

SAFETY

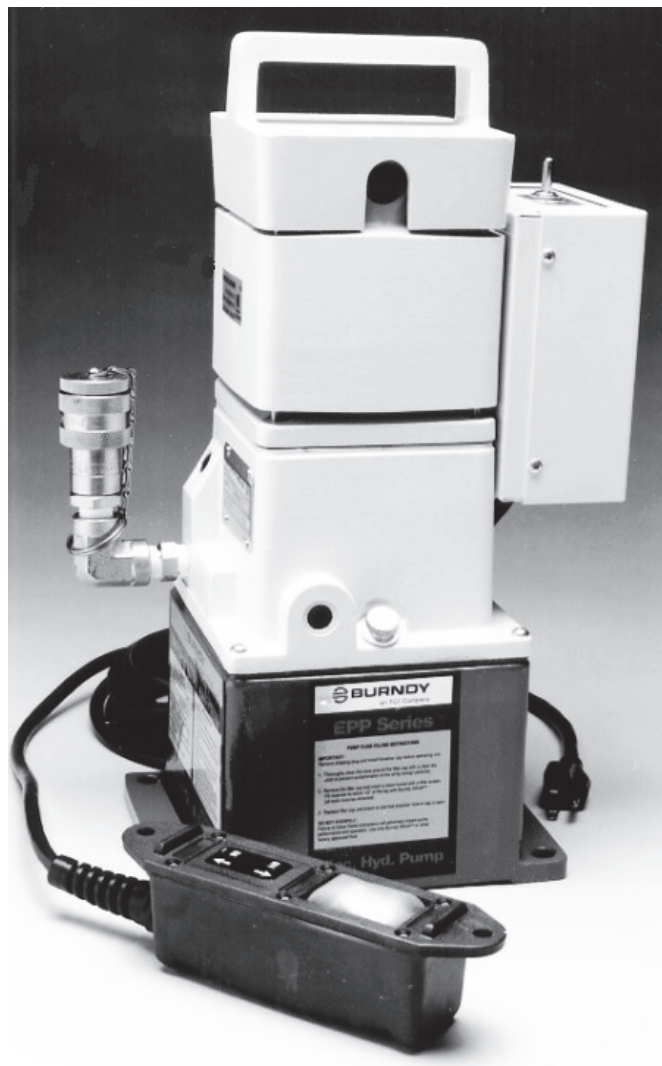
OPERATING &

MAINTENANCE

INSTRUCTIONS

EPP SERIES HYDRAULIC PUMP

EPP, EPP-EC



BURNDY

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For information only, contact:

BURNDY® TOOL SERVICE CENTER
 150 Burndy Road
 Littleton, NH 03561
 or call, toll free 1-800-426-8720

Additional or replacement manuals may be obtained free of charge from the BURNDY® Tool Service Center.

SAFETY INFORMATION



The above symbols are used to call your attention to instructions concerning your personal safety. Look for these symbols; read and follow the instructions that accompany them. Failure to follow the safety information provided can lead to serious personal injury or death.

SAFETY FIRST

WARNING



The information provided in this manual is essential for the safe handling, operation, and maintenance of BURNDY® hydraulic pumps. The operator must read, understand, and follow these instructions and ALL safety warnings and labels before operating these pumps.




- Only use these pumps in accordance with the manufacturer's specifications. Other use of these pumps may lead to serious personal injury or death.

Each employer shall instruct each employee and user in the recognition and avoidance of unsafe working conditions and the laws and regulations applicable to his/her work environment to control or eliminate any hazards or other exposure to illness or injury. Reference: OSHA 29CFR 1910 etseq. (1994).

If a conflict arises between the material contained in this manual, rules of the user, his/her employer or company, and legal or industry guidelines the more stringent rules take precedence and must be followed.

Observe and follow all other safety rules and regulations for the job.

Safety is everyone's responsibility.

<u>Symbol</u>	<u>Meaning</u>
	Hazard has a high level of risk.
	Hazard has a medium level of risk
	Hazard has a low level of risk

OPERATING SAFETY PRECAUTIONS

WARNING



Hydraulic pumps are NOT insulated for use on or near energized conductors. Use of these pumps near energized conductors may lead to electrical shock, causing severe injury or death. Do NOT use these pumps near energized conductors without adequately insulating operator and surroundings.



Operator must clear all bystanders from the work area when handling, starting, and operating a hydraulic pump to avoid potential injury to bystanders.



Hydraulic fluid under pressure. Always depressurize the hydraulic system before connecting or disconnecting a hose or tool to avoid injury from escaping hydraulic fluid. If injury results from escaping hydraulic fluid, seek immediate medical attention to avoid serious bodily injury.



Hydraulic fluid under pressure. Do NOT use any part of your body to locate a hydraulic leak. Escaping fluid under pressure can cause severe injury or death. If injury results from escaping hydraulic fluid, seek immediate medical attention to avoid serious bodily injury.



Hot hydraulic fluid. Exposure to hot hydraulic fluid can cause severe burns. Do NOT connect or disconnect a hose or tool while the hydraulic pump is running and/or if hydraulic fluid is hot.



Use all appropriate personal safety equipment when handling, operating, and servicing this hydraulic pump such as: safety shoes, hard hat, eye and ear protection, and work gloves.

