



Porto-Power Blackhawk Automotive is a licensed trademark

Porto-Power Kit

Operating Instructions & Parts Manual

U.S. PATENT 5,520,400

Model Number	Capacity
B65114	4 Ton
B65115	10 Ton

SFA Companies
10939 N. Pomona Ave. Kansas City, MO 64153
816-891-6390
sales@blackhawk-automotive.com

- Before using this product, read this manual and follow all its Safety Rules and Operating Instructions

Made in China
B65114-M0 rev 11/05

ONE YEAR LIMITED WARRANTY

For a period of one (1) year from date of purchase, SFA Companies will repair or replace, at its option, without charge, any of its products which fails due to a defect in material or workmanship under normal usage. This limited warranty is a consumer's exclusive remedy.

Performance of any obligation under this warranty may be obtained by returning the warranted product, freight prepaid, to SFA Companies Warranty Service Department, 10939 N. Pomona Ave., Kansas City, MO 64153.

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Some states do not allow limitations on how long an implied warranty lasts, so the above limitation may not apply to you. Some states do not allow the exclusion or limitation of incidental or consequential damages, so the above limitation or exclusion may not apply to you. This warranty gives you specific legal rights, and you may also have other rights which vary from state to state.



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SAVE THESE INSTRUCTIONS

For your safety, read and understand the information contained within. The owner and operator shall have an understanding of this product and safe operating procedures before attempting to use this product. Instructions and Safety information shall be conveyed in the operator's native language before use of this product is authorized. Make certain that the operator thoroughly understands the inherent dangers associated with the use and misuse of the product. If any doubt exists as to the safe and proper use of this product as outlined in this factory authorized manual, remove from service immediately.

Inspect before each use. Do not use if broken, bent, cracked or otherwise damaged parts are noted. If any component of this product has been or suspected to have been subjected to a shock load (a load dropped suddenly, unexpectedly upon it), discontinue use until checked out by a Porto-Power Blackhawk Automotive Authorized Service Center. Owners and operators of this equipment shall be aware that the use and subsequent repair of this equipment may require special training and knowledge. It is recommended that an annual inspection be done by qualified personnel and that any missing or damaged parts, decals, warning / safety labels or signs be replaced with factory authorized replacement parts only. Any component of this Porto-Power Kit that appears to be damaged in any way, is worn or operates abnormally shall be removed from service immediately until such time as it can be repaired/replaced. Labels and Operator's Manuals are available from manufacturer.

PRODUCT DESCRIPTION

Porto-Power Kits are designed to be used for pushing, spreading, and pressing of vehicle body panels as well as various component parts and assemblies. A variety of attachments are included. B65114 is rated 8,000PSI and B65115 is rated 10,000PSI, where rams are rated from 4 to 10 tons.

WARNING: when extension tubes and/or offset attachments are used, the rated capacity is always reduced by 50% for each tube or offset attachment connected. Refer to figure 3 on page 8 for more offset illustration.

SPECIFICATIONS

Model	Capacity	Ram		Number of Attachments	Weight
		Closed Height	Extended Height		
B65114	4 Ton	11"	15 3/4"	14	46 lbs
B65115	10 Ton	13 5/8"	19 3/4"	13	88 lbs

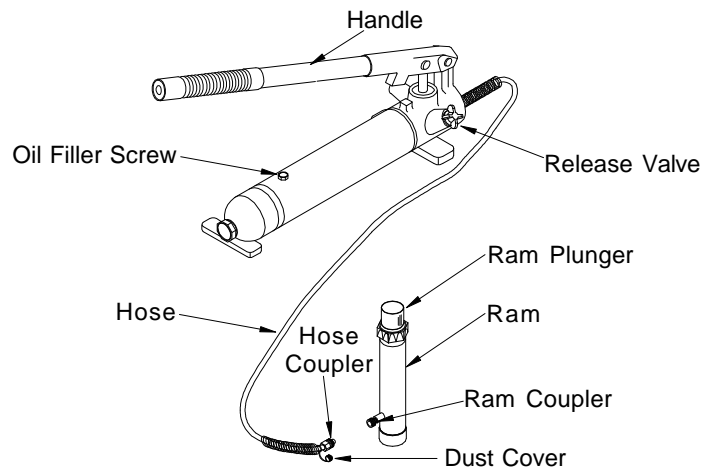


Figure 1 - B65114 and B65115 Components

SAFETY INSTRUCTIONS

BEFORE USE (Refer to Figure 1 on page 3)

