



# RECEIVING YOUR MACHINE

## **NewArc™ Machine Manual**

The Technical Information Pages of the NewArc™ website contains the Machine User Manual. Since it is a searchable pdf file, specific items are easily accessed. The file is also downloadable for your convenience.

## **Explanation of Essential Items**

The following items are included with your NewArc™ Wheel Straightening Machine. These items are necessary in order to perform SAE accepted wheel straightening repairs. These materials include reference materials and required tools, which comprise the following list:

- Dye Penetrant Kit
- Infrared Thermometer
- Reference Material A (*Decision Flow Chart, ITS Certificate*)
- Reference Material B (*DNS Formula, Bend Ratio Chart*)
- Bend Assessment Tool
- Quality Assurance Reports
- Temporary Repair Labels

## **Dye Penetrant Kit**

This is the state-of-the-art inspection system used both in the aerospace and automotive industries to detect cracks in critical components such as turbine blades and crankshafts. The kit contains fluorescent dye an ultraviolet light, which is used for the examination. Replacement items from the kit can be purchased directly at our website store.

## **Infrared Thermometer**

As you apply heat to the wheel, this device is used to monitor wheel temperature. A laser targets the heating area and displays the temperature on a screen. In order to **properly** monitor heat applications, this tool must be used. This monitoring method meets SAE requirements and insures that the NewArc™ established limits are not exceeded. It is important that no spoke temperature ever exceeds 400 degrees.

## **Reference Material**

Technician reference material is used to review the Decision Flow Chart for approved inspection, process, marking and recording methods. It is also used for evaluation of the bent wheel to determine if it falls within the NewArc™ established acceptance criteria for onsite straightening. The following reference material is included:

### ***Decision Flow Chart***

This contains the NewArc™ (formerly NBT Global) process that was certified by Independent Test Services and has now been accepted by the Society of Automotive Engineers. This process must be used on every wheel straightening regardless of severity or bend location.

### ***ITS Certificate***

On the back of the Decision Flow Chart is a copy of the actual certificate issued to NBT Global by Independent Test Services. This document proves that the actual repair process was scientifically certified.

### ***Dimensional Relationship Chart and Disqualification Formula***

These back to back references both represent a way to assess bent wheels for on-site repairs. They both show the same thing, one in graph form and the other in a simple mathematical equation. In both cases however, it is imperative that the bend be measured accurately, which can be done with the Bend Measuring Template, which is also included.

### **Bend Measuring Template**

Scientific studies have proved that the ratio of bend depth to width is important. Since it is extremely difficult to determine the true width of a bend, NBT Global developed this tool to quickly measure the true width of the bend while, at the same time, measuring the depth. The accuracy of this tool can be validated. The validation method is explained on the Technical Information Pages of the NewArc™ website. Once this ratio is established, you can use the reference material to determine if the wheel can be straightened.

### **Quality Assurance Reports**

Proper documentation is critical to SAE accepted repairs. These two-part forms answer the requirement. Whenever you handle a wheel, whether it is simply for evaluation or if you actually work on it, this form must be filled out. One copy is provided to your customer and the other is attached to your copy of the invoice. You can order additional forms as needed or keep a supply handy by using your own printer source. It is inexpensive to print and you are welcome to download it from the Technical Information Pages of the NewArc™ website.

### **Temporary Repair Labels**

SAE requires that all repaired wheels be marked in a manner so that the repair is traceable. These labels are sufficient to satisfy that requirement. We recommend that your company have some permanent labels made and attached to every wheel repaired by your company. The information contained on these labels provides a model.

## **COMPONENT ASSEMBLY**

Some components will require assembly after unpacking your machine. The following pages contain brief explanations that will assist in what should be simple and straightforward procedures. NewArc part numbers are shown in parenthesis. For a pictorial view of component relationships, please refer to the exploded view drawings on the Technical Information Pages of the NewArc™ website.

# ENERPAC ASSEMBLY AND SET UP CHOICES

## YOUR COUPLING CHOICE FOR ENERPAC ASSEMBLY

All Enerpac hydraulic cylinders (Rams) have female couplers and the hydraulic hoses have male couplers. This makes for easy Ram changes. The same type female coupler is also included on the GA45GC Gauge Adaptor Manifold (346). This enables the user to disconnect the hose from the manifold end as well. Some people might want to store the components disassembled. The components can be stowed away more efficiently if disconnected but each time it is done, a small amount of oil is usually spilled, requiring occasional oil level checking and reservoir replenishing.