Refer to the hydraulic hose operator's manual and SAE Standard J1273 (see Appendix A) recommended practice for "Selection, Installation, and Maintenance of Hose and Hose Assemblies" for selection, inspection, and maintenance procedures for hydraulic hose before use with these tools. Worn, damaged, or improper hose selection may lead to failure, causing serious personal injury or death.

To help ensure safe operation of this tool, keep all safety labels clean and legible. Replace labels when necessary with new labels.

DESCRIPTION

The lightweight and durable EPP and EPP-EC series electric/hydraulic pumps are for use with all BURNDY® HYPRESS™ remote heads and cutters requiring 6000, 8800, or 10 000 lb/in² operating pressure. These pumps are equipped with a built-in factory set pressure relief valve. An audible “pop,” recycling of the pump and relaxing of the hose all signal completion of the crimp cycle. EPP pumps are supplied with a durable hand-held electric pendent switch for remote operation of the unit, and also have a manual selection switch for operation of the unit at the pump.

FEATURES AND BENEFITS

Features	Benefits
Lightweight & compact size.	Easy to lift, carry, and transport unit around the job site with lightweight design and integral carry handle.
Factory set relief valve.	High quality crimps are achieved with built-in, factory set pressure relief valve & audible signal for crimp completion.
115V-AC electric motor.	Provides long working life.
Remote pendent switch (EPP Series).	Unit may be operated with remote pendent switch or with toggle switch mounted on pump unit (EPP Series).
Remote pendent switch with full automatic operation (EPP-EC Series).	Unit provided with automatic, full cycle operation assuring users that every crimp obtained the full and proper pressure with no further input or action required by the installer (EPP-EC Series).
5 year warranty.	Backed by one of the best tool product warranties in the electrical industry.

SPECIFICATIONS - TOOLS FOR USE WITH EPP & EPP..EC PUMPS

The EPP and EPP-EC Series Electric/Hydraulic pumps are for use with all BURNDY® HYPRESS™ remote crimp heads and cutters requiring operating pressures of 6000, 8800 or 10,000 lb/in².

<u>PUMP</u>	<u>PRESSURE (lb/in²)</u>	<u>HYPRESS™ TOOLS & CUTTERS</u>
EPP10, EPP10-2 EPP10EC, EPP10EC-2 EPP10EC-LG EPP10EC-LG2	10 000 (68.9 MPa)	Y34BH, Y35BH, Y35BH-4, Y39BH, Y45, Y45-1, Y46, Y46C, Y60BH, Y60BHU, YCC-13, YCC-11, Y750BH, Y750BH-2, Y644MBH, HCC10, RHCC129, RHCC245CUAL
EPP8, EPP8-2 EPP8EC, EPP8EC-2, EPP8EC-LG EPP8EC-LG2	8800 (60.7 MPa)	Y48BH, Y486RBH
EPP6, EPP6-2 EPP6EC, EPP6EC-2 EPP6EC-LG EPP6EC-LG2	6000 (41.4 MPa)	Y35L, Y29B, Y45L, YCC-1, YCC-8, HCC6

SPECIFICATIONS - HYDRAULIC PUMP

WARNING



Hydraulic fluid under pressure. Failure to follow these warnings could over-pressurize the system, resulting in serious bodily injury to the operator.

- Pump pressure and flow must meet specified system operating pressure and flow rate.
- Ensure hoses are properly connected.
- Any hydraulically operated tool used with this pump must meet the requirements listed below. Use of a hydraulic power source not matched with the pressure and flow rate of the attached equipment may result in system failure, possibly causing severe injury or death.

SPECIFICATIONS - EPP PUMPS

Operating Pressure:

Catalog Number	Operating Pressure (lb/in ²)
EPP6, EPP6-2	6000 +200/-300 (41.4 +1.4/-21 MPa)
EPP8, EPP8-2	8800 +200/-300 (60.7 +1.4/-21 MPa)
EPP10, EPP10-2	10 000 ±500 (69.0 ±3.5 MPa)

Minimum Flow Rate @ Operating Pressure: 18 in³/min.
(0.3 cm³/min)

Dimensions: 10.60 in (269 mm) wide x 7.0 in (178 mm) deep x 16.50 in (419 mm) high

Weight with fluid: 30 lb (13.61 kg)

Reservoir Capacity: Maximum - 2 quarts (1.89 l)

Motor Specifications:

Catalog Number	Motor Specifications
EPP6, EPP8, EPP10	1/2 hp @ 3450 rpm 373 W @ 361 rad/sec 115 Vac, 12 Amps Maximum, 50/60 Hz
EPP6-2, EPP8-2, EPP10-2	1/2 hp @ 3450 rpm 373 W @ 361 rad/sec 220 Vac, 6 Amps Maximum, 50/60 Hz

Pump Type: 2 stage - low pressure roller vane and high pressure axial piston
 Output Fitting: 3/8 in female coupler for high pressure hydraulic hose, for single acting ram
 Control: Single switch remote pendant with 25 ft (7.62 m) cord
 Power Switch: SPDT, on/off/remote positions
 Power Cord: 8 ft (2.44 m) long, grounded
 Pressure Indicator: Audible blow-off valve

SPECIFICATIONS - EPP-EC PUMPS

Operating Pressure:

Catalog Number	Operating Pressure (lb/in ²)
EPP6EC, EPP6EC-2	6000 +200/-300 (41.4 +1.4/-21 MPa)
EPP8EC, EPP8EC-2	8800 +200/-300 (60.7 +1.4/-21 MPa)
EPP10EC, EPP10EC-2	10 000 ±500 (69.0 ±3.5 MPa)