1. Study, understand, and follow all instructions provided with and on this device before use.
2. Inspect before each use. Do not use if bent, broken, leaking or damaged components are noted.
3. Ensure that product and application are compatible.
4. Check to ensure that all parts of your kit are included (see illustration and parts list on page 10 & 11).
5. Carefully remove the dust covers and plugs from hose coupler and ram coupler.
6. Connect hose coupler to ram coupler, ensure that there are no fluid leaks.
7. Locate and open release valve. Pump handle a few strokes to purge air from system. Close release valve and pump handle until ram is fully extended, then open release valve until ram has fully retracted.
8. With ram fully retracted and release valve open, place pump in horizontal position. Locate and open oil filler screw (on reservoir body, near the back). This will release air trapped within the reservoir. Retighten the oil filler screw.

GENERAL SAFETY INFORMATION

1. Ensure that attachments are fully engaged before applying load.
2. Ensure that load is centrally applied to attachment or ram saddle. Do not load off center.
3. Always monitor the force applied to workpiece by using a load cell and indicator or you may monitor pressure developed in the ram by using an inline pressure gauge, then calculate the applied force using the formula:
 $F = P \times A$, where F = lbs force, P = pressure in PSI, and A = effective ram area in².
Ram Area of B65114 is: 0.998 in²
Ram Area of B65115 is: 2.431 in²
you can refer to the Load-Pressure Correlation chart on page 12.
4. If bowing or bending of ram or any attachment occurs during use, "**STOP**", release pressure immediately and reconsider application. Application may not be compatible with product, a ram kit with a higher capacity may be needed.

! DANGER !

- If oil leakage is detected, discontinue use of the ram immediately and contact your nearest Porto-Power Blackhawk Automotive Authorized Service Center. The ram could develop excessive pressure and cause the ram, hose or coupler to burst, which could cause serious injury or death.



WARNING



To avoid crushing and related injuries:
Do not work on, under or around a lifted load.
Always support with appropriate mechanical means.



Wear protective clothing and safety goggles to reduce the risk of injection.



WARNING

- **All WARNING** statements must be carefully observed to help prevent personal injury.
- Do not exceed rated capacity.
- Use only on hard, level surfaces capable of sustaining rated capacity loads.
- Do not open oil filler screw unless ram is fully retracted.
- Do not wear sandals and jewelry when operating this equipment.
- Do not use as a vehicle lifting device or vehicle support.
- Any attachment that is not loaded centrally, as through the centerline of the ram, is considered to be "offset".
- When extension tubes and/or offset attachments are used, the rated capacity is always reduced by 50% for each tube or attachment connected.
- Monitor pressure and load at all times.
- Always verify load with calibrated load cell and indicator, known good pressure gauge or equivalent devices.
- Do not modify this device.
- Failure to heed these markings may result in personal injury and/or property damage.

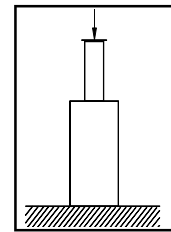
WARNING

Hydraulic Hoses and Fluid Transmission Lines

- Avoid short runs of straight line tubing. Straight line runs do not provide for expansion and contraction due to pressure and/or temperature changes.
- Reduce stress in tube lines. Long tubing runs should be supported by brackets or clips. Before operating the pump, all hose connections must be tightened with the proper tools. Do not overtighten. Connections should only be tightened securely and leak-free. Overtightening can cause premature thread failure or high pressure fittings to burst.
- Should a hydraulic hose ever rupture, burst or need to be disconnected, immediately shut off the pump and release all pressure. Never attempt to grasp a leaking pressurized hose with your hands. The force of escaping hydraulic fluid can inflict injury.
- Do not subject the hose to potential hazard such as fire, sharp objects, extreme heat or cold, or heavy impact.
- Do not allow the hose to kink, twist, curl, crush, cut or bend so tightly that the fluid flow within the hose is blocked or reduced. Periodically inspect the hose for wear, because any of these conditions can damage the hose and possibly result in personal injury.
- Do not pull, position or move setup by the hose. Doing so can damage the hose and possibly cause personal injury.
- Hose material and coupler seals must be compatible with hydraulic fluid used. Hoses also must not come in contact with corrosive materials such as battery acid, creosote-impregnated objects and wet paint. Hose deterioration due to corrosive material can result in personal injury. Never paint a coupler or hose.
- The user must be a qualified operator familiar with the correct operation, maintenance, and use of rams. Lack of knowledge in any of these areas can lead to personal injury.
- Use only approved accessories and approved hydraulic fluid.
- Do not exceed the rated capacity of the ram.
- Inspect each ram and coupler before each use to prevent unsafe conditions from developing.
- Do not use rams if they are damaged, altered or in poor condition.
- Do not use rams with bent or damaged coupler or damaged threads.
- Under certain conditions, the use of an extension with a hydraulic ram may not be advisable and could present a dangerous condition.
- Avoid pinch points or crush points that can be created by the load or parts of ram.
- To help prevent material fatigue if the ram is to be used in a continuous application, the load should not exceed 85% of the rated capacity.

