

# Flexfence Swaging Unit

## *Product Manual*



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## 1.0 Safety Precautions

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### 1.1 Personal Protection

While operating this equipment it is recommended that the following personal protective equipment be worn;

- Long sleeve shirt and trousers or overalls
- High visibility vest or high visibility component included in clothing
- Gloves
- Safety glasses
- Steel capped protective footwear

To avoid personal injury keep hands and feet away from moving components during operation.

Always keep your body to the side of the swaging operation, and ensure guards are in place during operation.

Read all instructions, warnings and cautions carefully. Follow all safety precautions to avoid personal injury or property damage during system operation.

Ingal cannot be responsible for damage or injury resulting from unsafe product use or incorrect product and/or system operation. Contact Ingal when in doubt regarding safety precautions and operations.

### 1.2 Equipment Operation

The Ingal swaging unit is designed only for the purposes described in this document. All other use is prohibited.

Do not subject the hydraulic hoses to any potential hazard such as fire, extreme heat or cold, sharp surfaces or heavy impact.

Do not allow the hoses to kink, twist, curl or bend so tightly that the fluid flow within the hose is blocked or reduced.

### 1.3 Site Safety

Identify the area where work is to be completed and clear area of debris so there are no trip hazards or other obstructions which may prevent the work being conducted in a safe manner and ensure suitable traffic control is in place.

