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I. PRODUCT FEATURES AND SPECIFICATIONS

CLEARFLOOR CHAIN-DRIVE MODEL FEATURES

Model 90HSC (See Fig. 1)

- Dual hydraulic cylinders designed and made on ANSI standard, utilizing NOK oil seal for cylinder.
- Self-lubricating UHMW Polyethylene sliders and bronze bush.
- Single-point safety release and dual safety lock design.
- Clear floor design, provide unobstructed floor space.
- Overhead safety shutoff device.

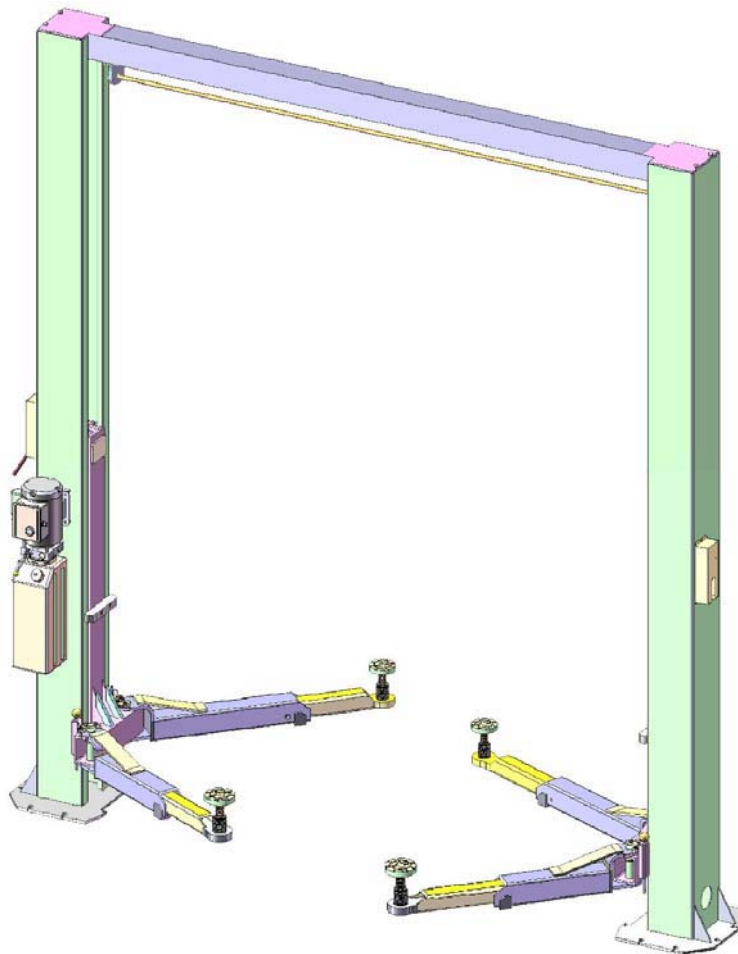
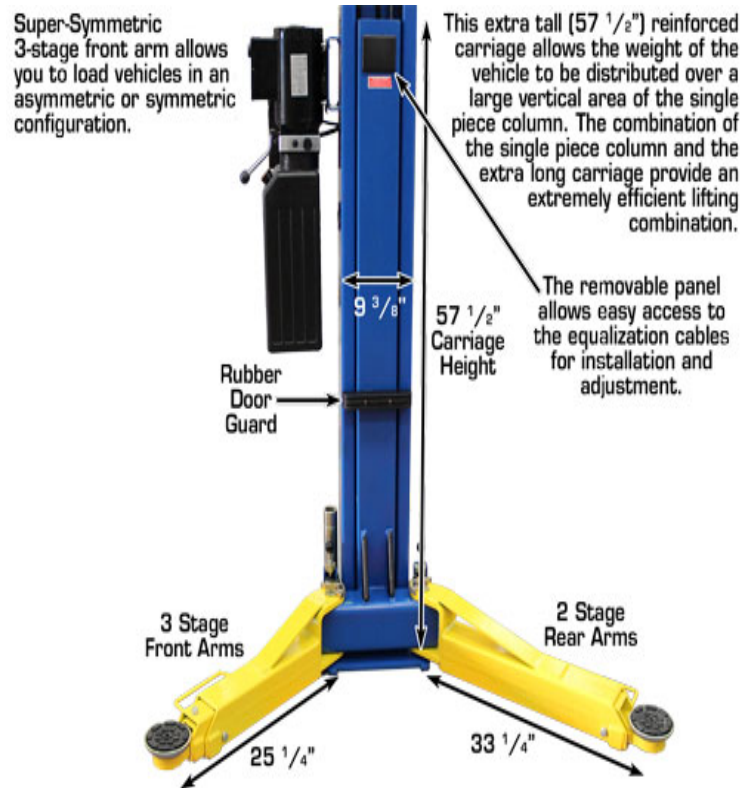
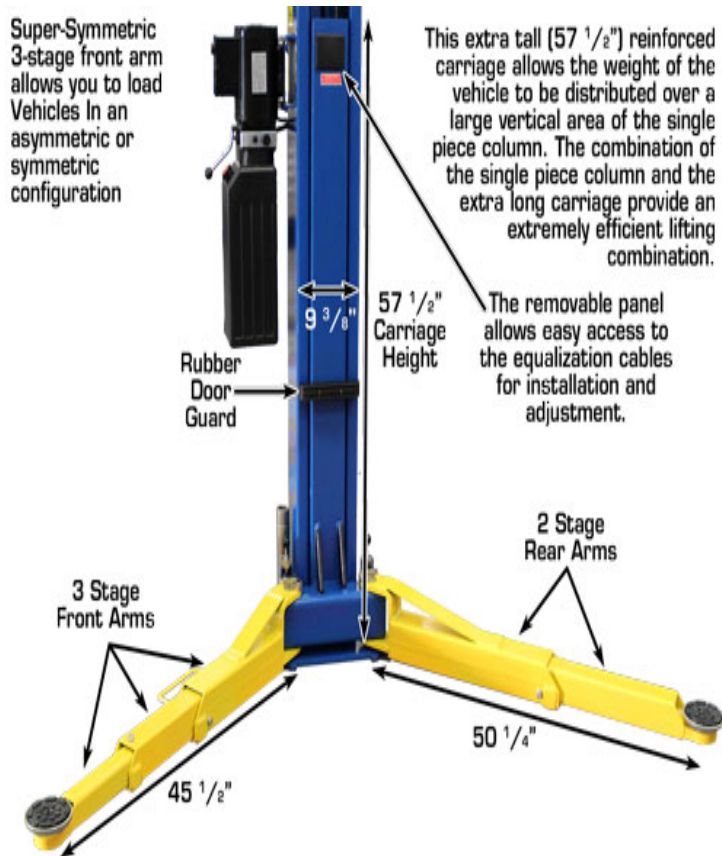


Fig. 1

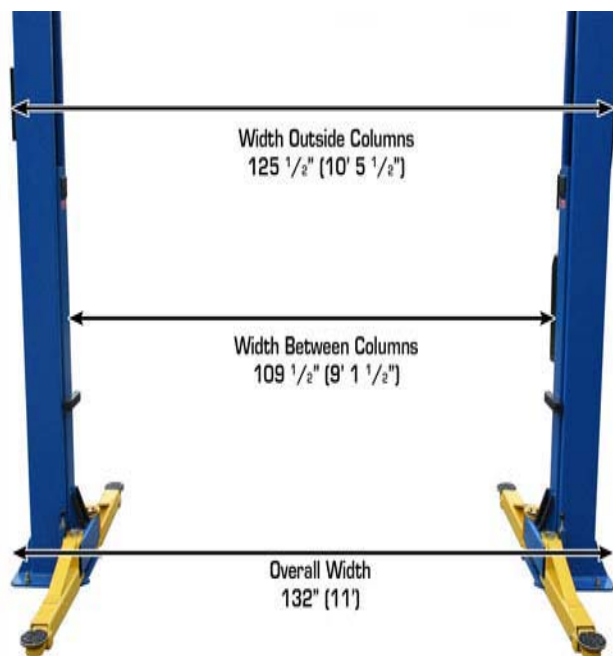
MODEL 90HSC SPECIFICATIONS

Model	Style	Lifting Capacity	Lifting Time	Lifting Height	Lifting Height w/ Truck Adapters	Overall Height	Overall Width	Width Between Posts	Minimum Pad Height for stackable adapters	Motor
90HSC	Clear-floor Chain-assist cylinders	9,000 lbs	45 S	70 7/8"	81 3/8"	142"	132"	109 1/2"	3 1/2"	3.0 HP

Arm Swing View



Column Dimensions



II. INSTALLATION REQUIREMENT

A. TOOLS REQUIRED

- ✓ Rotary Hammer Drill (3/4")



- ✓ Hammer



- ✓ 4ft Level



- ✓ Crescent Wrench (12")



- ✓ Ratchet Spanner With Socket (30mm)



- ✓ Wrench set

(10#, 13#, 14#, 15#, 17#, 19#, 24#, 27#)



- ✓ Carpenter's Chalk



- ✓ Screw Driver Set



- ✓ Tape Measure (25ft)



- ✓ Pliers



- ✓ Socket Head Wrench (6#)



- ✓ Vise Grips



Fig. 3

B. CONCRETE SPECIFICATIONS (See Fig. 4)

Specifications of concrete must be adhered to the specification as following.

Failure to do so may result in lift and or vehicle falling.

1. Concrete must have 4 inches minimum and must be totally cured before lift installation.
2. Concrete must be in good condition and must have a test strength 3,000psi minimum.
3. Floors must be level with no cracks or holes.

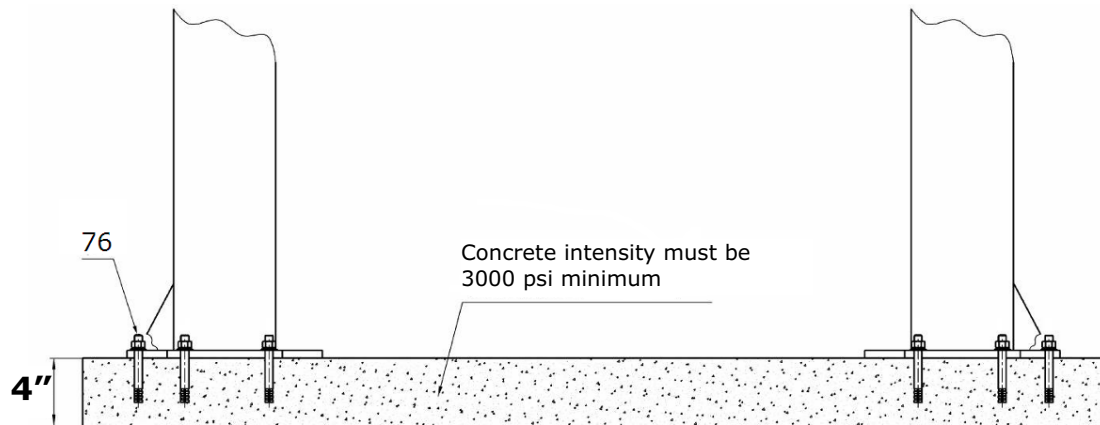


Fig. 4

C. POWER SUPPLY

220 volt single phase 30 amp breaker with minimum of 10 gauge wire

III. STEPS OF INSTALLATION

A. Installation Location

Check and insure the installation location (concrete, layout, space size etc.) is suitable for lift installation.

