ITORQ®

Hydraulic Cylinders

Instructions Manual

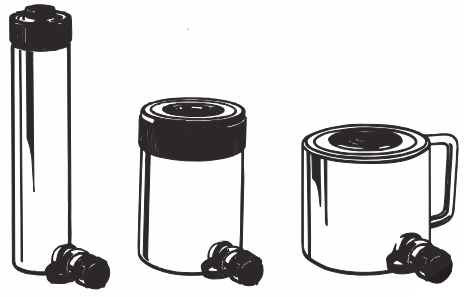
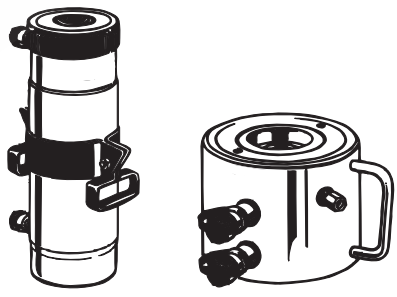
Read all instructions, warnings and cautions carefully. Follow all basic safety precautions to avoid personal injury or property damage during system operation. ITORQ cannot be held responsible for damage or injury resulting from unsafe product use, lack of maintenance or incorrect product and/or system operation. Contact ITORQ when in doubt as to the safety precautions and operations.

Important points to remember:

- *Our ratings of load capacity and stroke are maximum safe limits. Good practice encourages using only 80% of these ratings. Example: a 50 ton Hydraulic Cylinder should be used in order to lift a maximum load upto 40 ton*
- *Never attempt to lift a load weighing more than the capacity of the hydraulic cylinder. Overloading causes equipment failure and possible personal injury.*
- *The Hydraulic Cylinders are designed for a maximum operating pressure of 10,000 psi / 700 bar.*
- *Do not disconnect the Hydraulic Couplers during operation or when under pressure.*

- ***Keep Hydraulic Cylinders away from flames, heat and weld spatter.*** *Excessive heat will soften packings and seals, resulting in fluid leaks.*
- ***Be sure setup is stable before lifting load*** *Hydraulic Cylinders should be placed on a flat surface that can support the load. Where applicable, use a Cylinder Base for added stability. Do not weld or otherwise modify the Hydraulic Cylinder to attach a base or other support.*
- *Off-centre loads produce considerable strain on the Hydraulic Cylinders and Plungers. In addition, the load may slip or fall, causing potentially dangerous results.*
- *Immediately replace any worn or damaged parts with genuine ITORQ replacement parts/spares.*

Types of Hydraulic Cylinders:

Single Acting Cylinders	***Double Acting Cylinders***
	

Installation & Operation:

1) Make the hydraulic connections.

   Procedure:
   For Single Acting Cylinders:
   use a pump with a release valve
   (or 3 way valve) and a hose
   For Double Acting Cylinders:
   use a pump with a 4 way valve and 2 hoses

   Note: *Only for Double Acting Cylinders: B*e certain that hoses are connected at BOTH couplers. Never attempt to pressurize a Double Acting Cylinder if only 1 hose is connected.

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

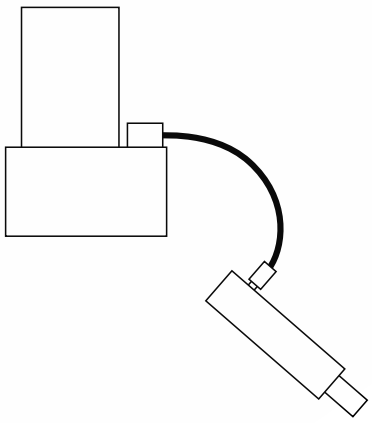
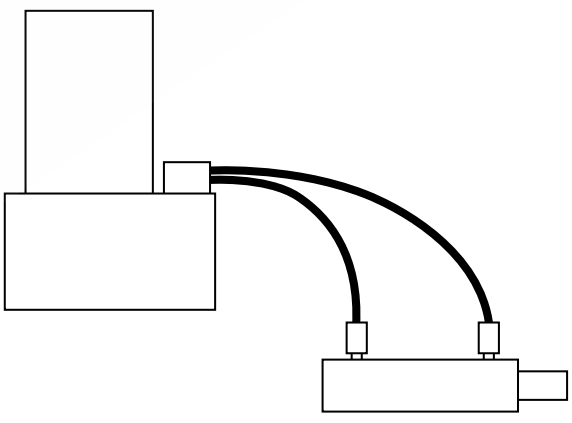
3) Remove air from the cylinder.

   Procedure:
   For Single Acting Cylinders:
   Position the cylinder so that the plunger is pointed down and the cylinder is lower than the pump.
   Fully extend and retract the cylinder several times, until operation is smooth. (Check Figure 1)
   For Double Acting Cylinders:
   Lay the cylinder on its side so that the couplers are facing up.
   Fully extend and retract the cylinder several times, until operation is smooth. (Check Figure 2)

4) Install adaptors and attachments, if any, as required.

5) Operate the hydraulic pump to advance and retract the cylinder.

How to remove air from the Hydraulic Cylinder?

Single Acting Cylinders	***Double Acting Cylinders***
	
(Figure 1)	*(Figure 2)*

Maintenance:

1) *Use only ITORQ oil with the cylinder.*
   The use of any other oil may invalidate your warranty.

2) *Use dust cap(s) when cylinder is disconnected from the hose(s).*
   Keep the entire cylinder clean to prolong its life.

3) *Store the cylinders upright to prevent seal distortion.*

Note: *Only for Single Acting Cylinders:*
Before long term storage, fully extend and retract the plunger once. Then, store the cylinder upside-down. This will help protect the cylinder from corrosion and seal distortion.

Relieving Trapped Pressure:

Pressure can sometimes become trapped in a hydraulic cylinder if a hose is disconnected before pressure is completely relieved.
If a trapped pressure condition occurs, always use the ITORQ coupler bleed tool to safely relieve the remaining pressure.

Troubleshooting Guide:

Trouble	*Probable Cause*
Cylinder will not advance (or) advances slower than normal	*Pump release valve is open*
	Couplers aren't connected properly
	Oil level in pump is low
	Pump malfunctioning
	Load is too heavy for the cylinder
	Cylinder seals are leaking
Cylinder advances part way	*Couplers aren't connected properly*
	Oil level in pump is low
Cylinder advances in spurts	*Air in hydraulic system*
Cylinder advances but will not hold	*Leaking Connection*
	Incorrect system set-up
	Pump malfunctioning
	Cylinder seals are leaking
Cylinder leaks oil	*Worn or damaged seals*
	Internal cylinder damage
	Couplers aren't connected properly
Cylinder will not retract (or) retracts slower than normal	*Pump release valve is closed*
	Couplers aren't connected properly
	Pump reservoir over-filled
	Narrow hose restricting flow
	Broken or weak retracting spring (if equipped)
	Internal cylinder damage
Oil leaking from external relief valve	*Couplers aren't connected properly*
	Restriction in return line