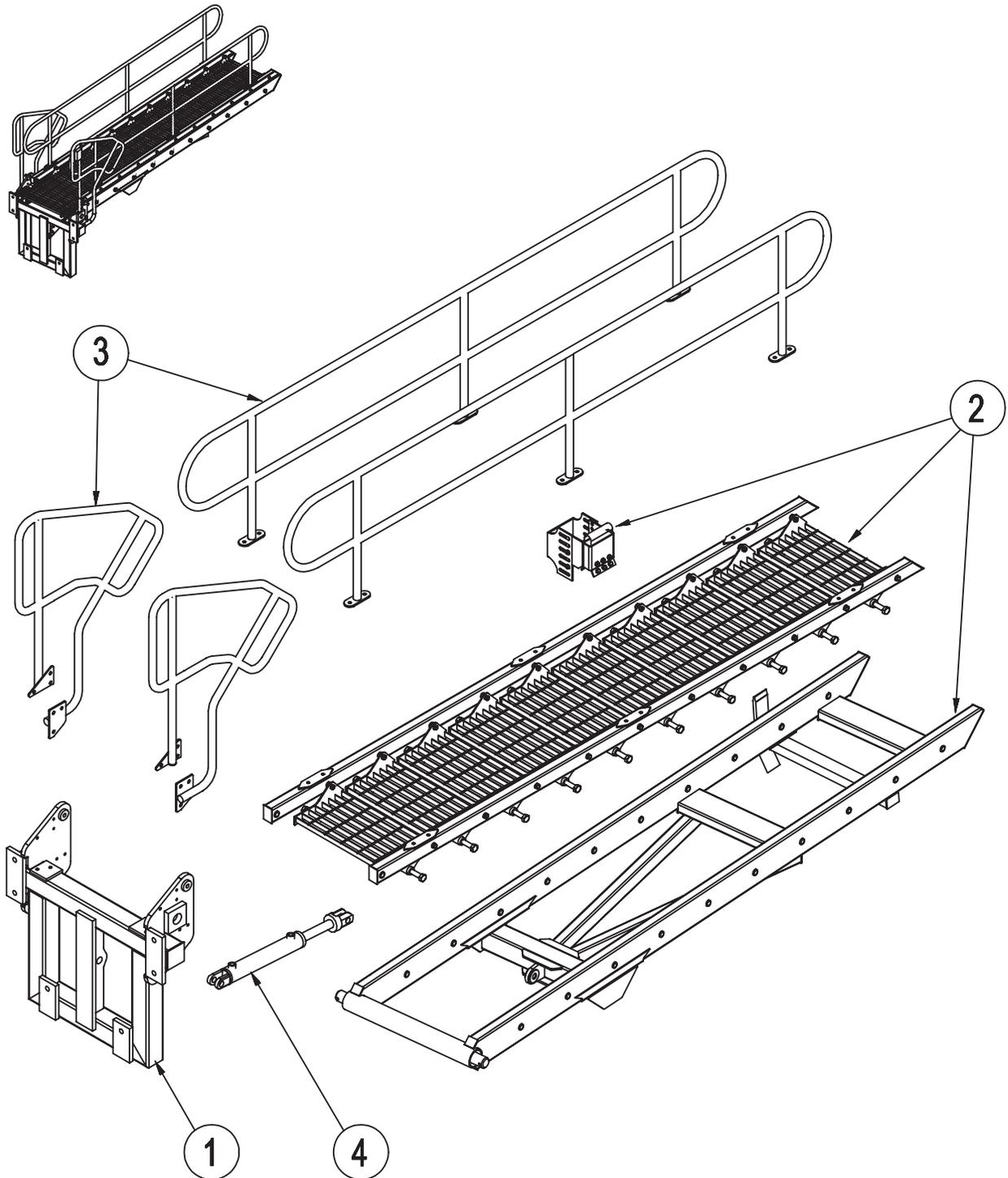
Once the stair is in the up position release the Up Switch.