B. Use a carpenter's chalk line to establish installation layout (See Fig. 5).

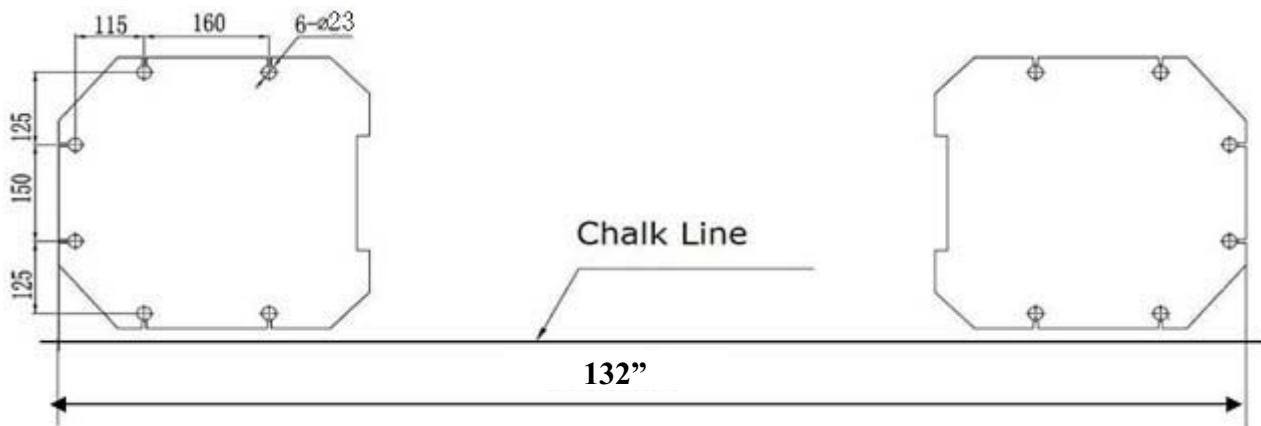


Fig. 5

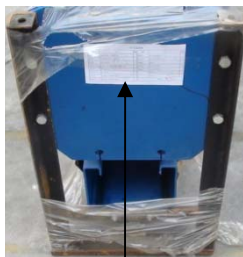
C. Check the Parts before assembly

1. Packaged lift and Hydraulic Power Unit (See Fig. 6)



Fig. 6

2. Move the lift aside with a fork lift or hoist, and open the outer packing carefully (See Fig. 7)



Shipment Part list



Serial No.

Top Beam

Parts Box

Fig. 7

3. Remove the parts from inside the column and remove the parts box, and check the parts according to the shipment parts list. (See Fig. 8)



Fig. 8

4. Loosen the bolts on the upper package stand and remove the upper column. (**See Fig. 9**)

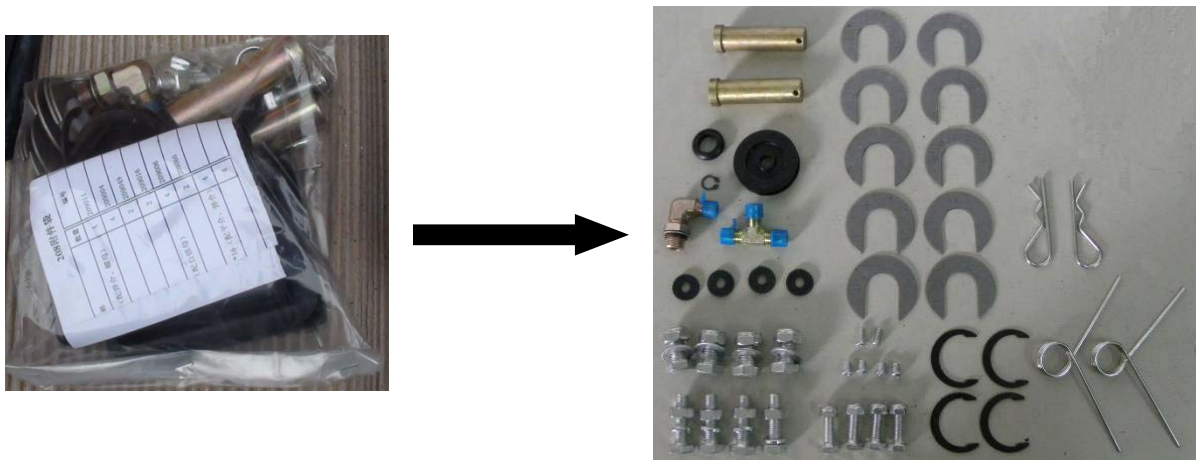


5. Open the box of parts and check the parts according to parts box list.

(See Fig. 10)



6. Check the parts in the parts bag according to parts bag list. **(See Fig.11)**



D. Position columns

1. Snap a chalk line so the columns will be **exactly parallel** from each other.
2. Position the columns upright on the installation layout. Position the offside column parallel to the power side column at the approximate overall width (132"). Install the overhead cross beam. **Do not drill holes for anchor bolts until overhead cross beam is installed** (See Fig. 12)
3. Position the columns making sure the base plates align with the chalk line. Install the rubber door protectors (See Fig. 13)



Fig. 12

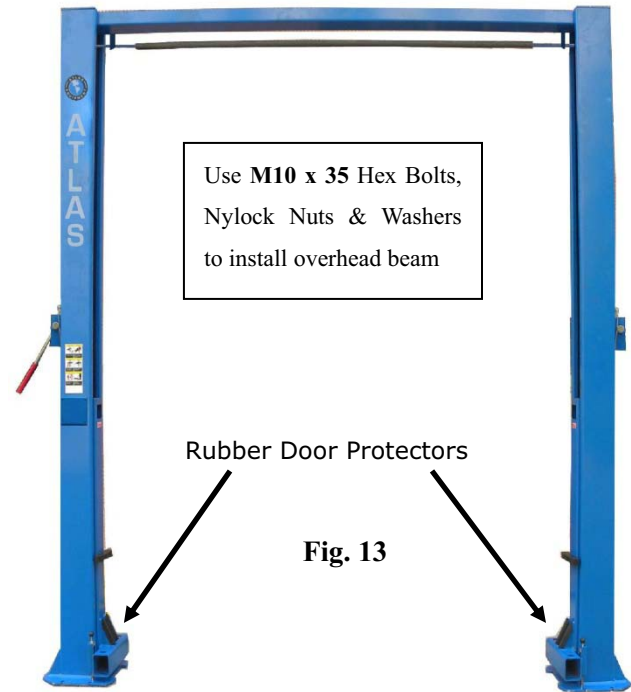


Fig. 13

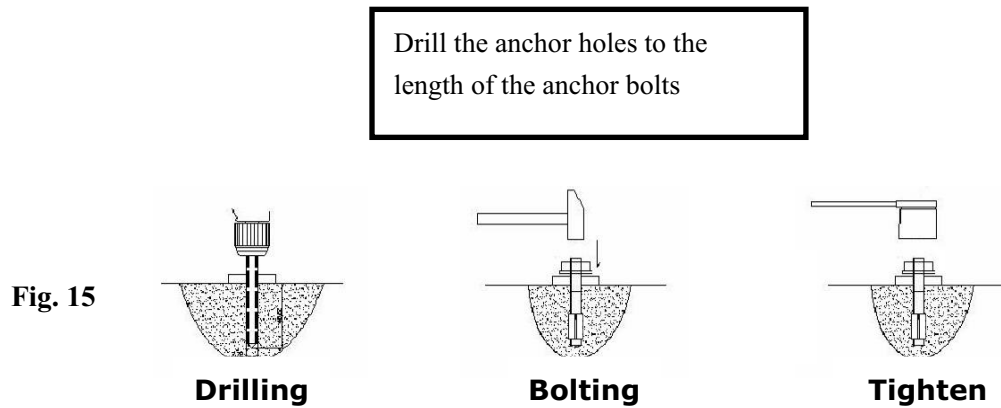
E. Drill and install anchor bolts

1. Position the columns so their positions are square with the chalk line.
2. Prepare the Anchor Bolts. (See Fig. 14)



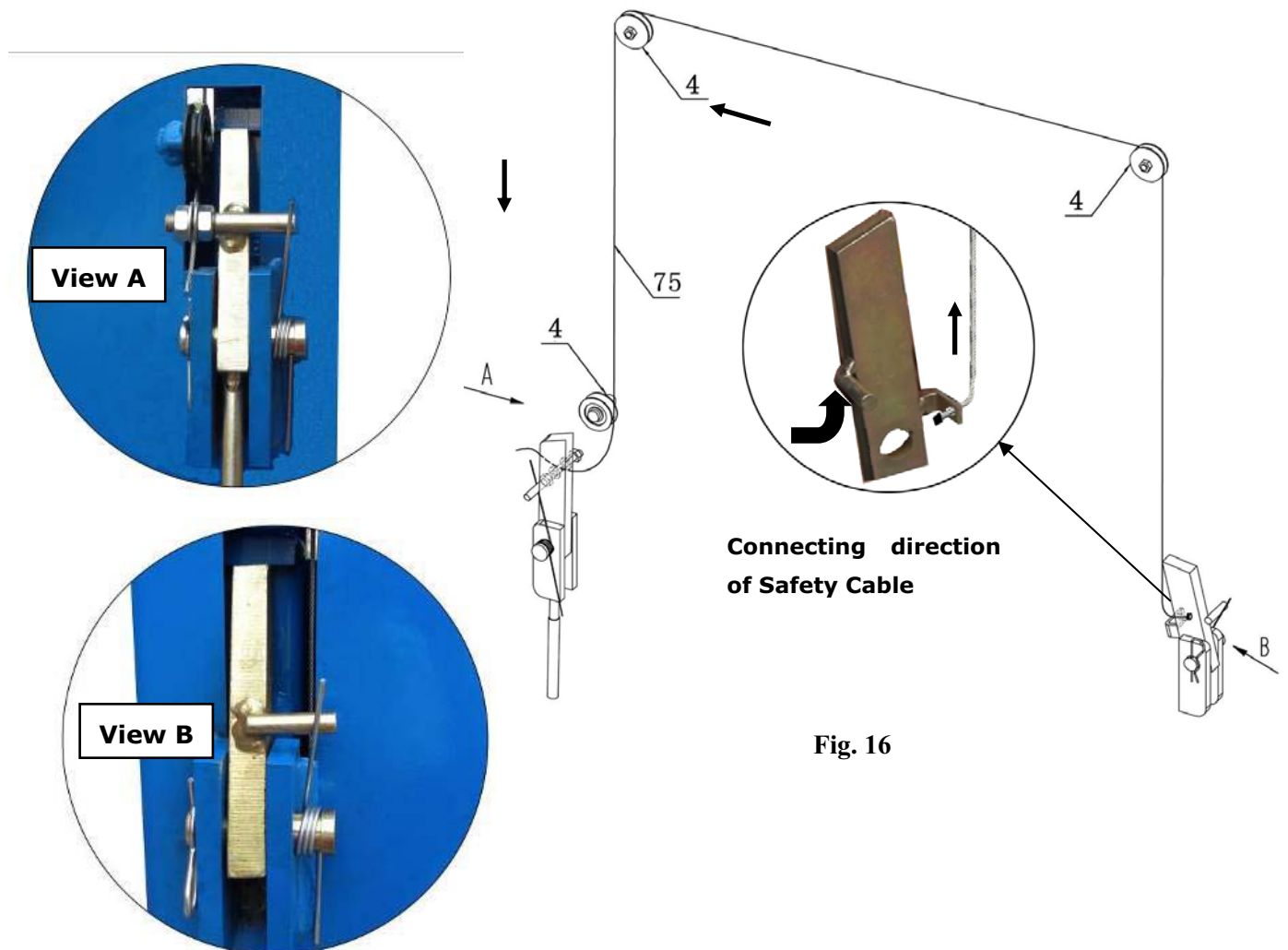
Fig. 14

3. Use a hammer drill (3/4" bit), drill all the anchor holes and install the anchor bolts. Check the posts for plumb with level bar, and adjust with the horseshoe shims if the columns are not plumb. Tighten the anchor bolts between 60 and 86 foot pounds. **(See Fig. 15).**