WARNING

- Ram must be on a stable base, which is able to support the load while pushing or lifting.
- Ensure ram is fully engaged into/onto adapters, extension accessories.
- To help prevent personal injury, use shims, friction material or constraints to prevent slippage of the base or load.
- Do not off-center loads on a ram. The load can tip or the ram can "kick out" and cause personal injury.
- As the load is lifted, use blocking and cribbing to guard against a falling load.
- Never allow personnel to work on, under or around a load before it is properly supported by appropriate mechanical means. Never rely on hydraulic pressure alone to support load.
- All personnel must be clear before lowering.
- Never try to disassemble a hydraulic cylinder, Refer repairs to qualified, authorized personnel.



Center loads on ram

IMPORTANT

- Keep ram clean at all times.
- When the ram is not in use, keep the piston(s) fully retracted.
- Use an approved, high-grade pipe thread sealant to seal all hydraulic connections. Teflon tape can be used if only one layer of tape is used and it is applied carefully (two threads back) to prevent the tape from being introduced into hydraulic system. A piece of tape could travel through the system and obstruct the flow of fluid and adversely affect function.
- Never attach ANY component not authorized by manufacturer.
- Never use other than factory provided and/or authorized fasteners.

KNOW YOUR SYSTEM

Your ram, hose(s), couplings and pump all must be rated for the same maximum operating pressure, correctly connected and compatible with the hydraulic fluid used. An improperly matched system can cause the system to fail and possibly cause serious injury. If you are in doubt, consult your nearest Porto-Power Blackhawk Automotive Dealer.

OPERATION

Note: Inspect before each use for evidence of fluid leaks, damaged hydraulic fittings, bent or broken attachments and missing parts.

1. Locate and close release valve by turning it clockwise until firmly closed. (Do not over tighten)
2. Operate by pumping handle. This will send fluid from the pump reservoir into the high pressure hose assembly and into the ram assembly.
3. Continue pumping until ram reaches desired height.

Note: Pump may be used in horizontal and vertical position as illustrated (See figure 2).

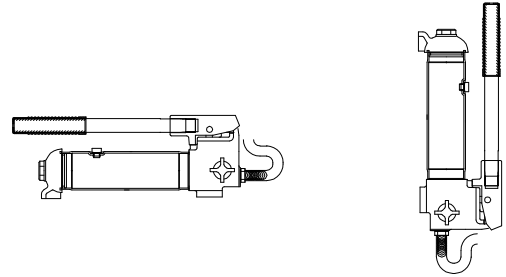


Figure 2 - Horizontal and Vertical Position

To Release Pressure on work piece:

Slowly, carefully turn the release valve counterclockwise until ram retracts to desired position. **Never turn release valve more than 1/2 full turn.** The ram return system is spring loaded, allowing controlled retraction of the ram.

MAINTENANCE

Important: Use only good grade hydraulic oil. We recommend Hein-Werner HW93291. Avoid mixing different types of fluid and **Never** use brake fluid, turbine oil, transmission fluid, motor oil or glycerin. Improper fluid can cause failure of the pump and the potential for sudden and immediate loss of load.

Adding oil

1. With ram fully lowered, set pump unit in its normal, level position. Locate and remove oil filler screw (see Figure 1).
2. Fill until oil is within 1/4" (6 mm) of the hole opening, reinstall oil filler screw.

Changing oil

For best performance and increased system life, replace the complete fluid supply at least once per year.