Frequent Ram changes are common but it is rarely necessary to disconnect the hose from the pump end. Therefore, we recommend threading one end of the hose directly into the manifold for a permanent connection. Then simply store the Rams and hose assembly on the brackets attached to the frame. Here are the steps for the assembly we recommend.



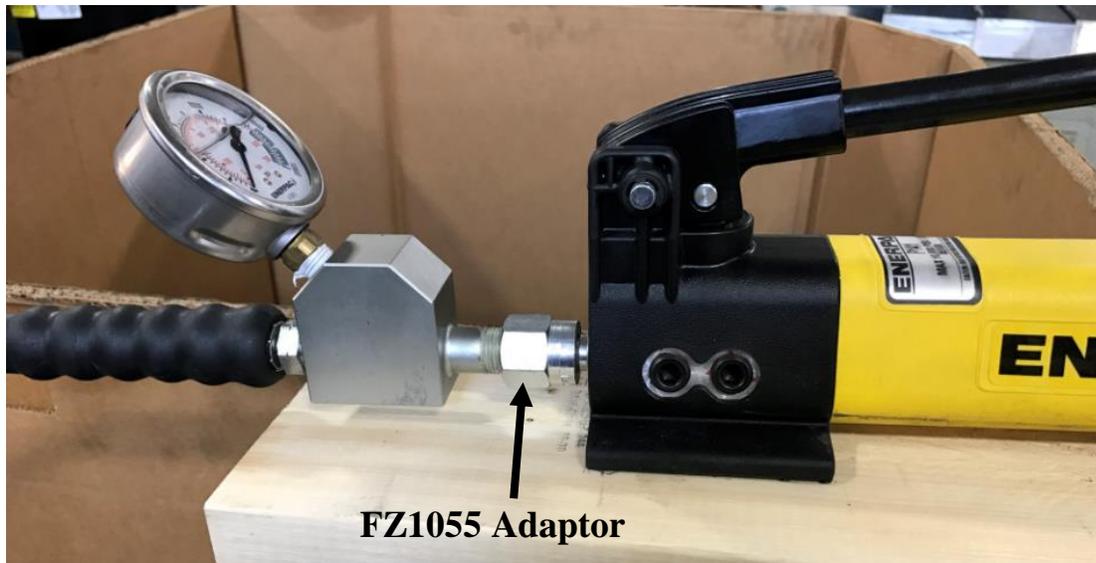
### STEP ONE

Remove the Hose Coupler from the Enerpac GA45GC Gauge Adaptor Manifold (346). This enables you to make a permanent connection between the hose and the manifold.



### STEP TWO

Remove the Hose Coupler from one end of the Enerpac HC9206C Hose (348). Next, wrap Teflon tape around the threads of the hose and thread it directly into the Gauge Adaptor Manifold, as shown in the photo on the next page. Do not over tighten.



### **STEP THREE**

Even if you choose to leave the female hose couplers intact, you will need the Enerpac FZ1055 step down adaptor (345) to connect the GA45GC Gauge Adaptor Manifold assembly to the Enerpac P141 pump (344). The photo above shows the adaptor between the gauge manifold and the pump. When assembling hydraulic components, do not over tighten.

### **BLEEDING THE SYSTEM**

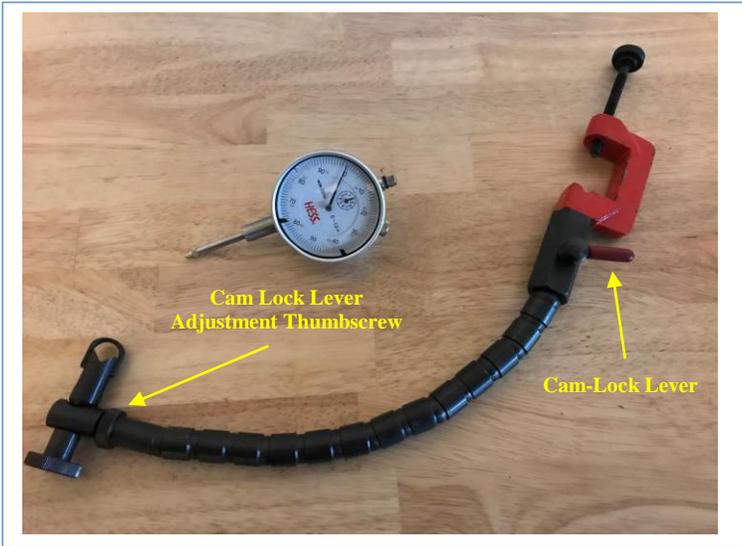
Before beginning, you must first connect one of the Enerpac hydraulic Rams. Push the male hose coupler into the Ram coupler. You will feel spring tension as the Ram valve is opened. While holding the Ram valve open, thread the connector onto the hose coupler until it is finger tight.