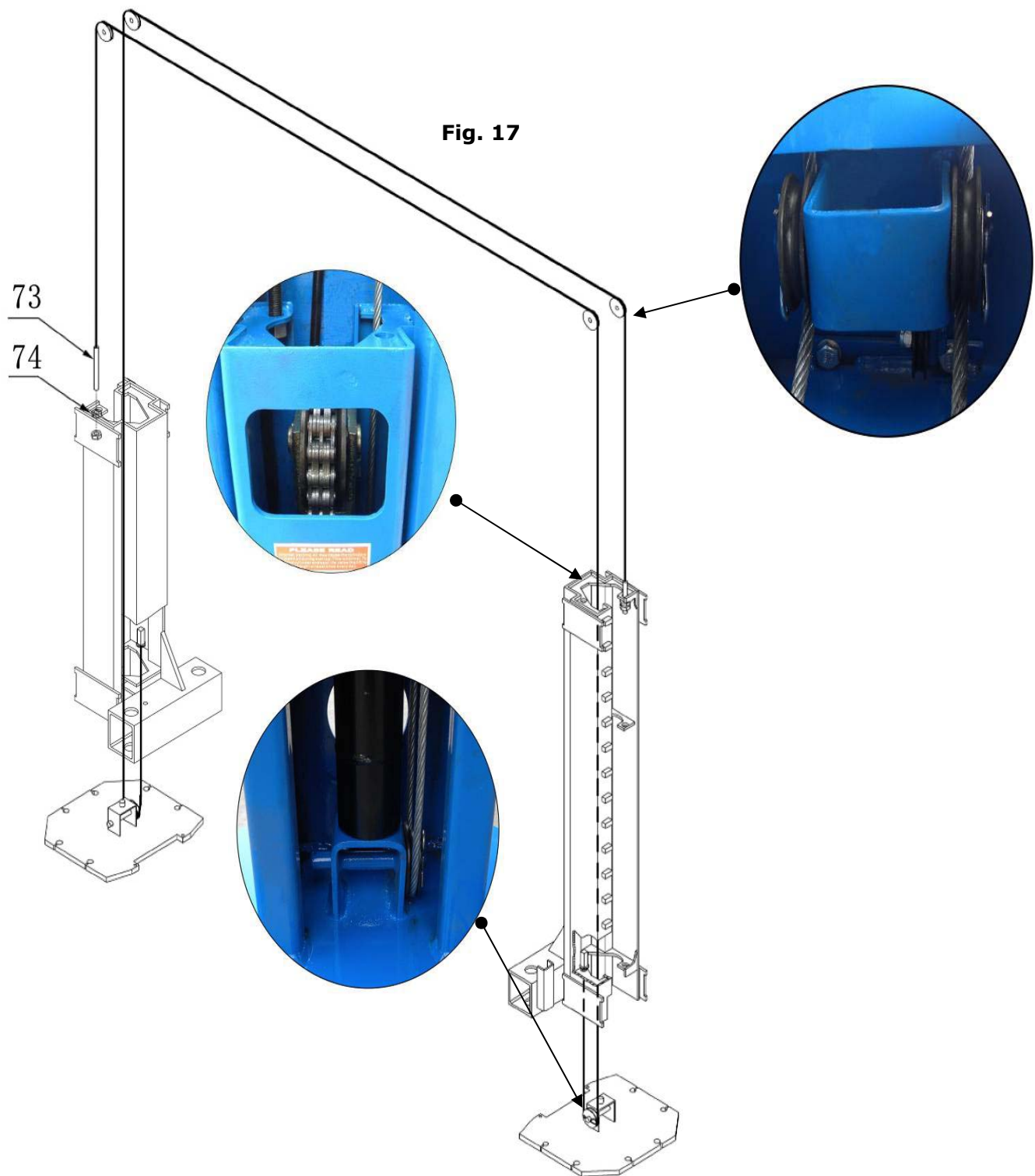
F. Install Safety Lock Device and Safety Cable (See Fig. 16)

Install the safety cable from the off side safety assembly to the power side safety assembly and through the top beam. Do not tighten the safety cable at this time



G. Install Cables (See Fig. 17)

Manually lift each carriage until they rest on the first set of safety locks.



H. Oil Hose Assembly. (See Fig. 18)

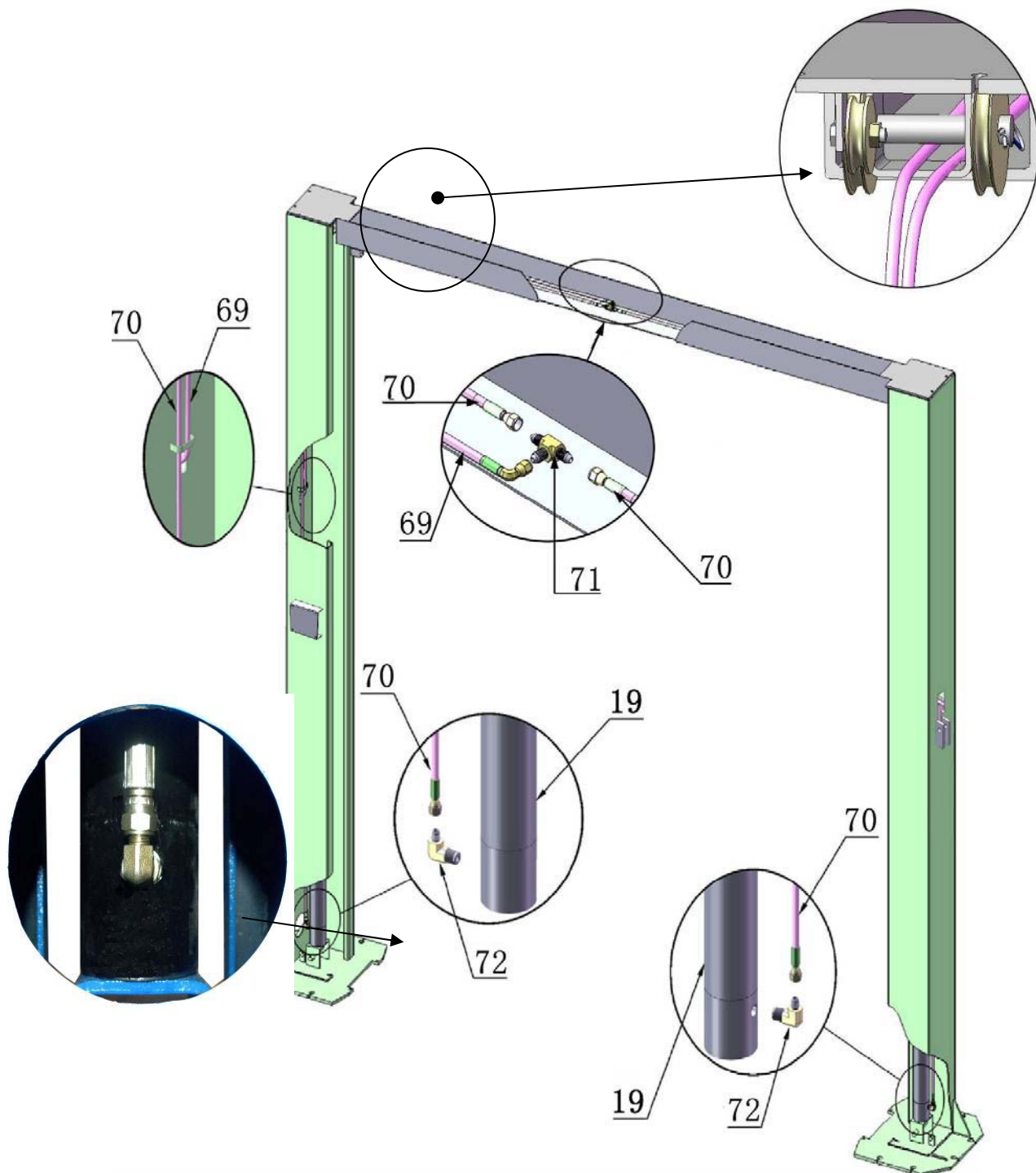


Fig. 18

Use Teflon tape to seal pipe threads. Do not use Teflon tape on hydraulic hose ends.