1. With ram fully lowered, remove the oil filler screw from the pump reservoir as above.
2. Lay the pump on its side and drain the fluid into a suitable container.

Note: Dispose of hydraulic fluid in accordance with local regulations.

3. Set pump in its level upright position.
4. Fill with good quality hydraulic oil to within 3/8" of the oil filler screw hole opening. Reinstall oil filler screw.

Lubrication

A periodic coating of light lubricating oil to pivot points and hinges will help to prevent rust and assure that pump assemblies move freely.

Cleaning

Periodically check the pump piston and ram for signs of rust or corrosion. Clean as needed and wipe with an oily cloth.

Note: Never use sandpaper or abrasive material on these surfaces!

Storage

When not in use, store with the pump piston and ram fully retracted.

REPLACEMENT PARTS (refer to page 10 & 11)

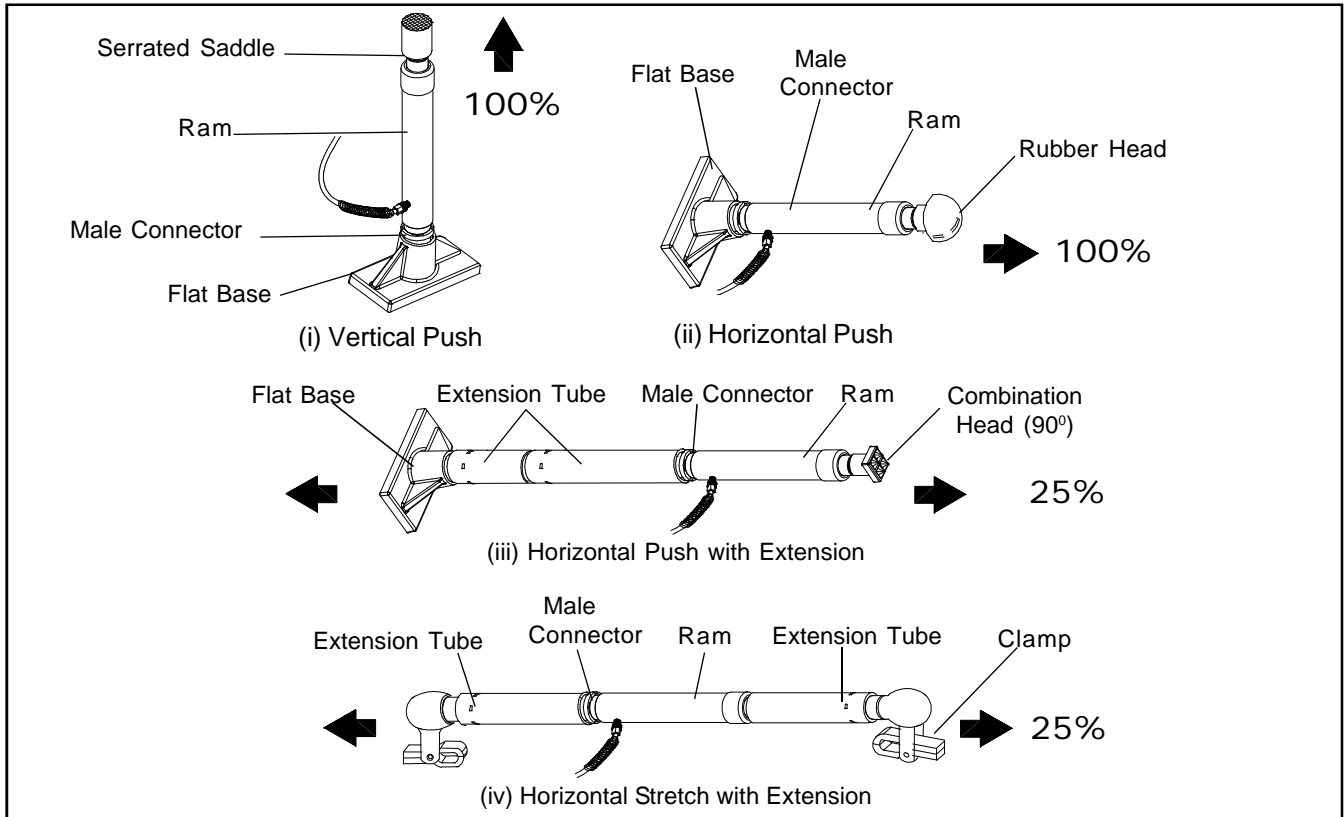
Not all components of the porto-power kit are replacement items, but are illustrated as a convenient reference of location and position in the assembly sequence. When ordering parts, give model number, serial number and parts description. Call or write for current pricing: SFA Companies 10939 N. Pomona Ave. Kansas City, MO 64153, U.S.A. Tel:(816)891-6390 Fax:(816)891-6599 E-Mail: sales@blackhawk-automotive.com