Minimum Flow Rate @ Operating Pressure: 18 in³/min.
(0.3 cm³/min)

Dimensions: 12.5 in (318 mm) wide x 7.8 in (198 mm) deep x 16.2 in (411 mm) high

Weight with fluid: 41 lb (18.6 kg)

Reservoir Capacity: Maximum - 2 quarts (1.89 l)

Motor Specifications:

Catalog Number	Motor Specifications
EPP6EC, EPP6-LG	1/2 hp @ 3450 rpm 373 W @ 361 rad/sec
EPP8EC, EPP8-LG	115 Vac, 12 Amps
EPP10EC, EPP10EC-LG	Maximum, 50/60 Hz
EPP6EC-2, EPP6EC-LG2	1/2 hp @ 3450 rpm 373 W @ 361 rad/sec
EPP8EC-2, EPP8EC-LG2	220 Vac, 6 Amps
EPP10EC-1, EPP10EC-LG2	Maximum, 50/60 Hz

Pump Type: 2 stage - low pressure roller vane and high pressure axial piston

Output Fitting: 3/8 in female coupler for high pressure

Control: Dual rocker switch pendant remote with 25 ft (7.62 m) cord. Rocker #1: set/run. Rocker #2: return

Power Switch: SPST, on/off positions

Power Cord: 8 ft (2.44 m) long, grounded

Pressure Indicator: Pressure gauge with valve (except Cat. No. EPP6EC-LG, EPP8EC-LG, EPP10EC-LG, EPP6EC-LG2, EPP8EC-LG2, EPP10EC-LG2)

RECOMMENDED HYDRAULIC FLUID

WARNING

Use of non-recommended hydraulic fluids may lead to unsatisfactory performance or pump damage which could lead to personal injury.

The use of BURNDY® ALFLUID™ is recommended for year-round use of this hydraulic pump unit. This unit is shipped with ALFLUID™ from the factory. Use of other hydraulic fluids may result in damage and may void the warranty.

HOSES AND FITTINGS

WARNING

Hose working pressure rating must be properly selected to match the pump's rated pressure and flow. Failure to make proper hose selections may lead to serious personal injury or death.

Refer to the hydraulic hose operator's manual and SAE Standard J1273 (see Appendix A) recommended practice for "Selection, Installation, and Maintenance of Hose and Hose Assemblies" for selection, inspection, and maintenance procedures for hydraulic hose before use with these tools. Worn, damaged, or improper hose selection may lead to failure, causing serious personal injury or death.

HOSE RATING SELECTION

EPP10- Series

Supply hoses and fittings for all 10 000 lb/in² (68.9 MPa) pumps must have a minimum working pressure rating of 10 500 lb/in² (72.4 MPa).

EPP8- Series

Supply hoses and fittings for all 8800 lb/in² (60.7 MPa) pumps must have a minimum working pressure rating of 9000 lb/in² (62.1 MPa).

EPP6- Series

Supply hoses and fittings for all 6000 lb/in² (41.4 MPa) pumps must have a minimum working pressure rating of 6200 lb/in² (42.8 MPa).

Hoses and hose fittings used with this tool must comply with SAE Standard J1273 (see Appendix A) recommended practice for "Selection, Installation, and Maintenance of Hose and Hose Assemblies."

HOSE CONNECTIONS

CONNECTING HOSES

WARNING

Always stop the hydraulic pump flow before connecting a hose or tool. Failure to comply could lead to serious personal injury.

- 1) Stop the hydraulic pump.
- 2) Depressurize the system.
- 3) Allow system and hydraulic fluid to cool.
- 4) Remove the protective dust cap from the pump and supply hose hydraulic fittings.
- 5) Securely connect the supply hose to the pump. Make sure fittings are secure.


DISCONNECTING HOSES

WARNING


Always stop the hydraulic pump flow before disconnecting a hose or tool. Failure to comply could lead to serious personal injury.

- 1) Stop the hydraulic pump.
- 2) Depressurize the system.
- 3) Allow the system and the hydraulic fluid to cool.
- 4) Disconnect the supply hose from the pump.
- 5) Reinstall the protective dust caps onto the pump and hose hydraulic fittings.


PRE-OPERATION INSTRUCTIONS



WARNING



Read and follow all PRE-OPERATION instructions. Failure to read and follow the PRE-OPERATION instructions may lead to serious personal injury or death.



Do NOT use a hydraulic tool that is pressure rated below the maximum output pressure of your hydraulic pump. A lower rated tool may burst and result in serious personal injury or death.

- 1) Place the pump on a flat, level surface. Ensure the pump is firmly supported before proceeding.
- 2) Check the hydraulic fluid level in the reservoir (see the MAINTENANCE section in this manual for instructions on checking and correcting fluid level).

SHIPPING PLUG/BREATH ER CAP

- 2a) The hydraulic pump is shipped with the shipping plug installed on the hydraulic fluid filler port. Remove the shipping plug (or breather cap) from the filler port to check fluid level.
- 2b) When preparing the pump for operation, install the breather cap on the hydraulic fluid filler port. (With the shipping plug in place during operation, a vacuum may be created in the reservoir, preventing hydraulic fluid from being delivered to the tool.)


NOTE: If separated from the breather cap, do NOT discard the shipping plug. Always install the shipping plug when preparing the pump for shipping or transporting. Reinstall the breather cap for normal pump operation.