I. Install Control Bar (See Fig. 19)

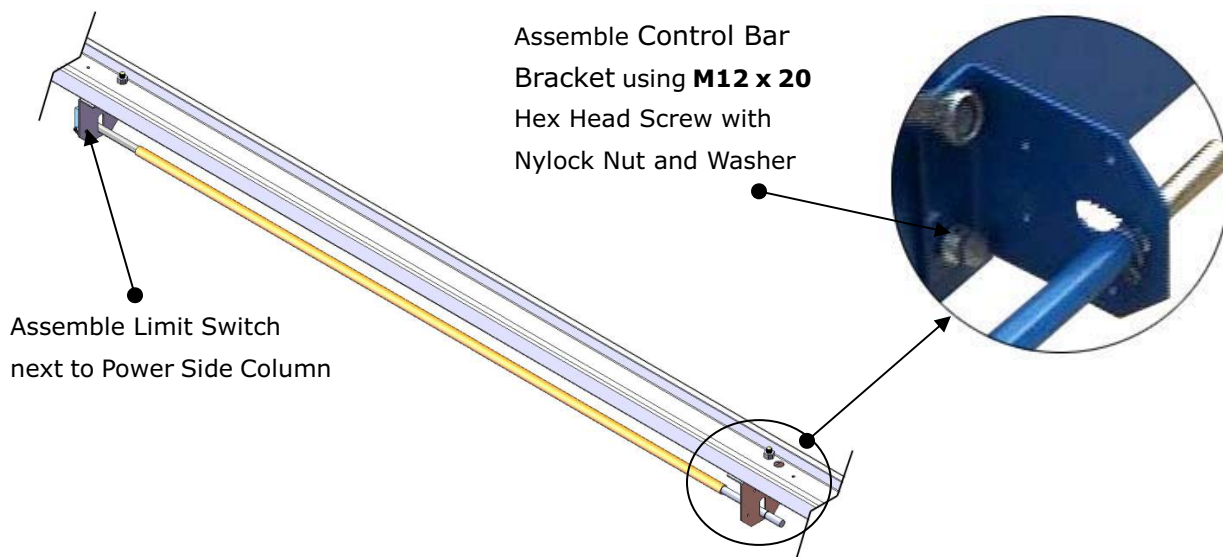


Fig. 19

I. Install Limit Switch (See Fig. 20)

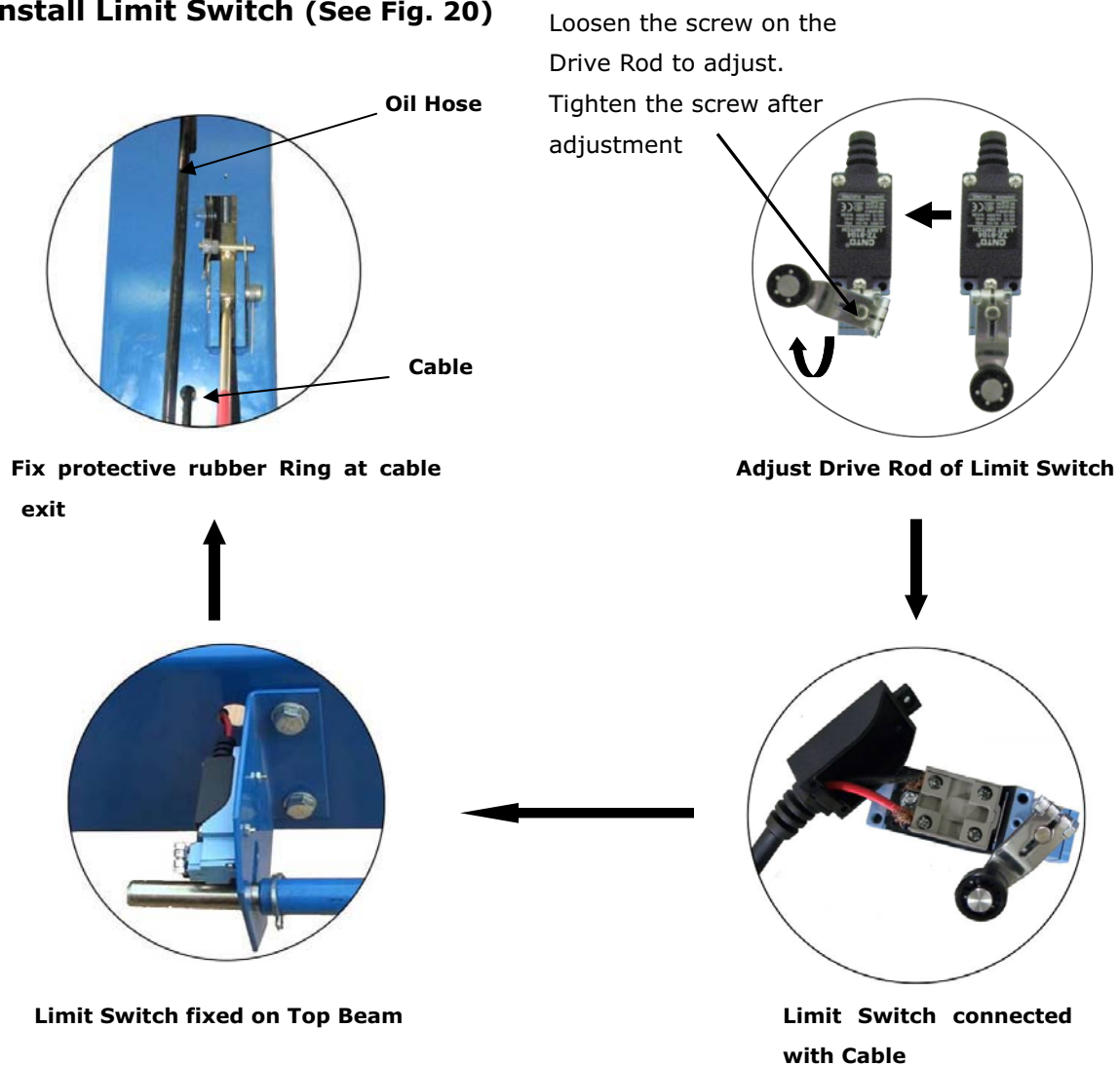
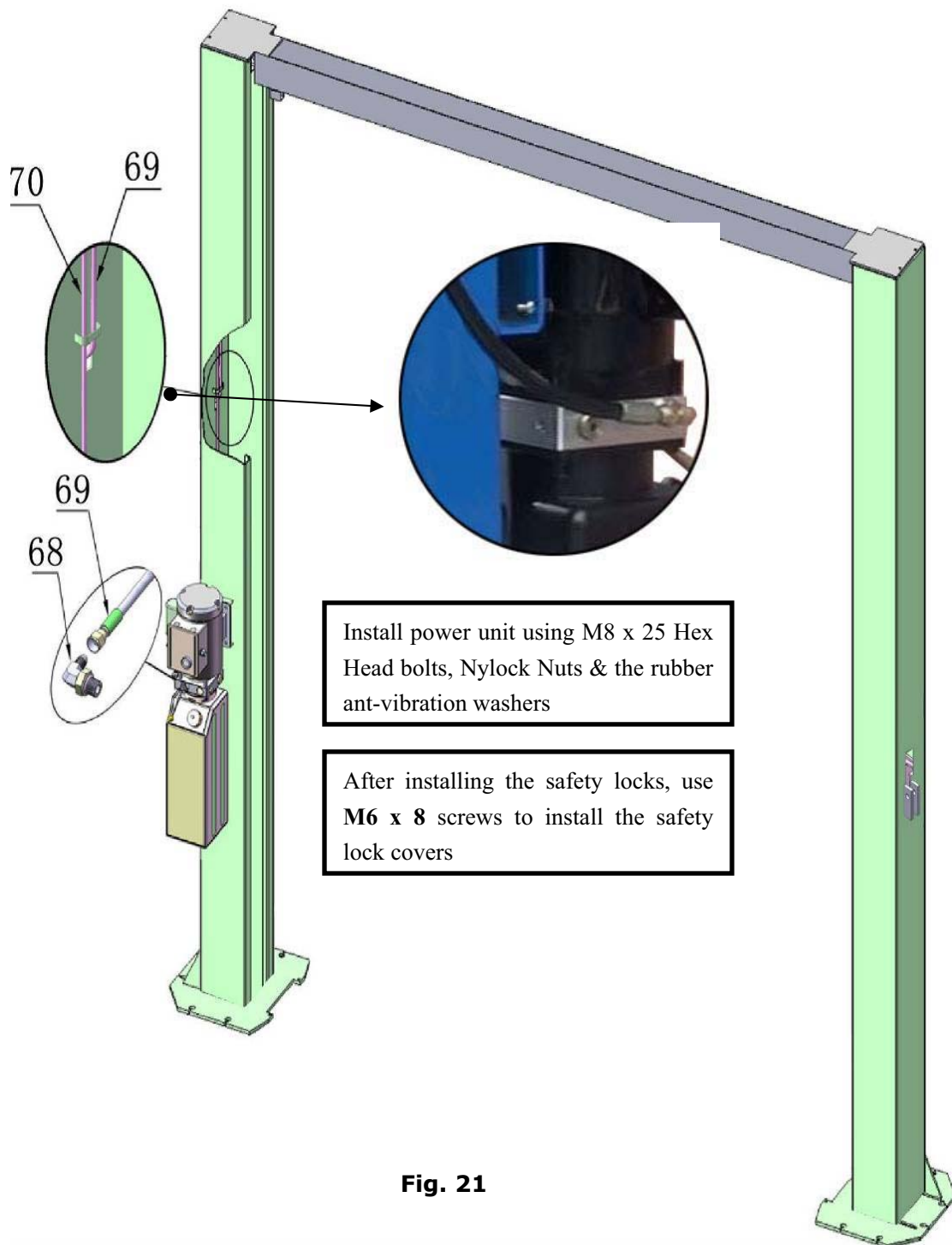


Fig. 20

J. Install Hydraulic Power Unit and Oil Hose (See Fig. 21)

Note: Tighten the fittings on the Hydraulic Power Unit and Oil Hoses.



Use Teflon tape to seal pipe threads. Do not use Teflon tape on hydraulic hose ends.

K. Install Lifting Arms and Adjust the Arm Locks (See Fig. 22, 23 & 24)

1. Install the lifting arms, adjust the teeth on the arm lock assemblies so it meshes with the gear on the lifting arm, then tighten the hex bolts on the arm lock assemblies.
2. Fill the Reservoir with Hydraulic Oil.

Note: In consideration of Hydraulic Power Unit's durability and keep the equipment running in peak condition, please use **Hydraulic Oil AW32**.

