



SUPER HEAVY DUTY

**STRONGARM**<sup>®</sup>

**PROD NO.** 033001, 03300, 033010, 033001, 033011, 033012, 033013, 033014, 033035, 033036, 033037, 033038, 033039, 033050, 033060, 033061, 033063, 033065, 033070, 033074, 033076, 033077, 033078, 033079

**MOD NO.** SACS50, SACS55, SACS102, SACS104, SACS106, SACS108, SACS1010, SACS252, SACS254, SACS256, SACS258, SACS2510, SACS506, SACS1006, SACL50, SACL100, SACL200, SACL300, SACL500, SACH202, SACH206, SACH302, SACH306

# Single Acting Cylinder Manual



## **WARNING:**

**Important: read these instructions and all warnings prior to using this equipment. Understand all operating procedures, safety warnings and maintenance requirements. Failure to do so could cause an accident resulting in serious or fatal injury and/or personal property damage.**

Repair Parts Sheets for hydraulic cylinders are available from your nearest authorized STRONGARM Service Centre or [www.jetgroupbrands.com](http://www.jetgroupbrands.com).

**NOTE: PLEASE READ AND FOLLOW THESE INSTRUCTIONS BEFORE YOU USE ANY STRONGARM CYLINDERS.**

Carefully inspect all components for shipping damage, if shipping damage is found. Please notify carrier at once. The carrier is responsible for any damage resulting from shipment.

## 1. SAFETY

To avoid personal injury or property damage, please follow all safety precautions. STRONGARM is not responsible for injury or damage resulting from unsafe and/or incorrect product use or system operation, or lack of maintenance.

**⚠ DANGER** is used when your action or lack of action may cause serious injury or even death.

**⚠ WARNING** indicates a potential danger that requires correct action to avoid personal injury.

**⚠ IMPORTANT** indicates correct action to prevent damage or equipment failure.

### **⚠ DANGER**

- The hydraulic equipment operator must be a qualified operator familiar with correct training and work experience with hydraulic equipment. Lack of knowledge in any of these areas can lead to equipment damage or personal injury.
- Carefully inspect cylinder(s), coupler(s) and hose(s) before use of hydraulic equipment, if you find any damage on the cylinder(s), coupler(s), and hose(s), stop using your equipment and contact with your nearest Authorized STRONGARM Service Centre or Distributor. Damage may cause equipment failure and possible personal injury.
- To avoid personal injury, do not modify or weld hydraulic equipment.
- Never lift a load more than the rated capacity of the cylinder(s), overloading will cause equipment failure and possible personal injury.
- The cylinder(s) are designed for a max pressure of (700 bar) 10,000 PSI, do not use a pump or relief valve with a pressure rating higher than (700 bar) 10,000 PSI. Pumps or relief valves with higher pressure ratings may cause equipment failure and possible personal injury.
- Hydraulic cylinders are a load lifting device, not a load holding device. After the load has been raised or lowered, it must always be held mechanically. Never work under a load supported by hydraulic pressure only.
- To avoid personal injury, keep hands and feet away from cylinder(s) and workplace during operation.
- Do not lift unbalanced or off-Centre loads with cylinder(s). The incorrect loading can result in equipment failure and possible personal injury.

### **⚠ WARNING**

- Always wear safety glasses, helmet and other necessary personal protective equipment when operating hydraulic equipment.
- When lifting, ensure hydraulic cylinder has a solid, stable lifting surface for proper support. Ensure any and all steel or wood cribbing is capable of supporting the load.
- Install pressure gauge in the system to monitor the operating pressure. The gauge must have same pressure rating as the pump and cylinder(s) in the system. The incorrect gauge may cause equipment failure and possible personal injury.