- 3) Attach the properly sized and rated hydraulic hose to the pump (refer to HOSES AND FITTINGS and HOSE CONNECTIONS).
- 4) Make sure the hose length is adequate for the job. Do NOT pull the pump unit by the hydraulic hose or electrical cord. Damaged hydraulic hose and/or electrical cord may lead to serious personal injury or death.


- 5) The tool to be used must be rated equal to or higher than the maximum pump output pressure rating to ensure safe operation. When the maximum pump output pressure is above the maximum tool rating, the tool can burst and may cause severe injury or death. Compare the tool operating pressure rating with the maximum pump output rating to ensure they are capable of being operated together safely.
- 6) Prepare the tool for the operation to be performed (e.g. select dies and insert for crimping). Follow the tool's pre-operation instructions for details on preparing the tool for use.
- 7) Attach the tool to the free end of the hydraulic hose. Refer to the tool's operating manual for details in connecting to the hydraulic power source.
- 8) Verify that the remote pendant control cord is free of damage or any obstructions.

Your hydraulic system is now ready for operation.


OPERATION




WARNING




Read and follow all PRE-OPERATION instructions. Failure to read and follow the PRE-OPERATION instructions can lead to severe personal injury or death.



Hydraulic pumps are NOT insulated for use on or near energized conductors. Use of these pumps near energized conductors may lead to electrical shock, causing severe injury or death. Do NOT use these pumps near energized conductors without adequately insulating operator and surroundings.



Do NOT use an ungrounded extension cord with this pump. Use of ungrounded extension cords can lead to electrical shock, severe burns, or death. If an extension cord is needed, use only grounded cords with sufficient conductor gauge to safely supply the pump's requirements over the full length of the cord.



Operator must clear all bystanders from the work area when handling, starting, and operating a hydraulic pump to avoid potential injury to bystanders.



Hydraulic fluid under pressure. Always depressurize the hydraulic system before connecting or disconnecting a hose or tool to avoid injury from escaping hydraulic fluid. If injury results from escaping hydraulic fluid, seek immediate medical attention to avoid serious bodily injury.



Hydraulic fluid under pressure. Do NOT use any part of your body to locate a hydraulic leak. Escaping fluid under pressure can cause severe injury or death. If injury results from escaping hydraulic fluid, seek immediate medical attention to avoid serious bodily injury.

- 1) Complete all PRE-OPERATION instructions. Failure to read and follow the PRE-OPERATION instructions can lead to personal injury.
- 2) If the pump you are using is equipped with a pressure gauge and its use is desired, the metering valve must be fully opened by turning counter-clockwise. If the gauge is not needed, fully close the valve by turning clockwise. For efficient operation, do not leave the valve partially open or closed.
- 3) Turn the power switch, located on the top side of the pump unit, to the OFF position. Plug the power cord into a properly grounded outlet of the correct voltage for the pump (either 115 or 220 Vac) and frequency (either 50 or 60 Hz). (Refer to the motor nameplate on the pump unit to verify the correct operating voltage.)
- 4) If the pump is being used for the first time or if the pump has not been used for some time, it may be necessary to prime the unit. To prime the pump, back the priming screw out two complete turns. The priming screw is located on the lower portion of the pump, just above the reservoir. Jog the pump three times using the remote pendant or the power switch (see the instructions below for activating your specific pump and configuration). Re-tighten the priming screw to 15 to 25 lb-in (1.7 to 2.8 Nm) torque.

5) EPP PUMPS

Operation WITHOUT Remote Pendant

- 5a) Position the tool for operation according to the tool's operating instructions.

- 5b) Turn the pump on by flipping the power switch from the OFF position to the RUN position.

- 5c) The tool's ram should advance smoothly, quickly at first, and then slowly near the end of the stroke. For crimp heads, an audible "pop" will be heard when the operating pressure has been reached. At this time, turn power switch to OFF position and ram will retract automatically. For cutters, turn the pump off as soon as the conductor has been cut or after you hear the audible "pop".

- 5d) Reposition the tool for the next cycle or unplug the power cord.

Operation WITH Remote Pendant

- 5a) Position the tool for operation according to the tool's operating instructions.

- 5b) Flip the power switch from the OFF position to the REMOTE position.

- 5c) Hold the remote pendant with the rocker switch positioned on top and facing you. Press and hold the switch to start the crimp/cut cycle.

- 5d) The tool's ram should advance smoothly, quickly at first, and then slowly near the end of the stroke. For crimp heads, an audible "pop" will be heard when the operating pressure has been reached. At this time, release rocker switch and the ram will retract automatically. For cutters, release the switch as soon as the conductor has been cut or after you hear the audible "pop".

- 5e) Reposition the tool for the next cycle or turn power switch to OFF position and unplug the power cord.

6) EPP-EC PUMPS

NOTE: Hydraulic pressure can be visually monitored on pumps equipped with a pressure gage.

- 6a) The hand-held remote pendant controls four functions: Jog, Advance, Hold and Reset.

- 6b) Turn the power toggle switch, on the top of the electrical control box on the pump unit, from the OFF position to the ON position.

- 6c) Position the tool for operation according to the tool's operating instructions.