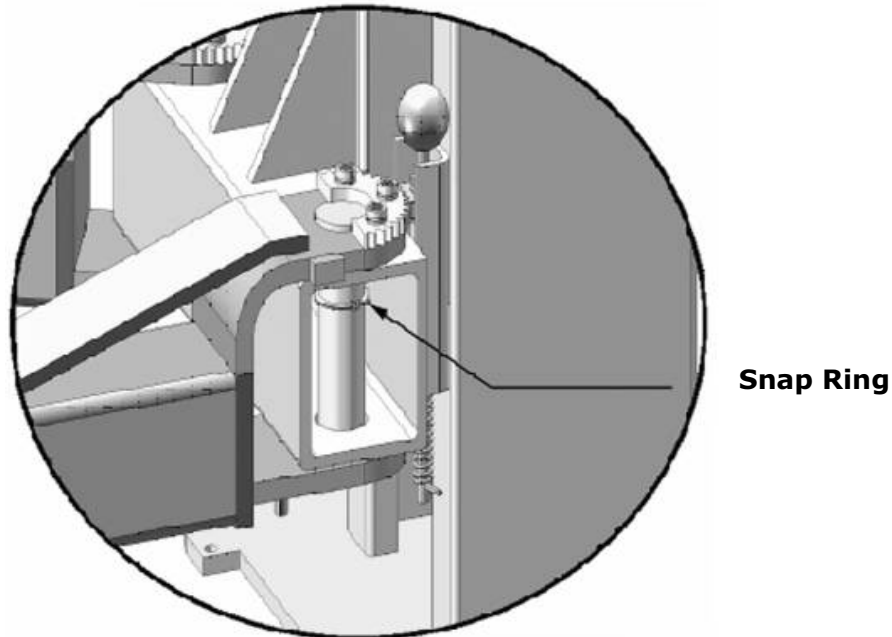


Fig. 22

Adjust the arm lock and follow the arrow direction

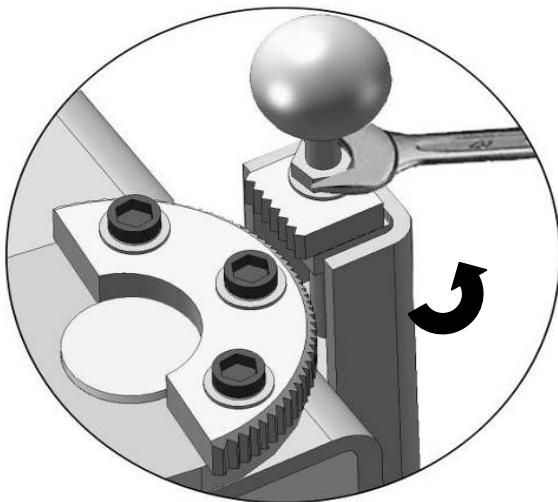


Fig. 23

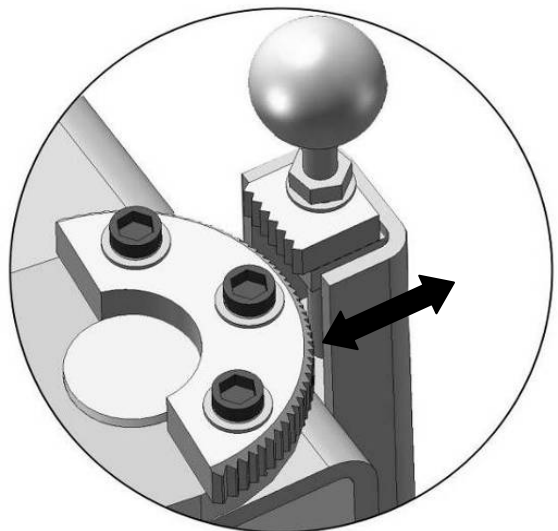


Fig. 24

Install Electrical System

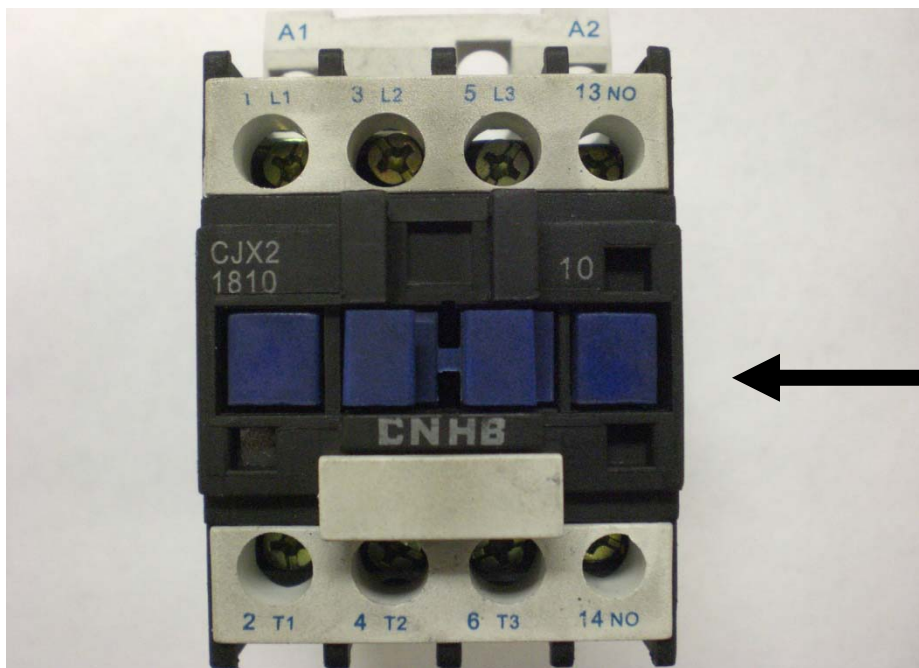
Connect the power source according to the data plate on the Power Unit.

Remove the short "Pig Tail" wire connected to the AC contactor terminals. This wire was used to test the motor after production.

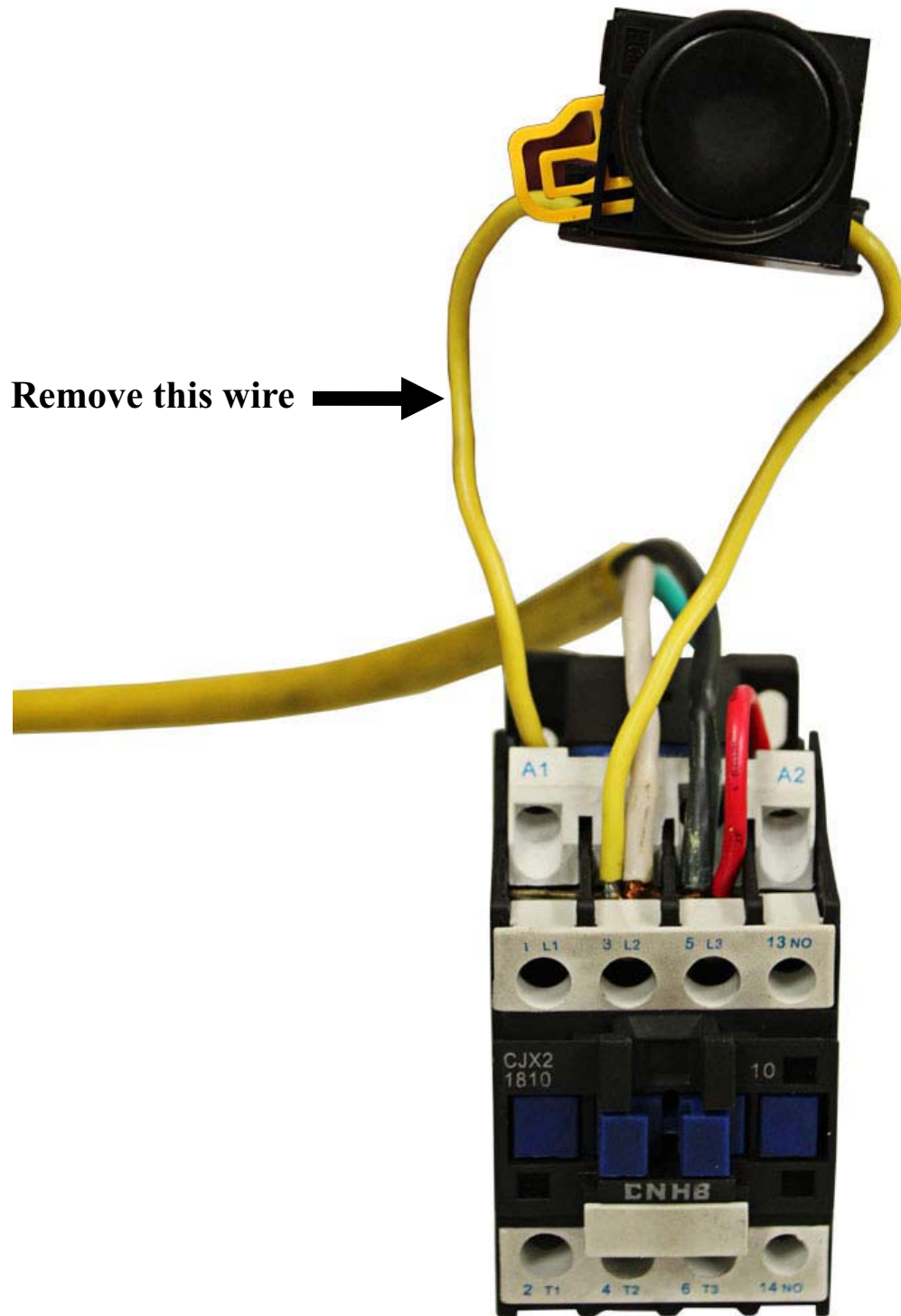
ATLAS Single phase motor

Please Note: This motor is powered by Alternating Current and the terminals on the AC contactor are not wire color specific. There are no positive or negative terminals.

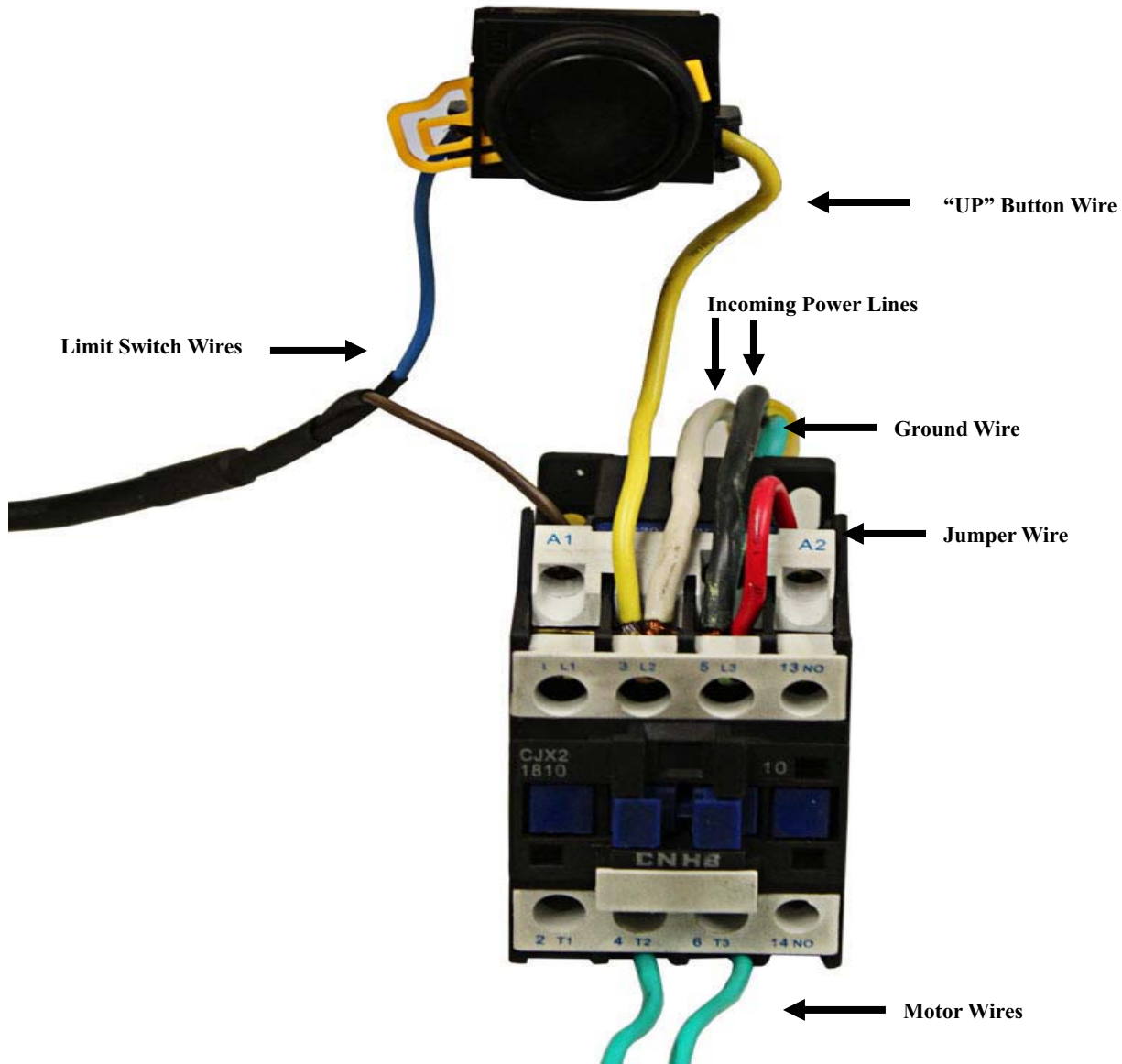
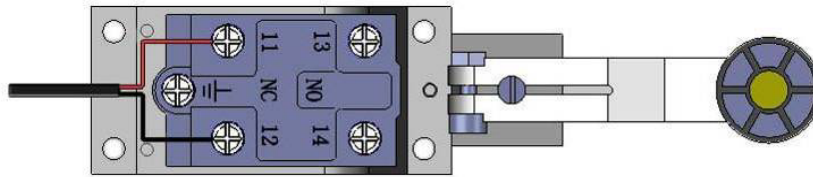
1. Connect the two power supply (**incoming**) wires (**black & white**) to terminals on the AC contactor marked **L2 & L3**.
2. Connect the two motor wires to terminals on the AC contactor marked **T2, T3**. **These wires are already connected from the factory.**
3. Connect the short wire **A2** to **L3** on the AC contactor. **This wire is already connected from the factory.**
4. Remove the **entire** wire that connects from the **"UP" button** to **A1** on the AC contactor.
5. Connect one of the wires (**does not matter which one**) on the Limit Switch to the **"UP" button** and connect the remaining Limit Switch wire to terminal **A1** on the AC contactor.



