

ORIGINAL INSTRUCTIONS

POP-A-PLUG® SYSTEM HYDRAULIC RAM PACKAGE OPERATING INSTRUCTIONS

EST Group Hydraulic Ram Package consist of an Air Activated Hydraulic Pump, a High Pressure Hydraulic Hose with quick connects, and a Hydraulic Ram. EST Group Ram Kits are used for installation and removal of Pop-A-Plug Heat Exchanger Tube Plugs manufactured by Curtiss-Wright EST Group.

Operating Instructions for:

Part Number	Description	Components	Description
PAP-6600-SIL	Small Ram Package	PAP-6605	5 Ton Ram Assembly
		PAP-1010	Hose Assembly
		PAP-1000	Pump Assembly
PAP-123-RK	Medium Ram Package	PAP-123-RA	12 Ton Ram Assembly
		PAP-1010	Hose Assembly
		PAP-1000	Pump Assembly
PAP-1750	Large Ram Package	PAP-1755	17.5 Ton Ram Assembly
		PAP-1010	Hose Assembly
		PAP-1000	Pump Assembly

Workstation Sound Pressure Level: 84 dB(A) at Rated Capacity

Operation Air Pressure: 90 – 120 PSIG (6.2 – 8.2 BARG)

MAX Pump Pressure: 7500 PSIG (517 BARG)

Authorized European Distributor: EST Group B.V. Hoorn 312a, 2404 HL Alphen aan den Rijn, The Netherlands.

Year of Construction: Updated at date of mfg.

Questions? Contact EST Group Customer Service at any of the following locations.

**CURTISS -
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SAFETY SYMBOLS AND DEFINITIONS

Safety symbols are used to identify any action or lack of actions that can cause personal injury.

**DANGER**

Danger is used only when actions or lack of actions will cause serious human injury or death

**WARNING**

Warning is used to describe and action or lack of action where serious injury can occur



READ INSTRUCTIONS - Read all instruction prior to operating equipment



EYE PROTECTION - Wear proper eye protection to protect against ejected parts or projectiles



EAR PROTECTION - Wear proper ear protection to protect against hearing loss or damage



PUMP - Activating the pump with the pedal end marked with this pictogram, the flow of fluid is directed out of the reservoir.



RELEASE - Activating the pump with the pedal end marked with this pictogram, the flow of fluid is directed back to the reservoir.

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- The user must read and thoroughly understand these installation instructions before any work begins. The user should read and thoroughly understand the installation procedures as supplied with every kit of Pop-A-Plug's. It is advisable to watch the P2 Installation or CPI/PERMA [Training Video](#) to learn how to properly handle the equipment. It is the responsibility of the user to establish appropriate safety, health and training measures for their personnel using, servicing or working in an area where this equipment is being used.

- The user must be a qualified operator familiar with correct operation, maintenance, and use of hydraulic tools. Lack of knowledge in any of these areas can lead to personal injury.



- Wear proper eye protection to protect against ejected parts or other projectiles. A face shield is acceptable.
- Wear proper ear protection to protect against hearing loss or damage.
- Possible Kickback and Parts Ejection Hazard. Keep body, head, face and all extremities clear from rear of hydraulic ram during operation.
- Tools and components listed in this instruction are designed for the sole

purpose of installing and removing P2 and CPI/PERMA plug heat exchanger tube plugs. The equipment is not designed or intended to be used for other tasks.

- Never leave the equipment unattended when connected to pneumatic pressure supply.
- EST Group Ram Kits are not generally suited for coming in contact with electrical power sources.
- EST Group Ram Kits shall not be used in an explosive atmosphere.
- Unexpected tool movement or breakage of inserted tool could cause injury to personnel.
- Unsuitable postures may not allow for proper counteracting of normal or unexpected movement of the tool during operation.
- Inspect equipment before each use to prevent unsafe conditions from developing. Do not use equipment if it is damaged, altered or in poor condition.
- Other than refilling / changing the hydraulic fluid, there are no serviceable parts in these assemblies. If any equipment is damaged or faulty, contact EST Group for service or replacement.
- These instructions are intended for the end-user or operator of this equipment. For additional information or parts lists contact an EST Group facility listed below.