- 6d) Hold the remote pendant with the rocker switches positioned on top and facing you. Press the SET rocker switch to initialize the electrical circuitry.
- 6e) Next, press and hold the rocker switch, labeled RUN, to start the pump cycle. Releasing the RUN switch will halt the ram advance, and the pump will hold the current pressure.
- 6f) Continue pressing the RUN rocker switch to complete the tool's cycle. For crimp tools, the pump will stop automatically when the factory preset operating pressure is reached. For cutter heads, the conductor will most often be cut before the operating pressure is reached. Once the cut is complete, the ram will continue to advance and will stop and retract once pressure is attained.
- 6g) Press the SET rocker switch to prepare for the next tool cycle.
- 6h) The tool cycle may be aborted at any time by simply pressing the rocker switch labeled RETURN. The ram will immediately retract.
- 6i) Reposition the tool for the next cycle or turn the power switch to the OFF position and unplug the power cord.

MAINTENANCE

WARNING

Unplug the pump's power cord from the electrical outlet prior to performing any maintenance tasks. Failure to unplug the pump during maintenance or service can lead to severe burns, electrocution or death.

CAUTION

Failure to perform regular maintenance tasks could lead to a malfunction and result in bodily injury and/or property damage.

The service life of a tool can be greatly improved with proper care and maintenance. To extend the life of your BURNDY® EPP/EPP-EC Electric Hydraulic Pump, follow the recommended maintenance tasks outlined below.

PERIODIC CLEANING

IMPORTANT: The largest single cause of failure in hydraulic pumps is dirt. Keep the pump and attached equipment clean to prevent foreign matter from entering the system.

- 1) Use only clean BURNDY® ALFLUID™ and change fluid every 300 hours of use or when the hydraulic fluid turns dark or becomes milky colored, whichever occurs first.
- 2) Seal the hydraulic fluid outlet and all unused couplers with dust protector caps when the pump is not in use. These caps are effective in keeping contaminants from entering the hydraulic system.

GEAR BOX LUBRICATION

To check the level of lubricant in the gear box:

- 1) Scribe a mark along the motor shell cover, the motor shell and the pump body. This mark will be used for alignment during reassembly.
- 2) Remove the four machine screws holding the motor assembly to the pump housing. Lift the motor assembly away from the pump to uncover the gear box.
- 3) If the largest gear is not completely covered by oil, add SAE 90 gear lubricant.
- 4) Reassemble the motor assembly to the pump housing. Align the scribe marks made in Step 1, and finish tightening the four screws.

HYDRAULIC FLUID LEVEL

- 1) Check the oil level before each first operation of the pump and after every 10 hours of use. The correct level of oil is 1/2 in (12 mm) from the top of the filler port hole (see port for breather cap. If a tool is connected to the pump, the ram must be fully retracted when checking the fluid level.
- 2) Drain, flush and fill the reservoir with BURNDY® ALFLUID™ after every 300 hours of use or when the fluid turns dark or becomes milky in color, whichever occurs first (see DRAINING AND FLUSHING THE RESERVOIR). The frequency of hydraulic fluid changes will depend upon working conditions and the overall amount of use and maintenance given to the pump.

ADDING HYDRAULIC FLUID TO THE RESERVOIR

- 1) If a tool is connected to the pump, retract the ram in the tool head.
- 2) Unplug the pump's power cord from the electrical outlet.
- 3) Clean the area around the breather cap and filler port to ensure contaminants do not enter the reservoir. Remove the breather cap and insert a clean funnel with a filter.
- 4) Fill with BURNDY® ALFLUID™ to 1/2 in (12 mm) from the top of the filler port hole.
- 5) Replace the breather cap.

DRAINING AND FLUSHING THE RESERVOIR

The reservoir should be drained and flushed with a nonflammable flushing fluid after every 300 hours of use.

IMPORTANT: Clean the outside of the pump, prior to opening, to keep dirt from entering the reservoir. Disconnect any attached hydraulic hose from the pump.

- 1) Remove the four screws that fasten the pump assembly to the reservoir. Carefully remove the pump assembly from the reservoir without damaging the gasket, filter or safety valves.
- 2) Pour out the old oil into a waste oil container. Clean the inside of the reservoir with clean, dry rags. Fill the reservoir with a nonflammable flushing oil. Rinse the filter clean with the flushing oil.
- 3) Re-place the pump assembly on to the reservoir, and secure it with two of the four screws assembled in opposite corners of the pump housing.
- 4) Plug the pump's power cord into an appropriate electric outlet.

CAUTION

Do NOT build to full pressure in Step 5. The pump unit is not fully operational at this time.

- 5) Start the pump and let it idle for several minutes. Do NOT build to full pressure.

- 6) Unplug the pump's power cord.
- 7) Remove the pump assembly from the reservoir again. Drain and clean the reservoir with clean, dry rags.
- 8) Fill the reservoir to 1/2 in (12mm) from the top of the filler port hole with BURNDY® ALFLUID™.
- 9) Place the pump assembly (with gasket, item # 21, Basic Pump Assembly) on to the reservoir. Reinstall all four reservoir screws and tighten securely.

SERVICE

 **DANGER**

NEVER service or adjust a tool that is connected to a hydraulic power source. Servicing a connected tool may result in severe personal injury or death.

 **WARNING**

Stop and depressurize the hydraulic system before disconnecting a tool. Failure to follow these instructions can lead to severe personal injury. Read and follow the directions for the proper way to disconnect tools from the hydraulic system.

Service information is provided only for experienced pump technicians. We do not recommend that you attempt to service or repair any pump yourself. Pump servicing by unqualified personnel will void the warranty and may lead to serious personal injury.