Note: Stair Proximity Switch should be wired into the machines jacking and traveling system: ie. Stair in the raised position to operate machine

# STAIR DML DRILL



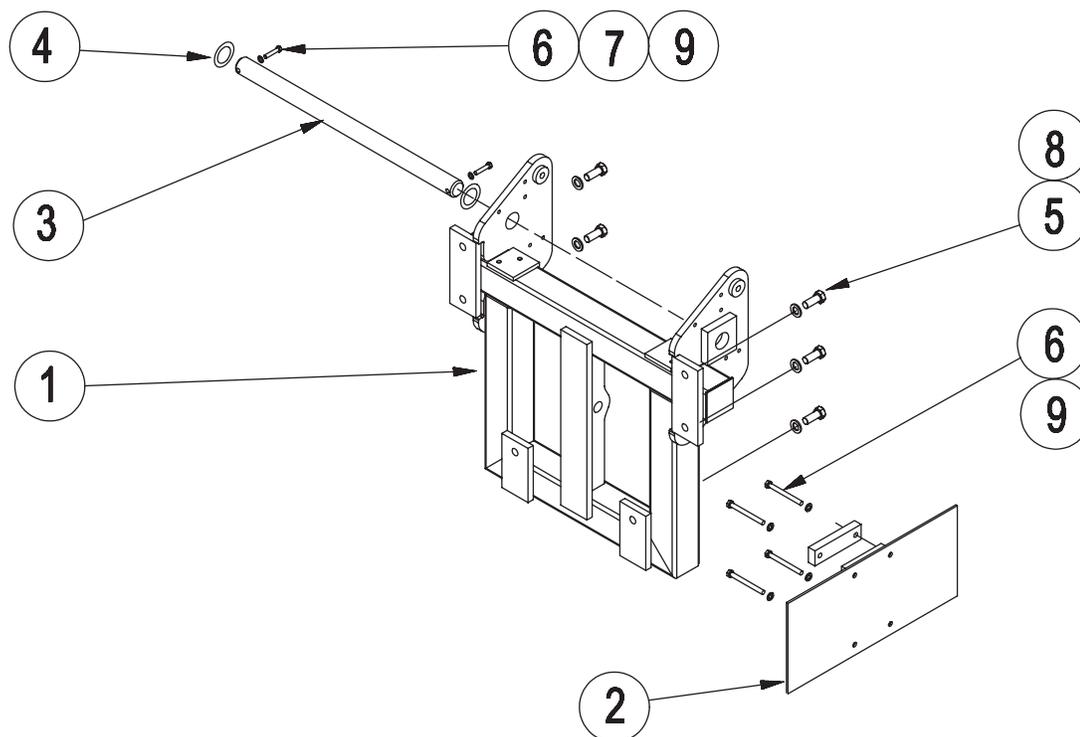
## Section 4 Assembly Complete PS-23-400-DML