1. INSPECTION



Prior to use, all equipment must be inspected to ensure safe and reliable operation. Only qualified operators should assemble, operate, and maintain this equipment.

General: Ensure the area around all port connections is clean and free of dirt or debris.

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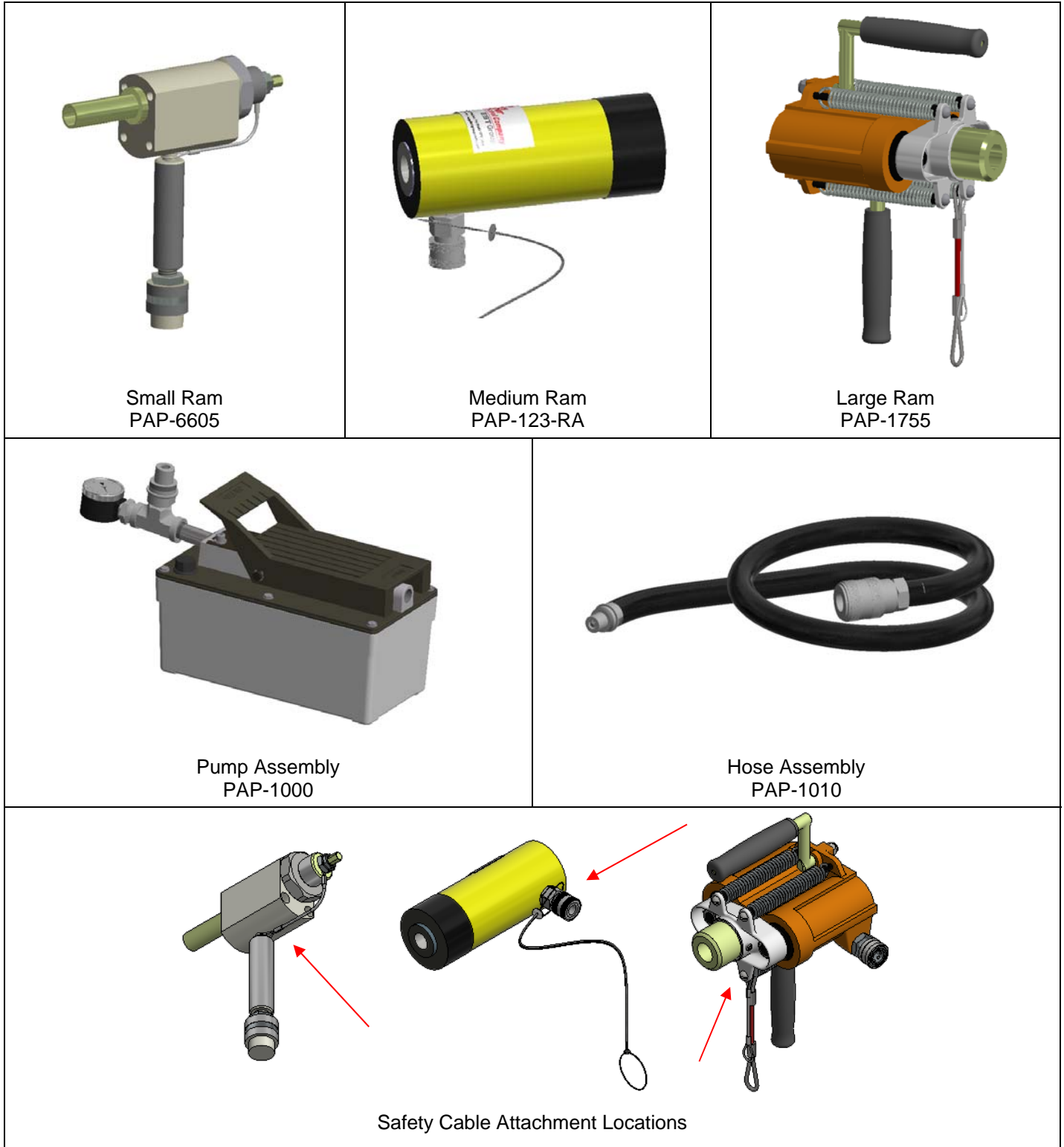
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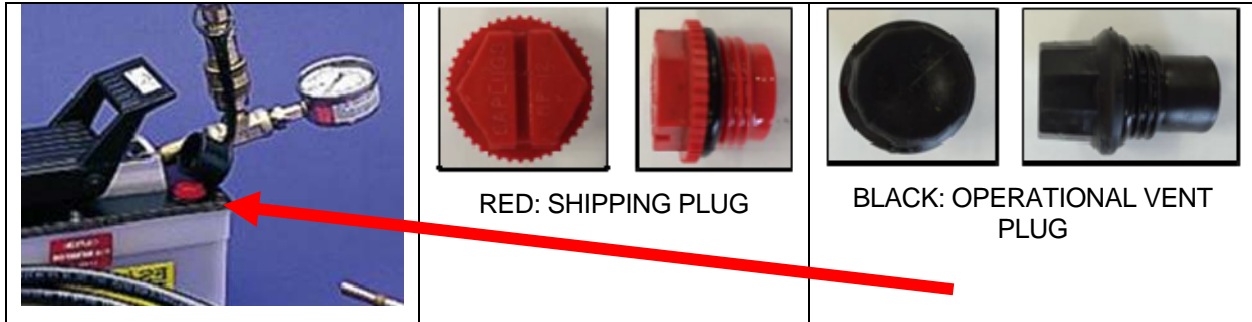
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1.1. Pump