- Carefully inspect the cylinder(s) and coupler(s) before use. Do not use cylinder(s) with damaged coupler(s) or damaged port threads. The damaged coupler(s) or damaged port thread(s) may cause equipment failure and possible personal injury.
- To prevent dust or other debris from entering the cylinder body, store coupler(s) in a clean and dry environment. Dirt or other debris will damage the cylinder's seals and result in equipment failure and possible personal injury.
- Before removing or tightening hose(s) or coupler(s), release hydraulic pressure in system.
- Never handle pressurized hoses; escaping oil under high pressure can penetrate the skin, causing serious injury. Seek medical aid immediately if injured.
- Hydraulic cylinders must use high-quality oil.
- Before lifting, saddle or other accessories must be fully seated in piston. Failure to ensure saddle or other accessory is fully seated can result in damage to hydraulic cylinder and/or severe injury.
- Before lifting, if using external collar threads, ensure that accessory is completely threaded onto cylinder. Failure to ensure accessory is completely threaded onto cylinder body can result in damage to hydraulic cylinder and/or severe injury.
- For hydraulic technical help or repair service. Please contact the authorized STRONGARM Service Centre in your area. STRONGARM has no obligations under any warranty with respect to products that have been repaired by unauthorized personnel, modified, or damaged through misuse, abuse, accident, neglect, or mishandling.

### ⚠ IMPORTANT

- Please keep the cylinder clean at all the times.
- When the cylinder is not in use, keep the piston rod fully retracted, remove hose and use rubber cap(s) to cover the coupler. Ensure collar threads are protected with the thread protector.
- Do not drop heavy loads on hose.
- Do not lift and carry hydraulic cylinders by the hose(s) or coupler(s).
- Do not use equipment in temperatures of 65°C (150°F) or higher. Overheating will soften seals and weakens hose materials, resulting in oil leaking or other equipment failure.

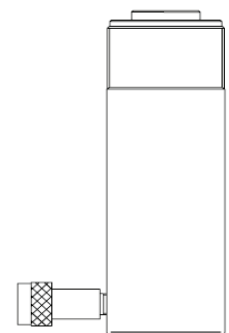
## 2. OPERATION

Before using the cylinder, visually check all units to make sure there is no damage to cylinder(s), port threads, coupler(s) and hose(s). Ensure that no oil is leaking and you have all the required parts. If you find any problems stop using your equipment and contact with your nearest authorized STRONGARM Service Centre or Distributor.

### 2.1 Set-Up

- Single Acting Cylinders

Use a pump with a release valve or a 3-way valve and one hose to connect with Single Acting Cylinder (Figure 1). After connecting all parts, fully hand-tighten all couplers.



**Figure 1**

## 2.2 Bleeding Air from the cylinder

Air may accumulate within a cylinder during shipment or after prolonged use; this trapped air can cause poor performance. Please use the steps below to bleed the air from cylinder.

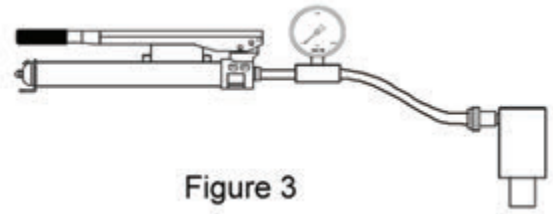


Figure 3

- Single-acting cylinders:

Position the cylinder as (Figure 3) shows, the piston rod is facing down and the cylinder lower than the pump. Fully extend and retract the cylinder 1 or 2 times. It may be necessary to repeat the above steps several times.

## 2.3 Operation

- After completing the above steps, operate hydraulic pump to advance and retract the cylinder.
- Single acting cylinders use both spring-return and load return.
- Do not allow piston rod to rotate when installing adaptors or during use, rotation of the piston rod may damage the return spring.
- To reduce the wear, use less than full stroke and full capacity when possible.
- Once task is complete, fully retract the piston rod, remove hose and use rubber cap(s) to recover the coupler. If collar threads were used, please use the thread protector to protect them.

