



ALERT



THREADED QUICK-CONNECT HYDRAULIC COUPLINGS WITH CHECK VALVES

A worker was fatally injured when the female section of a quick-connect hydraulic coupling hit him in the throat while he was unscrewing it from the port of a hydraulic cylinder. Unknown to the worker, the internal check valve in the coupling section had trapped hydraulic pressure behind it, pressure in the order of 10, 000 psi. As he was unscrewing the coupling, it reached the point where the threads were unable to withstand the force from the pressurized hydraulic fluid and the coupling became a high velocity projectile.

These quick-connect couplings are designed to have internal check valves in both the male and female sections. When the coupling sections are brought together, projections on the ends of each check valve serve to move the other check valve off its seat, allowing oil to flow in either direction. If the coupling is not tightly made, one or the other of these check valves may not be properly lifted off its seat. Under this circumstance, oil would flow in one direction but not in the other when the pressure is relieved on the feed side. Tests conducted on the fittings have shown that even with no oil leaks this dangerous build up of pressure can occur when the fittings are one (1) turn or less from fully installed.

Hazard

If the connection of a quick-connect coupling is not made completely tight, one of the internal check valves within the coupling may trap hydraulic pressure behind the check valve. The absence of any leaking oil around the coupling is not an indication that the coupling has been made completely tight.

Required Action

Before using a quick-connect coupling:

- Ensure that both sections are in good condition.
- Ensure that the threads for the locking sleeve are clean, and that there are no restrictions that would prevent the full threading of the locking sleeve onto the male section of the coupling.



Ontario

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- Ensure that the quick-connect coupling is made completely tight.
 - Always assume that there may be pressure behind a fitting.
 - Avoid the use of fittings with check valves whenever possible. In particular these types of fittings should not be used for stretching punch press tie rods.
 - Keep your body out of the line of any potential trajectory. Do not bend over or position yourself in front of any fittings being removed from equipment.
 - Provide a positive means of confirming all pressure is released (gauges or bleed ports) before removing fittings. This is required by the Regulations for Industrial Establishments, O. Reg. 851, sec. 78.

Location and Sectors

These fittings may be found in all sectors including construction, mining and industrial establishments, where hydraulic equipment is used.

Note: O. Reg. 213/91, Section 48 of Regulations for Construction Projects specifies requirements for repairs and alterations to drums, tanks, pipelines or other containers. O. Reg. 854/90, Section 56 of Regulations for Mines and Mining Plants specifies requirements for pressurized systems.

Remember that while complying with occupational health and safety laws, you are also required to comply with applicable environmental laws.

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