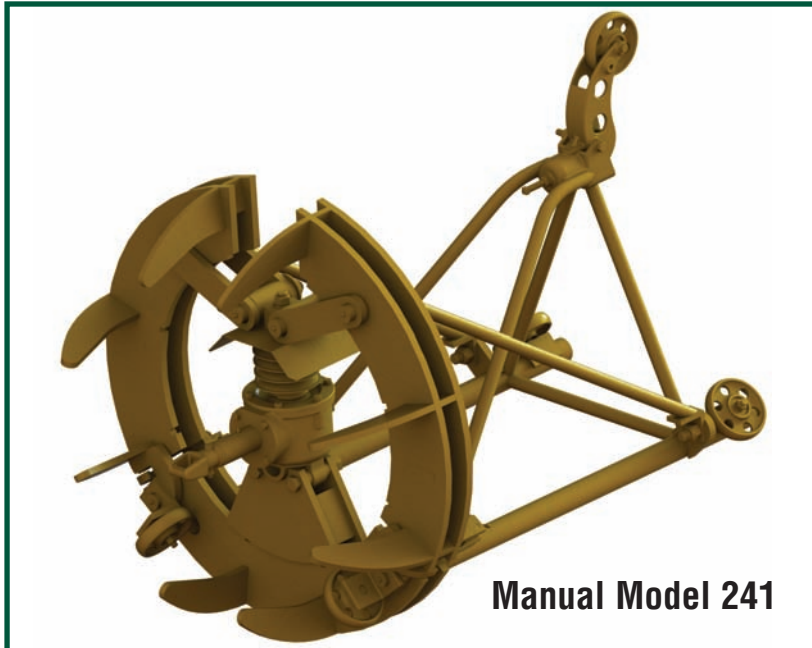
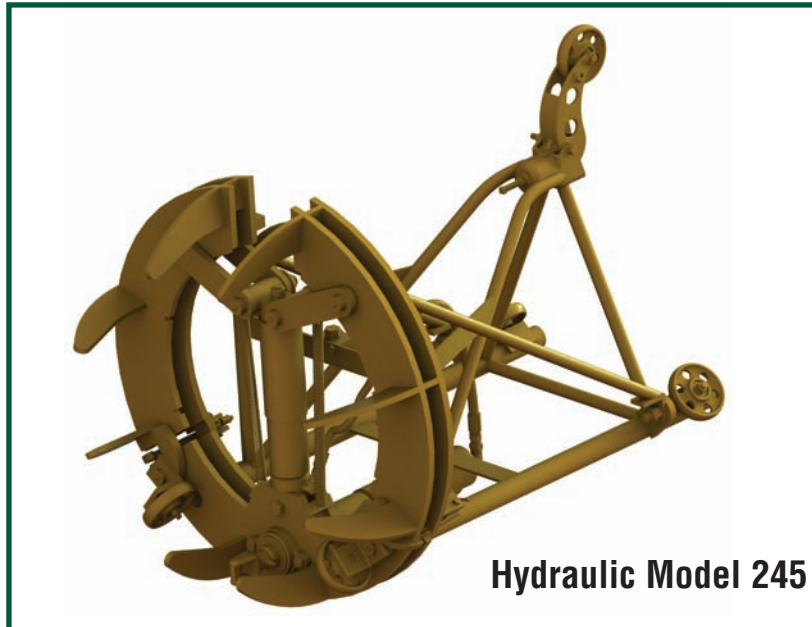