Basic Setup

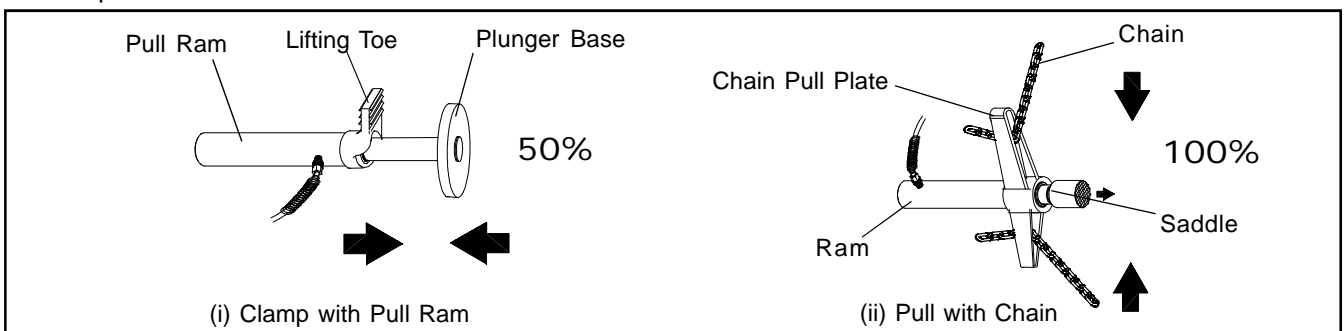
The capacity of the Porto-Power Kit can be significantly affected by the number of attachments used and the type of load applied. The approximate load capacity of each function setup is illustrated below. When two or more extension tubes are used together, be sure to position the shortest tube further away from the ram.

Note: Not all accessories in the illustrations provided in the Porto-Power Kit.