# STAIR DML DRILL



## Section 4-1 Mounting Frame Assembly PS-23408-A

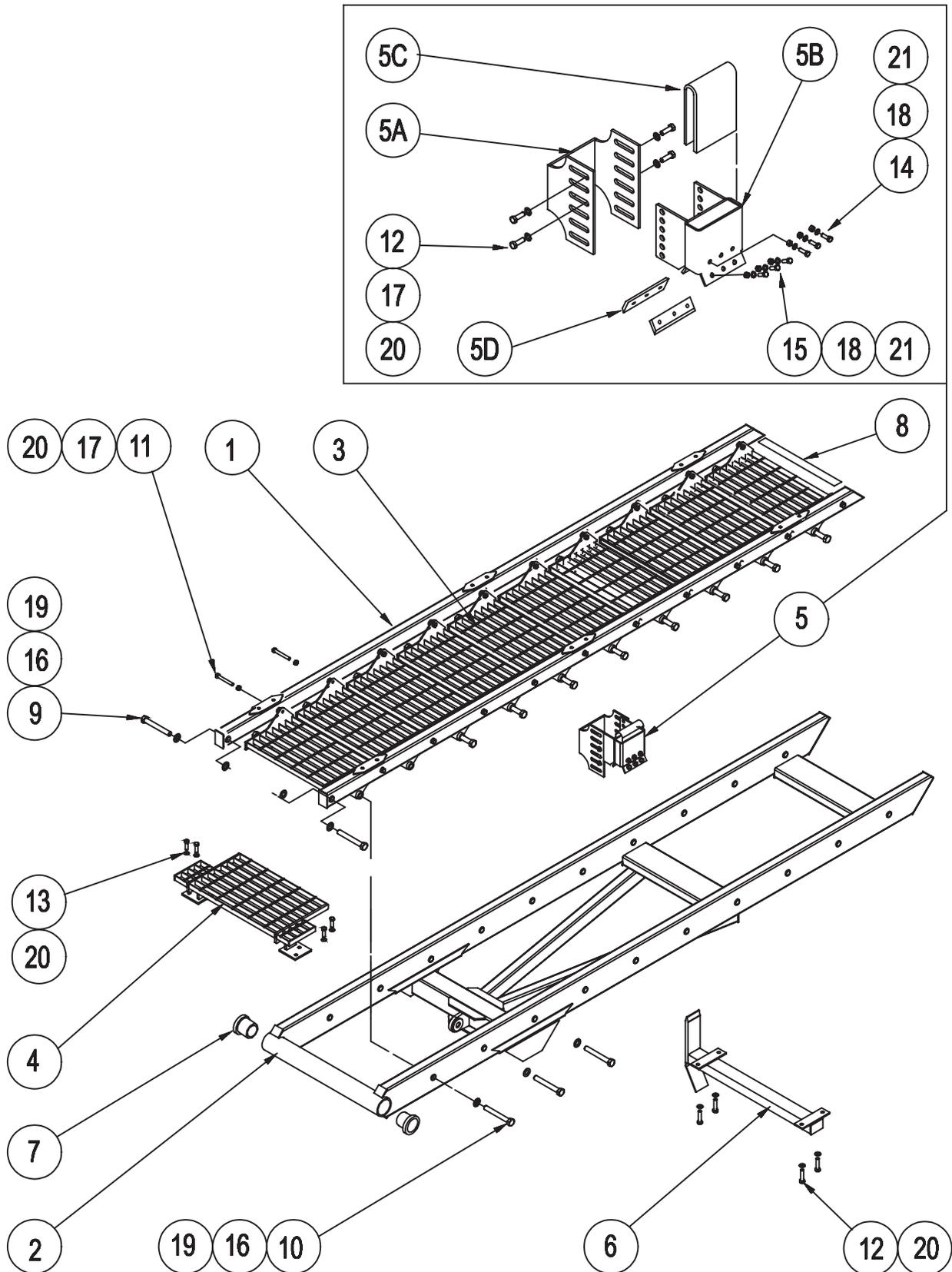


Item	Part No.	Part Name	Qty		
1	PS-23408	MOUNTING FRAME	1		
2	PS-23403	POWER UNIT MOUNTING	1		
3	PS-21260	MAIN PIVOT PIN	1		
4	PS-21271	SPACER WASHER	2		
5	PS-M20X50ZP	BOLT-M20 x 50	6		
6	CPS-M12X130ZP	BOLT-M12 x 130	4		
7	CPS-M12NN	NUT-NYLOC-M12	2		
8	PS-M20WH	WASHER-HARDENED-M20	6		
9	PS-M20WH	WASHER-HARDENED-M12	12		

# STAIR DML DRILL



## Section 4-2 Stair Assembly PS-23400-L-DML



# STAIR DML DRILL



## Section 4-2 Stair Assembly

See Page 10

Item	Part No.	Part Name	Qty	
1	PS-23433	TIE BAR	2	
2	PS-23432	STRINGER FRAME	1	
3	PS-21251B	STAIR TREAD	9	
4	PS-23404	TOP TREAD	1	
5	PS-23552	LADDER LOCATOR BRACKET	1	
5A	PS-23552 01	MOUNTING	1	
5B	PS-23552 99	HOUSING	1	
5C	PS-23552 04	RUBBER LINER	1	
5D	PS-23552 05	ENTRY GUIDES	2	
6	PS-23551	WEDGE BEAM	1	ADDED
7	PS-21718	PIVOT BUSH	2	CHECK Pt. No
8	PS-32266-SAN	NON SLIP NOSING	10	
9	PS-M20X140ZP	BOLT-M20 x 140	2	
10	PS-M20X110ZP	BOLT-M20 x 110	18	
11	CPS-M12X90ZP	BOLT-M12 x 90	18	
12	CPS-M12X30ZP	BOLT-M12 x 30	8	Wedge beam&Mounting
13	CPS-M12X25CAP/SCREW	BOLT-M12 x 25- Socket Hd.	4	
14	CPS-M8X25ZP	BOLT-M8 x 25-Pan hd.	6	
15	CPS-M8X25CAP/SCREW	BOLT-M8 x 25-Cap Screw C/Sunk	6	
16	PS-M20NNZP	NUT-M20-NYLOCK	20	
17	CPS-M12NZP	NUT-M12	22	+ 4 From 5A
18	CPS-M8NZP	NUT-M8	12	
19	PS-M20WH	WASHER-HARDENED-M20	4	
20	CPS-M12WH	WASHER-HARDENED-M12	26	Add Wedge beam bolts& Mounting 5A
21	CPS-M8WH	WASHER-HARDENED-M8	12	