# INTERNAL LINE-UP CLAMPS

## Operating and Maintenance Instructions



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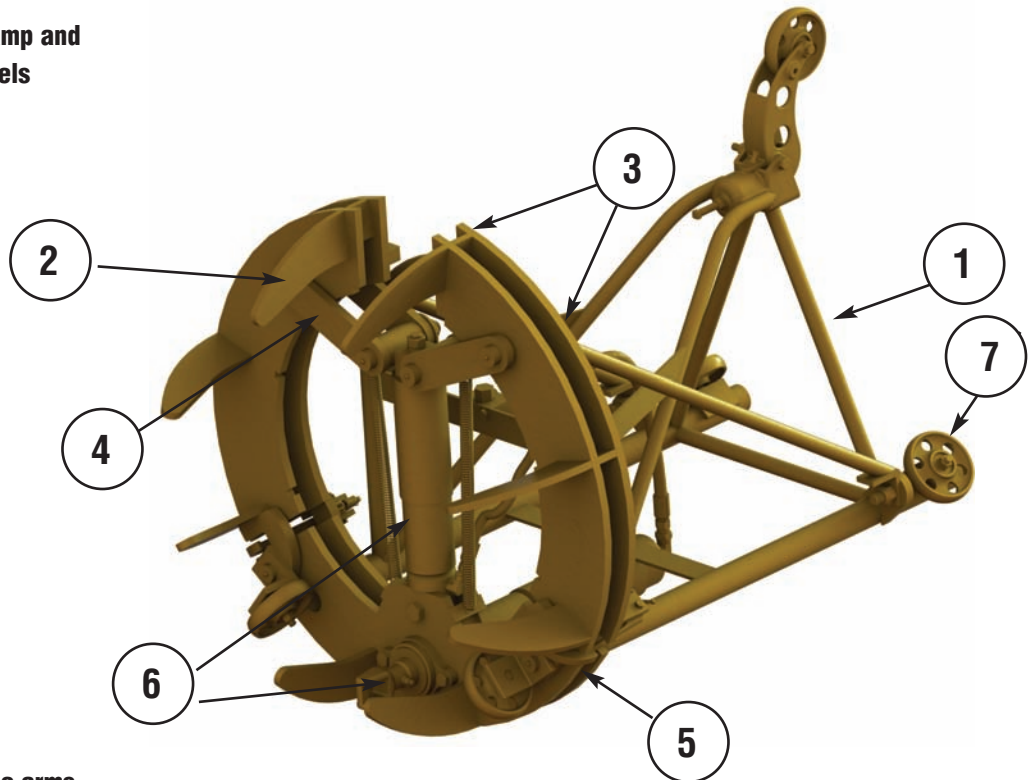
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# MODEL 245

## Hydraulic Internal Line-up Clamp

1. **FRAME:** Supports the clamp and runs on four bottom wheels and one upper wheel.
2. **GUIDES:** Directs the clamp into the next pipe joint.
3. **SIDE ARMS:** Three side arm rings (two top, one bottom) align the two pipe joints.
4. **TOGGLE BARS:** The toggle bars push the two upper side arms against the internal wall of the pipe.
5. **LOCKING LATCHES:** two brass latches located at 4 and 8 o'clock lock the clamp in place providing self-alignment of the side arms.
6. **HYDRAULIC PUMP AND CYLINDER:** transfers motion from reach rod to the hydraulic piston and the toggle arms.
7. **WHEELS:** Allows the clamp to roll into the next pipe joint.



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### Features

- Heavy duty steel construction
- Clamping ring contacts both pieces of pipe on each side of the weld joint leaving an unobstructed gap under the weld joint
- Manual hydraulic screw type pump.
- Hydraulic cylinder actuates toggle action to expand clamp head- multiplying clamping pressure.
- Clamp is pulled through the pipe, positioned, actuated and de-actuated by the reach rod, hook and crank assembly.
- Clamp moves through the pipe on ball bearing wheels.
- Clamp is self-contained and low maintenance.
- Clamp head assembly is machined to pipe I.D. for true and accurate fit.

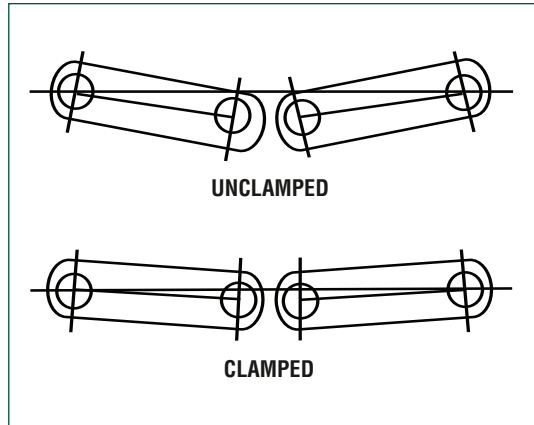
### Options

- Polyurethane wheels
- Copper or stainless steel back up and trim
- Gas-purging with copper or stainless back up.
- Standard 49-ft. reach rod is supplied in 7-ft. sections and may be added to or subtracted in 7-ft. sections.

## Toggle Action Principle

The key feature of the internal line-up clamp is the accuracy that the three segments provide when aligning the internal pipe walls of the two pipes to be welded.

To achieve a close alignment of the pipes, the circumference of the side arms is machined to match the contour and wall thickness of the pipe. A toggle bar mechanism connected to the end of the hydraulic ram will expand as the hydraulic pump is rotated. The toggle bar length is calculated based on the distance that the side arms have to travel to make contact with the internal wall of the pipe.



Toggle bars in a centered position reach maximum force. Toggle bars in an under or over toggle position as shown in the drawing will not exert maximum force.