AC CONTACTOR



Limit Switch-Connect wires to 11 & 12 (NC) on the Limit



IV. EXPLODED VIEW

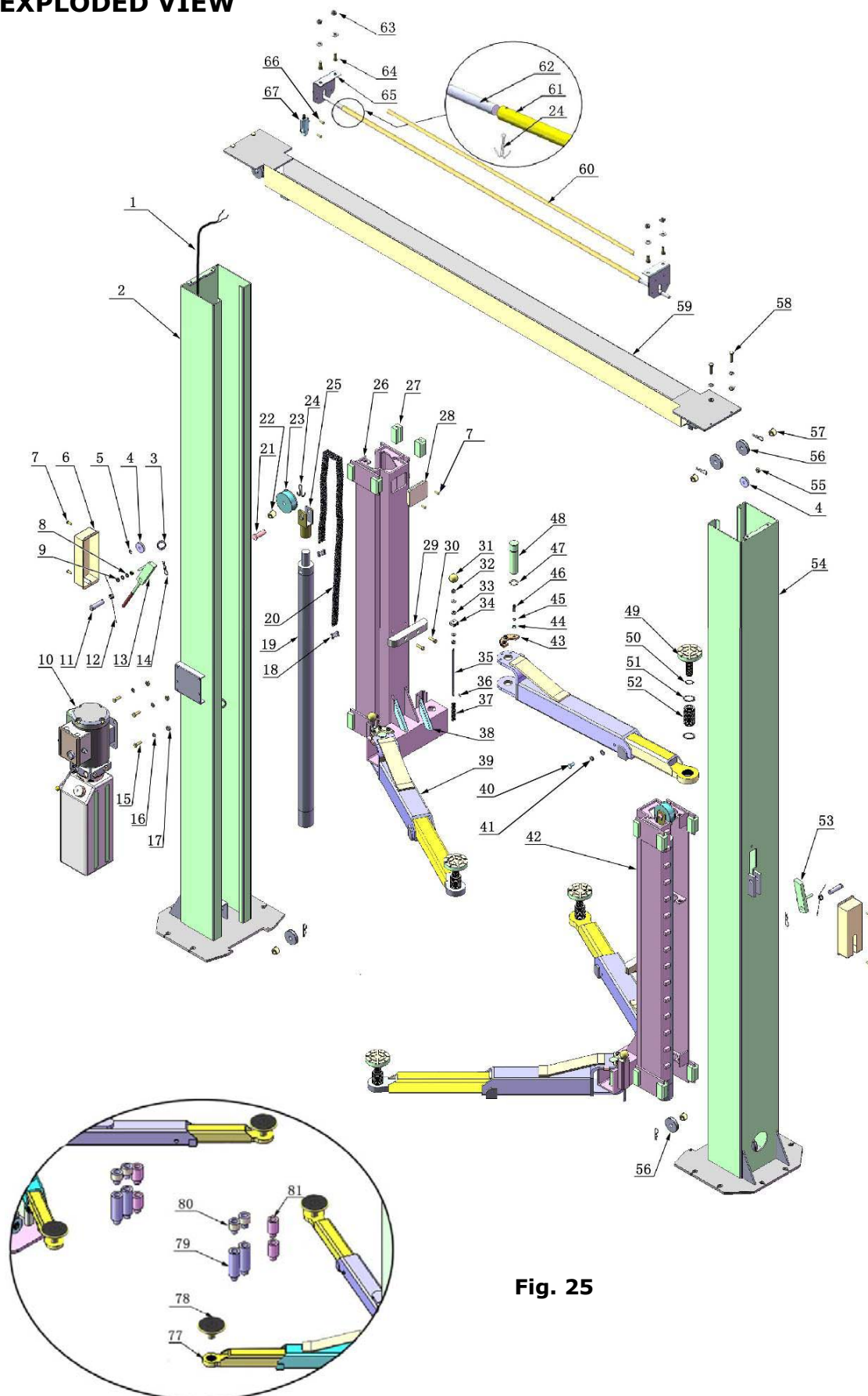


Fig. 25

Cylinders

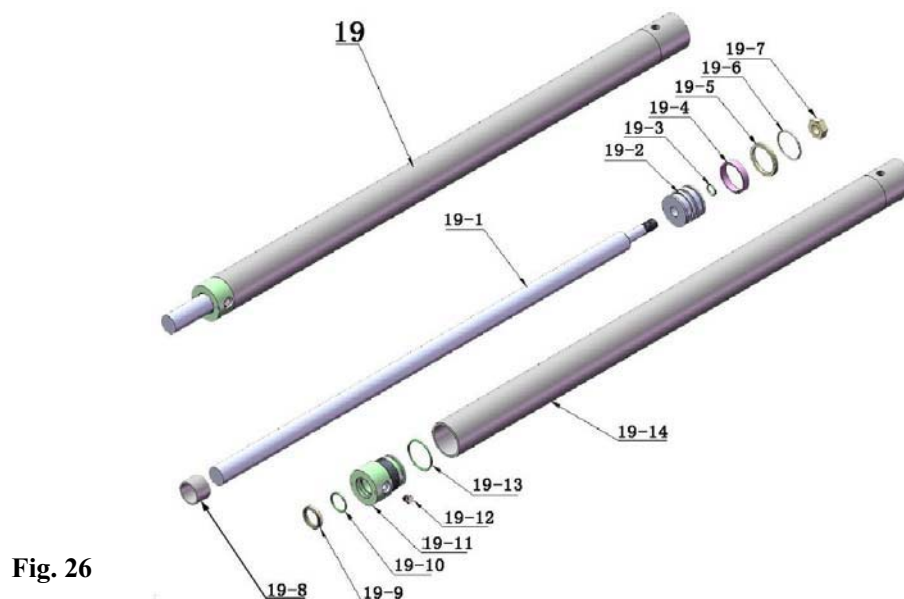


Fig. 26

SPX Manual power unit 220V/60HZ, Single phase

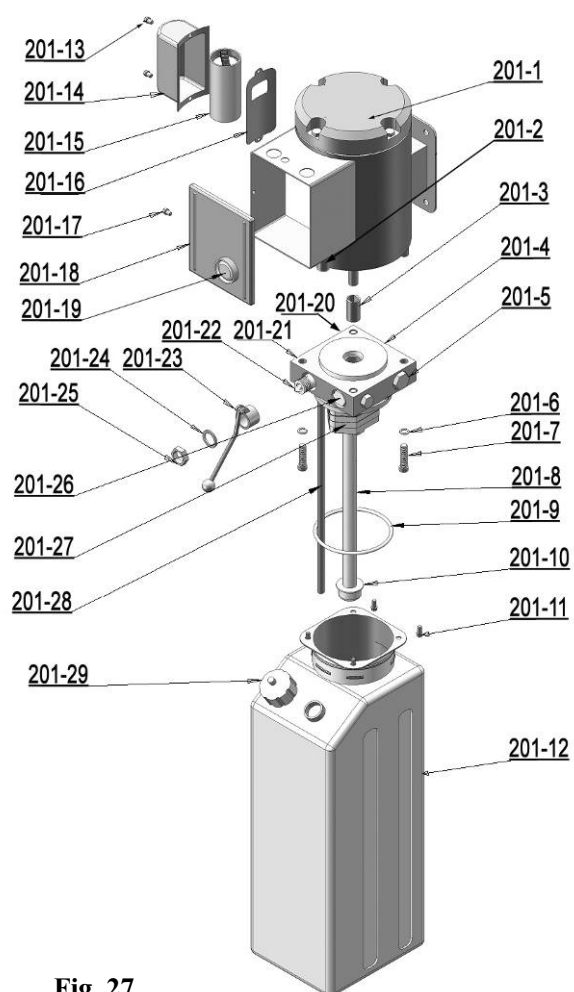


Fig. 27

ATLAS Manual power unit

220V/60HZ, Single Phase

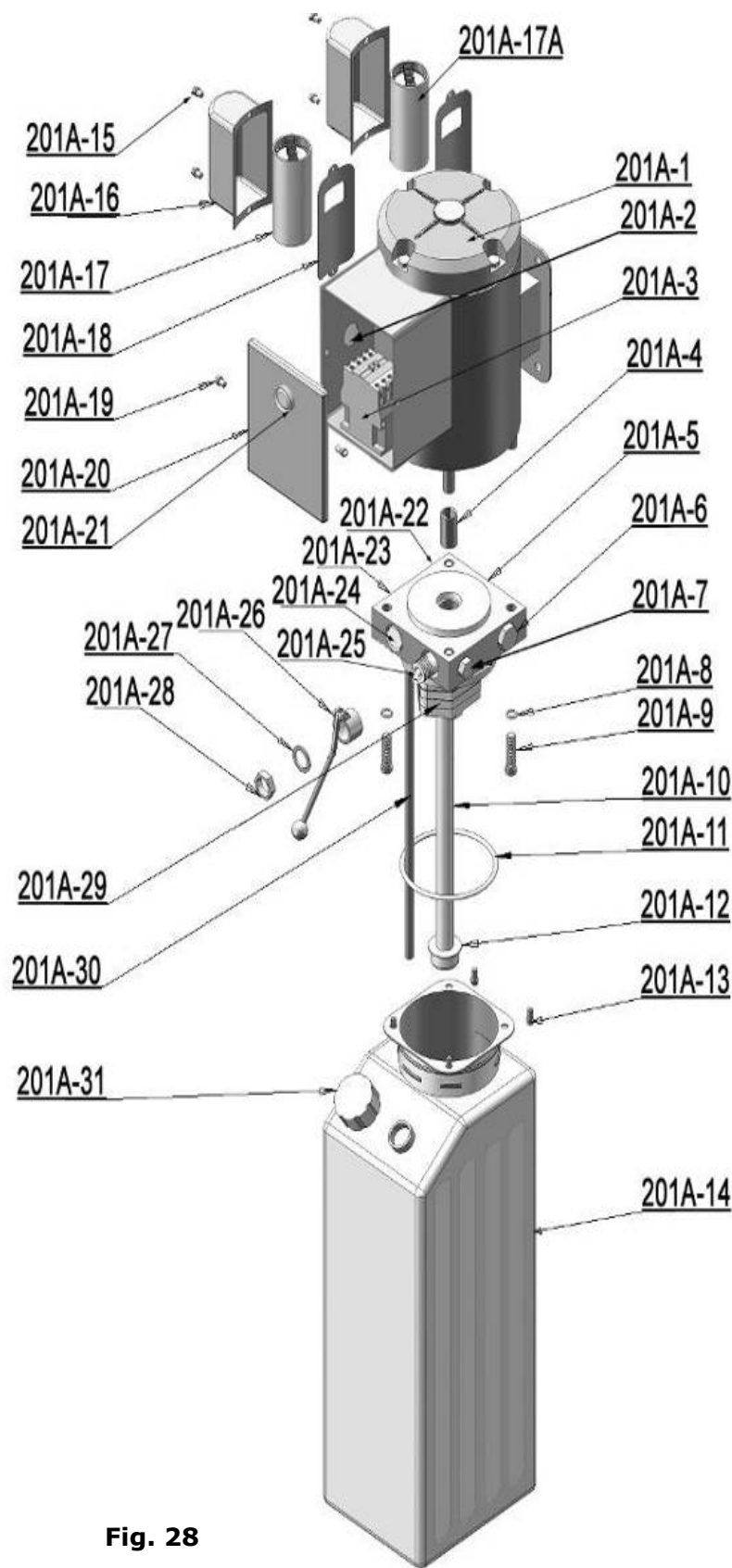


Fig. 28

Illustration of hydraulic valves for SPX & ATLAS hydraulic power unit

a. SPX manual power unit, 220V/60HZ, Single phase (See Fig. 29)