Ensure the red shipping cap is removed from the pump reservoir and has been replaced with the black vent plug.



Ensure there is sufficient hydraulic fluid in the reservoir. Add additional fluid as required. Check oil level prior to first use of the day and at least after every 10 hours of use.

Follow the safety and handling instructions with regards to the hydraulic oil in accordance with the provided SDS.

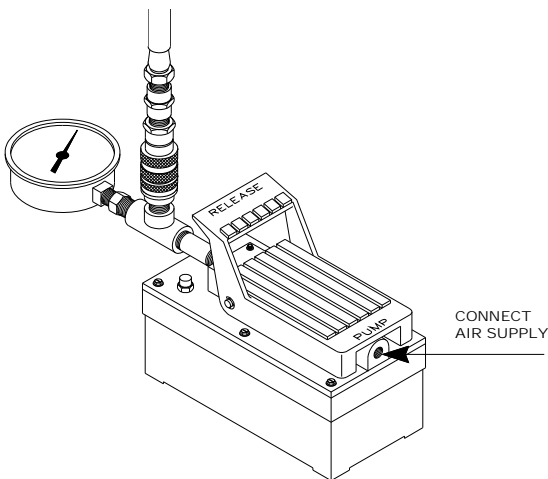
1.2. Hose

Ensure the hose is free of cracks, kinks, or any visible damage. Inspect all threads and fittings for signs of wear or damage.

1.3. Ram

Visually inspect for cylinder damage, leaking fluid, and excessive wear or damage. Ensure the safety cables are securely attached to the ram.

2. ASSEMBLY



Remove all thread protective caps. Connect the hose assembly to the pump and ram. Ensure mating quick-connects are fully engaged and hand tight. All connections are to be tightened securely and leak-free but do not overtighten.



WARNING
ENSURE HYDRAULIC HOSE QUICK CONNECTS ARE FULLY ENGAGED AND TIGHTENED. FAILURE TO CORRECTLY SEAT AND TIGHTEN HYDRAULIC FITTINGS WILL CAUSE RAM PISTON TO LOCK IN EXTENDED POSITION AFTER ACTIVATION.