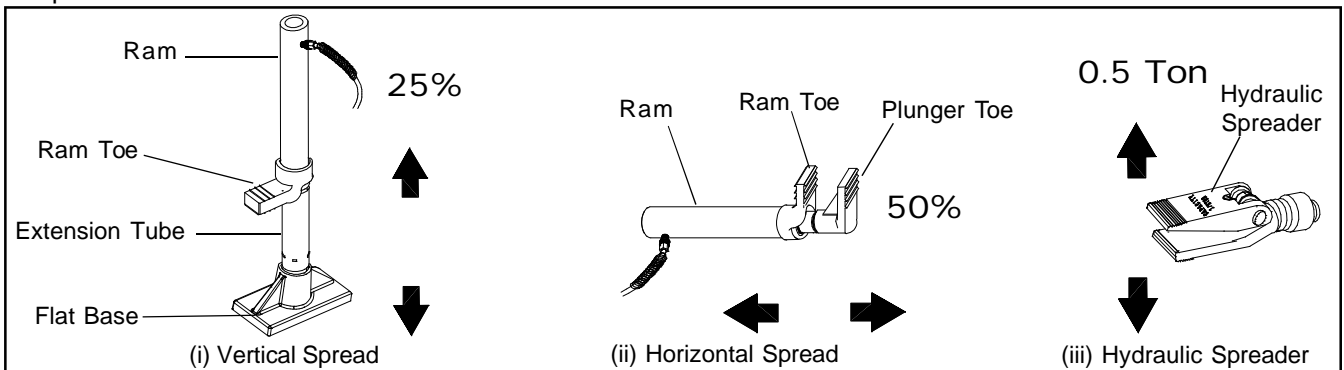
A. Push & Stretch



B. Clamp & Pull



C. Spread



TROUBLESHOOTING

Symptom	Possible Causes	Corrective Action
Ram will not extend	<ul style="list-style-type: none"> • Release valve not tightly closed • Overload condition 	<ul style="list-style-type: none"> • Ensure release valve tightly closed • Remedy overload condition
Ram will not lift to full extension	<ul style="list-style-type: none"> • Fluid level low 	<ul style="list-style-type: none"> • Ensure proper fluid level
Spongy effect	<ul style="list-style-type: none"> • Air trapped in system 	<ul style="list-style-type: none"> • Bleed air from system
Ram *bleeds off after lift	<ul style="list-style-type: none"> • Release valve not tightly closed • Dirt in pump's return check valve • Hydraulic unit malfunction 	<ul style="list-style-type: none"> • Ensure release valve tightly closed • Flush the system • Replace ram/pump or, contact service center
Handle kick-back	<ul style="list-style-type: none"> • Dirt in return check valve 	<ul style="list-style-type: none"> • Flush the system
Ram will not lower after unloading	<ul style="list-style-type: none"> • Reservoir overfilled • Damage coupler • Bent plunger/ ram damaged 	<ul style="list-style-type: none"> • Drain fluid to proper level • Replace coupler • Replace ram
Poor performance	<ul style="list-style-type: none"> • Fluid level low • Air trapped in system 	<ul style="list-style-type: none"> • Ensure proper fluid level • Bleed air from system

* "Bleeds off" means that ram begins to slowly retract rather than maintain position

How to remove faulty coupler

If ram does not retract, secure load by other means. Open pump release valve to depressurize pump and hose. To avoid hydraulic oil from spilling, wraps the grasping tool with rags or similar padding. Remove the ram from application. Disconnect and replace with new coupler.

How to bleed air from system

1. Bleed air from ram: Place pump at a higher elevation than the hose and ram (refer to figure 4). The objective is to "float the air bubbles up hill and back to the reservoir where they belong. Close valve and extend ram as fast as possible. Open valve fully allowing oil and air to return to reservoir. Repeat this procedure two or three times will do the trick.
2. Bleed air from pump: With ram fully retracted, remove oil filler screw to let pressurized air escape, then reinstall oil filler screw.

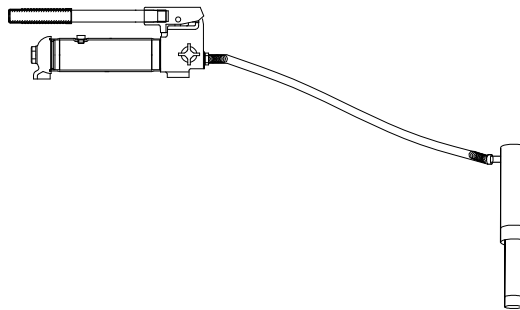


Figure 4 - Pump and ram illustration to bleed air

Replacement Parts for Model B65114

Item #	Part #	Description	Qty.
1	B65161	Extension Tube (19-1/2")	1
2	B65160	Extension Tube (16-1/2")	1
3	B65159	Extension Tube (8-1/2")	1
4	B65158	Extension Tube (6-1/8")	1
5	B65157	Extension Tube (3")	1
6	B65177	Male connector	1
7	B65153	Wedge Head (offset)	1
8	B65151	Serrated Saddle	1
9	B65156	Flat Base	1
10	B65154	Plunger Toe (offset)	1
11	B65155	Ram Toe (offset)	1
12	B65178	Rubber Head	1
13	B65152	Combination Head 90°	1
14	B65123	1/2 Ton Spreader	1
15	434-6-3313-101	Dust Cover - Hose	1
16	434-6-3312-109	Dust Cover - Ram	1
17	B69478	Hose Coupler, Male	1
18	B69477	Ram Coupler, Female	1
19	B65187	4 Ton Hydraulic Ram	1
20	426-3-1301-203	Release Valve Knob	1
21	431-6-1702-404	Pump Handle	1
22	B65291	Hose w/ Coupler	1
23	324-4-1900-208	Oil Filler Screw	1
24	B65186	4 Ton Hydraulic Pump	1
25	B65067	Plastic Case	1
-	B65114-L0	Label (not shown)	1
-	B65114-M0	Manual	1