COMPLETE DISASSEMBLY OF THE PUMP IS NOT RECOMMENDED. RETURN THE PUMP TO THE BURNDY® TOOL SERVICE CENTER OR BURNDY® AUTHORIZED TOOL REPAIR CENTER. CALL 1-800-426-8720 FOR ADDITIONAL INFORMATION.

Complete disassembly of the tool is seldom necessary. Disassemble only the areas necessary to correct the problem.

GENERAL GUIDELINES

- Disassembly should be done on a flat, clean surface. Some parts may fall free during disassembly. To prevent part loss or damage, keep the tool as close to the working surface as possible.
- Inspect all parts as they are disassembled and their mating parts in the tool that are not removed for signs of damage, wear, cracks, etc. Replace any parts which appear to be damaged.
- When disassembling the tool for service, it is recommended that O-rings, back-up rings and gaskets be replaced.
- Clean grease and oil from all parts (take care to protect eyes), then dry thoroughly. Do not expose O-rings or other packing components to cleaning agent for long periods of time.
- Inspect all parts as they are assembled for signs of damage, wear, cracks, etc. Do not install any parts which appear to be damaged.
- Apply hydraulic fluid or O-ring lubricant to all O-rings and their mating surfaces to facilitate installation. When installing an O-ring over a sharp edge, use a rolling action to avoid damage to the O-ring.
- Wherever assembled parts cause metal-to-metal contact, coat the surface with hydraulic fluid or O-ring lubricant.

TROUBLESHOOTING

WARNING

Stop and depressurize the hydraulic system before connecting/disconnecting a hydraulic hose or tool. Failure to follow these instructions can lead to severe personal injury. Read and follow the instructions in this manual for the proper way to connect and disconnect hydraulic components from the hydraulic system.

- 1) Any tool used with a hydraulic pump must be matched to the power source system. See the tool's operating manual and labels for the type of hydraulic system required. Verify that the hydraulic pump matches the tool's requirements.
 - 2) Verify that the hydraulic hose is connected properly to the hydraulic pump and tool ports.
 - 3) The hydraulic pump reservoir must be filled to the correct level with hydraulic fluid for proper operation (see MAINTENANCE - HYDRAULIC FLUID LEVEL).
 - 4) After verifying the above, start the hydraulic pump according to the PRE-OPERATION and OPERATION instructions.
 - 5) Check the tool to see if it operates.
- If the tool does not operate, it will be necessary to determine where the problem exists (i.e. tool, hoses or pump).

DETERMINING THE PROBLEM AREA

- 1) Stop the hydraulic pump. Depressurize the hydraulic system and allow it to cool. Disconnect the existing tool from the hoses and pump unit.
- 2) Connect a known, properly operating tool to the hose and pump unit. See the tool's operating manual for the correct hook-up procedure. Start the hydraulic pump.
 - A) If the known, properly operating tool functions correctly, the problem is in the disconnected tool. See the tool's operating manual for troubleshooting/service information.
 - B) If the known, properly operating tool does not function, the problem is likely to be in the hoses or the power source. Proceed to Step 3.
- 3) Stop the hydraulic pump. Disconnect the existing hoses from the known, properly operating tool and pump unit. Again, reference the tool's operating manual for the proper procedure to disconnect the tool from the hydraulic system.
- 4) Connect a different set of hoses to the known, properly operating tool and pump unit. Start the hydraulic pump.
 - A) If the known, properly operating tool functions correctly with the different set of hoses, the problem is in the disconnected hoses.
 - B) If the known, properly operating tool does not function, the problem is in the power source.

If, after following all steps in the TROUBLESHOOTING section, it has been determined that the problem lies within the pump, proceed to the TROUBLESHOOTING GUIDE. Use of the TROUBLESHOOTING GUIDE will help you identify and determine the cause of the problem.

Note: It is not recommended that the end user attempt to perform repairs on this tool, as specialized tools, training, and/or procedures may be required.

Avoidance of excess heat is the responsibility of the user. Excess heat may be generated through any combination of pump inefficiencies or unusual flow restrictions in the system. Where possible inefficiencies exist, substantially larger reservoirs and/or coolers may be required.

Should you have any problems or questions with your BURNDY® EPP or EPP-EC hydraulic pump, please do not hesitate to contact the Customer & Technical Service Departments by calling 1-800-346-4175 or the BURNDY® Tool Service Center for pump servicing and repair related questions at 1-800-426-8720.