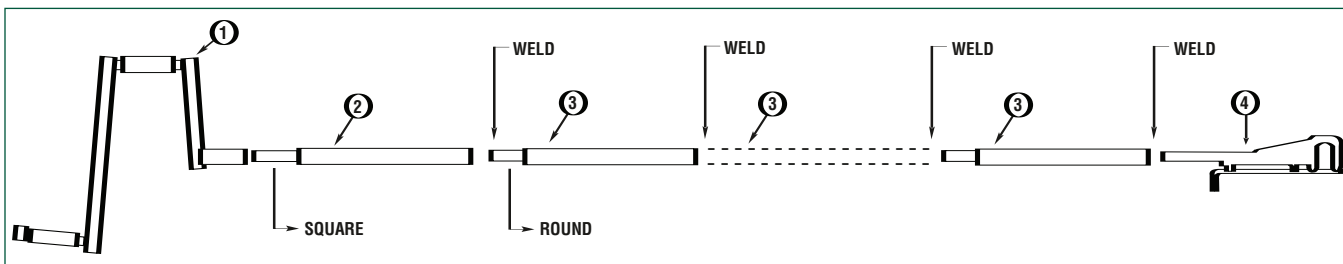
*NOTE: The principle is the same for both Model 245 hydraulic and Model 241 manual clamps.*

Each clamp is machined for a specific pipe internal diameter. Sawyer highly recommends machining or shimming the clamp to compensate for changes in the pipe internal diameter. However, the clamp can still be used without modification when changes in the internal diameter of the pipe do not exceed +/- 4mm of the internal diameter that the clamp as setup for.

Not adjusting the clamp for variations in diameter could:

- Limit the surface contact area between the side arm and the internal wall of the pipe. As a result, only the highest point of the side arm will be in contact with the internal wall.
- Limit the performance of the toggle bars.

## Reach Rod Assembly (Model 245 and 241)



Reach Rod, Hook and Crank- The reach rod should be assembled at the job site. The Reach Rod Assembly consists of:

- One (1) crank handle (No.1)
- One (1) reach rod crank end (1" tubing with 1" square stub on one end, No.2).
- Reach rods - usually six (6) pieces - 1" OD tube with 3/4-inch round stub welded in on end (No.3).
- Hook assembly, which has a 3/4-inch round stub, end (No.4).

### Welding Procedure

1. Place No.2 on flat surface
2. Insert solid end of a No.3 into open end of No. 2 push in.
3. Align No's. 2 and 3 until they are straight.
4. Weld No's. 2 and 3 together all around.
5. Continue welding No. 3's until desired length is achieved.
6. Slide round solid end of No. 4 into last No. 3, three to four inches and weld.

## Operation - Model 245

Clamp- All standard 245 clamps are shipped greased, full of hydraulic oil, and ready for use.

1. The clamp (with the head ring facing out) is placed in the pipe at the first joint to be welded.
2. Push the clamp into the pipe until the latches catch.
3. Thread the reach rod through the next joint of pipe and attach the hook to the eye on the hydraulic screw pump.
4. Position the pipe over the clamp and turn the crank clockwise until the clamp contacts the pipe.
5. Align pipe and space joints according to job specifications.
6. Turn crank until clamp is at desired tightness, weld joint.
7. To release clamp turn crank counter-clockwise until clamp is free.
8. Use reach rod to pull clamp to next joint.
9. When latches catch, release the reach rod hook and the repeat the above procedure.

*NOTE: When lifting the clamp, be sure to use the lifting bail located behind the head ring. Failure to do so could result in problems with the clamp.*

## Maintenance - Model 245

The Model 245 is ready to work when you receive it. The hydraulic system is a closed circuit and should not require any additional oil unless there is damage to the system. If it should become necessary to refill the hydraulic system the following steps should be followed:

1. Place clamp on level surface.
2. Remove plug from top of filler/bleeder block.
3. Screw hose fitting into plug hole.
4. Place other end of hose into clean container. Fill with clean SAE 10 wt. hydraulic oil. DO NOT USE any type hydraulic brake fluid.
5. Crank clamp up and down fully two or three times. Be sure the end of the hose in the oil container stays below the surface. If not, the system will draw air.
6. Remove hose and replace plug. Clamp is ready.

## Lubrication

Grease toggle assemblies and swivel pins (6 places) with good grade lithium grease, every morning.

All wheels have sealed bearings and should not require additional lubrication.