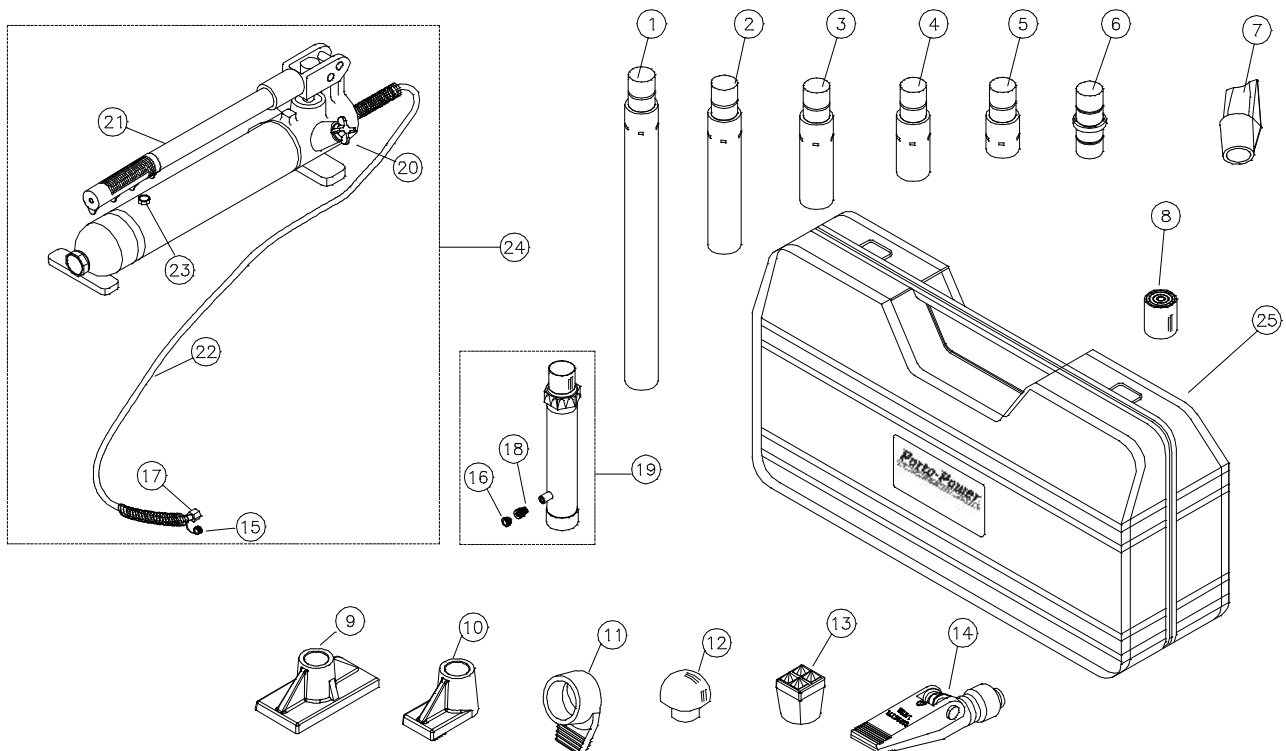


Figure 5 - Replacement Parts Illustration for B65114

Replacement Parts for Model B65115

Item#	Part#	Description	Qty.
1	B65162	Extension Tube (27")	1
2	B65163	Extension Tube (18")	1
3	B65164	Extension Tube (10")	1
4	B65165	Extension Tube (4")	1
5	B65179	Male Connector	1
6	B65166	Wedge Head (offset)	1
7	B65167	Serrated Saddle	1
8	B65168	Flat Base	1
9	B65172	Plunger Toe (offset)	1
10	B65169	Ram Toe (offset)	1
11	B65180	Rubber Head	1
12	B65173	Combination Head 90°	1
13	B65123	1/2 Ton Spreader	1
14	434-6-3313-101	Dust Cover - Hose	1
15	434-6-3312-109	Dust Cover - Ram	1
16	B69478	Hose Coupler, Male	1
17	B69477	Ram Coupler, Female	1
18	B65189	10 Ton Hyd. Ram	1
19	426-3-1301-203	Release Valve Knob	1
20	430-6-1702-407	Pump Handle	1
21	B65291	Hose w/ Coupler	1
22	324-4-1900-208	Oil Filler Screw	1
23	B65188	10 Ton Hyd. Pump	1
24	B65068	Mobile Case	1
-	B65115-L0	Label (not shown)	1
-	B65114-M0	Manual	1