# Flexfence Swaging Unit

## 2.0 Component Identification

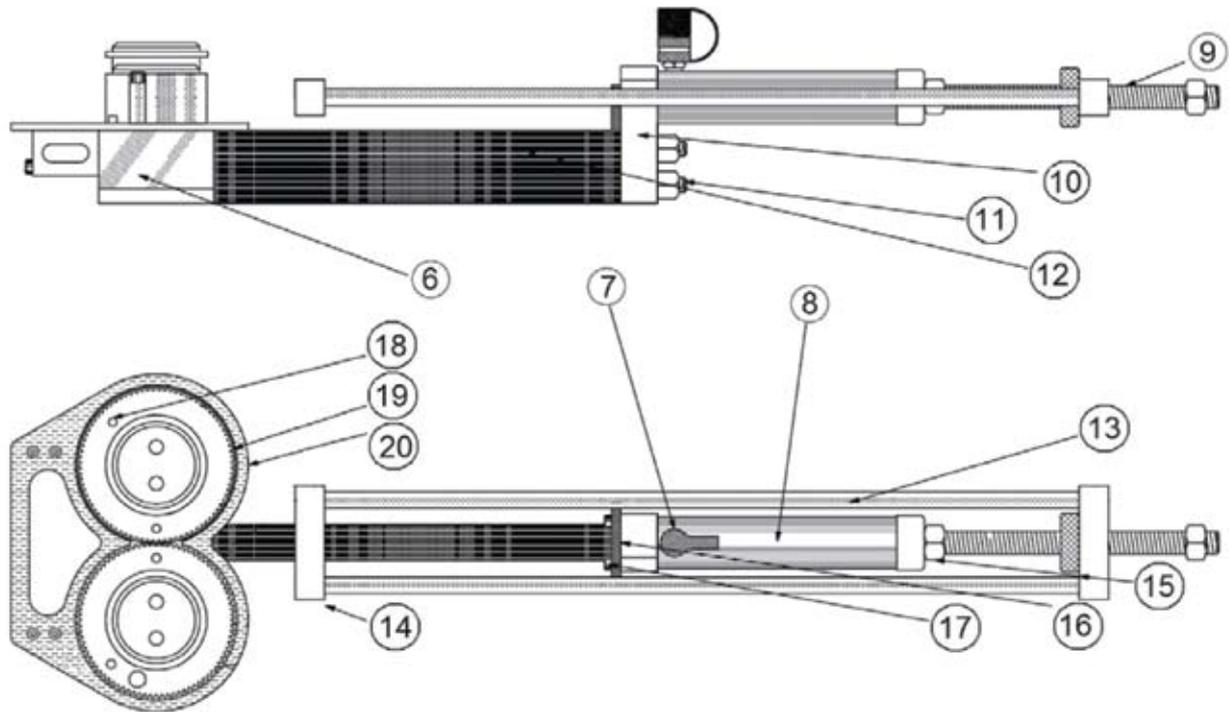


Figure 1: Swaging Unit

Table 1: List of Components

Component ID	Description		
1	Relief Valve	11	Pulling Rods
2	Electric Box	12	Compression Tube
3	–	13	Pulling Rods
4	Roll Bar	14	Cross Bar
5	–	15	Locking Nut
6	Bottom Plate	16	Pulling Rod Guide
7	Quick Coupling	17	Allen Screw
8	Hydraulic Ram	18	Synchronizing Pins
9	Threaded Arm	19	Cog Wheel
10	Cylinder Bracket	20	Cog Wheel Guard

## 3.0 Inspections

### 3.1 Hose Inspections

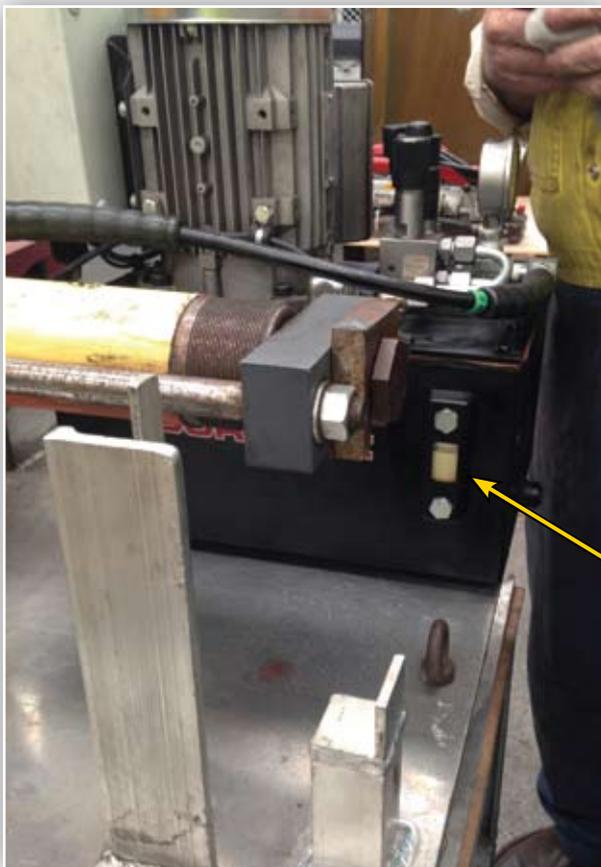
Before operating the swaging unit, check that the hose connection is tight with the proper tools. If loose, tighten using proper tools. Do not over tighten. Connections need only be tightened securely and leak free. Over tightening may cause premature thread failure or high-pressure fittings to split at pressures lower than their rated capacities.

The hydraulic hoses are fitted with protective sheathing to prevent escaping hydraulic fluid from causing injury. Do not operate the swaging tool if the sheathing is damaged or missing.

### 3.2 Hydraulic Fluid Level

Check the fluid level in the hydraulic reservoir through the viewing window. The power supply is to be disconnected when adding fluid to the reservoir. Only use approved Enerpac hydraulic fluid to fill the reservoir.

1. Clean the area around the filler cap before removing the filler cap.
2. Use a clean funnel with a filter when adding fluid.
3. The oil level will typically be around 25mm from the top of the pump cover.



**Table 2:  
Minimum Generator Required**

KW	2
Amps	10
Voltage	240

Hydraulic Fluid Level

**Figure 2: Hydraulic Fluid Level Location**

## 4.0 Operation

### 4.1 Attachment of the End Fitting

Only end fittings supplied by Ingal Civil Products are to be used.

1. Identify the location where the end fitting is to be attached to the cable.
2. Cut the cable at the required location. This can be achieved by using a wire cutter or a disk grinder.  
If using a disk grinder the following is to be observed;
  - i. The operator is to be fitted with a full face shield and PPE as noted in Section 1.1
  - ii. The wire rope is to be appropriately clamped or secured. The cable should NOT be held by hand when cutting.
  - iii. Care is to be taken not to contact the cable downstream of the cutting location.
3. When the cable is cut to its correct length, remove any burrs with a file and ensure the rope is correctly twisted.
4. Insert the cable into the end fitting. The end fitting is manufactured with an observation hole to ensure the cable is embedded to its full depth.