TROUBLESHOOTING GUIDE

SYMPTOM/PROBLEM	CAUSE	REMEDY
Motor does not run.	<ol style="list-style-type: none"> 1. Pump turned OFF. 2. Pump unplugged. 3. No voltage supply. 4. Broken lead wire or defective power cord plug. 5. Defective remote switch. 6. Worn brushes. 7. Defective motor. 	<ol style="list-style-type: none"> 1. Turn toggle switch ON. 2. Plug in electric cord. 3. Check line voltage. 4. Replace defective parts. 5. Check remote switch. 6. Replace brushes. 7. Replace defective parts.
Motor turns but does not rotate pump.	<ol style="list-style-type: none"> 1. Broken gear has jammed power train. 	<ol style="list-style-type: none"> 1. Replace broken gear and correct condition that caused failure.
Hydraulic oil leaking into gear case under motor.	<ol style="list-style-type: none"> 1. Damaged oil shaft seal and/or O ring seal. 2. Crack in pump body. 	<ol style="list-style-type: none"> 1. Replace damaged seal(s). 2. Replace pump body.
Pump is not delivering oil.	<ol style="list-style-type: none"> 1. Oil level too low. 2. Pump is not primed. 3. Loose fitting coupler to cylinder. 4. Vacuum in reservoir. 5. Air leak in suction line. 6. Dirt in pump or filter clogged. 7. Cold oil or oil is too heavy (of a higher viscosity than necessary). 8. Relief valve or low pressure unloading valve set wrong. 9. Motor rotating wrong direction. 10. Defective control valve. 11. Sheared drive shaft key. 	<ol style="list-style-type: none"> 1. Retract ram in tool head. Fill reservoir to 1/2 in (12 mm) from top of filler port hole. 2. Open priming screw - see OPERATION instructions on priming. 3. See if quick disconnect couplings to cylinder are completely coupled. Sometimes couplers have to be replaced, because the ball check doesn't stay open due to wear. 4. Replace shipping plug with breather cap (see PRE-OPERATION). 5. Tighten suction line. 6. Clean filter. Dismantle pump and clean all parts if needed. 7. Use BURNDY® ALFLUID™. 8. Adjust as needed. Refer to Tool Service Center. 9. Looking at motor shaft end, motor must rotate clockwise. Reverse lead wires to brush holders, if necessary. 10. Inspect all parts and replace if needed. 11. Replace key and determine cause of key failure.
Pump delivers only enough oil to advance ram in tool head partially or erratically.	<ol style="list-style-type: none"> 1. Low oil level. 	<ol style="list-style-type: none"> 1. Retract ram in tool head. Fill reservoir to 1/2 in (12 mm) from top of filler hole with BURNDY® ALFLUID™.
Pump builds but does not maintain pressure.	<ol style="list-style-type: none"> 1. Defective tool head. 2. External leaks. 3. Internal leaks: Lift pump from reservoir, keeping filter in oil. Remove drain line and look for leaks from valve. 4. Sheared drive shaft key. 	<ol style="list-style-type: none"> 1. Remove tool head from pump. If pump holds pressure, tool head is defective. 2. Seal leaking pipe fittings with pipe sealant. 3. Clean, reseal or replace valve parts. 4. Replace key and determine cause of key failure.
Pump does not build full pressure.	<ol style="list-style-type: none"> 1. External leakage. 2. Relief valve set wrong. 3. Leaking valve. 4. Internal leakage. 5. Sheared drive shaft key. 6. High pressure pump inlet or outlet ball checks are leaking. 	<ol style="list-style-type: none"> 1. Seal leaking pipe fittings with pipe sealant. 2. Adjust as needed - refer to Tool Service Center 3. Clean and reseal parts. 4. Look for leaks around entire inner mechanism. If there are no visible leaks, the low-to-high pressure ball check may be leaking. Remove all parts. Look for damage to the seat area in the end plate body. Clean and reseal, if needed. Inspect the ball for damage; replace if necessary. 5. Replace key and determine cause of key failure. 6. Seat or replace valve head.
Pump delivers excess oil pressure.	<ol style="list-style-type: none"> 1. Relief valve set incorrectly. 	<ol style="list-style-type: none"> 1. Adjust relief valve
Ram in tool head will not retract.	<ol style="list-style-type: none"> 1. Check system pressure. If pressure is zero, control valve is releasing pressure and problem could be in tool head, linkage to tool head or couplings. 2. Defective valve. 	<ol style="list-style-type: none"> 1. Look for broken return spring in tool head. See if couplers are completely coupled. Sometimes couplers have to be replaced because one check does not stay open due to wear. 2. Inspect and/or replace parts. Refer to Tool Service Center.

ACCESSORIES

The following items are available for your EPP and EPP-EC Electric Hydraulic Pumps.

Catalog Number	Item Description
EPP-CASE	Steel Carrying Case for Pump (EPP pumps only)
EPP-CASE1	Steel Carrying Case for Pump and Hydraulic Hose (all pumps)

APPENDIX A

SELECTION, INSTALLATION AND MAINTENANCE OF HOSE AND HOSE ASSEMBLIES

SAE J1273 MAY 1986

SAE RECOMMENDED PRACTICE

The following recommendations on selection, installation and maintenance of hose and hose assemblies were established by SAE in 1979 and reaffirmed May 1986. Please read these general instructions carefully.

1. SCOPE

Hose (also includes hose assemblies) has a finite life and there are a number of factors which will reduce its life.

This recommended practice is intended as a guide to assist system designers and/or users in the selection, installation and maintenance of hose. The designers and users must make a systematic review of each application and then select, install and maintain the hose to fulfill the requirements of the application. The following are general guidelines and are not necessarily a complete list.

WARNING

Improper selection, installation, or maintenance may result in premature failures, bodily injury, or property damage.

2. SELECTION

The following is a list of factors which must be considered before final hose selection can be made.

2.1 Pressure - After determining the system pressure, hose selection must be made so that the recommended maximum operating pressure is equal to or greater than the system pressure. Surge pressures higher than the maximum operating pressure will shorten hose life and must be taken into account by the hydraulic designer.

2.2 Suction - Hoses used for suction applications must be selected to insure the hose will withstand the negative pressure of the system.