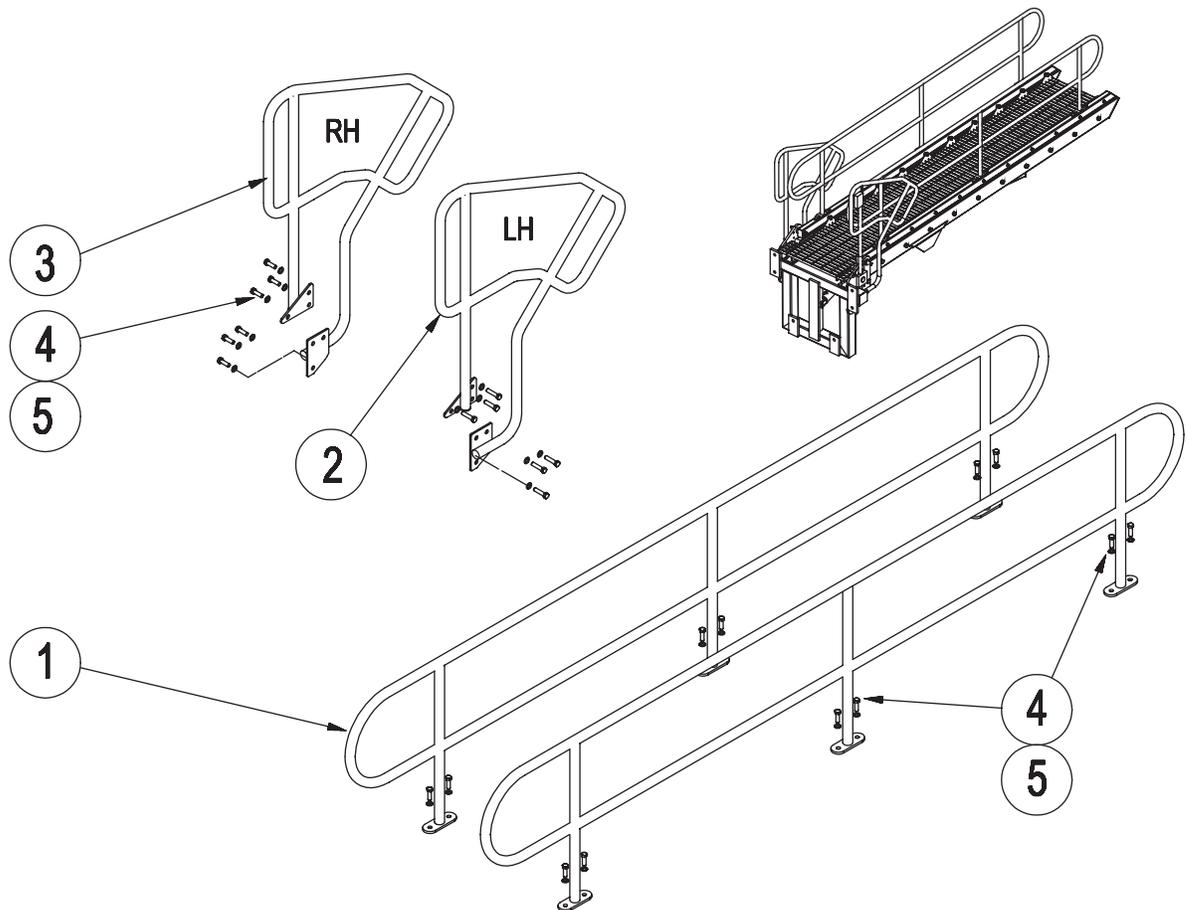
From 13 & 14

**PLEASE VERIFY QTYS. & PARTS ADDED**

# STAIR DML DRILL



## Section 4-3 Handrail Assemblies

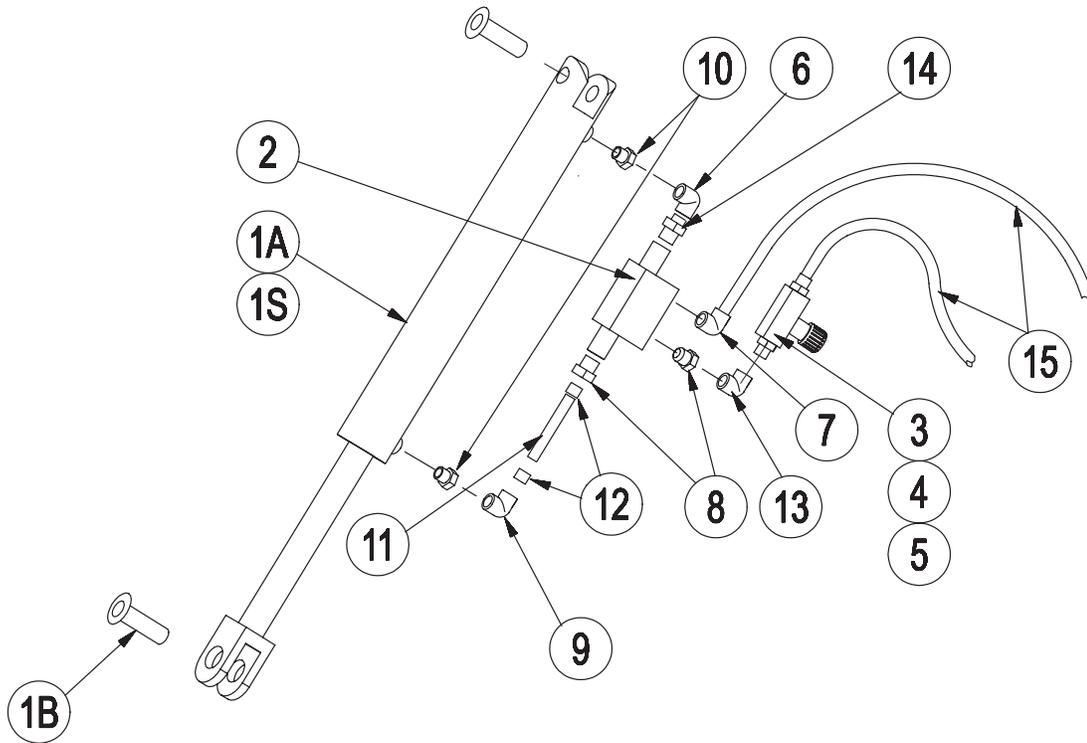


Item	Part No.	Part Name	Qty		
1	PS-23412	STAIR HANDRAIL	2		
2	PS-23402 99	TOP HANDRAIL LH	1		
3	PS-23402 98	TOP HANDRAIL RH	1		
4	CPS-M12X25ZP	BOLT-M12 x 25	24		
5	CPS-M12WH	WASHER-M12	24		

# STAIR DML DRILL



## Section 4-4 Hydraulic Cylinder PS-62999-AH



Item	Part No.	Part Name	Qty		
1A	PS-62999A	HYDRAULIC CYLINDER	1		
1B	PS-62999-P	PIN - CYLINDER- (WITH RETAINER)	2		
1S	PS-63103	SEAL KIT (NOT SHOWN)	1		
1C	PS-62999-HPK	HARD PLUMBING KIT	1		
2	PS-63201	VALVE - PILOT OPERATED LOCKING	1		
3	PS-63202	FLOW CONTROL VALVE	1		
4	PS-63202B	FITTING - JIC NIPPLE	1		
5	PS-63202C	FITTING- JIC SWIVEL	1		
6	PS-61156-040"	FITTING - Hyd fitting with Restrictor- Cyl end	1		
7	PS-61154	FITTING - ELBOW- O RING 1/4BSPPx9/16" JIC	1		
8	PS-61157	FITTING - O RING 1/4BSPPx 9/16" JIC	2		
9	PS-61158-030"	FITTING - RESTRICTOR 90 DEG- Rod end	1		
10	PS61163	REDUCER JIC x BSPP	2		
11	PS-61160	TUBE- 200mm	1		
12	PS-61147	FERRULES/NUTS 2 x each	2		
13	PS-61159	FITTING 9/16 ELBOW	1		
14	PS-61155	FITTING	1		
15	PS-60051-1.8	HOSE- HYDR. (9/6" JIC SWIVEL FITTING 1.8M)	2		