After the components are assembled, it is a good idea to check the system. Especially in assemblies of new components, air can be trapped in the circuit and should be removed. To bleed the air from the hydraulic circuit, you must first close the valve on the side of the Pump. Next, place the Ram on the floor or on a level lower than that of the Pump. Now operate the pump until the Ram is fully extended. If air is present in the system, this process could take a little time.

When the Ram reaches full extension, open the valve on the Pump and the ram will quickly retract. If there is air in the system, it will be forced upward into the Pump reservoir. Repeat this process until the Ram operates smoothly and responds to every move of the Pump handle.

## **DIAL INDICATOR ASSEMBLY**

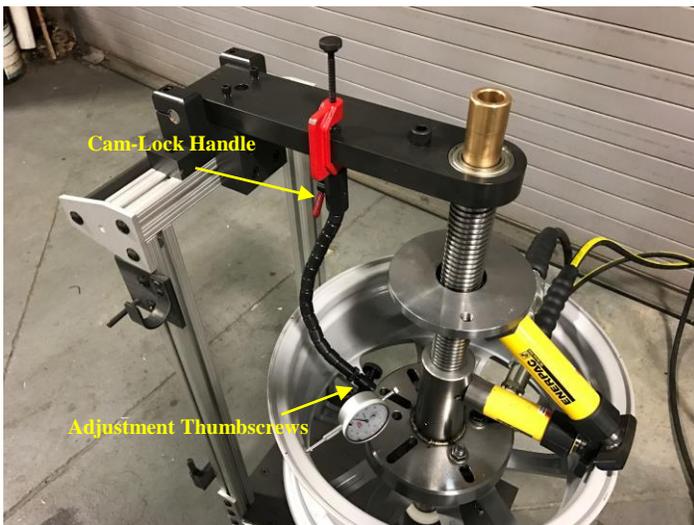
To make the Dial Indicator assembly effectively operational, you must correctly attach the Lug Back Adaptor to both the back of the Indicator and Flexbar C-Clamp. Instructional photos are contained on the following page.



Indicator Head and Flexbar with C-Clamp. The Cam-Lock Lever is used to lock Flexbar in whatever position you desire. If the Lever does not lock, turning the adjusting nut will tighten the gaps between the Flexbar segments, which will allow the Lever to lock the Flexbar firmly in place.



Slide the Indicator Head into the Holding Bracket of the Flexbar. It can then be moved into precise positions for readings. Use the Tightening Thumbscrew to hold the Indicator Head in the position desired.



Once the C-Clamp is secured, put the indicator head in the desired position and actuate the Cam-Lock Lever. If the Indicator Head does not lock in place, tighten the Lever Thumbscrew. Leave the Indicator Head slightly loose so it can be rotated to observe needle movements. Once it is rotated into the desired position, tighten the bracket thumbscrew.

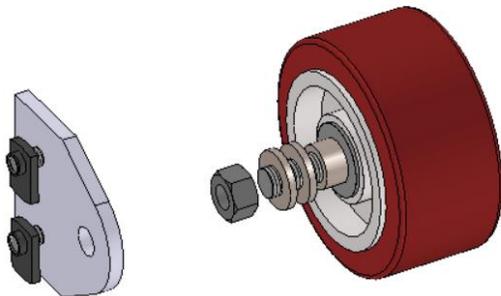
# PORTABILITY OPTIONS

If you intend on mounting the machine in a stationary position in a shop or bolted to the floor of a mobile repair unit, you will not be required to do any further assembly. However, if your machine is equipped with the Portability Package, there are additional assembly requirements that are detailed on the following page.