### The following parts should be greased DAILY:

- Pump
- Hinge
- Toggle Assembly

### Oil and Lubricants

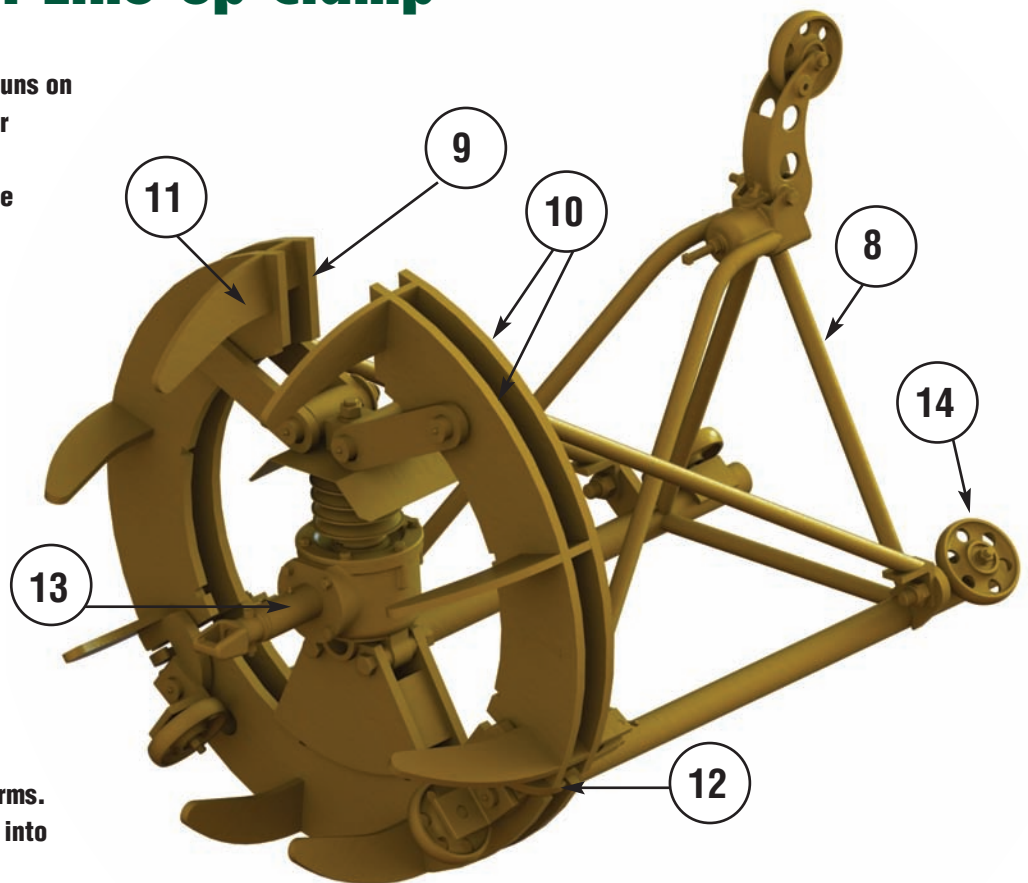
Oil - good grade SAE 10 wt. hydraulic oil. DO NOT USE HYDRAULIC BRAKE FLUID.

Lubricant- Good grade chassis lube.

# MODEL 241

## Manual Internal Line-up Clamp

8. **FRAME:** Supports the clamp and runs on four bottom wheels and one upper wheel.
9. **GUIDES:** Directs the clamp into the next pipe joint.
10. **SIDE ARMS:** Three side arm rings (two top, one bottom) align the two pipe joints.
11. **TOGGLE BARS:** The toggle bars push the two upper side arms against the internal wall of the pipe.
12. **LOCKING LATCHES:** two brass latches located at 4 and 8 o'clock lock the clamp in place providing self-alignment of the side arms.
13. **MANUAL POWER JACK:** transfers motion from reach rod to the hydraulic piston and the toggle arms.
14. **WHEELS:** Allows the clamp to roll into the next pipe joint.



### Features

- Heavy duty steel construction
- Clamping ring contacts both pieces of pipe on each side of the weld joint leaving an unobstructed gap under the weld joint
- Manual power jack actuates toggle action to expand clamp head- multiplying clamping pressure.
- Clamp is pulled through the pipe, positioned, actuated and de-actuated by the reach rod, hook and crank assembly.
- Clamp moves through the pipe on ball bearing wheels.
- Clamp is self-contained and low maintenance.
- Clamp head assembly is machined to pipe I.D. for true and accurate fit.

### Options

- Polyurethane wheels
- Copper or stainless steel back up and trim
- Gas-purging with copper or stainless back up.
- Standard 49-ft. reach rod is supplied in 7-ft. sections and may be added to or subtracted in 7-ft. sections.

## **Operating Instructions - Model 241 Manual Clamp**

*Operating instructions for the Model 241 and the Model 245 are the same.*

## **Lubrication and Maintenance**

Grease the following points daily with any good quality chassis lube:

- Toggle ends (4 places)
- Hinge pins in head ring- (2 places)
- Power Jack input shaft

Check latches, wheels and tail wheel assembly-- to work freely lube with oil.

Check general appearance for visual damage.

Do not try to adjust wheels. This must be done at the factory.

## **Product Warranty**

All products manufactured by or for Sawyer Mfg. Company are guaranteed against defects due to faulty workmanship or materials.

This guarantee is limited to the repair or replacement of any parts found to be defective, and no other liability, expressed, implied or contingent is assumed.

All products of Sawyer Mfg. Company are subject to constant innovation and improvements, so changes in manufacture and price will be made without notice or obligation.



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