2.3 Temperature - Care must be taken to insure that fluid and ambient temperatures, both static and transient, do not exceed the limitations of the hose. Special care must be taken when routing near hot manifolds.

2.4 Fluid Compatibility - Hose selection must assure compatibility of the hose tube, cover, and fittings with the fluid used. Additional caution must be observed in hose selection for gaseous applications.

2.5 Size - Transmission of power by means of pressurized fluid varies with pressure and rate of flow. The size of the components must be adequate to keep pressure losses to a minimum and avoid damage to the hose due to heat generation or excessive turbulence.

2.6 Routing - Attention must be given to optimum routing to minimize inherent problems.

2.7 Environment - Care must be taken to insure that the hose and fittings are either compatible with or protected from the environment to which they are exposed. Environmental conditions such as ultraviolet light, ozone, salt water, chemicals, and air pollutants can cause degradation and premature failure and, therefore, must be considered.

2.8 Mechanical Loads - External forces can significantly reduce hose life. Mechanical loads which must be considered include excessive flexing, twist, kinking, tensile or side loads, bend radius, and vibration. Use of swivel type fittings or adapters may be required to insure no twist is put into the hose. Unusual applications may require special testing prior to hose selection.

2.9 Abrasion - While a hose is designed with a reasonable level of abrasion resistance, care must be taken to protect the hose from excessive abrasion which can result in erosion, snagging, and cutting of the hose cover. Exposure of the reinforcement will significantly accelerate hose failure.

2.10 Proper End Fitting - Care must be taken to insure proper compatibility exists between the hose and coupling selected based on the manufacturer's recommendations substantiated by testing to industry standards such as SAE J517d (November, 1976).

2.11 Length - When establishing proper hose length, motion absorption, hose length changes due to pressure, as well as hose and machine tolerances must be considered.

2.12 Specifications and Standards - When selecting hose, government, industry, and manufacturer's specifications and recommendations must be reviewed as applicable.

2.13 Hose Cleanliness - Hose components vary in cleanliness levels. Care must be taken to insure that the assemblies selected have an adequate level of cleanliness for the application.

2.14 Electrical Conductivity - Certain applications require that the hose be non-conductive to prevent electrical current

flow. Other applications require the hose to be sufficiently conductive to drain off static electricity. Hose and fittings must be chosen with these needs in mind.

3. INSTALLATION

After selection of proper hose, the following factors must be considered by the installer:

- 3.1 Pre-Installation Inspection - Prior to installation, a careful examination of the hose must be performed. All components must be checked for correct style, size, and length. In addition, the hose must be examined for cleanliness, I.D. obstructions, blisters, loose cover, or any other visible defects.
- 3.2 Follow Manufacturers' Assembly Instructions.
- 3.3 Minimum Bend Radius - Installation at less than minimum bend radius may significantly reduce hose life. Particular attention must be given to preclude sharp bending at the hose/fitting juncture.
- 3.4 Twist Angle and Orientation - Hose installations must be such that relative motion of machine components produces bending of the hose rather than twisting.
- 3.5 Securement - In many applications, it may be necessary to restrain, protect, or guide the hose to protect it from damage by unnecessary flexing, pressure surges, and contact with other mechanical components. Care must be taken to insure such restraints do not introduce additional stress or wear points.
- 3.6 Proper Connection of Ports - Proper physical installation of the hose requires a correctly installed port connection while insuring that no twist or torque is put into the hose.
- 3.7 Avoid External Damage - Proper installation is not complete without insuring that tensile loads, side loads, kinking, flattening, potential abrasion, thread damage, or damage to sealing surfaces are corrected or eliminate.
- 3.8 System Check-Out - After completing the installation, all air entrapment must be eliminated and the system pressurized to the maximum system pressure and checked for proper function and freedom from leaks.
Note: Avoid potential hazardous areas while testing.

4. MAINTENANCE

Even with proper selection and installation, hose life may be significantly reduced without a continuing maintenance program. Frequency should be determined by the severity of the application and risk potential. A maintenance program should include the following as a minimum.

- 4.1 Hose Storage - Hose products in storage can be affected adversely by temperature, humidity, ozone, sunlight, oils,

solvents, corrosive liquids and fumes, insects, rodents, and radioactive materials. Storage areas should be relatively cool and dark and free of dust, dirt, dampness, and mildew.

- 4.2 Visual Inspection - Any of the following conditions requires replacement of the hose:

- (a) Leaks at fitting or in hose. (Leaking fluid is a fire hazard.)
- (b) Damaged, cut, or abraded cover. (Any reinforcement exposed.)
- (c) Kinked, crushed, flattened, or twisted hose.
- (d) Hard, stiff, heat cracked, or charred hose.
- (e) Blistered, soft, degraded, or loose cover.

- (f) Cracked, damaged, or badly corroded fittings.**
- (g) Fitting slippage on hose.**

- 4.3 Visual Inspection - The following items must be tightened, repaired, or replaced as required:

- (a) Leaking port conditions.
- (b) Clamps, guards, shields.
- (c) Remove excessive dirt build-up.
- (d) System fluid level, fluid type, and any air entrapment.

- 4.4 Functional Test - Operate the system at maximum operating pressure and check for possible malfunctions and freedom from leaks.

Note: Avoid potential hazardous areas while testing.

- 4.5 Replacement Intervals - Specific replacement intervals must be considered based on previous service life, government or industry recommendations, or when failures could result in unacceptable down time, damage, or injury risk.

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