Connect the air supply to the 1/4" F-NPT port at the rear of the pump. The air supply should be at least 20 CFM (.57 m³/min) and 100 PSIG (7 BARG) to obtain the rated hydraulic pressure. Air pressure must be regulated to no more than 120 PSIG (8.3 BARG) maximum.

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3. TESTING

3.1. Test Ram/Pump set-up

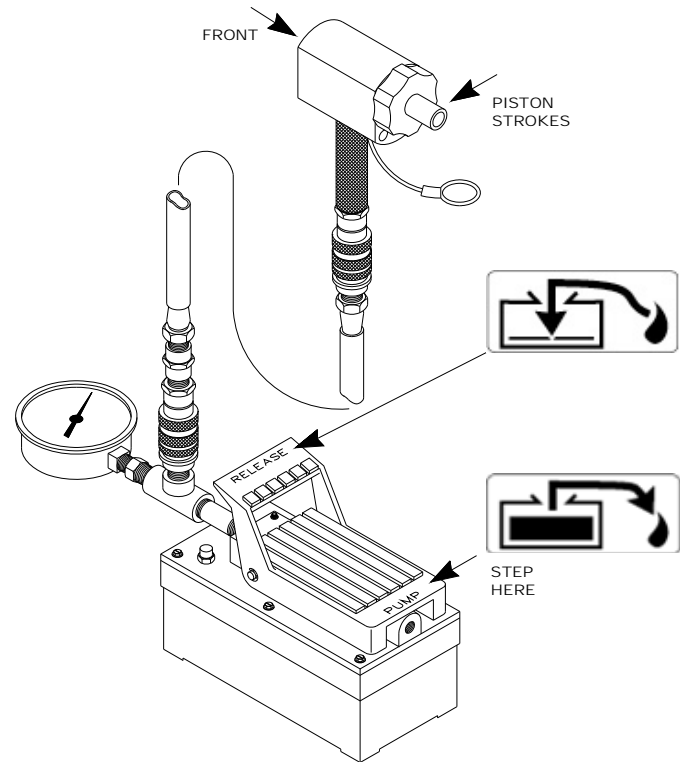
To verify Ram/Pump set-up, step on the end of the pump pedal marked "PUMP"  while watching the Hydraulic Ram. Within a few seconds, the Ram should begin to stroke. Note that the piston strokes out of the back of the hydraulic Ram. If the Ram does not stroke, check all connections, the oil level and repeat this step.

Proper operation will be indicated by cylinder of the ram extending 1" – 3" (25.4 to 76.2 mm) (model dependent) followed by the pressurization indicated on the gauge increasing to 7500 PSIG (517 BARG).

3.2. Release Pump pressure

While holding the Ram handle step on end of the Pump Pedal marked "RELEASE".  This will allow the piston of the Ram to retract.

To remove the pneumatic power to the equipment, disconnect the pneumatic quick connect.



4. OPERATION

Assemble the ram head with the pullrod assembly in accordance with **DC1220** or **DC4000**: Pop-A-Plug installation instructions. Follow Pop-A-Plug installation instructions.



- **DURING RAM OPERATION, THE SAFETY CABLE MUST ALWAYS BE ATTACHED TO THE PULLROD.**
- **NEVER LEAVE THE EQUIPMENT UNATTENDED WHILE CONNECTED TO A PNEUMATIC PRESSURE SUPPLY.**
- **NEVER DISCONNECT THE HOSE FROM THE RAM OR PUMP WHEN THE EQUIPMENT IS PRESSURIZED.**

5. CLEANING AND MAINTENANCE

The Ram system should be cleaned of all dirt and oils after every use. Keeping the Ram Kit components wiped free of debris before and after use will lessen the chances of foreign materials entering the hydraulic or pneumatic system and extend the life of the equipment. Change hydraulic oil every 300 hours of use approximately; use Power-Team AW Hydraulic Oil ISO-46.

There are no serviceable parts on the Ram Kit. Contact EST Group for any repair or replacements of components.

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