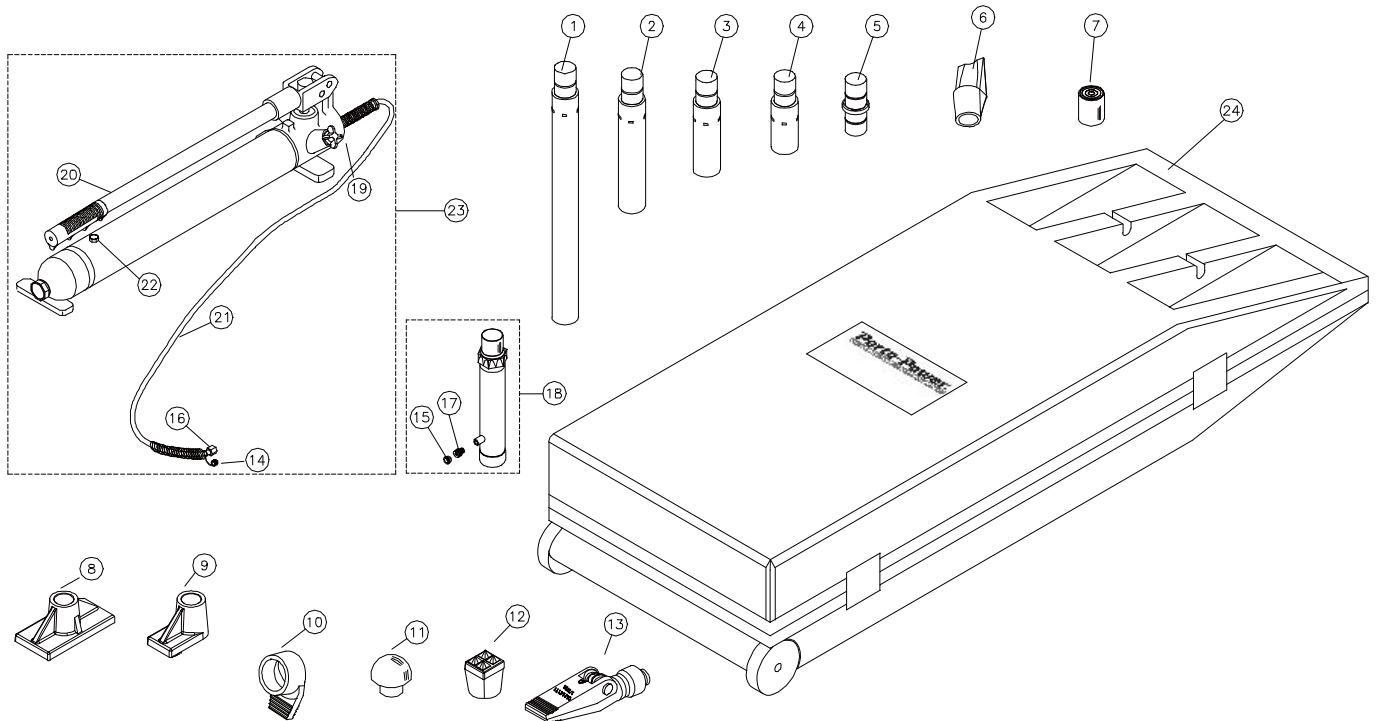


Figure 6 - Replacement Parts Illustration for Model B65115

Load - Pressure Correlation For Model B65114 & B65115

Always monitor the force applied to workpiece by using a load cell and indicator or you may monitor pressure developed in the ram by using an inline pressure gauge, then calculate the applied force using the formula:

$$F = P \times A$$

where F = Force/ Load (lbs);
 P = Hydraulic working pressure (psi) and;
 A = Ram effective area (in²)

For model B65114, A = 0.998 in² ;
 For model B65115, A = 2.411 in²

Example1

Model B65114 lifting 5,000 lbs will require what pressure?

Pressure = 5,000 lbs ÷ 0.998 in² = 5,010 psi

Example2

Model B65115 operating at 6,000 psi will generate what force?

Force = 6,000 psi x 2.411 in² = 14,466 lbs

Load (lbs)	Pressure of 4 Ton Ram, where A = 0.998 in ² (psi)	Pressure of 10 Ton Ram, where A = 2.411 in ² (psi)
1,000	1002	415
2,000	2004	830
3,000	3006	1244
4,000	4008	1659
5,000	5010	2074
6,000	6012	2489
7,000	7014	2903
8,000	8016	3318
9,000	\	3733
10,000		4148
11,000		4562
12,000		4977
13,000		5392
14,000		5807
15,000		6221
16,000		6636
17,000		7051
18,000		7466
19,000		7881
20,000		8295