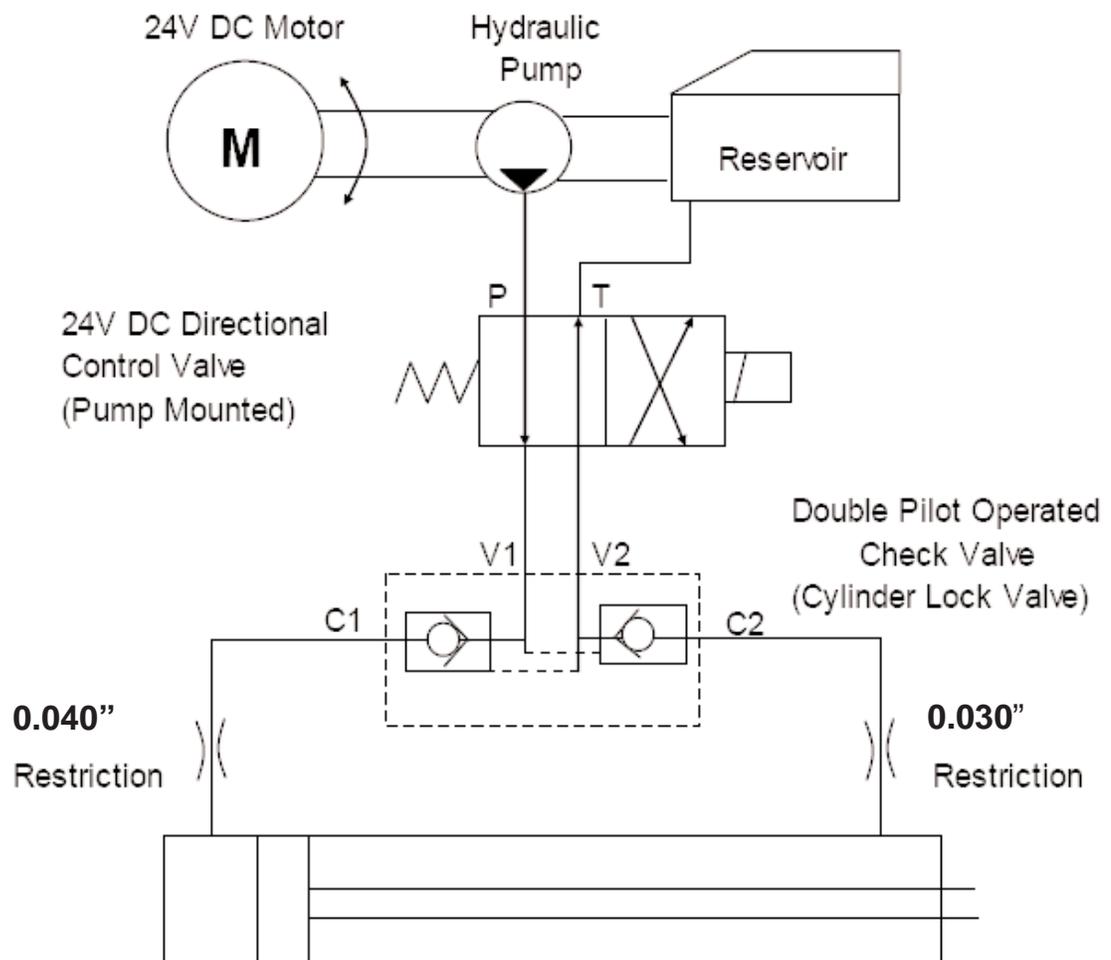
# STAIR DML DRILL



## Section 4-4 Hydraulic Cylinder

Valve diagram

Double Acting Hydraulic System with  
directional Control Valve and Cylinder  
Lock Valve



# STAIR DML DRILL



## Section 5-1 Electrical Parts

(Including other Items supplied by PowerStep)

Item	Part No.	Part Name	Qty		
1	PS-80103A	POWER PACK	1		
2	PS-84213	135A CIRCUIT BREAKER	1		
3	PS-41011	DECAL ELECTRICAL - 135amp C/Breaker	1		
4	PS-41041	DECAL OIL TANK (LEVEL)	1		
5	-	MANUALS	1		
6	-	INSTALLATION DRAWINGS	1		
7	-	WA ELECTRIC SYSTEM			CHECK

**WARNING**  
**LOW OR FAULTY BATTERIES WILL VOID**  
**WARRANTY ON HYDRAULIC POWER PACK**  
**ELECTRICAL PARTS**

CONFIRM THIS WARNING MAY STILL  
APPLY TO THIS ONE