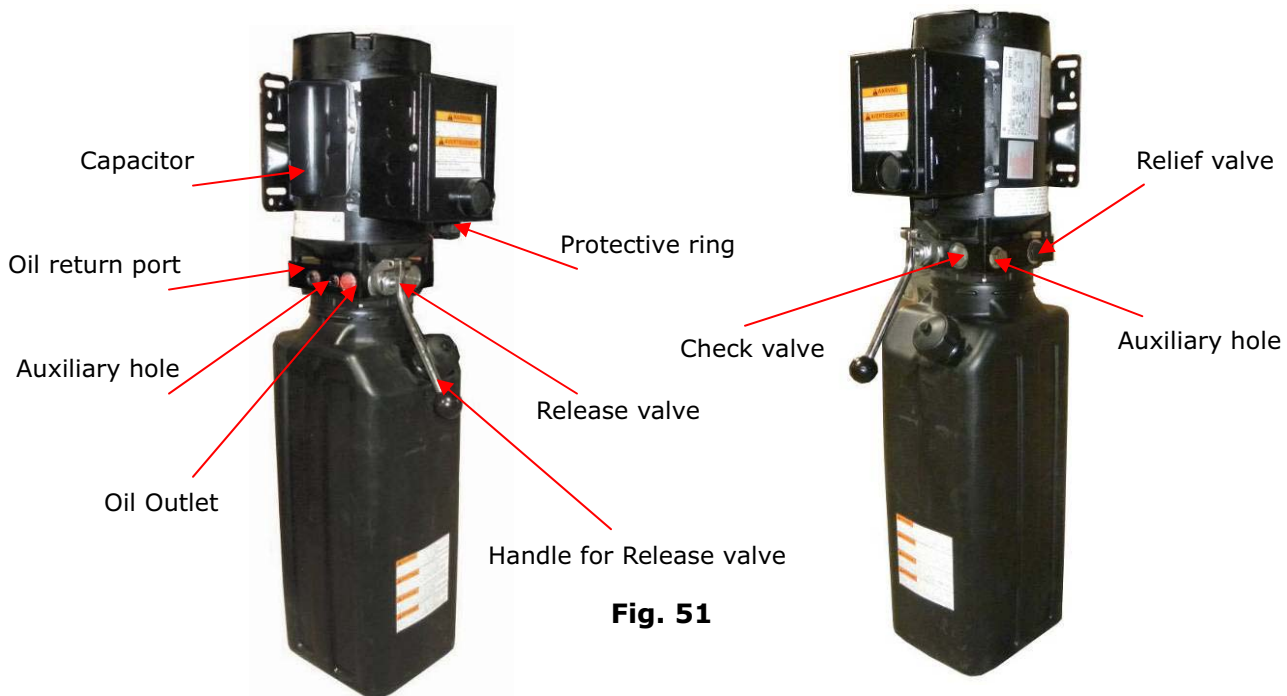


Fig. 51

b. ATLAS manual power unit, 220V/60HZ, Single phase (See Fig. 52)

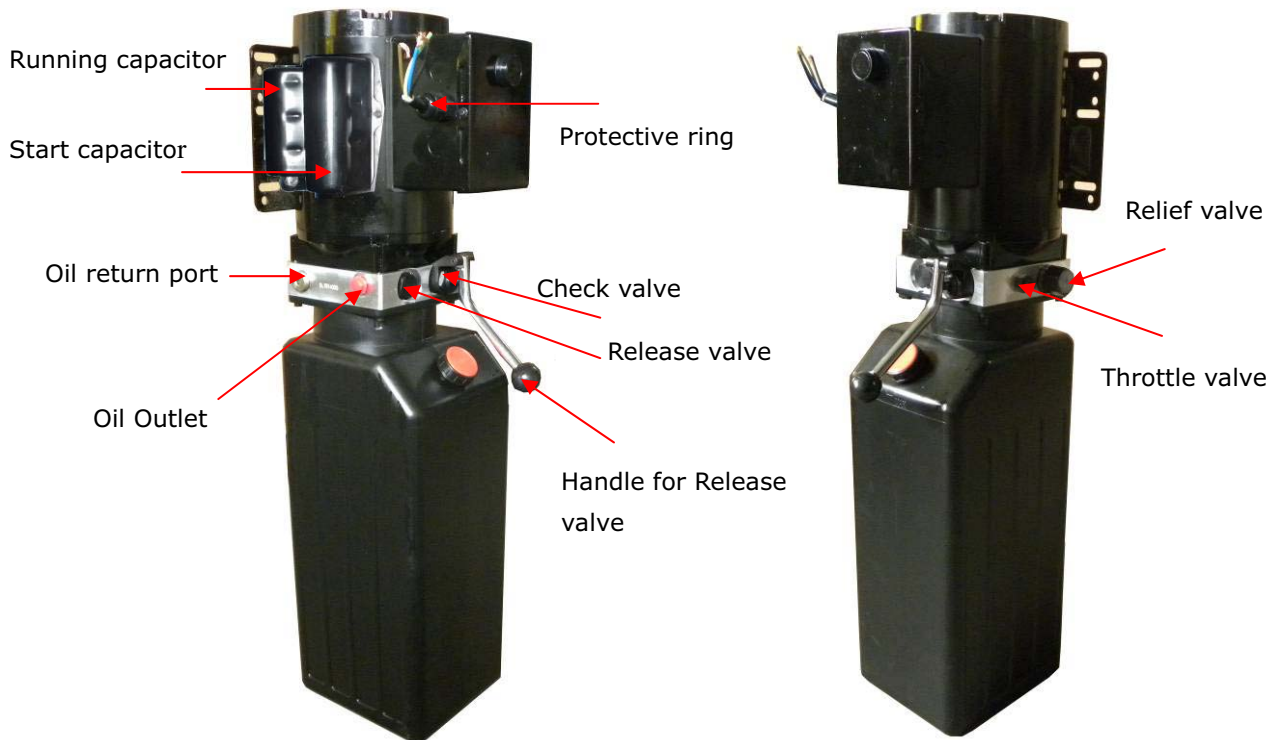
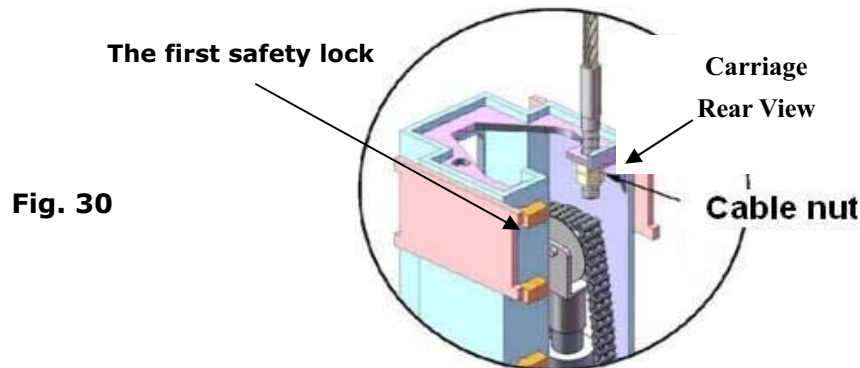


Fig. 29

V. TEST RUN

1. Adjust the Equalizing Cables

Use vise grips to hold the cable fitting, use a Ratchet spanner to tighten the cable nut. Make sure the two Cables have the same tension so that two Lifting carriages synchronize while going up. Install plastic cover on the carriage.



2. Adjust Safety Cable

Lift the carriages and lock at the same height, pull the safety cable and then release a little and tighten the cable nuts. Make sure the safety locks click at the same time.

3. Adjust the lowering speed (Adjust with a load on the lift) (Only for ATLAS power unit)

You can adjust the lowering speed of the lift if necessary: Loosen the locking nut on the throttle valve, and then turn the throttle valve clockwise to decrease the lowering speed, or counterclockwise to increase the lowering speed. Do not forget to tighten the locking nut after the lower speed adjustment has been completed.

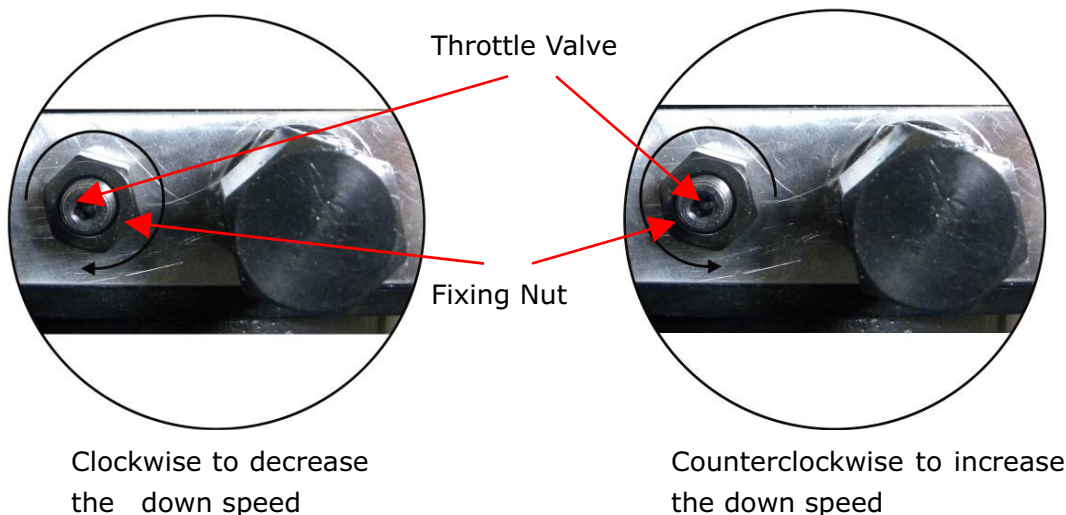


Fig. 31

4. Test with load

After finishing the cable adjustments, test the lift with a load. Run the lift in the low position several times. Make sure the carriages raise and lower at the same time. Make sure the safety locks release. Test run the lift to the top. If there are any issues, repeat the above adjustment(s).

NOTE: If the lift bounces with a load on it; up and down, the cylinders will require bleeding.

This is done by loosening the oil hose connections at the bottom of the cylinders.

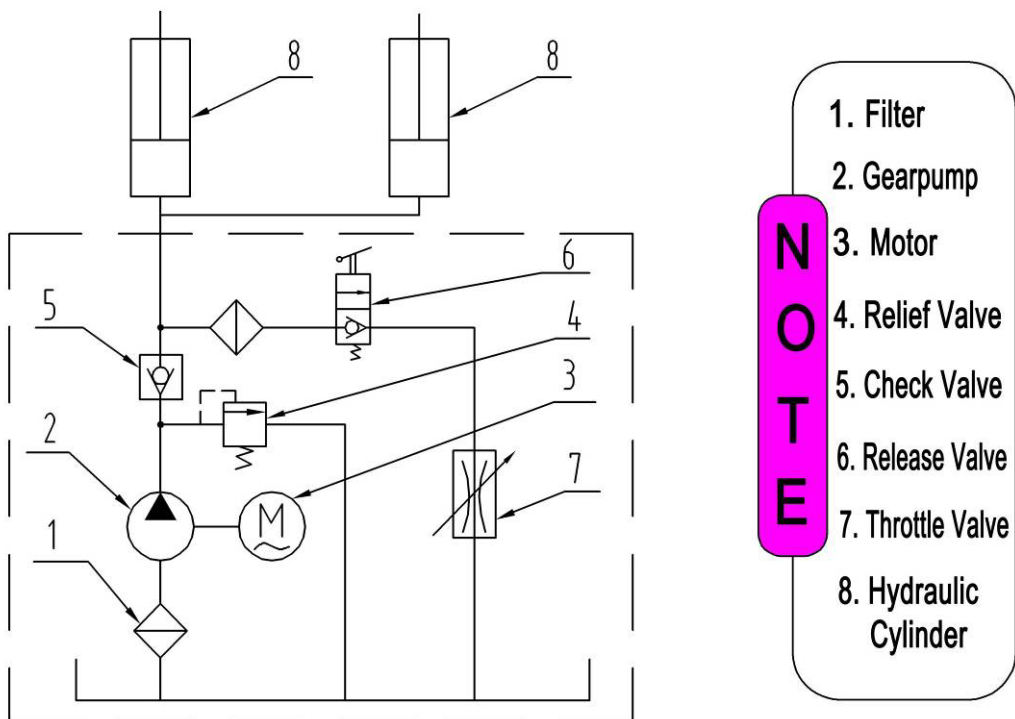


Fig. 32 Hydraulic System

VI. OPERATION INSTRUCTIONS

1. Keep the lift area free of clutter;
2. Position lift arms to the lowest position;
3. Open lift arms;
4. Position vehicle between columns;
5. Move arms to the vehicle's lifting points;

Note: The four lift arms must make contact at the same with the vehicle's lifting points and both axles must rise off of the ground at the same time.

