

OPERATING AND MAINTENANCE INSTRUCTIONS FOR HYDRAULIC CYLINDERS

1. ESSENTIAL SAFETY REQUIREMENTS

1.1. General Considerations

Visually inspect all components for shipping damage. Since the warranty does not cover such damage, if any, please contact and inform the shipping company immediately, as the shipping company is responsible for all repair or replacement costs that may result from shipping damage.

1.2. Safety Precautions

Read all instructions, warnings and cautions. Observe all safety precautions to avoid personal injury or property damage during operation of the system. GCHydraulic cannot be held responsible for damage or injury resulting from failure to use the product safely, lack of maintenance, or misapplication of the product. Contact GCHydraulic if you have any questions regarding safety precautions or their applications.

Failure to comply with the following cautions and warnings could result in equipment damage as well as personal injury.

A CAUTION is used to indicate proper operating or maintenance procedures and practices to avoid damage or destruction of equipment or other property.

A WARNING indicates a potential hazard that requires correct procedures or practices to avoid personal injury.

A DANGER is used only when its action or inaction could cause serious injury or even death.



WARNING: Wear appropriate personal protective equipment when using hydraulic equipment.

WARNING: Stay away from loads supported by hydraulic systems.

When a cylinder is used as a load lifting device, it should never be used as a load holding device. After the load has been lifted or lowered, it must always be mechanically locked.

WARNING: Use only rigid parts to support loads. Carefully select steel or wooden blocks capable of supporting the load. Never use a hydraulic cylinder as a chock or spreader in lifting or pressing applications.



DANGER: To avoid injury, keep hands and feet away from the cylinder and workpiece during operation.

WARNING: Do not exceed the rated value of the equipment. Never attempt to lift a load that weighs more than the cylinder capacity. Overloading causes equipment failure and possible personal injury. Cylinders are designed to withstand a maximum pressure of 700 bar. Do not connect a jack or cylinder to a pump with a higher pressure rating than indicated.



DANGER: Never set the safety relief valve at a pressure higher than the maximum pressure rating of the pump. Higher settings may result in equipment damage and/or personal injury. Do not remove the safety relief valve.



WARNING: The system operating pressure must not exceed the pressure rating of the lowest rated component in the system. Install pressure gauges in the system to monitor the operating pressure. This is the way to know what is happening in the system.



CAUTION: Avoid damaging the hydraulic hose. Avoid kinks and sharp bends when routing hydraulic hoses. Using a hose with kinks or bends can cause severe back pressure. Sharp kinks and bends will cause internal damage to the hose, resulting in premature hose failure.

Also, do not drop heavy objects on the hose. A direct impact can cause internal damage to the wire strands of the hose. Applying pressure to a damaged hose may cause it to break.

IMPORTANT: Do not lift the hydraulic equipment by the rotating hoses or couplers. Use the carrying handle or other means to transport it safely.

CAUTION: Keep hydraulic equipment away from open flames and heat. Excessive heat will soften gaskets and seals, resulting in fluid leakage. Also, heat weakens hose and gasket materials. For optimum performance, do not expose equipment to temperatures of 150°F (65°C) or higher. Protect hoses and cylinders from weld splatter.

DANGER: Do not handle hoses under pressure. Oil escaping under pressure can penetrate the skin and cause serious injury. If oil is injected under the skin, consult a physician immediately.

WARNING: Use hydraulic cylinders only in coupled systems. Never use a cylinder if the couplers are not connected. If the cylinder is overloaded, components may fail, causing serious injury.

WARNING: Ensure that the load on the equipment is stable before lifting the load. The cylinder must be placed on a flat surface capable of supporting the load. If necessary, use a cylinder base for stability. Do not weld or modify the cylinder in any way to attach a base or other means of support. Avoid situations where loads are not directly centred on the cylinder piston. Off-centre loads place considerable stress on the cylinders and pistons. In addition, the load could slip or fall, creating potentially dangerous situations.

Distribute the load evenly over the entire surface of the cylinder seat. Always use a seat to protect the plunger when threaded fittings are not used.

IMPORTANT: Only qualified hydraulic service technicians should service hydraulic equipment.

WARNING: Replace worn or damaged parts immediately with genuine GCHydraulic part

INSTALLATION AND COMMISSIONING

Installation

Make the hydraulic connections. For single-acting cylinders (Left) use a pump with a three-way valve and one hose. For double-acting cylinders (right) use pump with a four-way valve and two hoses.



WARNING:

On double acting cylinders make sure that the hoses are connected to BOTH couplers. Never attempt to pressurize a double-acting cylinder if only one hose is attached.

1) Fully hand tighten all couplers. Loose coupler connections will block oil flow between the pump and cylinder.

2) Remove air from the cylinder:

Single acting cylinders: Position the cylinder so that the plunger points down and the cylinder is below the pump. Fully extend and retract the cylinder several times until it runs smoothly.

Double-acting cylinders: Rest the cylinder on its side so that the couplers are facing upwards. Fully extend and retract the cylinder several times until it runs smoothly.

3) Fit adapters and couplings as required. Operate the hydraulic pump to advance and retract the cylinder. Some single-acting cylinders are spring return, while others are load return. Hose length as well as other line restrictions can influence the recoil speed. Double-acting cylinders are fed by the pump in both directions.

The cylinder guide head is designed to absorb the full load. However, it is recommended to use 80% of the minimum pressure and stroke for proper operation.

Releasing trapped pressure

Occasionally some pressure may be retained in the hydraulic cylinder if a hose is disconnected before the pressure has been fully released.



DANGER: Never attempt to depressurise by loosening a coupler. Contained hydraulic pressure can cause a coupler that has been loosened to move unexpectedly strongly. If the coupler is ejected with force, it could result in serious personal injury or death to persons working in the area.



WARNING: Loosening a coupler can result in a high-pressure oil leak that can contact skin. Serious injury or death could result.



WARNING: Never use hammer and punch (or other similar method) to remove the backflow preventer ball from the coupler under pressure. Serious personal injury or death could result from a sudden and uncontrolled release of oil under high pressure.