## CASTER AND FOOT PAD ATTACHMENT

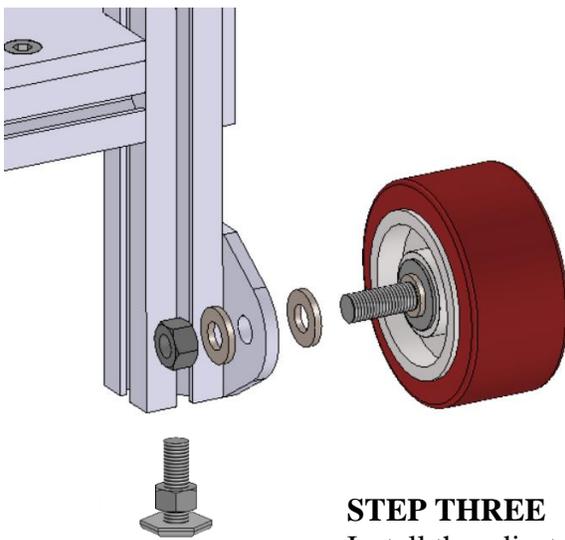
### SHIPPING BRACKETS

The angle brackets at the bottom of the frame legs are installed for shipping only. The fastening hardware that attaches the brackets to the frame is the same as those that attach all other frame joining brackets. Once they are removed, the caster assembly and foot pads can easily be attached.



### STEP ONE

Remove Caster wheel (313) and axle assembly from the mounting plate (315). The button head bolts and T-Nuts might need to be loosened slightly so the plate slide easily in place. Make sure the projections on the T-Nuts face away from the bracket. After sliding the Bracket in place, make sure it is flush with the bottom of the frame legs and tighten in place.



### STEP TWO

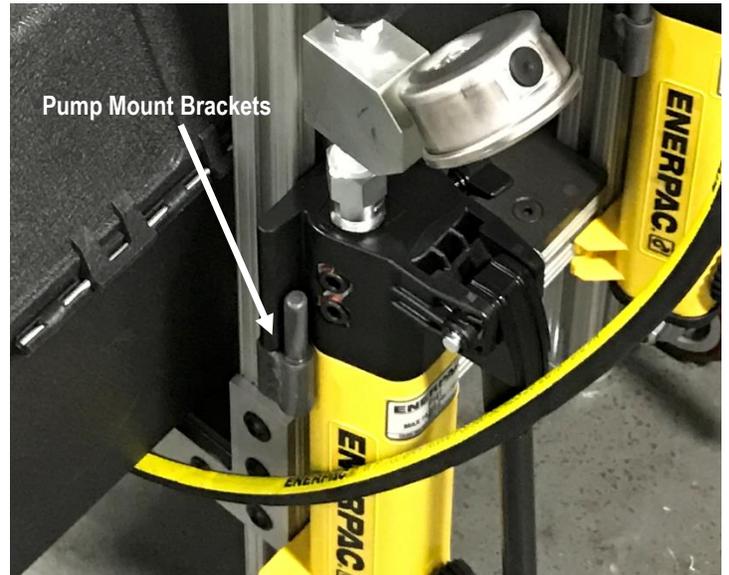
Install the Caster assembly in the order shown. When you tighten the Nylock nut, the head of the button axle bolt will jam against the Caster bushing, securing the assembly while allowing the Caster wheel to turn freely.

### STEP THREE

Install the adjustable Foot Pad (419) into bottom of frame leg.

# PORTABILITY BRACKETS

The Pump Mount and Ram Mount Brackets are designed to hold those components so they can be easily accessed. Left photo shows how the Enerpac Rams should be positioned in their brackets.



The Pump Mount Brackets are at the rear of the machine uprights and the Enerpac pumps slide easily into the slots. The hoses can be routed in any way that is convenient for the operator. They can be wrapped around the Swing Arm or criss-crossed across the front of the Frame. If the knurled couplers connecting the Rams to the Hoses are left slightly loose, the coupler will swivel so the Hoses can be easily twisted into any position desired.

**NOTE:** It is not a problem if the knurled couplers are kept *slightly* loose. It makes for easy hose positioning. However, do not let the coupler become too loose. Proper coupling between the Hose and Ram is essential so an internal spring-loaded release valve will remain open. If the valve closes, oil inside the Ram cannot return to the Pump. This makes the operator believe that the Ram is stuck. If that happens, simply tighten the knurled nut and the release valve will open.