6. Press the **UP** button until the lift pads contact underside of vehicle. Check to make sure vehicle is secure;
7. Continue to raise the lift slowly to the desired working height, ensuring the balance of vehicle;
8. Push lowering handle to lower lift onto the nearest locks. The vehicle is ready to repair. **Note: The lift must always be on the safety locks!!!!**

To lower vehicle

1. Keep the lift area free of clutter;
2. Press the button of **UP** to raise the vehicle slightly, and then release the safety device, lower vehicle by pushing lowering handle.
3. Open the arms and position them to the shortest length.
4. Drive away the vehicle.

VII.MAINTENANCE SCHEDULE

Monthly:

1. Re-torque the anchor bolts;
2. Check all connectors, bolts and pins to insure proper mounting;
3. Lubricate cable with lubricant;
4. Make a visual inspection of all hydraulic hoses/lines for possible wear or leakage;
5. Check the condition of the safety lock device;
6. Lubricate all rollers and pins with 90wt. Gear oil or equivalent;

Note: All anchor bolts should take full torque. If any of the bolts do not function for any reason, DO NOT use the lift until the bolt has been replaced.

Every six months:

1. Make a visual inspection of all moving parts for possible wear, interference or damage.
2. Check and adjust as necessary, equalizer tension of the cables to ensure level lifting.
3. Check columns for plumb.
4. Check rubber pads and replace as necessary.
5. Check safety lock device and make sure the condition is suitable.

VIII.TROUBLE SHOOTING

TROUBLE	CAUSE	REMEDY
Motor does not run	1. Button does not work 2. Wiring connections are not in good condition 3. Motor burned out 4. Height Limit Switch is damaged 5. AC contactor burned out	1. Replace button 2.Repair all wiring connections 3. Repair or replace motor 4.Replace the Limit Switch 5. Replace AC Contactor
Motor runs but the lift is not raised	1. Motor runs in reverse rotation 2. Gear Pump out of operation 3. Release Valve in damage 4. Relief Valve or Check Valve in damage 5. Low oil level	1.Reverse two power wire 2.Repair or replace 3. Repair or replace 4.Repair or replace 5.Fill tank
Lift does not stay up	1. Release Valve out of work 2. Relief Valve or Check Valve leakage 3. Cylinder or Fittings leaks	Repair or replace
Lift raises slowly	1. Oil line is jammed 2. Motor running on low voltage 3. Oil mixed with air 4. Gear Pump leaks 5. Overload lifting	1. Clean the oil line 2. Check Electrical System 3. Fill tank 4. Replace Pump 5. Check load
Lift can not lower	1. Safety device are in activated 2. Release Valve in damage 3. Safety cable broken 4. Oil system is jammed	1. Release the safeties 2. Repair or replace 3. Replace 4. Clean the oil system

For more motor trouble shooting, visit our web site at gregsmithequipment.com. Go to knowledge base and then to troubleshooting and repair.

IX. Parts List

Parts For 90HSC				
Item.	Part No.	Description	Qty.	Note
1	211010	Wire Cable	1	
2	202001A	Power Side Post	1	
3	209114	Protective Ring	1	
4	209049	Plastic Pulley	3	
5	209010	Snap Ring	1	
6	209008	Safety Cover	2	
7	209009	Cup Head Bolt	8	
8	206006	Washer	2	
9	206023A	Hex Nut	2	
10	209002	Hydraulic Power Unit	1	
11	209006	Safety Pin	2	
12	209007	Safety Spring	2	
13	209013	Power Side Safety Assy.	1	
14	209012	Hair Pin	8	
15	209003	Hex Bolt	4	
16	209004	Rubber Ring	4	
17	209005	Nylok Nut	4	
18	201010	Chain Connector	4	
19	201008A	Hydraulic Cylinder	2	
20	201009A	Chain	2	
21	201007	Pin For Chain Pulley	2	
22	203004A	Bronze Bush For Chain Pulley	4	
23	201006	Chain Pulley	2	
24	201005	Split Pin	4	
25	201004	Chain Pulley Assy.	2	
26	202002	Power Side Lifting Head	1	
27	206044	Slider	16	
28	201038	Carriage Plastic Cover	2	
29	206045	Protective Rubber	2	
30	206046	Bolt	4	
31	209020	Plastic Ball	4	
32	209021	Hex Nut	12	

Item.	Part No.	Description	Qty.	Note
33	209022	Washer	16	
34	209023A	Teeth	4	
35	209024	Arm Lock Bar	4	
36	209025	Hair Pin	4	
37	209026	Spring	4	
38	209027	Protective Rubber Sets	4	
39	201039	Lifting Arm	4	
40	209038	Hex Bolt	4	
41	209039	Lock Washer	12	
42	202003	Offside Lifting Head	1	
43	209035	Gear	4	
44	209033	Washer	12	
45	209034	Lock Washer	12	
46	209032	Socket Bolt	12	
47	209031	Snap Ring	4	
48	209030A	Lifting Arm Pin	4	
49	206031	Inner Screw	4	
50	206032	Snap Ring	4	
51	206033	Snap Ring	8	
52	206034	Outer Screw	4	
53	211013	Offside Safety Assy.	1	
54	202006A	Offside Power Post	1	
55	209056	Nylok Nut	2	
56	209057	Small Pulley	6	
57	209057A	Bronze Bush For Pulley	6	
58	209046	Hex Bolt	4	
59	206018	Top Beam W/Bracket	2	
60	206025A	Foam cushion	1	
61	206025	Control Bar	1	
62	206025C	Connection Pin for Control Bar	2	
63	206023	Nylok Nut	4	
64	206041	Hex Screw	4	
65	206042	Control Bar Support Bracket	2	
66	206011	Cup Head Bolt (not used)	2	
67	206013	Limit Switch	1	

Item.	Part No.	Description	Qty.	Note
68	209060	90 ⁰ Fitting for Hydraulic Power Unit	1	
69	202007A	Oil Hose	1	
70	202008A	Oil Hose	2	
71	211016	T-Fitting	1	
72	201020	90 ⁰ Fitting	2	
73	202009A	Cable (29 FT. 2")(8895MM)	2	
74	209066	Cable Nut	4	
75	202010A	Safety Cable (22 FT. 10 IN.)(6960mm)	1	
76	209059	Anchor Bolt	12	
77	201040	Lifting Arms	4	
78	680030	Rubber Pad Frame Support	4	
79	209053	Stackable Adapter (6")	4	
80	209051	Stackable Adapter (1.5")	4	
81	209052	Stackable Adapter (3")	4	
Parts For Hydraulic Cylinder				
19-1	201027A	Piston Rod	2	
19-2	201028	Piston	2	
19-3	206069	O-Ring	2	
19-4	201029	Support Ring	2	
19-5	201030	Y-Ring	2	
19-6	201031	O-Ring	2	
19-7	206071	Hex Nut	2	
19-8	201037	Adjustment Tube	2	
19-9	209078	Dust Seal	2	
19-10	201032	O-Ring	2	
19-11	201033	Head Cap	2	
19-12	201034	Bleeding Plug	2	
19-13	201035	O-Ring	2	
19-14	201036A	Bore Weldment	2	

Parts For ATLAS Hydraulic Power Unit, 220V/60Hz, 1 phase

Item.	Part No.	Description	Qty.	Note
10A-1	209082A	Motor	1	
10A-2	209109	Protective Ring	1	
10A-3	209112	AC Contactor	1	
10A-4	209083A	Motor Connecting Shaft	1	
10A-5	209084A	Valve Body	1	
10A-6	209085A	Relief Valve	1	
10A-7	209113	Throttle Valve	1	
10A-8	209086A	Spring Washer	4	
10A-9	209087A	Socket Bolt	4	
10A-10	209088A	Inlet Pipe	1	
10A-11	209089A	O-Ring	1	
10A-12	209090A	Filter	1	
10A-13	209091A	Socket Bolt	4	
10A-14	209092A	Reservoir	1	
10A-15	209093A	Bolt	4	
10A-16	209094A	Cover of Capacitor	2	
10A-17	209095A	Capacitor	2	
10A-18	209096A	Rubber Gasket	2	
10A-19	209097A	Hex Bolt	2	
10A-20	209098A	Cover of Motor Terminal Box	1	
10A-21	209099A	Push Button	1	
10A-22	209110A	Oil Return Port	1	
10A-23	209100A	Oil Outlet	1	
10A-24	209105A	Check Valve	1	
10A-25	209101A	Release Valve	1	
10A-26	209102A	Handle For Release Valve	1	
10A-27	209103A	Washer	1	
10A-28	209104A	Hex Nut	1	
10A-29	209106A	Gear Pump	1	
10A-30	209107A	Oil Return Pipe	1	
10A-31	209108A	Filler Cap	1	

Parts for SPX Manual Power Unit, 220V/60Hz, 1 phase

Item	Part#	Description	Qty.		Note
			PV-10P	PV-10HP	
201-1	209082	Motor	1	1	
201-2	209109	Protective ring	1	1	
201-3	209083	Motor connecting shaft	1	1	
201-4	209084	Valve body	1	1	
201-5	209085	Relief valve	1	1	
201-6	209086	Lock washer	4	4	
201-7	209087	Allen bolt	4	4	
201-8	209088	Inlet pipe	1	1	
201-9	209089	O-Ring	1	1	
201-10	209090	Filter	1	1	
201-11	209091	Bolt	4	4	
201-12	209092	Reservoir	1	1	
201-13	209093	Bolt	2	2	
201-14	209094	Cover of capacitor	1	1	
201-15	209095	Capacitor	1	1	
201-16	209096	Rubber gasket	1	1	
201-17	209097	Bolt	1	1	
201-18	209098	Cover of motor terminal box	1	1	
201-19	209099	Push button	1	1	
201-20	209110	Oil return port	1	1	
201-21	209100	Oil outlet	1	1	
201-22	209101	Release valve	1	1	
201-23	209102	Release valve handle	1	1	
201-24	209103	Washer	1	1	
201-25	209104	Nut	1	1	
201-26	209105	Check valve	1	1	
201-27	209106	Gear pump	1	1	
201-28	209107	Oil return pipe	1	1	
201-29	209108	Filler cap	1	1	