Note: At the anchor locations, where applicable it may be necessary to attach a safety check rope to the cable. Slide the thimble eye of the check rope over the cable prior to the attachment of the end fitting.



Figure 3: Non-Swaged End Fitting



Figure 4: Swaged End Fitting

## 4.2 Swaging the End Fitting

1. Where applicable, turn the main isolator switch located on the control box to the ON position, and push the reset button. Refer to Figure 6.
2. Locate the emergency stop button where applicable, and ensure it is not obstructed.
3. Lift the guard away from the entrance to the swaging roller dies. If the swager is not in the open position, use allen key (provided in box) to position the dies. Refer to Figure 9.
4. Remove the nut from the end fitting.
5. Feed the end fitting through the roller die area so that the threaded section of the end fitting passes through the cross bar. Refer to Figure 7.
6. Reattach the end fitting nut so that the thread of the end fitting is flush with the back of the nut. Gripping the end fitting (do not pull the cable), pull back to ensure a tight connection with the cross bar. Refer to Figure 9.
7. Rotate the roller dies with allen key so that they rest against the end fitting.
8. Return the guard to the closed position in front of the roller dies.
9. Operate the hydraulic ram by press and hold the button on the pendant control until swage is complete. A small amount of pressure on the allen key may be required to initiate swaging. Note: the ram will stop if the cover is opened. Refer to Figure 10.
10. Pressure around the end fitting will increase as the hydraulic ram moves and the roller dies rotate. The end fitting will pull through the roller dies.
11. Once the swage is complete, open the cover and use the allen key to rotate the dies and release the end fitting before the ram returns to rest position.
12. Remove the end fitting from the cross bar by releasing the nut.
13. Return the nut to the end fitting.
14. If continuing to use swaging unit, repeat steps 3-12 for each end fitting.
15. When done, rotate the roller dies back to open position. Return allen key and pendant control to the box and unplug the generator.

**To stop the hydraulic pump in an emergency press one of the two emergency stop buttons located on the unit. Under normal conditions turn the main switch on the control box to the OFF position.**



Figure 5: Emergency Stop Button

Emergency Stop



Main Isolator Switch

Reset Button

Figure 6: Old Style Unit Only

# Flexfence Swaging Unit



Cross Bar

Figure 7: Roller Dies and Cross Bar



End Fitting  
with Nut

Figure 8: Attachment of End Fitting to Cross Bar



Allen Key  
to Rotate  
Roller Dies

Figure 9: Initial positioning of the end fitting



Allen Key  
to Rotate  
Roller Dies

Pendant  
Control

Figure 10: Operation of swaging machine via pendant control

## 5.0 Troubleshooting

Repairs must be performed in a dirt-free environment by qualified personnel familiar with this equipment.

**Table 3: Troubleshooting**

Problem	Cause	Solution
Pump does not operate	<ol style="list-style-type: none"><li>1. Main isolator switch OFF</li><li>2. Unit is not plugged in</li><li>3. Emergency stop button has not been reset</li><li>4. Swaging guard open</li></ol>	<ol style="list-style-type: none"><li>1. Switch main isolator ON</li><li>2. Plug unit in</li><li>3. Reset emergency stop buttons and press reset button on the control box</li><li>4. Close the swaging guard</li></ol>
Pump is not delivering oil or delivers only enough oil to advance hydraulic ram partially or erratically	<ol style="list-style-type: none"><li>1. Low fluid level in reservoir</li><li>2. Air trapped in system</li><li>3. Loose coupler</li><li>4. Contaminated oil</li><li>5. Relief valve or low pressure valve out of adjustment</li></ol>	<ol style="list-style-type: none"><li>1. Check fluid level in accordance with Section 3.2</li><li>2. Remove air from system in accordance with Section 3.3</li><li>3. Check all couplers</li><li>4. Repair by authorised service dealer</li><li>5. Repair by authorised service dealer</li></ol>







*For more information*

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