## 3. MAINTENANCE

- 3.1** Always use clean high-quality hydraulic oil with cylinders. Never use brake fluid, transmission fluid, turbine oil, motor oil, alcohol, glycerin etc. Use of other than high-quality hydraulic oil will void warranty and damage the pump, hose and application.
- 3.2** Always keep cylinder clean, use thread proctor and dust cap to protect collar thread and couplers.
- 3.3** Clean cylinder before storage. Ensure the piston is fully retracted and cylinder is kept in a well-ventilated, moisture-proof environment.

## 4. TROUBLESHOOTING

### ⚠ WARNING

STRONGARM Cylinders should be repaired only by a qualified operator or authorized STRONGARM Service Centres. Repair of cylinders without special tools and knowledge may result in personal injury. Please release pressure and disconnect hose(s) before making repair.

Problem	Cause	Solution
Cylinder will not extend or fully extend	<ol style="list-style-type: none"> <li>1. Release valve open</li> <li>2. Couplers not fully tightened</li> <li>3. Oil level in pump reservoir is low</li> <li>4. Pump or valve malfunctioning</li> <li>5. Overload for cylinder</li> <li>6. Cylinder piston rod binding</li> </ol>	<ol style="list-style-type: none"> <li>1. Fully tighten pump release valve</li> <li>2. Fully tighten couplers</li> <li>3. Fill oil in pump</li> <li>4. Repair or use another pump and valve</li> <li>5. Change another cylinder with appropriate capacity</li> <li>6. Check for dirt or leaks, change the damage parts</li> </ol>
Cylinder cannot maintain pressure	<ol style="list-style-type: none"> <li>1. Leaky connection</li> <li>2. Cylinder seals damage</li> <li>3. Release valve not fully closed</li> <li>4. Pump or valve malfunctioning</li> </ol>	<ol style="list-style-type: none"> <li>1. Clean and reseal thread, tighten connection</li> <li>2. Replace worn seals. Clean inside cylinder and use clean hydraulic oil</li> <li>3. Fully tightening the release valve</li> <li>4. Repair, or use another pump and valve</li> </ol>
Cylinder extends slower than normal	<ol style="list-style-type: none"> <li>1. Leaky connection</li> <li>2. Coupler not fully tightened</li> <li>3. Pump malfunctioning</li> </ol>	<ol style="list-style-type: none"> <li>1. Clean and reseal thread, tighten connection</li> <li>2. Fully tighten couplers</li> <li>3. Repair or use another pump and valve</li> </ol>
Poor cylinder performance	<ol style="list-style-type: none"> <li>1. Air in cylinder</li> <li>2. Cylinder piston rod binding</li> </ol>	<ol style="list-style-type: none"> <li>1. Bleed air (see chapter 2.2)</li> <li>2. Check for dirt or leaks, Check for bent, misaligned and worn parts</li> </ol>
Cylinder leaks hydraulic oil	<ol style="list-style-type: none"> <li>1. Leaky connection</li> <li>2. Worn or damaged seals</li> <li>3. Cylinder damage</li> </ol>	<ol style="list-style-type: none"> <li>1. Clean and reseal thread, tighten connection</li> <li>2. Replace worn seals, clean inside cylinder and use clean hydraulic oil</li> <li>3. Use new cylinder or contact with your nearest Authorized STRONGARM Hydraulic Service Centre for repairing</li> </ol>
Cylinder will not retract or retracts slower than normal	<ol style="list-style-type: none"> <li>1. Pump release valve closed</li> <li>2. Couplers are not fully tightened</li> <li>3. Pump reservoir is full</li> <li>4. Hose is blocked</li> <li>5. Return spring is damaged</li> <li>6. Cylinder damaged</li> </ol>	<ol style="list-style-type: none"> <li>1. Open release valve</li> <li>2. Tightening the couplers</li> <li>3. Drain hydraulic oil to correct level</li> <li>4. Clean or change hose</li> <li>5. Change return spring</li> <li>6. Use new cylinder or contact your nearest Authorized STRONGARM Hydraulic Service Centre for repairing</li> </ol>